

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

Original report release date: May 31, 2023

Revised report release date: June 21, 2023

Revised report release date: August 30, 2023

Revision 1 – Revision of Total Hydrocarbons (THC) Data at Firebag

During routine data review, it was identified that the Total Hydrocarbon (THC) baseline points for Firebag Air Monitoring Stations (AMS) had inadvertently been left unaccepted for April 2023. On June 21, 2023, THC data for Firebag AMS for April 2023 was resubmitted to the Electronic Transfer System to include baseline corrections.

Revision 1 – Submission of H₂S data and Revision of TRS data at Patricia McInnes.

The Patricia McInnes air monitoring station (AMS06) collected H₂S data from January 3, 2023, to June 12, 2023, but it was reported as TRS. On August 30, 2023, the data was resubmitted as H₂S 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.



**WOOD BUFFALO
ENVIRONMENTAL ASSOCIATION**

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Wood Buffalo Environmental Association

**APRIL 2023
MONTHLY REPORT**

CONTINUOUS MONITORING

August 30, 2023

Revision 01

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





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August 30, 2023

Director, Environmental Monitoring and Evaluation Branch
Alberta Environment and Protected Areas
11th Floor, Oxbridge Place
9820 106 Street
Edmonton, Alberta T5K 2J6

**RE: Monthly Ambient Air Quality Monitoring Report April 2023 – Revision 01
Wood Buffalo Environmental Association**

Enclosed is the April 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
Canadian Natural

EPEA Approval No.

289664-00-00; 241311-00-00
149968-01-00; 153125-01-00;
20809-02-00; 224816-01-00; 228044-00-00;
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

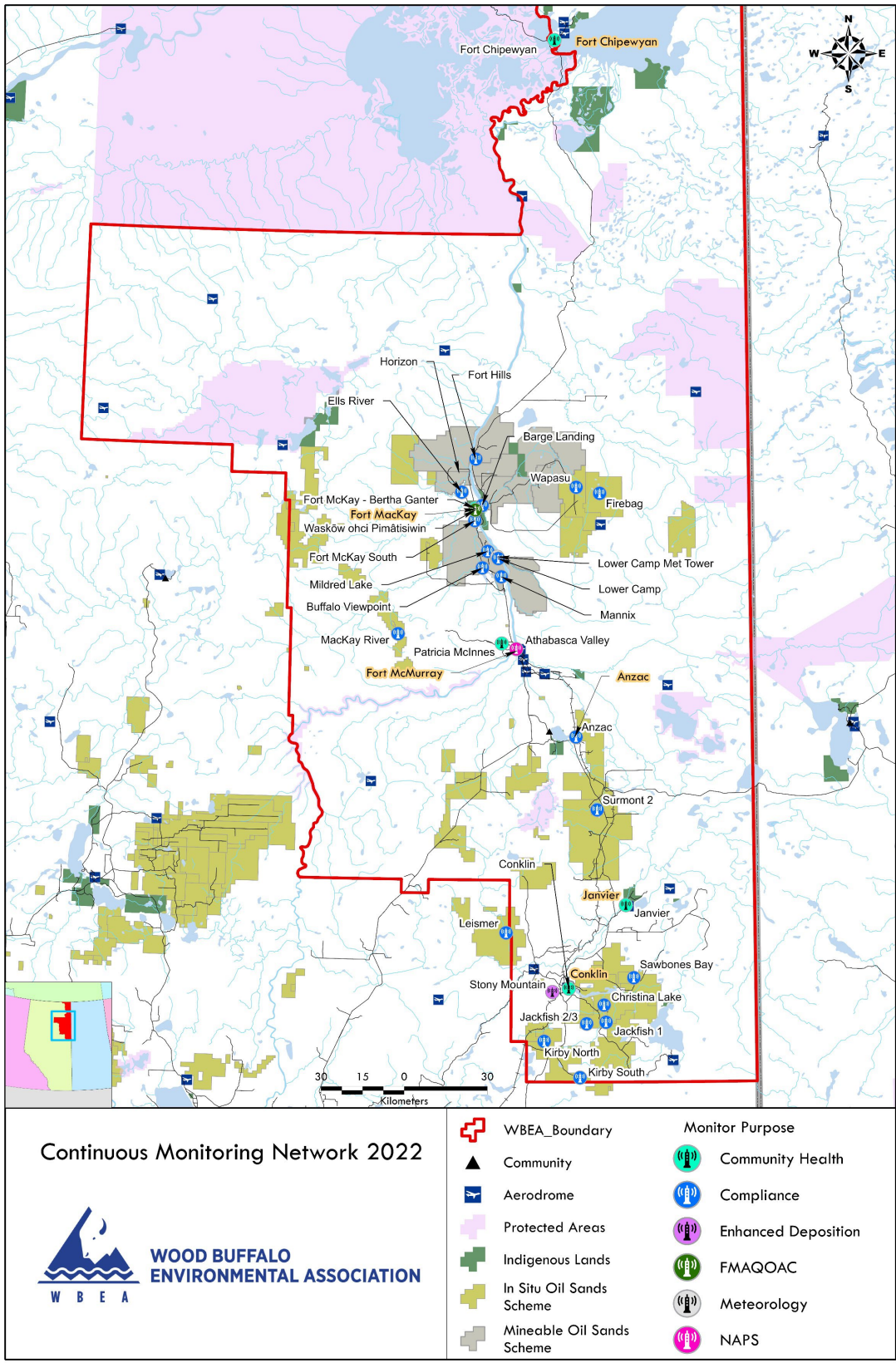


Figure 1: Map of WBEA Continuous Monitoring Network

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, NH₃, NO₂, O₃, SO₂, and TRS.

There was one ground-level concentration in excess of the 1-hour H₂S objective reported to AEPA; following data validation and processing this exceedance was found to be not an exceedance.

There were eight ambient ground-level concentrations in excess of the 1-hour PM_{2.5} guideline reported to AEPA; following data validation and processing these exceedances were confirmed.

There was one ambient ground-level concentration in excess of the 24-hour PM_{2.5} objective reported to AEPA; following data validation and processing this exceedance was confirmed.

There was one ground-level concentration in excess of the 1-hour TSP objective reported to AEPA; following data validation and processing this exceedance was confirmed.

Site	Parameter	Date / Time	Reference	Period	Reported	Final	Status*
Lower Camp	H ₂ S	9Apr23, 04:00	411475	1-hr	10	9.7	nae
Surmont 2	PM _{2.5}	12Apr23, 21:00	411640	1-hr	87	87.1	exc
Fort Hills	PM _{2.5}	14Apr23, 05:00	411668	1-hr	88	87.9	exc
Fort Hills	PM _{2.5}	14Apr23, 23:00	411704	1-hr	145	144.7	exc
Fort Hills	PM _{2.5}	14Apr23, 24:00	411704	1-hr	115	115.3	exc
Fort Hills	PM _{2.5}	14Apr23, 24:00	411704	24-hr	36	36.2	exc
Fort Hills	PM _{2.5}	15Apr23, 01:00	411722	1-hr	104	104.4	exc
Fort Hills	PM _{2.5}	15Apr23, 02:00	411722	1-hr	93	93.5	exc
Janvier	PM _{2.5}	15Apr23, 21:00	411760	1-hr	126	126.4	exc
Fort Hills	PM _{2.5}	15Apr23, 24:00	411722	24-hr	30	29.8	exc
Janvier	PM _{2.5}	23Apr23, 17:00	412018	1-hr	91	90.9	exc

*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_{2.5}, 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_{2.5} 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, NO₂ concentrations were re-calculated from baseline-corrected NO_x and NO concentrations. Specifically, the NO concentration was subtracted from the NO_x concentration to determine the NO₂ 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 April 2023, there was one instance that resulted in monitoring instruments operating less than 90% of the time.

1. The wind speed and wind direction (WS/WD) sensor at the Firebag AMS operated less than 90% for the month of February 2023 through to the month of May 2023, which is a contravention of Clause DQ 4-C, of Chapter 6 of the Air Monitoring Directive (2016, as amended). This incident was reported to Alberta Environment and Protected Areas (AEPA) on May 10, 2023 (reference number 412838).

On May 2, during the daily system check the WBEA noted the WS/WD was not comparing well with nearby sites. A physical inspection of the WS/WD sensor tower by the WBEA found one set of bolts that secure the tower to the station were missing, resulting in the misalignment of the tower orientation. The WBEA rectified the issue by replacing the missing bolts and ensuring the tower was in proper alignment. The subsequent data review determined that data collected from February 25 to May 4, 2023, was invalid.

3.2 Intermittent Monitoring

The results for time-integrated sampling of precipitation, PAH, VOC, ECOC, PM_{2.5}, and PM₁₀ will be submitted in the 2023 Annual Report.

3.3 General Network Notes

The Ammonia (NH₃) 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 (CH₄) measurements are collected at some air monitoring stations in the WBEA network using the Thermo Environmental model 55i direct CH₄/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 NH₃ 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 NH₃ gas, and this is an inherent behavior in the NH₃ analyzer operations due to the properties of the NH₃ gas. Data for 1 hour following the daily spans have been reported as invalid for a total of 30 hours this month.

An internal audit on April 13 interrupted the normal operations of the NH₃ analyzer for 4 hours.

A flatline in the output signal of the NO₂ analyzer on April 15 resulted in 11 hours of invalid data.

Unstable operations due to excessive baseline noise in the output signal of the H₂S analyzer on April 17 and 18 resulted in 13 hours of invalid data.

Station power failure on April 18 affected the normal operations of all continuous analyzers for 1 hour.

Cleaning of the sample manifold on April 21 interrupted the normal operations of all gaseous analyzers, except for the H₂S and TRS analyzer, for 3 hours.

Unstable operations due to excessive baseline noise in the output signal of the THC/NMHC/CH₄ analyzer on April 25 to 26 resulted in 31 hours of invalid data. Subsequent maintenance on April 26 to adjust the retention timing of the chromatogram resulted in an additional 3 hours of downtime.

The surface leaf wetness sensor operated out of range on April 2, 18, and 19 resulting in 7 hours of downtime.

A flatline in the output signal of the wind sensor on April 13, 20, and 23 resulted in 8 hours of invalid data.

Maintenance to complete field verification checks of the precipitation collector sensor on April 21 resulted in 2 hours of invalid data.

Intermittent flatlines in the output signal of the temperature sensor at the 10-meter elevation throughout the month resulted in 17 hours of invalid data.

Station 2, Mildred Lake

Maintenance to replace the sample pump of the H₂S analyzer on April 5 resulted in 3 hours of invalid data.

Analyzer failure due to a non-responsive output signal of the H₂S analyzer on April 16 and 17 resulted in 12 hours of invalid data.

Maintenance to reboot the H₂S analyzer on April 17 resulted in 1 hour of downtime.

Station power failure on April 18 affected the normal operations of all continuous analyzers for 1 hour.

The relative humidity sensor operated out of range on April 20 resulting in 2 hours of downtime.

Station 3, Lower Camp – Meteorology

A flatline in the output signal of the wind sensor on April 18 at every elevation resulted in 1 to 3 hours of invalid data.

A flatline in the output signal of the wind sensor on April 18 at a 100-meter elevation resulted in 1 hour of invalid data.

Station 4, Buffalo Viewpoint

Unstable operations due to excessive baseline drift in the output signal of the analyzer THC/NMHC/CH₄ on April 5 resulting in 2 hours of invalid data.

Station operator activities on April 5 interrupted the normal operations of the THC/NMHC/CH₄ analyzer for 1 hour.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on April 13 resulted in 2 hours of downtime.

Station 5, Mannix

A flatline in the output signal of the wind sensor on April 18 at the 45, 75, and 90-meter elevations resulted in 1 hour of invalid data.

Station 6, Patricia McInnes

The NH₃ analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily spans and routine monthly multipoint calibrations. NH₃ analyzers require additional time

for stabilization after being exposed to high concentrations, this is due to the physical properties of the NH₃ gas. Data for 1 to 2 hours following each daily span has been reported as invalid for a total of 45 hours this month.

Cleaning of the sample manifold on April 13 interrupted the normal operations of all gaseous analyzers for 1 hour.

Maintenance to replace the calibration gas cylinder of the NH₃ analyzer on April 20 resulted in 6 hours of downtime.

An internal audit on April 26 interrupted the normal operations of the NH₃ analyzer for 9 hours.

Unstable operations due to excessive baseline noise in the output signal of the THC/NMHC/CH₄ analyzer on April 20 to 24 resulted in 19 hours of invalid data. Subsequent maintenance on April 25 to replace the actuator of the THC/NMHC/CH₄ resulted in an additional 5 hours of downtime.

The TRS analyzer was not in service for 720 hours in April.

Station 7, Athabasca Valley

Maintenance to repair, replace, and stabilization of the O₃ analyzer on April 19 and 20 resulted in 22 hours of invalid data.

Cleaning of the sample manifold on April 26 interrupted the normal operations of the CO, NO₂, O₃, SO₂, and THC/NMHC/CH₄ analyzers for 2 hours.

A flatline in the output signal of the barometric pressure sensor and PM_{2.5} analyzer on April 29 and 30 resulted in 16 hours of invalid data.

Automated daily zero-response checks of the O₃ analyzer did not meet WBEA's QC acceptance criteria for the month of April. Therefore, the calibrator zeros from the April and May multi-point calibrations were used to validate the analyzer baseline response.

Station 8, Fort Chipewyan

Note: The weighing rain gauge (PC) data collection and submission started on April 1, 2023.

Station power failure on April 3 affected the normal operations of CO and CO₂ analyzers for 1 hour.

Stabilization of the CO₂ analyzer post power failure on April 3 resulted in 3 hours of invalid data.

Stabilization of the TRS analyzer after a routine calibration on April 26 resulted in 10 hours of invalid data.

The relative humidity sensor operated out of range throughout the month resulting in 24 hours of downtime.

A flatline in the output signal of the wind sensor on April 3 resulted in 1 hour of invalid data.

The surface leaf wetness sensor operated out of range on April 18 resulting in 2 hours of downtime.

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

Station 9, Barge Landing

Cleaning of the sample manifold on April 17 interrupted the normal operations of the NO₂, SO₂, and THC/NMHC/CH₄ analyzers for 1 hour.

Station power failure on April 18 and 19 affected the normal operations of all continuous analyzers for a total of 8 hours.

A flatline in the output signal of the wind sensor on April 20 resulted in 4 hours of invalid data.

Station 11, Lower Camp

Cleaning of the sample manifold on April 17 interrupted the normal operations of all gaseous analyzers for 2 hours.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on April 27 resulted in 2 hours of downtime.

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

Station 13, Fort McKay South

Station power failure on April 18 affected the normal operations of all air quality analyzers for 1 hour.

Station 14, Anzac

Station power failure on April 10 affected the normal operations of all continuous analyzers for 4 hours.

Maintenance to replace the support gas cylinder of the THC/NMHC/CH₄ analyzer on April 5 resulted in 2 hours of downtime.

Station 17, Wapasu

Maintenance to reset the logger and the modem on April 5 interrupted the normal operation of the entire station resulting in 1 hour of downtime.

Station 18, Stony Mountain

Analyzer failure due to a non-responsive PM_{2.5} analyzer on April 17 to 19 resulted in 38 hours of invalid data. Subsequent maintenance to replace the PM_{2.5} analyzer on April 19 resulted in a further 1 hour of invalid data.

Maintenance to complete field verification checks of the precipitation collector sensor on April 20 resulted in 2 hours of invalid data.

Station 19, Firebag

Analyzer failure due to a non-responsive THC analyzer on April 13 and 14 resulted in 26 hours of invalid data.

Unstable operations due to the misaligned tower that affected the wind sensor readings throughout the month for 720 hours.

Station 20, MacKay River

Unstable operations due to excessive baseline drift in the output signal of the H₂S analyzer on April 5 and 6 resulted in 2 hours of invalid data.

Cleaning of the sample manifold on April 19 interrupted the normal operations of the H₂S, SO₂, and THC analyzers for 2 hours.

A flatline in the output signal of the wind sensor on April 29 resulted in 1 hour of invalid data.

Station 21, Conklin

Maintenance to adjust the chromatogram windows of the THC/NMHC/CH₄ analyzer on April 16 resulted in 3 hours of invalid data.

Unstable operations due to excessive baseline noise in the output signal of the THC/NMHC/CH₄ analyzer on April 18 resulted in 8 hours of invalid data.

Maintenance to replace the THC/NMHC/CH₄ on April 18 resulted in 2 hours of downtime.

Automated daily zero-response checks of the O₃ analyzer did not meet WBEA's QC acceptance criteria for the month of April. Therefore, the calibrator zeros from the March, April, and May multi-point calibrations were used to validate the analyzer baseline response.

Station 22, Janvier

Cleaning of the sample manifold on April 26 interrupted the normal operations of the NO₂, SO₂, THC/NMHC/CH₄, and TRS analyzers for 1 hour.

Maintenance of the zero-air generator on April 27 impacted the normal operations of the THC/NMHC/CH₄ analyzer, resulting in 1 hour of invalid data.

Station 23, Fort Hills

Cleaning of the sample manifold on April 5 interrupted the normal operations of the NO₂, SO₂, and THC analyzers for 2 hours.

Station power failure from April 18 through 20 interrupted the normal operations of the entire station resulting in 38 hours of downtime.

Maintenance to verify the daily QA check on April 26 interrupted the normal operations of the NO₂ analyzer for 2 hours.

Station 25, Waskōw ohci Pimâtisiwin

Failure to record data of all parameters on April 18 resulted in 1 hour of invalid data.

An internal audit on April 19 interrupted the normal operations of the H₂S analyzer for 3 hours.

An internal audit on April 21 interrupted the normal operations of the SO₂ analyzer for 3 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 13 hours of invalid data.

Station 26, Christina Lake

Cleaning of the sample manifold on April 26 interrupted the normal operations of the H₂S and SO₂ analyzers for 1 hour.

A flatline in the output signal of the wind sensor on April 15 resulted in 4 hours of invalid data.

Station 27, Jackfish 2/3

Unstable operations due to excessive baseline drift in the output signal of the H₂S analyzer on April 1 resulted in 2 hours of invalid data.

Cleaning of the sample manifold on April 19 interrupted the normal operations of the H₂S and SO₂ analyzers for 1 hour.

Maintenance to replace the NO₂ analyzer and subsequent stabilization on April 19 and 20 resulted in 19 hours of invalid data.

Failure to record data of all parameters on April 26 resulted in 1 hour of invalid data.

Station 29, Surmont 2

Cleaning of the sample manifold on April 26 interrupted the normal operations of the H₂S, SO₂, and THC analyzers for 2 hours.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 9 hours of invalid data.

The daily span check for the NO₂ analyzer was outside the 10% AMD criteria on April 2 and 25 due to an interruption in the station calibrator configuration.

Station 30, Ells River

Station power failure on April 18 affected the normal operations of all air quality analyzers for 1 hour.

A flatline in the output signal of the wind sensor on April 20 and 21 resulted in 9 hours of invalid data.

Station 506, Jackfish 1

A flatline in the output signal of the wind sensor on April 29 resulted in 1 hour of invalid data.

Station 508, Kirby North

Maintenance to replace the SO_x scrubber beads and subsequent stabilization of the H₂S analyzer on April 19 and 20 resulted in 13 hours of invalid data.

Cleaning of the sample manifold on April 21 interrupted the normal operations of the H₂S and NO₂ analyzers for 1 hour.

Maintenance to replace the power distribution card on April 27 resulted in 1 hour of invalid data for all parameters.

A flatline in the output signal of the wind sensor on April 18 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.

Yours sincerely,

Wood Buffalo Environmental Association

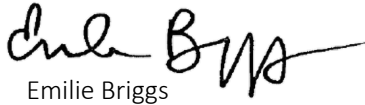
The representative of the Person Responsible for this monitoring program is Emilie Briggs, Operations Manager, WBEA.

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
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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

April 2023

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APPROVAL NUMBERS	REPORT DATE						
	MONTH	YEAR					
289664-00-00	04	2023					
241311-00-00	CONTINUOUS AMBIENT MONITORING						
20809-02-00							
149968-01-00							
237382-00-00							
48522-01-00							
240008-00-00	PARAMETER	STN. NO.	% TIME OPERATIONAL	ONE-HOUR AVERAGE MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	24-HOUR AVERAGE MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
48263-01-00	SO2(ppb)	1	99	22	0	5.1	0
224816-00-00	SO2(ppb)	2	100	41.6	0	15.0	0
151469-01-00	SO2(ppb)	4	100	35.3	0	3.7	0
189942-00-00	SO2(ppb)	5	100	48.3	0	11.0	0
206355-00-00	SO2(ppb)	6	100	13.0	0	5.0	0
46586-00-00	SO2(ppb)	7	100	15.3	0	4.3	0
73203-02-00	SO2(ppb)	8	100	1.7	0	0.5	0
216466-01-00	SO2(ppb)	9	99	20.2	0	5.5	0
137467-01-00	SO2(ppb)	11	100	47.3	0	9.2	0
236394-00-00	SO2(ppb)	13	100	38.9	0	6.0	0
254465-00-00	SO2(ppb)	14	99	24.5	0	3.9	0
094-03-00	SO2(ppb)	17	100	21.1	0	3.5	0
80105-01-00	SO2(ppb)	18	100	18.5	0	1.4	0
305529-00-00	SO2(ppb)	19	100	9.6	0	3.0	0
318401-00-00	SO2(ppb)	20	100	7.1	0	2.8	0
026-03-00	SO2(ppb)	21	100	4.2	0	1.0	0
364232-00-00	SO2(ppb)	22	100	4.4	0	1.2	0
228044-00-00	SO2(ppb)	23	94	17.3	0	4.1	0
247548-00-00	SO2(ppb)	25	99	22.4	0	4.9	0
231302-00-00	SO2(ppb)	26	100	31.6	0	9.0	0
153125-01-00	SO2(ppb)	27	100	4.6	0	1.2	0
	SO2(ppb)	29	100	4.3	0	1.1	0
	SO2(ppb)	30	100	29.7	0	5.3	0
	SO2(ppb)	506	100	39.5	0	7.5	0
	SO2(ppb)	508	100	13.9	0	2.9	0
	H2S(ppb)	1	98	1.4	0	0.4	0
	H2S(ppb)	2	98	4.9	0	0.8	0
	H2S(ppb)	4	100	2.8	0	0.4	0
	H2S(ppb)	5	100	6.8	0	1.5	0
	H2S(ppb)	6	100	0.6	0	0.2	0
	H2S(ppb)	11	100	9.7	0	1.3	0
	H2S(ppb)	17	100	0.8	0	0.2	0
	H2S(ppb)	19	100	4.2	0	0.5	0
	H2S(ppb)	20	99	1.7	0	0.4	0
	H2S(ppb)	25	99	1.5	0	0.5	0
	H2S(ppb)	26	100	1.5	0	0.5	0
	H2S(ppb)	27	99	0.7	0	0.3	0
	H2S(ppb)	29	100	0.2	0	0.1	0
	H2S(ppb)	506	100	0.7	0	0.2	0
	H2S(ppb)	508	98	0.6	0	0.1	0
	TRS(ppb)	1	100	2.1	0	0.9	0
	TRS(ppb)	6	NaN	--	0	--	0
	TRS(ppb)	7	100	0.8	0	0.3	0
	TRS(ppb)	8	99	0.5	0	0.3	0
	TRS(ppb)	9	99	3.5	0	0.8	0
	TRS(ppb)	13	100	2.4	0	0.8	0
	TRS(ppb)	14	99	1.2	0	0.6	0
	TRS(ppb)	18	100	0.3	0	0.2	0
	TRS(ppb)	21	100	0.6	0	0.5	0
	TRS(ppb)	22	100	0.6	0	0.2	0
	TRS(ppb)	23	95	0.9	0	0.4	0
	TRS(ppb)	30	100	1.4	0	0.7	0
	THC(ppm)	1	95	2.9	-	2.2	-
	THC(ppm)	2	100	3.6	-	2.3	-
	THC(ppm)	4	99	4.5	-	2.4	-
	THC(ppm)	5	100	3.5	-	2.4	-
	THC(ppm)	6	97	2.4	-	2.1	-
	THC(ppm)	7	100	2.4	-	2.1	-
	THC(ppm)	9	99	3.2	-	2.2	-
	THC(ppm)	11	99	2.9	-	2.2	-
	THC(ppm)	13	100	2.8	-	2.2	-
	THC(ppm)	14	99	2.3	-	2.1	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

April 2023

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Created: Aug 02 2023 10:20

REPORT DATE							
MONTH	YEAR						
04	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	2.4	-	2.3	-
241311-00-00	THC(ppm)	18	100	2.2	-	2.1	-
20809-02-00	THC(ppm)	19	96	2.4	-	2.3	-
149968-01-00	THC(ppm)	20	100	2.9	-	2.4	-
237382-00-00	THC(ppm)	21	98	2.5	-	2.2	-
48522-01-00	THC(ppm)	22	100	2.2	-	2.1	-
240008-00-00	THC(ppm)	23	94	5.6	-	2.6	-
48263-01-00	THC(ppm)	29	100	2.8	-	2.2	-
224816-00-00	THC(ppm)	30	100	3.4	-	2.3	-
151469-01-00	THC(ppm)	508	100	3.9	-	2.6	-
189942-00-00	O3(ppb)	1	99	49.3	0	43.7	-
206355-00-00	O3(ppb)	4	100	56.1	0	52.1	-
46586-00-00	O3(ppb)	6	100	55.2	0	49.8	-
73203-02-00	O3(ppb)	7	97	52.6	0	44.2	-
216466-01-00	O3(ppb)	8	100	57.6	0	53.1	-
137467-01-00	O3(ppb)	13	100	50.5	0	44.5	-
236394-00-00	O3(ppb)	14	99	52.3	0	49.0	-
254465-00-00	O3(ppb)	17	100	56.3	0	54.2	-
094-03-00	O3(ppb)	18	100	52.5	0	48.7	-
80105-01-00	O3(ppb)	21	100	55.1	0	51.4	-
305529-00-00	O3(ppb)	22	100	58.5	0	52.7	-
318401-00-00	NO2(ppb)	1	98	34.6	0	13.8	-
026-03-00	NO2(ppb)	4	100	45.2	0	13.0	-
364232-00-00	NO2(ppb)	6	100	31.0	0	10.0	-
228044-00-00	NO2(ppb)	7	100	31.7	0	10.9	-
247548-00-00	NO2(ppb)	8	100	8.2	0	2.9	-
231302-00-00	NO2(ppb)	9	99	41.6	0	13.9	-
153125-01-00	NO2(ppb)	13	100	39.2	0	14.6	-
	NO2(ppb)	14	99	15.7	0	3.9	-
	NO2(ppb)	17	100	16.8	0	5.8	-
	NO2(ppb)	18	100	13.4	0	2.3	-
	NO2(ppb)	19	100	14.1	0	5.4	-
	NO2(ppb)	20	100	15.4	0	4.2	-
	NO2(ppb)	21	100	9.5	0	2.6	-
	NO2(ppb)	22	100	8.9	0	1.9	-
	NO2(ppb)	23	94	47.2	0	23.5	-
	NO2(ppb)	26	100	16.8	0	6.0	-
	NO2(ppb)	27	97	6.8	0	1.5	-
	NO2(ppb)	29	100	7.2	0	3.2	-
	NO2(ppb)	30	100	43.0	0	13.3	-
	NO2(ppb)	506	100	13.5	0	3.8	-
	NO2(ppb)	508	100	9.1	0	3.3	-
	CO(ppm)	1	99	0.3	0	0.3	-
	CO(ppm)	7	100	0.3	0	0.2	-
	CO(ppm)	8	100	0.1	0	0.1	-
	CO(ppm)	18	100	0.2	0	0.2	-
	CO2(ppm)	1	99	-	0	434.4	-
	CO2(ppm)	8	99	-	0	431.7	-
	CO2(ppm)	18	100	-	0	450.5	-
	NH3(ppb)	1	94	0.0	0	0.0	-
	NH3(ppb)	6	92	13.8	0	0.0	-
	PM2.5(ug/m3)	1	100	36.5	0	12.1	0
	PM2.5(ug/m3)	4	100	21.9	0	10.3	0
	PM2.5(ug/m3)	6	100	24.4	0	9.3	0
	PM2.5(ug/m3)	7	98	20.8	0	10.2	0
	PM2.5(ug/m3)	8	100	49.7	0	6.6	0
	PM2.5(ug/m3)	9	99	29.7	0	12.2	0
	PM2.5(ug/m3)	13	100	38.7	0	14.4	0
	PM2.5(ug/m3)	14	99	32.7	0	7.3	0
	PM2.5(ug/m3)	17	100	13.9	0	7.1	0
	PM2.5(ug/m3)	18	95	13.2	0	7.5	0
	PM2.5(ug/m3)	21	100	43.6	0	10.4	0
	PM2.5(ug/m3)	22	100	126.4	2	10.7	0
	PM2.5(ug/m3)	23	95	144.7	5	36.2	2

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

April 2023

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Created: Aug 02 2023 10:20

REPORT DATE

MONTH	YEAR
04	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	87.1	1	17.1	0
241311-00-00	PM2.5(ug/m3)	30	100	28.2	0	10.4	0
20809-02-00	WS(km/h)	1	99	-	-	-	-
149968-01-00	WS(km/h)	2	100	-	-	-	-
237382-00-00	WS(km/h)	4	100	-	-	-	-
48522-01-00	WS(km/h)	5	100	-	-	-	-
240008-00-00	WS(km/h)	6	100	-	-	-	-
48263-01-00	WS(km/h)	7	100	-	-	-	-
224816-00-00	WS(km/h)	8	100	-	-	-	-
151469-01-00	WS(km/h)	9	99	-	-	-	-
189942-00-00	WS(km/h)	11	100	-	-	-	-
206355-00-00	WS(km/h)	13	100	-	-	-	-
46586-00-00	WS(km/h)	14	100	-	-	-	-
73203-02-00	WS(km/h)	17	100	-	-	-	-
216466-01-00	WS(km/h)	18	100	-	-	-	-
137467-01-00	WS(km/h)	19	0	-	-	-	-
236394-00-00	WS(km/h)	20	100	-	-	-	-
254465-00-00	WS(km/h)	21	100	-	-	-	-
094-03-00	WS(km/h)	22	100	-	-	-	-
80105-01-00	WS(km/h)	23	95	-	-	-	-
318401-00-00	WS(km/h)	25	98	-	-	-	-
026-03-00	WS(km/h)	26	99	-	-	-	-
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	100	-	-	-	-
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 APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY - BERTHA GANTER (AMS01)
APRIL 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	681	35	39	99.44	21.7	0	5.1	0
H2S(ppb) Average	669	37	51	98.06	1.4	0	0.4	0
TRS(ppb) Average	681	38	39	99.86	2.1	0	0.9	0
THC(ppm) Average	647	35	73	94.72	2.9	-	2.2	-
NMHC(ppm) Average	647	35	73	94.72	0.564	-	0.097	-
CH4(ppm) Average	647	35	73	94.72	2.6	-	2.1	-
O3 (ppb) Average	682	34	38	99.44	49.3	0	43.7	-
NO2 (ppb) Average	671	34	49	97.92	34.6	0	13.8	-
NO (ppb) Average	671	34	49	97.92	52.3	-	4.2	-
NOX (ppb) Average	671	34	49	97.92	79.9	-	17.9	-
NH3 (ppb) Average	634	44	86	94.17	0	0	0	-
PM2.5 (ug/m3) Average	716	3	4	99.86	36.5	0	12.1	0
CO(ppm) Average	682	34	38	99.44	0.3	0	0.3	0
CO2(ppm) Average	682	34	38	99.44	449.4	0	434.4	0
Temperature 2 m (C) Average	720	0	0	100	21.7	-	13.4	-
Temperature 10 m (C) Average	703	0	17	97.64	21.5	-	13.6	-
Relative Humidity (%) Average	720	0	0	100	96.6	-	88.5	-
Wind Speed 10 m (km/h) Average	712	0	8	98.89	30	-	16	-
Wind Direction 10 m (deg) Average	712	0	8	98.89	-	-	-	-
Precipitation (mm) Total	718	0	2	99.72	1.4	-	6.2	-
Leaf Wetness (% of range) Average	713	0	7	99.03	66.9	-	13.6	-
Global Solar Radiation (W/m2) Average	720	0	0	100	865.2	-	293.3	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT MCKAY (AMS01)
 APRIL 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	681	1.36	3.2	-	0	0	0	0.1	0.8	4.1	21.7
H2S (ppb) Average	669	0.14	0.2	-	0	0	0	0.1	0.2	0.3	1.4
TRS (ppb) Average	681	0.5	0.2	-	0.3	0.4	0.4	0.4	0.5	0.7	2.1
THC (ppm) Average	647	2.01	0.1	-	1.9	1.9	1.9	2	2.1	2.2	2.9
NMHC(ppm) Average	647	0.027	0.06	-	0	0	0	0	0	0.1	0.564
CH4(ppm) Average	647	1.98	0.1	-	1.9	1.9	1.9	2	2	2.1	2.6
O3 (ppb) Average	682	31.73	11.4	-	0.8	15.6	23.7	33.5	41.3	45.6	49.3
NO2 (ppb) Average	671	6.04	6.2	-	0	0.2	1.2	4.1	9	14.7	34.6
NO (ppb) Average	671	1.21	3.2	-	0	0	0	0	1	3.8	52.3
NOX (ppb) Average	671	7.24	8.3	-	0	0.2	1.3	4.6	10.7	17.2	79.9
NH3 (ppb) Average	634	0	0	-	0	0	0	0	0	0	0
PM2.5 (ug/m3) Average	716	7.56	4.2	-	0.1	3.5	4.6	6.6	9.8	12.9	36.5
CO(ppm) Average	682	0.22	0	-	0.1	0.2	0.2	0.2	0.2	0.3	0.3
CO2(ppm) Average	682	429.35	5.4	-	418.8	423.3	425.9	428.3	432.1	436.8	449.4
Temperature 2 m (C) Average	720	4.65	6.2	-	-8.9	-3	0	4.2	9.2	13.2	21.7
Temperature 10 m (C) Average	703	4.91	6	-	-8.9	-2.9	0.7	4.6	9.4	13	21.5
Relative Humidity (%) Average	720	55.65	22	-	16.5	25.8	35.8	56.8	74.9	86.2	96.6
Wind Speed 10 m (km/h) Average	712	8.3	5	-	0	3	4	7	11	16	30
Wind Direction 10 m (deg) Average	712	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	718	-	-	14.81	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	713	1.57	7.4	-	0	0	0	0	0	0.3	66.9
Global Solar Radiation (W/m2) Average	720	192.33	240.7	-	0	0	0	51.6	360	599.3	865.2

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

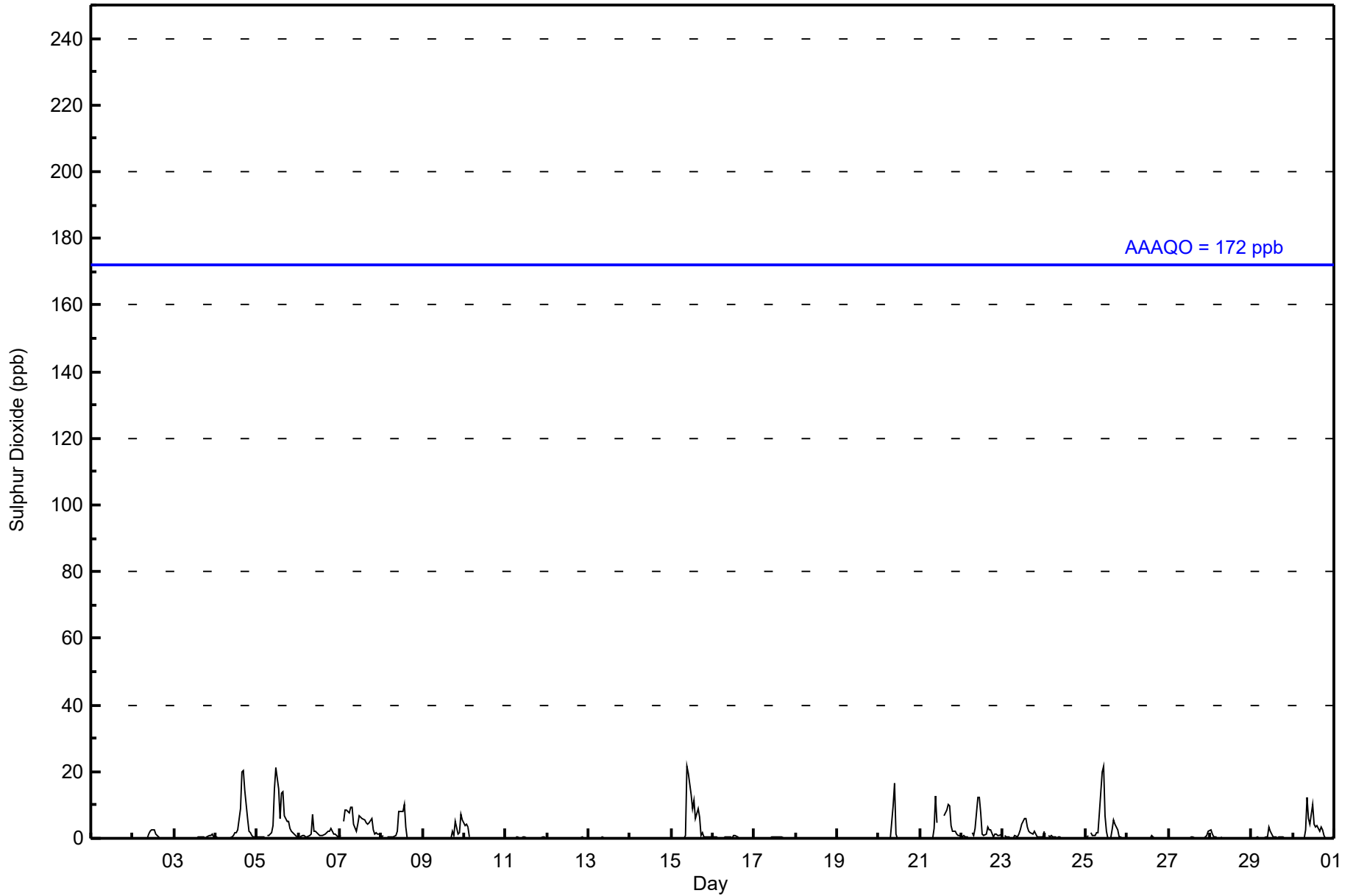
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	18 Apr 2023 08:00	18 Apr 2023 08:00	1	Station power failure
ALL GASEOUS ANALYZERS (except H2S TRS)	21 Apr 2023 12:00	21 Apr 2023 14:00	3	Maintenance - sample manifold cleaned
NH3	01 Apr 2023 06:00	30 Apr 2023 06:00	30	Stabilization after daily QA check
NH3	13 Apr 2023 11:00	13 Apr 2023 18:00	8	Maintenance - WBEA internal audit
H2S	17 Apr 2023 19:00	18 Apr 2023 07:00	13	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	25 Apr 2023 04:00	26 Apr 2023 03:00	24	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	26 Apr 2023 05:00	26 Apr 2023 11:00	7	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	26 Apr 2023 12:00	26 Apr 2023 14:00	3	Maintenance - chromatogram retention time adjusted
NO2	15 Apr 2023 00:00	15 Apr 2023 10:00	11	Unstable Operation - flatline in analyzer output signal
Temperature 10 m	18 Apr 2023 08:00	18 Apr 2023 11:00	4	Flat line in sensor output signal
Temperature 10 m	19 Apr 2023 08:00	19 Apr 2023 13:00	6	Flat line in sensor output signal
Temperature 10 m	20 Apr 2023 00:00	20 Apr 2023 05:00	6	Flat line in sensor output signal
Temperature 10 m	27 Apr 2023 06:00	27 Apr 2023 06:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	13 Apr 2023 06:00	13 Apr 2023 06:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	20 Apr 2023 02:00	20 Apr 2023 07:00	6	Flat line in sensor output signal
Wind Speed, Wind Direction	23 Apr 2023 01:00	23 Apr 2023 01:00	1	Flat line in sensor output signal
Precipitation Collector	21 Apr 2023 14:00	21 Apr 2023 15:00	2	Maintenance - sensor verification check
Surface Leaf Wetness	02 Apr 2023 12:00	02 Apr 2023 12:00	1	Sensor operated out of range
Surface Leaf Wetness	18 Apr 2023 07:00	18 Apr 2023 09:00	3	Sensor operated out of range
Surface Leaf Wetness	19 Apr 2023 10:00	19 Apr 2023 12:00	3	Sensor operated out of range



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	662	97.21	97.21
11 - 20	16	2.35	99.56
21 - 60	3	0.44	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: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	71	36	28	17	18	53	59	127	81	15	17	24	23	15	38	34	656
11 - 20	0	0	0	0	0	1	3	9	1	0	0	0	0	0	1	1	16
21 - 60	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
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
Totals	71	36	28	17	18	54	62	139	82	15	17	24	23	15	39	35	675

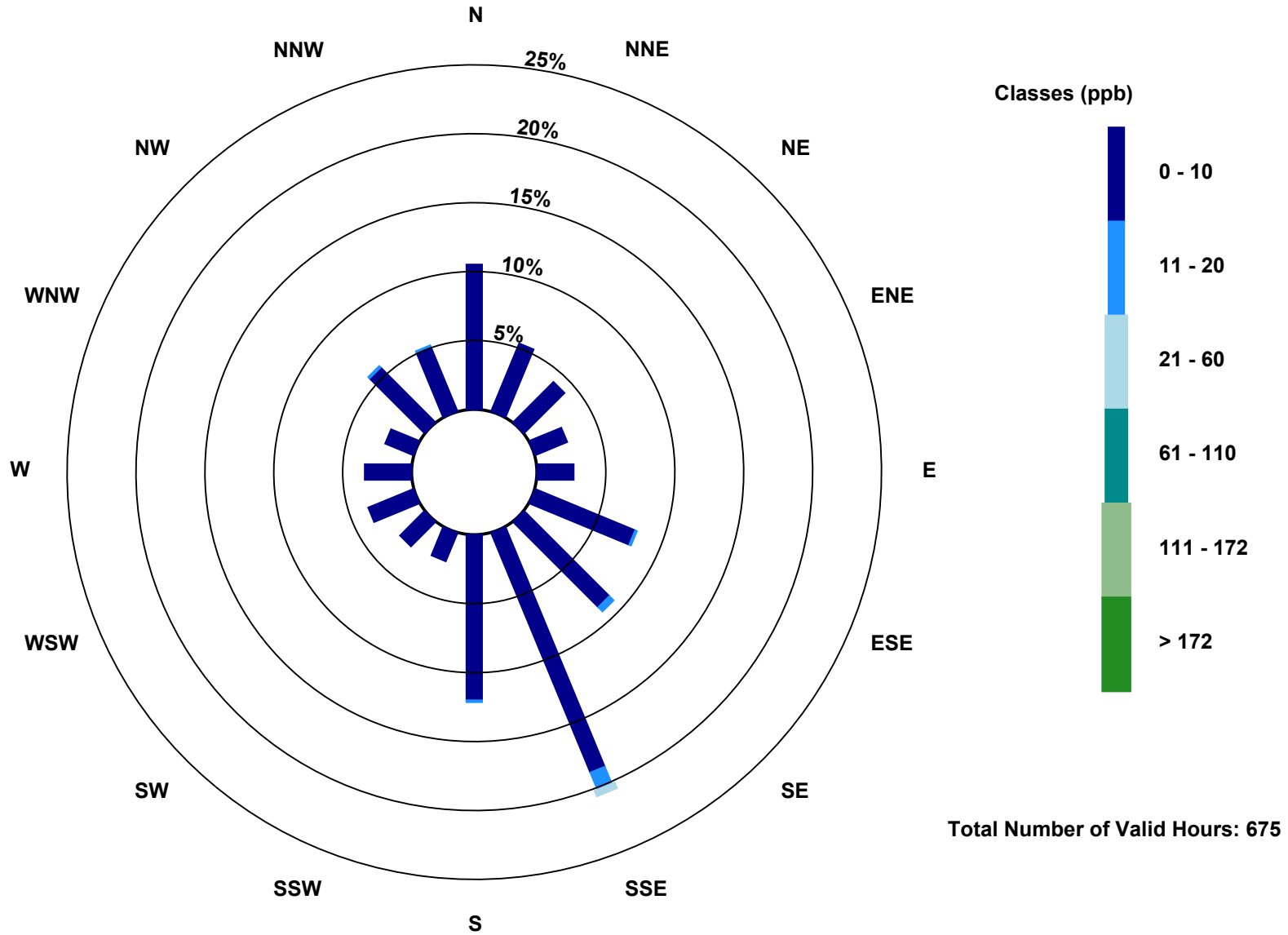
Total Number of Valid Hours: 675

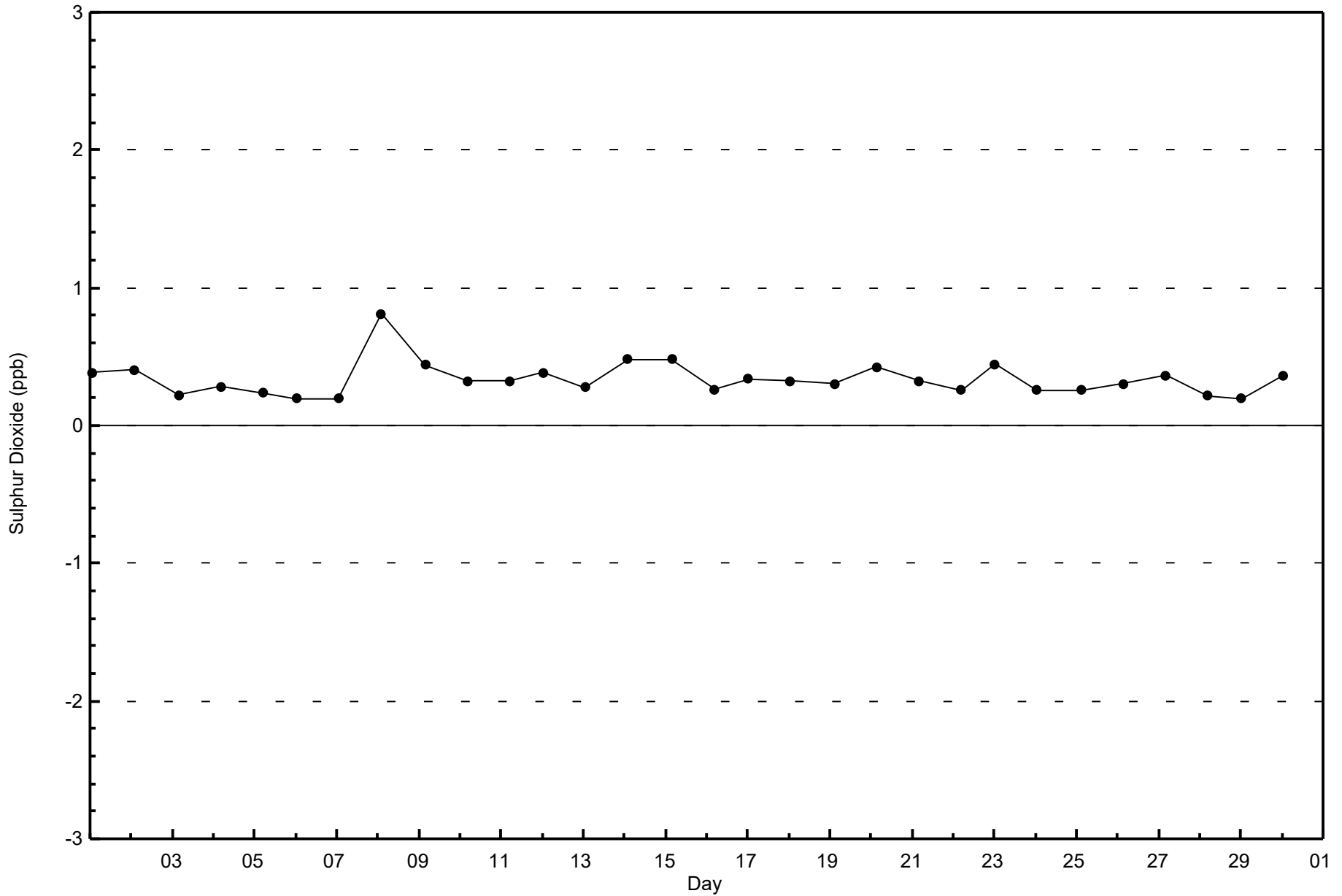
Total Number of Hours: 720

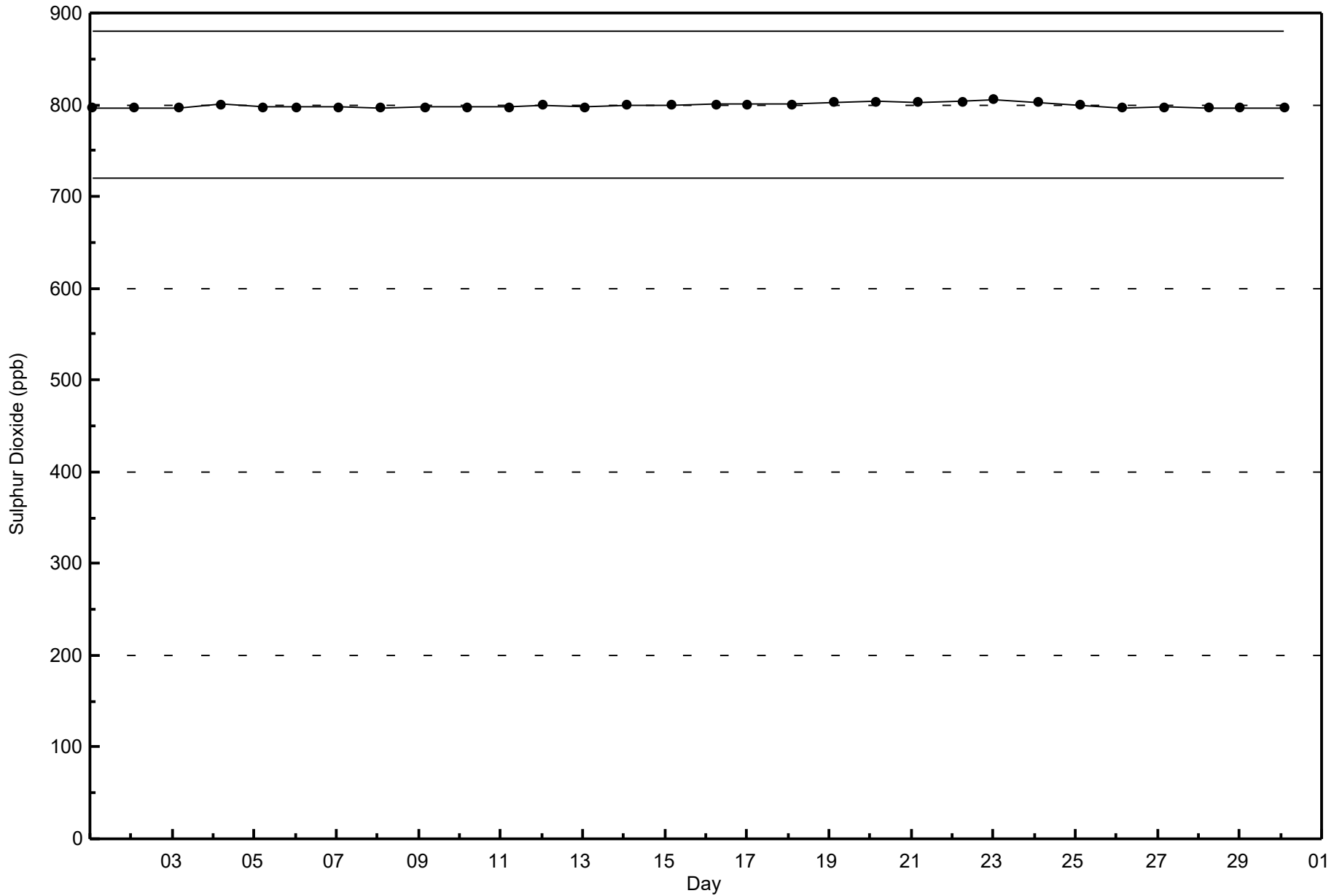


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter



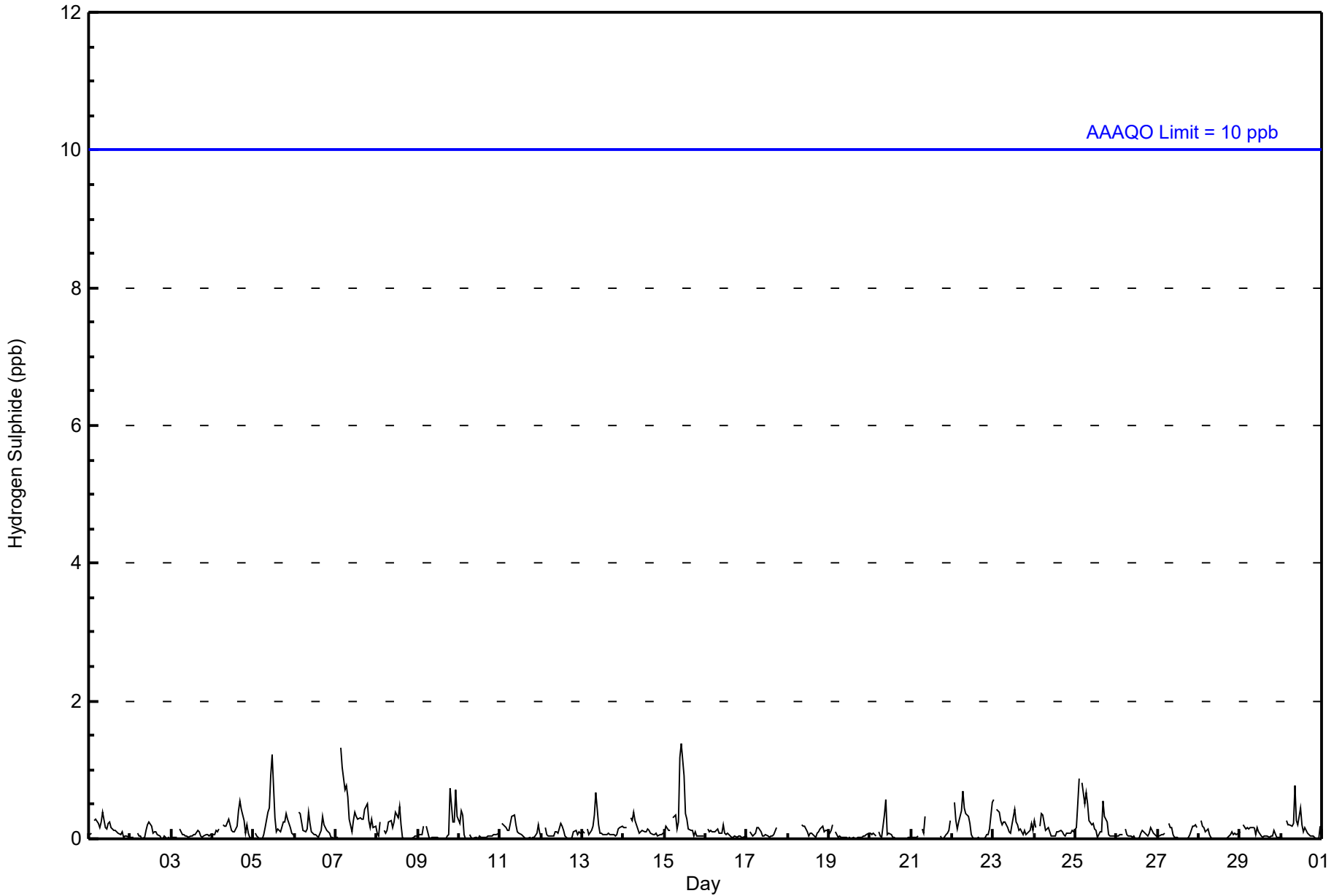






Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	669	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: 669

Total Number of Hours: 720



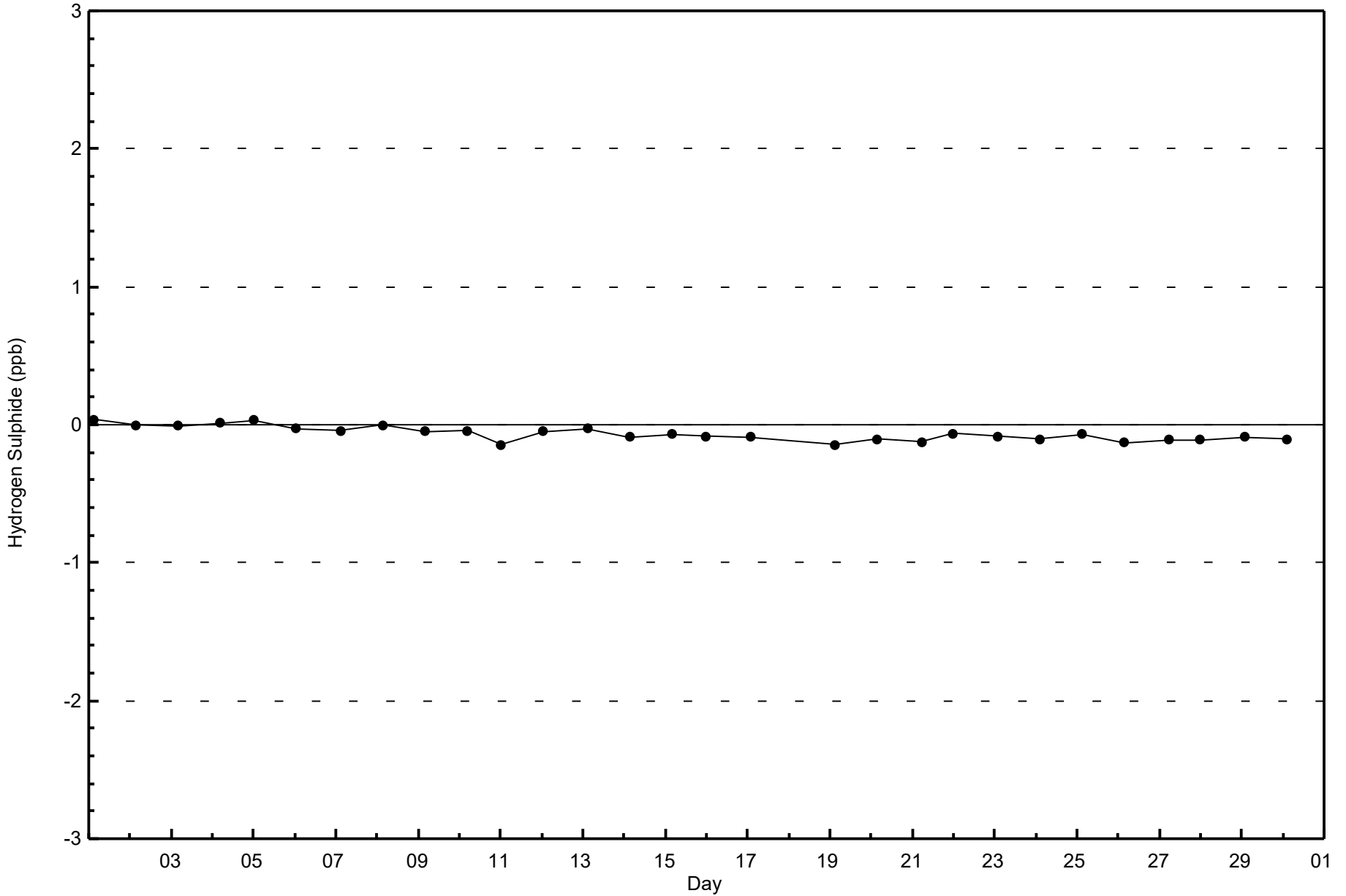
**Wood Buffalo Environmental Association
Frequency Distribution**

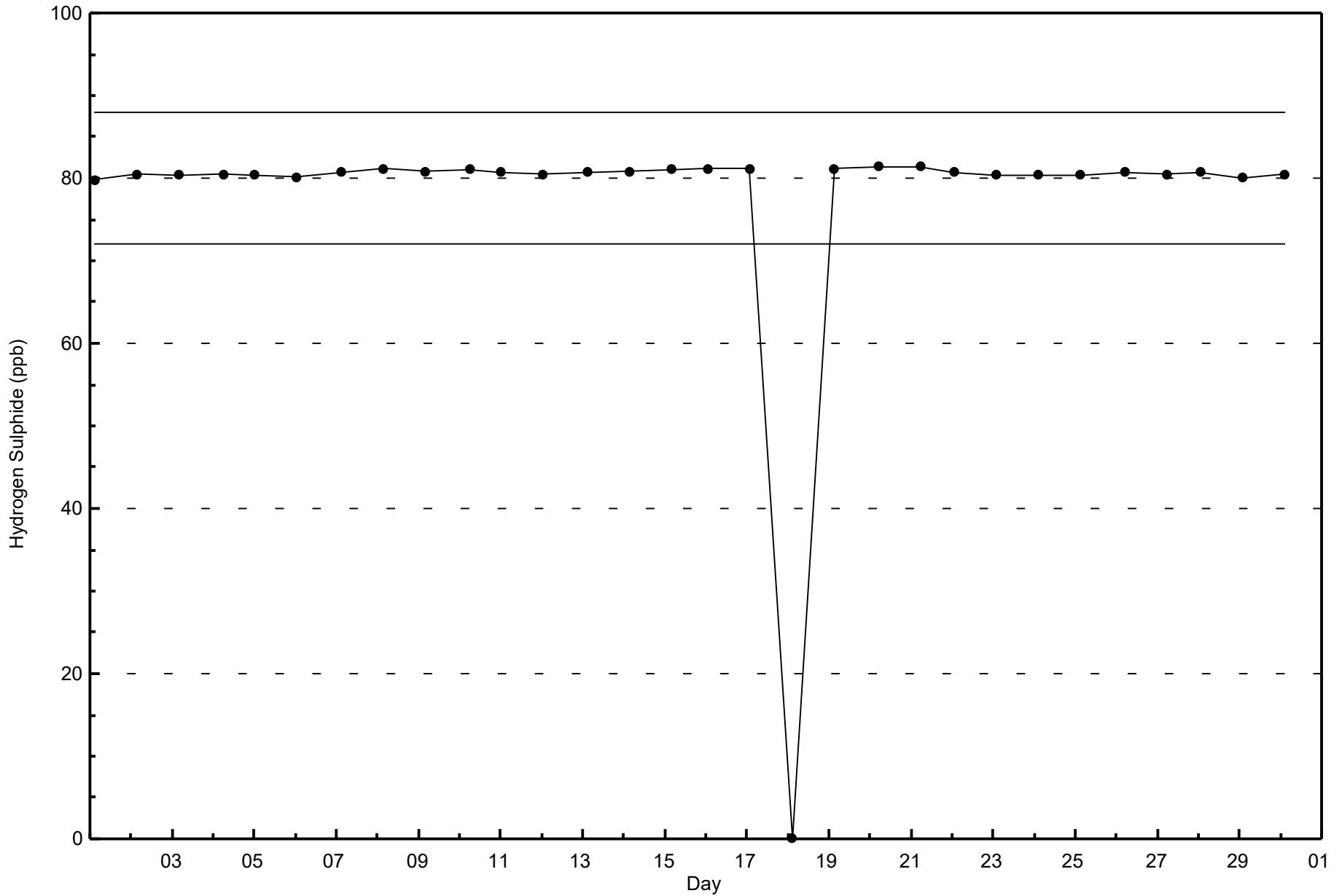
**Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	71	37	28	16	17	49	58	133	81	15	17	25	23	15	41	36	662
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
Totals	71	37	28	16	17	49	58	133	81	15	17	25	23	15	41	36	662

Total Number of Valid Hours: 662

Total Number of Hours: 720







Wood Buffalo Environmental Association

Summary of Hour Averages

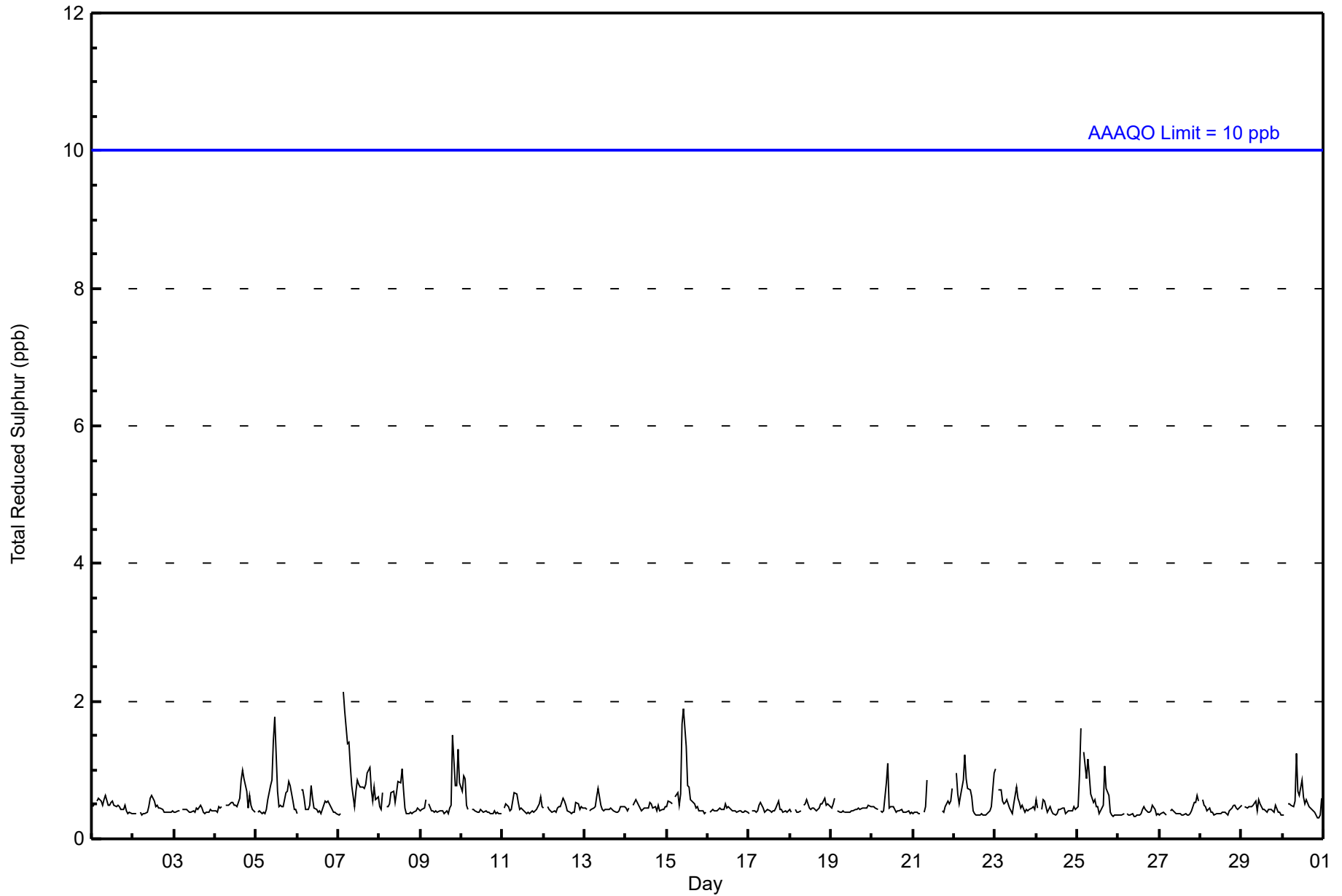
Total Reduced Sulphur (TRS) - ppb Fort McKay - Bertha Ganter - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																			
Maximum Value: 2.1 ppb on Apr 7 04:00		Maximum Daily Average: 0.9 ppb on Apr 7				Hours of Data:		681																			
Minimum Value: 0.3 ppb on Apr 30 22:00		Minimum Daily Average: 0.4 ppb on Apr 26				Hours of Missing Data:		39																			
Maximum Diurnal Average: 0.6 ppb at hour 9		Minimum Diurnal Average: 0.4 ppb at hour 22				Hours of Calibration:		38																			
Monthly Average: 0.50 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.4 Q ₃ = 0.5 P ₉₀ = 0.7 P ₉₉ = 1.4				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-Apr	0.5	0.5	Z	0.5	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.6	
2-Apr	0.4	0.4	0.4	Z	0.4	0.3	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	0.6
3-Apr	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	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
4-Apr	0.4	0.4	0.5	0.4	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.9	1.0	0.9	0.7	0.5	0.6	0.5	0.4	0.4	0.4	0.4	1.0	0.5
5-Apr	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.8	0.9	1.4	1.8	0.7	0.5	0.5	0.5	0.5	0.7	0.7	0.8	0.8	0.6	0.4	0.4	0.4	1.8	0.6
6-Apr	0.4	Z	0.7	0.7	0.6	0.4	0.4	0.5	0.8	0.6	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	0.4	0.4	0.8	0.5
7-Apr	0.4	0.4	Z	2.1	1.9	1.4	1.4	1.1	0.8	0.5	0.7	0.8	0.8	0.7	0.7	0.7	0.8	1.0	1.0	0.7	0.5	0.8	0.6	0.6	0.6	2.1	0.9
8-Apr	0.5	0.4	0.7	Z	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.8	0.8	1.0	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.0	0.5
9-Apr	0.4	0.4	0.4	0.6	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	0.5	1.5	0.8	0.8	1.3	0.8	1.5	0.6
10-Apr	0.7	0.9	0.9	0.5	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	0.9	0.5
11-Apr	Z	0.4	0.5	0.5	0.4	0.4	0.6	0.7	0.7	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.5	0.7	0.5
12-Apr	0.5	Z	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5	0.4	0.6	0.4
13-Apr	0.5	0.4	Z	0.4	0.4	0.4	0.5	0.6	0.7	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	0.5	0.5	0.5	0.7	0.5
14-Apr	0.4	0.4	0.5	Z	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.6	0.5
15-Apr	0.5	0.5	0.5	0.5	Z	0.6	0.7	0.5	0.6	1.7	1.9	1.4	0.8	0.8	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	1.9	0.7
16-Apr	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	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	0.4	0.5	0.4
17-Apr	0.4	Z	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4
18-Apr	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	PF	0.5	0.5	0.6	0.5	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.5
19-Apr	0.4	0.5	0.6	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	0.5	0.5	0.5	0.6	0.4
20-Apr	0.5	0.5	0.4	0.4	Z	0.4	0.4	0.4	0.8	1.1	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	1.1	0.5
21-Apr	0.4	0.4	0.4	0.4	0.4	Z	0.4	0.5	0.9	C	C	C	C	C	C	C	C	C	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.9	--
22-Apr	Z	0.9	0.6	0.5	0.6	0.9	1.2	0.9	0.7	0.7	0.6	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.9	1.2	0.6	
23-Apr	1.0	Z	0.7	0.7	0.6	0.5	0.5	0.6	0.5	0.4	0.4	0.5	0.8	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	1.0	0.5	
24-Apr	0.6	0.4	Z	0.4	0.6	0.5	0.4	0.4	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.4	
25-Apr	0.5	0.9	1.6	Z	1.3	0.9	1.2	0.9	0.7	0.5	0.6	0.5	0.5	0.4	0.4	0.5	1.0	0.7	0.6	0.4	0.3	0.3	0.3	0.3	1.6	0.7	
26-Apr	0.3	0.4	0.3	0.4	Z	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.4	
27-Apr	0.3	0.4	0.4	0.4	0.3	Z	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	0.5	0.6	0.5	0.6	0.4	
28-Apr	Z	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	0.5	0.5	0.4	0.4	0.5	0.6	0.4	
29-Apr	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.6	0.4	
30-Apr	0.4	0.4	Z	0.5	0.5	0.5	0.5	0.6	1.2	0.7	0.6	0.8	0.6	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.6	1.2	0.5	
																								Diurnal Average			
																								Diurnal Maximum			
																								0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.6 0.5 0.6 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.4 0.5 0.5			
																								1.0 0.9 1.6 2.1 1.9 1.4 1.4 1.1 1.2 1.7 1.9 1.8 0.8 1.0 0.7 0.9 1.0 1.0 1.0 1.5 0.8 0.8 1.3 0.9			
Z - zerspan 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 - Bertha Ganter - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	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: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

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

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	71	37	29	18	18	53	62	133	81	15	17	25	23	15	41	36	674
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
Totals	71	37	29	18	18	53	62	133	81	15	17	25	23	15	41	36	674

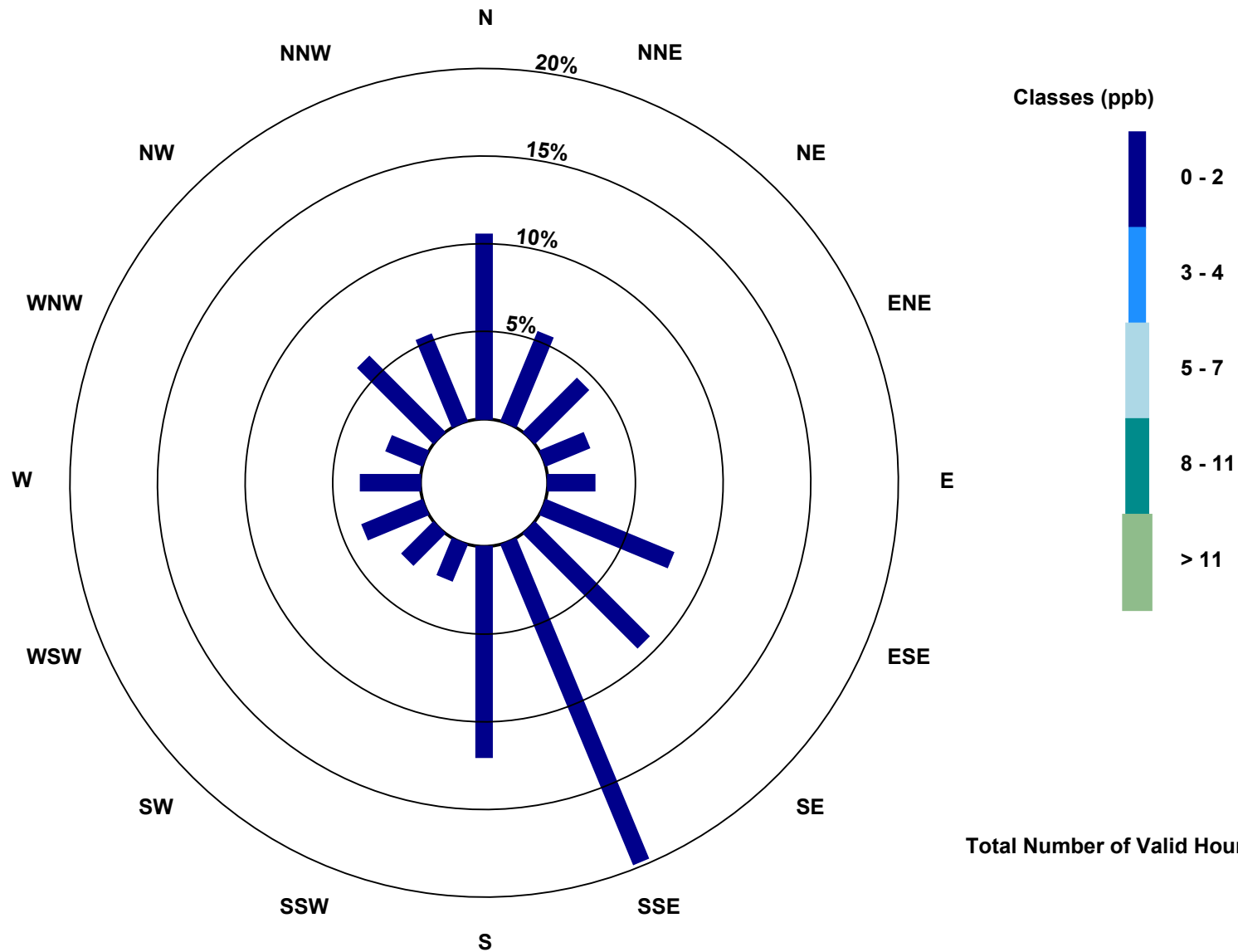
Total Number of Valid Hours: 674

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

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

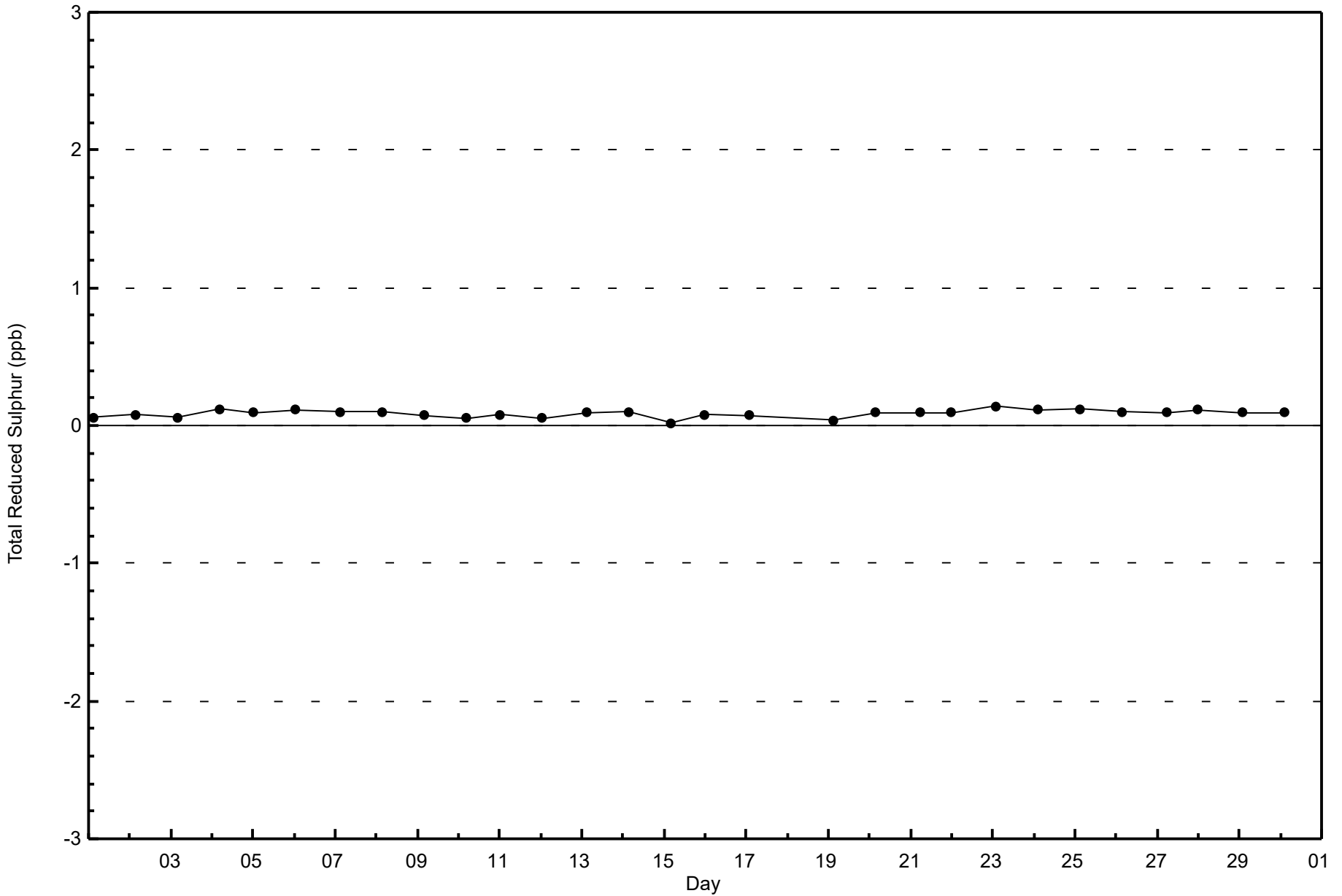


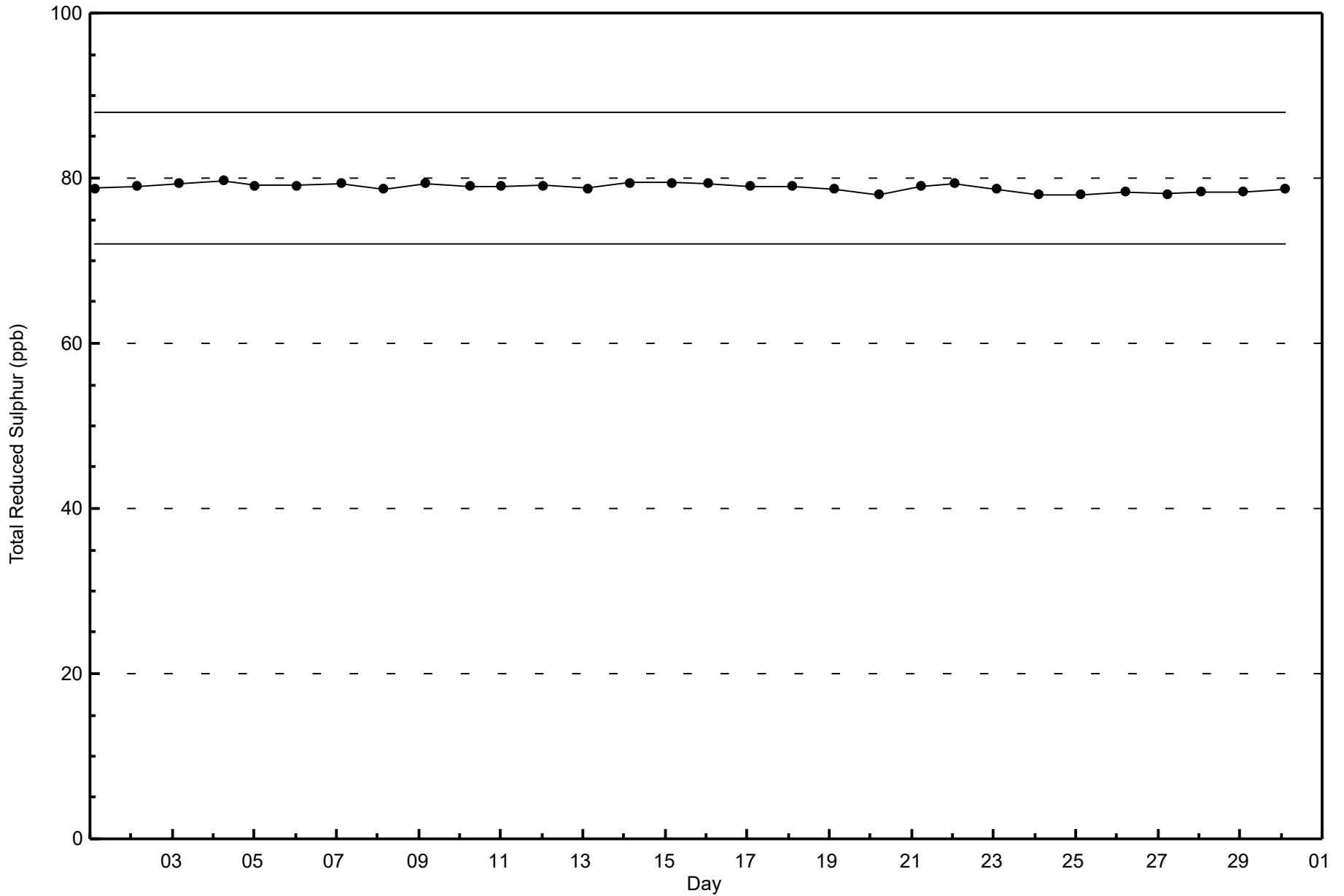
Total Number of Valid Hours: 674



Wood Buffalo Environmental Association
Zero Responses

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







Wood Buffalo Environmental Association

Summary of Hour Averages

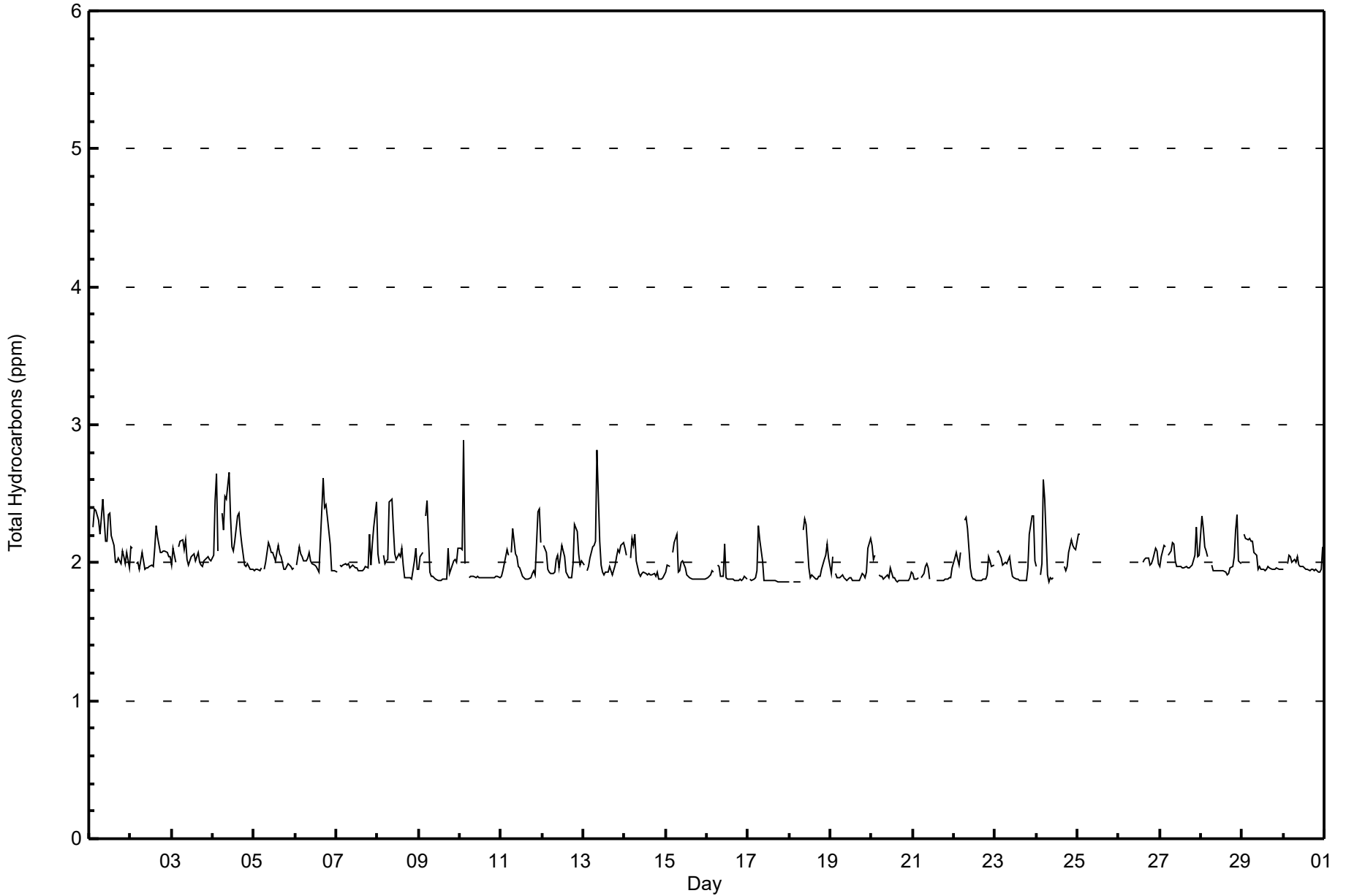
Total Hydrocarbons (THC) - ppm
Fort McKay - Bertha Ganter - April 2023

Maximum Value: 2.9 ppm on Apr 10 03:00																				Maximum Daily Average: 2.2 ppm on Apr 4					Hours in Service: 720				
Minimum Value: 1.9 ppm on Apr 17 19:00																				Minimum Daily Average: 1.9 ppm on Apr 21					Hours of Data: 647				
Maximum Diurnal Average: 2.1 ppm at hour 9																				Minimum Diurnal Average: 2.0 ppm at hour 19					Hours of Missing Data: 73				
Monthly Average: 2.01 ppm																				Percentiles: P ₁ = 1.9 P ₁₀ = 1.9 Q ₁ = 1.9 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.5					Hours of Calibration: 35				
																				Percent Operational Time: 94.7									
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-Apr	2.0	Z	2.3	2.4	2.4	2.3	2.2	2.3	2.5	2.2	2.2	2.3	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.2	2.5			
2-Apr	2.1	2.1	Z	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.3			
3-Apr	2.0	2.1	2.0	Z	2.1	2.2	2.2	2.1	2.2	2.0	2.0	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2			
4-Apr	2.1	2.5	2.6	2.1	Z	2.4	2.2	2.5	2.5	2.7	2.3	2.1	2.1	2.2	2.3	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.7			
5-Apr	1.9	1.9	2.0	1.9	2.0	Z	2.0	2.0	2.1	2.1	2.1	2.1	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			
6-Apr	Z	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	1.9	2.4	2.6	2.4	2.4	2.3	2.1	1.9	1.9	1.9	2.1	2.6			
7-Apr	1.9	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	1.9	1.9	2.0	2.0	2.0	2.2	2.0	2.1	2.3	2.4	2.0	2.4			
8-Apr	2.1	2.0	Z	2.1	2.0	2.0	2.0	2.4	2.5	2.2	2.1	2.0	2.1	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	1.9	2.0	2.5			
9-Apr	2.0	2.0	2.1	Z	2.3	2.5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.5		
10-Apr	2.1	2.1	2.9	2.0	Z	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	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.9		
11-Apr	1.9	1.9	2.0	2.1	2.1	Z	2.1	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.4	2.4	2.1	2.0	2.4			
12-Apr	Z	2.1	2.1	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.3	2.2	2.1	2.0	2.0	2.0	2.3		
13-Apr	2.0	Z	1.9	2.0	2.0	2.1	2.1	2.2	2.8	2.2	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.8		
14-Apr	2.1	2.1	Z	2.0	2.2	2.1	2.2	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	1.9	1.9	1.9	2.0	2.2		
15-Apr	1.9	2.0	2.0	Z	2.1	2.1	2.2	1.9	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	1.9	1.9	1.9	1.9	1.9	2.2		
16-Apr	1.9	1.9	1.9	1.9	1.9	Z	2.0	2.0	1.9	1.9	2.1	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	1.9	2.1		
17-Apr	Z	1.9	1.9	1.9	1.9	1.9	2.3	2.2	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	1.9	1.9	1.9	2.3		
18-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	PF	2.2	2.3	2.3	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.0	2.0	2.3			
19-Apr	1.9	2.0	Z	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	1.9	1.9	1.9	1.9	1.9	2.1	2.2	1.9	2.2			
20-Apr	2.1	2.0	2.0	Z	1.9	1.9	1.9	1.9	1.9	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	2.1		
21-Apr	1.9	1.9	1.9	1.9	Z	1.9	1.9	2.0	2.0	2.0	1.9	M	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0		
22-Apr	2.0	2.1	2.0	2.0	2.1	Z	2.3	2.3	2.2	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	2.0	2.0	2.0	2.3		
23-Apr	Z	2.1	2.1	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	2.2	2.3	2.3	2.0	2.0	2.0	2.3		
24-Apr	2.0	Z	1.9	2.0	2.6	2.5	1.9	1.9	1.9	1.9	1.9	C	C	C	C	C	C	2.0	1.9	2.0	2.1	2.2	2.1	2.1	2.1	2.0	2.6		
25-Apr	2.2	2.2	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	2.2		
26-Apr	UO	UO	UO	Z	UO	UO	UO	UO	UO	UO	UO	M	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1		
27-Apr	2.0	2.0	2.1	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	2.0	2.0	2.0	2.1	2.3	2.0	2.1	2.0	2.0	2.3		
28-Apr	2.3	2.2	2.1	2.1	2.0	Z	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	2.2	2.3	2.0	2.0	2.0	2.0	2.3		
29-Apr	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.2		
30-Apr	2.0	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	2.0	1.9	1.9	2.0	1.9	2.0	1.9	1.9	2.0	2.1	2.0	2.0	2.1		
																								Diurnal Average					
																								Diurnal Maximum					
Z - zerospan																													
C - Calibration																													
M - Maintenance																													
UO - Unstable Operation																													
PF - Power Failure																													



Wood Buffalo Environmental Association
Hourly Averages

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





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

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

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	469	72.49	72.49
2.1 - 3.0	178	27.51	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 647

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	33	21	25	17	15	47	49	99	54	8	14	22	12	4	23	21	464
2.1 - 3.0	38	15	3	0	3	5	13	31	26	6	3	2	5	3	12	12	177
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
Totals	71	36	28	17	18	52	62	130	80	14	17	24	17	7	35	33	641

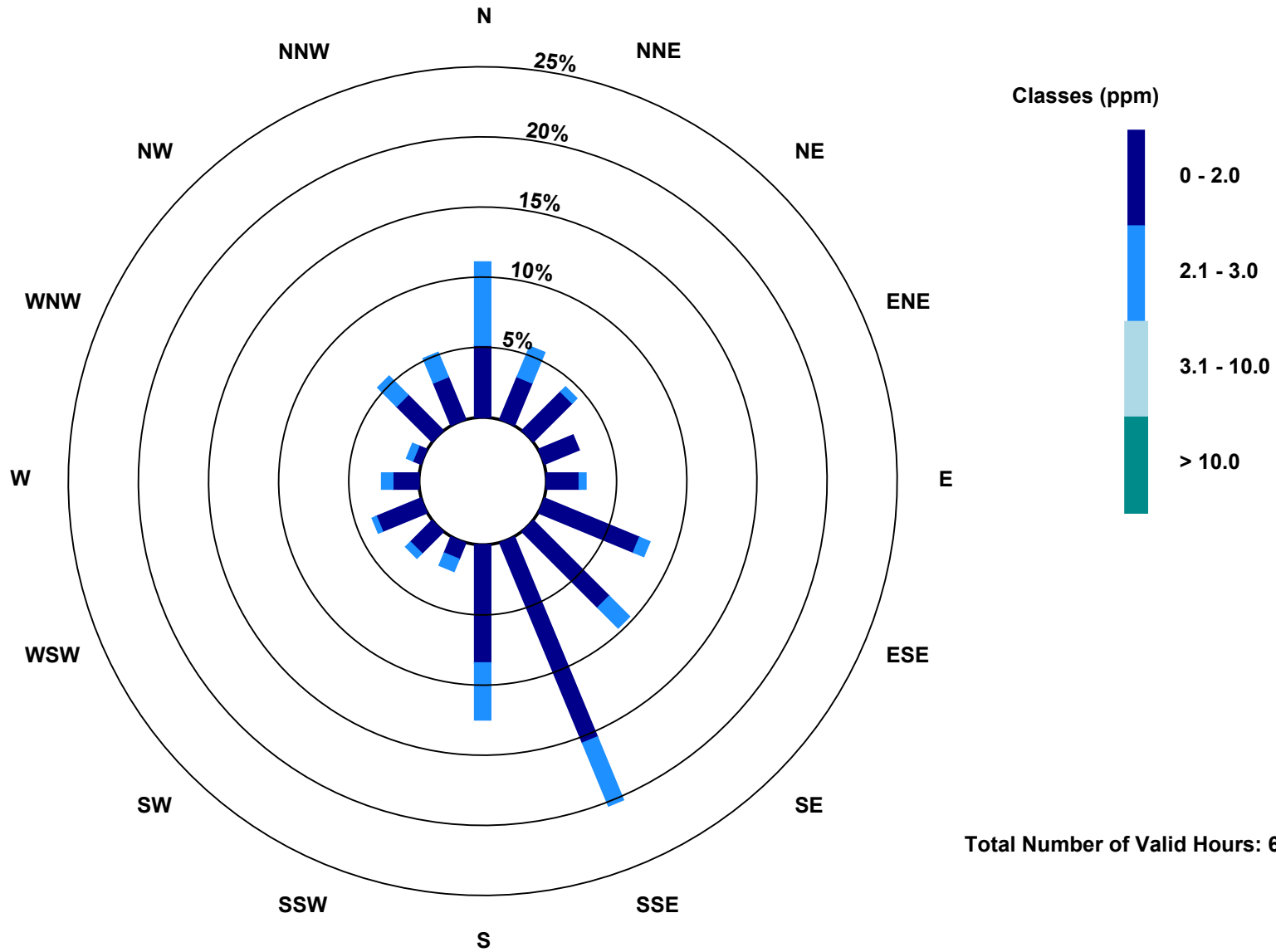
Total Number of Valid Hours: 641

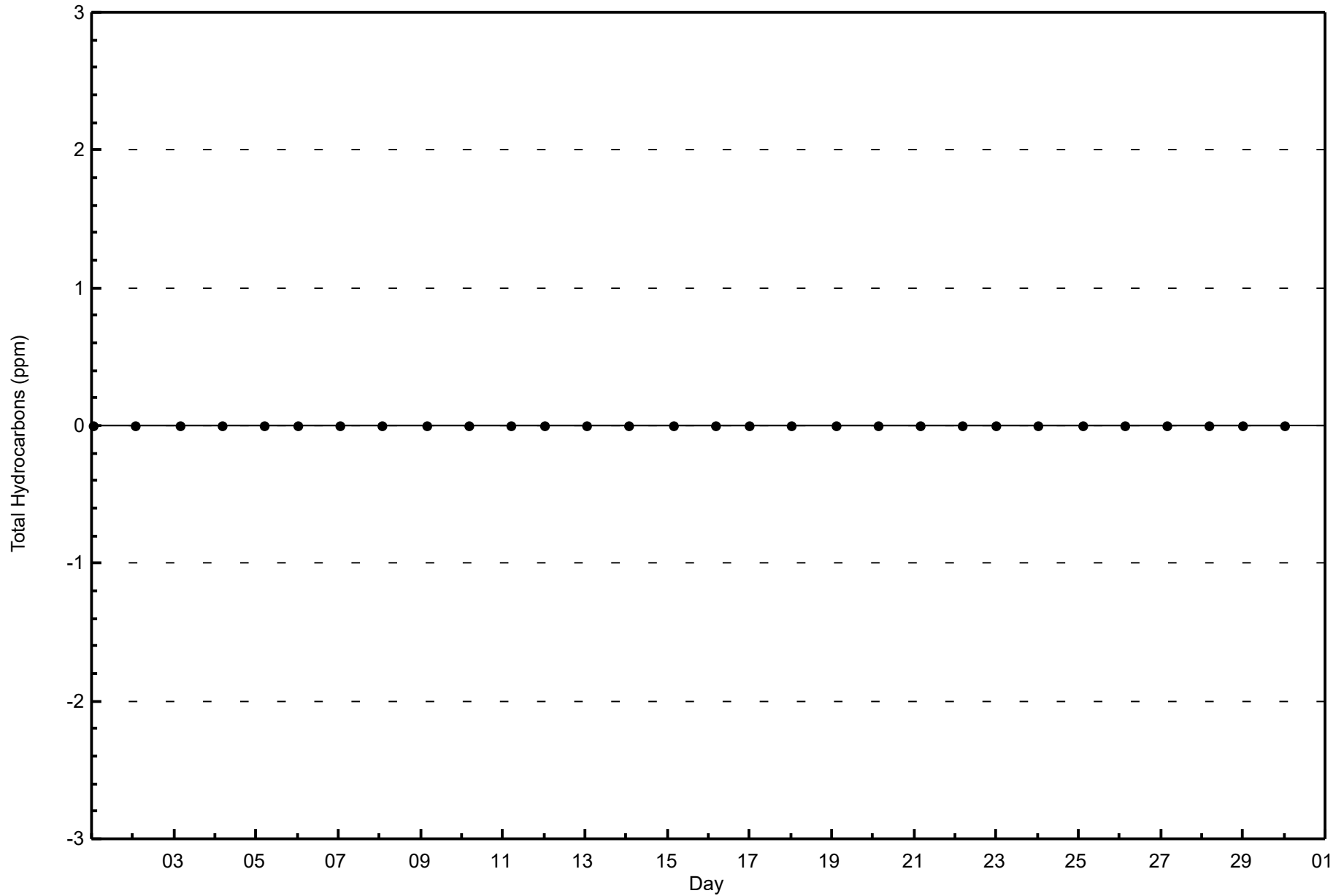
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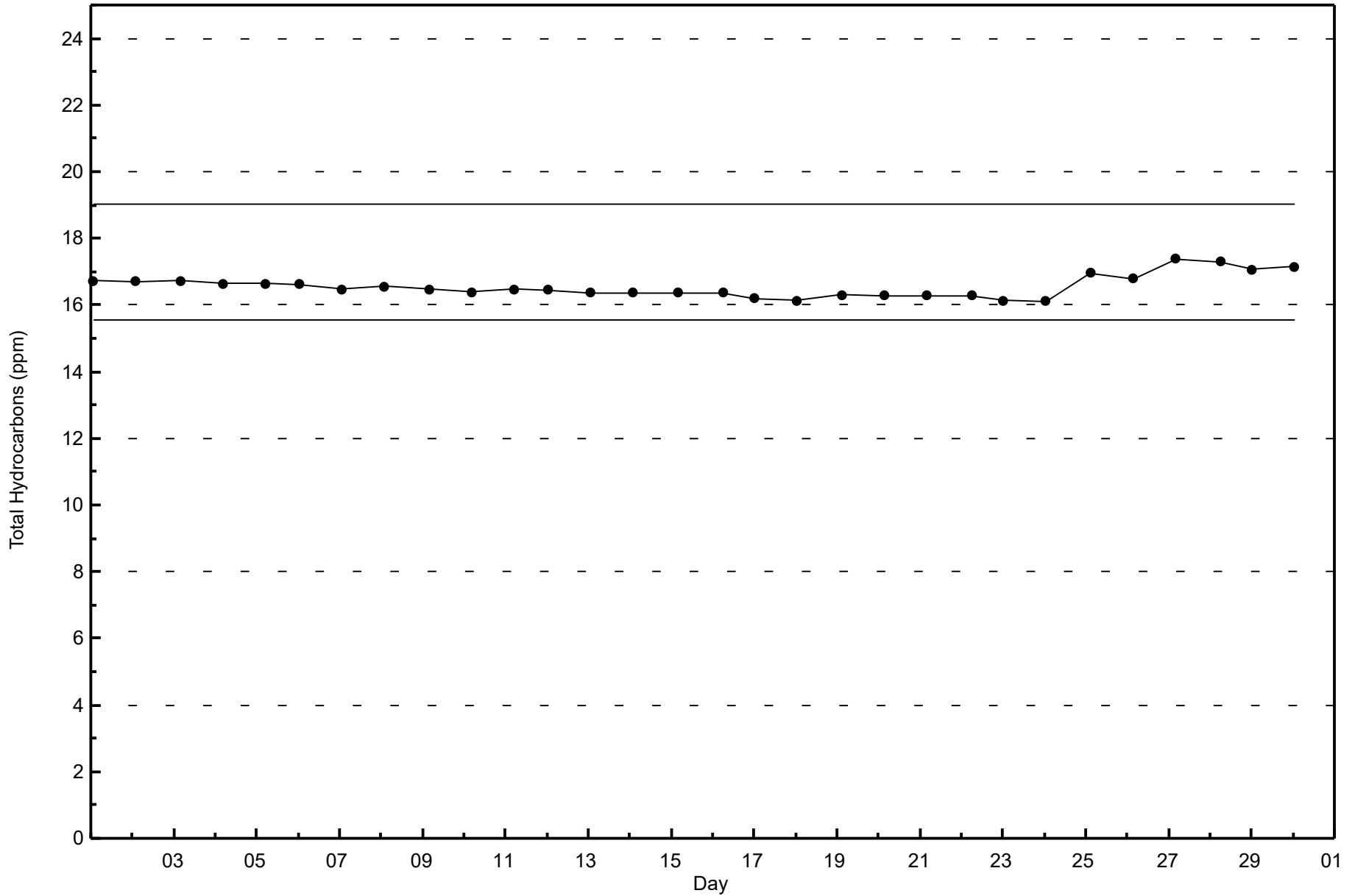


Wood Buffalo Environmental Association
Wind Rose Apr 2023

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







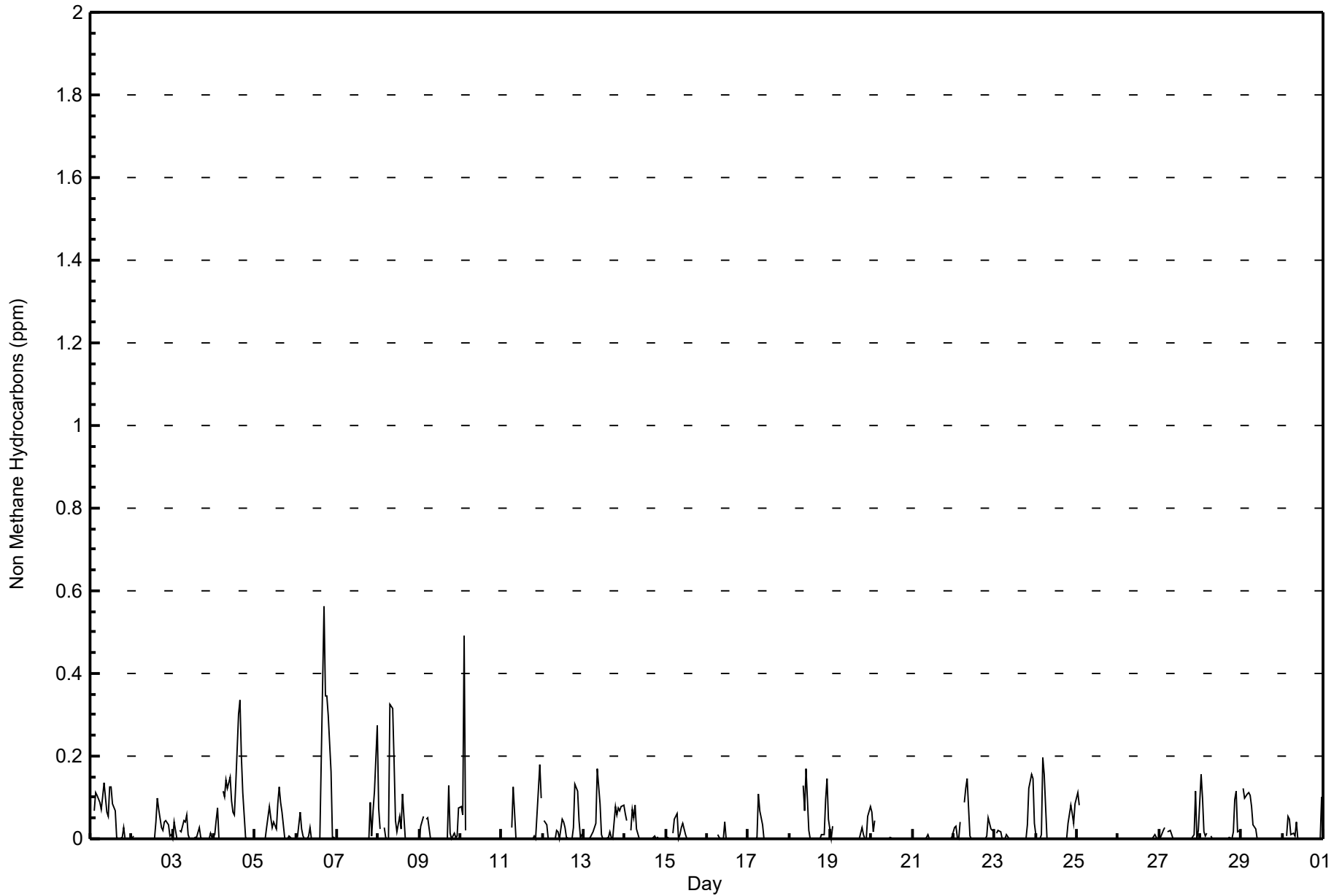


Maximum Value: 0.564 ppm on Apr 6 17:00																				Maximum Daily Average: 0.097 ppm on Apr 6					Hours in Service:	720
Minimum Value: 0.000 ppm on Apr 1 01:00																				Minimum Daily Average: 0.001 ppm on Apr 21					Hours of Data:	647
Maximum Diurnal Average: 0.047 ppm at hour 9																				Minimum Diurnal Average: 0.012 ppm at hour 13					Hours of Missing Data:	73
Monthly Average: 0.027 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.1 P ₉₉ = 0.3					Hours of Calibration:	35
																									Percent Operational Time:	94.7
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-Apr	0.000	Z	0.069	0.112	0.105	0.090	0.073	0.103	0.136	0.063	0.054	0.124	0.127	0.084	0.068	0.004	0.000	0.000	0.003	0.026	0.000	0.000	0.001	0.000	0.054	0.136
2-Apr	0.001	0.006	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.099	0.070	0.026	0.022	0.041	0.045	0.033	0.007	0.011	0.017	0.099
3-Apr	0.000	0.040	0.001	Z	0.022	0.017	0.046	0.042	0.057	0.012	0.001	0.001	0.001	0.003	0.004	0.026	0.004	0.000	0.000	0.000	0.000	0.000	0.015	0.005	0.013	0.057
4-Apr	0.009	0.044	0.074	0.000	Z	0.116	0.102	0.143	0.120	0.148	0.093	0.065	0.058	0.131	0.302	0.336	0.200	0.111	0.005	0.000	0.000	0.000	0.000	0.000	0.089	0.336
5-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.027	0.078	0.052	0.026	0.039	0.023	0.084	0.126	0.089	0.065	0.000	0.000	0.000	0.006	0.001	0.000	0.000	0.027	0.126
6-Apr	Z	0.004	0.066	0.023	0.007	0.001	0.000	0.005	0.028	0.000	0.000	0.000	0.000	0.000	0.001	0.377	0.564	0.345	0.347	0.300	0.164	0.002	0.003	0.000	0.097	0.564
7-Apr	0.000	Z	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	0.000	0.000	0.000	0.000	0.087	0.008	0.067	0.117	0.276	0.024	0.276
8-Apr	0.075	0.022	Z	0.027	0.003	0.001	0.001	0.325	0.317	0.185	0.043	0.017	0.056	0.023	0.108	0.055	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.055	0.325
9-Apr	0.000	0.030	0.053	Z	0.047	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.129	0.013	0.000	0.012	0.005	0.007	0.074	0.129
10-Apr	0.077	0.057	0.492	0.019	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	0.028	0.492
11-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.027	0.127	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	0.119	0.181	0.099	0.024	0.181
12-Apr	Z	0.044	0.035	0.000	0.000	0.000	0.000	0.000	0.019	0.018	0.001	0.048	0.039	0.028	0.005	0.000	0.000	0.000	0.027	0.131	0.116	0.043	0.005	0.009	0.025	0.131
13-Apr	0.000	Z	0.000	0.000	0.005	0.016	0.027	0.036	0.168	0.084	0.012	0.000	0.000	0.000	0.002	0.018	0.002	0.000	0.079	0.059	0.075	0.068	0.078	0.083	0.035	0.168
14-Apr	0.062	0.045	Z	0.022	0.071	0.052	0.082	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.007	0.000	0.002	0.000	0.000	0.000	0.000	0.016	0.082
15-Apr	0.000	0.003	0.000	Z	0.012	0.047	0.061	0.000	0.009	0.027	0.037	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.061
16-Apr	0.000	0.000	0.000	0.000	0.001	Z	0.011	0.003	0.000	0.000	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.039
17-Apr	Z	0.000	0.000	0.000	0.000	0.002	0.110	0.068	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.110
18-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	PF	0.130	0.068	0.170	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.011	0.094	0.147	0.049	0.032	0.170
19-Apr	0.000	0.029	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	0.027	0.009	0.000	0.002	0.053	0.077	0.009	0.077
20-Apr	0.064	0.019	0.043	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.064
21-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.003	0.009	0.000	M	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.001	0.009
22-Apr	0.027	0.030	0.004	0.001	0.039	Z	0.087	0.123	0.147	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.052	0.039	0.023	0.016	0.026	0.147
23-Apr	Z	0.014	0.021	0.016	0.001	0.001	0.002	0.009	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.122	0.155	0.146	0.037	0.024	0.155
24-Apr	0.010	Z	0.000	0.011	0.197	0.157	0.000	0.000	0.000	0.000	0.000	C	C	C	C	C	0.000	0.000	0.001	0.036	0.081	0.063	0.037	0.086	0.038	0.197
25-Apr	0.110	0.081	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	0.110
26-Apr	UO	UO	UO	Z	UO	UO	UO	UO	UO	UO	UO	M	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.005	0.000	--	0.011
27-Apr	0.000	0.004	0.020	0.029	Z	0.016	0.019	0.010	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.116	0.000	0.021	0.011	0.116
28-Apr	0.155	0.099	0.016	0.006	0.014	Z	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.016	0.093	0.115	0.016	0.024	0.155
29-Apr	Z	0.123	0.098	0.110	0.113	0.104	0.079	0.034	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.123
30-Apr	0.000	Z	0.007	0.053	0.049	0.011	0.015	0.006	0.039	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	0.102	0.012	0.102
																				0.025 0.030 0.042 0.018 0.029 0.029 0.027 0.040 0.047 0.024 0.017 0.013 0.012 0.014 0.023 0.036 0.031 0.021 0.018 0.026 0.027 0.032 0.029 0.033					Diurnal Average	
																				0.155 0.123 0.492 0.112 0.197 0.157 0.110 0.325 0.317 0.185 0.170 0.124 0.127 0.131 0.302 0.377 0.564 0.345 0.347 0.300 0.164 0.155 0.181 0.276					Diurnal Maximum	
Z - zerospan			C - Calibration				M - Maintenance				UO - Unstable Operation				PF - Power Failure											



Wood Buffalo Environmental Association
Hourly Averages

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	409	63.21	63.21
0.006 - 0.05	129	19.94	83.15
0.06 - 0.1	88	13.60	96.75
> 0.1	21	3.25	100.00

Total Number of Valid Hours: 647

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	25	15	21	15	15	46	48	86	45	8	14	18	12	3	21	14	406
0.006 - 0.05	19	11	5	2	3	4	7	25	16	3	1	6	2	1	7	14	126
0.06 - 0.1	24	9	2	0	0	2	6	12	11	3	2	0	3	2	7	5	88
> 0.1	3	1	0	0	0	0	1	7	8	0	0	0	0	1	0	0	21
Totals	71	36	28	17	18	52	62	130	80	14	17	24	17	7	35	33	641

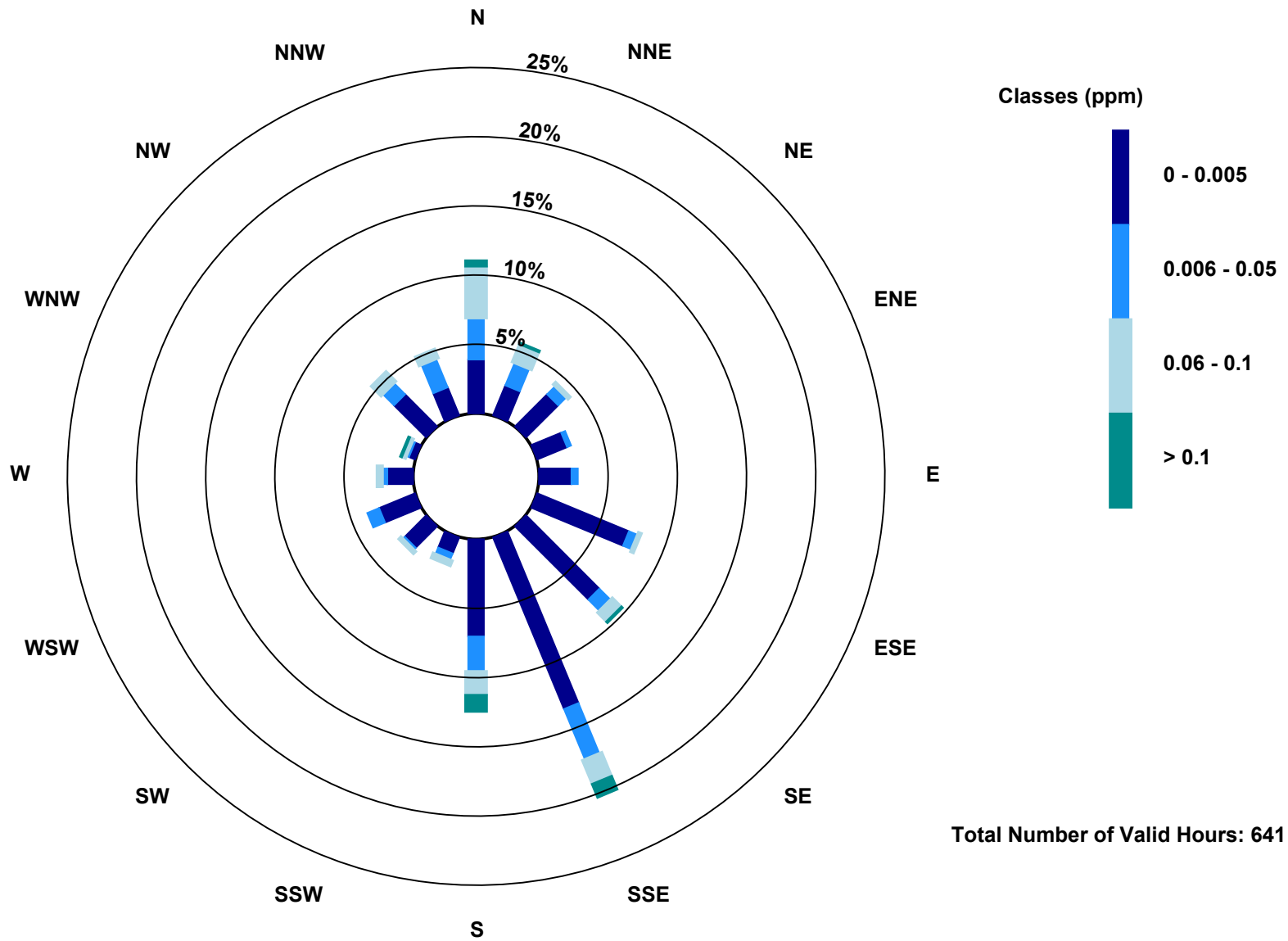
Total Number of Valid Hours: 641

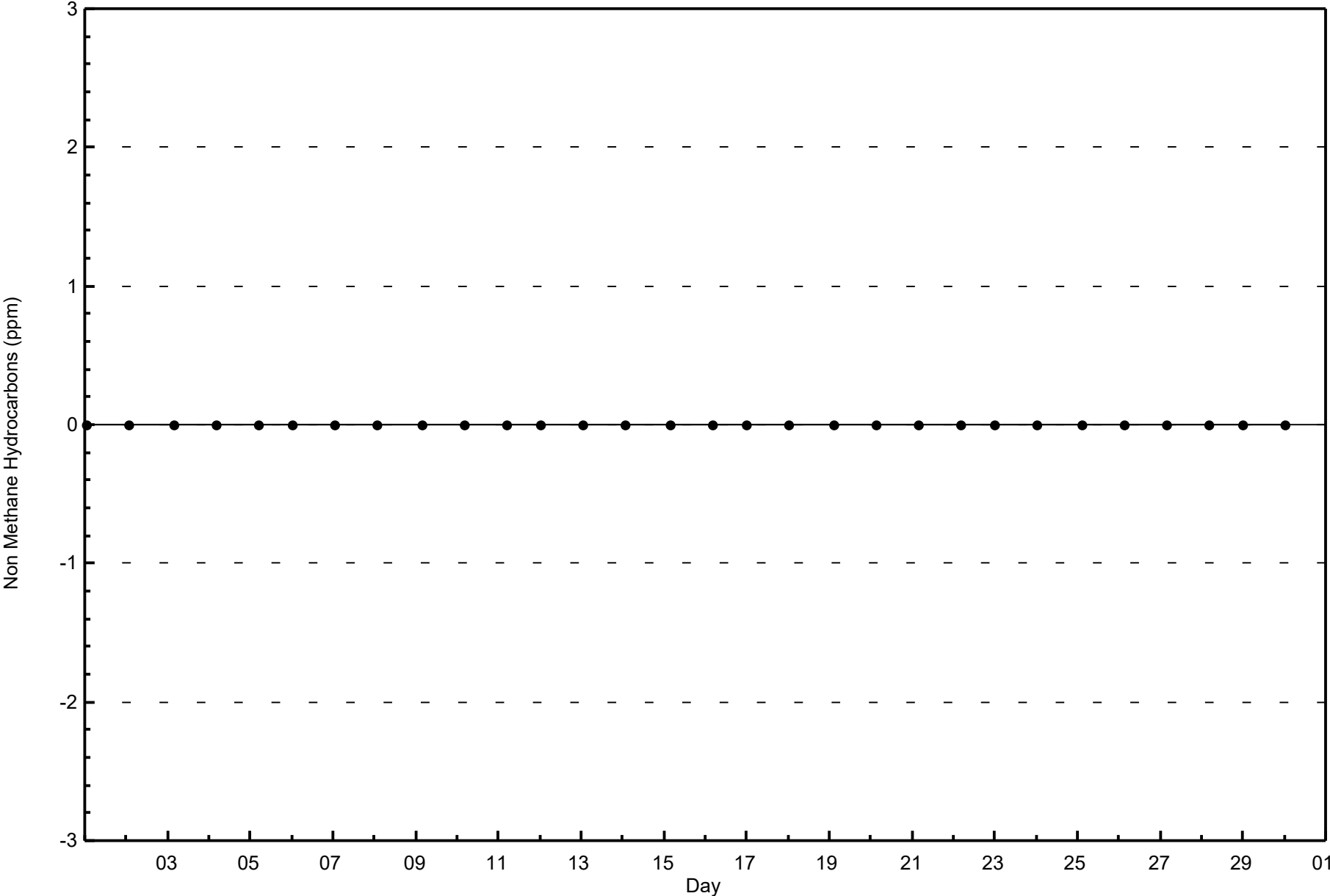
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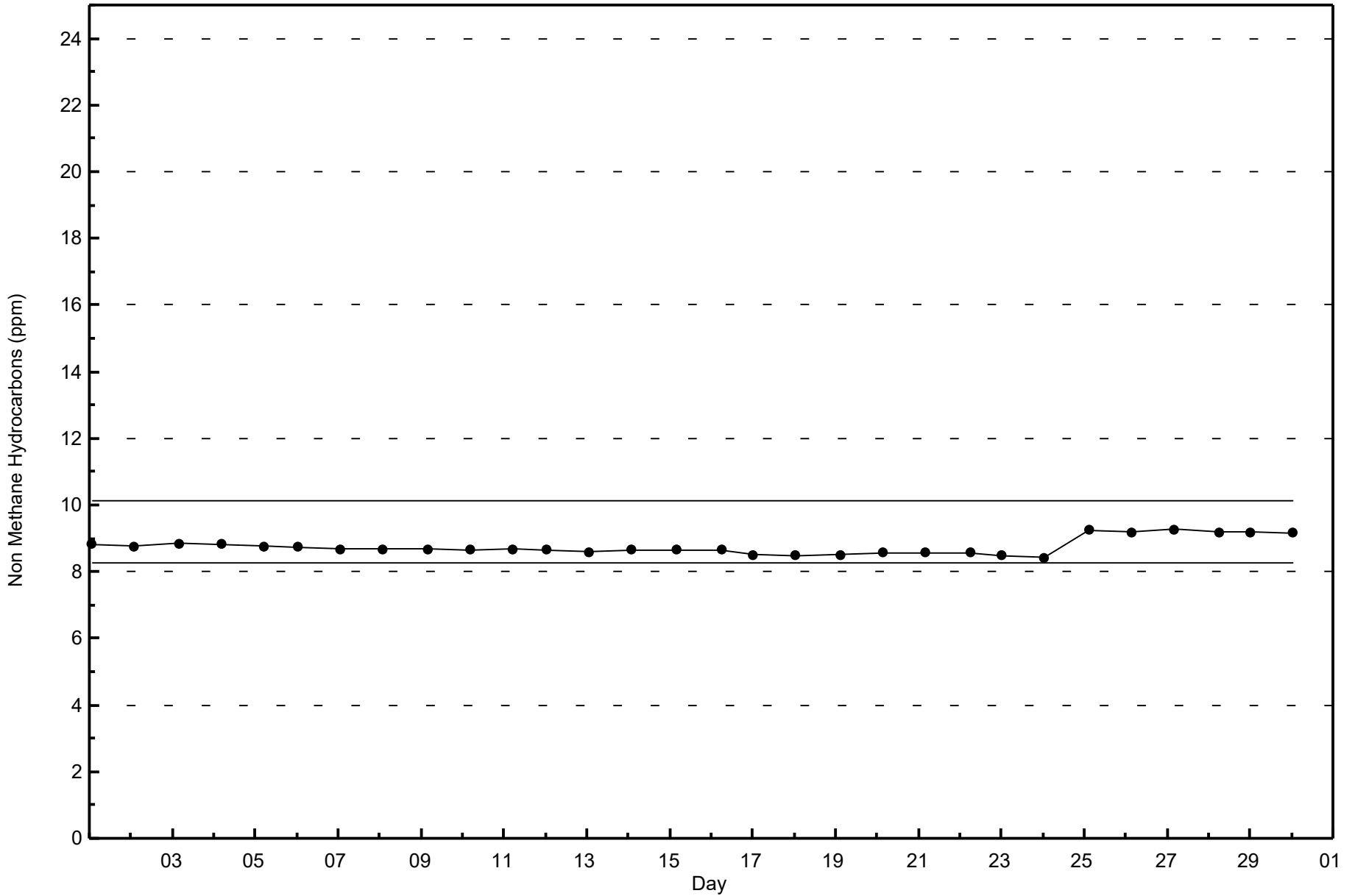


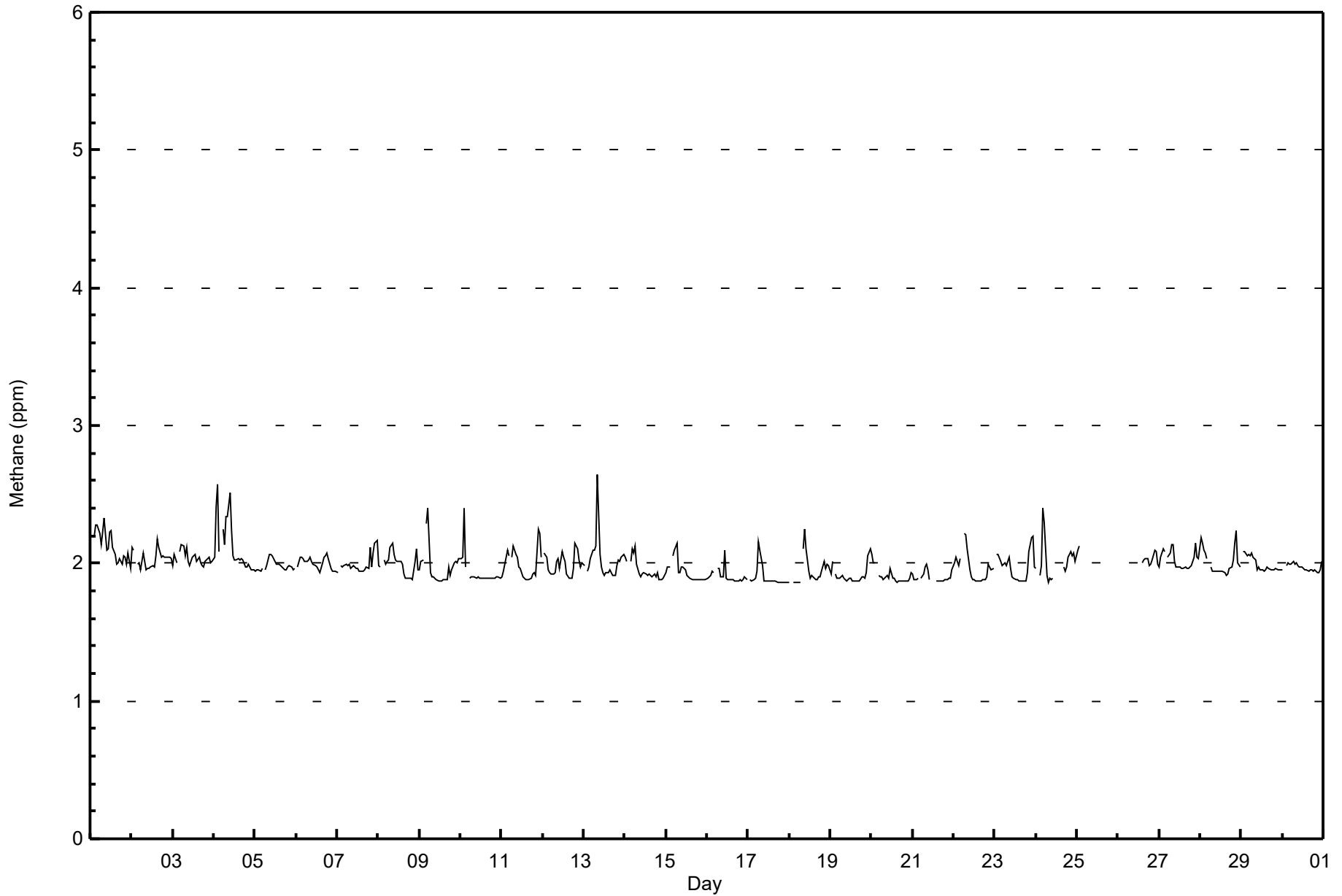
Wood Buffalo Environmental Association
Wind Rose Apr 2023

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











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	525	81.14	81.14
2.1 - 3.0	122	18.86	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 647

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	39	27	25	17	16	47	54	115	67	9	15	23	14	4	25	23	520
2.1 - 3.0	32	9	3	0	2	5	8	15	13	5	2	1	3	3	10	10	121
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
Totals	71	36	28	17	18	52	62	130	80	14	17	24	17	7	35	33	641

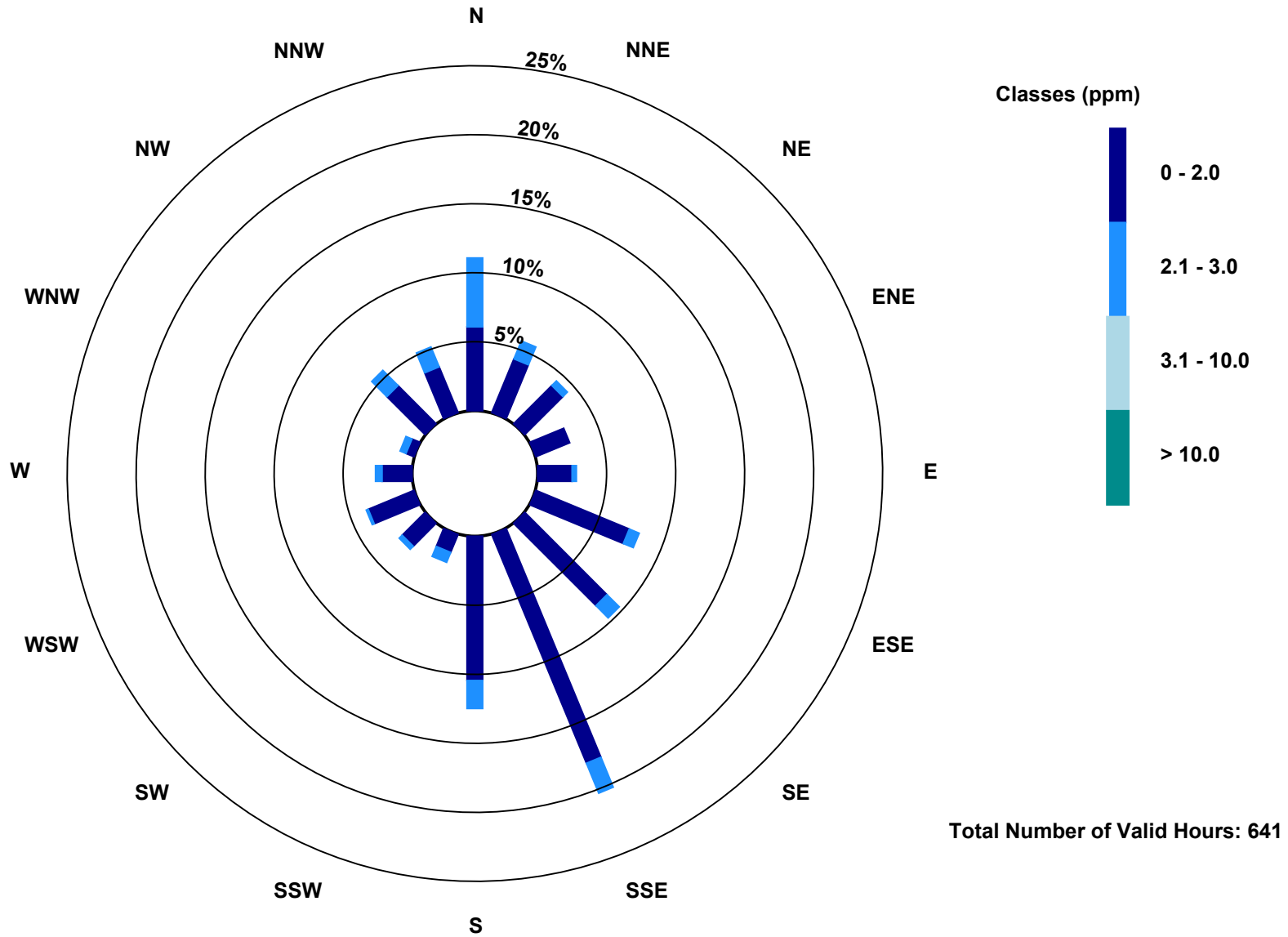
Total Number of Valid Hours: 641

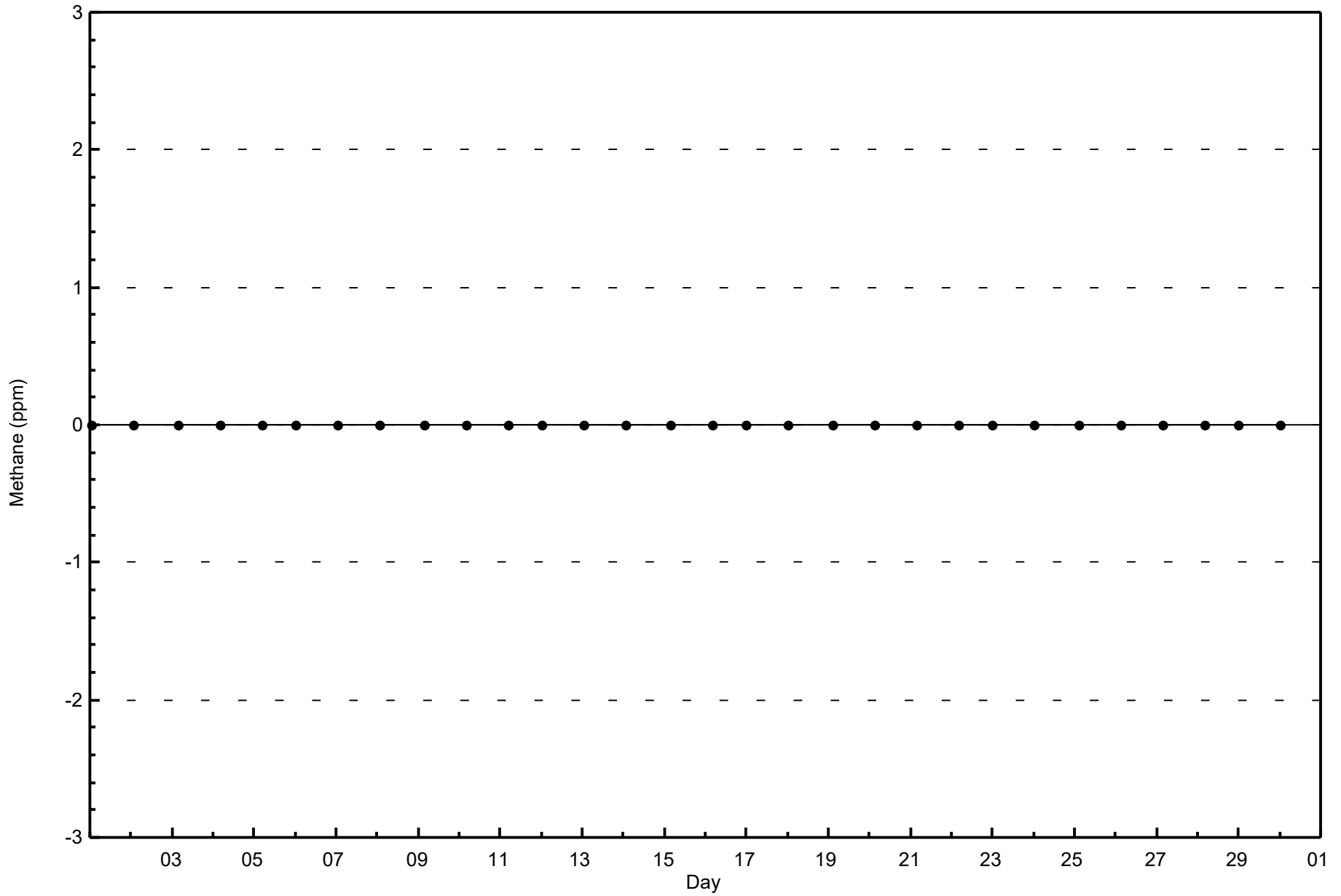
Total Number of Hours: 720

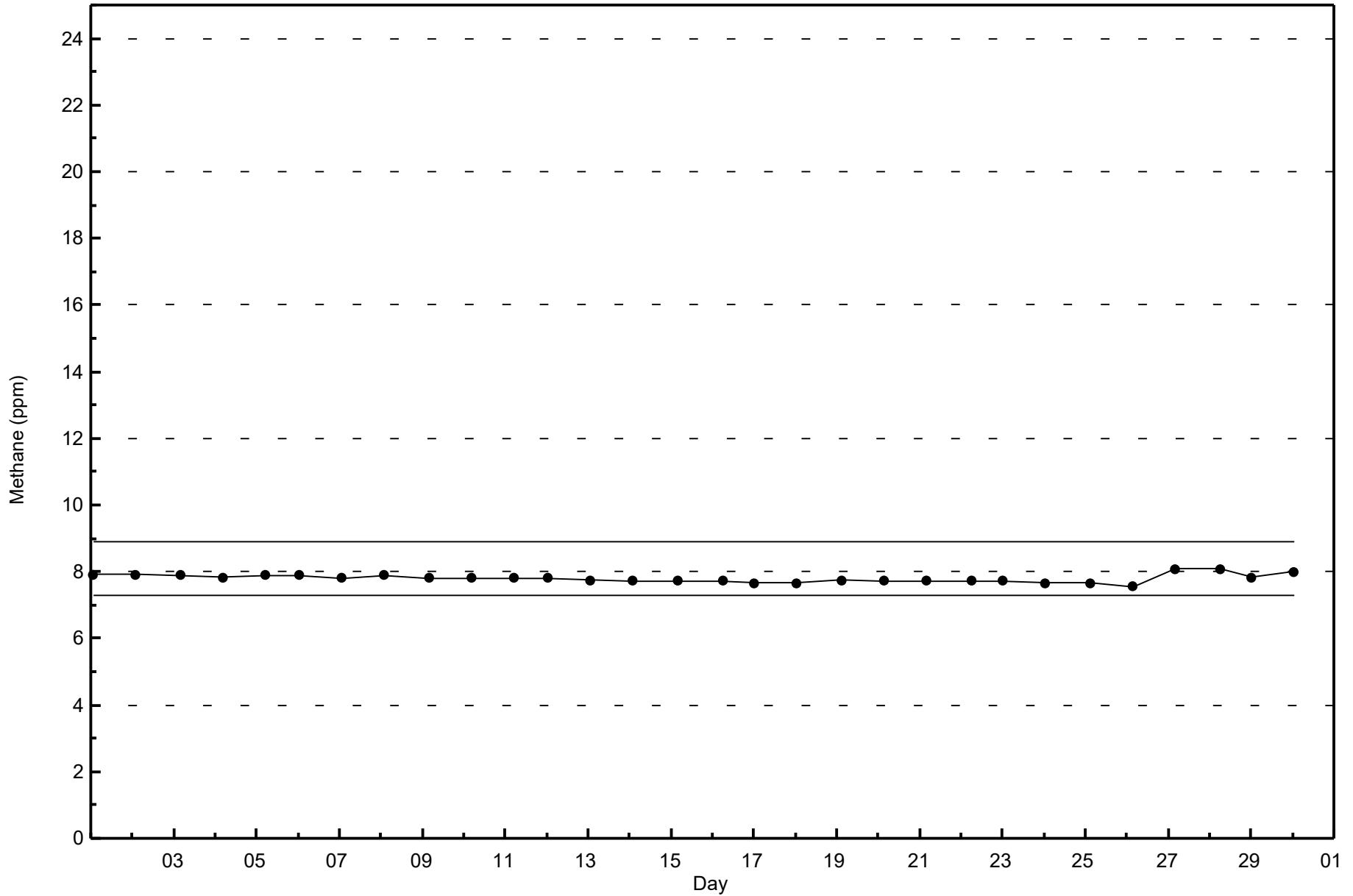


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Fort McKay - Bertha Ganter







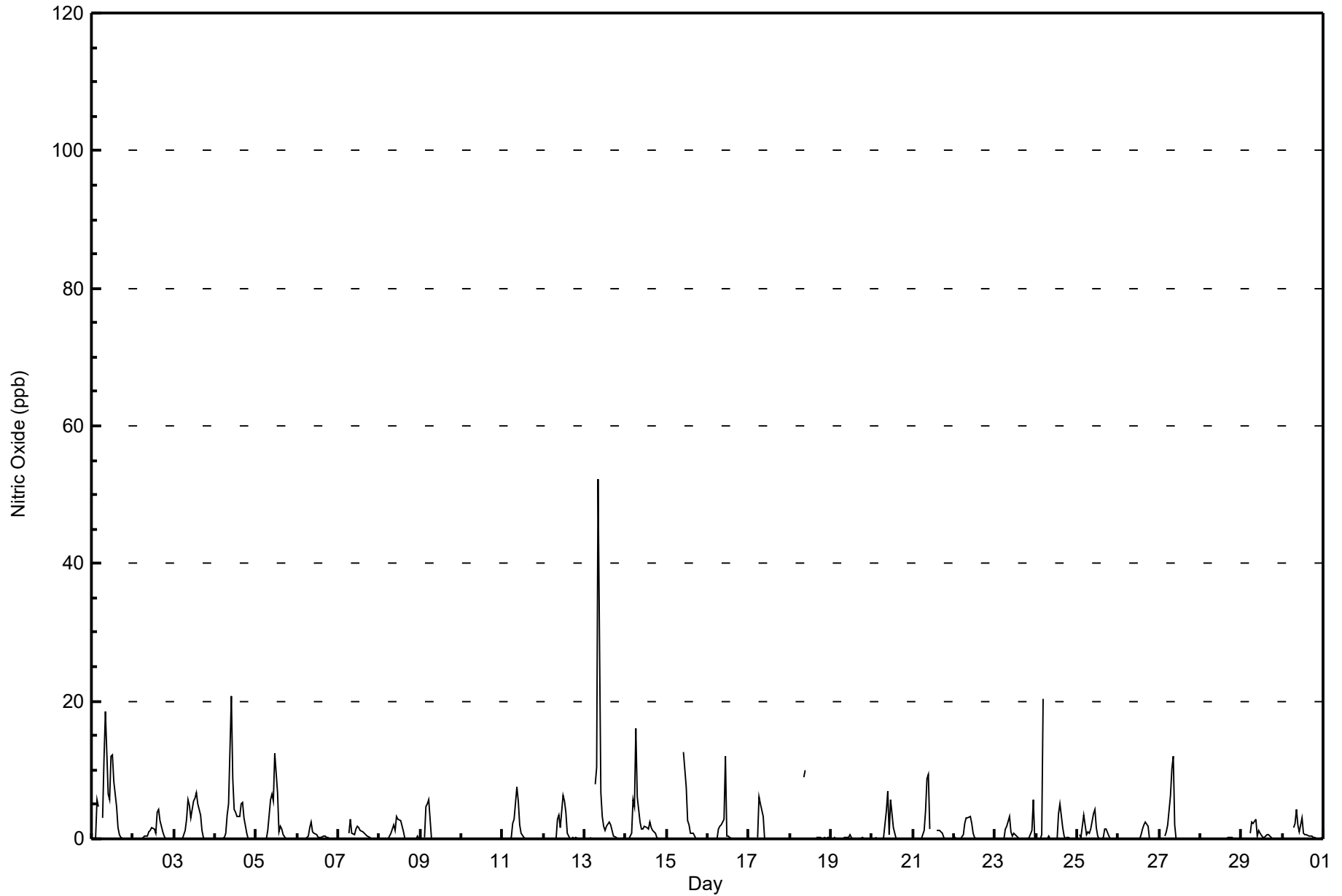


Maximum Value: 52.3 ppb on Apr 13 09:00																				Maximum Daily Average: 4.2 ppb on Apr 1					Hours in Service: 720				
Minimum Value: 0.0 ppb on Apr 1 01:00																				Minimum Daily Average: 0.0 ppb on Apr 10					Hours of Data: 671				
Maximum Diurnal Average: 5.5 ppb at hour 9																				Minimum Diurnal Average: 0.0 ppb at hour 1					Hours of Missing Data: 49				
Monthly Average: 1.21 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 1.0 P ₉₀ = 3.8 P ₉₉ = 12.2					Hours of Calibration: 34				
																				Percent Operational Time: 97.9									
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-Apr	0.0	0.0	0.1	5.6	4.7	Z	3.1	11.7	18.5	6.5	5.7	11.9	12.1	8.4	4.7	1.7	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	4.2	18.5			
2-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.4	1.0	1.2	1.6	1.5	0.9	3.9	4.3	2.7	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.8	4.3			
3-Apr	0.1	Z	0.0	0.0	0.0	0.1	1.3	2.8	5.7	4.9	3.1	5.5	5.9	6.8	5.0	3.4	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	2.0	6.8			
4-Apr	0.0	0.0	Z	0.0	0.0	0.1	0.7	3.5	5.1	20.8	8.8	4.3	3.8	3.3	5.0	5.3	3.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	3.0	20.8			
5-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.1	1.2	5.7	6.6	5.5	12.5	6.8	1.1	1.8	1.4	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.9	12.5			
6-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.4	1.6	2.4	1.0	0.9	0.6	0.2	0.2	0.2	0.3	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.4	2.4			
7-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.8	2.9	0.8	0.7	1.4	1.9	1.7	1.3	1.0	0.8	0.5	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.6	2.9			
8-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.4	0.9	2.0	1.2	3.2	2.8	2.7	1.8	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	3.2			
9-Apr	0.0	Z	0.2	4.8	5.2	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.6			
10-Apr	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		
11-Apr	0.0	0.0	0.0	Z	0.0	0.1	2.2	2.9	7.6	5.5	2.0	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	7.6			
12-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	2.9	3.4	1.5	6.4	5.5	3.8	0.8	0.0	0.0	0.2	0.1	0.3	0.1	0.0	0.0	0.0	1.1	6.4			
13-Apr	0.0	0.0	0.0	0.0	0.3	Z	8.0	10.3	52.3	6.7	3.2	1.8	1.3	1.8	2.4	2.0	1.2	0.5	0.2	0.1	0.0	0.0	0.0	0.1	4.0	52.3			
14-Apr	Z	0.1	0.0	0.8	5.7	4.7	16.1	6.1	2.5	1.4	1.5	1.8	1.5	1.4	2.4	1.6	1.3	0.9	0.2	0.0	0.0	0.0	0.0	0.0	2.3	16.1			
15-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	12.7	7.6	2.7	2.1	0.9	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	12.7			
16-Apr	0.0	0.0	0.0	Z	0.0	0.0	1.3	1.8	2.0	2.9	11.9	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	11.9			
17-Apr	0.0	0.0	0.0	0.0	Z	0.1	6.1	5.0	3.2	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	0.6	6.1			
18-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	PF	9.0	10.0	C	C	C	C	C	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	--	10.0			
19-Apr	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5			
20-Apr	0.0	Z	0.3	0.0	0.0	0.0	0.0	0.2	4.1	6.9	0.7	5.8	1.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.9			
21-Apr	0.0	0.0	Z	0.0	0.0	0.0	1.2	4.0	8.7	9.3	1.5	M	M	M	1.3	1.3	1.1	0.9	0.1	0.0	0.0	0.0	0.0	0.0	1.5	9.3			
22-Apr	0.1	0.0	0.0	Z	0.0	0.6	2.2	3.0	3.1	3.2	2.2	0.9	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.2			
23-Apr	0.0	0.0	0.0	0.0	Z	0.1	1.3	1.8	3.2	0.9	0.4	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2	5.6	0.7	5.6				
24-Apr	0.0	0.0	0.0	0.6	20.3	Z	0.0	0.3	0.1	0.0	0.0	0.0	0.0	3.8	5.0	1.5	0.3	0.0	0.2	0.3	0.1	0.0	0.1	0.0	1.4	20.3			
25-Apr	Z	0.6	0.1	1.8	3.4	0.7	1.0	0.9	1.5	3.7	4.3	1.6	0.5	0.0	0.0	0.3	1.3	1.3	0.4	0.0	0.0	0.0	0.0	0.0	1.0	4.3			
26-Apr	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	0.7	1.4	2.0	2.4	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.4			
27-Apr	0.0	0.0	Z	0.4	1.0	2.0	6.2	10.3	12.0	1.9	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	1.5	12.0			
28-Apr	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	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2		
29-Apr	0.0	0.0	0.0	0.0	Z	0.8	2.5	2.2	2.8	0.5	1.3	0.8	0.1	0.2	0.5	0.6	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.8			
30-Apr	0.0	0.0	0.0	0.0	0.0	Z	1.6	2.3	4.3	2.0	1.0	3.0	0.9	0.7	0.6	0.3	0.5	0.4	0.3	0.1	0.0	0.0	0.0	0.1	0.8	4.3			
																								Diurnal Average					
																								Diurnal Maximum					
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation PF - Power Failure																													



Wood Buffalo Environmental Association
Hourly Averages

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





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

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

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	669	99.70	99.70
21 - 40	1	0.15	99.85
41 - 80	1	0.15	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 671

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	67	32	28	15	19	51	61	137	81	15	18	25	21	17	40	36	663
21 - 40	0	0	0	0	0	1	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
Totals	67	33	28	15	19	52	61	137	81	15	18	25	21	17	40	36	665

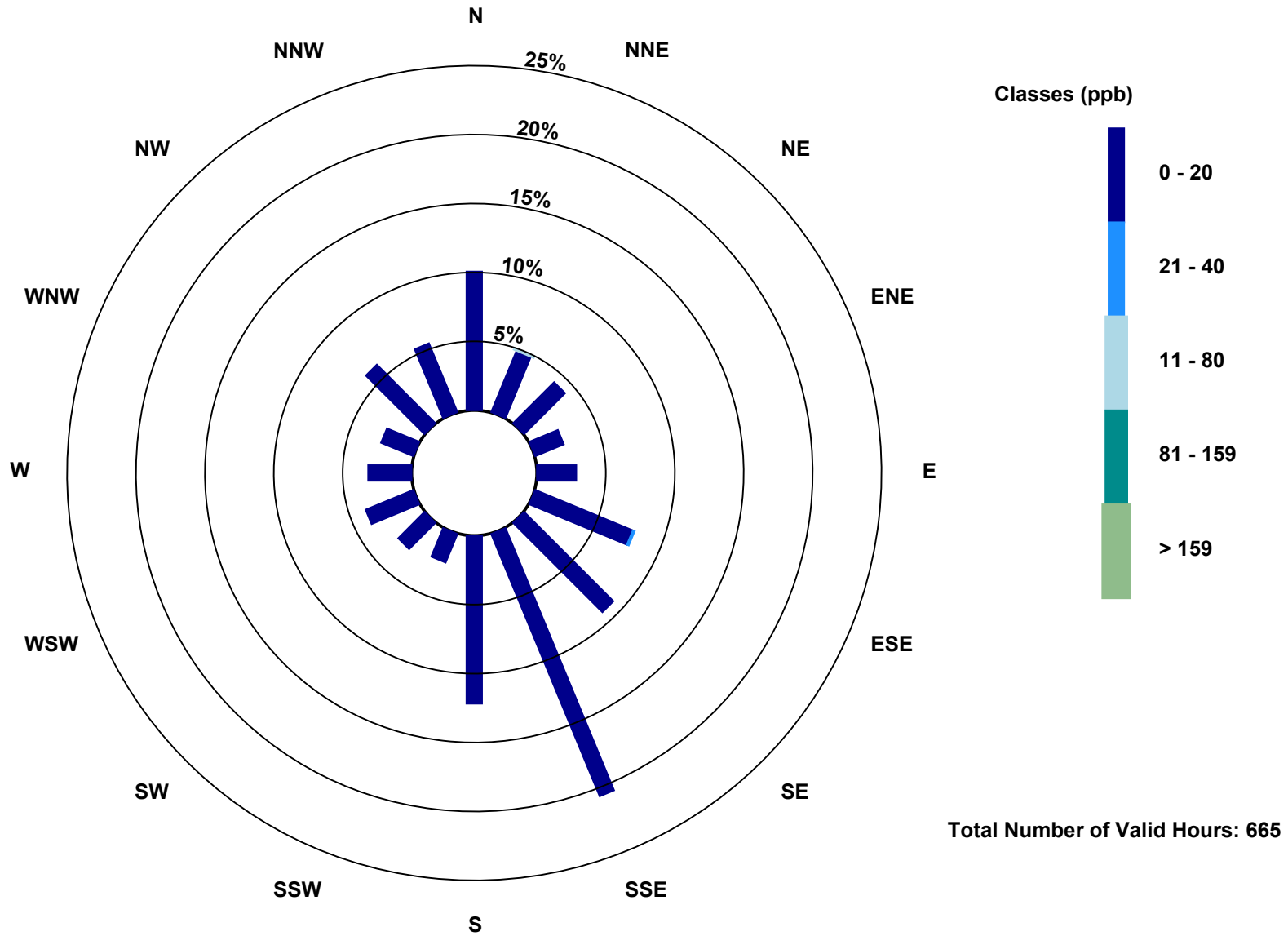
Total Number of Valid Hours: 665

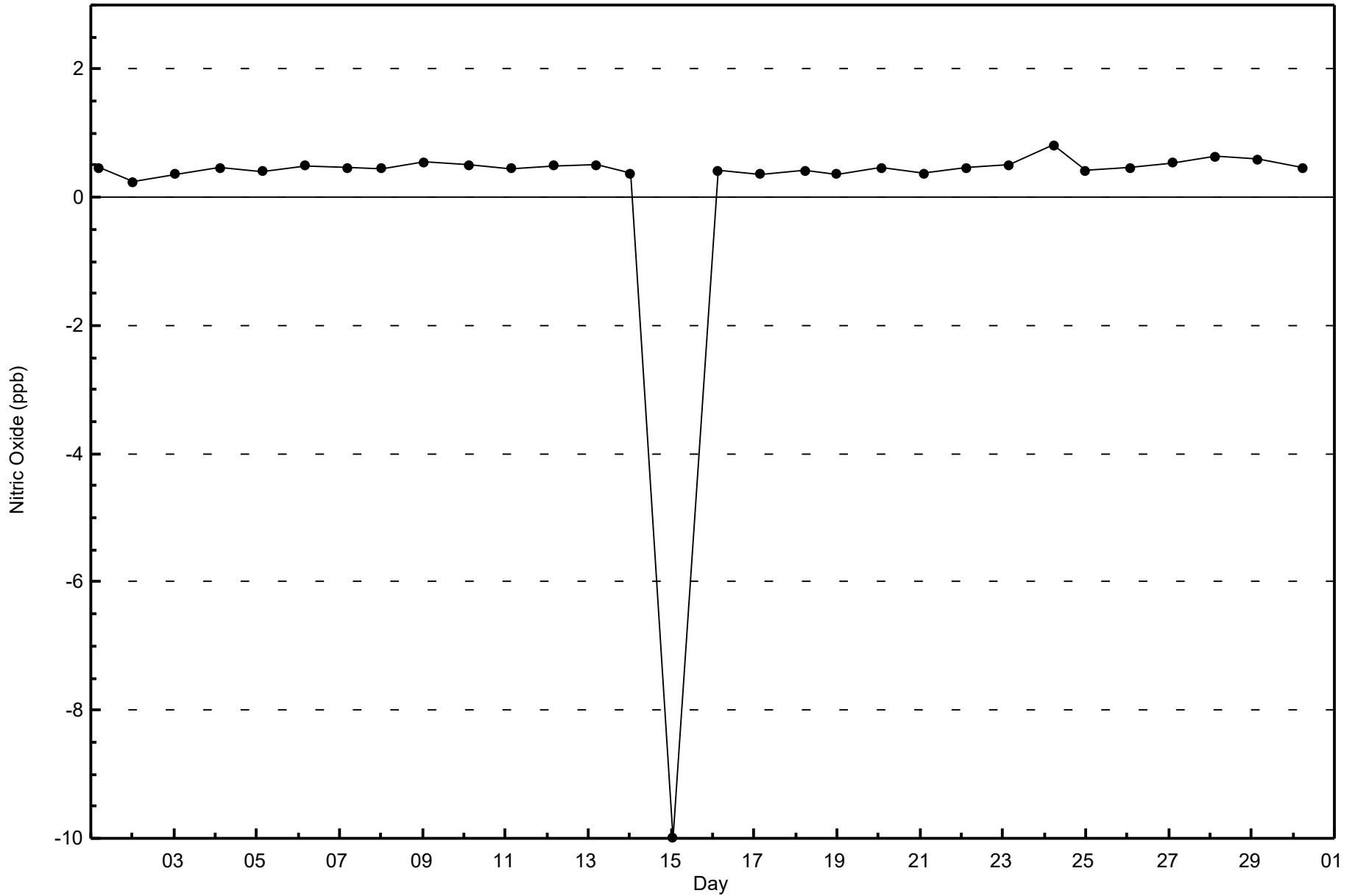
Total Number of Hours: 720

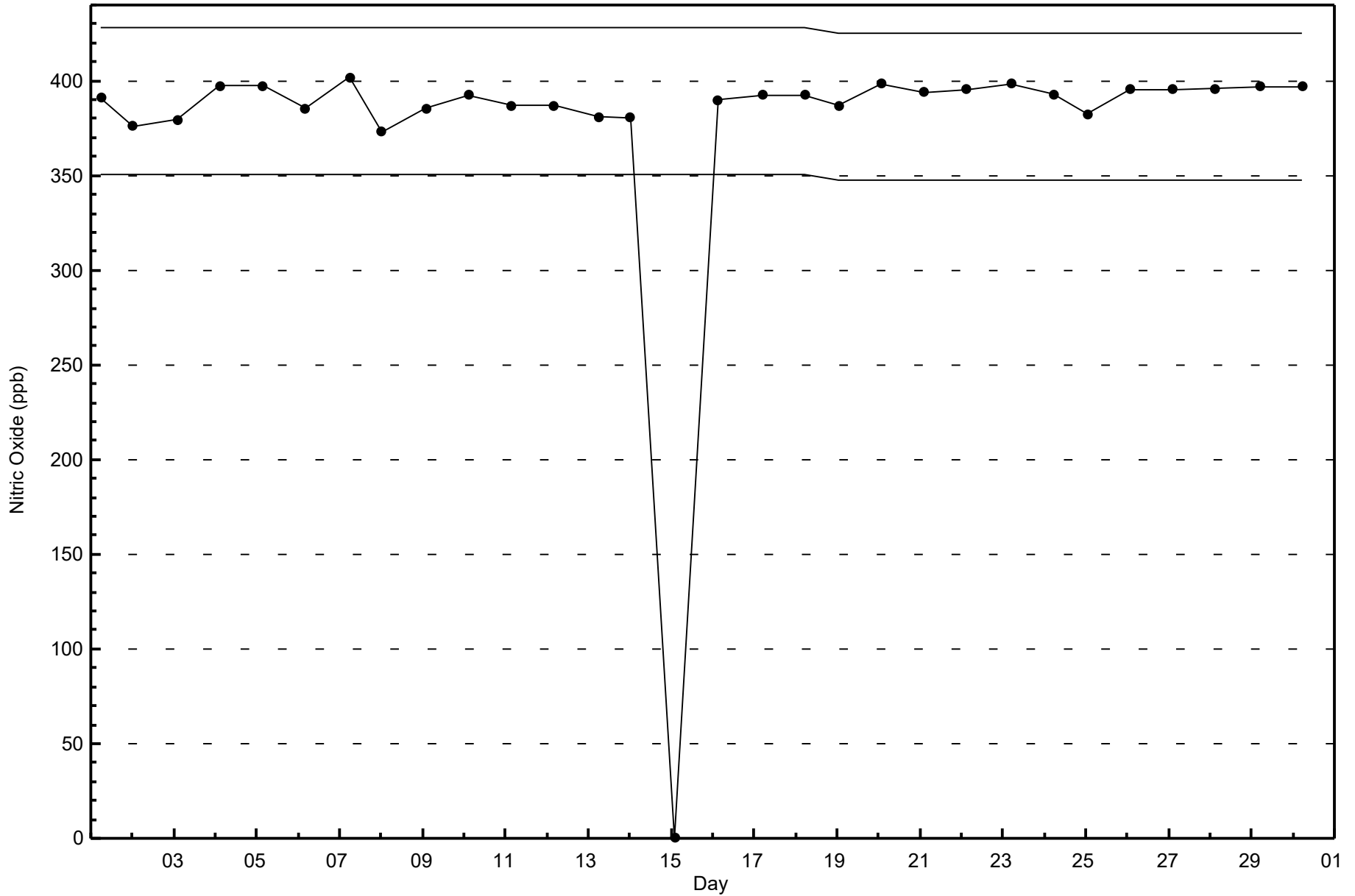


Wood Buffalo Environmental Association
Wind Rose Apr 2023

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









Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 34.6 ppb on Apr 23 23:00	Maximum Daily Average: 13.8 ppb on Apr 1		Hours of Data:	671
Minimum Value: 0.0 ppb on Apr 9 10:00	Minimum Daily Average: 1.5 ppb on Apr 10		Hours of Missing Data:	49
Maximum Diurnal Average: 10.5 ppb at hour 5	Minimum Diurnal Average: 3.0 ppb at hour 18		Hours of Calibration:	34
Monthly Average: 6.04 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.2 Q ₁ = 1.2 Median = 4.1 Q ₃ = 9.0 P ₉₀ = 14.7 P ₉₉ = 30.1		Percent Operational Time:	97.9

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-Apr	6.3	16.0	23.6	32.5	33.4	Z	21.3	20.7	23.4	14.9	12.9	19.9	18.0	15.1	12.0	8.4	6.6	6.3	5.4	11.4	2.6	2.2	2.0	1.4	13.8	33.4	
2-Apr	Z	2.4	2.4	1.8	1.9	2.3	3.7	3.5	2.2	3.2	4.3	4.6	4.8	3.1	8.9	12.7	11.2	9.2	11.1	9.7	11.7	10.9	10.3	8.3	6.3	12.7	
3-Apr	13.7	Z	16.6	13.0	17.7	23.5	14.5	9.7	8.9	7.0	4.4	6.9	6.7	8.0	8.7	11.5	6.9	4.3	3.9	4.6	7.3	6.7	6.2	5.0	9.4	23.5	
4-Apr	6.0	13.0	Z	5.1	16.0	17.6	10.3	12.2	10.6	19.6	10.0	5.6	5.8	6.0	8.3	13.0	15.3	14.1	10.1	7.6	8.6	7.4	4.8	4.7	10.1	19.6	
5-Apr	3.6	2.8	3.6	Z	5.7	3.3	3.5	7.5	14.3	12.5	14.0	17.5	10.7	4.4	8.0	8.3	5.3	3.2	4.3	5.7	7.9	6.1	3.1	3.3	6.9	17.5	
6-Apr	2.6	6.0	15.2	14.6	Z	10.0	8.4	8.6	8.3	4.2	3.8	2.9	2.1	1.7	1.7	2.8	3.0	2.5	6.9	7.9	3.4	2.8	2.2	1.5	5.4	15.2	
7-Apr	1.5	1.6	2.9	6.1	4.9	Z	10.9	12.9	3.4	3.1	4.2	5.5	5.0	4.2	3.8	3.7	3.6	4.1	8.2	5.4	5.0	4.7	4.4	4.1	4.9	12.9	
8-Apr	Z	3.9	3.6	3.4	3.6	5.4	7.5	10.6	9.1	4.4	8.0	7.3	7.4	5.9	4.2	1.1	0.1	0.4	0.6	0.6	0.5	11.2	25.0	9.1	5.8	25.0	
9-Apr	5.9	Z	10.6	31.5	32.6	29.7	2.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.0	2.7	3.1	1.9	2.3	9.9	16.7	6.6	32.6	
10-Apr	15.0	13.6	Z	4.2	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	0.1	0.1	0.3	0.1	1.5	15.0	
11-Apr	0.1	6.1	16.4	Z	16.5	10.9	14.7	10.8	14.0	11.1	5.5	2.8	1.0	0.0	0.0	0.0	0.0	0.0	1.6	2.3	1.7	19.1	17.0	6.3	6.9	19.1	
12-Apr	3.6	8.9	6.7	1.9	Z	0.5	0.7	1.2	8.1	9.1	5.3	12.7	10.3	8.2	2.3	0.0	0.0	0.2	4.9	19.9	19.0	9.4	3.8	7.1	6.3	19.9	
13-Apr	11.1	10.5	6.2	6.8	11.2	Z	15.2	11.3	27.6	10.0	6.2	3.9	2.7	4.2	5.7	5.6	4.5	2.6	3.2	9.4	10.4	10.2	19.7	24.3	9.7	27.6	
14-Apr	Z	18.8	14.4	17.0	23.5	20.3	19.9	11.3	5.0	2.7	2.8	3.9	3.5	3.1	5.5	4.6	5.0	5.1	3.7	4.3	0.7	0.5	0.8	UO	8.0	23.5	
15-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	16.7	13.0	7.4	6.8	4.3	4.3	3.4	2.2	2.3	0.9	1.6	1.3	0.4	0.4	--	16.7
16-Apr	0.6	1.5	2.9	Z	4.7	4.0	5.1	5.2	5.3	6.9	17.5	1.8	1.9	1.7	0.8	0.5	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.3	2.7	17.5	
17-Apr	0.3	0.3	0.3	0.5	Z	6.0	22.0	15.7	9.4	0.7	0.7	0.6	0.5	0.6	0.5	0.6	0.7	0.8	0.6	0.6	0.5	0.4	0.4	0.2	2.7	22.0	
18-Apr	0.2	0.4	0.2	0.2	0.3	Z	0.9	PF	19.1	20.2	C	C	C	C	C	1.0	0.9	1.6	2.3	6.6	8.5	8.2	12.9	10.7	--	20.2	
19-Apr	Z	11.9	11.5	8.1	0.4	0.5	1.0	1.3	1.8	1.4	1.2	2.1	1.1	0.7	0.9	1.6	0.7	0.6	3.9	4.6	2.5	9.6	18.2	17.4	4.5	18.2	
20-Apr	15.5	Z	12.1	3.6	1.3	1.1	0.9	1.1	7.1	10.8	1.7	9.4	4.2	2.4	0.6	0.1	0.1	0.1	0.2	0.1	0.4	0.6	1.1	1.4	3.3	15.5	
21-Apr	0.9	0.8	Z	1.1	0.8	1.4	3.6	8.2	13.9	14.1	3.9	M	M	M	4.4	5.0	5.3	5.7	3.0	3.0	3.8	4.3	5.7	11.0	5.0	14.1	
22-Apr	11.4	10.6	11.9	Z	6.8	9.7	10.1	8.6	7.9	7.7	5.6	3.0	1.0	0.8	1.1	1.6	1.5	1.4	1.5	0.9	2.7	9.9	5.8	4.8	5.5	11.9	
23-Apr	5.6	10.3	18.5	12.7	Z	5.3	8.8	11.3	12.3	6.4	3.4	4.8	3.9	3.7	2.5	2.2	2.2	1.3	1.8	8.0	23.1	31.5	34.6	12.0	9.8	34.6	
24-Apr	7.9	5.6	2.7	11.2	30.9	Z	2.1	3.9	3.3	1.8	1.5	1.0	1.4	12.4	12.4	7.2	4.1	1.3	5.9	13.8	17.2	15.7	15.2	6.7	8.1	30.9	
25-Apr	Z	11.4	11.0	15.3	20.0	15.5	12.3	6.3	6.8	11.0	9.5	4.4	2.2	0.5	0.9	3.0	8.2	7.1	5.6	0.9	0.2	0.2	0.1	0.1	6.6	20.0	
26-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2.1	3.2	4.3	6.1	5.0	0.8	1.1	3.3	17.2	14.9	2.8	2.6	17.2	
27-Apr	1.0	13.7	Z	10.4	8.2	5.3	6.0	9.1	8.7	2.5	0.5	0.5	0.7	0.4	0.7	0.6	0.1	1.1	2.3	3.0	6.2	3.1	1.9	3.6	3.9	13.7	
28-Apr	2.2	8.2	10.8	Z	5.1	3.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.7	3.1	3.5	9.0	18.8	24.1	10.6	8.7	4.8	24.1	
29-Apr	16.4	14.9	12.7	10.4	Z	6.4	5.1	4.2	5.9	1.8	3.8	2.6	1.2	1.5	2.3	3.1	3.2	1.9	2.0	1.3	12.9	0.8	1.0	0.6	5.0	16.4	
30-Apr	0.3	1.2	6.0	8.0	6.9	Z	5.2	6.8	10.6	5.3	3.2	8.0	3.2	2.8	2.5	2.0	2.7	2.8	3.4	3.5	0.8	0.7	2.0	7.9	4.2	10.6	

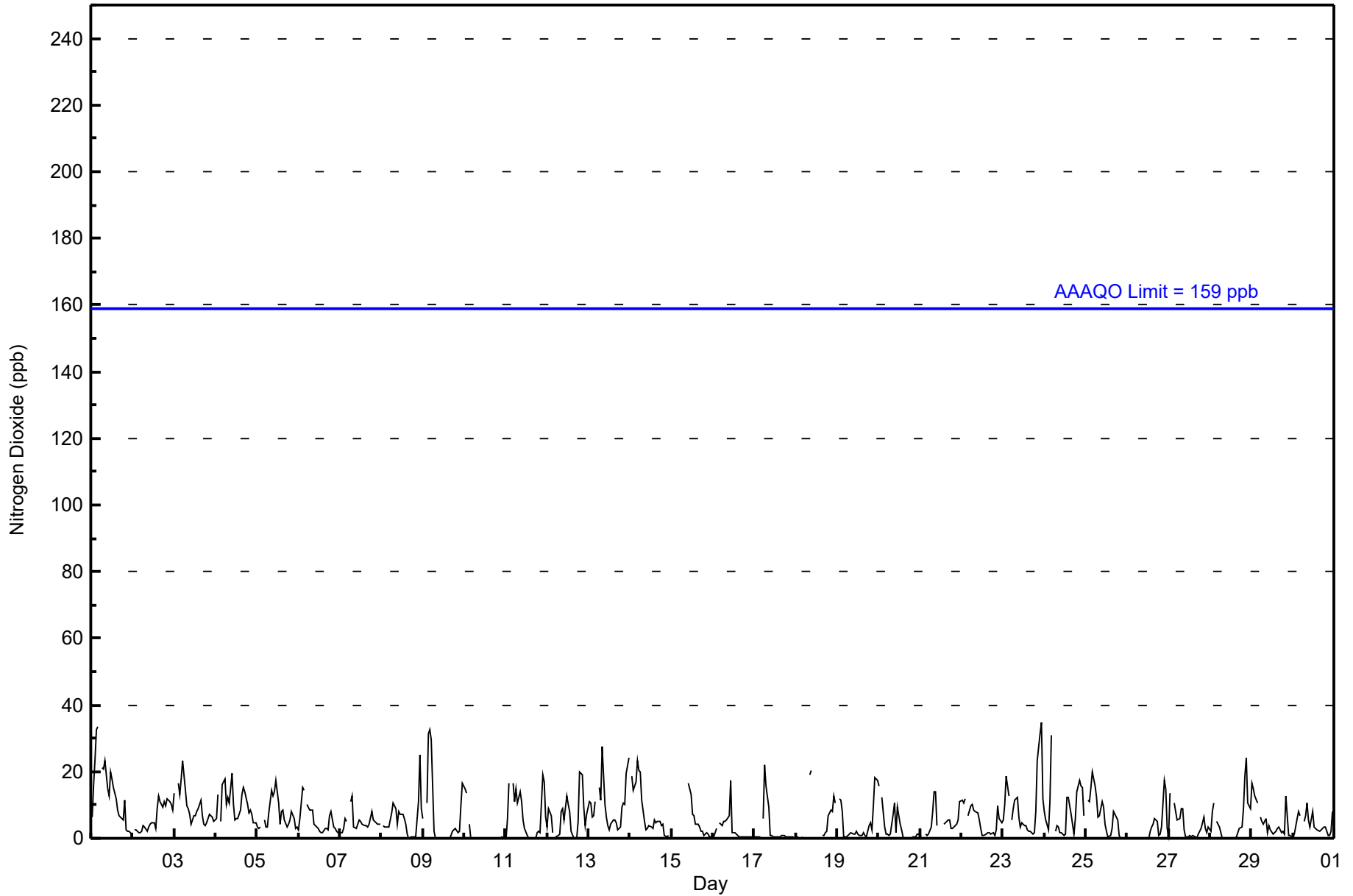
5.5	7.8	8.9	9.1	10.5	7.9	7.5	7.2	8.5	6.6	5.2	5.2	3.8	3.6	3.7	3.6	3.5	3.0	3.5	5.0	6.1	7.4	7.8	6.2	Diurnal Average	
16.4	18.8	23.6	32.5	33.4	29.7	22.0	20.7	27.6	20.2	17.5	19.9	18.0	15.1	12.4	13.0	15.3	14.1	11.1	19.9	23.1	31.5	34.6	24.3	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation PF - Power Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	651	97.02	97.02
21 - 40	20	2.98	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: 671

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	58	30	28	15	19	52	61	136	81	13	17	25	21	17	38	34	645
21 - 40	9	3	0	0	0	0	0	1	0	2	1	0	0	0	2	2	20
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
Totals	67	33	28	15	19	52	61	137	81	15	18	25	21	17	40	36	665

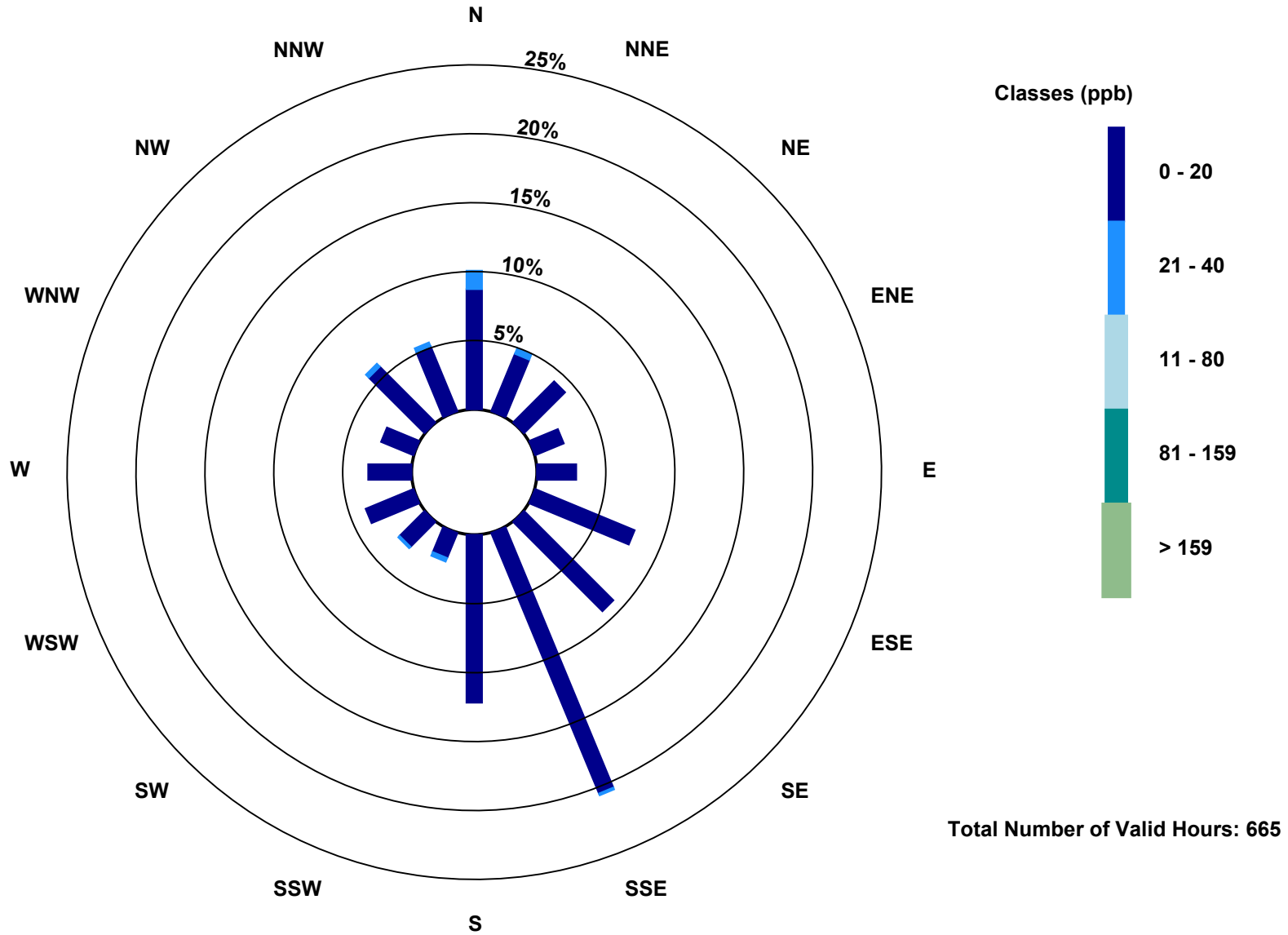
Total Number of Valid Hours: 665

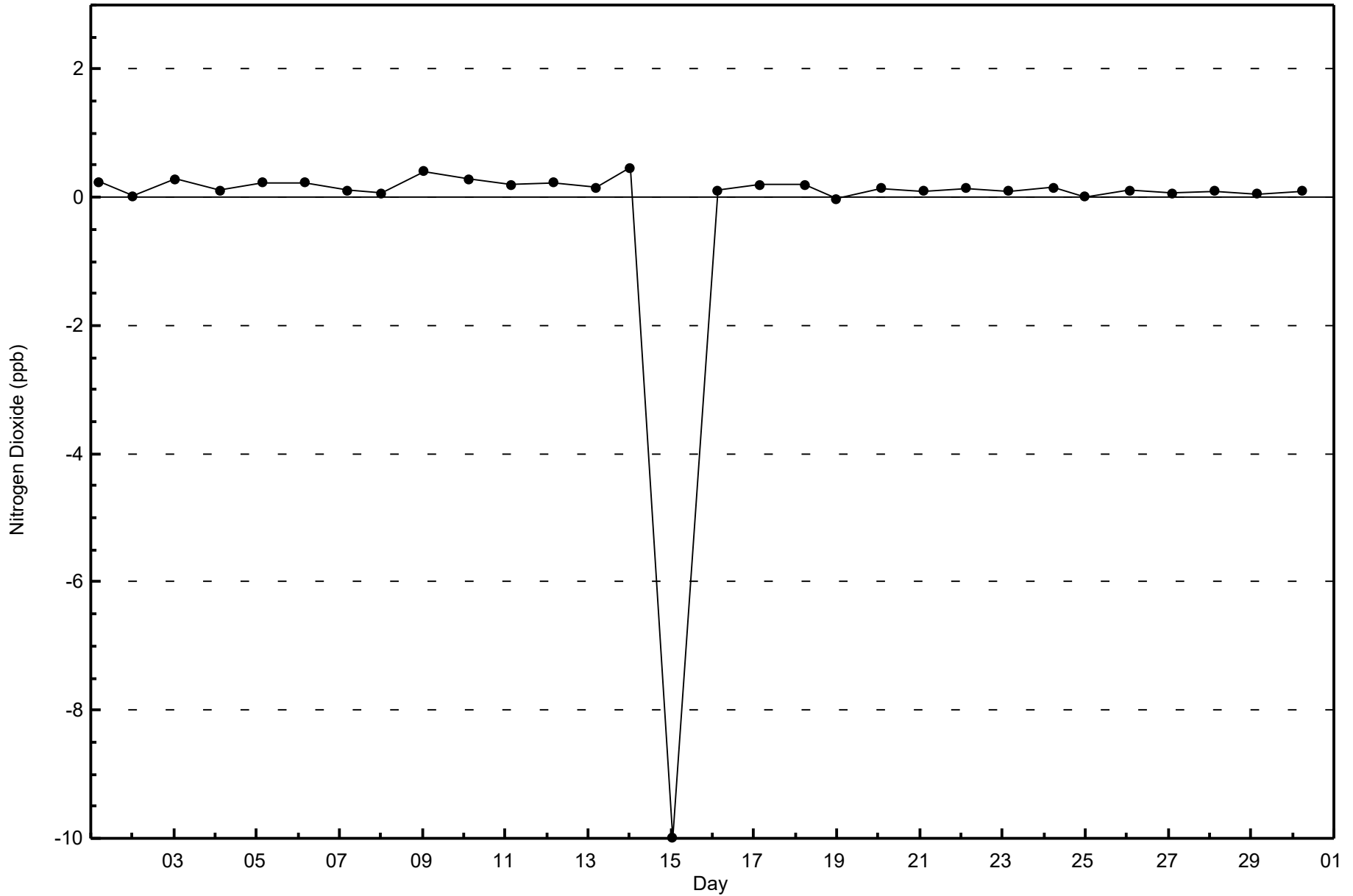
Total Number of Hours: 720

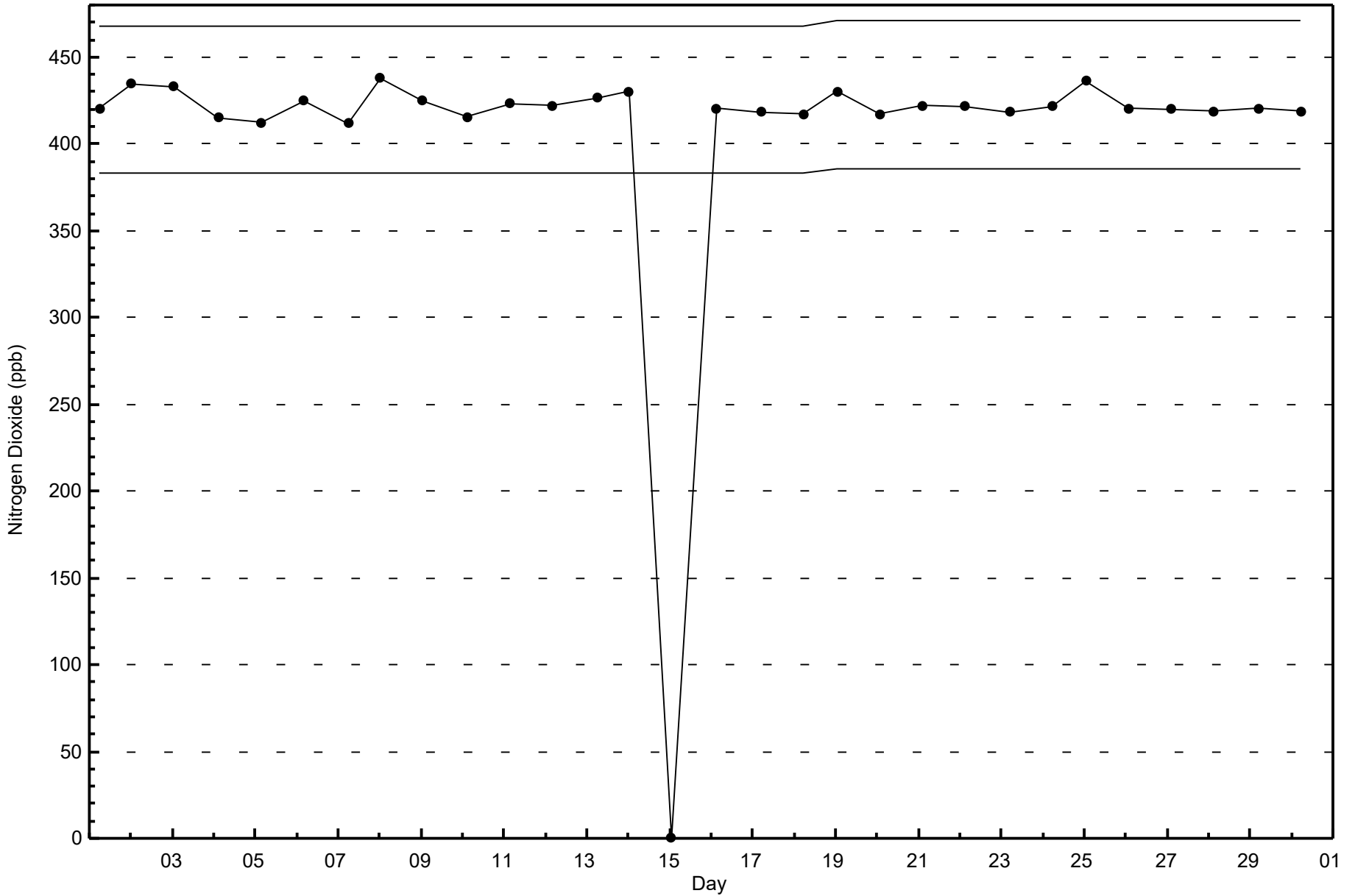


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association
Summary of Hour Averages

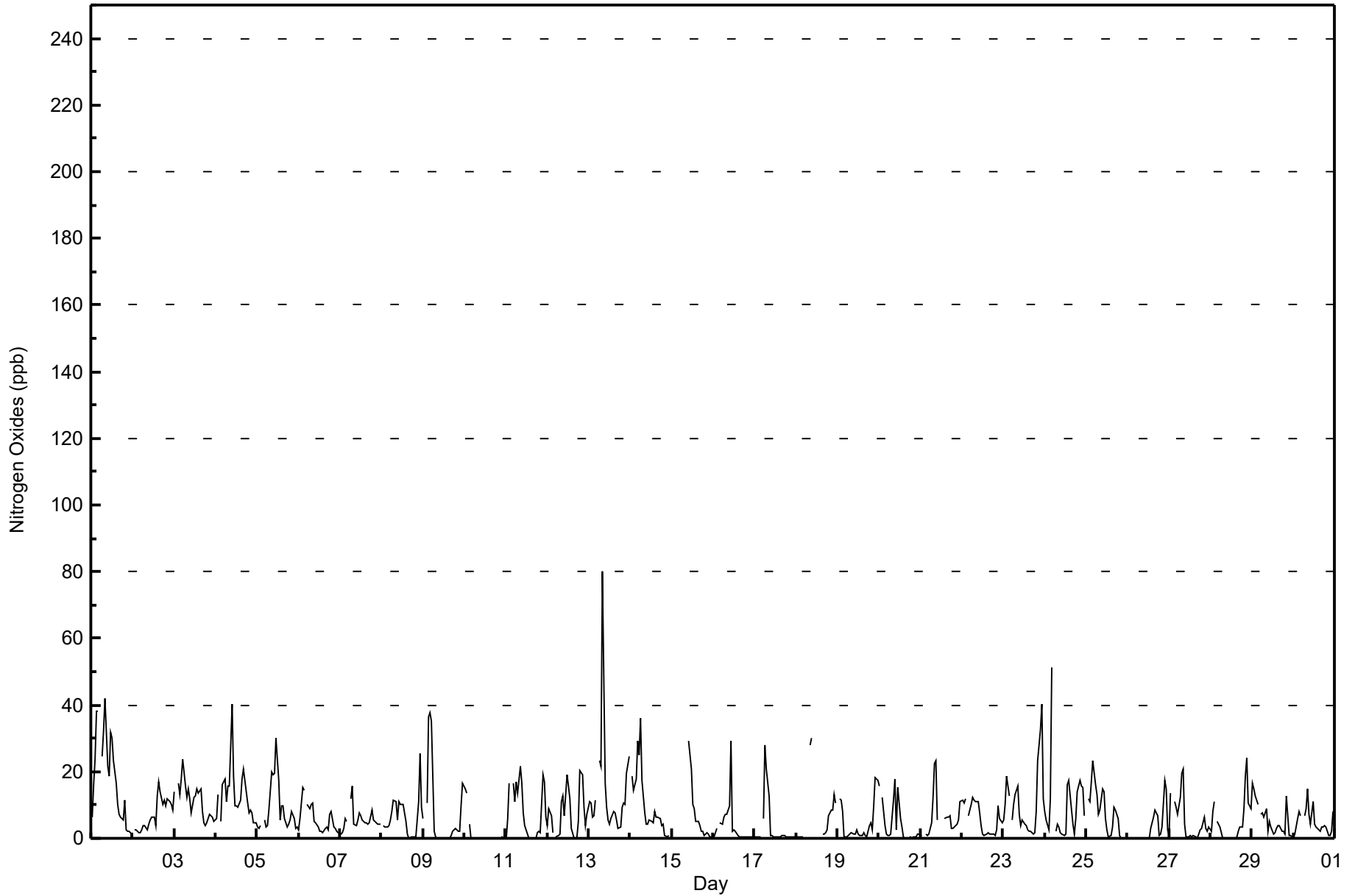
Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - April 2023

Maximum Value: 79.9 ppb on Apr 13 09:00		Maximum Daily Average: 17.9 ppb on Apr 1		Hours in Service: 720																							
Minimum Value: 0.0 ppb on Apr 9 11:00		Minimum Daily Average: 1.5 ppb on Apr 10		Hours of Data: 671																							
Maximum Diurnal Average: 14.0 ppb at hour 9		Minimum Diurnal Average: 3.4 ppb at hour 18		Hours of Missing Data: 49																							
Monthly Average: 7.24 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.2 Q ₁ = 1.3 Median = 4.6 Q ₃ = 10.7 P ₉₀ = 17.2 P ₉₉ = 37.9		Hours of Calibration: 34																							
				Percent Operational Time: 97.9																							
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-Apr	6.3	16.0	23.7	38.1	38.1	Z	24.4	32.4	41.9	21.4	18.6	31.8	30.1	23.5	16.7	10.1	7.2	6.6	5.5	11.4	2.6	2.2	2.0	1.4	17.9	41.9	
2-Apr	Z	2.4	2.4	1.8	1.9	2.3	3.9	4.0	2.6	4.2	5.5	6.2	6.3	4.0	12.8	17.0	13.9	10.1	11.5	9.7	11.7	10.9	10.3	8.3	7.1	17.0	
3-Apr	13.8	Z	16.6	13.0	17.7	23.6	15.8	12.5	14.6	11.9	7.5	12.4	12.6	14.8	13.7	14.9	8.1	4.5	3.9	4.6	7.3	6.7	6.2	5.0	11.4	23.6	
4-Apr	6.0	13.0	Z	5.1	16.0	17.7	11.0	15.7	15.7	40.4	18.8	9.9	9.6	9.3	11.6	18.0	20.6	17.2	10.8	7.6	8.6	7.4	4.8	4.7	13.0	40.4	
5-Apr	3.6	2.8	3.6	Z	5.7	3.3	3.6	8.7	20.0	19.1	19.5	30.0	17.5	5.5	9.8	9.7	5.9	3.3	4.3	5.7	7.9	6.1	3.1	3.3	8.8	30.0	
6-Apr	2.6	6.0	15.2	14.6	Z	10.0	8.8	10.2	10.7	5.2	4.7	3.5	2.3	1.9	1.9	3.1	3.3	2.6	7.2	7.9	3.4	2.8	2.2	1.5	5.7	15.2	
7-Apr	1.5	1.6	2.9	6.1	4.9	Z	11.7	15.8	4.2	3.8	5.6	7.4	6.7	5.5	4.8	4.5	4.1	4.5	8.4	5.4	5.0	4.7	4.4	4.1	5.5	15.8	
8-Apr	Z	3.9	3.6	3.4	3.6	5.4	7.9	11.5	11.1	5.6	11.2	10.1	10.1	7.7	5.2	1.2	0.1	0.4	0.6	0.6	0.5	11.2	25.4	9.1	6.5	25.4	
9-Apr	5.9	Z	10.8	36.3	37.8	35.3	2.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.0	2.7	3.1	1.9	2.3	9.9	16.7	7.3	37.8	
10-Apr	15.0	13.6	Z	4.2	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	0.1	0.1	0.3	0.1	1.5	15.0	
11-Apr	0.1	6.1	16.4	Z	16.5	11.0	16.9	13.7	21.6	16.6	7.5	3.6	1.2	0.0	0.0	0.0	0.0	0.0	1.6	2.3	1.7	19.1	17.0	6.3	7.8	21.6	
12-Apr	3.6	8.9	6.7	1.9	Z	0.5	0.7	1.3	11.0	12.5	6.8	19.1	15.8	12.0	3.1	0.0	0.0	0.4	5.0	20.2	19.1	9.4	3.8	7.1	7.3	20.2	
13-Apr	11.1	10.5	6.2	6.8	11.5	Z	23.2	21.6	79.9	16.7	9.4	5.7	4.0	6.0	8.1	7.6	5.7	3.1	3.4	9.5	10.4	10.2	19.7	24.4	13.7	79.9	
14-Apr	Z	18.9	14.4	17.8	29.2	25.0	36.0	17.4	7.5	4.1	4.3	5.7	5.0	4.5	7.9	6.2	6.3	6.0	3.9	4.3	0.7	0.5	0.8	UO	10.3	36.0	
15-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	29.4	20.6	10.1	8.9	5.2	5.2	3.8	2.2	2.3	0.9	1.6	1.3	0.4	0.4	--	29.4
16-Apr	0.6	1.5	2.9	Z	4.7	4.0	6.4	7.0	7.3	9.8	29.4	2.1	2.4	1.9	0.8	0.5	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.3	3.7	29.4	
17-Apr	0.3	0.3	0.3	0.5	Z	6.1	28.1	20.7	12.6	0.7	0.7	0.6	0.5	0.6	0.5	0.6	0.7	0.8	0.6	0.6	0.5	0.4	0.4	0.2	3.4	28.1	
18-Apr	0.2	0.4	0.2	0.2	0.3	Z	0.9	PF	28.1	30.2	C	C	C	C	C	1.1	1.1	1.8	2.4	6.7	8.6	8.3	13.0	10.8	--	30.2	
19-Apr	Z	12.0	11.6	8.2	0.4	0.5	1.0	1.4	1.9	1.5	1.3	2.6	1.2	0.8	1.0	1.7	0.7	0.6	4.0	4.6	2.5	9.6	18.2	17.4	4.6	18.2	
20-Apr	15.5	Z	12.4	3.6	1.3	1.1	0.9	1.3	11.2	17.7	2.4	15.2	5.9	3.3	0.6	0.1	0.1	0.1	0.2	0.1	0.4	0.6	1.1	1.4	4.2	17.7	
21-Apr	0.9	0.8	Z	1.1	0.8	1.4	4.8	12.2	22.6	23.4	5.4	M	M	M	5.7	6.3	6.4	6.6	3.1	3.0	3.8	4.3	5.7	11.0	6.5	23.4	
22-Apr	11.5	10.6	11.9	Z	6.8	10.3	12.3	11.6	11.0	10.9	7.8	3.9	1.1	0.8	1.1	1.7	1.5	1.4	1.5	0.9	2.7	9.9	5.8	4.8	6.2	12.3	
23-Apr	5.6	10.3	18.5	12.7	Z	5.4	10.1	13.1	15.5	7.3	3.8	5.6	4.3	3.9	2.5	2.2	2.2	1.3	1.8	8.0	23.3	32.7	40.2	12.0	10.5	40.2	
24-Apr	7.9	5.6	2.7	11.8	51.2	Z	2.1	4.2	3.4	1.8	1.5	1.0	1.4	16.2	17.4	8.7	4.4	1.3	6.1	14.1	17.3	15.7	15.3	6.7	9.5	51.2	
25-Apr	Z	12.0	11.1	17.1	23.4	16.2	13.3	7.2	8.3	14.7	13.8	6.0	2.7	0.5	0.9	3.3	9.5	8.4	6.0	0.9	0.2	0.2	0.1	0.1	7.6	23.4	
26-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2.8	4.6	6.3	8.5	6.7	0.8	1.1	3.3	17.2	14.9	2.8	3.0	17.2	
27-Apr	1.0	13.7	Z	10.8	9.2	7.3	12.2	19.4	20.7	4.4	0.5	0.5	0.7	0.4	0.7	0.6	0.1	1.1	2.3	3.0	6.2	3.1	1.9	3.6	5.4	20.7	
28-Apr	2.2	8.2	10.8	Z	5.1	3.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.9	3.3	3.6	9.1	18.8	24.1	10.6	8.7	4.9	24.1	
29-Apr	16.4	14.9	12.7	10.4	Z	7.2	7.6	6.4	8.7	2.3	5.1	3.4	1.3	1.7	2.8	3.7	3.7	2.0	2.0	1.3	12.9	0.8	1.0	0.6	5.6	16.4	
30-Apr	0.3	1.2	6.0	8.0	6.9	Z	6.8	9.1	14.9	7.3	4.2	11.0	4.1	3.5	3.1	2.3	3.2	3.2	3.7	3.6	0.8	0.7	2.0	8.0	4.9	14.9	
																								Diurnal Average			
																								Diurnal Maximum			
																								5.5 7.8 9.0 9.7 12.2 8.6 9.4 9.9 14.0 10.1 7.7 7.8 5.6 5.0 4.9 4.6 4.1 3.4 3.7 5.0 6.1 7.4 8.0 6.2			
																								16.4 18.9 23.7 38.1 51.2 35.3 36.0 32.4 79.9 40.4 29.4 31.8 30.1 23.5 17.4 18.0 20.6 17.2 11.5 20.2 23.3 32.7 40.2 24.4			
																								Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation PF - Power Failure			



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	629	93.74	93.74
21 - 40	39	5.81	99.55
41 - 80	3	0.45	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 671

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	52	27	27	15	18	50	59	131	80	13	17	25	21	17	38	33	623
21 - 40	14	4	1	0	1	2	2	6	1	2	1	0	0	0	2	3	39
11 - 80	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
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
Totals	67	33	28	15	19	52	61	137	81	15	18	25	21	17	40	36	665

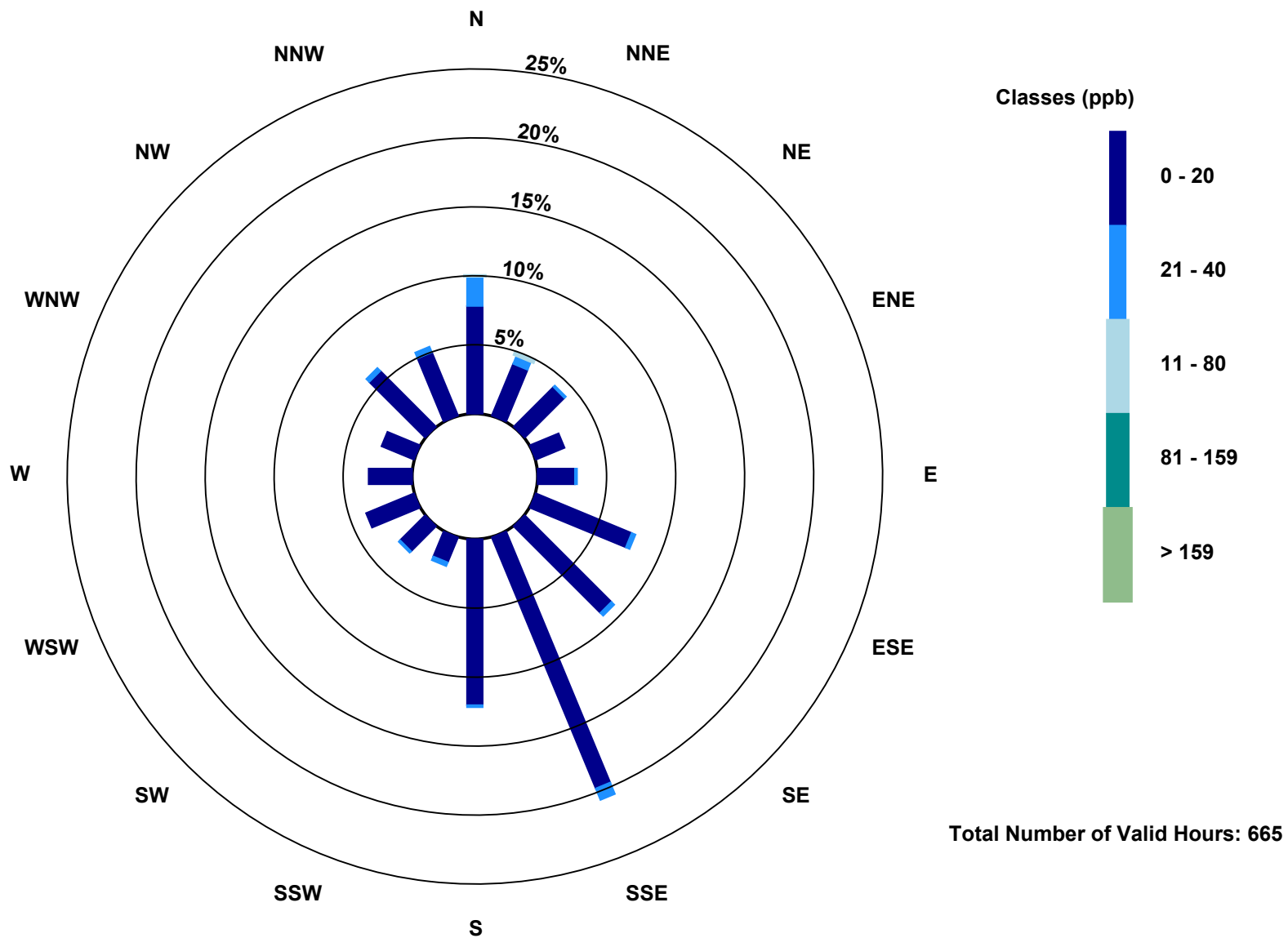
Total Number of Valid Hours: 665

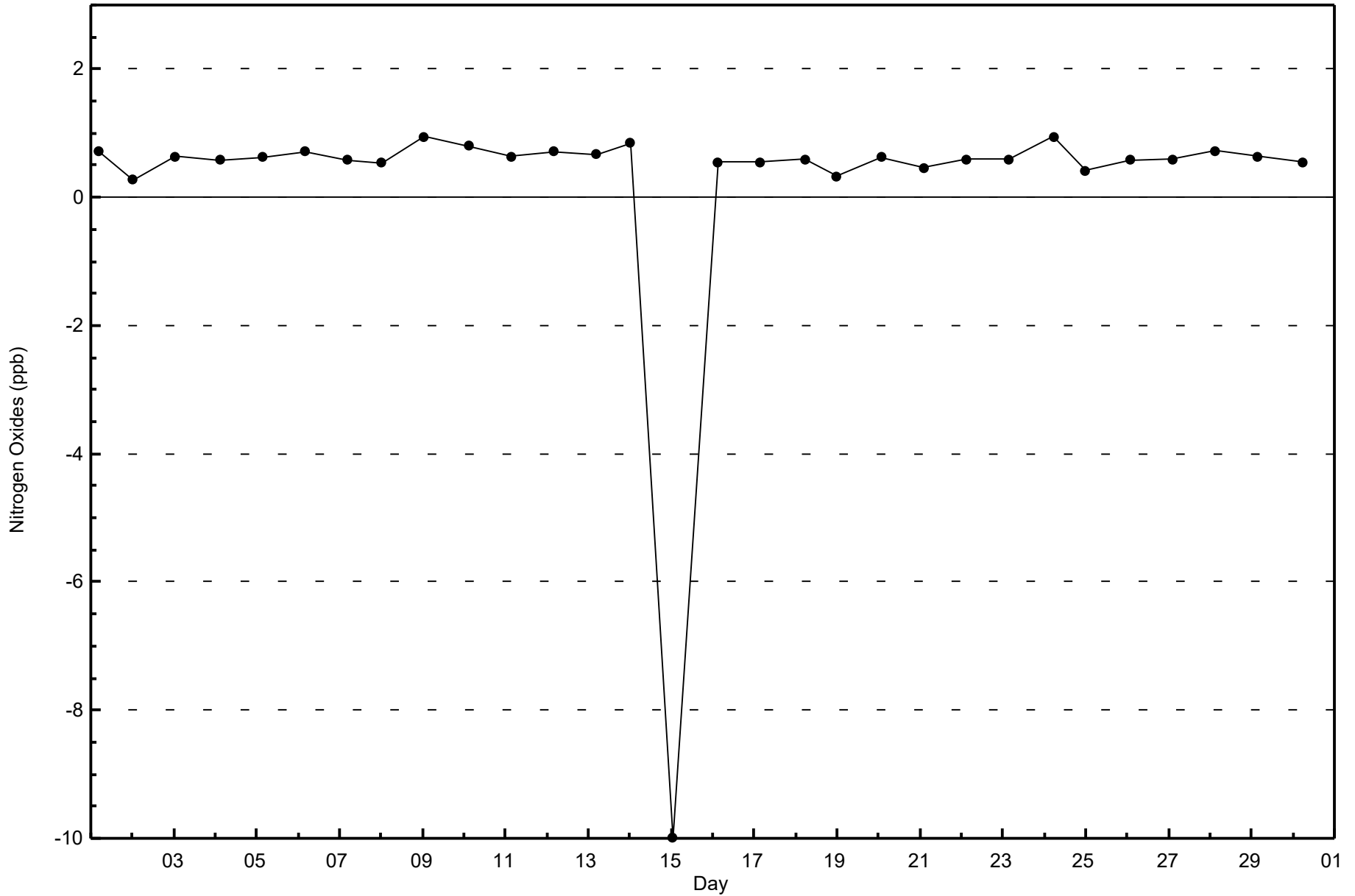
Total Number of Hours: 720

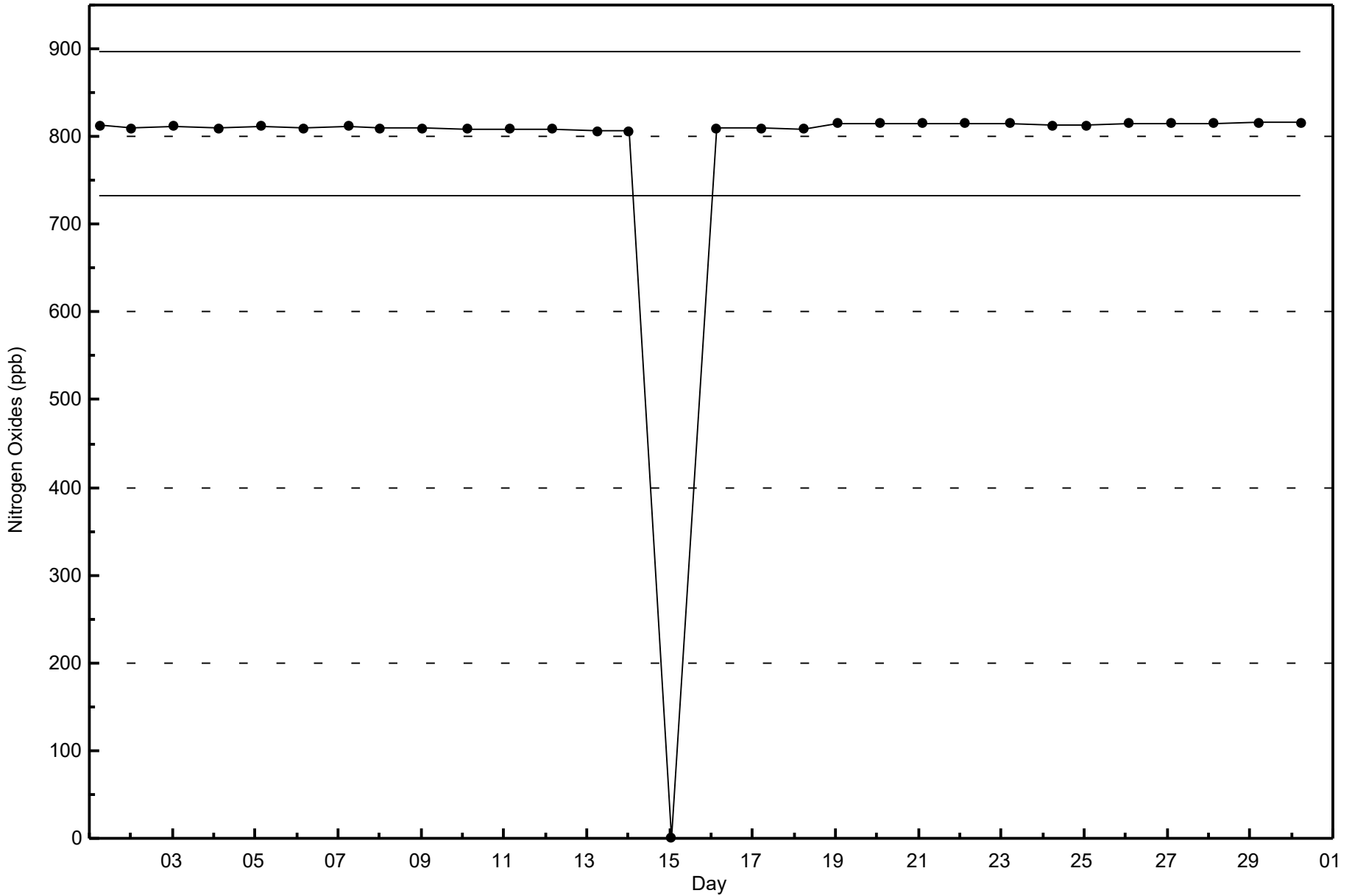


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Fort McKay - Bertha Ganter - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 49.3 ppb on Apr 16 15:00	Maximum Daily Average: 43.7 ppb on Apr 10		Hours of Data:	682
Minimum Value: 0.8 ppb on Apr 1 05:00	Minimum Daily Average: 23.2 ppb on Apr 26		Hours of Missing Data:	38
Maximum Diurnal Average: 40.6 ppb at hour 17	Minimum Diurnal Average: 20.4 ppb at hour 5		Hours of Calibration:	34
Monthly Average: 31.73 ppb	Percentiles: P ₁ = 4.0 P ₁₀ = 15.6 Q ₁ = 23.7 Median = 33.5 Q ₃ = 41.3 P ₉₀ = 45.6 P ₉₉ = 47.8		Percent Operational Time:	99.4

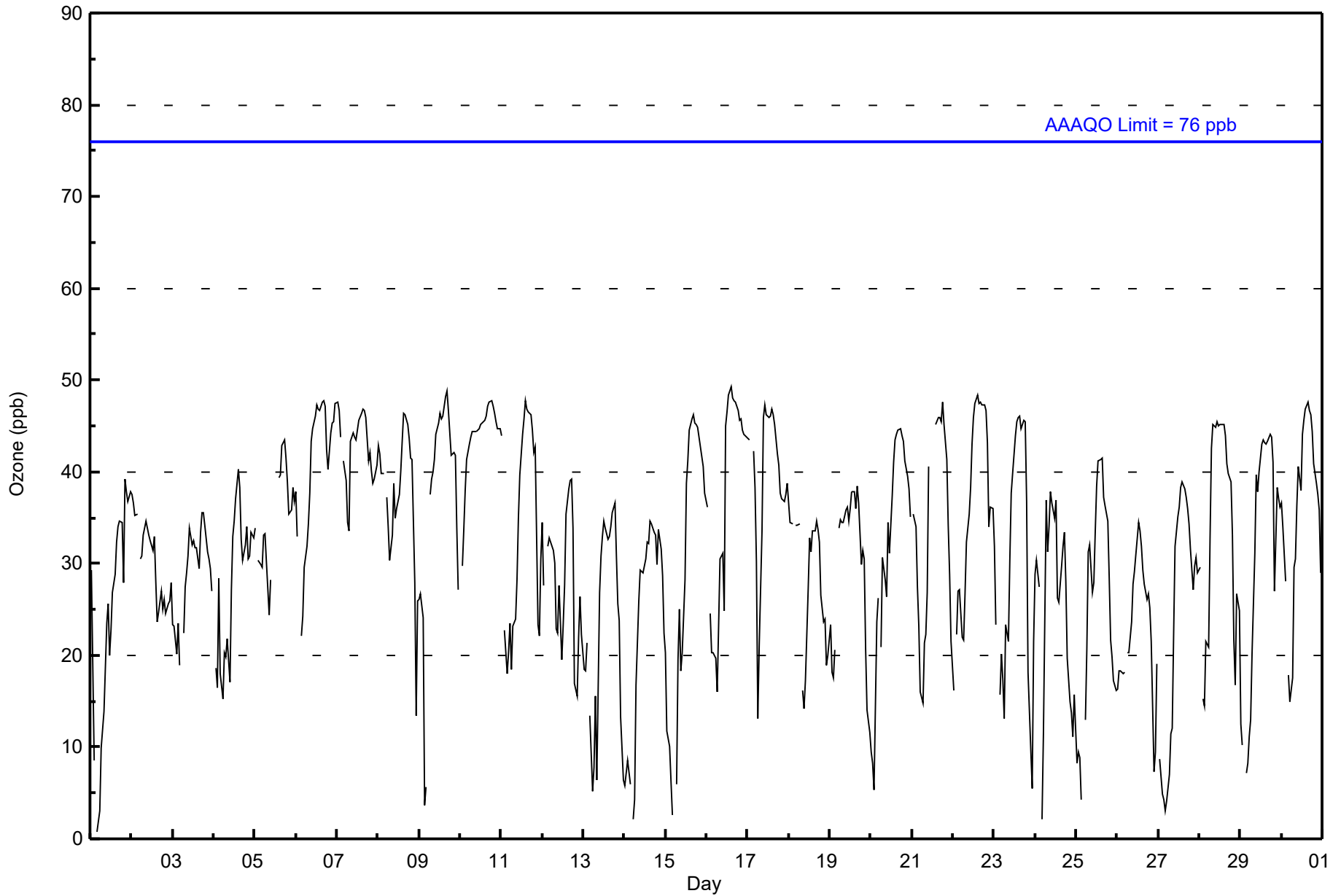
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	29.2	18.9	8.5	Z	0.8	3.0	9.9	11.9	13.9	23.4	25.6	20.0	22.8	26.8	28.9	32.3	34.1	34.7	34.5	27.9	39.2	37.8	36.8	37.8	24.3	39.2																							
2-Apr	37.5	36.7	35.2	35.3	Z	30.5	30.8	33.0	34.7	33.9	33.1	32.5	31.4	33.0	28.1	23.6	24.7	27.0	25.1	26.1	24.5	25.6	26.0	27.9	30.3	37.5																							
3-Apr	23.3	23.2	20.2	23.4	18.9	Z	22.4	27.5	29.0	30.8	33.8	32.1	32.4	31.7	31.8	29.4	33.3	35.6	35.5	34.2	31.3	30.4	29.4	27.0	29.0	35.6																							
4-Apr	Z	18.6	16.5	28.4	18.0	15.2	20.3	19.9	21.8	17.0	27.1	33.0	34.6	37.0	40.3	38.3	32.6	30.4	32.0	34.0	30.5	30.9	33.4	32.8	27.9	40.3																							
5-Apr	33.9	Z	30.4	29.8	29.6	33.1	33.2	30.2	24.4	28.3	C	C	C	C	39.4	39.6	42.8	43.5	41.5	39.0	35.4	35.9	38.3	36.8	35.0	43.5																							
6-Apr	37.9	32.9	Z	22.2	24.3	29.6	31.9	34.4	37.6	43.4	44.7	46.1	47.4	46.9	46.6	47.6	47.8	47.1	42.3	40.2	44.2	45.3	45.5	47.4	40.6	47.8																							
7-Apr	47.6	46.6	43.7	Z	41.2	39.1	34.5	33.6	43.4	44.3	43.8	43.5	44.5	45.6	46.4	46.8	46.7	45.9	41.2	42.1	40.1	38.7	39.2	40.7	42.6	47.6																							
8-Apr	42.9	42.0	39.7	39.8	Z	37.2	34.0	30.4	33.1	38.8	34.9	35.9	37.5	40.1	43.3	46.4	46.3	45.1	43.6	41.5	41.4	28.0	13.4	25.9	37.4	46.4																							
9-Apr	26.0	26.7	24.1	3.7	5.7	Z	37.5	39.1	40.0	41.4	44.0	45.3	46.4	45.7	46.1	48.2	48.8	46.6	44.2	41.8	42.0	41.8	33.8	27.2	36.8	48.8																							
10-Apr	Z	29.7	33.7	38.0	41.3	43.1	43.7	44.3	44.4	44.5	44.6	44.6	45.1	45.4	45.6	46.1	47.2	47.7	47.7	47.1	46.4	45.5	44.8	44.7	43.7	47.7																							
11-Apr	43.9	Z	22.8	18.0	20.4	23.5	18.4	23.2	23.9	28.1	34.9	39.6	44.1	45.7	47.8	46.8	46.5	46.1	44.5	42.2	42.8	23.4	22.1	30.5	33.9	47.8																							
12-Apr	34.5	27.7	Z	31.9	32.8	32.3	31.5	30.0	22.8	22.4	27.7	19.5	23.3	27.6	35.3	38.1	39.1	39.3	33.9	16.9	15.6	22.0	26.3	22.3	28.4	39.3																							
13-Apr	18.5	18.3	21.4	Z	13.4	5.3	7.7	15.5	6.5	26.9	30.8	32.9	34.7	33.9	32.6	32.9	34.1	35.6	36.6	30.9	25.7	23.7	13.3	6.3	23.4	36.6																							
14-Apr	5.8	7.1	8.6	6.0	Z	2.1	4.2	16.8	26.0	29.3	29.1	29.0	30.6	32.3	32.2	34.6	34.4	33.4	33.1	29.9	33.8	31.6	28.7	22.4	23.5	34.6																							
15-Apr	20.2	11.7	10.1	6.3	2.6	Z	6.0	19.5	25.0	18.3	20.3	28.2	38.8	41.1	44.6	45.7	46.2	45.3	45.1	44.9	42.7	41.6	40.5	37.7	29.7	46.2																							
16-Apr	36.1	Z	24.5	20.3	20.3	19.7	16.0	23.1	30.5	31.1	24.9	44.9	46.5	48.3	49.3	48.0	47.7	47.5	46.7	45.5	45.7	44.6	44.1	43.8	36.9	49.3																							
17-Apr	43.6	43.5	Z	42.3	38.3	30.2	13.1	21.1	33.5	46.0	47.3	46.2	46.0	46.0	46.8	46.2	45.2	41.9	40.8	37.6	37.1	36.8	37.5	38.7	39.4	47.3																							
18-Apr	36.7	34.5	34.4	Z	34.2	34.1	34.3	PF	16.2	14.2	17.2	27.3	32.9	31.3	33.6	33.5	34.6	33.8	32.4	26.6	23.7	24.0	18.9	20.0	28.6	36.7																							
19-Apr	23.4	18.1	17.6	20.6	Z	33.8	34.8	34.5	34.5	35.8	36.1	34.7	35.9	37.8	37.8	36.0	38.5	36.7	29.9	31.4	30.5	20.8	14.1	11.6	29.8	38.5																							
20-Apr	9.5	8.3	5.3	23.7	26.3	Z	20.9	30.6	28.2	26.3	34.5	31.1	37.4	41.0	43.5	44.1	44.5	44.7	43.9	43.3	41.2	39.6	38.1	35.1	32.2	44.7																							
21-Apr	Z	35.5	34.0	27.5	23.2	16.0	14.9	21.3	22.3	26.9	40.6	M	M	M	45.2	46.0	45.9	45.4	47.6	45.1	41.3	34.2	28.9	21.6	33.2	47.6																							
22-Apr	16.1	Z	22.2	27.0	27.2	21.9	21.6	26.7	32.3	35.4	38.4	43.0	45.9	47.4	48.3	47.4	47.6	47.3	47.3	46.7	43.2	34.0	36.2	36.0	36.5	48.3																							
23-Apr	31.9	23.4	Z	15.6	20.1	17.3	13.1	23.4	21.5	30.3	37.7	39.8	43.9	45.5	45.9	46.1	44.7	45.6	45.5	36.8	18.1	9.6	5.5	21.6	29.7	46.1																							
24-Apr	28.8	30.4	27.5	Z	2.1	11.4	36.9	31.2	34.1	37.8	36.6	34.9	37.0	26.3	25.8	29.7	31.9	33.4	28.1	19.7	14.9	13.7	11.1	15.7	26.0	37.8																							
25-Apr	8.2	9.5	8.8	4.3	Z	12.9	20.6	31.2	32.1	26.9	27.9	33.5	38.4	41.2	41.4	41.5	37.2	36.4	34.6	28.4	21.7	19.8	17.3	16.1	25.7	41.5																							
26-Apr	16.3	18.4	18.4	18.1	18.2	Z	20.3	20.3	23.7	27.8	29.2	30.9	34.4	33.6	31.9	29.3	27.7	26.0	26.7	25.2	21.5	7.3	9.5	19.1	23.2	34.4																							
27-Apr	Z	8.7	4.9	4.2	3.1	4.1	7.0	11.5	12.0	22.3	31.9	35.1	36.1	38.2	38.9	38.1	37.2	36.1	34.3	31.6	27.2	29.7	30.6	29.0	24.0	38.9																							
28-Apr	29.6	Z	15.3	14.5	21.5	20.9	32.6	42.5	45.1	44.9	45.5	45.0	45.2	45.2	45.2	43.9	40.9	39.7	38.8	33.1	21.7	16.7	26.7	24.8	33.9	45.5																							
29-Apr	12.6	10.2	Z	7.2	8.2	11.1	12.9	20.1	31.1	39.7	37.9	40.0	43.1	43.5	43.2	43.0	43.3	44.1	43.7	41.1	27.0	38.2	37.1	36.1	31.1	44.1																							
30-Apr	36.6	34.1	28.1	Z	17.9	15.0	17.5	29.6	30.6	36.3	40.5	38.0	44.1	45.6	46.9	47.6	46.7	46.3	44.4	40.9	38.7	37.5	35.9	29.0	36.0	47.6																							
																								28.1	24.6	22.2	21.2	20.4	21.7	22.8	26.8	28.5	31.7	34.5	36.0	38.6	39.4	40.4	40.6	40.6	40.3	38.9	35.7	33.0	30.3	28.8	28.8	Diurnal Average	
																								47.6	46.6	43.7	42.3	41.3	43.1	43.7	44.3	45.1	46.0	47.3	46.2	47.4	48.3	49.3	48.2	48.8	47.7	47.7	47.1	46.4	45.5	45.5	47.4	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
Hourly Averages

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	124	18.18	18.18
21 - 50	558	81.82	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	28	10	3	0	0	2	6	9	6	3	4	3	6	9	16	16	121
21 - 50	43	26	26	16	19	51	58	128	71	11	14	22	15	7	26	21	554
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
Totals	71	36	29	16	19	53	64	137	77	14	18	25	21	16	42	37	675

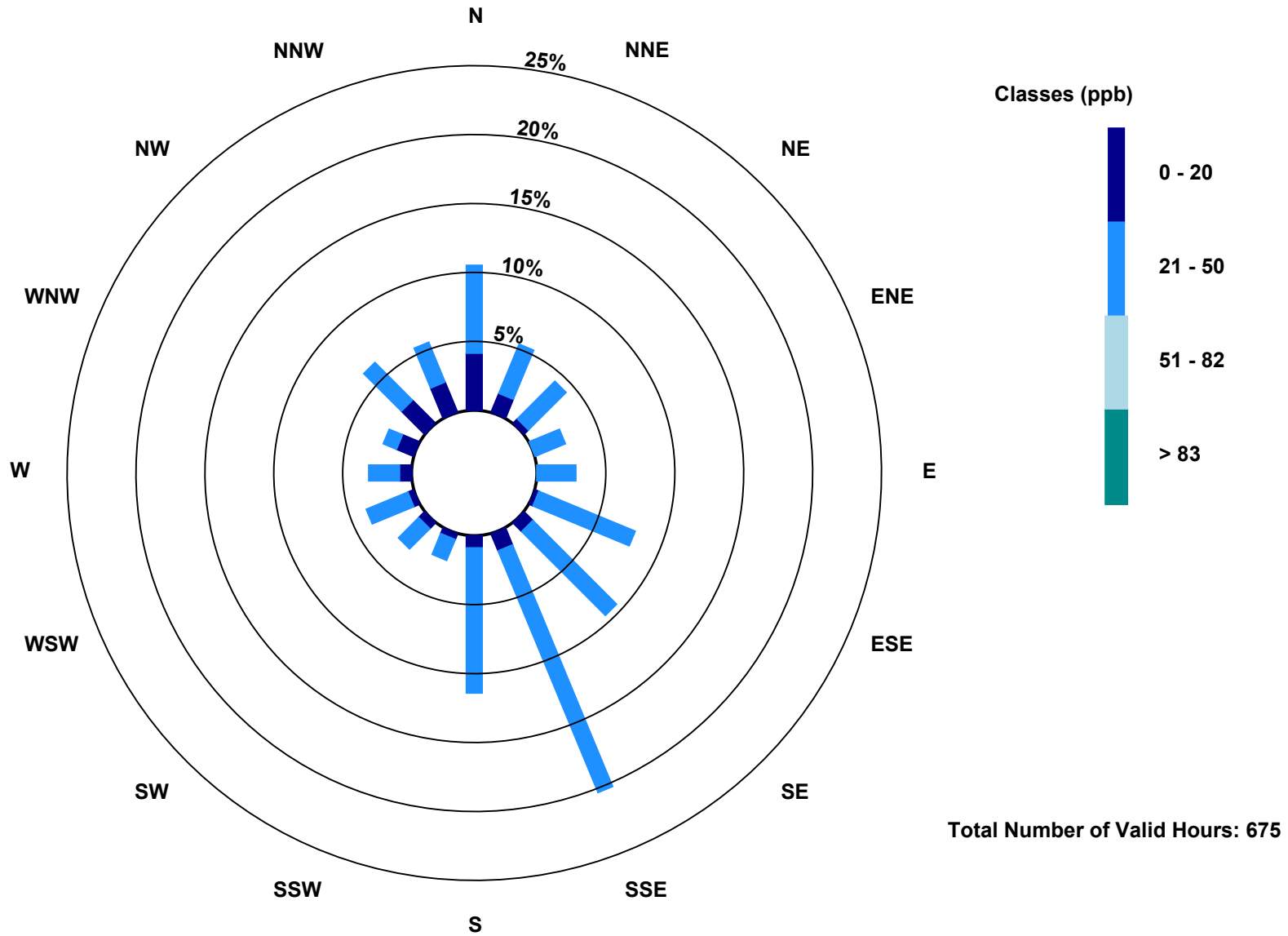
Total Number of Valid Hours: 675

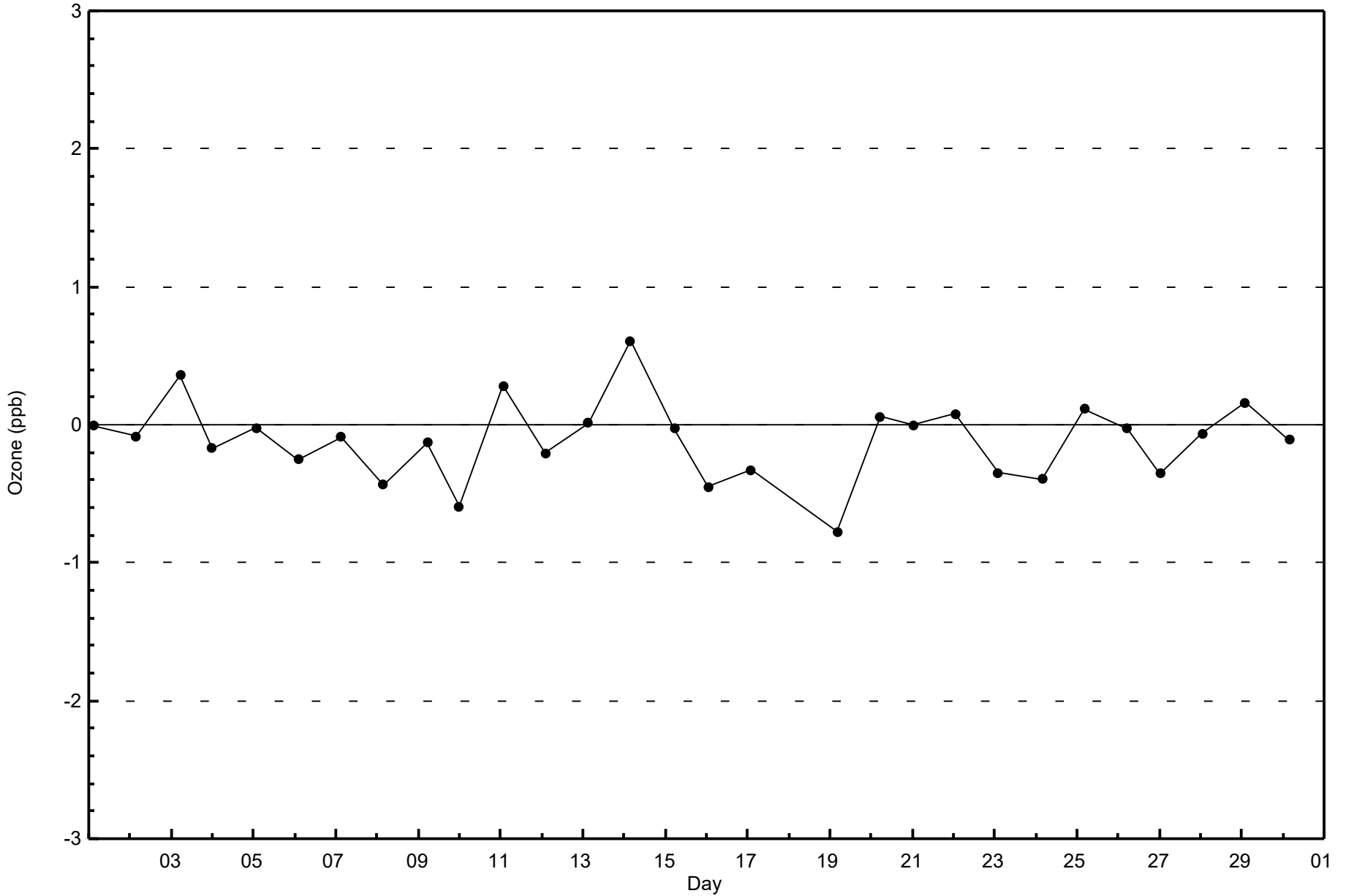
Total Number of Hours: 720

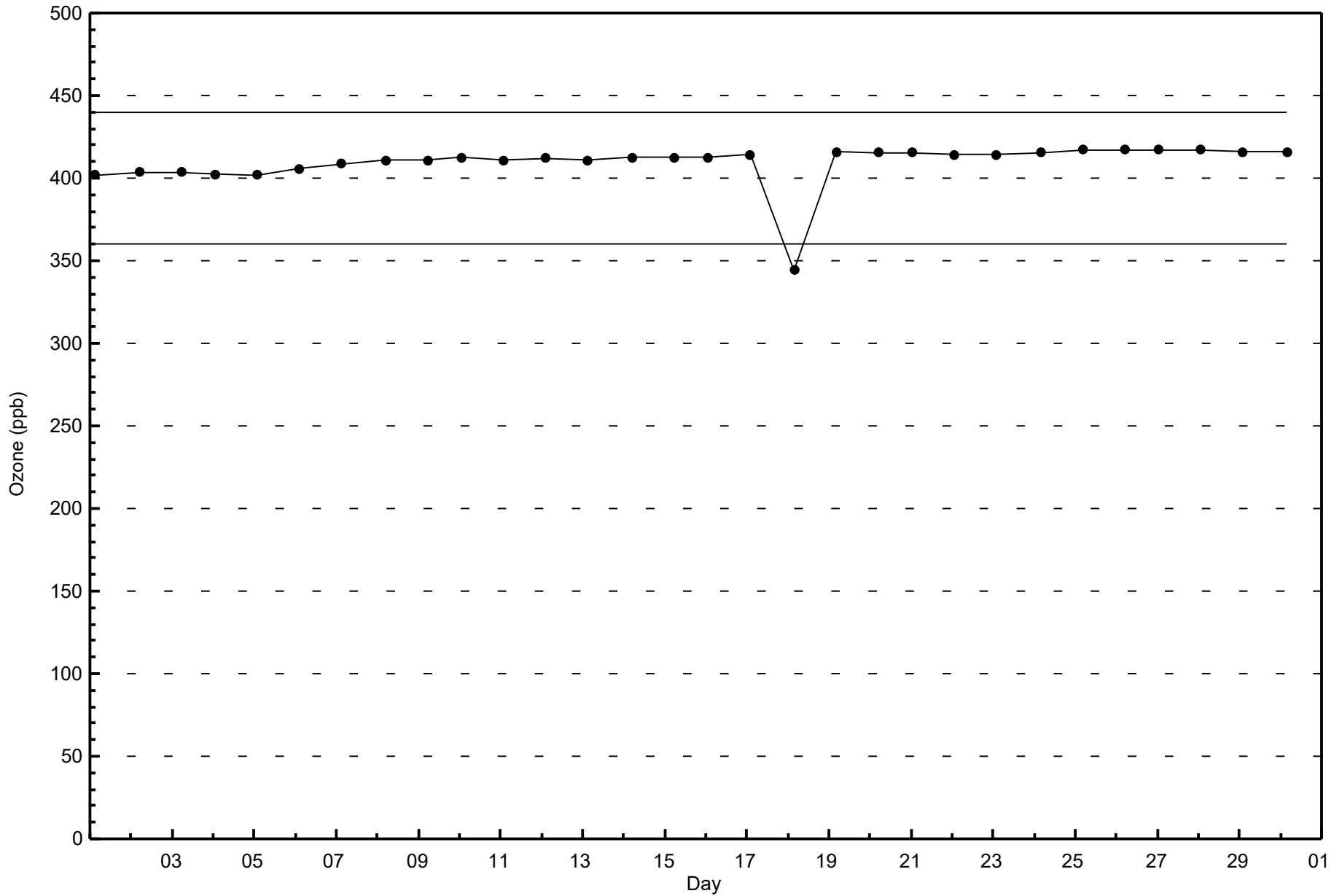


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Fort McKay - Bertha Ganter









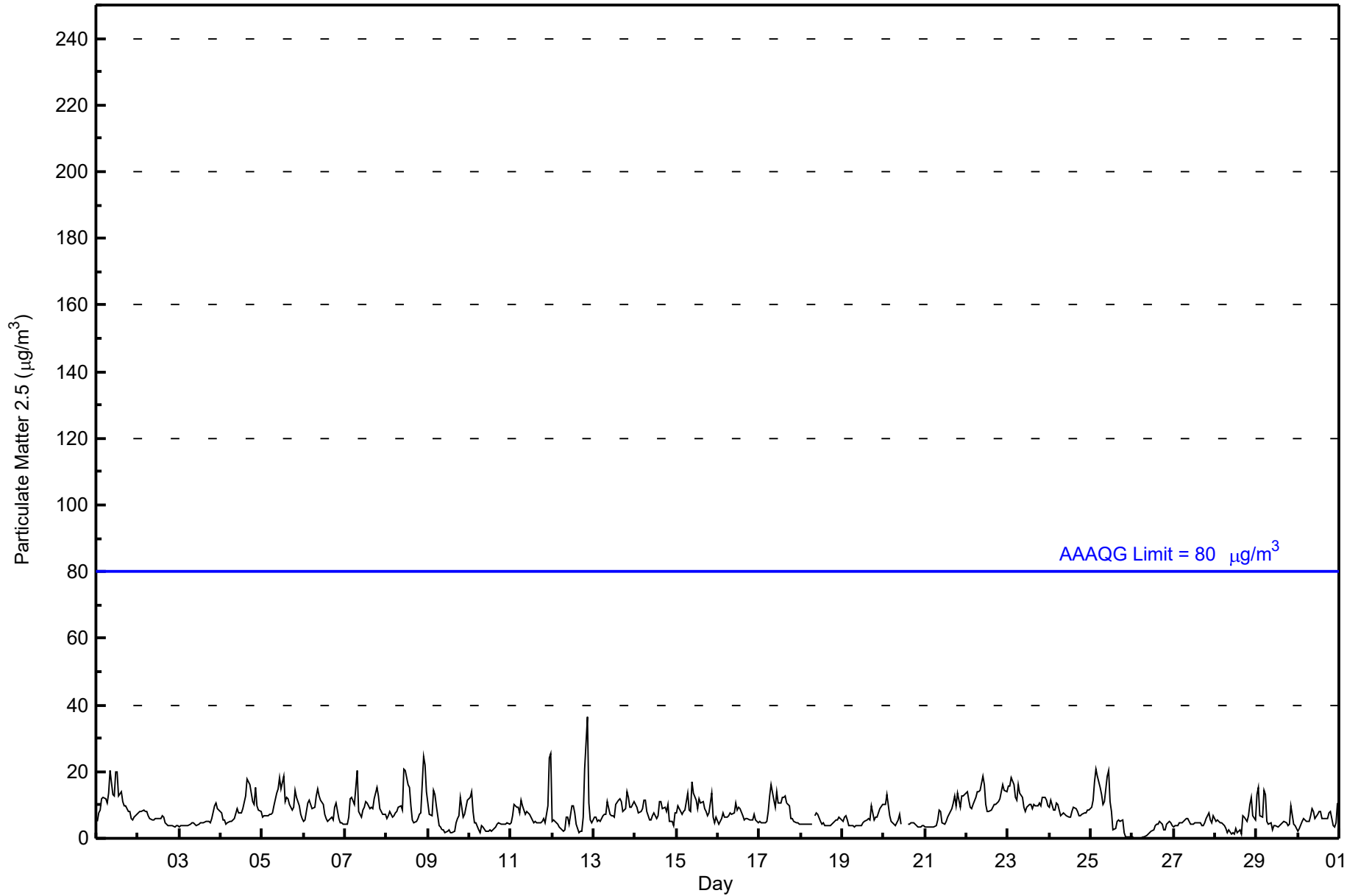
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Fort McKay - Bertha Ganter - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																																									
Maximum Value: 36.5 µg/m ³ on Apr 12 21:00		Maximum Daily Average: 12.1 µg/m ³ on Apr 22				Hours of Data:		716																																									
Minimum Value: 0.1 µg/m ³ on Apr 26 06:00		Minimum Daily Average: 2.3 µg/m ³ on Apr 26				Hours of Missing Data:		4																																									
Maximum Diurnal Average: 8.6 µg/m ³ at hour 21		Minimum Diurnal Average: 6.9 µg/m ³ at hour 19				Hours of Calibration:		3																																									
Monthly Average: 7.56 µg/m ³		Percentiles: P ₁ = 0.5 P ₁₀ = 3.5 Q ₁ = 4.6 Median = 6.6 Q ₃ = 9.8 P ₉₀ = 12.9 P ₉₉ = 20.6				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-Apr	5.1	7.8	8.7	12.0	12.5	12.0	10.6	13.7	20.3	13.1	12.8	19.9	20.1	12.7	13.9	11.2	9.6	9.9	8.1	8.2	6.1	5.4	6.4	7.1	11.1	20.3																							
2-Apr	7.7	8.2	8.0	8.3	7.9	7.9	6.9	5.8	5.6	5.5	6.1	5.9	5.9	6.0	6.7	6.4	4.8	3.9	3.6	3.7	3.9	3.6	3.8	3.7	5.8	8.3																							
3-Apr	3.6	4.0	3.8	3.8	3.8	3.9	4.1	4.6	4.5	4.1	3.9	4.4	4.5	4.8	4.7	5.3	5.2	5.0	4.7	5.8	9.6	10.4	9.1	8.6	5.3	10.4																							
4-Apr	7.6	5.5	5.4	4.2	4.7	5.2	5.3	5.5	5.9	9.0	7.5	7.6	7.7	8.8	12.9	17.9	17.0	16.2	10.9	10.1	15.2	9.6	8.4	8.1	9.0	17.9																							
5-Apr	6.5	6.9	7.0	6.6	7.2	7.0	7.8	9.7	13.8	14.8	18.4	14.8	18.8	10.8	12.3	11.7	10.3	8.3	9.3	14.6	12.1	9.9	7.2	5.7	10.5	18.8																							
6-Apr	5.0	5.6	10.5	11.2	10.3	8.9	9.4	12.7	15.0	12.9	11.6	10.1	7.3	6.0	5.2	6.1	6.6	5.7	9.3	10.7	5.8	4.6	4.8	4.3	8.3	15.0																							
7-Apr	4.2	4.1	6.5	11.8	12.4	10.3	15.4	20.3	7.9	6.5	8.6	9.4	11.0	10.4	8.9	9.5	9.1	11.9	15.4	12.9	9.0	8.2	7.1	7.2	9.9	20.3																							
8-Apr	5.8	7.0	8.1	6.3	6.6	7.6	8.1	9.3	9.9	8.5	20.6	20.2	16.1	15.4	9.9	5.5	4.6	5.0	5.9	7.1	7.6	24.4	22.2	14.0	10.7	24.4																							
9-Apr	10.5	7.0	6.7	14.5	13.1	9.8	3.7	3.2	2.6	2.4	1.8	2.1	2.5	1.8	1.8	2.2	4.5	5.7	6.6	12.2	6.5	7.0	9.3	11.5	6.2	14.5																							
10-Apr	12.3	14.2	8.1	4.7	4.6	2.7	1.9	3.7	3.3	2.3	2.3	2.1	2.7	2.1	2.9	3.5	4.4	4.5	4.2	4.3	4.2	4.1	4.5	4.4	4.5	14.2																							
11-Apr	4.5	6.9	10.0	9.4	9.4	7.8	11.5	9.6	7.4	7.9	7.7	7.0	5.6	4.5	4.9	4.8	4.7	4.6	5.0	5.9	4.7	9.8	24.0	25.5	8.5	25.5																							
12-Apr	5.1	5.4	4.7	4.2	3.3	2.8	2.3	2.7	6.2	6.3	4.1	9.7	9.6	7.7	4.1	1.7	1.9	2.1	6.4	20.8	36.5	10.5	5.3	4.7	7.0	36.5																							
13-Apr	6.4	6.2	5.1	5.4	5.2	6.6	7.2	7.3	11.0	7.1	6.8	6.9	6.2	10.3	11.5	11.9	11.2	8.1	9.0	13.8	12.4	9.4	9.1	11.0	8.5	13.8																							
14-Apr	10.2	9.4	7.6	8.0	8.8	11.5	11.6	8.1	5.6	5.6	6.7	7.5	5.9	6.6	11.0	11.0	9.0	9.5	8.0	10.1	5.2	5.2	3.9	7.4	8.1	11.6																							
15-Apr	7.5	9.6	8.0	7.3	8.3	8.7	13.8	8.5	8.1	16.8	13.4	11.4	9.0	11.8	10.6	11.0	9.1	8.2	6.9	7.5	13.4	6.4	4.7	6.3	9.4	16.8																							
16-Apr	4.3	5.3	6.0	7.7	6.4	6.5	6.8	7.7	7.0	7.7	10.6	8.6	9.5	8.8	7.0	5.6	6.1	5.9	5.4	5.4	5.3	7.2	5.7	4.7	6.7	10.6																							
17-Apr	5.0	4.5	4.5	4.8	5.3	8.0	12.9	16.3	11.4	9.2	14.2	10.4	10.5	12.1	12.3	12.6	10.5	9.8	5.9	5.7	5.1	4.8	4.6	4.4	8.5	16.3																							
18-Apr	4.3	4.3	4.2	4.2	4.2	4.3	4.2	PF	6.7	7.6	7.4	5.2	4.2	4.7	4.0	3.7	3.7	3.8	4.3	4.7	5.6	5.6	6.3	6.0	4.9	7.6																							
19-Apr	5.2	6.2	6.8	5.5	3.9	3.8	3.7	3.6	3.7	3.8	3.8	3.9	4.6	5.1	5.3	6.0	5.7	9.8	5.7	6.5	6.2	7.5	8.9	10.1	5.6	10.1																							
20-Apr	10.3	10.0	13.1	6.6	4.9	4.5	4.4	3.9	5.3	7.1	4.3	C	C	C	4.3	4.2	4.5	4.5	4.2	3.9	3.6	3.4	3.9	4.0	5.5	13.1																							
21-Apr	3.5	3.5	3.4	3.4	3.2	3.4	3.9	5.7	8.5	8.0	4.8	4.2	5.2	6.2	7.1	8.8	10.8	12.5	9.6	13.7	9.5	12.6	12.8	12.9	7.4	13.7																							
22-Apr	14.0	11.6	9.4	9.0	10.3	12.4	14.2	13.9	14.2	18.8	16.1	10.0	8.2	8.2	8.4	9.4	10.2	10.2	10.8	11.8	14.2	16.1	14.3	14.1	12.1	18.8																							
23-Apr	15.6	15.9	18.1	16.2	12.3	11.6	16.3	13.6	12.3	9.2	8.1	9.1	10.3	10.0	9.0	10.0	9.8	9.6	10.5	9.8	12.5	12.1	11.3	9.7	11.8	18.1																							
24-Apr	9.4	11.4	8.3	8.3	10.5	10.2	7.0	7.0	7.4	7.2	6.9	6.5	6.4	8.2	9.2	8.9	8.2	6.9	6.6	7.2	7.6	7.7	8.6	8.6	8.1	11.4																							
25-Apr	9.4	11.6	16.9	20.8	18.7	15.4	13.3	10.1	11.1	18.5	20.5	11.2	7.9	2.7	3.0	4.9	5.6	5.3	5.3	1.8	0.5	0.6	0.5	0.5	9.0	20.8																							
26-Apr	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.5	0.9	1.5	1.7	2.0	2.6	3.8	4.2	4.3	5.0	4.4	2.7	2.6	4.2	5.2	4.7	3.8	2.3	5.2																							
27-Apr	3.3	3.7	4.0	4.7	4.9	4.7	5.7	5.9	5.9	5.0	4.2	4.4	4.8	4.6	4.7	4.8	4.0	4.0	4.7	6.0	7.4	5.4	4.7	6.7	4.9	7.4																							
28-Apr	5.2	5.4	5.2	4.6	4.6	3.7	2.9	1.9	2.4	1.2	1.5	1.5	3.1	1.8	2.4	1.1	6.7	6.2	5.0	6.9	10.4	12.1	6.8	5.5	4.5	12.1																							
29-Apr	13.1	15.2	6.7	6.2	14.4	12.9	5.2	4.3	4.6	2.6	3.6	3.9	3.5	3.7	4.4	4.8	5.2	4.8	3.9	4.4	10.0	4.3	3.7	3.1	6.2	15.2																							
30-Apr	2.0	2.8	5.1	5.9	5.3	4.9	4.9	6.6	8.8	8.1	6.0	7.0	8.2	8.0	6.1	5.9	6.0	6.0	7.6	8.2	3.7	3.4	4.6	10.6	6.1	10.6																							
																								6.9	7.3	7.3	7.5	7.6	7.3	7.5	7.8	7.9	7.9	8.2	7.8	7.6	7.2	7.1	7.2	7.1	7.1	6.9	8.2	8.6	7.9	7.7	7.8	Diurnal Average	
																								15.6	15.9	18.1	20.8	18.7	15.4	16.3	20.3	20.3	18.8	20.6	20.2	20.1	15.4	13.9	17.9	17.0	16.2	15.4	20.8	36.5	24.4	24.0	25.5	Diurnal Maximum	
C - Calibration																								PF - Power Failure																									
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	270	37.71	37.71
6 - 15	413	57.68	95.39
16 - 25	31	4.33	99.72
26 - 80	2	0.28	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 716

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	23	6	14	10	8	33	21	21	14	8	12	20	19	13	30	15	267
6 - 15	47	30	14	8	11	19	43	108	70	8	4	5	2	3	12	25	409
16 - 25	2	1	1	0	0	2	1	14	4	0	2	1	0	1	1	0	30
26 - 80	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	72	37	29	18	19	54	65	143	88	16	18	26	23	17	43	40	708

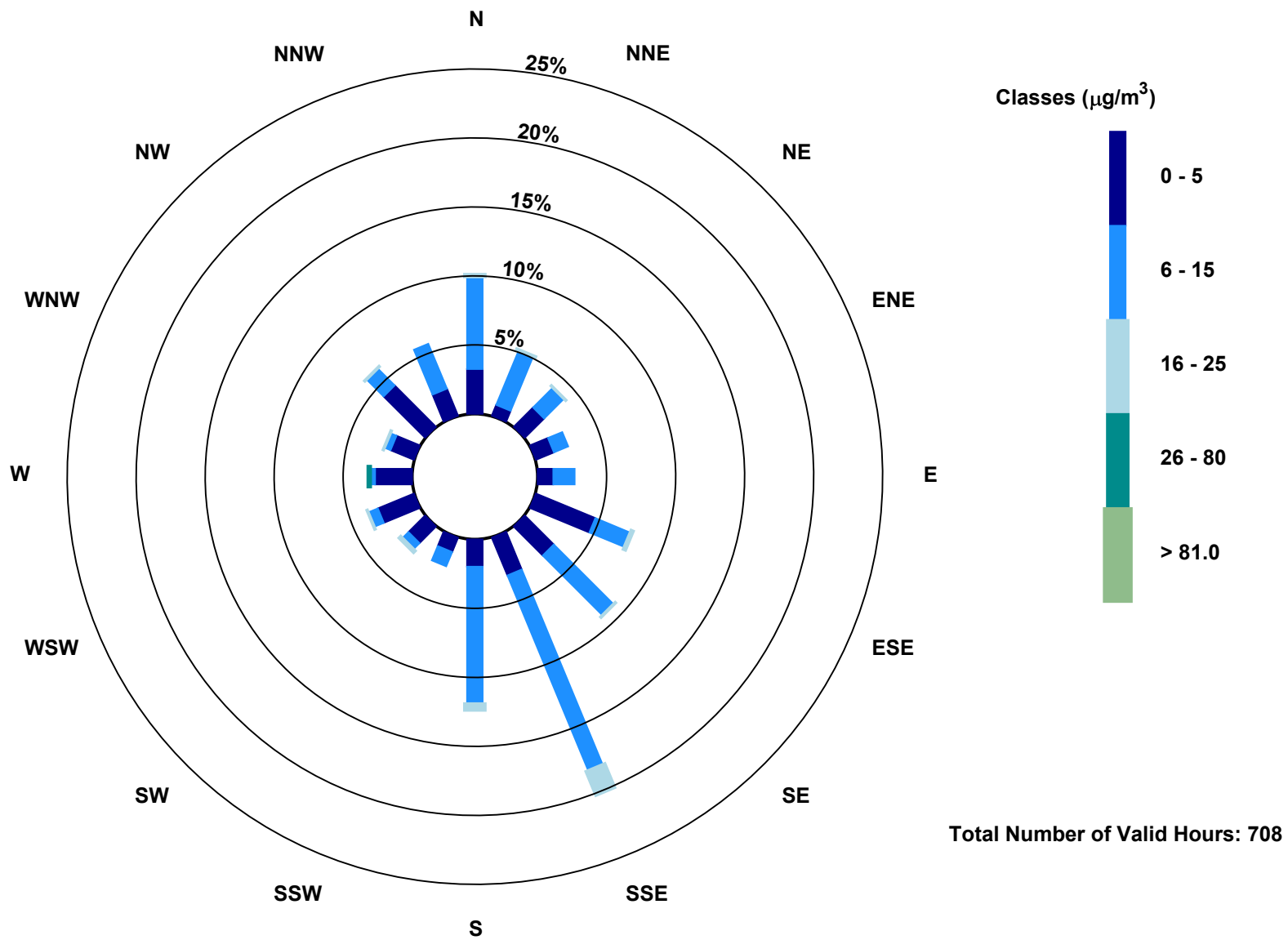
Total Number of Valid Hours: 708

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

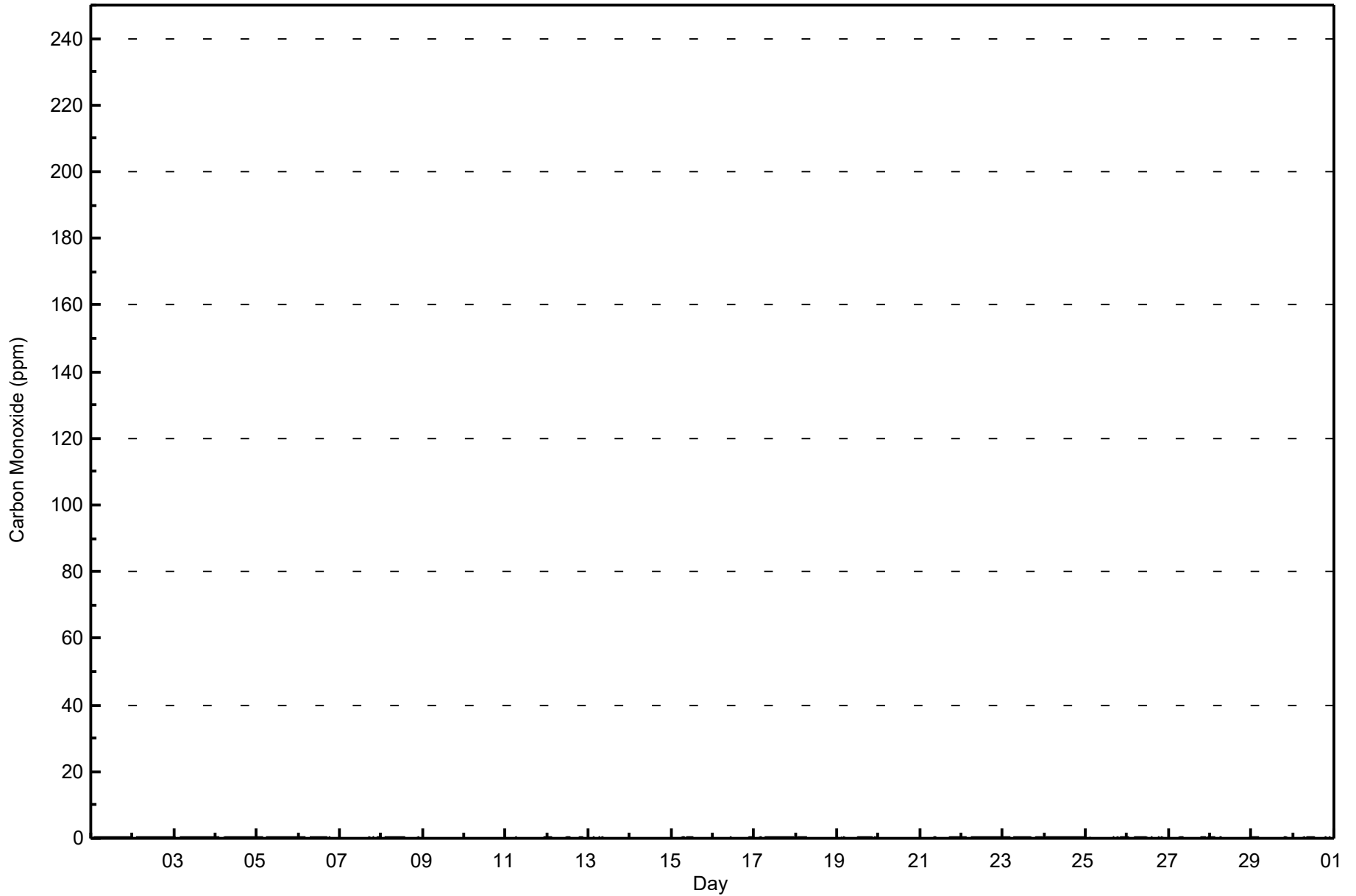
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay - Bertha Ganter





Wood Buffalo Environmental Association
Hourly Averages

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





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

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

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	682	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: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	66	36	29	18	19	51	64	137	82	14	17	24	23	15	43	37	675
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
Totals	66	36	29	18	19	51	64	137	82	14	17	24	23	15	43	37	675

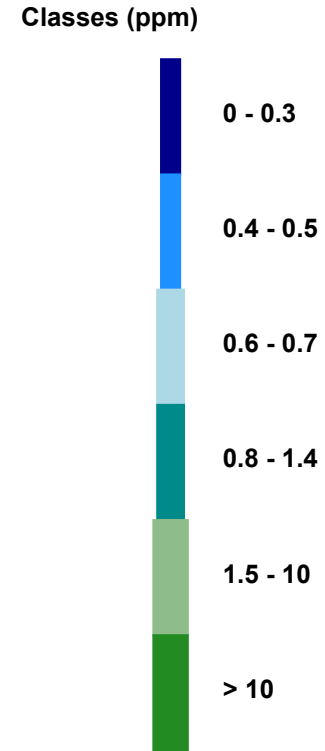
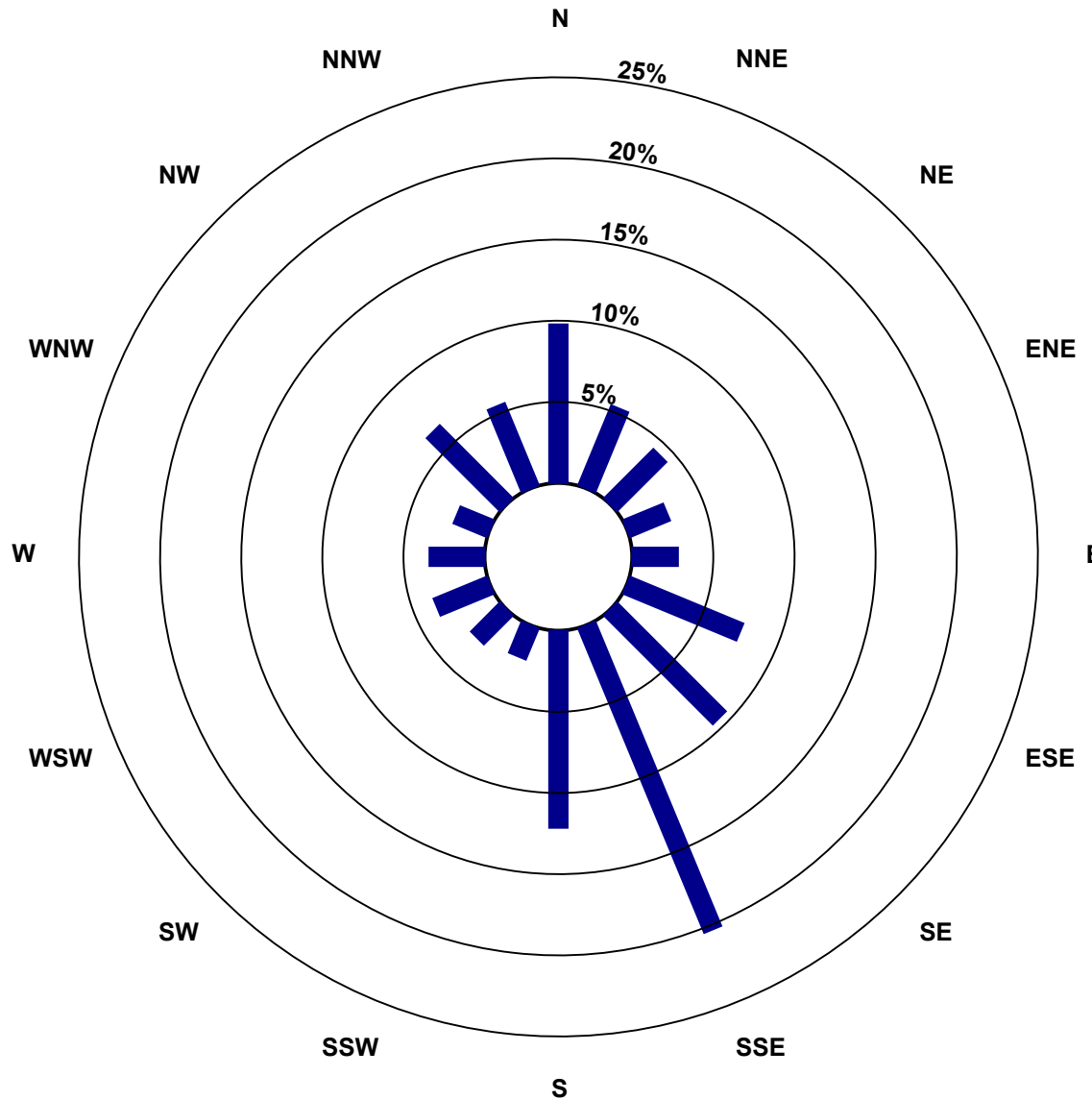
Total Number of Valid Hours: 675

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

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



Total Number of Valid Hours: 675



Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Dioxide (CO₂) - ppm

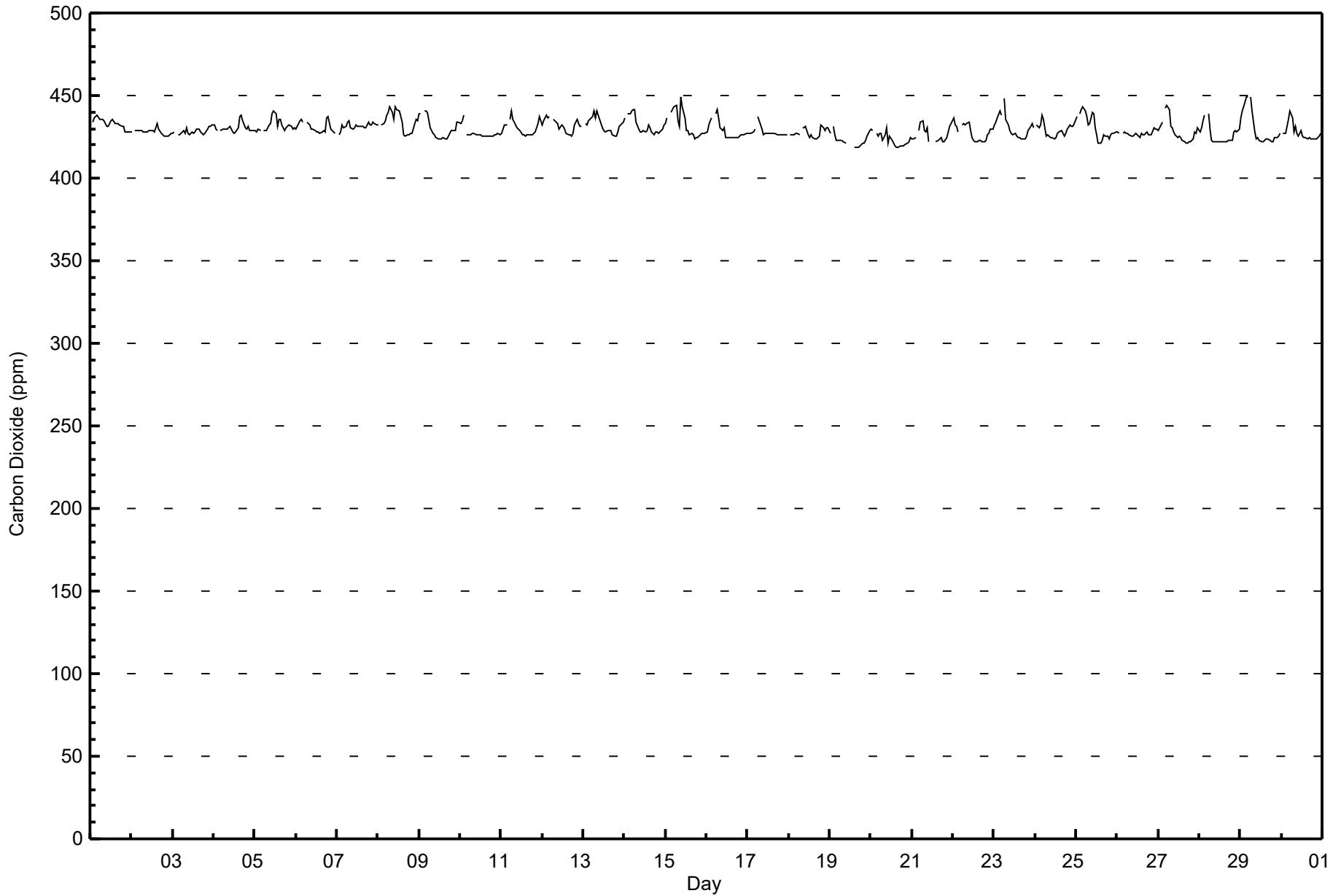
Fort McKay - Bertha Ganter - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service:																	720					
Maximum Value: 449.4 ppm on Apr 29 05:00		Maximum Daily Average: 434.4 ppm on Apr 8																	Hours of Data:		682					
Minimum Value: 418.8 ppm on Apr 19 18:00		Minimum Daily Average: 422.8 ppm on Apr 19																	Hours of Missing Data:		38					
Maximum Diurnal Average: 434.6 ppm at hour 7		Minimum Diurnal Average: 425.6 ppm at hour 18																	Hours of Calibration:		34					
Monthly Average: 429.35 ppm		Percentiles: P ₁ = 419.2 P ₁₀ = 423.3 Q ₁ = 425.9 Median = 428.3 Q ₃ = 432.1 P ₉₀ = 436.8 P ₉₉ = 443.7																	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-Apr	Z	433.9	436.6	437.1	438.1	435.8	436.0	435.9	434.8	431.5	431.1	433.0	434.5	435.8	433.4	433.3	433.1	432.3	431.3	431.2	428.2	427.9	428.1	427.6	433.1	438.1
2-Apr	428.1	Z	428.5	428.5	428.6	428.7	428.6	427.9	427.6	428.1	428.6	428.6	428.5	427.6	430.1	433.3	429.9	427.4	426.4	425.8	425.8	425.7	425.9	427.2	428.1	433.3
3-Apr	426.8	427.6	Z	426.2	426.4	426.9	428.4	427.0	430.9	426.7	426.3	427.6	426.8	427.9	429.8	429.5	427.9	426.7	426.6	427.4	430.0	431.1	431.5	431.8	428.2	431.8
4-Apr	431.9	429.4	429.2	Z	428.7	429.8	429.8	429.5	429.8	431.5	429.9	427.9	427.4	427.9	430.8	437.4	438.4	435.1	430.8	429.7	431.4	432.0	431.0	428.7	430.5	438.4
5-Apr	428.8	427.7	429.5	428.9	Z	428.7	429.0	429.2	431.9	433.1	439.1	440.4	439.3	431.0	435.2	435.7	432.4	429.0	430.1	431.4	432.0	431.0	429.7	430.4	431.9	440.4
6-Apr	429.8	430.9	434.4	435.8	434.3	Z	433.7	433.0	432.4	429.9	429.4	428.8	428.1	427.8	426.8	428.3	428.7	427.9	436.2	437.3	429.4	428.7	428.3	426.8	430.7	437.3
7-Apr	Z	426.4	428.1	431.9	430.5	431.7	434.3	434.7	430.4	429.8	430.7	432.1	431.7	431.2	431.1	431.0	430.4	430.8	434.1	432.0	432.6	433.8	433.1	432.0	431.5	434.7
8-Apr	432.5	Z	432.4	433.3	435.1	438.3	440.2	443.1	439.7	435.9	443.1	441.4	440.9	437.2	434.2	426.3	425.8	426.3	426.6	427.1	427.4	432.8	435.7	434.9	434.4	443.1
9-Apr	438.9	438.6	Z	440.7	440.4	440.1	430.2	428.8	427.4	426.3	424.4	424.0	423.6	424.1	424.2	423.8	423.8	425.7	427.0	429.1	428.5	429.1	434.0	433.7	429.9	440.7
10-Apr	433.3	434.4	438.5	Z	426.3	426.1	426.7	426.8	426.7	426.6	426.5	426.2	426.1	425.8	425.6	425.4	425.3	425.1	425.1	425.4	426.0	426.4	427.0	426.4	427.3	438.5
11-Apr	426.8	429.7	431.8	431.9	Z	435.9	441.1	435.4	432.0	430.9	429.7	429.0	426.2	425.9	425.7	426.0	426.4	426.1	426.2	427.2	427.6	432.9	437.6	435.0	430.3	441.1
12-Apr	432.6	434.3	438.4	436.8	437.2	Z	435.8	434.8	433.7	433.1	429.8	431.8	431.3	429.9	427.3	426.2	425.9	425.8	426.8	432.0	435.4	433.3	431.6	431.2	432.0	438.4
13-Apr	Z	432.9	432.6	435.1	435.3	437.7	441.0	436.8	440.7	435.7	432.8	430.4	429.2	427.6	428.8	428.7	428.4	426.7	425.2	425.8	427.6	431.6	432.3	434.2	432.0	441.0
14-Apr	436.5	Z	438.8	438.9	440.8	441.6	441.7	434.0	429.6	428.1	428.0	428.4	428.2	428.5	432.4	430.8	428.0	426.5	427.6	427.8	426.8	428.6	429.6	432.0	431.9	441.7
15-Apr	433.5	436.2	Z	439.9	441.3	443.4	444.3	434.6	431.3	449.4	442.8	436.3	428.4	428.6	426.4	427.0	425.9	424.0	424.7	424.7	426.5	426.8	426.8	427.2	432.6	449.4
16-Apr	427.7	432.5	434.8	436.2	Z	438.8	441.8	436.6	430.8	429.2	430.4	425.0	425.0	424.7	424.5	424.7	424.6	424.5	424.9	425.6	426.0	426.4	426.8	426.8	429.0	441.8
17-Apr	426.9	427.2	427.2	427.7	429.6	Z	436.9	434.7	429.8	426.6	427.1	427.3	427.3	427.3	427.3	427.0	426.7	426.1	425.9	426.4	426.5	426.5	426.4	426.2	427.9	436.9
18-Apr	Z	426.5	426.7	426.7	427.1	426.9	426.4	PF	430.4	430.9	431.4	426.1	424.5	426.4	424.7	423.9	423.8	424.6	425.5	431.9	430.1	429.2	430.3	430.3	427.5	431.9
19-Apr	426.7	Z	431.0	426.1	423.2	422.9	422.9	422.6	422.0	421.2	C	C	C	C	419.0	419.0	418.9	418.8	420.2	421.1	421.2	423.1	425.4	428.6	422.8	431.0
20-Apr	429.5	428.8	Z	427.3	425.7	427.0	427.4	422.5	426.3	430.4	420.8	425.0	422.8	420.9	419.4	419.0	419.0	419.2	419.3	419.4	420.1	421.1	421.9	424.2	423.4	430.4
21-Apr	423.9	424.0	424.7	Z	428.4	433.8	434.7	429.1	428.1	430.2	421.9	M	M	M	422.0	422.9	423.7	424.2	422.1	422.0	424.8	428.3	431.5	433.2	426.7	434.7
22-Apr	436.6	432.3	431.4	428.0	Z	432.5	433.1	432.0	433.2	433.5	428.6	424.7	422.5	422.1	422.0	422.7	422.8	421.9	421.8	422.7	426.4	427.3	429.6	429.9	427.7	436.6
23-Apr	431.9	433.6	436.8	440.9	438.4	Z	448.1	435.6	432.3	428.8	426.8	426.3	426.7	425.7	424.5	424.2	423.5	423.5	424.1	425.2	428.5	431.7	432.7	430.2	430.4	448.1
24-Apr	Z	432.2	430.9	431.8	438.2	435.5	425.7	426.3	425.6	425.0	425.0	423.9	424.3	427.5	428.4	428.6	427.4	425.1	426.7	429.5	431.8	431.6	431.7	433.0	428.9	438.2
25-Apr	437.6	Z	438.8	441.6	443.6	440.4	437.2	432.6	432.8	439.9	438.9	430.9	426.3	421.4	421.4	423.2	426.3	425.3	425.0	424.0	425.9	426.7	427.4	428.2	431.1	443.6
26-Apr	428.0	427.2	Z	427.4	427.7	427.2	426.8	426.2	425.4	425.1	426.4	426.8	425.5	424.8	427.0	426.0	426.2	428.0	426.1	426.2	426.4	430.2	429.5	429.4	426.9	430.2
27-Apr	428.4	430.6	433.8	Z	442.3	443.7	441.5	431.6	430.7	427.8	426.5	424.4	425.2	424.5	422.5	421.6	421.5	421.4	421.8	422.4	424.1	427.9	426.7	430.8	428.3	443.7
28-Apr	428.3	430.5	434.5	438.0	Z	439.1	429.8	422.7	422.2	422.3	422.1	422.0	421.9	421.9	422.0	421.9	421.9	422.6	422.5	423.2	427.6	428.8	427.6	430.1	426.2	439.1
29-Apr	436.6	440.6	443.5	449.4	449.4	Z	449.4	440.8	428.3	423.4	424.2	423.1	421.8	421.7	422.6	423.5	423.5	422.5	422.4	422.2	424.7	424.5	425.4	427.0	430.0	449.4
30-Apr	Z	427.1	427.3	431.0	435.5	441.0	436.7	428.0	431.2	427.4	425.5	429.0	425.4	425.0	424.6	423.9	424.4	424.1	423.9	424.0	423.9	424.3	425.6	427.0	427.6	441.0
430.9 431.0 432.8 433.7 434.1 434.1 434.6 431.5 430.3 429.9 429.2 428.6 427.5 426.8 426.5 426.5 426.2 425.6 425.9 426.7 427.4 428.5 429.3 429.8																								Diurnal Average		
438.9 440.6 443.5 449.4 449.4 443.7 449.4 443.1 440.7 449.4 443.1 441.4 440.9 437.2 435.2 437.4 438.4 435.1 436.2 437.3 435.4 433.8 437.6 435.0																								Diurnal Maximum		
Z - zerspan		C - Calibration				M - Maintenance				PF - Power Failure																



Wood Buffalo Environmental Association
Hourly Averages

Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	12	1.76	1.76
420 - 440	639	93.70	95.45
440 - 460	31	4.55	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: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter - April 2023**

Concentration 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	1	1	1	8	0	0	0	0	0	0	0	0	0	1	12
420 - 440	64	34	29	17	18	39	61	128	80	13	16	23	22	13	42	33	632
440 - 460	4	2	0	0	0	1	3	9	2	1	1	1	1	2	1	3	31
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
Totals	68	36	30	18	19	48	64	137	82	14	17	24	23	15	43	37	675

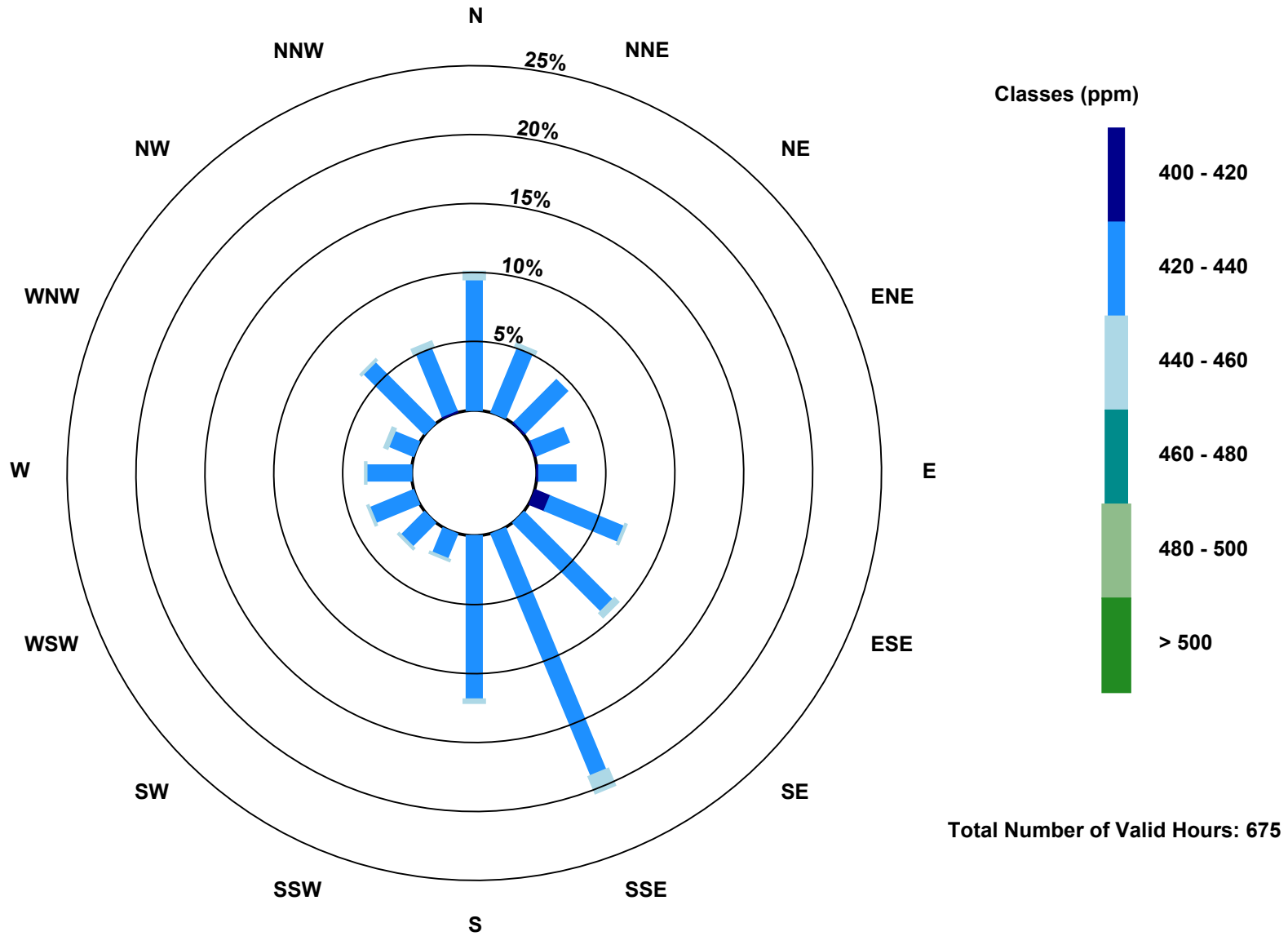
Total Number of Valid Hours: 675

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter





Wood Buffalo Environmental Association

Summary of Hour Averages

Ammonia (NH₃) - ppb

Fort McKay - Bertha Ganter - April 2023

Number of Exceedences (AAAQO): 1-hr: 0		Hours in Service: 720	
Maximum Value: 0.0 ppb on Apr 1 01:00		Maximum Daily Average: 0.0 ppb on Apr 1	
Minimum Value: 0.0 ppb on Apr 1 01:00		Hours of Data: 634	
Maximum Diurnal Average: 0.0 ppb at hour 1		Hours of Missing Data: 86	
Monthly Average: 0.00 ppb		Hours of Calibration: 44	
Minimum Daily Average: 0.0 ppb on Apr 1		Percent Operational Time: 94.2	
Minimum Diurnal Average: 0.0 ppb at hour 1		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0	

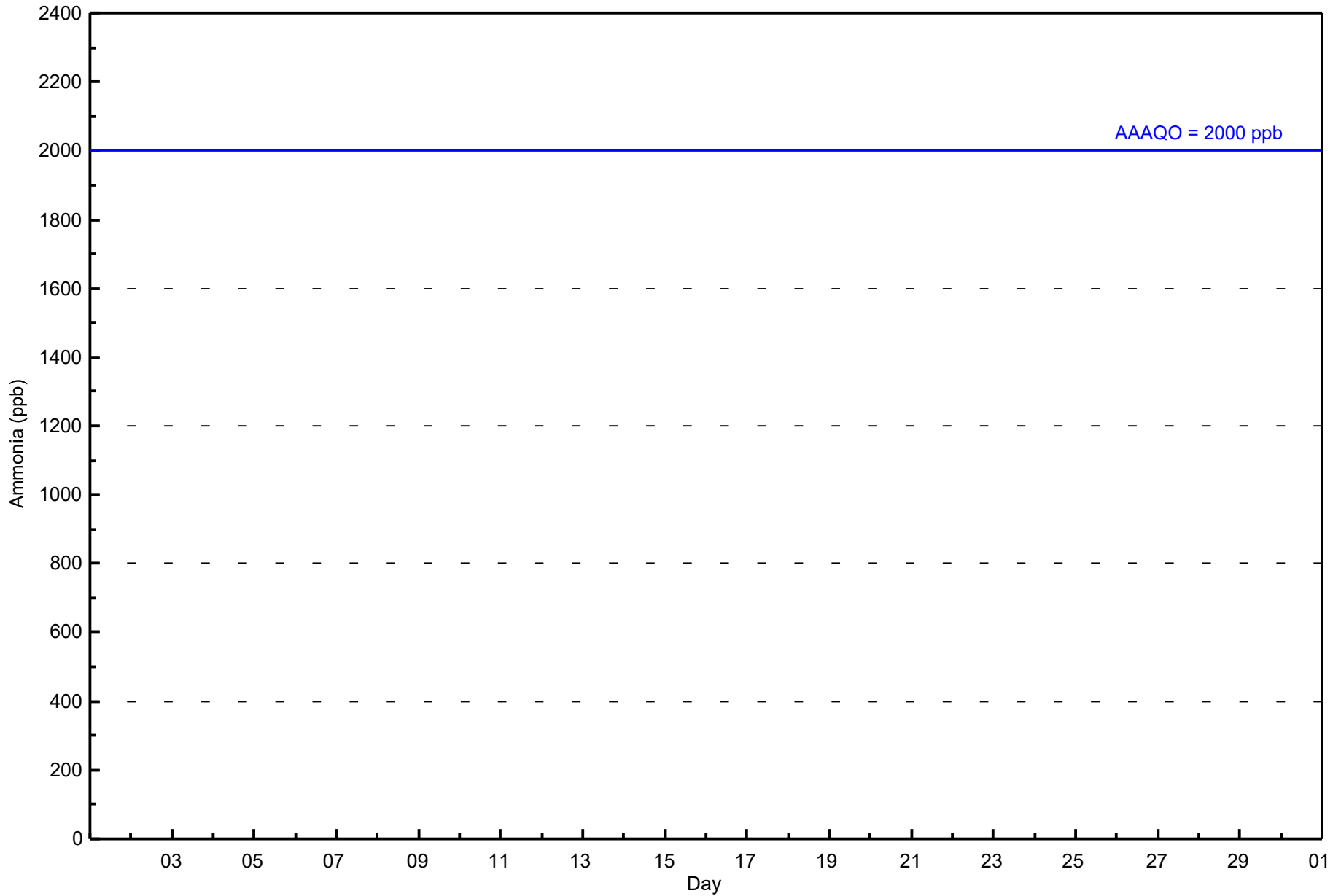
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1-Apr	0.0	0.0	0.0	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-Apr	0.0	0.0	0.0	0.0	0.0	Z	RE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

Z - zerospan	C - Calibration	M - Maintenance	PF - Power Failure	RE - Recovery
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb				



Wood Buffalo Environmental Association
Hourly Averages

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	634	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: 634

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	66	33	26	15	16	49	63	136	73	14	17	23	17	16	28	36	628
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
Totals	66	33	26	15	16	49	63	136	73	14	17	23	17	16	28	36	628

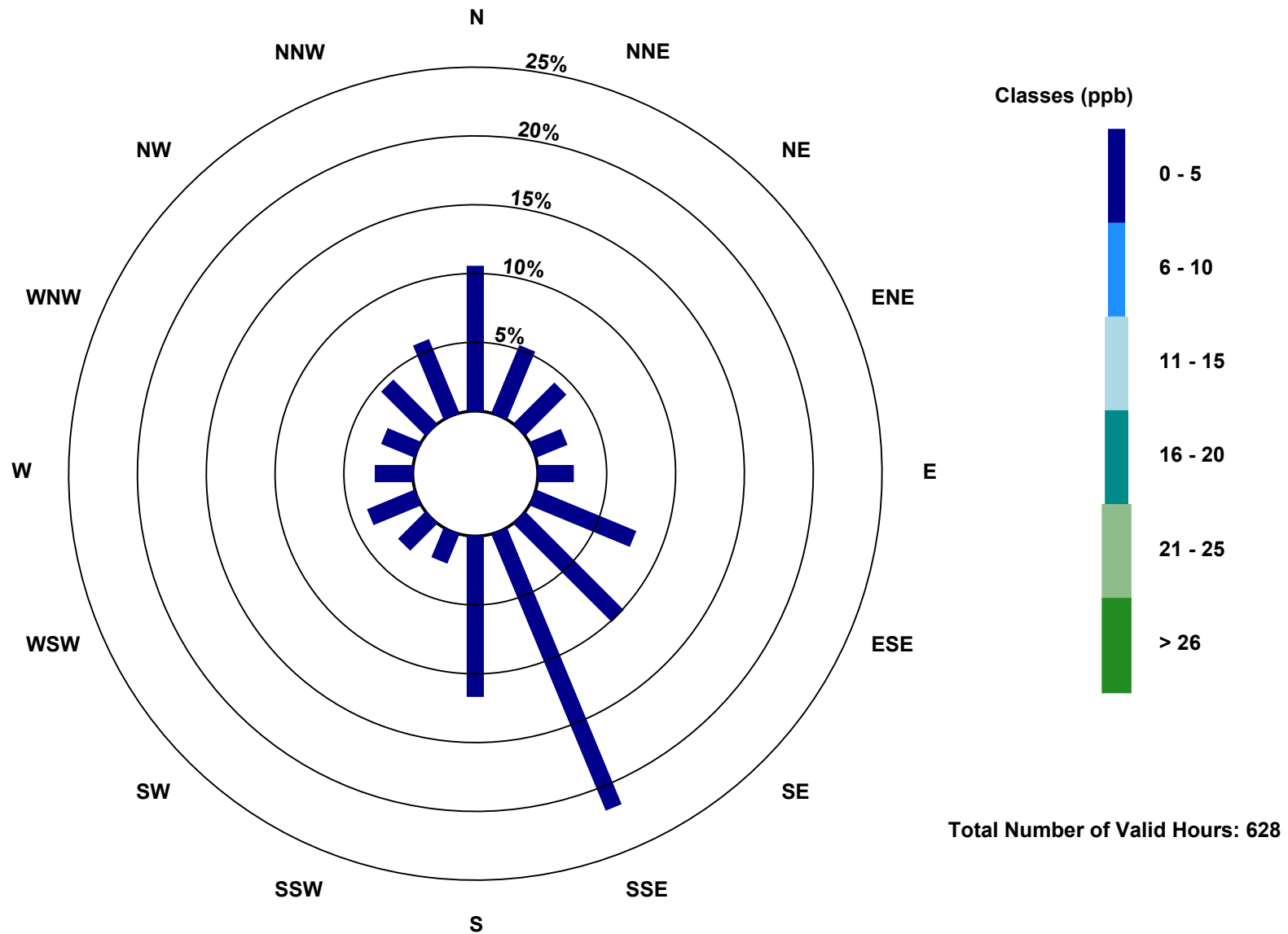
Total Number of Valid Hours: 628

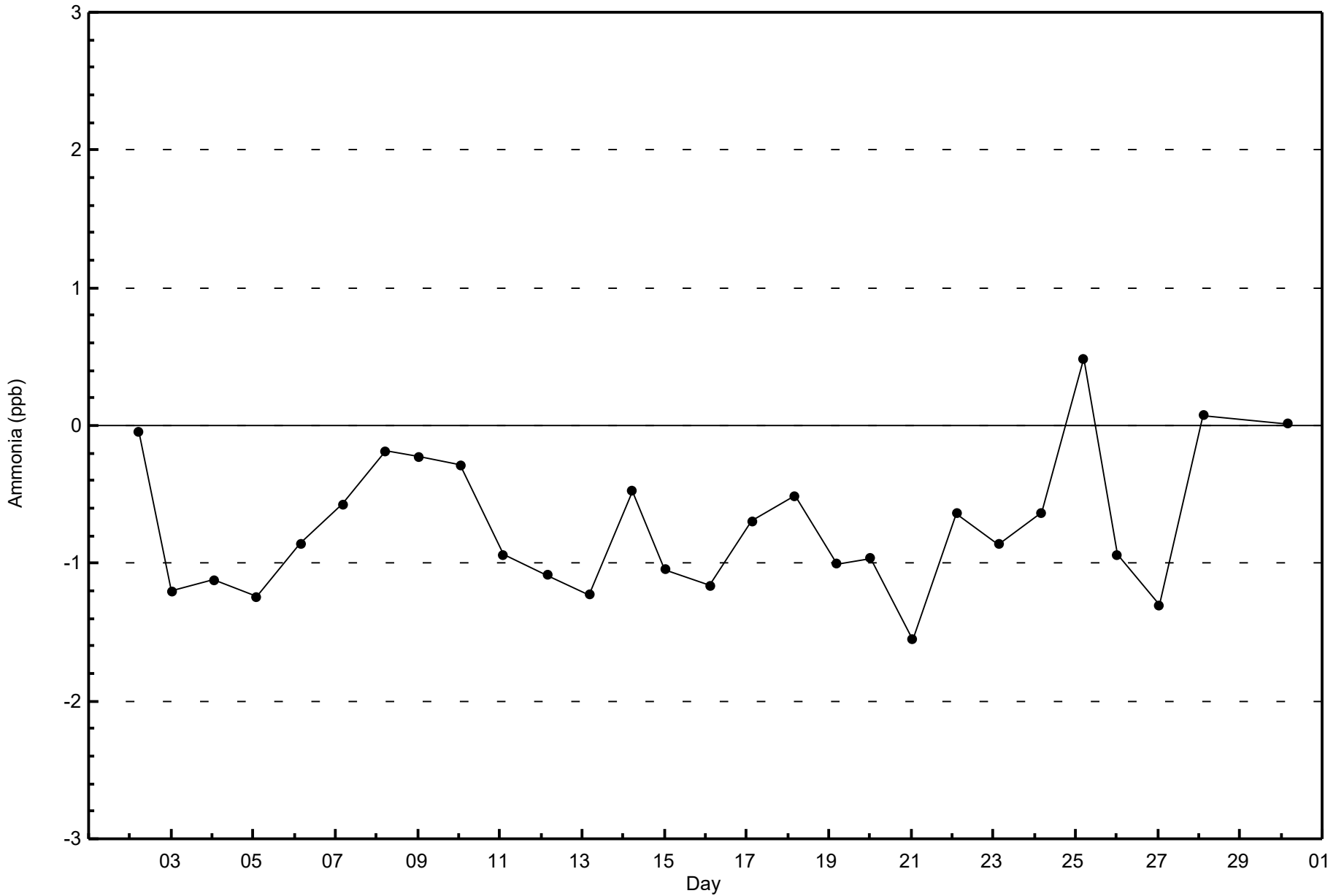
Total Number of Hours: 720

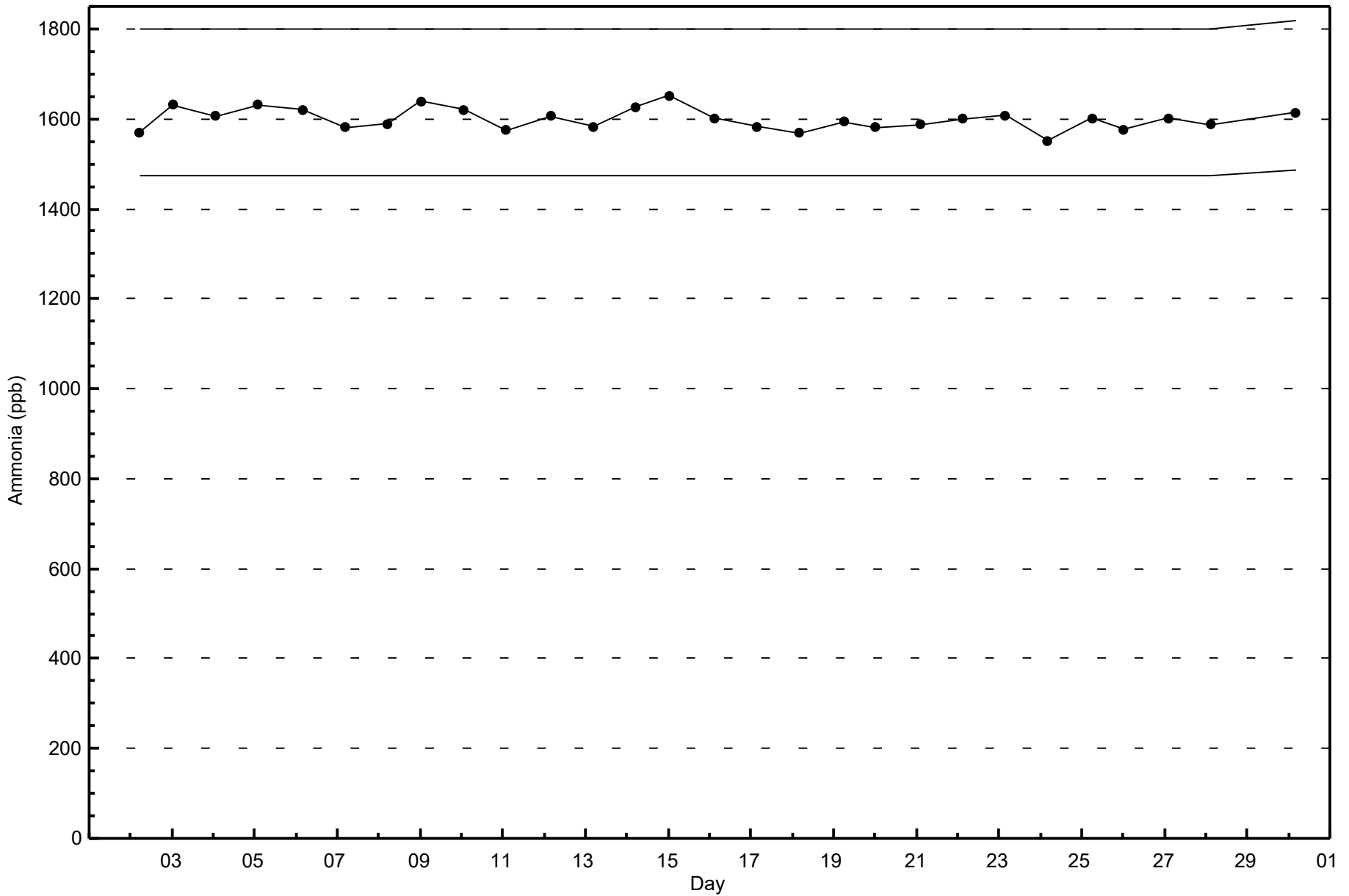


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter





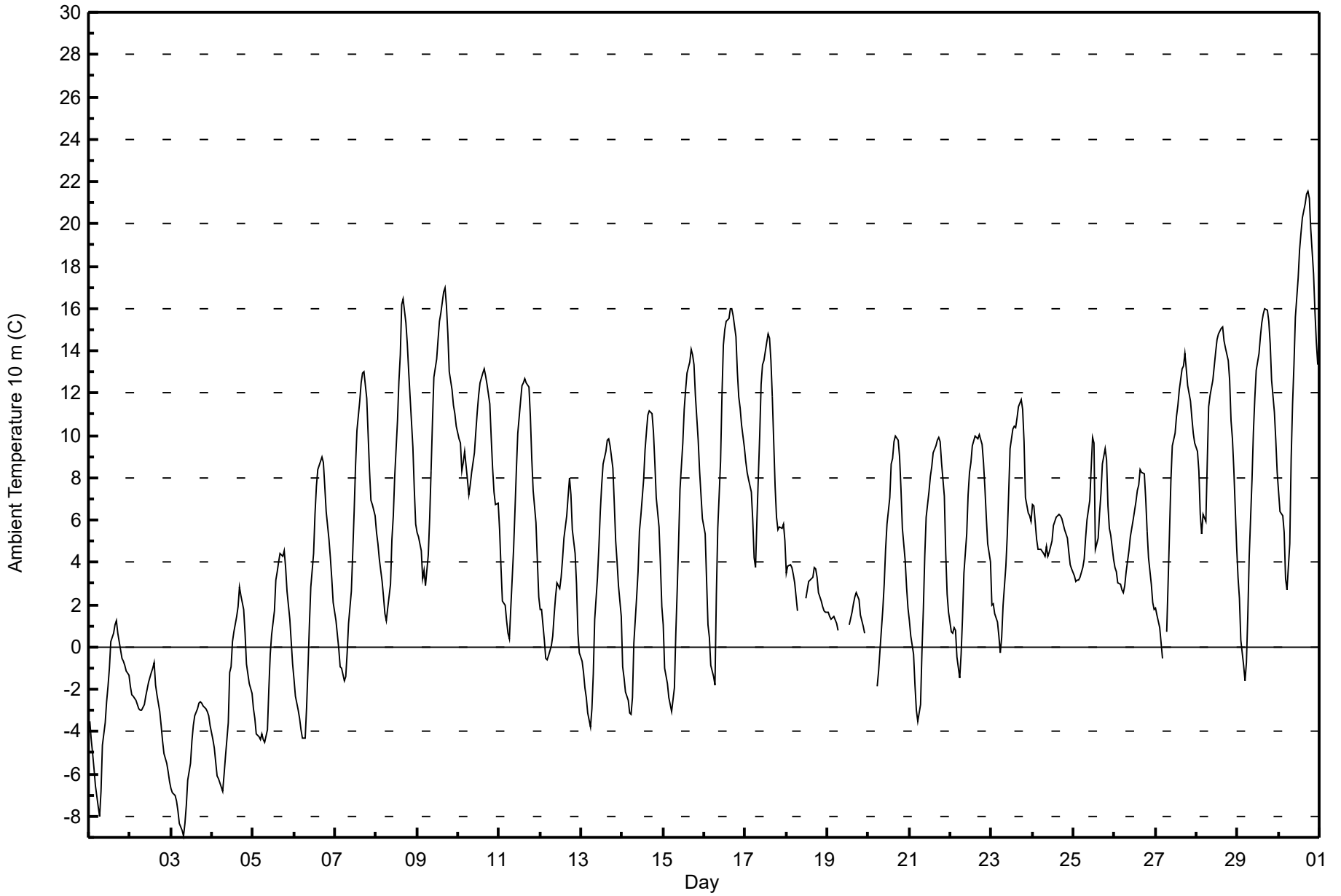




Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Value: 21.5 C on Apr 30 18:00		Maximum Daily Average: 13.6 C on Apr 30		Hours in Service: 720																						
Minimum Value: -8.9 C on Apr 3 08:00		Minimum Daily Average: -5.3 C on Apr 3		Hours of Data: 703																						
Maximum Diurnal Average: 9.6 C at hour 17		Minimum Diurnal Average: -0.5 C at hour 6		Hours of Missing Data: 17																						
Monthly Average: 4.91 C		Percentiles: P ₁ = -7.5 P ₁₀ = -2.9 Q ₁ = 0.7 Median = 4.6 Q ₃ = 9.4 P ₉₀ = 13.0 P ₉₉ = 18.8		Hours of Calibration: 0																						
				Percent Operational Time: 97.6																						
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-Apr	-3.5	-4.4	-5.0	-5.8	-6.6	-7.6	-8.0	-6.8	-4.7	-3.6	-2.6	-1.9	-1.0	0.2	0.6	1.1	1.2	0.7	-0.2	-0.6	-0.7	-0.9	-1.1	-1.3	-2.6	1.2
2-Apr	-1.9	-2.3	-2.3	-2.5	-2.8	-2.9	-3.0	-3.0	-2.7	-2.3	-2.0	-1.7	-1.2	-1.0	-0.7	-1.8	-2.2	-3.0	-3.7	-4.5	-5.0	-5.5	-5.9	-6.3	-2.9	-0.7
3-Apr	-6.7	-6.9	-7.0	-7.3	-7.7	-8.4	-8.7	-8.9	-8.3	-7.5	-6.3	-5.5	-4.4	-3.7	-3.2	-2.9	-2.7	-2.6	-2.7	-2.8	-2.9	-3.0	-3.3	-3.7	-5.3	-2.6
4-Apr	-4.4	-4.8	-5.4	-6.1	-6.2	-6.6	-6.8	-6.0	-5.1	-3.6	-1.2	-0.9	0.3	0.7	1.4	1.9	2.8	2.4	1.8	0.6	-0.8	-1.2	-1.7	-2.2	-2.1	2.8
5-Apr	-2.9	-3.4	-4.1	-4.3	-4.4	-4.1	-4.4	-4.5	-3.9	-2.0	-0.3	0.6	1.7	3.2	3.6	4.1	4.4	4.3	4.6	3.8	2.6	1.3	0.3	-0.8	-0.2	4.6
6-Apr	-1.5	-2.3	-3.0	-3.4	-3.9	-4.3	-4.3	-2.8	-1.0	1.0	2.9	4.4	6.3	7.6	8.4	8.8	9.0	8.7	7.6	6.4	5.1	4.2	3.2	2.1	2.5	9.0
7-Apr	1.3	0.6	-0.1	-0.9	-1.0	-1.6	-1.4	-0.3	1.1	2.6	4.5	6.4	8.6	10.2	11.6	12.5	13.0	13.0	11.8	10.0	8.3	7.0	6.7	6.2	5.4	13.0
8-Apr	5.4	4.8	4.2	3.1	2.4	1.6	1.2	1.8	3.0	5.1	6.2	8.1	10.7	12.6	13.8	16.2	16.5	15.3	14.3	13.0	11.8	9.4	7.4	5.8	8.1	16.5
9-Apr	5.4	5.2	4.6	3.2	3.6	2.9	4.4	6.1	8.3	10.6	12.7	13.6	14.6	15.4	15.8	16.8	17.0	16.1	14.8	13.0	12.1	11.4	11.1	10.5	10.4	17.0
10-Apr	9.9	9.6	8.3	8.7	9.2	7.9	7.2	7.6	8.2	9.2	10.2	11.1	11.9	12.5	12.9	13.1	12.8	12.4	11.5	9.9	8.4	7.3	6.7	6.8	9.7	13.1
11-Apr	5.6	3.7	2.1	2.0	1.3	0.7	0.4	1.8	4.6	6.4	8.4	10.1	11.6	12.3	12.5	12.7	12.5	12.3	10.9	8.9	7.4	5.9	4.1	2.4	6.7	12.7
12-Apr	1.8	1.8	0.3	-0.5	-0.6	-0.4	0.1	0.5	1.5	2.3	3.0	2.8	3.3	4.1	5.1	6.2	7.1	8.0	7.2	5.5	4.4	3.0	0.6	-0.3	2.8	8.0
13-Apr	-0.7	-1.2	-1.9	-2.4	-3.1	-3.8	-2.9	-1.3	1.3	3.3	4.8	6.4	7.6	8.7	9.2	9.8	9.8	9.5	8.5	6.8	5.0	4.0	2.9	1.4	3.4	9.8
14-Apr	-0.9	-1.5	-2.1	-2.5	-3.1	-3.2	-2.4	0.2	2.3	3.6	5.5	6.2	7.9	9.3	10.2	10.9	11.2	11.0	10.1	8.7	7.0	5.7	3.9	1.9	4.2	11.2
15-Apr	1.0	-1.0	-1.7	-2.4	-2.7	-3.0	-2.0	0.7	2.7	4.9	7.4	9.6	11.2	12.2	12.9	13.5	14.1	13.8	13.3	11.9	9.8	8.3	7.2	6.1	6.2	14.1
16-Apr	5.3	3.2	1.0	0.4	-0.9	-1.4	-1.8	2.5	5.6	8.8	11.9	14.3	15.0	15.4	15.6	16.0	16.0	15.7	14.7	13.0	11.8	11.3	10.5	9.4	8.9	16.0
17-Apr	8.8	8.3	8.0	7.3	6.0	4.3	3.7	6.0	10.1	12.4	13.3	13.5	14.4	14.8	14.6	13.6	11.8	7.6	6.1	5.6	5.7	5.6	5.8	5.0	8.8	14.8
18-Apr	3.5	3.8	3.9	3.8	3.4	3.0	1.7	UO	UO	UO	UO	2.3	2.7	3.1	3.2	3.3	3.7	3.7	3.3	2.6	2.2	1.9	1.7	1.7	2.9	3.9
19-Apr	1.6	1.5	1.3	1.4	1.4	1.1	0.8	UO	UO	UO	UO	UO	UO	1.0	1.7	2.1	2.4	2.5	2.2	1.5	1.3	1.0	0.7	UO	--	2.5
20-Apr	UO	UO	UO	UO	UO	-1.9	-1.1	-0.2	1.8	3.0	4.6	5.8	7.0	8.6	8.9	9.7	10.0	9.8	9.0	7.4	5.6	4.1	2.8	1.8	5.1	10.0
21-Apr	1.2	0.5	-0.4	-1.8	-3.0	-3.5	-2.7	-0.2	1.8	4.3	6.1	7.3	8.0	8.5	9.2	9.5	9.8	9.9	9.7	8.7	7.2	4.4	2.5	1.6	4.1	9.9
22-Apr	0.7	0.7	0.9	0.8	-0.4	-1.4	-0.4	1.4	3.5	5.3	7.2	8.2	8.7	9.5	10.0	9.9	9.9	10.0	9.6	8.7	7.5	6.1	4.9	4.0	5.2	10.0
23-Apr	2.0	2.0	1.6	1.2	0.5	-0.3	0.5	2.0	3.8	5.3	7.3	9.4	10.3	10.4	10.8	11.3	11.7	11.3	9.7	7.1	6.3	6.2	5.9	6.1	11.7	6.1
24-Apr	6.7	6.7	5.1	4.6	4.6	4.6	4.4	4.3	4.7	4.3	4.5	5.0	5.7	5.9	6.1	6.3	6.2	6.1	5.8	5.6	5.2	4.5	3.9	3.7	5.2	6.7
25-Apr	3.4	3.1	3.1	3.2	3.3	3.7	4.2	5.2	6.0	6.9	8.4	9.9	9.7	4.6	5.1	6.3	7.3	8.6	9.4	8.8	6.7	5.6	5.3	4.1	5.9	9.9
26-Apr	3.8	3.6	3.0	3.0	2.7	2.6	2.9	3.6	4.6	5.2	5.6	6.0	6.9	7.4	7.7	8.4	8.3	8.2	7.0	5.5	4.2	3.0	2.1	1.8	4.9	8.4
27-Apr	1.9	1.5	0.9	0.2	-0.6	UO	0.7	3.0	5.4	7.9	9.5	10.1	10.9	11.4	12.2	13.1	13.3	13.8	13.2	12.3	11.6	10.8	10.1	9.7	8.0	13.8
28-Apr	9.2	8.3	6.3	5.4	6.3	5.9	8.7	11.4	11.9	12.6	13.2	13.9	14.5	14.8	15.1	15.1	14.4	14.1	13.5	12.6	10.7	9.8	8.4	4.8	10.9	15.1
29-Apr	3.3	2.3	0.3	-0.9	-1.6	-0.7	1.5	4.3	7.9	10.2	11.8	13.1	13.8	14.6	15.3	15.7	16.0	15.9	15.4	14.4	12.6	11.1	9.7	8.3	8.9	16.0
30-Apr	7.3	6.4	6.2	5.4	3.3	2.7	4.9	8.9	11.5	13.3	15.6	17.4	18.8	19.5	20.3	20.9	21.4	21.5	21.2	19.8	17.7	15.9	14.4	13.3	13.6	21.5
																								Diurnal Average		
																								Diurnal Maximum		
UO - Unstable Operation																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	155	22.05	22.05
0 - 10	401	57.04	79.09
10 - 20	142	20.20	99.29
> 20	5	0.71	100.00

Total Number of Valid Hours: 703

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

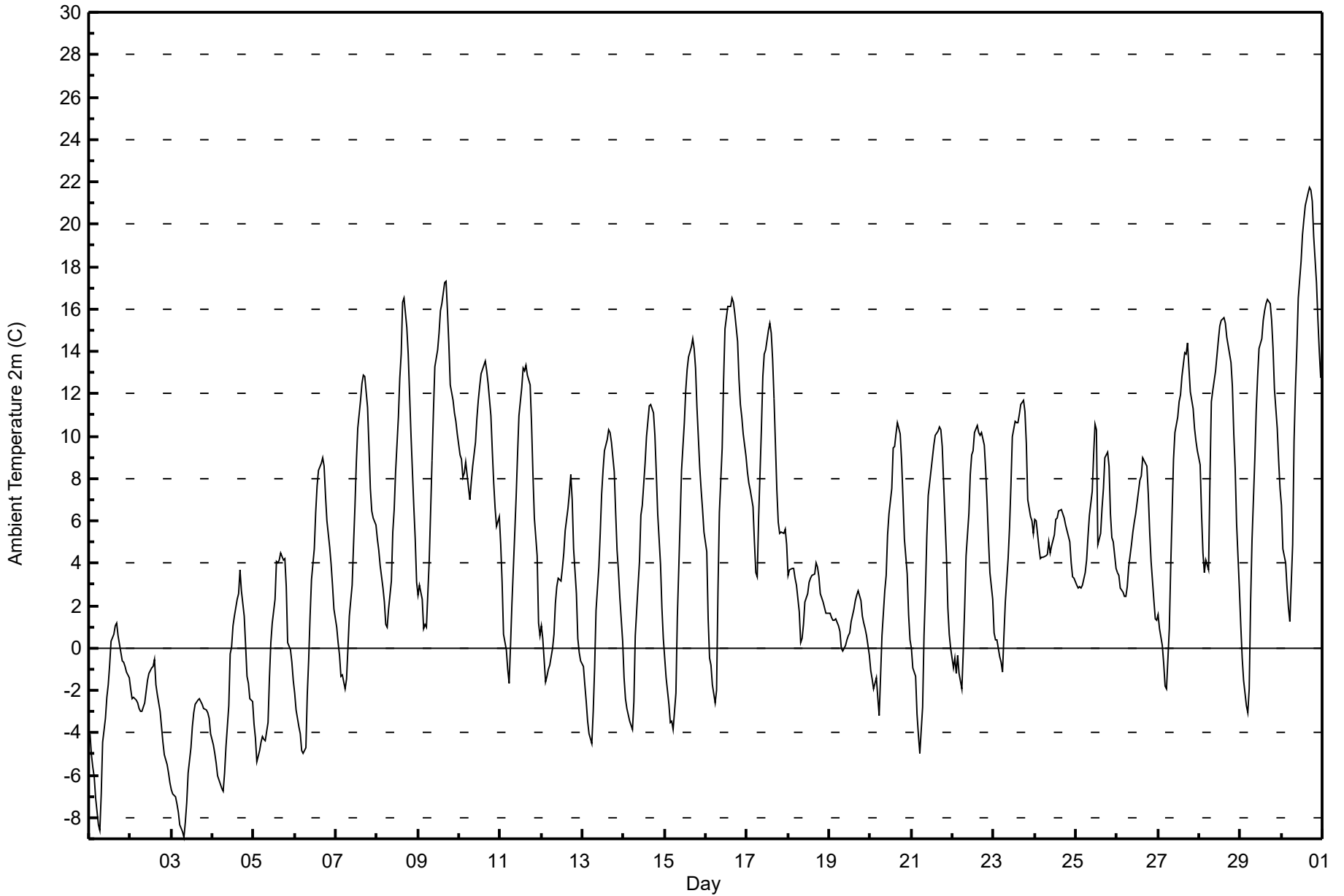
Ambient Temperature 2m (AT 2m) - C
Fort McKay - Bertha Ganter - April 2023

Maximum Value: 21.7 C on Apr 30 17:00																				Maximum Daily Average: 13.4 C on Apr 30					Hours in Service: 720																								
Minimum Value: -8.9 C on Apr 3 08:00																				Minimum Daily Average: -5.1 C on Apr 3					Hours of Data: 720																								
Maximum Diurnal Average: 9.9 C at hour 17																				Minimum Diurnal Average: -1.2 C at hour 6					Hours of Missing Data: 0																								
Monthly Average: 4.65 C																				Percentiles: P ₁ = -7.3 P ₁₀ = -3.0 Q ₁ = 0.0 Median = 4.2 Q ₃ = 9.2 P ₉₀ = 13.2 P ₉₉ = 19.2					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-Apr	-4.0	-5.0	-5.6	-6.1	-7.1	-8.3	-8.6	-6.9	-4.5	-3.3	-2.3	-1.8	-0.8	0.3	0.7	1.0	1.2	0.6	-0.2	-0.6	-0.7	-0.9	-1.1	-1.4	-2.7	1.2																							
2-Apr	-1.9	-2.4	-2.3	-2.5	-2.6	-2.9	-3.0	-3.0	-2.6	-2.1	-1.5	-1.2	-1.0	-0.9	-0.6	-1.7	-2.2	-3.0	-3.7	-4.5	-5.0	-5.5	-5.9	-6.4	-2.8	-0.6																							
3-Apr	-6.7	-6.9	-7.0	-7.3	-7.8	-8.4	-8.7	-8.9	-8.2	-7.3	-5.9	-4.7	-3.7	-3.1	-2.7	-2.4	-2.4	-2.5	-2.6	-2.9	-2.9	-3.0	-3.3	-4.1	-5.1	-2.4																							
4-Apr	-4.6	-5.0	-5.4	-6.0	-6.2	-6.6	-6.7	-5.9	-4.6	-2.7	-0.3	0.0	1.0	1.5	2.3	2.6	3.7	2.7	1.5	0.1	-1.4	-1.7	-2.4	-2.5	-1.9	3.7																							
5-Apr	-3.6	-4.2	-5.4	-4.9	-4.4	-4.2	-4.3	-4.4	-3.5	-1.4	0.3	1.2	2.3	4.1	4.0	4.2	4.5	4.2	4.3	2.9	0.3	-0.1	-0.7	-1.5	-0.4	4.5																							
6-Apr	-2.1	-3.0	-3.7	-4.0	-4.8	-4.9	-4.7	-2.2	-0.5	1.5	3.2	4.7	6.4	7.7	8.4	8.7	9.0	8.6	7.2	6.0	4.8	3.9	3.0	1.8	2.3	9.0																							
7-Apr	1.0	0.3	-0.3	-1.3	-1.3	-1.9	-1.5	0.0	1.5	2.9	4.9	6.7	8.8	10.4	11.7	12.5	12.9	12.8	11.4	9.5	7.5	6.5	6.1	5.8	5.3	12.9																							
8-Apr	5.2	4.6	3.9	2.8	2.1	1.1	1.0	1.9	3.2	5.5	6.5	8.3	10.9	12.7	13.9	16.3	16.5	15.1	13.9	11.9	10.0	6.7	5.1	3.1	7.6	16.5																							
9-Apr	2.5	3.0	2.3	0.9	1.1	1.0	4.2	6.4	8.8	11.2	13.3	14.1	14.9	15.9	16.2	17.2	17.3	15.9	14.3	12.4	11.7	11.1	10.7	10.1	9.9	17.3																							
10-Apr	9.1	8.9	8.0	8.3	8.8	7.6	7.0	7.8	8.6	9.7	10.8	11.7	12.4	12.9	13.3	13.6	13.1	12.5	11.0	9.3	7.8	6.6	5.7	6.2	9.6	13.6																							
11-Apr	4.9	3.1	0.6	-0.1	-1.0	-1.7	0.2	2.1	5.4	7.2	9.1	11.0	12.3	13.2	13.1	13.4	12.9	12.4	10.5	8.2	6.2	4.3	1.2	0.6	6.2	13.4																							
12-Apr	1.0	0.5	-1.6	-1.3	-1.0	-0.8	0.0	0.7	2.1	2.9	3.3	3.1	3.7	4.5	5.5	6.6	7.3	8.2	7.0	4.7	2.6	0.5	-0.2	-0.6	2.4	8.2																							
13-Apr	-0.9	-1.7	-2.5	-3.5	-4.0	-4.5	-3.0	-0.9	1.8	3.8	5.4	7.2	8.4	9.3	9.9	10.3	10.2	9.7	8.3	6.4	4.6	3.6	2.4	0.3	3.4	10.3																							
14-Apr	-1.4	-2.4	-2.8	-3.4	-3.6	-3.8	-2.5	0.6	3.0	4.1	6.2	6.7	8.7	10.0	10.7	11.4	11.5	11.1	10.0	8.3	6.3	3.9	1.9	0.4	4.0	11.5																							
15-Apr	-0.5	-1.4	-2.6	-3.5	-3.5	-3.8	-2.1	1.5	3.7	6.0	8.4	10.6	12.2	13.1	13.7	14.2	14.6	14.1	13.2	11.4	8.5	7.5	6.5	5.5	6.1	14.6																							
16-Apr	4.6	1.4	-0.5	-0.8	-1.7	-2.6	-2.0	2.7	6.4	9.4	12.6	15.1	15.6	16.1	16.1	16.5	16.3	15.8	14.5	12.7	11.5	10.9	10.1	9.0	8.7	16.5																							
17-Apr	8.3	7.8	7.5	6.7	5.0	3.5	3.3	6.1	10.4	12.8	13.9	14.1	15.0	15.3	14.9	13.6	11.8	7.4	6.0	5.4	5.5	5.4	5.6	4.9	8.8	15.3																							
18-Apr	3.4	3.7	3.8	3.7	3.3	3.0	1.7	0.3	0.5	1.1	2.2	2.5	3.1	3.3	3.4	3.5	4.0	3.8	3.3	2.6	2.2	1.9	1.6	1.6	2.6	4.0																							
19-Apr	1.6	1.4	1.3	1.3	1.4	1.1	0.8	0.0	-0.1	0.1	0.4	0.6	0.7	1.3	1.9	2.2	2.5	2.7	2.2	1.5	1.2	0.9	0.6	-0.3	1.1	2.7																							
20-Apr	-1.1	-1.5	-1.9	-1.4	-2.3	-3.2	-1.4	0.6	2.7	3.4	5.3	6.3	7.5	9.4	9.5	10.1	10.6	10.1	8.8	7.1	5.1	3.5	1.6	0.4	3.7	10.6																							
21-Apr	0.0	-1.0	-1.4	-3.1	-4.1	-5.0	-2.8	0.6	2.7	5.3	7.2	8.4	9.0	9.6	10.0	10.3	10.4	10.3	9.5	7.8	4.3	1.9	0.6	0.0	3.8	10.4																							
22-Apr	-0.9	-0.5	-1.2	-0.3	-1.2	-1.9	-0.1	1.9	4.3	6.4	8.2	9.1	9.3	10.2	10.5	10.2	10.1	10.2	9.6	8.4	6.8	5.1	3.6	2.3	5.0	10.5																							
23-Apr	0.7	0.4	0.4	-0.4	-0.7	-1.1	0.6	2.2	4.2	5.7	7.6	10.0	10.7	10.6	10.6	11.1	11.5	11.7	11.1	9.6	7.0	6.2	6.0	5.4	5.9	11.7																							
24-Apr	6.1	6.0	4.8	4.2	4.3	4.3	4.3	4.4	5.0	4.5	4.8	5.3	6.1	6.1	6.5	6.3	6.1	5.8	5.5	5.0	4.0	3.4	3.3	3.3	5.1	6.5																							
25-Apr	3.0	2.9	2.9	2.9	2.9	3.6	4.2	5.2	6.3	7.4	9.1	10.6	10.3	4.8	5.4	6.6	7.5	9.0	9.2	8.6	6.3	5.2	5.0	3.8	5.9	10.6																							
26-Apr	3.5	3.4	2.8	2.7	2.4	2.5	2.9	3.8	4.9	5.5	5.9	6.3	7.4	7.9	8.1	9.0	8.8	8.6	7.2	5.5	4.1	2.3	1.4	1.3	4.9	9.0																							
27-Apr	1.5	0.9	0.1	-0.7	-1.8	-1.9	0.9	3.8	6.4	8.9	10.2	10.9	11.6	11.9	12.8	13.9	13.9	14.4	13.2	12.1	11.3	10.4	9.8	9.3	7.7	14.4																							
28-Apr	8.6	6.3	4.5	3.5	4.1	3.7	8.0	11.6	12.2	13.1	13.8	14.6	15.2	15.5	15.6	15.3	14.7	14.3	13.5	12.4	10.1	8.4	5.9	2.8	10.3	15.6																							
29-Apr	1.1	-0.5	-1.5	-2.7	-3.0	-1.9	2.2	5.1	8.9	11.2	12.8	14.1	14.6	15.4	15.9	16.3	16.5	16.3	15.5	14.1	12.2	10.4	8.8	7.5	8.7	16.5																							
30-Apr	6.7	4.7	4.0	2.9	1.9	1.2	4.9	9.8	12.3	14.2	16.5	18.2	19.5	20.2	20.9	21.4	21.7	21.6	21.1	19.4	17.2	15.5	14.0	12.7	13.4	21.7																							
																								1.5	0.8	0.0	-0.4	-0.8	-1.2	-0.2	1.6	3.4	4.9	6.4	7.5	8.4	9.0	9.4	9.8	9.9	9.5	8.6	7.2	5.7	4.5	3.6	2.7	Diurnal Average	
																								9.1	8.9	8.0	8.3	8.8	7.6	8.0	11.6	12.3	14.2	16.5	18.2	19.5	20.2	20.9	21.4	21.7	21.6	21.1	19.4	17.2	15.5	14.0	12.7	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	182	25.28	25.28
0 - 10	377	52.36	77.64
10 - 20	155	21.53	99.17
> 20	6	0.83	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

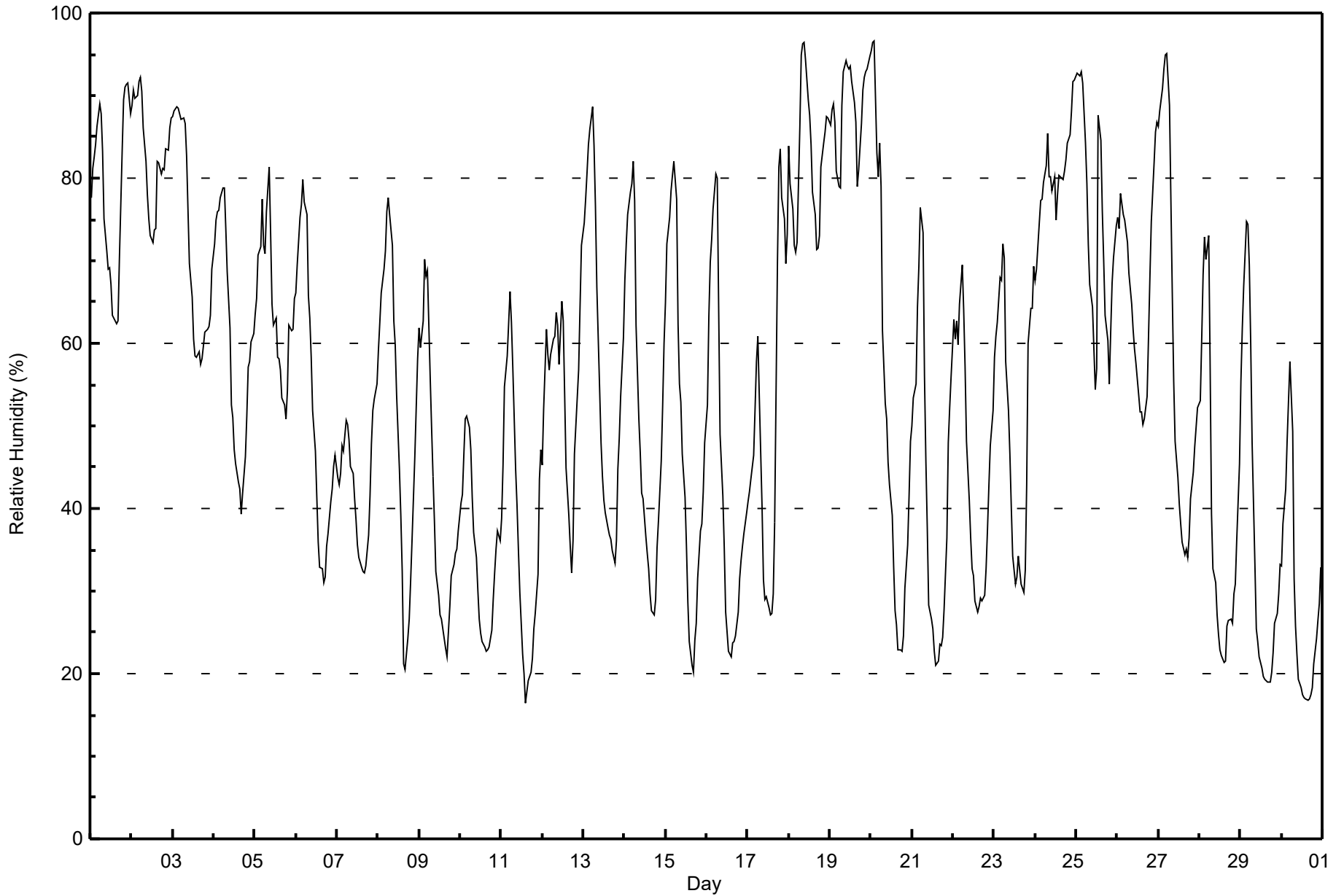
Fort McKay - Bertha Ganter - April 2023

Maximum Value: 96.6 % on Apr 20 03:00 Maximum Daily Average: 88.5 % on Apr 19																						Hours in Service: 720 Hours of Data: 720																										
Minimum Value: 16.5 % on Apr 11 15:00 Minimum Daily Average: 28.9 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																										
Maximum Diurnal Average: 74.8 % at hour 6 Minimum Diurnal Average: 39.3 % at hour 17																						Percent Operational Time: 100.0																										
Monthly Average: 55.65 % Percentiles: P ₁ = 18.0 P ₁₀ = 25.8 Q ₁ = 35.8 Median = 56.8 Q ₃ = 74.9 P ₉₀ = 86.2 P ₉₉ = 94.8																																																
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-Apr	77.7	81.2	82.5	84.2	86.3	89.0	87.9	83.3	75.1	71.1	68.9	69.2	67.0	63.3	62.7	62.4	62.7	70.1	83.3	89.5	91.0	91.4	91.5	87.9	78.3	91.5																						
2-Apr	88.8	90.7	89.7	89.9	91.7	92.1	90.6	86.2	82.0	77.9	75.1	73.1	72.2	73.8	73.9	82.1	81.9	80.5	81.2	81.1	83.5	83.5	86.1	87.4	83.1	92.1																						
3-Apr	87.4	88.1	88.7	88.5	87.8	87.1	87.3	86.6	82.7	76.0	69.6	65.5	60.5	58.6	58.3	59.0	57.5	58.2	59.6	61.4	61.7	62.0	63.4	68.9	71.8	88.7																						
4-Apr	72.0	74.9	75.9	76.1	77.7	78.9	78.8	73.9	68.6	61.9	52.6	51.0	47.1	45.4	43.3	42.4	39.3	41.8	46.2	51.1	57.2	57.8	60.1	61.2	59.8	78.9																						
5-Apr	63.5	65.3	70.6	71.6	77.4	71.9	70.9	76.0	81.4	73.5	64.7	62.1	63.1	58.3	58.1	56.7	53.3	52.5	50.8	54.2	62.2	61.5	61.7	65.4	64.5	81.4																						
6-Apr	66.1	69.6	75.3	76.8	79.8	77.1	75.5	65.8	63.0	58.3	51.8	47.0	41.4	36.0	32.9	32.7	31.0	31.8	35.4	37.0	40.9	42.4	45.0	46.4	52.5	79.8																						
7-Apr	43.8	42.9	44.2	47.5	47.0	50.7	50.2	48.4	45.0	44.2	41.2	38.6	35.6	34.0	32.8	32.3	32.2	33.1	36.8	41.6	47.8	51.8	53.2	55.2	42.9	55.2																						
8-Apr	59.2	62.6	66.0	69.0	71.2	75.9	77.7	75.7	71.9	62.7	59.9	53.7	44.8	39.2	32.3	21.2	20.5	24.2	26.6	31.2	36.2	46.3	52.2	58.2	51.6	77.7																						
9-Apr	61.8	59.6	62.7	70.1	68.2	68.8	55.7	49.6	44.0	38.5	32.4	29.4	27.1	26.6	25.5	23.0	22.0	25.1	28.1	31.8	33.3	34.5	35.1	37.3	41.3	70.1																						
10-Apr	40.6	41.7	46.4	50.8	51.2	49.8	47.1	41.3	37.1	34.0	30.2	26.6	24.9	23.8	23.2	22.6	22.9	23.2	25.3	29.0	32.2	35.1	37.3	36.1	34.7	51.2																						
11-Apr	38.9	45.3	54.8	58.4	62.4	66.3	62.5	57.0	44.8	40.3	35.0	29.9	22.4	19.9	16.5	17.9	19.2	20.2	21.8	25.5	27.3	32.0	43.5	47.1	37.9	66.3																						
12-Apr	45.2	52.0	61.7	58.6	56.7	58.7	60.5	60.9	63.8	62.1	57.4	65.1	62.8	53.9	44.9	39.1	35.4	32.3	36.1	46.6	53.4	56.8	64.5	71.8	54.2	71.8																						
13-Apr	74.5	77.4	80.7	84.1	85.9	88.6	83.9	76.6	66.8	54.5	48.0	43.9	40.9	39.4	37.6	36.9	36.3	34.9	33.4	36.1	44.8	48.5	53.5	60.7	57.0	88.6																						
14-Apr	67.7	72.0	75.6	78.2	79.3	82.1	77.3	62.2	50.8	46.7	41.9	41.1	36.5	34.6	32.6	29.6	27.6	27.1	28.9	35.3	38.5	45.8	52.3	60.1	51.0	82.1																						
15-Apr	64.8	72.1	75.3	78.6	80.3	82.0	77.5	62.3	55.1	52.9	46.6	41.4	35.4	28.6	23.8	21.0	20.2	24.1	26.2	31.5	37.4	38.1	42.0	48.0	48.5	82.0																						
16-Apr	52.5	63.2	69.9	72.5	76.3	80.5	80.0	64.5	49.0	41.5	35.2	27.4	25.1	22.6	22.1	23.7	23.9	24.6	27.4	31.5	33.8	35.3	36.9	39.4	44.1	80.5																						
17-Apr	40.8	42.0	43.6	46.4	52.1	57.8	60.9	53.8	40.1	31.4	29.0	29.4	27.9	27.2	27.3	29.7	38.4	69.8	81.4	83.5	77.6	75.0	69.7	73.3	50.3	83.5																						
18-Apr	83.8	79.3	76.2	71.9	71.0	72.3	86.2	94.8	96.2	96.4	94.4	89.5	87.7	84.1	78.2	75.5	71.4	71.6	73.0	81.3	84.2	85.5	87.5	87.3	82.5	96.4																						
19-Apr	86.5	88.3	88.9	86.8	80.8	78.9	78.8	88.7	93.0	94.3	93.5	93.2	93.5	91.6	89.1	86.8	78.9	80.9	86.7	90.7	92.2	92.8	93.3	94.8	88.5	94.8																						
20-Apr	95.5	96.4	96.6	83.0	80.1	84.2	79.0	61.5	52.7	50.9	45.7	42.9	39.2	32.8	27.7	26.0	23.0	23.0	22.7	24.5	30.3	35.5	41.6	48.2	51.8	96.6																						
21-Apr	50.0	53.4	55.2	64.5	69.3	76.5	73.4	56.1	45.8	37.6	28.3	26.6	25.4	22.7	21.1	21.6	23.6	23.3	24.3	27.8	36.4	47.9	52.3	55.9	42.5	76.5																						
22-Apr	62.9	60.4	62.7	59.8	64.7	69.5	64.1	57.1	48.1	41.1	36.4	32.7	31.9	28.9	27.5	28.2	29.1	28.8	29.5	32.7	37.5	42.7	47.7	51.9	44.8	69.5																						
23-Apr	58.4	60.9	62.5	68.0	67.6	72.0	70.4	57.7	51.9	46.7	40.2	34.2	30.8	31.7	34.3	32.5	30.9	29.9	32.6	42.9	60.0	64.3	64.3	69.3	50.6	72.0																						
24-Apr	67.6	69.0	74.5	77.3	77.4	79.5	81.5	85.5	80.2	80.2	78.4	80.2	74.9	77.9	80.3	79.9	79.8	80.8	82.1	84.2	85.3	88.1	91.7	91.9	80.3	91.9																						
25-Apr	92.7	92.6	92.3	92.8	91.5	84.3	79.3	72.1	67.2	64.4	59.3	54.3	56.9	87.7	84.7	76.2	70.0	63.4	60.3	55.1	61.3	67.3	70.3	74.3	73.8	92.8																						
26-Apr	75.2	73.8	78.2	75.6	74.9	73.6	72.2	68.6	64.8	61.7	59.4	57.6	53.8	51.7	51.7	50.2	50.8	53.5	60.7	68.0	74.7	81.8	85.6	86.8	66.9	86.8																						
27-Apr	86.3	88.2	90.9	93.2	94.9	95.0	88.9	77.3	66.0	55.4	48.1	43.8	40.5	38.1	35.9	34.4	35.0	34.0	36.5	41.1	44.4	47.4	49.8	52.2	59.0	95.0																						
28-Apr	53.0	60.5	68.3	72.9	70.2	73.1	57.6	39.4	32.6	31.0	27.2	24.8	22.9	22.2	21.4	21.5	25.8	26.4	26.6	26.1	29.7	30.9	36.0	45.5	39.4	73.1																						
29-Apr	55.4	61.8	66.9	74.7	74.3	69.5	60.0	48.1	33.2	25.4	23.9	22.1	20.7	19.7	19.3	19.2	18.9	18.9	20.1	22.6	26.1	27.3	29.7	33.2	37.1	74.7																						
30-Apr	33.0	38.2	42.4	48.2	53.0	57.8	49.3	31.6	25.7	22.3	19.4	18.3	17.4	17.1	16.9	16.9	16.9	17.4	18.3	21.2	24.2	26.5	28.5	32.9	28.9	57.8																						
																								64.9	67.4	70.6	72.3	73.4	74.8	72.2	65.4	59.3	54.5	49.8	47.2	44.3	43.1	41.2	40.0	39.3	40.8	43.4	47.2	51.5	54.5	57.5	60.9	Diurnal Average
																								95.5	96.4	96.6	93.2	94.9	95.0	90.6	94.8	96.2	96.4	94.4	93.2	93.5	91.6	89.1	86.8	81.9	80.9	86.7	90.7	92.2	92.8	93.3	94.8	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

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



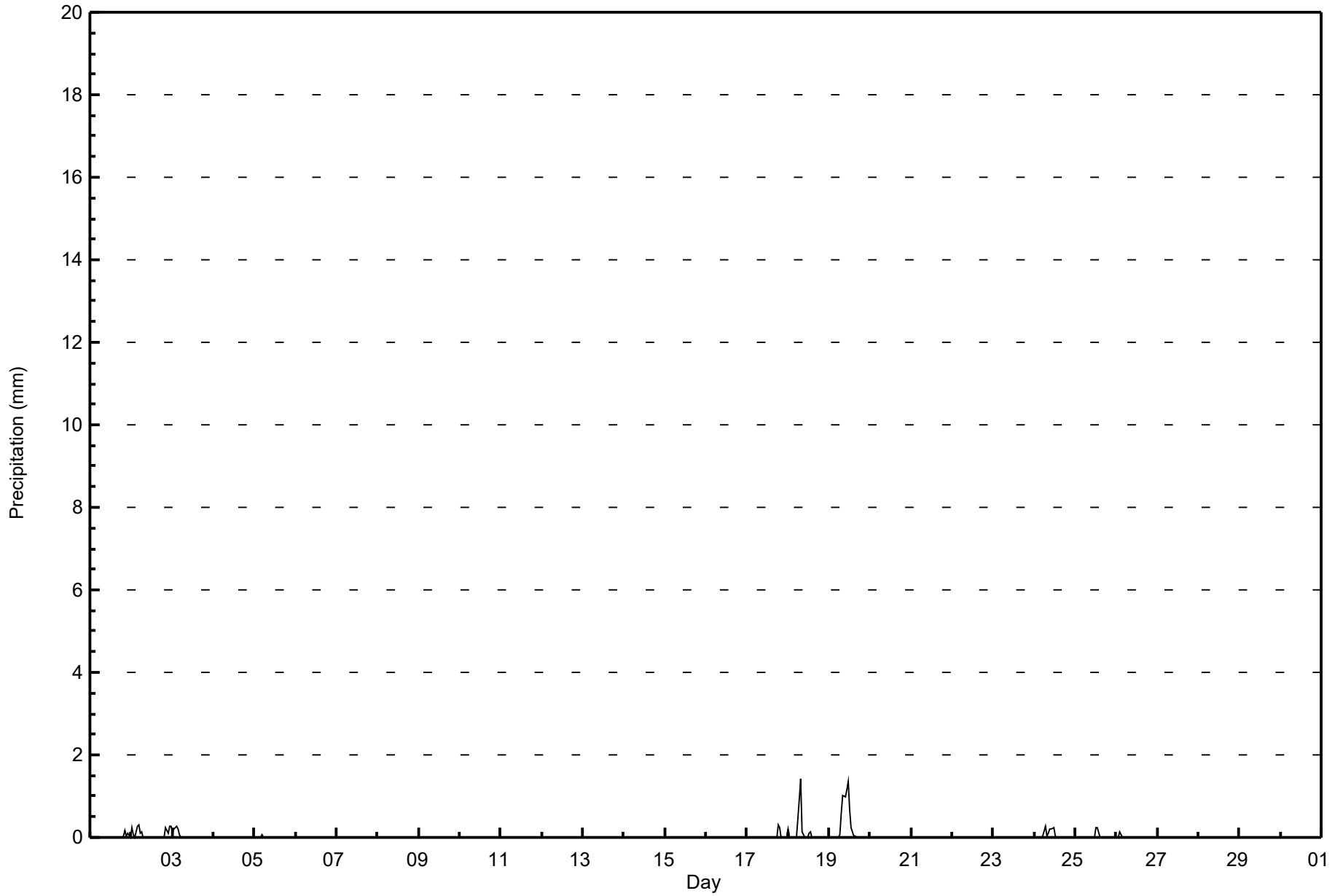


Maximum Value: 1.4 mm on Apr 18 08:00																				Maximum Daily Total: 6.2 mm on Apr 19					Hours in Service: 720	
Minimum Value: 0.0 mm on Apr 1 01:00																				Minimum Daily Total: 0.0 mm on Apr 4					Hours of Data: 718	
Maximum Diurnal Total: 2.1 mm at hour 8																				Minimum Diurnal Total: 0.0 mm at hour 17					Hours of Missing Data: 2	
Monthly Total: 14.81 mm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.5					Hours of Calibration: 0	
																									Percent Operational Time: 99.7	
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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.1	0.0	0.4	0.2
2-Apr	0.2	0.1	0.0	0.3	0.3	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	0.1	0.3	0.3	2.0	0.3
3-Apr	0.1	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3
4-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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
6-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.6	0.3
18-Apr	0.2	0.0	0.0	0.0	0.0	0.0	0.9	1.4	0.2	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	3.0	1.4
19-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.0	1.0	1.1	1.4	0.7	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	1.4
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	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
22-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.1	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	1.2	0.3
25-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2
26-Apr	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	0.1	0.1
27-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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		
M - Maintenance																										



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Fort McKay - Bertha Ganter - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Precipitation (PC) - mm
Fort McKay - Bertha Ganter - April 2023

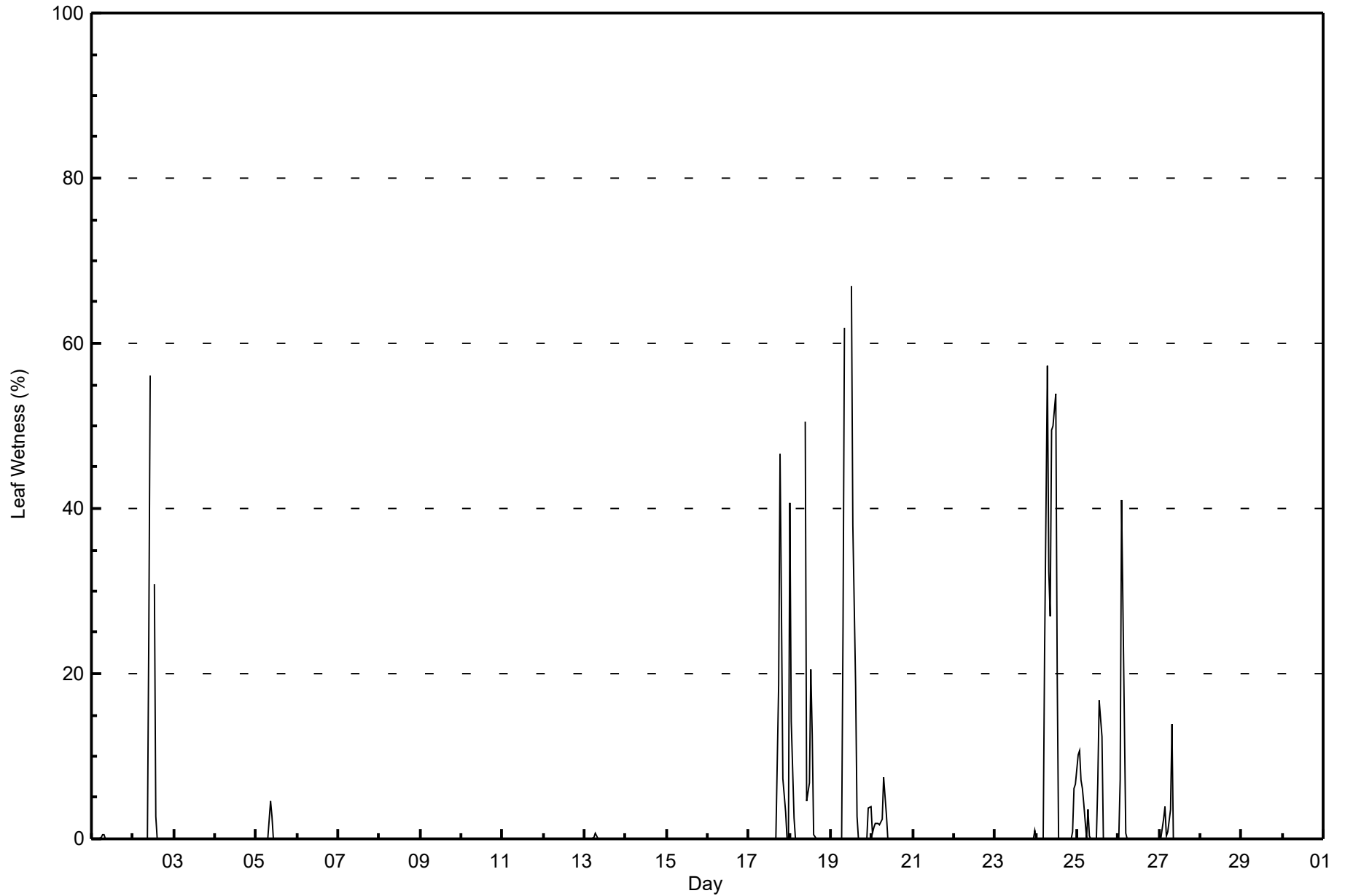
Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	710	98.89	98.89
0.4 - 0.5	0	0.00	98.89
0.6 - 0.7	2	0.28	99.16
0.8 - 1.4	6	0.84	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



Maximum Value: 66.9 % on Apr 19 13:00		Maximum Daily Average: 13.6 % on Apr 24		Hours in Service: 720																																													
Minimum Value: 0.0 % on Apr 1 01:00		Minimum Daily Average: 0.0 % on Apr 3		Hours of Data: 713																																													
Maximum Diurnal Average: 4.9 % at hour 13		Minimum Diurnal Average: 0.0 % at hour 17		Hours of Missing Data: 7																																													
Monthly Average: 1.57 %		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.3 P ₉₉ = 49.1		Hours of Calibration: 0																																													
				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-Apr	0.0	0.0	0.0	0.0	0.0	0.2	0.6	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	0.0	0.0	0.0	0.0	0.1	0.6																							
2-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.5	56.1	OR	30.9	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	56.1																							
3-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.6																							
6-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.4	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	0.6																							
14-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.7	46.6	27.6	7.3	3.1	0.0	0.0	4.3	46.6																						
18-Apr	40.7	14.2	2.6	0.0	0.0	0.0	OR	OR	OR	50.5	4.5	6.8	20.5	12.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	50.5																							
19-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.7	61.8	OR	OR	OR	66.9	38.0	18.5	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.9	10.5	66.9																						
20-Apr	0.7	1.4	1.9	1.9	1.7	2.0	2.4	7.4	2.9	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	0.9	7.4																							
21-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	1.0																						
24-Apr	0.0	0.0	0.0	0.0	0.0	22.6	57.3	32.3	27.0	49.4	50.0	53.8	20.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.1	6.7	13.6	57.3																						
25-Apr	10.2	10.7	7.1	6.1	4.2	0.0	3.6	0.3	0.0	0.0	0.0	0.0	6.9	16.8	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	16.8																							
26-Apr	0.0	7.1	40.9	14.2	0.7	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	0.0	0.0	0.0	0.0	0.0	0.0	2.6	40.9																							
27-Apr	0.0	0.0	2.4	3.8	0.3	0.9	3.5	14.0	0.0	0.0	0.0	0.0	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	14.0																							
28-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																						
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																						
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	1.1	1.8	0.9	0.2	0.9	2.3	2.8	3.3	4.4	3.8	2.2	4.9	2.3	1.0	0.1	0.0	0.6	1.6	0.9	0.2	0.1	0.3	0.4	Diurnal Average	
																								40.7	14.2	40.9	14.2	4.2	22.6	57.3	32.3	61.8	50.5	56.1	53.8	66.9	38.0	18.5	2.7	0.0	18.7	46.6	27.6	7.3	3.1	6.1	6.7	Diurnal Maximum	
OR - Out of Range																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

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

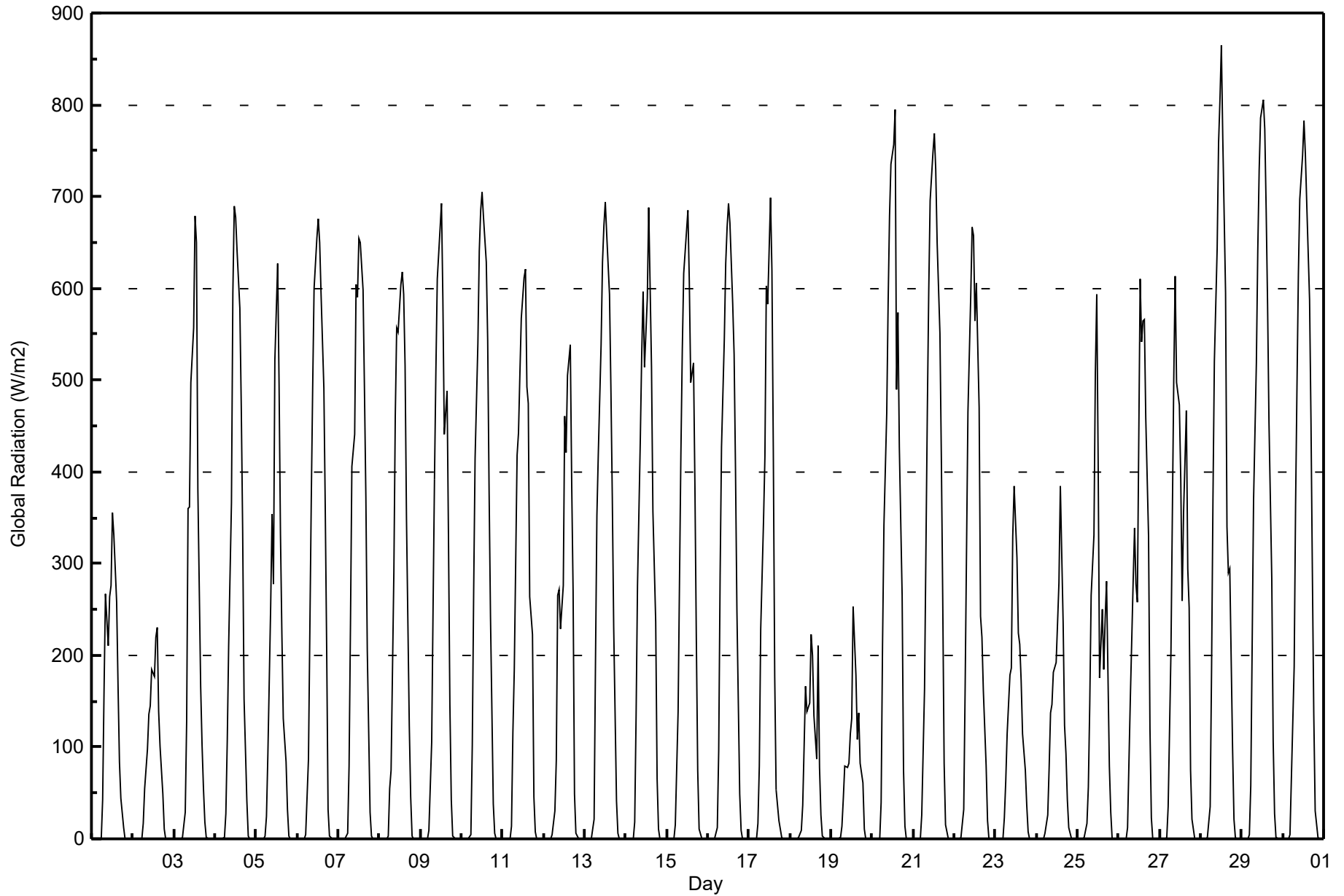
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	642	90.04	90.04
0.4 - 0.5	3	0.42	90.46
0.6 - 0.7	4	0.56	91.02
0.8 - 1.4	4	0.56	91.58
1.5 - 10	29	4.07	95.65
> 10	31	4.35	100.00

Total Number of Valid Hours: 713

Total Number of Hours: 720



Maximum Value: 865.2 W/m2 on Apr 28 13:00 Maximum Daily Average: 293.3 W/m2 on Apr 29																						Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0				
Minimum Value: 0.0 W/m2 on Apr 1 01:00 Minimum Daily Average: 57.3 W/m2 on Apr 19 Maximum Diurnal Average: 571.1 W/m2 at hour 13 Minimum Diurnal Average: 0.0 W/m2 at hour 24 Monthly Average: 192.33 W/m2 Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 51.6 Q ₃ = 360.0 P ₉₀ = 599.3 P ₉₉ = 768.2																										
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-Apr	0.0	0.0	0.0	0.0	0.0	0.2	43.1	162.4	266.9	210.8	263.4	276.7	355.5	331.6	257.5	166.3	84.2	44.0	12.4	0.6	0.0	0.0	0.0	0.0	103.1	355.5
2-Apr	0.0	0.0	0.0	0.0	0.0	0.4	17.0	54.8	97.4	135.7	145.4	184.1	176.4	220.2	230.9	138.1	100.7	49.0	10.3	0.3	0.0	0.0	0.0	0.0	65.0	230.9
3-Apr	0.0	0.0	0.0	0.0	0.0	0.9	29.4	128.5	359.6	361.1	498.0	556.9	678.1	649.3	381.4	166.5	102.9	55.2	18.8	1.1	0.0	0.0	0.0	0.0	166.2	678.1
4-Apr	0.0	0.0	0.0	0.0	0.0	1.2	27.6	106.1	210.7	366.3	595.2	689.1	677.4	640.0	578.2	472.1	335.6	153.2	41.4	2.4	0.0	0.0	0.0	0.0	204.0	689.1
5-Apr	0.1	0.0	0.0	0.0	0.0	3.5	24.7	91.0	252.6	353.5	278.3	521.9	626.7	496.4	332.1	224.9	131.0	83.9	32.6	2.6	0.0	0.0	0.0	0.1	144.0	626.7
6-Apr	0.2	0.2	0.2	0.1	0.1	5.0	86.2	228.9	369.0	490.5	599.1	653.9	676.3	650.0	593.5	491.2	359.2	206.9	32.2	3.2	0.1	0.1	0.1	0.1	226.9	676.3
7-Apr	0.0	0.1	0.1	0.1	0.1	5.4	79.9	233.9	405.3	440.3	604.5	589.6	654.4	650.3	598.2	487.7	371.5	205.4	28.4	3.0	0.0	0.1	0.0	0.0	223.3	654.4
8-Apr	0.0	0.0	0.1	0.1	0.1	3.6	54.9	74.3	291.1	460.7	556.4	552.1	603.9	618.1	593.3	516.3	349.0	124.1	45.4	3.6	0.0	0.0	0.0	0.0	202.0	618.1
9-Apr	0.0	0.0	0.1	0.0	0.0	8.5	104.5	253.4	392.7	509.1	610.8	665.8	693.2	587.6	441.3	488.5	328.1	146.1	43.3	2.8	0.0	0.0	0.0	0.0	219.8	693.2
10-Apr	0.0	0.0	0.0	0.0	0.0	5.2	102.7	272.0	414.9	539.7	640.3	685.0	704.4	676.6	628.4	543.6	379.3	241.9	38.0	5.7	0.0	0.0	0.0	0.0	244.9	704.4
11-Apr	0.0	0.2	0.0	0.0	0.0	14.1	115.5	184.6	417.4	443.1	505.9	567.2	612.0	621.0	493.4	474.8	264.4	223.0	46.5	7.7	0.0	0.0	0.0	0.0	208.0	621.0
12-Apr	0.0	0.0	0.0	0.0	0.0	3.9	30.1	85.5	265.3	270.9	229.0	276.5	460.9	421.5	504.6	539.0	387.5	270.5	49.3	5.9	0.0	0.0	0.0	0.0	158.4	539.0
13-Apr	0.0	0.0	0.0	0.0	0.0	21.5	193.9	352.4	420.3	539.2	629.0	668.3	693.7	658.8	592.9	491.4	372.1	230.3	40.9	6.3	0.0	0.0	0.0	0.0	246.3	693.7
14-Apr	0.0	0.0	0.0	0.0	0.0	18.9	134.4	275.8	435.1	527.1	597.0	514.6	588.9	688.5	602.0	513.4	357.3	237.0	64.9	10.6	0.1	0.0	0.0	0.0	231.9	688.5
15-Apr	0.0	0.0	0.0	0.0	0.0	15.0	138.3	281.5	421.7	533.4	616.0	662.0	684.7	606.7	497.7	518.9	385.9	220.1	74.5	10.6	0.0	0.0	0.0	0.0	236.1	684.7
16-Apr	0.0	0.0	0.0	0.0	0.0	11.6	96.3	286.5	427.0	544.2	627.3	667.3	693.3	671.2	582.7	527.8	401.3	248.5	49.4	9.3	0.1	0.0	0.0	0.0	243.5	693.3
17-Apr	0.1	0.1	0.1	0.1	0.0	17.4	79.9	229.4	345.9	417.0	602.7	582.1	698.8	619.9	422.7	177.3	53.8	19.5	10.4	1.1	0.0	0.0	0.0	0.0	178.3	698.8
18-Apr	0.0	0.0	0.0	0.0	0.0	1.5	9.9	36.9	101.3	165.8	138.5	148.4	223.2	199.6	133.6	86.6	210.9	77.3	26.6	3.3	0.0	0.0	0.0	0.0	65.1	223.2
19-Apr	0.0	0.0	0.0	0.0	0.0	1.6	13.0	43.8	79.3	77.7	82.0	113.8	131.5	252.8	179.2	108.6	137.3	83.1	60.4	10.8	0.0	0.0	0.0	0.0	57.3	252.8
20-Apr	0.0	0.0	0.0	0.0	0.5	39.4	210.1	342.2	463.0	584.6	678.5	735.8	756.3	795.1	490.1	573.5	427.8	265.9	75.5	14.2	0.7	0.3	0.0	0.0	268.9	795.1
21-Apr	0.0	0.0	0.1	0.0	0.0	26.7	162.6	315.4	466.5	596.7	696.3	747.9	769.2	728.9	649.6	549.9	416.3	261.4	83.0	15.3	0.0	0.0	0.2	0.0	270.2	769.2
22-Apr	0.1	0.0	0.0	0.0	0.9	32.0	164.9	315.7	465.6	592.4	666.9	657.5	564.6	605.5	469.4	242.5	220.3	162.0	79.6	19.4	0.5	0.0	0.0	0.0	219.2	666.9
23-Apr	0.0	0.0	0.0	0.0	0.3	22.5	61.8	114.7	177.9	186.1	329.2	384.1	307.1	224.1	211.5	172.0	115.1	75.5	37.0	7.6	0.0	0.0	0.0	0.0	101.1	384.1
24-Apr	0.0	0.0	0.0	0.0	0.2	5.5	26.4	78.3	136.5	146.8	180.8	192.8	234.9	278.7	384.4	234.6	123.7	93.0	43.3	12.7	0.0	0.0	0.0	0.0	90.5	384.4
25-Apr	0.0	0.0	0.0	0.0	1.1	16.5	56.9	146.3	265.3	331.4	508.3	593.6	412.2	175.1	250.5	184.3	240.0	280.8	78.7	28.4	0.1	0.0	0.0	0.0	148.7	593.6
26-Apr	0.0	0.0	0.0	0.0	0.6	12.2	83.8	153.8	280.1	339.3	277.4	258.0	609.6	542.2	564.0	566.0	459.9	330.1	120.2	22.6	0.2	0.0	0.0	0.0	192.5	609.6
27-Apr	0.0	0.0	0.0	0.0	1.9	34.5	203.7	354.2	499.9	613.0	497.8	472.9	392.3	259.1	354.7	466.8	294.9	251.2	75.0	21.3	0.5	0.0	0.0	0.0	199.7	613.0
28-Apr	0.0	0.0	0.0	0.0	1.8	35.6	184.3	371.4	520.4	644.4	758.4	805.9	865.2	763.8	595.1	339.6	289.9	294.7	98.6	22.1	0.8	0.0	0.0	0.0	274.7	865.2
29-Apr	0.0	0.0	0.0	0.0	3.9	57.8	211.8	369.3	519.0	641.1	729.9	785.4	805.9	772.8	684.7	582.0	454.1	284.3	107.3	27.4	1.5	0.0	0.2	0.0	293.3	805.9
30-Apr	0.1	0.0	0.0	0.0	3.9	65.3	187.5	363.5	493.0	615.3	697.6	744.2	782.9	746.3	691.7	587.5	456.1	289.4	136.3	30.0	1.4	0.1	0.1	0.1	287.2	782.9
																								Diurnal Average		
																								Diurnal Maximum		





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

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

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	323	44.86	44.86
21 - 100	74	10.28	55.14
101 - 300	120	16.67	71.81
301 - 600	131	18.19	90.00
601 - 900	72	10.00	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

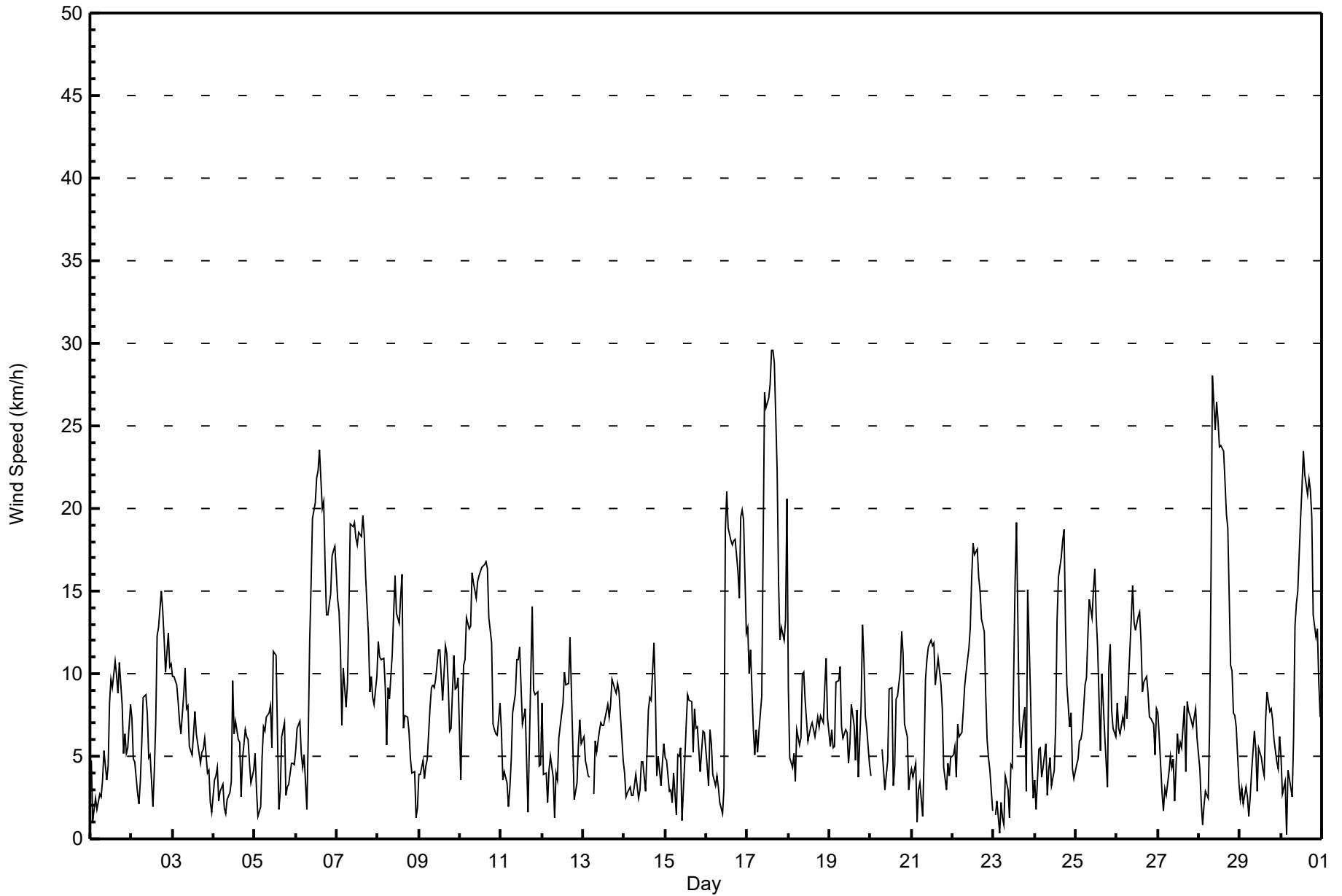


Maximum Speed: 30 km/h on Apr 17 15:00	Maximum Daily Speed Average: 14.8 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 30 04:00	Minimum Daily Speed Average: 2.4 km/h on Apr 4	Hours of Data: 712
Maximum Diurnal Speed Average: 5.4 km/h at hour 12	Minimum Diurnal Speed Average: 0.6 km/h at hour 4	Hours of Missing Data: 8
Monthly Average Velocity: 2.3 km/h 151.1 deg	Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 4 Median = 7 Q ₃ = 11 P ₉₀ = 16 P ₉₉ = 26	Percent Operational Time: 98.9

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-Apr	N5	NNW1	N2	NNE2	NNW2	N3	NNW3	N4	NNE5	NNE4	N4	N8	N10	N9	N11	N10	NNW9	NNW11	N8	NE5	SE6	ESE5	ESE5	ESE8	N4.1	N11
2-Apr	SE7	SE5	SE5	SE3	ENE2	E3	SE6	SE9	SE9	SE8	SSE5	SSE5	NNW2	NNW4	NNE7	N12	N13	N15	N14	N12	NNE10	N12	N10	N11	NE4.0	N15
3-Apr	N10	N10	N9	N8	N7	N6	N9	N10	N8	N8	ENE6	ESE5	ESE6	E8	E6	E5	SE5	SSE5	SSE5	SSE6	SSE4	S4	S2	NNW2	NE2.9	NNW10
4-Apr	NNW4	NW4	NNW4	N2	NW3	NNW3	N2	NNE2	ESE2	ESE3	SE4	SE10	SE6	SE7	SSE6	SSE6	SSE3	SSE5	S7	S6	SSE6	SSE5	SSE3	ESE4	SE2.4	SE10
5-Apr	SE5	S3	NNE1	ESE2	SSE5	SSE7	SSE7	S7	SSE8	SSE8	S5	SSE11	SSE11	S6	SE2	NW3	S6	SSE7	SSE3	SSE3	SSE3	S5	SSE5	SSE4	SSE4.9	SSE11
6-Apr	SSE5	S7	S7	SSE5	SSE4	SSE5	SSE2	S6	SSE12	SSE15	SSE19	S20	SSE22	SSE22	SSE24	SSE20	S20	S17	S14	S14	S15	S17	S17	S18	S13.6	SSE24
7-Apr	S14	S14	S11	S7	S10	S8	S9	S14	S19	S19	SSE19	SSE18	S18	S19	SSE18	S20	S18	SSE16	S12	S9	SSE10	SSE9	S8	S10	S13.7	SSE20
8-Apr	S12	S11	S11	S11	S9	S6	S9	S9	SSE11	SSE14	SSE16	SSE14	SSE13	SSE15	SSE16	SW7	SW7	SW7	SSW6	SW5	SW4	SW4	SW1	W2	S8.4	SSE16
9-Apr	WSW4	WSW4	SSW5	SSE4	SSW4	SSW5	SW8	WSW9	WSW9	WSW9	WSW10	WSW11	WSW11	SW10	SSW8	SSW12	S11	SSE9	S7	SSE7	S11	S9	S9	SSE10	SSW6.7	SSW12
10-Apr	S4	S8	S11	WSW11	WSW13	WSW13	WSW13	WSW16	W15	WSW15	WSW16	W16	W16	W16	W17	W17	WSW16	W13	W12	SW7	SSW7	SSW6	SW6	WSW8	WSW11.1	W17
11-Apr	SW7	S4	S4	S3	SSE2	SSW3	SSE5	S8	S9	SSE11	SSE11	SSE12	SW7	SW7	WSW8	WSW5	W2	NNW10	NNW14	NNW9	NW9	NW9	WNW4	W4	SW2.6	NNW14
12-Apr	NW8	NW4	W4	W2	W4	WNW5	WNW4	N1	ESE4	ESE4	N6	NE8	NNE8	N10	NNW9	NW9	NW12	WNW9	NW6	NW2	W3	NW6	NW7	N6	NNW4.4	NW12
13-Apr	NNW6	WNW5	NNW4	NW4	NW4	UO	NNE3	NNE6	NNE5	NE6	ENE7	E7	E7	ENE7	ENE8	NE7	NE8	NNE10	NNE9	NNE9	N9	NNE9	N8	N5	NNE5.3	NNE10
14-Apr	N4	NNW3	N3	NNW3	N3	NNW3	N3	NE4	NNE2	NNE3	ENE5	ENE5	SE3	NE5	NE8	NE9	NNE8	N12	NNE9	E4	SSE5	ESE3	NNE5	NNE6	NNE3.8	N12
15-Apr	NNE5	NNE5	N3	NNW3	NNW2	NNW4	N1	SE5	SE5	SE6	SE1	ESE5	SE7	SSE9	SSE8	SE8	SE5	E8	ESE7	ESE7	SE4	SSE5	S7	S6	SE3.2	SSE9
16-Apr	SE4	NE3	N7	N6	N4	NW3	N4	NE3	ESE2	NE1	E3	SSE19	SSE21	SSE19	SSE18	SE18	ESE18	ESE18	ESE16	ESE15	SE19	SE20	SE19	SSE12	SE8.9	SSE21
17-Apr	SE13	SSE10	SE11	ESE7	NE5	N7	N5	NE7	E9	SE18	SE27	SE26	SE27	SE28	SE30	SE30	SE29	SE22	ESE16	E12	SE13	SE12	SE13	SE21	SE14.8	SE30
18-Apr	ESE9	ENE5	NE4	ENE5	NE3	ESE7	ESE6	N6	N10	N10	N8	ENE6	ENE6	NE7	ENE7	E6	ENE7	NE7	NE7	NE7	NNE7	NNE9	NNE11	NNE7	NE5.7	NNE11
19-Apr	NNE6	NNE7	NE6	E6	ESE10	ESE10	ESE10	ESE7	ESE6	ESE7	ESE6	ESE5	ESE6	ESE8	ESE7	E5	ESE8	NE4	NNW8	N13	N11	N7	N7	NNW4	ENE4.3	N13
20-Apr	NW4	UO	UO	UO	UO	UO	UO	SE5	SE3	NNW4	ENE5	N9	N9	NE3	E4	ENE8	ESE9	ESE10	ESE13	ESE11	ESE7	SE6	SE3	SE4	E4.2	ESE13
21-Apr	SSE4	S4	SSE5	ESE1	NNW3	NW3	N1	SE5	SSE10	SSE11	SSE12	S12	S12	SSE12	SSE9	SSE11	SSE10	SSE9	SSE8	SSE4	S3	S5	SSE4	S5	SSE6.0	S12
22-Apr	S5	S6	SSE4	S7	S6	S6	S8	SSE9	SSE10	SE12	SSE13	SSE16	SSE18	SSE17	SSE18	SSE16	SSE15	S13	S13	S9	S6	S5	SSE4	SSE2	SSE9.7	SSE18
23-Apr	UO	ESE1	SSE2	WSW0	NW2	NW1	ESE1	SE4	SSE3	ENE1	NNE4	SE4	SSE16	SE19	SSE13	SE7	ESE6	SE7	SSE8	NE3	N15	N9	NW5	NNW2	SE2.6	SE19
24-Apr	SSE4	NE2	N5	N6	N4	SE4	SE6	NNE3	SE4	SSE5	ESE3	E4	NNE7	NNW13	N16	NNW17	N18	N19	N13	N9	N7	NW8	WSW4	SW4	N4.9	N19
25-Apr	SSE4	S5	S6	SSE6	SSE6	S9	S10	SSE12	SSE15	SSE13	SSE15	SSE16	SSW13	WNW11	ESE5	SSE10	SSE8	ESE6	W3	W10	WNW12	W8	WNW7	W6	S5.9	SSE16
26-Apr	W8	W7	WNW6	WNW7	WNW7	WNW9	WNW7	WNW10	NW13	NW15	NW13	NW13	NNW14	NNW14	N12	NE9	NE9	NE10	NE9	NNE7	NNE7	NNW7	NW5	NW8	NNW7.2	NW15
27-Apr	NNW8	NW6	NW3	SW2	SW3	S3	SSE4	SSE5	SE4	S5	NW2	SSE6	SSW5	W6	SW6	SSW8	WSW4	SSW8	S8	S7	S7	SSE7	S8	SSE6	SSW3.4	SSW8
28-Apr	SSE4	SSW2	W1	SSE2	WSW3	NW2	WNW7	NW16	NW28	NW25	NW26	NW25	NW24	NW24	NW23	NW22	N20	N19	N10	NNE10	N8	NW7	NNW7	NW3	NNW11.9	NW28
29-Apr	WSW2	WNW3	W2	WNW3	SSW3	SSW1	SE3	SE4	SE7	SE5	SE3	SE6	ESE5	ENE4	NE4	NE7	E9	E8	E8	E7	E6	SE5	ESE4	SSE6	ESE3.0	E9
30-Apr	SSE5	SE3	SSE4	WSW0	NNW4	NW4	NNW3	SSE6	SSE13	SSE14	SSE15	SSE19	SSE21	SSE23	SSE22	SSE21	SSE22	SSE21	SSE19	SSE14	SSE12	SSE13	SSE9	SSE7	SSE11.4	SSE23

SSE1.3	S1.2	SSE1.1	S0.6	SW0.8	SSW1.1	S1.3	S1.9	SSE2.8	SSE3.3	SSE3.7	SSE5.4	SSE5.0	SSE3.8	SSE4.0	SE3.3	SE3.6	ESE2.9	ESE2.5	ESE2.2	ESE2.1	SE1.8	SSE1.8	SSE2.2	Diurnal Average	
S14	S14	SE11	S11	WSW13	WSW13	WSW13	WSW16	NW28	NW25	SE27	SE26	SE27	SE28	SE30	SE30	SE29	SE22	SSE19	ESE15	SE19	SE20	SE19	SE21	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 - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	256	35.96	35.96
6 - 11	299	41.99	77.95
12 - 19	124	17.42	95.37
20 - 28	30	4.21	99.58
29 - 38	3	0.42	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 712

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	20	15	13	8	6	22	29	43	18	8	7	9	10	6	18	24	256
6 - 11	40	21	17	10	12	26	16	45	48	6	11	9	6	10	11	11	299
12 - 19	14	1	0	0	1	6	10	43	20	2	0	8	7	1	6	5	124
20 - 28	1	0	0	0	0	0	7	12	2	0	0	0	0	0	8	0	30
29 - 38	0	0	0	0	0	0	3	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
Totals	75	37	30	18	19	54	65	143	88	16	18	26	23	17	43	40	712

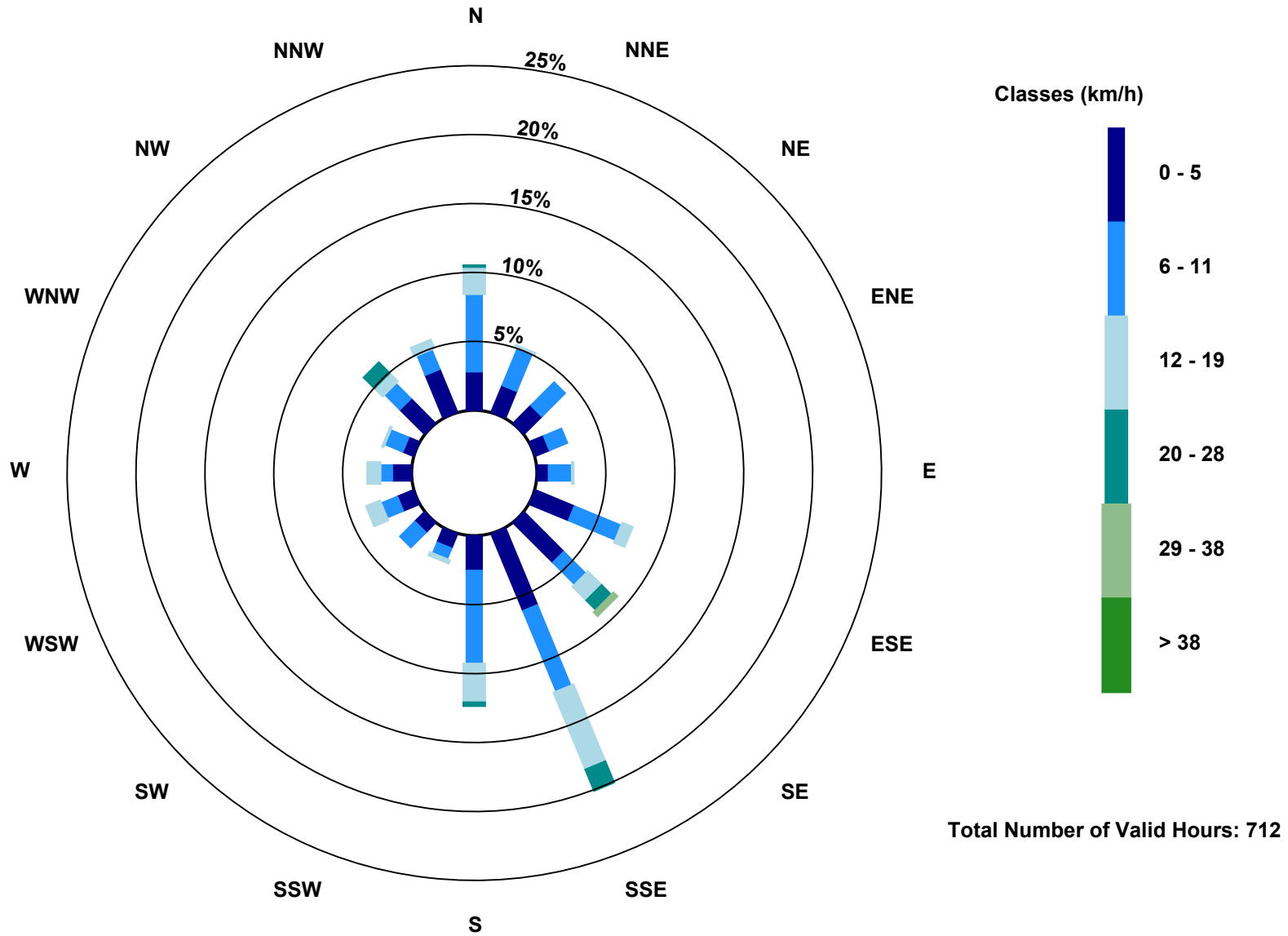
Total Number of Valid Hours: 712

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 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 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 8 km/h on Apr 17 15:00	Hours of Data: 712
Minimum Value: 0 km/h on Apr 30 05:00	Hours of Missing Data: 8
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 4 P ₉₉ = 7	Hours of Calibration: 0
	Percent Operational Time: 98.9

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-Apr	1	1	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	
2-Apr	2	1	1	1	1	1	1	2	1	2	1	2	1	2	3	3	4	3	4	3	3	2	2	2	
3-Apr	2	2	1	2	1	1	2	2	3	3	2	2	2	2	2	1	1	1	1	1	1	1	2	1	
4-Apr	1	1	2	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	2	1	1	
5-Apr	1	1	1	1	1	1	2	2	2	2	2	3	3	2	2	1	4	2	2	2	1	1	1	1	
6-Apr	1	1	1	1	1	1	1	2	4	3	4	4	4	4	5	4	5	4	3	3	3	4	3	3	
7-Apr	3	3	3	2	2	2	2	3	5	3	3	4	3	4	4	4	4	3	2	2	3	2	2	2	
8-Apr	2	3	2	2	2	1	2	2	2	3	2	2	2	3	3	4	4	3	2	1	1	1	1	1	
9-Apr	1	2	1	1	2	2	3	4	4	4	4	5	5	5	4	4	3	3	1	1	2	2	2	2	
10-Apr	2	3	2	4	6	6	6	7	7	7	7	7	7	8	7	7	7	6	6	3	2	2	2	4	
11-Apr	3	1	1	2	2	2	1	2	2	2	2	3	4	4	3	3	2	6	4	2	1	3	1	1	
12-Apr	3	1	1	1	1	1	1	2	1	2	3	2	4	4	4	4	4	4	3	1	1	2	2	1	
13-Apr	2	1	1	1	1	UO	2	2	2	2	2	2	3	3	3	3	3	3	3	2	2	3	2	2	
14-Apr	1	2	1	1	2	1	1	1	2	2	2	2	2	3	3	3	3	3	3	2	2	1	1	1	
15-Apr	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	2	1	1	1	1	
16-Apr	2	1	1	1	1	1	1	1	1	1	2	6	5	4	5	5	5	5	5	4	5	5	5	3	
17-Apr	4	3	3	2	2	2	2	2	5	6	7	7	7	7	8	7	7	6	5	4	4	3	4	8	
18-Apr	6	2	2	2	2	3	3	2	2	2	2	2	2	3	3	2	2	3	3	2	2	3	2	2	
19-Apr	2	2	2	3	3	3	3	4	2	2	3	3	2	2	2	2	3	2	2	3	2	2	1	1	
20-Apr	1	UO	UO	UO	UO	UO	UO	1	2	1	2	4	4	3	4	3	4	4	4	3	1	2	1	2	
21-Apr	2	1	1	1	0	1	1	2	2	2	3	4	3	3	3	3	3	2	2	1	0	1	1	1	
22-Apr	1	2	1	1	1	1	1	1	2	2	3	4	5	5	5	3	4	4	3	2	1	1	1	1	
23-Apr	UO	1	1	2	1	1	1	1	1	1	2	3	5	4	3	4	3	4	5	4	3	2	2	2	
24-Apr	3	3	1	2	2	3	5	1	2	2	1	2	3	3	3	3	3	3	3	1	2	1	1	1	
25-Apr	1	1	2	1	1	2	2	2	2	3	3	3	5	6	3	2	3	2	3	5	5	3	3	3	
26-Apr	4	3	2	2	2	3	3	3	4	4	4	4	4	4	4	3	3	3	3	3	2	1	1	1	
27-Apr	2	1	1	1	1	1	2	2	2	2	2	3	3	2	3	4	2	3	3	1	1	1	2	2	
28-Apr	2	1	3	2	1	1	3	6	7	6	6	7	7	7	6	5	7	6	3	2	1	1	1	2	
29-Apr	1	1	1	1	2	1	1	1	2	2	3	2	3	3	3	3	3	2	2	2	2	2	1	1	
30-Apr	1	1	1	1	0	1	1	3	3	3	3	4	5	5	5	5	4	4	4	3	3	3	2	2	
	6	3	3	4	6	6	6	7	7	7	7	7	7	8	8	7	7	6	6	5	5	5	5	8	

Diurnal Maximum

UO - Unstable Operation



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

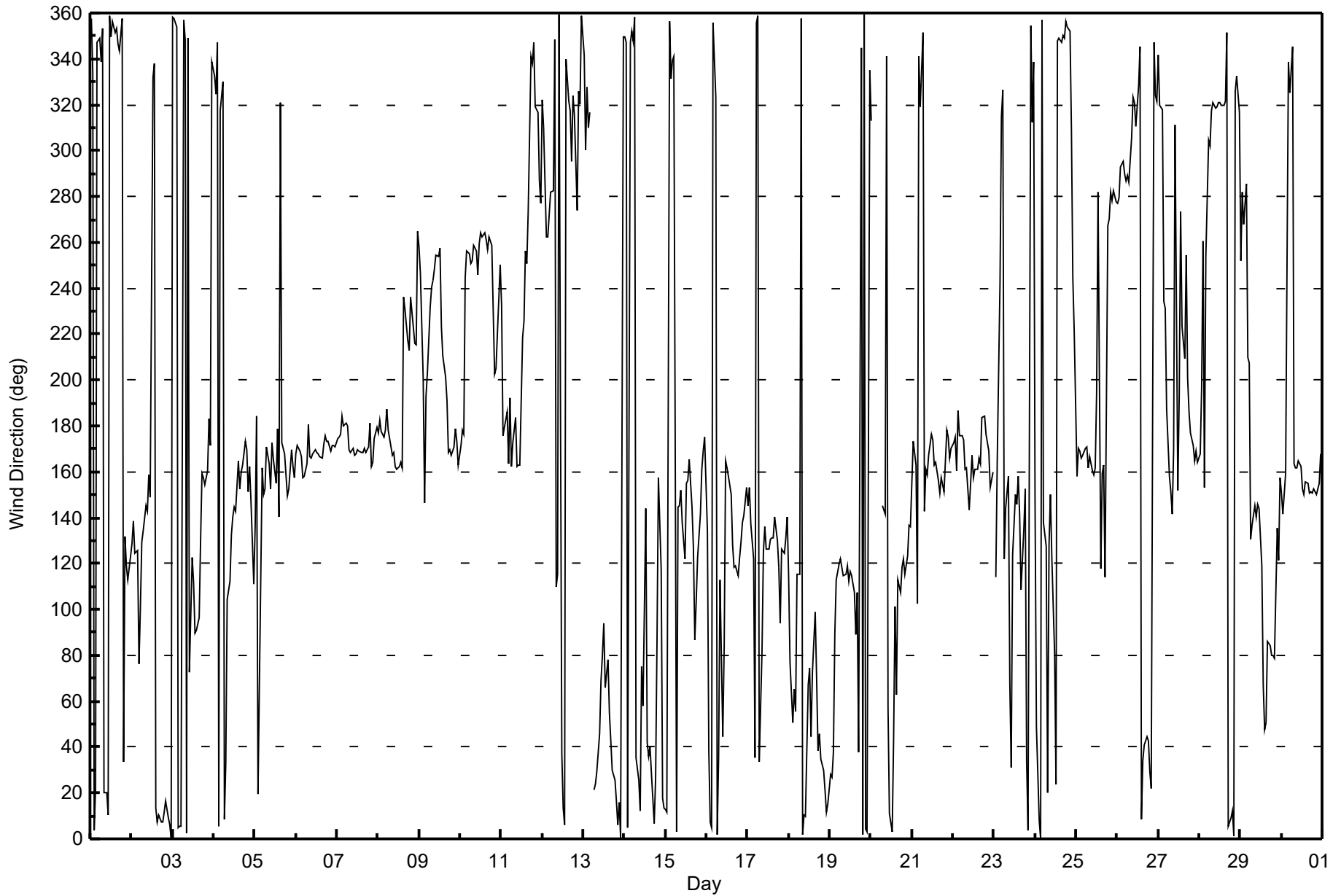
Fort McKay - Bertha Ganter - April 2023

Direction of Maximum Speed: 131 deg on Apr 17 15:00		Hours in Service:	720
Direction of Maximum Daily Speed Average: 126.3 deg on Apr 17		Hours of Data:	712
Direction of Minimum Speed: 251 deg on Apr 30 04:00		Hours of Missing Data:	8
Direction of Minimum Daily Speed Average: 2.4 deg on Apr 4		Percent Operational Time:	98.9
Monthly Average Direction: 151.1 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-Apr	357	334	4	22	347	349	339	353	20	20	11	359	350	356	352	353	347	344	358	34	132	119	113	123	8.8
2-Apr	129	138	125	126	76	101	129	134	145	143	158	149	332	338	13	7	10	7	8	11	17	9	6	0	38.3
3-Apr	358	358	354	5	6	5	357	349	2	349	72	123	112	90	91	96	130	159	158	154	160	183	172	339	38.1
4-Apr	333	325	347	5	317	330	8	33	104	112	133	140	144	143	165	152	160	163	174	169	151	162	147	111	144.3
5-Apr	137	184	20	115	161	150	153	171	164	152	172	166	155	179	140	321	173	168	158	149	153	170	163	157	160.7
6-Apr	168	172	169	166	158	158	163	181	166	166	168	169	168	168	167	166	172	176	173	173	169	171	171	171	169.4
7-Apr	174	175	176	184	180	181	180	170	169	170	167	168	170	169	168	169	170	168	171	181	162	164	174	180	171.5
8-Apr	177	183	178	175	178	187	178	175	167	168	162	161	162	164	162	236	231	217	213	236	229	216	215	265	180.5
9-Apr	258	246	201	147	193	203	232	240	243	248	254	254	257	223	211	201	191	168	170	167	171	179	173	163	209.4
10-Apr	171	178	176	245	256	255	251	252	259	256	246	260	264	262	264	261	257	262	259	231	202	205	220	250	248.6
11-Apr	233	176	179	186	163	192	162	173	184	162	163	163	219	225	256	250	274	341	338	347	319	317	287	277	229.8
12-Apr	322	310	262	263	272	282	282	349	110	115	359	37	14	6	340	321	318	295	324	315	274	326	320	359	328.9
13-Apr	342	300	328	310	316	UO	22	24	29	45	69	80	94	66	78	55	43	30	26	17	6	16	0	350	27.9
14-Apr	350	347	5	347	352	348	358	36	26	12	75	58	144	42	36	40	29	7	26	86	157	117	17	13	30.3
15-Apr	13	12	356	331	339	341	3	145	146	152	138	122	155	156	166	145	127	87	104	123	142	161	169	175	133.5
16-Apr	134	39	7	5	356	324	2	36	113	45	85	165	162	158	150	128	118	119	115	123	129	138	141	153	131.8
17-Apr	145	153	137	122	36	356	359	34	82	125	136	126	126	130	131	131	141	130	118	94	126	125	131	141	126.3
18-Apr	115	77	51	65	56	115	115	357	2	10	10	67	75	44	73	99	70	38	45	35	30	21	12	15	46.3
19-Apr	28	27	38	89	113	120	122	119	115	115	119	113	117	115	108	89	107	38	345	2	359	5	3	335	73.0
20-Apr	313	UO	UO	UO	UO	UO	UO	145	142	341	58	11	3	44	101	63	113	107	119	122	115	124	137	136	93.2
21-Apr	155	173	163	102	341	319	351	142	161	159	167	176	174	163	164	156	151	157	154	151	178	175	166	170	162.8
22-Apr	173	175	160	187	176	176	174	161	162	143	155	167	158	161	161	166	164	184	184	176	173	169	153	160	166.4
23-Apr	UO	114	164	243	315	326	122	144	158	68	31	124	150	146	158	141	108	135	153	34	4	354	313	338	124.3
24-Apr	149	49	8	0	357	138	127	20	128	150	122	80	24	348	349	347	350	349	356	354	352	309	245	221	358.2
25-Apr	158	170	169	166	167	170	171	162	167	160	159	162	195	282	118	159	163	114	267	270	282	278	283	278	184.7
26-Apr	277	279	293	295	290	287	289	286	306	323	321	311	328	345	8	34	41	44	43	29	22	347	324	321	331.0
27-Apr	342	320	318	234	231	188	158	152	142	170	311	152	193	274	224	209	255	201	186	177	171	165	169	164	194.0
28-Apr	168	196	260	153	254	304	302	317	321	319	319	321	321	320	320	322	352	5	9	12	1	326	333	316	327.3
29-Apr	252	282	268	286	210	208	131	136	145	140	146	144	119	67	47	51	86	84	80	80	79	135	122	158	108.9
30-Apr	151	141	159	251	339	325	346	163	162	162	165	162	153	150	156	155	151	151	151	153	150	153	155	168	155.2

164.2	183.1	163.4	181.5	230.2	209.0	181.1	171.6	165.7	158.3	155.9	156.3	160.2	155.6	147.2	139.8	131.5	113.9	111.9	104.9	123.3	146.0	156.7	165.5
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 - Bertha Ganter - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 103 deg on Apr 15 11:00	Hours of Data: 712
Minimum Value: 6 deg on Apr 28 23:00	Hours of Missing Data: 8
Percentiles: P ₁ = 10 P ₁₀ = 12 Q ₁ = 15 Median = 22 Q ₃ = 37 P ₉₀ = 55 P ₉₉ = 89	Hours of Calibration: 0
	Percent Operational Time: 98.9

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-Apr	24	70	55	33	55	32	37	33	23	34	34	24	23	25	20	24	22	17	22	42	17	16	19	15	70
2-Apr	14	15	21	44	23	25	17	14	13	18	21	22	71	27	28	18	17	15	17	17	17	15	15	14	71
3-Apr	15	14	13	15	14	14	13	13	29	28	41	41	31	24	23	21	28	20	16	17	19	17	74	52	74
4-Apr	23	24	24	21	16	30	28	35	42	51	61	14	27	25	37	37	65	19	11	12	12	29	22	14	65
5-Apr	17	55	41	38	16	14	25	18	16	16	32	15	15	44	89	38	58	13	29	16	21	14	13	10	89
6-Apr	18	10	13	16	13	16	85	18	15	13	13	12	12	12	12	12	15	16	14	14	12	12	13	12	85
7-Apr	14	13	14	16	14	14	13	13	13	12	13	12	13	12	14	13	12	11	12	12	11	13	13	12	16
8-Apr	12	14	13	13	13	13	11	14	13	16	11	10	12	11	12	55	48	28	24	24	26	23	72	26	72
9-Apr	43	48	29	23	39	49	35	35	43	47	43	41	45	50	40	32	21	15	10	11	12	13	13	12	50
10-Apr	42	18	13	37	39	38	41	38	40	40	42	41	38	39	39	38	41	39	43	36	17	18	33	38	43
11-Apr	38	35	26	25	72	54	19	13	22	16	18	29	57	63	48	66	92	49	12	10	10	10	17	16	92
12-Apr	33	34	21	82	30	18	33	80	52	63	48	28	38	36	34	40	19	33	46	49	25	24	14	15	82
13-Apr	23	20	23	34	18	UO	24	19	39	40	39	38	43	42	34	36	35	23	21	16	16	21	21	21	43
14-Apr	19	40	38	36	18	30	25	37	84	68	68	53	84	63	36	35	32	21	21	53	24	32	13	10	84
15-Apr	12	19	44	28	32	24	70	18	28	57	103	57	35	40	33	30	57	33	31	15	27	17	12	14	103
16-Apr	30	36	7	13	16	21	18	21	71	85	69	18	17	17	18	20	22	16	18	18	15	14	13	18	85
17-Apr	14	17	13	15	41	18	43	29	42	21	15	17	17	16	16	15	21	18	18	23	20	18	18	14	43
18-Apr	37	42	33	31	32	33	40	12	15	15	21	37	33	32	40	29	29	30	32	24	22	20	15	15	42
19-Apr	20	18	23	38	18	16	18	25	22	20	26	37	21	18	23	23	22	38	10	13	12	14	12	14	38
20-Apr	14	UO	UO	UO	UO	UO	UO	22	80	41	51	33	43	84	93	40	47	39	21	12	14	27	26	41	93
21-Apr	37	28	15	68	24	12	24	17	14	17	21	27	26	20	31	18	18	17	13	13	16	14	11	9	68
22-Apr	11	11	14	12	12	11	14	12	14	14	22	21	18	18	17	17	15	21	18	16	17	13	10	13	22
23-Apr	UO	29	39	89	32	37	46	27	56	70	33	65	16	18	19	43	48	35	37	86	15	19	49	90	90
24-Apr	70	57	15	43	52	64	61	19	38	38	45	43	32	16	17	14	13	15	18	17	13	25	45	49	70
25-Apr	13	18	13	11	13	11	13	13	12	13	14	13	53	34	48	15	67	38	67	35	26	30	28	36	67
26-Apr	35	31	21	16	18	21	27	30	19	20	23	23	25	27	27	37	31	30	33	23	23	10	25	9	37
27-Apr	12	12	40	64	40	25	35	20	56	55	96	66	74	50	64	48	69	36	22	12	15	10	12	12	96
28-Apr	25	60	88	75	62	50	18	18	17	19	18	20	23	24	22	18	23	18	19	16	12	18	6	41	88
29-Apr	58	24	55	21	53	77	33	16	18	72	95	64	79	78	95	42	35	33	23	21	28	29	22	23	95
30-Apr	17	26	25	82	18	16	27	54	16	16	17	17	17	16	16	16	15	15	14	13	12	12	12	11	82
	70	70	88	89	72	77	85	80	84	85	103	66	84	84	95	66	92	49	67	86	28	32	74	90	

Diurnal Maximum

UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS02 MILDRED LAKE APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
 APRIL 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	685	34	35	99.86	41.6	0	15	0
H2S (ppb) Average	669	34	51	97.64	4.9	0	0.8	0
THC (ppm) Average	685	34	35	99.86	3.6	-	2.3	-
NMHC(ppm) Average	685	34	35	99.86	0.564	-	0.115	-
CH4(ppm) Average	685	34	35	99.86	3.5	-	2.2	-
Temperature (C) Average	720	0	0	100	21.6	-	14.3	-
Relative Humidity (%) Average	718	0	2	99.72	100	-	85.2	-
Wind Speed 10 m (km/h) Average	720	0	0	100	28	-	20	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)

APRIL 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	685	2.38	5.2	-	0	0	0.1	0.4	1.7	7	41.6
H2S (ppb) Average	669	0.35	0.6	-	0	0	0.1	0.2	0.4	0.8	4.9
THC (ppm) Average	685	2.1	0.2	-	1.9	2	2	2	2.1	2.3	3.6
NMHC(ppm) Average	685	0.036	0.07	-	0	0	0	0	0	0.1	0.564
CH4(ppm) Average	685	2.06	0.2	-	1.9	2	2	2	2.1	2.2	3.5
Temperature 2 m (C) Average	720	4.82	5.8	-	-9.1	-2.7	0.5	4.6	9.1	12.5	21.6
Relative Humidity (%) Average	718	55.62	20.8	-	18	28.3	37.6	54.6	72.6	84.4	100
Wind Speed 10 m (km/h) Average	720	10.5	5	-	1	5	7	10	13	18	28
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

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

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
All paramerters	18 Apr 2023 08:00	18 Apr 2023 08:00	1	Station power failure
H2S	05 Apr 2023 10:00	05 Apr 2023 12:00	3	Maintenance - replaced sample pump
H2S	16 Apr 2023 23:00	17 Apr 2023 10:00	12	Analyzer Failure - inconsistent response
H2S	17 Apr 2023 11:00	17 Apr 2023 11:00	1	Maintenance - analyzer rebooted
Relative Humidity	20 Apr 2023 00:00	20 Apr 2023 00:00	1	Sensor operated out of range
Relative Humidity	20 Apr 2023 03:00	20 Apr 2023 03:00	1	Sensor operated out of range



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

Mildred Lake - April 2023

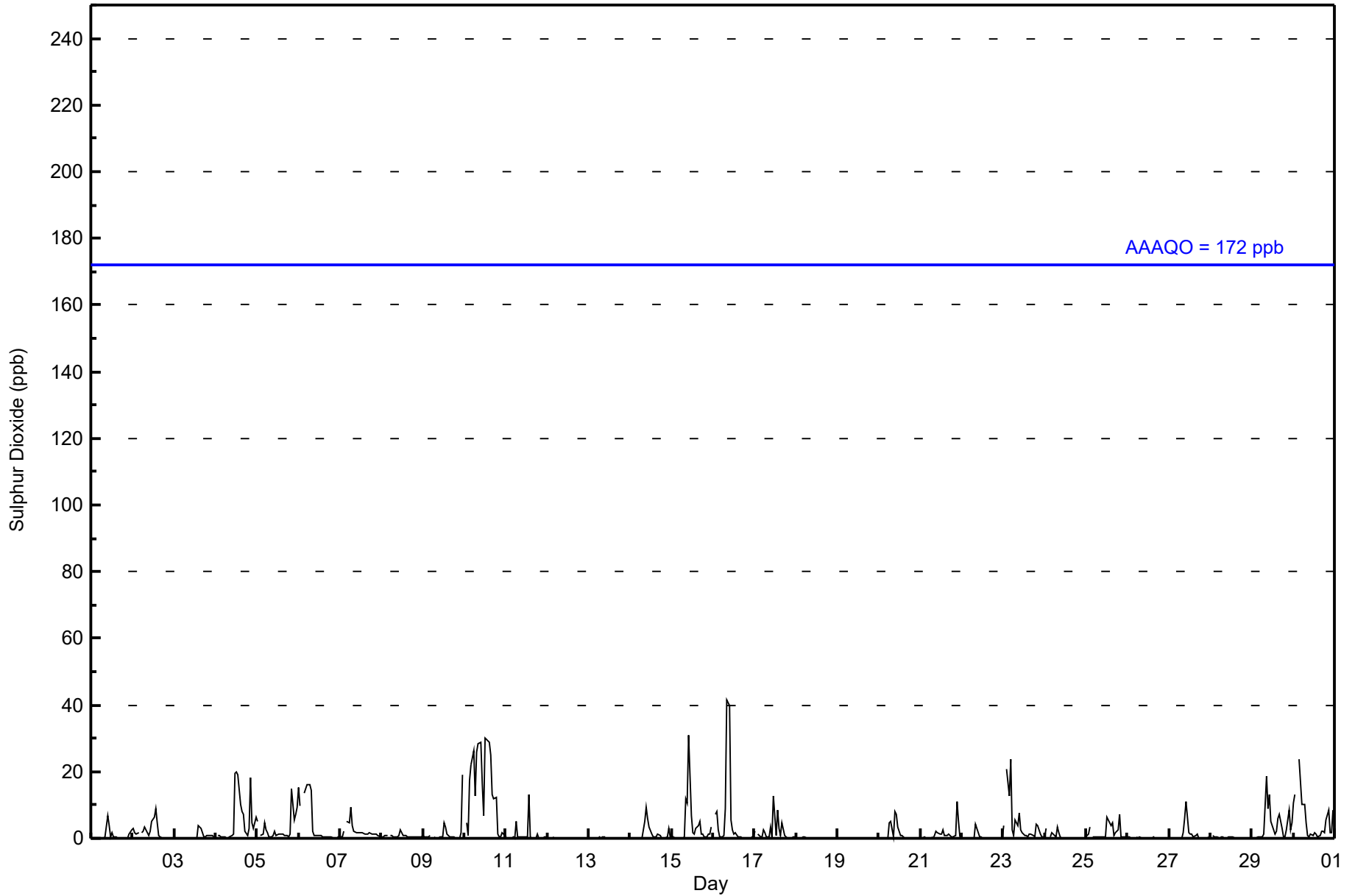
Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Daily Average		Daily Maximum				
Maximum Value: 41.6 ppb on Apr 16 09:00		Maximum Daily Average: 15.0 ppb on Apr 10																	Hours of Data: 685		Hours of Missing Data: 35						
Minimum Value: 0.0 ppb on Apr 1 01:00		Minimum Daily Average: 0.0 ppb on Apr 19																	Hours of Calibration: 34		Percent Operational Time: 99.9						
Maximum Diurnal Average: 4.7 ppb at hour 10		Minimum Diurnal Average: 0.9 ppb at hour 19																									
Monthly Average: 2.38 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.4 Q ₃ = 1.7 P ₉₀ = 7.0 P ₉₉ = 28.6																									
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-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.6	6.8	3.6	0.4	1.7	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	1.4	2.7	0.8	6.8	
2-Apr	2.8	1.5	1.5	1.7	Z	1.9	2.1	3.2	1.7	0.9	2.0	5.1	6.2	9.0	4.7	0.9	0.4	0.1	0.1	0.1	0.0	0.2	0.0	0.0	2.0	9.0	
3-Apr	0.0	0.0	0.0	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.9	3.1	1.7	0.4	0.5	0.8	0.8	1.0	0.8	0.5	0.6	3.9	
4-Apr	Z	0.7	0.8	0.4	0.3	0.3	0.2	0.1	0.4	0.9	1.5	19.4	20.0	19.2	10.3	8.2	7.1	2.0	0.8	2.9	18.4	4.5	2.9	6.5	5.6	20.0	
5-Apr	5.3	Z	0.7	1.4	4.8	2.6	1.7	0.3	0.4	0.9	2.1	0.8	1.3	1.4	1.4	1.3	0.9	1.0	0.6	1.3	14.9	5.3	7.1	9.4	2.9	14.9	
6-Apr	15.4	9.7	Z	13.5	14.8	16.0	16.0	14.2	2.0	0.8	0.8	0.7	0.7	0.7	0.3	0.2	0.3	0.3	0.3	0.3	0.1	0.2	0.2	0.4	4.7	16.0	
7-Apr	0.2	0.2	2.1	Z	4.9	4.6	9.2	3.8	2.0	1.5	1.7	1.5	1.7	1.6	1.4	1.4	1.2	1.6	1.3	1.3	1.3	1.3	0.9	0.6	2.1	9.2	
8-Apr	0.5	0.6	0.7	0.8	Z	0.7	0.7	0.6	0.6	0.6	0.6	0.8	2.4	0.9	0.7	0.7	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.6	2.4
9-Apr	0.7	0.5	0.4	0.5	1.0	Z	0.3	0.1	0.2	0.1	0.3	0.5	4.8	3.4	1.3	0.4	0.3	0.2	0.4	0.1	0.2	0.1	1.7	19.2	1.6	19.2	
10-Apr	Z	4.9	0.9	17.2	22.2	26.2	12.8	25.8	28.6	28.6	16.5	6.8	30.0	29.5	28.7	25.0	13.1	11.7	12.4	1.5	0.3	0.3	1.6	0.7	15.0	30.0	
11-Apr	0.3	Z	0.2	0.2	0.5	0.1	5.0	0.6	0.5	0.2	0.3	0.5	0.3	13.1	0.5	0.1	0.2	0.1	1.2	0.2	0.2	0.1	0.5	0.5	1.1	13.1	
12-Apr	0.5	0.1	Z	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	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	0.5
13-Apr	0.1	0.0	0.1	Z	0.1	0.1	0.3	0.1	0.3	0.3	C	C	C	C	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3
14-Apr	0.1	0.1	0.2	0.1	Z	0.0	0.0	0.1	5.3	9.2	5.7	3.5	1.2	0.3	0.3	0.6	1.1	0.9	0.1	0.0	0.1	0.3	2.9	0.3	1.4	9.2	
15-Apr	1.0	0.3	0.0	0.0	0.0	Z	0.0	0.3	11.8	10.7	31.0	6.8	1.8	1.3	2.9	3.9	5.0	1.4	1.3	0.4	0.3	1.1	1.4	3.5	3.8	31.0	
16-Apr	Z	7.1	8.2	2.5	0.6	0.3	0.7	8.9	41.6	39.6	5.4	2.4	1.4	1.5	0.4	0.5	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.8	5.4	41.6	
17-Apr	2.0	Z	1.4	0.2	0.4	2.4	1.6	0.4	0.3	3.5	0.6	12.8	1.0	8.5	2.8	0.9	4.7	0.7	0.3	0.1	0.1	0.1	0.2	0.3	2.0	12.8	
18-Apr	0.1	0.1	Z	0.1	0.4	0.5	0.0	PF	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.5	
19-Apr	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
20-Apr	0.0	0.0	0.0	0.0	Z	0.0	4.5	5.0	0.4	7.9	7.2	3.5	0.9	0.7	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	1.3	7.9	
21-Apr	0.0	0.1	0.3	0.2	0.1	Z	0.2	0.1	0.7	2.3	1.7	1.2	1.3	2.7	0.7	0.8	1.3	0.7	0.5	0.5	0.9	10.9	5.3	0.5	1.4	10.9	
22-Apr	Z	0.1	0.1	0.0	0.0	0.1	0.1	0.1	4.3	1.8	0.4	0.4	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.4	4.3	
23-Apr	4.0	Z	20.6	12.8	23.8	2.4	0.8	5.5	3.7	7.7	2.6	1.8	0.8	0.7	0.5	1.4	1.3	0.8	0.4	4.2	3.7	1.3	0.6	0.4	4.4	23.8	
24-Apr	0.4	2.8	Z	0.5	1.9	1.2	0.4	3.3	1.5	0.5	0.2	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	0.6	3.3	
25-Apr	0.8	1.1	3.2	Z	0.6	0.4	0.4	0.3	0.4	0.4	0.5	0.5	6.3	5.6	3.7	4.7	0.8	1.6	2.5	7.1	0.3	0.4	0.3	0.2	1.8	7.1	
26-Apr	0.5	0.4	0.2	0.2	Z	0.2	0.2	0.3	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	
27-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.0	1.8	6.1	11.0	1.7	1.5	1.2	0.4	0.8	1.1	0.0	0.2	0.1	0.1	0.0	0.1	0.2	1.1	11.0	
28-Apr	Z	0.9	0.6	0.3	0.4	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.9	
29-Apr	0.2	Z	0.2	0.4	0.3	0.4	0.6	1.4	18.7	8.7	13.0	5.1	2.5	1.4	1.9	5.8	7.2	2.9	0.2	0.2	2.5	8.6	2.5	4.6	3.9	18.7	
30-Apr	10.4	13.2	Z	23.5	16.8	10.0	10.0	4.8	0.7	0.5	1.1	1.0	1.6	1.2	0.6	0.8	2.2	1.9	1.7	5.6	8.5	1.8	1.6	8.4	5.6	23.5	
																								Diurnal Average		Diurnal Maximum	
																								1.8		15.4	
																								1.8		13.2	
																								1.7		20.6	
																								3.1		23.5	
																								3.8		23.8	
																								2.8		26.2	
																								2.3		16.0	
																								2.8		25.8	
																								4.3		41.6	
																								4.7		39.6	
																								3.8		31.0	
																								2.7		19.4	
																								3.1		30.0	
																								3.6		29.5	
																								2.3		28.7	
																								2.1		25.0	
																								1.7		13.1	
																								1.0		11.7	
																								0.9		12.4	
																								0.9		7.1	
																								1.8		18.4	
																								1.3		10.9	
																								1.1		7.1	
																								2.0		19.2	

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 (SO₂) - ppb
Mildred Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mildred Lake - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	641	93.58	93.58
11 - 20	29	4.23	97.81
21 - 60	15	2.19	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mildred Lake - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	53	21	15	26	40	98	76	109	44	26	26	15	15	21	23	33	641
11 - 20	0	0	0	0	0	4	10	2	4	1	1	6	0	0	1	0	29
21 - 60	0	0	0	0	0	0	4	1	1	0	0	9	0	0	0	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
Totals	53	21	15	26	40	102	90	112	49	27	27	30	15	21	24	33	685

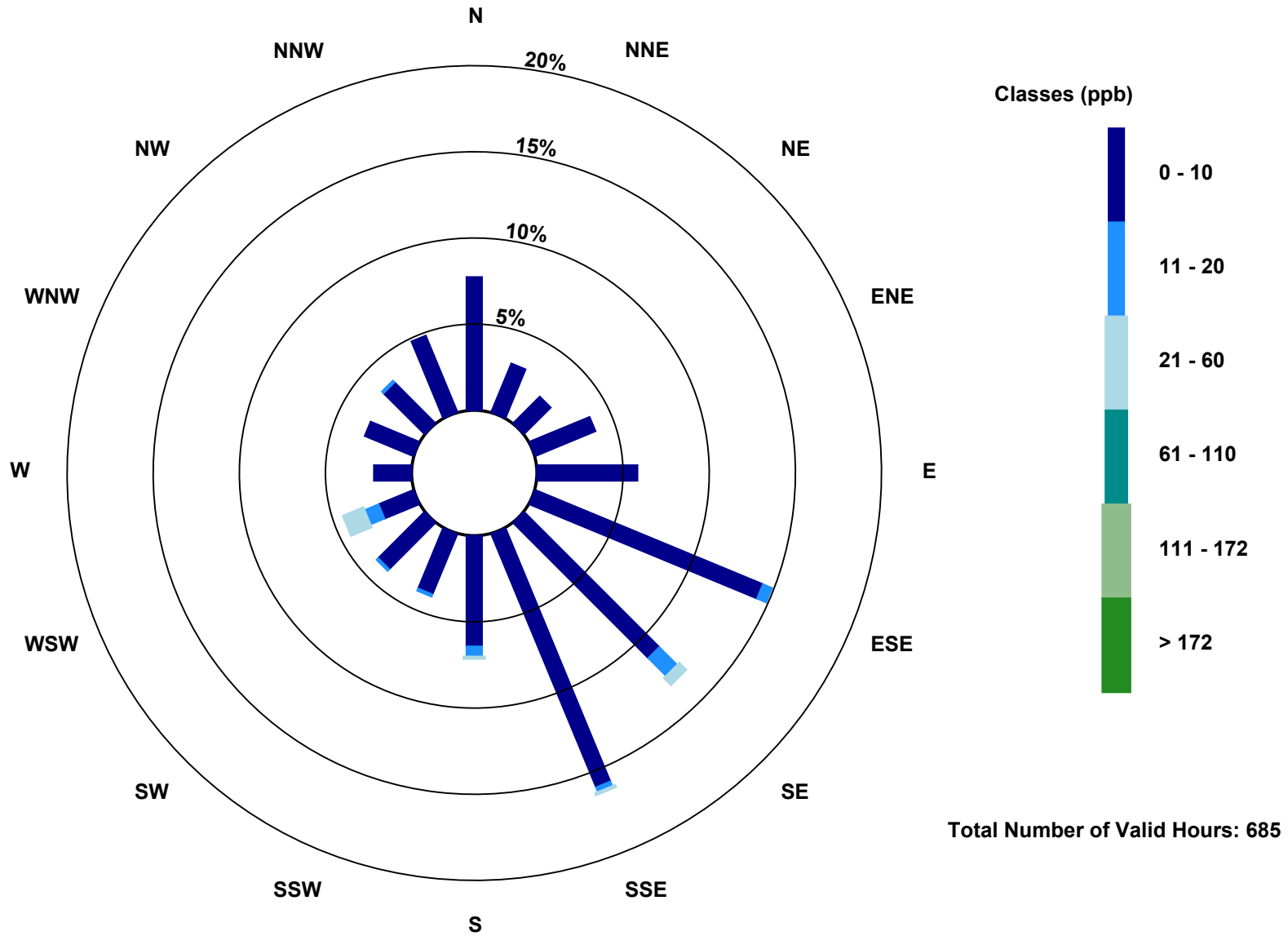
Total Number of Valid Hours: 685

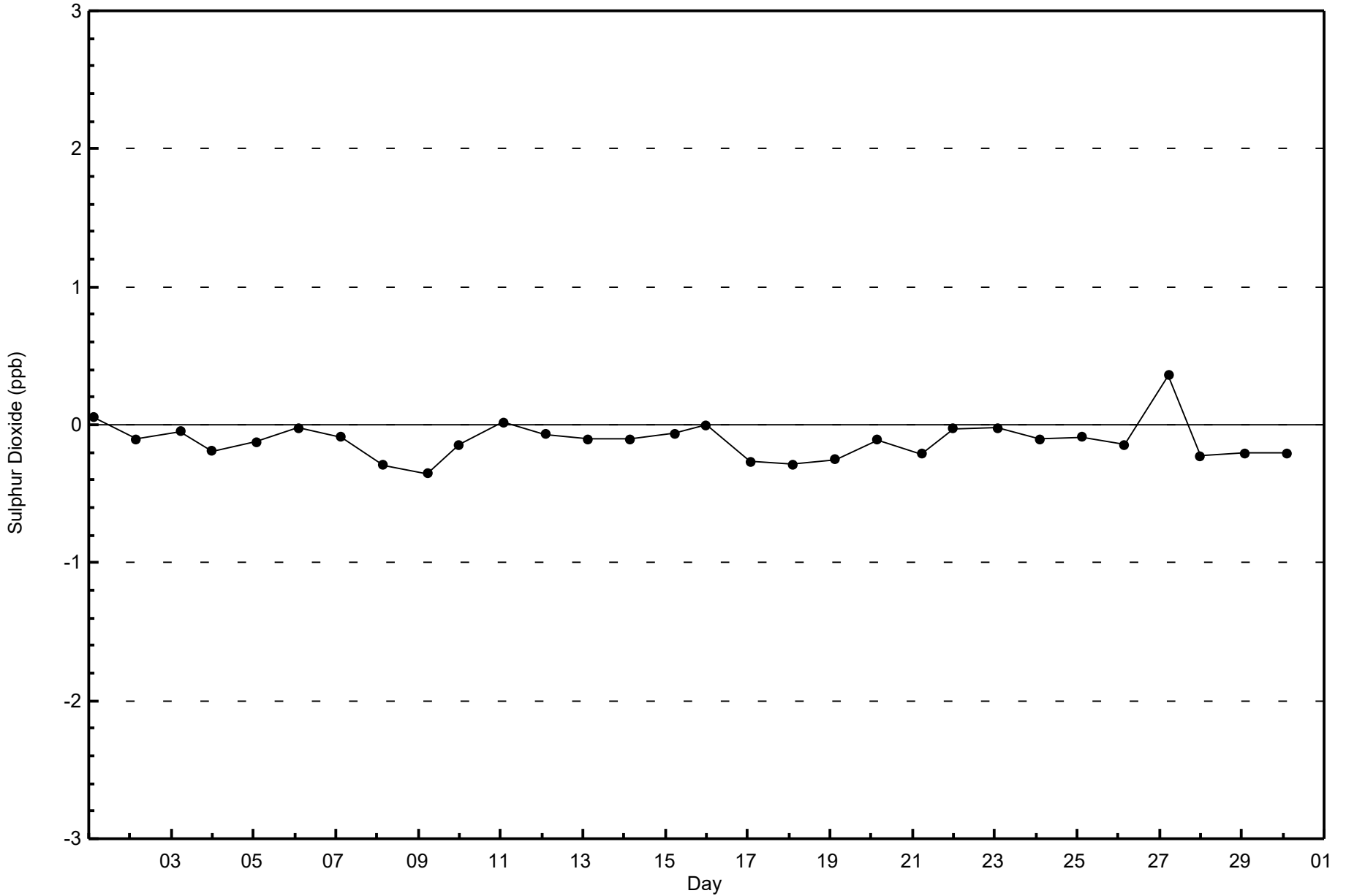
Total Number of Hours: 720

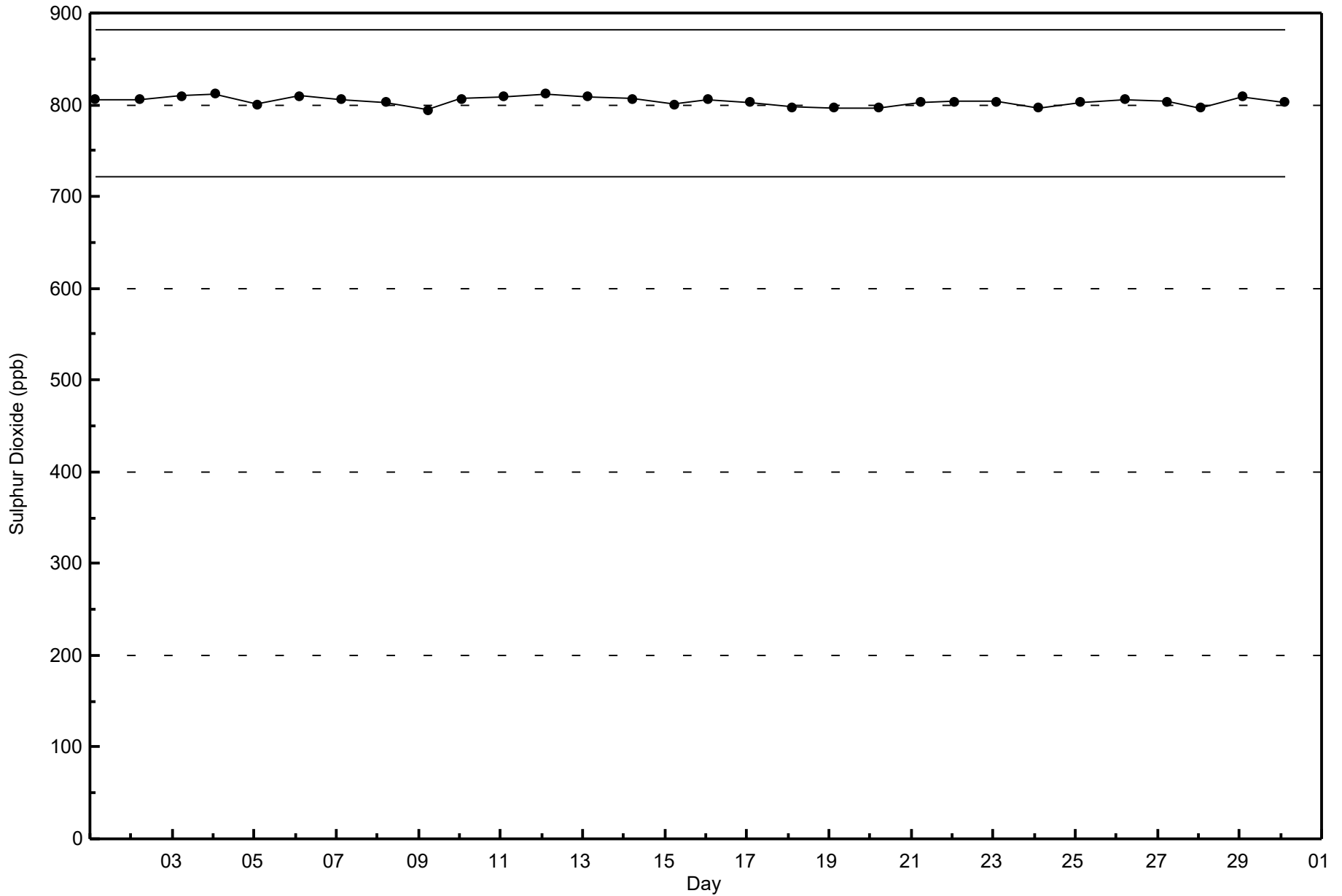


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Mildred Lake









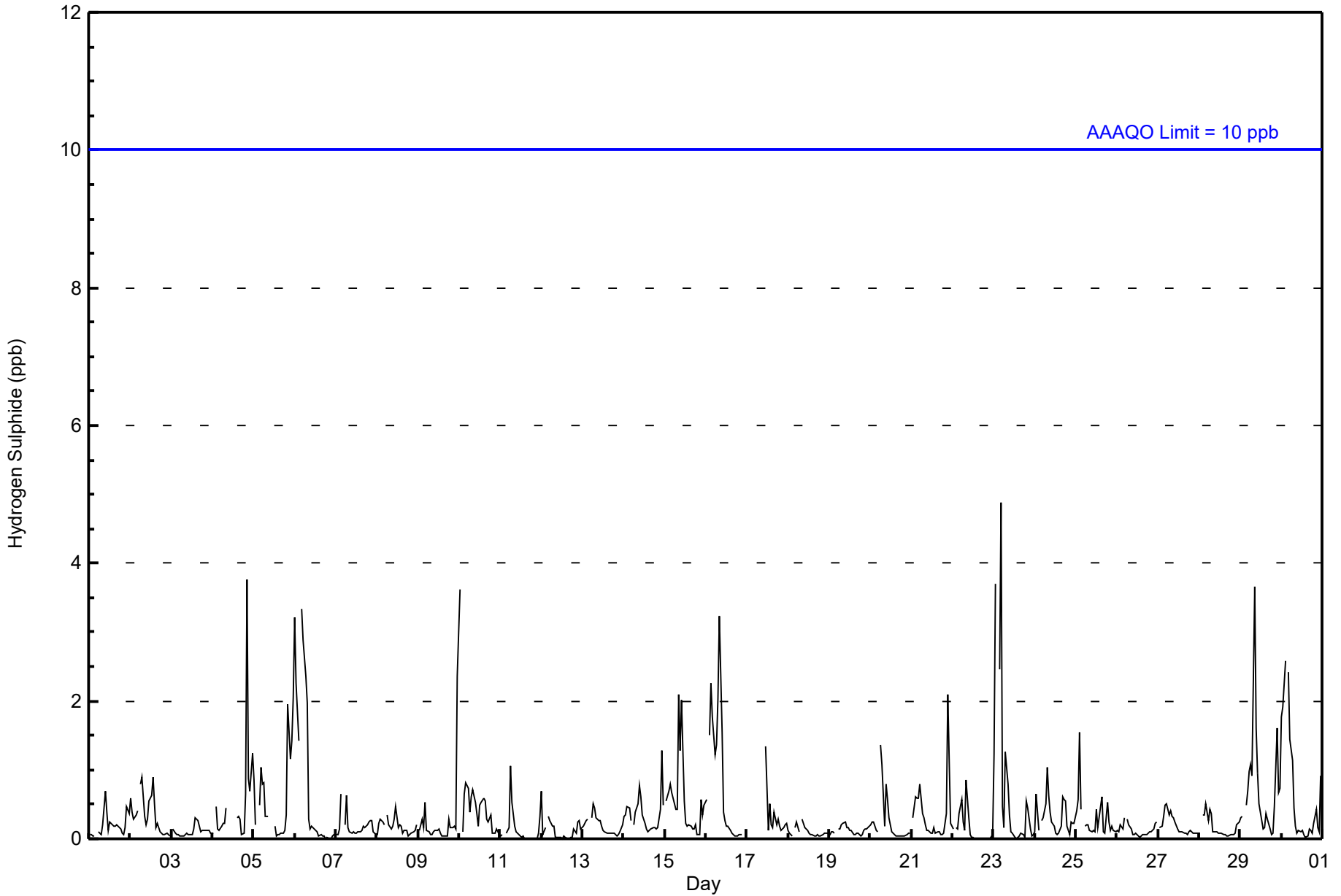
Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb

Mildred Lake - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Daily Average		Daily Maximum				
Maximum Value: 4.9 ppb on Apr 23 05:00		Maximum Daily Average: 0.8 ppb on Apr 6																	Hours of Data: 669		Hours of Missing Data: 51						
Minimum Value: 0.0 ppb on Apr 11 15:00		Minimum Daily Average: 0.1 ppb on Apr 18																	Hours of Calibration: 34		Percent Operational Time: 97.6						
Maximum Diurnal Average: 0.9 ppb at hour 5		Minimum Diurnal Average: 0.1 ppb at hour 18																									
Monthly Average: 0.35 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.8 P ₉₉ = 3.2																									
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-Apr	0.1	0.1	0.0	0.1	Z	0.1	0.1	0.1	0.2	0.7	0.4	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.5	0.4	0.2	0.7	
2-Apr	0.6	0.4	0.3	0.3	0.4	Z	0.8	0.9	0.3	0.2	0.3	0.6	0.6	0.9	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.9	
3-Apr	Z	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	
4-Apr	0.1	Z	0.5	0.1	0.1	0.2	0.2	0.2	0.4	C	C	C	C	C	0.3	0.3	0.3	0.1	0.1	0.7	3.8	0.9	0.7	1.2	0.6	3.8	
5-Apr	0.9	0.2	Z	0.5	1.0	0.8	0.8	0.3	0.3	M	M	M	M	0.0	0.1	0.1	0.1	0.1	0.1	0.3	2.0	1.2	1.4	2.1	0.6	2.1	
6-Apr	3.2	2.3	1.4	Z	3.3	2.9	2.4	2.0	0.3	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	3.3	
7-Apr	0.1	0.1	0.1	0.6	Z	0.2	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.1	0.2	0.6	
8-Apr	0.1	0.2	0.3	0.2	0.2	Z	0.4	0.2	0.1	0.2	0.3	0.5	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.5	
9-Apr	Z	0.1	0.3	0.2	0.5	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	0.3	0.2	0.2	0.2	0.1	2.4	0.2	2.4	
10-Apr	3.6	Z	0.1	0.7	0.8	0.7	0.4	0.6	0.7	0.5	0.4	0.2	0.5	0.5	0.6	0.6	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.5	3.6	
11-Apr	0.0	0.1	Z	0.1	0.1	0.2	1.1	0.5	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	0.1	0.3	0.1	1.1		
12-Apr	0.7	0.1	0.2	Z	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.1	0.1	0.7		
13-Apr	0.2	0.2	0.3	0.3	Z	0.3	0.5	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.5		
14-Apr	0.3	0.3	0.5	0.4	0.3	Z	0.2	0.4	0.5	0.8	0.6	0.4	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.4	1.3	0.5	0.4	1.3		
15-Apr	Z	0.6	0.7	0.8	0.7	0.6	0.4	0.4	2.1	1.3	2.0	0.6	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.6	0.4	0.5	0.6	2.1	
16-Apr	0.6	Z	1.5	2.3	1.8	1.2	1.4	2.0	3.2	1.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	AF	AF	0.8	3.2	
17-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	M	1.4	0.1	0.5	0.2	0.2	0.4	0.2	0.3	0.2	0.1	0.2	0.2	0.2	--	1.4	
18-Apr	0.1	0.1	0.0	Z	0.2	0.2	0.1	AF	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	
19-Apr	0.1	0.1	0.1	0.1	Z	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	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.2	
20-Apr	0.2	0.2	0.2	0.1	0.1	Z	1.4	1.1	0.2	0.8	0.6	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	1.4	
21-Apr	Z	0.3	0.6	0.6	0.6	0.8	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.4	2.1	1.1	0.2	0.4	2.1	
22-Apr	0.1	Z	0.2	0.1	0.4	0.6	0.2	0.1	0.8	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	0.1	0.1	0.8	
23-Apr	1.2	3.7	Z	2.5	4.9	0.5	0.2	1.3	0.8	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.5	0.5	0.1	0.0	0.1	0.7	4.9		
24-Apr	0.1	0.7	0.1	Z	0.3	0.3	0.5	1.0	0.6	0.4	0.2	0.1	0.1	0.1	0.2	0.6	0.6	0.5	0.2	0.1	0.2	0.2	0.2	0.2	0.3	1.0	
25-Apr	0.4	0.6	1.6	0.4	Z	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.4	0.2	0.5	0.6	0.1	0.1	0.5	0.2	0.1	0.2	0.1	0.1	0.3	1.6	
26-Apr	0.1	0.1	0.2	0.1	0.3	Z	0.3	0.2	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	0.1	0.2	0.2	0.1	0.3	
27-Apr	Z	0.2	0.2	0.3	0.5	0.5	0.4	0.4	0.3	0.3	0.3	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	0.5	
28-Apr	0.1	Z	0.4	0.4	0.5	0.3	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.5	
29-Apr	0.3	0.3	Z	0.5	0.7	1.0	1.1	0.9	3.7	1.6	1.0	0.5	0.3	0.1	0.2	0.4	0.3	0.1	0.1	0.1	0.5	1.6	0.7	0.7	0.7	3.7	
30-Apr	1.8	1.9	2.6	Z	2.4	1.4	1.1	0.5	0.2	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	0.2	0.1	0.9	2.6	
																								Diurnal Average		Diurnal Maximum	
																								0.6		3.6	
																								0.5		3.7	
																								0.5		2.6	
																								0.5		2.5	
																								0.9		4.9	
																								0.6		2.9	
																								0.5		2.4	
																								0.5		2.0	
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																								0.2		0.6	
																								0.2		0.9	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.5	
																								0.1		0.7	
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																								0.3		2.1	
																								0.3		1.4	
																								0.4		2.4	
																								Diurnal Average		Diurnal Maximum	
																								0.6		3.6	
																								0.5		3.7	
																								0.5		2.6	
																								0.5		2.5	
																								0.9		4.9	
																								0.6		2.9	
																								0.5		2.4	
																								0.5		2.0	
																								0.6		3.7	
																								0.4		1.6	
																								0.3		2.0	
																								0.2		1.4	
																								0.2		0.6	
																								0.2		0.9	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.5	
																								0.1		0.7	
																								0.3		3.8	
																								0.3		2.1	
																								0.3		1.4	
																								0.4		2.4	
																								Diurnal Average		Diurnal Maximum	
																								0.6		3.6	
																								0.5		3.7	
																								0.5		2.6	
																								0.5		2.5	
																								0.9		4.9	
																								0.6		2.9	
																								0.5		2.4	
																								0.5		2.0	
																								0.6		3.7	
																								0.4		1.6	
																								0.3		2.0	
																								0.2		1.4	
																								0.2		0.6	
																								0.2		0.9	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.5	
																								0.1		0.7	
																								0.3		3.8	
																								0.3		2.1	
																								0.3		1.4	
																								0.4		2.4	
																								Diurnal Average		Diurnal Maximum	
																								0.6		3.6	
																								0.5		3.7	
																								0.5		2.6	
																								0.5		2.5	
																								0.9		4.9	
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																								0.2		1.4	
																								0.2		0.6	
																								0.2		0.9	
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																								0.1		0.6	
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																								0.1		0.5	
																								0.1		0.7	
																								0.3		3.8	
																								0.3		2.1	
																								0.3		1.4	
																								0.4		2.4	
																								Diurnal Average		Diurnal Maximum	
																								0.6		3.6	
																								0.5		3.7	
																								0.5		2.6	
																								0.5		2.5	
																								0.9		4.9	
																								0.6		2.9	
																								0.5		2.4	
																								0.5		2.0	
																								0.6		3.7	
																								0.4		1.6	
																								0.3		2.0	
																								0.2		1.4	
																								0.2		0.6	
																								0.2		0.9	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.5	
																								0.1		0.7	
																								0.3		3.8	
																								0.3		2.1	
																								0.3		1.4	
																								0.4		2.4	
																								Diurnal Average		Diurnal Maximum	
																								0.6		3.6	
																								0.5		3.7	
																								0.5		2.6	
																								0.5		2.5	
																								0.9		4.9	
																								0.6		2.9	
																								0.5		2.4	
																								0.5		2.0	
																								0.6		3.7	
																								0.4		1.6	
																								0.3		2.0	
																								0.2		1.4	
																								0.2		0.6	
																								0.2		0.9	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.6	
																								0.1		0.5	
																								0.1		0.7	
																								0.3		3.8	
																								0.3		2.1	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mildred Lake - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	659	98.51	98.51
3 - 4	9	1.35	99.85
5 - 7	1	0.15	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 669

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mildred Lake - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	53	21	16	25	38	88	84	109	46	23	30	28	16	22	25	35	659
3 - 4	0	0	0	0	0	1	7	0	1	0	0	0	0	0	0	0	9
5 - 7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
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
Totals	53	21	16	25	38	89	91	110	47	23	30	28	16	22	25	35	669

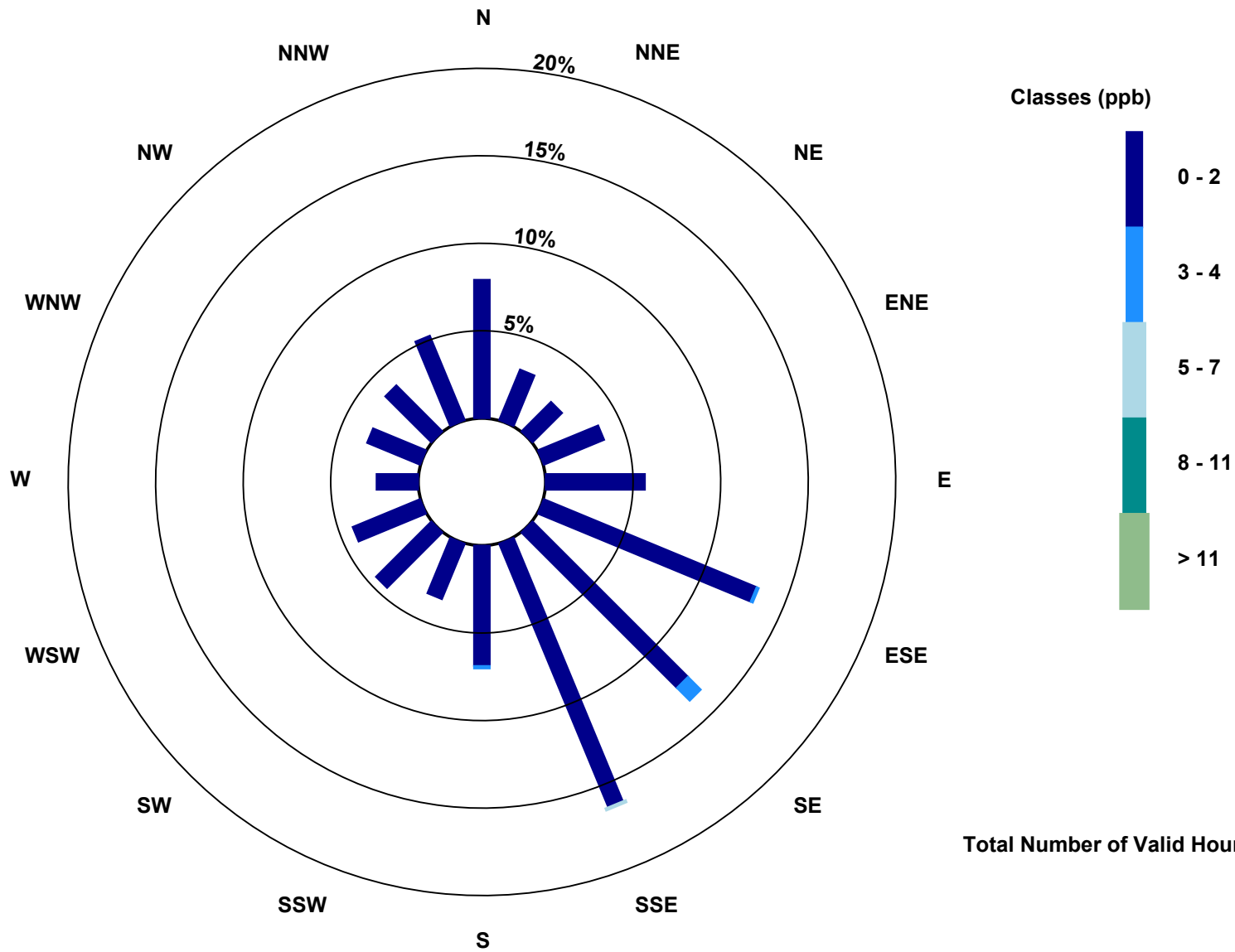
Total Number of Valid Hours: 669

Total Number of Hours: 720

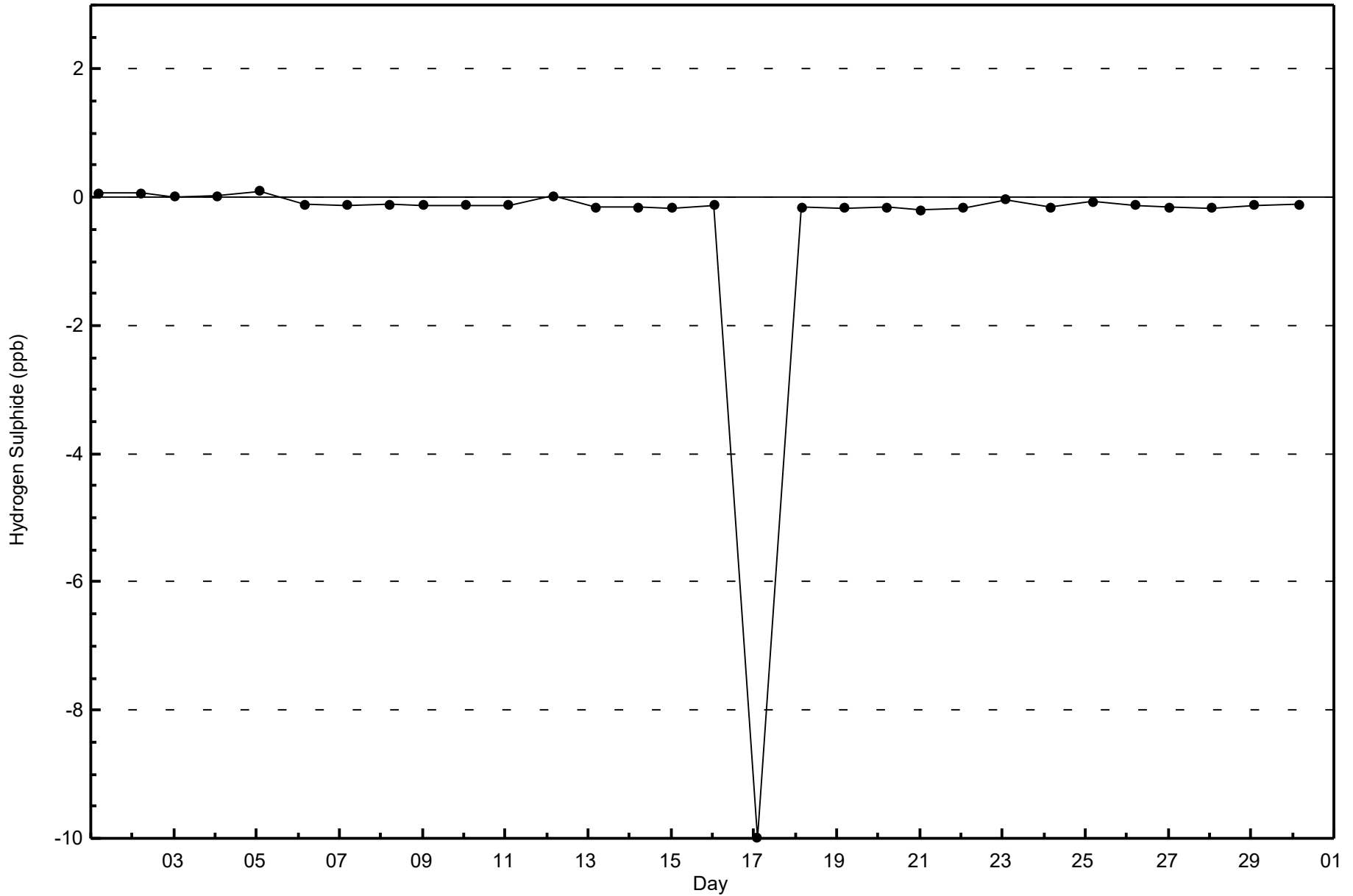


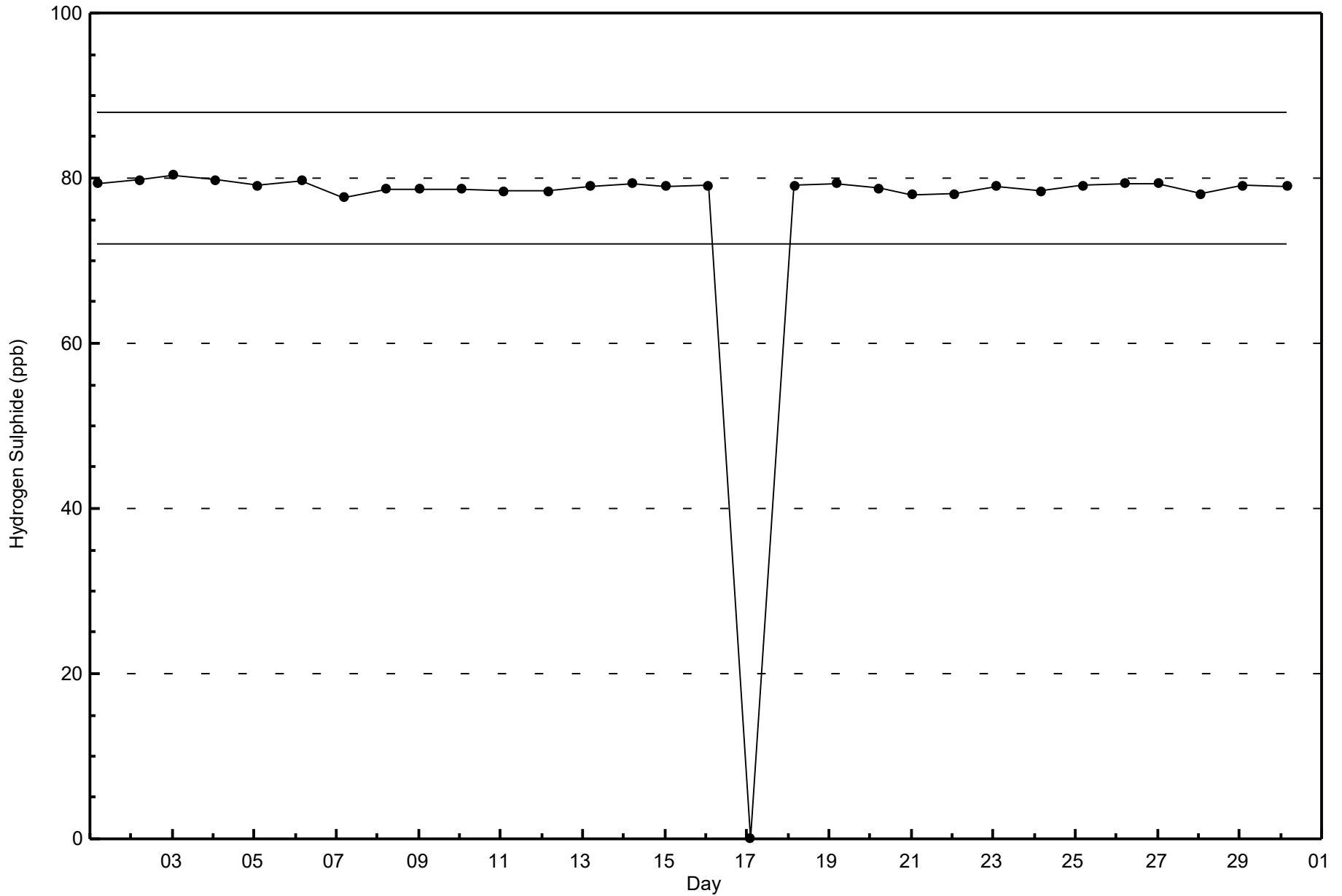
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Mildred Lake



Total Number of Valid Hours: 669







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

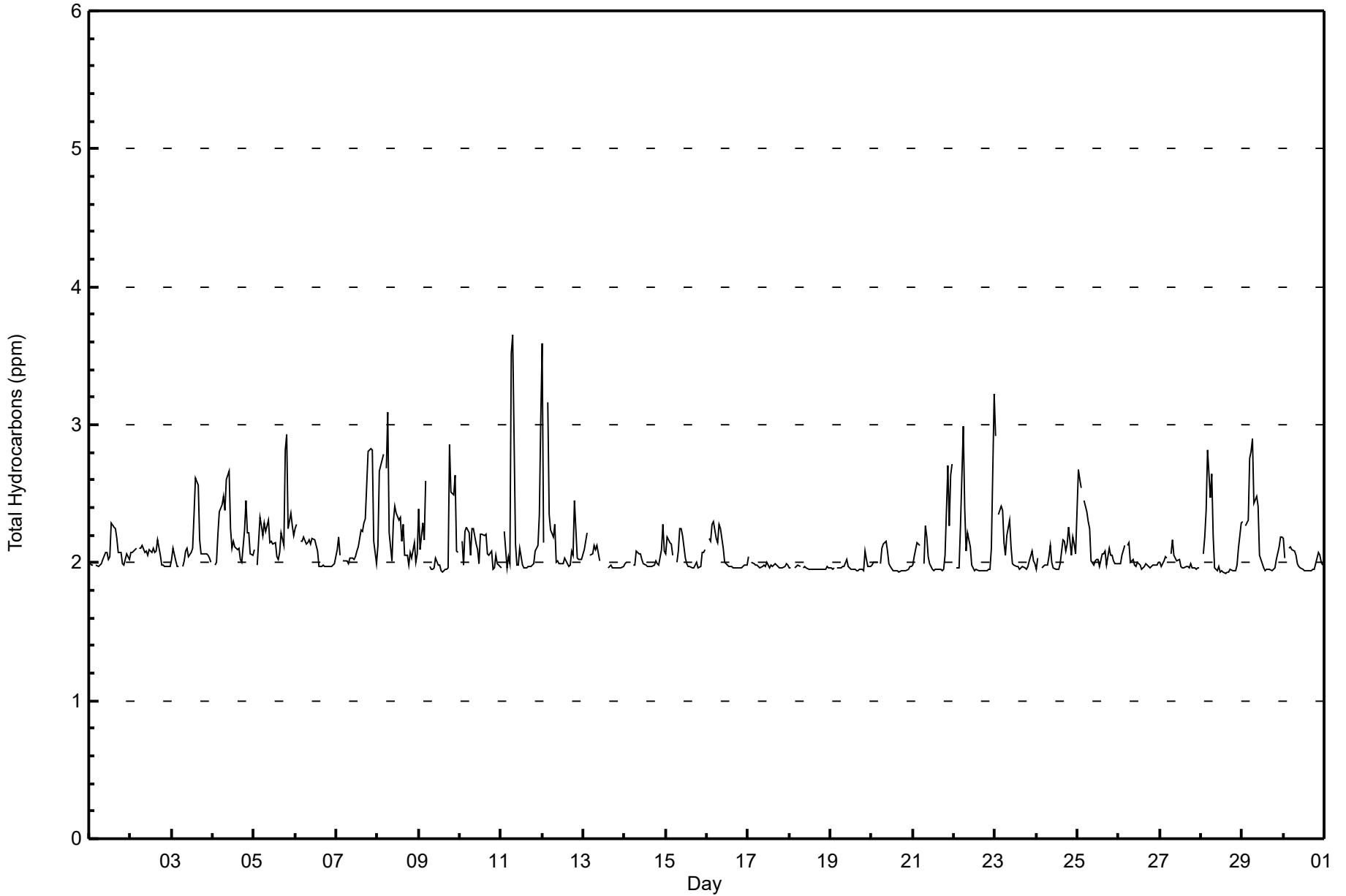
Mildred Lake - April 2023

Maximum Value: 3.6 ppm on Apr 11 08:00																				Maximum Daily Average: 2.3 ppm on Apr 8					Hours in Service: 720						
Minimum Value: 1.9 ppm on Apr 28 15:00																				Minimum Daily Average: 2.0 ppm on Apr 18					Hours of Data: 685						
Maximum Diurnal Average: 2.2 ppm at hour 7																				Minimum Diurnal Average: 2.0 ppm at hour 18					Hours of Missing Data: 35						
Monthly Average: 2.10 ppm																				Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.3 P ₉₉ = 3.0					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-Apr	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.3	2.1	2.3			
2-Apr	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	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2			
3-Apr	2.0	2.1	2.0	2.0	2.0	Z	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.3	2.6	2.6	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.6	2.1			
4-Apr	Z	2.0	2.0	2.2	2.4	2.4	2.5	2.4	2.6	2.7	2.2	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.2	2.4	2.2	2.2	2.1	2.1	2.2	2.7	2.2			
5-Apr	2.1	Z	2.0	2.3	2.3	2.2	2.3	2.2	2.3	2.1	2.2	2.1	2.1	2.0	2.0	2.1	2.2	2.1	2.2	2.8	2.9	2.2	2.4	2.3	2.2	2.2	2.9	2.2			
6-Apr	2.2	2.3	Z	2.2	2.2	2.2	2.1	2.1	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	2.0	2.0	2.0	2.1	2.3			
7-Apr	2.1	2.2	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.8	2.8	2.8	2.8	2.2	2.0	2.2	2.8	2.2	2.8			
8-Apr	2.1	2.7	2.7	2.8	Z	2.7	3.1	2.2	2.0	2.3	2.4	2.4	2.3	2.3	2.2	2.3	2.1	2.1	2.0	2.1	2.0	2.2	2.0	2.1	2.3	3.1	2.3	3.1			
9-Apr	2.4	2.1	2.3	2.2	2.6	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.9	2.5	2.5	2.6	2.1	2.1	2.2	2.9	2.2	2.9			
10-Apr	Z	2.2	2.0	2.2	2.3	2.2	2.1	2.2	2.3	2.1	2.1	2.0	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.3	2.1	2.3			
11-Apr	2.0	Z	2.2	2.0	2.0	2.0	3.5	3.6	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	3.0	2.2	3.6	2.2	3.6			
12-Apr	3.6	2.1	Z	3.2	2.3	2.2	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	2.4	2.0	2.0	2.0	2.0	2.0	2.2	3.6	2.2			
13-Apr	2.1	2.2	2.2	Z	2.1	2.1	2.1	2.1	2.1	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2			
14-Apr	2.0	2.0	2.0	2.0	Z	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	2.0	2.0	2.1	2.3	2.1	2.0	2.3	2.1	2.0			
15-Apr	2.1	2.2	2.1	2.1	2.1	Z	2.0	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2		
16-Apr	Z	2.2	2.2	2.3	2.3	2.2	2.2	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	2.1	2.3	2.1		
17-Apr	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		
18-Apr	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		
19-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.0	2.0	2.0	2.0	2.1	2.0		
20-Apr	2.0	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.2	2.1	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	2.0	2.0	2.0	2.2	2.0		
21-Apr	2.0	2.0	2.1	2.1	2.1	Z	2.0	2.3	2.2	2.0	2.0	1.9	1.9	2.0	1.9	1.9	2.0	1.9	1.9	2.0	2.7	2.3	2.6	2.7	2.1	2.7	2.1	2.7	2.1		
22-Apr	Z	2.0	2.0	2.0	2.3	3.0	2.4	2.1	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	3.2	2.1	3.2	2.1	3.2	2.1		
23-Apr	2.9	Z	2.4	2.4	2.4	2.1	2.1	2.2	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.9	2.1	2.9	2.1		
24-Apr	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	2.2	2.2	2.1	2.1	2.3	2.0	2.2	2.1	2.1	2.0	2.3	2.0	2.3	2.0		
25-Apr	2.7	2.6	2.5	Z	2.5	2.4	2.3	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.2	2.7	2.2	2.7	2.1	
26-Apr	2.0	2.0	2.1	2.1	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	
27-Apr	2.0	2.0	2.0	2.0	2.0	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.2	2.0
28-Apr	Z	2.1	2.2	2.4	2.8	2.5	2.6	2.2	2.0	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	2.0	2.1	2.3	2.1	2.8	2.1	2.8	2.1
29-Apr	2.3	Z	2.3	2.3	2.8	2.8	2.9	2.4	2.5	2.4	2.1	2.0	2.0	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.9	2.2	2.9	2.2
30-Apr	2.2	2.0	Z	2.1	2.1	2.1	2.1	2.1	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	2.1	2.1	2.0	2.0	2.0	2.2	2.0	2.2	2.0	2.2
																								Diurnal Average							
																								Diurnal Maximum							
Z - zerospan C - Calibration PF - Power Failure																															



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Mildred Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mildred Lake - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	387	56.50	56.50
2.1 - 3.0	292	42.63	99.12
3.1 - 10.0	6	0.88	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	34	17	13	21	34	67	31	47	32	18	20	4	7	7	17	18	387
2.1 - 3.0	19	4	2	5	6	35	56	64	17	9	7	25	8	13	7	15	292
3.1 - 10.0	0	0	0	0	0	0	3	1	0	0	0	1	0	1	0	0	6
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	53	21	15	26	40	102	90	112	49	27	27	30	15	21	24	33	685

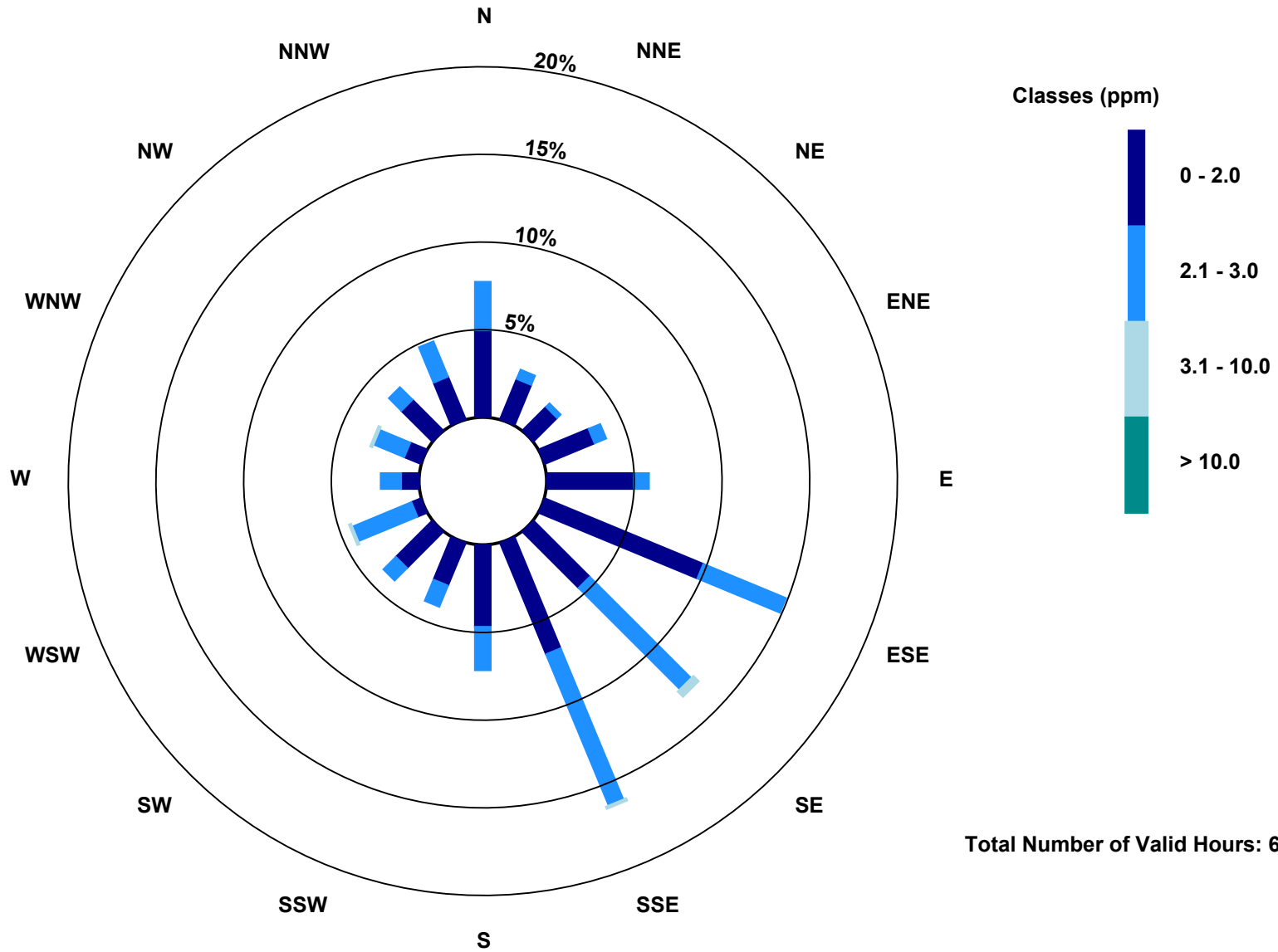
Total Number of Valid Hours: 685

Total Number of Hours: 720

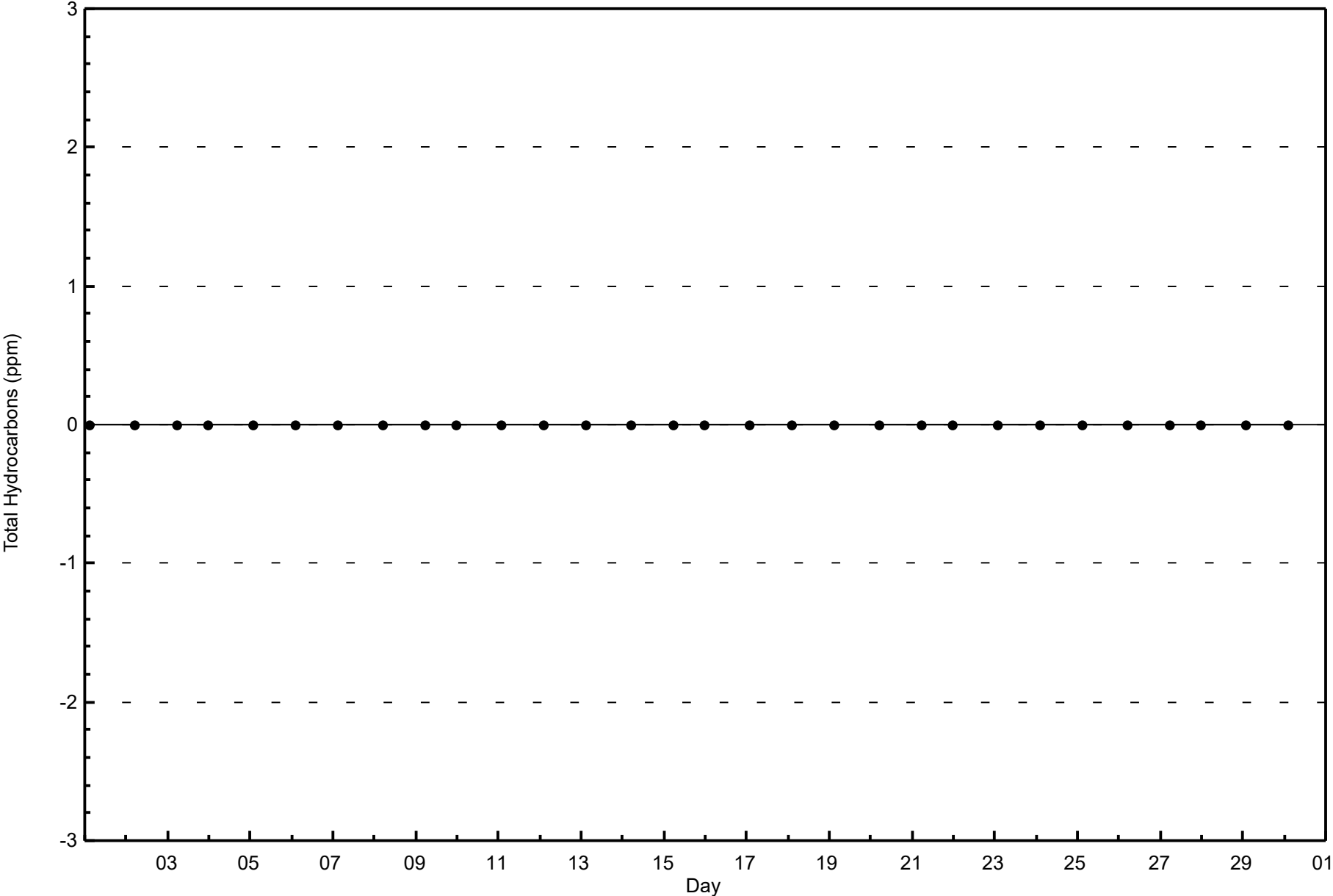


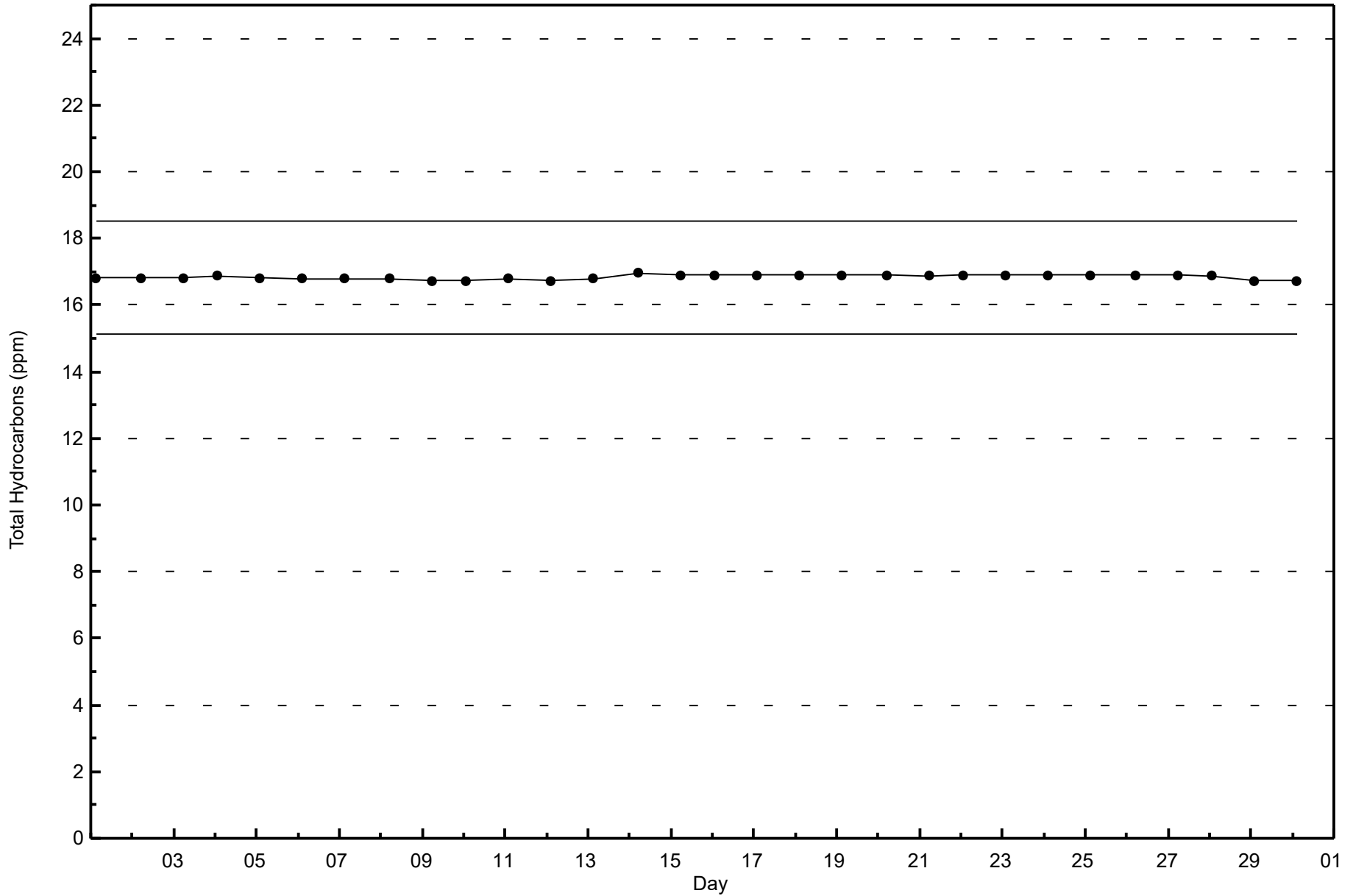
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Mildred Lake



Total Number of Valid Hours: 685



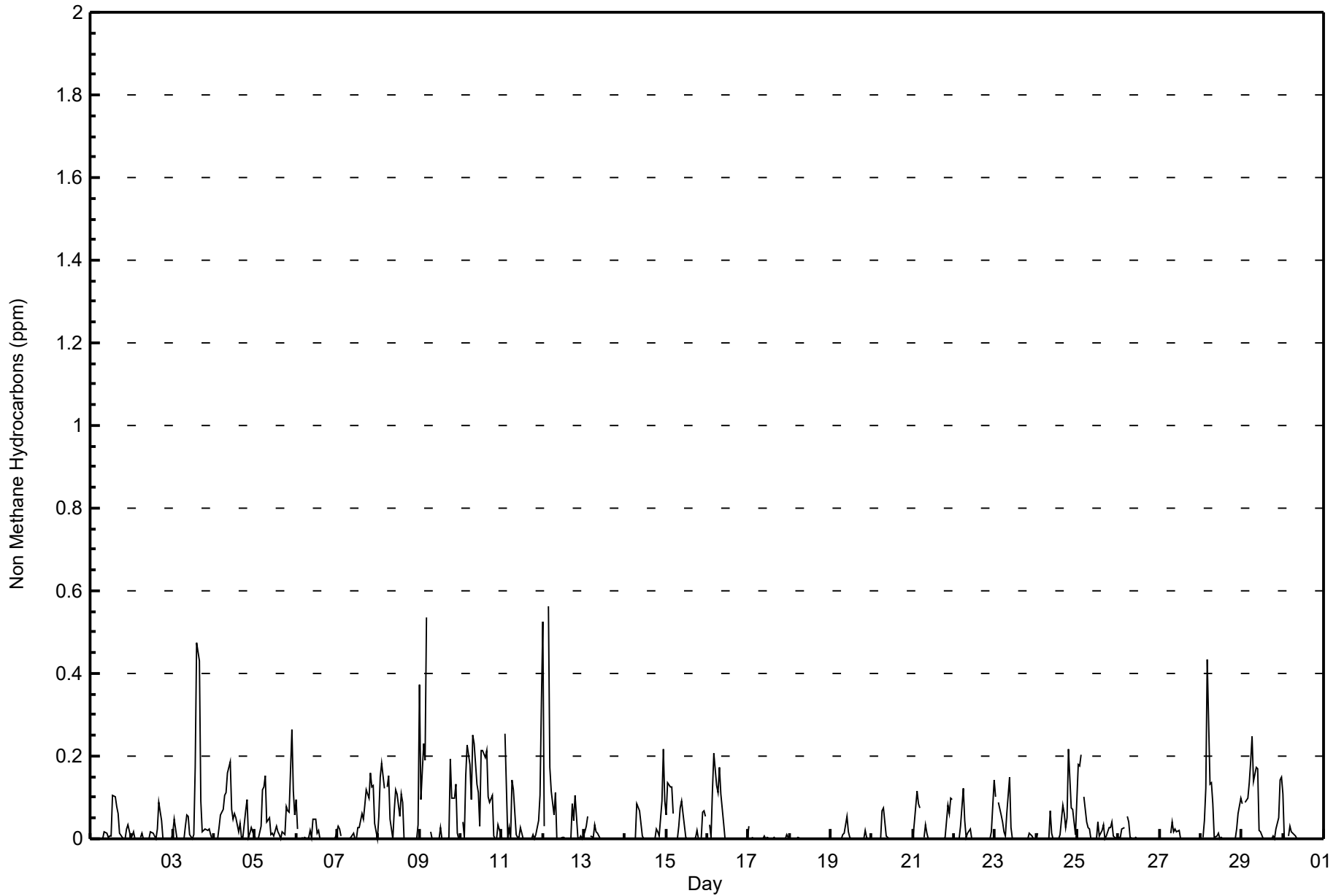




Summary of Hour Averages

Mildred Lake - April 2023

Maximum Value: 0.564 ppm on Apr 12 04:00																				Maximum Daily Average: 0.115 ppm on Apr 10					Hours in Service: 720		
Minimum Value: 0.000 ppm on Apr 1 01:00																				Minimum Daily Average: 0.000 ppm on Apr 18					Hours of Data: 685		
Maximum Diurnal Average: 0.090 ppm at hour 5																				Minimum Diurnal Average: 0.012 ppm at hour 12					Hours of Missing Data: 35		
Monthly Average: 0.036 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.1 P ₉₉ = 0.3					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-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.018	0.015	0.003	0.006	0.007	0.106	0.103	0.079	0.061	0.014	0.004	0.002	0.000	0.024	0.035	0.005	0.021	0.106	
2-Apr	0.008	0.018	0.000	0.001	Z	0.002	0.012	0.000	0.000	0.000	0.000	0.017	0.015	0.007	0.001	0.025	0.087	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.087	
3-Apr	0.013	0.047	0.001	0.000	0.000	Z	0.000	0.030	0.057	0.053	0.011	0.001	0.011	0.174	0.474	0.429	0.093	0.016	0.019	0.023	0.021	0.023	0.011	0.002	0.066	0.474	
4-Apr	Z	0.000	0.000	0.028	0.058	0.070	0.106	0.113	0.160	0.186	0.071	0.047	0.062	0.050	0.018	0.037	0.003	0.002	0.069	0.096	0.005	0.012	0.026	0.008	0.053	0.186	
5-Apr	0.003	Z	0.000	0.030	0.119	0.125	0.154	0.042	0.050	0.012	0.014	0.007	0.031	0.016	0.009	0.001	0.017	0.010	0.079	0.068	0.065	0.266	0.117	0.057	0.056	0.266	
6-Apr	0.094	0.022	Z	0.003	0.000	0.003	0.001	0.004	0.021	0.004	0.048	0.049	0.013	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.012	0.094	
7-Apr	0.032	0.025	0.008	Z	0.000	0.000	0.000	0.000	0.002	0.014	0.000	0.000	0.026	0.029	0.060	0.048	0.081	0.118	0.100	0.158	0.125	0.130	0.039	0.000	0.043	0.158	
8-Apr	0.053	0.151	0.184	0.123	Z	0.127	0.154	0.046	0.001	0.067	0.118	0.108	0.054	0.108	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.062	0.184	
9-Apr	0.373	0.096	0.231	0.190	0.537	Z	0.016	0.000	0.000	0.000	0.000	0.001	0.026	0.000	0.001	0.000	0.000	0.004	0.195	0.097	0.097	0.131	0.014	0.000	0.087	0.537	
10-Apr	Z	0.042	0.005	0.151	0.228	0.181	0.093	0.252	0.232	0.133	0.111	0.032	0.214	0.214	0.197	0.214	0.100	0.089	0.106	0.006	0.000	0.000	0.033	0.009	0.115	0.252	
11-Apr	0.000	Z	0.254	0.001	0.026	0.000	0.141	0.118	0.012	0.003	0.005	0.028	0.001	0.001	0.000	0.000	0.000	0.000	0.010	0.000	0.010	0.043	0.106	0.333	0.047	0.333	
12-Apr	0.527	0.030	Z	0.564	0.174	0.114	0.059	0.111	0.000	0.000	0.001	0.004	0.003	0.001	0.001	0.000	0.000	0.084	0.043	0.106	0.005	0.001	0.007	0.000	0.080	0.564	
13-Apr	0.018	0.032	0.053	Z	0.008	0.002	0.033	0.016	0.015	0.000	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.053	
14-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.086	0.067	0.039	0.007	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.024	0.019	0.006	0.091	0.218	0.093	0.028	0.218	
15-Apr	0.057	0.134	0.126	0.126	0.061	Z	0.000	0.029	0.076	0.090	0.060	0.002	0.000	0.000	0.000	0.000	0.000	0.004	0.020	0.000	0.000	0.065	0.069	0.056	0.042	0.134	
16-Apr	Z	0.033	0.004	0.117	0.206	0.128	0.111	0.172	0.108	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040	0.206	
17-Apr	0.030	Z	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.003	0.000	0.001	0.000	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.011	0.005	0.003	0.030	
18-Apr	0.000	0.000	Z	0.000	0.000	0.003	0.000	PF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	
19-Apr	0.000	0.000	0.000	Z	0.000	0.001	0.000	0.011	0.014	0.055	0.017	0.004	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.003	0.000	0.006	0.055	
20-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.068	0.074	0.006	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	0.007	0.074	
21-Apr	0.000	0.038	0.114	0.085	0.074	Z	0.005	0.035	0.014	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.003	0.081	0.063	0.099	0.095	0.031	0.114	
22-Apr	Z	0.000	0.000	0.000	0.030	0.121	0.045	0.005	0.014	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.144	0.017	0.144	
23-Apr	0.102	Z	0.088	0.058	0.040	0.016	0.007	0.060	0.150	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.006	0.001	0.001	0.025	0.150	
24-Apr	0.000	0.013	Z	0.000	0.000	0.000	0.000	0.000	0.068	0.013	0.000	0.000	0.000	0.000	0.011	0.081	0.061	0.027	0.050	0.217	0.073	0.070	0.040	0.009	0.032	0.217	
25-Apr	0.178	0.178	0.204	Z	0.101	0.039	0.027	0.024	0.000	0.000	0.000	0.000	0.039	0.008	0.022	0.034	0.001	0.006	0.026	0.027	0.040	0.008	0.003	0.000	0.042	0.204	
26-Apr	0.004	0.003	0.024	0.027	Z	0.055	0.042	0.003	0.000	0.001	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	0.007	0.055	
27-Apr	0.000	0.000	0.001	0.001	0.000	Z	0.013	0.039	0.016	0.023	0.016	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.039	
28-Apr	Z	0.003	0.043	0.121	0.434	0.134	0.135	0.086	0.004	0.007	0.013	0.001	0.004	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.062	0.097	0.051	0.434	
29-Apr	0.085	Z	0.087	0.097	0.136	0.187	0.246	0.140	0.173	0.171	0.021	0.018	0.002	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.023	0.051	0.142	0.148	0.075	0.246	
30-Apr	0.109	0.001	Z	0.006	0.030	0.018	0.011	0.007	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.008	0.109	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerspan																								C - Calibration		PF - Power Failure	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	373	54.45	54.45
0.006 - 0.05	161	23.50	77.96
0.06 - 0.1	109	15.91	93.87
> 0.1	42	6.13	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	32	17	12	20	30	55	47	51	29	19	16	4	6	5	15	15	373
0.006 - 0.05	13	3	2	3	5	21	21	36	16	4	8	2	4	8	6	9	161
0.06 - 0.1	7	1	1	2	4	23	18	19	2	2	1	8	4	5	3	9	109
> 0.1	1	0	0	1	1	3	4	6	2	2	2	16	1	3	0	0	42
Totals	53	21	15	26	40	102	90	112	49	27	27	30	15	21	24	33	685

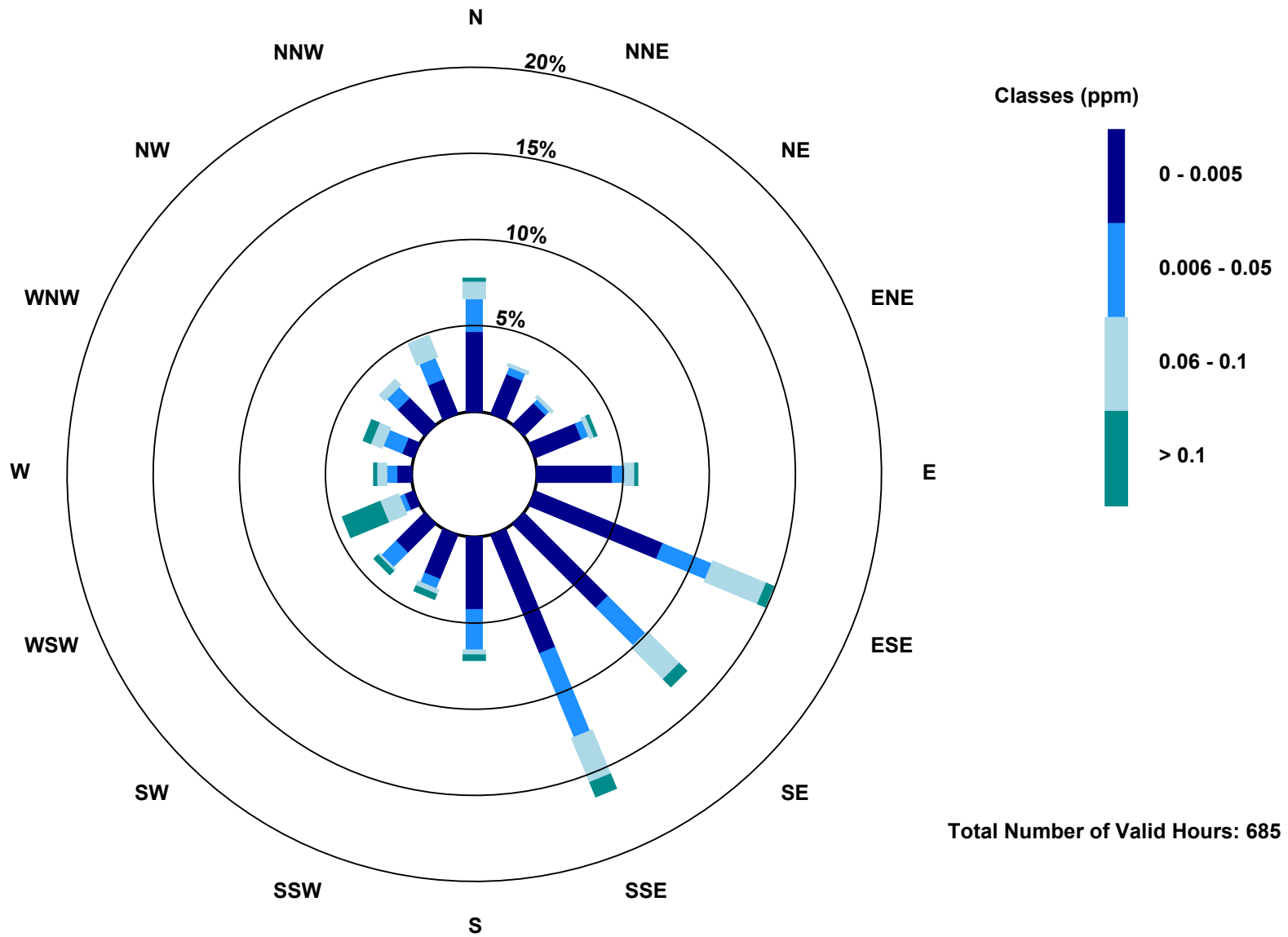
Total Number of Valid Hours: 685

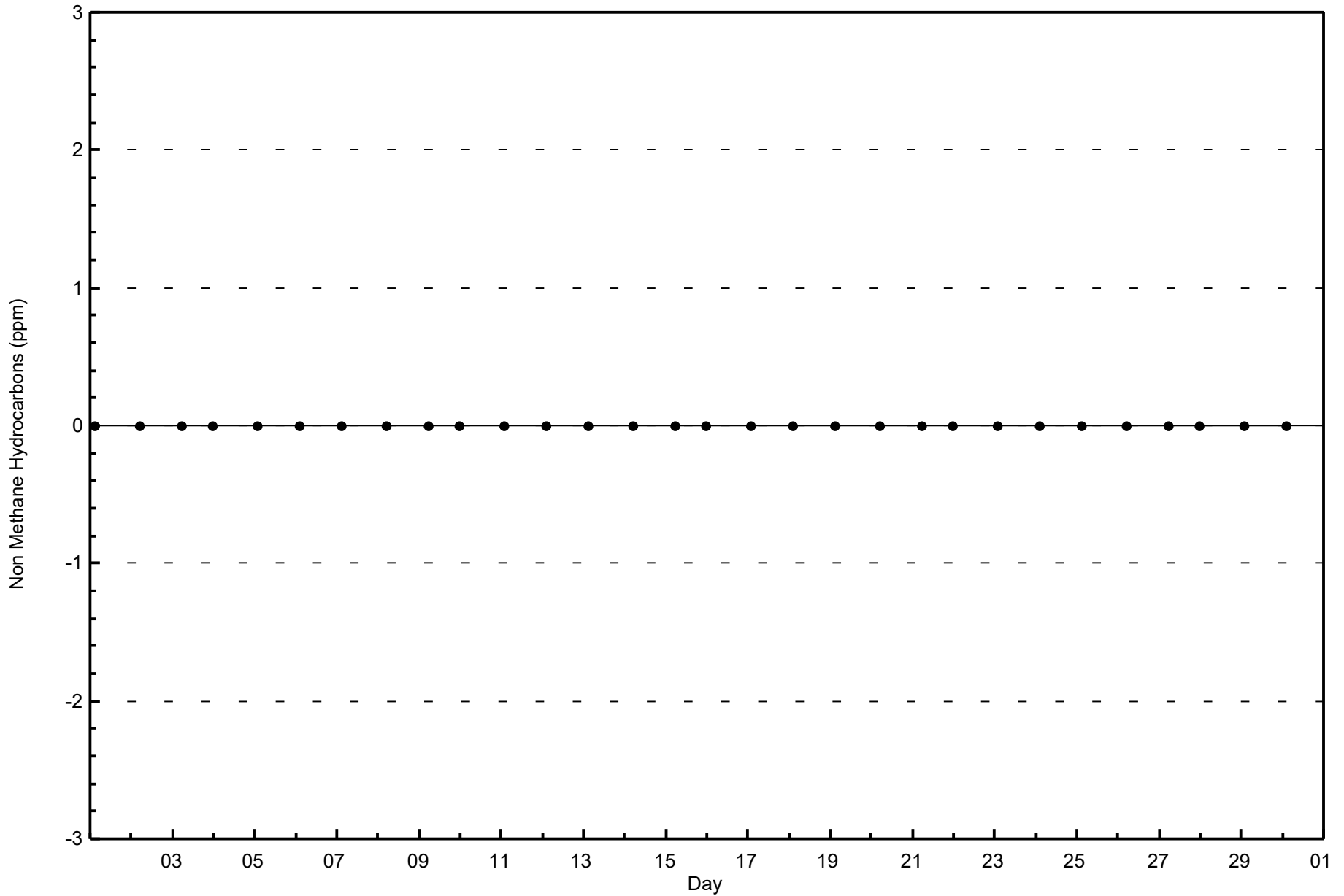
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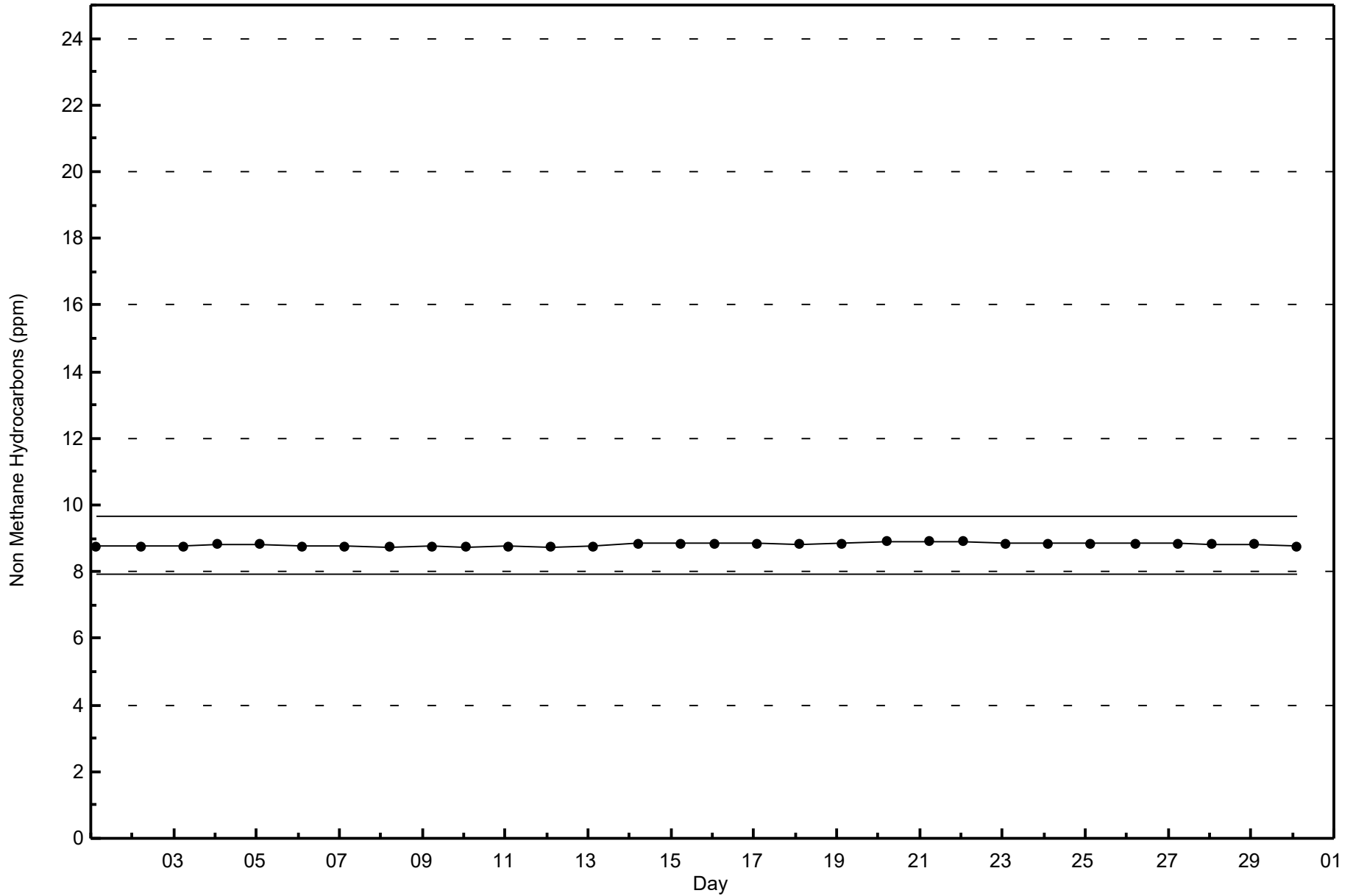


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Mildred Lake



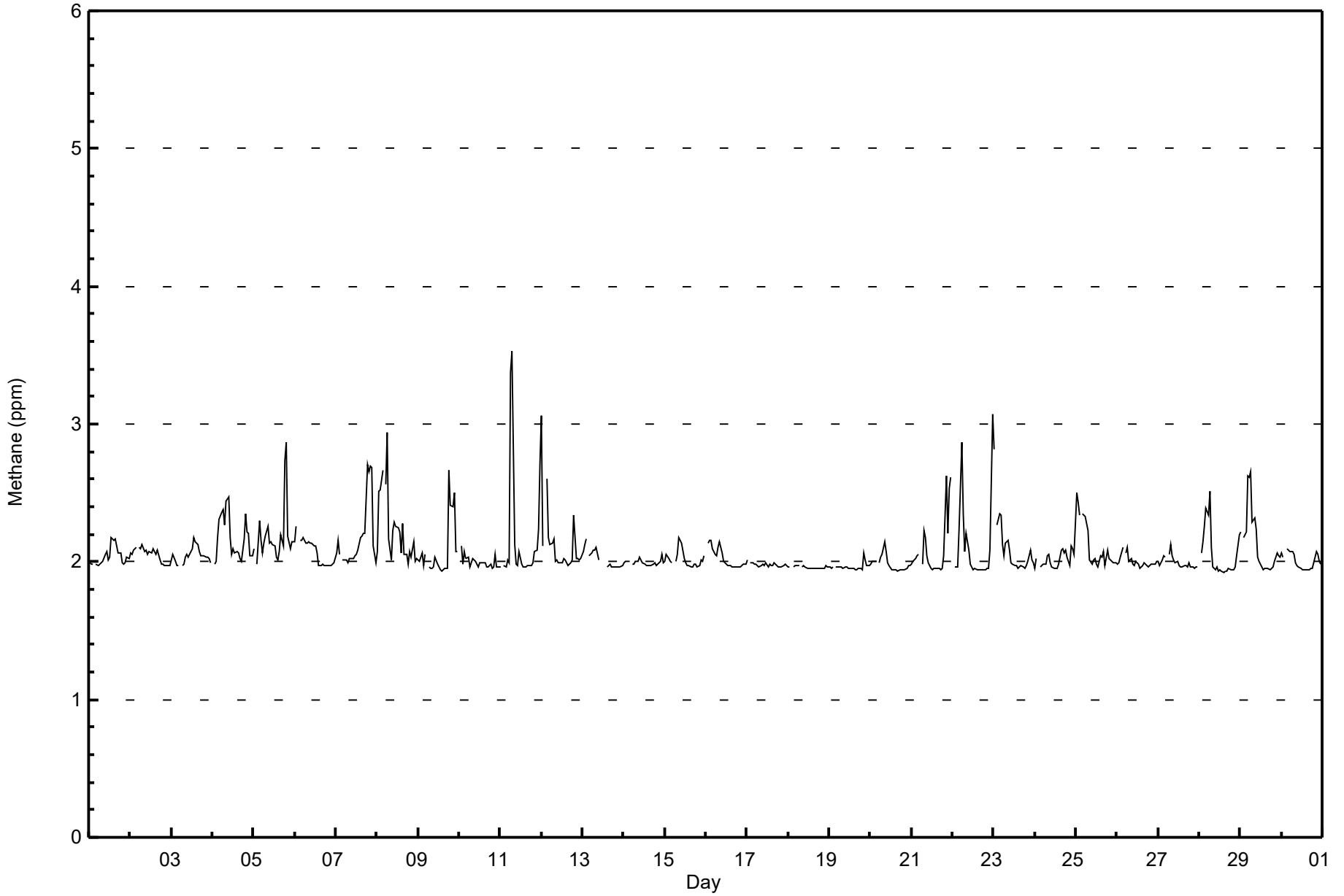






Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Mildred Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Mildred Lake - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	450	65.69	65.69
2.1 - 3.0	231	33.72	99.42
3.1 - 10.0	4	0.58	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Mildred Lake - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	40	17	15	23	37	81	36	49	35	18	24	19	9	10	18	19	450
2.1 - 3.0	13	4	0	3	3	21	52	62	14	9	3	11	6	10	6	14	231
3.1 - 10.0	0	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	53	21	15	26	40	102	90	112	49	27	27	30	15	21	24	33	685

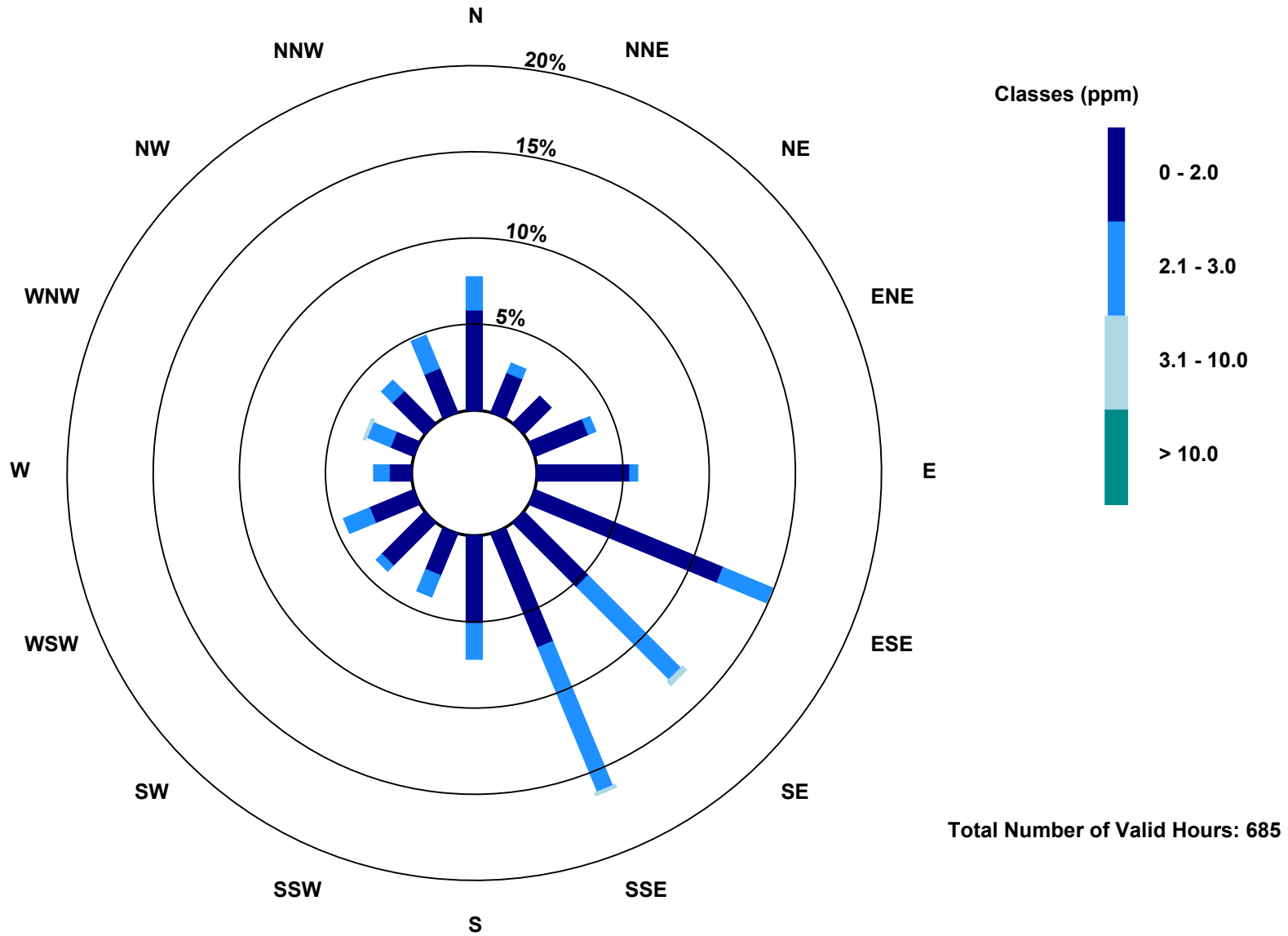
Total Number of Valid Hours: 685

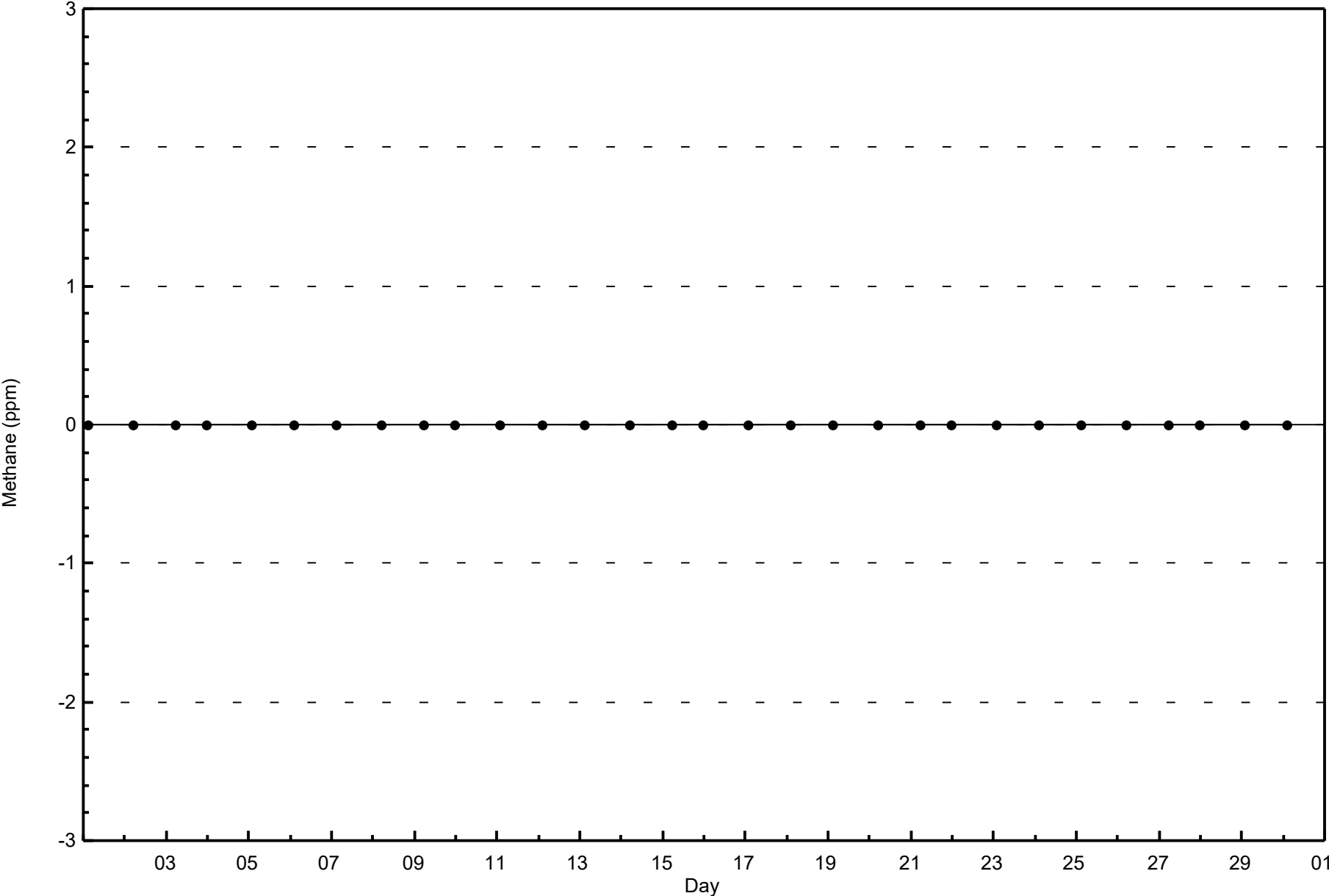
Total Number of Hours: 720

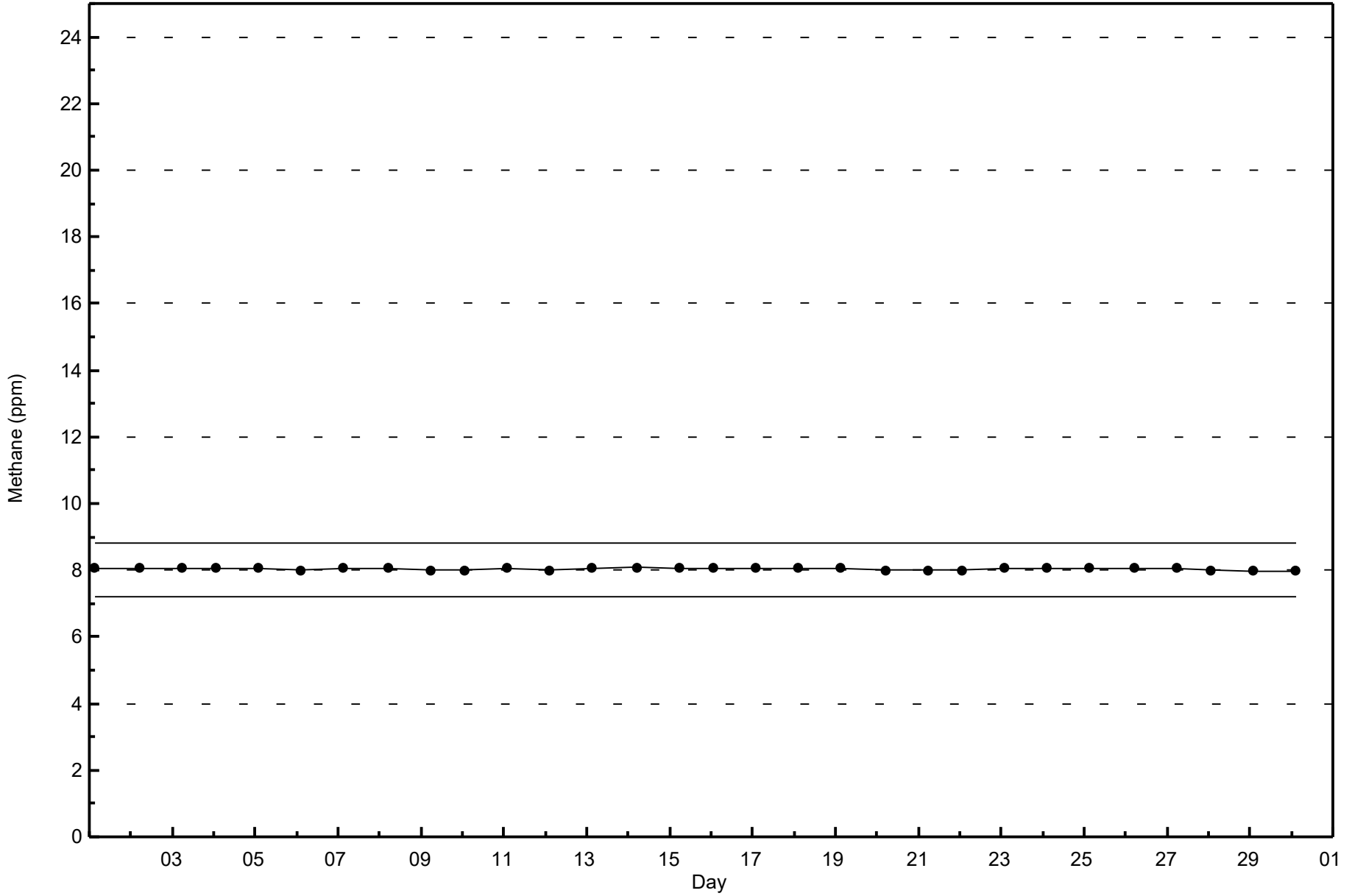


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Mildred Lake

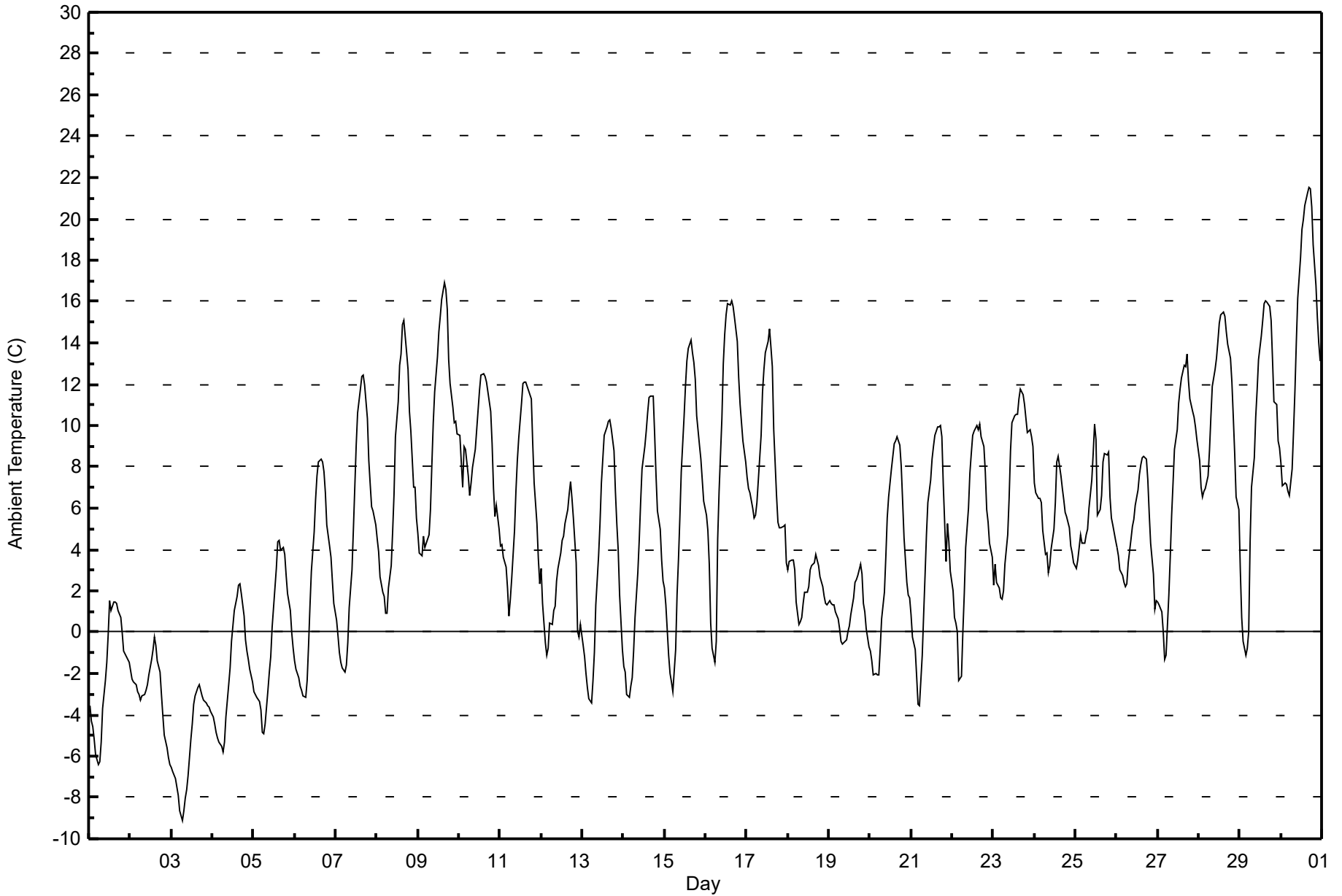








Maximum Value: 21.6 C on Apr 30 17:00 Maximum Daily Average: 14.3 C on Apr 30																						Hours in Service:	720			
Minimum Value: -9.1 C on Apr 3 07:00 Minimum Daily Average: -5.4 C on Apr 3																						Hours of Data:	720			
Maximum Diurnal Average: 9.6 C at hour 16 Minimum Diurnal Average: -0.1 C at hour 6																						Hours of Missing Data:	0			
Monthly Average: 4.82 C Percentiles: P ₁ = -7.1 P ₁₀ = -2.7 Q ₁ = 0.5 Median = 4.6 Q ₃ = 9.1 P ₉₀ = 12.5 P ₉₉ = 18.6																						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-Apr	-3.5	-4.3	-4.6	-5.2	-5.9	-6.4	-6.3	-5.3	-3.7	-2.3	-1.4	-0.1	1.5	1.1	1.4	1.5	1.4	1.1	0.7	0.0	-0.9	-1.0	-1.2	-1.4	-1.9	1.5
2-Apr	-1.8	-2.3	-2.4	-2.6	-2.9	-3.0	-3.3	-3.1	-3.0	-2.8	-2.5	-2.1	-1.4	-0.9	-0.2	-0.6	-1.4	-1.9	-3.0	-4.1	-5.0	-5.6	-6.1	-6.4	-2.8	-0.2
3-Apr	-6.5	-6.8	-7.1	-7.5	-7.9	-8.7	-9.1	-8.6	-8.0	-7.6	-6.9	-5.2	-4.4	-3.5	-3.1	-2.7	-2.5	-2.8	-3.1	-3.3	-3.4	-3.5	-3.7	-3.8	-5.4	-2.5
4-Apr	-4.1	-4.4	-4.9	-5.1	-5.3	-5.5	-5.8	-5.3	-4.1	-2.5	-1.7	-0.5	0.3	1.1	1.7	2.2	2.3	1.9	0.8	-0.4	-0.9	-1.3	-1.8	-2.4	-1.9	2.3
5-Apr	-2.9	-3.0	-3.1	-3.4	-3.8	-4.8	-4.9	-4.4	-2.8	-1.9	-1.2	0.2	2.1	3.1	4.4	4.4	4.0	4.1	3.8	2.7	1.9	1.0	0.0	-0.8	-0.2	4.4
6-Apr	-1.4	-1.8	-2.2	-2.6	-2.8	-3.1	-3.2	-2.3	-0.7	1.3	3.0	4.9	6.4	7.6	8.3	8.4	8.3	7.7	6.7	5.2	4.2	3.6	2.5	1.4	2.5	8.4
7-Apr	0.6	-0.2	-1.0	-1.4	-1.7	-2.0	-1.6	-0.5	1.2	3.0	5.0	7.0	9.1	10.6	11.8	12.4	12.4	12.0	10.3	8.3	7.2	6.1	5.9	5.2	5.0	12.4
8-Apr	4.5	3.9	2.7	2.0	1.7	0.9	0.9	2.2	3.2	4.9	6.7	9.5	11.1	12.9	13.4	14.9	15.1	13.5	12.7	10.7	9.7	7.0	7.0	5.5	7.4	15.1
9-Apr	4.8	3.8	3.7	4.6	4.1	4.3	4.7	5.9	8.1	10.1	11.6	13.3	14.5	15.3	16.1	16.9	16.6	15.6	13.2	12.0	10.9	10.1	10.2	9.6	10.0	16.9
10-Apr	9.5	8.2	7.0	9.0	8.8	7.6	6.6	7.2	8.0	8.8	9.8	10.7	11.7	12.4	12.5	12.3	12.1	11.6	10.6	9.1	6.9	5.6	6.1	5.0	9.1	12.5
11-Apr	4.2	4.2	3.7	3.1	2.1	0.8	1.6	2.6	4.9	6.8	8.3	9.4	11.1	12.0	12.1	12.1	11.9	11.5	11.3	9.1	7.2	5.2	3.5	2.3	6.7	12.1
12-Apr	3.1	1.4	-0.5	-1.1	-0.7	0.4	0.4	1.0	1.3	2.5	3.1	3.9	4.4	4.7	5.2	5.9	6.7	7.3	6.5	5.5	3.3	0.1	-0.2	0.4	2.7	7.3
13-Apr	-0.6	-1.2	-2.0	-2.7	-3.2	-3.4	-2.3	-1.0	1.3	3.7	5.3	7.2	8.4	9.5	9.9	10.2	10.3	9.9	8.8	6.8	5.3	4.0	1.8	-0.8	3.5	10.3
14-Apr	-1.6	-1.9	-3.0	-3.1	-2.6	-2.2	-0.9	0.7	2.8	4.4	6.3	7.9	9.0	9.7	10.6	11.3	11.4	11.4	9.6	7.5	5.9	5.0	3.5	2.5	4.3	11.4
15-Apr	2.2	1.3	-1.1	-2.0	-2.4	-2.9	-0.9	1.8	3.5	5.5	7.8	10.4	11.9	13.1	13.7	14.1	13.5	13.1	12.3	10.5	9.0	8.3	7.3	6.3	6.5	14.1
16-Apr	5.7	4.9	3.3	0.5	-0.8	-1.5	-0.5	4.5	6.8	10.3	13.0	14.4	15.3	15.9	15.8	16.0	15.7	15.2	14.1	12.3	11.0	10.1	9.3	8.2	9.2	16.0
17-Apr	7.5	7.0	6.7	6.0	5.5	5.7	6.3	7.4	9.5	11.6	12.7	13.5	14.0	14.7	13.8	12.8	9.8	6.6	5.3	5.1	5.1	5.1	5.2	3.4	8.3	14.7
18-Apr	3.0	3.4	3.5	3.5	3.0	1.4	0.3	0.5	0.7	1.4	2.0	1.9	2.2	3.0	3.2	3.3	3.7	3.5	3.2	2.7	2.2	1.7	1.4	1.3	2.3	3.7
19-Apr	1.6	1.4	1.3	1.3	1.0	0.6	0.2	-0.5	-0.6	-0.4	-0.4	0.0	0.3	0.8	1.6	2.4	2.5	2.8	3.3	2.8	1.4	1.0	0.2	-0.7	1.0	3.3
20-Apr	-0.9	-1.4	-2.1	-2.0	-2.1	-2.1	-0.8	0.7	1.9	3.7	5.6	6.5	7.9	8.5	9.1	9.3	9.5	9.1	8.1	6.4	4.6	2.4	1.8	1.6	3.5	9.5
21-Apr	0.8	-0.3	-0.9	-2.1	-3.5	-3.6	-1.1	0.8	2.7	4.7	6.3	7.3	8.4	9.0	9.5	9.9	10.0	10.0	9.4	7.2	3.4	5.3	4.3	2.9	4.2	10.0
22-Apr	2.0	0.7	0.4	0.1	-2.3	-2.1	0.0	1.8	4.1	6.0	7.7	8.6	9.5	9.8	10.0	9.8	10.1	9.5	9.0	7.7	5.9	5.3	4.3	3.6	5.1	10.1
23-Apr	2.3	3.3	2.4	2.2	1.6	1.6	2.0	3.3	4.7	6.5	8.8	10.1	10.5	10.6	10.5	11.3	11.7	11.5	11.0	10.4	9.7	9.8	9.5	9.0	7.3	11.7
24-Apr	7.2	6.7	6.5	6.5	6.3	4.9	3.8	3.8	2.9	3.2	4.0	5.0	6.2	8.2	8.5	7.5	6.9	6.4	5.8	5.6	5.1	4.2	3.8	3.4	5.5	8.5
25-Apr	3.1	3.5	4.1	4.7	4.3	4.3	4.7	5.0	6.0	7.3	8.7	10.1	9.3	5.7	5.9	6.6	8.2	8.6	8.6	8.7	6.5	5.5	5.2	4.4	6.2	10.1
26-Apr	4.1	3.7	3.0	2.7	2.4	2.2	2.4	3.4	4.5	5.1	5.5	6.1	6.9	7.6	8.1	8.5	8.5	8.4	7.4	5.8	4.3	2.8	1.1	1.5	4.8	8.5
27-Apr	1.4	1.3	1.0	0.0	-1.3	-1.1	1.8	3.6	5.7	7.2	8.9	9.8	11.1	11.8	12.3	12.9	12.9	13.4	12.2	11.3	10.7	10.4	9.9	9.3	7.4	13.4
28-Apr	8.3	7.0	6.6	6.8	7.0	7.5	8.8	10.4	11.9	12.7	13.3	14.1	14.9	15.3	15.5	15.3	14.6	13.9	13.3	12.1	10.4	8.6	6.5	5.9	10.9	15.5
29-Apr	3.0	0.7	-0.5	-1.1	-0.8	0.1	4.4	7.0	8.5	10.4	11.7	13.2	14.3	15.1	15.9	16.1	15.9	15.7	15.1	13.2	11.1	11.0	9.2	8.9	9.1	16.1
30-Apr	8.2	7.1	7.2	7.2	6.8	6.6	7.9	9.7	11.7	14.1	16.2	18.1	19.5	20.0	20.7	21.3	21.6	21.4	20.6	18.7	16.8	15.2	14.0	13.1	14.3	21.6
																						Diurnal Average				
																						Diurnal Maximum				





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	164	22.78	22.78
0 - 10	412	57.22	80.00
10 - 20	139	19.31	99.31
> 20	5	0.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

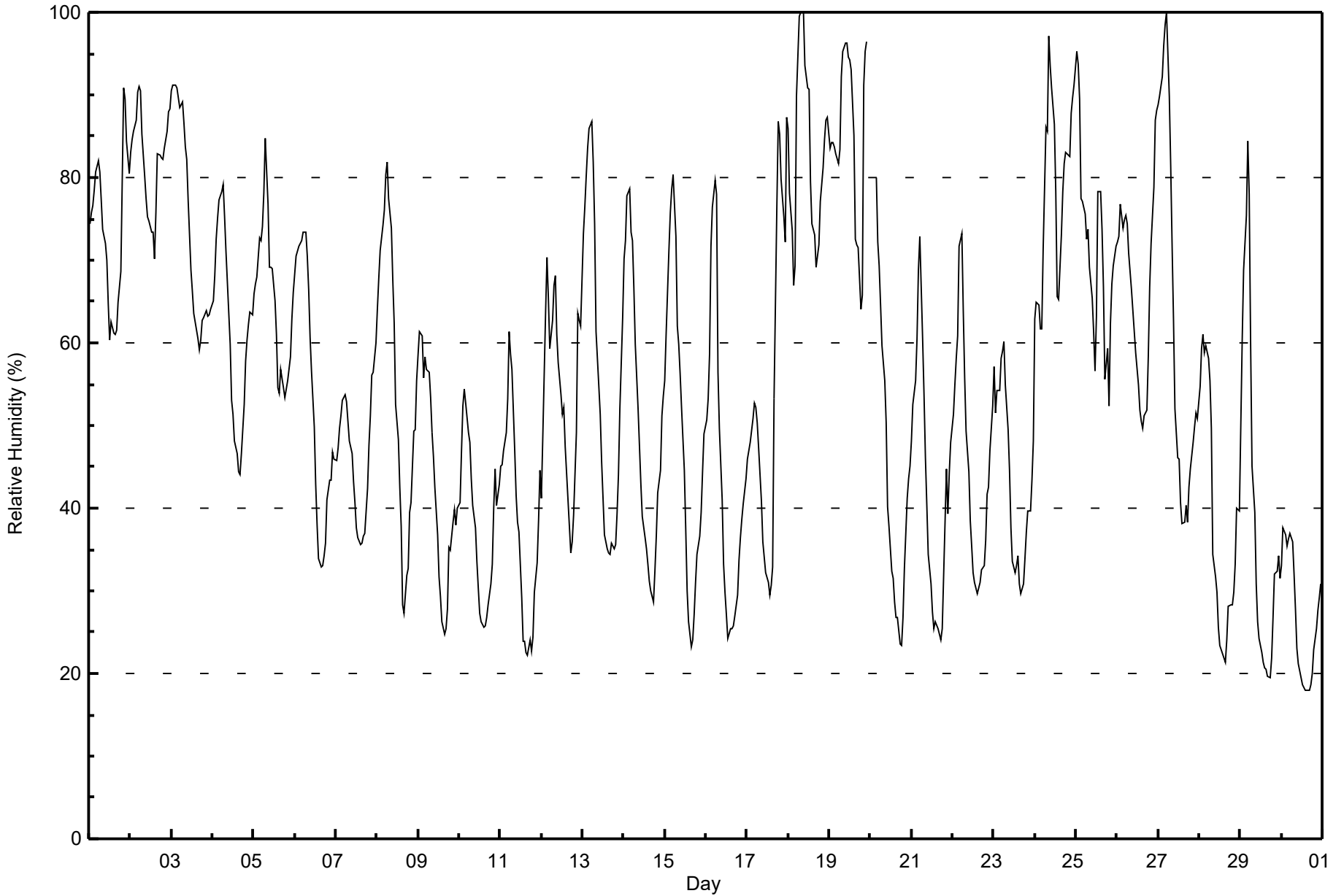
Relative Humidity (RH) - %
Mildred Lake - April 2023

Maximum Value: 100.0 % on Apr 18 08:00		Maximum Daily Average: 85.2 % on Apr 19		Hours in Service:	720																						
Minimum Value: 18.0 % on Apr 30 17:00		Minimum Daily Average: 26.7 % on Apr 30		Hours of Data:	718																						
Maximum Diurnal Average: 72.0 % at hour 6		Minimum Diurnal Average: 40.3 % at hour 16		Hours of Missing Data:	2																						
Monthly Average: 55.62 %		Percentiles: P ₁ = 19.6 P ₁₀ = 28.3 Q ₁ = 37.6 Median = 54.6 Q ₃ = 72.6 P ₉₀ = 84.4 P ₉₉ = 98.2		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-Apr	74.4	75.8	76.6	78.4	80.7	82.0	80.8	77.3	73.7	72.0	70.0	64.7	60.4	62.5	61.2	61.0	61.5	65.0	68.6	79.8	90.8	89.4	84.3	80.5	73.8	90.8	
2-Apr	83.0	84.7	85.5	87.0	90.4	91.0	90.5	85.2	80.1	77.4	75.2	74.7	73.4	73.4	70.2	75.8	82.9	82.7	82.3	82.2	83.6	85.6	88.0	88.2	82.2	91.0	
3-Apr	90.5	91.2	91.1	90.8	89.7	88.5	89.1	86.6	83.7	82.2	77.3	68.7	66.2	63.5	62.6	60.5	59.2	60.3	62.7	63.0	63.9	63.2	63.4	64.2	74.2	91.2	
4-Apr	65.0	68.2	72.5	75.0	77.3	78.3	79.1	75.2	71.0	63.6	59.9	53.0	51.4	48.2	46.5	44.4	44.1	46.6	52.6	57.9	60.4	62.1	63.6	63.4	61.6	79.1	
5-Apr	65.9	67.2	68.0	72.7	72.3	74.1	78.1	84.8	76.8	69.2	69.2	68.9	65.1	61.1	54.7	53.9	56.8	54.5	53.4	54.3	55.4	58.4	62.8	66.0	65.2	84.8	
6-Apr	68.4	70.4	71.7	72.0	72.4	73.4	73.5	70.5	66.4	60.6	56.6	49.8	42.9	38.0	33.9	32.8	33.0	34.3	35.7	41.0	43.3	43.4	46.8	45.9	53.2	73.5	
7-Apr	45.8	47.3	49.7	51.1	53.1	53.8	52.9	50.5	48.2	46.5	43.2	40.7	37.7	36.4	35.7	35.8	36.7	37.0	42.4	47.7	51.2	56.0	56.5	60.0	46.5	60.0	
8-Apr	64.0	67.9	71.1	74.2	76.0	80.3	81.9	77.4	73.9	67.6	62.4	52.5	48.4	42.5	37.8	28.3	27.2	31.9	32.8	39.5	40.7	49.4	49.5	55.5	55.5	81.9	
9-Apr	58.5	61.4	60.8	55.8	58.3	56.7	56.5	53.5	49.2	46.3	42.6	36.8	31.7	29.3	26.3	24.7	25.4	27.9	35.2	35.0	38.2	39.8	38.0	39.9	42.8	61.4	
10-Apr	40.7	46.8	52.3	54.4	52.6	49.1	48.0	43.6	40.4	37.6	33.5	30.3	27.3	26.3	25.6	25.8	26.7	28.2	30.9	33.3	40.1	44.7	40.3	42.8	38.4	54.4	
11-Apr	45.0	45.3	47.0	49.1	53.2	61.4	58.6	56.7	47.0	41.6	38.2	37.2	29.1	23.9	24.0	22.6	22.2	24.1	22.8	24.5	29.7	33.4	38.4	44.5	38.3	61.4	
12-Apr	41.2	48.4	63.6	70.3	65.5	59.3	62.7	67.0	68.2	61.0	57.6	53.8	51.4	52.2	47.4	41.1	37.9	34.6	35.9	39.1	49.1	63.5	62.8	62.0	54.0	70.3	
13-Apr	73.2	76.4	80.2	83.6	85.9	86.8	81.8	74.4	61.3	54.8	51.4	45.6	41.1	36.8	35.0	34.6	34.5	35.8	35.0	35.5	39.4	44.1	52.0	63.1	55.9	86.8	
14-Apr	70.2	72.4	77.8	78.7	73.3	72.4	66.5	59.8	52.1	47.4	42.9	38.9	36.5	35.0	33.2	31.2	30.1	28.7	32.3	36.6	41.9	44.7	51.2	53.6	50.3	78.7	
15-Apr	55.4	61.0	71.2	75.8	78.7	80.4	72.8	62.1	59.8	56.2	52.2	44.5	37.5	30.1	26.3	23.2	24.1	27.1	31.0	34.4	36.5	39.5	44.5	48.9	48.9	80.4	
16-Apr	50.7	53.1	58.7	71.7	76.4	79.7	77.9	56.4	49.6	41.0	33.2	29.8	27.2	24.2	25.4	25.3	25.8	26.9	29.5	33.8	36.4	38.6	40.5	43.5	44.0	79.7	
17-Apr	45.9	46.9	47.9	50.9	52.7	52.2	50.3	47.4	40.9	35.9	34.2	32.2	31.1	29.5	30.7	32.8	53.1	76.4	86.9	85.2	79.8	75.3	72.1	87.3	53.2	87.3	
18-Apr	85.9	78.1	73.5	66.9	69.3	89.8	99.5	100.0	100.0	100.0	93.6	90.9	90.7	79.4	74.4	73.1	69.2	70.6	71.9	77.1	81.1	84.5	86.9	87.3	83.1	100.0	
19-Apr	83.6	84.3	84.2	83.8	82.9	81.7	83.4	92.3	95.2	96.3	96.2	94.6	94.3	93.0	85.1	72.6	71.9	71.6	64.0	65.8	91.2	95.2	96.5	OR	85.2	96.5	
20-Apr	100.0	100.0	OR	80.0	72.2	69.4	64.6	59.7	55.4	50.3	40.3	37.9	32.4	31.6	28.7	26.9	26.8	23.5	23.3	26.7	32.7	41.2	43.5	45.1	48.4	100.0	
21-Apr	48.2	52.6	55.4	60.4	68.9	72.9	60.5	53.7	46.2	40.4	34.4	30.8	27.4	25.4	26.2	25.5	24.7	24.0	25.4	31.8	44.7	39.3	44.2	48.0	42.1	72.9	
22-Apr	51.4	54.9	58.1	60.8	71.7	73.3	63.8	55.7	49.3	44.4	38.4	35.5	32.2	31.0	29.7	30.4	31.0	32.6	33.1	36.1	41.7	42.5	46.9	52.3	45.7	73.3	
23-Apr	57.1	51.6	54.2	54.2	58.2	59.0	60.1	54.9	49.6	44.6	37.6	33.6	32.3	33.0	34.3	30.9	29.7	30.9	33.8	37.1	39.7	39.7	43.4	48.1	43.6	60.1	
24-Apr	62.9	64.9	64.6	61.7	61.7	71.3	86.0	85.6	97.2	93.5	90.9	86.4	78.3	65.6	65.3	73.1	78.3	81.7	83.1	82.9	82.6	87.8	89.6	91.2	78.6	97.2	
25-Apr	95.2	93.7	89.5	77.5	77.1	75.5	72.6	73.8	69.1	65.4	61.3	56.7	63.3	78.3	78.3	73.7	66.9	55.5	59.4	52.3	62.3	67.1	69.4	71.8	71.1	95.2	
26-Apr	72.3	72.8	76.8	73.9	74.9	75.5	74.4	70.8	66.4	63.9	61.4	58.8	54.9	51.9	50.5	49.6	51.1	51.9	58.3	66.7	72.0	78.8	87.0	88.2	66.8	88.2	
27-Apr	88.8	89.9	92.2	95.9	98.4	99.9	89.8	81.3	71.7	62.8	52.1	46.1	46.0	40.7	38.2	38.3	40.4	38.2	42.5	44.8	48.0	49.8	51.6	50.8	62.4	99.9	
28-Apr	54.8	59.3	61.1	58.8	59.6	58.2	55.4	49.6	34.5	31.8	29.8	25.6	23.4	22.9	21.9	21.4	24.1	28.1	28.3	28.2	29.8	33.2	39.9	39.7	38.3	61.1	
29-Apr	49.9	60.3	68.8	75.5	84.4	77.9	60.1	45.1	39.5	30.9	26.2	24.3	22.5	21.3	20.8	20.4	19.7	19.5	21.8	26.8	32.1	32.3	34.3	31.6	39.4	84.4	
30-Apr	33.0	37.6	36.7	35.5	36.3	36.9	36.0	32.0	27.8	23.1	21.2	19.6	18.6	18.3	18.0	18.0	18.0	18.6	19.9	23.0	25.5	27.6	29.2	30.9	26.7	37.6	
		64.0	66.1	67.6	69.2	70.8	72.0	70.2	66.1	61.5	56.9	52.8	48.8	45.8	43.5	41.6	40.3	41.1	42.3	44.5	47.4	52.1	55.0	57.2	58.4	Diurnal Average	
		100.0	100.0	92.2	95.9	98.4	99.9	99.5	100.0	100.0	100.0	96.2	94.6	94.3	93.0	85.1	75.8	82.9	82.7	86.9	85.2	91.2	95.2	96.5	91.2	Diurnal Maximum	
OR - Out of Range																											



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Mildred Lake - April 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Speed: 28 km/h on Apr 10 15:00	Maximum Daily Speed Average: 19.7 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 16 07:00	Minimum Daily Speed Average: 3.4 km/h on Apr 4	Hours of Data: 720
Maximum Diurnal Speed Average: 5.5 km/h at hour 13	Minimum Diurnal Speed Average: 2.8 km/h at hour 4	Hours of Missing Data: 0
Monthly Average Velocity: 3.9 km/h 139.7 deg	Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 7 Median = 10 Q ₃ = 13 P ₉₀ = 18 P ₉₉ = 26	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-Apr	ENE8	ENE7	ENE6	ENE4	ENE5	ENE6	ENE7	NE5	E4	SE7	ESE10	E8	S6	NW10	NNW9	NNW10	NNW11	N11	N8	E12	E12	ESE9	ESE9	ESE13	ENE4.7	ESE13	
2-Apr	ESE11	SE11	SE10	SE9	SE7	ESE6	ESE7	SE9	SE11	SE11	SE9	SE8	SSE6	SSW6	W2	N11	N12	N12	N13	NNE14	NNE14	N12	N13	N11	ENE4.1	NNE14	
3-Apr	N11	N10	N8	N8	N10	N11	N9	N11	NNW11	NNW11	NNW9	NW7	WNW6	WSW9	SSW8	W5	WSW5	WNW6	N4	NE5	ENE4	E6	E7	E7	NNW4.9	NNW11	
4-Apr	SE4	ESE4	N2	N5	N3	NNE2	NNW4	NNW3	WSW3	SSW2	SSW6	SSW7	S7	S7	S7	SSW6	SSW6	S6	SSE6	ESE7	SE9	SE10	SE10	SE9	SSE3.4	SE10	
5-Apr	SE11	SSE16	SSE15	SSE9	ESE7	ESE5	SE6	S8	S8	SSE8	SSE9	SSE10	SSE10	SE8	S5	SSE11	SSE12	SSE7	SSE7	SE7	ESE7	ESE8	ESE7	ESE7	SE8.2	SSE16	
6-Apr	SE9	SE9	SE7	SE10	SE13	SE17	SE17	SE19	SSE15	SSE17	SSE13	SSE14	SSE20	SSE20	S22	S23	S22	S23	S22	SSE16	SSE15	SSE18	SSE17	SSE16	SSE16.0	S23	
7-Apr	SSE14	SSE15	SE15	SE14	SE14	SE15	SE17	SE17	SSE16	SSE16	SSE17	SSE17	SSE17	SSE16	SSE18	SSE17	SSE15	SSE16	SSE11	SSE10	SE10	SSE11	SSE11	SSE11	SSE14.4	SSE18	
8-Apr	SSE11	SSE10	SE10	SE9	SSE9	SE7	SE8	SSE8	SSE9	SSE14	SSE12	SSE11	SE13	SSE13	SSE10	SSW11	SW10	SSW8	SW9	WSW6	WSW6	WSW3	WSW6	SW6	S7.6	SSE14	
9-Apr	WSW5	SW5	WSW6	SW8	WSW7	SW12	SW12	SW12	SW12	SW10	SSW13	SW13	SW14	SW14	SW11	SW10	S11	SSE10	SSE10	SSE13	SSE13	SSE12	SE13	SE12	SSW8.7	SW14	
10-Apr	SE14	SSE10	SSW9	WSW20	WSW22	WSW24	WSW23	WSW22	WSW23	WSW22	WSW23	WSW25	WSW27	WSW26	WSW28	WSW28	WSW25	WSW22	WSW16	SW15	SW10	SW9	SW14	SW13	WSW17.8	WSW28	
11-Apr	SW11	SW13	SW13	SW11	SW7	S7	SE5	SSE7	S9	SSW9	S7	SSE9	S11	SW9	SSW11	SSW13	SSW13	SSW10	NW8	NNW10	NNW8	NNW10	NNW7	WNW7	SW5.7	SW13	
12-Apr	WNW10	N9	W4	WSW4	WSW5	W10	W8	NW9	NNW8	NW7	WNW9	NNW10	NW13	NNW11	NNW10	NW13	NW9	WNW8	NW9	NW7	NNW4	NW5	NNW8	N8	NW7.4	NW13	
13-Apr	NW5	NNW7	N5	NNW5	N4	N5	NNE3	NNE6	NNE5	W4	NNW6	NNW3	NW7	WNW4	NNW7	N6	N9	NNE11	NNE9	NNE9	NNE10	NNE8	NNE6	NE4	N5.5	NNE11	
14-Apr	NNE4	NNE3	NNE4	NE5	NE5	ENE6	ENE6	E8	SE4	S8	S9	SSE6	SSE4	E6	ESE6	ENE4	SW1	ESE2	ESE13	E12	ESE10	ESE8	ESE6	ESE8	ESE4.6	ESE13	
15-Apr	ESE7	ESE6	E4	ENE3	N1	N3	NE3	ESE2	SE6	SSE7	S8	S7	SSE7	SSE7	SSW6	SSE5	SE7	SE7	ESE13	E11	E11	ESE15	ESE12	ESE10	SE5.7	ESE15	
16-Apr	SE10	SE12	SE6	E3	ENE4	ENE3	NE1	ESE3	SE7	SE10	ESE16	ESE20	ESE20	SE18	ESE19	ESE18	E21	E22	E17	ESE20	ESE20	ESE21	ESE18	ESE17	ESE13.2	E22	
17-Apr	ESE14	ESE15	ESE17	ESE14	E18	ESE18	E18	E20	ESE20	ESE23	ESE24	ESE24	ESE26	ESE25	ESE26	ESE23	SE26	ESE21	E17	E16	ESE19	ESE16	ESE18	ESE23	ESE19.7	ESE26	
18-Apr	ESE18	ESE17	E18	E15	ESE14	ESE14	ESE9	NNE6	N9	N9	NE7	ENE8	E10	ENE10	ENE10	ENE8	ENE8	ENE9	NE8	ENE8	NE6	N9	N9	NNE8	ENE8.3	E18	
19-Apr	NE6	NNE6	ENE6	E11	ESE14	ESE16	ESE17	ESE16	ESE16	ESE14	ESE14	ESE13	ESE15	E13	ESE13	ESE13	ESE11	E8	E6	NNE5	NNW9	N10	N9	N7	E8.8	ESE17	
20-Apr	N7	N5	ENE4	E8	ESE8	ESE7	ESE7	SE9	SSE8	S7	S9	NNW4	ESE7	SE10	ESE11	ESE11	ESE13	ESE14	E14	E12	E10	E8	E10	E12	ESE7.2	ESE14	
21-Apr	ESE8	ESE6	SE7	ESE4	SE3	SSE4	SSE5	SSE7	SSE10	SE10	SSE11	S10	SSE9	S8	S8	SSE8	SE6	SE7	SE7	SE5	SE6	ESE8	SE7	SE7	SSE6.7	SSE11	
22-Apr	SSE6	S5	S5	S3	ENE2	SSE4	SSE7	SSE8	SE8	SE11	SE14	SSE13	SSE16	SSE15	SSE17	S16	S13	S14	S14	S12	S7	S8	SSE7	SE7	SSE9.4	SSE17	
23-Apr	ESE6	ESE8	SE8	SE7	SSE3	S6	SSE6	SE7	ESE10	ESE11	SSE11	SE16	SSE17	SSE18	S14	SE13	SE12	SSE11	SSE12	ESE11	ESE8	SE11	SSE12	SSE12	SE9.9	SSE18	
24-Apr	SSE8	ENE5	ENE9	ENE8	SE8	ESE10	E4	ESE6	E5	NE5	NNE7	N13	N12	NNW16	NNW19	NNW17	NNW17	N14	N11	N11	WNW4	SW7	S4	NNE5.2	NNW19		
25-Apr	SSE5	SSE6	SE6	SE12	SE11	SSE12	SSE13	SSE15	SSE14	SE12	SSE12	SSE16	SSW14	W17	ESE4	SE11	SSE13	SSE6	SSE10	W16	W13	W15	W15	W15	WNW14	S6.3	W17
26-Apr	W15	W14	WNW13	WNW13	WNW13	WNW13	WNW12	W13	WNW15	NW16	NW13	WNW13	NW12	NNW10	NNW12	N11	NNE10	NE11	NE10	NE10	NNE7	N5	NNW5	NNW7	NW8.7	NW16	
27-Apr	NNW8	NNW8	NNW6	N4	ENE1	SW2	S4	S6	S5	WNW6	NW6	WSW4	SSW9	SSW11	SSW10	SSW10	SSW10	SSW9	SSW7	S9	SSE8	SSE9	SSE13	S13	SSW4.5	S13	
28-Apr	S7	SSE3	NW5	W8	WNW8	WNW9	WNW12	WNW14	NW26	NW25	WNW24	NW25	NW24	NW23	NW24	NW22	NNW20	N15	N11	N9	N8	N7	N8	N8	NW12.4	NW26	
29-Apr	N6	SW1	SSW2	W1	WSW2	SSE1	E2	ESE3	S7	S8	S8	S8	SSW6	SW5	S7	SSE4	SE7	E8	E9	E5	ESE7	ESE9	ESE9	ESE12	SE3.9	ESE12	
30-Apr	ESE11	ESE10	SE12	SE13	SE12	SE11	SE11	SSE14	SSE15	SSE15	SE15	SE16	SE19	SSE21	SE20	SE19	SE19	SE18	SE18	SE16	SE17	SE17	SE16	SE13	SE15.2	SSE21	

SE3.8	SE3.8	SE3.6	SE2.8	SE3.0	SE3.3	SE3.7	SSE4.0	SSE3.9	SSE4.3	SSE5.1	SSE5.4	SSE5.5	S4.6	SSE4.3	SSE3.6	SSE4.4	SE4.2	ESE4.4	ESE4.3	ESE4.4	ESE4.2	SE4.2	ESE4.7	Diurnal Average
ESE18	ESE17	E18	WSW20	WSW22	WSW24	WSW23	WSW22	NW26	NW25	WNW24	NW25	WSW27	WSW26	WSW28	WSW28	SE26	S23	S22	ESE20	ESE20	ESE21	ESE18	ESE23	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

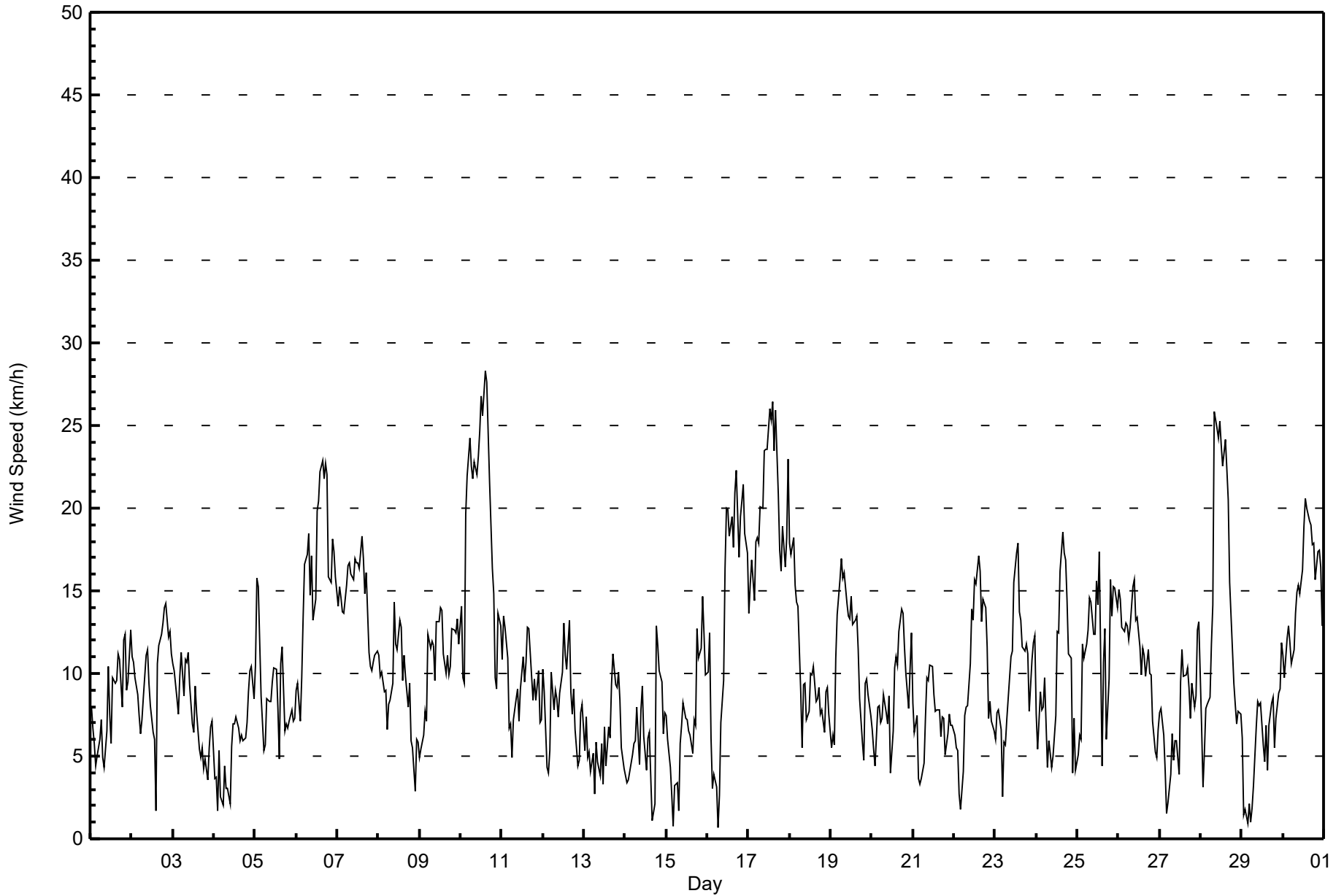
Wind Speed (WS) - km/h
Mildred Lake - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on Apr 10 15:00 Minimum Value: 1 km/h on Apr 16 05:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 8																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1	1	1	1	1	1	1	2	2	2	3	4	2	2	2	2	2	2	2	3	2	2	3	3	4
2-Apr	3	3	3	3	2	2	2	2	3	3	2	2	2	1	2	2	3	3	3	4	4	3	4	3	4
3-Apr	2	2	2	2	3	2	2	3	3	2	2	4	3	2	3	2	2	2	1	1	1	1	1	1	1
4-Apr	1	1	1	1	2	1	1	1	1	2	2	1	1	2	2	1	1	1	2	2	2	3	2	3	3
5-Apr	2	4	3	2	2	2	2	2	2	2	2	2	2	2	1	4	3	2	1	2	1	2	1	1	4
6-Apr	2	2	2	2	3	3	3	4	3	3	3	3	4	4	5	6	5	5	5	5	4	4	4	4	6
7-Apr	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	3
8-Apr	2	1	2	2	2	1	1	2	2	3	2	2	3	2	2	3	3	2	3	2	2	2	2	2	3
9-Apr	2	2	2	3	2	4	3	4	4	4	4	5	5	4	3	4	3	2	2	2	2	2	3	3	5
10-Apr	4	3	3	7	8	8	7	7	7	7	7	8	8	9	9	9	8	7	6	4	3	3	4	4	9
11-Apr	3	4	4	3	2	2	2	2	2	2	2	2	4	4	4	4	3	3	6	2	1	2	1	1	6
12-Apr	3	3	2	1	2	2	2	4	2	3	3	3	4	5	4	4	4	3	2	1	1	1	1	2	5
13-Apr	2	2	2	2	2	1	1	2	2	2	3	3	3	3	3	4	3	3	2	2	2	2	1	1	4
14-Apr	1	1	1	1	1	1	2	2	2	2	2	3	2	3	3	3	2	3	4	2	3	2	2	2	4
15-Apr	2	2	1	2	1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	2	3	3	3	3	3
16-Apr	3	3	3	1	1	1	1	2	2	3	4	6	5	5	5	5	5	5	4	4	5	5	4	5	6
17-Apr	3	4	4	3	4	5	4	4	6	7	6	7	7	7	7	7	7	6	5	5	6	5	5	7	7
18-Apr	4	4	4	4	4	4	3	1	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	4
19-Apr	1	1	2	3	4	4	5	3	4	4	3	3	4	3	4	4	3	3	3	1	2	2	1	2	5
20-Apr	1	1	1	1	1	1	2	2	2	1	2	4	5	4	4	4	3	4	4	3	2	2	2	2	5
21-Apr	2	1	1	2	1	1	1	2	2	2	3	3	3	3	3	2	3	2	2	1	1	1	1	1	3
22-Apr	2	1	3	2	2	1	2	1	2	3	3	4	5	4	5	4	3	4	4	3	1	1	1	1	5
23-Apr	2	1	1	2	1	1	1	2	2	3	3	4	5	5	5	4	4	4	4	2	3	4	4	5	5
24-Apr	6	1	2	2	2	3	2	1	1	1	2	2	3	3	3	4	4	3	4	3	3	2	2	3	6
25-Apr	1	2	1	2	2	2	2	3	3	3	2	3	8	8	3	2	4	4	4	8	4	5	5	4	8
26-Apr	5	4	4	4	3	4	3	4	4	4	4	4	4	3	4	4	4	3	3	3	2	1	1	1	5
27-Apr	1	1	1	2	1	1	1	1	2	3	3	2	3	3	3	3	3	3	2	1	1	2	3	3	3
28-Apr	2	2	3	3	3	3	4	4	6	6	7	7	6	6	6	6	6	5	4	2	2	1	1	1	7
29-Apr	2	1	1	2	2	1	1	1	1	2	2	2	2	3	3	3	3	4	2	1	2	2	2	3	4
30-Apr	3	2	3	4	3	3	3	3	3	3	3	4	5	5	5	5	4	4	5	4	4	4	4	3	5
Diurnal Maximum																									



Wood Buffalo Environmental Association
Hourly Averages

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	108	15.00	15.00
6 - 11	360	50.00	65.00
12 - 19	200	27.78	92.78
20 - 28	52	7.22	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	12	7	9	11	7	8	5	10	7	2	5	8	5	2	3	7	108
6 - 11	34	13	7	17	18	46	55	51	32	21	14	6	3	10	10	23	360
12 - 19	9	2	0	0	14	36	36	51	7	4	12	1	8	10	5	5	200
20 - 28	0	0	0	0	3	15	2	4	4	0	0	15	0	1	7	1	52
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
Totals	55	22	16	28	42	105	98	116	50	27	31	30	16	23	25	36	720

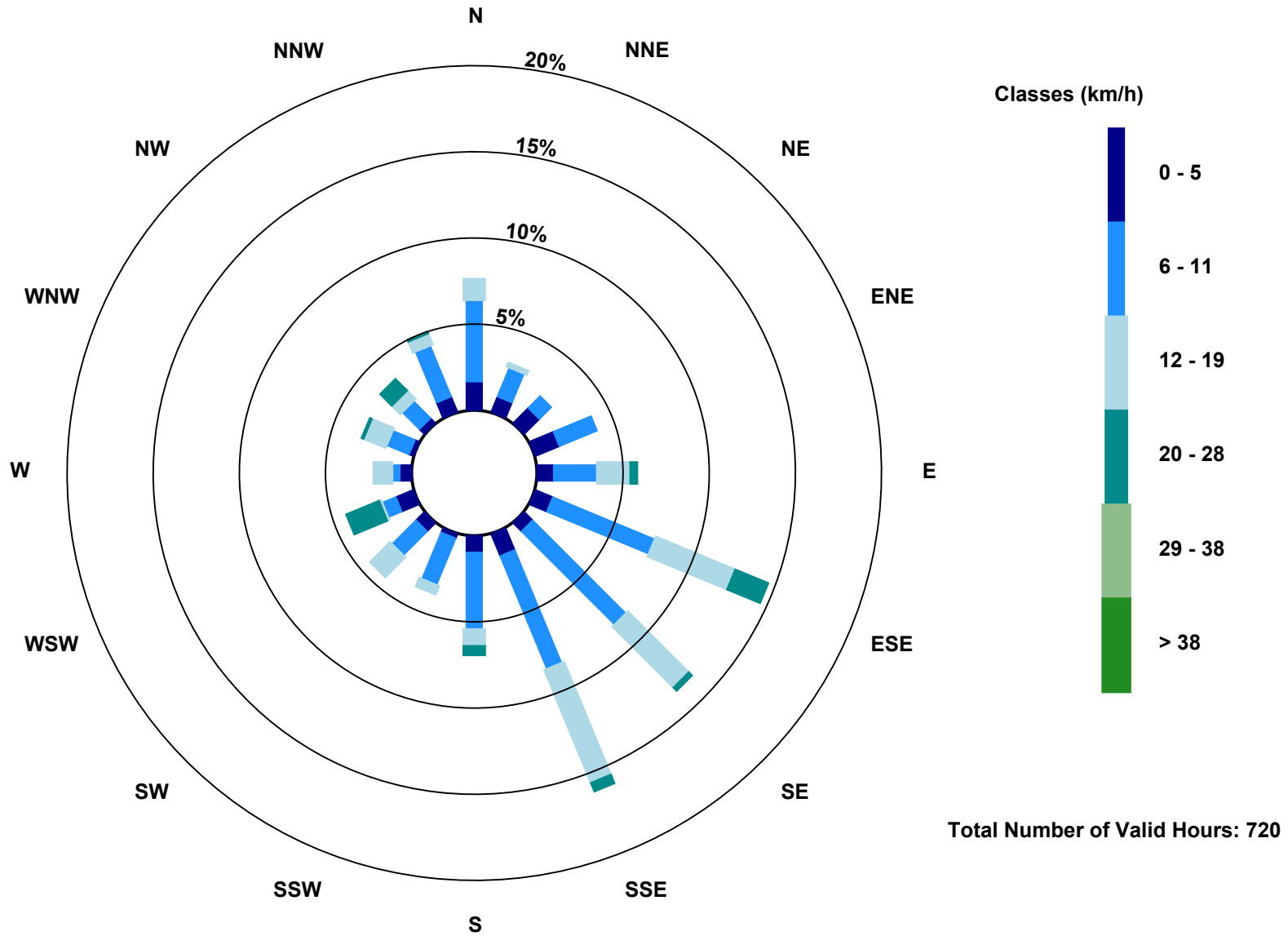
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Mildred Lake





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Mildred Lake - April 2023

Direction of Maximum Speed: 255 deg on Apr 10 15:00 Direction of Maximum Daily Speed Average: 109.5 deg on Apr 17	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0
Direction of Minimum Speed: 47 deg on Apr 16 07:00 Direction of Minimum Daily Speed Average: 3.4 deg on Apr 4	Percent Operational Time: 100.0
Monthly Average Direction: 139.7 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-Apr	75	78	65	66	59	71	76	49	100	131	110	87	187	314	328	344	348	356	6	92	99	111	118	120	68.9
2-Apr	122	124	133	141	131	116	122	132	133	136	138	124	160	209	262	352	5	5	10	13	15	8	3	7	73.0
3-Apr	353	351	5	5	2	3	353	352	346	335	336	318	301	246	201	261	256	303	349	48	67	79	89	96	347.6
4-Apr	139	123	10	356	352	23	340	334	257	200	201	195	186	177	183	197	196	171	147	121	128	142	142	130	159.6
5-Apr	138	149	150	156	122	106	128	176	171	153	148	156	154	146	179	160	149	148	148	128	122	115	111	116	144.8
6-Apr	128	134	129	125	133	139	139	140	149	149	159	157	149	154	169	170	169	170	172	166	166	167	161	159	155.4
7-Apr	159	149	141	135	140	138	139	143	155	161	148	149	148	149	150	150	154	149	148	153	144	147	157	162	148.4
8-Apr	154	151	146	146	150	140	140	158	160	149	148	149	144	149	166	197	215	208	225	243	241	238	245	225	168.8
9-Apr	237	220	237	232	240	223	225	218	224	217	210	217	232	223	228	221	186	165	149	153	155	153	138	127	199.7
10-Apr	131	155	196	258	256	257	244	249	258	258	248	240	255	250	255	250	242	241	241	228	224	229	234	228	243.5
11-Apr	224	225	223	223	223	183	140	153	188	193	185	149	190	231	212	211	201	192	313	348	340	327	331	299	219.0
12-Apr	303	0	260	258	253	279	275	315	345	324	293	293	310	345	340	314	319	286	310	308	345	311	338	349	312.7
13-Apr	316	346	350	348	354	2	17	16	26	271	342	328	307	300	342	3	7	27	24	17	18	22	13	34	0.5
14-Apr	28	22	24	50	49	58	78	97	143	186	181	150	165	80	106	62	234	105	114	95	103	120	118	106	105.1
15-Apr	118	114	85	58	1	350	41	104	166	162	183	172	153	156	192	152	124	130	111	93	99	105	117	120	125.0
16-Apr	126	144	132	86	72	68	47	103	138	142	119	119	123	124	110	110	100	95	101	102	104	105	106	102	111.0
17-Apr	104	102	103	102	98	106	97	92	106	118	106	123	111	122	114	116	142	108	90	92	105	111	114	114	109.5
18-Apr	102	104	95	95	103	113	102	13	354	2	54	63	87	73	72	63	74	71	54	61	34	4	1	18	71.2
19-Apr	49	13	58	94	103	113	109	108	108	107	106	103	106	101	103	104	111	98	90	32	342	354	1	3	90.7
20-Apr	7	11	64	101	106	112	117	141	162	191	177	335	115	126	112	111	117	102	100	98	92	88	89	87	107.0
21-Apr	107	117	124	116	131	168	164	164	163	143	166	170	167	175	170	154	137	144	140	140	141	120	128	133	146.9
22-Apr	157	183	186	190	78	160	162	156	143	134	145	157	160	157	165	172	171	186	173	175	170	175	159	143	163.2
23-Apr	112	123	131	136	167	177	168	126	117	111	147	146	150	149	170	133	133	155	152	119	116	139	151	153	141.4
24-Apr	166	65	72	73	134	123	96	111	90	41	39	18	360	4	348	345	346	346	351	353	359	287	220	177	15.0
25-Apr	150	150	137	146	146	148	150	148	157	158	152	148	211	277	118	135	147	160	148	269	279	277	278	284	181.8
26-Apr	281	279	285	286	283	283	282	281	301	311	310	295	308	329	345	355	20	35	42	39	29	359	338	331	315.2
27-Apr	339	336	348	357	69	228	189	184	180	282	317	246	204	202	198	197	206	200	192	176	165	163	166	173	199.3
28-Apr	177	155	320	278	297	298	293	285	309	309	300	306	305	314	321	323	338	4	8	7	7	0	353	353	318.1
29-Apr	358	219	195	261	240	154	85	103	173	181	172	187	198	219	175	147	140	100	98	83	115	109	109	114	139.4
30-Apr	120	120	124	128	131	134	136	149	150	148	145	143	140	148	144	143	139	138	137	133	137	140	137	133	138.5

124.4	125.0	124.2	128.9	131.3	140.3	140.7	146.4	159.3	163.2	160.0	160.1	168.1	171.4	162.1	157.4	148.5	128.7	116.1	103.6	103.3	117.3	125.9	122.1
Diurnal Average																							

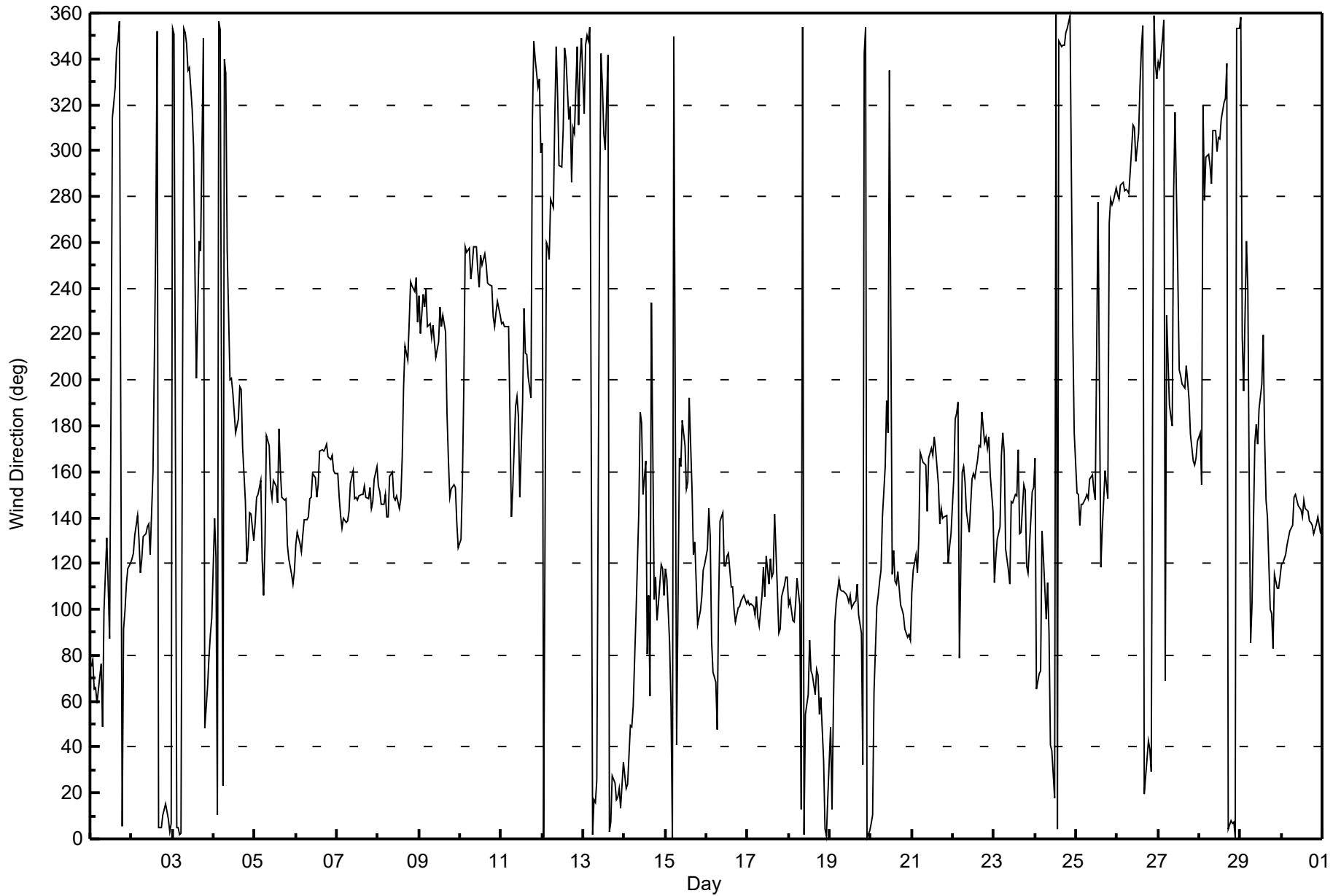
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Mildred Lake - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 96 deg on Apr 14 18:00 Minimum Value: 7 deg on Apr 20 05:00 Percentiles: P ₁ = 9 P ₁₀ = 13 Q ₁ = 15 Median = 19 Q ₃ = 25 P ₉₀ = 39 P ₉₉ = 80											Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	10	10	11	24	13	10	12	25	48	26	21	31	40	14	15	16	14	14	17	21	13	15	18	19	48
2-Apr	18	20	19	20	19	19	18	18	18	18	22	27	34	16	92	20	18	18	18	19	18	19	18	17	92
3-Apr	17	14	17	16	16	16	15	16	18	17	26	47	50	18	36	33	33	29	39	22	16	11	14	11	50
4-Apr	26	32	41	18	55	40	22	17	39	74	23	22	25	26	23	23	19	25	19	15	15	15	12	16	74
5-Apr	13	11	12	16	18	19	36	19	19	22	17	17	17	19	28	23	14	17	13	16	13	15	12	11	36
6-Apr	17	14	16	15	15	12	13	13	12	12	15	17	13	15	14	13	13	13	13	14	14	14	15	15	17
7-Apr	15	11	14	15	13	14	14	12	15	15	13	13	14	13	12	13	13	12	15	14	15	10	12	13	15
8-Apr	12	11	11	13	11	19	13	16	16	12	14	15	16	15	20	21	24	20	26	31	25	20	20	25	31
9-Apr	30	21	23	23	23	23	22	24	25	28	22	25	26	23	27	28	23	18	9	13	12	12	14	17	30
10-Apr	17	14	27	19	22	20	21	21	19	21	23	22	22	22	21	21	23	23	24	20	22	23	22	21	27
11-Apr	22	20	21	23	28	19	22	15	21	18	21	18	27	38	35	24	19	18	62	13	11	8	10	14	62
12-Apr	23	19	50	31	36	15	18	25	24	41	31	28	26	33	38	23	30	24	13	21	25	12	11	20	50
13-Apr	33	17	15	18	49	15	51	28	35	61	58	88	59	74	61	67	32	20	17	16	18	16	20	24	88
14-Apr	24	28	25	14	12	9	23	20	53	30	23	65	80	54	66	76	94	96	17	12	12	17	24	13	96
15-Apr	14	20	30	52	42	30	44	63	31	32	22	34	43	47	50	71	27	22	19	9	12	13	18	18	71
16-Apr	16	11	40	20	22	17	41	48	23	29	22	22	23	22	20	21	18	15	15	14	14	14	15	13	48
17-Apr	16	16	15	16	14	18	13	12	19	20	19	20	20	20	19	19	19	18	15	16	17	19	18	18	20
18-Apr	15	14	14	17	21	18	21	26	13	18	28	16	22	17	15	20	18	16	18	15	21	16	14	16	28
19-Apr	18	14	42	15	15	18	17	15	15	17	15	15	15	15	17	17	17	18	25	24	15	15	15	13	42
20-Apr	13	14	29	8	7	13	16	19	27	24	22	86	81	39	33	31	29	20	15	10	10	10	8	9	86
21-Apr	15	12	12	50	16	20	19	19	18	25	22	28	36	34	36	38	46	30	18	11	14	13	11	14	50
22-Apr	34	24	52	90	73	29	15	18	24	22	20	22	22	20	17	17	20	19	17	13	12	13	15	14	90
23-Apr	11	12	11	24	69	22	14	25	20	20	23	18	16	20	30	25	33	30	31	25	23	25	23	20	69
24-Apr	30	28	11	18	30	25	22	27	23	22	28	20	21	24	17	16	15	15	17	17	17	61	27	65	65
25-Apr	14	11	11	11	11	12	13	12	16	16	16	14	50	27	69	18	25	65	45	25	16	18	19	19	69
26-Apr	19	19	19	17	17	18	18	19	19	17	20	22	22	28	34	31	31	25	21	18	19	17	16	8	34
27-Apr	12	12	15	26	26	47	21	24	43	44	53	60	33	27	26	26	26	20	18	11	13	14	12	15	60
28-Apr	28	69	32	14	14	17	18	18	16	17	20	17	19	24	18	18	23	21	21	18	16	13	10	12	69
29-Apr	15	69	19	78	64	70	48	50	21	21	27	26	55	76	47	80	49	36	13	18	31	20	19	16	80
30-Apr	19	17	18	17	16	14	16	15	14	15	20	20	18	16	17	18	16	16	16	17	15	13	15	16	20
											Diurnal Maximum														
											34 69 52 90 73 70 51 63 53 74 58 88 81 76 92 80 94 96 62 31 31 61 27 65														





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS03 LOWER CAMP METEOROLOGY APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
APRIL 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
Temperature 20 m (C) Average	720	0	0	100	21.1	-	14.5	-
Temperature 45 m (C) Average	720	0	0	100	21.2	-	14.4	-
Temperature 100 m (C) Average	720	0	0	100	20.8	-	14.1	-
Temperature 163 m (C) Average	720	0	0	100	20.2	-	13.8	-
Relative Humidity 20 m (%) Average	720	0	0	100	97.8	-	78.5	-
Relative Humidity 45 m (%) Average	720	0	0	100	95.6	-	80.3	-
Relative Humidity 100 m (%) Average	720	0	0	100	92.3	-	78.8	-
Relative Humidity 163 m (%) Average	720	0	0	100	95.9	-	82.3	-
Wind Speed 20 m (km/h) Average	719	0	1	99.86	36	-	22.0	-
Wind Speed 45 m (km/h) Average	718	0	2	99.72	46	-	30.0	-
Wind Speed 100 m (km/h) Average	717	0	3	99.58	52	-	40.0	-
Wind Speed 163 m (km/h) Average	717	0	3	99.58	55	-	46.0	-
Wind Direction 20 m (deg) Average	719	0	1	99.86	-	-	-	-
Wind Direction 45 m (deg) Average	718	0	2	99.72	-	-	-	-
Wind Direction 100 m (deg) Average	717	0	3	99.58	-	-	-	-
Wind Direction 163 m (deg) Average	717	0	3	99.58	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	719	0	1	99.86	0.6	-	0.1	-
Vertical Wind Speed 45 m (km/h) Average	718	0	2	99.72	1.3	-	0.7	-
Vertical Wind Speed 100 m (km/h) Average	717	0	3	99.58	2.3	-	0.7	-
Vertical Wind Speed 163 m (km/h) Average	717	0	3	99.58	2.8	-	1.1	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
 APRIL 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	720	5.2	5.7	-	-8.6	-2.4	0.9	4.9	9.5	12.7	21.1
Temperature 45 m (C) Average	720	5.25	5.6	-	-8.7	-2.2	1.2	5.1	9.4	12.7	21.2
Temperature 100 m (C) Average	720	5.05	5.6	-	-9.2	-2.5	1.2	5.1	9.1	12.5	20.8
Temperature 163 m (C) Average	720	4.75	5.5	-	-9.7	-2.6	1	4.9	8.6	12	20.2
Relative Humidity 20 m (%) Average	720	52.92	20.4	-	17.6	26.8	34.6	53.1	69.8	80.6	97.8
Relative Humidity 45 m (%) Average	720	52.67	20.2	-	17.3	26.8	34.6	51.8	69.4	81.3	95.6
Relative Humidity 100 m (%) Average	720	50.11	19.7	-	16.3	25.1	32.5	48.1	67.1	79.3	92.3
Relative Humidity 163 m (%) Average	720	51.46	20.2	-	17.8	26.2	33.5	48.6	68.5	81.3	95.9
Wind Speed 20 m (km/h) Average	719	10.8	7	-	0	3	6	9	15	21	36
Wind Speed 45 m (km/h) Average	718	15.1	9	-	0	5	8	13	21	28	46
Wind Speed 100 m (km/h) Average	717	19.1	11	-	1	7	11	17	26	33	52
Wind Speed 163 m (km/h) Average	717	21.8	12	-	1	7	12	21	30	38	55
Wind Direction 20 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	718	-	-	-	-	-	-	-	-	-	-
Wind Direction 100 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-
Wind Direction 163 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	719	-0.43	0.5	-	-2.4	-1.1	-0.7	-0.4	-0.1	0.1	0.6
Vertical Wind Speed 45 m (km/h) Average	718	0.14	0.4	-	-1.3	-0.4	-0.1	0.1	0.4	0.7	1.3
Vertical Wind Speed 100 m (km/h) Average	717	0.07	0.7	-	-2	-0.9	-0.2	0.1	0.5	0.9	2.3
Vertical Wind Speed 163 m (km/h) Average	717	0.33	0.7	-	-2.4	-0.4	0	0.3	0.7	1.3	2.8

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

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction, Vertical Wind Speed at 20m	18 Apr 2023 07:00	18 Apr 2023 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, Vertical Wind Speed at 45m	18 Apr 2023 07:00	18 Apr 2023 08:00	2	Flat line in sensor output signal
Wind Speed, Wind Direction, Vertical Wind Speed at 100m	18 Apr 2023 07:00	18 Apr 2023 08:00	2	Flat line in sensor output signal
Wind Speed, Wind Direction, Vertical Wind Speed at 100m	24 Apr 2023 10:00	24 Apr 2023 10:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, Vertical Wind Speed at 163m	18 Apr 2023 06:00	18 Apr 2023 08:00	3	Flat line in sensor output signal

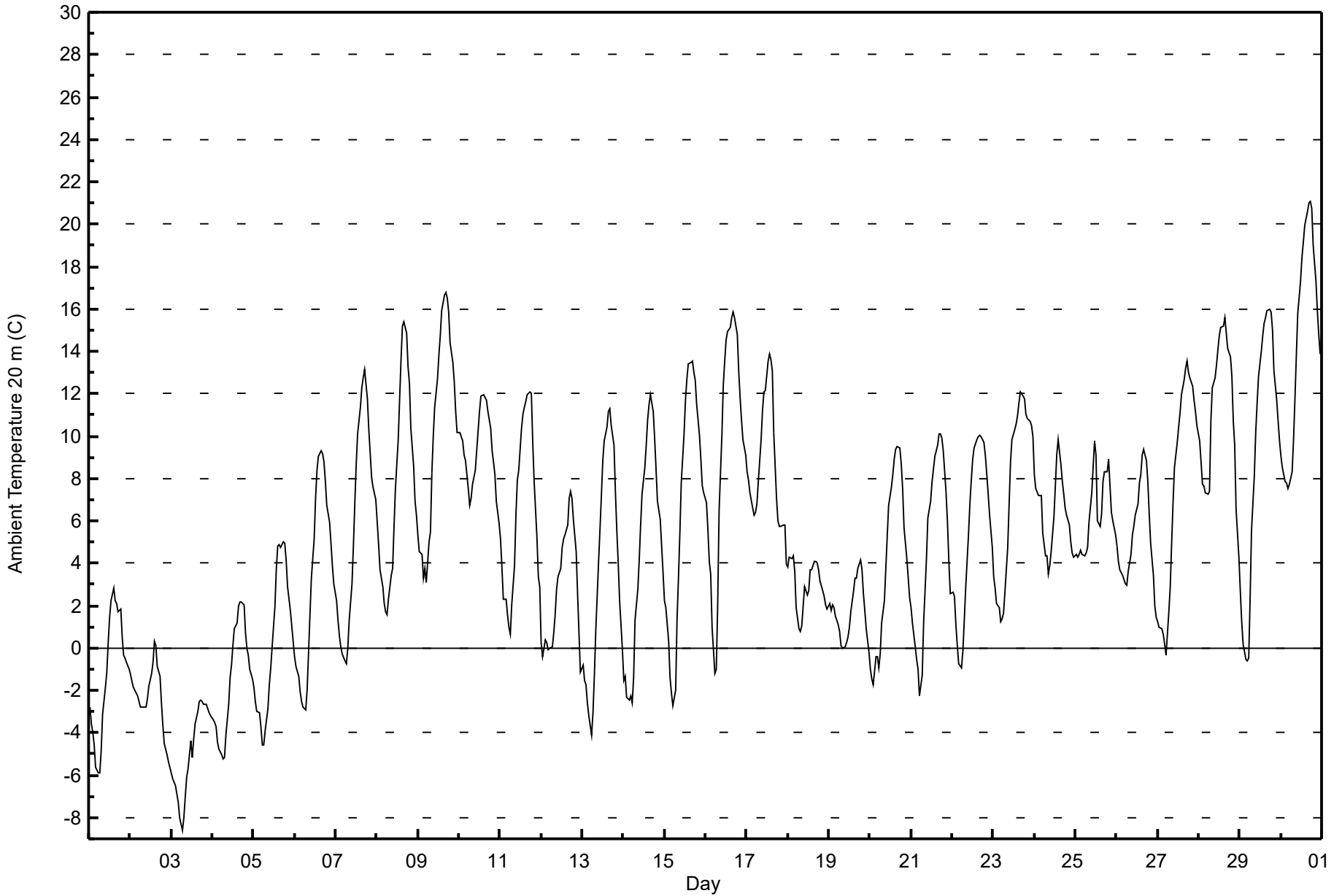


Maximum Value: 21.1 C on Apr 30 18:00																				Maximum Daily Average: 14.5 C on Apr 30					Hours in Service: 720																							
Minimum Value: -8.6 C on Apr 3 07:00																				Minimum Daily Average: -4.9 C on Apr 3					Hours of Data: 720																							
Maximum Diurnal Average: 9.7 C at hour 17																				Minimum Diurnal Average: 0.2 C at hour 6					Hours of Missing Data: 0																							
Monthly Average: 5.20 C																				Percentiles: P ₁ = -6.2 P ₁₀ = -2.4 Q ₁ = 0.9 Median = 4.9 Q ₃ = 9.5 P ₉₀ = 12.7 P ₉₉ = 18.2					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-Apr	-2.8	-3.6	-4.0	-4.6	-5.6	-5.9	-5.9	-4.8	-3.1	-1.9	-1.1	0.2	1.4	2.3	2.8	2.2	2.1	1.7	1.8	0.5	-0.3	-0.5	-0.7	-1.0	-1.3	2.8																						
2-Apr	-1.3	-1.6	-1.9	-2.1	-2.3	-2.5	-2.8	-2.8	-2.8	-2.8	-2.4	-1.8	-1.2	-0.7	0.3	0.1	-0.8	-1.3	-2.6	-3.6	-4.5	-5.0	-5.4	-5.6	-2.4	0.3																						
3-Apr	-5.9	-6.2	-6.5	-6.9	-7.3	-8.0	-8.6	-8.0	-7.0	-6.1	-5.7	-4.4	-5.1	-4.3	-3.6	-3.0	-2.5	-2.4	-2.5	-2.6	-2.7	-2.8	-3.0	-3.2	-4.9	-2.4																						
4-Apr	-3.4	-3.5	-3.7	-4.4	-4.8	-5.0	-5.3	-5.2	-4.1	-2.6	-1.4	-0.8	0.1	0.9	1.2	1.9	2.2	2.2	2.1	0.7	0.0	-0.4	-1.0	-1.4	-1.5	2.2																						
5-Apr	-1.9	-2.5	-3.0	-3.0	-3.7	-4.6	-4.6	-3.9	-2.8	-1.7	-1.0	0.0	2.0	3.8	4.8	4.9	4.8	5.0	5.0	4.1	2.9	1.8	1.0	0.3	0.3	5.0																						
6-Apr	-0.4	-0.9	-1.3	-2.0	-2.5	-2.8	-2.9	-1.9	-0.2	1.6	3.3	5.2	7.0	8.4	9.0	9.3	9.2	8.8	7.8	6.7	5.9	5.0	3.9	3.0	3.3	9.3																						
7-Apr	2.3	1.3	0.6	0.1	-0.3	-0.6	-0.7	0.0	1.3	3.0	4.8	6.8	8.6	10.1	11.4	12.3	12.7	13.2	11.7	10.3	9.2	8.1	7.6	7.0	5.9	13.2																						
8-Apr	5.9	4.9	3.7	2.9	2.1	1.7	1.6	2.3	3.4	3.8	5.7	7.5	9.9	11.8	13.6	15.2	15.4	14.8	13.3	12.5	10.4	8.6	6.9	6.2	7.7	15.4																						
9-Apr	5.3	4.5	4.4	3.3	3.7	3.1	5.0	5.5	8.3	10.0	11.3	12.7	13.8	14.7	15.9	16.7	16.8	16.5	15.8	14.4	13.4	12.6	11.2	10.2	10.4	16.8																						
10-Apr	10.1	9.9	9.7	9.1	8.8	7.5	6.7	7.1	7.7	8.4	9.3	10.2	11.2	11.9	12.0	11.8	11.7	11.2	10.4	9.3	8.8	8.2	6.9	5.9	9.3	12.0																						
11-Apr	5.2	3.8	2.3	2.3	1.5	1.0	0.7	2.0	3.9	6.3	7.9	8.4	10.4	11.0	11.3	11.6	11.9	12.1	12.0	9.7	7.9	5.2	3.4	2.9	6.5	12.1																						
12-Apr	0.3	-0.4	0.4	0.3	-0.1	0.0	0.1	0.7	1.6	2.7	3.4	3.8	4.7	5.1	5.3	5.8	7.0	7.4	7.1	6.1	4.6	2.6	0.7	-1.1	2.8	7.4																						
13-Apr	-0.8	-1.5	-1.7	-2.6	-3.2	-4.1	-3.1	-1.3	0.8	4.1	5.6	7.2	8.9	9.7	10.5	11.2	11.3	10.5	9.5	7.4	5.5	4.0	2.2	-0.1	3.7	11.3																						
14-Apr	-1.5	-1.3	-2.3	-2.4	-2.2	-2.6	-1.4	1.3	2.8	4.2	5.8	7.3	8.5	9.6	10.8	11.5	12.0	11.2	9.9	8.5	6.9	6.1	4.8	3.5	4.6	12.0																						
15-Apr	2.2	1.9	0.3	-1.4	-2.1	-2.7	-2.0	1.4	3.3	5.4	7.8	10.1	11.7	12.7	13.4	13.5	13.6	13.0	12.6	11.5	10.1	8.9	7.7	7.3	6.7	13.6																						
16-Apr	6.9	5.6	4.1	3.5	1.0	-1.2	-1.0	2.0	6.4	10.0	12.4	13.6	14.5	14.9	15.2	15.6	15.9	15.6	14.8	13.1	11.8	10.8	9.9	9.1	9.3	15.9																						
17-Apr	8.3	7.9	7.3	6.6	6.3	6.4	6.8	7.9	9.8	11.2	12.1	12.2	13.5	13.9	13.6	13.1	10.2	7.0	6.0	5.8	5.8	5.8	4.0	8.6	13.9																							
18-Apr	3.8	4.3	4.2	4.4	3.6	1.9	0.9	0.8	1.1	2.0	2.9	2.5	2.7	3.7	3.7	4.1	4.1	4.0	3.7	3.2	2.7	2.4	2.1	1.8	2.9	4.4																						
19-Apr	2.1	1.8	2.0	1.9	1.5	1.1	0.8	0.1	0.0	0.1	0.3	0.5	1.0	1.7	2.7	3.3	3.3	3.8	4.2	3.7	2.6	1.7	0.9	-0.2	1.7	4.2																						
20-Apr	-1.0	-1.5	-1.7	-0.4	-0.4	-1.0	-0.3	1.2	2.2	3.8	5.3	6.7	7.6	8.2	8.9	9.4	9.5	9.4	8.7	7.5	5.7	4.2	3.3	2.3	4.1	9.5																						
21-Apr	1.9	1.2	0.1	-0.5	-1.0	-2.3	-1.2	1.2	2.7	4.2	6.2	7.0	7.8	8.4	9.1	9.6	10.1	10.1	9.9	9.3	7.3	5.9	4.1	2.6	4.7	10.1																						
22-Apr	2.6	2.4	1.1	0.1	-0.7	-0.9	-0.2	1.3	2.8	5.4	6.8	7.9	8.9	9.4	9.9	10.0	10.0	10.0	9.7	9.1	8.3	7.3	6.3	4.7	5.5	10.0																						
23-Apr	3.3	2.8	2.1	1.9	1.3	1.4	1.7	2.7	4.7	6.8	8.8	9.9	10.3	10.6	11.0	11.6	12.1	11.9	11.8	11.0	10.8	10.7	10.5	10.0	7.5	12.1																						
24-Apr	8.2	7.6	7.2	7.2	7.2	5.4	4.4	4.4	3.5	3.9	4.5	6.2	7.7	9.1	9.8	8.6	7.9	7.3	6.6	6.3	5.8	5.0	4.5	4.3	6.4	9.8																						
25-Apr	4.4	4.3	4.4	4.6	4.4	4.3	4.5	4.7	6.0	7.3	8.6	9.8	9.1	6.0	5.7	6.4	7.8	8.3	8.3	8.9	7.6	6.4	6.0	5.4	6.4	9.8																						
26-Apr	4.8	4.1	3.7	3.4	3.2	3.1	3.0	3.6	4.4	5.3	5.7	6.2	6.8	7.8	8.2	9.1	9.4	8.8	7.9	6.4	4.9	3.4	1.9	1.4	5.3	9.4																						
27-Apr	1.2	1.0	0.9	0.7	0.2	-0.3	1.7	2.9	5.0	6.9	8.5	9.7	10.4	11.1	12.0	12.7	13.2	13.5	13.0	12.7	12.4	11.7	11.2	10.5	7.6	13.5																						
28-Apr	9.7	8.8	7.7	7.7	7.3	7.3	7.4	10.7	12.3	12.7	13.3	14.0	14.7	15.1	15.2	15.6	14.9	14.1	13.8	12.8	10.7	9.6	6.6	4.3	11.1	15.6																						
29-Apr	2.7	1.3	0.2	-0.5	-0.6	-0.5	2.3	5.5	8.1	10.2	11.6	12.8	14.0	14.8	15.3	15.6	15.9	16.0	15.9	15.0	13.1	11.7	10.7	9.8	9.2	16.0																						
30-Apr	9.0	8.5	7.9	7.8	7.5	7.7	8.3	9.8	11.8	13.8	15.8	17.3	18.4	19.1	20.0	20.6	21.0	21.1	20.8	19.0	17.3	15.9	14.8	13.9	14.5	21.1																						
																								2.7	2.2	1.6	1.2	0.8	0.2	0.5	1.7	3.1	4.6	5.9	7.0	8.0	8.7	9.3	9.7	9.7	9.5	9.0	8.0	6.8	5.8	4.8	3.9	Diurnal Average
																								10.1	9.9	9.7	9.1	8.8	7.7	8.3	10.7	12.3	13.8	15.8	17.3	18.4	19.1	20.0	20.6	21.0	21.1	20.8	19.0	17.3	15.9	14.8	13.9	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

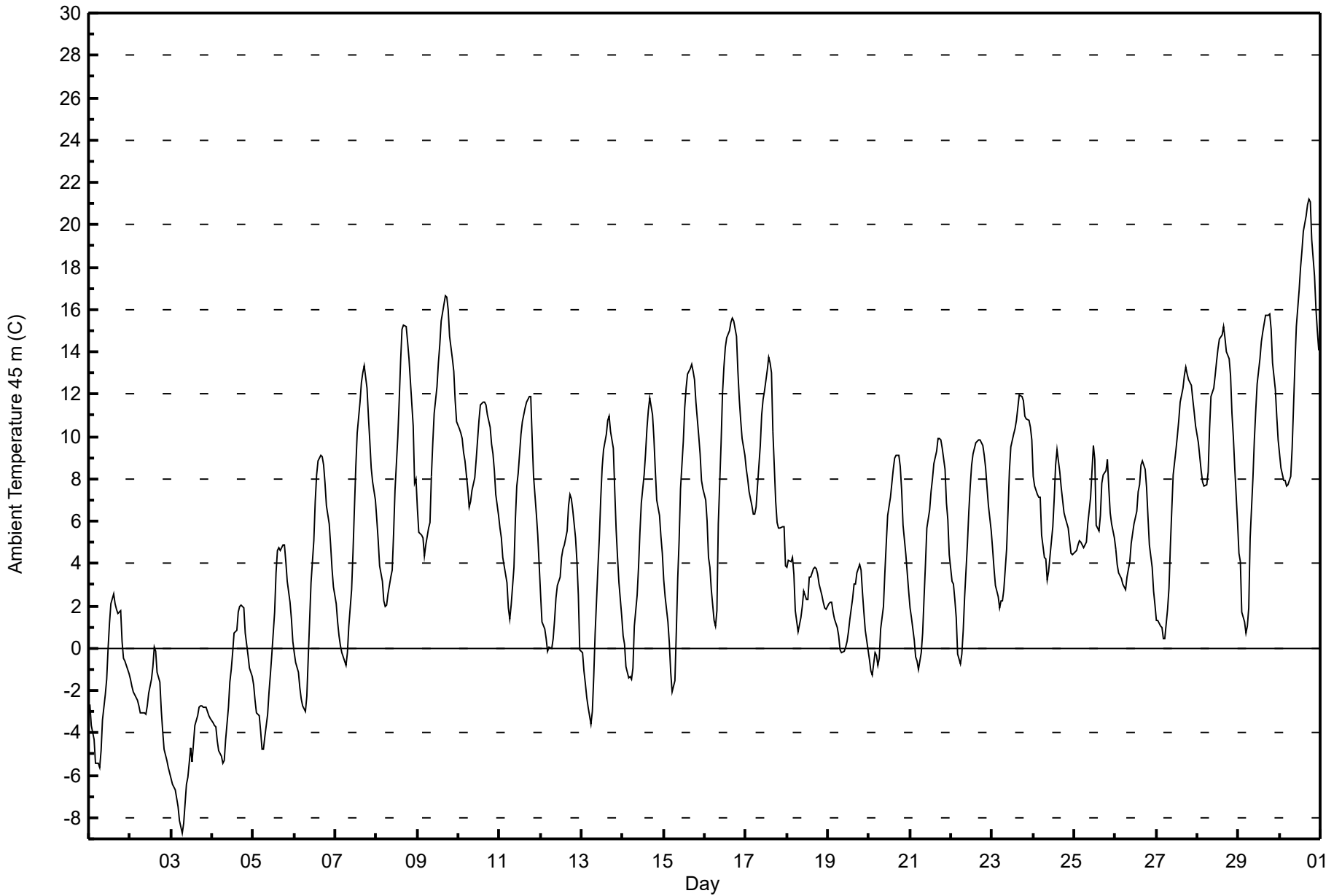
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	144	20.00	20.00
0 - 10	422	58.61	78.61
10 - 20	150	20.83	99.44
> 20	4	0.56	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 21.2 C on Apr 30 18:00																				Maximum Daily Average: 14.4 C on Apr 30					Hours in Service: 720	
Minimum Value: -8.7 C on Apr 3 07:00																				Minimum Daily Average: -5.1 C on Apr 3					Hours of Data: 720	
Maximum Diurnal Average: 9.5 C at hour 17																				Minimum Diurnal Average: 0.7 C at hour 6					Hours of Missing Data: 0	
Monthly Average: 5.25 C																				Percentiles: P ₁ = -6.4 P ₁₀ = -2.2 Q ₁ = 1.2 Median = 5.1 Q ₃ = 9.4 P ₉₀ = 12.7 P ₉₉ = 17.9					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-Apr	-2.7	-3.6	-4.0	-4.3	-5.4	-5.4	-5.7	-4.9	-3.4	-2.2	-1.5	0.0	1.2	2.1	2.6	2.1	1.9	1.6	1.8	0.3	-0.5	-0.6	-0.8	-1.2	-1.4	2.6
2-Apr	-1.5	-1.8	-2.1	-2.3	-2.5	-2.7	-3.0	-3.0	-3.1	-3.1	-2.7	-2.1	-1.4	-0.9	0.1	-0.2	-1.1	-1.6	-2.9	-3.9	-4.8	-5.3	-5.6	-5.9	-2.6	0.1
3-Apr	-6.2	-6.4	-6.7	-7.1	-7.5	-8.2	-8.7	-8.3	-7.4	-6.4	-6.1	-4.7	-5.4	-4.5	-3.7	-3.2	-2.8	-2.7	-2.7	-2.8	-2.8	-3.0	-3.2	-3.3	-5.1	-2.7
4-Apr	-3.5	-3.7	-3.7	-4.4	-4.8	-5.1	-5.4	-5.3	-4.3	-2.8	-1.6	-1.0	-0.2	0.7	0.9	1.7	2.0	2.1	1.9	0.7	0.2	-0.3	-0.9	-1.4	-1.6	2.1
5-Apr	-1.7	-2.5	-3.1	-3.2	-3.9	-4.7	-4.8	-4.2	-3.1	-2.0	-1.2	-0.2	1.7	3.6	4.6	4.7	4.6	4.9	4.9	4.1	3.2	2.2	1.4	0.4	0.2	4.9
6-Apr	-0.2	-0.6	-1.2	-1.9	-2.4	-2.7	-3.0	-2.2	-0.5	1.3	3.1	5.1	6.9	8.2	8.9	9.1	9.1	8.7	7.8	6.7	5.9	4.9	3.8	2.9	3.2	9.1
7-Apr	2.1	1.2	0.6	0.1	-0.2	-0.6	-0.8	-0.2	1.0	2.8	4.6	6.6	8.6	10.2	11.6	12.5	13.0	13.3	12.3	10.9	9.8	8.5	7.8	7.0	5.9	13.3
8-Apr	6.1	5.1	3.9	3.1	2.3	2.0	2.0	2.6	3.3	3.7	5.4	7.5	9.9	11.7	13.6	15.0	15.3	15.2	14.4	13.7	12.6	10.5	7.8	8.0	8.1	15.3
9-Apr	6.6	5.4	5.4	5.2	4.3	4.9	5.7	5.9	8.1	9.7	11.1	12.4	13.5	14.4	15.5	16.3	16.6	16.5	16.0	14.8	13.7	13.1	11.7	10.7	10.7	16.6
10-Apr	10.4	10.2	9.9	9.2	8.8	7.5	6.7	6.9	7.4	8.1	8.9	9.8	10.8	11.5	11.6	11.6	11.5	11.0	10.4	9.6	9.2	8.4	7.3	6.3	9.3	11.6
11-Apr	5.7	5.2	4.3	3.5	3.1	1.9	1.3	2.1	3.8	6.0	7.7	8.3	10.1	10.7	11.0	11.4	11.6	11.9	11.9	9.9	8.1	6.3	5.3	4.0	6.9	11.9
12-Apr	2.6	1.3	0.9	0.4	-0.1	0.1	0.0	0.4	1.3	2.4	3.0	3.4	4.3	4.7	4.9	5.5	6.7	7.3	7.1	6.6	5.2	4.1	2.5	-0.1	3.1	7.3
13-Apr	-0.2	-1.0	-1.7	-2.3	-2.8	-3.6	-3.0	-1.3	0.7	3.9	5.2	7.0	8.5	9.4	10.1	10.8	11.0	10.2	9.5	7.5	5.6	4.3	3.1	1.5	3.9	11.0
14-Apr	0.6	0.2	-0.9	-1.4	-1.3	-1.5	-1.0	1.0	2.5	3.9	5.5	6.9	8.2	9.1	10.4	11.2	11.8	11.0	9.9	8.4	7.0	6.3	5.3	4.5	4.9	11.8
15-Apr	3.2	2.5	1.2	0.2	-1.1	-2.0	-1.5	0.8	3.3	5.1	7.5	9.8	11.3	12.3	12.9	13.2	13.4	13.1	12.7	11.6	10.1	9.2	7.9	7.5	6.8	13.4
16-Apr	7.0	6.0	4.3	3.9	2.7	1.3	1.0	1.8	5.9	9.7	12.0	13.3	14.2	14.6	15.0	15.4	15.6	15.5	14.8	13.1	11.8	10.8	9.9	9.1	9.5	15.6
17-Apr	8.4	8.0	7.4	6.7	6.3	6.3	6.7	7.7	9.6	11.0	11.8	12.2	13.2	13.7	13.5	13.0	10.2	6.9	6.0	5.7	5.7	5.7	3.9	3.9	8.5	13.7
18-Apr	3.8	4.2	4.1	4.3	3.5	1.8	0.8	1.1	1.5	2.0	2.7	2.3	2.3	3.4	3.3	3.8	3.8	3.8	3.5	3.0	2.5	2.2	1.9	1.9	2.8	4.3
19-Apr	2.1	2.1	2.2	1.7	1.4	1.0	0.6	-0.1	-0.2	-0.1	0.1	0.3	0.8	1.3	2.4	3.0	3.0	3.6	4.0	3.7	2.6	1.7	0.8	-0.1	1.6	4.0
20-Apr	-0.5	-1.1	-1.2	-0.2	-0.3	-0.8	-0.5	0.9	2.0	3.6	5.0	6.3	7.1	7.8	8.5	9.0	9.1	9.1	8.6	7.5	5.8	4.4	3.5	2.7	4.0	9.1
21-Apr	1.9	1.4	0.4	-0.4	-0.6	-1.0	-0.2	0.7	2.4	4.0	5.7	6.5	7.4	8.0	8.7	9.3	9.9	9.9	9.8	9.4	8.5	6.9	6.1	4.4	5.0	9.9
22-Apr	3.2	3.0	2.3	1.4	-0.3	-0.7	-0.3	0.9	2.5	4.9	6.5	7.6	8.6	9.2	9.7	9.8	9.8	9.8	9.6	9.1	8.5	7.6	6.7	5.5	5.6	9.8
23-Apr	4.7	3.8	2.9	2.4	1.9	2.3	2.3	2.8	4.7	6.5	8.4	9.5	10.1	10.4	10.7	11.3	11.9	11.9	11.7	11.0	10.8	10.7	10.4	9.8	7.6	11.9
24-Apr	8.1	7.6	7.2	7.1	7.1	5.4	4.3	4.2	3.2	3.7	4.4	5.7	7.1	8.7	9.4	8.3	7.6	7.0	6.4	6.1	5.7	5.1	4.5	4.4	6.2	9.4
25-Apr	4.5	4.6	4.9	5.1	5.0	4.7	4.9	5.0	5.9	7.1	8.4	9.6	8.9	5.8	5.5	6.3	7.8	8.2	8.4	8.9	7.6	6.4	5.9	5.2	6.4	9.6
26-Apr	4.7	3.9	3.5	3.3	3.1	2.9	2.8	3.4	4.1	4.9	5.4	5.9	6.5	7.4	7.8	8.6	8.8	8.4	7.6	6.2	4.9	3.8	2.7	2.1	5.1	8.8
27-Apr	1.3	1.3	1.1	1.0	0.4	0.5	1.8	2.8	4.8	6.5	8.2	9.4	10.1	10.7	11.6	12.3	12.9	13.3	12.9	12.7	12.4	11.7	11.2	10.5	7.6	13.3
28-Apr	9.7	9.0	8.4	7.9	7.6	7.7	8.3	10.4	11.9	12.3	12.9	13.5	14.2	14.6	14.8	15.2	14.6	14.0	13.7	12.9	11.1	10.0	8.5	5.9	11.2	15.2
29-Apr	4.5	4.1	1.7	1.2	0.7	1.1	1.9	5.2	8.0	9.9	11.2	12.5	13.7	14.4	15.0	15.3	15.7	15.7	15.8	15.1	13.5	12.2	10.9	9.9	9.5	15.8
30-Apr	9.2	8.5	8.0	7.9	7.6	7.7	8.1	9.4	11.4	13.4	15.2	16.9	17.9	18.8	19.7	20.4	20.9	21.2	21.0	19.3	17.6	16.1	15.0	14.1	14.4	21.2
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	141	19.58	19.58
0 - 10	430	59.72	79.31
10 - 20	145	20.14	99.44
> 20	4	0.56	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

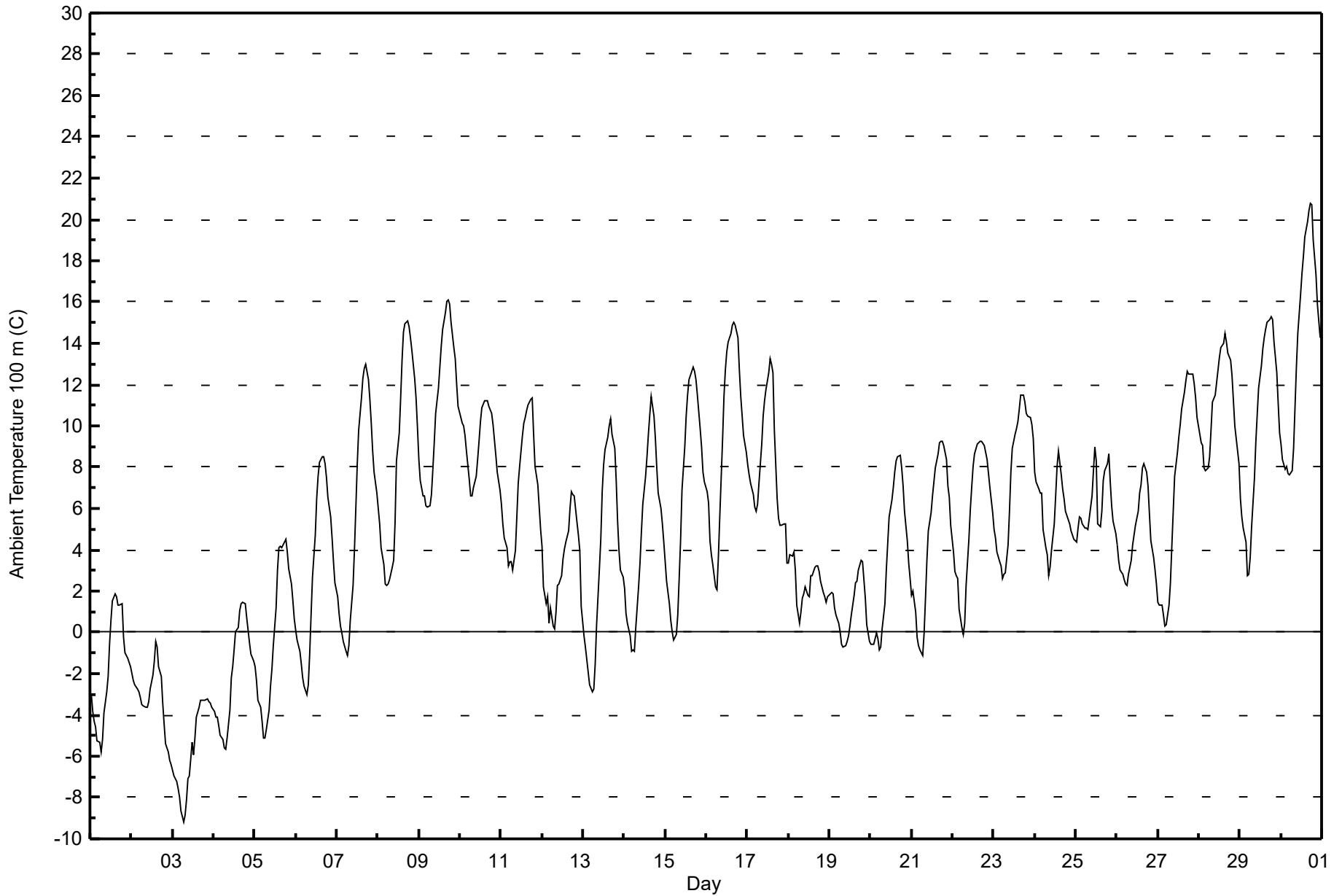


Maximum Value: 20.8 C on Apr 30 18:00																				Maximum Daily Average: 14.1 C on Apr 30					Hours in Service: 720	
Minimum Value: -9.2 C on Apr 3 07:00																				Minimum Daily Average: -5.7 C on Apr 3					Hours of Data: 720	
Maximum Diurnal Average: 9.0 C at hour 17																				Minimum Diurnal Average: 0.8 C at hour 7					Hours of Missing Data: 0	
Monthly Average: 5.05 C																				Percentiles: P ₁ = -7.1 P ₁₀ = -2.5 Q ₁ = 1.2 Median = 5.1 Q ₃ = 9.1 P ₉₀ = 12.5 P ₉₉ = 17.4					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-Apr	-3.0	-3.8	-4.3	-4.6	-5.2	-5.3	-5.8	-5.2	-3.9	-2.9	-2.2	-0.6	0.6	1.5	1.9	1.7	1.4	1.3	1.4	-0.2	-1.0	-1.1	-1.3	-1.6	-1.8	1.9
2-Apr	-2.0	-2.3	-2.5	-2.8	-2.9	-3.2	-3.5	-3.6	-3.6	-3.6	-3.4	-2.8	-2.0	-1.4	-0.5	-0.7	-1.6	-2.2	-3.4	-4.4	-5.4	-5.8	-6.2	-6.4	-3.2	-0.5
3-Apr	-6.7	-6.9	-7.2	-7.6	-7.9	-8.6	-9.2	-8.9	-8.1	-7.1	-6.9	-5.3	-6.0	-5.1	-4.1	-3.6	-3.3	-3.3	-3.3	-3.3	-3.2	-3.4	-3.4	-3.6	-5.7	-3.2
4-Apr	-3.8	-4.1	-4.1	-4.5	-5.0	-5.2	-5.6	-5.7	-5.1	-3.7	-2.2	-1.7	-0.9	0.0	0.2	1.1	1.4	1.5	1.4	0.7	0.1	-0.5	-1.0	-1.4	-2.0	1.5
5-Apr	-1.7	-2.3	-3.3	-3.6	-4.3	-5.1	-5.1	-4.7	-3.8	-2.6	-1.8	-0.6	1.2	3.0	4.1	4.2	4.1	4.4	4.5	3.9	3.1	2.3	1.5	0.7	-0.1	4.5
6-Apr	0.1	-0.3	-0.9	-1.5	-2.2	-2.6	-3.0	-2.6	-1.0	0.8	2.7	4.7	6.4	7.6	8.2	8.5	8.5	8.2	7.5	6.5	5.6	4.6	3.4	2.4	3.0	8.5
7-Apr	1.7	0.9	0.3	-0.1	-0.4	-0.9	-1.1	-0.6	0.6	2.3	4.1	6.1	8.2	9.8	11.4	12.3	12.8	13.0	12.3	11.3	10.1	8.8	7.8	6.7	5.7	13.0
8-Apr	6.0	5.3	4.1	3.3	2.3	2.3	2.3	2.5	3.2	3.5	5.3	8.3	9.7	11.4	13.2	14.5	15.0	15.1	14.8	14.3	13.7	12.3	11.4	9.9	8.5	15.1
9-Apr	8.4	7.4	6.6	6.6	6.1	6.1	6.1	6.7	7.9	9.2	10.6	11.8	12.9	13.9	14.7	15.5	16.0	16.1	15.9	15.0	13.8	13.2	12.0	10.9	11.0	16.1
10-Apr	10.4	10.1	10.0	9.5	8.8	7.4	6.6	6.6	7.0	7.6	8.4	9.3	10.2	10.9	11.2	11.2	11.2	10.9	10.6	10.1	9.3	8.6	7.7	6.9	9.2	11.2
11-Apr	6.2	5.3	4.6	4.1	3.2	3.4	3.5	3.0	3.9	5.6	7.2	8.0	9.5	10.1	10.4	10.8	11.0	11.3	11.4	9.6	8.0	7.1	6.1	5.0	7.0	11.4
12-Apr	4.2	2.2	1.4	1.7	0.4	1.2	0.3	0.2	1.0	2.2	2.3	2.7	3.6	4.0	4.4	4.9	6.0	6.8	6.7	6.6	5.4	4.7	4.0	1.3	3.3	6.8
13-Apr	-0.2	-0.7	-1.3	-1.9	-2.5	-2.9	-2.8	-1.5	0.4	3.1	4.5	6.8	8.1	8.8	9.4	10.0	10.3	9.6	8.9	7.3	5.4	4.0	3.0	2.7	3.7	10.3
14-Apr	2.1	0.9	0.4	-0.2	-0.9	-0.9	-0.9	0.2	2.2	3.4	4.9	6.2	7.6	8.5	9.6	10.6	11.4	10.5	9.4	8.0	6.7	6.0	5.3	4.4	4.8	11.4
15-Apr	3.4	2.5	1.4	0.6	0.0	-0.4	-0.1	0.8	2.6	4.4	6.9	9.0	10.5	11.5	12.2	12.6	12.8	12.6	12.2	11.5	9.9	9.0	7.8	7.3	6.7	12.8
16-Apr	6.8	6.2	4.4	3.8	3.3	2.2	2.1	3.6	5.6	9.3	11.4	12.7	13.6	14.1	14.5	14.9	15.0	14.9	14.3	12.7	11.4	10.5	9.5	8.7	9.4	15.0
17-Apr	8.1	7.6	7.2	6.6	6.1	5.9	6.2	7.2	9.1	10.5	11.2	11.8	12.6	13.2	13.0	12.6	9.8	6.4	5.5	5.2	5.2	5.3	5.3	3.4	8.1	13.2
18-Apr	3.4	3.8	3.7	3.9	3.0	1.3	0.4	1.0	1.7	1.8	2.2	1.8	1.7	2.8	2.8	3.2	3.3	3.2	3.0	2.5	1.9	1.7	1.4	1.7	2.4	3.9
19-Apr	1.9	1.9	1.8	1.2	0.8	0.5	0.0	-0.6	-0.7	-0.6	-0.4	-0.1	0.3	0.8	1.8	2.4	2.5	3.0	3.5	3.4	2.6	1.7	0.4	-0.4	1.1	3.5
20-Apr	-0.6	-0.6	-0.6	0.0	-0.3	-0.8	-0.7	0.2	1.4	3.0	4.3	5.6	6.4	7.0	7.8	8.3	8.5	8.6	8.0	7.1	5.8	4.4	3.3	2.6	3.7	8.6
21-Apr	1.8	2.0	1.0	-0.3	-0.6	-0.9	-1.1	0.0	1.7	3.5	4.9	5.8	6.6	7.3	8.0	8.6	9.2	9.3	9.3	9.1	8.3	7.1	6.6	5.2	4.7	9.3
22-Apr	3.9	3.0	2.7	2.6	1.1	0.2	-0.1	0.4	2.3	4.5	5.9	7.0	8.0	8.6	9.1	9.2	9.3	9.3	9.1	8.7	8.4	7.7	7.0	5.8	5.6	9.3
23-Apr	5.0	4.6	3.9	3.5	3.2	2.6	2.8	2.9	4.3	5.9	7.8	8.9	9.6	9.8	10.2	10.8	11.5	11.5	11.2	10.6	10.5	10.4	10.0	9.4	7.5	11.5
24-Apr	7.7	7.3	7.0	6.7	6.7	5.0	4.1	3.7	2.8	3.1	4.0	5.2	6.6	8.1	8.8	7.6	6.9	6.5	5.9	5.7	5.3	4.9	4.7	4.5	5.8	8.8
25-Apr	4.4	5.1	5.6	5.5	5.2	5.1	5.1	5.0	5.5	6.6	7.9	9.0	8.3	5.2	5.1	5.8	7.4	7.8	8.2	8.6	7.3	6.1	5.4	4.8	6.2	9.0
26-Apr	4.2	3.5	3.0	2.8	2.6	2.3	2.2	2.8	3.5	4.2	4.7	5.2	5.9	6.7	7.2	8.0	8.2	7.8	7.1	5.7	4.5	3.6	3.0	2.4	4.6	8.2
27-Apr	1.4	1.3	1.3	0.8	0.3	0.3	1.3	2.4	4.2	5.8	7.6	8.7	9.4	10.0	10.8	11.6	12.2	12.7	12.5	12.5	12.5	12.0	11.3	10.4	7.2	12.7
28-Apr	9.6	9.2	9.0	8.0	7.8	8.0	8.5	9.8	11.2	11.5	12.1	12.7	13.3	13.8	14.0	14.5	14.1	13.5	13.2	12.5	11.2	10.0	9.4	8.2	11.0	14.5
29-Apr	6.5	5.6	5.0	4.3	2.7	2.8	3.6	5.1	7.4	9.2	10.5	11.8	12.9	13.7	14.3	14.7	15.0	15.1	15.3	15.1	14.0	12.6	11.1	9.7	9.9	15.3
30-Apr	9.1	8.3	7.9	8.0	7.7	7.6	7.8	8.9	10.9	12.9	14.5	16.3	17.4	18.2	19.2	19.9	20.4	20.8	20.7	19.0	17.3	15.9	15.1	14.3	14.1	20.8
																								Diurnal Average		
																								Diurnal Maximum		



Wood Buffalo Environmental Association
Hourly Averages

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

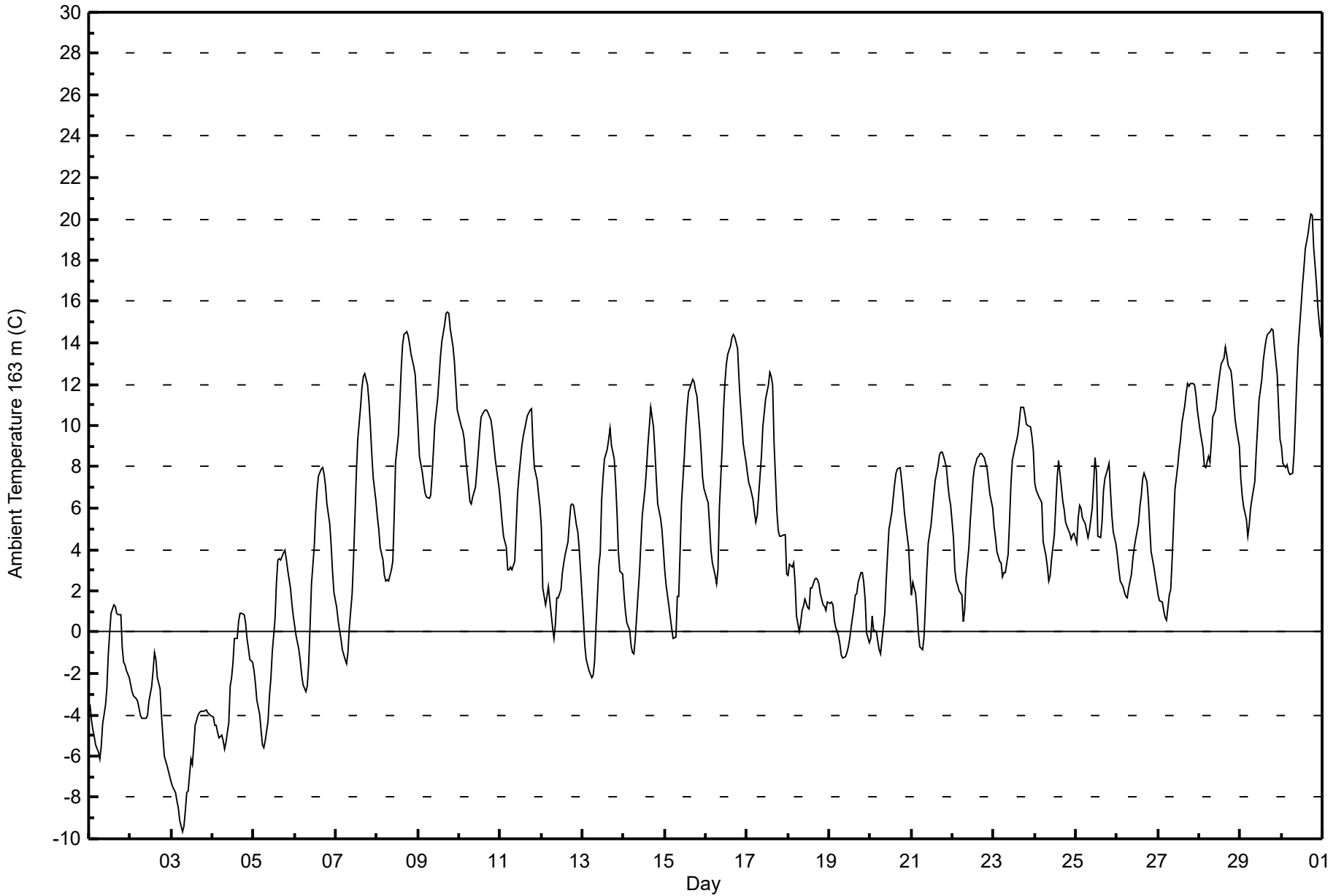
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	139	19.31	19.31
0 - 10	439	60.97	80.28
10 - 20	139	19.31	99.58
> 20	3	0.42	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 20.2 C on Apr 30 18:00 Maximum Daily Average: 13.8 C on Apr 30																				Hours in Service: 720 Hours of Data: 720						
Minimum Value: -9.7 C on Apr 3 07:00 Minimum Daily Average: -6.2 C on Apr 3 Maximum Diurnal Average: 8.4 C at hour 17 Minimum Diurnal Average: 0.8 C at hour 7 Monthly Average: 4.75 C Percentiles: P ₁ = -7.7 P ₁₀ = -2.6 Q ₁ = 1.0 Median = 4.9 Q ₃ = 8.6 P ₉₀ = 12.0 P ₉₉ = 16.8																				Hours of Missing Data: 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-Apr	-3.5	-4.2	-4.7	-5.0	-5.5	-5.8	-6.2	-5.5	-4.5	-3.5	-2.8	-1.1	0.0	0.9	1.3	1.3	0.9	0.9	0.9	-0.8	-1.5	-1.6	-1.9	-2.2	-2.3	1.3
2-Apr	-2.6	-2.9	-3.1	-3.2	-3.4	-3.7	-4.1	-4.2	-4.2	-4.2	-4.0	-3.4	-2.6	-1.9	-1.0	-1.3	-2.2	-2.7	-4.0	-5.0	-6.0	-6.4	-6.8	-7.0	-3.7	-1.0
3-Apr	-7.3	-7.5	-7.7	-8.1	-8.5	-9.1	-9.7	-9.4	-8.6	-7.7	-7.7	-6.1	-6.4	-5.5	-4.5	-4.0	-3.9	-3.8	-3.8	-3.9	-3.8	-3.9	-4.0	-4.0	-6.2	-3.8
4-Apr	-4.1	-4.5	-4.5	-4.8	-5.1	-5.0	-5.2	-5.7	-5.3	-4.3	-2.6	-2.2	-1.5	-0.3	-0.3	0.5	0.9	0.9	0.8	0.5	-0.3	-0.7	-1.3	-1.5	-2.3	0.9
5-Apr	-1.9	-2.5	-3.3	-4.0	-4.7	-5.4	-5.6	-5.3	-4.3	-3.1	-2.3	-1.0	0.7	2.4	3.5	3.6	3.5	3.8	3.9	3.6	3.0	2.1	1.4	0.8	-0.5	3.9
6-Apr	0.3	-0.2	-0.9	-1.4	-2.1	-2.5	-2.9	-2.6	-1.5	0.3	2.3	4.1	5.8	6.9	7.5	7.9	7.9	7.6	7.1	6.2	5.2	4.2	2.9	1.9	2.7	7.9
7-Apr	1.2	0.6	0.1	-0.3	-0.8	-1.3	-1.5	-1.0	0.2	1.8	3.6	5.6	7.7	9.3	10.9	11.8	12.4	12.5	12.0	11.1	10.0	8.6	7.5	6.3	5.3	12.5
8-Apr	5.6	5.0	4.1	3.5	2.8	2.4	2.6	2.5	3.0	3.4	5.6	8.3	9.5	11.1	12.7	13.9	14.4	14.6	14.4	13.9	13.5	12.9	12.4	11.2	8.5	14.6
9-Apr	9.9	8.5	7.7	7.2	6.7	6.6	6.4	6.6	7.6	8.8	10.1	11.3	12.3	13.3	14.1	14.9	15.4	15.5	15.5	14.7	13.8	13.1	11.9	10.8	10.9	15.5
10-Apr	10.2	9.9	9.7	9.3	8.5	7.1	6.3	6.2	6.5	7.0	7.8	8.7	9.7	10.4	10.7	10.7	10.8	10.6	10.3	9.8	9.1	8.4	7.9	6.9	8.9	10.8
11-Apr	6.1	5.3	4.7	4.1	3.0	3.0	3.1	3.0	3.4	5.1	6.7	7.6	9.0	9.5	9.8	10.1	10.4	10.7	10.8	9.1	8.0	7.4	6.7	6.1	6.8	10.8
12-Apr	5.1	2.2	1.3	1.8	2.2	1.5	0.3	-0.3	0.4	1.6	1.7	2.1	2.9	3.3	3.8	4.3	5.3	6.1	6.2	6.1	5.2	4.8	4.0	2.9	3.1	6.2
13-Apr	0.7	-0.7	-1.3	-1.6	-1.8	-2.2	-2.1	-1.4	0.3	3.2	3.8	6.4	7.5	8.4	8.8	9.3	9.8	9.1	8.4	7.2	5.7	3.8	2.9	2.8	3.6	9.8
14-Apr	1.8	1.0	0.4	0.1	-0.6	-1.0	-1.1	-0.3	1.9	2.9	4.3	5.6	7.0	7.9	9.0	10.0	10.9	9.9	8.8	7.4	6.2	5.5	5.0	4.0	4.4	10.9
15-Apr	3.0	2.3	1.2	0.7	0.2	-0.3	-0.3	1.8	1.7	4.0	6.2	8.5	9.9	10.9	11.6	12.1	12.2	12.1	11.7	11.4	9.8	8.7	7.5	7.0	6.4	12.2
16-Apr	6.5	6.3	5.2	4.0	3.4	2.7	2.3	3.0	6.0	8.9	10.8	12.1	13.0	13.4	13.9	14.2	14.4	14.3	13.7	12.2	11.1	10.1	9.1	8.2	9.1	14.4
17-Apr	7.7	7.2	7.0	6.4	5.8	5.3	5.7	6.6	8.5	9.9	10.6	11.3	12.0	12.6	12.3	12.0	9.2	5.9	4.9	4.6	4.6	4.7	4.7	2.8	7.6	12.6
18-Apr	2.7	3.3	3.2	3.4	2.4	0.8	0.1	0.5	1.0	1.3	1.6	1.2	1.1	2.1	2.1	2.5	2.6	2.6	2.3	1.8	1.3	1.2	1.1	1.5	1.8	3.4
19-Apr	1.4	1.4	1.3	0.6	0.2	-0.2	-0.6	-1.1	-1.3	-1.2	-1.0	-0.7	-0.3	0.3	1.2	1.8	1.9	2.4	2.9	2.9	2.4	1.6	0.0	-0.5	0.6	2.9
20-Apr	-0.3	0.8	0.1	0.0	-0.4	-0.9	-1.1	-0.4	0.9	2.5	3.7	5.0	5.8	6.4	7.1	7.7	7.9	8.0	7.4	6.7	5.8	4.6	4.1	2.8	3.5	8.0
21-Apr	1.8	2.4	1.9	1.0	-0.1	-0.7	-0.8	-0.2	1.3	3.0	4.3	5.2	5.9	6.7	7.3	8.0	8.5	8.7	8.7	8.5	7.9	7.1	6.5	6.1	4.6	8.7
22-Apr	4.6	3.0	2.4	2.3	2.0	1.8	0.5	1.1	2.6	4.1	5.4	6.4	7.4	8.0	8.5	8.5	8.6	8.6	8.4	8.2	7.9	7.3	6.7	6.0	5.4	8.6
23-Apr	5.1	4.6	3.9	3.4	3.4	2.7	2.9	2.9	3.8	5.3	7.2	8.3	9.0	9.2	9.6	10.2	10.8	10.9	10.6	10.1	10.0	9.9	9.5	8.8	7.2	10.9
24-Apr	7.2	6.8	6.5	6.4	6.3	4.4	3.7	3.2	2.4	2.8	3.5	4.7	6.1	7.5	8.3	7.0	6.3	5.9	5.4	5.1	4.8	4.5	4.7	4.8	5.4	8.3
25-Apr	4.3	5.5	6.2	6.0	5.5	5.3	4.9	4.6	4.9	6.0	7.2	8.4	7.7	4.6	4.5	5.3	6.8	7.5	7.9	8.2	6.9	5.6	4.9	4.2	6.0	8.4
26-Apr	3.7	3.0	2.5	2.2	2.0	1.8	1.7	2.1	2.8	3.5	4.1	4.5	5.2	6.0	6.6	7.4	7.7	7.3	6.5	5.1	3.9	3.2	2.7	2.2	4.1	7.7
27-Apr	1.8	1.5	1.4	1.0	0.7	0.6	1.8	2.1	3.5	5.2	6.9	8.0	8.8	9.3	10.1	10.9	11.5	12.1	11.9	12.0	12.0	12.0	11.5	10.8	7.0	12.1
28-Apr	9.7	9.3	8.9	8.0	8.0	8.5	8.3	9.2	10.4	10.8	11.4	11.9	12.5	12.9	13.3	13.8	13.4	12.9	12.6	12.0	11.1	10.3	9.8	9.0	10.8	13.8
29-Apr	7.4	6.6	6.0	5.5	4.6	5.2	6.0	6.4	7.3	8.7	9.9	11.2	12.3	13.1	13.6	14.1	14.4	14.6	14.7	14.6	13.8	12.5	10.8	9.3	10.1	14.7
30-Apr	9.0	8.1	8.0	8.1	7.8	7.6	7.7	8.7	10.4	12.3	13.9	15.7	16.8	17.6	18.6	19.3	19.9	20.2	20.2	18.6	16.8	15.7	14.9	14.2	13.8	20.2
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	143	19.86	19.86
0 - 10	451	62.64	82.50
10 - 20	124	17.22	99.72
> 20	2	0.28	100.00

Total Number of Valid Hours: 720

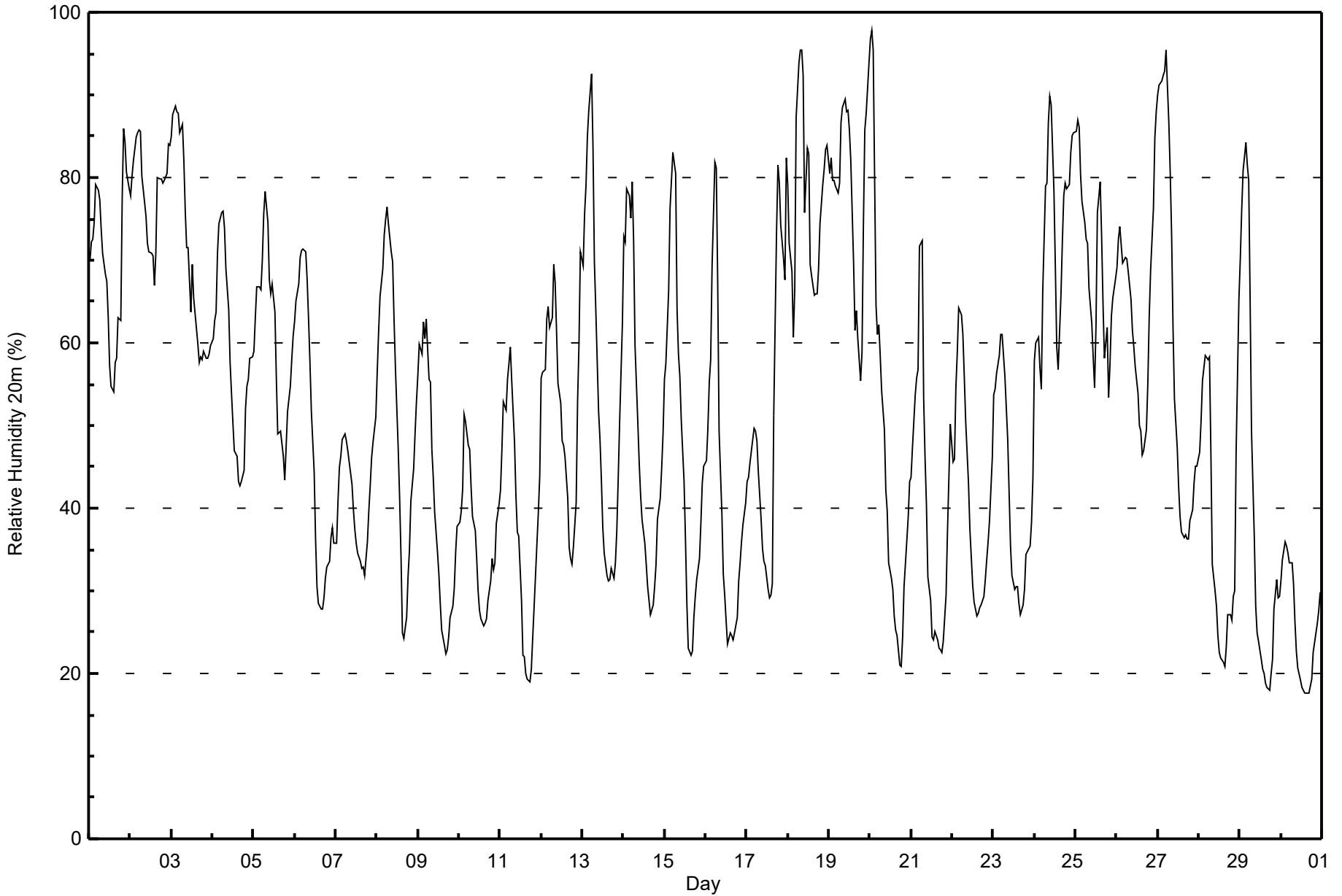
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Value: 97.8 % on Apr 20 02:00 Maximum Daily Average: 78.5 % on Apr 2																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 17.6 % on Apr 30 16:00 Minimum Daily Average: 25.6 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																											
Maximum Diurnal Average: 70.3 % at hour 6 Minimum Diurnal Average: 37.5 % at hour 16																						Percent Operational Time: 100.0																											
Monthly Average: 52.92 % Percentiles: P ₁ = 18.5 P ₁₀ = 26.8 Q ₁ = 34.6 Median = 53.1 Q ₃ = 69.8 P ₉₀ = 80.6 P ₉₉ = 93.7																																																	
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-Apr	70.0	72.2	72.5	74.6	79.2	78.4	77.3	73.8	70.8	68.4	67.4	63.2	57.2	54.7	54.1	57.7	58.1	63.0	62.7	77.6	85.9	84.2	80.7	78.6	70.1	85.9																							
2-Apr	77.7	80.1	82.0	84.9	85.5	85.7	85.6	80.2	76.9	75.2	72.1	71.0	70.9	70.6	67.0	70.8	80.0	79.9	79.9	79.4	79.7	80.6	84.1	83.9	78.5	85.7																							
3-Apr	84.9	87.7	88.6	88.0	87.7	85.4	86.4	82.1	75.9	71.5	71.5	63.7	69.4	65.4	63.6	59.9	57.7	58.3	58.0	58.9	58.1	58.1	58.6	59.6	70.8	88.6																							
4-Apr	60.5	62.6	63.7	70.8	74.4	75.8	75.9	74.0	69.1	64.0	57.6	53.9	50.3	46.9	46.2	43.2	42.8	43.3	44.5	52.1	54.7	55.7	58.1	58.4	58.3	75.9																							
5-Apr	59.0	63.1	66.8	66.7	66.5	70.0	75.7	78.4	74.5	67.6	65.9	67.0	63.8	55.8	49.1	49.1	49.3	46.2	43.4	47.5	51.8	54.8	58.0	60.9	60.5	78.4																							
6-Apr	62.5	65.1	67.1	70.4	71.2	71.3	70.9	67.7	62.8	57.6	51.7	44.4	36.3	30.6	28.4	27.8	27.9	29.2	31.5	32.9	33.5	36.5	37.6	35.7	47.9	71.3																							
7-Apr	35.8	40.9	44.8	46.2	48.3	49.0	48.2	47.0	45.5	42.8	39.8	37.4	35.8	34.5	33.6	32.7	32.8	31.9	36.0	39.6	42.7	46.0	48.0	51.0	41.3	51.0																							
8-Apr	56.4	61.3	65.6	69.0	73.1	74.9	76.4	74.4	71.1	69.9	62.9	57.0	47.1	41.2	34.1	25.0	24.2	26.8	31.7	34.9	40.8	44.7	49.0	52.9	52.7	76.4																							
9-Apr	56.1	59.8	58.7	62.5	60.5	63.0	55.5	55.2	47.1	43.7	39.5	34.7	32.0	28.5	25.3	23.3	22.4	22.9	24.4	26.7	28.2	30.3	34.7	37.8	40.5	63.0																							
10-Apr	38.2	39.7	42.5	51.4	50.4	47.6	47.1	42.6	39.0	37.2	33.9	29.9	27.7	26.6	25.8	26.1	26.6	28.9	31.2	34.0	32.6	33.4	38.1	40.5	36.3	51.4																							
11-Apr	42.3	47.2	52.8	51.9	55.5	57.5	59.5	55.5	48.0	41.5	37.2	36.6	28.9	22.3	22.1	20.1	19.3	18.9	20.4	24.3	28.2	35.8	39.5	43.9	37.9	59.5																							
12-Apr	55.8	56.5	56.7	62.9	64.4	61.9	63.1	69.4	67.2	61.3	55.1	52.7	48.2	47.7	46.2	41.3	35.3	33.9	33.2	35.3	40.8	52.8	59.9	71.0	53.0	71.0																							
13-Apr	69.3	75.6	79.0	84.8	88.2	92.6	83.8	69.9	64.1	51.7	48.4	43.4	37.6	34.6	31.9	31.1	31.4	32.7	31.6	33.4	37.2	43.5	50.4	62.4	54.5	92.6																							
14-Apr	72.9	72.1	78.7	77.7	75.0	79.5	72.3	59.7	50.3	45.4	41.5	38.6	35.7	33.2	30.5	28.8	27.1	28.4	30.5	33.2	38.7	41.2	44.8	49.0	49.4	79.5																							
15-Apr	55.6	57.4	66.3	76.2	79.7	83.1	80.5	64.1	58.7	55.9	50.6	43.3	36.2	28.5	23.1	22.3	22.6	26.8	29.3	31.3	33.9	38.1	43.1	45.2	48.0	83.1																							
16-Apr	45.7	49.6	55.3	57.9	69.3	81.8	81.3	67.4	49.3	39.3	32.1	29.4	26.5	23.5	25.0	24.5	24.1	24.9	26.8	31.1	33.5	35.9	37.9	40.7	42.2	81.8																							
17-Apr	43.2	43.8	45.5	48.2	49.6	49.4	48.1	44.5	38.6	35.0	33.5	33.1	30.2	29.2	29.4	30.8	51.1	73.4	81.5	79.3	74.2	70.2	67.7	82.4	50.5	82.4																							
18-Apr	79.1	72.1	68.6	60.8	66.4	87.3	93.9	95.4	95.4	92.5	75.8	83.5	82.9	69.6	68.1	65.7	66.0	65.9	68.9	74.5	79.1	81.0	83.4	83.8	77.5	95.4																							
19-Apr	80.5	82.3	79.7	79.7	78.9	78.2	79.3	86.6	88.5	89.5	88.0	88.1	85.7	82.1	69.6	61.5	63.9	60.6	55.5	58.8	74.3	85.8	87.7	93.9	78.3	93.9																							
20-Apr	96.9	97.8	95.4	64.5	61.0	62.3	58.5	54.2	49.6	42.2	39.6	33.5	31.5	30.1	27.0	25.3	24.6	21.0	20.8	24.4	30.5	36.0	39.0	43.2	46.2	97.8																							
21-Apr	43.7	47.3	53.7	55.8	56.7	71.7	72.3	53.4	46.0	40.3	31.6	28.8	24.4	24.1	25.1	24.1	23.1	22.8	22.6	24.0	29.6	37.2	43.6	50.2	39.7	72.3																							
22-Apr	45.6	45.9	54.5	58.9	64.3	63.3	61.0	55.9	50.6	43.1	37.4	34.0	30.7	28.6	26.9	27.3	27.9	28.3	29.4	31.4	33.8	35.9	38.5	46.0	41.6	64.3																							
23-Apr	53.7	54.4	56.3	58.4	60.9	61.0	58.5	55.8	48.3	41.8	35.4	31.8	30.1	30.4	30.4	28.4	27.0	28.4	30.2	34.5	34.8	35.4	38.3	43.8	42.0	61.0																							
24-Apr	57.8	60.0	60.7	56.9	54.4	66.3	79.0	79.3	86.7	89.8	88.8	78.3	69.2	59.4	56.8	65.7	72.2	77.9	79.4	78.6	79.2	83.0	85.1	85.4	72.9	89.8																							
25-Apr	85.6	87.0	86.0	80.3	77.2	74.6	72.5	72.1	66.6	62.3	58.4	54.5	62.0	75.8	79.4	73.0	65.0	58.2	61.8	53.4	57.4	63.2	65.5	67.8	69.2	87.0																							
26-Apr	69.1	72.6	74.0	69.7	70.0	70.3	70.3	68.6	65.3	61.5	59.5	57.2	53.9	50.0	49.2	46.5	47.0	49.5	55.0	63.1	68.7	76.3	84.7	88.0	64.2	88.0																							
27-Apr	90.0	91.2	91.7	92.4	92.9	95.5	86.5	80.6	72.8	61.7	53.3	47.2	42.6	39.0	37.1	36.4	36.8	36.2	36.2	38.6	39.8	43.0	45.2	45.2	59.7	95.5																							
28-Apr	46.8	50.5	55.3	57.0	58.5	58.0	58.4	47.0	33.3	30.0	28.1	24.6	22.5	21.8	21.4	20.9	23.2	27.1	27.2	26.5	29.4	30.1	46.5	65.3	37.9	65.3																							
29-Apr	70.2	76.1	80.8	84.3	81.5	79.7	65.4	49.4	36.4	28.2	25.0	23.9	21.7	20.5	20.0	18.9	18.4	17.9	20.0	21.8	27.8	31.4	29.1	29.4	40.7	84.3																							
30-Apr	31.2	33.8	36.0	35.4	34.5	33.4	33.4	30.8	26.3	22.7	20.6	19.2	18.3	18.0	17.6	17.6	17.6	18.4	19.4	22.6	24.9	26.2	27.7	29.9	25.6	36.0																							
																								61.2	63.5	66.0	66.6	67.9	70.3	69.2	64.5	59.2	54.4	50.1	46.8	43.6	40.8	38.8	37.5	38.2	39.4	40.8	43.5	46.8	50.2	53.5	57.5	Diurnal Average	
																								96.9	97.8	95.4	92.4	92.9	95.5	93.9	95.4	95.4	92.5	88.8	88.1	85.7	82.1	79.4	73.0	80.0	79.9	81.5	79.4	85.9	85.8	87.7	93.9	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	13	1.81	1.81
20 - 40	228	31.67	33.47
40 - 60	204	28.33	61.81
60 - 80	196	27.22	89.03
80 - 100	79	10.97	100.00

Total Number of Valid Hours: 720

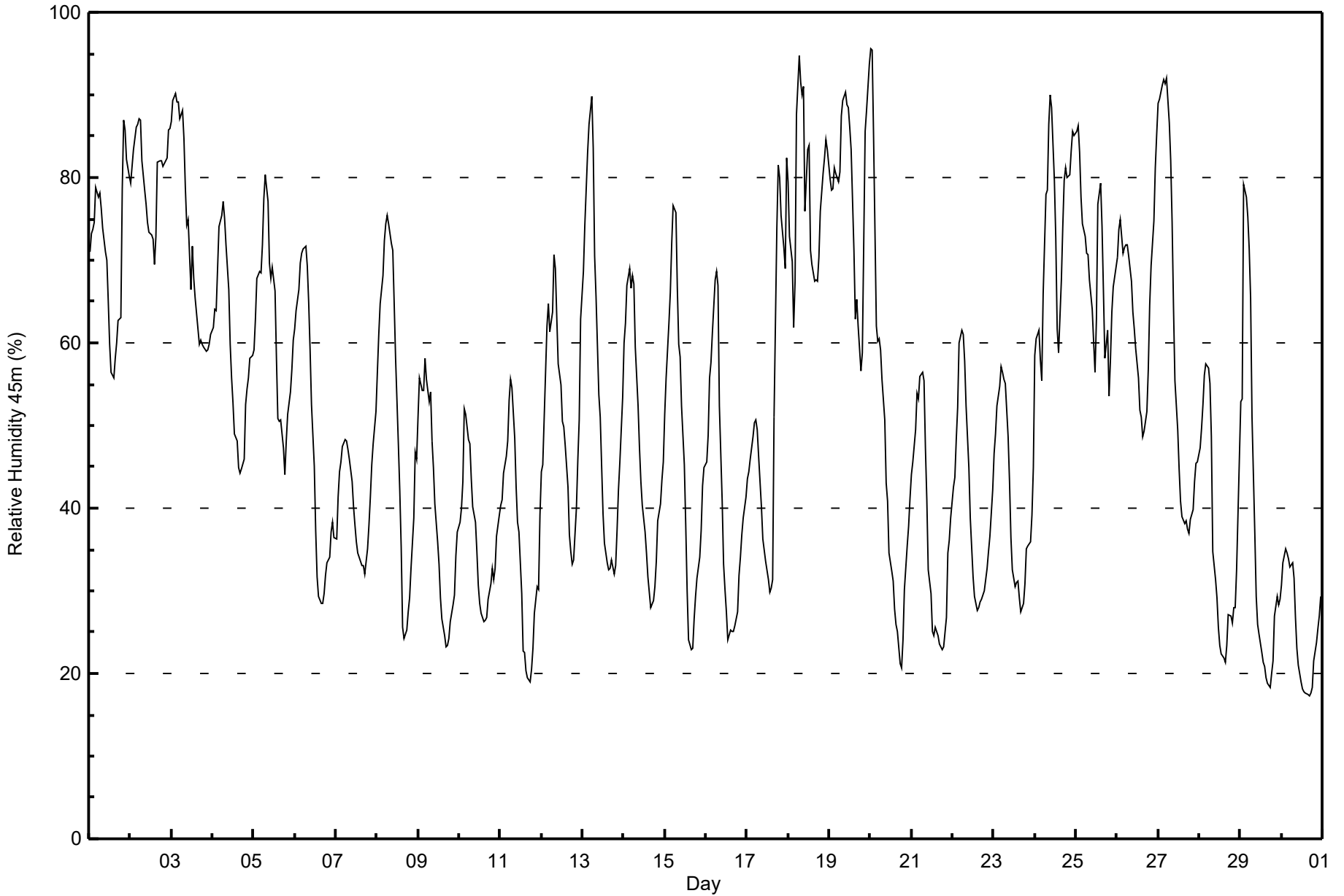
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Value: 95.6 % on Apr 20 01:00																						Hours in Service: 720																									
Maximum Daily Average: 80.3 % on Apr 2																						Hours of Data: 720																									
Minimum Value: 17.3 % on Apr 30 17:00																						Hours of Missing Data: 0																									
Minimum Daily Average: 25.3 % on Apr 30																						Hours of Calibration: 0																									
Maximum Diurnal Average: 67.9 % at hour 7																						Percent Operational Time: 100.0																									
Minimum Diurnal Average: 38.5 % at hour 16																																															
Monthly Average: 52.67 %																																															
Percentiles: P ₁ = 18.4 P ₁₀ = 26.8 Q ₁ = 34.6 Median = 51.8 Q ₃ = 69.4 P ₉₀ = 81.3 P ₉₉ = 91.3																																															
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-Apr	71.0	73.3	73.8	74.6	78.8	77.7	78.1	76.2	73.9	71.1	70.0	65.2	59.8	56.4	55.8	58.2	60.0	62.6	63.0	78.7	87.0	85.7	82.2	80.1	71.4	87.0																					
2-Apr	79.3	81.3	83.3	86.0	86.4	87.0	86.9	82.0	78.5	76.7	74.6	73.4	73.0	72.5	69.5	72.9	81.8	82.0	82.0	81.4	81.7	82.3	85.8	85.9	80.3	87.0																					
3-Apr	86.7	89.4	90.2	89.2	89.2	87.2	88.1	84.8	78.8	74.2	74.9	66.4	71.7	67.7	65.4	61.8	59.8	60.3	59.9	59.4	59.1	59.1	59.9	61.0	72.7	90.2																					
4-Apr	61.9	64.1	63.9	68.9	74.1	75.4	77.1	75.1	71.8	66.4	59.8	55.7	52.7	49.0	48.1	45.0	44.3	44.8	46.0	52.5	54.4	55.7	58.1	58.5	59.3	77.1																					
5-Apr	59.2	62.9	67.9	68.6	68.4	71.8	77.5	80.4	77.1	69.6	67.9	69.1	66.2	58.1	50.9	50.6	50.7	47.3	44.0	48.1	51.4	54.0	56.8	60.3	61.6	80.4																					
6-Apr	61.8	63.9	66.4	69.6	70.9	71.4	71.7	69.4	65.0	59.1	52.6	45.2	37.3	31.8	29.3	28.4	28.4	29.6	31.9	33.3	34.1	37.1	38.3	36.4	48.4	71.7																					
7-Apr	36.3	41.3	44.3	45.6	47.5	48.3	48.1	47.2	46.0	43.2	40.2	38.0	35.9	34.6	33.5	33.0	33.0	32.1	35.1	38.0	41.4	45.3	47.9	51.7	41.2	51.7																					
8-Apr	56.4	61.1	64.8	68.1	72.3	74.3	75.4	74.4	72.1	71.2	64.8	58.1	47.6	42.0	35.2	25.6	24.2	25.2	27.5	29.2	32.8	38.8	46.7	46.0	51.4	75.4																					
9-Apr	51.0	55.7	54.2	54.2	58.1	55.6	52.9	54.1	48.1	45.0	40.5	35.9	33.1	29.2	26.6	24.6	23.3	23.4	24.3	26.2	28.2	29.5	34.2	37.0	39.4	58.1																					
10-Apr	38.3	39.9	43.2	52.0	51.3	48.3	47.7	43.6	40.1	38.3	34.7	30.6	28.4	27.3	26.3	26.4	26.9	28.9	30.8	32.7	31.3	32.7	36.7	39.1	36.5	52.0																					
11-Apr	40.3	41.0	44.3	46.3	48.2	53.1	55.6	54.6	48.4	42.6	38.4	37.2	29.7	22.8	22.5	20.4	19.4	19.1	20.4	23.1	27.3	30.6	30.2	39.1	35.6	55.6																					
12-Apr	44.4	45.3	56.4	62.0	64.7	61.3	63.8	70.7	69.0	63.0	57.5	55.0	50.4	49.8	47.6	42.6	36.8	34.7	33.2	33.7	39.9	45.8	50.7	62.9	51.7	70.7																					
13-Apr	68.6	74.3	78.7	83.1	86.5	89.9	83.5	70.5	65.6	53.7	51.0	45.1	39.4	35.8	33.3	32.6	32.7	33.8	32.1	33.0	37.3	42.3	45.6	53.4	54.2	89.9																					
14-Apr	60.0	62.4	66.9	69.0	66.7	68.2	67.1	59.4	52.4	47.4	43.2	40.3	37.1	34.6	31.7	29.9	28.0	28.9	30.5	33.6	38.5	40.5	43.4	45.6	46.9	69.0																					
15-Apr	51.4	55.7	62.3	66.2	72.0	76.6	75.8	66.6	59.8	58.2	52.5	45.3	38.0	29.9	24.1	22.8	23.1	26.6	29.3	31.5	34.1	37.3	42.8	44.9	46.9	76.6																					
16-Apr	45.6	48.9	55.8	57.7	61.1	67.6	68.7	66.9	52.3	40.9	33.2	30.2	27.4	24.1	25.3	25.1	25.1	25.7	27.5	31.8	34.0	36.9	38.8	41.4	41.3	68.7																					
17-Apr	43.5	44.4	46.0	48.7	50.4	50.7	49.4	46.2	40.2	36.3	34.9	33.5	31.3	29.8	30.3	31.4	51.1	73.9	81.4	80.1	75.4	71.5	68.9	82.5	51.3	82.5																					
18-Apr	79.4	72.8	69.8	61.8	67.5	87.6	94.7	91.5	90.1	91.0	75.9	83.4	83.9	71.2	69.5	67.5	67.6	67.5	70.3	76.0	80.6	82.4	84.6	83.4	77.9	94.7																					
19-Apr	79.8	78.4	78.6	81.1	80.5	79.5	80.6	87.4	89.3	90.4	88.7	88.5	86.2	83.4	71.2	62.9	65.3	62.0	56.6	58.8	72.2	85.6	88.2	93.8	78.7	93.8																					
20-Apr	95.6	95.4	85.1	62.1	60.1	60.6	59.2	55.6	50.7	43.1	40.9	34.6	32.4	31.2	27.8	25.9	25.1	21.1	20.7	24.1	30.1	35.4	37.7	41.2	45.6	95.6																					
21-Apr	44.1	45.7	49.5	53.8	53.3	55.9	56.4	55.4	47.3	41.0	32.6	29.7	25.1	24.5	25.6	24.5	23.6	23.3	22.9	23.2	26.8	34.7	36.1	38.9	37.2	56.4																					
22-Apr	42.5	43.7	48.3	52.2	60.0	61.6	61.1	57.8	52.4	44.9	38.9	35.2	31.7	29.3	27.6	28.0	28.7	29.0	29.9	31.4	32.7	34.8	36.7	42.3	40.9	61.6																					
23-Apr	46.6	49.0	52.3	54.8	57.1	56.5	55.6	55.1	48.7	43.2	36.5	32.5	30.6	31.0	31.2	29.1	27.5	28.5	30.9	35.0	35.5	36.0	39.1	44.9	41.1	57.1																					
24-Apr	58.5	60.6	61.5	58.0	55.4	65.9	78.0	78.4	86.4	89.9	88.4	79.6	72.7	61.6	58.9	67.6	74.1	79.7	81.1	80.0	80.4	83.2	85.6	85.1	73.8	89.9																					
25-Apr	85.6	86.3	83.0	77.7	74.5	72.8	70.8	70.6	67.6	64.1	60.1	56.4	63.0	76.9	79.3	74.1	66.3	58.1	61.6	53.5	58.0	63.7	66.8	69.1	69.2	86.3																					
26-Apr	70.4	73.8	74.9	70.8	71.5	71.8	71.9	70.6	67.5	63.8	61.7	59.3	55.7	51.9	51.1	48.6	49.2	51.7	56.8	64.5	69.4	74.8	81.2	85.3	65.3	85.3																					
27-Apr	89.0	89.5	91.2	91.8	91.3	92.0	86.5	82.0	74.6	64.3	55.4	49.4	44.7	40.9	39.0	38.2	38.5	37.4	37.0	38.7	39.9	43.3	45.4	45.6	60.2	92.0																					
28-Apr	47.3	49.7	52.5	56.1	57.4	57.0	55.1	48.6	34.8	31.3	29.2	25.6	23.4	22.4	21.9	21.4	23.4	27.2	26.9	26.1	28.0	28.0	32.5	46.0	36.3	57.4																					
29-Apr	52.9	53.1	79.2	77.6	75.3	71.3	65.4	51.1	37.0	29.4	25.9	24.7	22.6	21.3	20.8	19.4	18.8	18.4	20.0	21.4	26.9	29.3	28.2	29.0	38.3	79.2																					
30-Apr	30.8	33.4	35.1	34.5	34.0	32.9	33.5	31.6	26.8	23.0	21.0	19.0	18.1	17.9	17.7	17.5	17.3	17.6	18.3	21.6	23.8	25.5	26.9	29.3	25.3	35.1																					
																						59.3	61.2	64.1	64.7	66.1	67.7	67.9	65.3	60.4	55.9	51.5	48.1	45.0	42.0	39.9	38.5	39.1	40.0	41.1	43.4	46.4	49.4	51.9	55.3	Diurnal Average	
																						95.6	95.4	91.2	91.8	91.3	92.0	94.7	91.5	90.1	91.0	88.7	88.5	86.2	83.4	79.3	74.1	81.8	82.0	82.0	81.4	87.0	85.7	88.2	93.8	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	13	1.81	1.81
20 - 40	228	31.67	33.47
40 - 60	211	29.31	62.78
60 - 80	184	25.56	88.33
80 - 100	84	11.67	100.00

Total Number of Valid Hours: 720

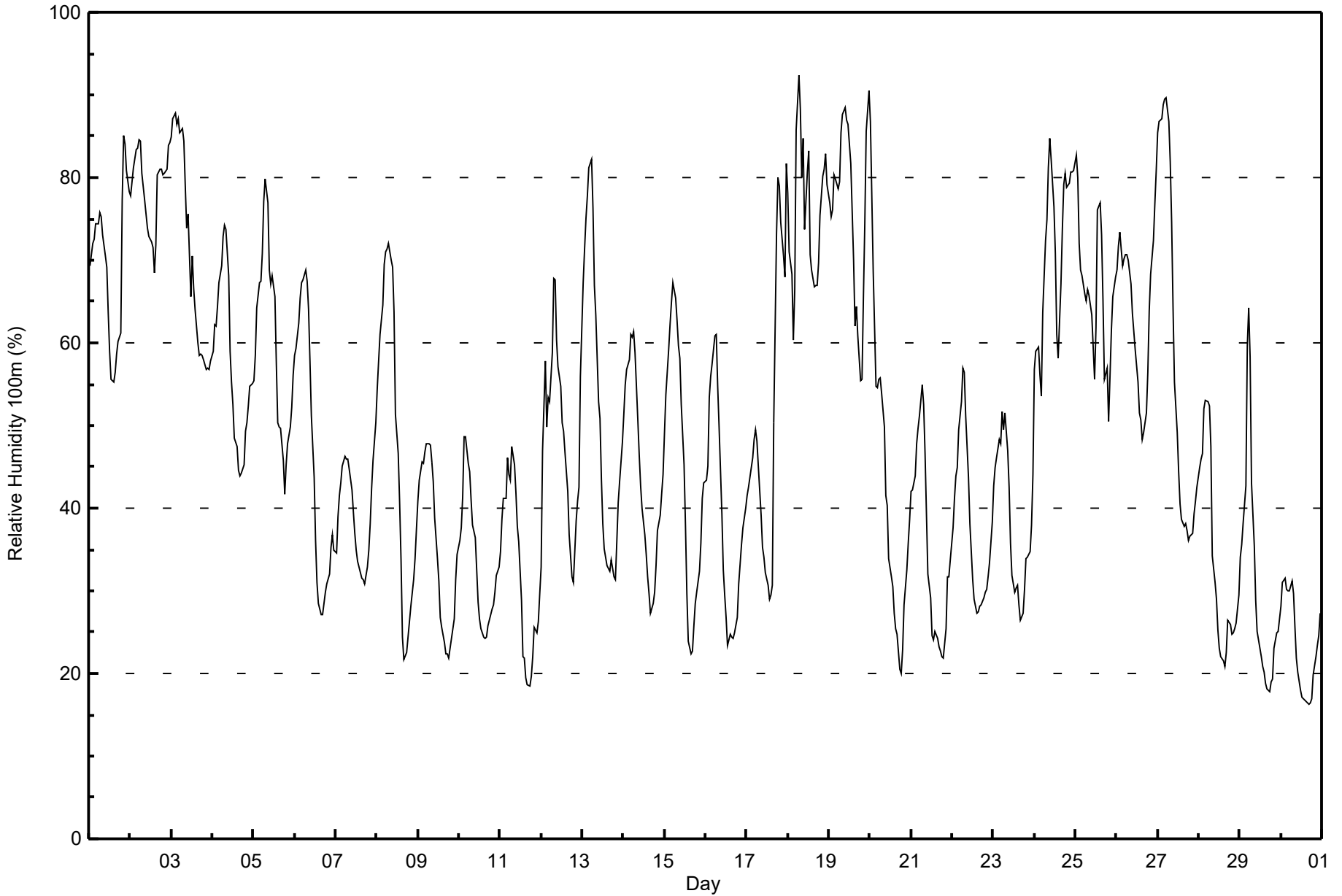
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Value: 92.3 % on Apr 18 07:00 Maximum Daily Average: 78.8 % on Apr 2																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 16.3 % on Apr 30 17:00 Minimum Daily Average: 23.4 % on Apr 30 Maximum Diurnal Average: 63.8 % at hour 7 Minimum Diurnal Average: 37.7 % at hour 16 Monthly Average: 50.11 % Percentiles: P ₁ = 17.8 P ₁₀ = 25.1 Q ₁ = 32.5 Median = 48.1 Q ₃ = 67.1 P ₉₀ = 79.3 P ₉₉ = 87.7																						Hours of Missing Data: 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-Apr	69.3	70.7	72.1	72.5	74.4	74.4	75.8	75.3	73.0	70.5	69.2	63.7	59.0	55.6	55.2	56.5	58.7	60.2	61.2	77.2	85.1	84.0	80.8	78.3	69.7	85.1																							
2-Apr	77.7	79.6	81.2	83.4	83.5	84.6	84.4	80.5	77.4	75.5	73.9	72.9	72.2	71.6	68.5	71.8	80.4	81.0	81.0	80.3	80.6	81.0	84.0	84.2	78.8	84.6																							
3-Apr	84.9	87.1	87.7	86.4	87.1	85.4	85.9	84.4	79.0	73.9	75.6	65.7	70.5	66.6	64.0	60.1	58.4	58.6	58.5	57.9	56.8	57.0	56.8	57.9	71.1	87.7																							
4-Apr	59.0	62.2	62.0	64.4	67.3	69.3	72.8	74.2	73.7	68.1	59.0	55.2	52.5	48.5	47.5	44.6	44.0	44.2	45.2	49.3	50.4	52.3	54.7	55.0	57.3	74.2																							
5-Apr	55.5	58.5	64.2	67.4	67.4	70.8	77.0	79.8	76.9	68.8	67.1	68.2	65.5	57.5	50.3	49.9	49.6	45.8	41.7	45.2	47.7	49.8	52.1	56.2	59.7	79.8																							
6-Apr	58.5	59.3	62.4	65.4	67.3	67.7	68.7	67.4	64.1	57.8	51.3	43.7	36.1	31.0	28.4	27.2	27.2	28.5	29.8	30.9	32.0	35.2	36.8	34.9	46.3	68.7																							
7-Apr	34.6	38.9	41.6	43.0	45.1	46.2	46.0	44.7	42.1	39.4	36.9	34.8	33.5	32.1	31.5	31.3	30.8	32.8	34.9	38.2	42.4	45.8	50.4	39.3	50.4																								
8-Apr	54.3	57.9	61.0	64.5	69.5	71.0	71.4	72.0	70.1	69.1	63.7	51.4	46.7	40.7	33.8	24.4	21.8	22.6	24.4	26.3	28.1	31.3	33.9	37.5	47.8	72.0																							
9-Apr	40.8	43.5	45.6	45.4	46.8	47.8	47.7	47.6	45.6	43.2	38.8	34.0	31.2	26.8	25.5	23.7	22.3	22.4	21.9	23.0	25.4	26.6	31.3	34.5	35.1	47.8																							
10-Apr	36.0	37.6	41.3	48.7	48.6	45.4	44.4	41.0	38.0	36.5	32.6	28.6	26.5	25.4	24.4	24.2	24.4	25.8	27.1	27.8	28.3	29.8	31.8	32.9	33.6	48.7																							
11-Apr	34.7	38.6	41.1	41.2	46.1	44.0	43.3	47.4	45.3	41.9	37.7	36.0	28.8	22.1	21.9	19.5	18.6	18.5	19.6	22.0	25.6	24.9	26.3	29.6	32.3	47.4																							
12-Apr	32.8	47.0	57.9	49.8	53.5	52.9	58.9	67.9	67.6	60.3	57.1	54.7	50.3	49.4	46.7	42.1	36.8	34.2	31.7	31.0	38.5	40.9	42.5	56.0	48.3	67.9																							
13-Apr	67.4	71.4	75.1	77.8	81.2	82.2	76.2	67.0	63.5	53.0	50.8	43.5	38.1	35.1	33.0	32.7	32.4	33.7	31.7	31.3	36.0	40.7	43.2	48.0	51.9	82.2																							
14-Apr	51.4	54.8	56.7	58.1	61.0	60.7	61.3	58.7	50.7	46.4	42.7	39.9	36.8	34.4	31.8	29.7	27.4	28.4	29.8	33.0	37.3	39.2	41.7	44.0	44.0	61.3																							
15-Apr	49.0	53.8	59.1	62.3	64.9	67.3	65.5	62.8	59.6	58.1	52.5	45.3	38.0	29.7	23.9	22.5	22.7	25.8	28.5	29.8	32.3	35.7	41.2	43.1	44.7	67.3																							
16-Apr	43.5	45.1	53.5	55.9	57.5	60.9	61.0	54.8	49.9	39.3	32.5	29.5	26.7	23.4	24.8	24.5	24.3	25.0	26.7	30.8	33.2	35.6	37.6	40.0	39.0	61.0																							
17-Apr	41.5	42.5	43.8	46.1	48.4	49.5	48.2	45.1	39.2	35.3	34.1	32.2	30.7	29.0	29.4	30.7	50.4	73.2	79.9	79.0	74.6	70.6	68.0	81.7	50.1	81.7																							
18-Apr	78.1	71.1	68.4	60.3	66.4	85.8	92.3	88.3	80.1	84.8	73.7	80.6	83.2	70.7	68.9	66.9	66.9	66.9	69.6	75.4	80.1	81.1	82.9	79.1	75.9	92.3																							
19-Apr	77.0	75.3	76.1	80.3	79.8	78.7	79.5	85.4	87.6	88.5	86.9	86.5	84.1	81.7	70.0	62.1	64.4	60.9	55.5	55.7	65.5	74.4	85.7	90.6	76.3	90.6																							
20-Apr	86.8	77.8	68.7	54.8	54.6	55.6	55.8	53.9	49.8	41.5	40.4	33.8	31.7	30.5	27.3	25.5	24.7	20.6	20.0	23.0	28.3	32.5	35.8	38.7	42.2	86.8																							
21-Apr	42.1	42.2	43.9	47.7	49.7	51.2	54.8	52.5	46.6	39.4	32.1	29.1	24.6	24.1	25.1	24.3	23.2	22.7	22.1	21.9	25.4	31.8	31.7	33.8	35.1	54.8																							
22-Apr	37.7	41.2	43.8	44.9	49.5	52.9	57.0	56.4	51.2	43.7	38.2	34.7	31.3	29.0	27.2	27.5	28.1	28.3	29.1	29.8	30.2	31.6	33.4	38.3	38.1	57.0																							
23-Apr	42.7	45.0	46.0	48.3	47.8	51.6	49.5	51.6	46.9	42.5	35.8	31.8	29.8	30.4	30.7	28.3	26.5	27.2	30.1	33.9	34.0	34.8	38.0	44.2	38.6	51.6																							
24-Apr	56.7	59.0	59.4	56.1	53.6	63.8	72.4	75.0	81.1	84.7	82.1	76.4	70.9	61.0	58.1	67.1	73.7	79.1	80.4	78.9	79.3	80.7	80.6	80.9	71.3	84.7																							
25-Apr	82.7	80.0	72.0	68.8	68.2	65.9	65.0	66.4	65.8	63.4	59.5	55.7	61.9	76.1	77.0	73.0	65.0	55.6	57.0	50.5	56.0	61.6	65.7	68.0	65.9	82.7																							
26-Apr	68.9	71.7	73.3	69.3	70.1	70.7	70.7	70.0	67.2	63.6	61.4	59.1	55.3	51.6	50.6	48.3	49.1	51.6	56.4	63.9	68.2	72.4	76.8	80.8	64.2	80.8																							
27-Apr	85.4	86.8	87.2	88.9	89.5	89.7	86.7	81.9	74.6	64.2	55.3	49.2	44.4	40.6	38.6	37.9	38.2	37.2	36.1	36.6	36.9	39.3	40.9	42.6	58.7	89.7																							
28-Apr	45.0	46.0	46.7	52.0	53.1	52.8	52.4	47.5	34.2	31.1	28.9	25.3	23.0	22.1	21.5	20.8	22.6	26.5	26.0	24.8	25.0	25.4	26.1	29.5	33.7	53.1																							
29-Apr	34.1	35.5	38.2	42.7	59.6	64.2	58.3	43.1	35.4	28.9	25.1	24.1	22.0	20.8	20.2	18.8	18.1	17.7	19.1	19.3	23.0	24.9	25.0	26.6	31.0	64.2																							
30-Apr	28.2	31.0	31.5	30.1	30.0	30.0	31.1	29.6	25.6	21.9	20.1	18.0	17.1	16.9	16.7	16.5	16.3	16.4	17.0	19.9	22.0	23.4	24.6	27.2	23.4	31.5																							
																								55.2	57.0	58.7	59.2	61.4	63.1	63.8	62.4	58.8	54.6	50.6	46.9	44.1	41.2	39.1	37.7	38.3	39.0	39.7	41.4	44.1	46.4	48.5	51.5	Diurnal Average	
																								86.8	87.1	87.7	88.9	89.5	89.7	92.3	88.3	87.6	88.5	86.9	86.5	84.1	81.7	77.0	73.0	80.4	81.0	81.0	80.3	85.1	84.0	85.7	90.6	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

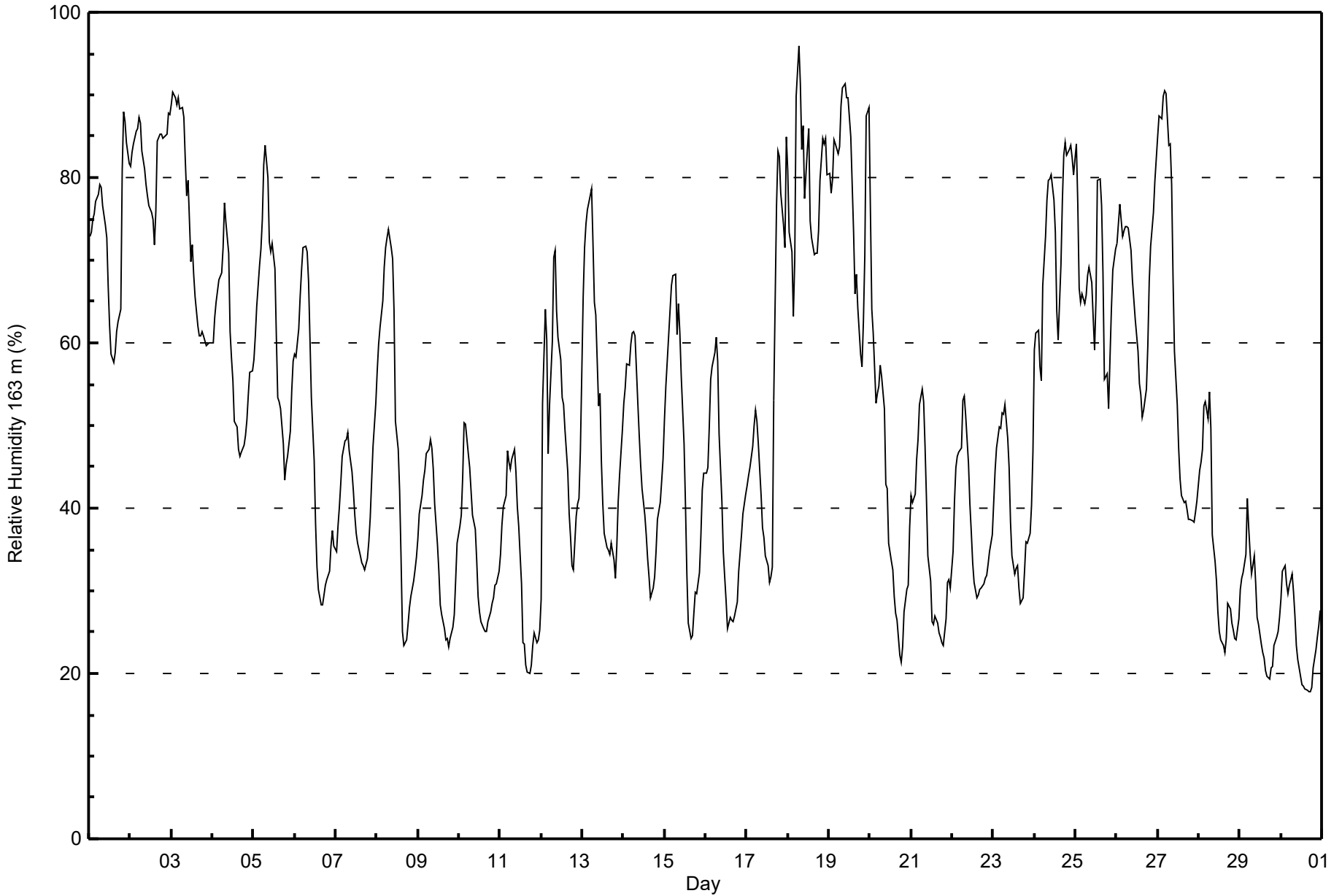
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	18	2.50	2.50
20 - 40	246	34.17	36.67
40 - 60	220	30.56	67.22
60 - 80	169	23.47	90.69
80 - 100	67	9.31	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 95.9 % on Apr 18 07:00 Maximum Daily Average: 82.3 % on Apr 2																						Hours in Service: 720 Hours of Data: 720				
Minimum Value: 17.8 % on Apr 30 17:00 Minimum Daily Average: 24.5 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0				
Maximum Diurnal Average: 64.1 % at hour 7 Minimum Diurnal Average: 39.9 % at hour 16																						Percent Operational Time: 100.0				
Monthly Average: 51.46 % Percentiles: P ₁ = 19.4 P ₁₀ = 26.2 Q ₁ = 33.5 Median = 48.6 Q ₃ = 68.5 P ₉₀ = 81.3 P ₉₉ = 89.9																										
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-Apr	72.8	73.3	74.9	75.6	77.1	78.0	79.2	78.7	76.6	74.2	72.7	66.8	62.0	58.7	57.6	58.8	61.4	62.5	64.1	80.8	88.0	86.8	84.2	81.6	72.8	88.0
2-Apr	81.3	83.1	84.1	85.6	86.0	87.2	86.6	83.2	81.1	79.1	77.8	76.7	75.8	74.9	71.9	76.0	84.4	85.3	85.3	84.7	84.9	85.3	87.8	87.6	82.3	87.8
3-Apr	88.8	90.4	89.7	88.8	89.6	88.3	88.5	87.3	82.2	77.7	79.7	69.8	71.8	68.4	65.7	62.1	60.9	60.8	61.4	60.9	59.6	59.9	60.0	59.9	73.8	90.4
4-Apr	59.9	63.1	65.0	66.3	67.7	68.4	71.5	76.9	74.6	70.9	61.4	58.1	55.4	50.4	49.9	47.0	46.3	46.8	47.7	48.8	50.7	53.7	56.5	56.6	58.9	76.9
5-Apr	58.0	60.9	64.5	69.4	71.4	74.9	81.5	83.9	80.1	72.3	71.0	72.1	69.0	60.8	53.4	52.9	52.0	47.7	43.4	45.2	46.2	49.3	54.3	57.8	62.2	83.9
6-Apr	58.6	58.3	61.8	65.6	68.8	71.6	71.6	71.0	67.4	60.5	53.4	45.7	38.2	32.9	30.2	28.3	28.2	29.5	30.6	31.4	32.4	35.4	37.3	35.5	47.7	71.6
7-Apr	34.7	37.8	40.2	43.1	46.3	48.1	48.2	49.1	47.0	44.3	42.1	39.2	37.0	35.7	34.2	33.5	33.0	32.5	33.9	36.0	38.9	43.1	47.4	52.6	40.8	52.6
8-Apr	56.6	59.8	61.9	65.1	69.1	71.5	72.6	73.7	71.6	70.2	63.9	50.6	47.1	42.1	34.1	25.1	23.4	24.1	25.9	28.0	29.4	31.3	32.6	34.1	48.5	73.7
9-Apr	36.3	39.4	41.6	43.4	44.6	46.6	47.1	48.3	47.2	44.8	40.6	35.6	32.4	28.2	27.0	25.5	24.1	24.3	23.3	24.2	25.7	27.1	31.4	35.7	35.2	48.3
10-Apr	37.7	39.2	43.7	50.4	50.1	46.6	45.0	42.0	39.2	37.4	33.8	29.4	27.4	26.2	25.4	25.1	25.0	26.3	27.5	28.4	29.2	30.6	30.9	32.4	34.5	50.4
11-Apr	34.5	38.0	40.2	41.4	46.9	45.6	44.8	45.9	47.2	44.4	40.1	37.7	30.9	23.8	23.5	21.0	20.2	20.0	21.1	23.4	25.0	23.7	24.1	25.3	32.9	47.2
12-Apr	29.0	52.7	64.0	60.3	46.6	52.6	60.1	70.4	71.2	63.9	60.7	57.9	53.5	52.6	49.5	44.4	39.3	36.4	33.0	32.5	39.0	40.4	41.2	46.9	49.9	71.2
13-Apr	65.6	71.6	74.4	76.1	77.0	78.7	72.0	65.0	63.3	52.5	53.8	45.5	40.6	37.0	35.2	35.0	34.4	35.7	33.7	31.5	35.5	40.9	44.0	49.5	52.0	78.7
14-Apr	52.7	54.6	57.5	57.3	59.9	61.1	61.4	60.9	52.7	48.8	45.2	42.3	39.2	36.8	33.8	31.7	29.2	30.4	31.6	34.7	38.7	40.6	43.2	46.0	45.4	61.4
15-Apr	50.7	54.8	60.9	63.9	67.0	68.3	61.0	64.8	61.1	55.9	47.8	40.5	32.0	26.0	24.3	24.6	27.3	29.9	29.7	32.3	36.7	42.2	44.2	44.2	46.4	68.3
16-Apr	44.3	44.9	49.9	55.6	57.1	58.9	60.7	57.8	48.9	40.9	34.8	31.7	28.9	25.4	26.7	26.4	26.3	26.9	28.6	32.4	34.6	36.8	39.3	41.7	40.0	60.7
17-Apr	42.6	43.9	45.0	47.5	50.0	51.9	50.6	47.8	41.5	37.6	36.5	34.3	33.0	31.1	31.6	32.8	53.1	76.6	83.2	82.6	78.2	74.2	71.5	84.9	52.6	84.9
18-Apr	80.8	73.4	71.0	63.2	70.0	89.9	95.9	91.3	83.5	86.2	77.5	83.5	86.0	74.7	72.7	70.7	70.8	70.8	73.6	79.6	84.7	84.1	84.7	80.3	79.1	95.9
19-Apr	80.6	78.2	79.9	84.6	84.1	82.9	83.7	88.7	90.9	91.3	89.6	89.7	87.3	84.9	73.3	65.9	68.3	64.3	58.6	57.1	62.5	70.6	87.4	88.4	78.9	91.3
20-Apr	76.1	64.1	61.2	52.7	53.8	54.8	57.3	55.9	52.1	43.0	42.4	35.8	33.6	32.5	29.3	27.3	26.5	22.2	21.3	23.3	27.4	30.2	30.6	37.6	41.3	76.1
21-Apr	41.5	40.7	41.8	45.9	48.4	52.6	54.4	52.9	47.4	41.1	34.2	31.2	26.3	25.8	26.9	26.1	25.0	24.4	23.7	23.4	26.6	31.0	31.4	30.3	35.5	54.4
22-Apr	34.7	40.9	44.9	46.2	46.7	47.4	53.0	53.5	51.3	45.4	40.5	37.0	33.4	31.1	29.2	29.5	30.2	30.3	30.9	31.5	31.9	33.2	34.7	36.8	38.5	53.5
23-Apr	40.8	44.6	47.4	49.9	49.7	51.5	51.3	52.5	48.4	44.9	38.3	34.2	32.1	32.7	33.0	30.4	28.5	29.2	32.3	35.9	35.8	37.0	40.4	46.8	40.3	52.5
24-Apr	59.2	61.2	61.6	57.1	55.4	66.9	72.8	77.3	79.6	79.8	80.3	77.3	73.3	63.9	60.3	69.5	77.2	82.7	84.2	82.7	83.4	83.9	82.4	80.4	73.0	84.2
25-Apr	84.1	77.0	66.6	65.0	65.9	64.7	65.7	68.1	69.1	67.2	63.1	59.1	65.3	79.7	79.8	76.6	68.3	55.6	56.3	52.0	58.2	64.0	68.8	71.3	67.1	84.1
26-Apr	72.0	74.4	76.8	72.8	73.6	74.0	74.1	73.9	71.1	67.6	65.2	62.9	58.9	55.1	53.7	51.1	51.9	54.4	59.7	67.4	71.7	75.8	79.4	82.3	67.5	82.3
27-Apr	85.0	87.5	87.1	89.9	90.5	90.2	84.0	84.1	79.1	67.9	58.9	52.6	47.3	43.6	41.5	40.6	40.9	39.9	38.7	38.6	38.4	38.2	39.5	40.8	60.2	90.5
28-Apr	44.5	45.5	47.1	52.4	52.8	50.9	54.0	49.6	36.8	33.5	31.2	27.4	25.1	24.1	23.4	22.6	24.3	28.5	27.9	26.1	25.2	24.2	24.1	26.6	34.5	54.0
29-Apr	30.2	31.6	32.3	34.4	41.1	37.6	34.6	32.1	34.3	30.8	26.8	25.9	23.6	22.5	21.9	20.3	19.7	19.3	20.6	20.9	23.4	24.4	25.1	26.9	27.5	41.1
30-Apr	29.0	32.5	33.0	30.9	29.7	30.6	32.0	29.9	27.0	23.4	21.7	19.6	18.6	18.4	18.2	18.0	17.8	17.9	18.3	20.7	23.0	24.4	25.8	27.7	24.5	33.0
																						Diurnal Average				
																						Diurnal Maximum				





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	11	1.53	1.53
20 - 40	245	34.03	35.56
40 - 60	208	28.89	64.44
60 - 80	175	24.31	88.75
80 - 100	81	11.25	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Speed: 36 km/h on Apr 7 00:00	Maximum Daily Speed Average: 20.5 km/h on Apr 7	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 20 03:00	Minimum Daily Speed Average: 3.2 km/h on Apr 24	Hours of Data: 719
Maximum Diurnal Speed Average: 7.4 km/h at hour 12	Minimum Diurnal Speed Average: 3.0 km/h at hour 5	Hours of Missing Data: 1
Monthly Average Velocity: 4.8 km/h 147.2 deg	Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 6 Median = 9 Q ₃ = 15 P ₉₀ = 21 P ₉₉ = 30	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-Apr	ENE4	E2	NE2	ENE4	NNW2	ENE4	ENE5	NE4	ENE3	ESE6	ESE9	SE8	ESE5	SE4	NNW4	N9	NNW8	N11	ENE6	E11	ESE10	ESE8	ESE8	ESE10	E4.0	E11
2-Apr	SE13	SE12	ESE12	ESE8	ESE7	ESE6	SE8	SE10	SE12	SE14	SE9	ESE8	SSE8	SSW5	NNW4	NNW10	N12	N12	N15	N15	N15	N13	N12	NNW11	ENE3.9	N15
3-Apr	NNW11	NNW9	N9	N7	NNW7	NNW9	NNW6	NNW7	NNW8	NNW9	NNW7	NNW4	WSW14	WSW14	SW12	SW8	WSW7	W6	NW4	N4	ENE2	NE4	ENE6	E7	NW3.9	WSW14
4-Apr	E6	SSE4	ENE2	N4	NW3	N4	N4	N5	N3	NE1	SSE6	S6	S5	SSE4	SSE9	SSE8	SSW10	SSE7	SSE7	SSE5	ESE11	SE9	SE10	ESE14	SE3.8	ESE14
5-Apr	ESE13	SE7	SSE3	E4	ESE7	ESE6	ESE6	ESE5	SE8	SE8	SE9	SE12	SSE10	SSE9	S12	SSE17	SSE15	SSE9	SSE9	SSE7	SE5	SE5	SE9	SE10	SE8.0	SSE17
6-Apr	SE10	SE12	SE11	SE9	SE9	SE9	SE13	ESE15	SSE12	SSE14	SE18	SSE21	SSE26	SSE31	SSE31	S30	S30	SSE28	SSE24	SSE26	SSE30	SSE26	SSE32	SSE36	SSE20.3	SSE36
7-Apr	SSE31	SSE22	SSE24	SE20	SE20	SE20	SE19	SE21	SE22	SE20	SE21	SE19	SE20	SE21	SE24	SSE26	SE23	SSE23	SSE22	SSE17	SE14	SE14	SSE17	SSE17	SE20.5	SSE31
8-Apr	SSE17	SSE13	SE15	SE11	SE7	SE10	SE12	SE15	SE14	SE15	SE11	SE16	SE18	SE15	SSE14	SSW13	WSW16	WSW11	WSW13	SW10	WSW5	W2	W4	W9	SSE8.6	SE18
9-Apr	W5	SSW7	SW5	SSE6	SSW6	SSE7	WSW11	SW7	WSW15	WSW19	WSW21	WSW21	WSW17	WSW17	WSW9	WSW9	SSW15	SSE14	SSE18	SSE21	SSE21	SSE21	SE21	SE16	SSW9.7	SSE21
10-Apr	ESE13	SSE16	S16	W20	WSW26	W24	WSW26	WSW25	WSW27	WSW26	WSW29	WSW29	WSW28	WSW26	W27	WSW29	WSW27	WSW22	WSW19	WSW16	SW13	SW13	WSW13	W10	WSW19.4	WSW29
11-Apr	WSW4	SE7	SE9	SE11	SE8	SE11	SE8	SE8	SE10	SE8	SE9	SE13	SSE7	WSW17	WSW14	WSW16	WSW12	SW10	W5	N9	NNW5	NNW5	NNW4	W4	S4.0	WSW17
12-Apr	NW3	NNW4	W4	W4	W4	W10	W7	NNW3	N6	NNE8	NW7	WNN9	NW9	N11	N12	NNW8	NNW7	WSW2	NW4	WNN4	NW2	WNN2	NW3	NW3	NW4.6	N12
13-Apr	NW3	NNW3	W3	NW2	NW3	NNW2	N2	N4	WNN1	N3	NNW5	NNE5	NNE6	NNE7	NNW6	NNW8	N9	NNE9	NNE12	N8	NW5	N5	N5	NNW3	N4.5	NNE12
14-Apr	NNW3	NNW4	NNW3	NNW3	NNW3	NNW4	NNW3	N2	SE6	SSE9	SSE11	SSE11	SSE12	SSE9	SSE7	SSW4	WSW4	SE9	SE14	ESE8	ESE6	SE11	ESE7	ESE6	SE4.1	SE14
15-Apr	E4	E3	N3	NNW3	NNW3	NW3	NW2	NW0	SE3	SE6	SE8	SE6	SE6	SE8	ESE7	SE8	ESE8	SE11	ESE12	ESE5	SE7	SE12	SE12	SE18	SE5.2	SE18
16-Apr	SE20	ESE6	N2	NE3	NNW4	NNW3	NNW2	NNW2	ENE2	SE12	SE19	SE21	SE21	SE21	SE20	ESE17	E19	E20	ESE18	ESE16	ESE18	ESE17	SE13	SE14	ESE11.6	SE21
17-Apr	ESE16	ESE17	ESE16	ESE14	ESE16	SE15	SSE11	SE10	ESE18	SE25	ESE21	SE32	ESE26	SE29	ESE29	ESE24	SE34	ESE20	E15	E14	ESE17	SE18	ESE21	ESE22	ESE19.5	SE34
18-Apr	ESE15	ESE15	ESE13	ESE15	SE14	SE14	UO	N9	N10	N8	E8	ENE7	ESE9	E10	E9	ENE7	E8	ENE7	NE6	ENE7	NNE5	NNW6	NNW7	N8	E6.5	ESE15
19-Apr	N6	N7	E5	ESE8	SE11	SE16	SE15	ESE17	ESE15	ESE13	ESE14	ESE13	ESE14	ESE12	ESE15	ESE15	ESE11	ESE9	E6	NE4	NNW3	NNW4	NNW5	N4	ESE7.9	ESE17
20-Apr	N4	NNW3	WNN0	ESE9	ESE8	ESE6	ESE7	SSE5	SSE6	SSE6	WNN5	SE10	SE11	SE10	ESE10	ESE10	ESE10	ESE12	E13	E9	E5	ESE4	ESE7	ESE5	ESE6.1	E13
21-Apr	SE9	ESE7	SE6	SE2	ESE1	N1	NNW2	ESE2	SE6	SE10	SE9	SE10	SE9	SE9	SE7	S8	SSE5	SSE7	SSE8	SSE6	SE5	SE6	ESE6	SE5	SE5.8	SE10
22-Apr	SE6	SE10	SE11	SE12	ESE6	SE7	SE9	ESE7	SE10	SE13	SE18	SSE18	SSE19	SSE21	S24	S23	S22	S21	S18	S14	S13	S14	SSE11	SE7	SSE13.0	S24
23-Apr	SE7	ESE4	ENE1	SSE2	SE2	N1	SE6	SE5	SE9	SE11	SE13	SE19	SE20	SSE21	SSE16	SE12	SE16	SE13	SSE14	SE11	SE9	SSE14	S14	S18	SE10.2	SSE21
24-Apr	S9	ENE2	ENE3	E2	SE7	ESE11	E1	SE3	NE1	N3	NNW4	N7	NNW11	NNW12	NNW12	NNW14	NNW13	NNW11	NNW11	NNW8	NNW7	WSW8	SW13	S6	NNW3.2	NNW14
25-Apr	ESE2	SE5	SE9	SE15	SE16	SE14	SE17	SE18	SSE18	SSE15	S17	SSE17	SSW18	W15	SE5	SE12	SE17	SE6	SE14	WSW13	W14	W15	W14	W12	S8.3	SSW18
26-Apr	W14	WSW14	WNN14	WNN14	WNN17	WNN17	WNN15	WNN13	WNN14	NW12	NW11	NW10	NNW8	N9	N11	N11	N10	NNE10	NE10	NE8	NNE4	NNW5	N4	N5	NW8.5	WNN17
27-Apr	NW4	N4	NNW4	E2	SE0	NW1	NE1	ESE4	SE4	WSW8	SW7	WSW7	WSW9	WSW11	WSW8	WSW10	WSW11	SSW6	S8	S13	S17	SSE17	SSE22	SSE23	SSW5.4	SSE23
28-Apr	SE11	SE9	NW2	WNN4	WNN4	NNW4	NW3	WNN17	NW18	NW20	NW20	NW21	NW19	NNW19	NNW20	NNW18	NNW20	N18	N13	N10	NNW6	NNW5	NNW3	WNN2	NNW9.4	NW21
29-Apr	WNN1	WNN1	W1	E0	E1	NNE1	NE0	SE1	SE4	SE7	SSE7	S6	SW5	SSW5	SW5	S6	S6	SE8	E5	E4	SE5	SE3	ESE9	ESE10	SSE3.2	ESE10
30-Apr	ESE12	SE14	SE13	ESE13	ESE9	ESE13	ESE14	SE12	SE15	SE15	SE14	SE20	SE23	SE23	SE21	SE21	SE22	SE21	SE20	SE17	SE19	SE18	SE18	SE15	SE16.6	SE23

SE5.2 SE4.8 SE3.9 SE3.7 SE3.0 SE3.3 SSE3.2 SE3.1 SSE4.0 SSE5.0 SSE6.0 SSE7.4 SSE7.0 SSE6.1 SSE5.6 SSE5.1 SSE5.4 SE5.3 SE5.2 SE4.2 SE4.7 SE5.2 SSE5.9 SE6.4	Diurnal Average
SSE31 SSE22 SSE24 W20 WSW26 WSW24 WSW26 WSW25 WSW27 WSW26 WSW29 SE32 WSW28 SSE31 SSE31 S30 SE34 SSE28 SSE24 SSE26 SSE30 SSE26 SSE32 SSE36	Diurnal Maximum

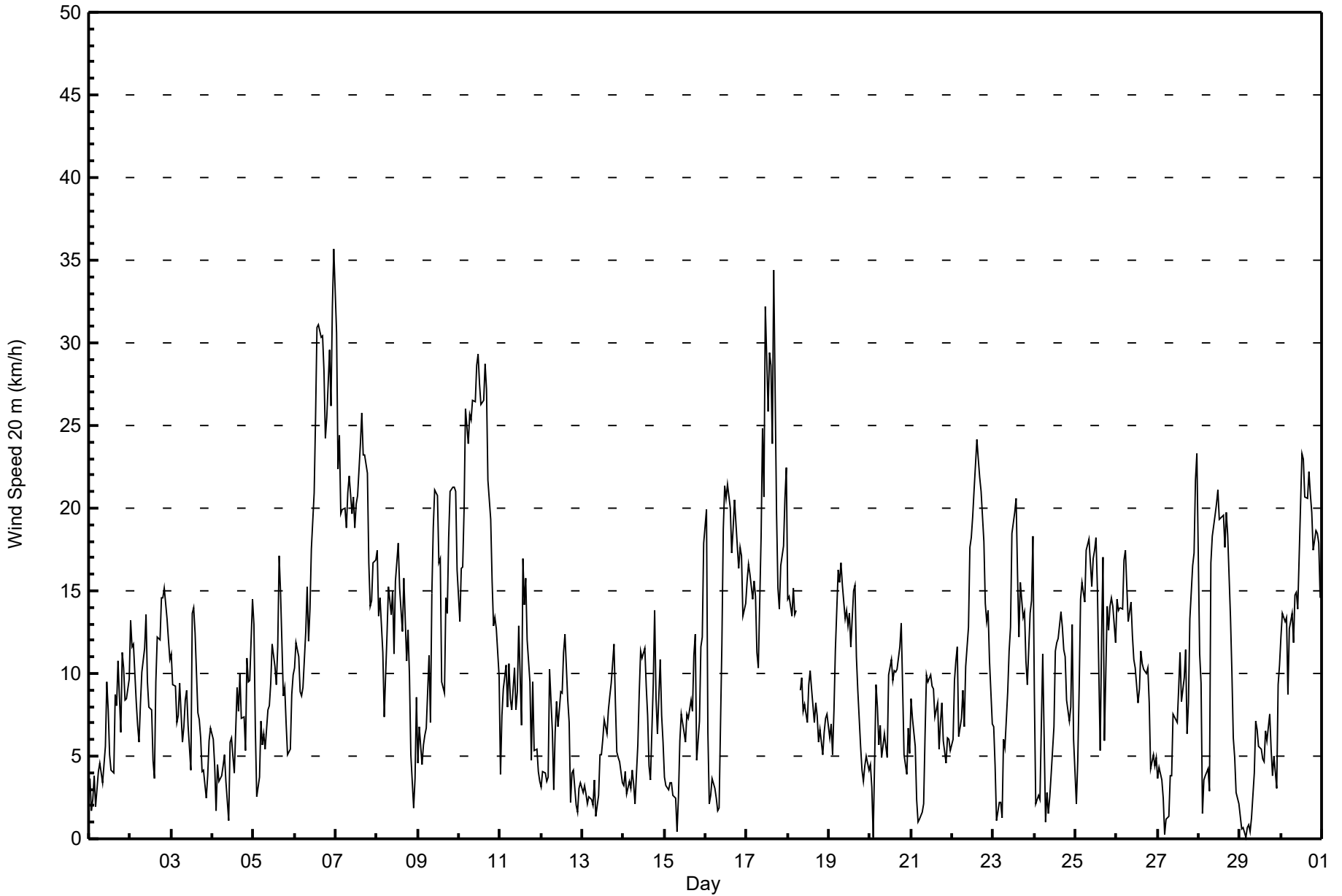
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on Apr 17 12:00 Minimum Value: 0 km/h on Apr 29 03:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 3 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 9																		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	2	2	2	2	1	1	2	2	2	3	4	2	2	2	2	3	2	3	4	4	4	3	3	5	5
2-Apr	4	4	4	3	3	3	4	4	4	4	3	3	2	1	2	3	3	4	4	5	5	4	4	4	5
3-Apr	4	3	3	2	3	4	2	2	3	3	3	4	2	2	2	2	2	2	2	2	2	2	2	2	4
4-Apr	3	2	2	2	2	2	1	2	1	1	2	2	2	3	2	2	3	2	2	2	3	3	4	4	4
5-Apr	4	3	2	2	2	2	2	2	3	4	3	2	4	3	4	4	5	3	2	2	2	3	2	1	5
6-Apr	2	2	2	2	3	3	5	5	5	3	5	4	5	6	6	6	5	5	4	5	5	5	5	5	6
7-Apr	8	5	5	5	6	6	6	6	5	5	5	5	5	5	5	5	4	5	4	3	3	3	3	3	8
8-Apr	3	3	2	3	2	3	3	3	3	3	5	3	3	4	3	4	4	3	2	2	3	2	2	4	5
9-Apr	3	2	2	2	2	3	3	3	7	7	4	5	5	5	4	3	5	3	2	3	4	4	4	5	7
10-Apr	5	4	4	6	8	8	7	8	8	7	8	8	8	9	9	8	8	7	6	4	3	3	3	3	9
11-Apr	4	3	3	4	3	1	1	3	3	2	4	4	3	4	4	3	3	3	5	3	2	2	2	2	5
12-Apr	3	3	2	2	3	4	4	2	2	3	3	4	5	5	4	4	3	2	2	2	2	1	1	1	5
13-Apr	2	1	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3	3	2	2	1	2	3
14-Apr	2	2	1	2	2	2	1	1	2	2	3	2	2	3	3	3	2	4	4	3	3	3	5	2	5
15-Apr	2	3	2	1	2	1	2	1	2	2	2	2	3	4	3	3	3	3	4	4	3	3	4	5	5
16-Apr	5	7	1	1	1	1	1	1	2	5	6	7	7	7	6	6	7	8	7	6	7	7	4	4	8
17-Apr	4	4	6	5	5	5	3	4	9	9	8	12	10	10	10	9	11	8	7	6	6	6	7	8	12
18-Apr	6	6	6	7	5	5	UO	2	3	3	4	3	4	4	4	3	3	3	2	2	2	3	2	2	7
19-Apr	1	2	3	4	4	5	5	5	5	5	5	4	5	5	6	5	4	4	3	1	3	2	2	1	6
20-Apr	1	1	1	2	3	3	3	2	2	2	3	5	4	4	5	6	5	5	5	4	3	2	2	3	6
21-Apr	3	3	2	1	1	1	1	2	2	2	3	4	3	4	3	4	3	3	2	1	2	2	2	1	4
22-Apr	3	2	3	2	2	2	3	3	2	4	5	5	6	6	6	5	4	4	3	3	1	1	1	2	6
23-Apr	3	3	1	2	2	2	2	2	2	4	4	6	5	7	6	5	5	5	5	4	5	4	5	6	7
24-Apr	6	2	2	2	4	5	2	2	1	1	2	3	3	4	4	5	5	4	4	3	3	6	3	2	6
25-Apr	2	3	2	2	2	2	2	3	4	3	4	5	10	9	3	3	4	6	4	7	6	6	5	4	10
26-Apr	5	4	5	4	5	5	4	5	5	5	4	4	3	4	4	4	4	4	4	3	2	2	2	2	5
27-Apr	1	2	2	1	1	1	1	1	2	3	3	3	3	4	3	3	4	3	3	2	3	2	3	3	4
28-Apr	7	5	2	2	2	1	4	6	9	8	8	8	7	7	7	7	8	6	5	4	2	1	2	1	9
29-Apr	1	1	0	1	1	1	1	1	2	2	2	2	3	3	3	3	4	3	2	1	2	2	4	3	4
30-Apr	4	4	4	5	4	4	4	4	4	4	5	6	7	7	6	6	7	6	6	5	5	4	5	4	7
Diurnal Maximum																								8	
UO - Unstable Operation																									





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	180	25.03	25.03
6 - 11	254	35.33	60.36
12 - 19	195	27.12	87.48
20 - 28	75	10.43	97.91
29 - 38	15	2.09	100.00
> 38	0	0.00	100.00

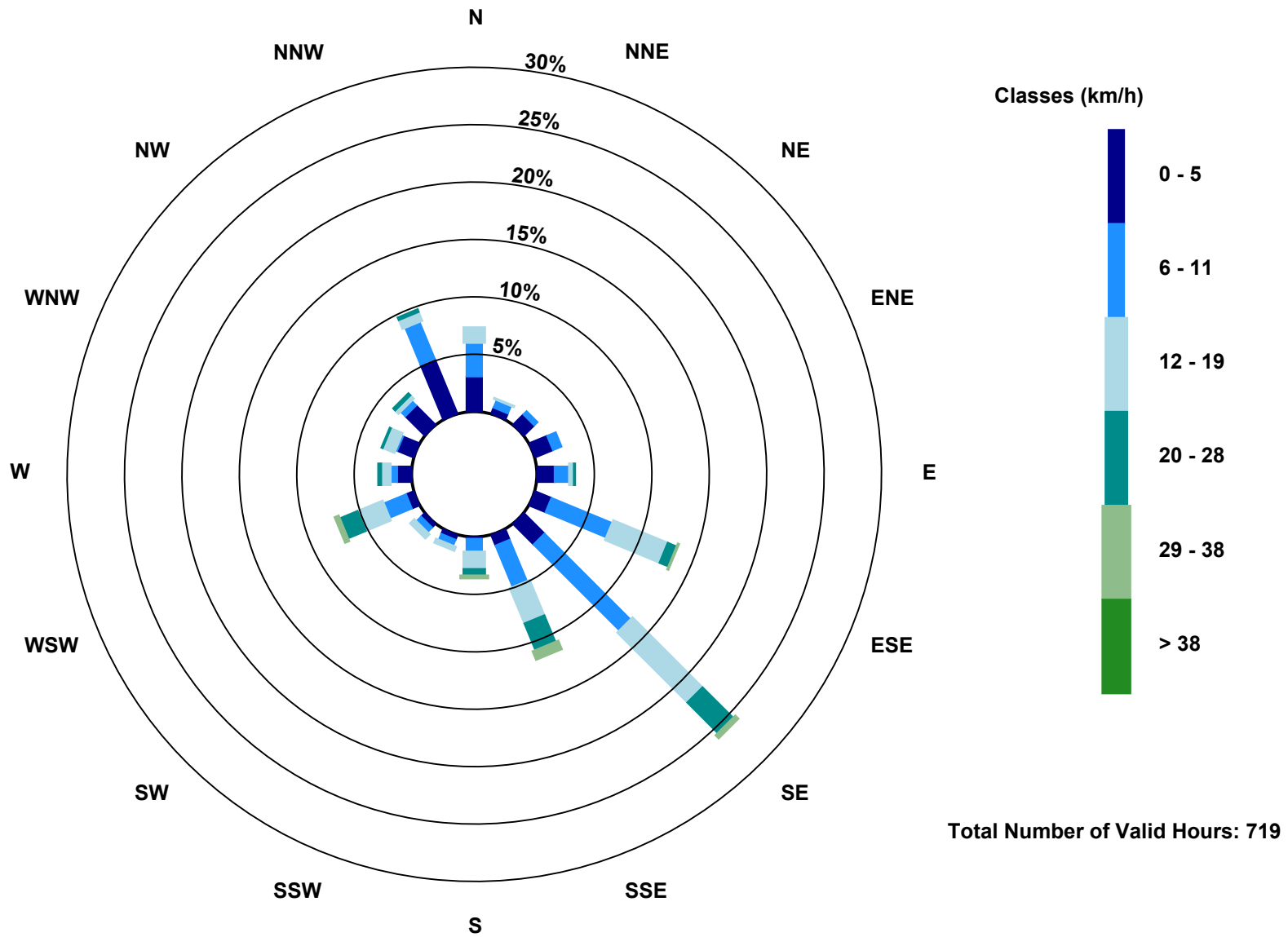
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

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





Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Speed: 46 km/h on Apr 17 17:00	Maximum Daily Speed Average: 28.7 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 27 07:00	Minimum Daily Speed Average: 3.9 km/h on Apr 11	Hours of Data: 718
Maximum Diurnal Speed Average: 9.5 km/h at hour 24	Minimum Diurnal Speed Average: 5.1 km/h at hour 8	Hours of Missing Data: 2
Monthly Average Velocity: 6.6 km/h 140.7 deg	Percentiles: P ₁ = 1 P ₁₀ = 5 Q ₁ = 8 Median = 13 Q ₃ = 21 P ₉₀ = 28 P ₉₉ = 38	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-Apr	E8	E4	E4	E7	NE3	E8	E9	E7	E7	ESE9	ESE13	SE9	ESE6	SE6	NNW2	N11	NNW12	N15	ENE10	E17	ESE16	ESE13	ESE13	ESE15	E6.9	E17
2-Apr	SE19	SE19	ESE18	ESE13	ESE12	ESE10	ESE12	SE15	SE19	SE20	SE13	ESE10	SE9	SSW4	NNW4	NNW13	N17	N19	N22	N23	N24	N22	N18	N15	ENE6.5	N24
3-Apr	NNW16	NNW14	N13	N11	NNW12	NNW14	NNW11	NNW10	NNW12	NNW11	NNW8	NNW6	WSW14	WSW14	SW12	WSW8	WSW8	W8	NW5	N6	ENE4	ENE7	ENE10	E11	NNW5.8	NNW16
4-Apr	ESE11	SE6	E3	NNW5	NW4	NNW4	NNW6	NNW5	NNW3	NW1	SSE6	S6	SSW5	SE4	SE11	SSE8	S10	SSE8	SSE8	SE9	ESE19	SE15	SE16	SE24	SE5.4	SE24
5-Apr	ESE23	ESE14	SE6	ESE6	ESE11	ESE9	ESE10	ESE7	SE9	SE10	SE12	SE14	SSE12	SSE10	S13	SSE19	SSE17	SSE10	SSE11	SE9	SE9	ESE11	ESE14	ESE13	SE11.0	ESE23
6-Apr	SE16	SE17	SE16	SE14	SE18	SE18	ESE23	ESE24	SSE15	SE18	SE24	SSE25	SSE29	SSE34	SSE34	S33	S34	SSE32	SSE29	SSE30	SSE34	SSE30	SSE36	SSE40	SSE24.9	SSE40
7-Apr	SSE34	SSE26	SE31	SE29	SE30	SE30	SE33	SE30	SE27	SE28	SE26	SE28	SE28	SE30	SSE30	SE28	SSE27	SSE26	SSE21	SSE19	SE19	SSE21	SSE21	SE26.9	SSE34	
8-Apr	SSE22	SSE16	SE16	SE16	SE14	SE15	SE17	SE18	SSE17	SE19	SE15	SE19	SE19	SE19	SSE15	SSW14	WSW21	SW16	WSW18	SW16	SW13	SW9	WSW11	WSW16	S11.8	SSE22
9-Apr	WSW14	SW13	WSW8	SSW5	WSW10	SSW7	WSW18	WSW12	WSW20	WSW24	WSW24	WSW25	WSW20	WSW22	WSW12	WSW11	SSW15	SSE16	SSE23	SSE26	SSE27	SSE26	SE28	SE27	SSW12.9	SE28
10-Apr	SE23	SSE20	S21	WSW30	WSW37	WSW35	WSW36	WSW36	WSW37	WSW35	WSW37	WSW38	WSW36	WSW36	WSW38	WSW39	WSW37	WSW31	WSW28	WSW22	SW19	SW20	WSW20	WSW17	WSW27.3	WSW39
11-Apr	SW10	SSE8	SSE10	SSE8	SE8	SE13	SE13	SE11	SE11	SE8	SE10	SE15	SSE8	SW18	WSW16	WSW18	WSW14	SW11	WNW6	N16	NNW10	NNW10	NNW10	W7	S3.9	SW18
12-Apr	NW6	NNW12	W7	WSW7	WSW7	WSW16	W12	NNW5	N8	N12	NW9	NNW12	NW13	N16	N18	NNW11	NW9	W3	NW7	NW9	NNW5	W2	WNW3	NNW5	NW7.0	N18
13-Apr	NW7	NNW7	NW4	NNW5	NW5	NNW6	N3	N4	NW3	N4	NNW6	NNE5	N7	N9	NNW8	NNW10	N11	NNE13	NNE17	NNE14	NNW8	N8	NNE7	N4	N6.7	NNE17
14-Apr	NE4	N3	NNW6	NNW4	N2	N3	NE2	ENE2	SE6	SE9	SSE12	SE12	SSE12	SSE10	SSE8	SSW4	WSW4	SE12	SE21	ESE14	ESE12	SE17	ESE16	ESE14	SE6.6	SE21
15-Apr	ESE12	ESE11	ESE4	NNE2	NNW5	NNW6	NW5	W1	ESE3	SE6	SE8	SE7	SE7	SE9	ESE9	SE11	ESE11	SE16	ESE19	ESE10	SE9	SE19	SE19	SE27	ESE8.3	SE27
16-Apr	SE29	ESE16	E1	ESE5	ENE3	N1	NW5	NW4	ESE2	SE18	SE27	SE31	SE30	SE29	SE28	ESE26	ESE28	E31	ESE27	ESE27	ESE28	ESE26	SE19	SE20	ESE18.0	E31
17-Apr	ESE23	ESE24	ESE26	ESE25	ESE25	SE19	SE14	SE14	ESE27	SE35	ESE30	SE43	ESE37	SE43	ESE42	ESE35	SE46	ESE30	E23	E22	ESE24	SE25	ESE30	ESE34	ESE28.7	SE46
18-Apr	ESE23	ESE23	ESE20	ESE23	ESE20	SE20	UO	UO	NNE11	N10	E13	ENE11	ESE13	E14	E13	ENE10	E11	ENE11	ENE10	ENE10	NNE8	NNW11	N12	NNE10	E10.7	ESE23
19-Apr	NNE7	NNE10	ESE10	ESE12	SE16	SE24	SE23	ESE24	ESE22	ESE19	ESE20	ESE19	ESE20	ESE17	ESE22	ESE22	ESE16	ESE13	E9	NE8	N5	NNW8	N8	N7	ESE12.1	ESE24
20-Apr	N8	N7	ESE4	ESE14	ESE14	ESE14	ESE14	SE7	SE7	SSE6	WNW5	SE12	SE13	ESE12	ESE13	E13	ESE14	ESE17	E19	ESE15	E11	ESE8	ESE11	ESE11	ESE9.7	E19
21-Apr	SE12	ESE15	ESE11	SE6	SE5	SE4	SE1	SE3	SE7	SE11	SE11	SE12	SE11	SE11	SE9	SSE9	SSE6	SE9	SSE10	SSE8	SE9	SE11	SE14	ESE13	SE8.8	ESE15
22-Apr	SE11	SE11	SE14	SE13	SE12	SE12	SE12	ESE10	SE12	SE17	SE21	SSE20	SSE22	SSE23	S26	S24	S23	S23	S19	S17	S18	S18	S15	SE12	SSE15.6	S26
23-Apr	SE13	SE11	ESE6	SE8	SE8	SSW1	SE8	SE9	SE12	ESE17	SE18	SE28	SE26	SSE24	SSE19	SE17	SE22	SE19	SSE16	SE16	SE13	SSE16	S17	S21	SE14.6	SE28
24-Apr	SSE11	E6	E6	E5	SE10	ESE17	ESE3	ESE6	ENE3	N3	N4	N9	N15	NNW15	NNW17	NNW20	NNW19	NNW18	NNW17	NNW14	NNW13	W10	SW17	S7	N4.4	NNW20
25-Apr	SE4	SE9	SE14	SE19	SE19	SE18	SE21	SE22	SSE22	SSE17	SSE18	SSE20	SSW23	W21	SE6	SE16	SE22	SE7	SE18	WSW19	W21	W22	W20	W16	S10.3	SSW23
26-Apr	W21	WSW20	NNW19	NNW21	NNW24	NNW25	NNW22	NNW17	NNW19	NW18	NNW14	NW14	NNW12	NNW12	N16	N14	N14	NNE14	NE16	NE13	NNE7	NNW9	NNW8	NNW9	NW12.0	NNW25
27-Apr	NNW7	NNW9	NNW8	N3	NE2	W2	SSW0	ESE4	SE4	WSW9	SW8	WSW8	WSW10	WSW13	W10	WSW12	WSW13	SSW7	S10	S17	S21	SSE22	SSE26	SSE28	SSW6.1	SSE28
28-Apr	SSE14	SE12	NNW2	NNW6	NNW8	NW9	NW8	NNW23	NW25	NW27	NNW27	NW29	NW26	NNW28	NNW28	NNW24	NNW29	N27	N21	N16	N12	NNW10	N8	NNW3	NNW14.2	NW29
29-Apr	NNW2	W2	NNW2	NW2	ESE4	SE0	SSE1	SE2	SE4	SE7	SSE6	S5	SW5	SSW5	SW4	S7	SSE7	SE10	E9	E7	ESE10	ESE11	ESE17	ESE17	SE4.5	ESE17
30-Apr	SE21	SE21	SE22	SE23	ESE18	ESE22	SE22	SE18	SE19	SE18	SE20	SE29	SE36	SE33	SE27	SE30	SE32	SE31	SE32	SE27	SE29	SE28	SE29	SE24	SE25.4	SE36

SE8.3	SE7.2	SE6.3	SE5.6	SE5.3	SE5.4	SE5.1	SE5.1	SE5.3	SE6.3	SSE7.8	SSE9.1	SSE8.5	SSE7.1	SSE6.4	SSE5.8	SSE6.3	SE6.8	SE6.9	ESE5.9	SE6.7	SE7.0	SE8.2	SE9.5	Diurnal Average
SSE34	SSE26	SE31	WSW30	WSW37	WSW35	WSW36	WSW36	WSW37	WSW35	WSW37	SE43	ESE37	SE43	ESE42	WSW39	SE46	SSE32	SE32	SSE30	SSE34	SSE30	SSE36	SSE40	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

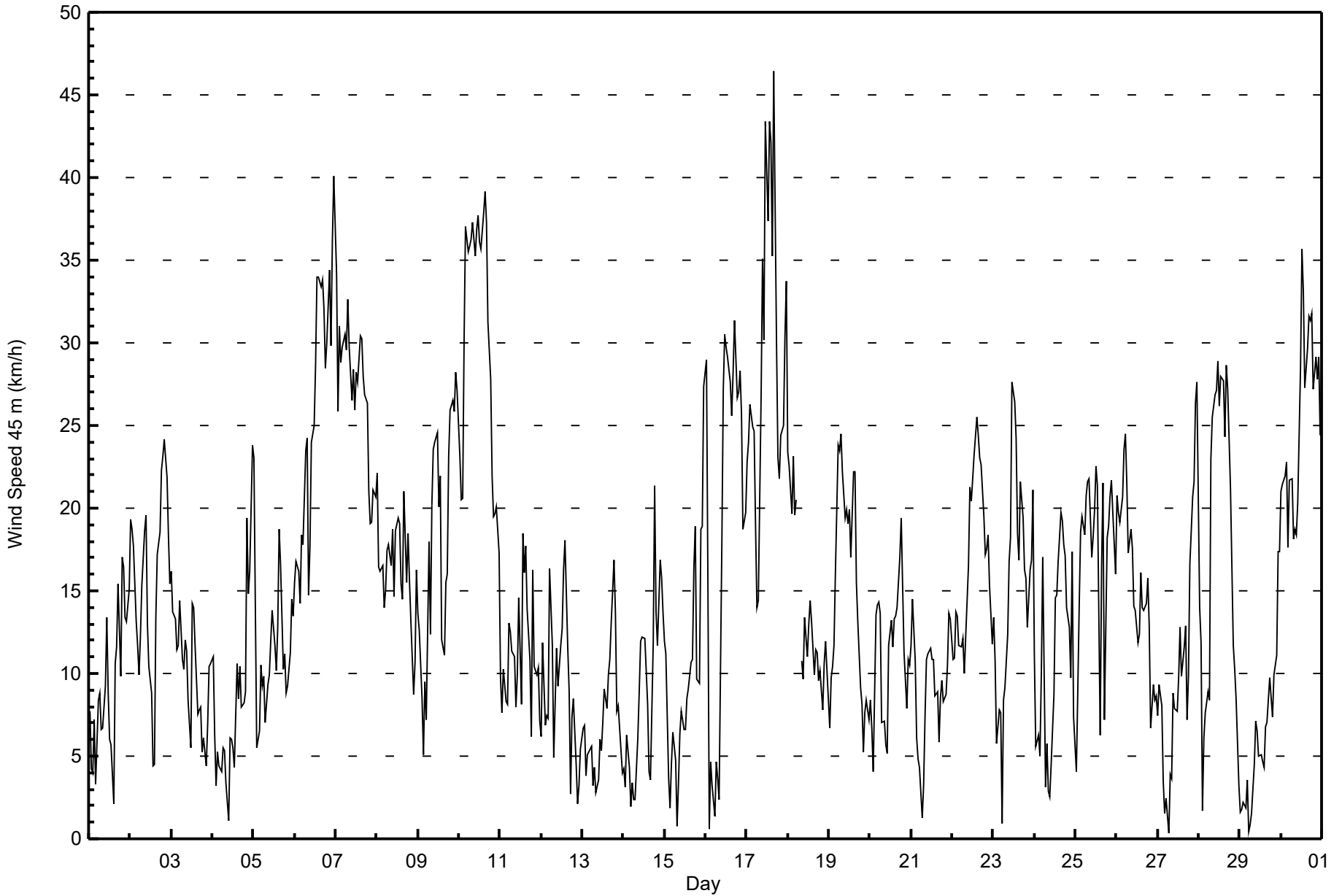
Wind Speed 45 m (WS45m) - km/h
Lower Camp Met Tower - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on Apr 17 12:00 Minimum Value: 1 km/h on Apr 29 02:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 3 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 10																		Hours in Service: 720 Hours of Data: 718 Hours of Missing Data: 2 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-Apr	2	3	4	3	2	2	2	3	3	4	4	2	2	2	2	2	2	3	4	4	4	3	3	5	5
2-Apr	4	3	4	3	3	3	5	3	3	2	3	3	3	1	2	3	2	3	4	5	4	4	3	4	5
3-Apr	3	3	2	2	3	4	2	2	3	4	3	3	3	2	3	2	1	2	1	1	3	2	2	2	4
4-Apr	3	2	2	2	2	2	1	2	2	1	2	2	2	3	2	2	3	2	2	4	3	4	5	3	5
5-Apr	4	6	3	3	2	2	3	2	3	4	4	2	4	3	4	4	5	3	2	3	3	4	2	2	6
6-Apr	2	2	2	2	3	4	4	5	5	4	5	4	5	6	6	6	5	5	4	5	6	5	5	5	6
7-Apr	8	5	5	4	4	4	6	5	4	4	4	4	4	4	5	4	5	5	5	3	3	3	4	3	8
8-Apr	3	4	2	2	2	2	2	3	3	2	5	2	2	2	3	4	3	3	2	2	3	3	3	3	5
9-Apr	4	4	3	2	3	4	3	3	7	6	3	5	5	5	4	3	5	3	3	4	4	5	3	4	7
10-Apr	4	4	4	6	7	7	6	7	7	6	7	8	8	9	9	8	7	7	5	4	3	3	3	4	9
11-Apr	6	3	3	2	2	1	1	3	3	2	3	3	4	3	4	3	3	3	8	4	2	2	3	3	8
12-Apr	4	5	4	2	4	5	6	2	2	3	3	4	5	5	4	5	4	2	3	2	3	2	2	2	6
13-Apr	2	2	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3	3	2	2	1	2	3
14-Apr	2	2	2	2	1	2	2	1	2	2	2	2	2	3	3	3	2	5	3	3	3	3	5	3	5
15-Apr	4	4	2	1	2	1	2	1	2	2	2	2	2	4	4	4	3	5	3	6	4	3	4	4	6
16-Apr	4	10	2	2	2	1	1	1	4	5	5	6	6	6	6	6	7	8	8	7	7	7	4	3	10
17-Apr	3	4	5	5	5	4	3	5	10	9	10	12	10	9	10	9	9	8	7	7	7	6	7	8	12
18-Apr	7	7	7	7	5	5	UO	UO	2	2	4	3	4	4	4	2	3	3	3	2	2	3	2	3	7
19-Apr	1	1	4	4	4	4	4	4	5	4	4	4	5	5	6	5	4	4	3	2	3	2	2	2	6
20-Apr	1	2	4	2	2	3	4	3	2	2	3	5	5	4	6	7	6	5	5	4	4	2	3	4	7
21-Apr	3	4	3	2	1	2	1	2	3	2	3	5	4	4	3	4	4	4	2	1	2	2	2	1	5
22-Apr	3	1	2	2	1	2	2	3	2	4	5	6	6	6	6	5	4	4	4	3	2	1	2	1	6
23-Apr	2	2	2	2	2	2	2	2	3	4	5	7	5	6	6	5	4	5	6	5	4	4	6	6	7
24-Apr	6	3	4	3	6	5	4	3	2	1	3	3	2	3	4	5	5	5	4	3	3	7	3	2	7
25-Apr	2	5	1	2	2	2	2	3	4	3	3	5	10	11	3	2	5	7	5	8	6	6	5	5	11
26-Apr	6	4	5	4	5	4	4	5	5	6	4	4	4	5	4	5	4	4	4	4	2	2	1	2	6
27-Apr	2	2	2	1	1	1	1	2	2	3	3	3	3	4	3	3	4	4	3	2	2	3	4	3	4
28-Apr	8	5	3	2	2	2	5	5	10	8	8	8	8	8	7	7	9	6	6	4	2	1	3	1	10
29-Apr	2	1	1	1	2	1	1	1	2	2	2	2	3	3	3	3	4	3	2	2	4	5	4	3	5
30-Apr	4	4	4	5	3	4	4	4	4	3	5	6	5	6	6	5	6	5	5	4	3	3	4	4	6
Diurnal Maximum																								8	
UO - Unstable Operation																									



Wood Buffalo Environmental Association
Hourly Averages

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





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

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

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	90	12.53	12.53
6 - 11	206	28.69	41.23
12 - 19	224	31.20	72.42
20 - 28	134	18.66	91.09
29 - 38	58	8.08	99.16
> 38	6	0.84	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Speed: 52 km/h on Apr 17 17:00	Maximum Daily Speed Average: 36.2 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 27 06:00	Minimum Daily Speed Average: 5.4 km/h on Apr 11	Hours of Data: 717
Maximum Diurnal Speed Average: 12.4 km/h at hour 24	Minimum Diurnal Speed Average: 6.4 km/h at hour 9	Hours of Missing Data: 3
Monthly Average Velocity: 8.5 km/h 146.0 deg	Percentiles: P ₁ = 2 P ₁₀ = 7 Q ₁ = 11 Median = 17 Q ₃ = 26 P ₉₀ = 33 P ₉₉ = 47	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-Apr	ESE9	ESE8	ESE8	ESE11	E10	ESE12	ESE18	ESE13	ESE13	ESE11	ESE16	ESE8	ESE7	SE6	SSE3	NNW9	N14	N16	E13	E21	ESE21	ESE18	SE17	SE20	ESE10.1	ESE21
2-Apr	SE24	SE24	SE23	SE18	SE16	ESE14	SE17	SE19	SE19	SE19	SE15	ESE12	SE9	S4	NNW5	NNW14	N18	N20	N24	N25	N26	N24	N21	N20	ENE7.8	N26
3-Apr	N20	N18	N16	N14	N15	N19	NNW16	NNW14	NNW15	NNW13	NNW9	NNW7	WSW13	WSW13	WSW10	WSW6	WSW8	W8	NW6	N6	E5	ENE9	ENE13	E15	NNW7.5	N20
4-Apr	ESE18	SE9	ESE5	N4	NNW3	NNW2	NW5	NW4	W3	WSW3	SSE5	S6	SSW5	SE4	SE11	SSE9	S11	SSE8	SSE9	SE19	SE27	SE22	SE24	SE30	SE7.8	SE30
5-Apr	SE32	SE26	SE15	SE10	ESE16	ESE15	SE14	SE9	SE10	SE10	SE13	SE15	SSE12	S11	S14	SSE20	SSE19	SSE13	SSE15	SE14	SE15	SE21	SE22	SE20	SE15.2	SE32
6-Apr	SE22	SSE22	SE21	SE21	SE26	SE26	SE31	SE32	SE19	SE20	SE27	SSE27	SSE31	SSE38	SSE39	S39	S39	SSE39	SSE38	SSE42	SSE46	SSE39	SSE45	SSE46	SSE31.4	SSE46
7-Apr	SSE42	SSE33	SSE34	SE36	SE36	SE37	SE38	SE37	SE32	SE29	SE32	SE31	SE31	SE31	SE33	SSE33	SSE31	SSE30	SSE32	SSE30	SSE30	SSE27	SSE29	SSE29	SSE32.4	SSE42
8-Apr	SSE29	SSE25	SSE20	SSE23	SE18	SSE18	SSE23	SSE21	SSE18	SSE17	SE13	SSE14	SE18	SE18	S16	SSW16	WSW25	SW20	WSW25	WSW24	WSW21	SW21	WSW23	WSW28	S15.4	SSE29
9-Apr	WSW25	WSW24	WSW15	WSW17	WSW17	WSW27	WSW22	WSW28	WSW30	WSW27	WSW29	WSW24	WSW27	WSW15	WSW14	SSW17	SSE17	SSE30	SSE35	SSE38	SSE35	SSE34	SE37	SE37	SSW18.8	SSE38
10-Apr	SE33	SSE27	SSW27	W42	WSW48	WSW46	WSW48	WSW46	WSW47	WSW43	WSW44	WSW45	WSW43	WSW44	WSW46	WSW48	WSW47	WSW42	WSW37	WSW32	SW28	SW30	WSW33	WSW30	WSW36.2	WSW48
11-Apr	SW21	SW8	SW8	SW8	SSW5	SSE10	S12	SSE11	S9	SSE8	SSE9	SE14	S8	SW19	WSW17	WSW18	WSW15	SW11	W6	N21	N16	NNW22	NNW18	NW8	SW5.4	NNW22
12-Apr	NW16	N19	NW8	WSW16	WSW17	W20	W18	NW9	N9	N10	NW11	NNW13	NW15	NNW18	N19	NNW13	NW11	W4	NW12	NW15	NNE7	WNW2	NNW7	NNW16	NW10.7	W20
13-Apr	NW13	NNW12	NNW11	NNW10	NNW10	N8	NE3	NNW4	NNW3	NNW4	NW6	N5	N7	N9	NNW10	NNW11	N12	NNE15	NNE19	NNE23	NNE13	NNE10	NE6	ESE11	N8.4	NNE23
14-Apr	ESE13	SE9	ESE4	E9	E6	ESE8	ESE11	ESE7	SE5	SE8	SSE12	SE12	SE11	SSE9	SSE8	SSW3	WSW3	SE12	SE24	ESE18	ESE17	SE22	SE23	SE20	SE10.9	SE24
15-Apr	SE19	SE19	SE13	ESE8	ENE2	ENE2	ENE2	ESE3	ESE4	SE7	SE8	SE6	SE7	SE9	ESE10	SE12	ESE13	SE20	ESE23	ESE19	ESE17	SE24	SE27	SE34	ESE12.6	SE34
16-Apr	SE35	SE27	SE11	SE12	ESE12	SE9	SSE1	SSE2	SE11	SE23	SE31	SE34	SE33	SE32	SE30	ESE28	ESE32	ESE37	ESE33	ESE36	ESE38	ESE35	ESE25	SE24	ESE24.3	ESE38
17-Apr	ESE27	ESE29	ESE33	ESE33	ESE31	SE23	SE17	ESE20	ESE34	SE40	ESE34	SE48	ESE43	SE50	ESE49	ESE43	SE52	ESE35	E30	E30	ESE31	ESE30	ESE37	ESE42	ESE34.6	SE52
18-Apr	ESE32	ESE30	ESE25	ESE29	ESE24	SE24	UO	UO	ENE10	NE9	ESE17	E12	ESE14	E15	E14	ENE11	E12	ENE11	ENE11	ENE11	NNE10	N13	N14	NE11	E13.8	ESE32
19-Apr	ENE7	NE9	ESE14	ESE13	SE19	SE27	SE27	ESE30	SE27	ESE25	ESE25	ESE23	ESE23	ESE20	ESE26	ESE25	ESE18	ESE16	E12	ENE10	NNE9	N11	N11	N10	ESE15.4	ESE30
20-Apr	NNE7	NE4	ESE13	SE22	ESE23	ESE22	SE21	SE12	SE7	SSE6	W4	SE13	ESE15	ESE13	ESE15	E15	ESE15	ESE19	E22	ESE22	ESE21	ESE16	ESE16	ESE17	ESE13.8	ESE23
21-Apr	SE18	SE23	SE20	ESE14	ESE10	SE9	SE7	SE8	SE9	SE11	SE12	SE13	SE12	SE11	SE9	SSE9	SSE7	SSE10	SSE11	SSE11	SSE13	SE17	SSE19	SSE18	SE12.1	SE23
22-Apr	SSE16	S11	S10	S10	SSE12	SSE15	SSE12	SE12	SE11	SE17	SSE22	SSE22	SSE24	SSE25	S28	S27	S25	S25	S23	S22	S25	SSW26	S21	SSE16	S18.1	S28
23-Apr	SE17	SE17	SE16	SE19	SE19	SSE7	SE16	SE15	SE15	ESE19	SE22	SE31	SE30	SSE27	SSE21	SE20	SE25	SE24	SSE19	SE20	SE17	SSE20	S21	S24	SE19.5	SE31
24-Apr	SSE15	ESE11	ESE11	E8	SE14	ESE21	ESE8	SE9	E6	UO	NE5	NNE9	N15	NNW16	NNW19	NNW24	NNW24	NNW24	NNW23	N19	N18	NNW10	WSW23	SSW8	N5.4	NNW24
25-Apr	SSE9	SSE14	SSE20	SSE23	SSE24	SSE26	SSE27	SSE26	SSE24	SE19	S19	SSE22	SSW25	W26	SE6	SE18	SSE23	SE7	SE20	WSW27	W27	W29	W26	W21	S13.2	W29
26-Apr	W26	W25	WNW24	WNW27	WNW30	WNW30	WNW27	WNW21	WNW21	NW20	NW16	NW17	NNW13	NNW14	N17	NNW15	N15	NNE16	NE17	NE16	NNE10	N13	N13	NNW14	NW14.7	WNW30
27-Apr	NNW15	NNW16	N14	NNE5	NE4	W1	WSW4	S4	S3	WSW9	SW8	WSW8	WSW10	WSW14	WSW12	WSW13	WSW13	SSW8	S12	SSW23	S27	S32	S38	S37	SSW7.9	S38
28-Apr	S19	SSE12	WNW6	W12	WNW15	NW17	WNW15	WNW27	NW32	NW32	NW32	NW34	NW31	NNW34	NNW33	NNW29	NNW34	N30	N24	N22	N21	N16	N17	N14	NNW18.7	NNW34
29-Apr	N8	N3	N2	NNW2	WSW4	WSW2	E2	SE3	SE5	SE6	SE5	S4	SW5	SW5	SW3	S7	SSE8	SE11	ESE10	E13	SE22	SE22	SE26	SE26	SE6.0	SE26
30-Apr	SE31	SE30	SE32	SE33	SE28	SE30	SE29	SE23	SE20	SE20	SE24	SE32	SE40	SE36	SE31	SE33	SE36	SE36	SE37	SE34	SE36	SE36	SE38	SE31	SE31.4	SE40

SE11.4 SE10.3 SE8.9 SE8.1 SSE7.9 SSE7.9 SSE8.2 SSE7.5 SSE6.4 SSE7.3 SSE8.8 SSE9.7 SSE9.0 SSE7.6 SSE7.1 SSE6.5 SSE7.0 SE7.8 SE8.4 ESE8.3 SE9.8 SE10.0 SSE10.8 SE12.4	Diurnal Average
SSE42 SSE33 SSE34 WSW42 WSW48 WSW46 WSW48 WSW46 WSW47 WSW43 WSW44 SE48 WSW43 SE50 ESE49 WSW48 SE52 WSW42 SSE38 SSE42 SSE46 SSE39 SSE45 SSE46	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

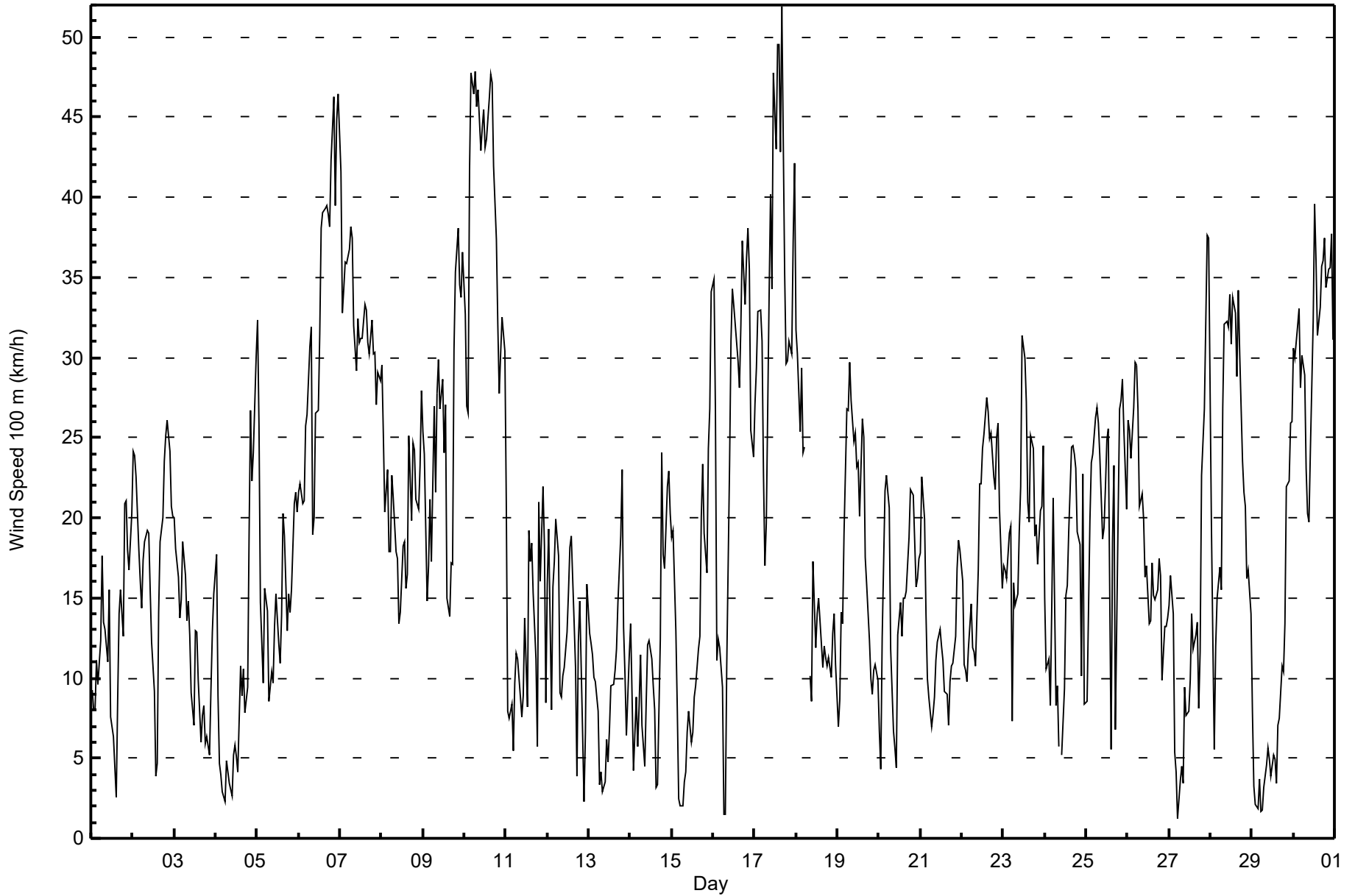
Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 12 km/h on Apr 17 12:00	Hours of Data: 717
Minimum Value: 0 km/h on Apr 29 07:00	Hours of Missing Data: 3
Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 9	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-Apr	2	4	7	6	4	2	2	3	3	3	3	2	2	2	2	4	2	2	5	4	3	3	3	5	7
2-Apr	4	3	4	3	3	3	5	3	2	2	2	3	3	1	2	3	2	2	3	4	3	3	2	3	5
3-Apr	2	2	3	2	3	2	2	2	2	2	3	2	2	2	3	2	2	1	1	1	2	2	1	3	3
4-Apr	2	3	3	2	2	2	2	2	1	2	2	2	3	3	2	2	2	2	5	2	5	6	4	6	
5-Apr	3	4	4	4	2	3	3	2	2	3	4	2	4	3	4	4	4	2	3	4	5	4	3	1	5
6-Apr	2	3	2	2	3	2	3	3	6	4	4	5	6	6	7	7	5	5	4	5	5	6	5	4	7
7-Apr	8	6	5	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	4	4	4	3	8
8-Apr	3	4	4	4	2	2	3	3	3	2	2	2	2	2	3	3	2	3	3	2	2	2	2	2	4
9-Apr	1	3	4	5	3	6	3	2	5	3	2	4	6	4	3	3	6	4	5	4	3	5	4	4	6
10-Apr	3	4	3	5	6	5	5	5	6	5	5	7	7	7	8	6	6	6	4	3	2	2	2	3	8
11-Apr	7	3	2	3	3	2	1	1	2	2	2	2	4	3	3	3	3	3	8	3	2	2	4	3	8
12-Apr	6	5	2	3	4	3	3	3	2	3	3	4	5	4	4	5	4	2	3	2	4	1	3	3	6
13-Apr	2	2	1	1	1	1	1	1	1	2	3	2	2	3	4	3	4	3	3	3	5	2	2	4	5
14-Apr	2	5	2	3	2	3	5	3	3	2	2	2	3	2	3	2	3	2	6	3	3	3	3	2	6
15-Apr	4	4	4	2	2	1	1	2	2	1	2	2	2	4	3	3	3	5	3	5	4	5	4	3	5
16-Apr	3	5	4	4	3	3	1	1	7	4	4	5	5	5	6	5	6	7	8	7	8	8	6	4	8
17-Apr	4	4	5	4	5	5	4	6	10	9	9	12	9	9	9	10	8	7	8	7	8	7	7	8	12
18-Apr	7	8	7	8	5	4	UO	UO	3	3	4	3	4	4	4	2	3	2	2	2	3	3	1	3	8
19-Apr	2	1	4	5	4	4	4	3	4	4	4	4	5	4	5	4	4	5	3	3	2	3	2	1	5
20-Apr	2	1	5	1	1	2	3	3	2	1	3	6	4	5	5	6	5	5	5	3	4	3	3	3	6
21-Apr	4	3	2	2	2	1	2	2	2	2	3	5	3	3	3	4	3	3	2	2	2	3	3	2	5
22-Apr	3	2	1	1	1	1	2	2	1	4	5	6	6	7	6	5	4	4	4	3	2	1	1	2	7
23-Apr	2	1	2	3	4	3	3	4	3	3	4	6	5	7	5	5	4	5	7	5	5	5	6	7	7
24-Apr	6	4	4	3	6	4	6	3	3	3	UO	3	2	2	3	4	4	4	3	2	2	5	4	3	6
25-Apr	3	3	4	2	2	3	3	4	4	3	3	5	11	12	4	3	4	8	5	10	6	6	5	5	12
26-Apr	5	3	5	3	4	3	3	4	5	6	4	4	4	5	3	4	4	4	4	4	3	2	1	1	6
27-Apr	1	2	3	2	2	1	1	1	2	3	3	3	2	3	3	3	4	4	4	2	3	2	2	3	4
28-Apr	10	4	4	3	2	3	6	4	9	8	7	8	8	8	7	8	8	5	5	4	3	3	2	1	10
29-Apr	3	2	1	2	2	2	0	1	2	1	2	2	3	3	3	3	4	3	2	2	6	4	3	3	6
30-Apr	4	3	4	3	3	2	3	3	3	3	4	5	4	5	6	6	5	4	4	4	3	3	4	4	6

10	8	7	8	6	6	6	6	6	10	9	9	12	11	12	9	10	8	8	8	8	10	8	8	7	8		
Diurnal Maximum																											

UO - Unstable Operation





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	56	7.81	7.81
6 - 11	145	20.22	28.03
12 - 19	205	28.59	56.62
20 - 28	168	23.43	80.06
29 - 38	109	15.20	95.26
> 38	34	4.74	100.00

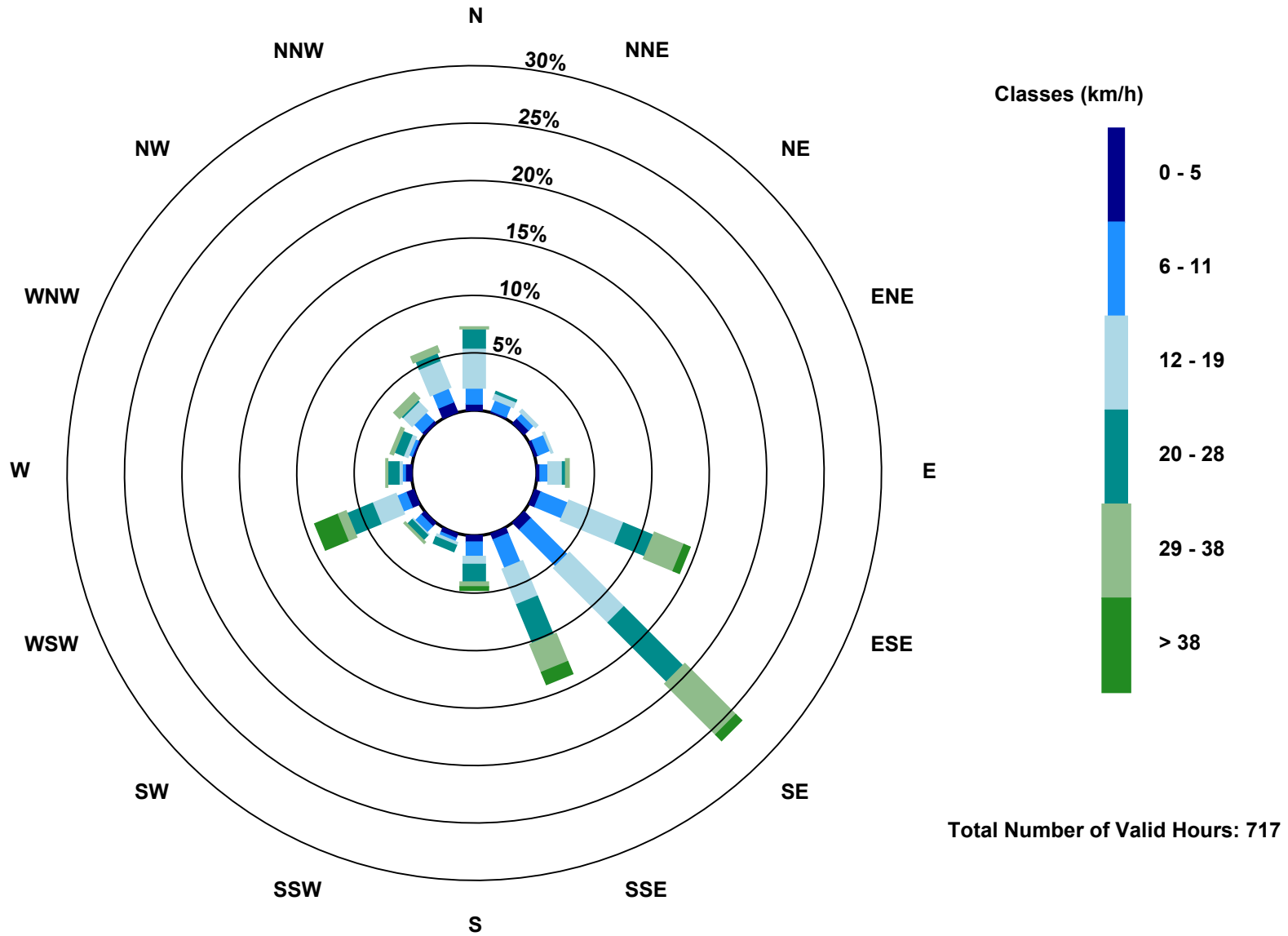
Total Number of Valid Hours: 717

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

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





Wood Buffalo Environmental Association
Summary of Hour Averages

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

Maximum Speed: 55 km/h on Apr 10 07:00	Maximum Daily Speed Average: 41.9 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 4 05:00	Minimum Daily Speed Average: 6.1 km/h on Apr 24	Hours of Data: 717
Maximum Diurnal Speed Average: 15.0 km/h at hour 24	Minimum Diurnal Speed Average: 7.0 km/h at hour 16	Hours of Missing Data: 3
Monthly Average Velocity: 9.7 km/h 149.5 deg	Percentiles: P ₁ = 2 P ₁₀ = 7 Q ₁ = 12 Median = 21 Q ₃ = 30 P ₉₀ = 38 P ₉₉ = 52	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-Apr	ESE11	ESE11	ESE13	ESE13	ESE15	ESE14	SE23	SE18	ESE17	ESE13	ESE17	ESE7	ESE8	SE6	SE8	NNE5	N13	NNE14	E14	ESE24	ESE25	SE21	SE20	SE25	ESE12.9	SE25
2-Apr	SE28	SE27	SE26	SE21	SE18	SE19	SE21	SE21	SE19	SE19	SE16	ESE13	SE10	SSE4	NNW4	NNW13	N17	N19	N22	N25	NNE27	N25	N22	N22	E9.6	SE28
3-Apr	N21	N19	N18	N17	N17	N20	N19	N16	N16	N12	NNW10	NNW7	W10	W11	WSW8	WSW4	W7	W7	NNW6	NNE6	E4	ENE10	ENE12	E12	N8.5	N21
4-Apr	ESE17	SE12	SE6	NE1	NW1	ESE1	SSW2	WSW4	SW7	SW5	S4	S6	SSW5	SSE4	SE10	SSE8	S10	SSE8	SSE10	SE24	SE31	SE27	SE27	SE34	SE9.6	SE34
5-Apr	SE34	SE29	SE23	SE16	SE19	SE18	SE17	SE10	SE12	SE9	SE13	SSE16	S13	S11	S15	SSE20	SSE20	SSE15	SSE17	SE19	SE25	SE29	SE24	SE23	SE18.1	SE34
6-Apr	SSE26	SSE31	SSE29	SSE25	SE28	SE26	SE32	SE31	SSE21	SSE21	SSE26	SSE29	SSE34	SSE40	SSE42	S43	S43	S44	S43	S50	S55	S48	SSE51	SSE51	SSE35.5	S55
7-Apr	SSE48	SSE41	SSE39	SSE37	SSE35	SE37	SE39	SE34	SSE30	SSE29	SE32	SE32	SSE30	SSE30	SSE32	SSE33	SSE32	SSE33	SSE38	SSE36	SSE38	SSE35	S37	S35	SSE34.7	SSE48
8-Apr	SSE34	SSE31	SSE28	SSE32	SSE28	SSE25	S26	S23	S17	SSE17	SSE13	SSE13	SSE16	SSE17	S16	SW19	WSW27	SW22	WSW28	WSW28	WSW25	WSW24	WSW27	W33	SSW17.7	SSE34
9-Apr	W31	W28	WSW28	WSW30	WSW32	WSW29	WSW38	WSW30	WSW33	WSW33	WSW28	WSW31	WSW27	WSW29	WSW17	WSW16	SSW19	SSE18	S33	SSE40	SSE46	SSE41	SSE38	SSE38	SW22.7	SSE46
10-Apr	SE37	SSE31	SW30	W49	WSW55	W53	WSW55	WSW51	WSW51	WSW47	WSW48	WSW50	WSW47	WSW48	W50	WSW51	WSW52	WSW47	WSW43	WSW38	WSW35	WSW39	WSW44	WSW40	WSW41.9	WSW55
11-Apr	WSW31	WSW21	WSW19	WSW18	WSW14	SSW9	SSW8	SSW9	SSW10	S8	SSE9	SSE13	S8	WSW20	WSW18	WSW19	WSW16	SW11	WNN6	N26	N25	NNW31	N26	NNW17	WSW8.2	NNW31
12-Apr	NW27	N26	N11	W10	W18	WNNW25	WNNW21	NW13	N8	N8	NW11	WNNW14	NW16	NNW17	N18	NNW15	NW11	WNN6	NW16	NW16	N9	NW6	NNW12	NNW7	NW12.9	NW27
13-Apr	NNW11	N14	N9	N10	N9	N14	NNE9	NE5	NE5	NNW3	NW5	N4	N6	N9	NNW10	NNW10	N12	NE15	NNE20	NE29	NE25	NE14	E9	SE22	NNE9.2	NE29
14-Apr	SE20	SE18	SE9	ESE16	ESE15	ESE18	ESE20	SE11	SE4	SE8	SE12	SE12	SE11	SE10	SSE7	SSW3	WSW3	SE12	SE25	ESE21	ESE21	SE26	SE24	SE23	SE14.0	SE26
15-Apr	SE24	SE26	SE29	SE14	SE57	SE5	SE3	SE1	SE6	SE7	SE8	SE6	SE7	SE9	ESE9	SE12	ESE13	SE21	ESE27	ESE29	ESE29	SE33	SE33	SE38	SE16.0	SE38
16-Apr	SE37	SE34	SE27	SE23	SE21	SE20	SE11	ESE10	SE21	SE27	SE33	SE36	SE35	SE34	SE31	ESE29	ESE34	ESE40	ESE39	ESE46	ESE51	ESE48	ESE34	SE30	ESE30.8	ESE51
17-Apr	ESE34	ESE37	ESE41	ESE40	ESE39	SE27	ESE21	ESE26	ESE41	SE43	ESE37	SE49	ESE45	SE53	ESE54	ESE48	SE53	ESE39	ESE36	ESE36	ESE39	ESE35	SE43	ESE51	ESE39.8	ESE54
18-Apr	ESE41	ESE40	ESE32	ESE35	ESE28	UO	UO	UO	E11	ENE9	ESE19	E11	ESE15	E13	E10	ENE10	E9	E11	ENE12	ENE12	NE11	NNE15	NNE14	E12	E16.0	ESE41
19-Apr	E9	ENE7	ESE16	ESE15	SE23	SE29	SE30	SE33	SE32	SE30	SE30	SE27	SE26	ESE22	ESE29	ESE26	ESE19	ESE18	ESE14	E10	NE11	NE11	NNE13	NE13	ESE18.5	SE33
20-Apr	ENE7	ESE13	SE20	SE26	SE25	SE25	SE24	SE14	SE7	SE6	WNN3	SE14	ESE15	ESE13	ESE15	ESE15	ESE15	ESE19	ESE23	ESE29	ESE31	SE26	ESE28	ESE27	ESE17.7	ESE31
21-Apr	SE25	SE25	SE23	SE19	SE13	SE12	SSE9	SSE10	SSE10	SSE12	SE13	SE13	SE12	SE11	SE9	SSE9	SSE8	SSE10	SSE12	SSE12	SSE16	SE22	SSE26	SSE32	SSE14.8	SSE32
22-Apr	S26	SW17	SW11	SW9	S8	SSE10	SSE15	S10	SSE9	SSE17	SSE21	SSE23	SSE25	SSE25	S28	S28	S25	S26	S24	S24	S28	SSW28	SSW22	S22	S19.2	SSW28
23-Apr	SSE20	SE19	SE17	SE20	SE23	SSE14	SE17	SE20	SE18	SE20	SE23	SE33	SE30	SSE28	SSE22	SE21	SE27	SE27	SSE20	SE21	SE20	SSE23	S22	S26	SE21.5	SE33
24-Apr	SSE17	ESE15	ESE16	E12	SE19	SE22	SE12	SE12	ESE10	E7	E8	NE9	N14	N15	N19	N27	N28	N27	N26	N21	N21	NNW9	WSW20	SSW9	NE6.1	N28
25-Apr	S13	SSE19	SSE27	SSE30	SSE30	SSE32	SSE31	SSE30	SSE24	SSE19	SSE20	SSE22	SW26	W28	SE5	SE20	SSE24	S6	SSE19	W31	W33	W34	W30	W25	S15.1	W34
26-Apr	W31	W29	WNNW27	WNNW30	WNNW32	WNNW32	WNNW30	WNNW23	WNNW23	NW20	NW17	NW18	NNW14	NNW14	N17	N15	N14	NNE16	NE19	NE20	NE14	NNE15	NNE15	N14	NW15.4	WNNW32
27-Apr	N17	N21	N20	NNE13	NE10	ENE4	W1	SSW5	SSW5	WSW10	WSW8	W8	WSW9	WSW15	WSW13	WSW13	WSW14	SSW8	SSW12	SSW24	S26	S32	S42	S44	SW7.6	S44
28-Apr	SSW28	SSW15	WNNW12	WNNW16	NW22	NW24	NW22	WNNW29	NW35	NW35	NW34	NW36	NW33	NNW36	NNW36	NNW31	N36	N32	N24	NNE27	NNE30	N27	N25	NNE22	NNW22.1	N36
29-Apr	NNE15	E5	ESE3	E2	SW4	NNW2	NE4	ENE4	SE5	SE5	SSE4	SSW3	SW4	WSW5	SW3	S7	SSE8	SE11	ESE11	E13	SE28	SE30	SE31	SE32	SE7.5	SE32
30-Apr	SE36	SE33	SE36	SE37	SE33	SE32	SE31	SE27	SE21	SSE20	SE25	SE33	SE40	SE37	SE32	SE34	SE36	SE38	SE39	SE40	SE40	SE41	SE40	SSE33	SE33.9	SE41

SSE13.3 SE12.8 SE11.7 SSE10.2 SSE9.8 SSE8.6 SSE9.3 SSE8.7 SSE7.4 SSE7.5 SSE9.0 SSE9.9 SSE9.0 SSE7.7 SSE7.3 SSE7.0 SSE7.5 SE8.5 SE9.6 SE10.5 SE12.5 SE12.4 SSE12.7 SSE15.0	Diurnal Average
SSE48 SSE41 ESE41 W49 WSW55 W53 WSW55 WSW51 WSW51 WSW47 WSW48 WSW50 WSW47 SE53 ESE54 WSW51 SE53 WSW47 WSW43 S50 S55 ESE48 SSE51 SSE51	Diurnal Maximum

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



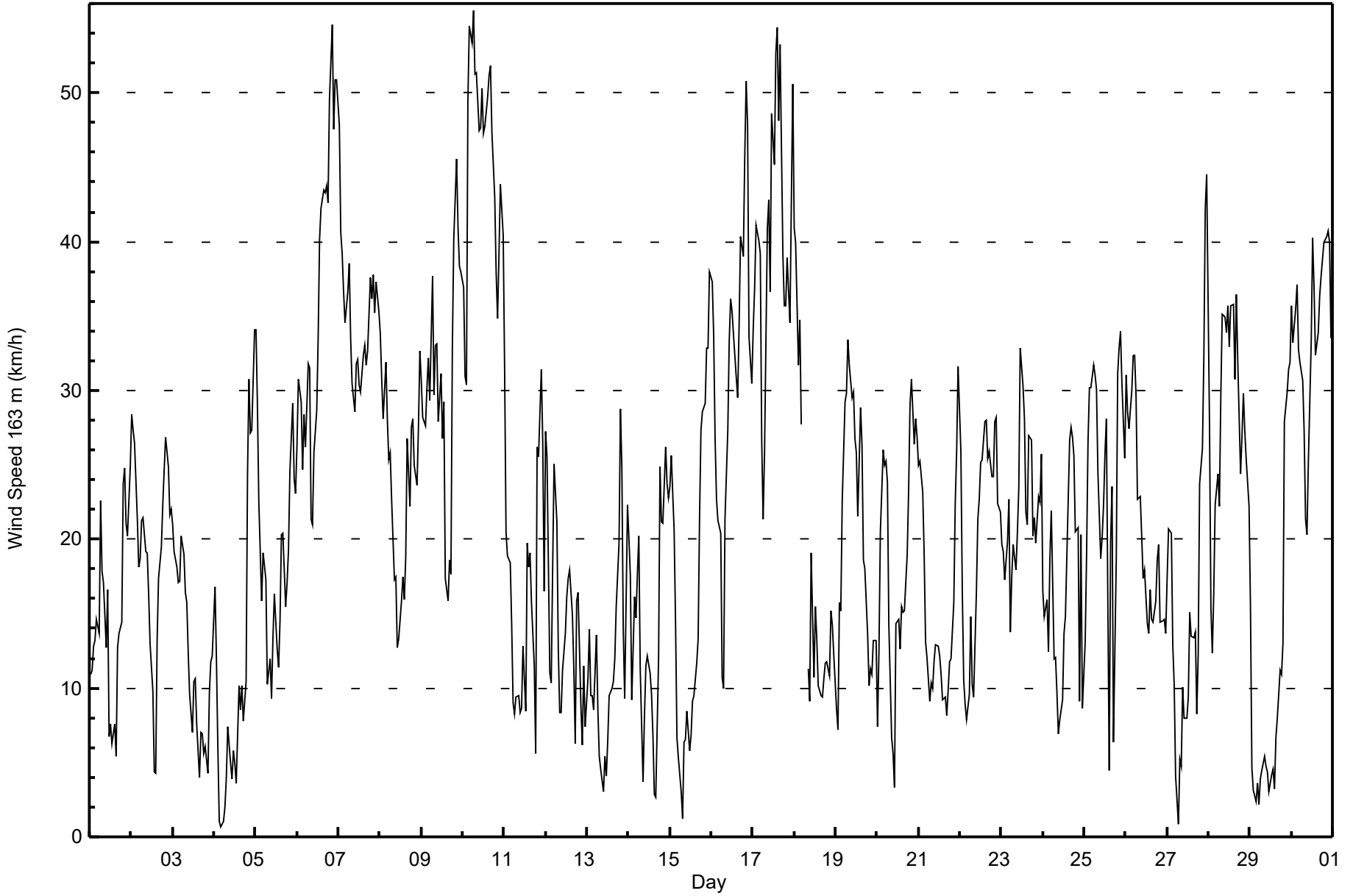
Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 13 km/h on Apr 25 13:00	Hours in Service: 720 Hours of Data: 717 Hours of Missing Data: 3 Hours of Calibration: 0 Percent Operational Time: 99.6
Minimum Value: 1 km/h on Apr 27 01:00	
Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P 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-Apr	2	2	7	7	4	3	2	3	3	3	3	2	2	3	3	2	3	5	5	3	3	3	4	7	
2-Apr	3	3	4	3	4	3	4	3	2	1	2	2	3	2	2	3	2	3	4	4	4	3	3	3	4
3-Apr	2	2	3	3	3	2	2	2	2	2	4	2	2	2	3	2	2	1	1	1	2	2	2	3	4
4-Apr	1	4	2	1	1	1	1	1	2	2	2	2	3	2	2	2	3	2	3	4	2	5	6	3	6
5-Apr	3	4	3	3	2	3	3	2	2	3	4	2	3	3	4	4	4	2	3	4	6	3	3	2	6
6-Apr	3	2	2	2	2	2	3	3	6	4	4	6	6	6	5	7	4	4	4	4	4	5	4	3	7
7-Apr	6	5	6	5	4	4	4	4	4	4	4	3	4	4	5	5	5	5	4	4	3	3	3	3	6
8-Apr	2	3	3	3	3	2	1	3	2	2	2	2	2	2	4	2	3	2	1	2	2	3	2	2	4
9-Apr	2	2	3	5	4	4	4	3	4	2	2	4	5	3	3	3	6	3	6	4	3	4	5	5	6
10-Apr	4	3	5	5	5	5	4	4	5	4	5	6	5	7	7	6	6	6	4	3	2	2	2	3	7
11-Apr	6	4	4	3	4	2	1	1	2	2	2	2	5	3	3	3	3	2	8	3	2	2	4	2	8
12-Apr	5	3	3	3	3	3	3	3	3	3	3	4	5	4	4	4	4	4	2	2	3	2	2	2	5
13-Apr	1	2	2	1	3	1	1	1	2	2	2	2	2	2	4	3	3	3	3	3	7	3	4	3	7
14-Apr	2	5	3	3	2	4	2	4	2	2	2	2	2	3	2	3	2	7	2	3	3	2	3	3	7
15-Apr	4	2	2	1	2	1	3	1	2	2	2	2	2	4	4	4	3	5	3	2	4	5	4	3	5
16-Apr	3	3	4	3	2	2	3	3	4	4	4	5	5	4	5	5	7	8	8	7	6	8	7	5	8
17-Apr	5	5	6	5	7	6	5	7	10	9	9	12	9	8	8	10	6	7	8	9	9	7	6	8	12
18-Apr	8	7	9	9	5	UO	UO	UO	4	4	4	4	5	5	3	3	3	3	2	2	3	3	2	3	9
19-Apr	3	2	4	5	5	5	4	4	4	4	3	4	5	4	5	4	4	6	3	3	3	3	2	2	6
20-Apr	3	4	3	2	1	2	3	3	2	2	3	6	5	5	6	6	6	6	5	2	3	3	3	4	6
21-Apr	2	4	2	2	2	1	1	1	2	2	4	4	3	3	3	4	4	3	2	2	3	2	4	2	4
22-Apr	4	3	2	2	1	1	2	1	2	4	5	5	6	6	6	5	4	4	4	2	2	1	1	2	6
23-Apr	2	2	2	3	3	3	3	3	3	3	4	6	5	6	6	5	5	5	7	5	5	5	5	6	7
24-Apr	5	4	5	5	4	4	3	2	3	2	2	2	3	4	3	3	3	3	2	2	2	5	3	2	5
25-Apr	2	1	4	1	1	1	2	3	4	3	3	5	13	11	4	3	4	7	5	12	4	5	5	4	13
26-Apr	5	3	5	3	3	3	2	4	4	6	4	4	4	4	3	3	4	4	4	4	3	2	1	2	6
27-Apr	1	2	2	2	2	2	1	2	2	3	3	2	3	3	2	3	4	4	4	2	2	3	2	1	4
28-Apr	10	5	3	3	2	4	5	3	9	7	6	7	7	6	6	7	7	5	5	3	2	3	2	1	10
29-Apr	3	2	1	1	2	1	1	1	1	1	2	2	3	3	3	3	4	3	3	3	7	5	3	4	7
30-Apr	3	3	3	3	2	2	2	3	3	4	4	5	4	5	6	5	4	3	4	3	3	4	5	4	6
Diurnal Maximum																									

UO - Unstable Operation





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	45	6.28	6.28
6 - 11	120	16.74	23.01
12 - 19	170	23.71	46.72
20 - 28	178	24.83	71.55
29 - 38	137	19.11	90.66
> 38	67	9.34	100.00

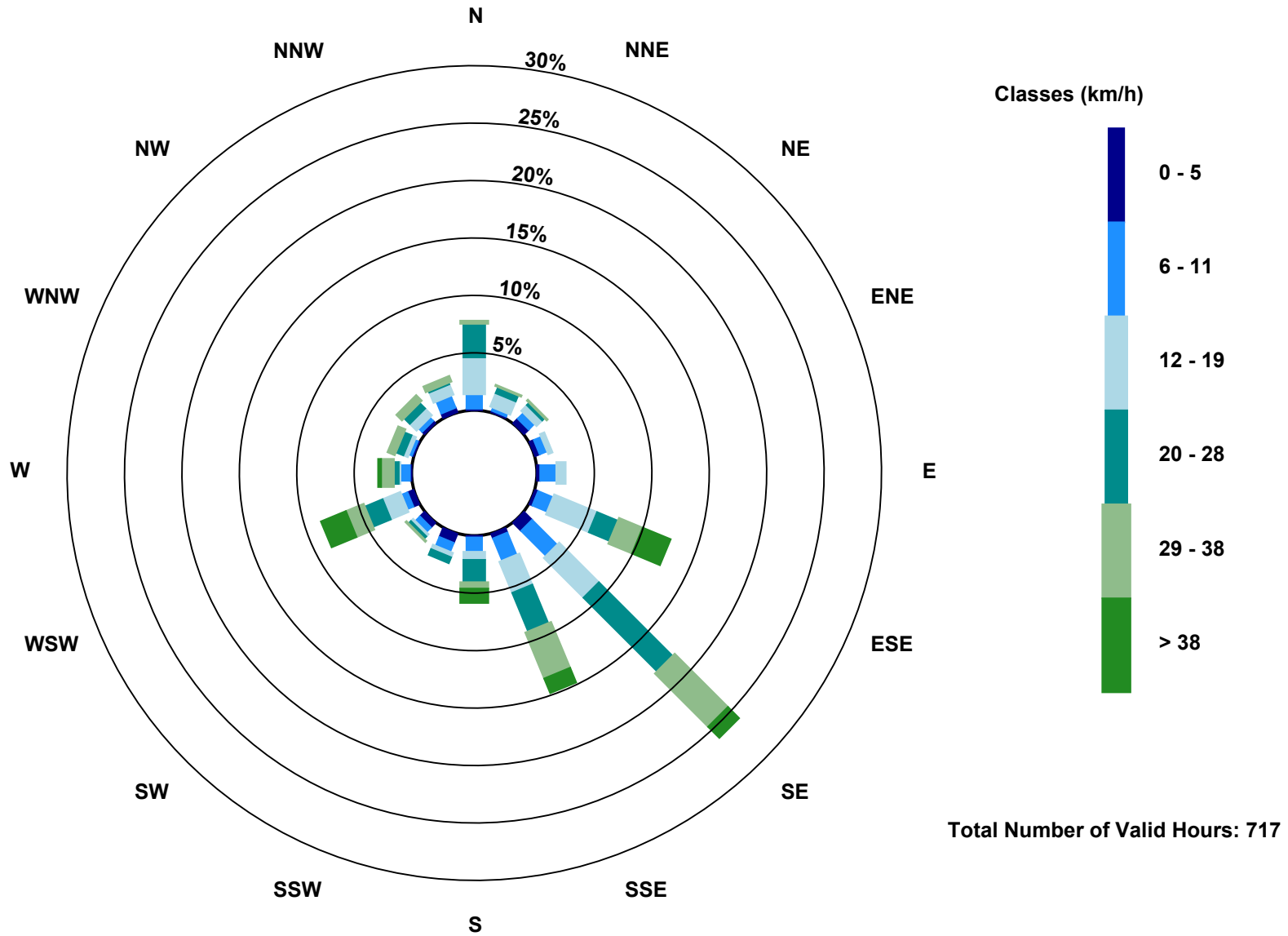
Total Number of Valid Hours: 717

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 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 - April 2023

Direction of Maximum Speed: 156 deg on Apr 7 00:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 144.7 deg on Apr 7	Hours of Data: 719
Direction of Minimum Speed: 296 deg on Apr 20 03:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 3.2 deg on Apr 24	Percent Operational Time: 99.9
Monthly Average Direction: 147.2 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-Apr	78	86	40	63	343	73	68	45	58	106	119	142	120	128	348	354	347	358	61	95	108	110	116	123	81.3
2-Apr	125	127	119	119	118	108	127	125	135	139	130	122	149	211	327	343	350	359	358	3	7	360	351	347	67.2
3-Apr	345	345	350	357	344	344	332	343	342	345	331	341	240	237	227	234	241	264	305	3	61	51	73	91	318.1
4-Apr	98	152	66	349	324	356	351	2	4	38	151	176	188	147	150	165	193	156	164	151	117	145	133	122	140.1
5-Apr	118	143	167	101	115	112	118	122	134	133	139	136	158	168	179	167	157	165	163	156	136	127	134	140	144.7
6-Apr	134	134	135	137	132	135	124	123	155	148	142	148	153	162	167	171	171	168	168	168	167	161	158	156	156.3
7-Apr	158	156	147	139	139	137	133	134	140	140	139	139	139	142	144	149	146	151	148	149	142	138	153	161	144.7
8-Apr	151	149	142	137	138	141	137	140	146	137	134	136	139	136	157	203	244	244	242	230	240	266	262	263	163.2
9-Apr	267	197	220	149	199	159	243	223	245	242	239	243	243	248	257	258	192	157	164	158	159	152	140	133	199.5
10-Apr	123	153	182	259	256	259	252	256	255	252	245	248	251	253	259	255	253	251	252	242	222	226	246	262	246.2
11-Apr	237	142	142	138	141	135	133	127	136	137	139	135	164	237	240	238	244	236	279	355	337	344	328	259	183.0
12-Apr	322	345	261	262	272	259	277	346	11	14	319	286	323	351	360	340	329	240	314	297	317	287	321	316	320.0
13-Apr	321	339	278	321	317	337	357	4	302	4	336	25	17	16	342	340	4	29	17	10	324	354	5	337	357.0
14-Apr	334	330	336	327	335	334	334	2	141	147	158	153	155	154	156	193	241	142	127	105	119	129	112	104	137.4
15-Apr	83	98	350	341	331	325	313	319	138	138	156	144	140	136	122	135	119	129	116	108	146	124	136	128	126.7
16-Apr	127	115	355	50	344	341	338	329	72	135	127	131	128	127	132	120	101	99	104	102	105	117	138	126	116.9
17-Apr	115	112	107	112	107	132	148	135	116	132	121	139	120	131	123	121	144	114	94	97	121	127	123	119	122.8
18-Apr	106	112	112	113	125	131	UO	357	356	2	93	71	107	91	82	72	85	76	56	60	16	340	348	2	80.0
19-Apr	358	358	98	107	127	135	128	119	121	121	120	119	122	114	113	117	123	109	87	35	334	332	347	352	110.9
20-Apr	359	348	296	120	112	103	115	147	156	165	290	142	127	127	114	105	108	103	99	99	93	109	116	114	114.6
21-Apr	129	121	135	144	118	349	342	123	125	137	131	144	135	128	142	170	167	150	159	154	129	124	123	132	138.0
22-Apr	131	135	137	134	122	124	132	122	137	131	145	163	162	167	175	179	183	182	188	181	178	178	161	132	161.0
23-Apr	125	117	69	152	124	355	127	129	141	124	133	133	146	153	168	132	129	138	165	132	141	155	172	174	144.7
24-Apr	176	59	78	79	143	116	86	130	36	350	348	355	347	342	342	339	340	340	338	339	336	249	227	170	340.6
25-Apr	120	135	128	136	137	136	140	143	149	160	170	156	202	268	135	138	146	142	145	246	270	268	275	274	169.9
26-Apr	270	257	297	292	286	284	288	290	292	321	306	314	339	351	2	351	356	25	40	43	13	348	350	349	315.5
27-Apr	320	351	345	81	127	304	42	107	137	256	225	251	242	247	255	254	242	193	174	181	170	161	163	162	197.4
28-Apr	146	138	312	300	293	346	304	288	318	316	304	312	322	334	339	331	345	4	356	7	346	327	331	292	328.2
29-Apr	300	303	278	88	99	31	40	141	144	137	155	172	223	196	217	182	169	138	98	79	133	130	123	119	147.7
30-Apr	122	133	128	123	112	118	123	127	142	146	128	137	131	134	143	137	134	136	136	133	135	127	131	130	132.3

130.6	132.9	133.0	127.9	141.5	137.9	147.4	138.2	147.7	148.5	155.1	154.2	159.1	165.4	160.7	167.8	165.0	141.0	136.6	131.2	141.7	145.3	146.9	142.2
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

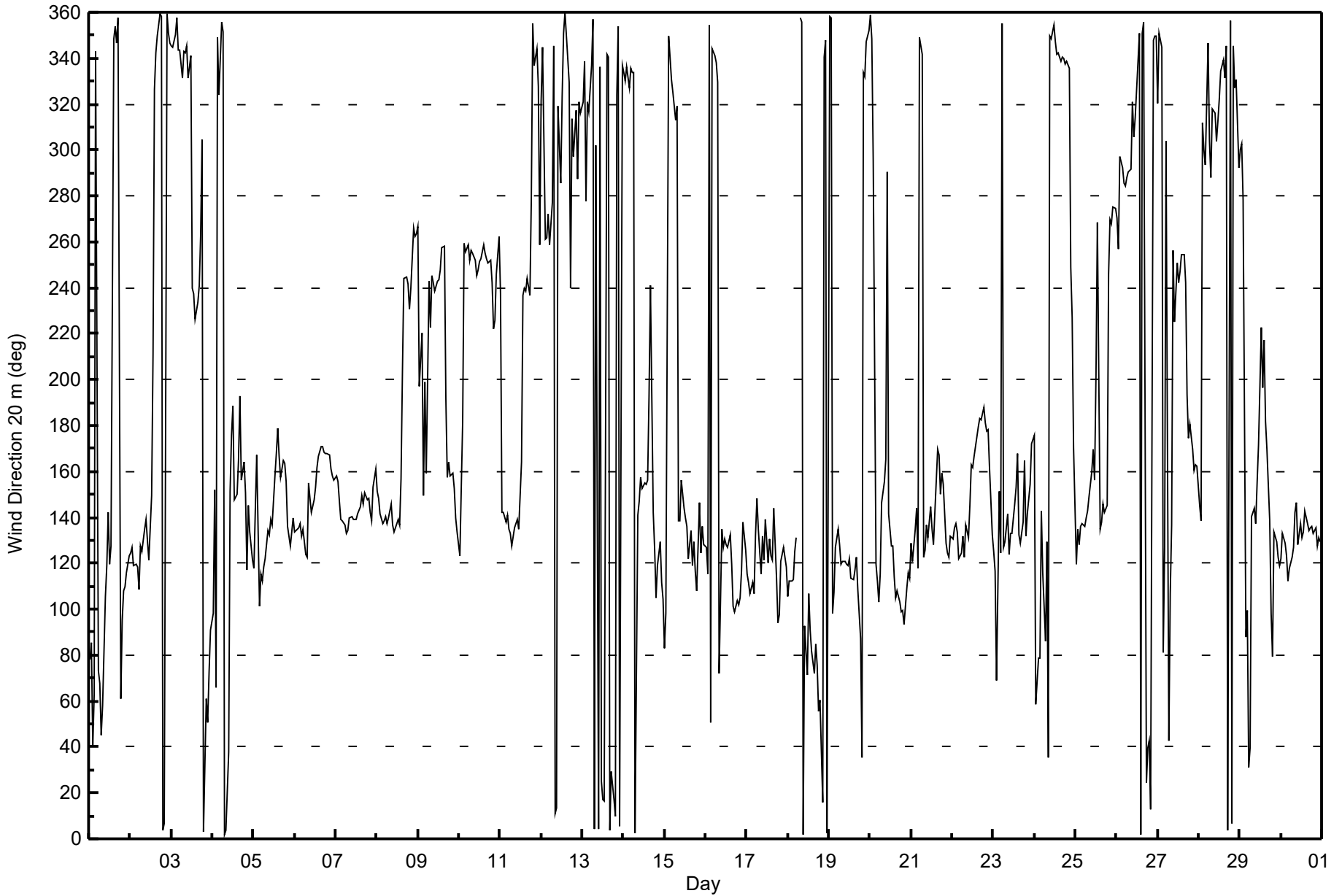
Wind Direction 20 m (WD20m) - deg
Lower Camp Met Tower - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 98 deg on Apr 20 03:00	Hours of Data: 719
Minimum Value: 4 deg on Apr 22 22:00	Hours of Missing Data: 1
Percentiles: P ₁ = 6 P ₁₀ = 10 Q ₁ = 14 Median = 19 Q ₃ = 29 P ₉₀ = 50 P ₉₉ = 86	Hours of Calibration: 0
	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-Apr	25	92	59	35	44	13	17	31	54	41	21	15	28	65	56	12	14	12	44	19	17	18	16	19	92
2-Apr	17	17	16	18	25	28	27	17	16	13	18	25	20	34	40	15	13	17	16	16	17	16	14	15	40
3-Apr	14	14	16	15	15	17	17	17	17	22	32	52	16	8	8	10	17	20	35	27	48	27	17	19	52
4-Apr	23	30	68	18	52	18	14	16	22	82	18	39	39	68	12	20	15	15	14	18	14	21	19	14	82
5-Apr	17	32	77	51	17	23	22	26	21	22	20	12	29	22	27	18	10	16	18	20	23	23	15	8	77
6-Apr	8	8	10	11	21	20	20	17	23	14	13	11	11	11	10	8	8	8	7	8	8	7	7	6	23
7-Apr	8	9	11	13	13	13	15	15	12	12	13	13	12	12	10	9	8	9	9	10	10	9	11	7	15
8-Apr	10	9	8	11	17	10	10	10	15	11	17	9	8	11	18	39	12	11	8	5	32	73	48	27	73
9-Apr	51	24	25	19	27	34	13	32	15	17	8	13	13	15	21	23	30	13	6	9	8	10	8	14	51
10-Apr	17	15	37	15	14	16	13	14	15	14	12	14	15	15	16	14	15	14	13	10	9	10	12	17	37
11-Apr	66	22	10	27	12	4	8	20	10	11	13	12	48	10	16	12	13	16	54	14	14	12	27	33	66
12-Apr	44	41	28	42	58	19	45	58	24	16	44	32	35	22	17	38	37	77	35	29	62	53	31	38	77
13-Apr	30	29	26	32	27	29	36	27	83	70	51	37	29	28	48	32	22	21	14	18	21	35	17	53	83
14-Apr	26	30	37	55	42	26	26	72	22	13	10	12	11	20	24	65	53	37	16	17	25	12	49	13	72
15-Apr	40	64	45	32	26	16	43	81	59	24	18	18	38	37	34	35	23	21	18	52	39	15	14	13	81
16-Apr	12	66	58	48	21	38	23	43	61	18	17	16	18	18	17	24	18	18	20	21	20	20	17	19	66
17-Apr	13	13	16	17	16	18	17	24	22	18	20	15	21	18	18	18	16	18	21	25	22	17	18	20	25
18-Apr	21	20	25	23	19	17	UO	13	13	23	22	20	22	21	21	23	23	22	21	19	34	15	15	13	34
19-Apr	13	11	51	23	18	16	17	15	17	18	17	17	18	21	19	22	20	20	21	19	70	27	18	12	70
20-Apr	11	41	98	8	16	36	31	38	16	25	52	42	31	38	34	33	29	23	18	16	31	28	17	36	98
21-Apr	22	21	14	25	69	48	30	64	22	10	21	27	31	30	37	37	56	34	16	10	18	15	15	14	69
22-Apr	38	10	9	6	15	10	12	20	12	14	16	17	20	18	13	15	15	12	10	8	5	4	13	11	38
23-Apr	12	41	57	52	59	97	14	20	14	21	19	17	17	21	30	29	19	22	21	24	41	14	18	19	97
24-Apr	36	64	66	63	33	26	86	67	87	26	47	17	16	17	19	17	18	17	18	18	18	41	10	41	87
25-Apr	48	43	10	7	5	6	6	8	10	14	13	13	49	24	61	13	14	47	18	53	18	18	19	20	61
26-Apr	19	16	20	17	15	14	16	21	21	26	23	22	33	24	17	20	23	27	22	20	26	11	26	10	33
27-Apr	19	17	23	33	91	42	59	17	41	32	32	31	23	23	25	24	22	43	40	6	6	8	7	7	91
28-Apr	36	16	80	35	34	29	60	18	24	21	23	22	23	21	17	22	21	19	16	19	13	13	46	29	80
29-Apr	68	89	66	86	90	70	86	55	37	16	24	26	66	60	64	48	53	24	24	16	36	62	19	16	90
30-Apr	18	15	15	17	22	16	16	19	14	13	20	17	16	15	20	17	17	15	14	13	13	12	14	16	22
	68	92	98	86	91	97	86	81	87	82	52	52	66	68	64	65	56	77	54	53	70	73	49	53	

Diurnal Maximum

UO - Unstable Operation





Wood Buffalo Environmental Association
Summary of Hour Averages

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

Direction of Maximum Speed: 139 deg on Apr 17 17:00		Hours in Service:	720
Direction of Maximum Daily Speed Average: 120.6 deg on Apr 17		Hours of Data:	718
Direction of Minimum Speed: 211 deg on Apr 27 07:00		Hours of Missing Data:	2
Direction of Minimum Daily Speed Average: 3.9 deg on Apr 11		Percent Operational Time:	99.7
Monthly Average Direction: 140.7 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-Apr	89	96	83	94	47	86	96	87	99	111	121	134	113	129	339	350	346	359	70	97	109	112	119	123	91.9
2-Apr	124	128	122	121	118	112	121	125	130	133	126	120	139	210	327	344	350	0	359	3	5	360	355	350	65.0
3-Apr	347	344	352	359	347	347	336	344	343	348	332	341	244	242	230	237	247	262	312	6	68	59	75	88	333.3
4-Apr	102	140	96	347	323	345	340	348	339	318	151	174	192	143	144	161	191	155	161	126	123	134	129	124	134.8
5-Apr	121	122	136	112	116	114	121	123	130	129	133	132	158	167	178	165	157	165	161	144	129	123	122	123	137.4
6-Apr	125	130	131	129	126	125	123	122	148	142	136	147	152	160	165	170	170	168	167	166	167	160	157	155	151.8
7-Apr	155	151	143	137	137	135	132	131	135	136	134	133	135	137	141	147	144	150	150	153	149	141	157	161	142.1
8-Apr	154	154	145	139	131	134	137	145	150	136	130	133	136	134	159	204	241	236	241	233	224	220	245	243	168.9
9-Apr	252	232	237	203	237	198	241	243	242	240	237	242	243	247	257	258	193	158	163	159	160	155	140	132	205.2
10-Apr	125	152	187	257	254	257	249	255	254	251	244	247	250	252	256	253	250	249	250	241	225	228	239	250	244.5
11-Apr	231	153	147	147	139	130	132	128	138	140	138	131	161	236	239	237	242	235	289	0	340	337	331	265	191.2
12-Apr	318	347	264	246	257	254	266	335	5	8	317	290	321	350	358	337	321	260	312	306	343	274	295	343	316.3
13-Apr	321	343	323	343	322	332	357	356	313	351	327	14	10	9	338	339	3	30	18	18	345	357	12	9	356.8
14-Apr	50	352	346	347	4	9	49	71	140	141	152	146	148	148	151	194	248	139	124	108	120	128	117	117	126.7
15-Apr	112	114	106	33	336	338	325	260	120	132	146	139	135	134	119	126	116	126	114	105	133	126	131	128	121.7
16-Apr	127	123	92	111	70	3	321	308	113	129	125	127	126	124	127	116	103	101	105	102	105	112	129	126	116.4
17-Apr	119	117	111	113	110	131	142	126	112	127	120	134	118	127	121	120	139	114	98	99	117	124	121	117	120.6
18-Apr	105	110	112	110	122	128	UO	UO	16	8	97	75	105	92	85	74	88	77	58	62	21	343	349	17	84.9
19-Apr	25	13	107	109	124	131	127	120	121	121	119	117	121	114	112	115	121	109	93	49	350	335	351	350	109.5
20-Apr	351	4	117	117	115	112	114	128	142	155	289	134	124	120	115	101	106	103	99	102	101	116	118	110	110.6
21-Apr	126	117	120	130	130	124	134	126	124	135	129	138	129	127	134	162	163	146	159	154	145	135	128	122	133.8
22-Apr	126	134	136	138	130	125	127	122	131	130	143	159	157	166	174	178	182	182	187	181	181	182	169	131	158.4
23-Apr	127	126	123	141	146	203	125	127	130	121	127	130	140	150	163	128	127	132	163	126	137	153	170	173	139.9
24-Apr	166	89	99	89	137	116	108	120	67	358	3	4	349	343	342	338	341	341	339	341	341	259	227	181	351.3
25-Apr	139	136	130	137	140	139	143	144	148	159	168	155	204	266	127	132	144	143	141	248	271	267	272	275	172.7
26-Apr	269	256	294	291	287	285	288	289	294	320	303	313	336	346	359	351	357	28	41	42	23	346	334	340	315.5
27-Apr	336	337	341	8	47	266	211	123	139	255	229	254	245	248	259	253	244	193	176	185	172	164	164	165	203.6
28-Apr	151	138	291	291	294	322	312	287	317	316	302	313	320	333	337	331	346	4	359	8	356	338	351	340	329.2
29-Apr	331	281	342	308	123	142	157	137	128	132	148	169	233	205	224	184	168	129	98	82	119	115	121	122	134.3
30-Apr	124	130	125	125	117	121	124	125	135	140	124	133	130	131	138	133	131	132	133	129	133	129	130	128	129.6

129.0 127.4 129.3 129.6 137.5 136.9 145.7 141.8 142.1 142.7 147.5 147.3 153.0 159.4 153.2 158.8 157.2 132.2 127.9 119.2 134.5 141.0 142.7 137.8

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

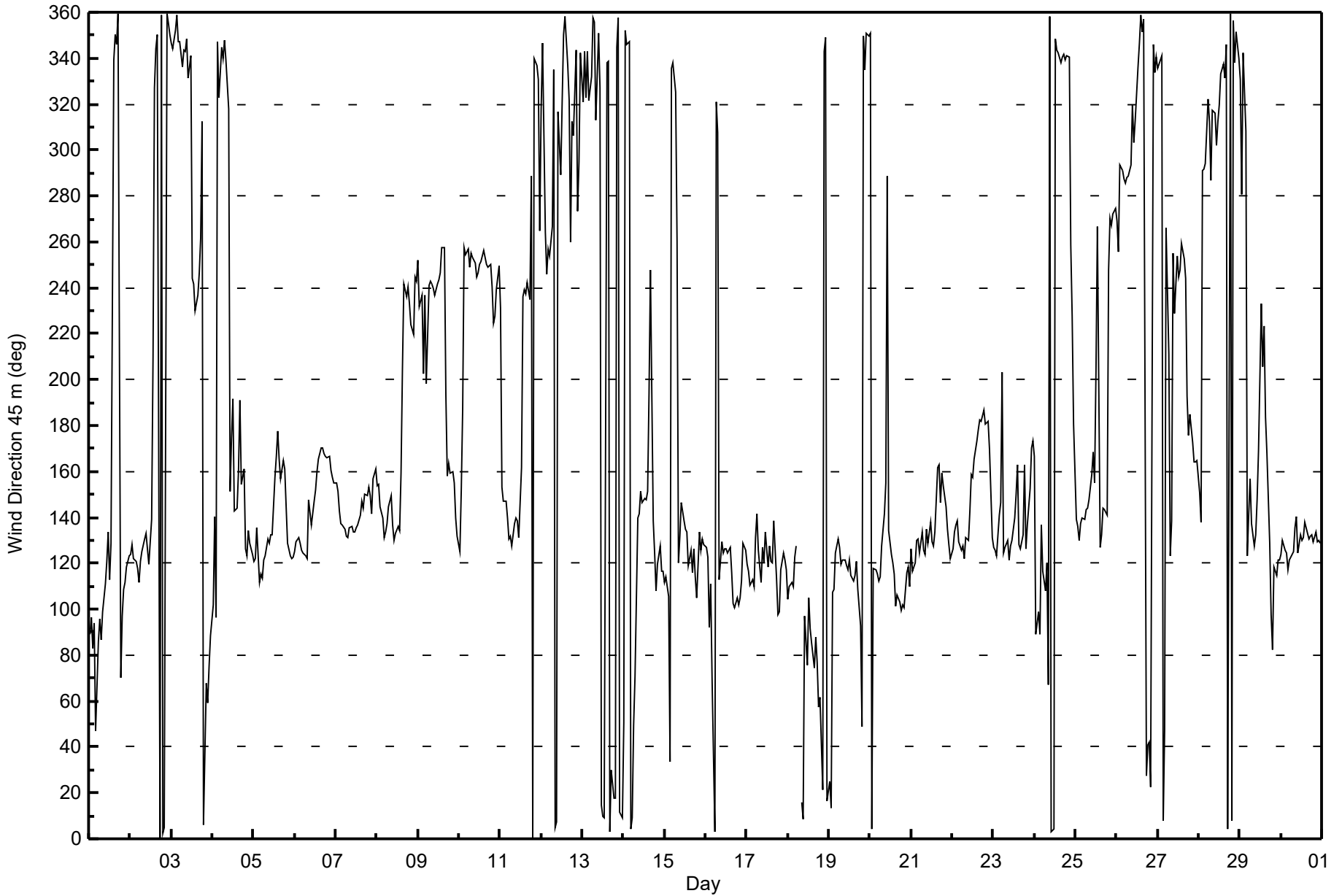
Wind Direction 45 m (WD45m) - deg
Lower Camp Met Tower - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 114 deg on Apr 16 03:00	Hours of Data: 718
Minimum Value: 3 deg on Apr 8 20:00	Hours of Missing Data: 2
Percentiles: P ₁ = 4 P ₁₀ = 7 Q ₁ = 9 Median = 13 Q ₃ = 21 P ₉₀ = 38 P ₉₉ = 88	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-Apr	10	74	56	18	45	6	12	19	33	21	14	14	21	42	92	7	8	10	36	12	9	9	10	10	92
2-Apr	9	9	9	10	11	15	15	10	7	5	11	16	17	38	34	9	7	11	9	9	10	7	8	11	38
3-Apr	8	9	10	8	9	10	11	11	11	19	27	44	13	8	9	10	17	13	33	19	31	22	7	10	44
4-Apr	10	23	56	29	50	28	11	15	23	78	20	40	38	70	10	21	14	16	12	17	6	13	10	6	78
5-Apr	7	16	38	26	11	14	14	21	17	14	14	7	27	20	22	18	11	15	16	18	21	11	7	6	38
6-Apr	6	5	5	6	7	8	6	8	20	11	9	10	10	10	9	8	8	7	7	7	8	7	7	6	20
7-Apr	8	9	8	8	7	7	8	7	7	7	8	9	7	7	9	9	9	8	9	10	11	10	9	7	11
8-Apr	8	9	8	9	6	4	7	11	14	8	11	4	4	6	18	35	7	9	5	3	13	16	17	11	35
9-Apr	12	10	18	42	25	38	7	11	10	11	6	9	10	10	15	16	29	11	5	8	7	9	7	7	42
10-Apr	8	13	35	10	8	10	8	8	9	10	8	9	10	10	11	9	9	9	8	8	6	8	7	11	35
11-Apr	34	16	15	24	13	6	4	9	13	12	12	8	48	8	13	10	11	13	53	7	8	6	9	19	53
12-Apr	38	11	30	21	31	9	27	49	17	8	37	27	26	16	11	35	32	72	22	22	34	57	39	23	72
13-Apr	11	18	22	11	16	11	15	25	56	51	43	31	27	19	41	28	18	18	9	11	22	16	14	50	56
14-Apr	36	57	14	30	57	36	62	54	17	11	10	9	10	18	19	63	52	38	8	9	13	6	10	5	63
15-Apr	8	13	42	63	24	9	28	88	42	19	15	15	27	30	29	27	17	15	11	16	28	8	8	5	88
16-Apr	5	34	114	28	42	87	16	18	91	11	9	9	10	12	12	15	11	10	12	11	11	13	14	12	114
17-Apr	7	8	8	8	10	13	14	19	15	12	13	10	15	11	11	11	12	11	13	15	16	12	10	13	19
18-Apr	12	13	17	15	14	11	UO	UO	20	22	12	13	15	13	12	15	16	13	15	11	30	10	10	21	30
19-Apr	19	14	36	15	13	9	9	8	10	10	9	10	11	15	13	15	14	14	13	15	45	15	12	7	45
20-Apr	5	11	76	6	6	7	13	23	13	22	54	36	26	32	25	29	22	15	9	8	14	13	9	16	76
21-Apr	14	7	9	12	14	16	36	36	16	9	15	26	23	26	28	33	57	32	14	9	10	9	7	5	57
22-Apr	11	10	5	6	5	4	7	11	10	8	13	18	21	16	13	15	15	12	10	8	6	3	9	5	21
23-Apr	5	6	20	9	18	93	11	10	9	11	12	9	15	19	30	23	14	19	21	20	37	13	18	18	93
24-Apr	35	22	19	35	26	18	92	33	57	51	43	18	9	11	15	11	11	12	12	12	11	44	8	42	92
25-Apr	31	23	6	5	4	6	7	7	9	13	14	12	47	18	68	7	12	50	18	47	12	13	14	15	68
26-Apr	14	10	17	10	9	8	9	15	17	21	18	18	30	25	10	17	22	22	16	14	20	8	7	6	30
27-Apr	9	8	11	38	64	15	91	19	42	24	24	24	20	18	19	18	19	42	36	6	5	7	7	6	91
28-Apr	32	12	87	25	12	15	26	12	19	15	19	19	19	15	12	17	17	14	9	12	8	7	14	37	87
29-Apr	97	47	27	43	22	80	70	55	30	13	23	36	59	62	66	42	44	20	16	9	22	27	11	9	97
30-Apr	10	8	8	7	10	7	7	9	11	12	12	10	7	9	17	12	10	7	6	6	5	6	6	9	17

97	74	114	63	64	93	92	88	91	78	54	44	59	70	92	63	57	72	53	47	45	57	39	50	
Diurnal Maximum																								

UO - Unstable Operation





Wood Buffalo Environmental Association
Summary of Hour Averages

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

Direction of Maximum Speed: 140 deg on Apr 17 17:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 244.7 deg on Apr 10	Hours of Data: 717
Direction of Minimum Speed: 274 deg on Apr 27 06:00	Hours of Missing Data: 3
Direction of Minimum Daily Speed Average: 5.4 deg on Apr 11	Percent Operational Time: 99.6
Monthly Average Direction: 146.0 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-Apr	109	105	109	116	92	107	118	114	120	116	123	119	106	130	156	348	351	10	83	100	111	120	125	129	105.7
2-Apr	128	130	126	127	124	120	126	126	129	130	127	122	133	188	335	343	355	2	1	3	6	2	358	355	73.3
3-Apr	352	349	358	2	352	354	347	347	347	347	327	334	257	253	243	243	257	266	320	10	79	69	75	90	344.6
4-Apr	103	132	112	3	333	332	325	312	265	243	164	181	198	138	142	161	189	157	156	128	132	134	134	130	139.0
5-Apr	131	129	130	126	122	122	128	131	130	129	134	138	163	171	177	165	157	167	165	133	125	129	131	129	139.2
6-Apr	140	149	145	138	133	131	129	129	145	146	143	152	155	160	165	172	172	168	168	167	168	164	161	158	155.4
7-Apr	155	150	147	143	142	140	137	135	140	140	137	136	140	141	145	150	149	153	152	156	155	155	164	166	146.7
8-Apr	159	157	158	154	145	152	154	164	167	151	136	151	141	140	173	207	240	234	246	247	242	228	239	244	186.6
9-Apr	249	242	242	242	246	239	238	237	239	239	237	241	244	245	256	257	195	161	168	163	162	155	148	140	211.1
10-Apr	134	155	204	259	255	257	249	253	253	251	245	247	250	251	256	253	250	250	252	246	232	234	242	242	244.7
11-Apr	236	227	214	224	192	166	172	165	175	163	147	141	173	236	240	237	241	231	281	3	351	332	344	309	235.9
12-Apr	317	358	313	258	256	276	277	321	356	2	310	291	318	346	353	333	322	278	313	309	14	295	331	339	316.4
13-Apr	324	339	347	347	344	354	41	343	336	331	315	8	5	3	337	338	3	31	22	27	20	16	40	115	4.3
14-Apr	120	124	110	101	87	104	111	119	134	136	149	146	144	147	151	205	256	139	124	110	123	128	125	125	127.3
15-Apr	125	127	124	122	126	58	72	112	119	135	141	138	134	137	119	124	115	127	114	106	116	124	130	131	123.5
16-Apr	130	133	129	124	121	126	148	164	136	130	127	127	127	125	127	116	105	102	106	104	106	111	122	125	119.1
17-Apr	122	121	115	114	113	130	132	122	112	125	120	131	118	128	121	121	140	114	100	100	114	123	122	116	120.4
18-Apr	104	109	109	112	122	127	UO	UO	70	43	103	82	103	93	89	75	88	78	60	65	32	358	2	54	90.5
19-Apr	78	47	116	114	125	130	127	123	125	123	122	121	123	116	115	116	122	111	100	71	14	359	0	4	111.6
20-Apr	19	43	118	124	123	122	127	126	135	151	279	131	119	118	116	100	106	104	100	104	108	119	115	117	114.6
21-Apr	124	129	126	120	123	134	134	139	134	145	129	136	127	130	131	162	160	149	162	165	153	137	149	154	138.5
22-Apr	155	182	185	177	157	156	148	129	138	138	147	159	157	167	175	179	182	182	186	182	186	192	185	157	169.4
23-Apr	137	136	135	140	141	164	141	129	124	122	129	132	142	152	161	130	128	135	163	130	138	155	170	174	141.8
24-Apr	163	104	105	87	137	121	118	124	93	UO	54	18	353	346	344	340	344	346	345	350	351	288	242	208	5.8
25-Apr	150	148	153	154	153	156	156	153	154	161	169	157	209	266	131	135	149	154	146	253	272	269	272	275	183.1
26-Apr	272	261	294	292	289	288	291	290	299	319	307	311	330	342	354	347	0	29	42	46	31	2	354	340	316.5
27-Apr	338	340	351	14	52	274	240	184	178	250	234	258	246	249	255	250	244	199	185	194	180	173	174	175	208.9
28-Apr	176	168	290	281	302	312	303	290	319	318	304	314	319	334	337	331	346	4	1	10	7	360	355	356	328.7
29-Apr	2	4	354	340	252	248	97	124	133	129	145	182	232	229	231	188	165	126	102	92	126	126	129	127	130.7
30-Apr	133	137	134	134	129	129	129	127	138	142	127	134	133	133	140	136	134	135	136	130	135	135	137	141	134.1
	139.0	136.9	136.9	143.5	147.6	148.6	155.3	152.3	150.3	150.7	150.2	151.1	155.4	163.8	156.5	161.8	159.6	135.4	132.6	123.3	133.7	143.4	149.2	144.5	

Diurnal Average

UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



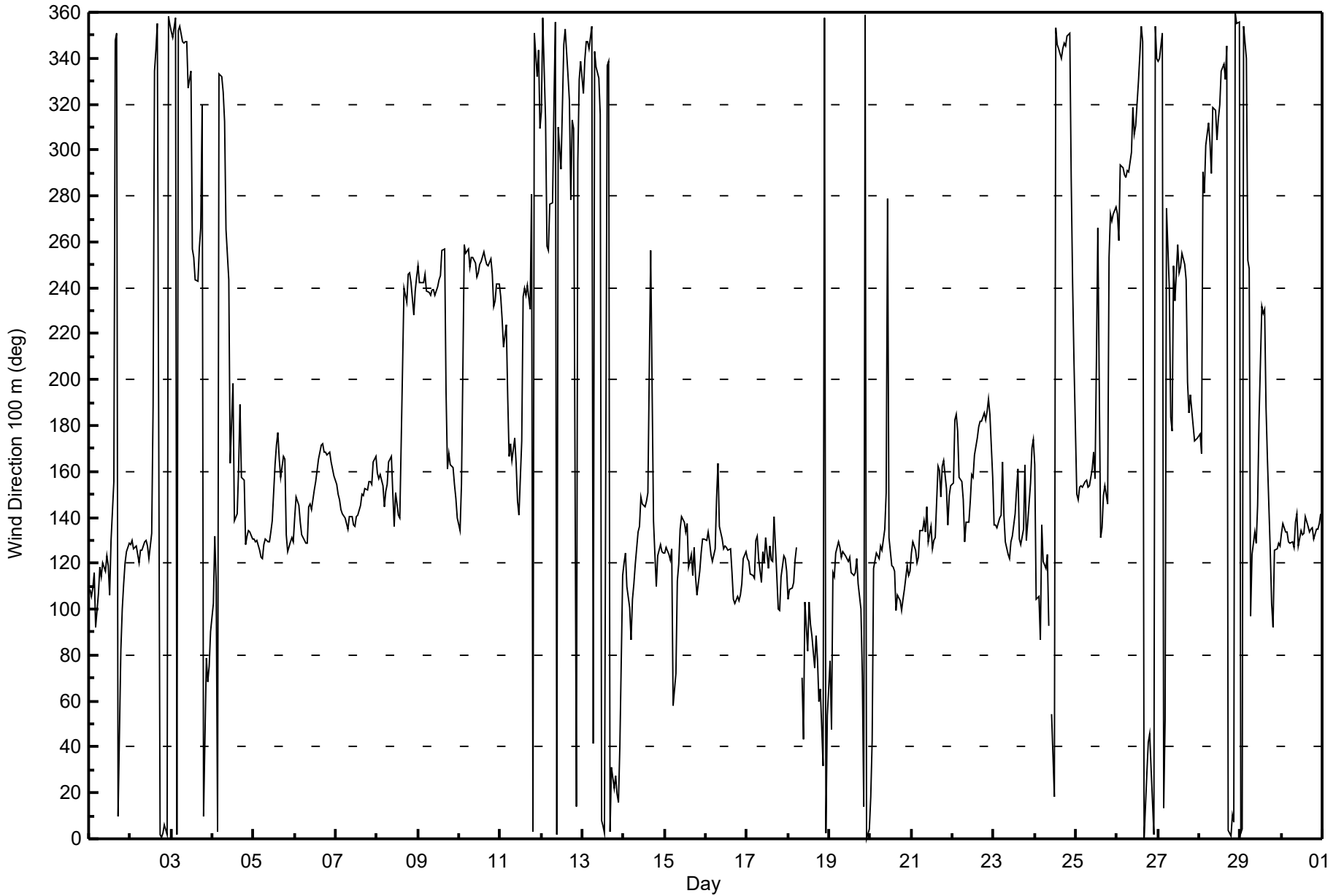
Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 84 deg on Apr 1 15:00	Hours of Data: 717
Minimum Value: 2 deg on Apr 27 20:00	Hours of Missing Data: 3
Percentiles: P ₁ = 3 P ₁₀ = 5 Q ₁ = 6 Median = 10 Q ₃ = 16 P ₉₀ = 31 P ₉₉ = 66	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-Apr	8	31	60	14	13	4	6	8	11	12	8	18	15	20	84	35	7	16	29	8	7	6	8	8	84
2-Apr	6	6	5	6	6	9	9	6	4	4	8	11	12	45	33	7	6	8	7	6	8	6	6	7	45
3-Apr	5	5	8	6	7	6	6	7	7	16	26	34	12	8	17	15	17	8	28	18	17	15	3	5	34
4-Apr	5	19	38	43	54	58	13	22	32	43	25	35	48	51	9	19	12	15	13	6	3	7	5	3	58
5-Apr	3	3	10	17	7	8	10	13	12	11	10	11	22	19	18	14	11	10	13	14	10	6	4	3	22
6-Apr	7	8	8	6	4	3	2	4	15	10	9	10	9	8	7	7	7	6	5	4	5	6	5	5	15
7-Apr	7	8	7	6	5	4	4	4	8	7	6	6	8	8	9	9	9	7	6	6	6	8	7	5	9
8-Apr	5	6	6	7	7	7	6	9	14	9	12	9	5	8	17	28	6	9	6	4	9	5	4	2	28
9-Apr	4	3	15	13	4	11	4	5	5	5	4	7	8	7	11	9	28	11	5	7	5	6	7	5	28
10-Apr	4	9	30	5	5	5	5	5	5	6	6	6	8	7	7	6	5	6	6	5	5	5	3	4	30
11-Apr	10	26	21	19	36	11	5	13	18	17	18	10	47	8	9	8	10	12	57	6	11	3	5	20	57
12-Apr	16	14	32	8	14	8	9	31	15	8	32	22	21	13	10	32	26	55	12	11	33	30	9	5	55
13-Apr	6	9	4	3	3	7	20	23	46	38	35	30	22	18	31	22	16	15	8	6	19	16	33	14	46
14-Apr	7	34	30	13	20	15	14	17	31	12	10	9	12	14	17	67	49	42	6	6	9	4	4	4	67
15-Apr	6	6	11	12	33	34	61	37	40	12	11	18	21	22	26	24	15	12	9	6	11	6	6	3	61
16-Apr	3	4	22	13	11	14	67	60	28	6	6	7	8	8	10	13	9	8	9	7	8	9	11	9	67
17-Apr	7	7	7	6	9	12	13	14	12	10	10	9	12	9	8	9	10	9	10	11	12	9	8	12	14
18-Apr	9	9	12	12	12	9	UO	UO	18	29	8	10	11	11	9	13	14	10	12	10	26	9	9	30	30
19-Apr	15	14	20	14	10	7	7	6	7	7	7	8	8	10	10	11	11	12	8	14	31	11	10	8	31
20-Apr	18	28	15	4	4	5	5	10	13	18	67	32	22	27	18	27	18	13	7	6	5	10	8	8	67
21-Apr	8	2	5	6	6	6	7	10	12	10	11	19	16	19	18	32	39	26	12	7	11	6	9	8	39
22-Apr	15	12	9	10	6	4	8	7	11	11	12	16	20	15	12	14	14	11	10	6	5	4	9	11	20
23-Apr	7	4	5	4	5	32	5	12	7	7	8	6	14	17	29	20	12	15	21	19	31	13	13	17	32
24-Apr	30	11	12	15	22	11	39	22	18	UO	45	24	8	9	12	8	8	8	8	8	6	49	4	46	49
25-Apr	15	7	9	5	5	5	5	6	9	10	12	11	47	15	68	10	9	54	20	40	8	9	10	12	68
26-Apr	10	7	14	6	5	6	6	12	14	17	15	14	26	18	8	13	21	18	12	10	17	7	8	5	26
27-Apr	3	6	5	33	64	78	16	22	45	17	23	21	16	15	15	14	15	36	30	2	4	3	3	5	78
28-Apr	25	14	58	18	8	10	13	9	14	12	15	15	16	11	9	15	15	12	8	10	5	7	5	7	58
29-Apr	16	19	58	67	44	61	11	22	24	13	33	52	47	57	76	36	44	16	12	5	12	8	6	6	76
30-Apr	5	5	5	4	4	3	3	5	10	12	6	7	5	7	14	12	7	5	4	4	3	4	4	6	14
	30	34	60	67	64	78	67	60	46	43	67	52	48	57	84	67	49	55	57	40	33	49	33	46	
	Diurnal Maximum																								

UO - Unstable Operation





Wood Buffalo Environmental Association
Summary of Hour Averages

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

Direction of Maximum Speed: 253 deg on Apr 10 07:00																							Hours in Service: 720		
Direction of Maximum Daily Speed Average: 248.9 deg on Apr 10																							Hours of Data: 717		
Direction of Minimum Speed: 324 deg on Apr 4 05:00											Direction of Minimum Daily Speed Average: 6.1 deg on Apr 24												Hours of Missing Data: 3		
Monthly Average Direction: 149.5 deg																							Percent Operational Time: 99.6		
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-Apr	122	113	119	122	109	120	124	126	123	120	122	107	105	124	141	13	4	30	92	105	115	127	130	132	113.9
2-Apr	131	131	129	130	129	126	129	127	127	128	128	122	129	160	347	347	5	9	9	9	13	10	7	4	83.1
3-Apr	360	358	9	8	2	5	5	359	355	351	331	334	277	271	258	243	273	278	328	20	83	73	78	96	356.5
4-Apr	111	129	131	53	324	103	210	251	234	233	171	187	207	159	141	160	189	158	150	132	135	139	139	138	145.8
5-Apr	137	136	133	133	134	136	137	142	136	137	137	151	170	176	180	167	160	168	168	131	128	132	139	141	143.9
6-Apr	153	160	157	149	141	141	139	139	148	153	154	156	158	164	167	174	174	172	172	170	172	169	166	163	161.4
7-Apr	158	153	152	152	150	145	143	144	149	148	144	142	148	149	151	155	155	155	154	157	159	162	172	172	153.1
8-Apr	166	162	160	159	161	166	177	185	184	166	157	166	154	153	189	215	243	236	250	254	257	248	252	267	198.3
9-Apr	271	262	244	251	247	243	249	239	246	247	244	244	246	248	256	256	197	165	173	168	168	157	153	147	220.0
10-Apr	141	160	221	262	258	260	253	256	257	254	248	249	253	255	259	256	253	253	256	252	242	243	250	247	248.9
11-Apr	245	242	239	242	239	206	203	195	206	188	164	155	190	239	241	239	242	229	283	8	359	345	354	327	258.5
12-Apr	318	10	354	275	276	302	301	324	349	356	309	296	316	344	352	332	320	289	315	314	355	322	341	347	323.2
13-Apr	345	2	8	1	2	2	27	56	54	335	322	356	5	360	337	339	7	36	30	41	46	50	92	127	25.4
14-Apr	127	125	124	114	113	114	121	126	128	130	145	139	138	144	155	211	251	137	124	112	123	129	131	129	127.3
15-Apr	129	130	128	128	151	127	126	131	135	145	138	146	140	141	120	125	117	128	116	111	113	124	128	132	126.2
16-Apr	133	139	137	132	127	124	130	118	133	130	129	129	128	127	117	108	105	108	107	108	113	120	124	124	121.5
17-Apr	121	121	119	117	116	125	123	119	112	124	121	129	117	128	122	123	141	115	105	102	113	122	124	118	120.4
18-Apr	106	109	109	113	122	UO	UO	UO	93	76	107	87	105	95	88	78	89	79	67	73	46	24	30	90	94.3
19-Apr	95	78	119	119	124	128	127	125	126	125	125	125	124	120	117	119	122	114	107	93	52	35	25	39	114.5
20-Apr	77	118	128	133	133	131	132	133	137	146	286	127	116	117	116	102	108	105	103	108	113	124	121	121	120.0
21-Apr	128	139	141	143	145	142	155	156	152	155	130	138	127	133	135	162	161	155	167	168	154	140	156	168	147.3
22-Apr	184	221	225	218	187	168	167	173	155	151	154	161	161	168	176	182	183	184	187	185	190	199	196	173	180.3
23-Apr	152	145	144	145	145	159	146	136	126	125	131	135	144	155	161	133	133	138	165	133	142	157	170	175	145.4
24-Apr	161	115	110	97	135	126	127	129	117	100	82	38	7	354	353	350	353	355	356	1	4	327	246	206	35.6
25-Apr	170	163	161	158	157	159	159	158	160	164	168	159	216	269	141	141	155	174	154	259	276	274	276	279	189.9
26-Apr	277	270	295	295	294	293	297	292	303	321	309	313	328	341	355	350	8	33	48	51	43	20	15	4	321.0
27-Apr	359	349	360	21	45	67	268	193	209	251	246	263	248	250	253	250	245	208	192	199	186	184	187	191	217.3
28-Apr	200	212	287	290	317	320	304	296	320	320	308	315	322	336	339	333	349	7	7	15	15	11	11	17	332.2
29-Apr	26	79	106	83	236	331	46	72	140	138	150	205	219	240	230	187	165	124	106	99	134	135	134	131	128.8
30-Apr	140	144	143	142	139	137	136	134	145	147	131	137	135	136	143	140	137	137	139	132	136	139	144	149	139.1
146.5	143.2	145.0	150.4	154.0	154.7	160.3	160.1	156.6	156.6	153.7	155.5	158.4	168.6	160.2	164.1	161.2	137.9	135.4	125.2	130.7	140.9	150.3	149.4		
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 163 m (WD163m) - deg

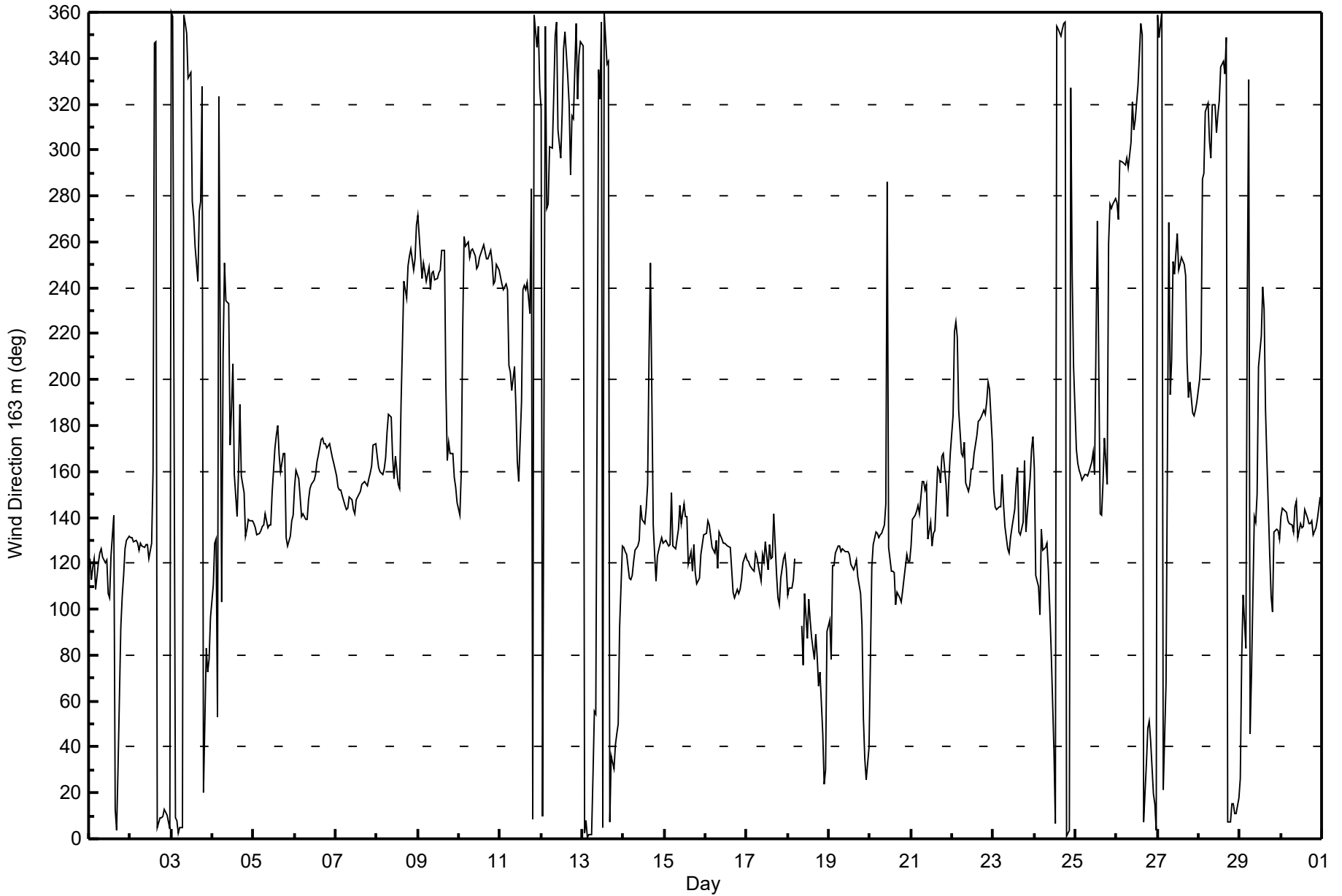
Lower Camp Met Tower - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 90 deg on Apr 4 05:00	Hours of Data: 717
Minimum Value: 2 deg on Apr 27 23:00	Hours of Missing Data: 3
Percentiles: P ₁ = 2 P ₁₀ = 4 Q ₁ = 5 Median = 8 Q ₃ = 14 P ₉₀ = 23 P ₉₉ = 66	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-Apr	8	7	17	16	7	6	3	5	7	10	7	17	13	16	20	52	8	24	21	7	4	6	6	6	52
2-Apr	4	5	4	5	5	6	6	5	4	4	6	9	11	37	46	8	8	6	7	6	7	6	6	7	46
3-Apr	5	4	7	6	6	6	6	7	7	14	18	30	17	13	24	32	17	15	27	19	15	8	3	6	32
4-Apr	4	13	20	60	90	71	66	19	17	21	32	32	49	42	11	19	12	15	14	3	4	4	5	3	90
5-Apr	4	4	4	8	5	4	6	10	9	15	10	14	17	19	15	12	10	7	10	11	4	5	4	5	19
6-Apr	7	4	4	6	3	3	3	4	11	9	9	9	8	8	6	5	5	4	3	3	3	4	3	4	11
7-Apr	6	6	6	8	7	6	5	7	9	9	9	7	9	9	9	8	8	6	5	5	4	5	4	3	9
8-Apr	3	4	4	4	4	5	4	8	12	6	12	12	8	9	17	22	6	9	5	3	5	2	4	2	22
9-Apr	3	5	6	7	4	6	5	5	5	3	5	6	6	6	8	7	26	10	6	6	6	5	6	6	26
10-Apr	5	11	25	4	4	5	4	4	4	5	4	4	7	7	6	5	4	5	6	4	4	4	3	3	25
11-Apr	6	9	9	9	15	13	9	10	16	14	22	14	44	8	7	7	9	12	61	5	8	3	3	14	61
12-Apr	13	12	30	15	15	6	5	15	15	17	26	21	21	13	11	29	24	41	8	15	19	10	7	12	41
13-Apr	9	8	8	7	11	6	8	10	29	40	34	33	23	19	30	20	18	14	7	4	7	14	32	5	40
14-Apr	5	9	13	6	5	6	4	7	28	12	14	14	14	15	21	71	57	58	5	5	8	4	3	3	71
15-Apr	5	3	4	3	12	12	57	47	16	16	10	16	19	20	24	26	13	11	7	3	6	5	4	3	57
16-Apr	3	3	4	4	5	3	11	12	5	4	5	5	7	7	9	12	8	6	7	5	5	6	8	7	12
17-Apr	7	6	6	5	7	10	12	11	9	10	9	8	10	8	7	8	10	8	9	9	10	8	7	10	12
18-Apr	7	7	10	9	10	UO	UO	UO	15	23	7	9	10	11	9	11	13	9	9	6	22	8	13	20	23
19-Apr	12	11	13	13	9	7	6	5	5	5	5	7	7	10	8	9	10	12	9	12	21	20	11	12	21
20-Apr	16	10	10	3	2	2	2	8	13	20	82	29	19	24	18	23	15	11	7	3	3	5	5	6	82
21-Apr	8	4	3	3	4	5	7	11	11	12	12	19	15	16	18	28	31	24	10	4	13	5	8	4	31
22-Apr	15	7	9	14	15	6	6	7	10	11	13	16	17	14	11	11	12	10	9	5	5	4	7	4	17
23-Apr	12	6	6	5	4	11	5	10	8	6	7	6	14	18	27	21	12	14	21	18	28	11	12	16	28
24-Apr	28	11	12	11	17	10	15	16	13	12	18	26	9	9	10	6	6	6	7	7	6	52	7	34	52
25-Apr	9	5	5	2	2	2	3	5	9	8	9	9	47	12	74	11	9	65	22	31	5	7	8	9	74
26-Apr	7	7	11	4	4	5	6	11	12	14	13	12	22	16	8	14	19	15	11	7	11	6	5	7	22
27-Apr	4	2	6	14	11	22	84	18	33	12	24	20	15	11	15	12	12	36	27	2	6	4	2	4	84
28-Apr	13	16	28	17	6	6	7	7	13	12	14	14	15	10	7	13	15	11	8	8	3	4	2	2	28
29-Apr	13	17	26	35	30	19	15	14	16	17	34	57	55	55	73	34	40	13	12	8	9	5	4	5	73
30-Apr	5	4	5	4	4	4	4	6	12	13	6	8	6	8	13	12	7	5	4	3	3	4	6	6	13
	28	17	30	60	90	71	84	47	33	40	82	57	55	55	74	71	57	65	61	31	28	52	32	34	

Diurnal Maximum

UO - Unstable Operation





Maximum Value: 0.6 km/h on Apr 13 10:00 Maximum Daily Average: 0.1 km/h on Apr 13																						Hours in Service:	720			
Minimum Value: -2.4 km/h on Apr 6 17:00 Minimum Daily Average: -1.3 km/h on Apr 6																						Hours of Data:	719			
Maximum Diurnal Average: -0.2 km/h at hour 2 Minimum Diurnal Average: -0.7 km/h at hour 17																						Hours of Missing Data:	1			
Monthly Average: -0.43 km/h Percentiles: P ₁ = -1.9 P ₁₀ = -1.1 Q ₁ = -0.7 Median = -0.4 Q ₃ = -0.1 P ₉₀ = 0.1 P ₉₉ = 0.2																						Hours of Calibration:	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-Apr	-0.1	0.0	0.1	0.0	0.0	-0.1	0.0	0.1	0.2	0.2	-0.3	-0.5	-0.3	-0.5	-0.1	-0.2	-0.1	-0.1	-0.1	-0.3	-0.3	-0.3	-0.4	-0.4	-0.2	0.2
2-Apr	-0.5	-0.3	-0.5	-0.3	-0.1	-0.2	-0.4	-0.5	-0.3	-0.6	-0.4	-0.5	-0.6	-0.5	-0.1	-0.2	-0.3	0.0	-0.1	0.1	0.1	-0.1	-0.2	-0.2	-0.3	0.1
3-Apr	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1	0.1	0.0	0.0	-0.3	0.1	0.3	-0.7	-1.2	-1.2	-0.7	-0.5	-0.2	-0.2	0.0	0.0	0.2	0.1	0.0	-0.2	0.3
4-Apr	0.0	-0.2	0.1	0.0	-0.1	0.0	0.0	-0.1	0.2	0.1	-0.6	-0.4	-0.4	-0.3	-0.6	-0.6	-0.8	-0.5	-0.5	-0.3	-0.4	-0.5	-0.2	-0.6	-0.3	0.2
5-Apr	-0.3	-0.1	-0.1	-0.2	-0.4	-0.2	-0.2	-0.2	-0.5	-0.5	-0.5	-0.9	-0.9	-0.8	-0.7	-1.2	-1.0	-0.5	-0.4	-0.4	-0.1	0.0	-0.6	-0.6	-0.5	0.0
6-Apr	-0.6	-0.7	-0.6	-0.4	-0.4	-0.4	-0.6	-0.7	-0.5	-0.8	-0.7	-1.2	-1.6	-2.1	-2.2	-1.9	-2.4	-1.9	-1.7	-1.5	-1.9	-1.7	-1.9	-2.2	-1.3	-0.4
7-Apr	-1.8	-0.8	-1.5	-1.0	-1.0	-0.8	-0.8	-0.7	-1.3	-1.1	-1.3	-0.9	-1.0	-1.2	-1.5	-1.8	-1.4	-1.2	-1.1	-0.5	-0.5	-0.6	-0.8	-0.9	-1.1	-0.5
8-Apr	-0.9	-0.5	-0.9	-0.6	-0.4	-0.4	-0.6	-0.8	-0.7	-1.0	-0.4	-0.7	-1.0	-0.7	-0.8	-0.7	-0.9	-0.7	-0.6	-0.2	-0.1	0.0	-0.2	-0.3	-0.6	0.0
9-Apr	-0.1	-0.3	-0.2	0.0	-0.4	-0.2	-0.1	-0.5	-0.9	-1.1	-1.3	-1.3	-1.3	-1.0	-0.4	-0.6	-1.0	-0.6	-1.1	-1.1	-1.0	-0.8	-1.2	-0.8	-0.7	0.0
10-Apr	-0.5	-0.8	-0.9	-1.1	-1.6	-1.0	-1.5	-1.2	-1.1	-1.6	-1.3	-1.4	-1.5	-1.2	-1.4	-1.7	-1.5	-1.1	-1.2	-0.8	-0.5	-0.5	-0.4	-0.5	-1.1	-0.4
11-Apr	-0.3	0.2	0.0	-0.2	0.0	0.0	0.1	-0.3	-0.5	-0.5	-0.4	-0.6	-0.4	-1.0	-0.9	-0.9	-0.7	-0.6	-0.3	0.0	-0.1	-0.1	-0.1	-0.1	-0.3	0.2
12-Apr	0.0	0.0	-0.1	-0.2	-0.4	-0.5	0.0	-0.1	-0.2	0.1	0.0	-0.3	0.2	0.1	-0.1	-0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	-0.1	0.2
13-Apr	-0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.2	0.5	0.6	0.0	-0.1	0.5	0.3	0.0	-0.1	-0.1	0.0	0.1	0.2	-0.3	-0.1	0.1	0.1	0.1	0.6
14-Apr	0.0	0.2	0.0	0.0	0.1	0.0	0.1	-0.1	-0.2	-0.8	-0.8	-0.6	-0.8	-0.7	-0.4	-0.5	-0.2	-0.6	-0.5	-0.2	-0.2	-0.4	-0.2	0.0	-0.3	0.2
15-Apr	0.1	0.1	0.1	0.2	0.0	0.0	0.0	-0.1	0.1	0.0	-0.5	-0.4	-0.2	-0.3	-0.6	-0.4	-0.3	-0.5	-0.4	-0.1	-0.3	-0.4	-0.5	-0.8	-0.2	0.2
16-Apr	-1.1	-0.2	0.1	0.0	0.0	0.0	0.1	-0.1	0.1	-0.3	-0.7	-1.0	-0.8	-1.1	-1.0	-0.8	-0.8	-0.8	-0.6	-0.2	-0.5	-0.6	-0.6	-0.7	-0.5	0.1
17-Apr	-0.6	-0.6	-0.5	-0.4	-0.4	-0.8	-0.6	-0.5	-0.8	-1.0	-0.7	-1.9	-1.1	-1.3	-1.2	-1.1	-2.0	-0.8	-0.6	-0.5	-0.4	-0.8	-1.0	-0.9	-0.8	-0.4
18-Apr	-0.3	-0.5	-1.0	-0.5	-0.7	-0.6	UO	-0.3	-0.1	-0.1	-0.1	-0.1	-0.4	-0.4	-0.1	-0.2	-0.2	-0.1	0.1	0.0	0.1	0.1	0.1	0.2	-0.2	0.2
19-Apr	0.0	0.0	-0.1	-0.3	-0.5	-0.7	-0.6	-0.8	-0.6	-0.7	-0.7	-0.6	-0.7	-0.4	-0.5	-0.6	-0.5	-0.3	0.0	0.2	-0.1	0.0	-0.1	0.0	-0.4	0.2
20-Apr	0.1	0.1	0.0	-0.3	-0.1	-0.1	-0.2	-0.2	-0.4	-0.1	-0.2	-0.4	-0.2	-0.4	-0.4	-0.3	-0.5	-0.6	-0.4	-0.3	0.0	0.0	0.0	0.0	-0.2	0.1
21-Apr	-0.5	-0.3	-0.1	-0.1	0.1	0.1	0.1	-0.1	-0.1	-1.0	-0.4	-0.4	-0.3	-0.4	-0.4	-0.5	-0.3	-0.4	-0.5	0.0	0.1	0.1	0.1	0.0	-0.2	0.1
22-Apr	-0.1	0.0	0.0	-0.3	0.1	0.1	-0.5	0.1	-0.7	-0.6	-1.0	-1.3	-1.3	-1.4	-1.8	-1.5	-1.6	-1.4	-1.2	-1.1	-0.9	-0.9	-0.3	0.2	-0.7	0.2
23-Apr	0.1	0.1	0.0	0.0	0.0	0.0	-0.2	-0.3	-0.5	-0.4	-0.4	-0.9	-0.9	-1.2	-1.0	-0.5	-0.8	-0.5	-0.6	-0.4	-0.5	-0.6	-0.9	-1.2	-0.5	0.1
24-Apr	-0.5	0.0	-0.1	0.0	-0.4	-0.6	-0.1	0.1	0.0	0.0	0.1	0.0	-0.3	-0.3	-0.1	0.1	0.1	0.2	0.0	0.1	0.2	-0.3	-0.3	-0.3	-0.1	0.2
25-Apr	-0.1	-0.2	-0.3	-0.6	-0.7	-0.6	-0.8	-0.9	-1.2	-1.0	-1.2	-1.0	-1.1	-0.5	-0.3	-0.6	-0.9	-0.3	-0.7	-0.6	-0.8	-0.7	-0.8	-0.6	-0.7	-0.1
26-Apr	-0.8	-0.8	-0.6	-0.3	-0.6	-0.7	-0.6	-0.6	-0.7	0.0	-0.3	-0.2	0.0	0.2	-0.2	0.0	-0.2	0.1	0.2	0.1	0.0	-0.1	0.0	0.0	-0.2	0.2
27-Apr	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.7	-0.6	-0.7	-0.6	-0.3	-0.5	-0.9	-1.1	-0.8	-1.2	-1.2	-0.5	0.1
28-Apr	-0.7	-0.3	-0.1	-0.2	-0.2	-0.1	0.0	-0.5	-0.1	-0.4	-0.7	-0.5	-0.3	0.1	-0.1	-0.2	-0.1	-0.1	-0.1	0.3	-0.1	-0.2	0.0	0.0	-0.2	0.3
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	-0.3	-0.1	-0.3	-0.1	-0.2	-0.2	-0.6	-0.5	-0.5	-0.2	0.0	-0.1	0.1	-0.2	-0.4	-0.1	0.1
30-Apr	-0.4	-0.6	-0.5	-0.5	-0.2	-0.4	-0.5	-0.4	-0.8	-0.8	-0.2	-0.8	-0.9	-1.1	-0.8	-0.9	-1.1	-1.0	-0.8	-0.8	-1.0	-0.9	-0.7	-0.6	-0.7	-0.2
																						Diurnal Average				
																						Diurnal Maximum				
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1 Maximum Value: 5.4 km/h on Apr 17 15:00		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																							
Minimum Value: 0.1 km/h on Apr 29 03:00																									
Percentiles: P ₁ = 0.2 P ₁₀ = 0.5 Q ₁ = 1.0 Median = 1.7 Q ₃ = 2.4 P ₉₀ = 3.1 P ₉₉ = 4.5																									
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-Apr	0.8	0.8	0.7	0.7	0.5	0.6	0.8	0.8	1.2	1.7	2.1	1.4	1.3	1.1	1.0	1.1	1.3	1.2	1.5	2.4	2.1	1.7	1.6	1.9	2.4
2-Apr	2.5	2.2	2.2	1.7	1.6	1.4	1.8	2.1	2.4	2.3	1.9	1.7	1.2	0.9	1.1	1.7	1.9	2.0	2.5	2.7	2.8	2.4	2.0	1.9	2.8
3-Apr	1.9	1.7	1.5	1.2	1.3	1.6	1.2	1.4	1.6	1.7	1.8	1.6	1.8	1.3	1.1	0.8	0.9	1.1	0.8	0.5	0.6	0.8	1.2	1.4	1.9
4-Apr	1.3	0.8	0.7	0.4	0.6	0.5	0.7	0.9	0.8	0.9	1.2	1.6	1.4	1.5	1.5	1.2	1.2	0.9	0.7	0.9	1.9	1.6	1.8	2.4	2.4
5-Apr	2.5	1.8	1.1	1.0	1.4	1.2	1.4	1.3	1.5	1.5	1.6	1.7	1.7	1.6	1.7	1.8	1.5	0.9	1.0	0.9	0.8	0.9	1.1	0.8	2.5
6-Apr	1.0	1.1	1.2	1.0	1.9	2.0	2.7	3.1	2.1	2.0	2.7	2.5	2.7	2.9	3.1	2.6	2.7	2.5	2.2	2.4	3.0	2.5	2.8	2.9	3.1
7-Apr	2.9	2.5	2.9	3.0	3.1	3.3	3.5	3.9	3.1	2.9	3.1	3.1	2.8	2.8	2.7	2.7	2.4	2.4	2.2	1.5	1.4	1.4	1.5	1.4	3.9
8-Apr	1.8	1.2	1.1	1.4	1.3	1.0	1.2	1.5	1.7	2.2	2.1	2.1	1.8	2.1	1.6	1.7	2.0	1.2	0.8	0.5	0.7	0.7	1.0	1.3	2.2
9-Apr	1.1	0.9	0.4	0.9	0.8	1.0	1.3	1.3	2.2	2.4	1.9	2.4	2.3	2.5	2.2	2.0	1.7	1.1	1.2	1.6	1.8	1.8	2.2	2.6	2.6
10-Apr	2.6	1.6	1.8	3.3	4.3	4.3	3.8	4.3	4.6	3.9	3.9	4.1	4.2	4.2	4.5	4.4	4.2	3.3	2.8	1.6	1.2	1.5	1.7	1.7	4.6
11-Apr	1.0	1.0	0.8	1.0	0.6	0.4	0.6	1.2	1.5	1.5	1.6	1.8	1.8	1.7	1.8	1.6	1.6	1.2	1.5	1.5	0.7	0.7	0.5	0.4	1.8
12-Apr	0.5	0.6	0.5	1.0	1.4	1.8	1.8	1.2	1.4	2.0	1.9	2.0	2.1	2.3	2.2	2.0	1.8	1.0	0.7	0.5	0.3	0.2	0.2	0.4	2.3
13-Apr	0.3	0.4	0.3	0.1	0.2	0.2	0.4	1.1	1.3	1.4	2.1	1.9	2.1	2.1	1.9	1.9	1.9	1.8	1.5	1.0	0.7	0.5	0.8	0.8	2.1
14-Apr	0.4	0.7	0.4	0.4	0.4	0.5	0.6	0.8	1.7	1.5	1.6	1.8	1.6	1.7	1.8	1.8	1.5	1.6	2.5	1.6	1.2	1.4	1.4	0.7	2.5
15-Apr	1.0	0.9	0.7	0.6	0.3	0.2	0.5	0.5	1.2	1.8	1.6	2.0	2.0	2.0	1.9	1.8	1.5	1.7	2.1	1.2	1.1	1.7	2.0	2.9	2.9
16-Apr	2.9	2.0	0.8	0.8	0.4	0.4	0.3	0.5	1.0	2.5	3.7	3.9	3.9	3.8	3.3	3.4	3.9	4.0	3.7	3.6	4.0	3.8	2.3	2.0	4.0
17-Apr	2.3	2.5	2.9	3.0	2.7	2.4	1.6	2.3	4.1	4.6	4.2	4.3	5.2	5.1	5.4	4.6	4.7	4.0	3.2	3.3	3.7	3.3	4.0	4.5	5.4
18-Apr	3.3	3.2	3.0	3.6	2.5	2.6	UO	1.5	1.5	1.3	1.9	1.6	2.0	2.1	1.9	1.6	1.8	1.6	1.3	1.4	1.2	1.2	1.2	1.0	3.6
19-Apr	0.7	0.7	1.4	1.7	2.2	2.9	3.0	3.0	2.9	2.5	2.6	2.4	2.6	2.6	3.1	3.2	2.2	1.9	1.3	0.7	0.8	0.8	0.9	0.5	3.2
20-Apr	0.5	0.4	0.4	0.9	1.2	1.4	1.9	1.4	1.4	1.5	2.0	2.2	2.5	2.3	2.4	2.5	2.2	2.4	2.6	1.8	1.2	0.7	1.0	1.2	2.6
21-Apr	1.1	1.3	0.7	0.6	0.3	0.2	0.3	0.9	1.8	1.6	2.1	2.3	2.2	2.1	1.9	1.8	1.7	1.5	1.0	0.5	0.6	0.6	0.7	0.6	2.3
22-Apr	0.9	0.7	1.1	0.8	0.7	0.7	1.3	1.7	1.8	2.4	2.5	2.5	2.5	2.4	2.3	2.3	2.2	2.0	1.9	1.2	0.7	0.7	0.6	0.6	2.5
23-Apr	0.5	0.5	0.4	0.4	0.5	0.4	0.6	1.0	1.4	2.4	2.7	3.6	3.2	2.7	2.3	2.4	2.6	2.3	1.8	2.1	1.6	1.5	1.6	1.8	3.6
24-Apr	1.2	0.7	0.8	0.9	1.3	2.0	0.7	1.0	0.7	0.7	0.9	1.3	2.0	2.2	2.4	2.7	2.5	2.4	2.1	1.7	1.4	1.0	1.2	0.6	2.7
25-Apr	0.5	0.8	0.8	1.0	1.0	1.1	1.3	1.7	2.1	1.7	1.7	2.3	3.4	3.1	1.1	1.7	2.2	1.4	1.9	3.0	2.4	2.8	2.8	2.3	3.4
26-Apr	2.8	2.3	2.5	2.5	2.8	2.8	2.5	2.5	2.6	2.6	2.1	2.3	2.0	2.2	2.1	2.1	2.2	2.2	2.0	1.7	0.8	0.5	0.5	0.5	2.8
27-Apr	0.5	0.5	0.4	0.2	0.2	0.1	0.4	0.8	1.4	2.0	1.8	1.9	2.0	2.1	2.1	2.0	1.9	1.5	1.1	0.9	1.1	1.4	1.9	1.9	2.1
28-Apr	1.7	1.0	0.5	0.8	0.5	0.6	1.0	2.8	3.9	3.8	3.9	4.2	4.1	3.9	3.6	3.5	3.5	3.2	2.3	1.8	0.9	0.5	0.3	0.1	4.2
29-Apr	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.9	1.4	1.9	2.0	1.8	2.2	2.1	2.0	1.6	1.6	1.4	1.1	0.7	0.9	1.1	1.8	1.8	2.2
30-Apr	2.3	2.4	2.5	2.5	1.9	2.4	2.6	2.6	2.3	2.1	3.1	3.5	4.5	4.0	3.3	3.5	3.6	3.5	3.5	2.7	2.8	2.7	3.1	2.5	4.5
	3.3	3.2	3.0	3.6	4.3	4.3	3.8	4.3	4.6	4.6	4.2	4.3	5.2	5.1	5.4	4.6	4.7	4.0	3.7	3.6	4.0	3.8	4.0	4.5	
	Diurnal Maximum																								
UO - Unstable Operation																									



Maximum Value: 1.3 km/h on Apr 17 12:00 Maximum Daily Average: 0.7 km/h on Apr 7																						Hours in Service: 720 Hours of Data: 718				
Minimum Value: -1.3 km/h on Apr 26 06:00 Minimum Daily Average: -0.4 km/h on Apr 10 Maximum Diurnal Average: 0.3 km/h at hour 2 Minimum Diurnal Average: 0.0 km/h at hour 14 Monthly Average: 0.14 km/h Percentiles: P ₁ = -1.0 P ₁₀ = -0.4 Q ₁ = -0.1 Median = 0.1 Q ₃ = 0.4 P ₉₀ = 0.7 P ₉₉ = 1.1																						Hours of Missing Data: 2 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-Apr	-0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.5	0.5	0.5	0.2	-0.2	-0.1	0.0	-0.4	-0.2	-0.1	0.1	0.1	0.3	0.3	0.3	0.5	0.1	0.5
2-Apr	0.5	0.3	0.4	0.3	0.6	0.3	0.4	0.3	0.7	0.6	0.4	0.3	0.1	-0.2	-0.1	-0.3	-0.2	0.0	-0.1	0.1	0.2	0.1	-0.1	0.0	0.2	0.7
3-Apr	-0.3	-0.3	-0.2	0.1	0.0	0.0	0.1	0.1	-0.2	-0.4	0.4	0.8	0.4	-0.5	-0.6	-0.5	-0.1	0.0	-0.2	0.1	0.0	0.1	0.1	0.3	0.0	0.8
4-Apr	0.5	0.2	0.2	0.0	-0.1	0.0	-0.1	-0.1	0.2	0.5	-0.3	0.1	0.2	-0.1	0.0	-0.2	-0.3	0.1	-0.1	0.7	0.5	0.8	0.7	0.7	0.2	0.8
5-Apr	1.1	1.1	0.3	-0.1	-0.2	0.0	0.0	-0.1	0.0	0.1	0.3	-0.1	-0.2	-0.3	0.1	-0.1	-0.2	-0.1	0.3	0.2	0.3	0.3	0.1	-0.2	0.1	1.1
6-Apr	-0.2	-0.1	0.1	0.0	0.7	0.8	0.9	0.8	0.5	0.7	1.1	0.6	0.1	-0.7	-0.6	-0.6	-1.2	-0.8	-0.6	-0.5	-0.8	-0.2	-0.5	-0.5	0.0	1.1
7-Apr	0.0	1.3	1.2	1.1	1.2	1.1	1.0	1.2	0.9	0.7	0.8	0.7	0.8	0.7	0.7	0.4	0.9	0.7	0.9	0.9	0.7	0.4	-0.1	-0.3	0.7	1.3
8-Apr	0.1	0.5	0.5	0.7	0.4	0.4	0.5	0.3	0.2	0.3	0.3	0.1	0.4	0.3	0.3	0.0	-0.3	-0.1	-0.1	0.1	0.5	0.4	-0.2	0.6	0.3	0.7
9-Apr	0.6	0.8	0.0	0.2	0.1	0.1	0.5	0.1	-0.2	-0.1	-0.4	-0.4	-0.6	-0.6	-0.3	-0.3	0.0	0.2	-0.4	-0.1	-0.2	0.5	0.7	1.0	0.1	1.0
10-Apr	0.7	0.5	0.0	-0.7	-0.8	-0.8	-0.5	-1.0	-0.6	-0.6	-0.3	-0.6	-0.5	-0.6	-0.7	-1.1	-0.7	-0.4	-0.4	-0.1	0.2	0.2	0.1	-0.2	-0.4	0.7
11-Apr	0.0	0.4	0.7	0.2	0.5	0.8	0.7	0.1	0.1	0.1	0.1	0.1	0.1	-0.4	-0.4	-0.2	-0.1	0.1	-0.2	0.1	-0.1	0.0	-0.2	0.0	0.1	0.8
12-Apr	0.0	-0.1	0.0	-0.5	-0.5	0.1	0.4	0.0	-0.4	-0.1	0.0	-0.3	0.0	-0.2	-0.3	0.0	0.0	0.1	-0.2	-0.1	0.0	0.0	0.1	-0.1	-0.1	0.4
13-Apr	-0.2	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.7	0.9	0.1	-0.1	0.3	0.1	-0.1	-0.2	0.0	-0.1	0.1	0.4	-0.1	-0.1	0.1	0.3	0.1	0.9
14-Apr	0.2	0.2	0.2	-0.1	0.0	0.1	0.0	0.0	0.0	-0.2	-0.2	0.1	-0.1	-0.2	0.1	-0.2	-0.1	0.2	0.5	0.5	0.4	0.3	0.7	0.5	0.1	0.7
15-Apr	0.7	0.7	0.1	0.2	0.1	0.0	-0.1	0.0	0.3	0.1	-0.2	-0.1	0.2	0.3	-0.2	0.1	0.3	0.4	0.5	0.2	0.4	0.6	0.3	0.1	0.2	0.7
16-Apr	0.1	0.8	0.1	0.0	0.2	0.1	0.0	-0.2	0.3	0.6	0.7	0.7	0.7	0.3	0.7	0.6	0.1	0.1	0.6	0.4	1.0	0.5	0.4	0.3	0.4	1.0
17-Apr	0.4	0.3	0.7	0.9	0.8	-0.1	0.1	0.4	0.4	1.0	0.7	1.3	1.1	1.1	0.9	1.2	0.7	0.3	0.5	0.6	0.8	0.5	0.5	0.6	0.6	1.3
18-Apr	0.7	0.6	0.2	0.7	0.3	0.3	UO	UO	0.1	-0.3	0.2	-0.1	0.2	-0.1	0.0	0.0	-0.1	0.0	0.1	0.1	-0.1	0.1	0.1	-0.1	0.1	0.7
19-Apr	0.0	0.0	0.2	-0.1	0.4	0.5	0.4	0.2	0.2	0.2	0.2	0.0	0.4	0.3	0.6	0.2	0.3	0.4	0.3	0.1	0.1	0.0	-0.1	-0.1	0.2	0.6
20-Apr	-0.1	0.1	0.3	0.1	0.5	0.9	0.5	0.3	-0.1	0.2	-0.2	0.3	0.6	0.2	0.5	0.2	0.0	0.2	0.2	0.4	0.4	0.3	0.2	0.5	0.3	0.9
21-Apr	-0.3	0.5	0.5	0.2	0.1	0.2	0.1	0.0	0.3	-0.1	0.3	0.2	0.4	0.2	0.0	0.2	0.1	0.2	-0.1	0.3	0.5	0.5	0.7	0.8	0.2	0.8
22-Apr	0.4	0.6	1.2	0.5	0.7	0.6	-0.1	0.5	0.1	0.1	0.3	0.2	0.1	-0.4	-0.6	-0.1	-0.2	-0.1	0.0	-0.3	-0.2	-0.1	0.3	0.9	0.2	1.2
23-Apr	0.8	0.7	0.2	0.3	0.3	0.1	0.2	0.2	0.3	0.5	0.6	0.9	0.7	0.1	0.0	0.6	0.4	0.7	0.3	0.5	0.1	0.3	0.1	-0.3	0.4	0.9
24-Apr	0.3	0.1	0.0	0.0	0.3	0.3	0.0	0.5	-0.1	0.0	0.0	0.1	-0.6	-0.6	-0.5	-0.3	-0.2	-0.1	-0.3	-0.2	-0.1	0.0	0.4	0.2	0.0	0.5
25-Apr	0.0	0.3	0.4	0.5	0.6	0.5	0.5	0.5	0.2	-0.3	-0.1	0.1	0.4	-0.1	0.2	0.3	0.6	0.3	0.6	0.0	-0.5	-0.4	-0.6	-0.5	0.1	0.6
26-Apr	-0.6	-0.3	-0.7	-0.8	-0.7	-1.3	-0.9	-0.5	-0.6	-0.4	-0.4	-0.2	-0.2	0.1	-0.4	0.0	-0.6	0.0	0.2	0.2	0.1	-0.1	-0.1	-0.1	-0.4	0.2
27-Apr	-0.1	-0.2	0.0	0.0	0.1	0.0	0.1	0.0	-0.2	0.0	-0.2	-0.5	-0.2	-0.2	-0.5	-0.3	-0.3	0.7	0.2	-0.1	-0.3	0.0	-0.3	-0.3	-0.1	0.7
28-Apr	0.1	0.5	0.0	-0.4	-0.4	-0.4	-0.1	-1.1	-0.4	-1.1	-1.1	-1.0	-0.7	-0.9	-0.8	-0.7	-0.3	-0.2	0.0	0.1	0.0	-0.2	0.0	0.0	-0.4	0.5
29-Apr	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.2	0.2	0.1	0.4	-0.1	0.1	0.2	0.0	-0.1	-0.1	0.1	0.1	0.1	0.5	0.9	0.6	0.3	0.2	0.9
30-Apr	0.7	0.5	0.7	0.8	0.8	0.7	0.5	0.6	0.5	0.3	0.8	1.0	0.8	0.7	1.0	0.8	0.9	1.1	1.1	0.6	1.0	0.3	0.9	0.9	0.7	1.1
																								Diurnal Average		
																								Diurnal Maximum		
UO - Unstable Operation																										



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 4.7 km/h on Apr 17 15:00			Hours of Data:	718
Minimum Value: 0.1 km/h on Apr 29 04:00			Hours of Missing Data:	2
Percentiles: $P_1 = 0.2$ $P_{10} = 0.6$ $Q_1 = 1.0$ Median = 1.6 $Q_3 = 2.2$ $P_{90} = 3.0$ $P_{99} = 4.2$			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-Apr	0.8	0.8	0.9	0.8	0.7	0.6	1.0	1.0	1.6	1.6	1.9	1.2	1.3	1.1	1.2	0.8	1.1	0.9	1.5	2.1	1.7	1.4	1.5	1.8	2.1
2-Apr	2.3	1.9	1.7	1.5	1.4	1.4	1.7	1.7	1.7	1.2	1.7	1.6	1.1	1.0	1.3	1.4	1.3	1.6	1.7	2.1	2.2	1.9	1.6	1.7	2.3
3-Apr	1.5	1.5	1.3	1.0	1.1	1.4	1.4	1.4	1.6	1.7	2.1	1.8	2.0	1.4	1.3	0.9	1.0	1.0	0.9	0.3	0.6	0.8	1.0	1.4	2.1
4-Apr	1.2	0.9	0.7	0.3	0.5	0.4	0.6	0.5	0.9	1.1	1.3	1.5	1.8	1.6	1.4	1.5	1.6	1.1	0.9	1.3	1.3	1.5	1.8	1.6	1.8
5-Apr	2.0	2.0	1.5	1.0	1.3	1.2	1.2	1.4	1.5	1.2	1.2	1.2	2.0	2.0	2.2	2.0	1.8	1.1	1.1	1.3	1.0	1.2	1.1	0.8	2.2
6-Apr	1.0	1.1	1.1	1.1	1.6	1.6	1.9	2.3	2.3	1.9	2.1	2.7	3.2	3.7	3.9	3.1	3.1	3.1	2.6	2.9	3.5	2.9	3.2	3.3	3.9
7-Apr	3.6	3.1	2.6	2.6	2.4	2.3	2.6	2.7	2.1	2.1	2.4	2.5	2.2	2.3	2.5	2.8	2.3	2.7	2.3	1.9	2.0	1.9	1.9	1.8	3.6
8-Apr	2.0	1.6	1.1	1.3	1.0	0.8	1.0	1.3	1.5	1.4	1.5	0.8	0.9	1.4	1.7	1.9	1.5	0.9	0.5	0.4	0.6	0.9	1.2	0.9	2.0
9-Apr	1.2	1.0	0.4	1.2	0.9	1.2	1.1	1.2	1.9	2.2	1.7	2.3	2.3	2.2	2.2	2.1	2.0	1.3	1.3	2.0	2.3	2.4	1.9	2.1	2.4
10-Apr	2.0	1.8	2.0	3.1	3.7	3.7	3.4	3.7	4.0	3.7	3.4	3.9	3.8	3.8	4.2	3.7	3.9	3.1	2.4	1.5	1.1	1.5	1.6	1.7	4.2
11-Apr	1.1	1.2	1.1	1.0	1.0	0.5	0.5	0.8	1.0	1.2	1.2	1.2	1.7	1.8	1.9	1.7	1.5	1.4	1.4	1.2	0.7	0.5	0.3	0.5	1.9
12-Apr	0.9	0.5	0.8	1.4	1.8	1.4	1.7	1.1	1.1	1.4	1.9	2.1	2.4	2.3	1.8	1.9	2.1	1.2	0.8	0.6	0.5	0.3	0.4	0.5	2.4
13-Apr	0.5	0.3	0.4	0.2	0.2	0.2	0.4	1.0	1.4	1.6	2.2	2.0	2.1	1.8	2.3	2.1	1.9	1.9	1.6	1.7	1.2	0.9	0.6	1.3	2.3
14-Apr	0.7	1.0	0.6	0.6	0.7	0.6	0.8	1.0	1.7	1.2	1.7	1.8	1.7	1.8	2.1	1.7	1.5	1.9	1.4	1.2	1.2	1.1	1.1	0.8	2.1
15-Apr	0.9	1.0	1.0	0.7	0.3	0.2	0.4	0.5	1.4	1.7	1.5	2.1	2.2	2.1	2.0	1.9	1.5	1.4	1.8	1.2	1.3	1.3	1.7	1.9	2.2
16-Apr	1.9	1.7	1.3	1.3	0.8	0.6	0.4	0.5	1.2	2.0	2.8	3.0	3.2	2.9	2.7	3.0	3.4	3.5	3.7	3.5	3.8	3.7	2.7	2.0	3.8
17-Apr	1.8	2.2	2.3	2.4	2.6	2.7	1.9	2.6	4.2	4.3	3.6	3.3	4.6	3.9	4.7	3.9	4.0	3.5	3.3	3.7	3.9	3.0	3.5	4.2	4.7
18-Apr	3.2	3.5	3.1	3.8	2.5	2.3	UO	UO	1.6	1.4	1.6	1.5	1.9	2.0	1.7	1.6	1.6	1.6	1.2	1.3	1.2	1.1	1.0	0.9	3.8
19-Apr	0.8	0.6	1.3	1.7	2.2	2.5	2.5	2.4	2.4	2.4	2.2	2.2	2.5	2.4	2.6	2.7	2.0	1.7	1.2	0.7	0.9	0.8	0.9	0.5	2.7
20-Apr	0.5	0.5	0.7	0.9	1.0	1.1	1.5	1.6	1.3	1.6	2.2	2.2	2.6	2.4	2.5	2.6	2.2	2.2	2.2	1.7	1.2	1.0	1.3	1.4	2.6
21-Apr	1.4	1.0	0.8	0.8	0.6	0.4	0.2	1.0	1.6	1.2	2.0	2.2	2.2	2.2	2.1	2.2	2.1	1.6	1.1	0.7	0.9	0.9	1.1	0.9	2.2
22-Apr	1.2	1.0	0.7	0.6	0.5	0.6	1.1	1.5	1.1	1.7	2.6	3.0	2.9	2.9	3.0	3.0	2.8	2.4	2.2	1.3	0.8	0.6	0.6	0.6	3.0
23-Apr	0.7	0.5	0.8	0.6	0.8	0.6	0.7	0.8	1.3	1.9	2.2	2.7	2.7	3.1	2.4	2.2	2.3	2.1	2.2	2.1	1.6	1.8	1.9	2.0	3.1
24-Apr	1.3	0.9	1.0	1.1	1.5	1.7	0.9	1.1	0.8	0.7	0.7	1.2	1.7	2.0	2.3	2.8	2.5	2.4	2.2	1.6	1.6	0.9	1.0	0.7	2.8
25-Apr	0.8	1.0	1.0	0.9	1.0	1.2	1.3	1.6	2.1	1.9	2.2	2.5	3.3	3.1	0.9	1.3	1.9	1.6	1.7	3.3	2.7	3.0	3.2	2.3	3.3
26-Apr	3.0	2.1	2.5	2.4	2.5	2.3	2.3	2.7	2.8	2.8	2.2	2.5	1.9	2.2	1.6	2.1	2.1	2.2	2.0	1.9	1.1	0.5	0.4	0.3	3.0
27-Apr	0.5	0.5	0.3	0.2	0.3	0.2	0.3	0.6	1.4	2.2	2.0	2.2	2.4	2.5	2.3	2.3	2.1	1.8	1.1	0.9	1.1	1.5	2.1	2.1	2.5
28-Apr	1.8	1.0	0.6	1.1	0.8	0.9	1.3	2.8	4.3	4.3	4.2	4.3	4.4	3.9	3.5	3.8	3.3	2.8	2.0	1.6	0.8	0.6	0.4	0.3	4.4
29-Apr	0.2	0.2	0.1	0.1	0.3	0.1	0.2	0.9	1.4	1.9	2.2	1.9	2.4	2.2	2.3	2.0	1.8	1.5	1.0	0.7	1.3	1.3	1.7	1.7	2.4
30-Apr	2.1	2.2	2.0	2.0	1.8	1.8	1.9	2.0	2.0	2.1	2.7	2.8	3.1	2.9	3.0	3.0	2.8	2.4	2.2	2.0	1.7	1.9	2.3	2.2	3.1
	3.6 3.5 3.1 3.8 3.7 3.7 3.4 3.7 4.3 4.3 4.2 4.3 4.6 3.9 4.7 3.9 4.0 3.5 3.7 3.7 3.9 3.7 3.5 4.2																								
	Diurnal Maximum																								

UO - Unstable Operation



Maximum Value: 2.3 km/h on Apr 5 02:00		Maximum Daily Average: 0.7 km/h on Apr 17		Hours in Service: 720																						
Minimum Value: -2.0 km/h on Apr 10 16:00		Minimum Daily Average: -1.3 km/h on Apr 10		Hours of Data: 717																						
Maximum Diurnal Average: 0.3 km/h at hour 2		Minimum Diurnal Average: -0.2 km/h at hour 14		Hours of Missing Data: 3																						
Monthly Average: 0.07 km/h		Percentiles: P ₁ = -1.7 P ₁₀ = -0.9 Q ₁ = -0.2 Median = 0.1 Q ₃ = 0.5 P ₉₀ = 0.9 P ₉₉ = 1.6		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-Apr	0.3	0.8	0.3	0.4	1.1	0.5	0.1	0.3	0.9	1.1	0.4	0.2	-0.2	-0.2	0.7	-0.2	0.2	0.4	0.4	0.5	0.6	0.2	0.3	0.4	0.4	1.1
2-Apr	-0.1	-0.2	0.1	0.5	1.0	0.9	0.8	0.5	0.3	0.3	0.3	0.3	0.3	-0.4	0.0	0.1	0.1	0.4	0.6	0.8	0.8	0.6	0.4	0.4	0.4	1.0
3-Apr	0.1	0.1	0.3	0.4	0.3	0.4	0.3	0.2	0.2	-0.2	1.6	1.1	0.6	-0.7	-0.9	-0.7	-0.2	0.0	0.0	0.2	0.3	0.4	0.5	0.8	0.2	1.6
4-Apr	1.1	0.4	0.2	0.1	0.2	0.1	-0.1	-0.2	-0.1	0.4	-0.3	0.3	0.3	0.1	-0.2	-0.3	-0.5	0.2	-0.2	2.1	0.1	1.2	0.6	-0.2	0.2	2.1
5-Apr	0.6	2.3	1.8	0.0	-0.3	-0.1	0.0	-0.4	-0.1	0.1	0.0	-0.3	-0.2	-0.1	0.1	-0.4	-0.2	-0.4	0.0	0.5	0.6	0.2	0.0	-0.6	0.1	2.3
6-Apr	-0.2	0.2	-0.2	0.0	1.2	1.2	0.6	0.3	1.1	1.6	1.7	0.8	-0.2	-1.3	-1.4	-1.6	-1.9	-1.6	-1.5	-1.6	-1.8	-1.3	-1.1	-1.2	-0.3	1.7
7-Apr	-0.5	0.8	1.6	1.4	1.0	0.9	0.5	0.8	0.8	0.5	0.9	0.7	0.8	0.9	0.9	1.3	1.0	1.0	0.8	0.7	0.2	-0.3	-1.1	-1.0	0.6	1.6
8-Apr	-0.8	0.2	0.5	1.2	0.6	0.1	0.1	-0.3	-0.2	-0.1	-0.1	0.0	-0.6	-0.5	0.1	-0.4	-0.9	-0.6	-0.9	-0.9	-0.3	0.2	-0.2	0.0	-0.2	1.2
9-Apr	0.6	0.3	-0.3	-0.6	-0.2	-0.3	-0.4	-0.4	-1.0	-0.7	-1.1	-1.0	-1.2	-1.2	-0.5	-0.8	-0.3	-0.2	-1.2	-0.9	-0.9	0.1	0.6	1.0	-0.4	1.0
10-Apr	0.7	0.5	-0.9	-1.1	-1.6	-1.2	-1.7	-1.6	-1.7	-1.5	-1.9	-1.8	-1.5	-1.6	-1.4	-2.0	-1.9	-1.7	-1.1	-1.3	-0.8	-0.8	-0.9	-1.0	-1.3	0.7
11-Apr	-0.6	-0.1	-0.1	-0.2	0.1	-0.1	-0.3	-0.2	-0.2	-0.2	-0.3	-0.5	-0.3	-1.2	-1.3	-0.9	-0.6	0.3	-0.1	0.8	0.2	-0.1	0.1	-0.1	-0.2	0.8
12-Apr	-0.2	0.3	0.1	-1.5	-1.4	-0.1	1.2	0.2	-0.4	0.0	0.1	-0.2	-0.1	0.1	0.1	-0.2	0.0	0.1	-0.2	-0.2	0.3	0.0	0.1	0.0	-0.1	1.2
13-Apr	-0.2	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.4	1.1	0.4	0.2	0.2	0.0	-0.2	-0.1	0.5	0.7	0.8	1.6	0.7	0.1	0.1	0.5	0.3	1.6
14-Apr	0.5	0.4	0.2	0.7	0.3	0.5	0.8	0.3	-0.1	-0.7	-0.5	-0.6	-0.5	-0.6	-0.3	-0.4	-0.4	0.4	0.2	0.7	0.5	-0.1	0.6	0.3	0.1	0.8
15-Apr	0.6	0.3	0.7	0.2	0.1	0.1	0.3	0.2	0.1	-0.2	-0.5	-0.5	-0.2	0.4	0.0	0.0	0.5	0.4	0.6	0.8	0.4	0.2	-0.1	-1.2	0.1	0.8
16-Apr	-1.2	1.3	0.4	0.1	0.7	0.3	0.1	0.0	0.1	0.2	0.0	0.0	0.2	-0.3	0.3	0.9	0.4	0.0	0.9	1.3	1.7	1.8	0.8	-0.5	0.4	1.8
17-Apr	0.0	-0.7	0.9	1.4	0.7	-1.1	-0.1	0.6	1.2	0.7	0.6	0.7	1.5	0.3	0.7	1.4	-0.1	0.9	1.3	1.6	1.3	0.7	0.5	0.9	0.7	1.6
18-Apr	1.4	1.6	1.0	1.1	0.3	0.0	UO	UO	0.5	0.3	0.3	0.1	0.4	0.5	0.0	0.2	-0.1	0.3	0.5	0.3	0.3	0.2	0.4	0.3	0.4	1.6
19-Apr	0.2	0.2	0.4	-0.2	0.4	-0.1	-0.3	-0.1	-0.1	0.1	0.0	0.0	0.7	0.7	0.5	-0.1	0.3	0.7	0.3	0.6	0.8	0.4	0.1	0.1	0.2	0.8
20-Apr	0.2	0.2	0.5	-0.3	0.4	1.1	1.0	1.0	-0.1	-0.1	-0.2	0.2	0.9	0.6	1.0	0.8	-0.1	0.6	0.7	1.0	0.9	0.2	0.1	0.9	0.5	1.1
21-Apr	-0.9	0.2	0.7	0.5	0.0	0.2	0.4	0.0	0.2	-0.3	0.5	0.5	0.7	0.0	-0.2	-0.2	-0.2	0.0	-0.2	0.0	0.1	-0.2	-0.1	0.6	0.1	0.7
22-Apr	0.2	-0.4	-0.3	-0.5	0.2	0.4	-0.4	0.1	-0.1	-0.4	0.3	0.3	0.4	-0.7	-0.9	-0.6	-0.6	-0.5	-0.8	-1.2	-1.0	-0.7	0.0	0.5	-0.3	0.5
23-Apr	0.6	0.9	0.5	0.6	1.1	0.2	0.3	0.5	0.3	0.6	0.8	0.3	1.0	-0.1	0.0	0.6	0.4	1.1	0.1	0.9	0.3	0.1	-0.4	-1.0	0.4	1.1
24-Apr	0.1	0.5	0.4	-0.1	0.4	0.0	0.4	1.3	-0.1	UO	0.4	0.4	-0.1	-0.4	0.0	0.0	0.4	0.6	0.1	0.3	0.3	-0.1	-0.5	-0.2	0.2	1.3
25-Apr	-0.3	0.2	0.5	0.0	0.1	0.1	0.0	0.1	0.2	-1.1	-0.1	-0.1	-0.2	-0.4	0.0	0.2	0.3	0.3	0.4	-0.9	-0.8	-0.8	-0.5	-0.5	-0.1	0.5
26-Apr	-0.9	-0.6	-0.9	-1.2	-1.1	-1.4	-1.0	-0.1	-0.4	-0.3	-0.5	-0.1	-0.1	0.3	-0.4	0.3	0.3	0.5	0.8	0.6	0.5	0.2	0.2	-0.1	-0.2	0.8
27-Apr	0.0	0.0	0.2	0.2	0.2	0.0	0.0	-0.2	0.0	-0.4	-0.6	-0.9	-0.5	-0.9	-0.7	-0.7	-0.5	1.3	-0.1	-0.5	-0.9	-1.0	-1.5	-1.3	-0.4	1.3
28-Apr	-0.1	-0.3	-0.2	-0.7	-0.5	-0.7	-0.4	-1.3	0.1	-1.4	-0.8	-0.8	-0.6	-0.8	-0.9	-0.6	0.3	0.8	0.6	0.7	0.8	0.0	0.2	0.3	-0.3	0.8
29-Apr	0.5	0.1	0.1	0.1	-0.1	0.0	0.1	0.0	0.4	-0.3	0.1	-0.2	0.0	0.6	0.1	-0.1	-0.2	-0.1	0.4	0.5	1.0	1.6	0.2	0.2	0.2	1.6
30-Apr	0.8	0.7	1.0	0.7	1.0	0.3	-0.2	0.2	0.8	0.4	1.1	1.0	-0.2	-0.1	0.9	0.5	-0.1	0.4	0.4	0.2	0.3	-0.6	0.7	1.5	0.5	1.5
																								Diurnal Average		
																								Diurnal Maximum		
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1																				Hours in Service: 720					
Maximum Value: 4.9 km/h on Apr 17 13:00																				Hours of Data: 717					
Minimum Value: 0.1 km/h on Apr 29 07:00																				Hours of Missing Data: 3					
Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.1 Median = 1.7 Q ₃ = 2.5 P ₉₀ = 3.2 P ₉₉ = 4.4																				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-Apr	1.0	1.1	1.3	1.0	0.8	0.5	1.1	1.1	1.8	1.8	2.1	1.2	1.3	1.2	1.4	1.0	1.0	1.4	1.7	2.0	1.6	1.3	1.7	2.1	2.1
2-Apr	2.2	1.9	1.5	1.3	1.3	1.5	1.7	1.6	1.5	1.1	1.8	1.8	1.3	1.0	1.2	1.5	1.0	1.6	1.7	2.1	2.4	1.9	1.5	1.6	2.4
3-Apr	1.2	1.1	1.3	1.2	1.2	1.2	1.0	1.4	1.5	1.8	2.8	1.9	2.3	1.5	1.4	0.9	1.1	0.9	0.8	0.5	0.7	0.6	0.4	0.9	2.8
4-Apr	0.9	1.1	0.8	0.4	0.4	0.6	0.6	0.4	0.9	1.4	1.2	2.0	2.0	1.9	1.5	1.8	2.0	1.3	1.2	1.3	1.0	1.8	1.6	1.1	2.0
5-Apr	1.5	1.5	1.7	1.4	1.0	1.2	1.2	1.4	1.5	1.2	1.3	1.4	2.4	2.6	2.8	2.5	2.0	1.3	1.4	1.6	1.3	1.5	1.1	0.6	2.8
6-Apr	1.3	1.8	1.8	1.2	1.0	0.9	0.9	1.6	2.4	2.2	2.6	3.6	3.9	3.8	3.9	3.1	2.9	3.1	2.1	2.6	2.8	2.6	2.8	2.8	3.9
7-Apr	3.8	3.8	3.6	3.0	2.9	2.4	2.2	2.5	2.5	2.6	2.5	2.6	2.7	2.8	3.2	3.9	3.1	3.3	3.1	2.5	2.6	2.6	2.1	1.8	3.9
8-Apr	1.7	1.9	1.7	2.0	1.4	1.4	1.5	1.5	1.8	1.6	1.1	1.0	1.5	1.8	2.0	2.1	1.0	1.0	0.6	0.5	0.5	0.7	0.4	0.6	2.1
9-Apr	0.9	0.7	0.7	1.5	0.5	1.6	1.2	1.3	1.5	1.6	1.2	2.0	1.8	1.4	1.8	1.5	2.5	1.8	0.8	1.9	1.9	2.7	2.7	2.1	2.7
10-Apr	1.7	2.2	2.1	2.2	2.8	2.7	2.7	2.6	3.1	3.1	2.5	3.1	3.3	3.1	3.2	2.6	2.6	2.5	1.8	1.0	1.0	1.4	1.1	1.2	3.3
11-Apr	1.3	1.6	1.3	1.1	1.4	0.9	0.5	0.7	1.3	1.2	1.3	1.4	2.0	2.1	2.0	1.9	1.7	2.0	1.9	1.4	1.0	0.5	0.3	0.5	2.1
12-Apr	1.4	0.6	0.6	1.7	2.6	1.1	1.7	1.0	1.2	1.0	2.3	2.3	2.8	2.6	2.1	2.4	2.2	1.4	1.0	0.6	0.9	0.3	0.4	0.3	2.8
13-Apr	0.5	0.3	0.3	0.2	0.3	0.3	0.2	0.5	1.2	1.9	2.1	1.9	1.9	1.9	2.7	2.8	2.4	2.5	1.8	1.5	2.0	1.5	0.9	1.4	2.8
14-Apr	0.9	1.6	0.8	1.0	1.0	1.2	1.3	1.1	1.3	1.1	1.8	1.8	1.8	1.9	1.9	2.5	1.6	1.8	1.8	1.5	1.4	1.3	1.3	1.0	2.5
15-Apr	1.1	1.3	1.6	1.0	0.4	0.2	0.4	0.4	1.3	1.2	1.3	1.4	2.1	2.3	2.2	2.6	2.0	1.4	1.9	1.3	2.1	1.9	1.7	1.6	2.6
16-Apr	1.3	1.6	2.4	2.0	1.6	1.2	0.6	0.8	1.2	2.0	2.8	3.1	3.4	3.5	3.3	3.5	3.9	3.9	3.6	4.0	4.4	4.2	3.6	2.6	4.4
17-Apr	2.5	3.0	3.1	2.6	3.6	3.5	2.8	3.4	4.8	4.8	4.0	4.1	4.9	4.1	4.8	4.4	4.4	4.0	3.9	4.3	4.6	3.9	3.7	4.5	4.9
18-Apr	3.7	3.8	3.7	4.0	3.2	2.8	UO	UO	1.6	1.5	1.7	1.3	1.9	2.5	1.8	1.8	1.7	1.7	1.4	1.2	1.3	1.0	0.8	0.9	4.0
19-Apr	0.7	0.8	1.5	2.1	2.8	2.8	2.8	2.2	2.4	2.4	2.4	2.2	2.8	2.6	2.9	2.9	2.3	2.2	1.2	0.7	1.2	1.0	1.1	0.8	2.9
20-Apr	0.9	0.7	1.0	0.8	1.0	1.0	1.2	1.5	1.2	1.6	2.7	2.3	3.2	2.9	3.3	3.4	2.9	2.7	2.5	1.8	1.0	1.3	1.6	1.9	3.4
21-Apr	1.5	1.0	0.9	1.1	0.7	0.6	0.5	0.9	1.4	1.4	2.2	2.7	2.5	2.7	2.2	2.7	2.6	1.9	1.5	0.8	1.4	1.2	2.0	1.7	2.7
22-Apr	1.9	1.2	0.7	0.5	0.5	0.6	0.9	0.8	1.0	1.8	3.2	4.1	4.1	3.8	3.7	3.7	3.5	2.9	2.2	1.2	0.6	0.3	0.3	0.8	4.1
23-Apr	1.1	0.8	0.9	0.9	1.0	1.0	0.8	1.0	1.5	1.9	2.5	2.9	3.5	4.1	3.3	2.6	2.6	2.8	2.9	2.3	2.4	2.4	2.5	2.5	4.1
24-Apr	1.4	1.1	1.3	1.3	2.4	1.8	1.3	1.4	0.8	UO	1.0	1.3	1.5	2.3	2.1	2.4	2.4	2.1	1.7	1.3	1.1	0.9	0.3	1.0	2.4
25-Apr	1.2	1.3	1.7	1.4	1.4	1.8	1.9	2.1	2.7	2.1	2.6	3.1	3.8	2.7	0.9	1.7	2.3	1.8	2.2	2.9	2.7	2.8	3.2	2.7	3.8
26-Apr	2.8	1.9	2.8	1.9	1.9	1.9	1.7	3.0	2.9	3.1	2.6	2.6	2.3	2.4	1.7	2.6	2.6	2.6	2.4	1.9	1.5	0.6	0.3	0.3	3.1
27-Apr	0.3	0.4	0.3	0.3	0.5	0.3	0.2	0.4	1.4	2.5	2.1	2.3	2.8	2.6	2.5	2.5	2.5	2.4	1.5	0.5	0.4	0.6	0.9	1.4	2.8
28-Apr	2.1	1.3	1.0	1.2	0.8	1.1	1.2	2.4	4.3	4.3	4.4	4.5	4.4	4.0	3.6	3.8	3.5	3.1	2.2	1.7	1.2	0.9	0.6	0.3	4.5
29-Apr	0.5	0.4	0.1	0.3	0.3	0.2	0.1	0.7	1.2	1.0	2.2	2.2	2.9	3.0	2.6	2.4	2.1	1.9	1.3	0.4	1.5	1.3	1.8	1.6	3.0
30-Apr	1.8	2.0	1.8	1.5	1.5	1.3	1.3	1.7	2.3	2.7	2.6	3.2	3.1	2.9	3.7	3.3	3.1	2.6	2.1	2.0	1.7	2.0	2.3	2.5	3.7
Diurnal Maximum																									
3.8 3.8 3.7 4.0 3.6 3.5 2.8 3.4 4.8 4.8 4.4 4.5 4.9 4.1 4.8 4.4 4.4 4.0 3.9 4.3 4.6 4.2 3.7 4.5																									
UO - Unstable Operation																									



Maximum Value: 2.8 km/h on Apr 5 02:00		Maximum Daily Average: 1.1 km/h on Apr 7		Hours in Service: 720																						
Minimum Value: -2.4 km/h on Apr 17 06:00		Minimum Daily Average: -0.1 km/h on Apr 15		Hours of Data: 717																						
Maximum Diurnal Average: 0.6 km/h at hour 3		Minimum Diurnal Average: 0.1 km/h at hour 14		Hours of Missing Data: 3																						
Monthly Average: 0.33 km/h		Percentiles: $P_1 = -1.2$ $P_{10} = -0.4$ $Q_1 = 0.0$ Median = 0.3 $Q_3 = 0.7$ $P_{90} = 1.3$ $P_{99} = 2.2$		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-Apr	0.2	0.7	-0.2	0.0	0.9	0.0	-0.3	-0.1	0.2	0.8	0.0	-0.1	-0.7	-0.5	1.1	0.3	0.3	0.3	0.1	-0.1	0.1	-0.1	0.3	0.3	0.1	1.1
2-Apr	-0.6	-0.6	-0.2	0.4	0.9	0.8	1.0	0.3	0.2	0.2	0.2	0.0	0.2	-0.3	0.1	0.3	0.1	0.2	0.7	0.8	0.7	0.4	0.3	0.3	0.3	1.0
3-Apr	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.1	-0.1	1.9	2.0	1.0	0.1	0.0	-0.2	0.4	0.7	0.1	0.0	0.2	0.1	0.1	0.3	0.4	2.0
4-Apr	0.6	0.4	0.2	0.2	0.1	0.1	0.2	0.3	0.0	0.1	-0.4	1.2	1.0	-0.3	-0.6	-0.2	-0.4	0.3	0.3	2.2	0.2	1.4	0.8	0.0	0.3	2.2
5-Apr	0.9	2.8	2.4	0.1	-0.5	0.0	0.1	-0.5	-0.3	0.2	-0.1	-0.1	-0.1	0.3	0.5	0.0	0.1	-0.2	0.6	0.4	0.7	0.1	0.3	0.1	0.3	2.8
6-Apr	0.7	0.9	0.7	0.9	1.9	1.3	1.6	0.9	1.9	2.7	2.7	0.6	-0.2	-0.9	-0.7	-1.2	-1.1	-1.0	-0.9	-0.9	-1.2	-0.6	-0.3	-0.4	0.3	2.7
7-Apr	0.1	0.7	1.4	1.9	1.5	1.6	1.1	1.3	1.8	1.3	2.1	1.7	1.7	2.0	1.9	2.0	1.5	1.3	1.0	1.0	0.3	-0.3	-1.1	-0.7	1.1	2.1
8-Apr	-0.4	0.1	0.8	1.5	1.5	0.2	-0.1	-0.2	-0.3	0.0	0.1	0.0	-0.7	-0.1	0.6	0.4	0.3	0.4	0.6	0.8	1.3	1.3	1.3	2.2	0.5	2.2
9-Apr	2.7	2.7	1.2	1.0	1.6	1.0	1.4	0.7	0.6	1.0	0.2	0.6	0.2	0.1	0.3	-0.1	0.2	-0.3	-0.7	-0.5	-0.6	0.3	1.3	1.9	0.7	2.7
10-Apr	1.4	0.6	0.2	1.1	1.3	1.6	1.8	1.5	1.2	1.1	0.8	0.9	1.4	1.3	1.5	0.7	1.1	1.2	1.3	0.8	0.7	0.8	1.3	1.0	1.1	1.8
11-Apr	0.9	0.4	0.6	0.5	1.0	0.1	0.0	-0.1	0.2	0.2	-0.3	-0.7	-0.2	-0.4	-0.6	-0.1	0.2	1.2	0.1	0.9	0.4	0.8	0.5	0.3	0.2	1.2
12-Apr	0.6	0.7	0.6	-0.1	0.3	0.5	2.0	0.5	-0.7	-0.3	0.2	0.9	0.4	0.3	0.2	-0.2	0.1	0.5	0.2	0.3	0.3	0.0	0.4	0.2	0.3	2.0
13-Apr	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.1	-0.2	0.9	0.8	0.1	0.1	0.0	-0.5	0.0	0.4	0.6	0.6	1.1	0.8	-0.1	0.0	0.2	0.3	1.1
14-Apr	-0.1	0.1	0.4	0.9	0.6	0.2	0.8	0.3	-0.3	-1.4	-0.7	-1.1	-0.9	-1.0	-0.4	-0.1	-0.4	0.5	-0.2	0.4	0.5	-0.4	0.1	0.2	-0.1	0.9
15-Apr	0.3	-0.4	0.5	0.3	0.1	0.2	0.1	0.0	0.0	-0.3	-0.9	-0.6	-1.0	0.1	0.1	-0.2	0.2	0.1	0.2	0.4	0.1	-0.1	-0.2	-1.4	-0.1	0.5
16-Apr	-1.3	1.7	1.8	0.5	0.5	0.4	0.2	0.2	0.2	0.1	-0.7	-0.5	-0.4	-0.8	0.2	0.4	-0.5	-1.1	-0.1	0.5	0.9	1.8	0.9	-1.4	0.1	1.8
17-Apr	-0.9	-1.8	0.4	1.3	-0.4	-2.4	-0.4	0.6	0.9	0.7	0.6	0.4	1.3	0.0	0.2	1.5	0.6	0.4	0.5	0.9	0.8	0.2	0.4	0.0	0.2	1.5
18-Apr	1.1	1.0	0.6	0.8	0.2	UO	UO	UO	0.4	0.6	0.0	-0.1	0.1	0.1	-0.4	0.0	-0.1	0.0	-0.3	0.0	0.3	0.5	0.4	-0.2	0.2	1.1
19-Apr	0.2	0.0	0.1	0.0	0.0	-0.5	-0.5	-0.4	-0.4	-0.3	-0.5	-0.5	0.2	0.1	-0.2	-0.7	-0.1	0.2	0.2	0.3	1.0	0.5	0.3	0.1	0.0	1.0
20-Apr	0.1	0.2	0.4	0.0	0.4	1.0	1.2	1.4	0.0	-0.6	-0.1	-0.2	0.6	0.4	0.8	0.7	-1.0	0.4	-0.1	0.2	0.7	-0.1	-0.1	1.1	0.3	1.4
21-Apr	-1.3	0.3	1.1	0.8	0.5	0.4	0.3	0.2	0.1	-0.5	0.3	0.8	0.1	-0.5	-0.3	-0.3	-0.4	0.0	-0.3	0.1	0.2	-0.1	0.5	0.9	0.1	1.1
22-Apr	0.3	0.4	0.2	0.1	0.1	0.2	-0.1	0.2	-0.1	-0.3	0.3	1.0	1.4	-0.1	-0.1	-0.1	-0.1	0.1	-0.4	-0.8	-0.7	-0.2	0.5	0.6	0.1	1.4
23-Apr	0.5	0.7	0.7	0.7	0.9	0.5	0.2	0.8	0.2	0.5	0.8	0.4	1.3	0.2	0.4	0.6	0.4	1.3	0.9	1.0	0.4	0.5	-0.1	-0.7	0.5	1.3
24-Apr	0.3	0.3	0.3	-0.3	0.6	-0.4	0.8	1.6	-0.1	0.3	0.0	0.3	0.0	-0.2	0.2	0.8	0.8	1.2	0.6	0.4	0.3	0.6	0.7	0.3	0.4	1.6
25-Apr	-0.5	0.3	1.4	0.4	0.5	0.4	0.2	0.2	0.4	-1.1	0.5	0.2	1.1	1.4	0.2	0.5	0.4	0.0	0.5	1.3	0.8	1.1	1.2	0.7	0.5	1.4
26-Apr	0.6	0.9	0.3	0.0	0.1	-0.1	0.1	1.1	0.6	0.1	-0.2	0.6	0.4	0.3	-0.6	0.1	0.6	0.5	0.5	0.0	0.2	0.5	0.5	0.1	0.3	1.1
27-Apr	0.3	0.4	0.4	0.2	0.2	0.0	0.1	0.0	0.3	-0.1	-0.2	-0.8	-0.3	-0.5	-0.3	0.0	0.0	2.0	0.2	-0.2	-0.4	-0.3	-0.8	-0.4	0.0	2.0
28-Apr	1.2	0.0	0.3	0.1	0.2	-0.1	0.3	0.0	0.8	-0.5	1.0	0.1	0.2	0.1	-0.3	0.3	0.9	0.8	0.8	0.8	1.3	0.0	0.2	0.9	0.4	1.3
29-Apr	0.9	0.1	0.1	0.1	0.1	0.1	0.1	-0.1	0.5	-0.4	-0.9	-0.4	0.2	1.5	0.7	0.3	-0.5	-0.5	0.4	0.0	0.8	1.4	0.0	0.3	0.2	1.5
30-Apr	1.2	1.3	1.4	1.4	1.6	0.7	0.3	0.1	1.1	0.7	0.9	1.3	-0.6	-0.1	0.9	0.7	-0.2	0.5	0.5	0.2	0.4	-0.8	0.9	2.2	0.7	2.2
																								Diurnal Average		
																								Diurnal Maximum		
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1 Maximum Value: 5.5 km/h on Apr 17 10:00 Minimum Value: 0.1 km/h on Apr 29 06:00 Percentiles: P ₁ = 0.2 P ₁₀ = 0.7 Q ₁ = 1.2 Median = 1.7 Q ₃ = 2.7 P ₉₀ = 3.5 P ₉₉ = 4.7		Hours in Service: 720 Hours of Data: 717 Hours of Missing Data: 3 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-Apr	1.0	1.1	1.4	1.2	0.8	0.7	0.8	1.4	1.7	2.0	2.0	1.4	1.3	1.3	1.4	1.2	1.0	1.5	1.8	1.5	1.3	1.3	1.9	2.1	2.1
2-Apr	2.0	1.8	1.4	1.5	1.3	1.7	1.6	1.6	1.5	1.2	1.6	1.8	1.3	1.0	1.5	1.6	1.2	1.7	2.0	2.4	2.7	2.0	1.6	1.8	2.7
3-Apr	1.1	0.9	1.4	1.2	1.3	1.2	0.9	1.2	1.2	2.2	3.4	2.3	2.7	1.5	1.5	1.0	1.3	1.1	0.7	0.6	0.8	0.6	0.4	0.5	3.4
4-Apr	0.5	1.2	1.0	0.6	0.5	0.8	0.9	0.5	0.9	1.2	1.2	2.3	2.7	1.8	1.5	2.4	2.2	1.6	1.5	1.1	1.0	1.9	1.8	1.7	2.7
5-Apr	2.0	1.7	1.8	1.5	1.1	0.9	1.1	1.2	1.3	1.2	1.3	1.7	2.7	3.0	3.3	2.8	2.1	1.4	1.6	1.8	1.4	1.6	1.5	1.2	3.3
6-Apr	1.6	1.3	1.6	1.6	1.5	1.6	1.5	1.9	2.5	2.4	3.4	3.8	4.1	3.7	3.5	2.8	2.6	2.4	1.8	2.0	2.5	2.3	2.2	2.2	4.1
7-Apr	3.1	3.5	4.2	4.7	3.8	3.2	2.9	3.3	3.2	3.0	2.9	2.5	3.2	3.4	4.0	4.4	3.5	3.3	2.7	2.2	1.9	2.3	1.8	1.5	4.7
8-Apr	1.1	1.5	1.8	1.7	1.5	1.4	1.0	1.4	1.8	1.4	1.2	1.2	1.4	1.8	1.9	2.0	1.2	1.2	0.7	0.8	0.5	0.4	0.7	0.6	2.0
9-Apr	0.9	0.7	1.2	1.6	1.0	2.1	1.4	1.9	1.4	1.2	1.1	1.7	1.2	1.1	1.5	1.4	3.2	1.8	0.7	1.6	1.2	2.5	3.7	3.1	3.7
10-Apr	2.4	2.5	2.4	2.5	2.9	3.0	2.3	2.5	2.8	2.4	2.0	2.5	3.1	3.0	3.1	2.3	2.3	2.2	2.0	1.1	1.0	1.4	1.2	1.2	3.1
11-Apr	1.2	1.8	1.8	1.7	1.4	1.1	0.7	0.8	1.6	1.4	1.5	1.6	2.5	2.5	2.1	2.1	2.4	2.6	2.3	1.4	0.9	0.5	0.3	0.6	2.6
12-Apr	1.4	0.7	0.6	1.0	2.0	1.3	1.4	1.2	1.3	1.4	2.6	2.8	3.1	3.0	2.7	2.9	2.8	1.9	1.1	0.9	0.9	0.5	0.4	0.2	3.1
13-Apr	0.3	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.9	1.9	2.4	1.9	2.5	2.3	3.5	3.5	3.0	3.0	1.8	0.6	1.5	1.5	1.0	1.3	3.5
14-Apr	1.0	1.3	0.9	0.9	1.0	1.0	1.1	1.0	0.7	1.2	2.0	2.1	1.9	2.3	2.1	2.7	1.8	1.9	1.6	1.5	1.8	1.4	1.1	0.9	2.7
15-Apr	1.3	1.4	1.2	0.7	0.7	0.3	0.3	0.3	1.0	1.0	1.2	1.3	2.2	3.0	2.8	3.0	2.6	1.4	1.5	0.9	1.8	2.3	1.8	1.7	3.0
16-Apr	1.5	1.6	1.6	1.6	1.7	1.1	1.0	1.3	1.3	1.7	2.5	3.0	3.6	3.8	4.0	3.7	3.9	2.9	3.2	3.2	3.6	3.8	3.7	3.1	4.0
17-Apr	3.3	3.6	3.9	3.1	4.2	4.2	3.4	3.8	4.7	5.5	4.1	4.1	5.2	4.3	4.9	4.2	4.7	4.1	3.8	3.8	4.7	4.3	3.5	4.3	5.5
18-Apr	3.3	3.6	4.2	4.3	3.4	UO	UO	UO	2.0	1.7	1.6	1.1	2.2	2.4	1.5	2.0	1.7	1.8	1.0	0.9	1.4	1.3	1.0	0.9	4.3
19-Apr	0.8	0.7	1.7	2.6	3.1	3.1	3.0	2.3	2.4	2.2	2.2	2.2	2.9	2.8	2.8	3.1	2.5	2.2	1.2	0.6	1.2	1.4	1.6	1.1	3.1
20-Apr	0.9	0.7	0.8	0.9	0.8	0.9	1.3	1.5	1.1	1.4	2.8	3.1	3.7	3.6	4.1	4.2	3.4	2.9	2.3	1.2	0.6	1.2	1.4	1.9	4.2
21-Apr	1.3	1.3	1.1	0.9	0.6	0.5	0.5	0.9	1.4	1.6	2.4	3.1	2.8	3.0	2.2	3.0	3.2	2.2	1.6	0.8	1.7	1.4	1.9	0.9	3.2
22-Apr	1.7	1.0	0.9	0.9	0.5	0.5	0.8	0.8	1.1	1.9	3.7	5.1	5.2	4.6	4.4	4.2	3.8	3.3	2.2	1.1	0.4	0.3	0.3	0.5	5.2
23-Apr	1.3	1.4	1.3	1.3	1.5	1.2	1.1	1.3	1.5	1.9	2.6	3.5	4.1	4.7	3.7	3.2	2.8	3.2	3.4	2.8	2.9	2.7	3.0	2.8	4.7
24-Apr	1.4	0.9	1.4	1.4	3.3	2.4	1.6	1.5	1.1	0.7	1.1	1.2	1.4	2.4	2.3	2.0	2.0	1.8	1.5	1.3	1.0	1.1	0.7	1.2	3.3
25-Apr	1.1	1.4	1.4	0.9	1.1	1.0	1.4	2.1	2.8	2.2	2.7	3.3	3.5	2.9	1.2	2.0	2.5	2.2	2.5	2.7	2.0	2.4	2.7	2.7	3.5
26-Apr	2.8	2.1	3.0	1.7	1.5	1.7	1.5	3.2	3.1	3.3	2.8	2.9	2.9	2.8	2.1	3.0	3.4	3.2	2.3	1.5	1.2	0.6	0.4	0.2	3.4
27-Apr	0.2	0.3	0.5	0.4	0.5	0.3	0.2	0.5	1.3	2.3	2.5	2.8	3.0	2.5	2.6	2.8	2.6	3.0	1.6	0.4	0.2	0.4	0.4	0.9	3.0
28-Apr	2.4	1.3	1.1	1.1	0.7	0.8	1.3	2.3	4.2	4.2	5.2	4.9	4.7	4.3	3.4	3.7	3.7	3.5	2.5	1.7	1.0	0.8	0.5	0.5	5.2
29-Apr	0.7	0.5	0.2	0.3	0.3	0.1	0.2	0.4	1.1	0.9	1.9	2.4	3.7	3.8	3.1	3.0	2.5	2.1	1.4	0.5	1.6	1.5	1.9	1.8	3.8
30-Apr	2.4	2.2	2.5	2.0	1.8	1.6	1.7	2.2	2.7	2.9	2.7	3.8	3.5	3.5	4.2	4.0	3.8	3.1	2.5	1.5	1.8	2.5	3.2	3.1	4.2
	3.3	3.6	4.2	4.7	4.2	4.2	3.4	3.8	4.7	5.5	5.2	5.1	5.2	4.7	4.9	4.4	4.7	4.1	3.8	3.8	4.7	4.3	3.7	4.3	
	Diurnal Maximum																								
UO - Unstable Operation																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS04 BUFFALO VIEWPOINT APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
 APRIL 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	686	34	34	100	35.3	0	3.7	0
H2S (ppb) Average	685	35	35	100	2.8	0	0.4	0
THC (ppm) Average	682	33	38	99.31	4.5	-	2.4	-
NMHC(ppm) Average	682	33	38	99.31	2.145	-	0.181	-
CH4(ppm) Average	682	33	38	99.31	3.2	-	2.3	-
O3(ppb) Average	684	36	36	100	56.1	0	52.1	-
NO2(ppb) Average	684	36	36	100	45.2	0	13	-
NO(ppb) Average	684	36	36	100	29.2	-	4.5	-
NOX(ppb) Average	684	36	36	100	74.4	-	17.5	-
PM2.5(ug/m3) Average	719	1	1	100	21.9	0	10.3	0
Temperature (C) Average	720	0	0	100	21.9	-	14	-
Relative Humidity (%) Average	720	0	0	100	97.2	-	83.5	-
Wind Speed 10 m (km/h) Average	720	0	0	100	32	-	23	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
 APRIL 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	686	0.79	2.7	-	0	0	0	0.1	0.4	1.4	35.3
H2S (ppb) Average	685	0.14	0.2	-	0	0	0	0.1	0.2	0.4	2.8
THC (ppm) Average	682	2.11	0.2	-	2	2	2	2	2.1	2.3	4.5
NMHC(ppm) Average	682	0.042	0.122	-	0	0	0	0	0	0.1	2.145
CH4(ppm) Average	682	2.07	0.1	-	2	2	2	2	2.1	2.2	3.2
O3(ppb) Average	684	38.05	12.1	-	0.5	20.7	31.6	39.5	48.2	52.3	56.1
NO2(ppb) Average	684	5.18	6.4	-	0	0.9	1.4	2.5	6.5	12.7	45.2
NO(ppb) Average	684	0.92	2.1	-	0	0	0.1	0.3	0.6	2.1	29.2
NOX(ppb) Average	684	6.09	7.9	-	0	1.1	1.6	2.8	7.3	15.4	74.4
PM2.5(ug/m3) Average	719	6.08	3.3	-	0.2	2.8	3.8	5.3	7.7	10.4	21.9
Temperature 2 m (C) Average	720	4.8	5.9	-	-9.3	-2.9	0.5	4.7	9	12.6	21.9
Relative Humidity (%) Average	720	54.4	21.2	-	16.5	27.3	36	53	71.2	84.9	97.2
Wind Speed 10 m (km/h) Average	720	9.8	5	-	1	4	6	9	13	17	32
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

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

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	05 Apr 2023 07:00	05 Apr 2023 08:00	2	Unstable Operation - excessive baseline drift
THC/NMHC/CH4	05 Apr 2023 09:00	05 Apr 2023 09:00	1	Maintenance - station operator activities
THC/NMHC/CH4	13 Apr 2023 07:00	13 Apr 2023 08:00	2	Maintenance - replaced support gas cylinder



Wood Buffalo Environmental Association

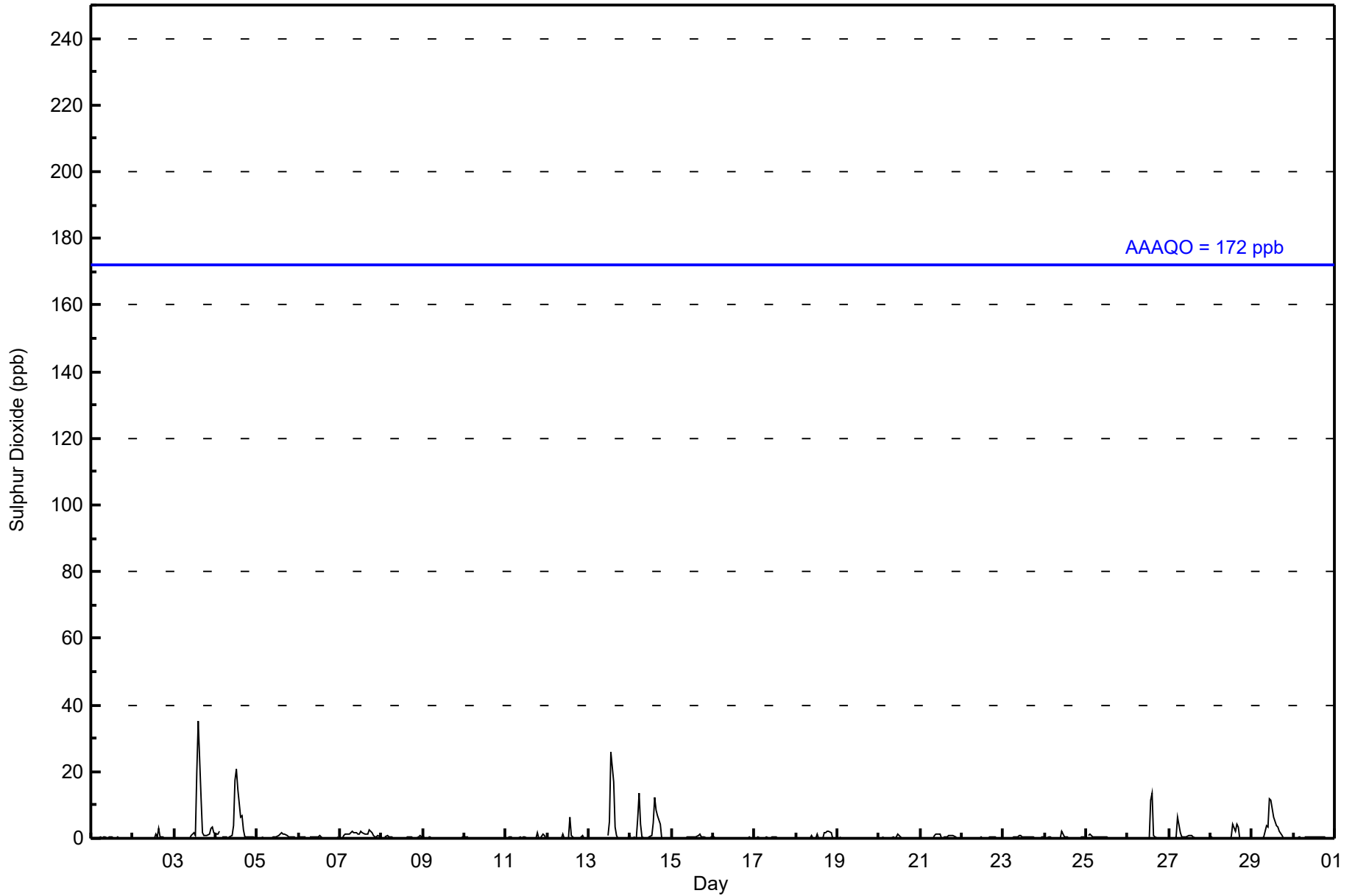
Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 35.3 ppb on Apr 3 15:00	Maximum Daily Average: 3.7 ppb on Apr 3		Hours of Data:	686
Minimum Value: 0.0 ppb on Apr 1 21:00	Minimum Daily Average: 0.0 ppb on Apr 19		Hours of Missing Data:	34
Maximum Diurnal Average: 3.3 ppb at hour 14	Minimum Diurnal Average: 0.2 ppb at hour 1		Hours of Calibration:	34
Monthly Average: 0.79 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.4 P ₉₀ = 1.4 P ₉₉ = 13.7		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-Apr	Z	0.2	0.2	0.1	0.1	0.3	0.2	0.3	0.2	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.2	0.3																							
2-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2	0.4	2.9	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.3	2.9																							
3-Apr	0.1	0.1	Z	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.8	1.5	0.8	20.0	35.3	12.3	1.6	0.7	0.9	0.9	1.1	3.0	3.6	1.8	3.7	35.3																						
4-Apr	1.1	1.1	2.2	Z	0.5	0.2	0.2	0.2	0.3	0.7	3.6	17.2	20.8	15.0	6.2	6.9	2.4	0.6	0.3	0.4	0.4	0.3	0.2	0.2	0.2	3.5	20.8																						
5-Apr	0.1	0.0	0.1	0.3	Z	0.1	0.0	0.0	0.0	0.2	0.4	0.5	0.6	0.8	1.3	1.6	1.4	1.2	1.0	0.5	0.5	0.4	0.2	0.1	0.2	0.5	1.6																						
6-Apr	0.3	0.3	0.3	0.3	0.3	Z	0.6	0.6	0.4	0.4	0.6	0.6	0.7	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.4	0.3	0.7																							
7-Apr	Z	0.0	0.7	1.2	1.1	1.5	1.7	1.9	1.6	1.5	1.5	1.5	1.9	1.7	1.4	1.4	1.4	2.5	1.6	1.0	0.6	0.4	0.8	0.2	1.3	2.5																							
8-Apr	0.5	Z	0.3	0.8	0.6	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.6	0.4	0.5	0.0	0.0	0.1	0.4	0.7	0.6	0.3	0.8																						
9-Apr	0.4	0.4	Z	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.6																						
10-Apr	0.5	0.6	0.4	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	0.1	0.6																						
11-Apr	0.0	0.1	0.4	0.4	Z	0.2	0.2	0.1	0.3	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.1	0.2	1.5	1.0	0.0	0.3	1.9																							
12-Apr	0.0	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	1.1	0.0	0.0	0.0	6.3	1.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.4	6.3																							
13-Apr	Z	0.0	0.1	0.0	0.0	0.0	0.0	C	C	C	C	0.7	5.1	25.8	17.0	3.2	0.9	0.2	0.1	0.0	0.0	0.0	0.1	0.5	2.8	25.8																							
14-Apr	0.7	Z	0.2	0.1	6.1	13.5	4.1	0.3	0.1	0.1	0.1	0.4	0.7	4.7	12.3	8.3	6.6	4.1	0.2	0.0	0.1	0.0	0.0	0.0	2.7	13.5																							
15-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.6	0.5	0.4	0.7	1.1	0.5	0.3	0.2	0.2	0.0	0.0	0.4	0.3	1.1																							
16-Apr	0.4	0.2	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.4																							
17-Apr	0.0	0.1	0.2	0.1	Z	0.1	0.0	0.2	0.2	0.1	0.3	0.5	0.3	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.5																							
18-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.0	0.7	0.0	0.0	1.1	0.1	0.0	0.2	1.7	1.6	2.1	2.1	1.7	0.0	0.0	0.0	0.5	2.1																							
19-Apr	Z	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	0.1	0.1	0.1	0.0	0.0	0.3																							
20-Apr	0.0	Z	0.4	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.4	1.3	0.3	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.2	1.3																							
21-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	1.0	1.4	1.3	1.2	0.2	0.0	0.5	0.5	0.7	0.7	0.8	0.7	0.5	0.1	0.0	0.0	0.4	1.4																							
22-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.1	0.0	0.1	0.2	0.3	0.4	0.2	0.1	0.1	0.0	0.0	0.1	0.4																							
23-Apr	0.0	0.1	0.0	0.0	Z	0.2	0.2	0.2	0.5	0.7	0.8	0.6	0.4	0.3	0.3	0.4	0.2	0.3	0.1	0.2	0.2	0.2	0.3	0.2	0.3	0.8																							
24-Apr	0.1	0.1	0.3	0.3	0.2	Z	0.1	0.1	0.1	0.1	2.2	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.6	0.3	0.3	0.3	2.2																						
25-Apr	Z	0.8	1.1	0.8	0.4	0.3	0.3	0.4	0.5	0.4	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1																							
26-Apr	0.1	Z	0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	11.5	13.4	0.7	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.1	1.2	13.4																							
27-Apr	0.0	0.1	Z	0.2	0.3	6.3	1.7	0.3	0.6	0.4	0.5	0.7	0.7	0.6	0.4	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.6	6.3																							
28-Apr	0.2	0.1	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.1	2.0	4.2	3.6	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.7	4.2																							
29-Apr	0.1	0.0	0.2	0.1	Z	0.1	0.1	0.3	4.0	3.2	12.0	11.3	6.3	5.1	3.8	3.2	2.1	0.9	0.2	0.2	0.2	0.0	0.1	0.0	2.3	12.0																							
30-Apr	0.0	0.2	0.2	0.4	0.4	Z	0.5	0.4	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.2	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.3	0.6																							
																								0.2	0.2	0.3	0.2	0.4	0.9	0.4	0.2	0.4	0.4	0.9	1.4	1.4	3.3	3.3	1.6	0.9	0.5	0.3	0.3	0.2	0.3	0.3	0.2	Diurnal Average	
																								1.1	1.1	2.2	1.2	6.1	13.5	4.1	1.9	4.0	3.2	12.0	17.2	20.8	25.8	35.3	12.3	6.6	4.1	2.1	2.1	1.7	3.0	3.6	1.8	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 (SO₂) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	672	97.96	97.96
11 - 20	11	1.60	99.56
21 - 60	3	0.44	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	37	29	18	9	34	101	108	134	40	10	27	34	21	26	21	23	672
11 - 20	1	1	1	1	0	1	2	0	0	0	0	0	0	2	1	1	11
21 - 60	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
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
Totals	39	30	19	10	34	102	110	134	40	10	27	34	21	28	23	25	686

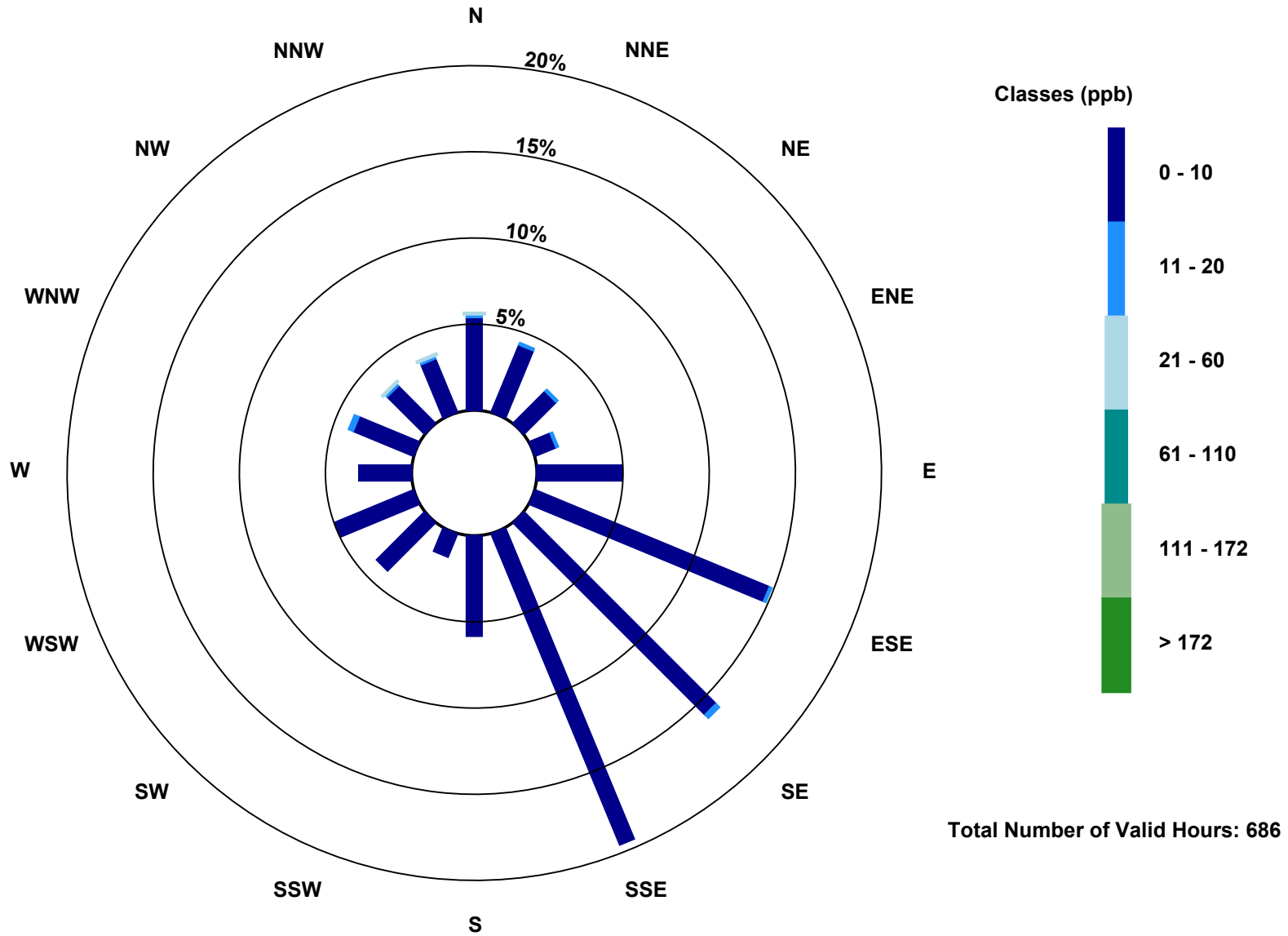
Total Number of Valid Hours: 686

Total Number of Hours: 720

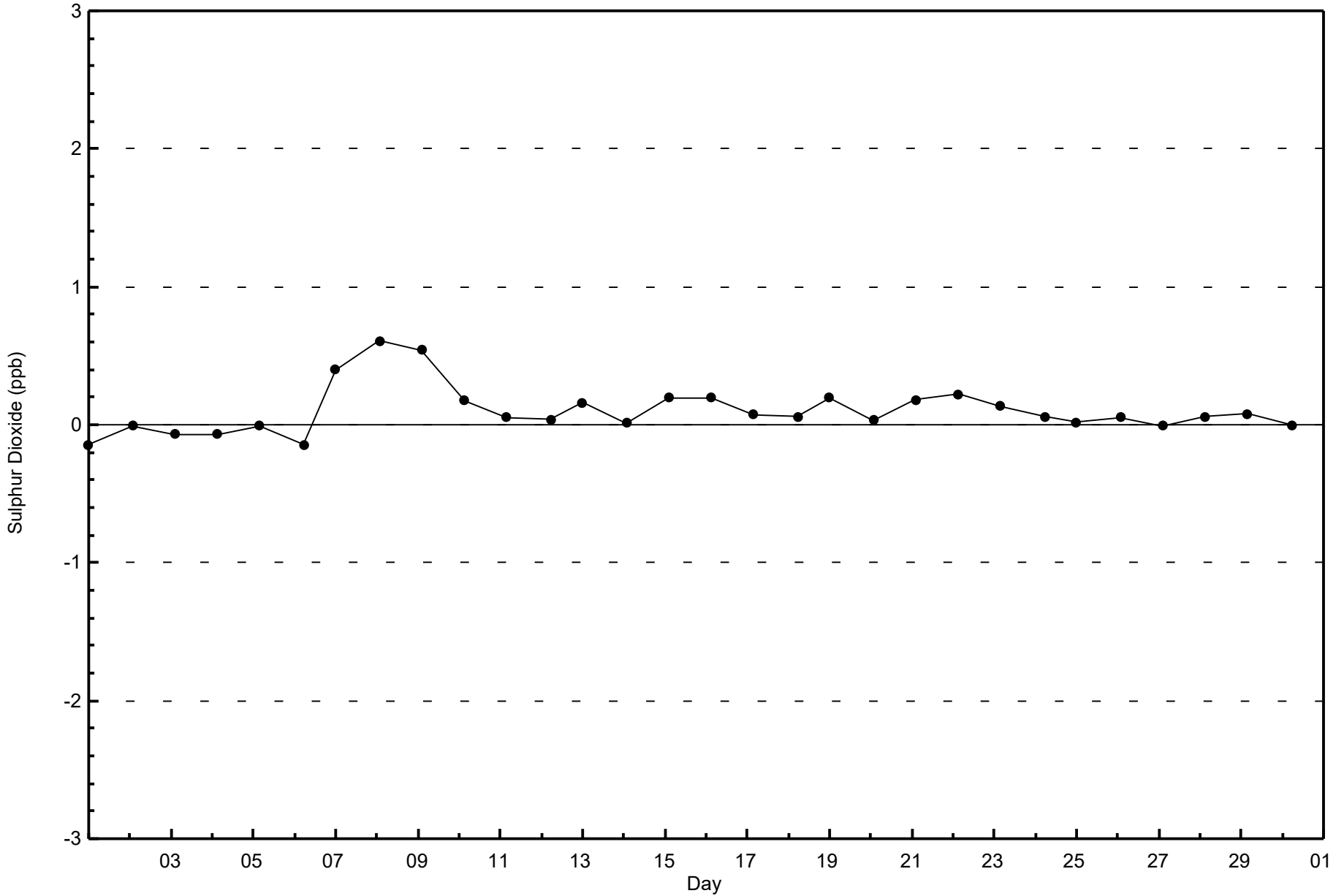


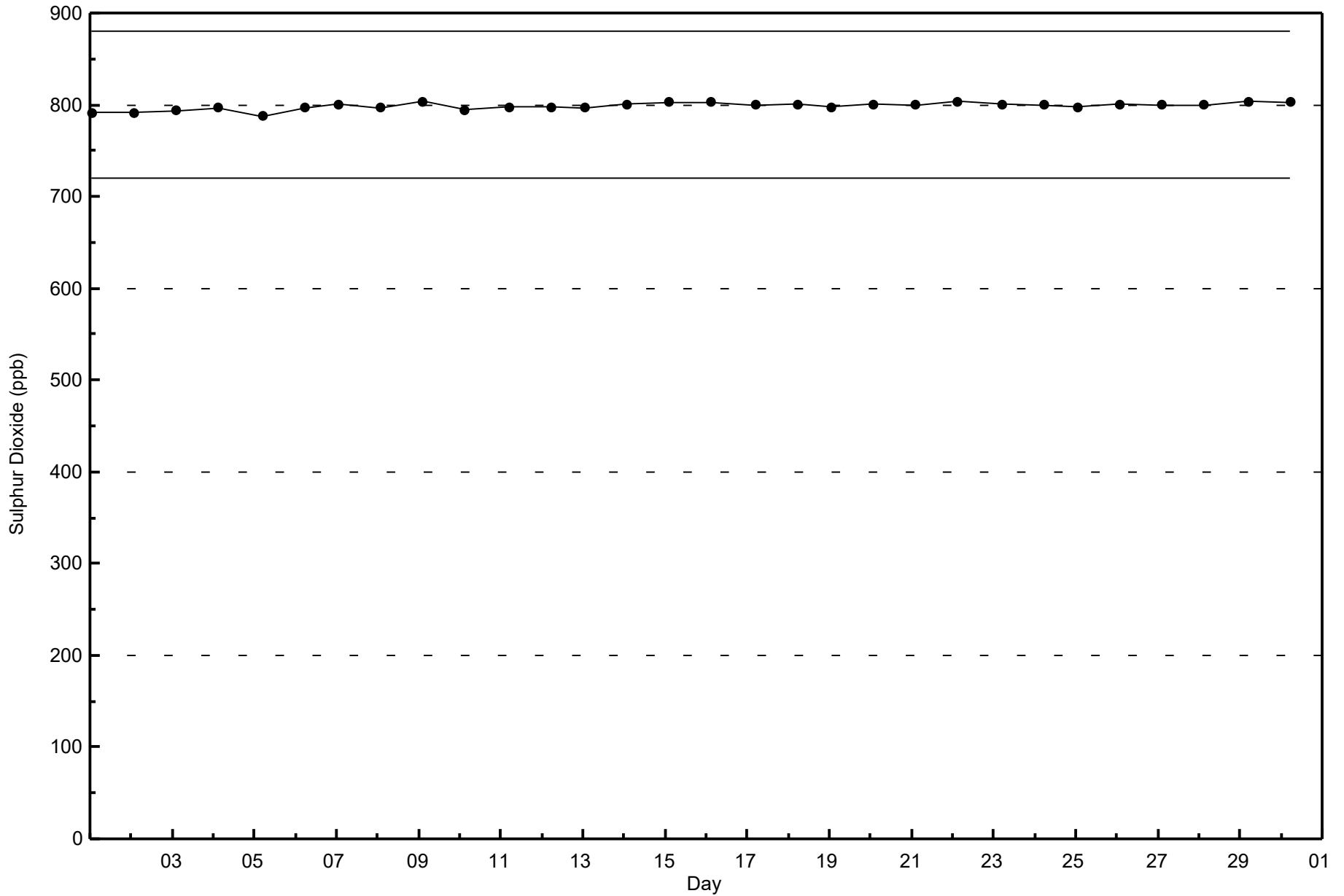
Wood Buffalo Environmental Association
Wind Rose Apr 2023

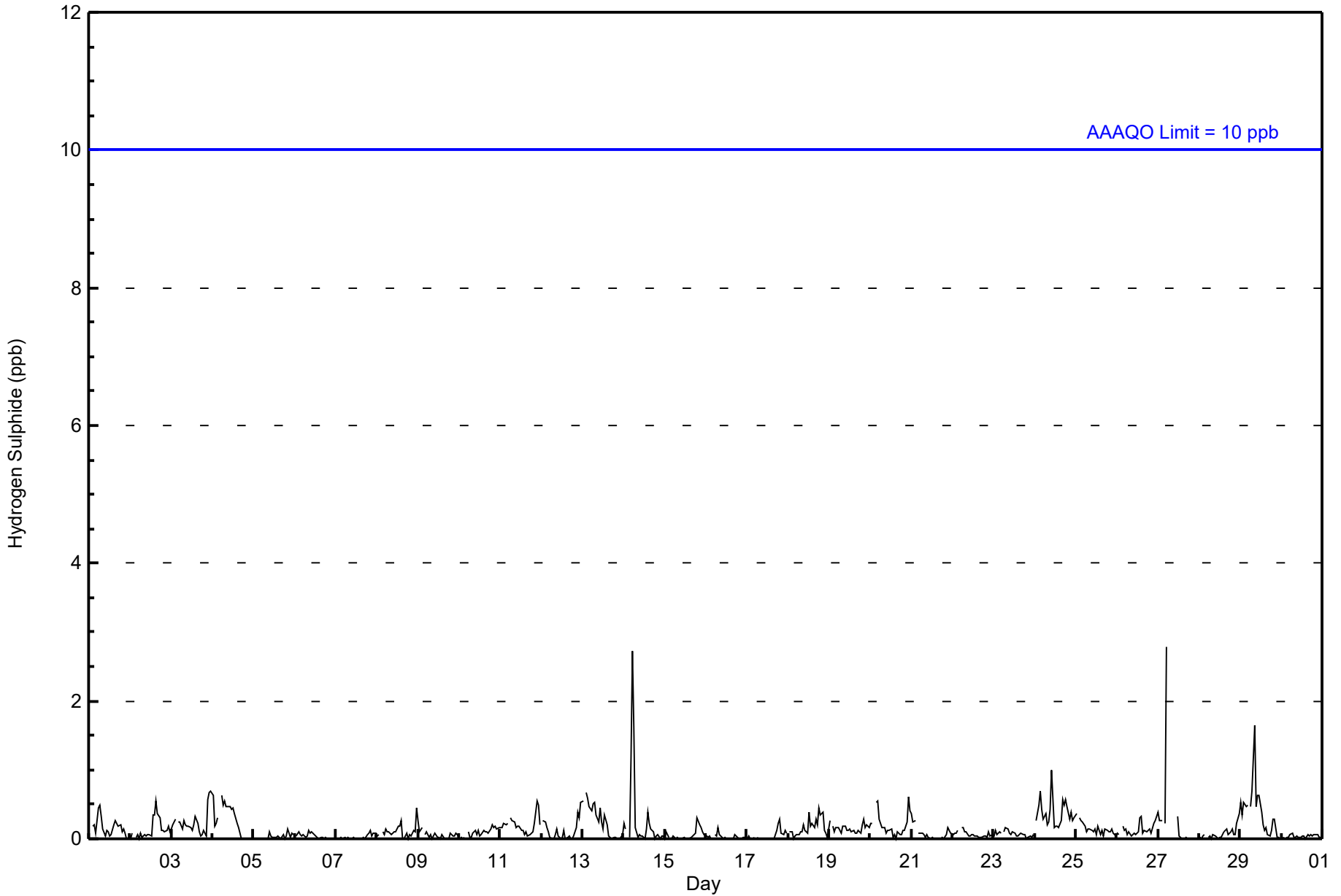
Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint



Total Number of Valid Hours: 686









**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	99.71	99.71
3 - 4	2	0.29	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	39	33	16	11	34	103	106	137	39	9	26	32	24	25	23	26	683
3 - 4	0	0	1	0	0	0	0	0	0	0	1	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
Totals	39	33	17	11	34	103	106	137	39	9	27	32	24	25	23	26	685

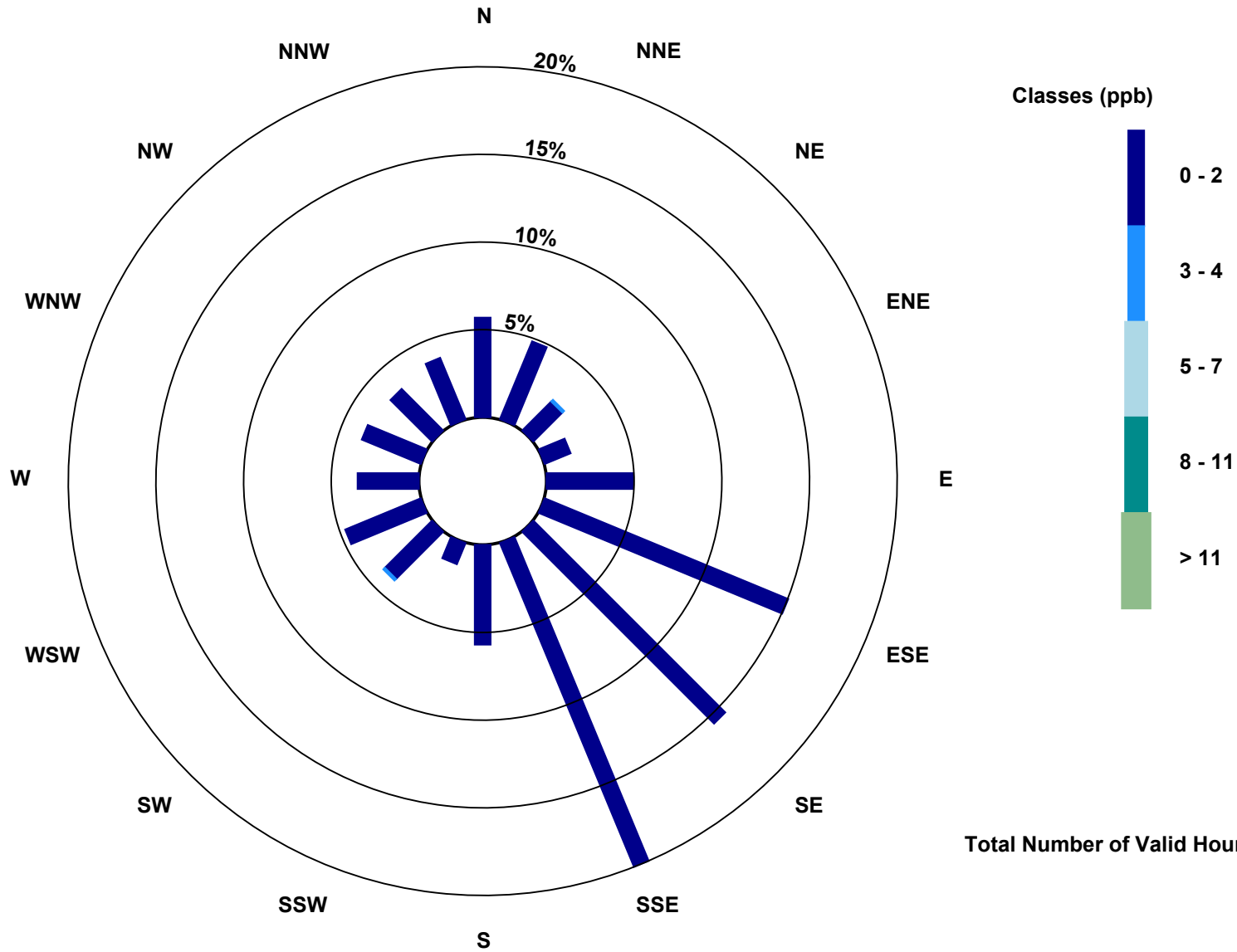
Total Number of Valid Hours: 685

Total Number of Hours: 720

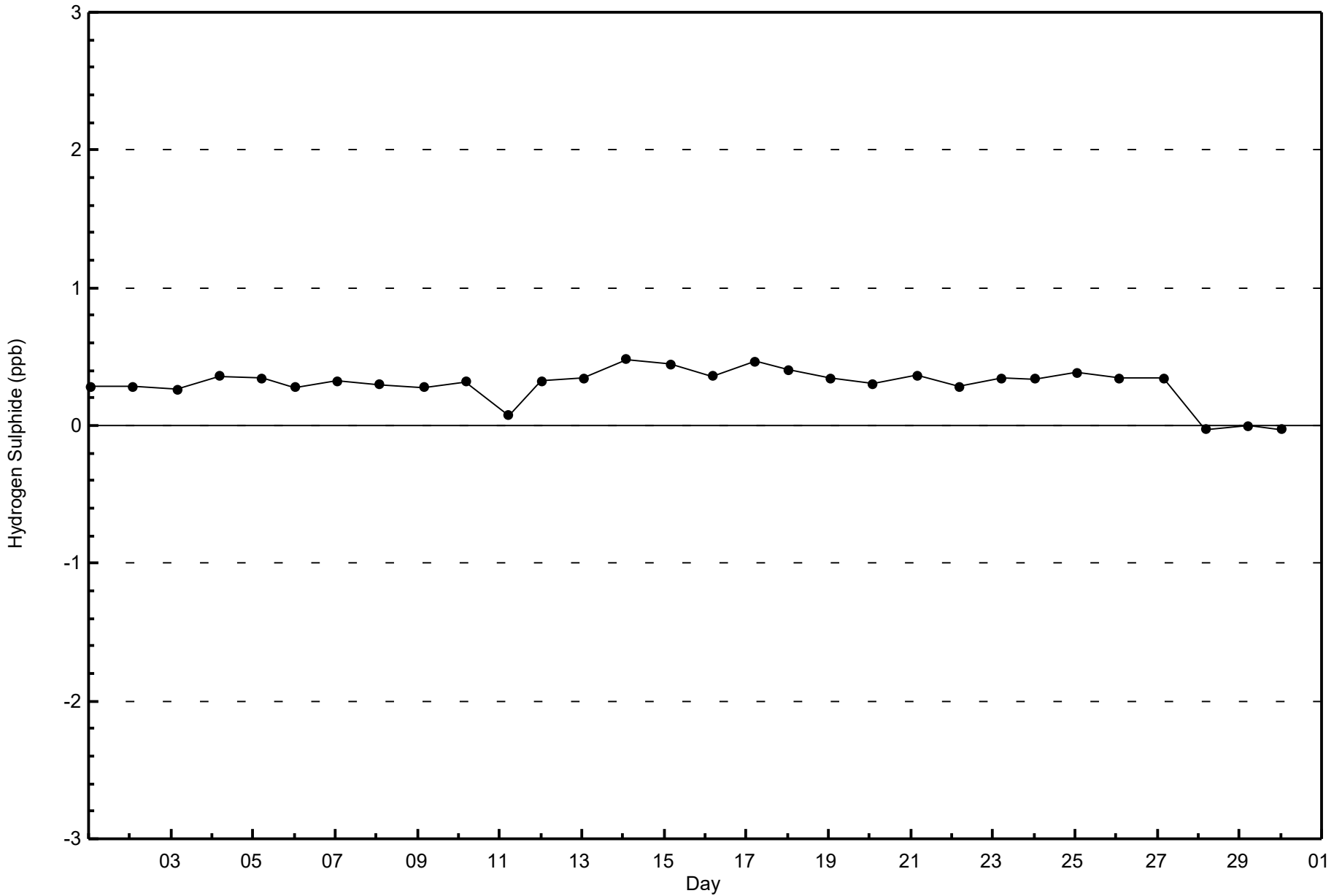


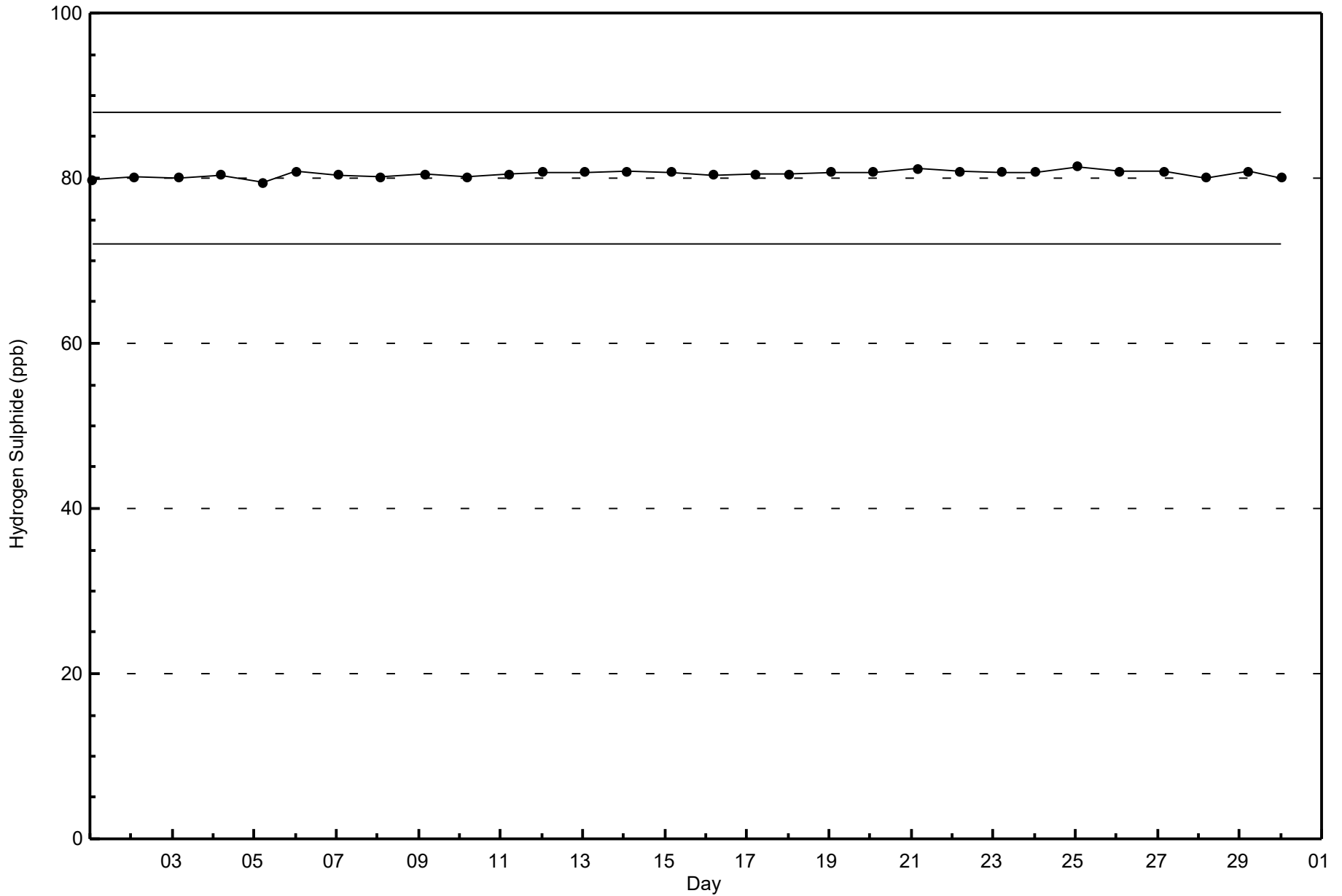
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint



Total Number of Valid Hours: 685







Wood Buffalo Environmental Association
Summary of Hour Averages

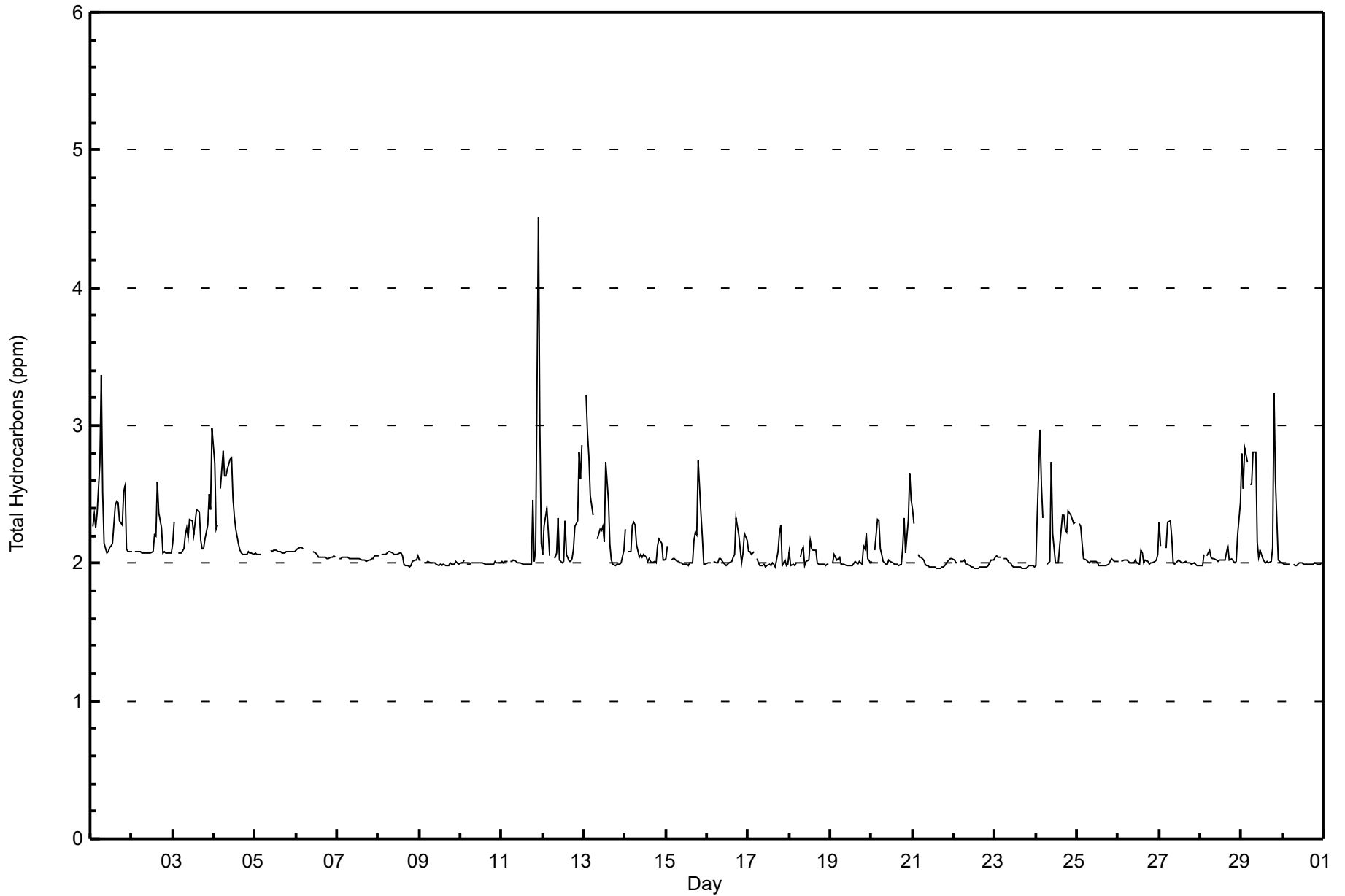
Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint - April 2023

Maximum Value: 4.5 ppm on Apr 11 22:00		Maximum Daily Average: 2.4 ppm on Apr 29		Hours in Service: 720																						
Minimum Value: 2.0 ppm on Apr 23 17:00		Minimum Daily Average: 2.0 ppm on Apr 22		Hours of Data: 682																						
Maximum Diurnal Average: 2.2 ppm at hour 3		Minimum Diurnal Average: 2.0 ppm at hour 13		Hours of Missing Data: 38																						
Monthly Average: 2.11 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.3 P ₉₉ = 3.0		Hours of Calibration: 33																						
				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-Apr	Z	2.3	2.4	2.3	2.4	2.7	3.4	2.5	2.1	2.1	2.1	2.1	2.1	2.4	2.5	2.4	2.3	2.3	2.5	2.6	2.1	2.1	2.1	2.1	2.3	3.4
2-Apr	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	2.2	2.6	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.6
3-Apr	2.1	2.3	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.3	2.3	2.3	2.4	2.4	2.2	2.1	2.1	2.2	2.3	2.5	2.4	3.0	2.3	3.0	
4-Apr	2.7	2.2	2.3	Z	2.5	2.8	2.6	2.6	2.7	2.8	2.8	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	2.3	2.8
5-Apr	2.1	2.1	2.1	2.1	Z	2.1	UO	UO	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	2.1	2.1	2.1	2.1	2.1
6-Apr	2.1	2.1	2.1	2.1	2.1	Z	2.1	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	2.1	2.0	2.1	2.1	2.1
7-Apr	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	2.0	2.1
8-Apr	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
9-Apr	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
10-Apr	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
11-Apr	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	2.5	2.0	2.1	4.5	3.0	2.2	2.2	4.5	
12-Apr	2.1	2.3	2.4	2.2	2.1	Z	2.0	2.0	2.1	2.3	2.0	2.0	2.0	2.3	2.1	2.0	2.0	2.0	2.1	2.3	2.3	2.8	2.6	2.9	2.2	2.9
13-Apr	Z	3.2	3.0	2.8	2.5	2.3	M	M	2.2	2.2	2.2	2.3	2.2	2.7	2.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	3.2
14-Apr	2.2	Z	2.1	2.1	2.3	2.3	2.3	2.1	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.1	2.3
15-Apr	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	2.2	2.2	2.2	2.7	2.4	2.2	2.0	2.0	2.1	2.7
16-Apr	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	2.3	2.2	2.1	2.0	2.1	2.2	2.2	2.1	2.1	2.3
17-Apr	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	2.1	2.2	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.3
18-Apr	2.1	2.0	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.0	2.0	2.0	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	2.2
19-Apr	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	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.2
20-Apr	2.0	Z	2.1	2.3	2.3	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	2.1	2.3	2.7	2.5	2.1	2.7	2.7
21-Apr	2.4	2.3	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	2.4
22-Apr	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
23-Apr	2.0	2.1	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	2.1
24-Apr	2.0	2.4	3.0	2.6	2.3	Z	2.0	2.0	2.0	2.7	2.2	2.0	2.0	2.1	2.3	2.3	2.2	2.2	2.4	2.4	2.3	2.3	2.3	2.3	2.3	3.0
25-Apr	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3
26-Apr	2.0	Z	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	2.0	2.0	2.1	2.0	2.1	2.1
27-Apr	2.3	2.1	Z	2.1	2.1	2.3	2.3	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	2.0	2.0	2.3
28-Apr	2.0	2.0	2.1	Z	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	2.0	2.2	2.4	2.1	2.1	2.4
29-Apr	2.8	2.5	2.8	2.7	Z	2.6	2.6	2.8	2.8	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	3.2	2.6	2.0	2.0	2.0	2.4	3.2
30-Apr	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
																								Diurnal Average		
																								Diurnal Maximum		
																								Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation		



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	403	59.09	59.09
2.1 - 3.0	275	40.32	99.41
3.1 - 10.0	4	0.59	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration 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	13	12	4	5	66	73	85	29	6	21	33	15	15	12	4	403
2.1 - 3.0	28	20	7	6	27	36	37	44	10	4	6	1	6	13	11	19	275
3.1 - 10.0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	39	33	19	10	34	102	110	129	39	10	27	34	21	28	23	24	682

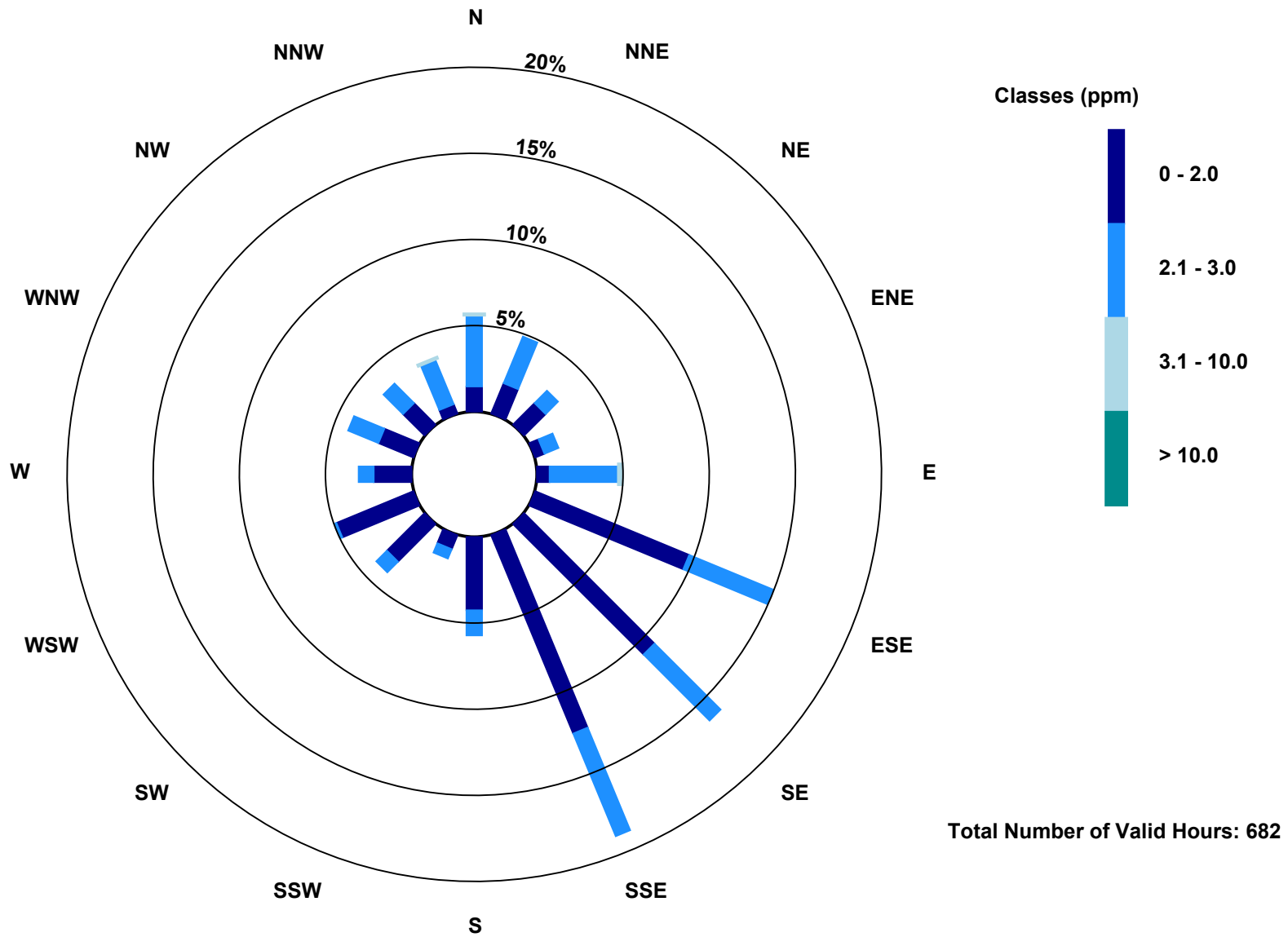
Total Number of Valid Hours: 682

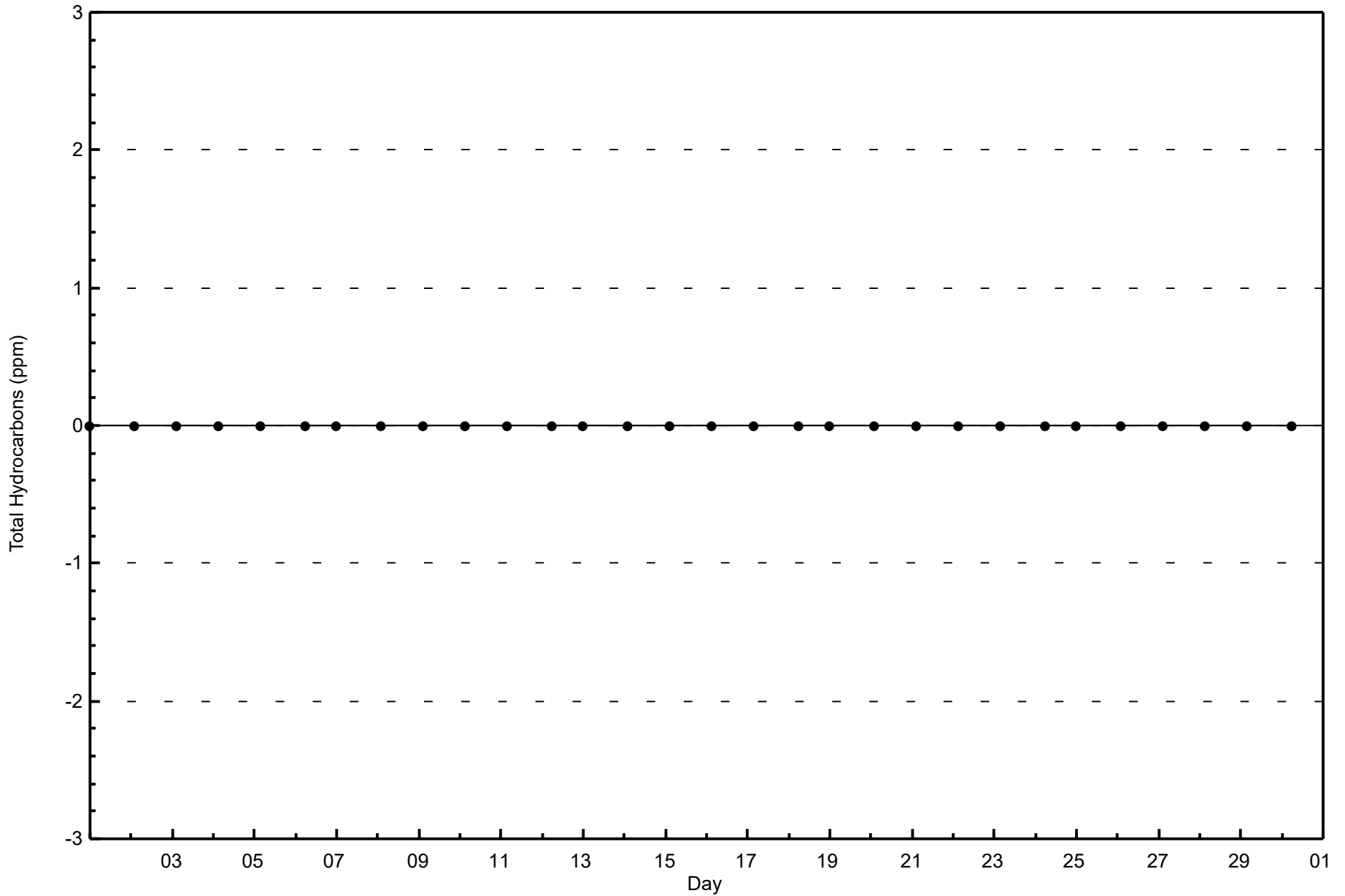
Total Number of Hours: 720

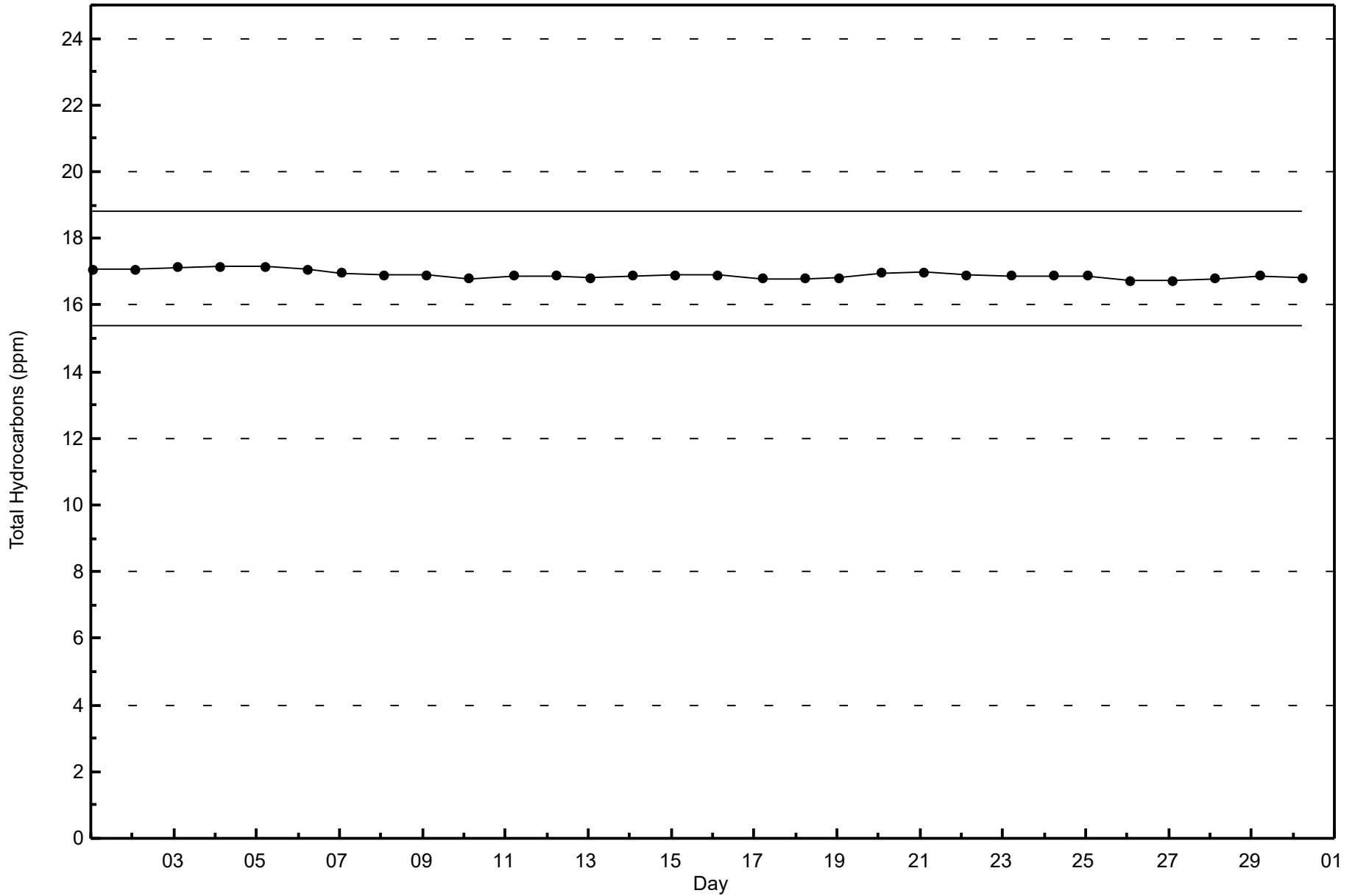


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint





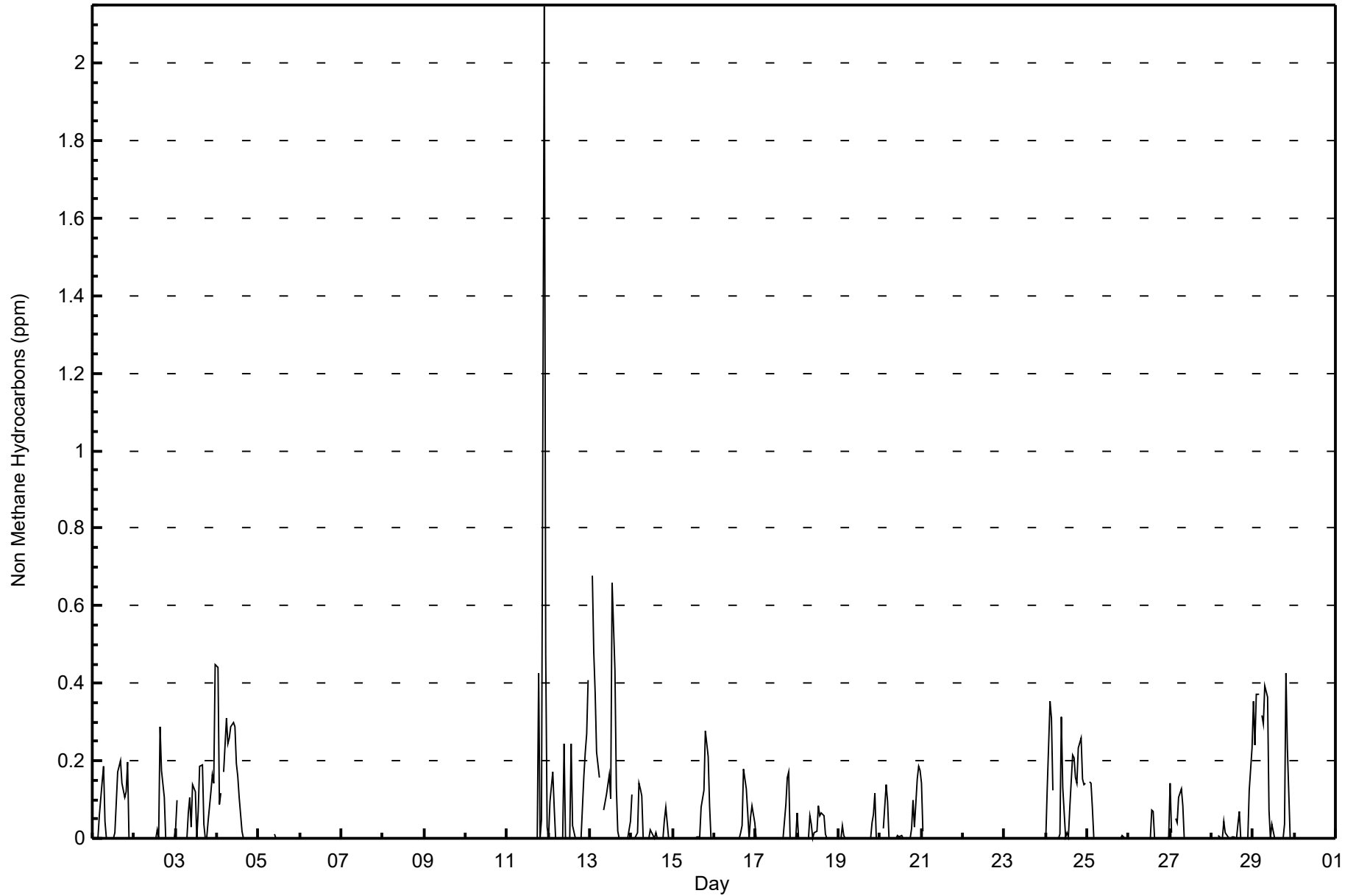




Summary of Hour Averages

Buffalo Viewpoint - April 2023

Maximum Value: 2.145 ppm on Apr 11 22:00		Maximum Daily Average: 0.181 ppm on Apr 13		Hours in Service: 720																									
Minimum Value: 0.000 ppm on Apr 1 02:00		Minimum Daily Average: 0.000 ppm on Apr 6		Hours of Data: 682																									
Maximum Diurnal Average: 0.103 ppm at hour 22		Minimum Diurnal Average: 0.013 ppm at hour 13		Hours of Missing Data: 38																									
Monthly Average: 0.042 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.1 P ₉₉ = 0.4		Hours of Calibration: 33																									
				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-Apr	Z	0.000	0.000	0.000	0.059	0.147	0.188	0.045	0.000	0.000	0.000	0.000	0.014	0.170	0.187	0.201	0.142	0.105	0.119	0.195	0.001	0.000	0.000	0.068	0.201				
2-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.002	0.289	0.175	0.105	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.289				
3-Apr	0.024	0.098	Z	0.000	0.000	0.000	0.000	0.067	0.105	0.028	0.140	0.120	0.000	0.067	0.187	0.191	0.035	0.000	0.000	0.043	0.122	0.164	0.141	0.448	0.448				
4-Apr	0.442	0.087	0.116	Z	0.171	0.309	0.245	0.258	0.289	0.298	0.287	0.193	0.162	0.105	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.129	0.442				
5-Apr	0.000	0.000	0.000	0.000	Z	0.000	UO	UO	M	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.011					
6-Apr	0.000	0.000	0.000	0.000	0.000	Z	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	0.000	0.000					
7-Apr	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				
8-Apr	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				
9-Apr	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				
10-Apr	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				
11-Apr	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	0.427	0.000	0.049	2.145	0.474	0.027	2.145				
12-Apr	0.000	0.094	0.173	0.080	0.000	Z	0.000	0.000	0.000	0.246	0.000	0.000	0.000	0.243	0.033	0.000	0.000	0.000	0.000	0.000	0.161	0.222	0.271	0.410	0.410				
13-Apr	Z	0.677	0.481	0.375	0.221	0.158	M	M	0.071	0.114	0.140	0.165	0.103	0.660	0.435	0.130	0.017	0.000	0.000	0.000	0.000	0.000	0.045	0.677	0.677				
14-Apr	0.113	Z	0.000	0.015	0.141	0.128	0.110	0.000	0.000	0.001	0.000	0.021	0.008	0.000	0.014	0.002	0.000	0.000	0.000	0.046	0.078	0.000	0.000	0.000	0.141				
15-Apr	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	0.004	0.004	0.081	0.100	0.123	0.278	0.210	0.082	0.000	0.000	0.278				
16-Apr	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	0.013	0.034	0.180	0.129	0.065	0.002	0.055	0.086	0.041	0.026	0.180					
17-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.086	0.157	0.170	0.001	0.000	0.000	0.000	0.170					
18-Apr	0.064	0.000	0.000	0.000	0.000	Z	0.000	0.059	0.038	0.000	0.014	0.019	0.084	0.060	0.065	0.057	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.084	0.084				
19-Apr	Z	0.000	0.033	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040	0.064	0.115	0.000	0.115					
20-Apr	0.000	Z	0.026	0.138	0.095	0.000	0.000	0.000	0.000	0.000	0.008	0.005	0.008	0.000	0.000	0.000	0.000	0.000	0.027	0.098	0.030	0.153	0.187	0.177	0.187				
21-Apr	0.142	0.017	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	0.000	0.000	0.142	0.142				
22-Apr	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				
23-Apr	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				
24-Apr	0.000	0.129	0.352	0.308	0.123	Z	0.000	0.000	0.011	0.312	0.133	0.004	0.015	0.003	0.079	0.216	0.206	0.155	0.142	0.235	0.259	0.152	0.138	0.142	0.352				
25-Apr	Z	0.145	0.142	0.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.005	0.000	0.000	0.145				
26-Apr	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	0.072	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.072				
27-Apr	0.142	0.014	Z	0.051	0.041	0.106	0.126	0.085	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	0.142				
28-Apr	0.000	0.000	0.000	Z	0.007	0.000	0.000	0.042	0.013	0.005	0.000	0.000	0.002	0.005	0.001	0.037	0.068	0.000	0.000	0.000	0.000	0.001	0.125	0.233	0.233				
29-Apr	0.353	0.242	0.370	0.372	Z	0.315	0.296	0.395	0.364	0.075	0.000	0.036	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.427	0.232	0.000	0.000	0.427				
30-Apr	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				
																								Diurnal Average					
																								Diurnal Maximum					
Z - zerospan																								C - Calibration		M - Maintenance		UO - Unstable Operation	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	499	73.17	73.17
0.006 - 0.05	47	6.89	80.06
0.06 - 0.1	69	10.12	90.18
> 0.1	67	9.82	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	18	15	12	3	3	81	96	119	37	7	22	33	16	17	14	6	499
0.006 - 0.05	4	3	2	5	6	11	5	2	0	0	0	0	2	2	2	3	47
0.06 - 0.1	9	6	5	2	14	6	6	8	0	2	4	0	0	2	1	4	69
> 0.1	8	9	0	0	11	4	3	0	2	1	1	1	3	7	6	11	67
Totals	39	33	19	10	34	102	110	129	39	10	27	34	21	28	23	24	682

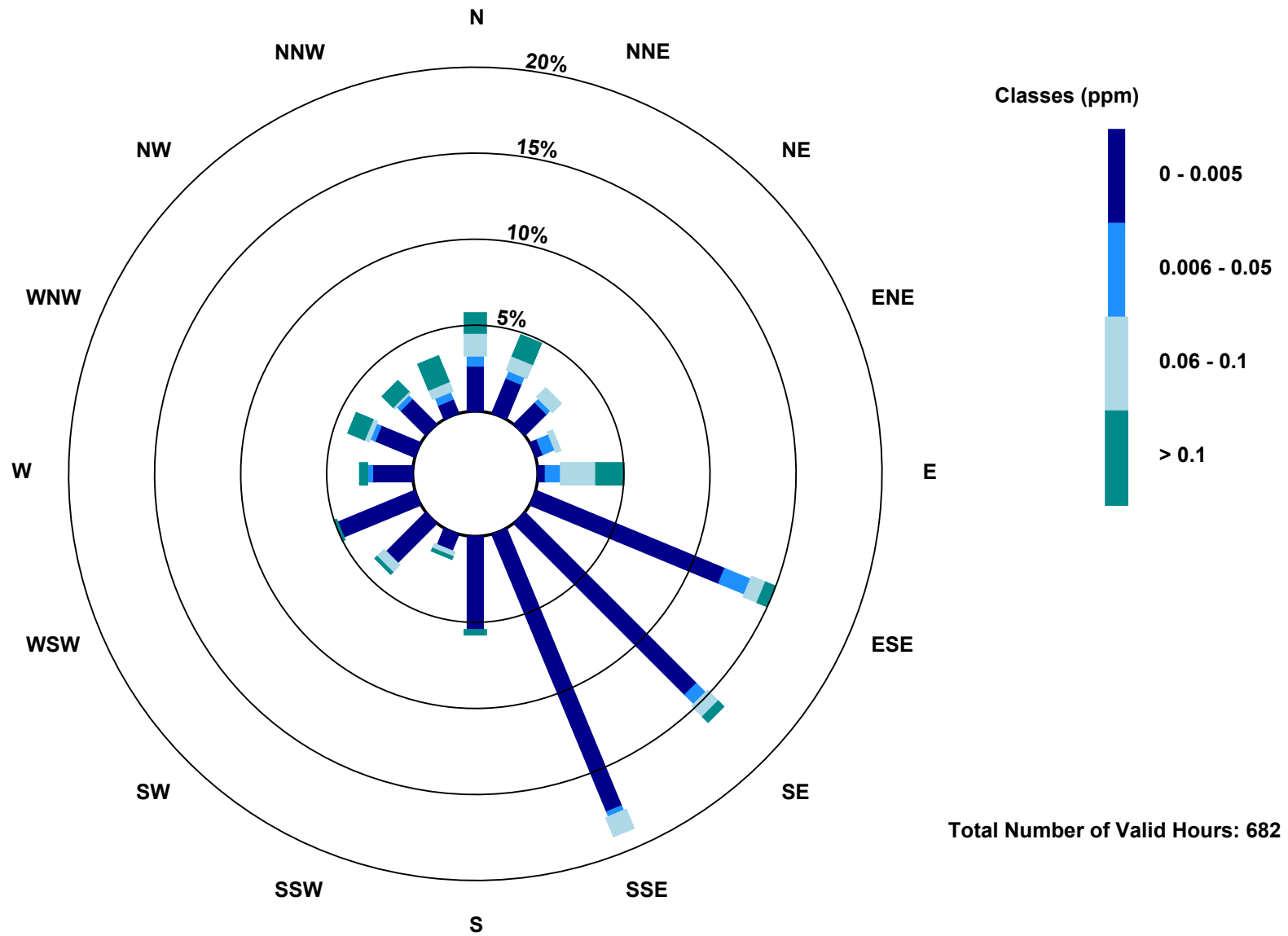
Total Number of Valid Hours: 682

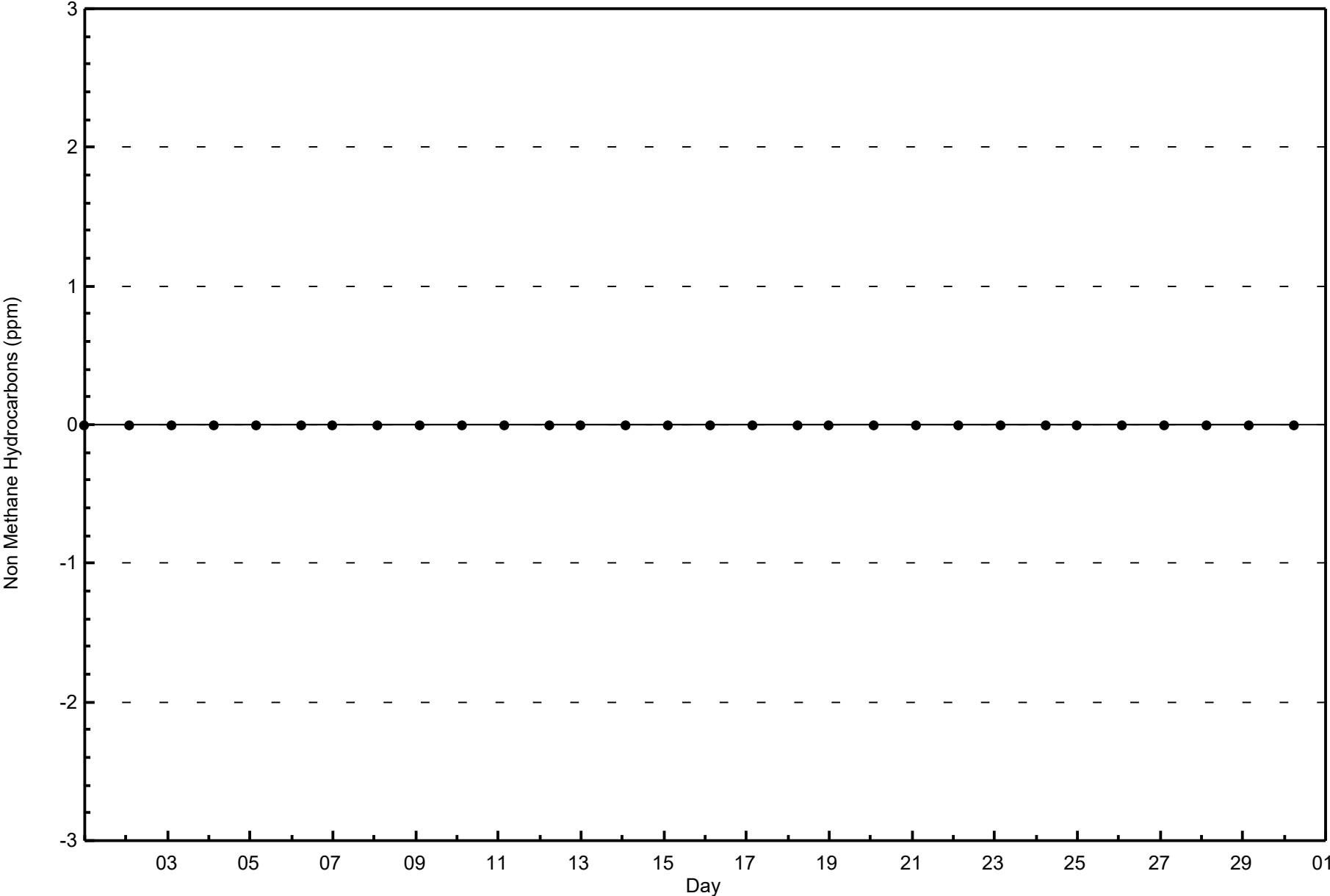
Total Number of Hours: 720

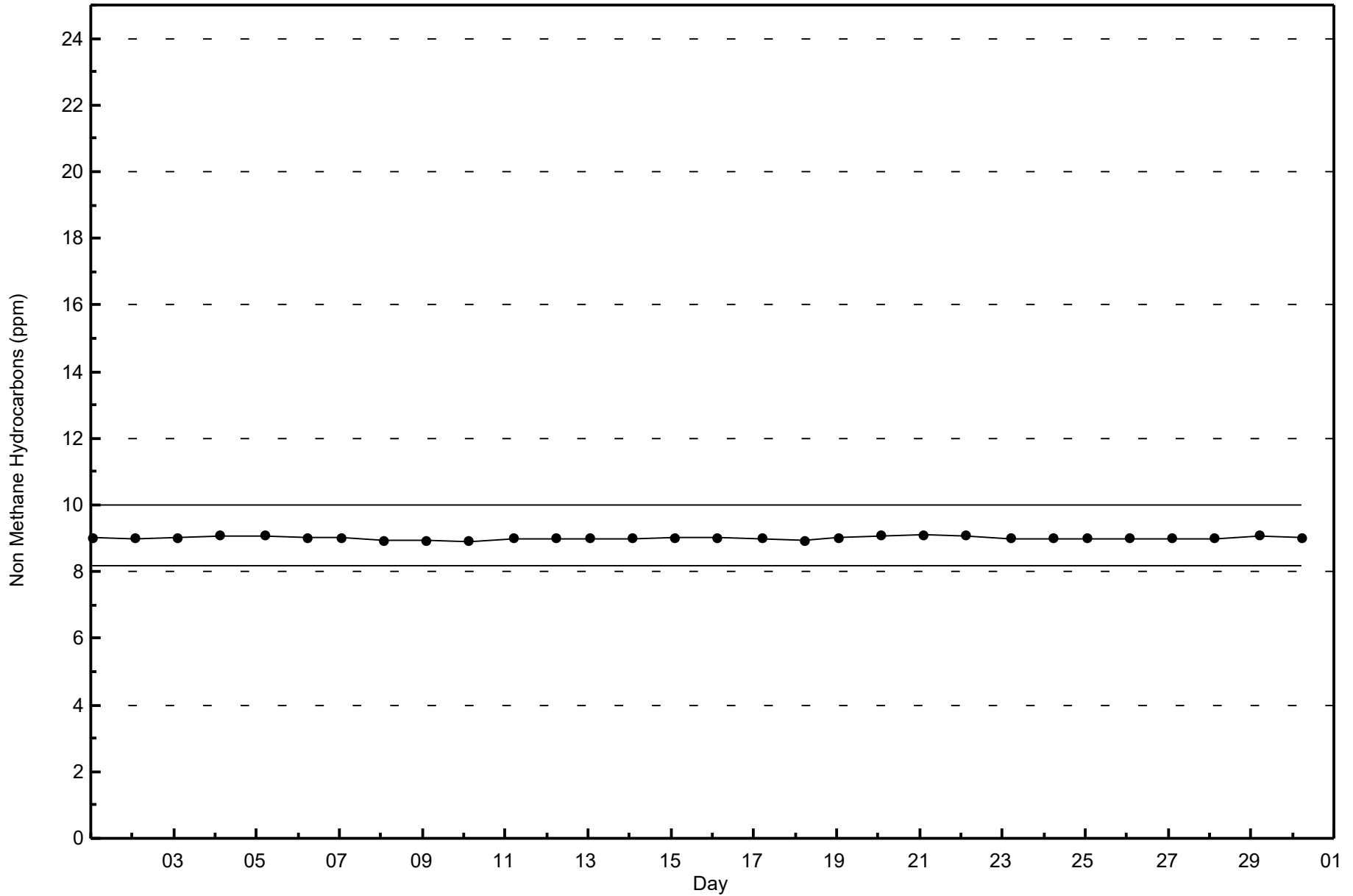


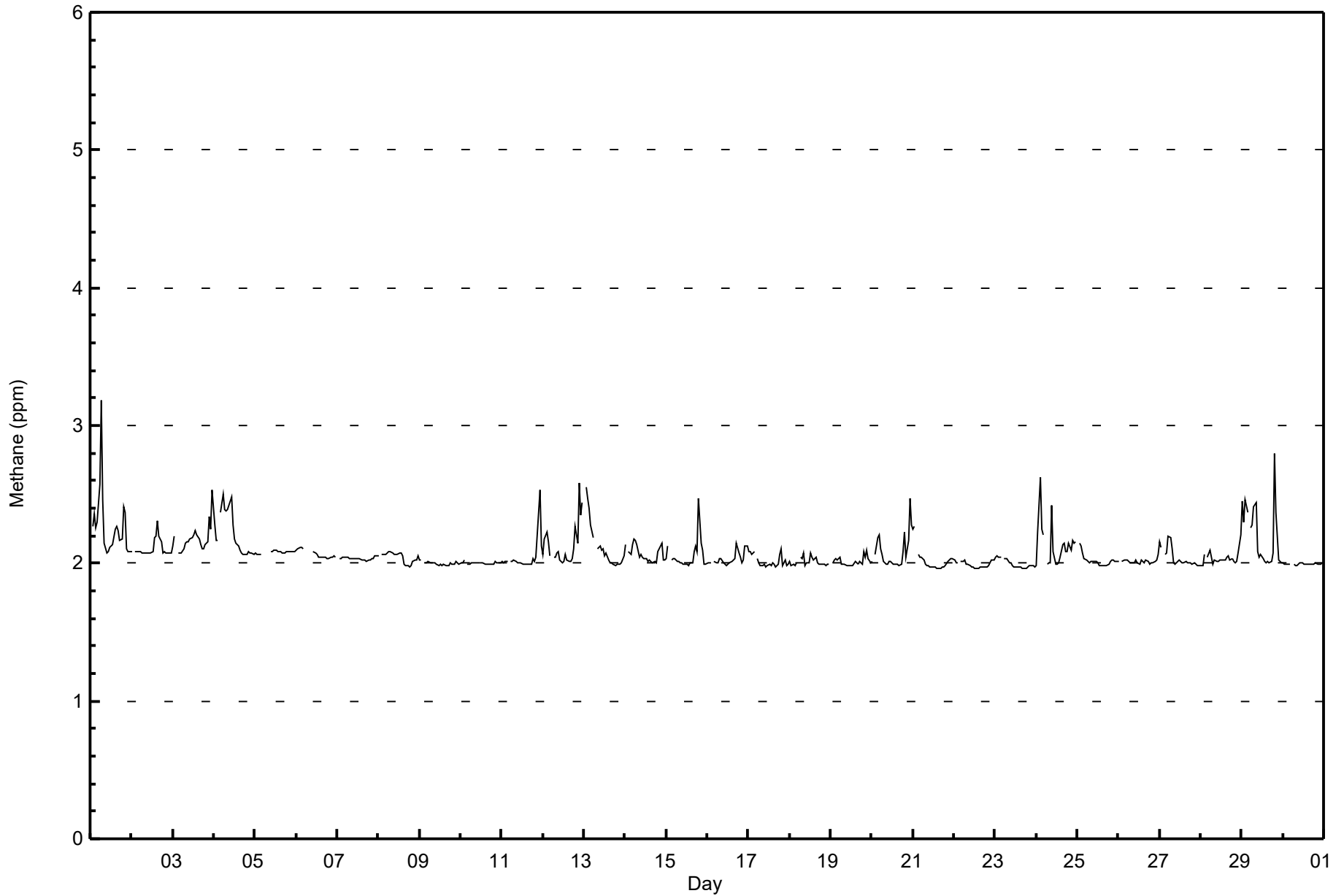
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Buffalo Viewpoint











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	426	62.46	62.46
2.1 - 3.0	255	37.39	99.85
3.1 - 10.0	1	0.15	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Buffalo Viewpoint - April 2023**

Concentration 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	14	12	5	9	72	74	85	29	6	21	33	15	18	14	6	426
2.1 - 3.0	26	19	7	5	24	30	36	44	10	4	6	1	6	10	9	18	255
3.1 - 10.0	0	0	0	0	1	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
Totals	39	33	19	10	34	102	110	129	39	10	27	34	21	28	23	24	682

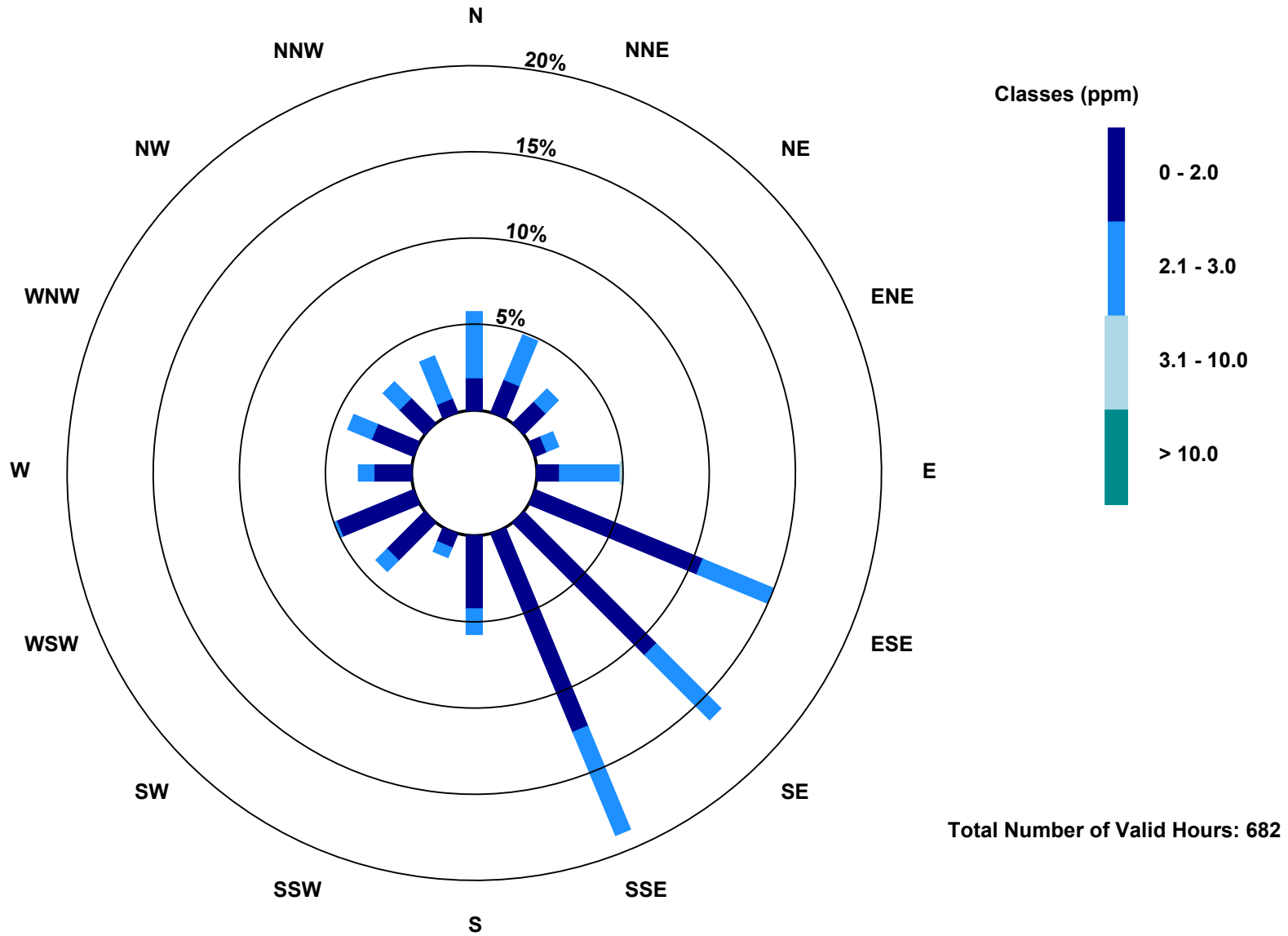
Total Number of Valid Hours: 682

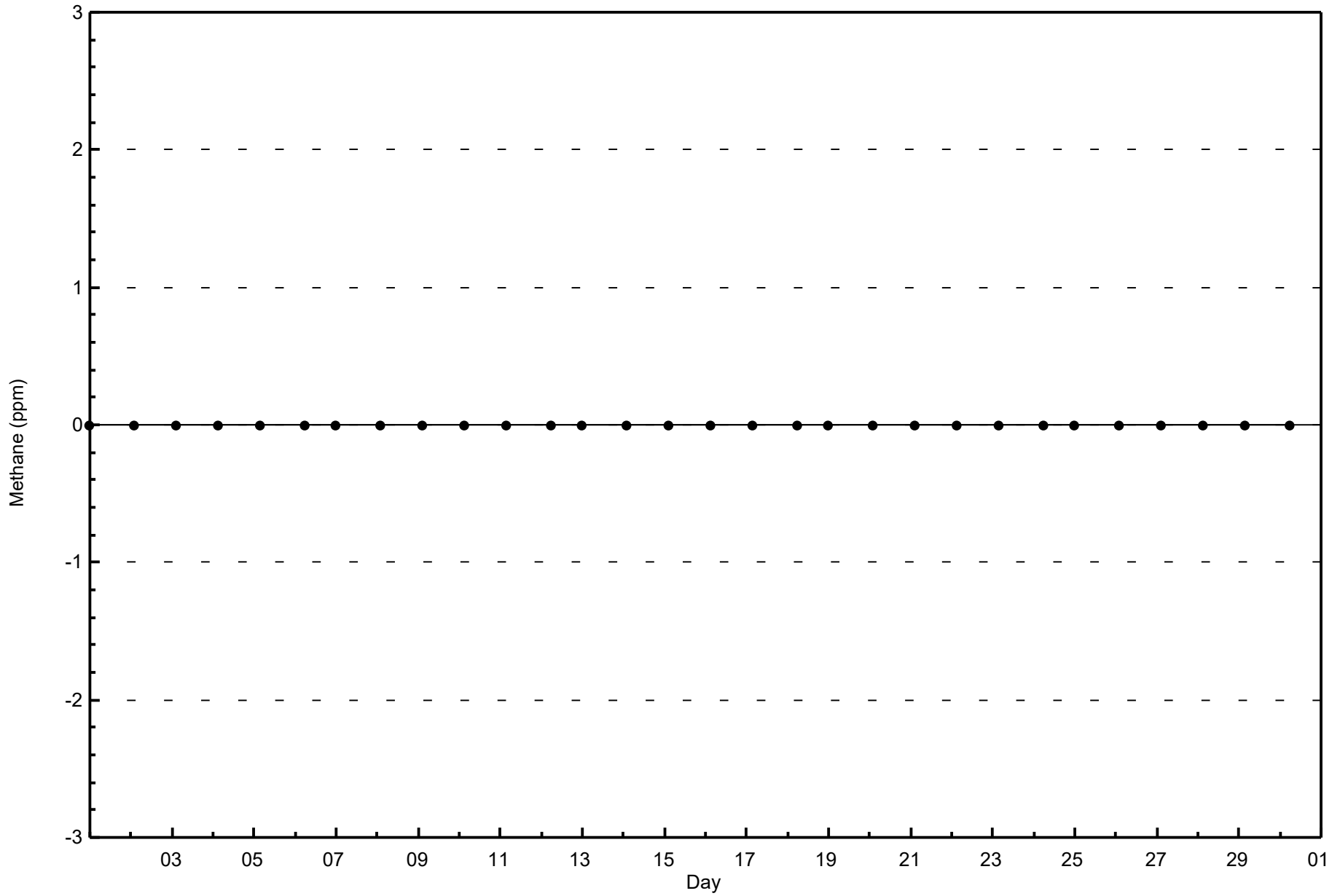
Total Number of Hours: 720

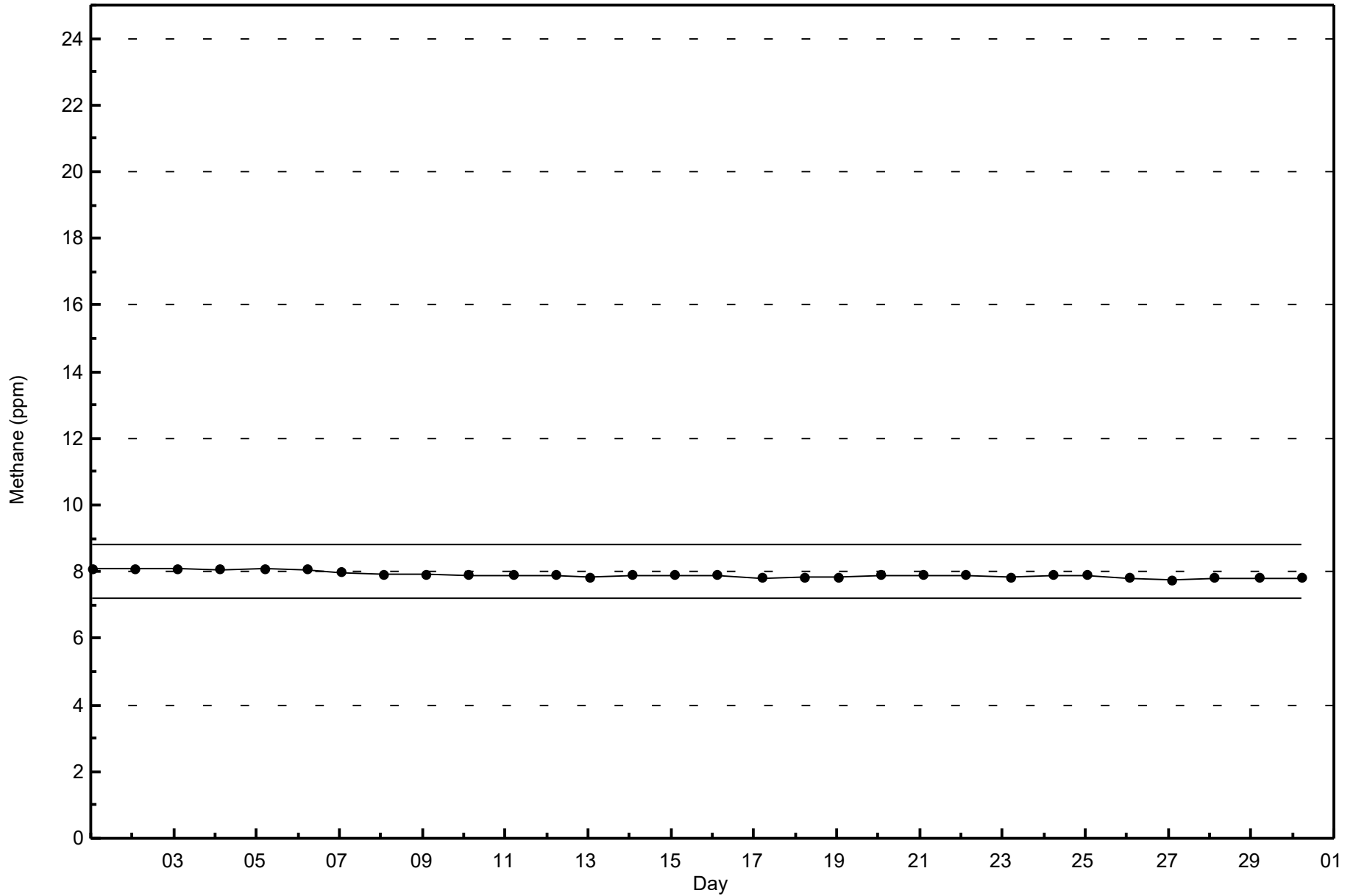


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Buffalo Viewpoint









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

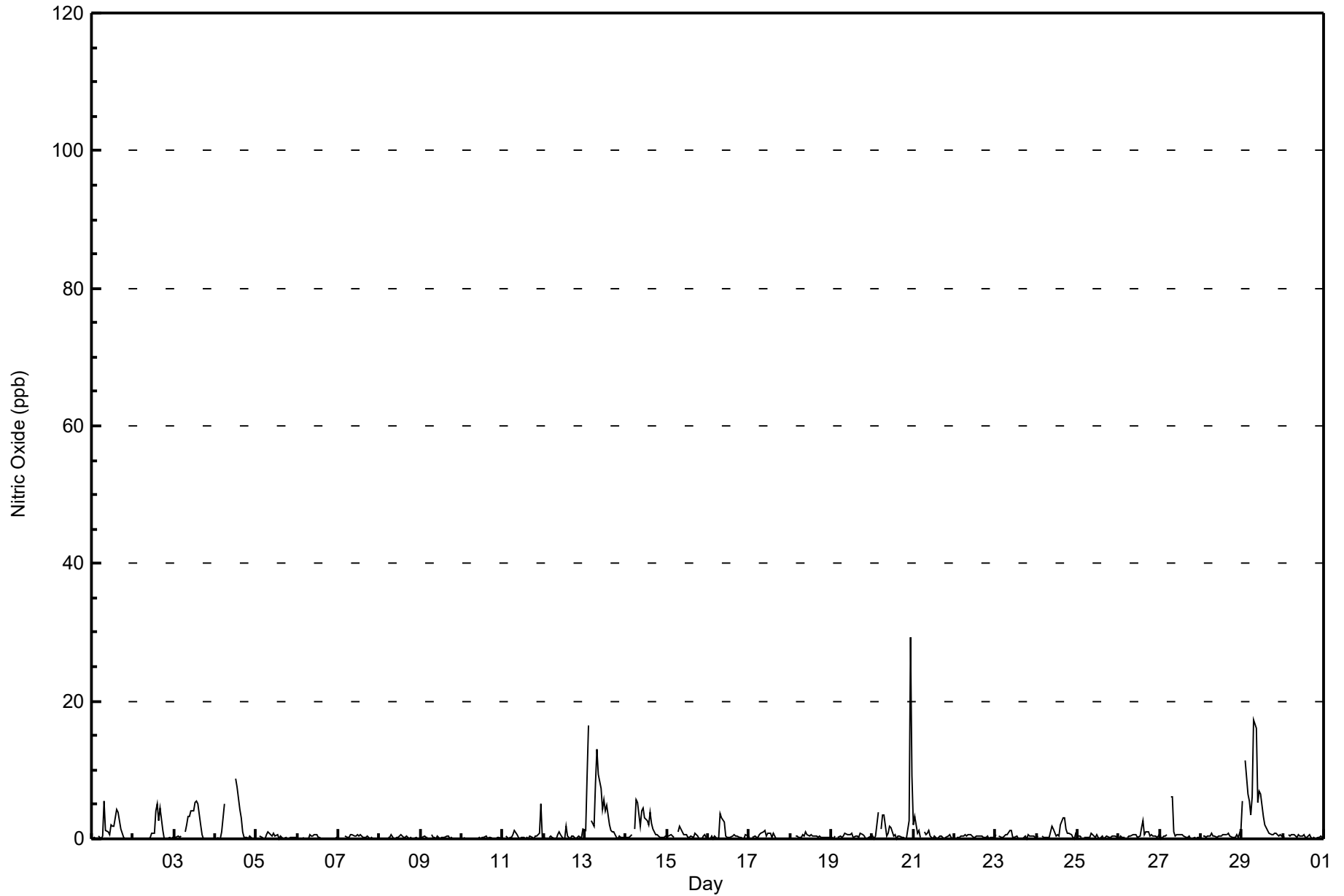
Buffalo Viewpoint - April 2023

Maximum Value: 29.2 ppb on Apr 20 23:00																				Maximum Daily Average: 4.5 ppb on Apr 29					Hours in Service: 720				
Minimum Value: 0.0 ppb on Apr 1 01:00																				Minimum Daily Average: 0.1 ppb on Apr 10					Hours of Data: 684				
Maximum Diurnal Average: 2.3 ppb at hour 8																				Minimum Diurnal Average: 0.2 ppb at hour 21					Hours of Missing Data: 36				
Monthly Average: 0.92 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.6 P ₉₀ = 2.1 P ₉₉ = 9.2					Hours of Calibration: 36				
																									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-Apr	0.0	0.3	0.0	Z	0.5	0.0	0.5	5.6	1.2	1.0	0.5	2.0	1.7	1.9	4.3	3.9	2.7	1.4	0.2	0.0	0.0	0.0	0.0	0.0	1.2	5.6			
2-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.9	0.7	4.0	5.1	2.6	4.6	1.1	0.0	0.0	0.0	0.3	0.0	0.2	0.9	5.1			
3-Apr	0.2	0.2	0.5	0.3	0.3	Z	1.0	2.0	3.3	3.3	4.0	4.1	5.4	5.6	5.1	2.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.7	5.6				
4-Apr	Z	0.2	0.1	0.1	1.0	5.1	C	C	C	C	C	C	8.8	7.6	4.3	3.0	0.9	0.3	0.2	0.0	0.4	0.2	0.1	0.0	--	8.8			
5-Apr	0.0	Z	0.5	0.2	0.0	0.0	0.6	1.0	0.7	0.5	0.8	0.5	0.7	0.1	0.3	0.2	0.0	0.2	0.0	0.0	0.2	0.1	0.1	0.2	0.3	1.0			
6-Apr	0.1	0.0	Z	0.2	0.1	0.0	0.0	0.6	0.4	0.4	0.7	0.5	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.7			
7-Apr	0.0	0.0	0.0	Z	0.3	0.2	0.3	0.6	0.7	0.4	0.5	0.5	0.4	0.5	0.2	0.2	0.1	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.7			
8-Apr	0.0	0.0	0.0	0.0	Z	0.2	0.1	0.5	0.0	0.0	0.1	0.2	0.6	0.4	0.2	0.3	0.3	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.6			
9-Apr	0.0	0.3	0.4	0.1	0.1	Z	0.6	0.2	0.3	0.1	0.3	0.0	0.1	0.2	0.1	0.5	0.4	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.6			
10-Apr	Z	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.1	0.2	0.2	0.4	0.0	0.2	0.3	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.4			
11-Apr	0.1	Z	0.5	0.1	0.2	0.2	0.6	1.2	0.7	0.3	0.0	0.1	0.2	0.0	0.2	0.0	0.3	0.3	0.0	0.4	0.3	0.8	5.1	0.2	0.5	5.1			
12-Apr	0.0	0.2	Z	0.2	0.3	0.2	0.0	0.0	0.6	1.1	0.6	0.0	0.0	1.8	0.4	0.1	0.4	0.5	0.3	0.1	0.4	0.2	0.3	1.3	0.4	1.8			
13-Apr	1.3	9.2	16.5	Z	2.7	1.8	8.2	13.0	9.3	7.4	4.2	5.8	4.1	4.8	1.9	1.2	1.1	1.0	0.1	0.0	0.3	0.1	0.2	0.2	4.1	16.5			
14-Apr	0.2	0.2	0.3	0.5	Z	1.4	5.6	5.2	1.8	4.1	4.5	3.1	2.7	2.1	3.8	2.2	1.4	0.6	0.6	0.5	0.2	0.1	0.1	0.4	1.8	5.6			
15-Apr	0.4	0.3	0.5	0.4	0.3	Z	1.0	1.8	1.4	1.0	0.6	0.5	0.2	0.2	0.3	0.3	0.8	0.7	0.4	0.0	0.0	0.3	0.7	0.3	0.5	1.8			
16-Apr	Z	0.1	0.4	0.0	0.4	0.0	0.2	3.7	3.0	2.3	0.4	0.2	0.3	0.3	0.5	0.6	0.4	0.3	0.1	0.2	0.0	0.0	0.6	0.4	0.6	3.7			
17-Apr	0.3	Z	0.2	0.4	0.2	0.3	0.7	0.8	1.0	1.3	0.4	0.7	0.9	0.2	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.3			
18-Apr	0.3	0.0	Z	0.5	0.4	0.3	0.2	0.6	0.4	0.9	0.6	0.5	0.7	0.3	0.4	0.4	0.1	0.5	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.9			
19-Apr	0.2	0.0	0.3	Z	0.2	0.4	0.2	0.5	0.7	0.6	0.6	0.7	0.7	0.2	0.3	0.4	0.2	0.9	0.5	0.3	0.0	0.0	0.2	0.3	0.4	0.9			
20-Apr	0.4	0.0	0.4	3.8	Z	1.5	3.5	3.4	0.5	0.9	1.9	1.6	0.5	0.7	0.1	0.4	0.5	0.1	0.3	0.0	0.0	2.7	29.2	9.1	2.7	29.2			
21-Apr	2.0	3.3	0.7	1.1	0.2	Z	1.0	0.6	0.9	1.2	0.4	0.1	0.5	0.2	0.1	0.4	0.4	0.2	0.1	0.2	0.5	0.6	0.2	0.1	0.6	3.3			
22-Apr	Z	0.1	0.2	0.3	0.4	0.3	0.5	0.5	0.5	0.7	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.1	0.2	0.4	0.0	0.3	0.2	0.3	0.3	0.7			
23-Apr	0.5	Z	0.4	0.3	0.3	0.4	0.6	0.6	1.3	1.3	0.3	0.3	0.4	0.0	0.1	0.0	0.4	0.1	0.5	0.3	0.4	0.4	0.1	0.4	0.4	1.3			
24-Apr	0.2	0.4	Z	0.4	0.2	0.2	0.2	0.2	0.9	1.8	1.4	0.4	0.6	0.3	2.0	3.1	3.0	1.5	0.8	0.8	0.6	0.1	0.0	0.7	0.9	3.1			
25-Apr	0.5	0.3	0.3	Z	0.1	0.2	0.2	0.2	0.8	0.4	0.3	0.6	0.3	0.0	0.3	0.0	0.3	0.3	0.1	0.2	0.3	0.4	0.4	0.1	0.3	0.8			
26-Apr	0.0	0.4	0.1	0.2	Z	0.3	0.4	0.4	0.6	0.5	0.5	0.2	0.5	1.6	2.7	0.7	1.1	1.0	0.4	0.6	0.4	0.5	0.2	0.3	0.6	2.7			
27-Apr	0.8	0.0	0.4	0.4	0.7	Z	6.1	6.0	1.1	0.5	0.7	0.5	0.6	0.5	0.5	0.3	0.2	0.4	0.0	0.1	0.2	0.0	0.2	0.2	0.9	6.1			
28-Apr	Z	0.4	0.5	0.1	0.3	0.3	0.7	0.4	0.4	0.3	0.4	0.4	0.4	0.6	0.5	0.6	0.9	0.5	0.2	0.3	0.2	0.5	0.3	1.4	0.5	1.4			
29-Apr	5.4	Z	11.4	6.5	5.5	3.4	6.1	17.2	16.0	5.2	6.9	6.6	3.3	1.9	1.5	1.2	0.8	0.6	0.6	0.9	0.8	0.3	0.5	0.4	4.5	17.2			
30-Apr	0.3	0.3	Z	0.7	0.5	0.6	0.7	0.5	0.2	0.5	0.5	0.5	0.5	0.2	0.2	0.6	0.3	0.0	0.2	0.0	0.2	0.3	0.3	0.2	0.4	0.7			
																								Diurnal Average					
																								Diurnal Maximum					
0.5 0.7 1.4 0.7 0.6 0.7 1.4 2.3 1.7 1.3 1.1 1.1 1.2 1.2 1.2 0.9 0.7 0.4 0.2 0.2 0.2 0.3 1.3 0.6																													
5.4 9.2 16.5 6.5 5.5 5.1 8.2 17.2 16.0 7.4 6.9 6.6 8.8 7.6 5.1 3.9 4.6 1.5 0.8 0.9 0.8 2.7 29.2 9.1																													
Z - zerospan C - Calibration																													



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Buffalo Viewpoint - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	99.85	99.85
21 - 40	1	0.15	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	39	31	18	11	33	101	107	133	40	10	25	35	23	27	23	27	683
21 - 40	0	0	0	0	0	0	1	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
Totals	39	31	18	11	33	101	108	133	40	10	25	35	23	27	23	27	684

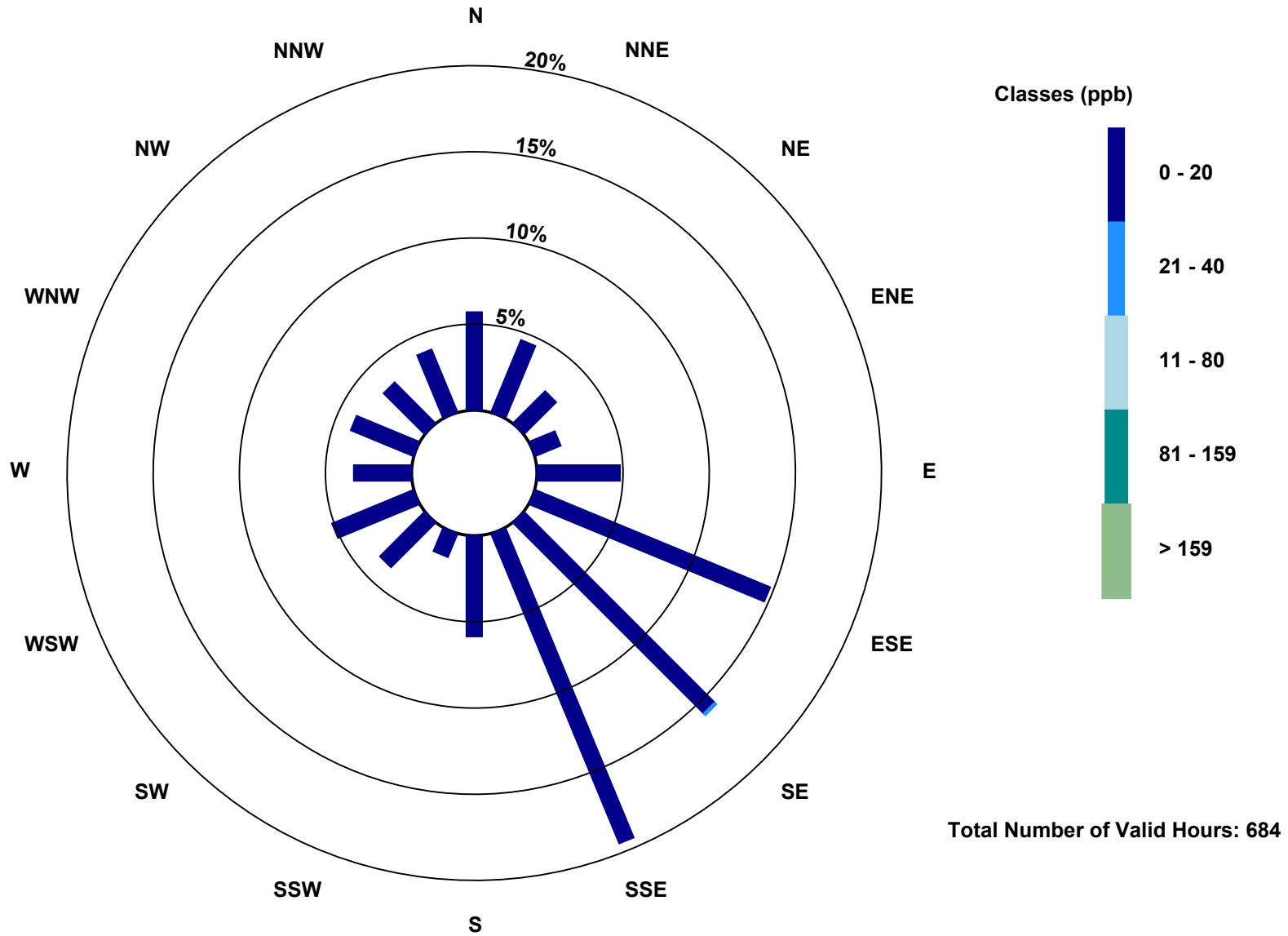
Total Number of Valid Hours: 684

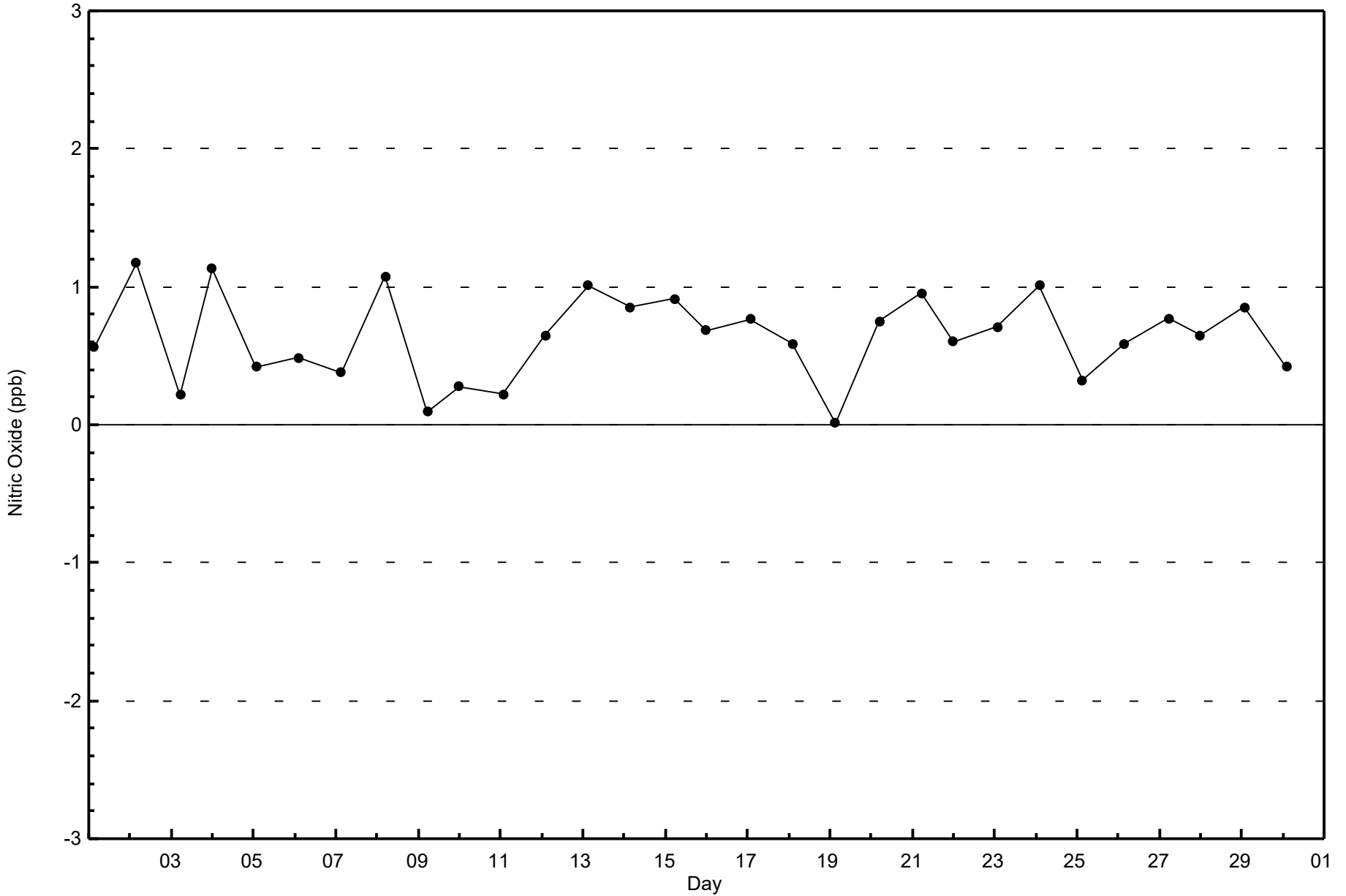
Total Number of Hours: 720

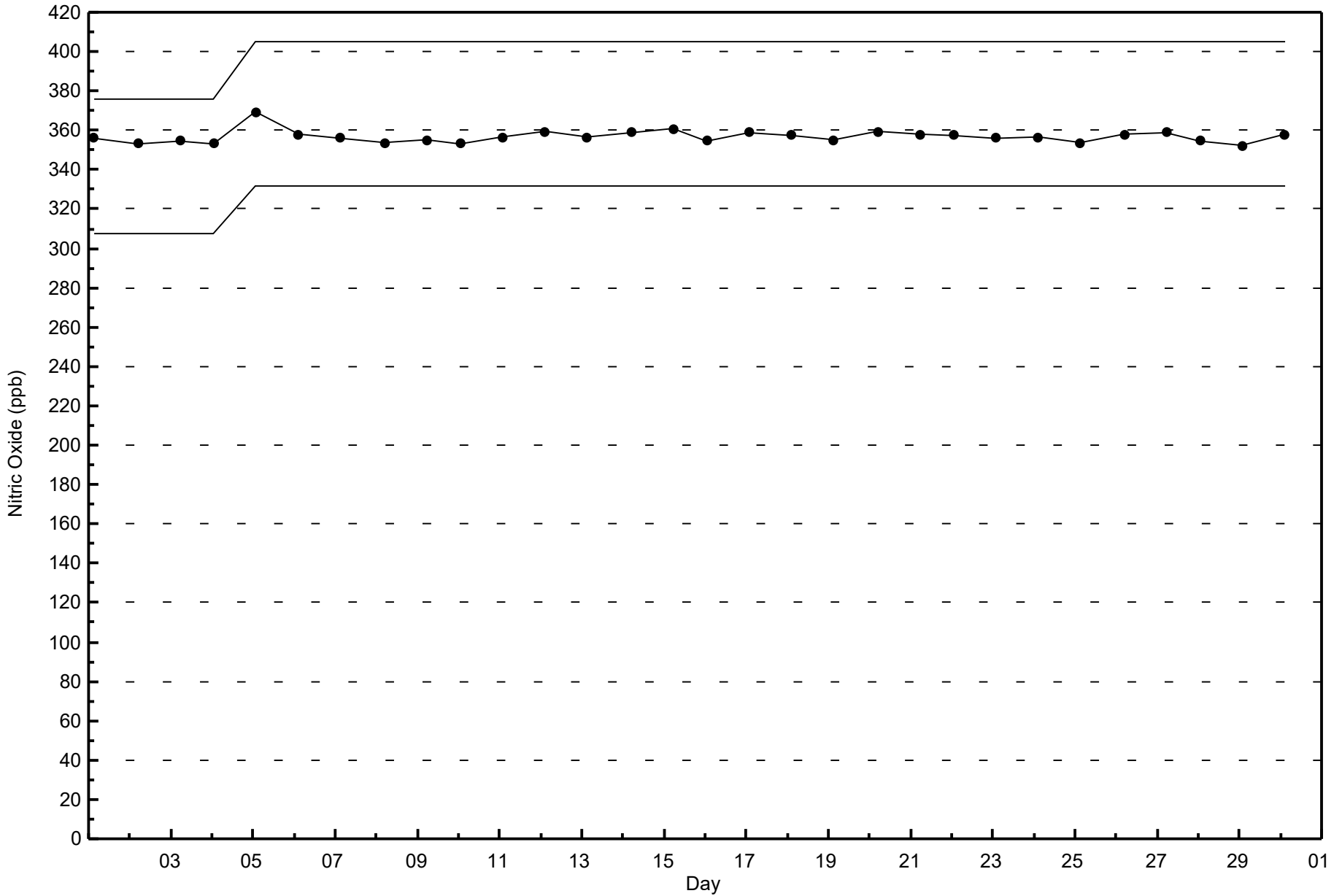


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Buffalo Viewpoint









Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 45.2 ppb on Apr 20 23:00	Maximum Daily Average: 13.0 ppb on Apr 29		Hours of Data:	684
Minimum Value: 0.0 ppb on Apr 2 03:00	Minimum Daily Average: 0.8 ppb on Apr 10		Hours of Missing Data:	36
Maximum Diurnal Average: 9.1 ppb at hour 3	Minimum Diurnal Average: 2.9 ppb at hour 13		Hours of Calibration:	36
Monthly Average: 5.18 ppb	Percentiles: P ₁ = 0.4 P ₁₀ = 0.9 Q ₁ = 1.4 Median = 2.5 Q ₃ = 6.5 P ₉₀ = 12.7 P ₉₉ = 31.2		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-Apr	11.5	17.6	20.1	Z	10.4	8.1	9.1	19.8	4.6	3.1	2.5	5.1	5.3	6.0	12.8	15.9	17.4	15.0	12.6	0.2	1.3	5.1	5.8	3.5	9.3	20.1	
2-Apr	1.7	1.5	0.0	0.0	Z	0.2	0.7	0.4	0.8	1.7	1.8	2.8	2.4	9.5	12.8	10.8	13.8	8.4	1.7	0.8	0.0	0.5	0.1	0.2	3.2	13.8	
3-Apr	4.0	8.5	17.5	0.9	1.2	Z	4.5	6.4	7.2	6.7	8.7	7.4	7.0	8.2	9.9	8.2	4.9	2.9	2.8	6.5	9.3	11.4	9.9	16.8	7.4	17.5	
4-Apr	Z	12.0	9.9	4.7	12.7	31.1	C	C	C	C	C	C	12.7	11.2	8.2	6.6	3.3	1.8	1.6	4.1	2.3	1.5	0.9	1.0	--	31.1	
5-Apr	0.6	Z	1.9	2.6	1.7	2.3	3.5	6.3	3.2	3.1	2.2	3.1	2.2	1.7	1.8	2.0	1.9	1.4	2.4	2.0	4.6	9.8	2.6	2.0	2.3	2.8	9.8
6-Apr	2.1	1.6	Z	1.8	2.0	3.1	3.5	4.5	2.7	2.4	2.7	2.4	2.4	1.6	1.1	1.1	1.0	1.0	0.7	1.1	0.9	1.0	0.7	1.4	1.9	4.5	
7-Apr	1.1	1.1	1.5	Z	2.0	2.4	3.0	2.4	2.3	2.0	2.1	2.0	2.3	1.9	1.6	1.8	1.9	2.2	2.2	2.1	2.1	1.6	1.3	1.3	1.9	3.0	
8-Apr	1.4	1.7	2.4	2.6	Z	3.2	3.6	3.7	2.3	1.6	1.4	1.8	2.1	1.8	1.6	0.8	0.9	0.9	2.0	2.5	3.1	6.1	3.0	1.6	2.3	6.1	
9-Apr	1.9	2.5	2.4	1.8	1.4	Z	2.1	1.7	1.1	0.9	0.7	0.7	0.8	0.6	0.7	0.6	0.4	0.8	0.6	0.8	1.2	1.5	0.9	1.1	1.2	2.5	
10-Apr	Z	2.2	1.9	0.9	0.8	0.5	0.7	0.7	0.6	0.6	0.7	0.7	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.9	0.5	0.6	1.2	1.3	0.8	2.2	
11-Apr	0.9	Z	1.2	1.1	1.0	3.1	6.1	5.8	2.1	0.9	1.3	1.6	0.8	0.7	0.6	0.5	0.6	0.6	2.0	4.1	7.0	18.9	30.8	16.8	4.7	30.8	
12-Apr	2.4	10.6	Z	12.4	3.4	1.0	0.9	0.7	4.2	4.7	1.8	0.7	0.9	4.7	1.9	1.1	1.2	1.0	1.7	4.5	7.5	16.7	22.2	30.5	5.9	30.5	
13-Apr	23.7	31.4	34.1	Z	30.5	21.8	19.3	18.5	12.7	11.3	8.5	10.2	8.4	13.5	8.2	4.2	3.8	3.4	3.8	5.0	2.8	2.8	2.3	6.2	12.5	34.1	
14-Apr	14.0	16.4	16.2	16.3	Z	19.7	21.7	14.6	5.8	8.7	9.6	6.2	5.6	5.5	8.6	6.6	5.6	4.9	7.0	9.9	8.5	18.2	10.9	13.4	11.0	21.7	
15-Apr	11.3	18.7	14.5	16.9	13.0	Z	5.2	5.0	3.6	3.0	2.1	1.7	1.6	1.1	1.5	1.7	5.2	6.3	4.0	3.0	7.1	19.4	13.8	6.0	7.2	19.4	
16-Apr	Z	1.7	1.2	1.6	5.5	8.3	4.7	9.9	8.8	7.8	2.2	1.5	1.3	1.2	2.0	2.8	2.5	2.5	2.4	2.9	2.9	6.5	16.7	18.5	5.0	18.5	
17-Apr	15.9	Z	11.6	12.4	8.8	7.9	7.0	4.1	5.4	4.5	2.7	3.1	3.0	1.6	3.5	4.6	1.5	5.3	2.0	1.3	2.3	6.1	3.0	3.7	5.3	15.9	
18-Apr	1.8	2.5	Z	2.2	4.5	6.6	9.7	5.0	2.4	4.6	4.6	3.3	2.7	1.8	2.0	2.4	2.6	2.5	2.4	2.7	1.7	1.5	3.9	2.7	3.3	9.7	
19-Apr	3.4	2.8	3.4	Z	7.4	9.8	5.7	4.2	4.7	5.8	4.2	3.0	2.5	2.0	3.6	2.4	2.5	5.3	4.6	5.3	7.6	12.3	7.9	7.5	5.1	12.3	
20-Apr	6.4	5.9	8.8	20.4	Z	15.9	13.0	9.0	1.6	1.7	5.1	4.0	2.1	2.3	1.3	1.6	1.3	1.7	1.3	1.6	6.6	25.0	45.2	41.9	9.7	45.2	
21-Apr	39.2	36.4	24.0	14.4	7.1	Z	3.1	1.8	2.7	2.1	1.3	1.3	1.0	0.9	0.9	1.0	1.1	1.0	1.0	2.1	9.0	9.2	4.7	2.7	7.3	39.2	
22-Apr	Z	1.5	2.9	7.4	6.8	4.9	3.8	2.2	1.8	1.4	1.0	1.1	0.8	0.9	1.0	0.9	0.8	1.0	0.9	0.9	2.0	1.0	2.3	1.2	2.1	7.4	
23-Apr	1.8	Z	2.7	2.0	2.4	2.8	3.7	4.2	6.7	5.4	1.9	1.6	1.5	1.3	1.4	1.5	1.3	1.1	1.1	1.3	2.9	1.3	1.2	1.3	2.3	6.7	
24-Apr	1.8	9.6	Z	6.3	4.3	2.3	2.5	4.3	8.5	11.0	6.8	1.9	1.8	1.9	5.2	12.4	16.8	13.7	11.5	13.8	6.3	11.2	10.8	10.8	7.6	16.8	
25-Apr	9.8	8.7	8.0	Z	3.3	2.5	2.0	2.2	2.7	2.3	1.6	1.8	1.5	1.2	1.6	1.7	1.2	1.2	2.0	0.9	1.3	1.1	1.2	1.0	2.6	9.8	
26-Apr	0.9	0.9	0.8	1.1	Z	1.2	0.9	1.0	1.0	1.7	1.8	1.3	1.3	4.4	5.8	2.5	3.6	3.6	3.2	4.3	3.3	4.5	6.5	7.6	2.7	7.6	
27-Apr	12.7	7.0	10.9	11.0	12.4	Z	11.0	8.4	2.7	1.6	1.8	1.9	1.6	1.6	1.3	1.2	1.2	0.8	0.8	1.0	1.0	1.0	1.1	1.2	4.1	12.7	
28-Apr	Z	1.5	2.1	7.7	1.9	5.1	2.7	0.9	1.5	1.2	0.9	1.2	1.3	1.4	1.5	2.4	3.6	3.3	3.1	2.9	2.6	3.4	11.3	31.0	4.1	31.0	
29-Apr	41.4	Z	27.7	26.0	30.6	16.4	12.1	16.6	19.9	11.9	14.1	14.7	8.8	5.8	4.9	3.9	3.5	4.1	5.9	10.6	10.8	2.1	1.2	6.9	13.0	41.4	
30-Apr	7.7	1.9	Z	2.2	2.4	3.4	4.2	2.7	2.0	1.7	1.3	1.4	1.4	1.4	1.1	1.3	1.1	1.2	1.4	1.6	1.2	1.0	1.1	1.4	2.0	7.7	

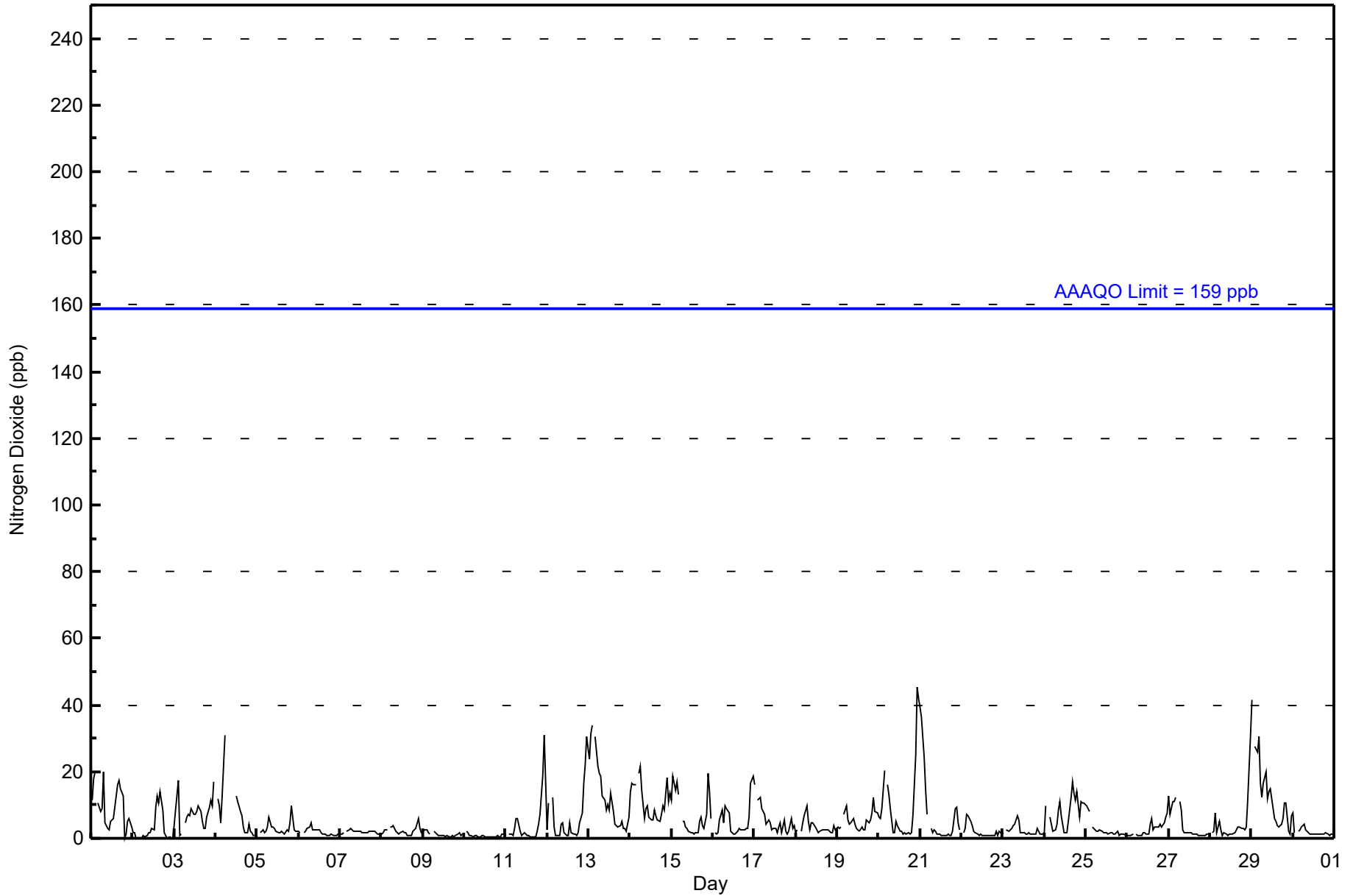
8.8	8.2	9.1	7.1	7.1	7.3	5.9	5.8	4.3	4.0	3.4	3.1	2.9	3.3	3.6	3.5	3.6	3.3	3.0	3.4	4.2	6.5	7.5	8.1	Diurnal Average	
41.4	36.4	34.1	26.0	30.6	31.1	21.7	19.8	19.9	11.9	14.1	14.7	12.7	13.5	12.8	15.9	17.4	15.0	12.6	13.8	10.8	25.0	45.2	41.9	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	663	96.93	96.93
21 - 40	18	2.63	99.56
41 - 80	3	0.44	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	36	29	18	11	33	99	105	131	40	10	24	35	22	25	22	23	663
21 - 40	3	1	0	0	0	2	1	2	0	0	1	0	1	2	1	4	18
11 - 80	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
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
Totals	39	31	18	11	33	101	108	133	40	10	25	35	23	27	23	27	684

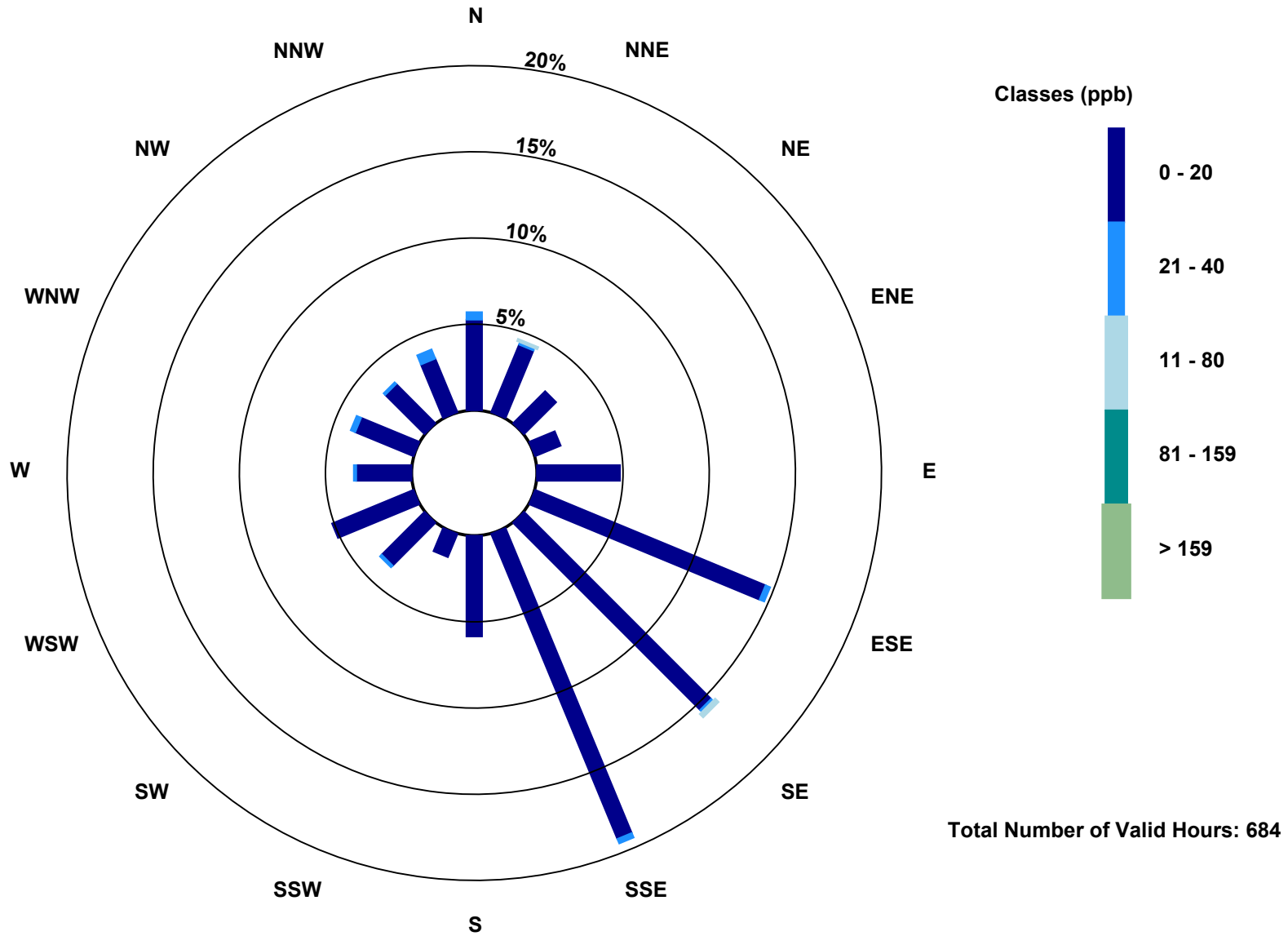
Total Number of Valid Hours: 684

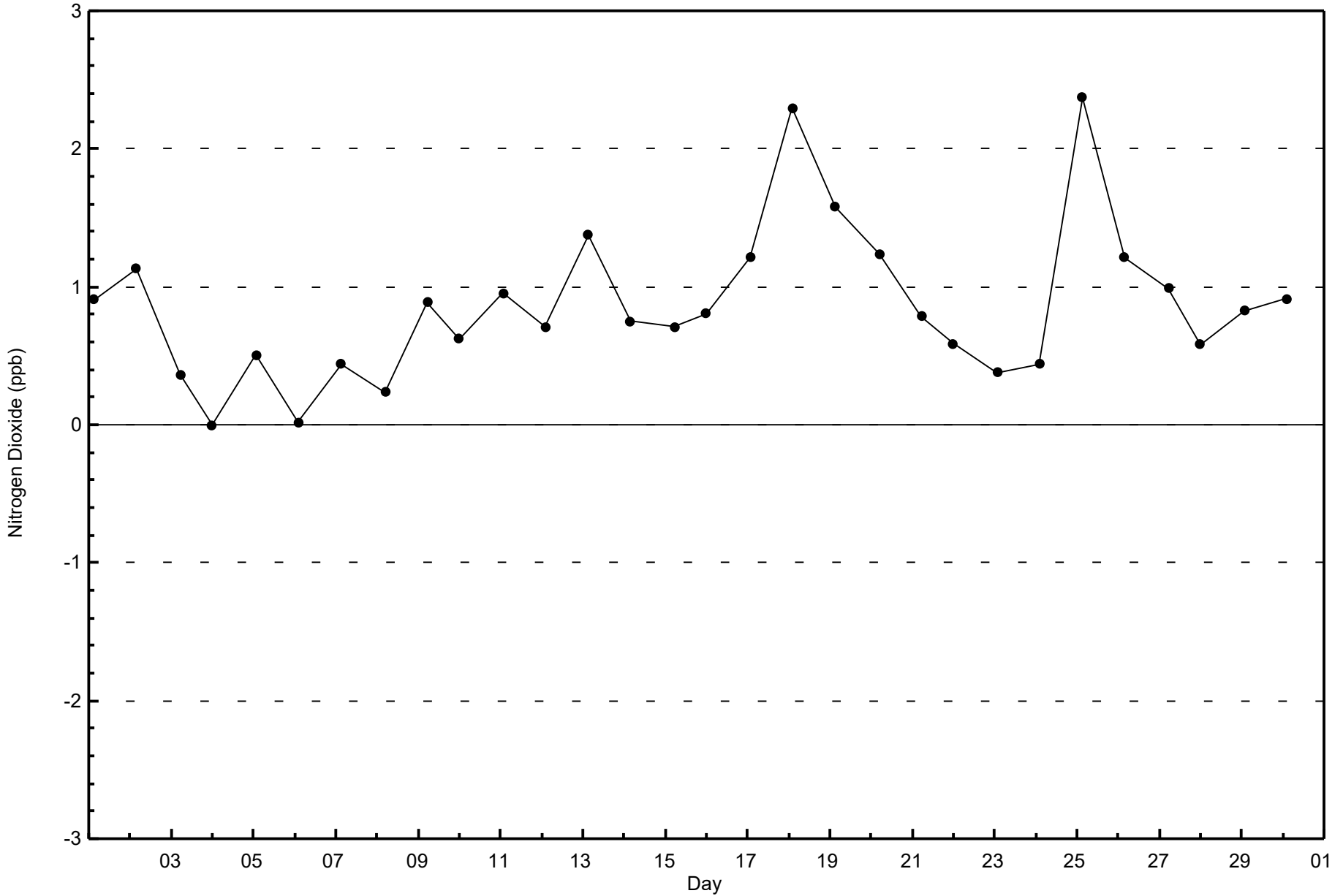
Total Number of Hours: 720

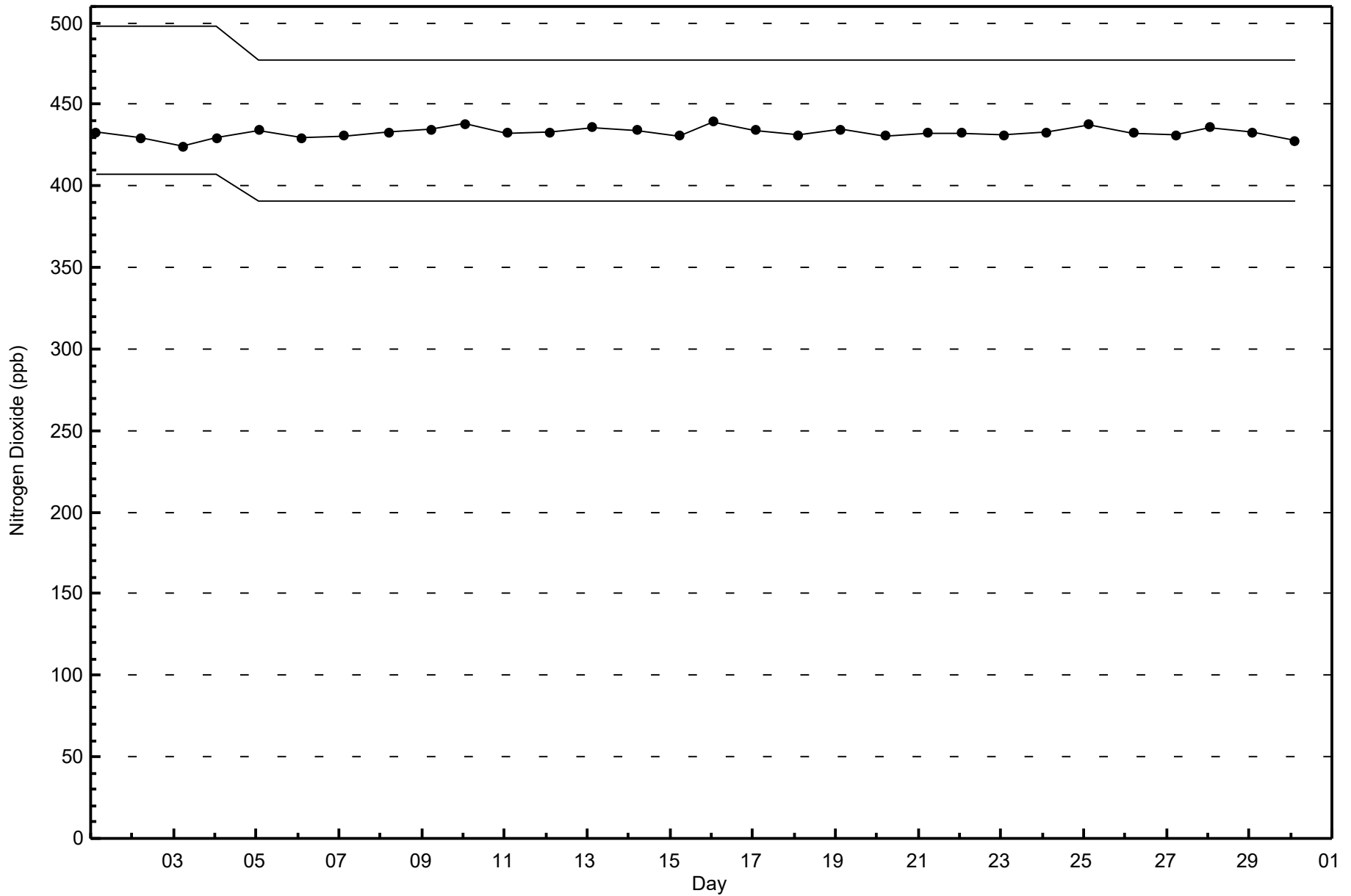


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

Buffalo Viewpoint - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 74.4 ppb on Apr 20 23:00	Maximum Daily Average: 17.5 ppb on Apr 29		Hours of Data:	684
Minimum Value: 0.0 ppb on Apr 2 03:00	Minimum Daily Average: 0.9 ppb on Apr 10		Hours of Missing Data:	36
Maximum Diurnal Average: 10.5 ppb at hour 3	Minimum Diurnal Average: 3.2 ppb at hour 19		Hours of Calibration:	36
Monthly Average: 6.09 ppb	Percentiles: P ₁ = 0.4 P ₁₀ = 1.1 Q ₁ = 1.6 Median = 2.8 Q ₃ = 7.3 P ₉₀ = 15.4 P ₉₉ = 39.2		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-Apr	11.5	17.9	20.1	Z	10.9	8.1	9.6	25.4	5.8	4.1	3.0	7.1	7.0	7.9	17.1	19.8	20.1	16.4	12.8	0.2	1.3	5.1	5.8	3.5	10.5	25.4
2-Apr	1.7	1.5	0.0	0.0	Z	0.2	0.7	0.4	0.8	1.8	2.0	3.7	3.1	13.5	17.9	13.4	18.4	9.5	1.7	0.8	0.0	0.8	0.1	0.4	4.0	18.4
3-Apr	4.2	8.7	18.0	1.2	1.5	Z	5.5	8.4	10.5	10.0	12.7	11.5	12.4	13.8	15.0	10.3	5.5	2.9	2.8	6.5	9.3	11.4	9.9	16.8	9.1	18.0
4-Apr	Z	12.2	10.0	4.8	13.7	36.2	C	C	C	C	C	C	21.5	18.8	12.5	9.6	4.2	2.1	1.8	4.1	2.7	1.7	1.0	1.0	--	36.2
5-Apr	0.6	Z	2.4	2.8	1.7	2.3	4.1	7.3	3.9	3.7	3.9	2.7	2.4	1.9	2.3	2.1	1.4	2.6	2.0	4.6	10.0	2.7	2.1	2.5	3.1	10.0
6-Apr	2.2	1.6	Z	2.0	2.1	3.1	3.5	5.1	3.1	2.8	3.4	2.9	2.5	1.7	1.2	1.2	1.1	1.0	0.7	1.1	1.0	1.0	0.7	1.5	2.0	5.1
7-Apr	1.1	1.1	1.5	Z	2.3	2.6	3.3	3.0	3.0	2.4	2.6	2.5	2.7	2.4	1.8	2.0	2.0	2.6	2.3	2.2	2.1	1.6	1.3	1.3	2.2	3.3
8-Apr	1.4	1.7	2.4	2.6	Z	3.4	3.7	4.2	2.3	1.6	1.5	2.0	2.7	2.2	1.8	1.1	1.2	0.9	2.1	2.5	3.1	6.3	3.0	1.6	2.4	6.3
9-Apr	1.9	2.8	2.8	1.9	1.5	Z	2.7	1.9	1.4	1.0	1.0	0.7	0.9	0.8	0.8	1.1	0.8	0.8	0.8	0.9	1.2	1.5	0.9	1.1	1.4	2.8
10-Apr	Z	2.4	1.9	0.9	0.8	0.5	0.8	0.7	0.7	0.6	0.9	0.8	0.7	0.7	0.9	0.6	0.7	0.8	0.7	0.9	0.5	0.7	1.3	1.3	0.9	2.4
11-Apr	1.0	Z	1.7	1.2	1.2	3.3	6.7	7.0	2.8	1.2	1.3	1.7	1.0	0.7	0.8	0.5	0.9	0.9	2.0	4.5	7.3	19.7	35.9	17.0	5.2	35.9
12-Apr	2.4	10.8	Z	12.6	3.7	1.2	0.9	0.7	4.8	5.8	2.4	0.7	0.9	6.5	2.3	1.2	1.6	1.5	2.0	4.6	7.9	16.9	22.5	31.8	6.3	31.8
13-Apr	25.0	40.6	50.6	Z	33.2	23.6	27.5	31.5	22.0	18.7	12.7	16.0	12.5	18.3	10.1	5.4	4.9	4.4	3.9	5.0	3.1	2.9	2.5	6.4	16.6	50.6
14-Apr	14.2	16.6	16.5	16.8	Z	21.1	27.3	19.8	7.6	12.8	14.1	9.3	8.3	7.6	12.4	8.8	7.0	5.5	7.6	10.4	8.7	18.3	11.0	13.8	12.8	27.3
15-Apr	11.7	19.0	15.0	17.3	13.3	Z	6.2	6.8	5.0	4.0	2.7	2.2	1.8	1.3	1.8	2.0	6.0	7.0	4.4	3.0	7.1	19.7	14.5	6.3	7.7	19.7
16-Apr	Z	1.8	1.6	1.6	5.9	8.3	4.9	13.6	11.8	10.1	2.6	1.7	1.6	1.5	2.5	3.4	2.9	2.8	2.5	3.1	2.9	6.5	17.3	18.9	5.6	18.9
17-Apr	16.2	Z	11.8	12.8	9.0	8.2	7.7	4.9	6.4	5.8	3.1	3.8	3.9	1.8	4.3	4.9	1.6	5.3	2.0	1.3	2.3	6.1	3.0	3.7	5.6	16.2
18-Apr	2.1	2.5	Z	2.7	4.9	6.9	9.9	5.6	2.8	5.5	5.2	3.8	3.4	2.1	2.4	2.8	2.7	3.0	2.6	2.9	1.8	1.6	4.0	2.9	3.7	9.9
19-Apr	3.6	2.8	3.7	Z	7.6	10.2	5.9	4.7	5.4	6.4	4.8	3.7	3.2	2.2	3.9	2.8	2.7	6.2	5.1	5.6	7.6	12.3	8.1	7.8	5.5	12.3
20-Apr	6.8	5.9	9.2	24.2	Z	17.4	16.5	12.4	2.1	2.6	7.0	5.6	2.6	3.0	1.4	2.0	1.8	1.8	1.6	1.6	6.6	27.7	74.4	51.0	12.4	74.4
21-Apr	41.2	39.7	24.7	15.5	7.3	Z	4.1	2.4	3.6	3.3	1.7	1.4	1.5	1.1	1.0	1.4	1.5	1.2	1.1	2.3	9.5	9.8	4.9	2.8	8.0	41.2
22-Apr	Z	1.6	3.1	7.7	7.2	5.2	4.3	2.7	2.3	2.1	1.4	1.4	1.1	1.3	1.4	1.2	1.2	1.1	1.1	1.3	2.0	1.3	2.5	1.5	2.4	7.7
23-Apr	2.3	Z	3.1	2.3	2.7	3.2	4.3	4.8	8.0	6.7	2.2	1.9	1.3	1.4	1.6	1.3	1.5	1.2	1.8	3.2	1.7	1.6	1.4	1.4	2.7	8.0
24-Apr	2.0	10.0	Z	6.7	4.5	2.5	2.7	4.5	9.4	12.8	8.2	2.3	2.4	2.2	7.2	15.5	19.8	15.2	12.3	14.6	6.9	11.3	10.8	11.5	8.5	19.8
25-Apr	10.3	9.0	8.3	Z	3.4	2.7	2.2	2.4	3.5	2.7	1.9	2.4	1.8	1.2	1.9	1.7	1.5	1.5	2.1	1.1	1.6	1.5	1.6	1.1	2.9	10.3
26-Apr	0.9	1.3	0.9	1.3	Z	1.5	1.3	1.4	1.6	2.2	2.3	1.5	1.8	6.0	8.5	3.2	4.7	4.6	3.6	4.9	3.7	5.0	6.7	7.9	3.3	8.5
27-Apr	13.5	7.0	11.3	11.4	13.1	Z	17.1	14.4	3.8	2.1	2.5	2.4	2.2	2.1	1.8	1.5	1.4	1.2	0.8	1.1	1.2	1.0	1.3	1.4	5.0	17.1
28-Apr	Z	1.9	2.6	7.8	2.2	5.4	3.4	1.3	1.9	1.5	1.3	1.6	1.7	2.0	2.0	3.0	4.5	3.8	3.3	3.2	2.8	3.9	11.6	32.4	4.6	32.4
29-Apr	46.8	Z	39.1	32.5	36.1	19.8	18.2	33.8	35.9	17.1	21.0	21.3	12.1	7.7	6.4	5.1	4.3	4.7	6.5	11.5	11.6	2.4	1.7	7.3	17.5	46.8
30-Apr	8.0	2.2	Z	2.9	2.9	4.0	4.9	3.2	2.2	2.2	1.8	1.9	1.9	1.6	1.3	1.9	1.4	1.2	1.6	1.6	1.4	1.3	1.4	1.6	2.4	8.0

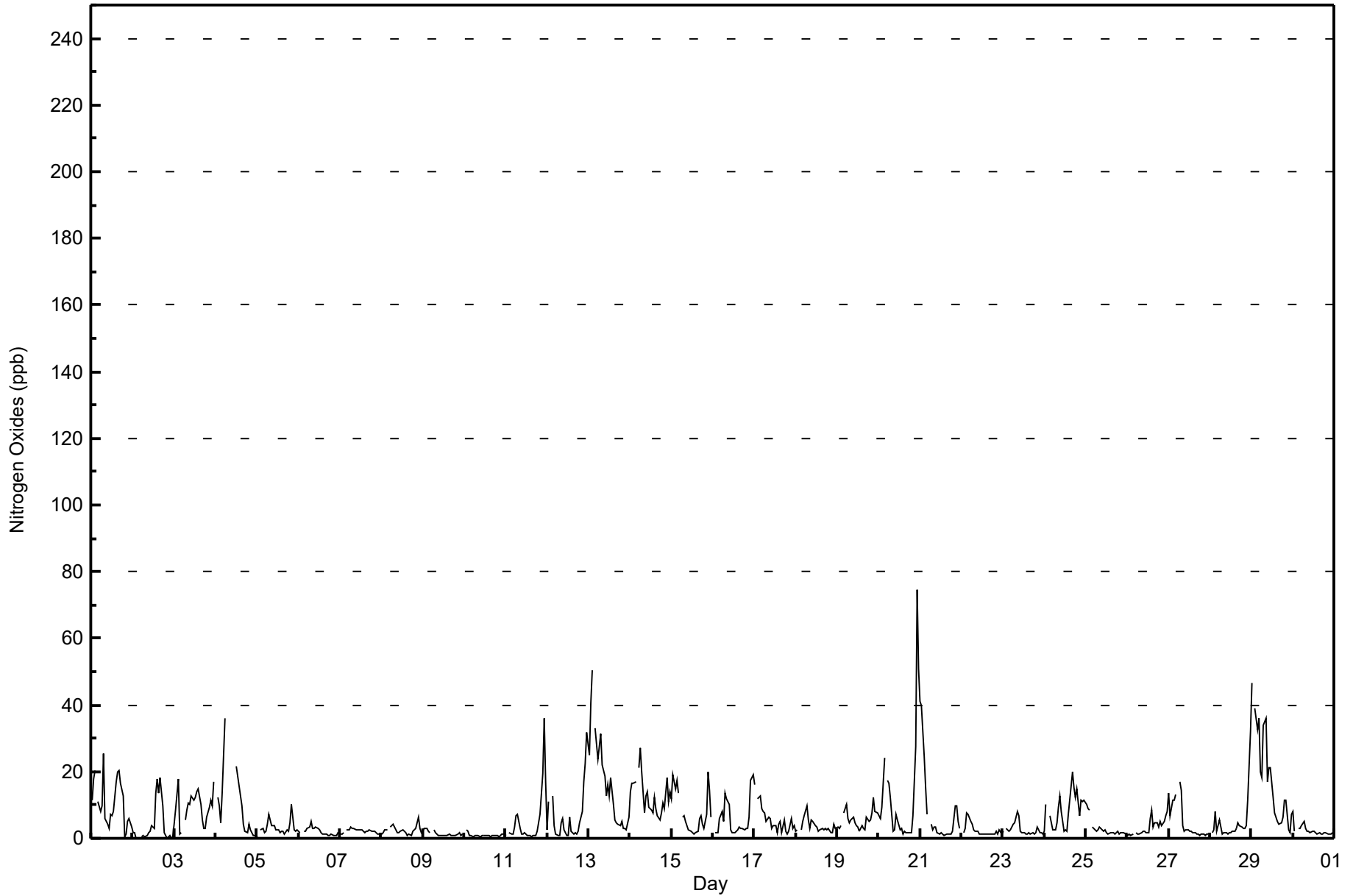
9.3	8.9	10.5	7.7	7.7	8.0	7.2	8.1	6.0	5.3	4.5	4.2	4.1	4.5	4.9	4.4	4.3	3.8	3.2	3.6	4.4	6.8	8.8	8.7	Diurnal Average	
46.8	40.6	50.6	32.5	36.1	36.2	27.5	33.8	35.9	18.7	21.0	21.3	21.5	18.8	17.9	19.8	20.1	16.4	12.8	14.6	11.6	27.7	74.4	51.0	Diurnal Maximum	

Z - zerospan C - Calibration



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	652	95.32	95.32
21 - 40	26	3.80	99.12
41 - 80	6	0.88	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	35	27	17	11	33	98	103	130	39	9	24	35	22	25	22	22	652
21 - 40	2	3	1	0	0	3	2	3	1	1	1	0	1	2	1	5	26
11 - 80	2	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	6
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
Totals	39	31	18	11	33	101	108	133	40	10	25	35	23	27	23	27	684

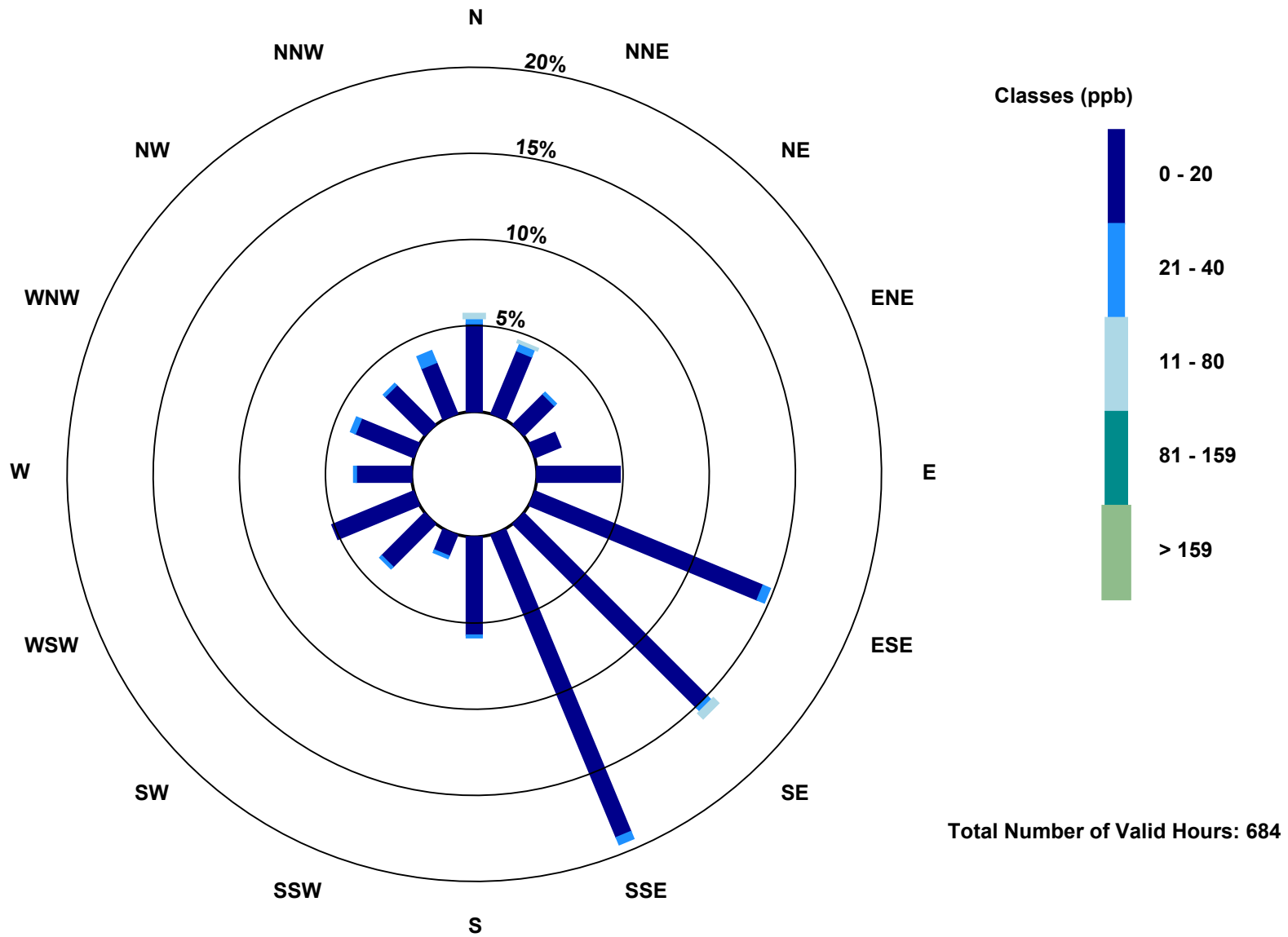
Total Number of Valid Hours: 684

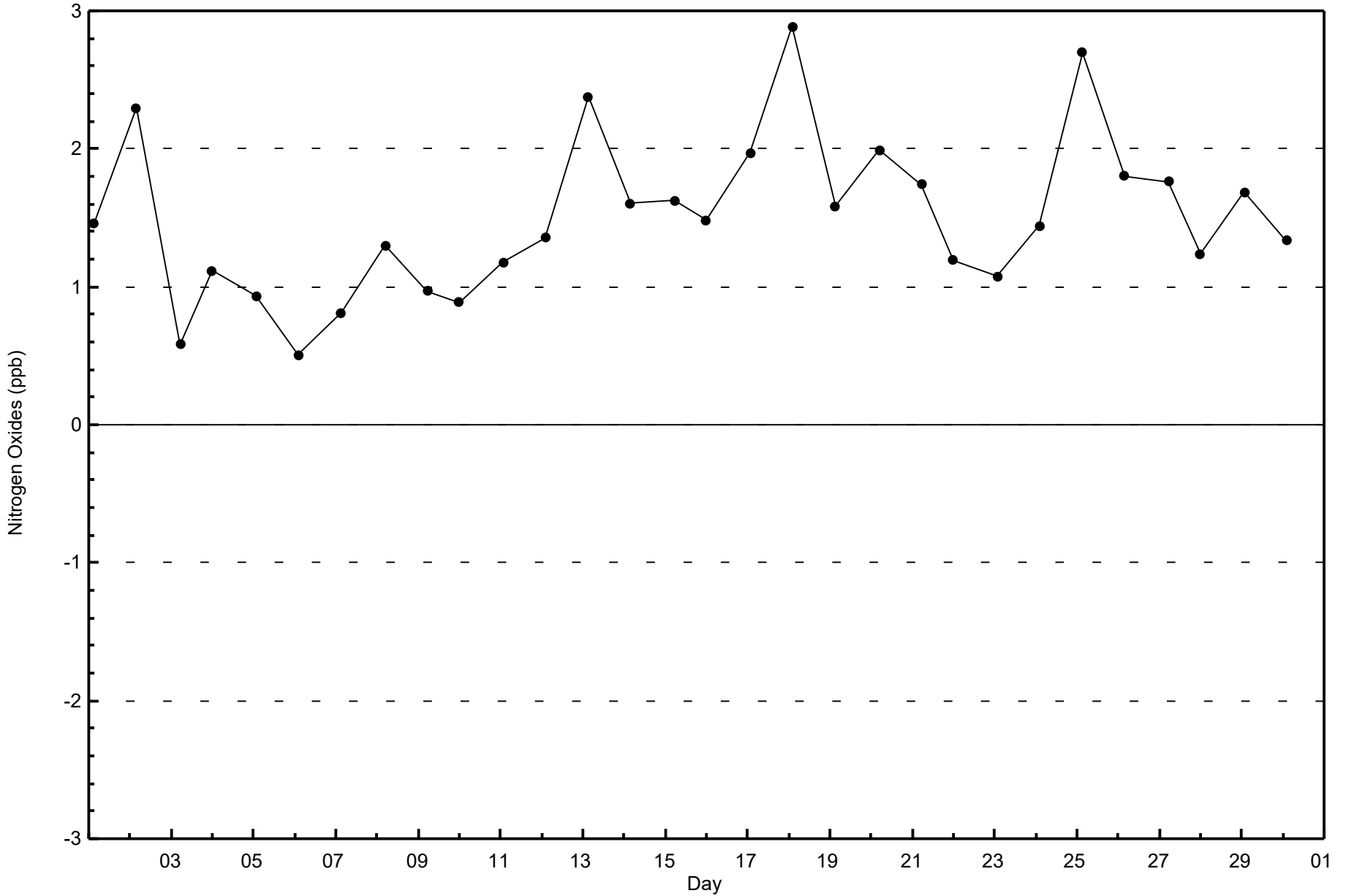
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint

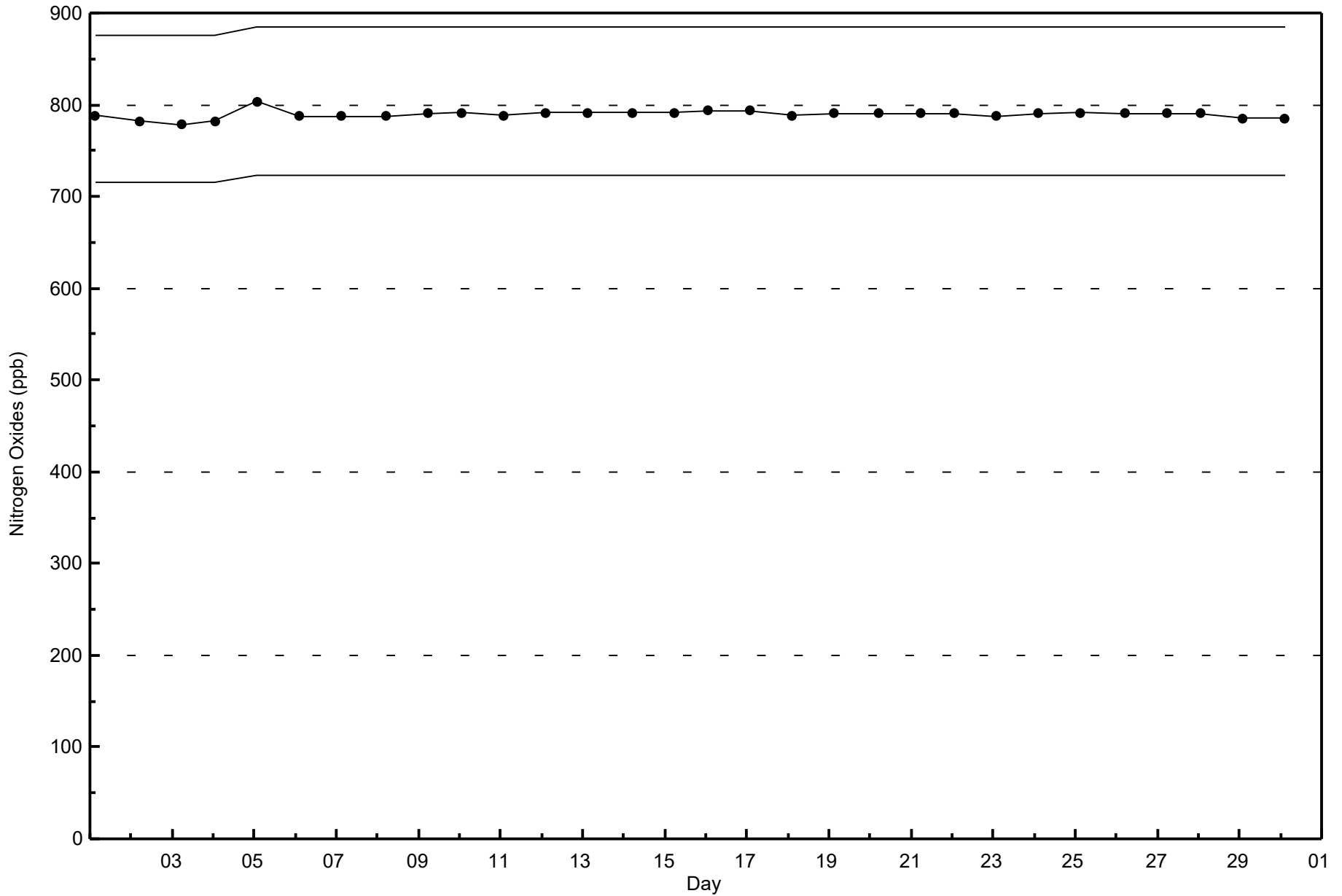






Wood Buffalo Environmental Association
Span Responses

Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint - April 2023





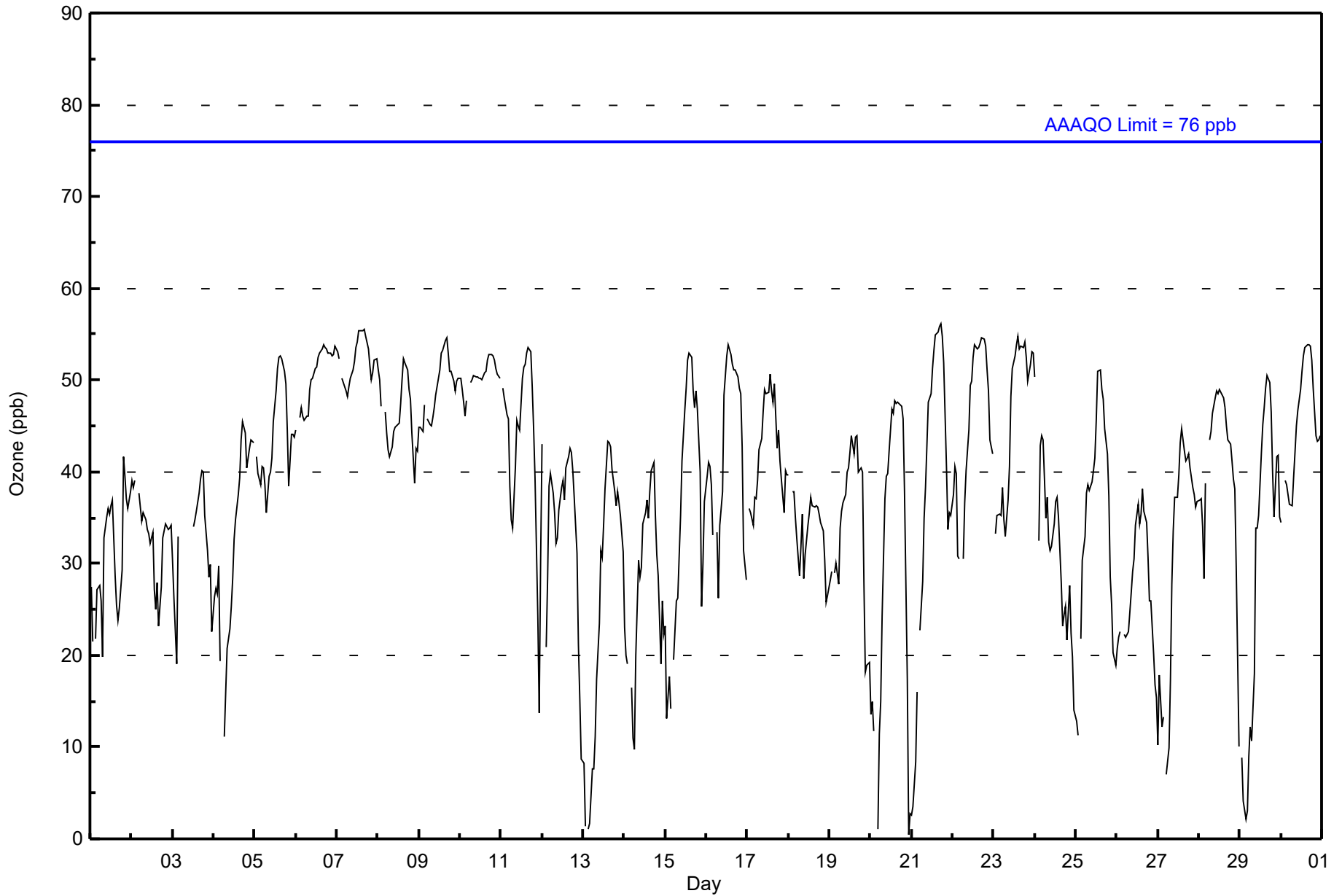
Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Buffalo Viewpoint - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Daily Average		Daily Maximum																										
Maximum Value: 56.1 ppb on Apr 21 18:00		Maximum Daily Average: 52.1 ppb on Apr 7																	Hours of Data: 684		Hours of Missing Data: 36																												
Minimum Value: 0.5 ppb on Apr 20 23:00		Minimum Daily Average: 26.0 ppb on Apr 13																	Hours of Calibration: 36		Percent Operational Time: 100.0																												
Maximum Diurnal Average: 45.8 ppb at hour 16		Minimum Diurnal Average: 29.2 ppb at hour 2																																															
Monthly Average: 38.05 ppb		Percentiles: P ₁ = 2.7 P ₁₀ = 20.7 Q ₁ = 31.6 Median = 39.5 Q ₃ = 48.2 P ₉₀ = 52.3 P ₉₉ = 54.9																																															
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-Apr	27.4	21.5	Z	21.8	27.2	27.6	25.9	19.9	32.9	35.1	36.0	35.4	36.3	36.9	28.7	25.4	23.7	25.1	29.3	41.6	39.5	37.1	36.0	37.8	30.8	41.6																							
2-Apr	39.1	38.3	39.0	Z	37.7	36.2	34.6	35.5	34.7	33.7	33.3	32.2	33.4	27.2	25.1	28.0	23.2	27.5	32.8	33.5	34.2	33.7	33.9	34.2	33.1	39.1																							
3-Apr	30.3	26.3	19.1	33.0	Z	31.6	C	C	C	C	C	C	34.0	34.8	35.6	37.7	39.2	40.1	40.0	35.2	31.5	28.5	29.9	22.5	--	40.1																							
4-Apr	26.4	27.3	26.7	29.8	19.4	Z	11.2	16.0	20.7	22.9	25.3	28.3	32.6	34.8	37.6	39.3	43.4	45.5	44.3	40.4	41.5	42.5	43.5	43.2	32.3	45.5																							
5-Apr	Z	41.7	39.9	38.6	40.6	40.4	38.5	35.5	39.6	40.0	41.5	45.4	48.8	51.3	52.4	52.6	52.3	50.9	49.6	44.6	38.4	44.1	44.0	43.8	44.1	52.6																							
6-Apr	44.5	Z	45.9	47.0	46.1	45.6	46.1	46.0	48.9	50.1	50.1	51.3	51.5	52.6	53.0	53.4	53.8	53.5	53.4	52.9	53.0	52.6	52.8	53.6	50.3	53.8																							
7-Apr	53.0	52.3	Z	50.2	49.8	48.8	48.2	49.3	50.1	51.1	52.0	53.5	54.2	55.3	55.4	55.3	55.6	54.8	53.4	51.6	50.0	50.9	52.1	52.3	52.1	55.6																							
8-Apr	51.1	50.0	47.2	Z	46.5	44.2	42.4	41.6	42.7	44.4	44.9	45.0	45.4	47.5	50.0	52.4	51.9	51.1	49.0	47.9	44.3	38.7	42.5	42.3	46.2	52.4																							
9-Apr	44.9	44.9	44.4	47.4	Z	45.8	45.1	45.0	45.9	47.0	48.3	50.1	51.1	52.9	53.2	54.3	54.7	52.9	51.0	50.9	50.0	48.9	49.8	50.1	49.1	54.7																							
10-Apr	50.2	48.9	47.6	46.1	47.7	Z	49.8	50.0	50.4	50.4	50.3	50.2	50.2	50.0	50.7	50.9	52.2	52.8	52.8	52.6	52.1	51.2	50.7	50.2	50.4	52.8																							
11-Apr	Z	49.0	48.0	46.2	45.7	38.4	34.8	33.8	40.6	45.6	45.0	44.5	50.2	51.3	51.8	52.9	53.6	53.0	49.3	44.7	39.3	24.3	13.8	30.2	42.9	53.6																							
12-Apr	43.0	Z	20.9	28.4	38.5	39.9	37.7	35.5	32.1	32.7	35.9	38.3	39.1	36.9	40.4	41.6	42.6	42.2	40.2	37.2	31.2	21.1	15.2	8.7	33.9	43.0																							
13-Apr	8.3	1.4	Z	1.0	1.6	7.6	7.6	11.1	17.3	23.5	31.5	30.7	34.2	38.1	43.3	43.1	42.6	40.3	37.8	36.3	37.9	36.6	35.3	31.2	26.0	43.3																							
14-Apr	23.0	20.0	19.0	Z	16.5	10.9	9.8	20.0	30.4	28.6	29.6	34.4	35.5	36.9	35.0	37.9	40.2	41.0	35.3	31.0	28.7	19.1	25.9	22.3	27.4	41.0																							
15-Apr	23.2	13.2	17.7	14.2	Z	19.5	25.9	26.3	30.9	35.3	41.2	46.7	49.1	52.2	53.0	52.4	48.8	47.0	48.8	46.8	39.9	25.4	30.0	36.7	35.8	53.0																							
16-Apr	39.5	41.0	40.5	38.6	33.1	Z	33.4	26.3	34.2	37.8	48.4	50.5	52.6	53.9	52.8	51.7	51.2	51.2	50.3	49.2	48.4	42.6	31.4	28.2	42.9	53.9																							
17-Apr	Z	36.0	35.5	34.1	37.2	37.1	39.1	42.4	43.6	46.5	48.9	48.6	48.6	50.7	48.8	47.6	49.6	42.6	44.6	41.2	39.1	35.5	40.0	39.6	42.5	50.7																							
18-Apr	39.7	Z	37.9	37.8	35.0	32.9	28.7	31.9	35.4	28.4	31.0	34.2	35.6	37.2	36.3	36.2	36.3	36.2	35.4	34.5	33.6	30.4	25.8	26.6	33.8	39.7																							
19-Apr	28.2	29.1	Z	29.0	30.0	27.8	33.8	35.7	36.5	37.5	40.0	40.5	42.1	44.0	42.0	43.7	43.9	40.0	40.5	39.9	27.9	18.2	19.0	19.2	34.3	44.0																							
20-Apr	13.6	14.9	11.7	Z	1.1	11.4	15.0	24.3	37.0	39.5	39.8	42.3	46.9	46.4	47.7	47.4	47.7	47.4	47.2	45.7	37.8	17.4	0.5	2.7	29.8	47.7																							
21-Apr	2.6	3.5	8.3	15.9	Z	22.8	28.1	35.0	38.3	42.9	47.6	48.6	51.3	53.2	54.9	55.3	55.9	56.1	54.8	51.9	40.5	33.7	35.5	35.3	37.9	56.1																							
22-Apr	37.5	40.6	39.7	30.8	30.6	Z	30.5	36.6	40.2	44.6	49.4	49.9	52.4	53.9	53.4	53.6	54.0	54.5	54.5	53.7	51.2	48.8	43.5	42.0	45.5	54.5																							
23-Apr	Z	33.2	35.3	35.3	35.3	38.3	34.8	33.0	37.0	40.6	48.2	51.3	52.7	53.8	54.7	53.4	53.7	53.6	54.2	52.4	49.8	51.8	53.1	52.9	46.0	54.7																							
24-Apr	50.4	Z	32.4	42.9	44.0	43.5	34.9	37.2	32.4	31.4	31.9	34.3	36.7	37.3	35.2	27.9	23.2	24.5	25.3	21.6	27.5	22.5	19.9	14.0	31.8	50.4																							
25-Apr	12.8	11.2	Z	21.8	30.3	33.0	37.7	38.6	38.0	38.8	40.2	41.4	45.6	51.0	51.1	49.0	48.0	44.7	42.0	37.4	28.5	25.5	20.4	18.9	35.0	51.1																							
26-Apr	20.7	22.0	22.6	Z	22.3	22.0	22.2	22.6	26.9	29.1	30.5	34.2	36.5	34.3	35.5	38.1	35.8	34.4	30.7	26.0	26.0	20.1	16.8	15.4	27.2	38.1																							
27-Apr	10.2	17.9	12.3	13.2	Z	7.0	9.9	17.2	27.7	33.5	37.2	37.3	39.6	43.2	44.7	42.2	41.2	41.4	42.0	40.4	38.3	37.5	36.1	36.8	30.7	44.7																							
28-Apr	37.0	37.1	34.0	28.4	38.7	Z	43.4	44.4	46.3	48.1	48.8	48.5	49.0	48.6	48.0	47.0	45.0	43.4	43.0	41.2	39.2	38.2	29.6	10.1	40.7	49.0																							
29-Apr	Z	8.8	4.1	2.1	3.1	8.9	12.2	10.7	18.1	33.8	33.8	35.2	42.1	45.1	47.0	49.1	50.5	49.7	46.5	39.9	35.2	41.6	41.9	35.0	30.2	50.5																							
30-Apr	34.4	Z	39.1	38.5	37.5	36.4	36.3	39.3	42.1	45.1	46.7	49.0	50.9	52.6	53.5	53.8	53.9	53.6	52.1	49.2	43.9	43.3	43.5	43.9	45.2	53.9																							
																								31.6	29.2	30.8	30.9	31.8	30.3	31.0	32.4	36.2	38.5	40.9	42.5	44.3	45.5	45.7	45.8	45.6	45.0	44.3	42.4	39.3	35.4	33.7	32.7	Diurnal Average	
																								53.0	52.3	48.0	50.2	49.8	48.8	49.8	50.0	50.4	51.1	52.0	53.5	54.2	55.3	55.4	55.3	55.9	56.1	54.8	53.7	53.0	52.6	53.1	53.6	Diurnal Maximum	
Z - zerospan C - Calibration																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ozone (O₃) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	68	9.94	9.94
21 - 50	507	74.12	84.06
51 - 82	109	15.94	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Buffalo Viewpoint - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	9	7	3	0	0	4	6	10	5	3	3	0	4	4	2	8	68
21 - 50	25	25	16	9	31	93	82	89	16	4	17	22	17	22	21	18	507
51 - 82	0	0	0	0	2	8	20	35	19	3	7	11	4	0	0	0	109
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	32	19	9	33	105	108	134	40	10	27	33	25	26	23	26	684

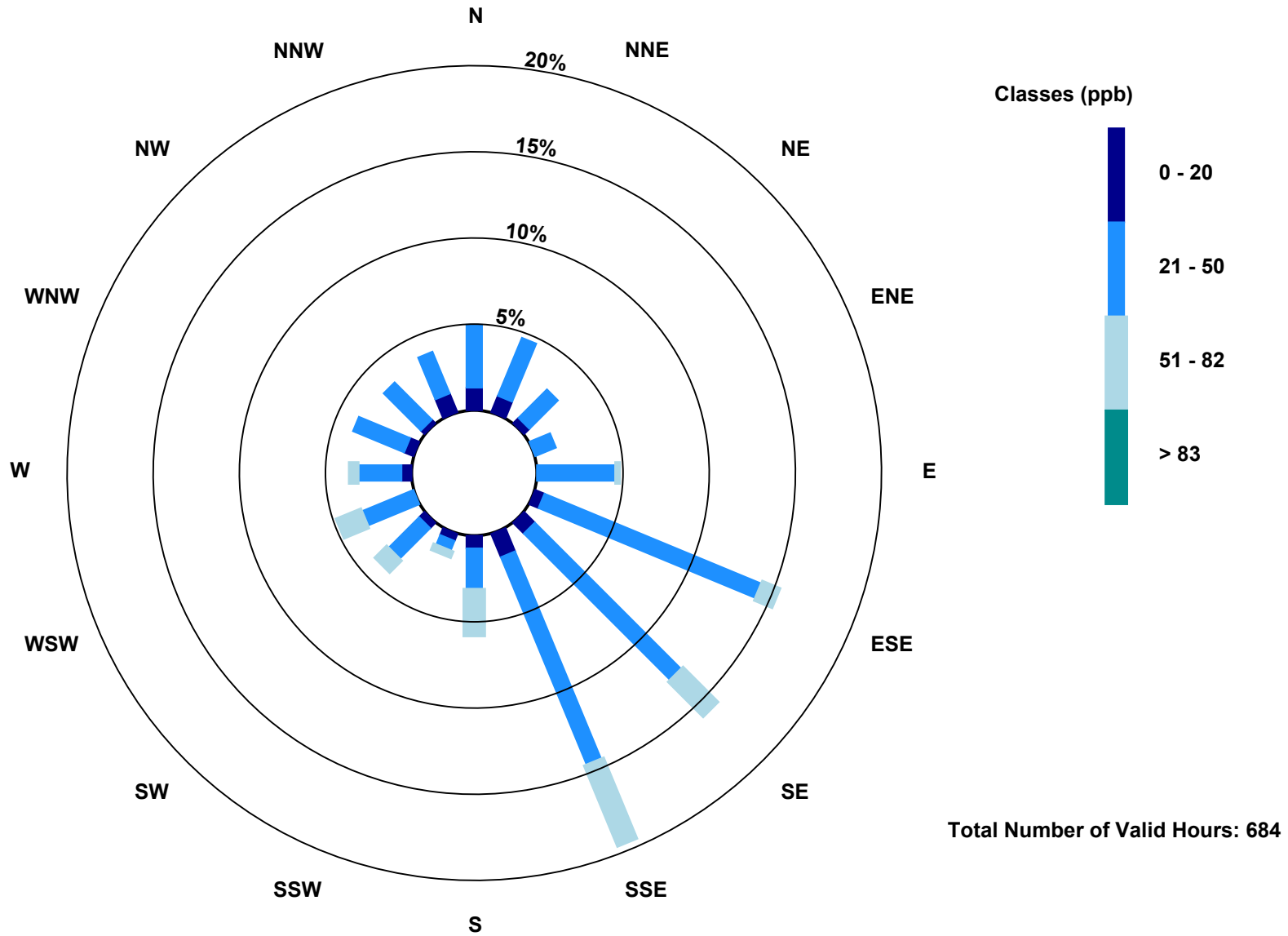
Total Number of Valid Hours: 684

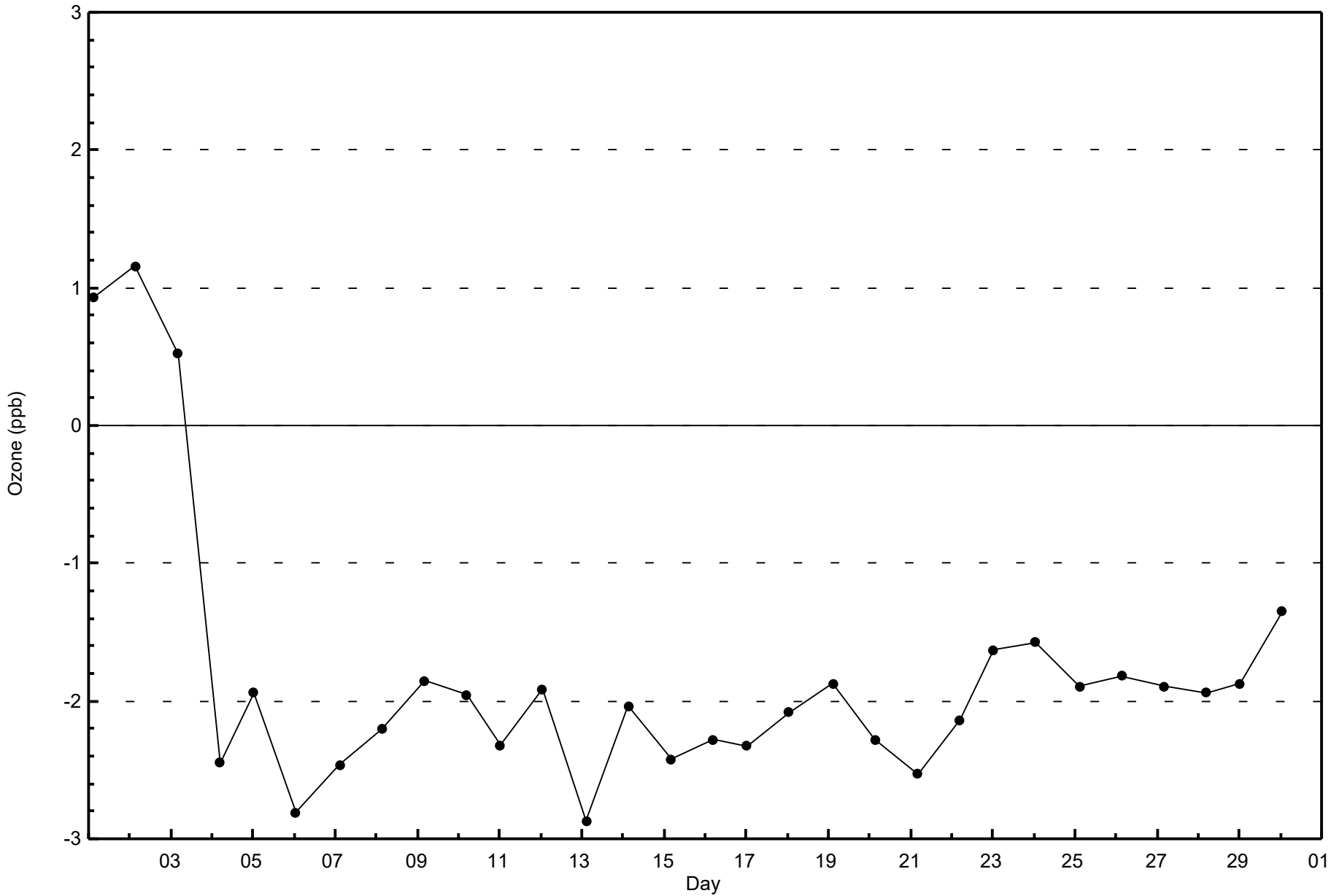
Total Number of Hours: 720

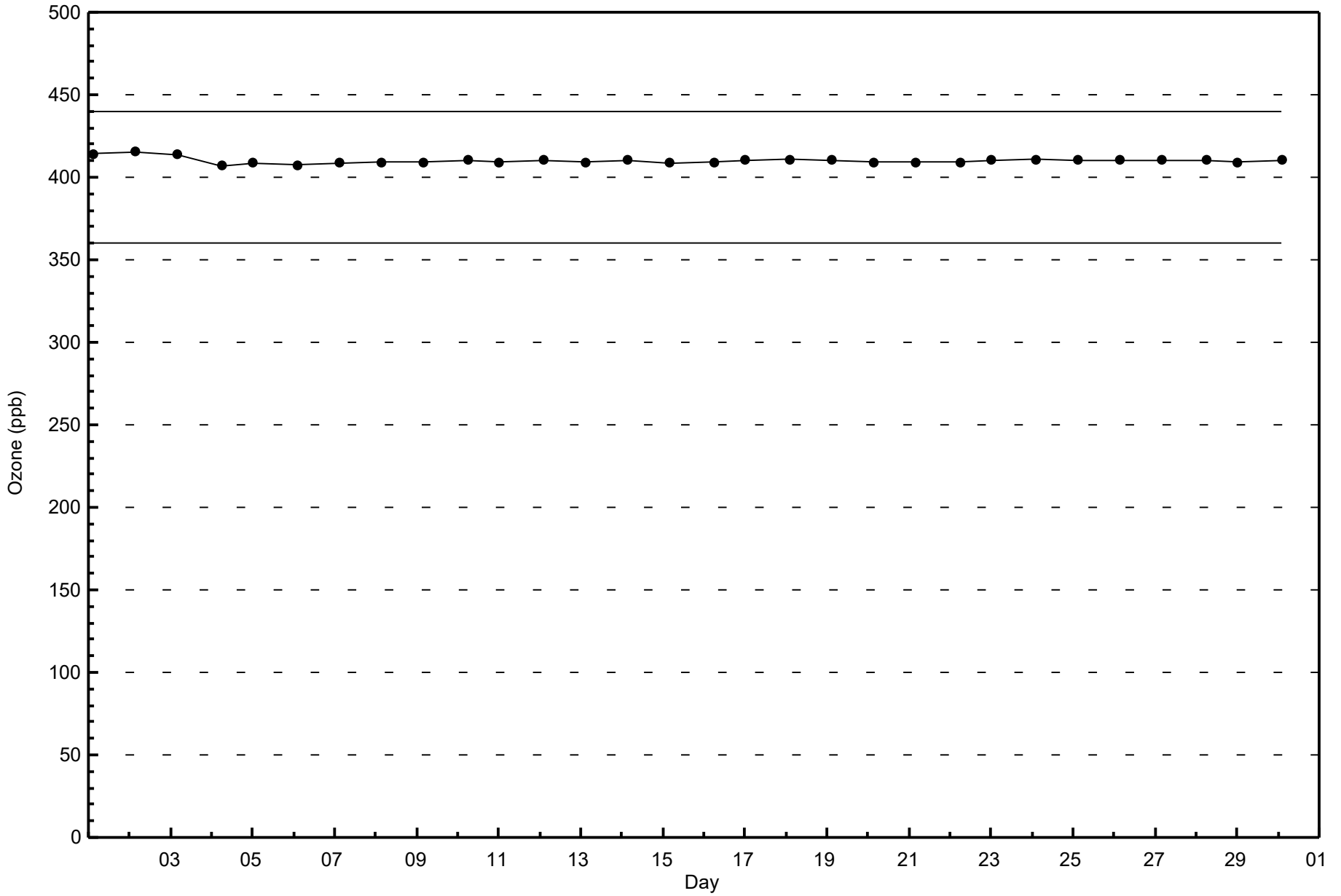


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Buffalo Viewpoint









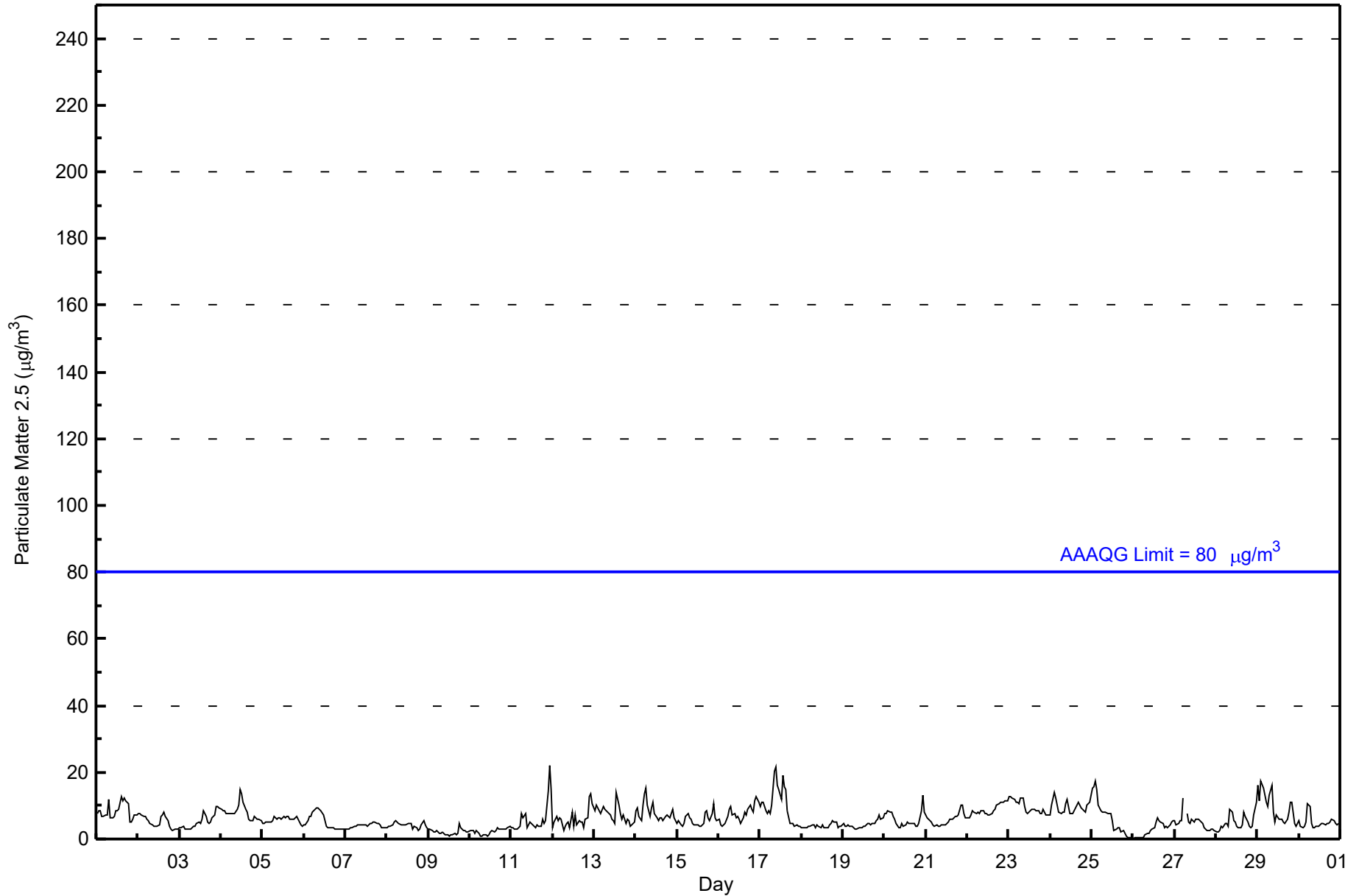
Summary of Hour Averages

Buffalo Viewpoint - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 21.9 µg/m ³ on Apr 11 23:00	Maximum Daily Average: 10.3 µg/m ³ on Apr 17		Hours of Data:	719
Minimum Value: 0.2 µg/m ³ on Apr 26 01:00	Minimum Daily Average: 2.1 µg/m ³ on Apr 9		Hours of Missing Data:	1
Maximum Diurnal Average: 6.6 µg/m ³ at hour 23	Minimum Diurnal Average: 5.5 µg/m ³ at hour 13		Hours of Calibration:	1
Monthly Average: 6.08 µg/m ³	Percentiles: P ₁ = 0.5 P ₁₀ = 2.8 Q ₁ = 3.8 Median = 5.3 Q ₃ = 7.7 P ₉₀ = 10.4 P ₉₉ = 16.1		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-Apr	7.5	8.3	8.6	6.8	6.7	7.1	7.2	11.9	6.2	6.5	6.6	8.5	8.3	9.1	12.7	11.4	12.1	11.6	10.7	5.1	5.1	6.1	7.0	7.1	8.3	12.7																							
2-Apr	7.5	7.4	7.0	6.9	6.7	5.9	5.4	4.5	4.1	3.7	3.7	4.0	4.1	6.6	7.4	8.1	6.7	5.5	3.6	3.0	2.7	2.8	3.0	2.9	5.1	8.1																							
3-Apr	3.4	3.6	3.7	3.0	3.0	2.8	3.1	3.4	3.8	3.9	4.5	5.0	4.7	5.8	8.5	6.6	5.0	4.8	5.2	6.2	7.4	9.9	9.9	9.5	5.3	9.9																							
4-Apr	8.8	8.3	8.6	7.8	7.7	7.7	7.7	7.6	7.7	8.8	10.2	15.0	13.4	11.2	9.0	8.1	6.1	5.7	5.6	6.6	6.3	5.8	5.8	5.5	8.1	15.0																							
5-Apr	4.8	4.5	5.0	5.1	5.0	5.3	5.7	6.8	6.1	6.2	6.2	6.1	6.7	6.5	9.7	6.7	6.0	5.9	6.1	6.3	6.8	5.0	4.2	4.0	5.7	6.8																							
6-Apr	4.2	4.4	5.7	6.7	6.9	7.9	8.9	9.2	9.2	9.1	8.5	7.1	5.5	3.7	3.4	3.4	3.4	3.3	3.1	3.0	3.0	3.0	3.1	3.1	5.4	9.2																							
7-Apr	3.0	2.8	3.0	3.2	3.6	3.8	4.0	4.2	4.3	4.1	4.3	4.0	4.1	4.0	4.6	4.5	5.0	5.3	4.7	4.7	4.2	3.5	3.3	3.4	4.0	5.3																							
8-Apr	3.6	3.8	4.0	4.4	5.2	5.5	5.1	4.7	4.4	4.4	4.1	4.3	4.5	4.8	4.8	3.2	3.6	3.3	2.5	2.8	4.2	5.7	4.1	3.5	4.2	5.7																							
9-Apr	2.8	2.8	2.6	2.3	2.2	2.5	1.9	1.7	2.0	1.6	1.4	1.1	1.0	1.3	1.2	1.8	1.2	1.6	4.6	3.6	2.4	2.6	2.0	2.2	2.1	4.6																							
10-Apr	2.4	2.4	2.4	1.9	2.4	1.6	1.0	1.1	1.1	1.2	1.0	1.2	2.2	2.5	2.2	2.5	3.5	3.1	3.1	3.1	3.0	2.9	3.4	3.6	2.3	3.6																							
11-Apr	3.3	3.2	3.0	3.0	3.5	4.0	7.5	6.5	7.4	3.5	4.2	5.1	4.4	3.8	3.4	4.0	3.9	3.9	5.7	4.8	5.7	14.4	21.9	14.9	6.0	21.9																							
12-Apr	3.4	5.2	6.8	5.5	6.4	6.0	2.5	3.9	4.8	4.9	3.4	8.1	3.8	7.2	4.1	5.3	4.9	5.3	3.4	5.9	6.2	12.6	13.7	10.5	6.0	13.7																							
13-Apr	8.4	10.2	9.5	8.5	7.5	9.6	9.1	8.6	7.9	7.4	6.0	5.6	4.8	13.9	10.2	7.4	6.1	7.2	4.8	5.8	5.6	4.0	4.1	5.0	7.4	13.9																							
14-Apr	8.5	9.2	6.7	5.7	10.2	13.5	15.1	10.3	6.7	9.2	10.8	7.5	6.5	5.4	6.2	6.3	5.4	6.6	7.4	6.9	6.4	8.8	6.3	5.4	8.0	15.1																							
15-Apr	4.5	5.5	4.3	4.0	4.5	6.9	7.4	6.5	5.9	4.6	4.4	4.2	4.4	3.8	3.9	4.7	8.0	8.3	6.3	5.6	7.7	10.4	6.4	5.6	5.7	10.4																							
16-Apr	6.1	4.4	4.0	4.1	4.7	6.6	8.9	9.8	7.4	7.4	6.2	6.9	5.9	4.7	6.4	8.2	7.1	8.8	10.3	9.0	8.0	11.6	12.6	11.1	7.5	12.6																							
17-Apr	9.8	11.0	11.2	8.6	7.6	8.5	7.6	10.0	20.2	21.7	16.2	14.9	11.8	19.2	15.9	15.0	8.6	4.8	4.7	4.6	4.0	4.0	3.6	3.7	10.3	21.7																							
18-Apr	3.5	3.4	3.4	3.4	3.6	3.8	4.1	4.2	3.6	4.1	3.7	3.5	4.1	3.3	3.3	3.5	4.4	4.7	5.4	5.1	5.0	3.5	3.9	3.8	3.9	5.4																							
19-Apr	4.5	3.9	3.9	4.2	3.7	3.7	3.2	3.0	3.0	3.3	3.2	3.2	3.8	4.0	4.6	4.6	4.4	4.7	4.7	5.4	5.8	7.2	6.1	6.5	4.4	7.2																							
20-Apr	7.6	7.6	8.4	8.3	8.2	6.7	5.8	4.7	3.5	3.4	4.6	4.0	4.0	4.9	4.5	4.7	4.5	4.5	3.9	3.6	4.8	8.6	13.0	8.2	5.9	13.0																							
21-Apr	7.1	6.2	5.4	5.1	4.1	3.9	4.1	3.7	4.0	4.1	4.1	4.2	4.6	5.2	6.0	6.0	6.2	6.7	6.6	7.0	10.2	10.3	7.8	6.5	5.8	10.3																							
22-Apr	6.2	6.5	7.2	8.3	7.9	7.6	7.8	7.7	8.6	8.4	7.7	7.6	7.1	7.2	7.7	8.3	8.8	10.1	10.5	11.0	11.0	11.1	11.5	11.5	8.6	11.5																							
23-Apr	12.5	12.6	12.3	11.8	10.8	10.8	10.8	12.2	12.1	9.6	8.1	7.6	8.3	8.9	8.9	8.9	8.7	8.4	7.5	7.6	8.9	7.1	7.2	7.3	9.6	12.6																							
24-Apr	7.3	10.3	13.9	12.2	10.2	8.1	7.8	7.9	8.2	10.8	11.8	7.6	7.4	7.6	8.5	10.2	11.1	10.3	9.4	9.0	7.9	10.2	10.6	11.2	9.6	13.9																							
25-Apr	15.3	15.7	17.4	14.7	10.0	8.6	8.2	8.0	7.9	7.6	7.6	7.7	5.5	2.5	3.0	3.2	3.2	2.2	2.4	1.7	0.7	0.5	0.3	0.2	6.4	17.4																							
26-Apr	0.2	0.3	0.3	0.4	0.3	0.4	0.6	1.2	1.6	1.9	2.4	2.8	3.5	5.3	6.4	5.4	5.0	4.5	3.6	3.9	3.6	4.1	5.2	5.6	2.8	6.4																							
27-Apr	5.6	4.2	4.7	5.3	5.6	12.2	C	7.5	5.2	4.7	5.9	5.3	5.9	5.8	5.8	5.0	4.5	3.5	2.8	2.6	2.6	2.8	3.1	2.5	4.9	12.2																							
28-Apr	2.0	2.1	2.6	3.8	3.4	4.6	4.5	3.7	8.9	7.9	5.7	5.1	3.8	3.4	3.5	4.4	8.0	6.6	5.2	3.7	3.2	3.7	7.1	10.9	4.9	10.9																							
29-Apr	16.0	11.5	17.6	15.1	13.1	10.9	9.9	13.0	16.2	8.0	5.2	7.2	5.8	5.8	6.1	5.1	4.8	6.0	8.0	11.0	11.2	4.7	3.7	4.8	9.2	17.6																							
30-Apr	5.3	3.8	3.3	3.6	5.0	10.8	9.7	4.8	3.5	3.4	3.7	3.9	4.2	4.5	4.6	4.3	4.6	4.8	5.1	6.0	5.3	4.6	4.4	4.5	4.9	10.8																							
																								6.2	6.2	6.5	6.1	6.0	6.6	6.4	6.4	6.5	6.2	5.9	5.9	5.5	6.1	6.1	6.0	5.8	5.7	5.6	5.5	5.6	6.4	6.6	6.1	Diurnal Average	
																								16.0	15.7	17.6	15.1	13.1	13.5	15.1	13.0	20.2	21.7	16.2	15.0	13.4	19.2	15.9	15.0	12.1	11.6	10.7	11.0	11.2	14.4	21.9	14.9	Diurnal Maximum	

C - Calibration
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Buffalo Viewpoint - April 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	372	51.74	51.74
6 - 15	336	46.73	98.47
16 - 25	11	1.53	100.00
26 - 80	0	0.00	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Buffalo Viewpoint - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	21	10	11	8	16	44	54	73	18	4	22	33	17	18	15	8	372
6 - 15	20	23	8	3	18	58	58	68	22	6	5	2	7	12	7	19	336
16 - 25	0	1	0	0	0	5	0	2	1	0	0	0	1	0	1	0	11
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
Totals	41	34	19	11	34	107	112	143	41	10	27	35	25	30	23	27	719

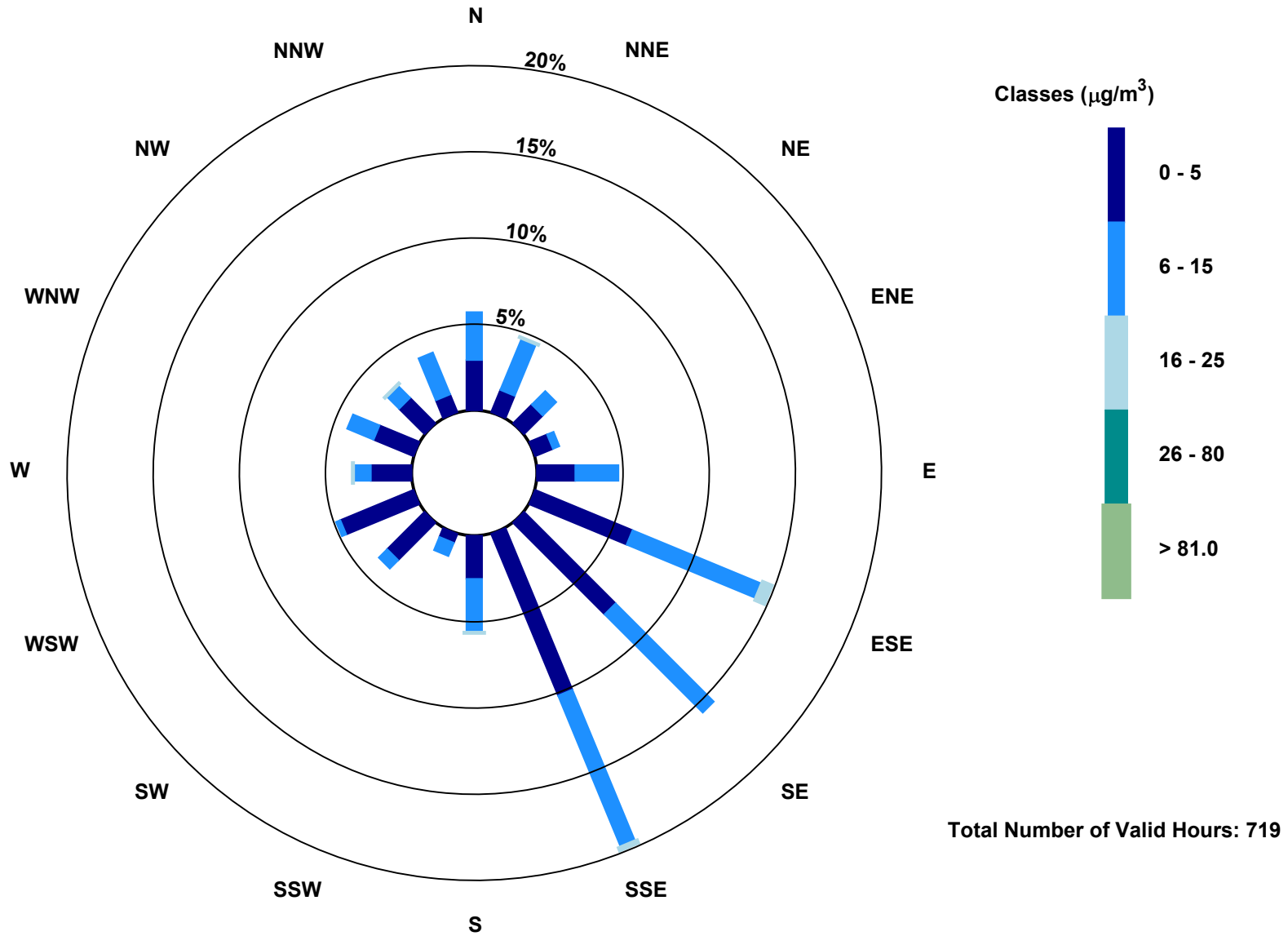
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Buffalo Viewpoint

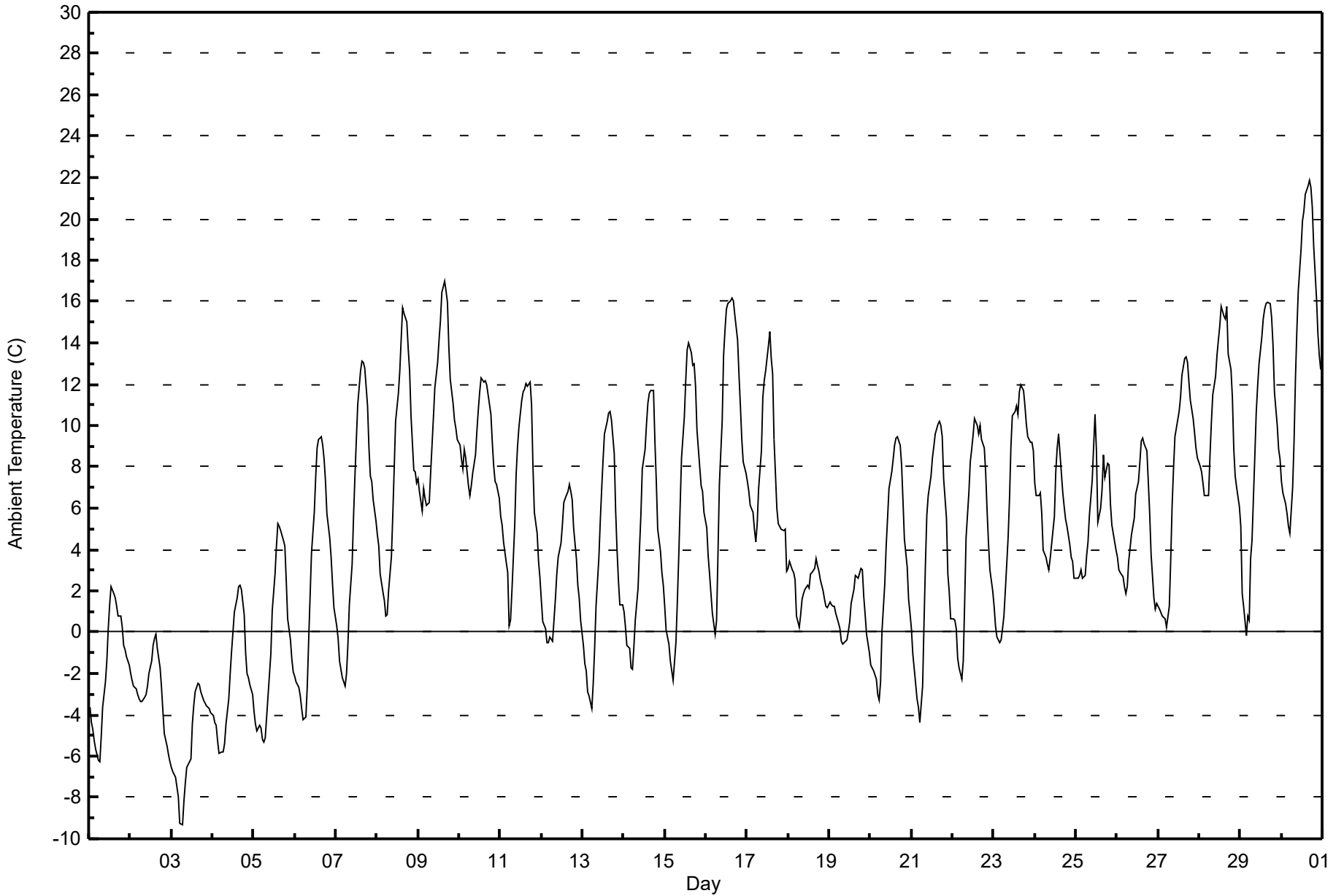




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Buffalo Viewpoint - April 2023

Maximum Value: 21.9 C on Apr 30 17:00		Maximum Daily Average: 14.0 C on Apr 30		Hours in Service: 720																							
Minimum Value: -9.3 C on Apr 3 07:00		Minimum Daily Average: -5.4 C on Apr 3		Hours of Data: 720																							
Maximum Diurnal Average: 9.8 C at hour 16		Minimum Diurnal Average: -0.5 C at hour 6		Hours of Missing Data: 0																							
Monthly Average: 4.80 C		Percentiles: P ₁ = -6.7 P ₁₀ = -2.9 Q ₁ = 0.5 Median = 4.7 Q ₃ = 9.0 P ₉₀ = 12.6 P ₉₉ = 18.7		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-Apr	-3.6	-4.3	-4.7	-5.3	-5.7	-6.2	-6.3	-5.0	-3.6	-2.4	-1.4	0.2	1.3	2.2	1.9	1.7	1.2	0.8	0.8	0.2	-0.7	-0.8	-1.2	-1.6	-1.8	2.2	
2-Apr	-2.0	-2.3	-2.6	-2.8	-3.0	-3.2	-3.4	-3.3	-3.2	-3.0	-2.6	-2.0	-1.4	-0.6	-0.3	-0.1	-0.8	-1.7	-2.7	-3.8	-4.9	-5.5	-6.0	-6.3	-2.8	-0.1	
3-Apr	-6.5	-6.8	-7.0	-7.5	-8.0	-9.2	-9.3	-8.2	-7.3	-6.6	-6.4	-6.1	-4.4	-3.5	-2.9	-2.5	-2.5	-2.9	-3.1	-3.3	-3.5	-3.6	-3.7	-3.9	-5.4	-2.5	
4-Apr	-4.1	-4.4	-4.5	-5.2	-5.9	-5.8	-5.8	-5.4	-4.4	-3.2	-2.0	-0.9	0.0	1.0	1.7	2.2	2.3	2.1	0.9	-1.0	-2.0	-2.2	-2.5	-3.0	-2.2	2.3	
5-Apr	-3.8	-4.4	-4.8	-4.5	-4.6	-5.2	-5.3	-5.1	-3.1	-2.1	-1.0	1.1	2.8	4.2	5.3	5.1	4.9	4.5	4.1	2.5	0.6	-0.4	-1.3	-1.9	-0.5	5.3	
6-Apr	-2.1	-2.4	-2.7	-3.1	-3.7	-4.2	-4.1	-2.6	-0.4	1.7	3.8	5.8	7.5	8.9	9.3	9.4	9.0	8.3	7.3	5.7	4.5	3.6	2.3	1.2	2.6	9.4	
7-Apr	0.3	-0.3	-1.4	-1.8	-2.2	-2.6	-2.0	-0.5	1.3	3.3	5.6	7.5	9.4	11.0	12.6	13.1	13.1	12.8	10.9	8.9	7.6	7.3	6.4	5.4	5.2	13.1	
8-Apr	4.7	4.2	2.8	2.0	1.5	0.8	0.8	2.0	3.6	5.7	7.9	10.2	11.6	12.7	14.2	15.7	15.5	15.0	13.8	12.7	10.5	7.8	7.8	7.2	7.9	15.7	
9-Apr	7.4	6.8	5.9	7.0	6.5	6.2	6.3	7.7	9.0	10.4	11.8	13.0	14.1	15.1	16.4	17.0	16.5	15.9	13.8	12.2	11.1	10.2	9.9	9.4	10.8	17.0	
10-Apr	9.1	8.4	7.9	8.9	8.5	7.1	6.6	7.1	7.7	8.5	9.7	10.7	11.6	12.3	12.1	12.2	12.0	11.5	10.6	9.2	8.0	7.3	7.1	6.4	9.2	12.3	
11-Apr	5.6	5.2	4.4	3.3	2.9	0.3	0.6	2.0	5.2	7.6	9.0	10.0	11.2	11.6	11.8	12.0	11.9	12.1	11.0	8.0	5.8	4.8	3.4	2.6	6.8	12.1	
12-Apr	1.6	0.5	0.2	-0.5	-0.5	-0.3	-0.5	0.6	1.6	2.8	3.6	4.3	5.2	6.2	6.5	6.8	7.2	6.8	6.4	5.1	3.6	2.2	1.6	0.6	3.0	7.2	
13-Apr	-0.7	-1.6	-1.8	-2.9	-3.1	-3.7	-2.5	-0.8	1.2	3.5	5.3	6.9	8.3	9.6	10.2	10.6	10.7	10.3	8.6	5.9	4.0	2.5	1.3	1.4	3.5	10.7	
14-Apr	1.0	0.2	-0.6	-0.8	-1.7	-1.8	-0.7	0.6	2.2	4.1	5.7	7.9	8.9	10.1	11.1	11.6	11.7	11.7	9.3	7.3	5.0	3.9	2.9	2.3	4.6	11.7	
15-Apr	1.3	0.1	-0.6	-1.4	-1.9	-2.3	-0.5	1.5	3.6	6.1	8.5	10.4	12.1	13.6	14.0	13.5	12.9	13.0	11.9	9.8	8.0	7.1	6.8	5.8	6.4	14.0	
16-Apr	5.0	3.7	2.8	1.8	0.9	-0.1	0.6	3.8	7.2	10.2	13.4	14.6	15.6	15.9	16.0	16.2	16.0	15.4	14.1	12.4	11.0	9.3	8.2	7.7	9.2	16.2	
17-Apr	7.3	6.8	6.2	5.8	5.0	4.4	5.3	6.9	8.8	11.4	12.1	12.6	13.9	14.6	13.2	12.5	9.3	6.0	5.3	5.1	5.0	4.9	5.0	2.9	7.9	14.6	
18-Apr	3.1	3.4	3.0	2.9	2.6	0.8	0.2	0.8	1.6	1.9	2.1	2.3	2.1	2.8	2.9	3.1	3.5	3.2	3.0	2.5	2.0	1.6	1.3	1.2	2.2	3.5	
19-Apr	1.5	1.3	1.2	1.2	0.9	0.5	0.1	-0.4	-0.6	-0.4	-0.4	0.0	0.5	1.4	2.1	2.7	2.7	2.6	3.1	3.0	1.7	0.8	-0.1	-1.0	1.0	3.1	
20-Apr	-1.6	-1.8	-1.9	-2.2	-3.0	-3.3	-2.4	0.0	2.3	4.2	5.5	7.0	7.8	8.4	9.0	9.4	9.5	9.1	8.1	6.4	4.5	3.2	1.6	0.9	3.4	9.5	
21-Apr	0.1	-1.1	-2.5	-3.2	-3.6	-4.4	-2.6	0.5	3.3	5.7	6.6	7.5	8.5	9.0	9.6	10.1	10.2	10.0	9.5	7.4	5.5	2.8	1.9	0.7	3.8	10.2	
22-Apr	0.6	0.6	0.2	-1.3	-1.7	-2.3	-1.4	1.5	4.6	6.7	8.2	8.9	9.5	10.4	10.0	9.6	10.0	9.3	8.9	7.7	5.9	4.3	3.0	2.0	4.8	10.4	
23-Apr	1.3	0.3	-0.2	-0.5	-0.4	0.2	0.8	2.0	4.6	6.4	9.0	10.5	10.7	10.9	10.5	11.6	11.9	11.7	11.0	10.1	9.4	9.2	9.2	8.8	6.6	11.9	
24-Apr	7.2	6.6	6.6	6.7	5.7	4.0	3.6	3.3	3.0	3.6	4.3	5.6	7.7	8.9	9.6	7.7	6.8	6.1	5.4	5.1	4.2	3.7	3.4	2.6	5.5	9.6	
25-Apr	2.6	2.6	2.8	3.0	2.6	2.7	3.7	4.4	5.6	7.4	9.0	10.6	8.8	5.3	6.0	6.9	8.6	7.5	8.2	8.1	6.2	5.2	4.8	3.9	5.7	10.6	
26-Apr	3.6	3.0	2.9	2.7	2.2	1.9	2.2	3.4	4.7	5.1	5.5	6.7	7.3	8.2	9.2	9.4	9.1	8.8	7.3	5.7	3.8	1.6	1.1	1.4	4.9	9.4	
27-Apr	1.2	1.1	0.8	0.7	0.6	0.3	1.3	3.5	6.1	7.9	9.5	10.3	10.7	11.4	12.4	13.3	13.3	13.0	12.1	11.2	10.3	9.7	8.9	8.4	7.4	13.3	
28-Apr	8.1	7.8	7.2	6.6	6.6	6.6	8.5	10.2	11.5	12.4	13.4	14.1	14.8	15.7	15.3	15.1	15.8	13.5	12.7	11.4	8.9	7.5	7.0	6.1	10.7	15.8	
29-Apr	5.1	1.8	1.3	-0.2	0.8	0.6	3.5	4.5	8.5	10.6	11.9	13.0	14.3	15.2	15.7	15.9	15.9	15.9	15.2	13.9	11.6	10.0	8.9	8.4	9.3	15.9	
30-Apr	7.3	6.8	6.2	5.8	5.2	4.8	7.0	9.3	12.3	14.6	16.5	18.5	19.9	20.4	21.2	21.6	21.9	21.5	20.6	18.7	16.2	14.5	13.4	12.7	14.0	21.9	
		2.0	1.4	0.9	0.5	0.1	-0.5	0.1	1.5	3.2	4.8	6.1	7.4	8.3	9.1	9.6	9.8	9.7	9.1	8.3	6.9	5.5	4.4	3.7	3.1	Diurnal Average	
		9.1	8.4	7.9	8.9	8.5	7.1	8.5	10.2	12.3	14.6	16.5	18.5	19.9	20.4	21.2	21.6	21.9	21.5	20.6	18.7	16.2	14.5	13.4	12.7	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	160	22.22	22.22
0 - 10	412	57.22	79.44
10 - 20	142	19.72	99.17
> 20	6	0.83	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

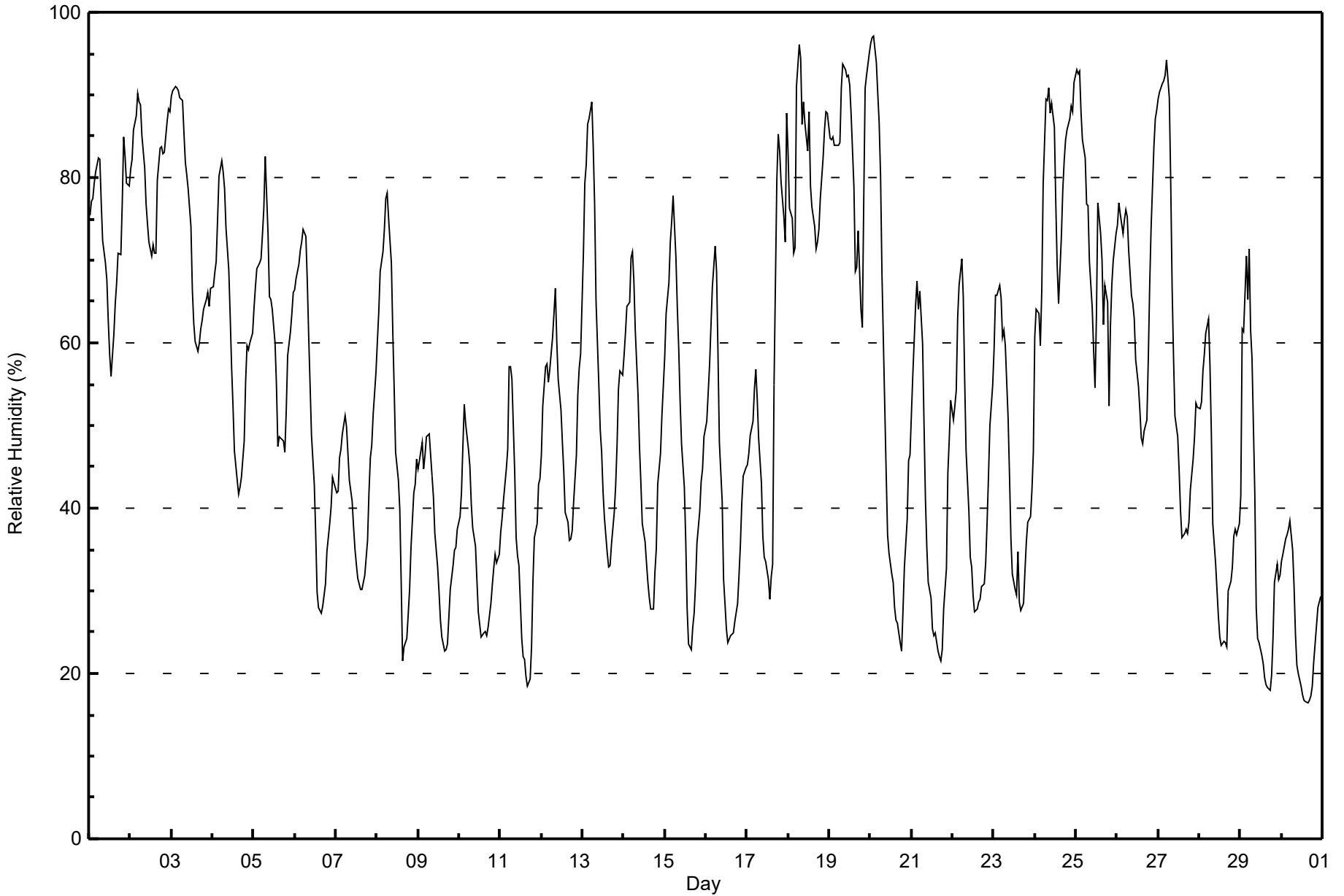


Wood Buffalo Environmental Association

Summary of Hour Averages

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

Maximum Value: 97.2 % on Apr 20 03:00 Maximum Daily Average: 83.5 % on Apr 19																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 16.5 % on Apr 30 16:00 Minimum Daily Average: 25.8 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																											
Maximum Diurnal Average: 71.9 % at hour 6 Minimum Diurnal Average: 38.3 % at hour 16																						Percent Operational Time: 100.0																											
Monthly Average: 54.40 % Percentiles: P₁ = 18.3 P₁₀ = 27.3 Q₁ = 36.0 Median = 53.0 Q₃ = 71.2 P₉₀ = 84.9 P₉₉ = 93.8																																																	
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-Apr	75.5	77.2	77.5	79.4	80.6	82.5	82.2	77.0	72.4	69.7	67.6	62.8	58.6	55.9	61.0	64.8	67.3	70.8	70.7	76.9	84.9	82.6	79.4	79.0	73.2	84.9																							
2-Apr	81.0	82.2	85.7	87.4	90.1	89.1	88.8	85.1	81.1	76.8	74.3	72.2	70.5	71.8	70.8	70.9	79.7	83.6	83.8	82.8	83.1	86.8	88.4	88.0	81.4	90.1																							
3-Apr	89.8	90.6	91.1	90.9	90.5	89.6	89.4	85.4	81.9	80.3	78.6	74.1	66.4	62.3	60.3	59.0	59.9	61.7	62.7	64.0	65.3	66.1	64.5	66.6	74.6	91.1																							
4-Apr	66.7	68.6	69.9	75.0	80.3	82.0	80.7	78.6	73.8	68.8	63.2	57.1	52.3	47.0	43.4	41.8	42.6	43.7	48.1	55.2	59.6	59.2	60.0	61.1	61.6	82.0																							
5-Apr	64.2	66.8	69.0	69.7	70.2	73.1	76.3	82.5	73.1	65.5	65.3	64.0	59.9	54.8	47.5	48.7	48.4	48.2	46.8	51.9	58.4	61.3	63.6	66.1	62.3	82.5																							
6-Apr	66.4	67.8	69.5	71.1	72.3	73.7	72.9	67.4	60.8	54.9	48.7	42.8	36.9	29.8	28.0	27.3	28.2	29.6	30.9	34.8	38.2	40.1	43.7	43.1	49.1	73.7																							
7-Apr	41.9	42.1	46.2	47.2	49.1	51.2	49.8	46.6	43.4	40.9	37.8	35.1	33.2	31.5	30.2	30.2	31.0	31.8	36.1	41.8	46.1	47.7	51.3	56.4	41.6	56.4																							
8-Apr	60.2	63.7	68.7	70.9	73.7	77.4	78.2	75.0	69.7	61.4	54.3	46.8	43.5	39.9	31.0	21.5	23.2	24.2	27.1	30.1	35.3	41.9	43.0	46.0	50.3	78.2																							
9-Apr	44.8	45.8	48.0	44.8	46.4	48.6	48.9	46.4	44.0	41.3	37.0	33.0	29.9	26.4	24.4	22.7	22.8	23.5	26.8	30.1	33.0	34.8	35.3	37.5	36.5	48.9																							
10-Apr	38.9	41.9	47.4	52.6	50.2	47.2	45.0	40.4	37.6	35.4	31.4	27.4	25.9	24.3	24.9	25.0	24.5	25.6	28.4	30.6	32.7	34.4	33.4	34.5	35.0	52.6																							
11-Apr	37.2	38.7	41.0	44.7	47.1	57.2	57.1	55.6	44.2	36.4	34.2	33.1	24.2	22.1	21.7	19.6	18.5	19.3	23.3	31.2	36.4	38.1	43.0	43.6	36.1	57.2																							
12-Apr	46.4	52.4	57.2	57.4	55.2	56.9	60.8	63.5	66.6	60.1	55.5	51.8	47.9	44.4	39.4	38.3	36.1	36.2	37.2	40.7	46.4	53.8	57.0	58.7	50.8	66.6																							
13-Apr	70.9	79.4	81.5	86.4	87.2	89.2	83.6	76.8	65.1	54.9	49.4	46.7	42.1	38.8	34.6	32.9	33.1	35.5	39.5	42.8	47.7	54.4	56.6	56.0	57.7	89.2																							
14-Apr	58.4	61.1	64.4	65.0	70.3	71.0	67.5	61.5	53.6	47.4	43.0	38.2	35.9	33.3	31.1	29.2	27.8	27.8	32.2	35.1	42.9	46.6	51.2	54.7	47.9	71.0																							
15-Apr	58.3	63.6	67.3	72.2	74.8	77.7	70.4	64.2	59.3	52.9	47.8	42.6	36.1	27.7	23.5	22.9	25.5	27.3	30.8	35.8	39.6	43.3	44.7	48.6	48.2	77.7																							
16-Apr	50.6	53.9	57.2	62.1	66.8	71.7	68.6	58.8	47.9	40.8	31.3	28.4	25.4	23.7	24.6	24.7	25.0	26.2	28.4	31.9	35.6	40.7	43.9	44.9	42.2	71.7																							
17-Apr	45.3	46.7	48.8	50.5	54.4	56.7	53.2	48.4	43.0	36.6	34.1	33.5	31.4	29.0	31.7	33.3	54.9	79.8	85.3	83.2	79.5	75.2	72.2	87.8	53.9	87.8																							
18-Apr	83.1	76.3	75.1	70.8	71.6	91.0	96.1	94.4	86.4	89.1	86.6	83.2	88.0	78.9	76.5	74.1	71.3	72.3	73.7	77.5	82.4	85.8	88.0	87.8	81.7	96.1																							
19-Apr	84.8	84.5	84.9	83.9	83.9	83.9	84.2	90.9	93.8	93.1	92.2	92.4	91.2	87.7	78.9	68.6	69.1	73.6	64.1	61.9	77.3	90.8	92.4	95.1	83.5	95.1																							
20-Apr	96.3	97.0	97.2	93.8	90.2	86.6	80.2	68.3	52.2	44.2	36.8	34.6	32.1	31.0	28.0	26.4	26.1	23.7	22.8	27.6	32.8	38.6	45.8	46.5	52.5	97.2																							
21-Apr	51.3	56.2	64.5	67.4	64.1	66.2	59.8	50.1	41.2	35.3	31.0	29.2	25.4	24.6	25.0	22.8	22.0	21.5	23.0	27.7	32.7	44.3	48.3	53.1	41.1	67.4																							
22-Apr	50.7	52.3	54.2	63.1	66.9	70.1	65.7	55.7	47.0	39.7	34.1	32.8	29.6	27.5	27.8	28.7	28.9	30.5	30.9	33.4	38.3	43.8	50.0	54.8	44.0	70.1																							
23-Apr	59.3	65.8	65.7	67.0	65.5	60.7	61.5	59.7	50.9	43.9	36.2	32.0	29.5	34.8	28.7	27.7	28.5	32.4	36.0	38.3	39.1	42.2	46.7	45.1	67.0	67.0																							
24-Apr	60.7	64.0	63.6	59.7	66.3	79.1	89.4	89.3	90.9	87.9	89.0	86.1	77.0	69.3	64.7	72.9	78.5	82.0	84.5	85.7	87.2	88.7	88.1	91.5	79.0	91.5																							
25-Apr	93.1	92.6	92.9	87.9	84.5	82.4	76.9	76.7	69.8	64.3	59.2	54.5	63.2	77.0	73.2	69.9	62.1	67.0	64.9	52.4	62.0	67.2	70.0	73.2	72.4	93.1																							
26-Apr	74.3	76.9	75.6	73.2	74.9	76.1	75.2	71.2	65.8	64.7	62.9	58.0	54.8	51.9	48.5	47.8	49.2	50.7	57.9	66.9	74.0	83.7	87.1	88.1	67.1	88.1																							
27-Apr	89.5	90.4	91.4	91.7	92.3	94.3	89.6	79.4	66.9	58.3	51.2	48.6	44.5	39.6	36.4	36.9	37.5	36.9	38.3	42.3	46.0	48.7	52.7	52.2	60.6	94.3																							
28-Apr	52.1	53.0	56.6	58.6	61.2	62.9	57.4	49.0	38.1	33.3	30.1	26.9	24.4	23.4	23.8	23.7	23.2	29.9	31.2	32.9	36.6	37.5	36.7	38.2	39.2	62.9																							
29-Apr	41.5	61.6	61.4	70.4	65.3	71.4	61.5	58.1	41.7	28.0	24.3	23.8	22.2	21.2	19.6	18.6	18.2	18.0	19.8	24.4	31.1	33.1	31.3	31.9	37.4	71.4																							
30-Apr	33.6	34.4	36.3	36.8	37.5	38.4	35.0	30.5	24.7	21.0	20.0	18.5	17.5	16.8	16.6	16.5	16.8	17.3	18.5	21.3	25.8	27.9	28.6	29.4	25.8	38.4																							
																								62.2	64.9	67.0	68.4	69.4	71.9	70.2	66.2	59.6	54.2	50.2	47.0	44.0	41.4	39.4	38.3	39.3	41.6	43.3	46.3	51.0	54.5	56.4	58.7	Diurnal Average	
																								96.3	97.0	97.2	93.8	92.3	94.3	96.1	94.4	93.8	93.1	92.2	92.4	91.2	87.7	78.9	74.1	79.7	83.6	85.3	85.7	87.2	90.8	92.4	95.1	Diurnal Maximum	





Maximum Speed: 32 km/h on Apr 10 05:00	Maximum Daily Speed Average: 22.0 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 29 07:00	Minimum Daily Speed Average: 1.5 km/h on Apr 4	Hours of Data: 720
Maximum Diurnal Speed Average: 4.1 km/h at hour 12	Minimum Diurnal Speed Average: 2.6 km/h at hour 16	Hours of Missing Data: 0
Monthly Average Velocity: 3.1 km/h 148.7 deg	Percentiles: P ₁ = 2 P ₁₀ = 4 Q ₁ = 6 Median = 9 Q ₃ = 13 P ₉₀ = 17 P ₉₉ = 29	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-Apr	ESE4	ESE4	ESE4	ESE3	E5	E6	E4	ESE4	ESE7	ESE11	ESE10	ESE10	SE9	ESE8	NNE5	NNE7	NNE8	NNE9	NE7	E10	E9	ESE10	ESE10	ESE11	E6.0	ESE11
2-Apr	SE11	SE9	SE6	SSE5	SE6	SE6	SE6	SE9	SE10	ESE13	ESE10	ESE8	ESE6	N6	N6	NNW7	N12	N13	N15	NNE16	NNE18	N14	N13	N15	NE5.0	NNE18
3-Apr	N12	NNW13	N10	N9	N10	N9	NNW9	N10	N10	N8	N7	WNW7	WNW7	WNW5	NW3	NNW4	NNW4	NW4	NE2	ENE3	E4	E4	E5	E5	N5.4	NNW13
4-Apr	ESE5	SSE3	SW3	WNW4	WNW5	WNW4	W3	WNW4	WNW3	NNE4	NNE5	NNE6	N6	ENE4	SE6	SW7	S6	S5	SE5	SE6	SE7	SE7	SSE9	SSE9	SSE1.5	SSE9
5-Apr	SE8	SSE7	SSE6	SSE6	SE8	SSE8	SSE7	SSE6	SSE6	SSE5	SE7	SSE8	S10	S9	SSW10	SSE10	SSE10	SE7	SE6	SE6	SE5	SE5	SE5	SE6	SSE6.8	SSE10
6-Apr	SSE7	SSE8	SSE9	SSE8	SSE9	SSE11	SSE11	SSE13	S11	SSE13	SSE12	SSE13	SSE16	S19	S19	S18	S18	S18	S18	S15	SSE16	SSE16	SSE16	SSE16	SSE13.6	S19
7-Apr	SSE15	SSE14	SSE13	SSE13	SSE10	SSE10	SSE10	SSE11	SSE13	SSE13	SE14	SE15	SE15	SE15	SSE15	SSE16	SSE15	SSE14	SSE12	SSE10	SSE8	SSE9	SSE9	SSE9	SSE12.3	SSE16
8-Apr	SSE10	SSE9	SSE8	SSE9	SSE8	SSE7	SSE8	SSE7	SSE8	SSE11	SSE9	SE9	SE10	ESE11	S6	SW13	WSW14	SW10	WSW9	WSW8	SSW7	S7	SW7	SW11	S6.9	WSW14
9-Apr	SW12	WSW10	SW9	WSW13	WSW11	SW10	WSW11	SW13	WSW16	WSW17	WSW17	WSW18	W18	W18	W10	WSW10	SSW11	S9	SSE8	SSE11	SSE10	SSE9	SSE11	SE12	SW9.3	WSW18
10-Apr	SE11	S8	SW9	W25	WSW32	WSW31	WSW26	WSW29	WSW32	W30	WSW26	WSW29	W30	WSW32	WSW29	WSW26	WSW29	WSW28	WSW22	WSW14	SW12	SW13	WSW17	WSW16	WSW22.0	WSW32
11-Apr	SW14	SW13	SW13	SW8	WSW6	SE8	SE7	SE5	SSW4	SSW4	ESE3	SSE5	SW10	WSW13	SW12	WSW12	SW9	SW8	WNW8	N15	N11	NNW11	NW8	W8	WSW5.0	N15
12-Apr	WNW11	N8	W6	SW5	W7	W11	W11	WNW8	NW9	NW8	WNW9	WNW11	NW10	NNW12	NW14	NW11	NW7	NNW4	NW6	W6	NW7	NW6	NNW3	N4	WNW7.3	NW14
13-Apr	NNW6	N6	N4	N4	NNE3	NNW4	NNW4	N6	NNE6	NNE6	NNE5	NNE6	NE6	NNW6	WNW4	N5	NE6	NE10	NNE11	NNE11	NNE11	NE10	NNE6	ENE4	NNE5.8	NNE11
14-Apr	E4	SSE3	SE5	E4	NE4	NE5	ESE2	ESE7	ESE5	SE8	SE9	SE9	SE9	SE9	ESE6	E5	SSE2	S4	ESE12	ESE8	SE6	SSE5	SE6	SE4	ESE5.3	ESE12
15-Apr	SSE5	SSE5	SSE4	SSE2	SE3	SE2	ESE4	SE4	SE4	SE5	SSE5	ESE6	SE6	S5	SSE5	E5	E8	SE7	ESE12	ESE8	ESE8	SE9	SE10	SE9	SE5.5	ESE12
16-Apr	SE9	SE7	SE8	SSE5	SE4	SSE4	SSE4	SE4	ESE10	ESE13	ESE16	ESE20	SE17	ESE18	ESE18	ESE17	ESE17	E17	E17	ESE18	ESE19	ESE16	SE14	ESE13	ESE12.3	ESE20
17-Apr	SE12	ESE15	ESE15	ESE15	ESE13	ESE11	ESE13	ESE16	ESE20	ESE23	ESE25	ESE25	ESE24	ESE25	ESE27	ESE25	SE23	ESE21	E18	E16	ESE14	ESE14	SE19	ESE20	ESE18.6	ESE27
18-Apr	ESE18	ESE15	ESE13	ESE11	ESE11	ESE11	ESE6	E6	E10	NE9	E6	E7	E10	E9	E8	E7	ENE9	ENE9	ENE8	ENE8	NE7	NNE9	NNE9	NE8	E8.2	ESE18
19-Apr	ENE7	NE6	ENE6	ESE10	ESE15	ESE15	SE14	ESE14	ESE15	ESE14	ESE14	ESE13	ESE14	ESE15	ESE13	ESE13	ESE11	ESE8	ESE6	ENE6	NNE6	NNE7	NNE11	NNE9	ESE9.2	ESE15
20-Apr	NNW5	NNW4	NE4	SSE4	SSE4	S5	S5	S5	SSE6	SE5	SE8	ESE11	ESE9	SE11	ESE12	ESE11	ESE11	ESE11	E12	E11	ESE8	ESE7	SE6	SE4	ESE6.2	ESE12
21-Apr	SE6	SSE4	SSE5	S4	S6	SSE6	S7	SSE7	SSE8	SE7	ESE10	ESE8	SSE8	SE7	S6	S7	SSE7	SE8	SE5	SE6	SE7	SE6	SSE5	SSE6	SSE6.0	ESE10
22-Apr	SSE8	SSE7	SSE7	ESE9	SE7	SE7	SSE6	SSE5	SE7	SSE9	S11	SSE13	S15	S15	S14	SSE13	S12	SSW14	S10	S8	SSE5	SSE5	SE7	SSE5	SSE8.5	S15
23-Apr	SSE5	SSE4	SSE4	SE6	S4	S4	SSE4	SSE5	ESE10	ESE11	ESE11	SE14	SE15	SSE15	SSE13	ESE13	SSE11	SSE10	S11	ESE7	SE6	SSE7	SSE7	S11	SE8.1	SE15
24-Apr	ESE4	ENE6	E7	E6	SSE7	ESE7	SSE3	ESE5	ESE4	NE6	N9	N12	N12	NNW15	N18	N19	NNW18	NNW16	NNW12	NNW11	WSW5	SSW6	SE5	SE5	N4.8	N19
25-Apr	SSE5	SSE4	SSE4	SSE6	SSE6	SSE8	SSE9	SSE10	SSE12	SSE10	S10	SSE12	WSW19	W16	SE5	SE9	S7	SSE3	S6	W18	W18	W18	W17	W14	SSW6.2	WSW19
26-Apr	W18	W16	W15	WNW14	WNW14	WNW14	WNW12	WNW13	WNW16	NW12	NW11	NW13	WNW10	NW8	N11	N12	NNE10	NE11	NE11	NE13	NE8	N7	N7	N7	NW8.4	W18
27-Apr	N6	NNW7	N7	NNE4	NNE2	SW2	SW4	SSW6	WSW4	WNW7	NNW4	WNW8	WNW8	W10	SW8	WSW7	SW7	SW8	SSW8	S6	SSE6	SSE7	SSE9	SSE9	WSW3.0	W10
28-Apr	SSE8	SSE6	NNW6	W9	WNW7	WNW7	WNW12	WNW16	NW19	NW22	NW21	NW21	NW21	NW20	NNW18	NNW18	NNW22	N18	N16	NNE12	NNE12	N7	N5	NNW6	NW11.3	NW22
29-Apr	NNE5	S3	W3	SW2	WNW4	WNW3	NW1	SSW4	S4	SSE5	SE7	SE7	NE4	NNE7	NNE3	SE5	E7	ESE7	E8	E7	SE7	SE7	SE8	SE10	ESE2.8	SE10
30-Apr	SE10	SSE11	SE12	SE10	SSE7	SSE5	SE7	SE10	SSE10	SSE11	SE12	SE15	SE16	SE18	SE15	SE16	SE15	SE17	SE14	SE12	SE13	SE11	SE11	SSE11	SE12.0	SE18

SSE3.7	SSE3.3	SSE3.0	S3.1	S2.8	S3.0	S3.4	S3.3	SSE3.1	SSE3.4	SE4.0	SE4.1	SSE3.5	S3.0	SSE2.9	SSE2.6	SSE2.8	SE3.2	ESE3.5	E3.4	ESE3.6	SE3.1	SE3.5	SE4.0	Diurnal Average
W18	W16	ESE15	W25	WSW32	WSW31	WSW26	WSW29	WSW32	W30	WSW26	WSW29	W30	WSW32	WSW29	WSW26	WSW29	WSW28	WSW22	W18	ESE19	W18	SE19	ESE20	Diurnal Maximum

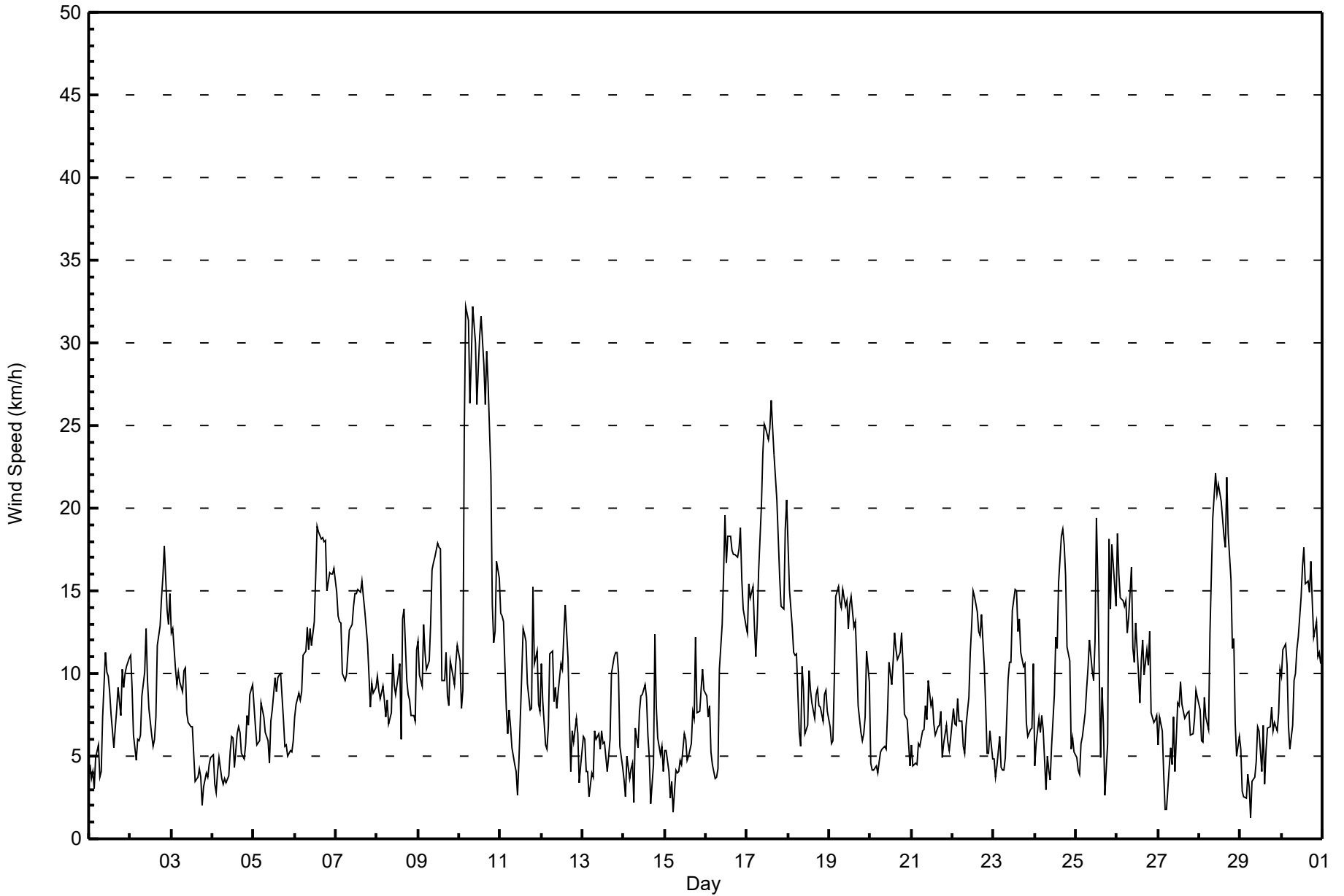
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on Apr 25 13:00 Minimum Value: 1 km/h on Apr 28 23:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1	1	1	1	1	1	1	2	2	3	2	3	3	2	2	2	2	2	2	3	2	3	3	3	3	3
2-Apr	3	3	2	2	2	2	2	3	3	3	3	2	2	2	1	2	3	3	3	4	5	3	3	3	3	5
3-Apr	3	3	2	2	2	2	2	2	2	2	2	2	1	1	2	1	2	1	2	1	1	1	1	1	1	3
4-Apr	1	1	1	1	1	1	1	1	1	2	1	1	1	2	3	2	3	2	1	3	2	2	3	3	3	3
5-Apr	2	2	1	1	2	3	2	2	2	2	2	3	3	3	3	3	4	2	1	1	1	1	1	1	4	
6-Apr	2	2	2	2	3	3	4	4	4	4	4	5	5	7	6	6	6	6	6	5	5	5	5	5	7	
7-Apr	5	4	4	4	3	3	3	4	4	4	5	5	5	5	5	5	4	4	3	3	2	3	2	3	5	
8-Apr	3	2	2	3	2	2	2	2	2	3	3	3	3	3	3	4	4	3	2	2	1	1	1	2	4	
9-Apr	3	3	3	3	3	3	4	4	5	4	4	5	5	6	3	3	3	3	2	3	3	2	3	3	6	
10-Apr	4	3	5	6	9	7	7	7	8	6	7	7	7	9	7	6	8	7	6	4	3	3	5	4	9	
11-Apr	3	3	3	4	3	2	2	2	1	2	2	2	3	4	4	3	3	2	5	4	2	3	2	2	5	
12-Apr	2	4	2	1	3	3	2	2	3	3	3	3	3	4	4	3	3	2	2	2	2	2	2	2	4	
13-Apr	1	1	1	2	2	2	1	1	1	2	2	2	2	2	2	2	3	3	3	2	2	2	2	1	3	
14-Apr	1	1	1	2	1	1	1	2	2	2	2	3	3	3	3	2	2	3	3	3	1	1	1	1	3	
15-Apr	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	2	2	2	3	2	4	
16-Apr	3	2	2	1	1	1	1	1	4	3	4	5	6	5	5	5	5	5	5	5	6	4	4	3	6	
17-Apr	4	4	4	4	4	4	4	5	6	7	7	7	7	7	7	7	8	6	6	5	4	4	6	6	8	
18-Apr	5	4	4	4	4	4	3	2	3	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	5	
19-Apr	1	1	2	3	4	5	4	4	4	4	4	4	4	4	4	4	3	3	2	1	1	2	2	3	5	
20-Apr	1	1	1	1	1	1	1	2	2	2	3	4	4	4	4	4	4	3	3	3	2	2	2	1	4	
21-Apr	1	1	1	1	1	1	2	2	3	2	3	3	4	3	3	3	3	3	2	1	1	1	1	1	4	
22-Apr	1	2	2	1	1	1	1	2	2	3	4	4	5	5	5	4	4	4	4	3	1	1	1	1	5	
23-Apr	1	1	1	1	2	1	1	2	2	3	3	5	5	5	5	4	4	4	5	2	2	2	3	4	5	
24-Apr	2	1	3	2	3	3	1	1	1	1	2	2	3	3	4	4	4	4	4	3	2	2	3	2	4	
25-Apr	2	1	1	2	2	2	3	3	4	3	3	4	11	8	3	3	5	2	3	7	3	3	3	3	11	
26-Apr	4	3	4	4	4	4	3	4	4	3	3	4	3	3	3	3	3	3	3	3	2	2	1	1	4	
27-Apr	1	2	2	2	1	1	1	1	2	3	2	3	3	3	3	3	3	3	2	2	2	2	2	2	3	
28-Apr	2	1	3	2	2	2	6	4	6	6	6	6	6	6	5	5	6	5	4	3	2	3	1	1	6	
29-Apr	1	1	1	2	2	2	1	1	2	2	2	3	2	2	2	3	3	2	2	1	2	1	2	3	3	
30-Apr	3	3	3	3	2	2	2	3	4	4	4	4	5	5	6	6	5	5	5	5	4	4	3	3	6	
																	Diurnal Maximum									
																	5 4 5 6 9 7 7 7 8 7 7 7 11 9 7 7 8 7 6 7 6 5 6 6									





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

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

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	146	20.28	20.28
6 - 11	364	50.56	70.83
12 - 19	176	24.44	95.28
20 - 28	24	3.33	98.61
29 - 38	10	1.39	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

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

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	9	5	3	10	13	20	37	11	3	5	2	2	9	3	9	146
6 - 11	21	21	13	8	19	45	68	79	20	6	14	8	9	13	11	9	364
12 - 19	15	4	1	0	5	38	23	27	10	1	9	12	11	8	4	8	176
20 - 28	0	0	0	0	0	11	1	0	0	0	0	5	1	0	5	1	24
29 - 38	0	0	0	0	0	0	0	0	0	0	0	8	2	0	0	0	10
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	41	34	19	11	34	107	112	143	41	10	28	35	25	30	23	27	720

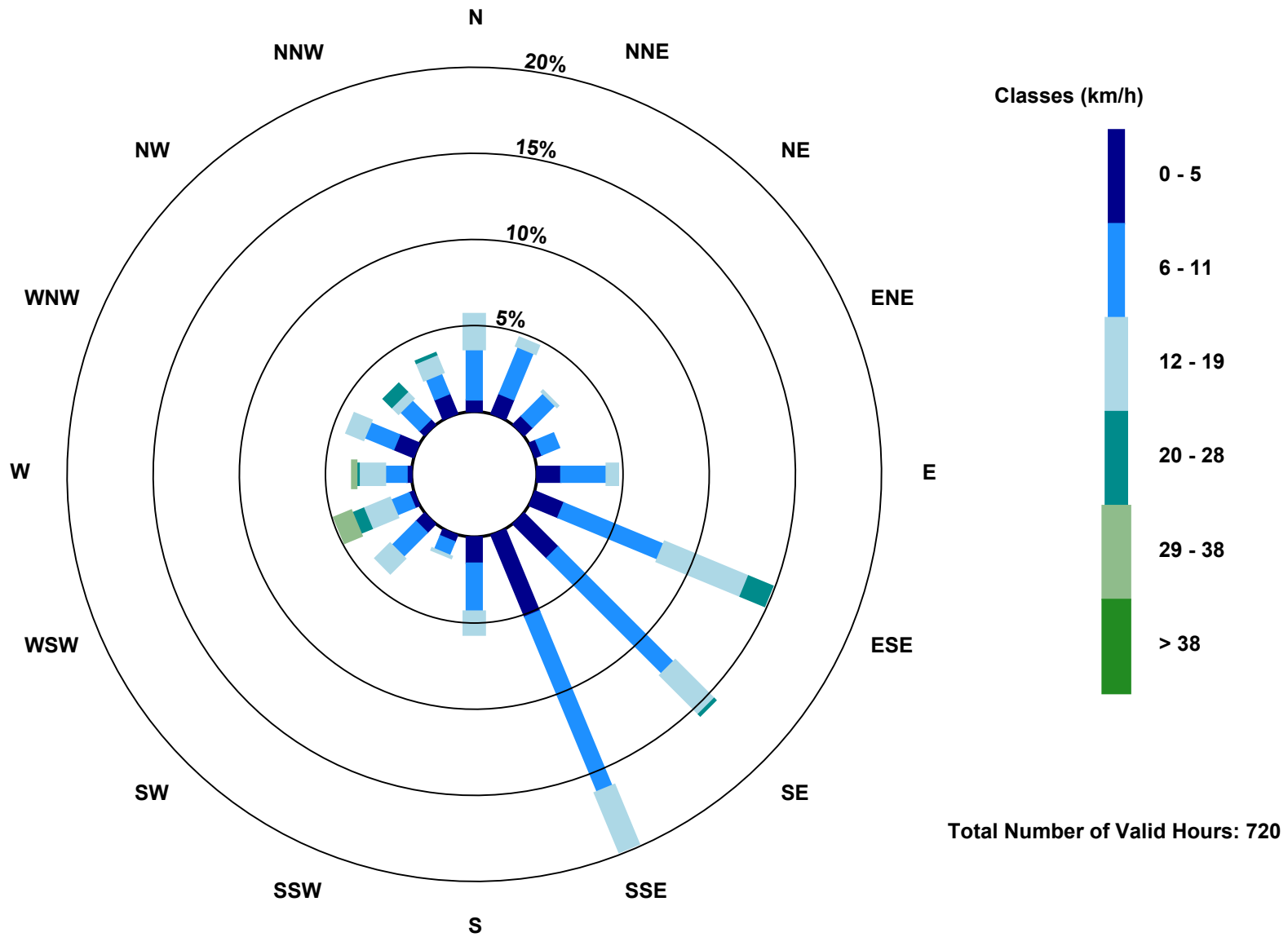
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Buffalo Viewpoint





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Buffalo Viewpoint - April 2023

Direction of Maximum Speed: 255 deg on Apr 10 05:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 251.1 deg on Apr 10	Hours of Data: 720
Direction of Minimum Speed: 307 deg on Apr 29 07:00	Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 1.5 deg on Apr 4	Percent Operational Time: 100.0
Monthly Average Direction: 148.7 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-Apr	122	107	108	118	82	95	98	109	116	115	114	120	127	115	30	18	20	20	56	97	98	122	121	120	98.2
2-Apr	125	128	127	148	124	132	140	133	126	115	111	114	121	11	359	337	4	7	7	14	12	2	358	5	53.0
3-Apr	351	348	356	359	354	359	344	352	357	358	352	284	290	290	313	335	332	319	53	60	94	82	87	100	352.4
4-Apr	122	168	235	300	290	293	263	292	292	14	16	16	7	66	131	222	183	176	142	129	133	143	151	148	152.9
5-Apr	143	155	165	157	143	149	157	150	152	147	144	168	170	184	193	164	150	137	145	127	138	145	145	143	154.7
6-Apr	155	151	154	153	148	150	152	151	170	154	162	153	148	171	171	172	170	174	173	169	163	165	159	159	162.0
7-Apr	159	156	150	151	153	149	150	154	163	154	146	145	144	144	147	148	150	148	147	158	167	165	156	161	151.9
8-Apr	158	168	158	159	163	155	157	164	161	158	148	138	126	122	190	235	254	235	246	237	200	171	219	223	181.4
9-Apr	235	238	226	237	241	233	237	233	244	250	254	252	263	261	270	243	194	169	152	154	157	155	148	143	226.2
10-Apr	144	169	220	261	255	255	249	255	257	259	252	254	261	258	256	257	256	253	255	244	226	229	246	241	251.1
11-Apr	228	227	224	223	250	133	135	144	192	196	108	160	236	250	234	244	219	221	301	353	353	329	309	279	243.4
12-Apr	293	350	270	232	260	263	265	283	315	307	295	300	309	328	318	315	304	327	319	280	318	307	343	8	302.0
13-Apr	327	349	352	349	16	344	344	11	14	16	30	21	43	342	300	2	35	36	20	25	27	36	30	63	15.3
14-Apr	101	153	127	100	52	56	109	122	122	128	132	130	140	141	108	99	162	169	116	106	124	149	137	140	123.1
15-Apr	153	151	153	164	126	141	109	132	145	126	152	119	128	169	162	98	92	128	104	106	115	136	141	144	129.5
16-Apr	140	143	145	148	143	158	157	134	119	116	114	115	129	116	114	109	106	96	101	104	108	118	125	121	117.3
17-Apr	124	121	122	120	119	123	115	108	110	116	117	116	114	122	117	115	135	108	97	100	116	121	126	115	116.5
18-Apr	105	107	105	112	118	122	118	82	80	54	97	100	84	87	89	84	70	68	64	73	45	15	21	39	84.8
19-Apr	65	42	72	105	112	117	124	119	120	122	120	120	122	120	106	118	116	108	107	75	23	24	21	18	102.9
20-Apr	343	336	51	149	166	169	181	181	148	128	140	119	104	130	108	104	106	116	97	97	110	119	132	138	118.7
21-Apr	136	155	153	173	176	157	172	164	163	134	112	115	149	145	176	184	162	139	135	126	126	140	147	160	148.7
22-Apr	159	162	148	123	136	138	163	152	126	154	172	158	180	175	169	167	183	199	182	176	163	155	126	150	163.3
23-Apr	147	158	155	143	173	177	158	155	118	113	119	129	141	158	167	116	150	156	176	121	131	157	157	170	145.3
24-Apr	123	76	96	89	159	121	158	122	107	88	35	11	360	349	347	349	351	348	348	346	348	256	205	136	10.4
25-Apr	147	154	167	159	162	158	157	159	165	169	163	237	271	124	136	170	160	170	160	262	264	263	264	266	206.7
26-Apr	263	260	281	295	286	288	284	286	303	307	309	306	303	325	1	2	16	36	37	39	52	2	354	356	316.6
27-Apr	350	341	353	12	14	220	218	201	238	285	332	289	284	268	232	257	234	225	203	180	159	156	155	153	239.8
28-Apr	149	161	328	259	298	301	300	295	310	307	311	314	316	321	328	327	339	5	3	13	14	9	352	348	325.2
29-Apr	15	183	274	226	285	292	307	201	183	156	128	146	47	16	23	131	79	108	95	101	131	137	137	133	119.3
30-Apr	145	147	145	146	152	157	146	142	155	157	144	138	132	139	145	138	136	134	138	135	131	139	145	150	141.8

149.1 153.2 154.4 169.0 178.0 171.8 180.0 172.0 163.1 149.2 140.9 145.6 162.0 172.4 157.4 151.2 148.3 127.6 110.1 100.7 107.1 135.5 142.1 142.1

Diurnal Average

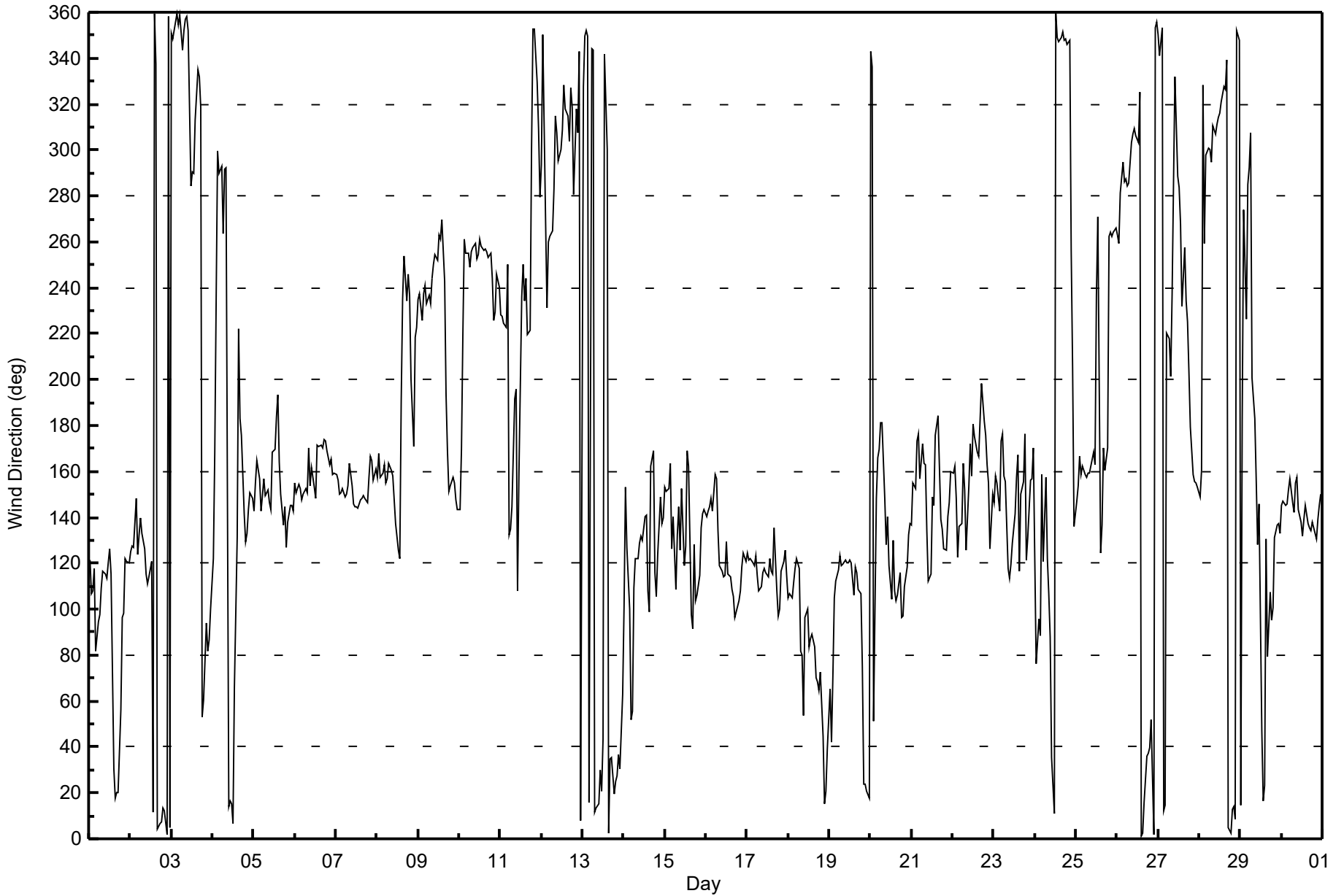
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Buffalo Viewpoint - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 91 deg on Apr 14 17:00 Minimum Value: 8 deg on Apr 22 04:00 Percentiles: P ₁ = 11 P ₁₀ = 15 Q ₁ = 19 Median = 24 Q ₃ = 30 P ₉₀ = 41 P ₉₉ = 71																			Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	20	12	12	23	22	8	12	21	23	19	21	26	25	27	36	25	18	18	28	16	19	22	22	21	36	
2-Apr	21	24	24	32	22	26	26	27	28	19	19	21	27	43	17	24	18	19	20	18	20	20	19	19	43	
3-Apr	19	17	20	16	18	16	18	17	19	22	30	28	29	40	53	42	30	27	58	29	22	13	12	19	58	
4-Apr	21	29	39	25	16	12	26	20	25	58	18	22	24	56	49	25	37	33	24	25	23	23	28	28	58	
5-Apr	26	27	23	24	25	29	29	29	39	41	33	38	33	36	29	34	32	26	23	13	23	20	20	23	41	
6-Apr	24	26	26	27	28	26	27	28	28	29	31	32	29	30	29	29	27	28	27	26	26	27	27	27	32	
7-Apr	27	28	27	27	29	29	30	29	30	29	30	30	30	26	27	26	27	26	26	28	28	26	26	26	30	
8-Apr	28	27	26	27	25	24	24	25	31	28	30	29	25	21	45	20	16	18	16	15	29	18	17	13	45	
9-Apr	19	18	15	17	21	19	19	18	18	17	15	19	16	18	38	31	25	27	23	25	25	25	25	25	38	
10-Apr	28	26	37	12	14	14	15	15	14	13	16	16	15	15	15	15	14	15	14	17	14	15	16	18	37	
11-Apr	16	15	14	57	52	18	13	21	36	53	72	60	34	26	23	26	23	21	58	18	16	15	20	16	72	
12-Apr	16	24	20	23	26	15	14	21	22	26	24	26	25	28	21	28	31	36	14	25	20	26	48	28	48	
13-Apr	11	17	19	35	69	44	34	16	20	24	42	35	45	49	68	53	54	21	19	17	15	14	35	32	69	
14-Apr	30	43	32	40	26	16	37	23	34	31	29	38	31	41	52	62	91	64	19	17	19	24	27	33	91	
15-Apr	21	23	20	72	18	51	35	44	55	52	65	45	50	67	68	68	25	38	18	15	16	25	26	27	72	
16-Apr	30	25	25	23	17	23	26	29	25	21	22	20	30	24	22	24	21	19	20	19	19	22	24	23	30	
17-Apr	24	22	23	24	22	27	23	22	21	22	21	22	21	25	21	22	30	21	19	20	23	25	24	23	30	
18-Apr	19	19	19	23	24	23	31	21	12	19	36	26	27	18	17	17	17	15	15	13	21	19	17	17	36	
19-Apr	14	16	32	20	20	23	23	22	23	23	22	23	21	22	23	26	22	23	20	11	19	16	14	16	32	
20-Apr	17	20	41	19	18	21	24	32	40	44	37	34	38	33	26	30	28	24	17	16	17	19	23	22	44	
21-Apr	18	17	14	12	12	15	19	31	33	38	28	41	48	53	64	52	41	38	30	12	9	13	20	18	64	
22-Apr	14	19	25	8	13	11	21	31	28	42	37	34	30	32	33	30	30	23	27	24	21	16	12	16	42	
23-Apr	14	17	15	18	39	34	24	31	21	19	28	29	29	34	36	23	34	38	37	24	32	30	31	32	39	
24-Apr	40	22	19	31	33	27	34	24	24	19	25	24	21	22	20	19	20	19	18	18	17	53	25	40	53	
25-Apr	26	26	31	28	25	25	27	28	27	28	32	30	51	20	65	29	68	78	49	22	15	11	12	15	78	
26-Apr	11	12	21	21	20	21	23	23	22	22	23	23	26	35	29	23	27	24	20	19	14	14	13	15	35	
27-Apr	23	19	19	31	44	77	13	26	55	41	73	36	37	33	37	42	39	27	19	23	23	25	24	24	77	
28-Apr	20	36	40	13	25	21	25	21	21	22	22	24	22	25	24	22	26	22	22	18	16	21	14	13	40	
29-Apr	14	65	59	62	39	34	58	17	59	60	46	49	78	42	88	58	59	34	17	18	22	20	24	25	88	
30-Apr	27	25	26	27	28	30	30	31	34	32	34	33	30	31	34	33	31	26	28	28	25	24	28	27	34	
	40	65	59	72	69	77	58	44	59	60	73	60	78	67	88	68	91	78	58	29	32	53	48	40		
Diurnal Maximum																										





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS05
MANNIX
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
APRIL 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	686	34	34	100	48.3	0	11	0
H2S (ppb) Average	685	35	35	100	7	0	1.5	0
THC (ppm) Average	686	34	34	100	3.5	-	2.4	-
NMHC(ppm) Average	686	34	34	100	0.823	-	0.166	-
CH4(ppm) Average	686	34	34	100	2.8	-	2.2	-
Temperature 2 m (C) Average	720	0	0	100	21.9	-	14.5	-
Temperature 20 m (C) Average	720	0	0	100	21	-	13.9	-
Temperature 45 m (C) Average	720	0	0	100	20.7	-	13.6	-
Temperature 75 m (C) Average	720	0	0	100	20.4	-	13.5	-
Temperature 90 m (C) Average	720	0	0	100	20.3	-	13.4	-
Relative Humidity 2 m (%) Average	720	0	0	100	94	-	80	-
Relative Humidity 20 m (%) Average	720	0	0	100	97	-	80	-
Relative Humidity 45 m (%) Average	720	0	0	100	94	-	81	-
Relative Humidity 75 m (%) Average	720	0	0	100	96	-	83	-
Relative Humidity 90 m (%) Average	720	0	0	100	99	-	84	-
Wind Speed 20 m (km/h) Average	720	0	0	100	39	-	26	-
Wind Speed 45 m (km/h) Average	719	0	1	99.86	47	-	33	-
Wind Speed 75 m (km/h) Average	719	0	1	99.86	52	-	38	-
Wind Speed 90 m (km/h) Average	719	0	1	99.86	52	-	39	-
Wind Direction 20 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 45 m (deg) Average	719	0	1	99.86	-	-	-	-
Wind Direction 75 m (deg) Average	719	0	1	99.86	-	-	-	-
Wind Direction 90 m (deg) Average	719	0	1	99.86	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	0	0	100	1.8	-	1	-
Vertical Wind Speed 45 m (km/h) Average	719	0	1	99.86	2	-	0.9	-
Vertical Wind Speed 75 m (km/h) Average	719	0	1	99.86	2.3	-	0.7	-
Vertical Wind Speed 90 m (km/h) Average	719	0	1	99.86	2.2	-	0.9	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)

APRIL 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	686	1.3	4	-	0	0	0.1	0.2	0.7	2.7	48.3
H2S (ppb) Average	685	0.27	0.6	-	0	0	0.1	0.1	0.2	0.5	6.8
THC (ppm) Average	686	2.07	0.2	-	1.9	2	2	2	2.1	2.2	3.5
NMHC(ppm) Average	686	0.033	0.086	-	0	0	0	0	0	0.1	0.823
CH4(ppm) Average	686	2.04	0.1	-	1.9	2	2	2	2.1	2.1	2.8
Temperature 2 m (C) Average	720	5.06	5.9	-	-8.7	-2.7	0.7	4.5	9.3	12.9	21.9
Temperature 20 m (C) Average	720	4.93	5.6	-	-8.8	-2.7	1.1	4.8	8.9	12.2	21
Temperature 45 m (C) Average	720	4.78	5.6	-	-8.9	-3	1	4.7	8.7	12	20.7
Temperature 75 m (C) Average	720	4.63	5.5	-	-9.1	-3.1	1	4.7	8.6	11.8	20.4
Temperature 90 m (C) Average	720	4.54	5.5	-	-9.3	-3.1	0.9	4.7	8.4	11.7	20.3
Relative Humidity 2 m (%) Average	720	53	20	-	16	26	35	53	70	81	94
Relative Humidity 20 m (%) Average	720	51.6	20	-	16	25	34	49	69	80	97
Relative Humidity 45 m (%) Average	720	51.3	20	-	17	26	33	49	69	80	94
Relative Humidity 75 m (%) Average	720	51.7	20	-	17	26	34	49	69	81	96
Relative Humidity 90 m (%) Average	720	52.2	21	-	17	26	34	49	70	82	99
Wind Speed 20 m (km/h) Average	720	12.9	6	-	1	6	9	12	16	21	39
Wind Speed 45 m (km/h) Average	719	16.5	8	-	0	7	11	16	21	26	47
Wind Speed 75 m (km/h) Average	719	17.3	9	-	0	7	10	16	24	29	52
Wind Speed 90 m (km/h) Average	719	18.7	9	-	0	7	11	17	25	31	52
Wind Direction 20 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Wind Direction 75 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Wind Direction 90 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	0.41	0.5	-	-1.1	-0.3	0	0.5	0.8	1	1.8
Vertical Wind Speed 45 m (km/h) Average	719	0.27	0.6	-	-1.5	-0.6	-0.1	0.4	0.7	1	2
Vertical Wind Speed 75 m (km/h) Average	719	0.2	0.5	-	-1.3	-0.3	-0.1	0.2	0.5	0.8	2.3
Vertical Wind Speed 90 m (km/h) Average	719	0.12	0.6	-	-1.7	-0.7	-0.2	0.1	0.5	0.9	2.2

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction, Vertical Wind Speed at 45m	18 Apr 2023 07:00	18 Apr 2023 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, Vertical Wind Speed at 75m	18 Apr 2023 07:00	18 Apr 2023 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, Vertical Wind Speed at 90m	18 Apr 2023 07:00	18 Apr 2023 07:00	1	Flat line in sensor output signal

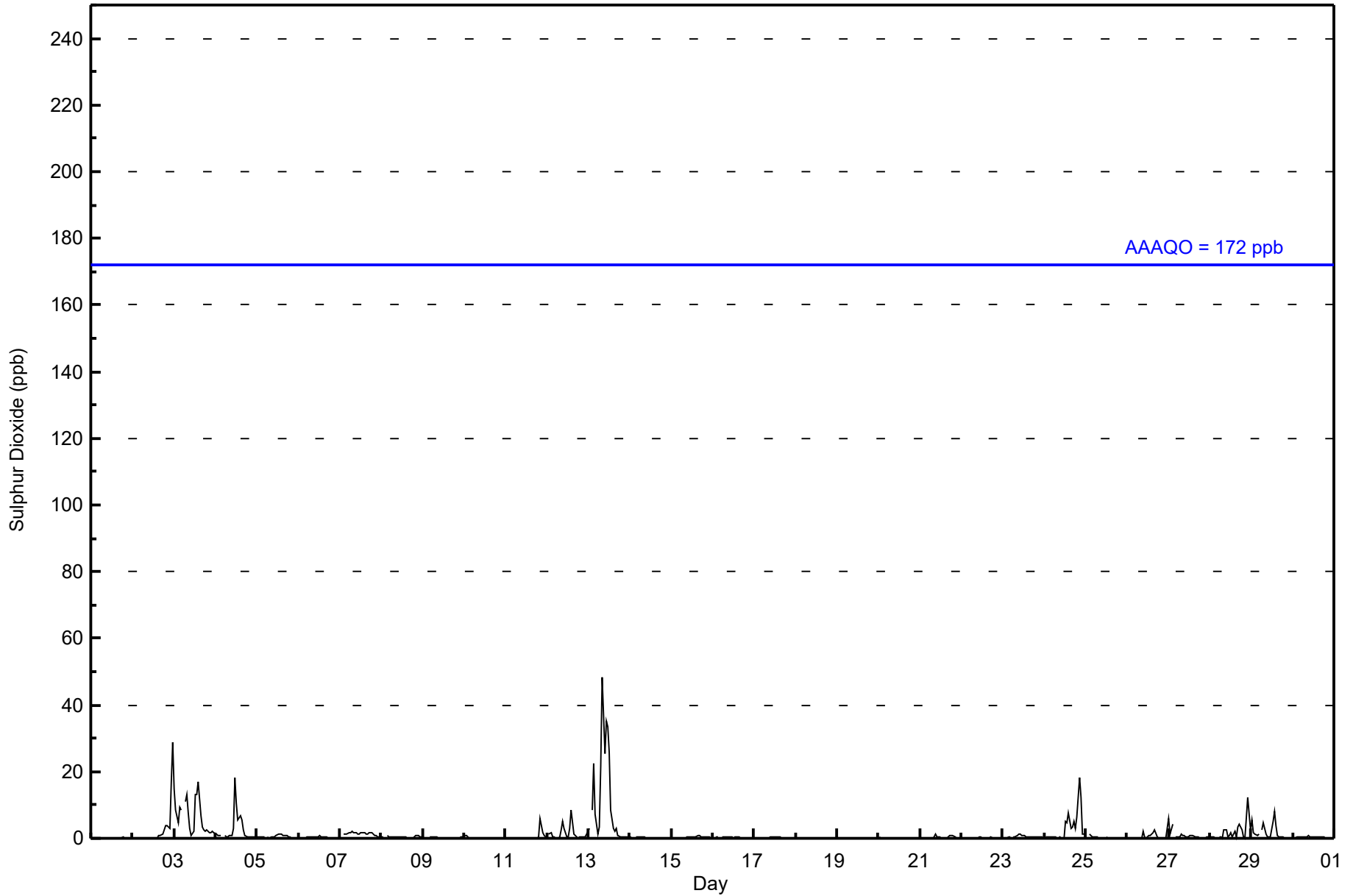


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Daily Average		Daily Maximum																										
Maximum Value: 48.3 ppb on Apr 13 09:00		Maximum Daily Average: 11.0 ppb on Apr 13																	Hours of Data: 686		Hours of Missing Data: 34																												
Minimum Value: 0.0 ppb on Apr 1 01:00		Minimum Daily Average: 0.0 ppb on Apr 18																	Hours of Calibration: 34		Percent Operational Time: 100.0																												
Maximum Diurnal Average: 2.4 ppb at hour 9		Minimum Diurnal Average: 0.3 ppb at hour 6																																															
Monthly Average: 1.30 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.7 P ₉₀ = 2.7 P ₉₉ = 21.6																																															
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-Apr	0.0	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	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.2																					
2-Apr	0.0	0.1	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.7	1.0	1.2	2.4	3.8	3.7	3.0	16.8	28.8	2.7	28.8																							
3-Apr	14.8	8.5	4.5	9.1	8.3	Z	10.9	13.0	7.6	2.8	1.0	2.3	13.3	13.0	17.1	6.9	3.4	2.6	2.3	2.5	1.5	1.7	2.0	1.7	6.6	17.1																							
4-Apr	1.2	0.8	0.8	0.9	Z	0.7	0.6	0.5	0.7	0.9	2.9	18.4	10.7	5.5	7.0	5.5	2.5	0.8	0.5	0.5	0.4	0.3	0.3	0.3	2.7	18.4																							
5-Apr	0.2	0.2	0.3	0.3	Z	Z	0.3	0.2	0.3	0.3	0.3	0.7	1.3	1.4	1.4	1.0	1.0	0.7	0.5	0.6	0.2	0.2	0.1	0.2	0.5	1.4																							
6-Apr	Z	0.2	0.2	0.1	0.2	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.6	0.3	0.3	0.3	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.3	0.7																							
7-Apr	0.1	Z	1.2	1.3	1.4	1.6	1.8	1.9	1.7	1.5	1.4	1.4	1.5	1.5	1.6	1.4	1.4	1.9	1.5	1.3	1.0	0.7	0.5	0.4	1.3	1.9																							
8-Apr	0.3	0.5	Z	0.7	0.5	0.5	0.4	0.4	0.3	0.3	0.5	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.5	0.8	1.0	0.6	0.4	0.4	1.0																							
9-Apr	0.3	0.2	0.2	Z	0.3	0.3	0.3	0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.4	0.5	0.2	0.5																							
10-Apr	0.7	0.9	0.6	0.1	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	0.2	0.1	0.0	0.1	0.9																							
11-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	5.8	1.6	0.8	0.4	0.4	5.8																							
12-Apr	Z	1.4	1.6	0.4	0.2	0.2	0.1	0.5	2.7	5.0	3.0	0.4	0.3	2.9	8.4	1.1	0.9	0.3	0.2	0.2	0.2	0.5	0.5	1.3	1.4	8.4																							
13-Apr	2.8	Z	8.4	22.4	7.0	1.2	3.5	21.4	48.3	25.5	35.2	33.4	25.7	8.3	3.2	1.9	2.9	0.6	0.4	0.3	0.2	0.3	0.4	0.2	11.0	48.3																							
14-Apr	0.3	0.2	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	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3																							
15-Apr	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.5	0.6	0.4	0.5	0.5	0.8	0.9	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.9																						
16-Apr	0.1	0.2	0.2	0.2	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.4																							
17-Apr	0.1	0.2	0.1	0.1	0.1	Z	0.2	0.1	0.2	0.3	0.5	0.5	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.5																							
18-Apr	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	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.2																							
19-Apr	0.1	Z	0.1	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	0.1	0.1	0.0	0.0	0.0	0.0	0.1																							
20-Apr	0.0	0.6	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.6																							
21-Apr	0.0	0.1	0.1	Z	0.1	0.2	0.2	0.0	0.3	1.4	0.6	0.5	0.1	0.2	0.2	0.2	0.4	0.6	0.9	0.8	0.4	0.2	0.1	0.1	0.3	1.4																							
22-Apr	0.1	0.1	0.1	0.0	Z	0.2	0.1	0.1	0.1	0.1	0.3	0.2	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	0.3																							
23-Apr	0.1	0.1	0.2	0.2	0.2	Z	0.3	0.4	0.9	1.3	1.2	0.9	0.9	0.6	0.5	0.6	0.5	0.6	0.4	0.3	0.4	0.4	0.4	0.4	0.5	1.3																							
24-Apr	Z	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.2	0.2	0.2	5.1	4.7	7.7	2.9	3.6	4.9	3.0	6.4	18.1	12.3	1.2	1.4	3.2	18.1																							
25-Apr	1.2	Z	1.3	0.7	0.4	0.4	0.3	0.3	C	C	C	C	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3																							
26-Apr	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.1	2.3	0.2	0.1	0.7	0.8	1.2	1.9	2.5	0.4	0.1	0.0	0.0	0.0	0.1	3.0	0.6	3.0																							
27-Apr	5.9	1.4	4.4	Z	0.4	0.3	0.5	1.4	1.0	0.6	0.5	0.4	0.8	0.9	0.8	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.4	0.9	5.9																							
28-Apr	0.4	0.3	0.2	0.2	Z	0.3	0.2	0.2	2.5	2.5	0.5	0.9	1.9	0.6	2.0	0.4	3.4	4.1	2.7	0.2	0.2	5.9	12.4	2.7	1.9	12.4																							
29-Apr	5.5	1.5	1.4	0.7	1.4	Z	2.7	4.7	1.3	0.4	0.3	0.3	4.9	8.0	3.7	0.8	0.3	0.2	0.3	0.2	0.2	0.1	0.0	0.1	1.7	8.0																							
30-Apr	Z	0.2	0.3	0.3	0.4	0.3	0.4	0.4	0.5	0.7	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.7																							
																								1.4	0.7	1.1	1.5	0.9	0.3	0.8	1.6	2.4	1.6	1.8	2.2	2.4	1.7	1.9	1.0	0.9	0.7	0.6	0.7	1.1	1.0	1.3	1.4	Diurnal Average	
																								14.8	8.5	8.4	22.4	8.3	1.6	10.9	21.4	48.3	25.5	35.2	33.4	25.7	13.0	17.1	6.9	3.6	4.9	3.0	6.4	18.1	12.3	16.8	28.8	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 (SO₂) - ppb
Mannix - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mannix - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	666	97.08	97.08
11 - 20	12	1.75	98.83
21 - 60	8	1.17	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: 686

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mannix - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	22	20	13	13	36	75	187	114	24	12	20	42	26	26	18	18	666
11 - 20	5	0	0	0	0	1	0	0	2	0	0	1	2	0	0	1	12
21 - 60	1	1	3	0	0	0	0	0	0	0	0	0	0	0	1	2	8
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
Totals	28	21	16	13	36	76	187	114	26	12	20	43	28	26	19	21	686

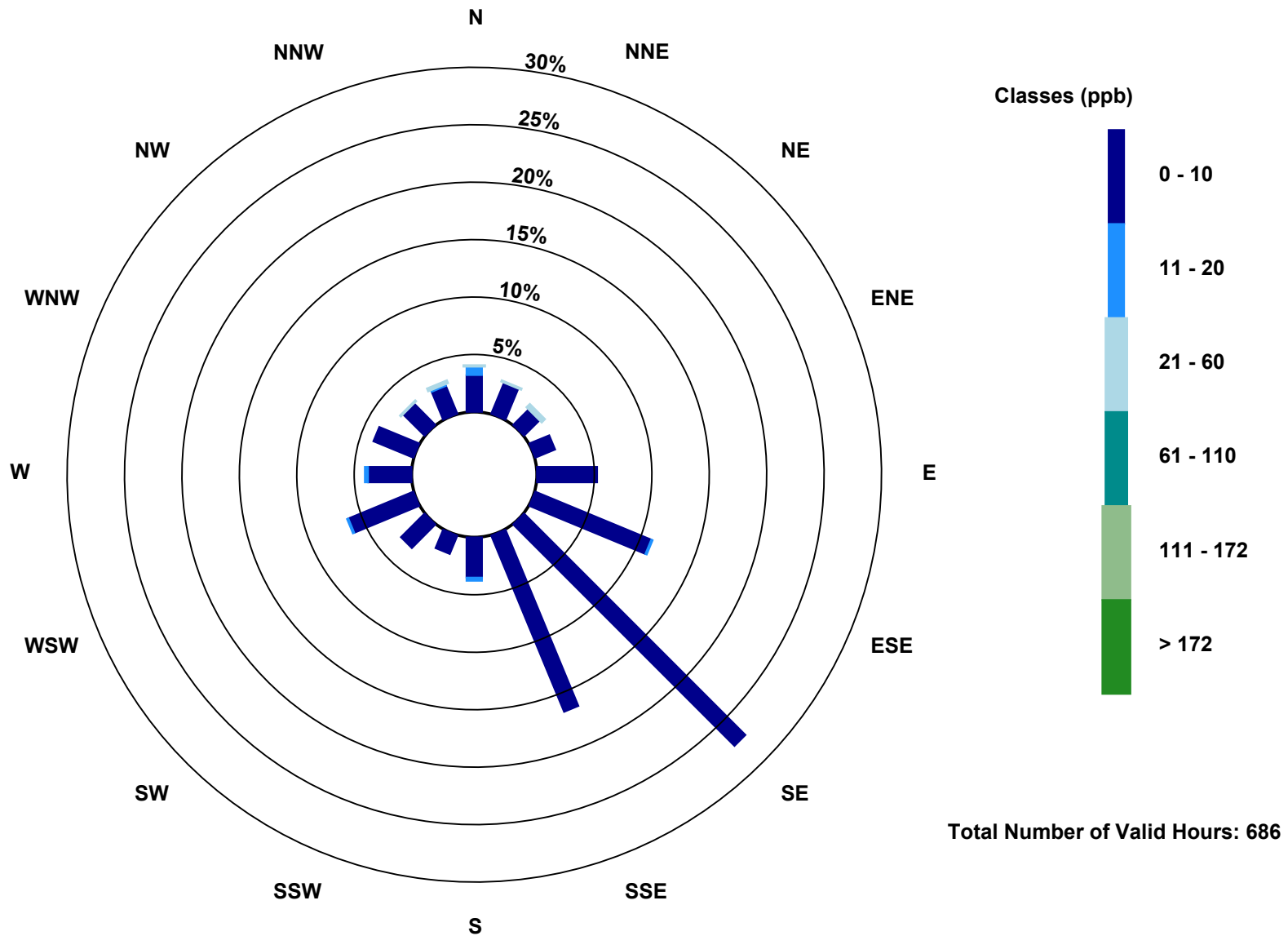
Total Number of Valid Hours: 686

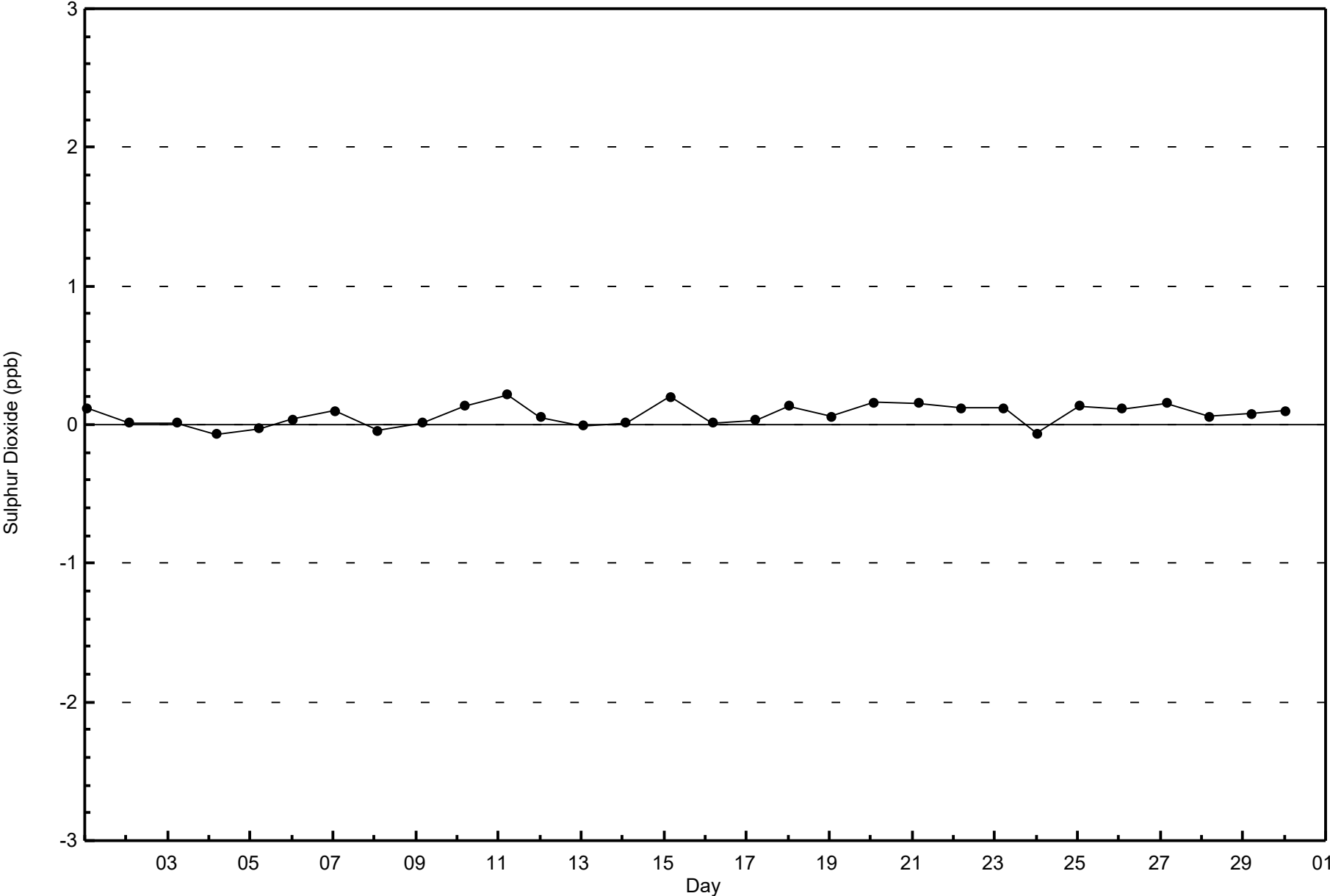
Total Number of Hours: 720

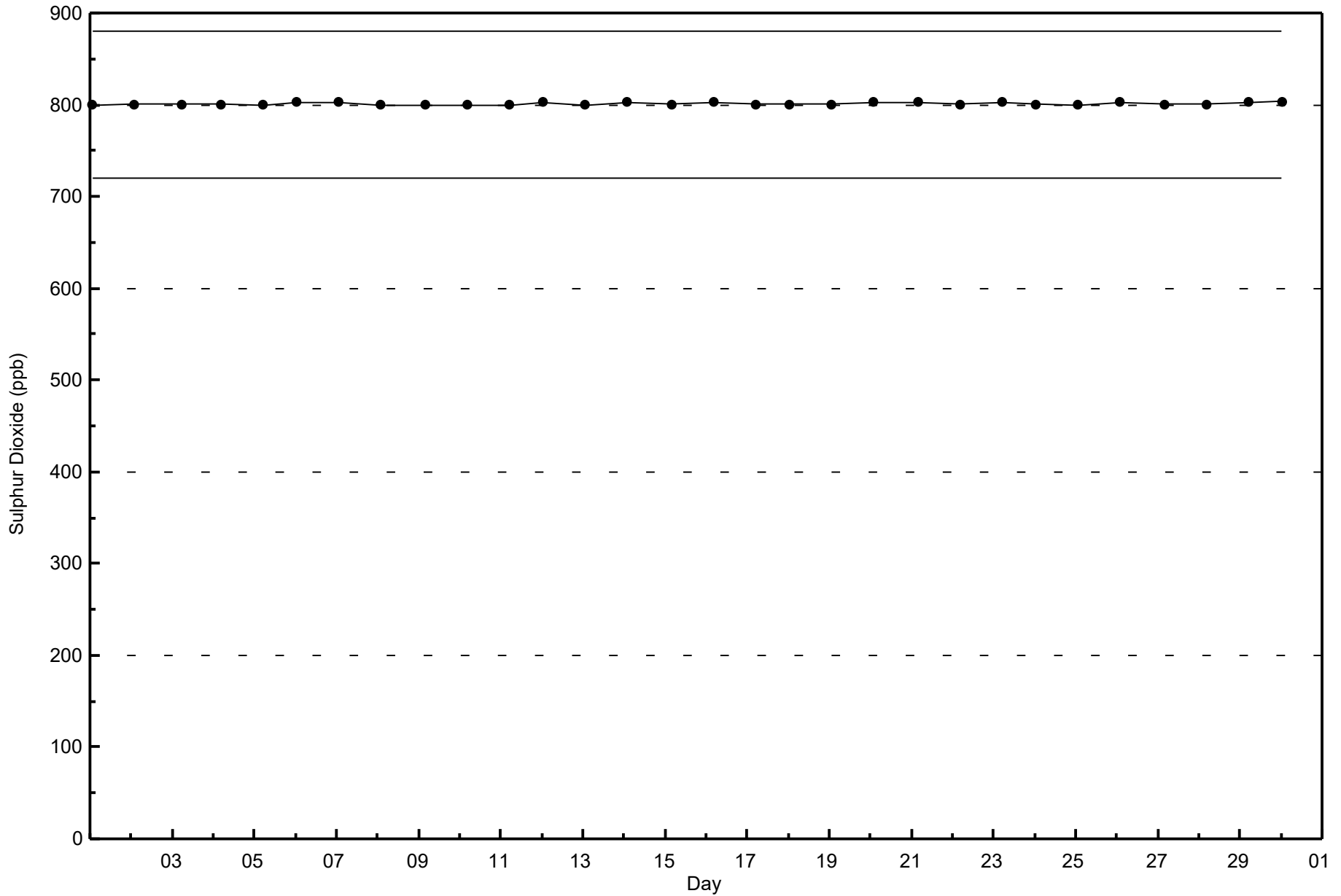


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Mannix





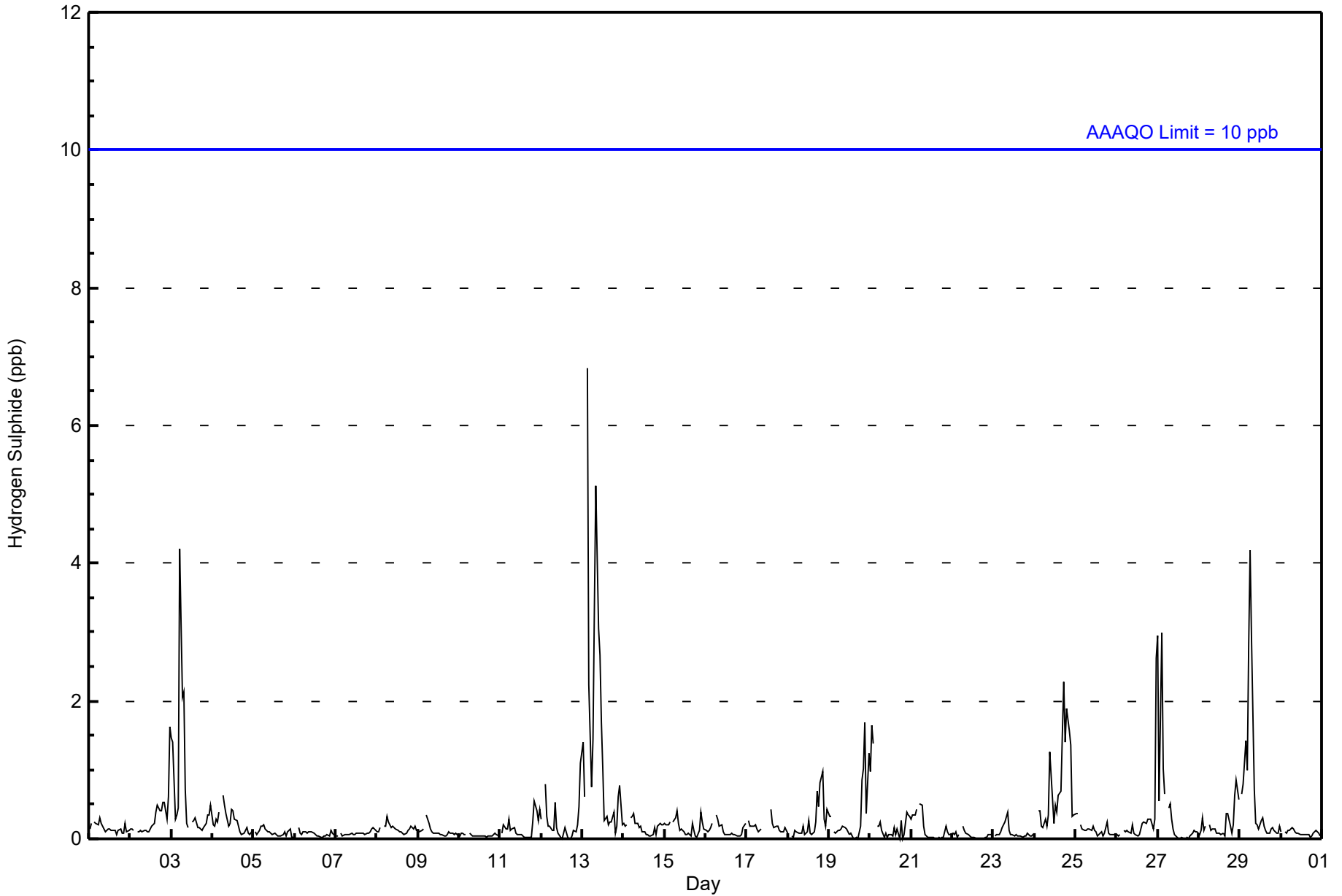




Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 6.8 ppb on Apr 13 04:00	Maximum Daily Average: 1.5 ppb on Apr 13		Hours of Data:	685
Minimum Value: 0.0 ppb on Apr 12 17:00	Minimum Daily Average: 0.0 ppb on Apr 22		Hours of Missing Data:	35
Maximum Diurnal Average: 0.5 ppb at hour 4	Minimum Diurnal Average: 0.1 ppb at hour 14		Hours of Calibration:	35
Monthly Average: 0.27 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.5 P ₉₉ = 2.9		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-Apr	0.2	0.2	Z	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3																						
2-Apr	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.5	0.4	0.4	0.5	0.5	0.3	0.6	1.6	0.3	1.6																						
3-Apr	1.5	1.4	0.3	0.4	0.4	4.2	2.1	2.1	0.7	0.2	0.2	Z	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	4.2																						
4-Apr	0.2	0.2	0.3	0.2	0.4	Z	0.6	0.5	0.4	0.2	0.2	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.6																						
5-Apr	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2																						
6-Apr	0.0	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2																						
7-Apr	0.0	0.0	Z	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	0.1	0.1	0.1	0.2	0.1	0.1	0.2																						
8-Apr	0.1	0.1	0.2	Z	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	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.3																						
9-Apr	0.1	0.1	0.1	0.1	Z	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3																						
10-Apr	0.1	0.1	0.1	0.1	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	0.1	0.1	0.1	0.0	0.1	0.1																						
11-Apr	Z	0.1	0.2	0.1	0.1	0.3	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	0.2	0.6	0.4	0.3	0.4	0.2	0.6																						
12-Apr	0.3	Z	0.8	0.3	0.2	0.2	0.1	0.1	0.5	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	1.1	0.2	1.1																						
13-Apr	1.4	0.6	Z	6.8	2.2	0.7	1.4	3.3	5.1	3.1	2.7	1.7	1.0	0.3	0.3	0.2	0.2	0.2	0.4	0.1	0.2	0.6	0.8	0.2	1.5	6.8																						
14-Apr	0.2	0.2	0.2	Z	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.4																						
15-Apr	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.4	0.2	0.1	0.2	0.4																						
16-Apr	0.1	0.1	0.1	0.2	0.2	Z	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.4																						
17-Apr	Z	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	C	C	C	C	C	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.4																						
18-Apr	0.1	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.2	0.7	0.5	0.8	1.0	0.3	0.2	0.4	0.2	1.0																						
19-Apr	0.3	0.3	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.9	1.0	1.7	0.4	1.2	0.3	1.7																						
20-Apr	1.0	1.7	1.4	Z	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.3	0.0	0.1	0.4	0.3	0.3	0.3	1.7																						
21-Apr	0.3	0.3	0.4	0.4	Z	0.5	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	0.2	0.1	0.1	0.1	0.1	0.5																						
22-Apr	0.1	0.1	0.1	0.0	0.1	Z	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	0.1	0.1	0.1	0.1	0.2																						
23-Apr	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.4																						
24-Apr	0.1	Z	0.4	0.4	0.2	0.2	0.3	0.2	0.4	1.3	0.9	0.2	0.5	0.4	0.6	0.7	1.5	2.3	1.4	1.9	1.6	1.4	0.3	0.3	0.8	2.3																						
25-Apr	0.4	0.4	Z	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.4																						
26-Apr	0.1	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.3	2.6	0.3	2.6																						
27-Apr	2.9	0.6	3.0	1.0	0.6	Z	0.5	0.5	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4	3.0																						
28-Apr	0.1	0.1	0.3	0.1	0.2	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.4	0.4	0.2	0.1	0.2	0.6	0.9	0.6	0.2	0.9																						
29-Apr	Z	0.6	0.8	1.4	1.0	2.8	4.2	2.9	0.7	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.7	4.2																						
30-Apr	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	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2																						
																								0.4	0.3	0.4	0.5	0.3	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.4	Diurnal Average
																								2.9	1.7	3.0	6.8	2.2	4.2	4.2	3.3	5.1	3.1	2.7	1.7	1.0	0.4	0.6	0.7	1.5	2.3	1.4	1.9	1.6	1.7	0.9	2.6	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 (H₂S) - ppb
Mannix - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	673	98.25	98.25
3 - 4	10	1.46	99.71
5 - 7	2	0.29	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mannix - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	26	20	13	14	36	70	187	116	26	13	19	42	29	26	18	18	673
3 - 4	2	1	3	0	1	1	0	0	0	0	0	0	0	0	0	2	10
5 - 7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	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
Totals	28	21	17	14	37	71	187	116	26	13	19	42	29	26	18	21	685

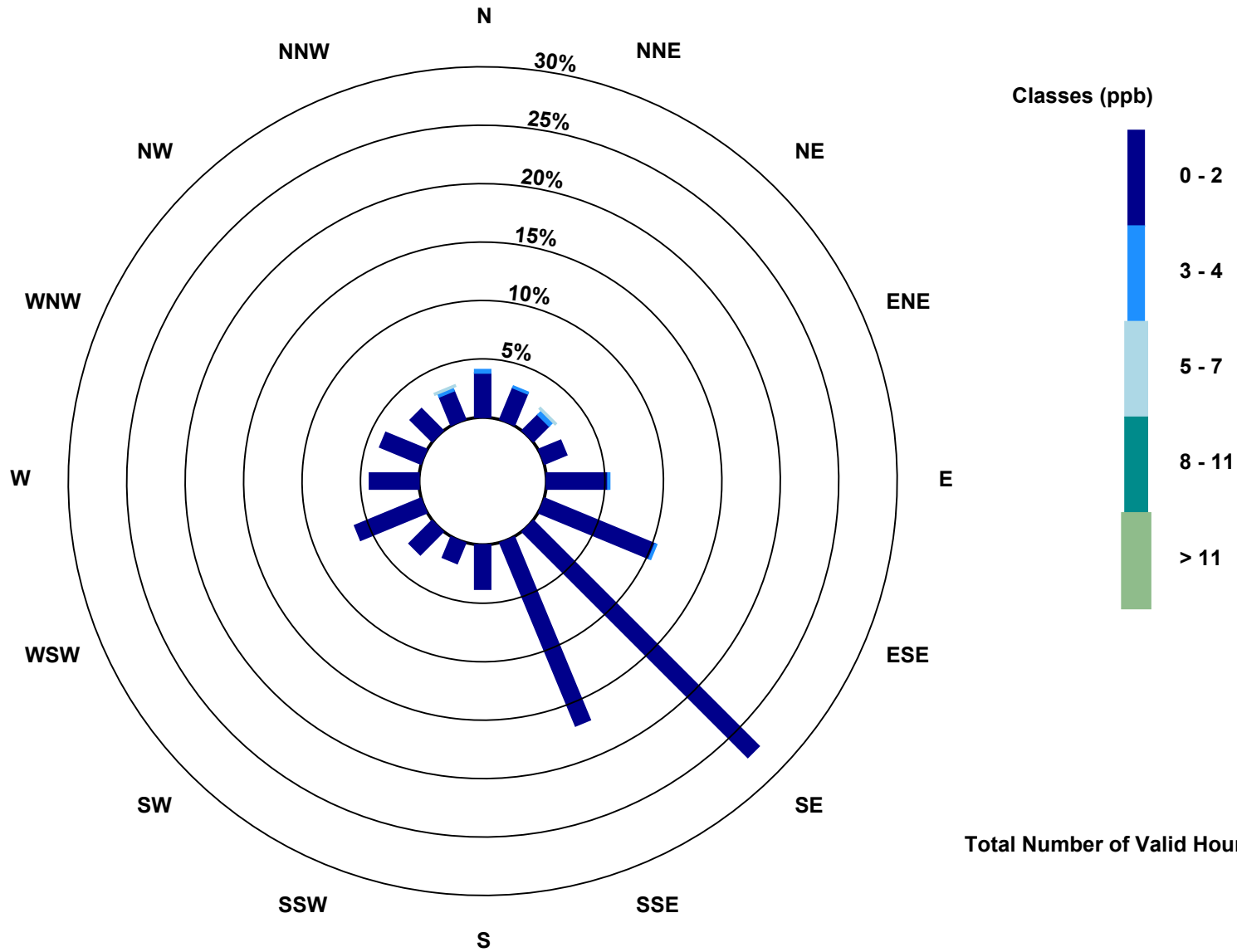
Total Number of Valid Hours: 685

Total Number of Hours: 720

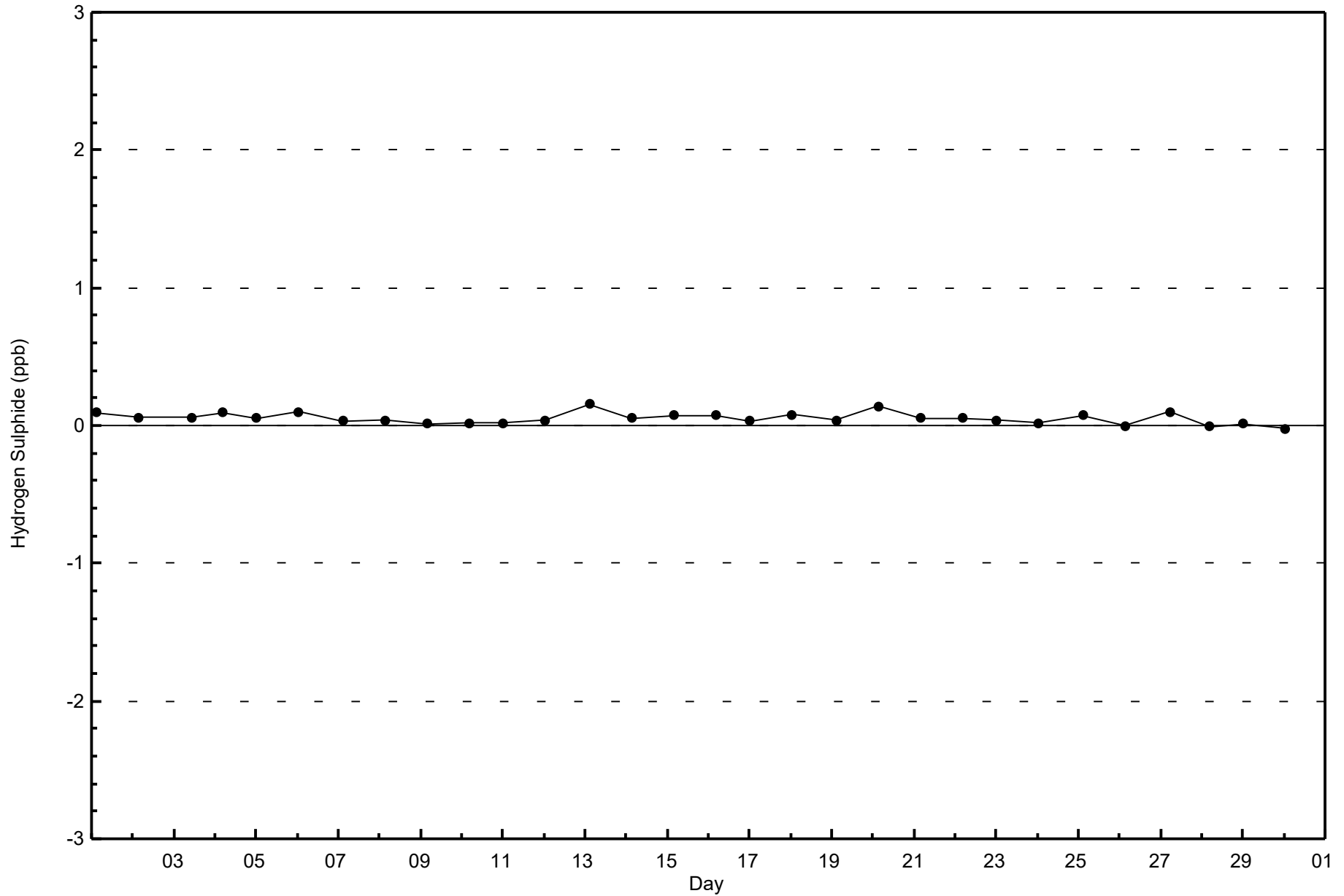


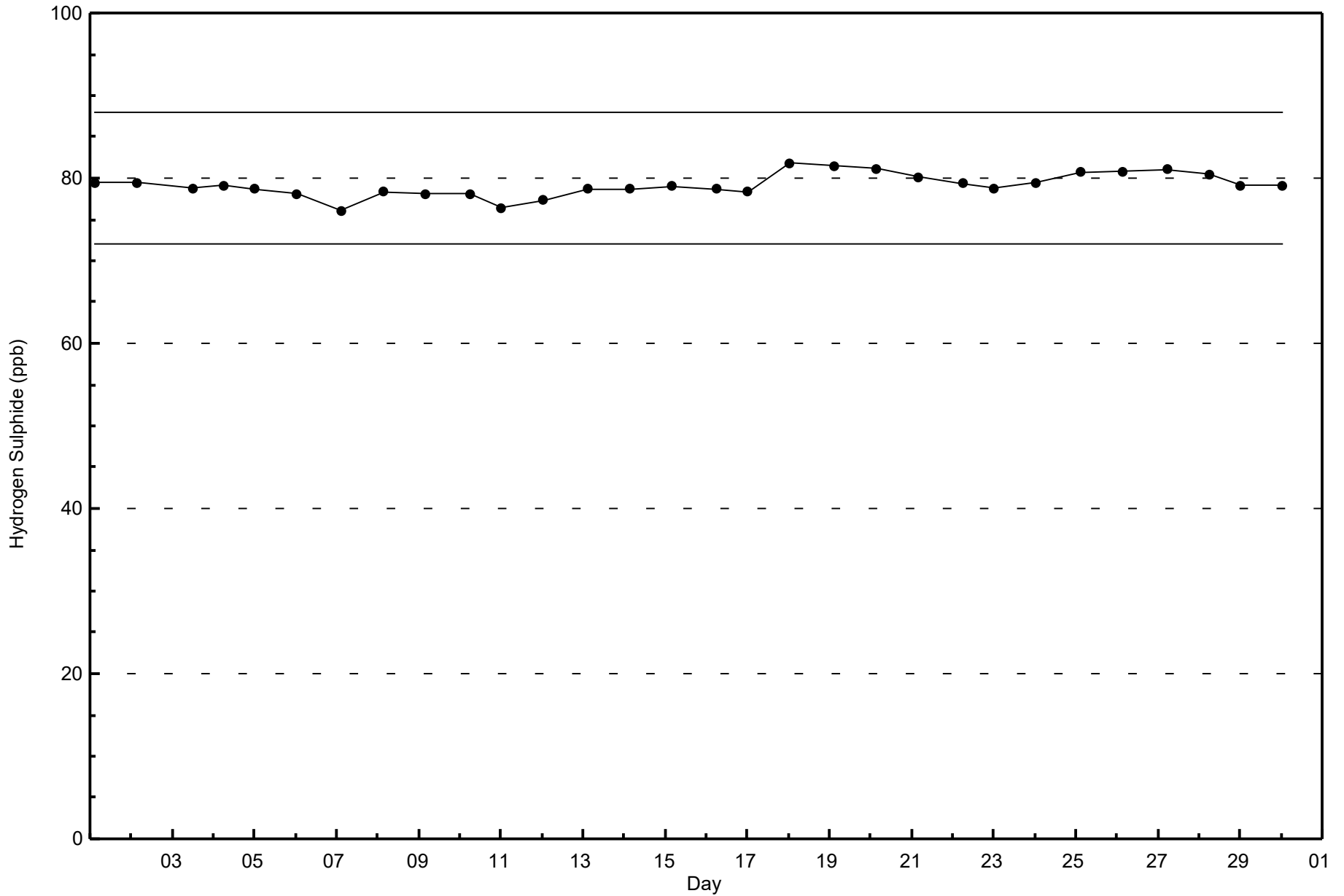
Wood Buffalo Environmental Association
Wind Rose Apr 2023

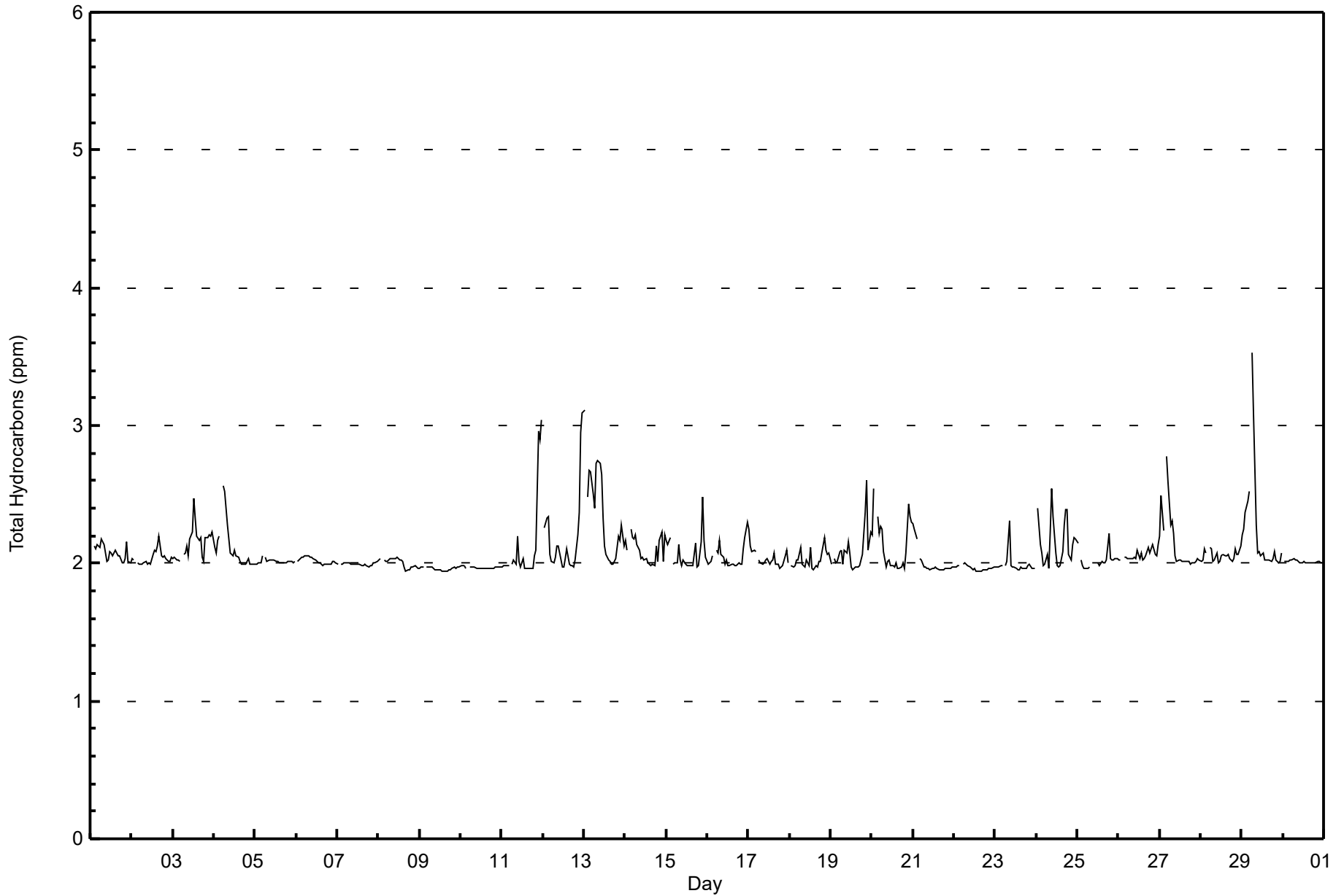
Hydrogen Sulphide (H₂S) - ppb
Mannix



Total Number of Valid Hours: 685









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mannix - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	459	66.91	66.91
2.1 - 3.0	223	32.51	99.42
3.1 - 10.0	4	0.58	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mannix - April 2023

Concentration 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	4	2	4	25	46	128	109	24	9	17	36	18	16	4	2	459
2.1 - 3.0	12	17	14	9	10	29	59	5	2	3	3	7	10	9	15	19	223
3.1 - 10.0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	21	16	13	36	76	187	114	26	12	20	43	28	26	19	21	686

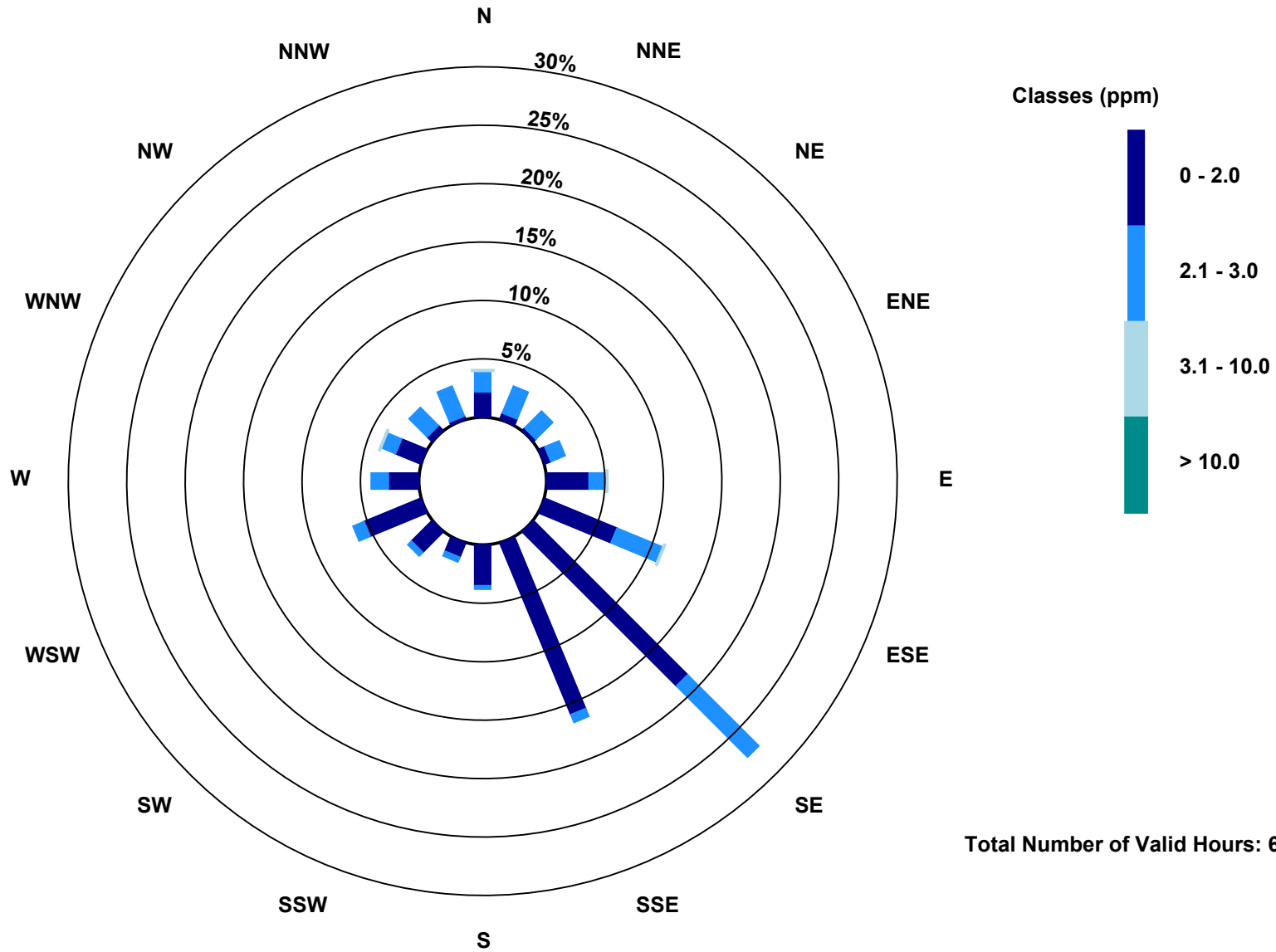
Total Number of Valid Hours: 686

Total Number of Hours: 720

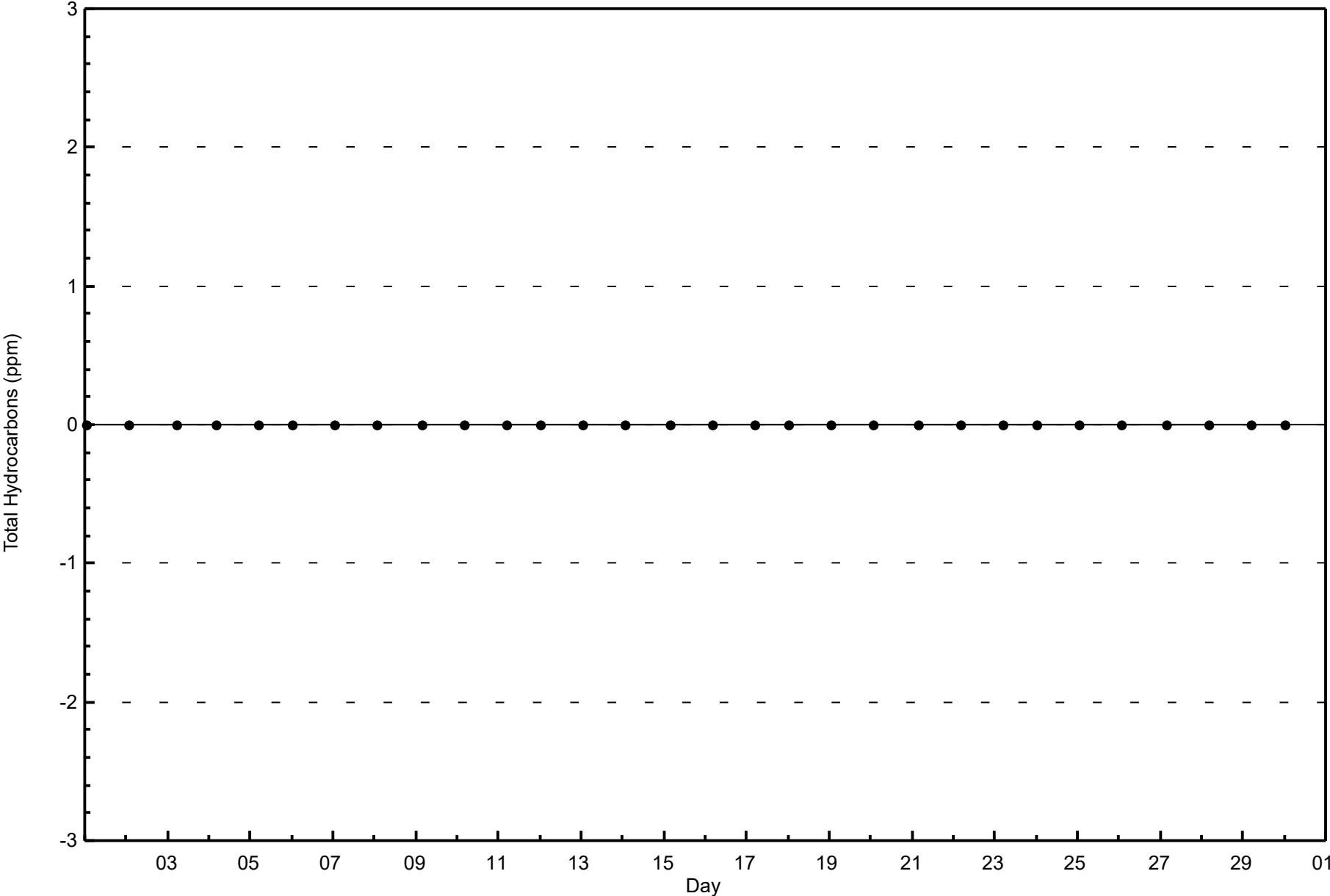


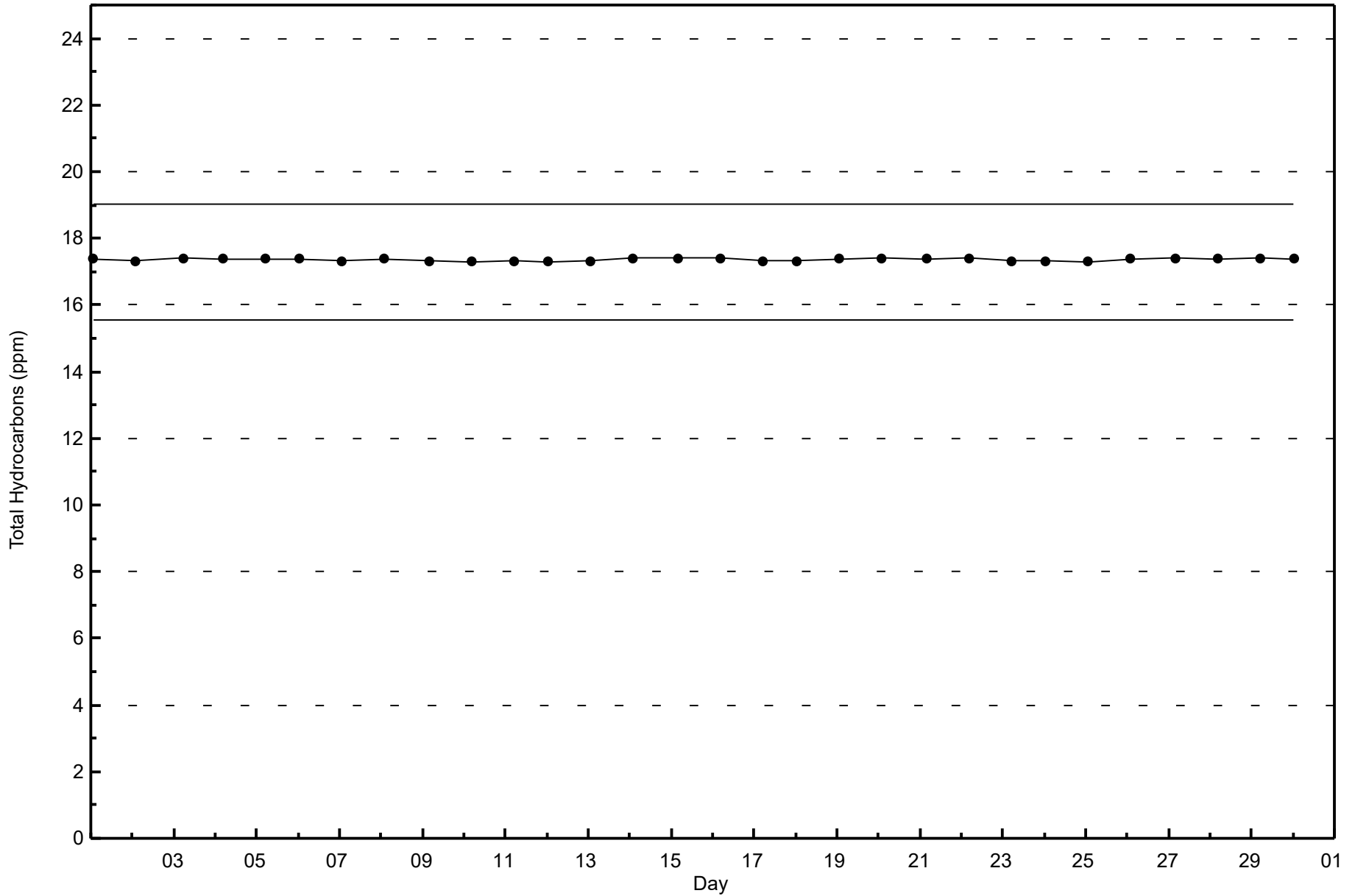
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Mannix



Total Number of Valid Hours: 686



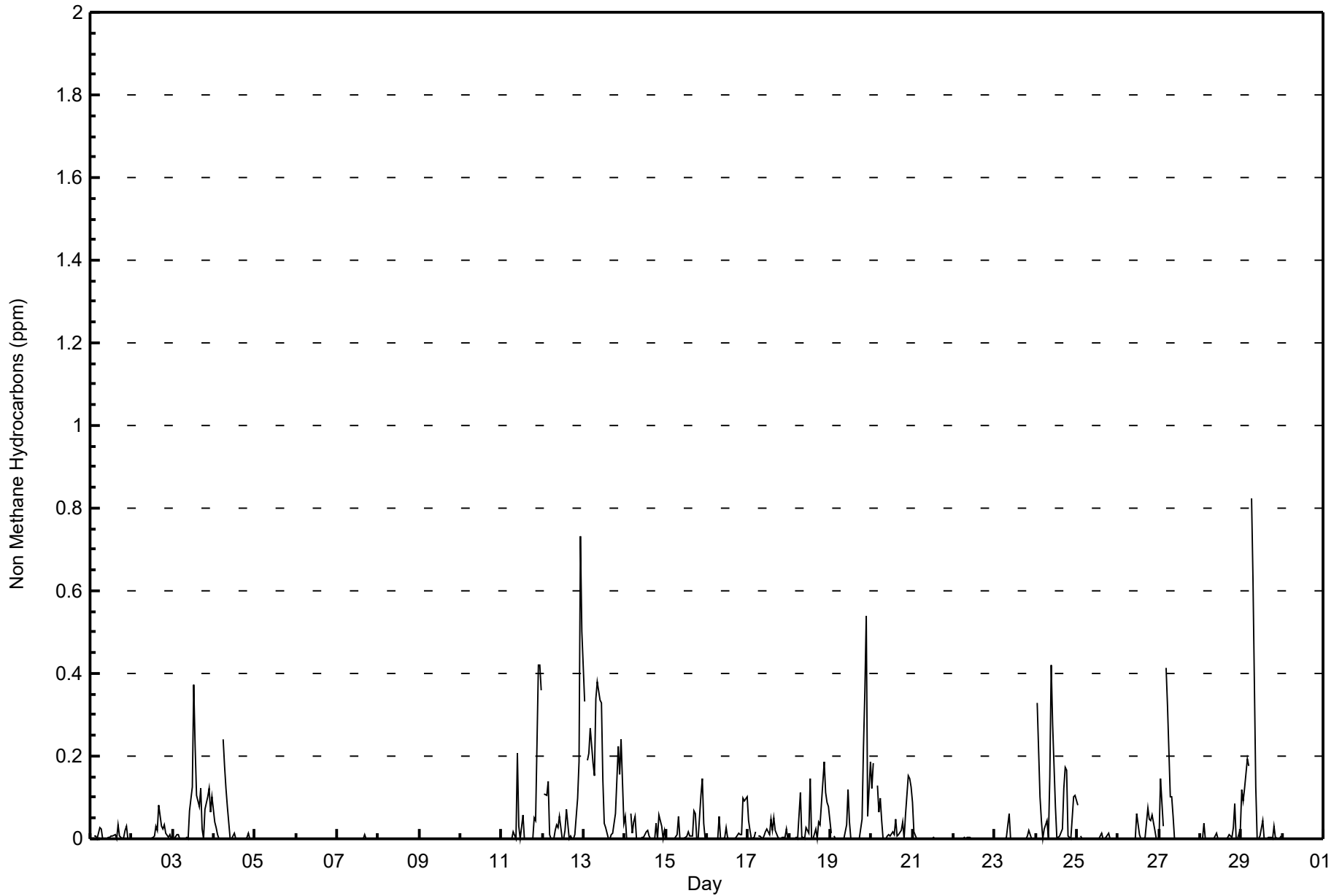




Summary of Hour Averages

Mannix - April 2023

Maximum Value: 0.823 ppm on Apr 29 07:00		Maximum Daily Average: 0.166 ppm on Apr 13		Hours in Service:	720																					
Minimum Value: 0.000 ppm on Apr 1 01:00		Minimum Daily Average: 0.000 ppm on Apr 5		Hours of Data:	686																					
Maximum Diurnal Average: 0.069 ppm at hour 22		Minimum Diurnal Average: 0.007 ppm at hour 16		Hours of Missing Data:	34																					
Monthly Average: 0.033 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.1 P ₉₉ = 0.4		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-Apr	0.000	Z	0.007	0.008	0.001	0.027	0.022	0.001	0.001	0.000	0.005	0.005	0.008	0.008	0.011	0.000	0.032	0.005	0.000	0.002	0.020	0.032	0.000	0.000	0.008	0.032
2-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.006	0.030	0.021	0.081	0.031	0.024	0.032	0.014	0.002	0.011	0.000	0.011	0.081
3-Apr	0.000	0.000	0.011	0.010	0.002	Z	0.000	0.000	0.002	0.000	0.069	0.126	0.372	0.224	0.105	0.078	0.122	0.024	0.000	0.073	0.103	0.124	0.065	0.102	0.070	0.372
4-Apr	0.040	0.026	0.011	0.000	Z	0.241	0.175	0.123	0.078	0.000	0.000	0.007	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.015	0.000	0.000	0.000	0.032	0.241
5-Apr	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
6-Apr	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	0.001	0.000	0.000	0.000	0.000	0.000	0.001
7-Apr	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
8-Apr	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
9-Apr	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
10-Apr	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
11-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.018	0.000	0.206	0.032	0.000	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.045	0.422	0.420	0.360	0.070	0.422
12-Apr	Z	0.109	0.106	0.138	0.010	0.000	0.000	0.019	0.035	0.027	0.054	0.000	0.000	0.019	0.071	0.001	0.007	0.001	0.000	0.010	0.099	0.187	0.734	0.503	0.093	0.734
13-Apr	0.333	Z	0.190	0.205	0.266	0.182	0.153	0.341	0.380	0.336	0.328	0.142	0.037	0.028	0.000	0.000	0.012	0.015	0.061	0.144	0.224	0.154	0.242	0.036	0.166	0.380
14-Apr	0.055	0.000	Z	0.062	0.014	0.041	0.056	0.001	0.001	0.000	0.002	0.004	0.018	0.019	0.005	0.000	0.000	0.001	0.036	0.000	0.059	0.029	0.000	0.019	0.018	0.062
15-Apr	0.000	0.000	0.000	Z	0.000	0.001	0.011	0.054	0.000	0.000	0.000	0.005	0.006	0.016	0.008	0.007	0.068	0.062	0.000	0.000	0.104	0.145	0.036	0.000	0.023	0.145
16-Apr	0.000	0.000	0.000	0.000	Z	0.002	0.000	0.054	0.000	0.001	0.003	0.029	0.002	0.000	0.002	0.001	0.000	0.004	0.015	0.011	0.011	0.098	0.091	0.101	0.018	0.101
17-Apr	0.045	0.019	0.001	0.003	0.018	Z	0.006	0.006	0.000	0.006	0.017	0.024	0.010	0.048	0.019	0.050	0.021	0.004	0.000	0.000	0.003	0.003	0.024	0.000	0.014	0.050
18-Apr	Z	0.000	0.000	0.000	0.002	0.000	0.113	0.004	0.004	0.000	0.026	0.014	0.146	0.001	0.000	0.023	0.001	0.041	0.034	0.084	0.185	0.112	0.087	0.080	0.042	0.185
19-Apr	0.012	Z	0.008	0.000	0.000	0.000	0.000	0.000	0.001	0.035	0.120	0.041	0.000	0.001	0.000	0.000	0.002	0.000	0.048	0.219	0.357	0.541	0.055	0.185	0.071	0.541
20-Apr	0.122	0.183	Z	0.128	0.065	0.098	0.043	0.000	0.000	0.006	0.009	0.008	0.017	0.009	0.047	0.006	0.010	0.019	0.042	0.000	0.057	0.152	0.146	0.126	0.056	0.183
21-Apr	0.089	0.017	0.001	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.089
22-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.004	0.000	0.002	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	0.004
23-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.003	0.062	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.019	0.000	0.000	0.000	0.004	0.062
24-Apr	Z	0.330	0.101	0.045	0.000	0.023	0.045	0.001	0.149	0.421	0.279	0.078	0.002	0.003	0.007	0.024	0.121	0.174	0.167	0.007	0.000	0.050	0.102	0.105	0.097	0.421
25-Apr	0.082	Z	0.007	0.000	0.000	0.000	0.000	0.000	0.000	C	C	C	C	0.000	0.000	0.013	0.000	0.001	0.005	0.012	0.000	0.000	0.000	0.000	0.006	0.082
26-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.062	0.011	0.000	0.000	0.000	0.005	0.074	0.047	0.045	0.057	0.019	0.000	0.000	0.014	0.074
27-Apr	0.002	0.145	0.029	Z	0.415	0.321	0.100	0.100	0.053	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.415
28-Apr	0.000	0.000	0.037	0.000	Z	0.000	0.000	0.000	0.000	0.014	0.000	0.001	0.000	0.000	0.001	0.000	0.005	0.011	0.003	0.028	0.086	0.000	0.000	0.024	0.009	0.086
29-Apr	0.118	0.093	0.123	0.192	0.178	Z	0.823	0.631	0.127	0.000	0.001	0.007	0.043	0.000	0.000	0.001	0.002	0.003	0.001	0.031	0.005	0.000	0.000	0.008	0.104	0.823
30-Apr	Z	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	0.000	0.000	0.001	0.000	0.000	0.001
																								Diurnal Average		
																								Diurnal Maximum		
0.036 0.037 0.025 0.030 0.039 0.039 0.052 0.045 0.031 0.036 0.033 0.019 0.025 0.013 0.011 0.007 0.017 0.016 0.016 0.025 0.049 0.069 0.067 0.055																								Diurnal Average		
0.333 0.330 0.190 0.205 0.415 0.321 0.823 0.631 0.380 0.421 0.328 0.142 0.372 0.224 0.105 0.078 0.122 0.174 0.167 0.219 0.357 0.541 0.734 0.503																								Diurnal Maximum		
Z - zerospan C - Calibration																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Mannix - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	449	65.45	65.45
0.006 - 0.05	129	18.80	84.26
0.06 - 0.1	66	9.62	93.88
> 0.1	42	6.12	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Mannix - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	14	1	0	2	17	34	141	105	23	10	18	36	18	15	8	7	449
0.006 - 0.05	11	6	4	4	14	31	34	6	1	0	0	3	2	4	7	2	129
0.06 - 0.1	2	11	2	5	4	8	12	2	2	2	2	1	3	3	2	5	66
> 0.1	1	3	10	2	1	3	0	1	0	0	0	3	5	4	2	7	42
Totals	28	21	16	13	36	76	187	114	26	12	20	43	28	26	19	21	686

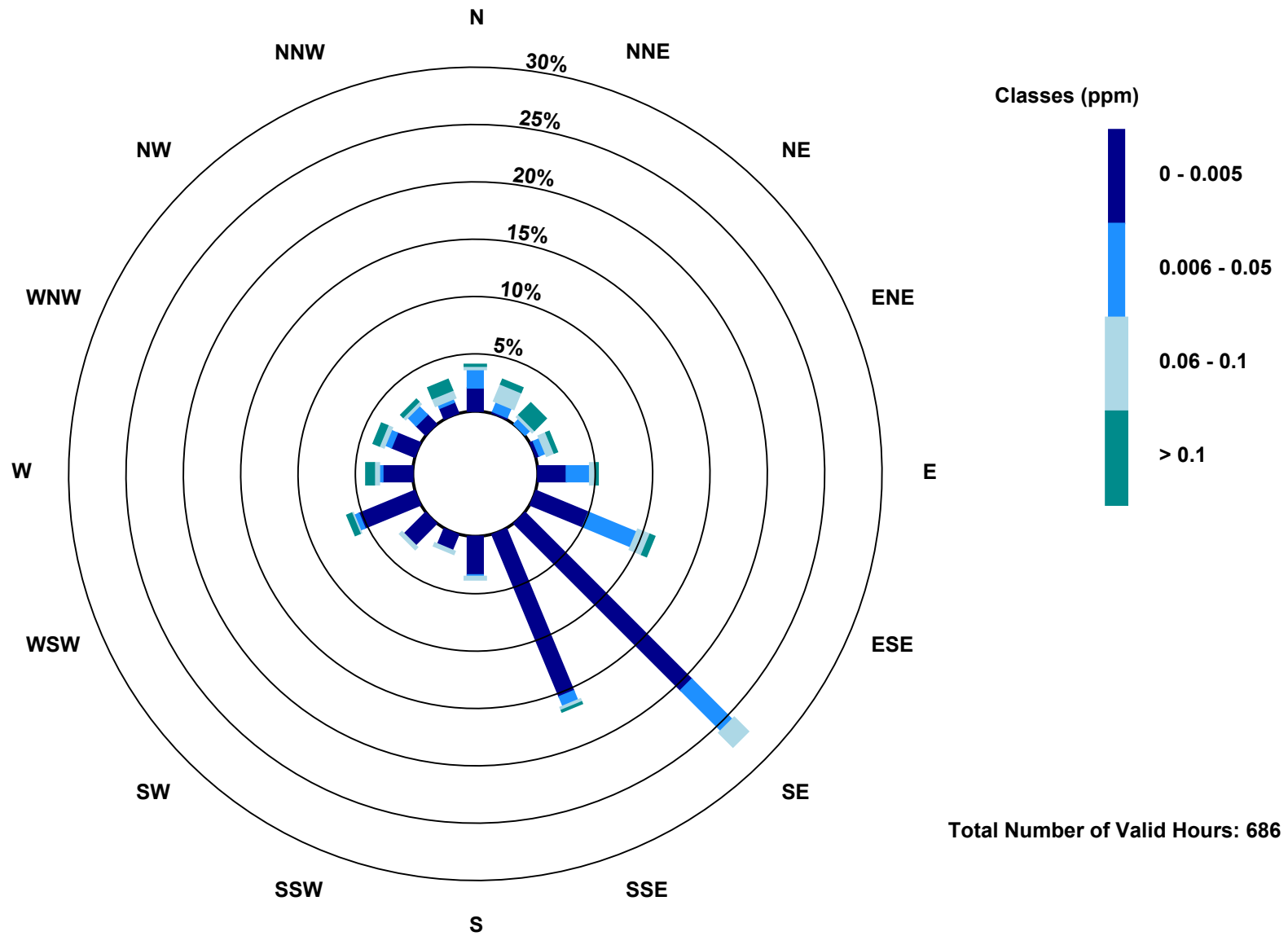
Total Number of Valid Hours: 686

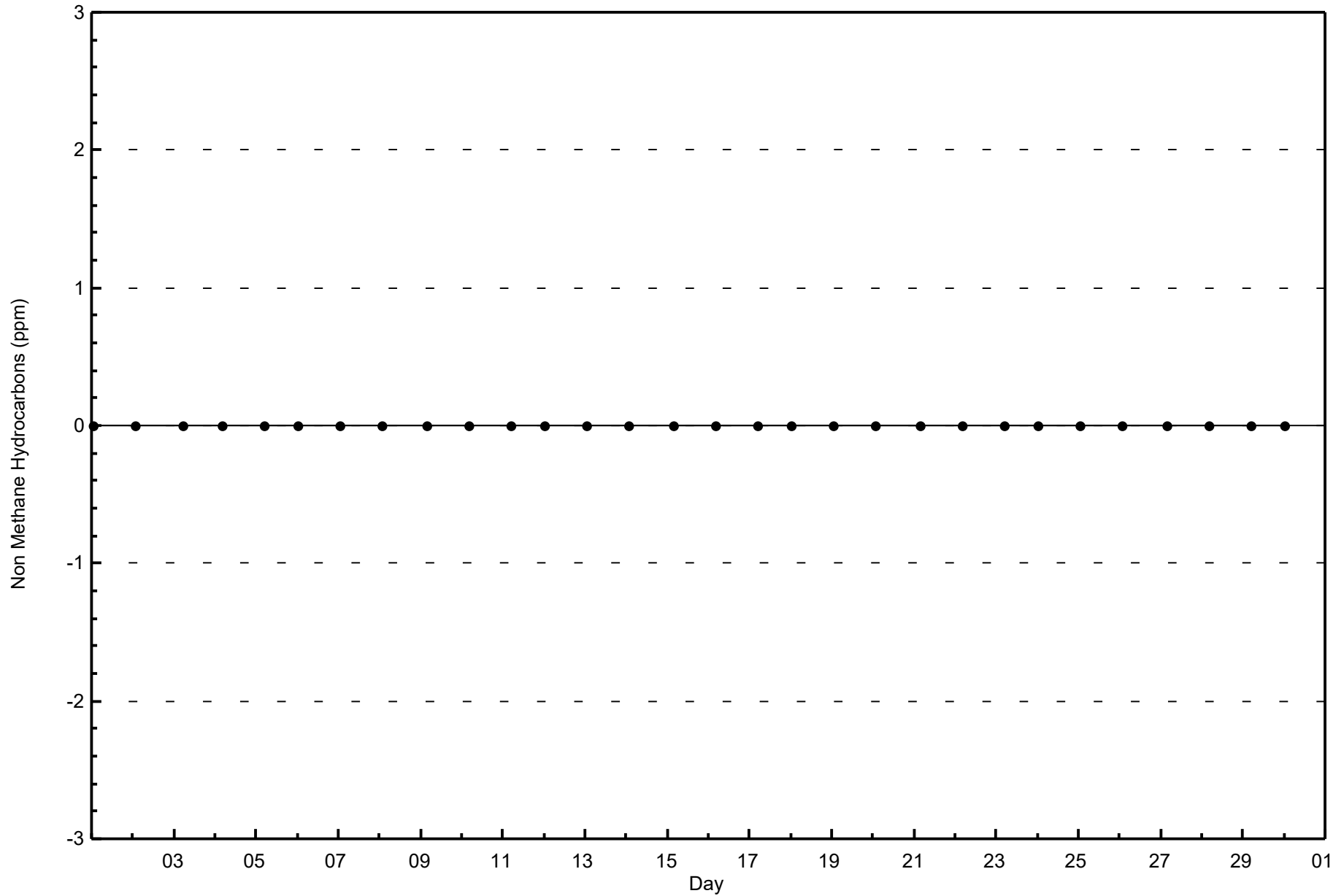
Total Number of Hours: 720

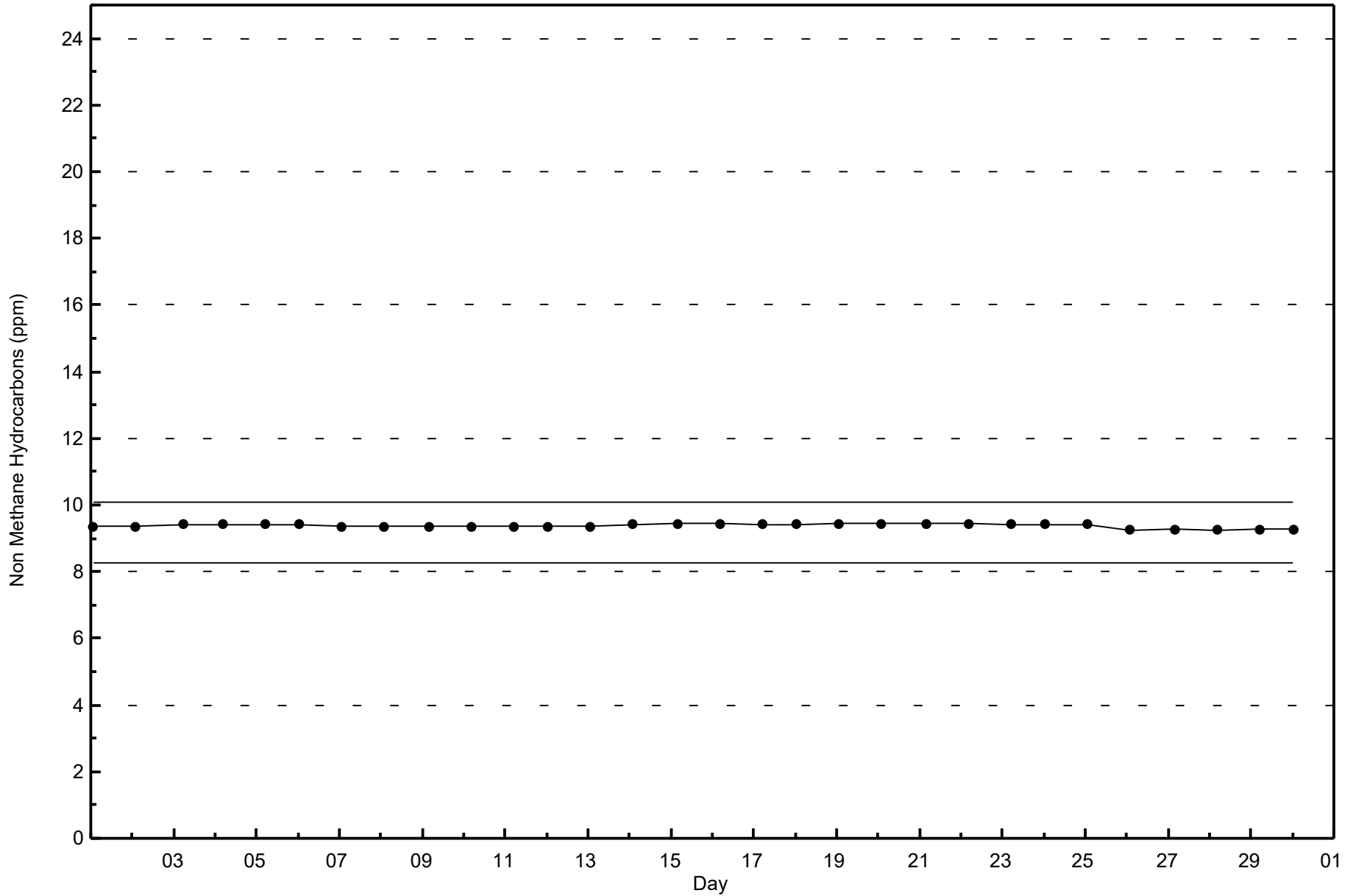


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Mannix









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

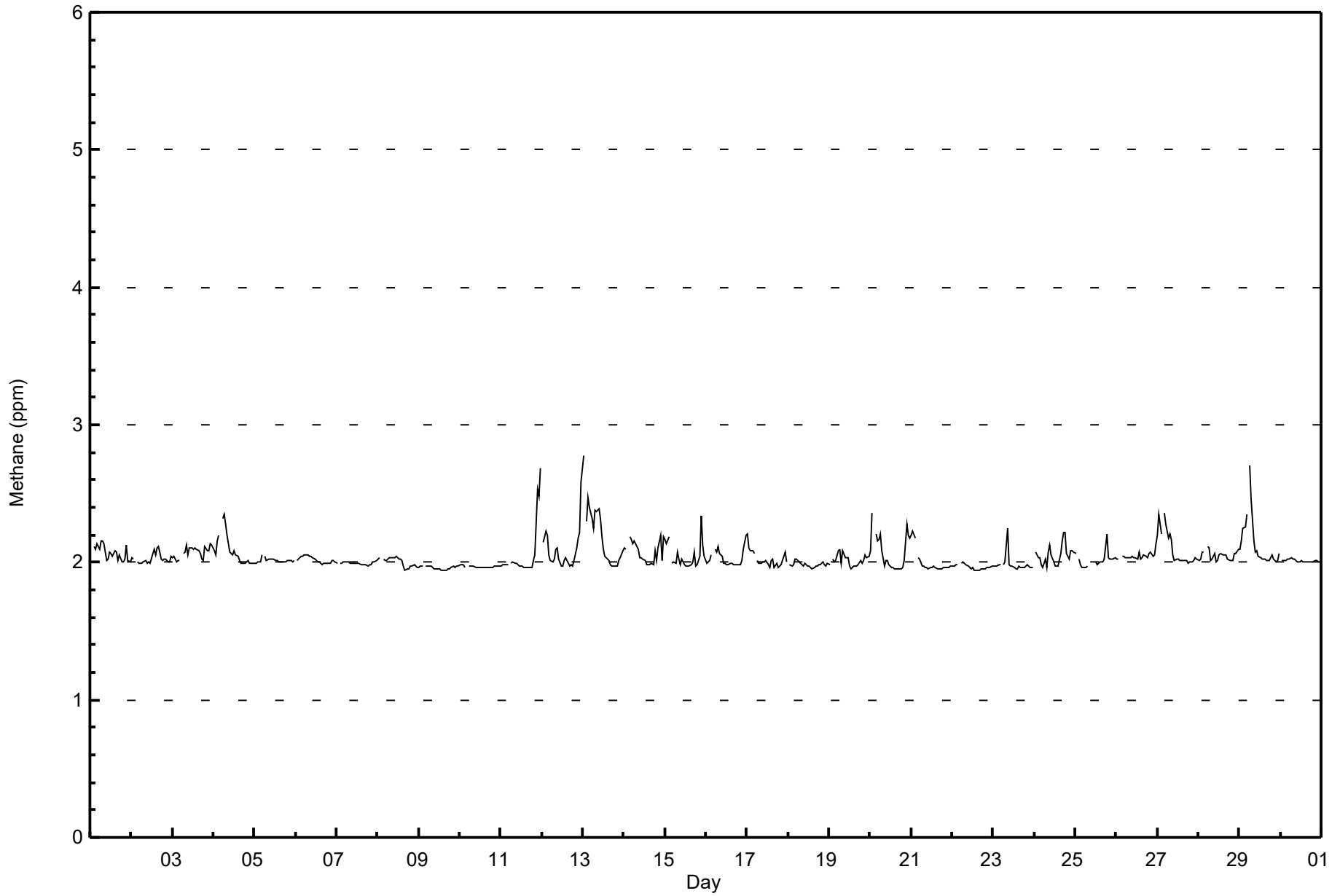
Mannix - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720																											
Maximum Value: 2.8 ppm on Apr 13 01:00		Maximum Daily Average: 2.2 ppm on Apr 13																	Hours of Data:	686																													
Minimum Value: 1.9 ppm on Apr 9 16:00		Minimum Daily Average: 2.0 ppm on Apr 9																	Hours of Missing Data:	34																													
Maximum Diurnal Average: 2.1 ppm at hour 24		Minimum Diurnal Average: 2.0 ppm at hour 17																	Hours of Calibration:	34																													
Monthly Average: 2.04 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.1 P ₉₉ = 2.5																	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-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.2	2.1	2.2																					
2-Apr	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	2.1	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																				
3-Apr	2.0	2.0	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	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1																				
4-Apr	2.1	2.1	2.2	2.2	Z	2.3	2.3	2.3	2.2	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	2.0	2.3																				
5-Apr	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	2.1																				
6-Apr	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1																				
7-Apr	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																				
8-Apr	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	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																				
9-Apr	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	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																				
10-Apr	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	2.0																				
11-Apr	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	2.1	2.5	2.5	2.7	2.1	2.2	2.7	2.7	2.7																				
12-Apr	Z	2.1	2.2	2.2	2.1	2.0	2.0	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	2.1	2.2	2.2	2.6	2.1	2.2	2.6	2.6	2.6																				
13-Apr	2.8	Z	2.3	2.5	2.4	2.3	2.2	2.4	2.4	2.4	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	2.1	2.2	2.2	2.1	2.2	2.8																				
14-Apr	2.1	2.1	Z	2.2	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	2.0	2.1	2.0	2.1	2.2	2.0	2.1	2.2	2.0	2.2	2.2																				
15-Apr	2.2	2.1	2.2	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	2.1	2.0	2.0	2.0	2.3	2.1	2.0	2.0	2.0	2.3	2.3																				
16-Apr	2.0	2.0	2.0	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	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.0	2.1	2.2	2.2																				
17-Apr	2.2	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	2.1	2.0	2.0	2.0	2.1	2.0	2.2																				
18-Apr	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																				
19-Apr	2.0	Z	2.0	2.0	2.0	2.1	2.1	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	2.0	2.0	2.0	2.0	2.1	2.0	2.1																				
20-Apr	2.1	2.4	Z	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	2.0	2.0	2.0	2.0	2.3	2.2	2.2	2.1	2.0	2.0	2.4	2.4																				
21-Apr	2.2	2.2	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	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																				
22-Apr	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	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																				
23-Apr	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	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	2.0	2.0	2.0	2.0	2.2																				
24-Apr	Z	2.1	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	2.2	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2																				
25-Apr	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2																				
26-Apr	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	2.1	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1																				
27-Apr	2.2	2.4	2.2	Z	2.4	2.3	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4																				
28-Apr	2.0	2.0	2.1	2.1	Z	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.1	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																				
29-Apr	2.1	2.2	2.2	2.3	2.3	Z	2.7	2.5	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.7	2.7																				
30-Apr	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																				
																								2.1	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	2.0	2.1	2.0	2.1	Diurnal Average		
																								2.8	2.4	2.3	2.5	2.4	2.3	2.7	2.5	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.5	2.5	2.7	Diurnal Maximum	
Z - zerospan																								C - Calibration																									



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Mannix - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Mannix - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	505	73.62	73.62
2.1 - 3.0	181	26.38	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Mannix - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	17	14	7	9	28	56	133	110	25	9	17	36	18	18	5	3	505
2.1 - 3.0	11	7	9	4	8	20	54	4	1	3	3	7	10	8	14	18	181
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
Totals	28	21	16	13	36	76	187	114	26	12	20	43	28	26	19	21	686

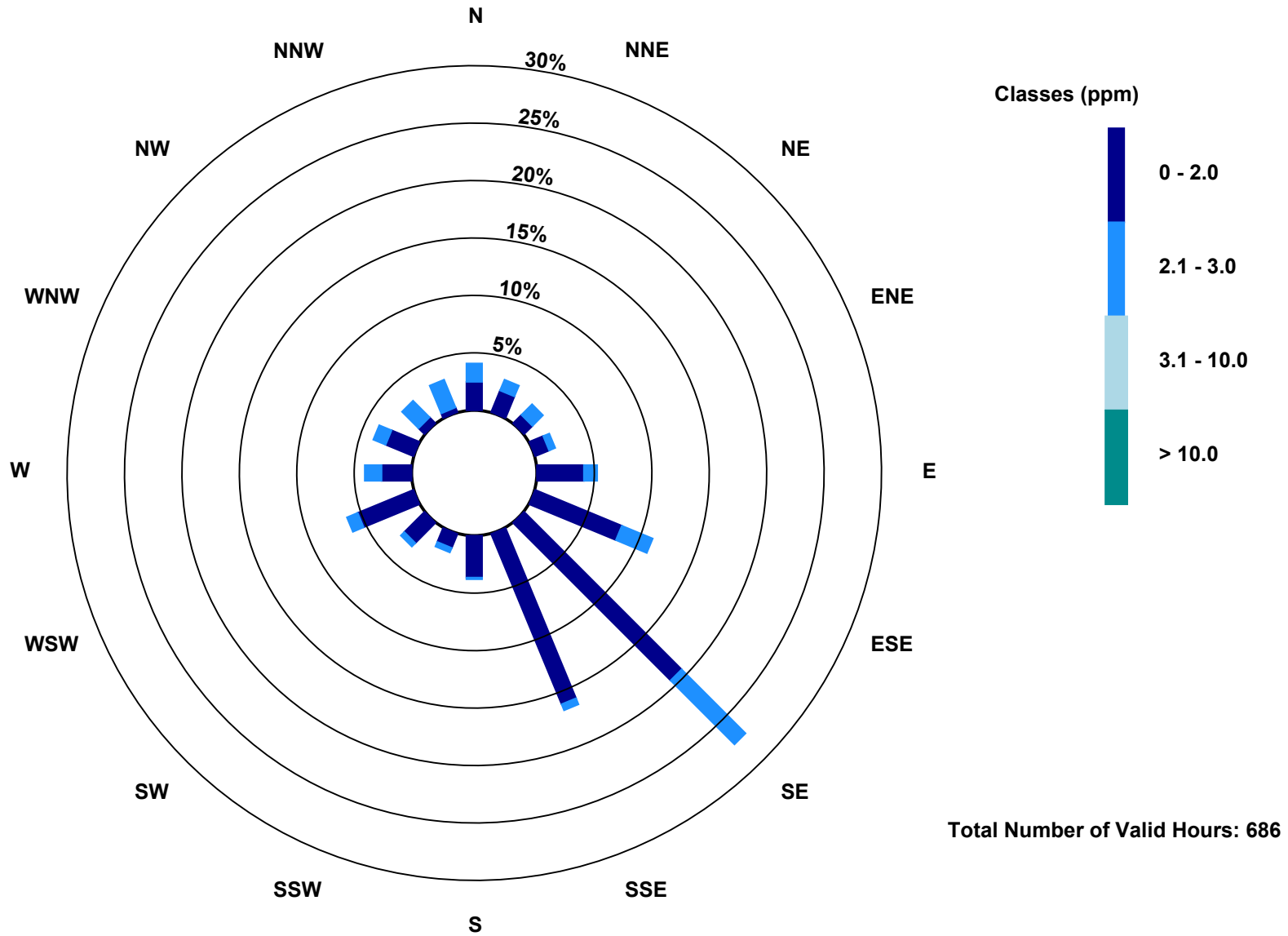
Total Number of Valid Hours: 686

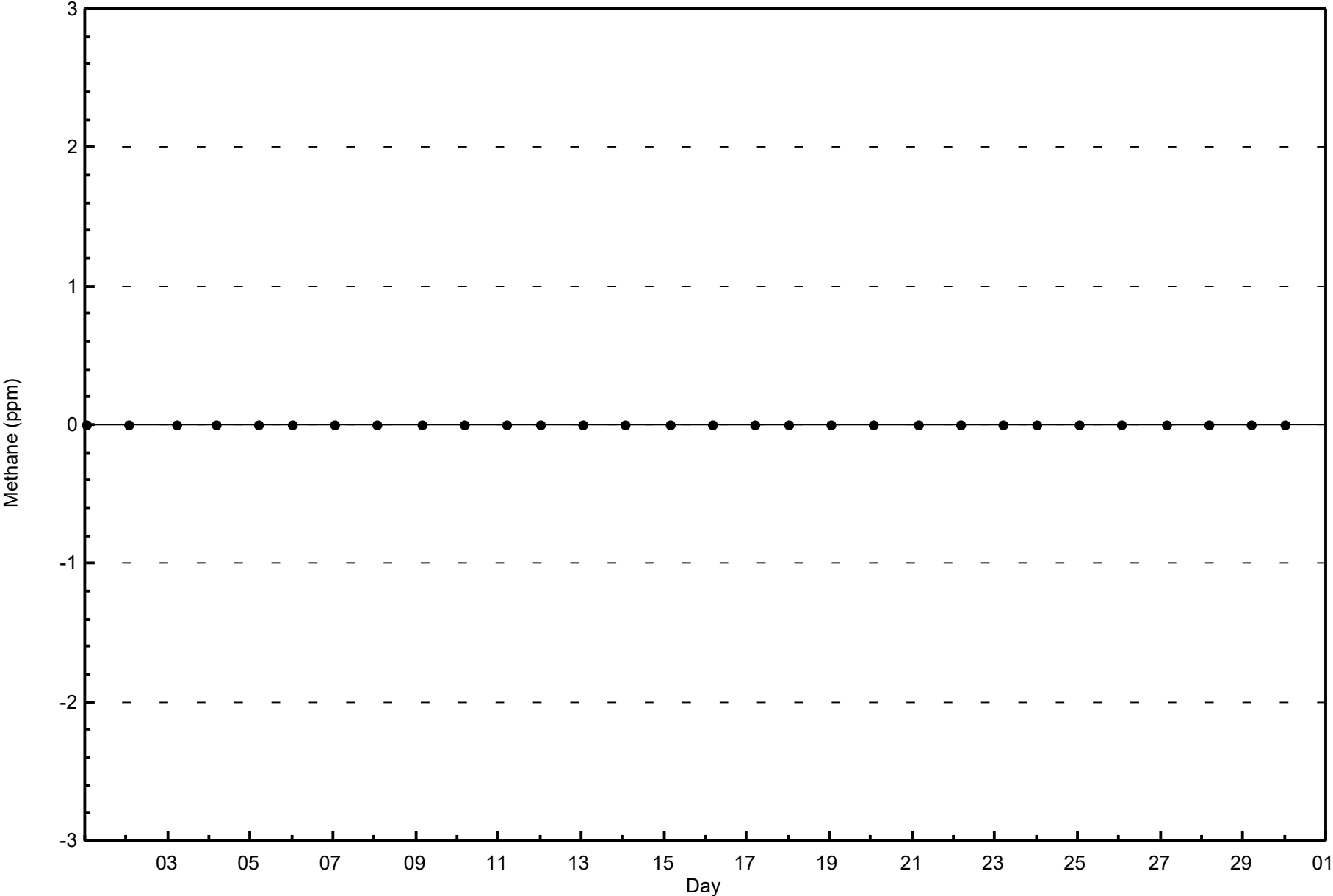
Total Number of Hours: 720

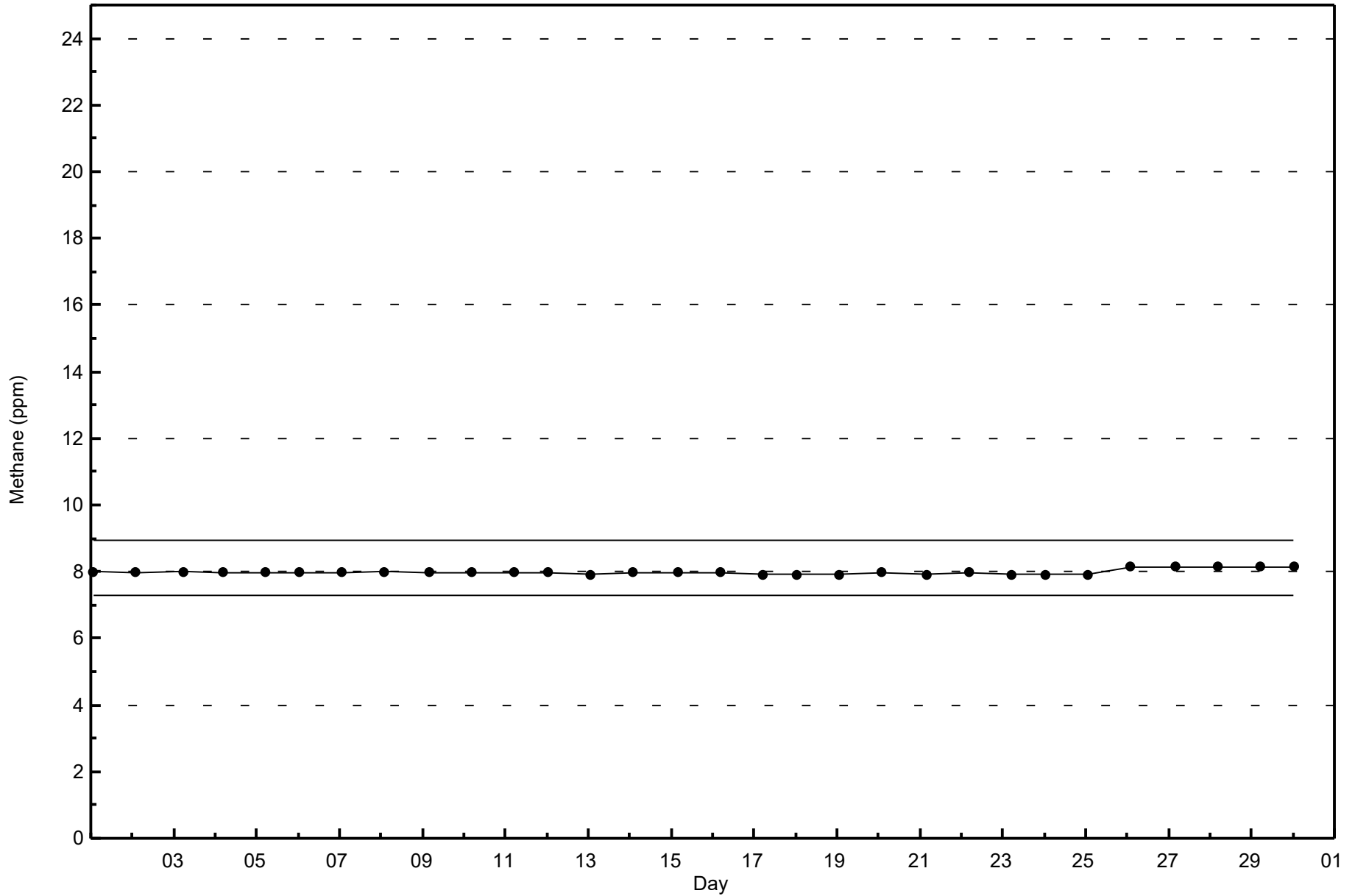


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Mannix

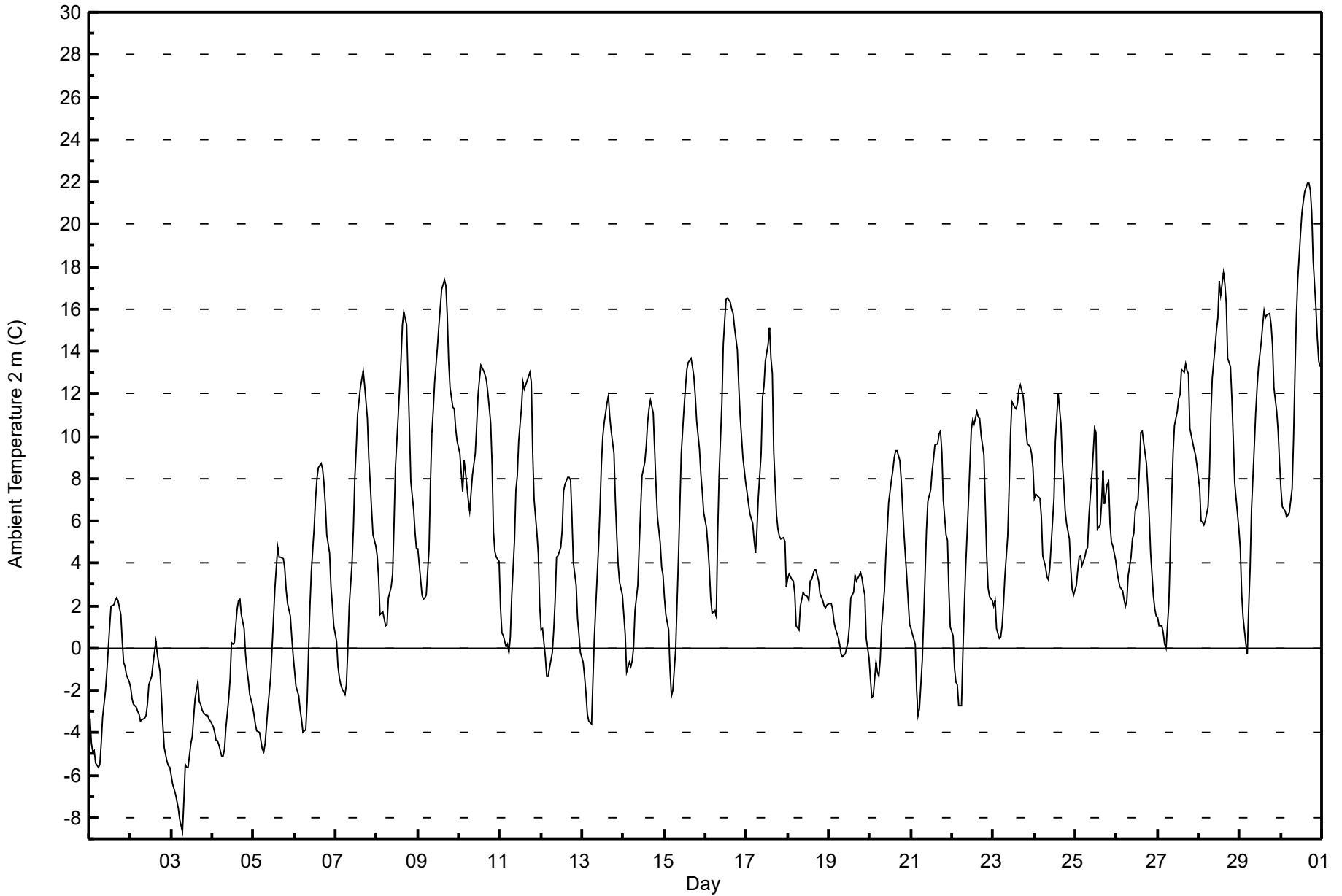








Maximum Value: 21.9 C on Apr 30 17:00		Maximum Daily Average: 14.5 C on Apr 30		Hours in Service: 720																						
Minimum Value: -8.7 C on Apr 3 07:00		Minimum Daily Average: -4.8 C on Apr 3		Hours of Data: 720																						
Maximum Diurnal Average: 10.2 C at hour 16		Minimum Diurnal Average: -0.1 C at hour 6		Hours of Missing Data: 0																						
Monthly Average: 5.06 C		Percentiles: P ₁ = -5.9 P ₁₀ = -2.7 Q ₁ = 0.7 Median = 4.5 Q ₃ = 9.3 P ₉₀ = 12.9 P ₉₉ = 19.3		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-Apr	-3.3	-4.5	-4.9	-4.8	-5.4	-5.6	-5.5	-4.5	-3.2	-2.0	-1.1	-0.1	1.0	2.0	2.0	2.2	2.3	2.3	1.5	0.3	-0.7	-0.8	-1.3	-1.6	-1.5	2.3
2-Apr	-1.9	-2.4	-2.6	-2.8	-3.0	-3.1	-3.4	-3.4	-3.3	-3.2	-2.6	-1.8	-1.3	-0.8	-0.2	0.3	-0.3	-1.1	-2.4	-3.6	-4.7	-5.3	-5.6	-5.6	-2.7	0.3
3-Apr	-6.0	-6.4	-6.9	-7.2	-7.5	-8.1	-8.7	-7.2	-5.5	-5.6	-5.6	-4.5	-4.1	-3.3	-2.4	-1.6	-2.5	-2.7	-2.9	-3.1	-3.2	-3.2	-3.4	-3.4	-4.8	-1.6
4-Apr	-3.7	-4.0	-4.4	-4.4	-4.6	-5.1	-5.1	-4.8	-3.8	-2.4	-1.5	0.3	0.2	0.3	1.8	2.3	2.3	1.6	0.9	-0.3	-1.0	-1.5	-2.2	-2.7	-1.7	2.3
5-Apr	-3.1	-3.6	-3.9	-4.0	-4.4	-4.8	-4.9	-4.5	-2.8	-2.1	-1.3	0.0	2.8	3.8	4.8	4.3	4.3	4.2	3.7	2.8	2.1	1.5	0.5	-0.4	-0.2	4.8
6-Apr	-1.1	-1.8	-2.2	-2.9	-3.4	-4.0	-3.9	-2.5	-0.2	2.0	3.6	5.6	7.1	8.0	8.5	8.7	8.5	7.8	6.7	5.3	4.5	2.9	2.0	1.0	2.5	8.7
7-Apr	0.3	-0.8	-1.4	-1.7	-1.9	-2.2	-1.7	-0.1	2.0	3.9	5.6	8.0	9.4	11.0	12.3	12.7	13.0	12.4	10.8	9.0	7.8	6.5	5.4	4.8	5.2	13.0
8-Apr	4.4	3.3	1.6	1.7	1.4	1.1	1.1	2.3	2.9	3.5	5.8	8.5	11.0	12.3	13.6	15.2	15.9	15.3	12.8	10.4	7.8	6.5	5.4	4.7	7.0	15.9
9-Apr	4.7	4.0	2.5	2.3	2.4	2.5	4.7	7.8	10.1	11.2	12.5	14.2	15.2	16.0	16.9	17.4	17.1	15.7	13.6	12.3	11.3	11.3	10.4	9.8	10.2	17.4
10-Apr	9.2	8.3	7.4	8.9	8.3	7.0	6.5	7.3	8.2	9.2	10.5	12.0	12.7	13.4	13.1	12.9	12.6	12.0	10.6	8.7	5.5	4.5	4.3	4.1	9.0	13.4
11-Apr	1.9	0.7	0.6	0.0	0.2	-0.2	0.5	2.4	5.0	7.4	8.1	9.8	11.4	12.6	12.2	12.4	12.6	13.0	12.6	9.2	7.0	5.4	4.4	2.0	6.3	13.0
12-Apr	0.8	0.9	-0.4	-1.3	-1.4	-1.0	-0.2	0.9	2.2	4.3	4.4	4.7	5.6	7.4	7.7	8.0	8.1	7.9	6.2	4.0	3.0	1.4	0.6	-0.2	3.1	8.1
13-Apr	-0.7	-1.3	-2.1	-3.1	-3.4	-3.6	-1.4	0.5	2.0	4.8	6.6	8.7	10.0	10.6	11.6	11.9	10.9	10.2	9.2	6.9	5.3	3.9	3.1	2.5	4.3	11.9
14-Apr	1.6	0.6	-1.1	-0.7	-0.9	-0.6	0.0	1.7	3.0	4.8	6.5	8.1	8.8	9.5	10.6	11.3	11.7	11.1	9.4	7.6	6.2	5.0	3.8	3.4	5.1	11.7
15-Apr	2.3	1.6	0.8	-1.0	-2.2	-2.0	-0.1	2.1	4.3	6.6	9.2	11.3	12.3	13.1	13.4	13.7	13.3	12.8	11.9	10.7	9.4	8.2	7.4	6.4	6.9	13.7
16-Apr	5.7	4.8	3.8	2.4	1.6	1.8	1.5	5.4	8.1	11.6	14.3	15.5	16.4	16.5	16.3	16.0	15.8	15.1	14.0	12.4	11.0	10.0	9.0	7.8	9.9	16.5
17-Apr	7.3	6.8	6.4	5.8	5.1	4.5	5.5	7.1	9.2	11.9	12.3	13.5	14.3	15.1	13.6	12.9	9.3	6.3	5.6	5.3	5.1	5.2	5.0	2.9	8.2	15.1
18-Apr	3.3	3.5	3.2	3.2	2.5	1.0	0.8	2.0	2.3	2.6	2.5	2.5	2.3	3.1	3.3	3.7	3.7	3.4	3.2	2.6	2.2	2.0	1.9	2.0	2.6	3.7
19-Apr	2.1	2.1	1.8	1.2	0.9	0.5	0.2	-0.3	-0.4	-0.3	0.0	0.3	1.0	2.4	2.7	3.4	3.1	3.3	3.5	3.3	2.8	2.5	0.5	-0.5	1.5	3.5
20-Apr	-1.5	-2.3	-2.3	-0.6	-1.2	-1.4	-0.5	1.0	2.7	4.3	5.6	6.9	7.9	8.4	9.0	9.3	9.3	8.8	7.9	6.6	5.3	3.3	2.2	1.1	3.7	9.3
21-Apr	0.9	0.6	0.2	-2.0	-3.2	-2.9	-0.6	1.4	3.4	5.5	6.9	7.5	8.3	8.9	9.6	9.6	10.1	10.2	9.2	7.0	5.3	5.1	2.7	1.0	4.4	10.2
22-Apr	0.6	-0.9	-1.6	-1.7	-2.7	-2.7	-0.2	1.9	3.9	6.9	8.6	10.3	10.8	10.6	11.2	10.9	10.8	10.0	9.1	6.8	4.4	2.8	2.5	2.2	4.8	11.2
23-Apr	2.0	2.2	0.9	0.4	0.5	1.1	2.1	3.5	5.3	7.5	10.1	11.6	11.4	11.3	11.5	12.3	12.4	11.9	11.2	10.4	9.7	9.5	9.2	8.5	7.3	12.4
24-Apr	7.1	7.2	7.1	7.0	6.2	4.4	3.8	3.4	3.3	3.8	4.9	7.1	9.8	10.9	12.0	10.6	8.8	7.7	6.5	5.9	5.1	3.8	2.7	2.5	6.3	12.0
25-Apr	3.0	3.7	4.3	4.3	3.9	4.3	4.6	4.7	6.3	8.1	9.2	10.4	10.2	5.6	5.8	6.9	8.4	6.8	7.7	7.9	5.9	5.0	4.8	4.1	6.1	10.4
26-Apr	3.7	3.2	2.9	2.7	2.3	2.0	2.2	3.5	4.3	5.1	5.4	6.5	7.0	8.5	10.2	10.3	9.7	8.7	7.6	6.2	4.5	2.5	1.9	1.5	5.1	10.3
27-Apr	1.4	1.0	1.0	0.7	0.2	0.0	2.1	4.6	7.0	9.1	10.5	11.2	11.7	12.0	13.2	13.0	13.4	13.1	12.9	10.4	9.7	9.4	9.1	8.7	7.7	13.4
28-Apr	7.5	6.0	5.9	5.8	6.0	6.7	8.3	11.0	12.8	14.2	15.0	15.6	17.3	16.6	17.7	17.2	16.3	13.7	13.3	11.8	9.8	7.8	7.0	5.6	11.2	17.7
29-Apr	4.7	2.6	1.4	0.2	-0.3	1.9	3.8	6.5	9.5	11.1	12.3	13.3	14.5	15.3	15.9	15.6	15.8	15.8	15.3	14.3	12.3	11.1	10.2	8.8	9.7	15.9
30-Apr	7.6	6.6	6.5	6.2	6.3	6.4	7.5	9.8	12.9	15.6	17.4	19.5	20.6	21.1	21.5	21.9	21.9	21.6	20.5	18.3	16.0	14.6	13.5	13.3	14.5	21.9
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2 m (AT2m) - C
Mannix - April 2023**

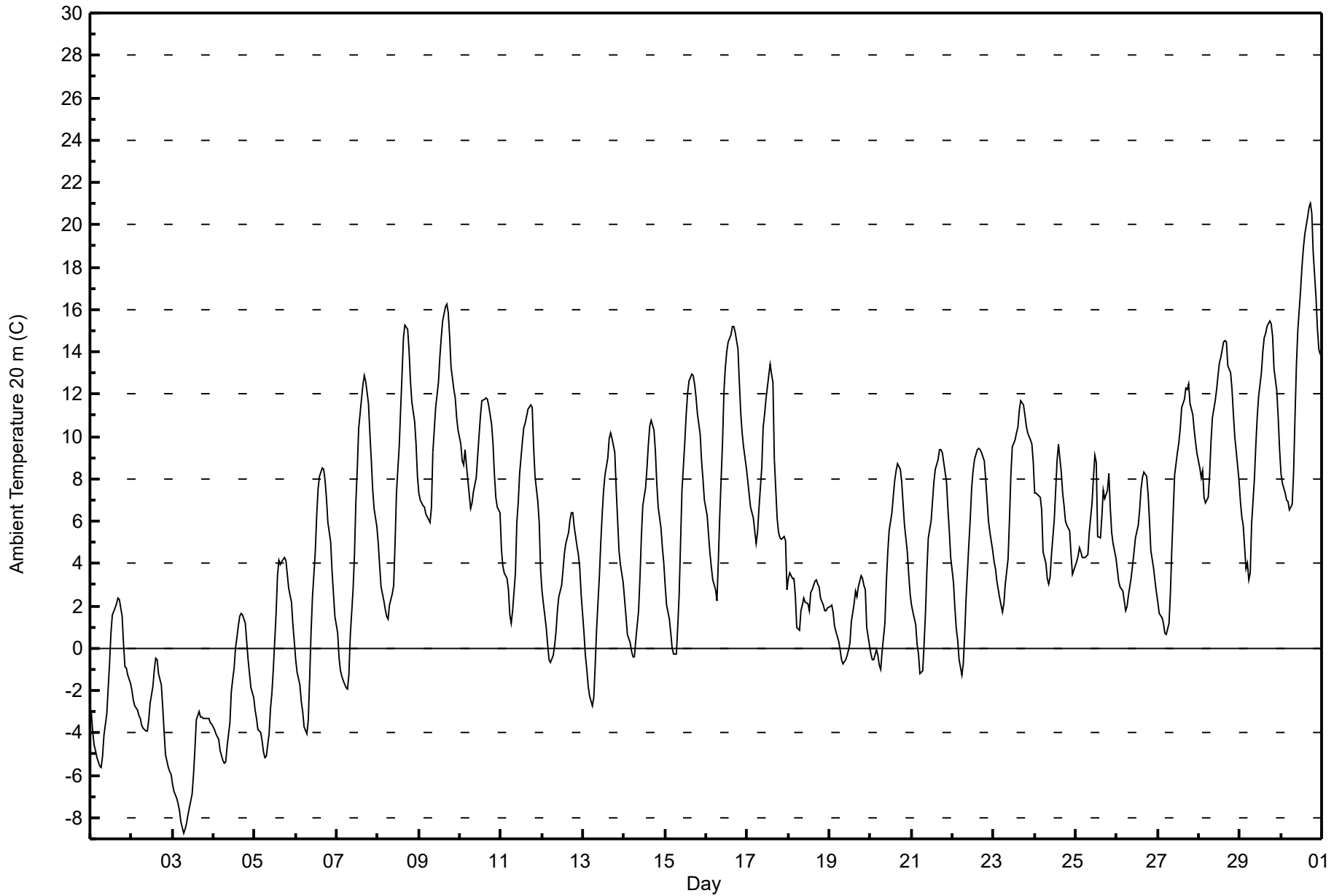
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	153	21.25	21.25
0 - 10	406	56.39	77.64
10 - 20	154	21.39	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 21.0 C on Apr 30 18:00		Maximum Daily Average: 13.9 C on Apr 30		Hours in Service: 720																						
Minimum Value: -8.8 C on Apr 3 07:00		Minimum Daily Average: -5.6 C on Apr 3		Hours of Data: 720																						
Maximum Diurnal Average: 9.1 C at hour 17		Minimum Diurnal Average: 0.5 C at hour 7		Hours of Missing Data: 0																						
Monthly Average: 4.93 C		Percentiles: P ₁ = -7.3 P ₁₀ = -2.7 Q ₁ = 1.1 Median = 4.8 Q ₃ = 8.9 P ₉₀ = 12.2 P ₉₉ = 17.8		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-Apr	-3.1	-4.0	-4.6	-4.8	-5.2	-5.6	-5.6	-5.1	-4.1	-3.1	-1.9	-0.7	0.7	1.6	1.9	2.1	2.3	2.3	1.5	0.2	-0.8	-0.9	-1.3	-1.7	-1.7	2.3
2-Apr	-2.0	-2.5	-2.7	-2.9	-3.2	-3.3	-3.6	-3.8	-3.9	-3.9	-3.4	-2.6	-1.8	-1.0	-0.5	-0.5	-1.2	-1.7	-2.8	-4.0	-5.0	-5.7	-5.8	-6.0	-3.1	-0.5
3-Apr	-6.4	-6.8	-7.1	-7.4	-7.7	-8.2	-8.8	-8.5	-8.2	-7.9	-7.5	-6.9	-5.9	-4.7	-3.4	-3.0	-3.3	-3.2	-3.3	-3.3	-3.3	-3.3	-3.5	-3.6	-5.6	-3.0
4-Apr	-3.9	-4.0	-4.2	-4.3	-4.8	-5.3	-5.4	-5.4	-4.6	-3.5	-2.0	-1.5	-1.0	0.0	1.0	1.5	1.7	1.5	1.2	0.3	-0.6	-1.2	-1.9	-2.3	-2.0	1.7
5-Apr	-2.9	-3.3	-3.9	-4.0	-4.4	-4.9	-5.2	-5.1	-4.0	-2.9	-2.1	-1.0	1.6	3.4	4.1	4.0	4.1	4.3	4.1	3.5	2.8	2.1	1.1	0.3	-0.3	4.3
6-Apr	-0.5	-1.2	-1.7	-2.5	-3.0	-3.7	-4.0	-3.4	-1.4	0.8	2.5	4.5	6.2	7.5	8.1	8.5	8.4	8.0	7.1	6.0	5.0	3.6	2.6	1.5	2.5	8.5
7-Apr	0.7	-0.5	-1.0	-1.3	-1.5	-1.8	-1.9	-1.3	0.6	2.7	4.4	6.9	8.5	10.4	11.7	12.4	12.9	12.6	11.5	10.2	8.9	7.5	6.6	5.7	5.2	12.9
8-Apr	5.0	3.9	2.9	2.3	1.8	1.5	1.4	2.1	2.5	2.9	5.0	7.3	9.6	11.3	12.9	14.7	15.3	15.1	14.0	12.6	11.6	10.7	9.6	8.1	7.7	15.3
9-Apr	7.3	7.0	6.7	6.6	6.3	6.2	5.9	6.7	9.2	10.3	11.3	12.5	13.7	14.7	15.5	16.1	16.3	15.8	14.8	13.3	12.2	11.8	10.9	10.3	10.9	16.3
10-Apr	9.7	8.8	8.6	9.4	8.7	7.3	6.6	6.9	7.4	8.1	9.1	10.0	11.0	11.7	11.8	11.8	11.7	11.4	10.6	9.6	8.2	7.1	6.7	6.4	9.1	11.8
11-Apr	4.7	3.9	3.6	3.3	2.8	1.6	1.2	1.8	3.5	6.0	6.8	8.3	9.8	10.4	10.6	10.9	11.3	11.5	11.4	9.5	8.2	6.9	6.0	3.7	6.6	11.5
12-Apr	2.7	2.1	1.0	0.2	-0.5	-0.6	-0.4	0.1	0.8	1.8	2.4	3.0	3.7	4.5	4.9	5.5	6.0	6.4	6.4	5.7	4.8	4.4	3.8	2.5	3.0	6.4
13-Apr	0.7	-0.4	-1.0	-1.8	-2.2	-2.7	-2.3	-0.8	0.9	3.4	5.0	6.3	7.4	8.2	9.0	9.9	10.2	9.9	9.2	7.5	6.1	4.6	3.9	3.1	3.9	10.2
14-Apr	2.3	1.5	0.6	0.3	-0.1	-0.4	-0.4	0.4	1.8	3.3	5.3	6.7	7.6	8.5	9.7	10.5	10.8	10.3	9.3	7.8	6.6	5.7	4.8	4.0	4.9	10.8
15-Apr	3.0	2.0	1.4	0.7	0.0	-0.3	-0.2	1.0	2.5	5.0	7.5	9.7	11.0	12.0	12.6	13.0	12.9	12.5	11.9	11.1	10.1	8.9	8.0	7.0	6.8	13.0
16-Apr	6.3	5.4	4.5	3.8	3.2	2.8	2.3	4.2	6.3	9.8	12.2	13.2	14.0	14.5	14.8	15.2	15.2	14.9	14.1	12.6	11.1	10.2	9.5	8.5	9.5	15.2
17-Apr	7.9	7.3	6.7	6.2	5.5	5.0	5.5	6.6	8.5	10.4	11.1	11.8	12.9	13.4	12.9	12.5	8.9	6.1	5.5	5.2	5.1	5.3	5.1	2.8	7.8	13.4
18-Apr	3.3	3.5	3.3	3.3	2.5	1.0	0.9	1.8	2.0	2.3	2.2	2.1	1.8	2.6	2.7	3.1	3.2	3.0	2.9	2.4	2.0	1.8	1.8	1.9	2.4	3.5
19-Apr	2.0	2.0	1.7	1.0	0.8	0.3	-0.1	-0.5	-0.7	-0.6	-0.3	-0.1	0.3	1.3	2.1	2.7	2.4	2.9	3.4	3.3	2.9	2.8	1.0	0.1	1.3	3.4
20-Apr	-0.3	-0.6	-0.5	-0.1	-0.3	-0.8	-1.0	-0.2	1.2	3.1	4.5	5.5	6.4	7.2	8.0	8.4	8.7	8.5	7.9	6.8	5.8	4.5	3.5	2.6	3.7	8.7
21-Apr	2.1	1.7	1.1	0.2	-0.3	-1.2	-1.1	0.2	1.7	3.7	5.2	6.0	6.9	7.8	8.4	8.9	9.3	9.4	9.2	8.8	7.9	6.6	5.6	4.3	4.7	9.4
22-Apr	3.1	1.9	0.9	0.4	-0.6	-1.3	-0.7	0.6	2.3	4.9	6.2	7.6	8.4	8.9	9.4	9.4	9.4	9.3	8.9	8.0	7.0	6.0	5.5	4.6	5.0	9.4
23-Apr	4.1	3.8	3.1	2.3	2.0	1.7	2.1	3.0	4.2	6.1	8.2	9.5	9.8	10.2	10.4	11.2	11.7	11.5	11.0	10.5	10.1	9.9	9.6	8.8	7.3	11.7
24-Apr	7.3	7.3	7.2	7.1	6.5	4.6	4.0	3.3	3.0	3.4	4.4	6.1	7.5	8.8	9.6	8.3	7.4	6.7	6.0	5.8	5.6	4.4	3.5	3.7	5.9	9.6
25-Apr	4.1	4.4	4.8	4.6	4.3	4.3	4.4	4.4	5.4	6.9	8.1	9.1	8.8	5.3	5.2	6.2	7.5	7.0	7.5	8.2	6.7	5.5	4.9	4.3	5.9	9.1
26-Apr	3.7	3.2	2.9	2.7	2.2	1.8	2.0	2.5	3.4	3.9	4.5	5.2	5.8	6.6	7.5	8.1	8.3	8.1	7.3	6.1	4.6	3.8	3.2	2.6	4.6	8.3
27-Apr	2.1	1.7	1.5	1.1	0.7	0.7	1.2	2.7	4.7	6.5	8.2	9.3	9.7	10.4	11.3	11.8	12.3	12.2	12.5	11.6	11.0	10.3	9.7	9.2	7.2	12.5
28-Apr	8.5	8.1	8.4	7.1	6.8	7.1	8.2	9.8	10.9	11.7	12.2	12.8	13.5	13.7	14.4	14.5	14.5	13.4	13.0	12.2	11.0	10.0	9.3	7.9	10.8	14.5
29-Apr	7.0	6.2	5.8	3.8	4.0	3.2	3.6	5.8	8.0	9.6	10.9	11.9	13.0	14.0	14.6	14.8	15.2	15.5	15.3	14.7	13.2	12.1	10.9	9.4	10.1	15.5
30-Apr	8.3	7.8	7.3	7.0	6.9	6.5	6.8	8.3	10.9	13.4	15.0	16.9	18.1	18.9	19.5	20.3	20.8	21.0	20.5	18.7	16.6	15.1	14.1	13.9	13.9	21.0
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 20 m (AT20m) - C
Mannix - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	144	20.00	20.00
0 - 10	440	61.11	81.11
10 - 20	132	18.33	99.44
> 20	4	0.56	100.00

Total Number of Valid Hours: 720

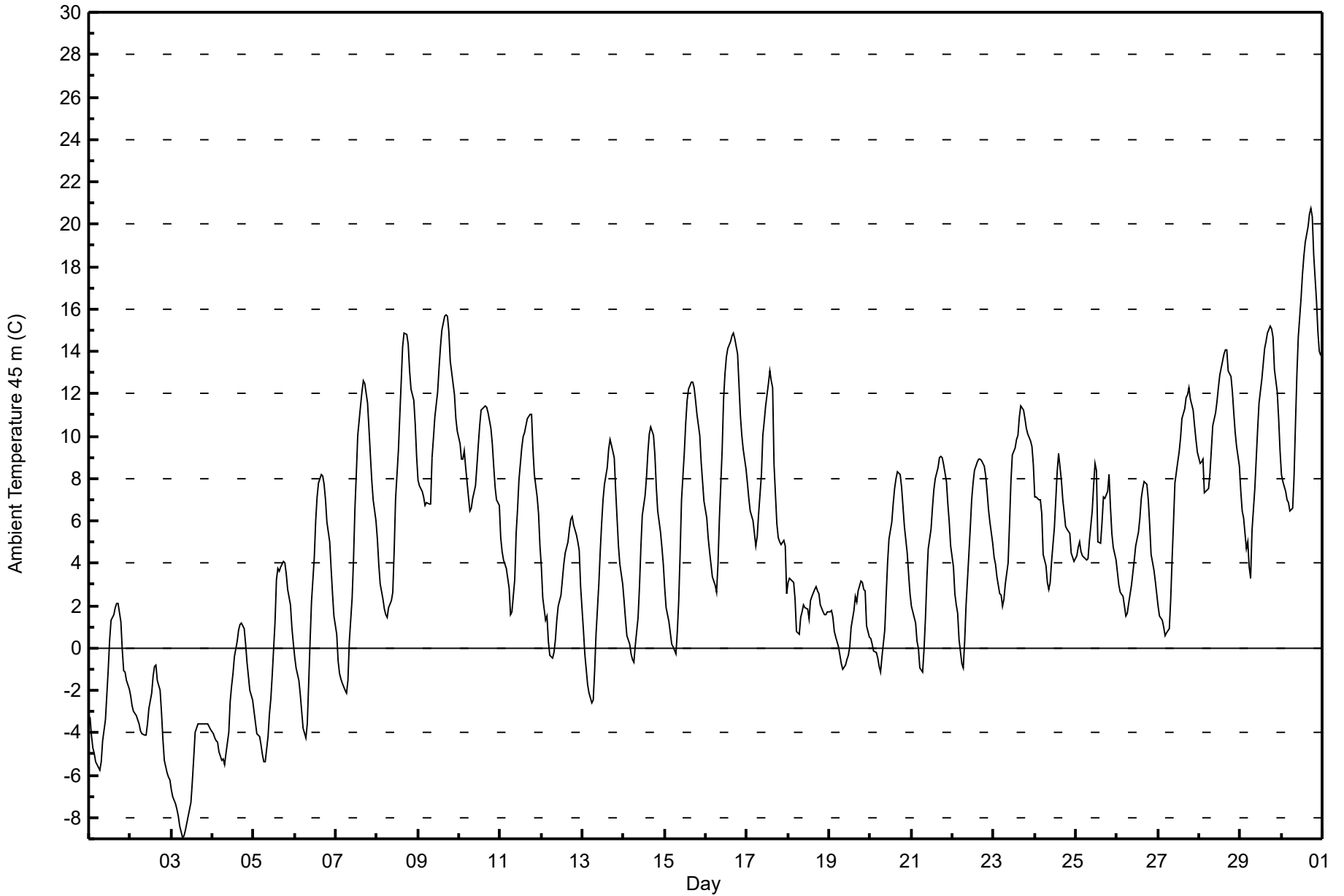
Total Number of Hours: 720



Summary of Hour Averages

Mannix - April 2023

Maximum Value: 20.7 C on Apr 30 18:00		Maximum Daily Average: 13.6 C on Apr 30		Hours in Service: 720																																												
Minimum Value: -8.9 C on Apr 3 07:00		Minimum Daily Average: -6.0 C on Apr 3		Hours of Data: 720																																												
Maximum Diurnal Average: 8.8 C at hour 17		Minimum Diurnal Average: 0.4 C at hour 7		Hours of Missing Data: 0																																												
Monthly Average: 4.78 C		Percentiles: P ₁ = -7.6 P ₁₀ = -3.0 Q ₁ = 1.0 Median = 4.7 Q ₃ = 8.7 P ₉₀ = 12.0 P ₉₉ = 17.4		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-Apr	-3.2	-4.1	-4.7	-5.0	-5.3	-5.6	-5.7	-5.3	-4.3	-3.4	-2.2	-1.0	0.4	1.3	1.6	1.9	2.1	2.1	1.3	-0.1	-1.1	-1.1	-1.5	-1.9	-1.9	2.1																						
2-Apr	-2.2	-2.7	-3.0	-3.2	-3.4	-3.6	-3.9	-4.0	-4.1	-4.1	-3.6	-2.8	-2.1	-1.3	-0.9	-0.8	-1.5	-2.0	-3.1	-4.3	-5.3	-5.9	-6.1	-6.2	-3.3	-0.8																						
3-Apr	-6.7	-7.0	-7.3	-7.6	-7.9	-8.4	-8.9	-8.9	-8.6	-8.3	-7.9	-7.3	-6.3	-5.1	-3.9	-3.6	-3.6	-3.6	-3.6	-3.5	-3.6	-3.6	-3.7	-3.8	-6.0	-3.5																						
4-Apr	-4.1	-4.3	-4.4	-4.4	-4.9	-5.3	-5.2	-5.5	-5.0	-4.0	-2.5	-1.8	-1.2	-0.4	0.3	0.9	1.1	1.2	0.9	0.2	-0.6	-1.3	-2.0	-2.5	-2.3	1.2																						
5-Apr	-3.0	-3.5	-4.0	-4.2	-4.5	-5.0	-5.4	-5.4	-4.2	-3.1	-2.4	-1.3	1.3	3.2	3.7	3.7	3.8	4.1	4.0	3.5	2.8	2.0	1.0	0.3	-0.5	4.1																						
6-Apr	-0.4	-0.9	-1.5	-2.2	-3.0	-3.8	-4.2	-3.6	-1.7	0.3	2.2	4.3	6.0	7.2	7.8	8.2	8.1	7.7	7.0	6.0	5.0	3.8	2.6	1.5	2.3	8.2																						
7-Apr	0.6	-0.6	-1.2	-1.5	-1.7	-2.0	-2.1	-1.5	0.3	2.4	4.2	6.6	8.3	10.0	11.4	12.1	12.6	12.5	11.5	10.4	9.1	7.9	7.0	6.0	5.1	12.6																						
8-Apr	5.1	3.9	3.0	2.3	1.9	1.6	1.5	1.9	2.3	2.6	4.6	7.1	9.3	11.0	12.5	14.2	14.9	14.8	14.4	13.1	12.2	11.7	10.6	9.0	7.7	14.9																						
9-Apr	7.9	7.6	7.4	7.1	6.7	6.9	6.8	6.8	9.0	9.9	10.9	12.1	13.2	14.2	15.0	15.6	15.7	15.7	14.9	13.6	12.5	12.0	10.9	10.2	10.9	15.7																						
10-Apr	9.6	8.9	8.9	9.3	8.5	7.1	6.5	6.6	7.0	7.7	8.6	9.6	10.5	11.2	11.3	11.4	11.3	11.1	10.4	9.6	8.6	7.6	7.0	6.8	9.0	11.4																						
11-Apr	5.2	4.6	4.1	3.7	3.3	2.8	1.6	1.7	3.2	5.4	6.5	7.9	9.4	10.0	10.2	10.5	10.8	11.0	11.0	9.4	8.2	7.1	6.3	4.8	6.6	11.0																						
12-Apr	3.8	2.4	1.3	1.5	0.3	-0.3	-0.5	-0.2	0.4	1.3	2.0	2.5	3.2	4.0	4.5	5.0	5.6	6.1	6.2	5.8	5.3	5.0	4.6	2.9	3.0	6.2																						
13-Apr	0.8	-0.2	-1.0	-1.7	-2.1	-2.6	-2.4	-1.1	0.7	3.0	4.5	5.9	7.0	7.7	8.5	9.4	9.8	9.6	9.0	7.5	6.1	4.8	4.0	3.0	3.8	9.8																						
14-Apr	2.2	1.4	0.6	0.2	-0.3	-0.6	-0.7	0.2	1.5	2.9	4.7	6.3	7.2	8.1	9.2	10.1	10.5	10.0	9.1	7.6	6.5	5.5	4.7	3.9	4.6	10.5																						
15-Apr	2.8	1.9	1.3	0.7	0.2	0.1	-0.3	0.8	2.3	4.5	7.0	9.2	10.6	11.7	12.2	12.6	12.5	12.3	11.7	11.1	10.0	8.8	7.9	6.9	6.6	12.6																						
16-Apr	6.1	5.2	4.5	3.9	3.3	3.0	2.6	4.0	6.1	9.4	11.8	12.9	13.7	14.1	14.5	14.7	14.8	14.6	13.9	12.4	11.0	10.0	9.4	8.4	9.4	14.8																						
17-Apr	7.8	7.1	6.5	6.0	5.4	4.8	5.3	6.3	8.2	10.1	10.7	11.4	12.5	13.1	12.6	12.3	8.6	5.9	5.2	5.0	4.9	5.1	4.8	2.5	7.6	13.1																						
18-Apr	3.1	3.3	3.1	3.1	2.3	0.8	0.6	1.5	1.7	2.0	1.9	1.8	1.4	2.3	2.4	2.8	2.9	2.7	2.6	2.1	1.7	1.6	1.6	1.7	2.1	3.3																						
19-Apr	1.7	1.8	1.4	0.8	0.5	0.1	-0.3	-0.7	-1.0	-0.8	-0.6	-0.3	0.0	1.0	1.8	2.4	2.1	2.7	3.2	3.1	2.8	2.7	1.0	0.5	1.1	3.2																						
20-Apr	0.4	0.2	-0.2	-0.2	-0.4	-0.9	-1.1	-0.4	0.9	2.5	4.0	5.2	6.0	6.8	7.5	8.0	8.3	8.2	7.6	6.6	5.7	4.5	3.5	2.6	3.5	8.3																						
21-Apr	2.0	1.7	1.2	0.3	0.0	-0.9	-1.1	-0.1	1.4	3.2	4.7	5.6	6.6	7.5	8.0	8.5	8.9	9.0	9.0	8.7	7.9	6.8	5.9	4.8	4.6	9.0																						
22-Apr	3.8	2.6	2.0	1.6	0.4	-0.7	-0.9	0.3	2.1	4.4	5.7	7.0	7.8	8.4	8.8	8.9	8.9	8.9	8.6	8.1	7.4	6.5	5.9	4.9	5.1	8.9																						
23-Apr	4.3	4.0	3.4	2.6	2.5	2.0	2.3	3.0	4.0	5.9	7.9	9.1	9.5	9.8	10.0	10.9	11.4	11.2	10.8	10.4	10.1	9.8	9.5	8.6	7.2	11.4																						
24-Apr	7.1	7.2	7.0	7.0	6.4	4.4	3.9	3.1	2.7	3.1	4.1	5.7	7.0	8.3	9.2	7.9	7.0	6.4	5.7	5.6	5.4	4.5	4.3	4.1	5.7	9.2																						
25-Apr	4.4	4.7	5.0	4.6	4.3	4.2	4.2	4.3	5.1	6.5	7.7	8.7	8.4	5.0	4.9	6.0	7.1	7.1	7.4	8.2	6.7	5.4	4.7	4.1	5.8	8.7																						
26-Apr	3.5	2.9	2.6	2.5	2.0	1.5	1.7	2.1	3.0	3.6	4.1	4.8	5.5	6.1	7.0	7.5	7.9	7.7	7.0	5.8	4.4	3.7	3.1	2.5	4.3	7.9																						
27-Apr	2.0	1.5	1.3	1.0	0.6	0.7	0.9	2.3	4.2	5.9	7.8	8.8	9.2	9.9	10.8	11.3	11.8	12.0	12.3	11.8	11.3	10.5	9.9	9.3	7.0	12.3																						
28-Apr	8.7	8.8	8.9	7.4	7.4	7.6	8.3	9.4	10.5	11.1	11.6	12.3	12.9	13.2	13.9	14.1	14.1	13.1	12.8	12.1	11.1	10.1	9.5	8.6	10.7	14.1																						
29-Apr	7.4	6.5	6.1	4.7	5.0	3.8	3.3	5.5	7.5	8.9	10.3	11.5	12.7	13.4	14.1	14.5	14.9	15.2	15.1	14.6	13.2	12.1	10.8	9.3	10.0	15.2																						
30-Apr	8.2	7.9	7.4	7.0	6.8	6.5	6.6	8.1	10.5	12.9	14.6	16.5	17.7	18.5	19.1	19.9	20.5	20.7	20.3	18.6	16.4	14.9	14.0	13.8	13.6	20.7																						
																								3.0	2.4	2.0	1.6	1.1	0.6	0.4	1.0	2.2	3.5	4.8	5.9	6.9	7.7	8.3	8.7	8.8	8.6	8.2	7.4	6.5	5.7	5.0	4.2	Diurnal Average
																								9.6	8.9	8.9	9.3	8.5	7.6	8.3	9.4	10.5	12.9	14.6	16.5	17.7	18.5	19.1	19.9	20.5	20.7	20.3	18.6	16.4	14.9	14.0	13.8	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 45 m (AT45m) - C
Mannix - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	143	19.86	19.86
0 - 10	445	61.81	81.67
10 - 20	129	17.92	99.58
> 20	3	0.42	100.00

Total Number of Valid Hours: 720

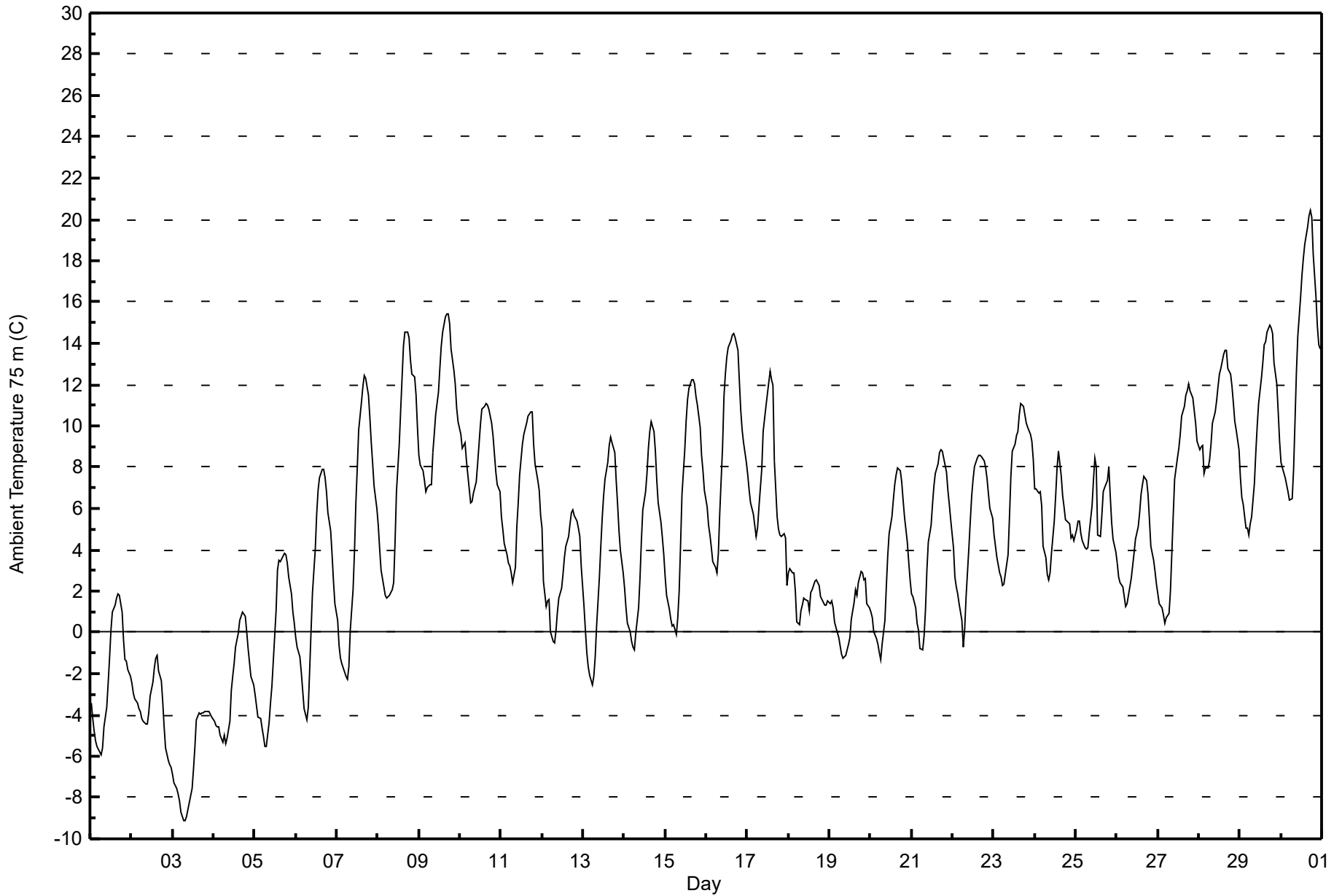
Total Number of Hours: 720



Summary of Hour Averages

Mannix - April 2023

Maximum Value: 20.4 C on Apr 30 18:00		Maximum Daily Average: 13.5 C on Apr 30		Hours in Service: 720																							
Minimum Value: -9.1 C on Apr 3 07:00		Minimum Daily Average: -6.2 C on Apr 3		Hours of Data: 720																							
Maximum Diurnal Average: 8.5 C at hour 17		Minimum Diurnal Average: 0.5 C at hour 7		Hours of Missing Data: 0																							
Monthly Average: 4.63 C		Percentiles: P ₁ = -7.8 P ₁₀ = -3.1 Q ₁ = 1.0 Median = 4.7 Q ₃ = 8.6 P ₉₀ = 11.8 P ₉₉ = 17.1		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-Apr	-3.4	-4.2	-4.8	-5.2	-5.6	-5.8	-5.9	-5.6	-4.6	-3.6	-2.5	-1.3	0.1	1.0	1.3	1.6	1.8	1.8	1.0	-0.4	-1.3	-1.4	-1.8	-2.2	-2.1	1.8	
2-Apr	-2.5	-2.9	-3.2	-3.4	-3.7	-3.8	-4.2	-4.3	-4.4	-4.4	-3.9	-3.1	-2.4	-1.7	-1.2	-1.1	-1.9	-2.3	-3.3	-4.5	-5.6	-6.2	-6.4	-6.5	-3.6	-1.1	
3-Apr	-6.9	-7.3	-7.6	-7.8	-8.2	-8.7	-9.1	-9.1	-8.9	-8.6	-8.2	-7.6	-6.6	-5.5	-4.2	-3.9	-3.9	-3.9	-3.9	-3.8	-3.8	-3.8	-4.0	-4.1	-6.2	-3.8	
4-Apr	-4.3	-4.5	-4.6	-4.6	-5.0	-5.3	-5.0	-5.4	-5.1	-4.3	-2.8	-2.1	-1.5	-0.7	0.0	0.6	0.8	1.0	0.8	0.0	-0.8	-1.5	-2.1	-2.5	-2.5	1.0	
5-Apr	-3.0	-3.6	-4.1	-4.2	-4.6	-5.1	-5.5	-5.6	-4.4	-3.4	-2.6	-1.4	1.0	3.0	3.5	3.4	3.6	3.8	3.8	3.4	2.7	1.9	1.0	0.4	-0.7	3.8	
6-Apr	-0.2	-0.7	-1.2	-1.9	-2.8	-3.7	-4.3	-3.7	-1.8	0.1	1.9	4.0	5.8	6.9	7.5	7.9	7.9	7.5	6.8	5.8	4.9	3.7	2.5	1.4	2.3	7.9	
7-Apr	0.6	-0.6	-1.3	-1.5	-1.8	-2.2	-2.3	-1.7	0.1	2.1	3.9	6.3	8.0	9.8	11.2	11.9	12.5	12.3	11.5	10.4	9.2	8.2	7.1	6.0	5.0	12.5	
8-Apr	5.2	4.0	3.0	2.2	1.8	1.6	1.7	1.8	2.1	2.4	4.4	6.8	9.1	10.8	12.3	13.9	14.6	14.6	14.3	13.2	12.5	12.3	11.5	9.9	7.8	14.6	
9-Apr	8.6	8.1	7.8	7.4	6.8	7.0	7.2	7.1	8.7	9.6	10.6	11.7	12.8	13.9	14.6	15.3	15.4	15.5	14.9	13.7	12.7	12.0	10.9	10.2	10.9	15.5	
10-Apr	9.6	8.9	9.1	9.2	8.3	6.9	6.3	6.4	6.7	7.3	8.2	9.2	10.1	10.8	11.0	11.1	11.0	10.8	10.1	9.5	8.6	7.8	7.1	6.8	8.8	11.1	
11-Apr	5.6	5.0	4.3	3.8	3.4	3.2	2.9	2.4	3.1	5.1	6.2	7.6	9.1	9.6	9.9	10.1	10.5	10.7	10.7	9.2	8.1	7.4	6.9	5.7	6.7	10.7	
12-Apr	5.0	2.5	1.3	1.5	1.6	0.1	-0.5	-0.5	0.1	1.0	1.6	2.1	2.8	3.6	4.2	4.6	5.3	5.8	5.9	5.7	5.4	5.0	4.6	3.2	3.0	5.9	
13-Apr	1.2	0.1	-1.0	-1.7	-2.1	-2.5	-2.2	-1.2	0.3	2.7	4.2	5.5	6.6	7.4	8.2	9.1	9.5	9.2	8.7	7.4	6.2	4.9	3.9	2.9	3.6	9.5	
14-Apr	2.1	1.2	0.5	0.1	-0.5	-0.7	-0.9	0.0	1.2	2.6	4.4	5.9	6.8	7.7	8.9	9.7	10.2	9.8	8.8	7.4	6.3	5.3	4.6	3.8	4.4	10.2	
15-Apr	2.7	1.8	1.1	0.7	0.3	0.4	-0.1	0.7	2.0	4.2	6.7	8.9	10.2	11.3	11.8	12.3	12.2	12.0	11.4	11.0	9.9	8.6	7.8	6.9	6.4	12.3	
16-Apr	6.1	5.2	4.7	4.1	3.4	3.1	2.9	3.8	5.8	9.0	11.4	12.5	13.3	13.8	14.1	14.4	14.5	14.3	13.6	12.2	10.8	9.8	9.2	8.3	9.2	14.5	
17-Apr	7.6	6.8	6.3	5.8	5.2	4.7	5.0	6.0	7.9	9.7	10.4	11.0	12.1	12.7	12.2	12.0	8.3	5.6	5.0	4.7	4.6	4.8	4.6	2.3	7.3	12.7	
18-Apr	2.8	3.1	2.9	2.9	2.0	0.5	0.4	1.1	1.3	1.7	1.6	1.5	1.1	1.9	2.1	2.5	2.5	2.4	2.3	1.8	1.4	1.3	1.3	1.5	1.8	3.1	
19-Apr	1.4	1.5	1.2	0.5	0.2	-0.2	-0.6	-1.0	-1.3	-1.1	-0.8	-0.6	-0.3	0.7	1.4	2.1	1.8	2.4	2.9	2.9	2.5	2.6	1.4	1.2	0.9	2.9	
20-Apr	1.0	0.7	0.0	-0.3	-0.6	-1.0	-1.3	-0.6	0.6	2.2	3.7	4.8	5.6	6.4	7.1	7.6	8.0	7.8	7.3	6.4	5.6	4.3	3.4	2.6	3.4	8.0	
21-Apr	1.9	1.7	1.2	0.5	0.1	-0.7	-0.8	-0.2	1.1	3.0	4.4	5.2	6.2	7.1	7.7	8.2	8.7	8.8	8.8	8.4	7.7	6.9	6.2	5.5	4.5	8.8	
22-Apr	4.1	2.7	2.2	1.8	1.4	0.6	-0.7	0.1	1.8	4.1	5.4	6.6	7.4	8.1	8.4	8.6	8.6	8.5	8.3	8.0	7.4	6.7	6.0	5.5	5.1	8.6	
23-Apr	4.7	4.2	3.6	2.9	2.7	2.3	2.3	2.8	3.8	5.6	7.6	8.7	9.1	9.5	9.8	10.6	11.1	10.9	10.5	10.1	9.9	9.6	9.3	8.4	7.1	11.1	
24-Apr	6.9	6.9	6.7	6.8	6.1	4.2	3.7	2.8	2.5	2.9	3.8	5.4	6.6	8.0	8.8	7.5	6.6	6.1	5.5	5.4	5.2	4.5	4.7	4.5	5.5	8.8	
25-Apr	5.0	5.4	5.4	4.8	4.4	4.1	4.0	4.1	4.8	6.2	7.4	8.4	8.1	4.7	4.6	5.7	6.8	7.0	7.3	8.0	6.6	5.3	4.5	3.9	5.7	8.4	
26-Apr	3.3	2.7	2.4	2.2	1.7	1.2	1.4	1.8	2.6	3.2	3.8	4.5	5.1	5.8	6.7	7.2	7.5	7.3	6.7	5.5	4.2	3.5	2.9	2.3	4.0	7.5	
27-Apr	1.8	1.4	1.2	0.8	0.4	0.7	0.9	2.0	3.9	5.7	7.4	8.4	8.9	9.6	10.4	11.0	11.5	11.7	12.0	11.7	11.4	10.8	10.1	9.3	6.8	12.0	
28-Apr	8.8	9.0	9.1	7.7	8.0	8.0	8.4	9.1	10.1	10.7	11.2	11.9	12.5	12.8	13.5	13.7	13.7	12.8	12.5	11.9	11.1	10.2	9.8	8.8	10.6	13.7	
29-Apr	7.5	6.6	6.2	5.1	5.0	4.7	5.3	5.6	7.2	8.7	10.0	11.1	12.3	13.1	13.9	14.1	14.5	14.9	14.7	14.5	13.1	12.0	10.7	9.2	10.0	14.9	
30-Apr	8.2	7.9	7.5	7.1	6.8	6.4	6.5	7.9	10.2	12.6	14.3	16.2	17.3	18.1	18.8	19.6	20.2	20.4	20.1	18.3	16.2	14.8	13.9	13.8	13.5	20.4	
		3.0	2.5	2.0	1.6	1.2	0.7	0.5	0.9	1.9	3.2	4.5	5.6	6.6	7.3	7.9	8.4	8.5	8.3	8.0	7.3	6.4	5.7	5.1	4.3	Diurnal Average	
		9.6	9.0	9.1	9.2	8.3	8.0	8.4	9.1	10.2	12.6	14.3	16.2	17.3	18.1	18.8	19.6	20.2	20.4	20.1	18.3	16.2	14.8	13.9	13.8	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 75 m (AT75m) - C
Mannix - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	142	19.72	19.72
0 - 10	454	63.06	82.78
10 - 20	121	16.81	99.58
> 20	3	0.42	100.00

Total Number of Valid Hours: 720

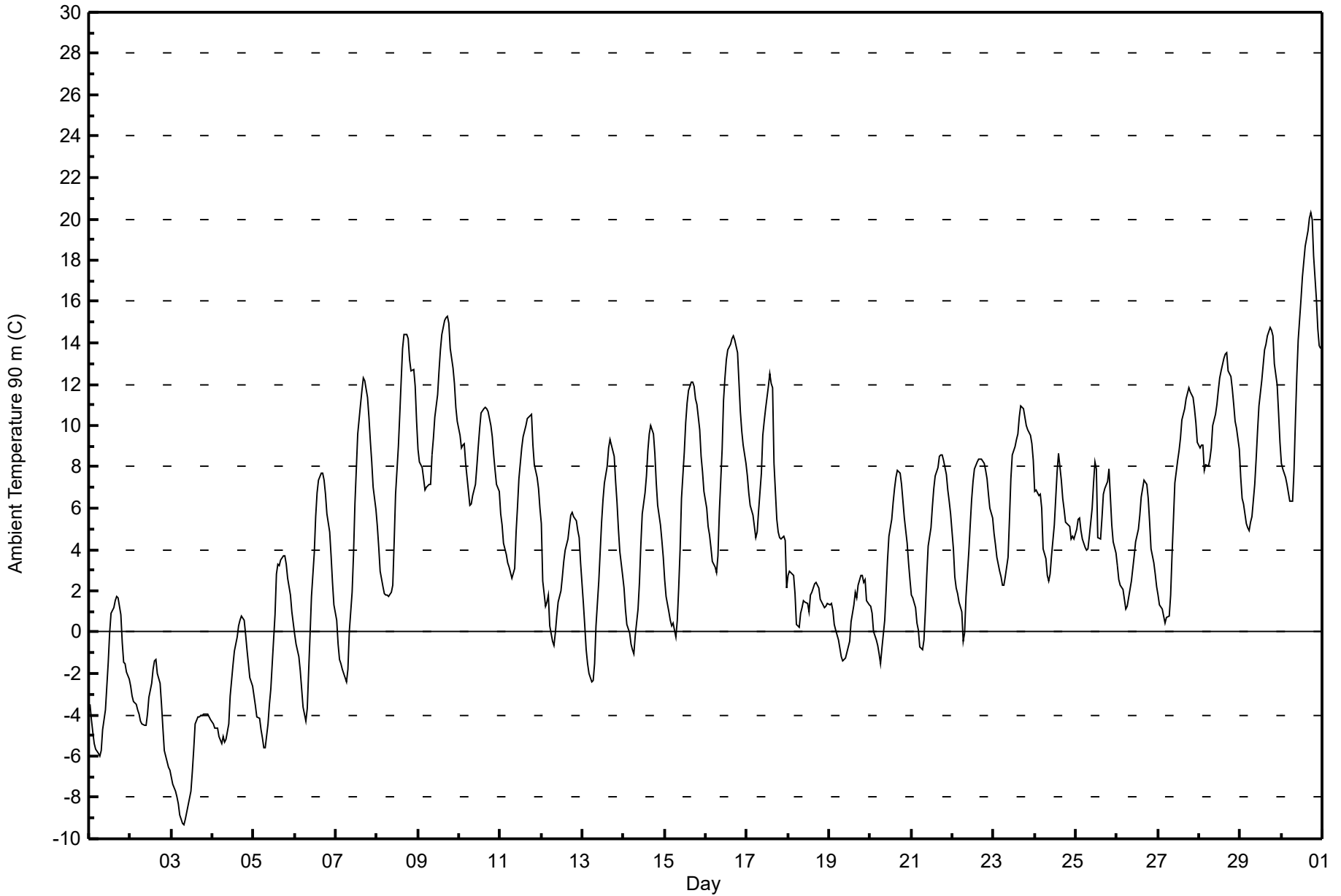
Total Number of Hours: 720



Summary of Hour Averages

Mannix - April 2023

Maximum Value: 20.3 C on Apr 30 18:00																				Maximum Daily Average: 13.4 C on Apr 30					Hours in Service: 720																							
Minimum Value: -9.3 C on Apr 3 08:00																				Minimum Daily Average: -6.4 C on Apr 3					Hours of Data: 720																							
Maximum Diurnal Average: 8.3 C at hour 17																				Minimum Diurnal Average: 0.4 C at hour 7					Hours of Missing Data: 0																							
Monthly Average: 4.54 C																				Percentiles: P ₁ = -7.9 P ₁₀ = -3.1 Q ₁ = 0.9 Median = 4.7 Q ₃ = 8.4 P ₉₀ = 11.7 P ₉₉ = 17.0					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-Apr	-3.5	-4.3	-4.8	-5.4	-5.7	-5.9	-6.0	-5.7	-4.7	-3.8	-2.6	-1.4	0.0	0.9	1.2	1.5	1.7	1.7	0.9	-0.5	-1.4	-1.5	-1.9	-2.3	-2.2	1.7																						
2-Apr	-2.6	-3.1	-3.4	-3.5	-3.8	-4.0	-4.3	-4.4	-4.5	-4.5	-4.0	-3.2	-2.5	-1.8	-1.4	-1.3	-2.0	-2.5	-3.5	-4.7	-5.7	-6.3	-6.5	-6.7	-3.8	-1.3																						
3-Apr	-7.0	-7.4	-7.7	-8.0	-8.3	-8.8	-9.2	-9.3	-9.0	-8.7	-8.4	-7.7	-6.8	-5.6	-4.4	-4.1	-4.1	-4.0	-4.0	-4.0	-4.0	-4.0	-4.1	-4.2	-6.4	-4.0																						
4-Apr	-4.5	-4.6	-4.7	-4.6	-5.0	-5.4	-5.1	-5.3	-5.2	-4.5	-3.1	-2.4	-1.6	-0.9	-0.2	0.3	0.6	0.8	0.6	-0.1	-0.9	-1.5	-2.2	-2.6	-2.6	0.8																						
5-Apr	-3.1	-3.6	-4.1	-4.1	-4.7	-5.1	-5.6	-5.6	-4.4	-3.5	-2.8	-1.5	0.8	2.8	3.3	3.2	3.5	3.7	3.7	3.3	2.6	1.8	1.0	0.5	-0.8	3.7																						
6-Apr	-0.1	-0.6	-1.2	-1.9	-2.7	-3.6	-4.3	-3.7	-1.9	-0.1	1.8	3.9	5.6	6.7	7.3	7.7	7.7	7.3	6.7	5.7	4.8	3.7	2.4	1.3	2.2	7.7																						
7-Apr	0.6	-0.6	-1.3	-1.5	-1.8	-2.2	-2.4	-1.8	0.0	1.9	3.8	6.2	7.9	9.6	11.0	11.7	12.3	12.1	11.4	10.4	9.2	8.2	7.0	5.9	4.9	12.3																						
8-Apr	5.1	4.1	2.9	2.2	1.8	1.8	1.8	1.8	2.0	2.3	4.4	6.7	9.0	10.6	12.2	13.7	14.4	14.4	14.2	13.2	12.6	12.7	11.9	10.2	7.7	14.4																						
9-Apr	8.9	8.3	7.9	7.5	6.9	7.0	7.2	7.1	8.6	9.4	10.4	11.5	12.6	13.7	14.4	15.1	15.2	15.3	14.9	13.8	12.8	12.0	10.9	10.2	10.9	15.3																						
10-Apr	9.5	8.9	9.1	9.1	8.2	6.8	6.1	6.2	6.6	7.1	8.0	9.0	9.9	10.6	10.8	10.9	10.8	10.6	10.0	9.4	8.6	7.8	7.2	6.8	8.7	10.9																						
11-Apr	5.8	5.2	4.3	3.8	3.4	3.2	2.9	2.6	3.1	4.8	6.1	7.5	8.9	9.4	9.7	10.0	10.3	10.5	10.5	9.1	8.1	7.5	7.0	6.0	6.6	10.5																						
12-Apr	5.3	2.5	1.3	1.5	1.8	0.3	-0.5	-0.6	0.0	0.8	1.5	2.0	2.7	3.4	4.0	4.5	5.1	5.7	5.8	5.6	5.4	4.9	4.5	3.3	2.9	5.8																						
13-Apr	1.4	0.3	-0.9	-1.5	-2.0	-2.4	-2.3	-1.5	0.3	2.5	3.9	5.3	6.4	7.2	8.0	8.9	9.3	9.0	8.5	7.3	6.3	5.0	3.9	2.8	3.6	9.3																						
14-Apr	2.1	1.1	0.4	0.0	-0.6	-0.9	-1.0	-0.2	1.1	2.4	4.3	5.8	6.7	7.5	8.8	9.6	10.0	9.6	8.7	7.2	6.1	5.2	4.5	3.7	4.2	10.0																						
15-Apr	2.6	1.7	1.0	0.6	0.3	0.4	-0.3	0.6	2.1	4.0	6.5	8.7	10.1	11.1	11.7	12.1	12.1	11.9	11.3	11.0	9.8	8.5	7.8	6.8	6.4	12.1																						
16-Apr	6.0	5.1	4.7	4.1	3.4	3.1	2.9	3.7	5.8	8.8	11.2	12.3	13.2	13.6	13.9	14.2	14.3	14.2	13.5	12.1	10.7	9.7	9.1	8.2	9.1	14.3																						
17-Apr	7.5	6.7	6.1	5.7	5.1	4.6	4.9	5.9	7.7	9.5	10.2	10.8	11.9	12.5	12.1	11.8	8.2	5.5	4.9	4.6	4.5	4.7	4.4	2.1	7.2	12.5																						
18-Apr	2.7	3.0	2.8	2.7	1.9	0.4	0.3	0.9	1.2	1.5	1.4	1.4	1.0	1.8	1.9	2.3	2.4	2.2	2.1	1.6	1.3	1.2	1.3	1.4	1.7	3.0																						
19-Apr	1.3	1.4	1.0	0.4	0.1	-0.4	-0.8	-1.2	-1.4	-1.2	-1.0	-0.7	-0.4	0.5	1.3	1.9	1.7	2.3	2.8	2.8	2.4	2.6	1.5	1.4	0.8	2.8																						
20-Apr	1.2	0.9	0.0	-0.3	-0.6	-1.0	-1.5	-0.8	0.6	2.0	3.5	4.6	5.4	6.3	7.0	7.5	7.8	7.7	7.2	6.3	5.5	4.3	3.4	2.5	3.3	7.8																						
21-Apr	1.8	1.7	1.2	0.4	0.1	-0.7	-0.9	-0.3	1.1	2.7	4.1	5.1	6.1	7.0	7.5	8.0	8.5	8.6	8.6	8.3	7.6	6.9	6.3	5.7	4.4	8.6																						
22-Apr	4.1	2.7	2.2	1.9	1.5	1.0	-0.4	0.0	1.7	3.9	5.2	6.4	7.3	7.9	8.2	8.4	8.4	8.4	8.2	7.9	7.4	6.7	6.0	5.5	5.0	8.4																						
23-Apr	4.8	4.2	3.6	2.9	2.7	2.3	2.3	2.7	3.6	5.5	7.4	8.6	9.0	9.3	9.6	10.4	10.9	10.8	10.4	10.0	9.8	9.5	9.1	8.3	7.0	10.9																						
24-Apr	6.8	6.9	6.6	6.7	6.0	4.0	3.6	2.7	2.5	2.8	3.7	5.2	6.4	7.8	8.6	7.4	6.5	5.9	5.3	5.3	5.1	4.5	4.7	4.5	5.4	8.6																						
25-Apr	5.0	5.5	5.5	4.9	4.5	4.1	4.0	4.1	4.7	6.0	7.2	8.3	7.9	4.6	4.5	5.5	6.7	7.0	7.3	7.9	6.5	5.2	4.4	3.8	5.6	8.3																						
26-Apr	3.2	2.6	2.2	2.1	1.6	1.1	1.3	1.7	2.5	3.1	3.7	4.3	5.0	5.6	6.5	7.0	7.3	7.1	6.5	5.3	4.0	3.4	2.8	2.2	3.8	7.3																						
27-Apr	1.8	1.3	1.1	0.8	0.4	0.7	0.8	1.8	3.8	5.4	7.2	8.3	8.7	9.4	10.3	10.8	11.3	11.5	11.9	11.6	11.3	10.8	10.1	9.2	6.7	11.9																						
28-Apr	8.9	9.1	9.1	7.8	8.1	8.0	8.4	8.9	10.0	10.5	11.0	11.7	12.3	12.6	13.3	13.5	13.5	12.6	12.4	11.8	11.0	10.2	9.9	8.9	10.6	13.5																						
29-Apr	7.5	6.5	6.2	5.3	5.1	4.9	5.3	5.6	7.2	8.4	9.7	10.9	12.2	12.9	13.7	13.9	14.3	14.7	14.6	14.4	13.0	12.0	10.6	9.2	9.9	14.7																						
30-Apr	8.2	7.9	7.5	7.2	6.8	6.4	6.3	7.8	10.2	12.4	14.1	16.1	17.2	18.0	18.7	19.4	20.0	20.3	19.9	18.2	16.1	14.7	13.9	13.8	13.4	20.3																						
																								3.0	2.4	2.0	1.5	1.1	0.7	0.4	0.8	1.8	3.1	4.3	5.4	6.4	7.2	7.8	8.2	8.3	8.2	7.8	7.2	6.4	5.7	5.0	4.3	Diurnal Average
																								9.5	9.1	9.1	9.1	8.2	8.0	8.4	8.9	10.2	12.4	14.1	16.1	17.2	18.0	18.7	19.4	20.0	20.3	19.9	18.2	16.1	14.7	13.9	13.8	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 90 m (AT90m) - C
Mannix - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	148	20.56	20.56
0 - 10	452	62.78	83.33
10 - 20	118	16.39	99.72
> 20	2	0.28	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

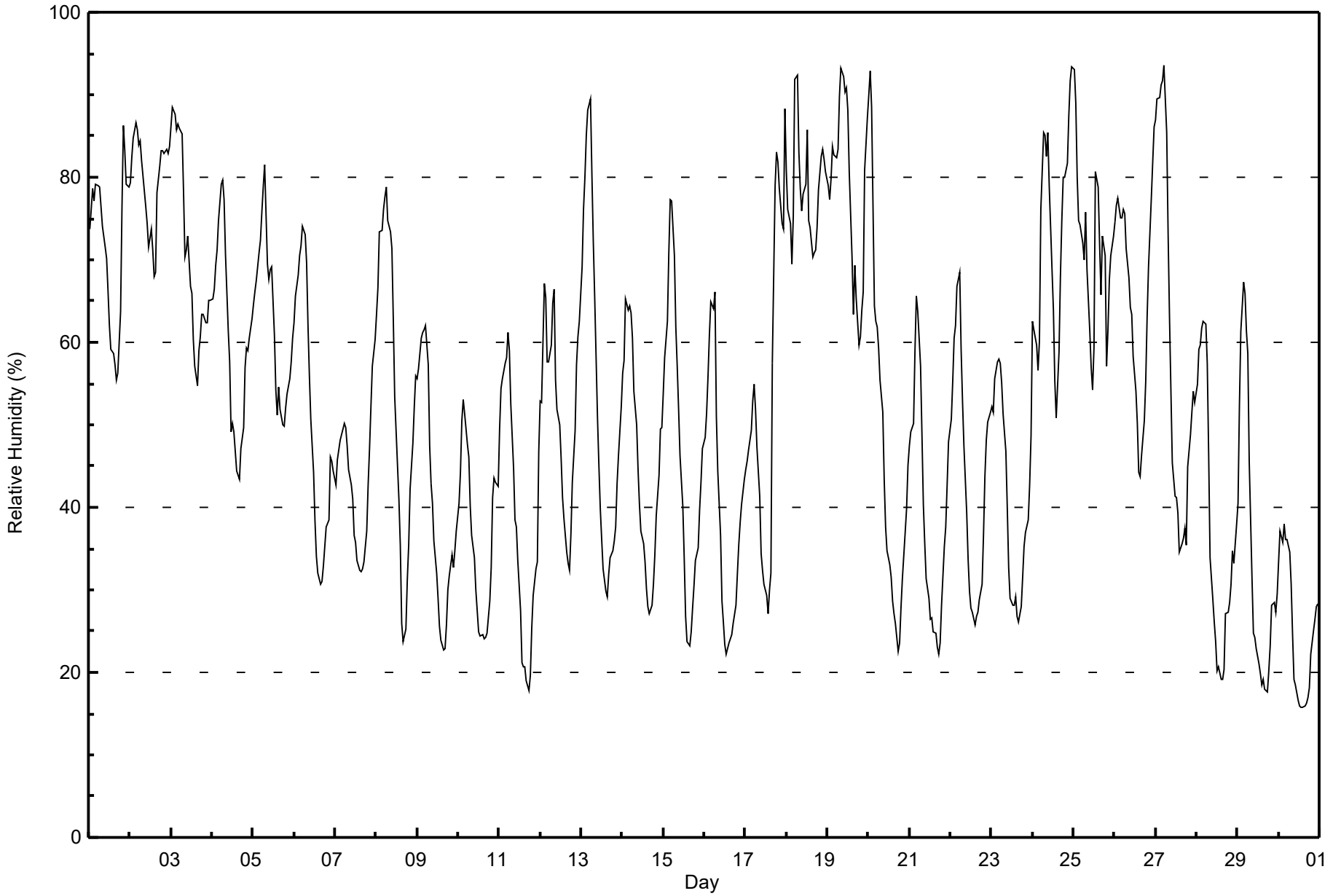


Maximum Value: 94 % on Apr 27 06:00 Maximum Daily Average: 79.6 % on Apr 2																		Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 16 % on Apr 30 15:00 Minimum Daily Average: 25.2 % on Apr 30 Maximum Diurnal Average: 69.5 % at hour 6 Minimum Diurnal Average: 37.0 % at hour 16 Monthly Average: 53.0 % Percentiles: P ₁ = 18 P ₁₀ = 26 Q ₁ = 35 Median = 53 Q ₃ = 70 P ₉₀ = 81 P ₉₉ = 92																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-Apr	74	76	79	77	79	79	79	76	74	72	70	66	62	59	59	57	55	56	64	76	86	83	79	79	71.6	86
2-Apr	79	82	85	87	86	84	84	82	78	76	74	72	74	71	68	69	78	81	83	83	83	83	83	84	79.6	87
3-Apr	86	89	88	86	86	86	85	78	70	71	73	67	66	60	57	55	59	61	63	63	62	62	65	65	71.0	89
4-Apr	65	66	69	71	75	79	80	77	71	61	58	49	50	49	44	44	43	47	50	57	59	59	61	63	60.3	80
5-Apr	65	66	67	71	72	76	79	82	70	68	69	69	61	54	51	55	52	50	50	52	54	56	58	61	62.7	82
6-Apr	62	66	68	70	72	74	73	70	62	56	51	44	38	34	32	31	31	33	35	38	38	46	46	44	50.6	74
7-Apr	43	46	47	48	49	50	50	48	45	43	41	37	36	34	32	32	32	33	37	43	47	52	57	60	43.4	60
8-Apr	63	67	73	74	76	78	79	75	73	71	63	53	45	41	35	26	24	25	31	36	42	48	52	56	54.4	79
9-Apr	56	57	60	61	61	62	57	47	43	40	36	32	29	26	24	23	23	26	30	32	34	33	35	37	40.2	62
10-Apr	41	44	50	53	51	48	46	40	37	34	30	27	25	24	25	24	24	25	29	33	41	44	43	43	36.7	53
11-Apr	50	54	56	57	58	61	59	53	45	38	38	34	27	21	21	21	19	18	20	25	29	33	33	47	38.2	61
12-Apr	53	53	67	65	58	58	60	65	66	55	52	50	46	41	39	35	33	32	37	43	49	57	61	63	51.5	67
13-Apr	69	76	80	85	88	89	80	72	65	51	45	40	36	32	30	29	32	34	35	36	38	43	46	52	53.5	89
14-Apr	56	58	65	64	64	61	54	50	45	40	37	36	33	30	28	27	28	31	34	39	44	49	50	50	45.3	65
15-Apr	54	58	63	71	77	77	71	62	57	52	46	40	34	27	24	23	25	28	31	34	35	40	43	47	46.5	77
16-Apr	48	51	56	61	65	64	66	51	44	37	29	26	23	22	24	24	25	26	28	32	35	38	40	43	40.0	66
17-Apr	45	46	47	49	53	55	52	47	41	34	32	31	29	27	30	32	57	79	83	82	79	74	74	88	52.8	88
18-Apr	81	76	74	70	75	92	92	83	79	76	78	79	86	75	74	70	71	71	74	78	83	83	82	81	78.4	92
19-Apr	79	77	80	84	83	82	83	90	93	92	90	91	88	81	70	63	69	65	60	61	64	66	81	87	78.3	93
20-Apr	90	93	88	64	63	62	59	55	52	43	38	35	33	32	29	27	26	23	24	28	31	37	40	45	46.5	93
21-Apr	47	49	50	59	66	64	57	49	40	36	31	29	26	27	25	25	23	22	24	28	35	38	43	48	39.2	66
22-Apr	51	55	61	62	67	68	59	53	47	39	34	30	28	27	26	27	27	29	31	37	44	48	50	52	43.8	68
23-Apr	52	52	56	58	58	58	55	51	47	40	33	29	28	28	29	27	26	28	31	35	37	39	43	49	41.1	58
24-Apr	63	61	60	57	60	76	85	85	82	85	79	69	64	55	51	59	68	75	80	80	82	87	92	93	72.8	93
25-Apr	93	89	80	75	74	72	70	76	69	61	57	54	59	81	79	72	66	73	71	57	62	68	70	73	70.8	93
26-Apr	75	77	77	75	75	76	76	71	68	64	63	58	54	50	44	44	46	51	55	63	69	77	82	86	65.7	86
27-Apr	87	90	90	91	92	94	86	73	63	54	45	41	41	39	35	36	36	37	35	45	49	51	54	53	59.0	94
28-Apr	55	59	60	62	63	62	57	46	34	29	26	24	20	21	19	19	20	27	27	29	31	35	33	38	37.3	63
29-Apr	40	52	61	67	66	61	59	46	31	25	24	23	21	20	18	19	18	18	20	23	28	28	27	30	34.5	67
30-Apr	33	37	36	38	36	36	35	31	25	19	18	17	16	16	16	16	16	17	18	22	25	26	28	28	25.2	38
																		61.8 64.1 66.4 67.1 68.3 69.5 67.8 63.0 57.4 52.3 48.8 45.1 42.7 40.3 38.0 37.0 38.5 40.6 42.8 46.1 49.7 52.6 55.0 58.1						Diurnal Average		
																		93 93 90 91 92 94 92 90 93 92 90 91 88 81 79 72 78 81 83 83 86 87 92 93						Diurnal Maximum		



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Mannix - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Mannix - April 2023

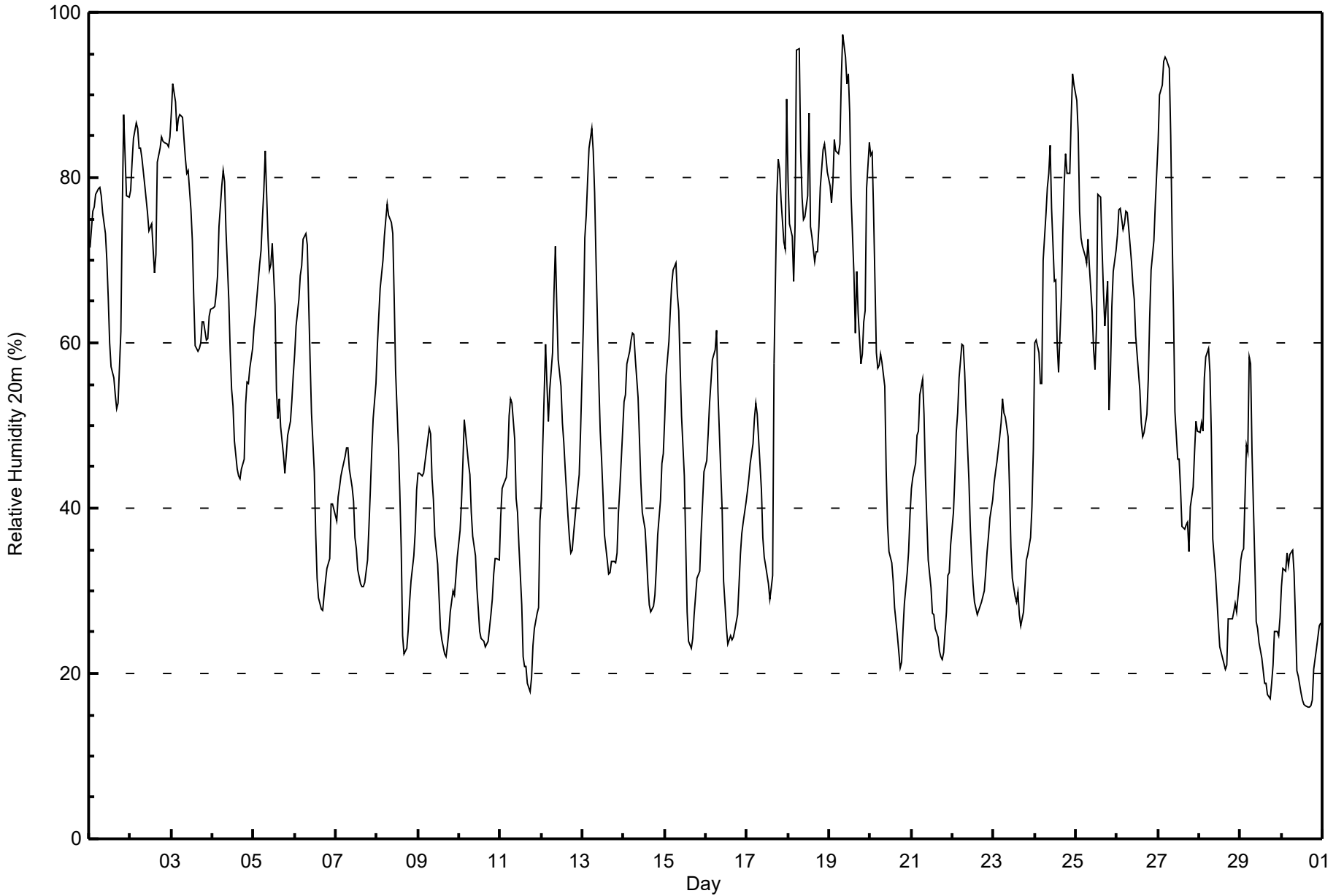
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	20	2.78	2.78
20 - 40	209	29.03	31.81
40 - 60	208	28.89	60.69
60 - 80	206	28.61	89.31
80 - 100	77	10.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 97 % on Apr 19 09:00														Maximum Daily Average: 80.4 % on Apr 2														Hours in Service: 720	
Minimum Value: 16 % on Apr 30 16:00														Minimum Daily Average: 24.3 % on Apr 30														Hours of Data: 720	
Maximum Diurnal Average: 66.9 % at hour 7														Minimum Diurnal Average: 37.4 % at hour 16														Hours of Missing Data: 0	
Monthly Average: 51.6 %														Percentiles: P ₁ = 17 P ₁₀ = 25 Q ₁ = 34 Median = 49 Q ₃ = 69 P ₉₀ = 80 P ₉₉ = 93														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-Apr	72	74	76	76	78	79	79	78	76	73	70	65	60	57	56	54	52	53	61	76	88	83	78	78	70.4	88			
2-Apr	78	82	85	87	86	84	84	82	79	77	76	74	74	71	69	71	82	84	85	84	84	84	84	85	80.4	87			
3-Apr	88	91	89	86	87	88	87	85	82	80	81	76	72	65	60	59	59	60	63	63	60	61	63	64	73.7	91			
4-Apr	64	64	66	68	74	79	81	79	74	65	59	54	52	48	45	44	43	45	46	53	55	55	57	59	59.6	81			
5-Apr	62	63	65	69	71	75	79	83	73	69	69	72	65	54	51	53	50	46	44	46	49	51	53	56	61.2	83			
6-Apr	59	62	65	68	69	72	73	72	65	58	52	44	37	32	29	28	28	29	31	33	34	40	41	40	48.4	73			
7-Apr	38	41	43	44	45	46	47	47	45	43	41	36	35	32	31	30	30	31	34	38	42	47	51	55	40.6	55			
8-Apr	60	63	67	70	73	75	77	76	75	73	65	57	48	42	35	25	22	23	25	29	31	34	37	42	51.0	77			
9-Apr	44	44	44	44	46	47	50	49	44	41	37	33	29	25	24	22	22	23	25	27	30	30	32	34	35.3	50			
10-Apr	37	41	45	51	49	45	44	39	37	34	30	28	25	24	24	23	24	24	27	29	32	34	34	34	33.9	51			
11-Apr	39	42	43	44	46	51	53	53	48	41	39	35	28	22	21	21	19	18	20	23	25	27	28	38	34.4	53			
12-Apr	41	48	60	55	51	54	59	66	72	64	58	55	50	48	45	39	36	35	35	37	41	42	44	50	49.3	72			
13-Apr	62	73	75	80	84	86	83	78	70	55	49	46	42	37	34	32	34	34	34	33	35	40	42	49	53.5	86			
14-Apr	53	54	57	59	60	61	61	58	53	48	43	39	37	34	31	28	27	28	29	33	37	41	45	47	44.4	61			
15-Apr	51	56	60	64	67	69	70	66	64	57	51	44	36	27	24	23	24	27	29	32	32	37	41	44	45.6	70			
16-Apr	46	49	53	55	58	59	62	54	49	40	31	29	26	24	25	24	24	25	27	31	34	37	38	41	39.1	62			
17-Apr	42	44	45	48	51	53	51	48	42	36	34	33	31	29	30	32	57	78	82	81	77	72	71	90	52.4	90			
18-Apr	80	74	73	68	74	95	96	83	78	75	75	78	88	74	73	70	71	71	74	79	83	84	83	81	78.3	96			
19-Apr	79	77	79	85	83	83	84	92	97	95	91	93	88	78	68	61	69	64	57	59	63	64	79	84	77.9	97			
20-Apr	83	83	76	59	57	57	59	58	55	45	38	35	33	31	28	26	25	21	21	25	28	32	35	39	43.7	83			
21-Apr	42	44	45	49	49	54	56	51	44	39	34	30	27	27	25	24	23	22	22	23	28	32	32	36	35.7	56			
22-Apr	39	44	49	52	56	60	60	56	52	43	38	34	31	29	27	28	28	29	30	32	35	37	39	41	40.3	60			
23-Apr	43	44	46	49	50	53	52	51	49	42	35	31	29	29	30	27	26	27	30	34	34	36	40	47	39.0	53			
24-Apr	60	60	59	55	55	70	76	79	80	84	76	67	68	60	56	66	73	79	83	80	80	87	92	91	72.4	92			
25-Apr	89	85	76	73	72	70	70	73	69	64	59	57	62	78	78	72	66	62	67	52	56	64	69	71	68.9	89			
26-Apr	73	76	76	74	74	76	76	74	70	67	65	61	56	54	50	49	49	51	56	63	69	72	77	81	66.2	81			
27-Apr	84	90	91	94	95	94	93	85	73	64	52	46	46	42	38	37	38	38	35	40	43	47	51	49	61.0	95			
28-Apr	49	50	49	56	58	59	56	49	36	32	29	26	23	23	21	21	21	27	27	27	27	28	27	31	35.6	59			
29-Apr	34	35	35	48	47	58	58	47	34	26	25	24	22	20	19	19	17	17	19	21	25	25	25	27	30.2	58			
30-Apr	31	33	32	35	33	34	35	32	27	20	20	18	17	16	16	16	16	16	17	20	23	24	26	26	24.3	35			
																												Diurnal Average	
57.4														59.6														89	
60.9														62.0														91	
63.3														63.3														91	
66.3														66.9														96	
64.8														60.3														92	
60.3														55.1														97	
50.8														47.3														95	
44.6														41.2														91	
41.2														38.7														93	
37.4														34.6														88	
38.5														37.4														88	
39.6														38.5														84	
41.2														39.6														85	
43.4														41.2														85	
46.1														43.4														88	
48.3														46.1														87	
50.4														48.3														92	
53.7														50.4														91	
																												Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 20m (RH20m) - %
Mannix - April 2023

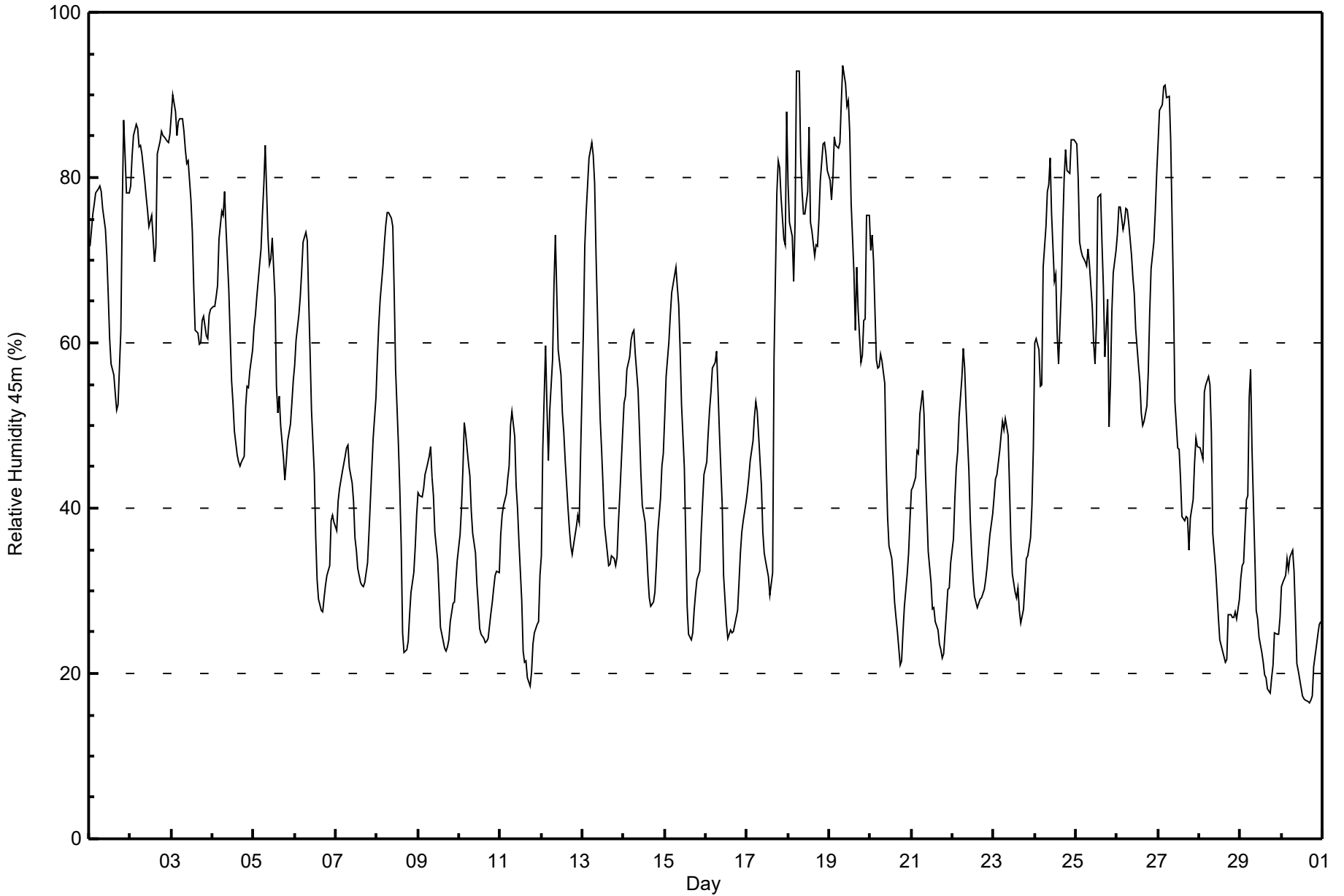
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	17	2.36	2.36
20 - 40	233	32.36	34.72
40 - 60	222	30.83	65.56
60 - 80	172	23.89	89.44
80 - 100	76	10.56	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 94 % on Apr 19 09:00 Maximum Daily Average: 81.0 % on Apr 2																		Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0								
Minimum Value: 17 % on Apr 30 17:00 Minimum Daily Average: 24.5 % on Apr 30 Maximum Diurnal Average: 65.9 % at hour 7 Minimum Diurnal Average: 38.2 % at hour 16 Monthly Average: 51.3 % Percentiles: P ₁ = 18 P ₁₀ = 26 Q ₁ = 33 Median = 49 Q ₃ = 69 P ₉₀ = 80 P ₉₉ = 90																										
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-Apr	72	74	76	77	78	79	79	78	76	74	70	66	61	57	56	54	52	53	61	76	87	83	78	78	70.6	87
2-Apr	79	82	85	86	86	84	84	83	80	78	76	74	75	73	70	72	83	84	86	85	85	84	84	85	81.0	86
3-Apr	88	90	88	85	87	87	87	86	83	82	82	77	73	67	62	61	60	60	63	63	61	60	63	64	74.1	90
4-Apr	64	64	66	67	73	76	75	78	74	66	61	55	53	49	47	46	45	46	46	52	55	55	57	59	59.5	78
5-Apr	62	63	66	69	71	76	79	84	73	69	70	73	66	55	52	54	50	46	43	46	48	50	53	55	61.3	84
6-Apr	57	60	63	66	69	72	73	72	65	59	52	44	37	31	29	28	28	29	31	32	33	39	39	38	47.8	73
7-Apr	37	41	42	43	44	46	47	48	45	43	41	36	35	33	31	31	31	31	33	37	41	45	48	53	40.1	53
8-Apr	58	62	65	69	72	74	76	76	75	74	66	57	48	42	36	25	23	23	24	27	30	32	35	39	50.4	76
9-Apr	42	42	41	42	44	45	46	47	44	42	37	34	30	26	25	23	23	23	24	26	28	29	31	34	34.5	47
10-Apr	37	40	45	50	49	45	44	40	37	35	31	28	25	25	24	24	24	24	27	29	30	32	32	32	33.7	50
11-Apr	37	39	40	42	43	45	50	52	49	43	40	36	29	23	21	21	19	18	20	24	25	26	26	32	33.3	52
12-Apr	34	47	60	52	46	52	58	67	73	66	59	56	52	49	46	40	37	35	34	36	38	39	38	47	48.4	73
13-Apr	62	72	76	79	82	84	83	79	71	57	51	47	43	38	35	33	33	34	34	33	34	38	42	49	53.7	84
14-Apr	53	54	57	58	60	61	62	59	54	49	44	40	38	35	32	29	28	29	30	33	37	41	45	47	44.8	62
15-Apr	51	56	60	63	66	67	69	67	65	59	53	45	36	28	25	24	25	28	30	31	32	37	41	44	45.9	69
16-Apr	46	49	52	54	57	58	59	54	49	40	32	29	26	24	25	25	25	26	28	31	35	37	39	41	39.2	59
17-Apr	42	44	46	48	51	53	52	49	43	37	35	34	32	30	31	32	58	78	82	81	78	73	72	88	52.8	88
18-Apr	79	75	73	67	75	93	93	83	78	76	76	78	86	75	74	71	72	72	75	80	84	84	83	81	78.3	93
19-Apr	80	77	80	85	84	84	84	89	94	91	89	89	85	77	68	61	69	64	58	58	63	63	75	75	76.8	94
20-Apr	71	73	70	58	57	57	59	58	55	45	39	35	34	32	29	27	25	21	22	25	28	32	35	39	42.7	73
21-Apr	42	43	44	47	47	51	54	51	45	40	35	31	28	28	26	25	24	23	22	22	27	30	30	33	35.3	54
22-Apr	36	41	45	47	51	56	59	57	52	45	39	35	31	29	28	28	29	29	30	31	33	35	37	39	39.3	59
23-Apr	41	44	44	47	49	51	49	51	49	43	36	32	30	29	30	28	26	28	31	34	34	36	40	47	38.7	51
24-Apr	60	61	59	55	55	69	74	78	79	82	76	68	68	61	57	67	74	80	83	81	81	85	85	85	71.7	85
25-Apr	84	80	72	71	70	70	69	71	69	64	60	57	62	78	78	72	67	58	65	50	55	64	69	71	67.8	84
26-Apr	73	76	77	74	75	76	76	75	71	68	66	62	57	55	52	50	50	52	56	64	69	72	76	81	66.8	81
27-Apr	84	88	89	91	91	90	90	84	75	66	53	47	47	44	39	39	39	39	35	39	41	45	49	47	60.4	91
28-Apr	47	47	46	54	55	56	55	49	37	33	30	27	24	23	22	21	22	27	27	27	27	27	29	29	34.9	56
29-Apr	32	33	33	41	41	53	57	47	34	28	27	24	22	21	20	20	18	18	19	21	25	25	25	27	29.6	57
30-Apr	30	31	32	34	33	34	35	32	27	21	20	18	17	17	17	17	17	17	17	21	23	25	26	26	24.5	35
56.0 58.2 59.7 60.8 62.0 64.8 65.9 64.8 60.7 55.8 51.5 47.8 45.0 41.8 39.5 38.2 39.2 39.8 41.2 43.2 45.6 47.4 49.3 52.2																								Diurnal Average		
88 90 89 91 91 93 93 89 94 91 89 89 86 78 78 72 83 84 86 85 87 85 85 88																								Diurnal Maximum		





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 45m (RH45m) - %
Mannix - April 2023

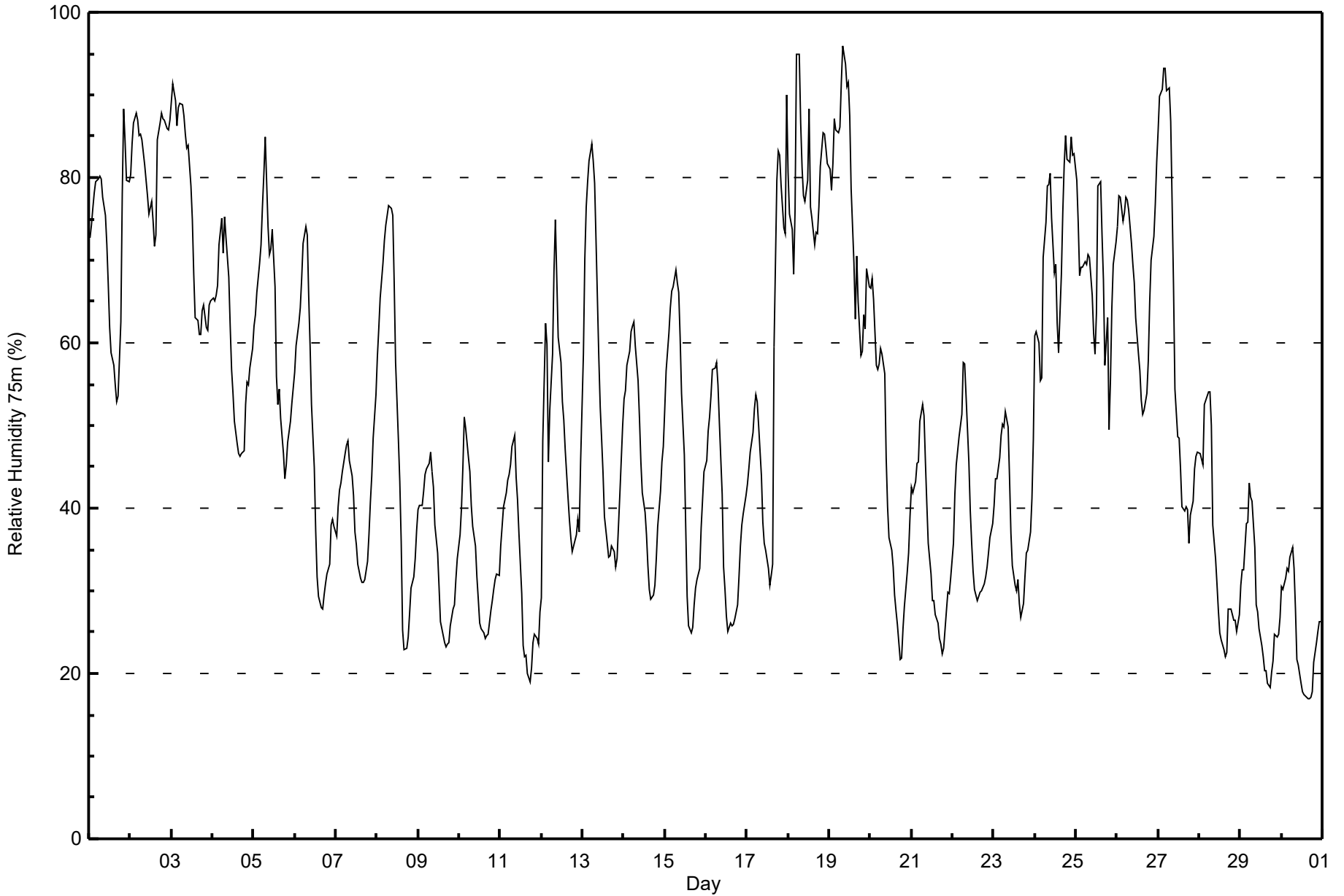
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	15	2.08	2.08
20 - 40	243	33.75	35.83
40 - 60	211	29.31	65.14
60 - 80	180	25.00	90.14
80 - 100	71	9.86	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 96 % on Apr 19 09:00														Maximum Daily Average: 82.6 % on Apr 2														Hours in Service: 720																					
Minimum Value: 17 % on Apr 30 17:00														Minimum Daily Average: 24.7 % on Apr 30														Hours of Data: 720																					
Maximum Diurnal Average: 65.5 % at hour 7														Minimum Diurnal Average: 39.1 % at hour 16														Hours of Missing Data: 0																					
Monthly Average: 51.7 %														Percentiles: P ₁ = 18 P ₁₀ = 26 Q ₁ = 34 Median = 49 Q ₃ = 69 P ₉₀ = 81 P ₉₉ = 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-Apr	73	74	76	78	79	80	80	80	78	75	72	67	62	59	57	55	53	53	63	78	88	84	80	79	71.8	88																							
2-Apr	80	84	87	88	87	85	85	85	81	80	78	76	77	75	72	73	85	87	88	87	87	86	86	87	82.6	88																							
3-Apr	89	91	89	86	88	89	89	88	85	84	84	79	75	68	63	63	61	61	64	65	62	62	65	65	75.6	91																							
4-Apr	65	65	66	67	72	75	71	75	73	68	62	57	54	50	48	47	46	47	47	53	55	55	57	59	59.7	75																							
5-Apr	62	63	66	70	72	76	80	85	74	71	71	74	67	56	53	54	51	47	44	45	48	50	53	55	61.9	85																							
6-Apr	57	60	62	64	68	72	74	73	66	60	53	45	37	32	29	28	28	30	31	32	33	38	39	38	47.8	74																							
7-Apr	37	40	42	43	44	47	48	48	46	44	42	37	36	33	32	31	31	31	34	37	41	44	48	54	40.3	54																							
8-Apr	58	62	65	70	72	74	75	77	76	75	67	58	48	43	36	25	23	23	24	27	30	32	34	37	50.6	77																							
9-Apr	40	40	40	42	44	45	45	47	44	43	38	35	31	26	25	24	23	24	24	26	28	28	31	34	34.4	47																							
10-Apr	37	40	45	51	50	46	44	40	38	36	32	29	26	25	25	24	25	25	28	29	30	31	32	32	34.1	51																							
11-Apr	36	38	40	42	43	44	45	47	49	44	41	37	30	23	22	22	20	19	21	24	25	24	23	27	32.8	49																							
12-Apr	29	48	62	60	46	52	59	69	75	68	61	58	53	51	47	41	39	36	35	35	37	39	37	46	49.2	75																							
13-Apr	59	70	76	80	82	84	82	79	72	58	52	48	44	39	36	34	34	35	35	33	34	38	42	50	54.1	84																							
14-Apr	53	54	57	59	61	62	63	60	55	51	46	42	40	37	33	30	29	29	31	34	38	42	46	47	45.8	63																							
15-Apr	52	57	61	64	66	67	69	67	66	61	54	46	38	29	26	25	26	28	30	31	33	38	41	44	46.6	69																							
16-Apr	46	49	51	54	57	57	58	55	50	42	33	30	27	25	26	26	26	27	28	32	35	38	39	42	39.6	58																							
17-Apr	43	45	47	49	52	54	53	50	44	38	36	35	33	31	32	33	60	80	83	83	79	74	73	90	54.0	90																							
18-Apr	81	76	74	68	76	95	95	87	81	78	77	80	88	76	75	72	73	73	76	81	85	85	84	82	79.9	95																							
19-Apr	81	78	82	87	86	85	86	91	96	94	91	92	87	79	70	63	71	65	59	59	63	62	69	67	77.6	96																							
20-Apr	67	68	65	57	57	57	59	59	56	46	40	36	35	33	30	28	26	22	22	25	28	32	35	39	42.6	68																							
21-Apr	43	42	43	45	46	51	53	51	46	41	36	32	29	29	27	26	24	24	22	23	28	30	30	32	35.4	53																							
22-Apr	36	42	45	47	49	51	58	57	54	46	40	36	32	30	29	29	30	30	31	32	33	35	36	38	39.3	58																							
23-Apr	40	43	44	46	49	50	50	52	50	44	37	33	31	30	31	28	27	29	32	35	35	37	41	48	39.2	52																							
24-Apr	61	61	60	55	56	70	75	79	79	81	75	68	70	62	59	68	76	82	85	82	82	85	83	83	72.4	85																							
25-Apr	80	75	68	69	69	70	70	71	70	66	61	59	64	79	79	73	68	57	63	49	55	64	69	72	67.5	80																							
26-Apr	74	78	78	75	76	78	77	76	72	70	67	63	59	57	53	51	52	54	58	65	70	73	77	82	68.0	82																							
27-Apr	86	90	91	93	93	91	91	87	77	67	54	49	48	45	40	40	40	40	36	39	41	45	46	47	61.4	93																							
28-Apr	47	46	45	53	53	54	54	50	38	34	31	28	25	24	23	22	22	28	28	27	26	27	25	27	34.8	54																							
29-Apr	31	33	32	38	38	43	41	41	35	28	27	25	23	22	20	20	19	18	20	21	25	24	25	27	28.3	43																							
30-Apr	30	30	31	33	32	34	35	33	28	22	21	19	18	17	17	17	17	17	18	21	24	25	26	26	24.7	35																							
																								55.7	58.1	59.8	61.1	62.1	64.6	65.5	65.2	61.8	57.0	52.6	49.0	46.2	42.9	40.5	39.1	40.1	40.6	41.9	43.7	45.9	47.5	49.0	51.8	Diurnal Average	
																								89	91	91	93	93	95	95	91	96	94	91	92	88	79	79	73	85	87	88	87	88	86	86	90	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity 75m (RH75m) - %
Mannix - April 2023

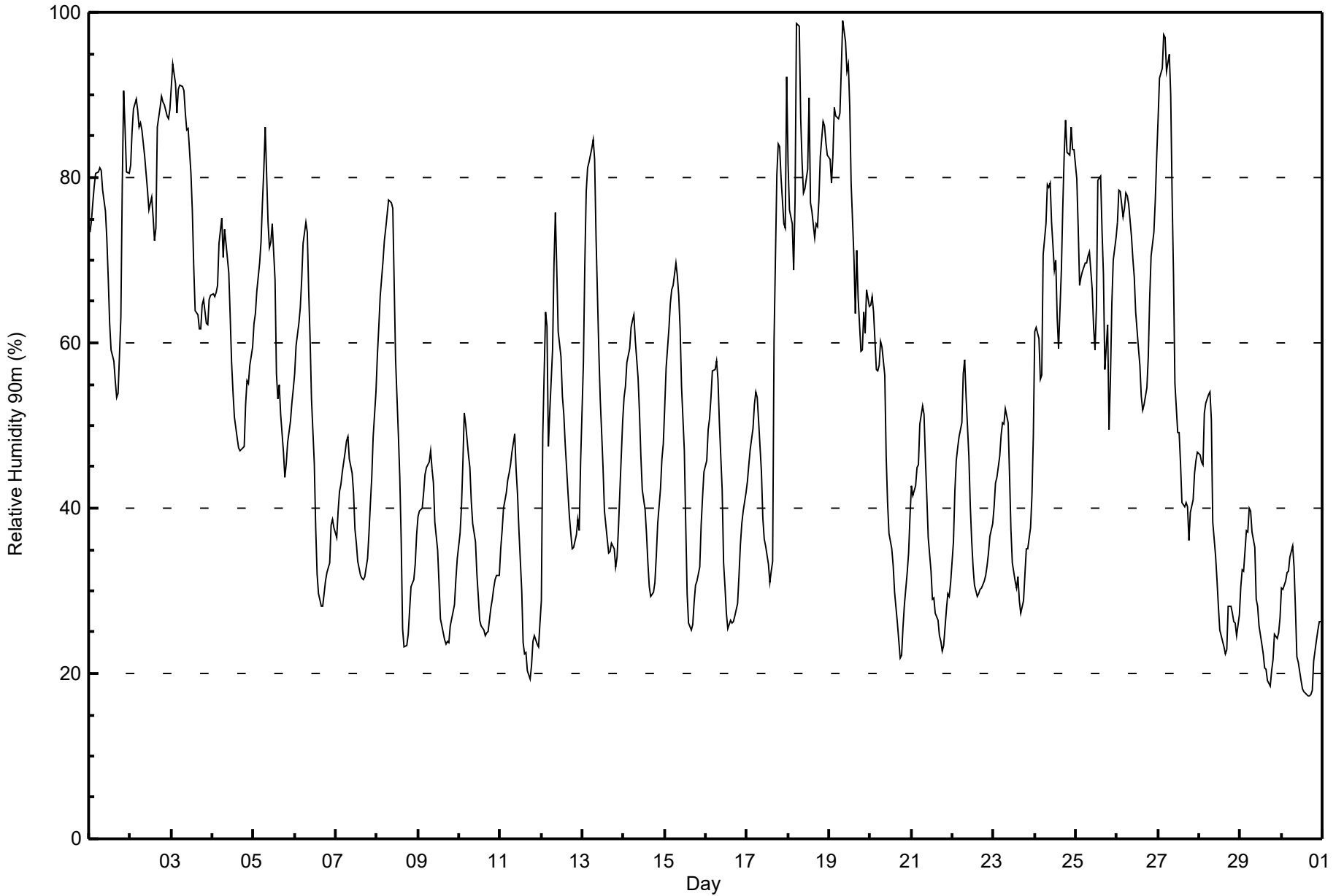
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	11	1.53	1.53
20 - 40	243	33.75	35.28
40 - 60	210	29.17	64.44
60 - 80	177	24.58	89.03
80 - 100	79	10.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 99 % on Apr 19 09:00														Maximum Daily Average: 83.9 % on Apr 2														Hours in Service: 720	
Minimum Value: 17 % on Apr 30 17:00														Minimum Daily Average: 24.8 % on Apr 30														Hours of Data: 720	
Maximum Diurnal Average: 66.1 % at hour 7														Minimum Diurnal Average: 39.6 % at hour 16														Hours of Missing Data: 0	
Monthly Average: 52.2 %														Percentiles: P ₁ = 19 P ₁₀ = 26 Q ₁ = 34 Median = 49 Q ₃ = 70 P ₉₀ = 82 P ₉₉ = 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-Apr	73	75	77	79	80	81	81	81	78	76	73	68	62	59	58	55	53	54	63	79	90	86	81	80	72.7	90			
2-Apr	81	86	88	90	88	86	87	86	82	80	78	76	78	75	72	74	86	89	90	89	89	87	87	88	83.9	90			
3-Apr	91	94	91	88	91	91	91	90	88	86	86	80	76	69	64	63	62	62	65	65	62	62	65	66	77.0	94			
4-Apr	66	66	66	67	72	75	70	74	72	69	63	58	54	51	48	47	47	47	47	53	55	55	57	59	60.0	75			
5-Apr	62	63	66	70	72	77	81	86	75	71	72	74	68	56	53	55	51	47	44	45	48	51	53	54	62.3	86			
6-Apr	56	60	62	64	68	72	75	73	66	60	53	45	38	32	30	28	28	30	31	32	33	38	39	38	48.0	75			
7-Apr	36	40	42	43	44	47	48	49	46	44	42	37	36	34	32	31	31	32	34	37	41	44	49	54	40.5	54			
8-Apr	58	62	66	70	72	74	76	77	77	76	67	58	49	44	36	25	23	23	25	28	31	31	33	37	50.7	77			
9-Apr	39	40	40	42	44	45	46	47	45	43	38	35	31	27	26	24	24	24	24	26	28	28	31	34	34.5	47			
10-Apr	37	40	45	51	50	46	45	41	38	36	32	29	26	26	25	24	25	25	28	29	30	31	32	32	34.4	51			
11-Apr	35	37	40	42	43	44	45	47	49	45	42	37	30	24	22	23	20	19	21	24	25	24	23	26	32.8	49			
12-Apr	29	49	64	62	47	52	59	69	76	69	61	58	54	51	48	42	39	37	35	35	37	39	37	46	49.8	76			
13-Apr	58	70	78	81	82	84	85	82	73	59	53	49	45	40	36	35	35	36	35	33	34	38	42	50	54.6	85			
14-Apr	53	55	58	59	62	63	63	60	56	52	46	42	40	37	33	30	29	30	31	34	38	42	46	48	46.2	63			
15-Apr	52	57	62	65	66	67	70	68	66	62	55	47	38	30	26	25	26	29	31	31	33	38	41	44	47.0	70			
16-Apr	46	50	51	53	57	57	58	56	50	42	33	31	27	25	26	26	26	27	29	32	36	38	40	42	39.9	58			
17-Apr	43	45	47	50	52	54	53	51	44	39	36	35	33	31	32	34	60	80	84	84	80	74	74	92	54.6	92			
18-Apr	82	76	74	69	77	99	98	87	82	78	79	81	90	77	76	73	74	74	77	83	87	86	84	83	81.1	99			
19-Apr	82	79	83	89	87	87	88	93	99	96	93	94	89	79	70	64	71	65	59	59	64	61	66	64	78.4	99			
20-Apr	65	66	64	57	57	57	60	59	56	46	41	37	35	33	30	28	26	22	22	26	28	32	35	39	42.5	66			
21-Apr	43	41	43	45	45	50	52	51	46	41	36	32	29	29	27	26	25	24	23	23	28	30	29	31	35.5	52			
22-Apr	36	42	46	47	49	50	56	58	54	46	40	36	33	31	29	30	30	30	31	32	33	35	37	38	39.5	58			
23-Apr	40	43	44	46	49	50	50	52	50	44	37	33	31	30	32	29	27	29	32	35	35	38	42	49	39.5	52			
24-Apr	61	62	60	56	56	71	74	79	79	79	75	69	70	63	59	69	76	83	87	83	83	86	83	83	72.8	87			
25-Apr	80	74	67	68	69	70	70	71	71	66	62	59	64	80	80	74	68	57	62	49	56	65	70	73	67.6	80			
26-Apr	75	78	78	75	76	78	78	77	73	70	68	64	59	57	54	52	52	55	58	65	71	73	77	82	68.6	82			
27-Apr	87	92	93	97	97	93	95	90	78	68	55	49	49	45	41	40	41	40	36	40	41	44	46	47	62.7	97			
28-Apr	46	46	45	51	53	54	54	51	38	34	31	28	25	25	23	22	23	28	28	27	26	26	24	27	34.9	54			
29-Apr	31	33	32	37	37	40	40	37	35	29	28	26	24	22	21	21	19	18	20	22	25	24	25	27	28.0	40			
30-Apr	30	30	31	32	32	34	35	33	28	22	21	19	18	18	18	17	17	17	18	22	24	25	26	26	24.8	35			
55.8														58.3														Diurnal Average	
91														94														Diurnal Maximum	
60.2														61.5															
62.6														64.9															
66.1														65.8															
62.3														57.7															
53.3														49.6															
46.7														43.3															
40.9														39.6															
40.6														41.1															
42.3														44.0															
46.3														47.8															
49.2														52.0															





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity 90m (RH90m) - %
Mannix - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	11	1.53	1.53
20 - 40	245	34.03	35.56
40 - 60	203	28.19	63.75
60 - 80	171	23.75	87.50
80 - 100	90	12.50	100.00

Total Number of Valid Hours: 720

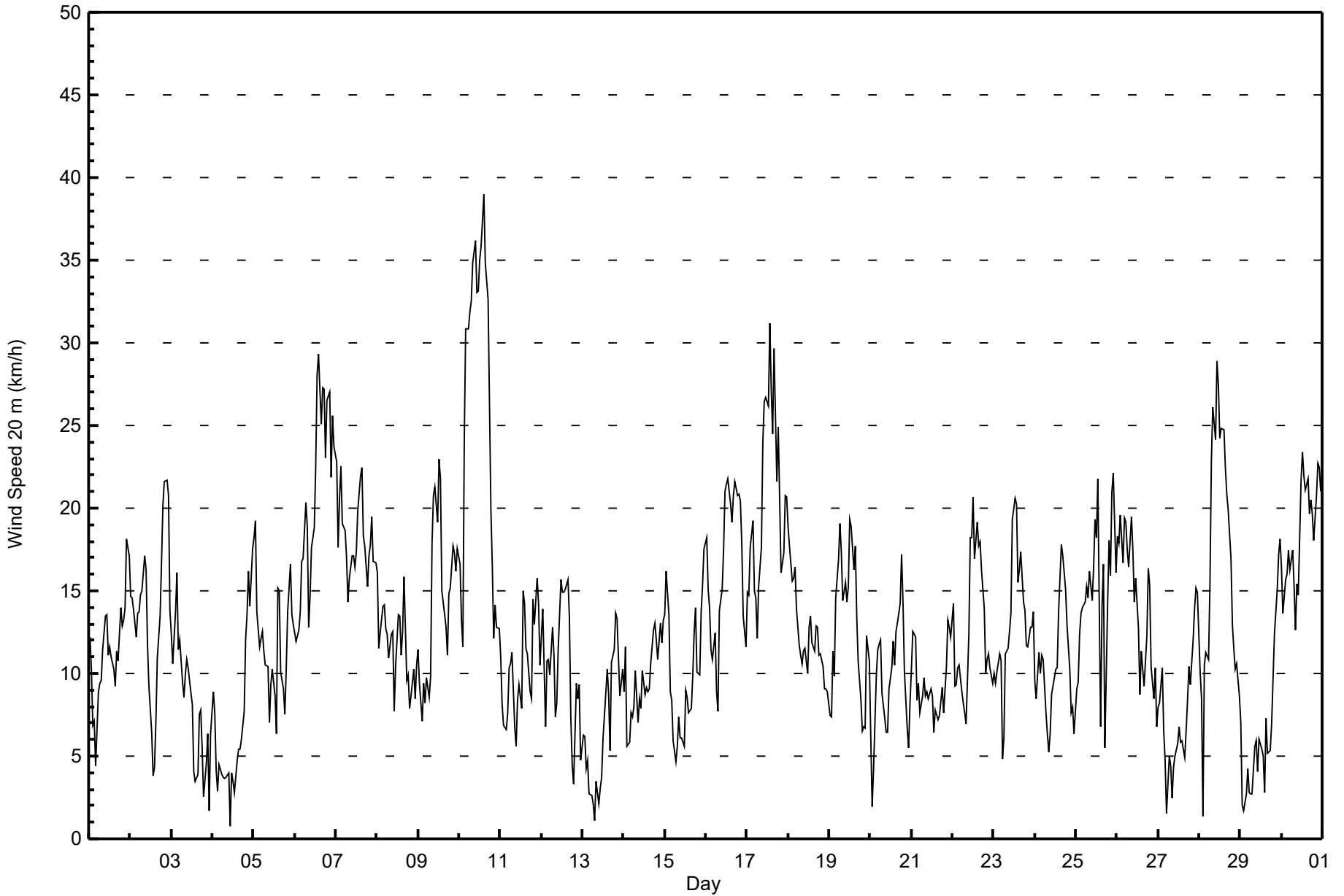
Total Number of Hours: 720



Maximum Speed: 39 km/h on Apr 10 15:00		Maximum Daily Speed Average: 24.3 km/h on Apr 10		Hours in Service: 720																							
Minimum Speed Value: 1 km/h on Apr 4 11:00		Minimum Daily Speed Average: 3.0 km/h on Apr 27		Hours of Data: 720																							
Maximum Diurnal Speed Average: 7.5 km/h at hour 24		Minimum Diurnal Speed Average: 5.0 km/h at hour 9		Hours of Missing Data: 0																							
Monthly Average Velocity: 5.8 km/h 147.6 deg		Percentiles: P ₁ = 2 P ₁₀ = 6 Q ₁ = 9 Median = 12 Q ₃ = 16 P ₉₀ = 21 P ₉₉ = 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-Apr	SE12	SE10	SE7	ESE7	ESE4	E9	ESE9	SE10	SE11	SE13	SE14	ESE11	ESE12	ESE11	ESE10	ESE9	E11	E11	E14	E13	E13	SE14	SE18	SE17	ESE10.7	SE18	
2-Apr	SE15	SE15	SE14	SE12	SE14	SE14	SE15	SE15	SE17	SE16	SE12	SE9	ESE6	E4	ENE4	NNW7	N11	N13	NNE17	NNE20	NNE22	N22	N21	N14	E6.2	N22	
3-Apr	N12	N11	N14	N16	N11	N12	NNW9	N9	NNW10	NW11	NW10	NW9	W8	W4	S3	SSW4	W8	W8	WNW5	NNE3	NNE5	E6	ENE2	E6	NNW5.7	N16	
4-Apr	E9	SE8	SSE4	SW3	W5	W4	WSW4	W4	SW4	SSW4	ENE1	S4	ESE3	SE3	SW5	SSW5	S5	SSE6	SSE8	SE12	SE14	SE16	SE14	SE18	SSE5.0	SE18	
5-Apr	SE18	SE19	SE14	SE12	SE12	SE13	SE11	SSE11	SE10	SE7	SSE9	SSE10	SSE9	SE6	SSE15	SSE15	SE10	SSE9	SSE8	SE10	SE14	SE17	SE14	SE13	SE11.8	SE19	
6-Apr	SE12	SSE12	SE13	SE14	SE17	SE17	SE20	SE19	SSE13	SSE15	SSE18	SSE19	SSE22	SSE28	S29	S25	S27	S27	S23	SSE27	S27	SSE22	SSE26	SSE24	SSE20.2	S29	
7-Apr	SSE23	SE18	SE21	SE23	SE19	SE19	SE17	SE14	SE16	SE17	SE17	SE16	SE17	SE20	SE22	SSE22	SSE18	SSE18	SE15	SSE17	SSE18	SSE20	SSE17	SSE17	SE18.1	SSE23	
8-Apr	SSE16	SSE12	SSE12	SSE14	SSE14	SSE13	SSE12	SSE11	SSE12	SSE13	SE8	SE10	SE14	SE13	SSE11	SW13	WSW16	WSW10	SW10	S8	S9	SSW10	WSW8	WSW10	S9.5	SSE16	
9-Apr	WSW11	WSW9	SW7	SW9	SW8	SW10	SSW9	SSW10	WSW18	WSW21	WSW21	WSW19	WSW23	WSW22	WSW15	SW14	SSW13	SSE11	SSE15	SSE15	SSE18	SSE17	SE16	SE18	SSW10.5	WSW23	
10-Apr	SE17	SSE13	SSW12	WSW24	WSW31	WSW31	WSW32	WSW33	WSW35	W36	WSW33	WSW33	WSW35	WSW36	WSW39	WSW35	WSW34	WSW33	WSW20	WSW17	SW12	SW14	SW13	SW13	WSW24.3	WSW39	
11-Apr	SW11	SW8	S7	SSW7	S8	SSE10	SSE11	SSE11	SSE7	SSE6	SE8	SE9	S8	SW15	WSW14	WSW11	WSW11	SW9	WSW8	N14	N13	NNW16	NNW14	W10	SW4.2	NNW16	
12-Apr	WNNW12	N14	WNNW7	W11	WSW11	W10	W13	WNNW11	NW7	NW8	WNNW11	WNNW16	WNNW15	NW15	WNNW15	NW16	WNNW13	NW7	WSW5	W3	WNNW9	WNNW8	WNNW9	N5	WNNW9.3	WNNW16	
13-Apr	WNNW6	WNNW6	WNNW4	WNNW5	W3	NW3	WNNW2	NE1	NE4	NE2	NNE3	WNNW4	NW6	NW7	WNNW10	NW9	NE5	NE11	NNE11	NNE14	NNE13	NE11	ENE9	ESE10	N4.4	NNE14	
14-Apr	SE9	SE12	SE6	ESE6	SE8	SE7	SE8	SE10	SE7	SE9	ESE8	ESE10	ESE9	ESE9	ESE9	ESE9	SE11	SE13	SE13	E12	ESE11	SE13	SE12	SE13	SE9.4	SE13	
15-Apr	SE14	SE16	SE14	SSE9	SSE8	SSE6	SSE5	SE6	SE7	SE6	SE6	SE6	ESE9	E9	E8	ESE8	E10	ESE12	E14	E10	ESE10	SE14	SE15	SE18	SE9.4	SE18	
16-Apr	SE18	SE15	SE14	SE11	SE11	SE12	SSE9	SE8	SE14	ESE15	SE17	SE21	SE21	SE22	ESE20	ESE19	ESE21	ESE22	ESE21	ESE21	ESE20	ESE18	SE13	SE12	ESE16.0	SE22	
17-Apr	SE15	SE15	ESE18	SE19	SE15	SE15	SE12	ESE15	ESE18	SE24	SE26	SE27	ESE26	SE31	ESE27	ESE25	SE30	ESE22	E25	E21	ESE16	SE17	SE21	ESE21	ESE20.3	SE31	
18-Apr	E19	ESE18	ESE16	ESE16	SE16	ESE14	ESE12	ESE11	E11	E11	SE12	ESE10	ENE13	E13	E12	E11	ENE13	ENE13	ENE11	ENE11	NE10	NNE9	NNE9	ENE9	E11.3	E19	
19-Apr	ENE7	ENE7	ESE11	ESE10	ESE15	SE17	SE19	SE17	ESE14	SE15	SE14	SE15	SE19	SE19	ESE16	ESE18	SE13	ESE11	ESE8	ENE7	NE7	NE7	NNE12	NNE11	ESE11.0	SE19	
20-Apr	NNE6	NNW2	ESE4	ESE10	SE11	SE12	SE12	SE9	SE7	ESE6	E6	E9	ESE10	ESE12	E10	ESE13	E13	ESE14	E17	E14	ESE10	SE7	SE6	SE8	ESE8.8	E17	
21-Apr	SE10	SE13	SE12	SE8	SSE9	SSE8	SSE9	SSE10	SE9	SE9	SE9	ESE9	E9	ESE6	SE8	ESE7	SE7	SSE8	SSE9	SSE8	SE10	SSE13	SSE13	SSE12	SE9.0	SSE13	
22-Apr	SSE14	SSE9	SSE9	SSE10	SSE11	SSE9	SE8	SSE8	SE7	SE12	SSE18	SSE18	SSE21	SSE17	S19	S18	S18	S16	S14	S10	S11	S11	SSE10	SSE9	SSE12.5	SSE21	
23-Apr	SSE10	SSE9	SSE10	SSE11	SSE11	SSW5	SSE6	SE11	SE12	SE13	SE14	SSE19	SE21	SSE20	SSE16	SE16	SSE17	SSE14	SSE14	SE12	SSE12	SSE13	SSE13	S14	SSE12.7	SSE21	
24-Apr	SE10	ESE8	E11	ESE10	SE11	SE11	SE8	SE6	E5	NE6	NE9	NNE10	N10	N10	N14	NNW18	NNW17	NNW16	NNW15	N13	N10	WSW8	SW8	SSE6	NNE3.8	NNW18	
25-Apr	SSE9	SE9	SSE12	SE14	SE14	SSE14	SSE15	SSE15	SSE16	SE14	SE16	SE16	SSE19	SSW18	W22	ESE7	SE14	SSE17	SSE6	SE14	WSW18	W16	W21	W22	W16	S9.4	W22
26-Apr	W18	W18	W20	WNNW17	W19	W19	W17	W16	WNNW20	WNNW17	WNNW14	WNNW16	WNNW13	NW9	NNW11	N10	NNE9	NE12	NE16	NE15	NE10	NNE8	N10	NNW7	NNW9.8	W20	
27-Apr	NNW8	NNW8	N10	NNE7	NE5	WSW2	WSW5	SSW4	WSW2	W4	WNNW5	W6	W7	W6	WSW6	SW5	SSW7	SE8	SW10	S9	SSE12	SSE14	SSE15	SSE15	SSW3.0	SSE15	
28-Apr	S10	SSE9	NW1	W11	WNNW11	WNNW11	WNNW15	WNNW23	WNNW26	NW24	WNNW29	WNNW27	NW24	NW25	NW25	NNW22	NNW21	N20	N17	NNE13	NNE12	N10	N11	N9	NW13.4	WNNW29	
29-Apr	NNE7	NNW2	NNE2	WSW3	NW4	NE3	E3	ESE3	SE6	SE6	ESE4	ESE6	ESE5	SSE5	S3	E7	E5	ESE5	E7	E10	SE12	SE15	SE17	SE18	ESE4.9	SE18	
30-Apr	SE16	SE14	SE16	SE16	SE17	SE16	SE17	SE15	SE13	SE15	SE15	SSE22	SE23	SSE22	SE21	SSE22	SE20	SE20	SE20	SE18	SE21	SE23	SE22	SE21	SE18.5	SE23	
SE7.1 SE6.7 SE6.5 SSE5.7 SSE6.4 SSE6.2 SSE6.5 SSE6.1 SSE5.0 SSE5.2 SSE5.4 SSE6.4 SSE5.9 SSE5.5 SSE5.2 SSE5.2 SSE5.2 SE5.6 ESE5.7 ESE5.9 ESE6.0 SE6.4 SE6.1 SE7.5																								Diurnal Average			
SSE23 SE19 SE21 WSW24WSW31WSW31WSW32WSW33WSW35WSW36WSW33WSW33WSW35WSW36WSW39WSW35WSW34WSW33																								Diurnal Maximum			
E25 SSE27 S27 SE23 SSE26 SSE24																											
All monthly, daily, and diurnal averages have been calculated using vector methods																											



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on Apr 17 14:00 Minimum Value: 1 km/h on Apr 22 22:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 3 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 9																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	4	2	2	3	2	2	3	3	4	4	4	4	3	3	3	3	2	3	3	4	3	5	5	4	5
2-Apr	4	4	3	3	4	3	4	4	5	4	3	3	2	2	2	4	3	4	4	5	5	5	5	4	5
3-Apr	3	3	5	5	4	4	3	3	3	3	3	3	2	2	2	2	2	1	2	1	1	2	1	2	5
4-Apr	2	2	2	1	3	2	1	2	1	2	1	3	2	2	3	3	2	2	1	3	3	4	4	4	4
5-Apr	4	4	4	3	3	3	3	2	3	4	2	2	3	3	5	4	5	2	1	2	3	4	3	3	5
6-Apr	2	2	2	2	3	4	5	5	3	4	4	5	6	8	7	7	8	6	6	6	6	5	5	5	8
7-Apr	5	4	5	5	4	4	4	4	5	5	5	5	5	6	5	6	5	4	4	4	4	4	3	3	6
8-Apr	3	3	2	3	2	2	3	3	3	3	3	3	3	4	3	6	4	3	2	1	2	1	1	2	6
9-Apr	1	2	1	2	2	3	2	3	6	5	5	5	7	6	5	6	5	3	3	3	3	4	4	4	7
10-Apr	5	3	4	6	9	8	8	8	8	8	8	8	8	8	9	9	8	8	8	5	2	3	3	3	9
11-Apr	3	2	1	2	2	2	2	3	2	2	3	3	5	5	4	4	4	3	4	6	3	4	4	3	6
12-Apr	2	4	2	1	2	2	2	3	3	3	4	4	3	5	5	4	4	3	1	2	3	1	1	1	5
13-Apr	1	2	1	2	1	2	1	1	2	2	2	3	3	3	4	4	4	3	3	3	3	3	3	3	4
14-Apr	3	3	3	2	3	3	3	4	3	3	3	4	3	3	3	3	3	5	4	4	3	3	4	3	5
15-Apr	4	4	4	2	1	2	2	2	3	2	3	3	3	4	4	4	3	4	4	2	4	4	5	4	5
16-Apr	4	4	3	2	3	3	2	3	5	5	6	7	7	7	7	6	7	7	7	6	6	6	5	4	7
17-Apr	4	5	6	6	4	4	4	6	6	10	9	8	9	11	9	9	10	7	7	7	6	6	7	7	11
18-Apr	6	6	5	5	6	5	4	4	3	4	4	3	3	4	4	3	3	3	3	3	2	2	2	3	6
19-Apr	2	3	4	4	5	5	5	5	5	5	5	5	6	6	5	6	5	4	3	2	2	3	2	1	6
20-Apr	3	1	3	3	3	4	3	4	3	2	2	4	5	6	5	5	5	5	4	4	3	3	2	3	6
21-Apr	3	3	3	1	1	2	2	2	2	3	4	5	5	4	4	3	4	3	2	1	2	3	2	2	5
22-Apr	2	1	1	1	1	1	3	3	2	5	6	7	7	7	7	7	7	5	5	3	1	1	1	1	7
23-Apr	2	2	2	2	2	1	2	3	4	4	5	6	6	6	7	6	5	5	7	5	3	4	5	5	7
24-Apr	3	3	3	3	4	4	3	3	2	2	3	3	4	4	5	5	5	5	4	4	3	4	3	3	5
25-Apr	2	2	2	3	3	3	3	3	4	5	5	5	9	11	4	4	5	7	4	7	5	4	4	4	11
26-Apr	4	4	4	4	4	3	3	4	5	4	4	4	3	3	4	4	4	4	3	4	4	2	1	2	5
27-Apr	2	3	3	2	2	2	1	2	2	3	4	4	3	4	3	3	3	3	4	2	2	2	3	3	4
28-Apr	2	2	4	2	3	2	4	5	7	7	7	7	7	7	7	7	7	6	5	3	3	2	2	2	7
29-Apr	2	1	1	2	2	1	1	1	2	3	3	3	3	3	3	4	3	3	3	2	3	5	5	5	5
30-Apr	4	3	4	4	5	4	4	4	4	5	5	6	7	7	7	6	6	6	5	5	6	6	6	5	7
																	Diurnal Maximum								





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	66	9.17	9.17
6 - 11	273	37.92	47.08
12 - 19	284	39.44	86.53
20 - 28	79	10.97	97.50
29 - 38	17	2.36	99.86
> 38	1	0.14	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1	4	6	3	4	7	1	3	4	5	4	6	7	3	3	5	66
6 - 11	13	10	8	8	20	37	56	47	10	5	10	11	10	10	10	8	273
12 - 19	12	6	3	3	11	22	119	57	6	3	7	7	9	10	2	7	284
20 - 28	3	2	0	0	2	11	20	16	5	0	0	6	4	4	4	2	79
29 - 38	0	0	0	0	0	0	2	0	1	0	0	13	0	1	0	0	17
> 38	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Totals	29	22	17	14	37	77	198	123	26	13	21	44	30	28	19	22	720

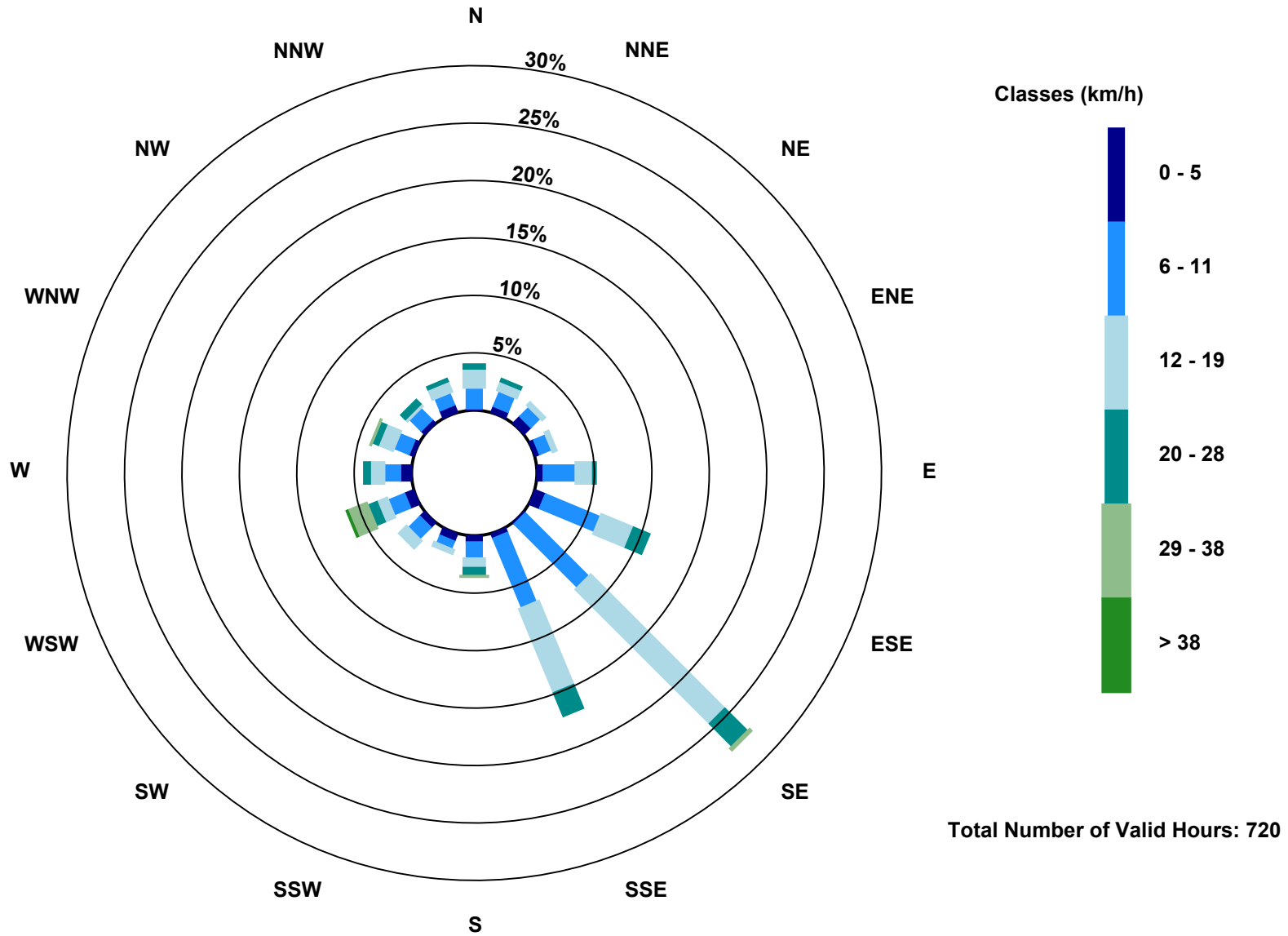
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed 20 m (WS20m) - km/h
Mannix





Maximum Speed: 47 km/h on Apr 10 15:00	Maximum Daily Speed Average: 30.8 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 4 11:00	Minimum Daily Speed Average: 4.2 km/h on Apr 27	Hours of Data: 719
Maximum Diurnal Speed Average: 9.7 km/h at hour 24	Minimum Diurnal Speed Average: 5.6 km/h at hour 9	Hours of Missing Data: 1
Monthly Average Velocity: 7.2 km/h 143.2 deg	Percentiles: P ₁ = 3 P ₁₀ = 7 Q ₁ = 11 Median = 16 Q ₃ = 21 P ₉₀ = 26 P ₉₉ = 40	Percent Operational Time: 99.9

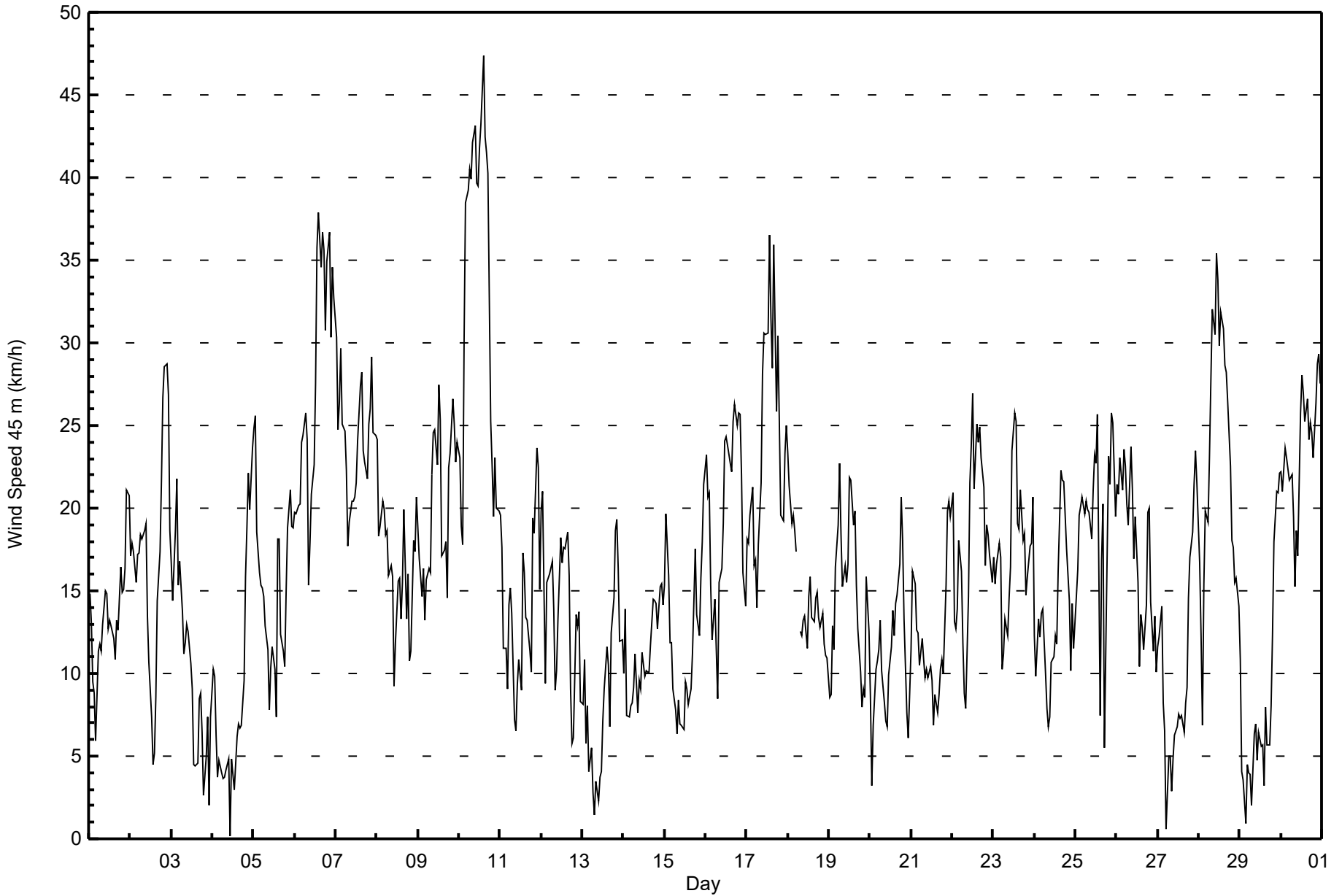
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-Apr	ESE15	SE13	SE10	E9	E6	E11	ESE12	ESE11	ESE13	SE15	ESE15	ESE13	E13	ESE13	E12	ESE11	E13	E13	ENE16	E15	E15	SE16	SE21	SE21	ESE12.8	SE21
2-Apr	SE17	SE18	SE17	SE16	SE17	SE17	SE18	SE18	SE19	SE19	SE13	SE11	E7	E4	NE5	NNW9	N14	N17	N22	N27	N29	N29	N27	N19	ENE8.1	N29
3-Apr	N17	N14	N19	N22	N15	N17	NNW14	N11	NNW12	NW13	WNW13	WNW11	W9	W5	SSW4	SW5	W8	W9	WNW6	NNE3	NNE5	ENE7	E2	ENE7	NNW7.5	N22
4-Apr	E10	ESE10	SSE6	S4	W5	W4	SW4	WSW4	SW4	SSW5	E0	S5	ESE4	SE3	SSW6	SSW7	S7	SSE7	SSE10	SE16	SE19	SE22	SE20	SE24	SSE6.6	SE24
5-Apr	SE25	SE26	SE19	SE16	SE15	SE15	SE15	SE13	SE11	SE8	SE10	SE12	SSE10	SE7	SE18	SE18	SE12	SSE11	SSE10	SE15	SE19	SE21	SE19	SE19	SE15.1	SE26
6-Apr	SE20	SSE20	SE20	SE20	SE24	SE24	SE26	SE24	SE15	SSE18	SE21	SSE23	SSE28	SSE36	SSE38	S35	SSE37	SSE36	SSE31	SSE35	SSE37	SSE30	SSE35	SSE33	SSE27.1	SSE38
7-Apr	SSE30	SE25	SE26	SE30	SE25	SE25	SE22	SE18	SE19	SE20	SE20	SE21	SE21	SE24	SE27	SE28	SE23	SE23	SE22	SSE25	SSE26	SSE29	SSE25	SSE24	SE23.9	SSE30
8-Apr	SSE24	SE18	SSE19	SSE20	SSE20	SSE18	SSE19	SSE16	SSE17	SSE16	SE9	SE12	SE16	SE16	SSE13	SSW16	WSW20	SW13	SW16	SSW11	SSW11	SW18	WSW17	WSW21	S13.2	SSE24
9-Apr	WSW19	WSW17	SW15	WSW16	SW13	SW16	SSW16	SSW16	WSW22	WSW25	WSW25	WSW23	WSW27	WSW25	WSW17	SSW17	S18	SSE15	SSE22	SSE23	SSE27	SE25	SE23	SE24	SSW14.8	WSW27
10-Apr	SE23	SSE19	SSW18	WSW30	WSW38	WSW39	WSW41	WSW40	WSW42	WSW43	WSW40	SW39	WSW42	WSW43	SW47	WSW42	WSW42	WSW40	WSW25	WSW23	SW19	SW23	SW20	SW20	WSW30.8	SW47
11-Apr	SW20	SW18	SSW11	SW12	SSW9	SSE14	SSE15	SSE14	SSE7	SE7	SE9	SE11	S9	SW17	WSW16	WSW13	SW13	SW11	WSW10	N19	N18	NNW24	NNW22	NNW15	SW5.9	NNW24
12-Apr	WNNW20	N21	NW9	W16	WSW16	W16	W17	WNNW14	NW9	NW10	NNW13	W18	W17	NW18	NW18	WNNW19	WNNW16	WNNW9	WSW6	W6	WNNW14	NW13	NW14	NNW8	WNNW12.5	N21
13-Apr	NW8	NNW11	NNW6	NNW8	NW4	NNW5	NW3	NNE1	NNE3	N2	N4	NNW4	NW7	NW9	WNNW12	WNNW10	NNE7	NE12	NNE15	NNE19	NNE19	NE16	ENE12	ESE12	N6.3	NNE19
14-Apr	ESE10	SE14	SE7	ESE7	ESE8	ESE8	ESE9	SE11	SE8	SE10	ESE9	E11	ESE10	E10	E10	ESE10	SE12	SE15	ESE14	E14	ESE13	SE15	SE15	ESE14	ESE10.8	SE15
15-Apr	SE15	SE20	SE16	SE12	SE12	SE9	SSE8	SE6	SE8	SE7	SE7	SE7	ESE9	E9	E8	ESE9	E11	ESE14	E18	E14	ESE12	ESE16	ESE18	SE21	ESE11.4	SE21
16-Apr	SE23	SE21	SE21	SE15	ESE12	SE15	SE11	SE8	SE16	ESE16	ESE19	ESE24	SE24	ESE24	ESE23	ESE22	E25	E26	E25	E26	E26	ESE22	ESE16	SE14	ESE19.3	E26
17-Apr	SE18	SE18	ESE20	ESE21	SE17	SE17	ESE14	ESE18	ESE22	ESE28	ESE31	ESE31	ESE31	ESE37	ESE32	ESE28	SE36	ESE26	E30	E25	ESE20	ESE19	ESE23	ESE25	ESE23.9	ESE37
18-Apr	E23	E21	E19	ESE20	ESE19	ESE17	UO	ESE13	E12	ENE13	ESE13	E12	ENE15	E16	E13	E13	ENE15	ENE15	NE13	ENE13	NE14	NNE12	NNE11	ENE11	E13.5	E23
19-Apr	ENE9	ENE9	E13	ESE11	ESE16	ESE19	SE23	ESE18	ESE15	ESE17	ESE16	ESE17	ESE22	ESE22	ESE19	ESE20	ESE15	ESE13	ESE10	ENE8	NE9	NE9	NNE16	NNE13	ESE12.8	SE23
20-Apr	NE9	NE3	E7	ESE10	ESE11	ESE11	SE13	SE10	SE8	ESE7	E7	E10	E12	E14	E12	E14	E15	ESE17	E21	E18	ESE13	ESE8	ESE6	ESE9	ESE10.4	E21
21-Apr	SE11	SE16	SE15	SE13	SE12	SE11	SE12	SE11	SE10	SE10	ESE10	ESE10	E10	ESE7	SE9	E8	SE9	SSE10	SE11	SE10	SE15	SE20	SSE20	SSE20	SE11.7	SSE20
22-Apr	SSE21	S13	SSE13	SSE14	SSE18	SSE16	SSE12	SSE9	SE8	SE15	SSE22	SSE24	SSE27	SSE21	SSE25	S24	S25	S23	S21	S17	S19	S18	SSE17	SSE16	SSE17.7	SSE27
23-Apr	SE17	SE15	SE17	SE18	SE17	S10	SE11	ESE13	SE12	SE15	SE16	SE23	SE26	SSE25	SSE19	SE19	SSE21	SE18	SSE18	SE15	SSE16	SSE18	SSE18	S21	SE17.0	SE26
24-Apr	SE12	E10	E13	ESE12	SE14	ESE14	SE10	SE8	E7	NE7	NE11	NNE11	N12	N12	N16	NNW22	NNW22	NNW22	NNW20	NNW18	N14	WSW10	SW14	SE11	NNE4.6	NNW22
25-Apr	SSE15	SE16	SE20	SE20	SE21	SSE20	SSE20	SSE20	SSE20	SSE18	SSE21	SSE23	SSW23	W26	ESE7	SE17	SSE20	SSE5	SE17	WSW23	WSW21	W26	W25	W19	S12.4	W26
26-Apr	W21	W21	W23	W21	W24	W23	W20	W19	WNNW24	WNNW21	W17	WNNW19	WNNW15	NW10	NNW14	N13	N11	NE14	NNE20	NE20	NE14	NNE11	N13	NNW10	NW11.9	WNNW24
27-Apr	NNW12	NNW12	N14	NNE8	NE7	N1	SW5	SSW5	SW3	W5	W6	W7	WSW8	WSW7	SW7	SW6	SSW8	SE9	SSW15	S17	SSE19	SSE21	SSE24	SSE22	SSW4.2	SSE24
28-Apr	S17	S12	W7	W15	WNNW20	WNNW19	WNNW23	WNNW28	WNNW32	WNNW31	WNNW35	WNNW34	NW30	NW32	NW31	NW29	NNW28	N26	N23	NNE18	NNE18	N15	N16	N14	NW17.8	WNNW35
29-Apr	NNE11	NE4	NE4	N1	WNNW5	N4	NNE4	E2	SE6	SE7	ESE5	E6	ESE6	SSE6	S3	ENE8	ENE6	E6	ENE8	E12	SE18	SE21	SE21	SE22	ESE6.0	SE22
30-Apr	SE22	SE21	SE24	SE23	SE22	SE22	SE22	SE20	SE15	SE19	SE17	SE26	SE28	SE27	SE25	SE27	SE24	SE25	SE25	SE23	SE26	SE29	SE29	SE28	SE23.5	SE29

SE9.4	SE8.9	SE8.5	SE7.2	SSE7.6	SSE7.6	SSE8.0	SSE7.2	SSE5.6	SSE5.9	SSE6.1	SSE7.4	SSE7.0	SSE6.4	SSE6.3	SSE6.2	SSE6.3	SE6.7	ESE7.1	ESE7.4	ESE7.8	SE8.2	SE8.0	SE9.7	Diurnal Average
SSE30	SE26	SE26	WSW30	WSW38	WSW39	WSW41	WSW40	WSW42	WSW43	WSW40	SW39	WSW42	WSW43	SW47	WSW42	WSW42	WSW40	SSE31	SSE35	SSE37	SSE30	SSE35	SSE33	Diurnal Maximum

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



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on Apr 25 14:00 Minimum Value: 1 km/h on Apr 12 23:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 4 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 9																		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	5	3	3	3	3	2	3	4	4	4	4	4	4	4	4	3	2	3	4	4	4	5	5	4	5
2-Apr	4	4	3	3	4	3	4	3	4	3	3	2	2	2	2	4	3	3	3	4	3	4	4	4	4
3-Apr	4	4	6	5	4	4	4	3	2	2	2	2	3	2	2	2	2	1	2	2	1	2	2	2	6
4-Apr	3	2	2	1	3	2	1	1	1	2	2	2	3	3	2	3	3	2	2	3	3	4	4	4	4
5-Apr	3	4	4	3	3	3	3	2	3	4	2	2	3	3	5	4	5	3	1	2	3	4	2	2	5
6-Apr	2	2	2	2	3	3	5	4	4	4	3	4	5	8	5	6	6	6	5	6	6	5	5	4	8
7-Apr	5	4	4	4	4	4	4	4	4	5	5	5	5	6	5	6	5	5	4	4	4	4	3	3	6
8-Apr	2	3	2	3	2	2	3	2	2	3	4	3	2	3	2	7	5	3	2	1	2	1	2	2	7
9-Apr	1	2	2	3	2	3	2	2	6	5	5	4	6	6	5	7	5	3	4	3	3	4	4	4	7
10-Apr	5	4	4	6	9	8	8	8	9	8	8	8	8	9	9	9	8	8	8	5	2	3	3	4	9
11-Apr	2	3	2	2	3	2	1	2	2	2	3	3	5	4	4	4	4	3	4	7	4	3	4	5	7
12-Apr	1	3	4	1	2	2	2	3	3	3	4	4	3	5	4	4	4	3	2	3	5	2	1	3	5
13-Apr	2	3	1	2	2	2	1	1	2	2	2	3	3	3	4	4	4	4	3	3	3	3	3	3	4
14-Apr	3	3	4	3	2	3	3	4	3	3	4	3	3	3	3	3	3	5	4	5	3	4	3	4	5
15-Apr	4	4	4	2	2	2	3	2	2	2	3	3	3	4	4	4	3	4	4	3	4	4	6	5	6
16-Apr	4	3	2	3	4	4	4	3	5	5	6	8	7	7	7	6	7	7	7	7	7	6	5	5	8
17-Apr	5	5	5	5	4	5	5	6	7	10	9	9	9	11	8	10	11	8	7	8	7	6	7	7	11
18-Apr	6	6	6	5	7	5	UO	4	3	4	4	3	3	4	3	3	3	3	3	3	2	2	2	3	7
19-Apr	2	3	3	4	5	6	6	5	5	5	5	5	6	6	5	6	4	4	3	2	2	4	1	1	6
20-Apr	3	2	2	3	3	4	4	4	2	2	2	4	5	6	5	5	6	5	4	4	3	3	3	3	6
21-Apr	4	3	3	2	2	2	2	2	2	3	4	4	5	4	4	4	4	3	2	1	3	2	2	2	5
22-Apr	3	2	2	3	1	1	2	2	2	5	5	6	6	8	6	5	5	4	5	2	1	1	1	1	8
23-Apr	1	2	1	2	2	1	2	3	4	4	5	6	6	6	8	8	6	5	7	6	3	3	6	5	8
24-Apr	4	3	3	3	5	5	3	3	2	2	2	3	4	4	4	4	5	4	4	3	5	3	4	4	5
25-Apr	2	1	2	2	2	2	3	3	4	3	4	5	10	11	4	4	5	8	4	8	4	4	4	4	11
26-Apr	4	4	4	4	4	3	3	4	4	3	3	4	3	3	4	4	4	4	4	4	4	2	1	2	4
27-Apr	2	3	3	2	2	2	1	2	2	2	4	3	3	4	3	3	3	4	3	1	2	2	2	3	4
28-Apr	2	2	6	2	2	2	3	5	7	6	6	6	6	6	6	6	6	6	6	4	3	3	2	3	7
29-Apr	2	3	2	3	1	1	1	1	2	2	3	3	3	3	3	4	3	3	3	3	3	5	6	5	6
30-Apr	4	3	4	3	4	4	4	4	4	5	5	6	7	6	6	6	6	6	5	5	6	5	6	5	7
Diurnal Maximum																									
UO - Unstable Operation																									





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 45 m (WS45m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	43	5.98	5.98
6 - 11	164	22.81	28.79
12 - 19	280	38.94	67.73
20 - 28	184	25.59	93.32
29 - 38	35	4.87	98.19
> 38	13	1.81	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 45 m (WS45m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	5	4	0	4	2	1	1	3	3	5	1	4	1	2	2	43
6 - 11	2	6	6	9	19	28	40	12	3	7	3	5	7	4	7	6	164
12 - 19	20	8	6	7	24	42	78	30	8	6	12	8	9	11	5	6	280
20 - 28	7	1	1	0	9	18	70	33	5	1	4	13	9	6	0	7	184
29 - 38	2	0	0	0	1	5	4	12	1	0	0	2	0	4	4	0	35
> 38	0	0	0	0	0	0	0	0	0	0	2	11	0	0	0	0	13
Totals	36	20	17	16	57	95	193	88	20	17	26	40	29	26	18	21	719

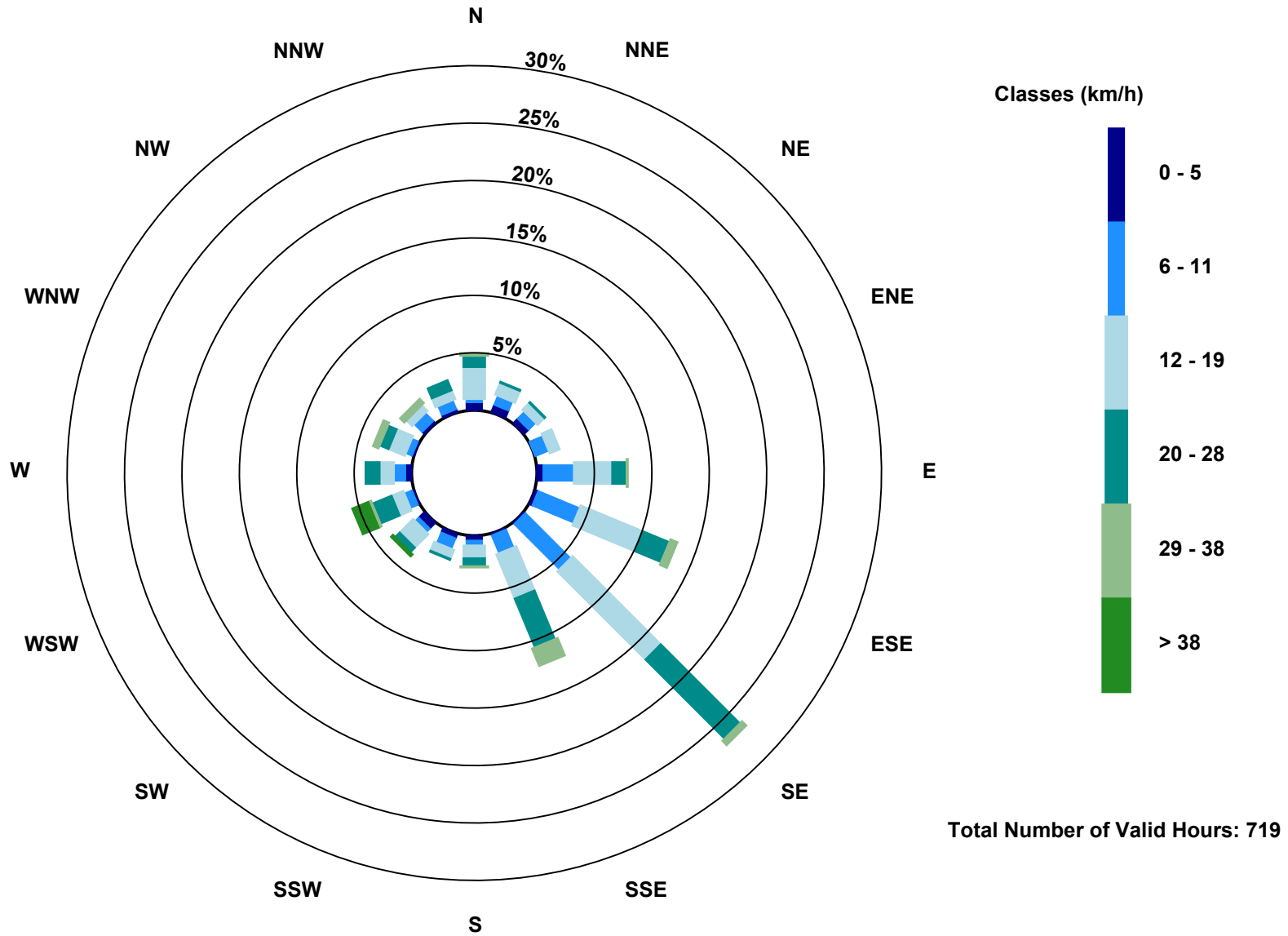
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed 45 m (WS45m) - km/h
Mannix





Maximum Speed: 52 km/h on Apr 10 15:00	Maximum Daily Speed Average: 35.2 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 4 11:00	Minimum Daily Speed Average: 5.0 km/h on Apr 27	Hours of Data: 719
Maximum Diurnal Speed Average: 10.2 km/h at hour 24	Minimum Diurnal Speed Average: 5.3 km/h at hour 9	Hours of Missing Data: 1
Monthly Average Velocity: 7.0 km/h 150.8 deg	Percentiles: P ₁ = 3 P ₁₀ = 7 Q ₁ = 10 Median = 16 Q ₃ = 24 P ₉₀ = 29 P ₉₉ = 46	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-Apr	ESE12	SE11	ESE9	E8	E6	E10	ESE10	ESE9	SE11	SE12	ESE12	ESE11	E12	ESE11	ESE11	ESE10	E12	E12	E17	E14	E13	SE13	SE17	SE17	ESE11.3	SE17
2-Apr	SE15	SE16	SE17	SE15	SE18	SE17	SE17	SE16	SE14	SE15	SE11	SE10	ESE7	E5	NE6	N9	N16	N19	N23	N29	N31	N32	N30	N22	ENE8.3	N32
3-Apr	N19	N16	N21	N26	N18	N20	N17	N12	NNW13	NW13	NW13	NNW11	WNW9	W5	SSW5	SW5	W9	W9	WNW6	NNE2	NE5	ENE7	E2	ENE8	NNW8.3	N26
4-Apr	E9	ESE9	SE8	SSE6	W3	SW3	S5	SW4	SSW5	S5	SSW0	S5	ESE4	SE3	SSW6	SSW7	S7	SSE7	SE11	SE15	SE19	SE26	SE23	SE25	SSE7.8	SE26
5-Apr	SE28	SE30	SE23	SE18	SE13	SE13	SE16	SE14	SE10	SE8	SE11	SSE13	SSE11	SE7	SE19	SE19	SE13	SSE13	SSE12	SE15	SE20	SE21	SE23	SE24	SE16.2	SE30
6-Apr	SSE26	SSE27	SSE26	SE23	SE29	SE29	SE29	SE27	SSE18	SSE19	SE22	SSE24	SSE29	SSE39	SSE41	S39	S41	SSE40	SSE35	SSE39	SSE42	SSE36	SSE40	SSE39	SSE31.0	SSE42
7-Apr	SSE37	SE32	SE31	SE33	SE29	SE28	SE25	SE20	SE20	SE21	SE21	SE22	SE22	SE26	SE29	SSE31	SSE26	SSE26	SE26	SSE32	SSE33	SSE36	SSE30	SSE29	SSE27.4	SSE37
8-Apr	SSE30	SSE24	SSE23	SSE26	SSE25	SSE24	SSE23	S20	S19	SSE18	SSE11	SSE13	SSE16	SE16	SSE14	SW17	WSW22	WSW16	SW19	SW14	SW16	SW24	WSW26	WSW29	S16.0	SSE30
9-Apr	WSW25	WSW24	WSW21	WSW22	WSW18	SW20	SW20	SW20	WSW25	WSW27	WSW27	WSW25	WSW30	WSW27	WSW18	SSW19	S20	SSE16	SSE28	SSE30	SSE34	SSE31	SE29	SE28	SSW17.9	SSE34
10-Apr	SE25	SSE24	SSW23	WSW34	WSW43	WSW45	WSW47	WSW44	WSW47	WSW47	WSW43	SW42	WSW46	WSW47	WSW52	WSW47	WSW46	WSW45	WSW30	WSW27	SW24	SW30	WSW26	SW25	WSW35.2	WSW52
11-Apr	SW25	SW25	SW16	WSW16	SW12	S12	S12	SSE12	SSE7	SSE7	SE9	SSE11	S10	SW18	WSW17	WSW14	SW14	SW12	WSW10	NNE23	N22	NNW31	NNW29	NW16	WSW6.9	NNW31
12-Apr	WNN25	N25	NNW10	W14	W20	W22	W21	WNN15	NW9	NW10	WNN13	W19	WNN17	NW18	NW18	NW19	WNN16	WNN9	W7	W9	NW15	NW14	NNW15	N9	WNN13.9	N25
13-Apr	NW9	NNW14	N8	N9	NNW7	NNW7	N2	NNE2	N3	N2	N4	NNW4	NW7	NW9	NW12	NW10	NE7	NE13	NNE17	NNE23	NE23	ENE20	E13	ESE9	NNE7.3	NE23
14-Apr	ESE8	SE11	SE6	ESE6	ESE6	ESE6	SE7	SE9	SE7	SE8	ESE8	ESE10	ESE9	E9	ESE9	ESE9	SE11	SE13	ESE11	E12	ESE11	SE11	SE12	ESE9	ESE9.0	SE13
15-Apr	ESE10	SE12	SE11	SE10	SE10	SE8	SE9	SE6	SE8	SE7	SE7	SE7	ESE9	E9	E8	ESE8	E10	ESE11	E17	E12	ESE11	ESE12	ESE15	SE19	ESE9.9	SE19
16-Apr	SE22	SE22	SE19	SE10	ESE7	ESE8	SE7	SE7	SE13	ESE12	SE15	SE19	SE20	SE19	ESE18	ESE18	E21	E23	E22	E24	E24	ESE19	ESE14	SE13	ESE16.1	E24
17-Apr	SE16	SE15	ESE16	ESE16	ESE13	SE14	ESE13	ESE15	ESE19	ESE23	ESE24	ESE24	ESE24	SE30	ESE25	ESE23	SE34	ESE21	E30	E25	ESE17	ESE16	ESE19	ESE22	ESE20.1	SE34
18-Apr	E23	E19	E18	ESE18	ESE16	ESE14	UO	ESE10	E12	E13	ESE12	E11	ENE15	E14	E13	E13	ENE15	ENE16	ENE15	ENE14	NE15	NNE13	NE12	ENE11	E13.2	E23
19-Apr	ENE9	ENE9	ESE10	ESE10	ESE14	SE16	SE18	ESE14	ESE12	ESE12	ESE12	ESE13	SE16	ESE17	ESE15	ESE15	ESE12	ESE10	ESE9	E8	NE11	ENE10	NNE15	NE12	ESE11.1	SE18
20-Apr	ENE8	ESE4	ESE7	ESE9	ESE8	ESE7	SE10	SE9	SE8	ESE7	E7	E9	E11	E13	E12	E13	E14	ESE14	E20	E18	ESE11	ESE7	ESE6	ESE6	ESE9.5	E20
21-Apr	ESE9	SE15	SE10	SE11	SE9	SE9	SE13	SE12	SE10	SE10	SE8	ESE10	ESE9	ESE7	SE9	ESE7	SE9	SSE11	SSE11	SE11	SE17	SE23	SSE26	SSE28	SE11.9	SSE28
22-Apr	S24	SSW17	SSW11	SSE9	SSE12	SSE16	SSE16	SSE9	SE8	SE15	SSE22	SSE26	SSE28	SSE22	SSE27	S26	S27	S26	S25	S20	S24	S24	SSE20	SSE19	S19.1	SSE28
23-Apr	SE22	SE21	SE22	SE23	SE20	SSE14	SE13	SE9	ESE8	SE12	SE16	SE24	SE28	SSE27	SSE20	SE18	SSE22	SSE19	SSE20	SE14	SSE18	SSE21	SSE20	S25	SSE18.6	SE28
24-Apr	SE13	ESE9	E13	ESE11	SE14	SE13	SE10	SE8	E6	ENE9	NE12	NNE11	N12	N12	N16	NNW24	NNW24	NNW25	NNW22	N20	N18	W9	SW17	S13	NNE5.1	NNW25
25-Apr	SSE19	SSE20	SE26	SSE26	SSE27	SSE24	SSE24	SSE24	SSE21	SE19	SSE22	SSE25	SSW25	W27	ESE6	SE17	SSE21	S5	SE15	WSW27	WSW25	W30	W28	W22	S14.3	W30
26-Apr	W24	W23	W25	WNN23	W26	W25	W22	W20	WNN25	WNN22	WNN18	WNN20	WNN16	NW11	NNW14	N13	NNE12	NE15	NE21	NE23	NE17	NNE14	N14	N11	NW12.6	W26
27-Apr	N13	NNW15	N16	NNE10	NE9	NE3	SW4	SSW5	SW3	W5	W7	WSW7	W8	WSW8	SW8	SW7	SSW9	SSE9	SSW17	S21	S24	SSE27	SSE29	SSE26	SSW5.0	SSE29
28-Apr	S22	SSW14	W12	W20	WNN25	WNN24	WNN28	WNN30	WNN34	NW32	WNN37	WNN35	NW31	NW34	NW32	NW31	NNW32	N29	N26	NNE22	NNE23	N21	N21	NNE17	NW20.2	WNN37
29-Apr	NNE14	NE6	ENE6	NE2	NW3	NNW6	N5	ENE3	SSE6	SE7	ESE5	E6	E6	SSE6	S3	E7	E6	ESE6	E8	E12	SE22	SE24	SE20	SE18	ESE6.2	SE24
30-Apr	SE24	SE26	SE29	SE27	SE23	SE22	SE20	SE20	SE16	SSE19	SE16	SSE26	SE28	SE28	SE26	SE28	SE24	SE26	SE27	SE23	SE25	SE29	SE31	SE32	SE24.7	SE32

SSE9.5	SE9.3	SE8.4	SSE6.9	SSE6.9	SSE6.8	SSE7.8	SSE6.9	SSE5.3	SSE5.5	SSE5.7	SSE7.3	SSE6.7	S6.3	SSE6.3	SSE6.1	SSE6.4	SE6.4	SE7.3	ESE7.3	SE8.0	SE8.4	SE8.4	SSE10.2	Diurnal Average
SSE37	SE32	SE31	WSW34	WSW43	WSW45	WSW47	WSW44	WSW47	WSW47	WSW43	SW42	WSW46	WSW47	WSW52	WSW47	WSW46	WSW45	SSE35	SSE39	SSE42	SSE36	SSE40	SSE39	Diurnal Maximum

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

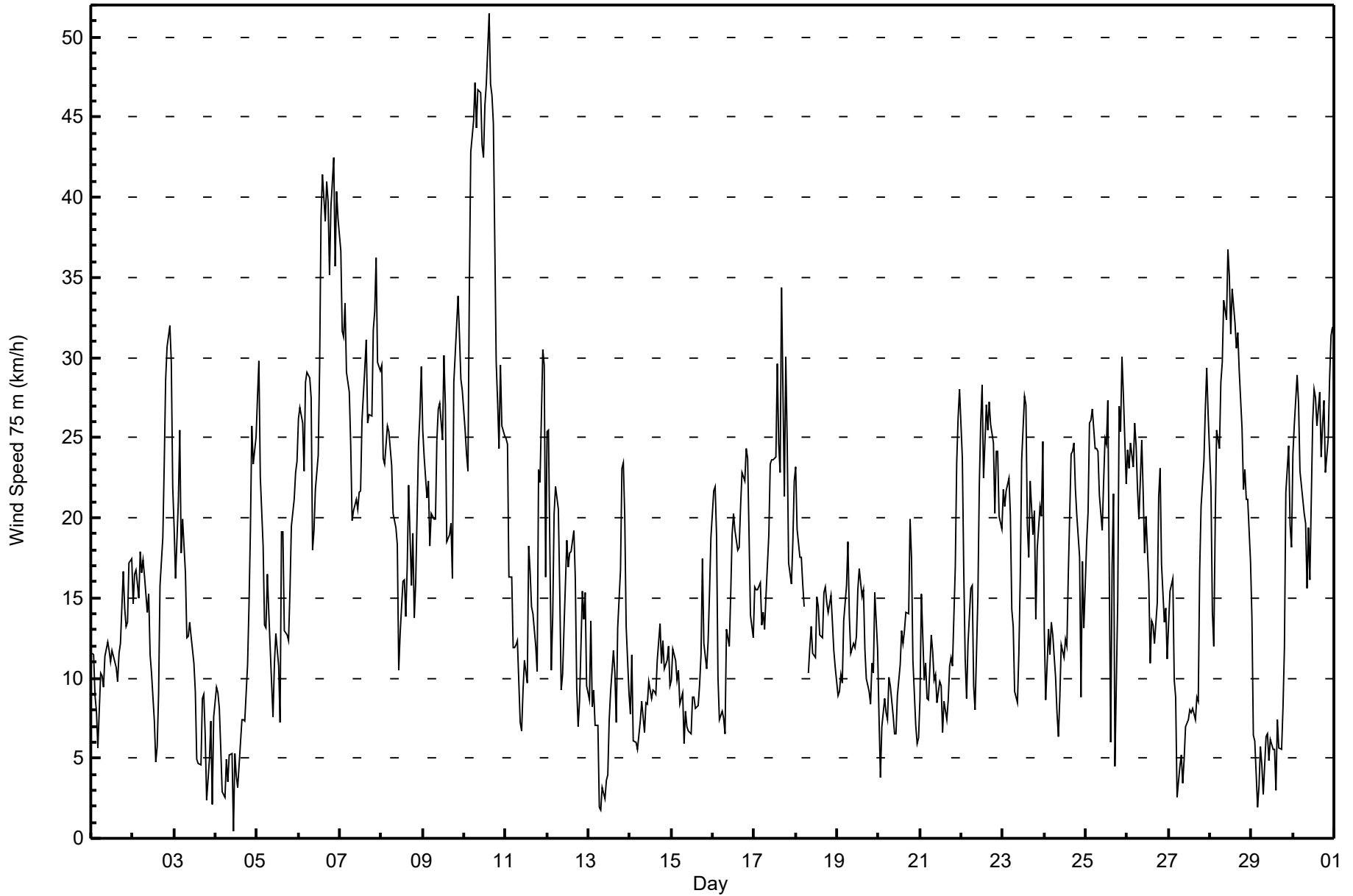


Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 15 km/h on Apr 17 17:00 Minimum Value: 1 km/h on Apr 29 07:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 4 Q ₃ = 5 P ₉₀ = 7 P ₉₉ = 9																		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	5	4	3	3	3	3	3	4	5	4	4	4	4	4	4	3	2	3	4	4	4	6	7	6	7	
2-Apr	6	5	5	4	4	4	5	5	5	5	4	3	2	2	2	4	3	3	3	3	3	3	3	5	6	
3-Apr	4	4	7	4	3	5	4	3	3	2	2	3	2	2	2	2	2	1	1	1	1	1	2	2	7	
4-Apr	2	3	2	1	3	2	2	1	2	2	1	3	2	2	3	3	2	2	5	4	4	4	5	5	5	
5-Apr	3	4	4	5	5	5	4	3	4	4	2	2	3	4	4	4	5	3	2	4	5	5	2	2	5	
6-Apr	1	1	2	2	2	2	4	4	4	4	3	4	5	8	5	7	6	6	5	6	6	5	4	4	8	
7-Apr	4	4	4	3	4	4	5	5	6	6	6	6	7	6	6	5	5	4	3	4	4	4	4	3	7	
8-Apr	2	3	2	2	2	2	3	2	2	3	4	3	2	2	2	7	4	3	2	3	3	1	2	2	7	
9-Apr	1	2	3	3	3	4	3	2	6	5	4	4	6	6	5	7	4	3	4	3	3	3	3	5	7	
10-Apr	6	4	5	6	9	7	7	8	9	7	7	7	8	9	8	8	8	8	8	8	5	3	2	4	4	9
11-Apr	3	3	2	2	4	1	2	2	2	2	3	3	5	4	4	4	4	3	4	8	6	3	4	3	8	
12-Apr	3	3	5	1	3	1	2	4	4	3	4	3	3	5	4	4	4	3	2	3	4	1	1	3	5	
13-Apr	2	2	1	1	1	2	1	2	2	2	2	3	3	3	3	3	4	4	3	2	3	3	4	3	4	
14-Apr	3	4	3	2	2	3	3	4	3	3	3	4	3	3	4	3	5	4	4	4	4	5	5	3	5	
15-Apr	4	5	5	4	4	4	4	3	3	2	3	3	3	4	3	3	3	4	4	3	4	5	7	7	7	
16-Apr	6	5	5	4	3	3	4	3	5	4	6	8	8	8	7	6	7	7	7	7	7	6	6	6	8	
17-Apr	6	6	6	6	5	6	5	6	8	11	10	9	9	13	8	9	15	7	8	9	7	6	8	8	15	
18-Apr	7	7	6	6	7	7	UO	4	4	4	4	4	3	3	4	3	3	3	3	3	2	2	2	3	7	
19-Apr	2	3	3	4	5	7	7	6	4	5	5	5	7	7	5	6	5	4	3	2	2	4	2	1	7	
20-Apr	3	2	2	3	3	3	4	5	3	2	3	4	5	6	5	5	5	6	4	5	4	3	3	3	6	
21-Apr	4	5	4	4	3	2	2	2	2	3	4	4	5	4	4	4	4	3	2	2	3	2	2	2	5	
22-Apr	4	3	2	2	2	2	3	2	2	5	6	6	6	8	6	5	5	4	5	2	1	1	1	1	8	
23-Apr	2	1	1	1	2	1	3	3	3	4	6	7	7	6	8	10	6	6	9	7	4	4	6	6	10	
24-Apr	6	3	4	4	5	6	3	4	3	2	3	3	3	3	3	4	4	5	4	4	3	5	5	4	6	
25-Apr	2	3	2	1	2	2	3	3	3	3	3	4	10	12	4	6	5	9	5	9	4	4	5	4	12	
26-Apr	4	4	4	4	4	4	3	3	4	3	3	4	3	3	3	4	4	4	3	4	4	2	1	2	4	
27-Apr	2	3	3	2	2	3	2	2	2	2	4	3	3	4	3	4	3	4	3	1	1	2	2	3	4	
28-Apr	2	2	5	2	2	3	3	4	7	6	6	6	6	6	6	6	6	6	6	4	3	3	3	2	7	
29-Apr	1	4	1	2	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	3	4	6	8	8	8	
30-Apr	6	3	4	4	7	6	6	5	4	5	6	6	9	7	7	7	7	7	6	7	8	7	8	5	9	
Diurnal Maximum																										
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed 75 m (WS75m) - km/h
Mannix - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 75 m (WS75m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	36	5.01	5.01
6 - 11	190	26.43	31.43
12 - 19	219	30.46	61.89
20 - 28	196	27.26	89.15
29 - 38	55	7.65	96.80
> 38	23	3.20	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 75 m (WS75m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	2	3	1	2	3	1	0	5	4	5	0	3	0	1	1	36
6 - 11	5	2	4	10	18	57	47	14	2	4	2	3	7	4	7	4	190
12 - 19	15	7	7	5	24	34	57	24	3	4	10	6	3	6	9	5	219
20 - 28	11	4	3	1	7	9	55	41	14	2	8	15	14	8	0	4	196
29 - 38	5	0	0	0	1	0	16	15	0	0	1	4	1	4	5	3	55
> 38	0	0	0	0	0	0	0	7	2	0	1	13	0	0	0	0	23
Totals	41	15	17	17	52	103	176	101	26	14	27	41	28	22	22	17	719

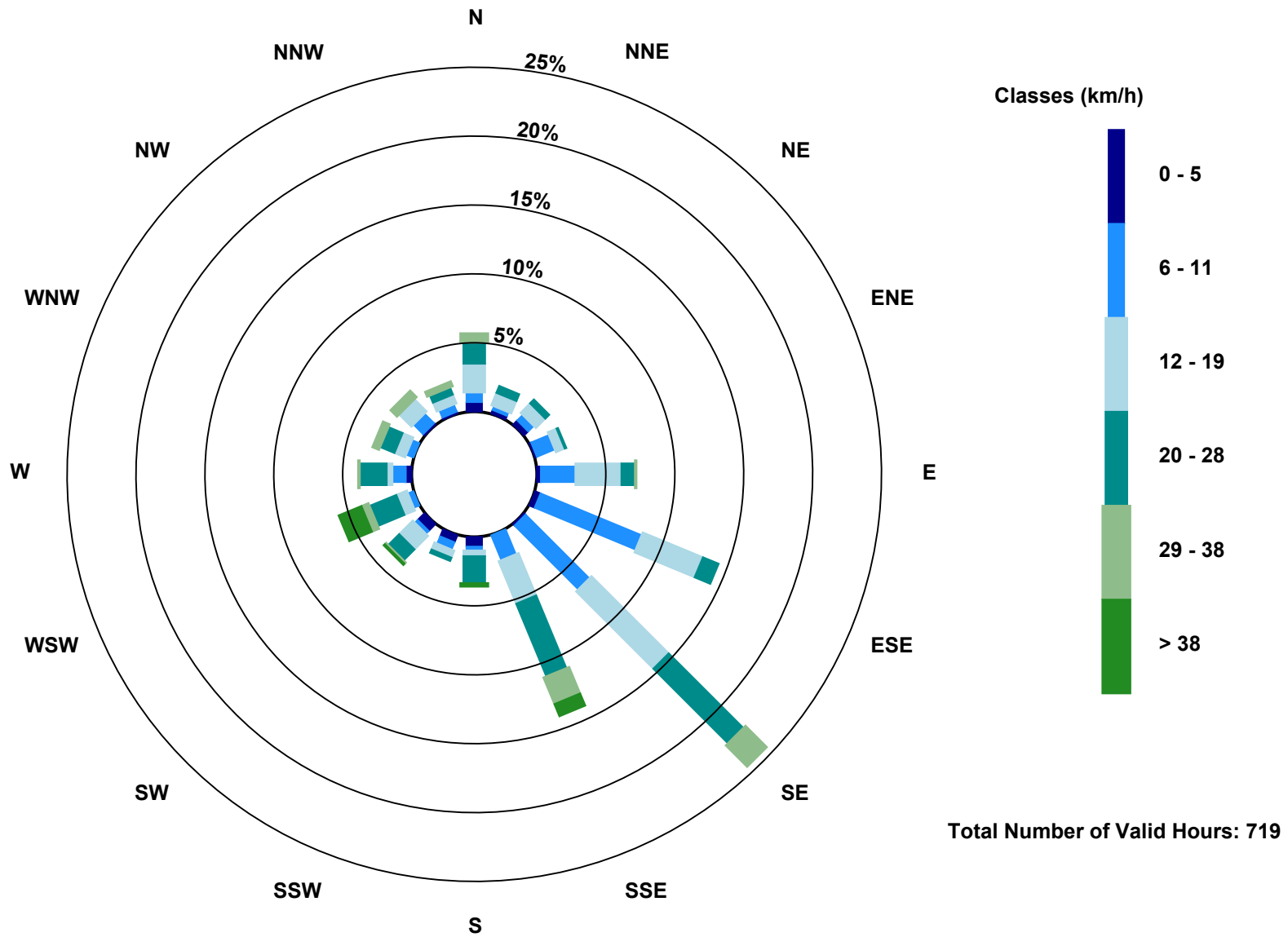
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed 75 m (WS75m) - km/h
Mannix





Maximum Speed: 52 km/h on Apr 10 15:00	Maximum Daily Speed Average: 36.3 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 4 11:00	Minimum Daily Speed Average: 5.0 km/h on Apr 27	Hours of Data: 719
Maximum Diurnal Speed Average: 11.0 km/h at hour 24	Minimum Diurnal Speed Average: 5.7 km/h at hour 9	Hours of Missing Data: 1
Monthly Average Velocity: 7.6 km/h 146.1 deg	Percentiles: P ₁ = 3 P ₁₀ = 7 Q ₁ = 11 Median = 17 Q ₃ = 25 P ₉₀ = 31 P ₉₉ = 46	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-Apr	ESE14	SE12	ESE11	E10	E7	E14	ESE13	ESE11	ESE13	SE13	ESE14	ESE13	E14	ESE13	ESE12	ESE11	E13	E14	E18	E16	E16	ESE15	ESE20	SE20	ESE13.2	ESE20
2-Apr	SE17	SE18	SE17	SE16	SE18	SE17	SE18	SE17	SE16	SE16	SE12	SE10	E8	E5	NE6	N9	N17	N19	N23	N29	N31	N32	N30	N23	ENE8.8	N32
3-Apr	N20	N17	N22	N27	N19	N21	N18	N13	NNW13	NW14	NW13	NNW11	WNW9	W5	SSW4	SW4	W9	W9	WNW7	NNE2	NE5	ENE7	ESE2	ENE7	NNW8.8	N27
4-Apr	E11	ESE11	SE8	SSE6	WSW2	SSW3	S6	SSW4	SSW6	S5	SSW0	S5	ESE4	SE3	SSW5	SSW7	S7	SSE7	SE11	SE16	SE20	SE27	SE24	SE27	SE8.2	SE27
5-Apr	SE28	SE31	SE24	SE19	SE15	SE15	SE18	SE15	SE10	SE8	SE11	SSE13	SSE10	SE7	SE19	SSE19	SE13	SSE13	SSE13	SE16	SE21	SE23	SE23	SE24	SE16.7	SE31
6-Apr	SSE28	SSE29	SSE27	SE24	SE29	SE29	SE30	SE29	SSE19	SSE19	SE21	SSE23	SSE29	SSE39	SSE41	S39	S41	SSE40	SSE36	SSE40	SSE43	SSE37	SSE41	SSE40	SSE31.5	SSE43
7-Apr	SSE38	SE34	SE32	SE34	SE30	SE29	SE26	SE21	SE21	SE22	SE21	SE22	SE23	SE26	SE30	SE31	SSE26	SSE27	SE27	SSE33	SSE35	SSE38	SSE31	SSE30	SSE28.3	SSE38
8-Apr	SSE31	SSE25	SSE24	SSE27	SSE27	SSE26	S24	S21	S20	SSE19	SSE11	SSE13	SSE15	SE16	SSE14	SW17	WSW23	WSW16	SW20	SW16	WSW19	WSW27	WSW29	WSW32	S16.6	WSW32
9-Apr	WSW28	WSW26	WSW24	WSW25	WSW21	WSW23	SW21	SW21	WSW26	WSW27	WSW27	WSW25	WSW31	WSW27	WSW19	SW19	S20	SSE16	S30	SSE32	SSE36	SSE33	SE30	SE30	SW18.7	SSE36
10-Apr	SE27	SSE25	SW24	WSW36	WSW44	WSW46	WSW49	WSW45	WSW47	WSW47	WSW44	SW43	WSW47	WSW48	WSW52	WSW48	WSW47	WSW46	WSW31	WSW29	SW26	WSW32	WSW28	WSW28	WSW36.3	WSW52
11-Apr	SW27	SW28	SW19	WSW19	SW14	SSW11	S10	SSE10	S7	SSE6	SE9	SSE11	S10	SW18	WSW17	WSW14	SW14	SW12	WSW10	N24	N24	NNW34	NNW31	NW17	WSW7.7	NNW34
12-Apr	WNNW27	N27	NNW11	W13	W20	W24	W22	WNNW16	NW10	NW11	WNNW13	WNNW19	WNNW17	NW18	NW18	NW20	WNNW17	WNNW10	W8	W10	NW16	NW14	NNW16	N10	WNNW14.6	WNNW27
13-Apr	NW9	NNW14	N9	N9	NNW7	NNW8	N2	NNE2	N3	N2	N3	NNW4	NW8	NW9	NW12	NW10	NNE7	NE13	NNE18	NNE24	NE24	ENE22	E14	ESE13	NNE7.5	NNE24
14-Apr	ESE12	ESE13	ESE8	ESE8	ESE8	ESE8	ESE8	ESE9	SE7	SE9	ESE9	ESE11	ESE10	E11	ESE11	ESE10	SE11	SE14	ESE14	E17	ESE14	ESE13	ESE14	ESE14	ESE10.7	E17
15-Apr	ESE14	ESE16	ESE13	SE11	SE11	SE10	SE10	ESE7	SE8	SE7	SE7	SE6	ESE10	E9	E8	ESE10	E11	ESE15	E21	ESE19	ESE16	ESE17	ESE20	SE22	ESE12.0	SE22
16-Apr	SE23	SE23	SE18	ESE13	ESE13	ESE13	ESE10	ESE8	SE15	ESE16	ESE19	ESE23	SE24	ESE23	ESE23	ESE25	ESE30	E32	E32	E33	E34	ESE29	ESE19	ESE15	ESE21.1	ESE34
17-Apr	SE19	ESE18	ESE22	ESE24	ESE17	ESE17	ESE18	ESE22	ESE27	ESE31	ESE31	ESE33	ESE35	ESE36	ESE38	ESE33	SE38	ESE31	E36	E31	ESE24	ESE22	ESE25	ESE31	ESE27.1	ESE38
18-Apr	E30	ESE27	E24	ESE25	ESE20	ESE20	UO	ESE14	E14	E14	ESE14	E12	ENE15	E17	E14	E14	ENE15	ENE16	NE15	ENE14	NE15	NNE14	NE12	E12	E15.4	E30
19-Apr	ENE9	E10	ESE13	ESE12	ESE18	ESE20	SE22	ESE18	ESE16	ESE16	ESE15	ESE17	ESE20	ESE20	ESE22	ESE20	ESE15	ESE13	ESE11	E10	NE12	ENE11	NE15	ENE12	ESE14.1	ESE22
20-Apr	E9	ESE5	ESE11	ESE14	ESE13	ESE12	ESE12	SE10	SE8	ESE7	E7	E10	E13	E15	E13	E14	E16	ESE18	E24	E22	ESE17	ESE10	ESE8	ESE10	ESE12.2	E24
21-Apr	ESE12	SE18	ESE13	ESE12	ESE10	SE8	SE14	SE12	SSE10	SE10	ESE9	ESE11	ESE10	ESE7	SE9	E7	SE9	SSE11	SSE11	SE11	SE17	SE24	SSE28	SSE29	SE12.4	SSE29
22-Apr	S23	SW18	SSW11	S7	SSE9	SSE12	SSE16	SSE9	SE8	SE15	SSE22	SSE26	SSE28	SSE22	SSE27	S25	S27	S26	S25	S21	S25	S25	S20	SSE20	S18.8	SSE28
23-Apr	SSE22	SE22	SE23	SE23	SE21	SSE15	SE14	ESE12	ESE11	SE13	SE17	SE24	SE28	SSE27	SSE19	SE20	SSE23	SE20	SSE21	SE15	SSE19	SSE21	SSE20	S26	SE19.2	SE28
24-Apr	SE14	ESE11	E15	ESE13	SE14	SE14	SE11	SE9	ESE8	E10	NE13	NNE11	N12	N12	N17	NNW25	NNW26	NNW26	NNW23	N21	N19	W8	SW17	S12	NNE5.5	NNW26
25-Apr	S17	SSE20	SSE27	SE28	SE28	SSE26	SSE25	SSE25	SSE21	SSE19	SSE22	SSE25	SSW24	W28	ESE7	SE17	SSE21	SSE5	SE15	WSW28	W27	W31	W29	W23	S14.4	W31
26-Apr	W25	W24	W25	WNNW24	W27	W26	W23	W20	WNNW25	WNNW22	WNNW18	WNNW21	WNNW16	NW11	NNW14	N13	N12	NNE15	NE21	NE24	NE18	NNE14	N15	N12	NW13.2	W27
27-Apr	N14	NNW16	N17	NNE11	NE10	NE3	WSW4	SSW5	WSW3	W5	W7	W7	W8	WSW8	SW8	SW8	SSW9	SSE8	SW17	SSW21	S24	SSE28	SSE30	S28	SSW5.0	SSE30
28-Apr	S23	SSW15	W14	WNNW22	WNNW27	WNNW27	WNNW31	WNNW31	WNNW34	NW33	WNNW37	WNNW36	NW32	NW35	NW33	NW32	NNW33	N30	N26	NNE23	NNE25	N24	N23	N19	NW21.6	WNNW37
29-Apr	NNE15	NE8	ENE7	NE3	NNW3	NW4	N4	ENE4	SSE6	SE6	ESE5	E6	E6	SSE5	S3	E7	E6	E6	ENE8	E13	SE23	SE26	SE23	ESE22	ESE6.9	SE26
30-Apr	SE27	SE27	SE31	SE29	SE26	SE25	SE22	SE21	SE16	SE19	SE17	SE26	SE29	SE28	SE26	SE28	SE25	SE27	SE28	SE25	SE28	SE31	SE33	SE33	SE26.0	SE33

SE10.1 SE9.8 SE9.1 SE7.7 SSE7.3 SSE7.3 SSE7.9 SSE7.3 SSE5.7 SSE5.9 SSE6.1 SSE7.6 SSE7.1 SSE6.5 SSE6.8 SSE6.5 SSE6.6 SE7.2 ESE8.0 ESE8.4 ESE9.1 SE9.1 SE9.1 SE11.0	Diurnal Average
SSE38 SE34 SE32 WSW36 WSW44 WSW46 WSW49 WSW45 WSW47 WSW47 WSW44 SW43 WSW47 WSW48 WSW52 WSW48 WSW47 WSW46 E36 SSE40 SSE43 SSE38 SSE41 SSE40	Diurnal Maximum

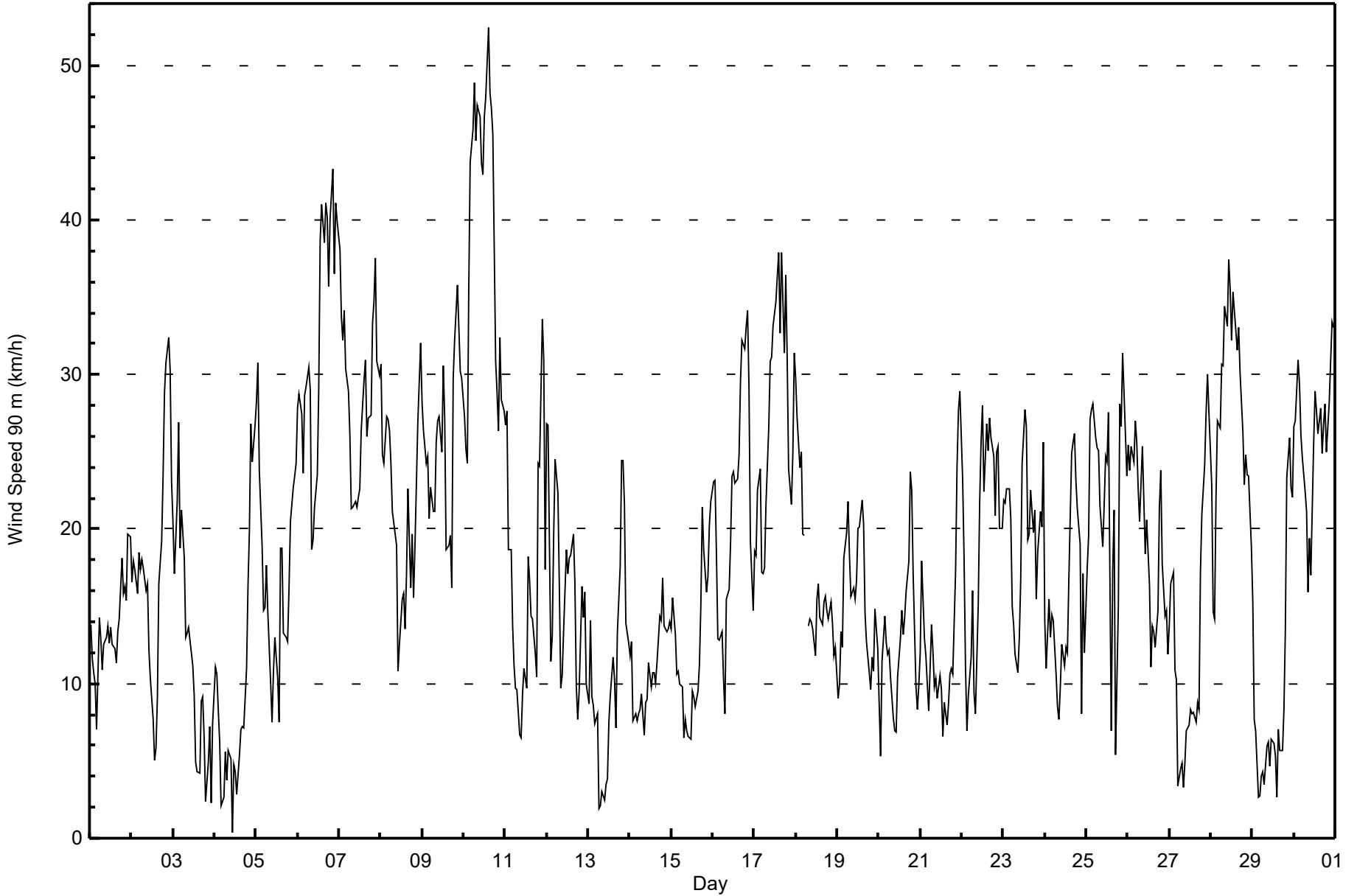
UO - Unstable Operation
 All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 90 m (WS90m) - km/h
Mannix - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on Apr 25 14:00 Minimum Value: 1 km/h on Apr 29 07:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 3 Q ₃ = 5 P ₉₀ = 6 P ₉₉ = 9																		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	4	3	4	4	4	2	3	4	4	4	4	4	3	4	4	3	2	3	3	4	3	5	5	5	5	
2-Apr	5	4	4	3	3	3	4	4	4	3	3	3	2	2	2	4	3	2	2	2	3	2	3	5	5	
3-Apr	4	4	7	4	3	4	4	4	2	2	2	2	3	2	2	2	2	1	1	1	1	1	2	2	7	
4-Apr	3	3	2	1	3	2	2	2	2	2	1	3	2	2	3	3	2	2	3	4	4	4	4	4	4	
5-Apr	3	3	2	5	3	3	3	2	3	4	2	2	3	3	4	3	5	3	1	3	4	4	2	2	5	
6-Apr	1	1	2	2	1	2	3	4	4	4	3	4	5	8	5	6	6	6	5	6	6	5	4	3	8	
7-Apr	4	3	3	3	3	3	4	4	5	5	5	5	5	5	5	5	4	4	3	4	3	3	4	3	5	
8-Apr	3	2	2	2	2	2	2	2	1	2	3	3	2	2	2	7	4	3	2	4	2	2	2	2	7	
9-Apr	2	2	2	3	2	4	3	2	6	5	4	4	6	6	4	7	4	3	5	3	3	3	3	4	7	
10-Apr	5	4	5	6	9	7	7	8	8	7	7	7	8	8	8	8	8	7	8	5	3	2	4	4	9	
11-Apr	4	3	2	3	4	2	2	2	2	2	3	2	5	4	4	4	4	3	4	8	6	3	4	2	8	
12-Apr	4	3	5	1	4	1	2	4	4	3	4	3	3	5	4	4	4	3	2	4	4	2	1	3	5	
13-Apr	3	1	1	1	1	3	1	2	2	2	2	3	3	3	3	4	4	4	3	2	3	3	4	3	4	
14-Apr	3	3	3	3	2	3	2	3	2	3	3	3	3	3	3	3	5	3	4	3	4	4	3	4	5	
15-Apr	3	3	3	3	3	3	3	3	2	2	3	3	3	4	4	4	3	5	3	2	4	4	6	5	6	
16-Apr	5	4	4	3	3	3	3	3	5	4	5	6	6	6	7	7	6	8	7	7	7	7	7	5	8	
17-Apr	5	5	6	5	5	5	5	7	9	9	8	8	9	10	9	9	12	8	8	8	8	7	7	8	12	
18-Apr	7	7	6	7	7	6	UO	5	3	4	3	3	3	3	3	3	3	3	3	2	2	2	2	3	7	
19-Apr	2	3	3	5	5	5	5	5	4	4	5	5	5	6	5	5	4	4	3	2	2	3	2	1	6	
20-Apr	2	2	3	4	3	3	3	4	3	2	3	5	5	6	5	5	5	5	4	4	4	4	4	4	6	
21-Apr	4	4	3	3	2	2	2	2	2	3	4	4	5	4	4	4	4	3	2	2	3	2	2	1	5	
22-Apr	3	3	3	2	2	2	2	2	2	5	5	6	5	8	6	5	5	4	5	2	1	1	1	1	8	
23-Apr	2	1	1	1	1	2	2	2	3	3	6	6	6	6	8	8	6	5	8	6	4	4	5	5	8	
24-Apr	5	3	4	4	5	5	3	3	3	2	3	2	3	3	3	4	4	5	4	4	3	5	5	4	5	
25-Apr	2	3	1	1	1	2	3	3	3	3	3	4	11	12	4	5	5	6	4	9	3	4	5	4	12	
26-Apr	4	4	4	4	4	4	3	3	3	3	3	4	3	3	4	4	4	4	3	3	4	2	1	1	4	
27-Apr	1	3	3	2	2	3	2	2	2	3	4	3	3	4	3	4	3	4	3	1	1	2	1	3	4	
28-Apr	2	2	5	2	2	3	3	4	7	6	5	6	6	6	6	6	6	6	6	4	3	3	3	2	7	
29-Apr	2	4	1	2	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	5	7	6	7	
30-Apr	4	2	3	2	5	4	5	4	3	5	4	6	7	6	6	6	6	6	5	6	6	6	5	5	7	
																		Diurnal Maximum								
UO - Unstable Operation																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 90 m (WS90m) - km/h
Mannix - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	37	5.15	5.15
6 - 11	152	21.14	26.29
12 - 19	218	30.32	56.61
20 - 28	206	28.65	85.26
29 - 38	83	11.54	96.80
> 38	23	3.20	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed 90 m (WS90m) - km/h
Mannix - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	2	3	1	1	4	1	2	3	6	1	3	2	0	1	2	37
6 - 11	4	3	3	6	19	36	30	14	6	5	1	3	8	4	7	3	152
12 - 19	15	7	8	5	23	57	42	19	2	2	10	6	2	7	8	5	218
20 - 28	13	4	2	1	4	24	53	37	17	2	7	16	13	8	1	4	206
29 - 38	5	0	0	0	6	12	20	17	1	0	0	7	2	5	5	3	83
> 38	0	0	0	0	0	0	0	7	2	0	1	13	0	0	0	0	23
Totals	42	16	16	13	53	133	146	96	31	15	20	48	27	24	22	17	719

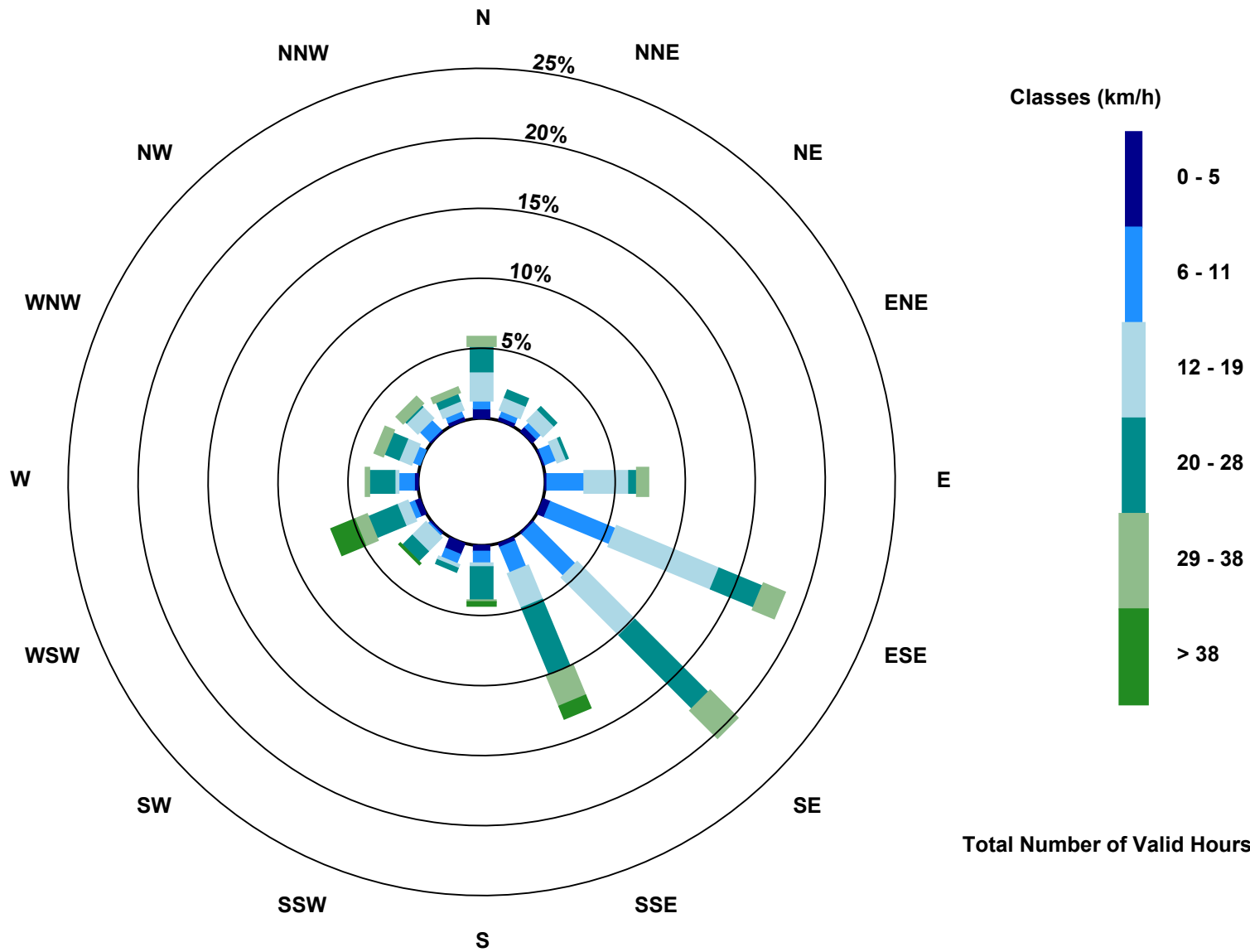
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed 90 m (WS90m) - km/h
Mannix





Direction of Maximum Speed: 240 deg on Apr 10 15:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 243.7 deg on Apr 10		Hours of Data: 720
Direction of Minimum Speed: 74 deg on Apr 4 11:00	Direction of Minimum Daily Speed Average: 3.0 deg on Apr 27	Hours of Missing Data: 0
Monthly Average Direction: 147.6 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-Apr	130	145	136	107	110	99	111	133	129	136	125	120	103	120	106	110	90	91	82	91	92	132	134	135	116.1
2-Apr	135	136	137	138	138	137	137	136	135	134	137	142	106	92	60	344	352	9	12	12	12	10	10	1	81.1
3-Apr	354	353	8	9	354	358	344	350	332	319	307	306	279	272	189	212	279	278	285	25	29	82	71	79	339.2
4-Apr	91	131	159	224	273	264	242	264	230	201	74	176	119	128	216	198	187	156	157	139	141	145	141	135	156.4
5-Apr	141	140	141	144	138	138	142	152	136	145	149	153	157	135	162	157	144	153	153	142	142	136	140	139	144.6
6-Apr	145	147	144	146	141	143	138	139	147	154	151	155	153	166	169	174	173	170	169	167	169	161	161	158	158.3
7-Apr	152	142	138	136	136	136	135	137	138	142	134	142	138	146	146	149	147	150	146	154	155	159	162	162	145.2
8-Apr	157	148	157	158	162	157	159	164	165	155	142	143	142	141	163	214	249	240	215	190	182	208	249	248	175.2
9-Apr	250	242	227	236	216	216	195	203	247	256	257	240	252	257	248	220	193	154	167	152	156	148	141	136	212.9
10-Apr	133	158	200	257	252	253	247	251	256	259	253	239	248	246	240	245	251	249	251	242	222	230	229	228	243.7
11-Apr	214	216	183	213	174	156	153	152	148	147	137	142	182	234	247	249	238	231	242	9	356	331	333	276	220.9
12-Apr	282	360	291	260	253	263	268	288	320	323	297	283	282	320	329	311	295	304	248	263	289	298	299	359	296.0
13-Apr	299	346	336	345	275	316	294	55	52	49	13	336	309	309	301	306	43	44	27	20	24	39	74	113	7.0
14-Apr	127	143	141	121	132	131	133	138	140	138	119	107	112	105	107	114	140	139	125	100	121	135	139	127	126.4
15-Apr	133	136	135	149	151	156	162	135	142	141	142	133	106	100	82	120	98	123	95	98	116	132	129	138	126.1
16-Apr	137	139	143	140	136	141	160	138	133	123	128	128	132	129	121	107	106	106	104	103	105	111	133	139	123.7
17-Apr	141	137	123	125	137	141	124	115	117	125	127	125	116	130	116	121	141	109	95	101	117	125	129	110	122.4
18-Apr	100	105	104	109	125	118	114	108	94	84	126	103	77	93	97	89	66	77	58	70	51	24	22	77	91.1
19-Apr	75	66	104	114	119	131	132	130	123	127	126	125	131	127	107	123	128	121	115	75	41	42	14	19	112.3
20-Apr	21	330	113	120	133	134	138	135	136	123	98	99	102	102	95	105	95	107	95	96	106	124	135	135	110.7
21-Apr	137	132	135	146	148	166	160	147	140	141	127	114	100	120	130	104	141	161	148	150	143	147	153	157	140.4
22-Apr	168	167	152	152	154	152	146	147	138	143	151	161	163	160	171	179	187	179	188	176	178	170	155	148	164.1
23-Apr	147	147	148	150	151	198	158	134	135	136	139	147	146	156	158	132	152	148	157	130	150	150	162	181	149.3
24-Apr	143	107	96	108	143	126	145	133	82	52	39	18	358	5	353	336	333	337	338	350	351	238	225	162	23.7
25-Apr	163	146	148	150	150	153	152	150	153	158	167	152	203	266	111	146	155	166	144	252	261	266	267	271	183.8
26-Apr	268	264	275	284	280	276	277	274	287	293	283	301	303	316	347	356	14	43	41	45	43	12	8	346	307.9
27-Apr	342	341	357	24	34	243	239	210	247	276	290	262	264	260	246	231	198	144	217	185	167	163	161	164	209.4
28-Apr	170	163	305	265	289	291	289	288	301	307	296	299	312	320	312	327	338	1	5	17	19	3	4	359	317.2
29-Apr	18	343	25	246	308	50	79	106	144	144	113	104	119	154	184	81	81	102	85	97	142	140	132	134	117.4
30-Apr	133	133	133	130	130	134	134	135	142	145	136	151	143	148	145	150	139	142	140	137	133	136	135	137	138.8

143.8 139.9 138.5 149.5 158.2 158.3 161.2 158.9 158.9 157.7 157.7 157.1 157.8 164.3 157.7 157.2 155.7 135.5 123.2 111.3 123.0 139.2 141.5 142.0

Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0														Hours in Service: 720											
Maximum Value: 90 deg on Apr 29 04:00														Hours of Data: 720											
Minimum Value: 5 deg on Apr 22 22:00														Hours of Missing Data: 0											
Percentiles: P ₁ = 5 P ₁₀ = 8 Q ₁ = 10 Median = 13 Q ₃ = 20 P ₉₀ = 34 P ₉₉ = 74														Hours of Calibration: 0											
														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-Apr	15	10	29	13	23	10	13	14	17	11	18	20	16	23	20	16	7	15	16	12	12	12	8	8	29
2-Apr	9	9	8	9	9	8	9	9	8	8	10	18	28	38	33	38	19	14	10	10	9	10	10	14	38
3-Apr	15	14	13	12	14	13	15	22	27	15	18	22	22	52	69	40	29	13	13	54	23	16	50	17	69
4-Apr	10	22	17	25	38	40	22	26	33	38	85	56	71	66	50	35	30	25	7	10	8	10	10	7	85
5-Apr	8	8	10	9	9	9	9	11	9	22	12	10	19	27	17	13	12	13	9	8	9	8	8	8	27
6-Apr	8	7	7	7	8	8	7	9	10	11	9	10	10	12	11	12	11	10	10	9	9	7	8	8	12
7-Apr	10	8	8	7	7	8	8	10	11	12	10	12	12	12	10	10	10	9	9	10	8	7	7	7	12
8-Apr	8	11	8	8	7	8	8	14	12	10	20	13	9	10	18	31	13	20	11	15	8	11	10	7	31
9-Apr	8	6	12	9	14	17	17	14	15	11	12	16	14	18	22	29	21	14	10	9	9	9	9	8	29
10-Apr	8	12	43	12	12	12	11	11	11	11	13	12	13	15	10	12	12	12	11	10	10	12	15	14	43
11-Apr	11	14	13	26	31	9	6	8	15	25	14	19	52	19	20	27	23	24	26	21	13	10	10	14	52
12-Apr	9	25	44	10	8	9	7	16	35	29	28	15	19	23	24	19	21	26	17	44	22	7	10	29	44
13-Apr	18	28	28	14	31	39	45	85	38	75	75	59	52	37	27	31	65	19	12	9	9	10	27	13	85
14-Apr	13	11	19	18	14	16	18	14	23	22	28	23	25	24	22	23	22	18	16	11	15	8	10	13	28
15-Apr	10	8	8	14	11	19	34	23	17	22	26	49	25	37	40	41	18	17	10	8	16	11	12	8	49
16-Apr	7	8	8	8	9	9	13	16	10	15	14	12	11	14	17	13	13	13	12	11	11	11	18	16	18
17-Apr	12	13	12	10	13	13	18	15	17	15	14	14	15	12	12	14	15	13	13	15	16	15	12	15	18
18-Apr	11	12	13	14	17	15	13	14	15	14	17	30	16	15	15	17	14	13	15	12	12	12	9	31	31
19-Apr	21	25	12	18	16	12	10	10	13	12	11	13	9	15	12	15	15	17	22	21	11	24	7	5	25
20-Apr	28	32	40	11	9	9	11	14	16	26	28	26	24	29	32	25	18	18	11	10	11	20	21	10	40
21-Apr	11	7	8	7	5	6	9	10	12	17	33	30	42	40	35	39	37	29	11	6	7	8	7	5	42
22-Apr	7	11	5	5	5	8	10	16	16	13	18	23	22	20	21	21	19	19	17	10	7	5	5	5	23
23-Apr	8	6	7	6	6	26	35	9	10	10	14	15	12	16	20	19	18	21	34	21	14	14	19	16	35
24-Apr	21	26	21	27	16	22	15	19	19	16	15	13	21	25	21	14	13	14	13	14	14	52	11	37	52
25-Apr	6	9	8	8	8	7	8	9	11	16	16	11	46	20	62	14	19	80	15	40	10	7	8	9	80
26-Apr	8	10	12	10	10	9	10	14	11	12	12	14	16	30	25	33	39	20	14	11	13	10	8	9	39
27-Apr	11	12	12	17	18	83	19	30	68	54	72	43	44	59	44	61	40	31	17	13	6	6	7	7	83
28-Apr	9	8	87	11	12	9	10	10	15	17	14	16	16	15	15	16	16	17	16	11	12	10	10	12	87
29-Apr	15	42	54	90	57	17	26	34	27	36	53	48	60	49	71	47	47	33	22	16	10	9	9	9	90
30-Apr	8	7	8	6	7	9	9	9	13	17	14	13	14	16	15	14	14	12	10	10	9	9	8	8	17
														28 42 87 90 57 83 45 85 68 75 85 59 71 66 71 61 65 80 34 54 23 52 50 37											
														Diurnal Maximum											



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 45 m (WD45m) - deg

Mannix - April 2023

Direction of Maximum Speed: 236 deg on Apr 10 15:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 238.9 deg on Apr 10	Hours of Data: 719
Direction of Minimum Speed: 81 deg on Apr 4 11:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 4.2 deg on Apr 27	Percent Operational Time: 99.9
Monthly Average Direction: 143.2 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-Apr	120	132	124	100	97	96	104	123	122	128	116	113	97	113	100	103	87	87	77	84	90	124	126	127	109.1
2-Apr	127	129	130	131	131	131	130	129	127	128	128	134	99	81	53	342	350	5	8	8	7	6	5	359	70.3
3-Apr	354	351	5	6	353	357	346	349	333	317	303	300	278	269	198	214	274	272	283	17	30	72	82	70	339.2
4-Apr	85	121	147	189	281	270	229	254	218	192	81	171	112	137	205	194	187	155	147	129	133	138	135	129	147.3
5-Apr	135	135	135	135	129	130	135	143	131	137	144	146	155	137	156	153	137	148	150	133	135	130	135	135	138.3
6-Apr	143	147	145	139	135	137	132	134	144	149	144	149	148	161	164	169	167	165	165	162	164	158	157	154	153.6
7-Apr	148	139	134	132	132	132	131	133	135	137	131	138	135	142	141	144	144	145	142	149	150	155	161	160	141.7
8-Apr	154	144	151	152	154	152	156	163	162	153	145	140	141	139	158	210	244	235	215	206	208	219	239	239	176.5
9-Apr	247	239	231	239	229	228	206	209	243	251	252	237	246	250	242	212	188	151	163	149	151	144	138	132	208.4
10-Apr	129	152	200	253	247	249	243	247	251	253	248	234	243	241	236	240	246	245	246	240	224	230	232	230	238.9
11-Apr	218	222	211	229	199	163	153	154	151	145	135	142	179	231	241	243	234	226	237	6	353	330	335	287	229.0
12-Apr	288	354	308	265	255	264	267	286	318	317	293	279	279	317	323	303	292	299	257	264	298	306	316	347	295.6
13-Apr	306	343	347	344	315	332	311	32	27	10	1	332	311	305	301	302	32	39	22	17	23	43	73	107	4.7
14-Apr	117	131	127	111	120	118	123	128	133	131	115	100	106	100	100	106	135	134	117	97	115	125	129	119	118.5
15-Apr	124	126	126	135	136	136	147	129	135	138	135	131	105	96	80	112	93	115	90	95	109	123	121	128	118.7
16-Apr	129	132	134	127	122	125	133	127	126	117	120	121	125	122	114	102	100	100	99	97	99	105	120	130	115.9
17-Apr	131	128	116	117	124	129	116	109	109	117	120	117	109	123	110	115	134	104	90	94	111	117	121	103	114.8
18-Apr	94	99	99	103	119	112	UO	105	90	77	119	94	72	88	89	82	59	71	52	62	47	21	21	73	84.0
19-Apr	70	67	100	109	113	123	126	122	115	120	118	117	123	120	103	117	120	115	108	75	44	46	12	23	104.8
20-Apr	41	46	101	112	118	120	127	130	132	118	90	94	95	97	91	98	88	102	89	90	103	115	118	122	102.0
21-Apr	124	126	124	131	129	145	143	140	138	137	122	112	100	118	126	98	139	156	144	144	136	142	148	151	134.2
22-Apr	167	188	165	153	150	151	150	148	133	140	147	157	157	155	165	175	181	174	180	171	176	174	156	147	162.6
23-Apr	142	141	144	144	139	170	141	123	124	128	136	143	142	153	153	128	147	144	153	126	147	147	158	177	144.3
24-Apr	140	100	89	103	136	122	134	125	82	54	37	14	358	360	351	333	331	336	334	346	350	243	218	159	20.2
25-Apr	155	142	143	145	146	148	148	147	149	154	162	148	199	260	107	140	151	164	135	247	257	262	263	266	176.7
26-Apr	263	259	272	279	276	273	273	269	283	288	278	295	297	313	341	351	10	36	33	38	36	13	5	348	305.3
27-Apr	342	335	356	17	35	356	236	202	229	269	279	261	258	254	236	222	195	141	212	184	164	156	157	162	197.4
28-Apr	171	177	279	269	286	294	286	282	297	303	291	295	308	315	307	322	333	357	1	13	14	4	2	6	313.1
29-Apr	22	36	48	1	303	353	31	87	143	138	111	95	107	150	182	77	78	99	77	90	135	135	126	125	108.0
30-Apr	127	132	130	127	125	127	127	129	137	143	133	146	137	143	140	144	135	137	136	131	127	130	130	134	133.8

139.5	136.8	135.8	143.4	151.4	151.7	156.9	154.8	155.4	153.9	154.1	153.1	153.5	161.0	153.9	154.9	152.3	131.8	121.1	109.0	119.6	135.2	137.3	138.6
Diurnal Average																							

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

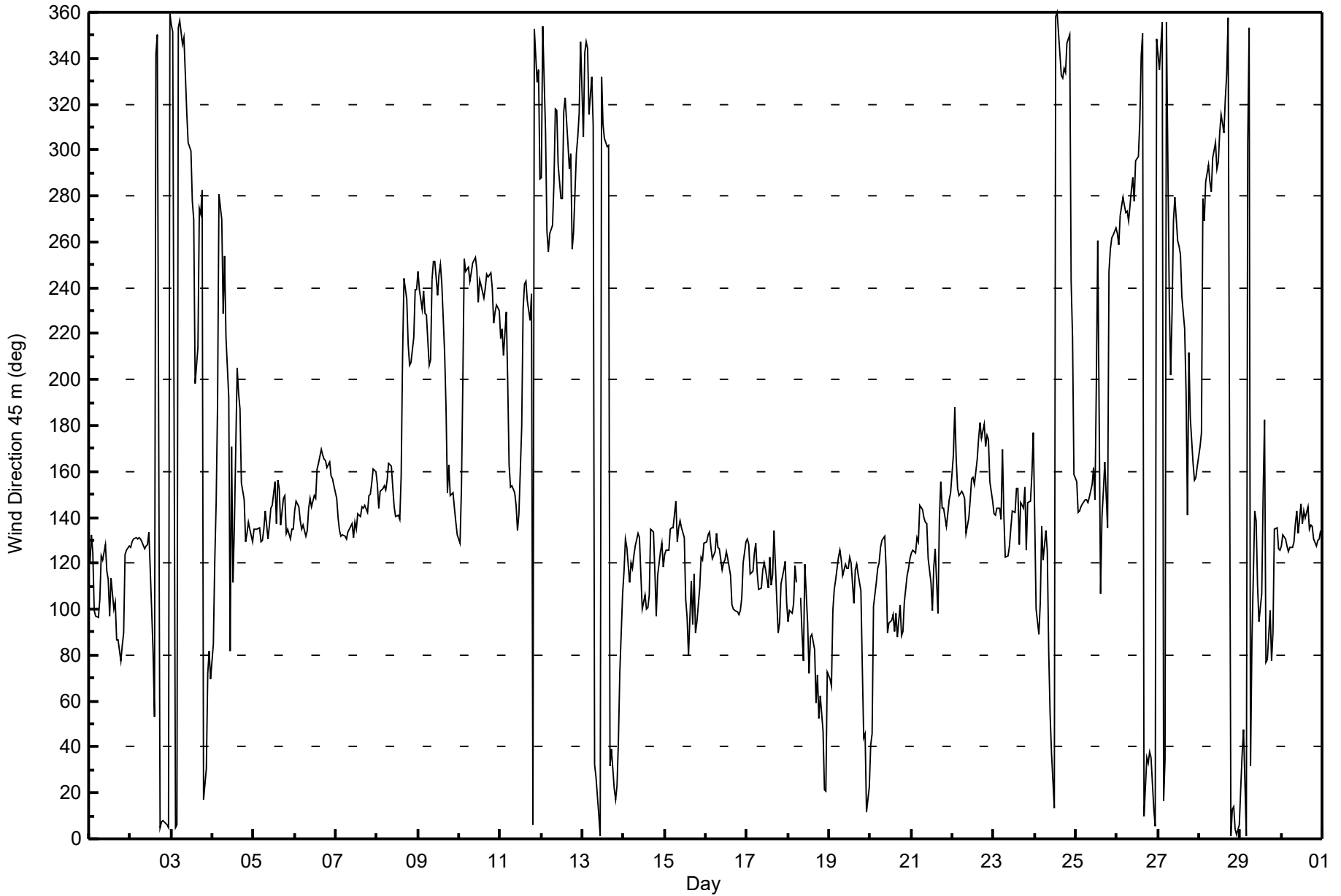


Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 100 deg on Apr 29 04:00	Hours of Data: 719
Minimum Value: 2 deg on Apr 22 05:00	Hours of Missing Data: 1
Percentiles: P ₁ = 3 P ₁₀ = 5 Q ₁ = 8 Median = 11 Q ₃ = 17 P ₉₀ = 29 P ₉₉ = 67	Hours of Calibration: 0
	Percent 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-Apr	13	8	24	11	18	8	10	14	17	10	16	18	15	22	18	15	6	13	15	12	11	11	7	6	24
2-Apr	8	7	6	7	6	6	6	6	7	5	9	14	27	30	29	34	16	8	7	6	5	5	7	11	34
3-Apr	12	10	8	8	10	9	11	17	25	12	15	18	19	39	49	34	22	11	12	55	21	14	50	14	55
4-Apr	9	18	11	35	22	46	28	27	30	26	95	46	70	66	37	32	24	24	7	8	6	7	7	5	95
5-Apr	6	6	7	7	7	8	8	10	9	20	11	8	17	23	13	10	9	12	8	6	7	6	5	5	23
6-Apr	5	4	4	3	4	5	5	7	8	9	7	8	8	10	8	8	7	7	7	6	6	5	6	6	10
7-Apr	8	6	6	5	5	5	6	8	10	11	10	10	11	10	8	8	8	7	7	7	6	5	5	5	11
8-Apr	5	7	5	6	5	5	4	9	9	8	16	10	7	8	15	28	10	16	7	25	11	6	4	3	28
9-Apr	4	4	6	5	8	9	13	9	12	9	10	13	11	15	16	27	15	12	7	7	6	6	7	7	27
10-Apr	6	10	39	9	10	9	8	9	9	9	11	10	11	12	8	9	9	10	8	8	6	9	10	8	39
11-Apr	6	7	8	16	29	13	3	6	15	20	12	15	50	15	19	25	19	20	25	17	10	7	7	14	50
12-Apr	9	21	38	8	5	5	5	14	32	20	24	12	16	20	23	17	19	21	12	24	27	6	7	20	38
13-Apr	13	19	20	8	15	19	35	81	39	65	68	54	46	30	19	26	51	18	8	6	7	9	21	10	81
14-Apr	11	9	15	14	11	13	17	12	22	19	25	21	22	19	19	20	20	17	13	9	13	7	8	10	25
15-Apr	8	5	6	12	10	10	23	23	13	16	22	39	26	34	39	33	17	15	8	7	13	11	11	8	39
16-Apr	5	6	5	5	7	8	11	14	8	12	12	10	11	12	15	12	11	11	11	10	10	11	16	13	16
17-Apr	10	12	11	10	12	13	16	13	15	14	12	12	13	11	11	12	15	11	11	13	15	13	11	13	16
18-Apr	11	10	11	13	15	12	UO	13	13	13	16	28	14	12	13	16	12	11	12	10	8	9	8	29	29
19-Apr	19	22	11	17	14	10	9	9	12	10	11	11	8	14	11	13	15	16	22	17	10	18	5	7	22
20-Apr	14	35	24	9	10	9	9	13	15	24	23	23	21	26	31	23	17	16	10	8	9	16	16	9	35
21-Apr	10	4	5	5	4	6	6	8	10	13	28	27	38	40	32	40	35	22	9	5	5	5	4	4	40
22-Apr	12	10	7	4	2	3	8	15	12	12	15	18	18	17	17	15	13	13	11	7	4	3	4	3	18
23-Apr	5	4	3	3	3	16	16	7	10	9	13	13	11	13	19	18	16	19	30	20	14	13	16	12	30
24-Apr	20	24	19	24	17	18	11	18	17	13	13	11	12	19	16	10	10	10	11	11	11	52	5	27	52
25-Apr	5	6	5	5	5	5	6	6	9	12	12	9	45	16	59	13	19	81	14	34	7	6	7	8	81
26-Apr	8	8	10	8	9	8	8	12	9	9	9	12	14	26	20	29	33	16	11	8	9	9	6	7	33
27-Apr	7	10	10	16	17	88	22	26	62	45	62	35	38	47	36	47	35	34	15	9	5	4	4	6	88
28-Apr	5	19	43	6	7	5	7	7	13	15	12	14	14	12	13	13	14	13	12	8	7	9	7	9	43
29-Apr	13	45	22	100	29	23	12	50	21	30	44	46	53	48	71	37	42	31	19	15	7	7	8	7	100
30-Apr	5	5	5	4	5	5	6	6	10	14	12	11	13	14	14	11	12	10	8	8	7	6	7	6	14

20	45	43	100	29	88	35	81	62	65	95	54	70	66	71	47	51	81	30	55	27	52	50	29	
Diurnal Maximum																								

UO - Unstable Operation





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 75 m (WD75m) - deg

Mannix - April 2023

Direction of Maximum Speed: 237 deg on Apr 10 15:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 240.3 deg on Apr 10	Hours of Data: 719
Direction of Minimum Speed: 198 deg on Apr 4 11:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 5.0 deg on Apr 27	Percent Operational Time: 99.9
Monthly Average Direction: 150.8 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-Apr	121	131	120	101	99	98	109	123	124	130	116	115	99	116	103	105	91	88	81	86	94	126	128	129	110.1
2-Apr	129	132	133	133	134	133	133	132	128	130	130	136	102	83	56	349	356	9	10	11	10	9	8	4	63.7
3-Apr	1	357	9	9	360	2	355	357	343	323	307	302	283	267	208	224	277	275	287	22	39	74	96	73	345.8
4-Apr	87	121	145	153	264	235	190	221	203	190	198	172	118	139	203	194	188	158	146	130	134	139	138	133	147.8
5-Apr	135	136	136	134	130	130	135	139	133	138	145	147	159	144	158	153	140	151	152	134	135	134	139	141	140.1
6-Apr	148	155	152	141	137	138	135	136	148	149	145	150	150	163	166	171	170	167	167	164	167	162	160	157	156.2
7-Apr	152	143	139	137	138	137	136	138	140	141	138	141	140	145	143	147	147	148	146	152	154	161	166	164	146.3
8-Apr	159	149	153	154	156	156	165	171	169	159	158	148	147	145	164	214	245	237	220	228	232	232	241	244	184.5
9-Apr	253	245	238	245	238	236	223	225	245	252	252	238	246	249	242	212	189	156	167	154	154	148	143	138	212.0
10-Apr	135	155	210	254	248	250	245	248	252	254	248	235	244	242	237	241	247	246	248	242	229	234	238	236	240.3
11-Apr	229	231	225	237	225	184	172	161	165	156	141	149	185	233	242	244	235	226	238	12	357	338	346	311	244.7
12-Apr	299	357	332	272	263	267	274	291	321	318	296	281	282	321	324	305	294	300	272	271	309	315	330	350	301.0
13-Apr	310	345	6	354	338	344	353	30	5	5	4	342	320	310	304	306	35	43	25	23	35	57	83	112	12.2
14-Apr	113	129	125	115	119	118	124	126	133	131	119	104	104	100	106	108	138	137	117	99	119	126	128	118	119.2
15-Apr	122	124	125	133	132	130	139	127	138	140	137	132	108	99	84	111	97	116	91	98	111	122	123	129	118.5
16-Apr	132	134	132	125	118	119	124	124	129	118	124	125	129	125	117	105	101	100	100	98	100	107	118	127	116.4
17-Apr	129	126	117	117	121	125	116	110	108	119	122	120	111	125	113	116	138	105	91	95	112	119	122	103	115.6
18-Apr	96	101	100	104	122	114	UO	110	93	80	123	95	76	89	90	83	64	74	57	65	54	29	34	78	85.0
19-Apr	73	77	105	112	116	124	128	123	118	121	120	120	124	123	105	120	122	117	109	83	55	61	32	54	105.3
20-Apr	74	105	108	115	114	114	126	133	136	123	92	96	96	101	91	98	88	102	89	92	107	117	114	115	103.5
21-Apr	121	131	125	130	127	134	135	142	145	143	125	118	108	123	127	103	145	157	149	145	136	142	149	159	137.7
22-Apr	180	209	192	167	157	157	161	161	141	144	149	159	159	157	167	177	181	176	182	173	180	182	167	158	169.2
23-Apr	146	143	144	141	138	153	139	124	122	129	140	145	146	155	156	133	149	148	157	131	150	151	160	178	147.0
24-Apr	146	103	90	110	139	127	135	128	96	74	48	22	3	5	356	338	338	341	340	352	357	262	224	170	20.9
25-Apr	167	150	146	147	147	151	151	150	153	156	162	151	203	261	111	145	155	181	139	249	258	264	266	267	180.4
26-Apr	266	260	274	282	279	276	278	272	286	290	282	297	298	316	346	356	14	37	36	41	40	20	11	356	309.1
27-Apr	351	340	0	18	38	45	236	205	232	267	275	258	260	255	235	219	196	149	213	189	169	163	165	168	197.4
28-Apr	181	197	281	280	295	302	290	285	301	306	294	298	311	319	311	326	338	1	5	16	17	10	8	12	317.5
29-Apr	29	56	58	39	321	329	9	69	150	141	115	100	100	154	184	80	85	102	80	93	137	138	130	127	107.9
30-Apr	134	139	137	135	132	132	131	133	141	147	137	147	140	146	145	146	139	140	140	133	131	134	136	140	138.2

148.3	145.0	142.9	149.9	159.5	159.9	165.0	163.6	167.5	163.3	164.1	160.6	162.5	170.5	162.8	163.6	159.3	138.5	126.9	113.8	124.8	140.5	144.2	146.9
Diurnal Average																							

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

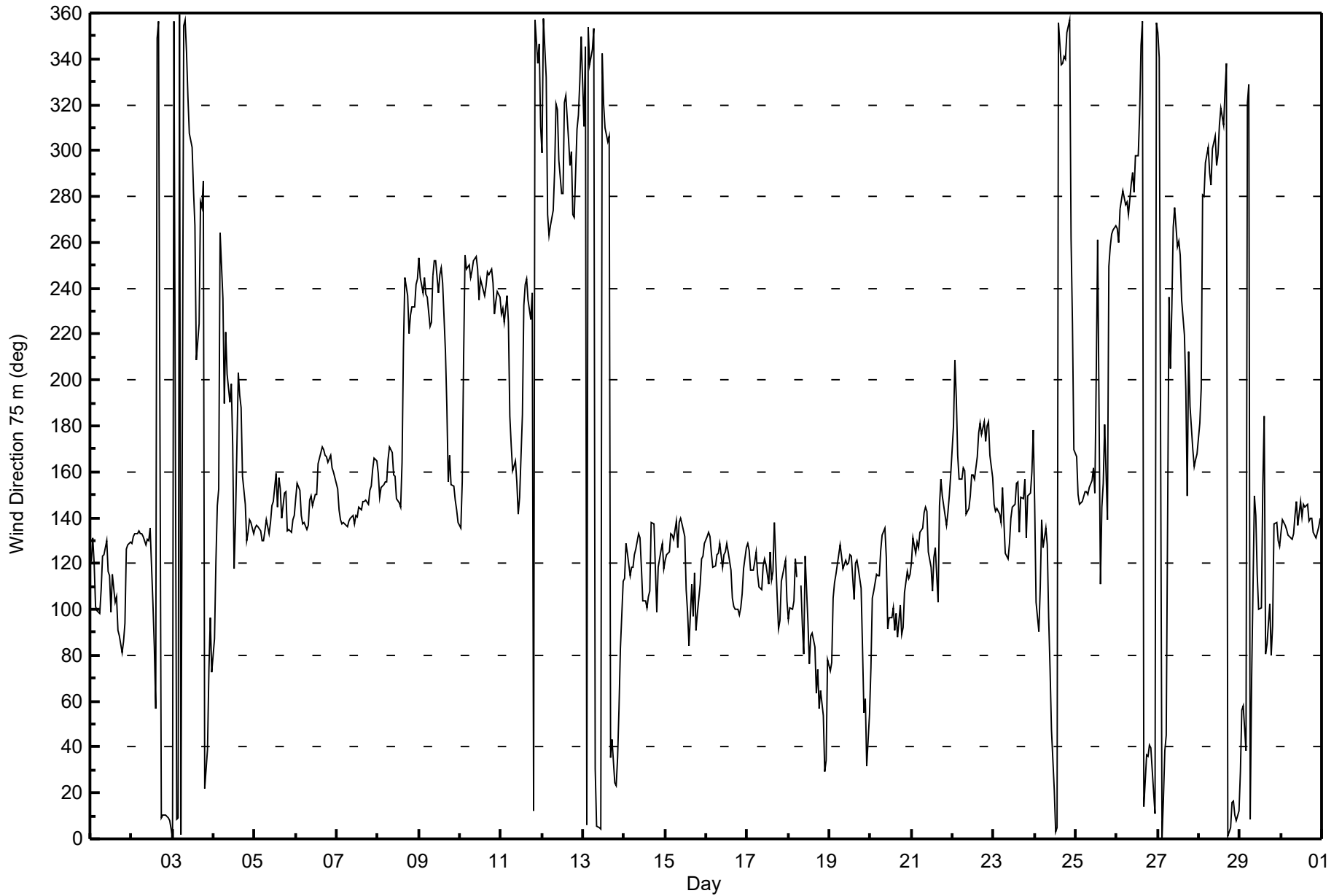


Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 96 deg on Apr 4 11:00	Hours of Data: 719
Minimum Value: 2 deg on Apr 22 22:00	Hours of Missing Data: 1
Percentiles: P ₁ = 3 P ₁₀ = 5 Q ₁ = 7 Median = 12 Q ₃ = 16 P ₉₀ = 27 P ₉₉ = 63	Hours of Calibration: 0
	Percent Operational 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-Apr	14	10	20	13	17	10	13	15	17	12	16	19	15	21	18	16	8	13	13	14	12	13	10	8	21
2-Apr	10	9	7	7	6	7	7	7	10	8	11	13	25	26	26	32	15	7	5	4	4	4	5	8	32
3-Apr	10	8	7	6	8	7	9	14	21	11	15	16	19	32	55	36	19	10	11	58	21	13	44	13	58
4-Apr	10	18	7	31	78	62	29	37	28	21	96	37	59	65	37	25	20	8	10	6	6	5	4	96	
5-Apr	3	3	4	6	9	10	6	8	12	20	9	8	18	22	11	10	9	10	6	8	7	6	3	3	22
6-Apr	4	3	3	3	2	3	3	5	7	9	6	7	7	9	7	7	6	5	6	6	5	4	5	4	9
7-Apr	6	4	4	3	4	4	5	7	9	9	10	9	11	9	7	6	7	7	5	5	5	4	5	4	11
8-Apr	4	5	4	4	3	3	5	6	7	6	13	8	6	8	14	27	9	14	6	22	7	3	4	4	27
9-Apr	4	3	4	4	6	6	10	7	11	8	8	12	10	14	15	26	13	11	6	5	5	5	5	6	26
10-Apr	6	9	35	9	9	8	7	8	8	8	9	10	9	12	7	8	8	9	7	7	5	7	8	6	35
11-Apr	4	4	6	11	21	14	8	6	14	20	13	13	47	15	17	25	16	18	27	15	9	5	4	14	47
12-Apr	8	18	36	11	6	3	4	13	31	21	24	11	15	20	23	16	17	20	11	10	29	8	8	16	36
13-Apr	14	17	9	6	10	16	36	83	44	61	62	54	38	28	17	27	48	16	7	4	7	8	18	13	83
14-Apr	13	13	15	15	14	14	15	15	21	17	23	21	22	18	18	20	19	16	14	11	14	11	10	13	23
15-Apr	12	11	12	14	10	10	15	20	14	14	22	35	26	31	36	25	19	15	9	9	14	13	12	10	36
16-Apr	6	5	6	11	12	13	13	15	10	13	13	11	11	13	16	13	12	12	11	10	11	12	16	15	16
17-Apr	12	14	14	12	15	15	17	14	15	15	13	13	14	12	12	13	15	12	11	13	16	14	13	14	17
18-Apr	11	11	13	14	16	15	UO	15	15	12	16	26	11	11	13	15	10	8	10	8	8	9	11	25	26
19-Apr	17	19	14	16	15	13	10	12	13	12	13	14	11	14	13	14	15	16	22	14	9	20	9	9	22
20-Apr	27	29	16	12	14	13	13	15	15	25	23	23	19	24	27	23	16	17	9	9	12	16	18	15	29
21-Apr	15	8	11	9	10	8	5	10	10	13	27	26	33	37	31	39	31	19	9	5	5	5	4	4	39
22-Apr	16	7	9	10	3	2	7	13	12	12	12	15	15	15	16	13	12	11	10	7	4	2	5	4	16
23-Apr	5	3	2	3	2	9	8	11	13	11	12	12	10	12	19	18	14	18	26	20	13	12	14	11	26
24-Apr	19	20	18	23	16	17	11	16	18	11	13	11	12	17	14	9	8	9	10	9	9	56	7	18	56
25-Apr	6	6	3	2	3	4	4	5	8	10	10	8	45	13	58	13	18	81	17	27	6	6	7	8	81
26-Apr	8	8	10	8	8	8	8	12	9	8	9	12	14	25	18	27	28	15	9	6	8	10	5	7	28
27-Apr	6	8	9	14	12	63	24	24	50	42	43	31	33	43	33	40	32	36	15	8	4	4	3	5	63
28-Apr	4	21	24	5	7	7	6	6	12	15	11	14	13	11	12	12	12	12	11	6	5	7	6	7	24
29-Apr	15	30	8	78	36	13	24	52	17	28	40	43	41	45	68	32	38	33	21	16	6	6	10	10	78
30-Apr	7	4	4	3	6	6	7	6	9	12	12	9	12	12	13	10	11	9	7	9	8	6	6	5	13
	27	30	36	78	78	63	36	83	50	61	96	54	59	65	68	40	48	81	27	58	29	56	44	25	

Diurnal Maximum

UO - Unstable Operation

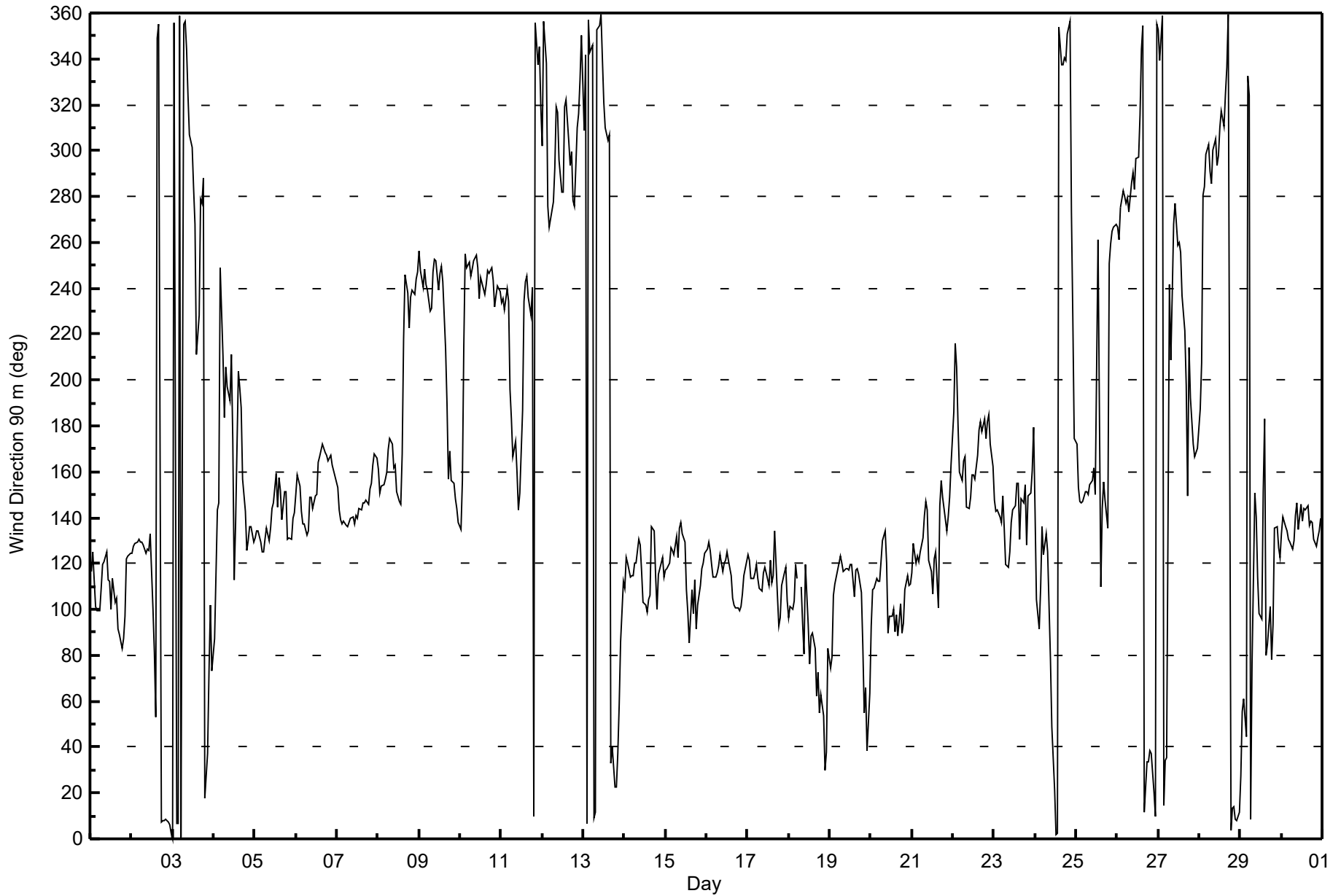




Summary of Hour Standard Deviations

Mannix - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 93 deg on Apr 4 11:00 Minimum Value: 2 deg on Apr 25 04:00 Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 7 Median = 10 Q ₃ = 15 P ₉₀ = 26 P ₉₉ = 66											Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	11	10	16	11	13	7	11	12	15	12	14	16	14	18	16	13	7	13	12	13	11	11	8	8	18																						
2-Apr	8	8	7	7	6	6	7	6	7	6	9	12	24	23	24	31	14	7	5	4	3	3	4	8	31																						
3-Apr	9	8	6	6	7	6	8	12	19	10	14	15	17	31	44	34	18	9	9	56	22	13	48	12	56																						
4-Apr	9	15	7	27	79	68	18	39	27	21	93	39	55	68	43	24	21	20	9	8	6	6	5	2	93																						
5-Apr	3	3	3	5	6	7	5	8	11	20	10	9	17	23	11	10	9	10	6	8	7	6	4	2	23																						
6-Apr	4	3	3	3	3	2	2	4	8	9	7	8	8	10	6	7	6	5	6	5	5	5	5	4	10																						
7-Apr	5	3	4	4	4	4	5	7	9	9	10	9	11	9	7	6	7	7	5	5	5	4	4	4	11																						
8-Apr	4	4	3	4	3	3	5	5	7	6	13	9	6	8	16	26	8	13	5	18	5	2	5	4	26																						
9-Apr	4	3	3	4	5	5	8	6	10	8	8	11	9	13	14	25	13	11	6	5	5	5	5	6	25																						
10-Apr	6	10	33	9	8	8	6	8	8	7	9	10	9	11	7	8	8	8	6	6	4	6	6	6	33																						
11-Apr	4	3	5	10	18	14	12	9	17	21	13	13	47	14	16	24	15	17	26	14	9	4	2	14	47																						
12-Apr	8	17	31	14	7	3	4	12	24	18	22	10	14	19	22	16	15	18	11	8	27	7	8	13	31																						
13-Apr	18	18	6	7	8	14	28	72	43	51	55	49	34	25	15	27	47	14	6	4	7	7	17	9	72																						
14-Apr	9	10	11	11	10	12	13	14	22	16	22	19	19	15	17	19	19	15	11	8	11	9	8	8	22																						
15-Apr	8	6	8	12	9	8	12	16	14	14	23	33	26	26	34	23	18	12	7	5	10	10	10	8	34																						
16-Apr	5	5	5	6	6	7	7	13	9	10	10	9	10	11	13	11	9	9	8	8	8	8	13	14	14																						
17-Apr	11	12	10	8	12	12	13	12	12	12	9	9	10	10	8	10	15	9	10	11	14	11	10	12	15																						
18-Apr	9	9	10	11	13	11	UO	12	14	11	14	25	12	11	12	15	10	9	10	8	8	9	12	23	25																						
19-Apr	17	18	11	14	12	10	8	9	10	10	10	10	7	11	9	11	11	13	20	15	8	21	9	12	21																						
20-Apr	20	19	9	7	8	8	10	14	14	23	23	22	18	22	26	21	15	14	8	7	8	14	15	11	26																						
21-Apr	12	5	6	6	6	7	4	11	10	13	28	25	33	36	30	40	32	19	10	5	5	5	3	5	40																						
22-Apr	18	6	9	16	4	3	6	13	14	13	13	15	15	16	16	13	12	11	10	7	4	2	5	3	18																						
23-Apr	7	2	2	2	2	7	8	7	10	10	12	13	10	12	20	16	14	18	27	19	14	13	14	11	27																						
24-Apr	19	17	15	19	17	15	11	14	14	12	12	10	11	15	14	9	8	8	9	9	8	55	6	19	55																						
25-Apr	6	7	2	2	3	3	4	4	8	10	10	7	45	12	59	14	18	78	20	24	6	5	6	7	78																						
26-Apr	7	7	9	7	7	7	7	11	8	8	8	11	14	24	18	26	27	14	9	5	7	9	5	7	27																						
27-Apr	6	7	7	13	10	49	28	21	48	38	37	27	31	39	29	36	31	40	14	8	4	4	2	5	49																						
28-Apr	6	19	21	5	7	8	6	6	11	15	10	13	12	11	12	11	11	12	10	5	4	5	5	5	21																						
29-Apr	15	22	9	77	32	14	20	45	19	28	38	51	38	46	71	30	38	32	22	15	6	6	9	8	77																						
30-Apr	6	4	4	3	5	5	6	6	9	13	13	10	11	13	14	11	11	10	8	8	7	6	6	5	14																						
Diurnal Maximum																								20	22	33	77	79	68	28	72	48	51	93	51	55	68	71	40	47	78	27	56	27	55	48	23
UO - Unstable Operation																																															





Summary of Hour Averages

Mannix - April 2023

Maximum Value: 1.8 km/h on Apr 17 16:00																				Maximum Daily Average: 1.0 km/h on Apr 17					Hours in Service: 720	
Minimum Value: -1.1 km/h on Apr 28 16:00																				Minimum Daily Average: -0.4 km/h on Apr 28					Hours of Data: 720	
Maximum Diurnal Average: 0.5 km/h at hour 12																				Minimum Diurnal Average: 0.3 km/h at hour 20					Hours of Missing Data: 0	
Monthly Average: 0.41 km/h																				Percentiles: P ₁ = -0.8 P ₁₀ = -0.3 Q ₁ = 0.0 Median = 0.5 Q ₃ = 0.8 P ₉₀ = 1.0 P ₉₉ = 1.4					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-Apr	1.1	1.0	0.7	0.6	0.4	0.7	1.0	1.1	0.8	0.8	1.0	0.9	0.8	0.8	0.8	0.8	0.2	0.5	0.5	0.6	0.7	0.9	0.8	0.7	0.8	1.1
2-Apr	0.6	0.8	0.5	0.4	0.6	0.5	0.6	0.5	0.8	0.5	0.7	0.4	0.5	0.1	0.0	-0.2	-0.4	-0.4	-0.7	-0.6	-0.9	-0.9	-0.9	-0.4	0.1	0.8
3-Apr	-0.4	-0.5	-0.4	-0.5	-0.6	-0.5	-0.3	0.2	-0.3	-0.3	-0.2	0.0	0.1	-0.1	0.5	0.2	-0.1	0.0	0.0	0.0	-0.1	0.5	0.2	0.7	-0.1	0.7
4-Apr	0.3	0.6	0.2	0.0	0.0	-0.1	0.1	-0.1	0.1	0.4	0.2	0.6	0.3	0.4	0.5	0.5	0.1	0.5	0.3	0.6	0.5	0.8	0.6	0.7	0.3	0.8
5-Apr	0.9	0.9	0.7	0.5	0.6	0.5	0.7	0.5	0.5	0.5	0.6	0.4	0.4	0.2	0.6	0.8	0.7	0.5	0.4	0.4	0.5	0.6	0.7	0.7	0.6	0.9
6-Apr	0.7	0.7	0.7	0.6	0.8	0.9	0.6	0.8	0.7	0.7	0.9	1.1	1.2	1.0	1.0	0.6	0.9	1.0	0.8	1.1	0.9	1.1	1.3	1.4	0.9	1.4
7-Apr	1.2	0.9	0.8	0.8	0.8	0.8	0.7	0.9	0.9	1.1	1.0	1.1	1.1	1.0	1.3	1.2	1.0	1.0	0.9	1.1	1.1	1.1	1.0	1.0	1.0	1.3
8-Apr	0.9	0.7	0.7	0.9	0.8	0.8	0.8	0.6	0.6	0.8	0.6	0.6	0.7	0.7	0.4	0.3	0.0	0.1	0.0	0.1	0.2	0.0	0.0	-0.1	0.5	0.9
9-Apr	-0.2	-0.1	0.0	-0.1	0.0	-0.1	0.1	0.0	-0.2	-0.1	-0.3	0.1	-0.1	-0.1	0.1	0.0	0.3	0.7	0.7	0.8	1.1	1.0	0.9	0.9	0.2	1.1
10-Apr	0.9	0.7	0.4	-0.1	-0.5	-0.3	-0.3	-0.4	-0.2	-0.3	0.0	-0.1	-0.1	0.0	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.9
11-Apr	0.0	0.1	0.1	-0.1	0.2	0.5	0.6	0.6	0.4	0.3	0.6	0.6	0.6	-0.3	-0.2	0.1	-0.1	0.2	0.0	-0.4	-0.6	-0.9	-0.8	0.0	0.1	0.6
12-Apr	-0.2	-0.6	-0.1	0.0	-0.2	-0.2	-0.1	0.1	0.0	-0.1	-0.2	0.0	-0.1	-0.4	-0.7	-0.2	-0.3	-0.1	0.0	0.1	-0.1	-0.2	-0.2	-0.1	-0.2	0.1
13-Apr	-0.1	-0.1	-0.1	-0.2	0.0	-0.1	0.0	0.4	0.1	0.4	0.3	0.1	-0.1	-0.3	-0.5	0.2	0.4	0.0	0.0	-0.4	-0.3	-0.2	0.3	1.1	0.0	1.1
14-Apr	0.8	0.6	0.5	0.6	0.8	0.9	1.0	0.8	0.6	0.7	0.7	0.5	0.5	0.3	0.4	0.3	0.7	0.8	1.1	0.5	1.0	0.8	0.6	1.0	0.7	1.1
15-Apr	1.0	0.7	0.6	0.6	0.6	0.7	0.2	0.4	0.4	0.2	0.2	0.6	0.8	0.6	0.4	0.5	0.6	1.0	0.7	0.2	0.6	0.7	1.1	0.8	0.6	1.1
16-Apr	1.0	0.8	0.8	0.7	1.0	0.6	0.5	0.8	0.5	1.5	1.3	1.0	1.1	1.0	1.0	1.2	1.0	1.1	1.0	1.0	0.8	0.9	0.9	0.7	0.9	1.5
17-Apr	0.5	0.6	0.5	0.6	0.7	0.9	0.9	0.7	0.9	1.1	1.3	1.4	1.5	1.6	1.3	1.8	1.6	1.2	0.9	0.8	0.8	1.0	1.4	0.8	1.0	1.8
18-Apr	0.9	0.7	0.8	0.9	1.1	1.2	0.5	0.7	0.6	0.5	1.0	0.5	0.4	0.6	0.7	0.4	0.3	0.4	0.3	0.4	0.1	-0.1	-0.2	0.4	0.5	1.2
19-Apr	0.4	0.4	0.6	0.9	1.1	0.8	0.7	1.0	1.3	1.1	1.3	1.2	0.6	0.9	0.9	1.1	0.9	0.7	0.6	0.3	-0.1	0.1	-0.4	-0.3	0.7	1.3
20-Apr	-0.1	0.0	0.3	1.1	1.1	1.1	0.7	0.7	0.7	0.5	0.1	0.3	0.7	0.6	0.8	0.6	0.4	0.7	0.6	0.5	0.7	0.8	0.4	0.6	0.6	1.1
21-Apr	0.7	0.7	0.8	0.5	0.8	0.5	0.4	0.6	0.6	0.4	0.7	0.3	0.4	0.3	0.3	0.4	0.5	0.2	0.5	0.5	0.5	0.7	0.8	0.8	0.5	0.8
22-Apr	0.5	0.3	0.4	0.5	0.6	0.6	0.5	0.4	0.5	0.8	0.8	0.9	1.0	0.9	0.8	0.6	0.4	0.6	0.3	0.3	0.3	0.4	0.6	0.5	0.6	1.0
23-Apr	0.6	0.4	0.5	0.6	0.6	0.1	0.2	0.6	0.8	0.4	0.5	1.0	1.2	1.0	0.7	0.9	1.1	0.6	0.6	0.7	0.7	0.7	0.7	0.5	0.6	1.2
24-Apr	0.5	0.6	0.4	0.3	0.6	0.7	0.5	0.7	0.5	0.4	0.1	-0.2	0.0	-0.1	-0.4	-0.5	-0.5	-0.5	-0.8	-0.4	-0.3	-0.1	0.0	0.3	0.1	0.7
25-Apr	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.8	1.0	0.9	0.6	1.0	0.6	0.1	0.6	0.7	1.0	0.4	0.5	-0.1	0.0	0.0	-0.2	0.0	0.5	1.0
26-Apr	0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1	-0.4	0.0	-0.1	-0.3	-0.2	-0.6	-0.1	0.0	0.3	-0.5	0.0	0.1	-0.3	-0.4	-0.2	-0.2	0.3
27-Apr	-0.3	-0.3	-0.4	-0.2	-0.1	-0.1	-0.1	0.2	0.1	0.3	-0.2	0.1	0.1	0.3	0.2	0.1	0.4	0.4	0.1	0.2	0.6	0.7	0.8	0.8	0.2	0.8
28-Apr	0.5	0.4	0.0	0.0	-0.2	-0.2	-0.3	-0.6	-0.5	-0.5	-0.5	-0.7	-0.8	-0.9	-0.7	-1.1	-0.6	-0.8	-0.6	-0.4	-0.3	-0.5	-0.5	-0.4	-0.4	0.5
29-Apr	-0.2	0.0	0.0	-0.2	-0.1	0.1	0.2	0.3	0.4	0.5	0.5	0.3	0.2	0.5	0.2	0.4	0.4	0.2	0.3	0.6	0.6	0.7	0.7	0.8	0.3	0.8
30-Apr	0.7	0.8	0.9	0.7	0.7	0.7	0.7	0.8	0.8	1.0	0.7	1.1	1.2	1.1	0.9	1.1	1.0	1.0	1.0	0.8	0.9	0.9	1.1	0.9	0.9	1.2
																								Diurnal Average		
																								Diurnal Maximum		



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 4.3 km/h on Apr 17 15:00 Minimum Value: 0.1 km/h on Apr 29 03:00 Percentiles: P ₁ = 0.4 P ₁₀ = 0.7 Q ₁ = 1.2 Median = 1.6 Q ₃ = 2.1 P ₉₀ = 2.6 P ₉₉ = 4.0																				Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1.6	1.2	0.9	1.1	0.8	1.1	1.4	1.6	1.7	1.7	1.9	1.7	1.8	1.5	1.4	1.4	1.1	1.3	1.6	1.7	1.6	1.9	2.1	1.9	2.1
2-Apr	1.7	1.7	1.5	1.4	1.5	1.5	1.7	1.7	1.9	1.7	1.5	1.2	1.2	1.0	1.1	1.1	1.7	1.8	2.1	2.4	2.6	2.7	2.6	2.2	2.7
3-Apr	2.0	1.5	1.9	2.3	1.7	1.8	1.6	1.9	1.7	1.5	1.4	1.6	1.4	1.5	1.5	1.5	1.0	0.9	0.7	0.7	0.5	0.8	0.5	0.9	2.3
4-Apr	0.9	1.0	0.4	0.4	0.6	0.6	0.6	0.6	0.8	1.2	1.2	1.4	1.4	1.5	1.6	1.6	1.4	1.0	0.6	1.5	1.5	1.8	1.5	1.8	1.8
5-Apr	2.0	2.2	1.7	1.4	1.3	1.3	1.4	1.2	1.3	1.0	1.1	1.1	1.5	1.4	1.7	1.6	1.3	1.0	0.6	1.0	1.6	1.7	1.5	1.4	2.2
6-Apr	1.2	1.2	1.3	1.2	1.8	1.8	2.1	2.0	1.5	1.6	1.8	1.9	2.1	2.9	3.1	3.1	3.1	2.9	2.5	2.6	2.8	1.9	2.3	2.2	3.1
7-Apr	2.3	2.1	2.2	2.2	1.9	2.0	1.9	1.8	2.1	2.2	2.0	2.1	2.1	2.4	2.4	2.3	2.1	1.9	1.7	1.7	1.8	1.6	1.3	1.4	2.4
8-Apr	1.3	1.2	1.0	1.3	1.1	1.1	1.0	1.2	1.3	1.4	1.3	1.6	1.5	1.6	1.5	1.9	2.1	1.3	0.9	0.6	0.4	0.5	0.3	0.7	2.1
9-Apr	0.6	0.5	0.4	0.6	0.6	0.9	1.1	1.3	2.1	2.5	2.3	2.5	2.9	2.5	2.1	2.3	2.0	1.1	1.5	1.4	1.6	1.8	1.8	1.9	2.9
10-Apr	1.9	1.2	1.8	2.7	3.8	3.9	3.9	3.9	4.1	3.8	3.9	3.6	4.2	4.0	4.1	3.9	4.1	3.7	2.6	2.0	1.1	1.4	1.4	1.5	4.2
11-Apr	1.1	1.0	0.6	0.6	0.7	0.6	0.7	1.0	1.2	1.5	1.4	1.5	1.8	2.0	1.8	1.7	1.7	1.5	1.2	2.1	1.6	1.9	1.7	0.4	2.1
12-Apr	0.5	1.6	0.8	0.3	0.5	0.8	0.9	1.4	1.6	1.9	1.7	2.0	1.9	2.5	2.4	2.2	1.8	1.2	0.6	0.5	0.7	0.4	0.4	0.4	2.5
13-Apr	0.4	0.8	0.4	0.4	0.4	0.5	0.5	1.1	1.3	1.5	1.9	1.9	2.0	2.0	1.9	2.0	2.0	1.6	1.7	1.4	1.4	1.1	1.1	1.4	2.0
14-Apr	1.2	1.4	0.8	1.0	1.2	1.3	1.2	1.5	1.4	1.7	1.8	2.0	1.8	2.0	1.8	1.8	1.7	1.7	1.9	1.6	1.6	1.5	1.2	1.7	2.0
15-Apr	1.7	1.8	1.5	0.9	0.6	0.6	0.8	1.2	1.5	1.6	1.7	1.9	2.0	2.0	2.3	1.7	1.5	1.9	1.8	1.1	1.6	1.8	2.2	2.0	2.3
16-Apr	1.9	1.8	1.6	1.2	1.3	1.5	0.6	1.4	1.8	2.4	2.6	2.9	2.7	2.7	2.8	2.8	2.9	3.2	3.1	3.0	3.4	3.0	2.4	1.9	3.4
17-Apr	2.2	2.3	2.5	2.5	2.0	2.1	2.3	2.7	3.4	3.5	3.8	4.1	4.0	4.1	4.3	3.8	3.5	3.2	3.6	3.3	3.0	2.9	3.0	3.5	4.3
18-Apr	2.9	2.8	2.4	2.7	2.5	2.6	2.0	1.8	1.6	1.5	1.7	1.5	1.8	1.9	1.7	1.6	1.7	1.6	1.5	1.4	1.4	1.2	0.9	1.2	2.9
19-Apr	1.1	1.1	1.5	1.9	2.3	2.5	2.4	2.2	2.1	2.1	2.2	2.3	2.5	2.5	2.4	2.4	1.8	1.6	1.3	0.8	0.8	1.0	0.9	0.7	2.5
20-Apr	0.4	0.2	0.8	1.4	1.5	1.6	1.6	1.5	1.4	1.6	1.7	1.9	2.1	2.3	2.0	2.1	1.9	1.8	2.2	1.9	1.5	1.3	1.0	1.2	2.3
21-Apr	1.4	1.1	1.3	0.7	0.5	0.4	0.8	1.2	1.4	1.6	1.9	2.1	2.1	2.1	2.0	1.9	1.7	1.5	0.9	0.4	0.9	1.2	1.0	0.7	2.1
22-Apr	0.8	0.5	0.5	0.6	0.6	0.6	1.0	1.2	1.5	1.8	2.3	2.7	2.8	2.5	2.6	2.6	2.7	2.3	2.1	1.1	0.7	0.4	0.5	0.6	2.8
23-Apr	0.9	0.8	0.8	0.9	0.7	0.5	0.7	1.5	1.7	1.6	1.9	2.3	2.4	2.4	2.1	2.3	2.2	1.9	2.2	1.6	1.2	1.4	1.7	2.0	2.4
24-Apr	1.3	1.2	1.5	1.1	1.4	1.4	1.0	1.1	1.0	1.1	1.5	1.6	2.2	2.4	2.1	2.5	2.6	2.4	2.1	2.0	1.6	1.0	0.7	0.6	2.6
25-Apr	0.6	0.8	1.2	1.4	1.4	1.3	1.5	1.6	1.7	1.7	2.1	2.0	3.0	2.4	1.2	1.6	1.8	2.0	1.7	2.3	1.4	1.7	1.7	1.4	3.0
26-Apr	1.6	1.8	1.7	1.8	1.9	1.6	1.5	1.7	2.2	1.8	1.6	1.9	1.6	1.9	2.3	2.3	2.0	2.1	2.1	2.1	1.5	0.7	0.7	0.7	2.3
27-Apr	1.0	1.2	1.2	0.7	0.6	0.4	0.8	1.2	1.6	1.7	1.9	1.8	1.8	1.8	1.8	1.6	1.6	1.4	1.4	1.0	0.7	1.0	1.3	1.2	1.9
28-Apr	0.8	0.5	0.7	0.7	1.1	1.1	1.7	2.4	2.9	3.0	3.1	3.2	3.0	3.2	3.2	3.0	3.2	2.8	2.5	1.7	1.4	1.0	1.0	0.5	3.2
29-Apr	0.5	0.2	0.1	0.4	0.3	0.2	0.6	1.0	1.5	1.6	1.9	2.1	1.9	2.1	1.9	1.8	1.6	1.5	1.1	1.2	1.5	1.7	2.0	2.1	2.1
30-Apr	1.7	1.3	1.7	1.6	1.8	1.9	2.1	1.9	1.8	2.0	2.1	2.3	2.8	2.7	2.6	2.5	2.7	2.5	2.4	2.2	2.5	2.5	2.3	2.4	2.8
Diurnal Maximum																									
2.9 2.8 2.5 2.7 3.8 3.9 3.9 3.9 4.1 3.8 3.9 4.1 4.2 4.1 4.3 3.9 4.1 3.7 3.6 3.3 3.4 3.0 3.0 3.5																									



Summary of Hour Averages

Mannix - April 2023

Maximum Value: 2.0 km/h on Apr 19 11:00		Maximum Daily Average: 0.9 km/h on Apr 7		Hours in Service: 720																						
Minimum Value: -1.5 km/h on Apr 10 15:00		Minimum Daily Average: -0.8 km/h on Apr 10		Hours of Data: 719																						
Maximum Diurnal Average: 0.4 km/h at hour 24		Minimum Diurnal Average: 0.2 km/h at hour 14		Hours of Missing Data: 1																						
Monthly Average: 0.27 km/h		Percentiles: P ₁ = -1.2 P ₁₀ = -0.6 Q ₁ = -0.1 Median = 0.4 Q ₃ = 0.7 P ₉₀ = 1.0 P ₉₉ = 1.5		Hours of Calibration: 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-Apr	1.5	1.2	1.0	1.0	0.5	0.8	1.8	1.7	1.1	0.5	1.0	1.4	1.0	0.8	1.3	1.2	0.0	0.3	0.7	0.6	0.7	1.0	0.1	0.0	0.9	1.8
2-Apr	0.3	0.2	0.0	-0.1	0.1	0.1	0.1	0.1	0.3	-0.1	0.4	0.1	0.6	0.0	0.0	-0.1	-0.2	-0.2	-0.3	-0.3	-0.6	-0.7	-0.6	0.2	0.0	0.6
3-Apr	-0.2	-0.4	-0.1	0.1	-0.5	-0.2	-0.6	0.7	-0.1	-0.2	-0.2	-0.2	0.2	-0.2	0.3	-0.2	-0.1	-0.3	-0.2	-0.1	0.0	0.6	0.4	1.1	0.0	1.1
4-Apr	0.3	0.6	0.0	-0.1	0.0	-0.2	-0.1	-0.2	0.0	0.2	0.3	0.6	0.3	0.7	0.5	0.2	0.4	0.0	0.4	0.2	0.6	0.5	0.5	0.3	0.3	0.7
5-Apr	0.6	0.6	0.5	0.4	0.4	0.2	0.3	0.3	0.2	0.4	0.5	0.1	0.2	-0.2	0.5	0.8	0.4	0.4	0.2	0.1	0.4	0.6	0.6	0.6	0.4	0.8
6-Apr	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.4	0.5	0.5	0.4	0.7	1.0	0.8	0.7	0.7	0.7	0.8	0.6	1.0	0.9	1.0	1.3	1.3	0.7	1.3
7-Apr	1.2	0.9	0.6	0.7	0.7	0.7	0.5	0.7	0.7	1.4	1.0	1.1	1.1	1.1	1.1	0.9	0.9	1.0	0.8	1.2	1.1	1.1	0.8	0.8	0.9	1.4
8-Apr	0.8	0.6	0.7	0.8	0.6	0.6	0.6	0.3	0.5	0.6	0.4	0.2	0.6	0.5	0.4	-0.1	-0.4	-0.3	-0.4	-0.2	-0.3	-0.6	-0.7	-0.8	0.2	0.8
9-Apr	-0.8	-0.7	-0.5	-0.7	-0.5	-0.7	-0.5	-0.5	-0.8	-0.7	-0.9	-0.4	-0.7	-0.7	-0.2	-0.6	0.1	0.4	0.5	0.9	0.9	0.9	0.7	0.7	-0.2	0.9
10-Apr	0.7	0.6	-0.1	-0.7	-1.4	-1.3	-1.3	-1.1	-1.2	-1.3	-1.0	-1.1	-0.9	-1.1	-1.5	-1.0	-1.3	-1.3	-0.8	-0.8	-0.6	-0.7	-0.7	-0.5	-0.8	0.7
11-Apr	-0.5	-0.5	-0.4	-0.5	-0.2	0.2	0.4	0.4	0.1	0.2	0.4	0.3	0.6	-0.8	-0.6	-0.1	-0.4	-0.1	-0.5	-0.2	-0.7	-1.2	-1.0	-0.3	-0.2	0.6
12-Apr	-0.8	-0.6	-0.3	-0.4	-0.6	-0.6	-0.4	-0.3	0.2	-0.2	-0.4	-0.6	-0.4	-0.6	-0.5	-0.1	-0.5	-0.3	-0.3	-0.1	-0.5	-0.4	-0.5	-0.3	-0.4	0.2
13-Apr	-0.2	-0.2	-0.3	-0.3	-0.2	-0.3	-0.2	0.5	0.2	0.9	0.6	-0.1	-0.3	-0.7	-0.7	0.4	0.4	0.4	0.3	-0.1	-0.1	0.2	0.7	1.5	0.1	1.5
14-Apr	1.2	0.2	0.5	0.9	1.0	1.5	1.4	1.0	1.0	0.9	0.9	0.4	0.2	-0.1	0.3	0.5	0.7	0.6	1.3	0.1	1.4	0.6	0.5	1.0	0.7	1.5
15-Apr	1.0	0.2	0.3	0.4	0.4	0.9	0.2	0.5	0.1	-0.2	-0.3	0.6	1.0	0.8	0.1	0.2	0.7	1.1	0.5	-0.1	0.5	0.6	1.3	0.3	0.5	1.3
16-Apr	0.9	0.6	0.7	0.6	0.8	0.3	0.4	1.0	0.0	1.7	1.2	0.9	0.8	0.5	0.8	1.1	0.9	0.8	1.0	1.0	0.7	0.8	1.0	0.5	0.8	1.7
17-Apr	0.1	0.1	0.0	-0.1	0.2	0.8	1.1	0.6	0.7	0.8	0.8	1.2	1.1	1.1	1.5	1.7	1.2	0.9	1.3	0.9	0.5	0.9	1.3	0.8	0.8	1.7
18-Apr	1.1	0.7	0.6	0.6	0.7	1.3	UO	0.7	0.4	0.7	0.8	0.5	0.5	0.4	0.8	0.4	0.7	0.5	0.4	0.6	0.4	0.2	0.1	0.4	0.6	1.3
19-Apr	0.5	0.6	0.4	1.3	1.3	0.5	0.2	0.7	1.9	1.3	2.0	1.3	0.2	0.5	0.5	1.0	1.0	0.6	0.7	0.4	0.1	0.4	-0.1	-0.1	0.7	2.0
20-Apr	0.1	0.0	0.4	1.4	1.0	0.9	0.4	0.6	0.9	0.3	-0.1	0.0	0.6	0.5	1.2	0.6	0.7	0.5	0.6	0.5	0.7	0.9	0.3	0.5	0.6	1.4
21-Apr	0.6	0.6	0.6	0.4	0.5	0.3	0.3	0.3	0.2	-0.1	1.1	0.0	0.5	0.2	0.2	0.7	0.6	0.0	0.3	0.2	0.4	0.6	0.6	0.6	0.4	1.1
22-Apr	0.3	-0.1	0.1	0.3	0.5	0.8	0.5	0.3	0.4	0.7	0.4	1.0	0.7	1.0	0.8	0.5	0.0	0.2	0.0	0.2	0.1	0.1	0.4	0.3	0.4	1.0
23-Apr	0.5	0.3	0.3	0.4	0.6	0.1	0.1	0.3	0.7	-0.1	0.3	0.8	1.0	1.0	0.5	1.0	1.0	0.6	0.5	0.4	0.4	0.5	0.4	0.4	0.5	1.0
24-Apr	0.3	0.8	0.4	0.4	0.4	0.6	0.3	0.9	0.6	0.4	0.2	-0.2	0.1	-0.2	0.0	-0.4	-0.3	-0.6	-0.8	-0.6	-0.2	-0.3	-0.4	0.2	0.1	0.9
25-Apr	0.3	0.4	0.6	0.6	0.7	0.7	0.7	0.6	0.9	0.9	0.5	1.0	0.3	-0.6	0.4	0.3	1.0	0.4	0.4	-0.5	-0.7	-0.6	-0.6	-0.2	0.3	1.0
26-Apr	-0.4	-0.5	-0.4	-0.3	-0.6	-0.5	-0.3	-0.7	-0.2	-0.8	-0.1	-0.2	-0.4	-0.5	-0.7	0.2	0.2	1.0	-0.2	0.4	0.2	-0.2	-0.3	-0.2	-0.2	1.0
27-Apr	-0.5	-0.5	-0.4	-0.1	-0.1	-0.1	-0.3	0.1	0.1	-0.1	-0.6	0.1	-0.1	0.3	-0.3	-0.1	0.3	0.3	-0.3	-0.1	0.3	0.6	0.6	0.5	0.0	0.6
28-Apr	0.3	0.0	-0.2	-0.2	-0.7	-0.7	-0.7	-0.8	-0.8	-0.5	-1.0	-0.9	-0.7	-1.2	-0.9	-1.0	-0.6	-0.7	-0.3	0.0	-0.1	-0.4	-0.5	-0.3	-0.5	0.3
29-Apr	-0.1	0.0	-0.1	-0.1	-0.2	-0.1	0.1	0.1	0.1	0.7	0.2	0.1	0.1	0.3	0.4	0.2	0.4	-0.1	0.4	0.6	0.4	0.5	0.5	0.4	0.2	0.7
30-Apr	0.4	0.8	0.9	0.7	0.4	0.4	0.2	0.4	0.9	1.1	0.3	0.8	1.1	1.0	0.5	0.9	0.8	0.9	0.8	0.4	0.3	0.5	0.9	0.8	0.7	1.1
																								Diurnal Average		
																								Diurnal Maximum		
UO - Unstable Operation																										



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Vertical Wind Speed 45 m (VW45m) - km/h

Mannix - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1 Maximum Value: 5.0 km/h on Apr 17 15:00		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																							
Minimum Value: 0.2 km/h on Apr 12 04:00																									
Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.3 Median = 1.9 Q ₃ = 2.5 P ₉₀ = 3.1 P ₉₉ = 4.5																									
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-Apr	2.0	1.4	1.2	1.2	1.0	1.3	1.7	2.0	2.2	2.3	2.6	2.2	2.3	1.9	1.8	1.7	1.1	1.5	1.7	2.0	1.8	2.4	2.3	2.2	2.6
2-Apr	2.1	2.0	1.6	1.4	1.6	1.5	1.7	1.9	2.2	1.7	1.9	1.6	1.5	1.2	1.2	1.4	1.7	1.6	1.6	1.9	2.1	2.1	2.2	2.4	2.4
3-Apr	2.2	1.6	1.9	2.4	1.7	2.0	1.7	2.3	2.0	1.8	1.7	2.0	1.7	1.8	2.0	2.0	1.2	1.0	0.8	0.8	0.7	1.0	0.8	1.1	2.4
4-Apr	0.9	1.1	0.5	0.5	0.5	0.5	0.4	0.6	0.9	1.5	1.6	1.8	1.7	1.8	2.0	2.1	1.9	1.5	0.8	1.7	1.4	2.0	1.4	1.6	2.1
5-Apr	2.0	2.3	2.0	1.5	1.5	1.4	1.7	1.3	1.6	1.3	1.5	1.3	1.8	2.0	2.0	2.0	1.5	1.1	0.7	1.0	1.9	1.8	1.4	1.2	2.3
6-Apr	1.1	1.1	1.0	0.8	1.6	1.7	2.0	2.1	1.7	1.9	2.1	2.2	2.7	3.1	3.1	3.2	3.2	3.1	2.7	2.7	2.9	2.0	2.6	2.3	3.2
7-Apr	2.5	2.4	2.4	2.2	2.0	2.0	1.9	2.3	2.5	2.9	2.6	2.6	2.6	3.1	3.0	2.8	2.5	2.2	2.1	2.0	1.9	1.6	1.4	1.4	3.1
8-Apr	1.2	1.2	1.0	1.5	1.3	1.1	0.8	1.2	1.2	1.4	1.4	1.7	1.7	2.0	1.6	2.4	2.5	1.6	0.7	0.6	0.5	0.3	0.4	0.6	2.5
9-Apr	0.4	0.5	0.5	0.8	0.8	1.2	0.9	1.2	2.6	3.0	2.7	3.1	3.4	3.1	2.7	2.5	2.0	1.3	1.4	1.5	1.6	2.0	2.0	2.1	3.4
10-Apr	1.9	1.4	2.1	3.3	4.3	4.4	4.5	4.5	4.5	4.3	4.3	4.0	4.7	4.7	4.5	4.6	4.4	4.1	2.8	2.2	1.1	1.5	1.7	1.7	4.7
11-Apr	0.9	0.9	0.9	0.9	1.0	0.6	0.5	0.7	1.5	2.0	1.7	1.8	2.6	2.6	2.4	2.3	2.1	1.7	1.4	2.2	1.6	2.0	1.7	0.5	2.6
12-Apr	0.5	1.4	0.8	0.2	0.3	0.5	0.9	1.4	2.2	2.3	2.2	2.2	2.3	3.0	3.1	2.8	2.2	1.6	0.7	0.6	0.9	0.3	0.3	0.5	3.1
13-Apr	0.5	0.8	0.6	0.4	0.3	0.4	0.5	1.2	1.7	1.9	2.3	2.4	2.5	2.6	2.5	2.6	2.3	2.0	1.8	1.4	1.3	1.0	1.4	1.7	2.6
14-Apr	1.6	1.6	1.1	1.2	1.3	1.7	1.7	1.9	1.9	2.1	2.3	2.4	2.4	2.4	2.3	2.3	2.4	2.2	2.3	1.8	2.0	1.7	1.4	2.0	2.4
15-Apr	1.9	1.7	1.8	1.0	0.9	0.8	0.9	1.4	1.8	2.0	2.0	2.4	2.3	2.6	2.8	2.4	1.9	2.3	2.0	1.3	2.1	2.3	2.9	2.4	2.9
16-Apr	1.8	1.9	1.4	1.1	1.4	1.5	0.9	1.7	2.0	3.0	3.1	3.6	3.3	3.3	3.4	3.3	3.4	3.7	3.6	3.6	3.8	3.7	3.2	2.5	3.8
17-Apr	2.6	3.1	3.2	3.3	2.7	2.7	3.1	3.5	4.0	4.2	4.4	4.9	4.5	4.8	5.0	4.5	4.2	3.8	4.1	3.9	3.8	3.5	3.5	4.2	5.0
18-Apr	3.6	3.4	3.0	3.3	3.1	3.2	UO	2.4	2.1	1.7	2.0	1.7	1.9	2.1	2.0	1.7	1.9	1.8	1.5	1.7	1.2	1.1	1.0	1.4	3.6
19-Apr	1.3	1.4	1.9	2.5	3.1	3.1	2.8	2.5	2.8	2.6	2.8	2.9	2.9	2.9	2.6	2.8	2.3	2.1	1.6	1.0	1.0	1.1	0.6	0.5	3.1
20-Apr	0.4	0.3	1.2	1.8	1.7	1.7	2.0	2.0	1.8	2.0	2.0	2.2	2.7	2.8	2.5	2.6	2.3	2.1	2.3	2.0	1.9	1.6	1.4	1.3	2.8
21-Apr	1.8	1.2	1.3	0.8	0.7	0.5	0.8	1.4	1.6	1.9	2.5	2.5	2.7	2.4	2.6	2.5	2.3	1.9	1.2	0.4	0.9	1.1	0.9	0.9	2.7
22-Apr	1.0	0.8	0.6	0.4	0.4	0.4	1.0	1.2	1.7	2.3	3.0	3.2	3.3	2.9	3.0	2.8	2.7	2.4	2.0	1.0	0.5	0.4	0.4	0.4	3.3
23-Apr	0.8	0.7	0.7	0.7	0.5	0.4	0.5	1.6	2.2	1.9	2.6	3.1	3.0	2.8	2.5	2.9	2.7	2.2	2.8	1.9	1.5	1.6	2.1	2.0	3.1
24-Apr	1.4	1.6	2.0	1.4	1.8	1.4	1.4	1.4	1.1	1.2	1.5	1.8	2.8	2.8	2.6	2.9	3.0	2.9	2.3	2.0	1.8	1.2	0.5	0.5	3.0
25-Apr	0.5	0.7	1.1	1.3	1.4	1.4	1.5	1.7	2.0	2.2	2.1	2.6	3.5	2.8	1.6	1.8	2.3	2.8	1.7	2.5	1.3	1.9	2.1	1.9	3.5
26-Apr	2.0	2.2	2.1	2.0	2.1	1.8	1.6	1.8	2.4	1.9	1.8	2.0	1.9	2.1	3.1	2.9	2.5	2.6	2.0	1.8	1.5	0.9	0.6	0.6	3.1
27-Apr	0.9	1.2	1.1	0.9	0.8	0.4	0.8	1.7	1.9	2.2	2.3	2.5	2.2	2.3	2.3	2.0	2.1	1.9	1.5	0.5	0.6	0.8	1.1	1.3	2.5
28-Apr	0.9	0.6	0.9	0.4	0.7	0.8	1.4	2.5	3.2	3.4	3.4	3.6	3.8	3.5	3.6	3.4	3.6	2.8	2.5	1.8	1.4	1.4	1.1	0.4	3.8
29-Apr	0.6	0.4	0.3	0.4	0.2	0.2	0.5	1.1	1.8	2.2	2.3	2.5	2.6	2.6	2.4	2.4	2.1	1.7	1.4	1.3	1.7	1.9	2.4	2.3	2.6
30-Apr	1.8	1.3	1.6	1.3	1.7	1.7	2.1	2.1	2.4	2.7	2.8	3.1	3.6	3.4	3.2	3.2	3.0	2.9	2.9	2.5	2.9	2.7	2.6	2.7	3.6
	3.6	3.4	3.2	3.3	4.3	4.4	4.5	4.5	4.5	4.3	4.4	4.9	4.7	4.8	5.0	4.6	4.4	4.1	4.1	3.9	3.8	3.7	3.5	4.2	
	Diurnal Maximum																								
UO - Unstable Operation																									



Summary of Hour Averages

Mannix - April 2023

Maximum Value: 2.3 km/h on Apr 1 07:00		Maximum Daily Average: 0.7 km/h on Apr 1		Hours in Service: 720																						
Minimum Value: -1.3 km/h on Apr 17 04:00		Minimum Daily Average: -0.3 km/h on Apr 2		Hours of Data: 719																						
Maximum Diurnal Average: 0.4 km/h at hour 9		Minimum Diurnal Average: 0.0 km/h at hour 3		Hours of Missing Data: 1																						
Monthly Average: 0.20 km/h		Percentiles: P ₁ = -0.7 P ₁₀ = -0.3 Q ₁ = -0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 0.8 P ₉₉ = 1.5		Hours of Calibration: 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-Apr	1.3	0.8	0.7	1.3	0.7	0.6	2.3	2.0	1.1	0.2	0.8	1.7	0.9	0.3	1.5	1.6	-0.4	-0.1	0.4	0.2	0.2	0.9	-0.7	-1.0	0.7	2.3
2-Apr	-0.5	-0.6	-0.8	-0.7	-0.7	-0.6	-0.8	-0.8	-0.3	-1.0	-0.2	-0.2	0.7	0.1	0.1	0.2	0.3	0.2	0.1	-0.1	-0.4	-0.7	-0.6	0.9	-0.3	0.9
3-Apr	0.3	0.1	0.3	0.6	0.0	0.4	-0.1	1.2	0.2	0.1	0.6	0.1	1.0	-0.1	0.2	-0.3	0.6	0.0	0.1	0.3	0.2	0.6	0.8	1.1	0.3	1.2
4-Apr	0.0	0.4	0.0	0.3	0.5	0.2	0.2	0.1	0.2	0.2	0.6	0.6	0.3	1.1	1.1	0.7	0.4	0.5	-0.1	-0.2	-0.4	-0.3	-0.3	-0.3	0.2	1.1
5-Apr	-0.1	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	0.1	0.0	0.2	0.0	-0.3	0.0	-0.2	0.5	0.8	0.0	0.3	0.2	-0.4	-0.4	-0.3	-0.1	-0.1	-0.1	0.8
6-Apr	0.1	0.6	0.3	-0.1	-0.4	-0.5	-0.3	-0.4	0.2	0.2	-0.2	0.4	0.4	0.3	0.5	0.9	0.6	0.7	0.6	0.9	0.6	0.9	0.9	0.9	0.3	0.9
7-Apr	0.5	0.0	-0.3	-0.5	-0.3	-0.2	-0.3	0.0	0.2	0.9	0.5	0.6	0.7	0.4	0.0	0.0	0.3	0.4	0.1	0.8	0.9	1.0	0.7	0.8	0.3	1.0
8-Apr	0.8	0.3	0.6	0.8	0.6	0.5	0.5	0.4	0.4	0.7	0.2	0.1	0.1	0.2	0.4	0.2	0.4	0.2	-0.1	0.1	0.1	-0.2	-0.3	-0.3	0.3	0.8
9-Apr	-0.2	-0.2	-0.1	-0.3	-0.2	-0.2	-0.2	-0.2	0.0	0.1	-0.4	0.3	0.1	-0.2	0.1	-0.2	0.3	0.5	0.5	0.6	0.6	0.2	-0.1	-0.3	0.0	0.6
10-Apr	-0.3	0.3	0.2	0.2	-0.3	-0.5	-0.2	0.0	-0.1	-0.4	-0.1	-0.1	-0.1	0.0	-0.3	0.0	-0.3	-0.2	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	0.3
11-Apr	-0.1	0.0	-0.1	-0.1	0.1	0.1	0.3	0.3	0.2	0.3	0.2	0.2	0.7	-0.4	0.0	0.2	0.0	0.2	-0.1	0.1	-0.2	-0.6	-0.2	0.4	0.1	0.7
12-Apr	0.2	-0.2	0.2	0.1	-0.1	0.0	0.2	0.3	0.7	0.4	0.0	0.2	0.1	-0.1	0.4	0.5	0.5	0.0	0.0	0.3	0.0	0.0	-0.1	0.0	0.2	0.7
13-Apr	0.2	0.1	0.0	0.2	0.1	0.0	0.1	0.9	0.2	1.4	1.3	0.1	-0.1	-0.5	-0.3	0.8	0.9	0.4	0.3	0.0	0.0	0.2	0.7	1.4	0.4	1.4
14-Apr	1.0	-0.2	0.4	0.9	0.9	1.6	1.4	1.0	1.5	0.9	0.8	0.2	0.0	-0.5	0.1	0.3	0.6	0.2	1.4	-0.6	1.4	0.2	-0.1	0.7	0.6	1.6
15-Apr	0.4	-0.4	-0.3	0.0	0.0	0.4	0.1	0.6	-0.1	-0.4	-0.5	0.8	1.3	0.8	0.1	0.0	0.6	1.2	-0.4	-0.7	0.2	-0.1	0.7	-0.6	0.2	1.3
16-Apr	-0.2	0.0	0.0	0.0	0.1	-0.1	0.0	0.8	-0.7	1.2	0.6	0.1	-0.2	0.0	0.2	0.5	-0.4	-0.3	0.0	-0.1	-0.4	0.1	0.9	0.2	0.1	1.2
17-Apr	-0.6	-0.7	-0.7	-1.3	-0.5	0.4	1.0	0.0	0.2	-0.2	-0.4	-0.3	0.0	0.3	0.1	0.7	0.2	0.0	0.2	0.0	0.3	0.6	0.5	-0.2	0.0	1.0
18-Apr	0.2	0.0	0.0	-0.1	0.3	0.6	UO	0.5	-0.2	0.6	0.3	0.6	0.2	-0.2	0.7	0.1	0.7	0.2	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.7
19-Apr	0.5	0.6	0.1	1.2	0.7	-0.1	-0.7	0.1	2.0	1.3	1.7	1.0	-0.3	0.0	-0.3	0.2	0.3	0.4	0.6	0.3	0.4	0.5	0.2	0.0	0.4	2.0
20-Apr	0.2	0.2	0.5	0.8	0.6	0.4	0.1	0.6	0.9	0.1	-0.3	0.0	0.4	-0.1	1.4	0.4	0.6	-0.2	-0.3	-0.4	0.3	0.9	0.5	0.4	0.3	1.4
21-Apr	0.4	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.4	1.3	-0.1	0.2	0.2	0.1	0.8	1.0	0.2	0.1	0.1	-0.1	-0.2	0.2	0.8	0.2	1.3
22-Apr	0.3	-0.1	0.1	0.2	0.5	0.9	0.6	0.6	0.1	0.1	0.1	0.7	0.2	1.0	0.7	0.6	0.1	0.2	0.1	0.4	0.2	0.2	0.4	0.4	0.4	1.0
23-Apr	0.1	-0.1	-0.2	-0.1	0.0	0.3	-0.2	-0.2	0.5	-0.5	-0.2	0.4	0.0	0.9	0.5	0.6	0.7	0.3	0.2	-0.1	0.1	0.2	0.2	0.6	0.2	0.9
24-Apr	-0.1	0.8	0.0	0.0	-0.1	0.2	0.2	0.8	0.8	0.4	0.2	0.0	0.3	0.0	0.4	0.2	0.3	0.0	-0.2	-0.1	0.2	0.1	-0.2	0.3	0.2	0.8
25-Apr	0.4	0.2	0.0	0.0	0.1	0.4	0.4	0.4	0.7	0.8	0.5	0.5	0.5	0.1	0.1	-0.1	0.6	0.5	0.0	0.1	0.0	0.2	0.2	0.6	0.3	0.8
26-Apr	0.3	0.1	0.6	0.5	0.4	0.2	0.4	0.2	0.6	0.0	0.4	0.9	0.3	-0.3	-0.2	0.5	0.9	1.2	0.0	0.2	0.1	0.0	-0.1	0.3	0.3	1.2
27-Apr	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.2	0.6	0.2	-0.2	0.3	0.4	0.7	-0.4	0.3	0.3	0.1	0.1	0.0	0.4	0.7	0.6	0.5	0.2	0.7
28-Apr	0.4	0.1	0.3	0.4	0.4	0.4	0.3	0.0	0.3	0.9	0.2	0.4	0.5	-0.3	0.2	-0.2	-0.1	0.0	0.3	0.3	0.2	0.1	-0.1	0.0	0.2	0.9
29-Apr	0.0	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.9	0.5	-0.2	0.5	0.0	0.8	0.2	0.3	-0.1	0.7	0.6	-0.3	-0.4	-0.4	-0.4	0.2	0.9
30-Apr	-0.6	-0.2	-0.2	-0.5	-0.6	-0.5	-0.7	-0.4	0.2	0.7	-0.3	-0.1	-0.1	0.3	-0.1	0.0	0.2	0.3	-0.1	-0.7	-0.7	-0.7	-0.3	-0.2	-0.2	0.7
																								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 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1 Maximum Value: 6.0 km/h on Apr 17 15:00 Minimum Value: 0.2 km/h on Apr 29 06:00 Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.3 Median = 2.0 Q ₃ = 2.8 P ₉₀ = 3.4 P ₉₉ = 5.0																					Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	2.7	1.9	1.9	1.9	1.4	2.3	2.6	2.3	2.8	2.7	3.2	2.9	3.1	2.2	2.5	2.7	1.6	2.1	2.1	2.4	2.5	2.8	2.3	2.2	3.2
2-Apr	2.3	2.1	1.6	1.4	1.5	1.5	1.7	1.8	2.3	1.9	2.1	1.9	1.8	1.3	1.3	1.4	1.5	1.5	1.4	1.5	1.5	1.6	1.9	2.2	2.3
3-Apr	2.3	1.7	1.7	2.2	1.8	1.8	1.8	2.6	2.0	1.8	2.1	2.1	1.9	2.0	2.2	1.9	1.3	1.0	0.9	1.0	0.8	1.1	0.9	1.3	2.6
4-Apr	1.2	1.6	0.4	0.7	0.8	0.8	0.5	0.6	0.9	1.5	1.7	1.9	2.1	2.0	2.2	2.4	2.3	1.6	0.8	1.8	1.4	1.7	1.2	1.3	2.4
5-Apr	1.4	1.7	1.5	1.3	1.4	1.5	1.4	1.3	1.8	1.4	1.3	1.2	2.0	2.3	2.1	2.0	1.6	1.1	0.8	1.2	1.8	1.7	0.8	0.6	2.3
6-Apr	0.7	0.8	0.7	0.4	0.8	0.9	1.4	1.7	1.4	1.9	2.1	2.3	2.8	2.9	2.8	3.2	3.1	2.8	2.7	2.7	3.0	1.8	2.4	2.1	3.2
7-Apr	2.1	1.6	1.8	1.7	1.6	1.6	1.8	2.2	2.5	2.8	2.6	2.7	2.8	3.0	2.9	2.6	2.5	2.1	1.8	1.7	1.6	1.4	1.6	1.5	3.0
8-Apr	0.9	0.8	0.9	1.3	1.1	0.9	0.7	0.9	0.8	1.3	1.1	1.4	1.4	1.9	1.6	2.4	2.4	1.4	0.7	0.8	0.5	0.2	0.3	0.4	2.4
9-Apr	0.4	0.5	0.6	0.8	0.9	1.5	1.1	1.2	2.7	3.1	2.6	3.0	3.4	3.2	2.6	2.8	2.2	1.3	1.2	1.2	1.2	1.6	1.7	2.0	3.4
10-Apr	1.9	1.4	2.2	3.4	4.5	4.3	4.4	4.5	4.5	4.4	4.3	4.2	4.7	4.5	4.6	4.5	4.4	4.1	2.7	2.3	1.3	1.5	2.0	2.0	4.7
11-Apr	0.9	0.8	1.1	1.1	1.2	0.7	0.5	0.6	1.4	2.1	1.6	1.7	2.9	2.8	2.6	2.6	2.4	1.9	1.6	2.2	1.5	1.4	0.9	0.5	2.9
12-Apr	0.5	1.2	0.9	0.2	0.4	0.5	0.8	1.4	2.5	2.7	2.3	2.5	2.3	3.2	3.7	3.1	2.6	1.7	0.7	0.7	1.2	0.4	0.3	0.4	3.7
13-Apr	0.5	0.7	0.7	0.3	0.2	0.3	0.3	1.2	1.5	2.1	2.6	2.5	2.8	2.8	3.0	3.0	2.5	2.2	1.6	1.0	1.1	1.2	1.7	2.4	3.0
14-Apr	2.2	1.7	1.3	1.6	1.6	1.8	1.9	2.1	2.0	2.3	2.7	2.9	2.9	2.8	2.8	2.7	2.6	2.5	2.8	2.7	2.8	2.1	1.7	2.5	2.9
15-Apr	2.3	2.0	2.0	1.2	1.0	1.3	1.0	1.4	2.0	1.9	2.1	2.9	2.7	2.9	3.2	2.8	2.5	3.1	2.4	2.4	2.9	2.7	3.4	2.4	3.4
16-Apr	1.9	1.6	1.4	1.5	1.8	1.8	1.4	1.9	2.1	3.3	3.4	3.8	3.6	3.8	3.9	4.4	4.4	4.9	4.8	5.0	5.2	4.7	3.7	2.9	5.2
17-Apr	2.8	3.3	3.7	3.6	3.2	3.0	3.8	4.2	5.0	4.8	4.5	5.0	5.4	4.8	6.0	5.2	4.2	5.0	5.3	4.9	4.7	4.1	4.0	5.1	6.0
18-Apr	4.7	4.5	3.9	4.3	3.4	3.9	UO	3.0	2.7	2.1	2.5	2.0	2.2	2.7	2.6	2.0	2.1	1.8	1.4	1.5	1.1	1.2	1.0	1.9	4.7
19-Apr	1.5	1.7	2.7	2.9	3.6	3.4	2.8	2.9	3.2	3.1	3.1	3.2	2.7	3.1	3.6	3.2	2.6	2.6	2.1	1.4	1.1	1.2	0.6	0.5	3.6
20-Apr	0.7	0.7	1.8	2.4	2.3	2.1	2.1	2.0	1.8	2.1	2.3	2.8	3.2	3.5	3.1	3.3	3.1	2.8	2.7	2.8	2.9	2.2	2.0	1.8	3.5
21-Apr	2.1	1.4	1.6	1.1	1.2	0.7	0.9	1.3	1.4	1.7	3.0	2.9	3.2	2.8	3.0	2.9	2.8	2.1	1.3	0.4	1.1	1.1	0.6	0.7	3.2
22-Apr	1.1	0.9	0.8	0.6	0.3	0.3	0.9	1.1	1.6	2.2	3.2	3.5	3.4	3.2	3.2	3.0	2.8	2.1	1.9	1.0	0.6	0.4	0.3	0.4	3.5
23-Apr	0.4	0.5	0.5	0.4	0.6	0.4	0.6	1.6	2.4	2.2	2.9	3.4	3.0	3.1	2.7	3.3	2.9	2.2	3.2	2.1	1.5	1.6	2.3	2.1	3.4
24-Apr	1.5	2.1	2.6	1.8	2.0	1.8	1.6	1.6	1.3	1.3	1.3	1.8	2.9	3.2	2.9	2.9	2.9	2.9	2.2	1.8	1.7	1.5	0.3	0.4	3.2
25-Apr	0.4	0.3	0.6	0.8	0.9	1.2	1.2	1.3	2.0	2.3	2.3	2.5	3.5	2.7	1.8	1.9	2.2	3.2	1.9	2.3	1.3	1.9	2.3	2.1	3.5
26-Apr	2.3	2.3	2.3	2.2	2.2	2.0	1.7	2.0	2.4	1.9	1.8	2.2	2.1	2.5	3.5	3.3	3.1	2.8	1.9	1.6	1.2	0.9	0.5	0.7	3.5
27-Apr	0.7	1.0	1.0	0.8	0.8	0.4	0.5	1.6	2.3	2.3	2.8	2.9	2.7	2.5	2.6	2.3	2.4	2.2	1.6	0.4	0.5	0.6	0.9	1.3	2.9
28-Apr	0.8	0.7	1.1	0.5	0.6	0.7	1.3	2.5	3.2	3.6	3.7	3.8	4.0	3.5	3.8	3.6	3.5	2.6	2.5	1.7	1.1	1.6	1.1	0.4	4.0
29-Apr	0.5	0.6	0.4	0.3	0.3	0.2	0.3	0.8	2.0	2.4	2.6	2.7	3.1	2.8	2.6	2.9	2.4	2.1	1.7	1.7	1.7	1.8	2.7	2.5	3.1
30-Apr	1.6	1.1	1.5	1.3	1.8	1.7	1.8	1.8	2.4	3.1	3.2	3.2	3.7	3.5	3.8	3.4	3.0	3.0	2.9	2.3	2.9	2.5	2.3	2.3	3.8
Diurnal Maximum																									
UO - Unstable Operation																									



Summary of Hour Averages

Mannix - April 2023

Maximum Value: 2.2 km/h on Apr 1 07:00		Maximum Daily Average: 0.9 km/h on Apr 1		Hours in Service: 720																							
Minimum Value: -1.7 km/h on Apr 10 15:00		Minimum Daily Average: -1.1 km/h on Apr 10		Hours of Data: 719																							
Maximum Diurnal Average: 0.3 km/h at hour 17		Minimum Diurnal Average: -0.1 km/h at hour 14		Hours of Missing Data: 1																							
Monthly Average: 0.12 km/h		Percentiles: P ₁ = -1.4 P ₁₀ = -0.7 Q ₁ = -0.2 Median = 0.1 Q ₃ = 0.5 P ₉₀ = 0.9 P ₉₉ = 1.7		Hours of Calibration: 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-Apr	1.3	0.9	0.7	1.5	0.9	0.8	2.2	2.2	1.5	0.2	0.9	2.0	1.1	0.5	1.9	1.9	-0.2	0.2	0.9	0.6	0.6	0.9	-1.0	-1.3	0.9	2.2	
2-Apr	-0.7	-0.5	-0.9	-0.8	-0.7	-0.7	-0.8	-0.9	-0.6	-1.2	-0.4	-0.3	0.8	0.1	0.1	0.2	0.5	0.8	0.8	0.6	0.4	0.1	0.1	1.5	-0.1	1.5	
3-Apr	0.8	0.4	1.0	1.4	0.6	1.1	0.3	1.6	0.4	0.0	0.5	-0.2	0.8	-0.4	-0.3	-0.6	0.4	-0.4	-0.1	0.2	0.2	0.7	0.8	1.2	0.4	1.6	
4-Apr	0.3	0.5	-0.1	0.3	0.4	0.0	0.0	-0.1	0.0	-0.2	0.4	0.5	0.1	1.1	0.8	0.4	0.0	0.2	-0.3	-0.4	-0.3	0.1	0.2	-0.3	0.1	1.1	
5-Apr	0.3	0.5	0.3	-0.2	-0.4	-0.3	-0.1	0.1	-0.1	0.0	-0.1	-0.6	-0.2	-0.4	0.1	0.8	0.0	0.0	0.0	-0.5	-0.3	-0.2	0.5	0.4	0.0	0.8	
6-Apr	0.1	0.1	0.1	0.3	0.5	0.5	0.2	0.2	0.1	0.0	-0.3	0.3	0.3	-0.6	-0.5	0.2	-0.3	-0.2	-0.1	0.1	-0.4	0.2	0.2	0.3	0.1	0.5	
7-Apr	0.3	0.5	0.6	0.5	0.6	0.5	0.3	0.2	0.3	1.1	0.8	1.0	1.0	0.6	0.3	0.1	0.2	0.4	0.3	0.6	0.5	0.2	-0.1	0.1	0.5	1.1	
8-Apr	0.1	0.2	0.3	0.5	0.0	0.0	-0.1	-0.2	-0.1	0.2	-0.2	0.0	0.0	0.2	0.1	-0.3	-0.2	-0.3	-0.7	-0.3	-0.4	-0.9	-1.1	-1.1	-0.2	0.5	
9-Apr	-0.8	-0.9	-0.8	-0.8	-0.7	-0.9	-0.8	-0.7	-0.7	-0.7	-1.1	-0.4	-0.7	-1.0	-0.5	-0.9	-0.2	0.2	-0.2	0.2	0.2	0.3	0.2	0.3	-0.5	0.3	
10-Apr	0.1	0.0	-0.5	-0.7	-1.3	-1.6	-1.7	-1.2	-1.2	-1.7	-1.3	-1.2	-1.2	-1.4	-1.7	-1.3	-1.6	-1.5	-0.9	-0.9	-0.9	-1.1	-0.9	-0.9	-1.1	0.1	
11-Apr	-0.8	-0.7	-0.7	-0.7	-0.3	-0.3	-0.2	-0.1	-0.2	0.0	0.2	0.1	0.5	-1.0	-0.6	-0.3	-0.5	-0.3	-0.5	0.8	0.3	-0.2	0.3	0.3	-0.2	0.8	
12-Apr	0.0	0.4	0.2	-0.1	-0.4	-0.5	-0.2	0.0	0.6	0.3	-0.3	-0.2	-0.3	-0.3	0.4	0.2	0.3	-0.3	-0.3	0.0	-0.1	-0.1	-0.1	0.1	0.0	0.6	
13-Apr	0.1	0.3	0.1	0.2	0.1	0.0	0.1	0.7	0.0	1.4	1.4	0.0	-0.4	-0.8	-0.6	0.7	1.0	0.8	0.8	0.7	0.7	0.9	1.1	0.4	1.4		
14-Apr	1.0	-0.4	0.4	0.7	0.8	1.6	1.4	1.2	1.7	1.0	1.0	0.4	0.0	-0.5	0.0	0.3	0.5	0.0	1.3	-0.2	1.3	-0.2	-0.5	0.5	0.6	1.7	
15-Apr	0.1	-0.8	-0.4	-0.1	-0.3	0.3	0.0	0.5	-0.1	-0.7	-0.8	0.8	1.5	0.7	-0.1	-0.1	0.7	1.6	0.3	0.0	0.3	-0.2	0.4	-0.9	0.1	1.6	
16-Apr	-0.4	0.0	-0.3	-0.2	0.2	-0.2	-0.2	0.6	-1.0	1.1	0.3	-0.3	-0.5	-0.1	0.4	1.2	0.5	0.8	1.0	0.9	0.8	0.5	0.9	0.2	0.3	1.2	
17-Apr	-0.7	-0.9	-1.2	-1.6	-0.6	0.3	1.0	0.3	0.8	-0.1	-0.6	-0.2	0.6	0.1	0.6	0.5	-0.1	0.6	1.2	1.1	0.6	0.6	0.2	0.7	0.1	1.2	
18-Apr	1.0	0.7	0.6	0.5	0.3	0.6	UO	0.7	-0.2	0.8	0.2	0.9	0.5	0.3	1.0	0.5	1.1	0.5	0.7	0.8	0.9	0.7	0.7	0.7	0.6	1.1	
19-Apr	0.5	0.9	0.1	1.2	0.6	-0.3	-1.0	0.0	1.8	1.1	1.6	0.9	-0.7	-0.1	0.4	0.3	0.3	0.4	0.8	0.3	0.7	0.7	0.5	0.2	0.5	1.8	
20-Apr	0.2	0.2	0.4	0.6	0.4	0.4	-0.1	0.6	0.9	0.0	-0.4	0.0	0.5	0.0	1.9	0.6	1.1	0.2	0.6	0.4	0.4	0.8	0.5	0.3	0.4	1.9	
21-Apr	0.2	0.0	-0.5	-0.4	-0.4	-0.1	0.1	-0.1	-0.2	-0.6	1.3	-0.2	0.1	0.1	-0.1	0.8	1.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.1	1.3	
22-Apr	-0.5	-0.6	-0.4	-0.1	0.0	0.3	0.1	0.3	0.0	0.0	0.1	0.4	-0.1	0.7	0.1	0.1	-0.7	-0.5	-0.5	-0.1	-0.4	-0.6	-0.2	-0.1	-0.1	0.7	
23-Apr	0.2	0.2	0.1	0.6	0.8	0.3	-0.1	-0.6	0.2	-0.5	-0.2	0.4	0.0	0.7	0.3	0.6	0.7	0.3	0.0	-0.2	0.0	0.0	-0.2	0.0	0.1	0.8	
24-Apr	-0.2	0.8	0.2	0.3	-0.2	0.4	0.2	0.8	0.9	0.5	0.4	0.2	0.4	0.0	0.6	0.4	0.6	0.4	0.2	0.3	0.6	-0.1	-0.7	-0.1	0.3	0.9	
25-Apr	-0.2	0.0	0.3	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.1	0.3	-0.3	-0.6	0.1	-0.3	0.3	0.4	-0.1	-0.7	-0.5	-0.5	-0.4	0.0	0.0	0.5	
26-Apr	-0.3	-0.5	0.1	0.0	-0.2	-0.4	-0.1	-0.3	0.2	-0.5	-0.1	0.7	0.1	-0.5	-0.2	0.6	1.5	1.7	0.6	0.9	0.6	0.3	0.1	0.4	0.2	1.7	
27-Apr	0.2	0.1	0.1	0.2	0.3	0.1	-0.2	-0.1	0.2	-0.2	-0.7	-0.1	0.2	0.4	-1.0	-0.1	-0.1	0.0	-0.6	-0.6	-0.2	-0.1	-0.3	-0.2	-0.1	0.4	
28-Apr	-0.4	-0.4	0.0	0.1	0.2	0.1	-0.2	-0.5	0.0	0.8	-0.3	0.2	0.5	-0.3	0.2	-0.1	0.4	0.8	1.1	0.9	0.9	0.8	0.6	0.5	0.3	1.1	
29-Apr	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.0	-0.1	0.9	0.4	-0.4	0.5	-0.5	0.7	0.2	0.1	-0.3	0.9	0.8	0.0	0.0	-0.2	-0.9	0.1	0.9	
30-Apr	-0.2	0.5	0.5	0.3	-0.4	-0.6	-1.1	-0.4	0.3	0.7	-0.4	-0.3	-0.1	0.2	-0.1	-0.2	0.4	0.4	0.1	-0.7	-1.0	-0.4	0.2	0.5	-0.1	0.7	
		0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.2	-0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	Diurnal Average		
		1.3	0.9	1.0	1.5	0.9	1.6	2.2	2.2	1.8	1.4	1.6	2.0	1.5	1.1	1.9	1.9	1.5	1.7	1.3	1.1	1.3	0.9	0.9	1.5	Diurnal Maximum	
UO - Unstable Operation																											



Summary of Hour Standard Deviations

Mannix - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 2 Maximum Value: 5.0 km/h on Apr 17 15:00		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 Percent Operational Time: 99.9																								
Minimum Value: 0.2 km/h on Apr 29 06:00																										
Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.2 Median = 2.0 Q ₃ = 2.9 P ₉₀ = 3.5 P ₉₉ = 4.7																										
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-Apr	2.8	2.1	1.8	1.8	1.3	1.8	2.4	2.5	2.9	3.0	3.2	3.1	2.9	2.3	2.5	2.7	1.4	1.7	1.9	2.3	2.0	3.0	2.5	2.2	3.2	
2-Apr	2.5	2.2	1.5	1.4	1.4	1.4	1.7	1.8	2.4	1.7	2.3	2.2	1.9	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.5	1.6	1.9	2.2	2.5	
3-Apr	2.4	1.8	1.8	2.1	1.8	1.9	1.8	2.8	2.2	1.8	2.1	2.3	2.1	2.2	2.5	2.1	1.4	0.9	1.0	1.1	0.9	1.1	1.0	1.3	2.8	
4-Apr	0.8	1.4	0.4	0.7	0.9	0.8	0.5	0.7	0.9	1.6	2.0	2.1	2.4	2.2	2.4	2.7	2.4	1.9	0.8	1.7	1.3	1.6	1.0	0.9	2.7	
5-Apr	1.0	1.3	1.1	0.9	1.2	1.2	1.1	1.3	1.8	1.3	1.4	1.3	2.2	2.7	2.2	2.1	1.7	1.2	0.8	1.2	1.8	1.8	0.9	0.7	2.7	
6-Apr	0.5	0.7	0.6	0.5	0.7	0.8	0.9	1.3	1.4	2.0	2.2	2.4	3.0	3.1	2.9	3.3	3.1	3.0	2.7	2.8	3.1	2.0	2.5	2.0	3.3	
7-Apr	2.2	1.5	1.6	1.5	1.7	1.7	1.8	2.2	2.9	3.0	2.8	2.9	2.9	3.2	3.0	2.5	2.5	2.2	1.9	1.5	1.6	1.3	1.7	1.5	3.2	
8-Apr	0.8	0.7	0.8	1.2	1.0	0.8	0.6	0.8	0.7	1.1	1.0	1.4	1.4	1.9	1.6	2.5	2.3	1.4	0.8	0.9	0.4	0.2	0.2	0.4	2.5	
9-Apr	0.4	0.5	0.7	0.8	1.0	1.6	1.3	1.3	2.7	3.1	2.6	3.0	3.5	3.3	2.7	2.9	2.4	1.3	1.1	1.1	1.0	1.6	1.7	2.0	3.5	
10-Apr	1.9	1.5	2.4	3.5	4.7	4.4	4.3	4.6	4.6	4.5	4.1	4.5	4.7	4.8	4.7	4.5	4.5	4.0	2.7	2.4	1.4	1.4	2.0	2.1	4.8	
11-Apr	1.0	0.8	1.2	1.2	1.3	0.8	0.6	0.6	1.4	2.3	1.8	1.9	3.0	2.9	2.8	2.8	2.5	1.9	1.6	2.2	1.6	1.2	0.6	0.6	3.0	
12-Apr	0.5	1.2	0.9	0.3	0.4	0.5	0.7	1.5	2.7	3.0	2.4	2.6	2.5	3.4	4.0	3.4	2.8	1.8	0.9	0.6	1.3	0.5	0.3	0.4	4.0	
13-Apr	0.5	0.7	0.6	0.3	0.2	0.3	0.3	1.2	1.5	2.5	2.9	3.0	3.2	3.2	3.4	3.2	2.9	2.5	1.5	0.9	1.2	1.2	1.6	2.1	3.4	
14-Apr	1.8	1.6	1.4	1.7	1.6	1.9	1.9	2.2	2.4	2.5	2.9	2.9	3.1	2.9	3.0	2.7	2.8	2.6	2.9	2.0	2.7	2.3	1.8	2.4	3.1	
15-Apr	2.4	2.0	2.1	1.3	1.1	1.5	1.0	1.5	2.0	2.0	2.4	3.4	3.1	3.2	3.7	3.0	2.3	2.8	1.8	1.0	2.5	2.8	3.5	2.6	3.7	
16-Apr	1.9	1.4	1.1	1.5	1.5	1.6	1.3	2.0	2.0	3.3	3.6	4.0	3.6	4.0	3.8	3.6	3.3	3.7	3.7	3.8	3.9	3.8	3.7	3.2	4.0	
17-Apr	3.1	3.6	3.9	3.7	3.3	3.1	3.7	4.0	4.3	4.4	4.5	4.9	4.8	4.9	5.0	5.0	4.2	4.0	4.4	4.4	4.4	4.0	4.1	4.6	5.0	
18-Apr	3.9	3.6	3.4	3.5	3.4	3.4	UO	2.7	2.6	2.2	2.4	2.0	2.2	2.3	2.4	1.9	2.2	1.8	1.4	1.5	1.1	1.2	1.0	1.6	3.9	
19-Apr	1.6	1.7	2.4	3.0	3.6	3.4	2.9	2.9	3.1	3.1	3.2	3.2	2.8	3.2	2.7	3.1	2.5	2.5	2.0	1.2	1.1	1.1	0.7	0.6	3.6	
20-Apr	0.6	0.7	1.5	2.1	1.9	1.8	2.1	2.2	1.9	2.2	2.4	2.8	3.3	3.7	3.4	3.5	3.0	2.3	2.2	1.9	2.2	2.4	2.1	1.8	3.7	
21-Apr	2.2	1.4	1.4	1.0	1.1	0.7	0.8	1.3	1.5	2.0	3.4	3.1	3.5	3.1	3.5	3.1	3.4	2.4	1.5	0.5	1.0	1.2	0.5	0.5	3.5	
22-Apr	1.1	1.0	0.9	0.8	0.3	0.3	0.8	1.0	1.5	2.3	3.4	3.8	3.7	3.5	3.4	3.3	2.9	2.1	1.9	1.0	0.5	0.4	0.3	0.3	3.8	
23-Apr	0.4	0.5	0.5	0.6	0.6	0.5	0.5	1.5	2.4	2.4	3.2	3.5	3.3	3.3	2.9	3.3	2.9	2.3	3.2	2.0	1.7	1.6	2.4	2.1	3.5	
24-Apr	1.5	1.9	2.4	1.6	2.1	1.7	1.8	1.7	1.2	1.1	1.3	1.8	3.2	3.5	3.1	2.8	2.9	2.8	2.3	1.9	1.9	1.7	0.4	0.5	3.5	
25-Apr	0.3	0.2	0.4	0.6	0.7	1.0	1.1	1.2	2.0	2.5	2.5	2.7	3.8	2.6	1.8	1.9	2.3	3.3	2.0	2.4	1.2	1.8	2.3	2.1	3.8	
26-Apr	2.4	2.3	2.4	2.2	2.1	2.0	1.8	2.0	2.4	2.0	1.8	2.4	2.2	2.8	3.7	3.6	3.4	3.0	1.8	1.4	1.2	0.8	0.6	0.8	3.7	
27-Apr	0.7	1.0	1.0	0.9	0.8	0.4	0.5	1.7	2.5	2.6	3.1	3.3	3.0	2.8	2.9	2.6	2.8	2.5	1.7	0.4	0.4	0.5	0.8	1.3	3.3	
28-Apr	0.9	0.8	1.2	0.4	0.7	0.7	1.3	2.5	3.2	3.7	3.9	4.0	4.2	3.5	4.0	3.7	3.5	2.8	2.6	1.6	1.1	1.5	1.0	0.4	4.2	
29-Apr	0.7	0.7	0.4	0.3	0.4	0.2	0.2	0.7	2.1	2.7	2.9	3.1	3.5	3.2	3.0	3.3	2.6	2.3	1.8	1.5	1.7	1.9	2.9	2.6	3.5	
30-Apr	1.5	1.3	1.3	1.1	1.5	1.5	1.7	1.7	2.5	3.3	3.4	3.5	4.0	3.7	4.0	3.5	3.3	3.1	2.9	2.4	3.0	2.6	2.4	2.3	4.0	
		3.9	3.6	3.9	3.7	4.7	4.4	4.3	4.6	4.6	4.5	4.5	4.9	4.8	4.9	5.0	5.0	4.5	4.0	4.4	4.4	4.4	4.0	4.1	4.6	
		Diurnal Maximum																								
UO - Unstable Operation																										



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS06
PATRICIA MCINNES
APRIL 2023

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

August 30, 2023

Revision 01

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
 APRIL 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	686	33	34	99.86	13	0	5	0
H2S(ppb) Average	684	35	36	99.86	0.6	0	0.2	0
TRS (ppb) Average	0	0	0	NaN	--	0	--	0
THC (ppm) Average	662	33	58	96.53	2.4	-	2.1	-
NMHC(ppm) Average	662	33	58	96.53	0.039	-	0.002	-
CH4(ppm) Average	662	33	58	96.53	2.4	-	2.1	-
O3 (ppb) Average	685	34	35	99.86	55.2	0	49.8	-
NO2 (ppb) Average	683	36	37	99.86	31	0	10	-
NO (ppb) Average	683	36	37	99.86	23.6	-	4.8	-
NOX (ppb) Average	683	36	37	99.86	48.3	-	14.8	-
NH3 (ppb) Average	619	40	101	91.53	13.8	0	0	-
PM2.5 (ug/m3) Average	719	1	1	100	24.4	0	9.3	0
Temperature 2 m (C) Average	720	0	0	100	22	-	13.8	-
Relative Humidity (%) Average	720	0	0	100	94.3	-	78.4	-
Wind Speed 10 m (km/h) Average	720	0	0	100	34	-	25	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)

APRIL 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	686	0.69	1.5	-	0	0	0	0.2	0.5	1.8	13
H2S(ppb) Average	684	0.07	0.1	-	0	0	0	0	0.1	0.2	0.6
TRS (ppb) Average	0	--	--	-	--	0	0	0	0	0	--
THC (ppm) Average	662	2	0.1	-	1.9	2	2	2	2	2.1	2.4
NMHC(ppm) Average	662	0	0.002	-	0	0	0	0	0	0	0.039
CH4(ppm) Average	662	2	0.1	-	1.9	2	2	2	2	2.1	2.4
O3 (ppb) Average	685	40.21	10.3	-	2	24.8	36.3	42	47.9	51.2	55.2
NO2 (ppb) Average	683	3.83	4.6	-	0	0.2	0.9	2.1	5	9.6	31
NO (ppb) Average	683	0.94	2.1	-	0	0	0.1	0.4	1	1.9	23.6
NOX (ppb) Average	683	4.77	6.1	-	0	0.3	1.2	2.7	6	11.3	48.3
NH3 (ppb) Average	619	0.02	0.6	-	0	0	0	0	0	0	13.8
PM2.5 (ug/m3) Average	719	5.42	3.1	-	0.3	2.4	3.5	4.7	6.8	9.3	24.4
Temperature 2 m (C) Average	720	4.8	6	-	-8.4	-3.4	0.5	4.6	9.2	12.6	22
Relative Humidity (%) Average	720	52.97	20.3	-	16.2	26.6	34.7	51.5	70.8	81.7	94.3
Wind Speed 10 m (km/h) Average	720	11.8	6	-	1	5	8	11	15	20	34
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
APRIL 2023

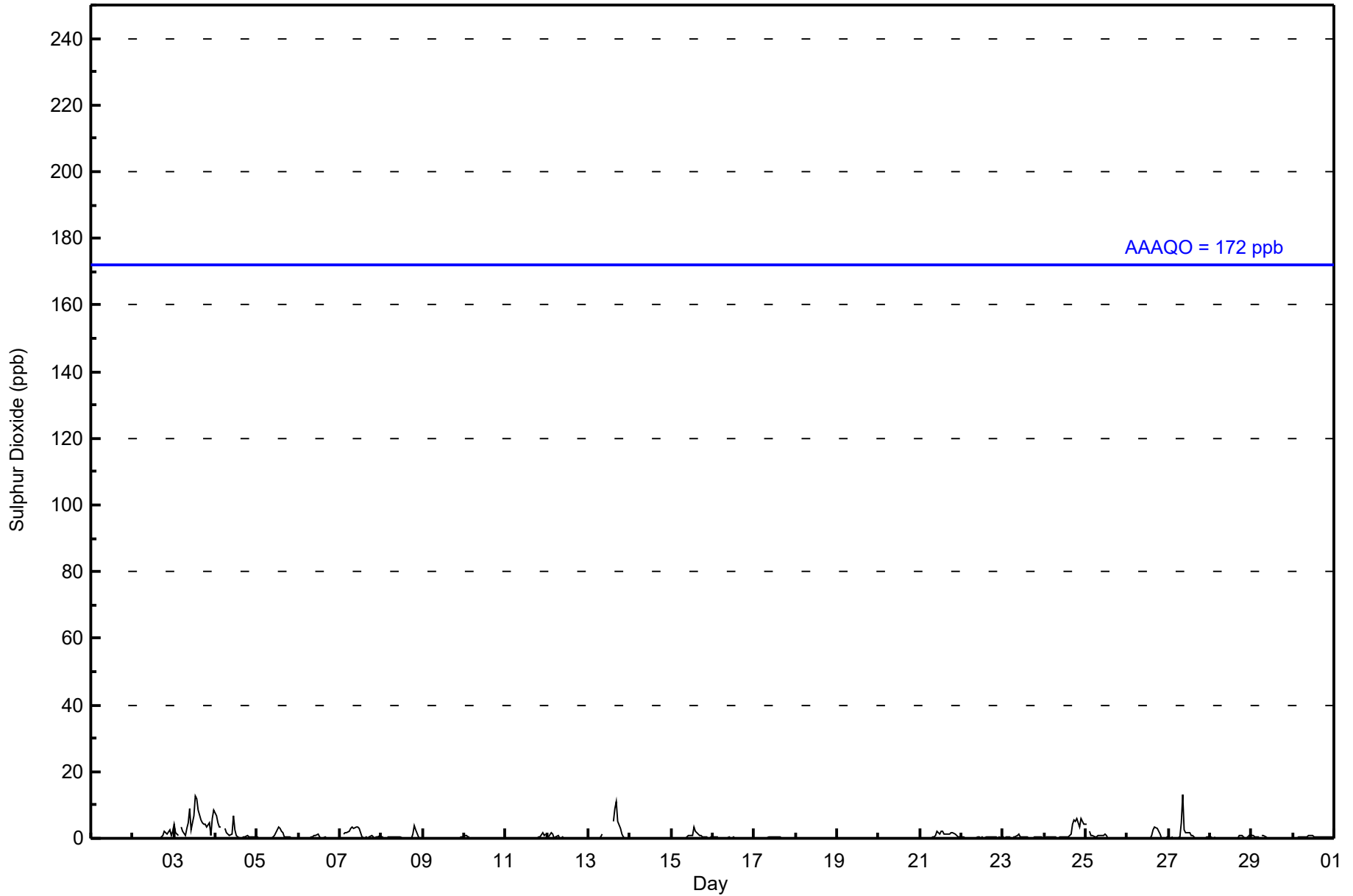
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL GASEOUS ANALYZERS	13 Apr 2023 14:00	13 Apr 2023 14:00	1	Maintenance - sample manifold cleaned
TRS	01 Apr 2023 01:00	01 May 2023 00:00	720	Not in Service
THC/NMHC/CH4	20 Apr 2023 11:00	20 Apr 2023 13:00	3	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	21 Apr 2023 10:00	21 Apr 2023 14:00	5	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	22 Apr 2023 09:00	22 Apr 2023 13:00	5	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	24 Apr 2023 13:00	24 Apr 2023 18:00	6	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	25 Apr 2023 09:00	25 Apr 2023 13:00	5	Maintenance - actuator replaced
NH3	01 Apr 2023 06:00	30 Apr 2023 05:00	45	Stabilization after daily span
NH3	20 Apr 2023 09:00	20 Apr 2023 14:00	6	Maintenance - replaced calibration gas cylinder
NH3	26 Apr 2023 11:00	26 Apr 2023 19:00	9	Maintenance - WBEA internal audit



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	682	99.42	99.42
11 - 20	4	0.58	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	23	17	23	19	66	154	99	44	50	15	31	38	27	18	23	35	682
11 - 20	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	4
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
Totals	23	19	24	19	66	154	99	44	51	15	31	38	27	18	23	35	686

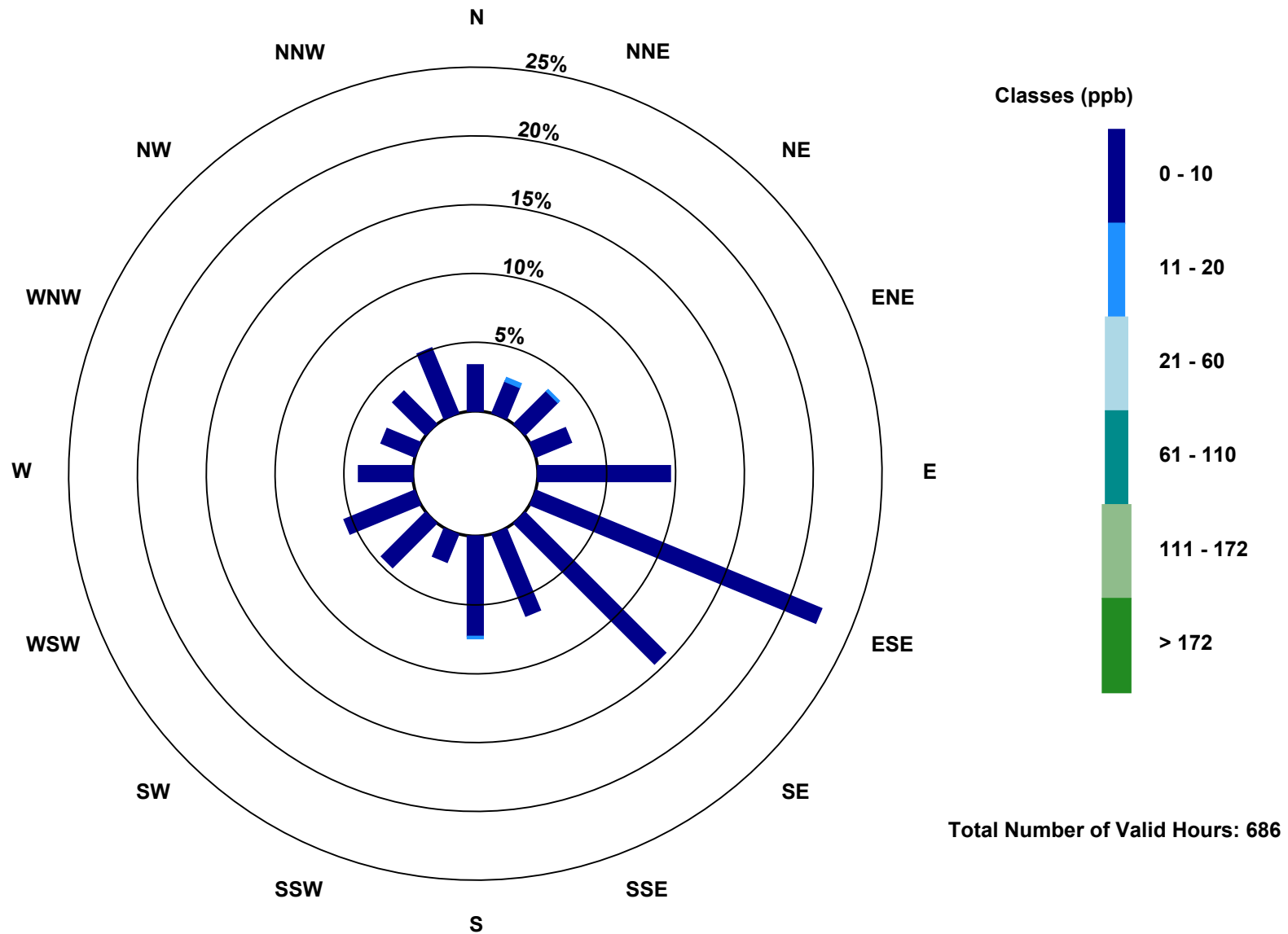
Total Number of Valid Hours: 686

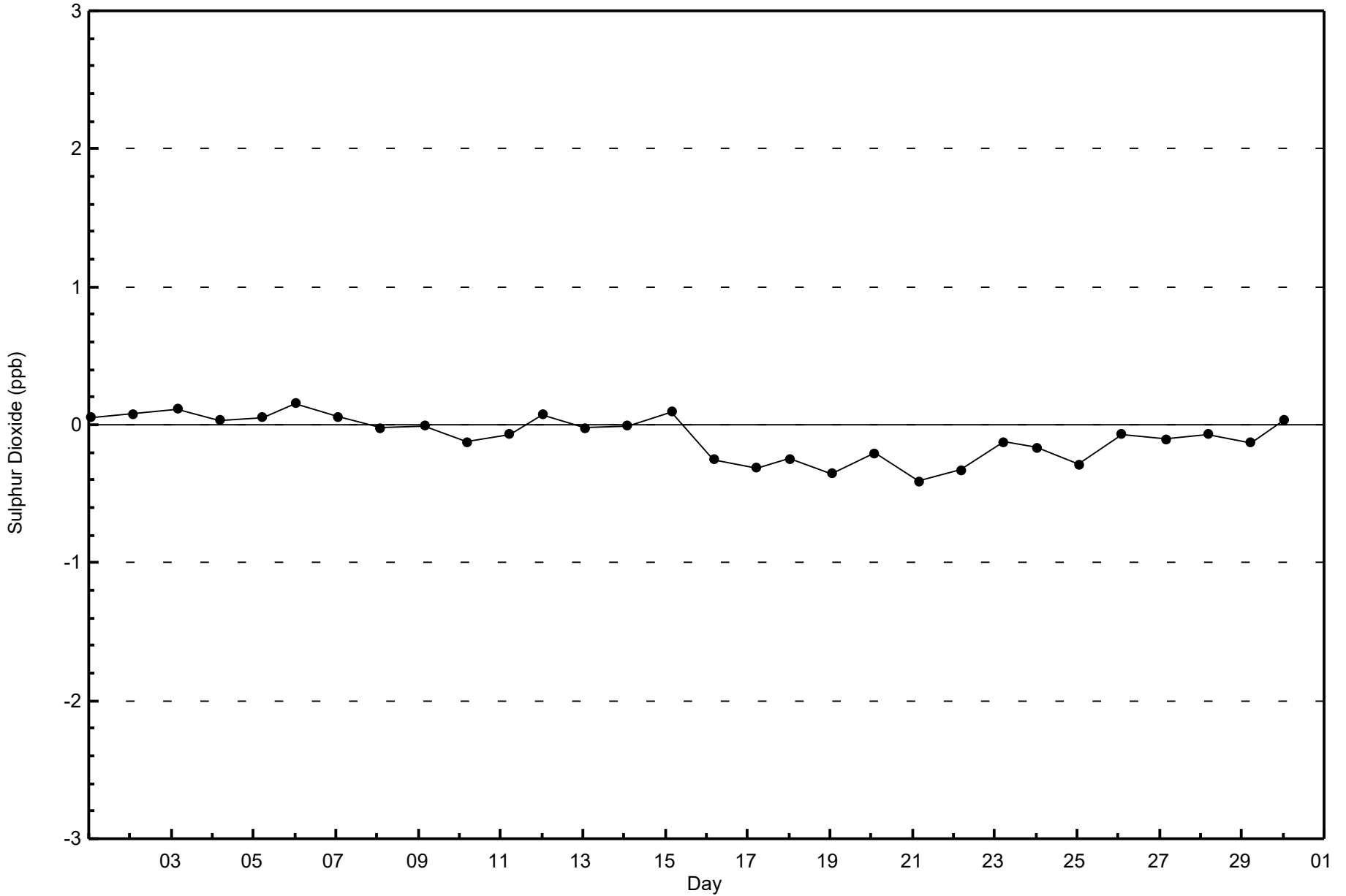
Total Number of Hours: 720

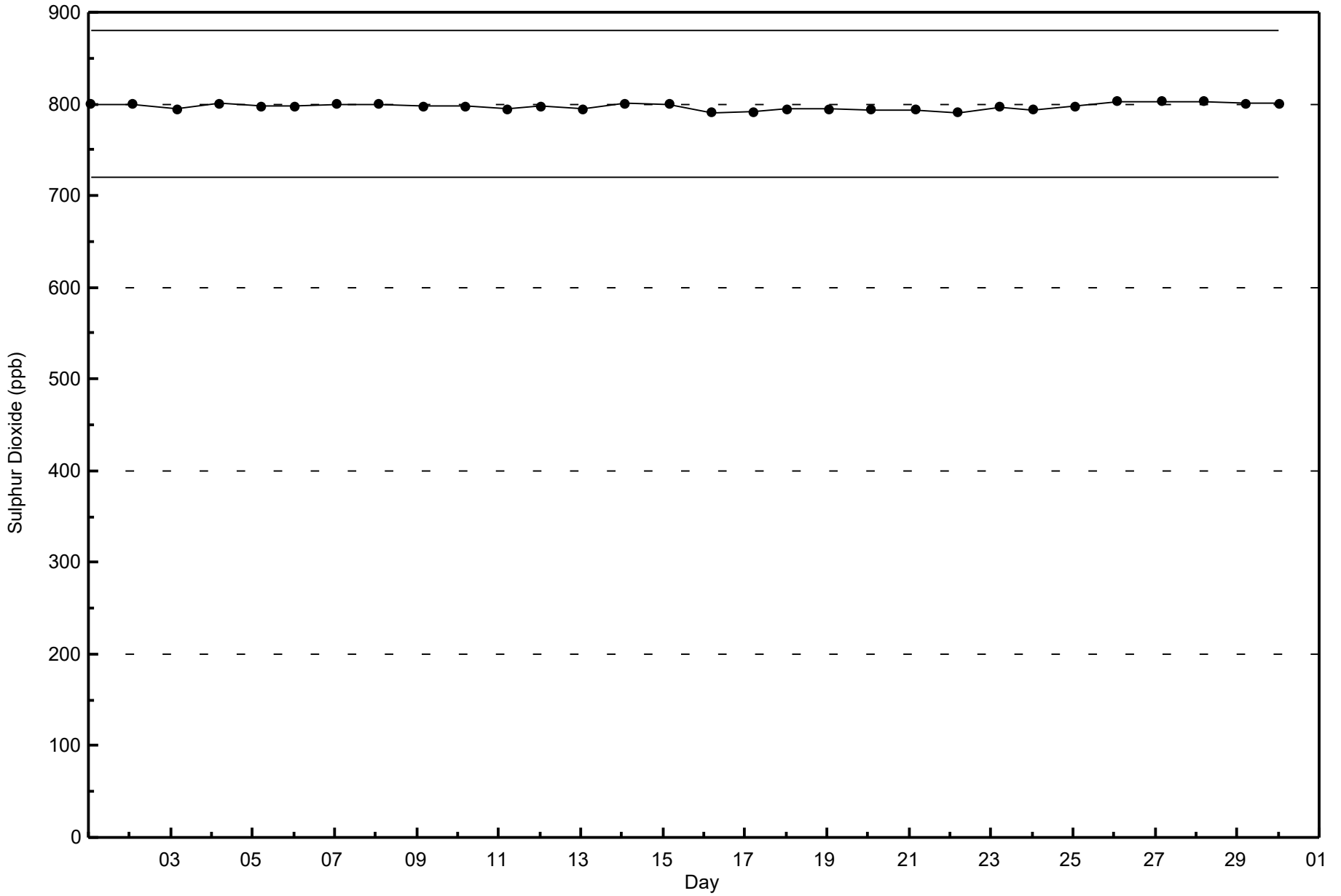


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Patricia McInnes









Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 0.6 ppb on Apr 13 10:00	Maximum Daily Average: 0.2 ppb on Apr 13		Hours of Data:	684
Minimum Value: 0.0 ppb on Apr 8 17:00	Minimum Daily Average: 0.0 ppb on Apr 9		Hours of Missing Data:	36
Maximum Diurnal Average: 0.1 ppb at hour 7	Minimum Diurnal Average: 0.0 ppb at hour 14		Hours of Calibration:	35
Monthly Average: 0.07 ppb	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 = 0.5		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-Apr	0.0	0.0	Z	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	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
2-Apr	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2
3-Apr	0.4	0.2	0.1	0.2	Z	0.2	0.1	0.3	0.5	0.6	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.2	0.2	0.0	0.1	0.2
4-Apr	0.2	0.2	0.2	0.2	0.2	Z	0.2	0.3	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-Apr	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	C	C	C	C	C	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
6-Apr	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	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1
7-Apr	0.0	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	0.0	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
8-Apr	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.2	0.2
9-Apr	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
10-Apr	0.0	0.0	0.1	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
11-Apr	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1
12-Apr	0.1	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13-Apr	0.0	0.1	Z	0.1	0.2	0.1	0.2	0.5	0.6	0.6	0.3	0.2	0.1	M	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
14-Apr	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
15-Apr	0.1	0.1	0.1	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-Apr	0.0	0.0	0.0	0.1	0.1	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
17-Apr	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	0.0	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
18-Apr	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	0.0	0.0	0.1	0.0	0.0	0.0	0.0
19-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-Apr	0.0	0.2	0.2	Z	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
21-Apr	0.0	0.0	0.0	0.1	Z	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	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
22-Apr	0.1	0.1	0.1	0.1	0.3	Z	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	0.1	0.1	0.1	0.1	0.1	0.1
23-Apr	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
24-Apr	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	0.0	0.0	0.1	0.3	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
25-Apr	0.3	0.3	Z	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-Apr	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
27-Apr	0.2	0.1	0.3	0.3	Z	0.2	0.3	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-Apr	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	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
29-Apr	Z	0.2	0.2	0.2	0.3	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Apr	0.0	Z	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	0.0	0.0	0.0	0.0	0.0

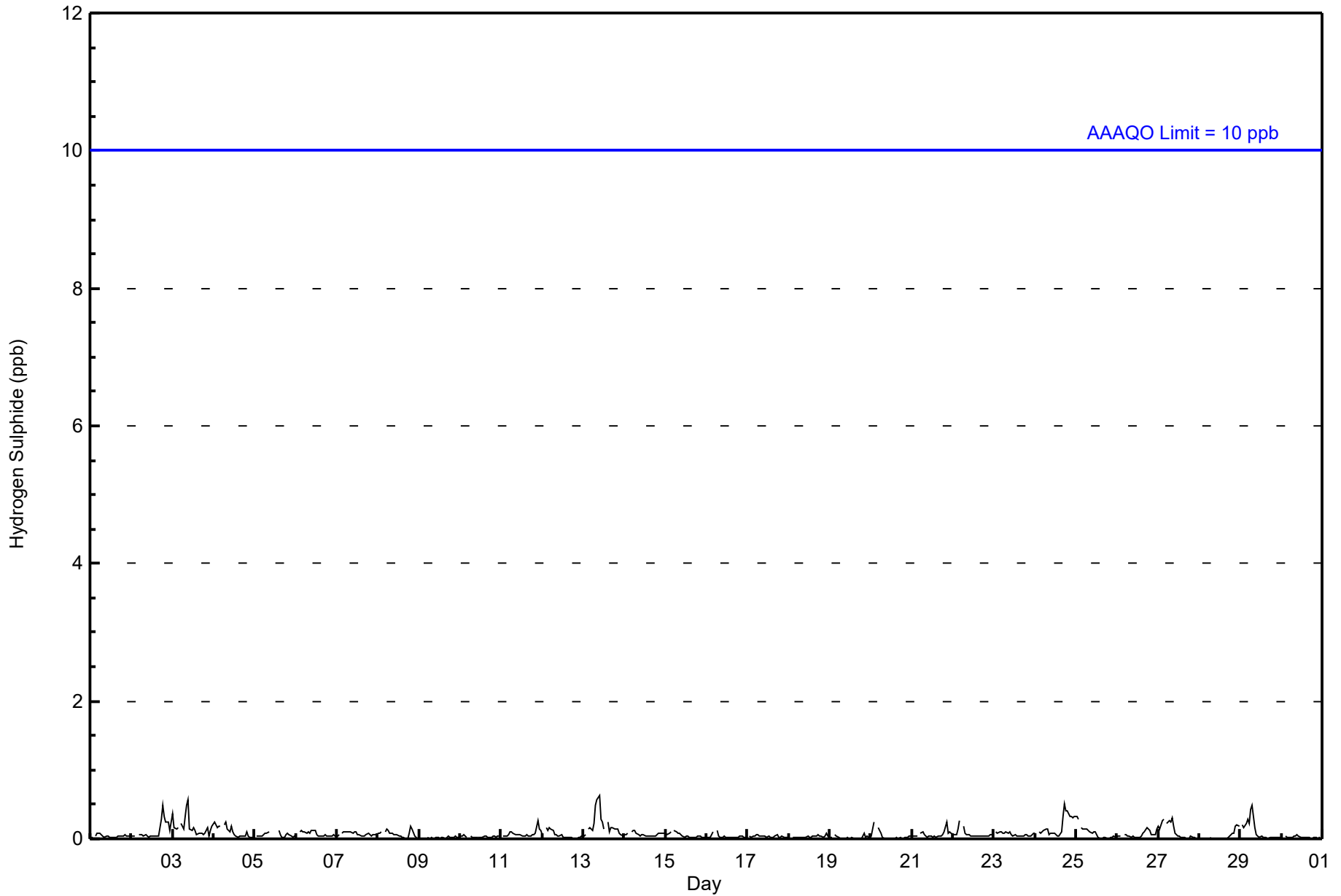
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average
0.4	0.3	0.3	0.3	0.3	0.2	0.4	0.5	0.6	0.6	0.6	0.3	0.2	0.2	0.1	0.2	0.1	0.3	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Diurnal Maximum

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



Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Patricia McInnes - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Patricia McInnes - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	24	21	23	19	67	148	97	44	52	15	31	38	27	20	23	35	684
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
Totals	24	21	23	19	67	148	97	44	52	15	31	38	27	20	23	35	684

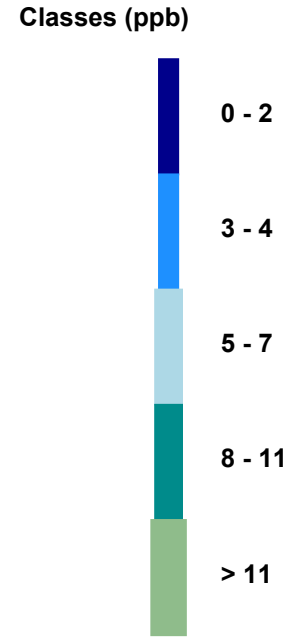
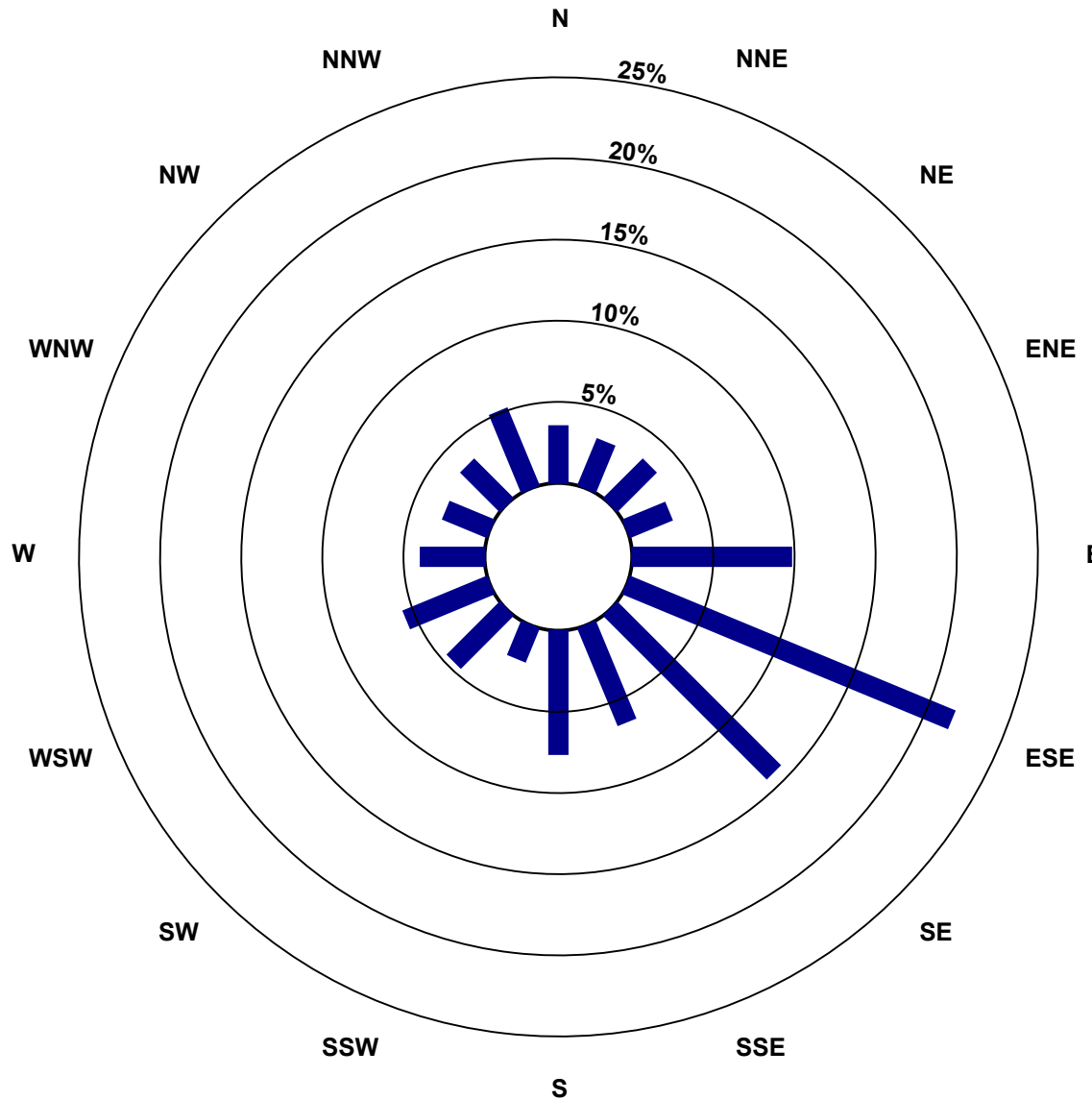
Total Number of Valid Hours: 684

Total Number of Hours: 720

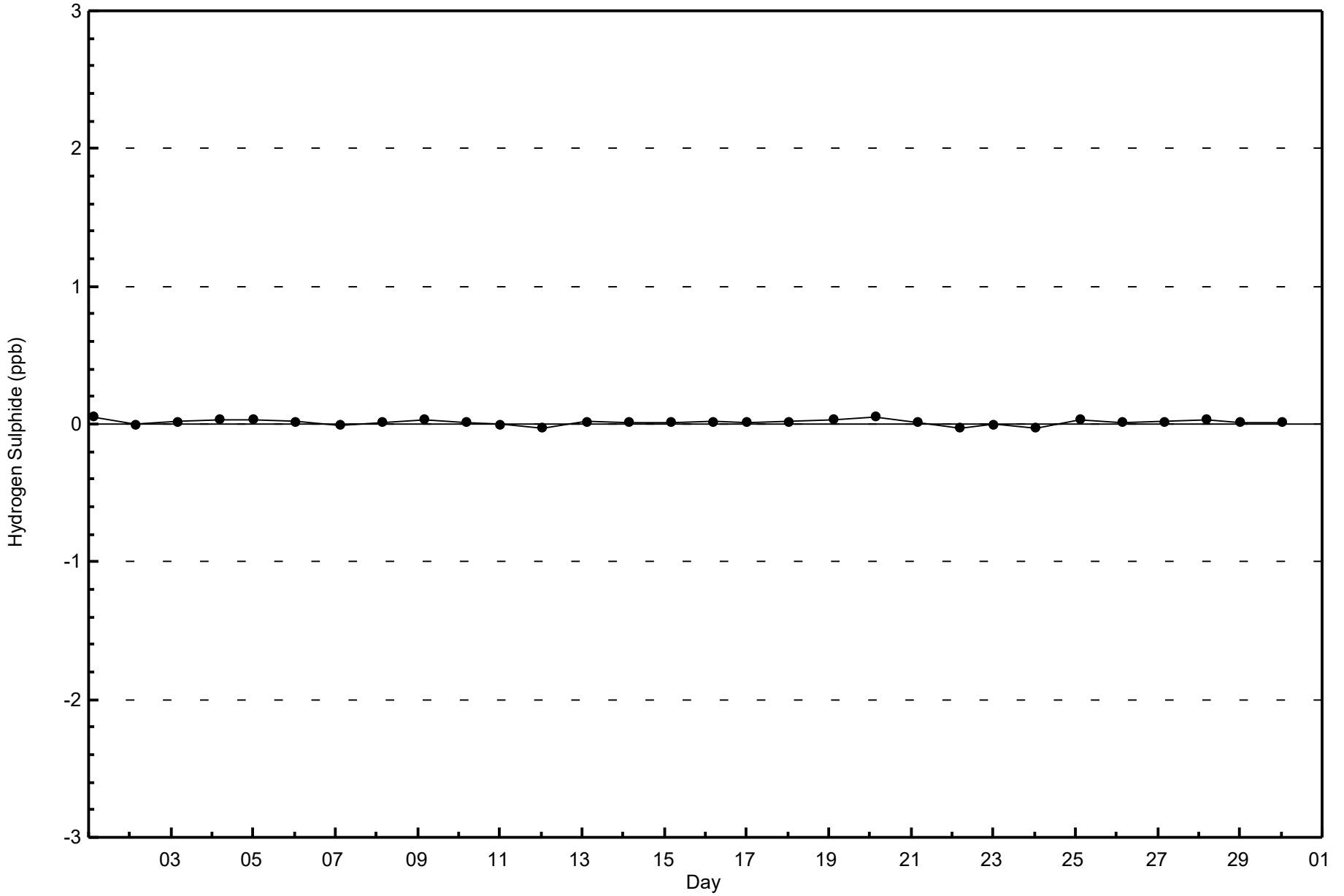


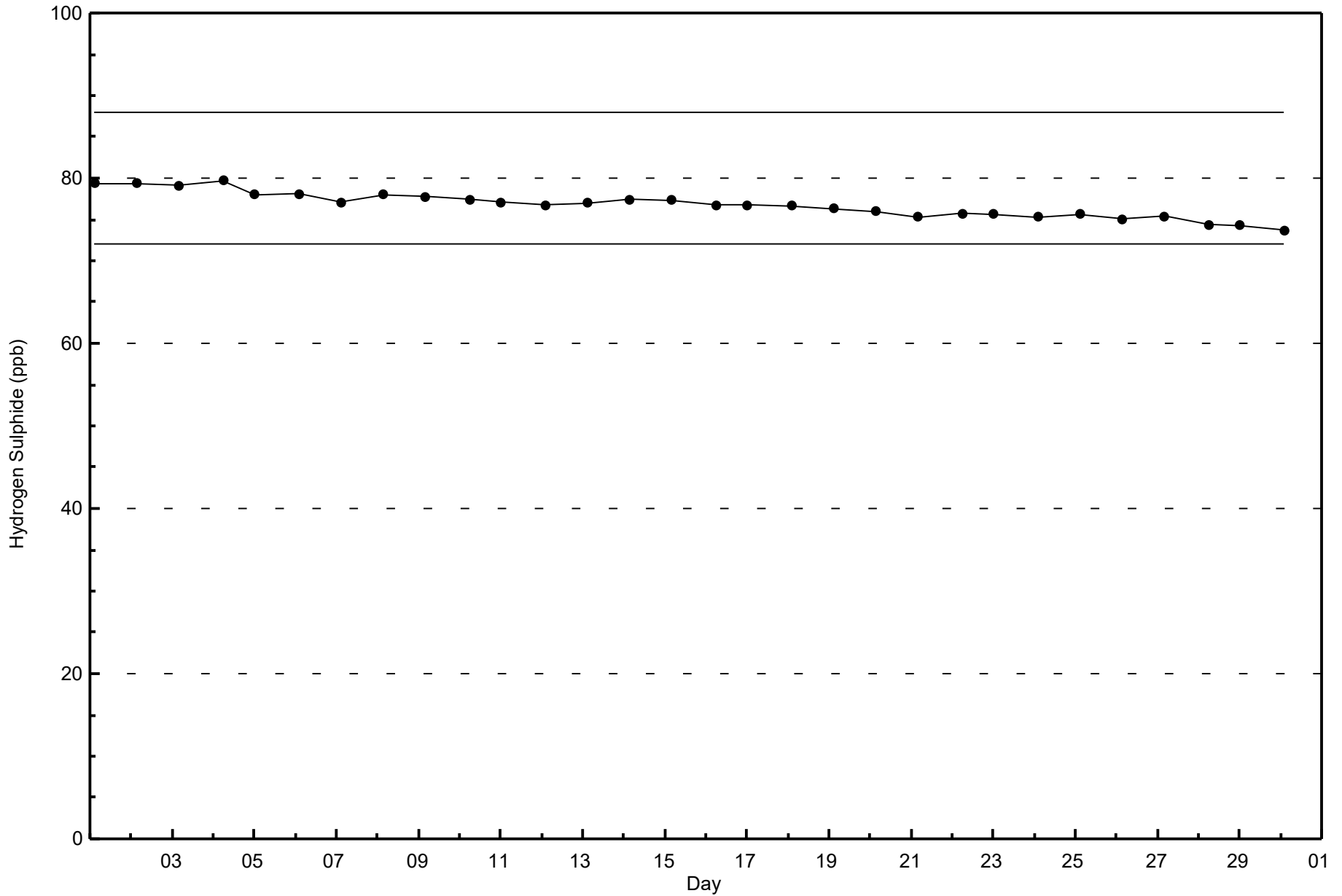
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Patricia McInnes



Total Number of Valid Hours: 684





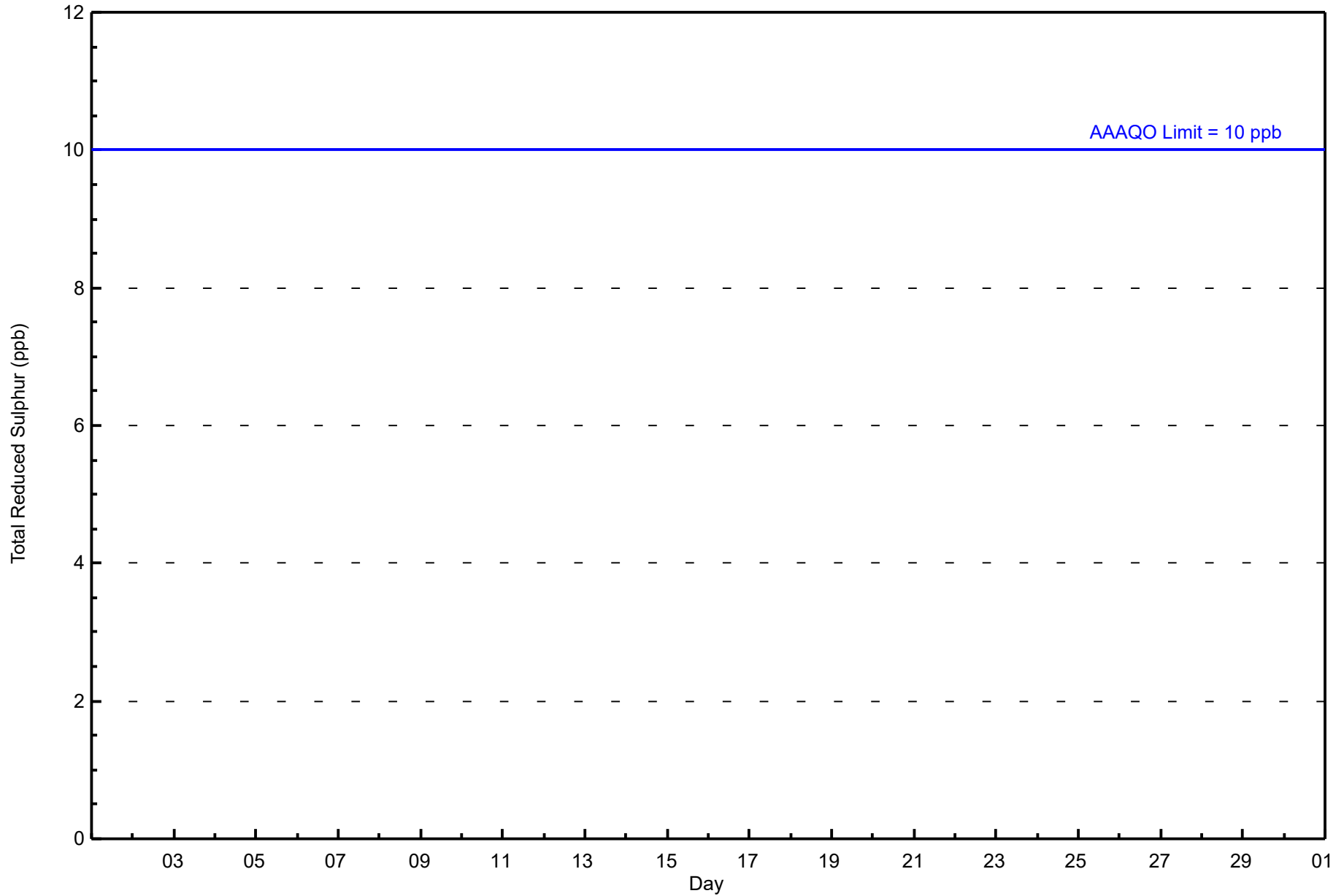


Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: -- ppb on Apr 1 00:00 Maximum Daily Average: -- ppb on Mar 31		Hours in Service: 0 Hours of Data: 0 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 0.0																								
Minimum Value: -- ppb on Apr 1 00:00 Maximum Diurnal Average: -- ppb at hour 0 Monthly Average: -- ppb		Minimum Daily Average: -- ppb on Mar 31 Minimum Diurnal Average: -- ppb at hour 0 Percentiles: $P_1 = 0.0$ $P_{10} = 0.0$ $Q_1 = 0.0$ Median = 0.0 $Q_3 = 0.0$ $P_{90} = 0.0$ $P_{99} = 0.0$																								
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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
29-Apr	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	--	--
30-Apr	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 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Patricia McInnes - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
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: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Patricia McInnes - April 2023**

Concentration 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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

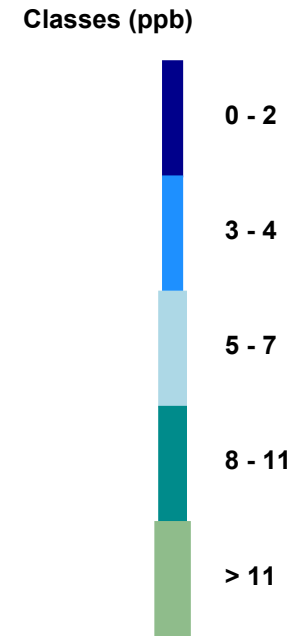
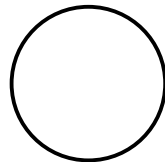
Total Number of Valid Hours: 0

Total Number of Hours: 720

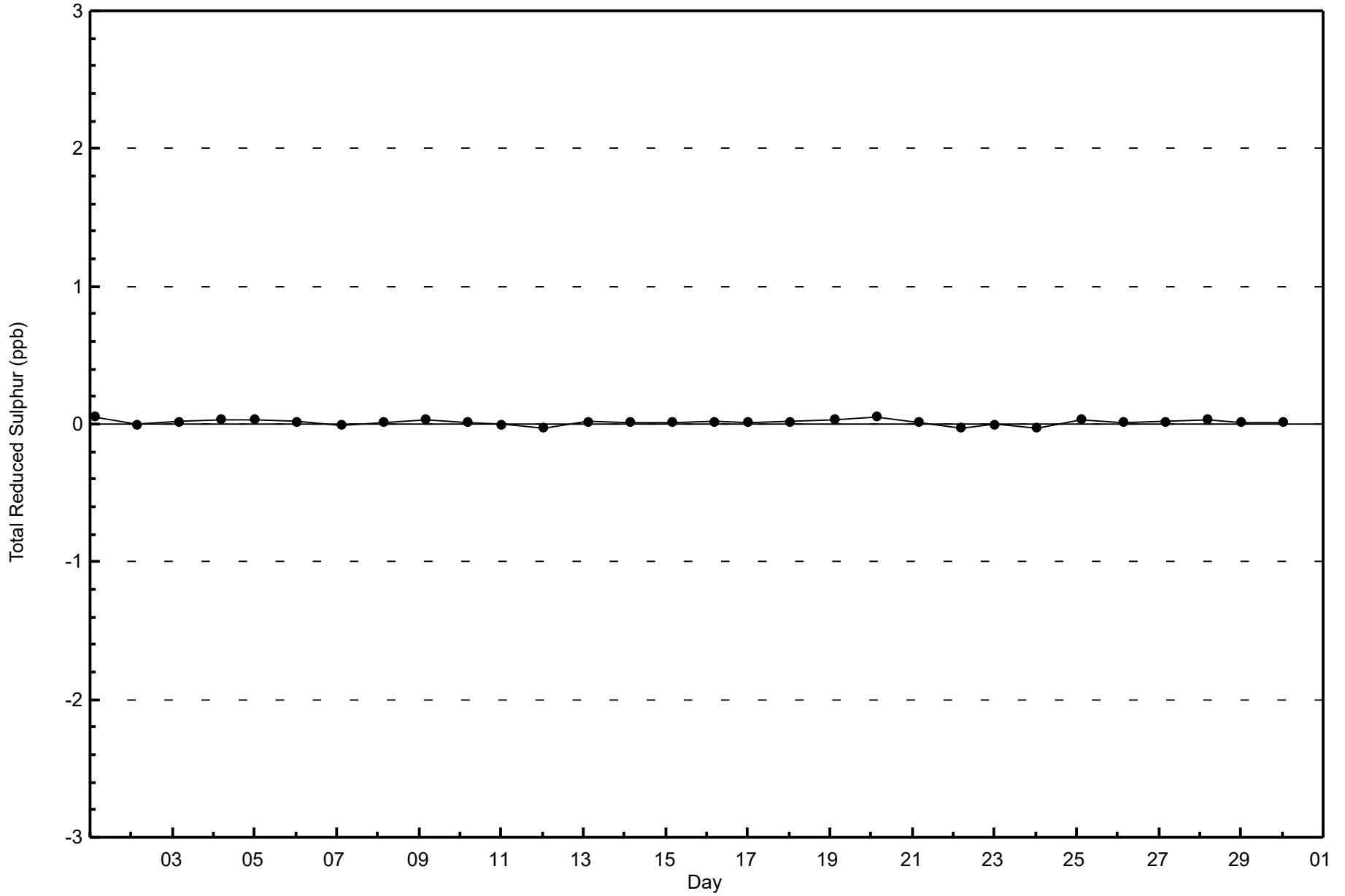


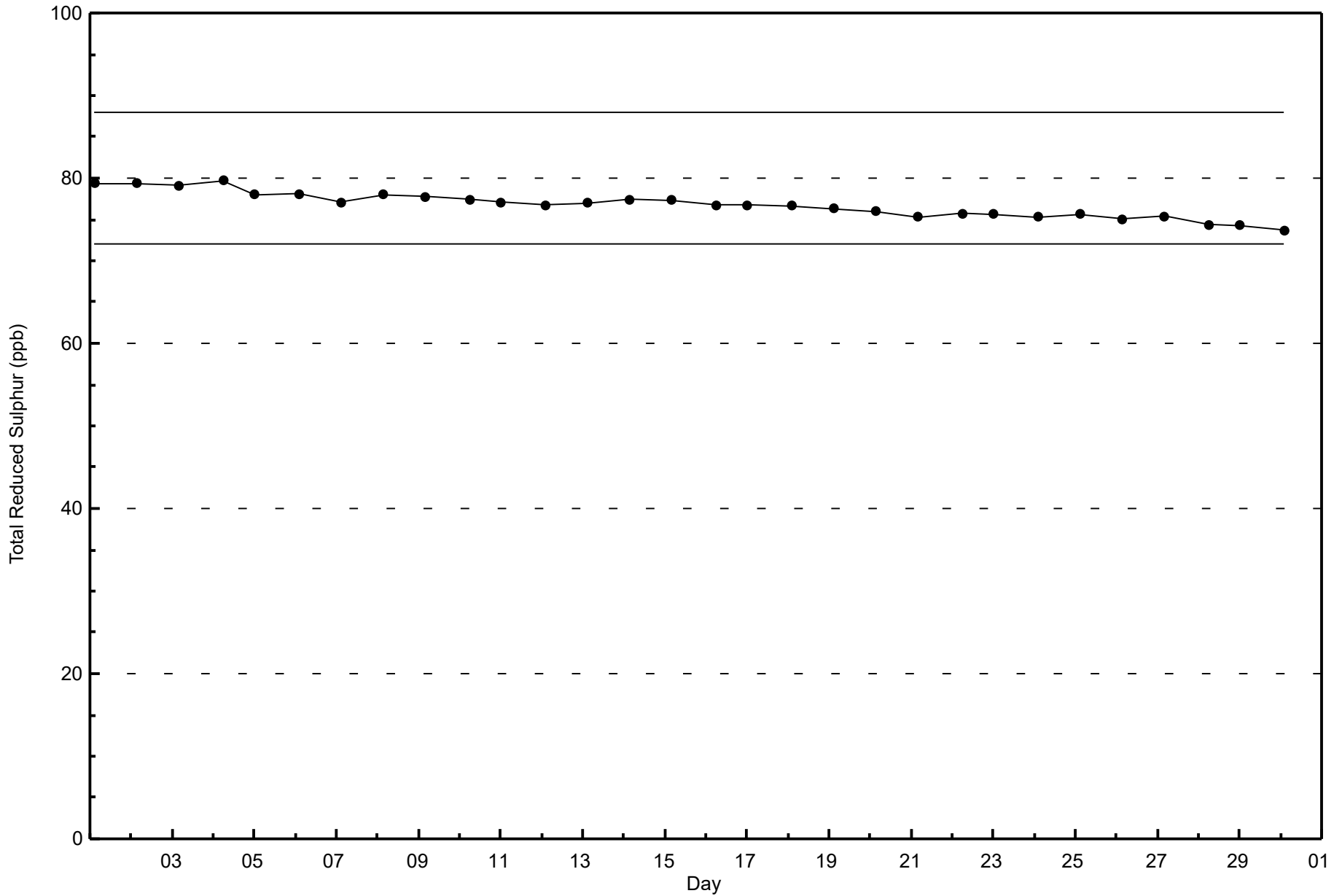
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Patricia McInnes



Total Number of Valid Hours: 0







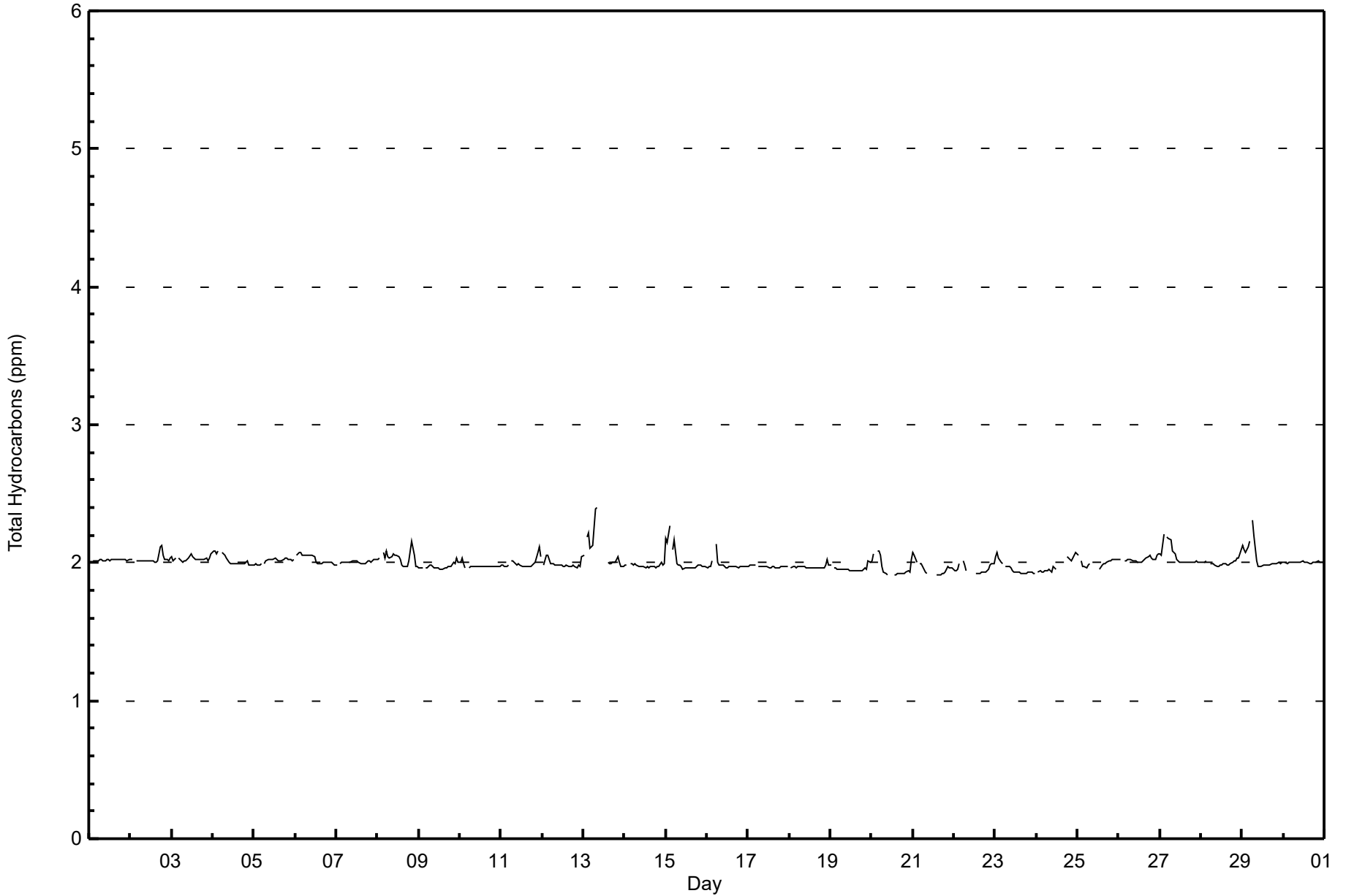
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Patricia McInnes - April 2023

Maximum Value: 2.4 ppm on Apr 13 09:00		Maximum Daily Average: 2.1 ppm on Apr 13		Hours in Service: 720																								
Minimum Value: 1.9 ppm on Apr 21 15:00		Minimum Daily Average: 2.0 ppm on Apr 22		Hours of Data: 662																								
Maximum Diurnal Average: 2.0 ppm at hour 3		Minimum Diurnal Average: 2.0 ppm at hour 16		Hours of Missing Data: 58																								
Monthly Average: 2.00 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.0 P ₉₀ = 2.1 P ₉₉ = 2.2		Hours of Calibration: 33																								
				Percent Operational Time: 96.5																								
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-Apr	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-Apr	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	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
3-Apr	2.0	2.0	2.0	Z	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	2.0	2.0	2.1	2.0
4-Apr	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
5-Apr	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	2.0
6-Apr	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	2.0	2.0	2.0	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-Apr	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
8-Apr	2.0	2.0	Z	2.1	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0
9-Apr	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
10-Apr	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
11-Apr	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	2.1	2.1	2.0	2.0	2.0	2.1	2.0
12-Apr	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	2.0	2.0	2.0	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-Apr	2.1	Z	2.2	2.2	2.1	2.1	2.3	2.4	2.4	C	C	C	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4
14-Apr	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
15-Apr	2.2	2.1	2.3	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.3
16-Apr	2.0	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	2.0	2.0	2.1
17-Apr	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	2.0
18-Apr	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
19-Apr	2.0	Z	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	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0
20-Apr	2.0	2.1	Z	2.1	2.1	2.1	2.0	1.9	1.9	1.9	UO	UO	UO	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
21-Apr	2.1	2.0	2.0	Z	2.0	2.0	2.0	1.9	1.9	UO	UO	UO	UO	UO	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	2.1
22-Apr	1.9	1.9	2.0	2.0	Z	2.0	2.0	1.9	UO	UO	UO	UO	UO	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
23-Apr	2.0	2.1	2.0	2.0	2.0	Z	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
24-Apr	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	UO	UO	UO	UO	UO	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	--	
25-Apr	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	M	M	M	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
26-Apr	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	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.1	
27-Apr	2.1	2.1	2.2	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	2.0	2.0	2.0	2.0	2.0	2.0	2.2
28-Apr	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	2.0
29-Apr	2.1	2.1	2.1	2.1	2.2	Z	2.3	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	2.0	2.0	2.0	2.0	2.3
30-Apr	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
																								Diurnal Average				
																								Diurnal Maximum				
Z - zerospan																												
C - Calibration																												
M - Maintenance																												
UO - Unstable Operation																												





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Patricia McInnes - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	588	88.82	88.82
2.1 - 3.0	74	11.18	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 662

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Patricia McInnes - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	17	18	18	15	60	144	86	33	42	11	29	33	26	16	18	22	588
2.1 - 3.0	5	1	4	2	5	8	10	5	5	4	2	4	1	2	5	11	74
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
Totals	22	19	22	17	65	152	96	38	47	15	31	37	27	18	23	33	662

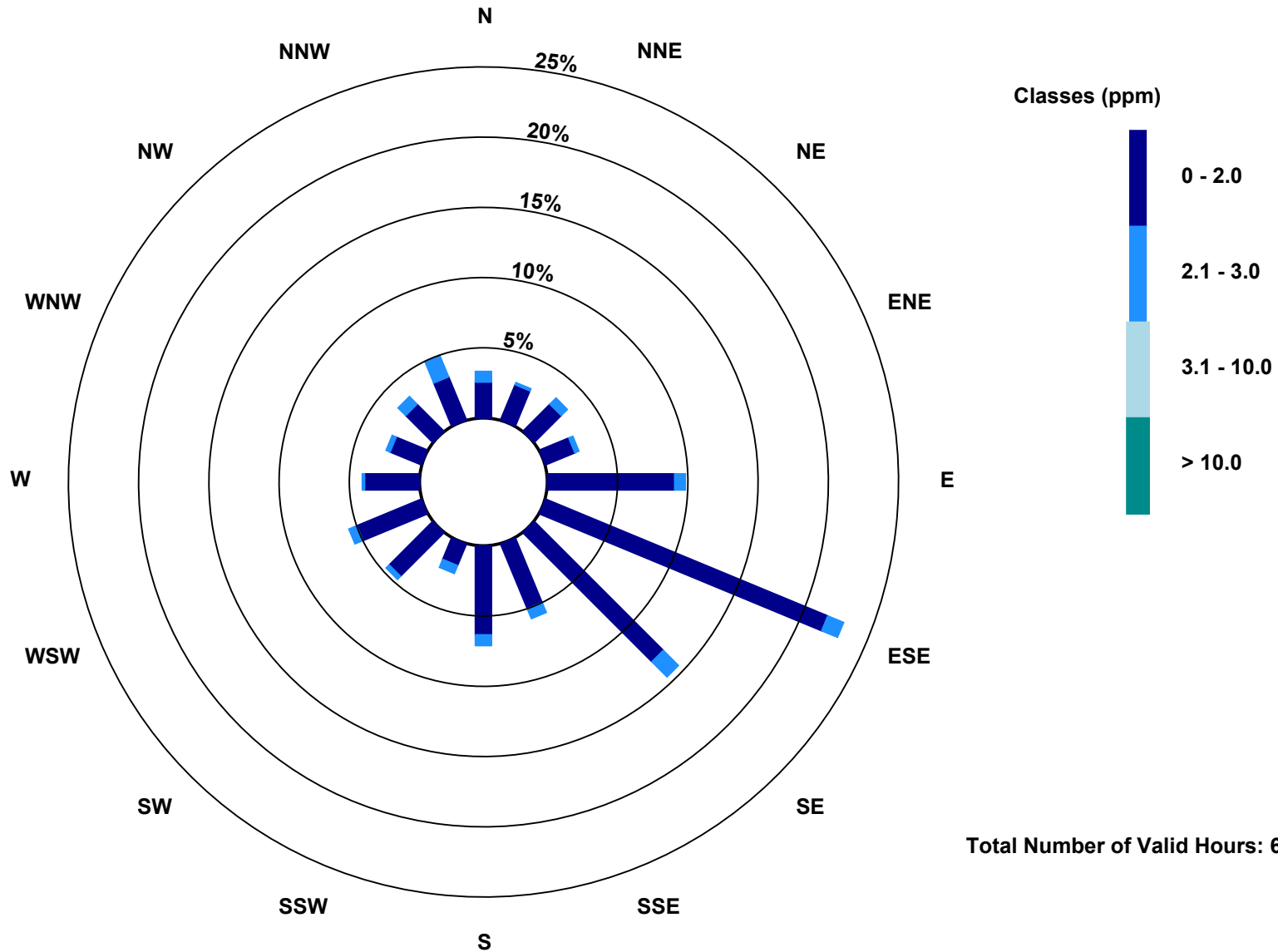
Total Number of Valid Hours: 662

Total Number of Hours: 720

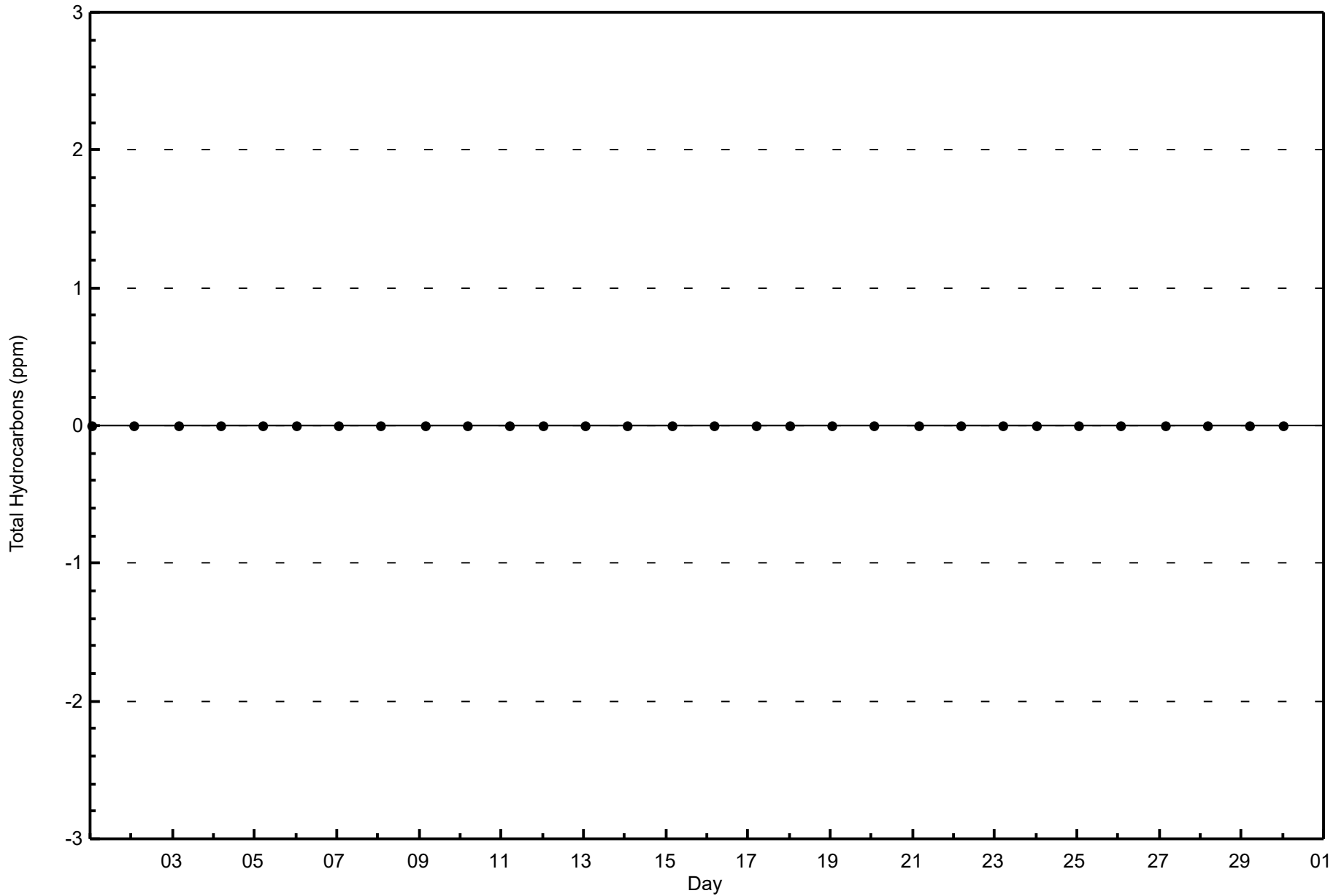


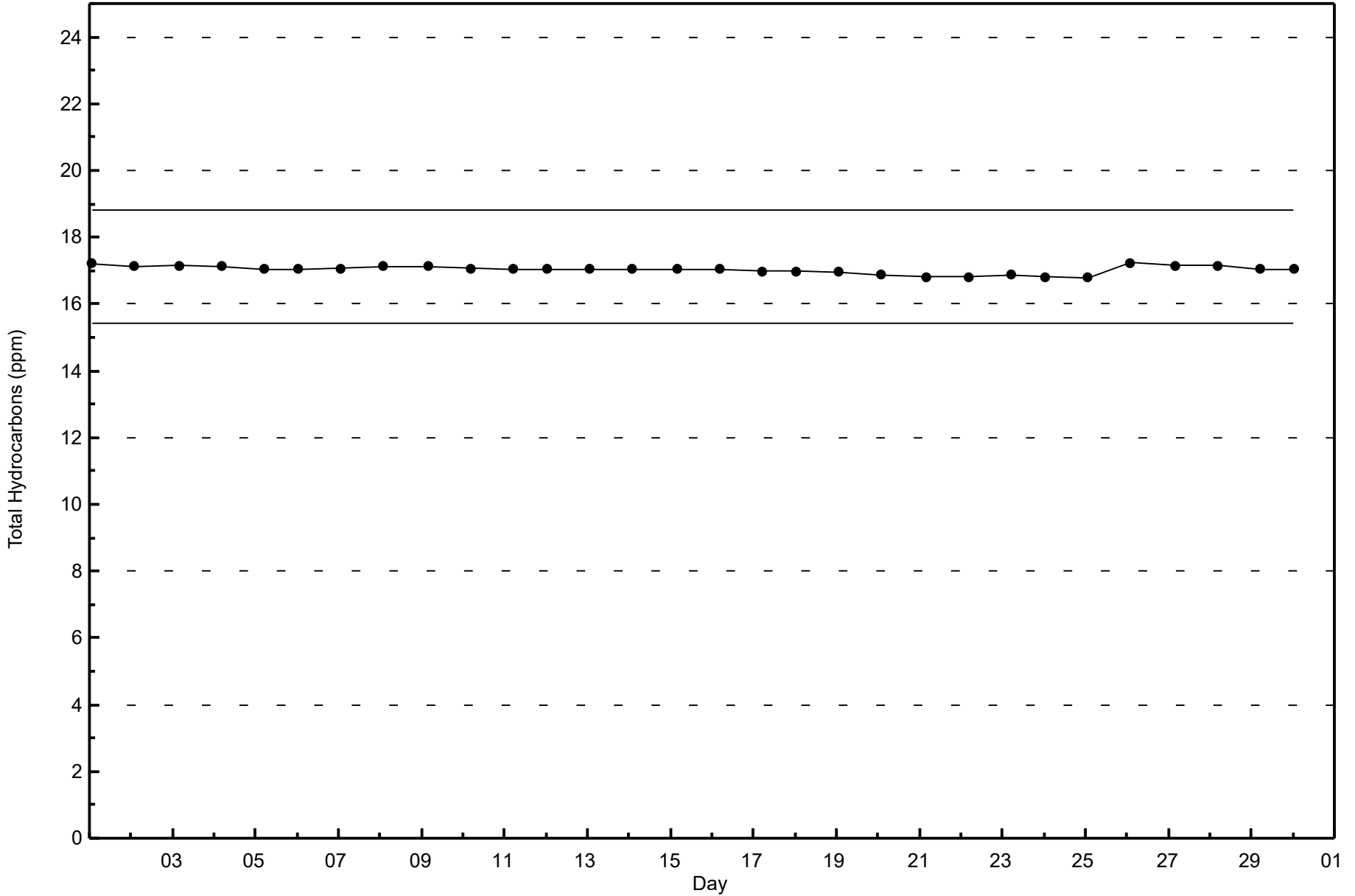
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Patricia McInnes



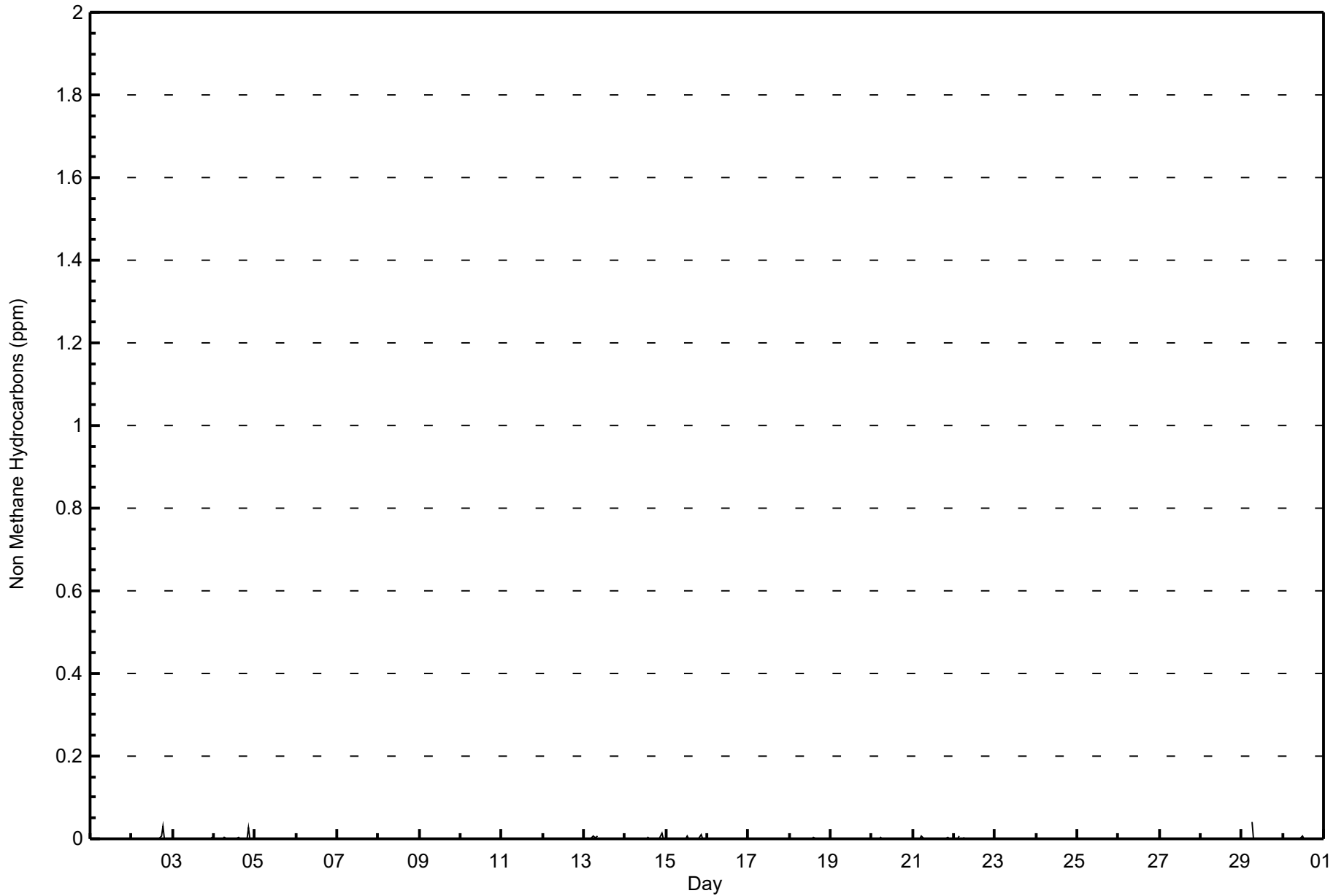
Total Number of Valid Hours: 662







Maximum Value: 0.039 ppm on Apr 29 07:00		Maximum Daily Average: 0.002 ppm on Apr 29		Hours in Service: 720																														
Minimum Value: 0.000 ppm on Apr 1 01:00		Minimum Daily Average: 0.000 ppm on Apr 1		Hours of Data: 662																														
Maximum Diurnal Average: 0.002 ppm at hour 7		Minimum Diurnal Average: 0.000 ppm at hour 1		Hours of Missing Data: 58																														
Monthly Average: 0.000 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0		Hours of Calibration: 33																														
				Percent Operational Time: 96.5																														
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-Apr	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	0.000	0.000
2-Apr	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	0.007	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.029	
3-Apr	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	0.004	
4-Apr	0.000	0.000	0.000	0.000	Z	0.002	0.002	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	0.000	0.000	0.000	0.001	0.026	
5-Apr	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	0.000	
6-Apr	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	0.000	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	
7-Apr	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	0.000	
8-Apr	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	0.000	
9-Apr	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	0.000	
10-Apr	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	0.000	
11-Apr	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	0.000	
12-Apr	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	0.000	
13-Apr	0.000	Z	0.000	0.000	0.002	0.006	0.004	0.004	0.008	C	C	C	0.005	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
14-Apr	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	0.003	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	0.000	0.001	
15-Apr	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	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	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	0.000	
17-Apr	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	0.000	
18-Apr	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	0.002	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	0.000	
19-Apr	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	0.000	
20-Apr	0.000	0.000	Z	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	UO	UO	UO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
21-Apr	0.000	0.000	0.000	Z	0.000	0.007	0.000	0.000	0.000	0.000	UO	UO	UO	UO	UO	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	0.000	0.000	0.000	0.007	Z	0.002	0.000	0.000	0.000	UO	UO	UO	UO	UO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	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	0.000	
24-Apr	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	UO	UO	UO	UO	UO	UO	UO	UO	0.000	0.000	0.000	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-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	M	M	M	M	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
26-Apr	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	0.000	
27-Apr	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	0.000	
28-Apr	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	0.000	
29-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.039	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	
30-Apr	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	0.000	
																								Diurnal Average										
																								Diurnal Maximum										
Z - zerospan																								C - Calibration		M - Maintenance		UO - Unstable Operation						





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	650	98.19	98.19
0.006 - 0.05	12	1.81	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 662

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	20	19	21	16	64	149	94	38	46	15	31	37	26	18	23	33	650
0.006 - 0.05	2	0	1	1	1	3	2	0	1	0	0	0	1	0	0	0	12
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
Totals	22	19	22	17	65	152	96	38	47	15	31	37	27	18	23	33	662

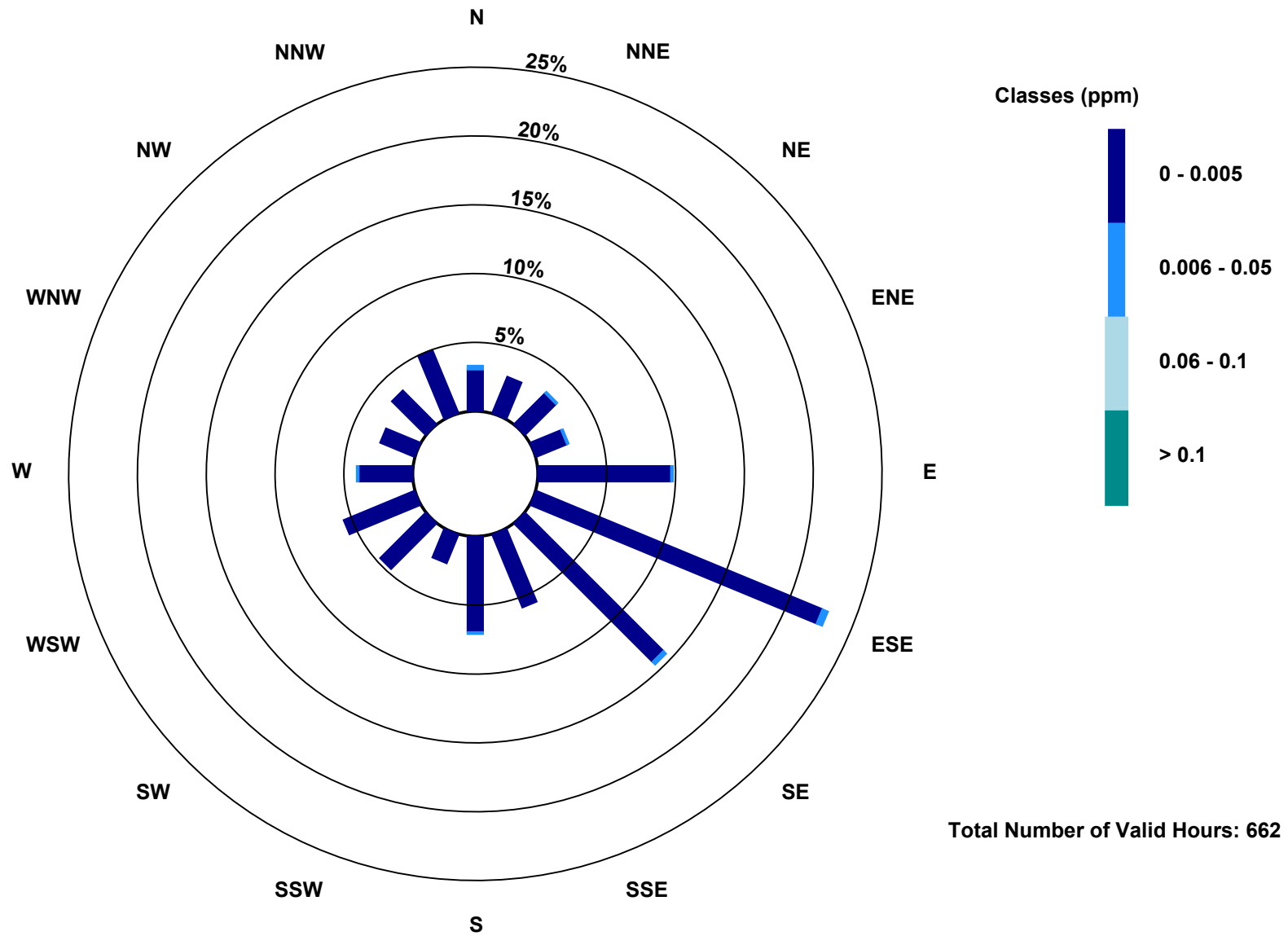
Total Number of Valid Hours: 662

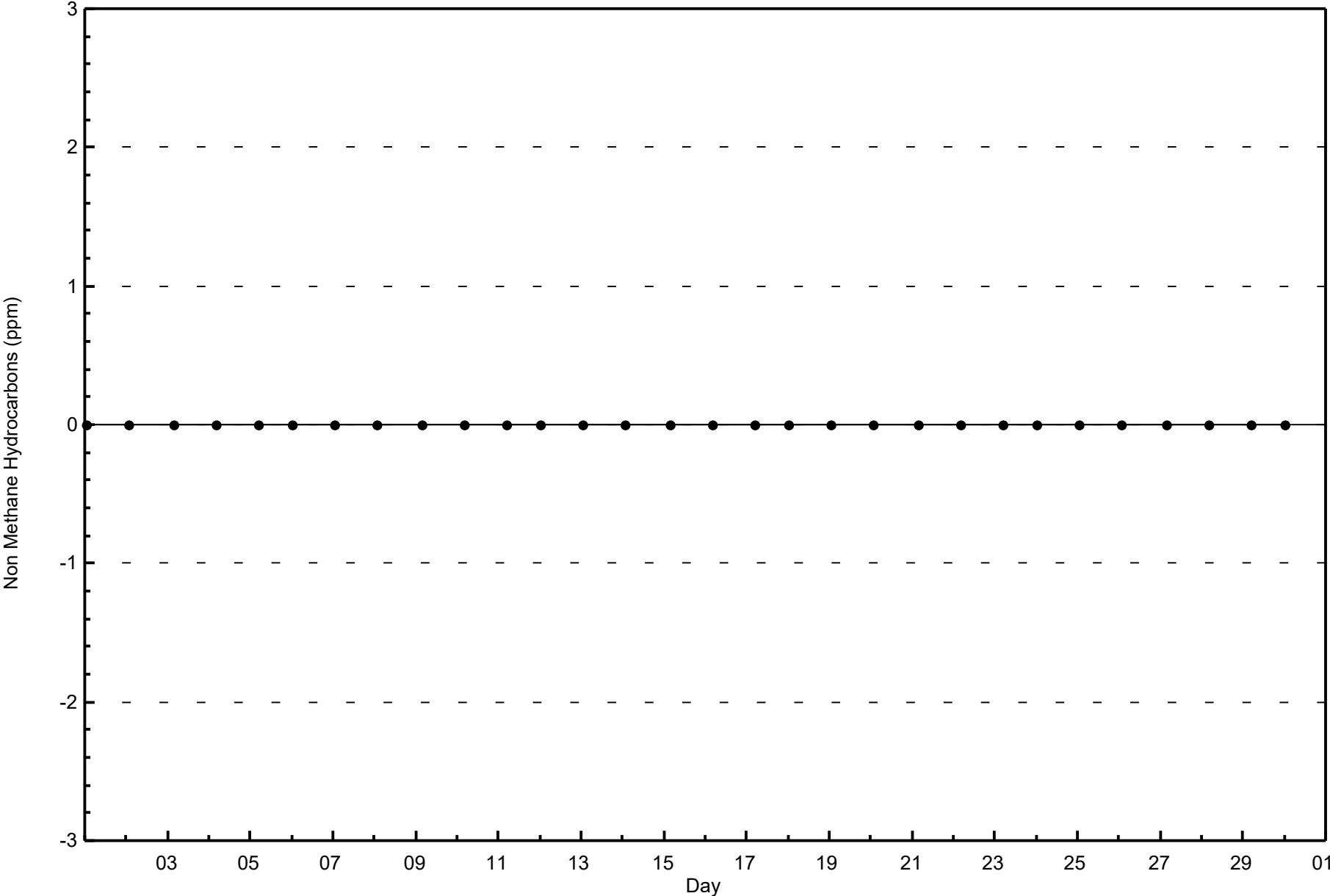
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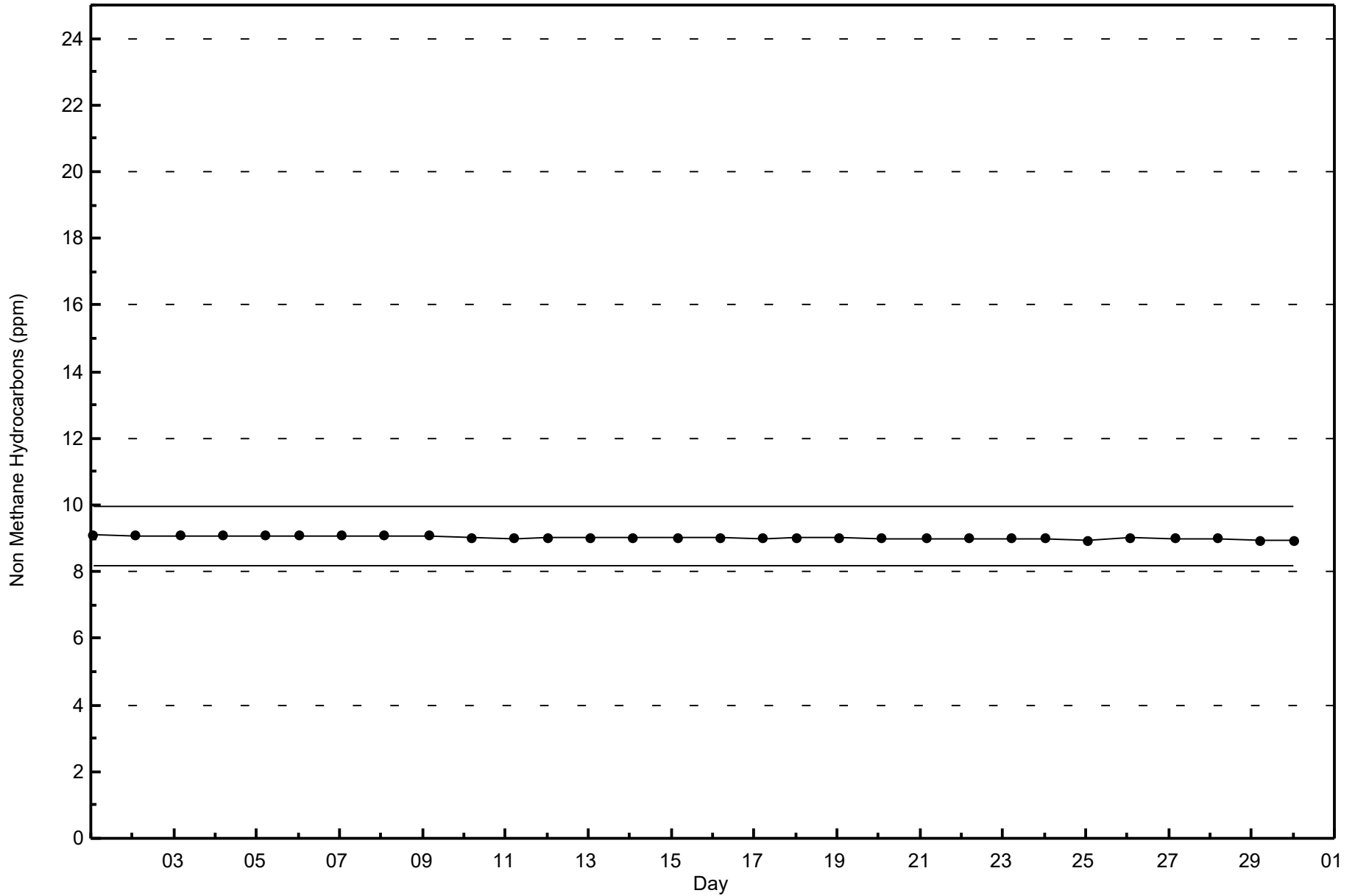


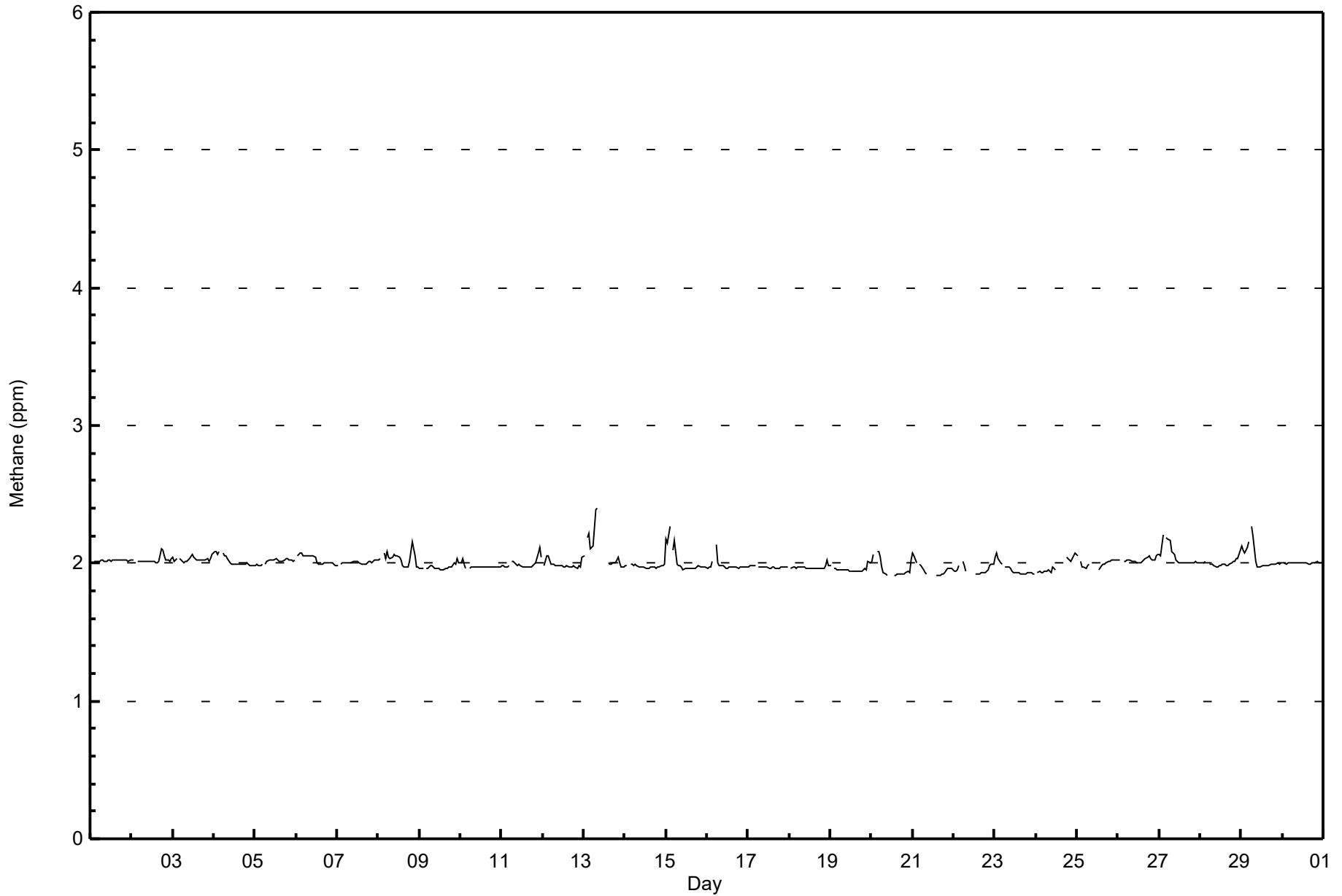
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Patricia McInnes - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	589	88.97	88.97
2.1 - 3.0	73	11.03	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 662

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Patricia McInnes - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	17	18	18	15	61	144	86	33	42	11	29	33	26	16	18	22	589
2.1 - 3.0	5	1	4	2	4	8	10	5	5	4	2	4	1	2	5	11	73
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
Totals	22	19	22	17	65	152	96	38	47	15	31	37	27	18	23	33	662

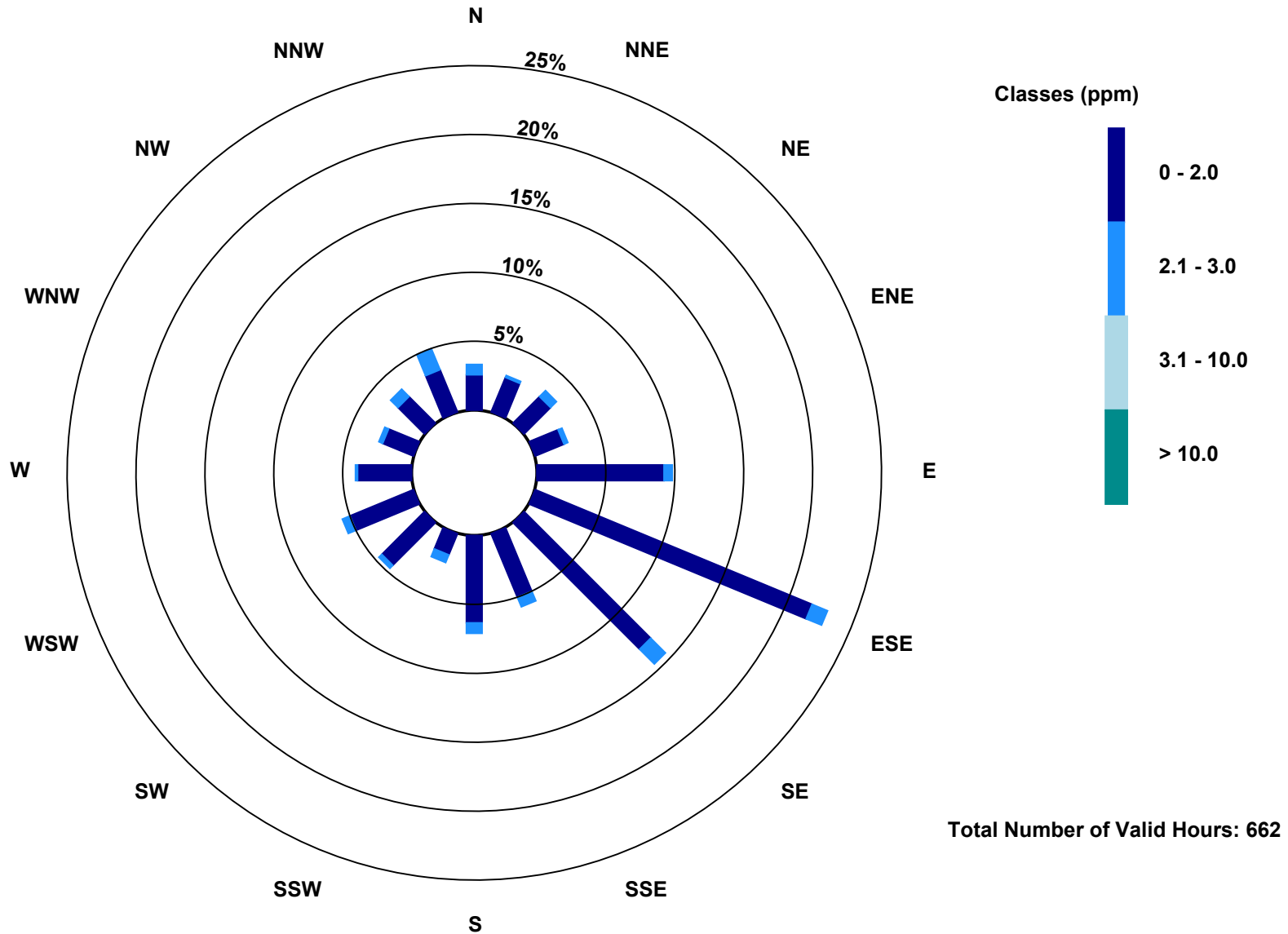
Total Number of Valid Hours: 662

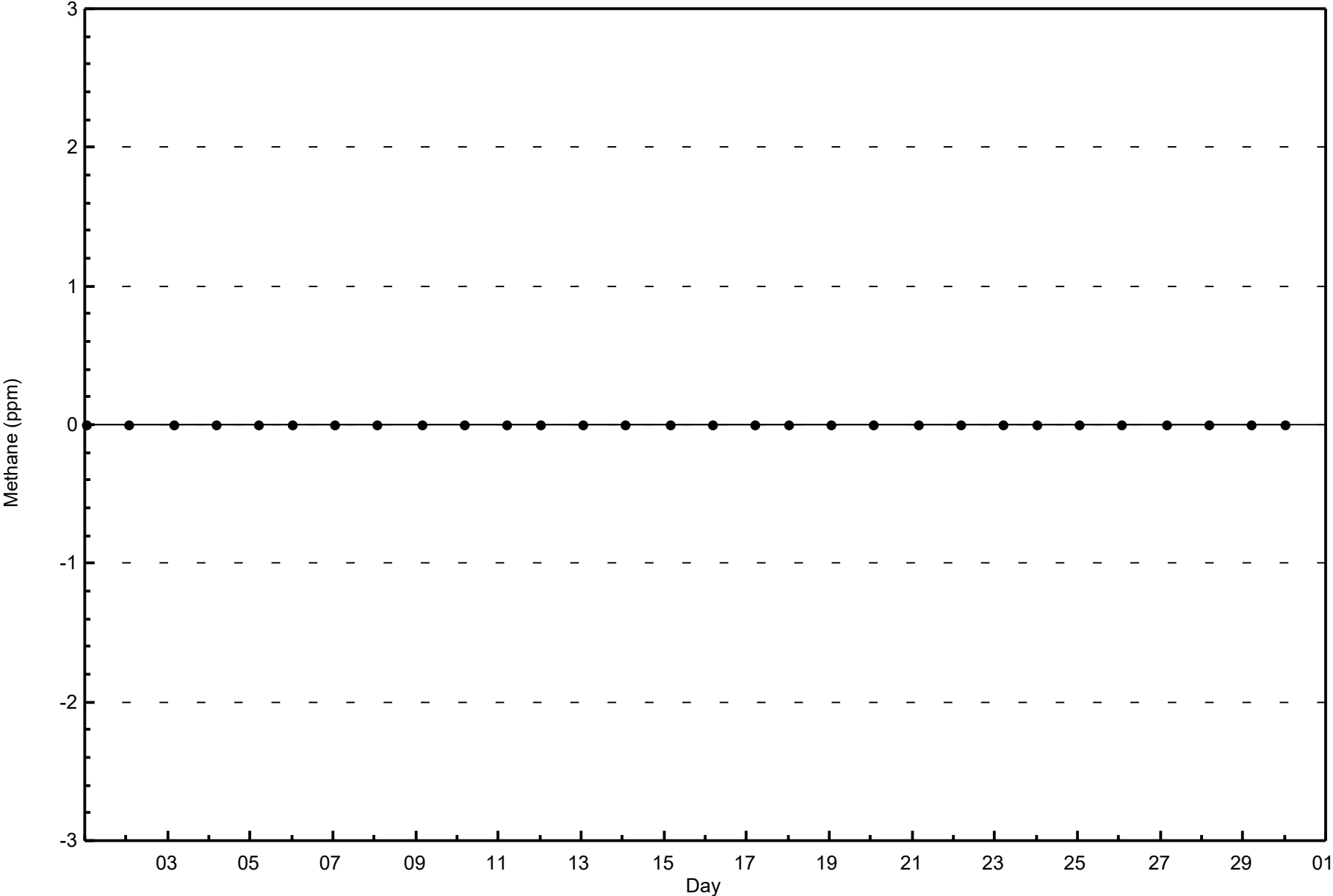
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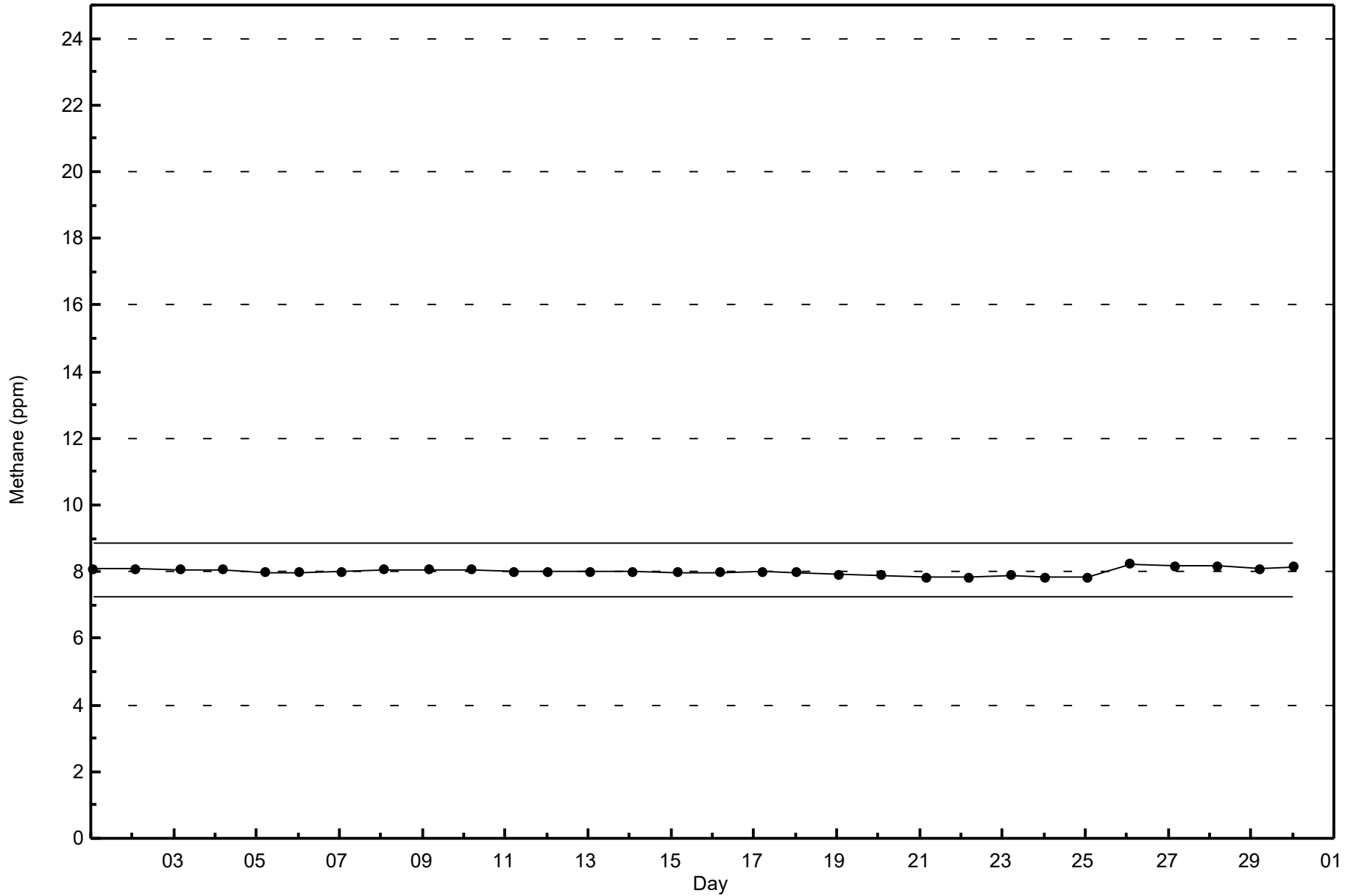


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Patricia McInnes









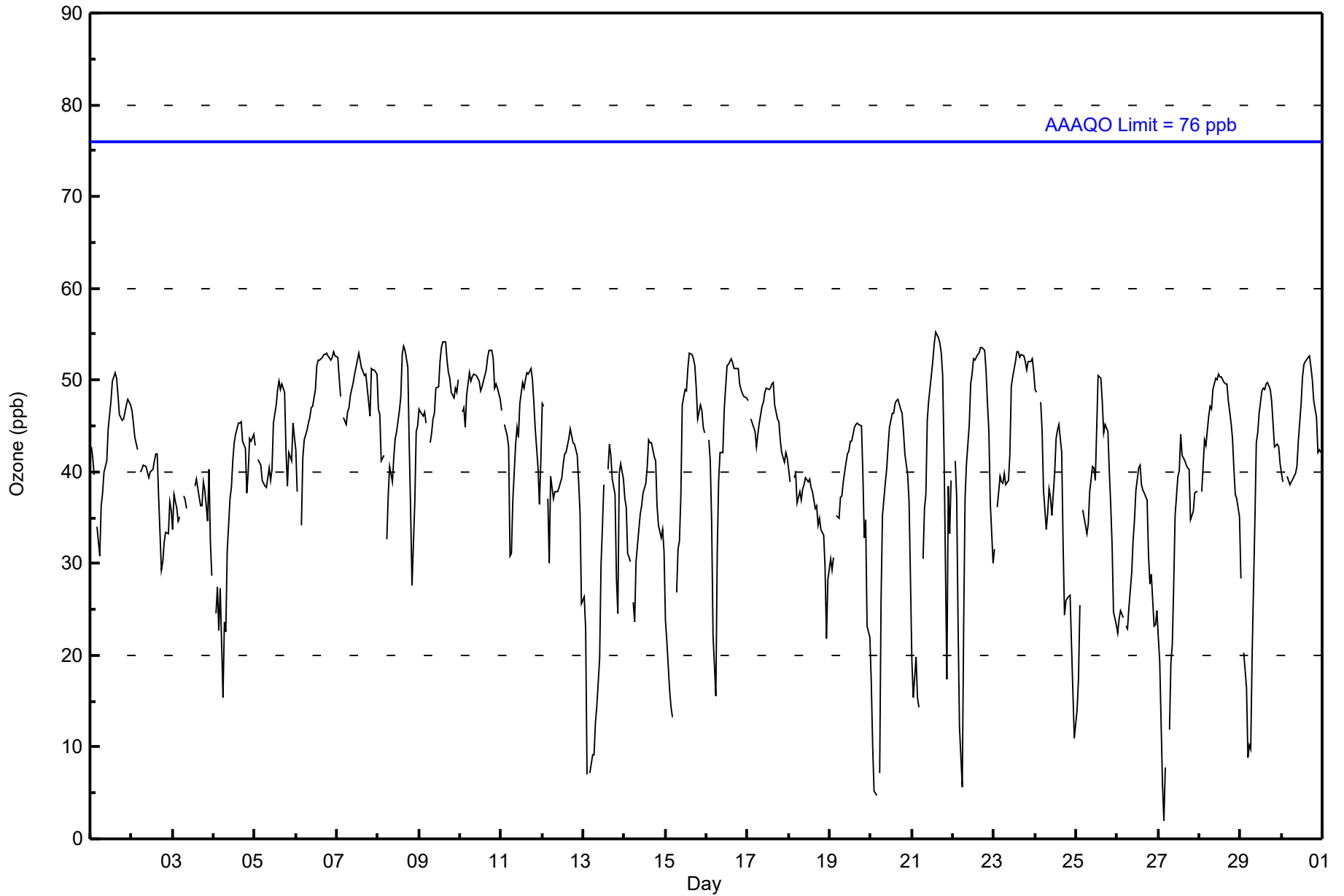
Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Patricia McInnes - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Hours of Data: 685																												
Maximum Value: 55.2 ppb on Apr 21 15:00		Maximum Daily Average: 49.8 ppb on Apr 10																	Hours of Missing Data: 35																														
Minimum Value: 2.0 ppb on Apr 27 04:00		Minimum Daily Average: 27.5 ppb on Apr 13																	Hours of Calibration: 34																														
Maximum Diurnal Average: 47.9 ppb at hour 15		Minimum Diurnal Average: 30.9 ppb at hour 6																	Percent Operational Time: 99.9																														
Monthly Average: 40.21 ppb		Percentiles: P ₁ = 7.2 P ₁₀ = 24.8 Q ₁ = 36.3 Median = 42.0 Q ₃ = 47.9 P ₉₀ = 51.2 P ₉₉ = 53.6																																															
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-Apr	42.7	41.5	39.6	Z	34.1	30.8	36.2	37.6	40.0	41.1	44.6	46.3	47.7	49.9	50.8	50.1	48.4	46.3	45.6	45.8	46.5	47.2	47.9	47.4	43.8	50.8																							
2-Apr	46.7	45.3	43.8	42.4	Z	39.9	40.2	40.7	40.6	40.0	39.4	40.0	40.3	41.3	41.9	41.9	37.3	29.3	30.2	32.3	33.4	33.2	36.7	35.8	38.8	46.7																							
3-Apr	33.8	37.5	35.9	34.7	35.1	Z	37.4	36.9	36.1	C	C	C	C	38.4	39.2	37.2	36.3	36.3	38.9	38.0	34.7	40.3	32.3	28.6	36.2	40.3																							
4-Apr	Z	24.6	27.4	22.7	27.3	15.5	23.6	22.6	31.3	37.1	38.3	41.1	43.1	44.2	45.3	45.3	45.4	43.2	42.6	37.6	40.0	43.6	43.4	44.1	36.0	45.4																							
5-Apr	42.9	Z	41.3	40.7	39.1	38.7	38.4	38.3	40.4	39.1	40.3	45.2	47.3	48.9	49.8	49.0	49.5	48.6	42.2	38.5	42.1	41.1	45.3	43.7	43.1	49.8																							
6-Apr	42.4	37.9	Z	34.1	41.5	43.5	44.6	45.4	45.9	46.9	47.1	48.9	51.5	52.2	52.1	52.5	52.8	52.8	52.9	52.6	52.1	52.5	53.1	52.6	48.2	53.1																							
7-Apr	52.5	50.1	48.1	Z	45.9	45.2	46.5	47.0	48.3	49.7	50.7	51.5	52.2	52.9	51.2	50.9	50.5	50.7	47.5	46.1	51.2	51.1	51.1	50.6	49.6	52.9																							
8-Apr	46.8	46.2	41.1	41.7	Z	32.7	37.4	40.6	38.9	41.6	43.6	44.4	46.7	48.2	52.8	53.7	53.2	51.3	43.0	35.8	27.6	36.8	44.5	45.0	43.2	53.7																							
9-Apr	46.8	46.5	46.1	46.6	45.3	Z	43.2	44.2	45.8	46.3	49.2	49.3	52.0	53.6	54.1	54.1	52.1	50.9	50.2	48.6	48.0	49.1	48.7	50.0	48.7	54.1																							
10-Apr	Z	46.5	47.0	44.9	48.3	50.8	49.9	50.3	50.7	50.5	50.2	49.9	48.8	49.3	50.5	51.2	52.5	53.2	53.2	52.3	49.2	49.6	49.1	47.9	49.8	53.2																							
11-Apr	46.7	Z	45.2	44.0	42.6	30.8	31.1	37.0	43.0	44.9	43.9	47.5	49.7	49.1	50.1	50.7	50.7	51.3	50.0	47.6	44.7	40.4	36.5	41.2	44.3	51.3																							
12-Apr	47.5	47.1	Z	37.1	30.0	39.4	37.1	37.8	37.8	37.9	38.3	39.3	40.9	42.0	42.1	43.6	44.6	43.9	43.2	43.1	41.8	39.0	35.6	25.6	39.8	47.5																							
13-Apr	26.5	22.9	7.1	Z	7.2	9.2	9.1	12.6	14.4	19.7	30.0	34.0	38.6	M	40.3	43.1	41.7	39.3	37.5	28.4	24.5	39.8	40.9	39.2	27.5	43.1																							
14-Apr	37.1	36.2	31.1	30.2	Z	25.8	23.7	30.2	33.8	35.4	36.4	37.6	38.8	40.6	43.4	43.2	43.2	41.6	41.2	36.3	34.1	32.8	33.8	31.3	35.6	43.4																							
15-Apr	23.9	21.5	16.1	14.4	13.2	Z	26.8	31.6	32.6	37.4	47.3	49.0	48.8	51.2	52.9	52.8	52.4	51.6	49.1	45.7	47.2	46.7	44.9	44.2	39.2	52.9																							
16-Apr	Z	43.4	41.1	34.5	22.2	15.6	31.2	39.0	42.0	42.2	46.8	49.2	51.6	51.6	52.4	51.8	51.3	51.2	51.3	49.5	49.0	48.5	48.2	48.1	44.0	52.4																							
17-Apr	47.8	Z	45.8	44.8	44.4	42.7	44.1	45.3	47.2	47.6	48.7	49.2	48.9	49.1	49.5	49.7	47.3	45.7	45.4	43.5	42.1	41.1	42.1	41.5	45.8	49.7																							
18-Apr	40.3	38.8	Z	39.4	39.8	36.7	37.8	36.9	38.1	38.6	39.4	38.9	39.2	38.4	37.9	36.0	36.4	34.1	35.0	33.7	33.1	29.6	21.7	28.2	36.0	40.3																							
19-Apr	30.4	29.2	30.7	Z	35.2	34.9	37.1	37.3	38.9	41.0	42.0	42.3	43.4	43.3	44.9	45.1	45.2	45.2	44.9	39.8	32.8	34.8	23.2	22.0	37.6	45.2																							
20-Apr	17.1	10.1	5.2	4.7	Z	7.1	26.0	35.2	38.8	40.3	42.6	44.8	46.4	46.4	47.5	47.8	47.9	46.8	46.4	44.4	41.9	39.7	36.8	28.2	34.4	47.9																							
21-Apr	19.4	15.4	19.8	15.4	14.3	Z	30.6	36.1	37.5	45.6	47.7	50.7	52.1	54.1	55.2	54.6	53.9	53.0	50.4	41.9	17.4	38.4	33.2	39.0	38.1	55.2																							
22-Apr	Z	41.2	37.2	23.3	12.3	5.6	23.3	37.2	40.8	45.1	49.6	50.7	52.3	52.2	52.8	52.9	53.6	53.6	53.2	51.0	47.4	44.4	36.6	30.0	41.1	53.6																							
23-Apr	31.6	Z	36.2	39.5	38.9	38.7	39.7	38.5	39.1	42.0	49.3	50.3	52.0	53.1	53.1	52.5	52.8	52.7	52.1	51.1	52.0	52.0	52.3	51.0	46.5	53.1																							
24-Apr	49.0	48.7	Z	47.5	44.5	37.9	33.7	35.6	38.1	37.2	35.2	40.0	43.6	44.5	45.2	42.2	32.2	24.5	25.9	26.2	26.6	21.3	15.9	11.0	35.1	49.0																							
25-Apr	14.0	17.4	25.4	Z	35.9	34.2	33.2	34.3	37.8	40.6	40.4	39.1	44.7	50.5	50.2	47.5	44.2	45.1	44.4	40.1	36.5	32.1	24.7	23.4	36.3	50.5																							
26-Apr	22.4	24.0	24.9	24.1	Z	23.1	23.0	25.2	28.9	32.5	34.8	38.0	40.4	40.7	38.6	38.0	37.6	36.9	31.0	27.8	28.8	23.2	23.3	24.9	30.1	40.7																							
27-Apr	21.9	19.3	5.9	2.0	7.8	Z	11.8	19.2	21.2	27.7	35.3	39.5	40.2	44.0	41.9	41.2	40.8	40.4	40.3	34.7	35.7	37.6	37.8	37.8	29.7	44.0																							
28-Apr	Z	37.8	40.6	43.4	42.9	46.1	47.2	46.9	49.0	50.2	50.1	50.7	50.4	50.4	49.8	49.6	49.6	47.8	45.3	43.7	40.3	37.5	37.0	35.0	45.3	50.7																							
29-Apr	28.4	Z	20.4	16.5	8.9	10.2	9.8	20.0	34.8	43.2	44.3	46.4	48.8	49.1	49.0	49.6	49.8	48.9	47.6	45.2	42.8	43.0	42.7	40.8	36.5	49.8																							
30-Apr	39.8	38.9	Z	39.5	39.1	38.5	39.3	39.5	39.8	40.5	43.4	47.4	50.3	51.7	52.0	52.4	52.6	51.4	50.0	47.7	45.9	42.1	42.4	42.1	44.6	52.6																							
																								35.9	34.7	32.1	32.3	31.8	30.9	33.1	36.0	38.4	40.8	43.1	44.9	46.6	47.6	47.9	47.7	46.9	45.6	44.3	41.6	39.6	40.3	38.7	37.7	Diurnal Average	
																								52.5	50.1	48.1	47.5	48.3	50.8	49.9	50.3	50.7	50.5	50.7	51.5	52.3	54.1	55.2	54.6	53.9	53.6	53.2	52.6	52.1	52.5	53.1	52.6	Diurnal Maximum	
Z - zerospan C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Patricia McInnes - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	41	5.99	5.99
21 - 50	551	80.44	86.42
51 - 82	93	13.58	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	2	2	3	1	4	7	3	1	3	1	1	3	1	2	4	3	41
21 - 50	21	18	22	18	59	134	75	28	25	14	23	31	17	18	18	30	551
51 - 82	0	0	0	0	3	11	18	15	26	0	4	6	9	0	1	0	93
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	20	25	19	66	152	96	44	54	15	28	40	27	20	23	33	685

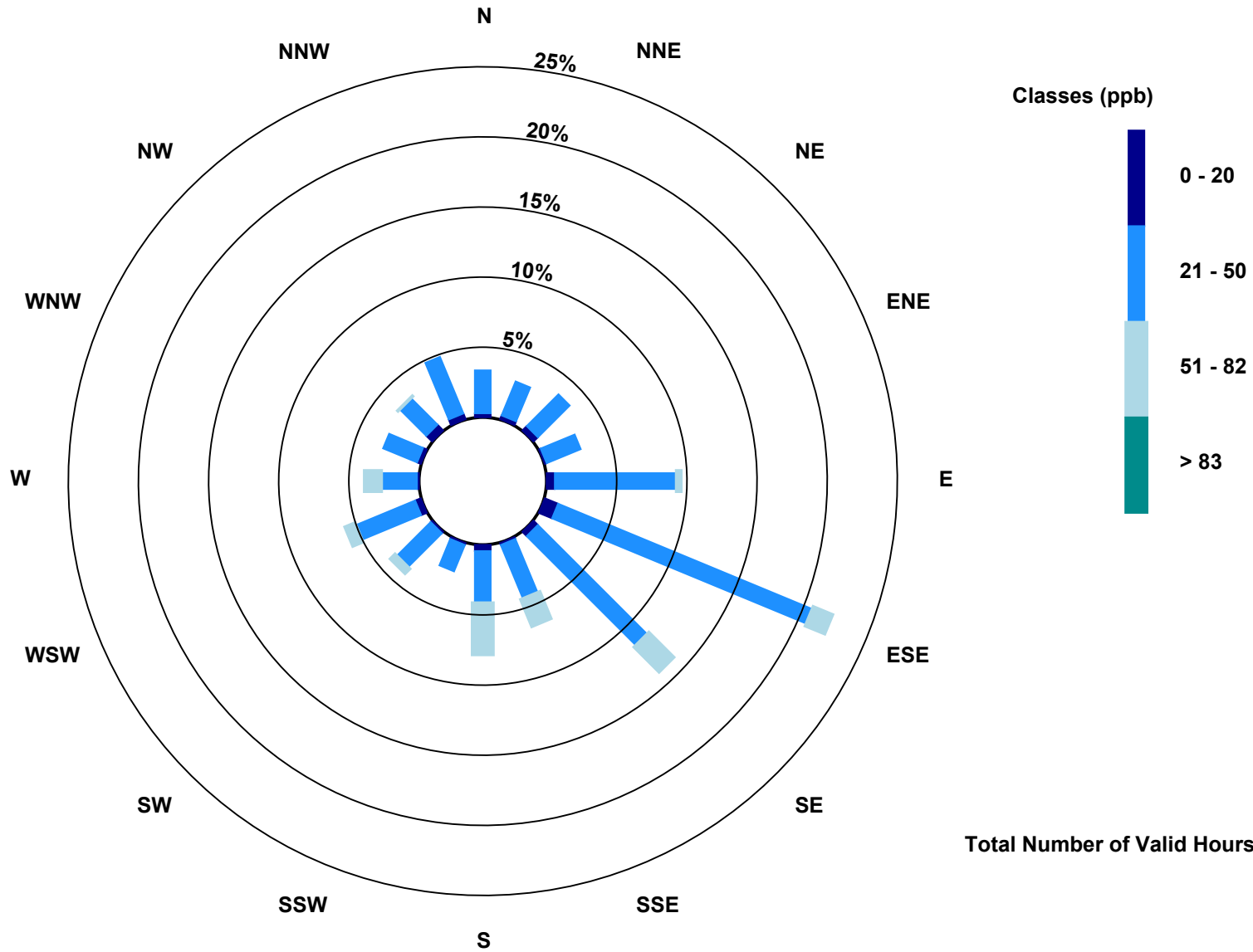
Total Number of Valid Hours: 685

Total Number of Hours: 720

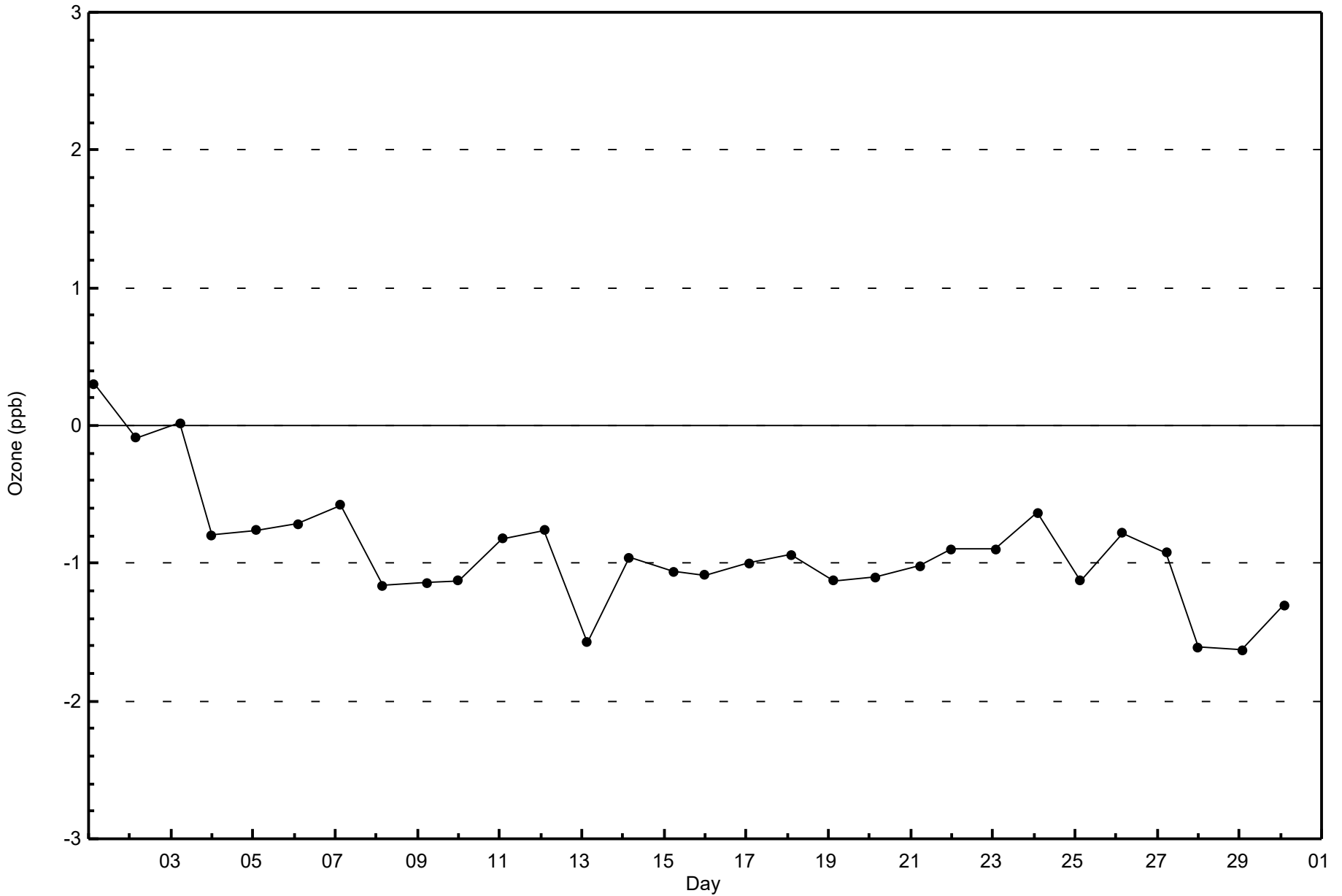


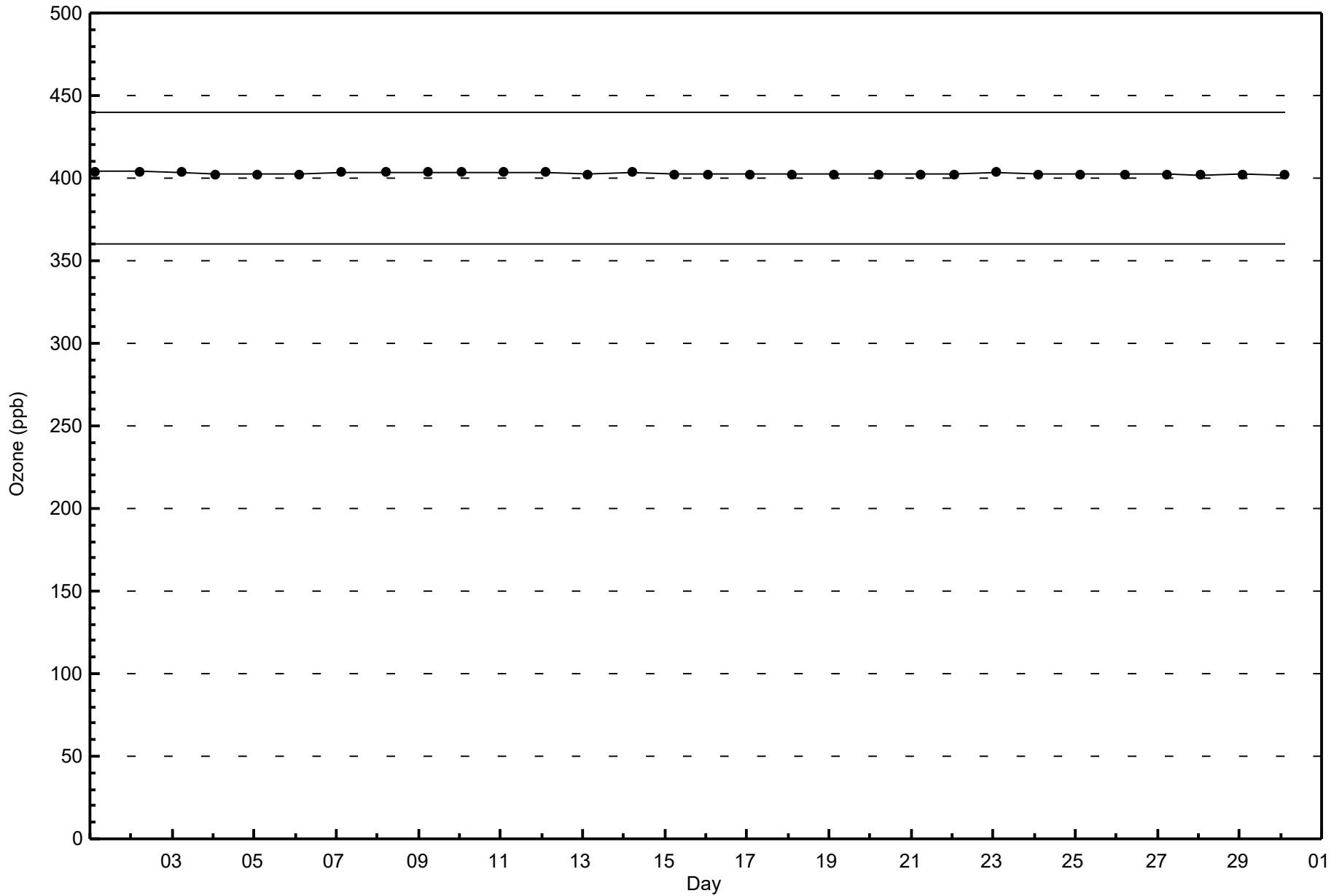
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Patricia McInnes



Total Number of Valid Hours: 685

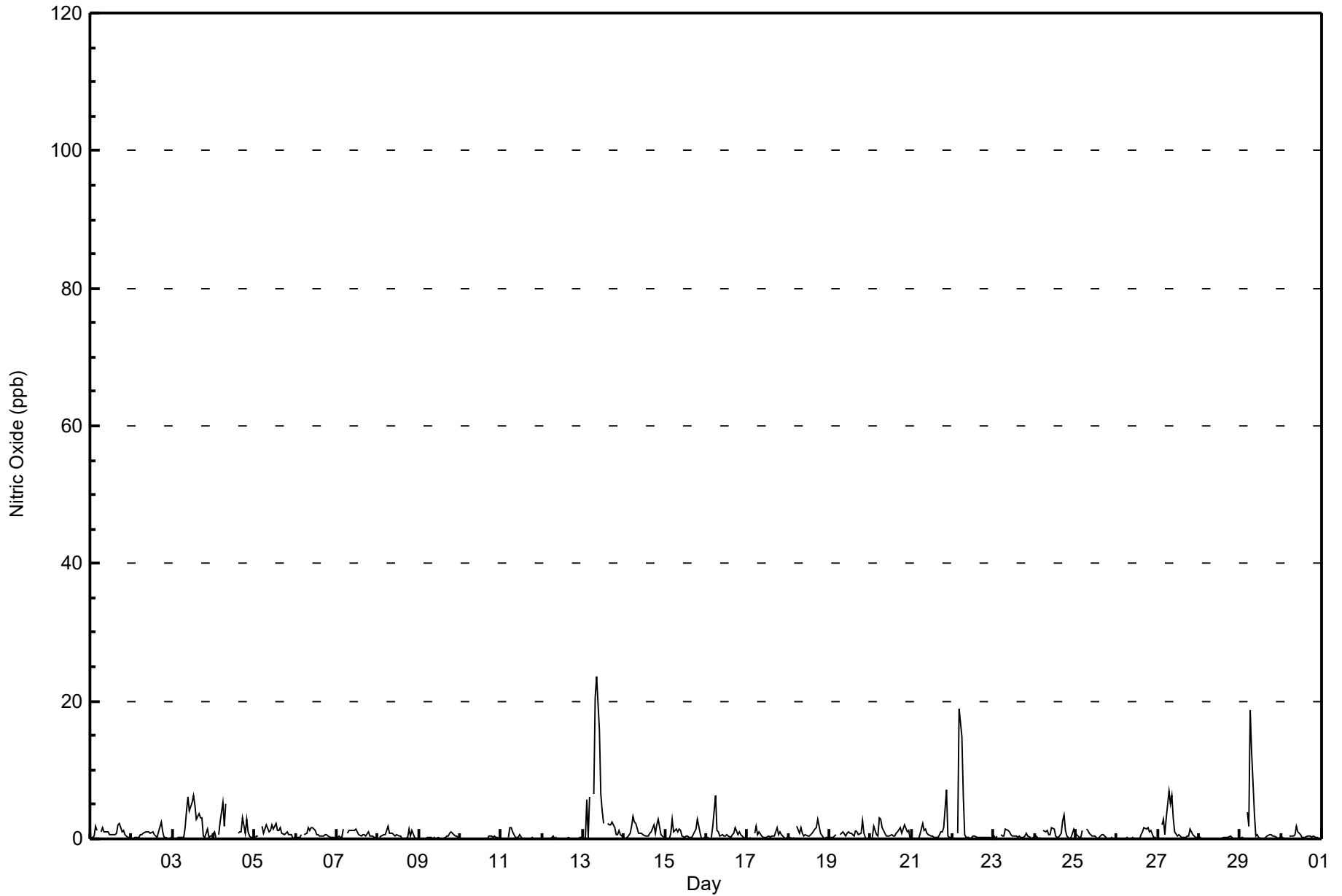






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Patricia McInnes - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	99.85	99.85
21 - 40	1	0.15	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: 683

Total Number of Hours: 720



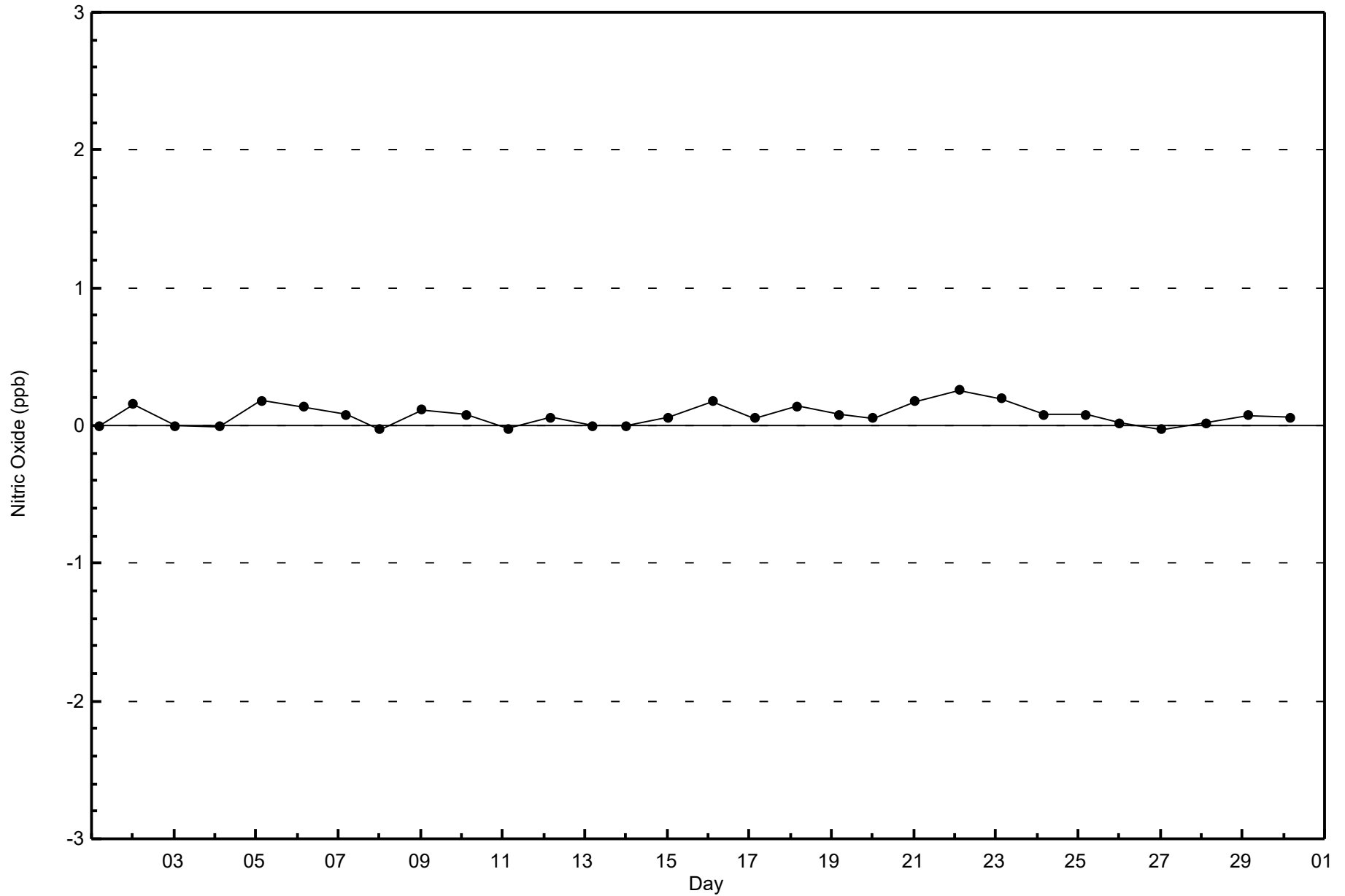
**Wood Buffalo Environmental Association
Frequency Distribution**

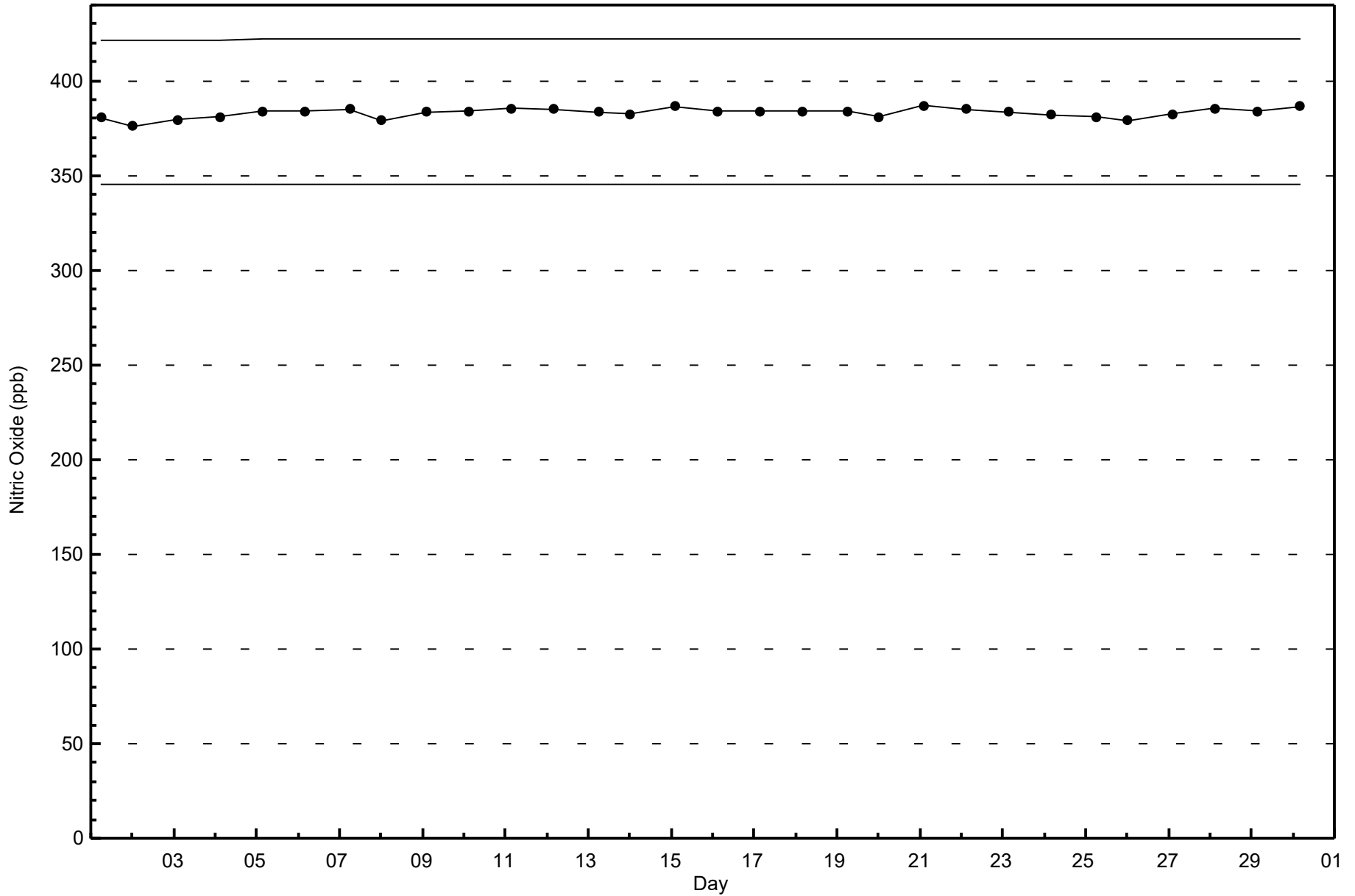
**Nitric Oxide (NO) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	20	23	19	66	153	93	47	53	11	32	37	25	19	26	34	682
21 - 40	0	0	1	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
Totals	24	20	24	19	66	153	93	47	53	11	32	37	25	19	26	34	683

Total Number of Valid Hours: 683

Total Number of Hours: 720







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Patricia McInnes - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 31.0 ppb on Apr 21 21:00	Maximum Daily Average: 10.0 ppb on Apr 13		Hours of Data:	683
Minimum Value: 0.0 ppb on Apr 9 11:00	Minimum Daily Average: 0.5 ppb on Apr 10		Hours of Missing Data:	37
Maximum Diurnal Average: 8.1 ppb at hour 6	Minimum Diurnal Average: 1.1 ppb at hour 14		Hours of Calibration:	36
Monthly Average: 3.83 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.2 Q ₁ = 0.9 Median = 2.1 Q ₃ = 5.0 P ₉₀ = 9.6 P ₉₉ = 21.7		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-Apr	1.8	2.0	3.4	5.6	8.9	Z	5.7	4.5	2.0	1.6	1.9	1.7	1.5	1.7	2.1	3.0	4.7	5.3	4.3	4.5	3.4	2.7	1.9	2.3	3.3	8.9
2-Apr	Z	2.1	2.4	3.3	2.8	4.3	3.0	2.4	2.2	2.3	2.0	1.6	2.1	1.5	1.5	1.3	5.1	13.1	10.7	7.0	5.5	5.7	3.4	4.3	3.9	13.1
3-Apr	6.1	Z	3.8	5.6	5.7	4.3	2.7	4.6	6.2	7.0	4.7	7.4	8.4	6.8	5.4	7.4	8.1	8.4	6.2	6.9	9.9	3.5	10.3	13.2	6.6	13.2
4-Apr	17.8	16.6	Z	17.2	11.7	24.3	14.8	17.0	C	C	C	C	C	C	1.6	1.9	1.9	4.6	4.6	10.0	6.2	2.5	2.5	1.6	--	24.3
5-Apr	1.8	2.1	2.4	Z	4.8	4.3	4.3	4.9	3.6	5.6	5.3	3.4	5.3	3.7	4.2	4.4	3.9	4.5	10.5	15.3	10.7	9.0	3.9	5.0	5.3	15.3
6-Apr	5.8	10.6	9.5	11.5	Z	6.7	5.6	4.6	4.0	4.3	4.4	3.6	1.7	1.1	1.2	1.3	1.6	2.0	1.9	1.9	1.9	1.8	1.9	2.1	4.0	11.5
7-Apr	1.7	3.1	3.8	3.6	6.2	Z	4.2	4.3	3.6	3.3	3.1	3.5	2.8	1.9	1.6	1.8	1.9	2.8	7.0	6.4	2.4	3.3	2.7	2.9	3.4	7.0
8-Apr	Z	4.5	7.9	7.5	9.3	14.8	9.5	4.6	4.9	2.6	1.6	1.8	1.3	1.2	0.3	0.3	0.6	1.6	9.0	14.4	16.2	5.3	2.4	0.5	5.3	16.2
9-Apr	0.3	Z	0.2	0.1	0.7	2.1	1.7	0.8	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.3	1.2	2.4	3.0	3.4	3.5	2.2	2.5	1.5	1.1	3.5
10-Apr	2.0	3.0	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	0.1	0.0	0.1	0.2	2.4	1.0	0.6	0.9	0.5	3.0
11-Apr	1.2	0.9	0.7	Z	2.1	13.6	11.8	4.2	0.5	0.6	0.9	0.3	0.3	0.2	0.2	0.1	0.1	0.3	2.0	2.5	3.5	5.6	10.1	5.6	2.9	13.6
12-Apr	0.7	0.5	6.0	5.6	Z	1.2	3.1	0.3	0.4	0.2	0.1	0.0	0.0	0.2	0.2	0.3	0.0	0.2	0.0	0.0	0.3	0.9	1.6	1.4	1.0	6.0
13-Apr	0.9	2.3	25.0	8.9	11.1	Z	10.3	22.4	21.2	17.2	9.6	7.2	4.5	M	5.3	5.8	7.4	7.9	8.7	15.4	17.7	6.1	3.7	2.2	10.0	25.0
14-Apr	Z	1.6	5.5	5.8	7.3	10.2	11.1	4.9	1.5	1.1	1.0	0.7	0.8	0.6	0.8	1.0	0.7	2.3	1.7	5.0	7.1	6.2	3.8	5.2	3.7	11.1
15-Apr	4.8	Z	3.2	6.7	16.0	8.5	4.8	2.0	2.6	2.5	1.5	1.0	1.1	1.3	1.1	1.2	1.7	2.5	3.3	6.9	3.9	0.9	0.7	0.8	3.4	16.0
16-Apr	0.7	1.0	Z	7.4	12.4	21.6	7.6	2.3	1.1	0.9	1.0	0.8	1.2	0.9	0.8	0.8	1.2	1.5	1.5	2.2	1.6	1.1	0.5	0.5	3.1	21.6
17-Apr	0.6	1.8	1.2	Z	2.8	3.7	1.7	1.1	1.1	0.8	0.9	0.8	0.7	1.0	1.3	1.6	1.5	2.0	1.5	1.7	1.0	1.2	0.6	0.5	1.4	3.7
18-Apr	0.5	0.8	0.6	0.9	Z	3.6	2.2	2.5	1.7	1.7	1.5	1.5	1.2	1.3	1.2	2.3	2.6	5.3	3.3	3.3	2.7	4.0	9.4	4.6	2.6	9.4
19-Apr	3.3	1.3	2.6	1.3	1.7	Z	2.3	2.4	2.1	2.0	2.2	2.0	1.7	1.5	0.8	1.0	1.6	2.1	3.2	7.9	13.3	8.4	6.4	3.1	3.2	13.3
20-Apr	Z	10.8	11.9	9.1	8.1	10.0	7.6	3.6	1.1	0.8	0.6	0.4	0.2	0.3	0.3	0.8	0.7	1.2	1.4	3.4	5.3	5.7	8.0	5.7	4.2	11.9
21-Apr	4.1	Z	5.0	3.4	3.0	4.1	6.1	3.1	3.1	1.3	1.1	1.1	0.7	0.5	0.3	0.6	1.0	1.7	3.6	10.5	31.0	7.9	8.7	5.2	4.7	31.0
22-Apr	2.6	3.1	Z	18.9	29.4	27.5	14.2	2.0	0.5	0.6	0.4	0.4	0.4	0.7	0.5	1.0	0.8	1.0	1.6	3.2	3.5	4.2	10.0	3.5	5.7	29.4
23-Apr	9.0	5.3	5.6	Z	5.6	4.9	3.7	5.1	4.5	3.2	1.2	1.0	1.1	1.2	1.1	0.8	0.9	1.3	1.7	3.2	2.0	1.7	0.9	1.0	2.9	9.0
24-Apr	2.6	2.6	2.2	1.8	Z	9.7	12.1	9.1	4.0	1.7	5.0	3.1	0.8	0.6	0.6	2.4	8.7	16.5	13.4	11.3	9.1	11.2	14.6	17.6	7.0	17.6
25-Apr	14.5	12.4	9.8	5.0	6.3	Z	7.5	5.9	2.6	1.7	1.5	1.8	0.8	0.1	1.2	1.6	1.4	0.7	0.1	0.2	0.2	0.3	0.2	0.2	3.3	14.5
26-Apr	Z	0.2	0.2	0.1	0.0	0.0	0.3	0.1	0.1	0.1	0.0	0.0	0.2	0.2	1.6	2.8	4.6	4.7	7.8	7.7	3.7	10.6	7.7	4.1	2.5	10.6
27-Apr	3.4	Z	18.7	23.1	15.3	12.9	11.1	7.2	7.9	4.8	2.4	1.1	1.1	0.9	0.7	0.5	0.2	0.9	1.6	6.1	4.8	2.5	1.5	1.3	5.7	23.1
28-Apr	0.6	0.7	Z	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.3	1.4	2.5	3.8	4.8	6.4	4.2	1.8	1.2	6.4
29-Apr	2.1	4.4	4.0	Z	14.4	7.2	18.2	19.5	6.4	1.6	1.5	0.8	0.6	0.3	0.4	0.7	1.1	1.3	2.3	2.3	2.1	1.9	1.2	1.9	4.2	19.5
30-Apr	1.6	1.5	1.3	1.7	Z	2.6	1.5	1.3	1.6	2.0	1.8	1.1	0.9	0.9	1.0	0.9	1.5	1.4	1.4	2.1	2.1	0.8	0.4	0.6	1.4	2.6

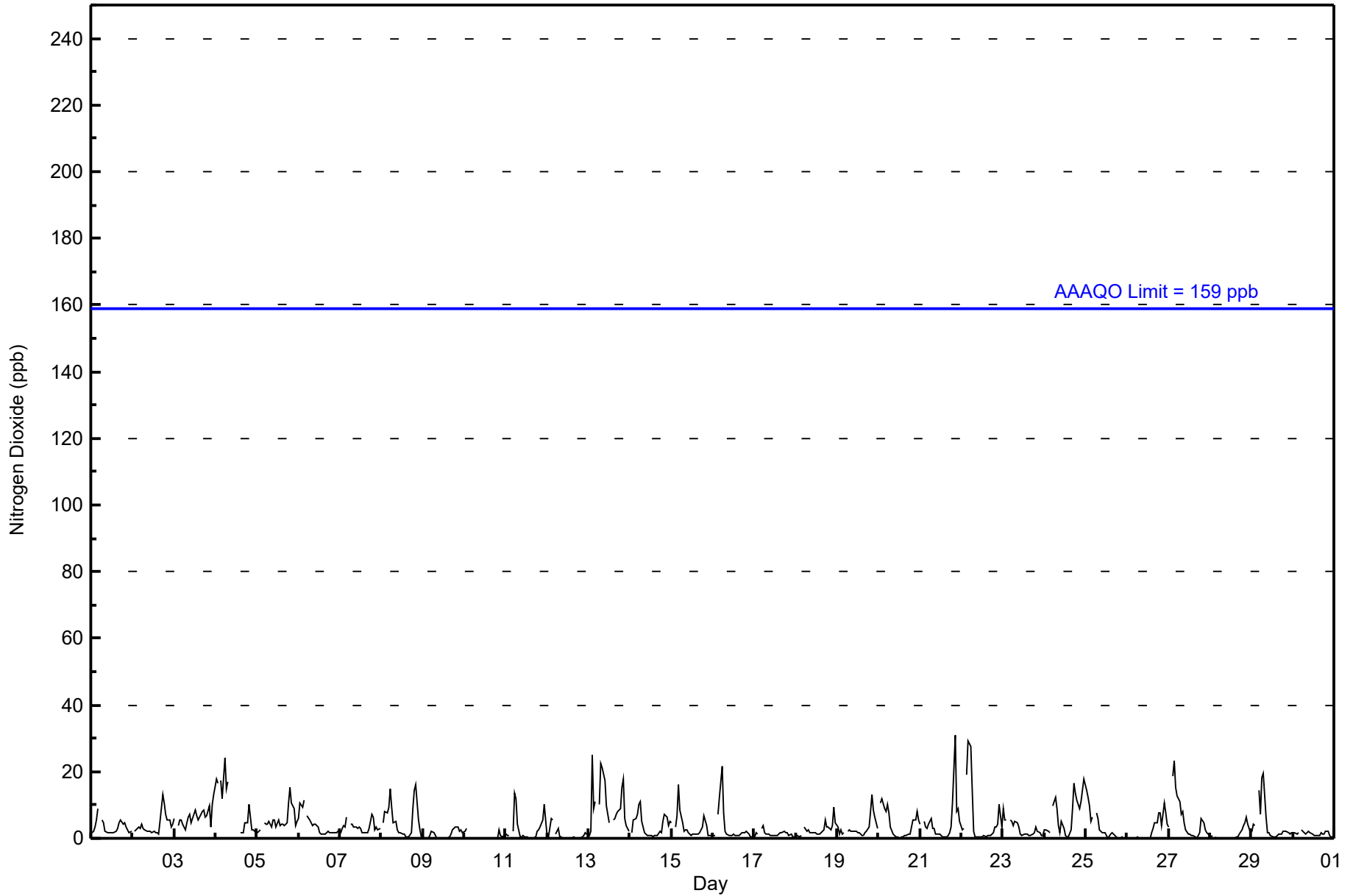
3.6	3.8	5.5	6.2	7.4	8.1	6.3	4.9	3.1	2.5	2.0	1.7	1.4	1.1	1.3	1.6	2.2	3.4	4.0	5.6	6.1	4.2	4.2	3.4	Diurnal Average	
17.8	16.6	25.0	23.1	29.4	27.5	18.2	22.4	21.2	17.2	9.6	7.4	8.4	6.8	5.4	7.4	8.7	16.5	13.4	15.4	31.0	11.2	14.6	17.6	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	674	98.68	98.68
21 - 40	9	1.32	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	23	20	22	19	66	151	92	47	51	11	32	37	25	19	25	34	674
21 - 40	1	0	2	0	0	2	1	0	2	0	0	0	0	0	1	0	9
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
Totals	24	20	24	19	66	153	93	47	53	11	32	37	25	19	26	34	683

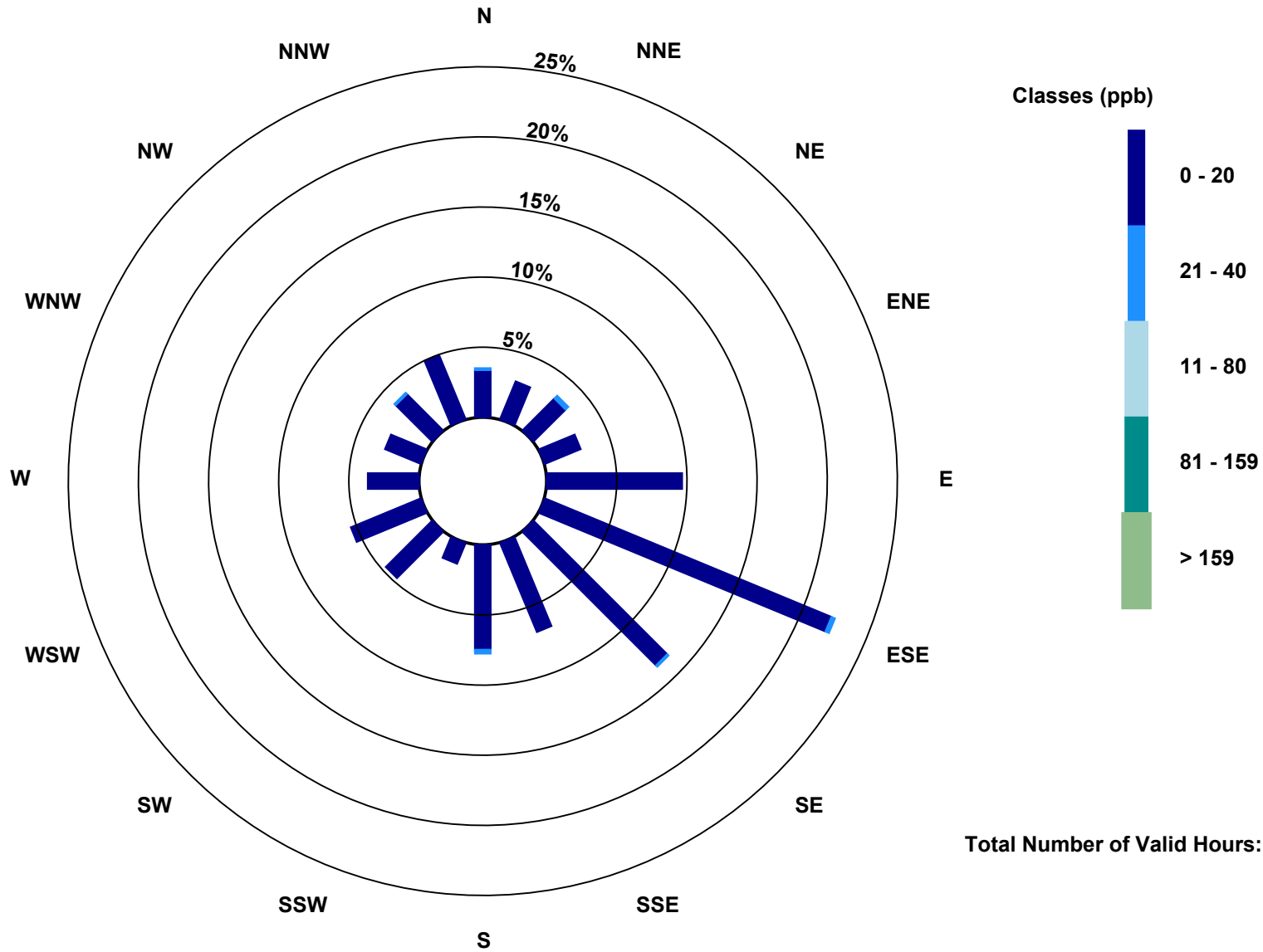
Total Number of Valid Hours: 683

Total Number of Hours: 720

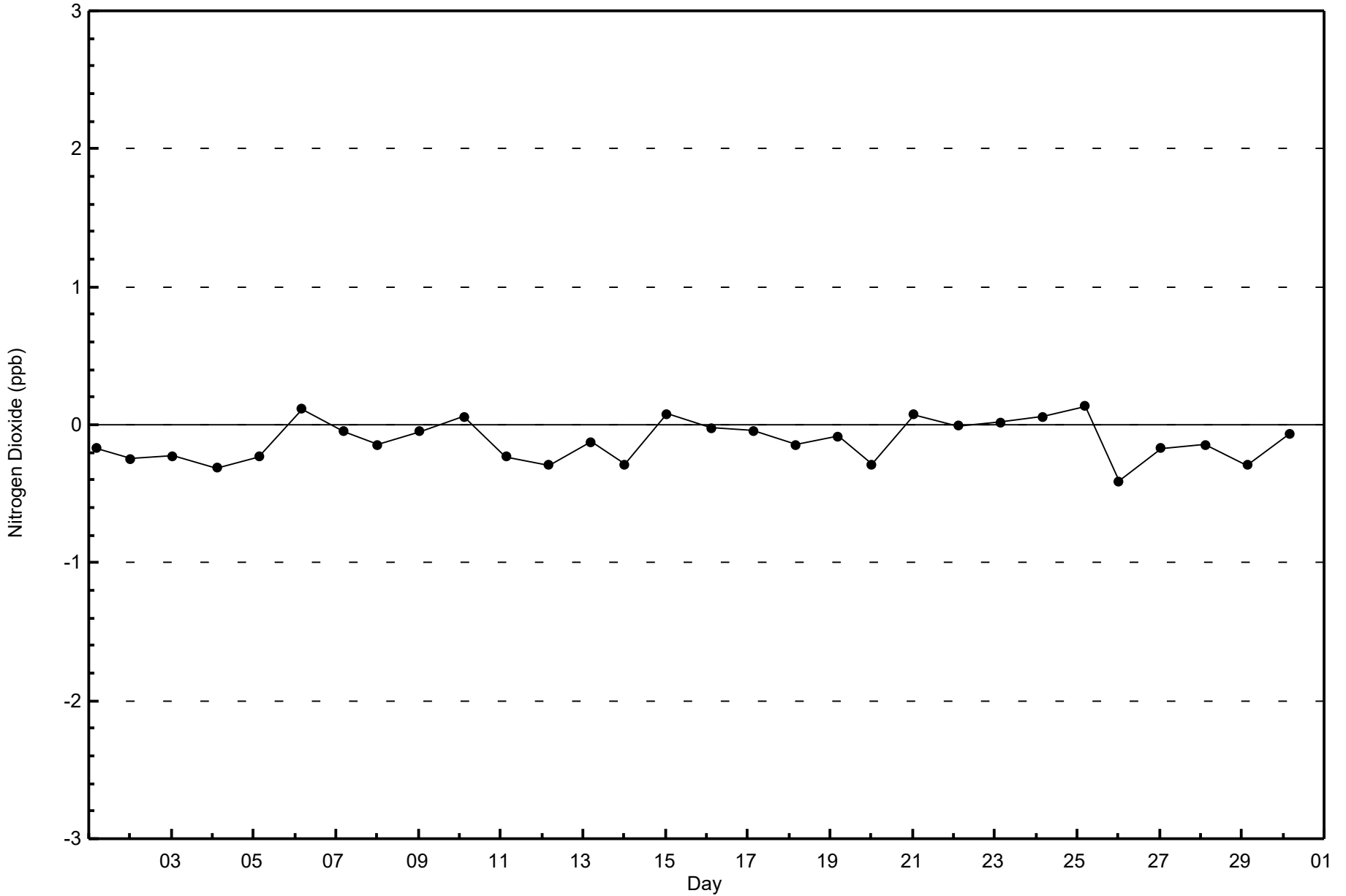


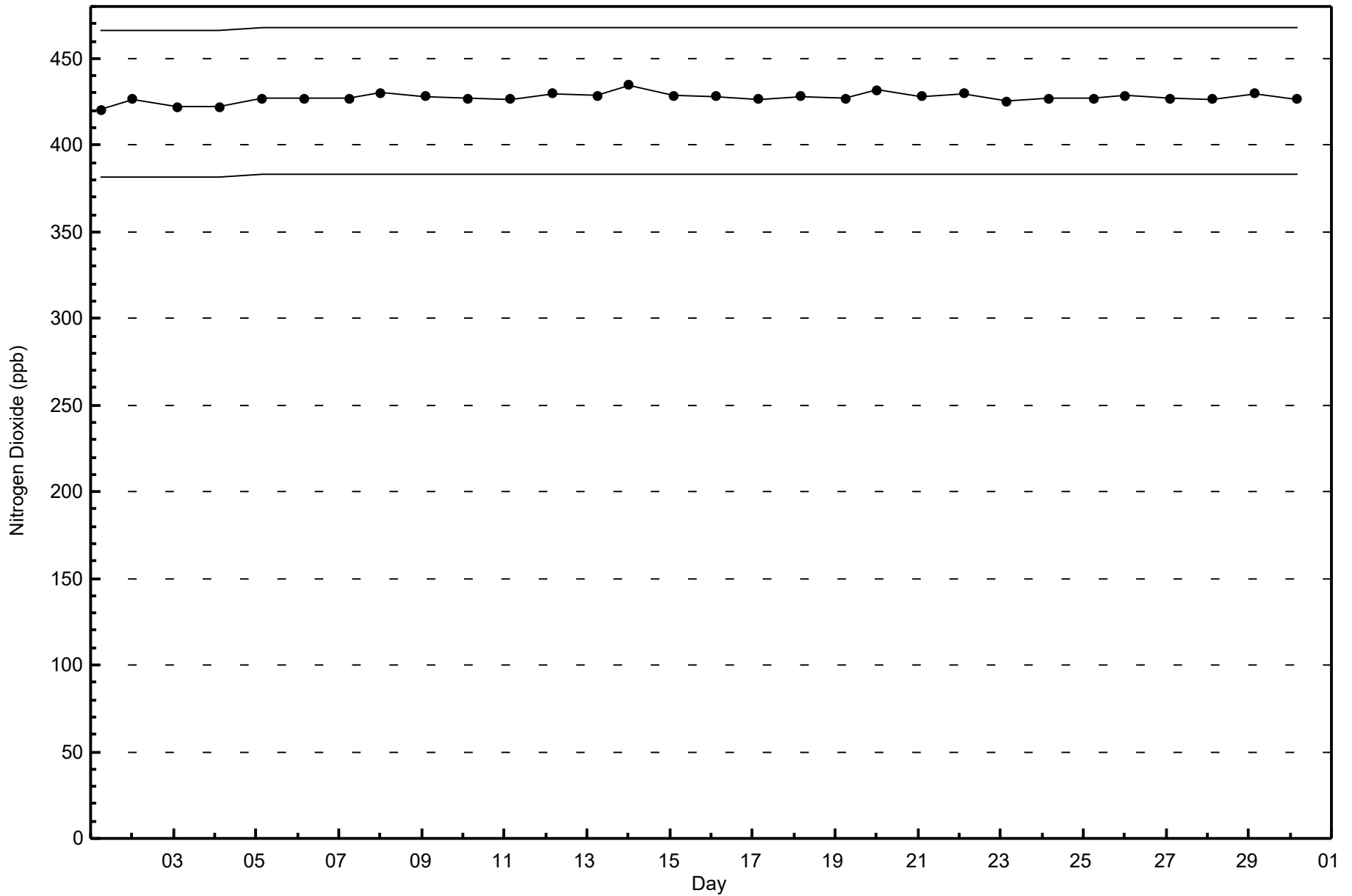
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes



Total Number of Valid Hours: 683







Wood Buffalo Environmental Association
Summary of Hour Averages

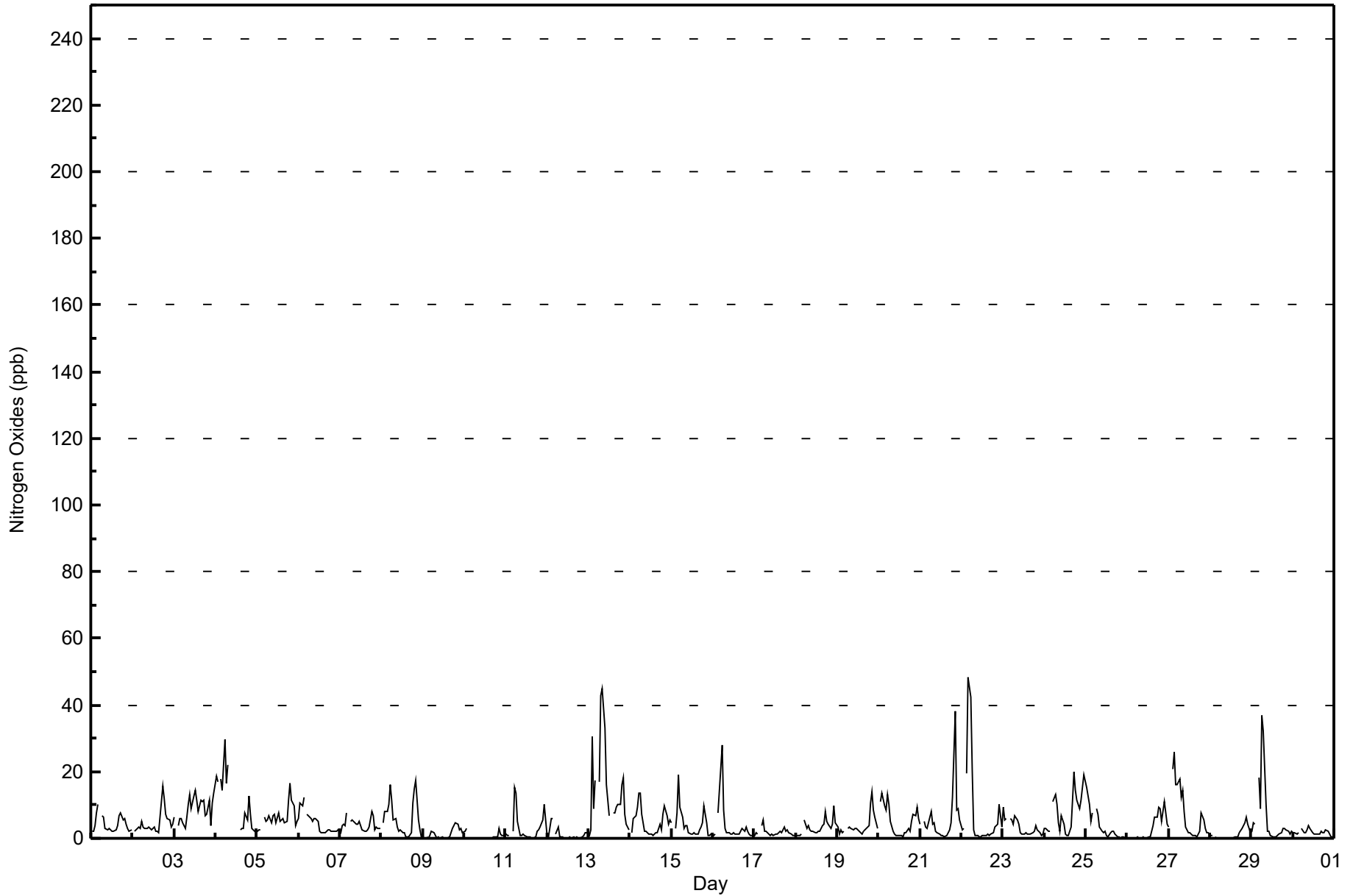
Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - April 2023

Maximum Value: 48.3 ppb on Apr 22 05:00																					Maximum Daily Average: 14.8 ppb on Apr 13					Hours in Service: 720	
Minimum Value: 0.0 ppb on Apr 10 08:00																					Minimum Daily Average: 0.6 ppb on Apr 10					Hours of Data: 683	
Maximum Diurnal Average: 10.1 ppb at hour 6																					Minimum Diurnal Average: 1.6 ppb at hour 14					Hours of Missing Data: 37	
Monthly Average: 4.77 ppb																					Percentiles: P ₁ = 0.0 P ₁₀ = 0.3 Q ₁ = 1.2 Median = 2.7 Q ₃ = 6.0 P ₉₀ = 11.3 P ₉₉ = 32.3					Hours of Calibration: 36	
																					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-Apr	2.0	2.1	3.7	7.5	10.1	Z	6.7	6.2	3.0	2.6	2.9	2.4	2.2	2.2	2.7	3.9	6.7	7.6	5.4	5.8	4.1	3.0	2.2	2.5	4.2	10.1	
2-Apr	Z	2.1	2.6	3.6	3.0	4.9	3.5	3.2	3.1	3.2	2.9	2.4	3.2	2.2	2.0	1.6	6.2	15.6	11.8	7.3	5.7	5.7	3.4	4.4	4.5	15.6	
3-Apr	6.2	Z	3.8	5.8	5.8	4.5	3.0	6.3	10.3	13.0	8.7	12.7	14.6	11.6	8.2	11.2	11.4	6.6	7.1	11.4	3.7	10.7	13.6	8.8	14.6		
4-Apr	18.7	16.9	Z	17.9	14.2	29.6	16.6	22.1	C	C	C	C	C	C	2.4	2.9	2.9	7.6	5.5	12.9	7.2	2.8	2.7	1.7	--	29.6	
5-Apr	2.0	2.4	2.7	Z	6.5	5.0	5.6	6.9	4.6	6.8	7.4	4.8	7.4	4.9	5.4	6.0	4.7	5.0	11.3	16.3	11.3	9.7	4.0	5.2	6.3	16.3	
6-Apr	5.9	10.7	9.6	12.2	Z	7.3	6.3	6.1	5.2	6.0	6.0	4.9	2.3	1.7	1.6	1.7	2.1	2.7	2.5	2.2	2.2	2.0	2.1	2.3	4.6	12.2	
7-Apr	1.8	3.6	4.0	3.8	7.6	Z	5.0	5.6	4.9	4.4	4.2	5.0	3.9	2.6	2.0	2.3	2.4	3.3	7.9	6.8	2.7	3.6	2.8	3.1	4.1	7.9	
8-Apr	Z	4.8	8.2	8.1	10.0	16.1	11.3	5.3	5.8	3.3	2.0	2.5	1.8	1.5	0.4	0.3	0.6	1.8	10.4	14.8	17.3	5.4	2.5	0.6	5.9	17.3	
9-Apr	0.3	Z	0.2	0.1	0.7	2.2	1.8	0.9	0.2	0.3	0.0	0.2	0.1	0.0	0.2	0.5	1.6	2.9	3.8	4.5	4.1	2.6	3.0	1.6	1.4	4.5	
10-Apr	2.1	3.1	Z	0.2	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	0.3	0.6	0.5	2.8	1.2	0.7	1.0	0.6	3.1	
11-Apr	1.2	0.9	0.7	Z	2.3	15.1	13.4	5.3	0.7	0.7	1.1	1.0	0.3	0.3	0.3	0.1	0.1	0.3	2.2	2.6	3.5	5.6	10.1	5.6	3.2	15.1	
12-Apr	0.7	0.5	6.0	5.7	Z	1.3	3.5	0.4	0.6	0.3	0.1	0.0	0.0	0.3	0.2	0.5	0.0	0.2	0.0	0.0	0.3	0.9	1.8	1.6	1.1	6.0	
13-Apr	0.9	2.4	30.7	9.1	17.2	Z	16.9	42.9	44.8	33.0	16.0	11.3	6.8	M	7.5	7.8	9.5	10.3	10.3	15.9	18.4	7.3	4.4	2.4	14.8	44.8	
14-Apr	Z	1.8	5.8	6.7	9.2	13.5	13.5	7.2	2.3	1.9	1.7	1.2	1.2	1.0	1.2	1.7	1.8	4.3	2.4	7.1	9.9	6.8	4.3	5.4	4.9	13.5	
15-Apr	4.8	Z	3.2	7.6	18.9	9.4	6.2	3.0	3.9	3.6	1.9	1.2	1.4	1.7	1.3	1.4	2.4	3.4	4.6	9.8	4.8	1.0	0.7	1.1	4.2	18.9	
16-Apr	0.9	1.2	Z	7.6	14.3	28.0	8.7	3.2	1.6	1.5	1.4	1.2	1.7	1.4	1.1	1.4	2.0	3.1	2.2	3.3	2.2	1.5	0.7	0.6	3.9	28.0	
17-Apr	0.6	1.9	1.3	Z	3.6	5.5	2.3	2.2	1.4	1.0	1.1	1.0	1.1	1.3	1.7	2.1	1.9	3.5	2.1	2.7	1.6	1.4	0.7	0.6	1.8	5.5	
18-Apr	0.7	1.0	0.7	1.1	Z	5.4	3.1	4.0	2.5	2.1	2.1	1.9	1.6	2.0	2.1	3.7	4.2	8.2	5.2	4.1	2.9	4.1	9.6	4.8	3.3	9.6	
19-Apr	3.4	1.4	2.7	1.6	2.2	Z	2.9	3.2	3.1	2.5	3.0	3.0	2.5	2.3	1.2	2.2	2.6	2.8	4.0	10.5	14.1	8.6	6.4	3.1	3.9	14.1	
20-Apr	Z	11.1	13.6	9.7	8.5	13.1	10.3	5.2	1.9	1.3	0.9	0.8	0.7	0.8	0.6	1.5	1.7	2.9	2.2	4.9	7.3	6.7	9.2	5.8	5.2	13.6	
21-Apr	4.2	Z	5.1	3.4	3.0	4.6	8.2	4.3	4.5	2.1	1.7	1.5	1.0	0.8	0.4	0.9	1.5	2.7	4.6	12.2	38.1	8.3	8.9	5.4	5.5	38.1	
22-Apr	2.7	3.1	Z	19.7	48.3	42.4	20.5	2.6	0.7	0.8	0.5	0.6	0.8	1.0	0.8	1.1	1.0	1.2	1.8	3.5	3.7	4.3	10.1	3.5	7.6	48.3	
23-Apr	9.3	5.4	6.0	Z	6.1	5.3	4.2	6.6	5.7	4.3	1.7	1.4	1.4	1.7	1.3	1.3	1.1	1.6	2.1	3.9	2.4	1.9	0.9	1.1	3.3	9.3	
24-Apr	2.8	2.9	2.3	2.1	Z	10.9	13.1	10.3	4.6	2.2	6.7	4.4	1.2	0.9	0.9	3.3	11.3	20.0	14.6	11.6	9.1	11.5	15.5	18.9	7.9	20.0	
25-Apr	15.1	12.9	10.1	5.2	7.6	Z	9.0	7.1	3.4	2.2	1.8	2.2	1.1	0.2	1.6	2.2	2.0	1.1	0.2	0.3	0.2	0.5	0.2	0.2	3.8	15.1	
26-Apr	Z	0.2	0.2	0.1	0.1	0.1	0.5	0.1	0.2	0.3	0.1	0.1	0.3	0.3	2.2	3.7	6.3	6.1	9.4	8.7	4.9	10.9	7.8	4.2	2.9	10.9	
27-Apr	3.5	Z	20.8	25.9	15.9	16.0	17.9	12.3	14.3	7.9	3.4	1.6	1.7	1.2	1.0	0.7	0.4	1.4	2.0	7.6	5.5	2.8	1.8	1.5	7.3	25.9	
28-Apr	0.8	0.8	Z	0.3	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.4	0.4	1.7	2.9	4.0	4.8	6.4	4.2	1.8	1.3	6.4	
29-Apr	2.1	4.5	4.1	Z	18.3	9.1	36.8	32.2	10.2	2.0	2.0	0.9	0.6	0.4	0.5	0.8	1.5	1.8	2.9	2.8	2.4	2.2	1.3	2.1	6.2	36.8	
30-Apr	1.6	1.6	1.3	1.8	Z	3.1	1.8	1.8	2.3	3.8	2.8	1.7	1.1	1.1	1.2	1.3	2.0	1.9	1.6	2.5	2.3	1.1	0.4	0.6	1.8	3.8	
																								Diurnal Average			
																								Diurnal Maximum			
																								3.8 4.0 6.0 6.7 9.3 10.1 8.4 7.2 5.0 3.9 2.9 2.5 2.1 1.6 1.7 2.3 3.1 4.6 4.8 6.5 6.9 4.4 4.4 3.5			
																								18.7 16.9 30.7 25.9 48.3 42.4 36.8 42.9 44.8 33.0 16.0 12.7 14.6 11.6 8.2 11.2 11.3 20.0 14.6 16.3 38.1 11.5 15.5 18.9			
																								Z - zerospan C - Calibration M - Maintenance			



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	668	97.80	97.80
21 - 40	11	1.61	99.41
41 - 80	4	0.59	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	23	19	21	18	66	151	91	47	50	11	32	37	25	19	25	33	668
21 - 40	0	1	2	1	0	2	2	0	1	0	0	0	0	0	1	1	11
11 - 80	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	4
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
Totals	24	20	24	19	66	153	93	47	53	11	32	37	25	19	26	34	683

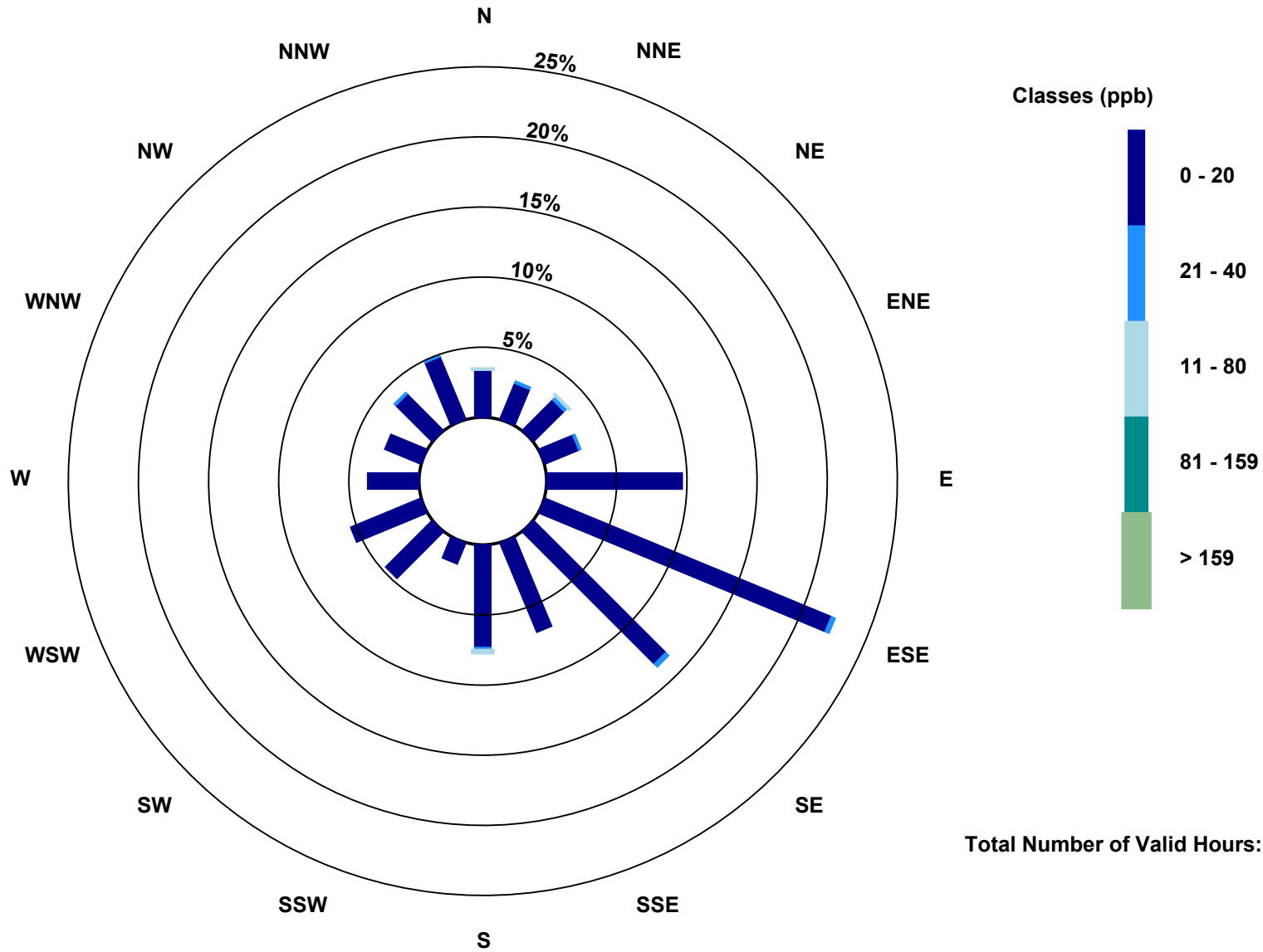
Total Number of Valid Hours: 683

Total Number of Hours: 720

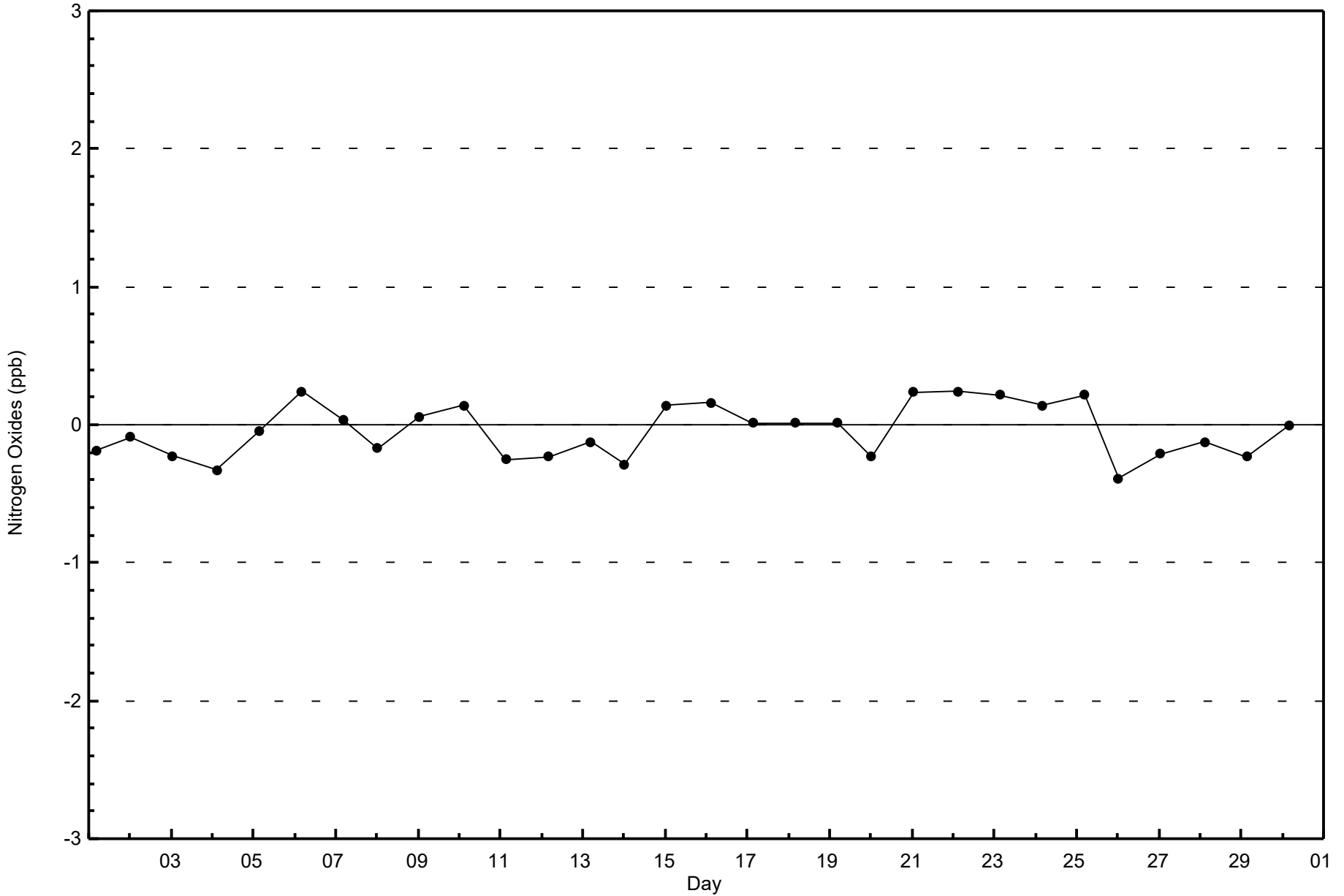


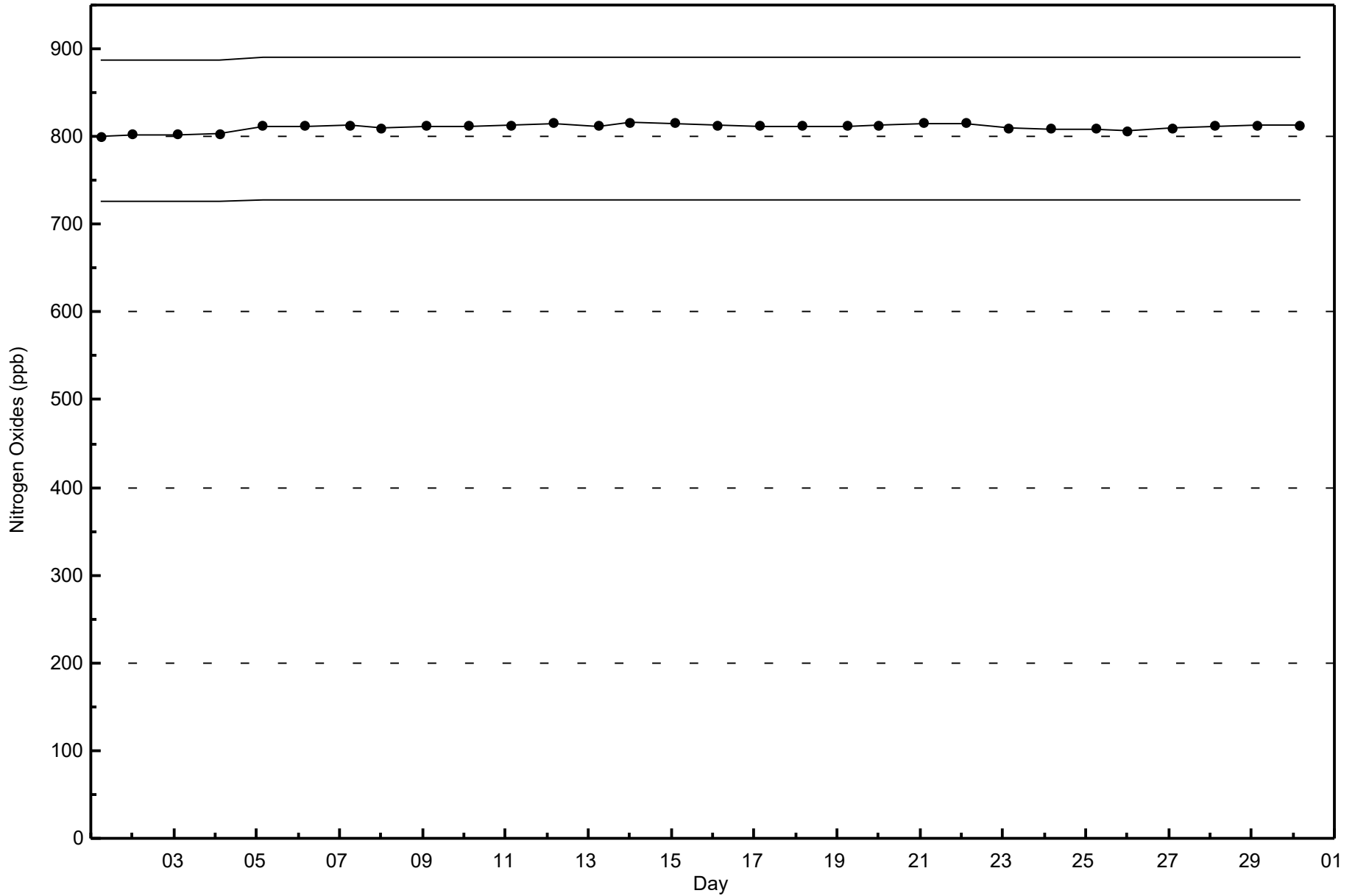
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Patricia McInnes



Total Number of Valid Hours: 683

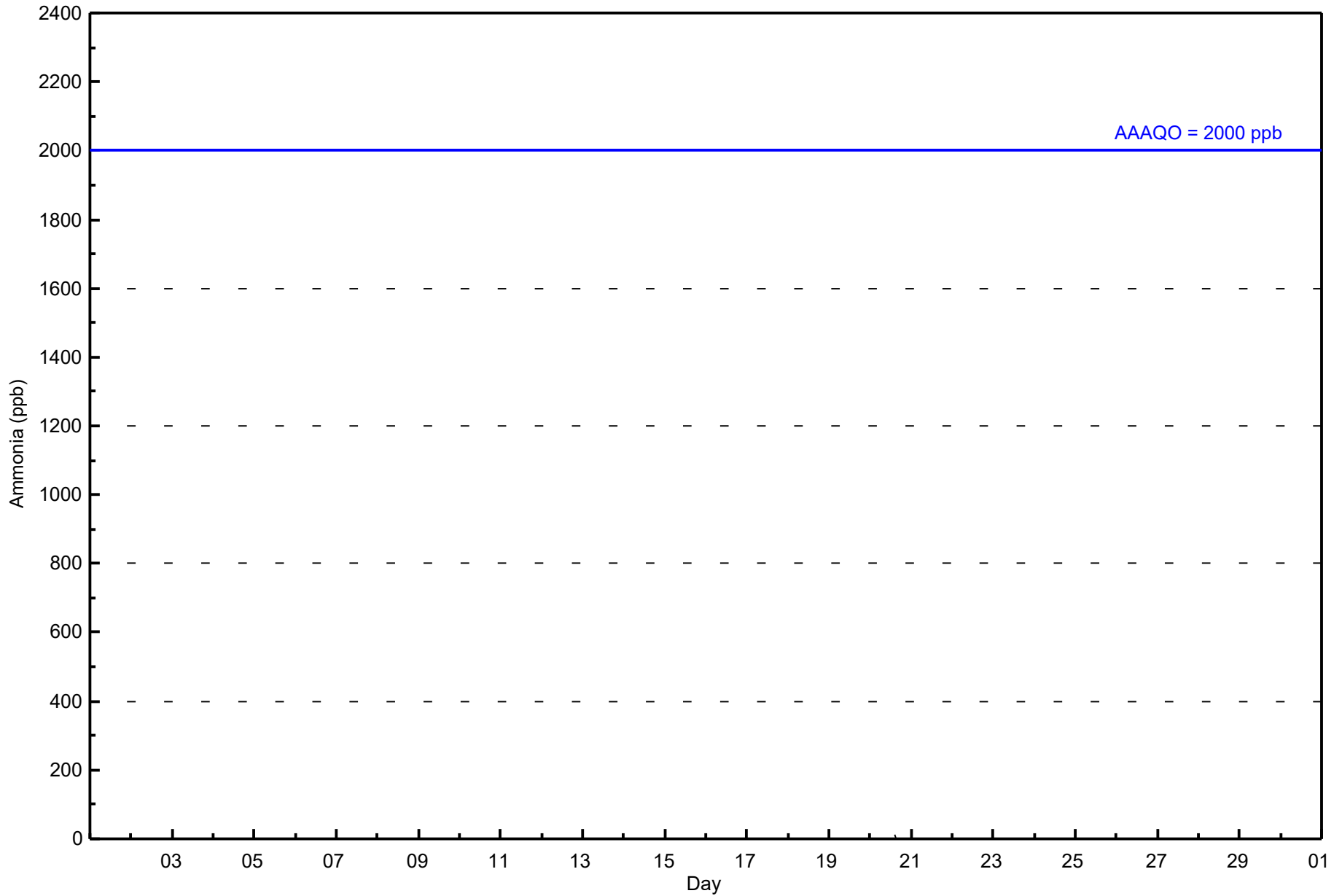






Wood Buffalo Environmental Association
Hourly Averages

Ammonia (NH₃) - ppb
Patricia McInnes - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ammonia (NH₃) - ppb
Patricia McInnes - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	618	99.84	99.84
6 - 10	0	0.00	99.84
11 - 15	1	0.16	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: 619

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ammonia (NH₃) - ppb
Patricia McInnes - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	24	18	21	16	60	140	86	44	50	11	24	32	24	15	22	31	618
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	1	0	0	0	0	0	0	0	0	0	0	1
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
Totals	24	18	21	16	60	141	86	44	50	11	24	32	24	15	22	31	619

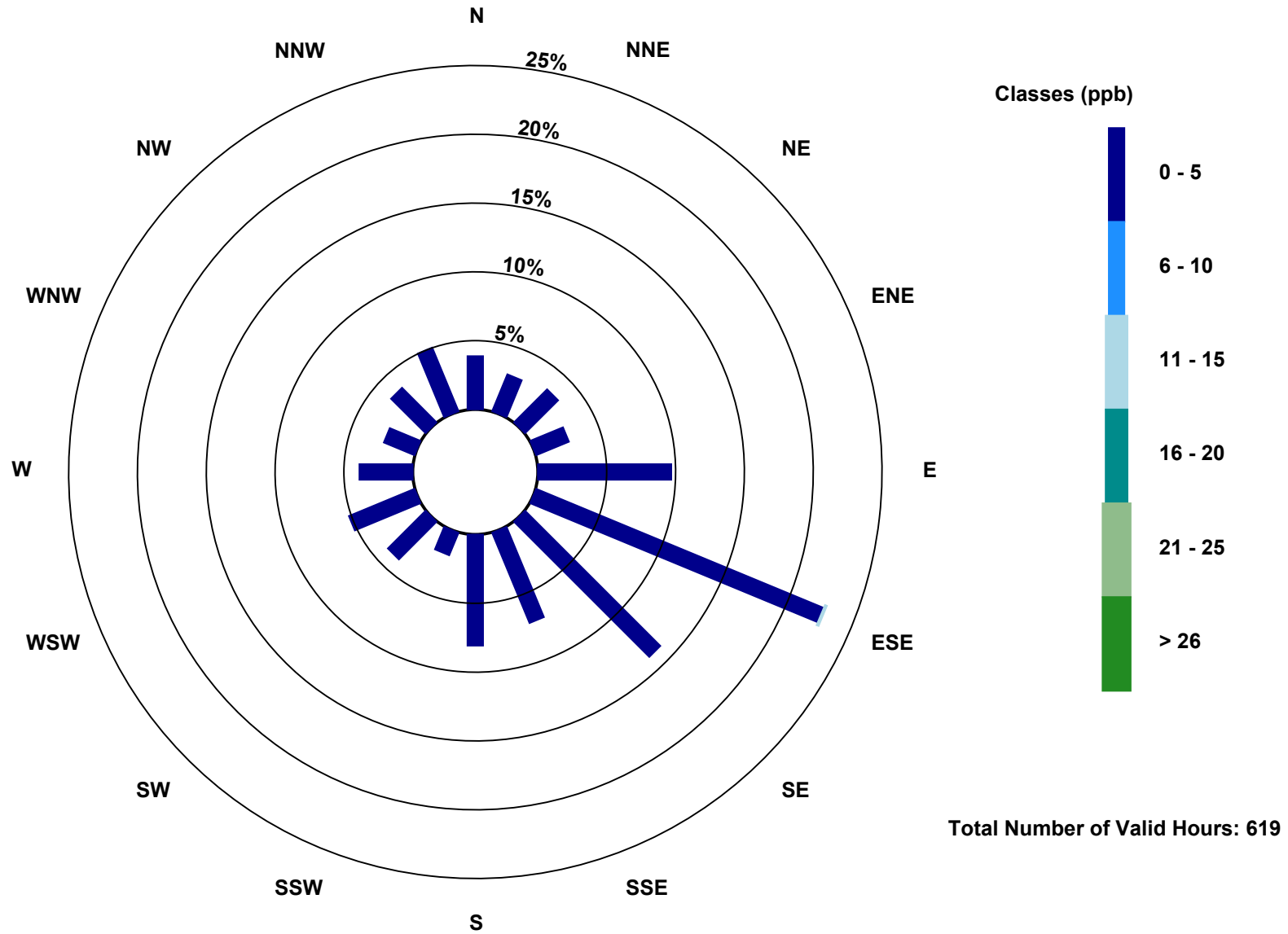
Total Number of Valid Hours: 619

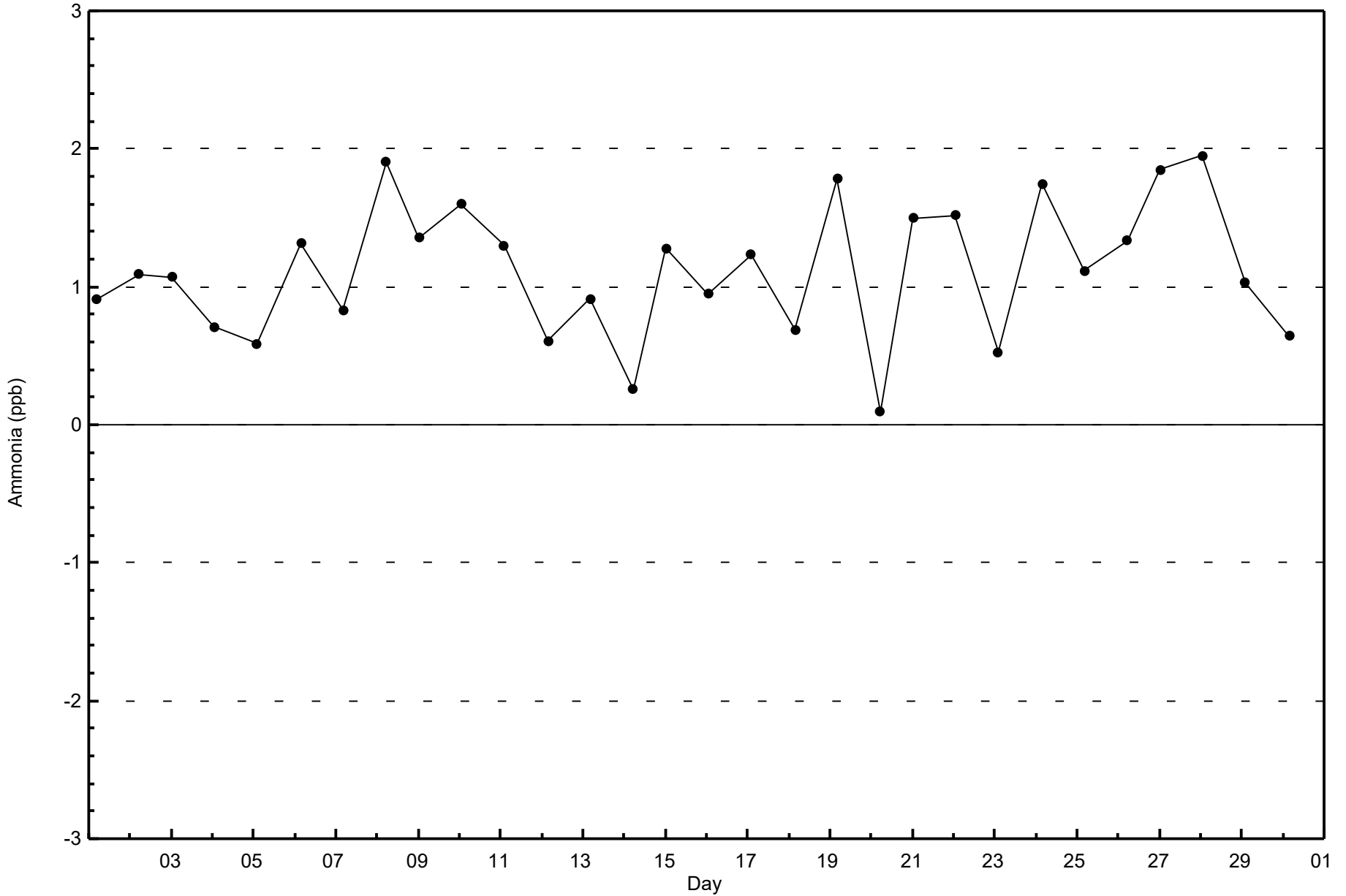
Total Number of Hours: 720

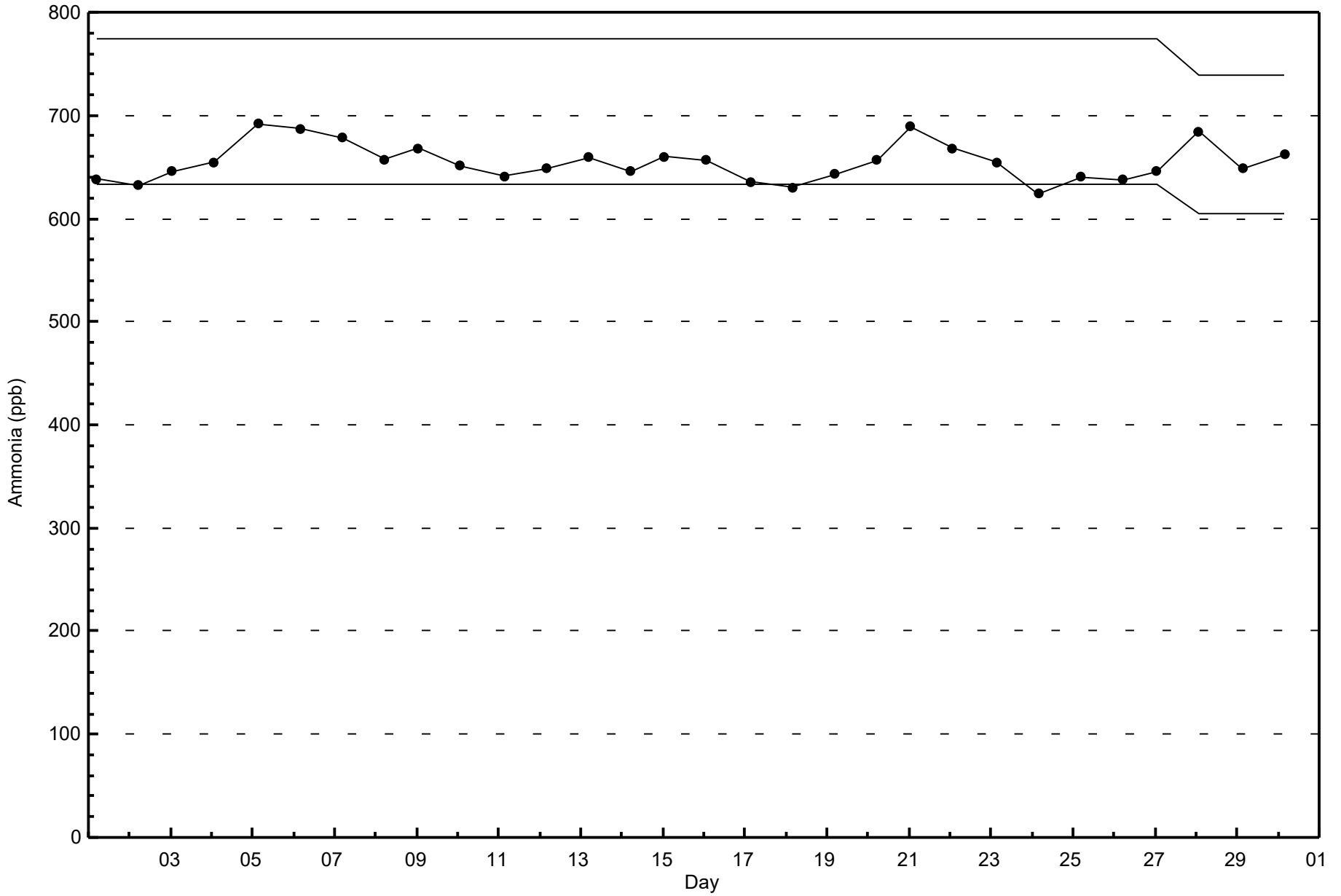


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ammonia (NH₃) - ppb
Patricia McInnes









Summary of Hour Averages

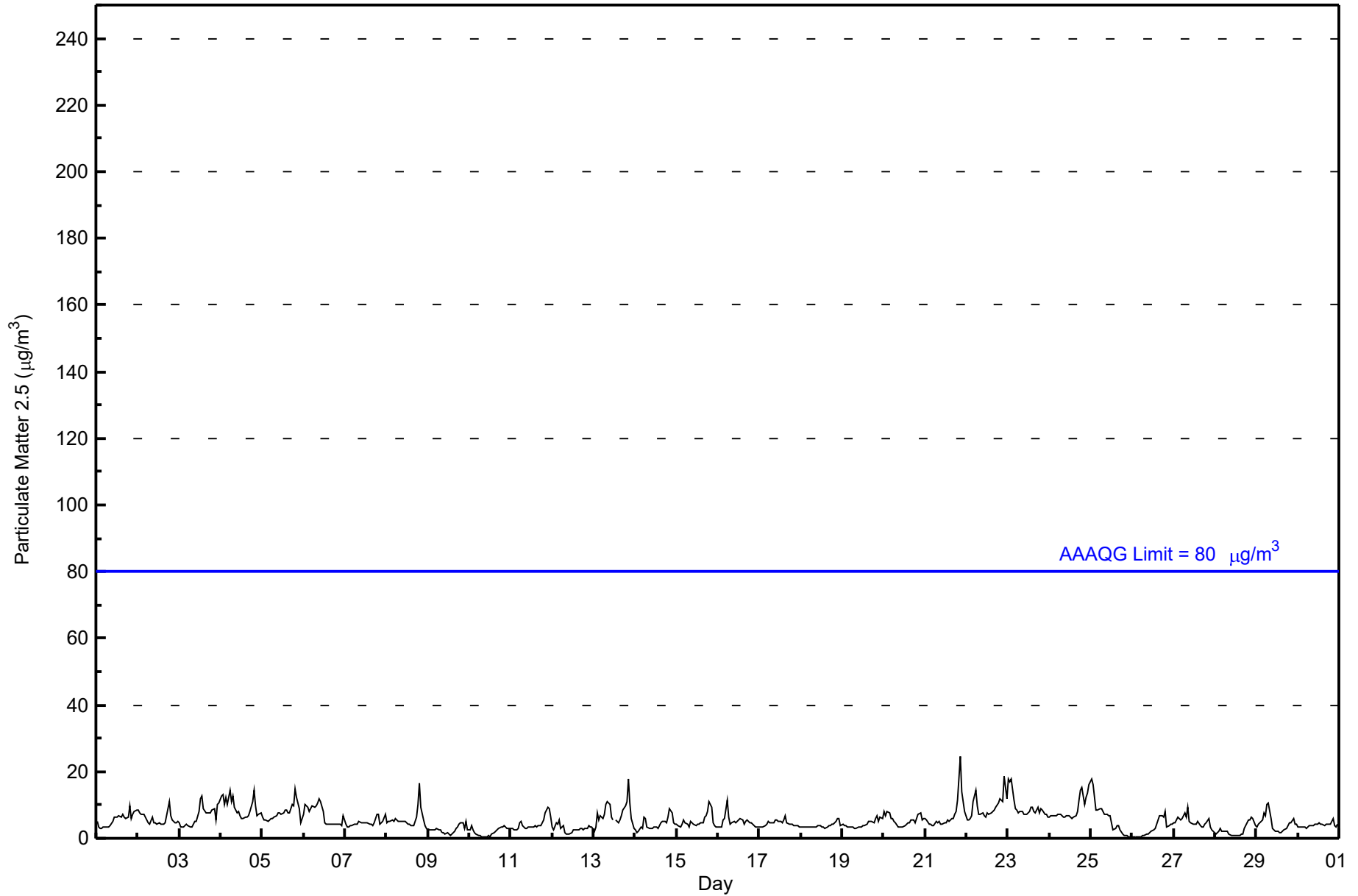
Patricia McInnes - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 24.4 µg/m ³ on Apr 21 21:00	Maximum Daily Average: 9.3 µg/m ³ on Apr 23		Hours of Data:	719
Minimum Value: 0.3 µg/m ³ on Apr 26 02:00	Minimum Daily Average: 2.0 µg/m ³ on Apr 10		Hours of Missing Data:	1
Maximum Diurnal Average: 7.6 µg/m ³ at hour 20	Minimum Diurnal Average: 4.5 µg/m ³ at hour 12		Hours of Calibration:	1
Monthly Average: 5.42 µg/m ³	Percentiles: P ₁ = 0.5 P ₁₀ = 2.4 Q ₁ = 3.5 Median = 4.7 Q ₃ = 6.8 P ₉₀ = 9.3 P ₉₉ = 16.6		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-Apr	4.9	3.3	3.0	3.1	3.3	3.4	3.5	3.5	4.0	5.0	6.5	6.5	6.2	6.8	6.3	7.1	6.5	5.8	6.2	9.5	6.1	7.0	7.9	8.3	5.6	9.5
2-Apr	8.4	7.6	7.3	7.2	6.4	5.7	4.9	4.3	6.4	4.6	4.5	4.3	4.5	4.4	4.3	4.2	4.8	8.8	11.2	6.6	5.3	4.7	4.8	5.1	5.8	11.2
3-Apr	4.6	3.5	3.6	3.9	4.0	3.8	3.3	3.5	4.1	4.9	4.9	8.0	11.7	12.5	9.0	7.8	7.4	7.7	7.7	8.3	9.0	5.5	10.2	10.8	6.7	12.5
4-Apr	12.6	13.1	10.3	12.1	10.0	14.5	10.8	12.6	9.3	7.4	8.0	6.6	6.0	6.1	6.3	6.3	6.7	7.9	10.9	14.6	9.6	6.9	7.3	7.5	9.3	14.6
5-Apr	6.5	5.6	5.3	5.2	5.7	5.7	5.9	6.3	6.8	7.7	7.7	7.0	7.7	8.4	8.5	7.6	7.8	10.2	9.9	15.0	12.4	9.0	4.8	6.1	7.6	15.0
6-Apr	7.1	10.2	9.4	8.1	8.7	9.6	9.2	9.8	10.4	11.8	11.1	8.2	4.8	4.1	4.1	4.1	4.2	4.1	4.4	4.1	4.1	4.1	3.9	6.8	6.9	11.8
7-Apr	4.3	3.5	3.4	3.6	3.9	4.2	4.2	4.4	4.9	4.8	4.8	4.8	4.8	4.7	4.3	4.4	4.0	4.5	7.1	7.3	4.3	4.5	5.1	7.2	4.7	7.3
8-Apr	4.8	5.0	5.1	5.3	5.2	5.7	5.3	5.1	5.2	5.1	5.0	5.1	4.3	4.3	3.8	3.7	3.9	6.4	10.0	16.6	9.2	5.5	3.9	2.9	5.7	16.6
9-Apr	2.6	2.5	2.6	2.6	2.7	2.8	2.7	2.4	1.7	1.8	1.3	1.5	1.2	1.0	1.4	2.1	3.0	3.4	4.2	4.6	4.6	3.0	5.1	2.7	2.7	5.1
10-Apr	2.5	3.7	2.4	1.6	1.1	0.8	0.7	0.5	0.5	0.5	0.5	0.8	0.6	1.2	1.7	2.2	2.7	3.1	3.3	3.2	3.6	3.4	3.2	3.1	2.0	3.7
11-Apr	3.2	2.9	2.6	2.5	2.9	4.5	4.9	3.9	2.9	3.0	3.4	3.5	3.3	3.3	3.7	3.4	3.7	3.7	4.8	5.6	7.8	9.2	8.9	6.3	4.3	9.2
12-Apr	3.3	2.5	4.6	4.4	5.3	3.0	3.8	1.6	1.4	1.5	1.2	1.5	2.4	2.4	2.6	2.5	2.8	3.0	2.6	3.1	3.0	3.7	3.3	3.6	2.9	5.3
13-Apr	2.2	3.4	7.7	5.3	6.8	6.1	7.1	10.3	11.1	10.1	6.3	5.4	C	5.4	4.6	5.3	6.8	8.4	9.8	11.0	17.6	10.8	6.0	3.0	7.4	17.6
14-Apr	2.5	1.7	1.9	3.2	3.1	6.3	5.9	3.4	3.0	2.9	2.9	3.4	3.2	3.1	3.7	4.7	5.2	5.1	4.7	6.5	9.0	7.6	4.5	4.4	4.3	9.0
15-Apr	4.1	3.9	3.5	4.4	5.3	4.8	4.2	3.4	5.2	4.5	4.2	3.9	4.2	4.3	4.7	4.8	6.2	6.8	7.9	11.2	9.1	4.5	3.7	3.5	5.1	11.2
16-Apr	3.4	3.4	3.5	5.6	6.1	11.4	6.5	4.4	4.9	5.2	4.8	4.9	5.4	5.8	5.4	4.3	5.0	5.6	4.8	4.7	4.3	3.9	3.5	3.4	5.0	11.4
17-Apr	3.4	3.5	3.5	3.7	4.1	5.0	4.7	4.8	4.5	5.5	5.4	5.2	4.9	4.6	5.4	6.7	4.5	4.2	4.2	4.2	3.9	3.9	3.8	3.5	4.5	6.7
18-Apr	3.3	3.2	3.2	3.3	3.3	3.4	3.4	3.3	3.3	3.5	3.7	3.6	3.5	3.4	3.0	3.4	3.6	4.0	4.3	4.2	4.9	6.0	5.8	3.9	3.8	6.0
19-Apr	4.1	3.9	3.6	3.6	3.4	3.3	3.2	3.0	3.2	3.4	3.4	3.5	4.0	3.9	4.1	5.0	5.0	4.9	4.8	5.8	6.7	5.3	6.3	6.1	4.3	6.7
20-Apr	8.2	6.7	8.1	7.5	6.0	5.8	5.1	4.5	3.5	3.4	3.4	3.5	3.6	4.2	4.6	4.9	5.3	5.5	4.5	5.8	7.3	7.7	5.5	5.8	5.4	8.2
21-Apr	6.1	5.7	4.1	4.1	3.6	3.7	5.2	4.5	5.2	4.2	4.4	4.8	4.7	5.3	5.1	5.9	6.1	7.2	8.1	11.6	24.4	13.9	10.9	8.0	6.9	24.4
22-Apr	5.7	5.6	6.1	6.9	11.1	14.5	9.8	7.2	7.4	7.5	6.6	6.2	7.6	7.1	7.8	8.1	8.6	9.2	10.6	11.9	11.5	10.8	18.8	12.0	9.1	18.8
23-Apr	17.6	16.8	17.6	11.5	9.0	8.4	7.8	8.0	7.9	7.2	7.1	7.2	8.2	9.3	9.4	7.9	7.5	9.4	7.8	8.8	8.7	7.3	7.4	6.5	9.3	17.6
24-Apr	6.4	6.8	6.7	6.7	6.7	7.1	7.1	7.0	6.5	6.4	6.9	6.8	6.3	6.1	6.2	6.7	8.2	11.3	14.4	15.3	10.2	12.4	13.7	15.9	8.7	15.9
25-Apr	17.8	16.3	12.4	8.4	8.3	8.9	8.9	7.9	7.4	7.1	6.9	6.9	4.5	2.5	3.0	3.9	3.8	2.6	1.2	0.9	0.9	0.8	0.4	0.4	5.9	17.8
26-Apr	0.3	0.3	0.3	0.3	0.3	0.5	0.7	1.0	1.2	1.3	1.6	2.1	2.6	2.9	4.2	5.6	6.9	6.8	6.6	8.2	3.6	3.8	4.0	4.0	2.9	8.2
27-Apr	4.7	4.6	6.3	5.9	5.6	5.9	7.7	6.4	9.5	5.2	4.7	4.0	4.3	4.4	5.0	3.8	3.5	3.5	4.1	4.5	5.9	3.3	2.6	2.3	4.9	9.5
28-Apr	1.5	1.6	2.2	3.0	2.1	2.1	2.2	2.3	1.4	0.9	1.0	0.8	0.8	1.0	0.8	1.1	1.1	2.9	4.6	5.4	5.6	6.3	5.9	3.8	2.5	6.3
29-Apr	3.4	4.3	4.7	5.7	7.5	6.8	10.1	10.7	6.0	3.0	2.7	2.1	2.0	1.8	1.9	2.1	2.5	3.0	3.7	4.6	4.7	6.0	4.0	4.2	4.5	10.7
30-Apr	3.5	3.6	3.2	3.3	3.3	3.0	3.9	4.0	3.7	3.7	4.1	4.0	4.5	4.3	4.2	3.9	4.4	4.1	4.2	4.3	6.1	3.8	3.4	4.1	3.9	6.1

5.4	5.3	5.3	5.1	5.2	5.7	5.4	5.1	5.1	4.8	4.6	4.5	4.6	4.6	4.6	4.8	5.1	5.8	6.4	7.6	7.5	6.1	6.0	5.5	Diurnal Average	
17.8	16.8	17.6	12.1	11.1	14.5	10.8	12.6	11.1	11.8	11.1	8.2	11.7	12.5	9.4	8.1	8.6	11.3	14.4	16.6	24.4	13.9	18.8	15.9	Diurnal Maximum	

C - Calibration
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Patricia McInnes - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	443	61.61	61.61
6 - 15	266	37.00	98.61
16 - 25	10	1.39	100.00
26 - 80	0	0.00	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Patricia McInnes - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	14	4	10	12	48	97	46	21	31	9	25	38	26	17	19	26	443
6 - 15	11	15	15	8	23	58	51	26	21	6	7	2	2	3	7	11	266
16 - 25	0	1	0	0	0	2	5	0	2	0	0	0	0	0	0	0	10
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
Totals	25	20	25	20	71	157	102	47	54	15	32	40	28	20	26	37	719

Total Number of Valid Hours: 719

Total Number of Hours: 720

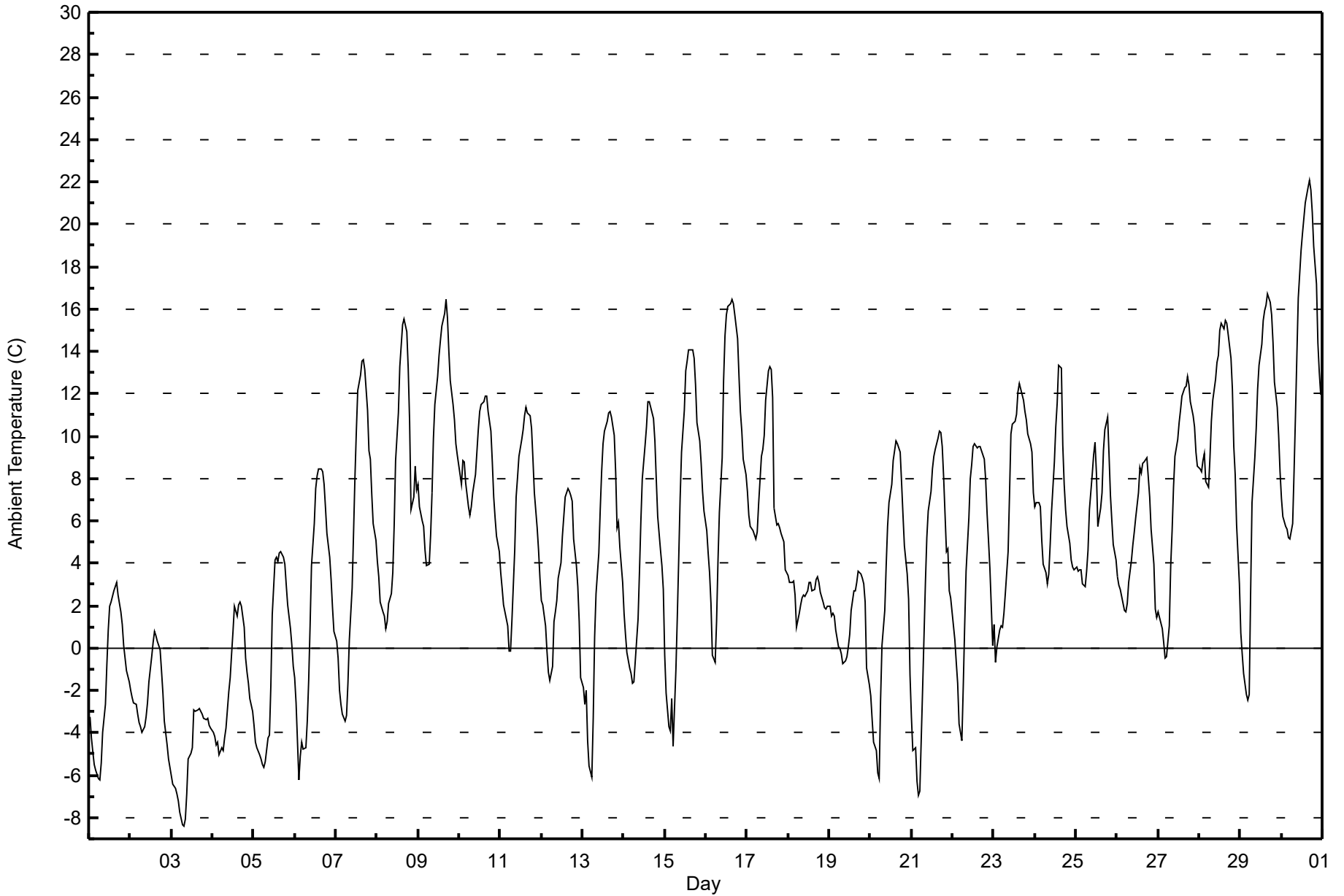


Maximum Value: 22.0 C on Apr 30 17:00		Maximum Daily Average: 13.8 C on Apr 30		Hours in Service: 720																						
Minimum Value: -8.4 C on Apr 3 08:00		Minimum Daily Average: -5.1 C on Apr 3		Hours of Data: 720																						
Maximum Diurnal Average: 9.9 C at hour 16		Minimum Diurnal Average: -1.0 C at hour 6		Hours of Missing Data: 0																						
Monthly Average: 4.80 C		Percentiles: P ₁ = -6.9 P ₁₀ = -3.4 Q ₁ = 0.5 Median = 4.6 Q ₃ = 9.2 P ₉₀ = 12.6 P ₉₉ = 18.9		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-Apr	-3.3	-4.2	-4.9	-5.5	-5.8	-6.2	-6.2	-5.4	-4.0	-2.6	-0.8	0.8	1.9	2.2	2.7	2.9	3.1	2.5	1.7	1.1	0.1	-0.5	-1.0	-1.6	-1.4	3.1
2-Apr	-2.0	-2.3	-2.6	-2.7	-3.1	-3.5	-3.7	-3.9	-3.7	-3.3	-2.6	-1.6	-0.4	0.3	0.8	0.6	0.3	0.0	-1.1	-2.1	-3.4	-4.6	-5.2	-5.6	-2.3	0.8
3-Apr	-6.0	-6.4	-6.6	-6.9	-7.2	-7.8	-8.3	-8.4	-8.1	-6.9	-5.2	-5.0	-4.7	-2.9	-3.0	-2.9	-2.9	-3.0	-3.1	-3.3	-3.4	-3.3	-3.6	-3.8	-5.1	-2.9
4-Apr	-4.0	-4.2	-4.6	-4.5	-5.1	-4.7	-4.9	-4.3	-3.8	-2.1	-1.4	-0.3	0.8	2.0	1.5	2.1	2.2	2.0	1.0	-0.4	-1.2	-1.7	-2.4	-3.0	-1.7	2.2
5-Apr	-3.6	-4.4	-4.7	-5.0	-5.2	-5.5	-5.6	-5.3	-4.3	-4.1	-1.8	1.6	4.2	4.3	4.1	4.5	4.5	4.3	3.9	3.0	2.0	0.9	0.1	-0.9	-0.5	4.5
6-Apr	-1.4	-2.6	-6.2	-5.1	-4.4	-4.8	-4.7	-3.4	-1.5	1.0	3.9	5.9	7.6	8.1	8.5	8.4	8.3	7.7	6.6	5.4	4.3	3.2	1.9	0.8	2.0	8.5
7-Apr	0.4	-0.4	-2.0	-2.6	-3.1	-3.4	-3.2	-1.7	0.4	2.8	5.4	8.0	10.3	12.1	12.9	13.5	13.6	13.2	11.2	9.3	8.9	7.3	5.9	5.1	5.2	13.6
8-Apr	4.1	3.4	2.2	1.7	1.5	0.9	1.2	2.1	2.6	3.6	5.8	8.9	11.1	13.3	14.3	15.2	15.5	14.9	13.2	10.7	6.6	7.2	8.6	7.5	7.3	15.5
9-Apr	7.7	6.7	6.0	5.8	4.6	3.9	4.0	5.3	7.3	9.9	11.5	12.8	13.8	14.5	15.2	15.8	16.4	15.6	14.0	12.6	11.5	10.8	9.7	9.1	10.2	16.4
10-Apr	8.2	7.8	8.9	8.8	7.8	6.7	6.3	6.7	7.3	8.2	9.2	10.3	11.2	11.5	11.6	11.9	11.9	11.2	10.3	8.8	7.1	6.1	5.3	4.5	8.6	11.9
11-Apr	3.6	2.8	2.0	1.4	1.0	-0.2	-0.1	1.3	4.6	7.1	8.0	9.0	9.9	10.3	11.0	11.3	11.1	10.9	10.4	8.9	7.3	5.7	4.6	3.3	6.1	11.3
12-Apr	2.3	2.1	1.0	-0.1	-1.1	-1.5	-0.8	1.2	1.7	2.2	3.3	4.0	5.3	6.2	7.1	7.6	7.4	7.2	7.0	5.2	3.9	2.9	1.2	-1.4	3.1	7.6
13-Apr	-1.9	-2.7	-2.0	-4.4	-5.6	-6.1	-3.3	0.5	2.6	4.5	6.5	8.3	9.6	10.2	10.7	11.1	11.1	10.9	10.0	8.3	5.7	6.0	4.7	3.1	4.1	11.1
14-Apr	1.6	0.7	-0.2	-0.9	-1.2	-1.7	-1.6	-0.6	1.4	3.6	6.0	8.0	9.6	10.4	11.6	11.6	11.4	10.9	9.8	7.9	6.2	4.6	3.9	2.8	4.8	11.6
15-Apr	-0.3	-2.2	-3.7	-3.9	-2.4	-4.6	-1.0	1.5	4.2	7.1	9.3	11.3	13.1	13.6	14.1	14.0	14.0	13.7	12.5	10.7	9.8	8.7	7.4	6.4	6.4	14.1
16-Apr	5.5	4.5	3.5	2.1	-0.3	-0.7	1.2	4.1	6.4	9.0	12.6	14.7	15.7	16.1	16.2	16.4	16.3	15.7	14.6	12.8	11.2	10.2	8.9	8.2	9.4	16.4
17-Apr	7.4	6.3	5.8	5.5	5.4	5.2	5.4	6.8	9.0	9.4	10.0	11.7	13.1	13.3	13.2	11.8	6.6	5.8	5.9	5.6	5.4	5.0	3.7	3.6	7.5	13.3
18-Apr	3.5	3.1	3.1	3.2	2.5	1.0	1.7	2.0	2.4	2.5	2.4	2.7	3.1	3.1	2.7	2.8	3.2	3.4	3.1	2.6	2.1	1.9	1.9	2.0	2.6	3.5
19-Apr	1.9	1.5	1.6	1.5	0.9	0.1	0.0	-0.2	-0.7	-0.6	-0.4	0.1	0.6	1.8	2.7	2.7	3.1	3.6	3.5	3.3	3.0	2.2	-1.0	-1.7	1.2	3.6
20-Apr	-2.3	-3.4	-4.4	-4.8	-5.9	-6.1	-2.5	0.1	1.7	3.9	5.7	6.9	7.7	8.9	9.3	9.8	9.7	9.2	7.8	6.3	4.8	3.5	2.3	-1.3	2.8	9.8
21-Apr	-3.2	-4.9	-4.7	-6.3	-6.9	-6.8	-1.9	0.6	3.1	5.2	6.5	7.4	8.4	9.1	9.4	9.9	10.3	10.1	9.5	8.1	4.6	4.7	2.7	2.4	3.2	10.3
22-Apr	1.1	0.4	-0.7	-1.7	-3.6	-4.3	-1.8	1.1	3.6	6.1	8.0	8.7	9.5	9.7	9.5	9.5	9.5	9.3	8.9	7.9	6.4	5.1	3.8	0.1	4.4	9.7
23-Apr	1.1	-0.7	0.0	0.8	1.0	1.0	1.6	2.6	4.6	7.3	10.1	10.5	10.7	11.0	12.1	12.5	12.2	11.7	11.2	10.8	10.1	9.6	9.2	7.3	7.0	12.5
24-Apr	6.7	6.9	6.8	6.7	5.1	4.0	3.6	3.1	3.5	4.9	6.5	8.8	10.5	11.6	13.3	13.2	9.5	7.7	6.5	5.7	4.9	4.2	3.9	3.7	6.7	13.3
25-Apr	3.8	3.6	3.7	3.7	3.1	2.9	3.6	4.6	6.5	8.2	9.1	9.7	8.3	5.7	6.6	7.3	9.3	10.3	10.9	9.1	7.2	6.0	4.9	4.1	6.3	10.9
26-Apr	3.3	3.0	2.8	2.1	1.8	1.7	2.1	3.1	4.1	4.9	5.4	6.2	7.3	8.5	8.3	8.7	8.8	9.0	8.1	7.1	5.6	4.0	1.8	1.5	5.0	9.0
27-Apr	1.7	1.4	0.9	0.3	-0.5	-0.4	1.1	3.9	5.5	7.6	9.0	9.8	10.6	11.2	11.9	12.3	12.4	12.8	12.4	11.6	11.0	10.5	9.2	8.6	7.3	12.8
28-Apr	8.5	8.3	8.8	9.2	7.9	7.6	9.0	10.7	11.7	12.7	13.5	13.8	15.0	15.3	15.0	15.5	15.3	14.8	13.7	12.2	9.5	8.2	5.8	3.0	11.0	15.5
29-Apr	0.7	-0.3	-1.2	-2.2	-2.5	-2.2	2.6	6.9	9.0	10.4	12.2	13.3	14.3	15.5	15.9	16.2	16.7	16.3	15.8	14.4	12.6	11.4	10.0	8.3	8.9	16.7
30-Apr	7.1	6.2	5.7	5.6	5.2	5.2	5.9	8.3	10.9	13.8	16.5	18.8	19.5	20.3	21.0	21.7	22.0	21.6	20.6	18.9	17.1	14.4	13.0	11.9	13.8	22.0
																								Diurnal Average		
																								Diurnal Maximum		



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Patricia McInnes - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Patricia McInnes - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	167	23.19	23.19
0 - 10	402	55.83	79.03
10 - 20	145	20.14	99.17
> 20	6	0.83	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

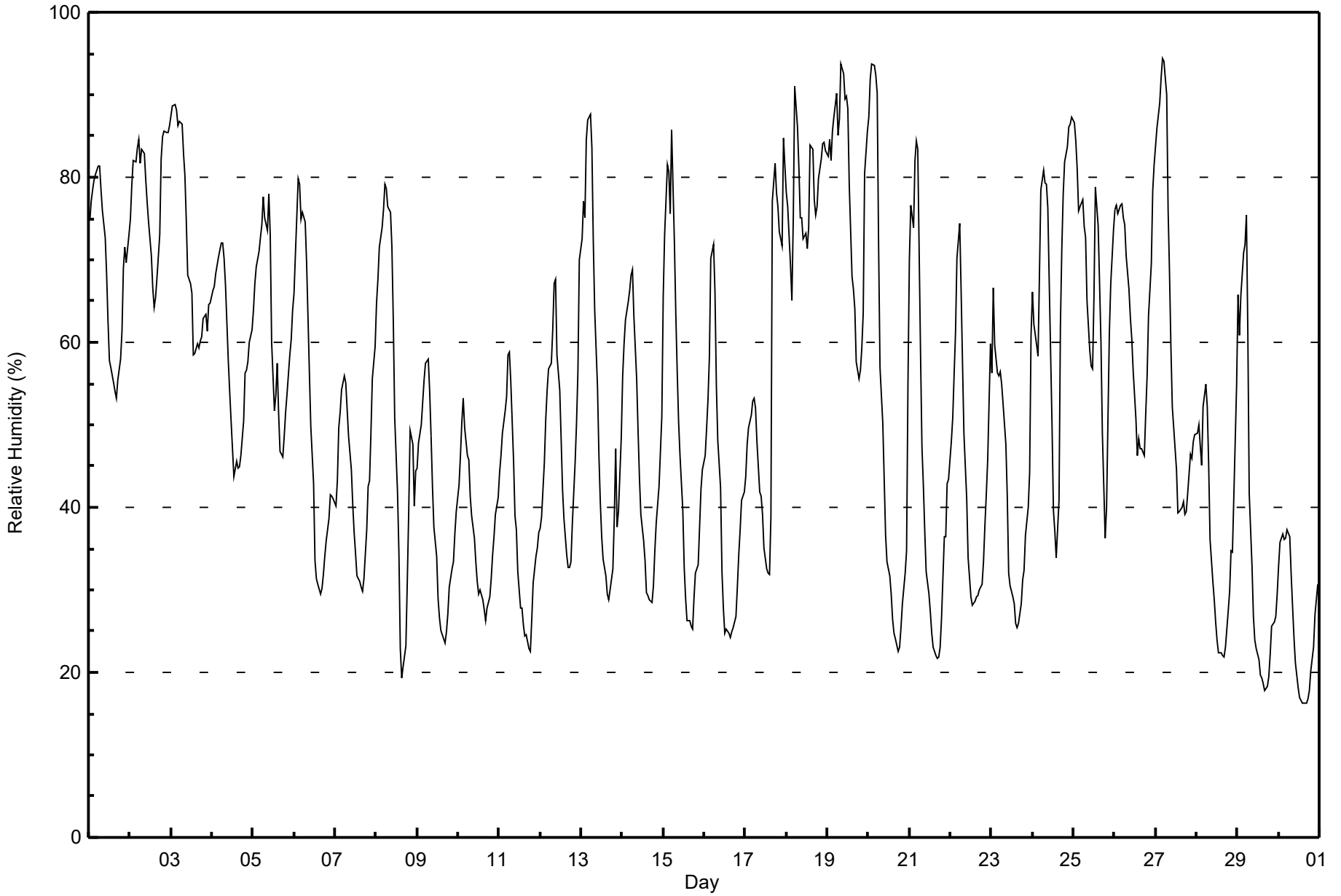
Relative Humidity (RH) - %
Patricia McInnes - April 2023

Maximum Value: 94.3 % on Apr 27 05:00 Maximum Daily Average: 78.4 % on Apr 2																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 16.2 % on Apr 30 16:00 Minimum Daily Average: 25.9 % on Apr 30 Maximum Diurnal Average: 72.5 % at hour 6 Minimum Diurnal Average: 37.2 % at hour 16 Monthly Average: 52.97 % Percentiles: P ₁ = 17.9 P ₁₀ = 26.6 Q ₁ = 34.7 Median = 51.5 Q ₃ = 70.8 P ₉₀ = 81.7 P ₉₉ = 92.1																						Hours of Missing Data: 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-Apr	74.8	77.1	78.4	79.7	80.4	81.3	81.3	78.5	75.9	72.8	68.3	62.6	57.8	56.9	55.1	54.0	53.3	55.4	58.0	61.4	69.0	71.6	69.7	73.1	68.6	81.3																							
2-Apr	74.9	79.0	82.1	81.9	83.6	84.6	81.7	83.4	82.9	79.6	76.9	74.5	70.5	66.6	64.3	65.4	67.8	73.0	82.2	85.0	85.6	85.4	85.4	86.2	78.4	86.2																							
3-Apr	87.5	88.6	88.8	88.1	86.3	86.8	86.4	82.9	80.2	74.6	68.1	67.2	66.0	58.5	58.7	59.8	59.3	60.1	60.6	62.9	63.4	61.4	64.6	64.7	71.9	88.8																							
4-Apr	66.2	66.8	68.3	69.4	70.3	72.0	72.0	70.2	66.9	57.9	54.0	50.5	47.0	43.7	45.6	44.8	44.8	46.3	50.5	56.2	56.6	57.7	59.9	61.5	58.3	72.0																							
5-Apr	64.0	67.2	69.1	70.9	72.7	74.3	77.6	75.0	73.6	78.0	73.0	60.0	51.7	53.6	57.5	51.3	46.8	46.1	48.7	51.5	53.8	58.4	60.3	63.9	62.5	78.0																							
6-Apr	66.0	70.6	79.9	79.1	74.9	75.8	74.6	69.7	63.1	56.2	49.9	42.9	33.6	31.3	30.6	29.5	30.2	31.8	34.1	35.9	38.7	41.5	41.4	41.1	50.9	79.9																							
7-Apr	40.1	43.3	49.6	51.5	54.2	55.9	55.1	51.9	48.7	44.5	40.4	37.0	34.4	31.8	31.0	30.3	29.8	31.4	37.4	42.6	43.2	49.0	55.6	59.5	43.7	59.5																							
8-Apr	64.8	67.6	71.5	73.9	76.2	79.1	78.6	76.4	75.7	71.5	62.5	50.8	41.8	34.6	22.9	19.3	20.7	23.3	31.0	39.4	49.4	47.6	40.1	44.4	52.6	79.1																							
9-Apr	44.7	47.8	50.0	52.7	55.4	57.5	58.0	54.1	48.6	42.5	37.6	34.0	29.1	26.6	25.1	24.0	23.5	25.0	27.1	30.4	32.5	33.4	36.8	39.4	39.0	58.0																							
10-Apr	42.7	46.2	50.3	53.1	49.7	46.2	45.7	41.4	39.0	36.2	33.4	31.0	29.5	30.1	28.7	27.6	26.3	27.8	29.1	31.3	34.2	36.5	39.2	41.2	37.4	53.1																							
11-Apr	44.3	46.3	49.0	51.7	53.5	58.5	58.8	55.3	45.5	38.9	37.4	32.3	27.8	27.8	25.8	24.5	24.6	22.8	22.5	26.5	30.9	34.0	35.1	36.9	37.9	58.8																							
12-Apr	37.5	38.8	45.3	50.6	54.3	56.7	57.4	61.5	67.1	67.6	58.5	54.3	48.2	42.2	38.7	34.3	32.7	32.8	33.5	38.0	45.4	50.2	56.5	70.0	48.8	70.0																							
13-Apr	72.5	77.2	75.1	84.6	87.0	87.6	83.5	72.2	63.9	54.6	46.4	40.6	36.5	33.8	31.6	29.5	28.7	30.0	32.5	38.7	47.1	37.6	39.4	48.5	53.3	87.6																							
14-Apr	56.0	59.9	62.8	64.9	66.3	68.2	68.8	63.2	55.6	49.3	43.5	39.2	35.9	33.6	29.6	29.4	28.9	28.5	30.5	34.7	38.1	42.5	46.9	51.0	47.0	68.8																							
15-Apr	65.5	73.0	81.5	80.7	75.6	85.7	72.0	63.4	56.5	50.3	46.2	39.7	32.7	29.1	26.3	26.3	25.7	25.3	28.9	32.0	33.0	37.7	42.1	44.5	48.9	85.7																							
16-Apr	46.3	49.4	53.0	58.1	70.1	71.9	66.1	54.8	48.1	42.3	32.2	27.8	24.8	25.3	24.7	24.3	25.0	25.5	26.8	30.3	34.2	37.2	40.8	41.9	40.9	71.9																							
17-Apr	43.7	47.6	49.6	51.1	52.8	53.1	52.1	48.0	41.9	41.3	39.1	35.1	32.6	32.0	31.9	38.8	77.1	81.7	78.1	76.4	73.3	71.7	84.7	81.4	54.8	84.7																							
18-Apr	78.1	76.4	69.4	65.1	75.2	91.0	86.1	81.1	75.1	75.0	72.5	73.2	71.3	74.0	83.9	83.5	77.3	75.4	76.4	79.9	82.2	84.1	84.2	83.2	78.1	91.0																							
19-Apr	82.5	84.6	82.1	85.7	87.2	90.2	85.0	87.2	93.7	92.6	89.6	89.8	88.3	79.1	68.0	66.4	64.1	57.6	55.5	56.7	59.4	63.5	80.5	85.6	78.1	93.7																							
20-Apr	87.2	91.8	93.7	93.6	92.3	90.3	71.7	56.9	50.2	43.4	36.7	33.3	31.7	29.5	26.5	24.7	24.0	22.6	23.0	25.5	28.2	32.0	34.7	55.2	49.9	93.7																							
21-Apr	70.0	76.6	73.8	82.0	84.4	83.4	58.5	47.3	42.7	37.1	32.1	29.5	27.3	24.7	23.0	22.1	21.7	21.9	23.1	26.6	36.5	36.4	42.9	43.4	44.5	84.4																							
22-Apr	47.9	50.8	56.1	61.3	70.2	74.4	66.3	57.4	49.0	41.1	34.0	31.5	29.2	28.2	28.7	29.2	29.3	30.0	30.7	33.3	37.8	41.5	45.7	59.8	44.3	74.4																							
23-Apr	56.2	66.6	59.7	56.2	56.0	56.5	54.8	52.6	47.7	41.3	32.0	30.5	29.2	28.4	26.0	25.4	26.0	28.3	31.2	32.4	36.6	40.0	44.2	60.8	42.4	66.6																							
24-Apr	66.2	62.2	59.7	58.2	68.2	78.5	80.9	79.3	79.1	76.2	67.3	50.0	39.7	37.1	34.0	40.8	62.1	71.3	78.0	81.8	83.8	86.2	86.4	87.3	67.3	87.3																							
25-Apr	86.7	84.5	81.1	76.0	76.4	77.3	74.1	72.7	65.0	59.0	57.1	56.8	65.6	78.8	74.0	67.1	60.0	49.0	36.3	40.1	50.7	61.1	67.1	73.8	66.3	86.7																							
26-Apr	76.1	76.6	75.7	76.7	76.8	75.1	74.3	70.5	66.5	63.0	60.5	56.5	50.8	46.2	48.3	47.2	47.2	46.2	51.4	56.0	63.3	69.4	78.3	81.5	63.9	81.5																							
27-Apr	83.7	85.9	89.0	92.1	94.3	94.1	90.0	76.1	68.5	59.5	52.2	47.1	44.5	39.3	39.5	39.9	40.7	39.1	39.4	41.7	46.5	45.8	47.9	48.8	60.2	94.3																							
28-Apr	49.0	50.0	47.5	45.2	52.1	54.9	52.1	45.3	36.0	31.1	28.8	26.0	23.8	22.4	22.4	22.0	21.8	23.1	27.5	29.8	34.8	34.5	41.3	55.0	36.5	55.0																							
29-Apr	65.7	60.8	65.7	70.8	71.8	75.4	61.3	41.7	32.9	26.8	23.9	22.8	21.6	19.6	19.3	18.6	17.9	18.3	19.5	22.3	25.5	26.2	26.7	29.4	36.9	75.4																							
30-Apr	32.8	35.7	36.8	36.1	36.2	37.3	36.4	31.9	28.0	24.2	21.2	18.2	16.9	16.6	16.3	16.2	16.3	16.8	17.8	20.1	23.0	27.0	28.8	30.7	25.9	37.3																							
																								62.5	65.0	66.5	68.0	70.1	72.5	68.7	63.4	58.9	54.3	49.2	44.8	41.3	39.4	37.9	37.2	38.5	38.9	40.7	44.0	47.9	50.0	53.6	58.1	Diurnal Average	
																								87.5	91.8	93.7	93.6	94.3	94.1	90.0	87.2	93.7	92.6	89.6	89.8	88.3	79.1	83.9	83.5	77.3	81.7	82.2	85.0	85.6	86.2	86.4	87.3	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Patricia McInnes - April 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Patricia McInnes - April 2023

Maximum Speed: 34 km/h on Apr 10 15:00		Maximum Daily Speed Average: 23.2 km/h on Apr 10		Hours in Service: 720																						
Minimum Speed Value: 1 km/h on Apr 27 08:00		Minimum Daily Speed Average: 3.7 km/h on Apr 29		Hours of Data: 720																						
Maximum Diurnal Speed Average: 5.0 km/h at hour 15		Minimum Diurnal Speed Average: 1.7 km/h at hour 3		Hours of Missing Data: 0																						
Monthly Average Velocity: 3.9 km/h 133.2 deg		Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 8 Median = 11 Q ₃ = 15 P ₉₀ = 20 P ₉₉ = 32		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-Apr	E11	E11	E10	E9	ENE7	ENE8	E10	ESE10	ESE13	ESE12	E13	ESE12	ESE13	ESE13	E10	ESE9	E9	E12	E13	E12	E13	ESE11	ESE15	ESE12	E10.8	ESE15
2-Apr	ESE11	ESE12	ESE10	ESE9	ESE13	ESE11	ESE13	ESE15	ESE15	ESE13	ESE11	ESE10	ESE8	E6	NE6	N8	NNE10	N12	N13	N15	N17	NNW18	N18	N17	ENE6.5	NNW18
3-Apr	N16	NNW17	NNW15	NNW17	NNW15	NNW15	NNW15	NNW15	NNW16	NNW14	N11	NNW8	NNE8	NE4	ENE3	E4	E2	NNE1	NNE4	NNE6	NE5	NE4	ESE6	E5	N8.0	NNW17
4-Apr	SE5	SE3	SSW2	S6	SW2	ESE4	S2	SE3	S5	SE4	NE2	NNE2	SSW3	SE5	SE6	SE9	ESE8	ESE9	SE9	ESE8	ESE11	SE12	SE13	SE13	SE5.3	SE13
5-Apr	SE12	SE11	SE11	SE11	SE12	SE11	SE11	ESE11	ESE8	SSE6	ESE4	SE5	ESE9	SE9	ESE12	ESE9	SSE9	SSE10	SE6	SE7	ESE9	ESE9	SE9	SE7	SE8.9	SE12
6-Apr	S7	SSE7	SSE5	SE8	SE10	SE12	SE14	SE14	ESE10	SE10	ESE11	SE16	S21	S23	S22	S23	S25	S22	S20	S20	S17	S17	S16	SSE13	SSE13.9	S25
7-Apr	SSE15	SSE10	ESE11	SE12	SE14	SE16	SE17	ESE15	ESE16	SE17	SE16	ESE15	SE14	SSE16	S19	S16	S16	SSE12	SE9	SSE10	S18	S12	S12	SSE10	SSE13.0	S19
8-Apr	SE8	SE9	SSE7	SSE8	SSE7	SSE7	SSE8	S9	S7	SSW9	SSW8	S9	S10	SSE9	WSW10	W7	SW9	SW9	SSE6	S4	SSW3	SW8	SW10	WSW10	S6.4	WSW10
9-Apr	WSW12	WSW13	WSW12	WSW15	WSW14	SW12	SW11	WSW13	WSW14	SW9	WSW17	SW15	WSW19	WSW16	SW14	SW13	S13	S12	SSE12	SSE12	SE10	SSE11	SE11	SE11	SW10.2	WSW19
10-Apr	SE12	SSE10	WSW20	WSW24	WSW34	WSW33	WSW28	WSW31	W33	WSW32	WSW28	WSW29	WSW33	WSW32	WSW34	WSW32	WSW32	W26	W22	W17	WSW11	SW13	SW12	SW10	WSW23.2	WSW34
11-Apr	SW11	SW12	SW12	WSW12	SW12	S6	S8	S6	SW11	SSW7	S8	SW13	WSW12	SW11	WSW8	W10	W11	W11	SW8	W7	NNW11	NNW12	NNW15	NW11	WSW7.4	NNW15
12-Apr	WNNW11	NW11	NW10	WNNW8	SSW7	WSW10	WSW7	WNNW12	NNW15	NW11	WNNW10	WNNW11	WNNW14	WNNW14	NW17	NW19	NNW17	WNNW12	WNNW6	W10	W10	W7	W7	WSW5	WNNW9.6	NW19
13-Apr	WSW6	NW4	NE4	NNW4	SW3	W2	NW2	N5	NE5	NNE5	NE6	N8	NNE6	N10	N10	N9	NNE8	ENE8	NE8	NNE7	NNE7	ENE9	E10	E10	NNE4.6	E10
14-Apr	E9	E9	ENE6	E7	E8	ESE7	ESE6	ESE10	ESE13	ESE11	ESE11	ESE11	ENE9	ENE10	E8	ENE12	E15	E15	ESE14	ESE10	ESE9	ESE7	ESE8	ESE6	E9.2	E15
15-Apr	NE1	E1	E2	SSE4	ESE4	SSE2	SE9	SE8	ESE4	ESE5	ESE7	SSE2	E6	E6	SE6	SE8	ESE9	SE10	E12	E10	ESE12	ESE16	ESE15	ESE17	ESE7.1	ESE17
16-Apr	ESE13	SE11	SE9	ESE4	E4	ESE5	ESE5	ESE10	ESE14	ESE17	ESE19	ESE21	ESE21	ESE22	ESE24	ESE23	ESE23	E25	ESE24	E20	E18	ESE23	ESE20	ESE18	ESE16.2	E25
17-Apr	ESE18	E12	E12	E13	E17	E17	E18	E21	ESE24	ESE27	ESE30	ESE30	ESE29	ESE28	ESE27	SE30	ESE26	E21	E21	E23	ESE22	ESE19	ESE25	E20	ESE21.9	ESE30
18-Apr	E18	E16	E17	E18	E19	E16	E14	E13	E16	ESE12	ESE13	ESE11	E10	E10	ESE9	E8	E10	ENE9	ENE9	NE10	NNE7	N8	N6	ENE6	E10.8	E19
19-Apr	NNE4	NNW6	NE6	E13	ESE16	ESE16	ESE19	ESE20	ESE19	ESE20	ESE18	ESE17	ESE17	ESE17	ESE19	ESE19	SE13	ESE13	ESE11	E6	NE6	NE6	N4	N5	ESE11.4	ESE20
20-Apr	NNW5	N4	NNE4	E2	ENE2	E3	ESE7	ESE11	ESE10	ENE7	E9	ENE13	ESE14	ESE14	ESE14	E13	ESE14	ESE15	SE16	ESE14	ESE11	ESE9	ESE7	E3	ESE8.3	SE16
21-Apr	ESE5	E3	ESE5	ESE2	S1	SE3	SE8	SE9	SE8	SE10	ESE10	SE9	SE10	SSE8	S7	SSE8	ESE6	ESE9	E9	ESE7	SE6	SE9	SE6	SSW8	SE6.2	SE10
22-Apr	SW8	SW9	SSW6	S5	S4	S4	S4	S6	S9	S8	S15	S17	SSE17	SSE17	SSE17	S17	S18	S15	S13	S12	S9	S7	S5	SSE4	S10.0	S18
23-Apr	SE6	ESE4	SE7	SE8	SE8	SE8	ESE10	ESE10	ESE12	ESE13	SE17	SE21	SE19	SE19	SE20	SE20	SE18	SSE16	SE13	SE11	SSE12	SSE11	SSE15	SSE13	SE12.4	SE21
24-Apr	E8	ENE10	ESE7	SE10	ESE10	NE5	NE5	ENE6	NE8	NNE9	NNE9	E10	ENE11	NE11	NE11	N18	NNW23	NNW22	NNW21	NNW17	WNNW7	SW8	SSW5	SE5	NNE5.9	NNW23
25-Apr	ESE5	SE5	SE6	SE9	SE9	SE8	SE7	SSE8	SSE11	SSE12	SSE12	SSE13	WSW21	W21	SSE8	SSE11	SSE12	SSW17	W24	W21	WNNW17	W18	W17	W20	SW6.7	W24
26-Apr	W18	W18	W17	W16	W15	WNNW17	WNNW17	WNNW19	WNNW20	NW16	NW13	WNNW17	NW13	NNW9	NE13	NE14	NNE13	NNE12	NNE13	NNE11	NE12	NNE7	NNW7	NNW8	NW9.6	WNNW20
27-Apr	NNW8	NNW8	NNW8	NW5	NW6	NNW6	WNNW4	WSW1	S5	SW7	SSW3	W9	WSW9	WSW11	SW11	SW12	W8	SW10	SW8	S8	SSE8	S9	SSW10	SSW9	WSW4.8	SW12
28-Apr	SW12	SW10	W14	NW12	WNNW13	NW12	NW19	NW25	NW27	NW28	WNNW28	NW29	NW26	NW25	NNW26	NNW24	NNW24	NNW21	N18	N11	NNW8	N9	NW8	NW8	NW16.0	NW29
29-Apr	NNW7	NW2	WSW5	WNNW5	WSW2	NW2	ENE2	NE2	ESE6	SSE5	ENE6	N3	N6	NE4	N4	NE5	E8	E8	ESE10	SE13	SE13	SE11	SE14	ESE12	E3.7	SE14
30-Apr	ESE12	ESE11	ESE11	ESE11	ESE12	SE13	SE15	SE17	ESE14	ESE14	ESE15	SE18	SE22	SE21	SE21	SE20	SE18	SE20	SE20	SE16	SE16	ESE16	ESE16	ESE12	SE15.7	SE22
SE3.2 SE2.3 SE1.7 SSE2.4 SE3.0 SE2.8 SE3.9 SE3.8 SE3.8 SE4.0 SE4.9 SE5.0 SE4.6 SE4.7 SE5.0 SE4.3 SE4.2 SE4.3 ESE4.6 ESE3.9 ESE4.3 SE4.4 SE4.7 SE4.0																								Diurnal Average		
E18 W18 WSW20 WSW24 WSW34 WSW33 WSW28 WSW31 W33 WSW32 ESE30 ESE30 WSW33 WSW32 WSW34 WSW32 WSW32 W26 ESE24 E23 ESE22 ESE23 ESE25 E20																								Diurnal Maximum		
All monthly, daily, and diurnal averages have been calculated using vector methods																										



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

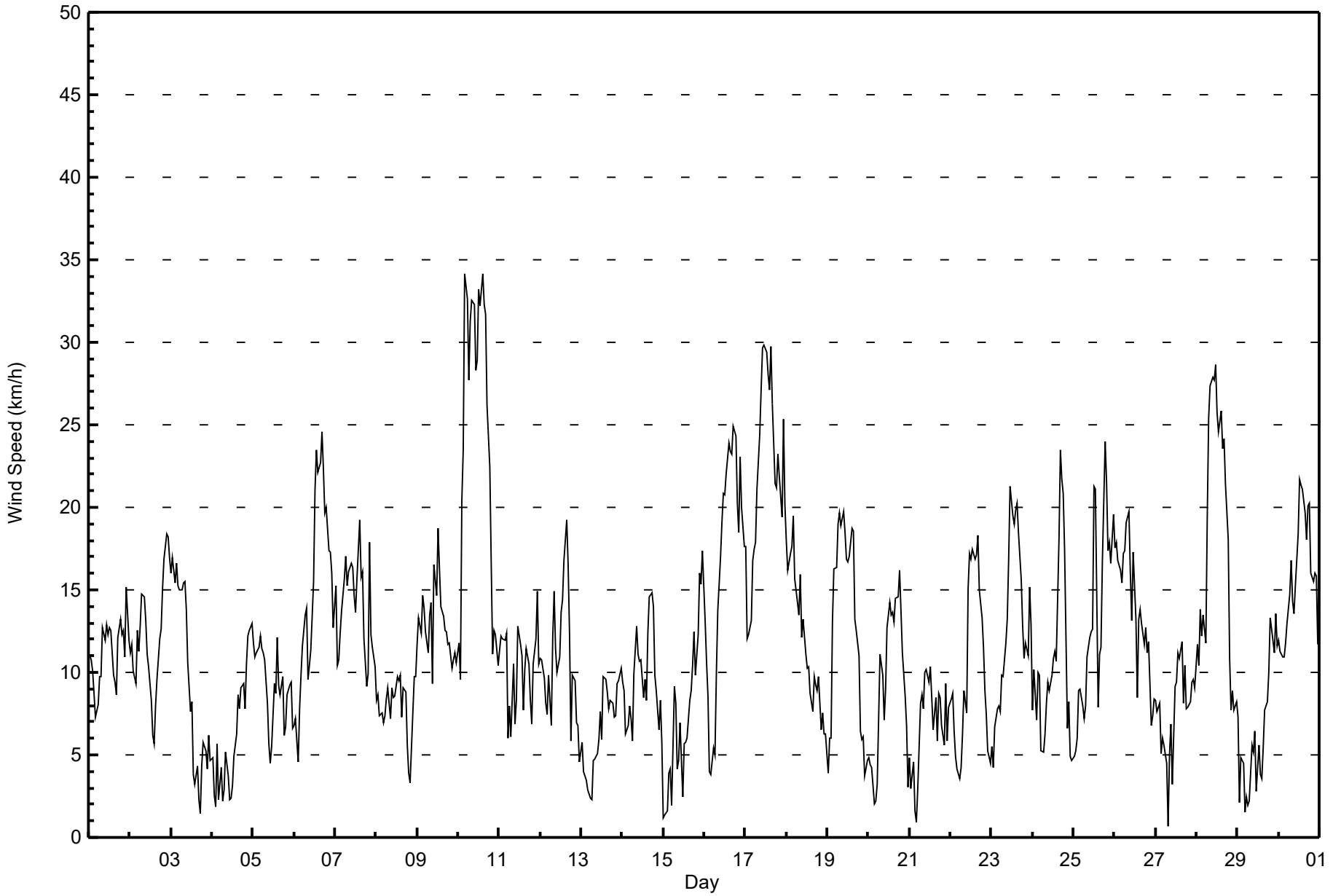
Wind Speed (WS) - km/h
Patricia McInnes - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 15 km/h on Apr 25 13:00 Minimum Value: 0 km/h on Apr 19 23:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	3	2	2	2	1	2	2	2	4	3	3	3	3	3	2	2	2	3	3	3	3	5	4	3	5
2-Apr	3	3	2	2	3	3	3	3	4	3	2	2	2	2	2	2	2	3	2	3	3	3	4	3	4
3-Apr	3	3	3	4	3	2	2	2	3	3	3	2	3	3	2	1	2	1	1	1	2	1	1	4	
4-Apr	1	1	1	2	1	2	2	1	1	1	2	2	2	3	3	3	3	2	2	2	2	3	3	3	
5-Apr	3	3	2	3	3	2	2	3	2	1	1	2	2	3	3	4	2	2	1	1	1	2	1	2	4
6-Apr	2	1	1	1	2	2	3	3	3	2	3	3	5	5	6	5	6	5	5	4	4	4	4	3	6
7-Apr	3	2	2	3	3	3	3	3	3	4	3	3	3	5	4	4	3	4	2	2	4	2	2	2	5
8-Apr	2	2	2	2	1	1	1	2	1	2	2	2	2	3	3	4	2	1	2	1	1	1	1	1	4
9-Apr	2	2	2	2	2	2	2	4	3	2	4	3	4	4	3	5	3	3	2	2	2	2	1	2	5
10-Apr	2	2	6	5	9	6	6	7	7	7	6	6	7	7	7	7	7	6	4	4	2	2	2	2	9
11-Apr	2	2	2	2	2	2	2	1	3	2	2	3	3	3	4	4	3	2	1	3	2	2	2	1	4
12-Apr	1	2	1	3	1	1	1	4	3	3	3	3	3	4	5	4	4	4	2	1	1	2	1	1	5
13-Apr	1	1	1	1	1	1	1	1	2	2	2	3	3	4	4	3	3	2	2	1	1	2	2	2	4
14-Apr	3	2	1	1	2	2	2	4	3	3	3	4	3	3	3	4	3	3	3	2	2	2	2	1	4
15-Apr	2	1	1	2	3	2	3	2	1	2	3	2	3	4	4	3	3	3	3	2	4	4	3	4	4
16-Apr	4	2	2	1	2	1	2	3	3	4	5	6	6	6	5	5	6	6	6	5	4	5	5	4	6
17-Apr	4	2	3	3	4	3	4	5	6	8	7	7	7	7	7	9	8	6	6	6	6	6	6	5	9
18-Apr	4	3	4	4	5	4	3	3	4	4	3	3	3	2	2	2	3	2	2	2	1	1	1	2	5
19-Apr	1	1	2	3	3	4	5	4	4	4	4	4	4	4	4	5	4	4	3	1	1	1	0	1	5
20-Apr	1	1	1	1	1	1	2	3	2	2	3	5	5	4	5	5	3	4	4	3	2	1	1	1	5
21-Apr	1	2	2	1	1	1	2	2	2	3	4	4	5	4	4	3	3	3	3	1	1	2	2	1	5
22-Apr	1	2	1	1	1	1	1	1	2	3	5	5	5	5	5	4	4	4	3	2	2	1	1	1	5
23-Apr	1	1	1	1	1	1	2	2	3	3	5	5	5	5	4	5	5	4	4	3	4	4	6	5	6
24-Apr	2	3	3	3	3	1	2	2	1	1	2	3	3	4	4	6	4	4	4	3	3	2	1	1	6
25-Apr	1	1	1	1	2	2	1	2	3	3	3	3	15	8	3	3	4	5	6	5	4	4	3	5	15
26-Apr	4	4	4	3	3	4	3	4	4	3	3	4	4	4	3	3	4	3	3	3	3	2	2	1	4
27-Apr	1	1	1	1	1	1	1	1	2	3	3	4	4	4	4	4	4	3	2	2	2	2	2	2	4
28-Apr	2	2	4	4	2	3	5	5	6	6	6	7	7	5	7	6	5	5	4	3	1	1	1	1	7
29-Apr	1	2	1	1	1	1	1	1	2	2	3	3	3	3	3	3	4	3	3	3	3	2	3	3	4
30-Apr	2	2	2	2	3	3	3	3	3	3	4	5	5	5	5	6	5	5	5	4	3	3	3	2	6
Diurnal Maximum																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Patricia McInnes - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Patricia McInnes - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	96	13.33	13.33
6 - 11	302	41.94	55.28
12 - 19	239	33.19	88.47
20 - 28	67	9.31	97.78
29 - 38	16	2.22	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Patricia McInnes - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	6	12	3	10	13	9	6	10	5	2	4	1	2	5	2	96
6 - 11	11	12	10	15	29	62	49	24	18	9	18	9	11	6	7	12	302
12 - 19	8	3	3	2	25	61	34	17	18	1	12	12	9	10	8	16	239
20 - 28	0	0	0	0	7	18	9	0	8	0	0	5	6	2	5	7	67
29 - 38	0	0	0	0	0	3	1	0	0	0	0	10	1	0	1	0	16
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	25	21	25	20	71	157	102	47	54	15	32	40	28	20	26	37	720

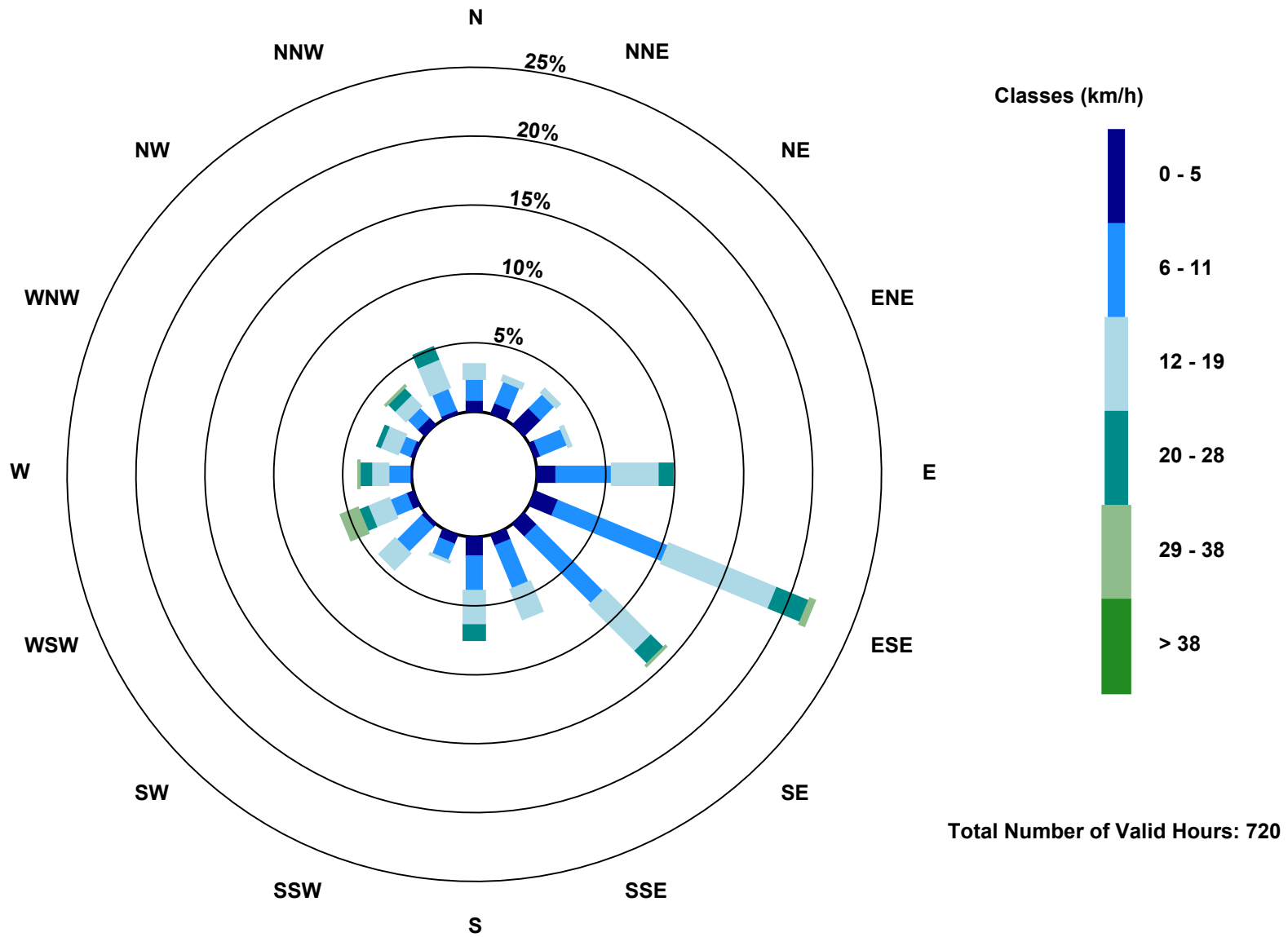
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Patricia McInnes





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Patricia McInnes - April 2023

Direction of Maximum Speed: 240 deg on Apr 10 15:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 248.1 deg on Apr 10	Hours of Data: 720
Direction of Minimum Speed: 253 deg on Apr 27 08:00	Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 3.7 deg on Apr 29	Percent Operational Time: 100.0
Monthly Average Direction: 133.2 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-Apr	99	88	79	79	66	66	95	103	121	111	101	107	106	110	101	110	94	92	89	96	96	107	119	118	99.8
2-Apr	118	123	120	118	116	117	112	113	115	110	107	105	105	90	54	5	12	357	358	352	357	348	355	350	63.6
3-Apr	349	343	344	347	347	341	335	337	336	340	351	344	15	39	69	91	98	28	12	18	55	50	105	100	355.3
4-Apr	130	144	196	180	228	104	176	131	180	143	46	26	197	133	141	124	118	112	125	114	123	125	127	131	131.1
5-Apr	129	129	129	126	124	130	124	122	110	161	118	140	107	134	116	123	155	149	135	139	121	119	136	133	128.4
6-Apr	169	160	150	134	128	132	127	124	122	125	111	127	172	170	182	189	175	175	171	174	170	171	173	164	160.3
7-Apr	167	147	123	125	127	126	131	123	121	126	125	119	129	153	177	171	179	163	142	163	176	174	176	162	146.8
8-Apr	145	139	151	164	152	148	160	175	185	205	199	172	176	168	253	259	225	217	165	178	205	236	225	248	190.0
9-Apr	241	244	244	245	240	232	221	240	247	228	258	224	238	237	236	219	191	179	166	159	145	151	130	124	217.7
10-Apr	137	166	246	247	255	258	255	256	259	257	244	243	245	242	240	247	253	264	266	261	241	233	234	230	248.1
11-Apr	226	231	234	239	226	181	179	191	232	204	186	225	241	235	239	274	279	262	228	274	340	334	327	308	247.6
12-Apr	297	307	319	289	210	258	244	297	328	318	291	300	300	290	316	323	328	300	298	265	259	268	265	244	296.2
13-Apr	247	307	37	337	227	260	318	9	50	29	34	9	25	5	4	357	19	68	48	26	18	74	80	83	27.5
14-Apr	92	99	78	92	100	102	104	115	115	106	113	104	77	59	94	73	93	94	108	110	109	115	121	111	99.4
15-Apr	39	91	89	151	112	156	130	135	118	110	123	163	100	90	144	131	120	124	95	98	117	123	122	118	118.6
16-Apr	121	124	128	104	101	102	107	118	115	118	117	119	121	104	107	104	106	98	103	100	101	113	116	115	110.4
17-Apr	110	99	99	101	96	98	101	100	110	113	109	115	107	107	111	134	119	98	98	99	104	108	110	94	107.2
18-Apr	84	88	93	99	101	94	92	90	99	109	110	107	100	100	102	87	83	72	57	47	17	355	4	65	87.2
19-Apr	27	345	44	100	103	107	111	112	110	110	111	112	111	115	117	117	126	121	123	98	39	38	9	358	105.0
20-Apr	344	359	33	89	60	98	110	119	113	77	89	77	102	108	114	95	109	104	126	117	105	105	118	99	101.7
21-Apr	105	97	104	112	186	141	128	136	140	131	113	124	128	157	191	158	120	116	100	107	125	136	141	193	131.9
22-Apr	215	216	203	185	181	175	177	175	179	176	172	173	155	157	167	178	190	189	178	181	190	189	172	161	178.7
23-Apr	131	123	130	126	128	136	118	108	110	106	141	129	128	130	127	126	141	163	140	146	157	157	168	148	134.8
24-Apr	96	75	102	138	112	53	47	62	36	20	32	79	67	53	52	353	343	343	342	340	293	229	200	144	26.8
25-Apr	119	136	136	129	129	128	142	147	159	155	165	163	247	263	162	168	153	213	276	278	285	268	278	264	217.3
26-Apr	265	264	274	278	280	286	288	292	298	307	307	294	320	348	39	35	30	20	21	29	49	27	341	333	316.4
27-Apr	340	335	336	322	320	323	283	253	173	220	209	264	254	253	235	236	261	232	214	176	165	180	197	203	242.4
28-Apr	214	226	264	304	299	316	307	304	313	314	298	311	318	322	327	332	331	347	11	7	347	350	315	326	316.8
29-Apr	347	321	249	285	258	325	65	53	114	149	74	1	8	35	9	55	84	100	119	126	125	127	125	121	100.4
30-Apr	120	118	117	120	121	125	124	125	117	110	108	130	130	132	131	139	137	131	133	135	128	120	120	121	125.9

135.0 135.7 139.7 146.4 143.6 132.9 133.3 130.3 129.1 127.8 128.9 137.6 143.1 143.7 141.5 138.6 134.7 130.1 114.7 116.3 119.0 131.8 137.1 133.7
 Diurnal Average

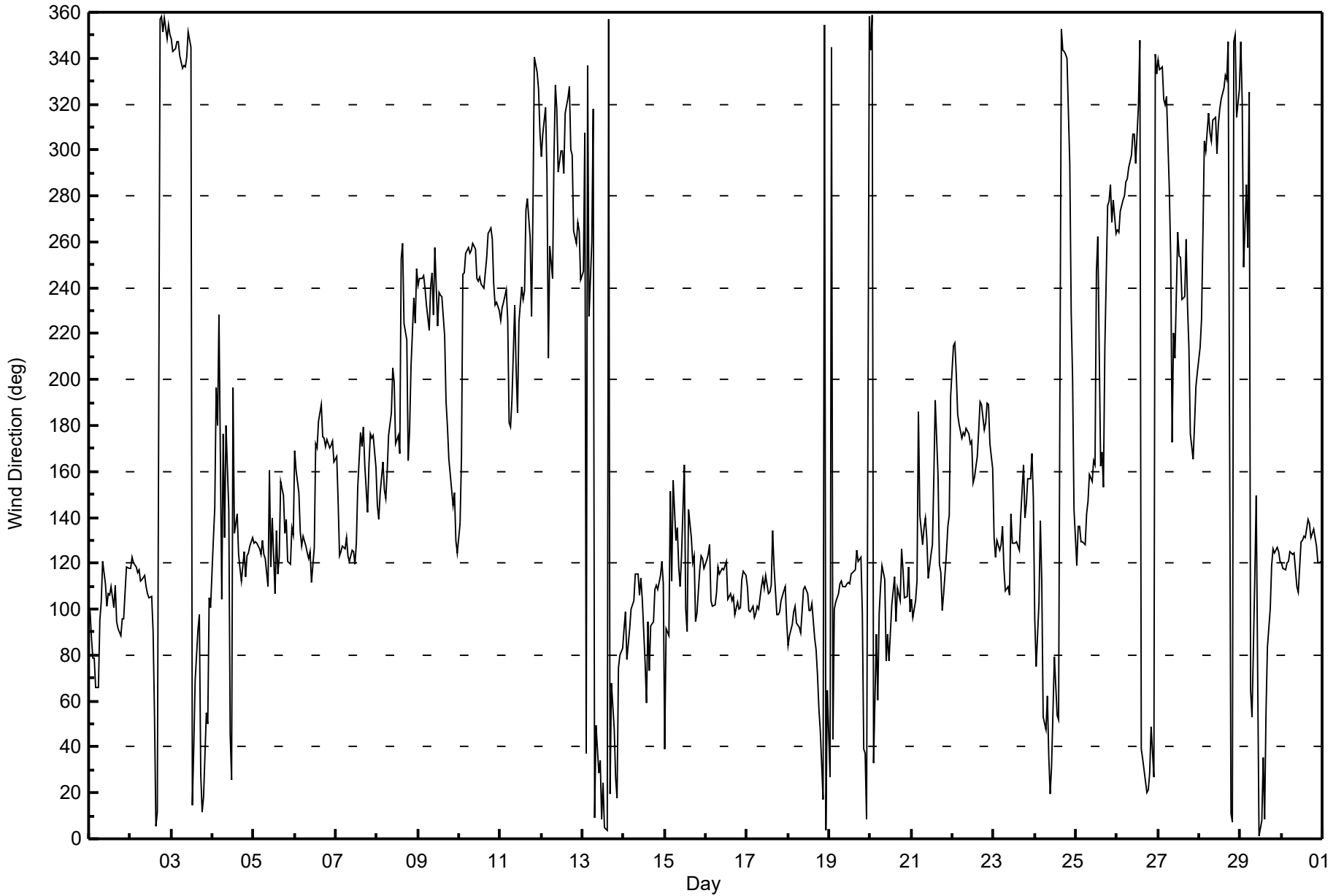
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Patricia McInnes - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0											Hours in Service: 720																								
Maximum Value: 98 deg on Apr 15 12:00											Hours of Data: 720																								
Minimum Value: 6 deg on Apr 27 00:00											Hours of Missing Data: 0																								
Percentiles: P ₁ = 8 P ₁₀ = 10 Q ₁ = 12 Median = 15 Q ₃ = 22 P ₉₀ = 39 P ₉₉ = 85											Hours of Calibration: 0																								
											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-Apr	12	12	10	10	14	17	13	12	18	16	16	18	18	18	16	17	14	13	12	13	12	18	14	13	18										
2-Apr	13	13	12	14	13	13	12	13	14	15	15	17	21	34	31	26	17	15	13	14	16	14	14	14	34										
3-Apr	13	9	11	14	13	9	9	10	10	14	22	22	26	90	76	49	75	88	33	17	19	44	19	16	90										
4-Apr	14	39	50	23	72	42	68	58	21	46	97	85	75	58	50	27	36	17	12	14	12	12	13	14	97										
5-Apr	14	13	12	14	14	14	14	16	16	25	36	35	21	21	18	25	18	13	18	10	9	10	8	14	36										
6-Apr	19	10	16	10	11	10	12	13	14	15	16	14	18	13	16	13	13	12	12	13	12	12	13	13	19										
7-Apr	12	18	11	12	12	10	11	13	12	13	13	12	15	23	13	17	12	24	14	21	13	10	11	14	24										
8-Apr	10	15	14	12	9	9	11	14	13	18	29	15	15	18	44	42	23	17	26	41	28	11	9	17	44										
9-Apr	9	8	8	9	8	9	9	12	10	27	21	17	15	17	19	26	16	11	13	12	12	13	9	12	27										
10-Apr	16	17	21	12	12	10	11	11	12	12	12	14	13	13	13	14	12	14	11	10	8	9	11	11	21										
11-Apr	9	8	9	10	10	29	17	20	19	29	25	16	17	24	46	30	24	15	17	49	10	8	7	9	49										
12-Apr	8	19	17	30	19	10	19	22	19	22	26	23	23	28	18	15	15	22	18	6	6	12	9	18	30										
13-Apr	13	38	37	16	30	36	51	31	27	35	43	35	62	48	49	48	41	25	18	10	15	15	14	10	62										
14-Apr	15	12	17	12	14	13	16	15	16	20	22	22	40	30	41	25	17	14	13	11	11	18	17	12	41										
15-Apr	77	82	60	32	26	59	14	17	39	45	39	98	62	70	73	35	27	32	13	11	11	12	12	12	98										
16-Apr	13	14	11	11	16	17	19	16	15	15	15	16	22	18	15	16	13	13	12	12	13	12	12	12	22										
17-Apr	11	12	13	13	11	12	12	13	14	16	16	16	15	14	14	16	19	15	14	13	14	15	15	13	19										
18-Apr	13	12	12	12	13	13	13	13	16	17	18	17	22	17	16	19	15	17	15	12	24	14	14	25	25										
19-Apr	37	12	32	13	12	12	14	12	12	12	12	13	14	16	16	14	19	16	13	17	17	12	15	13	37										
20-Apr	13	16	19	28	25	19	14	16	17	33	33	28	31	24	25	25	24	21	14	12	10	9	8	15	33										
21-Apr	11	32	14	33	57	11	12	17	20	25	37	49	32	42	57	40	61	30	20	10	11	10	14	11	61										
22-Apr	12	13	12	8	20	15	14	21	19	44	30	24	26	20	18	17	17	17	15	12	11	9	11	6	44										
23-Apr	20	10	9	9	11	12	13	12	14	14	25	16	17	18	17	16	18	29	23	26	27	30	19	28	30										
24-Apr	27	12	42	26	18	27	27	20	13	13	21	25	25	23	28	22	14	12	13	11	47	14	21	23	47										
25-Apr	13	9	10	11	11	14	16	14	16	18	22	21	52	19	28	16	19	24	22	11	12	14	14	10	52										
26-Apr	11	12	11	11	12	11	11	13	16	17	19	19	28	43	18	21	22	22	15	15	12	17	12	6	43										
27-Apr	10	16	9	12	8	14	13	91	51	55	94	41	45	32	32	30	60	38	16	11	12	12	14	14	94										
28-Apr	11	10	17	25	11	11	10	11	13	13	15	16	21	21	16	20	18	22	14	11	15	9	15	6	25										
29-Apr	14	69	13	25	76	46	25	56	33	51	52	89	58	80	84	57	50	27	20	12	12	11	11	10	89										
30-Apr	9	11	11	11	11	12	12	12	14	18	19	25	19	17	21	21	20	16	13	13	14	10	11	11	25										
											77	82	60	33	76	59	68	91	51	55	97	98	75	90	84	57	75	88	33	49	47	44	21	28	
											Diurnal Maximum																								





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS07 ATHABASCA VALLEY APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
 APRIL 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	685	33	35	99.72	15.3	0	4.3	0
TRS (ppb) Average	684	36	36	100	0.8	0	0.3	0
THC (ppm) Average	683	35	37	99.72	2.4	-	2.1	-
NMHC (ppm) Average	683	35	37	99.72	0.093	-	0.006	-
CH4(ppm) Average	683	35	37	99.72	2.4	-	2.1	-
O3 (ppb) Average	662	34	58	96.67	52.6	0	44.2	-
NO2 (ppb) Average	683	35	37	99.72	31.7	0	10.9	-
NO (ppb) Average	683	35	37	99.72	16.1	-	3.4	-
NOX (ppb) Average	683	35	37	99.72	44.3	-	13.4	-
PM2.5 (ug/m3) Average	702	2	18	97.78	20.8	0	10.2	0
CO(ppm) Average	685	33	35	99.72	0.3	0	0.2	-
Temperature 2 m (C) Average	720	0	0	100	22.6	-	14.4	-
Relative Humidity (%) Average	720	0	0	100	91.4	-	72.4	-
Barometric Pressure (inHg) Average	704	0	16	97.78	29.6	-	29.5	-
Wind Speed 10 m (km/h) Average	720	0	0	100	32	-	21	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
 APRIL 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	685	0.72	1.6	-	0	0	0.1	0.1	0.5	2.1	15.3
TRS (ppb) Average	684	0.14	0.1	-	0.1	0.1	0.1	0.1	0.2	0.2	0.8
THC (ppm) Average	683	2.02	0.1	-	1.9	2	2	2	2	2.1	2.4
NMHC (ppm) Average	683	0.001	0.007	-	0	0	0	0	0	0	0.093
CH4(ppm) Average	683	2.02	0.1	-	1.9	2	2	2	2	2.1	2.4
O3 (ppb) Average	662	34.9	9.9	-	5.7	20.2	29.4	35.7	42.6	46.8	52.6
NO2 (ppb) Average	683	5.78	5.2	-	0.5	1	2	4.4	7.8	12.5	31.7
NO (ppb) Average	683	1.29	1.9	-	0	0.1	0.3	0.7	1.5	2.8	16.1
NOX (ppb) Average	683	7.07	6.5	-	0.5	1.2	2.6	5.4	9.3	14.7	44.3
PM2.5 (ug/m3) Average	702	6.11	3	-	0.5	3.2	4.1	5.3	7.7	10.1	20.8
CO(ppm) Average	685	0.14	0	-	0.1	0.1	0.1	0.1	0.1	0.2	0.3
Temperature 2 m (C) Average	720	5.38	6	-	-7.2	-2.4	0.8	4.9	10	13.2	22.6
Relative Humidity (%) Average	720	51.54	19.7	-	14.7	25.4	33.4	52	67.9	78.5	91.4
Barometric Pressure (inHg) Average	704	28.98	0.2	-	28.4	28.7	28.8	29	29.1	29.3	29.6
Wind Speed 10 m (km/h) Average	720	10	6	-	0	3	5	9	13	19	32
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
 APRIL 2023

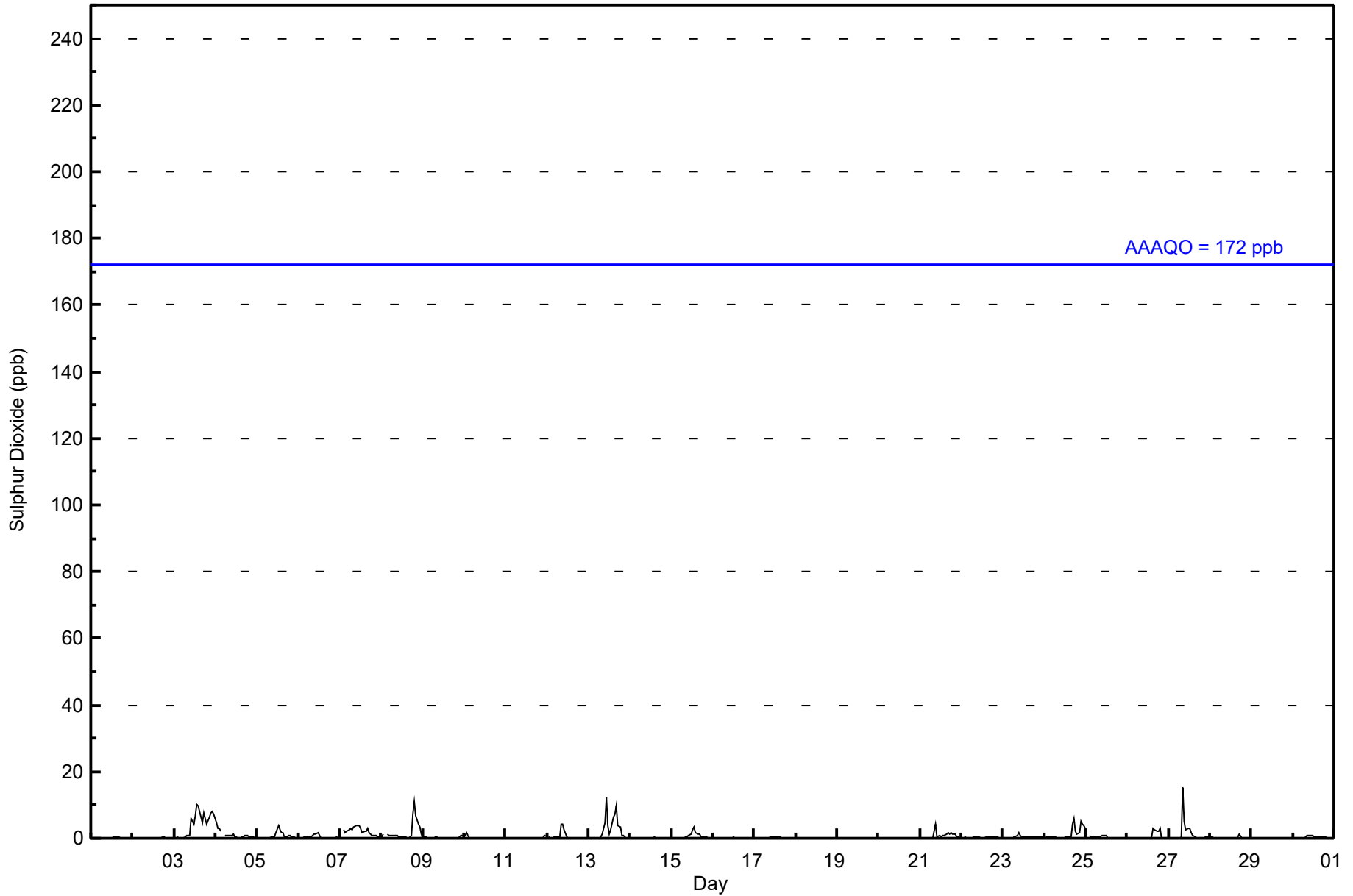
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
CO, NO2, O3, SO2, THC/NMHC/CH4	26 Apr 2023 11:00	26 Apr 2023 12:00	2	Maintenance - sample manifold cleaned
O3	19 Apr 2023 14:00	20 Apr 2023 11:00	22	Maintenance - stabilization post maintenance
Barometric Pressure, PM2.5	29 Apr 2023 19:00	30 Apr 2023 10:00	16	Unstable Operation - flatline in analyzer output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	682	99.56	99.56
11 - 20	3	0.44	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	25	10	12	17	48	104	173	63	30	20	29	35	26	11	24	55	682
11 - 20	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	3
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
Totals	25	10	12	17	48	104	173	64	30	20	30	35	26	11	25	55	685

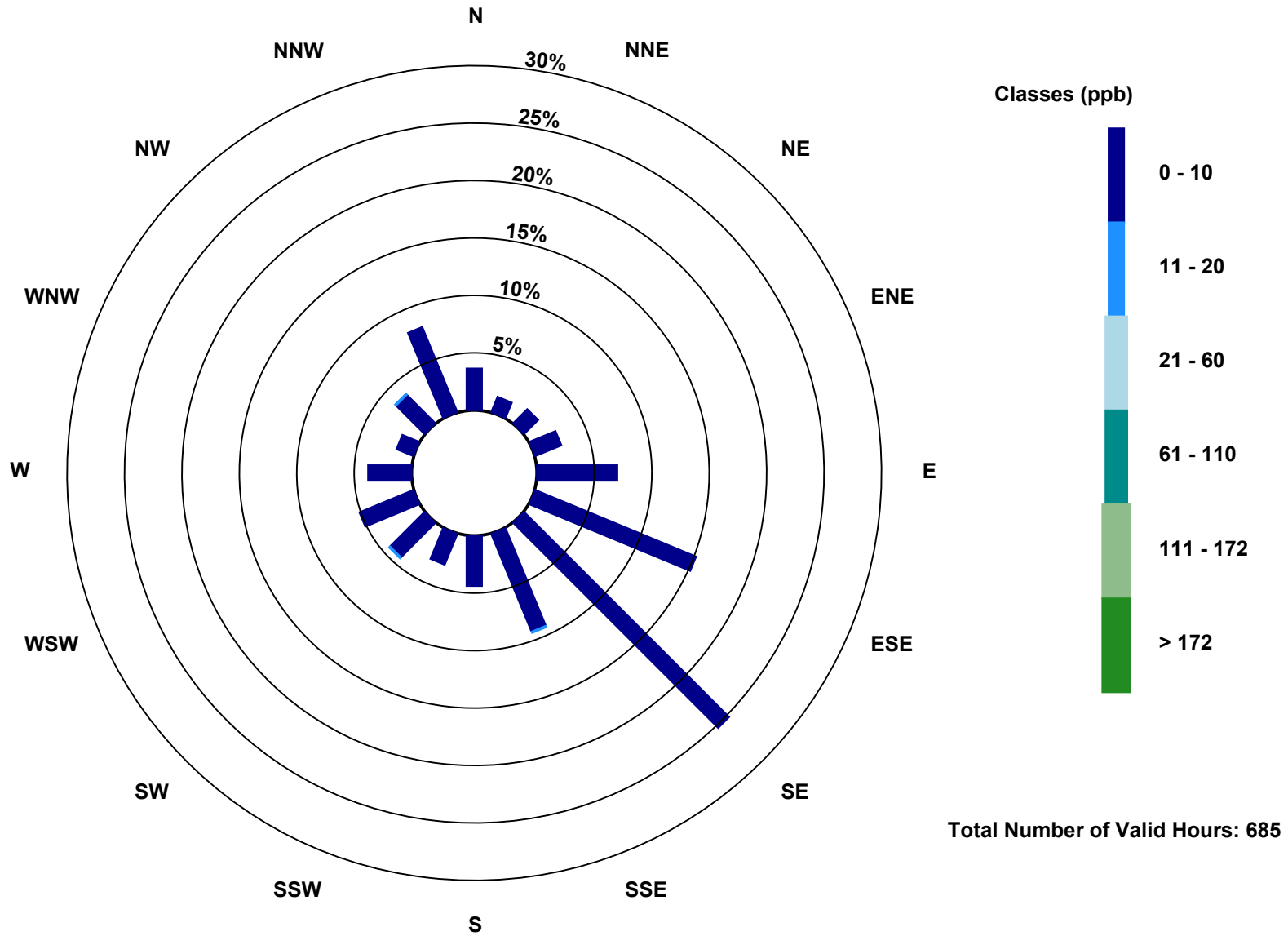
Total Number of Valid Hours: 685

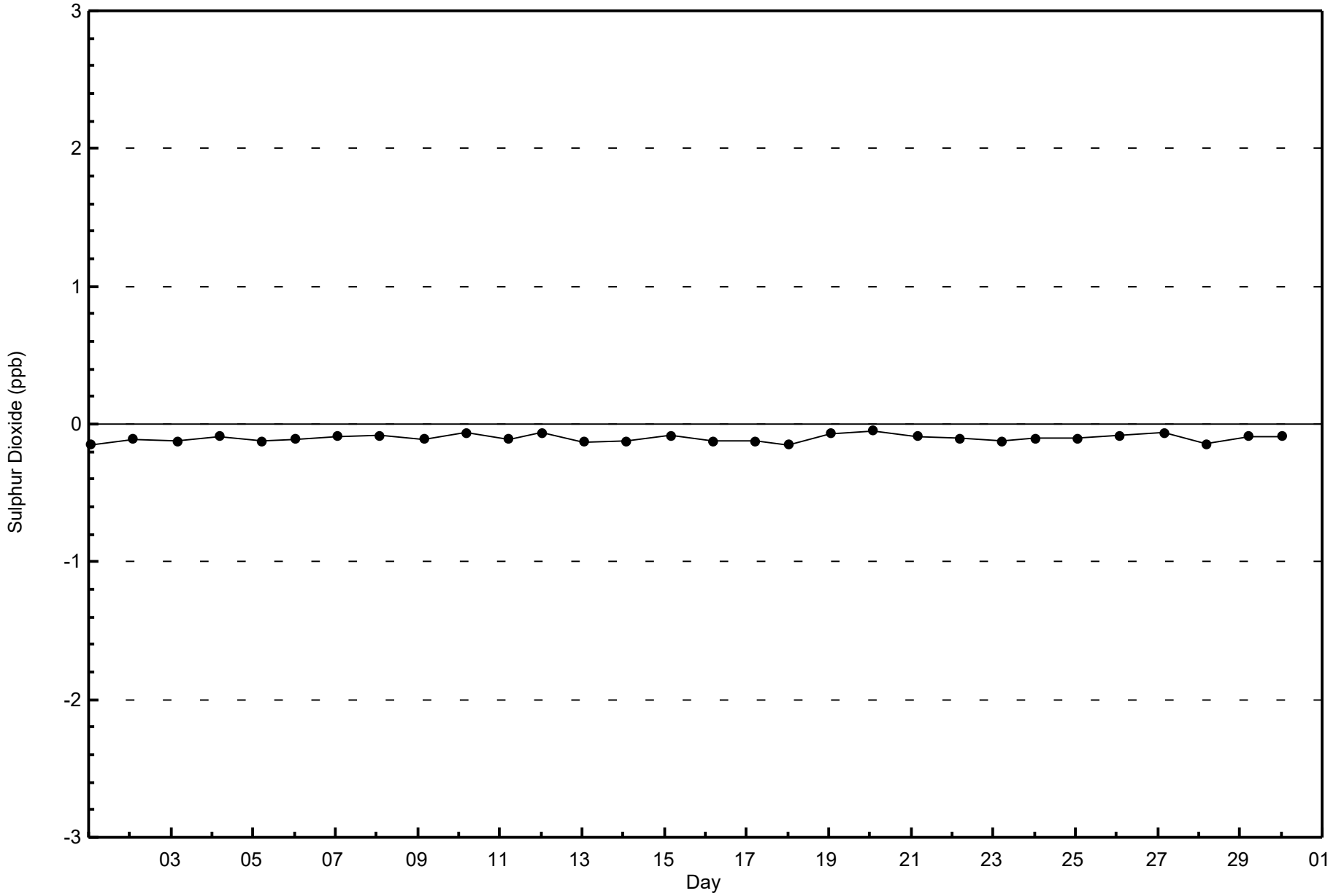
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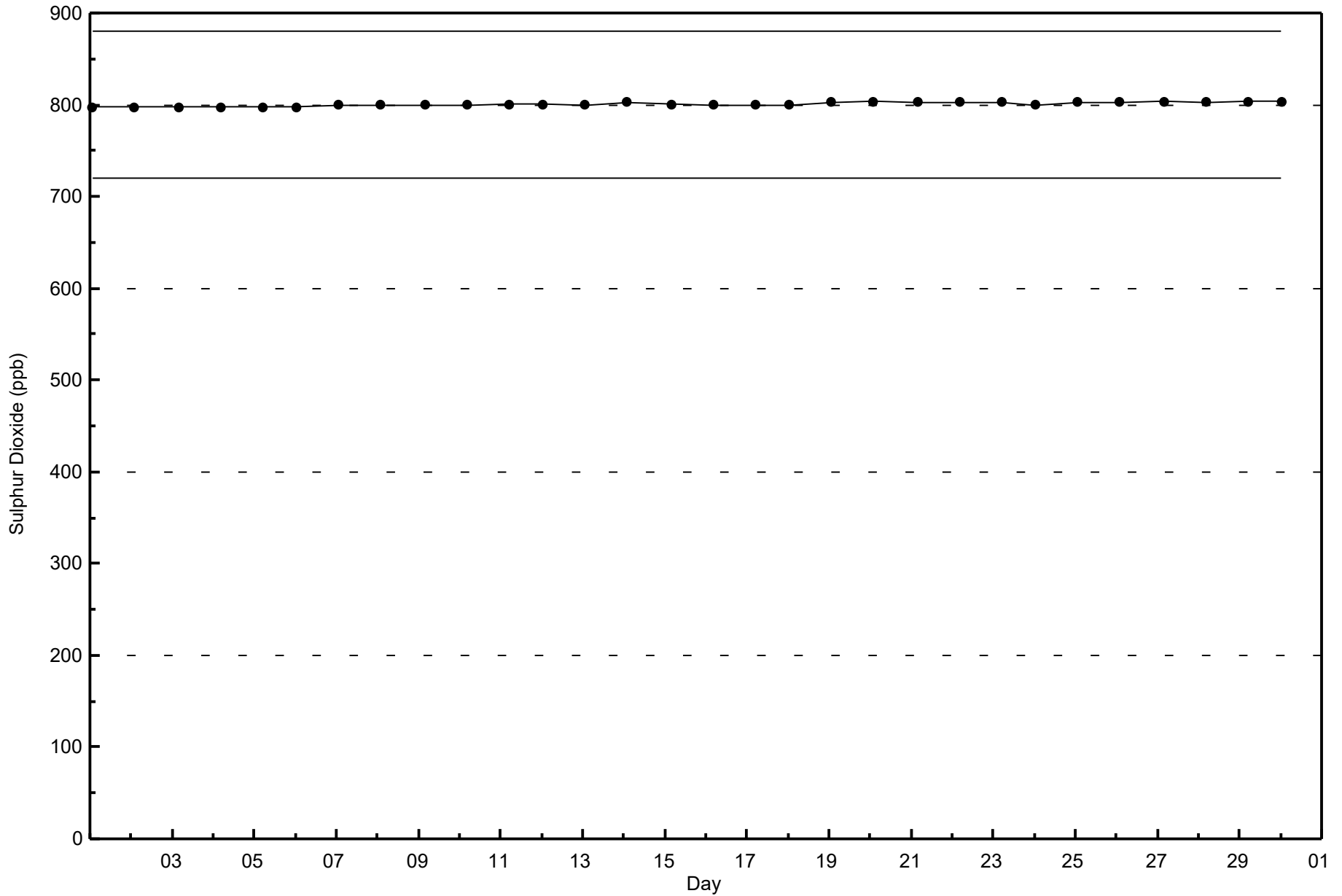


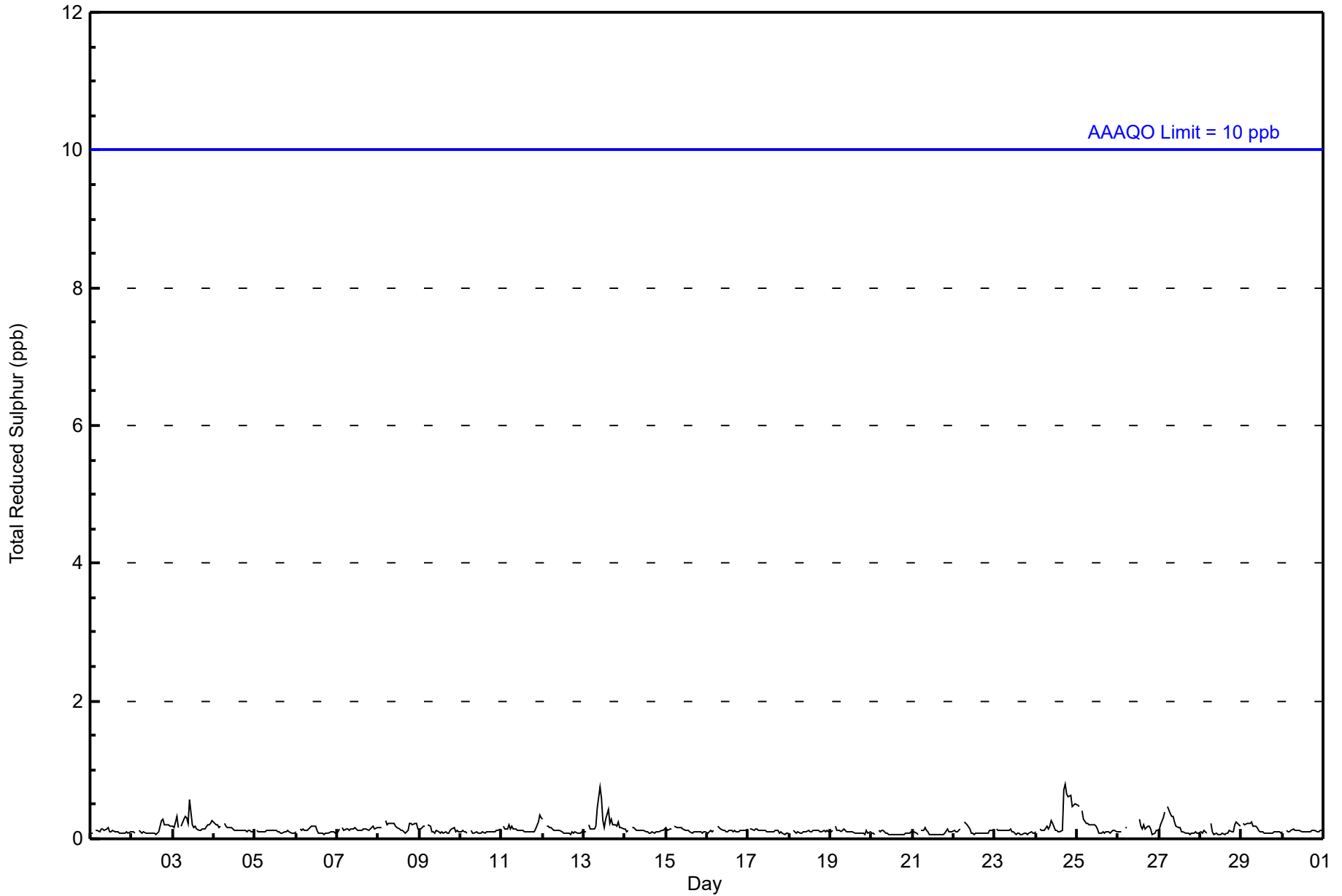
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Athabasca Valley











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	27	8	11	18	50	108	175	62	30	20	29	33	25	8	24	56	684
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
Totals	27	8	11	18	50	108	175	62	30	20	29	33	25	8	24	56	684

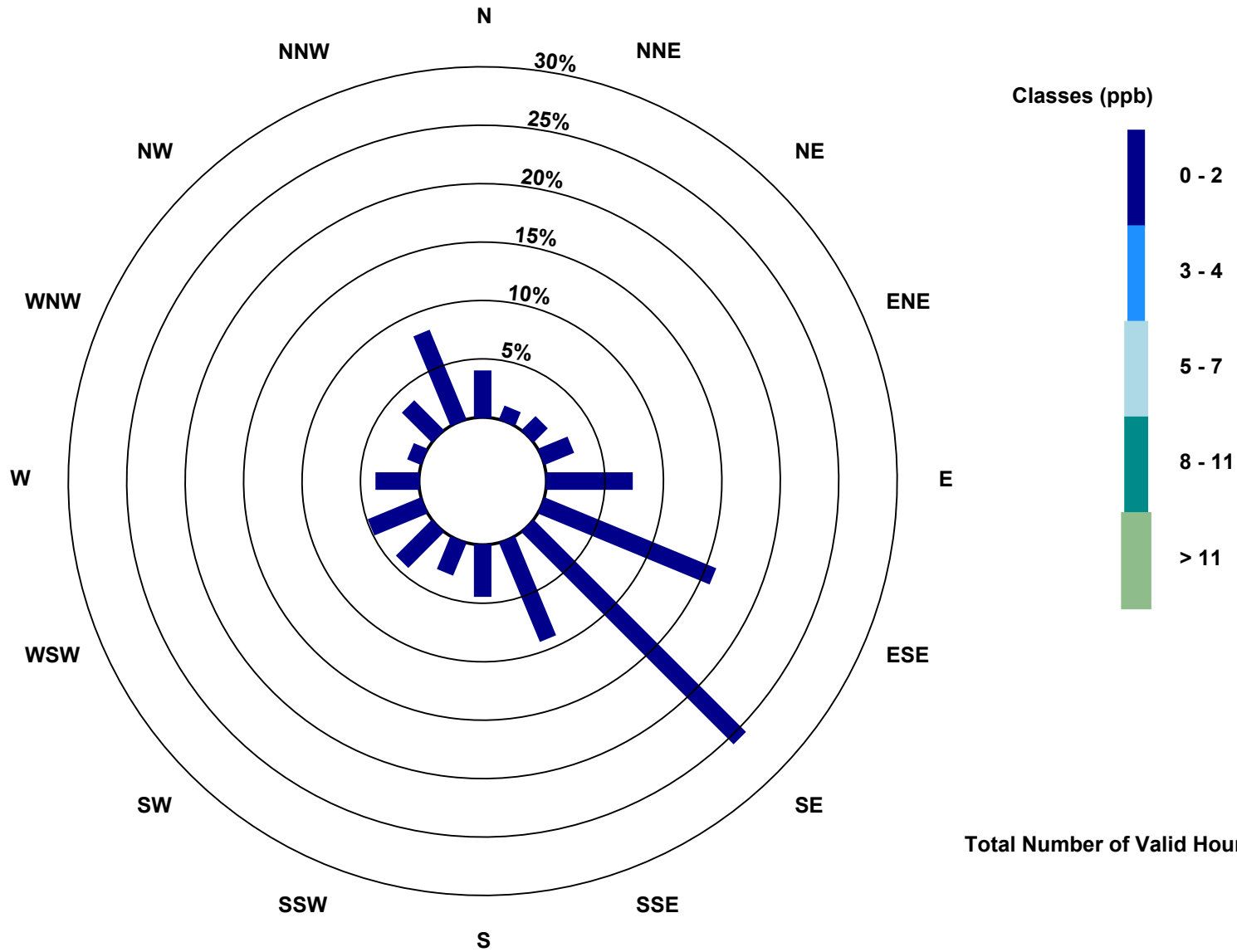
Total Number of Valid Hours: 684

Total Number of Hours: 720

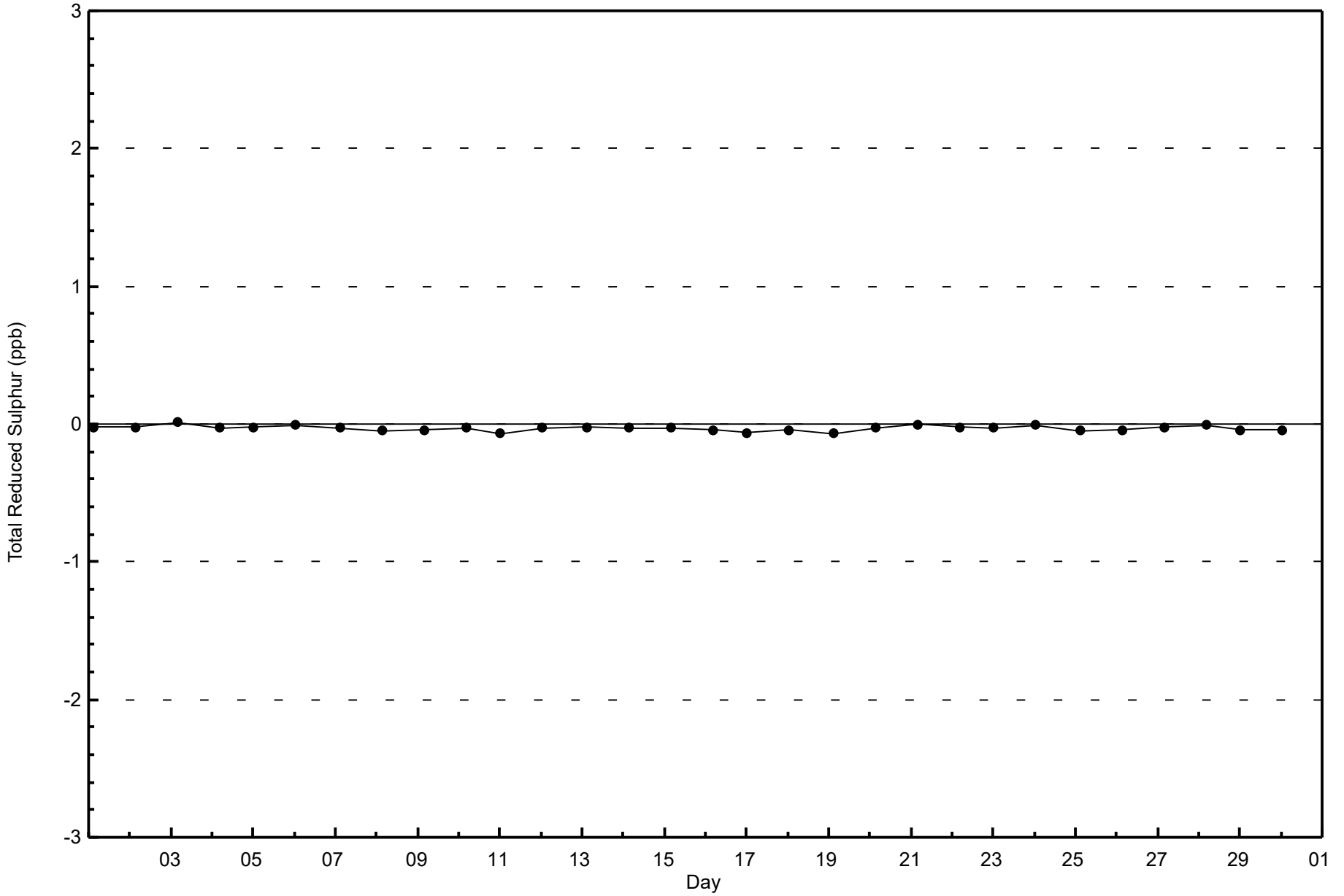


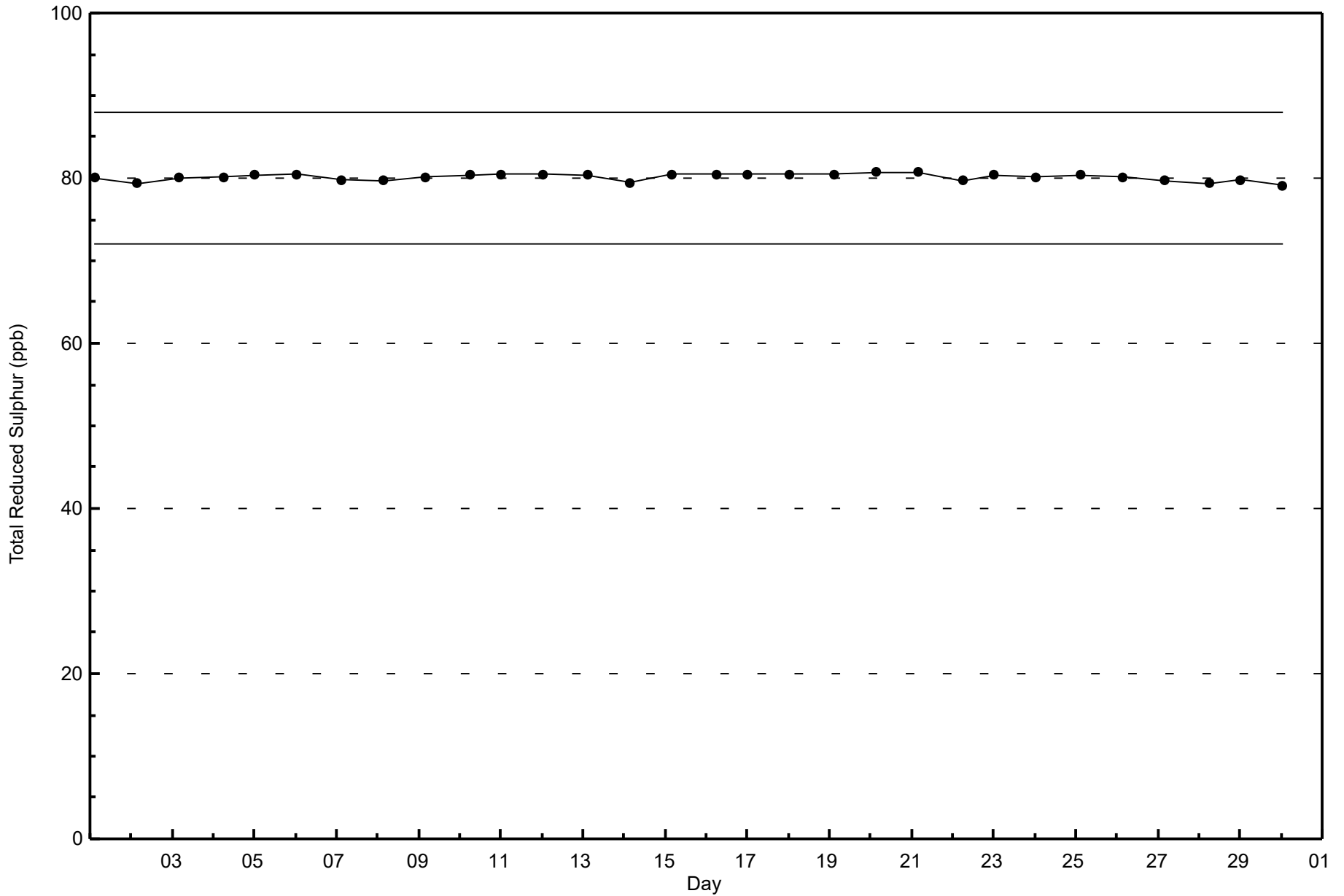
Wood Buffalo Environmental Association
Wind Rose Apr 2023

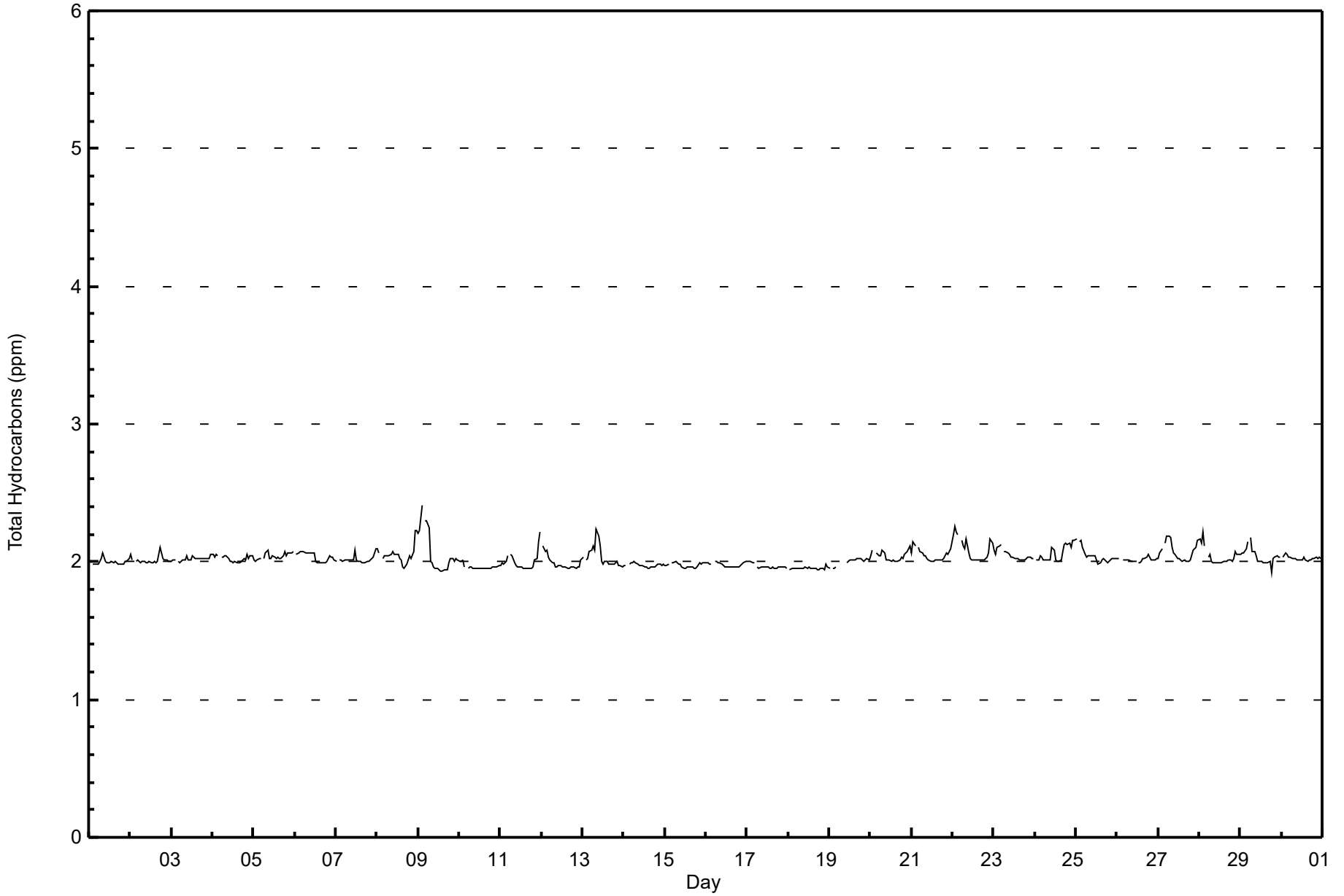
Total Reduced Sulphur (TRS) - ppb
Athabasca Valley



Total Number of Valid Hours: 684









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Athabasca Valley - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	544	79.65	79.65
2.1 - 3.0	139	20.35	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Athabasca Valley - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	23	8	7	11	35	87	129	47	28	16	23	34	21	10	22	43	544
2.1 - 3.0	2	2	5	6	13	16	43	17	2	4	7	1	5	1	3	12	139
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
Totals	25	10	12	17	48	103	172	64	30	20	30	35	26	11	25	55	683

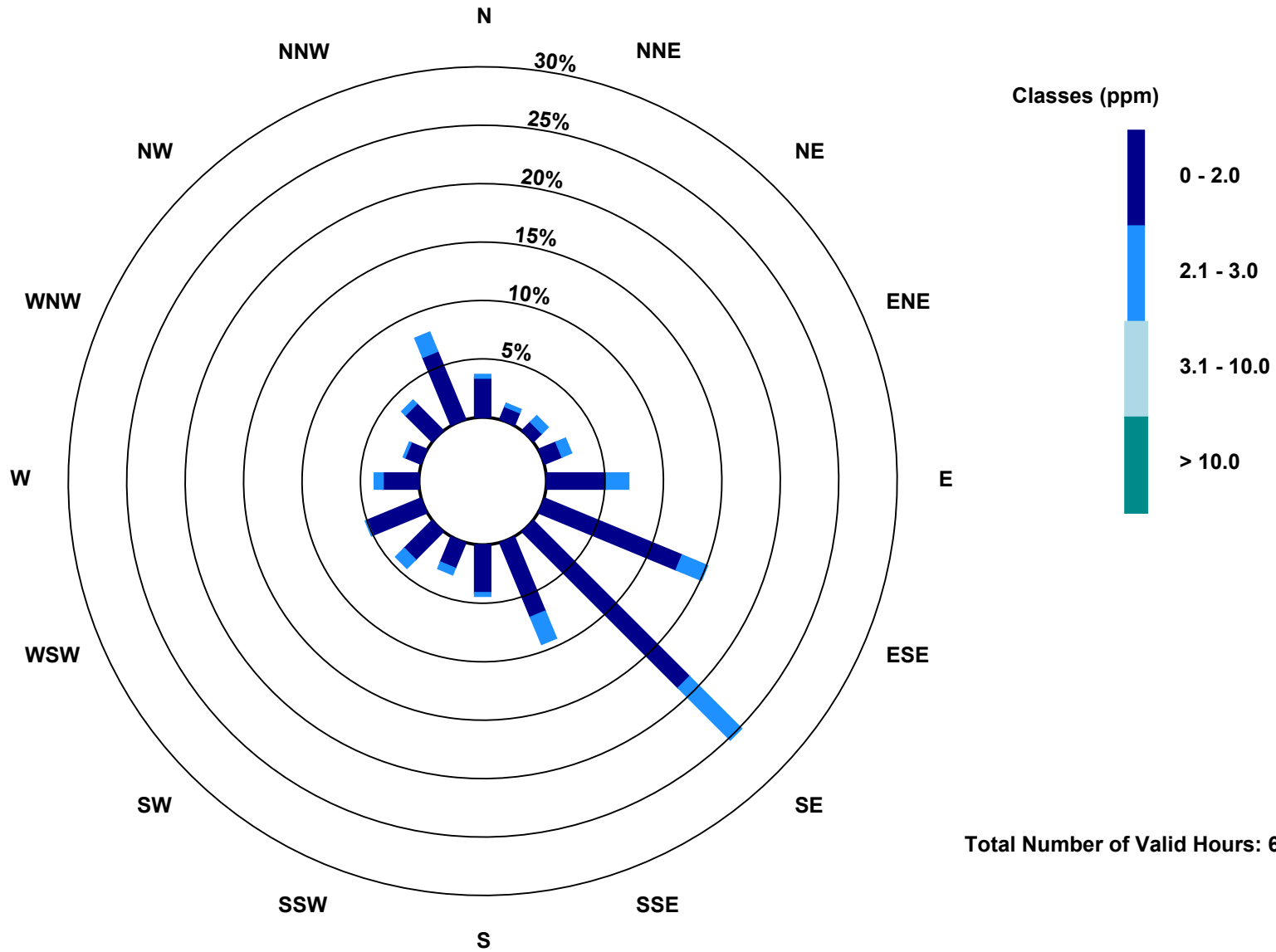
Total Number of Valid Hours: 683

Total Number of Hours: 720

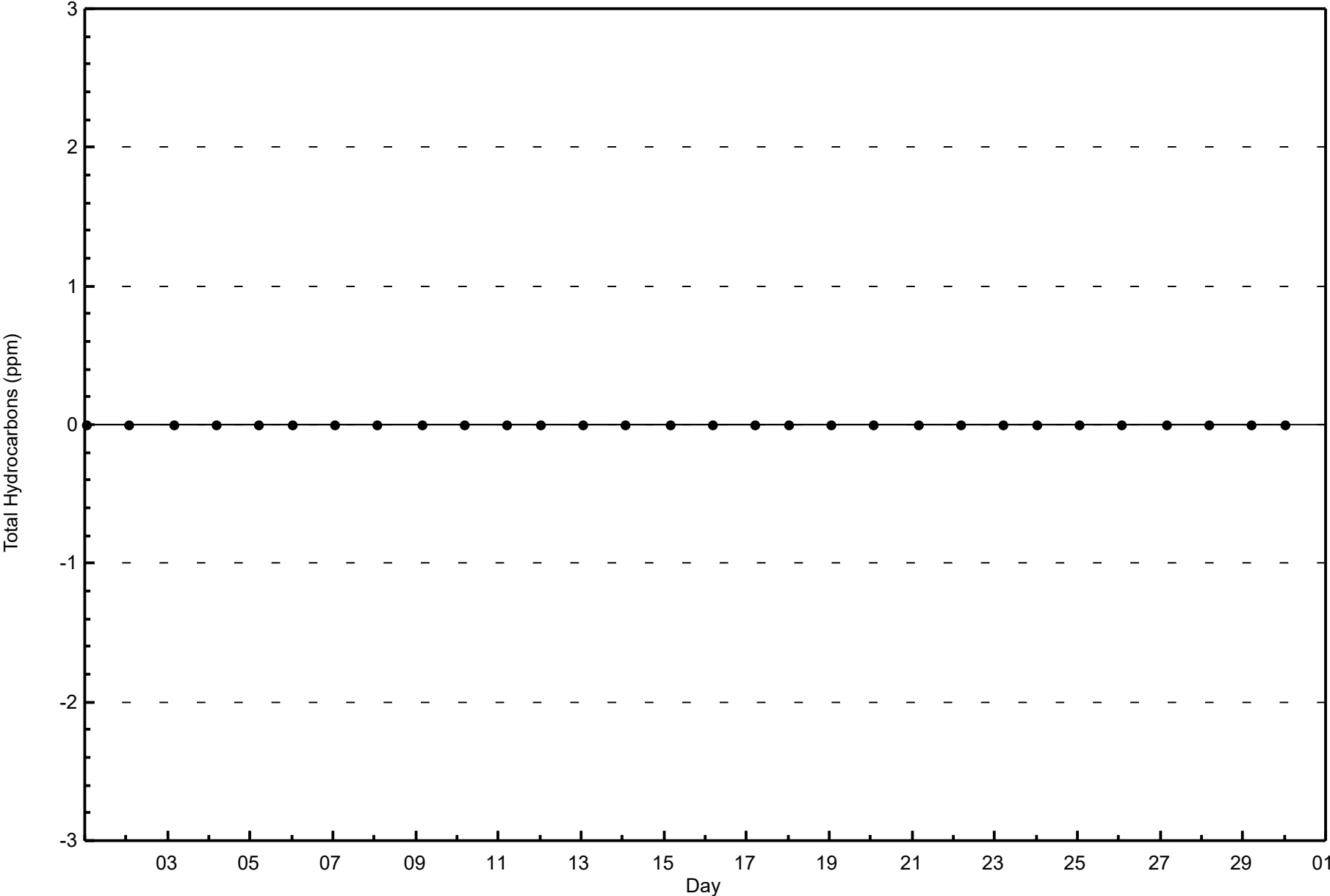


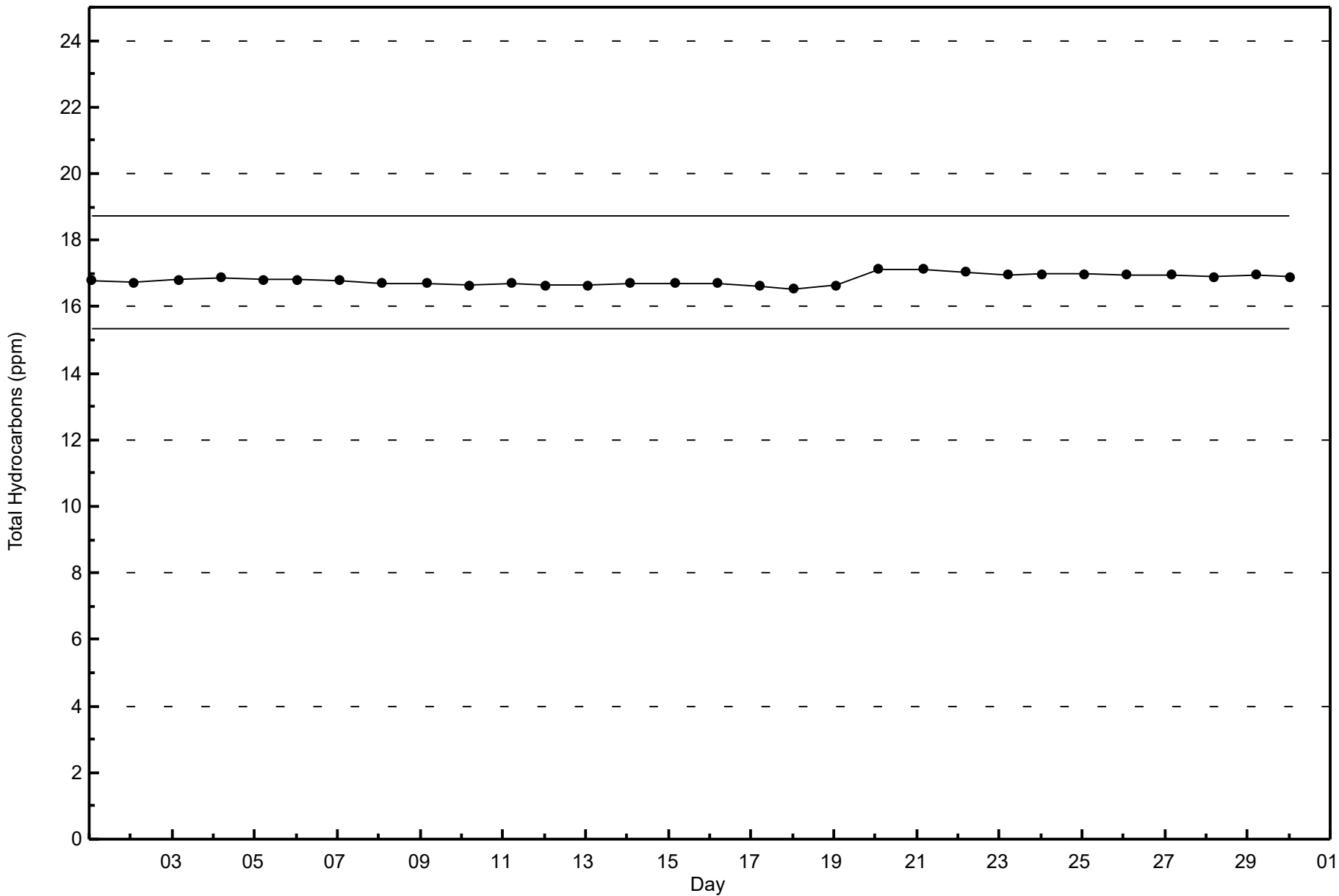
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Athabasca Valley



Total Number of Valid Hours: 683



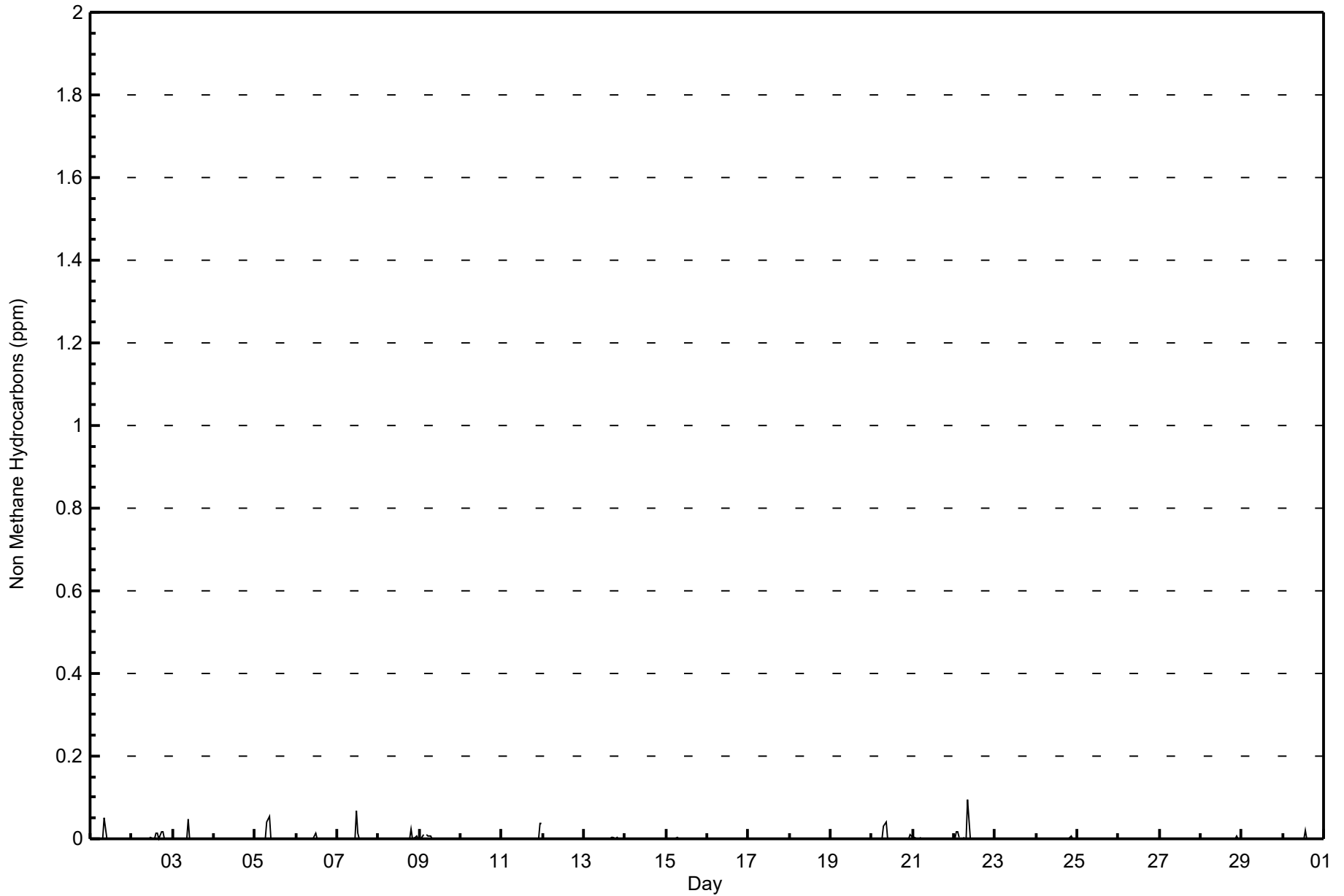




Summary of Hour Averages

Athabasca Valley - April 2023

Maximum Value: 0.093 ppm on Apr 22 09:00		Maximum Daily Average: 0.006 ppm on Apr 22		Hours in Service:	720																					
Minimum Value: 0.000 ppm on Apr 1 01:00		Minimum Daily Average: 0.000 ppm on Apr 4		Hours of Data:	683																					
Maximum Diurnal Average: 0.008 ppm at hour 9		Minimum Diurnal Average: 0.000 ppm at hour 1		Hours of Missing Data:	37																					
Monthly Average: 0.001 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0		Hours of Calibration:	35																					
				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-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.051
2-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.012	0.012	0.000	0.016	0.015	0.000	0.000	0.000	0.000	0.000	0.003	0.016
3-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.048
4-Apr	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
5-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.041	0.056	0.000	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	0.004	0.056
6-Apr	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.014
7-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.068	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.068
8-Apr	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	0.022	0.001	0.003	0.007	0.000	0.001	0.022
9-Apr	0.000	0.000	0.011	Z	0.009	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.011
10-Apr	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
11-Apr	0.000	0.000	0.000	0.000	0.001	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	0.039	0.038	0.003	0.039
12-Apr	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
13-Apr	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	0.003	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.005
14-Apr	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
15-Apr	0.000	0.000	0.000	Z	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	0.005
16-Apr	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
17-Apr	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
18-Apr	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
19-Apr	0.000	Z	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	0.000
20-Apr	0.000	0.001	Z	0.000	0.000	0.000	0.000	0.032	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	0.009	0.007	0.004	0.040	
21-Apr	0.000	0.003	0.000	Z	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	0.000	0.000	0.000	0.003
22-Apr	0.000	0.017	0.018	0.005	Z	0.002	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.093	
23-Apr	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
24-Apr	Z	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	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.005
25-Apr	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
26-Apr	0.000	0.000	Z	0.000	0.000	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	0.000	0.000	0.000	0.000
27-Apr	0.000	0.000	0.000	Z	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
28-Apr	0.001	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	0.006	0.000	0.000	0.000	0.000	0.006
29-Apr	0.000	0.000	0.000	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30-Apr	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.020
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	655	95.90	95.90
0.006 - 0.05	25	3.66	99.56
0.06 - 0.1	3	0.44	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	24	10	12	16	47	102	162	58	30	20	30	35	26	11	23	49	655
0.006 - 0.05	1	0	0	1	0	1	8	6	0	0	0	0	0	0	2	6	25
0.06 - 0.1	0	0	0	0	1	0	2	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
Totals	25	10	12	17	48	103	172	64	30	20	30	35	26	11	25	55	683

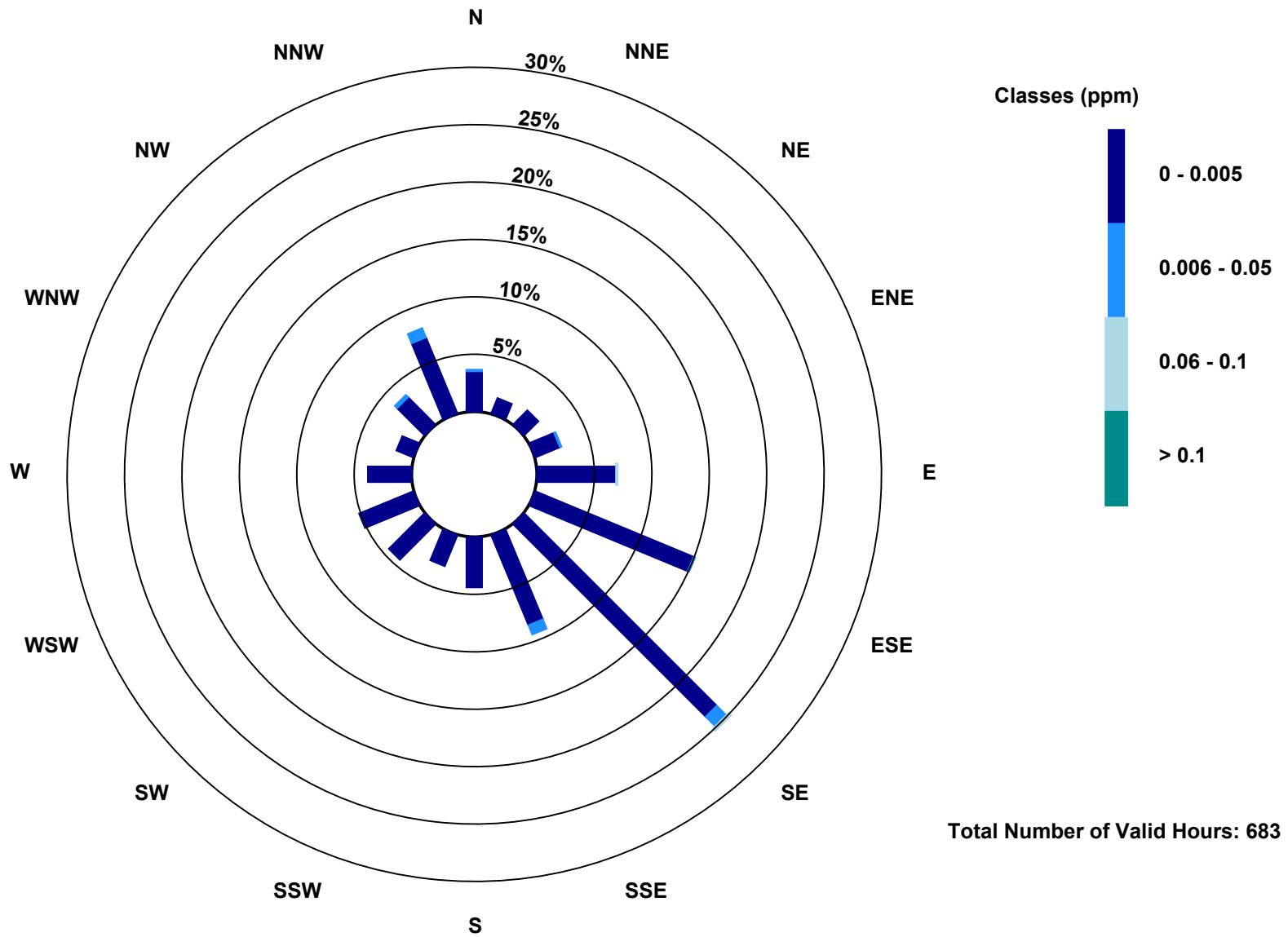
Total Number of Valid Hours: 683

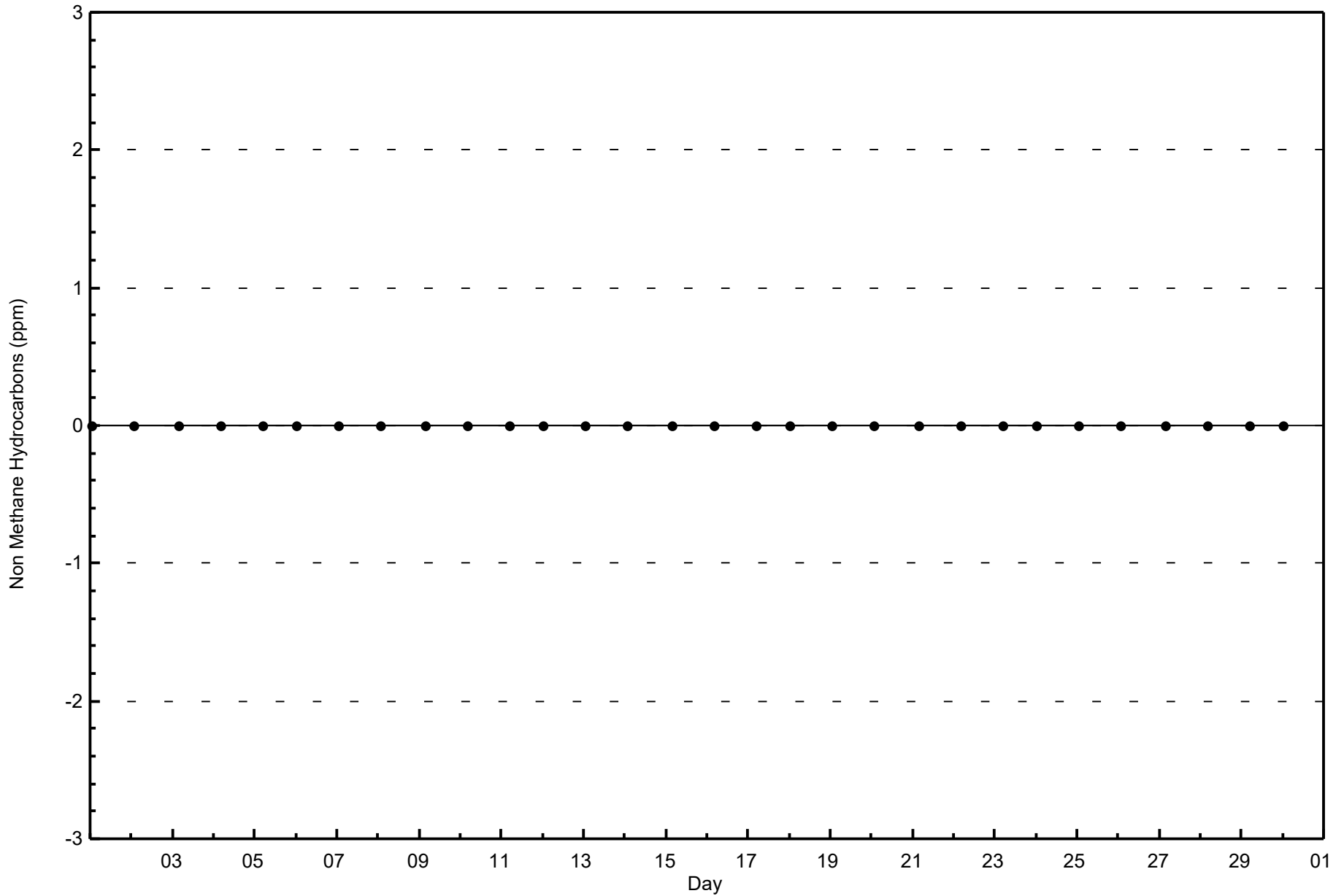
Total Number of Hours: 720

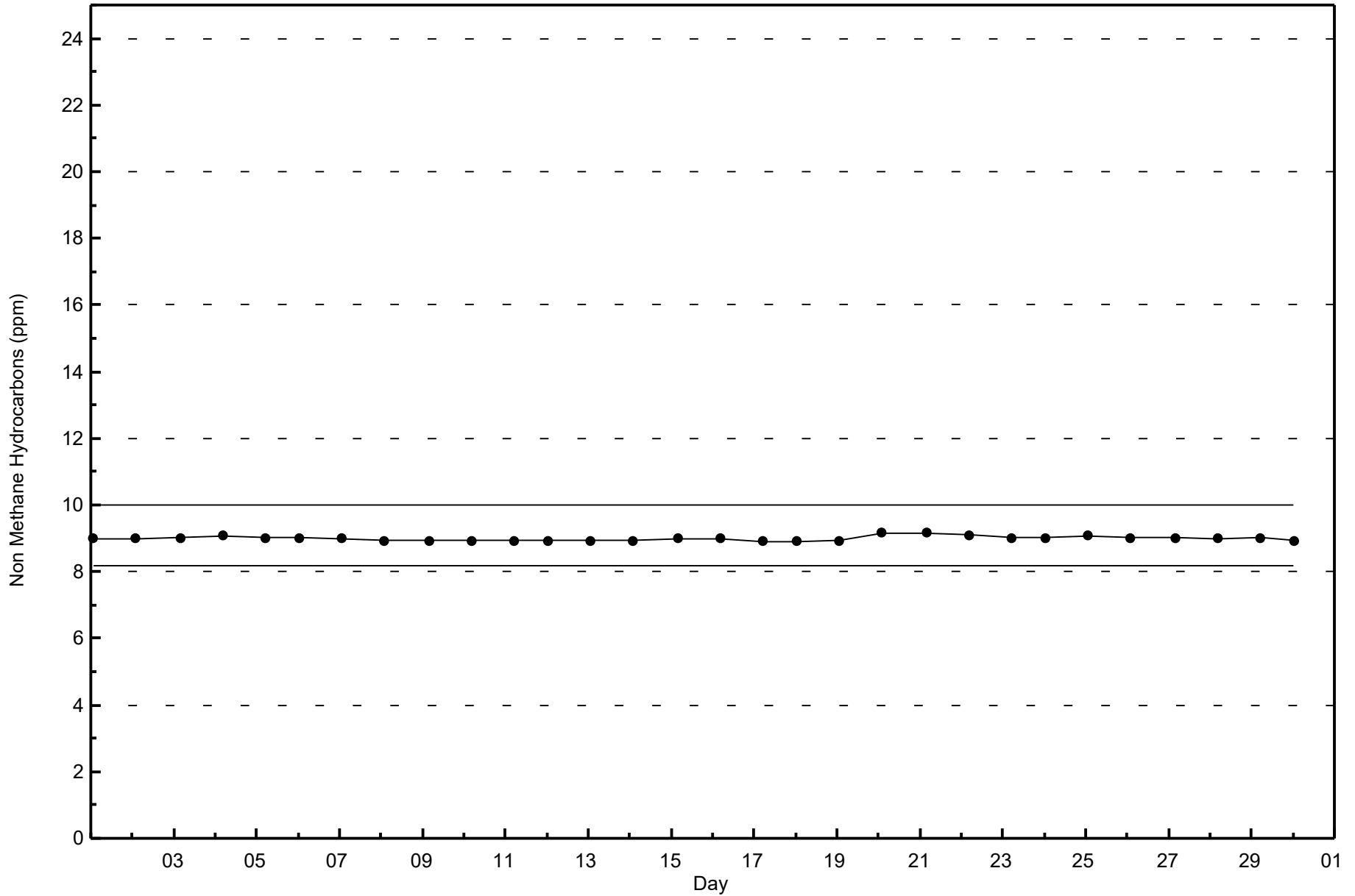


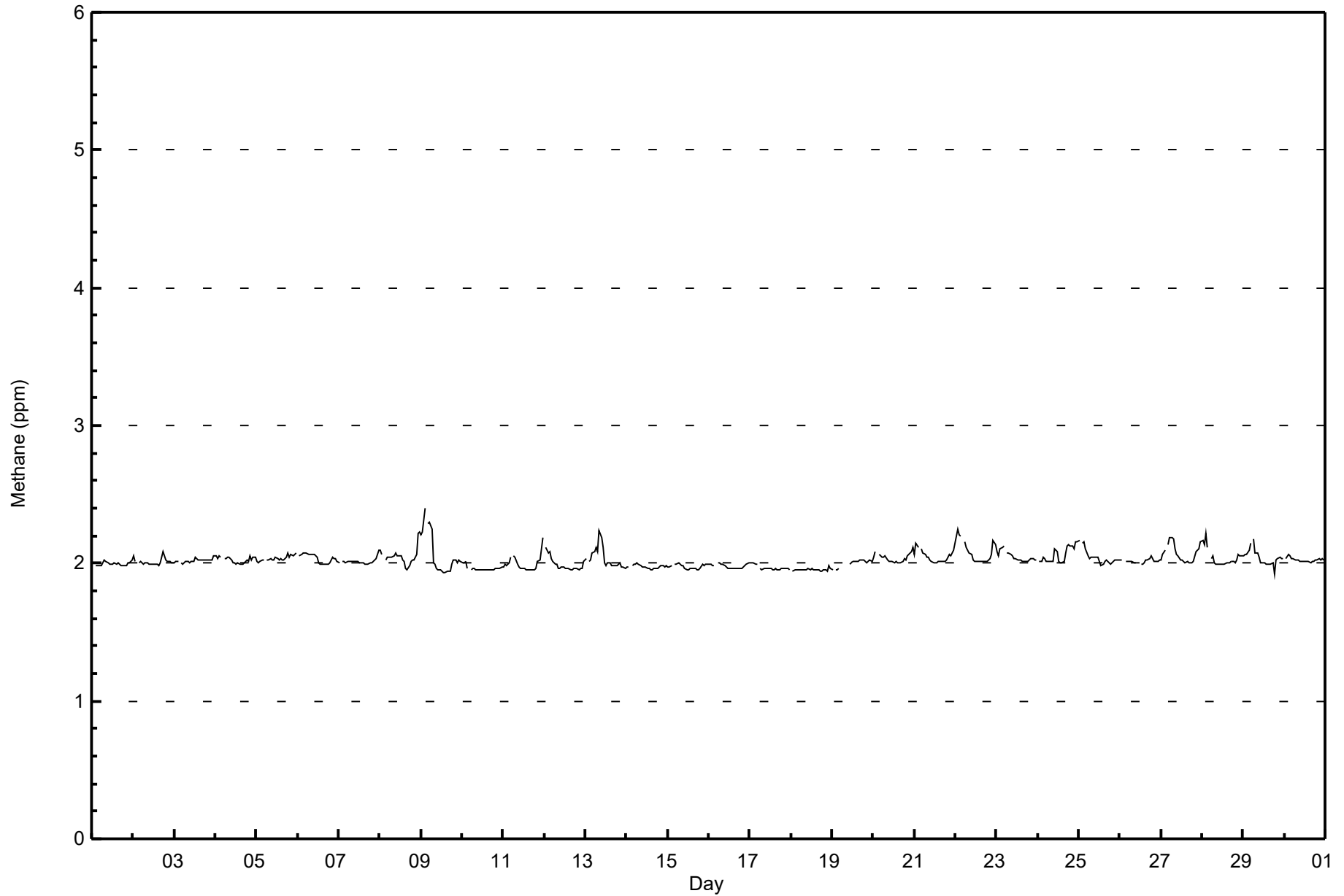
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Athabasca Valley - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	550	80.53	80.53
2.1 - 3.0	133	19.47	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Athabasca Valley - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	23	8	7	11	35	87	133	48	28	16	23	34	21	10	23	43	550
2.1 - 3.0	2	2	5	6	13	16	39	16	2	4	7	1	5	1	2	12	133
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
Totals	25	10	12	17	48	103	172	64	30	20	30	35	26	11	25	55	683

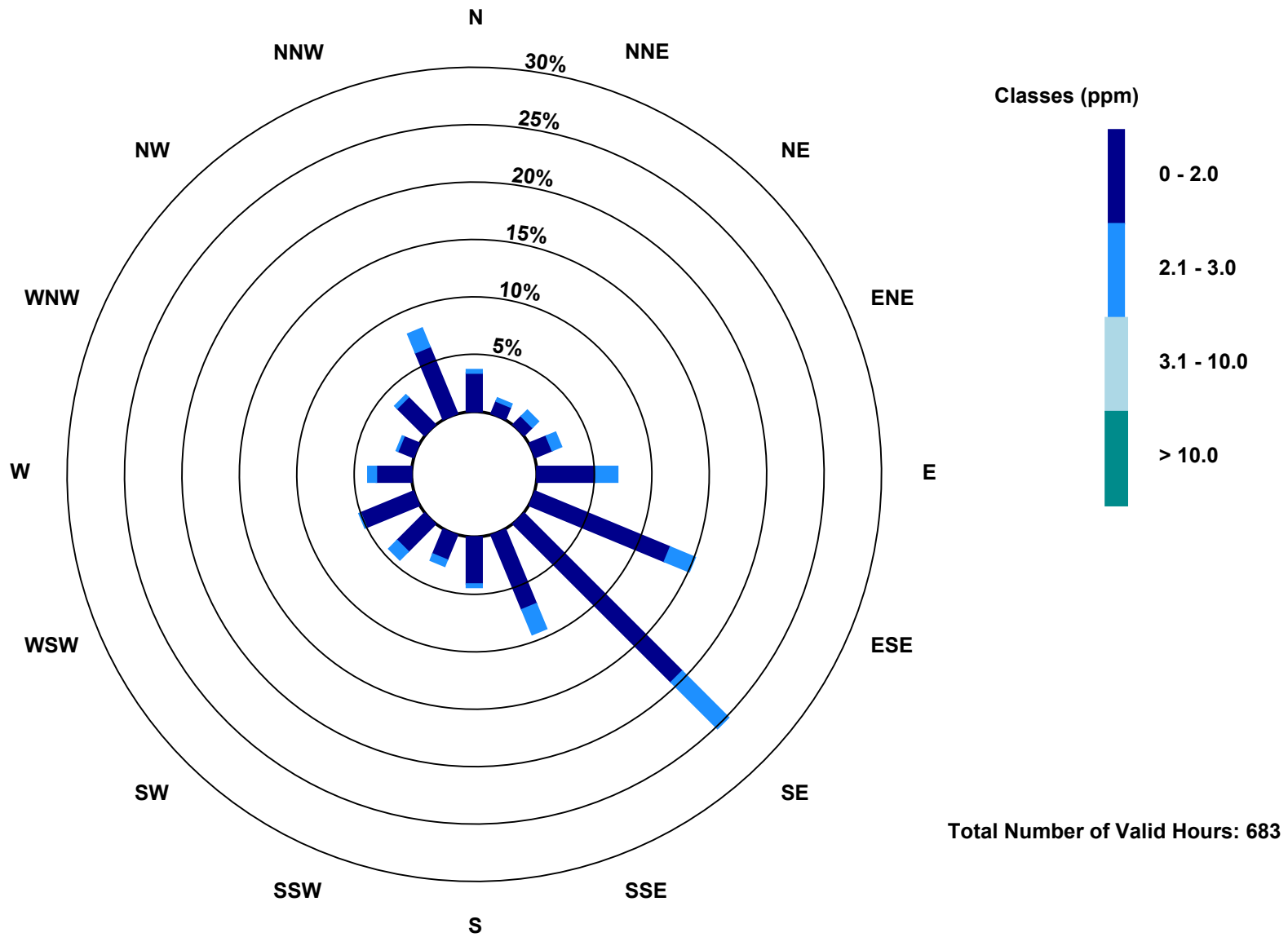
Total Number of Valid Hours: 683

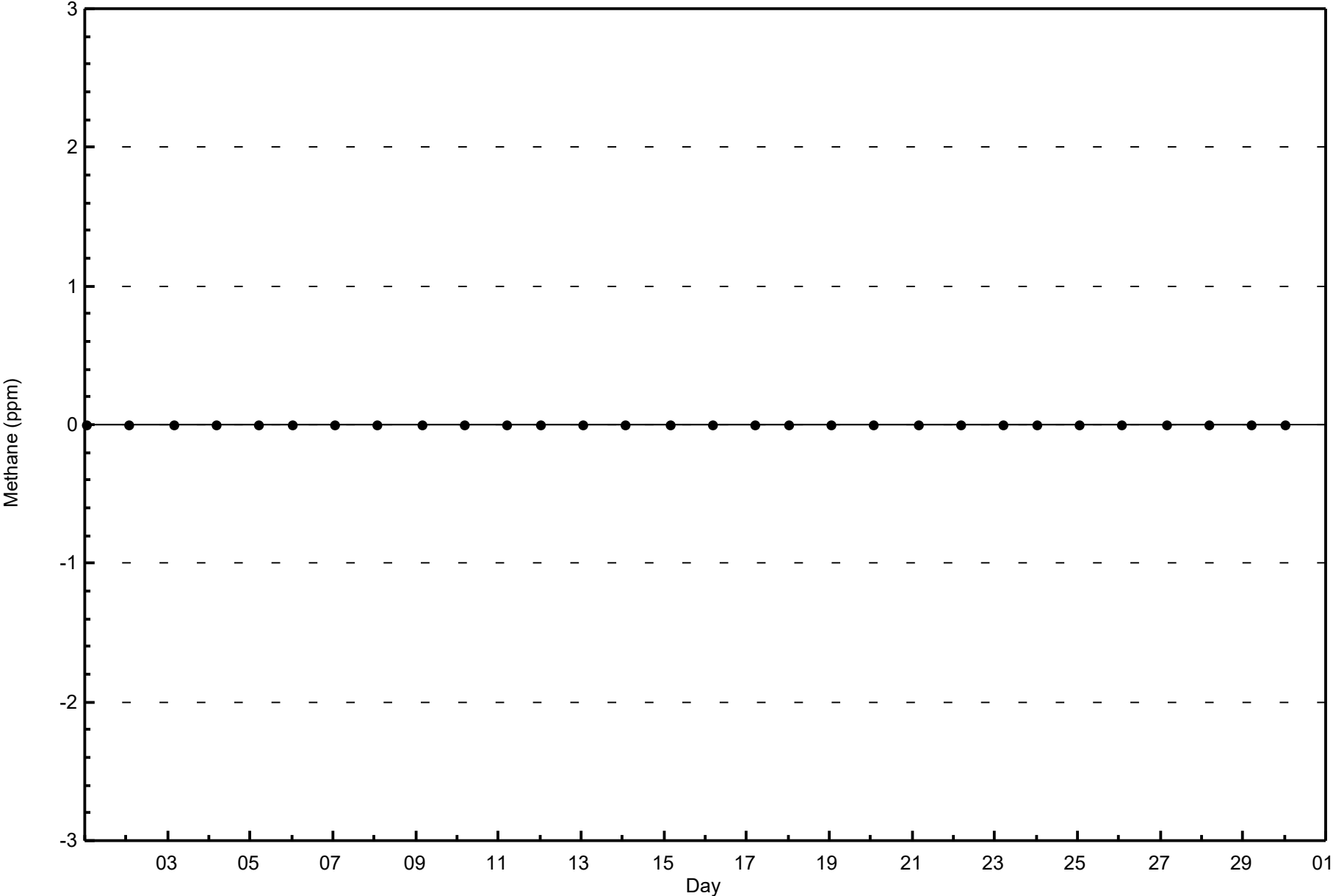
Total Number of Hours: 720

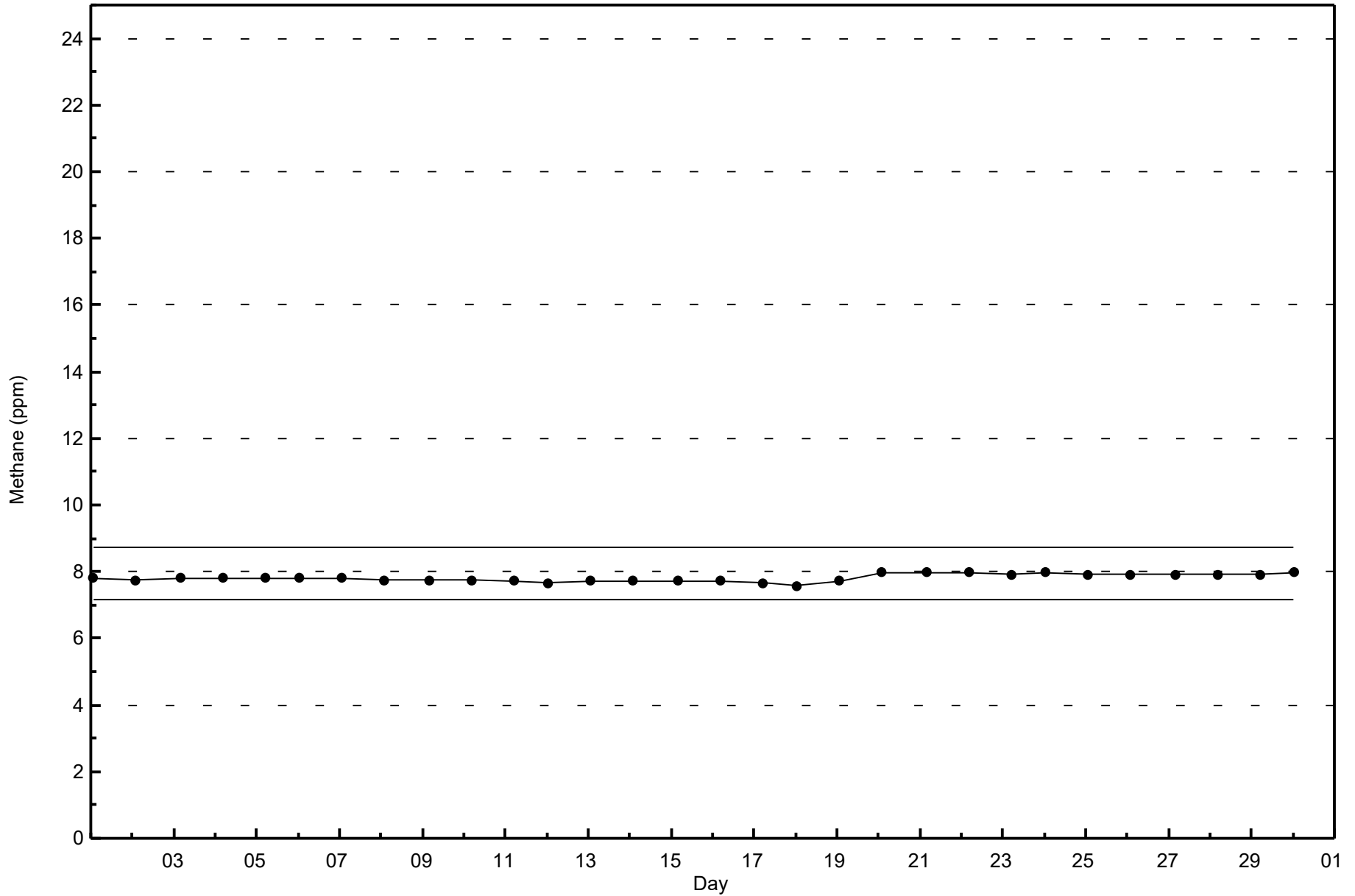


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Athabasca Valley









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Athabasca Valley - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 52.6 ppb on Apr 21 17:00	Maximum Daily Average: 44.2 ppb on Apr 10		Hours of Data:	662
Minimum Value: 5.7 ppb on Apr 27 05:00	Minimum Daily Average: 24.4 ppb on Apr 13		Hours of Missing Data:	58
Maximum Diurnal Average: 44.0 ppb at hour 15	Minimum Diurnal Average: 25.5 ppb at hour 5		Hours of Calibration:	34
Monthly Average: 34.90 ppb	Percentiles: P ₁ = 9.4 P ₁₀ = 20.2 Q ₁ = 29.4 Median = 35.7 Q ₃ = 42.6 P ₉₀ = 46.8 P ₉₉ = 51.2		Percent Operational Time:	96.7

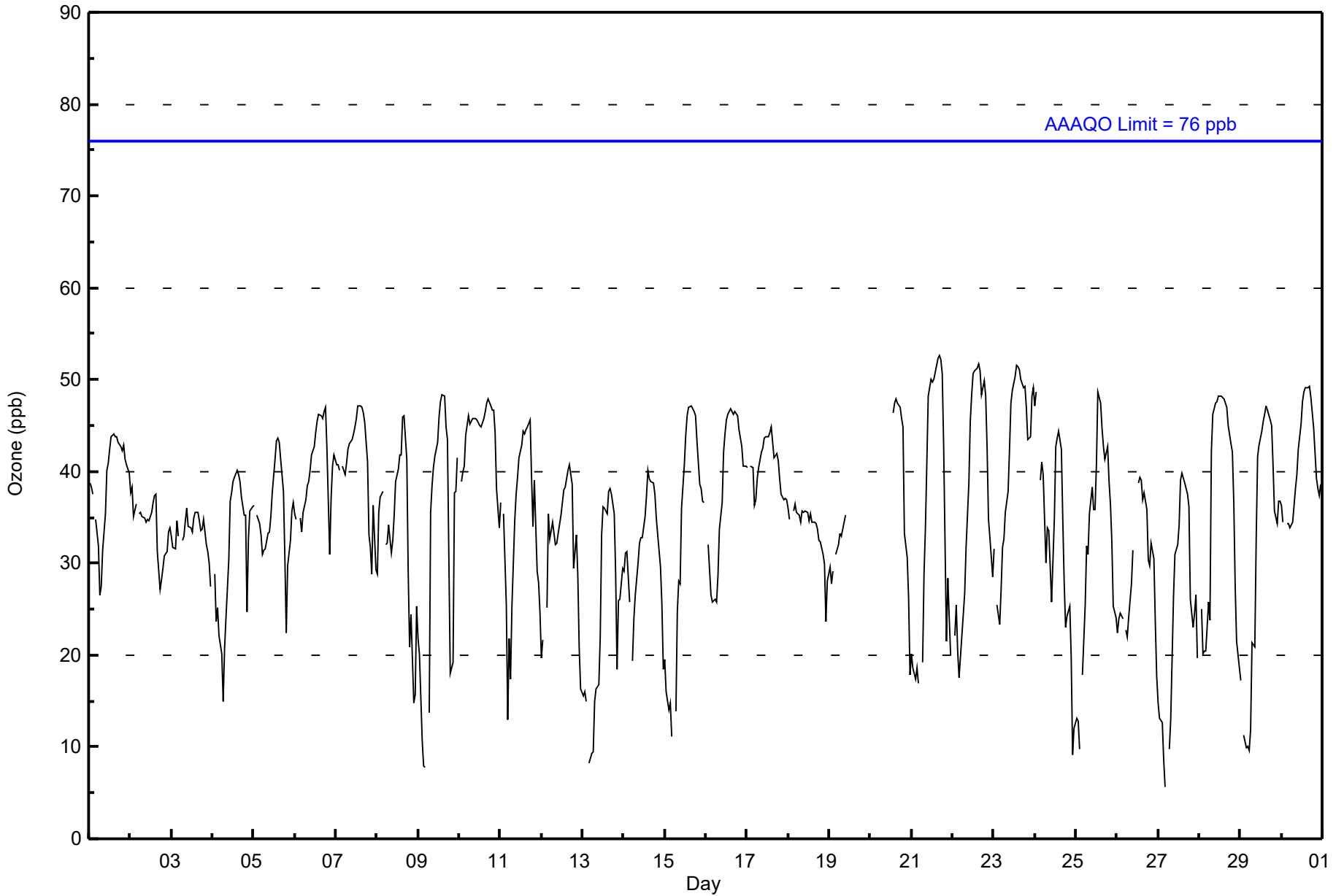
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	38.8	38.3	37.5	Z	34.8	31.9	26.5	27.5	31.4	35.4	40.1	40.9	42.4	43.8	44.1	43.8	43.8	43.2	42.7	42.3	42.9	41.3	40.7	39.8	38.9	44.1																							
2-Apr	37.7	38.2	35.1	36.4	Z	35.4	35.5	35.0	35.0	34.4	34.8	34.6	35.6	36.6	37.4	37.5	31.2	27.2	28.2	29.5	30.8	31.3	33.4	33.9	34.1	38.2																							
3-Apr	32.9	31.7	31.6	34.7	32.9	Z	32.5	32.9	34.7	35.9	34.0	33.9	33.4	34.9	35.5	35.5	34.7	33.5	33.7	34.8	32.0	31.2	30.1	27.5	33.2	35.9																							
4-Apr	Z	28.9	23.7	25.1	22.1	20.1	15.0	20.7	24.1	30.4	36.7	37.6	39.0	39.3	40.2	39.6	38.9	37.3	35.3	35.2	24.6	32.6	35.7	36.1	31.2	40.2																							
5-Apr	36.4	Z	35.3	34.4	33.2	31.0	31.3	31.6	33.3	33.5	35.0	37.7	41.4	43.3	43.7	43.1	41.3	37.8	30.6	22.5	29.7	32.4	35.7	36.5	35.2	43.7																							
6-Apr	35.3	34.8	Z	34.9	33.4	35.6	36.8	38.5	38.9	40.2	41.8	42.7	44.3	45.4	46.2	46.0	45.7	46.6	47.0	42.6	31.0	37.1	40.6	41.8	40.3	47.0																							
7-Apr	40.8	40.7	40.1	Z	40.5	39.7	40.9	42.5	43.1	43.4	44.1	44.9	45.8	47.1	47.2	47.0	46.3	45.4	41.0	33.1	31.8	28.8	36.3	29.4	40.9	47.2																							
8-Apr	28.8	35.5	37.2	37.8	Z	32.0	32.1	34.2	31.1	32.5	35.3	38.9	40.3	41.8	41.8	45.9	46.1	41.3	29.0	20.9	24.4	14.7	15.8	25.4	33.2	46.1																							
9-Apr	21.9	20.2	10.7	8.0	7.7	Z	13.7	35.6	38.4	40.4	41.6	43.2	46.0	47.5	48.4	48.2	44.9	43.4	30.6	18.0	19.2	37.6	37.9	41.6	32.4	48.4																							
10-Apr	Z	38.9	39.9	40.6	43.9	46.0	45.2	45.4	45.7	45.7	45.6	45.4	44.9	44.9	45.8	46.5	47.5	47.9	47.1	46.7	46.7	44.2	38.1	33.8	44.2	47.9																							
11-Apr	36.6	Z	35.3	25.4	12.9	21.8	17.4	25.4	34.6	37.6	39.3	41.6	42.8	44.4	44.1	44.5	44.9	45.6	39.3	34.0	39.1	29.2	27.9	24.7	34.3	45.6																							
12-Apr	19.7	21.7	Z	25.2	35.4	32.6	34.5	33.3	32.0	32.2	33.2	35.2	36.6	38.0	38.2	40.2	40.8	39.7	38.5	29.5	33.1	28.6	20.8	16.3	32.0	40.8																							
13-Apr	15.5	15.9	15.0	Z	8.2	9.3	9.4	14.9	16.3	16.8	21.9	33.2	36.1	36.0	35.4	37.8	38.2	37.5	35.4	28.9	18.5	25.9	26.1	29.5	24.4	38.2																							
14-Apr	29.1	31.1	31.3	25.9	Z	19.3	24.0	26.5	30.0	32.2	32.9	32.9	35.2	37.4	40.1	39.2	38.9	38.7	37.5	34.9	33.0	29.6	25.4	18.4	31.4	40.1																							
15-Apr	19.5	16.1	14.1	14.8	11.2	Z	13.8	24.7	28.1	27.8	35.9	40.8	43.9	46.1	47.0	47.2	46.9	46.5	46.0	43.3	38.6	38.1	36.7	36.6	33.2	47.2																							
16-Apr	Z	32.1	29.3	26.5	25.7	26.0	25.8	28.7	33.6	36.6	42.1	44.1	45.7	46.3	46.8	46.5	46.3	46.5	46.0	44.5	43.6	42.6	40.6	40.5	38.5	46.8																							
17-Apr	40.5	Z	40.6	40.4	36.3	37.0	39.2	40.5	42.2	42.5	43.6	43.8	43.8	44.2	44.9	43.2	41.5	41.9	41.2	39.1	37.5	36.9	37.1	36.9	40.6	44.9																							
18-Apr	36.1	34.8	Z	35.7	36.5	35.5	35.3	34.5	35.7	35.6	35.7	35.6	34.7	35.3	34.5	34.5	34.3	33.7	32.5	32.3	31.0	29.8	23.7	28.1	33.7	36.5																							
19-Apr	29.6	27.8	29.1	Z	31.0	32.0	33.2	33.0	33.8	35.2	C	C	C	M	M	M	M	M	M	M	M	M	M	M	--	35.2																							
20-Apr	M	M	M	M	M	M	M	M	M	M	M	C	C	46.4	47.4	47.9	47.5	46.9	45.7	44.9	33.2	30.7	26.3	17.9	--	47.9																							
21-Apr	20.1	18.6	17.5	18.7	17.0	Z	19.3	28.8	33.9	40.8	48.2	50.0	49.7	50.1	50.8	52.4	52.6	52.1	50.6	42.9	21.5	28.3	24.0	20.1	35.1	52.6																							
22-Apr	Z	22.2	25.4	20.5	17.6	22.1	24.4	26.7	31.8	38.8	45.5	48.4	50.6	50.9	51.3	51.7	51.0	48.4	49.9	48.3	42.6	34.8	32.9	28.5	37.6	51.7																							
23-Apr	31.6	Z	25.5	23.4	27.2	31.8	32.7	35.5	37.8	42.4	47.4	48.9	50.3	51.5	51.4	51.1	50.1	49.1	49.3	47.0	43.4	43.7	48.2	49.2	42.1	51.5																							
24-Apr	47.1	48.6	Z	39.0	41.0	39.6	30.1	33.8	33.5	29.8	25.7	34.9	42.7	43.6	44.4	42.5	34.8	27.9	23.1	24.3	25.3	19.8	9.2	12.1	32.7	48.6																							
25-Apr	13.1	12.7	9.8	Z	17.8	25.4	31.9	31.0	35.3	38.2	35.8	35.9	40.7	48.7	47.5	44.7	42.7	41.4	42.7	38.9	36.4	32.4	25.3	24.1	32.7	48.7																							
26-Apr	22.4	24.0	24.5	24.0	Z	22.7	21.9	24.1	27.8	31.4	M	M	38.8	39.4	39.1	36.9	37.6	35.8	30.3	29.8	32.1	30.5	23.7	17.7	29.3	39.4																							
27-Apr	14.7	13.1	12.7	8.5	5.7	Z	9.8	12.9	19.7	26.4	31.0	32.0	34.2	39.0	39.8	38.8	38.1	37.5	36.1	26.1	23.0	24.5	26.6	19.7	24.8	39.8																							
28-Apr	Z	25.0	20.1	20.4	20.4	25.8	23.8	42.1	46.2	47.4	47.6	48.2	48.2	48.2	47.9	47.5	47.0	45.0	43.0	42.1	36.6	27.4	21.5	18.6	36.5	48.2																							
29-Apr	17.2	Z	11.3	9.9	10.1	9.7	11.9	21.3	20.9	32.8	41.6	42.8	44.5	45.5	46.3	47.1	46.6	45.5	44.9	40.8	35.6	34.3	36.8	36.8	31.9	47.1																							
30-Apr	36.3	34.5	Z	34.2	34.3	33.8	34.5	36.3	38.1	39.7	42.3	45.1	47.6	48.7	49.1	49.1	49.3	48.0	46.4	44.7	39.2	38.1	37.4	38.5	41.1	49.3																							
																								29.2	28.6	26.4	26.9	25.5	29.0	27.0	31.0	33.3	35.7	38.5	40.5	42.1	43.6	44.0	44.0	43.1	41.8	39.4	35.9	33.0	32.3	30.8	29.7	Diurnal Average	
																								47.1	48.6	40.6	40.6	43.9	46.0	45.2	45.4	46.2	47.4	48.2	50.0	50.6	51.5	51.4	52.4	52.6	52.1	50.6	48.3	46.7	44.2	48.2	49.2	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 (O₃) - ppb
Athabasca Valley - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Athabasca Valley - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	70	10.57	10.57
21 - 50	579	87.46	98.04
51 - 82	13	1.96	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 662

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Ozone (O₃) - ppb
Athabasca Valley - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	1	2	1	4	6	6	12	12	1	4	4	3	4	1	3	6	70
21 - 50	26	7	10	11	36	87	157	47	25	17	25	32	21	8	21	49	579
51 - 82	0	0	0	0	4	1	3	1	4	0	0	0	0	0	0	0	13
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	9	11	15	46	94	172	60	30	21	29	35	25	9	24	55	662

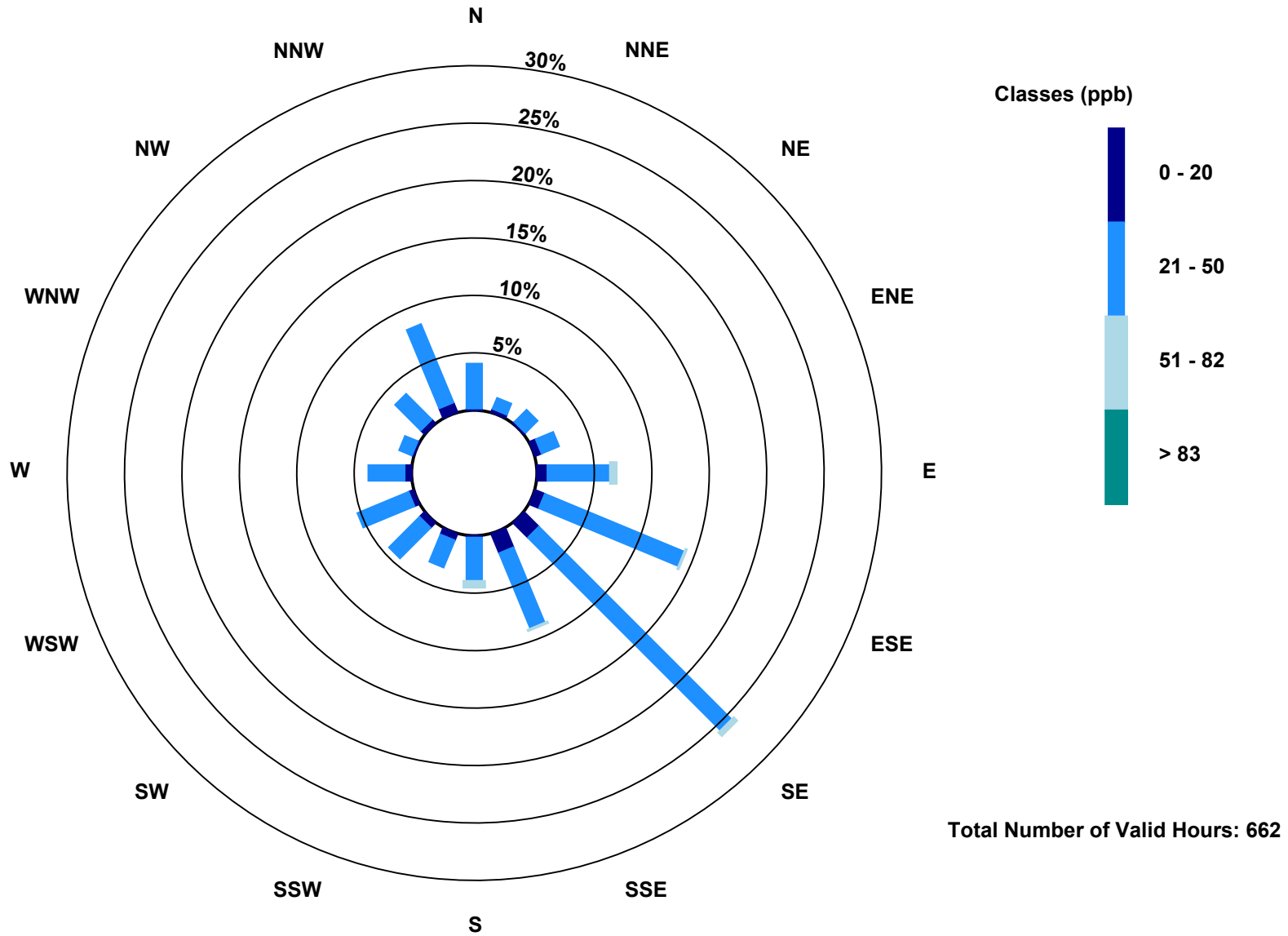
Total Number of Valid Hours: 662

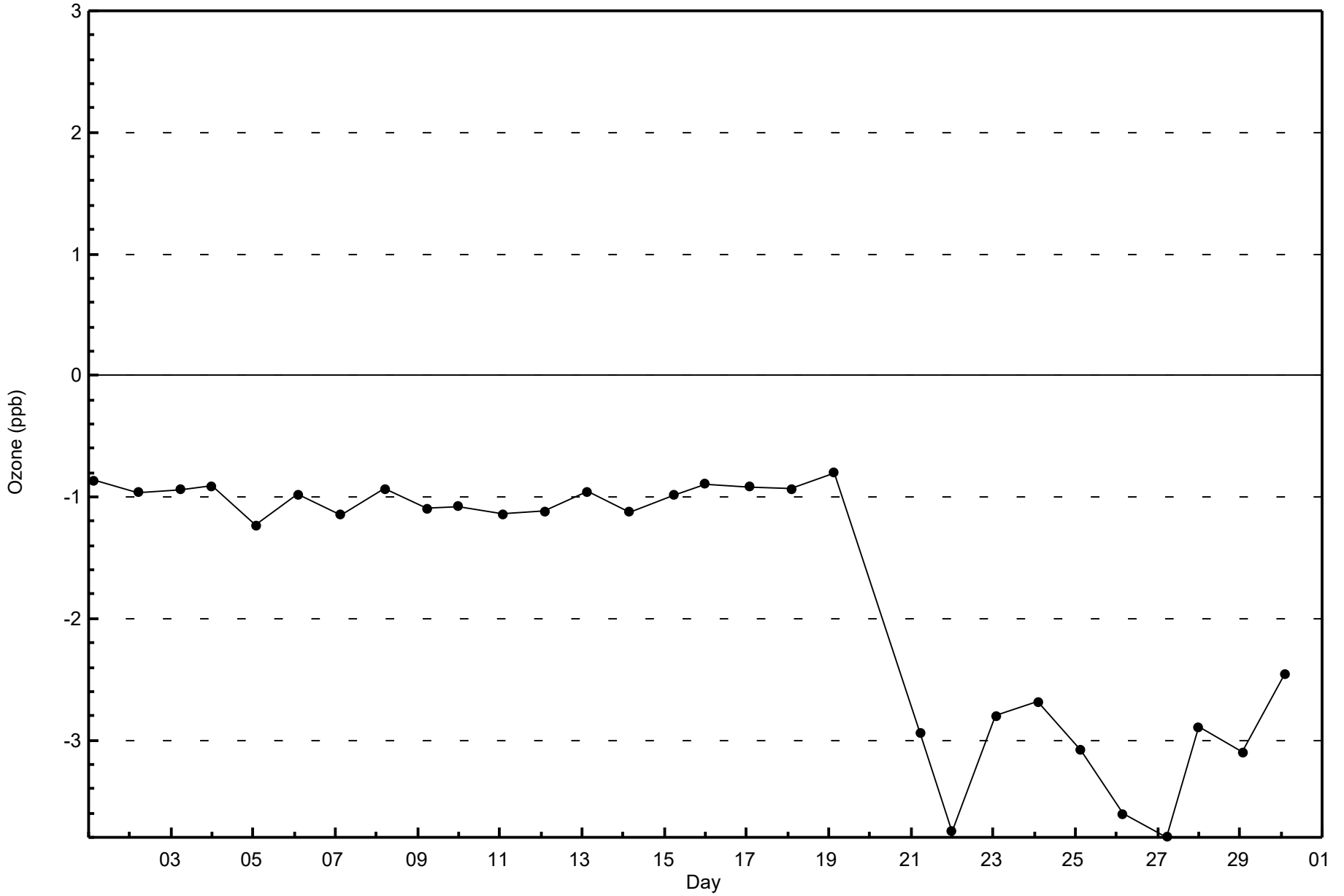
Total Number of Hours: 720

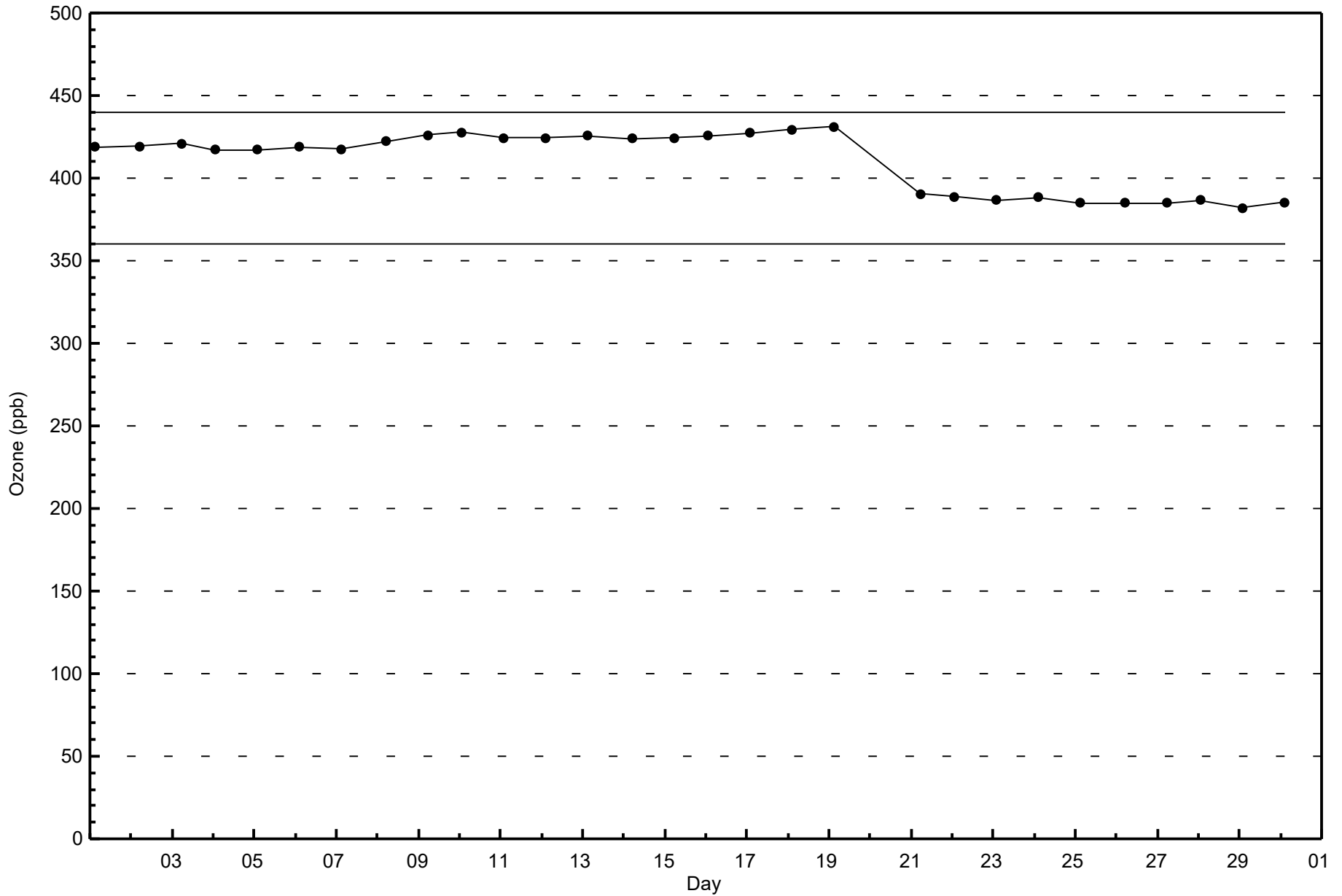


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Athabasca Valley







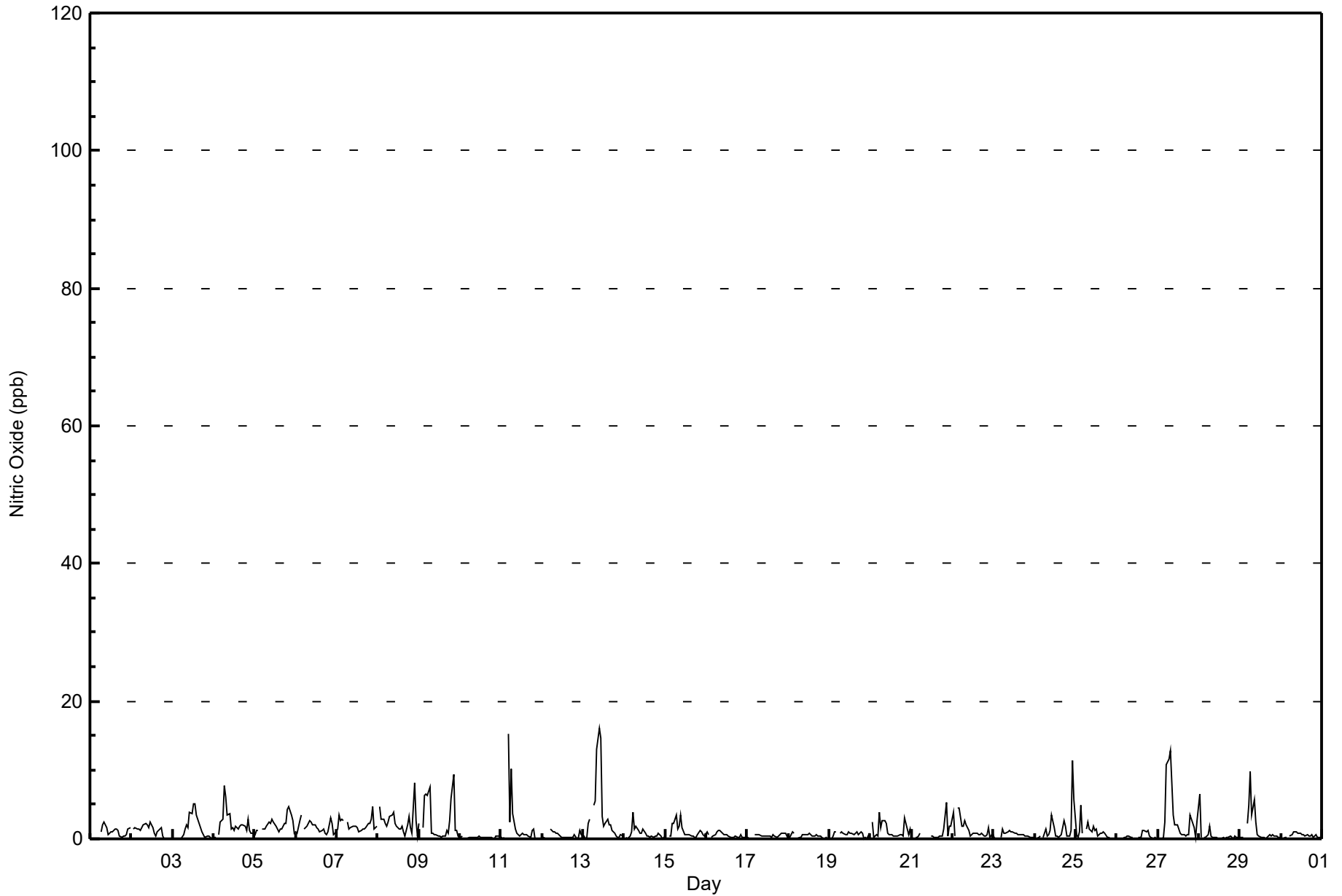


Maximum Value: 16.1 ppb on Apr 13 10:00																				Maximum Daily Average: 3.4 ppb on Apr 13					Hours in Service: 720		
Minimum Value: 0.0 ppb on Apr 1 04:00																				Minimum Daily Average: 0.2 ppb on Apr 10					Hours of Data: 683		
Maximum Diurnal Average: 2.8 ppb at hour 7																				Minimum Diurnal Average: 0.7 ppb at hour 3					Hours of Missing Data: 37		
Monthly Average: 1.29 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.3 Median = 0.7 Q ₃ = 1.5 P ₉₀ = 2.8 P ₉₉ = 10.9					Hours of Calibration: 35		
																									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-Apr	0.1	0.0	0.0	0.0	0.0	Z	1.0	2.0	2.4	1.6	0.6	0.9	1.0	1.0	1.4	1.4	1.2	0.4	0.3	0.4	0.3	0.6	1.4	1.5	0.9	2.4	
2-Apr	Z	1.4	1.6	1.4	1.3	1.2	1.6	2.0	2.2	2.1	1.6	2.5	1.6	0.7	0.5	1.0	1.2	1.7	0.4	0.1	0.0	0.0	0.0	0.0	1.1	2.5	
3-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.5	1.5	2.0	1.6	3.9	3.6	5.1	5.1	3.5	2.2	1.6	1.0	0.5	0.2	0.4	0.3	0.2	0.0	1.5	5.1	
4-Apr	0.2	0.1	Z	0.6	2.5	2.9	7.7	6.0	3.5	3.7	1.4	1.6	1.1	1.7	1.4	1.9	2.0	2.1	1.9	1.3	2.9	1.3	0.8	0.8	2.1	7.7	
5-Apr	0.6	1.2	1.3	Z	1.3	1.5	1.4	1.9	2.4	2.3	2.8	2.4	1.8	1.4	1.1	1.4	1.4	2.3	2.3	4.3	4.6	3.4	2.6	0.7	2.0	4.6	
6-Apr	0.9	0.8	2.7	3.5	Z	1.5	1.9	2.2	2.6	2.5	2.0	2.0	1.7	1.4	1.0	1.3	1.5	0.9	0.5	1.0	3.2	2.3	0.7	0.9	1.7	3.5	
7-Apr	1.5	3.4	2.7	2.9	2.7	Z	2.4	1.3	1.5	1.8	1.9	1.8	1.6	1.1	1.2	1.3	1.5	1.6	2.2	2.3	2.9	4.6	1.5	1.9	2.1	4.6	
8-Apr	Z	4.8	2.9	2.8	2.3	1.8	2.5	3.3	3.4	3.9	2.1	1.9	1.4	1.5	1.9	1.1	0.4	2.0	3.2	1.7	0.9	8.2	2.6	0.4	2.5	8.2	
9-Apr	2.2	Z	1.6	6.4	6.6	6.2	7.4	0.9	0.8	0.7	0.6	0.3	0.3	0.2	0.4	0.5	1.3	0.9	2.6	5.8	9.5	1.2	1.2	0.4	2.5	9.5	
10-Apr	0.2	0.3	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.3	0.5	0.5	0.2	0.5
11-Apr	0.2	0.1	0.1	Z	15.3	2.3	10.2	3.6	1.3	0.7	0.6	0.4	0.7	0.5	0.5	0.6	0.3	0.2	1.2	1.4	0.0	0.1	0.1	0.1	1.8	15.3	
12-Apr	0.1	0.2	0.0	0.0	Z	1.4	1.0	0.9	0.7	0.9	0.6	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.7	0.1	0.2	1.3	0.6	0.4	1.4	
13-Apr	0.4	0.1	0.1	2.3	2.9	Z	4.8	5.4	13.1	16.1	14.7	3.3	1.8	2.3	2.9	1.9	2.0	1.3	0.8	0.5	0.2	0.2	0.5	0.5	3.4	16.1	
14-Apr	Z	0.3	0.0	0.4	1.0	3.8	1.4	1.7	1.2	0.9	0.9	1.5	0.8	0.4	0.3	0.2	0.4	0.2	0.3	0.4	0.8	0.5	0.0	0.3	0.8	3.8	
15-Apr	0.0	Z	0.4	0.4	2.2	2.3	3.4	1.4	1.8	3.5	1.7	0.6	0.6	0.6	0.7	0.4	0.4	0.2	0.3	0.5	1.2	1.1	0.7	0.5	1.1	3.5	
16-Apr	1.0	0.6	Z	0.2	0.5	0.7	1.0	1.3	1.2	0.9	0.6	0.6	0.7	0.5	0.3	0.2	0.3	0.4	0.3	0.3	0.6	0.2	0.1	0.1	0.5	1.3	
17-Apr	0.1	0.1	0.1	Z	0.5	0.6	0.7	0.6	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.6	0.4	0.3	0.4	0.7	0.7	0.8	0.9	0.5	0.5	0.9	
18-Apr	0.0	0.2	1.0	0.9	Z	0.1	0.2	0.3	0.6	0.6	0.5	0.6	0.8	0.6	0.4	0.3	0.6	0.5	0.3	0.3	0.0	0.0	0.1	0.1	0.4	1.0	
19-Apr	0.0	0.0	0.3	1.0	0.9	Z	0.9	0.9	0.9	0.6	0.7	1.0	0.8	0.9	0.7	0.8	1.1	0.7	0.9	0.8	0.0	0.2	0.1	0.8	0.7	1.1	
20-Apr	Z	2.5	0.2	0.6	0.4	3.9	1.7	2.6	2.6	2.3	0.8	0.5	0.5	0.4	0.4	0.3	0.5	0.5	0.6	0.3	3.1	1.4	0.5	1.4	1.2	3.9	
21-Apr	0.2	Z	0.1	0.1	0.4	0.9	C	C	C	C	C	0.4	0.3	0.2	0.3	0.2	0.5	0.3	0.5	1.3	5.3	0.4	1.8	1.9	0.8	5.3	
22-Apr	3.9	0.4	Z	4.6	4.5	1.8	1.8	2.6	2.0	1.3	0.5	0.7	0.7	0.8	0.7	0.6	0.6	0.8	0.4	0.4	0.7	1.6	0.2	0.8	1.4	4.6	
23-Apr	0.1	0.1	0.1	Z	0.3	1.3	0.8	0.8	1.0	1.2	1.0	1.0	0.9	0.7	0.6	0.6	0.7	0.7	0.4	0.4	0.5	0.2	0.2	0.1	0.6	1.3	
24-Apr	0.1	0.1	0.1	0.5	Z	0.1	1.4	0.4	0.6	1.2	3.5	1.6	0.4	0.3	0.1	0.6	1.6	2.6	1.8	0.3	0.4	1.2	11.4	5.6	1.6	11.4	
25-Apr	0.6	0.2	1.1	4.9	0.9	Z	1.5	2.5	1.5	1.1	1.8	1.2	1.4	0.3	0.9	0.8	1.1	0.9	0.3	0.1	0.0	0.1	0.1	0.1	1.0	4.9	
26-Apr	Z	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.3	0.1	M	M	0.1	0.2	0.2	1.2	1.2	1.1	1.3	0.5	0.2	0.1	0.1	0.1	0.4	1.3	
27-Apr	0.1	Z	0.1	0.2	2.4	10.7	12.8	8.2	3.5	2.0	2.0	1.4	0.8	0.6	0.6	0.4	0.6	0.5	3.5	2.2	1.7	0.3	2.6	3.0	12.8		
28-Apr	6.5	0.2	Z	0.1	0.2	0.7	1.8	0.4	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.3	0.3	0.2	0.0	0.4	0.2	0.2	0.5	6.5	
29-Apr	0.2	0.2	0.2	Z	2.3	5.0	9.7	3.5	5.8	2.5	0.6	0.4	0.3	0.2	0.1	0.1	0.3	0.7	0.5	0.6	0.4	0.4	0.2	0.2	1.5	9.7	
30-Apr	0.1	0.1	0.1	0.2	Z	0.4	0.7	1.0	1.0	0.9	0.8	0.8	0.6	0.5	0.5	0.4	0.4	0.5	0.3	0.7	0.2	0.2	0.1	0.1	0.5	1.0	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Athabasca Valley - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	9	11	17	50	106	168	63	29	21	29	36	26	11	24	56	683
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
Totals	27	9	11	17	50	106	168	63	29	21	29	36	26	11	24	56	683

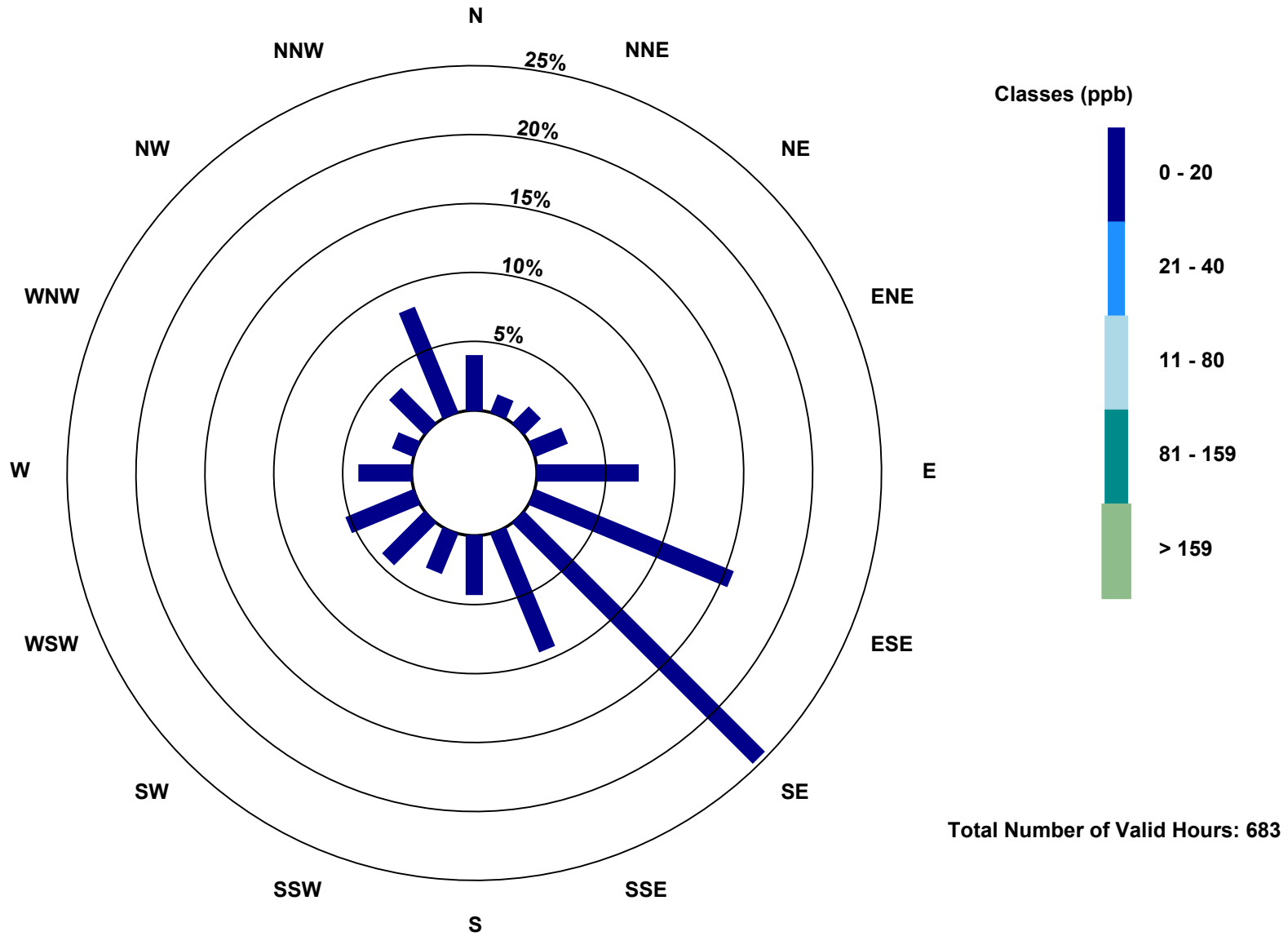
Total Number of Valid Hours: 683

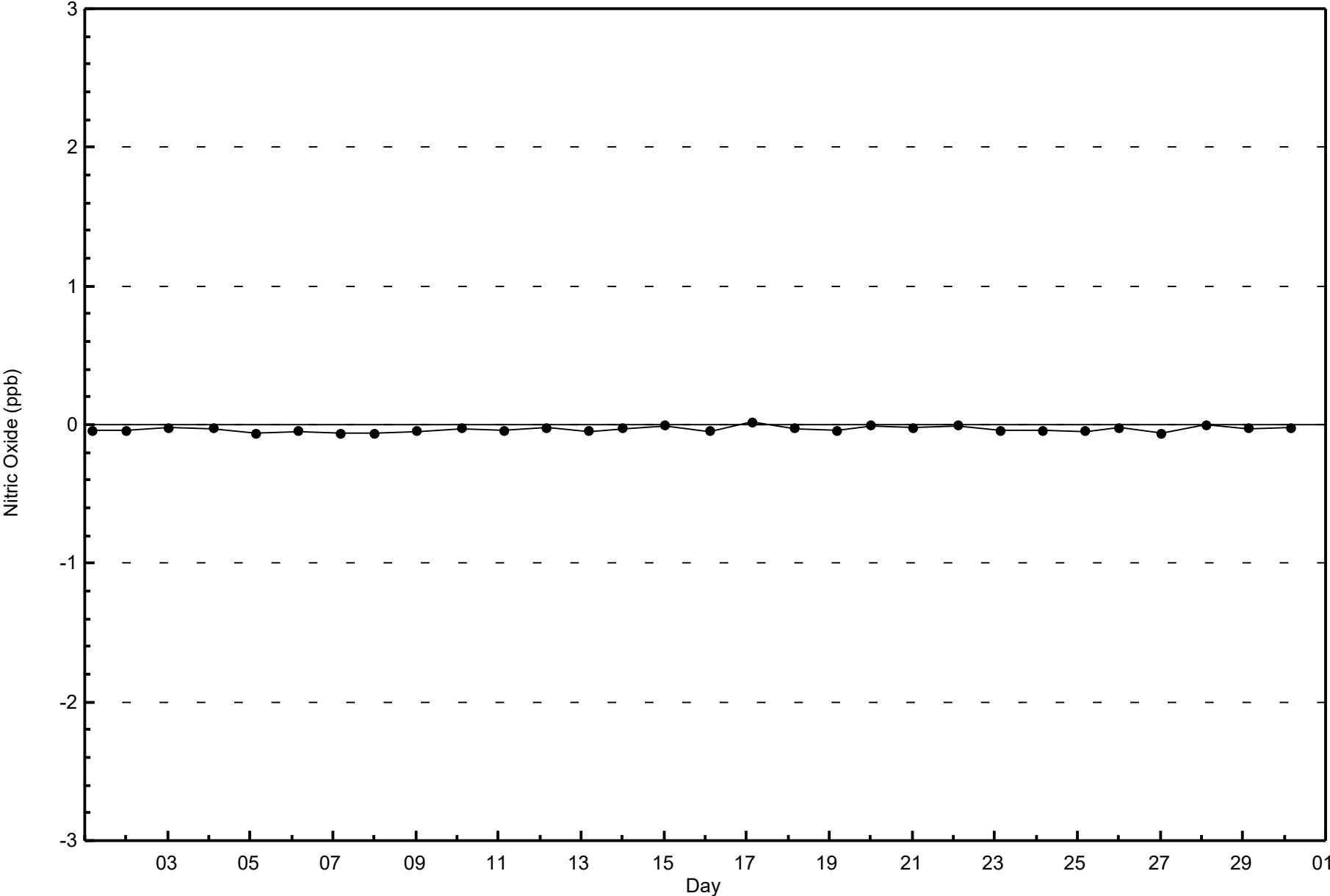
Total Number of Hours: 720

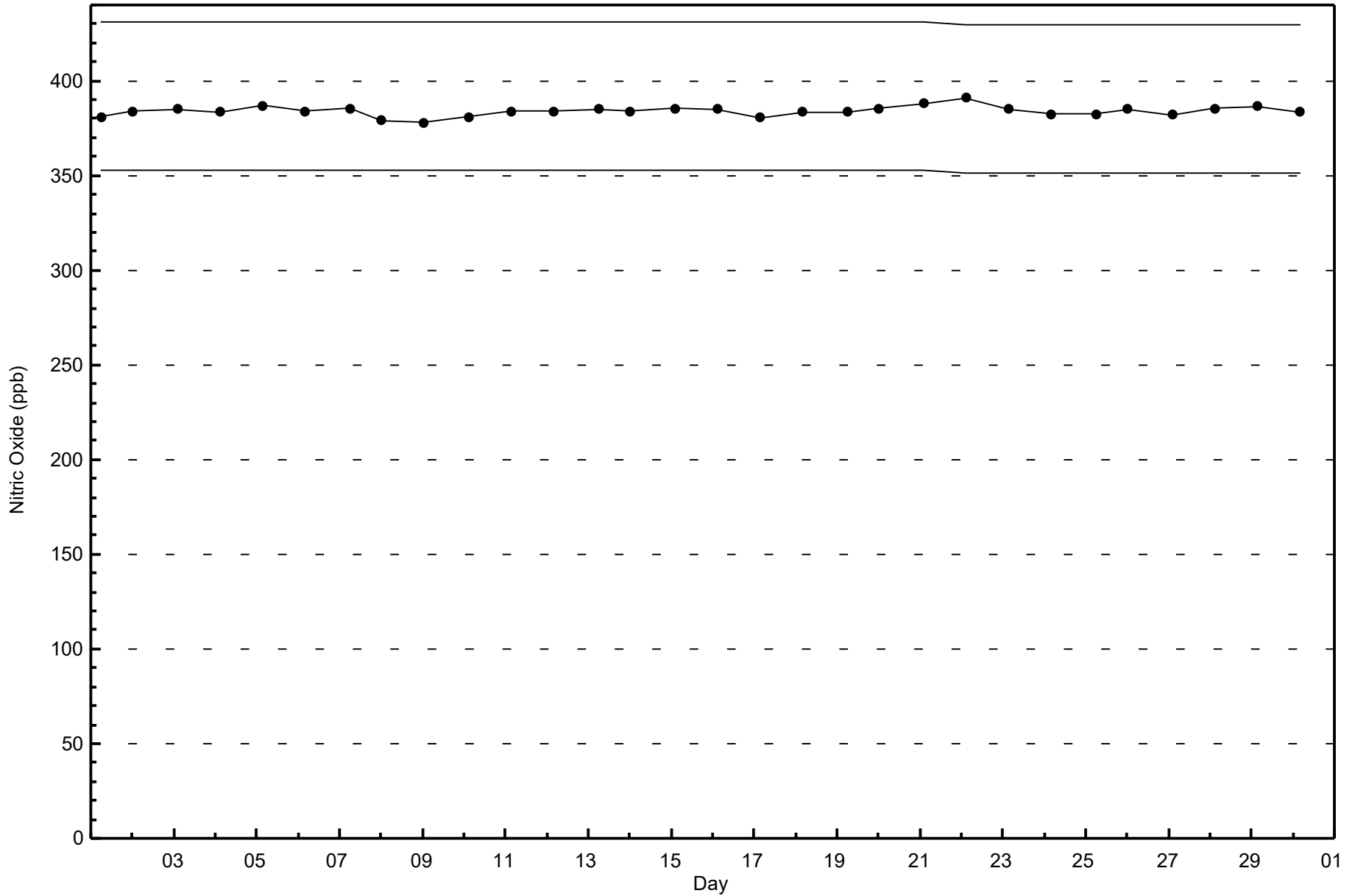


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Athabasca Valley









Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 31.7 ppb on Apr 9 20:00	Maximum Daily Average: 10.9 ppb on Apr 8		Hours of Data:	683
Minimum Value: 0.5 ppb on Apr 26 14:00	Minimum Daily Average: 1.5 ppb on Apr 18		Hours of Missing Data:	37
Maximum Diurnal Average: 9.9 ppb at hour 21	Minimum Diurnal Average: 2.2 ppb at hour 14		Hours of Calibration:	35
Monthly Average: 5.78 ppb	Percentiles: P ₁ = 0.5 P ₁₀ = 1.0 Q ₁ = 2.0 Median = 4.4 Q ₃ = 7.8 P ₉₀ = 12.5 P ₉₉ = 22.9		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-Apr	1.7	0.7	0.9	0.7	1.5	Z	8.3	8.1	6.2	4.2	2.0	2.5	2.5	3.4	4.0	4.5	4.3	2.0	1.4	2.5	2.2	4.3	5.2	6.1	3.4	8.3
2-Apr	Z	5.1	7.7	5.7	6.3	5.4	4.9	4.9	4.5	4.0	3.1	4.1	2.6	2.0	1.3	0.9	7.1	11.3	8.8	6.4	4.8	4.5	3.3	3.0	4.9	11.3
3-Apr	4.0	Z	4.9	3.2	5.3	5.0	6.2	5.5	4.1	2.7	5.0	5.4	7.6	7.7	6.5	5.8	6.2	7.8	7.8	6.3	8.9	8.8	9.0	10.8	6.3	10.8
4-Apr	10.9	7.9	Z	8.4	11.5	13.4	18.9	11.4	7.1	6.3	2.9	2.7	2.2	3.2	2.6	3.8	4.6	6.5	8.6	7.6	20.1	10.5	6.4	5.7	8.0	20.1
5-Apr	5.0	4.6	5.7	Z	6.7	8.9	8.0	8.2	7.2	7.4	5.5	4.9	4.4	5.5	5.9	6.0	7.9	11.4	19.6	28.7	18.5	14.4	10.9	8.8	9.3	28.7
6-Apr	9.1	9.0	11.2	11.6	Z	10.5	9.4	7.3	7.1	6.3	5.5	5.4	4.0	3.4	2.9	3.3	4.3	3.7	3.5	7.6	20.9	13.5	10.1	8.7	7.8	20.9
7-Apr	9.2	8.7	9.0	8.9	7.9	Z	7.1	5.1	4.7	5.0	5.0	4.8	4.2	3.3	3.5	4.1	4.9	5.8	9.7	17.9	19.0	21.2	13.2	18.7	8.7	21.2
8-Apr	Z	10.9	10.4	8.8	14.2	14.0	13.7	11.3	13.9	10.7	5.9	3.9	3.8	3.6	5.0	3.1	2.2	7.6	21.0	27.9	14.4	20.7	18.3	6.0	10.9	27.9
9-Apr	10.5	Z	18.2	22.6	22.9	22.5	17.3	3.4	2.2	1.9	1.7	1.2	1.2	1.0	1.3	1.6	4.5	5.9	19.5	31.7	29.5	9.6	9.0	5.6	10.6	31.7
10-Apr	6.2	8.4	Z	1.1	0.7	1.0	1.1	0.9	0.9	0.8	0.8	0.8	0.6	0.8	0.8	0.9	0.9	1.2	1.9	2.2	1.4	3.0	7.1	9.6	2.3	9.6
11-Apr	4.9	6.6	6.6	Z	29.0	19.7	22.4	11.7	4.0	2.4	2.3	1.8	2.7	2.0	2.0	2.5	2.1	1.6	8.9	13.2	6.3	14.1	13.1	16.2	8.5	29.0
12-Apr	13.5	10.3	4.0	6.7	Z	5.6	3.2	3.2	3.2	2.5	1.9	0.8	0.6	0.7	0.6	0.6	0.8	0.9	1.7	9.8	4.0	6.6	9.7	8.9	4.3	13.5
13-Apr	8.0	6.5	5.9	6.1	7.7	Z	7.7	7.6	14.2	16.1	15.8	5.8	3.8	5.2	6.8	5.7	7.1	5.9	7.1	12.0	16.9	11.5	8.6	5.8	8.6	16.9
14-Apr	Z	2.6	1.4	5.6	8.4	13.9	8.5	6.0	2.9	1.7	1.8	2.8	1.6	0.8	1.2	0.6	0.9	0.7	1.6	2.8	4.6	4.6	4.3	9.6	3.9	13.9
15-Apr	5.0	Z	7.7	8.0	10.2	8.5	7.1	3.4	3.6	6.4	4.2	2.1	1.9	1.9	1.6	1.9	1.9	1.1	0.9	3.2	7.6	5.2	4.5	3.5	4.4	10.2
16-Apr	8.4	6.8	Z	4.8	6.4	7.4	7.1	4.4	3.4	2.5	1.9	1.9	1.8	1.4	1.2	1.0	1.3	1.1	1.4	1.9	2.5	2.5	3.4	3.2	3.4	8.4
17-Apr	3.2	2.9	2.9	Z	6.3	5.3	2.6	2.1	1.7	1.6	1.5	1.7	1.4	1.4	1.4	3.1	2.3	1.2	1.8	1.6	2.1	2.2	2.3	1.2	2.3	6.3
18-Apr	0.6	1.2	2.6	2.3	Z	0.5	0.8	0.7	1.6	2.2	2.1	1.3	2.4	1.0	0.8	0.5	0.8	0.7	1.3	1.0	1.1	1.4	5.9	1.9	1.5	5.9
19-Apr	0.9	1.1	1.4	3.2	3.4	Z	2.6	2.5	2.7	2.5	2.4	2.5	2.0	2.2	1.9	2.3	3.5	3.9	4.7	2.7	3.6	5.5	6.8	7.7	3.1	7.7
20-Apr	Z	6.8	4.8	5.7	6.3	7.6	4.3	5.0	4.9	4.6	1.9	1.2	0.9	1.0	0.5	0.9	1.2	1.3	3.0	2.8	13.6	14.5	8.5	14.1	5.0	14.5
21-Apr	8.9	Z	9.1	5.8	6.5	5.9	C	C	C	C	C	1.4	1.0	0.8	0.9	0.7	1.5	1.8	2.0	7.7	26.6	7.1	8.2	10.9	5.9	26.6
22-Apr	17.1	12.5	Z	19.9	21.1	9.7	6.0	5.5	4.2	2.8	1.6	1.8	2.1	2.6	2.8	2.3	2.9	5.8	4.7	6.3	9.7	15.3	10.8	10.9	7.8	21.1
23-Apr	4.7	2.8	4.3	Z	6.7	10.3	6.2	5.1	4.7	3.9	2.8	3.0	3.3	2.6	2.4	2.5	3.7	4.7	3.7	6.5	10.2	9.0	4.6	3.1	4.8	10.3
24-Apr	3.1	1.3	2.6	7.9	Z	5.0	10.8	4.3	3.9	4.4	10.2	5.2	0.7	0.7	0.5	2.1	6.4	13.1	15.5	12.6	11.3	13.9	23.1	19.0	7.7	23.1
25-Apr	12.8	9.6	10.8	14.0	11.8	Z	8.1	8.7	5.3	4.3	6.4	5.6	3.8	1.9	4.0	5.1	4.1	3.4	1.9	1.6	1.3	1.2	0.8	0.7	5.5	14.0
26-Apr	Z	0.6	0.7	1.1	1.8	1.2	1.8	1.3	0.6	0.6	M	M	0.7	0.5	0.8	3.4	3.6	4.6	8.3	6.4	1.5	1.8	6.1	6.9	2.6	8.3
27-Apr	7.1	Z	8.3	11.5	12.3	15.8	13.4	12.3	9.6	5.5	4.5	4.5	3.3	2.4	2.2	2.3	2.2	2.9	4.4	14.8	17.3	12.4	8.0	17.0	8.4	17.3
28-Apr	22.2	6.6	Z	6.1	6.1	8.1	8.2	2.0	0.6	0.6	0.7	0.5	0.5	0.5	1.0	0.6	1.0	1.8	2.6	2.7	6.6	9.4	9.4	7.9	4.6	22.2
29-Apr	7.3	10.7	13.4	Z	12.3	12.6	12.0	5.4	7.6	4.7	1.8	1.3	1.1	0.8	0.6	0.6	1.1	2.5	2.9	3.9	6.8	7.1	4.5	3.7	5.4	13.4
30-Apr	3.4	4.4	4.3	4.0	Z	3.9	3.3	3.0	2.8	2.4	2.0	2.0	1.9	1.9	1.7	1.8	2.0	2.0	2.7	3.3	5.0	3.5	3.5	3.0	2.9	5.0

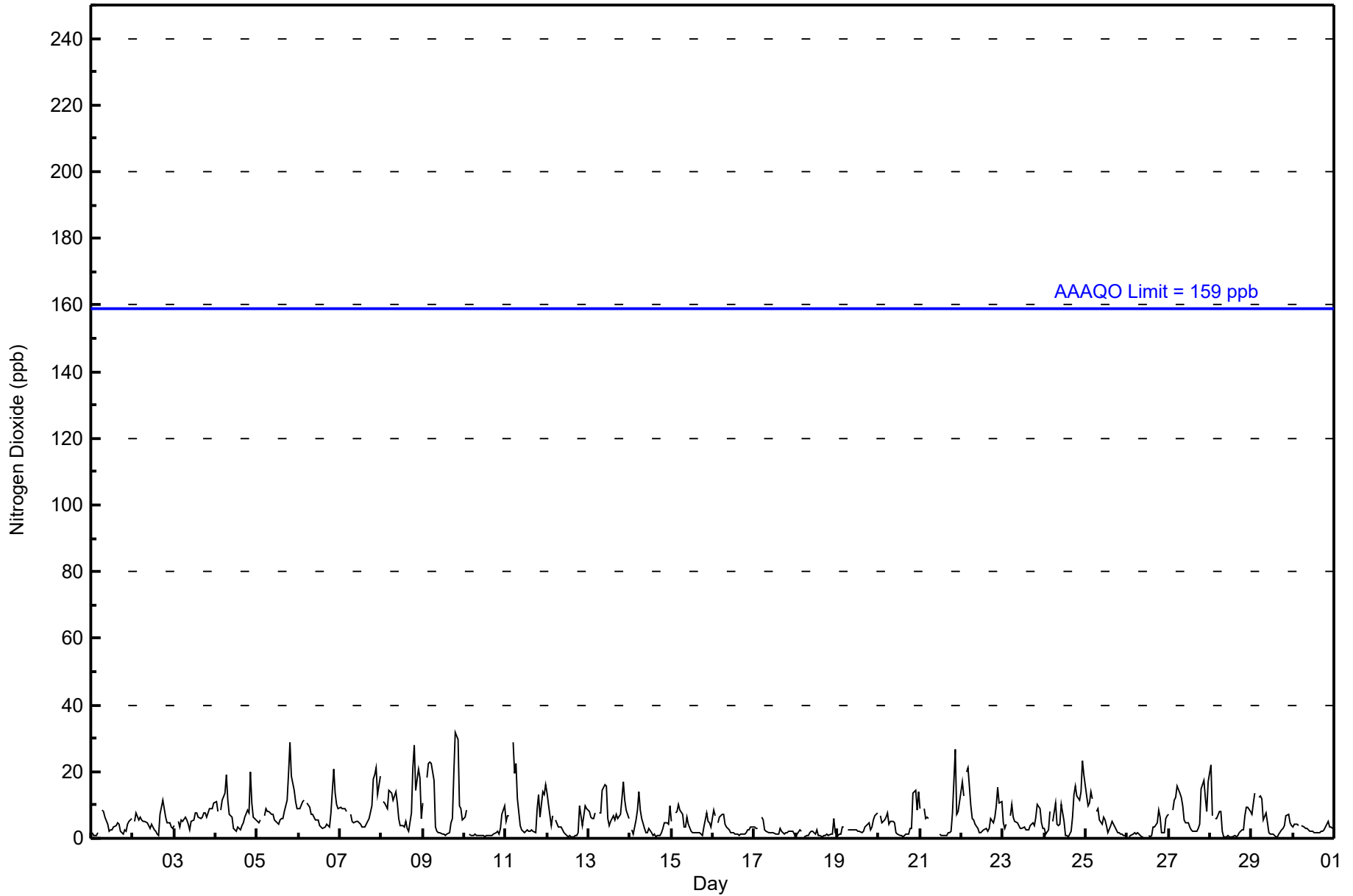
7.5	5.9	6.4	7.3	9.3	8.9	8.0	5.5	4.8	4.2	3.7	2.9	2.4	2.2	2.3	2.5	3.2	4.1	6.1	8.5	9.9	8.6	8.0	7.9	Diurnal Average	
22.2	12.5	18.2	22.6	29.0	22.5	22.4	12.3	14.2	16.1	15.8	5.8	7.6	7.7	6.8	6.0	7.9	13.1	21.0	31.7	29.5	21.2	23.1	19.0	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	666	97.51	97.51
21 - 40	17	2.49	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	9	11	17	50	106	164	51	28	21	29	36	26	11	24	56	666
21 - 40	0	0	0	0	0	0	4	12	1	0	0	0	0	0	0	0	17
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
Totals	27	9	11	17	50	106	168	63	29	21	29	36	26	11	24	56	683

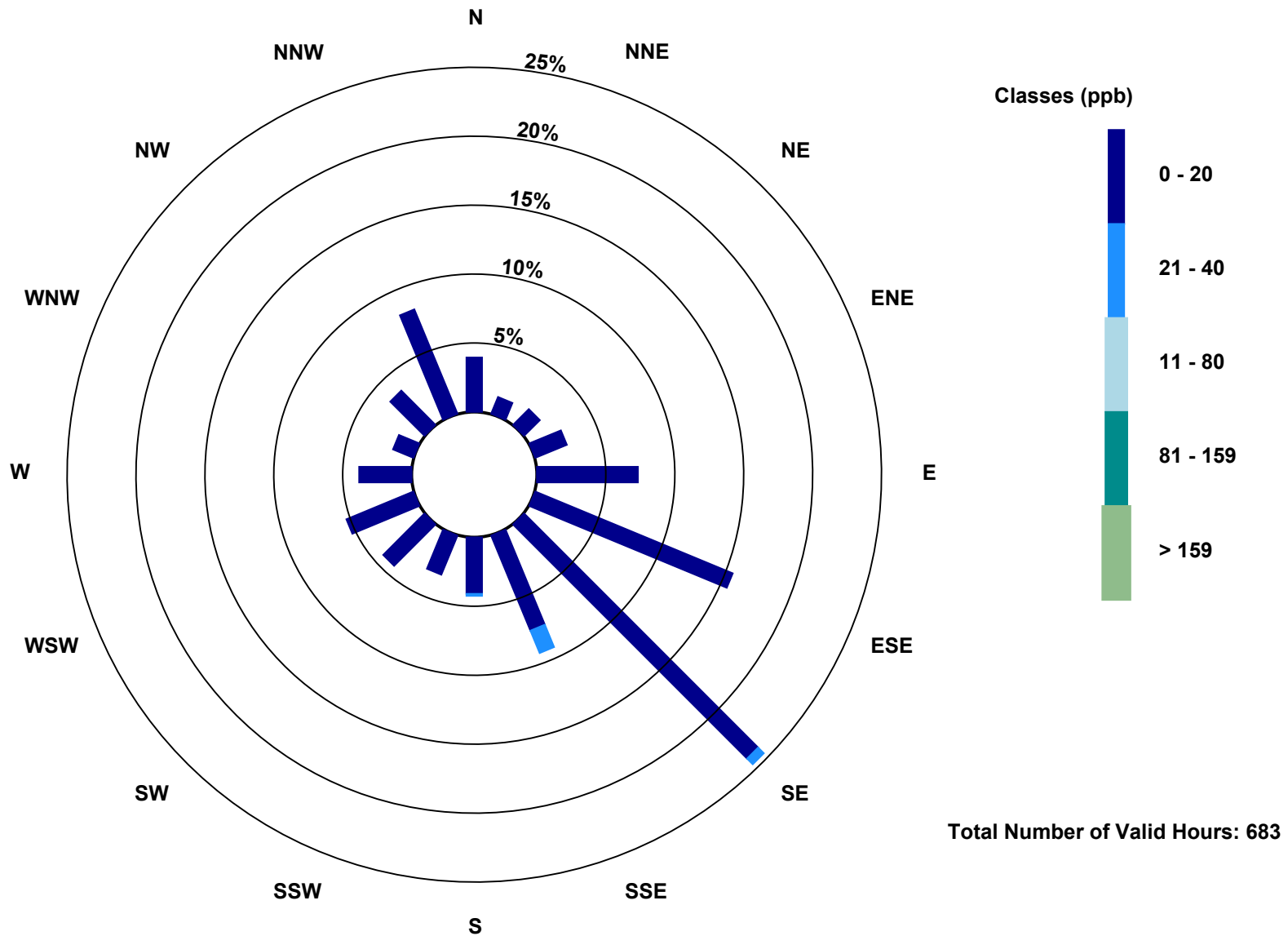
Total Number of Valid Hours: 683

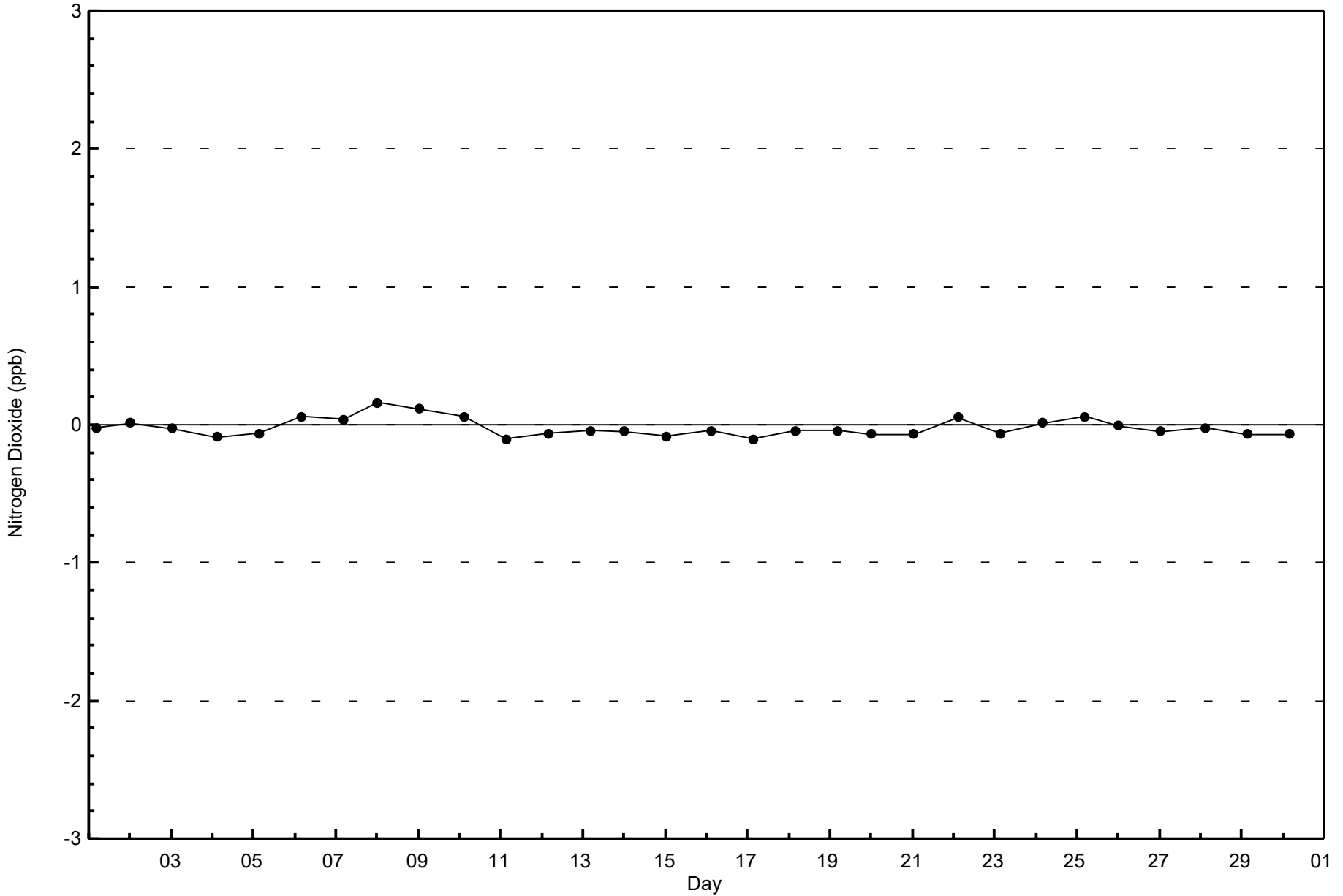
Total Number of Hours: 720

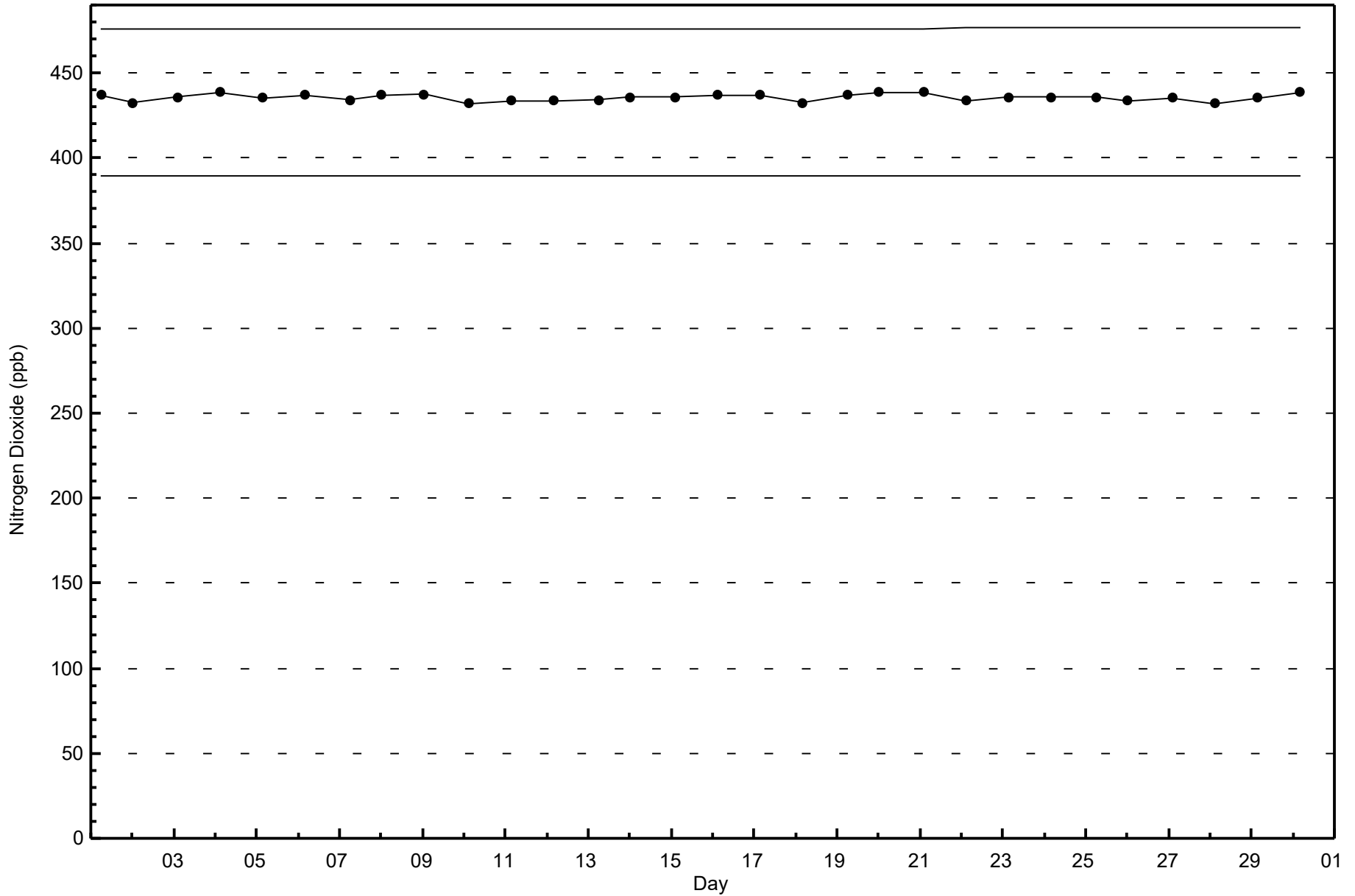


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley









Wood Buffalo Environmental Association
Summary of Hour Averages

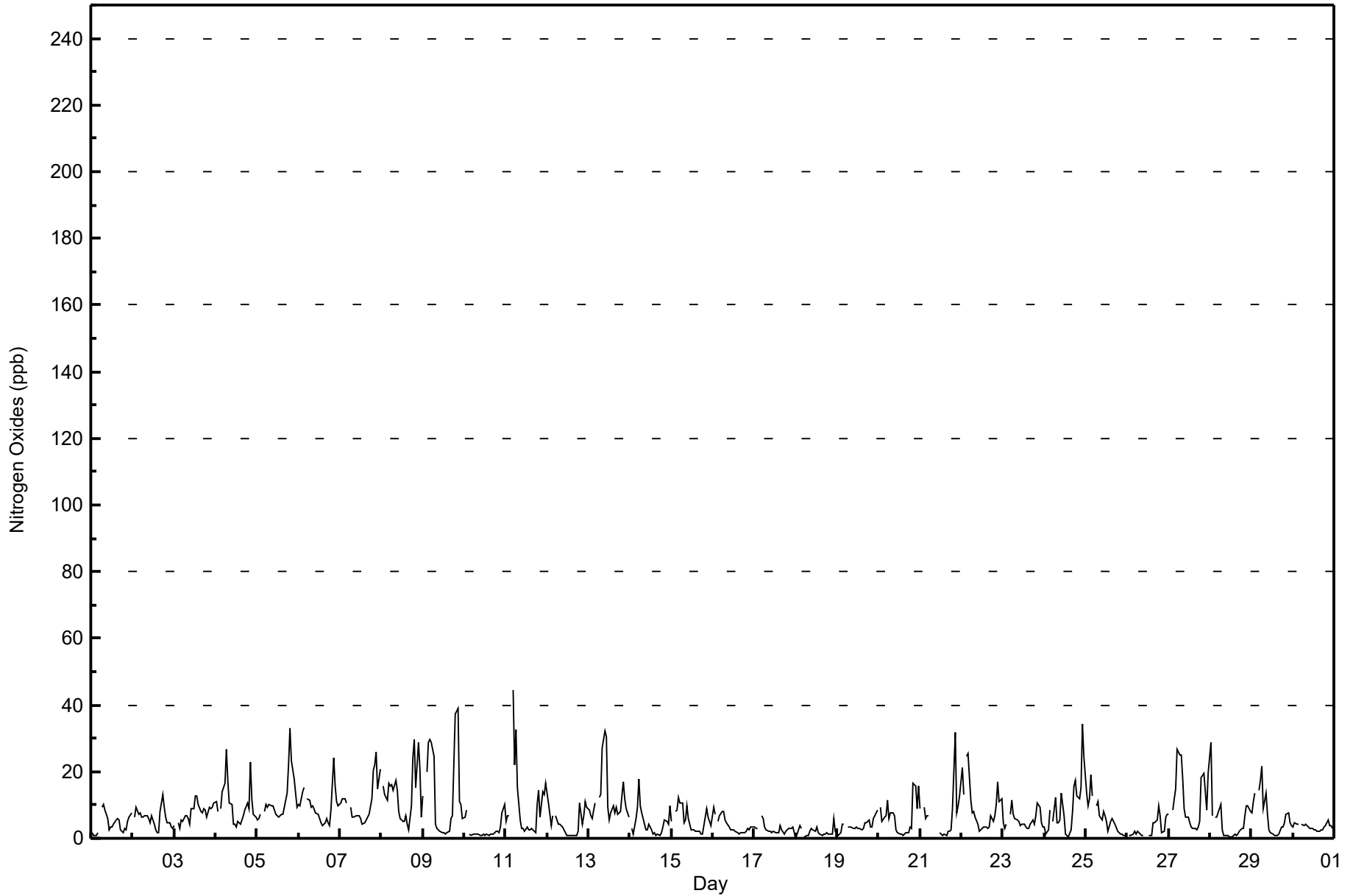
Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - April 2023

Maximum Value: 44.3 ppb on Apr 11 05:00																				Maximum Daily Average: 13.4 ppb on Apr 8					Hours in Service: 720								
Minimum Value: 0.5 ppb on Apr 28 13:00																				Minimum Daily Average: 1.9 ppb on Apr 18					Hours of Data: 683								
Maximum Diurnal Average: 11.4 ppb at hour 5																				Minimum Diurnal Average: 3.1 ppb at hour 14					Hours of Missing Data: 37								
Monthly Average: 7.07 ppb																				Percentiles: P ₁ = 0.7 P ₁₀ = 1.2 Q ₁ = 2.6 Median = 5.4 Q ₃ = 9.3 P ₉₀ = 14.7 P ₉₉ = 32.0					Hours of Calibration: 35								
																				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-Apr	1.8	0.7	0.9	0.7	1.5	Z	9.3	10.1	8.6	5.8	2.6	3.4	3.5	4.4	5.4	5.9	5.5	2.4	1.7	2.9	2.5	4.9	6.6	7.6	4.3	10.1							
2-Apr	Z	6.5	9.3	7.1	7.6	6.6	6.5	6.9	6.7	6.1	4.7	6.6	4.2	2.7	1.8	1.9	8.3	13.0	9.2	6.5	4.8	4.5	3.3	3.0	6.0	13.0							
3-Apr	4.0	Z	4.9	3.2	5.3	5.0	6.7	7.0	6.1	4.3	8.9	9.0	12.7	12.8	10.0	8.0	7.8	8.8	8.3	6.5	9.3	9.1	9.2	10.8	7.7	12.8							
4-Apr	11.1	8.0	Z	9.0	14.0	16.3	26.6	17.4	10.6	10.0	4.3	4.3	3.3	4.9	4.0	5.7	6.6	8.6	10.5	8.9	23.0	11.8	7.2	6.5	10.1	26.6							
5-Apr	5.6	5.8	7.0	Z	8.0	10.4	9.4	10.1	9.6	9.7	8.3	7.3	6.2	6.9	7.0	7.4	9.3	13.7	21.9	33.0	23.1	17.8	13.5	9.5	11.3	33.0							
6-Apr	10.0	9.8	13.9	15.1	Z	12.0	11.3	9.5	9.7	8.8	7.5	7.4	5.7	4.8	3.9	4.6	5.8	4.6	4.0	8.6	24.1	15.8	10.9	9.6	9.4	24.1							
7-Apr	10.7	12.1	11.7	11.8	10.6	Z	9.5	6.4	6.2	6.8	6.9	6.6	5.8	4.4	4.7	5.4	6.4	7.4	11.9	20.2	21.9	25.8	14.7	20.6	10.8	25.8							
8-Apr	Z	15.7	13.3	11.6	16.5	15.8	16.2	14.6	17.3	14.6	8.0	5.8	5.2	5.1	6.9	4.2	2.6	9.6	24.2	29.6	15.3	28.9	20.9	6.4	13.4	29.6							
9-Apr	12.7	Z	19.8	29.0	29.5	28.7	24.7	4.3	3.0	2.6	2.3	1.5	1.5	1.2	1.7	2.1	5.8	6.8	22.1	37.5	39.0	10.8	10.2	6.0	13.2	39.0							
10-Apr	6.4	8.7	Z	1.2	0.8	1.1	1.3	1.1	1.1	1.0	1.0	1.1	0.8	1.1	1.0	1.1	1.1	1.4	2.0	2.2	1.5	3.3	7.6	10.1	2.5	10.1							
11-Apr	5.1	6.7	6.7	Z	44.3	22.0	32.6	15.3	5.3	3.1	2.9	2.2	3.4	2.5	2.5	3.1	2.4	1.8	10.1	14.6	6.3	14.2	13.2	16.3	10.3	44.3							
12-Apr	13.6	10.5	4.0	6.7	Z	7.0	4.2	4.1	3.9	3.4	2.5	1.0	0.7	0.9	0.7	0.7	1.0	1.1	1.9	10.5	4.1	6.8	11.0	9.5	4.8	13.6							
13-Apr	8.4	6.6	6.0	8.4	10.6	Z	12.5	13.0	27.3	32.2	30.5	9.1	5.6	7.5	9.7	7.6	9.1	7.2	7.9	12.5	17.1	11.7	9.1	6.3	12.0	32.2							
14-Apr	Z	2.9	1.4	6.0	9.4	17.7	9.9	7.7	4.1	2.6	2.7	4.3	2.4	1.2	1.5	0.8	1.3	0.9	1.9	3.2	5.4	5.1	4.3	9.9	4.6	17.7							
15-Apr	5.0	Z	8.1	8.4	12.4	10.8	10.5	4.8	5.4	9.9	5.9	2.7	2.5	2.5	2.3	2.3	2.3	1.3	1.2	3.7	8.8	6.3	5.2	4.0	5.5	12.4							
16-Apr	9.4	7.4	Z	5.0	6.9	8.1	8.1	5.7	4.6	3.4	2.5	2.5	2.5	1.9	1.5	1.2	1.6	1.5	1.7	2.2	3.1	2.7	3.5	3.3	3.9	9.4							
17-Apr	3.3	3.0	3.0	Z	6.8	5.9	3.3	2.7	2.1	2.0	1.9	2.2	1.8	1.8	1.7	3.7	2.7	1.5	2.2	2.3	2.8	3.0	3.2	1.7	2.8	6.8							
18-Apr	0.6	1.4	3.6	3.2	Z	0.6	1.0	1.0	2.2	2.8	2.6	1.9	3.2	1.6	1.2	0.8	1.4	1.2	1.6	1.3	1.1	1.4	6.0	2.0	1.9	6.0							
19-Apr	0.9	1.1	1.7	4.2	4.3	Z	3.5	3.4	3.6	3.1	3.1	3.5	2.8	3.1	2.6	3.1	4.6	4.6	5.6	3.5	3.6	5.7	6.9	8.5	3.8	8.5							
20-Apr	Z	9.3	5.0	6.3	6.7	11.5	6.0	7.6	7.5	6.9	2.7	1.7	1.4	1.4	0.9	1.2	1.7	1.8	3.6	3.1	16.7	15.9	9.0	15.5	6.2	16.7							
21-Apr	9.1	Z	9.2	5.9	6.9	6.8	C	C	C	C	C	1.8	1.3	1.0	1.2	0.9	2.0	2.1	2.5	9.0	31.9	7.5	10.0	12.8	6.8	31.9							
22-Apr	21.0	12.9	Z	24.5	25.6	11.5	7.8	8.1	6.2	4.1	2.1	2.5	2.8	3.4	3.5	2.9	3.5	6.6	5.1	6.7	10.4	16.9	11.0	11.7	9.2	25.6							
23-Apr	4.8	2.9	4.4	Z	7.0	11.6	7.0	5.9	5.7	5.1	3.8	4.0	4.2	3.3	3.0	3.1	4.4	5.4	4.1	6.9	10.7	9.2	4.8	3.2	5.4	11.6							
24-Apr	3.2	1.4	2.7	8.4	Z	5.1	12.2	4.7	4.5	5.6	13.7	6.8	1.1	1.0	0.6	2.7	8.0	15.7	17.3	12.9	11.7	15.1	34.5	24.6	9.3	34.5							
25-Apr	13.4	9.8	11.9	18.9	12.7	Z	9.6	11.2	6.8	5.4	8.2	6.8	5.2	2.2	4.9	5.9	5.2	4.3	2.2	1.7	1.3	1.3	0.9	0.8	6.6	18.9							
26-Apr	Z	0.7	0.8	1.2	2.0	1.4	2.2	1.7	0.9	0.7	M	M	0.8	0.7	1.0	4.6	4.8	5.7	9.6	6.9	1.7	1.9	6.2	7.0	3.0	9.6							
27-Apr	7.2	Z	8.4	11.7	14.7	26.5	25.0	25.1	17.8	9.0	6.5	6.5	4.7	3.2	2.8	2.9	2.6	3.5	4.9	18.3	19.5	14.1	8.3	19.6	11.4	26.5							
28-Apr	28.7	6.8	Z	6.2	6.3	8.8	10.0	2.4	0.7	0.7	0.8	0.6	0.5	0.6	1.2	0.7	1.1	2.1	2.9	2.9	6.6	9.8	9.6	8.1	5.1	28.7							
29-Apr	7.5	10.9	13.6	Z	14.6	17.6	21.7	8.9	13.4	7.2	2.4	1.7	1.4	1.0	0.7	0.7	1.4	3.2	3.4	4.5	7.2	7.5	4.7	3.9	6.9	21.7							
30-Apr	3.5	4.5	4.4	4.2	Z	4.3	4.0	4.0	3.8	3.3	2.8	2.8	2.5	2.4	2.2	2.3	2.4	2.4	3.2	3.6	5.7	3.7	3.7	3.1	3.4	5.7							
																								Diurnal Average									
																								Diurnal Maximum									
Z - zerospan C - Calibration M - Maintenance																																	



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	646	94.58	94.58
21 - 40	36	5.27	99.85
41 - 80	1	0.15	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Athabasca Valley - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	9	11	17	49	105	157	47	28	20	27	36	25	11	23	54	646
21 - 40	0	0	0	0	1	1	11	15	1	1	2	0	1	0	1	2	36
11 - 80	0	0	0	0	0	0	0	1	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
Totals	27	9	11	17	50	106	168	63	29	21	29	36	26	11	24	56	683

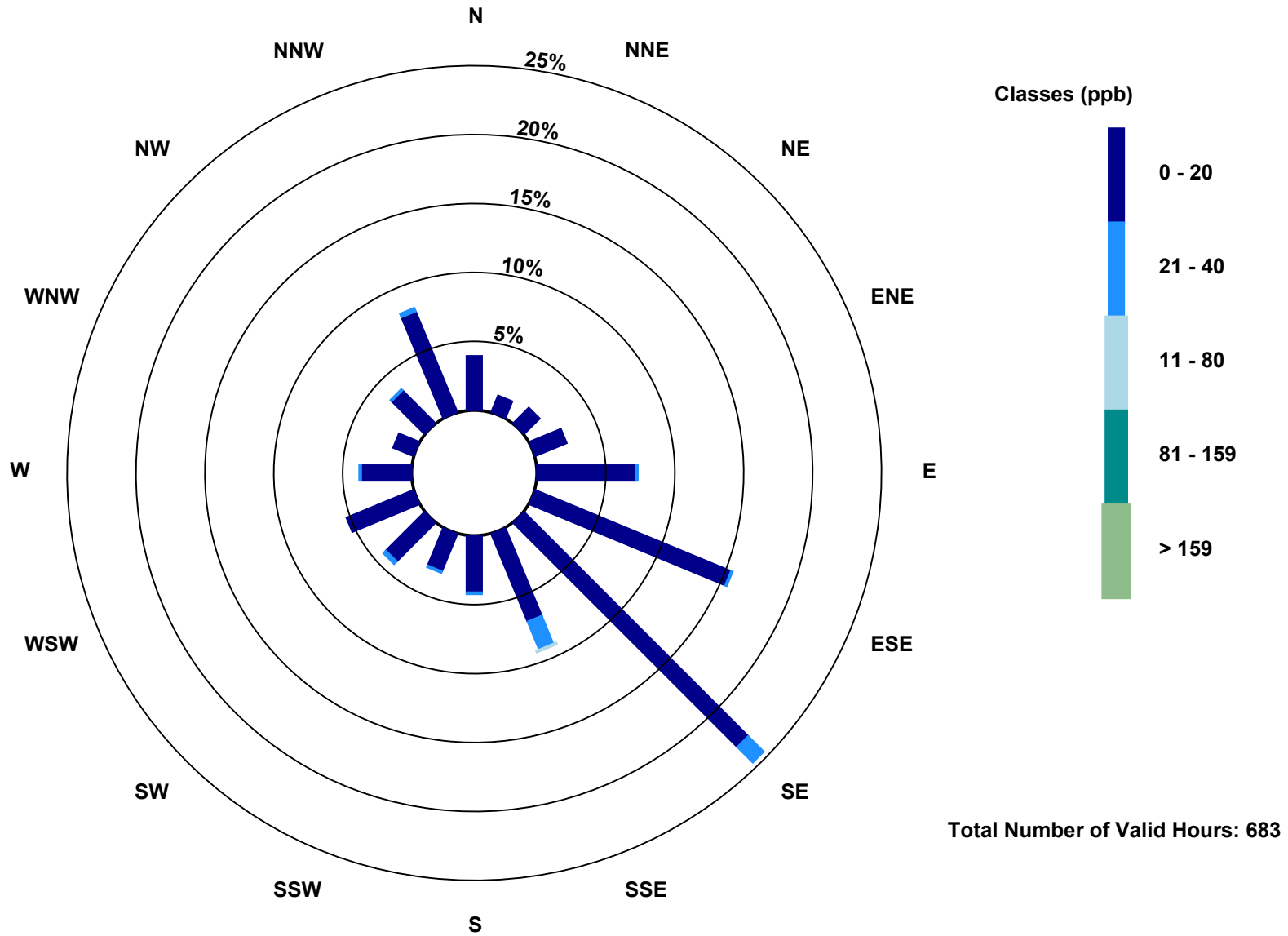
Total Number of Valid Hours: 683

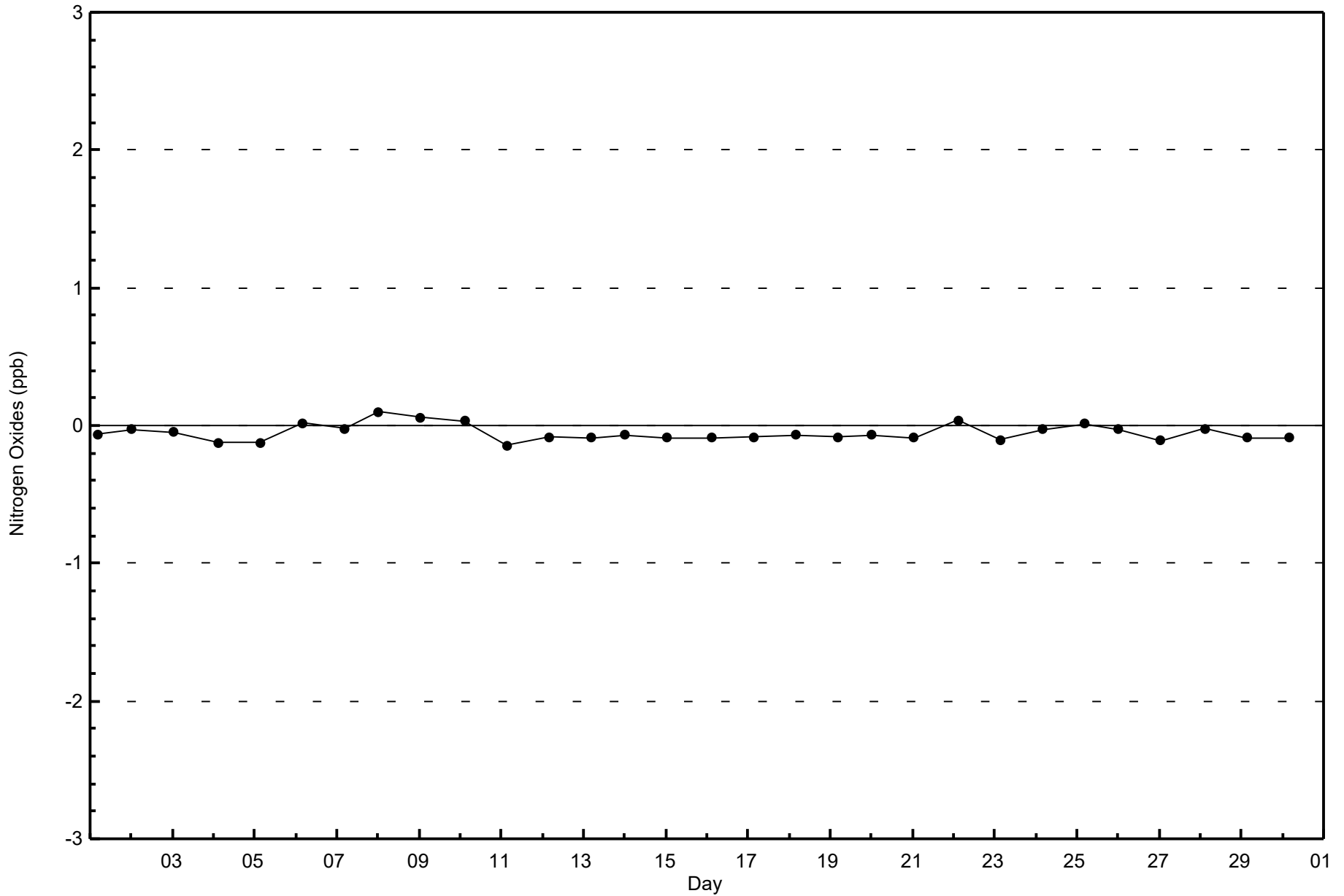
Total Number of Hours: 720

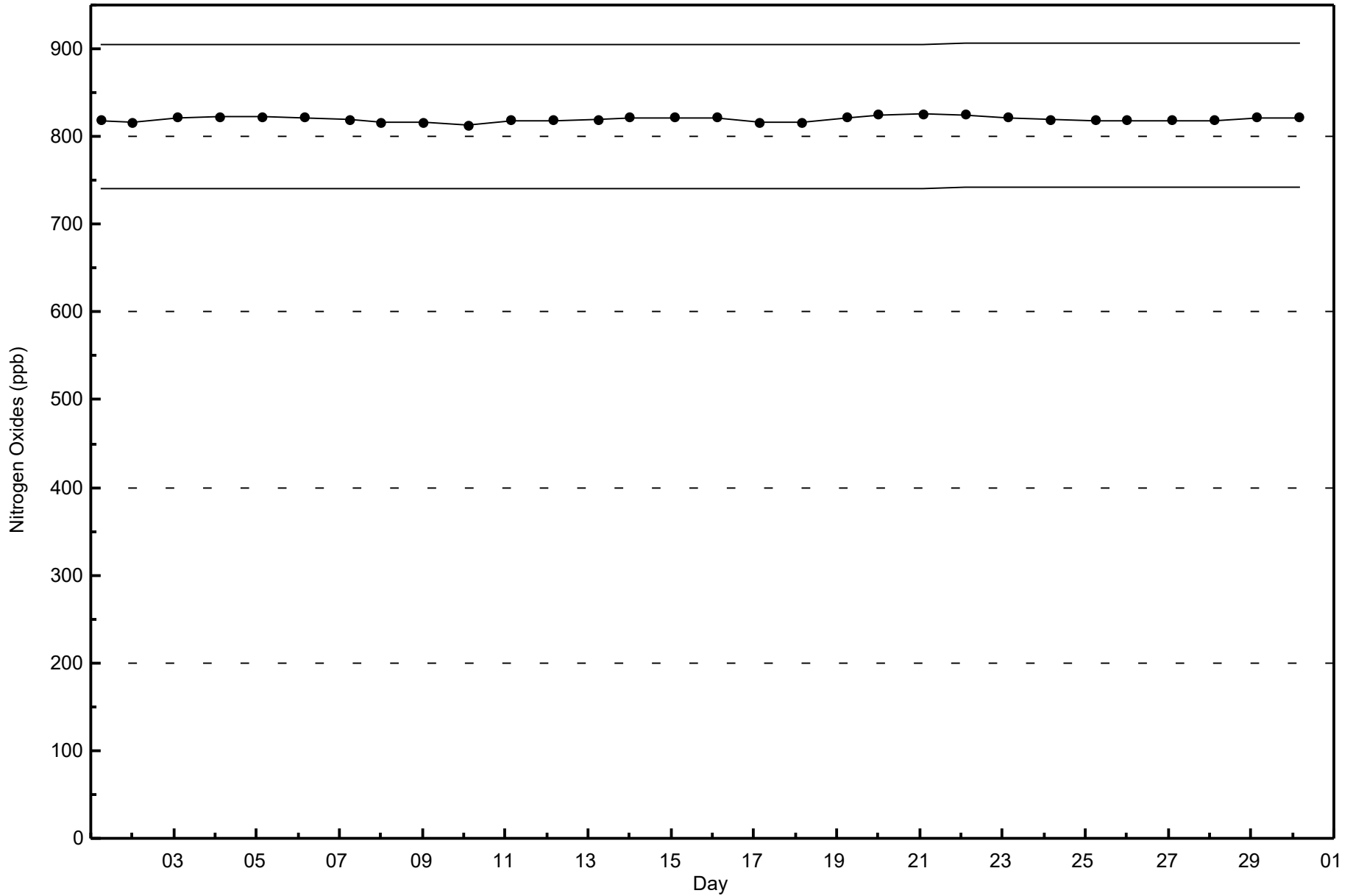


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Athabasca Valley









Summary of Hour Averages

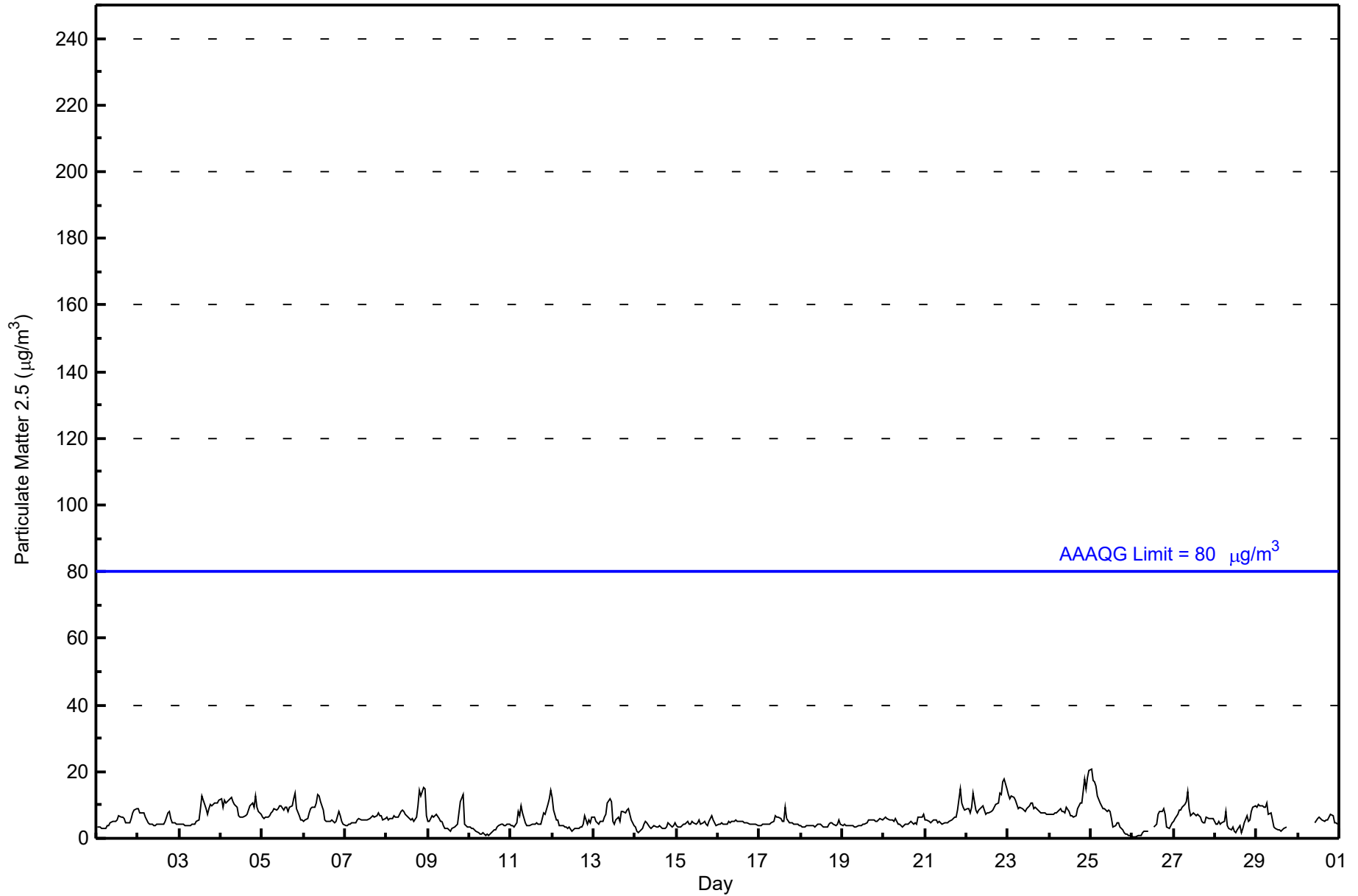
Athabasca Valley - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	720																											
Maximum Value: 20.8 µg/m ³ on Apr 25 01:00		Maximum Daily Average: 10.2 µg/m ³ on Apr 22																	Hours of Data: 702																													
Minimum Value: 0.5 µg/m ³ on Apr 26 02:00		Minimum Daily Average: 2.6 µg/m ³ on Apr 10																	Hours of Missing Data: 18																													
Maximum Diurnal Average: 7.6 µg/m ³ at hour 21		Minimum Diurnal Average: 5.1 µg/m ³ at hour 13																	Hours of Calibration: 2																													
Monthly Average: 6.11 µg/m ³		Percentiles: P ₁ = 1.0 P ₁₀ = 3.2 Q ₁ = 4.1 Median = 5.3 Q ₃ = 7.7 P ₉₀ = 10.1 P ₉₉ = 16.8																	Percent Operational Time: 97.8																													
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-Apr	3.6	3.3	3.2	3.2	3.2	3.2	3.7	3.9	4.5	5.0	5.2	5.2	5.5	6.7	6.4	6.5	6.0	4.7	4.6	4.8	5.8	7.5	8.4	8.9	5.1	8.9																						
2-Apr	8.7	7.6	7.6	7.5	6.5	5.5	4.8	4.3	4.1	3.9	3.8	4.1	4.3	4.3	4.3	4.2	5.2	7.7	8.2	6.1	4.8	4.7	4.3	4.3	5.4	8.7																						
3-Apr	4.3	4.4	4.1	3.7	3.9	3.6	3.9	4.1	4.1	4.3	5.3	5.5	8.8	12.9	11.5	8.8	7.3	8.8	10.2	9.6	10.5	10.7	10.6	11.4	7.2	12.9																						
4-Apr	11.7	9.3	11.6	10.6	11.2	11.7	12.3	11.0	10.2	9.5	6.9	6.6	6.2	6.3	6.8	7.3	8.5	9.6	10.5	9.2	12.6	9.1	8.2	7.3	9.3	12.6																						
5-Apr	6.3	6.0	6.2	6.4	6.9	7.6	7.9	8.8	8.4	9.0	9.7	9.6	8.6	9.5	9.3	8.1	9.3	9.7	11.7	13.5	9.0	6.7	5.6	5.4	8.3	13.5																						
6-Apr	5.2	5.7	5.8	7.5	9.0	9.2	9.5	10.7	12.9	12.8	11.1	8.6	5.6	4.9	5.0	5.2	5.4	5.1	4.8	5.2	8.1	6.7	5.1	4.3	7.2	12.9																						
7-Apr	3.9	3.8	4.1	4.2	4.5	4.8	4.8	5.4	5.8	5.7	5.6	5.5	5.5	5.5	5.7	6.3	7.0	6.4	6.9	7.8	6.6	6.8	5.5	5.9	5.6	7.8																						
8-Apr	6.2	5.6	6.0	6.1	6.6	6.5	6.3	6.6	8.0	8.6	7.9	7.2	6.5	5.9	5.6	5.9	5.3	6.5	9.9	14.4	12.7	15.3	14.6	6.7	7.9	15.3																						
9-Apr	5.1	5.1	6.6	6.5	6.6	7.0	5.9	5.3	4.9	3.7	2.9	2.8	2.4	2.2	3.1	3.4	3.9	4.4	7.5	11.0	13.1	4.1	3.9	3.5	5.2	13.1																						
10-Apr	3.3	3.0	3.2	2.5	2.2	1.6	1.2	1.2	1.5	1.1	1.1	1.1	1.1	1.7	2.5	2.6	3.3	3.9	4.3	4.3	3.7	3.9	4.2	4.2	2.6	4.3																						
11-Apr	3.8	3.6	3.4	4.5	8.1	6.7	10.0	7.6	4.8	3.9	4.0	3.8	4.3	4.2	4.3	4.6	4.3	4.3	5.9	7.7	7.0	10.3	11.7	14.2	6.1	14.2																						
12-Apr	12.3	8.5	5.7	5.6	4.0	4.0	3.8	3.5	3.3	3.1	3.5	2.2	2.6	3.1	2.9	3.1	3.2	3.2	4.2	6.6	4.2	5.4	4.5	6.3	4.5	12.3																						
13-Apr	6.4	5.2	4.5	4.4	5.0	5.1	6.3	7.4	10.6	12.0	11.1	5.1	4.4	5.6	6.4	5.0	8.3	7.9	7.7	8.7	9.0	7.3	5.6	3.8	6.8	12.0																						
14-Apr	3.4	2.2	1.7	2.4	3.0	4.3	4.9	4.6	3.2	3.0	3.5	3.9	3.6	3.3	3.7	3.3	3.1	3.1	3.4	4.8	4.4	3.5	3.9	4.8	3.6	4.9																						
15-Apr	3.8	3.5	3.5	3.7	4.1	4.1	5.0	4.1	4.1	5.2	4.8	4.4	4.7	5.3	4.4	4.7	4.9	4.1	4.0	4.9	7.0	5.4	4.7	4.0	4.5	7.0																						
16-Apr	4.1	4.2	4.5	4.2	4.1	4.4	4.9	4.7	5.0	5.2	5.4	5.2	5.1	5.1	5.0	4.6	4.7	4.5	4.3	4.1	4.4	4.2	4.3	4.0	4.6	5.4																						
17-Apr	3.9	3.9	4.0	4.1	4.4	4.4	4.2	4.6	5.2	7.0	6.2	6.2	6.1	5.1	5.0	9.5	5.7	4.7	4.7	4.6	4.3	4.2	4.4	4.0	5.0	9.5																						
18-Apr	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.5	3.8	4.3	4.2	4.0	3.5	3.3	3.3	4.2	4.7	4.7	4.4	4.0	4.1	5.3	4.4	4.0	5.3																						
19-Apr	3.8	4.0	3.9	3.8	3.8	3.7	3.6	3.2	3.3	3.6	3.7	3.7	4.1	4.1	4.6	5.5	5.5	5.4	5.7	5.2	5.3	5.4	6.1	5.6	4.5	6.1																						
20-Apr	5.7	6.6	5.8	5.5	5.4	5.5	5.3	5.9	4.3	4.2	3.6	3.6	4.4	4.4	4.4	4.7	5.0	4.1	4.5	4.4	6.2	6.4	6.2	7.2	5.1	7.2																						
21-Apr	5.4	5.4	5.0	4.7	4.9	5.5	5.3	4.7	5.0	4.7	4.4	4.8	4.9	4.9	5.1	5.6	6.0	6.3	6.4	8.3	14.7	10.4	9.3	8.4	6.3	14.7																						
22-Apr	8.7	8.9	7.5	9.5	13.4	8.4	7.5	8.4	9.1	9.8	8.7	7.1	7.5	7.7	8.3	8.3	9.1	10.1	10.5	13.6	13.1	16.8	17.6	14.8	10.2	17.6																						
23-Apr	13.3	11.9	12.6	12.3	11.5	10.1	8.9	9.5	9.0	8.4	8.0	8.8	9.7	10.5	10.5	9.0	9.5	8.4	8.0	7.7	7.5	7.8	7.3	7.0	9.5	13.3																						
24-Apr	7.1	7.0	7.3	7.6	7.5	8.2	8.9	8.2	7.9	7.7	9.3	8.0	6.9	6.6	6.2	6.9	8.9	9.9	10.4	10.5	17.9	15.0	18.2	20.4	9.7	20.4																						
25-Apr	20.8	17.3	16.8	15.8	12.6	10.7	9.8	9.0	8.8	8.0	8.3	8.1	6.0	3.2	3.7	4.5	4.5	3.5	2.6	1.6	1.5	1.3	0.7	0.8	7.5	20.8																						
26-Apr	0.6	0.5	0.6	0.7	1.0	1.0	1.8	2.0	2.1	2.3	C	C	3.5	3.9	4.2	7.3	7.9	8.2	8.7	7.0	3.5	3.1	4.0	4.5	3.6	8.7																						
27-Apr	5.0	5.8	7.0	8.5	8.5	9.3	10.3	11.1	14.1	8.7	6.8	7.6	7.1	6.7	7.2	6.3	5.2	4.9	4.8	6.4	5.9	6.0	5.8	5.8	7.3	14.1																						
28-Apr	4.3	4.1	5.0	4.4	4.5	5.2	7.9	3.9	2.9	2.7	3.2	1.9	1.9	2.5	3.9	1.9	2.9	4.8	6.7	5.2	5.6	8.2	9.4	9.9	4.7	9.9																						
29-Apr	9.2	10.1	9.9	9.9	9.4	9.3	10.7	7.2	7.6	5.7	3.4	2.8	2.5	2.7	2.3	2.5	3.1	3.4	UO	UO	UO	UO	UO	UO	6.2	10.7																						
30-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	4.7	5.7	6.5	5.8	5.4	5.2	5.4	5.4	6.4	7.0	6.9	4.7	4.5	4.3	--	7.0																						
																								6.3	5.9	5.9	6.0	6.2	6.0	6.3	6.0	6.1	6.0	5.7	5.3	5.1	5.3	5.4	5.5	5.8	5.9	6.6	7.2	7.6	7.1	7.0	6.8	Diurnal Average
																								20.8	17.3	16.8	15.8	13.4	11.7	12.3	11.1	14.1	12.8	11.1	9.6	9.7	12.9	11.5	9.5	9.5	10.1	11.7	14.4	17.9	16.8	18.2	20.4	Diurnal Maximum
C - Calibration																								UO - Unstable Operation																								
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																



Wood Buffalo Environmental Association
Hourly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Athabasca Valley - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Athabasca Valley - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	377	53.70	53.70
6 - 15	316	45.01	98.72
16 - 25	9	1.28	100.00
26 - 80	0	0.00	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 702

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Athabasca Valley - April 2023**

Concentration Ranges (µg/m ³)	Wind Direction															Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW		NNW
0 - 5	13	3	6	15	33	76	71	15	12	13	16	26	21	9	19	29	377
6 - 15	14	7	6	6	17	29	97	47	18	9	14	10	6	2	6	28	316
16 - 25	0	0	0	0	1	4	1	2	0	0	0	0	1	0	0	0	9
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
Totals	27	10	12	21	51	109	169	64	30	22	30	36	28	11	25	57	702

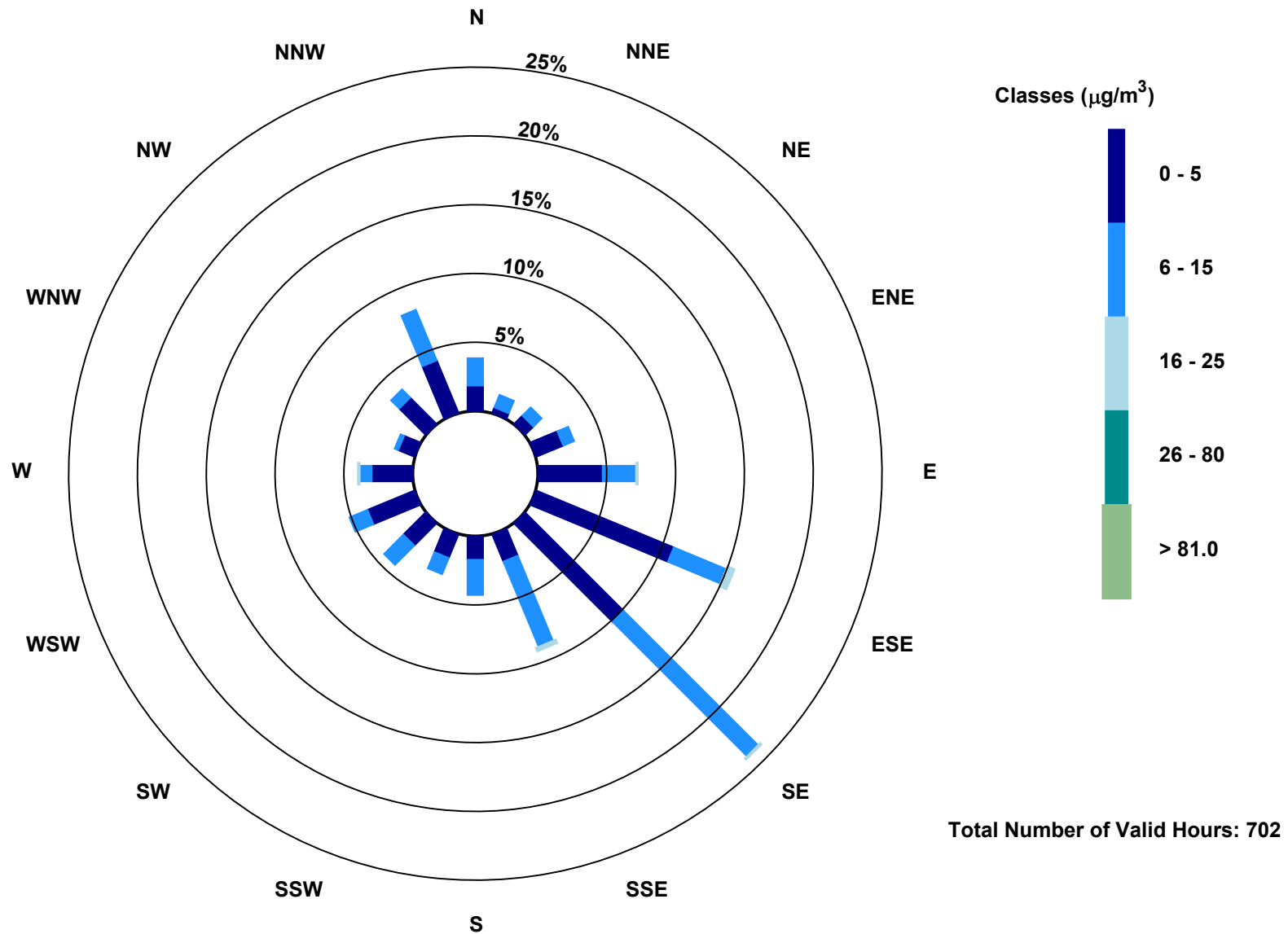
Total Number of Valid Hours: 702

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

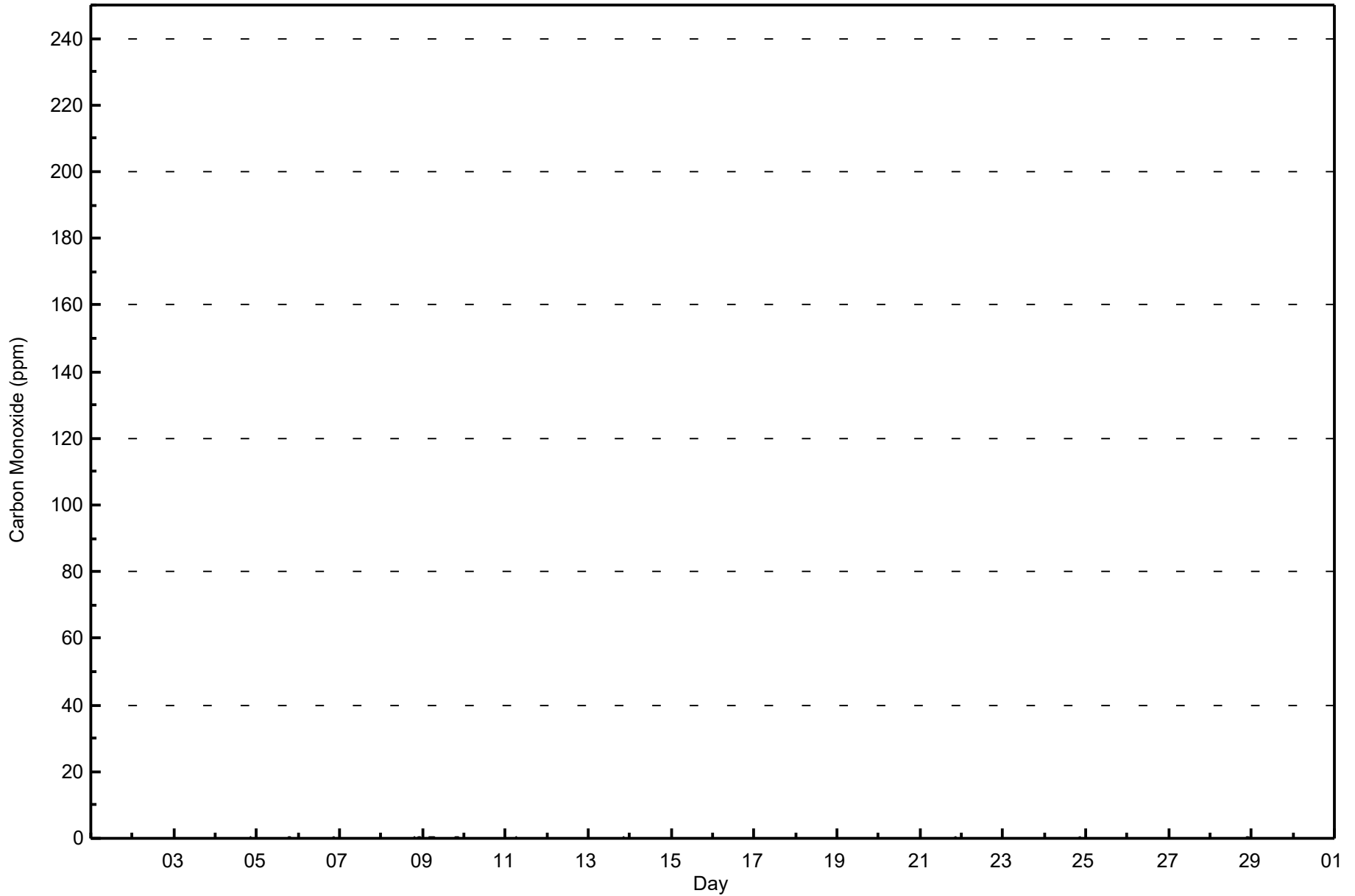
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Athabasca Valley





Wood Buffalo Environmental Association
Hourly Averages

Carbon Monoxide (CO) - ppm
Athabasca Valley - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Monoxide (CO) - ppm
Athabasca Valley - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Athabasca Valley - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	25	10	12	21	47	108	172	60	29	21	29	34	26	11	25	55	685
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
Totals	25	10	12	21	47	108	172	60	29	21	29	34	26	11	25	55	685

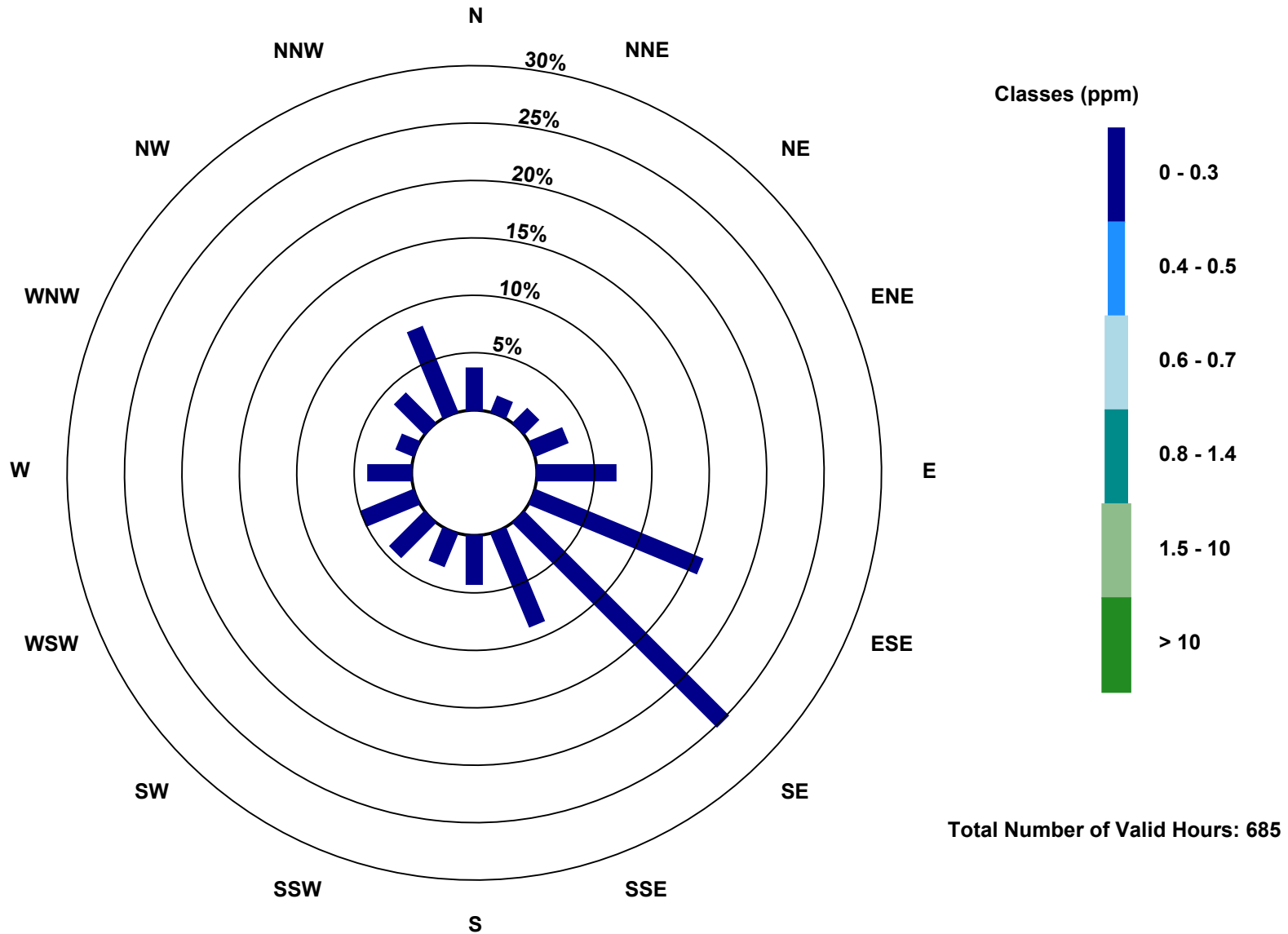
Total Number of Valid Hours: 685

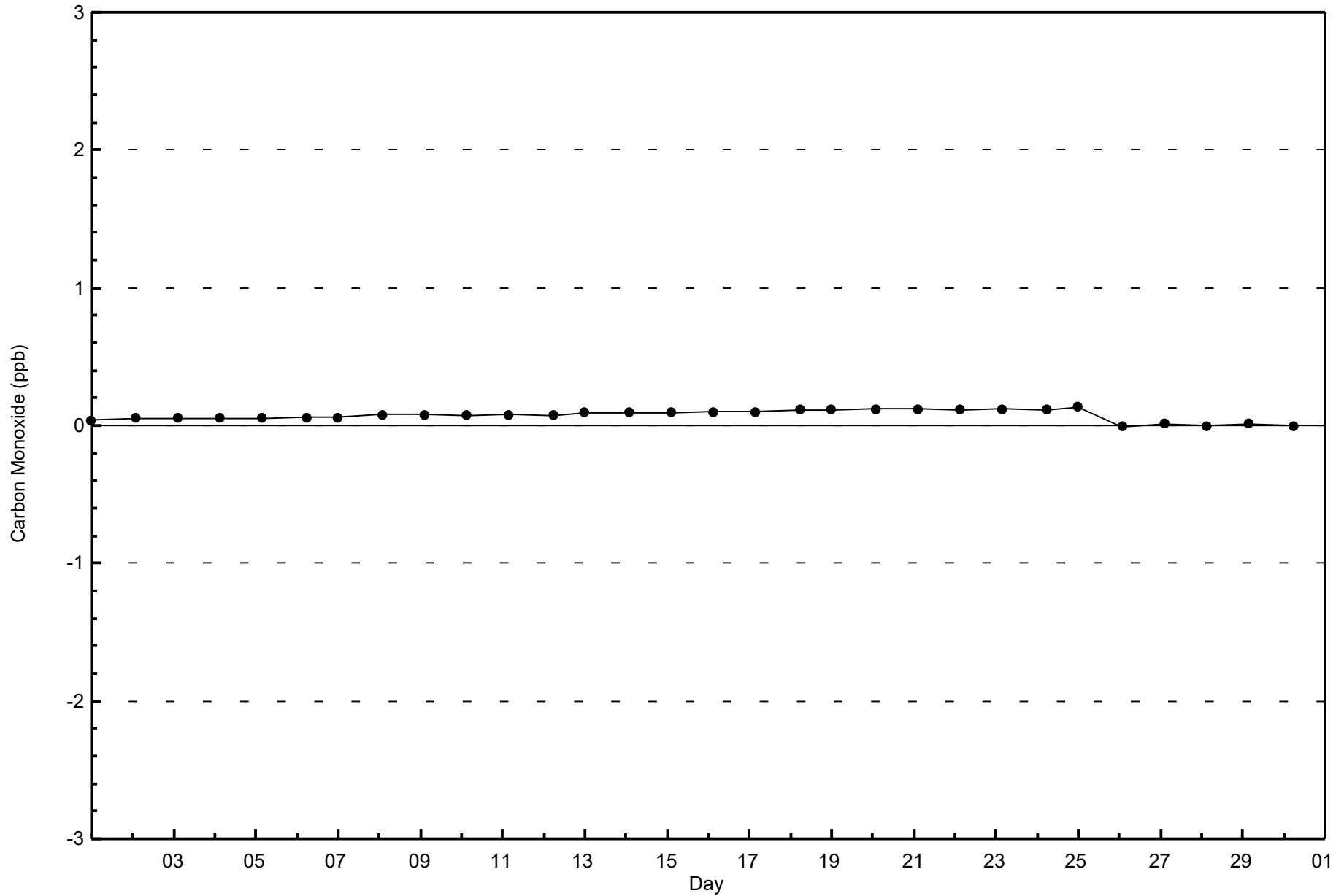
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Carbon Monoxide (CO) - ppm
Athabasca Valley

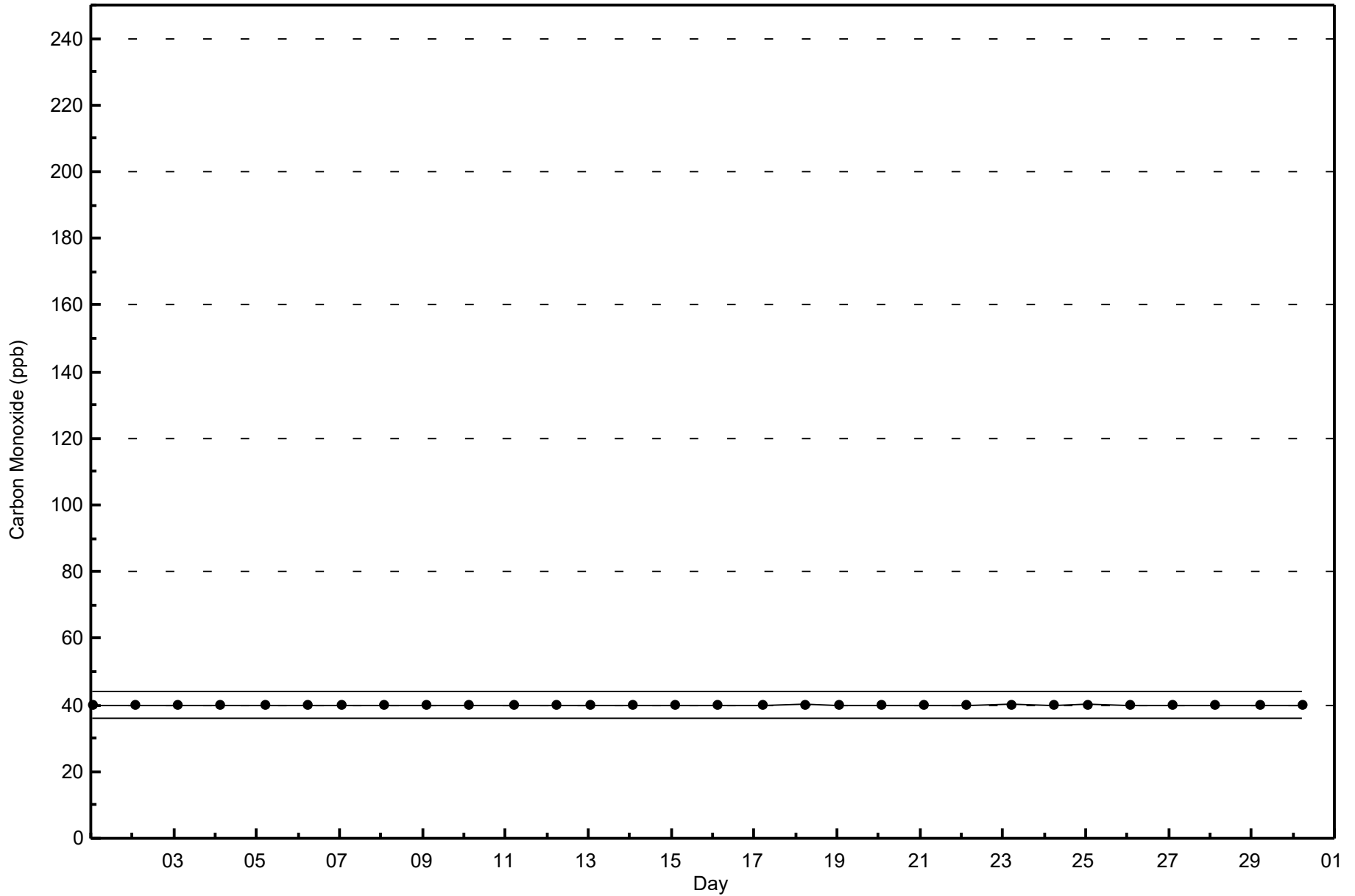






Wood Buffalo Environmental Association
Span Responses

Carbon Monoxide (CO) - ppb
Athabasca Valley - April 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

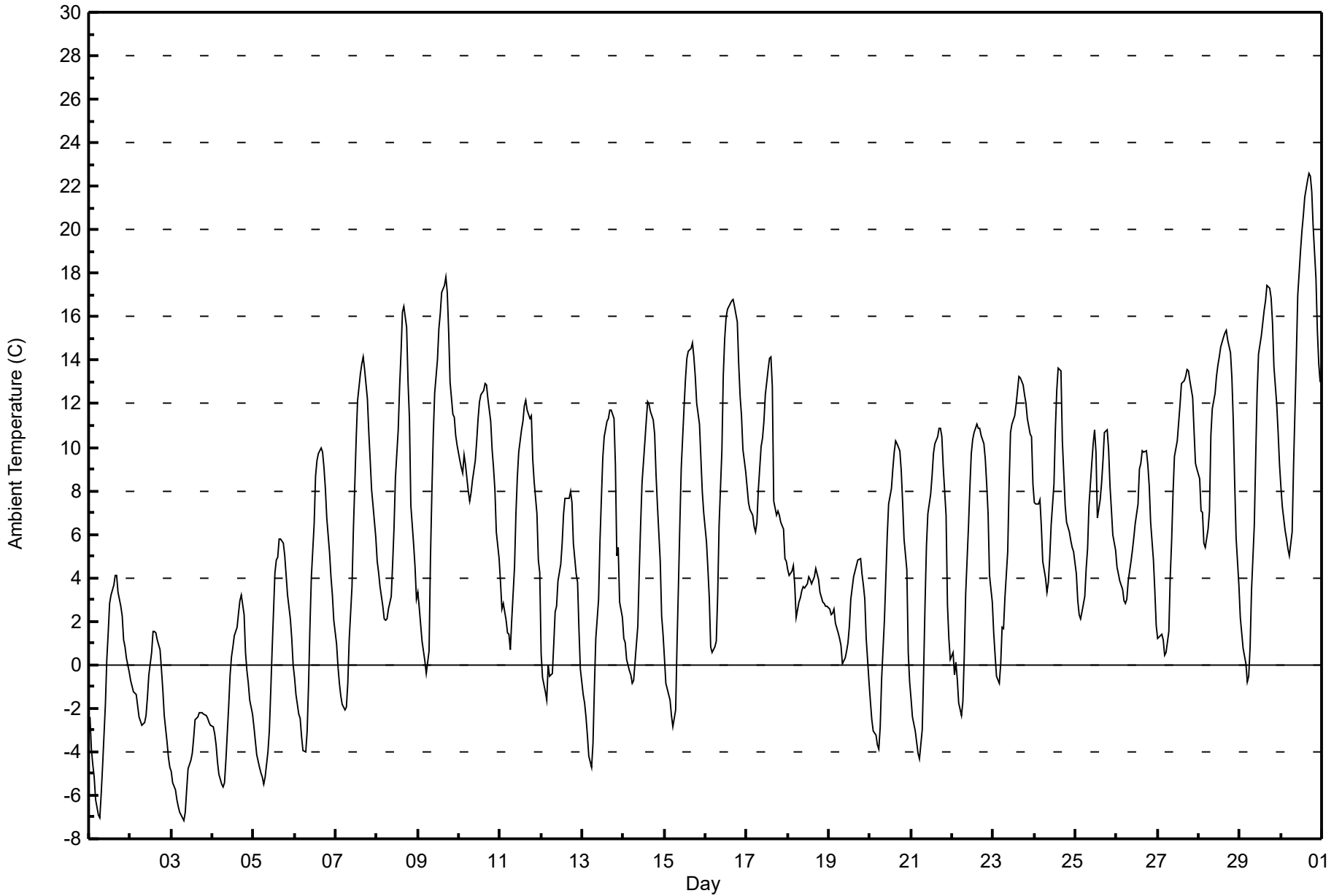
Ambient Temperature (AT) - C
Athabasca Valley - April 2023

Maximum Value: 22.6 C on Apr 30 17:00		Maximum Daily Average: 14.4 C on Apr 30		Hours in Service: 720																							
Minimum Value: -7.2 C on Apr 3 08:00		Minimum Daily Average: -4.3 C on Apr 3		Hours of Data: 720																							
Maximum Diurnal Average: 10.7 C at hour 16		Minimum Diurnal Average: -0.2 C at hour 6		Hours of Missing Data: 0																							
Monthly Average: 5.38 C		Percentiles: P ₁ = -6.2 P ₁₀ = -2.4 Q ₁ = 0.8 Median = 4.9 Q ₃ = 10.0 P ₉₀ = 13.2 P ₉₉ = 19.8		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-Apr	-2.4	-3.9	-4.6	-5.2	-6.2	-6.9	-7.0	-6.0	-4.6	-1.8	0.3	1.5	2.8	3.2	3.7	4.1	4.1	3.4	2.7	2.2	1.2	0.8	0.3	-0.4	-0.8	4.1	
2-Apr	-0.8	-1.0	-1.2	-1.4	-1.9	-2.4	-2.6	-2.8	-2.6	-2.3	-1.5	-0.5	0.6	1.6	1.5	1.5	1.2	0.7	-0.2	-1.2	-2.4	-3.6	-4.3	-4.7	-1.3	1.6	
3-Apr	-4.9	-5.4	-5.7	-6.2	-6.5	-6.8	-7.1	-7.2	-6.7	-5.8	-4.8	-4.4	-4.1	-3.4	-2.5	-2.4	-2.2	-2.2	-2.2	-2.3	-2.3	-2.5	-2.6	-2.8	-4.3	-2.2	
4-Apr	-2.8	-3.2	-3.7	-4.5	-5.0	-5.5	-5.6	-5.4	-4.4	-1.9	-0.5	0.4	0.8	1.4	1.7	2.4	3.0	3.2	2.3	0.6	-0.3	-0.8	-1.6	-2.3	-1.3	3.2	
5-Apr	-2.8	-3.5	-4.1	-4.7	-5.0	-5.1	-5.5	-5.2	-4.0	-3.0	-1.3	0.7	4.2	4.8	5.0	5.8	5.8	5.6	5.0	4.1	3.2	2.1	1.2	0.0	0.1	5.8	
6-Apr	-0.6	-1.4	-2.2	-2.5	-3.3	-4.0	-4.0	-3.0	-0.9	1.8	4.1	6.5	8.7	9.4	9.7	9.9	9.8	9.1	8.1	6.7	5.1	4.1	3.2	2.0	3.2	9.9	
7-Apr	0.9	-0.1	-0.9	-1.4	-1.8	-2.1	-2.0	-0.9	1.1	3.6	6.3	8.3	10.4	12.2	13.4	13.8	14.2	13.6	12.2	10.7	9.4	8.0	7.3	5.9	5.9	14.2	
8-Apr	4.7	4.2	3.6	2.7	2.1	2.1	2.1	2.6	3.1	4.6	6.3	8.6	10.8	12.8	14.4	16.2	16.5	15.5	13.0	11.3	7.3	5.5	4.5	3.0	7.4	16.5	
9-Apr	3.3	2.6	1.1	0.6	0.2	-0.4	0.6	4.9	7.9	10.6	12.5	14.0	15.5	16.1	17.1	17.5	17.8	17.1	15.3	13.0	11.5	11.4	10.5	10.1	9.6	17.8	
10-Apr	9.4	9.1	8.8	9.7	9.2	7.9	7.5	7.9	8.5	9.4	10.3	11.3	12.1	12.4	12.6	13.0	12.9	12.2	11.2	9.9	9.1	8.0	6.1	4.9	9.7	13.0	
11-Apr	3.8	2.6	2.8	2.0	1.4	1.4	0.7	2.0	4.5	6.9	8.6	9.8	10.8	11.2	11.9	12.1	11.7	11.3	11.4	9.5	8.4	6.9	4.8	4.3	6.7	12.1	
12-Apr	0.5	-0.6	-1.2	-1.6	0.0	-0.5	-0.4	1.0	2.4	2.7	3.8	4.6	5.6	6.9	7.6	7.7	7.6	8.0	7.5	5.6	4.2	3.8	1.6	-0.2	3.2	8.0	
13-Apr	-1.4	-1.8	-2.4	-3.2	-4.2	-4.7	-3.6	-1.0	1.2	3.0	5.8	7.7	9.5	10.5	11.2	11.3	11.7	11.7	11.3	9.2	5.0	5.4	2.9	2.2	4.1	11.7	
14-Apr	1.2	1.0	0.2	-0.3	-0.5	-0.9	-0.7	0.1	1.8	4.3	6.4	8.3	10.2	11.2	12.1	12.0	11.6	11.3	10.6	8.8	7.4	4.8	2.2	1.4	5.2	12.1	
15-Apr	0.3	-0.9	-1.4	-1.6	-2.3	-2.9	-2.1	1.0	3.7	6.5	9.1	11.8	13.1	14.1	14.4	14.5	14.8	14.1	13.2	12.0	11.1	9.5	8.0	7.0	7.0	14.8	
16-Apr	5.6	4.5	3.1	0.8	0.6	0.8	1.1	3.2	6.5	9.9	13.3	15.0	15.9	16.4	16.6	16.7	16.8	16.5	15.8	13.8	12.4	11.5	9.9	8.9	9.8	16.8	
17-Apr	8.2	7.4	7.2	6.9	6.3	6.1	6.5	8.0	10.1	10.4	11.2	12.4	13.6	14.1	14.2	12.8	7.5	6.9	7.1	6.9	6.6	6.3	4.9	4.8	8.6	14.2	
18-Apr	4.3	4.1	4.3	4.5	3.6	2.2	2.9	3.1	3.4	3.6	3.5	3.7	4.0	3.9	3.7	4.0	4.4	4.1	3.9	3.3	2.9	2.8	2.7	2.7	3.6	4.5	
19-Apr	2.6	2.3	2.4	2.6	1.9	1.5	1.2	0.9	0.0	0.3	0.6	1.0	1.8	3.0	4.0	4.3	4.6	4.8	4.9	4.2	3.6	3.0	1.2	-0.8	2.3	4.9	
20-Apr	-1.7	-2.5	-3.1	-3.2	-3.7	-3.9	-2.8	-0.6	2.1	4.0	5.9	7.4	8.1	9.0	9.8	10.3	10.2	9.9	9.0	7.5	5.8	4.4	0.6	-0.8	3.4	10.3	
21-Apr	-1.6	-2.4	-3.0	-3.6	-4.1	-4.3	-3.0	-0.3	2.8	5.5	7.0	7.8	8.7	9.7	10.2	10.5	10.9	10.9	10.5	9.1	6.9	2.7	1.2	0.3	3.8	10.9	
22-Apr	0.6	-0.5	0.1	-0.7	-1.7	-2.4	-1.7	0.4	3.3	6.3	8.2	9.7	10.3	10.7	11.1	10.9	10.9	10.5	10.2	9.4	8.3	7.0	4.1	2.9	5.3	11.1	
23-Apr	1.5	0.5	-0.5	-0.9	0.1	1.7	1.7	3.1	5.2	8.3	10.6	11.1	11.5	12.0	12.6	13.3	13.2	12.9	12.4	12.0	11.3	10.6	10.5	8.3	7.6	13.3	
24-Apr	7.5	7.4	7.4	7.6	6.4	4.7	4.0	3.3	3.8	5.0	6.4	8.3	10.8	12.6	13.6	13.5	10.3	8.8	7.4	6.6	6.1	5.7	5.4	5.2	7.4	13.6	
25-Apr	4.2	3.0	2.3	2.1	2.4	3.2	4.5	5.4	7.3	9.3	10.2	10.8	9.8	6.7	7.6	8.3	9.4	10.7	10.8	9.9	8.2	7.1	6.0	5.3	6.8	10.8	
26-Apr	4.5	4.2	3.8	3.5	2.9	2.8	3.0	3.8	4.8	5.3	5.8	6.5	7.4	9.0	9.3	9.8	9.8	9.9	9.2	8.2	6.6	4.8	3.4	1.8	5.8	9.9	
27-Apr	1.2	1.3	1.4	1.1	0.4	0.5	1.6	4.1	5.7	7.9	9.6	10.3	11.1	12.0	13.0	13.1	13.2	13.6	13.5	13.1	12.3	10.7	9.2	9.0	7.9	13.6	
28-Apr	8.5	7.1	7.0	5.6	5.4	6.2	7.1	10.5	11.8	12.5	13.3	13.8	14.2	14.6	15.0	15.3	15.4	15.0	14.3	13.2	11.2	8.3	5.8	3.6	10.6	15.4	
29-Apr	2.2	1.4	0.8	0.0	-0.8	-0.5	0.8	3.4	6.4	9.6	12.5	14.3	15.2	15.7	16.3	16.7	17.4	17.3	16.9	15.7	13.7	12.0	10.7	9.2	9.5	17.4	
30-Apr	8.1	7.3	6.2	5.8	5.3	5.0	6.1	9.1	11.7	14.2	17.0	19.0	19.9	20.7	21.5	22.3	22.6	22.5	21.8	20.1	17.7	15.4	13.8	13.0	14.4	22.6	
		2.1	1.4	0.9	0.5	0.0	-0.2	0.1	1.5	3.2	5.0	6.7	8.0	9.1	9.8	10.4	10.7	10.6	10.3	9.6	8.4	7.0	5.9	4.4	3.5	Diurnal Average	
		9.4	9.1	8.8	9.7	9.2	7.9	7.5	10.5	11.8	14.2	17.0	19.0	19.9	20.7	21.5	22.3	22.6	22.5	21.8	20.1	17.7	15.4	13.8	13.0	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Athabasca Valley - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Athabasca Valley - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	148	20.56	20.56
0 - 10	392	54.44	75.00
10 - 20	173	24.03	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Barometric Pressure (BP) - inHg

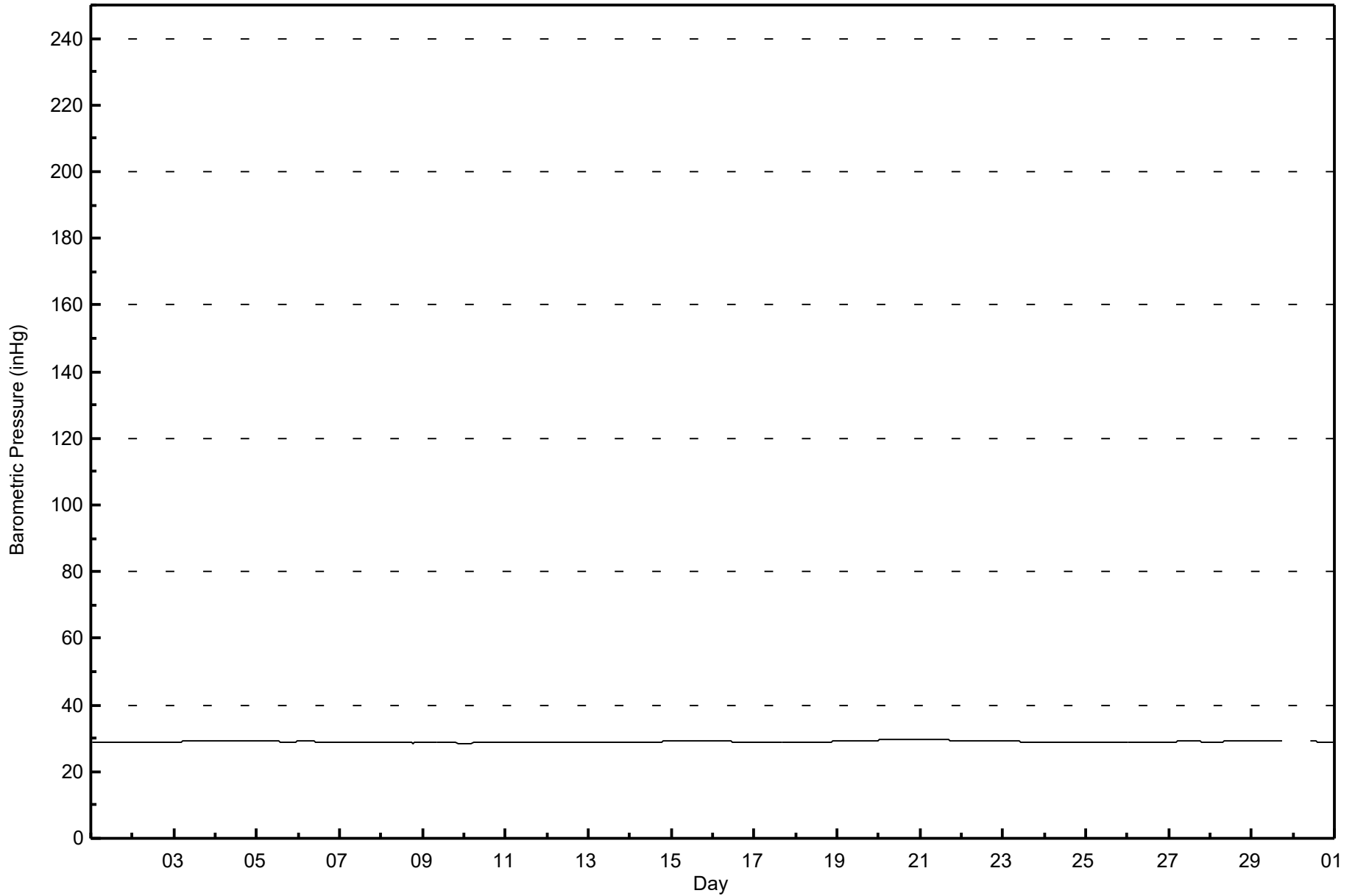
Athabasca Valley - April 2023

Maximum Value: 29.6 inHg on Apr 21 09:00 Maximum Daily Average: 29.5 inHg on Apr 20																						Hours in Service:	720					
Minimum Value: 28.4 inHg on Apr 10 02:00 Minimum Daily Average: 28.6 inHg on Apr 8																						Hours of Data:	704					
Maximum Diurnal Average: 29.0 inHg at hour 8 Minimum Diurnal Average: 29.0 inHg at hour 19																						Hours of Missing Data:	16					
Monthly Average: 28.98 inHg Percentiles: P ₁ = 28.6 P ₁₀ = 28.7 Q ₁ = 28.8 Median = 29.0 Q ₃ = 29.1 P ₉₀ = 29.3 P ₉₉ = 29.6																						Hours of Calibration:	0					
																						Percent Operational Time:	97.8					
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-Apr	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	28.7	28.7	28.7	28.7	28.7	28.7	28.8
2-Apr	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
3-Apr	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	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
4-Apr	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	29.2	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
5-Apr	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
6-Apr	29.0	29.0	29.0	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
7-Apr	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.8	28.9
8-Apr	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	28.6	28.6	28.6	28.6	28.6	28.7	28.6
9-Apr	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	28.7	28.7	28.7	28.6	28.6	28.6	28.5	28.5	28.5	28.5	28.5	28.7
10-Apr	28.4	28.4	28.5	28.5	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	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.8
11-Apr	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8
12-Apr	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	28.8	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
13-Apr	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	29.0	28.9
14-Apr	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	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
15-Apr	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	29.1	29.1	29.1	29.1
16-Apr	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	29.0	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	29.0
17-Apr	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
18-Apr	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	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	28.9
19-Apr	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.2	29.3	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	29.4	29.2
20-Apr	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.6	29.6	29.6	29.6	29.6	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
21-Apr	29.5	29.5	29.5	29.5	29.5	29.6	29.6	29.6	29.6	29.6	29.6	29.5	29.5	29.5	29.5	29.5	29.5	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.5
22-Apr	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	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2
23-Apr	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	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
24-Apr	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	29.0	29.0
25-Apr	29.0	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	28.9	28.9	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
26-Apr	28.9	28.9	28.9	28.9	28.9	28.9	29.0	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	28.9	28.9	28.9	28.9	28.9	28.9
27-Apr	28.9	28.9	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	29.0	29.1
28-Apr	28.9	28.9	28.9	28.9	28.9	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	29.2	29.2	29.2	29.2	29.2	29.2	29.1
29-Apr	29.3	29.3	29.3	29.3	29.3	29.3	29.4	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	UO	UO	UO	UO	UO	UO	UO	29.3	29.4
30-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	29.1	29.1	29.1	29.0	29.0	29.0	29.0	28.9	28.9	29.0	29.0	29.0	28.9	28.9	28.9	--	29.1	
																						Diurnal Average						
																						Diurnal Maximum						
UO - Unstable Operation																												



Wood Buffalo Environmental Association
Hourly Averages

Barometric Pressure (BP) - inHg
Athabasca Valley - April 2023

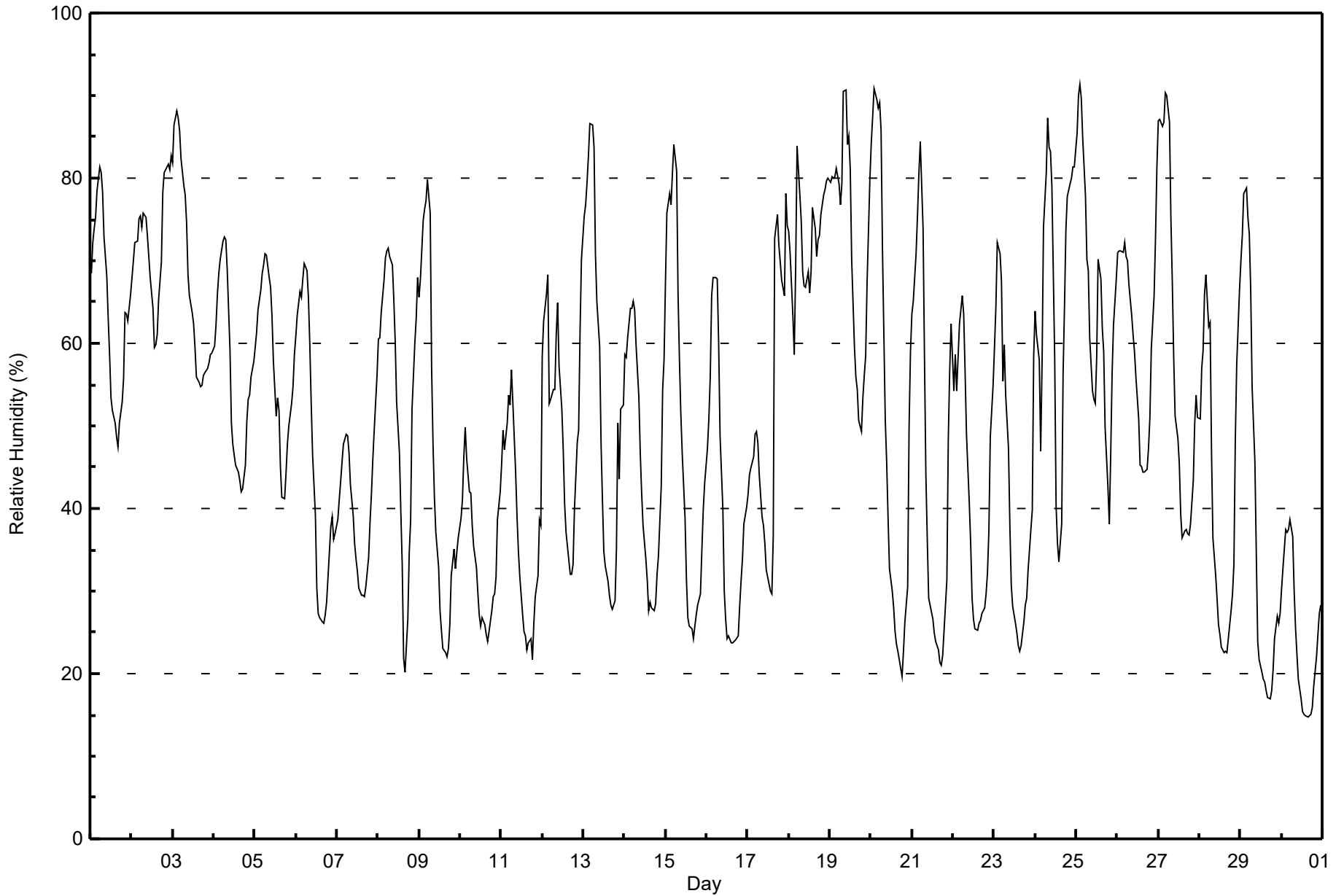




Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Athabasca Valley - April 2023

Maximum Value: 91.4 % on Apr 25 03:00 Maximum Daily Average: 72.4 % on Apr 18																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 14.7 % on Apr 30 16:00 Minimum Daily Average: 24.6 % on Apr 30 Maximum Diurnal Average: 69.9 % at hour 6 Minimum Diurnal Average: 34.7 % at hour 16 Monthly Average: 51.54 % Percentiles: P ₁ = 17.0 P ₁₀ = 25.4 Q ₁ = 33.4 Median = 52.0 Q ₃ = 67.9 P ₉₀ = 78.5 P ₉₉ = 89.6																						Hours of Missing Data: 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-Apr	68.5	72.3	73.9	75.2	78.4	81.3	80.7	78.2	72.9	68.2	63.1	58.6	53.4	51.9	50.4	48.6	47.5	50.4	52.8	55.7	63.7	63.6	62.6	65.9	64.1	81.3																							
2-Apr	68.0	70.0	72.2	72.4	75.1	75.4	74.0	75.8	75.2	73.1	70.5	67.9	64.3	59.5	59.8	60.9	65.2	69.9	78.3	80.7	81.1	81.7	81.0	82.7	72.3	82.7																							
3-Apr	81.8	86.4	88.2	87.2	85.8	82.3	79.2	77.9	74.6	68.3	65.7	63.8	62.3	59.4	55.9	55.2	54.7	54.9	56.1	56.5	57.0	57.6	58.6	58.8	67.8	88.2																							
4-Apr	59.6	62.3	66.0	68.5	70.1	72.4	72.9	72.6	69.1	59.1	50.4	47.8	46.4	45.2	44.4	43.3	42.1	42.4	45.3	50.4	53.2	53.7	55.9	57.8	56.3	72.9																							
5-Apr	59.4	61.4	64.1	66.5	68.5	69.5	70.9	70.7	67.9	66.8	63.3	57.8	51.2	53.4	51.9	45.2	41.4	41.2	44.2	47.8	50.0	52.6	54.7	58.7	57.5	70.9																							
6-Apr	60.9	63.4	66.2	65.6	67.8	69.6	68.9	65.5	59.8	52.7	46.5	39.1	30.4	27.3	26.8	26.2	26.0	27.1	28.6	31.7	37.9	39.0	36.3	36.9	45.9	69.6																							
7-Apr	38.6	41.0	43.2	45.7	47.8	48.9	48.8	46.8	42.8	39.2	35.8	33.9	32.3	30.4	29.5	29.6	29.3	30.5	34.1	38.3	41.8	46.0	49.5	56.0	40.0	56.0																							
8-Apr	60.5	60.7	63.7	67.6	70.4	71.2	71.6	70.6	69.5	65.2	60.2	52.8	46.8	39.6	33.2	21.8	20.2	26.7	34.6	38.5	52.0	59.9	63.1	68.0	53.7	71.6																							
9-Apr	65.5	67.8	74.9	76.3	77.3	79.8	75.8	57.0	47.8	41.3	37.1	32.9	27.6	25.2	23.1	22.6	22.1	23.0	26.0	31.9	35.1	32.6	34.8	36.4	44.7	79.8																							
10-Apr	38.8	40.9	46.2	49.8	46.0	42.1	41.9	38.0	35.4	32.9	29.9	27.2	25.8	26.7	25.9	24.7	23.9	25.1	27.7	29.3	29.6	31.7	38.6	42.0	34.2	49.8																							
11-Apr	45.3	49.5	47.1	50.4	53.8	52.5	56.7	52.9	44.4	38.9	34.8	31.7	27.1	25.0	24.6	22.9	23.7	24.3	21.6	26.2	29.3	31.8	38.6	38.0	37.1	56.7																							
12-Apr	58.5	62.8	66.0	68.3	52.7	53.2	54.4	54.5	61.1	64.9	57.3	52.0	47.1	40.5	37.1	33.7	32.0	32.0	33.2	39.8	48.0	49.4	61.4	70.1	51.3	70.1																							
13-Apr	75.4	76.9	79.5	82.8	86.6	86.5	83.7	70.9	65.0	59.6	47.9	41.1	34.7	33.0	31.2	29.5	28.3	27.8	28.8	35.1	50.4	43.5	52.0	52.6	54.3	86.6																							
14-Apr	58.7	58.3	60.6	64.2	64.3	65.0	64.0	59.9	53.5	46.7	41.8	37.9	33.9	31.3	27.7	28.6	28.0	27.6	28.5	32.1	34.2	42.7	54.4	58.0	45.9	65.0																							
15-Apr	67.3	75.8	78.1	76.8	80.6	84.1	80.8	65.9	58.0	51.3	46.6	38.9	31.4	26.8	25.7	25.4	24.3	25.8	27.2	28.4	29.7	34.9	39.9	43.0	48.6	84.1																							
16-Apr	47.2	50.9	55.9	65.8	67.9	67.9	67.8	60.0	48.9	40.0	30.1	26.5	24.3	24.5	23.7	23.8	24.0	24.1	24.5	28.2	31.1	33.9	38.1	40.3	40.4	67.9																							
17-Apr	41.7	44.1	44.9	46.2	48.9	49.4	48.0	44.1	38.9	37.9	35.7	32.5	30.9	30.0	29.7	36.5	72.7	75.6	71.9	69.9	67.6	65.8	78.2	74.3	50.6	78.2																							
18-Apr	73.5	71.0	63.5	58.7	69.2	83.9	78.0	74.7	68.6	67.0	66.7	68.6	66.2	68.6	76.4	73.8	70.6	72.5	73.0	75.6	78.0	78.7	79.7	80.0	72.4	83.9																							
19-Apr	79.4	80.2	80.1	80.1	81.1	79.4	76.8	79.3	90.5	90.6	84.1	85.1	81.0	70.2	59.6	55.9	54.4	50.8	49.4	53.4	56.1	58.5	67.2	79.8	71.8	90.6																							
20-Apr	84.3	87.4	90.9	89.6	88.5	89.1	85.7	71.4	50.7	45.7	38.9	32.7	30.1	27.9	25.1	23.5	22.8	20.7	19.6	22.7	26.3	30.5	49.8	59.0	50.5	90.9																							
21-Apr	63.5	65.1	70.8	75.4	80.5	84.4	74.0	58.2	44.0	36.3	29.2	27.4	26.6	24.9	23.9	22.9	21.3	21.0	22.2	25.3	31.4	48.2	56.6	62.4	45.6	84.4																							
22-Apr	54.2	58.7	54.2	58.4	62.4	65.7	63.6	56.6	49.0	40.7	35.8	29.1	26.6	25.4	25.2	26.2	26.4	27.3	28.0	29.7	32.1	37.2	48.7	55.0	42.3	65.7																							
23-Apr	59.5	64.4	72.1	70.9	67.5	55.4	59.8	53.8	47.3	37.9	30.7	28.2	26.1	24.8	23.4	22.7	23.3	26.3	28.4	29.2	32.5	37.4	39.8	58.6	42.5	72.1																							
24-Apr	63.8	60.9	58.0	46.9	57.9	74.1	80.6	87.3	83.7	83.3	79.0	58.3	40.3	35.7	33.5	38.1	56.3	64.4	73.7	77.9	79.3	80.0	81.4	81.3	65.6	87.3																							
25-Apr	85.4	89.9	91.4	89.6	84.9	77.8	70.2	68.8	60.6	54.2	53.2	52.8	58.4	70.1	67.8	61.8	58.9	49.8	42.7	38.2	46.5	56.3	62.3	67.7	65.0	91.4																							
26-Apr	71.0	71.2	71.2	71.0	72.2	70.6	70.1	67.1	63.5	61.0	59.0	56.0	50.9	45.2	45.1	44.4	44.4	44.7	47.3	51.1	59.3	65.7	72.6	81.3	60.7	81.3																							
27-Apr	86.9	87.2	86.3	86.8	90.4	90.0	86.8	75.0	67.4	58.3	51.2	48.5	45.5	39.4	36.4	37.3	37.5	36.9	36.7	38.1	43.4	50.3	53.8	51.0	59.2	90.4																							
28-Apr	50.9	57.0	59.1	65.9	68.3	62.0	62.6	46.9	36.5	31.9	29.0	25.9	24.7	23.2	22.6	22.7	22.6	24.2	27.6	29.6	33.2	48.2	57.4	66.4	41.6	68.3																							
29-Apr	70.0	73.1	78.1	78.8	75.3	73.2	66.4	54.7	45.5	34.3	23.9	21.7	20.2	19.4	19.0	18.0	17.1	17.0	17.9	20.4	24.3	27.0	26.2	27.3	39.5	78.8																							
30-Apr	30.1	32.7	37.4	37.1	37.5	38.7	36.6	30.2	25.6	22.4	19.4	17.0	15.4	15.2	14.9	14.7	14.8	15.1	16.0	18.5	22.0	24.8	27.3	28.2	24.6	38.7																							
																								62.3	64.8	66.8	67.9	69.3	69.9	68.4	62.8	57.3	52.3	47.2	43.1	39.4	37.3	35.8	34.7	35.9	36.6	38.2	41.0	45.2	48.8	54.0	57.9	Diurnal Average	
																								86.9	89.9	91.4	89.6	90.4	90.0	86.8	87.3	90.5	90.6	84.1	85.1	81.0	70.2	76.4	73.8	72.7	75.6	78.3	80.7	81.1	81.7	81.4	82.7	Diurnal Maximum	





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Athabasca Valley - April 2023

Maximum Speed: 32 km/h on Apr 10 13:00	Maximum Daily Speed Average: 19.7 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 13 04:00	Minimum Daily Speed Average: 2.0 km/h on Apr 29	Hours of Data: 720
Maximum Diurnal Speed Average: 5.0 km/h at hour 12	Minimum Diurnal Speed Average: 2.4 km/h at hour 21	Hours of Missing Data: 0
Monthly Average Velocity: 3.5 km/h 140.2 deg	Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 5 Median = 9 Q ₃ = 13 P ₉₀ = 19 P ₉₉ = 30	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-Apr	E8	E7	ENE7	ENE4	N3	NE3	E2	SE3	NW3	ESE6	ESE12	ESE12	ESE11	SE11	ESE9	ESE8	ESE9	E12	E12	E11	E11	ESE9	SE13	SE11	ESE7.5	SE13
2-Apr	SE8	SE11	ESE5	SE10	ESE9	ESE10	ESE10	SE11	SE12	ESE10	ESE8	SE8	ESE6	ESE1	NW4	NNW8	NNW10	NNW13	NNW13	NNW18	NNW19	NNW22	NNW22	NNW19	NNE3.8	NNW22
3-Apr	NNW19	NNW18	NNW18	NNW18	NNW18	NNW20	NNW17	NNW18	NNW17	N12	N9	NNW10	N9	N8	N6	NNW4	N5	NNW4	N4	NNE4	NNE3	E6	E5	E5	NNW9.7	NNW20
4-Apr	E3	W1	SSW4	S5	SSW5	SW5	SSW3	SW6	WSW4	SSW2	WSW3	S7	S5	SSE9	S10	SSE9	SSE7	SE7	SE9	ESE6	SE6	SE8	SE9	SE9	SSE4.7	S10
5-Apr	SSE10	SE15	SE13	SE13	SE13	SE10	SSE10	SE9	SE10	S8	WSW4	NW5	ESE4	SE11	SE10	ESE7	SSE9	SE8	SE6	SE5	SE7	SE9	SE9	SE5	SE7.9	SE15
6-Apr	SE5	SE4	SE7	SE10	SE10	SSE9	SE11	SE12	SSE10	SE10	SE14	SE16	SSE18	S21	S22	S21	S19	S20	S19	S14	SSE9	SSE11	SSE11	SSE10	SSE12.3	S22
7-Apr	SSE11	SE12	SE13	SE15	SE16	SE17	SE17	SE17	SE17	SE18	SE16	SE19	SE18	SE19	SE19	SE18	SE17	SE16	SE12	SSE10	SSE12	SSE10	SSE11	SSE8	SE14.7	SE19
8-Apr	SSE8	SE11	SE10	SE11	SSE9	SSE9	SSE10	SE11	SE7	SE5	SE5	ESE8	ESE8	ESE10	SE9	SSW8	WSW7	SSE8	SSE6	SSE1	WSW2	S3	SSE2	SW3	SSE6.1	SE11
9-Apr	SE3	SE3	SE4	SSE5	SSE5	SSE4	SE4	SW9	SSW8	SW9	SSW11	WSW10	WSW16	WSW13	SW10	SW12	SSW11	S12	SSE9	SSE7	SE6	SSE11	SE9	SE9	SSW6.4	WSW16
10-Apr	SSE11	SSE13	S5	WSW14	WSW29	WSW25	WSW23	WSW25	WSW27	WSW28	WSW28	WSW28	WSW32	WSW29	WSW30	WSW31	WSW30	W30	W23	W15	WSW12	WSW13	SW6	SSW5	WSW19.7	WSW32
11-Apr	SSW6	ESE4	S4	SE3	SSE5	SE8	SE6	SE4	SSW5	SSW5	SSW5	SW8	SW10	WSW10	SW9	SW11	W10	W12	SW7	WSW5	NNW11	NNW9	NNW9	NNW7	SW3.6	W12
12-Apr	W2	SSW2	W5	SW3	SW12	SW9	SW14	SW12	NNW14	NNW9	WNW4	NW10	NNW9	NNW12	NW15	NNW22	NNW16	N8	NNW3	WSW6	W9	SW1	SSE1	SSE2	WNW5.6	NNW22
13-Apr	SSW1	N2	NNE2	SE0	SE1	ENE2	E4	E4	NNW2	NNW3	NW7	NW7	NNW9	N10	N11	NNW11	NNW9	NE8	NNE5	N5	NNW6	NNW3	NE3	NE3	N3.9	N11
14-Apr	ENE3	W4	ENE3	ESE2	ESE5	SE3	SE4	SE7	SE9	SE10	SE11	SSE11	SE8	E9	ESE9	E15	E14	E15	ESE12	ESE7	ESE7	ESE4	ENE1	NNE1	ESE6.7	E15
15-Apr	NW3	E2	WSW1	SSW2	WSW1	WSW3	SSE2	ESE6	SE7	S2	S2	ESE5	E8	E10	ESE8	ESE8	ESE9	E16	E14	ESE9	SE11	SE11	SE11	SE12	ESE5.6	E16
16-Apr	SE5	SE4	SE5	SE4	ESE6	SE6	SE4	ESE4	SSE8	SE12	SE18	SE20	SE18	ESE19	ESE21	ESE21	ESE23	ESE22	ESE19	ESE13	ESE13	SE17	SE11	SE11	ESE12.3	ESE23
17-Apr	SE11	SE9	SE10	SE13	SE9	SE11	ESE14	ESE17	SE21	SE26	ESE25	SE27	ESE25	ESE22	ESE23	SE29	SE21	ESE21	ESE18	ESE18	ESE18	ESE19	ESE20	ESE17	ESE18.2	SE29
18-Apr	E12	ESE10	ESE12	ESE13	ESE15	E16	E11	E10	ESE13	ESE12	ESE12	E11	ESE11	E11	E11	E13	E12	E11	NE5	NE6	NNW6	N7	N6	ENE4	E8.9	E16
19-Apr	N4	N6	ENE4	ESE9	SE12	ESE13	SE15	ESE14	ESE13	SE14	ESE13	SE13	ESE13	ESE13	ESE16	ESE13	SE13	SE12	SE11	ENE5	NNW6	NNE2	NW2	WNW1	ESE8.4	ESE16
20-Apr	ENE1	ESE3	E2	ENE3	NE2	E1	E4	ENE3	SSE9	SW4	WNW3	ESE11	ESE14	ESE14	E13	ESE12	ESE14	ESE16	SE16	ESE10	SE5	SE5	SE3	SSE2	ESE6.1	SE16
21-Apr	ESE2	ENE2	E2	ENE1	NE1	ENE1	E3	ESE7	SE7	SE8	ESE10	SE11	E12	E7	E8	E11	E10	ESE8	E8	ESE6	SSE3	ESE2	S2	SSE4	ESE5.3	E12
22-Apr	ESE6	ESE5	SE7	SE5	SE7	SE10	SE10	SE8	E6	ENE5	WSW2	S12	S18	SSE17	S15	S17	S15	S13	S13	S11	SSE12	SSE9	E2	SE2	SSE8.4	S18
23-Apr	E5	E3	NE1	NNE2	ESE3	SE8	SE5	ESE2	ESE6	SE14	SE16	SE21	SSE19	SE19	SE19	SE19	SSE18	SE14	SSE10	SSE11	SSE9	S6	S11	SSE14	SE9.9	SE21
24-Apr	ESE5	NNE3	ESE3	SE10	SE7	N6	NW2	N7	NNW9	NNW10	NNW9	NNE5	ENE10	ENE10	N10	NNW19	N19	NNW18	NNW18	NNW14	W8	SSW7	SSE6	SE8	N4.8	NNW19
25-Apr	ESE4	ESE4	ESE2	SE1	SSE2	SSE5	SSE8	SE8	SE10	SE11	SSE11	SSE13	WSW20	W19	SE6	SSE11	SE11	SSW11	WNW17	W22	WNW17	W18	W17	WSW11	SW4.8	W22
26-Apr	W17	W16	W15	W17	W17	W20	W18	NNW20	NNW20	NW17	NW12	NNW13	NW13	N11	NNW12	NNE10	NNW11	N10	N9	NE10	ENE12	NNW5	N5	NNW3	NNW9.8	WNW20
27-Apr	NW4	NW3	NNW4	NNW4	WNW3	W3	SW5	SW2	SW6	SW8	SW8	SW12	SW14	SW10	WSW6	SW9	WSW8	SW9	SSW6	S9	SE9	SE3	E4	SE6	SW4.5	SW14
28-Apr	SSE5	ESE3	SE4	W2	E1	W4	NE2	NW16	NW27	NW31	NW30	NW31	NW29	NNW28	NW27	NW24	NNW24	N18	N13	N10	NNW7	NNW5	W2	W5	NW12.7	NW31
29-Apr	WSW4	SSW2	ESE2	ESE1	SSE1	ENE3	E2	E4	NE2	NW4	SSW6	SSW4	W7	WNW6	NW7	WNW4	ESE5	SE6	SE10	SE11	SE7	SE7	SE7	SE8	SSE2.0	SE11
30-Apr	SE8	SSE7	ESE9	SE11	SE10	SE10	SE11	SE12	SE14	ESE13	ESE15	SE19	SE21	SE20	SE20	SE18	SE19	SE20	SE18	SE15	SE13	SE13	SE8	SE12	SE13.9	SE21

SE2.7 ESE2.9 SE2.9 SE3.5 SSE3.4 SSE3.2 SSE3.9 SSE3.3 SSE2.6 SSE2.9 SSE3.7 SSE5.0 SSE4.7 SE4.4 SE4.1 SE3.7 SE3.8 ESE4.6 SE4.0 SE2.9 SE2.4 SE3.2 SE3.0 SE3.7	Diurnal Average
NNW19 NNW18 NNW18 NNW18 WSW29 WSW25 WSW23 WSW25 WSW27 WSW28 WSW28 WSW28 WSW32 WSW29 WSW30 WSW31 WSW30 W30 W23 W22 NNW19 NNW22 NNW22 NNW19	Diurnal Maximum

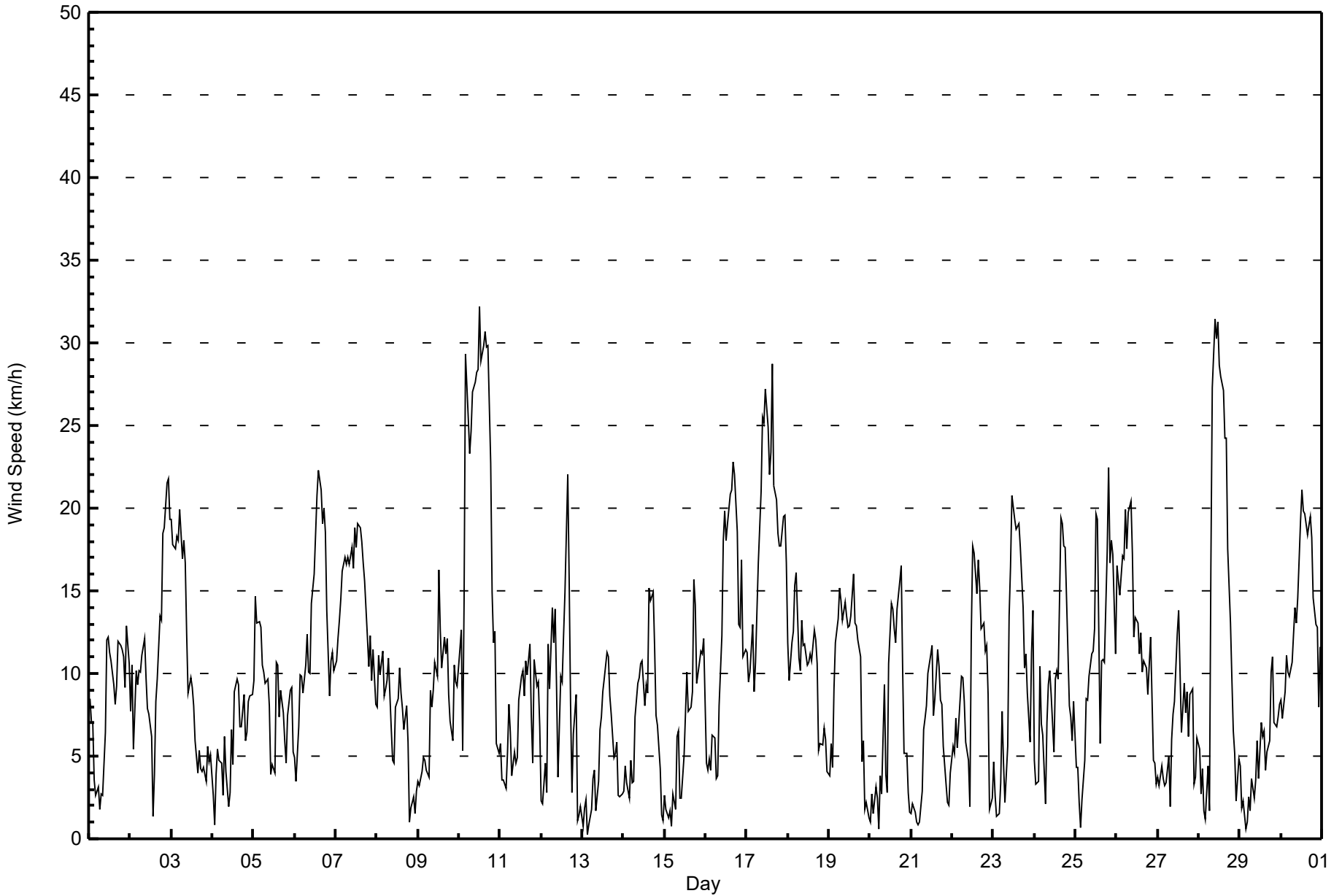
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Athabasca Valley - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 15 km/h on Apr 25 13:00 Minimum Value: 1 km/h on Apr 20 06:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 8																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	2	2	1	2	1	2	1	1	1	4	3	3	3	3	2	2	4	3	4	3	3	4	3	4	3	4
2-Apr	3	3	2	3	2	3	3	3	3	3	2	3	2	2	1	2	3	4	3	4	4	4	4	4	3	4
3-Apr	3	3	3	3	3	3	4	2	3	3	3	2	2	2	2	1	1	1	2	1	1	1	1	1	4	
4-Apr	2	1	2	1	2	2	2	3	1	2	2	3	2	2	3	2	2	3	2	2	2	2	2	2	3	
5-Apr	3	3	2	3	2	2	2	2	2	3	1	1	2	3	3	2	2	2	2	1	1	2	2	2	3	
6-Apr	2	2	2	2	2	2	3	3	3	3	4	4	6	5	5	5	5	5	5	3	2	3	3	2	6	
7-Apr	2	3	3	3	3	3	4	4	4	4	4	4	4	4	5	4	4	4	3	2	3	2	2	2	5	
8-Apr	3	2	3	3	2	2	2	2	1	2	2	2	2	2	3	3	2	3	3	2	1	1	1	3	3	
9-Apr	2	2	1	2	1	2	1	3	2	2	2	4	5	6	3	3	3	3	2	2	3	2	2	3	6	
10-Apr	3	3	3	4	7	5	5	8	8	7	7	7	8	7	9	7	8	7	5	5	2	3	2	3	9	
11-Apr	3	2	3	1	2	2	2	2	3	2	2	2	2	3	3	4	4	3	2	3	3	1	2	3	4	
12-Apr	1	2	2	3	3	3	3	4	5	3	2	3	4	5	5	5	6	3	2	2	2	1	1	2	6	
13-Apr	1	2	1	1	1	1	2	1	1	1	2	1	3	2	3	3	3	2	1	1	2	2	2	1	3	
14-Apr	2	1	1	1	3	2	2	3	2	3	3	3	3	3	4	4	4	3	3	3	2	2	1	1	4	
15-Apr	1	1	2	1	1	1	1	3	2	1	3	3	3	4	4	3	3	3	3	2	3	3	3	3	4	
16-Apr	2	2	2	1	1	2	2	2	4	3	5	5	5	6	6	6	7	6	5	4	4	4	3	3	7	
17-Apr	3	3	4	3	3	4	4	5	6	7	8	7	7	6	6	9	7	6	5	5	5	5	8	4	9	
18-Apr	3	3	3	4	4	5	3	2	4	4	3	3	3	3	2	3	3	2	3	2	1	1	2	5	5	
19-Apr	2	2	3	3	3	4	4	5	3	4	4	4	4	4	4	4	4	4	3	1	2	2	1	2	5	
20-Apr	1	1	1	1	1	1	1	2	2	2	2	4	4	5	5	5	5	5	4	4	2	2	1	1	5	
21-Apr	1	1	1	1	1	1	2	3	2	3	3	4	4	4	4	4	3	3	2	2	1	2	1	3	4	
22-Apr	2	2	1	2	2	2	2	2	1	2	4	4	6	6	5	5	4	3	3	3	2	4	1	1	6	
23-Apr	1	1	1	1	2	2	2	2	4	3	5	5	4	5	5	5	5	5	4	3	3	5	5	5	5	
24-Apr	2	1	3	3	3	2	1	1	2	2	2	3	4	4	4	4	5	3	3	3	2	2	2	2	5	
25-Apr	1	1	1	1	2	2	2	2	2	3	3	4	15	11	3	3	3	3	7	6	3	6	5	3	15	
26-Apr	4	4	4	3	3	3	3	5	4	4	4	5	5	3	3	4	3	3	2	4	3	2	2	2	5	
27-Apr	1	1	1	1	1	1	2	1	2	2	3	3	3	3	2	3	4	3	2	3	2	2	1	1	4	
28-Apr	1	2	2	1	1	2	1	8	6	5	5	7	7	6	6	6	7	5	4	3	1	1	2	1	8	
29-Apr	1	2	3	1	1	1	1	1	1	1	2	2	2	2	2	3	3	3	2	4	2	2	2	2	4	
30-Apr	2	2	2	2	2	2	2	3	3	3	5	5	6	5	5	6	5	5	4	3	2	3	2	3	6	
Diurnal Maximum																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed (WS) - km/h
Athabasca Valley - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	203	28.19	28.19
6 - 11	279	38.75	66.94
12 - 19	180	25.00	91.94
20 - 28	46	6.39	98.33
29 - 38	12	1.67	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Athabasca Valley - April 2023**

Wind Speed 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	9	9	16	19	25	30	16	8	13	7	10	9	5	9	11	203
6 - 11	16	1	3	4	19	38	88	40	7	9	17	7	4	1	5	20	279
12 - 19	4	0	0	1	13	36	55	9	11	0	6	5	11	4	5	20	180
20 - 28	0	0	0	0	0	12	8	0	4	0	0	8	3	2	3	6	46
29 - 38	0	0	0	0	0	0	1	0	0	0	0	6	1	0	4	0	12
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	10	12	21	51	111	182	65	30	22	30	36	28	12	26	57	720

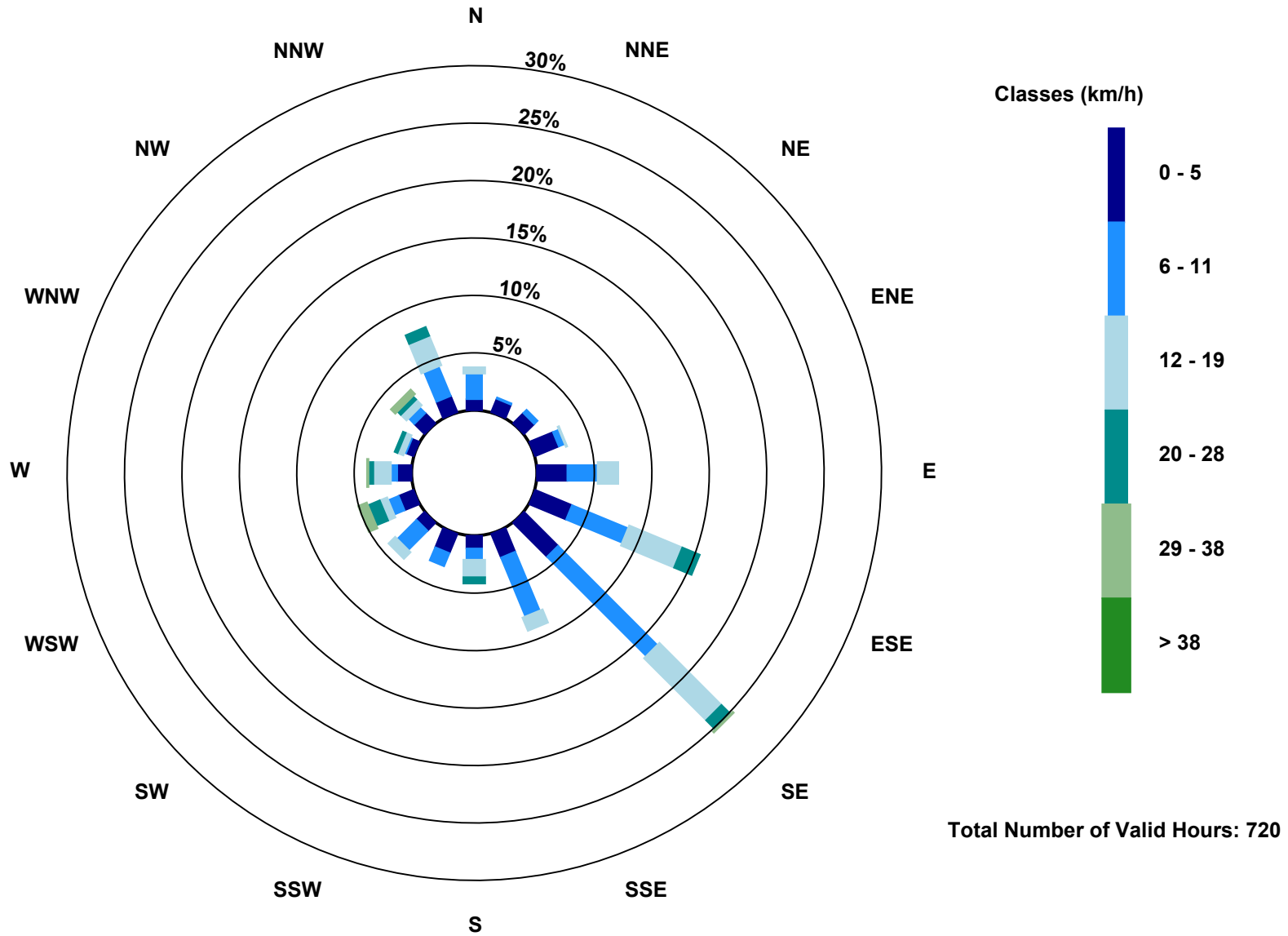
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Athabasca Valley





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Athabasca Valley - April 2023

Direction of Maximum Speed: 250 deg on Apr 10 13:00 Direction of Maximum Daily Speed Average: 249.6 deg on Apr 10	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0
Direction of Minimum Speed: 126 deg on Apr 13 04:00 Direction of Minimum Daily Speed Average: 2.0 deg on Apr 29	Percent Operational Time: 100.0
Monthly Average Direction: 140.2 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-Apr	95	79	62	73	350	48	82	128	325	109	109	120	112	128	118	114	112	94	94	101	100	115	126	127	105.2
2-Apr	134	125	123	125	121	119	118	124	125	120	113	137	113	113	326	342	342	343	344	342	340	339	339	340	33.7
3-Apr	339	340	339	338	337	338	333	329	335	358	350	341	359	8	359	341	354	339	2	18	24	97	97	86	346.5
4-Apr	86	267	206	190	202	221	209	223	242	195	241	172	188	164	172	164	160	128	130	121	140	139	129	134	164.1
5-Apr	153	141	142	137	136	144	147	143	140	191	258	312	102	139	126	117	149	135	135	145	130	129	130	127	140.3
6-Apr	145	138	137	137	139	147	138	144	153	141	129	128	163	178	178	175	178	181	177	176	154	152	160	156	159.3
7-Apr	153	142	144	140	142	144	142	132	131	129	132	130	131	130	126	130	130	133	137	151	153	148	164	153	137.7
8-Apr	147	140	144	145	148	148	147	144	142	143	130	108	118	123	135	213	240	151	149	161	249	185	166	233	147.6
9-Apr	131	138	130	152	147	147	144	219	213	219	212	239	246	245	227	221	195	179	160	160	145	147	146	135	191.5
10-Apr	148	150	191	246	256	257	252	254	257	246	246	248	250	249	252	249	257	268	272	268	250	244	226	210	249.6
11-Apr	198	119	178	135	155	142	146	145	200	209	209	215	221	237	217	229	263	276	229	240	335	332	331	347	232.2
12-Apr	270	210	264	220	220	216	227	227	334	328	302	307	313	300	317	329	340	358	341	251	261	231	161	168	292.0
13-Apr	199	352	16	126	142	78	83	80	339	335	325	324	348	7	2	340	341	53	20	11	329	329	35	51	0.5
14-Apr	73	89	68	118	119	136	134	146	135	133	139	154	124	98	112	81	92	91	106	112	115	116	69	31	111.8
15-Apr	323	261	237	194	249	240	162	122	150	173	174	115	94	85	114	114	106	95	92	113	130	130	125	125	116.9
16-Apr	142	140	137	133	123	138	138	105	152	140	132	131	124	107	109	105	108	103	112	109	119	129	140	137	121.0
17-Apr	138	126	124	128	131	127	116	117	124	124	122	125	119	115	118	143	124	105	115	114	117	123	123	102	121.5
18-Apr	91	102	119	117	107	92	95	91	113	117	108	101	119	96	92	88	80	84	43	47	330	356	4	66	93.2
19-Apr	354	3	66	118	124	122	125	123	123	124	123	124	118	119	120	120	136	127	135	78	341	20	307	294	118.0
20-Apr	75	107	91	78	49	80	81	75	158	233	288	107	116	114	89	105	102	109	129	119	130	135	131	162	113.5
21-Apr	112	75	97	63	56	59	98	121	130	134	119	126	96	93	98	87	95	102	99	118	147	107	179	168	109.4
22-Apr	118	116	136	141	144	136	130	130	99	65	253	175	171	166	179	191	178	176	181	176	165	158	89	133	160.3
23-Apr	85	88	39	31	118	146	126	111	121	124	132	143	147	139	133	140	147	145	151	157	156	177	180	164	142.2
24-Apr	103	22	122	141	127	356	319	349	347	344	347	21	77	59	5	344	349	346	328	330	266	208	155	141	359.2
25-Apr	111	105	112	124	151	151	150	140	134	137	157	147	244	264	139	149	125	207	282	274	294	267	276	258	219.8
26-Apr	264	267	268	274	272	277	274	285	295	315	318	300	313	8	345	12	346	349	2	38	60	338	357	334	307.1
27-Apr	325	313	342	332	294	261	218	221	230	214	215	215	217	218	257	232	244	220	203	170	145	141	91	144	217.8
28-Apr	159	117	140	273	98	270	47	318	316	318	312	313	323	332	312	325	330	355	7	4	343	337	281	262	323.9
29-Apr	255	198	119	110	158	72	91	88	46	304	207	211	259	285	306	301	115	132	126	129	130	128	137	138	148.7
30-Apr	140	147	123	133	139	135	134	134	129	123	121	126	130	133	136	136	137	133	131	140	130	128	131	136	132.3

133.9 123.4 130.3 142.7 155.7 153.8 149.4 149.8 152.6 146.4 150.4 150.5 154.6 139.8 136.1 141.3 128.1 119.5 125.6 129.0 130.7 141.2 137.6 136.9

Diurnal Average

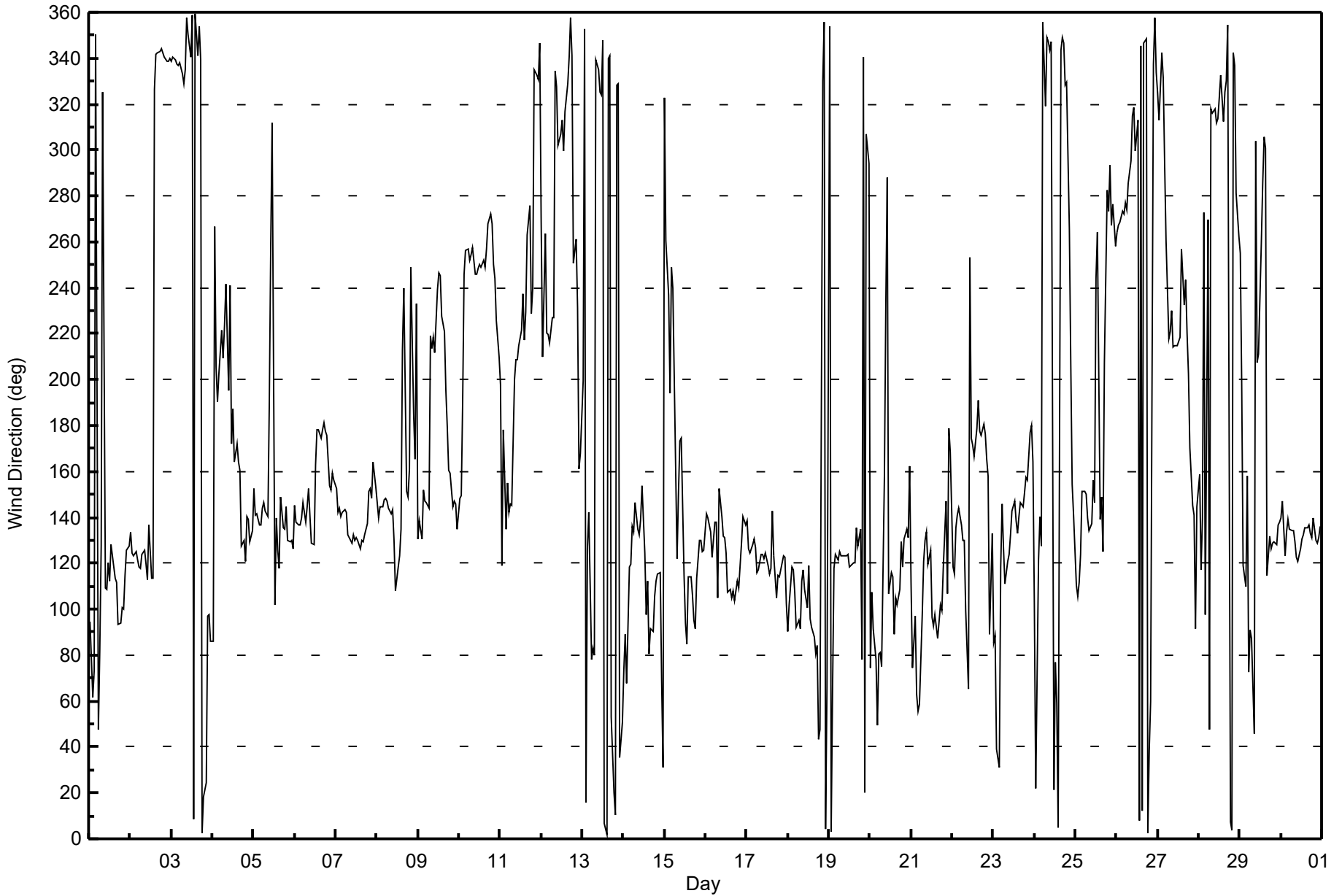
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Athabasca Valley - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0											Hours in Service: 720														
Maximum Value: 100 deg on Apr 2 14:00											Hours of Data: 720														
Minimum Value: 8 deg on Apr 11 22:00											Hours of Missing Data: 0														
Percentiles: P ₁ = 10 P ₁₀ = 13 Q ₁ = 16 Median = 21 Q ₃ = 35 P ₉₀ = 65 P ₉₉ = 90											Hours of Calibration: 0														
											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-Apr	15	12	12	35	53	57	85	55	65	55	21	21	21	22	21	22	20	15	13	17	17	23	18	17	85
2-Apr	19	17	26	18	19	18	20	19	17	22	28	27	36	100	29	15	18	14	17	15	13	13	12	12	100
3-Apr	11	12	11	9	9	10	10	9	17	20	25	23	24	29	40	43	25	20	27	27	33	17	18	22	43
4-Apr	79	90	28	21	34	28	65	17	51	86	71	43	68	26	20	23	45	31	18	19	20	16	16	19	90
5-Apr	17	12	12	13	16	19	15	17	19	30	43	19	70	26	17	31	23	19	20	20	15	13	14	56	70
6-Apr	34	37	18	12	15	23	18	15	20	22	16	15	24	17	15	16	16	15	14	12	16	17	14	15	37
7-Apr	14	14	13	13	13	13	15	15	16	14	15	14	15	14	14	14	14	14	15	15	13	11	15	13	16
8-Apr	15	12	17	14	17	16	15	13	16	35	51	27	28	19	32	23	24	42	45	88	75	40	64	88	88
9-Apr	57	55	31	22	25	29	43	22	12	15	12	28	22	26	23	18	28	14	15	17	19	15	15	18	57
10-Apr	16	17	58	15	12	14	12	15	16	15	16	15	15	15	18	16	15	13	10	13	11	14	36	47	58
11-Apr	56	48	82	61	27	11	20	62	57	69	46	12	16	21	26	21	30	14	20	46	21	8	13	20	82
12-Apr	72	88	42	75	10	15	11	22	31	25	62	33	36	33	29	16	27	26	66	33	31	97	84	46	97
13-Apr	83	51	36	87	65	66	26	35	86	51	19	12	28	29	26	20	26	31	32	25	25	65	69	42	87
14-Apr	49	22	35	63	44	57	41	31	21	27	26	24	42	28	38	21	17	17	18	23	21	37	79	81	81
15-Apr	35	84	90	73	90	57	67	35	24	76	91	72	34	34	51	29	27	16	11	18	13	14	16	14	91
16-Apr	37	38	19	24	18	21	35	49	58	19	17	18	19	21	21	20	20	18	20	19	20	15	16	15	58
17-Apr	15	20	19	16	21	21	19	20	18	19	19	17	20	20	19	20	21	21	21	21	21	18	18	18	21
18-Apr	15	21	20	21	20	14	16	15	20	20	21	20	31	19	14	11	14	13	37	48	21	16	14	28	48
19-Apr	42	20	52	21	18	18	18	19	18	18	19	18	22	21	22	21	21	18	17	21	9	80	68	76	80
20-Apr	75	32	88	17	38	85	13	57	21	62	83	37	24	25	28	41	23	22	15	19	25	23	32	59	88
21-Apr	80	54	78	81	69	36	76	33	23	29	29	31	33	63	45	24	29	31	20	22	24	69	66	70	81
22-Apr	37	19	10	26	11	12	14	13	29	42	85	41	23	23	30	25	21	21	18	13	11	24	52	58	85
23-Apr	19	50	47	52	57	27	53	82	79	18	24	20	18	16	18	23	21	24	35	25	30	40	19	29	82
24-Apr	74	52	94	18	36	28	70	17	16	14	15	48	24	33	43	16	20	19	12	11	36	26	32	13	94
25-Apr	29	20	69	86	81	51	19	19	16	18	23	31	47	32	48	21	21	30	40	13	11	11	15	20	86
26-Apr	13	14	11	10	10	10	11	13	14	19	28	31	23	29	21	38	21	22	22	32	17	49	25	41	49
27-Apr	13	32	31	32	39	30	48	82	37	29	32	14	12	21	33	33	31	45	21	11	14	75	42	12	82
28-Apr	27	74	27	88	90	30	82	22	13	15	14	19	20	16	16	20	20	23	21	20	14	13	59	19	90
29-Apr	16	59	72	96	77	69	75	60	63	38	48	81	20	36	21	68	73	47	25	17	17	18	20	19	96
30-Apr	18	18	16	13	15	15	14	15	14	20	21	20	19	20	21	21	18	16	15	15	13	13	20	14	21
											83 90 94 96 90 85 85 82 86 86 91 81 70 100 51 68 73 47 66 88 75 97 84 88														
Diurnal Maximum																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS08 FORT CHIPEWYAN APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)

APRIL 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	687	33	33	100	1.7	0	0.5	0
TRS (ppb) Average	675	35	45	98.61	0.5	0	0.3	0
O3(ppb) Average	685	35	35	100	57.6	0	53.1	-
NO2(ppb) Average	685	35	35	100	8.2	0	2.9	-
NO(ppb) Average	685	35	35	100	3.2	-	0.5	-
NOX(ppb) Average	685	35	35	100	11.4	-	3.3	-
PM2.5(ug/m3) Average	719	1	1	100	49.7	0	6.6	0
CO(ppm) Average	684	35	36	99.86	0.1	0	0.1	-
CO2(ppm) Average	683	33	37	99.44	437.6	-	431.7	-
Temperature 2 m (C) Average	720	0	0	100	14.1	-	8.9	-
Relative Humidity (%) Average	696	0	24	96.67	99.8	-	88.9	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	46	-	37	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-
PC(mm) Total	720	0	0	100	1.1	-	2.1	-
Leaf Wetness (% of range) Average	718	0	2	99.72	49.5	-	6.2	-
Global Solar Radiation (W/m2) Average	720	0	0	100	798.4	-	300.7	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)

APRIL 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	687	0.15	0.2	-	0	0	0	0.1	0.2	0.3	1.7
TRS (ppb) Average	675	0.13	0	-	0.1	0.1	0.1	0.1	0.1	0.2	0.5
O3(ppb) Average	685	42.4	7.5	-	13.2	35.3	39	43.6	47.2	50.3	57.6
NO2(ppb) Average	685	0.7	0.8	-	0.1	0.2	0.3	0.5	0.7	1.5	8.2
NO(ppb) Average	685	0.08	0.2	-	0	0	0	0	0.1	0.1	3.2
NOX(ppb) Average	685	0.77	1	-	0.1	0.3	0.4	0.5	0.7	1.6	11.4
PM2.5(ug/m3) Average	719	3.27	2.4	-	0.4	1.3	2	3	3.8	5.6	49.7
CO(ppm) Average	684	0.03	0	-	0	0	0	0	0	0.1	0.1
CO2(ppm) Average	683	427.84	2.5	-	422.4	424.4	426.4	428	429.3	431	437.6
Temperature 2 m (C) Average	720	1.44	5.6	-	-13.3	-7	-1.6	2.2	5.3	8.1	14.1
Relative Humidity (%) Average	696	65.14	17.2	-	21.1	43.1	53.4	65	77.7	89.4	99.8
Wind Speed 10 m (km/h) Average	719	18.6	9	-	1	6	12	18	25	31	46
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	720	-	-	6.83	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	718	0.82	4.2	-	0	0	0	0	0	0.5	49.5
Global Solar Radiation (W/m2) Average	720	207.38	250.8	-	0	0	0	76.4	397.6	634.5	798.4

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)
APRIL 2023

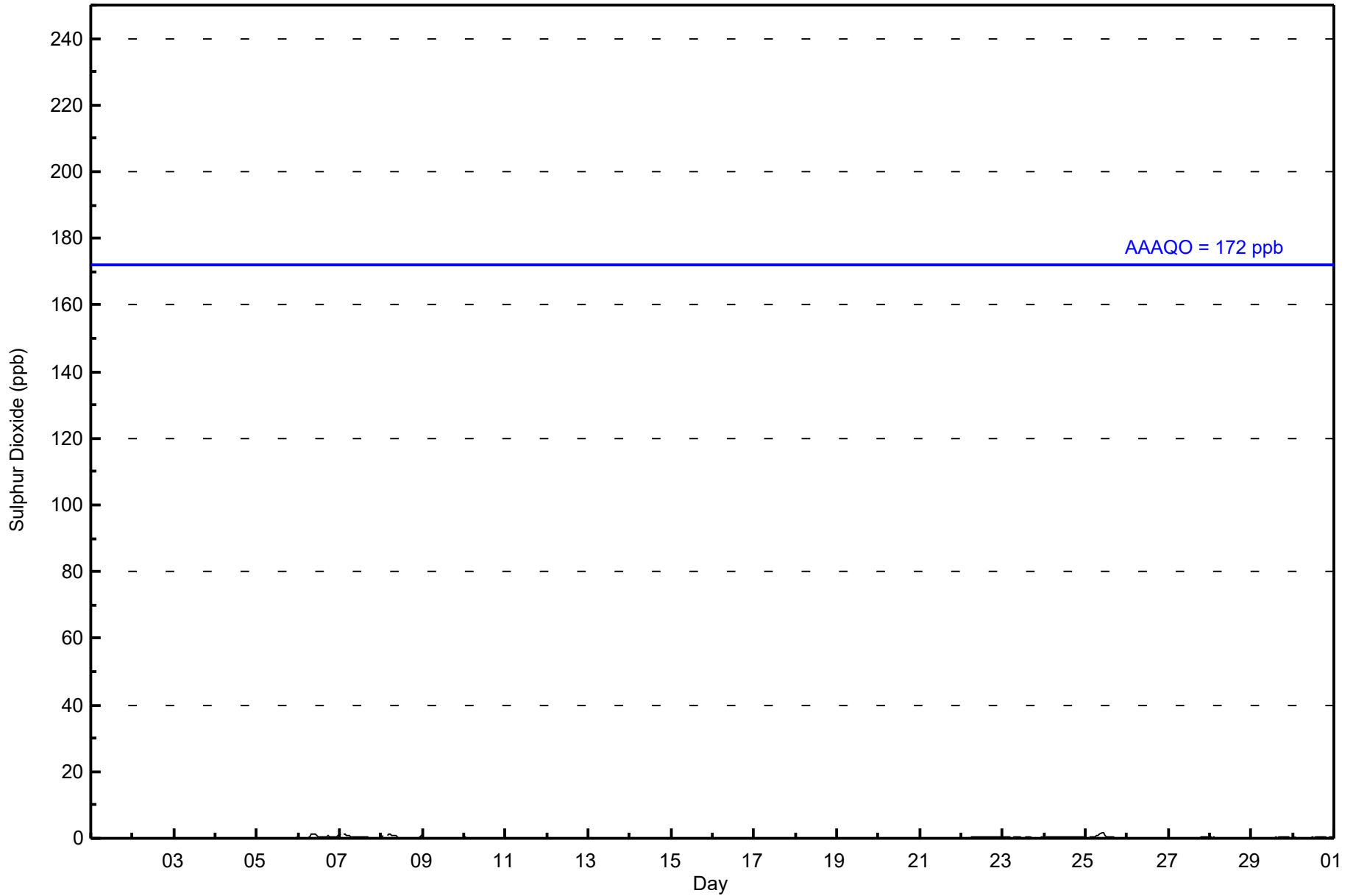
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
CO, CO2	03 Apr 2023 17:00	03 Apr 2023 17:00	1	Station power failure
CO2	03 Apr 2023 18:00	03 Apr 2023 20:00	3	Stabilization after a power failure
TRS	26 Apr 2023 15:00	27 Apr 2023 00:00	10	Stabilization period after a routine calibration
Relative Humidity	18 Apr 2023 08:00	18 Apr 2023 09:00	2	Sensor operated out of range
Relative Humidity	18 Apr 2023 13:00	18 Apr 2023 13:00	1	Sensor operated out of range
Relative Humidity	25 Apr 2023 05:00	25 Apr 2023 06:00	2	Sensor operated out of range
Relative Humidity	26 Apr 2023 02:00	26 Apr 2023 03:00	2	Sensor operated out of range
Relative Humidity	26 Apr 2023 07:00	26 Apr 2023 10:00	4	Sensor operated out of range
Relative Humidity	26 Apr 2023 23:00	27 Apr 2023 11:00	13	Sensor operated out of range
Wind Speed, Wind Direction	03 Apr 2023 07:00	03 Apr 2023 07:00	1	Flat line in sensor output signal
Surface Leaf Wetness	18 Apr 2023 08:00	18 Apr 2023 09:00	2	Sensor operated out of range



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	687	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: 687

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	6	2	9	191	228	21	11	38	20	9	10	24	39	27	16	35	686
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
Totals	6	2	9	191	228	21	11	38	20	9	10	24	39	27	16	35	686

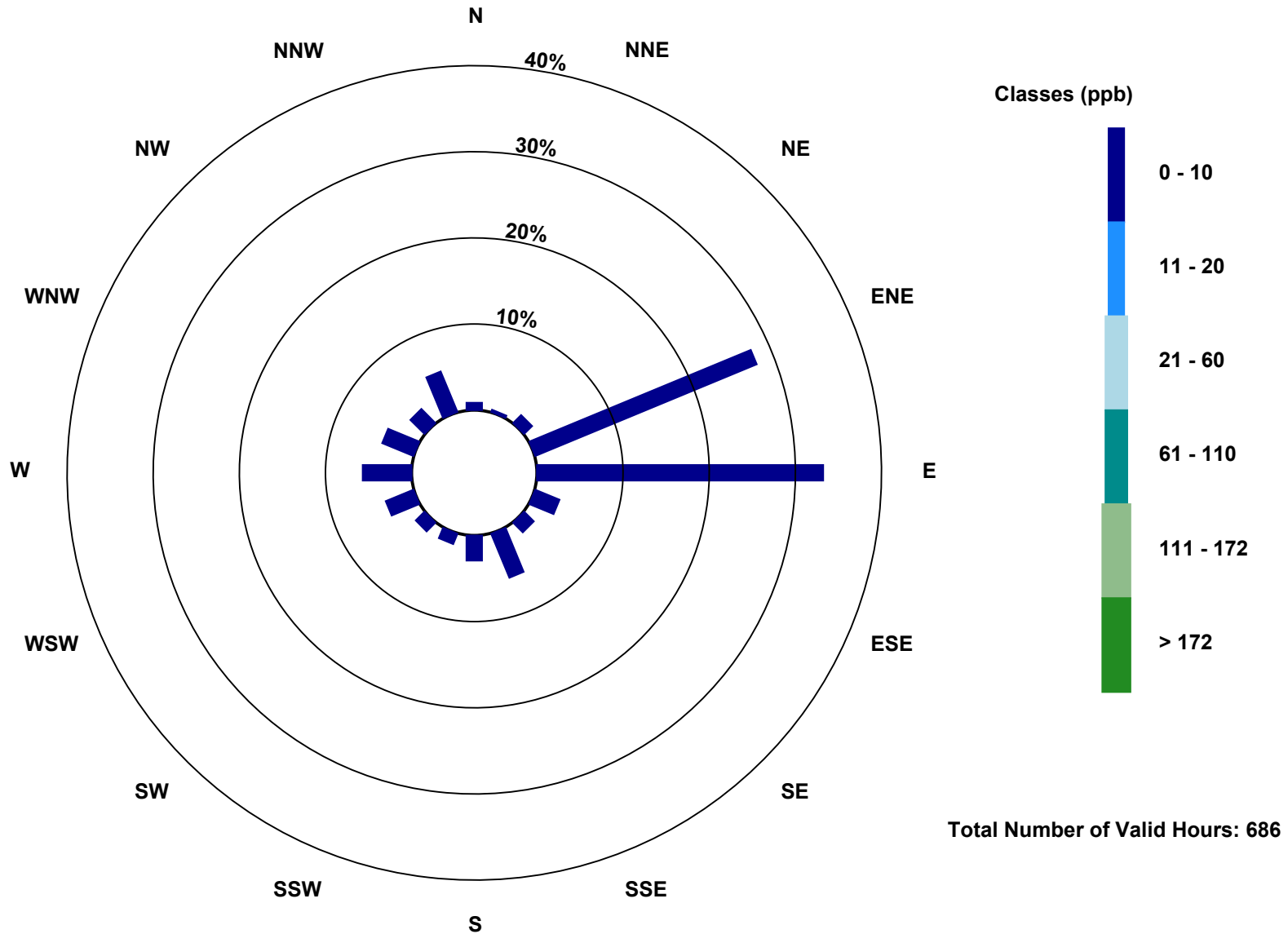
Total Number of Valid Hours: 686

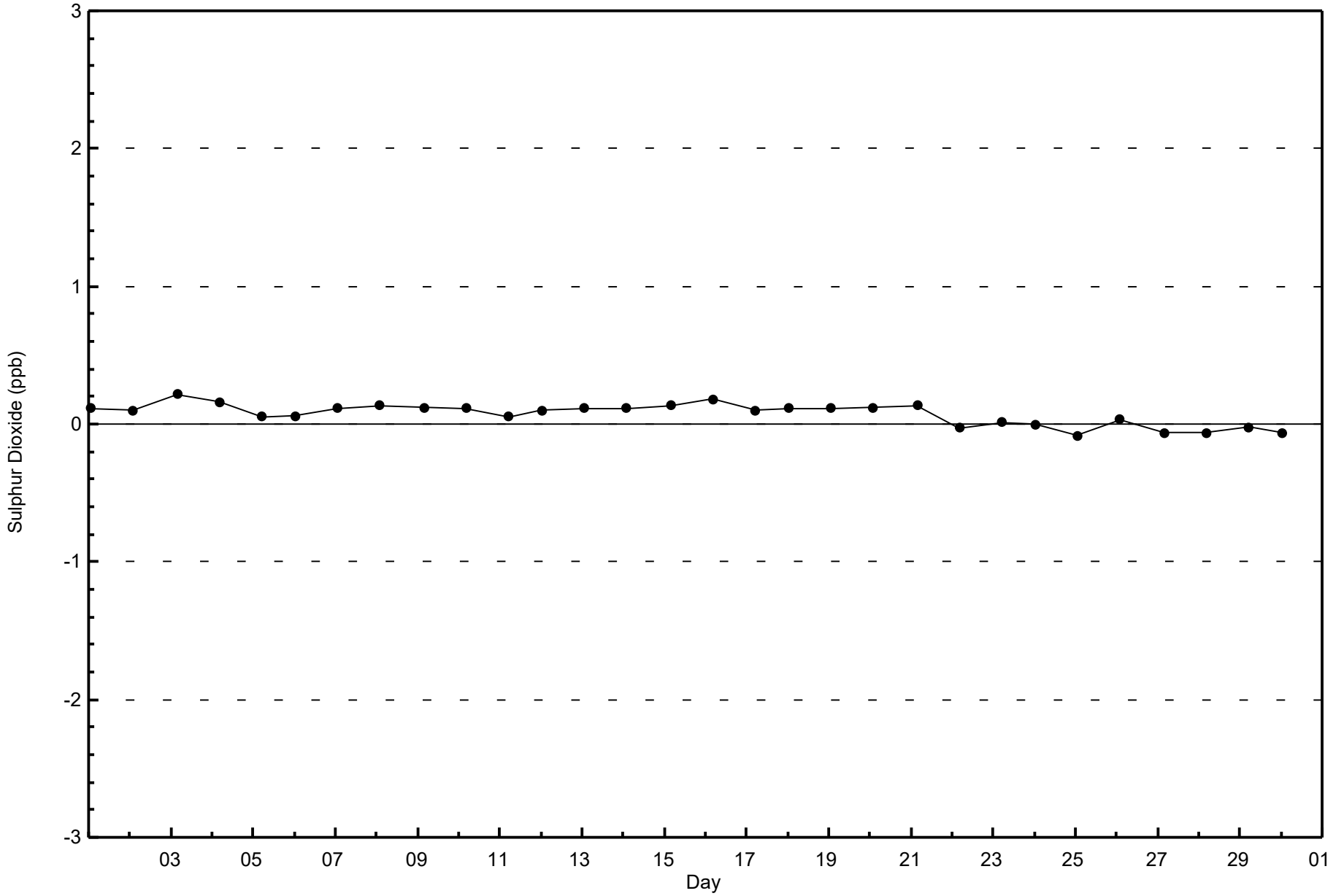
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan

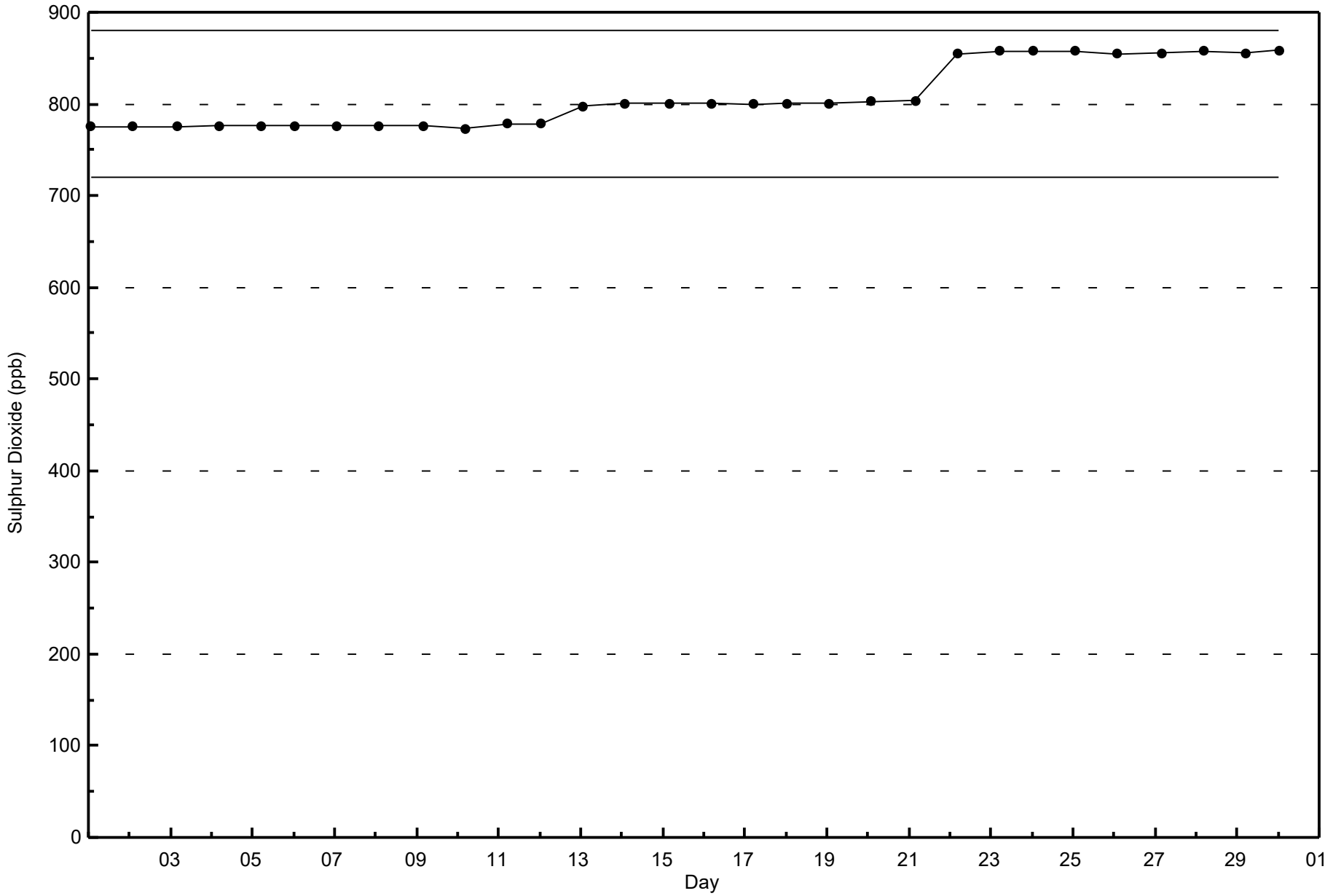






Wood Buffalo Environmental Association
Span Responses

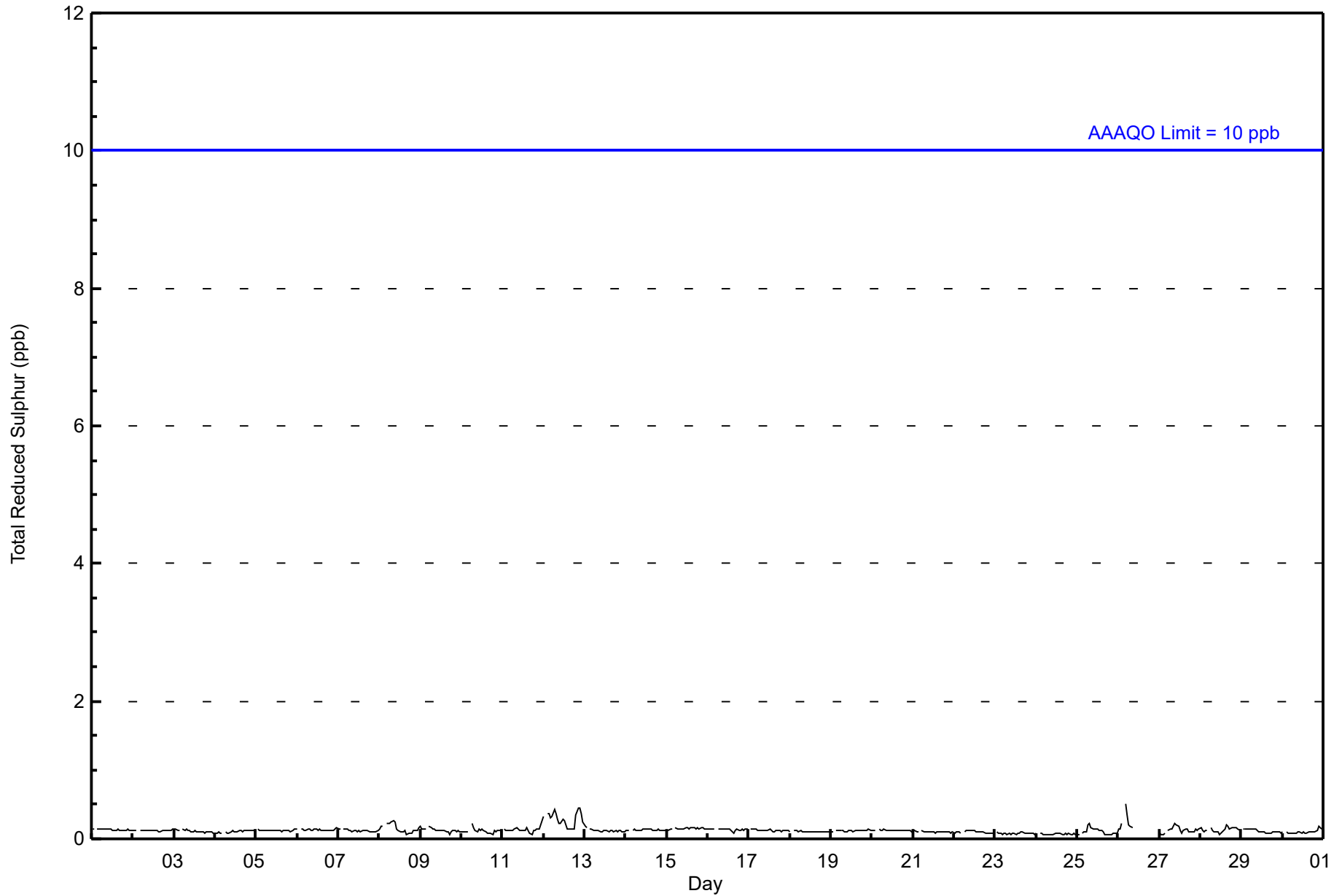
Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan - April 2023





Wood Buffalo Environmental Association
Hourly Averages

Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	675	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: 675

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	5	2	9	191	231	18	12	38	20	9	10	23	39	25	18	24	674
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
Totals	5	2	9	191	231	18	12	38	20	9	10	23	39	25	18	24	674

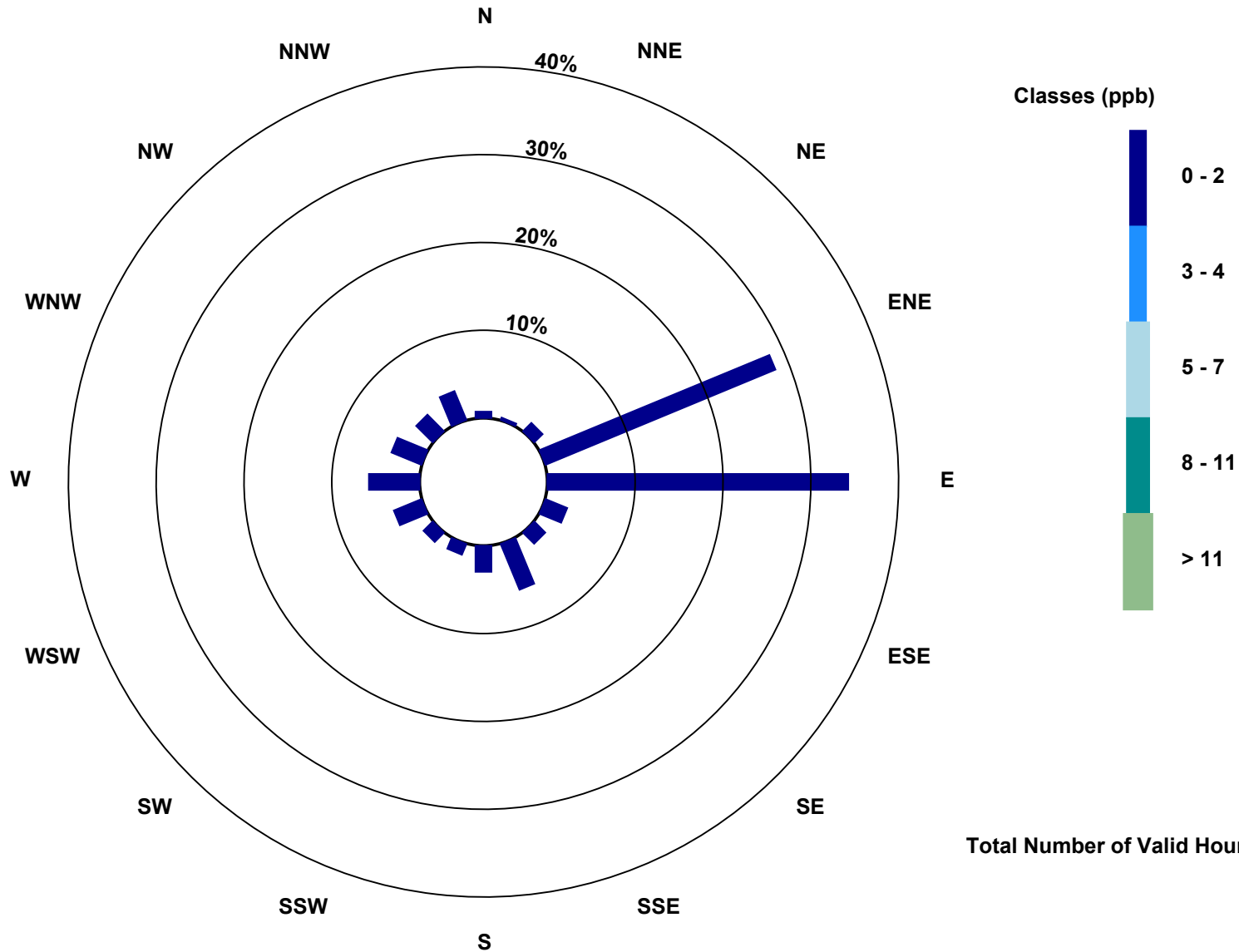
Total Number of Valid Hours: 674

Total Number of Hours: 720

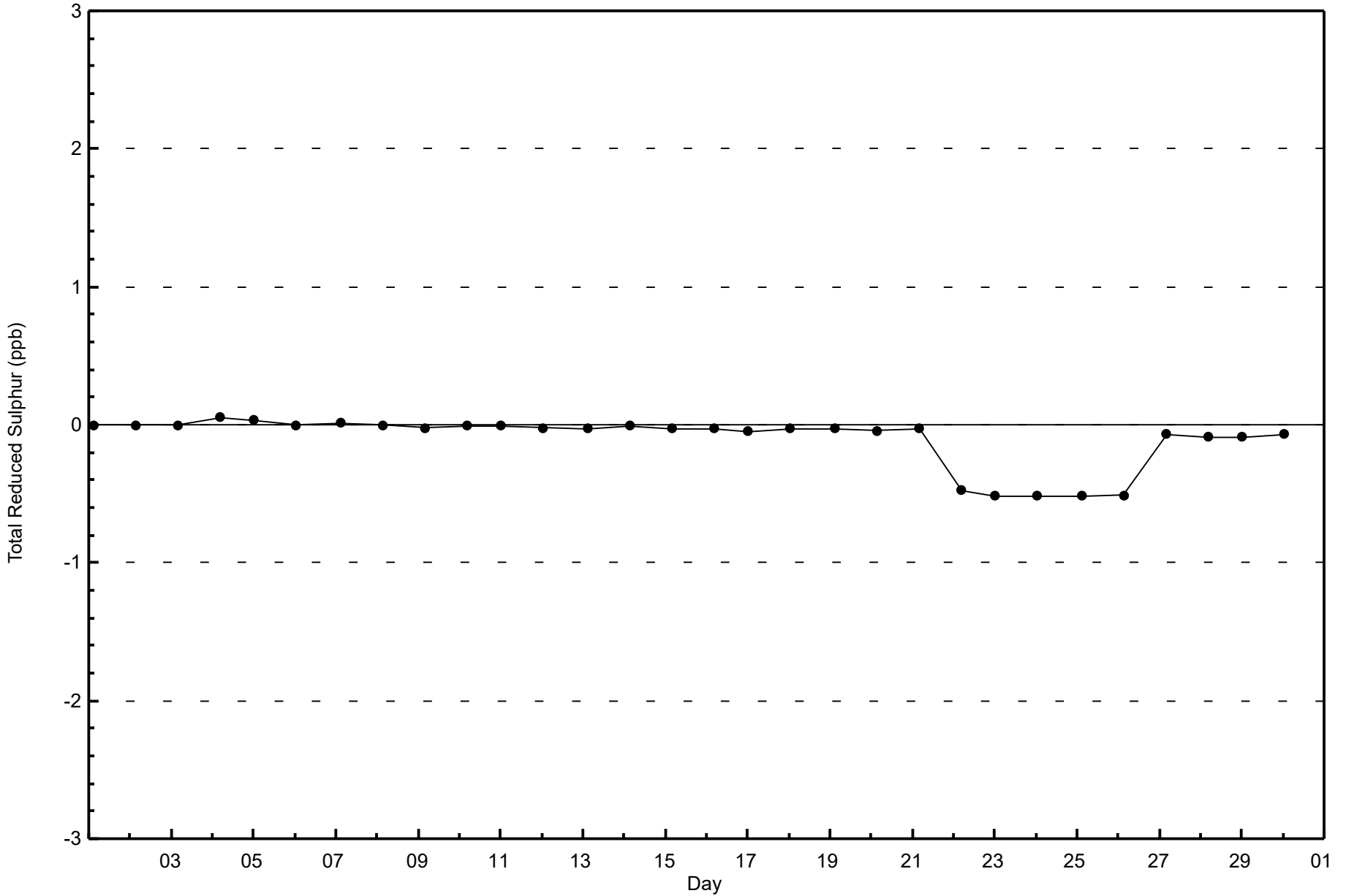


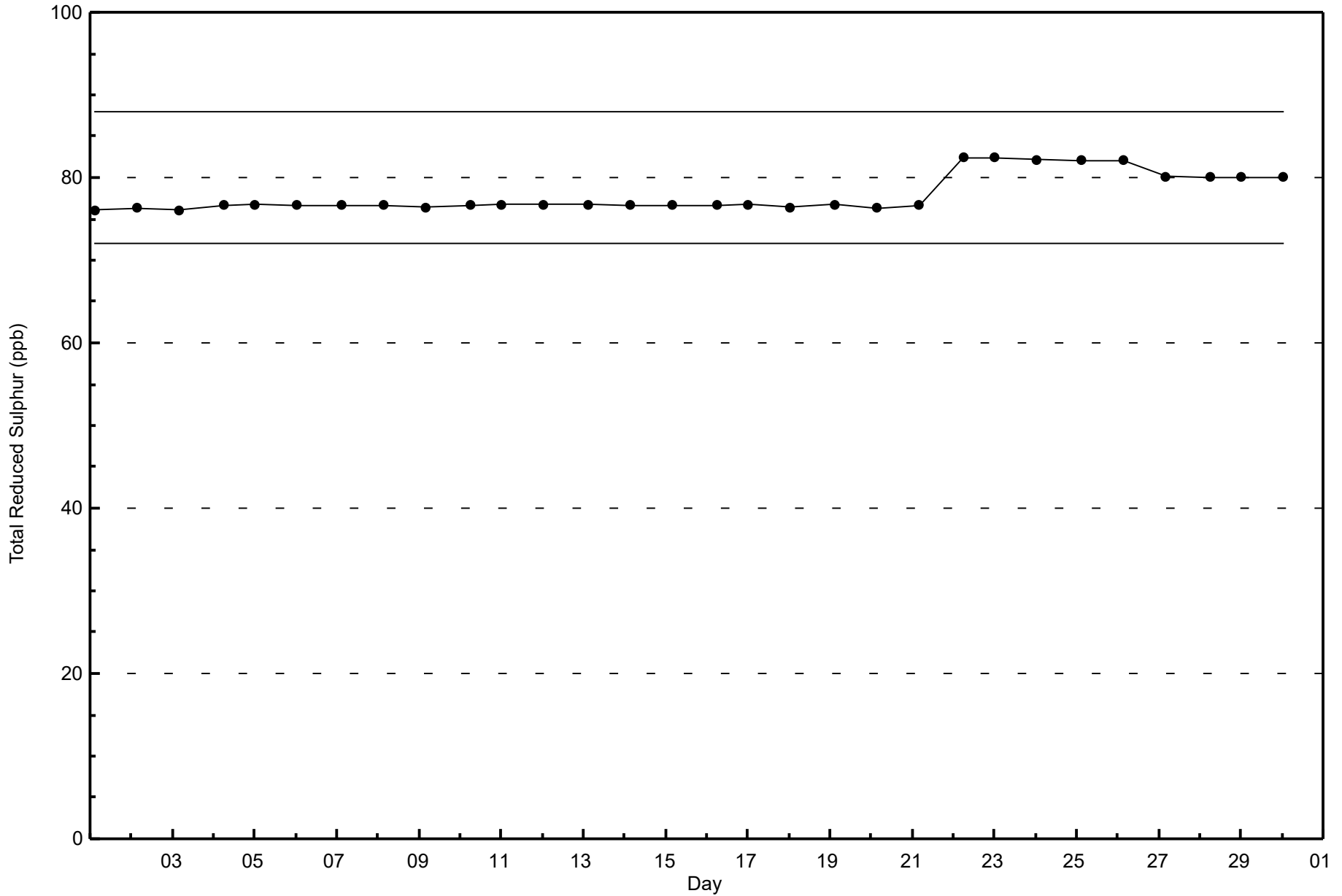
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan



Total Number of Valid Hours: 674

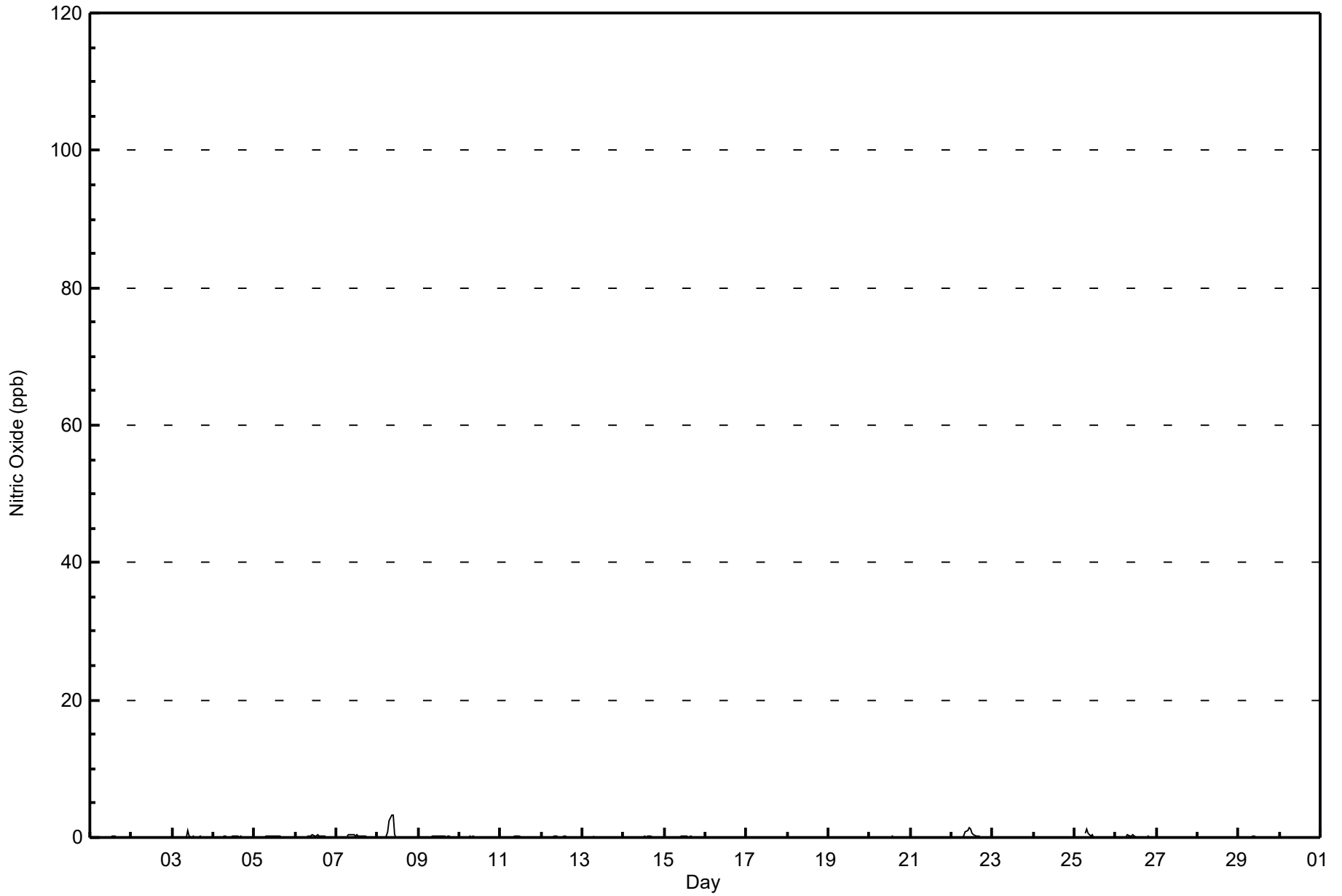






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Fort Chipewyan - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	7	2	8	192	224	20	12	37	20	9	10	22	40	27	21	33	684
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
Totals	7	2	8	192	224	20	12	37	20	9	10	22	40	27	21	33	684

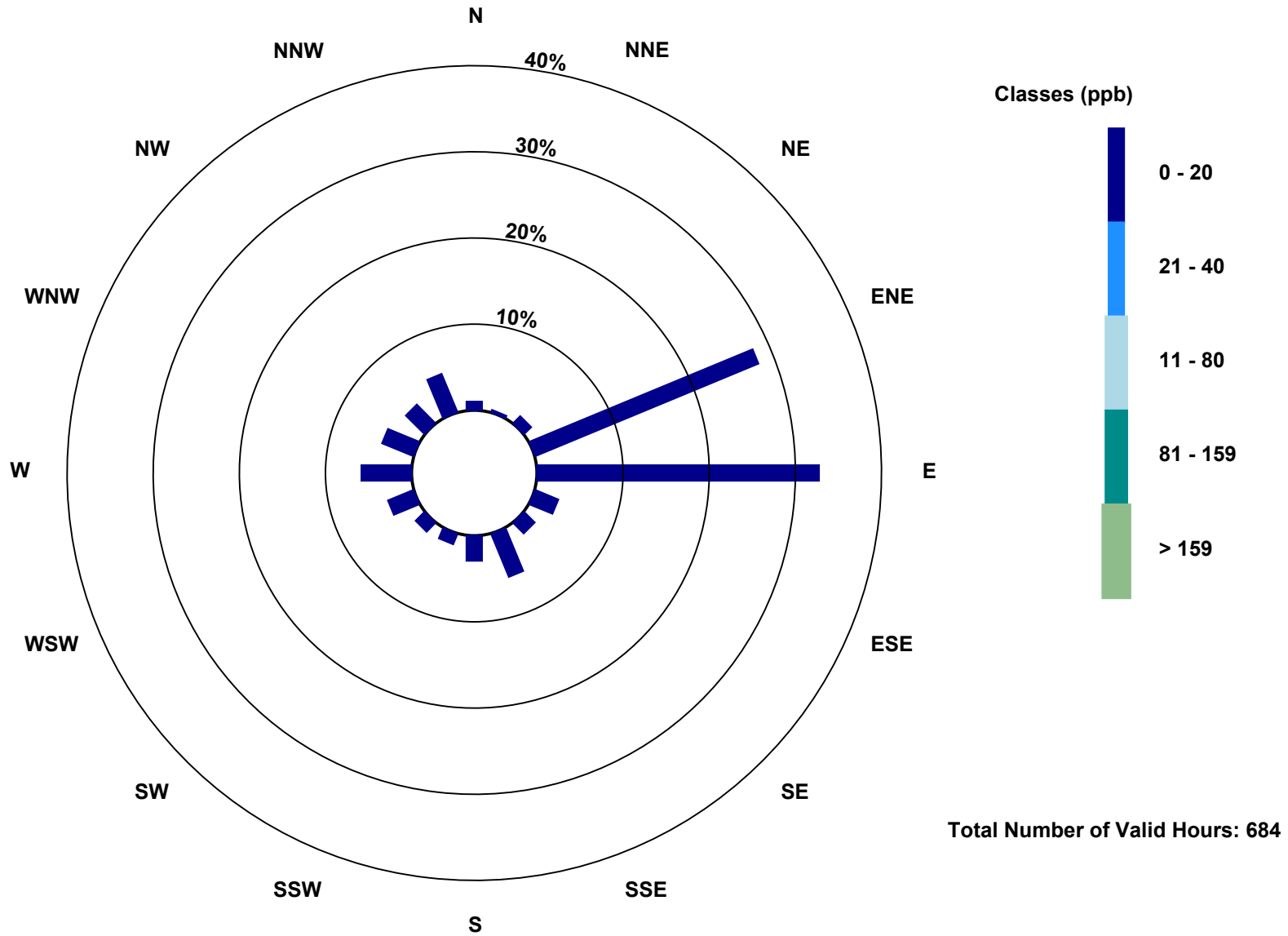
Total Number of Valid Hours: 684

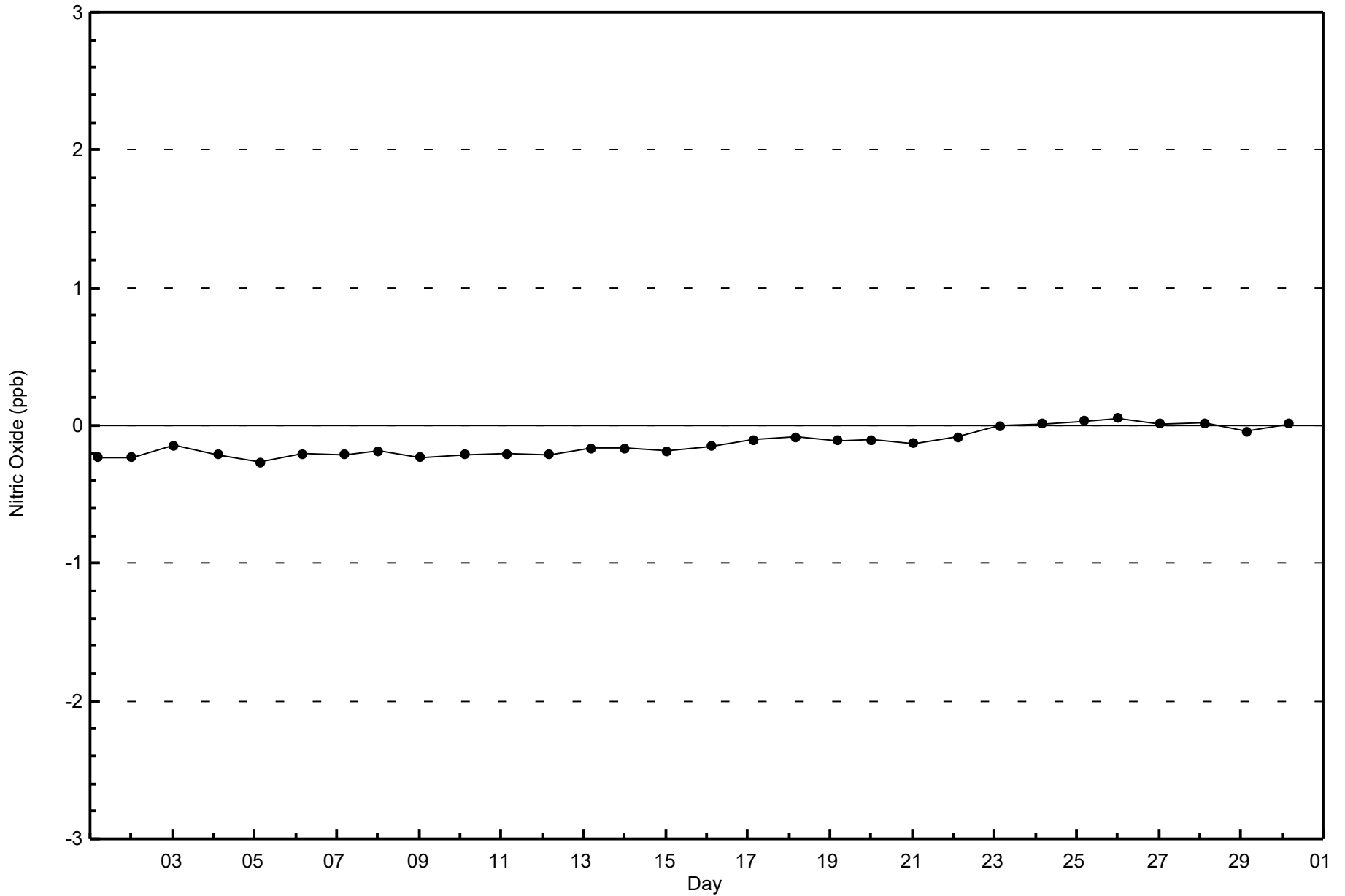
Total Number of Hours: 720

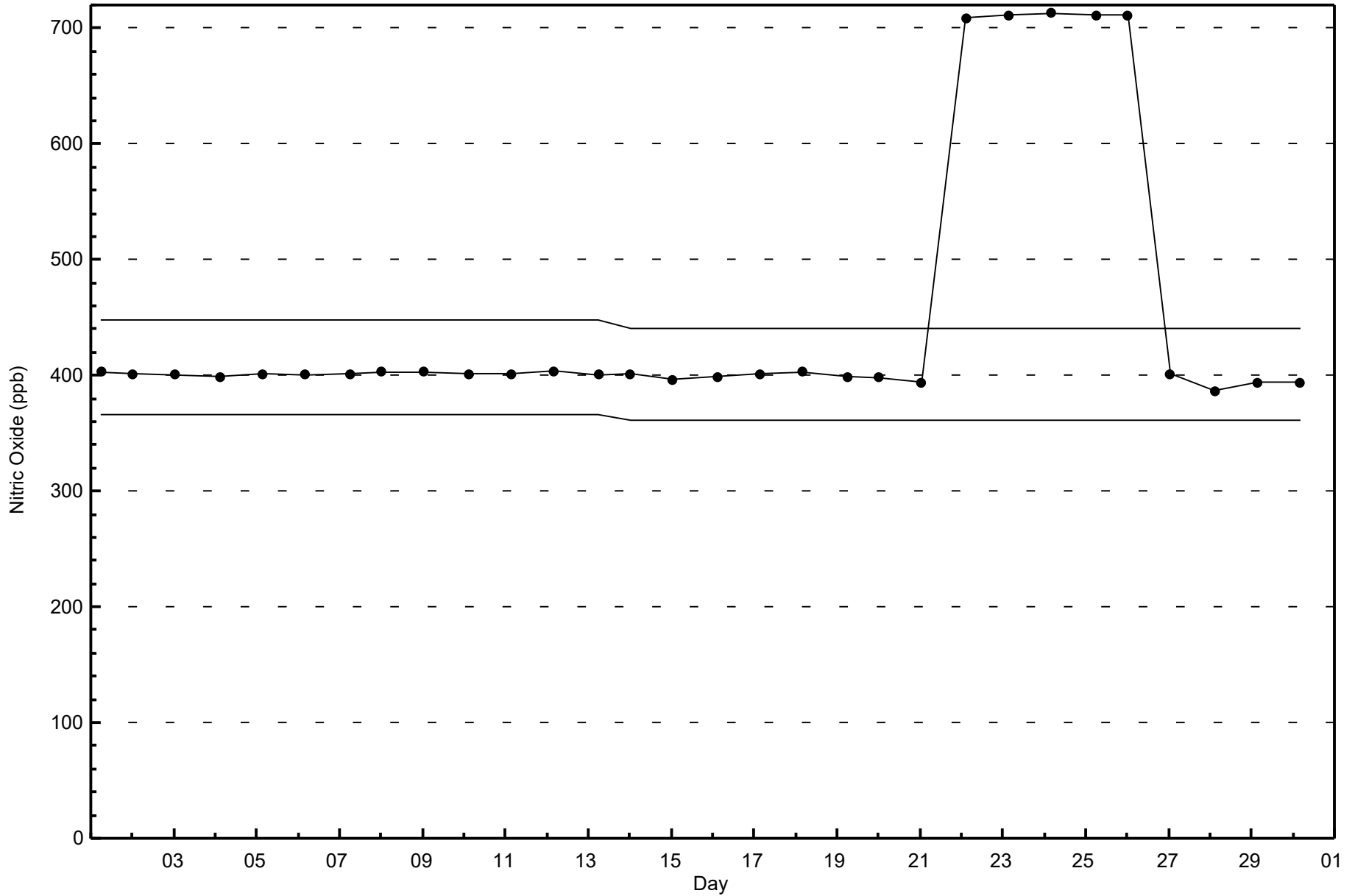


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Fort Chipewyan









Wood Buffalo Environmental Association
Summary of Hour Averages

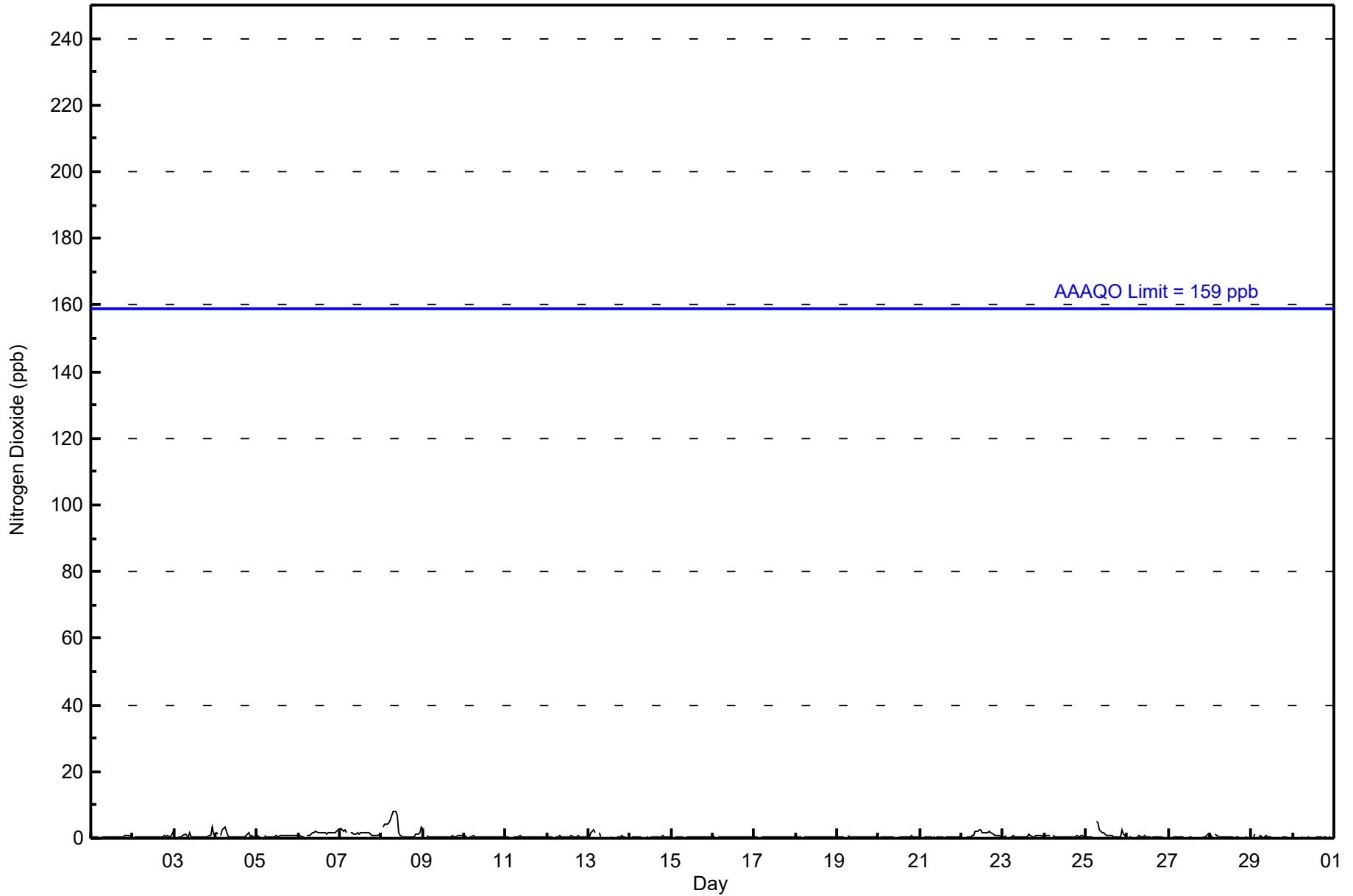
Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																		
Maximum Value: 8.2 ppb on Apr 8 09:00		Maximum Daily Average: 2.9 ppb on Apr 8				Hours of Data:		685																		
Minimum Value: 0.1 ppb on Apr 28 18:00		Minimum Daily Average: 0.2 ppb on Apr 30				Hours of Missing Data:		35																		
Maximum Diurnal Average: 1.0 ppb at hour 7		Minimum Diurnal Average: 0.5 ppb at hour 15				Hours of Calibration:		35																		
Monthly Average: 0.70 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.2 Q ₁ = 0.3 Median = 0.5 Q ₃ = 0.7 P ₉₀ = 1.5 P ₉₉ = 4.5				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-Apr	0.5	0.5	0.5	0.5	0.5	Z	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.8	0.7	0.7	0.7	0.6	0.6	0.8
2-Apr	Z	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.5	0.6	0.4	0.5	0.7	0.5	1.0	0.4	0.7	1.7	0.6	1.7
3-Apr	0.7	Z	0.4	0.3	0.3	0.8	1.3	0.9	0.4	1.9	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.4	0.4	0.8	0.7	3.3	1.2	0.8	3.3
4-Apr	1.5	1.1	Z	0.9	2.4	3.5	2.2	0.8	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.4	1.4	1.5	0.5	0.7	0.5	0.6	1.0	1.0	3.5
5-Apr	0.7	0.5	0.6	Z	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.6	0.7	0.7	0.9	0.8	0.8	0.8	0.7	0.7	1.0	1.0	0.7	1.0
6-Apr	0.8	0.7	0.6	0.5	Z	0.7	0.9	1.3	1.5	1.6	2.1	1.9	1.6	1.9	1.7	1.5	1.4	1.6	1.8	1.9	1.7	1.6	2.1	2.6	1.5	2.6
7-Apr	2.8	2.5	2.2	2.4	1.9	Z	1.8	1.5	1.3	1.4	1.5	1.3	1.5	1.5	1.5	1.6	1.5	1.6	1.0	0.9	0.8	0.8	1.0	1.2	1.5	2.8
8-Apr	Z	3.6	4.4	4.3	4.5	5.5	6.9	7.9	8.2	6.8	1.6	0.7	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.5	1.1	1.2	1.7	3.3	2.9	8.2
9-Apr	2.8	Z	0.7	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.5	0.5	0.7	0.7	0.8	0.7	0.7	2.8
10-Apr	0.6	0.8	Z	0.6	0.5	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.8
11-Apr	0.4	0.4	0.5	Z	0.6	0.5	0.6	0.4	0.8	0.6	0.6	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.8
12-Apr	0.4	0.4	0.4	0.3	Z	0.5	0.4	0.7	0.6	0.5	0.5	0.4	0.4	0.6	0.7	0.5	0.3	0.4	1.0	0.6	0.4	0.3	0.3	0.3	0.5	1.0
13-Apr	0.6	1.5	2.1	2.5	1.8	Z	1.5	0.4	C	C	C	C	C	0.3	0.2	0.2	0.2	0.3	0.5	0.9	0.6	0.3	0.2	0.2	0.8	2.5
14-Apr	Z	0.5	0.5	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.7	0.5	0.3	0.3	0.3	0.3	0.7
15-Apr	0.3	Z	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.4	0.3	0.4	0.3	0.5
16-Apr	0.4	0.4	Z	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.6
17-Apr	0.4	0.4	0.4	Z	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.6
18-Apr	0.4	0.4	0.5	0.5	Z	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.6
19-Apr	0.4	0.4	0.4	0.4	0.4	Z	0.7	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.4	0.6	0.6	0.5	0.7	0.7
20-Apr	Z	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.4	0.5	0.4	0.3	0.4	0.7
21-Apr	0.4	Z	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4
22-Apr	0.2	0.2	Z	0.3	0.4	0.4	0.7	1.0	2.0	2.2	2.6	2.6	1.9	1.5	1.5	1.7	2.0	1.7	1.2	1.0	0.7	0.7	0.7	0.6	1.2	2.6
23-Apr	0.6	0.6	0.8	Z	0.5	0.5	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.6	0.5	1.1	0.7	0.6	0.6	0.8	1.0	0.9	0.9	0.6	0.6	1.1
24-Apr	0.7	0.8	0.7	0.8	Z	0.7	0.5	0.4	0.3	0.4	0.3	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.8	0.5	0.8	0.7	0.5	0.5	0.5	0.8
25-Apr	0.6	0.4	0.3	0.3	0.4	Z	4.9	4.8	2.4	1.8	1.5	1.1	0.9	0.9	0.8	1.0	0.6	0.4	0.4	0.3	0.4	2.5	1.4	0.4	1.2	4.9
26-Apr	Z	0.3	0.3	0.2	0.2	0.2	0.3	0.8	0.6	0.6	0.9	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.5	0.3	0.2	0.2	0.2	0.4	0.9
27-Apr	0.2	Z	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.8	1.4	1.4
28-Apr	1.0	0.3	Z	1.3	0.8	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.5	0.3	0.2	0.3	0.3	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.4	1.3
29-Apr	0.2	0.2	1.1	Z	0.4	0.7	0.3	0.2	0.7	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.4	0.2	0.2	0.2	0.4	1.1
30-Apr	0.2	0.1	0.2	0.1	Z	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3
																								Diurnal Average		
																								Diurnal Maximum		
																								0.7 0.7 0.8 0.8 0.8 0.8 1.0 0.9 0.9 0.9 0.7 0.6 0.6 0.6 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.7 0.7		
																								2.8 3.6 4.4 4.3 4.5 5.5 6.9 7.9 8.2 6.8 2.6 2.6 1.9 1.9 1.7 1.7 2.0 1.7 1.8 1.9 1.7 2.5 3.3 3.3		
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	7	2	8	192	224	20	12	37	20	9	10	22	40	27	21	33	684
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
Totals	7	2	8	192	224	20	12	37	20	9	10	22	40	27	21	33	684

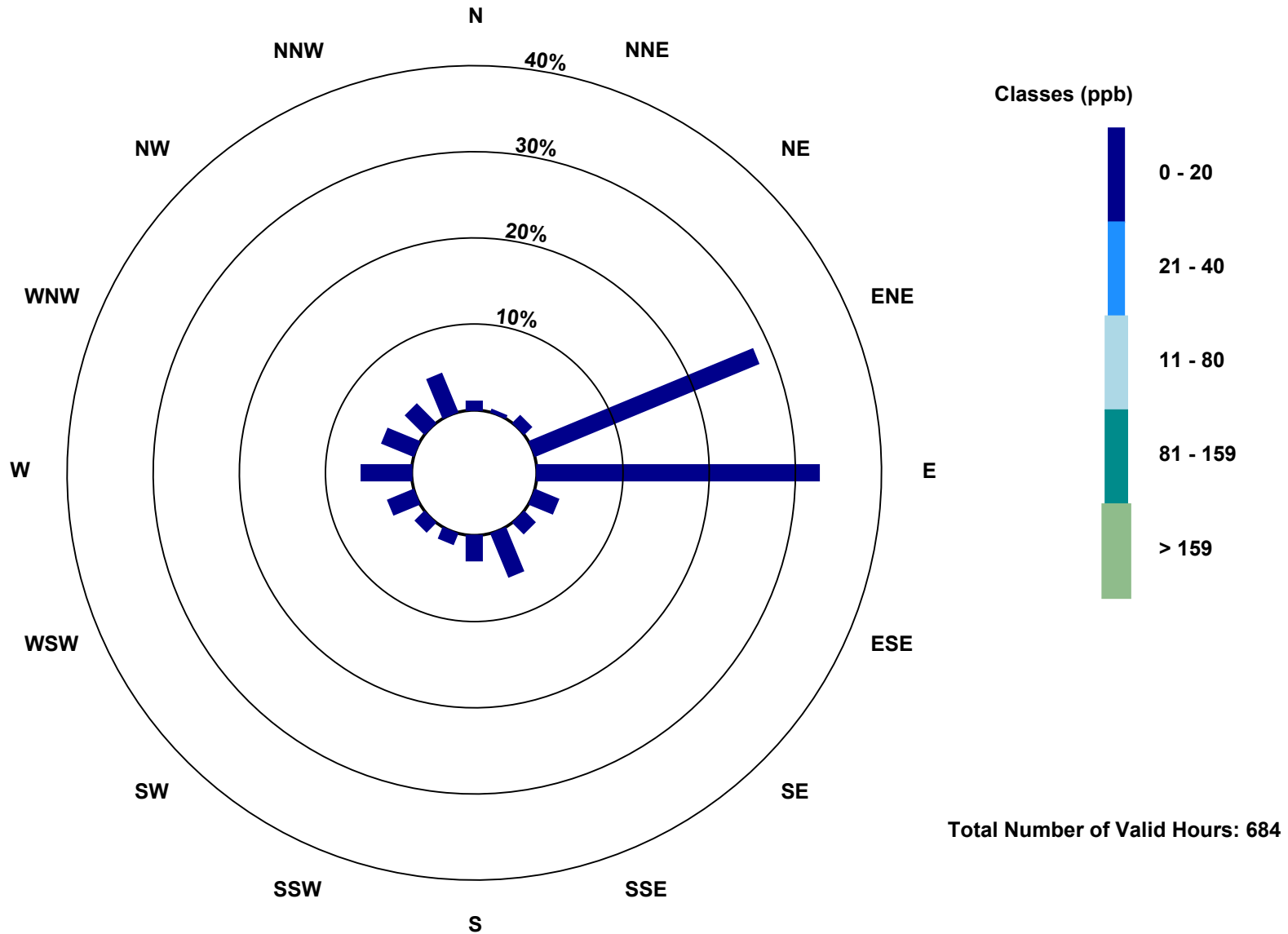
Total Number of Valid Hours: 684

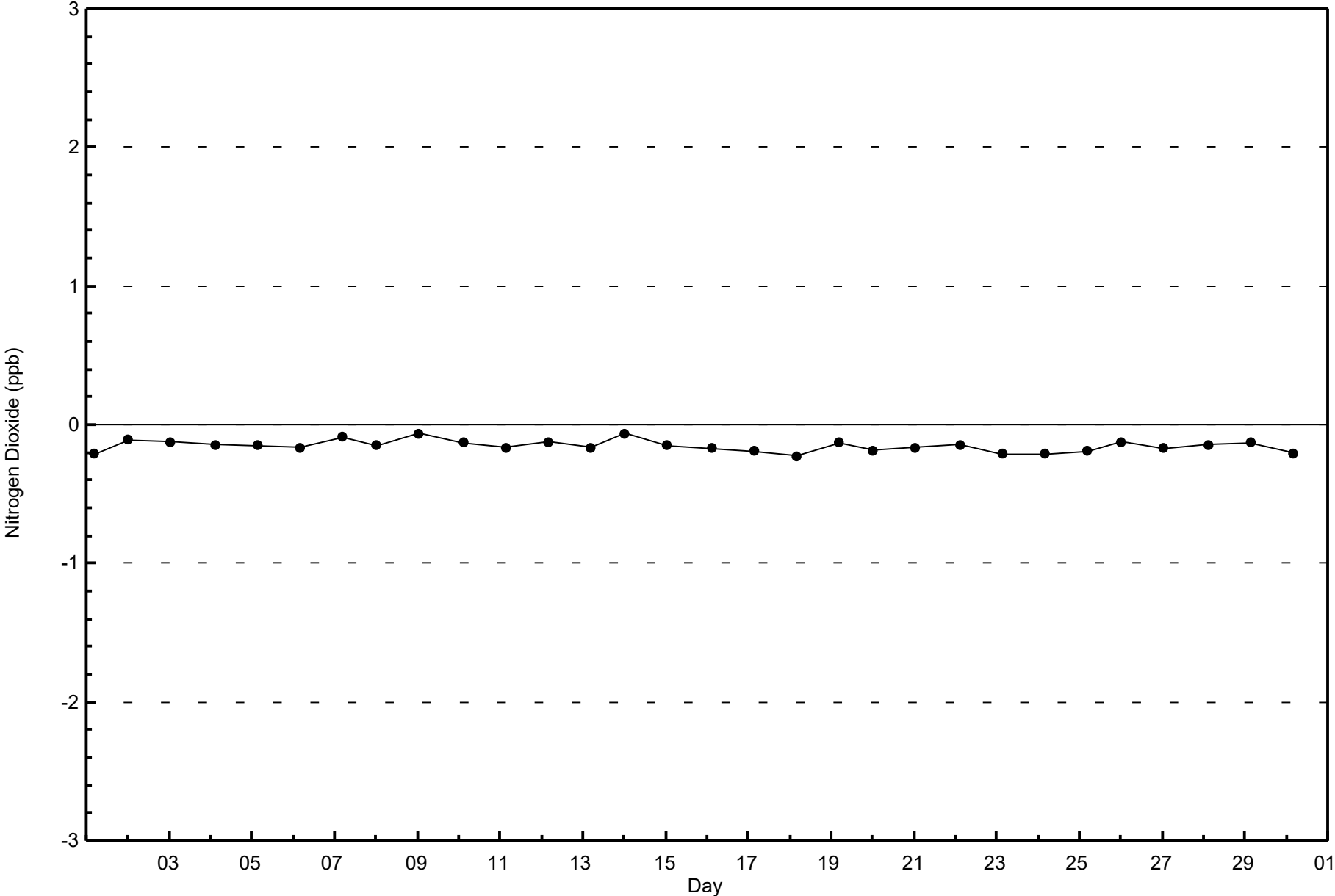
Total Number of Hours: 720

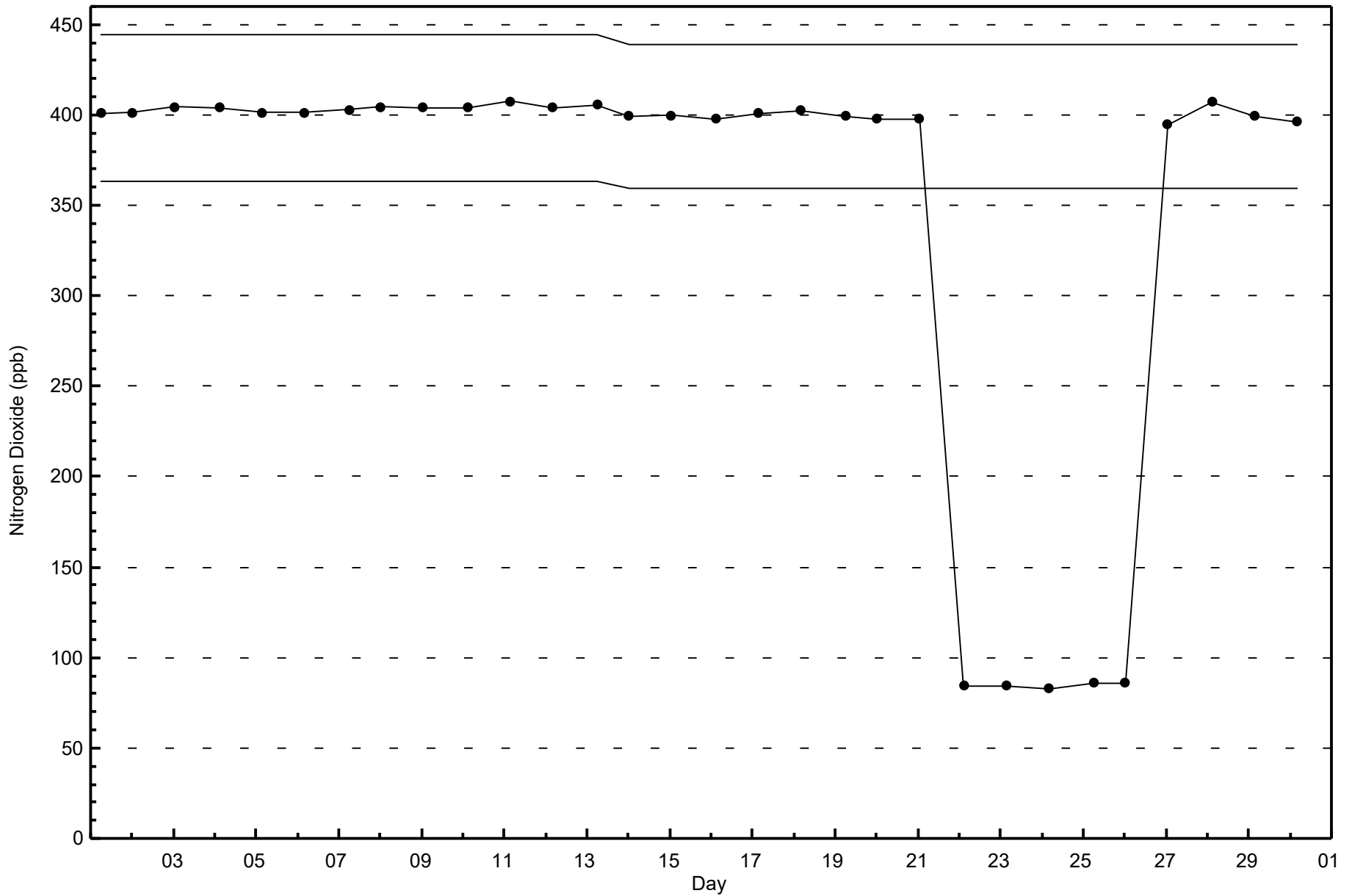


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan









Wood Buffalo Environmental Association
Summary of Hour Averages

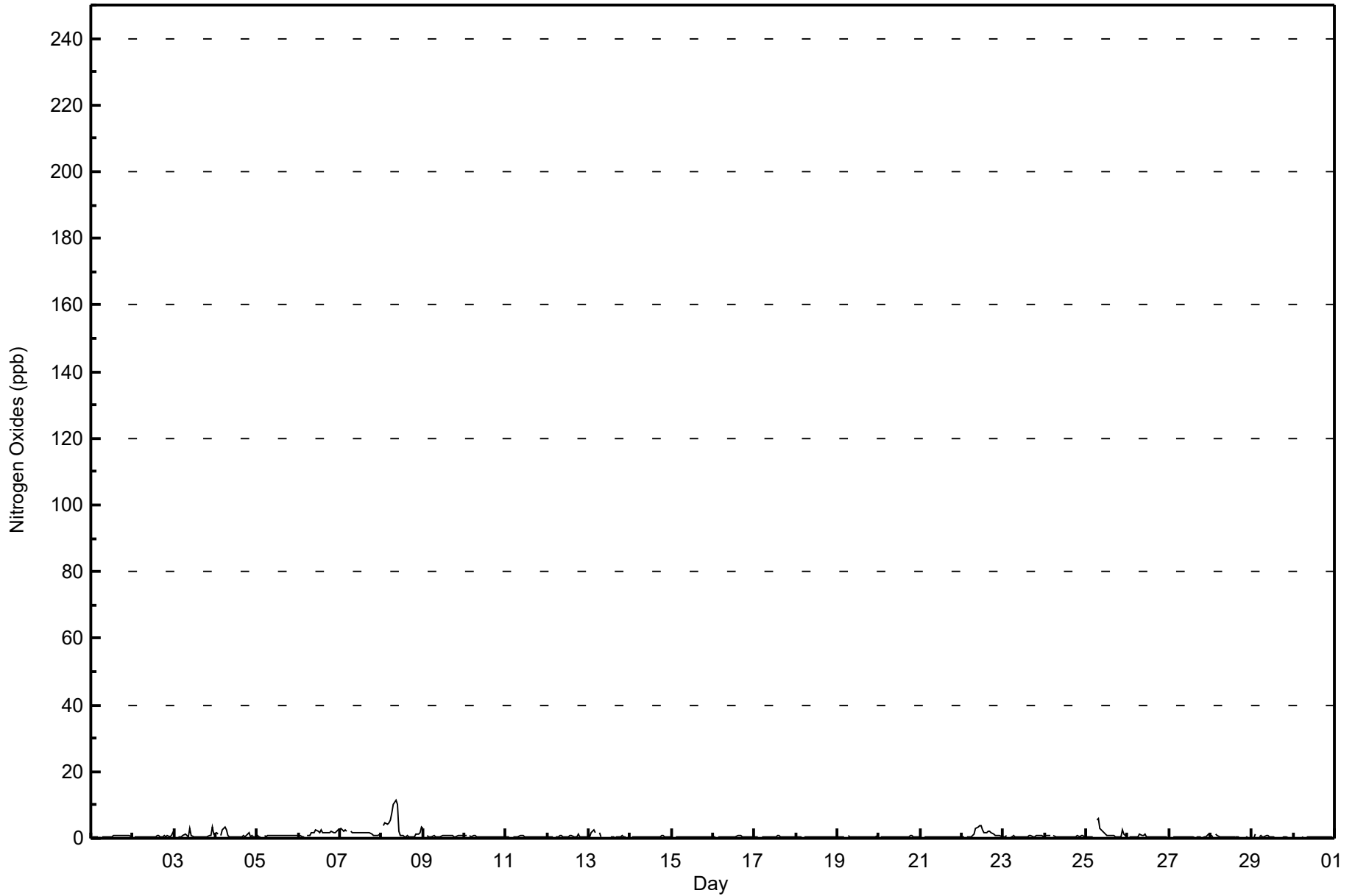
Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - April 2023

Maximum Value: 11.4 ppb on Apr 8 09:00		Maximum Daily Average: 3.3 ppb on Apr 8		Hours in Service: 720																						
Minimum Value: 0.1 ppb on Apr 29 00:00		Minimum Daily Average: 0.2 ppb on Apr 30		Hours of Data: 685																						
Maximum Diurnal Average: 1.1 ppb at hour 10		Minimum Diurnal Average: 0.6 ppb at hour 21		Hours of Missing Data: 35																						
Monthly Average: 0.77 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.3 Q ₁ = 0.4 Median = 0.5 Q ₃ = 0.7 P ₉₀ = 1.6 P ₉₉ = 4.7		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-Apr	0.5	0.5	0.5	0.5	0.5	Z	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	0.8	0.7	0.7	0.7	0.6	0.6	0.8
2-Apr	Z	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.6	0.7	0.4	0.5	0.8	0.5	1.0	0.4	0.7	1.7	0.6	1.7
3-Apr	0.8	Z	0.4	0.3	0.3	0.8	1.3	1.0	0.5	2.9	0.7	0.6	0.6	0.5	0.5	0.6	0.6	0.4	0.4	0.8	0.7	3.3	1.2	0.9	3.3	
4-Apr	1.6	1.1	Z	0.9	2.4	3.5	2.4	0.9	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.5	1.5	1.6	0.5	0.7	0.5	0.6	1.0	3.5	
5-Apr	0.7	0.5	0.6	Z	0.7	0.6	0.7	0.7	0.7	0.7	0.8	0.9	0.7	0.8	0.8	1.0	0.9	0.9	0.9	0.7	0.7	1.0	1.0	0.8	1.0	
6-Apr	0.8	0.7	0.6	0.5	Z	0.7	0.9	1.5	1.8	1.9	2.5	2.1	1.8	2.3	1.9	1.7	1.6	1.8	1.9	2.0	1.7	1.6	2.1	2.6	1.6	2.6
7-Apr	2.8	2.5	2.2	2.4	1.9	Z	1.9	1.8	1.6	1.8	1.9	1.5	1.8	1.7	1.8	1.9	1.7	1.7	1.1	0.9	0.8	0.8	1.0	1.2	1.7	2.8
8-Apr	Z	3.6	4.5	4.4	4.6	5.6	7.6	10.3	11.4	10.0	2.0	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	1.1	1.2	1.7	3.4	3.3	11.4
9-Apr	2.9	Z	0.8	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.8	0.7	0.7	0.9	0.7	1.0	0.6	0.6	0.8	0.8	0.9	0.8	0.8	2.9
10-Apr	0.7	0.9	Z	0.7	0.6	0.9	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.9
11-Apr	0.4	0.4	0.5	Z	0.6	0.5	0.6	0.5	1.0	0.8	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.5	1.0
12-Apr	0.4	0.4	0.4	0.4	Z	0.6	0.5	1.0	0.8	0.6	0.6	0.5	0.5	0.7	0.9	0.5	0.4	0.4	1.1	0.6	0.4	0.3	0.3	0.3	0.5	1.1
13-Apr	0.6	1.5	2.1	2.5	1.8	Z	1.6	0.4	C	C	C	C	C	0.3	0.2	0.2	0.2	0.3	0.5	0.9	0.6	0.3	0.2	0.2	0.8	2.5
14-Apr	Z	0.5	0.5	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.8	0.6	0.4	0.4	0.4	0.4	0.8
15-Apr	0.4	Z	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.6
16-Apr	0.4	0.4	Z	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.7
17-Apr	0.4	0.4	0.4	Z	0.5	0.4	0.4	0.5	0.5	0.6	0.5	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.4	0.4	0.7
18-Apr	0.4	0.4	0.5	0.5	Z	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.6
19-Apr	0.4	0.4	0.4	0.4	0.4	Z	0.8	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.4	0.6	0.6	0.5	0.7	0.5	0.8
20-Apr	Z	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.4	0.5	0.4	0.3	0.5	0.8
21-Apr	0.4	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4
22-Apr	0.2	0.2	Z	0.3	0.4	0.4	0.7	1.2	2.9	3.3	4.0	3.9	2.5	1.9	1.8	2.0	2.2	1.8	1.2	1.0	0.7	0.7	0.7	0.6	1.5	4.0
23-Apr	0.6	0.6	0.8	Z	0.5	0.5	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.6	0.5	1.1	0.7	0.6	0.6	0.8	1.0	0.9	0.9	0.6	0.6	1.1
24-Apr	0.7	0.8	0.7	0.8	Z	0.7	0.5	0.4	0.3	0.4	0.3	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.8	0.5	0.8	0.7	0.5	0.6	0.6	0.8
25-Apr	0.6	0.4	0.3	0.3	0.4	Z	5.5	6.0	2.9	2.0	1.8	1.2	0.9	0.9	0.8	1.0	0.6	0.4	0.4	0.3	0.4	2.5	1.4	0.4	1.4	6.0
26-Apr	Z	0.3	0.3	0.2	0.2	0.2	0.3	1.1	0.9	0.9	1.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.6	0.3	0.2	0.2	0.2	0.4	1.3
27-Apr	0.2	Z	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.8	1.4	1.4
28-Apr	1.0	0.3	Z	1.3	0.8	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.5	0.3	0.2	0.3	0.3	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.4	1.3
29-Apr	0.2	0.2	1.1	Z	0.4	0.7	0.3	0.2	0.9	0.7	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.4	0.2	0.2	0.2	0.4	1.1
30-Apr	0.2	0.1	0.2	0.1	Z	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3
																								Diurnal Average		
																								Diurnal Maximum		
																								Z - zerospan C - Calibration		



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	7	2	8	192	224	20	12	37	20	9	10	22	40	27	21	33	684
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
Totals	7	2	8	192	224	20	12	37	20	9	10	22	40	27	21	33	684

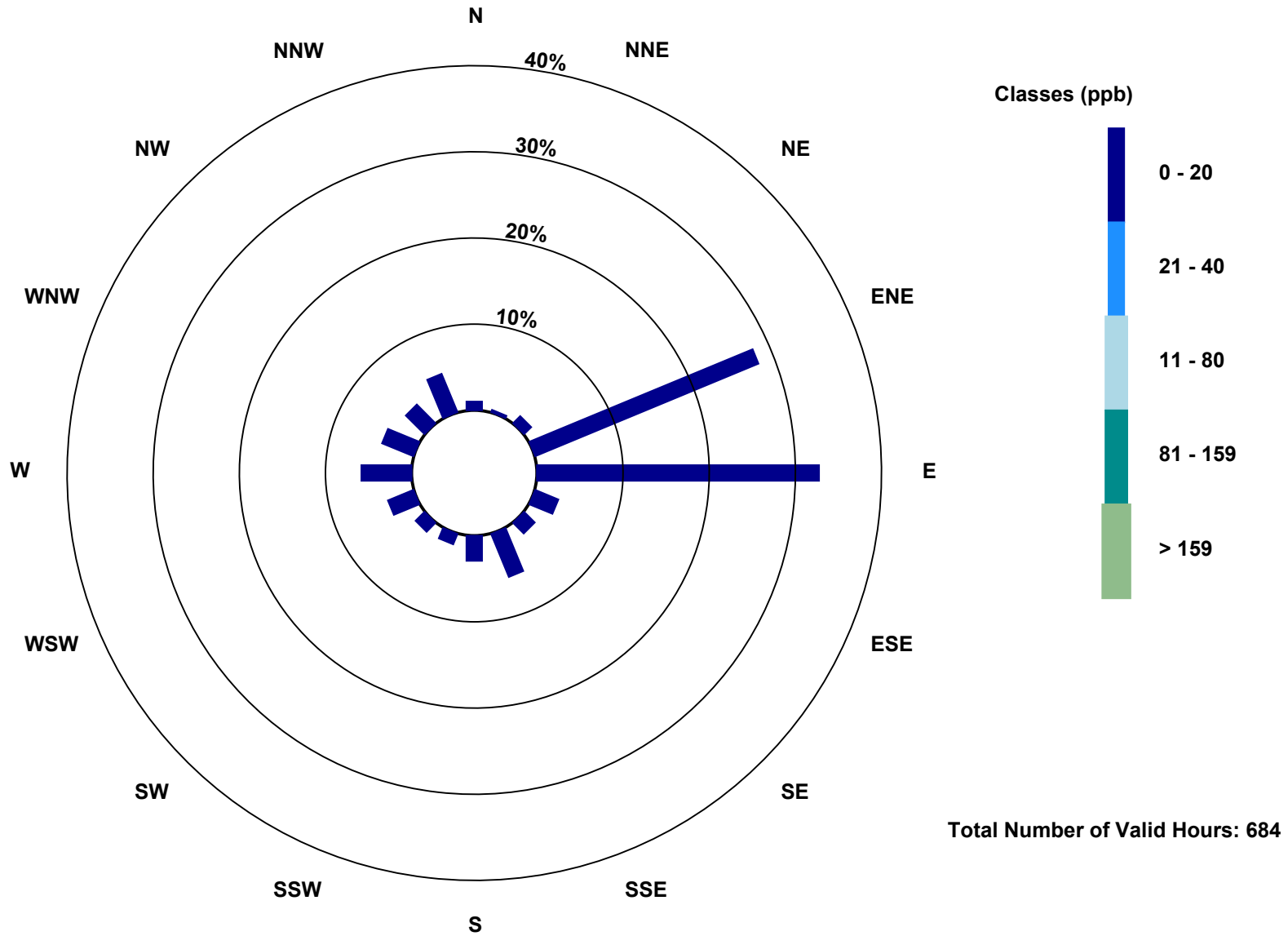
Total Number of Valid Hours: 684

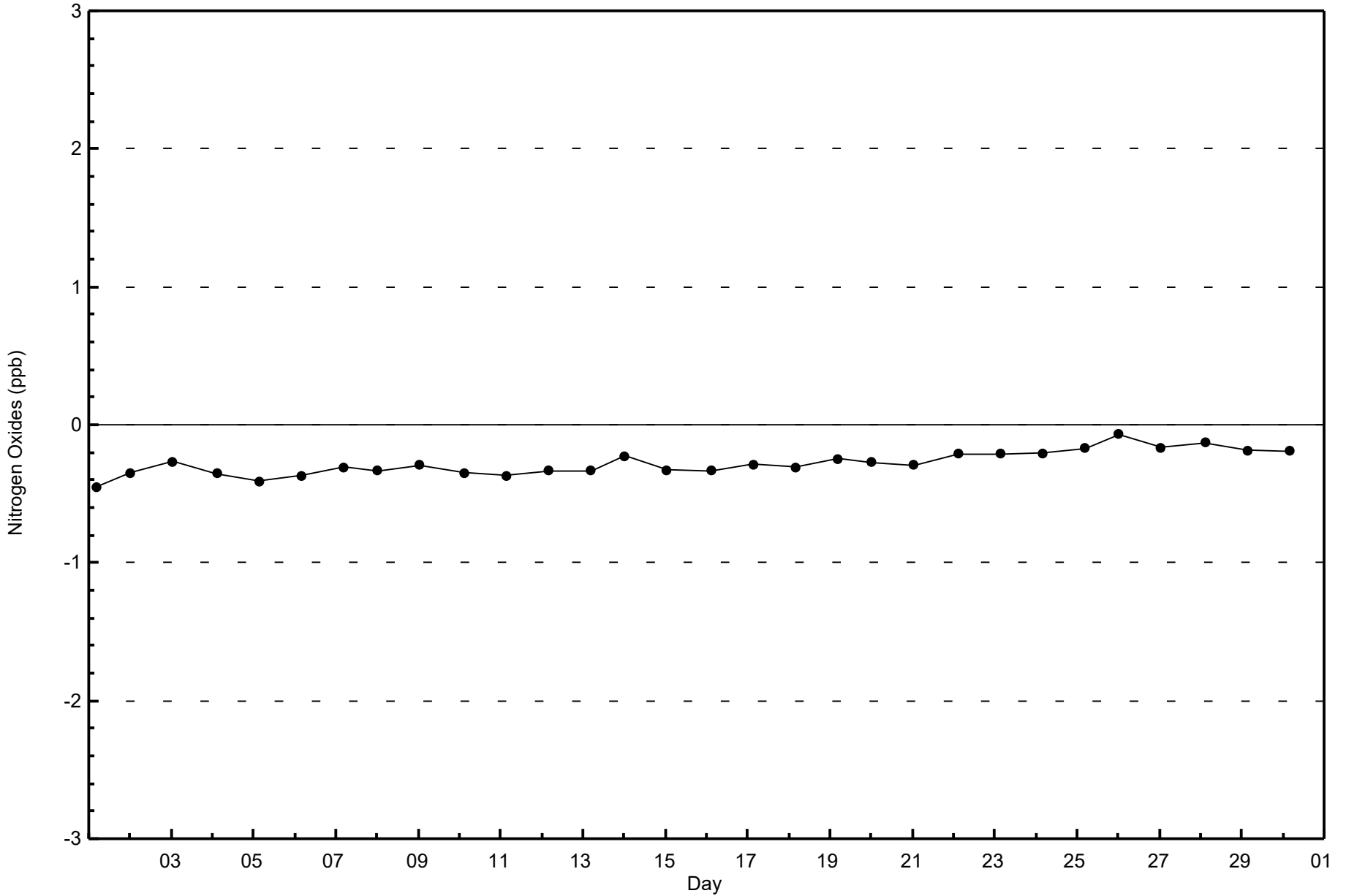
Total Number of Hours: 720

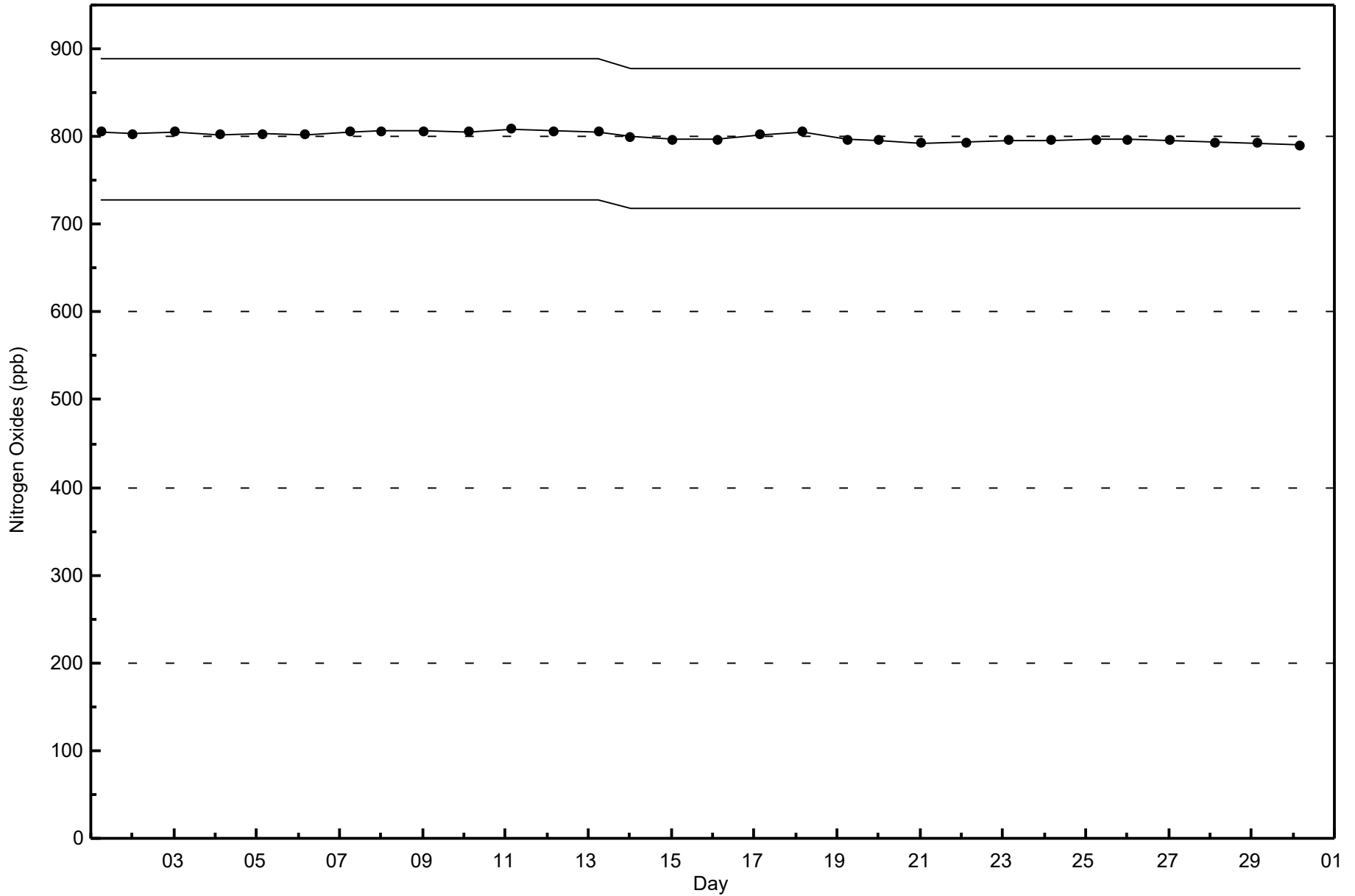


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Fort Chipewyan - April 2023

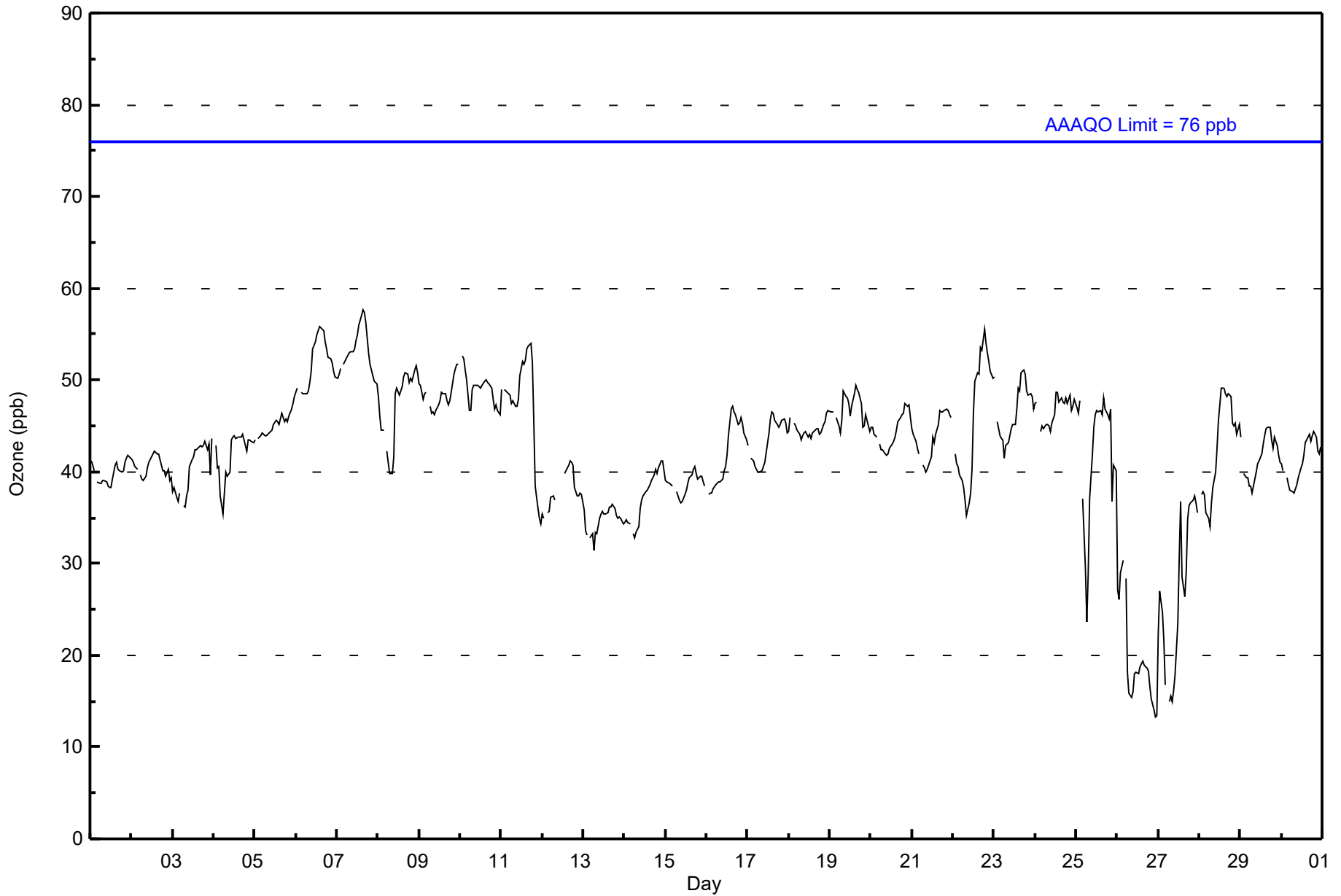
Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																																								
Maximum Value: 57.6 ppb on Apr 7 16:00		Maximum Daily Average: 53.1 ppb on Apr 7		Minimum Value: 13.2 ppb on Apr 26 23:00		Minimum Daily Average: 19.4 ppb on Apr 26		Hours of Data: 685																																								
Maximum Diurnal Average: 45.0 ppb at hour 17		Minimum Diurnal Average: 38.7 ppb at hour 7		Hours of Missing Data: 35		Hours of Calibration: 35		Percent Operational Time: 100.0																																								
Monthly Average: 42.40 ppb		Percentiles: P ₁ = 15.5 P ₁₀ = 35.3 Q ₁ = 39.0 Median = 43.6 Q ₃ = 47.2 P ₉₀ = 50.3 P ₉₉ = 55.6																																														
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-Apr	41.2	40.8	40.2	Z	38.9	38.7	38.8	39.1	39.1	38.9	38.4	38.3	38.3	39.3	40.7	41.0	40.3	40.1	40.0	40.0	41.1	41.5	41.8	41.5	39.9	41.8																						
2-Apr	41.4	41.0	40.6	40.2	Z	39.7	39.3	39.0	39.5	40.4	41.0	41.4	41.9	42.2	42.1	42.0	42.0	40.7	40.1	40.1	39.5	40.2	39.0	39.3	40.5	42.2																						
3-Apr	37.8	38.3	37.2	36.8	37.7	Z	36.3	36.2	37.3	38.0	40.6	41.3	41.7	42.4	42.5	42.6	42.8	42.8	42.9	43.3	42.4	43.1	39.7	43.6	40.3	43.6																						
4-Apr	Z	42.9	40.4	40.6	37.3	35.3	37.7	40.0	39.5	39.9	43.5	43.8	44.0	43.7	43.8	43.8	43.8	44.1	42.9	42.3	43.5	43.5	43.4	43.2	41.9	44.1																						
5-Apr	43.4	Z	43.6	43.9	44.2	44.1	44.0	44.0	44.2	44.4	44.5	45.1	45.6	45.4	45.2	45.8	46.3	45.4	45.8	45.5	46.1	46.8	47.4	48.2	45.2	48.2																						
6-Apr	48.7	49.1	Z	48.6	48.5	48.5	48.5	48.8	49.8	51.0	53.4	54.2	55.0	55.4	55.8	55.6	55.3	54.2	53.4	52.4	52.3	51.9	50.9	50.4	51.8	55.8																						
7-Apr	50.2	50.6	51.3	Z	51.7	52.3	52.7	52.9	53.0	53.2	53.5	54.3	54.9	56.0	57.0	57.6	57.4	56.3	53.0	51.7	51.1	50.5	49.8	49.6	53.1	57.6																						
8-Apr	48.2	46.0	44.6	44.5	Z	42.2	41.0	39.8	39.8	41.7	48.4	49.1	48.3	48.8	49.3	50.3	50.8	50.7	49.8	50.2	49.9	51.1	51.6	50.9	47.3	51.6																						
9-Apr	49.6	49.4	48.0	48.5	48.6	Z	47.2	46.4	46.5	46.2	46.7	47.2	47.8	48.7	48.6	48.5	47.8	47.4	47.7	48.7	50.6	51.2	51.7	51.7	48.5	51.7																						
10-Apr	Z	52.7	52.3	51.0	50.0	46.7	46.7	48.9	49.4	49.5	49.5	49.3	49.1	49.4	49.8	50.0	49.8	49.6	49.1	47.9	46.8	47.3	46.6	46.2	49.0	52.7																						
11-Apr	48.9	Z	49.0	48.7	48.5	48.3	47.4	47.8	47.1	47.2	47.9	50.4	52.0	51.7	52.1	53.4	53.7	53.9	51.8	45.5	38.5	35.9	35.0	34.3	47.4	53.9																						
12-Apr	35.3	35.0	Z	35.6	35.7	37.2	37.4	37.0	C	C	C	C	C	39.7	40.1	40.7	41.1	41.1	40.8	38.3	37.3	37.4	37.7	37.5	38.0	41.1																						
13-Apr	35.9	33.6	33.0	Z	32.8	33.2	31.4	33.4	33.2	35.0	35.4	35.8	35.4	35.5	35.6	36.1	36.2	36.5	36.0	35.2	35.0	35.2	34.9	34.3	34.7	36.5																						
14-Apr	34.5	34.7	34.5	34.3	Z	33.3	32.8	33.4	34.0	36.0	36.9	37.4	37.8	37.9	38.2	38.6	39.0	39.7	40.3	39.8	40.4	41.2	41.1	40.1	37.2	41.2																						
15-Apr	39.1	38.9	38.7	38.6	38.4	Z	37.8	37.4	36.9	36.6	36.8	37.5	38.0	38.8	39.3	39.7	40.3	40.6	39.8	39.3	39.5	39.5	38.9	38.4	38.6	40.6																						
16-Apr	Z	37.6	37.7	37.7	38.2	38.5	38.8	38.9	38.9	39.3	40.1	40.6	41.7	43.9	46.8	47.1	46.5	46.3	45.1	45.4	45.9	45.3	44.2	43.5	42.1	47.1																						
17-Apr	42.9	Z	41.5	41.2	40.5	40.2	40.0	39.9	40.2	40.5	41.0	42.1	44.2	45.8	46.5	46.4	45.6	45.2	44.9	45.1	45.6	45.8	45.3	44.3	43.2	46.5																						
18-Apr	44.4	45.9	Z	45.2	45.0	44.5	44.0	43.5	43.9	44.3	44.4	43.8	44.1	43.7	44.2	44.5	44.7	44.7	44.2	44.3	45.2	45.4	46.3	46.7	44.6	46.7																						
19-Apr	46.5	46.5	46.6	Z	45.9	45.0	44.3	45.6	48.8	48.2	48.0	47.4	46.1	47.2	48.6	49.5	49.0	48.7	47.5	44.8	45.0	46.2	45.5	44.4	46.7	49.5																						
20-Apr	44.8	44.9	44.1	43.8	Z	43.0	42.4	42.4	41.9	41.8	41.9	42.6	43.0	43.3	43.8	44.5	45.5	45.8	46.2	46.3	47.5	47.2	47.2	45.9	44.3	47.5																						
21-Apr	44.8	44.1	43.3	42.6	41.9	Z	40.8	40.4	39.9	40.3	40.7	41.7	43.7	43.2	44.1	45.2	46.7	46.5	46.5	46.6	46.8	46.7	46.2	45.9	43.8	46.8																						
22-Apr	Z	41.9	40.8	40.5	39.6	39.0	38.3	37.0	35.3	36.6	37.6	40.2	46.3	49.9	50.9	50.6	53.5	53.2	55.6	54.0	53.0	52.0	51.0	50.2	45.5	55.6																						
23-Apr	50.3	Z	45.5	43.9	43.6	43.4	41.6	42.8	43.1	44.0	44.7	45.1	45.2	46.9	49.1	48.8	50.8	51.2	50.7	48.8	48.3	48.5	48.2	46.8	46.6	51.2																						
24-Apr	47.5	47.7	Z	44.4	44.9	44.7	45.2	45.2	45.0	44.4	45.3	46.3	48.6	48.6	47.6	48.0	47.6	47.5	48.0	47.5	48.3	46.6	47.2	48.0	46.7	48.6																						
25-Apr	46.9	46.4	47.7	Z	37.0	29.5	23.6	29.0	37.1	42.0	44.8	46.2	46.7	46.5	46.7	46.2	48.0	46.8	46.2	45.8	46.9	36.8	40.7	40.1	42.1	48.0																						
26-Apr	27.2	26.1	29.0	30.4	Z	28.4	18.1	15.8	15.4	16.0	17.9	18.1	17.9	18.7	19.1	19.4	19.0	18.6	18.3	16.6	15.2	14.0	13.2	13.4	19.4	30.4																						
27-Apr	22.3	27.0	24.6	21.6	16.8	Z	15.0	15.5	15.0	16.2	17.9	23.5	30.7	36.7	28.6	26.4	29.2	34.8	36.3	36.6	37.0	37.3	36.6	35.6	27.0	37.3																						
28-Apr	Z	37.5	37.8	37.5	35.5	35.0	33.9	36.6	38.2	40.0	42.6	45.7	47.3	49.1	49.1	48.6	48.2	48.6	48.2	45.4	45.1	45.2	44.1	45.1	42.8	49.1																						
29-Apr	43.8	Z	39.8	39.4	39.3	38.5	38.4	37.7	39.2	40.0	40.9	41.2	42.0	43.0	43.9	44.6	44.8	44.8	43.5	42.5	43.7	42.9	41.7	41.0	41.6	44.8																						
30-Apr	40.8	40.1	Z	39.3	38.6	38.1	37.8	37.6	38.2	38.6	39.3	40.5	41.0	41.8	43.2	43.8	44.1	43.3	43.9	44.4	43.8	42.2	42.0	42.7	41.1	44.4																						
																								42.3	41.5	41.3	40.8	40.8	40.3	38.7	39.1	39.6	40.3	41.5	42.4	43.4	44.1	44.4	44.6	45.0	45.0	44.6	43.8	43.7	43.3	43.0	42.8	Diurnal Average
																								50.3	52.7	52.3	51.0	51.7	52.3	52.7	52.9	53.0	53.2	53.5	54.3	55.0	56.0	57.0	57.6	57.4	56.3	55.6	54.0	53.0	52.0	51.7	51.7	Diurnal Maximum

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



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Fort Chipewyan - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Fort Chipewyan - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	24	3.50	3.50
21 - 50	597	87.15	90.66
51 - 82	64	9.34	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Fort Chipewyan - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	1	0	0	0	0	0	0	0	0	0	0	2	2	7	2	10	24
21 - 50	5	2	9	191	211	18	10	14	11	8	9	19	32	17	15	25	596
51 - 82	0	0	0	2	17	1	2	24	9	0	1	2	5	1	0	0	64
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	6	2	9	193	228	19	12	38	20	8	10	23	39	25	17	35	684

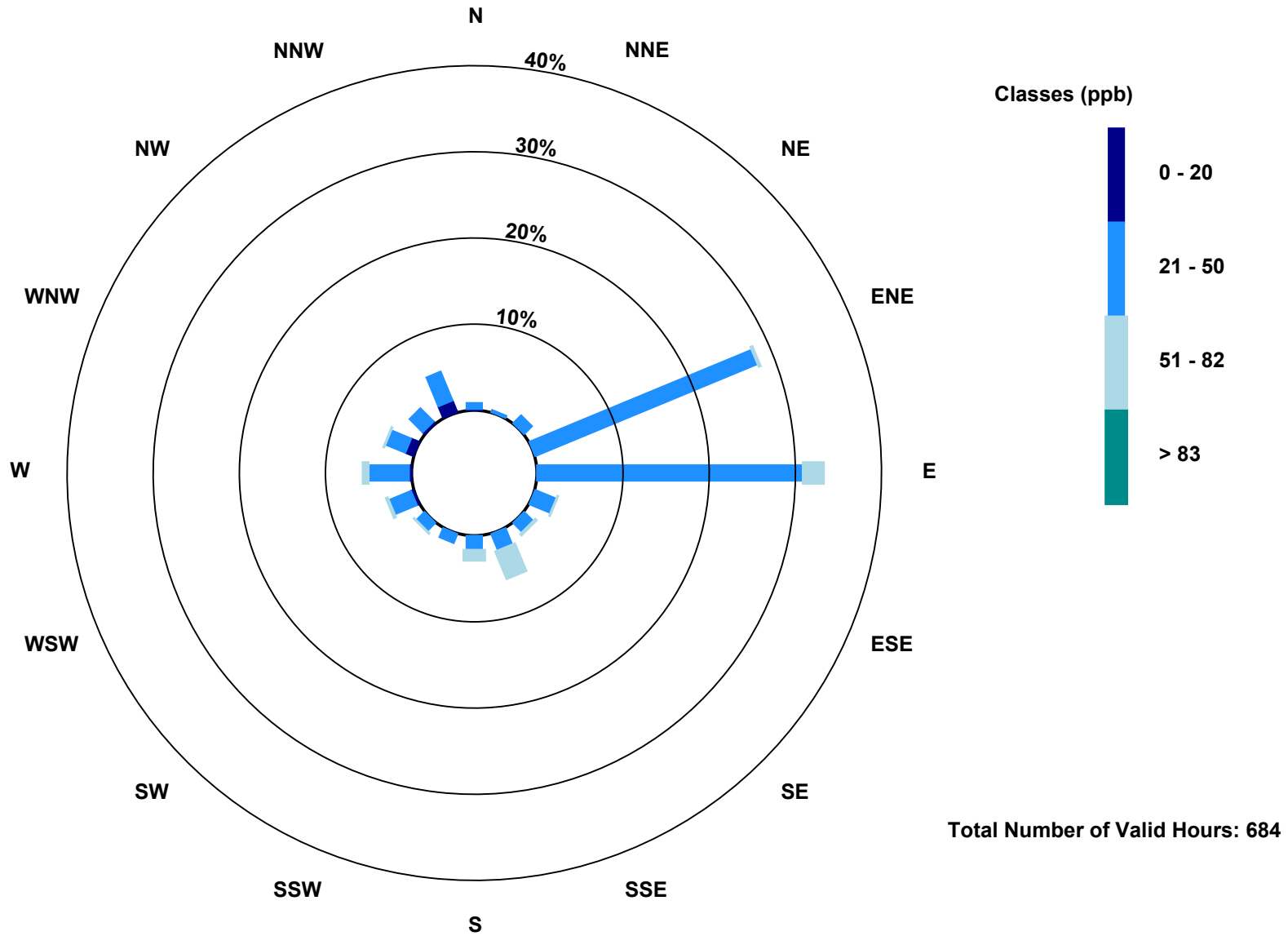
Total Number of Valid Hours: 684

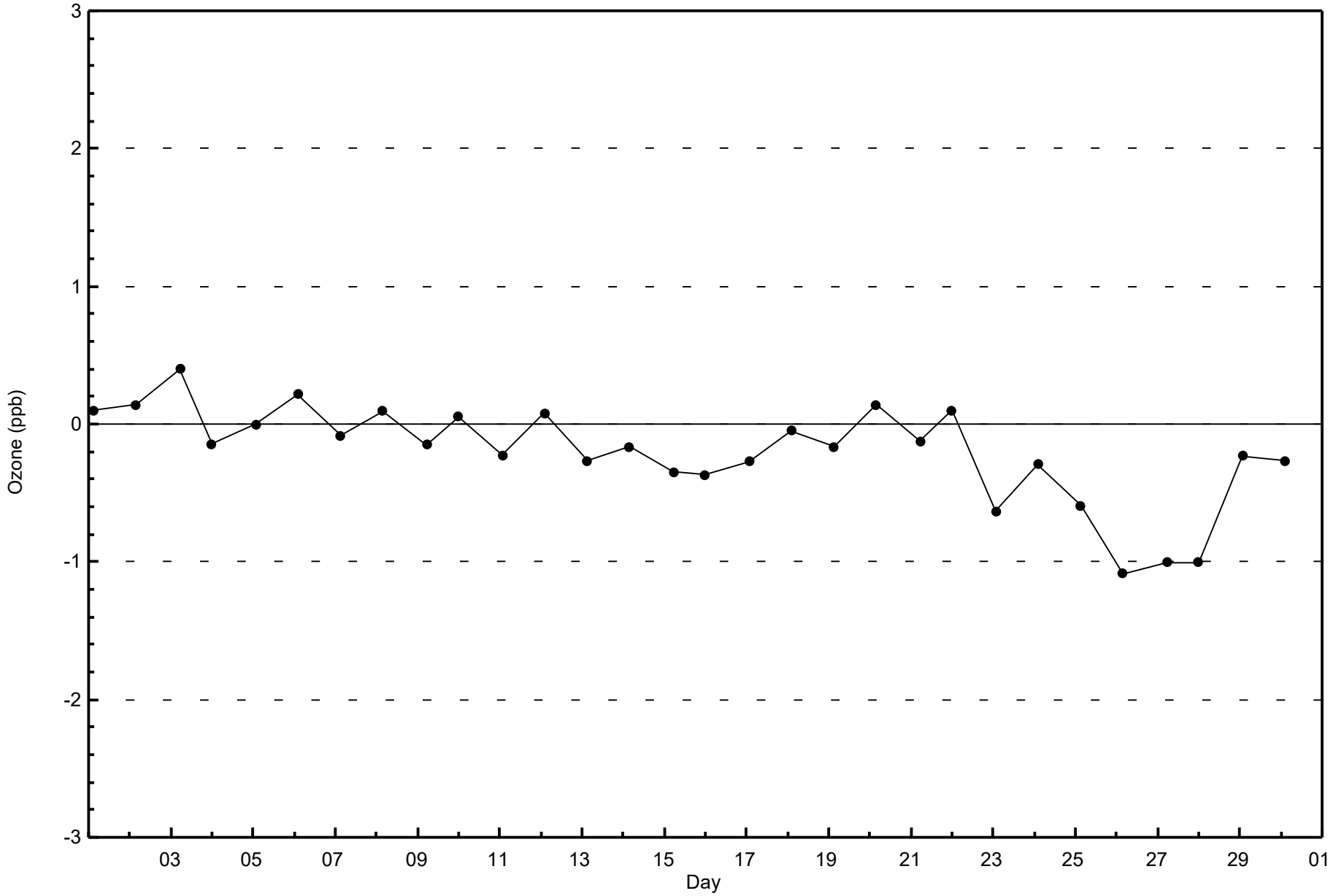
Total Number of Hours: 720

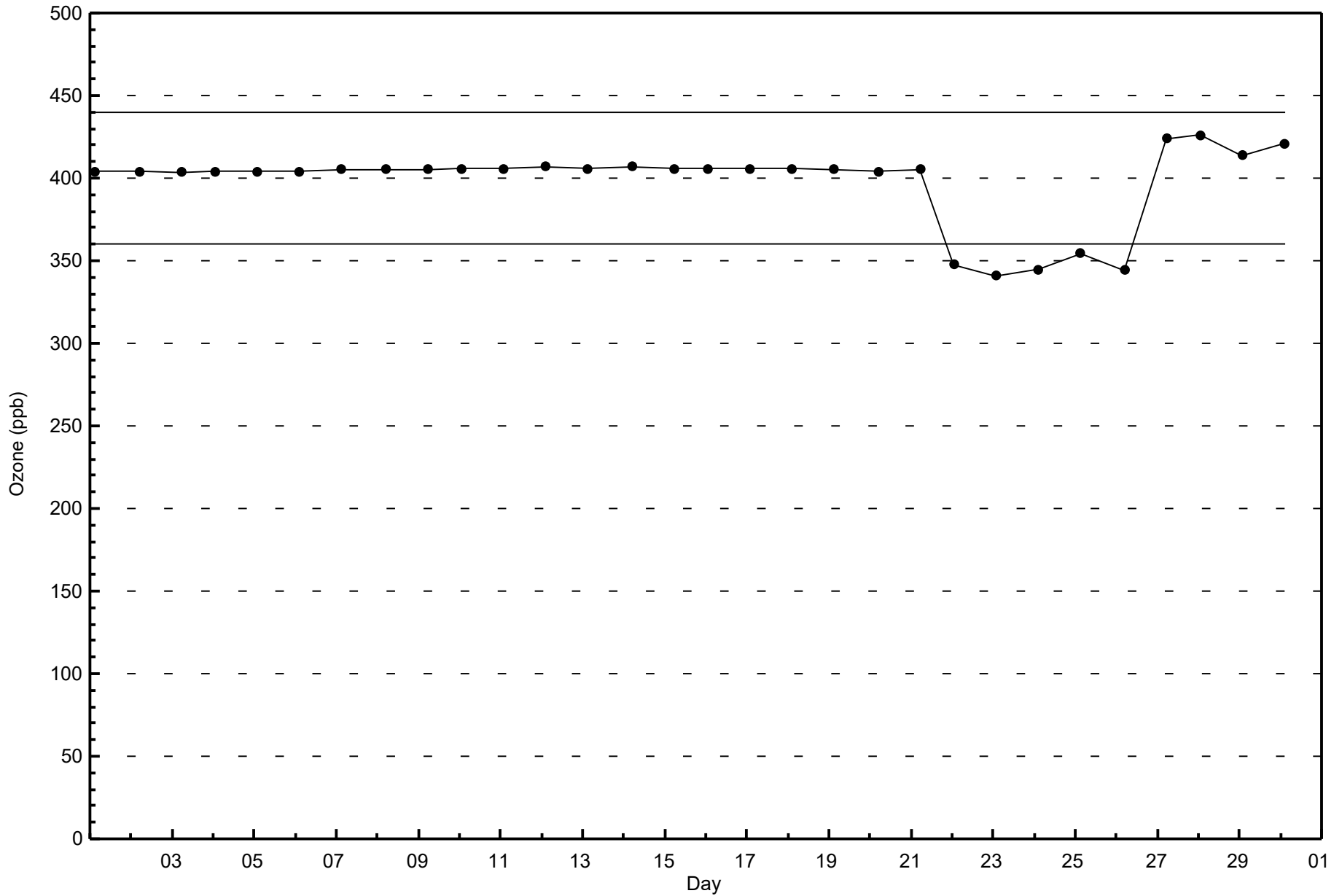


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Fort Chipewyan





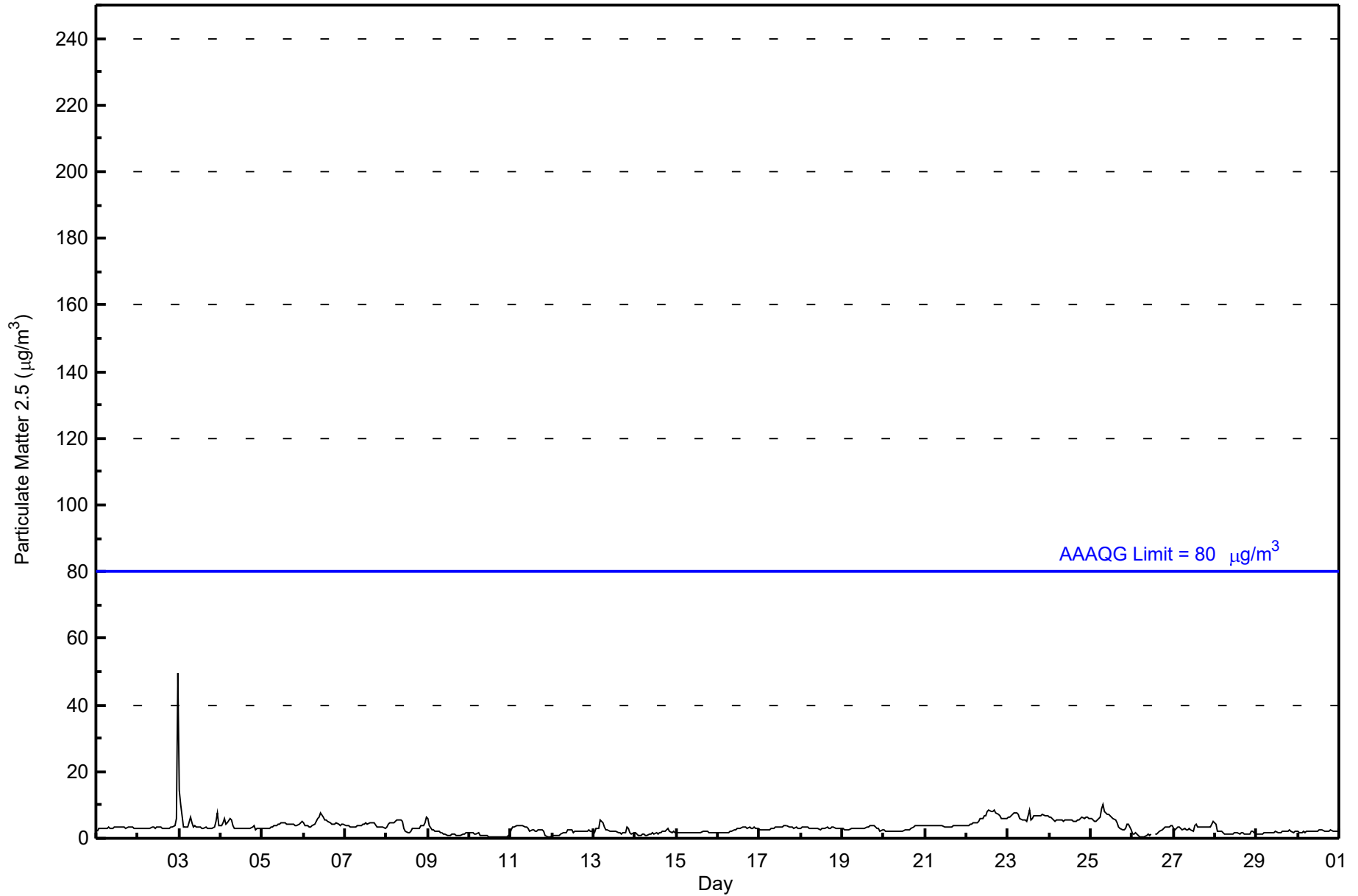




Summary of Hour Averages

Fort Chipewyan - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																																								
Maximum Value: 49.7 µg/m ³ on Apr 3 00:00		Maximum Daily Average: 6.6 µg/m ³ on Apr 23				Hours of Data:		719																																								
Minimum Value: 0.4 µg/m ³ on Apr 10 19:00		Minimum Daily Average: 0.9 µg/m ³ on Apr 10				Hours of Missing Data:		1																																								
Maximum Diurnal Average: 4.7 µg/m ³ at hour 24		Minimum Diurnal Average: 3.0 µg/m ³ at hour 4				Hours of Calibration:		1																																								
Monthly Average: 3.27 µg/m ³		Percentiles: P ₁ = 0.5 P ₁₀ = 1.3 Q ₁ = 2.0 Median = 3.0 Q ₃ = 3.8 P ₉₀ = 5.6 P ₉₉ = 8.3				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-Apr	2.3	2.8	3.1	3.2	3.1	3.1	3.1	3.2	3.2	3.1	3.2	3.3	3.4	3.4	3.5	3.5	3.3	3.1	3.3	3.2	3.3	3.2	3.1	3.0	3.2	3.5																						
2-Apr	2.9	2.8	2.9	2.9	2.9	2.9	3.0	3.1	3.2	3.2	3.2	3.3	3.2	3.3	3.0	3.2	3.2	2.9	3.1	3.3	3.5	3.8	6.0	49.7	5.2	49.7																						
3-Apr	14.6	10.4	3.3	3.3	3.3	3.5	6.3	4.5	3.4	3.8	3.3	3.4	3.5	3.2	3.1	3.2	3.2	3.2	3.1	3.0	3.5	5.1	7.5	3.8	4.5	14.6																						
4-Apr	3.8	4.6	5.7	4.1	4.8	5.8	5.6	3.8	3.1	3.0	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.8	3.5	3.7	2.7	3.0	2.8	2.9	3.6	5.8																						
5-Apr	3.0	2.9	3.0	3.0	3.1	3.3	3.5	3.8	3.9	4.1	4.3	4.6	4.7	4.5	4.2	4.3	4.3	4.0	4.2	3.9	3.9	4.0	4.7	5.2	3.9	5.2																						
6-Apr	4.7	3.9	3.6	3.6	3.6	3.7	4.2	5.1	6.0	6.3	7.6	6.3	5.4	5.4	5.2	4.7	4.2	4.1	4.2	4.7	4.4	3.9	4.2	4.0	4.7	7.6																						
7-Apr	3.9	3.7	3.6	3.5	3.3	3.4	3.5	3.7	3.7	3.7	4.2	4.2	4.5	4.4	4.5	4.6	4.6	4.5	3.5	3.4	3.3	3.3	3.2	3.1	3.8	4.6																						
8-Apr	3.6	4.1	4.5	4.5	4.9	5.0	5.4	5.6	5.6	5.0	2.9	2.0	1.7	1.8	2.1	2.8	3.0	3.0	3.0	3.2	3.8	3.8	4.6	6.4	3.8	6.4																						
9-Apr	5.8	3.6	2.7	2.4	2.2	2.3	2.1	1.8	1.6	1.1	1.1	1.0	1.0	1.0	1.2	1.4	1.0	0.9	0.9	0.9	1.2	1.3	1.8	1.6	1.8	5.8																						
10-Apr	1.6	1.8	1.7	1.4	1.3	1.5	1.1	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.6	0.4	0.5	0.6	1.3	0.9	1.8																						
11-Apr	2.6	3.2	3.4	3.7	3.8	3.8	3.8	3.7	3.5	3.3	2.9	2.3	2.3	2.4	2.3	2.3	2.5	2.6	2.7	2.0	0.8	0.5	0.4	0.4	2.6	3.8																						
12-Apr	0.7	1.0	0.8	0.9	0.8	1.1	1.5	1.5	1.8	2.4	2.3	2.4	1.7	2.0	2.2	2.0	2.2	2.1	2.2	2.1	2.1	2.5	2.3	2.0	1.8	2.5																						
13-Apr	1.9	2.8	2.9	3.0	5.4	4.5	3.3	2.3	2.4	2.3	2.3	2.1	1.9	1.9	1.6	1.5	1.6	1.8	3.5	2.8	1.6	1.4	1.6	2.4	5.4	2.4																						
14-Apr	1.5	1.1	1.0	1.0	1.1	1.0	1.0	1.0	1.1	1.3	1.5	1.5	1.4	1.5	1.7	2.0	2.1	2.5	2.8	2.2	1.9	2.1	1.9	1.6	2.8	1.6																						
15-Apr	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.9	1.9	1.9	1.8	1.7	1.6	1.7	1.8	2.0	2.0	2.1	2.2	1.9	1.8	1.8	1.7	1.7	1.8	2.2																						
16-Apr	1.8	1.7	1.7	1.8	1.7	1.8	1.9	2.0	2.2	2.4	2.6	2.9	3.1	3.2	3.3	3.2	3.2	3.1	3.2	3.2	3.1	3.2	3.0	2.8	2.6	3.3																						
17-Apr	2.4	2.5	2.4	2.4	2.5	2.6	2.6	3.0	3.1	3.2	3.4	3.4	3.5	3.5	3.7	3.7	3.8	3.4	3.3	3.2	3.1	3.2	3.1	2.9	3.1	3.8																						
18-Apr	3.0	3.3	3.3	3.2	3.2	3.2	3.1	3.0	3.0	2.8	2.8	2.7	2.8	3.0	3.2	3.2	3.1	3.2	3.2	3.2	3.1	3.0	2.9	2.9	3.0	3.3																						
19-Apr	2.8	2.7	2.7	2.7	2.7	2.9	2.8	3.0	2.8	2.9	2.8	2.8	2.9	3.1	3.5	3.5	3.6	3.7	3.8	3.3	3.1	2.8	2.3	2.4	3.0	3.8																						
20-Apr	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.6	2.7	2.7	3.0	3.4	3.7	3.9	3.6	3.8	3.8	3.6	2.7	3.9																						
21-Apr	3.7	3.7	3.6	3.7	3.7	3.6	3.7	3.6	3.7	3.7	3.6	3.6	3.6	3.5	3.5	3.4	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.7	3.7	3.8																						
22-Apr	3.9	4.0	4.2	4.3	4.5	4.6	4.8	5.1	5.9	6.0	6.6	6.9	7.9	8.4	8.2	7.9	8.4	7.5	7.4	6.6	6.1	6.1	5.9	6.1	6.1	8.4																						
23-Apr	6.3	6.3	6.9	7.5	7.4	7.5	7.4	6.1	5.4	5.4	5.4	5.3	8.3	5.4	6.1	6.8	6.7	6.7	6.8	7.0	7.1	7.0	6.8	6.6	6.6	8.3																						
24-Apr	6.5	6.1	5.6	5.3	5.5	5.7	5.5	5.3	5.2	5.4	5.5	5.5	5.6	5.6	5.3	5.0	5.4	5.5	5.9	6.6	6.1	6.3	6.2	6.0	5.7	6.6																						
25-Apr	5.9	5.7	5.2	5.0	5.7	6.4	9.1	10.0	8.0	7.2	7.1	6.7	6.4	6.1	5.5	4.7	3.3	2.9	2.4	2.5	3.1	4.4	4.4	2.7	5.4	10.0																						
26-Apr	1.1	1.1	1.6	0.8	0.6	0.5	0.4	0.6	0.8	1.1	0.9	1.2	C	1.2	1.3	1.7	2.1	2.6	2.8	3.2	3.2	3.4	3.6	3.8	1.7	3.8																						
27-Apr	2.9	2.5	3.3	3.4	2.8	2.7	2.9	2.7	2.3	2.8	2.4	2.0	3.6	4.2	3.5	3.3	3.4	3.3	3.3	3.2	3.3	3.5	4.1	4.9	3.2	4.9																						
28-Apr	4.2	2.2	1.9	2.1	2.2	1.4	1.3	1.3	1.4	1.3	1.2	1.5	1.8	1.6	1.4	1.5	1.5	1.3	1.4	1.2	1.1	2.1	2.2	1.1	1.7	4.2																						
29-Apr	1.2	1.3	1.3	1.5	1.6	1.5	1.8	1.5	1.7	1.6	1.8	1.9	1.9	1.7	1.6	1.9	2.0	2.0	2.2	2.6	2.2	1.9	2.0	2.0	1.8	2.6																						
30-Apr	1.9	1.9	1.9	2.0	1.9	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.6	2.6	2.3	2.3	2.1	2.2	2.4	2.2	2.3	2.3	2.2	2.2	2.6																						
																								3.5	3.3	3.1	3.0	3.1	3.2	3.4	3.2	3.2	3.2	3.2	3.1	3.3	3.2	3.2	3.2	3.2	3.1	3.2	3.3	3.1	3.2	3.4	4.7	Diurnal Average
																								14.6	10.4	6.9	7.5	7.4	7.5	9.1	10.0	8.0	7.2	7.6	6.9	8.3	8.4	8.2	7.9	8.4	7.5	7.4	7.0	7.1	7.0	7.5	49.7	Diurnal Maximum
C - Calibration																																																
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Chipewyan - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	643	89.43	89.43
6 - 15	75	10.43	99.86
16 - 25	0	0.00	99.86
26 - 80	1	0.14	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Fort Chipewyan - April 2023

Concentration Ranges (µg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	7	2	8	182	206	19	9	27	22	7	9	24	41	28	19	33	643
6 - 15	0	0	1	18	31	3	3	11	0	2	1	0	0	1	1	2	74
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	1	1
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	2	9	200	237	22	12	38	22	9	10	24	41	29	20	36	718

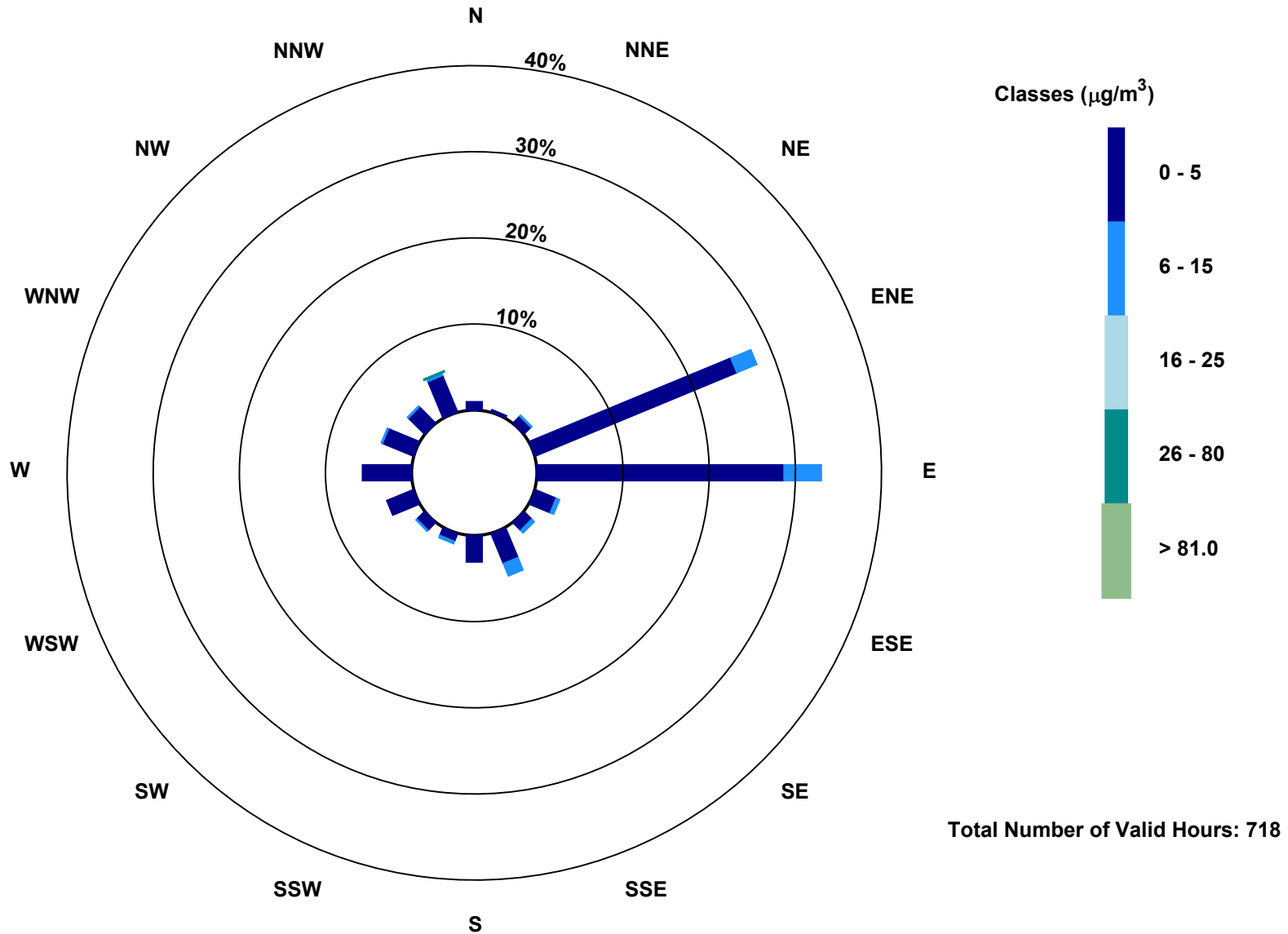
Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

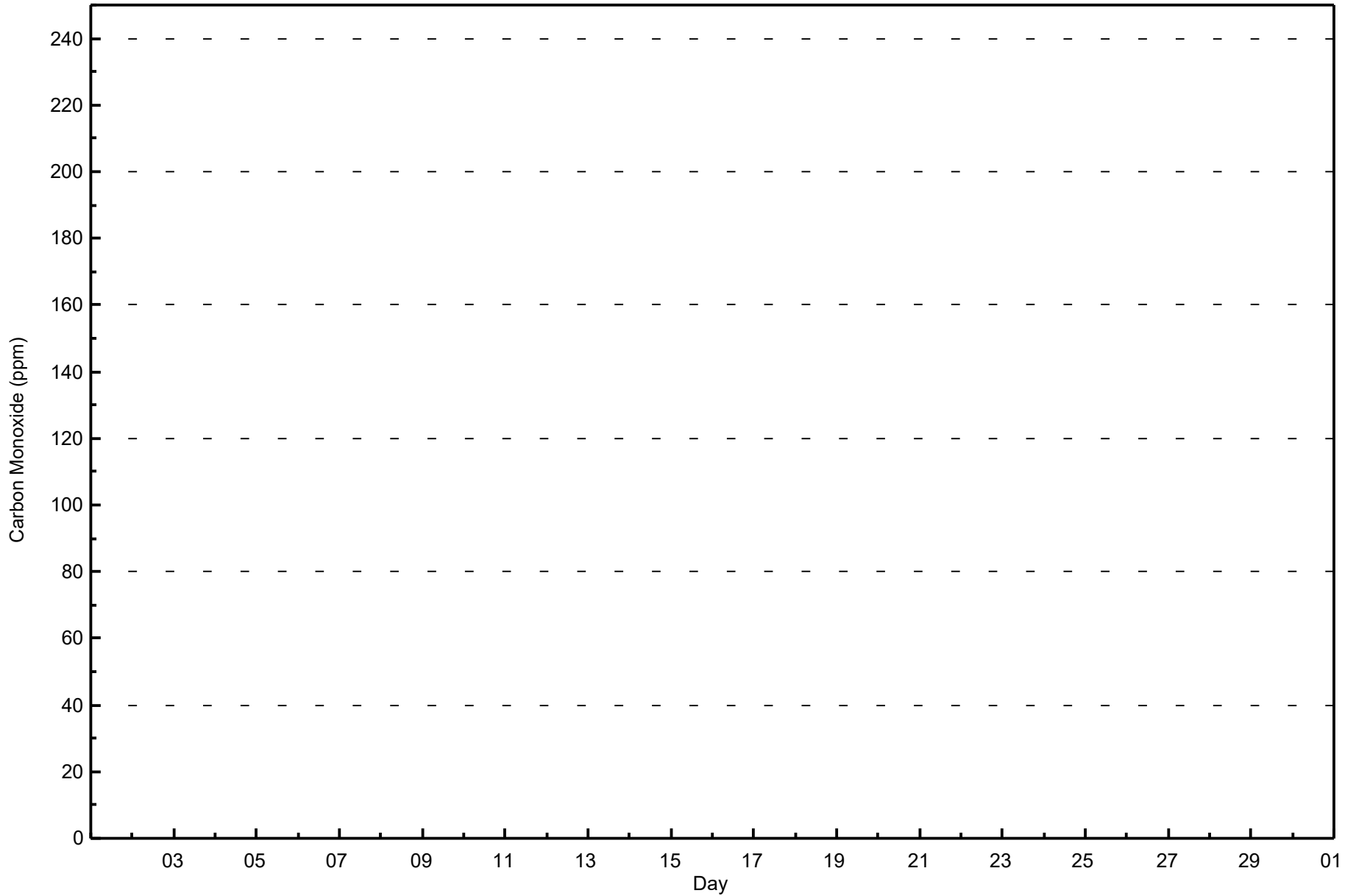
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Chipewyan





Wood Buffalo Environmental Association
Hourly Averages

Carbon Monoxide (CO) - ppm
Fort Chipewyan - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Monoxide (CO) - ppm
Fort Chipewyan - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Fort Chipewyan - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	6	2	9	191	220	22	12	38	20	9	10	23	40	28	19	34	683
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
Totals	6	2	9	191	220	22	12	38	20	9	10	23	40	28	19	34	683

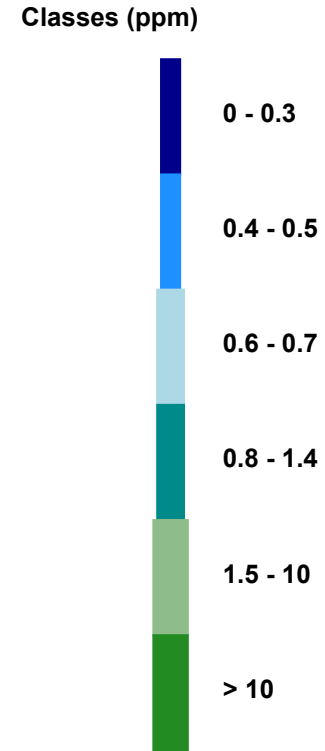
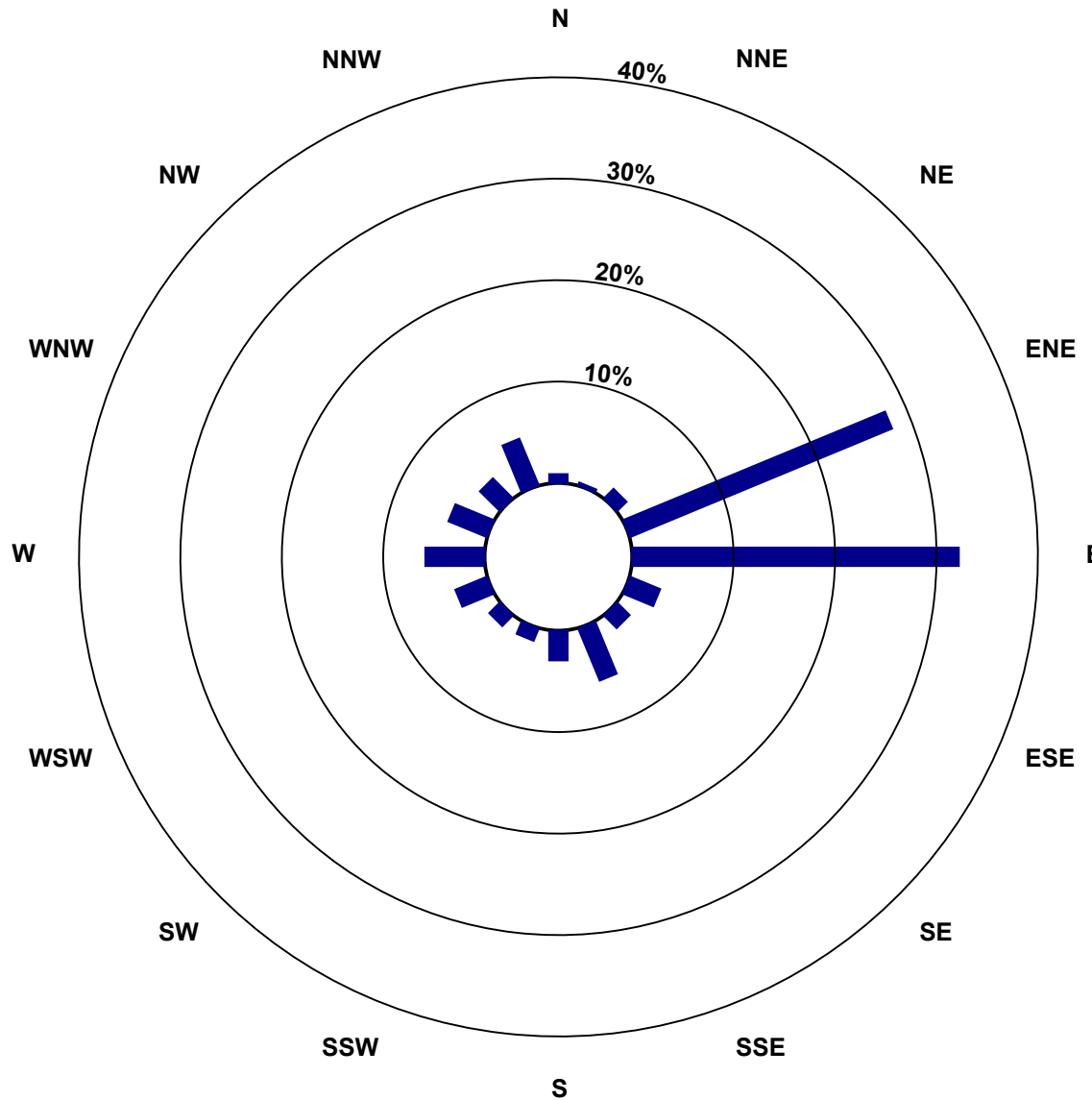
Total Number of Valid Hours: 683

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Carbon Monoxide (CO) - ppm
Fort Chipewyan



Total Number of Valid Hours: 683



Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Dioxide (CO₂) - ppm

Fort Chipewyan - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 437.6 ppm on Apr 25 08:00	Maximum Daily Average: 431.7 ppm on Apr 25		Hours of Data:	683
Minimum Value: 422.4 ppm on Apr 4 13:00	Minimum Daily Average: 423.2 ppm on Apr 20		Hours of Missing Data:	37
Maximum Diurnal Average: 428.8 ppm at hour 7	Minimum Diurnal Average: 427.1 ppm at hour 18		Hours of Calibration:	33
Monthly Average: 427.84 ppm	Percentiles: P ₁ = 422.8 P ₁₀ = 424.4 Q ₁ = 426.4 Median = 428.0 Q ₃ = 429.3 P ₉₀ = 431.0 P ₉₉ = 435.1		Percent Operational Time:	99.4

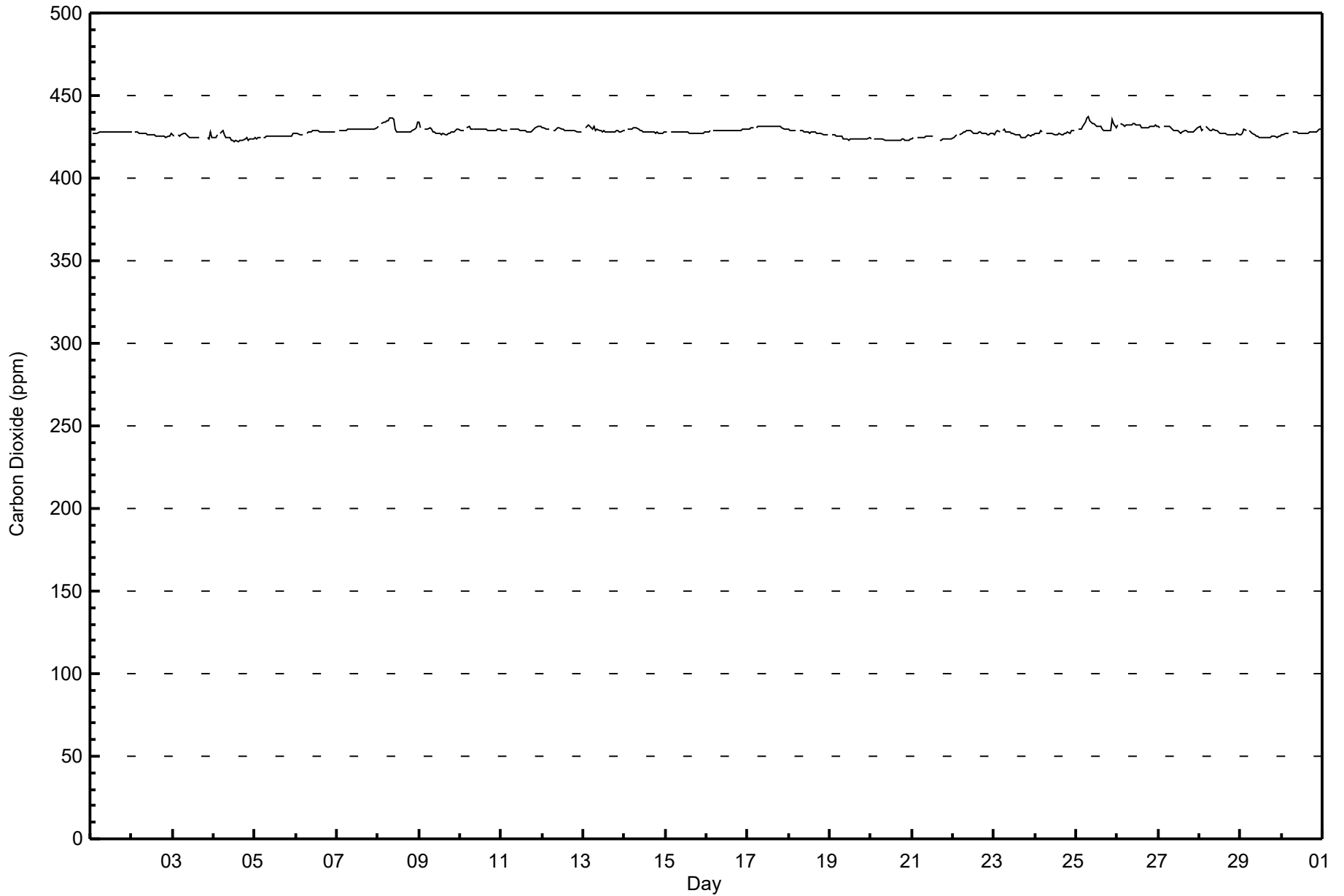
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1-Apr	Z	426.9	427.0	427.2	427.4	427.6	427.7	427.8	428.0	427.8	427.9	427.9	428.1	428.1	428.1	428.1	428.1	428.0	428.0	428.0	428.0	428.0	427.9	427.8	427.8	428.1	
2-Apr	427.8	Z	427.6	427.6	427.5	427.3	427.3	427.2	426.9	426.6	426.4	426.3	426.1	425.9	425.6	425.5	425.5	425.2	425.1	425.3	425.0	425.2	425.7	427.3	426.3	427.8	
3-Apr	426.0	425.8	Z	426.0	425.6	426.1	426.8	426.9	426.2	425.8	424.7	424.7	424.8	424.8	424.7	424.6	PF	RE	RE	RE	424.4	424.1	427.7	424.4	425.5	427.7	
4-Apr	424.7	424.4	425.9	Z	427.1	428.5	424.2	424.8	424.4	422.7	422.6	422.4	422.5	422.4	422.8	422.6	422.8	424.0	424.4	422.9	423.4	423.6	424.0	424.1	428.5	428.5	
5-Apr	424.3	424.1	424.2	424.4	Z	424.7	424.9	425.2	425.2	425.4	425.5	425.7	425.6	425.6	425.6	425.6	425.4	425.8	425.8	425.5	425.7	426.7	427.5	425.4	427.5	427.5	
6-Apr	427.3	426.7	426.5	426.5	426.6	Z	427.4	428.2	428.2	428.3	429.1	429.1	428.6	429.0	427.9	427.7	427.8	428.1	428.1	427.6	427.9	427.9	428.3	428.4	427.9	429.1	
7-Apr	Z	428.6	428.5	428.4	428.8	429.2	429.3	429.5	429.7	430.0	429.4	429.3	429.4	429.6	429.9	430.0	429.8	429.9	429.8	429.5	429.3	429.3	429.6	430.2	429.4	430.2	
8-Apr	431.3	Z	433.2	433.6	434.0	434.5	435.1	436.3	436.6	435.8	430.0	428.3	428.1	428.0	428.1	428.1	428.2	428.0	428.1	428.2	429.2	429.5	430.3	433.6	431.1	436.6	
9-Apr	433.8	430.2	Z	429.3	429.5	430.0	430.1	429.4	428.2	427.7	427.5	427.1	426.8	426.7	426.7	426.4	426.7	426.8	427.0	427.6	428.2	428.7	429.3	429.4	428.4	433.8	
10-Apr	428.5	428.7	429.2	Z	430.2	431.0	429.8	429.9	430.0	429.9	429.9	430.0	429.8	429.6	429.4	429.3	429.2	429.1	429.0	429.1	429.1	429.0	429.6	430.0	429.5	431.0	
11-Apr	428.9	428.9	429.0	429.2	Z	429.5	429.8	429.7	429.8	429.6	429.5	428.9	428.5	428.9	428.9	428.2	428.2	428.2	428.7	430.0	430.9	431.2	431.2	431.2	429.4	431.2	
12-Apr	430.6	430.4	430.0	430.0	430.0	Z	428.9	429.2	429.9	430.2	430.3	429.7	429.3	429.1	428.6	428.4	428.5	428.5	428.5	428.4	428.3	428.2	428.1	428.0	429.2	430.6	
13-Apr	Z	430.4	431.5	432.4	431.3	429.9	431.4	429.2	429.7	428.9	428.5	428.0	428.5	428.2	428.2	428.2	427.9	428.1	428.4	429.1	428.7	428.0	428.2	428.5	429.2	432.4	
14-Apr	429.0	Z	429.6	429.8	430.0	430.3	430.5	430.3	429.8	429.0	428.5	428.3	428.4	428.3	428.2	428.0	427.9	427.7	427.4	427.8	427.3	427.0	427.3	427.7	428.6	430.5	
15-Apr	428.0	427.9	Z	428.0	428.0	428.0	428.1	428.1	428.3	428.3	428.2	427.9	427.6	427.6	427.5	427.3	427.1	427.0	427.2	427.1	427.1	427.3	427.5	427.8	427.7	428.3	
16-Apr	428.1	428.4	428.4	Z	428.4	428.5	428.5	428.4	428.6	428.6	428.6	428.7	428.7	428.6	428.5	428.4	428.5	428.8	429.0	429.1	429.2	429.3	429.6	429.6	428.7	429.6	
17-Apr	429.7	429.9	430.3	430.5	Z	430.9	431.0	431.1	431.3	431.2	431.2	431.1	431.1	431.0	431.0	431.3	431.5	431.5	431.4	431.1	430.4	430.0	429.8	429.7	430.8	431.5	
18-Apr	429.3	428.9	428.9	429.0	429.0	Z	428.8	428.6	428.5	428.1	428.0	427.9	427.4	427.6	427.7	427.6	427.5	427.2	427.1	426.7	426.2	426.1	426.3	426.4	427.8	429.3	
19-Apr	Z	426.2	426.1	426.0	425.7	425.4	425.7	425.0	423.9	423.7	423.4	423.3	423.4	423.4	423.4	423.6	423.7	423.8	423.8	423.9	424.1	423.7	424.0	424.4	424.3	426.2	
20-Apr	424.0	Z	423.6	423.6	423.6	423.6	423.4	423.3	423.2	423.1	422.9	422.8	422.8	422.9	422.9	422.9	422.9	423.1	423.4	423.5	422.9	423.1	423.2	423.5	423.2	424.0	
21-Apr	424.0	424.2	Z	424.7	424.9	424.9	424.9	425.0	425.7	425.3	425.0	425.1	425.0	Z	C	C	C	423.2	423.2	423.3	423.4	423.4	423.5	424.0	424.1	424.3	425.7
22-Apr	424.7	425.7	425.9	Z	426.5	427.2	427.6	427.8	428.5	428.4	428.6	428.4	427.2	426.8	427.2	427.8	427.6	427.4	426.8	426.8	426.5	426.7	426.8	426.8	427.1	428.6	
23-Apr	426.6	428.1	428.6	428.2	Z	428.4	429.6	428.3	428.0	427.6	427.3	426.8	426.5	426.5	426.4	426.4	424.9	424.8	424.9	425.5	426.0	425.8	426.1	426.4	426.9	429.6	
24-Apr	426.8	427.1	427.4	428.6	427.9	Z	427.2	427.0	427.1	427.1	426.8	426.6	426.2	426.3	426.7	426.6	426.7	426.9	426.9	427.7	427.3	428.4	428.8	429.1	427.3	429.1	
25-Apr	Z	429.8	429.4	429.5	431.6	433.5	436.3	437.6	435.1	433.2	432.7	432.1	431.6	431.4	431.1	430.0	428.5	428.8	429.0	429.2	429.0	435.7	433.2	430.9	431.7	437.6	
26-Apr	432.0	Z	432.8	431.8	431.7	431.9	432.5	432.2	432.0	433.1	433.0	432.6	432.1	432.1	430.3	430.2	430.2	430.2	430.2	431.2	431.6	431.7	431.8	431.7	431.7	433.1	
27-Apr	431.1	430.7	Z	431.6	431.7	431.3	431.0	430.5	429.8	429.2	429.1	429.1	428.0	427.4	428.4	428.7	428.5	427.7	427.7	427.7	428.2	429.0	429.8	430.7	429.4	431.7	
28-Apr	431.0	429.1	429.4	Z	431.2	429.4	428.6	429.1	429.4	429.1	428.4	427.8	427.4	427.2	427.2	426.8	426.5	426.2	426.1	426.1	426.3	426.5	426.7	426.1	427.9	431.2	
29-Apr	426.6	427.2	429.4	429.1	Z	428.7	428.0	427.1	426.5	425.7	425.1	424.8	424.4	424.3	424.4	424.5	424.6	424.6	425.0	425.4	425.1	424.7	425.2	425.7	425.9	429.4	
30-Apr	426.2	426.6	427.1	427.4	427.5	Z	428.2	428.2	427.9	427.7	427.4	427.2	427.5	427.4	427.5	427.5	427.6	427.8	428.1	428.2	428.3	429.0	429.5	429.8	427.8	429.8	
428.0 427.8 428.4 428.5 428.6 428.8 428.8 428.7 428.6 428.3 427.9 427.6 427.4 427.4 427.3 427.3 427.1 427.1 427.2 427.3 427.2 427.5 427.9 428.0																								Diurnal Average			
433.8 430.7 433.2 433.6 434.0 434.5 436.3 437.6 436.6 435.8 433.0 432.6 432.1 432.1 431.1 431.3 431.5 431.5 431.4 431.2 431.6 435.7 433.2 433.6																								Diurnal Maximum			

Z - zerspan	C - Calibration	PF - Power Failure	RE - Recovery
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Wood Buffalo Environmental Association
Hourly Averages

Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	0	0.00	0.00
420 - 440	683	100.00	100.00
440 - 460	0	0.00	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Fort Chipewyan - April 2023**

Concentration 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	6	2	9	191	219	22	12	38	20	9	10	23	40	28	19	34	682
440 - 460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
Totals	6	2	9	191	219	22	12	38	20	9	10	23	40	28	19	34	682

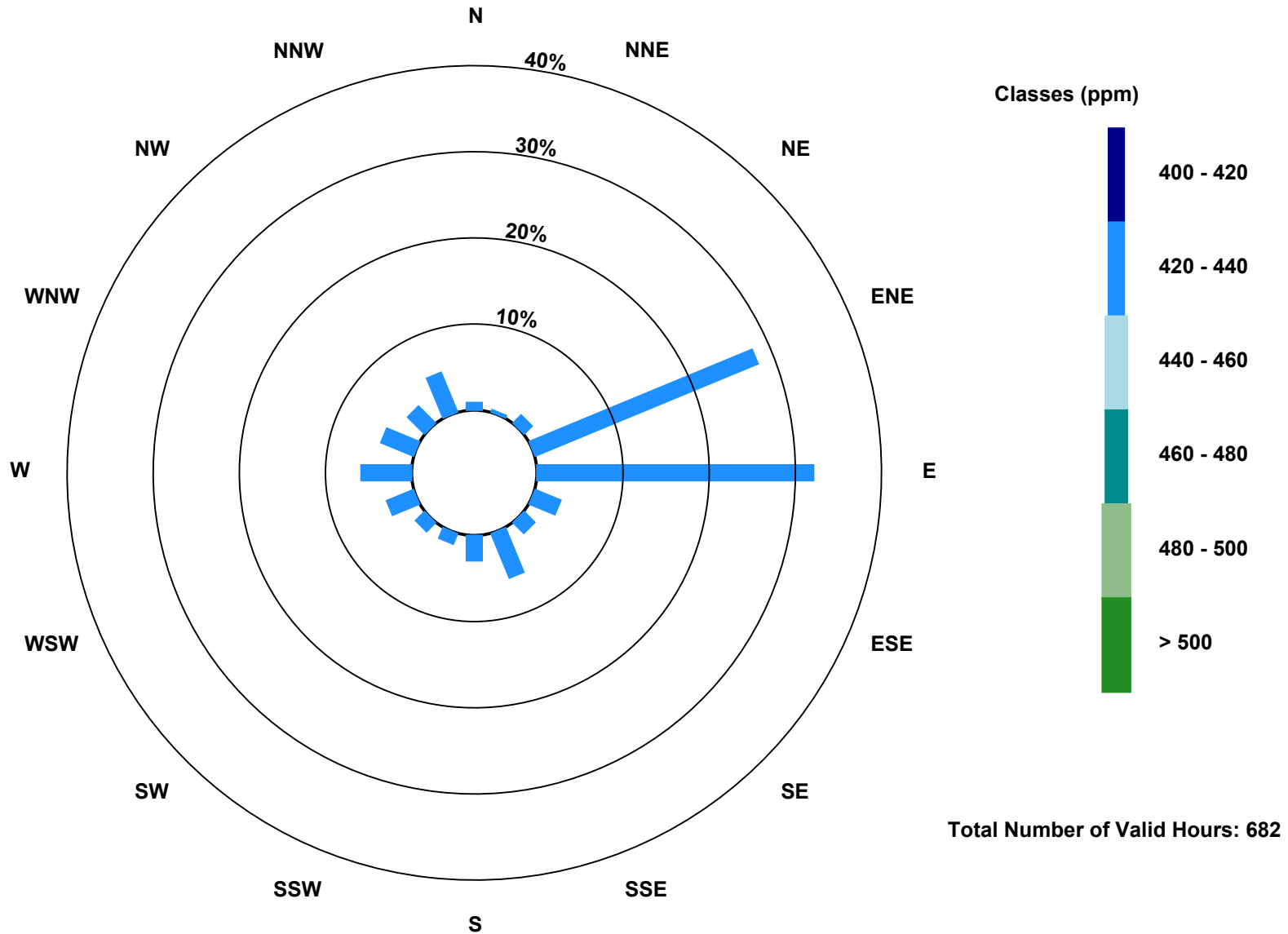
Total Number of Valid Hours: 682

Total Number of Hours: 720



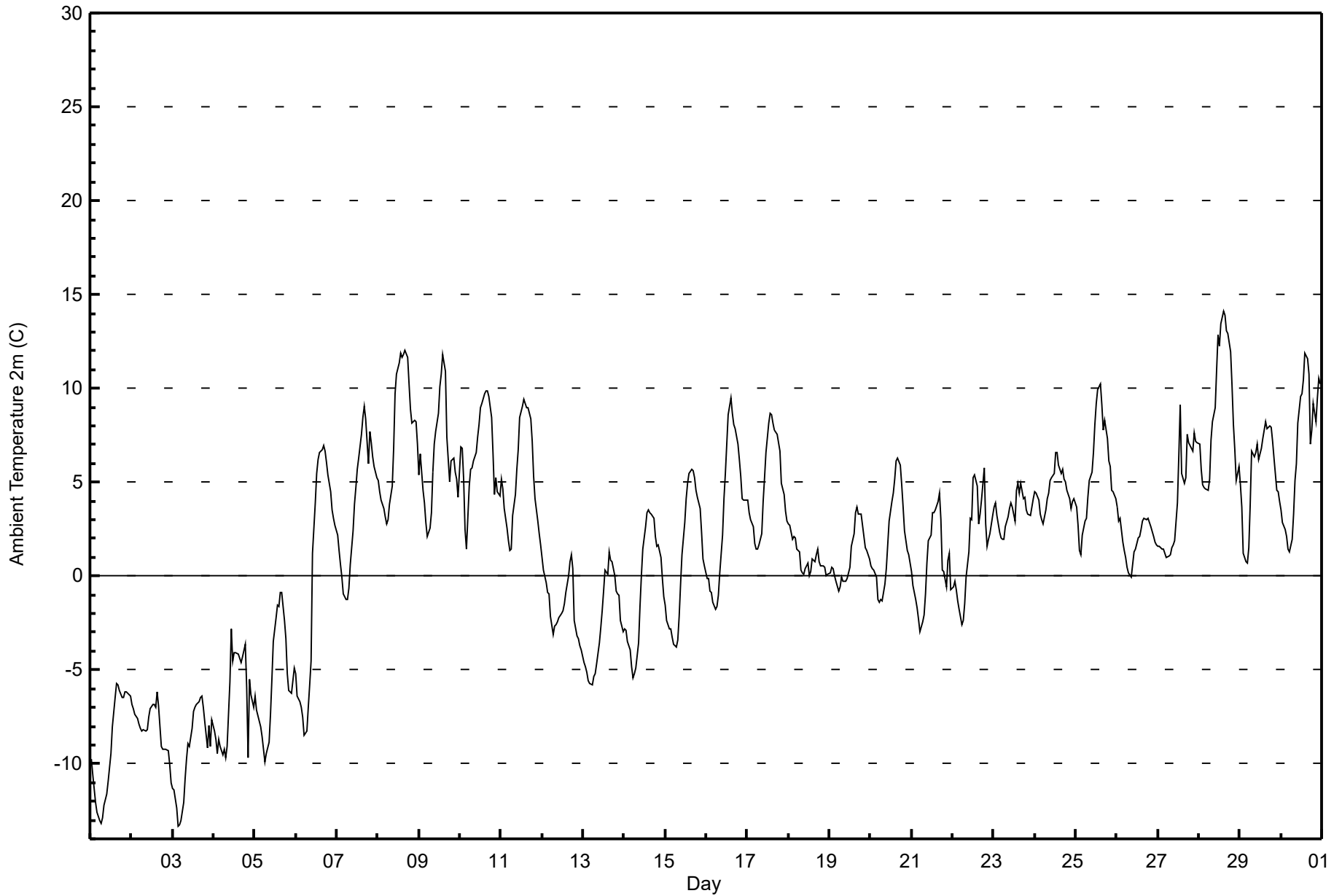
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Carbon Dioxide (CO₂) - ppm
Fort Chipewyan





Maximum Value: 14.1 C on Apr 28 15:00 Maximum Daily Average: 8.9 C on Apr 28																						Hours in Service: 720 Hours of Data: 720																										
Minimum Value: -13.3 C on Apr 3 04:00 Minimum Daily Average: -9.3 C on Apr 3 Maximum Diurnal Average: 4.6 C at hour 16 Minimum Diurnal Average: -1.9 C at hour 6 Monthly Average: 1.44 C Percentiles: P ₁ = -12.4 P ₁₀ = -7.0 Q ₁ = -1.6 Median = 2.2 Q ₃ = 5.3 P ₉₀ = 8.1 P ₉₉ = 12.0																						Hours of Missing Data: 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-Apr	-9.7	-10.5	-11.3	-12.0	-12.6	-13.1	-13.2	-12.9	-12.2	-11.6	-11.0	-10.2	-9.5	-8.1	-6.4	-5.7	-5.8	-6.1	-6.4	-6.4	-6.2	-6.2	-6.3	-6.4	-9.2	-5.7																						
2-Apr	-6.8	-7.1	-7.3	-7.6	-7.9	-8.1	-8.3	-8.2	-8.2	-8.2	-7.5	-7.0	-6.9	-6.9	-7.0	-6.2	-6.9	-9.0	-9.3	-9.3	-9.3	-9.3	-10.0	-11.0	-8.1	-6.2																						
3-Apr	-11.3	-11.4	-12.4	-13.3	-13.3	-13.0	-12.1	-10.8	-9.7	-8.9	-9.1	-8.1	-7.2	-7.0	-6.8	-6.7	-6.5	-6.4	-7.0	-7.8	-9.2	-8.0	-9.1	-7.6	-9.3	-6.4																						
4-Apr	-8.2	-8.7	-9.5	-8.7	-9.1	-9.5	-9.2	-9.7	-9.1	-5.6	-2.8	-4.5	-4.1	-4.1	-4.1	-4.4	-4.6	-4.3	-3.7	-5.9	-9.7	-5.5	-6.3	-7.0	-6.6	-2.8																						
5-Apr	-6.4	-7.1	-7.5	-8.0	-8.6	-9.3	-9.9	-9.5	-8.8	-7.4	-5.5	-3.5	-2.2	-1.5	-1.6	-0.9	-0.8	-2.3	-3.3	-5.2	-6.1	-6.2	-5.6	-4.9	-5.5	-0.8																						
6-Apr	-5.2	-6.4	-6.7	-7.0	-7.5	-8.5	-8.3	-7.0	-5.8	-4.6	1.2	3.9	5.4	6.2	6.6	6.7	7.0	6.7	6.0	5.4	4.5	3.5	3.1	2.7	0.1	7.0																						
7-Apr	2.2	1.4	0.7	0.0	-0.9	-1.2	-1.2	-0.6	0.6	2.4	3.8	4.7	5.7	6.3	7.6	8.4	9.0	8.4	6.0	7.7	7.1	6.4	5.9	5.2	4.0	9.0																						
8-Apr	5.1	4.5	4.0	3.6	3.2	2.8	3.0	3.8	4.8	6.8	9.8	10.8	11.4	11.8	11.6	11.8	12.0	11.6	10.3	8.9	8.1	8.3	8.2	7.1	7.6	12.0																						
9-Apr	5.4	6.5	4.6	3.9	2.9	2.1	2.5	3.4	5.6	7.0	7.7	8.7	10.1	10.8	11.8	10.9	7.4	6.2	5.0	6.1	6.3	5.6	5.1	4.2	6.2	11.8																						
10-Apr	6.9	6.8	5.2	2.4	1.4	4.8	5.7	5.8	6.1	6.6	7.4	8.1	9.0	9.2	9.7	9.8	9.8	9.6	8.5	6.5	4.4	5.3	4.5	4.3	6.6	9.8																						
11-Apr	5.2	4.6	3.6	2.5	1.9	1.3	1.4	3.2	4.3	5.7	6.7	8.5	9.0	9.4	9.2	8.9	8.9	8.4	7.2	5.3	4.1	2.9	2.3	1.6	5.3	9.4																						
12-Apr	1.0	0.3	-0.4	-0.9	-1.0	-2.2	-3.1	-2.7	-2.6	-2.4	-2.2	-2.0	-1.9	-1.5	-0.9	0.0	0.8	1.2	0.4	-2.4	-3.2	-3.4	-3.7	-4.0	-1.5	1.2																						
13-Apr	-4.6	-4.8	-5.1	-5.5	-5.7	-5.8	-5.4	-5.2	-4.7	-3.5	-2.7	-1.8	-0.8	0.3	0.1	1.3	0.9	0.8	0.0	-0.8	-1.0	-1.0	-2.4	-3.0	-2.5	1.3																						
14-Apr	-2.8	-2.9	-3.5	-3.9	-4.8	-5.5	-5.2	-4.9	-3.6	-1.6	0.0	1.5	2.6	3.4	3.5	3.4	3.3	3.1	2.1	1.6	1.7	1.0	-0.2	-1.1	-0.5	3.5																						
15-Apr	-1.5	-2.4	-2.8	-2.8	-3.2	-3.7	-3.8	-3.4	-2.2	-0.4	1.2	2.9	4.1	4.9	5.5	5.7	5.6	5.3	4.6	4.2	3.6	2.3	0.9	0.5	1.0	5.7																						
16-Apr	-0.1	-0.1	-0.8	-0.9	-1.4	-1.7	-1.6	-1.0	0.2	2.2	4.2	5.5	7.1	8.6	9.5	8.7	8.1	7.8	7.1	6.2	5.3	4.1	4.0	4.0	3.5	9.5																						
17-Apr	4.0	3.4	3.0	2.6	1.8	1.4	1.4	1.7	2.2	3.9	5.2	6.6	8.2	8.7	8.6	8.2	7.8	7.6	7.1	6.6	4.9	4.3	3.5	2.9	4.8	8.7																						
18-Apr	2.8	2.7	2.0	2.1	2.0	1.4	1.3	0.3	0.1	0.1	0.4	0.7	0.1	0.3	0.9	0.8	1.1	1.4	0.8	0.5	0.5	0.4	0.0	0.1	0.9	2.8																						
19-Apr	0.1	0.5	0.4	0.1	-0.3	-0.8	-0.6	0.0	-0.3	-0.3	-0.2	0.1	0.5	1.6	2.3	3.3	3.7	3.3	3.3	2.7	2.1	1.5	1.4	0.9	1.1	3.7																						
20-Apr	0.5	0.4	0.3	-0.1	-1.3	-1.4	-1.2	-1.3	-0.4	0.4	1.7	3.0	4.0	4.4	5.2	6.1	6.3	5.9	4.9	3.7	2.4	1.3	1.1	0.7	1.9	6.3																						
21-Apr	0.3	-0.5	-1.2	-1.7	-2.3	-3.0	-2.4	-2.1	-1.0	0.7	1.9	2.2	3.4	3.4	3.5	4.0	4.4	3.0	0.3	0.2	-0.6	0.8	1.2	-0.7	0.6	4.4																						
22-Apr	-0.6	-0.2	-0.7	-1.3	-1.7	-2.6	-2.4	-1.4	-0.1	1.3	3.1	3.0	5.2	5.4	4.8	2.8	3.3	4.0	5.8	2.8	1.6	1.9	2.2	3.2	1.6	5.8																						
23-Apr	3.7	3.9	3.2	2.3	2.1	2.0	1.9	2.6	3.2	3.6	3.9	3.7	2.9	4.6	5.0	4.4	4.9	4.1	4.2	3.6	3.3	3.2	3.7	4.2	3.5	5.0																						
24-Apr	4.5	4.4	4.0	3.3	3.0	2.8	3.5	4.2	4.4	5.1	5.2	5.5	6.6	6.6	5.9	5.5	5.7	5.2	5.0	4.6	4.1	3.6	4.0	4.1	4.6	6.6																						
25-Apr	3.7	2.7	1.4	1.1	2.2	2.9	3.1	4.2	5.1	5.5	6.6	8.0	9.2	10.0	10.2	9.1	7.8	8.3	7.3	6.1	5.8	4.6	4.5	4.1	5.6	10.2																						
26-Apr	3.7	2.9	3.1	1.8	1.3	1.0	0.5	0.1	0.0	0.6	1.3	1.5	2.0	2.1	2.5	2.9	3.1	3.0	3.1	2.9	2.6	2.1	1.8	1.7	2.0	3.7																						
27-Apr	1.6	1.6	1.5	1.4	1.2	1.0	1.1	1.1	1.5	1.7	1.9	3.9	6.5	9.1	5.4	4.9	5.3	7.6	7.1	7.0	6.6	7.6	7.2	7.1	4.2	9.1																						
28-Apr	7.0	5.7	4.9	4.7	4.7	4.6	5.2	7.2	8.2	8.9	11.0	12.9	12.3	13.4	14.1	13.9	13.0	12.9	11.9	10.1	8.1	6.7	5.1	5.8	8.9	14.1																						
29-Apr	4.9	3.7	1.2	0.7	0.7	1.5	3.9	6.6	6.4	6.6	7.0	6.2	6.8	7.3	7.8	8.2	7.9	8.0	7.9	7.2	6.3	4.6	4.5	3.9	5.4	8.2																						
30-Apr	3.5	2.9	2.5	2.1	1.4	1.3	2.0	3.3	5.1	6.0	8.1	9.5	9.7	10.4	11.9	11.6	10.8	7.0	7.7	9.2	8.2	9.5	10.5	10.3	6.9	11.9																						
																								0.3	-0.1	-0.8	-1.3	-1.7	-1.9	-1.7	-1.1	-0.4	0.7	1.9	2.8	3.6	4.3	4.5	4.6	4.4	4.1	3.5	2.7	1.9	1.7	1.4	1.1	Diurnal Average
																								7.0	6.8	5.2	4.7	4.7	4.8	5.7	7.2	8.2	8.9	11.0	12.9	12.3	13.4	14.1	13.9	13.0	12.9	11.9	10.1	8.2	9.5	10.5	10.3	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C
Fort Chipewyan - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	235	32.64	32.64
0 - 10	456	63.33	95.97
10 - 20	29	4.03	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



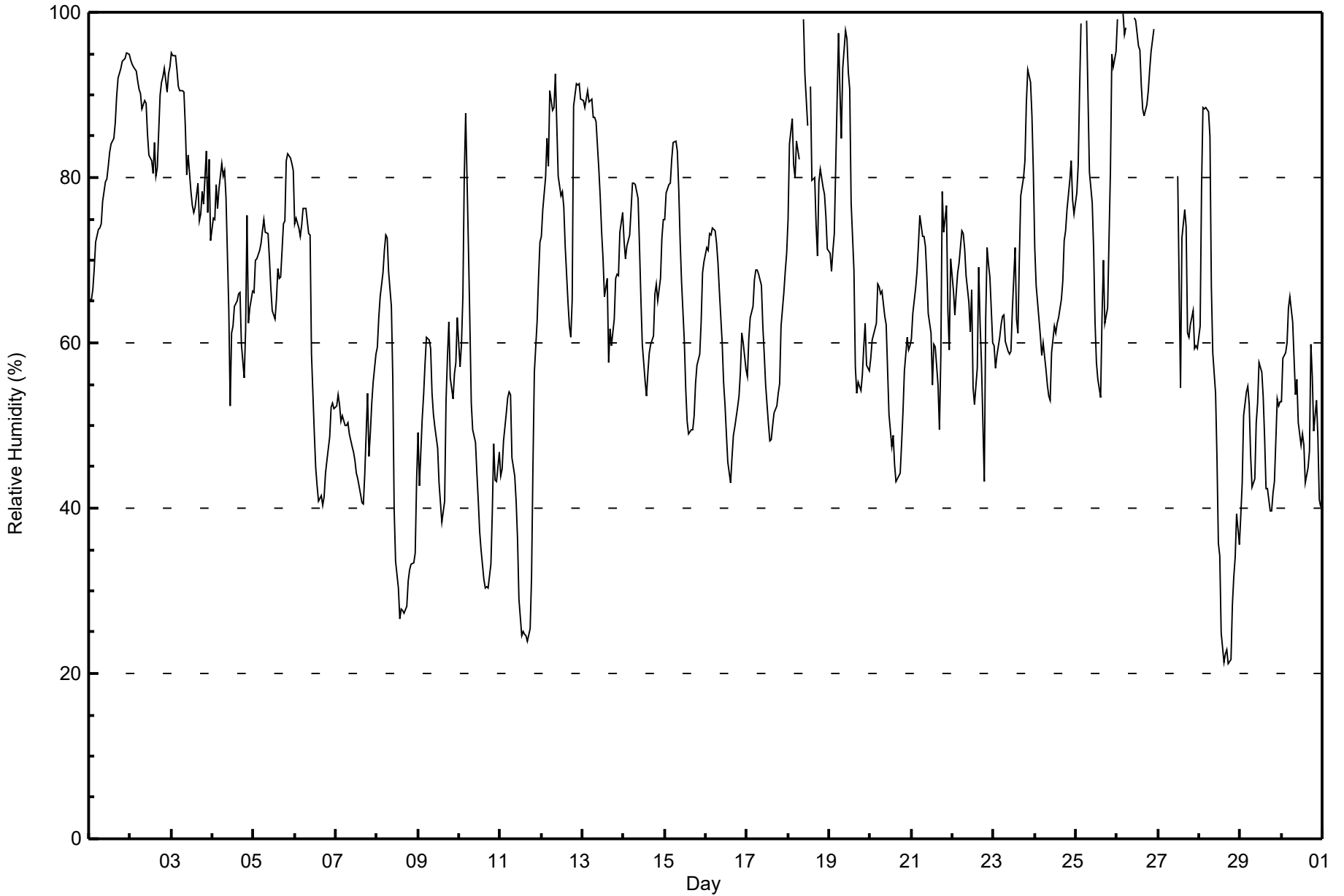
Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Fort Chipewyan - April 2023

Maximum Value: 99.8 % on Apr 26 04:00	Maximum Daily Average: 88.9 % on Apr 2	Hours in Service: 720
Minimum Value: 21.1 % on Apr 28 18:00	Minimum Daily Average: 42.9 % on Apr 11	Hours of Data: 696
Maximum Diurnal Average: 75.2 % at hour 6	Minimum Diurnal Average: 56.2 % at hour 15	Hours of Missing Data: 24
Monthly Average: 65.14 %	Percentiles: P ₁ = 24.6 P ₁₀ = 43.1 Q ₁ = 53.4 Median = 65.0 Q ₃ = 77.7 P ₉₀ = 89.4 P ₉₉ = 98.2	Hours of Calibration: 0
		Percent Operational Time: 96.7

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-Apr	65.2	65.2	66.5	68.9	72.2	73.8	73.9	74.3	77.1	79.5	79.9	81.3	83.1	84.1	84.8	86.6	89.9	92.1	93.3	94.1	94.3	94.4	95.1	94.9	81.9	95.1	
2-Apr	94.3	93.8	93.4	92.9	91.7	90.7	90.1	88.2	89.3	89.0	85.2	82.7	82.0	80.6	84.2	80.2	81.2	90.0	91.5	92.2	93.3	90.4	92.5	93.4	88.9	94.3	
3-Apr	95.0	94.8	94.7	93.0	91.0	90.6	90.6	90.4	86.0	80.4	82.7	78.4	76.5	75.7	76.4	79.2	74.8	75.5	78.3	76.9	83.2	75.7	82.2	72.3	83.1	95.0	
4-Apr	75.0	74.9	79.2	76.3	78.7	81.7	80.1	80.9	77.7	64.1	52.3	61.2	62.0	64.4	65.1	65.9	66.2	59.9	55.7	61.4	75.5	62.3	64.3	66.4	68.8	81.7	
5-Apr	66.1	70.0	70.1	71.1	72.1	73.6	74.9	73.4	73.3	70.2	66.6	63.9	62.9	65.2	69.0	67.9	67.9	74.5	74.8	82.1	82.9	82.3	81.8	80.9	72.4	82.9	
6-Apr	74.4	75.0	73.9	72.9	74.2	76.3	76.2	74.7	73.2	73.0	58.6	49.1	45.0	42.7	40.9	41.6	40.3	41.4	44.3	45.7	48.6	52.3	52.7	52.0	58.3	76.3	
7-Apr	52.3	53.8	52.5	50.6	51.2	50.0	50.1	50.3	48.9	47.5	46.8	45.8	44.2	43.6	41.8	40.7	40.5	44.1	53.9	46.3	49.2	52.7	55.3	58.6	48.8	58.6	
8-Apr	59.5	63.1	65.6	68.5	71.1	73.1	72.7	68.6	64.4	55.7	39.6	33.6	30.3	26.6	27.9	27.6	27.4	28.1	31.2	32.5	33.3	33.4	34.5	43.4	46.3	73.1	
9-Apr	49.1	42.7	50.8	53.8	57.5	60.7	60.4	59.2	54.0	51.3	49.8	47.4	43.1	40.7	38.3	40.8	53.1	58.2	62.6	55.8	53.2	56.3	57.7	63.1	52.5	63.1	
10-Apr	57.2	59.8	65.6	80.1	87.8	71.3	62.4	52.8	49.5	47.9	44.2	40.9	37.2	34.9	31.4	30.3	30.4	30.3	33.3	39.5	47.8	43.5	43.3	46.8	48.7	87.8	
11-Apr	44.0	44.8	48.2	51.6	53.5	54.1	53.7	46.1	43.9	40.9	36.3	29.0	24.6	25.1	24.7	24.5	24.0	25.5	31.7	45.1	56.4	62.8	68.0	72.2	42.9	72.2	
12-Apr	72.9	76.1	80.0	84.8	81.4	90.5	88.1	88.5	92.5	86.5	80.1	77.8	78.4	76.4	71.6	64.9	62.1	60.6	65.3	88.7	91.4	91.1	91.4	89.4	80.4	92.5	
13-Apr	89.4	88.5	89.4	90.6	89.2	89.5	87.2	87.4	86.8	81.0	77.5	73.4	70.1	65.7	67.9	57.5	61.7	59.7	62.9	67.8	68.2	68.1	73.4	75.7	76.2	90.6	
14-Apr	72.3	70.1	71.8	73.0	76.1	79.3	79.4	79.1	77.4	71.6	65.4	59.9	55.4	53.6	56.4	58.8	59.9	60.9	66.0	67.1	65.0	67.8	72.6	74.8	68.1	79.4	
15-Apr	74.9	78.2	79.2	79.3	82.1	84.3	84.3	83.2	78.6	72.4	67.5	60.1	54.3	50.6	49.0	49.5	49.5	51.2	55.0	57.3	58.6	62.6	68.5	69.8	66.7	84.3	
16-Apr	71.5	71.2	73.3	73.0	73.9	73.6	72.1	69.6	66.3	60.1	55.2	52.5	49.1	45.6	43.1	46.1	48.8	49.9	52.2	53.5	56.4	61.2	60.1	56.7	59.8	73.9	
17-Apr	56.0	60.6	63.1	64.4	67.6	68.9	68.8	68.3	66.9	62.0	58.6	54.9	50.1	48.2	48.2	50.1	51.5	52.3	53.8	55.1	62.1	66.2	68.6	70.8	59.9	70.8	
18-Apr	75.0	84.1	87.2	81.5	80.1	84.4	82.1	OR	OR	99.1	92.6	86.2	OR	91.1	79.6	80.1	74.2	70.5	79.5	81.1	78.7	77.9	75.2	71.4	81.5	99.1	
19-Apr	70.9	68.6	71.1	73.2	81.3	97.5	90.5	84.8	93.3	97.9	96.8	92.7	90.7	77.0	68.8	57.1	53.9	55.3	54.3	56.1	59.5	62.3	57.3	56.5	73.6	97.9	
20-Apr	58.2	60.3	61.1	62.3	67.2	66.7	66.0	66.3	63.3	62.1	56.7	51.4	47.4	48.8	45.2	43.1	43.5	44.2	47.8	51.7	56.7	60.7	59.2	59.6	56.2	67.2	
21-Apr	60.6	63.6	66.5	68.7	71.8	75.4	72.9	72.9	71.7	68.1	63.6	61.2	55.0	59.8	59.4	54.9	49.6	58.4	78.3	73.3	76.6	64.0	59.2	70.2	65.7	78.3	
22-Apr	66.2	63.5	66.0	68.5	69.7	73.5	73.2	71.4	68.2	64.9	61.4	66.4	54.5	52.5	56.9	69.2	62.3	57.4	43.3	62.8	71.6	69.5	67.9	60.0	64.2	73.5	
23-Apr	59.6	57.0	58.4	60.6	62.3	63.2	63.3	60.2	59.0	58.7	58.9	63.8	71.6	62.8	61.2	70.2	77.8	80.1	82.0	89.0	93.0	91.6	87.4	80.7	69.7	93.0	
24-Apr	71.5	66.9	62.8	60.9	58.5	60.1	56.7	55.0	53.5	53.1	58.8	61.2	62.3	63.1	65.2	67.4	72.3	73.5	76.2	79.6	82.1	77.3	75.5	65.6	82.1	93.0	
25-Apr	78.1	81.6	90.8	98.6	OR	OR	99.0	89.7	80.7	77.0	71.4	62.6	57.6	55.6	53.4	63.3	70.0	62.3	64.2	72.8	80.9	95.0	93.4	95.3	77.0	99.0	
26-Apr	99.2	OR	OR	99.8	97.3	98.2	OR	OR	OR	OR	99.3	99.0	95.9	95.4	91.3	88.3	87.4	88.8	90.5	93.1	95.2	98.0	OR	OR	--	99.8	
27-Apr	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	80.2	67.3	54.5	72.7	76.2	74.1	61.2	60.7	62.2	64.0	59.4	59.6	59.3	--	80.2
28-Apr	62.0	78.8	88.4	88.3	88.4	88.0	84.9	66.8	58.9	53.9	46.2	35.7	34.2	24.9	21.3	22.3	22.9	21.1	21.6	28.3	31.7	34.1	39.3	35.7	49.1	88.4	
29-Apr	39.1	43.1	51.2	54.0	54.7	52.6	46.4	42.5	43.5	50.4	52.7	57.7	56.4	53.4	48.4	42.4	42.4	39.6	39.7	41.8	43.2	53.3	52.4	52.9	48.1	57.7	
30-Apr	52.9	58.1	58.8	60.0	64.3	65.5	62.6	58.2	53.8	55.6	50.4	47.6	49.0	47.7	43.0	44.9	46.9	59.8	56.0	49.3	53.0	48.6	41.1	40.2	52.8	65.5	
	67.7	68.1	70.7	73.1	73.8	75.2	73.7	70.5	68.6	66.9	64.0	61.9	58.2	57.0	56.2	56.3	56.7	57.5	59.9	63.3	66.8	67.3	66.6	66.9		Diurnal Average	
	99.2	94.8	94.7	99.8	97.3	98.2	99.0	90.4	93.3	99.1	99.3	99.0	95.9	95.4	91.3	88.3	89.9	92.1	93.3	94.1	95.2	98.0	95.1	95.3		Diurnal Maximum	

OR - Out of Range





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Fort Chipewyan - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	47	6.75	6.75
40 - 60	223	32.04	38.79
60 - 80	278	39.94	78.74
80 - 100	148	21.26	100.00

Total Number of Valid Hours: 696

Total Number of Hours: 720

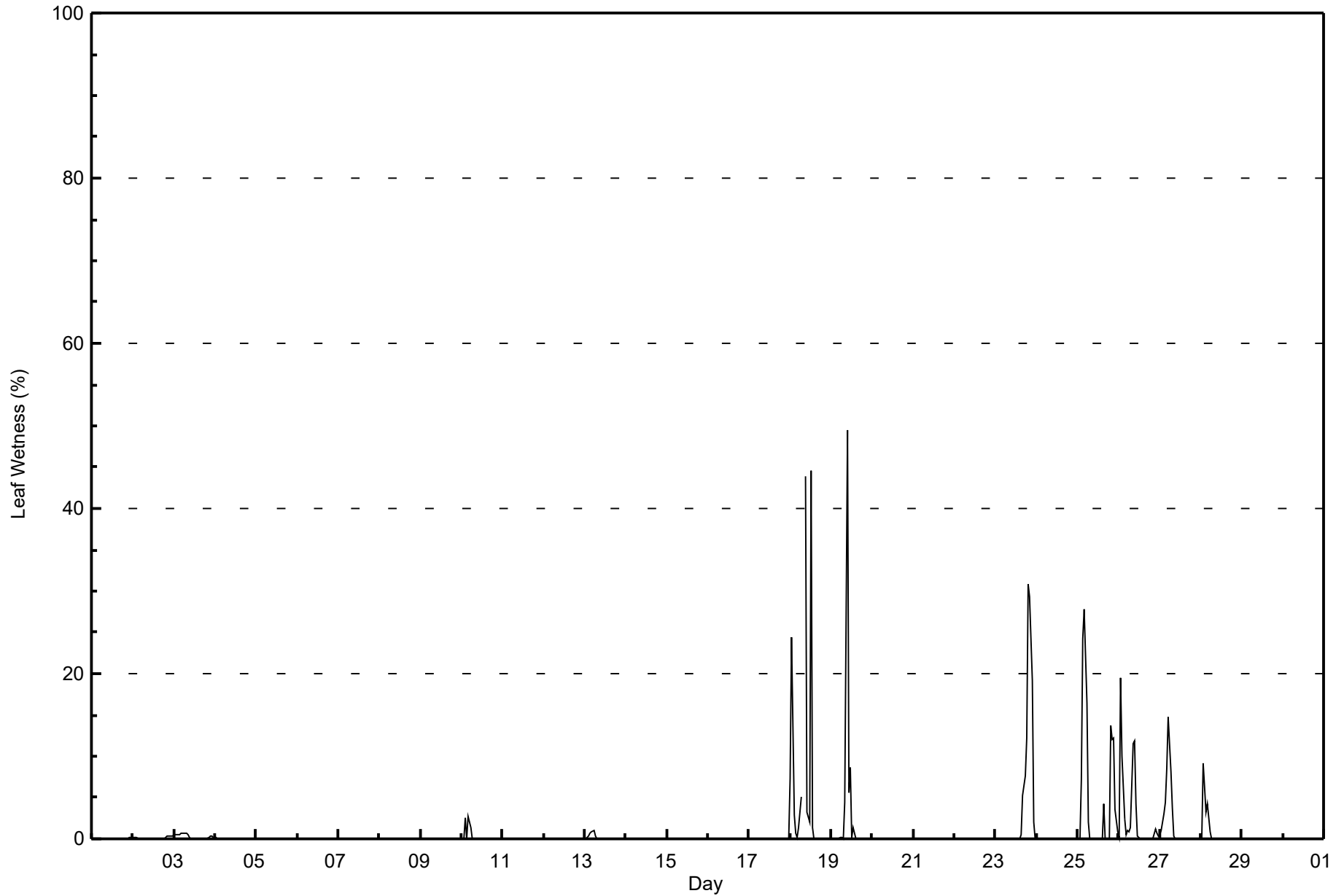


Maximum Value: 49.5 % on Apr 19 10:00		Maximum Daily Average: 6.2 % on Apr 18		Hours in Service: 720																						
Minimum Value: 0.0 % on Apr 1 01:00		Minimum Daily Average: 0.0 % on Apr 6		Hours of Data: 718																						
Maximum Diurnal Average: 3.5 % at hour 10		Minimum Diurnal Average: 0.0 % at hour 15		Hours of Missing Data: 2																						
Monthly Average: 0.82 %		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.5 P ₉₉ = 23.5		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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.1
2-Apr	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	0.1	0.3	0.3	0.4	0.4	0.1	0.4
3-Apr	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.3	0.7
4-Apr	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	0.0	0.0	0.0	0.2
5-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	2.5	0.0	2.7	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	0.3	2.7
11-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.1	0.3	0.6	0.9	1.1	0.4	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	0.1	1.1
14-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	7.4	24.3	2.9	0.6	0.2	1.3	5.1	OR	OR	43.9	3.3	2.1	44.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	44.5
19-Apr	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	4.4	49.5	5.7	8.6	0.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	49.5
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	5.3	7.6	12.2	30.9	29.2	19.1	2.0	0.0	0.0	4.5	30.9
24-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	7.1	24.3	27.8	16.4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	13.8	12.0	12.2	3.5	0.9	0.0	5.2	27.8
26-Apr	0.2	19.5	10.0	2.5	0.5	1.0	0.9	1.3	11.6	11.9	4.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.7	0.4	0.0	2.8	19.5
27-Apr	0.6	1.0	3.0	4.4	8.5	14.8	8.1	3.7	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	1.8	14.8
28-Apr	0.0	9.2	6.2	3.2	4.3	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	1.0	9.2
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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		
																								OR - Out of Range		



Wood Buffalo Environmental Association
Hourly Averages

Leaf Wetness (LW) - %
Fort Chipewyan - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Leaf Wetness (LW) - %
Fort Chipewyan - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	638	88.86	88.86
0.4 - 0.5	10	1.39	90.25
0.6 - 0.7	10	1.39	91.64
0.8 - 1.4	13	1.81	93.45
1.5 - 10	28	3.90	97.35
> 10	19	2.65	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



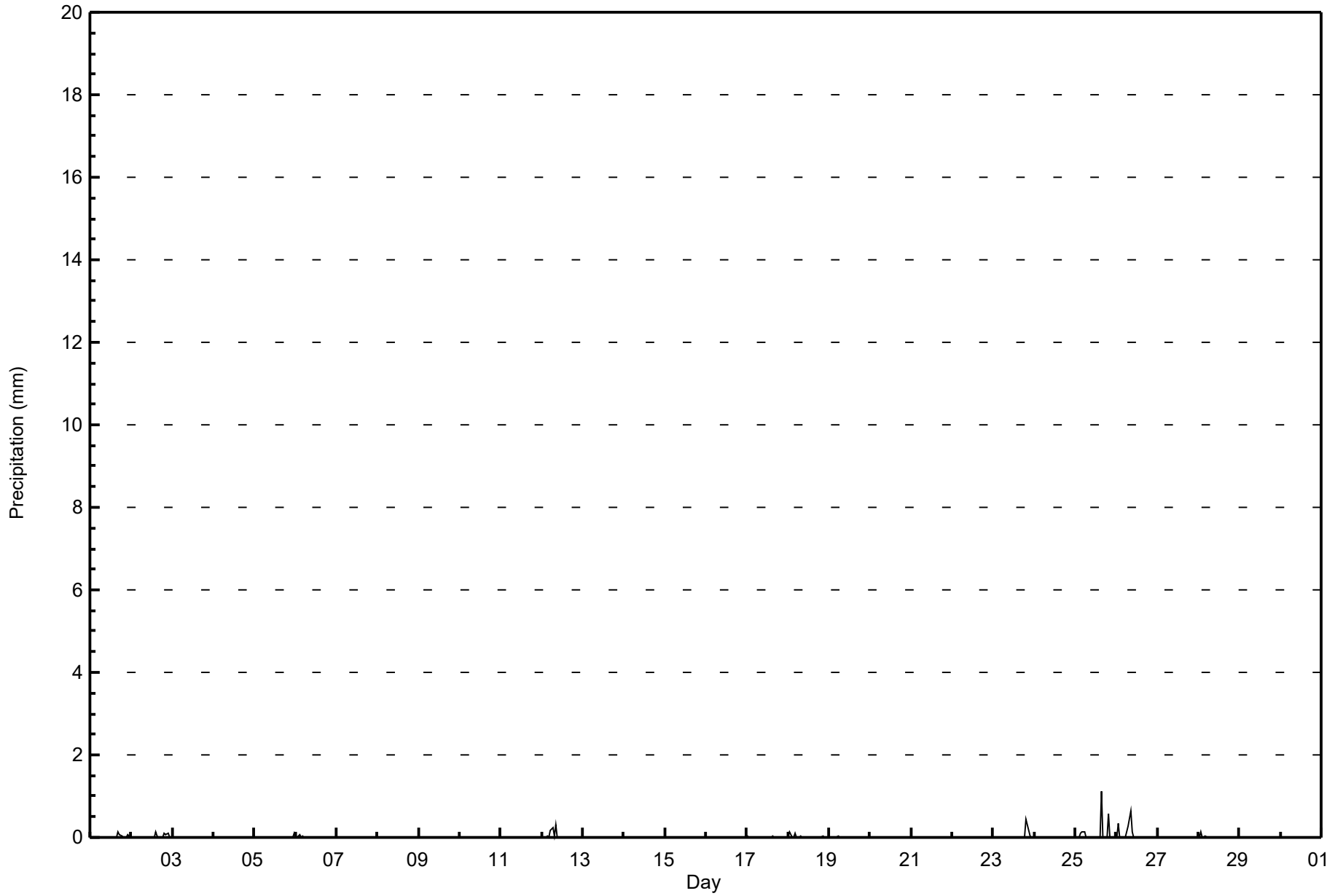
Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

Fort Chipewyan - April 2023

Maximum Value: 1.1 mm on Apr 25 16:00		Maximum Daily Total: 2.1 mm on Apr 25		Hours in Service: 720																						
Minimum Value: 0.0 mm on Apr 1 01:00		Minimum Daily Total: 0.0 mm on Apr 3		Hours of Data: 720																						
Maximum Diurnal Total: 1.2 mm at hour 16		Minimum Diurnal Total: 0.0 mm at hour 11		Hours of Missing Data: 0																						
Monthly Total: 6.83 mm		Percentiles: $P_1 = 0.0$ $P_{10} = 0.0$ $Q_1 = 0.0$ Median = 0.0 $Q_3 = 0.0$ $P_{90} = 0.0$ $P_{99} = 0.3$		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-Apr	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.1	0.0	0.3	0.1
2-Apr	0.0	0.0	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	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.5	0.1
3-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
6-Apr	0.0	0.0	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	0.1	0.1
7-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.0	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	0.8	0.3
13-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
18-Apr	0.1	0.2	0.0	0.0	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	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.2	0.2
19-Apr	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	0.1	0.1
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.0	0.0	0.8	0.4
24-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	2.1	1.1	1.1
26-Apr	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.3	0.7	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	1.5	0.7	0.7
27-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.2	0.4	0.4	0.4	0.3	1.0	0.1	0.0	0.0	0.0	0.1	1.2	0.1	0.1	0.1	1.1	0.4	0.2	0.1	0.1	Diurnal Average	
		0.1	0.3	0.1	0.1	0.2	0.2	0.2	0.3	0.7	0.1	0.0	0.0	0.0	0.1	1.1	0.1	0.1	0.1	0.6	0.3	0.1	0.1	0.1	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Precipitation (PC) - mm
Fort Chipewyan - April 2023

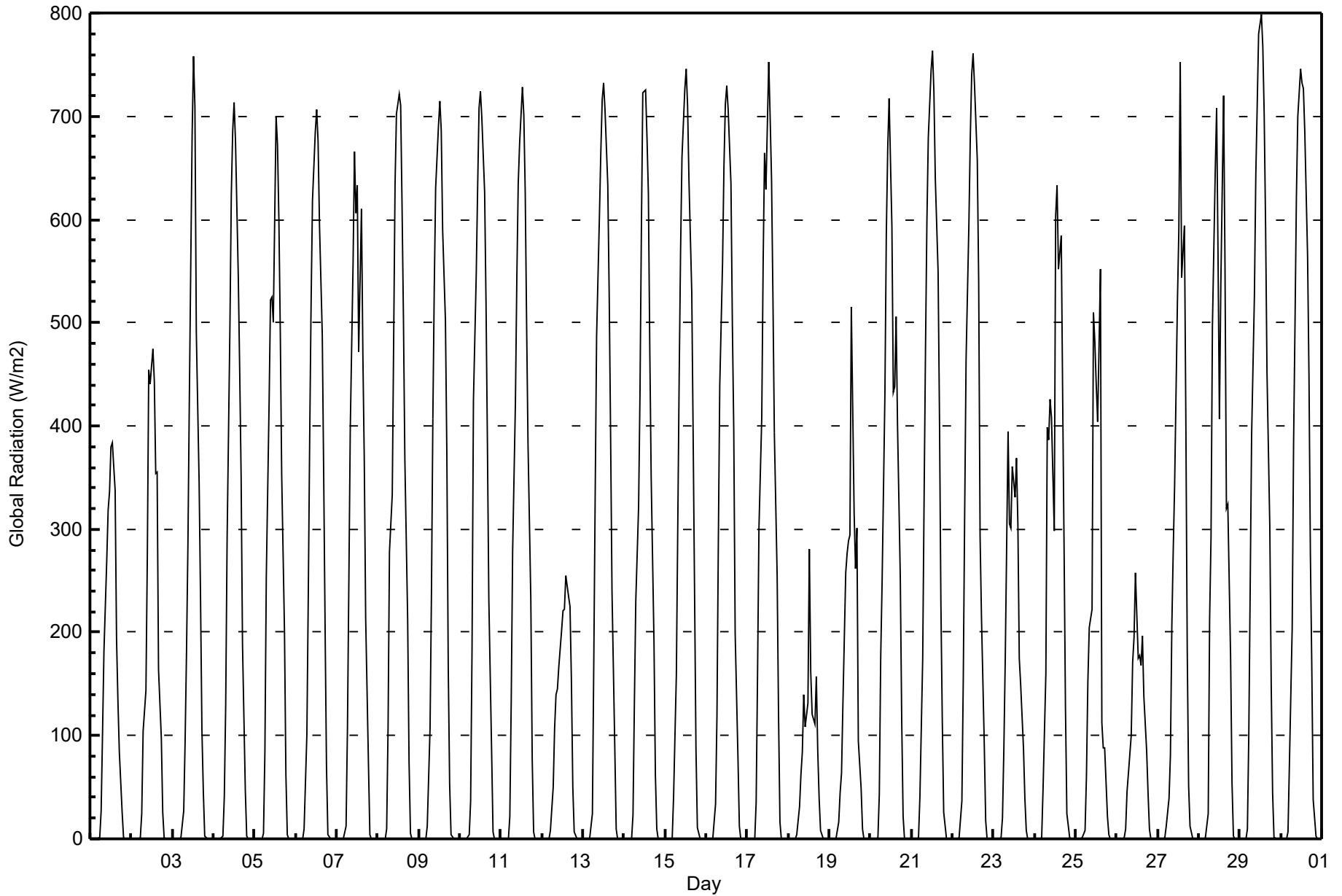
Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	716	99.44	99.44
0.4 - 0.5	1	0.14	99.58
0.6 - 0.7	2	0.28	99.86
0.8 - 1.4	1	0.14	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 798.4 W/m2 on Apr 29 13:00 Maximum Daily Average: 300.7 W/m2 on Apr 29																							Hours in Service:	720		
Minimum Value: 0.0 W/m2 on Apr 1 01:00 Minimum Daily Average: 63.4 W/m2 on Apr 18																							Hours of Data:	720		
Maximum Diurnal Average: 597.5 W/m2 at hour 13 Minimum Diurnal Average: 0.0 W/m2 at hour 3																							Hours of Missing Data:	0		
Monthly Average: 207.38 W/m2 Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 76.4 Q ₃ = 397.6 P ₉₀ = 634.5 P ₉₉ = 750.9																							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-Apr	0.0	0.0	0.0	0.0	0.0	1.1	27.7	102.5	182.0	270.3	318.6	336.8	379.1	383.6	337.4	194.4	132.2	84.7	25.6	0.7	0.0	0.0	0.0	0.0	115.7	383.6
2-Apr	0.0	0.0	0.0	0.0	0.0	1.4	24.1	104.6	144.2	274.1	454.9	440.6	475.2	442.8	353.8	354.9	164.1	98.2	26.2	1.0	0.0	0.0	0.0	0.0	140.0	475.2
3-Apr	0.0	0.0	0.0	0.0	0.0	1.5	26.5	94.4	182.3	285.3	424.6	680.5	757.4	709.8	491.3	345.5	234.5	105.7	45.7	2.5	0.0	0.0	0.0	0.0	182.8	757.4
4-Apr	0.0	0.0	0.0	0.0	0.0	2.9	40.2	129.9	290.1	494.6	624.1	686.6	713.7	674.8	544.1	453.3	352.7	188.3	47.4	2.6	0.0	0.0	0.0	0.0	218.5	713.7
5-Apr	0.0	0.0	0.0	0.0	0.0	5.8	84.2	252.9	421.1	522.3	524.3	499.8	700.0	672.7	599.2	491.0	352.2	201.3	62.7	3.5	0.0	0.0	0.0	0.0	224.7	700.0
6-Apr	0.0	0.0	0.0	0.0	0.0	9.0	101.2	236.3	387.9	517.6	618.6	684.8	706.6	675.7	595.0	488.0	353.6	206.2	70.3	3.7	0.0	0.0	0.0	0.0	235.6	706.6
7-Apr	0.0	0.0	0.0	0.0	0.0	11.5	108.3	250.5	397.3	558.0	665.9	605.9	632.9	472.2	609.7	469.8	367.6	213.7	72.1	4.4	0.0	0.0	0.0	0.0	226.7	665.9
8-Apr	0.0	0.0	0.0	0.0	0.0	9.0	107.4	278.6	333.4	482.1	634.3	702.9	720.7	710.2	612.5	502.5	368.0	213.1	75.0	5.9	0.0	0.0	0.0	0.0	239.8	720.7
9-Apr	0.0	0.0	0.0	0.0	0.0	12.7	107.3	237.3	406.6	532.6	630.3	690.1	715.0	686.2	589.4	501.8	372.6	166.3	52.5	4.3	0.0	0.0	0.0	0.0	237.7	715.0
10-Apr	0.0	0.0	0.0	0.0	0.0	4.3	36.9	184.7	424.0	547.0	631.2	708.2	723.4	698.1	626.1	517.7	380.7	231.4	84.0	6.3	0.0	0.0	0.0	0.0	241.8	723.4
11-Apr	0.0	0.0	0.0	0.0	0.0	21.3	132.8	277.5	423.4	542.7	635.1	674.4	728.2	701.1	625.9	497.9	382.4	231.9	77.9	6.2	0.0	0.0	0.0	0.0	248.3	728.2
12-Apr	0.0	0.0	0.0	0.0	0.0	7.8	50.1	107.8	139.8	145.2	166.4	201.8	220.5	222.9	255.5	235.2	224.7	153.2	50.2	7.1	0.0	0.0	0.0	0.0	91.2	255.5
13-Apr	0.0	0.0	0.0	0.0	0.1	24.6	173.4	334.7	486.6	602.5	664.8	716.2	732.8	705.8	632.8	527.5	392.4	240.0	87.6	9.5	0.0	0.0	0.0	0.0	263.8	732.8
14-Apr	0.0	0.0	0.0	0.0	0.2	23.3	131.9	230.7	320.8	431.2	589.2	722.4	725.2	679.1	625.5	474.9	349.2	191.7	62.9	9.0	0.0	0.0	0.0	0.0	232.0	725.2
15-Apr	0.0	0.0	0.0	0.0	0.3	41.3	159.7	304.0	446.8	569.3	660.7	725.6	745.7	711.0	637.6	528.9	387.3	238.7	86.3	10.7	0.0	0.0	0.0	0.0	260.6	745.7
16-Apr	0.0	0.0	0.0	0.0	0.3	34.5	119.2	290.7	439.5	558.2	651.6	711.7	729.5	707.1	634.4	498.5	395.5	198.9	79.3	12.5	0.1	0.0	0.0	0.0	252.6	729.5
17-Apr	0.0	0.0	0.0	0.0	0.5	35.0	159.7	301.5	408.7	558.9	664.4	629.5	752.6	698.7	638.1	523.1	393.5	254.8	119.0	15.7	0.1	0.0	0.0	0.0	256.4	752.6
18-Apr	0.0	0.0	0.0	0.0	0.0	4.5	30.6	62.0	83.7	139.6	107.8	131.1	280.0	161.2	120.3	111.6	156.9	85.6	38.8	8.3	0.0	0.0	0.0	0.0	63.4	280.0
19-Apr	0.0	0.0	0.0	0.0	0.3	16.7	45.2	63.1	131.5	257.1	276.3	289.5	294.5	515.5	315.9	261.1	300.9	94.7	49.3	8.9	0.1	0.0	0.0	0.0	121.7	515.5
20-Apr	0.0	0.0	0.0	0.0	1.0	43.4	175.7	249.7	430.9	586.0	668.0	717.3	593.0	432.6	438.2	505.7	401.7	251.8	115.5	21.3	0.4	0.0	0.0	0.0	234.7	717.3
21-Apr	0.0	0.0	0.0	0.0	1.4	40.9	175.4	330.6	474.4	598.6	679.2	744.1	763.2	724.5	640.3	549.0	406.8	227.3	113.6	26.1	0.4	0.0	0.0	0.0	270.7	763.2
22-Apr	0.0	0.0	0.0	0.0	1.6	36.6	155.7	317.2	465.1	594.8	679.8	740.8	760.9	730.5	657.9	539.8	292.5	214.3	91.5	17.7	0.3	0.0	0.0	0.0	262.4	760.9
23-Apr	0.0	0.0	0.0	0.0	1.1	20.3	88.6	176.2	395.2	304.8	301.5	360.3	331.1	368.4	305.0	174.8	149.7	88.4	39.8	8.3	0.2	0.0	0.0	0.0	129.7	395.2
24-Apr	0.0	0.0	0.0	0.0	1.5	48.2	160.5	398.6	385.8	425.6	407.6	298.9	603.8	633.6	552.3	583.9	428.3	282.8	127.3	24.0	0.8	0.0	0.0	0.0	223.5	633.6
25-Apr	0.0	0.0	0.0	0.0	0.9	7.5	61.4	151.2	204.7	222.0	509.6	482.0	438.8	404.4	552.4	112.3	88.5	88.3	22.1	3.7	0.2	0.0	0.0	0.0	139.6	552.4
26-Apr	0.0	0.0	0.0	0.0	0.7	9.8	46.7	63.5	100.1	170.6	195.1	257.6	175.0	177.0	168.0	197.1	138.4	85.0	45.3	9.3	0.5	0.0	0.0	0.0	76.6	257.6
27-Apr	0.0	0.0	0.0	0.0	0.8	12.3	38.8	81.8	206.6	280.0	343.3	520.6	588.6	752.1	543.2	594.1	409.8	183.8	51.3	11.9	0.6	0.0	0.0	0.0	192.5	752.1
28-Apr	0.0	0.0	0.0	0.0	1.1	25.0	213.5	291.2	495.7	645.2	708.3	566.7	407.1	535.3	719.3	551.5	320.0	324.3	174.3	54.6	2.7	0.1	0.1	0.2	251.5	719.3
29-Apr	0.2	0.2	0.1	0.1	9.8	101.7	244.8	389.9	526.1	643.0	710.4	780.1	798.4	767.2	700.8	593.2	451.1	302.0	150.5	44.9	2.0	0.0	0.0	0.0	300.7	798.4
30-Apr	0.0	0.0	0.0	0.0	7.1	72.1	205.1	384.0	497.6	621.0	699.2	745.2	732.8	726.9	684.6	563.8	447.0	275.2	166.8	38.1	2.2	0.0	0.0	0.0	286.2	745.2
																							Diurnal Average			
																							Diurnal Maximum			





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Global Radiation (GR) - W/m2
Fort Chipewyan - April 2023

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	311	43.19	43.19
21 - 100	69	9.58	52.78
101 - 300	114	15.83	68.61
301 - 600	135	18.75	87.36
601 - 900	91	12.64	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Speed: 46 km/h on Apr 17 17:00	Maximum Daily Speed Average: 37.1 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 3 09:00	Minimum Daily Speed Average: 1.5 km/h on Apr 9	Hours of Data: 719
Maximum Diurnal Speed Average: 13.1 km/h at hour 21	Minimum Diurnal Speed Average: 9.5 km/h at hour 6	Hours of Missing Data: 1
Monthly Average Velocity: 11.2 km/h 84.0 deg	Percentiles: P ₁ = 2 P ₁₀ = 6 Q ₁ = 12 Median = 18 Q ₃ = 25 P ₉₀ = 31 P ₉₉ = 39	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-Apr	ENE34	ENE34	ENE36	ENE35	ENE35	ENE36	ENE34	ENE34	ENE33	ENE33	ENE30	ENE30	ENE28	ENE28	ENE28	ENE31	ENE30	ENE30	ENE28	ENE29	ENE30	ENE30	ENE30	ENE31	ENE31.5	ENE36
2-Apr	ENE32	ENE32	ENE32	ENE32	ENE31	ENE29	ENE30	ENE29	ENE28	ENE27	ENE26	ENE21	ENE18	ENE17	ENE11	NNE9	NE9	E14	E11	E6	NE5	NNE5	NW4	NNW5	ENE18.4	ENE32
3-Apr	NNW4	NNW4	NNW4	N5	N5	N1	UO	NNW2	SE1	SE3	ESE6	ESE5	ESE10	E12	E13	E10	E10	E8	E6	E7	ENE2	NE4	ENE5	E3	E4.2	E13
4-Apr	SSW4	SW4	WNW3	N2	ENE2	E3	E2	ENE4	ENE5	SSE3	SSE6	ESE12	E11	E13	E14	E16	E16	E16	ENE11	ENE6	E8	ENE17	E23	E20	E8.1	E23
5-Apr	ENE15	E18	E17	ENE20	ENE24	E25	ENE25	ENE23	E24	ENE21	E22	ENE22	E23	E19	E21	E19	E17	E17	E12	E10	E10	E12	E12	SE14	E18.2	ENE25
6-Apr	SE16	ESE14	ESE13	E12	E17	E16	E16	ESE18	E20	E20	SSE23	SSE29	SSE25	SSE34	SSE38	S34	SSE33	SSE32	S29	SSE28	SSE27	SSE30	S32	S31	SSE21.6	SSE38
7-Apr	S29	S30	S39	S39	S35	S32	S27	SSE29	SSE27	SSE24	S33	SSE27	SSE28	SSE31	SSE28	SSE28	SSE23	SSE20	SE17	SSE26	SSE25	SSE20	SSE21	S24	SSE27.2	S39
8-Apr	S25	S18	S16	S18	S20	SSW18	SSW14	SSW12	SSW14	SW11	WSW15	WSW16	WSW16	W17	W17	WNW17	W11	SW8	SSW6	S4	SSE4	S4	E3	E3	SW9.9	S25
9-Apr	SW7	WSW10	WSW12	W10	W8	W9	W14	WNW15	W17	W15	W19	W16	W14	W14	W8	SSW3	E10	E15	E16	E21	E24	E26	E20	E19	W1.5	E26
10-Apr	SE14	ENE15	E14	E17	ESE9	W19	W27	WSW26	WSW30	WSW30	WSW25	W22	WSW21	W23	W23	W25	W22	W20	W16	WSW9	SW10	WSW12	SW5	SW14	WSW13.1	WSW30
11-Apr	WSW15	WSW14	W14	WSW12	W15	W14	WSW11	W16	W16	W17	W18	W16	WSW21	WSW21	W23	W24	W21	W18	WNW12	NNW8	NNW12	NNW11	NNW9	NNW6	W13.8	W24
12-Apr	NNW9	NNW7	NW10	WNW9	WNW12	NW14	NW12	WNW14	WNW14	WNW17	NW17	WNW16	NW15	WNW14	WNW15	NW11	NNW9	N6	NE9	E16	ENE13	E11	E10	E10	NW7.3	WNW17
13-Apr	E10	ENE6	ENE5	ENE7	ENE9	NE8	ENE9	E12	E14	E12	E13	E14	E14	E16	E19	E20	E20	ENE20	ENE17	ENE15	ENE18	E23	E23	E19	ENE14.0	E23
14-Apr	ENE20	E18	ENE17	ENE22	E22	ENE18	E21	E23	E24	E23	ENE25	ENE28	ENE27	ENE27	ENE28	ENE27	ENE27	NE26	NE25	ENE20	ENE25	E26	E24	ENE23	ENE23.2	ENE28
15-Apr	E24	E24	E22	E25	E26	E25	E24	E25	E22	E27	E25	ENE28	ENE27	ENE27	ENE28	ENE27	ENE27	ENE26	ENE24	ENE31	E34	E35	E31	E29	ENE26.2	E35
16-Apr	E27	E25	E27	E22	E28	E29	E29	E29	ENE28	ENE29	ENE29	ENE31	ENE28	ENE29	ENE30	ENE33	ENE32	ENE32	ENE34	ENE33	E31	E28	ENE28	ENE32	ENE29.2	ENE34
17-Apr	ENE38	ENE38	E38	ENE39	ENE38	ENE39	ENE39	ENE39	ENE36	ENE33	ENE34	ENE37	ENE38	ENE40	ENE43	ENE45	E46	ENE44	ENE40	ENE37	E32	E23	E29	E29	ENE37.1	E46
18-Apr	E28	ESE34	E32	E29	E30	E28	E29	E35	E35	E36	E30	ENE27	E29	ENE26	ENE27	ENE29	ENE28	ENE27	E24	E21	E26	ENE22	ENE30	ENE31	E28.3	E36
19-Apr	ENE31	ENE31	ENE26	ENE23	ENE23	ENE20	ENE20	ENE22	E27	E29	E29	E28	ENE33	ENE32	E26	ENE22	ENE23	ENE21	ENE19	NE14	NE16	ENE18	ENE20	ENE19	ENE23.5	ENE33
20-Apr	ENE19	ENE20	ENE17	E18	ENE19	ENE20	ENE22	ENE24	ENE23	E23	E25	E24	ENE24	ENE23	ENE23	ENE20	ENE20	ENE16	ENE18	ENE19	E20	E18	E20	E20	ENE20.6	E25
21-Apr	E18	E17	E17	E16	E14	E16	E15	E16	E14	E14	E16	E19	E19	E19	E21	E22	E22	E20	E18	E16	E13	E13	E15	E13	E16.7	E22
22-Apr	E11	ESE12	ESE9	E9	E10	ESE9	E7	E8	E8	E8	E11	E14	E17	E18	E21	E18	E19	E20	ENE20	E9	E8	E10	E10	E10	E12.1	E21
23-Apr	ESE10	E10	ENE15	E16	E17	E12	ENE13	E16	ENE20	E22	E20	E14	E13	E9	E16	SSE9	SSE15	SE10	ESE5	ENE11	ENE13	ENE17	ENE15	NE15	E12.6	E22
24-Apr	ENE19	ENE17	ENE17	ENE16	ENE15	ENE16	ENE20	ENE19	ENE18	E19	ENE20	E19	E21	ENE27	E25	ENE24	E28	ENE22	ENE17	E23	ENE17	ENE16	ENE16	ENE16	ENE19.3	E28
25-Apr	ENE11	E9	E14	ESE9	ESE10	SSE19	SE14	SSE18	SSE17	SSE21	SE24	SSE24	SSE24	SSE22	SE22	SSW15	S2	WSW12	WSW8	SW7	NNW3	ENE2	ENE5	WSW6	SSE9.9	SE24
26-Apr	W11	WNW9	NW11	NW16	NW15	WNW14	WNW14	WNW14	WNW13	WNW14	WNW13	NW13	NW10	NNW8	NNW7	NNW8	NNW7	NNW6	N5	NNW4	NNW5	NNW5	NNW7	NNW8	NW9.1	NW16
27-Apr	N7	NNW5	NNW6	WNW6	WNW8	WNW8	WNW8	W9	WSW10	W12	WSW11	SSW9	SW9	SW11	ESE9	E13	E14	E4	E8	E6	SE5	S11	SSE6	S5	SW1.8	E14
28-Apr	W12	WSW8	ESE3	ENE5	NW7	WNW9	W12	WNW16	WNW16	W17	WNW16	WNW14	NW17	NW22	NW23	NW23	NW17	NNW19	NNW16	NNW12	NNW8	WNW5	NW7	NNW7	NW11.3	NW23
29-Apr	NNW8	NNW7	NW6	NNW6	NW8	NW5	NNW4	E2	ESE6	ESE10	E13	E17	E18	E19	E21	E23	E23	E24	ENE20	ENE19	E26	E26	E25	E21	ENE12.1	E26
30-Apr	E22	E20	E21	E23	E24	E24	E28	E27	E25	E24	E26	E24	E23	E22	E23	E23	E21	E19	E18	E19	E20	ESE20	SE23	SE19	E21.7	E28

E10.8	E11.0	E11.3	E11.4	E10.9	E9.5	E9.9	E9.9	E9.9	E9.9	E9.8	E9.8	E10.6	E10.7	E10.5	E11.8	E10.9	E12.3	E12.4	ENE12.2	E12.0	E13.1	E12.6	E13.1	E11.8	Diurnal Average
ENE38	ENE38	S39	ENE39	ENE38	ENE39	ENE39	ENE39	ENE39	ENE36	E36	ENE34	ENE37	ENE38	ENE40	ENE43	ENE45	E46	ENE44	ENE40	ENE37	E34	E35	S32	ENE32	Diurnal Maximum

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



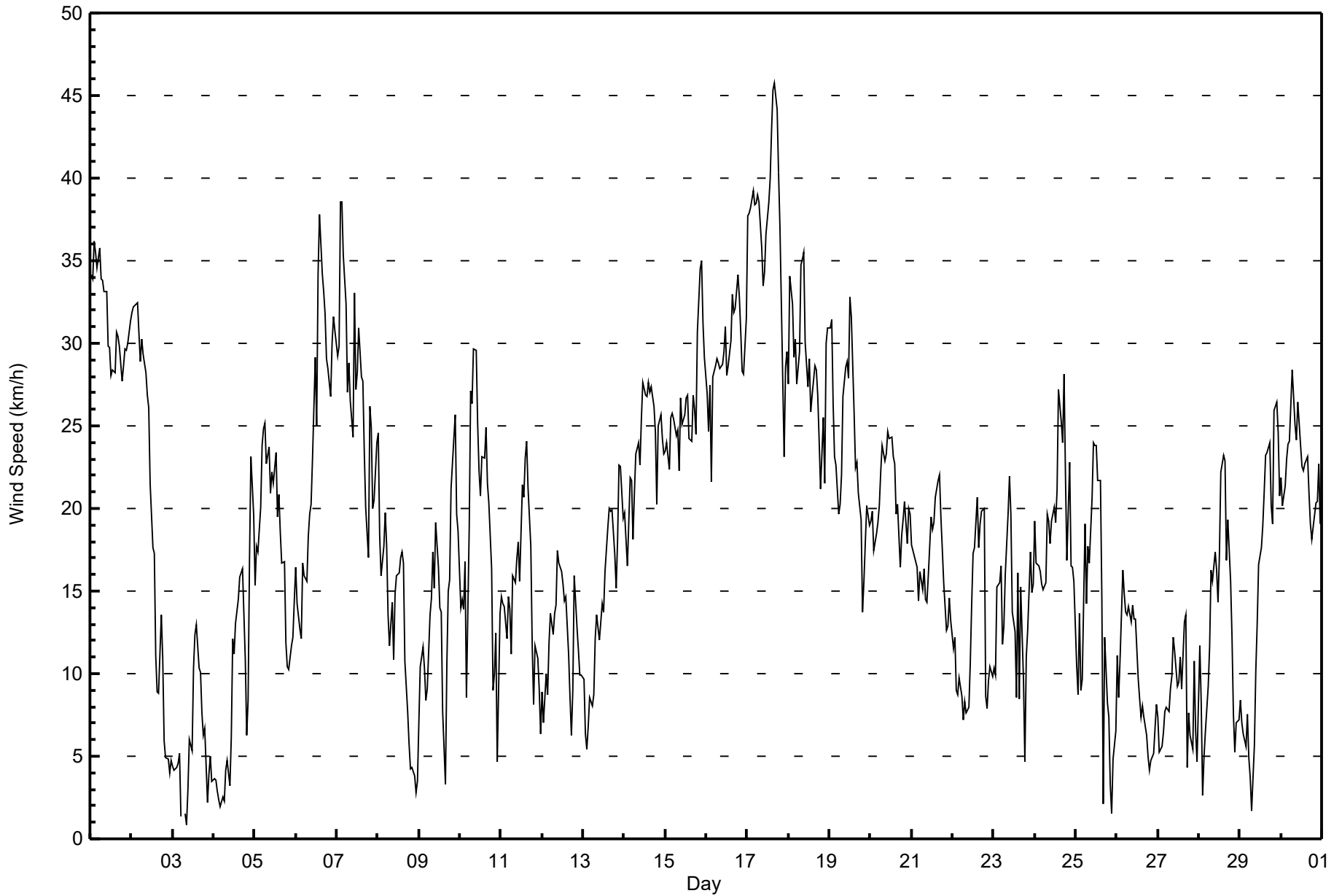
Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Fort Chipewyan - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 10 km/h on Apr 10 06:00	Hours of Data: 719
Minimum Value: 0 km/h on Apr 13 06:00	Hours of Missing Data: 1
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 4 P ₉₉ = 7	Hours of Calibration: 0
	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-Apr	4	4	4	5	4	5	5	5	4	5	4	4	3	4	3	4	4	4	4	3	3	3	3	3	5
2-Apr	3	3	3	3	3	3	3	3	3	3	3	4	3	2	4	3	2	1	3	1	2	1	1	1	4
3-Apr	1	1	1	2	2	1	UO	1	1	1	1	1	3	1	1	1	1	2	1	1	2	1	1	3	
4-Apr	3	2	2	1	2	1	1	1	1	2	1	2	1	1	1	1	1	1	2	2	2	4	2	3	4
5-Apr	3	3	3	2	3	3	3	3	3	3	2	2	2	1	1	1	1	2	3	2	1	2	2	3	
6-Apr	2	1	2	2	2	1	1	1	1	2	5	4	4	5	5	4	4	4	3	3	4	3	4	3	5
7-Apr	4	5	4	4	4	5	4	4	4	4	4	4	4	4	4	4	3	5	3	4	4	4	3	3	5
8-Apr	3	4	2	3	3	3	2	2	2	2	3	4	4	4	4	3	3	2	1	1	1	1	1	1	4
9-Apr	4	2	3	2	2	2	3	3	4	4	5	5	3	4	2	2	2	4	3	2	4	3	2	4	5
10-Apr	4	2	6	4	3	10	7	6	7	8	6	6	6	6	6	6	5	5	4	3	3	3	2	6	10
11-Apr	3	3	3	2	3	2	2	4	4	4	4	5	5	5	6	5	5	4	4	2	4	3	4	2	6
12-Apr	3	3	3	2	4	4	4	4	4	4	5	4	5	4	4	4	4	3	3	2	2	2	2	1	5
13-Apr	2	1	1	1	1	0	2	1	1	1	1	1	1	2	2	1	1	2	3	3	2	2	2	3	3
14-Apr	2	2	2	3	2	2	2	2	2	2	3	3	4	4	4	3	4	4	4	3	4	3	3	2	4
15-Apr	2	2	2	3	3	3	2	2	2	2	2	2	3	3	4	3	4	4	4	3	3	4	3	3	4
16-Apr	3	3	3	3	3	3	3	3	3	3	4	3	4	4	3	3	3	3	4	3	4	3	3	4	4
17-Apr	4	4	4	4	4	4	4	4	5	4	5	5	6	6	6	5	5	5	5	4	5	2	3	2	6
18-Apr	6	4	3	3	5	4	5	3	5	4	4	4	3	4	4	4	4	4	2	2	6	4	4	5	6
19-Apr	4	4	4	3	4	3	4	3	2	2	3	5	3	4	4	3	3	3	3	3	3	2	2	2	5
20-Apr	2	2	2	2	3	3	2	2	3	2	3	2	3	3	3	3	3	3	3	2	3	2	1	1	3
21-Apr	1	2	1	2	2	2	1	2	1	1	2	1	1	2	2	2	2	2	1	2	1	2	2	2	2
22-Apr	2	2	2	1	1	1	1	1	1	1	2	1	2	3	2	3	4	3	3	4	2	3	3	4	4
23-Apr	4	3	4	2	2	2	2	2	2	2	3	2	2	3	4	5	6	4	1	4	2	2	2	2	6
24-Apr	2	2	2	2	2	2	3	2	3	3	3	3	2	2	3	5	4	3	3	2	4	2	3	3	5
25-Apr	2	2	2	2	4	3	2	3	3	3	3	4	4	3	4	9	2	5	3	2	1	2	1	3	9
26-Apr	3	2	5	4	4	4	3	3	3	4	4	4	3	3	2	3	3	2	2	1	2	2	2	2	5
27-Apr	2	1	1	1	2	2	2	2	3	3	3	2	2	3	2	3	3	2	1	1	1	2	2	1	3
28-Apr	4	4	2	2	4	3	4	4	4	4	4	5	6	7	10	8	7	7	6	4	3	1	1	1	10
29-Apr	1	2	1	1	1	2	1	2	2	2	3	2	2	2	2	2	2	2	3	2	6	2	2	2	6
30-Apr	2	2	2	2	2	3	2	2	3	2	2	2	3	2	3	2	3	2	2	2	2	3	3	2	3
	6	5	6	5	5	10	7	6	7	8	6	6	6	7	10	9	7	7	6	4	6	4	4	6	
	Diurnal Maximum																								

UO - Unstable Operation





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Fort Chipewyan - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	55	7.65	7.65
6 - 11	124	17.25	24.90
12 - 19	215	29.90	54.80
20 - 28	214	29.76	84.56
29 - 38	99	13.77	98.33
> 38	12	1.67	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Fort Chipewyan - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5	1	2	10	6	3	3	2	4	2	2	0	0	2	2	11	55
6 - 11	2	1	3	9	34	11	1	3	1	2	7	8	7	7	8	20	124
12 - 19	0	0	3	40	82	6	5	4	3	5	1	9	24	20	8	5	215
20 - 28	0	0	1	75	92	1	3	20	4	0	0	5	10	0	3	0	214
29 - 38	0	0	0	57	22	1	0	9	8	0	0	2	0	0	0	0	99
> 38	0	0	0	9	1	0	0	0	2	0	0	0	0	0	0	0	12
Totals	7	2	9	200	237	22	12	38	22	9	10	24	41	29	21	36	719

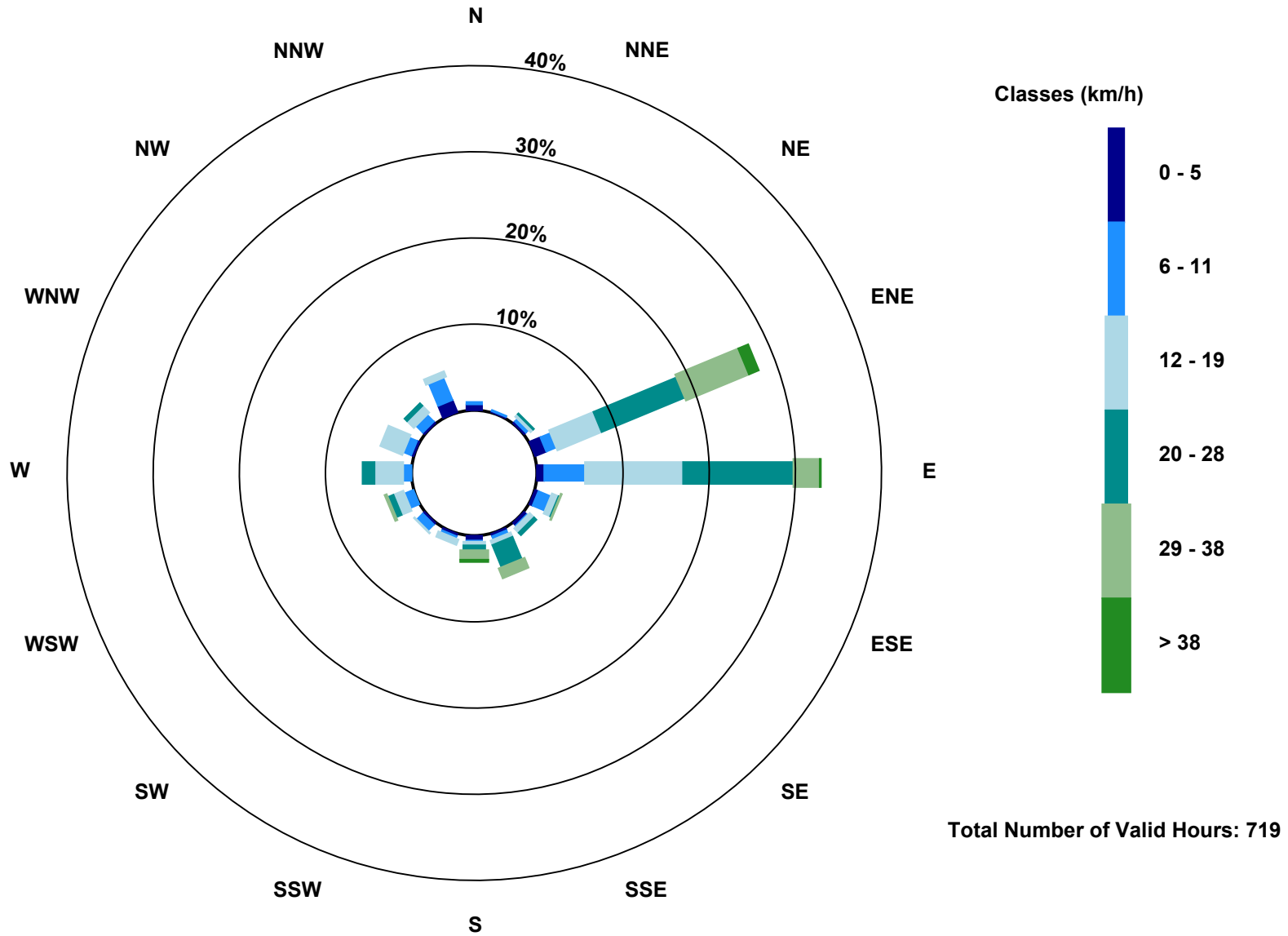
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Fort Chipewyan





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Fort Chipewyan - April 2023

Direction of Maximum Speed: 79 deg on Apr 17 17:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 75.5 deg on Apr 17	Hours of Data: 719
Direction of Minimum Speed: 139 deg on Apr 3 09:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 1.5 deg on Apr 9	Percent Operational Time: 99.9
Monthly Average Direction: 84.0 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-Apr	69	65	67	65	65	65	63	59	61	67	63	65	60	65	68	71	69	68	60	60	65	67	68	69	65.2
2-Apr	69	70	71	70	68	70	72	71	69	67	65	61	59	72	67	12	34	92	83	82	53	15	321	328	66.3
3-Apr	333	340	345	350	358	4	UO	341	139	146	105	105	116	101	86	85	92	83	88	88	77	44	75	94	79.0
4-Apr	198	222	296	359	77	91	88	77	73	163	149	109	93	91	88	86	84	80	70	90	78	80	79	86.9	
5-Apr	77	88	79	76	77	80	78	76	79	77	80	78	80	82	82	82	82	86	88	93	88	85	90	125	82.2
6-Apr	133	118	108	98	100	95	99	106	98	95	147	158	158	166	168	169	168	168	169	165	163	167	169	172	149.9
7-Apr	175	174	172	171	171	170	171	167	165	164	173	167	164	166	165	166	166	151	127	156	151	150	163	174	165.6
8-Apr	188	182	184	184	187	193	200	198	203	214	247	249	247	259	276	288	267	231	205	179	150	175	99	81	215.0
9-Apr	221	247	255	271	259	262	280	283	276	276	264	265	265	264	262	210	82	85	87	82	81	82	85	87	270.4
10-Apr	124	73	100	90	109	261	260	258	256	257	256	260	256	261	264	265	261	262	262	253	228	241	217	235	252.6
11-Apr	243	252	260	256	260	267	256	267	274	262	266	260	257	254	264	264	268	269	285	327	338	328	338	345	269.7
12-Apr	347	327	316	294	285	308	321	296	289	298	304	303	305	289	294	318	331	354	35	81	76	85	86	86	322.8
13-Apr	85	67	67	62	57	56	74	89	86	89	91	91	94	90	87	84	84	67	62	59	59	79	82	83	78.3
14-Apr	77	79	78	77	80	77	79	81	80	79	77	75	71	65	58	60	57	56	56	63	75	80	80	78	71.8
15-Apr	80	80	82	81	82	83	84	83	85	84	82	77	77	78	73	61	58	59	66	77	79	80	80	82	77.2
16-Apr	80	81	82	79	83	82	79	79	77	74	75	78	76	76	77	76	74	75	78	80	81	78	73	77.7	
17-Apr	76	77	80	78	78	78	77	78	73	69	63	60	68	70	72	77	79	78	76	76	82	83	84	82	75.5
18-Apr	97	106	83	79	88	89	83	84	81	81	79	75	83	71	66	68	71	74	80	80	98	72	61	62	79.7
19-Apr	63	73	72	70	72	69	63	71	84	84	80	79	77	78	80	77	74	69	65	41	54	69	74	67	72.5
20-Apr	70	77	77	79	76	76	77	78	78	80	81	81	77	66	62	61	66	62	70	69	80	83	82	84	74.8
21-Apr	83	85	86	82	81	82	88	93	90	89	86	88	87	86	86	86	84	87	100	91	91	87	80	86	86.8
22-Apr	100	115	102	99	97	103	99	87	81	84	86	92	89	92	85	93	85	82	69	96	94	87	84	86	89.8
23-Apr	105	83	75	80	83	83	78	79	77	80	81	89	97	89	86	168	160	129	103	77	71	70	65	48	85.2
24-Apr	57	60	67	63	70	63	73	78	76	77	82	75	81	85	78	81	77	79	77	63	79	71	73	75	74.2
25-Apr	71	82	96	114	111	151	144	154	148	147	142	148	153	152	143	209	182	245	257	225	347	77	78	240	148.2
26-Apr	268	290	316	318	311	298	285	285	286	293	302	315	319	339	340	338	345	343	9	343	336	336	336	343	312.0
27-Apr	359	338	328	300	293	287	285	267	257	263	253	206	227	232	106	93	93	87	83	87	125	175	164	175	228.9
28-Apr	268	249	116	69	310	283	280	285	286	277	282	287	307	318	316	324	326	332	333	344	343	302	309	338	307.0
29-Apr	336	333	323	328	306	325	331	79	103	105	98	90	91	90	87	85	84	83	77	62	79	81	80	82	76.6
30-Apr	81	86	83	85	86	87	86	86	87	89	84	87	89	86	86	84	86	88	85	86	93	119	139	140	91.1

86.2 86.4 83.7 80.9 83.1 84.4 81.6 84.0 84.3 84.9 88.7 88.3 88.7 88.4 83.0 80.9 80.8 79.4 76.5 80.2 84.1 86.7 86.1 87.4

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

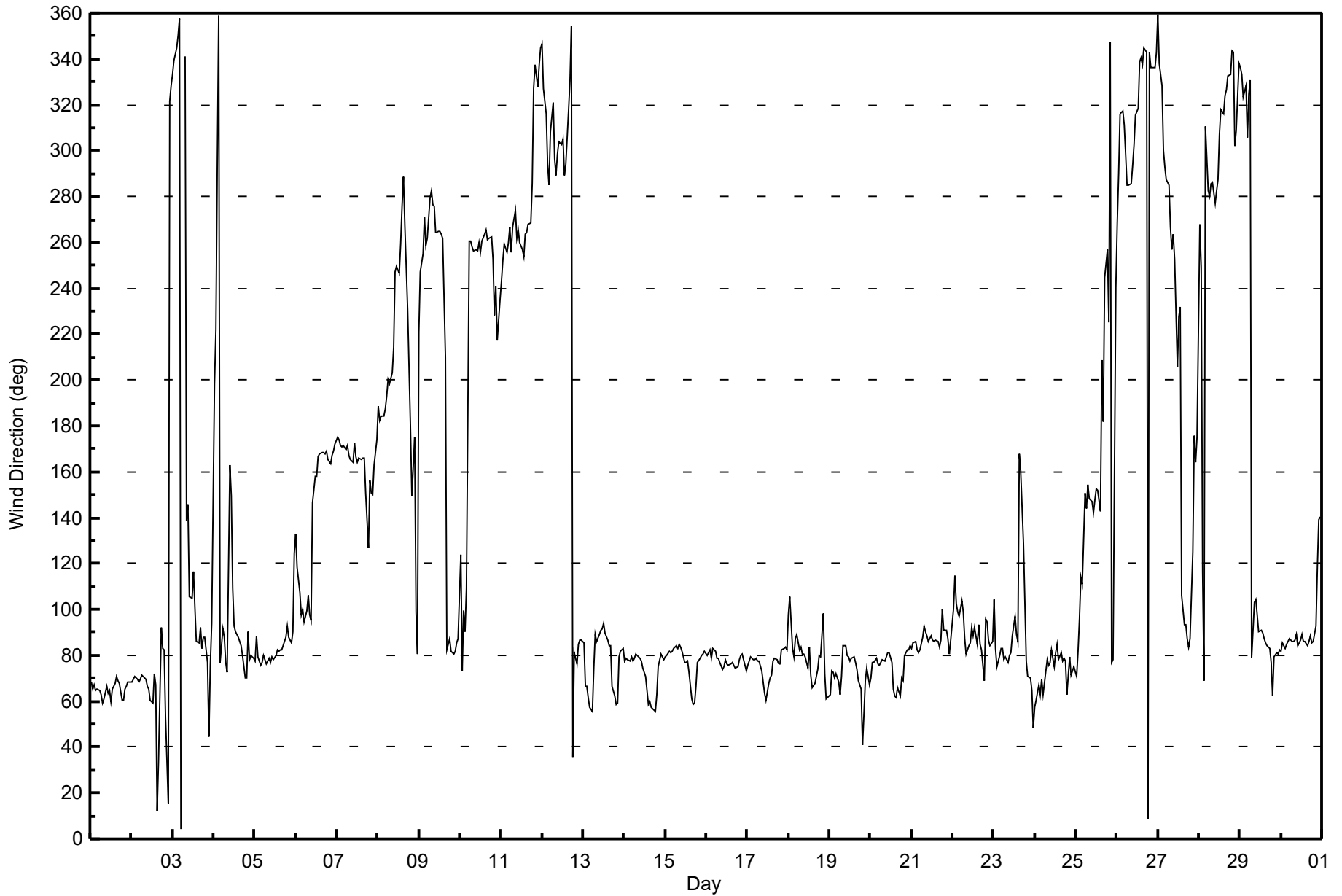
Wind Direction (WD) - deg
Fort Chipewyan - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 90 deg on Apr 25 22:00	Hours of Data: 719
Minimum Value: 3 deg on Apr 21 13:00	Hours of Missing Data: 1
Percentiles: P ₁ = 3 P ₁₀ = 5 Q ₁ = 7 Median = 11 Q ₃ = 16 P ₉₀ = 25 P ₉₉ = 60	Hours of Calibration: 0
	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-Apr	11	10	11	10	9	10	10	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8	7	7	11
2-Apr	7	6	6	6	6	6	5	6	6	8	8	10	10	11	38	25	32	5	6	9	25	25	29	12	38
3-Apr	14	15	17	29	34	31	UO	78	73	32	7	7	8	6	4	6	7	6	12	9	56	26	10	17	78
4-Apr	42	60	69	60	44	29	26	14	13	40	24	8	5	3	5	4	3	4	6	20	11	6	5	7	69
5-Apr	10	8	14	5	5	6	6	7	6	6	5	5	4	4	3	3	3	4	14	8	10	7	9	18	18
6-Apr	10	8	12	11	8	6	7	5	5	6	20	10	9	9	8	7	7	6	6	7	10	6	6	6	20
7-Apr	7	7	7	7	7	8	8	8	9	10	7	10	9	9	9	8	8	24	15	10	10	10	8	9	24
8-Apr	7	8	9	8	7	9	10	9	9	13	16	16	16	16	17	14	26	17	13	20	23	27	40	22	40
9-Apr	46	11	13	14	14	14	13	14	14	17	15	18	18	16	30	74	11	9	10	5	5	5	9	8	74
10-Apr	38	12	37	11	31	30	15	16	16	16	16	17	18	16	16	15	16	15	15	24	14	13	30	14	38
11-Apr	14	17	13	11	11	12	12	14	15	14	15	18	18	19	16	15	15	15	16	22	21	21	26	21	26
12-Apr	21	25	18	15	14	24	22	17	15	17	17	17	18	18	19	23	32	34	15	12	7	7	8	8	34
13-Apr	14	7	4	6	5	3	10	5	3	5	5	4	4	6	3	3	4	12	8	8	9	5	5	7	14
14-Apr	6	6	6	6	6	6	5	5	5	5	6	7	8	10	8	9	9	8	8	10	10	5	5	6	10
15-Apr	6	6	6	7	7	7	6	6	6	5	6	6	7	7	10	10	9	9	10	8	7	7	8	8	10
16-Apr	9	8	8	11	8	10	11	13	13	14	13	10	11	10	11	11	12	13	14	13	11	10	12	16	16
17-Apr	16	13	17	15	15	18	17	18	18	17	16	12	16	17	17	18	18	19	18	18	10	7	7	8	19
18-Apr	15	12	10	15	15	11	10	8	14	13	14	17	8	17	15	16	14	12	6	7	8	13	12	11	17
19-Apr	11	11	12	11	13	14	12	13	5	5	7	8	11	9	9	10	13	14	15	12	11	14	14	13	15
20-Apr	14	11	10	7	13	16	13	9	10	8	6	7	14	16	14	17	17	17	19	17	7	10	5	4	19
21-Apr	5	6	5	6	9	6	5	4	4	4	4	3	3	4	4	4	5	6	4	7	6	7	8	6	9
22-Apr	12	8	9	6	7	7	7	6	10	11	9	5	6	9	6	11	14	10	17	36	23	19	16	16	36
23-Apr	22	13	15	14	10	11	15	14	14	9	6	6	11	21	10	54	18	18	16	10	16	17	15	8	54
24-Apr	10	10	16	12	17	15	16	12	15	14	6	13	9	4	13	5	10	13	14	14	11	16	16	16	17
25-Apr	14	15	8	16	23	10	8	8	13	9	9	9	11	9	11	52	82	17	19	22	44	90	28	59	90
26-Apr	14	16	21	17	17	14	13	13	14	17	18	22	24	25	22	26	26	32	29	28	25	25	20	20	32
27-Apr	21	23	19	12	14	13	17	14	21	20	29	15	26	30	28	11	10	52	8	16	30	10	26	29	52
28-Apr	34	33	57	21	58	24	14	14	17	15	17	32	30	22	23	23	26	25	25	24	20	21	17	10	58
29-Apr	12	14	13	20	15	26	33	69	17	10	7	6	6	5	5	5	5	6	11	10	11	6	6	5	69
30-Apr	5	5	6	6	6	6	6	7	7	6	6	6	6	5	6	5	6	7	5	5	3	9	8	6	9
	46	60	69	60	58	31	33	78	73	40	29	32	30	30	38	74	82	52	29	36	56	90	40	59	

Diurnal Maximum

UO - Unstable Operation





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS09 BARGE LANDING APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
 APRIL 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	677	34	43	98.75	20.2	0	5.5	0
TRS(ppb) Average	676	36	44	98.89	3.5	0	0.8	0
THC(ppm) Average	677	34	43	98.75	3.2	-	2.2	-
NMHC(ppm) Average	677	34	43	98.75	0.304	-	0.058	-
CH4(ppm) Average	677	34	43	98.75	3	-	2.2	-
NO2 (ppb) Average	675	36	45	98.75	41.6	0	13.9	-
NO (ppb) Average	675	36	45	98.75	70.9	-	5.6	-
NOX (ppb) Average	675	36	45	98.75	99.7	-	17	-
PM2.5(ug/m3) Average	711	1	9	98.89	29.7	0	12.2	0
Temperature (C) Average	720	0	0	100	22.9	-	14.2	-
Relative Humidity (%) Average	720	0	0	100	99.1	-	88.1	-
Barometric Pressure (inHg) Average	720	0	0	100	29.5	-	29.4	-
Wind Speed 20 m (km/h) Average	716	0	4	99.44	36	-	25	-
Wind Direction 20 m (deg) Average	716	0	4	99.44	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)

APRIL 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	677	1.22	2.7	-	0	0	0.1	0.2	0.6	4.3	20.2
TRS(ppb) Average	676	0.3	0.3	-	0.1	0.2	0.2	0.2	0.3	0.5	3.5
THC(ppm) Average	677	2.06	0.1	-	1.6	2	2	2	2.1	2.2	3.2
NMHC(ppm) Average	677	0.015	0.034	-	0	0	0	0	0	0.1	0.304
CH4(ppm) Average	677	2.04	0.1	-	1.6	2	2	2	2.1	2.2	3
NO2 (ppb) Average	675	8.03	7.7	-	0.2	0.8	2.2	5.3	12	20.1	41.6
NO (ppb) Average	675	2.08	5.6	-	0	0	0	0.2	1.6	5.3	70.9
NOX (ppb) Average	675	10.11	11.6	-	0.2	0.9	2.4	6.1	13.8	24.2	99.7
PM2.5(ug/m3) Average	711	6.88	4.3	-	0.1	3	3.9	5.8	8.8	12.8	29.7
Temperature (C) Average	720	4.85	6.3	-	-8.6	-2.8	0	4.3	9.8	13.2	22.9
Relative Humidity (%) Average	720	55.2	21.9	-	16.4	26.3	36	55.4	73.9	86.6	99.1
Barometric Pressure (inHg) Average	720	28.9	0.2	-	28.4	28.6	28.7	28.9	29	29.2	29.5
Wind Speed 20 m (km/h) Average	716	11.6	7	-	0	5	7	10	14	21	36
Wind Direction 20 m (deg) Average	716	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
APRIL 2023

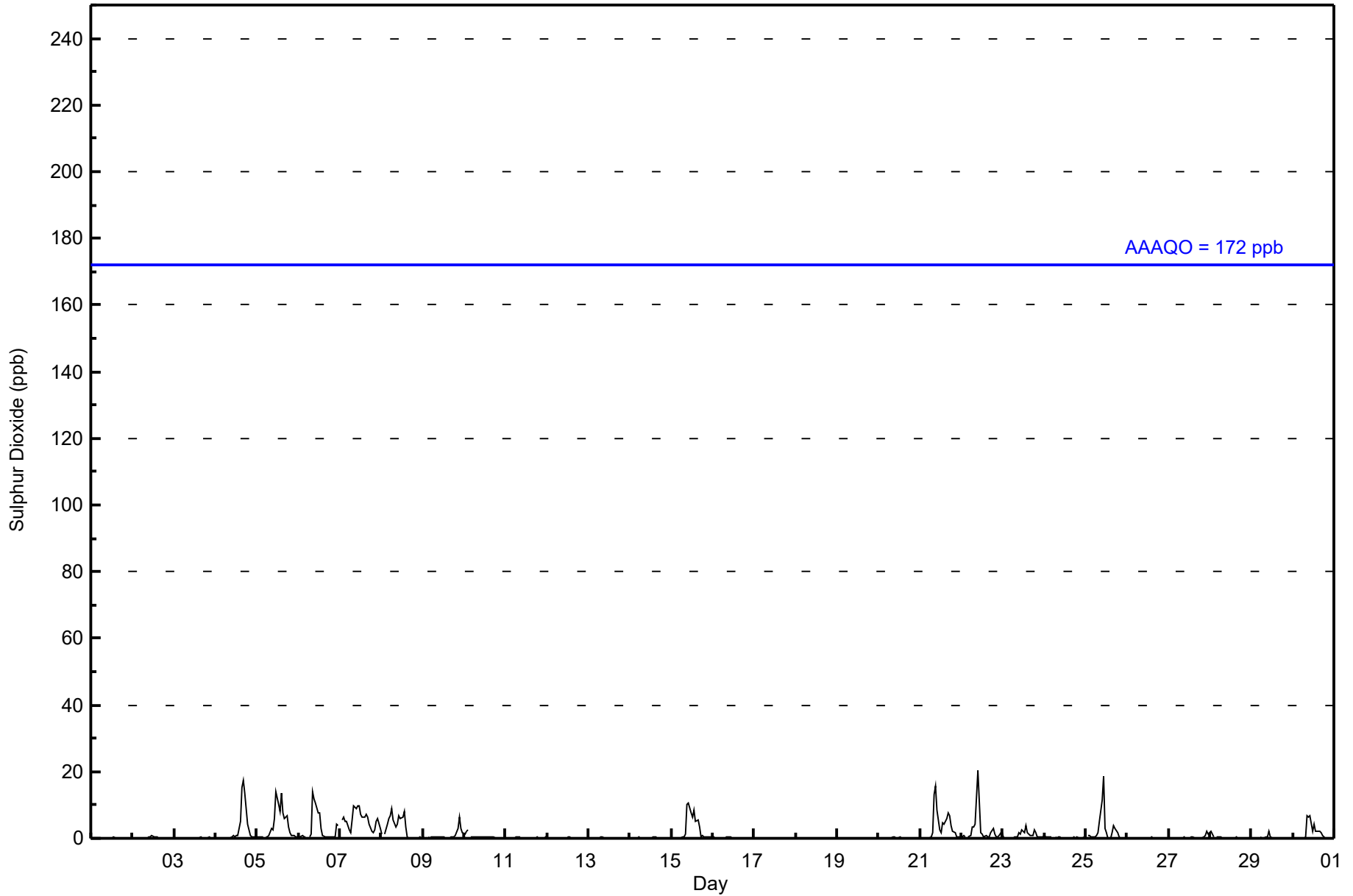
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	18 Apr 2023 08:00	18 Apr 2023 12:00	5	Station power failure
AIR QUALITY ANALYZERS	19 Apr 2023 19:00	19 Apr 2023 21:00	3	Station power failure
NO2, SO2, THC/ NMHC/ CH4	17 Apr 2023 14:00	17 Apr 2023 14:00	1	Maintenance - sample manifold cleaned
Wind Speed, Wind Direction	20 Apr 2023 04:00	20 Apr 2023 07:00	4	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Barge Landing - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Barge Landing - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	662	97.78	97.78
11 - 20	15	2.22	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: 677

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	40	42	36	21	31	56	88	95	41	23	29	39	24	16	33	44	658
11 - 20	0	0	0	0	0	0	0	3	5	2	0	2	2	0	1	0	15
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
Totals	40	42	36	21	31	56	88	98	46	25	29	41	26	16	34	44	673

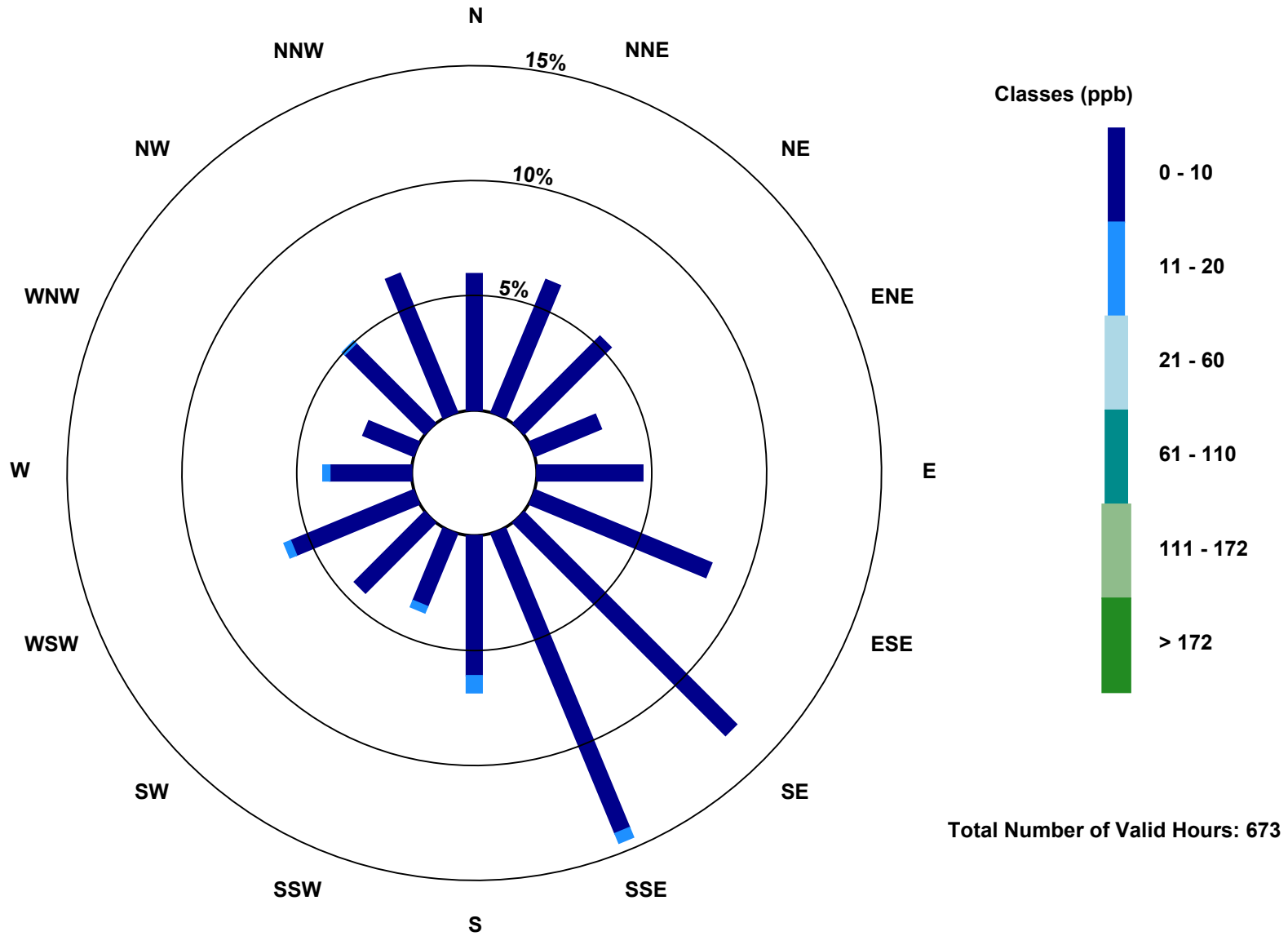
Total Number of Valid Hours: 673

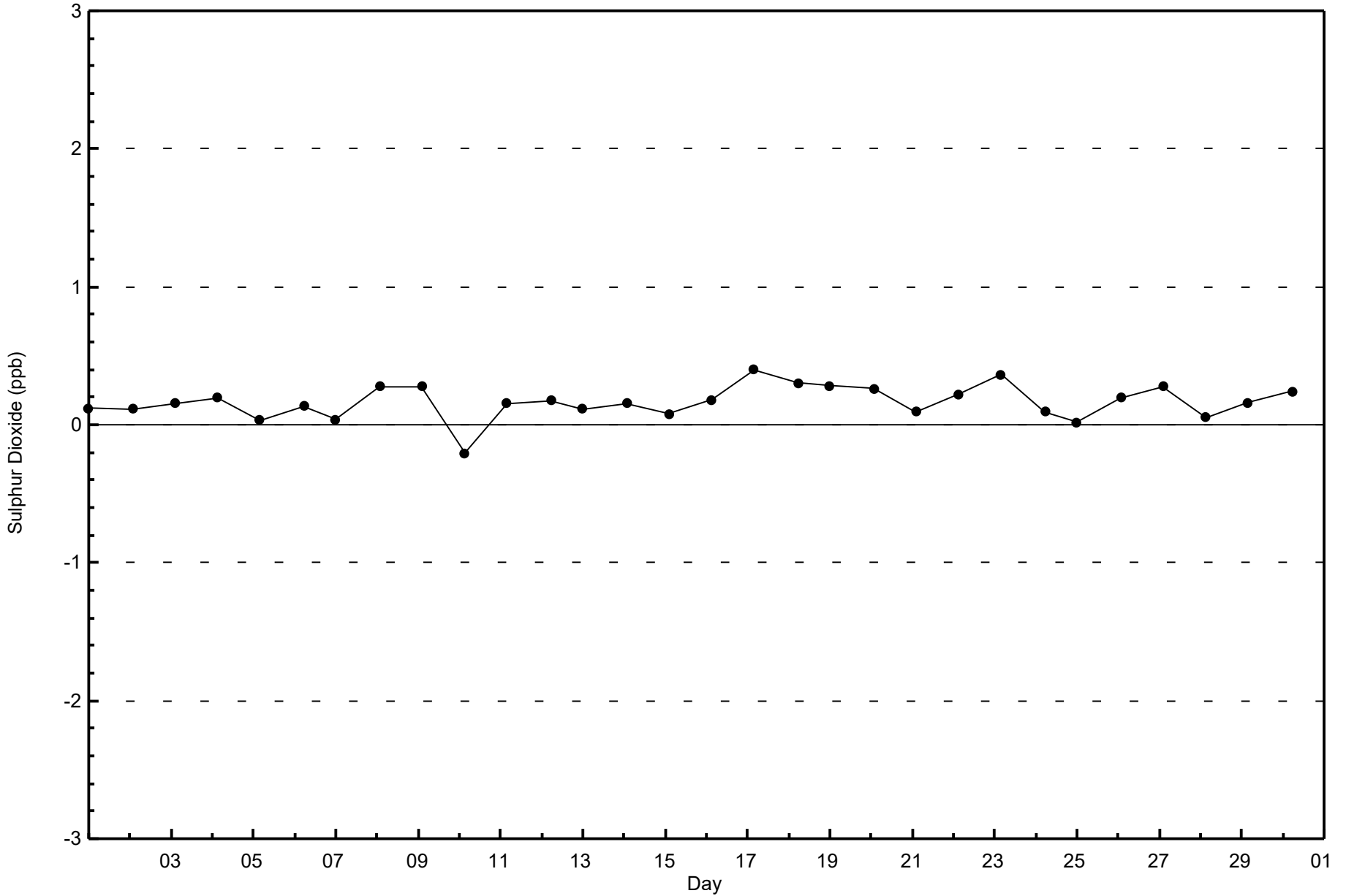
Total Number of Hours: 720

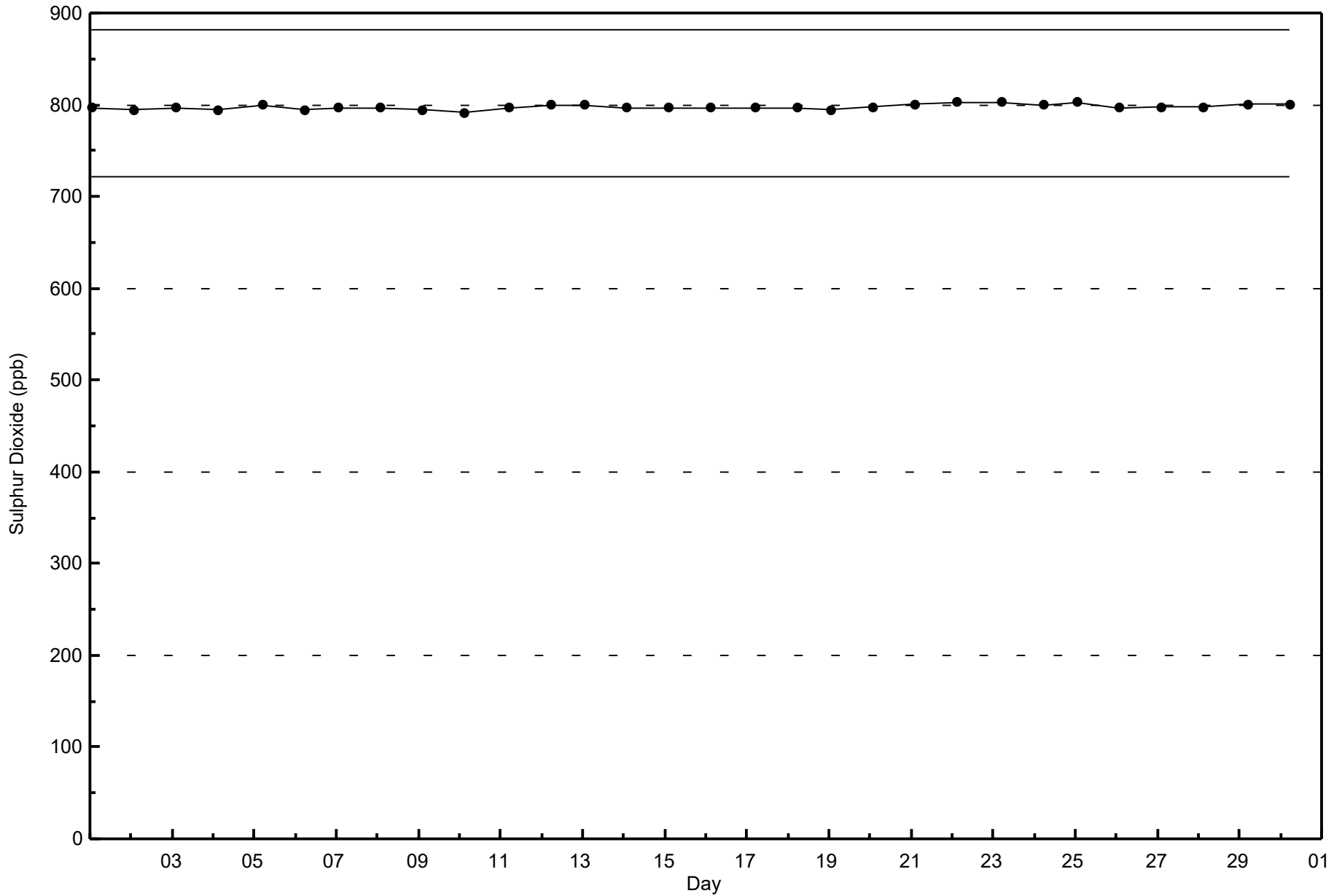


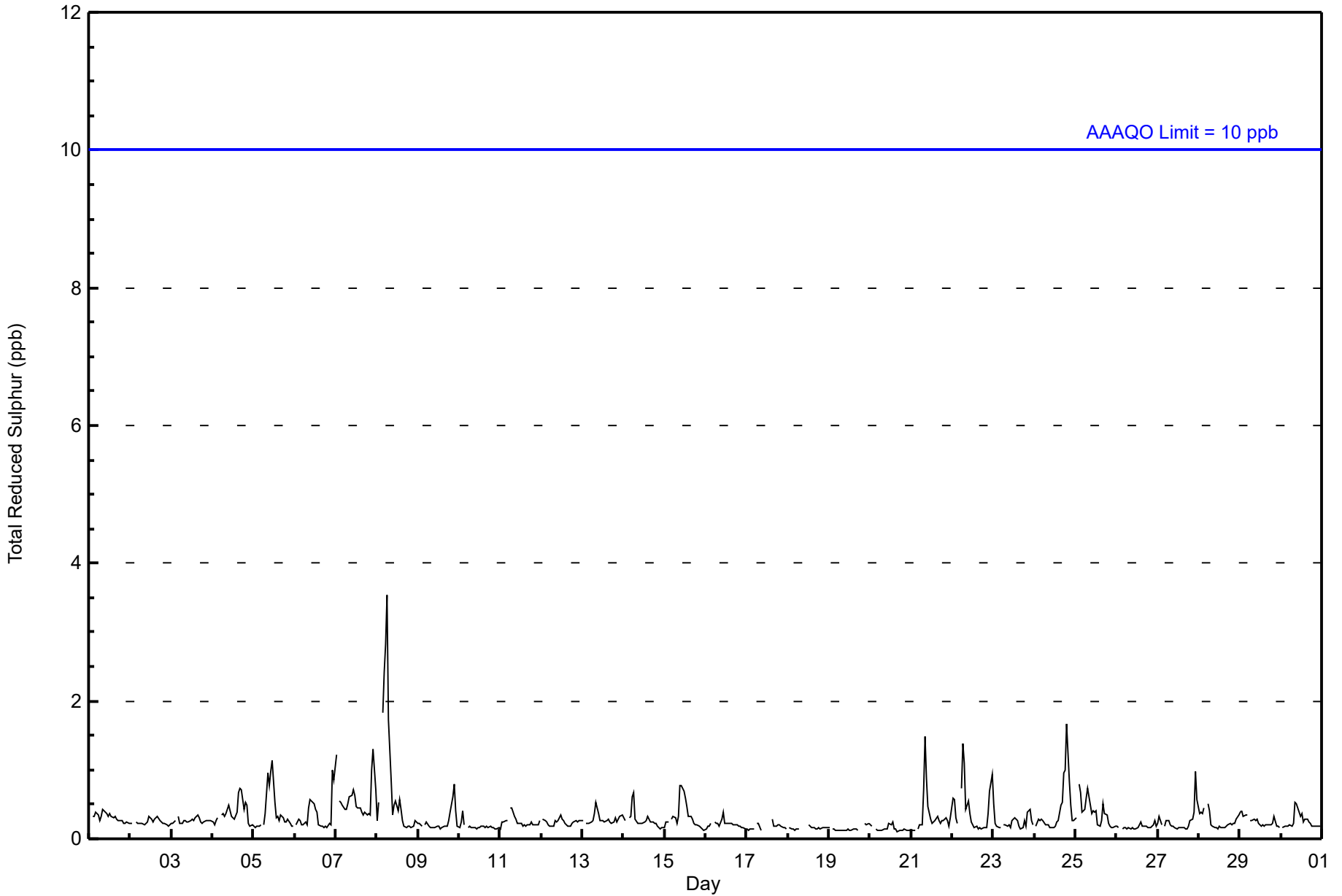
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Barge Landing











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	674	99.70	99.70
3 - 4	2	0.30	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: 676

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	38	41	36	22	31	52	85	97	49	27	30	41	26	16	33	46	670
3 - 4	0	0	0	0	0	0	0	2	0	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
Totals	38	41	36	22	31	52	85	99	49	27	30	41	26	16	33	46	672

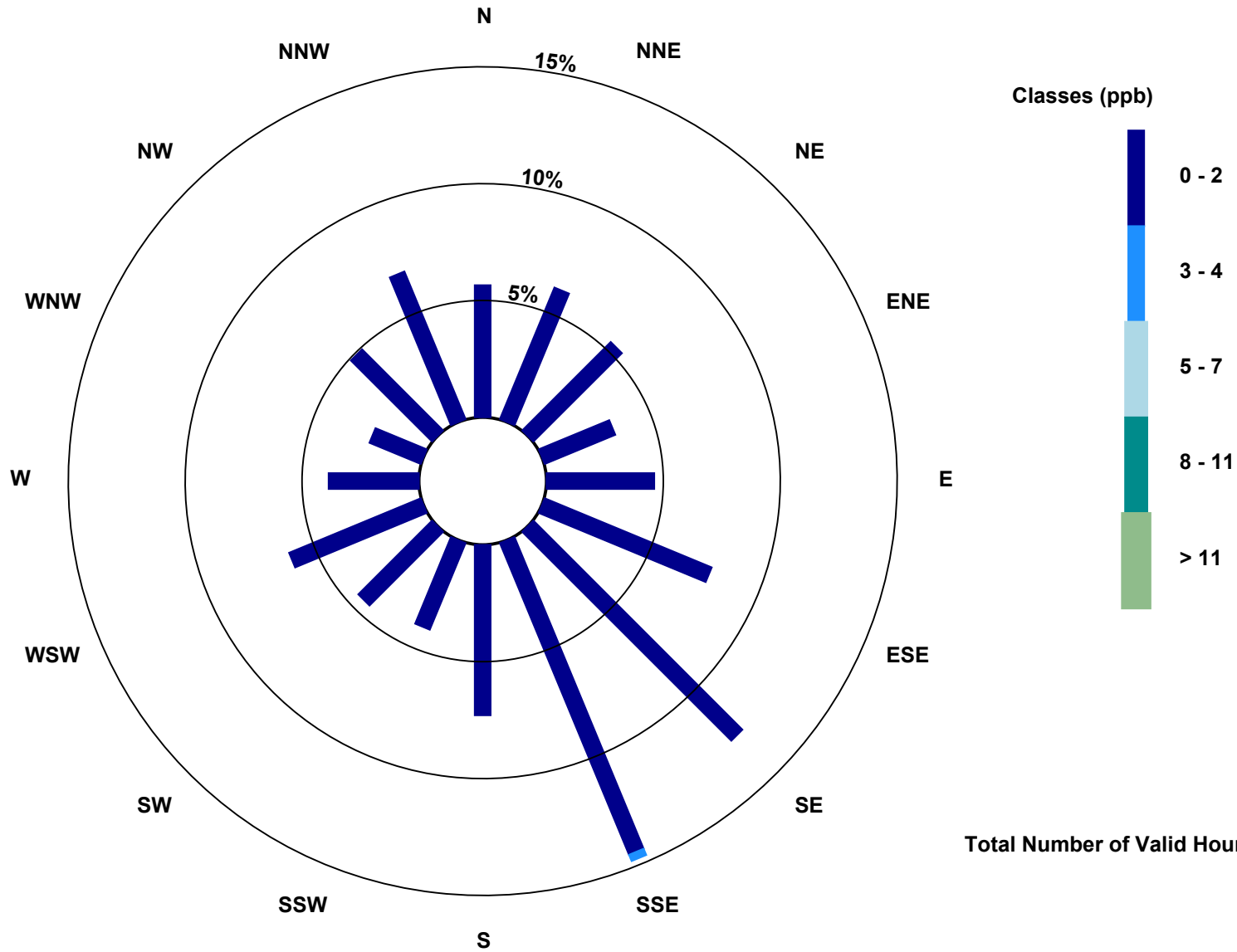
Total Number of Valid Hours: 672

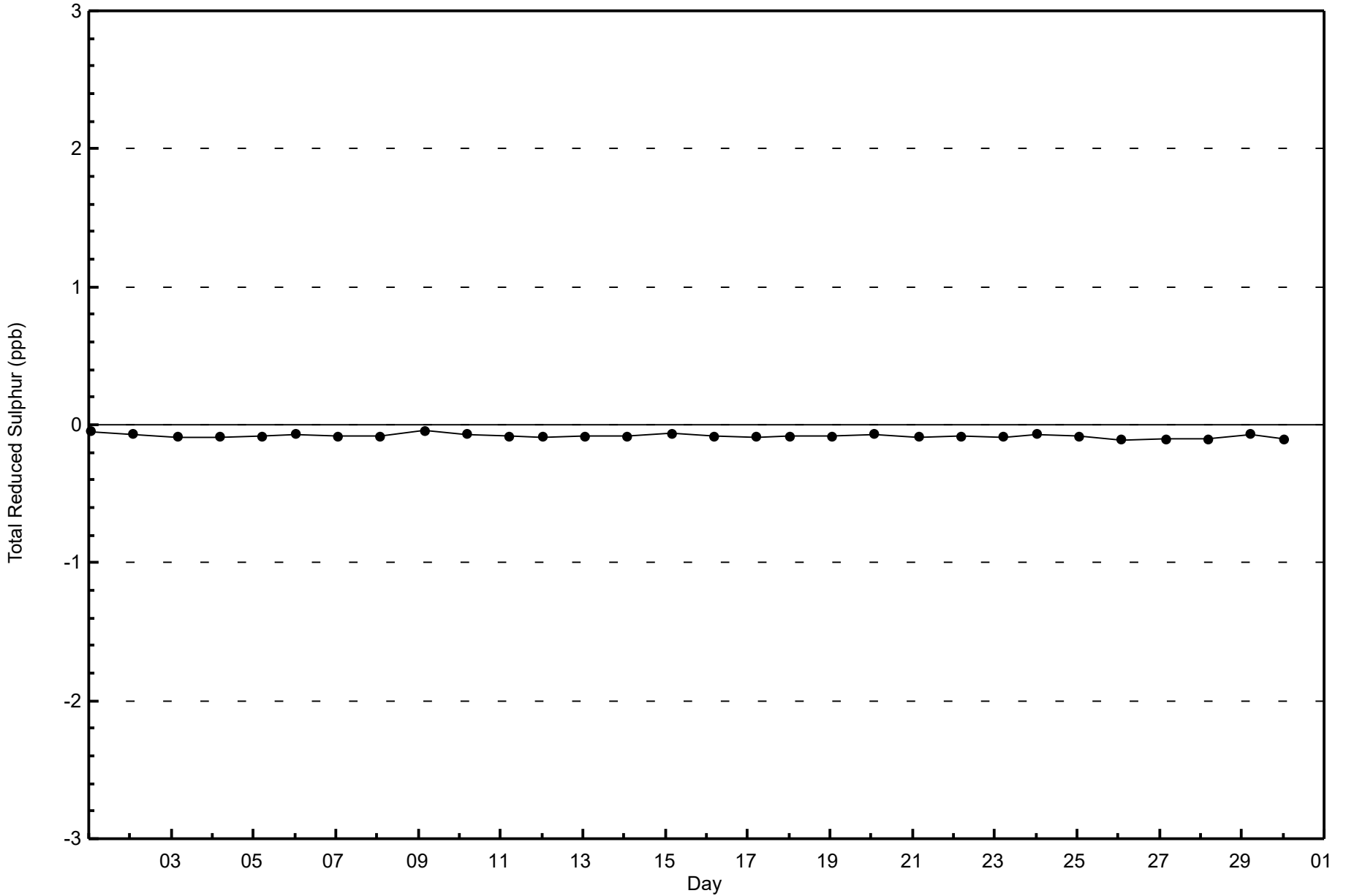
Total Number of Hours: 720

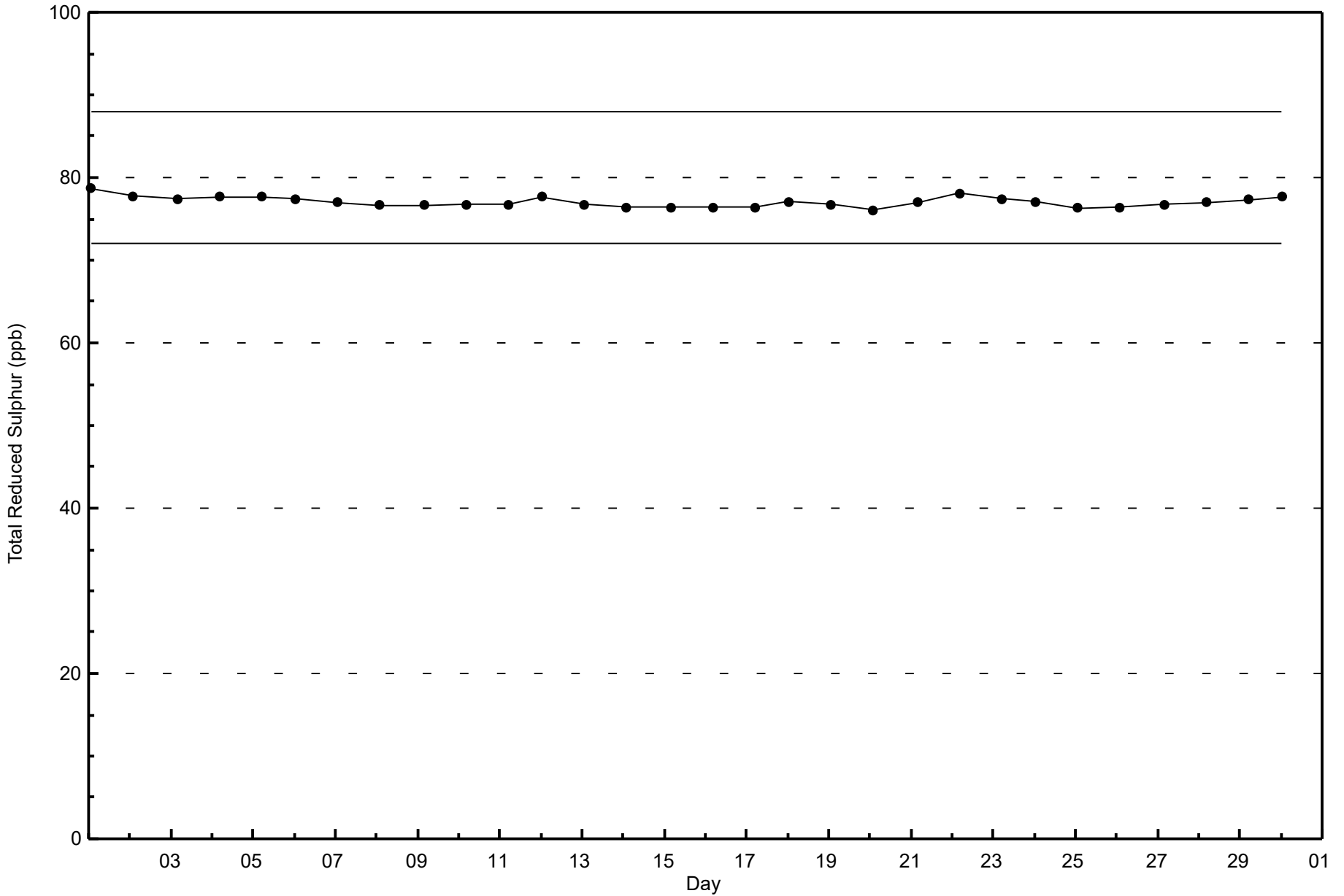


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Barge Landing









Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

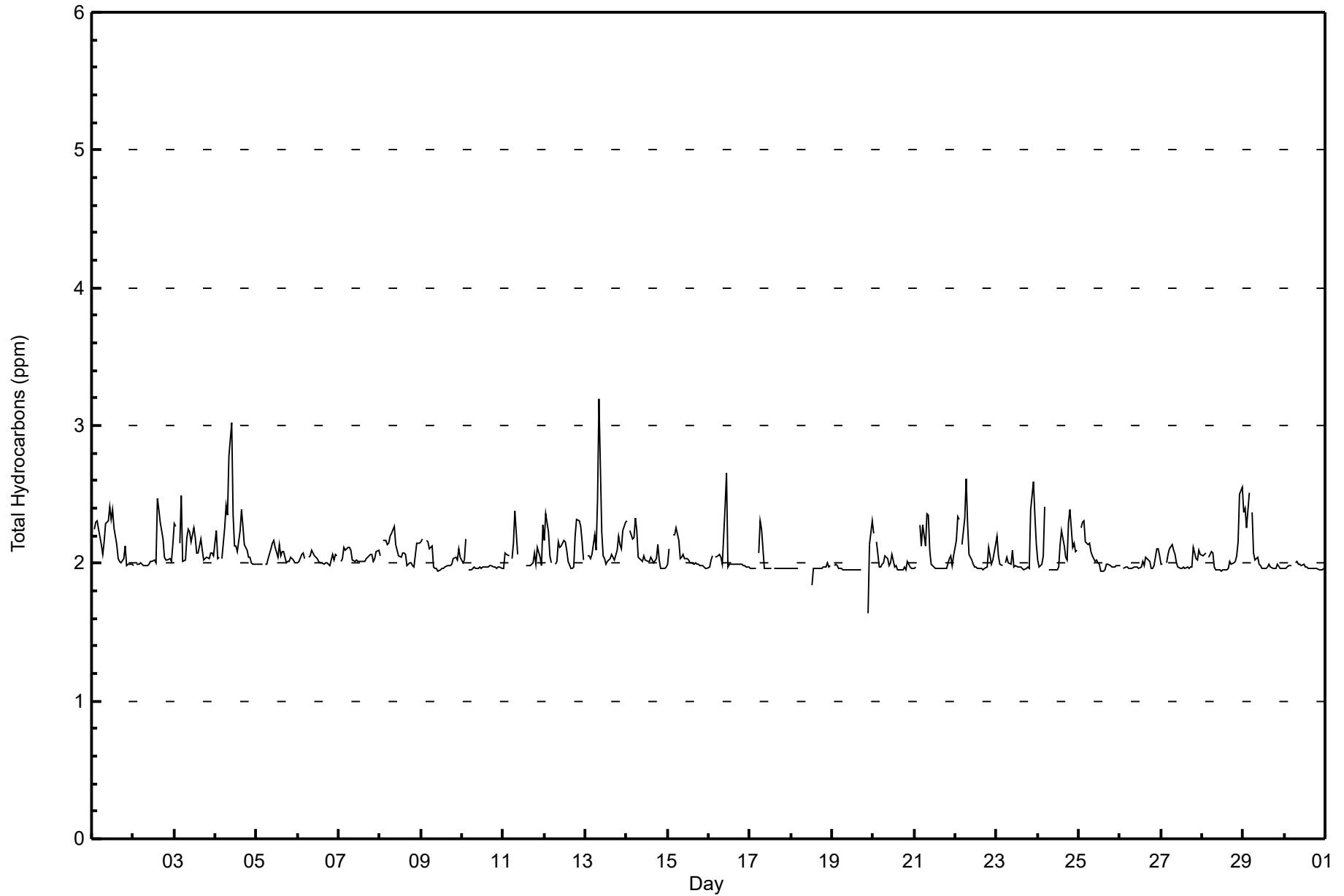
Barge Landing - April 2023

Maximum Value: 3.2 ppm on Apr 13 09:00		Maximum Daily Average: 2.2 ppm on Apr 4		Hours in Service: 720																							
Minimum Value: 1.6 ppm on Apr 19 22:00		Minimum Daily Average: 2.0 ppm on Apr 18		Hours of Data: 677																							
Maximum Diurnal Average: 2.1 ppm at hour 9		Minimum Diurnal Average: 2.0 ppm at hour 18		Hours of Missing Data: 43																							
Monthly Average: 2.06 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.5		Hours of Calibration: 34																							
				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-Apr	Z	2.3	2.3	2.3	2.2	2.1	2.1	2.2	2.3	2.3	2.4	2.3	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.2	2.4	
2-Apr	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	2.5	2.4	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.5	
3-Apr	2.3	2.3	Z	2.1	2.5	2.0	2.0	2.2	2.3	2.2	2.2	2.3	2.2	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.5	
4-Apr	2.2	2.0	2.0	Z	2.0	2.3	2.4	2.4	2.8	3.0	2.3	2.1	2.1	2.1	2.2	2.4	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.2	3.0	
5-Apr	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.1	2.1	2.2	2.1	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	2.2	
6-Apr	2.0	2.0	2.1	2.1	2.0	Z	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	2.1	2.0	2.1	2.1	2.0	2.1	
7-Apr	Z	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	2.0	2.0	2.1	2.1	2.1	2.1	
8-Apr	2.1	Z	2.2	2.2	2.1	2.1	2.2	2.2	2.3	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3	
9-Apr	2.2	2.2	Z	2.2	2.2	2.1	2.1	2.0	2.0	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	2.1	2.0	2.0	2.2	
10-Apr	2.0	2.0	2.2	Z	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	2.2	
11-Apr	2.0	2.1	2.1	2.1	Z	2.0	2.2	2.4	2.1	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.3	2.1	2.4	
12-Apr	2.2	2.4	2.2	2.1	2.0	Z	2.0	2.0	2.2	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.2	2.3	2.3	2.3	2.2	2.0	2.1	2.4	
13-Apr	Z	2.1	2.1	2.0	2.1	2.2	2.1	2.5	3.2	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2	2.3	2.2	3.2	
14-Apr	2.3	Z	2.2	2.2	2.2	2.3	2.2	2.0	2.0	2.0	2.1	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	2.1	2.3	
15-Apr	2.0	2.1	Z	2.2	2.2	2.3	2.2	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	2.3
16-Apr	2.0	2.0	2.1	Z	2.0	2.1	2.1	2.0	2.0	2.4	2.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.7
17-Apr	2.0	2.0	2.0	2.0	Z	2.1	2.3	2.3	2.0	2.0	2.0	2.0	2.0	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	
18-Apr	2.0	2.0	2.0	2.0	2.0	Z	2.0	PF	PF	PF	PF	PF	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
19-Apr	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	1.9	1.9	PF	PF	PF	1.6	2.1	2.3	2.0	2.3	
20-Apr	2.2	Z	2.2	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	
21-Apr	2.0	2.0	Z	2.3	2.1	2.3	2.1	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.4	
22-Apr	2.2	2.3	2.3	Z	2.1	2.3	2.6	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	2.1	2.0	2.0	2.1	2.1	2.6	
23-Apr	2.2	2.1	2.0	2.0	Z	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	2.4	2.6	2.3	2.1	2.1	2.6	
24-Apr	2.0	2.0	2.0	2.1	2.4	Z	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.3	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.4	
25-Apr	Z	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	
26-Apr	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	2.1	2.1	2.1	2.0	2.1	2.1	
27-Apr	2.0	2.0	Z	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	2.0	2.0	2.1	2.1	2.0	2.1	
28-Apr	2.1	2.1	2.1	Z	2.0	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.5	2.5	2.1	2.5	
29-Apr	2.4	2.4	2.3	2.5	Z	2.4	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	2.5	
30-Apr	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	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance PF - Power Failure																											



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Barge Landing - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Barge Landing - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	434	64.11	64.11
2.1 - 3.0	242	35.75	99.85
3.1 - 10.0	1	0.15	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Barge Landing - April 2023**

Concentration 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	24	22	13	27	53	73	59	24	8	23	34	17	11	17	15	430
2.1 - 3.0	30	17	14	8	4	3	15	39	22	17	6	7	9	5	17	29	242
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
Totals	40	42	36	21	31	56	88	98	46	25	29	41	26	16	34	44	673

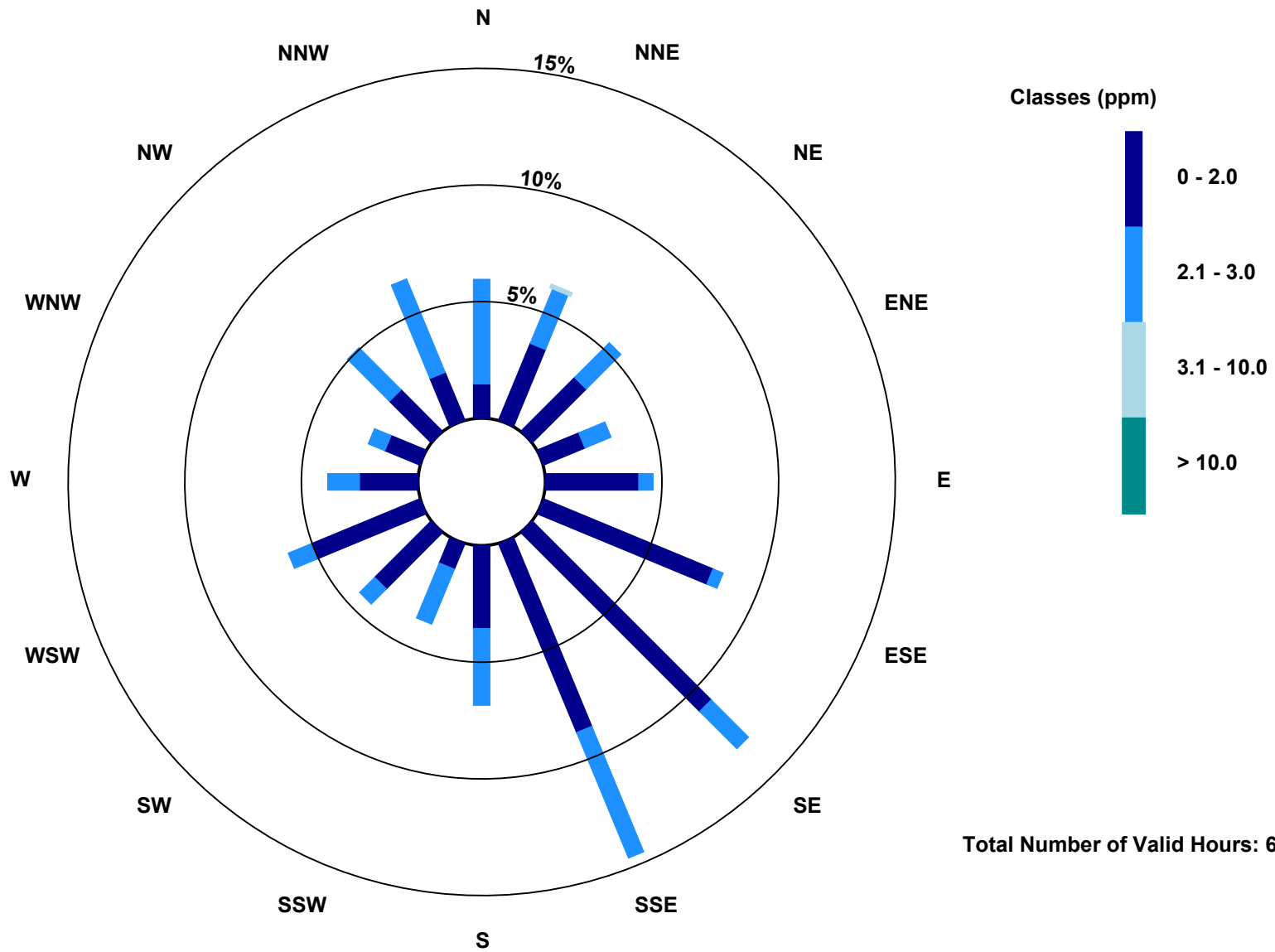
Total Number of Valid Hours: 673

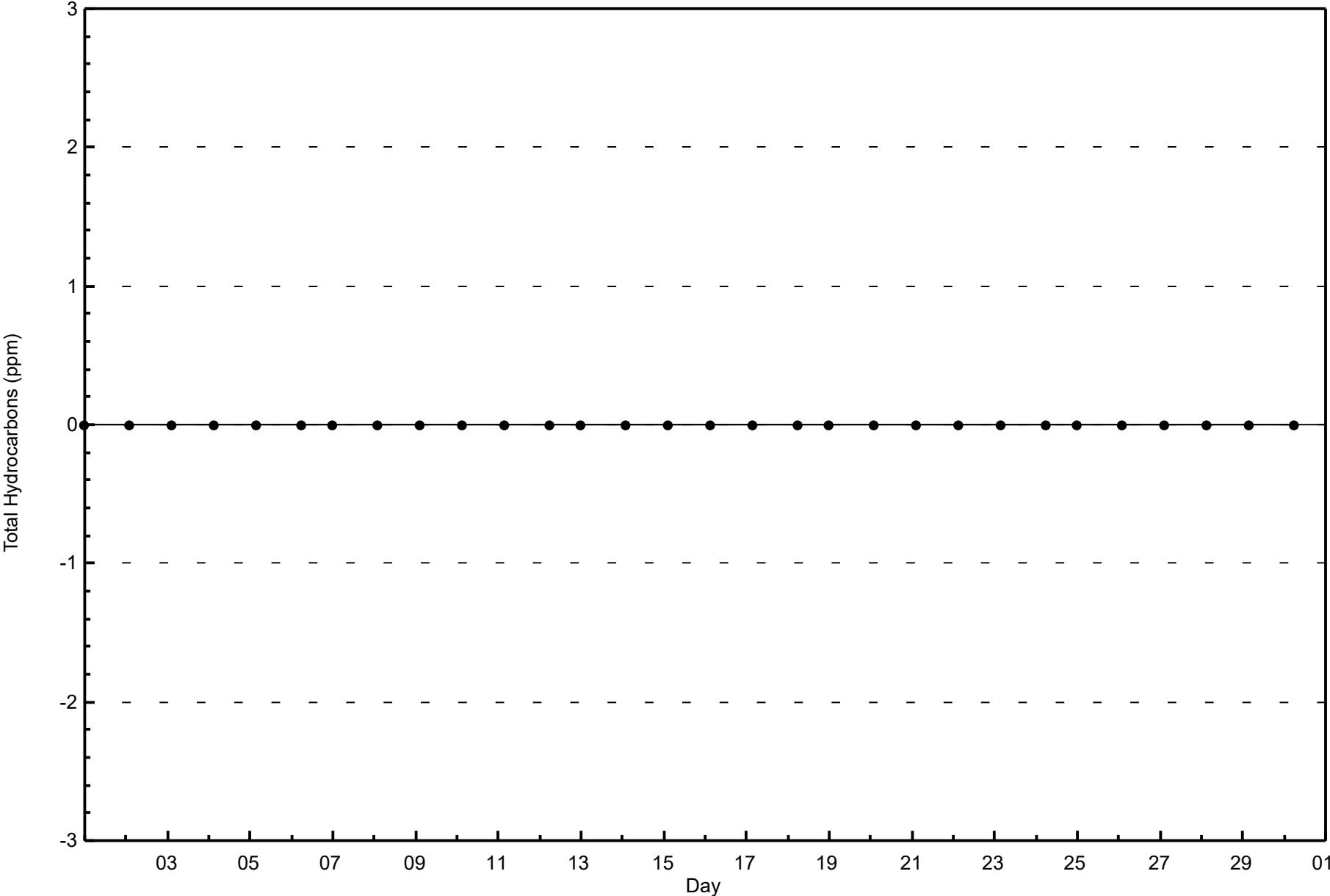
Total Number of Hours: 720

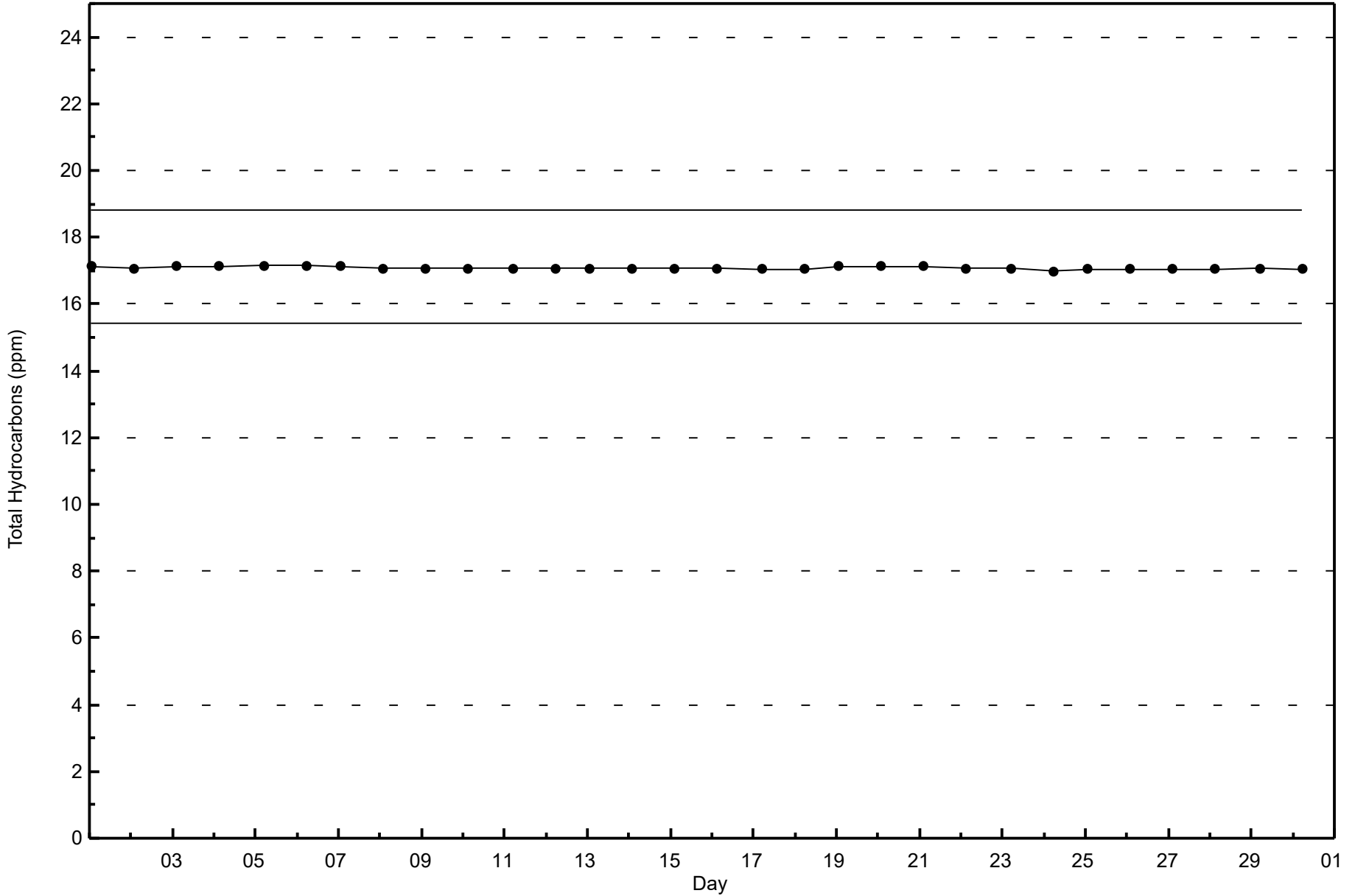


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Barge Landing









Summary of Hour Averages

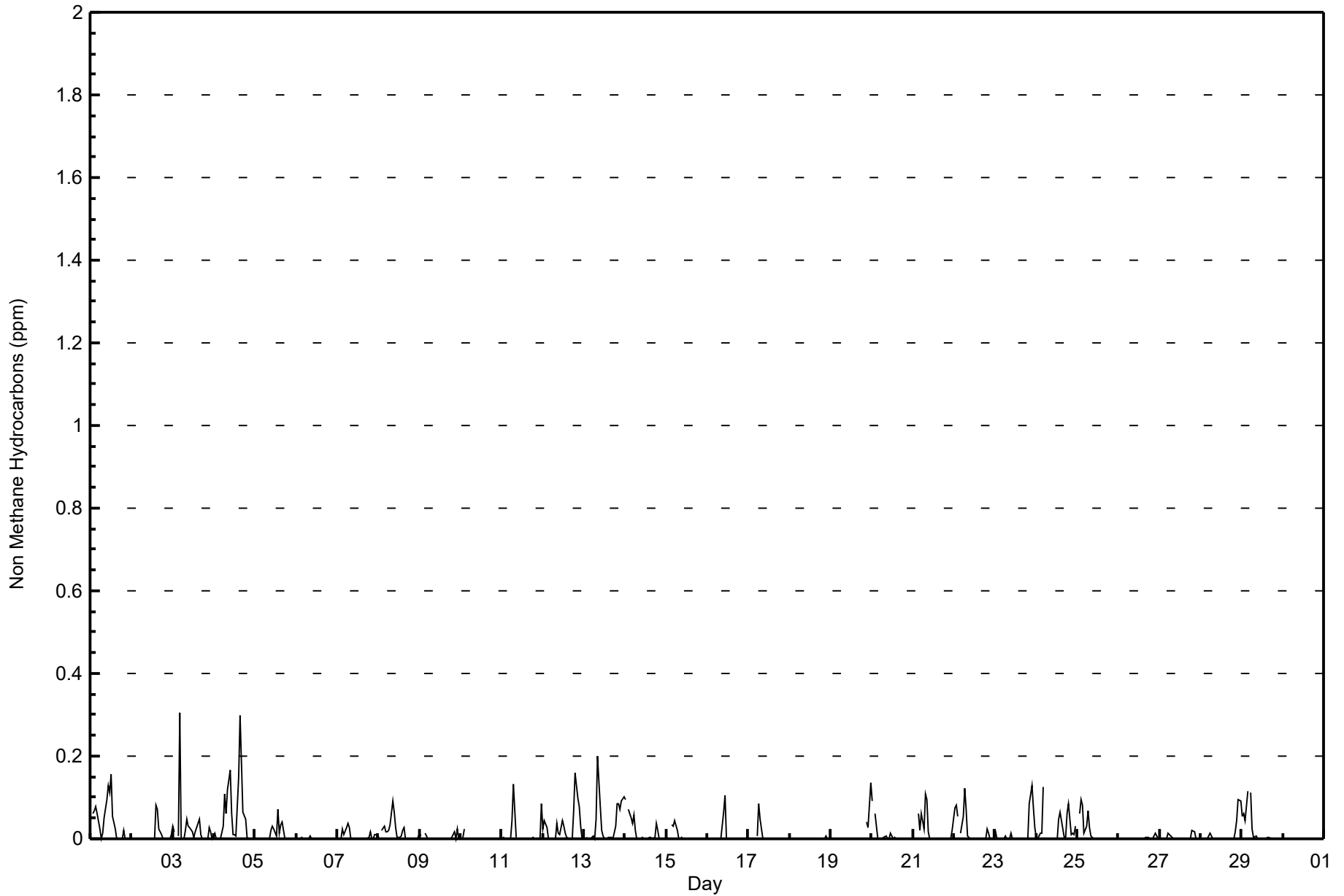
Barge Landing - April 2023

Maximum Value: 0.304 ppm on Apr 3 05:00	Maximum Daily Average: 0.058 ppm on Apr 4	Hours in Service: 720
Minimum Value: 0.000 ppm on Apr 1 17:00	Minimum Daily Average: 0.000 ppm on Apr 30	Hours of Data: 677
Maximum Diurnal Average: 0.026 ppm at hour 5	Minimum Diurnal Average: 0.003 ppm at hour 18	Hours of Missing Data: 43
Monthly Average: 0.015 ppm	Percentiles: $P_1 = 0.0$ $P_{10} = 0.0$ $Q_1 = 0.0$ Median = 0.0 $Q_3 = 0.0$ $P_{90} = 0.1$ $P_{99} = 0.2$	Hours of Calibration: 34
		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-Apr	Z	0.060	0.066	0.077	0.061	0.025	0.001	0.014	0.052	0.096	0.130	0.111	0.157	0.054	0.025	0.000	0.000	0.000	0.001	0.020	0.000	0.000	0.000	0.000	0.041	0.157	
2-Apr	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	0.080	0.072	0.025	0.011	0.000	0.000	0.000	0.000	0.000	0.009	0.009	0.080	
3-Apr	0.031	0.018	Z	0.008	0.304	0.001	0.000	0.021	0.047	0.029	0.028	0.017	0.002	0.017	0.027	0.048	0.010	0.000	0.000	0.000	0.000	0.026	0.017	0.001	0.028	0.304	
4-Apr	0.015	0.000	0.000	Z	0.000	0.029	0.110	0.061	0.120	0.168	0.062	0.009	0.009	0.006	0.149	0.300	0.184	0.063	0.046	0.002	0.000	0.000	0.000	0.000	0.058	0.300	
5-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.001	0.022	0.031	0.023	0.006	0.073	0.013	0.034	0.042	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.011	0.073	
6-Apr	0.000	0.000	0.000	0.002	0.000	Z	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	0.001	0.000	0.000	0.000	0.000	0.000	0.006	
7-Apr	Z	0.000	0.002	0.024	0.011	0.026	0.037	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.016	0.000	0.000	0.009	0.009	0.007	0.037	
8-Apr	0.003	Z	0.022	0.030	0.016	0.018	0.020	0.033	0.092	0.065	0.026	0.002	0.004	0.006	0.019	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.017	0.092	
9-Apr	0.015	0.008	Z	0.015	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	0.004	0.015	0.000	0.023	0.000	0.004	0.023	
10-Apr	0.000	0.002	0.025	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	0.025	
11-Apr	0.000	0.003	0.001	0.000	Z	0.001	0.046	0.132	0.002	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.001	0.000	0.000	0.084	0.014	0.132	
12-Apr	0.023	0.046	0.028	0.002	0.000	Z	0.000	0.000	0.037	0.014	0.011	0.045	0.032	0.013	0.003	0.000	0.000	0.000	0.067	0.159	0.100	0.077	0.030	0.000	0.030	0.159	
13-Apr	Z	0.002	0.001	0.000	0.000	0.008	0.000	0.047	0.199	0.077	0.022	0.007	0.000	0.000	0.003	0.004	0.005	0.000	0.031	0.084	0.086	0.072	0.092	0.101	0.037	0.199	
14-Apr	0.095	Z	0.072	0.050	0.038	0.057	0.021	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.003	0.003	0.000	0.004	0.038	0.021	0.000	0.000	0.000	0.000	0.018	0.095	
15-Apr	0.000	0.005	Z	0.033	0.031	0.045	0.019	0.000	0.000	0.004	0.001	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	0.006	0.045	
16-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.066	0.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.104	
17-Apr	0.000	0.000	0.000	0.000	Z	0.008	0.085	0.048	0.000	0.000	0.000	0.001	0.000	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.085	
18-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	PF	PF	PF	PF	PF	PF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.006	
19-Apr	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	PF	PF	PF	0.042	0.027	0.137	0.010	0.137	
20-Apr	0.092	Z	0.062	0.002	0.000	0.000	0.000	0.004	0.007	0.000	0.000	0.014	0.001	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.092	
21-Apr	0.000	0.000	Z	0.061	0.021	0.061	0.024	0.109	0.095	0.017	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.021	0.018	0.109		
22-Apr	0.074	0.083	0.054	Z	0.013	0.054	0.121	0.072	0.008	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.012	0.001	0.000	0.000	0.022	0.121	
23-Apr	0.016	0.000	0.000	0.000	Z	0.000	0.006	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.130	0.076	0.027	0.015	0.130	
24-Apr	0.003	0.001	0.015	0.014	0.127	Z	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.048	0.063	0.024	0.004	0.002	0.061	0.083	0.009	0.013	0.010	0.030	0.022	0.127	
25-Apr	Z	0.060	0.096	0.080	0.014	0.029	0.067	0.028	0.006	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	0.017	0.096	
26-Apr	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	0.003	0.000	0.000	0.001	0.014	0.006	0.001	0.001	0.014	0.014	
27-Apr	0.000	0.000	Z	0.000	0.000	0.013	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.015	0.000	0.000	0.000	0.000	0.002	0.019	
28-Apr	0.000	0.000	0.001	Z	0.000	0.012	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.000	0.018	0.045	0.096	0.091	0.012	0.096	
29-Apr	0.054	0.061	0.043	0.114	Z	0.114	0.022	0.003	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.114	
30-Apr	0.000	0.000	0.000	0.000	0.000	Z	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	0.001	0.001

0.017	0.014	0.020	0.020	0.026	0.020	0.020	0.021	0.023	0.020	0.015	0.008	0.007	0.008	0.013	0.017	0.009	0.003	0.009	0.015	0.012	0.014	0.013	0.017	Diurnal Average	
0.095	0.083	0.096	0.114	0.304	0.114	0.121	0.132	0.199	0.168	0.130	0.111	0.157	0.073	0.149	0.300	0.184	0.063	0.067	0.159	0.100	0.130	0.096	0.137	Diurnal Maximum	

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





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Barge Landing - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	476	70.31	70.31
0.006 - 0.05	132	19.50	89.81
0.06 - 0.1	62	9.16	98.97
> 0.1	7	1.03	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Barge Landing - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	13	26	21	13	27	54	77	68	30	12	26	36	18	12	19	20	472
0.006 - 0.05	16	9	10	7	3	2	8	25	11	9	3	3	2	3	8	13	132
0.06 - 0.1	11	5	4	1	1	0	3	5	5	4	0	2	4	1	6	10	62
> 0.1	0	2	1	0	0	0	0	0	0	0	0	0	2	0	1	1	7
Totals	40	42	36	21	31	56	88	98	46	25	29	41	26	16	34	44	673

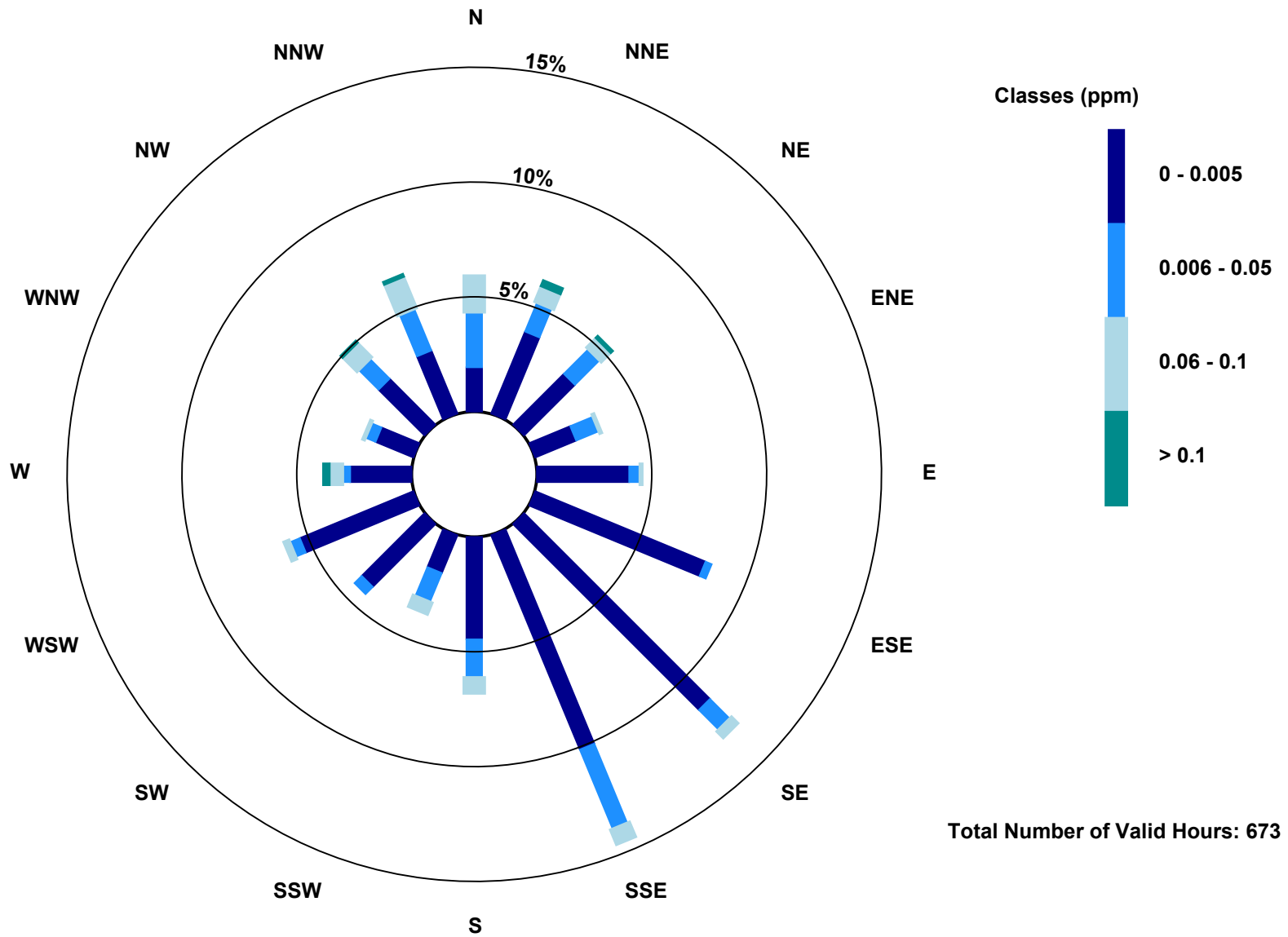
Total Number of Valid Hours: 673

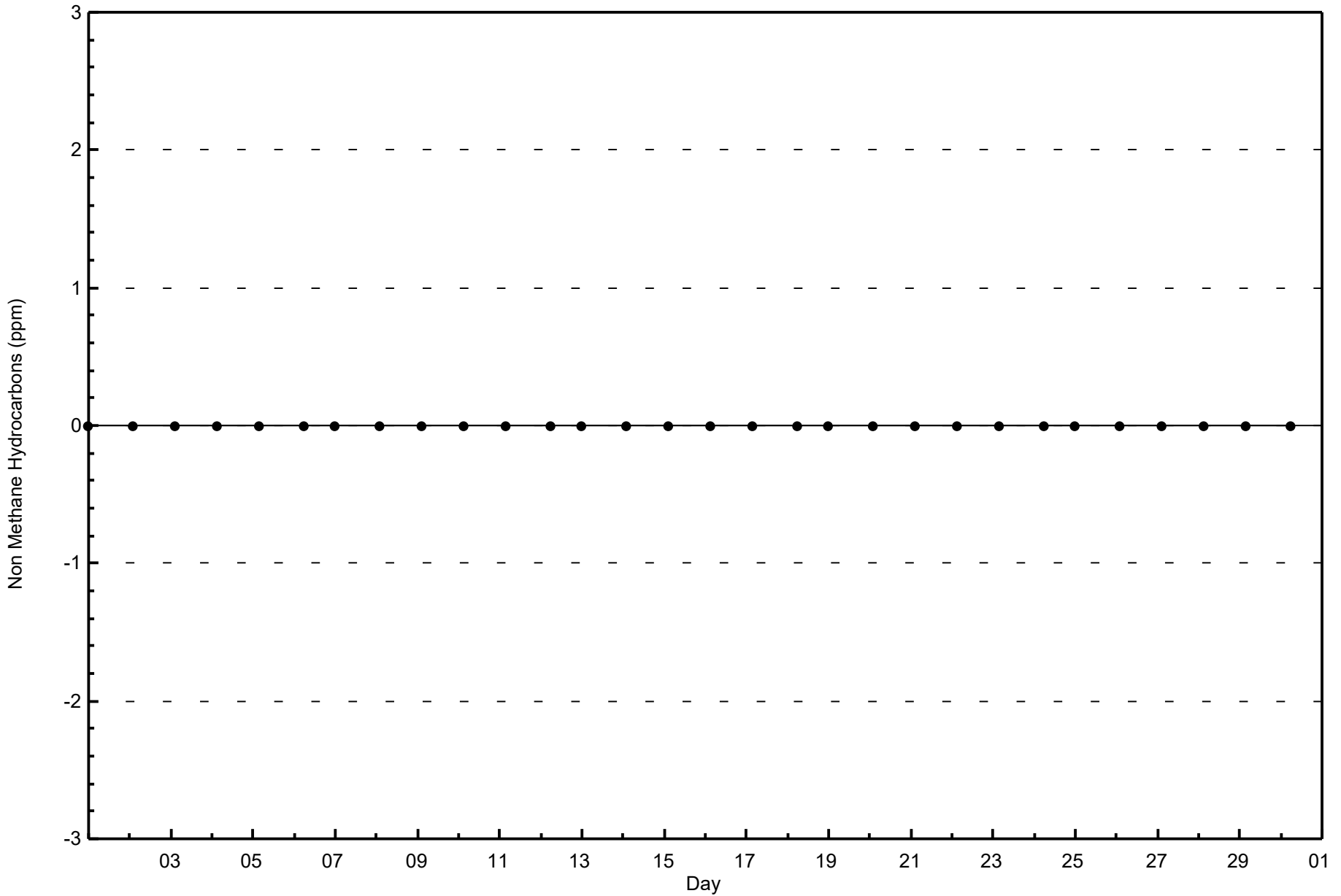
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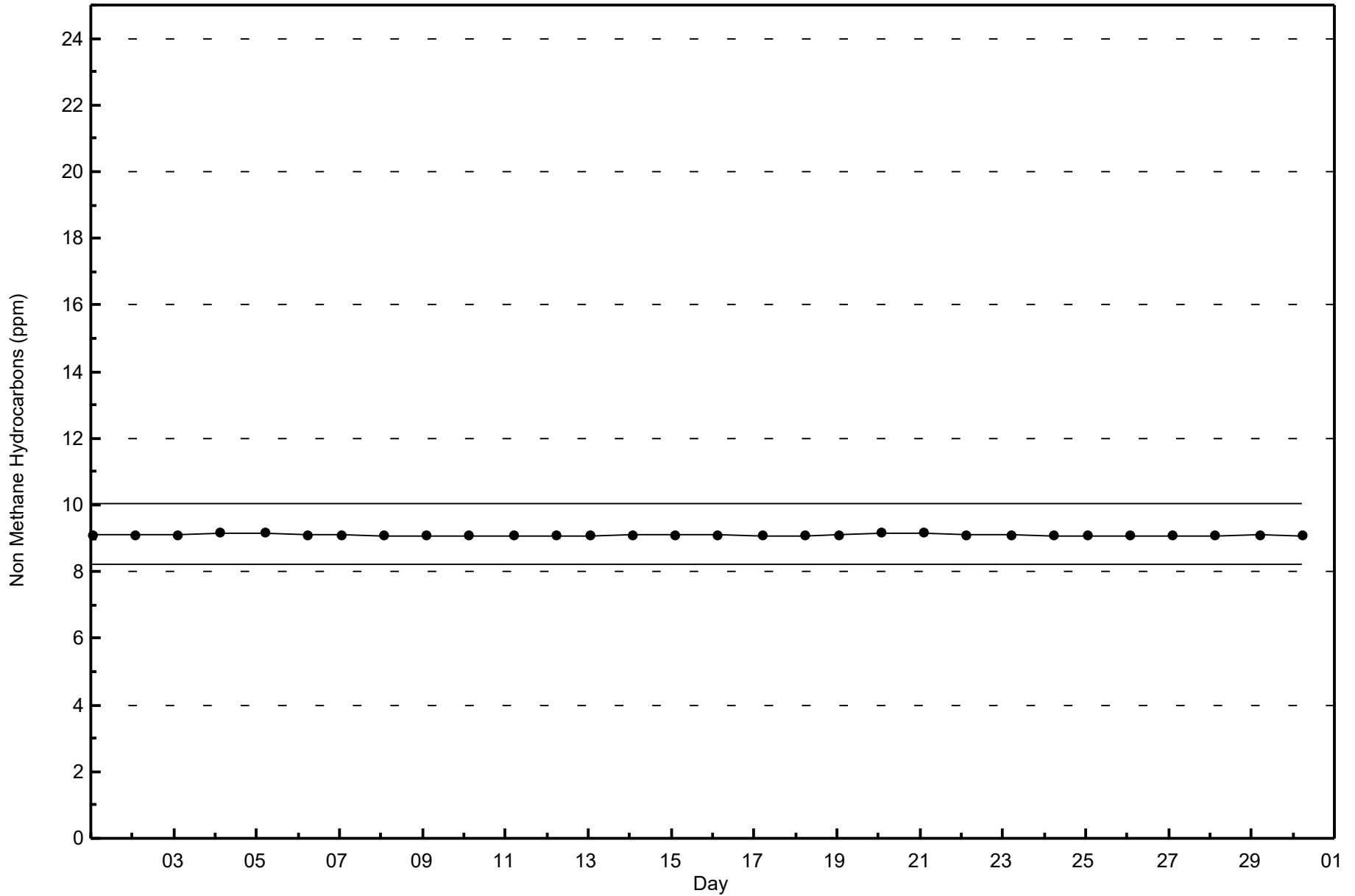


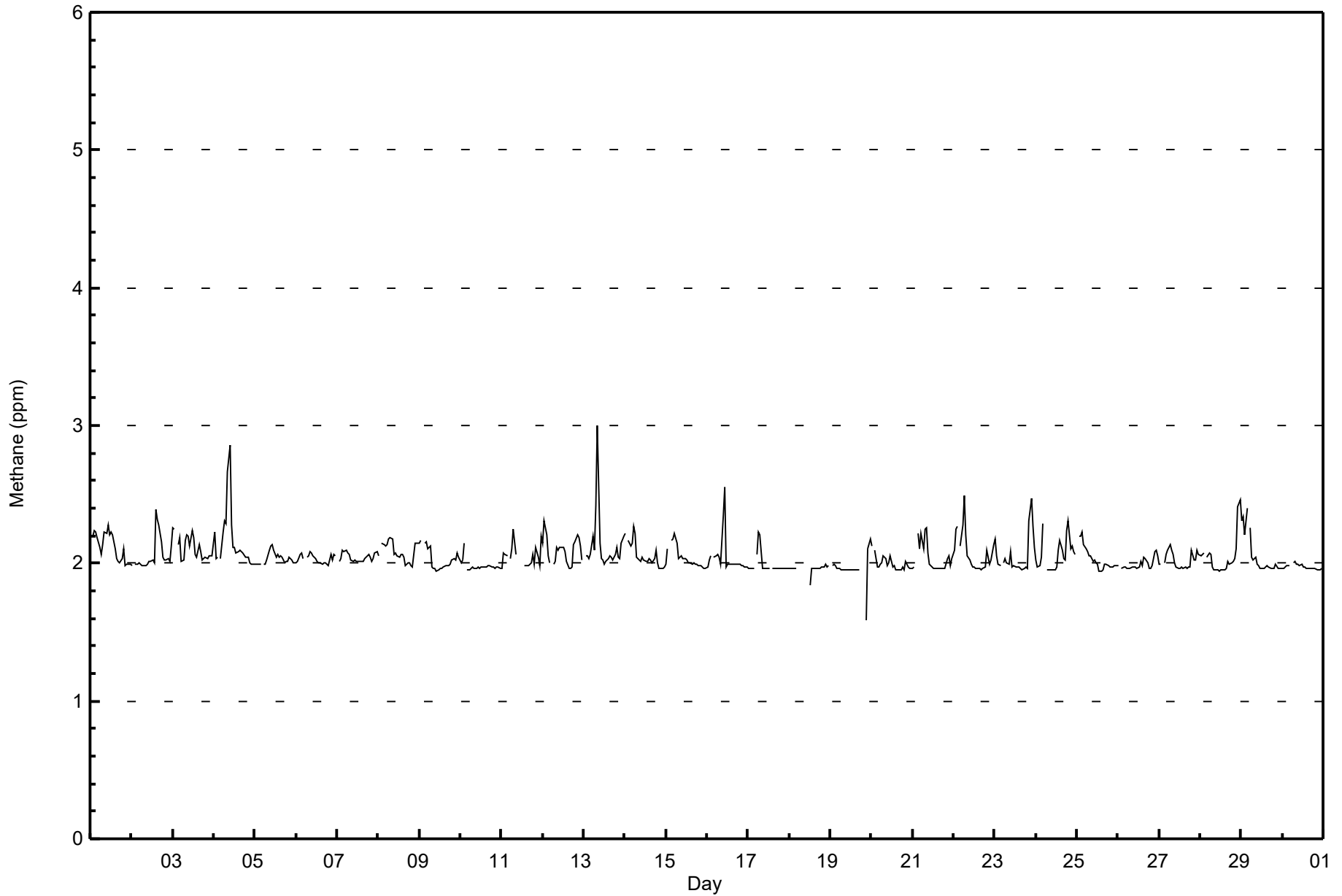
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Barge Landing











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Barge Landing - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	450	66.47	66.47
2.1 - 3.0	227	33.53	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720



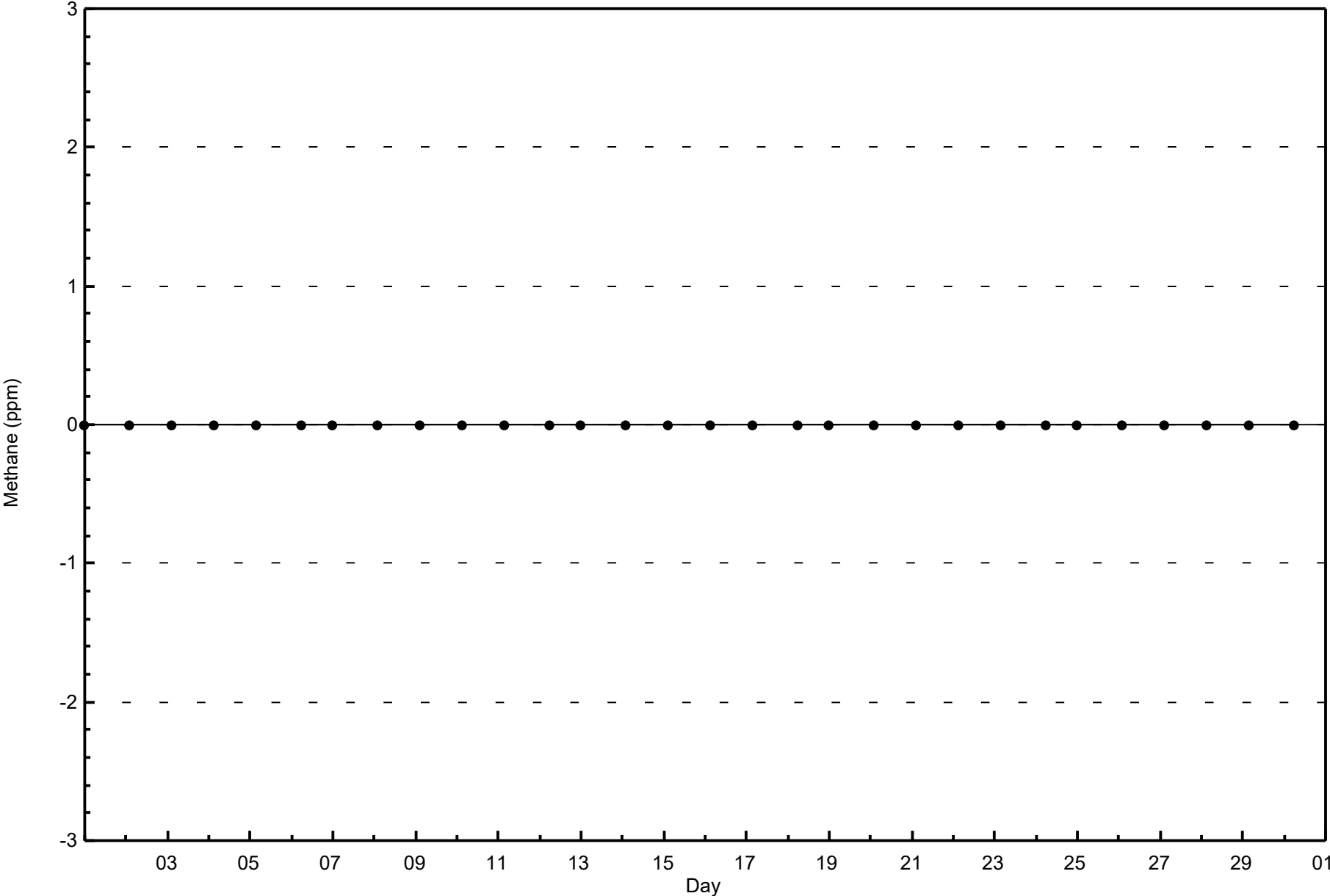
**Wood Buffalo Environmental Association
Frequency Distribution**

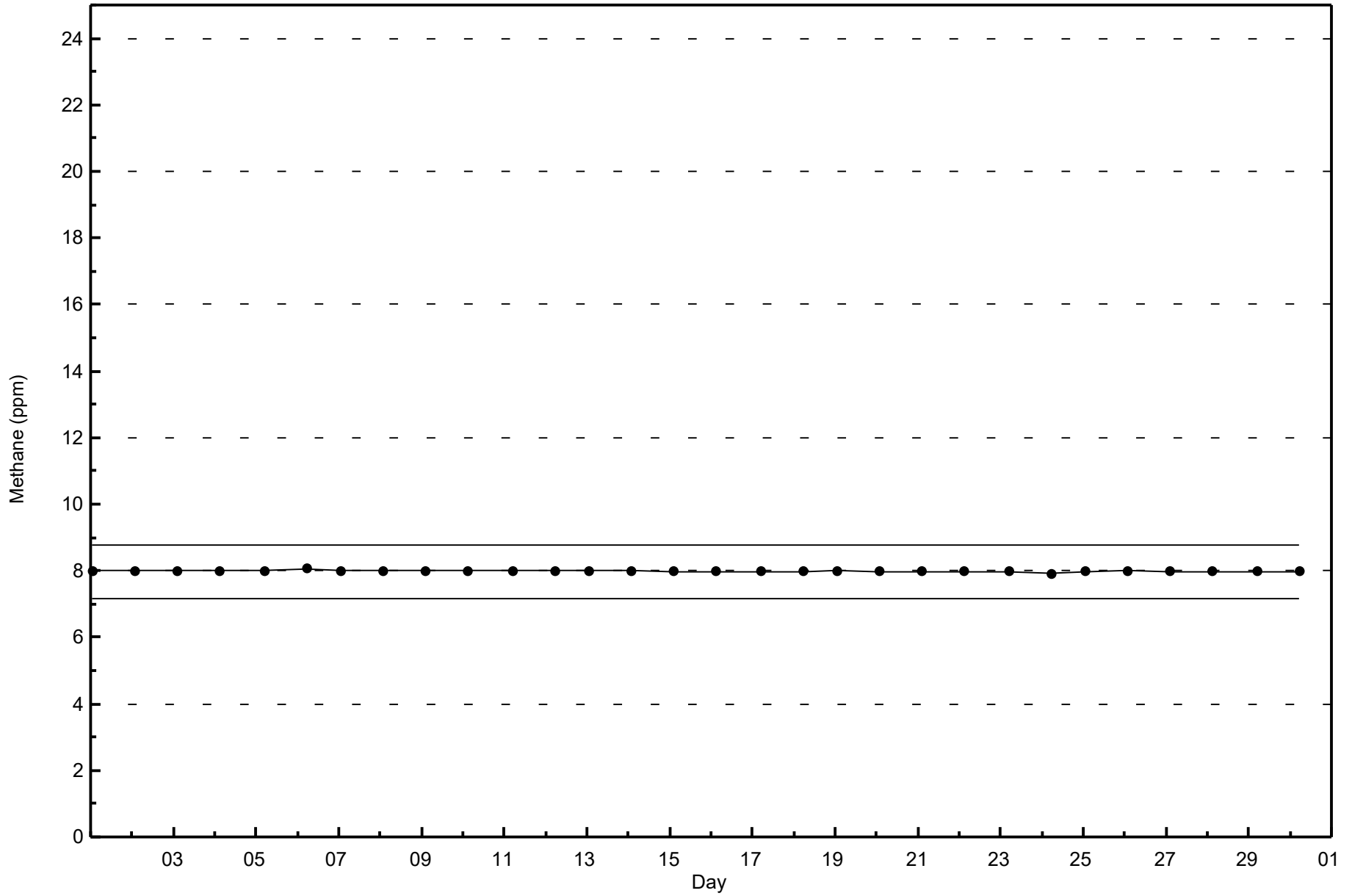
**Methane (CH₄) - ppm
Barge Landing - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	11	28	24	13	27	53	74	62	24	11	23	36	17	11	17	15	446
2.1 - 3.0	29	14	12	8	4	3	14	36	22	14	6	5	9	5	17	29	227
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
Totals	40	42	36	21	31	56	88	98	46	25	29	41	26	16	34	44	673

Total Number of Valid Hours: 673

Total Number of Hours: 720





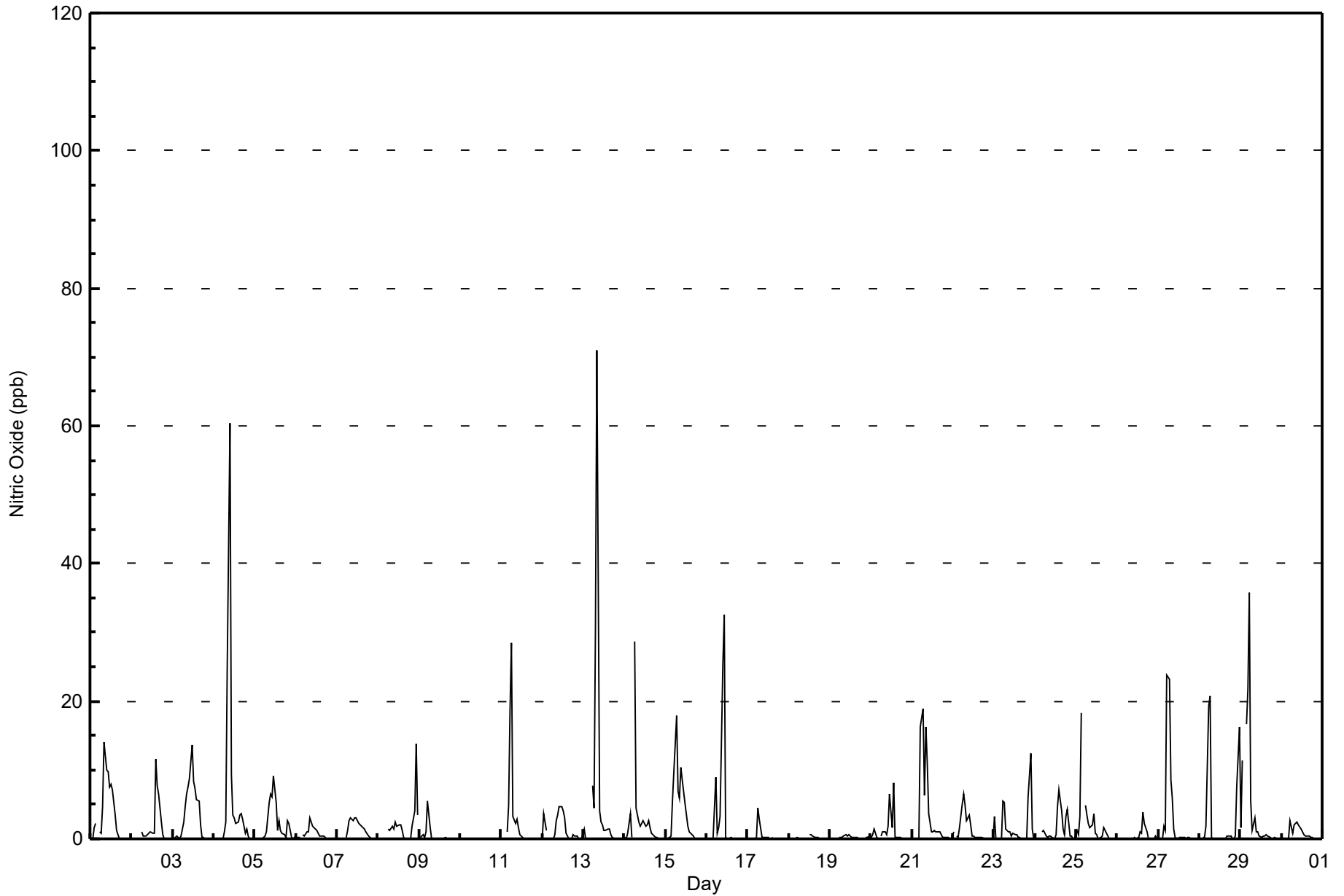


Maximum Value: 70.9 ppb on Apr 13 09:00																					Maximum Daily Average: 5.6 ppb on Apr 13					Hours in Service: 720																							
Minimum Value: 0.0 ppb on Apr 1 01:00																					Minimum Daily Average: 0.0 ppb on Apr 10					Hours of Data: 675																							
Maximum Diurnal Average: 6.7 ppb at hour 6																					Minimum Diurnal Average: 0.3 ppb at hour 19					Hours of Missing Data: 45																							
Monthly Average: 2.08 ppb																					Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 1.6 P ₉₀ = 5.3 P ₉₉ = 26.1					Hours of Calibration: 36																							
																										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-Apr	0.0	0.0	1.6	2.3	Z	1.0	0.9	4.7	13.9	10.0	9.7	7.4	7.9	7.0	3.5	1.3	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.1	3.1	13.9																							
2-Apr	0.0	0.0	0.0	0.0	0.0	Z	1.0	0.5	0.5	0.6	0.7	1.1	0.9	0.9	11.5	7.7	6.4	2.5	0.5	0.0	0.0	0.0	0.0	0.1	1.5	11.5																							
3-Apr	Z	0.0	0.3	0.2	0.0	0.3	2.5	4.7	6.4	7.6	8.8	13.6	8.3	7.3	5.7	5.6	2.0	0.3	0.1	0.1	0.1	0.0	0.0	0.0	3.2	13.6																							
4-Apr	0.0	Z	0.0	0.0	0.0	0.1	1.0	2.4	24.7	60.4	9.3	3.5	3.1	2.2	2.4	3.5	3.7	2.8	0.7	1.3	0.4	0.0	0.0	0.0	5.3	60.4																							
5-Apr	0.1	0.0	Z	0.0	0.1	0.2	0.4	1.0	5.3	6.5	6.0	9.1	5.2	1.2	2.7	1.3	0.8	0.6	0.2	2.6	2.3	0.2	0.0	0.1	2.0	9.1																							
6-Apr	0.1	0.1	0.1	Z	0.6	0.4	1.0	1.0	3.1	2.5	1.9	1.5	1.3	0.9	0.4	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.7	3.1																							
7-Apr	0.0	0.0	0.0	0.0	Z	0.2	1.2	2.6	3.0	2.7	3.1	3.1	2.6	2.1	1.8	1.5	1.5	1.1	0.4	0.1	0.1	0.0	0.0	0.0	1.2	3.1																							
8-Apr	0.0	0.0	0.0	0.0	0.0	Z	1.4	1.3	1.7	1.4	2.3	1.9	1.9	2.1	1.1	0.3	0.0	0.1	0.0	0.0	1.9	4.1	13.7	3.4	1.7	13.7																							
9-Apr	Z	0.2	0.5	0.2	1.0	5.6	1.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	5.6																							
10-Apr	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																						
11-Apr	0.0	0.1	Z	1.0	4.9	18.6	28.4	3.2	2.2	2.8	1.6	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	2.8	28.4																							
12-Apr	0.0	3.6	1.2	Z	0.0	0.0	0.0	0.5	2.7	3.6	4.7	4.7	4.1	3.1	0.8	0.0	0.0	0.0	0.6	0.3	0.4	0.1	0.0	0.0	1.3	4.7																							
13-Apr	1.5	0.1	0.1	0.0	Z	7.7	4.5	30.3	70.9	4.2	2.4	1.9	1.3	1.2	1.5	1.3	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	5.6	70.9																							
14-Apr	0.1	0.0	0.8	3.7	0.3	Z	28.7	4.6	2.5	1.8	2.2	2.7	1.8	2.0	2.7	1.6	0.8	0.4	0.2	0.1	0.0	0.0	0.0	0.0	2.5	28.7																							
15-Apr	Z	0.1	0.2	0.5	5.5	9.8	17.9	7.0	6.0	10.4	8.6	5.1	3.5	1.9	1.0	0.6	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.4	17.9																							
16-Apr	0.0	Z	0.0	0.0	0.1	9.0	0.8	1.5	3.3	25.3	32.5	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	32.5																							
17-Apr	0.0	0.0	Z	0.0	0.0	0.1	4.5	2.9	0.2	0.2	0.2	0.1	0.3	M	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.5																							
18-Apr	0.0	0.0	0.0	Z	0.0	0.2	0.1	PF	PF	PF	PF	PF	0.5	0.6	0.4	0.3	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.6																							
19-Apr	0.1	0.0	0.0	0.0	Z	0.3	0.2	0.2	0.3	0.6	0.3	0.6	0.3	0.3	0.3	0.2	0.2	0.1	PF	PF	PF	0.3	0.2	0.4	0.2	0.6																							
20-Apr	0.1	0.5	1.4	0.2	0.1	Z	0.4	0.9	1.0	0.6	1.9	6.5	1.7	8.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	1.1	8.2																							
21-Apr	Z	0.1	0.0	0.0	0.0	16.2	18.9	6.3	16.3	11.0	3.6	1.0	1.1	1.3	1.0	1.0	0.9	0.6	0.2	0.2	0.1	0.1	0.1	0.1	3.5	18.9																							
22-Apr	1.0	Z	0.4	0.1	1.7	5.1	6.6	4.9	2.6	3.4	2.0	0.4	0.3	0.2	0.2	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	1.3	6.6																							
23-Apr	3.2	0.1	Z	0.0	0.0	5.4	5.3	1.5	1.1	1.1	0.3	0.8	0.5	0.5	0.3	0.2	0.1	0.1	0.0	0.0	6.1	12.5	1.5	0.1	1.8	12.5																							
24-Apr	0.0	0.0	0.0	Z	0.9	1.2	0.3	0.2	0.4	0.3	0.3	0.1	0.6	4.6	7.1	4.1	1.5	0.6	3.4	4.2	0.4	0.5	0.0	0.0	1.3	7.1																							
25-Apr	1.2	0.5	3.2	18.3	Z	4.8	3.5	2.3	1.6	2.1	3.6	0.9	0.5	0.0	0.2	0.4	1.7	1.3	0.4	0.0	0.0	0.0	0.0	0.0	2.0	18.3																							
26-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.1	1.1	0.8	3.8	2.2	1.0	0.1	0.1	0.0	0.0	0.5	0.0	0.4	3.8																							
27-Apr	Z	0.0	0.0	1.8	1.3	23.7	23.1	8.5	5.9	1.5	0.1	0.1	0.2	0.1	0.1	0.2	0.0	0.3	0.1	0.1	0.0	0.0	0.1	0.0	2.9	23.7																							
28-Apr	0.0	Z	0.1	0.3	1.8	19.3	20.8	0.2	0.1	C	C	C	C	C	C	0.0	0.4	0.3	0.4	0.1	0.0	0.4	7.5	16.3	--	20.8																							
29-Apr	1.5	11.3	Z	16.8	21.8	35.9	5.5	1.2	3.1	1.1	0.9	0.4	0.1	0.4	0.5	0.7	0.4	0.1	0.1	0.0	0.2	0.0	0.0	0.0	4.4	35.9																							
30-Apr	0.0	0.0	0.0	Z	0.1	2.7	0.9	2.0	2.2	2.4	1.9	1.5	1.0	0.6	0.5	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.7	2.7																							
																								0.4	0.7	0.4	1.8	1.6	6.7	6.1	3.3	6.2	5.9	3.9	2.5	1.7	1.8	1.6	1.2	0.9	0.4	0.3	0.3	0.4	0.6	0.8	0.7	Diurnal Average	
																								3.2	11.3	3.2	18.3	21.8	35.9	28.7	30.3	70.9	60.4	32.5	13.6	8.3	8.2	11.5	7.7	6.4	2.8	3.4	4.2	6.1	12.5	13.7	16.3	Diurnal Maximum	
Z - zerospan																								C - Calibration			M - Maintenance			PF - Power Failure																			



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Barge Landing - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Barge Landing - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	662	98.07	98.07
21 - 40	11	1.63	99.70
41 - 80	2	0.30	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 675

Total Number of Hours: 720



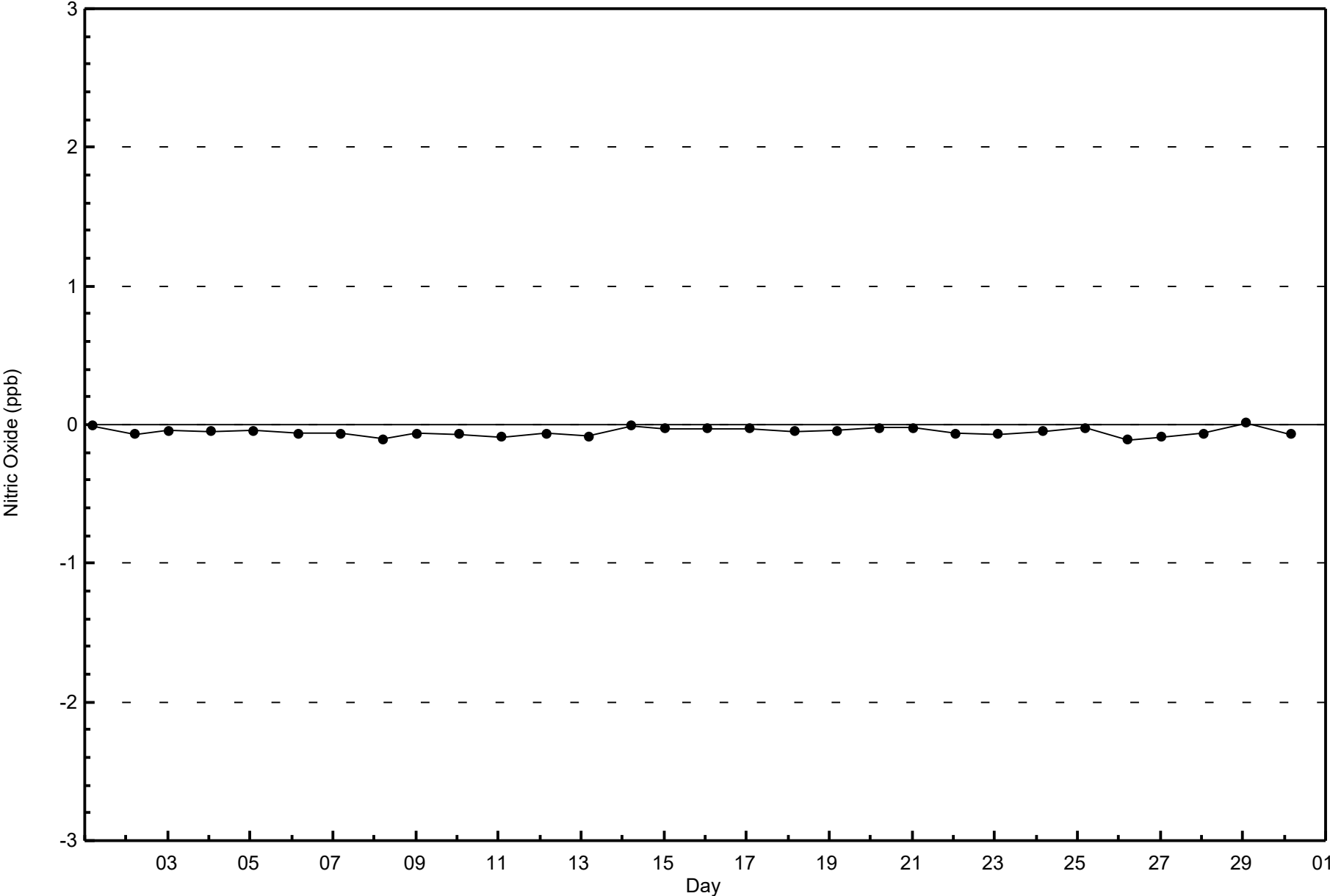
**Wood Buffalo Environmental Association
Frequency Distribution**

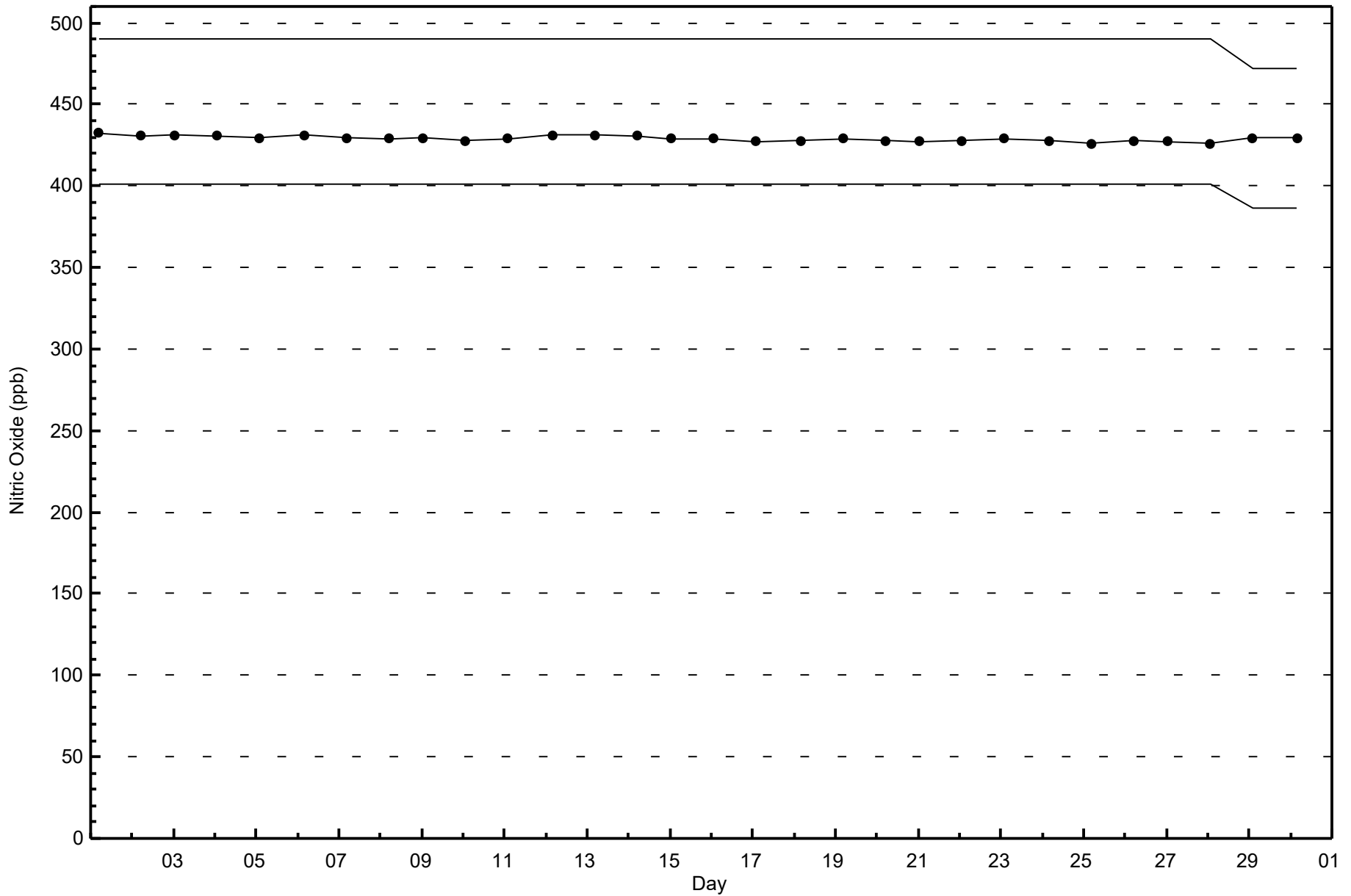
**Nitric Oxide (NO) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	40	40	39	20	28	56	85	99	46	27	30	41	26	11	30	41	659
21 - 40	1	0	0	1	0	0	1	2	0	2	0	0	1	1	1	1	11
11 - 80	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	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
Totals	41	41	39	21	28	56	86	101	46	29	30	41	27	12	32	42	672

Total Number of Valid Hours: 672

Total Number of Hours: 720







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

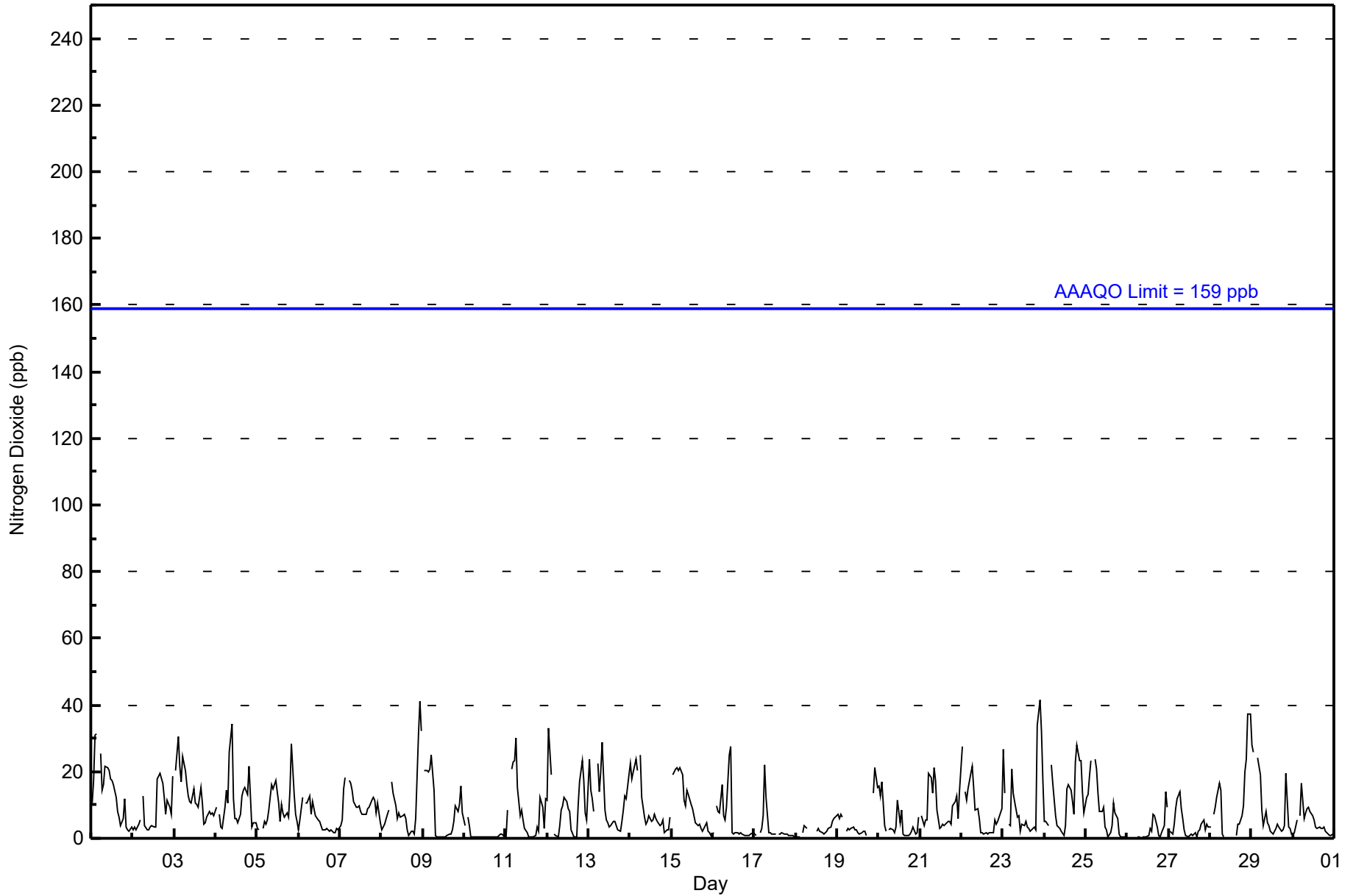
Barge Landing - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	720																												
Maximum Value: 41.6 ppb on Apr 23 22:00		Maximum Daily Average: 13.9 ppb on Apr 1																	Hours of Data: 675																														
Minimum Value: 0.2 ppb on Apr 26 01:00		Minimum Daily Average: 1.0 ppb on Apr 10																	Hours of Missing Data: 45																														
Maximum Diurnal Average: 15.1 ppb at hour 6		Minimum Diurnal Average: 4.0 ppb at hour 18																	Hours of Calibration: 36																														
Monthly Average: 8.03 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.8 Q ₁ = 2.2 Median = 5.3 Q ₃ = 12.0 P ₉₀ = 20.1 P ₉₉ = 32.5																	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-Apr	10.4	17.3	30.9	31.2	Z	25.3	14.6	15.9	21.4	21.1	20.2	17.6	17.4	16.2	12.2	8.2	6.3	4.0	6.1	12.0	3.2	2.5	2.3	3.5	13.9	31.2																							
2-Apr	2.7	3.6	2.6	4.2	5.5	Z	12.7	3.9	2.4	2.7	3.3	3.8	3.4	3.2	17.8	18.6	19.6	16.6	12.4	7.3	11.4	9.3	7.3	18.7	8.4	19.6																							
3-Apr	Z	20.2	30.5	21.8	17.1	24.4	20.3	15.9	12.5	11.0	10.8	14.7	10.7	10.0	9.5	15.3	10.4	4.2	4.5	6.4	8.2	7.0	7.8	6.9	13.0	30.5																							
4-Apr	9.4	Z	7.2	3.6	3.0	9.4	14.5	10.8	26.0	34.4	11.7	6.0	6.1	4.8	7.4	12.7	14.6	15.2	13.3	21.7	12.5	3.4	4.6	4.8	11.2	34.4																							
5-Apr	3.1	2.5	Z	2.8	5.1	4.3	5.4	8.6	15.9	14.8	16.0	17.3	10.6	5.0	10.2	7.6	6.5	7.5	6.3	14.4	28.3	13.0	7.0	5.0	9.4	28.3																							
6-Apr	2.6	5.5	12.2	Z	10.6	10.5	12.6	7.1	11.2	9.1	6.9	5.6	5.0	3.9	2.5	2.6	2.9	2.5	2.1	2.4	1.7	1.8	2.9	2.4	5.5	12.6																							
7-Apr	3.8	5.7	14.7	18.1	Z	17.4	16.7	14.3	10.9	9.4	9.2	9.6	8.2	7.4	7.0	7.4	8.8	9.5	11.6	12.4	11.5	7.7	10.5	4.7	10.3	18.1																							
8-Apr	2.4	3.2	4.2	7.1	8.5	Z	16.8	13.7	9.9	5.8	7.7	6.3	6.8	7.4	5.8	2.5	0.7	2.0	2.2	1.1	6.0	31.5	40.9	32.3	9.8	40.9																							
9-Apr	Z	20.4	20.3	20.1	20.6	25.2	14.6	0.9	0.6	0.6	0.4	0.4	0.4	0.3	0.8	1.4	1.3	2.7	5.0	9.6	8.1	10.0	15.8	7.8	8.1	25.2																							
10-Apr	4.0	Z	6.3	3.9	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	0.4	0.4	0.4	0.8	1.4	1.1	0.4	1.0	6.3																							
11-Apr	0.4	8.5	Z	20.8	22.9	23.1	29.9	15.1	6.8	8.4	5.6	2.9	1.6	0.4	0.4	0.4	0.3	0.9	3.3	2.3	12.1	9.5	2.8	12.0	8.3	29.9																							
12-Apr	11.5	33.2	19.1	Z	1.3	0.7	0.6	3.7	8.4	9.9	12.1	11.0	8.8	8.2	2.5	0.4	0.3	0.6	9.6	17.0	23.1	17.4	7.8	5.5	9.2	33.2																							
13-Apr	23.9	14.6	11.9	8.0	Z	22.4	13.9	20.0	28.8	8.5	5.6	4.7	3.5	3.7	4.9	5.1	3.7	2.5	2.1	5.2	8.5	12.5	12.0	19.2	10.7	28.8																							
14-Apr	22.5	17.6	20.1	23.8	20.5	Z	25.0	12.4	6.4	4.3	5.2	6.7	5.0	5.3	7.3	5.8	4.9	3.7	4.4	5.3	1.7	2.4	2.7	6.3	9.5	25.0																							
15-Apr	Z	19.2	20.6	21.1	20.5	21.2	19.0	11.6	9.7	14.5	13.1	10.1	8.9	6.9	4.6	3.9	4.1	2.8	2.0	2.8	4.5	2.2	1.7	0.9	9.8	21.2																							
16-Apr	1.5	Z	9.9	8.0	7.5	16.2	6.6	5.5	9.2	24.8	27.5	1.6	1.4	1.5	1.5	1.3	1.5	1.4	1.0	0.9	0.9	0.8	1.3	1.7	5.8	27.5																							
17-Apr	1.3	0.8	Z	1.5	2.8	6.8	22.2	12.2	1.9	1.7	1.4	1.3	1.4	M	1.4	1.4	1.5	1.4	1.1	1.2	0.8	0.9	0.7	0.5	3.0	22.2																							
18-Apr	0.6	0.6	0.5	Z	1.8	3.9	3.1	PF	PF	PF	PF	PF	2.1	2.8	2.1	1.9	1.1	1.6	2.1	3.0	3.5	4.9	6.0	6.2	2.7	6.2																							
19-Apr	7.1	6.1	7.2	6.4	Z	2.1	2.8	2.7	2.8	3.6	2.4	2.6	1.5	1.2	1.9	2.2	2.0	1.0	PF	PF	PF	13.4	21.2	15.1	5.3	21.2																							
20-Apr	15.6	12.9	17.0	3.8	2.2	Z	2.6	2.9	2.6	1.5	3.6	11.5	4.5	8.4	1.1	0.7	0.8	1.0	1.4	2.2	3.5	1.3	1.8	6.2	4.7	17.0																							
21-Apr	Z	6.7	4.0	5.3	5.3	19.3	18.3	13.7	21.3	17.5	8.5	2.9	3.4	4.4	3.7	4.5	5.2	5.1	4.2	9.8	11.2	12.7	5.8	14.3	9.0	21.3																							
22-Apr	27.5	Z	13.8	11.6	14.9	19.5	21.8	15.4	8.5	9.1	5.8	1.8	1.5	1.3	1.7	1.4	1.8	1.8	1.7	5.6	4.4	4.9	6.3	8.8	8.3	27.5																							
23-Apr	26.8	13.5	Z	4.1	4.0	20.6	13.7	11.2	6.4	6.7	2.3	4.2	4.0	5.1	3.5	3.1	2.2	2.9	3.4	2.6	33.8	41.6	32.0	17.4	11.5	41.6																							
24-Apr	4.9	5.2	3.7	Z	22.2	16.6	6.7	3.9	3.5	2.9	2.1	1.0	3.8	14.9	16.3	14.4	10.9	7.0	22.8	28.1	23.5	23.3	14.1	7.8	11.3	28.1																							
25-Apr	12.2	13.1	18.6	23.5	Z	23.8	20.6	13.5	7.9	8.2	9.2	3.3	2.5	0.4	1.7	4.0	10.5	7.5	5.9	1.4	0.3	0.3	0.3	0.3	8.2	23.8																							
26-Apr	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.2	0.3	0.5	0.3	0.8	3.1	2.2	7.3	6.6	3.5	0.7	0.6	1.5	3.8	14.1	9.5	2.5	14.1																							
27-Apr	Z	2.3	1.1	4.3	8.7	12.0	14.1	8.8	6.0	2.4	0.8	0.5	1.0	1.3	1.0	1.6	0.6	2.2	2.6	4.3	5.6	2.5	4.4	3.3	4.0	14.1																							
28-Apr	3.4	Z	7.4	9.3	12.3	16.4	14.6	1.1	0.4	C	C	C	C	C	C	0.8	4.4	4.4	6.7	9.8	19.8	23.8	37.4	37.2	--	37.4																							
29-Apr	27.9	26.0	Z	24.3	21.6	19.2	8.5	3.7	8.0	4.5	3.8	2.1	1.2	2.1	2.9	4.1	3.5	2.3	2.4	3.8	19.6	3.2	2.8	1.3	8.6	27.9																							
30-Apr	1.4	1.7	5.6	Z	6.8	16.7	6.1	7.5	8.7	9.4	7.9	6.7	5.4	3.3	3.0	3.2	3.1	3.0	3.4	2.0	1.1	0.9	0.7	1.4	4.7	16.7																							
																								9.1	10.4	11.6	11.6	9.9	15.1	12.6	8.9	8.9	8.8	7.3	5.6	4.5	4.7	4.7	4.8	4.7	4.0	5.0	6.7	9.3	9.0	9.2	8.7	Diurnal Average	
																								27.9	33.2	30.9	31.2	22.9	25.3	29.9	20.0	28.8	34.4	27.5	17.6	17.4	16.2	17.8	18.6	19.6	16.6	22.8	28.1	33.8	41.6	40.9	37.2	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 (NO₂) - ppb
Barge Landing - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	614	90.96	90.96
21 - 40	59	8.74	99.70
41 - 80	2	0.30	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 675

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	28	40	36	17	28	55	83	95	43	23	29	40	26	11	27	30	611
21 - 40	12	1	3	4	0	1	3	6	3	5	1	1	1	1	5	12	59
11 - 80	1	0	0	0	0	0	0	0	0	1	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
Totals	41	41	39	21	28	56	86	101	46	29	30	41	27	12	32	42	672

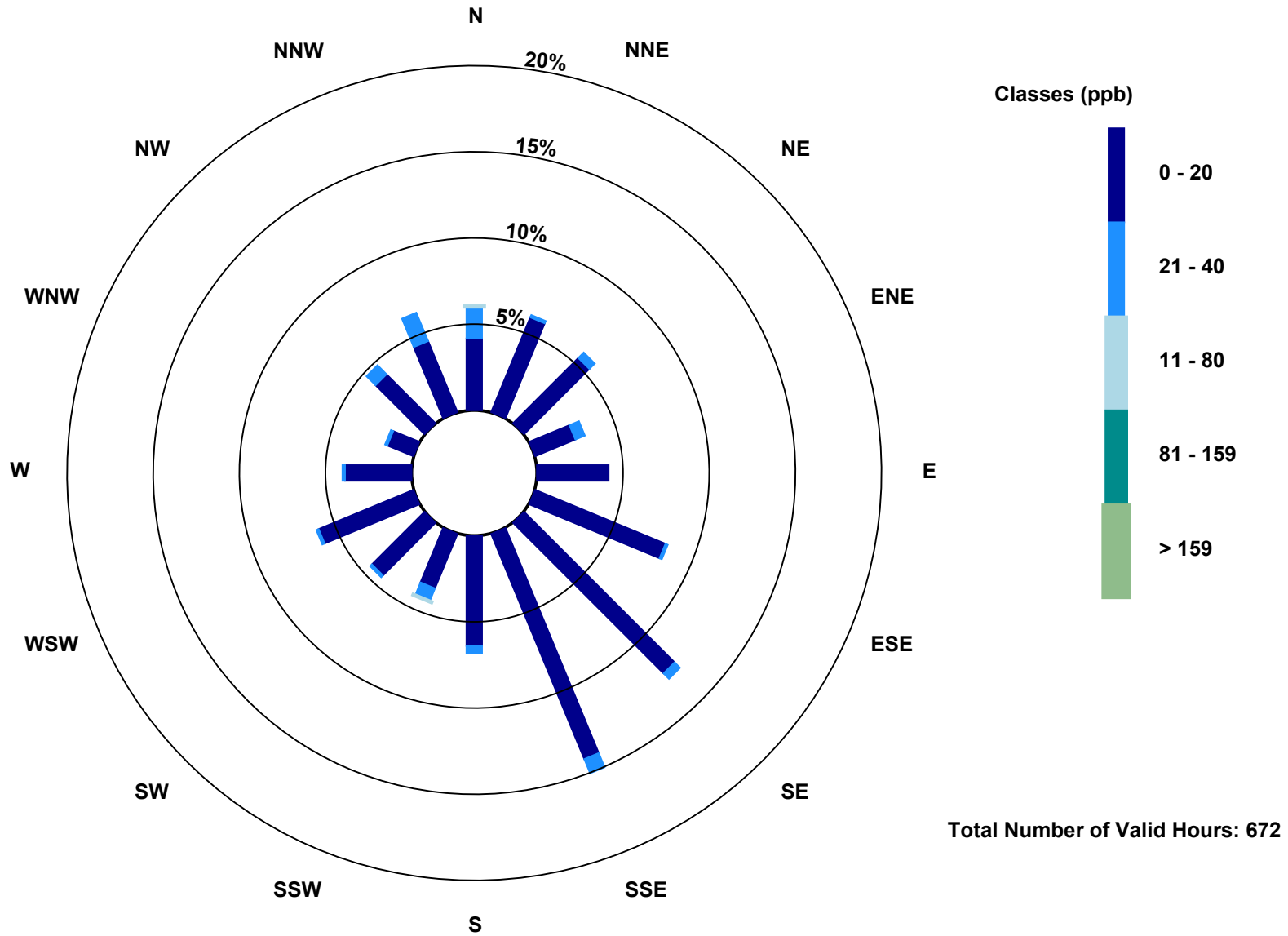
Total Number of Valid Hours: 672

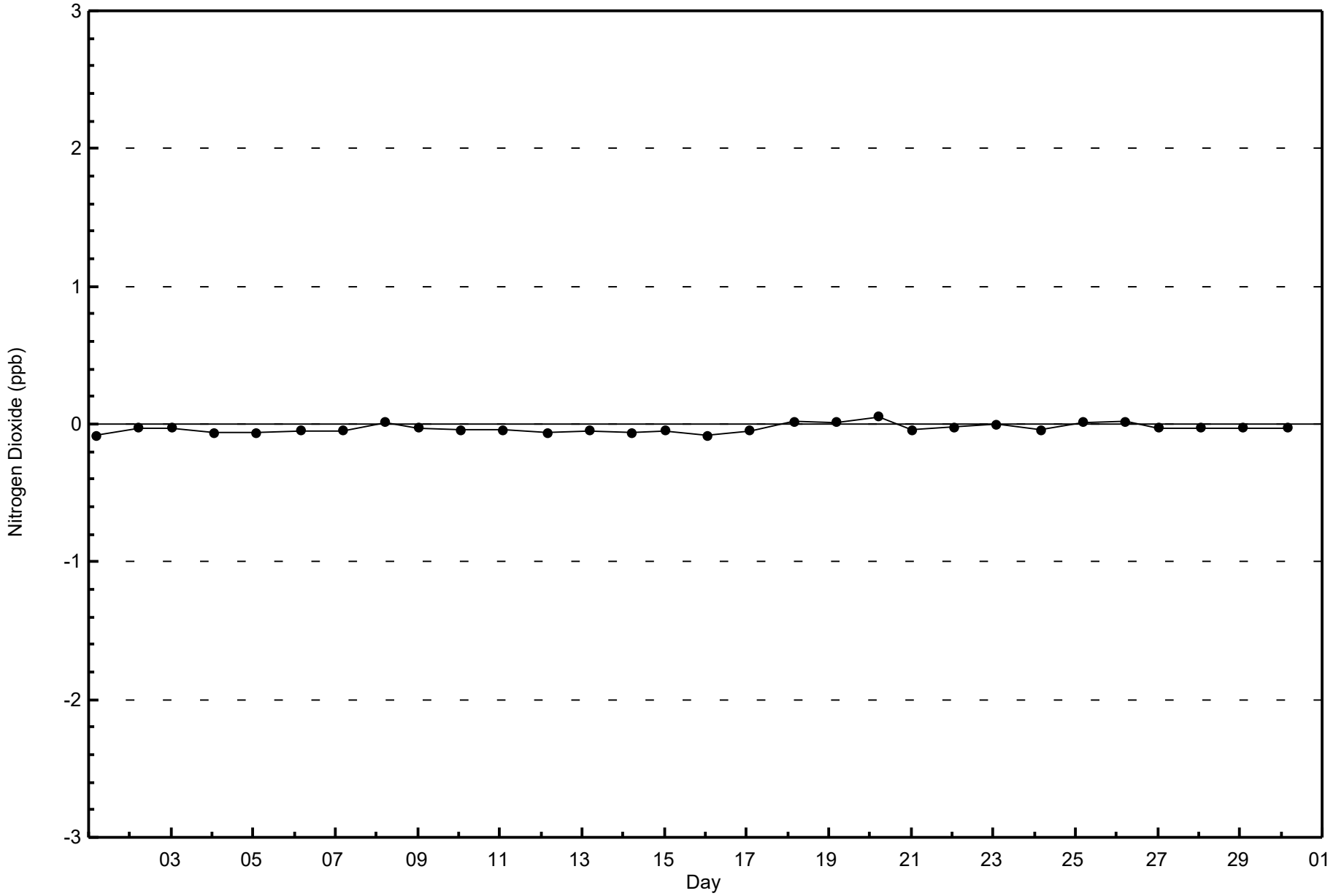
Total Number of Hours: 720

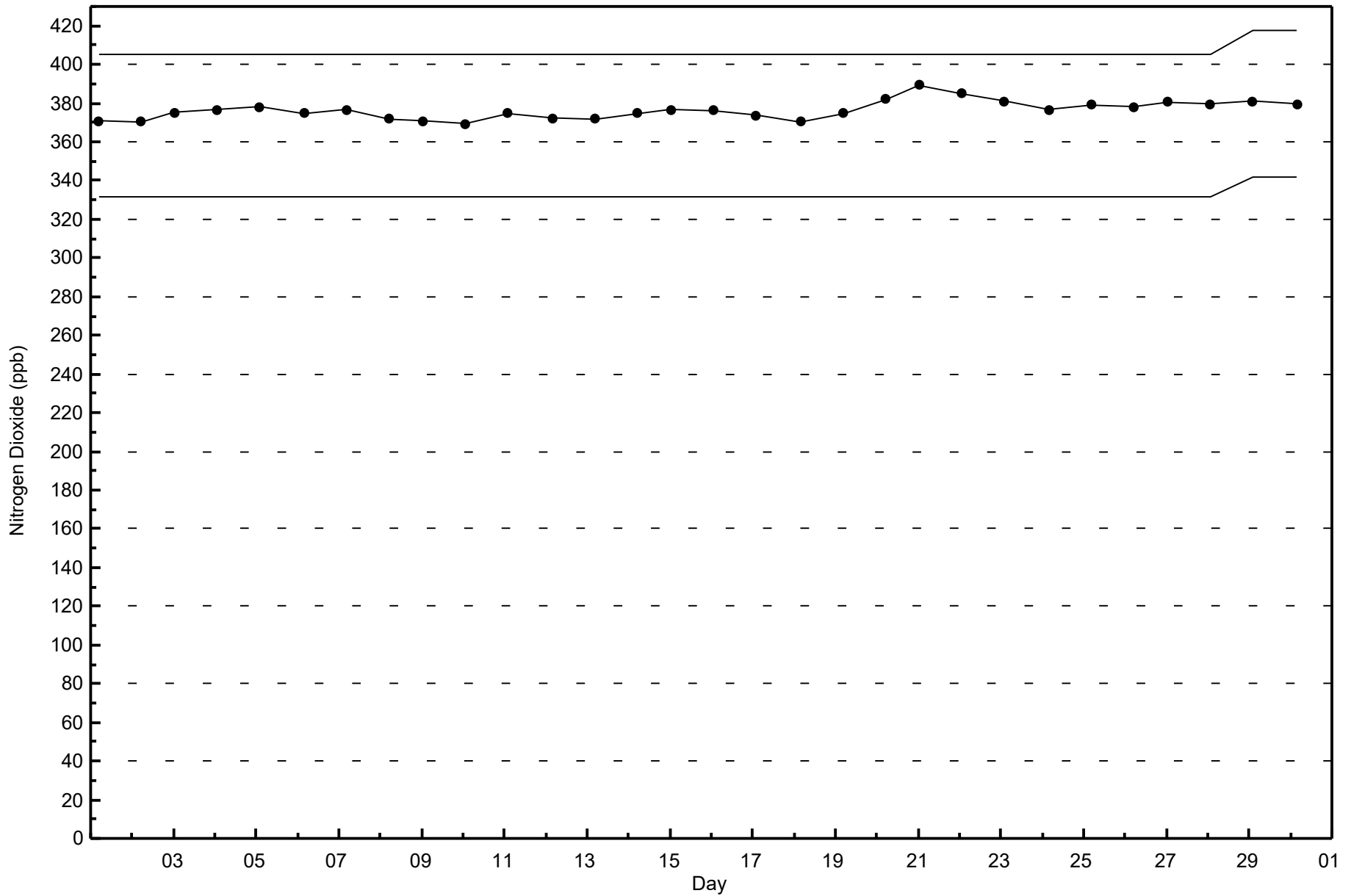


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Barge Landing









Wood Buffalo Environmental Association
Summary of Hour Averages

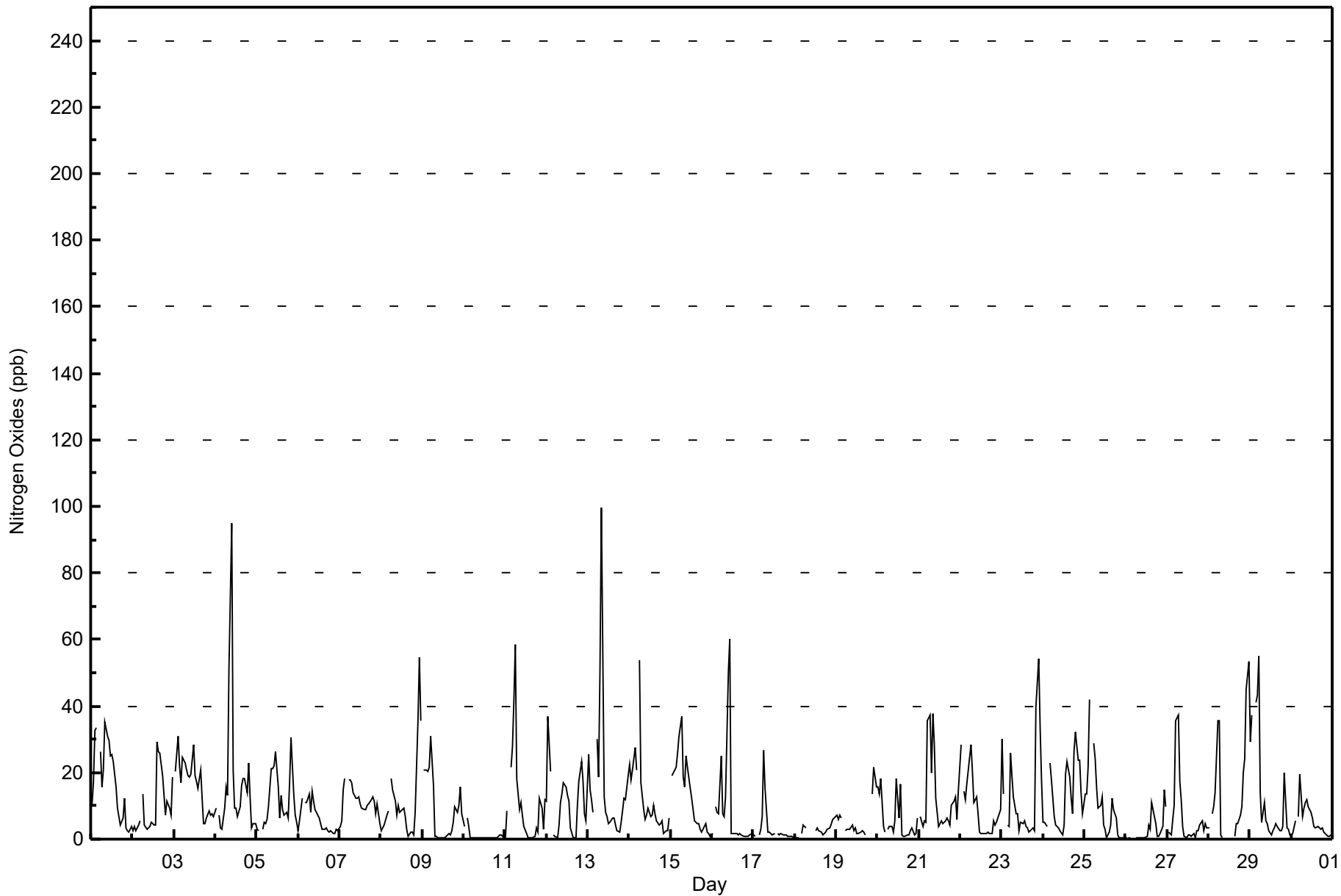
Nitrogen Oxides (NO_x) - ppb
Barge Landing - April 2023

Maximum Value: 99.7 ppb on Apr 13 09:00		Maximum Daily Average: 17.0 ppb on Apr 1		Hours in Service: 720																																												
Minimum Value: 0.2 ppb on Apr 26 05:00		Minimum Daily Average: 1.0 ppb on Apr 10		Hours of Data: 675																																												
Maximum Diurnal Average: 21.8 ppb at hour 6		Minimum Diurnal Average: 4.5 ppb at hour 18		Hours of Missing Data: 45																																												
Monthly Average: 10.11 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.9 Q ₁ = 2.4 Median = 6.1 Q ₃ = 13.8 P ₉₀ = 24.2 P ₉₉ = 53.8		Hours of Calibration: 36																																												
				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-Apr	10.4	17.3	32.5	33.5	Z	26.3	15.5	20.6	35.3	31.1	29.9	25.0	25.3	23.2	15.7	9.5	6.8	4.1	6.2	12.1	3.2	2.5	2.3	3.6	17.0	35.3																						
2-Apr	2.7	3.6	2.6	4.2	5.5	Z	13.7	4.4	2.9	3.3	4.0	4.9	4.3	4.1	29.3	26.3	26.0	19.1	12.9	7.3	11.4	9.3	7.3	18.8	9.9	29.3																						
3-Apr	Z	20.2	30.8	22.0	17.1	24.7	22.8	20.6	18.9	18.6	19.6	28.3	19.0	17.3	15.2	20.9	12.4	4.5	4.6	6.5	8.3	7.0	7.8	6.9	16.3	30.8																						
4-Apr	9.4	Z	7.2	3.6	3.0	9.5	15.5	13.2	50.7	94.8	21.0	9.5	9.2	7.0	9.8	16.2	18.3	18.0	14.0	23.0	12.9	3.4	4.6	4.8	16.5	94.8																						
5-Apr	3.2	2.5	Z	2.8	5.2	4.5	5.8	9.6	21.2	21.3	22.0	26.4	15.8	6.2	12.9	8.9	7.3	8.1	6.5	17.0	30.6	13.2	7.0	5.1	11.4	30.6																						
6-Apr	2.7	5.6	12.3	Z	11.2	10.9	13.6	8.1	14.3	11.6	8.8	7.1	6.3	4.8	2.9	3.0	3.2	2.7	2.2	2.4	1.7	1.8	2.9	2.4	6.2	14.3																						
7-Apr	3.8	5.7	14.7	18.1	Z	17.6	17.9	16.9	13.9	12.1	12.3	12.7	10.8	9.5	8.8	8.9	10.3	10.6	12.0	12.5	11.6	7.7	10.5	4.7	11.5	18.1																						
8-Apr	2.4	3.2	4.2	7.1	8.5	Z	18.2	15.0	11.6	7.2	10.0	8.2	8.7	9.5	6.9	2.8	0.7	2.1	2.2	1.1	7.9	35.6	54.6	35.7	11.4	54.6																						
9-Apr	Z	20.6	20.8	20.3	21.6	30.8	16.2	1.0	0.6	0.6	0.4	0.4	0.4	0.3	0.8	1.5	1.3	2.7	5.0	9.7	8.1	10.0	15.8	7.8	8.5	30.8																						
10-Apr	4.0	Z	6.3	3.9	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	0.4	0.4	0.4	0.8	1.4	1.1	0.4	1.0	6.3																						
11-Apr	0.4	8.6	Z	21.8	27.8	41.7	58.3	18.3	9.0	11.2	7.2	3.6	1.9	0.4	0.4	0.4	0.3	0.9	3.4	2.3	12.1	9.5	2.8	12.0	11.1	58.3																						
12-Apr	11.5	36.8	20.3	Z	1.3	0.7	0.6	4.2	11.1	13.5	16.8	15.7	12.9	11.3	3.3	0.4	0.3	0.6	10.2	17.3	23.5	17.5	7.8	5.5	10.6	36.8																						
13-Apr	25.4	14.7	12.0	8.0	Z	30.1	18.4	50.3	99.7	12.7	8.0	6.6	4.8	4.9	6.4	6.4	4.4	2.8	2.1	5.2	8.5	12.5	12.0	19.2	16.3	99.7																						
14-Apr	22.6	17.6	20.9	27.5	20.8	Z	53.7	17.0	8.9	6.1	7.4	9.4	6.8	7.3	10.0	7.4	5.7	4.1	4.6	5.4	1.7	2.4	2.7	6.3	12.0	53.7																						
15-Apr	Z	19.3	20.8	21.6	26.0	31.0	36.9	18.6	15.7	24.9	21.7	15.2	12.4	8.8	5.6	4.5	4.6	2.9	2.0	2.8	4.5	2.2	1.7	0.9	13.2	36.9																						
16-Apr	1.5	Z	9.9	8.0	7.6	25.2	7.4	7.0	12.5	50.1	60.0	1.8	1.5	1.6	1.6	1.3	1.6	1.4	1.0	0.9	0.9	0.8	1.3	1.7	9.0	60.0																						
17-Apr	1.3	0.8	Z	1.5	2.8	6.9	26.7	15.1	2.1	1.9	1.6	1.4	1.7	M	1.6	1.5	1.6	1.5	1.1	1.2	0.8	0.9	0.7	0.5	3.4	26.7																						
18-Apr	0.6	0.6	0.5	Z	1.8	4.1	3.2	PF	PF	PF	PF	PF	2.6	3.4	2.5	2.2	1.2	1.8	2.2	3.1	3.5	4.9	6.0	6.2	2.8	6.2																						
19-Apr	7.2	6.1	7.2	6.4	Z	2.4	3.0	2.9	3.1	4.2	2.7	3.2	1.8	1.5	2.2	2.4	2.2	1.1	PF	PF	PF	13.7	21.4	15.5	5.5	21.4																						
20-Apr	15.7	13.4	18.4	4.0	2.3	Z	3.0	3.8	3.6	2.1	5.5	18.0	6.2	16.6	1.3	0.8	0.9	1.1	1.5	2.3	3.5	1.3	1.9	6.2	5.8	18.4																						
21-Apr	Z	6.8	4.0	5.3	5.3	35.5	37.2	20.0	37.6	28.5	12.1	3.9	4.5	5.7	4.7	5.5	6.1	5.7	4.4	10.0	11.3	12.8	5.9	14.4	12.5	37.6																						
22-Apr	28.5	Z	14.2	11.7	16.6	24.6	28.4	20.3	11.1	12.5	7.8	2.2	1.8	1.5	1.9	1.5	2.0	1.9	1.7	5.7	4.4	4.9	6.3	8.8	9.6	28.5																						
23-Apr	30.0	13.6	Z	4.1	4.0	26.0	19.0	12.7	7.5	7.8	2.6	5.0	4.5	5.6	3.8	3.3	2.3	3.0	3.4	2.6	39.9	54.1	33.5	17.5	13.3	54.1																						
24-Apr	4.9	5.2	3.7	Z	23.1	17.8	7.0	4.1	3.9	3.2	2.4	1.1	4.4	19.5	23.4	18.5	12.4	7.6	26.2	32.3	23.9	23.8	14.1	7.8	12.6	32.3																						
25-Apr	13.4	13.6	21.8	41.8	Z	28.6	24.1	15.8	9.5	10.3	12.8	4.2	3.0	0.4	1.9	4.4	12.2	8.8	6.3	1.4	0.3	0.3	0.3	0.3	10.2	41.8																						
26-Apr	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.2	0.3	0.6	0.3	0.9	4.2	3.0	11.1	8.8	4.5	0.8	0.7	1.5	3.8	14.6	9.5	2.9	14.6																						
27-Apr	Z	2.3	1.1	6.1	10.0	35.7	37.2	17.3	11.9	3.9	0.9	0.6	1.2	1.4	1.1	1.8	0.6	2.5	2.7	4.4	5.6	2.5	4.5	3.3	6.9	37.2																						
28-Apr	3.4	Z	7.5	9.6	14.1	35.7	35.4	1.3	0.5	C	C	C	C	C	C	0.8	4.8	4.7	7.1	9.9	19.8	24.2	44.9	53.5	--	53.5																						
29-Apr	29.4	37.3	Z	41.1	43.4	55.1	14.0	4.9	11.1	5.6	4.7	2.5	1.3	2.5	3.4	4.8	3.9	2.4	2.5	3.8	19.8	3.2	2.8	1.3	13.1	55.1																						
30-Apr	1.4	1.7	5.6	Z	6.9	19.4	7.0	9.5	10.9	11.8	9.8	8.2	6.4	3.9	3.5	3.6	3.4	3.2	3.5	2.1	1.1	0.9	0.7	1.4	5.5	19.4																						
																								9.4	11.1	12.0	13.4	11.5	21.8	18.7	12.2	15.2	14.7	11.2	8.1	6.2	6.5	6.4	6.0	5.5	4.5	5.3	7.1	9.8	9.6	10.0	9.4	Diurnal Average
																								30.0	37.3	32.5	41.8	43.4	55.1	58.3	50.3	99.7	94.8	60.0	28.3	25.3	23.2	29.3	26.3	26.0	19.1	26.2	32.3	39.9	54.1	54.6	53.5	Diurnal Maximum
Z - zerspan		C - Calibration				M - Maintenance				PF - Power Failure																																						



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Barge Landing - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	578	85.63	85.63
21 - 40	80	11.85	97.48
41 - 80	15	2.22	99.70
81 - 159	2	0.30	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 675

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Barge Landing - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	24	38	34	16	27	54	81	91	41	19	29	40	24	8	24	25	575
21 - 40	14	2	5	4	1	2	3	10	5	6	1	1	2	4	6	14	80
11 - 80	3	0	0	1	0	0	2	0	0	4	0	0	1	0	1	3	15
81 - 159	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	41	41	39	21	28	56	86	101	46	29	30	41	27	12	32	42	672

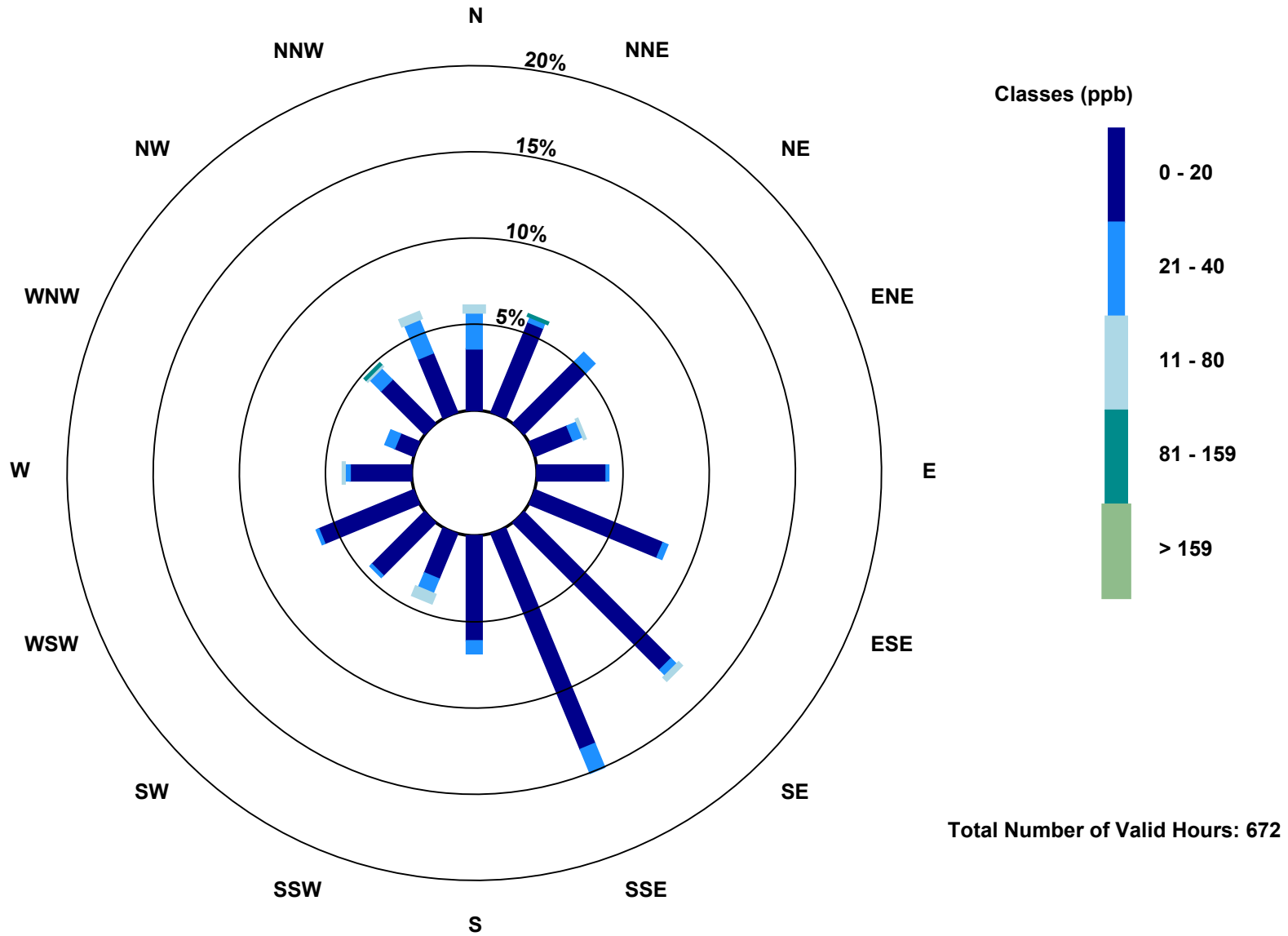
Total Number of Valid Hours: 672

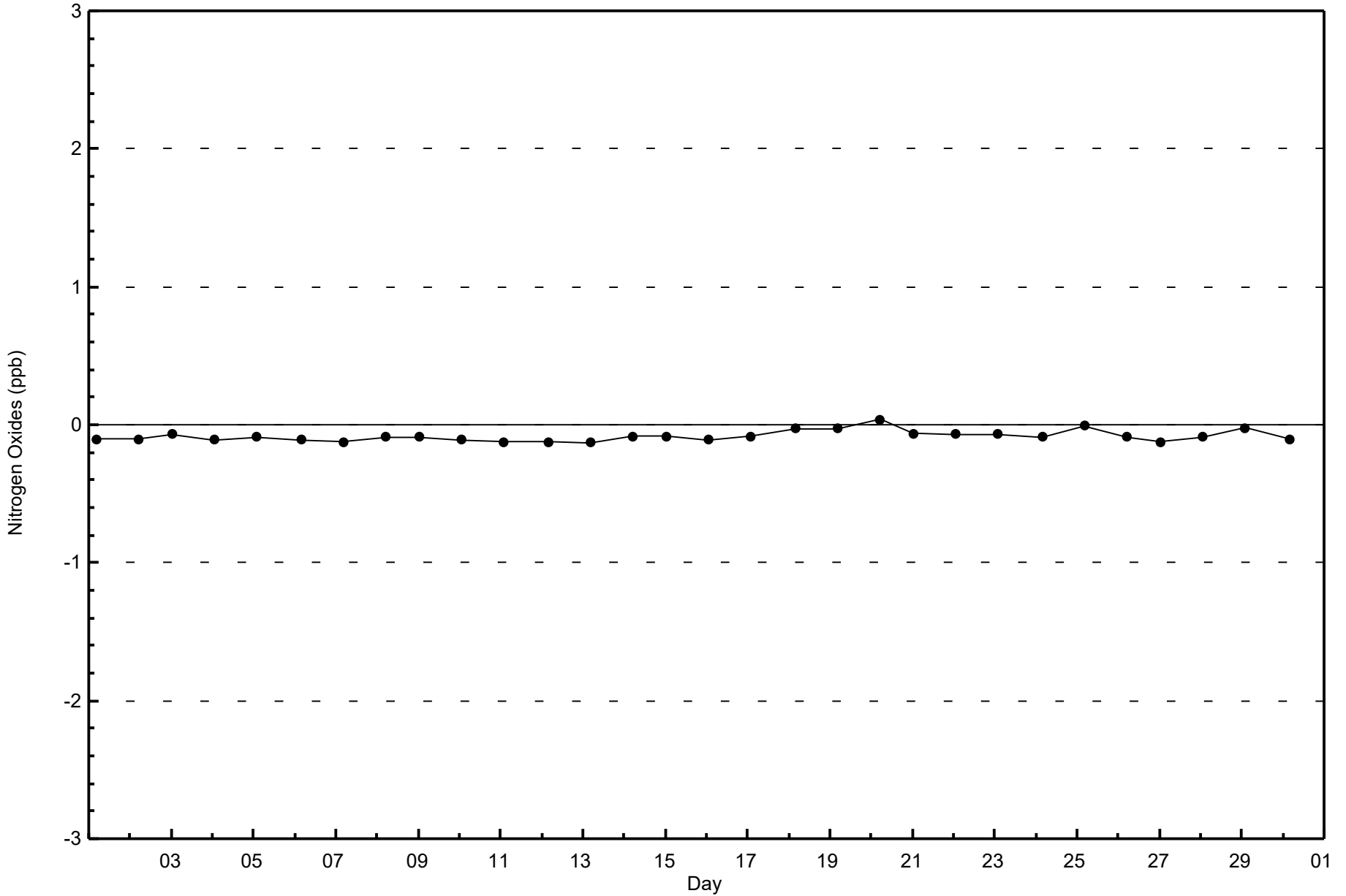
Total Number of Hours: 720

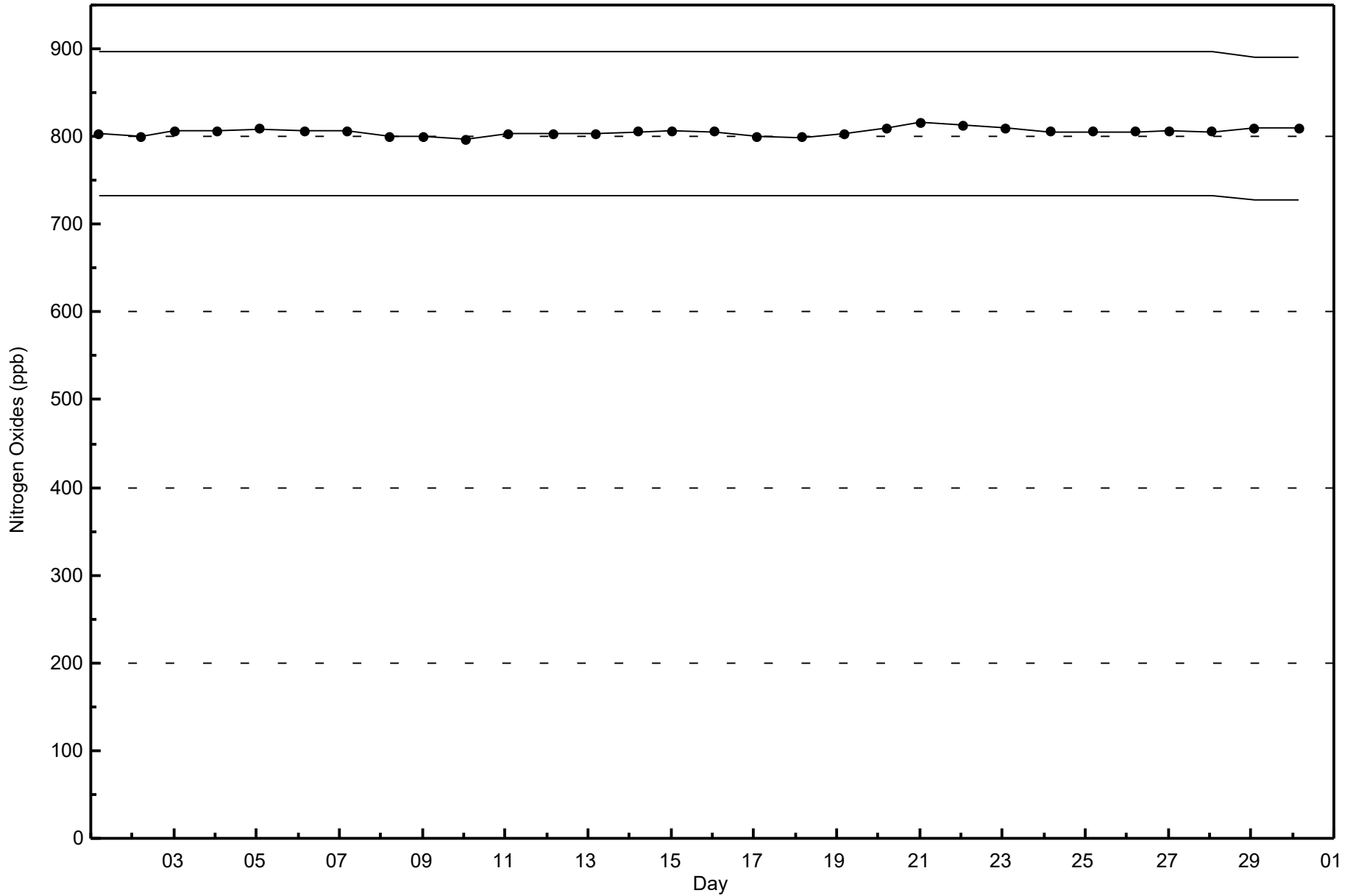


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Barge Landing









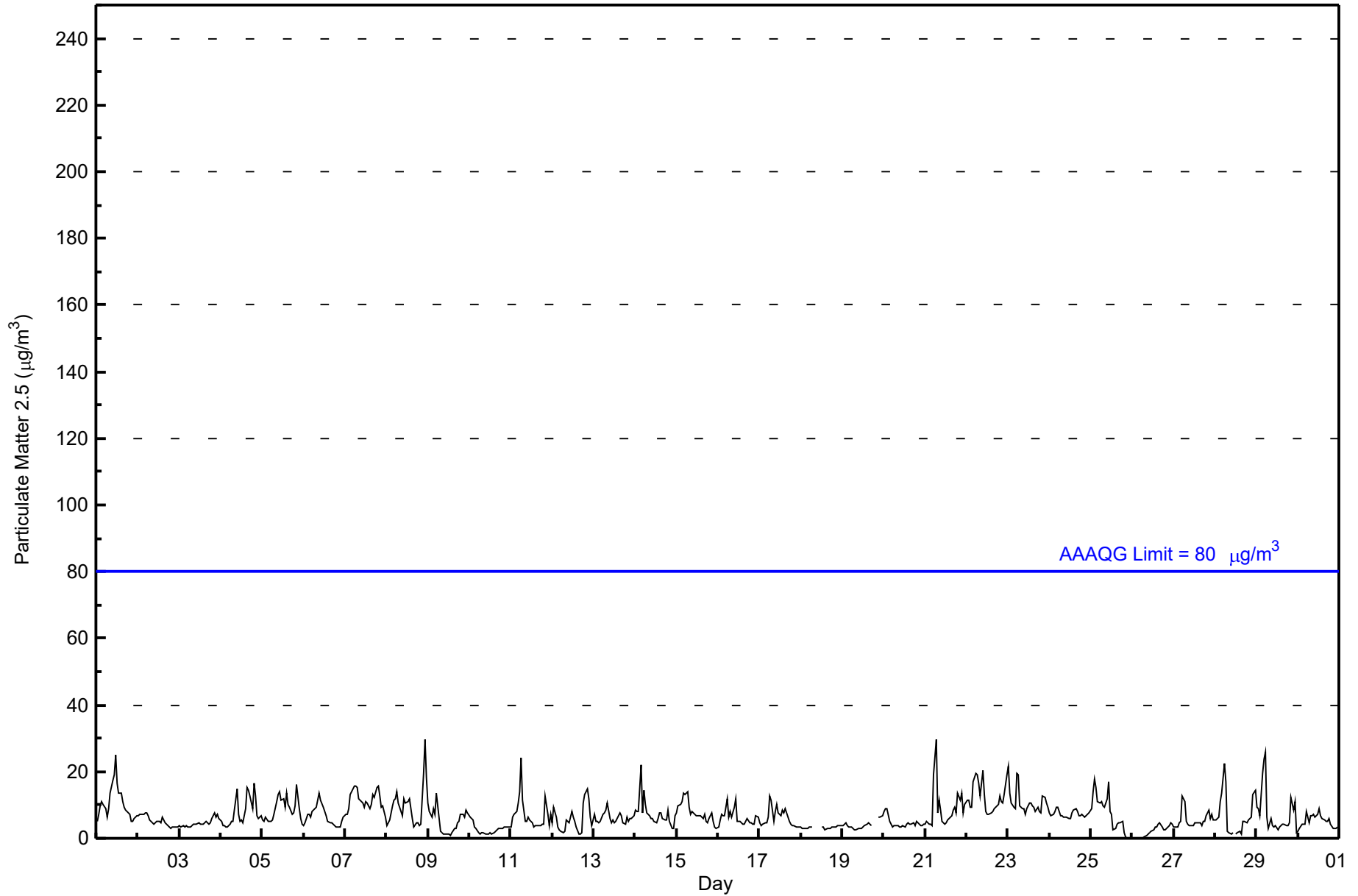
Summary of Hour Averages

Barge Landing - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 29.7 µg/m ³ on Apr 8 23:00	Maximum Daily Average: 12.2 µg/m ³ on Apr 22		Hours of Data:	711
Minimum Value: 0.1 µg/m ³ on Apr 26 05:00	Minimum Daily Average: 2.1 µg/m ³ on Apr 26		Hours of Missing Data:	9
Maximum Diurnal Average: 10.2 µg/m ³ at hour 6	Minimum Diurnal Average: 5.7 µg/m ³ at hour 18		Hours of Calibration:	1
Monthly Average: 6.88 µg/m ³	Percentiles: P ₁ = 0.2 P ₁₀ = 3.0 Q ₁ = 3.9 Median = 5.8 Q ₃ = 8.8 P ₉₀ = 12.8 P ₉₉ = 22.0		Percent Operational Time:	98.9

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-Apr	4.9	7.3	9.8	11.1	10.3	9.1	6.5	9.1	13.4	17.4	18.9	25.1	16.3	13.7	13.8	10.8	9.3	8.3	7.6	7.1	5.0	5.0	5.8	6.7	10.5	25.1																							
2-Apr	7.0	7.2	7.3	7.2	7.6	7.4	6.6	5.3	4.5	4.4	4.8	5.1	4.9	4.7	6.3	5.7	4.5	3.7	3.3	3.2	3.2	3.2	3.5	3.5	5.2	7.6																							
3-Apr	3.7	3.5	3.8	3.3	3.7	3.3	3.5	3.9	4.2	4.1	4.1	4.5	4.2	4.3	4.2	5.0	4.8	4.3	4.4	5.8	7.6	6.4	7.3	5.9	4.6	7.6																							
4-Apr	5.3	3.7	3.7	3.6	3.4	4.1	5.3	5.0	8.7	15.0	7.3	5.1	5.5	4.6	9.0	15.2	14.4	12.9	8.9	16.3	12.9	6.6	5.9	6.7	7.9	16.3																							
5-Apr	5.6	5.0	6.4	5.2	5.3	5.1	5.6	7.3	11.0	13.0	14.2	11.2	11.9	9.3	13.7	10.1	9.1	7.4	7.7	9.6	16.2	8.7	5.7	4.4	8.7	16.2																							
6-Apr	4.0	4.8	7.2	7.4	6.4	7.9	9.0	9.2	11.5	13.8	11.6	9.2	8.2	6.8	5.2	4.7	4.6	4.4	3.8	3.4	3.3	3.3	5.3	6.4	6.7	13.8																							
7-Apr	7.2	7.4	9.0	13.1	14.1	15.6	15.8	15.1	11.8	10.9	10.4	9.3	11.0	10.6	8.9	10.3	13.2	12.3	15.2	15.7	12.8	9.1	9.9	6.3	11.5	15.8																							
8-Apr	3.9	4.8	5.4	9.9	11.5	11.7	14.0	10.5	8.1	6.6	11.8	10.7	11.2	11.9	8.8	5.7	3.5	4.7	4.5	4.0	4.4	19.6	29.7	18.1	9.8	29.7																							
9-Apr	10.6	7.9	6.5	8.9	7.4	13.6	5.8	2.2	1.8	1.5	1.1	1.2	1.2	1.0	1.5	3.1	3.0	4.6	4.9	7.2	7.2	6.6	8.4	7.7	5.2	13.6																							
10-Apr	6.4	6.1	5.5	3.5	3.1	1.7	1.1	1.8	1.8	1.1	1.2	1.1	1.9	1.2	1.7	2.1	2.6	2.9	3.0	3.1	3.5	3.4	3.3	3.4	2.8	6.4																							
11-Apr	3.5	6.6	7.2	8.3	10.7	13.8	24.2	11.2	4.9	5.2	6.4	5.5	4.7	3.5	3.8	3.7	3.8	3.8	4.4	4.3	12.8	7.3	4.0	7.2	7.1	24.2																							
12-Apr	4.6	9.2	6.5	3.4	2.7	2.1	1.8	2.3	5.3	5.1	4.7	7.9	6.2	5.3	3.2	1.2	1.2	1.6	10.5	13.1	14.7	11.8	6.4	3.9	5.6	14.7																							
13-Apr	7.1	5.3	5.1	4.7	5.2	7.1	7.7	8.5	10.6	6.1	4.8	5.5	4.8	5.2	6.8	7.5	6.8	4.5	4.1	6.3	5.0	5.9	5.9	6.9	6.1	10.6																							
14-Apr	8.5	7.9	8.0	22.1	7.6	14.4	10.2	7.8	6.9	5.8	5.9	5.0	4.8	5.8	7.6	7.5	5.8	5.6	8.3	5.3	3.1	3.0	6.7	7.5	22.1	22.1																							
15-Apr	7.7	9.6	10.1	10.9	13.5	13.1	14.0	9.4	7.2	7.9	7.6	6.7	6.8	6.8	6.7	6.0	7.4	5.1	4.7	6.1	7.5	4.9	3.3	3.1	7.8	14.0																							
16-Apr	3.2	5.4	7.2	6.8	6.6	11.7	6.2	8.2	6.4	9.3	11.9	4.9	4.9	4.9	4.4	4.4	5.2	5.8	4.9	4.6	4.2	4.4	6.8	6.2	6.2	11.9																							
17-Apr	4.5	3.7	4.4	4.4	4.6	6.4	12.9	11.6	5.1	7.9	10.0	7.5	6.9	8.3	7.6	8.8	7.8	5.0	4.1	3.9	3.6	3.4	3.3	3.2	6.2	12.9																							
18-Apr	3.3	3.2	3.1	3.2	3.1	3.3	3.3	PF	PF	PF	PF	PF	3.2	3.4	2.6	3.1	2.8	3.0	3.3	3.4	3.5	3.7	3.9	3.7	3.3	3.9																							
19-Apr	3.7	4.1	4.5	3.8	3.2	3.4	3.0	2.6	2.7	2.9	2.8	3.1	3.5	3.8	4.1	4.5	4.2	4.0	PF	PF	PF	6.2	6.3	7.0	4.0	7.0																							
20-Apr	8.1	8.8	9.0	5.2	4.0	3.5	3.9	3.8	4.0	3.4	3.2	3.7	3.5	4.4	4.5	4.2	4.4	4.5	4.0	4.9	4.7	4.0	3.6	4.3	4.7	9.0																							
21-Apr	4.2	5.2	4.1	4.2	3.6	19.1	29.7	7.6	11.3	8.5	5.3	4.0	4.6	5.4	5.9	6.9	8.7	9.4	7.7	13.6	11.4	13.6	7.6	10.1	8.8	29.7																							
22-Apr	11.4	11.4	9.3	9.2	16.8	19.6	19.0	16.6	12.9	20.1	13.2	7.9	7.4	7.1	7.4	7.9	8.8	9.3	10.0	12.6	10.9	10.6	13.0	19.2	12.2	20.1																							
23-Apr	21.5	13.7	10.6	9.2	9.0	19.6	19.2	9.7	8.8	9.0	7.2	9.0	10.5	10.4	9.6	9.3	8.3	9.1	8.2	7.5	12.6	12.5	10.6	9.3	11.0	21.5																							
24-Apr	7.4	6.7	7.3	8.1	9.2	9.1	6.8	6.7	6.5	6.3	6.3	6.1	6.1	7.6	8.6	9.0	7.9	6.6	6.9	7.1	6.5	6.9	7.3	7.6	7.3	9.2																							
25-Apr	9.1	14.0	17.8	15.4	11.1	10.7	10.9	9.6	9.5	11.7	17.1	7.9	7.3	2.7	2.9	4.4	4.8	4.8	5.0	1.8	0.2	0.2	0.1	0.1	7.5	17.8																							
26-Apr	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.4	0.8	1.4	1.8	1.9	2.4	3.3	3.5	4.4	4.7	3.5	2.7	2.4	3.0	3.7	4.7	4.3	2.1	4.7																							
27-Apr	3.6	3.5	3.4	4.7	5.0	12.9	11.0	5.2	4.4	3.8	3.7	3.9	4.6	4.8	4.5	4.7	3.6	5.0	4.9	6.7	8.5	5.8	7.1	5.4	5.5	12.9																							
28-Apr	5.5	6.1	6.3	11.2	13.7	22.5	17.1	2.2	1.7	1.4	1.7	C	1.2	1.6	2.0	1.1	5.3	5.2	4.7	5.7	6.1	6.5	13.3	14.6	6.8	22.5																							
29-Apr	9.5	9.1	6.6	19.5	23.9	25.7	6.2	3.0	6.0	3.8	3.3	3.7	2.5	3.5	3.7	4.1	4.1	3.7	3.8	4.8	12.5	8.6	11.0	1.7	7.7	25.7																							
30-Apr	2.3	2.8	4.0	4.1	4.4	8.1	4.6	7.0	6.8	7.2	6.5	7.4	8.7	6.9	5.7	5.4	4.9	5.2	5.9	4.2	3.1	2.9	3.1	3.6	5.2	8.7																							
																								6.3	6.5	6.6	7.7	7.7	10.2	9.5	7.0	6.8	7.4	7.2	6.6	6.0	5.8	5.9	6.0	6.0	5.7	5.8	6.8	7.3	6.6	7.0	6.6	Diurnal Average	
																								21.5	14.0	17.8	22.1	23.9	25.7	29.7	16.6	13.4	20.1	18.9	25.1	16.3	13.7	13.8	15.2	14.4	12.9	15.2	16.3	16.2	19.6	29.7	19.2	Diurnal Maximum	

C - Calibration PF - Power Failure
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Barge Landing - April 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	337	47.40	47.40
6 - 15	342	48.10	95.50
16 - 25	29	4.08	99.58
26 - 80	3	0.42	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 711

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Barge Landing - April 2023**

Concentration 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	15	22	27	14	19	33	40	18	12	9	22	35	17	11	19	20	333
6 - 15	25	19	12	7	13	23	46	77	35	17	7	7	11	3	14	26	342
16 - 25	1	1	0	1	0	2	4	9	3	2	1	0	0	1	2	2	29
26 - 80	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	41	42	39	22	32	58	91	104	50	30	30	42	28	15	35	48	707

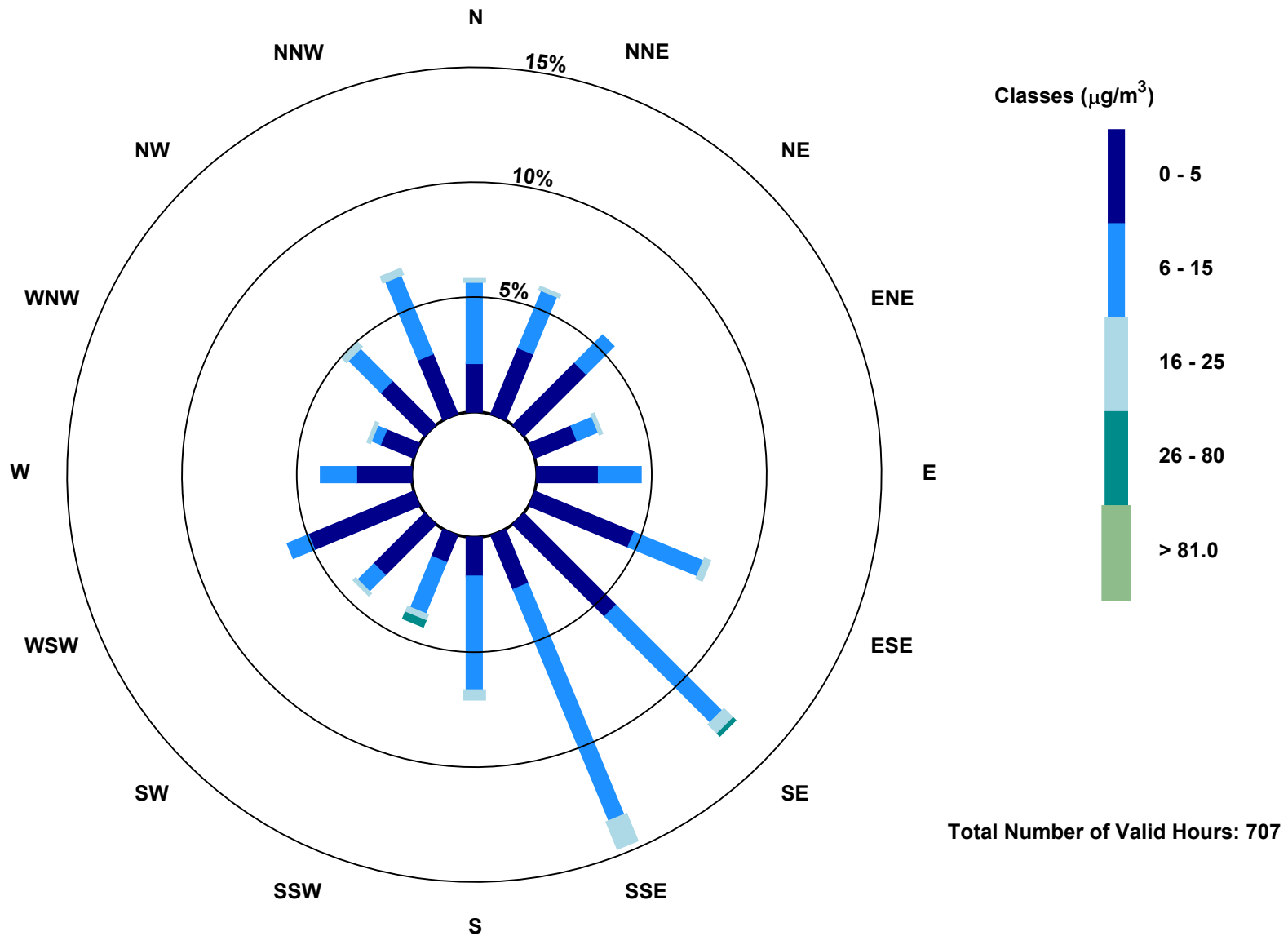
Total Number of Valid Hours: 707

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Barge Landing



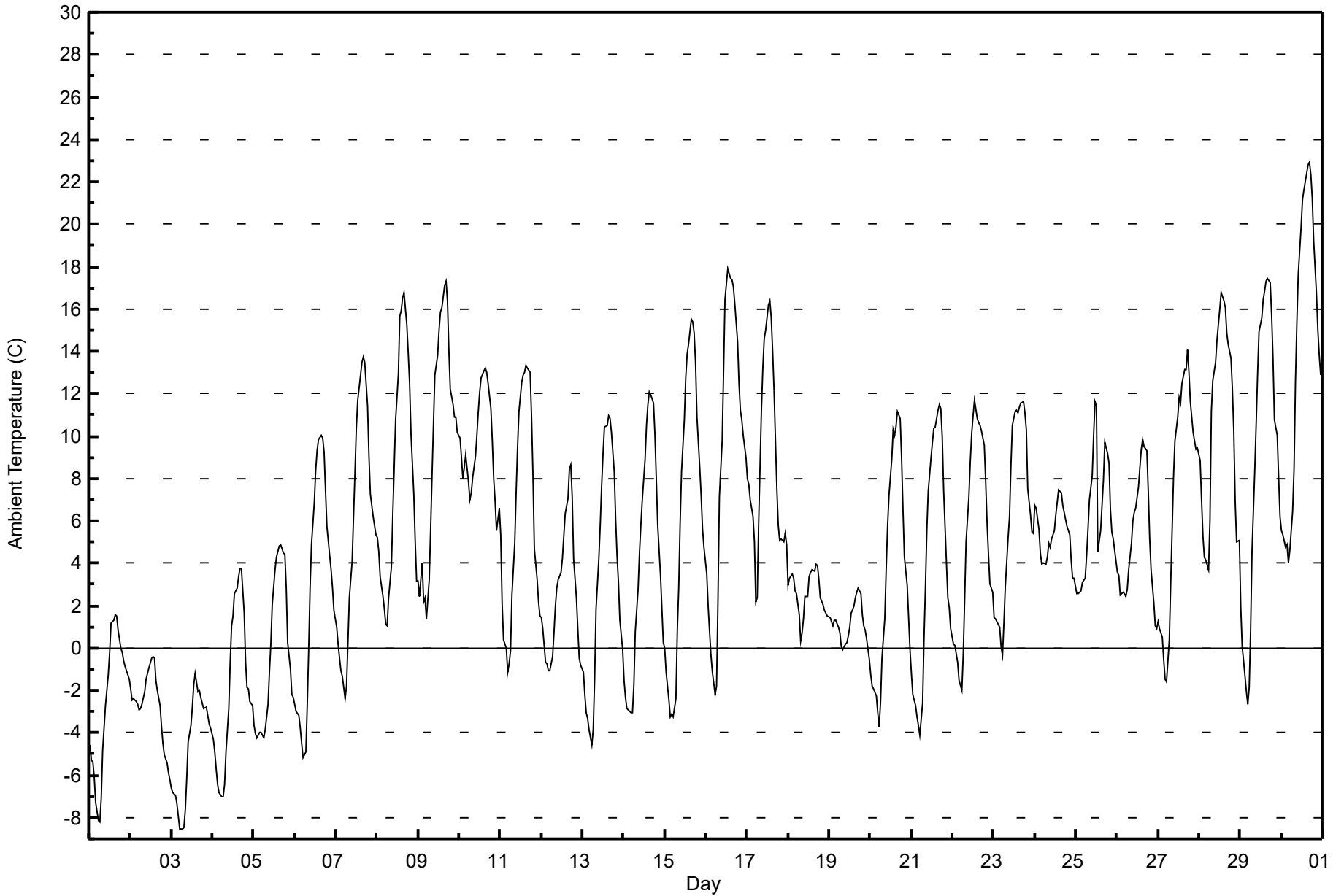


Maximum Value: 22.9 C on Apr 30 17:00		Maximum Daily Average: 14.2 C on Apr 30		Hours in Service: 720																							
Minimum Value: -8.6 C on Apr 3 06:00		Minimum Daily Average: -4.7 C on Apr 3		Hours of Data: 720																							
Maximum Diurnal Average: 10.3 C at hour 17		Minimum Diurnal Average: -1.1 C at hour 6		Hours of Missing Data: 0																							
Monthly Average: 4.85 C		Percentiles: P ₁ = -7.3 P ₁₀ = -2.8 Q ₁ = 0.0 Median = 4.3 Q ₃ = 9.8 P ₉₀ = 13.2 P ₉₉ = 19.7		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-Apr	-4.6	-5.3	-5.4	-6.1	-7.3	-8.1	-8.2	-7.1	-4.8	-2.8	-2.0	-1.2	-0.2	1.2	1.3	1.6	1.5	0.8	0.0	-0.2	-0.6	-0.9	-1.1	-1.4	-2.5	1.6	
2-Apr	-1.9	-2.5	-2.4	-2.5	-2.7	-2.9	-2.8	-2.7	-2.1	-1.4	-1.2	-1.0	-0.5	-0.4	-0.5	-1.6	-2.0	-2.7	-3.7	-4.5	-5.0	-5.4	-5.9	-6.2	-2.7	-0.4	
3-Apr	-6.6	-6.8	-6.9	-7.3	-7.9	-8.6	-8.5	-8.4	-7.6	-6.1	-4.4	-3.6	-2.8	-1.8	-1.2	-2.1	-2.0	-2.3	-2.6	-2.8	-2.8	-3.2	-3.6	-3.8	-4.7	-1.2	
4-Apr	-4.3	-4.9	-5.7	-6.4	-6.8	-7.0	-7.0	-6.4	-4.9	-2.8	-0.6	1.1	1.5	2.6	2.8	3.4	3.8	3.8	1.6	-0.7	-1.9	-2.5	-2.7	-1.9	3.8		
5-Apr	-3.7	-4.0	-4.3	-4.0	-4.0	-4.1	-4.2	-3.8	-2.7	-1.1	0.2	2.0	3.7	4.3	4.6	4.8	4.9	4.5	4.4	2.8	0.3	-1.0	-2.2	-2.3	-0.2	4.9	
6-Apr	-2.6	-3.0	-3.2	-3.8	-4.5	-5.2	-4.9	-2.7	-0.1	2.8	4.9	6.9	8.4	9.3	9.8	10.0	9.9	9.2	7.5	5.7	4.3	3.7	2.8	1.8	2.8	10.0	
7-Apr	1.0	0.2	-0.5	-1.1	-1.4	-2.4	-1.8	0.2	2.4	4.1	6.2	8.3	10.4	11.7	12.9	13.5	13.7	13.5	11.4	9.0	7.3	6.8	6.2	5.4	5.7	13.7	
8-Apr	5.2	4.5	3.4	2.4	1.8	1.1	1.1	2.4	3.8	6.3	8.5	10.8	12.9	15.6	15.9	16.5	16.8	15.2	13.9	12.5	10.1	7.3	5.0	3.2	8.2	16.8	
9-Apr	3.1	2.4	4.0	2.1	2.4	1.4	3.2	5.6	8.1	10.5	12.9	13.8	15.0	15.8	16.1	17.1	17.3	16.4	14.1	12.2	11.5	10.9	10.9	10.2	9.9	17.3	
10-Apr	9.9	9.0	8.0	8.5	9.1	7.8	7.0	7.3	8.1	9.0	10.1	11.1	12.1	12.8	13.1	13.2	13.0	12.5	11.3	9.8	8.0	7.0	5.5	6.6	9.6	13.2	
11-Apr	5.3	2.1	0.4	0.0	-1.1	-0.8	-0.1	2.5	4.9	7.3	9.4	11.1	12.5	12.8	13.0	13.4	13.2	13.0	10.9	8.2	4.7	3.2	2.2	1.5	6.2	13.4	
12-Apr	1.5	0.9	-0.7	-0.7	-1.1	-1.1	-0.4	0.7	1.9	2.8	3.2	3.5	4.2	5.3	6.3	7.1	8.4	8.6	7.1	4.2	2.4	0.9	-0.5	-0.8	2.7	8.6	
13-Apr	-1.1	-2.2	-3.1	-3.3	-3.9	-4.5	-3.8	-1.5	1.8	4.3	5.8	7.6	9.2	10.5	10.5	11.0	10.8	10.2	8.3	6.1	4.4	3.1	1.3	-0.1	3.4	11.0	
14-Apr	-1.5	-2.3	-2.9	-3.0	-3.1	-3.0	-1.7	0.8	2.8	4.5	5.8	7.0	8.9	10.5	11.5	12.1	12.0	11.6	10.1	8.0	5.8	3.4	1.9	0.2	4.1	12.1	
15-Apr	0.0	-1.2	-2.5	-3.2	-3.1	-3.3	-2.4	0.9	2.8	5.9	8.3	10.8	12.7	13.9	14.3	15.5	15.4	14.9	13.5	10.9	8.5	7.2	5.6	4.7	6.3	15.5	
16-Apr	3.5	2.0	0.8	-0.3	-1.1	-2.2	-1.8	2.2	7.1	9.8	13.0	16.5	17.2	17.9	17.4	17.4	17.1	16.3	14.5	12.5	11.3	10.7	10.0	9.0	9.2	17.9	
17-Apr	8.0	7.8	7.0	6.2	5.0	2.2	2.3	5.8	11.2	13.2	14.6	15.0	16.2	16.4	15.6	14.0	12.2	7.5	5.8	5.1	5.2	5.0	5.4	4.9	8.8	16.4	
18-Apr	3.0	3.3	3.5	3.3	2.7	2.6	1.5	0.3	0.7	1.4	2.4	2.5	3.4	3.5	3.7	3.6	4.0	3.9	3.2	2.4	2.0	1.8	1.6	1.5	2.6	4.0	
19-Apr	1.4	1.3	1.1	1.3	1.3	1.0	0.7	0.0	0.0	0.2	0.3	0.6	1.0	1.7	2.0	2.3	2.7	2.8	2.6	1.5	1.1	0.9	0.5	-0.5	1.1	2.8	
20-Apr	-1.2	-1.8	-1.9	-2.2	-3.1	-3.7	-2.5	-0.5	1.4	3.7	5.8	7.2	8.9	10.3	10.1	10.4	11.2	10.8	9.0	6.5	4.3	2.9	1.4	-0.1	3.6	11.2	
21-Apr	-1.2	-2.2	-2.7	-3.3	-3.7	-4.1	-2.6	0.5	2.9	5.6	7.4	9.0	9.7	10.4	10.4	11.2	11.5	11.3	10.0	7.4	4.0	2.4	1.9	0.9	4.0	11.5	
22-Apr	0.2	0.1	-0.3	-0.7	-1.5	-2.0	-0.2	2.3	5.0	7.1	8.8	10.1	11.0	11.7	10.8	10.6	10.5	10.2	9.6	7.9	5.9	4.4	3.0	2.6	5.3	11.7	
23-Apr	1.4	1.4	1.3	1.0	0.1	-0.3	1.2	2.9	5.2	6.2	8.6	10.5	11.2	11.2	11.1	11.4	11.6	11.6	11.1	10.3	7.5	6.3	5.5	5.4	6.4	11.6	
24-Apr	6.8	6.6	5.6	4.5	3.9	4.0	3.9	4.3	4.9	4.8	5.1	5.5	6.3	6.9	7.5	7.4	6.7	6.4	6.0	5.7	5.3	4.2	3.3	3.3	5.4	7.5	
25-Apr	2.5	2.6	2.7	2.7	3.1	3.3	4.3	5.6	7.0	8.1	10.0	11.6	11.4	4.5	5.5	6.7	7.9	9.7	9.2	8.7	6.5	5.5	5.1	4.1	6.2	11.6	
26-Apr	3.5	3.4	2.5	2.6	2.6	2.4	2.8	3.7	4.9	6.0	6.4	6.6	7.6	8.5	9.3	9.8	9.5	9.3	7.4	5.2	3.7	2.1	1.1	0.9	5.1	9.8	
27-Apr	1.2	0.9	0.5	-0.6	-1.4	-1.6	0.4	3.0	5.6	8.1	9.8	10.9	11.8	11.5	12.5	13.1	13.2	14.1	13.0	11.6	10.2	9.8	9.4	9.5	7.3	14.1	
28-Apr	8.9	7.0	5.3	4.3	4.1	3.7	6.0	11.1	12.6	13.5	14.5	15.3	16.0	16.8	16.4	16.0	14.8	14.3	13.7	12.2	10.2	7.0	5.0	5.0	10.6	16.8	
29-Apr	1.9	0.0	-0.6	-2.0	-2.6	-1.9	0.8	4.6	8.4	10.7	13.0	14.9	15.6	16.4	16.9	17.3	17.4	17.2	15.7	13.6	10.8	10.0	8.0	6.2	8.8	17.4	
30-Apr	5.6	5.4	4.7	4.9	4.0	4.6	6.5	8.5	12.5	15.3	17.6	19.8	21.1	21.6	22.0	22.8	22.9	22.3	21.2	19.2	16.7	15.0	13.8	12.8	14.2	22.9	
		1.5	0.8	0.3	-0.2	-0.7	-1.1	-0.4	1.4	3.5	5.2	6.8	8.1	9.2	9.8	10.1	10.3	10.3	9.9	8.7	7.0	5.4	4.3	3.4	2.7	Diurnal Average	
		9.9	9.0	8.0	8.5	9.1	7.8	7.0	11.1	12.6	15.3	17.6	19.8	21.1	21.6	22.0	22.8	22.9	22.3	21.2	19.2	16.7	15.0	13.8	12.8	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Barge Landing - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Barge Landing - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	179	24.86	24.86
0 - 10	367	50.97	75.83
10 - 20	167	23.19	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

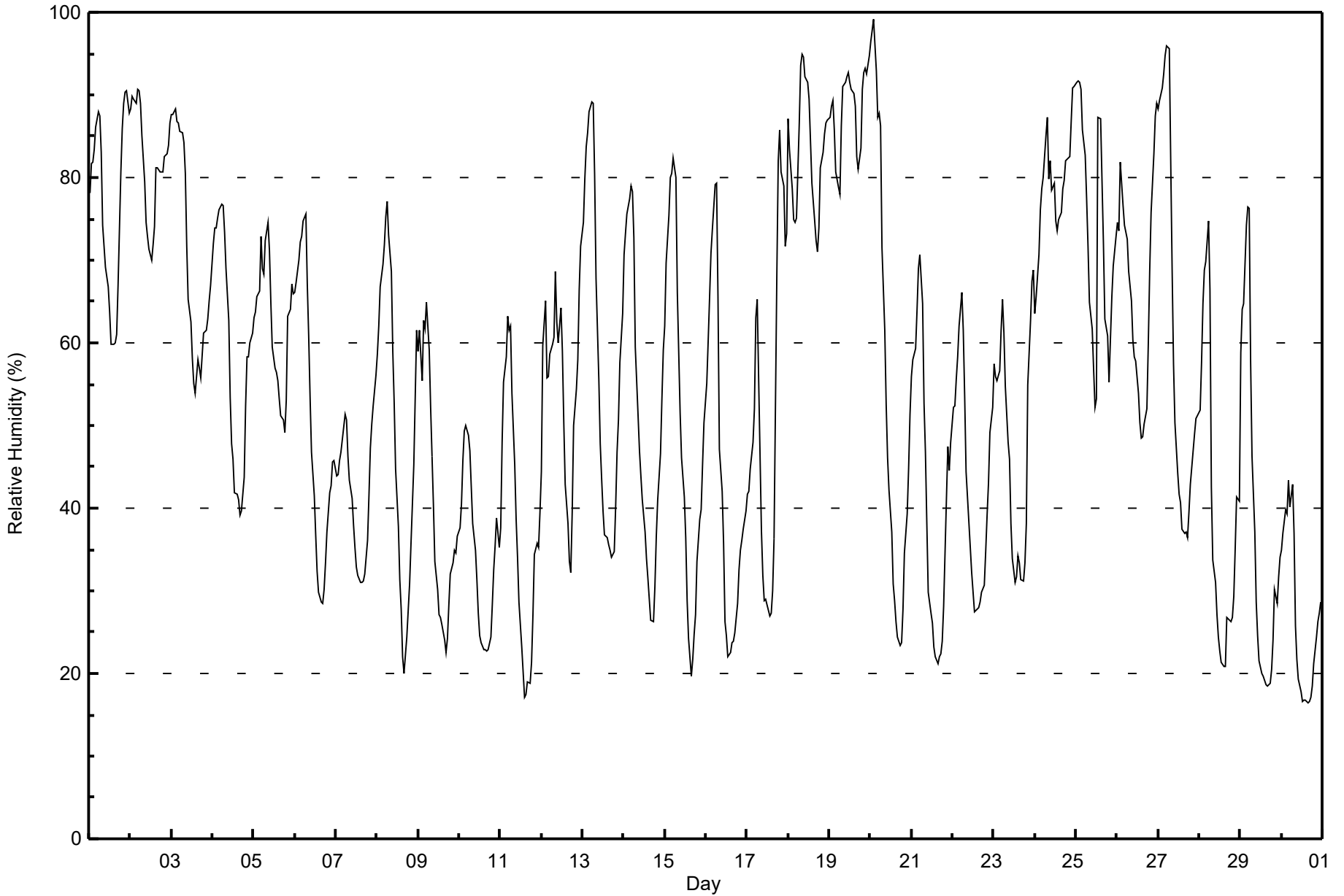
Relative Humidity (RH) - %
Barge Landing - April 2023

Maximum Value: 99.1 % on Apr 20 03:00																								Hours in Service: 720																								
Maximum Daily Average: 88.1 % on Apr 19																								Hours of Data: 720																								
Minimum Value: 16.4 % on Apr 30 16:00																								Hours of Missing Data: 0																								
Minimum Daily Average: 26.9 % on Apr 30																								Hours of Calibration: 0																								
Maximum Diurnal Average: 73.5 % at hour 6																								Percent Operational Time: 100.0																								
Minimum Diurnal Average: 39.1 % at hour 17																																																
Monthly Average: 55.20 %																																																
Percentiles: P ₁ = 17.6 P ₁₀ = 26.3 Q ₁ = 36.0 Median = 55.4 Q ₃ = 73.9 P ₉₀ = 86.6 P ₉₉ = 94.7																																																
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-Apr	78.2	81.7	81.9	83.4	86.1	88.0	87.5	83.1	74.2	69.1	68.0	66.7	63.8	59.8	59.9	59.9	61.1	67.0	80.7	85.9	89.0	90.4	90.4	87.8	76.8	90.4																						
2-Apr	88.3	89.8	89.4	89.0	90.7	90.6	89.1	85.0	79.4	74.6	72.9	71.4	70.0	71.9	74.0	81.2	81.2	80.7	80.7	80.7	82.6	82.8	83.9	86.7	81.9	90.7																						
3-Apr	87.6	87.7	88.4	86.8	86.6	85.7	85.4	84.2	80.4	71.7	65.2	62.5	58.2	55.1	53.9	58.0	56.9	55.8	58.5	61.1	61.5	62.9	65.0	66.9	70.2	88.4																						
4-Apr	72.0	74.0	74.0	75.1	76.2	76.9	76.6	73.4	68.9	62.6	53.4	47.8	46.0	41.9	41.6	41.0	39.2	39.6	43.7	52.4	58.4	58.4	60.1	61.2	58.9	76.9																						
5-Apr	63.1	63.8	65.5	66.3	72.9	69.0	68.3	72.3	74.6	71.2	64.8	59.6	57.0	56.5	55.4	53.2	51.2	50.7	49.1	53.1	63.3	64.1	67.1	66.0	62.4	74.6																						
6-Apr	66.1	67.3	70.0	72.2	72.9	74.7	75.5	67.1	60.9	53.4	46.7	41.5	36.7	32.4	29.9	28.6	28.4	30.2	33.4	37.2	41.8	42.8	45.6	45.7	50.0	75.5																						
7-Apr	43.9	44.1	45.8	46.8	48.2	51.3	50.7	46.3	43.5	41.2	38.0	35.2	32.9	31.8	31.0	30.9	31.2	32.1	36.1	41.5	47.2	50.1	52.4	56.2	42.0	56.2																						
8-Apr	58.6	62.0	66.7	69.4	71.9	75.2	77.1	73.0	68.7	59.1	52.7	44.7	37.8	31.4	27.9	22.0	19.9	24.3	27.6	30.9	35.8	45.2	53.4	61.6	49.9	77.1																						
9-Apr	58.9	61.5	55.4	62.7	61.7	64.9	59.1	52.1	46.2	40.3	33.5	30.2	27.1	26.8	26.0	24.1	22.5	24.3	28.3	32.1	33.4	34.8	34.6	36.5	40.7	64.9																						
10-Apr	37.6	40.5	45.8	49.3	49.9	48.8	46.9	42.6	38.1	34.9	31.4	27.3	24.6	23.7	22.9	22.9	22.7	22.8	24.5	28.2	32.6	35.5	38.8	35.2	34.5	49.9																						
11-Apr	37.6	47.9	55.2	58.2	63.2	61.5	62.0	53.8	45.3	38.7	34.0	28.7	23.2	20.2	17.1	17.5	19.0	18.9	21.4	27.1	34.4	35.8	35.2	39.5	37.3	63.2																						
12-Apr	44.3	59.7	65.0	55.8	55.9	58.6	59.8	60.7	68.6	62.5	60.0	64.2	59.0	50.4	42.9	38.1	33.6	32.2	39.4	50.0	54.4	58.0	66.5	71.7	54.6	71.7																						
13-Apr	74.6	79.8	83.7	85.4	87.9	89.1	88.9	80.3	67.9	55.5	47.7	43.6	39.6	36.7	36.5	35.6	35.0	34.0	34.7	40.1	46.9	50.8	57.7	63.6	58.1	89.1																						
14-Apr	70.7	73.2	75.6	77.5	79.0	78.3	72.8	59.4	51.2	46.9	43.8	41.1	37.1	34.0	31.5	28.9	26.5	26.3	30.5	36.6	41.0	46.5	53.2	59.2	50.9	79.0																						
15-Apr	62.0	69.7	75.5	80.0	80.5	82.3	80.0	66.1	58.9	51.6	46.1	41.4	36.5	28.8	24.2	19.6	21.7	24.7	27.1	33.6	38.7	39.8	45.2	50.4	49.4	82.3																						
16-Apr	55.1	60.2	65.4	70.8	73.7	79.1	79.4	65.6	47.2	42.1	35.7	26.3	24.5	22.1	22.5	23.8	24.0	24.9	28.4	32.6	35.0	36.1	37.5	39.7	43.8	79.4																						
17-Apr	41.7	42.0	44.7	47.9	52.0	63.0	65.2	55.8	37.2	31.9	28.9	29.0	27.7	27.0	27.4	30.0	36.2	68.3	82.1	85.8	80.7	78.9	71.8	73.2	51.2	85.8																						
18-Apr	87.0	83.4	78.7	75.0	74.6	75.1	86.7	93.6	94.9	94.7	92.3	91.6	89.4	84.4	79.3	74.7	72.3	70.9	73.9	81.2	83.0	85.3	86.7	87.0	83.2	94.9																						
19-Apr	87.2	88.6	89.3	85.8	80.7	78.8	77.9	86.2	90.9	91.5	92.2	92.7	91.6	90.8	90.2	88.6	82.6	81.0	83.5	90.7	92.8	93.1	92.5	94.7	88.1	94.7																						
20-Apr	96.5	97.8	99.1	92.9	87.3	87.7	86.2	71.6	61.5	52.5	46.0	42.1	37.0	30.8	28.8	26.3	24.5	23.5	23.8	27.8	34.6	39.2	44.7	51.4	54.7	99.1																						
21-Apr	55.9	58.0	59.4	63.8	69.0	70.7	64.7	52.7	46.7	38.1	29.8	27.2	26.1	23.2	22.0	21.2	22.1	22.3	23.9	28.2	41.2	47.5	44.6	48.0	41.9	70.7																						
22-Apr	52.3	52.4	55.6	58.4	62.0	66.1	61.6	53.5	44.5	38.4	35.3	32.3	29.8	27.5	27.9	28.0	28.6	29.8	30.7	34.7	39.1	43.1	49.2	52.2	43.0	66.1																						
23-Apr	57.5	56.0	55.4	56.5	61.6	65.3	61.2	54.8	48.0	46.0	38.2	33.9	31.0	31.7	34.2	33.3	31.4	31.2	33.4	38.1	55.0	62.8	67.4	68.9	48.0	68.9																						
24-Apr	63.6	65.5	70.6	76.1	78.7	79.9	85.0	87.3	79.8	82.1	78.6	79.4	74.8	73.5	74.8	75.8	78.7	79.6	82.0	82.3	82.6	86.8	90.9	91.1	79.1	91.1																						
25-Apr	91.6	91.6	91.5	90.6	85.7	82.7	77.5	71.7	65.0	61.7	56.8	52.3	53.3	87.3	87.1	79.5	72.0	62.9	60.9	55.2	60.5	65.6	69.3	72.8	72.7	91.6																						
26-Apr	74.6	73.5	81.8	76.6	74.2	73.4	72.5	68.7	65.1	60.3	58.3	57.8	53.9	50.4	48.4	48.7	50.2	52.1	59.8	68.6	75.7	83.0	87.4	89.0	66.8	89.0																						
27-Apr	88.3	89.3	90.8	92.6	94.8	95.9	95.7	82.0	69.0	57.4	50.4	44.3	41.6	40.6	37.4	36.9	37.1	36.4	39.5	42.9	47.0	49.0	50.9	51.1	60.9	95.9																						
28-Apr	51.9	57.7	64.7	68.8	69.8	74.7	66.5	42.5	33.7	31.1	27.1	24.4	22.6	21.3	20.8	20.8	26.8	26.6	26.2	26.8	29.3	35.2	41.4	40.9	39.6	74.7																						
29-Apr	58.9	64.1	64.8	74.2	76.4	76.4	57.8	46.3	37.2	28.7	24.6	21.5	19.9	19.6	19.2	18.7	18.6	18.8	20.6	24.0	30.2	28.5	31.6	34.1	38.1	76.4																						
30-Apr	34.9	37.0	39.8	39.3	43.4	40.1	42.9	37.0	25.8	21.7	19.3	17.9	16.7	16.8	16.7	16.4	16.6	17.1	18.4	21.1	24.5	26.3	27.4	28.7	26.9	43.4																						
																								64.7	67.3	69.7	70.9	72.2	73.5	72.0	65.6	59.1	53.7	49.1	45.9	43.0	41.6	40.4	39.5	39.1	40.3	43.4	47.7	52.4	55.3	58.1	60.4	Diurnal Average
																								96.5	97.8	99.1	92.9	94.8	95.9	95.7	93.6	94.9	94.7	92.3	92.7	91.6	90.8	90.2	88.6	82.6	81.0	83.5	90.7	92.8	93.1	92.5	94.7	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

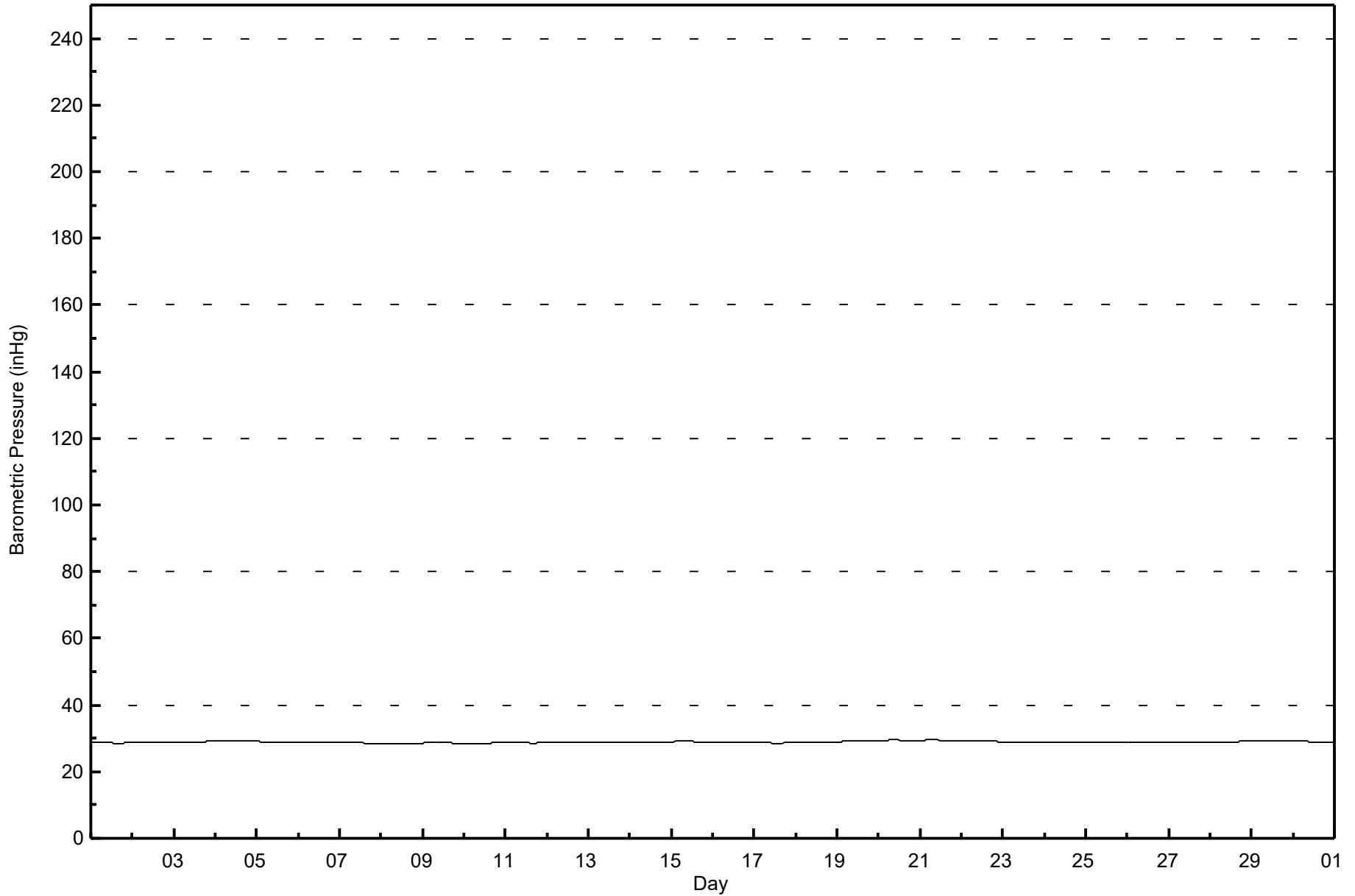
Relative Humidity (RH) - %
Barge Landing - April 2023





Wood Buffalo Environmental Association
Hourly Averages

Barometric Pressure (BP) - inHg
Barge Landing - April 2023





Maximum Speed: 36 km/h on Apr 17 16:00	Maximum Daily Speed Average: 23.7 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 3 23:00	Minimum Daily Speed Average: 0.7 km/h on Apr 4	Hours of Data: 716
Maximum Diurnal Speed Average: 5.6 km/h at hour 20	Minimum Diurnal Speed Average: 2.5 km/h at hour 5	Hours of Missing Data: 4
Monthly Average Velocity: 3.3 km/h 147.1 deg	Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 7 Median = 10 Q ₃ = 14 P ₉₀ = 21 P ₉₉ = 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-Apr	NE9	NNW3	N3	N4	NNW5	N6	N5	NNW6	NNW6	NW6	NNW7	NNE8	NNW10	NW11	NW11	NW9	NW10	NNW10	NNW7	E6	SE9	ESE8	ESE7	ESE9	N4.3	NW11
2-Apr	ESE8	SE6	ESE6	ESE2	E4	E6	ESE7	SE9	SE9	SE9	SE4	WSW2	WNW4	NNE6	NNE11	N13	N13	NNE13	NNE16	NNE17	NNE15	NNE16	NNE14	N9	NE5.5	NNE17
3-Apr	NNW9	N9	NNW8	N10	NNE9	N10	N10	NNW9	NNW9	NNE8	ENE10	ENE9	NE11	NE11	NE10	NE6	E3	SSE2	SSE6	SE8	ESE10	SE6	SW0	N5	NE5.1	ENE11
4-Apr	NW6	NNW6	NNW8	NNW6	NW6	NW6	NW6	NW5	NW5	NW3	W4	ENE4	NNE7	NNE5	W4	W6	W5	WSW3	SE5	SSE9	SE13	SE11	SE11	ESE11	NNW0.7	SE13
5-Apr	SE14	SSE10	SE8	SE9	SE8	SE8	SE7	SSE7	S6	W4	WNW5	S10	S11	SSW8	WSW7	WSW9	SSW8	SSE11	SE9	SE9	SE10	SE10	SE9	SE10	SSE6.8	SE14
6-Apr	SE12	SE12	SE13	SE12	SE12	SE11	SSE6	S7	S11	SSE18	SSE18	SSE20	SSE22	SSE25	S26	S26	S25	S23	S22	SSE21	SSE19	SSE22	SSE22	SSE24	SSE17.6	SSE26
7-Apr	SSE19	SSE20	SSE16	SSE14	S13	SSE10	SSE11	SSE16	SSE21	SSE22	SSE24	SSE21	SSE23	SSE26	SSE26	SSE27	SSE24	SSE20	SE16	SSE12	SSE13	SSE16	SSE15	S15	SSE18.2	SSE27
8-Apr	SSE17	S14	SSE13	SSE14	SSE13	SSE11	SSE12	S11	S13	S16	SSE13	S14	SSE14	SSE14	SSE16	SSW13	SW15	SW14	SW12	WSW12	SW9	SSW9	SSW6	SW7	S11.5	SSE17
9-Apr	SSW9	SSW6	SSW11	S7	SSW8	S10	SW13	WSW19	WSW16	WSW14	WSW18	WSW21	WSW21	SW17	SW14	SW13	SW14	S11	SE12	SE14	SSE15	SSE14	SE15	SE14	SSW10.4	WSW21
10-Apr	SE10	S10	S16	WSW22	WSW31	WSW29	WSW30	WSW33	WSW32	WSW33	WSW32	WSW33	WSW34	WSW32	WSW32	WSW33	WSW32	WSW31	WSW28	WSW16	SW13	SW13	SW11	WSW18	WSW23.7	WSW34
11-Apr	SW14	SSE9	SSE10	S7	S3	SSW6	SE6	S8	SSW11	SSW10	S11	SSW11	SSW12	SW11	WSW12	SW7	WNW6	NW10	NNW15	N11	NNW8	NNW9	NW5	W7	SW4.3	NNW15
12-Apr	NNW11	NNW4	WSW6	WSW9	WSW6	W5	WSW5	NNE2	NNE5	W4	N6	NE11	NNE10	N12	NNW11	NNW6	W8	NW8	NNE8	NE7	WSW5	NW9	NW11	NNW11	NNW5.0	N12
13-Apr	NNW7	NW6	NNW7	NNW7	NNW9	NNW7	NNW7	N4	NNE7	N8	NNE8	NE6	NNE6	NE8	NNE11	NE11	NNE14	NNE15	NE15	NE16	NE18	NE12	N7	N7	NNE8.4	NE18
14-Apr	NE5	NE4	NE5	ENE6	NE6	ENE7	ENE7	ENE5	NNE5	N7	NNE6	NW7	N5	NNE7	NNE12	NNE13	NNE15	NNE15	E10	SE11	SE6	E5	E9	NE6.2	NNE15	
15-Apr	E6	N5	ENE4	N4	NE2	ENE5	ESE4	SSE4	W5	WNW3	NW6	NW6	W7	SW6	WSW10	S7	ENE10	ENE15	E12	ESE11	ESE13	SE14	SE12	SE10	ESE3.0	ENE15
16-Apr	S3	NW5	W2	NW3	NNE4	E6	N6	N2	E6	NNW5	W1	SE23	SE23	SSE19	SE21	ESE21	ESE22	ESE22	ESE21	ESE24	ESE28	ESE30	ESE28	SE23	ESE12.1	ESE30
17-Apr	SE15	SE15	SE12	SE10	E6	N8	NNW9	NE6	ESE16	ESE26	SE34	ESE32	ESE31	ESE33	SE34	ESE36	SE33	ESE26	ESE22	E19	ESE21	SE14	SE18	SE26	ESE19.2	ESE36
18-Apr	ESE15	E10	E9	E8	E6	ESE8	E9	N6	N7	NNE10	NE8	ENE11	ENE11	NE11	ENE13	E11	ENE11	NE13	NE14	NE17	NE16	NE15	NE13	NE13	ENE9.8	NE17
19-Apr	NE12	NE10	NE12	E12	ESE14	ESE15	ESE14	ESE13	ESE11	ESE11	ESE9	ESE10	ESE13	ESE12	ESE11	ESE9	ESE11	ENE8	NNW8	NNW11	NNW9	N7	N8	NNE5	E7.3	ESE15
20-Apr	NNW5	NNW6	E4	UO	UO	UO	UO	WNW3	WNW6	WNW6	NNW7	N13	NNE13	ESE5	ESE10	E9	E14	E15	ESE17	ESE15	ESE12	ESE12	E13	E10	E5.9	ESE17
21-Apr	E8	SE7	SSE8	SSW5	S4	SSE6	SE5	SSE5	SSW6	SSW6	SW8	S8	SSW9	SSW11	SSW11	SSW10	S8	S8	SSE9	SE10	SE9	SE11	SSE12	SSE11	S7.1	SSE12
22-Apr	SSE12	S11	SSW8	S8	SSE10	SSE12	SSE11	S10	S10	S10	SSE14	SSE20	SSE18	S19	S18	S17	S17	S15	S13	SSE11	SSE11	SSE12	SE9	SE10	SSE12.4	SSE20
23-Apr	ESE11	SE10	SE10	SE10	SSE4	SSE5	SE6	SE5	SE7	SE3	E7	SSE6	SSE17	SSE18	SE15	SE13	E13	ESE15	SE8	SSE11	NNW11	N8	NW6	NW3	SE6.5	SSE18
24-Apr	SSE10	SE5	NE8	NNE7	N3	SSE9	ESE8	E5	SE8	SE5	ESE7	E8	NE9	N11	NNW15	NNW16	NNW17	NNW18	N13	N7	N10	NNW10	SW9	SSW8	NNE3.7	NNW18
25-Apr	SSE8	SE10	SE10	SE12	SE13	SSE12	SSE12	SSE15	SSE15	S13	S15	SSE18	SSW20	W18	ESE7	SE12	SSE10	E9	SSW2	WSW20	W21	W14	W12	W13	S7.7	W21
26-Apr	W12	W14	W10	W12	W8	W11	W12	W12	WNW14	NW16	NW14	WNW13	NW14	NNW15	N11	NNE15	NE13	NE15	NE18	NE16	NE12	NNE8	NNW8	NW9	NW7.8	NE18
27-Apr	NNW10	NNW9	N8	NE3	SSW5	SSE7	SSE5	WSW5	SW6	SW7	SW7	W4	SSW7	SW7	SW9	SW10	WSW8	S11	S9	S10	SSE10	SSE13	SSE13	SSE13	SSW4.5	SSE13
28-Apr	S10	S6	SW1	SW4	W6	NW4	WNW7	NW17	NW23	WNW24	WNW26	WNW25	WNW23	NW22	NW21	NW23	N19	N20	N16	NNE16	N13	NNW9	NNW10	NNW12	NW11.8	WNW26
29-Apr	NW4	WNW4	NNW4	N2	SSW5	SSW5	SSW3	SW3	SW5	WSW7	WSW6	ENE4	NNE13	NNE11	NE10	NE10	ENE11	ENE12	ENE14	ENE15	E14	ESE13	ESE11	SE12	ENE3.8	ENE15
30-Apr	SE13	SE12	SE11	SE9	SE7	SSE8	SSE5	WSW5	S13	SSE15	SSE16	SSE20	SSE22	SSE24	SSE25	SSE23	SSE22	SE24	SE22	SE20	SE18	SE19	SE17	SE17	SSE15.6	SSE25

SE4.1 SSE3.1 SE3.2 SSE2.6 S2.5 SSE3.2 S2.5 SSW2.9 SSW3.5 SSW3.4 SSW3.3 SSE4.4 S3.9 S3.6 SSE3.6 SSE3.7 SE3.6 ESE4.0 E4.7 ESE5.6 ESE5.6 ESE5.3 SE4.7 SE4.9	Diurnal Average
SSE19 SSE20 S16 WSW22 WSW31 WSW29 WSW30 WSW33 WSW32 WSW33 SE34 WSW33 WSW34 ESE33 SE34 ESE36 SE33 WSW31 WSW28 ESE24 ESE28 ESE30 ESE28 SE26	Diurnal Maximum

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



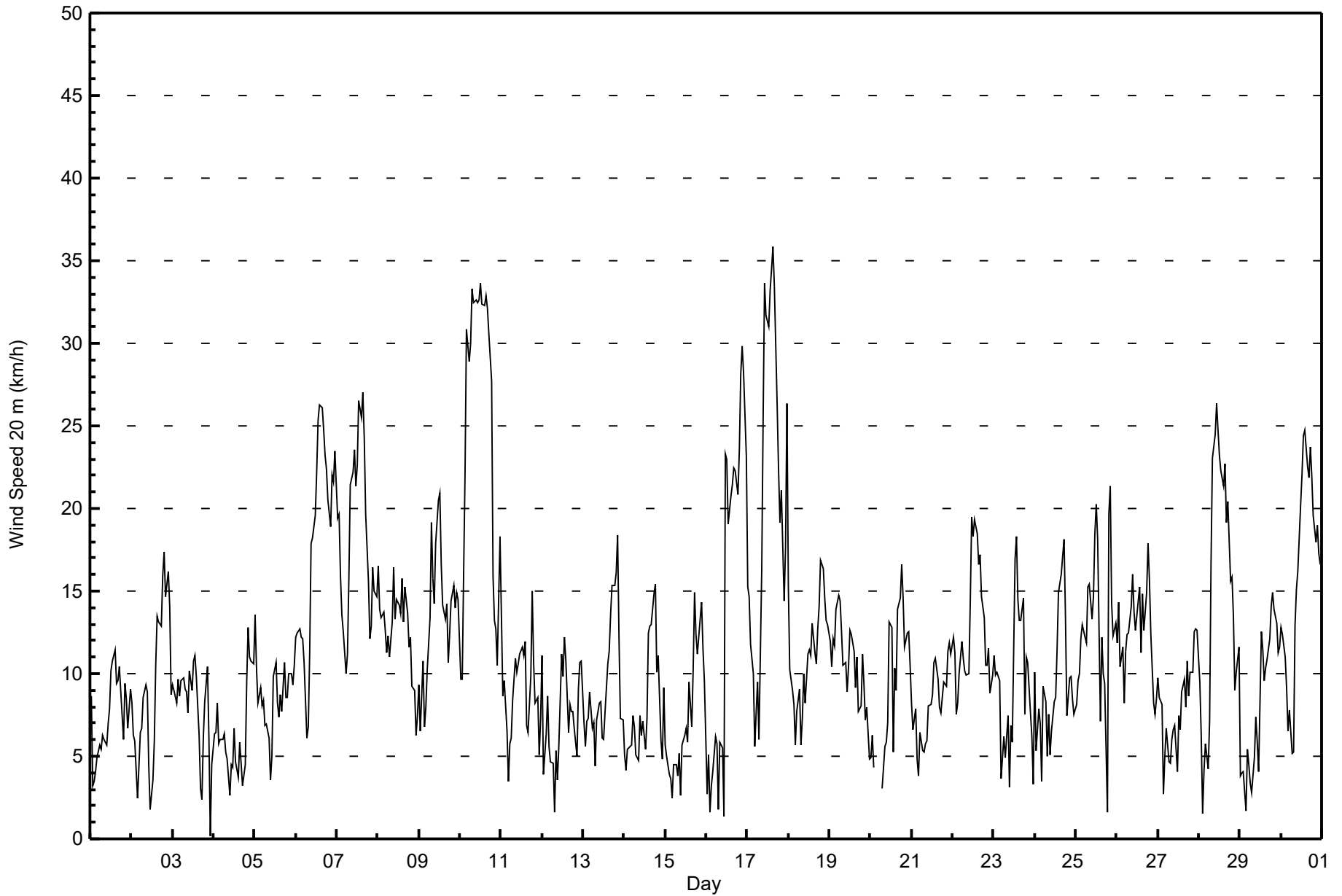
Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed 20 m (WS20m) - km/h
Barge Landing - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on Apr 25 13:00	Hours in Service: 720 Hours of Data: 716 Hours of Missing Data: 4 Hours of Calibration: 0 Percent Operational Time: 99.4
Minimum Value: 1 km/h on Apr 29 02:00	
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 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-Apr	2	2	2	2	1	1	1	1	1	1	2	2	3	2	3	2	3	2	2	2	2	1	1	2	3
2-Apr	2	1	2	1	1	1	1	2	2	2	2	1	2	1	4	3	3	3	4	4	3	3	4	3	4
3-Apr	2	2	2	2	2	2	2	3	2	2	3	2	3	3	2	2	1	2	2	2	1	2	2	2	3
4-Apr	1	1	2	2	1	1	1	2	1	1	2	3	2	2	2	2	2	2	1	2	1	2	2	2	3
5-Apr	2	2	2	2	2	3	2	3	2	1	1	5	4	3	2	2	3	2	2	1	1	2	1	1	5
6-Apr	1	1	1	1	1	2	1	2	4	5	4	5	6	7	7	6	6	6	5	5	4	5	5	5	7
7-Apr	4	4	3	3	3	2	2	5	5	5	5	5	6	5	6	6	6	5	4	2	3	3	2	2	6
8-Apr	3	3	2	2	2	2	2	2	3	4	3	3	3	4	4	5	5	4	2	2	2	1	1	1	5
9-Apr	2	2	2	2	4	2	4	4	4	5	5	6	6	5	4	5	4	3	2	2	2	3	2	3	6
10-Apr	3	4	3	6	8	8	7	8	9	8	8	9	9	9	8	8	8	8	8	4	3	3	3	4	9
11-Apr	3	2	1	2	2	2	1	2	3	3	3	3	4	5	4	3	3	5	3	3	1	1	2	1	5
12-Apr	4	3	3	2	1	2	1	2	2	2	4	3	3	4	4	4	4	3	2	3	2	3	1	2	4
13-Apr	2	1	1	1	1	2	2	1	3	2	3	2	2	3	3	3	3	3	3	3	3	4	2	2	4
14-Apr	1	1	2	2	1	2	2	2	2	2	2	2	3	3	3	3	4	4	3	2	2	3	1	1	4
15-Apr	2	2	1	1	2	1	3	1	1	2	2	2	2	3	3	4	5	4	3	2	2	3	2	2	5
16-Apr	3	1	2	2	2	2	2	1	1	2	5	7	7	6	6	6	6	5	6	6	6	5	6	5	7
17-Apr	3	4	3	2	2	2	2	3	6	8	7	6	7	8	8	7	7	8	7	5	6	5	5	7	8
18-Apr	6	3	3	3	2	3	3	1	2	3	3	3	3	3	4	3	3	3	4	4	4	4	3	3	6
19-Apr	3	3	3	3	3	3	4	3	2	2	3	3	5	3	4	2	3	2	4	2	2	2	2	1	5
20-Apr	1	1	2	UO	UO	UO	UO	1	1	2	2	3	4	5	4	6	4	4	5	3	1	1	2	1	6
21-Apr	2	3	2	1	1	1	1	2	2	2	3	4	4	4	4	4	3	2	2	1	1	1	1	1	4
22-Apr	2	2	2	2	2	1	2	2	2	4	4	7	6	6	6	5	5	4	4	2	1	1	1	1	7
23-Apr	1	1	1	3	2	2	1	1	2	3	2	4	6	5	5	5	5	6	3	5	3	2	2	2	6
24-Apr	4	1	2	3	2	3	4	1	2	2	3	2	3	4	3	4	4	5	4	3	2	2	2	1	5
25-Apr	2	1	1	1	1	2	2	3	4	3	4	5	12	12	3	3	4	3	2	7	6	4	4	3	12
26-Apr	3	4	2	3	2	3	3	4	4	5	4	4	4	4	4	4	4	4	4	3	4	2	1	1	5
27-Apr	2	1	1	1	2	1	1	1	2	2	3	3	4	3	4	5	4	3	2	2	1	1	2	2	5
28-Apr	2	1	4	3	2	1	3	6	7	7	8	7	7	6	6	7	6	7	5	4	3	2	2	1	8
29-Apr	2	1	1	1	2	2	1	1	2	2	2	3	4	4	4	4	4	3	3	2	2	2	1	2	4
30-Apr	2	1	2	2	2	1	2	2	5	4	5	6	5	6	6	6	5	6	6	4	3	3	3	3	6
Diurnal Maximum																									
6 4 4 6 8 8 7 8 9 8 8 9 12 12 8 8 8 8 8 8 7 6 5 6 7																									

UO - Unstable Operation





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Barge Landing - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	99	13.83	13.83
6 - 11	328	45.81	59.64
12 - 19	202	28.21	87.85
20 - 28	65	9.08	96.93
29 - 38	22	3.07	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 716

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h
Barge Landing - April 2023**

Wind Speed 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	6	5	5	5	3	7	7	3	6	5	6	10	5	9	6	99
6 - 11	24	18	18	12	20	24	42	30	27	21	14	9	8	4	19	38	328
12 - 19	7	19	17	6	7	15	31	41	16	2	11	8	9	3	3	7	202
20 - 28	1	0	0	0	0	11	8	26	4	1	0	5	1	4	4	0	65
29 - 38	0	0	0	0	0	5	3	0	0	0	0	14	0	0	0	0	22
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	43	43	40	23	32	58	91	104	50	30	30	42	28	16	35	51	716

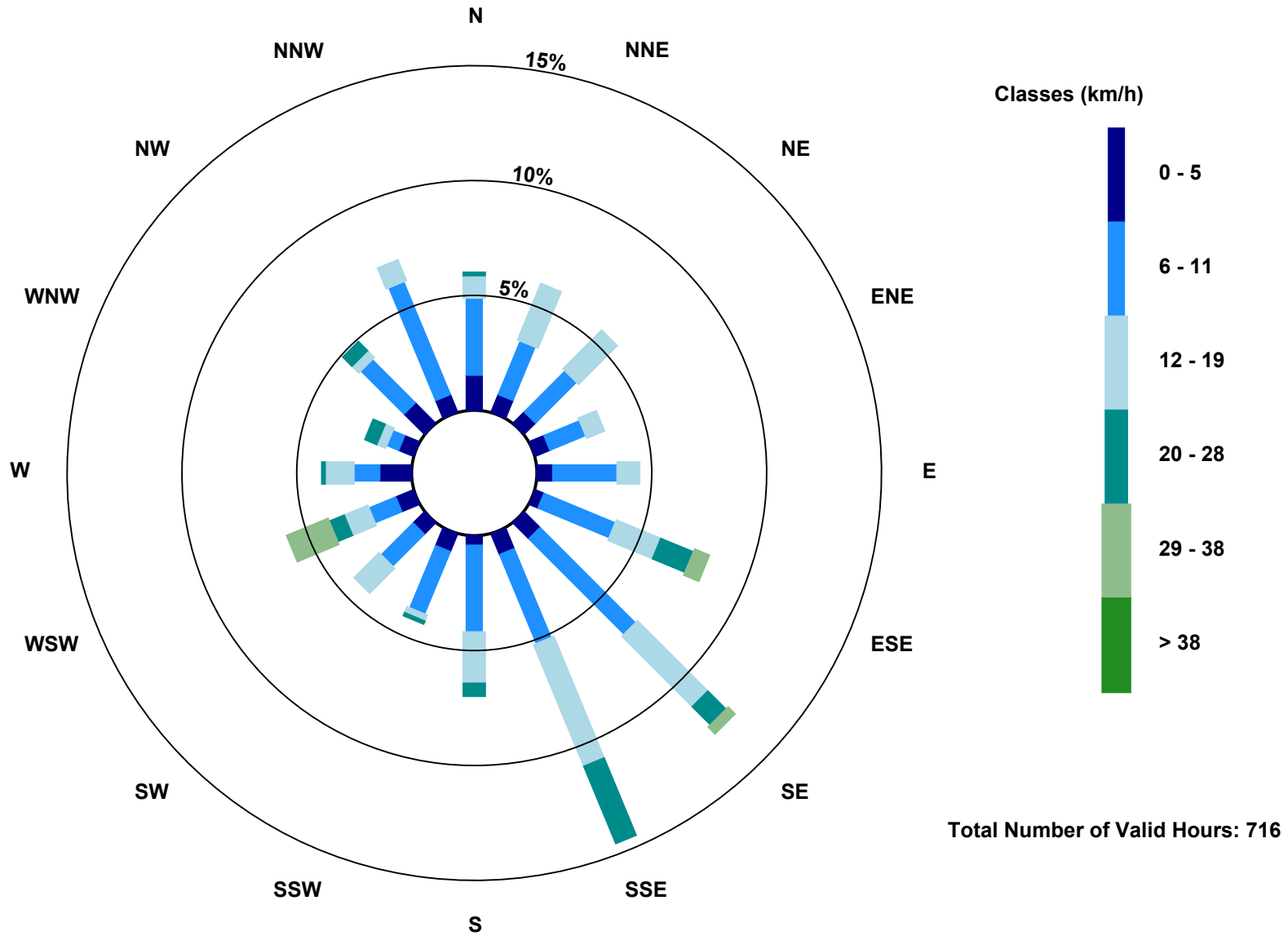
Total Number of Valid Hours: 716

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 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 - April 2023

Direction of Maximum Speed: 119 deg on Apr 17 16:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 245.1 deg on Apr 10	Hours of Data: 716
Direction of Minimum Speed: 217 deg on Apr 3 23:00	Direction of Minimum Daily Speed Average: 0.7 deg on Apr 4
Direction of Minimum Speed: 217 deg on Apr 3 23:00	Hours of Missing Data: 4
Monthly Average Direction: 147.1 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-Apr	41	348	3	3	345	358	5	329	335	318	336	12	334	325	324	321	323	330	339	91	126	121	116	119	355.4
2-Apr	122	131	122	117	94	101	113	130	143	145	142	254	295	17	20	11	9	14	15	26	19	25	21	356	43.8
3-Apr	348	350	347	5	21	8	9	334	333	15	59	68	51	56	55	42	98	148	154	136	103	132	217	353	34.1
4-Apr	325	329	331	330	321	325	324	317	311	308	264	60	29	13	272	264	263	257	143	156	130	140	131	123	334.0
5-Apr	128	152	153	144	140	133	132	157	176	276	284	179	181	209	239	249	195	156	141	130	136	134	138	138	158.8
6-Apr	140	141	144	136	137	145	147	173	174	166	168	164	162	165	169	171	171	173	170	166	162	164	163	161	162.2
7-Apr	166	166	161	166	170	166	167	168	165	158	163	162	160	158	158	158	158	156	144	156	154	158	163	170	160.8
8-Apr	168	173	165	162	165	166	168	175	171	174	168	170	166	161	164	201	224	222	217	238	228	210	199	214	183.3
9-Apr	210	196	207	179	197	173	221	238	240	242	244	248	249	229	220	218	221	172	135	136	154	154	139	135	204.5
10-Apr	145	174	177	243	251	249	248	248	253	250	244	249	255	253	254	252	250	256	252	239	220	220	228	248	245.1
11-Apr	230	157	168	169	180	211	145	175	194	194	184	201	212	236	248	235	287	322	335	358	336	341	316	273	230.3
12-Apr	341	339	251	244	250	276	255	22	28	261	7	36	12	353	340	336	278	307	26	56	251	326	321	341	331.2
13-Apr	333	305	337	330	338	334	340	351	13	10	13	40	21	43	32	39	27	31	34	35	46	34	6	356	16.7
14-Apr	36	47	49	58	47	66	72	70	16	353	15	304	8	21	29	26	19	19	31	91	128	126	97	94	43.4
15-Apr	98	2	57	2	48	65	104	154	263	286	322	306	266	221	253	177	75	68	88	111	103	125	139	153	107.3
16-Apr	170	325	279	318	13	92	352	357	100	334	267	141	135	148	134	121	110	113	107	111	115	120	122	125	119.3
17-Apr	138	136	135	130	85	355	344	34	103	117	126	121	119	121	127	119	126	120	108	91	113	126	126	131	118.4
18-Apr	110	90	84	84	85	113	100	1	349	15	40	78	64	52	69	95	67	55	51	45	45	40	38	52	61.3
19-Apr	51	35	51	97	112	114	121	116	116	110	109	112	114	110	105	115	113	73	335	339	336	0	4	22	86.6
20-Apr	344	343	97	UO	UO	UO	UO	291	285	302	341	9	12	111	107	92	97	86	116	119	103	102	88	92	79.1
21-Apr	99	143	164	193	188	161	145	158	197	206	215	176	200	196	200	209	184	177	163	145	137	138	150	147	169.5
22-Apr	147	172	198	185	155	162	166	169	177	180	168	154	166	173	171	176	177	177	186	167	158	164	144	124	167.5
23-Apr	119	128	133	130	159	148	141	141	140	132	82	155	151	161	141	132	97	118	124	148	335	353	316	313	131.1
24-Apr	162	124	46	25	350	147	123	90	144	131	106	86	40	3	330	336	340	339	358	354	1	332	235	212	12.1
25-Apr	148	145	145	136	146	147	150	155	162	170	170	164	205	266	104	146	155	84	208	258	268	268	267	264	184.6
26-Apr	262	266	271	279	275	269	272	274	291	305	312	303	321	338	351	28	44	41	49	46	41	12	337	321	326.2
27-Apr	337	333	353	34	197	149	149	237	227	232	236	277	197	229	226	225	239	190	186	173	156	153	153	157	198.3
28-Apr	179	186	220	226	261	304	294	304	312	299	296	303	298	310	304	320	350	5	11	17	10	344	341	345	318.7
29-Apr	308	284	327	358	197	206	207	225	226	255	257	57	16	24	39	47	72	77	75	73	79	107	115	135	72.8
30-Apr	133	134	137	146	142	148	160	258	173	158	158	156	159	147	147	148	149	145	141	134	136	135	137	143	146.9
137.6 148.2 143.5 156.0 170.9 159.0 170.0 210.3 203.2 207.3 191.9 162.6 171.8 172.2 159.1 152.3 135.7 106.1 98.4 106.4 110.0 121.9 130.1 139.3																									
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

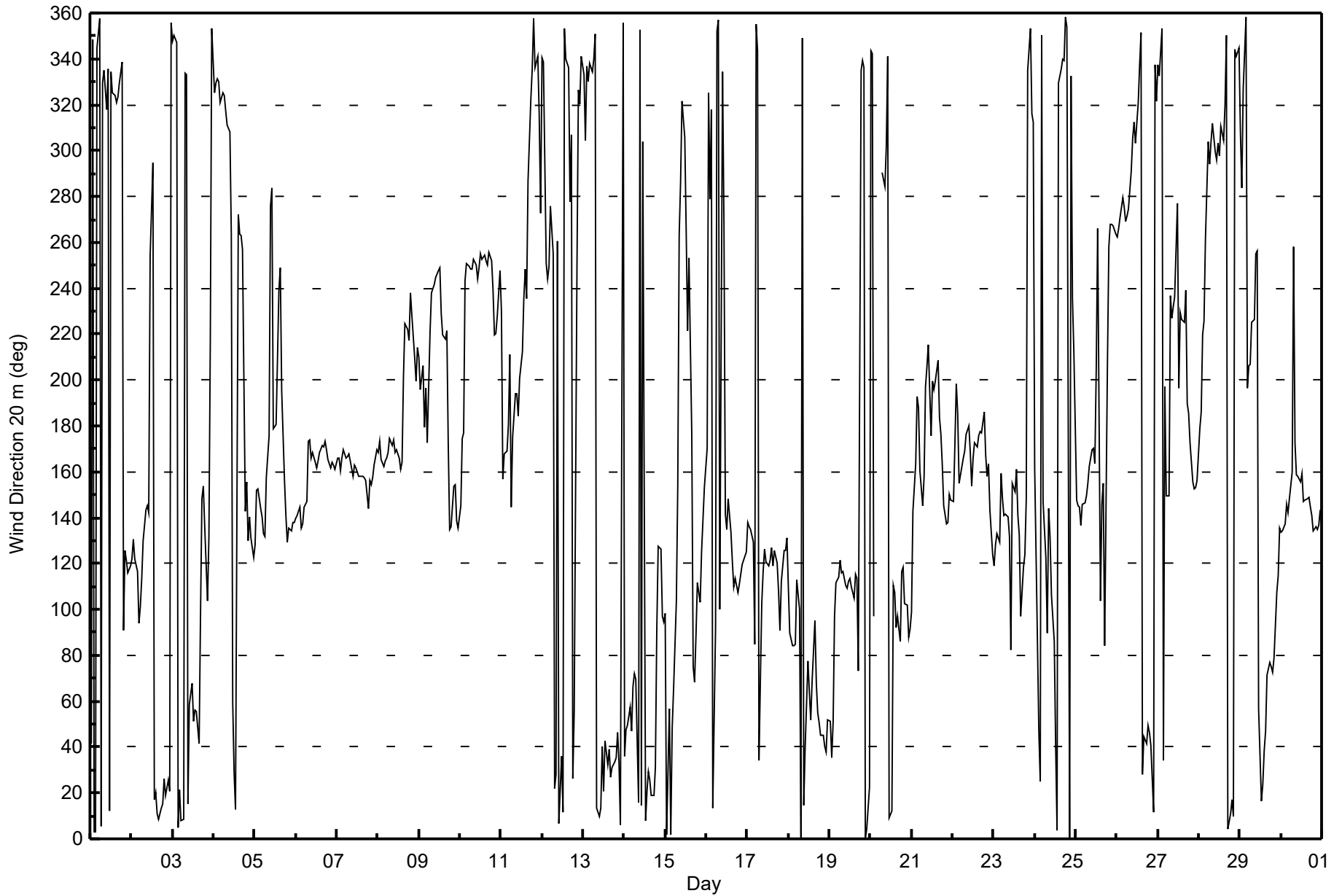
Barge Landing - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 94 deg on Apr 23 10:00	Hours of Data: 716
Minimum Value: 3 deg on Apr 21 21:00	Hours of Missing Data: 4
Percentiles: P ₁ = 5 P ₁₀ = 9 Q ₁ = 13 Median = 17 Q ₃ = 26 P ₉₀ = 42 P ₉₉ = 85	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-Apr	14	54	54	36	10	16	30	14	18	23	27	17	26	16	14	15	15	12	13	50	11	10	10	9	54
2-Apr	10	9	10	34	12	9	12	15	17	24	45	92	56	18	19	17	18	16	15	12	13	12	13	20	92
3-Apr	16	16	15	17	14	17	15	21	22	31	20	19	18	17	18	21	53	74	24	24	9	23	89	18	89
4-Apr	9	10	11	11	12	10	11	20	21	53	42	87	26	58	70	32	44	74	42	10	7	12	8	11	87
5-Apr	8	14	11	9	12	15	16	22	31	45	33	44	34	39	33	17	42	13	10	8	7	6	7	6	45
6-Apr	9	7	5	5	6	10	10	35	26	16	16	16	16	16	15	16	15	16	14	12	12	12	12	11	35
7-Apr	13	12	12	12	12	8	12	16	14	14	12	15	14	13	14	14	13	13	10	10	9	9	9	10	16
8-Apr	11	14	11	10	9	10	12	14	14	16	20	17	17	19	18	38	20	15	13	11	23	10	20	10	38
9-Apr	11	23	18	23	32	15	17	13	15	18	17	18	17	20	22	25	21	16	13	8	9	11	11	11	32
10-Apr	16	25	14	19	14	13	13	14	16	16	15	16	16	16	15	17	16	16	15	14	12	13	18	13	25
11-Apr	14	14	9	22	39	37	20	18	21	24	25	25	39	35	30	53	37	34	16	18	10	11	30	18	53
12-Apr	32	79	18	10	21	27	12	64	35	56	55	17	33	27	28	66	38	35	34	52	20	13	9	12	79
13-Apr	20	11	13	17	6	13	13	30	30	25	26	46	48	41	23	21	18	14	12	11	11	27	28	18	48
14-Apr	22	34	33	23	16	17	16	38	46	28	38	27	57	41	23	24	18	14	13	33	22	19	16	11	57
15-Apr	29	30	13	31	55	24	64	45	17	84	38	37	33	62	30	65	61	17	20	8	8	13	6	9	84
16-Apr	81	22	67	47	50	29	18	53	25	44	85	19	19	21	21	19	16	13	14	12	11	10	10	10	85
17-Apr	13	16	14	13	43	23	21	39	21	17	13	14	17	13	14	12	13	14	14	15	18	20	15	14	43
18-Apr	21	19	18	17	18	27	20	22	20	21	21	17	20	18	21	16	20	17	17	12	13	14	16	15	27
19-Apr	15	15	14	22	11	12	12	14	13	14	14	16	15	15	21	16	19	23	50	12	13	22	16	21	50
20-Apr	16	17	31	UO	UO	UO	UO	30	24	25	37	21	23	92	41	56	23	22	16	9	8	8	7	7	92
21-Apr	14	24	8	14	15	10	13	33	46	52	45	53	49	35	40	37	45	35	26	6	3	7	4	6	53
22-Apr	6	13	17	22	10	6	13	14	24	36	24	23	27	26	22	20	18	19	18	12	9	7	16	4	36
23-Apr	5	4	4	7	31	12	8	28	24	94	30	79	22	20	25	28	24	20	39	32	26	26	44	71	94
24-Apr	51	34	12	41	58	24	19	23	20	34	23	17	27	21	17	16	17	17	21	24	18	23	21	15	58
25-Apr	13	11	7	4	5	8	10	12	16	20	20	17	42	22	34	18	56	30	79	19	15	14	16	15	79
26-Apr	16	13	14	13	16	15	15	19	18	20	21	22	22	21	28	22	22	18	15	13	14	17	23	13	28
27-Apr	9	6	12	60	42	13	28	31	31	37	39	72	50	46	35	41	29	25	19	11	5	7	9	11	72
28-Apr	14	27	88	78	15	35	20	18	20	18	19	19	21	25	21	24	26	23	21	15	16	20	15	7	88
29-Apr	28	22	39	59	29	46	23	48	35	23	46	91	30	29	37	40	33	20	14	10	16	8	12	9	91
30-Apr	8	7	8	8	11	10	35	26	29	21	20	19	17	17	16	18	17	14	14	10	9	9	10	10	35

81	79	88	78	58	46	64	64	46	94	85	92	57	92	70	66	61	74	79	52	26	27	89	71	
Diurnal Maximum																								

UO - Unstable Operation





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS11 LOWER CAMP APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
 APRIL 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	685	33	35	99.72	47.3	0	9.2	0
H2S (ppb) Average	683	35	37	99.72	9.7	0	1.3	0
THC (ppm) Average	683	33	37	99.44	2.9	-	2.2	-
CH4(ppm) Average	683	33	37	99.44	2.9	-	2.2	-
NMHC(ppm) Average	683	33	37	99.44	0.249	-	0.022	-
Temperature (C) Average	720	0	0	100	20.1	-	13.1	-
Relative Humidity (%) Average	720	0	0	100	98.6	-	81.1	-
Barometric Pressure (inHg) Average	720	0	0	100	29.7	-	29.6	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	39	-	26	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
APRIL 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	685	2.24	5.1	-	0	0	0.1	0.4	1.8	5.8	47.3
H2S (ppb) Average	683	0.43	0.8	-	0	0	0.1	0.2	0.4	0.9	9.7
THC (ppm) Average	683	2.11	0.1	-	2	2	2	2.1	2.1	2.2	2.9
CH4(ppm) Average	683	2.1	0.1	-	2	2	2	2.1	2.1	2.2	2.9
NMHC(ppm) Average	683	0.004	0.016	-	0	0	0	0	0	0	0.249
Temperature 2 m (C) Average	720	4.75	5.8	-	-9.1	-2.4	0.1	4.5	9.3	12.6	20.1
Relative Humidity (%) Average	720	57.86	20.7	-	17.2	29	39	59.1	75.8	84.6	98.6
Barometric Pressure (inHg) Average	720	29.08	0.2	-	28.5	28.8	28.9	29.1	29.2	29.4	29.7
Wind Speed 10 m (km/h) Average	719	11.2	7	-	0	3	6	10	15	21	39
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
APRIL 2023

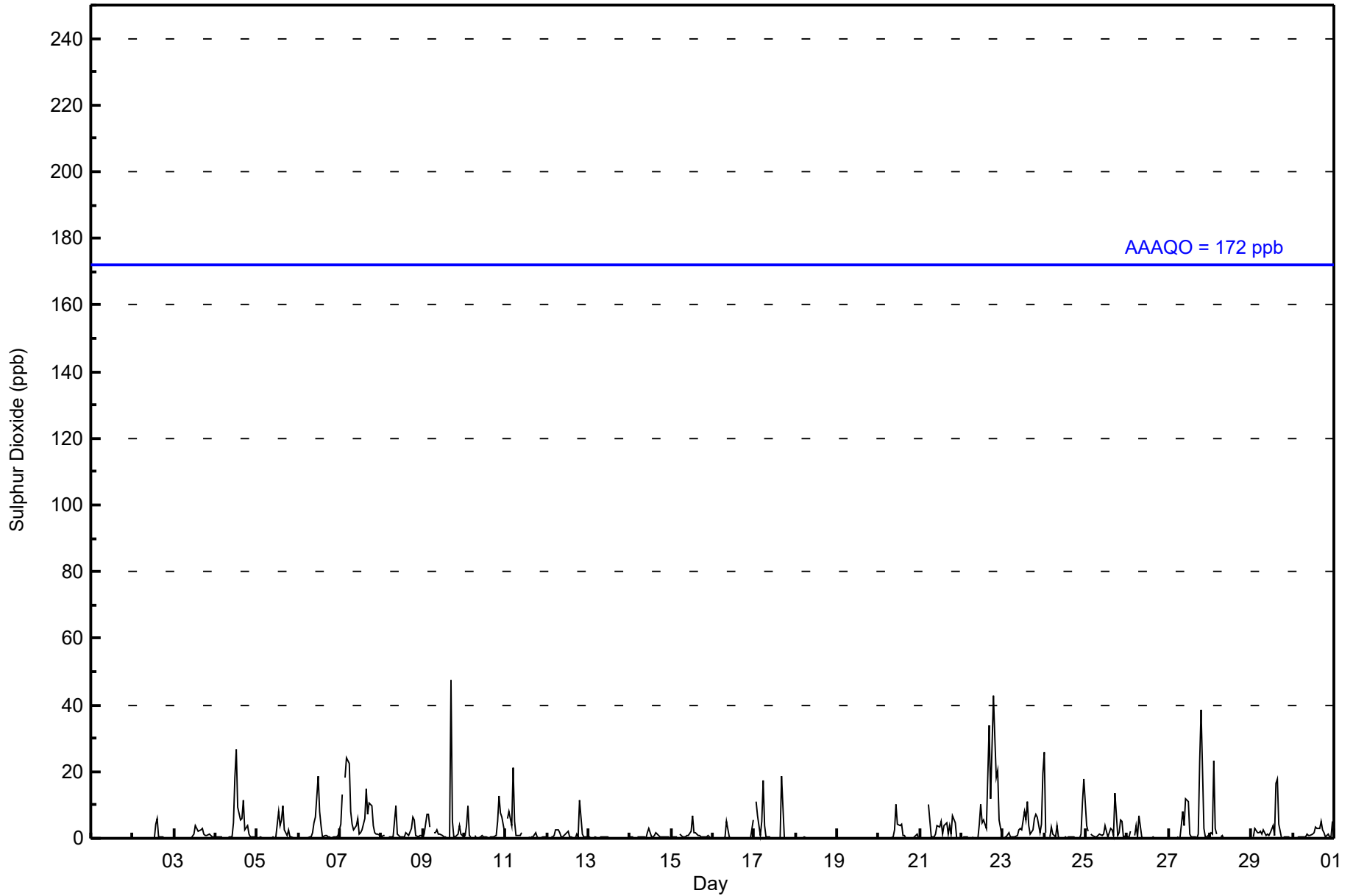
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL GASEOUS ANALYZERS	17 Apr 2023 11:00	17 Apr 2023 12:00	2	Maintenance - sample manifold cleaned
THC/NMHC/CH4	27 Apr 2023 10:00	27 Apr 2023 11:00	2	Maintenance - replaced support gas cylinder
Wind Speed, Wind Direction	01 Apr 2023 06:00	01 Apr 2023 06:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Lower Camp - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Lower Camp - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	648	94.60	94.60
11 - 20	25	3.65	98.25
21 - 60	12	1.75	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Lower Camp - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	43	27	13	14	15	62	225	72	5	3	3	17	36	29	34	49	647
11 - 20	0	0	0	0	0	0	6	5	8	1	2	0	2	1	0	0	25
21 - 60	0	0	0	0	0	1	3	2	4	1	0	0	0	1	0	0	12
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
Totals	43	27	13	14	15	63	234	79	17	5	5	17	38	31	34	49	684

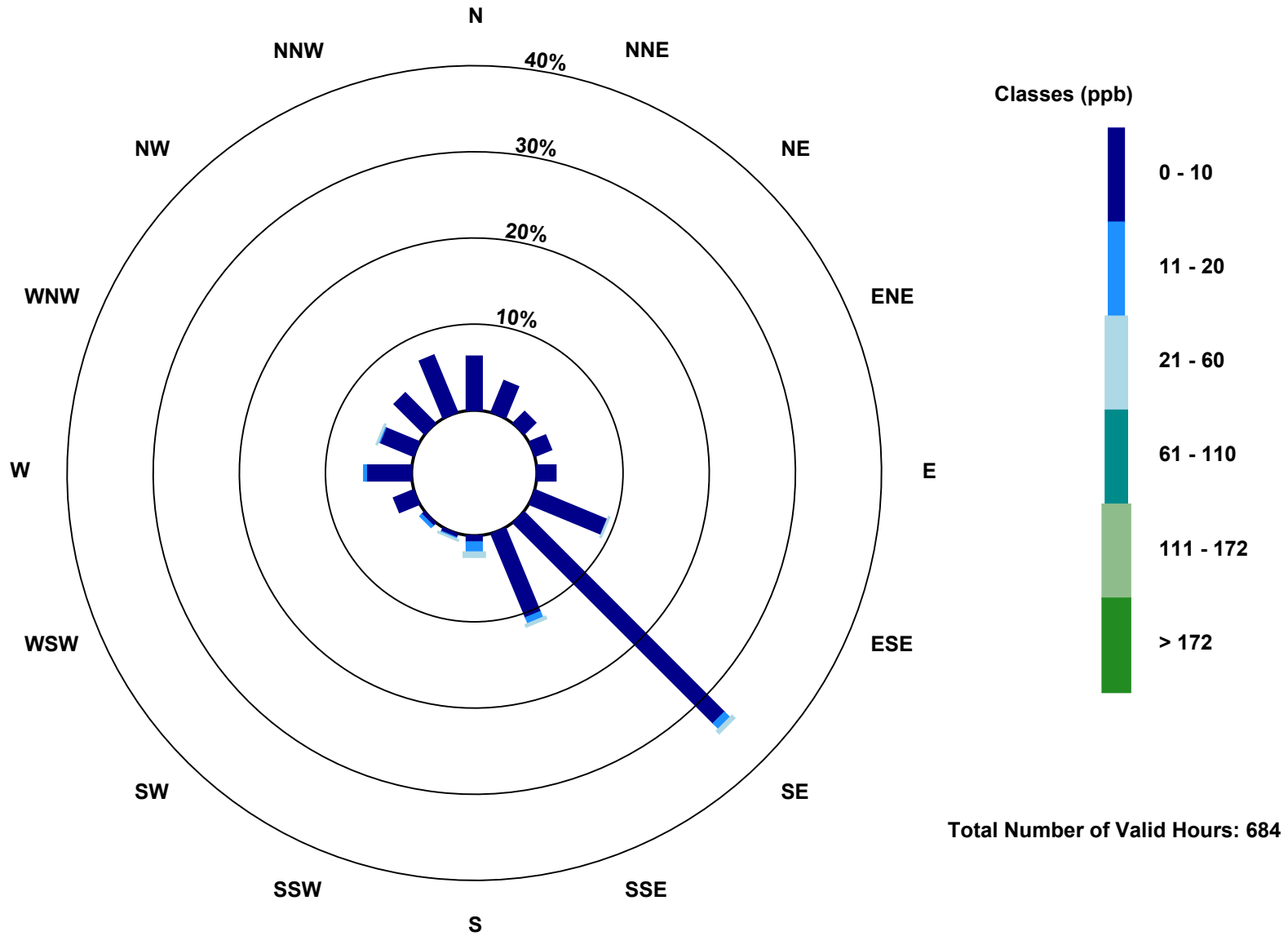
Total Number of Valid Hours: 684

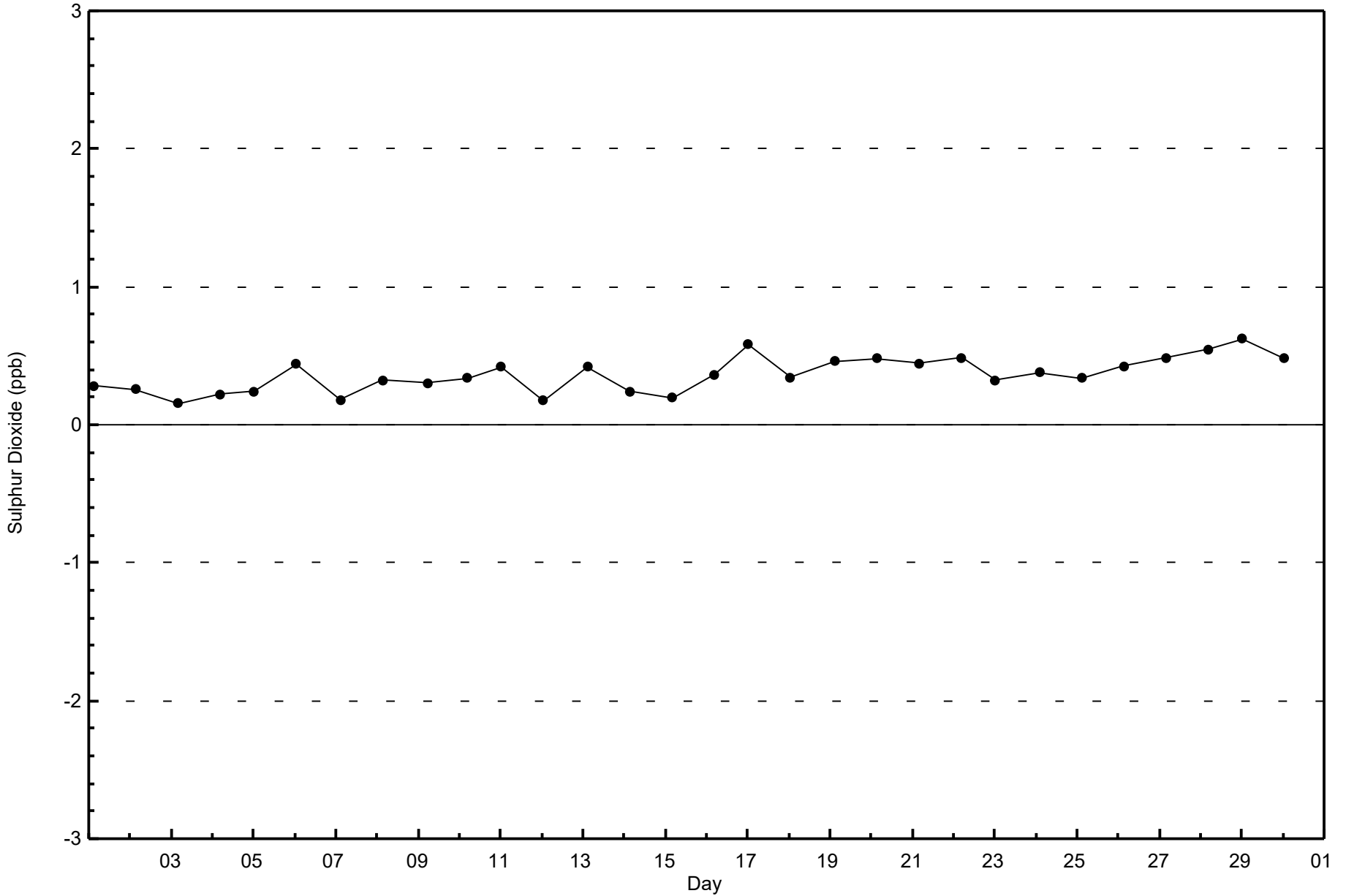
Total Number of Hours: 720

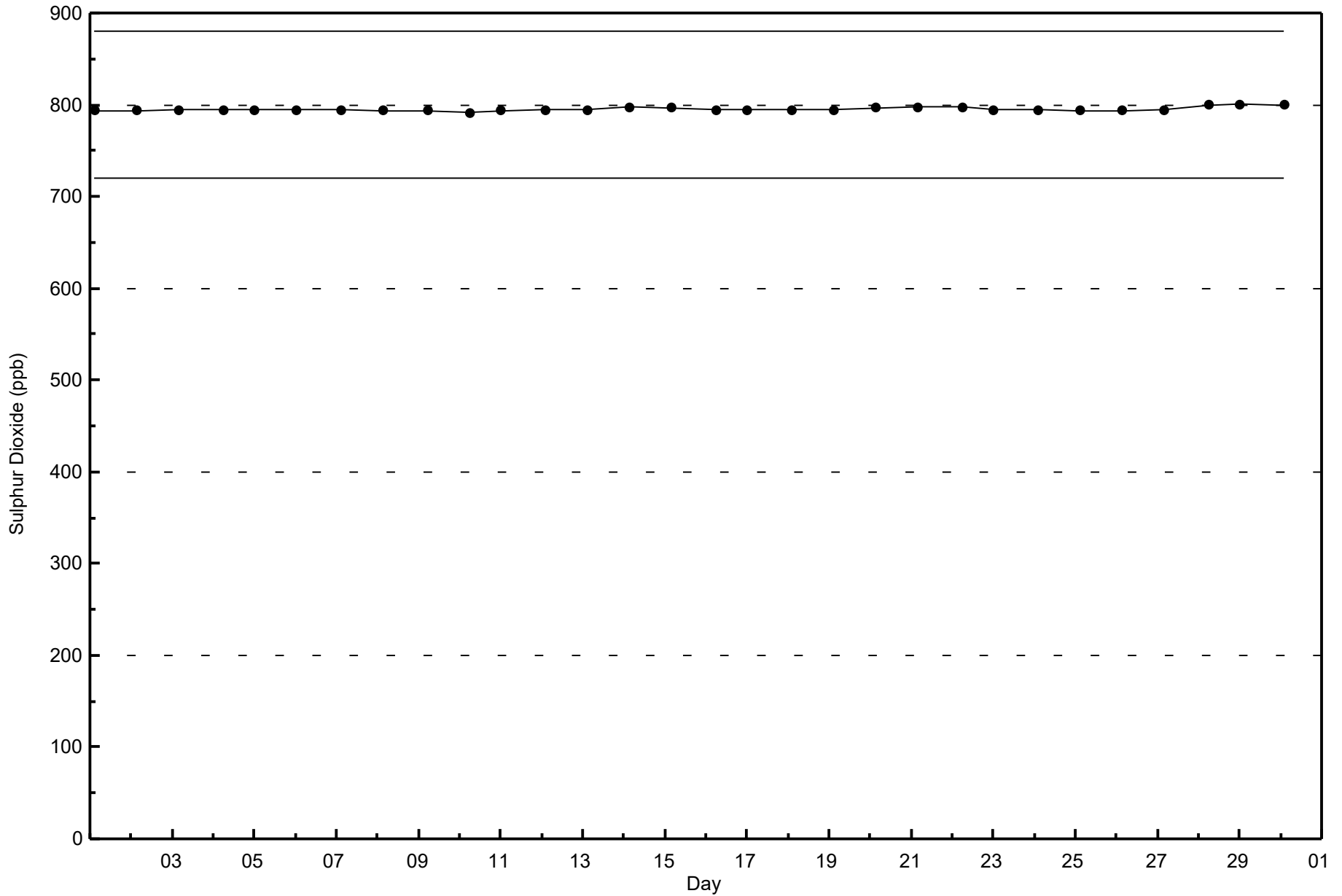


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Lower Camp









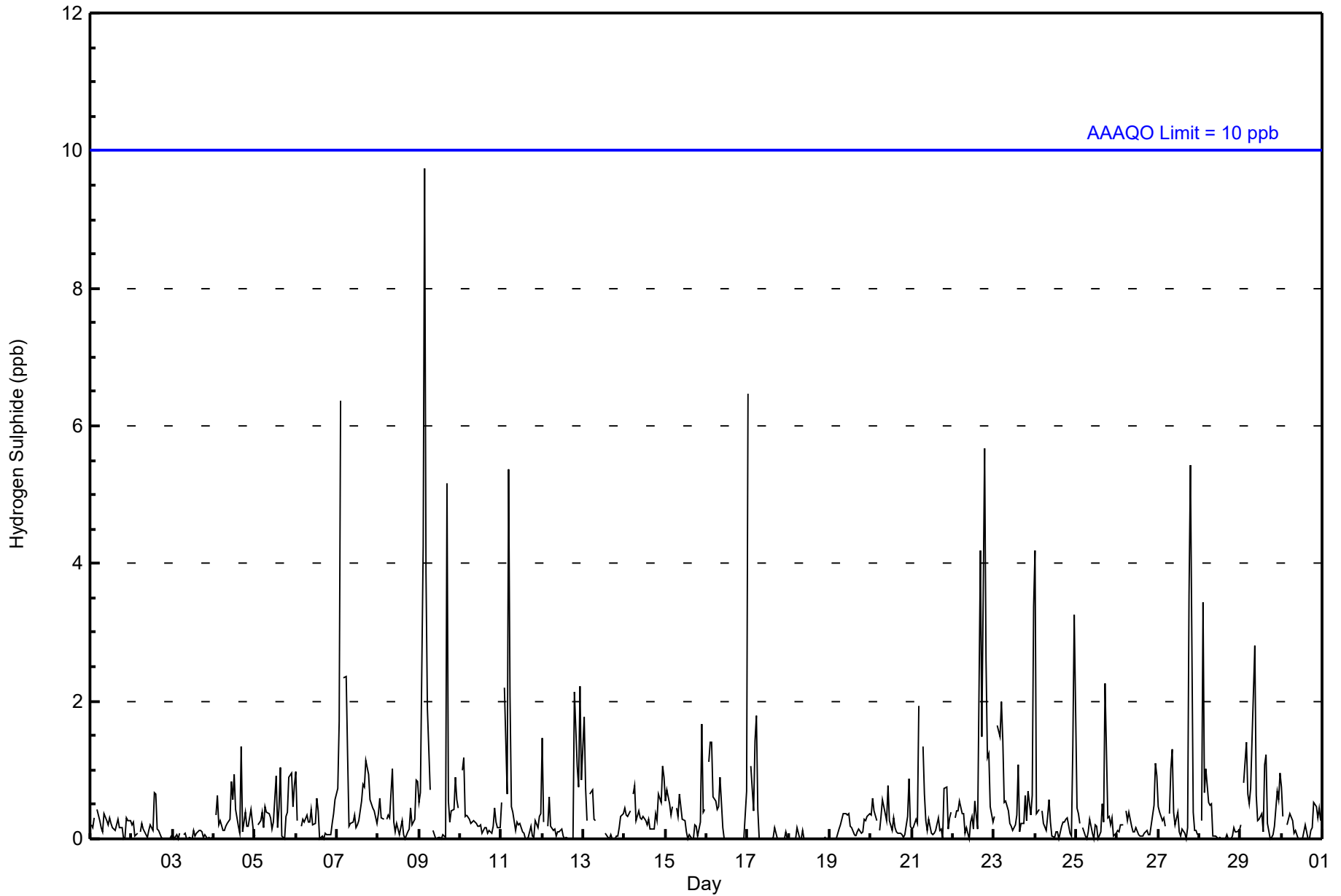
Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H₂S) - ppb

Lower Camp - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 9.7 ppb on Apr 9 04:00		Maximum Daily Average: 1.3 ppb on Apr 9														Hours of Data:		683								
Minimum Value: 0.0 ppb on Apr 2 20:00		Minimum Daily Average: 0.0 ppb on Apr 18														Hours of Missing Data:		37								
Maximum Diurnal Average: 1.0 ppb at hour 3		Minimum Diurnal Average: 0.2 ppb at hour 14														Hours of Calibration:		35								
Monthly Average: 0.43 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.9 P ₉₉ = 4.4														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-Apr	0.2	0.2	0.3	Z	0.4	0.3	0.2	0.1	0.4	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.0	0.0	0.3	0.3	0.3	0.2	0.4
2-Apr	0.2	0.3	0.0	0.1	Z	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.7	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
3-Apr	0.1	0.0	0.1	0.0	0.1	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
4-Apr	Z	0.3	0.6	0.2	0.3	0.1	0.1	0.2	0.2	0.3	0.8	0.6	0.9	0.4	0.2	0.1	1.3	0.1	0.4	0.2	0.2	0.3	0.4	0.1	0.4	1.3
5-Apr	0.0	Z	0.2	0.3	0.4	0.2	0.5	0.4	0.4	0.3	0.1	0.2	0.9	0.2	0.5	1.0	0.0	0.0	0.3	0.4	0.9	0.9	0.5	0.8	0.4	1.0
6-Apr	1.0	0.3	Z	0.2	0.3	0.2	0.3	0.2	0.3	0.4	0.2	0.2	0.6	0.4	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.4	0.6	0.3	1.0
7-Apr	0.7	1.7	6.4	Z	2.3	2.4	1.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.5	0.8	0.8	1.1	0.9	0.6	0.5	0.4	0.4	0.2	1.0	6.4
8-Apr	0.4	0.6	0.3	0.3	Z	0.3	0.4	0.3	1.0	0.3	0.1	0.2	0.1	0.2	0.3	0.1	0.0	0.1	0.1	0.5	0.2	0.3	0.9	0.8	0.3	1.0
9-Apr	0.5	0.7	4.3	9.7	3.9	1.9	0.7	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	5.2	0.6	0.2	0.4	0.4	0.9	0.6	0.4	1.3	9.7
10-Apr	Z	1.0	1.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.4	0.2	0.2	0.2	0.3	1.2
11-Apr	0.5	Z	2.2	0.7	5.4	2.1	0.5	0.4	0.1	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.3	0.2	0.3	0.4	0.6	5.4
12-Apr	1.5	0.2	Z	0.2	0.6	0.2	0.1	0.2	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.1	0.8	2.2	0.8	0.5	2.2
13-Apr	1.8	0.7	0.3	Z	0.6	0.7	0.3	0.3	C	C	C	C	C	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.3	1.8
14-Apr	0.4	0.4	0.3	0.4	Z	0.7	0.8	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.1	0.1	0.1	0.4	0.3	0.6	0.5	1.1	0.9	0.4	1.1
15-Apr	0.6	0.7	0.5	0.3	0.5	Z	0.4	0.3	0.6	0.5	0.3	0.3	0.1	0.0	0.1	0.0	0.0	0.2	0.2	0.0	0.2	1.7	0.4	0.4	0.4	1.7
16-Apr	Z	1.1	1.4	1.4	0.6	0.5	0.4	0.5	0.9	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	0.7	0.3	1.4
17-Apr	6.5	Z	1.1	0.4	1.4	1.8	0.4	0.0	0.0	0.0	M	M	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6	6.5
18-Apr	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
19-Apr	0.0	0.0	0.0	Z	0.0	0.1	0.2	0.3	0.4	0.4	0.3	0.4	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.2	0.4
20-Apr	0.3	0.6	0.4	0.3	Z	0.1	0.3	0.6	0.4	0.3	0.8	0.3	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.9	0.2	0.3	0.9
21-Apr	0.1	0.2	0.3	0.2	1.9	Z	1.3	0.6	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.3	0.1	0.2	0.0	0.7	0.8	0.1	0.3	0.4	0.4	1.9
22-Apr	Z	0.3	0.4	0.4	0.5	0.4	0.4	0.1	0.2	0.0	0.2	0.3	0.1	0.6	0.1	2.2	4.2	1.5	5.7	2.6	1.2	1.2	0.5	0.2	1.0	5.7
23-Apr	0.3	Z	1.6	1.5	2.0	1.4	0.5	0.5	0.4	0.2	0.2	0.1	0.2	0.3	1.1	0.1	0.2	0.2	0.6	0.3	0.7	0.3	0.6	3.4	0.7	3.4
24-Apr	4.2	0.4	0.4	Z	0.4	0.2	0.1	0.3	0.6	0.2	0.0	0.0	0.1	0.1	0.0	0.2	0.3	0.2	0.3	0.3	0.1	0.0	1.3	3.3	0.6	4.2
25-Apr	0.5	0.4	0.2	Z	0.2	0.0	0.0	0.1	0.3	0.1	0.0	0.2	0.2	0.0	0.1	0.5	0.2	2.3	0.3	0.3	0.2	0.3	0.0	0.1	0.3	2.3
26-Apr	0.1	0.1	0.2	0.2	Z	0.4	0.3	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.5	1.1	0.9	0.2	1.1
27-Apr	0.5	0.4	0.3	0.3	0.2	Z	0.4	1.0	1.3	0.4	0.2	0.4	0.1	0.0	0.1	0.1	0.0	0.2	3.5	5.4	0.4	0.1	0.1	0.1	0.7	5.4
28-Apr	Z	0.3	3.4	0.7	1.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.3	3.4
29-Apr	0.2	Z	0.8	1.4	0.7	0.5	0.7	1.4	2.8	0.6	0.3	0.3	0.4	0.1	1.1	1.2	0.2	0.0	0.0	0.1	0.2	0.7	0.6	1.0	0.7	2.8
30-Apr	0.7	0.3	Z	0.2	0.3	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.2	0.5	0.5	0.3	0.4	0.3	0.2	0.7
																								Diurnal Average		
																								Diurnal Maximum		
																								0.9 0.4 1.0 0.8 1.0 0.6 0.4 0.3 0.4 0.2 0.2 0.2 0.2 0.2 0.2 0.3 0.5 0.3 0.5 0.5 0.3 0.4 0.5 0.6		
																								6.5 1.7 6.4 9.7 5.4 2.4 1.3 1.4 2.8 0.6 0.8 0.6 0.9 0.7 1.1 2.2 5.2 2.3 5.7 5.4 1.2 1.7 2.2 3.4		
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 (H₂S) - ppb
Lower Camp - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	666	97.51	97.51
3 - 4	10	1.46	98.98
5 - 7	6	0.88	99.85
8 - 11	1	0.15	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Lower Camp - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	40	27	14	13	15	60	232	73	11	4	6	18	39	33	33	47	665
3 - 4	0	0	0	0	0	0	3	2	4	0	0	0	0	1	0	0	10
5 - 7	0	0	0	0	0	0	2	1	2	1	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
Totals	40	27	14	13	15	60	238	76	17	5	6	18	39	34	33	47	682

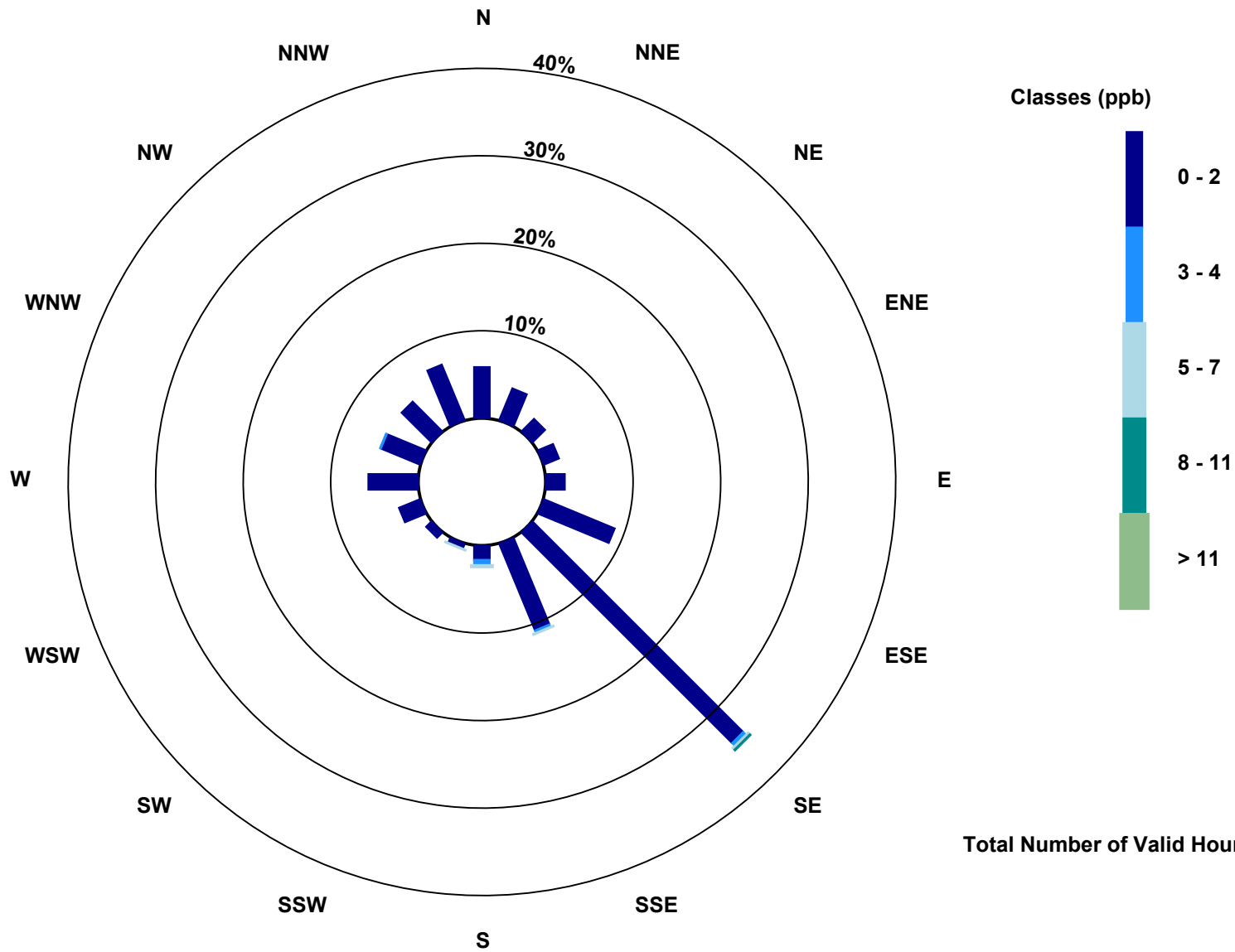
Total Number of Valid Hours: 682

Total Number of Hours: 720

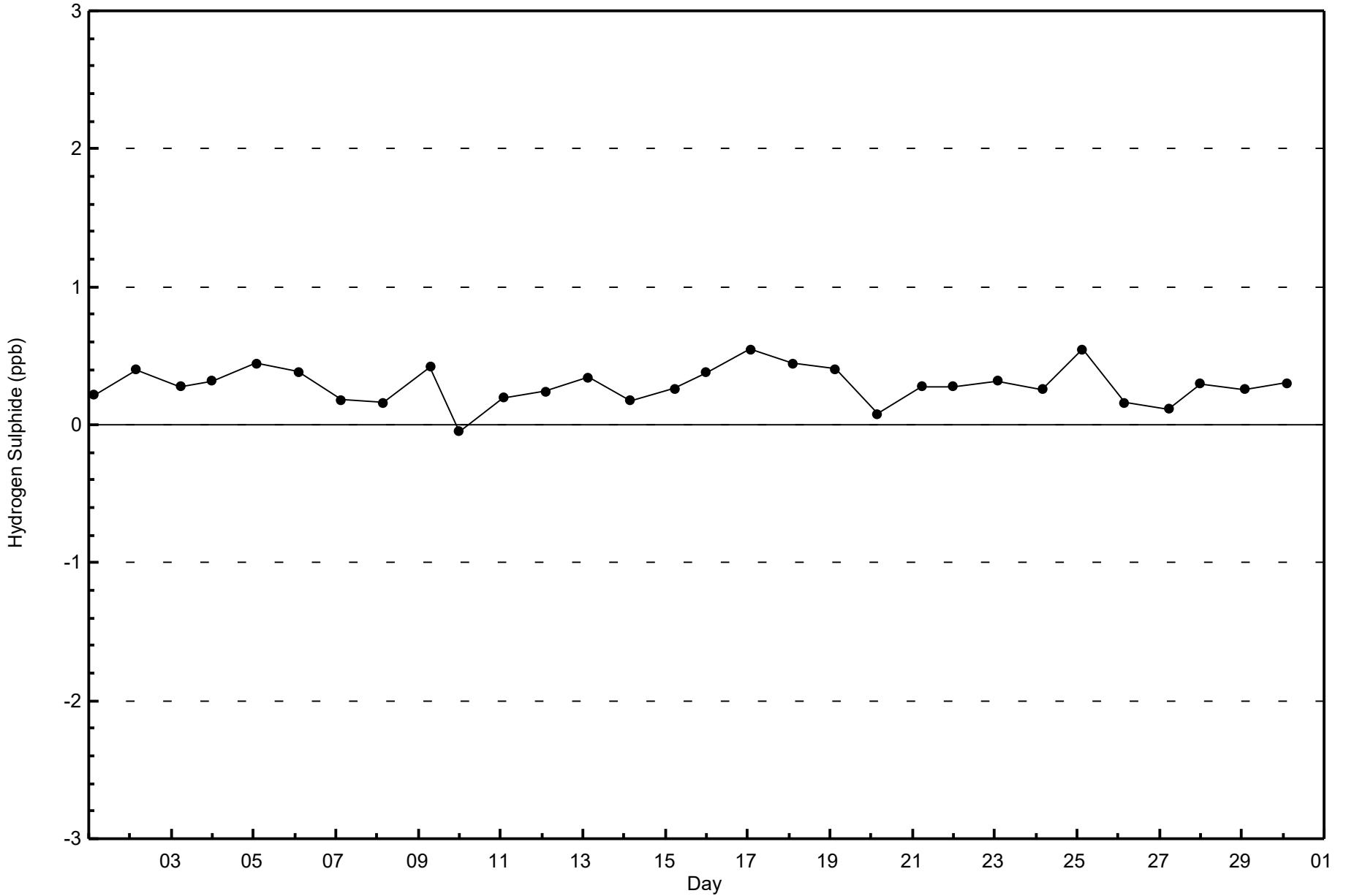


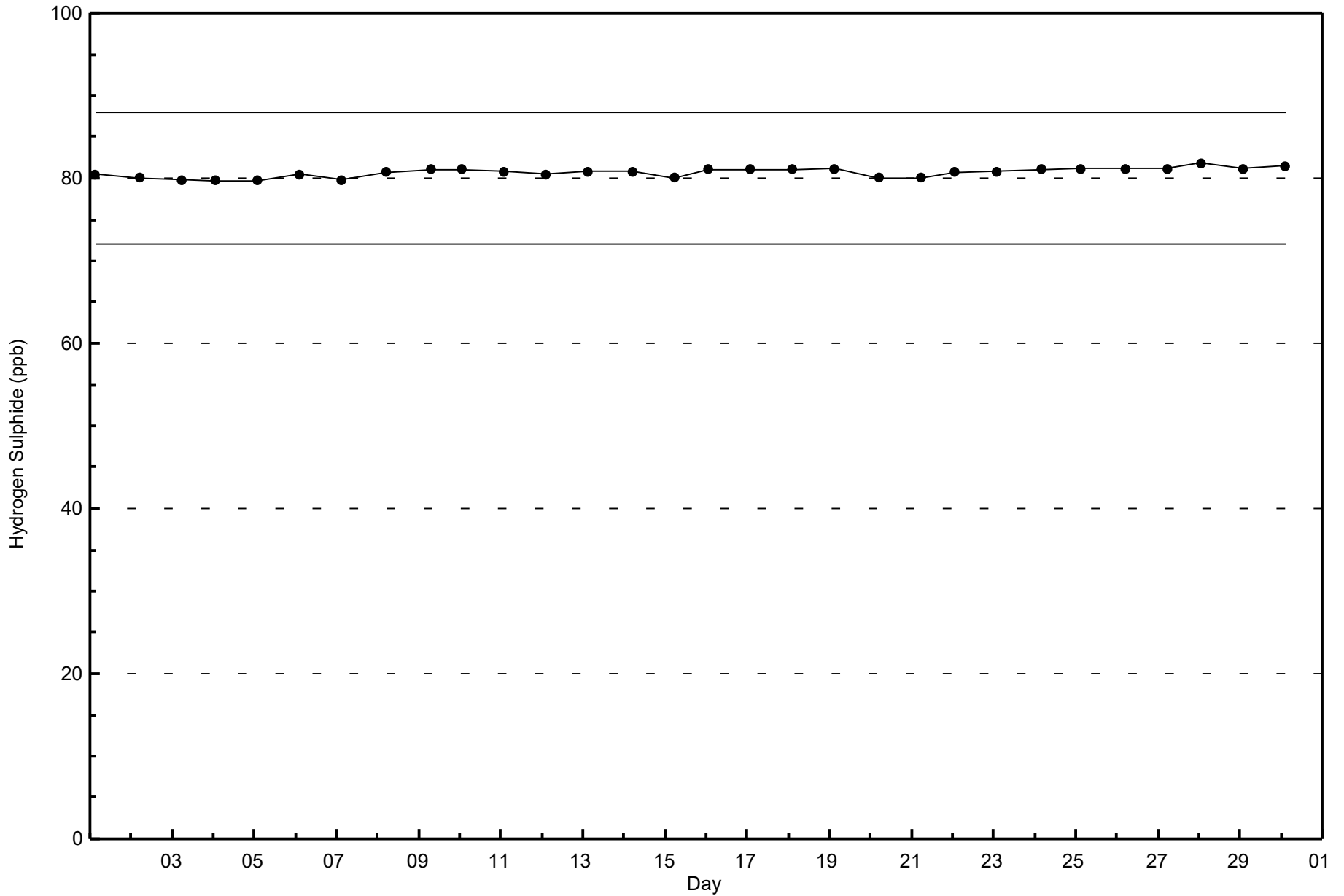
Wood Buffalo Environmental Association
Wind Rose Apr 2023

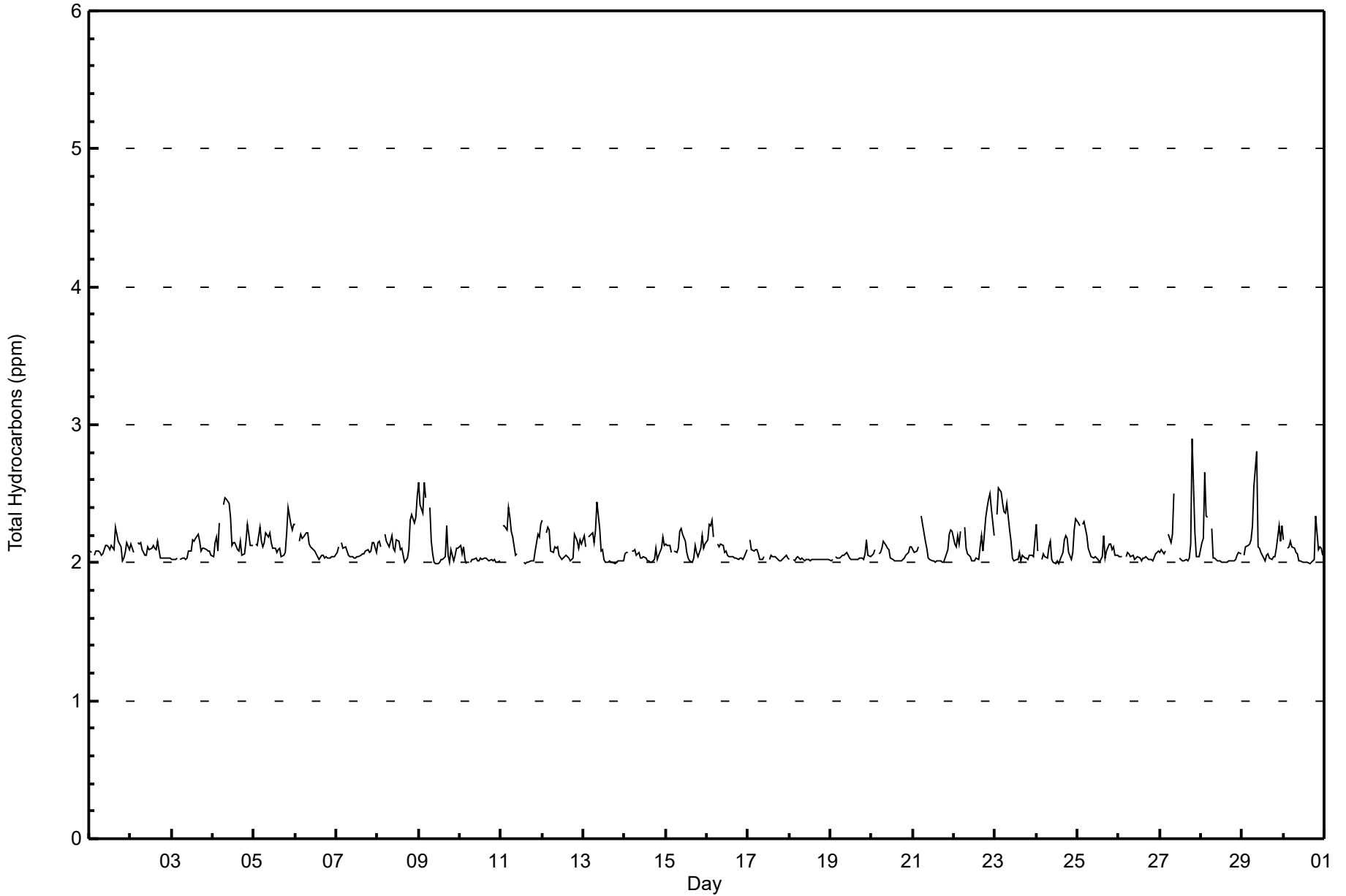
Hydrogen Sulphide (H₂S) - ppb
Lower Camp



Total Number of Valid Hours: 682









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Lower Camp - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	279	40.85	40.85
2.1 - 3.0	404	59.15	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Lower Camp - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	29	13	4	3	4	31	80	28	3	0	3	11	24	14	13	19	279
2.1 - 3.0	14	14	9	11	11	32	154	51	14	5	2	6	13	16	21	30	403
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
Totals	43	27	13	14	15	63	234	79	17	5	5	17	37	30	34	49	682

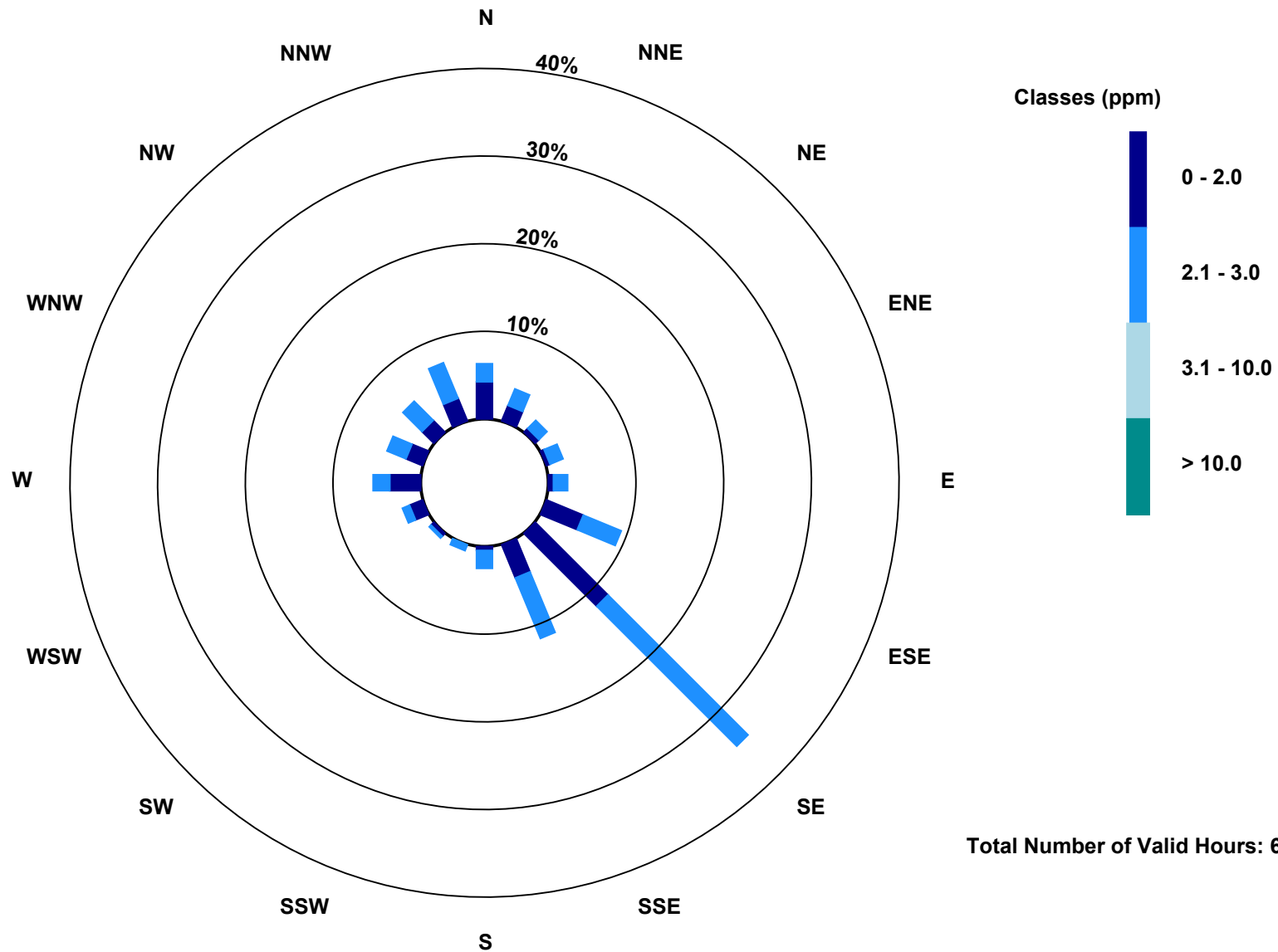
Total Number of Valid Hours: 682

Total Number of Hours: 720

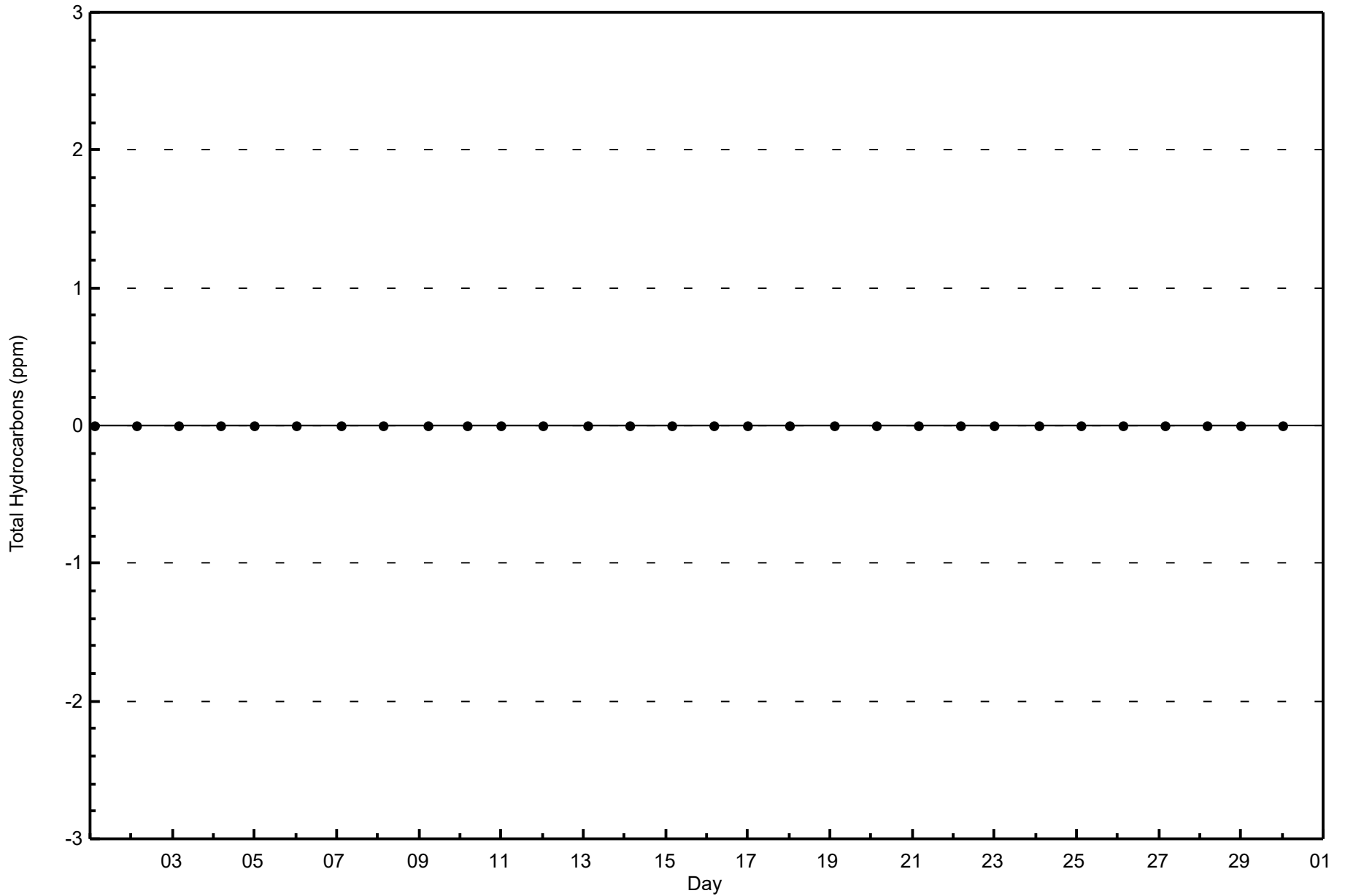


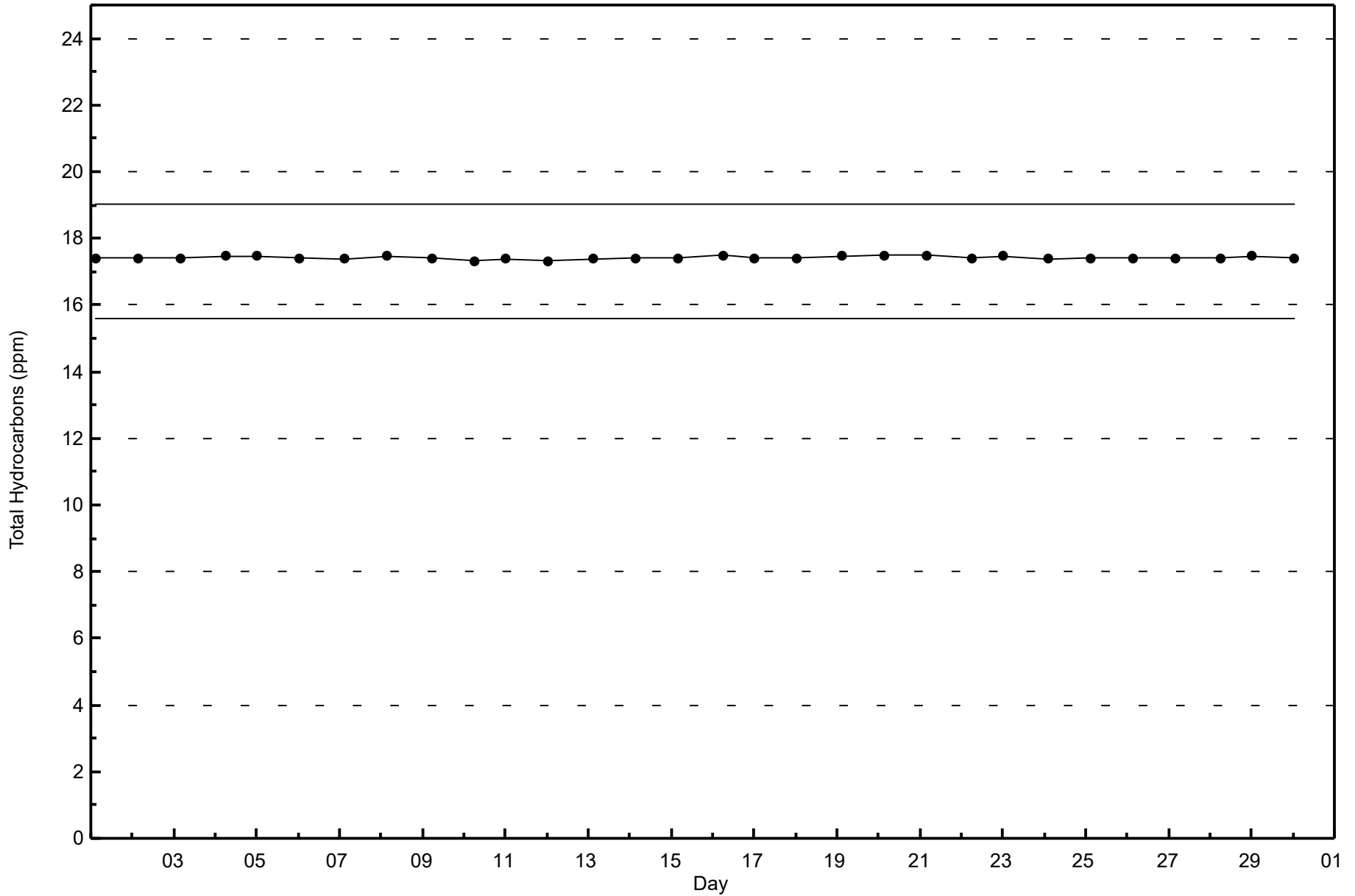
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Lower Camp



Total Number of Valid Hours: 682

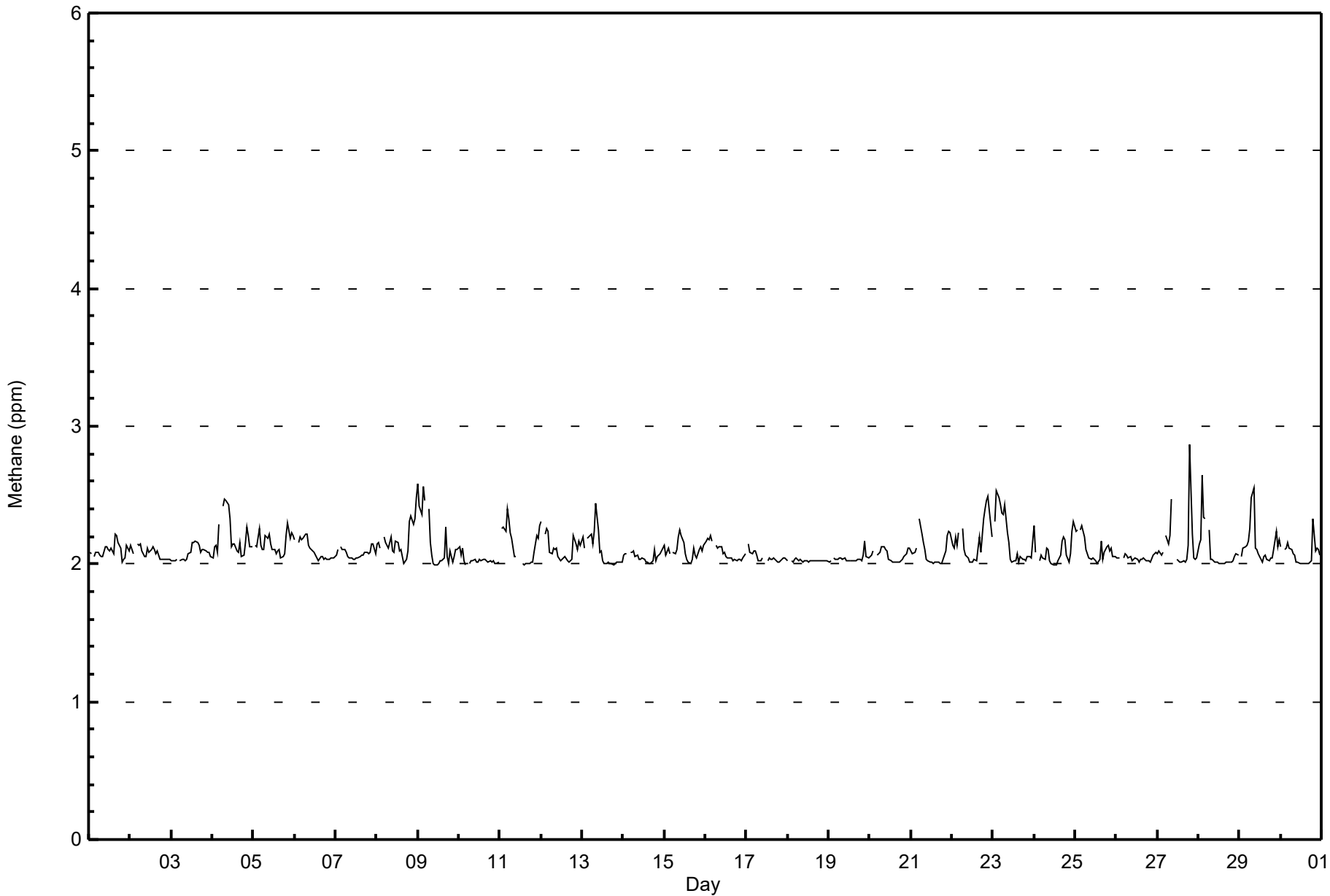






Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Lower Camp - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Lower Camp - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	286	41.87	41.87
2.1 - 3.0	397	58.13	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Lower Camp - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	29	13	4	3	4	32	86	28	3	0	3	11	24	14	13	19	286
2.1 - 3.0	14	14	9	11	11	31	148	51	14	5	2	6	13	16	21	30	396
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
Totals	43	27	13	14	15	63	234	79	17	5	5	17	37	30	34	49	682

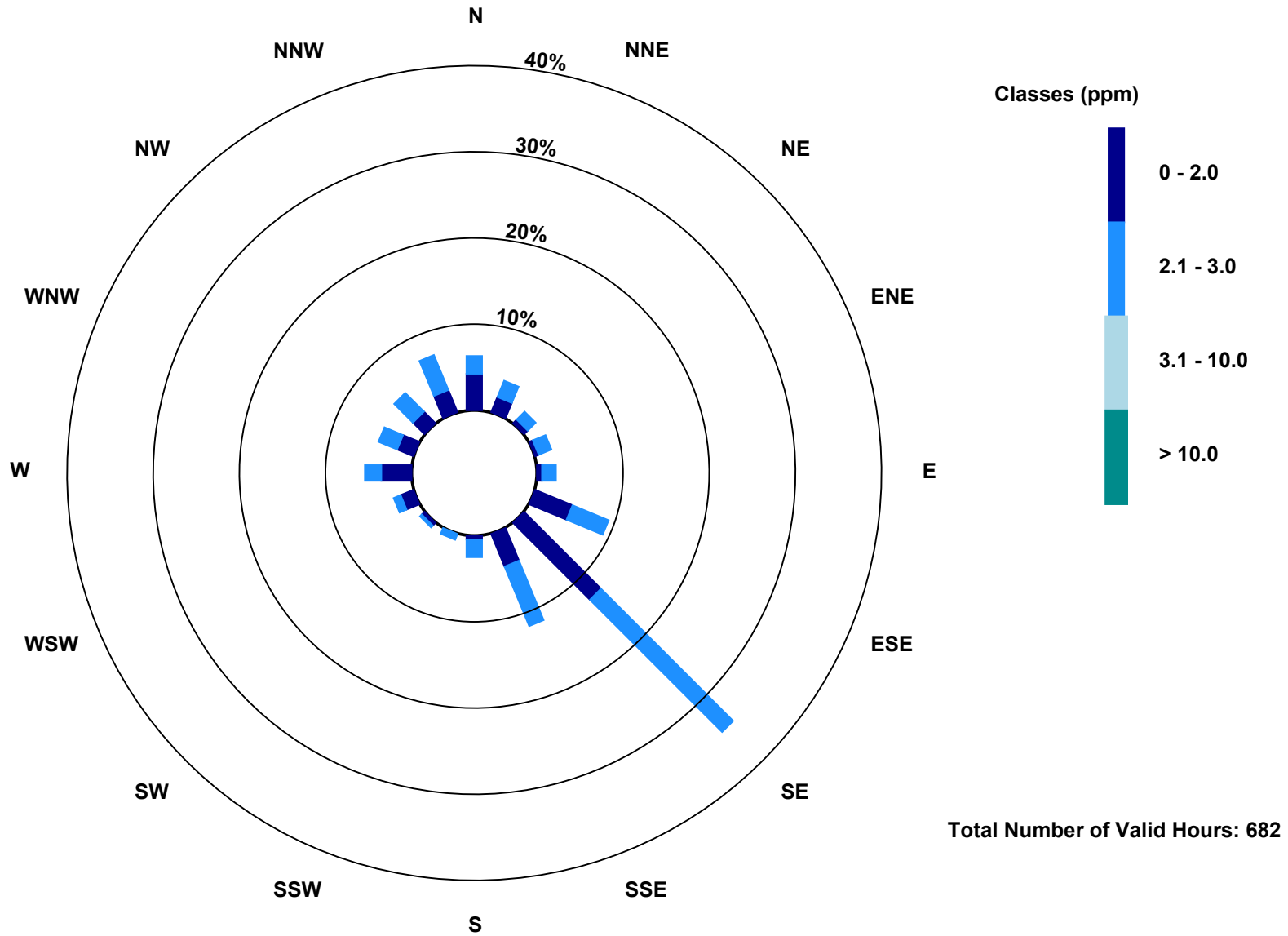
Total Number of Valid Hours: 682

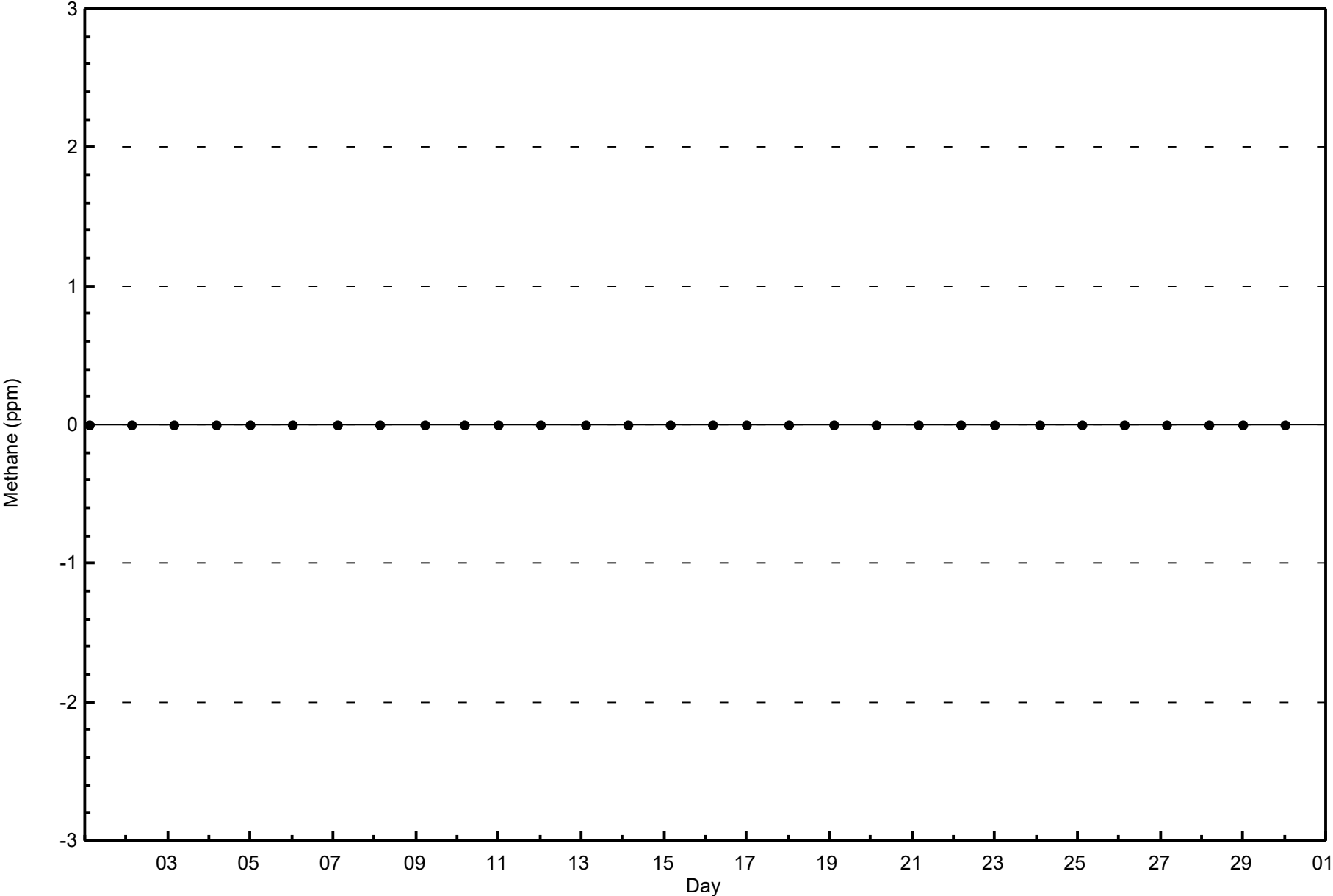
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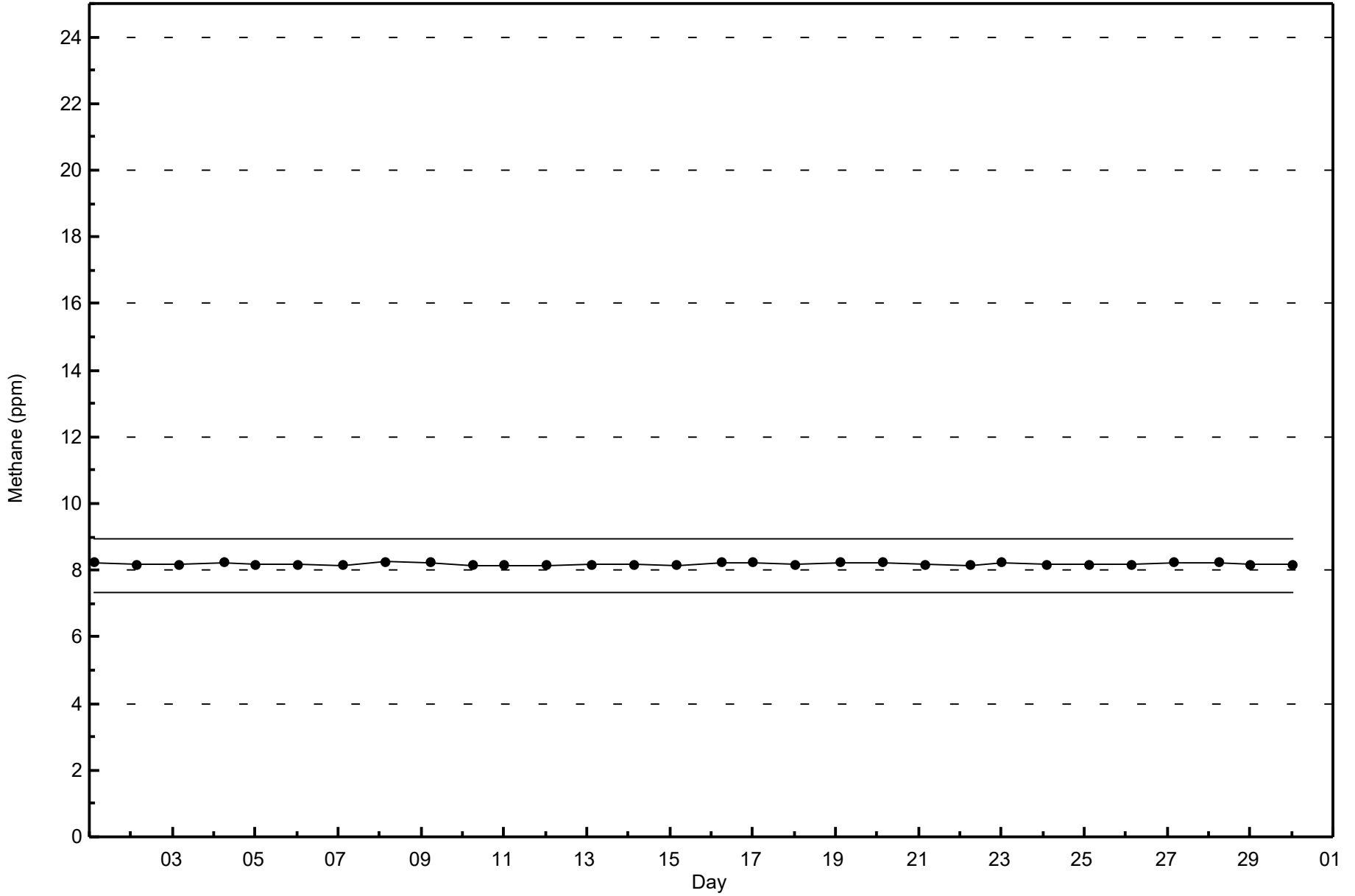


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Lower Camp





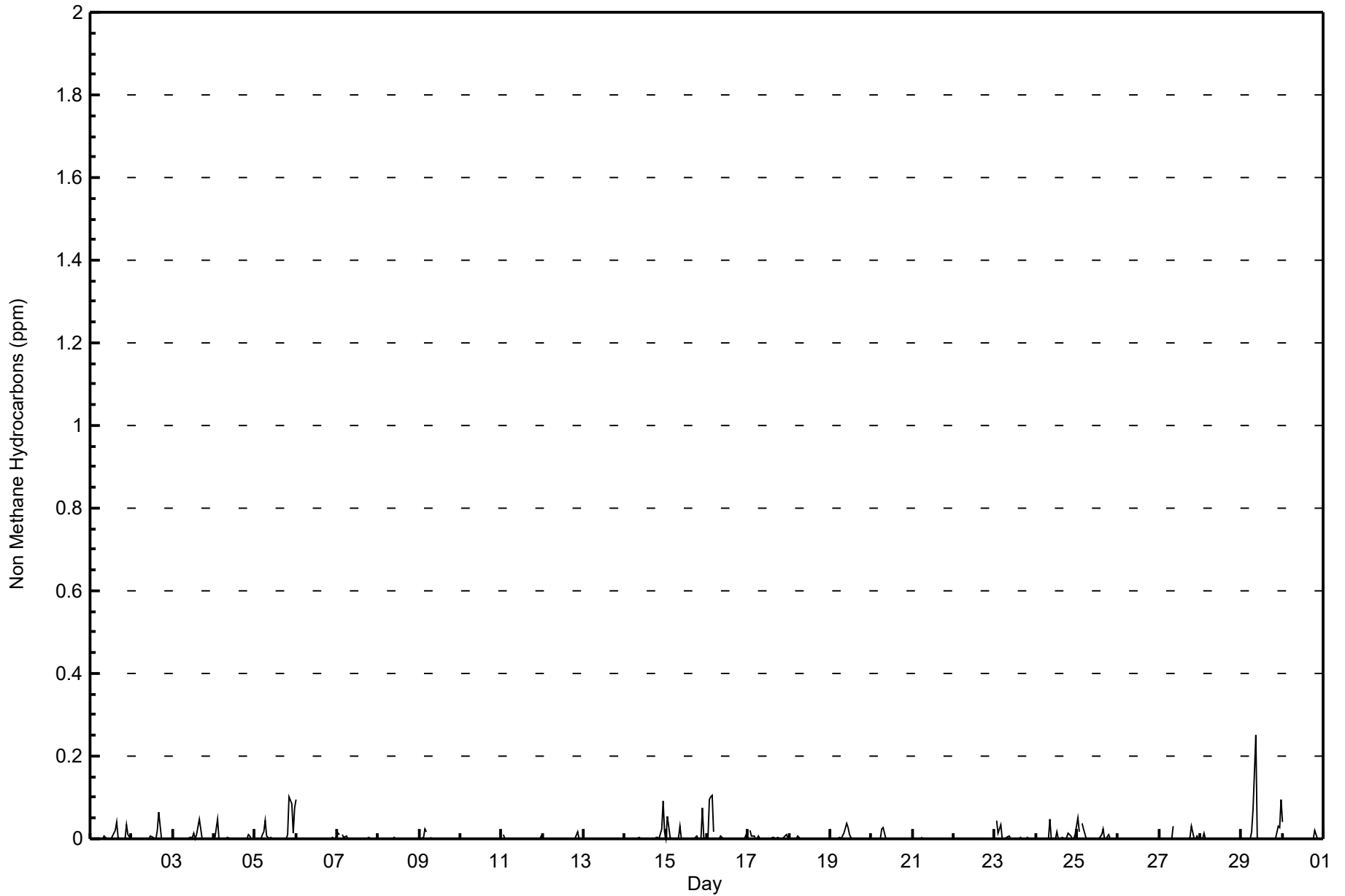




Summary of Hour Averages

Lower Camp - April 2023

Maximum Value: 0.249 ppm on Apr 29 09:00																				Maximum Daily Average: 0.022 ppm on Apr 29					Hours in Service: 720		
Minimum Value: 0.000 ppm on Apr 1 01:00																				Minimum Daily Average: 0.000 ppm on Apr 13					Hours of Data: 683		
Maximum Diurnal Average: 0.013 ppm at hour 9																				Minimum Diurnal Average: 0.000 ppm at hour 18					Hours of Missing Data: 37		
Monthly Average: 0.004 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.1					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-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.007	0.022	0.041	0.003	0.000	0.000	0.000	0.000	0.034	0.012	0.002	0.006	0.041	
2-Apr	0.001	0.001	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.002	0.000	0.000	0.019	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.065	
3-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.014	0.000	0.010	0.046	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.046	
4-Apr	0.000	0.023	0.047	0.000	0.000	Z	0.000	0.001	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.007	0.000	0.000	0.004	0.047	
5-Apr	Z	0.000	0.000	0.000	0.010	0.016	0.044	0.005	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.103	0.084	0.014	0.074	0.016	0.103	
6-Apr	0.096	Z	0.000	0.001	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	0.002	0.001	0.002	0.004	0.096		
7-Apr	0.012	0.011	Z	0.011	0.004	0.007	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.001	0.002	0.012		
8-Apr	0.001	0.000	0.001	Z	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		
9-Apr	0.000	0.000	0.003	0.024	0.016	Z	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	0.002	0.024		
10-Apr	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		
11-Apr	Z	0.009	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.005	0.001	0.009	
12-Apr	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	0.015	0.000	0.000	0.000	0.001	0.015	
13-Apr	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-Apr	0.000	0.000	0.000	Z	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	0.003	0.003	0.001	0.023	0.090	0.016	0.006	0.090
15-Apr	0.001	0.054	0.004	0.000	Z	0.000	0.000	0.002	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.008	0.000	0.000	0.073	0.002	0.000	0.008	0.073	
16-Apr	0.002	0.094	0.101	0.104	0.018	Z	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.015	0.104		
17-Apr	Z	0.019	0.007	0.006	0.000	0.001	0.005	0.000	0.000	0.002	M	M	0.000	0.001	0.003	0.003	0.000	0.002	0.000	0.000	0.000	0.006	0.012	0.004	0.003	0.019	
18-Apr	0.000	Z	0.000	0.000	0.002	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	
19-Apr	0.000	0.000	Z	0.000	0.000	0.004	0.001	0.006	0.015	0.039	0.029	0.011	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.039	
20-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.023	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.026	
21-Apr	0.000	0.000	0.001	0.000	Z	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	0.000	0.000	0.000	0.000	0.004	
22-Apr	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-Apr	Z	0.043	0.012	0.034	0.001	0.000	0.000	0.002	0.007	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.005	0.043	
24-Apr	0.001	0.001	Z	0.000	0.000	0.000	0.000	0.000	0.046	0.001	0.000	0.000	0.019	0.000	0.000	0.004	0.000	0.001	0.003	0.014	0.006	0.001	0.000	0.009	0.005	0.046	
25-Apr	0.051	0.018	Z	0.038	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.025	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.008	0.051	
26-Apr	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	
27-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.001	0.029	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.030	0.000	0.000	0.008	0.000	0.003	0.030	
28-Apr	0.000	0.000	0.013	0.001	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	0.013	
29-Apr	Z	0.000	0.000	0.000	0.000	0.000	0.018	0.071	0.249	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.028	0.095	0.022	0.249	
30-Apr	0.042	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	0.020	0.000	0.000	0.000	0.000	0.003	0.042	
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	595	87.12	87.12
0.006 - 0.05	75	10.98	98.10
0.06 - 0.1	12	1.76	99.85
> 0.1	1	0.15	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	40	25	10	13	13	47	198	69	15	5	5	15	33	28	32	46	594
0.006 - 0.05	2	2	3	1	1	13	30	9	2	0	0	2	3	2	2	3	75
0.06 - 0.1	1	0	0	0	1	3	5	1	0	0	0	0	1	0	0	0	12
> 0.1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Totals	43	27	13	14	15	63	234	79	17	5	5	17	37	30	34	49	682

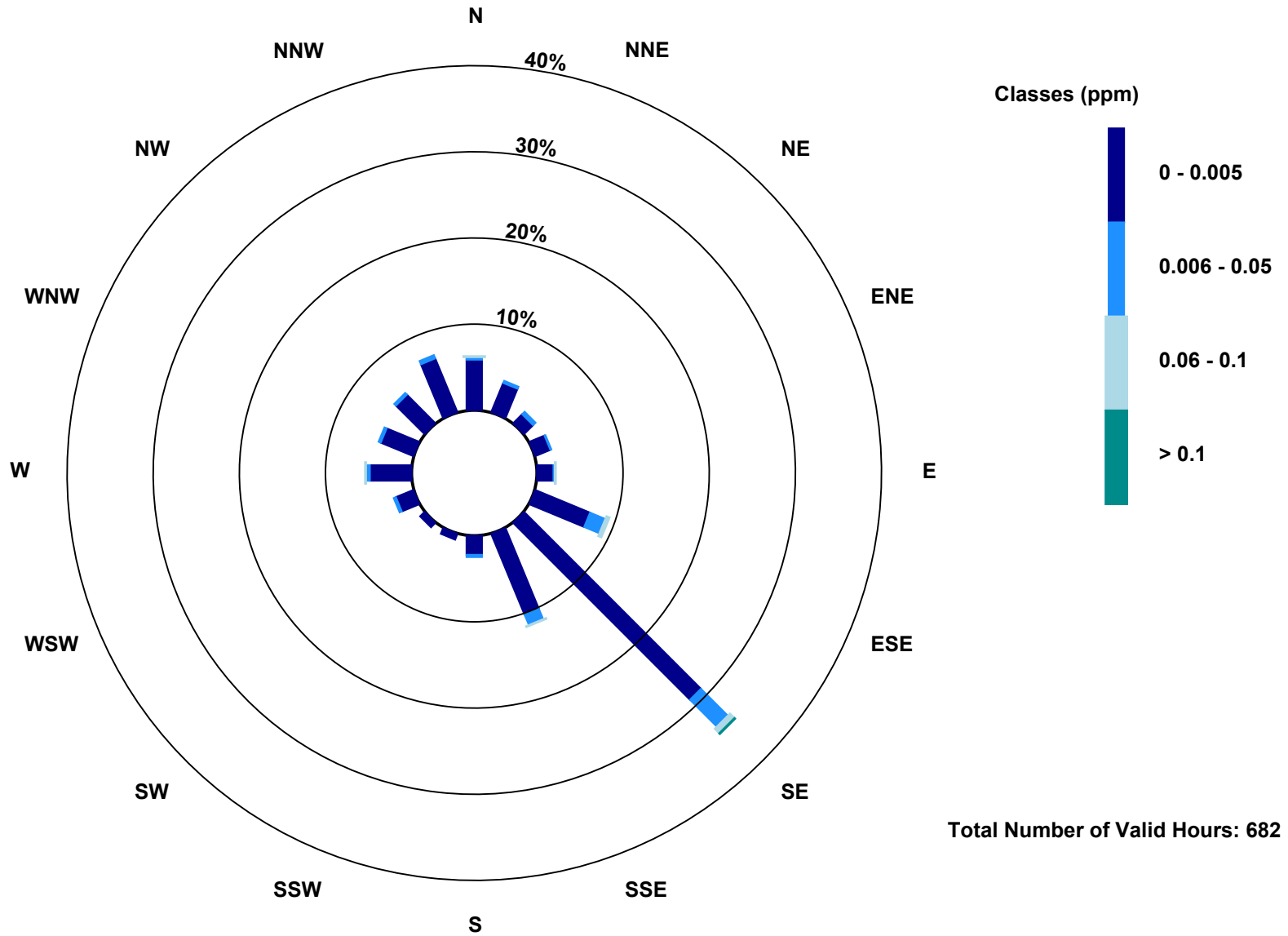
Total Number of Valid Hours: 682

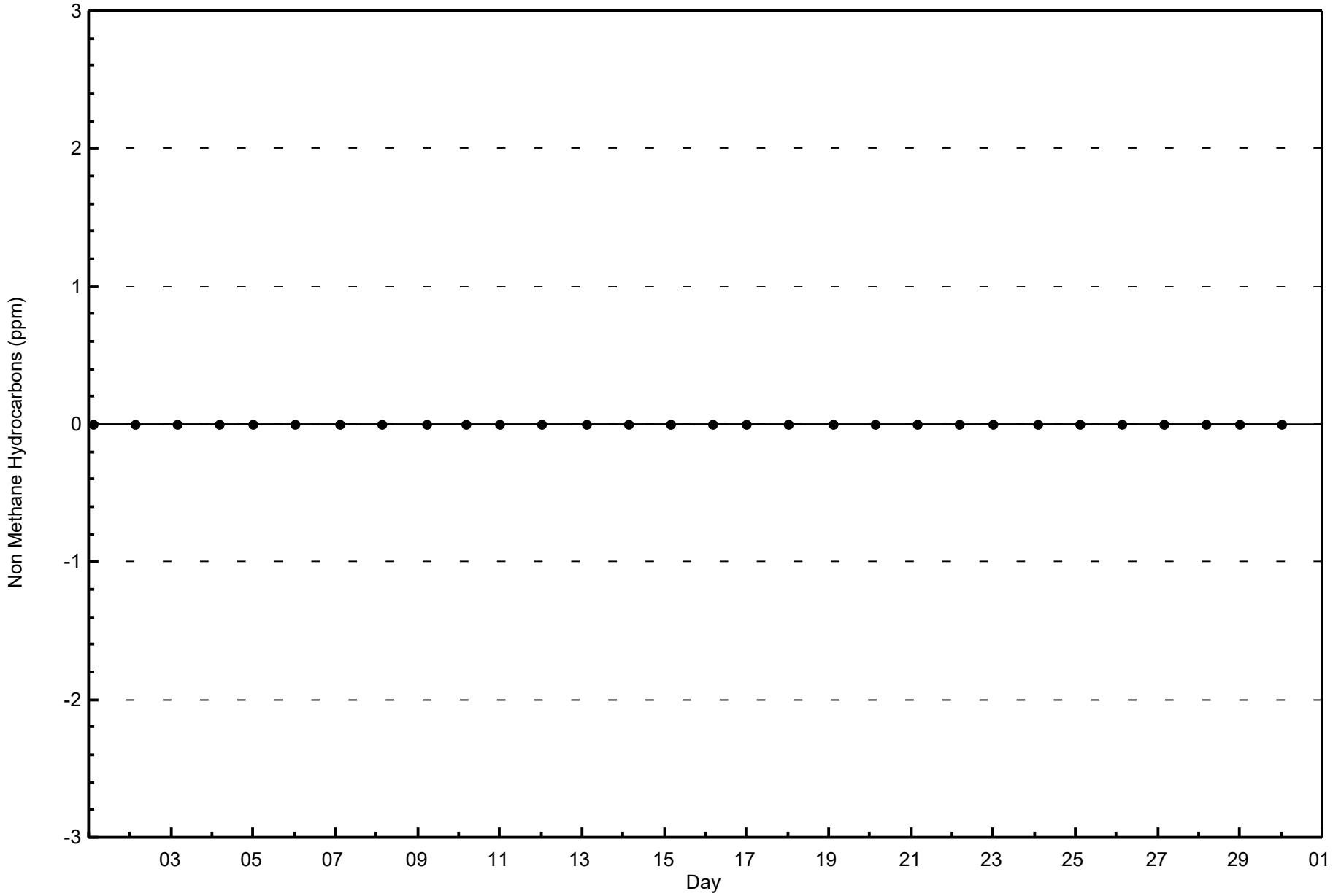
Total Number of Hours: 720

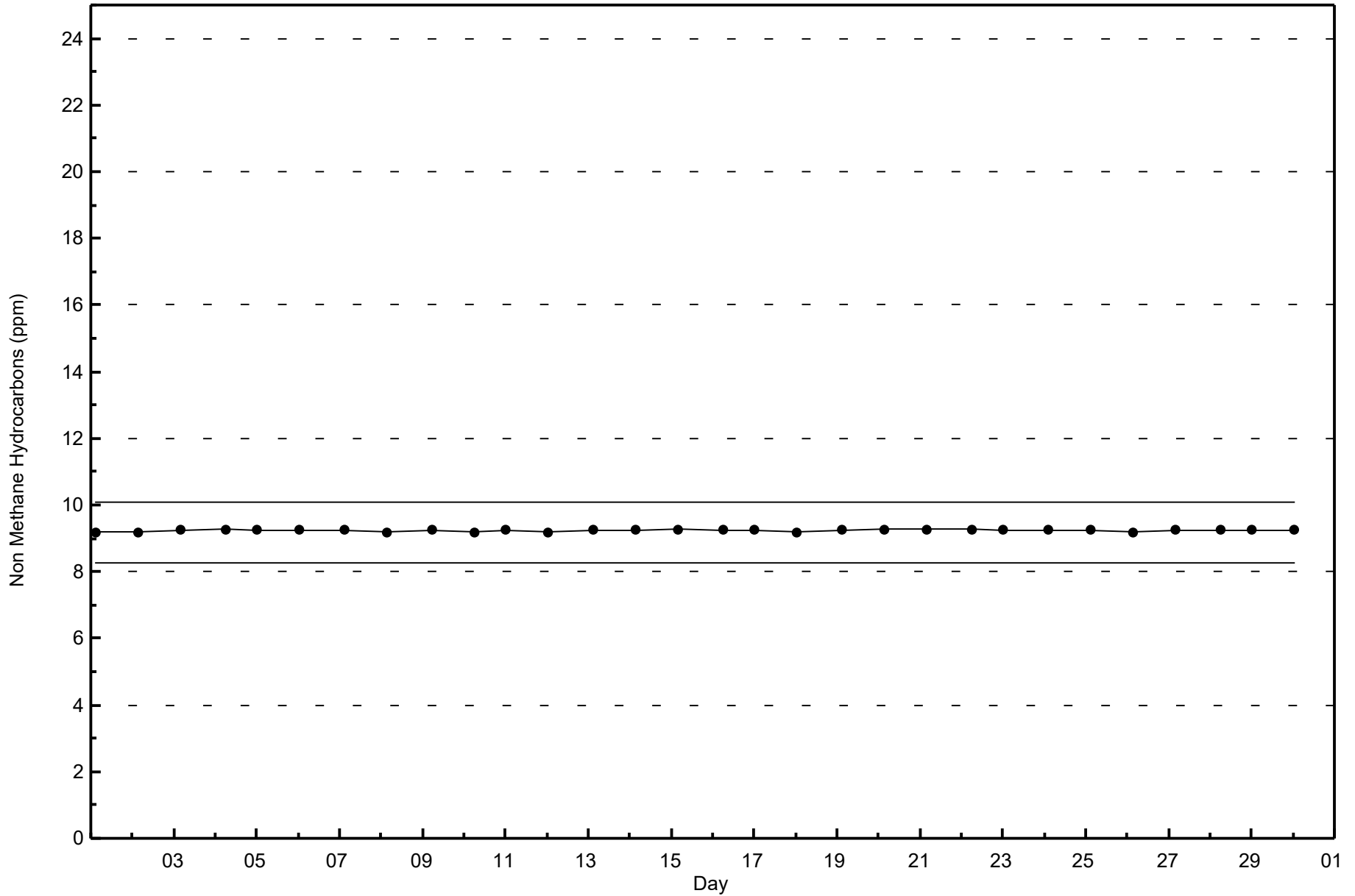


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp









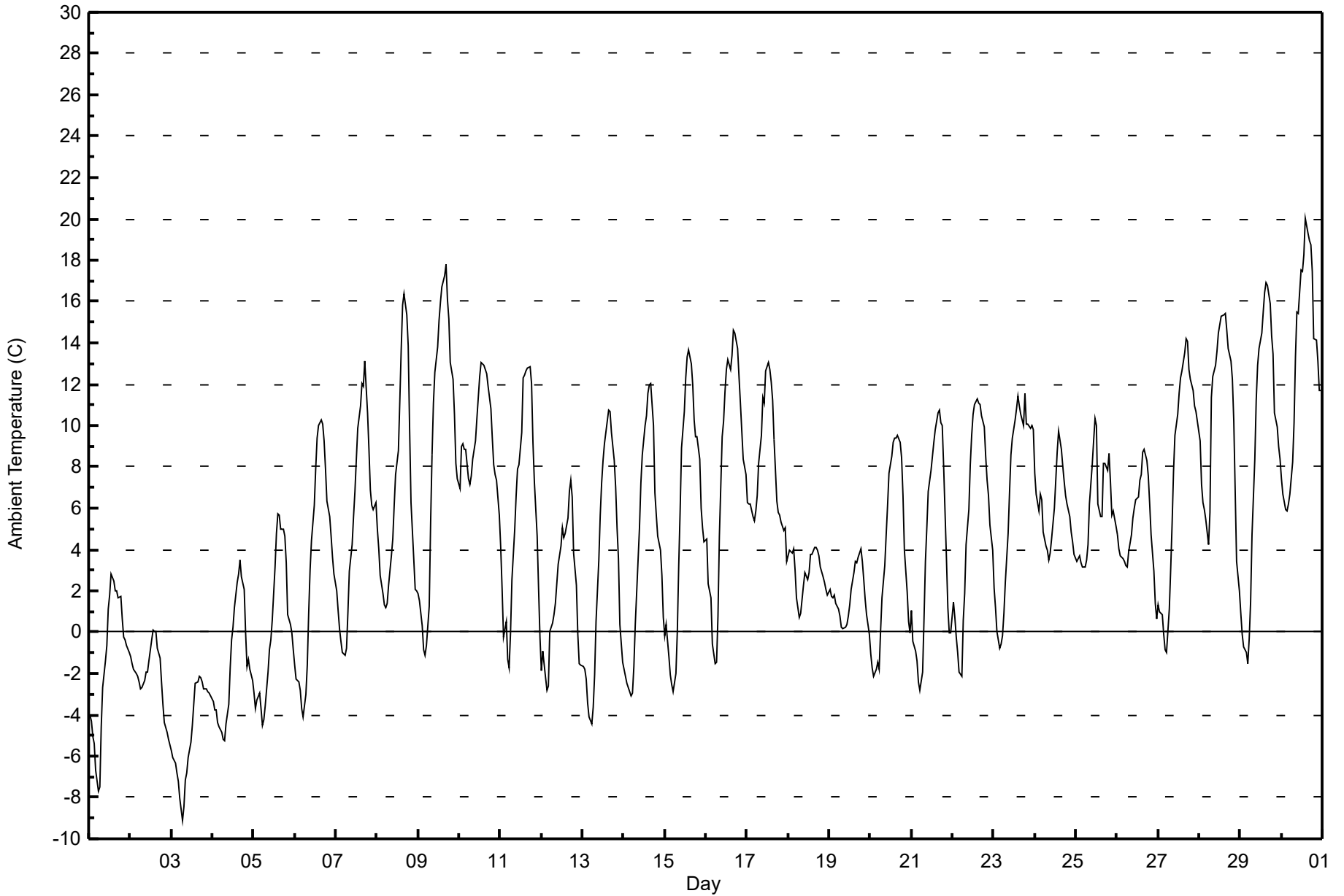
Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature (AT) - C

Lower Camp - April 2023

Maximum Value: 20.1 C on Apr 30 15:00		Maximum Daily Average: 13.1 C on Apr 30		Hours in Service: 720																																												
Minimum Value: -9.1 C on Apr 3 07:00		Minimum Daily Average: -4.9 C on Apr 3		Hours of Data: 720																																												
Maximum Diurnal Average: 9.8 C at hour 17		Minimum Diurnal Average: -0.5 C at hour 6		Hours of Missing Data: 0																																												
Monthly Average: 4.75 C		Percentiles: P ₁ = -6.8 P ₁₀ = -2.4 Q ₁ = 0.1 Median = 4.5 Q ₃ = 9.3 P ₉₀ = 12.6 P ₉₉ = 17.5		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-Apr	-4.0	-4.3	-5.1	-5.4	-6.7	-7.7	-7.5	-4.6	-2.7	-1.4	-0.6	1.1	1.8	2.8	2.5	2.0	2.0	1.6	1.8	0.6	-0.2	-0.4	-0.7	-1.0	-1.5	2.8																						
2-Apr	-1.2	-1.5	-1.8	-2.0	-2.1	-2.4	-2.7	-2.7	-2.3	-2.0	-1.9	-1.4	-0.4	0.1	0.0	0.1	-0.8	-1.3	-2.4	-3.5	-4.4	-4.8	-5.2	-5.5	-2.2	0.1																						
3-Apr	-5.8	-6.0	-6.3	-6.8	-7.2	-8.0	-9.1	-8.5	-7.2	-6.8	-6.1	-5.3	-4.5	-3.5	-2.5	-2.4	-2.1	-2.2	-2.4	-2.7	-2.7	-2.9	-3.0	-3.1	-4.9	-2.1																						
4-Apr	-3.3	-3.8	-3.8	-4.4	-4.6	-4.9	-5.2	-5.3	-4.5	-3.5	-1.7	-0.4	0.2	1.2	2.4	2.8	3.5	2.7	2.1	0.0	-1.7	-1.3	-1.8	-2.4	-1.6	3.5																						
5-Apr	-2.9	-3.7	-3.3	-3.0	-3.7	-4.5	-4.3	-3.5	-1.9	-0.8	-0.4	0.6	3.1	4.8	5.7	5.6	5.0	5.0	4.6	3.3	0.9	0.4	0.0	-0.9	0.3	5.7																						
6-Apr	-1.6	-2.2	-2.4	-2.8	-3.7	-4.1	-3.0	-1.6	0.9	3.0	4.5	6.1	7.9	9.4	10.0	10.2	10.1	9.2	7.9	6.4	5.6	4.6	3.6	2.8	3.4	10.2																						
7-Apr	2.0	1.0	0.2	-0.5	-1.0	-1.1	-0.8	1.0	3.0	4.2	5.6	6.8	8.4	9.9	10.9	12.0	11.9	13.1	10.6	8.8	6.8	6.1	5.9	6.3	5.5	13.1																						
8-Apr	5.0	4.1	2.7	1.9	1.3	1.2	1.4	2.2	3.7	4.5	6.1	7.6	8.8	11.1	13.6	15.8	16.4	15.4	13.9	9.9	6.3	3.5	2.0	2.0	6.7	16.4																						
9-Apr	1.9	1.5	0.3	-0.8	-1.1	-0.7	1.3	5.3	8.5	11.1	12.6	13.8	15.1	15.9	16.7	17.3	17.8	16.1	15.1	13.0	12.2	10.5	8.2	7.4	9.1	17.8																						
10-Apr	7.0	9.0	9.1	8.8	8.9	7.4	7.2	7.6	8.4	9.3	10.3	11.4	12.4	13.0	12.9	12.7	12.5	11.9	10.8	9.4	8.1	7.6	7.4	5.6	9.5	13.0																						
11-Apr	4.1	2.0	-0.2	0.5	-1.3	-1.7	0.0	2.5	5.0	6.6	7.9	8.1	9.7	12.3	12.4	12.7	12.8	12.9	12.0	9.2	7.3	4.6	2.1	-0.3	5.9	12.9																						
12-Apr	-1.8	-0.9	-2.2	-2.8	-2.6	0.0	0.4	0.8	1.4	2.3	3.3	4.1	5.0	4.6	4.8	5.6	6.8	7.4	6.5	3.8	2.2	-0.1	-1.5	-1.6	1.9	7.4																						
13-Apr	-1.6	-1.8	-2.3	-3.4	-4.1	-4.5	-3.6	-2.1	0.5	3.5	5.6	7.2	8.3	9.1	10.2	10.7	10.7	9.6	8.3	7.0	5.1	3.6	0.4	-1.5	3.1	10.7																						
14-Apr	-1.8	-2.2	-2.5	-2.8	-3.1	-3.0	-1.7	0.4	3.5	5.1	7.2	8.6	10.0	10.5	11.6	12.0	12.0	10.0	6.7	5.7	4.6	3.9	2.7	0.7	4.1	12.0																						
15-Apr	-0.1	0.4	-1.2	-2.1	-2.5	-2.9	-2.0	0.0	3.3	5.9	8.9	10.7	12.3	13.3	13.6	13.0	11.9	10.2	9.5	9.5	8.4	6.0	5.1	4.4	5.6	13.6																						
16-Apr	4.5	2.4	2.0	1.6	-0.6	-1.5	-1.5	0.8	4.7	9.5	10.2	11.6	12.7	13.2	12.7	13.4	14.6	14.5	13.7	12.4	11.1	9.7	8.4	7.6	7.8	14.6																						
17-Apr	6.2	6.2	6.2	5.6	5.4	5.9	6.6	8.1	9.5	11.4	11.1	12.6	13.0	12.7	12.1	11.2	9.3	6.4	5.8	5.7	5.3	4.9	5.1	3.4	7.9	13.0																						
18-Apr	3.7	4.0	3.8	4.1	3.0	1.7	0.7	0.9	1.6	2.3	2.9	2.6	2.9	3.8	3.8	4.1	4.1	4.0	3.7	3.2	2.7	2.4	2.1	1.8	2.9	4.1																						
19-Apr	2.1	1.7	1.7	1.8	1.4	1.1	0.8	0.2	0.2	0.2	0.4	0.7	1.3	2.1	2.8	3.4	3.4	3.6	4.0	3.4	2.5	1.6	0.8	-0.1	1.7	4.0																						
20-Apr	-1.1	-1.7	-2.1	-1.8	-1.5	-1.8	0.0	1.7	3.2	4.7	6.1	7.7	8.5	9.2	9.4	9.4	9.5	9.2	8.4	6.6	4.0	1.9	0.5	0.0	3.8	9.5																						
21-Apr	1.0	-0.4	-0.9	-1.4	-2.4	-2.8	-1.9	0.6	3.4	5.1	6.8	7.8	8.5	9.2	9.8	10.6	10.8	10.2	10.0	8.1	3.6	1.2	0.0	0.0	4.0	10.8																						
22-Apr	1.4	0.7	-0.2	-1.0	-1.9	-2.2	0.5	1.9	4.2	5.9	8.1	9.5	10.5	11.0	11.3	11.1	11.0	10.5	9.9	8.5	7.4	6.6	5.2	3.9	5.6	11.3																						
23-Apr	2.1	1.2	0.0	-0.8	-0.6	-0.2	0.9	2.4	4.8	6.7	8.6	9.4	10.2	10.8	11.4	11.0	10.5	10.0	11.5	10.1	10.1	9.9	10.0	9.8	6.7	11.5																						
24-Apr	7.7	6.7	5.9	6.7	6.4	4.8	4.2	4.0	3.5	3.8	4.5	6.0	7.4	8.7	9.7	8.8	8.0	7.3	6.6	6.2	5.6	4.9	4.3	3.8	6.1	9.7																						
25-Apr	3.5	3.6	3.7	3.4	3.2	3.2	3.5	4.3	6.2	8.1	9.3	10.3	10.0	6.2	5.6	5.6	8.2	8.2	7.8	8.6	7.3	5.7	5.9	5.1	6.1	10.3																						
26-Apr	4.7	4.1	3.7	3.5	3.4	3.2	3.2	3.9	4.7	5.5	6.0	6.4	6.6	7.4	7.6	8.7	8.8	8.3	7.5	6.2	4.7	2.9	1.4	0.7	5.1	8.8																						
27-Apr	1.3	1.0	0.8	-0.1	-0.9	-1.0	1.1	3.1	5.2	7.8	9.5	10.5	11.5	12.3	12.6	13.6	14.2	14.1	12.7	12.2	11.7	10.9	10.7	10.2	7.7	14.2																						
28-Apr	9.3	7.1	6.3	5.9	5.5	4.3	5.8	11.4	12.4	12.9	13.6	14.5	14.9	15.3	15.4	15.4	14.6	13.7	13.1	12.2	10.2	6.8	3.4	2.0	10.2	15.4																						
29-Apr	0.9	-0.1	-0.7	-1.0	-1.5	-0.3	1.5	4.7	8.4	11.2	12.9	13.7	14.5	15.5	16.5	16.9	16.8	15.9	14.3	13.4	10.6	10.0	9.0	8.4	8.8	16.9																						
30-Apr	7.4	6.7	6.0	5.9	6.2	6.7	8.2	10.1	13.3	15.5	15.4	17.5	17.5	18.2	20.1	19.3	19.0	18.7	17.4	14.2	14.1	13.1	11.7	11.7	13.1	20.1																						
																								1.7	1.2	0.6	0.2	-0.3	-0.5	0.1	1.7	3.5	5.1	6.2	7.3	8.3	9.0	9.5	9.8	9.8	9.2	8.4	7.0	5.6	4.5	3.5	2.7	Diurnal Average
																								9.3	9.0	9.1	8.8	8.9	7.4	8.2	11.4	13.3	15.5	15.4	17.5	17.5	18.2	20.1	19.3	19.0	18.7	17.4	14.2	14.1	13.1	11.7	11.7	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Lower Camp - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	174	24.17	24.17
0 - 10	397	55.14	79.31
10 - 20	148	20.56	99.86
> 20	1	0.14	100.00

Total Number of Valid Hours: 720

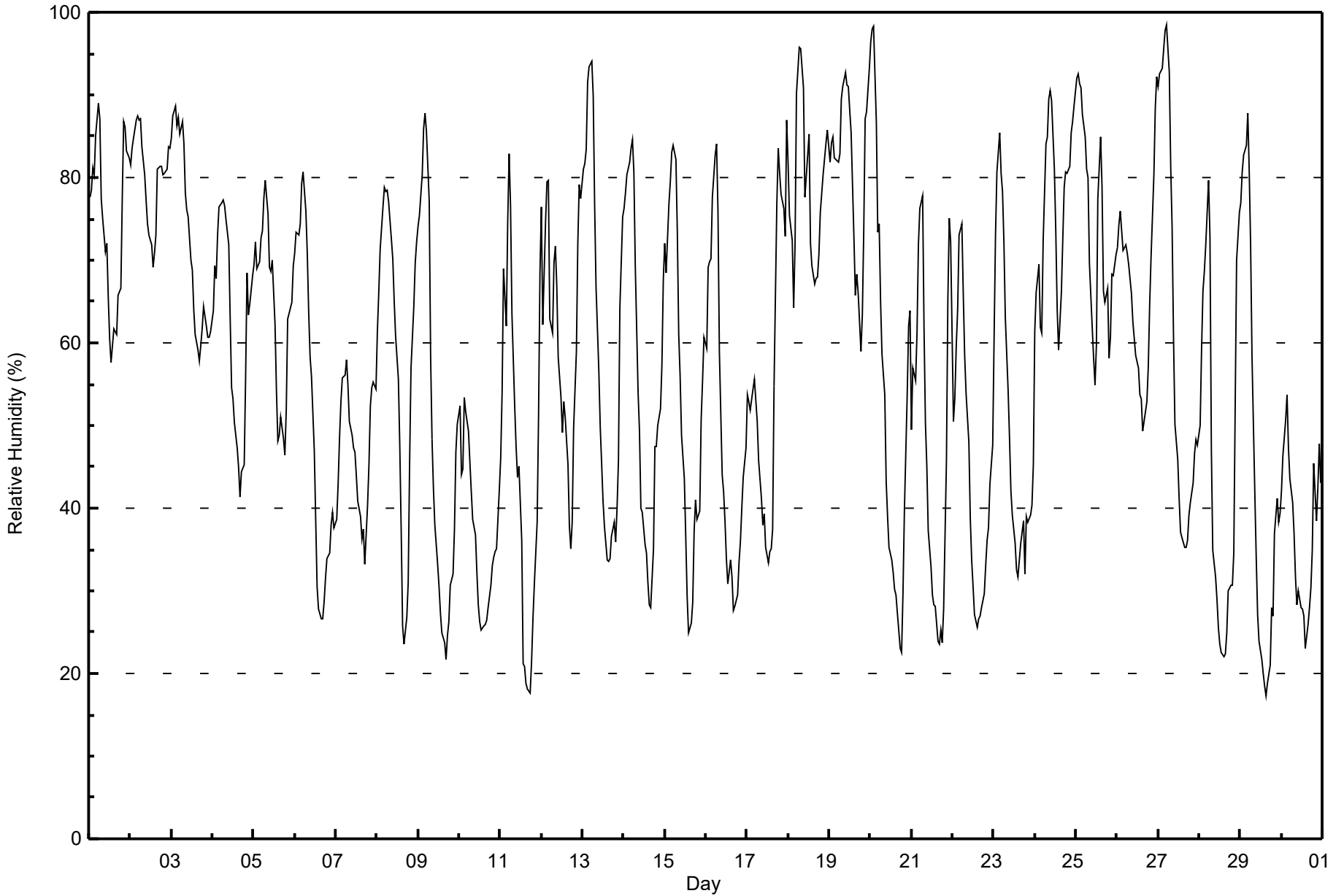
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Lower Camp - April 2023

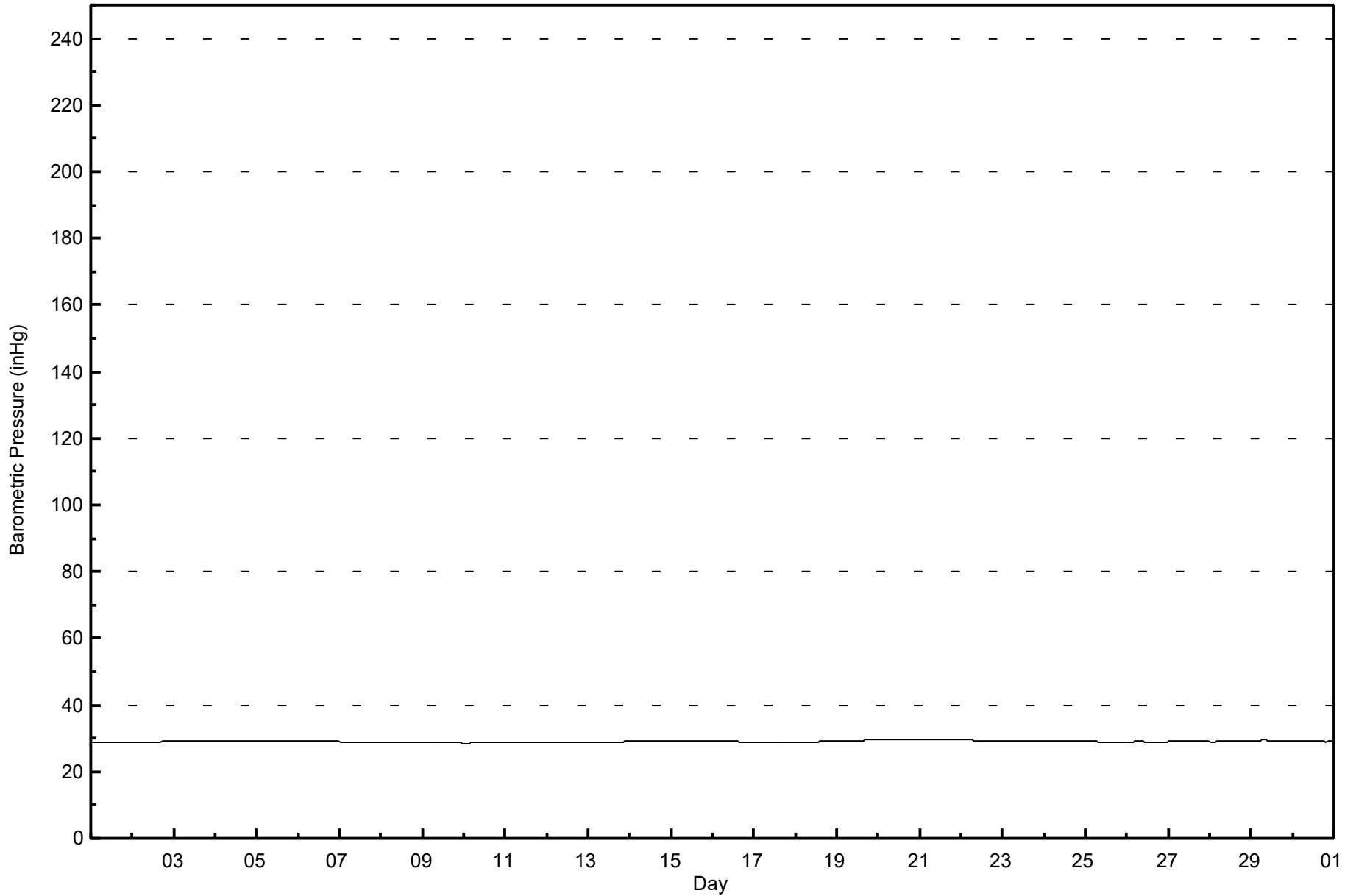
Maximum Value: 98.6 % on Apr 27 06:00 Maximum Daily Average: 81.1 % on Apr 19 Minimum Value: 17.2 % on Apr 29 16:00 Minimum Daily Average: 36.9 % on Apr 10 Maximum Diurnal Average: 77.1 % at hour 6 Minimum Diurnal Average: 39.6 % at hour 16 Monthly Average: 57.86 % Percentiles: P ₁ = 20.9 P ₁₀ = 29.0 Q ₁ = 39.0 Median = 59.1 Q ₃ = 75.8 P ₉₀ = 84.6 P ₉₉ = 95.3																						Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 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-Apr	77.7	78.5	81.2	80.4	85.1	89.0	87.1	77.4	75.1	71.0	72.0	65.5	60.5	57.7	61.7	61.4	61.1	65.8	66.6	77.5	86.8	86.1	83.3	82.5	74.6	89.0																						
2-Apr	81.5	83.6	84.7	87.0	87.5	87.0	87.1	83.7	80.3	77.3	74.4	73.1	71.9	69.1	70.9	73.0	81.1	81.4	81.4	80.3	80.6	81.0	83.7	83.6	80.2	87.5																						
3-Apr	84.8	87.5	88.6	86.2	87.3	85.2	86.7	84.1	78.1	76.0	75.3	70.1	68.9	64.0	60.9	59.1	57.8	59.6	61.6	64.4	62.1	60.6	60.7	61.4	72.1	88.6																						
4-Apr	63.8	69.3	67.8	73.1	76.4	76.9	77.2	76.7	74.9	71.9	62.9	54.6	53.3	50.3	47.3	44.9	41.4	44.5	45.3	55.7	68.5	63.4	64.7	68.1	62.2	77.2																						
5-Apr	69.5	72.2	69.0	69.8	72.7	73.5	77.5	79.6	75.6	69.2	68.6	70.0	62.2	54.3	48.2	48.8	51.0	48.4	46.5	51.9	62.9	64.3	65.0	69.3	64.2	79.6																						
6-Apr	70.9	73.4	73.0	74.4	79.4	80.6	75.9	70.8	63.8	58.4	55.9	47.0	38.6	30.6	27.9	26.6	26.6	28.7	31.6	33.9	34.6	38.1	39.4	37.6	50.7	80.6																						
7-Apr	38.6	42.9	48.5	52.9	55.7	56.1	57.9	55.0	50.5	48.8	47.3	46.9	43.8	40.9	39.0	36.3	37.5	33.2	40.4	45.3	52.4	54.6	55.3	54.4	47.3	57.9																						
8-Apr	61.4	66.1	71.3	76.4	78.8	78.3	78.5	77.1	72.6	70.2	65.0	60.8	55.6	47.4	37.3	25.8	23.5	26.7	31.0	45.5	57.0	64.4	69.7	72.3	58.9	78.8																						
9-Apr	74.1	75.4	80.3	85.9	87.8	85.6	77.1	58.2	48.4	42.4	37.9	33.3	30.4	27.3	25.0	23.7	21.7	24.6	26.2	30.7	32.0	37.5	46.8	50.2	48.4	87.8																						
10-Apr	52.4	44.1	44.7	53.4	51.7	49.3	45.6	42.0	38.7	36.7	32.2	28.3	26.3	25.2	25.8	25.9	26.4	27.9	30.7	33.1	34.2	34.8	35.1	42.2	36.9	53.4																						
11-Apr	46.1	54.1	69.1	62.0	74.8	82.9	76.6	63.5	52.2	47.3	43.7	45.0	36.1	21.1	20.8	18.9	18.1	17.6	21.3	26.6	30.8	38.4	51.2	68.5	45.3	82.9																						
12-Apr	76.4	62.3	74.7	79.6	79.7	62.9	61.1	69.7	71.6	66.9	58.3	53.4	49.2	53.0	51.0	45.3	37.7	35.0	38.4	49.7	59.0	72.1	79.2	77.4	61.0	79.7																						
13-Apr	81.0	81.7	83.4	91.6	93.4	94.1	89.8	76.7	66.7	56.5	49.9	45.4	40.8	37.8	33.7	33.5	33.9	36.7	38.2	36.0	40.0	45.8	64.2	75.3	59.4	94.1																						
14-Apr	76.2	78.1	80.3	81.9	83.5	84.5	80.7	69.4	54.0	49.4	40.1	39.5	35.7	34.5	30.9	28.2	28.0	35.0	47.4	47.4	50.0	52.1	57.4	67.6	55.5	84.5																						
15-Apr	72.1	68.4	76.9	79.4	83.0	83.9	82.2	73.4	61.1	56.0	48.9	43.6	36.7	29.4	24.9	26.1	28.7	37.3	41.1	38.7	39.7	50.7	55.4	60.8	54.1	83.9																						
16-Apr	59.4	69.1	69.8	70.3	77.7	82.8	84.0	76.0	58.9	44.1	42.1	38.5	33.9	30.9	33.7	31.7	27.7	28.2	29.5	33.4	36.0	40.0	43.7	47.3	49.5	84.0																						
17-Apr	53.7	52.9	51.8	54.5	55.5	53.1	50.6	45.8	41.3	38.0	39.3	35.3	33.4	34.8	35.1	37.5	54.7	77.0	83.5	80.5	77.9	76.3	72.9	87.0	55.1	87.0																						
18-Apr	81.9	75.4	72.3	64.2	72.0	90.2	95.7	95.6	93.3	90.8	77.7	82.7	85.3	72.0	69.4	67.2	67.9	67.9	70.6	75.7	80.3	82.2	84.1	85.7	79.2	95.7																						
19-Apr	81.9	84.2	84.9	82.4	82.3	81.8	82.9	89.4	91.0	92.7	91.1	91.0	88.2	85.4	72.7	65.7	68.4	66.0	59.0	63.3	73.5	87.2	88.0	93.3	81.1	93.3																						
20-Apr	96.5	97.9	98.4	86.6	73.4	74.4	65.2	58.7	53.7	43.3	39.1	35.2	33.8	32.3	30.1	29.6	27.3	23.0	22.6	29.9	39.6	53.8	62.0	63.9	52.9	98.4																						
21-Apr	49.4	57.0	55.5	61.1	71.8	76.3	77.8	61.9	50.3	45.0	37.3	32.8	29.5	28.3	28.1	23.9	23.6	25.2	23.8	27.7	45.8	65.1	75.0	72.3	47.7	77.8																						
22-Apr	50.5	53.5	59.7	64.1	73.0	74.4	65.9	58.5	53.9	48.0	38.9	33.8	30.5	27.1	25.6	26.6	26.9	27.9	29.6	33.0	36.1	37.6	42.9	47.7	44.4	74.4																						
23-Apr	60.6	73.1	80.6	85.5	80.6	78.3	72.1	63.0	54.3	48.4	42.1	39.1	35.7	32.5	31.8	33.8	35.8	38.6	32.0	39.0	38.4	39.1	40.4	45.3	50.8	85.5																						
24-Apr	61.3	66.1	69.6	61.8	61.1	72.4	84.2	85.0	89.5	90.5	89.3	81.0	73.6	64.1	59.2	66.2	72.6	78.8	80.7	80.5	81.4	85.5	86.8	88.7	76.2	90.5																						
25-Apr	92.0	92.5	91.4	90.8	87.6	84.8	81.0	80.0	69.6	61.9	58.1	54.9	59.8	77.5	84.8	78.9	66.3	64.8	66.6	58.1	60.6	68.3	68.2	70.6	73.7	92.5																						
26-Apr	71.5	74.3	75.9	71.1	71.5	71.9	70.9	69.4	65.9	62.5	60.5	58.5	57.0	53.7	53.2	49.4	50.5	52.9	57.1	64.8	70.4	80.4	88.5	92.2	66.4	92.2																						
27-Apr	91.1	92.5	93.1	95.7	97.8	98.6	92.7	81.3	73.9	60.6	50.1	45.9	41.2	37.1	36.5	35.3	35.3	36.1	39.1	40.7	43.0	46.6	48.3	47.6	60.8	98.6																						
28-Apr	50.0	59.1	66.4	68.6	71.9	79.7	72.9	47.2	34.9	31.7	29.0	25.6	23.6	22.5	22.0	22.4	24.9	30.0	30.6	30.6	34.6	52.4	69.9	75.8	44.8	79.7																						
29-Apr	76.9	80.7	82.8	83.9	87.9	80.9	71.9	58.3	41.9	34.0	27.2	23.9	21.7	20.0	18.5	17.2	18.8	21.0	28.0	26.9	37.0	41.2	38.3	39.3	44.9	87.9																						
30-Apr	42.1	46.2	50.7	53.7	47.3	43.5	40.7	36.9	31.7	28.3	30.0	27.9	27.8	26.9	23.1	26.0	27.9	30.3	34.9	45.4	38.5	42.6	47.9	43.1	37.2	53.7																						
																								68.2	70.4	73.2	74.3	76.3	77.1	75.0	68.8	62.3	57.3	52.8	49.4	46.2	42.9	41.0	39.6	40.1	42.3	44.5	48.2	52.8	58.1	62.3	65.7	Diurnal Average
																								96.5	97.9	98.4	95.7	97.8	98.6	95.7	95.6	93.3	92.7	91.1	91.0	88.2	85.4	84.8	78.9	81.1	81.4	83.5	80.5	86.8	87.2	88.5	93.3	Diurnal Maximum





Wood Buffalo Environmental Association
Hourly Averages

Barometric Pressure (BP) - inHg
Lower Camp - April 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Lower Camp - April 2023

Maximum Speed: 39 km/h on Apr 17 15:00	Maximum Daily Speed Average: 26.1 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 27 05:00	Minimum Daily Speed Average: 2.5 km/h on Apr 27	Hours of Data: 719
Maximum Diurnal Speed Average: 7.1 km/h at hour 12	Minimum Diurnal Speed Average: 3.5 km/h at hour 5	Hours of Missing Data: 1
Monthly Average Velocity: 5.0 km/h 138.2 deg	Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 6 Median = 10 Q ₃ = 15 P ₉₀ = 21 P ₉₉ = 31	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-Apr	E6	SE1	NE4	ENE6	NNW2	UO	ENE5	ENE7	ESE11	ESE11	SE15	SE10	ESE6	SE7	ESE5	N9	NNW8	N10	E9	ESE15	ESE14	ESE12	ESE13	SE17	ESE6.6	SE17
2-Apr	SE20	SE19	SE18	SE14	ESE10	ESE12	SE14	SE17	SE17	SE16	SE14	SE11	SE9	SSE2	NW5	NNW10	N11	N14	N16	NNE17	NNE18	N14	N11	N11	E6.3	SE20
3-Apr	NNW9	NNW9	N8	N9	NNW7	NNW8	NW7	NNW7	NNW9	N9	NNW9	NNW6	WSW14	WSW12	WSW8	W7	W6	W8	NW5	NNE5	E5	ENE4	E6	ESE8	NW4.5	WSW14
4-Apr	ESE11	SE5	NE3	NNW4	WNW5	N4	N5	N6	N5	NNE4	ESE4	SE7	ESE5	ESE5	SE10	SE7	S5	SSE6	SSE4	SSE4	SE13	SE8	SE10	SE18	ESE4.0	SE18
5-Apr	ESE17	SE12	SSE8	SE8	SE10	ESE8	ESE8	SE9	SE12	SE11	SE12	SE13	SSE8	SSE6	SSE7	SSE11	SSE9	SSE5	SSE5	SSE4	ESE2	SSE2	SSE6	SE6	SE8.1	ESE17
6-Apr	SE6	SE9	SSE9	SSE9	SE13	SE13	ESE20	SE23	SE13	SE13	SE17	SE16	SSE17	SSE18	SSE17	S15	S14	SSE13	SSE11	SSE13	SSE14	SSE15	SSE18	SSE20	SSE13.8	SE23
7-Apr	SSE16	SSE14	SSE18	SE21	SE20	SE22	SE23	SE25	SE22	SE20	SE21	SE20	SE20	SE19	SE20	SSE18	SE18	SSE17	SSE14	SSE11	SE10	SE10	SSE9	SSE9	SE17.2	SE25
8-Apr	SSE10	SSE8	SSE9	SE10	SE10	SSE10	SE11	SE12	SE10	SE14	SE16	SE17	SE18	SE17	SSE11	SSW8	WSW14	WSW8	WSW8	SW3	NNE2	NNE3	NNE3	NE1	SSE7.2	SE18
9-Apr	NNE2	SE5	SE4	SE4	SE4	SE5	SE7	SE6	WSW9	WSW18	WSW17	WSW20	W16	W18	WNW12	WNW10	SSW9	SSE8	S9	SSE11	SSE11	SSE13	SE16	SE16	SSW5.6	WSW20
10-Apr	SE15	SSE10	SSW9	W19	W27	W26	W27	W28	W29	W27	W27	W29	W30	W29	W28	W29	W26	W23	W17	WSW13	SW10	SW12	WSW13	WNW11	W19.4	W30
11-Apr	SW1	SE6	SE5	SE7	SE4	SE6	SE6	SE11	SE12	SE11	SE11	SE15	SE8	WSW13	W12	WSW13	WSW11	WSW8	WNW6	N9	NW6	NW6	WNW4	NNW3	S2.8	SE15
12-Apr	NNW2	WSW4	N2	E3	ENE1	W13	W13	NW4	NNE8	NNE9	NNW8	NNW12	NW11	N14	N14	N10	NNW8	NW3	WNW4	W2	W1	N0	NNW2	WNW4	NW4.7	N14
13-Apr	NW3	NW3	WNW3	NNW2	NNW3	NNW3	N3	NNE4	N4	N4	NNW6	N6	NNE7	NNE7	NNW8	NNW9	N9	NE12	NNE12	N7	WNW7	NNW5	NNE1	NNW2	N4.8	NNE12
14-Apr	WNW4	WNW5	WNW5	WNW5	WNW4	WNW4	NNW4	NE4	SE9	SE11	SE10	SE11	SE11	SE10	SE9	SE7	ESE2	SE12	SE18	SE13	SE8	SE10	SE7	ENE3	SE5.0	SE18
15-Apr	NE2	NW1	NW4	WNW5	WNW4	WNW5	NW4	N3	E3	SE7	SE9	SE7	SE7	SE10	SE9	SE11	ESE10	SE14	SE16	SE7	SE5	SE15	SE14	SE19	SE5.8	SE19
16-Apr	SE20	SE15	ESE3	W0	WNW5	WNW5	NW4	NNW3	NE2	SE16	SE26	SE27	SE27	SE25	SE24	SE23	ESE24	ESE24	ESE26	ESE26	ESE26	SE24	SE17	SE16	SE15.4	SE27
17-Apr	SE21	SE22	ESE25	ESE23	ESE23	SE14	SE10	SE15	SE26	SE29	SE27	SE34	SE36	SE35	SE39	SE36	SE32	ESE28	ESE24	ESE24	SE24	SE23	SE28	SE32	SE26.1	SE39
18-Apr	ESE24	SE23	ESE20	ESE24	SE19	SE18	SE10	N9	N7	NNE8	ESE12	E11	ESE12	ESE15	ESE13	E10	ESE11	E11	ENE9	ENE9	NNE5	NNW5	N6	NNE7	ESE9.6	ESE24
19-Apr	N6	N7	ESE8	ESE9	SE18	SE21	SE23	SE22	SE23	SE20	SE19	SE18	SE21	SE18	ESE21	SE21	SE15	ESE13	ESE9	NE4	NW5	NW5	NNW5	NNW4	ESE11.5	SE23
20-Apr	NNW3	NW2	SSW1	SE7	SE9	ESE15	ESE14	SE12	SE10	SE6	NNW2	SE10	SE13	SE12	SE14	SE15	ESE14	ESE18	ESE18	ESE14	ESE7	NNE2	ENE2	E5	ESE8.5	ESE18
21-Apr	SE6	SE7	SE8	SE4	WNW3	NW4	NNW3	ESE5	SE11	SE11	SE13	SE13	SE12	SE12	SE11	SSE7	SE6	SE8	SSE6	SSE4	ESE4	E3	SE2	SE5	SE6.0	SE13
22-Apr	SSE8	SE7	SE10	SE10	SE6	SE8	SE12	SE14	SE13	SE16	SE17	SSE14	SSE15	SSE13	S12	S11	S12	S10	S8	S6	S6	S7	SSE6	SSE6	SSE9.7	SE17
23-Apr	SE6	ESE3	NNW1	NNE1	NNW1	E1	SE5	SE11	SE12	SE14	SE18	SE25	SE21	SSE16	SSE11	SE15	SE17	SE15	SSE9	SE12	SE8	SSE8	S8	S10	SE10.0	SE25
24-Apr	SSE5	ENE2	NE1	NNE1	SE7	ESE14	E2	SE8	NNE2	N3	N4	N7	N11	N11	NNW12	NNW14	NNW13	NNW11	NNW12	NNW9	NW9	WSW9	SW11	S4	NNW3.4	NNW14
25-Apr	ESE1	SE6	SE7	SSE9	SSE9	SE13	SSE12	SSE14	SSE11	SSE9	SSE13	SW13	W19	SE7	SE13	SSE13	SSE8	SSE13	W12	W15	W14	W15	W12	S6.1	W19	
26-Apr	W15	W15	WNW17	WNW19	WNW19	WNW18	WNW17	WNW17	NW18	NW15	NW14	NW14	NNW10	N10	N13	N12	N11	NE12	ENE14	NE12	NNE4	NNW4	NW2	NNW2	NW9.5	WNW19
27-Apr	WNW5	NW3	NW3	SE3	NNE0	NE1	NE3	SE4	ESE6	WNW8	W5	WNW9	WNW9	W12	WNW11	W11	W11	SSE6	SSE6	S6	SSE7	SSE9	SSE10	SSE11	WSW2.5	W12
28-Apr	SE9	SE7	WNW2	NNW4	NW4	NNE1	NW3	WNW17	NW24	NW24	NW26	NW26	NW22	NNW20	NNW19	NNW20	N20	NNE19	N14	NNE9	NW5	WNW3	ENE1	NNE1	NNW10.3	NW26
29-Apr	ENE1	ENE1	NE1	E2	NNE1	ENE2	NE2	E3	SE7	SE10	SE9	SE6	N4	N2	S6	SSW5	SE7	SE10	SE10	ESE3	SSE2	ESE4	SE11	ESE15	SE4.2	ESE15
30-Apr	SE14	SE15	SE15	SE18	ESE15	ESE16	SE19	SE19	SE16	SE16	SE22	SE24	SE32	SE28	SE22	SE25	SE26	SE24	SE22	SE18	SE21	SE21	SE18	SE15	SE19.9	SE32

SE5.7	SE5.1	SE4.3	SE4.2	SE3.5	SE4.1	SE4.2	SE5.1	SE5.2	SE5.5	SE6.8	SE7.1	SSE6.6	SSE5.1	SE5.1	SSE4.1	SSE4.0	SE5.7	ESE5.6	ESE4.7	SE4.0	SE4.2	SE5.0	SE5.9	Diurnal Average
ESE24	SE23	ESE25	ESE24	W27	W26	W27	W28	W29	SE29	W27	SE34	SE36	SE35	SE39	SE36	SE32	ESE28	ESE26	ESE26	ESE26	SE24	SE28	SE32	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

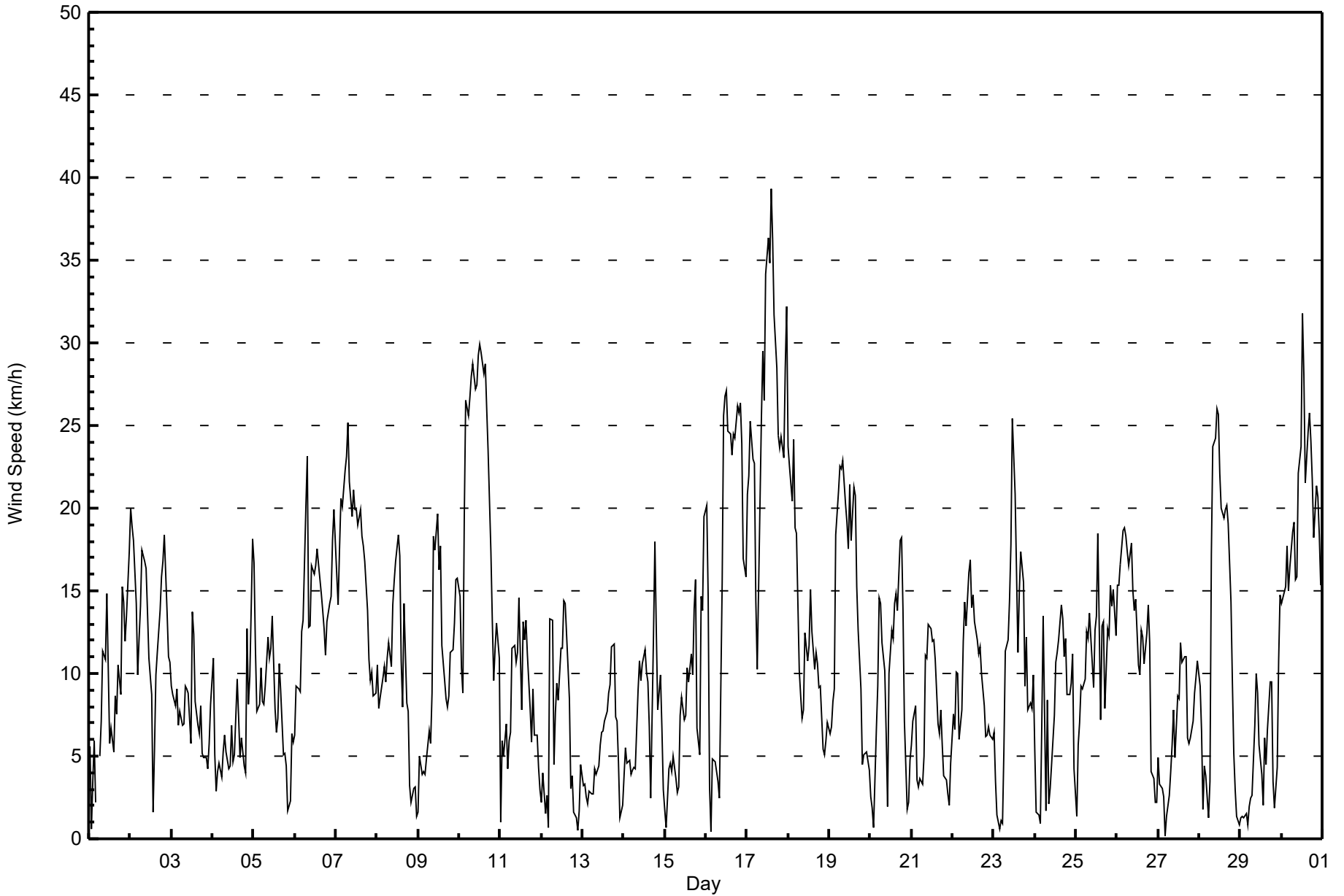
Wind Speed (WS) - km/h
Lower Camp - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on Apr 25 13:00 Minimum Value: 1 km/h on Apr 21 06:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7																		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	2	1	2	3	1	UO	3	1	4	3	2	1	1	2	2	2	2	2	3	3	2	2	2	3	4
2-Apr	3	3	3	2	3	3	3	2	2	2	2	2	2	1	2	2	3	3	3	4	4	3	2	3	4
3-Apr	2	2	3	3	2	2	1	2	2	2	3	3	2	2	3	2	2	2	1	1	1	1	1	2	3
4-Apr	2	4	2	1	2	2	1	2	1	1	2	1	2	2	2	2	2	2	1	2	3	4	6	3	6
5-Apr	3	4	3	3	2	3	2	2	2	3	3	2	3	3	3	4	3	2	1	2	1	1	1	1	4
6-Apr	1	1	2	3	3	3	3	3	5	3	4	4	5	6	5	6	5	4	4	4	5	4	5	5	6
7-Apr	5	5	5	4	4	4	4	4	4	4	4	3	3	3	4	4	4	5	4	3	2	2	2	3	5
8-Apr	3	2	2	2	2	2	2	2	3	3	2	1	1	2	4	3	3	4	2	2	1	1	1	1	4
9-Apr	1	1	2	2	2	2	2	2	7	4	4	5	5	4	3	3	4	2	2	3	3	4	2	4	7
10-Apr	5	3	4	4	6	6	6	6	6	6	6	7	6	6	7	7	6	5	5	3	3	3	4	3	7
11-Apr	3	2	2	2	2	1	3	1	2	2	3	2	4	4	4	3	3	3	6	3	1	1	3	2	6
12-Apr	2	2	1	1	1	6	4	3	1	2	3	3	4	3	3	4	3	2	1	2	2	1	1	1	6
13-Apr	1	1	2	1	2	1	1	1	1	1	2	2	2	3	3	3	3	3	2	2	2	1	1	1	3
14-Apr	1	2	1	2	1	1	2	2	1	1	2	2	3	3	3	3	2	4	3	3	2	3	3	1	4
15-Apr	3	2	1	1	1	1	2	1	2	1	1	2	3	3	3	4	3	4	3	4	2	4	4	3	4
16-Apr	4	5	1	2	1	1	2	1	1	7	4	4	4	4	5	4	5	5	5	5	5	5	4	5	7
17-Apr	5	3	3	3	3	4	3	5	7	5	7	8	7	6	7	7	8	7	5	5	6	5	5	6	8
18-Apr	5	5	6	5	4	5	6	2	2	3	2	3	3	3	3	2	2	2	2	2	2	2	2	2	6
19-Apr	1	1	5	3	4	4	4	3	4	3	3	4	3	3	5	4	3	3	3	1	2	1	1	1	5
20-Apr	1	1	1	1	3	3	2	2	2	2	2	4	3	4	4	4	4	5	3	3	3	1	1	3	5
21-Apr	2	3	2	3	1	1	1	3	2	2	3	5	3	3	3	3	2	3	2	1	1	1	1	1	5
22-Apr	2	1	2	3	2	2	2	2	1	3	4	5	6	5	5	4	4	4	3	2	2	2	1	1	6
23-Apr	2	2	2	1	2	2	2	2	2	2	4	6	6	6	5	4	4	6	4	5	3	2	4	4	6
24-Apr	3	2	1	1	6	4	2	3	1	1	1	2	2	2	3	4	3	3	3	2	2	4	3	2	6
25-Apr	1	2	1	2	1	3	2	2	3	3	3	3	10	9	4	2	4	5	3	7	5	3	4	3	10
26-Apr	4	3	5	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2	1	2	5
27-Apr	1	1	1	1	1	1	1	1	1	3	3	2	3	4	3	3	4	3	2	2	2	2	2	3	4
28-Apr	3	3	3	2	2	1	5	4	6	6	6	6	6	5	5	5	6	6	5	3	1	2	1	1	6
29-Apr	1	1	1	2	1	2	1	1	2	1	2	2	2	3	3	3	3	2	2	2	1	2	5	3	5
30-Apr	4	3	4	3	2	2	2	2	3	3	3	4	5	5	6	6	4	5	4	3	3	3	4	4	6
Diurnal Maximum																									
UO - Unstable Operation																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Lower Camp - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Lower Camp - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	175	24.34	24.34
6 - 11	247	34.35	58.69
12 - 19	200	27.82	86.51
20 - 28	83	11.54	98.05
29 - 38	13	1.81	99.86
> 38	1	0.14	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Lower Camp - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	12	18	12	10	9	13	16	10	2	2	2	1	4	20	20	24	175
6 - 11	23	7	0	4	6	15	87	45	11	3	2	7	5	8	5	19	247
12 - 19	8	4	3	1	0	21	90	24	4	0	2	9	16	9	4	5	200
20 - 28	1	0	0	0	0	16	48	1	0	0	0	1	9	0	5	2	83
29 - 38	0	0	0	0	0	0	8	0	0	0	0	0	5	0	0	0	13
> 38	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Totals	44	29	15	15	15	65	250	80	17	5	6	18	39	37	34	50	719

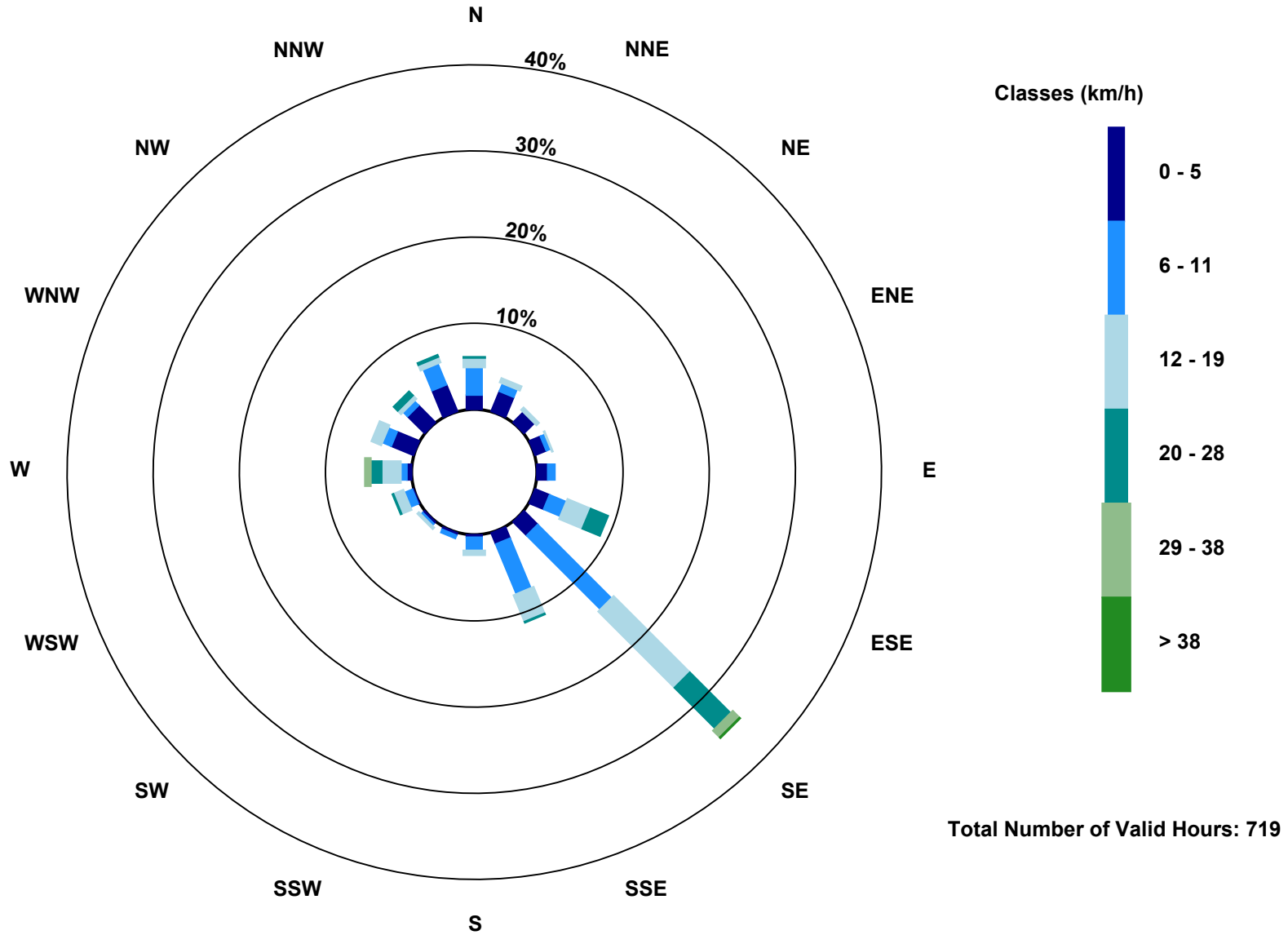
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Lower Camp





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Lower Camp - April 2023

Direction of Maximum Speed: 131 deg on Apr 17 15:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 129.7 deg on Apr 17		Hours of Data: 719
Direction of Minimum Speed: 24 deg on Apr 27 05:00	Direction of Minimum Daily Speed Average: 2.5 deg on Apr 27	Hours of Missing Data: 1
Monthly Average Direction: 138.2 deg		Percent Operational Time: 99.9

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-Apr	91	143	42	77	340	UO	74	75	113	122	131	138	116	126	108	355	343	5	89	109	116	115	122	130	103.3
2-Apr	128	133	128	128	121	117	130	133	138	139	131	125	139	157	325	341	356	5	11	16	15	5	358	354	90.5
3-Apr	346	342	351	6	344	338	317	334	342	349	334	348	257	258	257	261	270	275	311	13	88	63	100	116	324.3
4-Apr	120	132	55	333	299	358	358	4	4	16	123	133	108	121	141	142	180	149	162	151	126	144	134	127	121.4
5-Apr	123	127	153	138	124	117	123	125	134	138	134	132	151	147	165	160	155	166	165	165	111	154	148	144	139.1
6-Apr	145	144	148	148	132	128	123	124	142	143	142	145	152	162	162	171	173	166	168	166	164	160	158	160	150.7
7-Apr	158	153	147	142	142	141	137	137	140	140	139	141	141	142	145	147	146	149	150	152	144	143	150	162	144.1
8-Apr	150	151	149	144	146	147	146	144	145	140	137	138	139	139	150	211	258	252	252	232	30	18	29	51	153.3
9-Apr	32	141	141	137	142	133	142	145	247	255	253	258	266	266	284	285	197	159	171	160	160	150	142	139	205.8
10-Apr	130	157	199	271	268	271	264	268	268	265	260	265	267	268	270	268	267	266	265	252	227	236	257	283	261.7
11-Apr	227	145	140	141	141	124	130	139	138	136	136	136	140	258	260	256	255	237	302	4	312	311	288	329	185.2
12-Apr	337	258	349	100	76	261	263	310	15	15	328	295	317	5	6	352	332	312	282	270	260	10	332	288	323.8
13-Apr	325	323	291	334	329	336	2	14	350	352	342	357	20	22	347	342	4	44	26	3	298	329	17	341	356.8
14-Apr	295	299	296	289	290	293	330	49	134	135	145	141	145	139	143	135	112	138	132	125	131	134	128	78	136.7
15-Apr	49	323	309	283	298	296	320	2	100	132	141	133	128	136	130	130	120	134	128	126	141	128	136	132	130.6
16-Apr	128	130	112	277	295	298	309	341	51	130	131	135	131	132	135	130	116	114	117	116	118	127	139	135	126.2
17-Apr	131	129	122	120	123	139	145	137	125	136	133	140	129	136	131	128	144	122	113	115	130	131	130	127	129.7
18-Apr	120	125	120	121	132	136	133	359	11	15	104	83	112	114	102	93	104	97	78	75	25	344	349	14	102.3
19-Apr	9	10	117	121	133	138	135	127	130	128	124	127	130	130	122	125	131	122	104	41	323	310	340	341	122.8
20-Apr	336	305	207	134	129	120	120	128	133	134	337	134	136	128	128	128	117	114	108	113	111	29	66	92	120.9
21-Apr	142	129	143	140	289	308	327	113	130	132	131	136	129	135	135	158	140	138	150	158	115	91	132	145	135.6
22-Apr	147	140	145	144	125	134	137	134	137	133	142	149	154	163	171	173	187	176	187	186	180	180	160	149	153.7
23-Apr	135	120	343	24	347	96	128	133	141	129	133	134	141	149	158	132	134	138	162	131	137	153	173	179	140.5
24-Apr	164	63	56	22	142	118	88	127	16	349	349	6	357	353	345	340	338	345	333	333	325	254	228	176	345.5
25-Apr	106	147	145	148	148	147	145	147	147	162	160	150	219	276	139	139	151	155	147	261	274	266	279	280	183.1
26-Apr	277	265	300	302	294	290	296	294	306	321	310	313	339	357	6	5	8	46	57	54	31	328	311	329	320.7
27-Apr	291	326	318	124	24	48	51	126	117	303	269	303	287	277	290	280	267	160	168	176	167	158	160	161	237.9
28-Apr	140	144	283	327	312	19	312	296	315	323	306	311	324	336	345	336	351	12	10	14	314	297	72	26	330.8
29-Apr	66	70	55	93	29	78	44	86	127	135	138	128	11	3	173	194	145	130	127	108	160	115	126	120	124.3
30-Apr	125	132	130	129	121	123	124	128	136	140	132	137	134	135	142	136	136	137	136	136	139	132	135	132	133.4

130.4 137.8 134.0 133.5 144.6 143.9 140.1 131.2 135.1 138.2 144.0 144.8 147.1 153.6 144.2 147.4 149.5 126.5 121.0 116.0 131.5 142.8 145.2 136.5

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
Lower Camp - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 107 deg on Apr 12 05:00	Hours of Data: 719
Minimum Value: 4 deg on Apr 8 13:00	Hours of Missing Data: 1
Percentiles: P ₁ = 6 P ₁₀ = 9 Q ₁ = 12 Median = 18 Q ₃ = 30 P ₉₀ = 54 P ₉₉ = 92	Hours of Calibration: 0
	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-Apr	22	92	43	46	70	UO	22	19	34	16	11	7	25	26	51	20	20	17	38	13	9	10	10	8	92
2-Apr	7	9	8	9	12	12	10	7	6	6	10	16	10	90	28	18	18	16	16	15	12	16	18	19	90
3-Apr	18	17	20	17	18	22	14	18	20	24	27	46	13	15	24	22	24	15	31	22	15	27	16	16	46
4-Apr	11	29	53	27	30	30	19	16	21	29	21	16	45	68	9	22	58	21	23	27	10	24	21	7	68
5-Apr	9	18	21	18	13	22	19	15	10	7	11	7	40	47	41	30	24	30	29	27	53	60	14	13	60
6-Apr	13	9	12	16	13	12	7	7	25	14	12	14	23	25	26	29	28	28	25	25	24	21	20	20	29
7-Apr	22	23	16	11	11	11	8	8	8	9	9	8	9	9	11	16	12	17	18	18	11	11	18	24	24
8-Apr	18	18	13	11	10	12	10	10	29	9	6	4	4	6	21	50	17	35	15	66	58	60	36	85	85
9-Apr	66	20	25	27	25	58	14	55	73	15	14	16	17	16	20	25	45	24	22	21	22	17	8	12	73
10-Apr	15	23	43	13	13	13	14	13	13	14	14	14	14	13	13	13	13	14	14	15	20	19	14	23	43
11-Apr	100	37	33	21	36	16	27	4	6	9	12	6	59	25	27	20	23	32	48	22	18	10	47	45	100
12-Apr	55	47	73	64	107	31	14	59	11	6	41	21	30	15	18	34	34	58	19	88	83	71	56	20	107
13-Apr	31	38	42	40	30	46	52	23	35	37	28	22	39	35	29	24	22	13	30	16	29	69	63	69	69
14-Apr	28	34	23	24	34	25	43	47	7	8	11	10	12	16	16	38	81	11	8	10	15	13	20	32	81
15-Apr	85	105	30	22	23	11	42	33	50	11	7	12	18	17	28	20	21	15	11	26	29	9	11	7	105
16-Apr	8	8	46	91	30	29	26	30	50	11	7	7	10	11	8	13	16	14	12	11	12	12	12	13	91
17-Apr	10	10	9	7	11	17	20	15	14	11	11	10	13	9	10	11	17	12	12	14	14	10	10	13	20
18-Apr	12	13	16	14	14	10	66	23	22	28	13	16	17	16	20	18	17	19	20	14	36	27	22	24	66
19-Apr	13	16	52	21	9	9	8	10	8	9	9	11	11	13	15	14	10	17	18	24	28	22	20	16	52
20-Apr	32	53	92	14	14	9	10	8	8	18	93	42	19	24	25	17	26	14	12	9	23	45	73	31	93
21-Apr	26	23	10	84	23	15	26	39	9	8	10	14	15	12	13	54	31	33	21	20	21	33	34	14	84
22-Apr	48	11	9	12	14	8	6	6	6	8	18	28	33	34	35	37	34	30	32	22	18	17	16	10	48
23-Apr	20	36	51	79	89	87	27	10	9	13	9	9	17	28	41	18	13	24	37	25	42	23	32	31	89
24-Apr	38	81	72	86	56	20	87	21	59	38	25	18	18	21	20	18	18	21	15	18	14	26	17	49	87
25-Apr	64	18	11	9	10	11	7	12	16	29	32	21	57	23	67	9	23	60	17	59	16	13	14	14	67
26-Apr	13	12	18	11	12	13	12	15	12	23	16	17	31	25	14	19	30	18	14	14	44	29	61	51	61
27-Apr	17	31	42	38	94	22	17	16	17	50	77	30	34	25	22	21	32	51	41	21	19	17	18	18	94
28-Apr	34	57	98	34	42	76	64	14	18	15	16	17	24	25	21	24	23	21	17	19	23	55	57	69	98
29-Apr	79	68	39	62	69	36	40	29	9	8	11	26	55	88	59	66	44	17	13	37	69	69	29	9	88
30-Apr	15	13	11	8	10	8	7	7	10	10	6	9	6	8	18	11	9	7	7	5	7	8	8	13	18

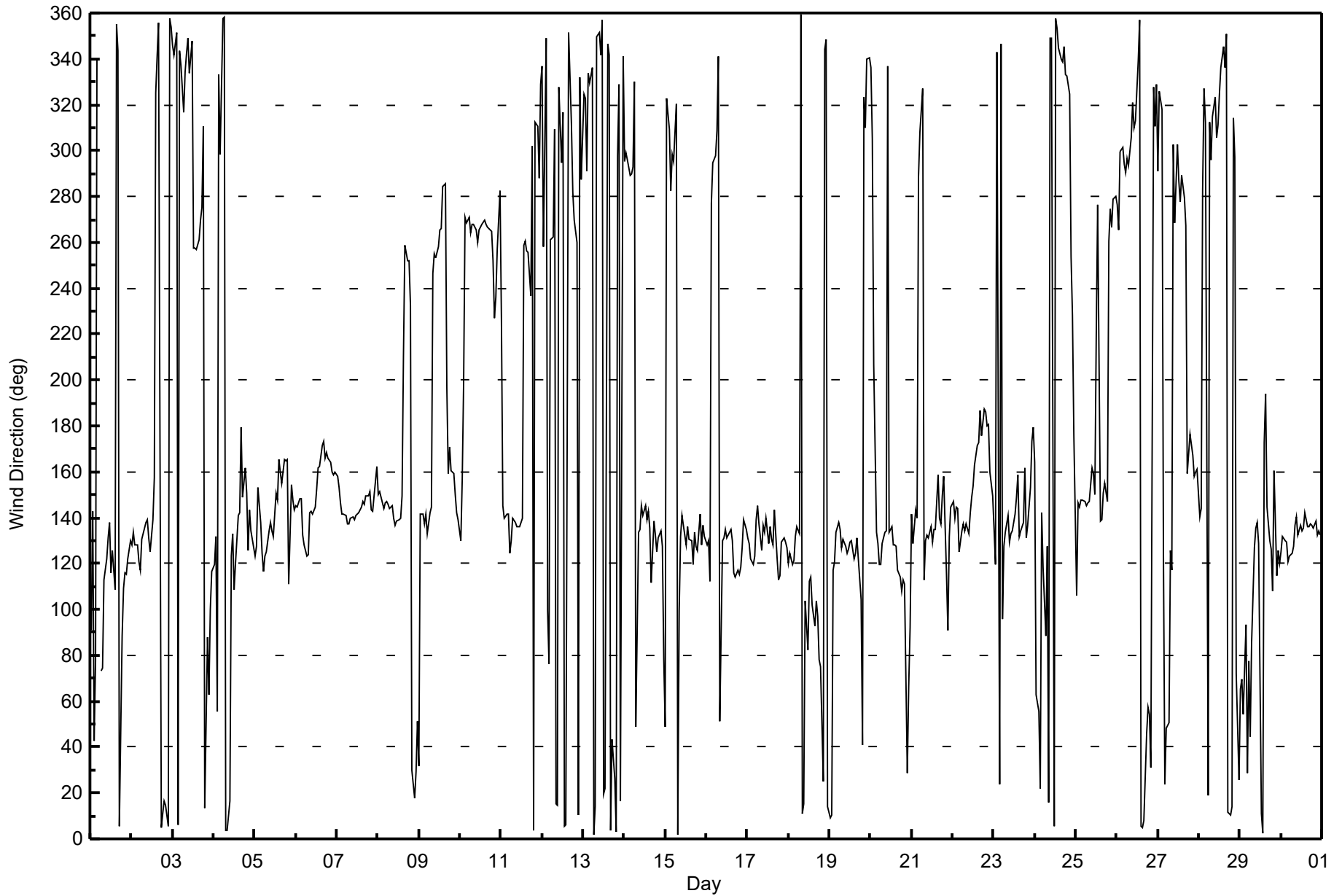
100	105	98	91	107	87	87	59	73	50	93	46	59	90	67	66	81	60	48	88	83	71	73	85	
Diurnal Maximum																								

UO - Unstable Operation



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Lower Camp - April 2023





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS13 FORT MCKAY SOUTH APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY SOUTH (AMS13)
 APRIL 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	686	33	34	99.86	38.9	0	6	0
TRS(ppb) Average	684	35	36	99.86	2.4	0	0.8	0
THC(ppm) Average	686	33	34	99.86	2.8	-	2.2	-
NMHC(ppm) Average	686	33	34	99.86	0.461	-	0.089	-
CH4(ppm) Average	686	33	34	99.86	2.8	-	2.2	-
O3(ppb) Average	685	34	35	99.86	50.5	0	44.5	-
NO2(ppb) Average	684	35	36	99.86	39.2	0	14.6	-
NO(ppb) Average	684	35	36	99.86	66	-	7.1	-
NOX(ppb) Average	684	35	36	99.86	95.8	-	21.7	-
PM2.5(ug/m3) Average	718	1	2	99.86	38.7	0	14.4	0
ET(C) Average	720	0	0	100	22.3	-	12.9	-
RH(%) Average	720	0	0	100	97.9	-	89.4	-
WS(km/h) Average	720	0	0	100	28	-	16	-
WD(deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT MCKAY SOUTH (AMS13)
 APRIL 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	686	1.7	3.7	-	0	0.2	0.3	0.4	1.1	4.4	38.9
TRS(ppb) Average	684	0.54	0.2	-	0.3	0.4	0.4	0.5	0.6	0.8	2.4
THC(ppm) Average	686	2.07	0.1	-	1.9	2	2	2	2.1	2.2	2.8
NMHC(ppm) Average	686	0.007	0.036	-	0	0	0	0	0	0	0.461
CH4(ppm) Average	686	2.06	0.1	-	1.9	2	2	2	2.1	2.2	2.8
O3(ppb) Average	685	29.25	13.5	-	0.9	8.2	18.9	32.2	40.3	46.1	50.5
NO2(ppb) Average	684	6.51	6.6	-	0.1	0.5	1.7	4.3	9.3	15.9	39.2
NO(ppb) Average	684	1.97	5.2	-	0	0	0	0.2	1.6	5.1	66
NOX(ppb) Average	684	8.48	10.6	-	0.1	0.5	1.8	4.8	11.6	20.7	95.8
PM2.5(ug/m3) Average	718	8.06	4.9	-	0.1	3.6	4.6	6.9	10.4	14.3	38.7
Temperature 2 m (C) Average	720	4.2	6.5	-	-9.6	-4.1	-1	3.7	9.3	13.2	22.3
Relative Humidity (%) Average	720	58.47	22.6	-	16.8	26.5	38.4	59.9	78.2	87.9	97.9
Wind Speed 10 m (km/h) Average	720	8.4	6	-	0	2	4	7	11	17	28
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS13)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	18 Apr 2023 08:00	18 Apr 2023 08:00	1	Station power failure



Wood Buffalo Environmental Association
Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb
Fort McKay South - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 38.9 ppb on Apr 4 16:00	Maximum Daily Average: 6.0 ppb on Apr 4		Hours of Data:	686
Minimum Value: 0.0 ppb on Apr 20 05:00	Minimum Daily Average: 0.2 ppb on Apr 19		Hours of Missing Data:	34
Maximum Diurnal Average: 4.7 ppb at hour 11	Minimum Diurnal Average: 0.5 ppb at hour 5		Hours of Calibration:	33
Monthly Average: 1.70 ppb	Percentiles: P ₁ = 0.1 P ₁₀ = 0.2 Q ₁ = 0.3 Median = 0.4 Q ₃ = 1.1 P ₉₀ = 4.4 P ₉₉ = 17.6		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-Apr	0.3	0.2	Z	0.3	0.3	0.3	0.3	0.4	0.5	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.5		
2-Apr	0.2	0.2	0.2	Z	0.2	0.1	0.1	0.1	0.9	1.8	9.2	11.0	5.8	2.8	1.2	0.8	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.1	1.6	11.0	
3-Apr	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.6	0.7	0.5	0.5	0.4	0.3	0.5	1.3	1.2	1.8	0.7	0.5	1.8	
4-Apr	0.6	0.7	0.5	0.4	0.3	Z	0.3	0.4	0.5	0.7	2.1	2.7	4.2	13.3	26.8	38.9	25.8	8.1	5.1	1.9	1.4	1.1	1.0	1.0	6.0	38.9	
5-Apr	Z	0.9	0.8	0.7	0.6	0.6	0.6	1.1	1.3	3.4	17.4	15.1	11.3	10.5	10.8	12.4	2.2	4.5	3.4	1.5	0.9	1.0	0.8	0.7	4.5	17.4	
6-Apr	1.0	Z	1.1	1.0	1.0	0.5	0.7	5.4	6.2	0.9	1.2	1.1	0.9	1.2	3.5	1.1	1.9	2.2	3.4	3.4	3.5	4.7	3.4	2.0	2.2	6.2	
7-Apr	1.3	0.7	Z	7.2	3.2	4.8	7.1	5.7	2.3	1.9	1.9	1.9	2.2	2.7	2.1	2.2	1.8	2.2	2.3	1.8	1.3	1.8	3.9	1.9	2.8	7.2	
8-Apr	1.4	2.4	2.9	Z	1.1	0.6	0.6	0.9	1.1	3.8	6.6	7.3	8.9	8.3	2.6	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.9	1.2	2.4	8.9	
9-Apr	1.1	1.2	1.2	0.9	Z	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	2.5	0.8	0.5	1.2	0.4	1.4	3.8	0.8	3.8	
10-Apr	7.3	6.7	3.3	0.7	0.5	Z	0.3	0.3	0.3	0.3	0.2	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	1.0	7.3	
11-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.6
12-Apr	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.4	0.4	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	
13-Apr	0.2	0.2	Z	0.2	0.2	0.3	0.4	0.5	1.5	1.1	0.3	0.3	0.2	0.2	0.6	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	1.5	
14-Apr	0.2	0.2	0.2	Z	0.2	0.2	0.6	0.6	0.3	0.2	0.3	0.3	0.3	0.3	0.6	0.8	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.8	
15-Apr	0.1	0.1	0.1	0.1	Z	0.1	0.2	0.3	2.5	18.7	34.7	12.8	16.6	11.5	8.4	6.1	4.5	4.5	2.6	0.8	0.8	0.6	0.5	0.4	5.5	34.7	
16-Apr	0.5	0.4	0.3	0.3	0.3	Z	0.2	0.3	0.3	0.4	0.4	0.5	0.9	1.4	0.6	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.4	1.4	
17-Apr	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.6	0.5	0.8	0.9	0.7	0.7	0.7	1.1	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.5	1.1	
18-Apr	0.3	Z	0.3	0.3	0.4	0.3	0.3	PF	0.3	0.5	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.5	
19-Apr	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	C	C	C	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	
20-Apr	0.1	0.1	0.1	Z	0.0	0.0	0.0	0.4	5.7	12.3	4.1	0.4	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.1	12.3	
21-Apr	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.4	1.1	4.9	8.2	2.1	5.5	9.9	10.2	13.0	15.5	6.3	2.6	1.3	0.7	0.5	0.3	0.5	3.7	15.5	
22-Apr	0.3	0.3	0.3	0.3	0.2	Z	0.6	1.0	5.1	11.6	13.8	10.8	1.6	4.4	8.4	3.3	5.8	3.1	0.8	2.1	1.0	0.6	0.6	0.5	3.3	13.8	
23-Apr	Z	0.4	0.4	0.4	0.4	0.3	0.4	0.8	1.0	3.5	4.3	6.7	5.2	2.8	3.3	3.6	1.9	1.3	2.1	1.9	1.0	0.5	0.7	0.7	1.9	6.7	
24-Apr	5.2	Z	1.1	0.7	0.6	0.8	0.3	0.5	1.4	0.5	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.6	5.2	
25-Apr	0.4	0.4	Z	0.4	0.3	0.4	0.5	3.9	14.8	26.3	21.0	7.0	7.9	0.6	0.5	5.8	4.6	3.7	1.4	0.7	0.5	0.4	0.5	0.4	4.4	26.3	
26-Apr	0.4	0.4	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.9	1.1	0.6	0.6	0.4	0.4	0.4	0.3	0.4	0.3	0.4	1.1	
27-Apr	0.3	0.3	0.3	0.3	Z	0.2	0.3	0.5	0.3	0.3	0.3	0.1	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.6	0.9	4.8	0.5	4.8	
28-Apr	0.6	0.3	0.3	0.3	0.2	Z	0.3	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	0.3	0.3	0.3	0.3	0.6	
29-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.7	2.7	3.8	4.1	2.3	1.5	1.0	2.1	2.5	1.5	0.8	0.4	0.3	0.3	0.2	0.2	1.1	4.1	
30-Apr	0.2	Z	0.4	0.2	0.2	0.3	0.4	4.0	8.5	3.1	3.4	10.0	4.0	3.8	2.3	2.8	4.6	3.6	1.9	2.9	0.3	0.3	2.1	11.0	3.1	11.0	

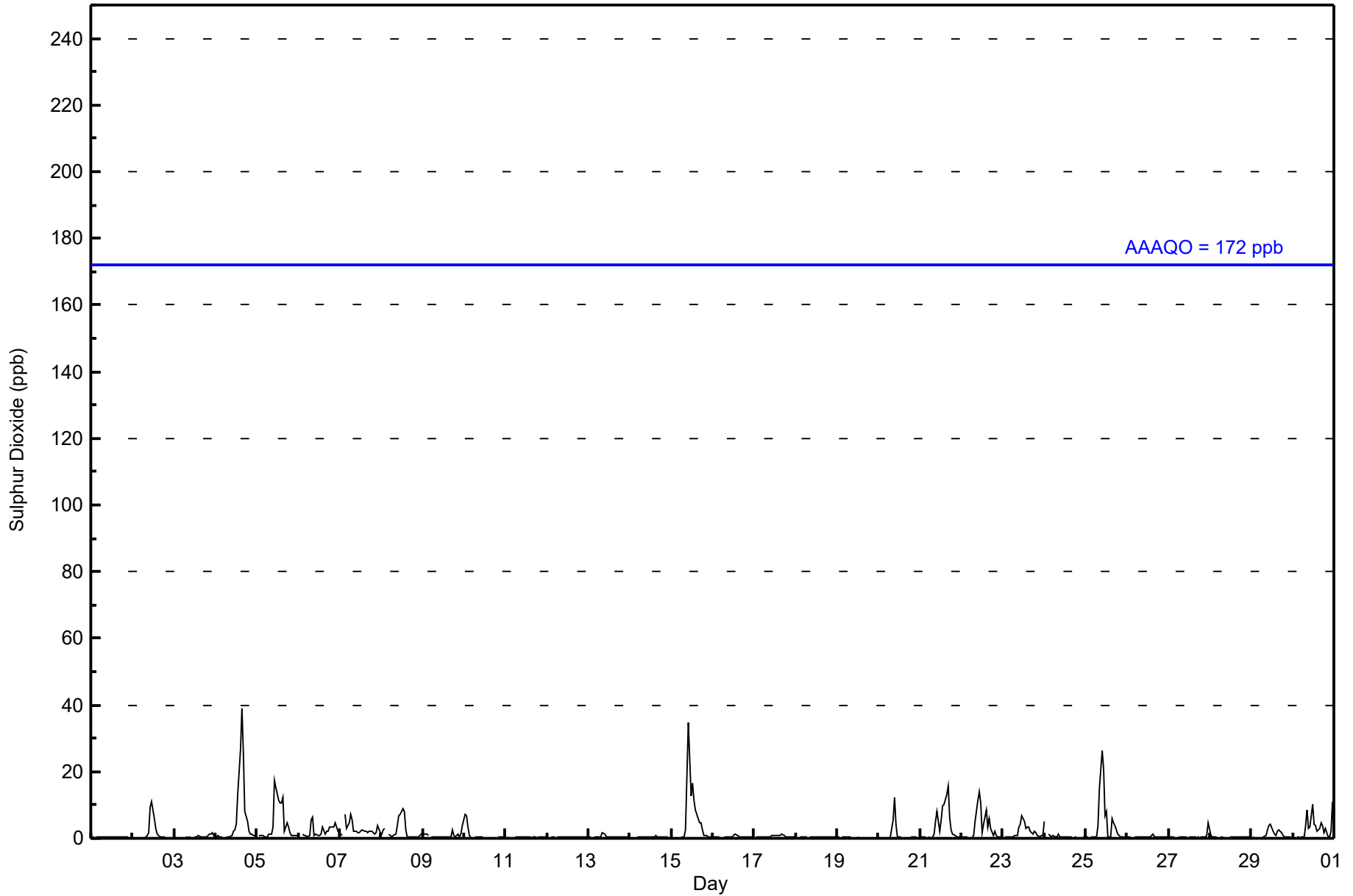
0.9	0.7	0.6	0.6	0.5	0.5	0.6	1.1	2.0	3.5	4.7	3.4	2.7	2.7	2.9	3.3	2.6	1.7	1.1	0.8	0.6	0.6	0.8	1.1	Diurnal Average	
7.3	6.7	3.3	7.2	3.2	4.8	7.1	5.7	14.8	26.3	34.7	15.1	16.6	13.3	26.8	38.9	25.8	8.1	5.1	3.4	3.5	4.7	3.9	11.0	Diurnal Maximum	

Z - zerspan 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 (SO₂) - ppb
Fort McKay South - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort McKay South - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	660	96.21	96.21
11 - 20	20	2.92	99.13
21 - 60	6	0.87	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	85	42	21	8	16	42	66	106	65	37	29	34	18	21	27	43	660
11 - 20	0	0	1	0	0	4	3	9	2	1	0	0	0	0	0	0	20
21 - 60	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	6
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
Totals	85	42	22	8	16	46	70	117	70	38	29	34	18	21	27	43	686

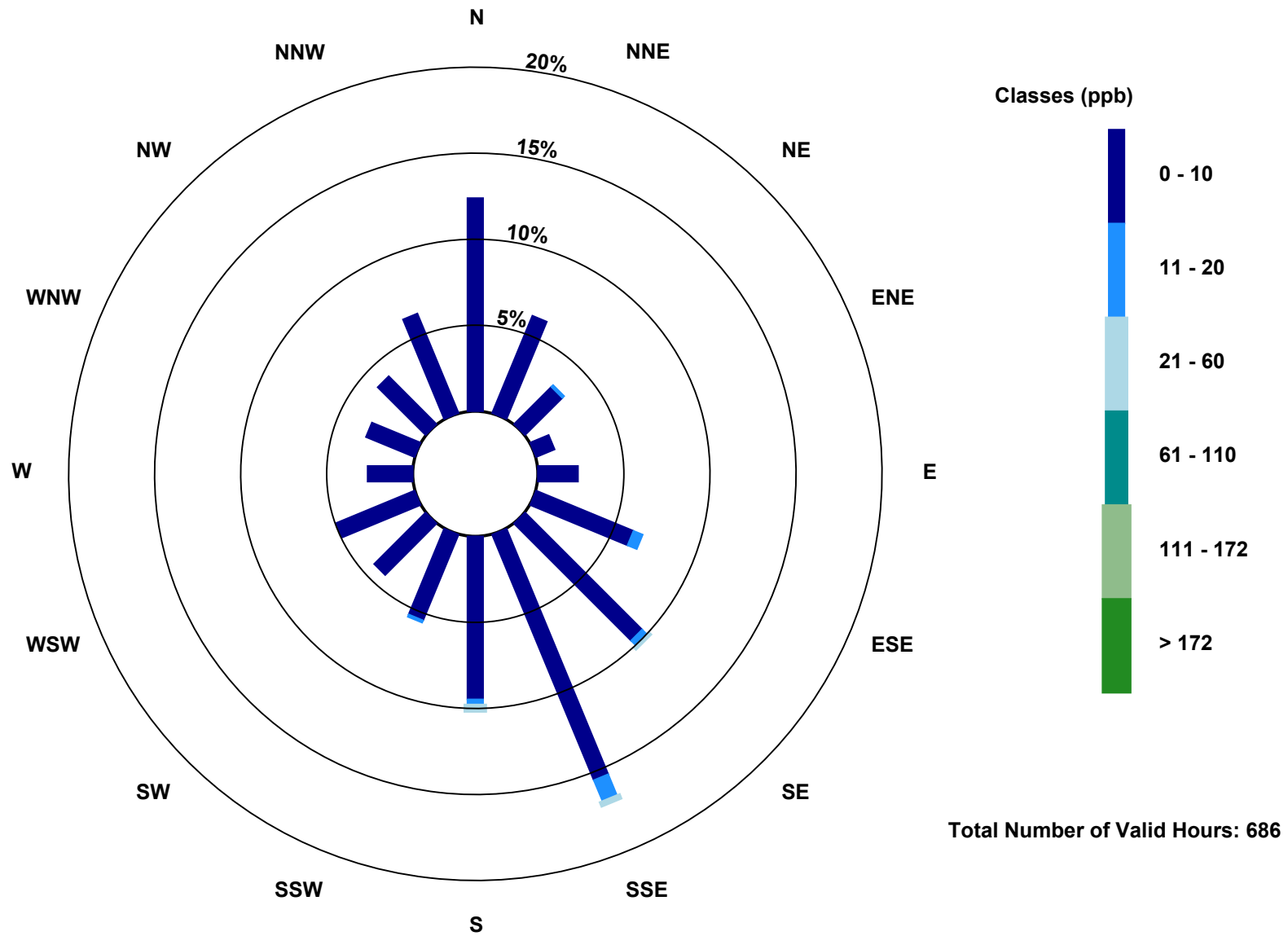
Total Number of Valid Hours: 686

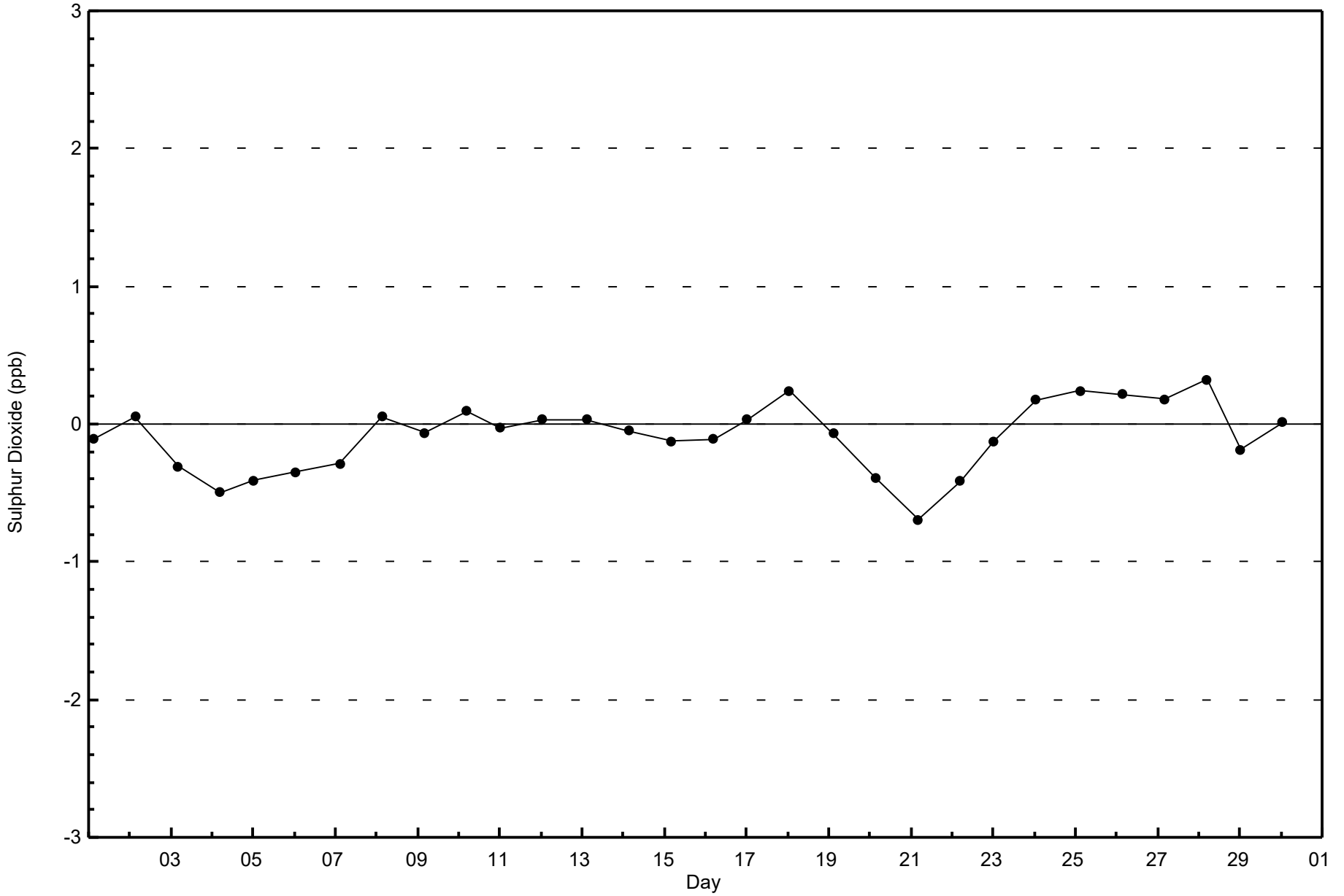
Total Number of Hours: 720

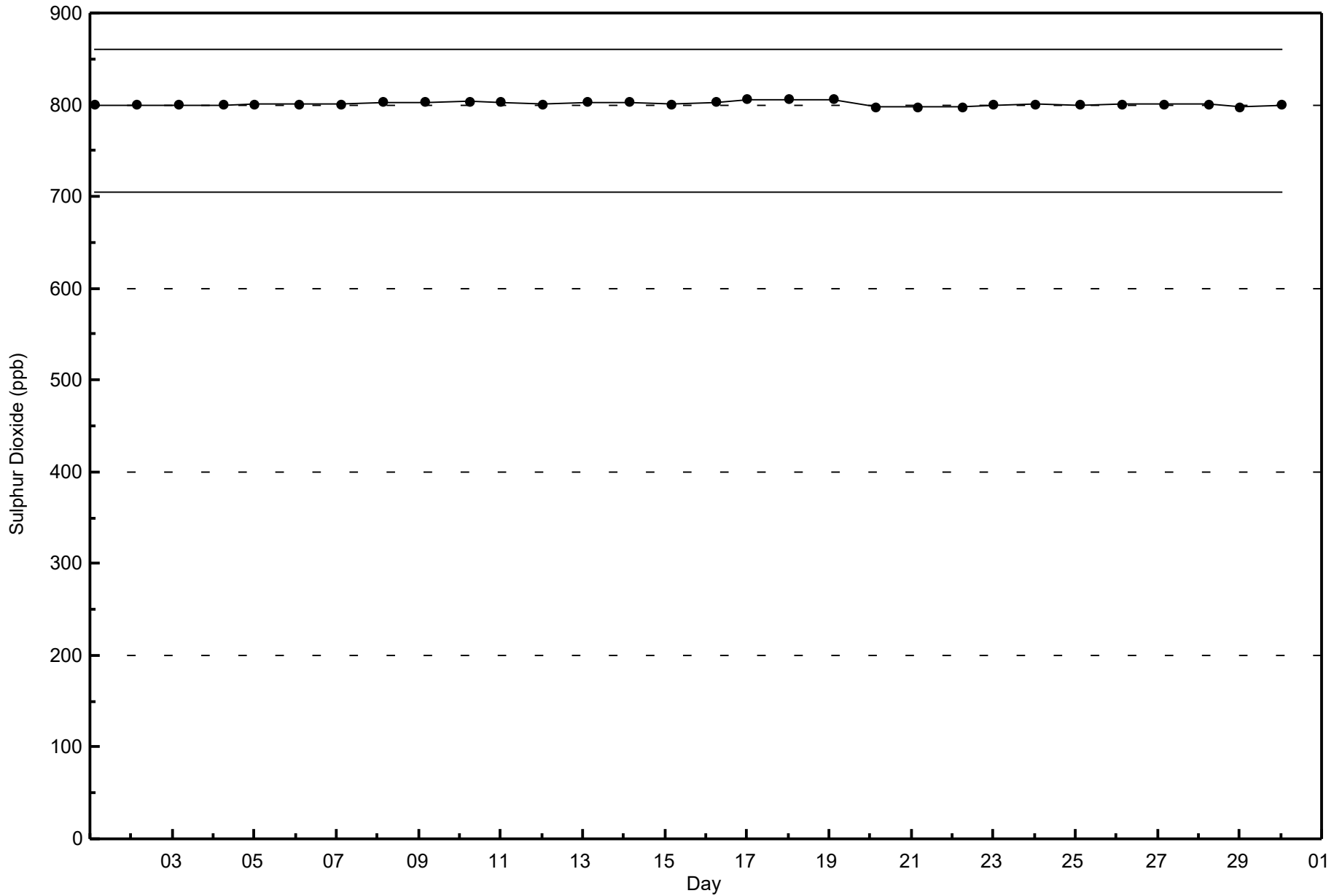


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Fort McKay South









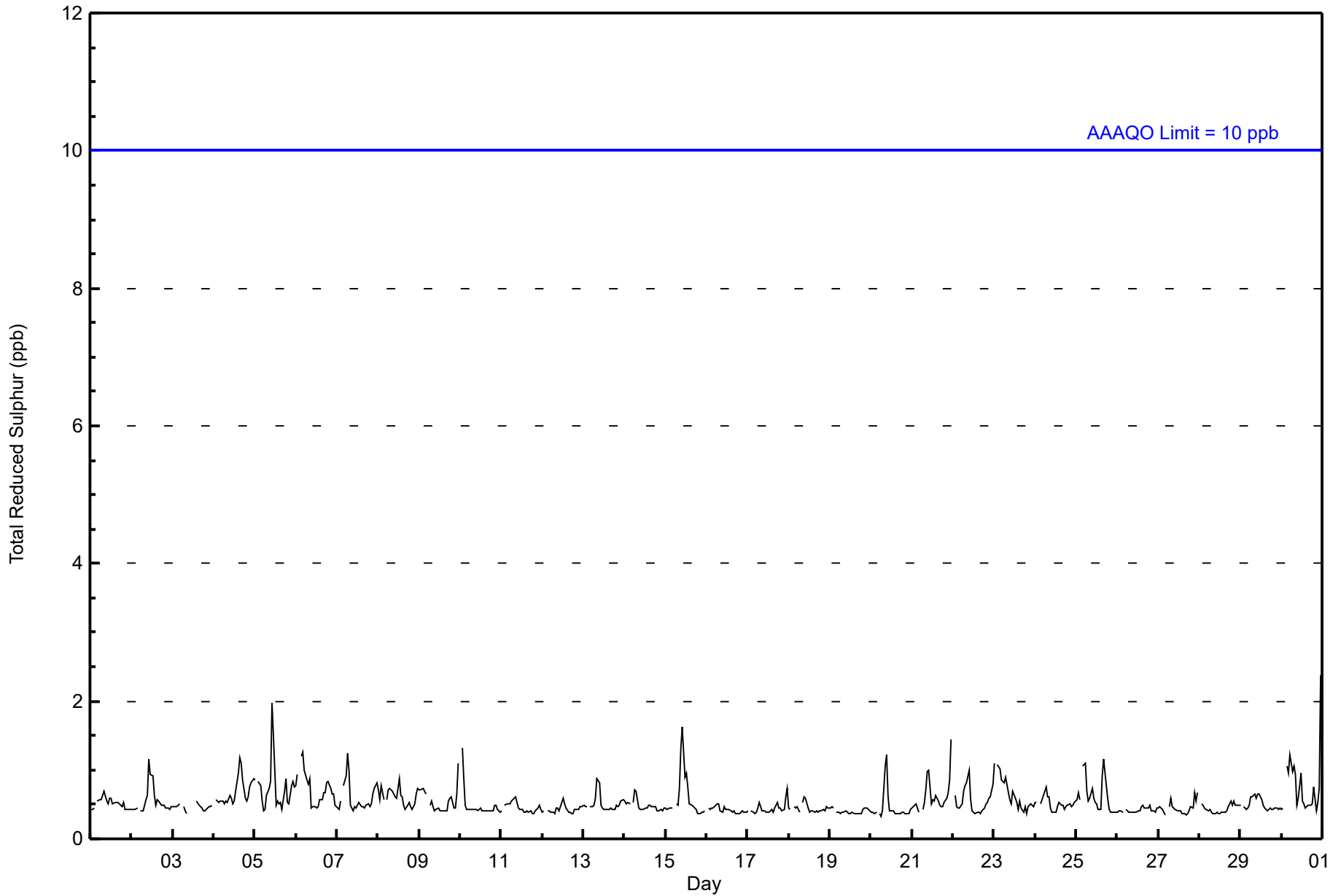
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:																720				
Maximum Value: 2.4 ppb on May 1 00:00		Maximum Daily Average: 0.8 ppb on Apr 30		Hours of Data:																684						
Minimum Value: 0.3 ppb on Apr 20 07:00		Minimum Daily Average: 0.4 ppb on Apr 19		Hours of Missing Data:																36						
Maximum Diurnal Average: 0.6 ppb at hour 24		Minimum Diurnal Average: 0.5 ppb at hour 21		Hours of Calibration:																35						
Monthly Average: 0.54 ppb		Percentiles: P ₁ = 0.4 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.5 Q ₃ = 0.6 P ₉₀ = 0.8 P ₉₉ = 1.3		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-Apr	0.4	0.4	0.4	Z	0.6	0.6	0.6	0.6	0.7	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.7
2-Apr	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.6	0.6	1.2	0.9	0.9	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.6	1.2
3-Apr	0.5	0.5	0.5	0.5	0.5	Z	0.5	0.4	0.4	C	C	C	C	C	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	
4-Apr	Z	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.7	1.0	1.2	1.1	0.9	0.6	0.6	0.6	0.7	0.8	0.9	
5-Apr	0.9	Z	0.8	0.8	0.5	0.4	0.4	0.6	0.7	0.8	2.0	1.5	0.5	0.5	0.5	0.5	0.4	0.7	0.9	0.5	0.5	0.8	0.8	0.7	2.0	
6-Apr	0.8	0.9	Z	1.2	1.3	1.0	0.8	0.8	0.9	0.4	0.5	0.5	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.5	1.3	
7-Apr	0.5	0.4	0.6	Z	0.8	0.9	1.2	1.0	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	0.7	0.7	0.8	1.2	
8-Apr	0.7	0.6	0.8	0.6	Z	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.9	0.6	0.6	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.6	0.7	0.9	
9-Apr	0.7	0.7	0.7	0.7	0.6	Z	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.5	0.4	0.6	1.1	1.1	
10-Apr	Z	1.3	0.9	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	0.4	0.4	1.3	
11-Apr	0.4	Z	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.6	
12-Apr	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	
13-Apr	0.5	0.5	0.5	Z	0.5	0.5	0.5	0.6	0.9	0.8	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.9	
14-Apr	0.5	0.5	0.5	0.5	Z	0.5	0.7	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.7	
15-Apr	0.5	0.4	0.5	0.4	0.5	Z	0.5	0.5	0.7	1.3	1.6	0.9	1.0	0.7	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.6	
16-Apr	Z	0.5	0.4	0.5	0.4	0.5	0.5	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	0.4	0.4	0.5	
17-Apr	0.4	Z	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	0.5	0.5	0.5	0.4	0.4	0.4	0.6	0.7	0.7	
18-Apr	0.5	0.4	Z	0.5	0.4	0.5	0.4	PF	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	
19-Apr	0.4	0.5	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	0.5	
20-Apr	0.4	0.4	0.4	0.4	Z	0.4	0.3	0.4	1.1	1.2	0.6	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	1.2	
21-Apr	0.4	0.5	0.5	0.5	0.4	Z	0.4	0.5	0.7	1.0	1.0	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8	1.4	1.4	
22-Apr	Z	0.6	0.5	0.4	0.4	0.5	0.7	0.8	0.8	1.0	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.8	1.0	
23-Apr	1.1	Z	1.1	1.0	0.9	0.8	0.8	0.9	0.7	0.6	0.5	0.7	0.6	0.5	0.4	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.5	1.1	
24-Apr	0.5	0.5	Z	0.5	0.6	0.6	0.8	0.6	0.6	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.8	
25-Apr	0.6	0.7	0.6	Z	1.1	1.1	0.7	0.5	0.6	0.7	0.6	0.5	0.5	0.4	0.4	0.9	1.2	1.0	0.6	0.4	0.4	0.4	0.4	0.4	1.2	
26-Apr	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	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.5	
27-Apr	0.5	0.5	0.4	0.4	0.4	Z	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.7	0.5	0.7	0.7	
28-Apr	Z	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	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.6	
29-Apr	0.5	Z	0.5	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	
30-Apr	0.4	0.5	Z	1.1	1.0	1.2	1.0	1.1	0.9	0.5	0.6	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.4	0.5	0.7	2.4	
																								Diurnal Average		
																								Diurnal Maximum		
																								0.5 0.5 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.6 0.6		
																								1.1 1.3 1.1 1.2 1.3 1.2 1.2 1.1 1.1 1.3 2.0 1.5 1.0 0.7 1.0 1.2 1.2 1.0 0.9 0.8 0.7 0.8 0.8 2.4		
Z - zerspan 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
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	84	39	21	8	14	49	70	116	71	35	31	32	19	22	28	45	684
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
Totals	84	39	21	8	14	49	70	116	71	35	31	32	19	22	28	45	684

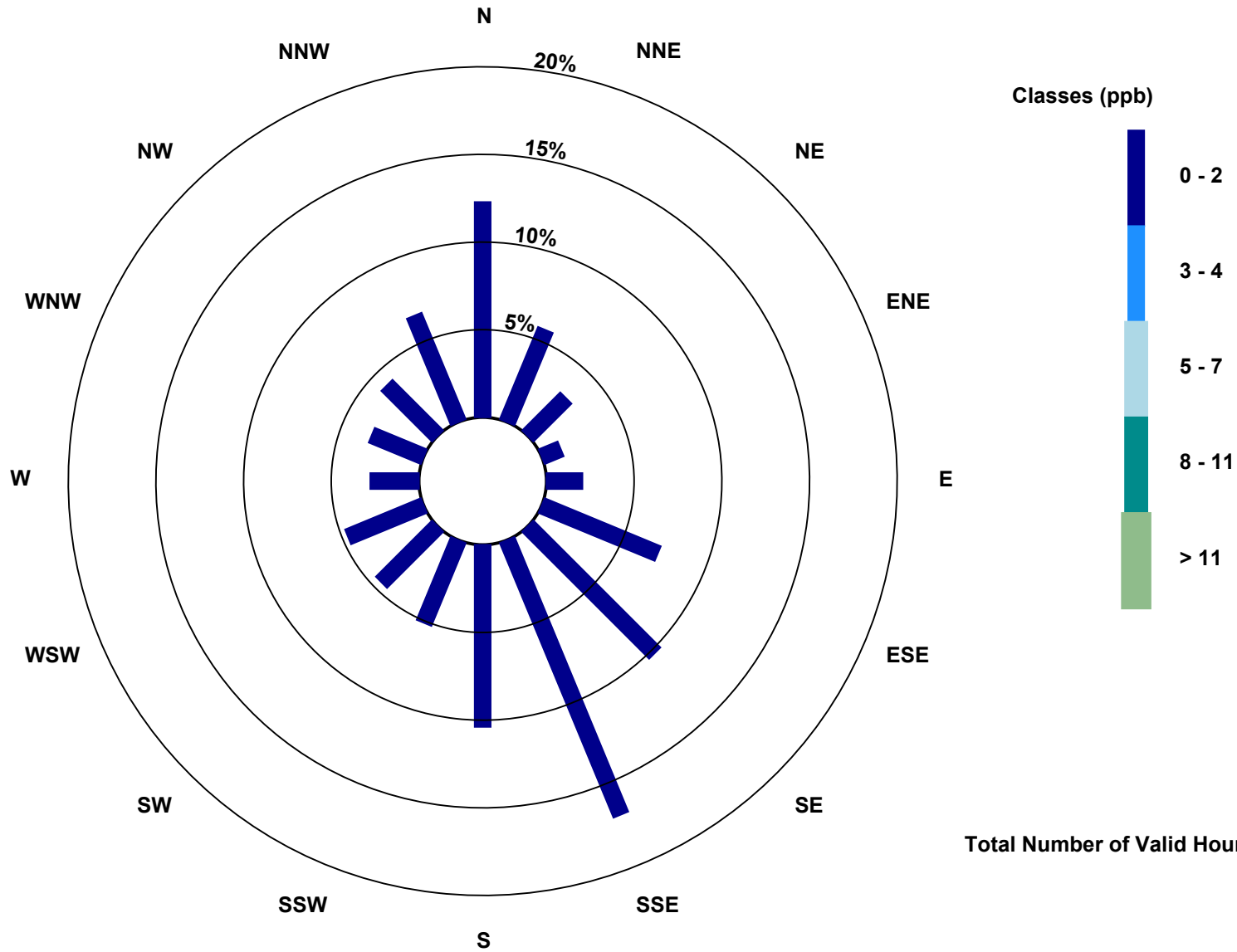
Total Number of Valid Hours: 684

Total Number of Hours: 720

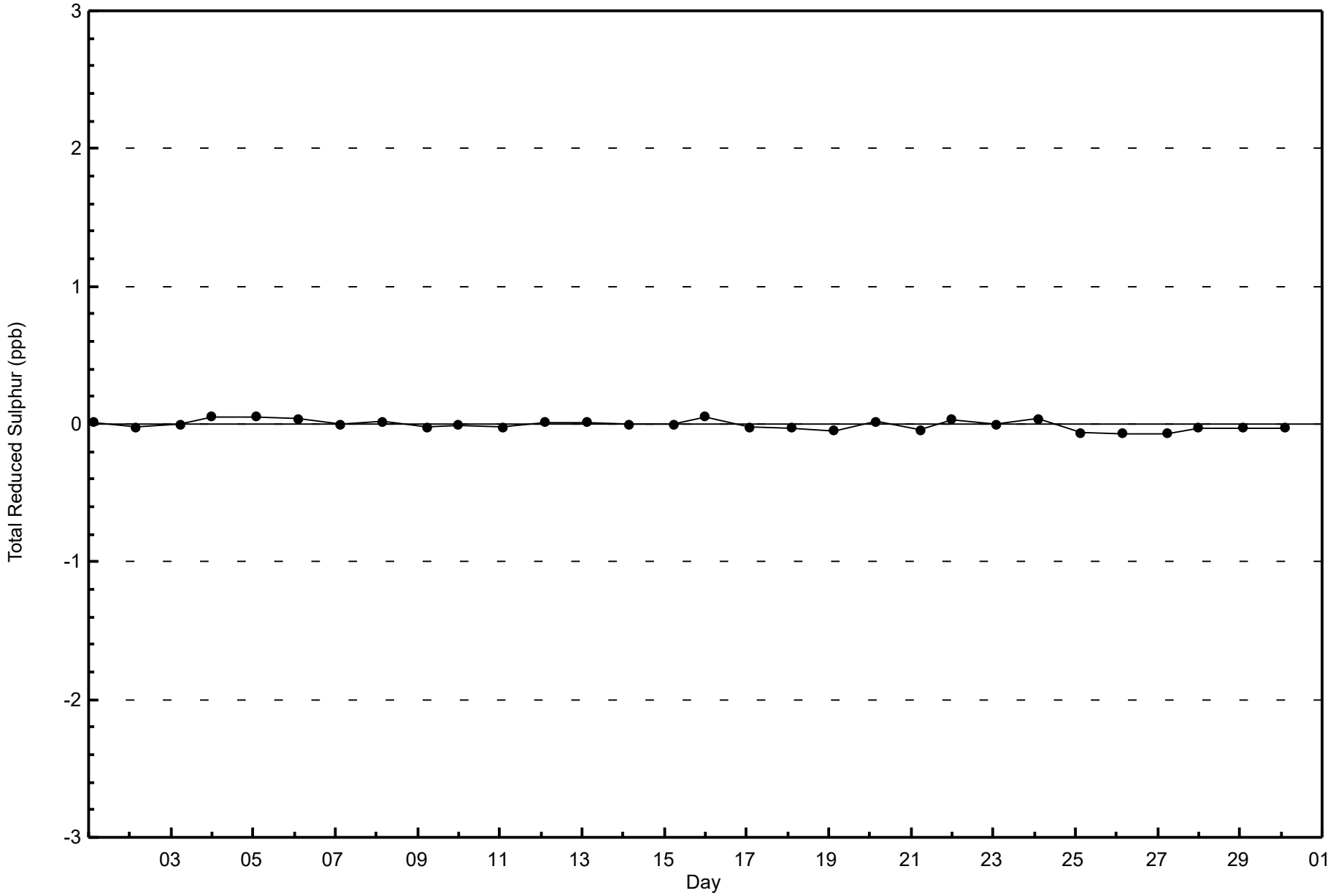


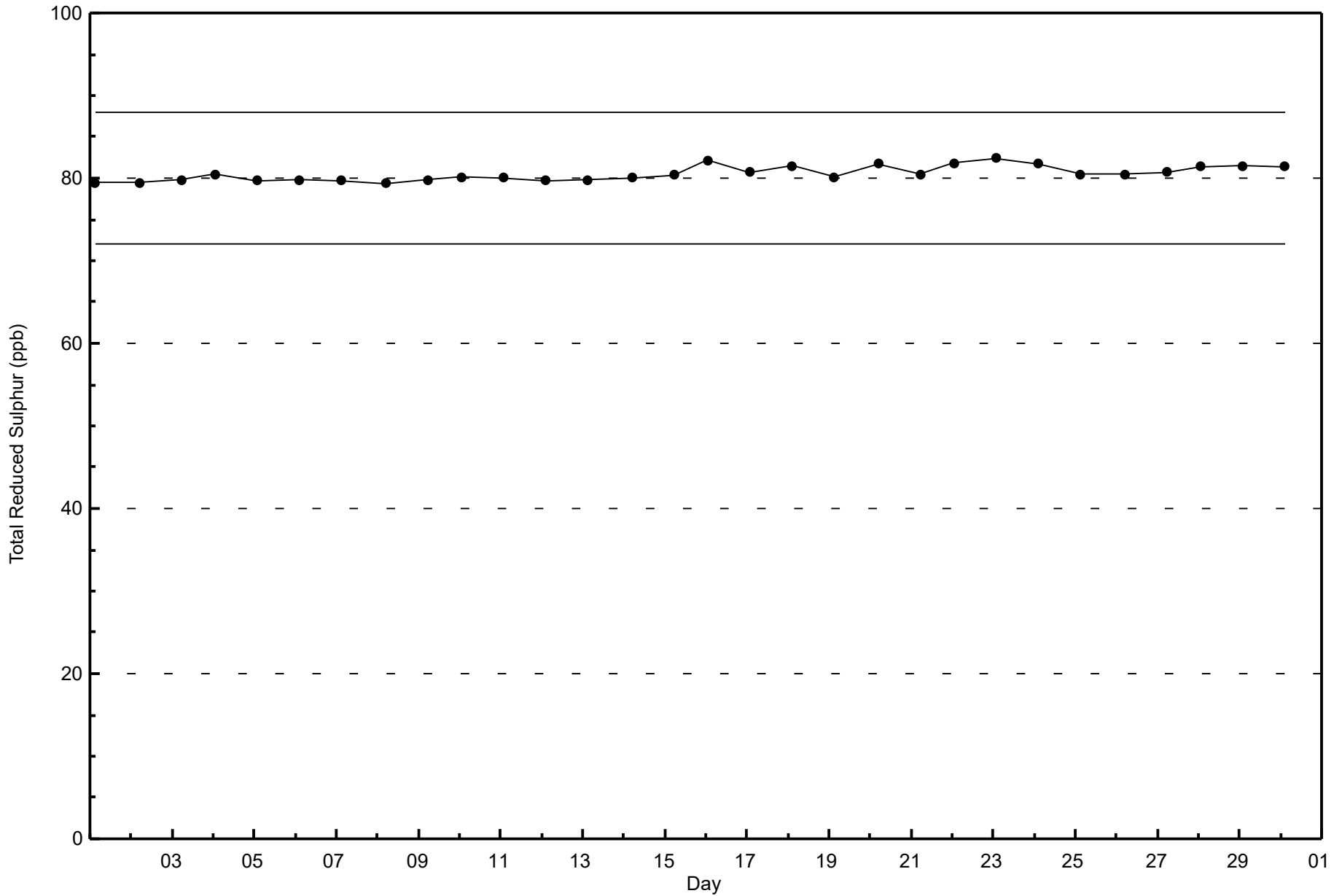
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Fort McKay South



Total Number of Valid Hours: 684







Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

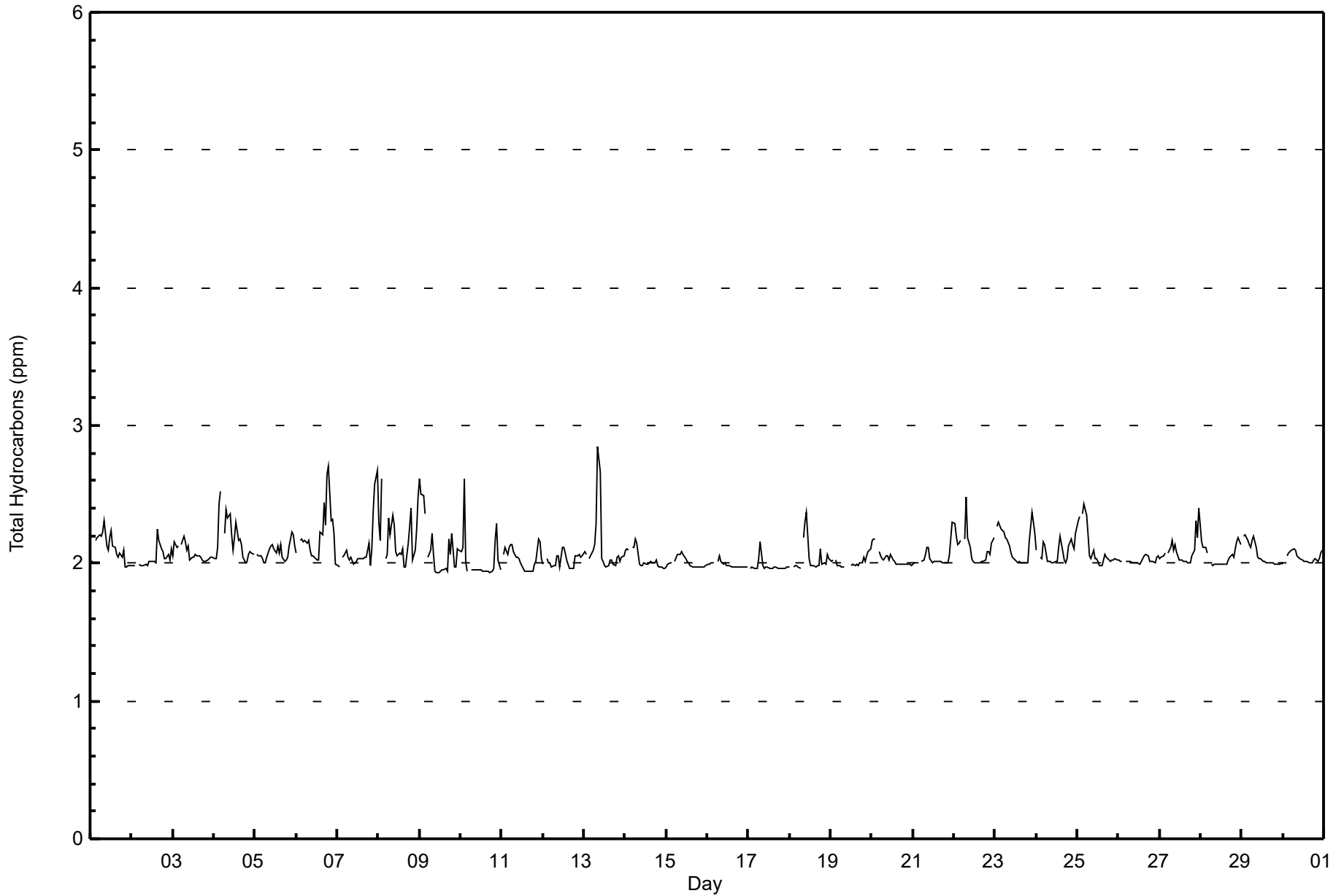
Fort McKay South - April 2023

Maximum Value: 2.8 ppm on Apr 13 09:00		Maximum Daily Average: 2.2 ppm on Apr 6		Hours in Service: 720																						
Minimum Value: 1.9 ppm on Apr 9 12:00		Minimum Daily Average: 2.0 ppm on Apr 17		Hours of Data: 686																						
Maximum Diurnal Average: 2.1 ppm at hour 3		Minimum Diurnal Average: 2.0 ppm at hour 13		Hours of Missing Data: 34																						
Monthly Average: 2.07 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.6		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-Apr	2.0	2.0	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.3
2-Apr	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	2.2	2.2	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.0	2.1	2.2
3-Apr	2.1	2.2	2.1	2.1	Z	2.1	2.2	2.2	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	2.0	2.0	2.0	2.0	2.2
4-Apr	2.0	2.0	2.1	2.4	2.5	Z	2.2	2.4	2.3	2.4	2.2	2.1	2.2	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.5
5-Apr	Z	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	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.2
6-Apr	2.1	Z	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.2	2.2	2.4	2.3	2.6	2.7	2.3	2.3	2.2	2.0	2.2	2.7
7-Apr	2.0	2.0	Z	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	2.1	2.0	2.1	2.4	2.6	2.7	2.1	2.1	2.7
8-Apr	2.3	2.2	2.6	Z	2.0	2.1	2.3	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.3	2.4	2.0	2.1	2.2	2.5	2.2	2.6
9-Apr	2.6	2.5	2.5	2.4	Z	2.0	2.1	2.2	2.1	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.2	2.1	2.2	2.0	2.0	2.1	2.1	2.1	2.6
10-Apr	2.1	2.1	2.6	2.0	1.9	Z	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.3	2.0	2.0	2.0	2.6
11-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.2	2.2	2.0	2.0	2.2
12-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.0	2.1
13-Apr	2.1	2.1	Z	2.0	2.1	2.1	2.1	2.3	2.8	2.7	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	2.8
14-Apr	2.1	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
15-Apr	2.0	2.0	2.0	2.0	Z	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	2.0	2.0	2.0	2.0	2.1
16-Apr	2.0	2.0	2.0	2.0	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
17-Apr	Z	2.0	2.0	2.0	2.0	2.0	2.0	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	2.0	2.0	2.2
18-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	PF	2.2	2.3	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.4
19-Apr	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	C	C	C	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	2.1
20-Apr	2.2	2.2	2.2	Z	2.1	2.1	2.0	2.0	2.1	2.1	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	2.2
21-Apr	2.0	2.0	2.0	2.0	Z	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	2.0	2.1	2.2	2.3	2.0	2.0	2.3
22-Apr	2.3	2.2	2.1	2.1	2.2	Z	2.2	2.5	2.2	2.1	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	2.5
23-Apr	Z	2.3	2.3	2.2	2.2	2.2	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	2.2	2.4	2.3	2.2	2.1	2.1	2.4
24-Apr	2.1	Z	2.0	2.0	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.2
25-Apr	2.3	2.3	Z	2.4	2.4	2.4	2.2	2.1	2.0	2.1	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	2.1	2.1	2.4
26-Apr	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	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1
27-Apr	2.0	2.0	2.1	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.2	2.4	2.1	2.1	2.4
28-Apr	2.2	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	2.1	2.0	2.1	2.2	2.2	2.1	2.1	2.2
29-Apr	Z	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
30-Apr	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration PF - Power Failure																										



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Fort McKay South - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort McKay South - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	403	58.75	58.75
2.1 - 3.0	283	41.25	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Fort McKay South - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	37	25	18	5	14	39	53	71	25	11	13	22	14	15	19	22	403
2.1 - 3.0	48	17	4	3	2	7	17	46	45	27	16	12	4	6	8	21	283
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
Totals	85	42	22	8	16	46	70	117	70	38	29	34	18	21	27	43	686

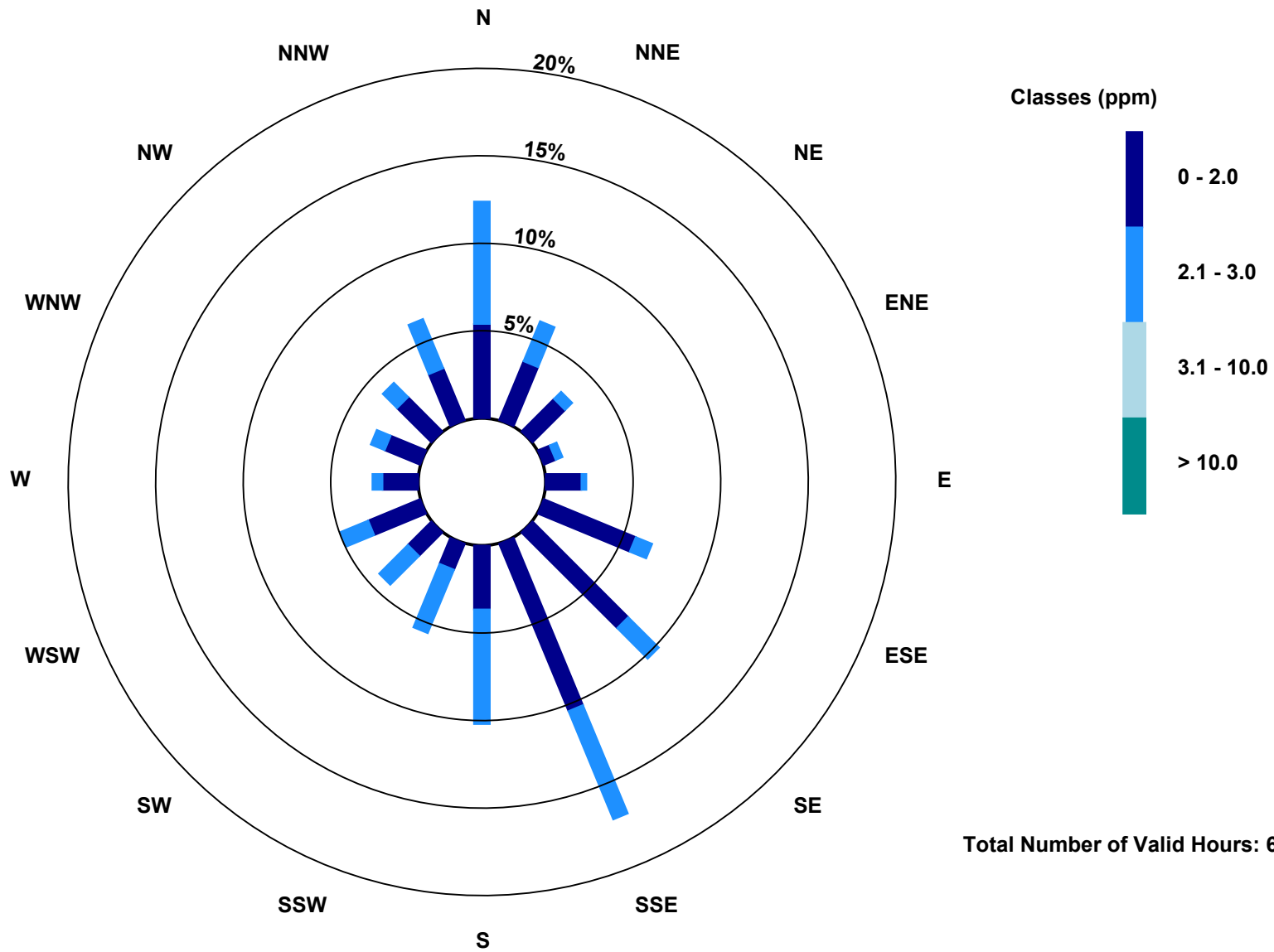
Total Number of Valid Hours: 686

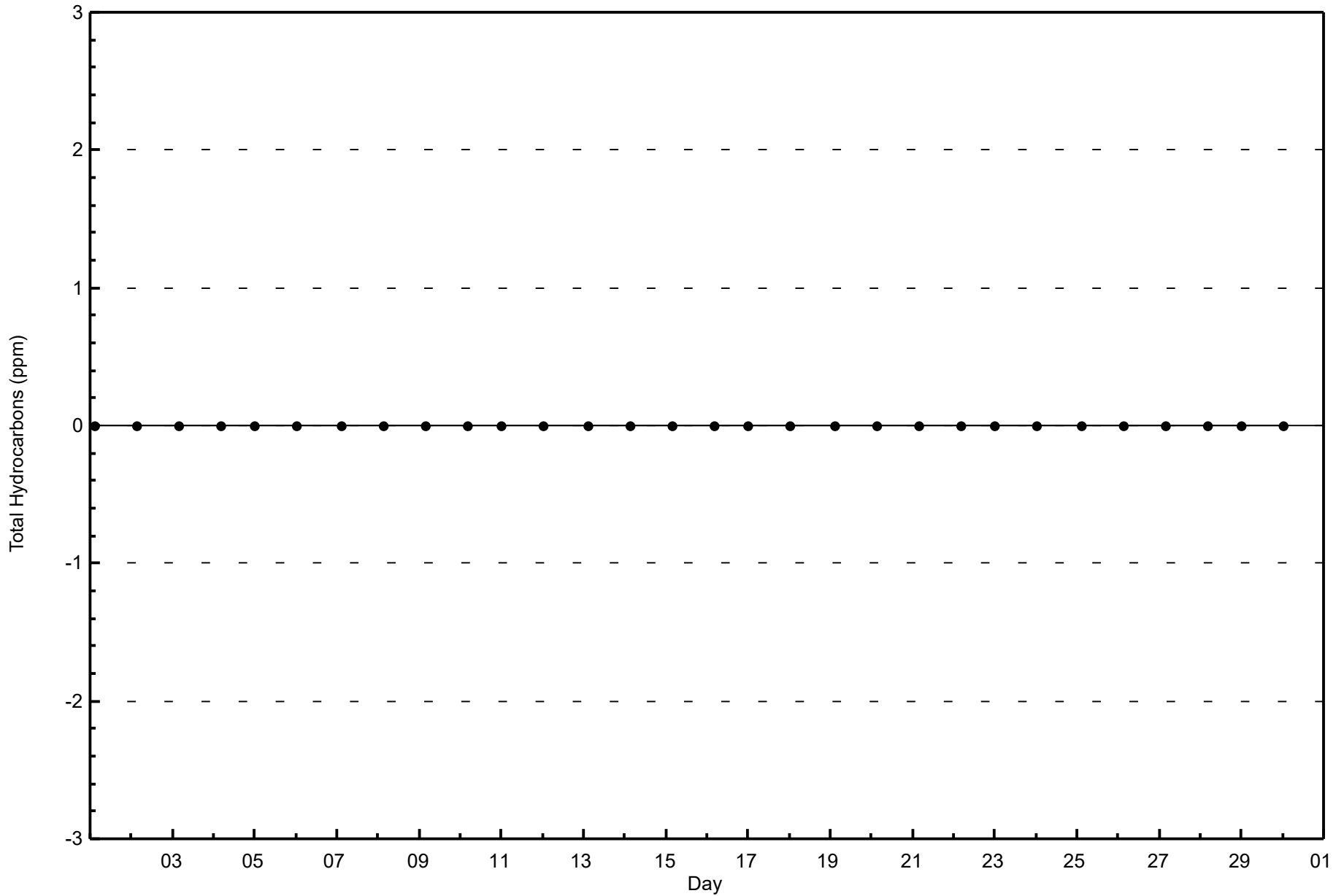
Total Number of Hours: 720

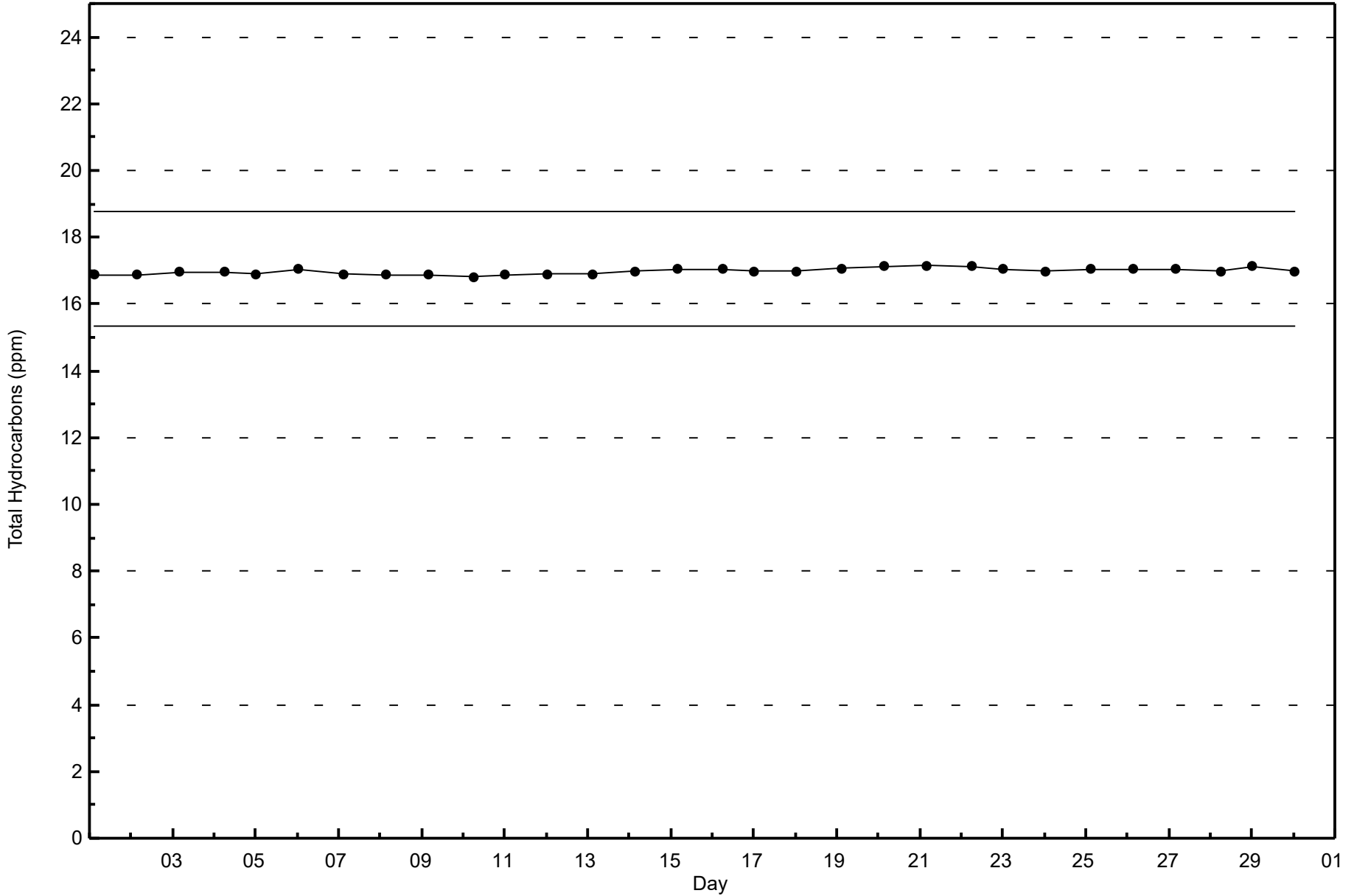


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Fort McKay South









Maximum Value: 0.461 ppm on Apr 6 20:00	Maximum Daily Average: 0.089 ppm on Apr 6	Hours in Service: 720
Minimum Value: 0.000 ppm on Apr 1 01:00	Minimum Daily Average: 0.000 ppm on Apr 1	Hours of Data: 686
Maximum Diurnal Average: 0.017 ppm at hour 20	Minimum Diurnal Average: 0.000 ppm at hour 4	Hours of Missing Data: 34
Monthly Average: 0.007 ppm	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.2	Hours of Calibration: 33
		Percent Operational Time: 99.9

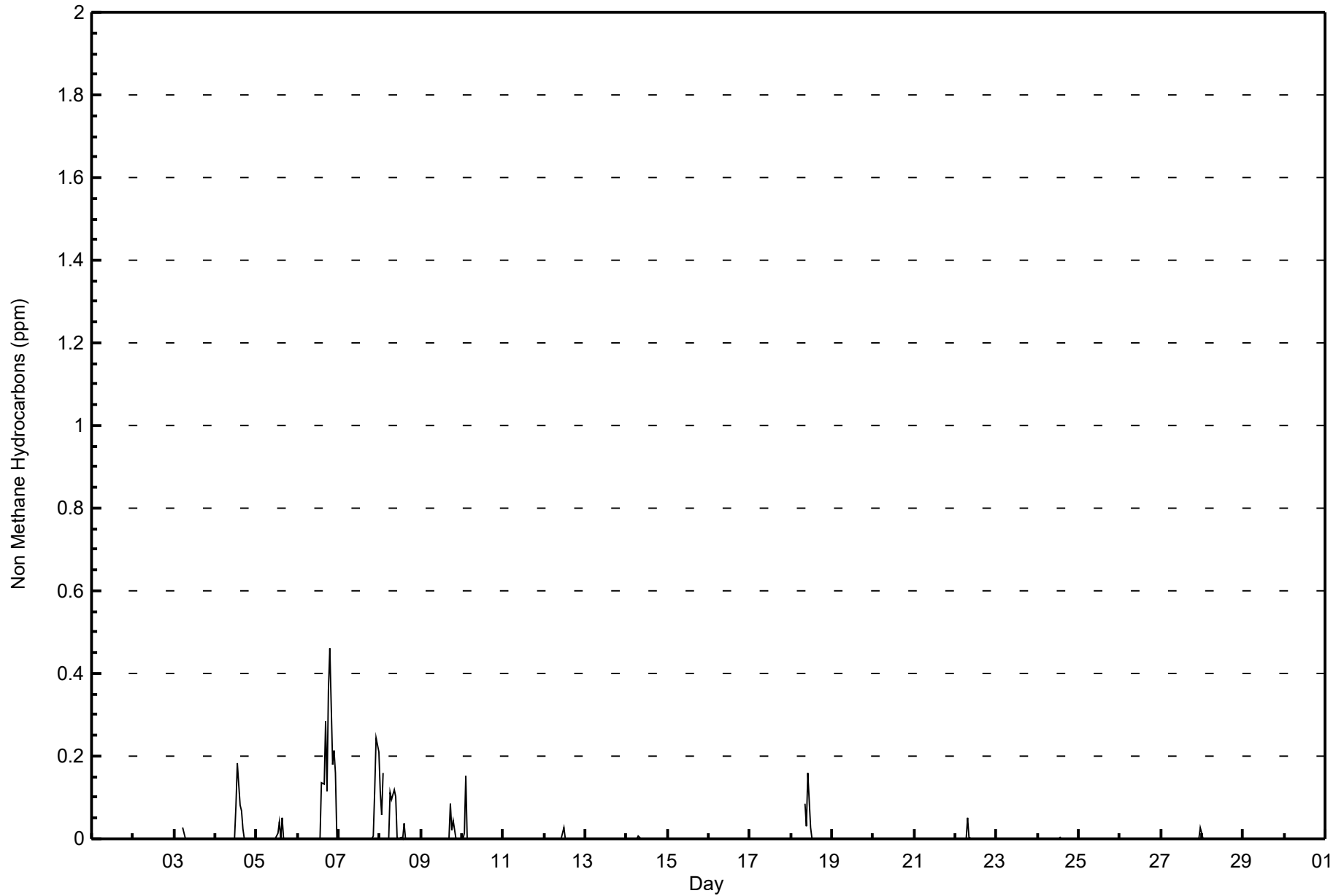
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24													
1-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
2-Apr	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	0.000	0.000	0.000	0.000	
3-Apr	0.000	0.000	0.000	0.000	Z	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.078	0.182	0.080	0.069	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.042	0.001	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
6-Apr	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	0.137	0.133	0.284	0.115	0.361	0.461	0.179	0.213	0.159	0.004	0.089	0.461	0.025	0.245	0.035	0.159	0.006	0.085	0.007	0.151	0.000	0.000	
7-Apr	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	0.008	0.115	0.245	0.209	0.000	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-Apr	0.112	0.059	0.159	Z	0.000	0.000	0.110	0.096	0.119	0.102	0.003	0.000	0.004	0.000	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9-Apr	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	0.085	0.019	0.044	0.000	0.000	0.000	0.000	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-Apr	0.000	0.014	0.151	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	0.000	0.000
11-Apr	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	0.000	0.000	0.000	0.000	0.000
12-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13-Apr	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	0.000	0.000	0.000	0.000	0.000
14-Apr	0.000	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	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	0.000	0.000	0.000	0.000	0.000
16-Apr	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	0.000	0.000	0.000	0.000	0.000
17-Apr	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	0.000	0.000	0.000	0.000	0.000
18-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	PF	0.083	0.029	0.158	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	0.000	0.000	Z	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20-Apr	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	0.000	0.000	0.000	0.000	0.000
21-Apr	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	0.000	0.000	0.000	0.000	0.000
22-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.050	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	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-Apr	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	0.000	0.000	0.000	0.000	0.000
24-Apr	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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-Apr	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	0.000	0.000	0.000	0.000	0.000
26-Apr	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	0.000	0.000	0.000	0.000	0.000
27-Apr	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	0.000	0.000	0.000	0.000	0.000
28-Apr	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	0.000	0.000	0.000	0.000	0.000
29-Apr	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	0.000	0.000	0.000	0.000	0.000
30-Apr	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	0.000	0.000	0.000	0.000	0.000

0.004	0.003	0.012	0.000	0.000	0.001	0.004	0.005	0.007	0.005	0.006	0.002	0.003	0.008	0.008	0.008	0.010	0.007	0.013
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Wood Buffalo Environmental Association
Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay South - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay South - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	643	93.73	93.73
0.006 - 0.05	16	2.33	96.06
0.06 - 0.1	15	2.19	98.25
> 0.1	12	1.75	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



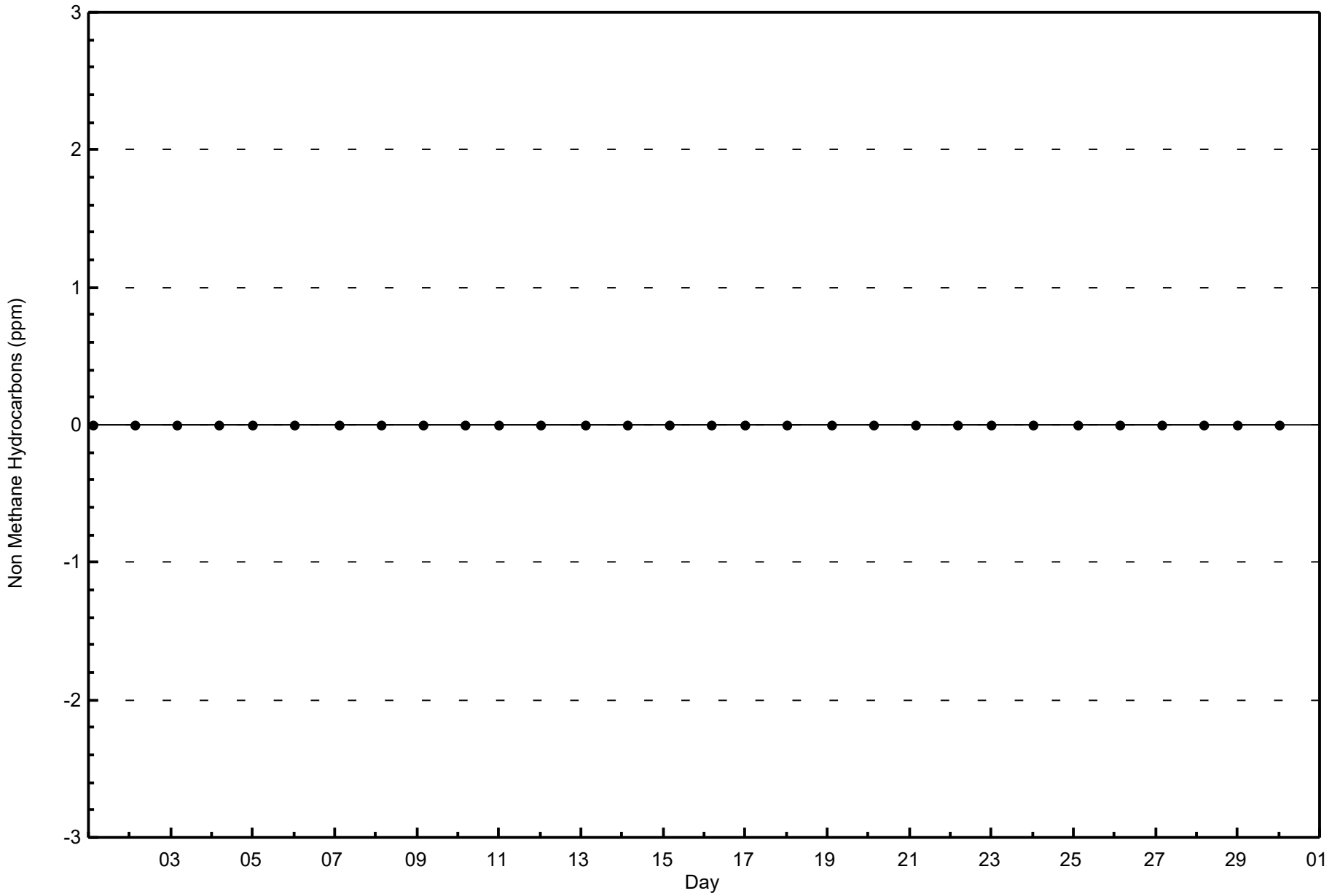
Wood Buffalo Environmental Association
Frequency Distribution

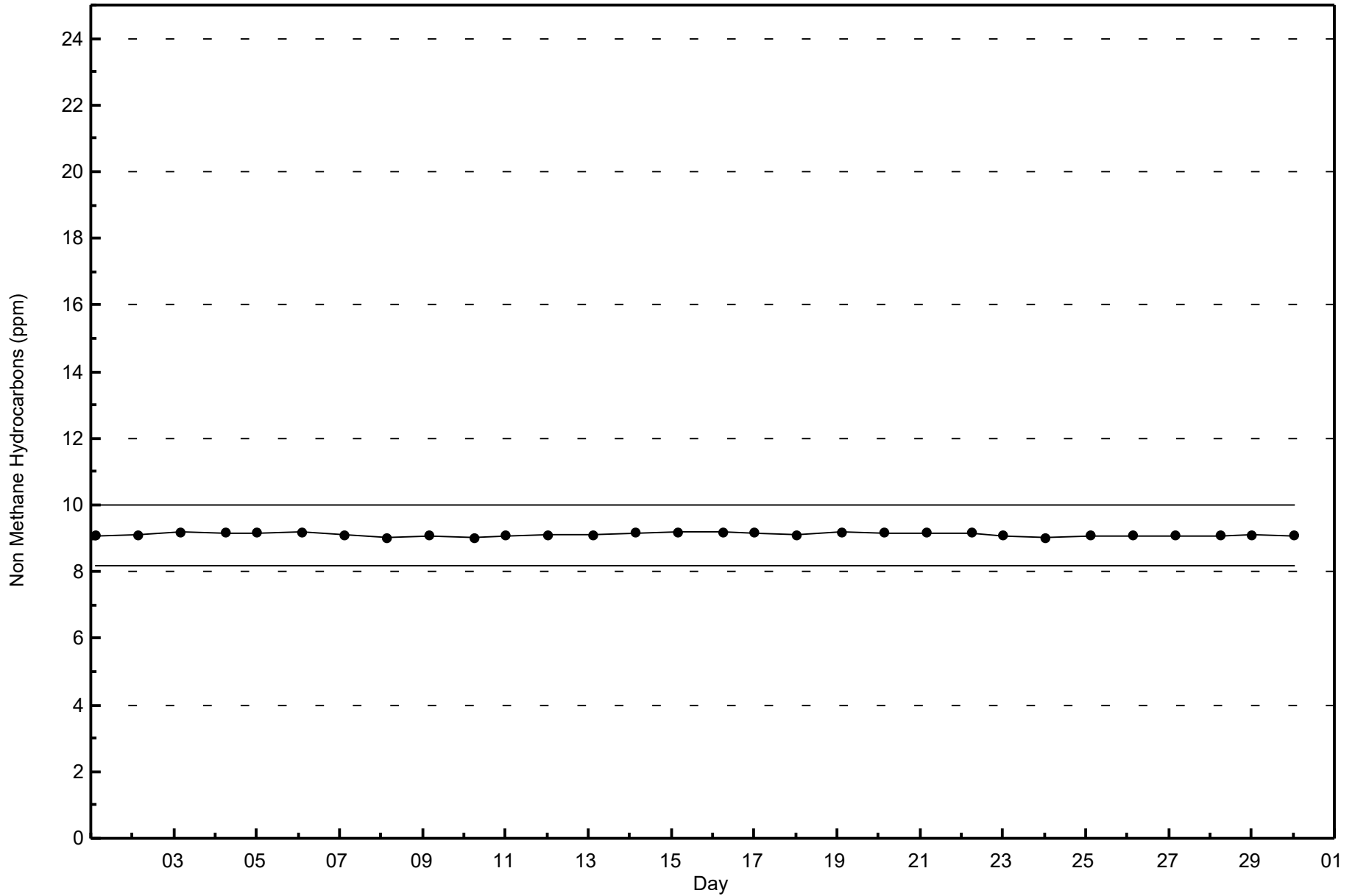
Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay South - April 2023

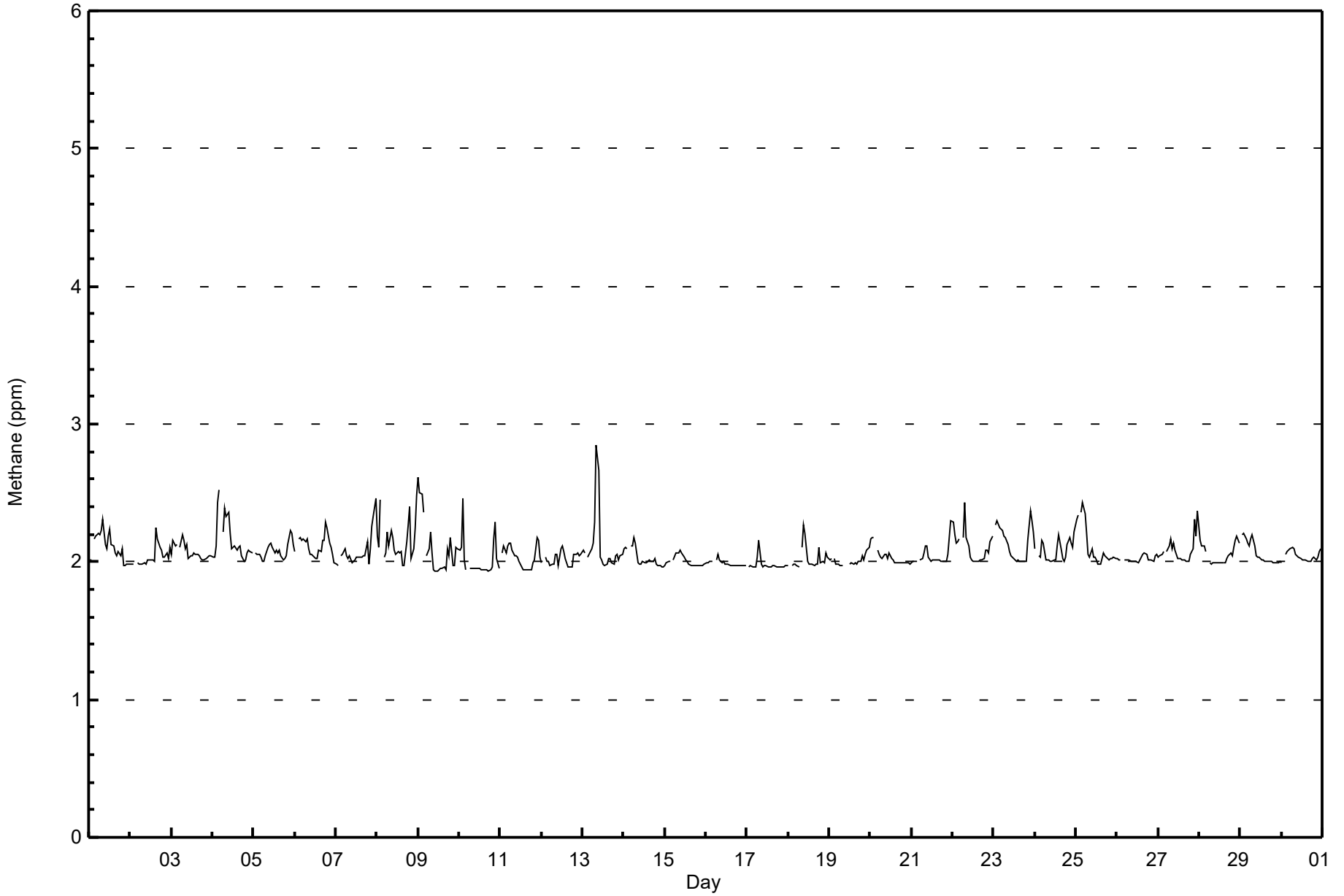
Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	80	41	21	8	16	46	69	105	49	36	29	34	18	21	27	43	643
0.006 - 0.05	3	1	1	0	0	0	1	3	5	2	0	0	0	0	0	0	16
0.06 - 0.1	1	0	0	0	0	0	0	4	10	0	0	0	0	0	0	0	15
> 0.1	1	0	0	0	0	0	0	5	6	0	0	0	0	0	0	0	12
Totals	85	42	22	8	16	46	70	117	70	38	29	34	18	21	27	43	686

Total Number of Valid Hours: 686

Total Number of Hours: 720









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Fort McKay South - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	404	58.89	58.89
2.1 - 3.0	282	41.11	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



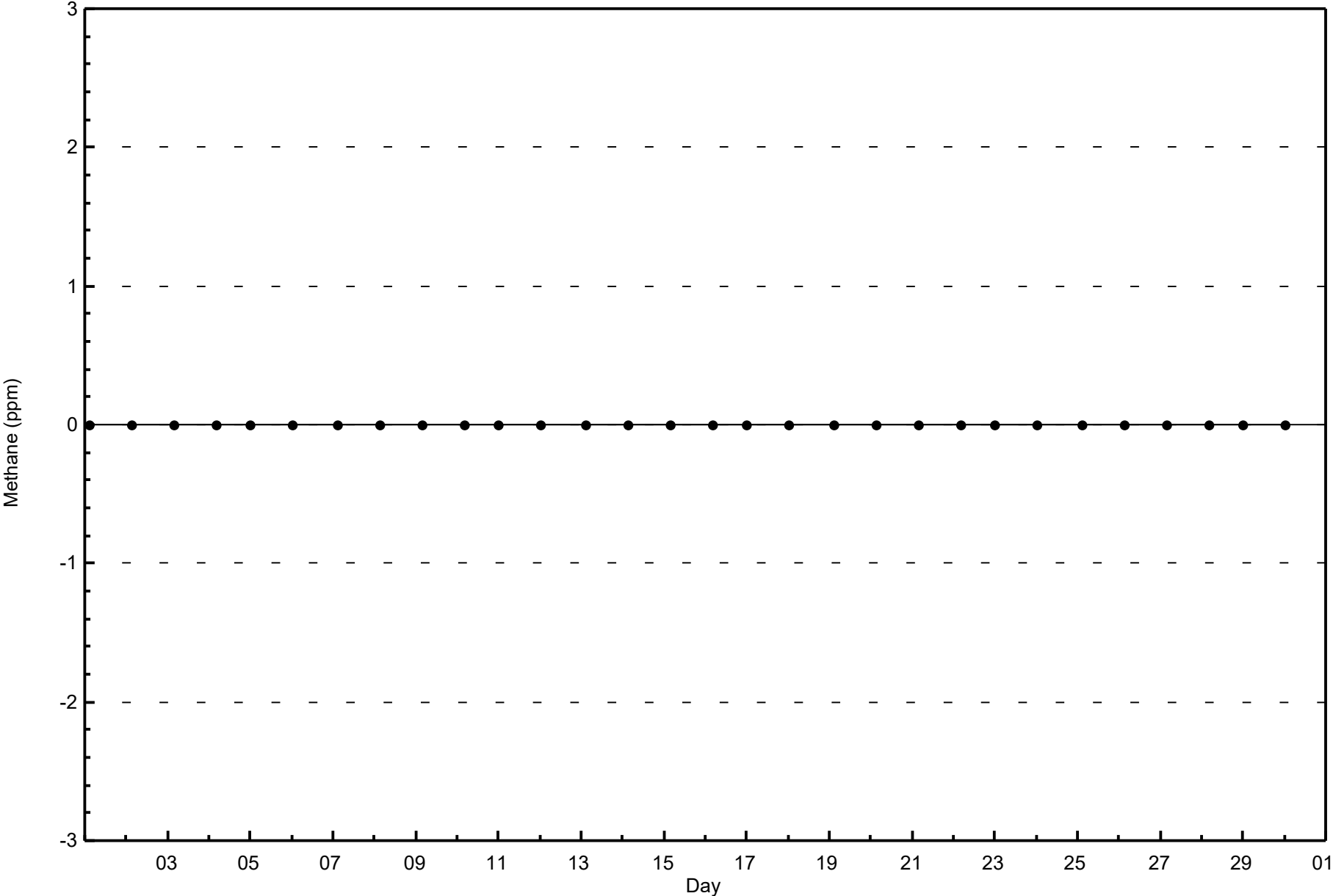
Wood Buffalo Environmental Association
Frequency Distribution

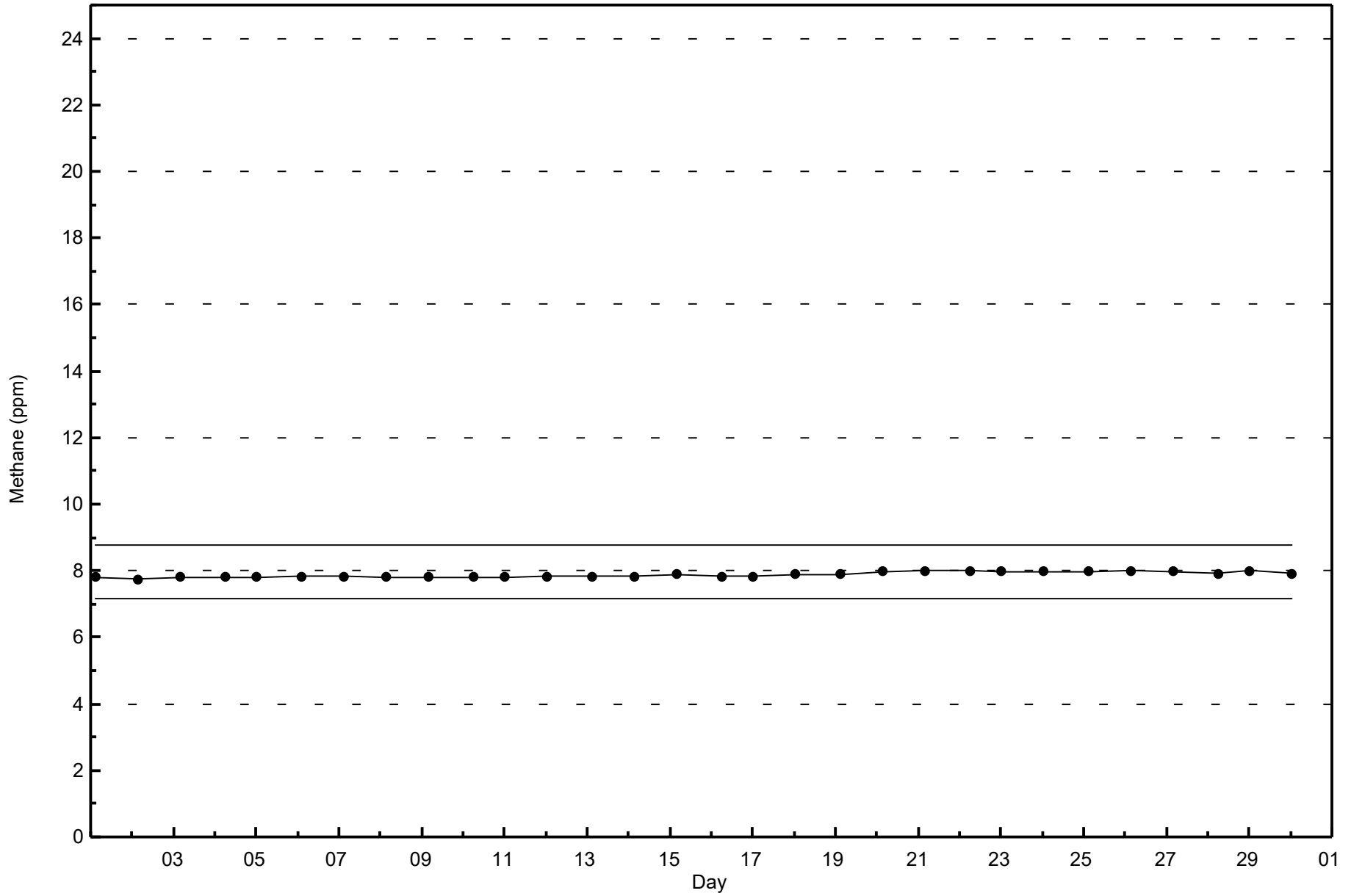
Methane (CH₄) - ppm
Fort McKay South - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	37	25	18	5	14	39	53	71	26	11	13	22	14	15	19	22	404
2.1 - 3.0	48	17	4	3	2	7	17	46	44	27	16	12	4	6	8	21	282
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
Totals	85	42	22	8	16	46	70	117	70	38	29	34	18	21	27	43	686

Total Number of Valid Hours: 686

Total Number of Hours: 720







Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Fort McKay South - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 50.5 ppb on Apr 7 15:00	Maximum Daily Average: 44.5 ppb on Apr 7		Hours of Data:	685
Minimum Value: 0.9 ppb on Apr 25 01:00	Minimum Daily Average: 22.3 ppb on Apr 4		Hours of Missing Data:	35
Maximum Diurnal Average: 40.7 ppb at hour 17	Minimum Diurnal Average: 15.0 ppb at hour 4		Hours of Calibration:	34
Monthly Average: 29.25 ppb	Percentiles: P ₁ = 1.5 P ₁₀ = 8.2 Q ₁ = 18.9 Median = 32.2 Q ₃ = 40.3 P ₉₀ = 46.1 P ₉₉ = 48.9		Percent Operational Time:	99.9

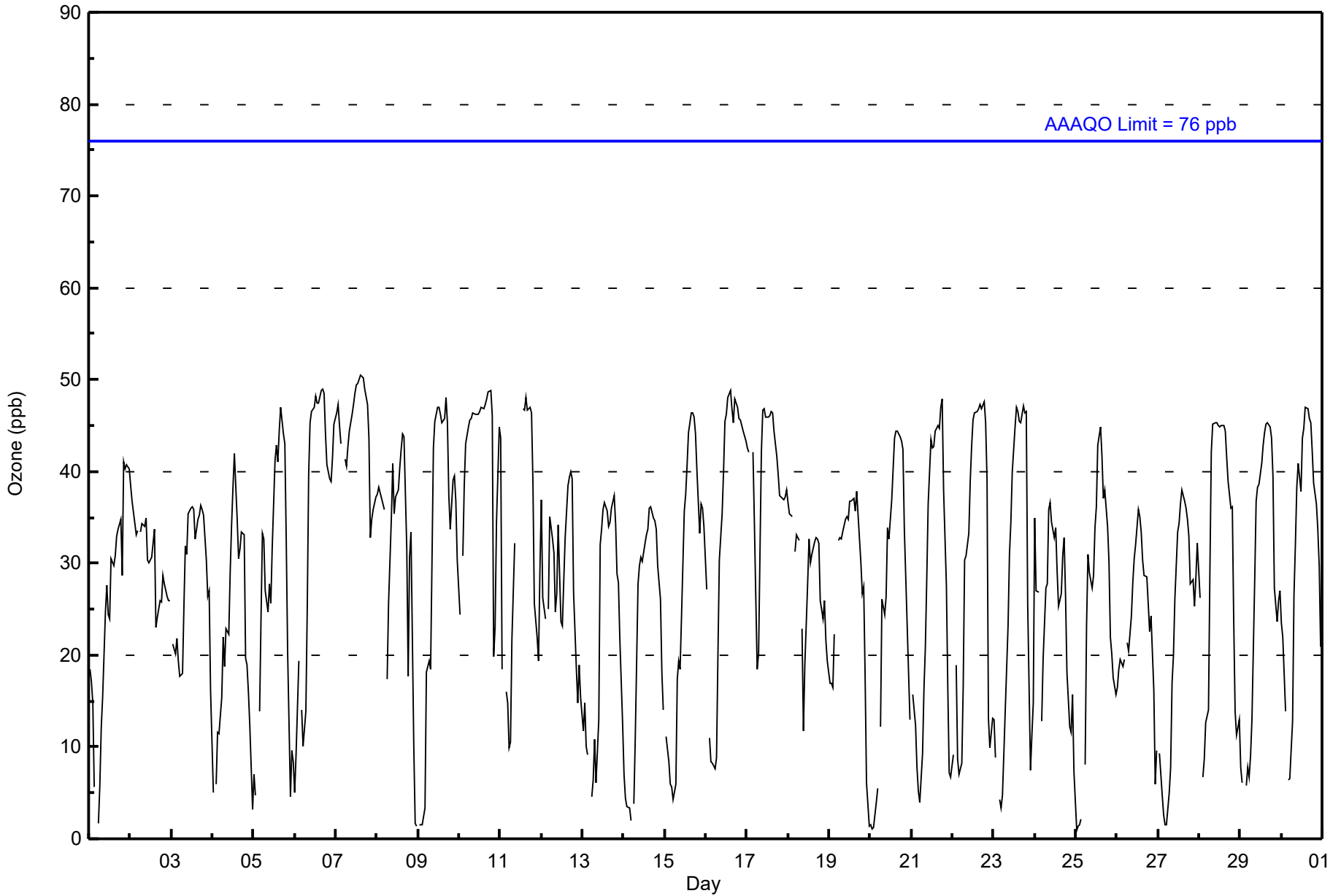
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	18.5	17.0	14.7	5.7	Z	1.7	5.7	12.1	15.4	24.7	27.6	24.5	24.0	30.5	29.7	30.8	33.0	33.7	34.8	28.7	41.0	40.2	40.8	40.2	25.0	41.0																							
2-Apr	38.5	36.8	35.5	33.1	33.5	Z	33.4	34.3	34.1	34.9	30.4	30.0	30.6	32.2	33.8	23.0	24.2	26.0	25.8	28.6	27.7	26.4	25.9	25.9	30.6	38.5																							
3-Apr	Z	21.2	20.1	21.8	19.3	17.7	18.0	25.3	31.9	30.9	35.4	36.1	36.1	35.8	32.6	34.8	35.2	36.3	35.9	35.2	30.4	26.3	27.0	16.1	28.7	36.3																							
4-Apr	5.0	Z	6.0	11.6	11.4	15.4	22.0	18.7	22.9	22.3	28.9	34.1	38.2	42.0	34.8	30.4	31.6	33.4	33.1	19.7	19.0	16.0	12.4	3.2	22.3	42.0																							
5-Apr	7.0	4.7	Z	13.9	23.9	33.3	32.7	27.0	24.7	27.8	25.6	31.7	41.2	42.8	41.1	44.4	47.0	44.1	42.9	32.4	20.3	4.6	9.6	8.3	27.4	47.0																							
6-Apr	5.1	9.2	19.3	Z	14.0	10.0	13.9	25.1	39.6	45.3	46.5	47.0	48.3	47.5	47.5	48.9	48.9	48.5	44.1	40.7	39.3	38.9	41.5	45.2	35.4	48.9																							
7-Apr	46.4	47.3	45.0	43.0	Z	41.3	40.5	42.8	44.4	46.2	47.2	48.5	49.4	49.6	50.5	50.3	50.2	49.0	47.2	43.6	32.9	34.7	35.9	37.2	44.5	50.5																							
8-Apr	37.5	38.2	37.6	36.4	35.9	Z	17.4	25.6	34.9	40.9	35.4	37.3	38.0	40.5	42.4	44.1	43.8	31.6	17.8	30.6	33.4	10.1	1.7	1.3	31.0	44.1																							
9-Apr	Z	1.6	1.5	2.4	3.3	18.2	19.4	18.4	30.4	42.5	45.5	47.0	46.9	46.3	45.2	45.8	48.1	45.2	37.4	33.7	39.0	39.5	36.7	30.4	31.5	48.1																							
10-Apr	24.4	Z	30.8	38.5	43.0	44.8	45.6	45.7	46.4	46.3	46.3	46.2	46.5	46.9	46.9	47.3	47.9	48.7	48.8	46.0	19.8	23.1	34.5	44.9	41.7	48.8																							
11-Apr	43.7	18.5	Z	16.0	14.8	9.9	10.5	21.7	32.2	C	C	C	C	46.8	46.7	48.0	46.7	47.0	46.3	38.9	25.6	21.9	19.4	29.2	30.7	48.0																							
12-Apr	36.9	26.3	23.9	Z	25.1	35.1	32.6	31.2	24.8	26.7	34.2	23.6	23.2	28.0	32.8	38.4	39.4	39.9	39.2	26.9	18.4	14.8	18.9	15.3	28.5	39.9																							
13-Apr	11.8	14.8	10.0	9.1	Z	4.5	6.4	10.8	6.1	13.0	32.1	33.6	35.9	36.6	35.7	33.9	34.4	36.0	37.4	34.3	28.8	27.9	21.8	12.5	22.9	37.4																							
14-Apr	6.9	4.5	3.5	3.4	1.9	Z	3.9	10.8	27.8	29.8	30.6	30.2	32.2	33.2	33.8	36.1	36.2	34.9	34.6	33.7	29.7	26.1	18.1	14.0	22.4	36.2																							
15-Apr	Z	11.1	8.4	5.9	5.6	4.2	6.0	17.4	19.4	18.5	24.1	35.8	37.5	40.7	44.3	46.4	46.4	46.0	44.1	40.1	33.3	36.5	36.0	33.9	27.9	46.4																							
16-Apr	27.1	Z	11.0	8.4	8.2	7.7	8.9	20.0	30.3	35.4	40.0	45.4	46.2	48.1	48.7	46.9	45.3	47.8	47.0	45.7	45.6	45.0	44.3	43.4	34.6	48.7																							
17-Apr	42.6	42.1	Z	42.1	34.5	26.4	18.4	20.1	42.0	46.6	46.8	45.9	45.9	46.1	46.6	46.4	44.4	41.6	39.7	37.4	37.2	36.8	37.2	37.9	39.3	46.8																							
18-Apr	36.5	35.4	35.0	Z	31.3	33.1	32.4	PF	22.8	11.7	18.9	27.8	32.6	30.1	30.9	32.3	32.8	32.7	32.2	26.0	24.0	25.9	21.7	19.4	28.4	36.5																							
19-Apr	17.0	17.0	16.5	22.2	Z	32.5	32.8	32.7	33.4	34.7	35.1	34.7	36.8	36.8	37.1	35.7	37.9	35.2	30.1	26.7	27.4	17.9	6.0	1.4	27.7	37.9																							
20-Apr	1.5	1.0	1.2	3.9	5.5	Z	12.2	26.2	24.4	26.3	33.8	32.6	36.9	40.3	43.6	44.4	44.3	43.8	43.3	42.4	33.8	23.3	18.1	13.0	25.9	44.4																							
21-Apr	Z	15.8	12.3	7.8	5.2	3.9	9.3	16.4	21.0	28.3	36.5	43.5	42.6	42.7	44.4	45.0	44.6	46.9	47.9	38.0	27.6	16.4	7.2	6.7	26.5	47.9																							
22-Apr	9.2	Z	18.9	8.7	7.0	8.2	16.6	30.4	30.9	33.2	39.0	42.8	45.6	46.4	46.6	46.8	47.3	46.8	47.6	45.3	39.1	13.2	9.9	13.1	30.1	47.6																							
23-Apr	13.0	8.9	Z	4.2	3.3	4.8	9.4	14.1	23.1	31.0	34.5	39.9	44.9	46.9	46.5	45.4	45.2	47.2	46.4	46.6	25.6	7.5	11.3	14.9	26.7	47.2																							
24-Apr	35.0	27.1	26.8	Z	12.9	19.6	27.4	27.8	35.9	36.5	34.4	32.8	33.8	29.2	25.3	26.8	30.8	32.8	26.5	18.2	12.2	11.6	15.7	7.4	25.5	36.5																							
25-Apr	0.9	1.3	1.5	2.1	Z	8.1	23.3	31.0	29.0	27.3	28.7	33.9	36.2	42.8	44.8	41.6	37.0	38.0	34.0	30.2	21.9	20.1	17.6	15.7	24.7	44.8																							
26-Apr	16.5	18.5	19.6	18.8	19.5	Z	21.4	20.5	24.2	28.0	30.5	32.1	35.8	35.2	33.4	30.4	28.7	28.6	25.7	22.5	24.2	16.1	5.9	9.6	23.7	35.8																							
27-Apr	Z	9.3	4.7	2.7	1.5	1.6	5.0	7.8	17.0	20.0	26.2	33.5	34.4	36.5	38.0	36.8	36.0	34.8	33.0	27.8	28.2	25.4	28.3	32.2	22.6	38.0																							
28-Apr	26.2	Z	6.8	8.6	12.7	14.0	28.9	42.0	45.1	45.2	45.3	45.0	44.9	45.0	44.9	44.4	41.4	38.9	36.0	36.2	23.8	13.8	11.3	13.0	31.0	45.3																							
29-Apr	7.8	6.0	Z	5.8	7.8	6.7	9.0	12.9	28.3	36.8	38.3	38.6	40.9	42.9	44.2	45.1	45.4	44.8	43.6	39.5	27.4	23.7	26.0	27.0	28.2	45.4																							
30-Apr	23.4	22.0	13.9	Z	6.3	6.6	12.7	26.5	32.1	38.3	40.9	37.8	43.6	44.7	47.0	46.8	45.8	45.3	42.3	38.7	36.4	33.7	29.7	20.8	32.0	47.0																							
																								21.5	18.2	17.0	15.0	15.5	16.4	19.2	24.0	29.2	32.0	35.1	37.0	38.9	40.4	40.7	40.6	40.7	40.2	38.2	34.5	29.1	23.9	22.3	21.1	Diurnal Average	
																								46.4	47.3	45.0	43.0	43.0	44.8	45.6	45.7	46.4	46.6	47.2	48.5	49.4	49.6	50.5	50.3	50.2	49.0	48.8	46.6	45.6	45.0	44.3	45.2	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Fort McKay South - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Fort McKay South - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	192	28.03	28.03
21 - 50	493	71.97	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



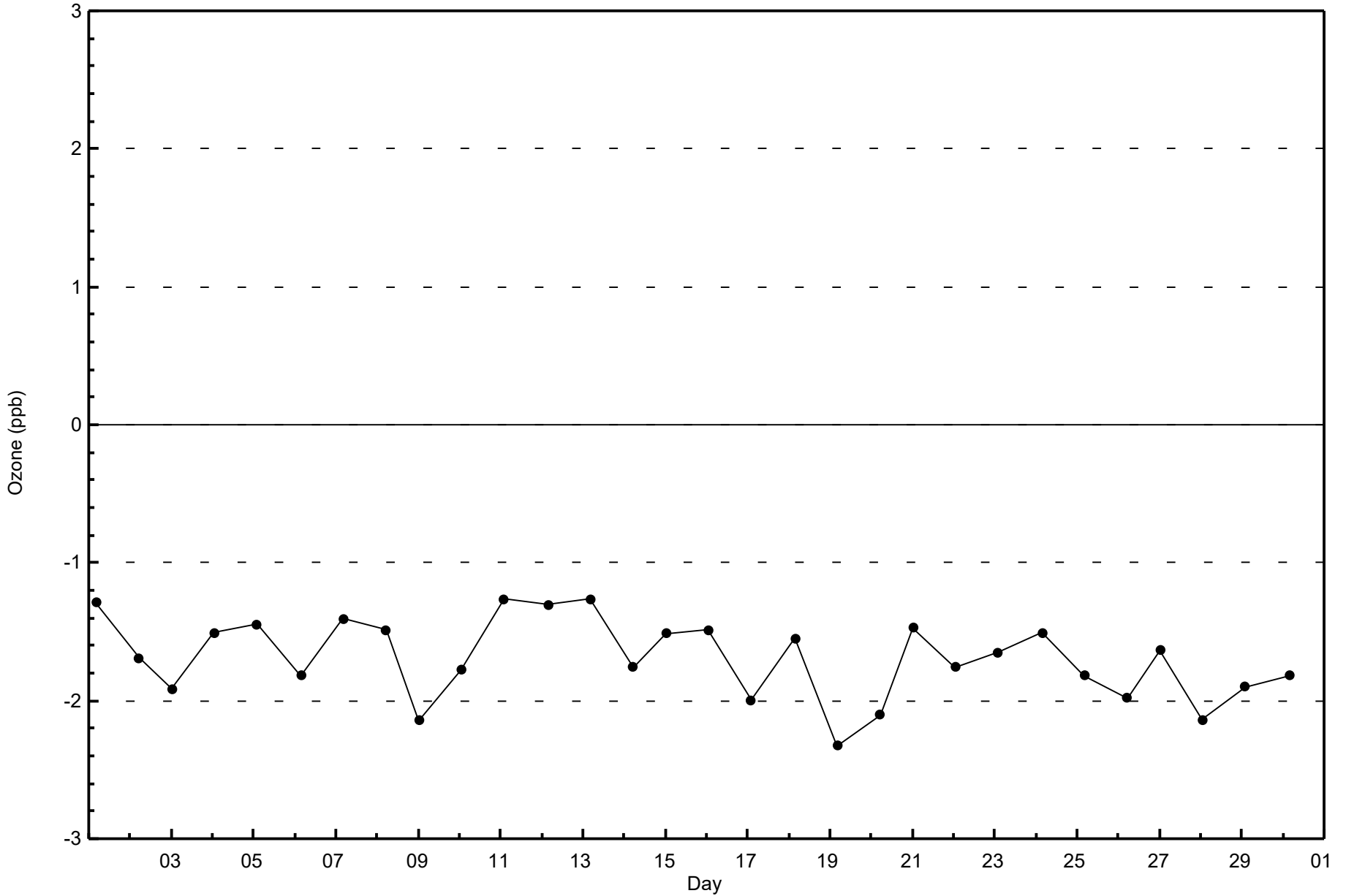
Wood Buffalo Environmental Association
Frequency Distribution

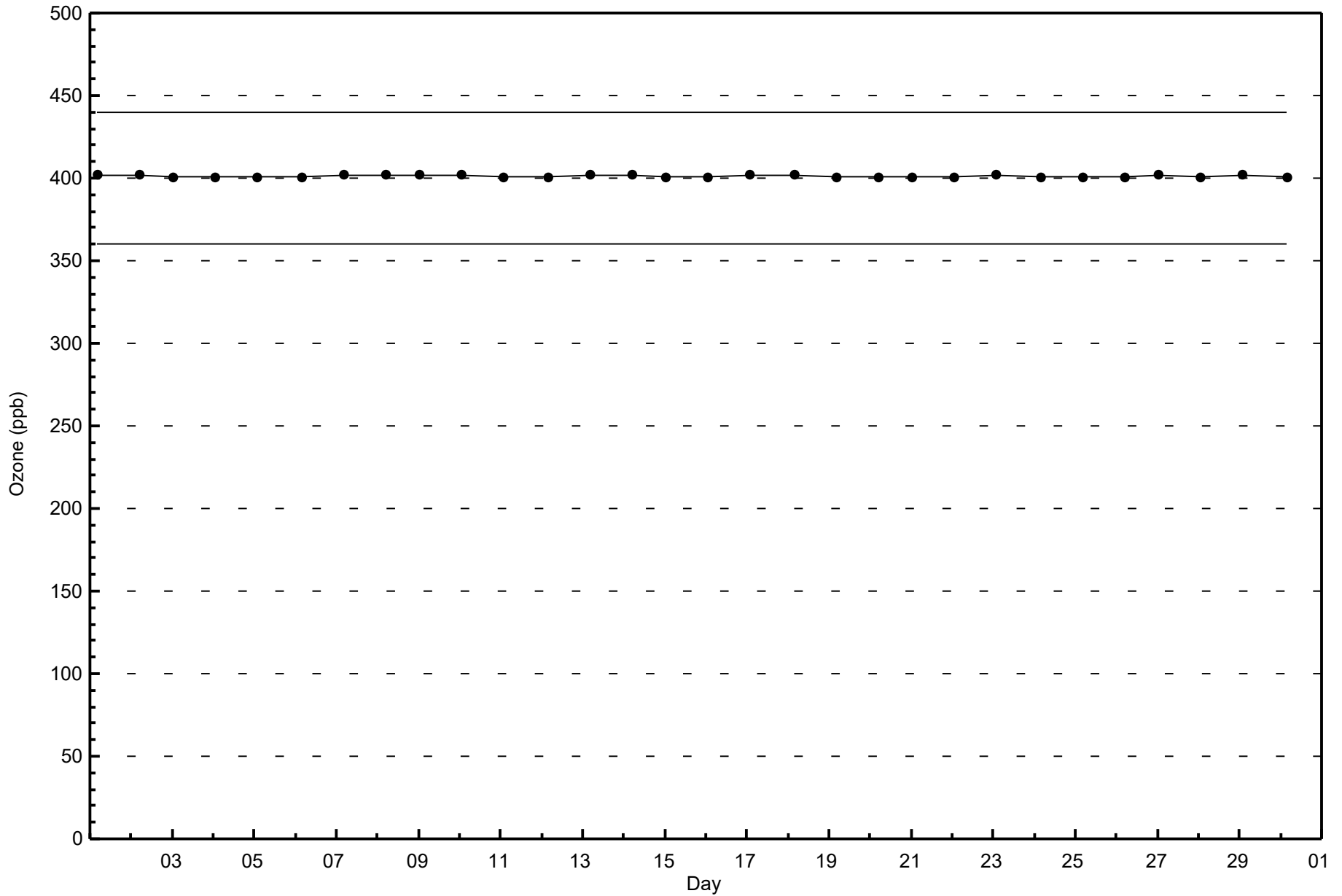
Ozone (O₃) - ppb
Fort McKay South - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	30	6	0	1	4	5	2	13	17	21	16	12	12	12	16	25	192
21 - 50	56	36	22	8	10	45	67	105	50	15	14	20	7	11	11	16	493
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
Totals	86	42	22	9	14	50	69	118	67	36	30	32	19	23	27	41	685

Total Number of Valid Hours: 685

Total Number of Hours: 720







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

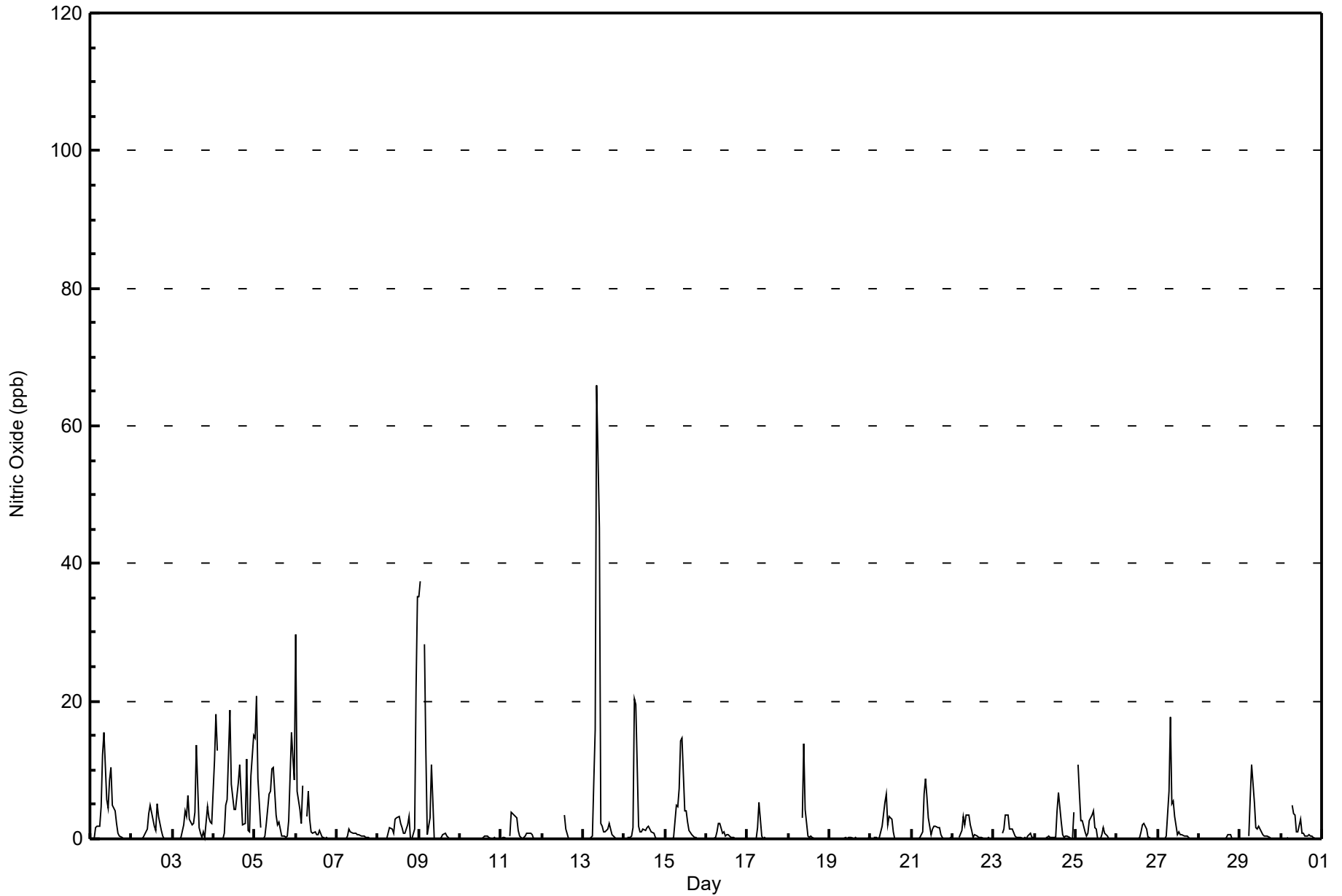
Fort McKay South - April 2023

Maximum Value: 66.0 ppb on Apr 13 09:00																				Maximum Daily Average: 7.1 ppb on Apr 4					Hours in Service:	720
Minimum Value: 0.0 ppb on Apr 1 02:00																				Minimum Daily Average: 0.1 ppb on Apr 19					Hours of Data:	684
Maximum Diurnal Average: 5.7 ppb at hour 9																				Minimum Diurnal Average: 0.3 ppb at hour 21					Hours of Missing Data:	36
Monthly Average: 1.97 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 1.6 P ₉₀ = 5.1 P ₉₉ = 22.9					Hours of Calibration:	35
																									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-Apr	Z	0.0	0.0	1.7	1.8	1.8	4.7	12.2	15.4	5.7	4.4	8.6	10.4	4.8	4.1	2.2	0.9	0.4	0.1	0.0	0.0	0.0	0.0	0.0	3.4	15.4
2-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.2	1.0	1.4	3.7	4.8	2.9	1.9	1.1	5.1	3.2	1.2	0.4	0.0	0.0	0.0	0.0	0.0	1.2	5.1
3-Apr	0.0	0.0	Z	0.0	0.0	0.2	2.1	4.0	3.2	6.2	2.9	2.0	2.3	3.8	13.6	1.6	0.8	0.3	1.1	0.2	4.8	3.0	2.5	2.2	2.5	13.6
4-Apr	11.3	18.1	12.8	Z	0.0	0.0	0.8	4.9	5.6	18.6	8.0	6.1	4.3	4.3	8.2	10.8	6.6	2.1	2.2	11.6	1.2	0.9	9.2	15.0	7.1	18.6
5-Apr	14.7	20.8	8.7	1.5	Z	0.0	0.4	2.2	6.4	6.9	10.2	10.4	3.5	1.9	2.3	1.3	0.3	0.4	0.2	0.4	2.7	15.4	11.8	8.6	5.7	20.8
6-Apr	29.6	7.0	4.2	2.2	7.6	Z	3.2	6.9	2.8	1.0	0.9	0.9	0.5	0.7	1.2	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	3.0	29.6
7-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.4	1.3	1.1	0.9	0.9	0.7	0.7	0.7	0.4	0.4	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.4	1.3
8-Apr	0.0	Z	0.0	0.0	0.0	0.1	0.8	1.7	1.5	0.9	2.9	3.1	3.2	2.3	1.5	0.9	0.7	1.9	3.2	0.0	0.1	1.4	21.8	35.1	3.6	35.1
9-Apr	35.2	37.3	Z	28.3	12.8	0.6	3.1	10.8	5.6	0.0	0.0	0.0	0.1	0.3	0.5	0.8	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	5.9	37.3
10-Apr	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	0.3	0.4	0.4	0.2	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.4
11-Apr	0.0	0.1	0.1	0.1	Z	0.5	3.9	3.7	3.2	3.1	1.2	0.5	0.1	0.1	0.5	0.7	0.9	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.9	3.9
12-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	C	C	C	C	C	3.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.6
13-Apr	Z	0.0	0.0	0.0	0.0	0.4	8.3	15.9	66.0	45.1	2.3	1.8	1.0	1.1	1.5	2.3	1.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	6.4	66.0
14-Apr	0.0	Z	0.2	0.2	0.4	1.7	20.4	19.6	1.8	1.1	1.0	1.5	1.2	1.6	1.9	1.4	1.0	0.8	0.2	0.0	0.0	0.0	0.0	0.0	2.4	20.4
15-Apr	0.0	0.0	Z	0.0	0.0	0.2	4.8	4.7	7.2	14.2	14.6	4.1	4.1	2.5	1.2	0.6	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	2.6	14.6
16-Apr	0.0	0.0	0.0	Z	0.0	0.1	1.1	2.2	2.2	0.9	1.0	0.4	0.6	0.5	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.2
17-Apr	0.0	0.0	0.0	0.0	Z	0.0	1.7	5.3	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	5.3
18-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	PF	3.0	13.9	4.4	0.5	0.2	0.3	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	13.9
19-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.3
20-Apr	0.2	Z	0.2	0.2	0.1	0.2	0.9	1.8	5.4	6.6	2.0	3.2	2.9	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.6
21-Apr	0.0	0.0	Z	0.0	0.0	0.2	1.0	6.4	8.8	6.1	3.0	0.6	1.5	1.9	1.7	1.6	1.6	0.5	0.1	0.0	0.0	0.0	0.1	0.1	1.5	8.8
22-Apr	0.1	0.1	0.1	Z	0.2	1.2	3.3	2.1	3.4	3.5	2.1	1.2	0.3	0.7	0.5	0.2	0.2	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.8	3.5
23-Apr	0.0	0.0	0.0	0.1	Z	0.8	1.4	3.4	3.4	1.5	1.5	1.4	0.5	0.2	0.3	0.3	0.1	0.1	0.2	0.0	0.4	0.8	0.2	0.3	0.7	3.4
24-Apr	0.0	0.0	0.0	0.0	0.1	Z	0.1	0.3	0.3	0.2	0.2	0.2	0.2	4.0	6.8	2.5	0.6	0.2	0.4	0.4	0.1	0.1	0.0	4.0	0.9	6.8
25-Apr	Z	10.8	6.5	2.6	2.7	1.0	0.4	0.9	2.5	3.4	4.0	1.6	1.5	0.0	0.0	0.5	1.7	0.9	0.4	0.0	0.0	0.0	0.0	0.0	1.8	10.8
26-Apr	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	0.9	2.0	2.3	1.4	0.2	0.2	0.0	0.0	0.0	0.0	0.3	2.3
27-Apr	0.0	0.0	Z	0.0	0.1	0.4	7.0	17.8	5.1	5.5	3.3	0.7	1.1	0.6	0.6	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	1.9	17.8
28-Apr	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	0.3	0.6	0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.7
29-Apr	0.0	0.0	0.0	0.0	Z	0.3	5.9	10.7	5.2	1.7	1.5	1.9	1.1	0.6	0.3	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	1.3	10.7
30-Apr	0.0	0.0	0.0	0.0	0.2	Z	5.0	3.7	3.5	1.0	1.0	2.8	0.9	0.8	0.4	0.5	0.7	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.9	5.0
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration PF - Power Failure																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Fort McKay South - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	675	98.68	98.68
21 - 40	7	1.02	99.71
41 - 80	2	0.29	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	82	39	23	8	15	50	67	116	71	37	31	30	18	22	26	40	675
21 - 40	0	0	0	0	0	0	0	0	1	1	1	4	0	0	0	0	7
41 - 80	0	2	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
Totals	82	41	23	8	15	50	67	116	72	38	32	34	18	22	26	40	684

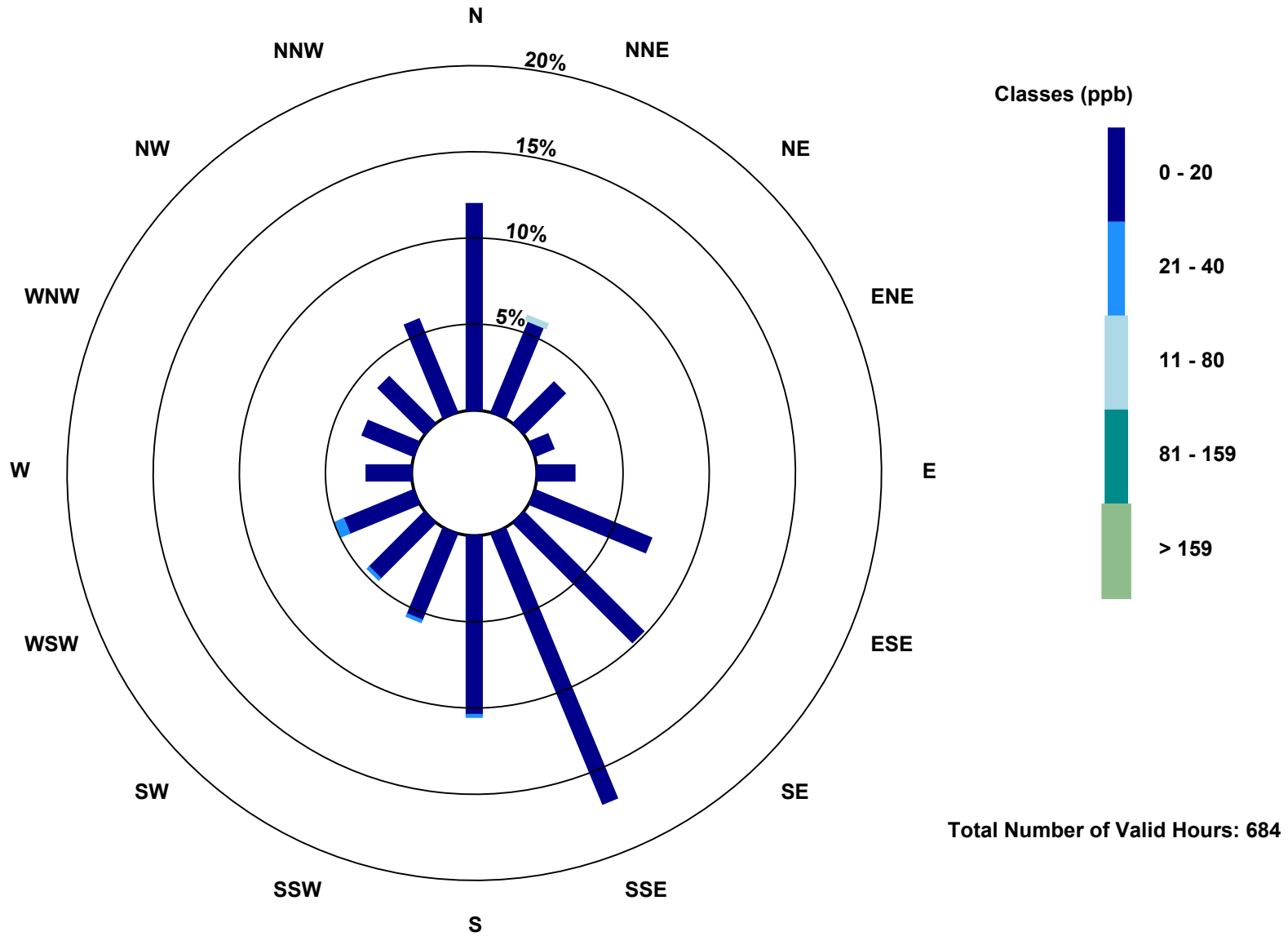
Total Number of Valid Hours: 684

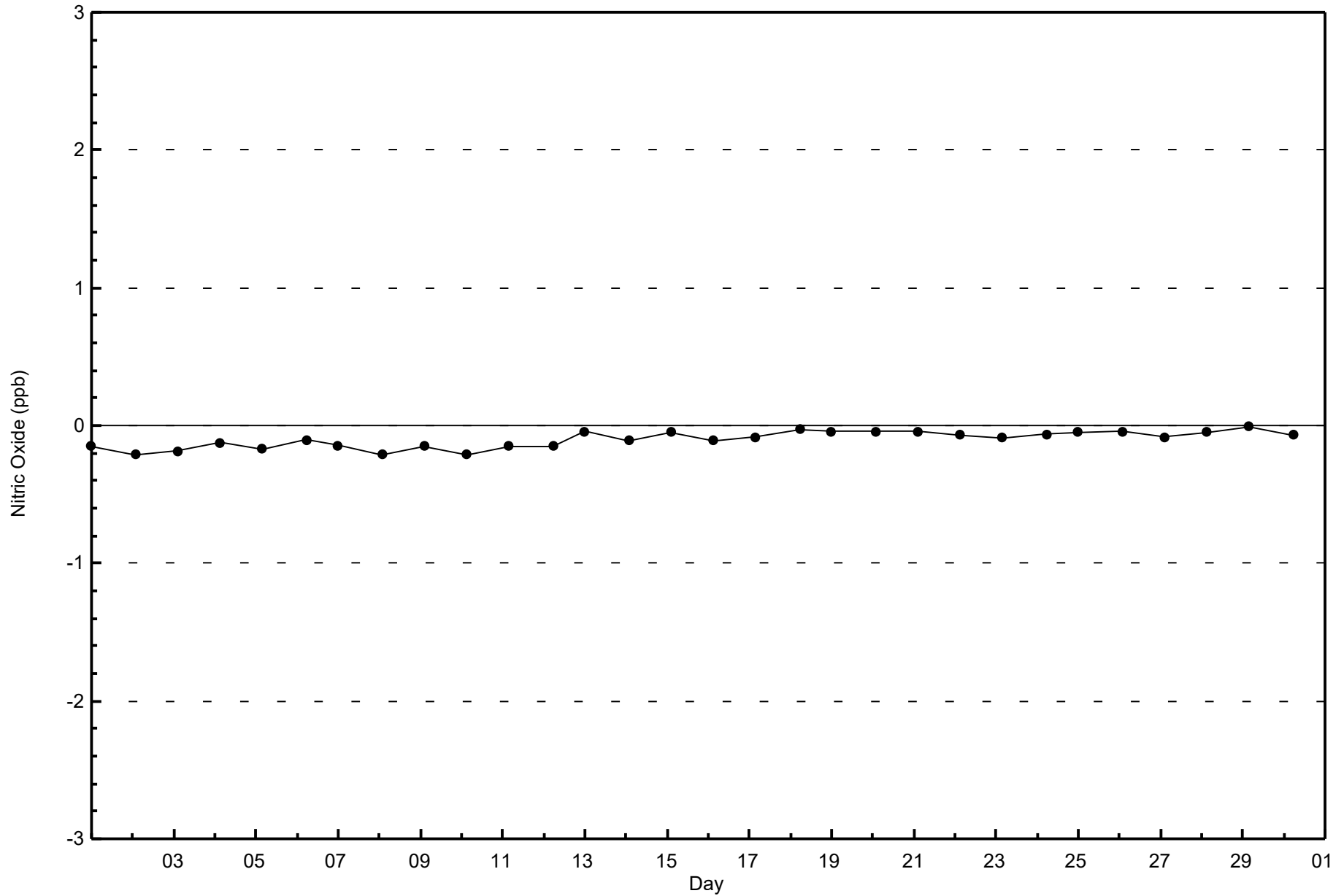
Total Number of Hours: 720

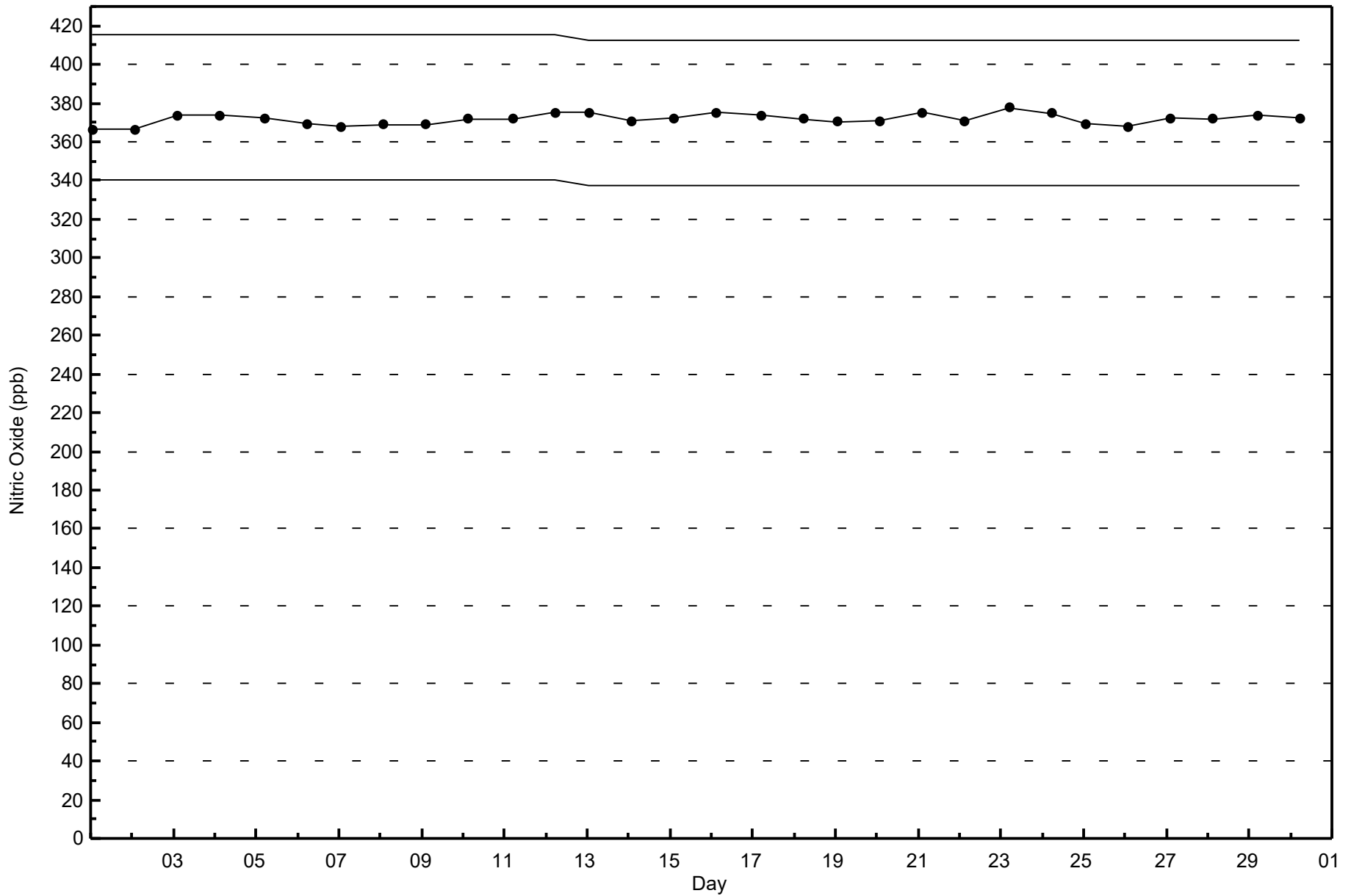


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Fort McKay South









Wood Buffalo Environmental Association
Summary of Hour Averages

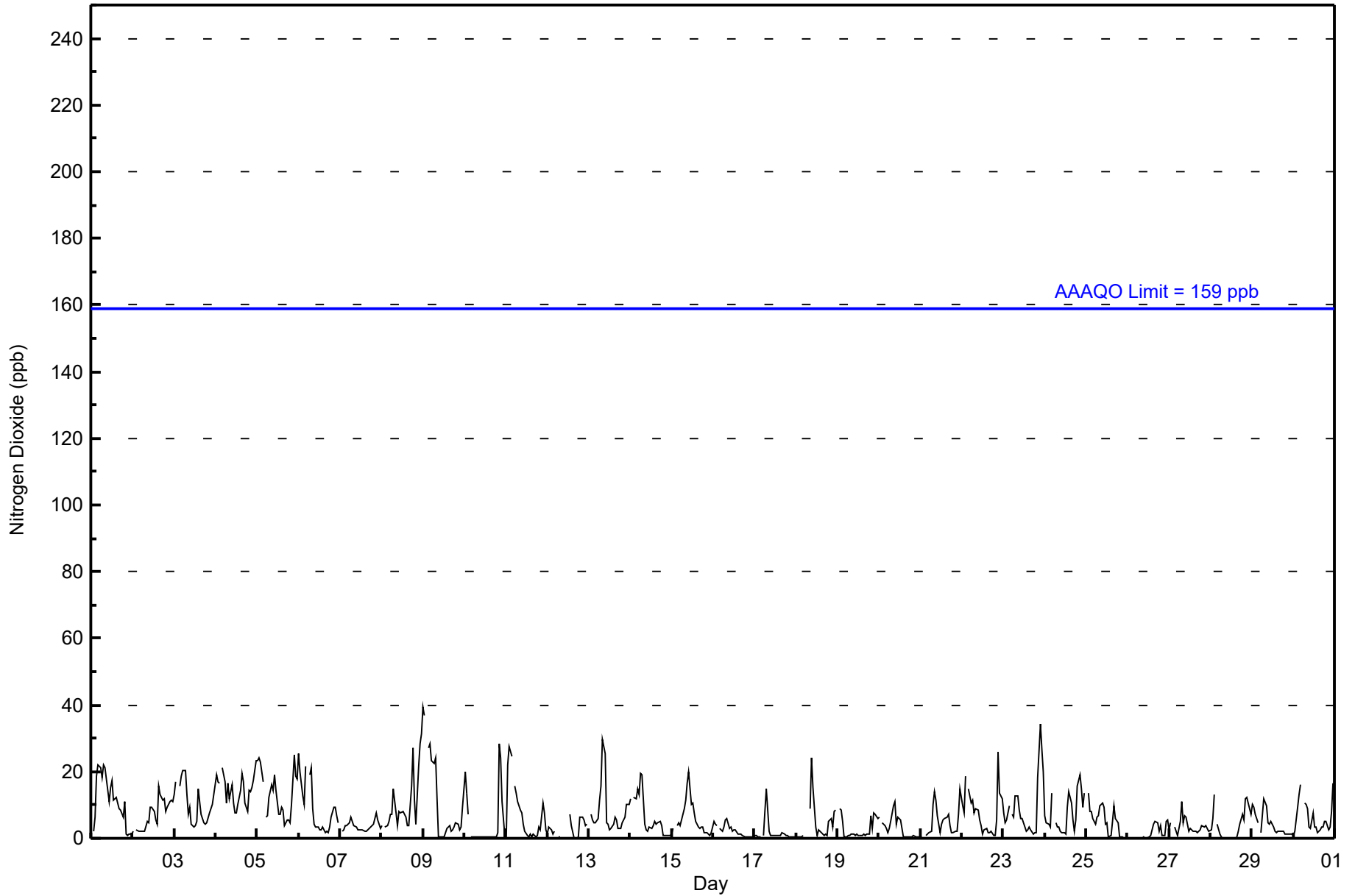
Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 39.2 ppb on Apr 9 01:00	Maximum Daily Average: 14.6 ppb on Apr 4		Hours of Data:	684
Minimum Value: 0.1 ppb on Apr 12 16:00	Minimum Daily Average: 1.6 ppb on Apr 26		Hours of Missing Data:	36
Maximum Diurnal Average: 9.9 ppb at hour 8	Minimum Diurnal Average: 3.8 ppb at hour 18		Hours of Calibration:	35
Monthly Average: 6.51 ppb	Percentiles: P ₁ = 0.1 P ₁₀ = 0.5 Q ₁ = 1.7 Median = 4.3 Q ₃ = 9.3 P ₉₀ = 15.9 P ₉₉ = 28.3		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-Apr	Z	2.1	6.2	18.8	22.1	21.2	18.4	21.9	21.3	14.2	11.0	15.2	17.4	11.5	12.3	10.5	8.8	8.4	6.5	11.2	1.4	1.0	1.2	1.2	11.5	22.1
2-Apr	2.0	Z	2.7	2.1	2.1	2.0	2.2	2.1	5.0	4.8	9.2	9.3	8.1	5.6	4.1	15.8	13.2	11.6	11.7	8.2	9.5	11.0	11.3	10.9	7.2	15.8
3-Apr	13.0	16.9	Z	15.7	18.6	20.4	20.2	13.3	7.4	9.3	4.3	3.4	3.7	5.1	14.9	7.2	6.0	4.5	4.4	4.6	7.5	8.8	10.1	13.0	10.1	20.4
4-Apr	18.9	16.8	16.4	Z	21.2	17.1	10.8	16.5	12.0	16.2	10.6	7.7	7.7	10.3	14.3	19.7	16.8	10.4	7.9	14.5	13.8	15.2	17.4	23.4	14.6	23.4
5-Apr	23.2	24.3	22.7	17.1	Z	6.4	6.8	12.4	15.9	14.3	18.9	14.6	7.0	7.1	9.5	8.5	3.9	5.5	5.4	4.7	10.0	25.1	18.7	17.6	13.0	25.1
6-Apr	25.6	20.0	12.7	10.0	21.5	Z	19.2	21.1	8.7	4.1	3.6	3.6	2.7	2.7	3.5	1.7	2.1	1.7	3.6	6.3	9.2	9.5	6.6	4.6	8.9	25.6
7-Apr	Z	2.0	2.6	3.8	3.8	4.7	6.5	5.1	3.9	3.2	2.7	2.7	2.6	2.6	2.2	2.2	2.5	3.1	3.7	4.3	5.9	7.7	5.6	3.1	3.8	7.7
8-Apr	4.0	Z	3.5	3.8	4.9	7.1	7.3	14.7	7.8	3.8	8.2	7.7	8.1	7.1	6.5	3.8	4.0	15.6	27.0	11.6	4.3	21.7	28.6	31.4	10.5	31.4
9-Apr	39.2	36.8	Z	27.0	28.3	23.1	22.3	24.2	11.7	0.5	0.4	0.3	0.6	1.5	2.9	3.7	2.3	2.5	3.5	4.8	4.2	2.6	3.6	9.2	11.1	39.2
10-Apr	19.8	13.7	7.3	Z	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.5	0.4	1.8	28.4	24.2	11.1	0.5	4.9	28.4
11-Apr	0.6	21.9	27.6	24.5	Z	15.5	13.6	11.0	8.4	7.8	4.1	2.3	0.9	0.6	1.2	0.6	1.1	0.5	0.7	3.2	2.7	10.5	7.5	2.6	7.4	27.6
12-Apr	1.3	3.2	2.6	1.3	2.1	Z	0.3	0.4	C	C	C	C	C	7.0	3.8	0.1	0.1	0.1	0.5	6.4	6.3	5.5	3.7	4.3	2.7	7.0
13-Apr	Z	7.2	5.3	4.8	4.8	6.1	11.5	15.5	29.8	25.4	4.8	4.1	2.7	2.9	4.1	6.2	5.3	3.1	2.9	4.6	5.7	6.2	10.3	10.0	8.0	29.8
14-Apr	11.8	Z	12.2	12.0	15.0	13.3	19.5	19.2	4.3	2.6	2.2	3.5	2.9	3.8	5.0	4.4	4.6	5.2	3.9	1.0	0.8	1.0	1.0	1.0	6.5	19.5
15-Apr	1.4	2.8	Z	3.9	4.7	3.7	7.3	8.8	11.3	16.6	19.8	10.2	10.7	7.5	5.0	3.3	2.8	3.5	3.6	1.9	1.5	1.1	1.0	1.7	5.8	19.8
16-Apr	5.2	4.4	4.0	Z	2.8	2.3	3.5	5.6	5.8	2.8	3.5	2.0	2.6	2.5	1.3	1.2	1.2	0.8	0.6	0.6	0.6	0.6	0.5	0.5	2.4	5.8
17-Apr	0.8	0.8	0.6	0.6	Z	1.0	8.1	14.9	2.3	0.9	1.0	0.8	0.9	0.8	1.0	0.9	1.5	1.3	0.9	0.7	0.6	0.5	0.4	0.4	1.8	14.9
18-Apr	0.4	0.4	0.4	0.5	0.8	Z	0.9	PF	9.0	24.2	15.2	3.3	0.9	2.5	2.2	1.1	1.0	1.2	1.0	4.9	6.0	3.6	8.0	8.4	4.4	24.2
19-Apr	Z	9.1	8.3	5.2	0.4	0.4	0.9	0.7	1.2	1.1	0.8	1.4	0.8	0.7	0.8	1.1	1.0	1.1	1.2	6.9	3.1	7.7	7.2	5.8	2.9	9.1
20-Apr	6.3	Z	4.8	3.9	2.8	1.8	2.8	4.9	9.7	11.2	4.3	6.3	5.4	2.8	0.5	0.5	0.5	0.5	0.5	0.4	0.8	0.6	0.4	0.4	3.1	11.2
21-Apr	0.4	0.5	Z	0.7	1.3	1.6	2.0	10.0	13.8	11.3	6.6	1.8	4.2	5.7	5.9	6.2	7.1	3.8	1.9	1.6	2.0	2.0	7.1	15.0	4.9	15.0
22-Apr	9.9	7.8	18.6	Z	14.7	10.8	11.5	7.6	8.9	8.3	5.5	3.7	1.3	2.4	2.9	1.6	1.7	2.2	0.7	0.9	5.3	25.7	13.7	12.0	7.7	25.7
23-Apr	7.7	4.8	5.5	9.8	Z	7.3	6.3	12.9	12.9	8.3	6.0	6.1	3.4	2.2	2.5	3.3	2.7	1.4	1.9	1.8	18.2	34.4	26.8	19.8	9.0	34.4
24-Apr	6.9	4.7	4.3	3.2	13.5	Z	4.6	3.2	3.4	2.3	1.8	1.5	1.4	9.5	13.9	10.5	5.4	2.3	5.7	15.8	18.9	14.8	9.3	13.5	7.4	18.9
25-Apr	Z	13.7	8.1	7.9	6.1	4.4	6.5	6.8	9.9	10.8	9.2	4.4	4.5	0.4	0.7	5.2	9.8	5.9	4.8	0.5	0.3	0.3	0.2	0.2	5.2	13.7
26-Apr	0.2	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.8	2.5	4.4	5.2	4.6	2.0	3.9	0.7	1.0	5.0	5.6	1.6	5.6
27-Apr	2.7	4.7	Z	3.4	2.0	0.9	4.9	11.1	4.7	6.7	6.4	2.0	2.8	2.7	2.2	2.1	1.5	2.3	2.4	3.8	3.2	4.0	2.8	2.1	3.5	11.1
28-Apr	2.6	6.0	13.1	Z	4.3	1.1	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	2.1	4.2	7.0	5.4	11.7	12.1	10.8	7.1	3.9	13.1
29-Apr	10.3	9.4	7.1	4.6	Z	1.9	6.9	12.0	9.6	4.7	4.3	5.1	3.4	2.3	1.7	2.1	2.3	2.1	2.0	1.2	1.2	1.1	1.2	1.1	4.2	12.0
30-Apr	0.8	2.1	9.5	13.1	15.9	Z	10.6	10.2	8.8	3.4	2.9	7.5	3.3	3.2	1.9	2.4	3.5	3.4	5.2	5.2	2.5	3.5	7.9	16.7	6.2	16.7

8.6	9.4	8.3	7.9	8.6	7.0	7.9	9.9	8.6	7.6	5.8	4.5	3.8	3.8	4.3	4.4	4.0	3.8	4.1	4.8	6.2	8.8	8.0	8.1	Diurnal Average	
39.2	36.8	27.6	27.0	28.3	23.1	22.3	24.2	29.8	25.4	19.8	15.2	17.4	11.5	14.9	19.7	16.8	15.6	27.0	15.8	28.4	34.4	28.6	31.4	Diurnal Maximum	

Z - zerospan C - Calibration PF - Power Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	649	94.88	94.88
21 - 40	35	5.12	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	78	38	23	8	14	50	67	112	70	29	27	30	18	22	25	38	649
21 - 40	4	3	0	0	1	0	0	4	2	9	5	4	0	0	1	2	35
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
Totals	82	41	23	8	15	50	67	116	72	38	32	34	18	22	26	40	684

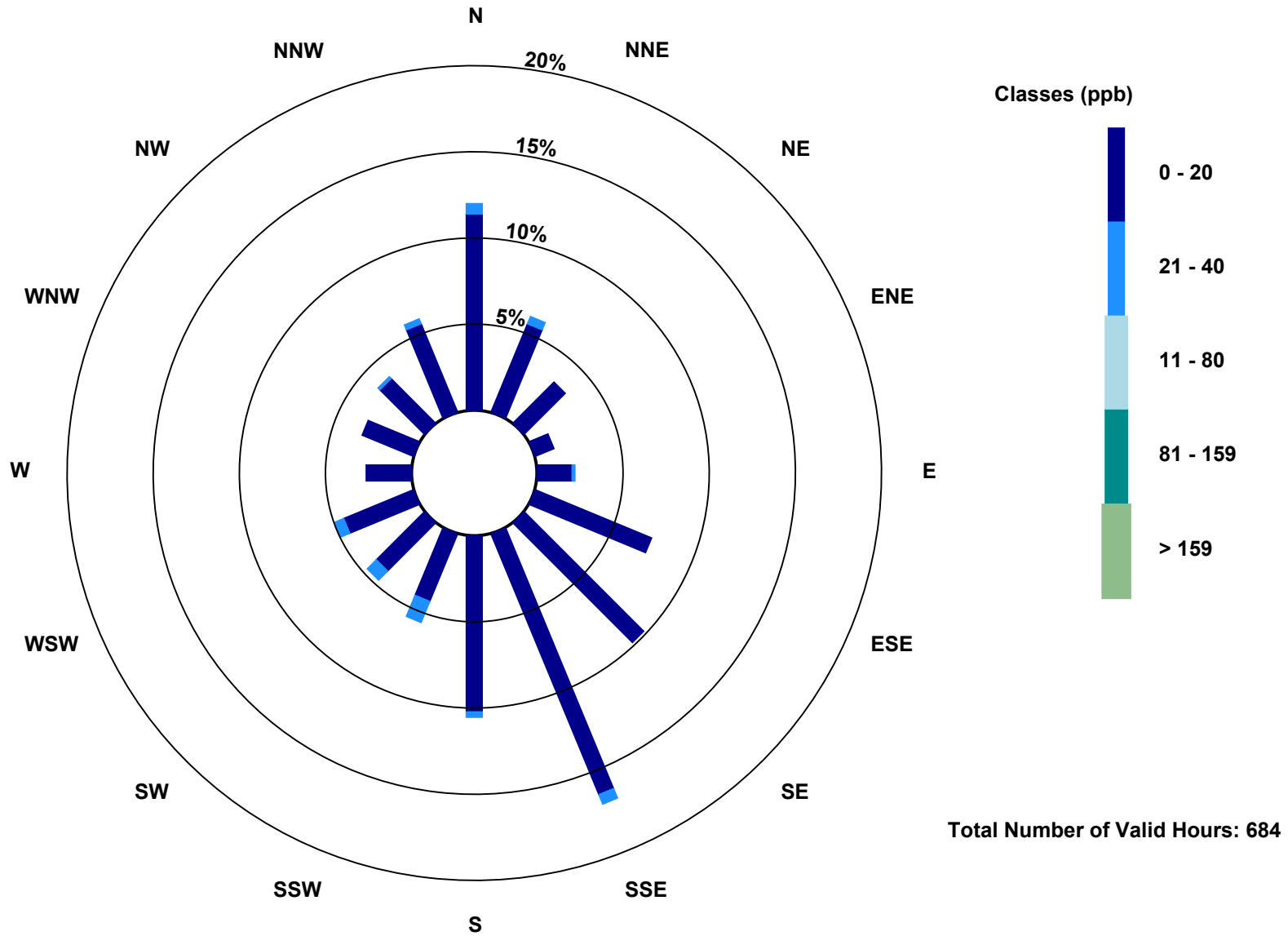
Total Number of Valid Hours: 684

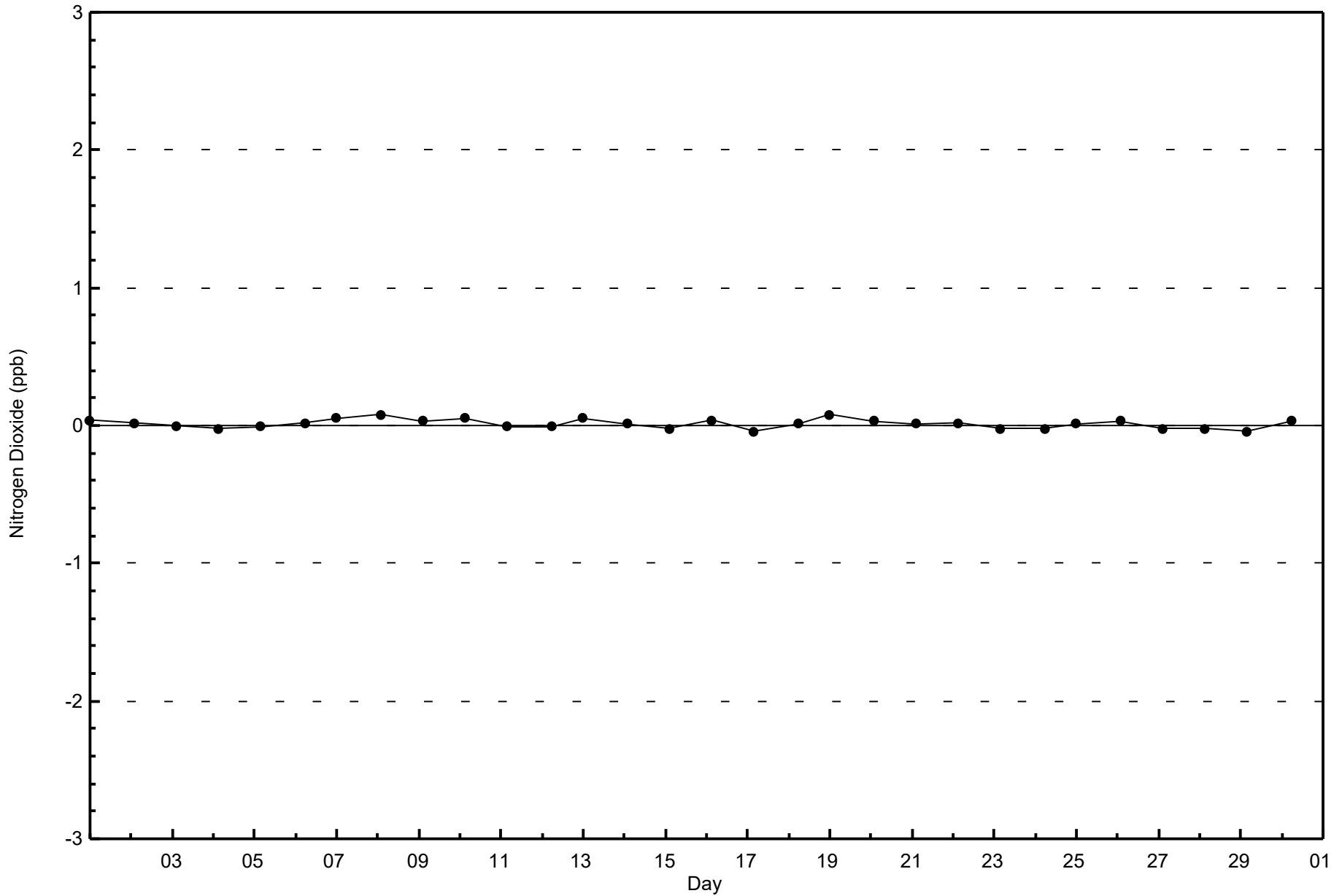
Total Number of Hours: 720

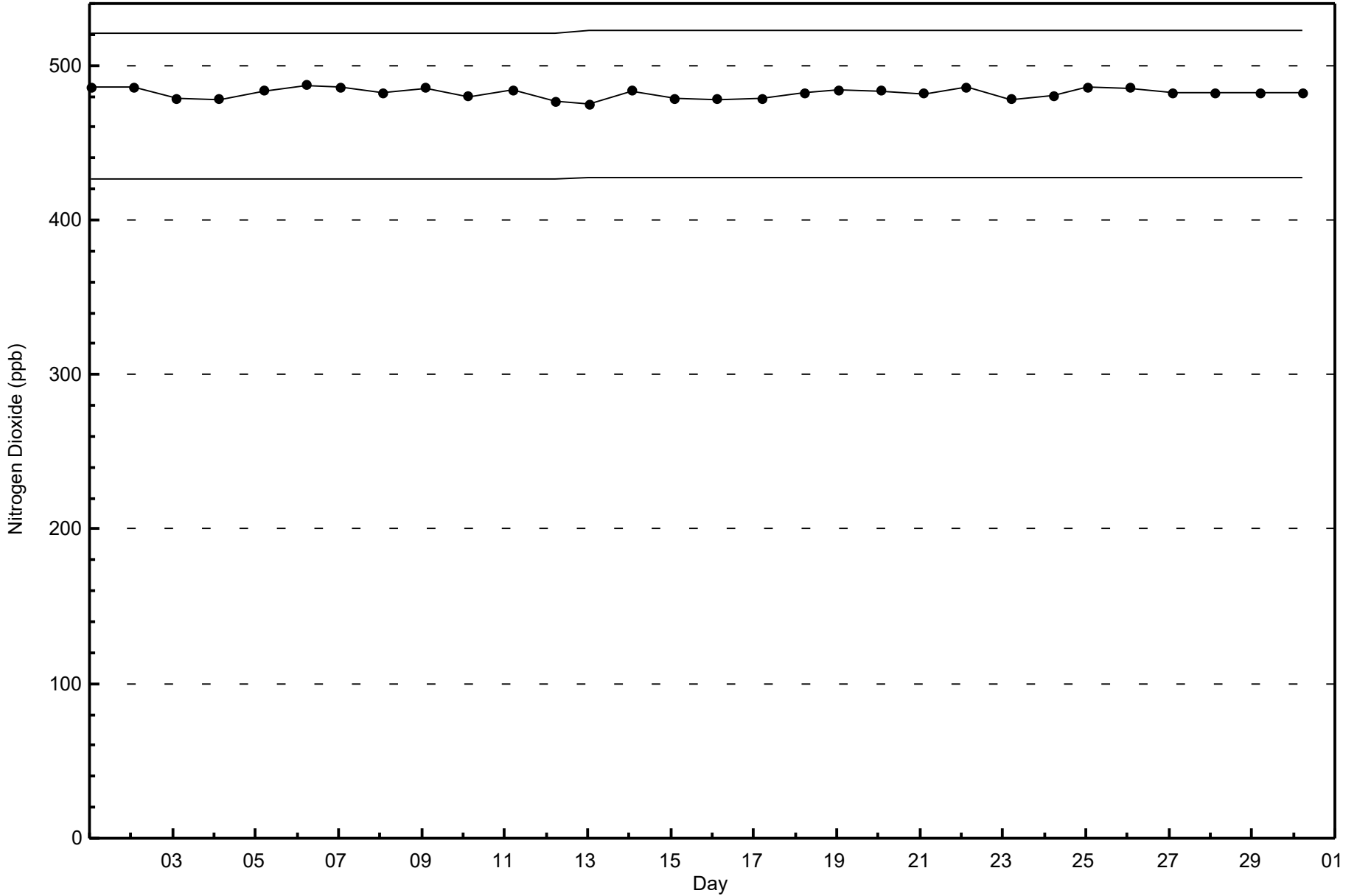


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Fort McKay South









Wood Buffalo Environmental Association
Summary of Hour Averages

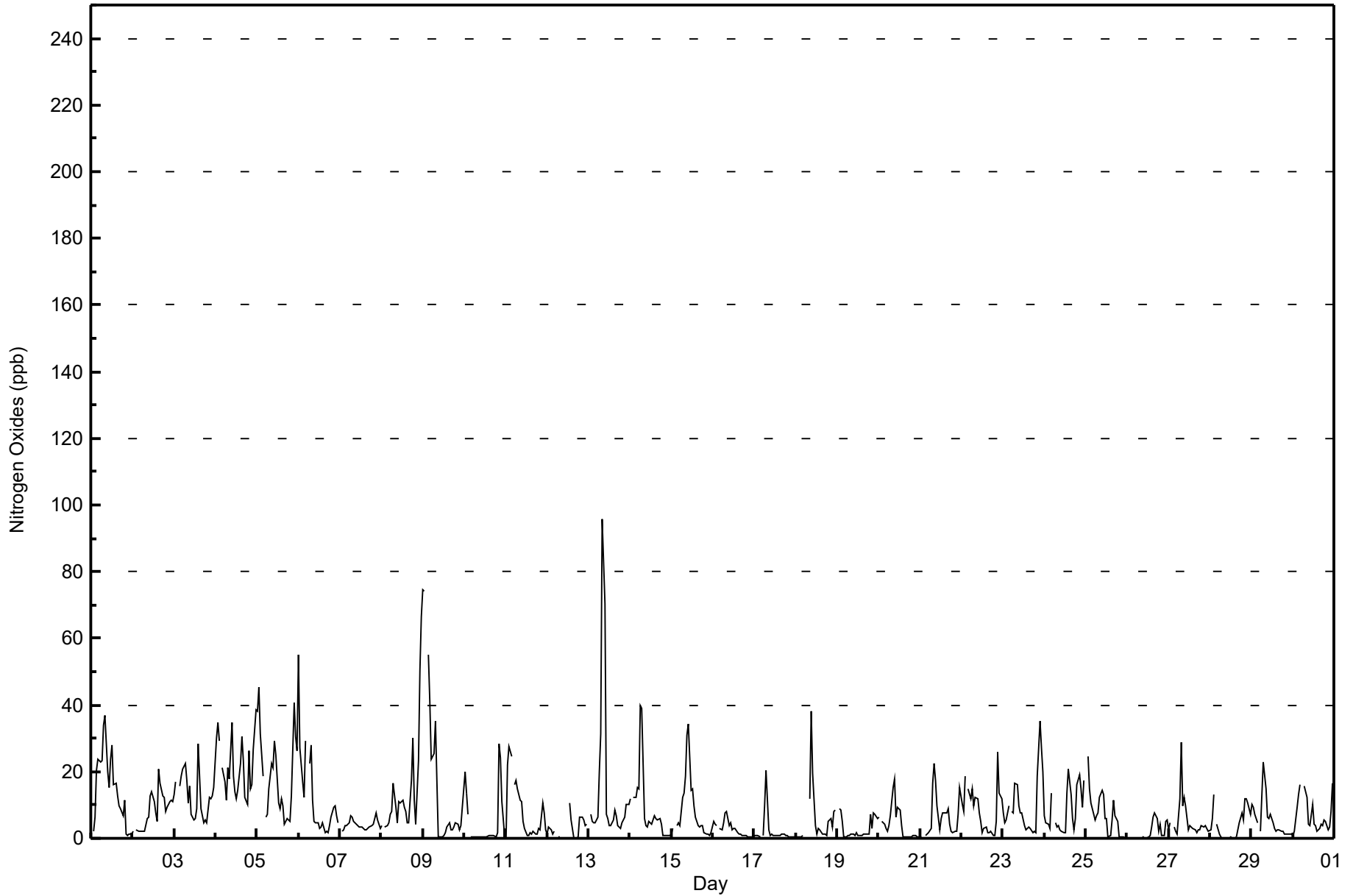
Nitrogen Oxides (NO_x) - ppb
Fort McKay South - April 2023

Maximum Value: 95.8 ppb on Apr 13 09:00		Maximum Daily Average: 21.7 ppb on Apr 4		Hours in Service: 720																																												
Minimum Value: 0.1 ppb on Apr 12 17:00		Minimum Daily Average: 1.9 ppb on Apr 26		Hours of Data: 684																																												
Maximum Diurnal Average: 14.8 ppb at hour 8		Minimum Diurnal Average: 4.3 ppb at hour 18		Hours of Missing Data: 36																																												
Monthly Average: 8.48 ppb		Percentiles: P ₁ = 0.1 P ₁₀ = 0.5 Q ₁ = 1.8 Median = 4.8 Q ₃ = 11.6 P ₉₀ = 20.7 P ₉₉ = 51.3		Hours of Calibration: 35																																												
				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-Apr	Z	2.1	6.2	20.5	23.9	23.0	23.1	34.1	36.7	19.9	15.4	23.8	27.8	16.3	16.4	12.7	9.7	8.8	6.6	11.2	1.4	1.0	1.2	1.2	14.9	36.7																						
2-Apr	2.0	Z	2.7	2.1	2.1	2.0	2.3	2.3	6.0	6.2	12.9	14.1	11.0	7.5	5.2	20.9	16.4	12.8	12.1	8.2	9.5	11.0	11.3	10.9	8.3	20.9																						
3-Apr	13.0	16.9	Z	15.7	18.6	20.6	22.3	17.3	10.6	15.5	7.2	5.4	6.0	8.9	28.5	8.8	6.8	4.8	5.5	4.8	12.3	11.8	12.6	15.2	12.6	28.5																						
4-Apr	30.2	34.9	29.2	Z	21.2	17.1	11.6	21.4	17.6	34.8	18.6	13.8	12.0	14.6	22.5	30.5	23.4	12.5	10.1	26.1	15.0	16.1	26.6	38.4	21.7	38.4																						
5-Apr	37.9	45.1	31.4	18.6	Z	6.4	7.2	14.6	22.3	21.2	29.1	25.0	10.5	9.0	11.8	9.8	4.2	5.9	5.6	5.1	12.7	40.5	30.5	26.2	18.7	45.1																						
6-Apr	55.2	27.0	16.9	12.2	29.1	Z	22.4	28.0	11.5	5.1	4.5	4.5	3.2	3.4	4.7	1.8	2.2	1.7	3.9	6.3	9.2	9.5	6.6	4.6	11.9	55.2																						
7-Apr	Z	2.0	2.6	3.8	3.8	4.7	6.9	6.4	5.0	4.1	3.6	3.4	3.3	3.3	2.6	2.6	2.8	3.4	3.8	4.3	5.9	7.7	5.6	3.1	4.1	7.7																						
8-Apr	4.0	Z	3.5	3.8	4.9	7.2	8.1	16.4	9.3	4.7	11.1	10.8	11.3	9.4	8.0	4.7	4.7	17.5	30.2	11.6	4.4	23.1	50.4	66.5	14.2	66.5																						
9-Apr	74.4	74.1	Z	55.3	41.1	23.7	25.4	35.0	17.3	0.5	0.4	0.3	0.7	1.8	3.4	4.5	2.6	2.6	3.6	4.8	4.2	2.6	3.6	9.2	17.0	74.4																						
10-Apr	19.8	13.7	7.3	Z	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.7	0.7	0.8	0.7	0.4	1.8	28.6	24.3	11.1	0.5	5.0	28.6																						
11-Apr	0.6	22.0	27.7	24.6	Z	16.0	17.5	14.7	11.6	10.9	5.3	2.8	1.0	0.7	1.7	1.3	2.0	1.4	1.3	3.2	2.7	10.5	7.5	2.6	8.2	27.7																						
12-Apr	1.3	3.2	2.6	1.3	2.1	Z	0.3	0.4	C	C	C	C	C	10.6	5.3	0.1	0.1	0.1	0.5	6.4	6.3	5.5	3.7	4.3	3.0	10.6																						
13-Apr	Z	7.2	5.3	4.8	4.8	6.5	19.8	31.4	95.8	70.5	7.1	5.9	3.7	4.0	5.6	8.5	6.7	3.6	3.0	4.6	5.7	6.2	10.3	10.0	14.4	95.8																						
14-Apr	11.8	Z	12.4	12.2	15.4	15.0	39.9	38.8	6.1	3.7	3.2	5.0	4.1	5.4	6.9	5.8	5.6	6.0	4.1	1.0	0.8	1.0	1.0	1.0	9.0	39.9																						
15-Apr	1.4	2.8	Z	3.9	4.7	3.9	12.1	13.5	18.5	30.8	34.4	14.3	14.8	10.0	6.2	3.9	3.2	3.8	3.7	1.9	1.5	1.1	1.0	1.7	8.4	34.4																						
16-Apr	5.2	4.4	4.0	Z	2.8	2.4	4.6	7.8	8.0	3.7	4.5	2.4	3.2	3.0	1.5	1.4	1.5	0.8	0.6	0.6	0.6	0.6	0.5	0.5	2.8	8.0																						
17-Apr	0.8	0.8	0.6	0.6	Z	1.0	9.8	20.2	2.6	1.0	1.1	0.9	1.0	0.8	1.0	0.9	1.5	1.3	0.9	0.7	0.6	0.5	0.4	0.4	2.2	20.2																						
18-Apr	0.4	0.4	0.4	0.5	0.8	Z	0.9	PF	12.0	38.1	19.6	3.8	1.1	2.8	2.5	1.1	1.1	1.2	1.0	4.9	6.0	3.6	8.0	8.4	5.4	38.1																						
19-Apr	Z	9.1	8.3	5.2	0.4	0.4	0.9	0.7	1.3	1.2	0.9	1.7	1.0	0.8	0.9	1.2	1.1	1.2	1.2	7.0	3.1	7.7	7.3	6.0	3.0	9.1																						
20-Apr	6.5	Z	5.0	4.1	2.9	2.0	3.7	6.7	15.1	17.8	6.3	9.5	8.3	3.8	0.6	0.5	0.5	0.5	0.5	0.4	0.8	0.6	0.4	0.4	4.2	17.8																						
21-Apr	0.4	0.5	Z	0.7	1.3	1.8	3.0	16.4	22.6	17.4	9.6	2.4	5.7	7.6	7.6	7.8	8.7	4.3	2.0	1.6	2.0	2.0	7.2	15.1	6.4	22.6																						
22-Apr	10.0	7.9	18.7	Z	14.9	12.0	14.8	9.7	12.3	11.8	7.6	4.9	1.6	3.1	3.4	1.8	1.9	2.3	0.7	0.9	5.3	26.0	13.7	12.0	8.6	26.0																						
23-Apr	7.7	4.8	5.5	9.9	Z	8.1	7.7	16.3	16.3	9.8	7.5	7.5	3.9	2.4	2.8	3.6	2.8	1.5	2.1	1.8	18.6	35.2	27.0	20.1	9.7	35.2																						
24-Apr	6.9	4.7	4.3	3.2	13.6	Z	4.7	3.5	3.7	2.5	2.0	1.7	1.6	13.5	20.7	13.0	6.0	2.5	6.1	16.2	19.0	14.9	9.3	17.5	8.3	20.7																						
25-Apr	Z	24.5	14.6	10.5	8.8	5.4	6.9	7.7	12.4	14.2	13.2	6.0	6.0	0.4	0.7	5.7	11.5	6.8	5.2	0.5	0.3	0.3	0.2	0.2	7.0	24.5																						
26-Apr	0.2	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.3	0.9	3.4	6.4	7.5	6.0	2.2	4.1	0.7	1.0	5.0	5.6	1.9	7.5																						
27-Apr	2.7	4.7	Z	3.4	2.1	1.3	11.9	28.9	9.8	12.2	9.7	2.7	3.9	3.3	2.8	2.5	1.8	2.6	2.6	3.9	3.2	4.0	2.8	2.1	5.4	28.9																						
28-Apr	2.6	6.0	13.1	Z	4.3	1.1	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	2.4	4.8	7.7	5.4	11.7	12.1	10.8	7.1	4.0	13.1																							
29-Apr	10.3	9.4	7.1	4.6	Z	2.2	12.8	22.7	14.8	6.4	5.8	7.0	4.5	2.9	2.0	2.5	2.6	2.3	2.1	1.2	1.2	1.1	1.2	1.1	5.6	22.7																						
30-Apr	0.8	2.1	9.5	13.1	16.1	Z	15.6	13.9	12.3	4.4	3.9	10.3	4.2	4.0	2.3	2.9	4.2	3.8	5.6	5.3	2.5	3.5	7.9	16.7	7.2	16.7																						
																								12.2	13.2	9.6	9.4	9.6	7.4	10.6	14.8	14.2	12.7	8.5	6.6	5.4	5.2	6.1	5.6	4.9	4.3	4.5	5.2	6.5	9.5	9.5	10.3	Diurnal Average
																								74.4	74.1	31.4	55.3	41.1	23.7	39.9	38.8	95.8	70.5	34.4	25.0	27.8	16.3	28.5	30.5	23.4	17.5	30.2	26.1	28.6	40.5	50.4	66.5	Diurnal Maximum
Z - zerspan																								C - Calibration				PF - Power Failure																				



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Fort McKay South - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	613	89.62	89.62
21 - 40	61	8.92	98.54
41 - 80	9	1.32	99.85
81 - 159	1	0.15	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort McKay South - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	68	35	22	8	13	48	62	108	65	27	27	30	18	21	24	37	613
21 - 40	14	4	1	0	2	2	5	8	6	10	3	0	0	1	2	3	61
11 - 80	0	1	0	0	0	0	0	0	1	1	2	4	0	0	0	0	9
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
Totals	82	41	23	8	15	50	67	116	72	38	32	34	18	22	26	40	684

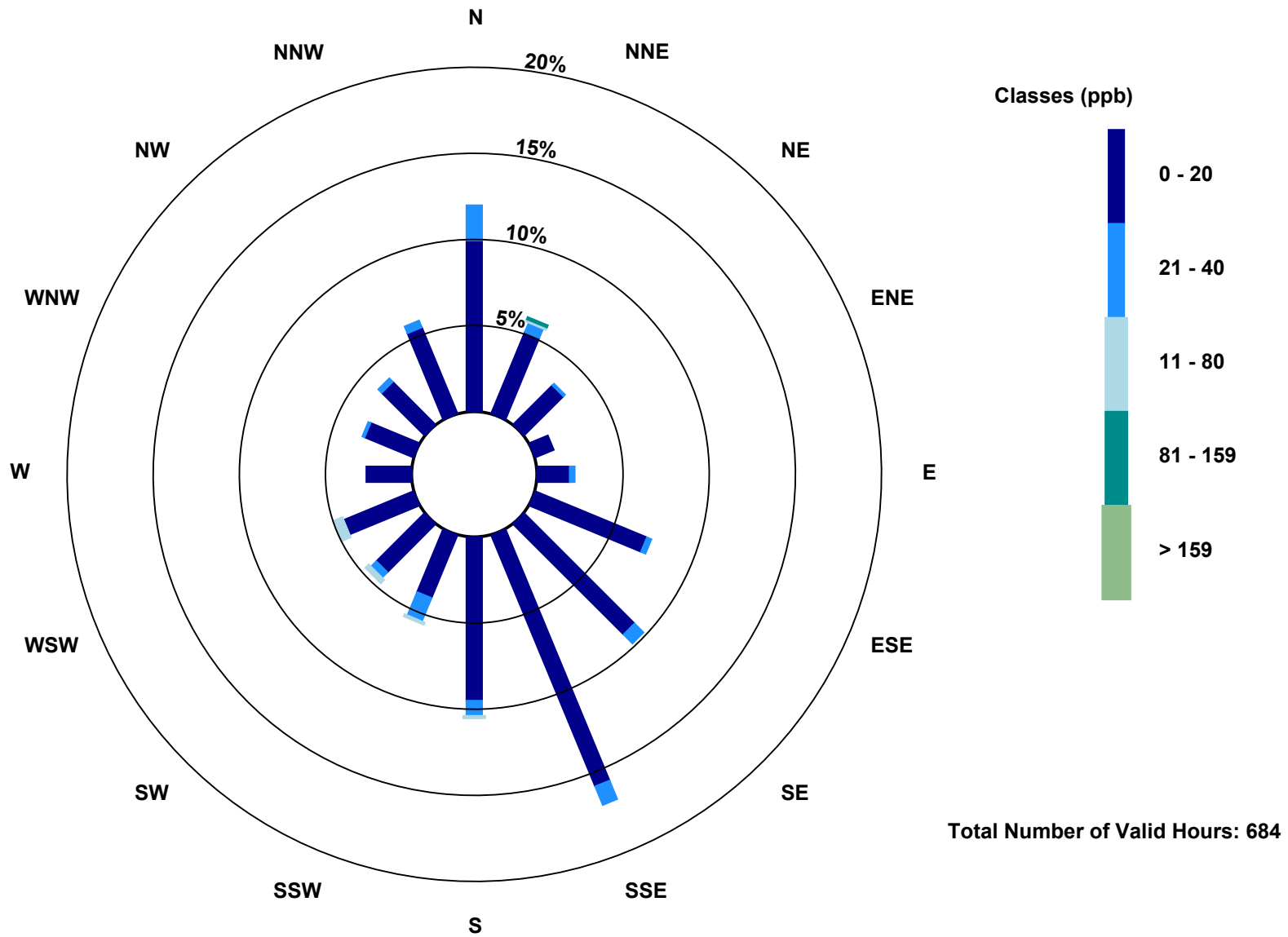
Total Number of Valid Hours: 684

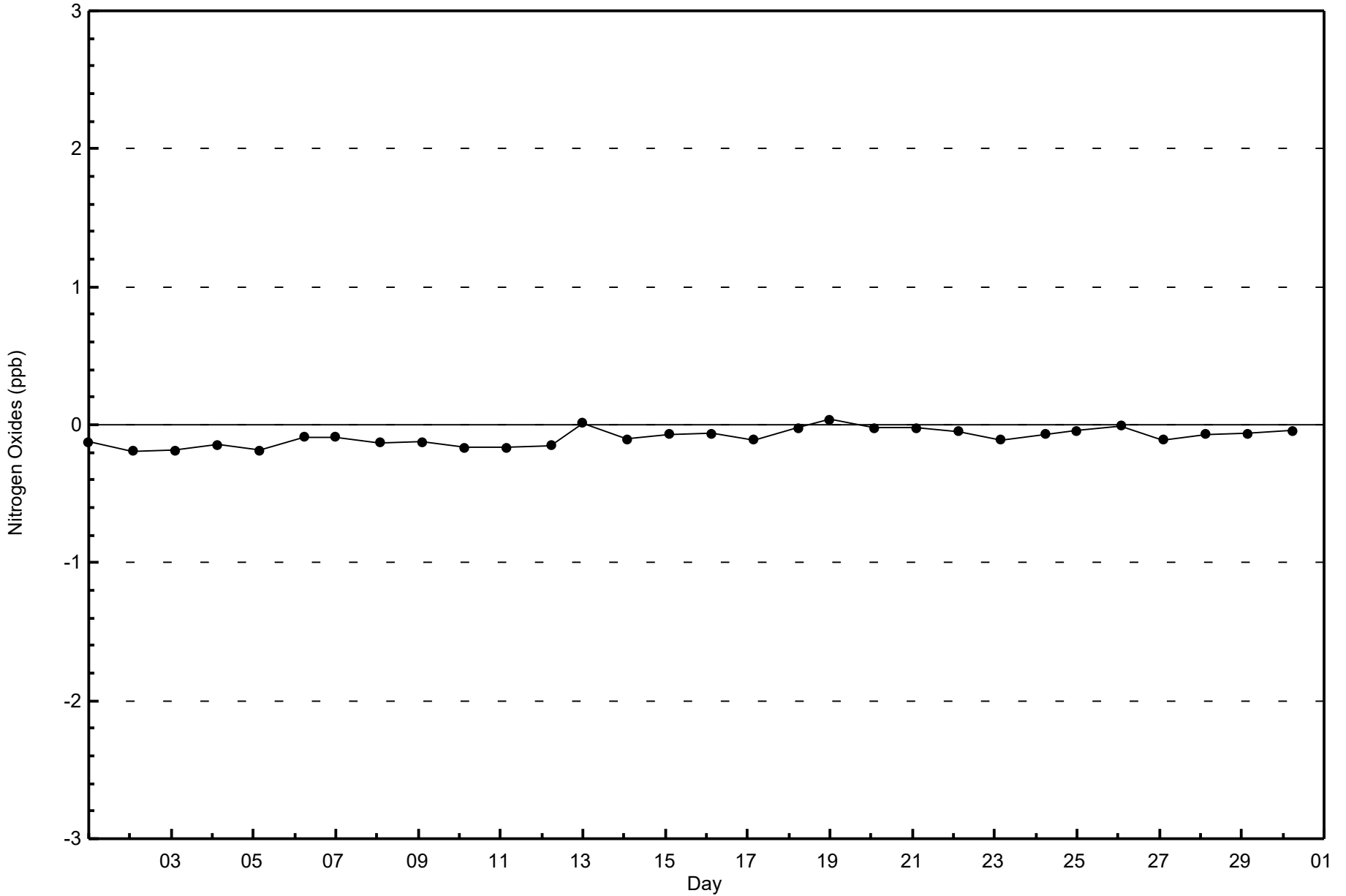
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Fort McKay South

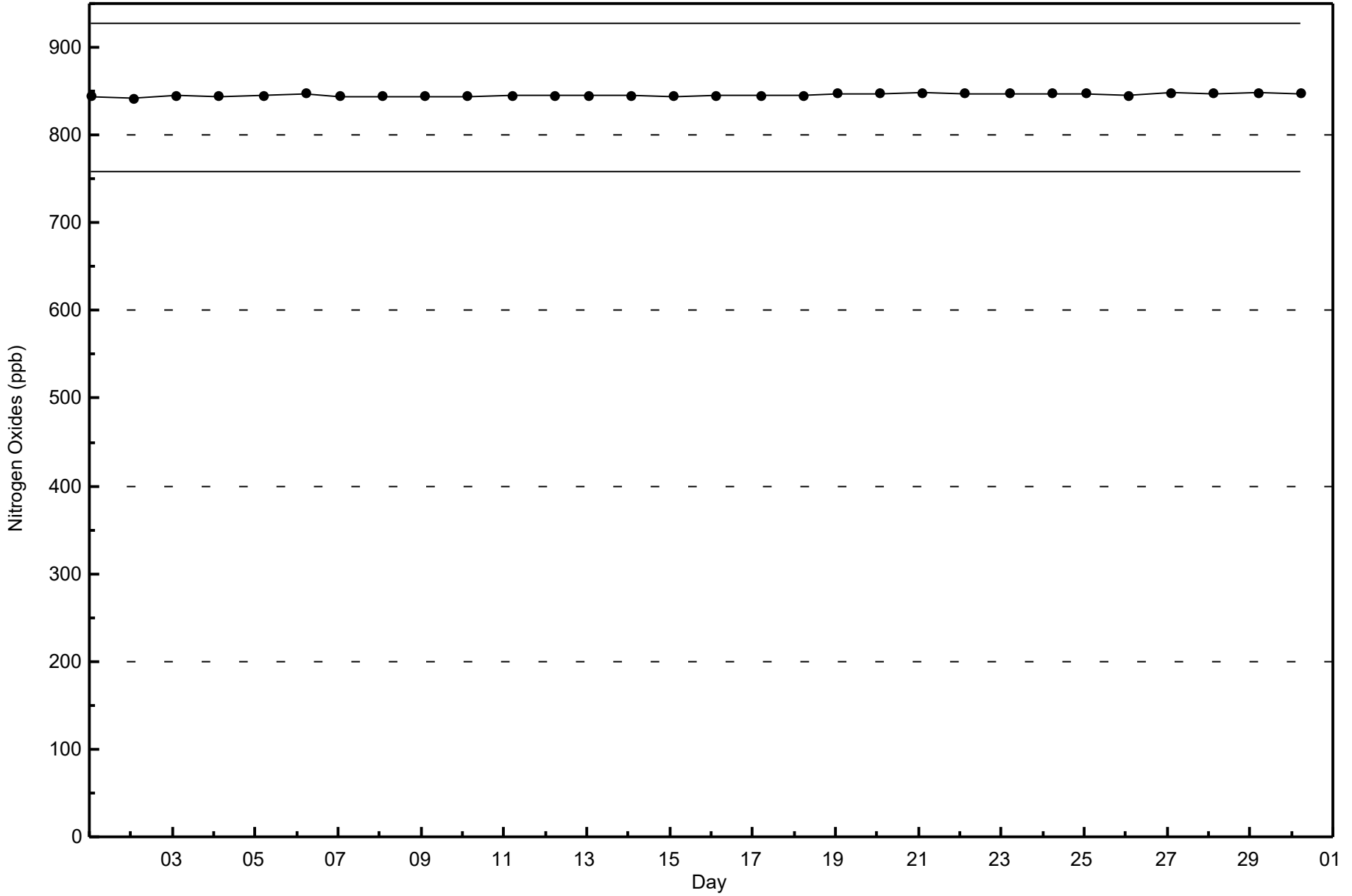






Wood Buffalo Environmental Association
Span Responses

Nitrogen Oxides (NO_x) - ppb
Fort McKay South - April 2023





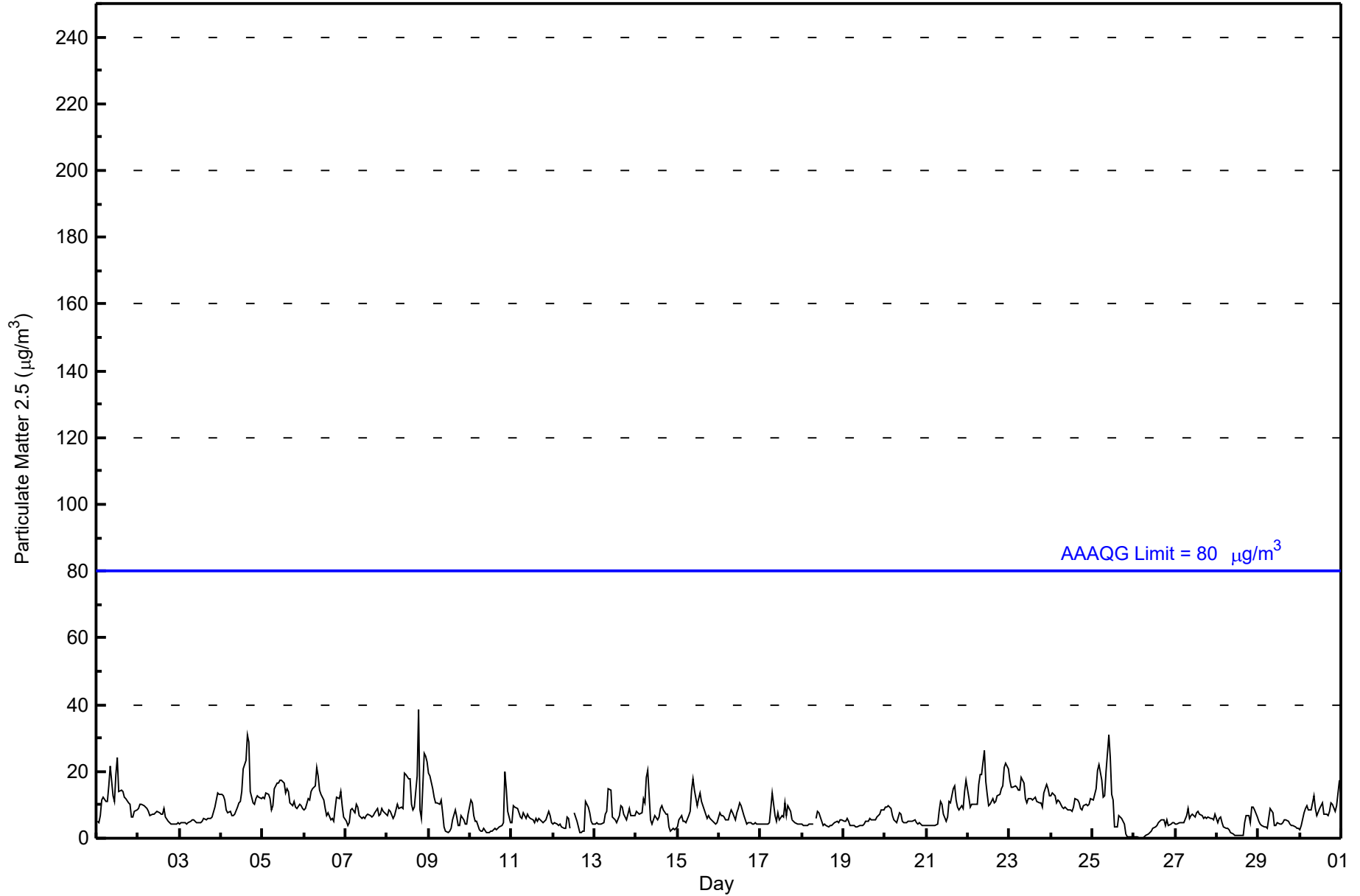
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Fort McKay South - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	720																												
Maximum Value: 38.7 µg/m ³ on Apr 8 19:00		Maximum Daily Average: 14.4 µg/m ³ on Apr 22																	Hours of Data: 718																														
Minimum Value: 0.1 µg/m ³ on Apr 26 06:00		Minimum Daily Average: 2.7 µg/m ³ on Apr 26																	Hours of Missing Data: 2																														
Maximum Diurnal Average: 9.6 µg/m ³ at hour 8		Minimum Diurnal Average: 7.0 µg/m ³ at hour 20																	Hours of Calibration: 1																														
Monthly Average: 8.06 µg/m ³		Percentiles: P ₁ = 0.3 P ₁₀ = 3.6 Q ₁ = 4.6 Median = 6.9 Q ₃ = 10.4 P ₉₀ = 14.3 P ₉₉ = 24.2																	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-Apr	4.9	4.8	6.9	11.2	12.3	11.0	10.9	15.7	21.7	12.9	11.0	19.0	24.3	14.1	14.3	13.9	12.3	11.9	10.4	10.4	6.5	6.5	8.0	8.6	11.8	24.3																							
2-Apr	9.0	10.0	10.0	9.7	9.4	8.9	7.8	6.8	7.3	7.2	7.5	7.8	7.5	7.4	7.1	8.8	6.4	5.0	4.6	4.3	4.3	4.2	4.3	4.6	7.1	10.0																							
3-Apr	4.3	4.7	4.7	4.5	4.4	4.4	5.0	5.5	5.3	5.2	4.5	4.5	4.6	5.2	6.1	5.6	5.9	5.9	5.7	6.2	9.4	11.3	13.7	13.1	6.2	13.7																							
4-Apr	13.2	12.6	11.5	8.4	7.5	8.2	6.8	7.4	9.3	10.7	10.9	13.8	20.7	23.1	30.9	28.8	14.0	10.6	10.0	11.7	12.9	12.3	11.9	13.1	13.1	30.9																							
5-Apr	12.5	11.8	13.7	13.2	11.7	8.6	9.6	14.7	16.4	16.4	17.5	17.5	16.7	13.6	14.7	14.0	10.8	9.7	10.9	9.3	8.8	10.1	9.9	8.9	12.5	17.5																							
6-Apr	8.3	9.1	12.1	11.4	13.9	15.0	15.8	21.1	18.6	14.4	13.1	11.3	8.8	6.9	7.8	5.4	5.9	5.1	9.0	12.3	12.0	13.9	9.7	6.5	11.1	21.1																							
7-Apr	5.3	3.8	4.6	8.5	8.8	7.8	10.4	9.2	6.8	6.0	6.4	5.8	6.6	7.0	6.7	6.5	7.0	7.8	9.1	6.7	7.1	8.8	8.0	7.2	7.2	10.4																							
8-Apr	6.7	8.3	7.8	6.1	7.0	8.6	10.0	9.1	9.3	8.9	19.5	19.2	17.7	17.7	10.0	8.6	9.2	18.7	38.7	8.5	6.0	25.5	24.5	23.0	13.7	38.7																							
9-Apr	19.3	18.5	14.9	12.3	10.5	10.7	10.4	11.4	7.6	3.2	2.2	1.9	2.2	3.1	5.4	8.3	6.4	4.0	3.9	6.7	5.5	4.3	4.4	7.4	7.7	19.3																							
10-Apr	11.5	10.5	6.6	5.0	5.1	2.7	2.0	2.2	3.0	1.8	1.8	1.7	2.0	2.0	2.9	2.5	3.2	3.6	3.9	4.6	19.9	14.8	8.0	4.7	5.2	19.9																							
11-Apr	4.7	9.9	9.3	8.8	7.8	6.3	6.1	7.7	6.1	7.2	6.4	5.9	5.4	4.8	6.0	5.2	5.7	5.3	4.5	5.3	5.4	7.9	6.6	4.8	6.4	9.9																							
12-Apr	4.3	4.7	4.4	3.9	4.3	3.2	3.1	3.1	6.3	6.0	2.8	C	7.7	6.4	5.0	1.6	1.8	2.1	2.0	11.0	9.5	7.5	5.1	4.4	4.8	11.0																							
13-Apr	4.4	4.5	4.2	4.2	4.1	4.6	7.0	8.0	14.9	14.5	6.2	5.9	5.6	4.8	7.0	9.6	9.4	7.1	5.5	7.1	8.8	6.9	6.8	6.8	7.0	14.9																							
14-Apr	8.1	7.6	7.0	7.6	11.9	10.5	18.1	20.3	5.4	4.2	5.4	7.0	5.7	6.2	8.8	9.8	8.6	7.1	7.1	3.2	1.9	3.0	2.5	2.8	7.5	20.3																							
15-Apr	3.4	5.5	6.7	5.0	5.2	4.7	6.9	8.0	14.2	17.6	14.4	9.6	11.7	13.5	11.1	8.4	7.2	6.0	6.7	6.0	5.2	4.8	4.3	4.8	8.0	17.6																							
16-Apr	7.6	6.9	6.7	6.2	5.7	5.6	7.3	8.3	7.6	5.4	7.8	8.9	10.5	9.9	6.7	5.6	4.4	4.5	4.5	4.4	4.3	4.6	4.4	4.2	6.3	10.5																							
17-Apr	4.3	4.3	4.3	4.3	4.2	4.6	9.1	13.6	6.6	5.3	7.4	5.4	6.8	6.5	10.6	6.8	9.8	8.3	5.5	5.1	4.5	4.3	4.2	4.2	6.3	13.6																							
18-Apr	4.1	4.0	3.9	3.9	4.0	4.1	4.1	PF	5.8	8.1	7.5	5.0	3.9	4.1	3.9	3.5	3.8	3.8	4.4	4.5	4.9	4.7	5.6	5.7	4.7	8.1																							
19-Apr	5.1	5.3	6.0	5.0	3.8	3.8	3.7	3.5	3.4	3.7	3.8	3.8	4.4	5.0	5.2	5.7	5.4	5.3	5.5	6.5	6.6	7.3	8.4	8.3	5.2	8.4																							
20-Apr	9.5	9.2	9.6	9.0	6.8	5.7	4.9	4.7	7.7	7.3	5.0	4.7	4.6	4.9	5.1	5.0	5.1	5.4	4.7	4.2	4.5	3.8	3.7	3.7	5.8	9.6																							
21-Apr	3.7	3.7	3.8	3.8	4.0	4.0	4.4	7.9	10.9	10.3	7.4	4.9	6.2	11.1	10.6	14.9	15.8	11.3	9.4	8.6	9.8	8.9	14.0	17.2	8.6	17.2																							
22-Apr	12.3	9.4	10.0	10.0	10.3	10.3	15.9	19.3	19.0	26.1	17.1	13.1	9.8	10.1	11.9	10.4	11.0	12.7	13.0	14.7	15.7	21.2	22.5	20.6	14.4	26.1																							
23-Apr	17.4	15.4	15.4	15.7	15.3	14.5	14.5	18.1	16.5	11.8	10.8	11.9	12.1	11.5	12.0	12.2	11.2	10.4	10.5	9.3	13.8	16.3	14.8	12.9	13.5	18.1																							
24-Apr	12.9	13.7	12.5	10.7	11.5	10.9	9.5	9.0	9.3	8.7	8.6	8.6	8.2	9.4	11.7	11.6	10.5	8.9	8.5	9.6	10.1	9.7	10.1	11.8	10.2	13.7																							
25-Apr	11.3	13.2	14.7	20.2	22.0	17.2	12.4	12.7	19.7	31.0	24.0	13.2	11.4	3.3	3.5	6.9	6.3	6.1	4.4	1.3	0.4	0.3	0.3	0.2	10.7	31.0																							
26-Apr	0.2	0.3	0.2	0.2	0.1	0.1	0.3	0.7	1.2	1.9	2.1	2.8	3.5	4.0	4.6	5.2	5.5	5.4	4.0	5.5	4.0	4.1	4.8	4.8	2.7	5.5																							
27-Apr	4.2	4.4	4.5	4.6	4.7	4.7	7.0	8.8	6.1	6.7	7.3	6.4	7.6	8.1	7.2	6.6	6.1	6.5	6.1	6.1	5.8	6.0	5.6	7.0	6.2	8.8																							
28-Apr	4.8	6.0	6.4	4.8	3.4	2.9	3.0	2.6	1.6	1.2	1.0	0.9	0.9	0.9	1.0	4.5	6.8	6.7	4.7	9.2	9.3	8.7	6.3	4.1	9.3																								
29-Apr	5.3	4.4	3.9	3.6	3.6	3.1	5.7	8.9	7.5	4.0	3.7	4.7	4.4	4.4	4.5	5.5	5.6	4.9	4.4	3.9	3.7	3.4	3.1	3.0	4.5	8.9																							
30-Apr	2.7	3.7	7.7	9.0	9.5	8.4	8.6	10.6	12.7	9.0	6.7	8.9	9.8	10.7	7.2	7.1	6.9	8.0	10.5	10.4	7.9	9.8	13.6	17.3	9.0	17.3																							
																								7.5	7.7	7.8	7.7	7.8	7.2	8.0	9.6	9.5	9.2	8.3	8.0	8.1	7.9	8.1	8.2	8.0	7.4	7.8	7.0	7.6	8.5	8.4	8.2	Diurnal Average	
																								19.3	18.5	15.4	20.2	22.0	17.2	18.1	21.1	21.7	31.0	24.0	19.2	24.3	20.7	23.1	30.9	28.8	18.7	38.7	14.7	19.9	25.5	24.5	23.0	Diurnal Maximum	
C - Calibration																								PF - Power Failure																									
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South - April 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	260	36.21	36.21
6 - 15	404	56.27	92.48
16 - 25	48	6.69	99.16
26 - 80	6	0.84	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Fort McKay South - April 2023**

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	24	16	15	6	9	28	16	16	15	4	12	25	17	17	19	21	260
6 - 15	59	24	8	2	7	21	48	87	51	30	17	7	3	7	10	23	404
16 - 25	4	2	0	1	0	1	5	16	7	5	3	3	0	0	0	1	48
26 - 80	0	0	0	0	0	0	1	1	2	1	1	0	0	0	0	0	6
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	87	42	23	9	16	50	70	120	75	40	33	35	20	24	29	45	718

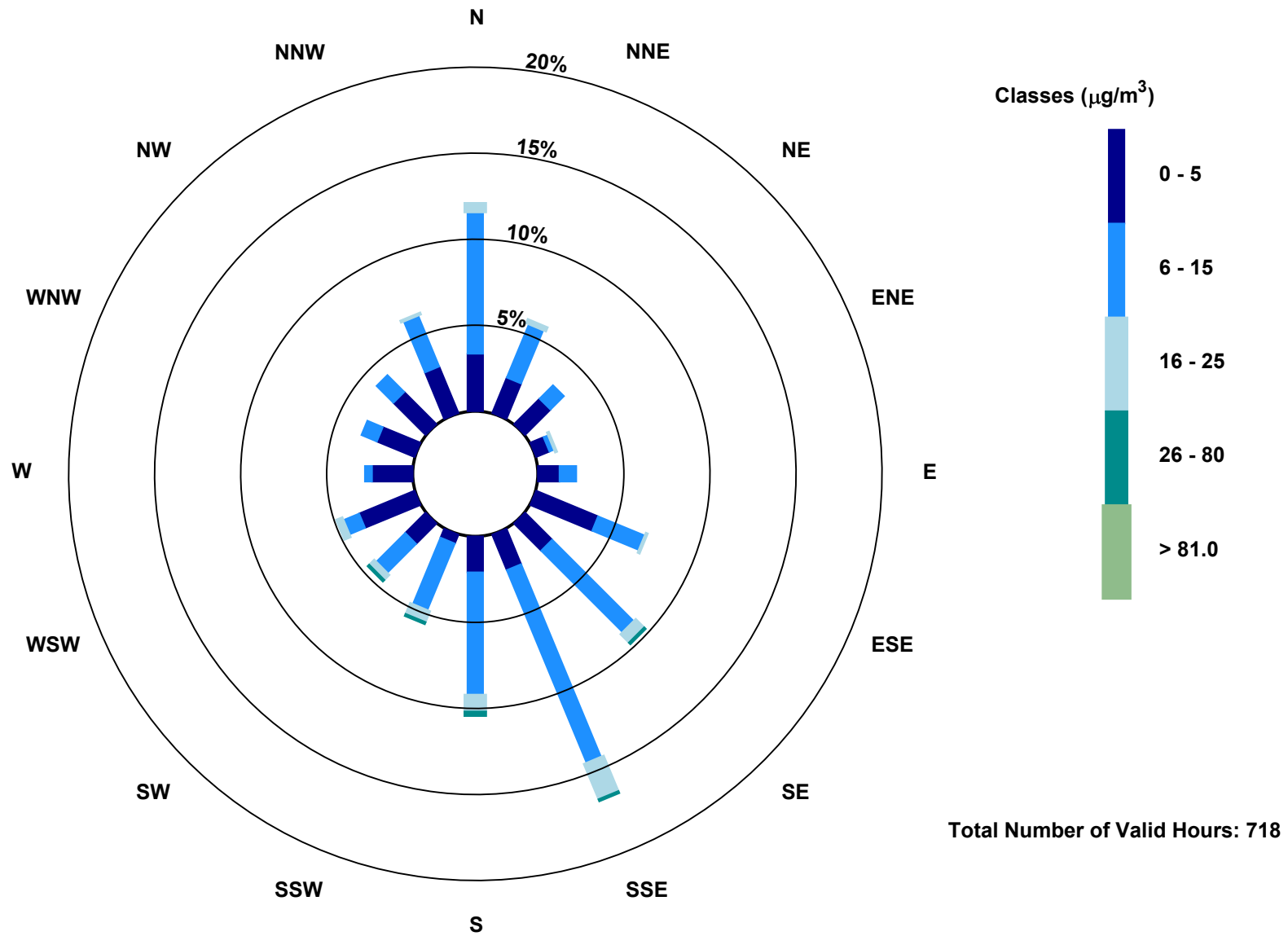
Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South





Wood Buffalo Environmental Association
Summary of Hour Averages

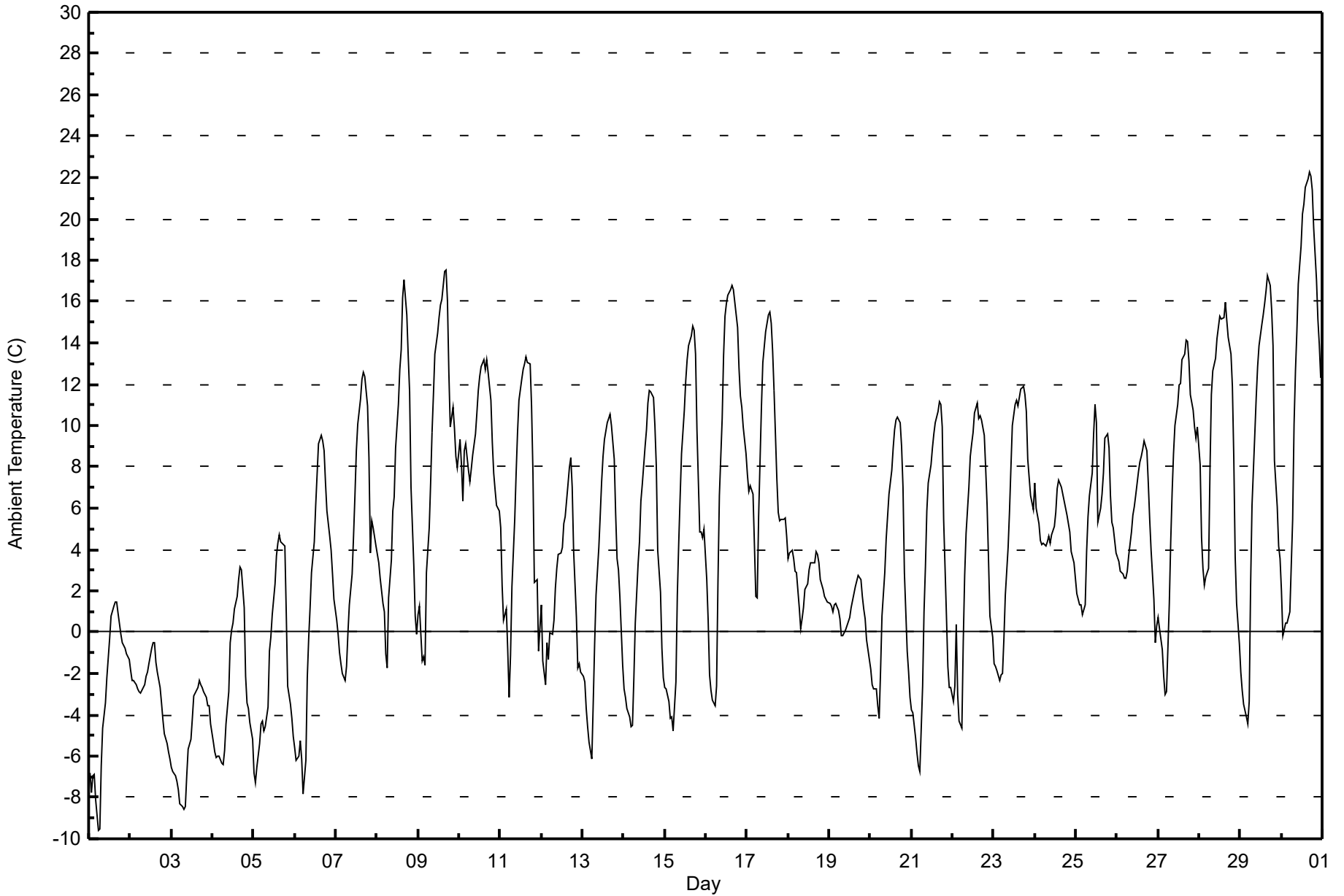
Ambient Temperature (AT) - C
Fort McKay South - April 2023

Maximum Value: 22.3 C on Apr 30 17:00 Maximum Daily Average: 12.9 C on Apr 30																						Hours in Service: 720 Hours of Data: 720																										
Minimum Value: -9.6 C on Apr 1 06:00 Minimum Daily Average: -5.2 C on Apr 3 Maximum Diurnal Average: 10.1 C at hour 17 Minimum Diurnal Average: -2.0 C at hour 6 Monthly Average: 4.20 C Percentiles: P ₁ = -7.8 P ₁₀ = -4.1 Q ₁ = -1.0 Median = 3.7 Q ₃ = 9.3 P ₉₀ = 13.2 P ₉₉ = 19.4																						Hours of Missing Data: 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-Apr	-6.8	-7.7	-6.9	-6.9	-8.1	-9.6	-9.5	-6.5	-4.6	-3.4	-2.2	-1.2	-0.3	0.8	1.3	1.5	1.5	0.9	-0.1	-0.5	-0.6	-0.8	-1.0	-1.3	-3.0	1.5																						
2-Apr	-1.8	-2.3	-2.4	-2.5	-2.7	-2.9	-2.9	-2.8	-2.5	-2.1	-1.9	-1.5	-0.8	-0.5	-0.5	-1.4	-1.9	-2.7	-3.4	-4.2	-4.9	-5.4	-5.8	-6.2	-2.8	-0.5																						
3-Apr	-6.6	-6.8	-6.9	-7.2	-7.6	-8.3	-8.5	-8.6	-8.4	-7.0	-5.7	-5.2	-4.2	-3.1	-3.0	-2.7	-2.4	-2.6	-2.7	-2.9	-3.1	-3.6	-3.5	-4.5	-5.2	-2.4																						
4-Apr	-5.3	-5.8	-6.1	-6.0	-6.0	-6.3	-6.4	-5.8	-4.4	-2.9	-0.5	0.1	0.5	1.1	1.7	2.5	3.1	3.0	1.2	-2.1	-3.4	-3.7	-4.4	-5.2	-2.5	3.1																						
5-Apr	-6.8	-7.3	-6.5	-5.4	-4.4	-4.3	-4.8	-4.6	-3.6	-0.9	-0.2	0.8	2.3	3.7	4.3	4.7	4.4	4.3	4.2	0.9	-2.6	-3.5	-4.2	-5.0	-1.4	4.7																						
6-Apr	-5.6	-6.2	-6.0	-5.2	-6.1	-7.8	-6.2	-2.2	-0.3	1.2	2.9	4.4	6.2	7.6	9.1	9.5	9.3	8.8	7.2	5.9	4.7	3.9	2.8	1.6	1.6	9.5																						
7-Apr	0.6	-0.1	-1.0	-1.5	-2.0	-2.3	-1.7	0.0	1.3	2.8	4.7	6.6	8.8	10.1	11.3	12.2	12.6	12.4	11.0	8.4	3.8	5.4	5.0	4.2	4.7	12.6																						
8-Apr	3.7	3.4	2.6	1.4	1.0	-1.1	-1.7	1.7	3.5	5.9	6.5	8.9	11.0	12.7	13.7	16.2	17.0	15.4	13.4	11.6	7.0	3.2	0.7	-0.1	6.6	17.0																						
9-Apr	0.9	1.2	-1.4	-1.2	-1.6	2.9	5.0	7.2	9.6	11.5	13.4	14.5	15.2	15.8	16.1	17.4	17.5	16.1	12.6	9.9	10.9	9.9	8.5	8.0	9.2	17.5																						
10-Apr	9.3	8.1	6.3	8.8	9.1	7.8	7.3	7.9	8.6	9.6	10.6	11.7	12.3	12.9	13.2	12.7	13.2	12.6	11.2	9.2	7.7	6.9	6.2	5.9	9.5	13.2																						
11-Apr	5.0	2.2	0.6	1.1	-0.9	-3.2	-1.1	2.2	5.4	7.7	9.7	11.2	12.3	12.7	13.0	13.3	13.0	13.0	11.0	7.7	2.4	2.5	-0.9	0.2	5.8	13.3																						
12-Apr	1.3	-1.4	-2.5	-0.5	-1.3	0.0	-0.1	0.6	2.1	3.1	3.8	3.8	4.1	5.3	5.6	7.1	7.9	8.4	7.0	4.0	0.7	-1.7	-1.5	-1.9	2.3	8.4																						
13-Apr	-2.1	-2.4	-3.7	-4.6	-5.3	-6.1	-3.5	-0.6	1.8	4.1	5.6	7.3	8.5	9.3	10.2	10.3	10.5	10.0	8.4	5.8	3.6	3.0	1.7	-1.6	2.9	10.5																						
14-Apr	-2.7	-3.2	-3.7	-4.1	-4.5	-4.5	-2.2	0.5	3.3	4.4	6.3	7.2	9.0	9.8	11.1	11.7	11.7	11.4	10.0	8.0	4.0	1.9	-0.8	-2.2	3.4	11.7																						
15-Apr	-2.7	-2.8	-3.3	-4.1	-4.1	-4.8	-2.4	1.8	4.3	6.5	8.7	10.8	12.2	13.2	13.9	14.3	14.8	14.6	13.5	9.8	4.8	4.8	4.6	5.0	5.6	14.8																						
16-Apr	2.6	0.6	-2.1	-2.8	-3.3	-3.6	-2.6	2.4	6.6	10.4	13.4	15.3	15.9	16.3	16.6	16.8	16.6	16.0	14.7	12.8	11.4	10.9	9.9	8.7	8.5	16.8																						
17-Apr	7.6	6.8	7.1	6.7	4.3	1.7	1.6	5.6	10.9	13.0	13.8	14.5	15.3	15.5	14.9	13.6	11.7	7.4	5.8	5.4	5.5	5.4	5.5	4.6	8.5	15.5																						
18-Apr	3.5	3.9	4.0	3.5	2.9	2.9	1.2	0.2	0.6	1.2	2.0	2.4	3.0	3.4	3.3	3.3	3.9	3.7	3.4	2.6	2.1	1.7	1.6	1.5	2.6	4.0																						
19-Apr	1.4	1.2	1.0	1.3	1.4	1.1	0.7	-0.2	-0.1	0.1	0.3	0.5	0.7	1.2	1.9	2.2	2.5	2.7	2.5	1.7	1.1	0.7	-0.4	-1.3	1.0	2.7																						
20-Apr	-1.8	-2.6	-2.8	-2.7	-3.6	-4.2	-1.9	0.8	2.9	4.5	5.6	6.7	7.8	8.9	9.8	10.3	10.4	10.1	9.0	7.0	2.9	-0.9	-1.9	-3.1	3.0	10.4																						
21-Apr	-3.8	-3.9	-5.1	-5.9	-6.5	-6.8	-2.6	1.0	3.2	5.8	7.2	8.1	8.9	9.6	10.1	10.7	11.2	11.0	9.9	5.5	0.8	-1.7	-2.7	-2.7	2.6	11.2																						
22-Apr	-3.3	-2.6	0.3	-3.0	-4.3	-4.7	-0.5	2.8	4.8	7.0	8.5	9.1	9.7	10.6	11.1	10.3	10.5	10.3	9.5	7.9	6.1	3.6	0.7	-0.2	4.3	11.1																						
23-Apr	-1.5	-1.6	-1.8	-2.3	-2.1	-2.0	-0.3	1.8	4.1	5.9	8.0	10.0	11.0	11.2	11.0	11.4	11.7	11.9	11.5	10.7	8.3	6.6	6.3	6.0	5.7	11.9																						
24-Apr	7.2	6.0	5.2	4.4	4.3	4.3	4.1	4.4	4.6	4.3	4.7	5.1	5.8	6.9	7.4	7.0	6.7	6.4	6.0	5.6	4.8	3.9	3.6	3.4	5.3	7.4																						
25-Apr	1.8	1.6	1.3	1.3	0.8	1.3	3.9	5.6	6.6	7.7	9.6	11.0	10.1	5.3	6.0	6.7	7.7	9.4	9.6	8.9	6.6	5.3	5.0	3.8	5.7	11.0																						
26-Apr	3.6	3.4	3.0	2.8	2.6	2.6	2.9	3.7	4.9	5.7	6.1	6.6	7.7	8.2	8.5	8.8	9.3	8.8	7.2	5.5	4.0	1.6	-0.5	0.3	4.9	9.3																						
27-Apr	0.7	0.2	-0.8	-2.1	-3.0	-2.9	1.4	4.4	6.8	8.7	10.0	11.0	12.0	12.0	13.2	13.4	14.1	14.1	13.1	11.5	10.7	9.9	9.4	9.9	7.4	14.1																						
28-Apr	8.1	4.6	3.1	2.3	2.7	3.1	7.8	11.5	12.6	13.2	14.2	14.8	15.3	15.1	15.2	16.0	15.1	14.3	13.5	11.9	8.4	3.6	1.4	-0.6	9.5	16.0																						
29-Apr	-1.9	-2.8	-3.5	-4.1	-4.5	-3.4	2.3	6.1	9.6	11.3	12.9	13.9	14.9	15.3	15.9	16.5	17.2	16.7	15.6	13.8	8.3	6.1	4.2	3.6	7.7	17.2																						
30-Apr	2.0	-0.1	0.5	0.4	0.7	1.0	5.4	10.1	12.6	14.5	16.9	18.6	20.2	20.7	21.5	21.9	22.3	22.1	21.4	19.5	17.0	15.2	14.0	12.3	12.9	22.3																						
																								0.2	-0.5	-1.1	-1.3	-1.7	-2.0	-0.5	1.7	3.6	5.1	6.5	7.6	8.5	9.1	9.6	10.0	10.1	9.7	8.6	6.7	4.4	3.2	2.1	1.4	Diurnal Average
																								9.3	8.1	7.1	8.8	9.1	7.8	7.8	11.5	12.6	14.5	16.9	18.6	20.2	20.7	21.5	21.9	22.3	22.1	21.4	19.5	17.0	15.2	14.0	12.3	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Fort McKay South - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Fort McKay South - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	214	29.72	29.72
0 - 10	351	48.75	78.47
10 - 20	148	20.56	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

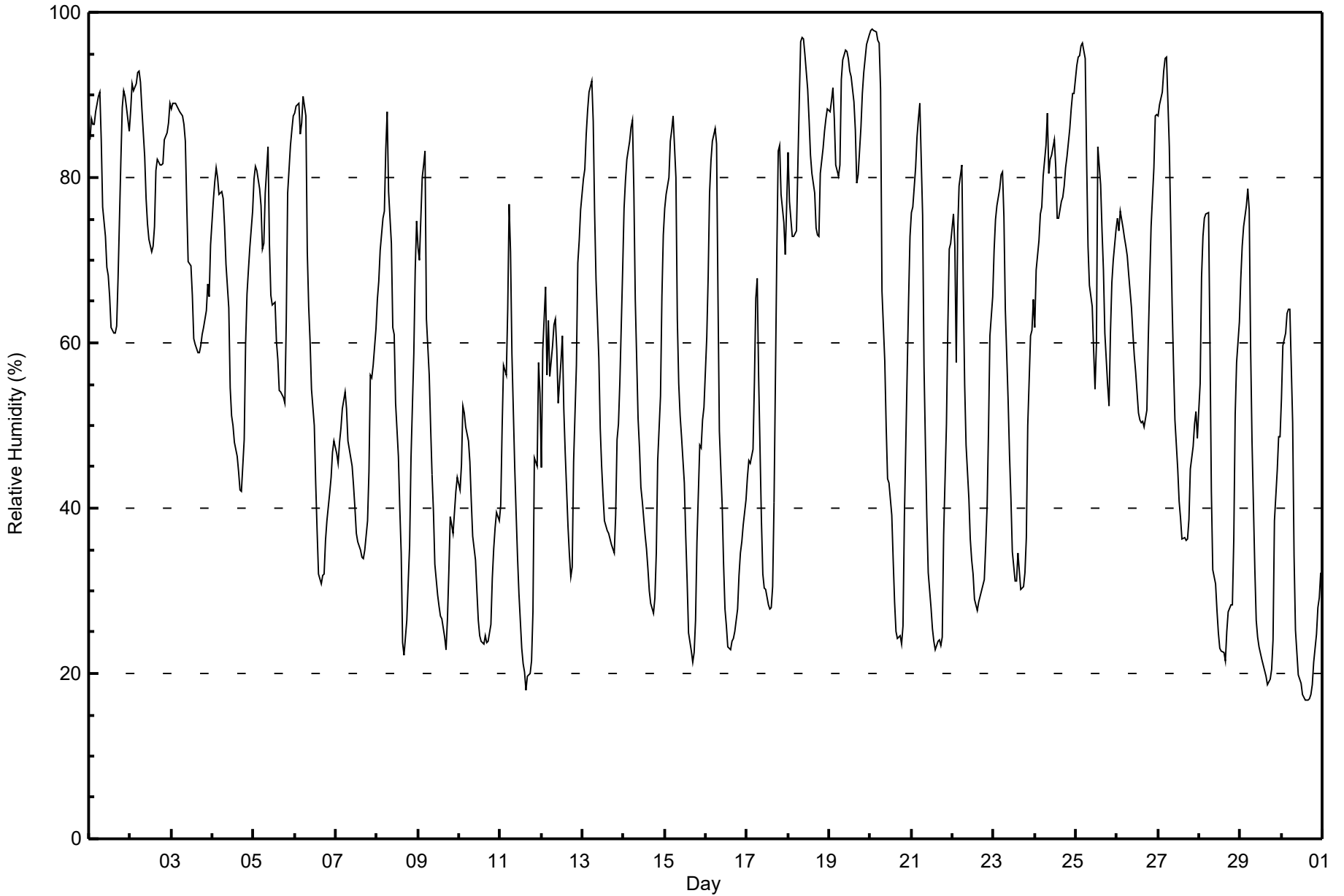
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Fort McKay South - April 2023

Maximum Value: 97.9 % on Apr 20 02:00		Maximum Daily Average: 89.4 % on Apr 19		Hours in Service: 720																																												
Minimum Value: 16.8 % on Apr 30 16:00		Minimum Daily Average: 33.1 % on Apr 30		Hours of Data: 720																																												
Maximum Diurnal Average: 78.9 % at hour 6		Minimum Diurnal Average: 39.8 % at hour 17		Hours of Missing Data: 0																																												
Monthly Average: 58.47 %		Percentiles: P ₁ = 18.7 P ₁₀ = 26.5 Q ₁ = 38.4 Median = 59.9 Q ₃ = 78.2 P ₉₀ = 87.9 P ₉₉ = 96.6		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-Apr	84.6	87.1	86.5	86.5	88.0	89.8	90.3	84.6	76.5	72.9	69.1	68.1	65.6	61.9	61.1	61.1	62.0	67.8	82.0	88.5	90.6	89.8	88.4	85.7	78.7	90.6																						
2-Apr	88.1	91.3	90.6	91.4	92.7	92.9	91.6	88.4	82.5	77.4	74.4	72.6	70.9	71.7	74.0	80.8	82.3	81.5	81.6	81.7	84.6	85.4	86.7	89.0	83.5	92.9																						
3-Apr	88.3	89.0	89.0	88.6	88.3	87.9	87.5	86.5	84.4	76.8	69.9	69.3	65.8	60.5	59.8	58.8	58.7	59.6	61.0	61.8	63.9	67.1	65.6	71.9	73.3	89.0																						
4-Apr	77.3	79.6	81.2	80.0	78.0	78.3	77.4	74.1	69.6	64.3	54.6	51.1	50.0	47.9	46.3	44.4	42.3	42.1	48.3	60.0	65.9	68.9	71.5	75.8	63.7	81.2																						
5-Apr	79.8	81.4	80.8	78.6	76.6	71.3	72.1	78.2	83.7	71.9	65.7	64.6	64.9	60.3	58.0	54.3	54.1	53.4	52.8	62.5	78.2	83.9	85.8	87.4	70.8	87.4																						
6-Apr	87.8	88.7	88.9	85.3	86.7	89.8	87.5	71.0	64.5	60.1	54.4	50.0	43.1	37.3	32.1	30.9	31.9	32.0	36.2	38.5	41.9	43.8	46.7	48.1	57.4	89.8																						
7-Apr	46.5	45.4	48.0	49.7	52.1	54.0	52.1	48.1	47.0	45.2	42.7	40.0	36.9	36.0	34.9	34.1	34.0	35.0	38.4	44.4	56.1	55.7	57.3	61.7	45.6	61.7																						
8-Apr	65.3	67.4	71.2	75.1	75.9	83.4	87.9	78.2	72.0	61.9	61.0	52.6	46.3	40.0	34.6	23.8	22.3	26.5	31.0	35.4	46.1	58.6	68.7	74.7	56.7	87.9																						
9-Apr	71.5	69.9	80.1	81.6	83.3	62.9	56.0	49.7	44.0	39.6	33.2	29.4	28.1	27.0	26.7	24.4	22.8	26.6	32.4	39.0	37.0	39.5	42.1	43.7	45.4	83.3																						
10-Apr	42.1	45.3	52.4	51.5	49.9	48.2	45.5	40.9	36.6	33.7	29.9	26.4	24.6	23.8	23.5	24.7	23.8	23.8	25.9	31.5	35.1	37.6	39.5	38.4	35.6	52.4																						
11-Apr	40.3	49.7	57.2	56.0	64.1	76.8	71.0	58.6	44.9	39.3	34.1	29.6	23.1	21.2	20.2	17.9	19.7	20.0	21.6	27.5	46.1	45.1	57.6	53.8	41.5	76.8																						
12-Apr	44.9	59.1	66.7	56.0	62.7	55.9	59.7	62.1	62.9	59.1	52.7	57.8	60.9	52.0	46.7	37.8	34.4	31.7	32.8	45.5	57.3	69.7	72.3	76.1	54.9	76.1																						
13-Apr	79.8	81.1	85.2	88.1	90.3	91.8	86.8	75.7	67.6	58.1	49.6	45.2	41.6	38.4	37.3	37.0	36.3	35.6	34.6	39.1	48.3	50.1	55.2	68.8	59.2	91.8																						
14-Apr	76.3	79.7	82.2	84.4	86.2	87.0	78.3	65.2	50.8	47.2	42.5	40.9	36.8	35.1	32.7	30.0	28.4	27.2	29.2	34.6	45.7	53.5	65.6	73.1	54.7	87.0																						
15-Apr	76.3	77.9	80.0	84.5	85.8	87.5	80.0	62.8	55.1	51.2	48.7	43.0	36.6	31.3	24.9	22.7	21.3	22.6	26.4	36.0	47.6	47.3	50.7	52.2	52.2	87.5																						
16-Apr	60.6	68.0	78.2	82.1	84.3	85.9	84.1	65.8	49.3	40.3	33.2	27.8	25.7	23.2	22.8	23.9	24.3	25.1	27.7	31.9	34.6	35.9	38.0	41.1	46.4	85.9																						
17-Apr	43.7	45.8	45.4	47.1	55.2	65.4	67.8	55.9	38.5	32.1	30.3	30.1	28.3	27.7	28.0	30.5	40.8	71.1	83.2	84.0	78.0	74.6	70.7	76.5	52.1	84.0																						
18-Apr	83.1	77.1	72.9	72.9	73.2	73.5	89.3	96.4	97.0	96.7	95.0	90.7	87.0	82.7	80.4	78.1	74.0	73.1	72.8	80.6	83.5	85.7	87.2	88.2	83.0	97.0																						
19-Apr	88.0	89.4	90.9	87.0	81.5	80.1	81.6	91.9	94.2	95.5	95.2	94.4	92.9	92.2	89.2	85.7	79.4	80.4	86.1	90.2	92.6	94.4	96.1	97.4	89.4	97.4																						
20-Apr	97.9	97.9	97.8	97.6	96.6	96.3	90.7	66.2	57.8	49.8	43.6	43.0	39.1	33.8	28.7	25.1	24.2	24.6	23.6	25.7	39.0	56.6	65.3	72.9	58.1	97.9																						
21-Apr	75.8	76.5	81.2	84.9	87.1	89.0	75.4	57.1	47.6	39.0	32.2	28.0	25.5	23.9	22.8	23.9	24.1	23.4	24.4	36.7	50.2	62.0	71.4	72.0	51.4	89.0																						
22-Apr	75.6	71.6	57.6	73.3	79.0	81.5	66.7	54.9	47.6	41.2	36.3	33.7	32.1	29.0	27.6	28.7	29.3	29.9	31.4	35.4	40.1	49.3	60.8	65.6	49.1	81.5																						
23-Apr	71.1	74.9	76.6	78.7	80.4	80.6	75.3	64.1	53.1	46.4	41.1	34.8	31.1	31.2	34.6	32.4	30.2	30.5	32.2	36.5	49.9	60.9	61.6	65.3	53.1	80.6																						
24-Apr	61.8	68.8	72.3	75.6	76.5	80.2	83.9	87.9	80.5	82.2	82.7	84.6	81.2	75.1	75.1	77.1	77.7	79.1	81.2	82.6	86.0	88.4	90.2	90.3	80.0	90.3																						
25-Apr	93.5	94.5	94.8	95.9	96.2	94.3	82.2	71.6	67.0	64.5	59.1	54.4	59.9	83.7	79.2	73.5	68.8	61.2	54.9	52.5	61.2	67.2	69.9	73.7	73.9	96.2																						
26-Apr	75.1	73.6	75.8	73.8	72.7	71.7	70.5	68.2	64.2	61.2	58.6	56.4	51.6	50.7	50.3	50.5	49.9	51.8	60.5	67.4	74.1	81.1	87.5	87.7	66.0	87.7																						
27-Apr	87.4	88.8	90.3	92.8	94.4	94.5	83.7	74.4	64.7	57.3	50.7	44.8	40.9	38.8	36.2	36.5	36.2	36.2	38.7	44.8	47.5	50.1	51.7	48.5	59.6	94.5																						
28-Apr	55.2	68.0	72.8	75.1	75.7	75.8	59.9	42.1	32.5	30.8	27.7	24.9	23.1	22.7	22.5	21.5	25.1	27.5	28.3	28.3	36.3	51.4	57.7	62.5	43.6	75.8																						
29-Apr	67.8	71.7	74.1	76.6	78.7	76.0	59.4	48.2	32.8	26.5	24.5	23.2	21.8	21.0	20.3	19.6	18.7	19.3	20.6	24.0	38.5	44.5	48.6	48.6	41.9	78.7																						
30-Apr	53.2	59.7	61.1	63.5	64.1	64.1	50.3	34.3	25.2	22.6	19.8	18.8	17.5	17.2	16.9	16.8	16.9	17.5	18.7	21.3	24.8	28.0	29.1	32.2	33.1	64.1																						
																								71.3	74.0	76.1	77.1	78.5	78.9	74.8	66.8	59.8	54.8	50.4	47.7	45.1	43.2	41.6	40.2	39.8	41.2	44.0	48.9	56.0	60.9	64.6	67.4	Diurnal Average
																								97.9	97.9	97.8	97.6	96.6	96.3	91.6	96.4	97.0	96.7	95.2	94.4	92.9	92.2	89.2	85.7	82.3	81.5	86.1	90.2	92.6	94.4	96.1	97.4	Diurnal Maximum





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Fort McKay South - April 2023

Maximum Speed: 28 km/h on Apr 17 15:00	Maximum Daily Speed Average: 16.2 km/h on Apr 7	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 20 03:00	Minimum Daily Speed Average: 1.9 km/h on Apr 4	Hours of Data: 720
Maximum Diurnal Speed Average: 5.3 km/h at hour 13	Minimum Diurnal Speed Average: 0.9 km/h at hour 5	Hours of Missing Data: 0
Monthly Average Velocity: 2.4 km/h 154.2 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 4 Median = 7 Q ₃ = 11 P ₉₀ = 17 P ₉₉ = 24	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-Apr	N4	NNW3	N4	N5	N5	N4	N5	N6	NNE7	N4	N5	N9	N10	NNE10	NNE10	NNE9	N9	NNW10	N8	NNE5	SE6	SE6	ESE6	ESE6	NNE5.0	N10	
2-Apr	ESE5	SE4	ESE3	NE2	E3	E3	ESE4	ESE5	SE8	SE9	SSE10	SSE8	SSE4	N5	N9	N13	N14	N15	N15	NNE12	N12	N11	N11	N10	NE4.4	N15	
3-Apr	N11	N10	NNW9	N10	N8	N9	N9	N9	N9	NNE7	NNE7	NNE6	NE6	ENE7	NE7	NNE5	NNE3	NNE4	ESE4	SE5	SSE5	SSE4	SSE5	NNW1	NNE4.8	N11	
4-Apr	WNW2	NW3	NNW4	NNW3	NW3	NW4	NNW3	N4	NNE4	NNE4	S3	SE8	SSE9	SSE8	S9	S7	S3	SSE7	S8	S4	SSE4	S3	SSE2	E1	SSE1.9	SSE9	
5-Apr	SSE3	SSW1	SSE3	ESE3	SE5	SE9	SSE6	SE7	SE7	SE4	SE7	SSE12	SSE11	SSW7	SSE2	SE4	SSE12	SSE8	SSE8	S3	SW3	SSW3	SSW2	SSE3	SSE5.0	SSE12	
6-Apr	S4	SSW3	SSW6	SSW4	SSE4	SSE5	SSE1	SSE6	SSE15	SSE19	SSE20	SSE21	SSE26	SSE26	S25	S23	S21	S21	S17	S17	SSE15	SSE18	SSE17	SSE17	SSE14.3	SSE26	
7-Apr	SSE15	S14	S12	S12	S10	S12	S14	SSE18	SSE21	SSE24	SSE23	SSE23	SSE23	SSE23	SSE25	SSE25	SSE24	SSE20	SSE15	S10	SSW6	S11	S9	SSE8	SSE16.2	SSE25	
8-Apr	SSE9	S8	S8	S8	S7	SSW5	S6	SSE7	SSE10	S15	SSE14	SSE13	SE14	SSE16	SSE16	S14	SW11	SSW8	SSW7	SW6	SW5	SW6	WSW3	WSW3	S8.2	SSE16	
9-Apr	SW6	SW5	SSW3	WSW2	SW3	SSW8	SW7	SW8	SW10	SW12	WSW13	WSW14	WSW14	SW15	SSW9	SSW9	SSW11	S10	S7	S10	SSE11	SSE9	S5	SSE8	SSW7.5	SW15	
10-Apr	SSE9	S8	S9	WSW12	WSW17	WSW17	WSW17	WSW21	WSW21	WSW20	WSW20	WSW21	WSW21	WSW21	WSW21	WSW19	WSW18	WSW18	WSW16	WSW14	SW8	SSW8	SSW8	SW8	SW7	WSW14.1	WSW21
11-Apr	SSW7	SSW6	S5	SSW5	N2	W2	SW1	SSE6	S9	S10	S10	S10	SSW11	SW10	SW10	SW7	NE1	N4	NNW12	NNW7	WNW6	NW7	W5	W8	SW3.7	NNW12	
12-Apr	WNW7	WNW2	WSW6	WSW7	W4	W7	W6	NNW3	ENE2	N3	NW9	N8	NNE10	NNE10	NNE10	NW9	WNW8	WNW6	WNW6	NNW4	WSW2	WNW2	NW6	NNW5	NW4.2	NNE10	
13-Apr	NW3	WNW3	NW2	WNW2	NW2	WSW1	N4	NNE5	NNE6	NNE5	NNE7	N6	NNE7	NE10	NNE10	N11	N10	N13	N11	N9	NNW9	N10	N8	N2	N6.0	N13	
14-Apr	NNW4	NNW3	NNW3	NNW4	N2	NNW3	N4	NNE5	SE3	NNE1	ENE4	NE7	NE7	NNE8	N9	NNE10	N13	N13	N12	SE6	SSE5	SE4	NNW3	NNW4	NNE4.1	N13	
15-Apr	NNW2	N4	N3	NNW2	NNW1	NW2	NNW2	SE3	SE3	ESE4	SE6	ESE7	ESE8	ESE9	E10	ESE10	SE7	SSE9	SE7	SSE6	SSE4	SSE6	SSE9	SSE7	SE3.9	ESE10	
16-Apr	SSE5	SSE3	NW3	NW3	NW2	WNW1	N3	NNE3	SE6	ESE4	ESE9	SE22	SE24	SE22	SE17	SE16	ESE15	ESE15	ESE14	SE11	SE14	SE16	SE15	SSE13	SE9.3	SE24	
17-Apr	SSE11	SSE9	SE10	ESE8	E4	NNW5	N4	N6	ESE10	SE17	SE24	ESE19	SE22	SE23	SE28	SE24	SE24	SE17	ESE11	E9	ESE11	SE12	SE12	SE19	SE12.8	SE28	
18-Apr	SE11	ESE7	NE7	NE5	NE4	SE6	E3	N6	N9	N10	N8	NE6	E7	NE7	ENE7	NE5	NNE8	NNE8	NE7	NNE9	NNE9	N9	N11	N8	NE5.7	SE11	
19-Apr	N7	N8	N7	E5	E7	ESE8	ESE8	ESE5	ESE5	ESE5	ESE5	ESE5	ESE5	ESE7	ESE6	ESE5	E5	ESE7	NE2	NNW6	N9	NNW7	N7	NNW4	NNW2	ENE3.2	N9
20-Apr	NW3	WNW1	SSW0	SSE1	SW2	W1	E1	SSE5	ESE4	NE1	NNE5	N10	N9	NE5	ESE10	ESE10	E9	ESE10	ESE11	ESE8	SSE4	S4	E1	NW2	E2.7	ESE11	
21-Apr	WSW2	S3	SW2	W2	W1	WSW1	WNW0	SE4	SE7	SE7	SE10	SSE12	SSE10	SSE11	SSE9	SSE9	S7	SSE7	SE8	SSE5	SSW2	S3	SSW4	SSW4	SSE4.8	SSE12	
22-Apr	SSW4	SSW5	SSW5	S2	S4	S5	SSE6	SSE8	SE9	SE9	SSE14	SSE18	SSE19	S19	S18	SSE18	S16	S16	S13	S10	S8	SSW6	S1	SW2	S9.4	SSE19	
23-Apr	SW1	SW1	SW2	SSW2	WNW2	SW1	NNW0	ENE1	SSE7	SE4	NNE5	ESE9	SE18	SSE17	SSE17	SE9	E9	S12	SSE12	SE7	N9	NNW9	NNW4	N1	SE3.9	SE18	
24-Apr	SSE8	ENE1	N6	NNW4	N4	SSE5	SSE3	SSE2	SE7	ESE3	NE3	N3	N10	N13	N15	N15	NNW16	N18	N13	N8	NNW7	WNW6	WSW7	SSW4	N4.7	N18	
25-Apr	SSE4	S3	S4	SSE3	S3	S5	S7	SSE12	SSE15	SSE14	SSE15	SSE18	SSW16	W11	ESE5	SE13	SE12	E6	WNW2	W11	W10	W8	W7	W6	S5.6	SSE18	
26-Apr	W7	W6	WNW6	W6	W8	WNW9	WNW8	WNW9	WNW11	NW12	NW10	NW11	NNW12	N13	NNE13	NNE13	N13	NE11	NE11	NNE9	NNE9	NNW5	NW4	NW5	NNW6.8	N13	
27-Apr	NNW6	NW5	NNW2	SW3	SW2	S3	SSE2	ESE5	SSW3	WSW5	SSW5	SSW9	SSW8	SW9	SSW10	SW9	SSW9	S8	S8	S8	S8	SSE7	SSE11	S12	SSW5.0	S12	
28-Apr	ESE2	WSW2	SW2	S2	W4	WNW3	W6	NW11	NW21	NW19	NW18	NW21	NNW21	NNW19	NNW19	NNW22	N22	N19	N11	N11	N5	NW5	NW4	SW2	NNW10.0	NNW22	
29-Apr	SW2	SW2	SW1	WSW2	SSW2	S1	ESE2	E3	SE6	SE5	S6	ENE5	NNE7	NNE10	NE7	NE4	SSE4	ESE7	ENE7	ENE5	NE1	SE2	SSE3	SSE6	E2.2	NNE10	
30-Apr	S2	S3	S5	S4	NNW4	NNW2	N3	SE6	SSE15	SSE16	SSE17	SE19	SSE21	SE23	SSE23	SE22	SE21	SE20	SE18	SSE15	SSE13	SSE12	SSE13	S10	SSE11.8	SE23	

S1.8	SSW1.4	SSW0.9	SW1.1	WSW0.9	SW1.5	SW1.0	SSE1.3	SSE3.5	SSE3.4	SSE4.2	SE5.0	SSE5.3	SE4.3	SE4.8	SE3.7	SE3.4	ESE2.9	ESE2.4	SE1.8	SSE1.6	S2.1	S2.1	S2.6	Diurnal Average
SSE15	S14	S12	WSW12	WSW17	WSW17	WSW17	WSW21	WSW21	SSE24	SE24	SSE23	SSE26	SSE26	SE28	SSE25	SE24	S21	SE18	S17	SSE15	SSE18	SSE17	SE19	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

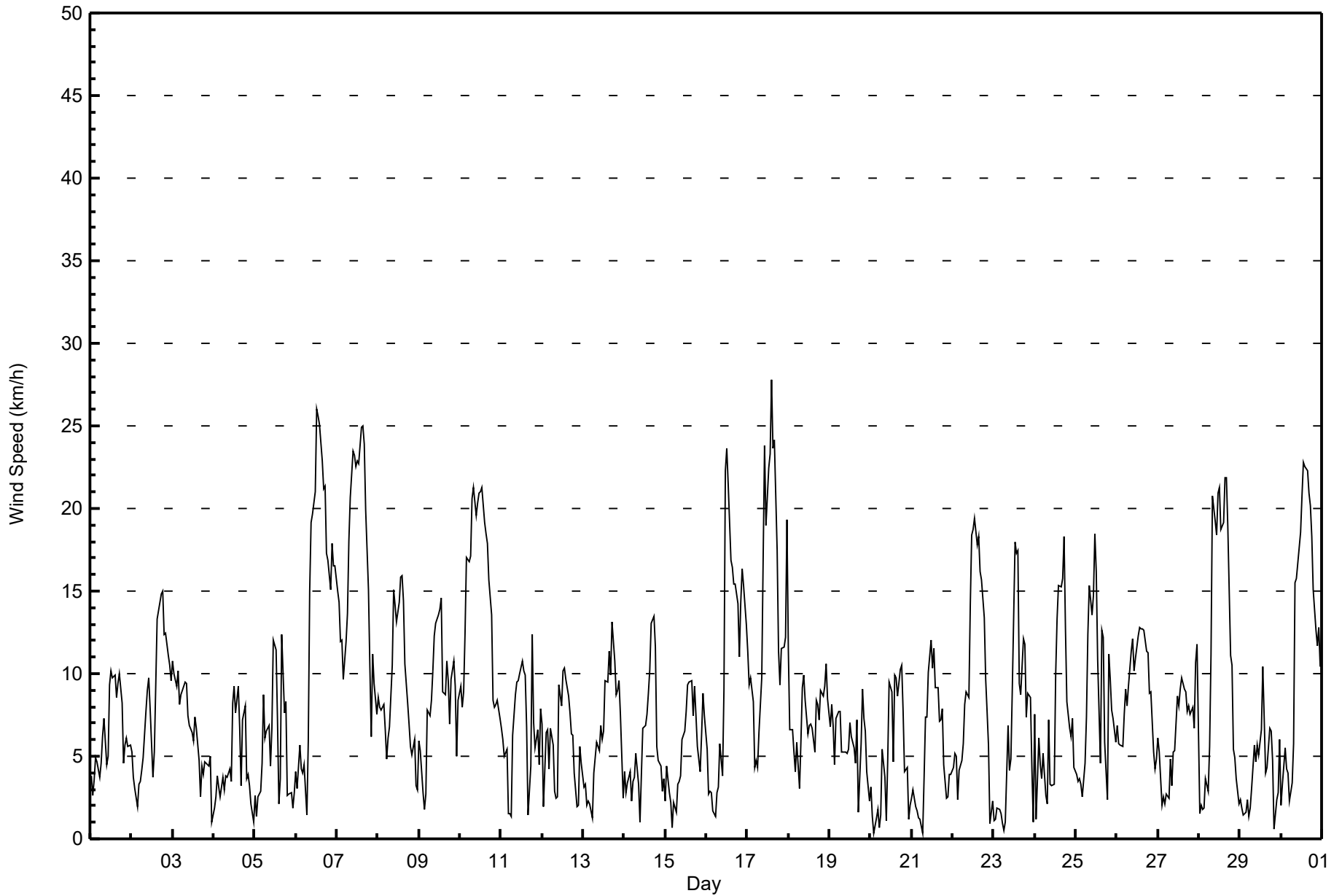
Wind Speed (WS) - km/h
Fort McKay South - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 9 km/h on Apr 17 15:00 Minimum Value: 0 km/h on Apr 21 21:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 5 P ₉₉ = 7																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1	1	2	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2
2-Apr	2	1	1	1	1	1	1	1	2	2	2	2	2	3	2	2	3	3	3	3	3	3	3	2	3
3-Apr	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	1	1	1	1	1	1	2	1	3
4-Apr	1	1	1	1	1	1	1	1	1	1	1	2	3	3	3	3	2	3	1	2	1	1	1	1	3
5-Apr	1	2	1	2	2	2	2	2	1	2	2	4	3	3	2	2	3	3	2	2	1	1	1	0	4
6-Apr	1	1	1	2	1	2	1	2	4	3	4	4	5	5	5	5	4	4	3	3	3	3	3	3	5
7-Apr	3	3	2	2	2	2	2	3	4	4	4	4	5	5	5	4	4	3	3	3	2	1	2	1	5
8-Apr	2	2	2	2	1	1	1	1	4	3	3	3	2	2	3	5	3	3	2	2	1	1	2	2	5
9-Apr	1	2	1	1	2	2	3	3	4	4	5	5	5	4	3	3	4	3	1	2	2	3	1	2	5
10-Apr	3	2	2	4	7	6	6	7	7	8	8	8	8	7	7	6	6	6	6	3	2	2	2	3	8
11-Apr	2	1	1	1	1	1	1	2	2	2	3	3	4	4	3	3	3	5	4	3	1	2	2	2	5
12-Apr	3	1	3	3	2	2	2	2	2	2	4	3	3	4	4	3	3	3	3	1	1	2	2	1	4
13-Apr	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	3
14-Apr	1	1	2	1	2	1	1	1	2	2	2	2	3	2	4	4	3	3	3	2	1	2	1	1	4
15-Apr	1	2	1	1	1	1	1	1	2	2	3	3	3	3	2	3	3	5	3	2	2	1	3	2	5
16-Apr	1	1	1	1	1	1	1	1	2	2	5	5	5	5	5	5	5	5	4	3	4	4	4	3	5
17-Apr	3	2	3	3	2	2	1	2	5	6	7	6	6	7	9	7	8	7	4	4	4	3	4	6	9
18-Apr	4	2	2	2	1	2	3	1	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	4
19-Apr	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	1	1	1	2
20-Apr	1	1	1	1	1	1	1	2	1	2	3	3	4	3	3	4	3	3	3	3	1	1	1	1	4
21-Apr	1	1	1	1	1	1	1	2	2	3	4	4	5	4	3	3	3	3	2	2	0	1	1	1	5
22-Apr	1	1	2	1	1	1	1	2	2	3	5	5	6	5	5	4	4	4	3	2	1	2	1	0	6
23-Apr	1	1	1	1	1	1	1	1	2	2	2	4	5	5	5	4	4	5	4	3	3	3	2	2	5
24-Apr	5	2	1	2	2	2	2	1	2	1	1	3	3	3	3	3	4	4	3	1	2	2	1	5	5
25-Apr	1	1	1	0	1	2	2	3	3	3	3	4	6	6	3	3	4	2	3	5	4	2	3	2	6
26-Apr	3	2	3	2	2	3	3	3	4	4	4	4	5	4	3	3	3	3	4	2	2	1	1	2	5
27-Apr	1	1	1	1	1	1	2	1	2	3	2	3	4	4	3	4	3	3	2	1	1	1	2	2	4
28-Apr	2	1	3	1	2	2	2	5	7	6	5	7	7	6	6	6	7	6	4	3	3	1	1	1	7
29-Apr	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	3	3	3	2	2	2	1	1	2	3
30-Apr	2	1	1	1	1	1	1	3	3	3	4	5	5	6	6	5	4	4	4	4	2	2	3	2	6
																	Diurnal Maximum								



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Fort McKay South - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Fort McKay South - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	267	37.08	37.08
6 - 11	293	40.69	77.78
12 - 19	115	15.97	93.75
20 - 28	45	6.25	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Fort McKay South - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	25	14	11	6	10	21	12	28	26	20	16	13	7	12	17	29	267
6 - 11	46	25	12	3	6	25	29	39	30	19	15	3	13	12	7	9	293
12 - 19	17	3	0	0	0	4	16	37	15	1	2	12	0	0	3	5	115
20 - 28	1	0	0	0	0	0	13	16	4	0	0	7	0	0	2	2	45
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
Totals	89	42	23	9	16	50	70	120	75	40	33	35	20	24	29	45	720

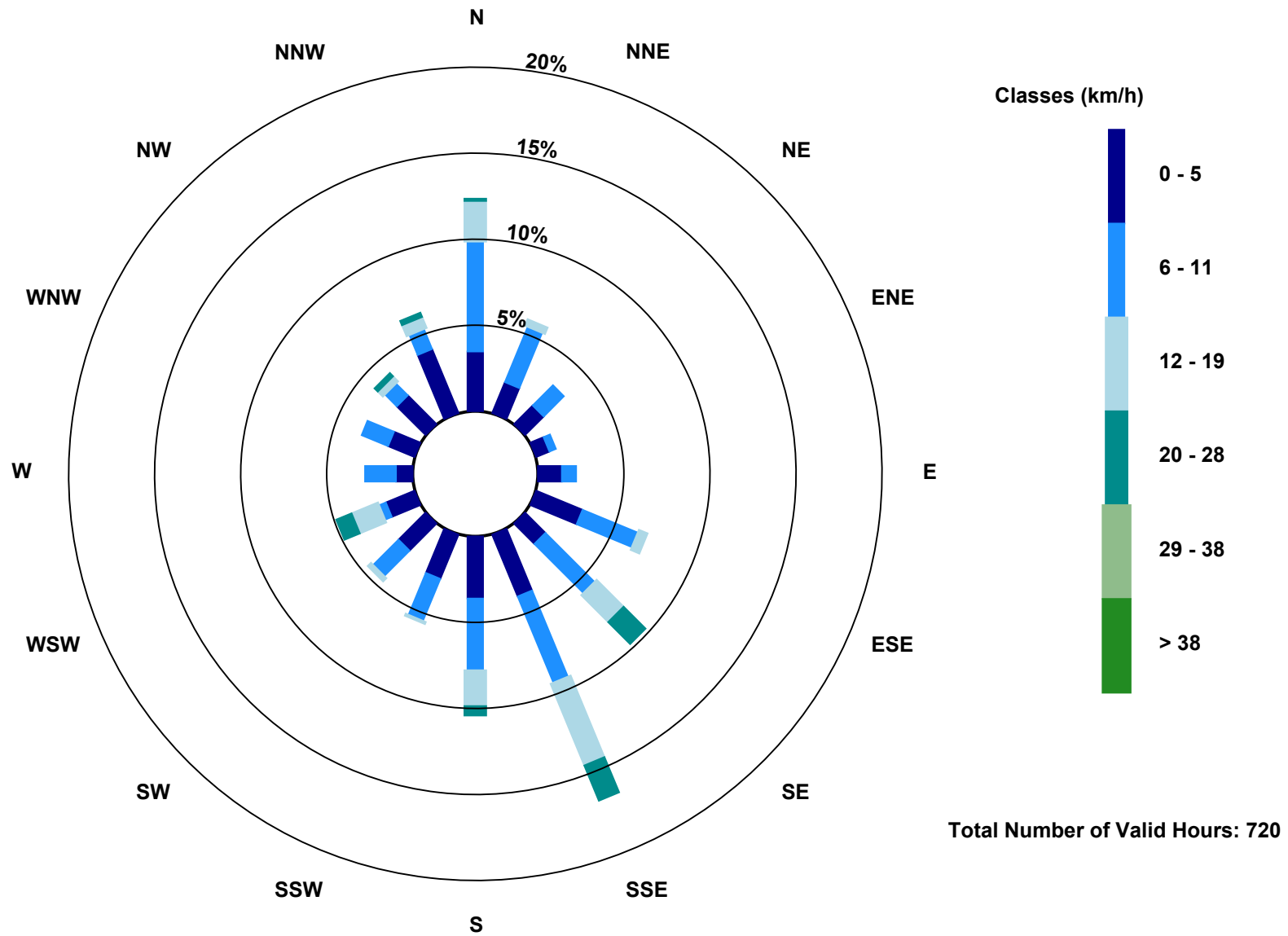
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Fort McKay South





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Fort McKay South - April 2023

Direction of Maximum Speed: 137 deg on Apr 17 15:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 163.5 deg on Apr 7		Hours of Data: 720
Direction of Minimum Speed: 204 deg on Apr 20 03:00		Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 1.9 deg on Apr 4		Percent Operational Time: 100.0
Monthly Average Direction: 154.2 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-Apr	360	343	8	4	359	359	352	356	13	6	8	6	11	17	16	14	2	346	356	14	131	126	112	116	14.4
2-Apr	120	124	103	52	85	89	111	114	143	146	161	158	156	1	11	9	6	4	2	16	11	11	10	357	35.6
3-Apr	353	349	347	354	3	7	351	359	11	26	24	28	35	59	43	13	29	31	123	129	155	159	155	336	17.7
4-Apr	282	316	334	343	311	321	330	351	24	30	172	142	152	149	173	181	176	165	178	180	161	171	167	95	165.4
5-Apr	160	213	151	102	146	145	147	146	145	136	144	148	163	206	148	135	159	152	150	186	236	210	194	164	156.3
6-Apr	181	199	197	197	157	148	158	149	161	153	151	148	153	156	169	175	174	176	172	172	166	166	163	164	164.5
7-Apr	167	169	170	181	185	181	173	166	160	158	154	155	159	155	154	154	156	156	167	170	192	186	177	167	163.5
8-Apr	164	178	171	176	184	200	181	157	166	173	160	150	146	150	147	186	214	209	206	224	221	233	237	246	176.1
9-Apr	230	236	198	244	228	208	228	228	218	232	244	248	237	219	209	207	204	170	169	171	162	160	172	156	209.1
10-Apr	160	180	176	239	246	245	242	240	252	249	246	240	248	250	242	249	243	246	241	216	208	210	219	223	237.5
11-Apr	206	196	190	206	351	278	217	168	189	174	172	180	211	216	216	226	40	0	337	334	303	307	271	262	222.1
12-Apr	301	292	252	257	263	262	265	342	73	5	311	1	22	19	15	313	303	283	296	328	242	296	323	338	317.5
13-Apr	312	296	325	302	324	245	9	29	20	15	29	4	13	36	31	11	10	10	2	344	358	6	4	7.2	
14-Apr	346	339	347	332	349	344	351	18	142	12	67	36	53	26	2	15	7	3	9	127	154	143	346	343	16.3
15-Apr	338	351	352	334	334	312	348	126	132	113	139	116	107	102	98	111	138	153	135	150	164	164	153	153	126.4
16-Apr	151	166	314	315	311	282	349	19	141	105	116	142	145	144	139	133	115	106	110	130	139	140	142	148	133.3
17-Apr	155	151	135	123	79	338	352	355	105	124	134	121	126	124	137	128	140	125	112	90	120	125	131	139	126.1
18-Apr	137	102	55	34	39	128	82	350	2	5	7	47	95	41	64	52	29	20	36	14	12	4	3	1	34.1
19-Apr	358	10	6	90	101	108	116	105	114	112	112	114	118	103	112	84	107	48	331	352	341	352	347	292	67.6
20-Apr	313	301	204	150	216	261	101	149	118	45	29	360	3	55	108	112	97	122	114	122	152	185	86	321	97.6
21-Apr	252	174	219	264	278	253	289	124	130	132	126	148	158	156	164	166	181	164	140	160	196	179	196	192	159.6
22-Apr	195	198	206	173	184	178	153	157	134	134	168	165	150	169	177	163	170	184	180	178	188	193	190	225	170.1
23-Apr	232	236	223	208	294	227	330	76	150	138	30	119	144	148	158	144	101	174	152	142	0	348	328	353	141.5
24-Apr	168	63	5	334	4	147	154	23	135	108	38	7	355	3	355	353	348	352	353	351	339	299	240	213	354.1
25-Apr	164	182	185	164	179	172	169	160	154	164	154	153	198	270	108	141	140	87	300	263	269	260	267	263	180.1
26-Apr	265	260	290	277	277	285	288	285	301	326	307	310	333	354	14	20	10	35	35	18	12	348	305	309	332.0
27-Apr	329	311	335	233	224	180	156	102	199	239	208	204	203	216	201	217	208	184	185	178	181	159	168	174	196.4
28-Apr	109	237	235	185	263	290	281	312	324	317	308	322	331	328	332	339	356	3	5	5	352	309	307	236	330.1
29-Apr	230	236	235	246	192	190	118	98	131	138	187	62	32	28	55	51	153	114	70	59	43	129	157	147	99.5
30-Apr	182	178	185	186	347	327	3	142	154	149	153	140	147	141	150	145	142	141	142	148	150	150	159	172	148.5

186.1	200.6	201.8	226.3	244.3	214.9	216.2	158.5	153.8	154.1	157.7	146.1	148.3	140.8	137.7	137.9	134.1	123.6	117.3	129.6	161.2	170.5	173.1	174.9
Diurnal Average																							

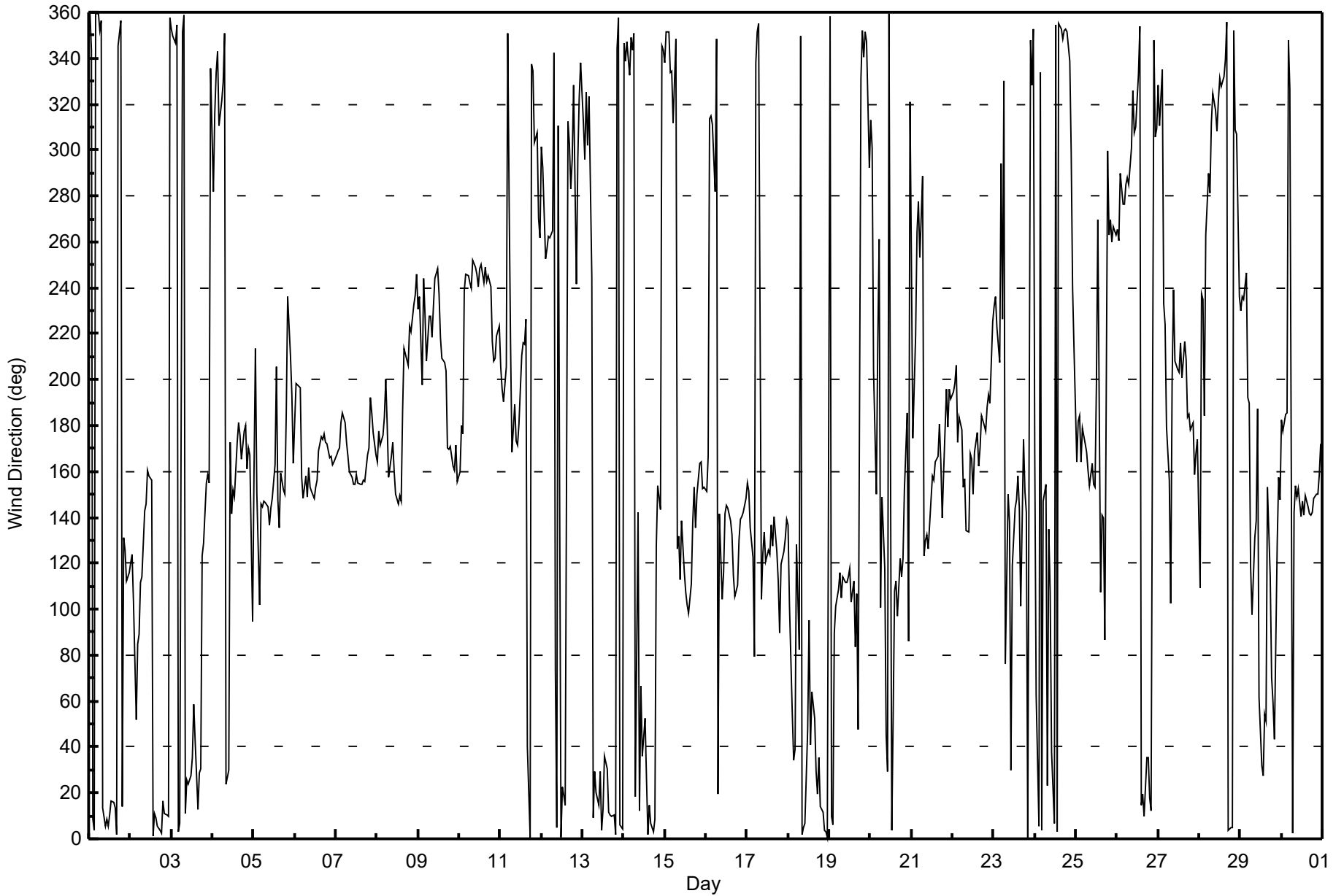
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Fort McKay South - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 105 deg on Apr 24 00:00 Minimum Value: 7 deg on Apr 8 22:00 Percentiles: P ₁ = 9 P ₁₀ = 12 Q ₁ = 15 Median = 23 Q ₃ = 37 P ₉₀ = 55 P ₉₉ = 89																			Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	23	13	18	17	15	16	39	14	13	21	25	16	15	13	14	12	16	17	13	50	19	17	19	19	50
2-Apr	19	20	48	44	17	22	21	22	18	14	18	13	23	27	18	14	14	14	15	15	15	13	15	14	48
3-Apr	14	13	12	15	13	14	14	15	22	26	51	41	43	36	28	33	69	19	32	16	23	12	19	69	
4-Apr	32	26	18	35	36	20	20	23	21	28	62	32	19	28	37	48	81	32	10	18	17	24	42	71	
5-Apr	24	70	23	31	15	13	16	13	13	25	26	11	24	45	79	60	13	13	10	45	12	26	13	16	79
6-Apr	12	16	14	23	17	52	92	15	15	9	10	10	9	11	13	13	12	11	10	10	10	10	9	9	92
7-Apr	9	10	10	11	13	10	9	11	12	10	10	11	12	11	10	9	9	9	10	10	12	9	11	11	13
8-Apr	11	13	14	10	14	13	10	12	13	14	14	14	10	10	13	24	25	21	20	17	9	7	28	61	61
9-Apr	10	16	25	73	63	17	23	24	26	27	34	33	35	26	27	32	27	12	8	10	12	12	20	9	73
10-Apr	18	14	15	30	30	27	28	25	27	29	28	27	29	28	29	27	28	28	25	23	19	21	22	26	30
11-Apr	20	15	21	23	71	46	54	14	27	23	23	28	38	46	37	51	92	93	14	11	10	14	17	13	93
12-Apr	37	53	13	30	58	18	29	72	83	82	47	42	25	36	32	45	48	47	31	37	42	41	16	14	83
13-Apr	25	31	34	24	53	58	13	21	26	55	42	60	54	27	37	21	29	19	17	16	14	16	16	70	70
14-Apr	19	31	35	15	72	23	22	20	64	94	72	48	54	40	48	28	22	16	18	36	16	48	31	19	94
15-Apr	53	16	50	24	44	42	46	41	64	67	49	51	53	36	23	28	45	33	39	14	21	15	13	11	67
16-Apr	13	62	17	21	31	34	24	33	32	67	43	16	15	18	24	22	24	24	22	21	15	15	15	15	67
17-Apr	11	17	18	19	45	34	30	20	35	22	19	23	23	22	21	20	23	23	26	31	25	21	20	17	45
18-Apr	23	37	36	26	34	29	57	12	13	14	16	31	37	41	36	32	19	21	20	16	17	16	15	14	57
19-Apr	13	14	14	50	23	24	21	27	27	24	26	28	24	24	29	32	23	72	14	14	18	12	14	30	72
20-Apr	13	56	81	61	37	72	55	21	36	95	70	30	46	84	35	42	40	25	24	17	29	12	82	30	95
21-Apr	33	33	30	35	42	37	71	30	18	39	32	25	46	38	39	42	45	34	18	19	9	14	10	16	71
22-Apr	14	20	38	41	13	14	13	18	20	26	31	22	19	22	19	17	17	16	13	10	10	14	84	14	84
23-Apr	49	59	50	49	51	58	84	89	17	52	51	46	17	18	21	36	33	25	26	33	45	16	55	105	105
24-Apr	56	83	10	39	60	32	71	46	24	39	40	51	18	19	19	17	16	16	22	27	16	37	24	29	83
25-Apr	27	19	16	20	30	17	16	12	12	17	19	16	47	46	66	14	18	44	88	30	29	26	31	38	88
26-Apr	38	31	38	30	24	26	30	31	26	25	30	35	34	31	26	22	25	22	24	20	15	23	17	18	38
27-Apr	12	15	45	32	53	23	51	27	71	65	62	39	55	43	39	42	30	30	22	8	9	12	10	10	71
28-Apr	77	53	61	89	45	66	29	36	24	25	27	26	25	25	23	21	23	18	17	17	22	12	15	22	89
29-Apr	53	47	32	39	53	68	40	32	28	64	55	78	58	27	51	81	68	37	30	31	78	57	70	15	81
30-Apr	45	16	13	23	16	45	19	49	17	15	22	19	19	15	19	15	16	14	13	11	10	10	11	10	49
	77	83	81	89	72	72	92	89	83	95	72	78	58	84	79	81	92	93	88	50	78	57	84	105	
	Diurnal Maximum																								





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS14
ANZAC
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
 APRIL 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	683	33	37	99.44	24.5	0	3.9	0
TRS(ppb) Average	682	34	38	99.44	1.2	0	0.6	0
THC(ppm) Average	681	33	39	99.17	2.3	-	2.1	-
NMHC(ppm) Average	681	33	39	99.17	0.135	-	0.017	-
CH4(ppm) Average	681	33	39	99.17	2.2	-	2.1	-
NO2(ppb) Average	681	35	39	99.44	15.7	0	3.9	-
NO(ppb) Average	681	35	39	99.44	7.4	-	1.3	-
NOX(ppb) Average	681	35	39	99.44	16.1	-	4.7	-
O3(ppb) Average	681	35	39	99.44	52.3	0	49	-
PM2.5(ug/m3) Average	715	1	5	99.44	32.7	0	7.3	0
AT 2m(C) Average	720	0	0	100	20.4	-	12.7	-
RH(%) Average	720	0	0	100	99.4	-	79.3	-
WS(km/h) Average	720	0	0	100	36	-	24	-
WD(deg) Average	720	0	0	100	-	-	-	-
Leaf Wetness (% of range) Average	720	0	0	100	69.7	-	12.9	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
 APRIL 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	683	1.18	2.9	-	0	0	0.1	0.3	0.9	2.6	24.5
TRS(ppb) Average	682	0.4	0.1	-	0.2	0.3	0.3	0.4	0.4	0.5	1.2
THC(ppm) Average	681	2.02	0	-	2	2	2	2	2	2	2.3
NMHC (ppm) Average	681	0.002	0.012	-	0	0	0	0	0	0	0.135
CH4(ppm) Average	681	2.02	0	-	2	2	2	2	2	2	2.2
NO2(ppb) Average	681	1.85	1.8	-	0.3	0.5	0.7	1.3	2.2	3.9	15.7
NO(ppb) Average	681	0.34	0.8	-	0	0	0	0.1	0.3	0.9	7.4
NOX(ppb) Average	681	2.19	2.4	-	0.3	0.5	0.7	1.4	2.6	5.1	16.1
O3(ppb) Average	681	40.22	7.5	-	9.3	30.8	37.1	41.3	45.9	48.4	52.3
PM2.5(ug/m3) Average	715	3.97	2.4	-	0.3	1.7	2.8	3.4	4.8	6.5	32.7
Temperature 2 m (C) Average	720	3.79	5.9	-	-9.6	-4.2	-0.4	3.6	8.1	11.4	20.4
Relative Humidity (%) Average	720	54.64	20.2	-	17.5	28.6	37.5	52.9	70.4	82.8	99.4
Wind Speed 20 m (km/h) Average	720	12.4	6	-	0	6	8	11	15	21	36
Wind Direction 20 m (deg) Average	720	149.7	-	-	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	720	1.02	6	-	0	0	0	0	0	0	69.7

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
APRIL 2023

OPERATIONAL NOTES				
Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	10 Apr 2023 05:00	10 Apr 2023 08:00	4	Station power failure
THC/NMHC/CH4	05 Apr 2023 07:00	05 Apr 2023 08:00	2	Maintenance - replaced support gas cylinder



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 24.5 ppb on Apr 16 11:00	Maximum Daily Average: 3.9 ppb on Apr 16		Hours of Data:	683
Minimum Value: 0.0 ppb on Apr 1 22:00	Minimum Daily Average: 0.0 ppb on Apr 18		Hours of Missing Data:	37
Maximum Diurnal Average: 4.0 ppb at hour 9	Minimum Diurnal Average: 0.3 ppb at hour 23		Hours of Calibration:	33
Monthly Average: 1.18 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.3 Q ₃ = 0.9 P ₉₀ = 2.6 P ₉₉ = 16.3		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-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	9.1	2.1	0.4	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.7	9.1
2-Apr	0.0	Z	1.0	0.0	0.1	0.1	0.0	0.0	0.1	4.0	6.3	14.7	7.1	7.0	6.1	5.7	1.5	1.4	0.2	0.1	0.1	0.2	0.1	0.2	2.4	14.7
3-Apr	0.1	0.2	Z	0.4	1.0	0.4	0.2	0.4	0.6	0.9	1.1	1.9	2.1	2.7	4.0	4.0	2.1	1.3	1.5	1.2	0.9	0.6	0.5	0.4	1.2	4.0
4-Apr	0.2	0.1	1.0	Z	0.7	0.8	0.8	1.4	0.8	0.1	0.1	5.6	9.9	9.6	6.8	3.8	2.1	1.3	0.6	0.5	0.5	0.6	0.2	0.1	2.1	9.9
5-Apr	0.1	0.1	0.2	0.3	Z	0.3	0.4	0.6	2.0	1.6	1.5	3.7	18.3	1.9	0.8	0.6	1.1	0.9	0.7	0.3	0.2	0.3	0.4	0.5	1.6	18.3
6-Apr	0.5	0.4	0.4	0.4	0.5	Z	0.6	0.7	1.1	1.2	1.1	1.1	1.3	0.4	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.5	1.3
7-Apr	Z	0.8	1.0	1.1	1.4	1.7	1.6	1.7	1.5	1.2	1.0	0.8	0.9	0.8	0.5	0.5	0.7	0.6	0.5	0.6	1.1	1.1	1.1	1.5	1.0	1.7
8-Apr	1.3	Z	1.0	0.8	1.0	0.7	0.6	0.5	0.4	0.6	0.8	0.9	0.7	1.9	14.1	16.3	12.7	5.5	3.0	1.9	0.6	0.4	0.0	0.2	2.9	16.3
9-Apr	0.1	0.1	Z	0.2	0.1	0.0	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.6	0.9	0.2	0.9
10-Apr	0.9	0.8	0.2	Z	PF	PF	PF	PF	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.9
11-Apr	0.3	0.4	0.4	0.5	Z	1.3	1.1	1.1	1.9	1.0	0.7	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.8	0.5	1.9
12-Apr	1.1	1.9	1.6	0.6	0.6	Z	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	0.1	0.0	0.1	0.0	0.3	1.9	
13-Apr	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.9	0.5	0.0	0.1	0.0	0.0	0.1	0.4	0.7	2.8	3.5	2.6	1.4	0.9	0.3	0.2	0.0	0.6	3.5
14-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	16.3	12.0	1.5	3.6	2.4	2.7	5.7	2.1	0.3	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	2.1	16.3
15-Apr	0.1	0.1	Z	0.2	0.2	0.1	0.4	1.0	0.5	3.4	10.3	12.7	8.3	4.1	2.1	1.7	0.6	0.3	9.3	1.3	0.2	0.8	0.3	1.7	2.6	12.7
16-Apr	0.7	0.1	0.1	Z	0.5	5.4	3.9	4.3	14.7	22.0	24.5	3.3	1.9	2.3	1.5	0.1	0.0	0.0	0.0	0.0	0.0	4.3	1.1	3.9	24.5	
17-Apr	0.0	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.3	0.4	0.3	1.4	0.8	0.7	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	1.4
18-Apr	0.0	0.0	0.1	0.0	0.1	Z	0.1	0.1	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
19-Apr	Z	1.1	1.3	4.1	0.4	0.3	0.2	3.4	21.9	0.4	0.2	0.0	1.2	0.2	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	1.6	21.9
20-Apr	0.1	Z	0.2	0.0	0.0	0.0	0.0	13.0	19.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.4	1.5	19.1
21-Apr	0.1	0.3	Z	0.3	0.1	0.1	0.1	0.1	9.4	9.8	6.8	7.3	7.0	4.2	4.3	3.3	2.5	1.2	0.4	0.4	0.2	0.2	0.2	0.1	2.5	9.8
22-Apr	0.1	0.3	0.4	Z	0.5	0.7	0.5	0.4	0.8	0.4	0.4	0.2	0.8	0.6	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.8
23-Apr	0.7	0.7	0.6	0.6	Z	1.0	1.2	1.1	1.2	1.3	0.6	0.3	0.3	0.4	0.4	0.9	0.5	0.5	0.6	0.5	0.7	0.6	0.5	0.4	0.7	1.3
24-Apr	3.7	0.8	1.0	2.3	1.3	Z	0.3	6.6	20.1	7.3	11.9	4.1	2.0	3.7	0.3	0.2	0.2	0.3	0.4	3.3	2.8	1.1	0.3	0.5	3.2	20.1
25-Apr	Z	0.4	0.4	0.3	0.2	0.2	0.7	0.9	0.6	0.7	0.4	0.3	0.1	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.1	0.4	0.2	0.1	0.3	0.9
26-Apr	0.0	Z	0.0	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	0.2	1.2	1.2	0.5	0.1	0.1	0.0	0.1	0.2	1.2
27-Apr	0.1	0.1	Z	0.1	0.1	0.2	0.3	0.3	3.3	4.7	2.2	1.9	2.0	0.7	0.3	0.2	0.2	0.3	0.2	0.1	0.0	0.1	0.1	0.1	0.8	4.7
28-Apr	0.2	0.1	0.2	Z	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.5	0.6	0.0	0.1	0.0	0.1	0.0	0.1	0.6
29-Apr	0.1	0.2	0.3	0.2	Z	0.1	0.3	0.1	0.6	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	1.3	4.3	0.1	0.0	0.4	4.3
30-Apr	0.0	0.0	0.4	0.5	0.4	Z	0.5	0.7	1.0	0.9	0.8	0.3	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	1.0

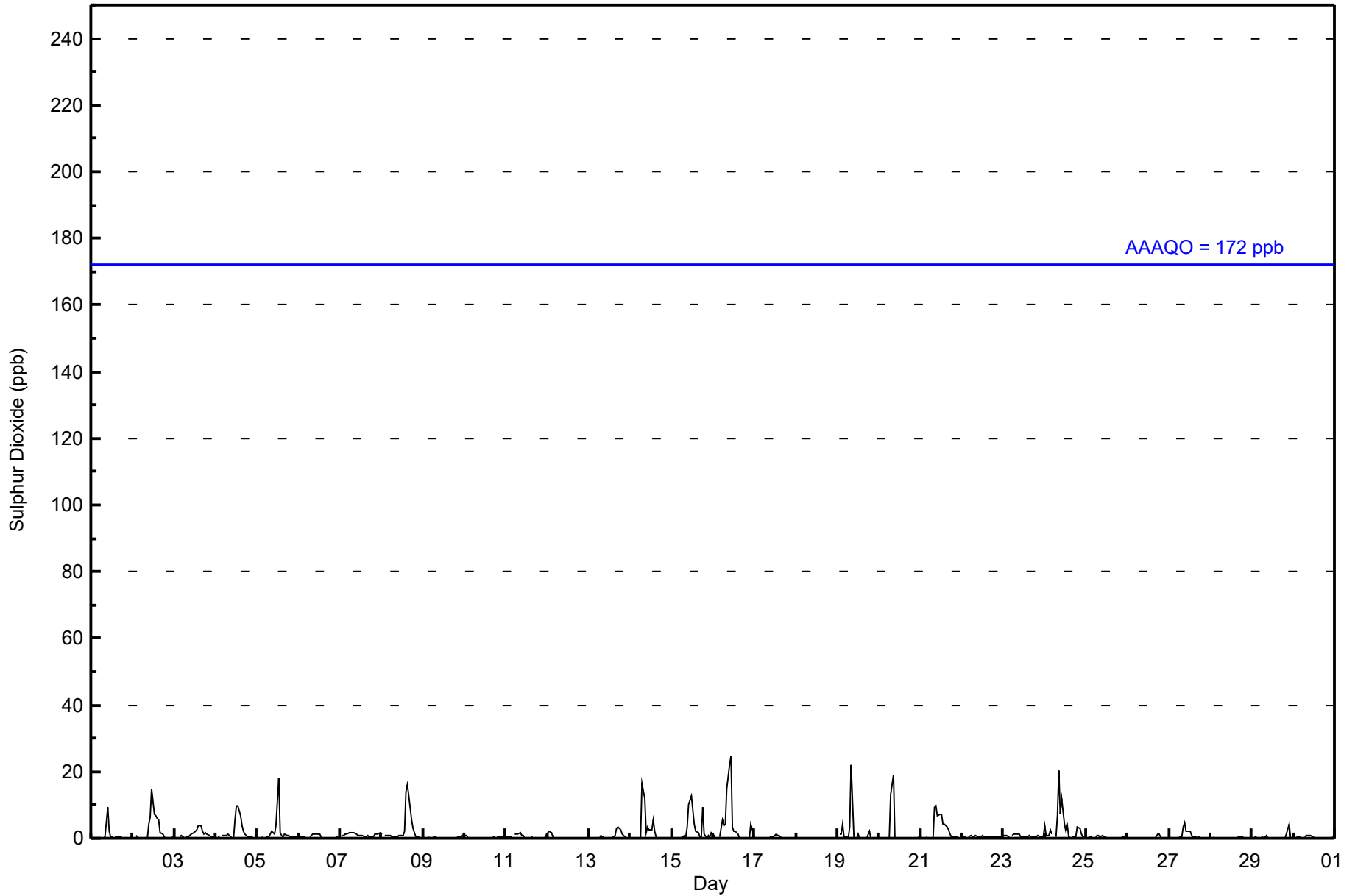
0.4	0.4	0.5	0.5	0.4	0.6	0.5	1.9	4.0	2.5	2.6	2.1	2.3	1.6	1.5	1.3	1.0	0.7	0.8	0.4	0.4	0.4	0.3	0.4	Diurnal Average	
3.7	1.9	1.6	4.1	1.4	5.4	3.9	16.3	21.9	22.0	24.5	14.7	18.3	9.6	14.1	16.3	12.7	5.5	9.3	3.3	2.8	4.3	4.3	1.7	Diurnal Maximum	

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 (SO₂) - ppb
Anzac - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	667	97.66	97.66
11 - 20	13	1.90	99.56
21 - 60	3	0.44	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: 683

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	14	9	19	35	89	91	139	57	19	9	25	44	58	22	19	18	667
11 - 20	0	0	0	0	2	9	2	0	0	0	0	0	0	0	0	0	13
21 - 60	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
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
Totals	14	9	19	35	91	102	142	57	19	9	25	44	58	22	19	18	683

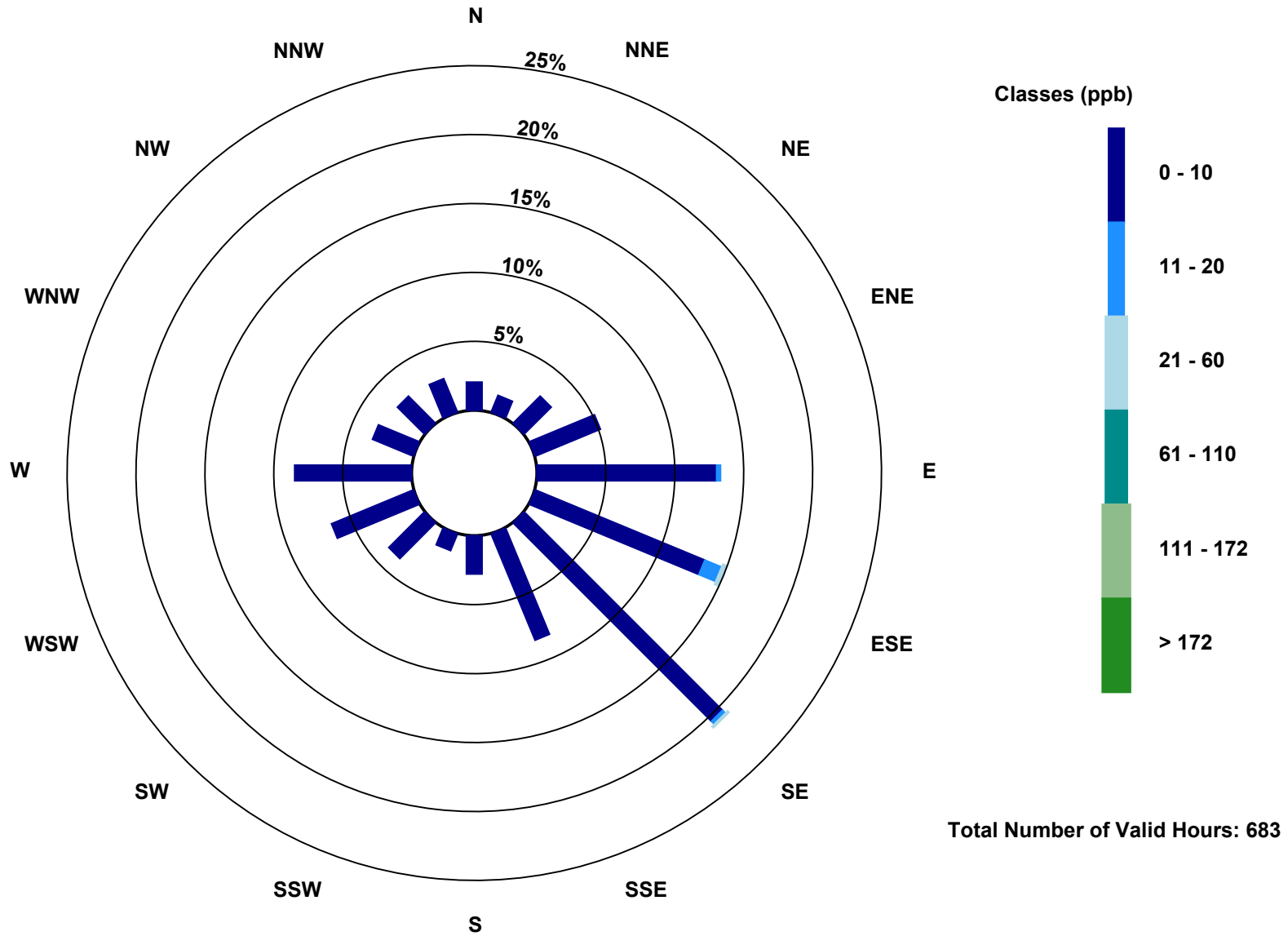
Total Number of Valid Hours: 683

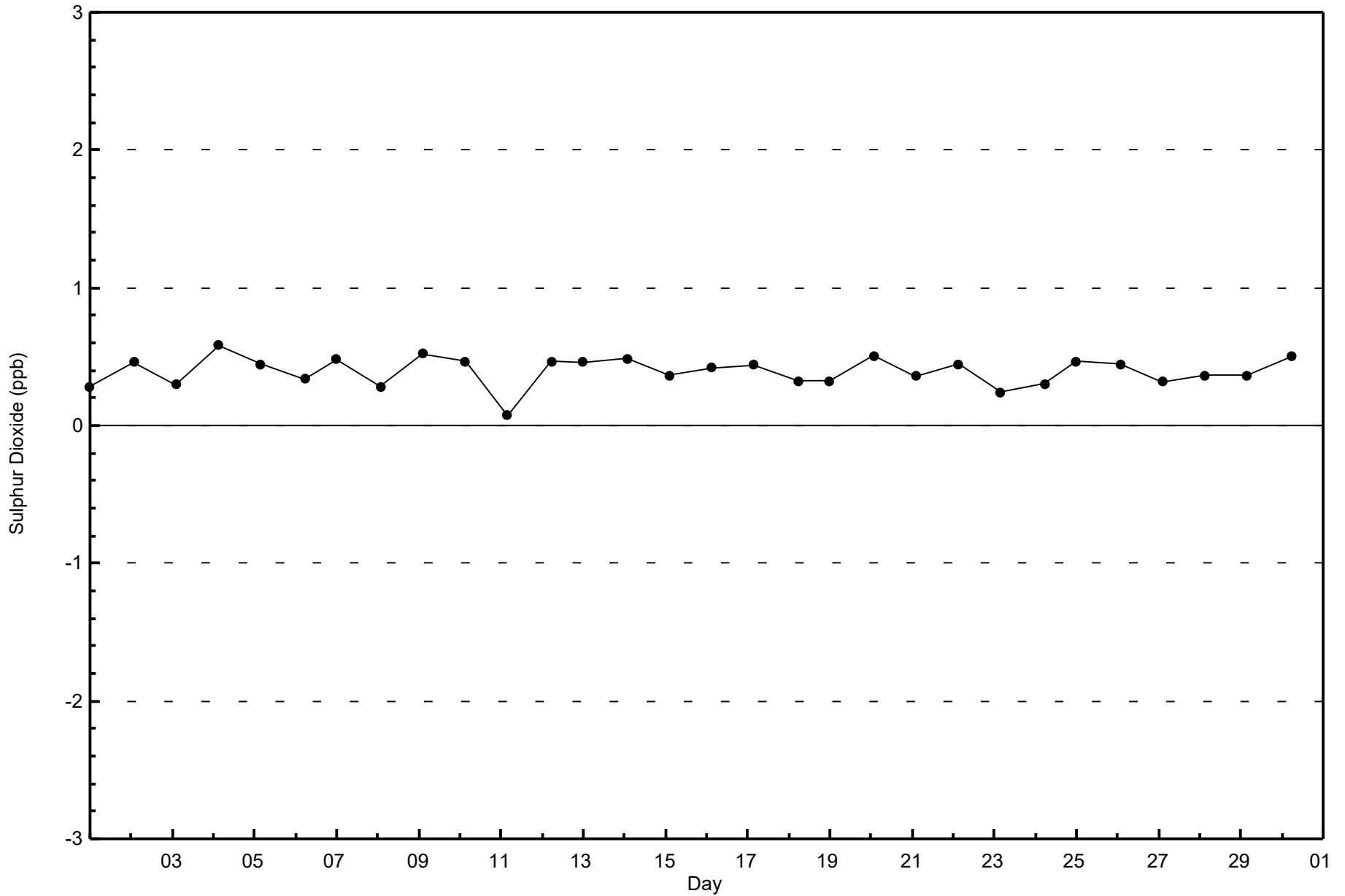
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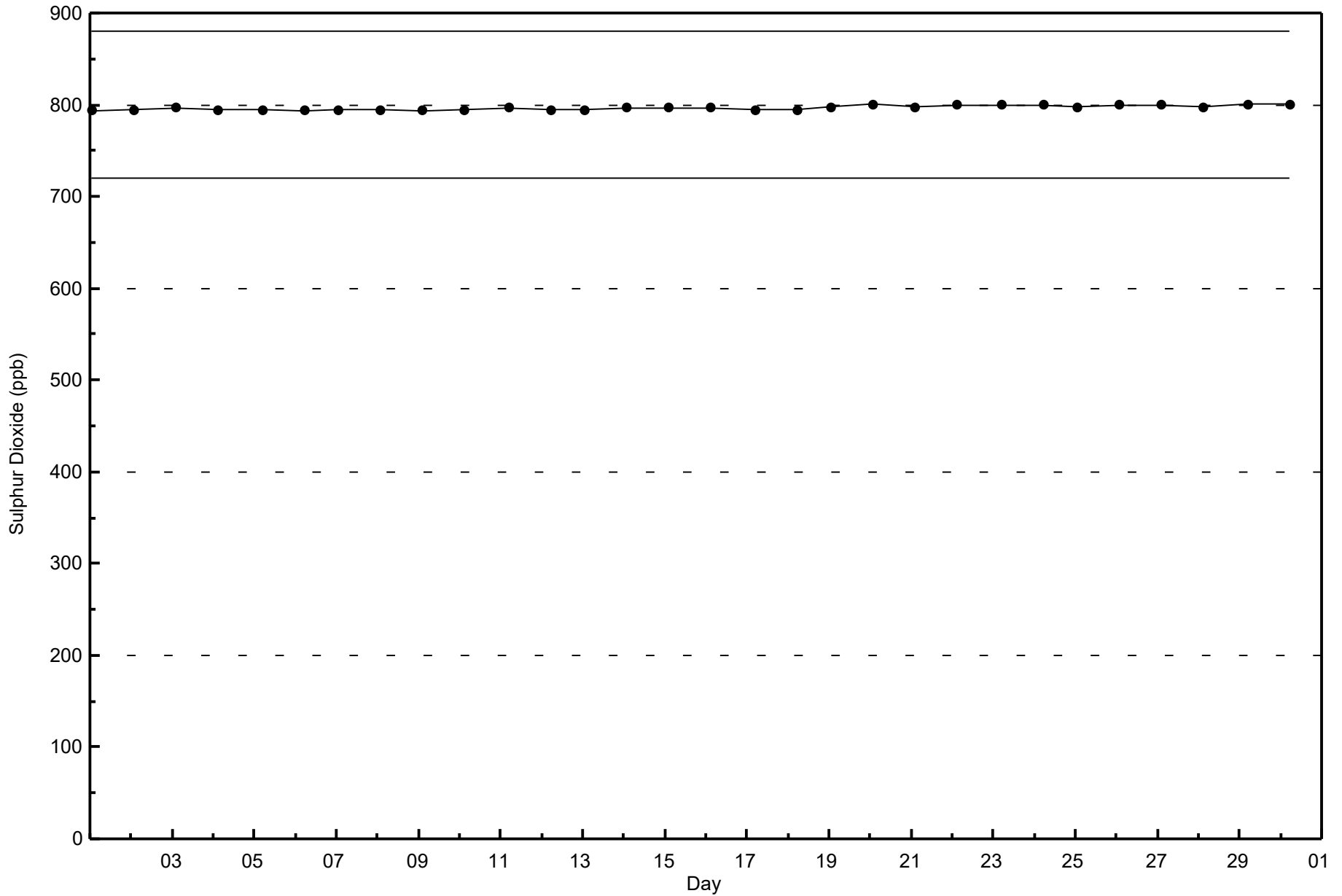


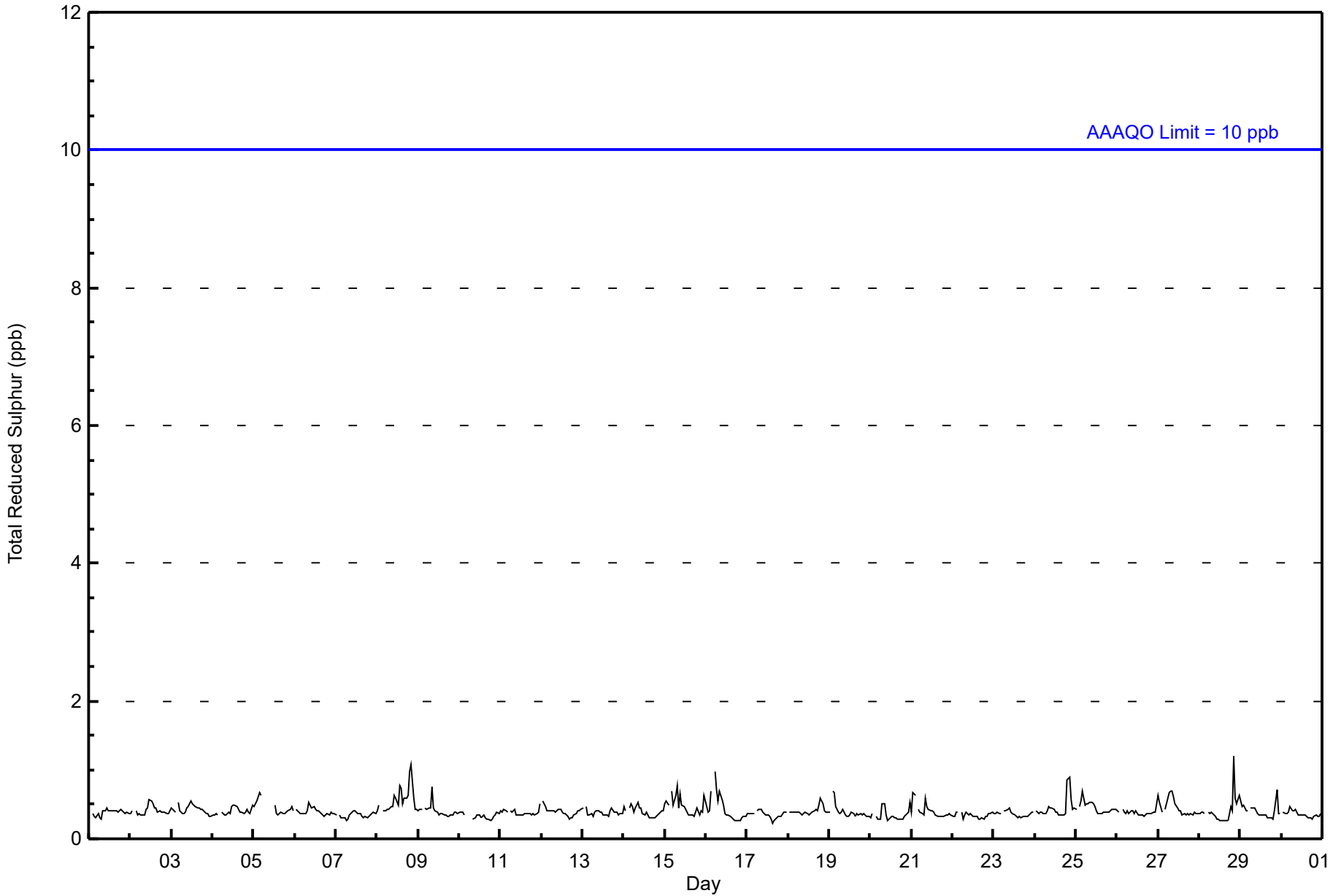
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Anzac











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	682	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: 682

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	15	9	19	34	94	102	139	55	19	9	25	46	58	21	20	17	682
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
Totals	15	9	19	34	94	102	139	55	19	9	25	46	58	21	20	17	682

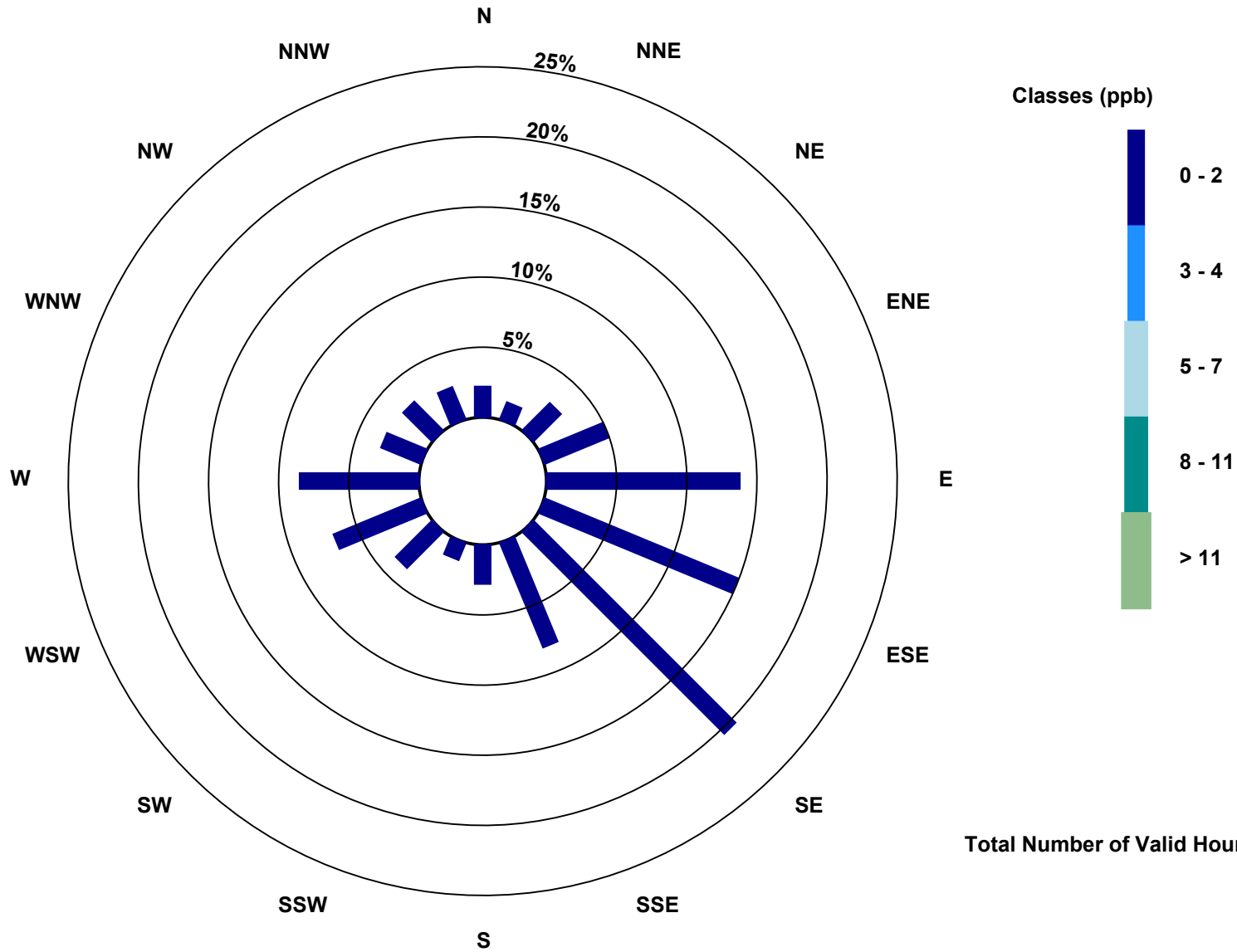
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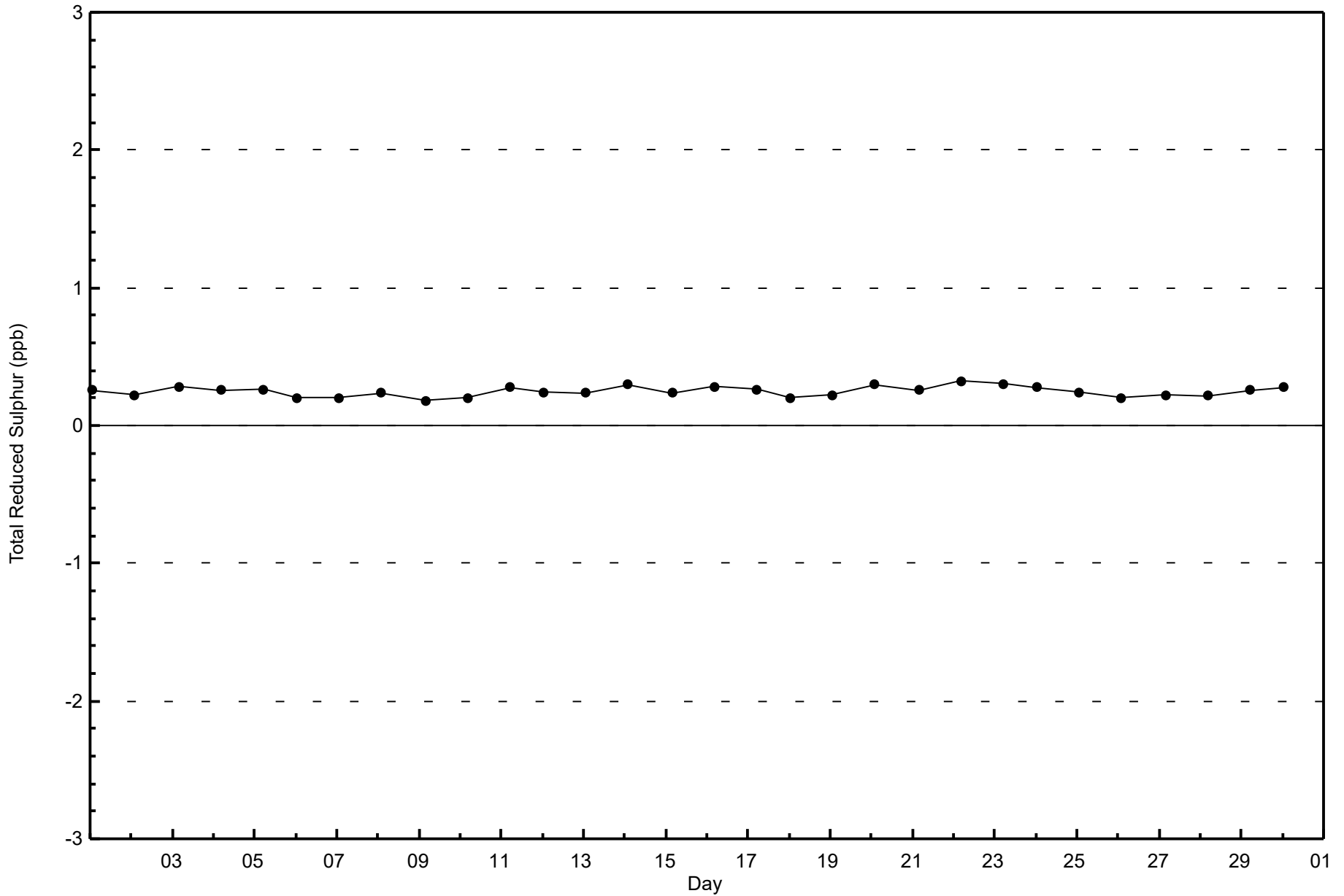
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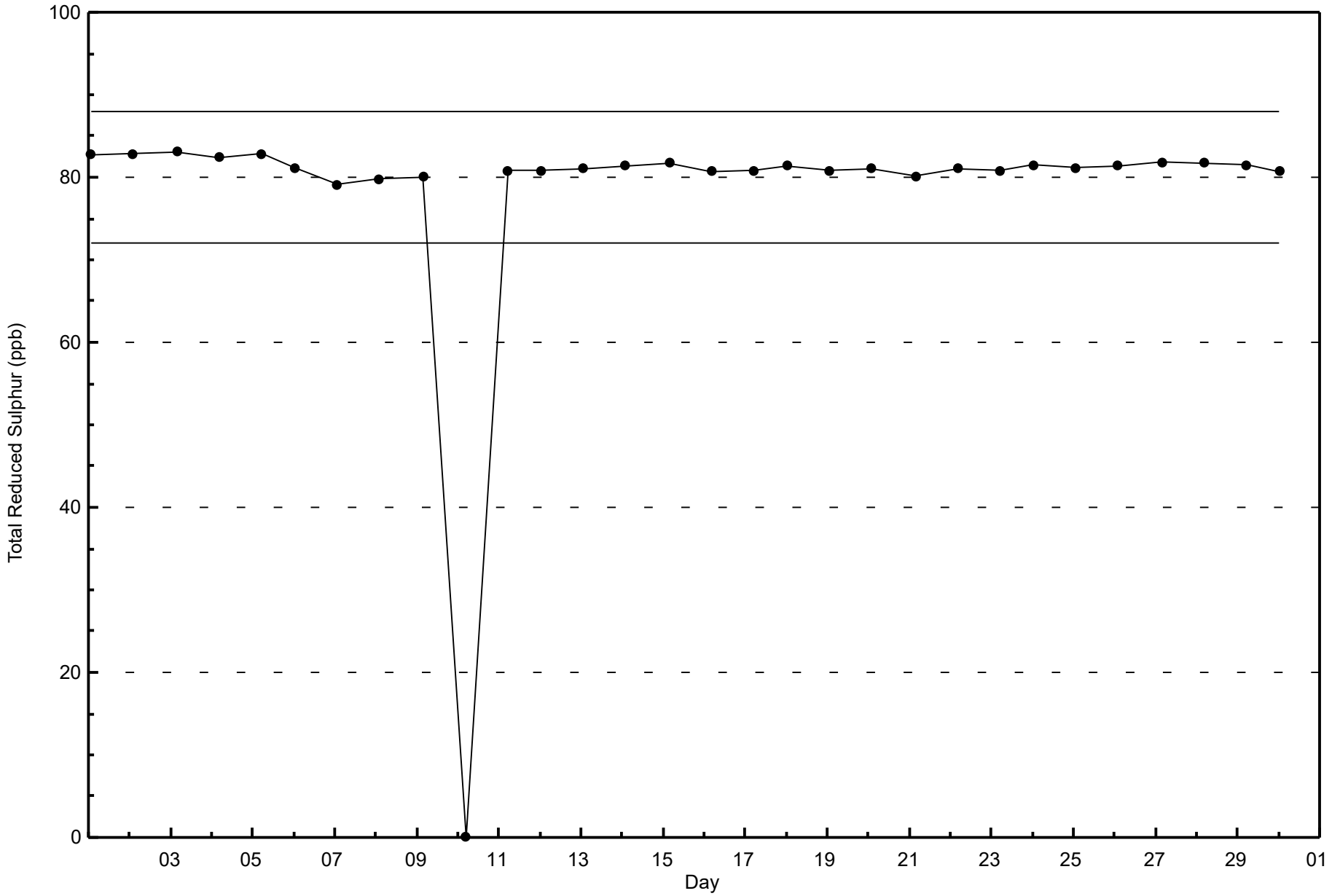


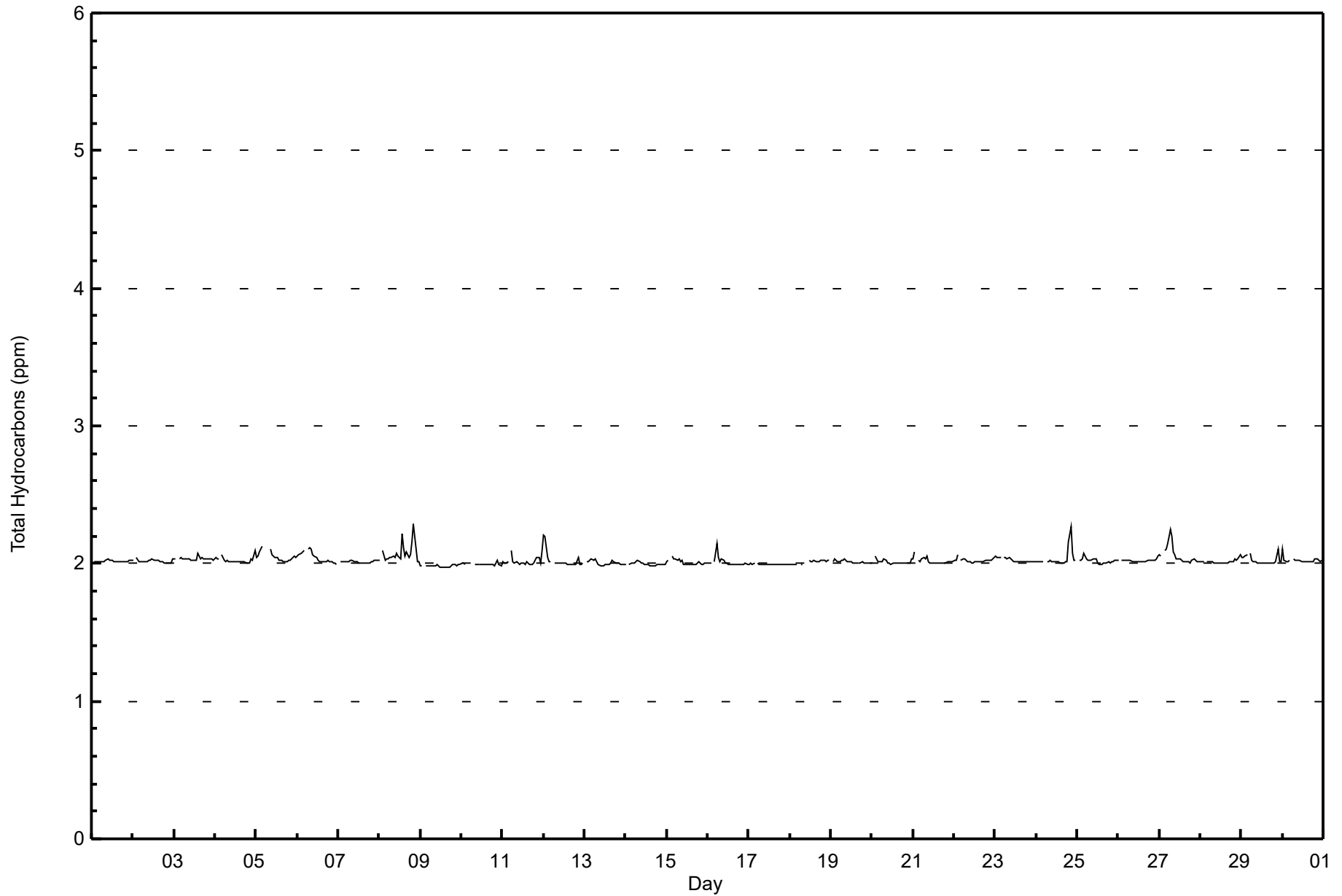
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Anzac











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Anzac - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	617	90.60	90.60
2.1 - 3.0	64	9.40	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Anzac - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	14	9	19	35	87	93	117	54	17	9	22	37	52	19	19	14	617
2.1 - 3.0	0	0	0	0	4	9	23	3	2	0	3	7	6	3	0	4	64
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
Totals	14	9	19	35	91	102	140	57	19	9	25	44	58	22	19	18	681

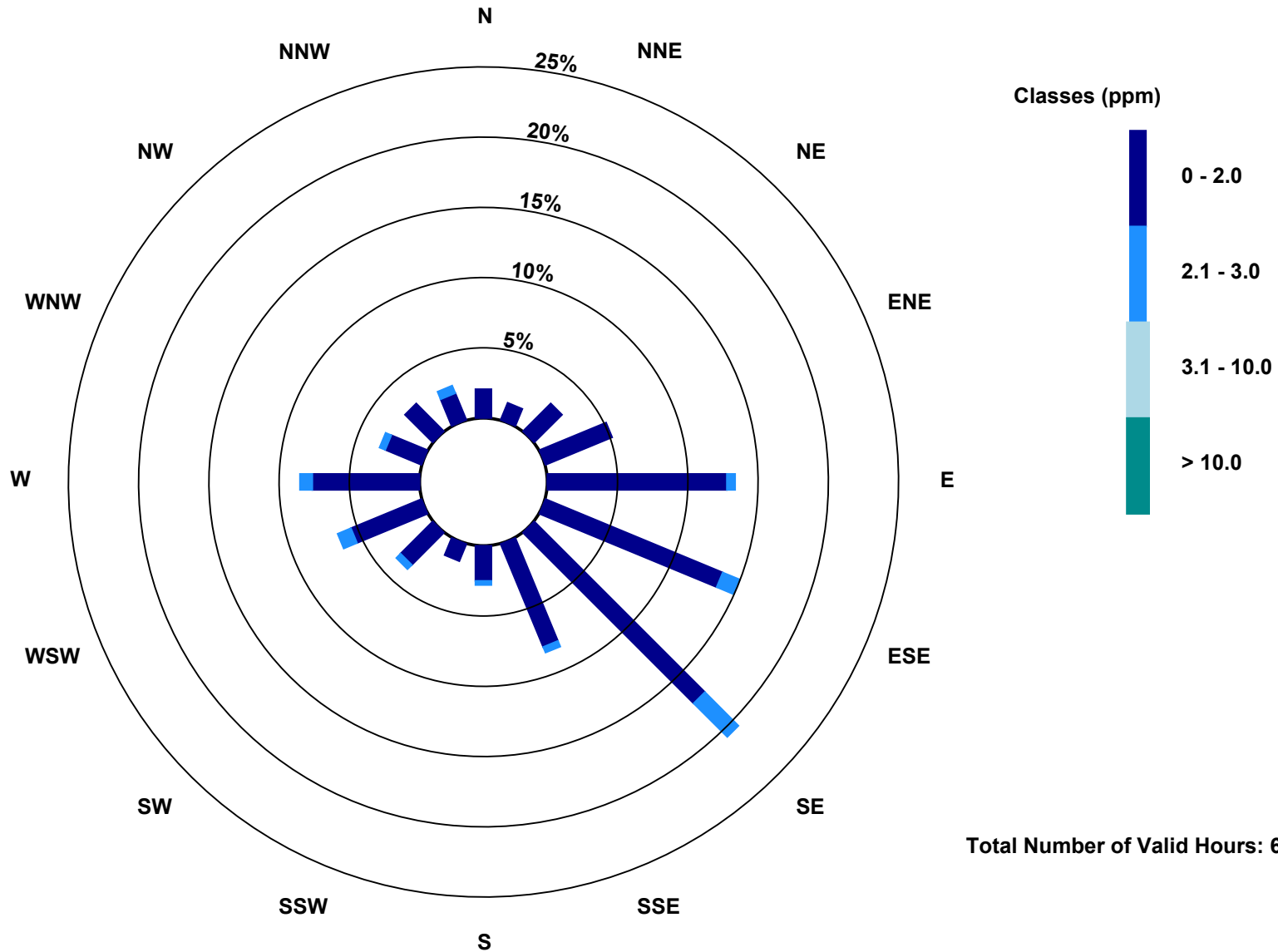
Total Number of Valid Hours: 681

Total Number of Hours: 720

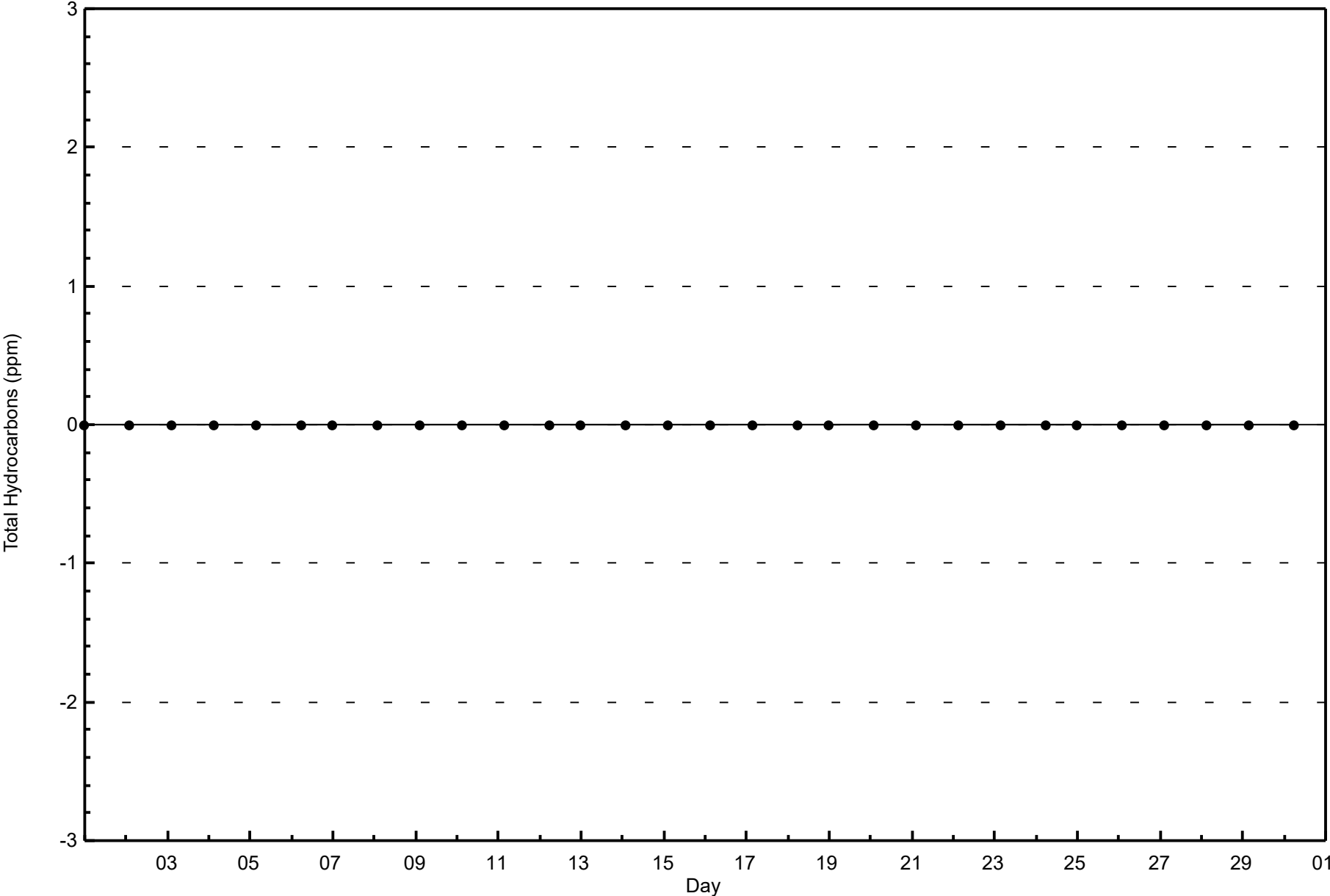


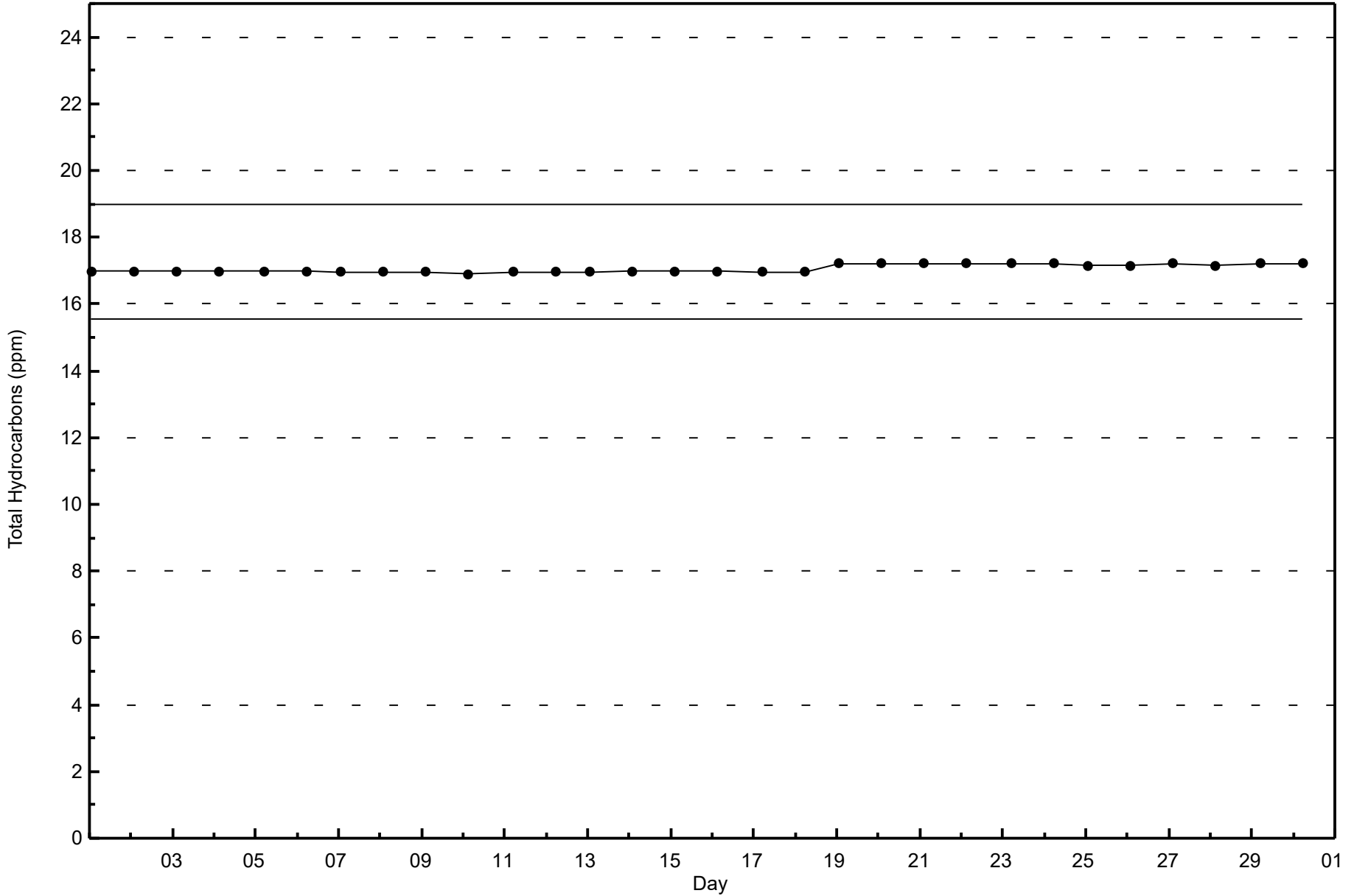
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Anzac



Total Number of Valid Hours: 681



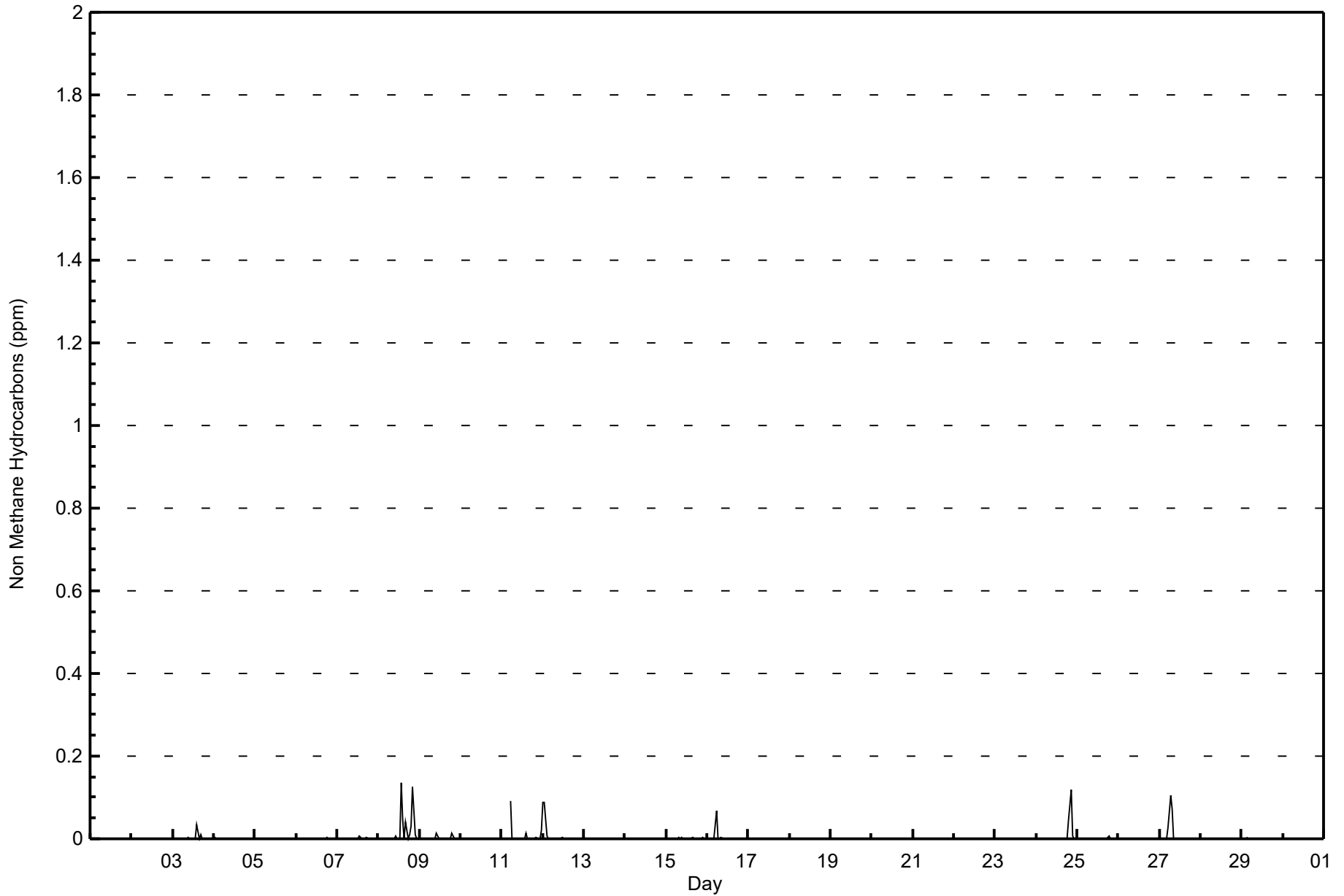




Summary of Hour Averages

Anzac - April 2023

Maximum Value: 0.135 ppm on Apr 8 14:00		Maximum Daily Average: 0.017 ppm on Apr 8		Hours in Service: 720																																													
Minimum Value: 0.000 ppm on Apr 1 02:00		Minimum Daily Average: 0.000 ppm on Apr 1		Hours of Data: 681																																													
Maximum Diurnal Average: 0.008 ppm at hour 21		Minimum Diurnal Average: 0.000 ppm at hour 5		Hours of Missing Data: 39																																													
Monthly Average: 0.002 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.1		Hours of Calibration: 33																																													
				Percent Operational Time: 99.2																																													
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-Apr	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																		
2-Apr	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																		
3-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.033	0.000	0.011	0.000	0.000	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-Apr	0.002	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																		
5-Apr	0.000	0.000	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
6-Apr	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	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
7-Apr	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	0.006	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																		
8-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.135	0.047	0.000	0.039	0.000	0.009	0.030	0.125	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
9-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
10-Apr	0.000	0.000	0.000	Z	PF	PF	PF	PF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
11-Apr	0.000	0.000	0.000	0.000	Z	0.092	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	0.001	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																		
12-Apr	0.088	0.089	0.006	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.000																		
13-Apr	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																		
14-Apr	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																		
15-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.005	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																		
16-Apr	0.000	0.000	0.000	Z	0.000	0.068	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	0.000	0.000	0.000	0.000	0.000																		
17-Apr	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																		
18-Apr	0.000	0.000	0.000	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
19-Apr	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																		
20-Apr	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																		
21-Apr	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																		
22-Apr	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																		
23-Apr	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																		
24-Apr	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	0.045	0.119	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
25-Apr	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	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																		
26-Apr	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																		
27-Apr	0.000	0.000	Z	0.000	0.000	0.027	0.103	0.070	0.000	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																		
28-Apr	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																		
29-Apr	0.000	0.000	0.000	0.002	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																		
30-Apr	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																		
																								0.004	0.004	0.000	0.000	0.000	0.008	0.004	0.003	0.000	0.000	0.001	0.000	0.000	0.005	0.003	0.000	0.002	0.000	0.001	0.003	0.008	0.001	0.000	0.001	Diurnal Average	
																								0.088	0.089	0.006	0.002	0.000	0.092	0.103	0.070	0.002	0.005	0.015	0.002	0.000	0.135	0.047	0.002	0.039	0.002	0.009	0.045	0.125	0.010	0.000	0.021	Diurnal Maximum	
Z - zerospan																								C - Calibration			M - Maintenance			PF - Power Failure																			





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Anzac - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	655	96.18	96.18
0.006 - 0.05	17	2.50	98.68
0.06 - 0.1	9	1.32	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Anzac - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	14	9	19	35	90	100	135	56	17	8	24	39	52	20	19	18	655
0.006 - 0.05	0	0	0	0	0	1	5	0	2	1	0	3	4	1	0	0	17
0.06 - 0.1	0	0	0	0	1	1	0	1	0	0	1	2	2	1	0	0	9
> 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14	9	19	35	91	102	140	57	19	9	25	44	58	22	19	18	681

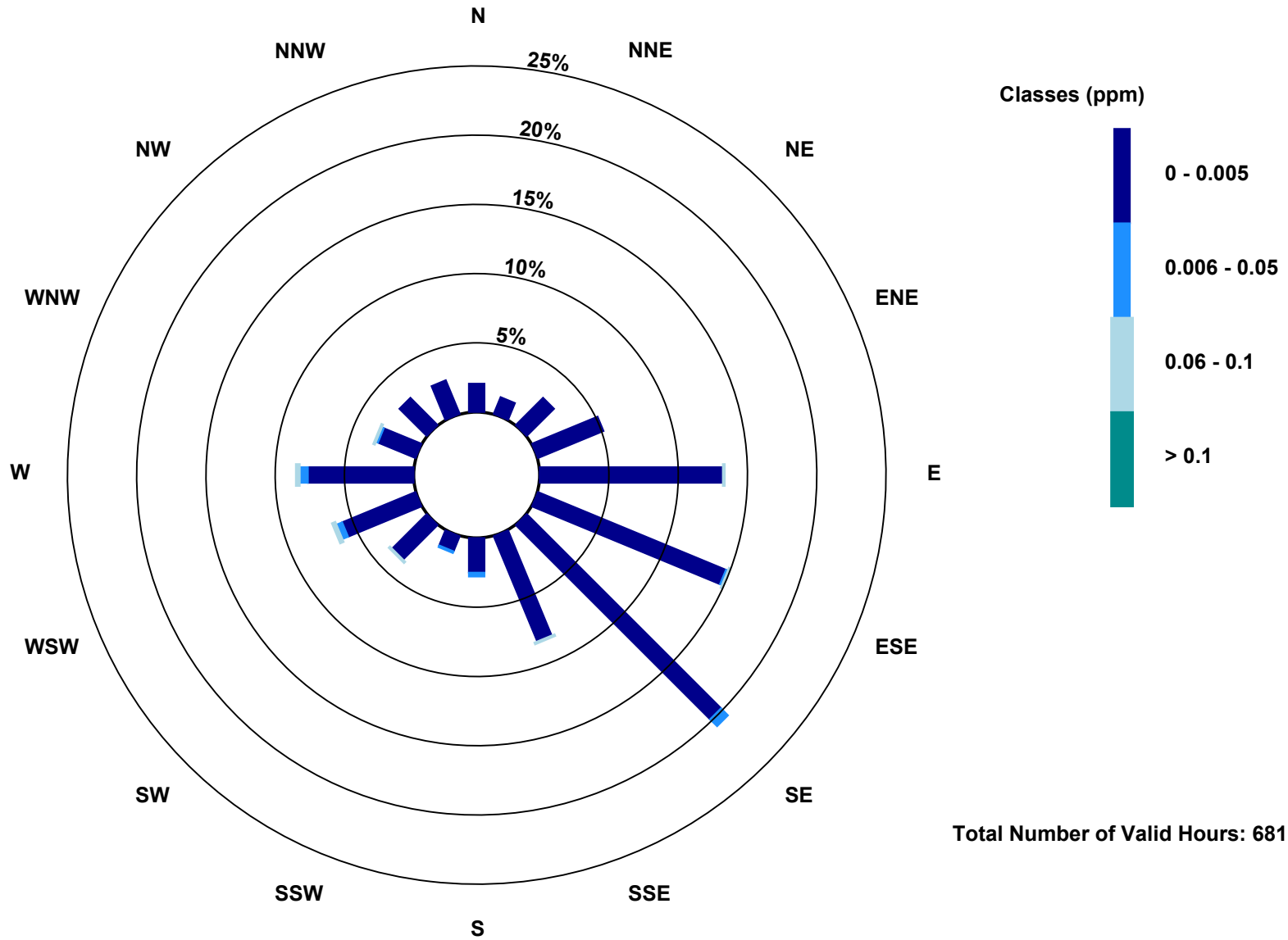
Total Number of Valid Hours: 681

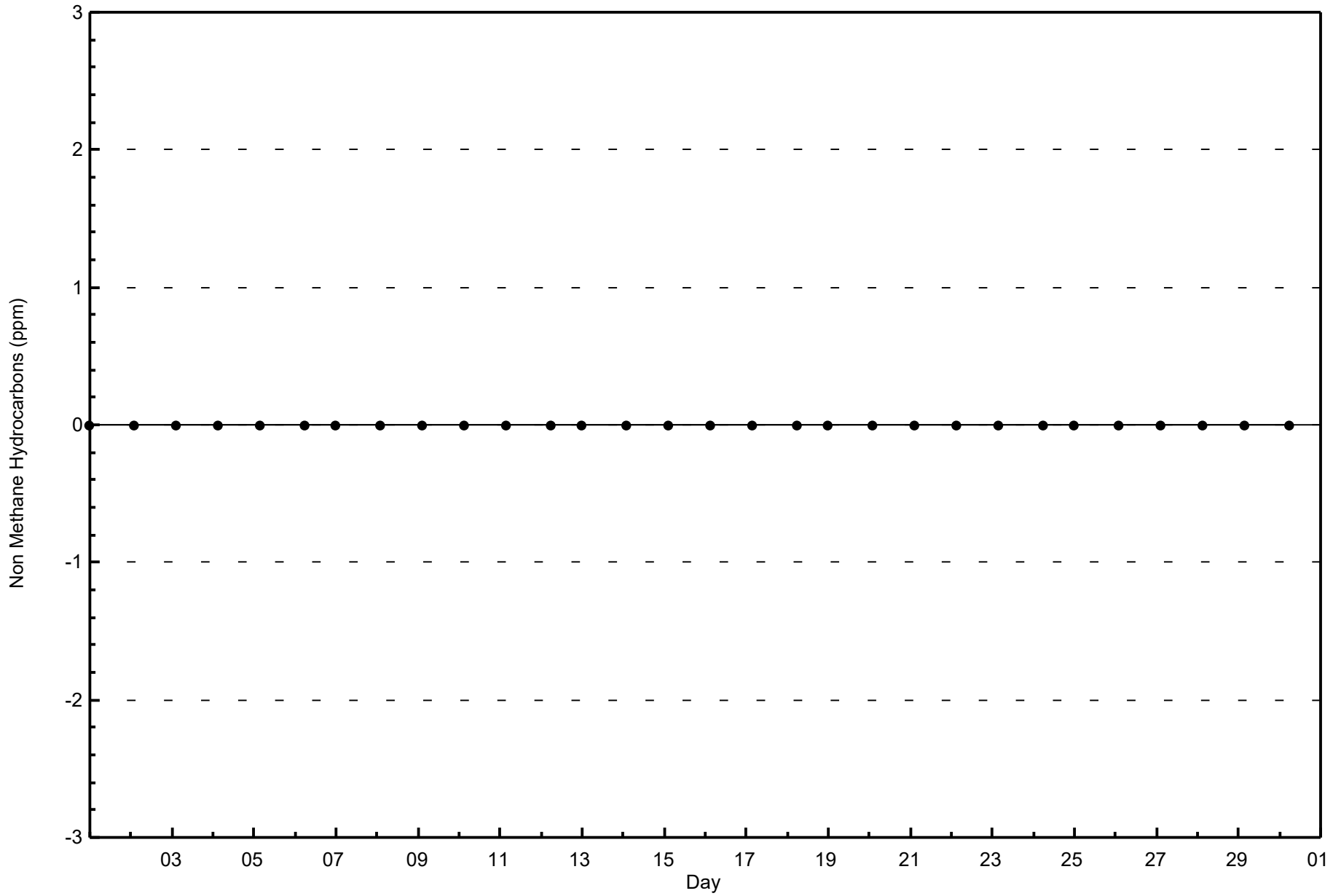
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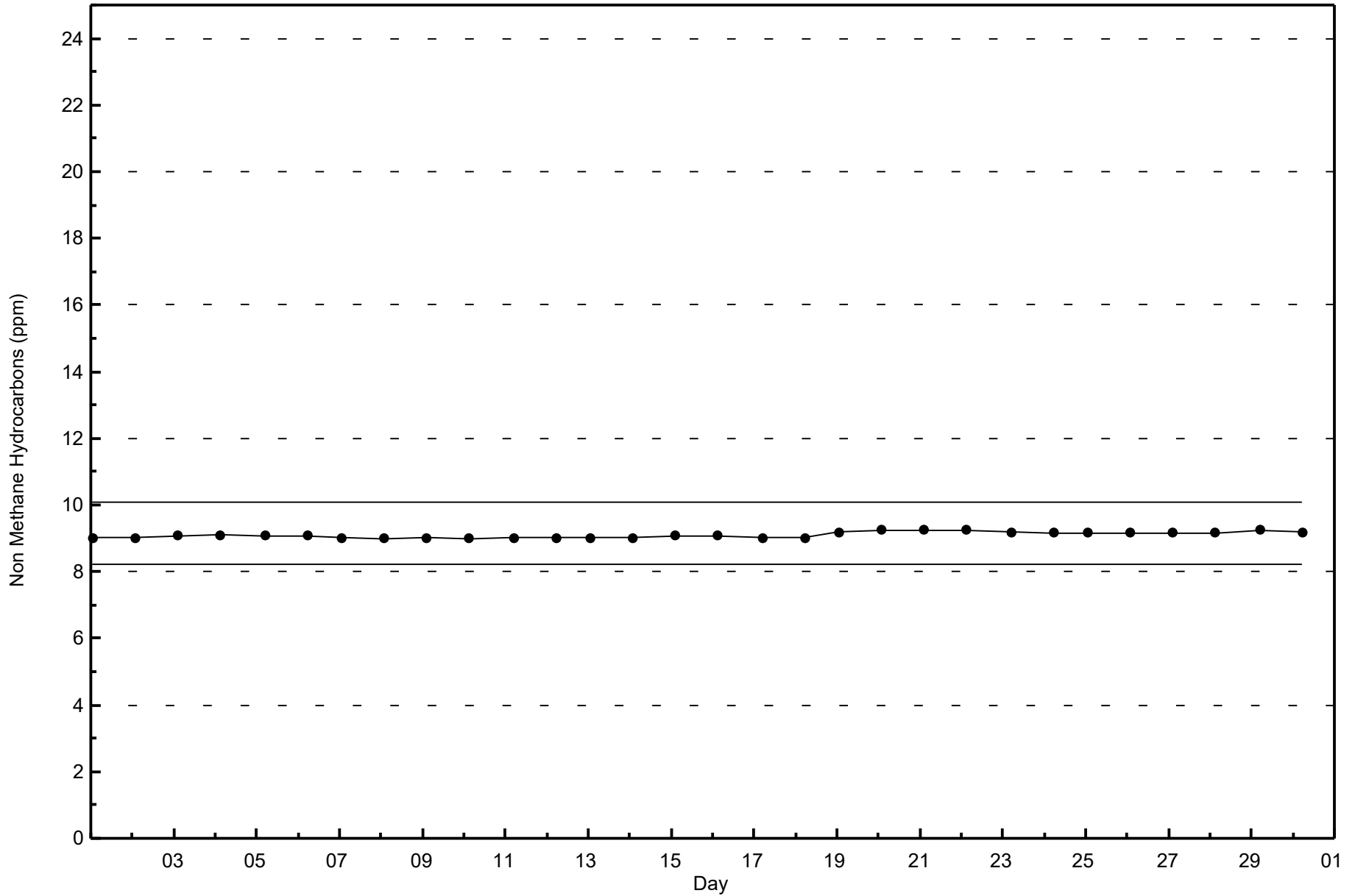


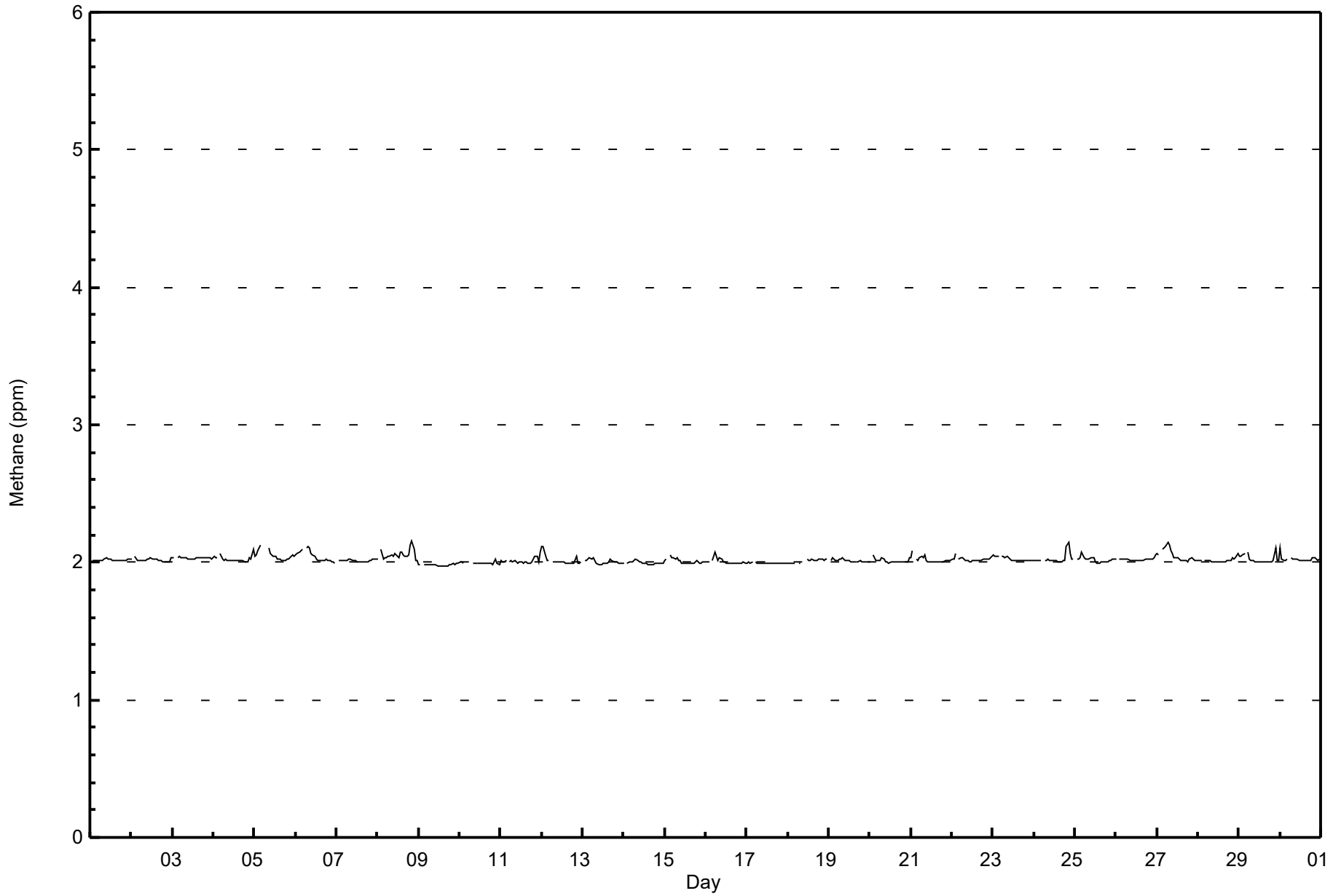
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Anzac











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Anzac - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	620	91.04	91.04
2.1 - 3.0	61	8.96	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Anzac - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	14	9	19	35	87	94	117	54	17	9	23	38	52	19	19	14	620
2.1 - 3.0	0	0	0	0	4	8	23	3	2	0	2	6	6	3	0	4	61
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
Totals	14	9	19	35	91	102	140	57	19	9	25	44	58	22	19	18	681

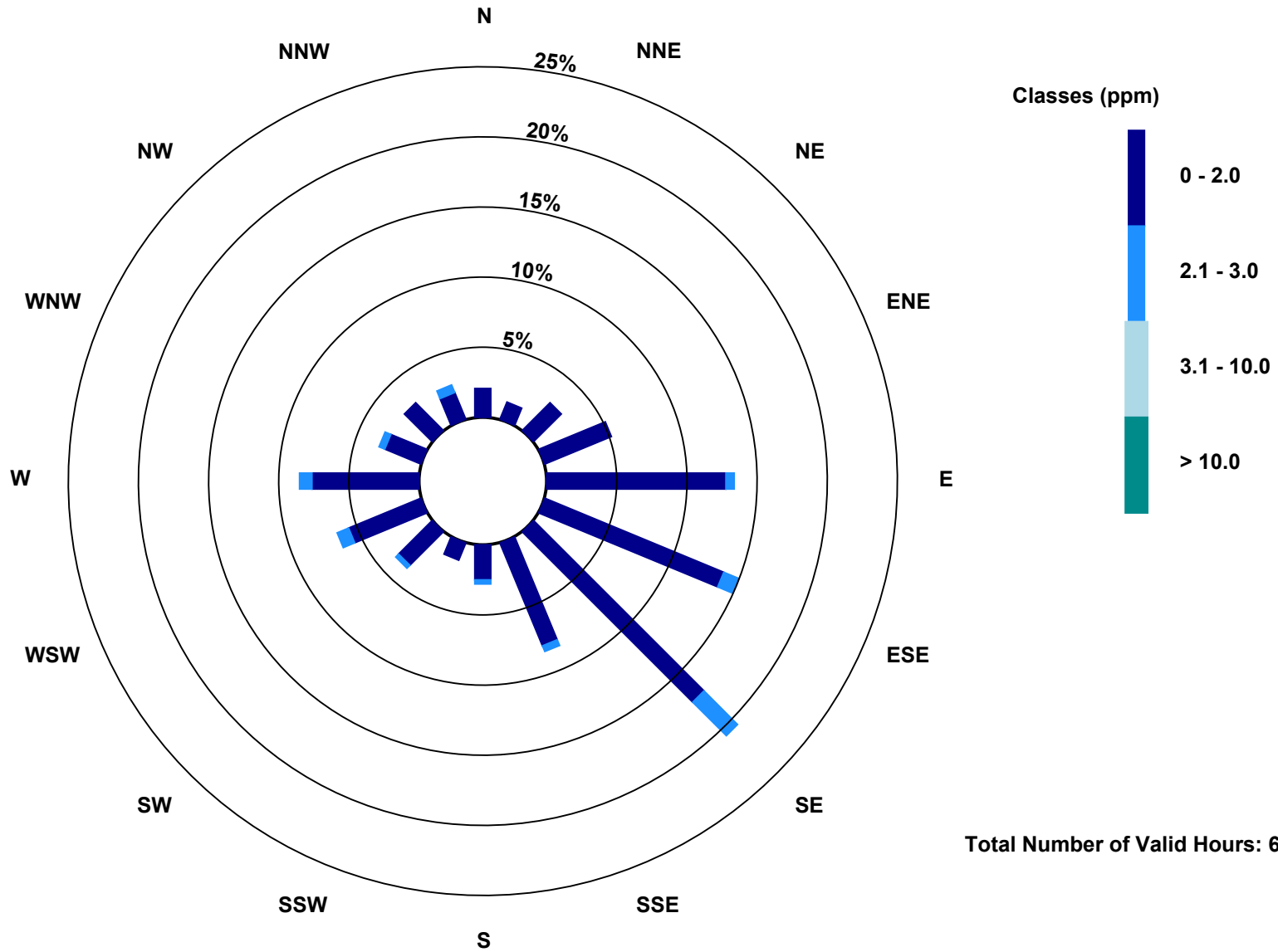
Total Number of Valid Hours: 681

Total Number of Hours: 720

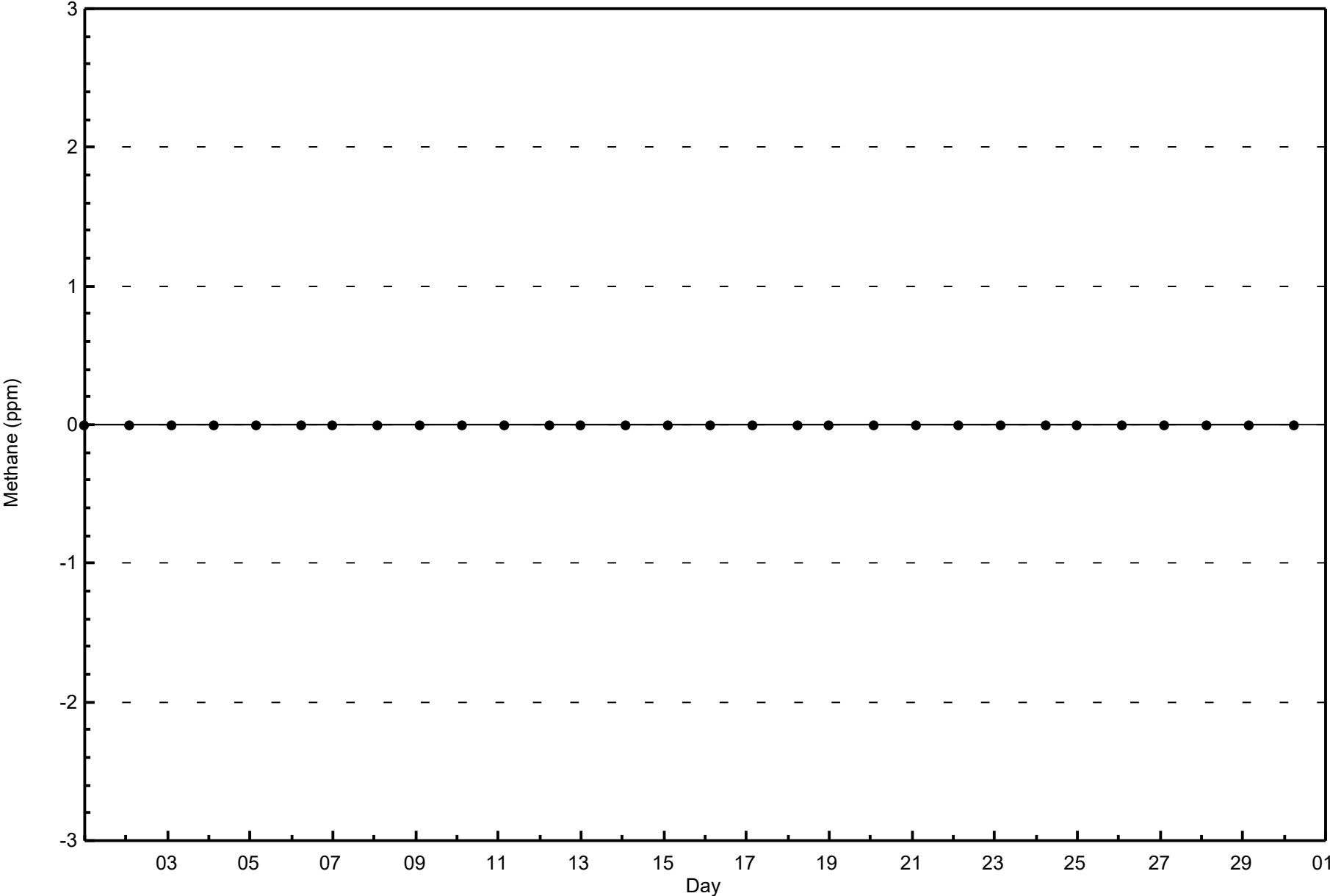


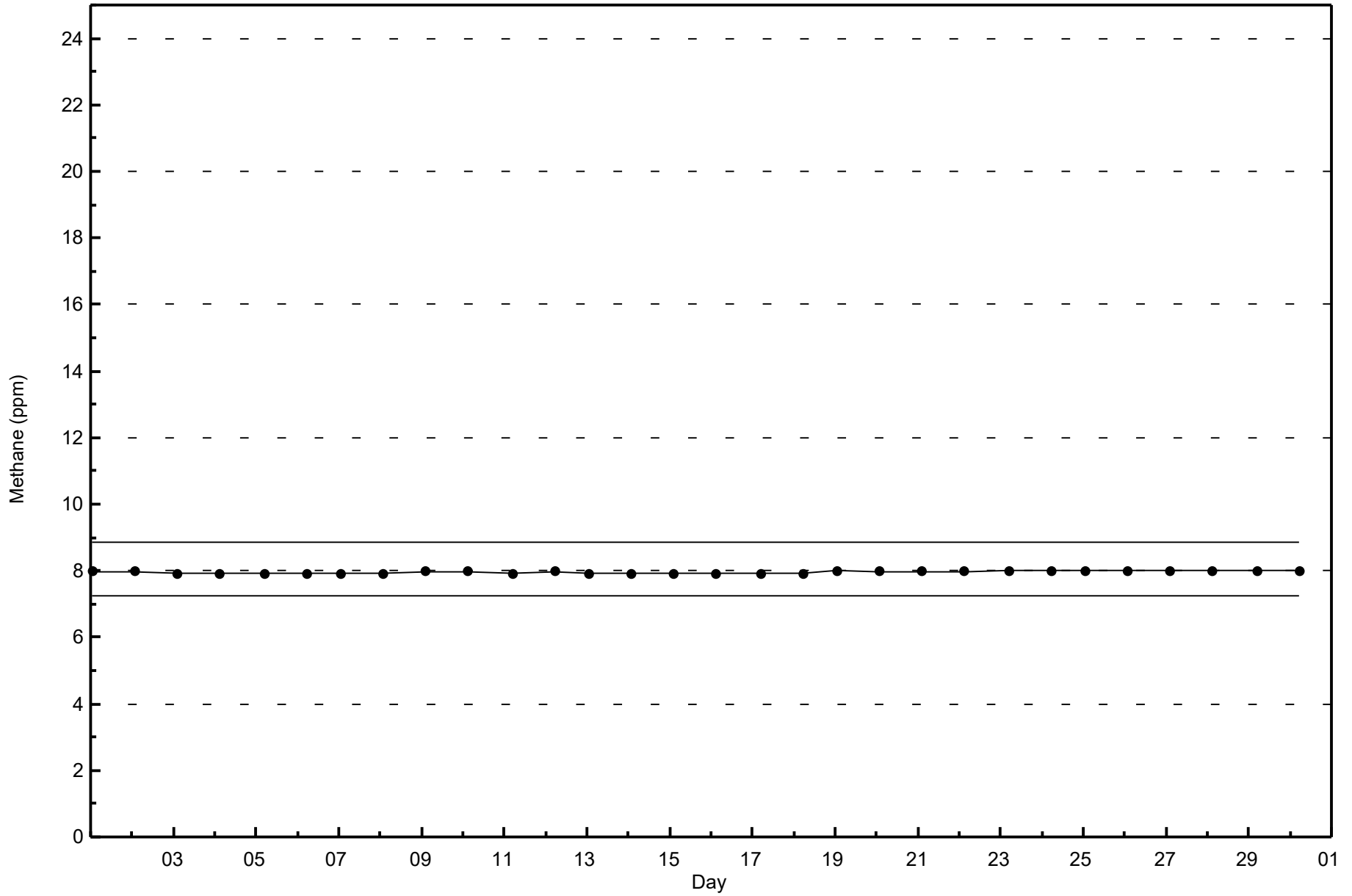
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Anzac



Total Number of Valid Hours: 681





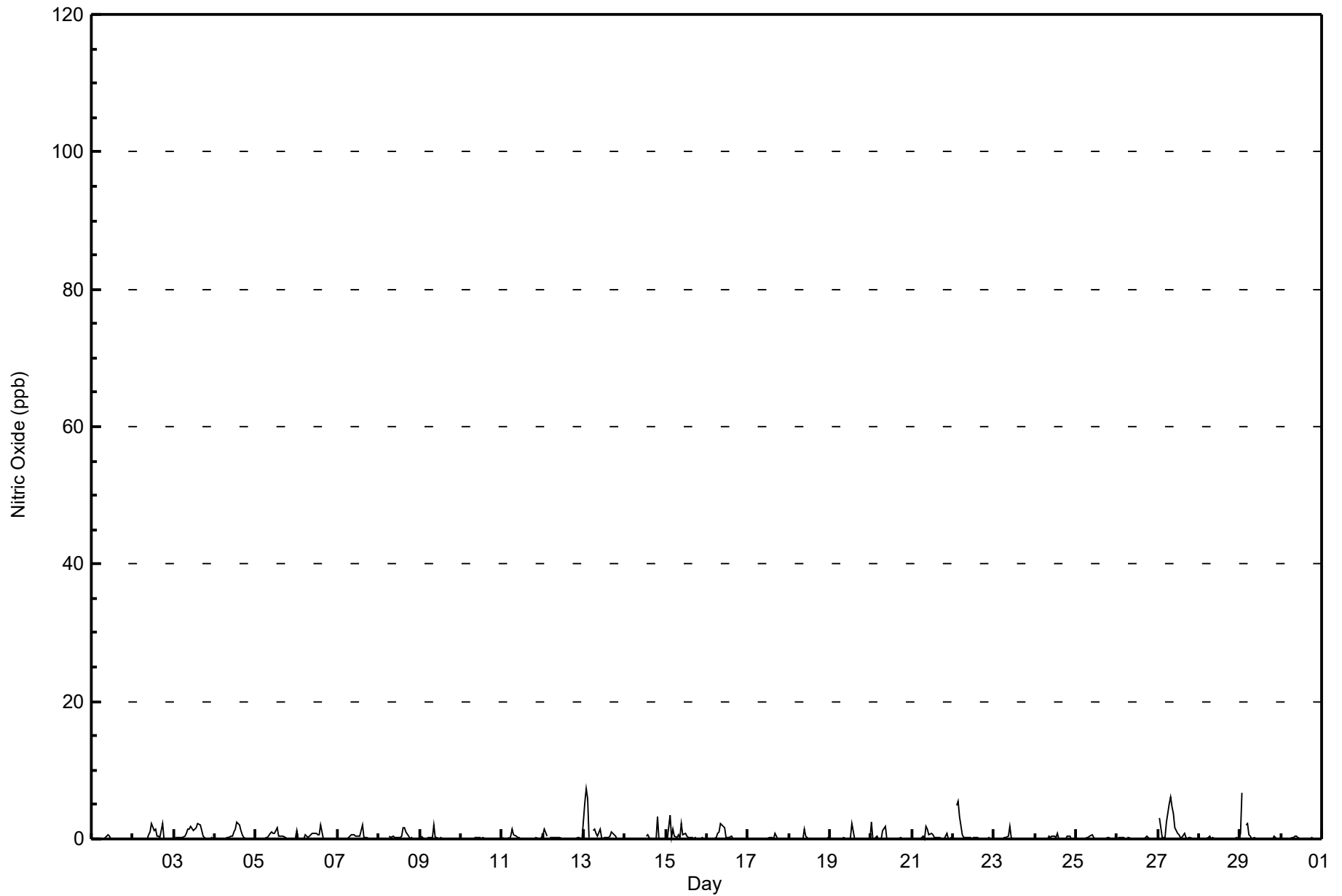


Maximum Value: 7.4 ppb on Apr 13 02:00		Maximum Daily Average: 1.3 ppb on Apr 27		Hours in Service: 720																							
Minimum Value: 0.0 ppb on Apr 1 02:00		Minimum Daily Average: 0.1 ppb on Apr 28		Hours of Data: 681																							
Maximum Diurnal Average: 0.8 ppb at hour 2		Minimum Diurnal Average: 0.0 ppb at hour 23		Hours of Missing Data: 39																							
Monthly Average: 0.34 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.3 P ₉₀ = 0.9 P ₉₉ = 4.9		Hours of Calibration: 35																							
				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-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.3	0.6	0.5	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	
2-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.6	1.1	2.3	1.2	1.3	0.5	0.4	0.2	2.3	0.0	0.0	0.0	0.0	0.0	0.1	0.5	2.3	
3-Apr	Z	0.1	0.2	0.1	0.2	0.1	0.4	0.9	1.4	1.5	1.8	1.2	1.3	1.6	2.3	2.1	1.2	0.4	0.2	0.0	0.1	0.0	0.1	0.0	0.7	2.3	
4-Apr	0.1	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.3	1.0	1.5	2.3	2.0	1.3	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.3	
5-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.3	0.8	1.0	0.8	0.8	1.6	0.4	0.4	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.3	1.6		
6-Apr	1.2	0.0	0.1	Z	0.0	0.6	0.3	0.5	0.6	0.8	0.8	0.7	0.6	0.6	2.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4	2.1	
7-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.4	0.5	0.6	0.5	0.4	0.4	0.3	2.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	2.1	
8-Apr	0.0	0.0	0.0	0.1	0.0	Z	0.4	0.2	0.3	0.2	0.3	0.3	0.2	0.4	1.7	1.6	1.1	0.4	0.1	0.2	0.1	0.1	0.0	0.0	0.3	1.7	
9-Apr	Z	0.4	0.0	0.1	0.0	0.1	0.3	0.2	2.1	0.2	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	0.2	2.1	
10-Apr	0.0	Z	0.1	0.1	PF	PF	PF	PF	0.2	0.1	0.3	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	
11-Apr	0.1	0.1	Z	0.2	0.0	0.3	1.4	0.7	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	1.4	
12-Apr	0.6	1.4	0.4	Z	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.2	1.4	
13-Apr	5.2	7.4	5.9	0.1	Z	1.2	1.4	0.9	0.3	1.5	0.1	0.1	0.1	0.1	0.3	0.4	1.1	0.8	0.3	0.0	0.0	0.0	0.0	0.0	1.2	7.4	
14-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	C	C	C	C	C	0.4	0.6	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.1	0.3	3.3	
15-Apr	Z	0.0	3.5	0.1	1.5	0.3	0.3	0.3	0.6	0.2	2.2	0.7	0.7	0.4	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.5	3.5	
16-Apr	0.0	Z	0.0	0.0	0.0	0.3	0.8	1.1	2.2	1.8	1.6	0.2	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.2	
17-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	
18-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	1.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	1.4	
19-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.3	
20-Apr	2.5	0.0	0.0	0.5	0.0	Z	0.1	1.2	1.8	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	0.3	2.5	
21-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.4	0.0	1.9	1.4	0.6	0.8	0.6	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.9	0.0	0.0	0.2	0.3	1.9	
22-Apr	0.1	Z	4.9	5.5	3.3	0.6	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.7	5.5	
23-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.2	0.3	1.9	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	1.9	
24-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.5	0.3	0.3	0.3	0.1	0.9	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.1	0.9	
25-Apr	0.0	0.1	0.0	0.0	Z	0.0	0.1	0.2	0.4	0.7	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.7	
26-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
27-Apr	Z	3.1	0.2	0.2	0.3	2.4	5.1	6.0	4.7	3.7	1.6	0.9	0.7	0.3	0.3	0.8	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	1.3	6.0	
28-Apr	0.0	Z	0.1	0.0	0.1	0.1	0.4	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	0.1	0.1	0.1	0.4	
29-Apr	0.8	6.7	Z	2.1	2.2	0.7	0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.6	6.7	
30-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
		0.4	0.8	0.6	0.4	0.3	0.3	0.4	0.5	0.7	0.8	0.5	0.4	0.4	0.4	0.3	0.2	0.2	0.1	0.2	0.1	0.0	0.0	0.1	Diurnal Average		
		5.2	7.4	5.9	5.5	3.3	2.4	5.1	6.0	4.7	3.7	1.8	2.3	1.6	2.3	2.3	2.1	1.2	2.3	0.3	3.3	0.9	0.3	0.1	0.3	Diurnal Maximum	
Z - zerospan		C - Calibration				PF - Power Failure																					



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Anzac - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	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: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Anzac - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	9	19	35	91	101	141	56	19	10	23	44	59	22	20	17	681
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
Totals	15	9	19	35	91	101	141	56	19	10	23	44	59	22	20	17	681

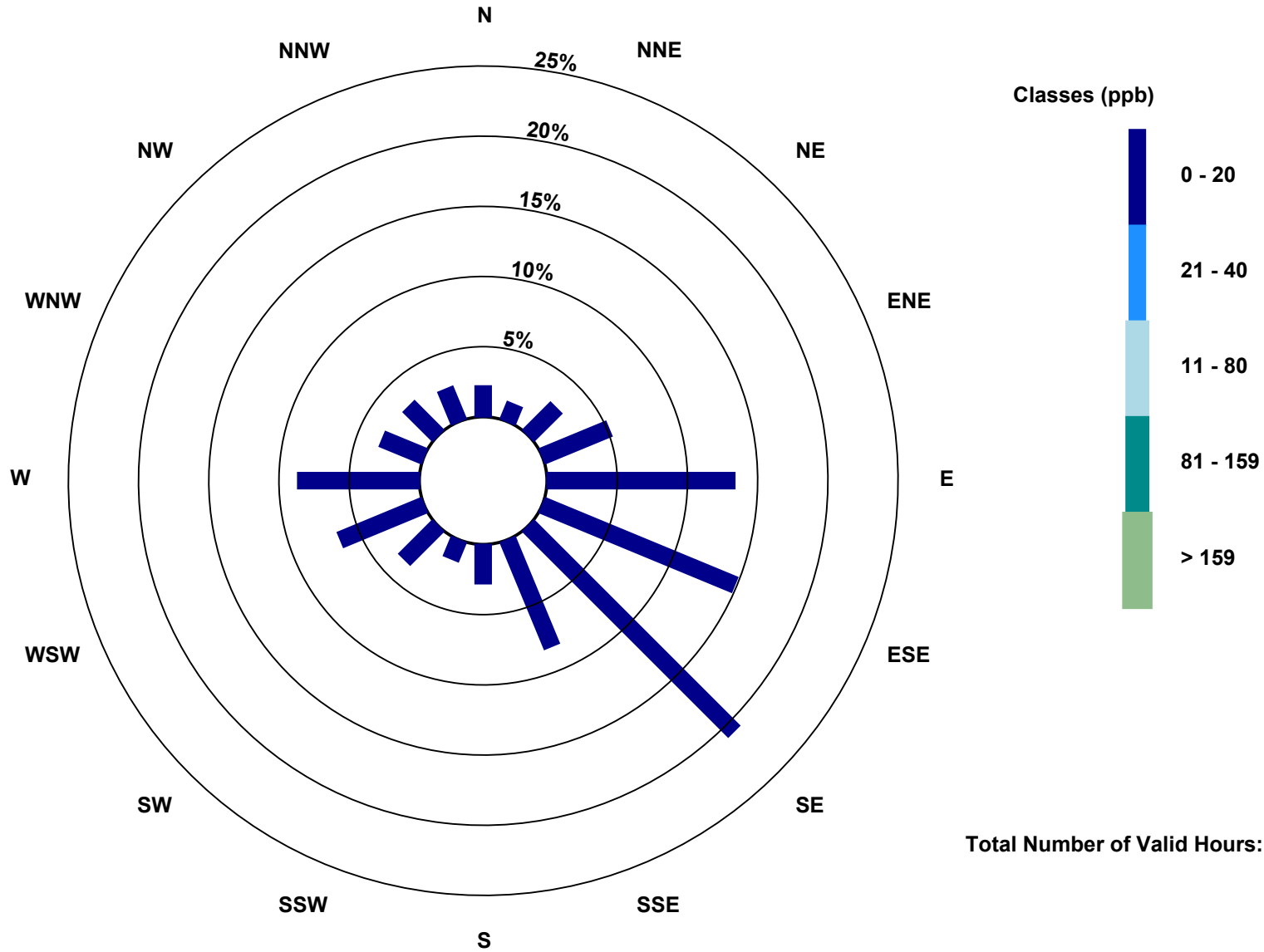
Total Number of Valid Hours: 681

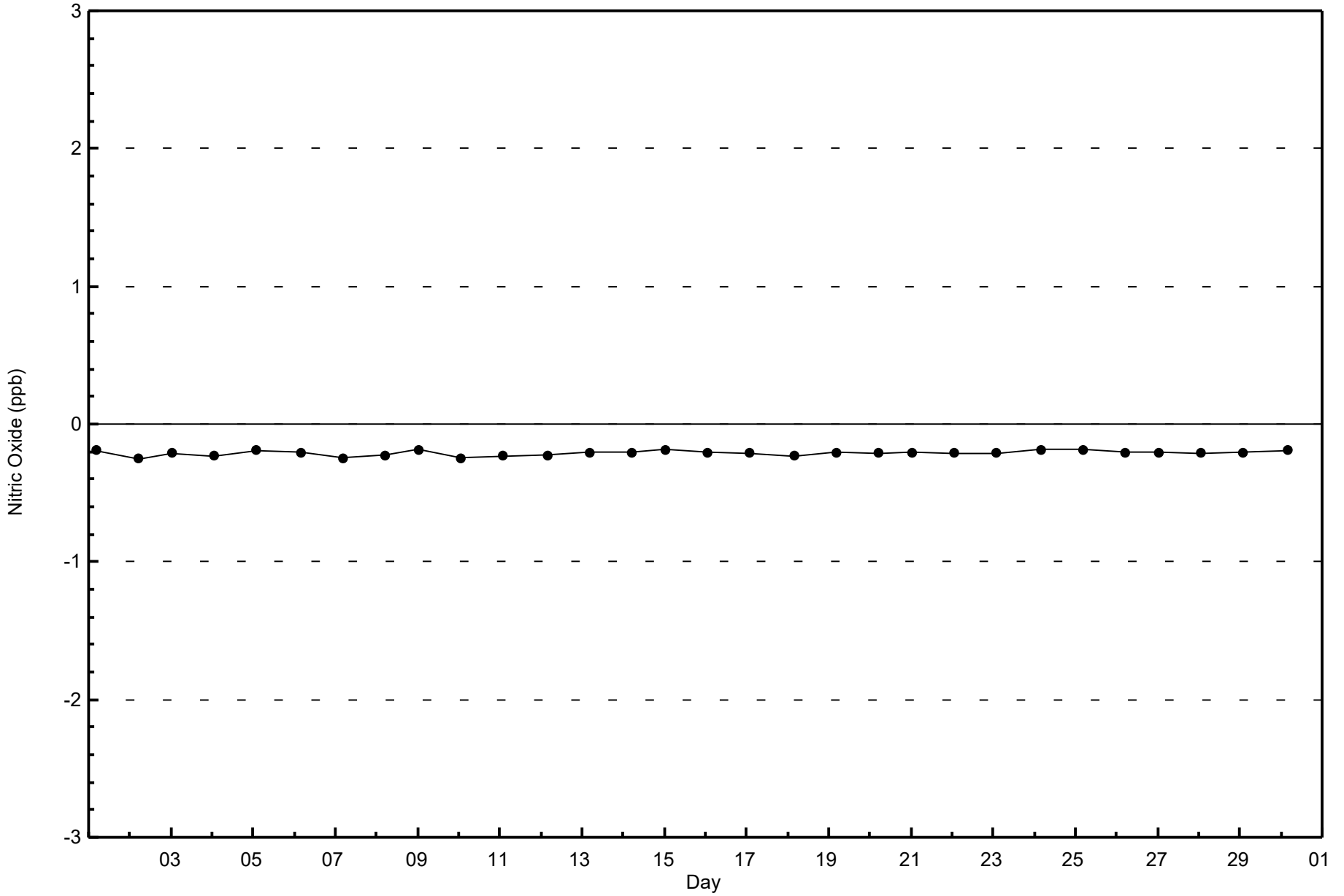
Total Number of Hours: 720

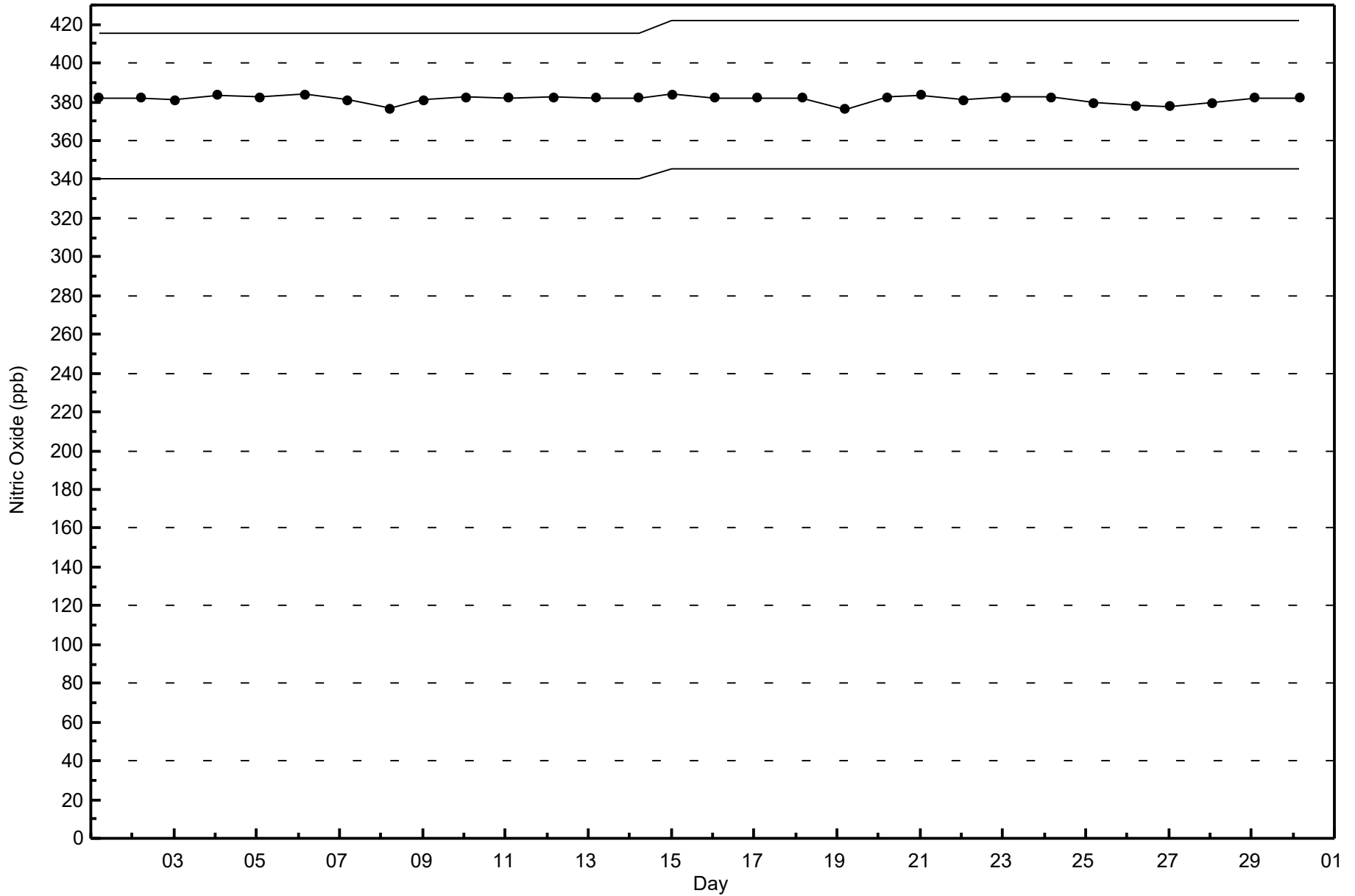


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Anzac







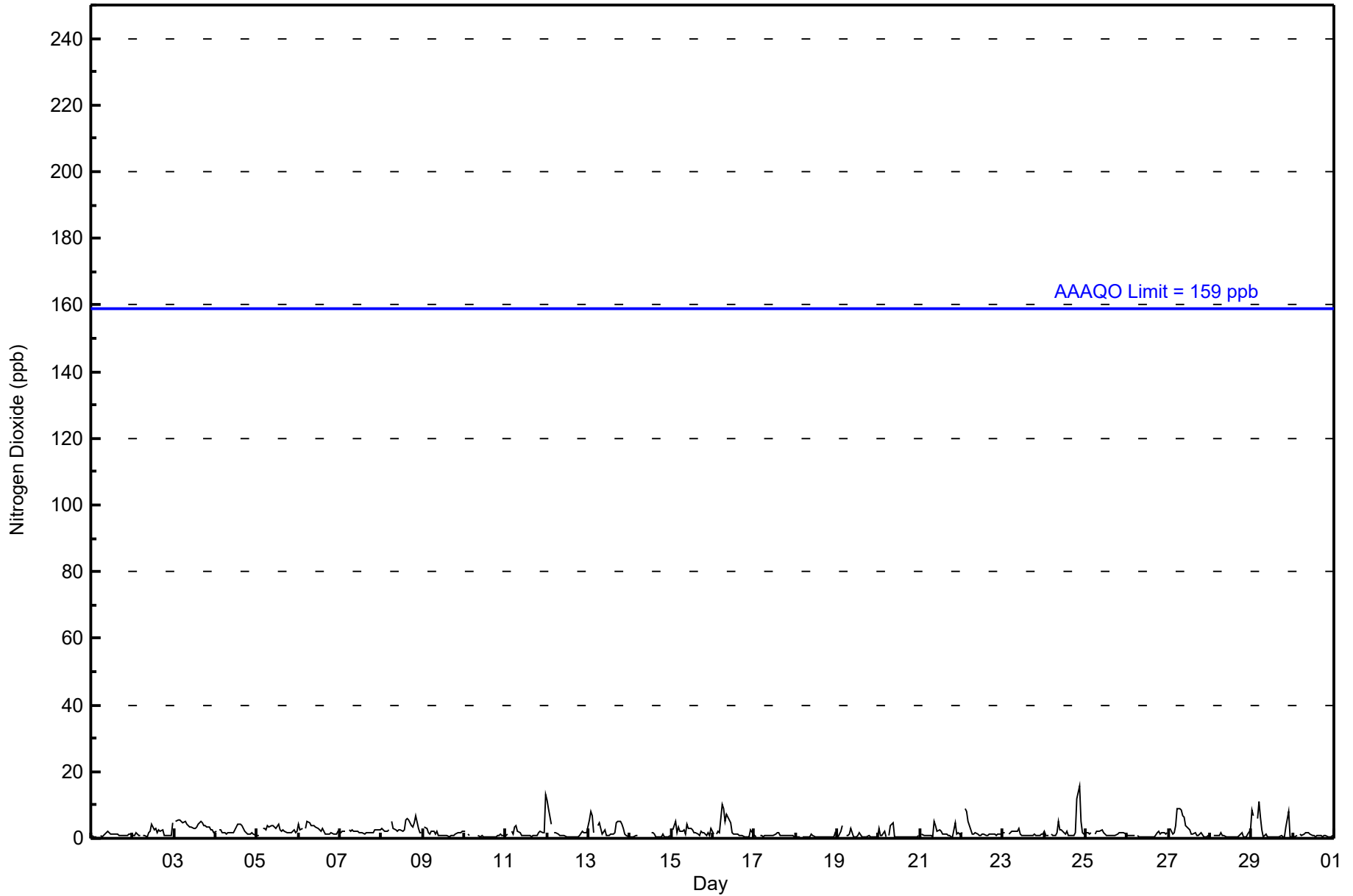


Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 15.7 ppb on Apr 24 21:00				Maximum Daily Average: 3.9 ppb on Apr 3		Hours of Data:														681						
Minimum Value: 0.3 ppb on Apr 20 19:00				Minimum Daily Average: 0.6 ppb on Apr 18		Hours of Missing Data:														39						
Maximum Diurnal Average: 2.8 ppb at hour 6				Minimum Diurnal Average: 1.3 ppb at hour 23		Hours of Calibration:														35						
Monthly Average: 1.85 ppb				Percentiles: P ₁ = 0.4 P ₁₀ = 0.5 Q ₁ = 0.7 Median = 1.3 Q ₃ = 2.2 P ₉₀ = 3.9 P ₉₉ = 8.9		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-Apr	0.7	0.6	0.6	0.6	Z	1.0	0.6	0.7	1.2	2.1	1.9	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.0	1.0	2.1
2-Apr	1.0	1.0	1.8	1.0	0.8	Z	0.8	0.7	0.6	1.7	2.1	4.1	2.5	2.8	1.9	2.4	2.0	2.5	0.9	0.7	0.7	0.7	0.7	4.7	4.7	
3-Apr	Z	5.2	5.6	5.6	4.9	4.8	4.9	4.2	3.8	3.4	3.4	2.8	2.8	3.3	4.4	5.0	4.8	3.8	3.9	3.5	3.3	2.7	2.6	1.8	5.6	
4-Apr	2.1	Z	2.5	2.4	1.9	1.5	1.3	1.5	1.6	1.6	1.5	2.4	3.3	4.4	4.4	3.7	3.0	2.0	1.3	1.3	1.4	1.6	1.3	0.8	4.4	
5-Apr	0.8	0.8	Z	3.0	2.9	2.5	4.0	3.2	3.9	3.7	3.3	3.1	4.2	2.4	2.2	2.4	2.2	1.9	1.8	1.7	1.8	2.4	1.9	2.0	4.2	
6-Apr	4.1	2.4	3.1	Z	3.1	5.1	4.6	3.9	3.8	3.7	3.4	2.9	2.6	2.0	3.0	1.2	1.2	1.1	1.3	1.5	1.3	1.4	1.3	2.1	5.1	
7-Apr	1.7	2.0	2.1	2.1	Z	2.4	2.3	2.4	2.3	2.2	2.1	1.8	1.9	1.8	1.4	1.6	1.5	1.6	1.6	1.8	2.5	2.6	2.6	2.7	2.7	
8-Apr	2.8	2.4	2.3	2.3	2.4	Z	5.2	2.8	2.6	2.3	2.5	2.4	2.1	2.7	5.3	6.0	5.4	3.7	3.4	4.6	6.6	2.9	1.7	1.9	6.6	
9-Apr	Z	3.5	3.0	1.9	1.3	2.0	2.1	1.2	2.0	1.0	0.9	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7	1.1	1.7	1.5	1.9	2.3	3.5	
10-Apr	2.2	Z	1.2	0.9	PF	PF	PF	PF	0.7	0.6	0.8	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.9	0.8	1.2	0.9	0.9	2.2	
11-Apr	1.0	1.3	Z	2.0	1.4	3.5	3.7	2.1	1.8	0.9	0.9	0.7	0.8	0.8	0.7	0.6	0.7	0.7	0.7	1.6	2.2	1.9	1.9	13.0	13.0	
12-Apr	11.4	9.0	4.1	Z	1.8	1.9	1.2	1.0	0.9	1.0	0.9	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.9	2.1	1.5	1.5	1.6	11.4	
13-Apr	5.5	8.0	6.7	1.7	Z	3.9	4.6	3.1	1.3	2.4	1.0	0.8	0.9	1.1	1.4	1.9	4.5	5.1	5.1	4.1	3.0	1.1	0.8	0.6	8.0	
14-Apr	0.6	0.6	0.6	0.7	0.7	Z	0.8	C	C	C	C	C	1.6	1.9	1.2	0.6	0.5	0.5	0.4	1.3	0.5	0.5	0.6	1.0	1.9	
15-Apr	Z	2.6	5.2	1.9	3.4	2.0	2.1	2.6	1.2	4.2	2.9	2.9	2.4	1.9	1.6	1.4	1.0	2.1	1.8	1.8	0.8	1.5	0.7	2.9	5.2	
16-Apr	1.4	Z	1.2	2.2	1.6	10.3	8.9	5.0	7.0	5.7	4.7	1.5	1.2	1.2	1.1	0.7	0.7	0.7	0.6	0.6	0.6	0.6	2.7	1.3	10.3	
17-Apr	0.7	0.6	Z	0.7	0.7	0.6	0.7	0.7	0.8	0.8	0.8	0.7	1.3	1.6	1.5	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.6	1.6	
18-Apr	0.5	0.5	0.5	Z	0.6	0.5	0.4	0.4	0.4	1.4	0.7	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	1.5	1.5	
19-Apr	0.6	1.1	2.1	4.0	Z	0.8	0.7	1.3	2.9	0.6	0.6	0.6	0.9	1.6	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.5	0.4	0.4	4.0	
20-Apr	3.0	0.9	0.9	2.2	0.4	Z	0.7	3.9	4.5	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	0.4	0.9	4.5	
21-Apr	Z	1.3	0.9	0.8	0.9	0.8	1.0	0.5	5.2	4.0	2.2	2.4	2.0	1.3	1.3	1.1	1.0	0.8	0.6	0.5	4.6	1.3	1.9	1.3	5.2	
22-Apr	1.7	Z	8.8	8.2	5.1	2.5	1.3	1.2	1.5	1.1	1.0	0.8	1.1	1.1	1.0	0.9	1.3	1.1	1.2	1.4	1.0	1.4	1.4	1.3	8.8	
23-Apr	1.6	1.6	Z	1.4	1.8	2.0	2.1	2.2	2.3	2.9	1.4	0.8	0.7	0.7	0.7	0.8	0.7	0.8	1.1	0.9	1.0	1.0	1.1	1.1	2.9	
24-Apr	2.2	0.9	0.9	Z	1.2	0.7	0.7	1.9	5.0	2.6	2.6	1.9	1.2	2.0	0.9	0.9	1.0	1.0	1.6	12.0	15.7	5.2	1.5	1.4	15.7	
25-Apr	1.7	1.7	1.4	1.5	Z	1.4	2.2	2.1	2.1	2.5	1.8	1.4	0.9	0.8	0.9	0.9	0.9	0.9	1.1	1.7	1.9	1.9	1.7	1.2	2.5	
26-Apr	0.7	0.7	0.7	0.7	0.8	Z	0.7	0.6	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.6	1.9	2.3	1.4	1.5	1.5	1.4	1.8	2.3	
27-Apr	Z	2.8	1.4	1.9	3.9	8.9	8.8	8.5	6.7	6.2	3.7	3.1	2.5	1.3	1.1	1.8	1.0	0.7	1.1	1.5	0.6	0.6	0.6	0.7	8.9	
28-Apr	0.7	Z	1.0	0.8	0.7	0.8	1.6	0.8	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.9	1.5	0.5	0.5	0.6	1.3	2.5	2.5	
29-Apr	8.6	6.9	Z	5.9	11.0	6.4	2.6	0.6	1.2	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.8	0.4	0.3	3.4	8.1	0.4	0.4	11.0	
30-Apr	0.4	0.5	1.0	Z	1.1	0.9	1.2	1.5	1.7	1.6	1.4	0.8	0.7	0.6	0.7	0.7	0.6	0.9	0.7	0.5	0.5	0.6	0.8	0.8	1.7	
																								Diurnal Average		
																								Diurnal Maximum		
																								2.3 2.4 2.4 2.3 2.3 2.8 2.5 2.2 2.4 2.1 1.7 1.5 1.4 1.4 1.4 1.4 1.4 1.3 1.3 1.7 2.1 1.6 1.3 1.9		
																								11.4 9.0 8.8 8.2 11.0 10.3 8.9 8.5 7.0 6.2 4.7 4.1 4.2 4.4 5.3 6.0 5.4 5.1 5.1 12.0 15.7 8.1 2.7 13.0		
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 (NO₂) - ppb
Anzac - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	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: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Anzac - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	9	19	35	91	101	141	56	19	10	23	44	59	22	20	17	681
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
Totals	15	9	19	35	91	101	141	56	19	10	23	44	59	22	20	17	681

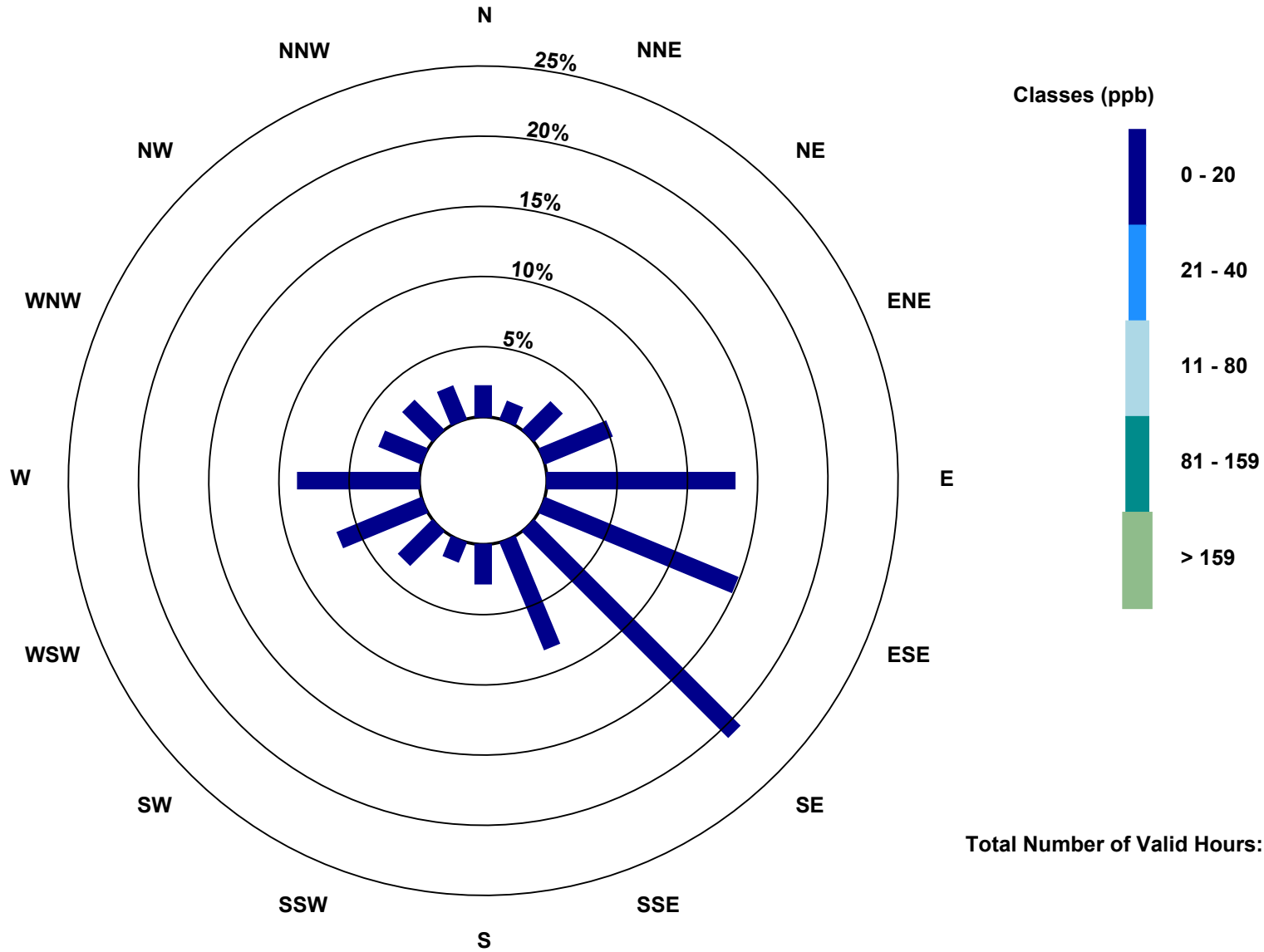
Total Number of Valid Hours: 681

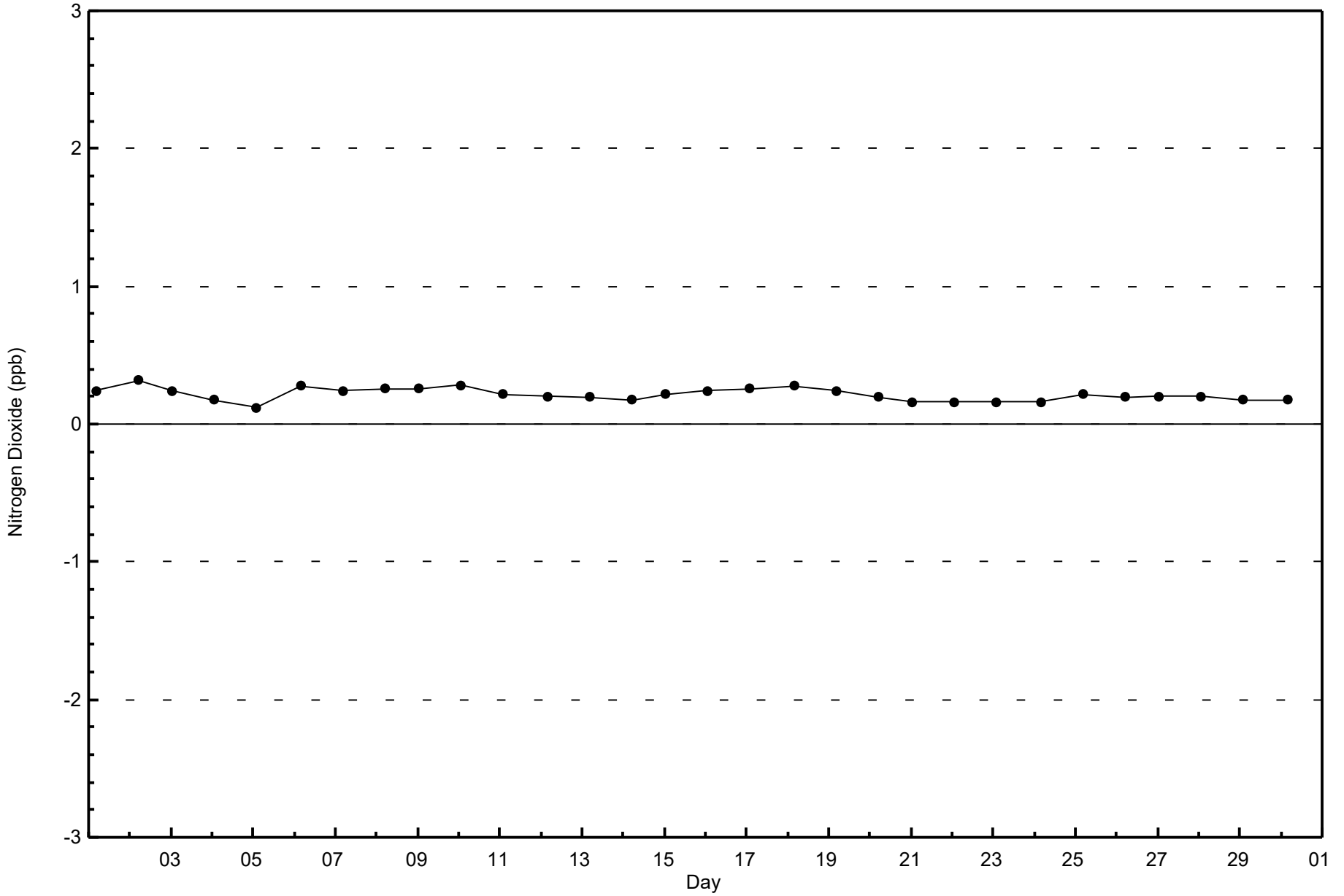
Total Number of Hours: 720

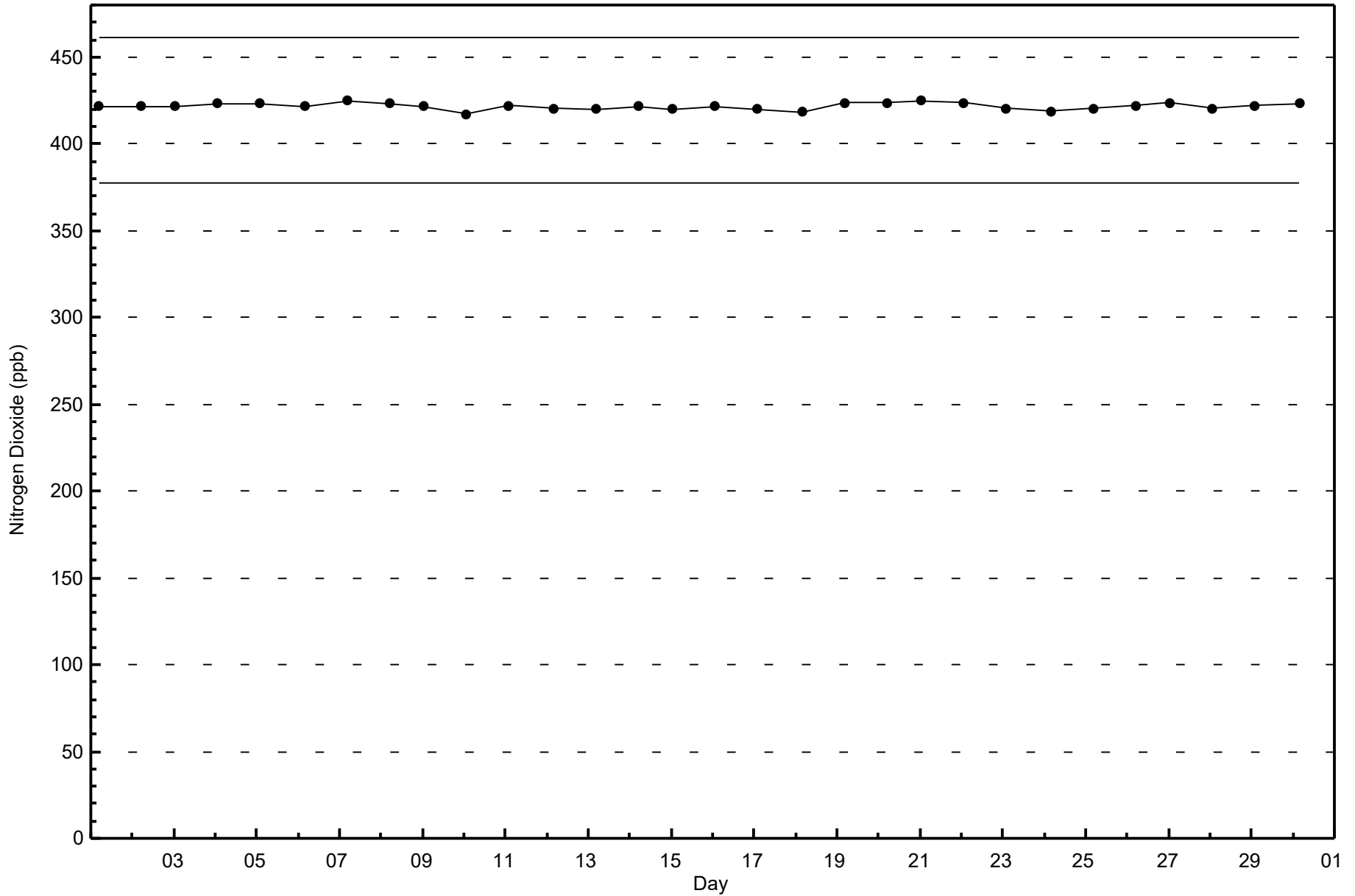


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Anzac



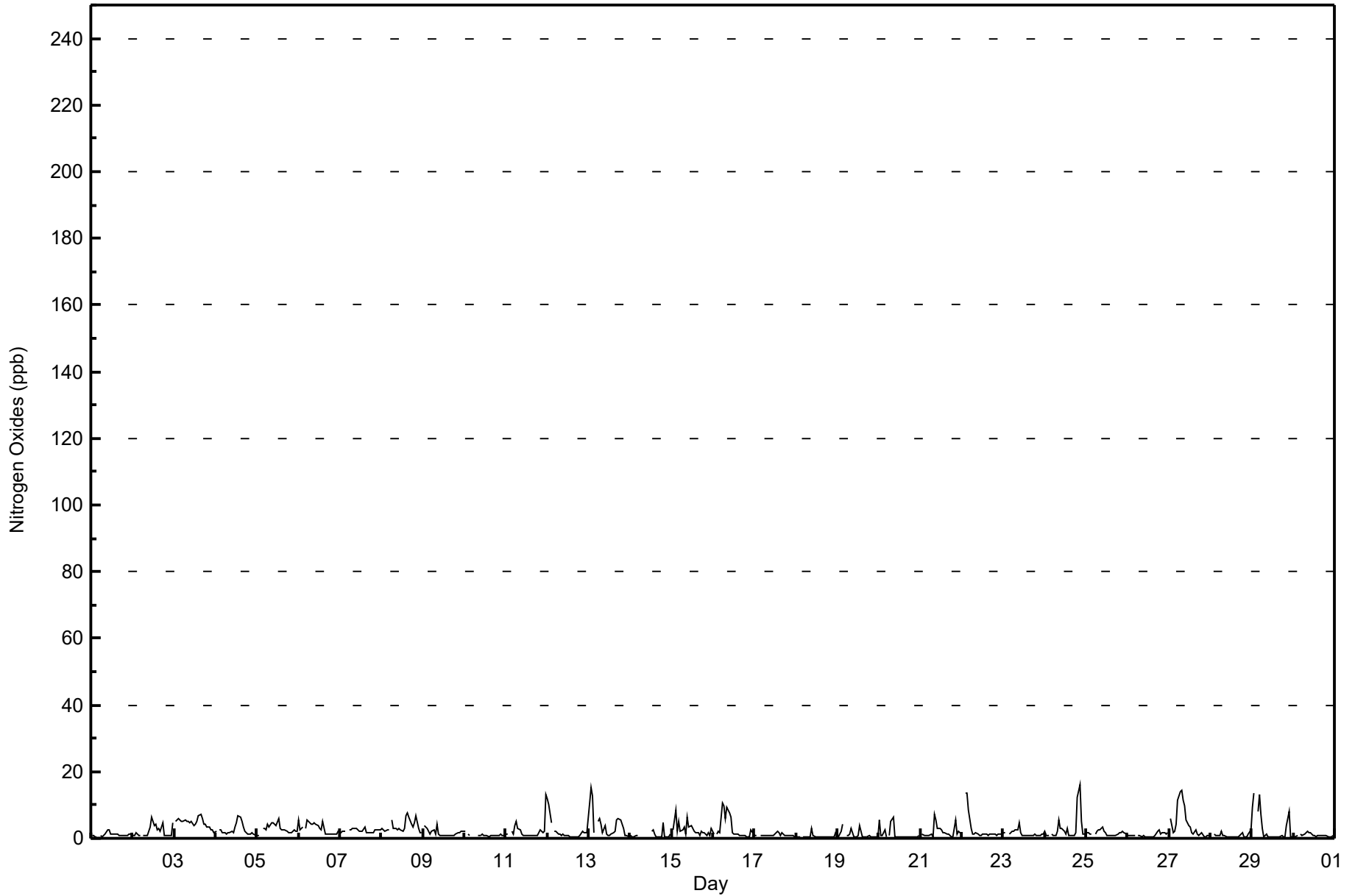






Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Anzac - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	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: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Anzac - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	15	9	19	35	91	101	141	56	19	10	23	44	59	22	20	17	681
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
Totals	15	9	19	35	91	101	141	56	19	10	23	44	59	22	20	17	681

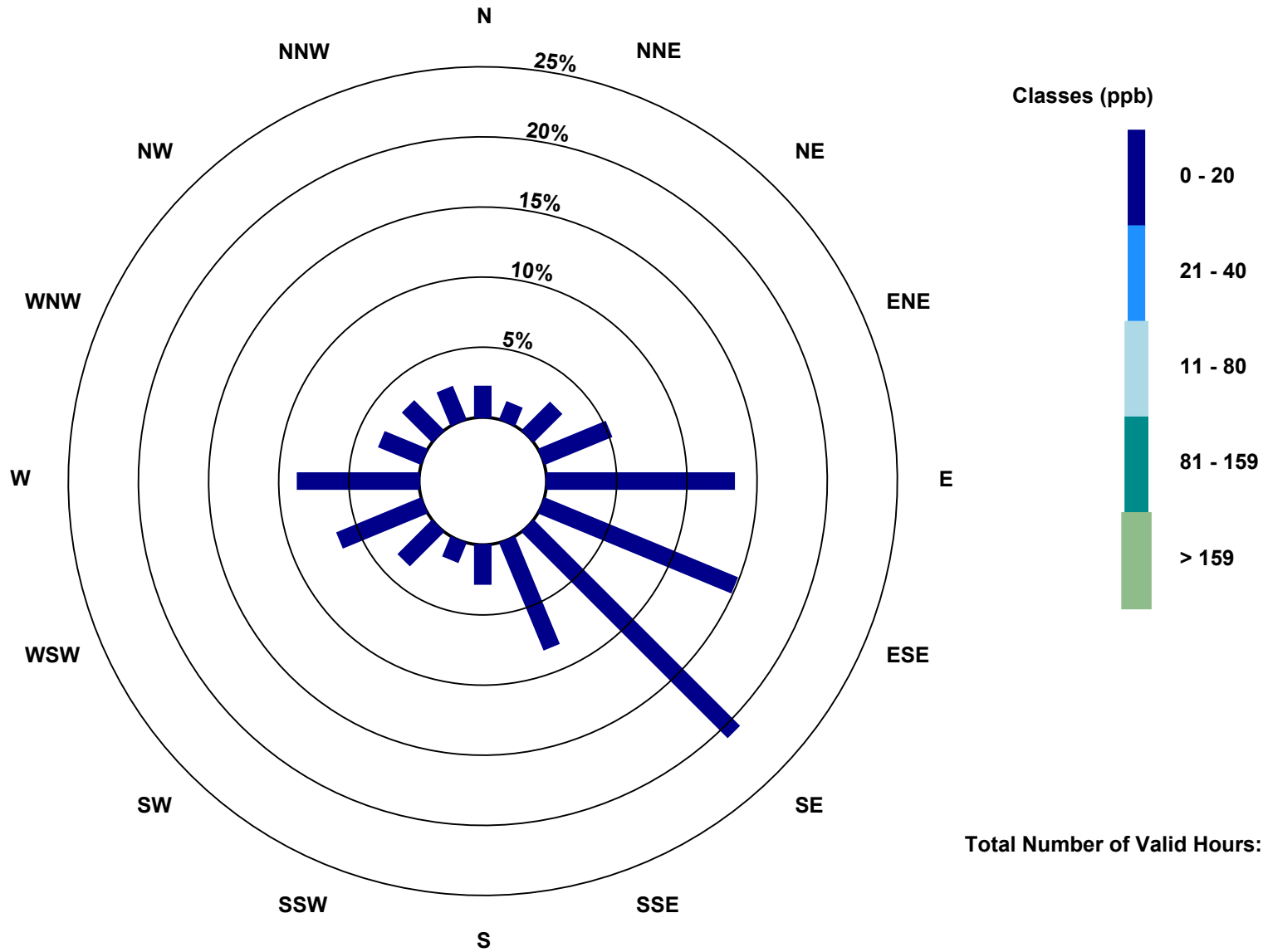
Total Number of Valid Hours: 681

Total Number of Hours: 720

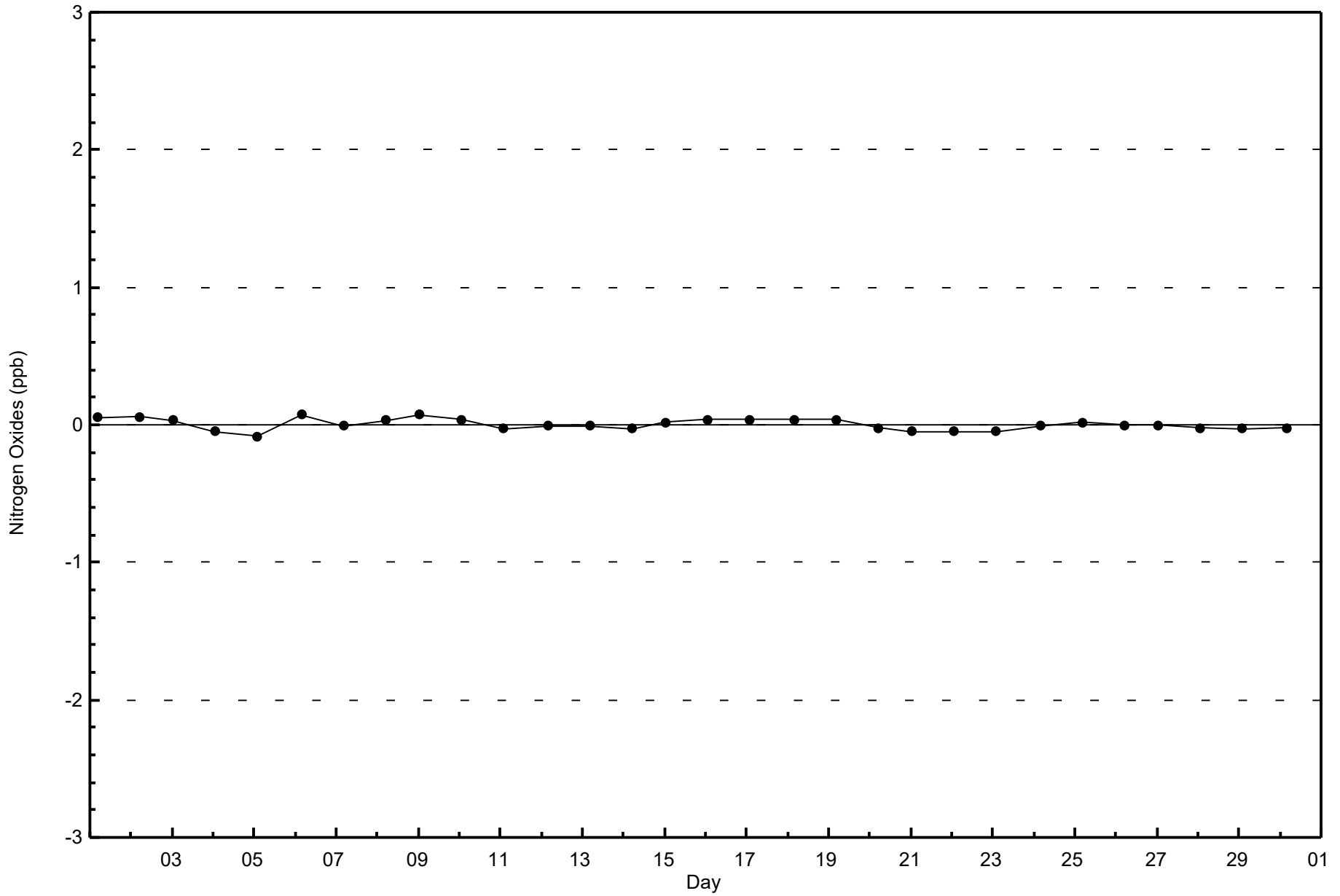


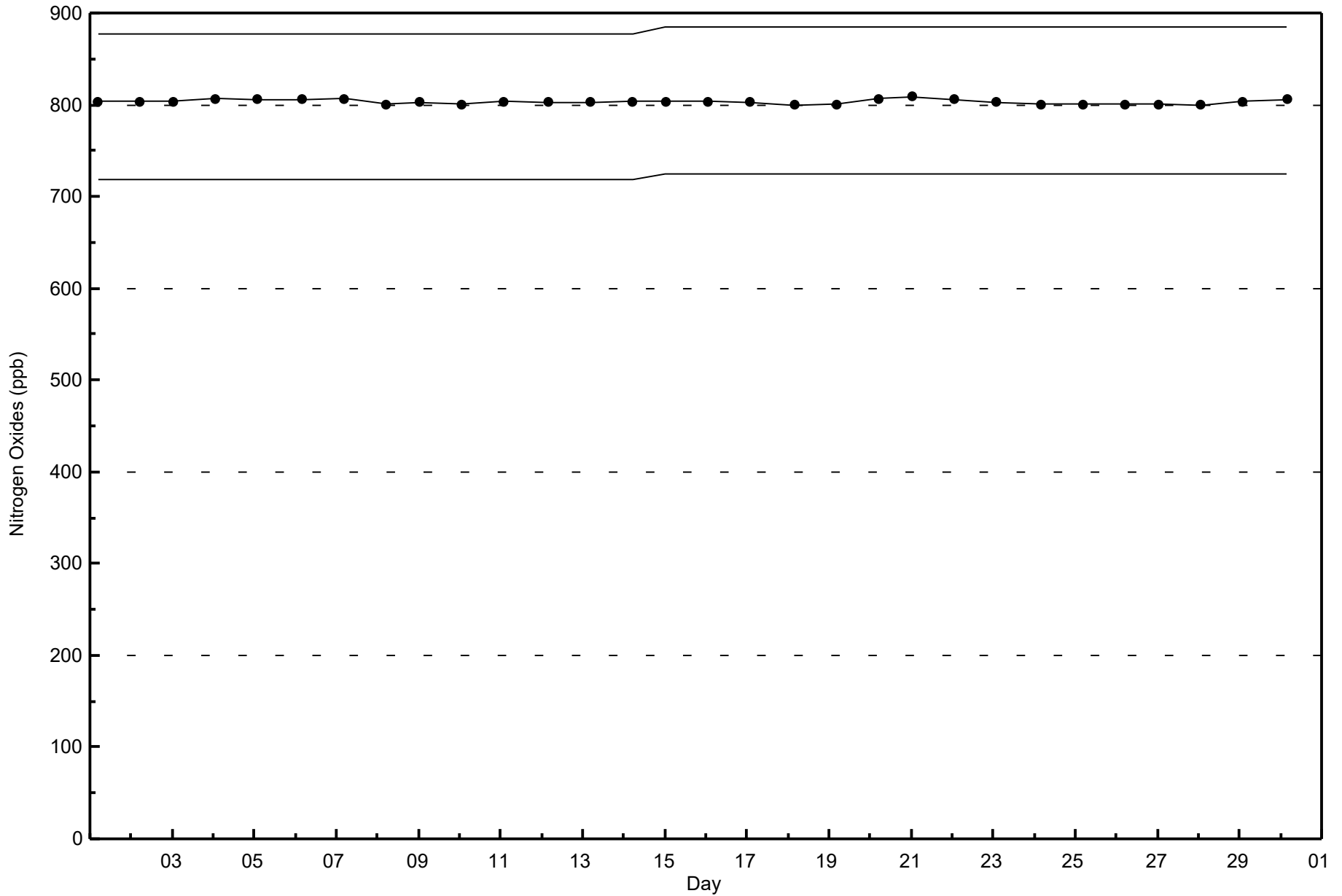
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Anzac



Total Number of Valid Hours: 681







Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

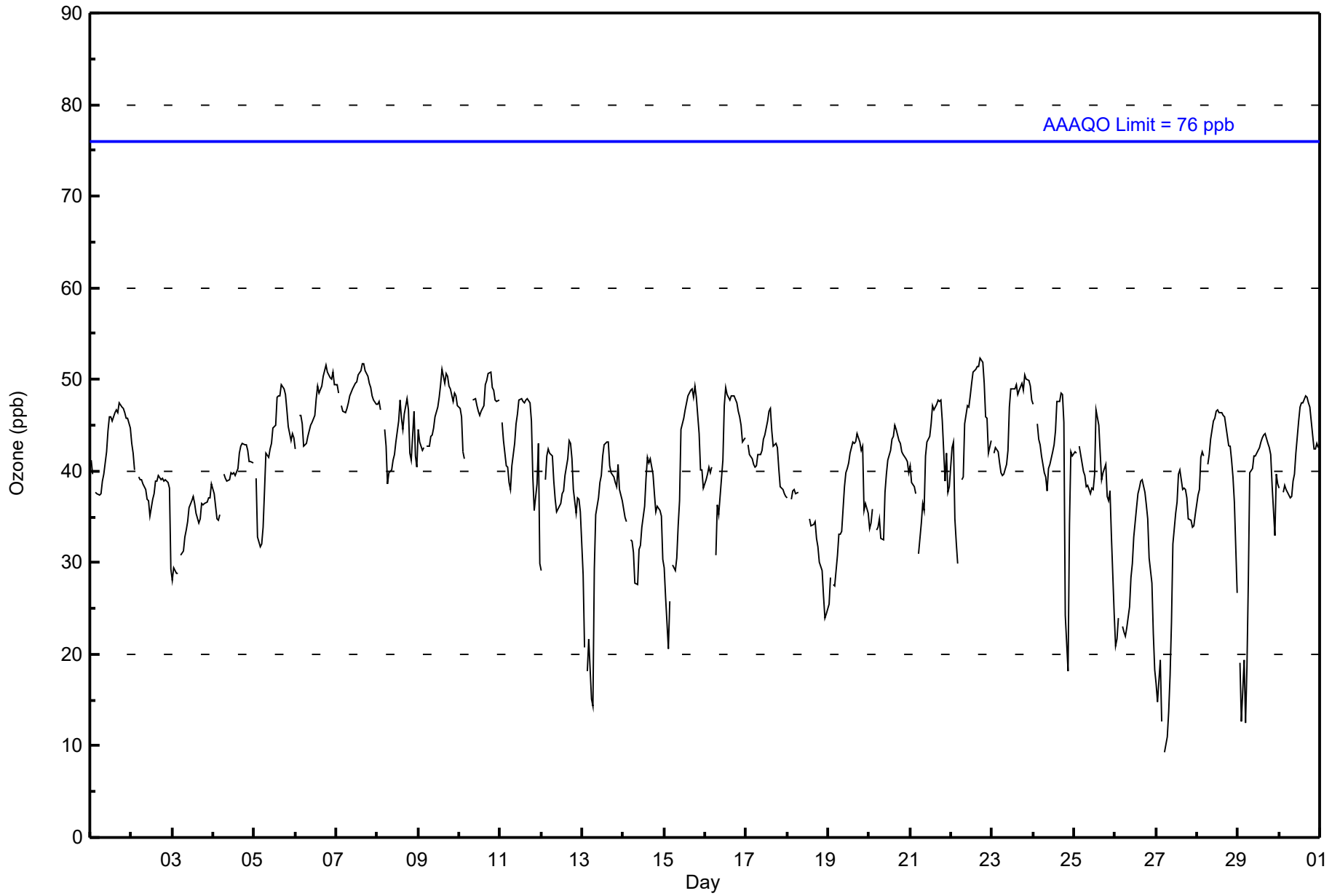
Anzac - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720					
Maximum Value: 52.3 ppb on Apr 22 18:00		Maximum Daily Average: 49.0 ppb on Apr 7																	Hours of Data:	681							
Minimum Value: 9.3 ppb on Apr 27 06:00		Minimum Daily Average: 28.1 ppb on Apr 27																	Hours of Missing Data:	39							
Maximum Diurnal Average: 44.9 ppb at hour 17		Minimum Diurnal Average: 34.3 ppb at hour 6																	Hours of Calibration:	35							
Monthly Average: 40.22 ppb		Percentiles: P ₁ = 14.8 P ₁₀ = 30.8 Q ₁ = 37.1 Median = 41.3 Q ₃ = 45.9 P ₉₀ = 48.4 P ₉₉ = 51.2																	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-Apr	41.1	39.7	Z	37.6	37.5	37.3	37.6	38.9	39.6	42.1	44.4	45.9	46.0	45.5	46.4	46.7	46.4	47.4	47.0	46.8	46.4	45.8	45.8	44.6	43.3	47.4	
2-Apr	43.0	42.0	40.1	Z	39.3	39.1	39.1	38.6	38.0	36.9	36.7	35.1	37.0	37.5	38.9	39.0	39.5	39.0	39.2	38.9	39.0	38.7	38.2	29.2	38.3	43.0	
3-Apr	28.1	29.4	28.8	28.9	Z	30.8	31.3	32.8	33.6	34.4	36.1	36.8	37.2	36.5	35.4	34.3	34.8	36.4	36.4	36.5	36.5	37.1	37.1	38.6	34.2	38.6	
4-Apr	37.5	36.2	34.7	34.7	35.2	Z	39.6	39.2	38.9	39.1	39.9	39.7	39.8	39.6	40.3	41.9	42.7	43.1	42.9	42.8	42.3	41.1	41.0	40.9	39.7	43.1	
5-Apr	Z	39.2	32.8	31.7	32.0	Z	33.9	37.8	41.9	41.4	42.3	43.0	44.7	45.0	48.1	48.3	48.2	49.4	49.0	48.4	46.6	44.8	43.3	44.1	43.6	42.6	49.4
6-Apr	42.4	Z	46.0	46.1	45.1	42.8	43.1	43.8	44.4	45.0	45.2	46.1	47.9	49.3	48.6	49.3	50.3	51.0	51.6	50.8	50.2	50.1	50.7	49.4	47.3	51.6	
7-Apr	49.4	48.5	Z	47.2	46.5	46.4	46.8	47.4	48.2	49.0	49.2	49.6	49.8	50.5	50.9	51.7	51.6	50.9	50.4	49.5	49.1	48.3	47.8	47.3	49.0	51.7	
8-Apr	47.3	47.5	46.7	Z	44.5	42.7	38.6	39.8	40.1	41.1	41.8	43.1	45.5	47.8	45.8	44.6	46.2	47.9	46.7	41.9	41.1	46.5	41.6	40.4	43.9	47.9	
9-Apr	44.6	43.2	42.2	42.6	Z	42.7	42.7	43.7	44.0	44.6	45.9	46.9	48.0	49.4	51.1	49.6	50.6	50.4	49.3	48.9	47.6	48.6	48.2	47.1	46.6	51.1	
10-Apr	46.8	46.0	42.0	41.3	PF	PF	PF	PF	47.7	47.9	47.1	46.6	46.0	46.5	47.1	49.4	50.0	50.7	50.8	49.1	48.8	47.7	47.6	47.7	47.3	50.8	
11-Apr	Z	45.3	43.4	40.6	40.5	38.7	38.0	40.6	43.0	45.2	46.2	47.7	47.9	47.6	47.5	47.7	47.9	47.5	45.4	39.3	35.6	38.6	42.9	29.9	42.9	47.9	
12-Apr	29.1	Z	39.1	41.6	42.4	41.9	41.6	38.9	36.9	35.6	35.9	36.5	37.6	37.8	39.6	41.4	43.3	43.0	41.4	38.0	35.4	37.1	36.9	35.6	38.5	43.3	
13-Apr	28.7	20.8	Z	18.1	21.7	15.2	14.4	29.3	35.3	37.1	38.8	39.5	41.6	42.8	43.2	43.2	40.6	39.9	39.4	38.7	38.4	40.7	38.1	36.8	34.0	43.2	
14-Apr	35.8	34.9	34.5	Z	32.5	32.4	31.1	27.8	27.6	31.5	31.9	33.9	36.2	39.2	41.5	40.8	41.4	39.7	37.5	35.5	36.1	35.7	35.0	30.3	34.9	41.5	
15-Apr	29.4	26.3	20.6	25.8	Z	29.7	29.2	30.4	34.1	36.8	44.5	45.8	46.7	47.4	48.2	48.8	49.0	48.0	49.3	48.0	44.1	40.1	40.2	38.1	39.1	49.3	
16-Apr	39.1	39.7	40.5	39.8	40.4	Z	30.8	36.2	35.3	39.2	41.2	47.1	49.1	48.4	47.7	48.1	48.2	48.2	47.5	46.5	46.0	45.1	43.1	43.6	43.1	49.1	
17-Apr	Z	42.8	41.8	41.3	40.8	40.5	40.6	41.8	41.8	42.3	43.4	43.9	45.5	46.6	46.9	44.3	42.7	43.0	42.6	40.2	38.3	38.0	37.5	37.2	41.9	46.9	
18-Apr	37.0	Z	37.0	37.8	38.0	37.5	37.6	C	C	C	C	C	C	C	34.8	34.1	34.1	34.4	32.6	31.8	30.1	29.1	26.3	24.0	24.4	--	38.0
19-Apr	25.4	28.3	Z	27.6	27.5	30.8	33.1	33.1	33.4	38.3	39.8	40.2	40.8	41.9	43.1	42.9	43.2	44.0	43.2	42.3	42.7	35.8	36.5	35.4	36.9	44.0	
20-Apr	33.7	34.4	35.8	Z	33.6	33.9	34.7	32.7	32.5	37.6	39.7	41.2	42.2	43.5	43.8	44.9	44.5	43.3	43.1	42.0	41.7	41.3	41.0	39.8	39.2	44.9	
21-Apr	40.5	38.8	38.4	37.5	Z	31.0	34.4	36.5	35.7	41.7	43.2	43.8	45.1	47.2	46.7	47.3	47.8	47.6	47.7	45.5	38.9	42.0	37.7	38.3	41.4	47.8	
22-Apr	42.5	43.1	34.8	32.2	30.0	Z	39.1	39.3	45.2	47.1	47.0	48.2	49.5	50.8	51.1	51.4	51.4	52.3	51.8	49.6	45.9	45.7	42.0	43.3	44.9	52.3	
23-Apr	Z	42.0	42.6	42.1	40.9	39.8	39.6	39.7	40.7	42.3	47.0	49.0	49.0	49.0	49.5	48.4	48.8	49.6	48.8	50.5	50.1	49.9	49.3	47.8	45.9	50.5	
24-Apr	47.4	Z	45.1	43.5	42.9	41.7	39.8	39.4	37.8	40.3	40.7	42.0	42.8	44.4	47.6	47.5	48.5	48.4	45.2	24.3	18.2	34.1	42.1	41.6	41.1	48.5	
25-Apr	42.1	42.0	Z	42.7	41.7	40.0	39.6	38.2	38.5	37.6	38.1	37.9	39.6	46.6	45.1	41.9	39.0	39.8	40.7	37.2	36.8	37.8	33.0	24.5	39.1	46.6	
26-Apr	21.0	21.6	24.0	Z	23.1	22.5	22.0	22.8	25.2	28.3	29.9	32.9	36.0	37.5	38.2	38.9	39.1	37.7	36.3	34.8	30.6	27.7	22.3	18.3	29.2	39.1	
27-Apr	16.7	14.9	19.4	12.7	Z	9.3	11.0	13.7	17.8	23.5	32.0	35.5	36.5	39.7	40.1	37.9	38.1	38.0	37.0	34.8	34.6	33.9	34.0	35.2	28.1	40.1	
28-Apr	37.4	38.0	41.5	42.2	41.6	Z	40.7	41.7	43.5	45.5	45.8	46.6	46.7	46.4	46.4	46.1	45.9	44.9	42.8	42.8	41.2	39.4	36.6	26.8	42.2	46.7	
29-Apr	Z	19.0	12.7	19.3	12.6	18.7	28.1	39.9	40.2	41.7	41.6	41.9	42.6	43.2	43.6	43.9	44.1	43.0	42.6	41.7	38.4	33.0	39.6	38.5	35.2	44.1	
30-Apr	38.1	Z	37.7	38.5	37.9	37.7	37.1	37.2	38.9	39.6	42.0	45.5	47.0	47.4	47.4	48.2	48.0	47.5	47.0	45.5	42.4	42.5	43.0	42.6	42.5	48.2	
																								Diurnal Average			
																								Diurnal Maximum			
																								Z - zerospan C - Calibration PF - Power Failure			
																								Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb			



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Anzac - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Anzac - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	18	2.64	2.64
21 - 50	644	94.57	97.21
51 - 82	19	2.79	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Anzac - April 2023**

Concentration 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	0	0	0	1	0	3	5	4	0	2	3	18
21 - 50	14	9	19	33	91	102	136	48	14	10	23	38	53	22	17	15	644
51 - 82	0	0	0	0	0	0	5	8	3	0	1	2	0	0	0	0	19
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14	9	19	33	91	102	141	56	18	10	27	45	57	22	19	18	681

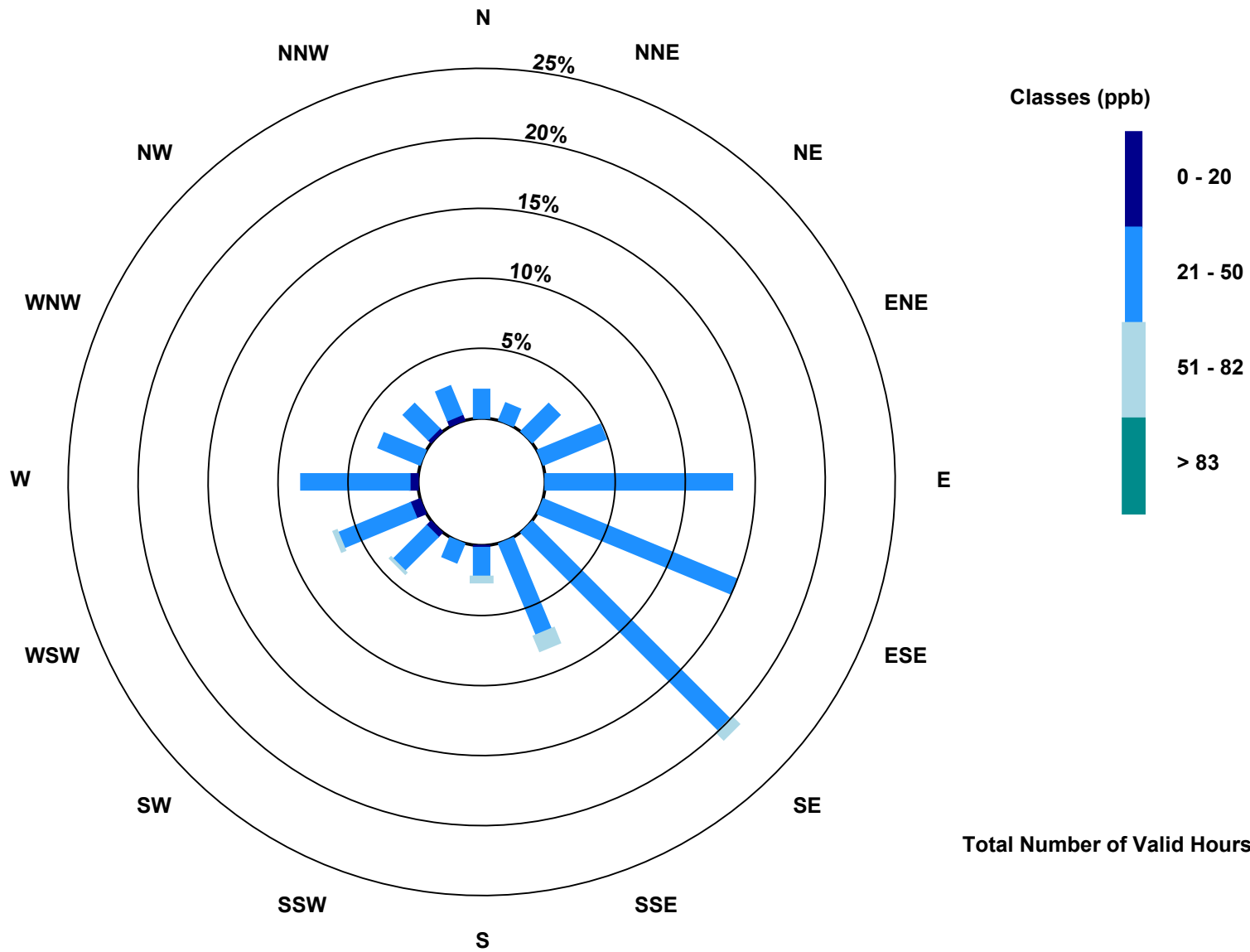
Total Number of Valid Hours: 681

Total Number of Hours: 720

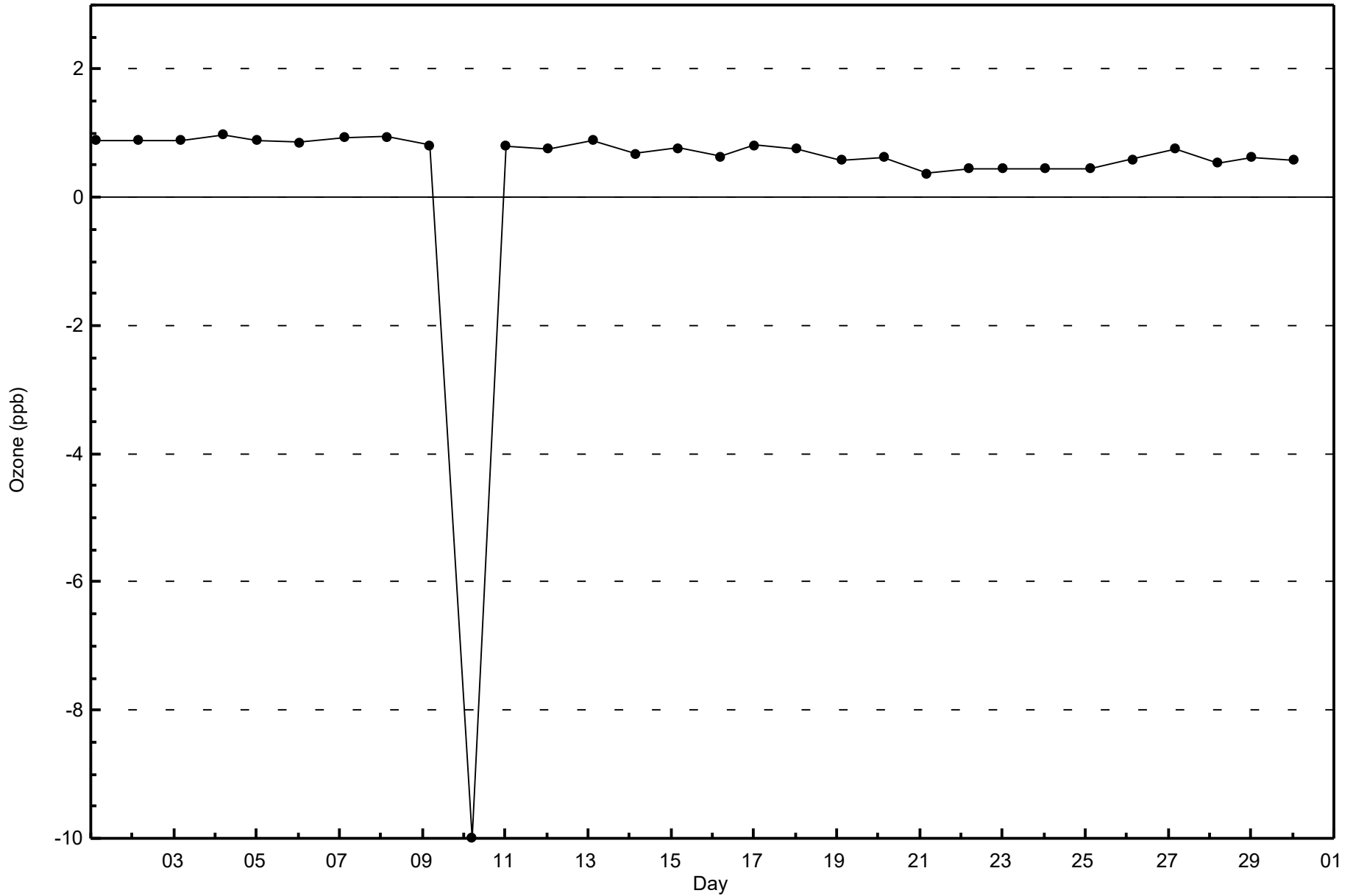


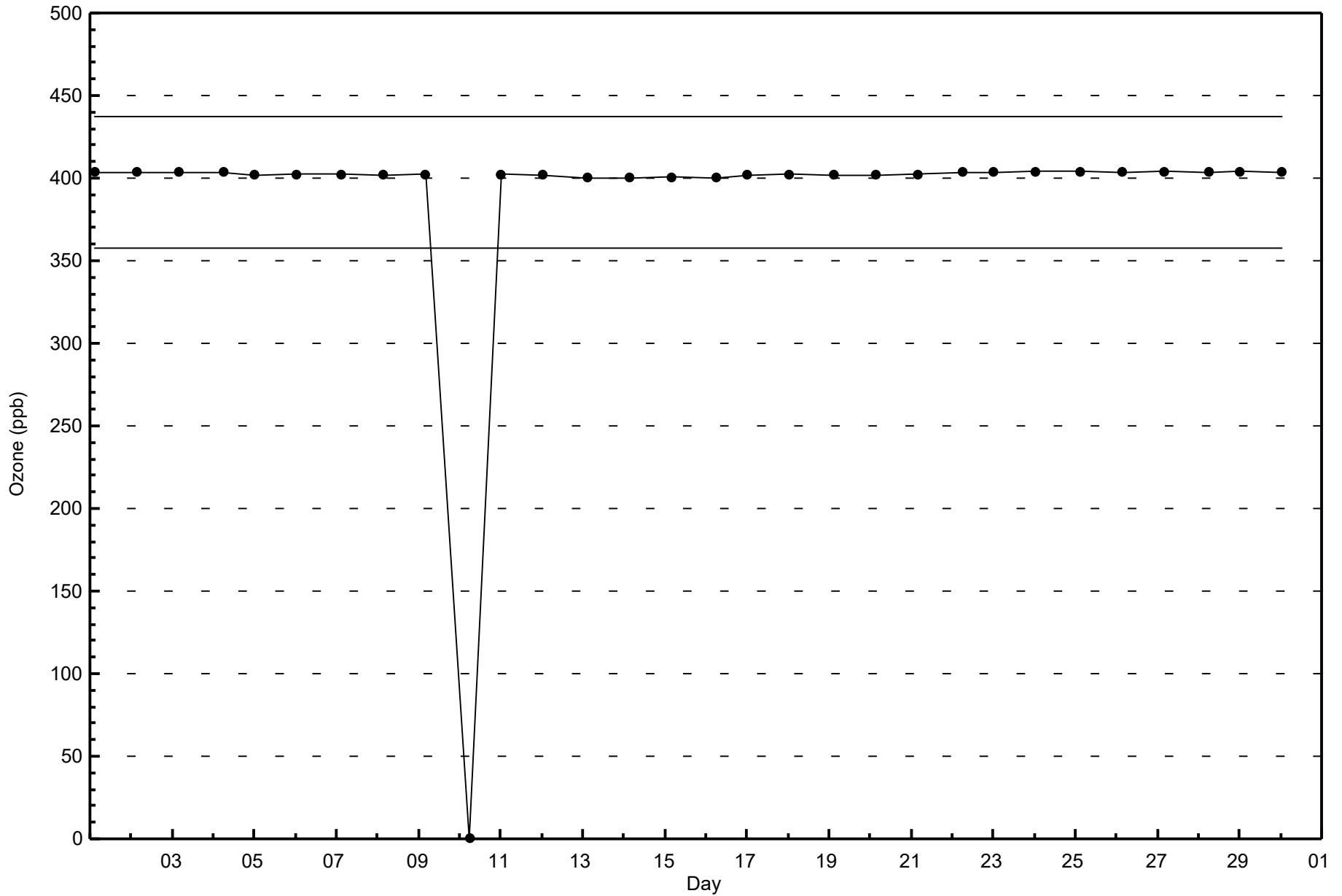
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Anzac



Total Number of Valid Hours: 681



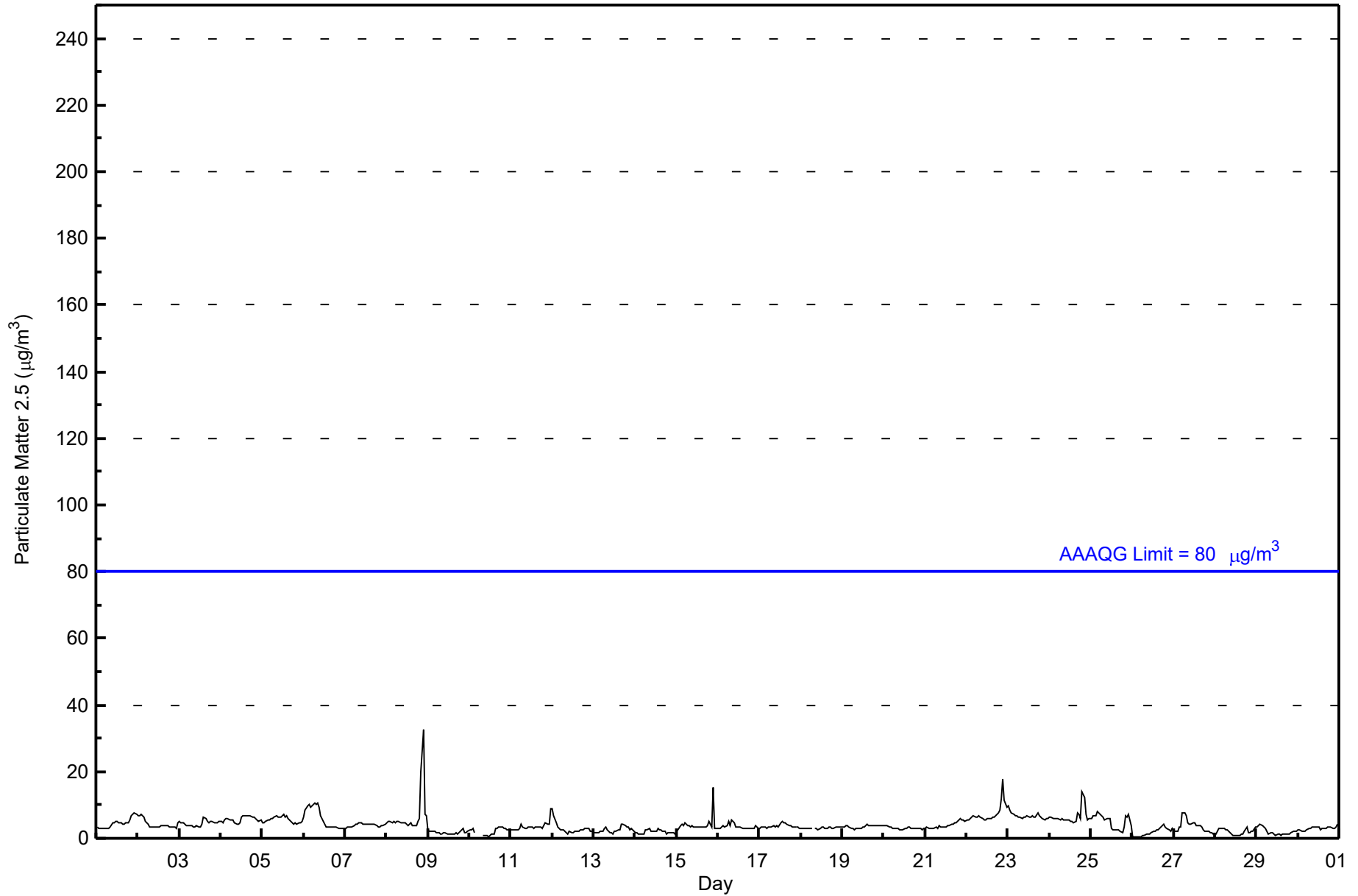




Summary of Hour Averages

Anzac - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service:																	720					
Maximum Value: 32.7 µg/m ³ on Apr 8 22:00		Maximum Daily Average: 7.3 µg/m ³ on Apr 22																	Hours of Data:	715						
Minimum Value: 0.3 µg/m ³ on Apr 26 02:00		Minimum Daily Average: 1.7 µg/m ³ on Apr 9																	Hours of Missing Data:	5						
Maximum Diurnal Average: 5.5 µg/m ³ at hour 22		Minimum Diurnal Average: 3.5 µg/m ³ at hour 12																	Hours of Calibration:	1						
Monthly Average: 3.97 µg/m ³		Percentiles: P ₁ = 0.6 P ₁₀ = 1.7 Q ₁ = 2.8 Median = 3.4 Q ₃ = 4.8 P ₉₀ = 6.5 P ₉₉ = 11.2																	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-Apr	3.4	3.1	3.1	3.0	3.0	3.1	3.0	3.2	3.6	4.5	4.8	4.9	4.9	4.6	4.8	4.4	4.3	4.5	4.7	5.5	6.8	7.3	7.6	7.4	4.6	7.6
2-Apr	6.7	6.7	7.2	6.4	4.9	4.5	4.0	3.5	3.2	3.2	3.5	3.6	3.5	3.7	3.7	3.7	3.7	3.7	3.4	3.3	3.3	3.2	3.2	4.7	4.2	7.2
3-Apr	5.2	4.7	4.7	4.3	3.9	4.0	4.0	3.9	3.6	3.6	3.8	3.5	3.5	4.3	6.3	5.9	4.9	4.5	5.0	5.3	4.8	4.7	4.8	4.9	4.5	6.3
4-Apr	4.9	4.8	5.5	5.7	5.7	5.3	5.3	5.5	4.8	4.2	4.1	4.8	6.1	6.9	6.7	6.9	6.9	6.6	6.4	6.2	5.8	5.4	5.1	5.4	5.6	6.9
5-Apr	4.8	4.8	5.1	5.3	5.5	5.8	6.1	6.2	6.9	6.5	6.4	6.2	7.0	6.1	6.6	5.9	5.5	4.5	4.3	4.6	4.4	4.6	4.8	4.9	5.5	7.0
6-Apr	6.2	8.6	9.5	10.3	9.5	9.9	10.5	10.3	10.6	9.2	6.8	5.3	4.3	3.6	3.4	3.2	3.3	3.3	3.6	3.5	3.0	2.9	2.9	3.0	6.1	10.6
7-Apr	3.1	3.3	3.4	3.4	3.5	3.7	4.1	4.4	4.7	4.5	4.3	4.2	4.3	4.4	4.1	4.2	4.2	4.3	3.6	3.4	3.6	3.7	3.9	4.2	3.9	4.7
8-Apr	4.8	5.2	5.1	4.8	4.9	4.8	5.0	4.9	4.8	4.6	4.6	4.7	4.0	4.3	4.6	4.0	3.7	3.8	4.9	6.0	19.9	32.7	7.2	6.7	6.7	32.7
9-Apr	2.4	2.2	2.1	2.3	2.0	1.5	1.5	1.3	1.3	1.7	1.5	1.1	1.3	1.2	1.2	1.3	1.5	1.4	1.6	2.1	2.9	1.8	1.8	2.2	1.7	2.9
10-Apr	2.6	2.4	2.9	1.6	PF	PF	PF	PF	0.7	0.6	0.7	0.6	0.8	1.3	1.5	2.8	3.0	3.3	3.3	3.2	3.1	3.0	2.6	2.7	2.1	3.3
11-Apr	2.7	2.4	2.5	2.5	2.7	2.9	4.2	3.2	3.0	2.9	3.2	3.4	3.3	3.1	3.2	3.3	3.5	3.2	3.1	3.8	4.5	4.3	4.1	8.8	3.5	8.8
12-Apr	8.8	6.9	4.7	3.2	3.1	2.7	2.4	2.1	1.7	1.3	1.9	1.8	1.8	2.1	2.1	2.2	2.4	2.6	2.5	2.8	3.2	3.2	2.2	2.1	2.9	8.8
13-Apr	1.8	1.9	1.9	1.8	2.1	2.1	2.9	3.3	2.4	1.7	1.6	1.5	1.9	2.3	2.4	2.5	4.1	4.2	3.8	3.6	3.4	2.7	2.8	2.0	2.5	4.2
14-Apr	1.7	1.5	1.4	1.3	1.5	1.3	2.7	2.7	2.9	2.0	2.3	2.3	2.3	2.8	2.6	2.3	2.3	2.1	1.4	1.5	1.8	1.5	1.6	1.4	2.0	2.9
15-Apr	2.3	2.6	3.8	4.4	3.8	4.5	3.6	3.8	3.5	4.0	3.6	3.6	3.3	3.3	3.3	3.4	3.3	3.3	3.8	4.9	3.4	15.1	3.0	3.1	4.0	15.1
16-Apr	3.1	3.1	3.3	3.8	3.6	3.9	5.2	3.8	5.4	4.5	3.5	3.4	3.5	3.4	3.2	3.0	3.1	3.1	3.0	2.8	3.0	2.9	3.6	3.1	3.5	5.4
17-Apr	3.0	3.2	3.3	3.2	3.2	3.2	3.2	3.3	3.8	3.5	3.6	3.5	4.6	5.0	4.5	4.5	4.1	3.9	3.7	3.5	3.3	3.4	3.3	3.1	3.6	5.0
18-Apr	2.9	2.9	3.0	3.0	3.1	3.0	3.0	C	2.9	2.9	2.7	2.9	3.3	3.4	3.2	3.0	3.2	3.3	3.1	3.1	3.3	3.3	3.4	3.3	3.1	3.4
19-Apr	3.2	3.2	3.7	3.8	3.3	3.1	3.1	2.6	3.0	3.0	3.0	3.0	3.2	3.5	4.1	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.9	3.9	3.5	4.1
20-Apr	3.7	3.8	3.9	3.5	3.2	2.9	2.8	2.9	3.0	2.5	2.4	2.5	2.9	3.2	3.3	3.2	3.1	3.1	3.0	2.9	2.8	2.8	2.7	3.0	3.0	3.9
21-Apr	3.0	3.2	3.1	3.1	2.9	3.0	3.5	3.1	3.7	3.4	3.3	3.4	3.5	3.8	3.8	4.2	4.4	4.5	4.6	4.9	5.8	5.7	5.6	5.1	4.0	5.8
22-Apr	5.3	5.4	6.0	6.2	6.8	6.5	6.5	6.7	6.5	5.7	5.6	5.4	5.8	6.0	6.0	6.2	6.3	6.9	7.5	8.5	11.7	17.7	11.3	9.2	7.3	17.7
23-Apr	9.7	8.4	7.8	7.1	6.9	6.6	6.3	6.2	6.1	6.4	6.5	6.6	6.5	6.3	6.9	6.6	6.5	7.4	6.7	6.2	5.8	5.7	5.9	6.0	6.7	9.7
24-Apr	6.3	6.2	6.1	6.0	5.9	5.9	5.7	5.8	5.7	5.5	5.5	5.4	5.2	4.9	4.7	5.0	7.8	7.2	6.0	13.9	12.3	7.0	5.6	5.9	6.5	13.9
25-Apr	6.1	6.7	6.7	6.9	8.0	7.2	6.6	6.3	5.6	5.9	5.9	5.8	3.2	2.5	2.6	2.5	2.5	2.2	1.5	3.3	6.6	6.3	7.2	3.7	5.1	8.0
26-Apr	0.6	0.3	0.4	0.5	0.5	0.6	0.7	0.9	1.1	1.3	1.5	1.8	2.1	2.1	2.5	2.7	3.0	3.9	4.1	3.3	3.0	2.7	2.3	2.9	1.9	4.1
27-Apr	2.3	2.1	2.0	3.4	3.4	7.7	7.5	6.8	4.7	4.3	4.1	4.8	4.7	4.0	3.9	3.6	3.5	2.7	2.3	2.1	1.9	1.8	1.7	1.5	3.6	7.7
28-Apr	1.5	2.0	2.8	3.0	3.0	3.0	2.7	2.4	2.2	1.2	1.0	0.8	0.7	0.8	0.9	1.2	1.2	2.3	3.4	1.5	1.7	2.1	2.1	3.5	2.0	3.5
29-Apr	3.5	3.9	4.0	3.7	3.5	3.1	2.3	1.3	1.8	1.5	1.1	1.0	1.1	1.1	1.0	1.1	1.2	1.2	1.2	1.2	1.8	2.0	1.9	2.1	2.0	4.0
30-Apr	2.3	2.4	2.3	2.2	2.3	2.4	2.9	3.1	3.2	3.5	3.4	3.3	3.2	2.7	2.9	3.0	3.0	3.5	3.3	3.3	3.1	3.2	3.5	4.4	3.0	4.4
																								Diurnal Average		
																								Diurnal Maximum		
C - Calibration PF - Power Failure																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Anzac - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	578	80.84	80.84
6 - 15	134	18.74	99.58
16 - 25	2	0.28	99.86
26 - 80	1	0.14	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 715

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Anzac - April 2023

Concentration 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	14	8	19	29	86	93	100	34	9	10	23	39	57	20	20	17	578
6 - 15	1	1	0	6	13	14	49	21	9	0	4	8	5	2	0	1	134
16 - 25	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
26 - 80	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	9	19	35	99	107	149	57	19	10	27	47	62	22	20	18	715

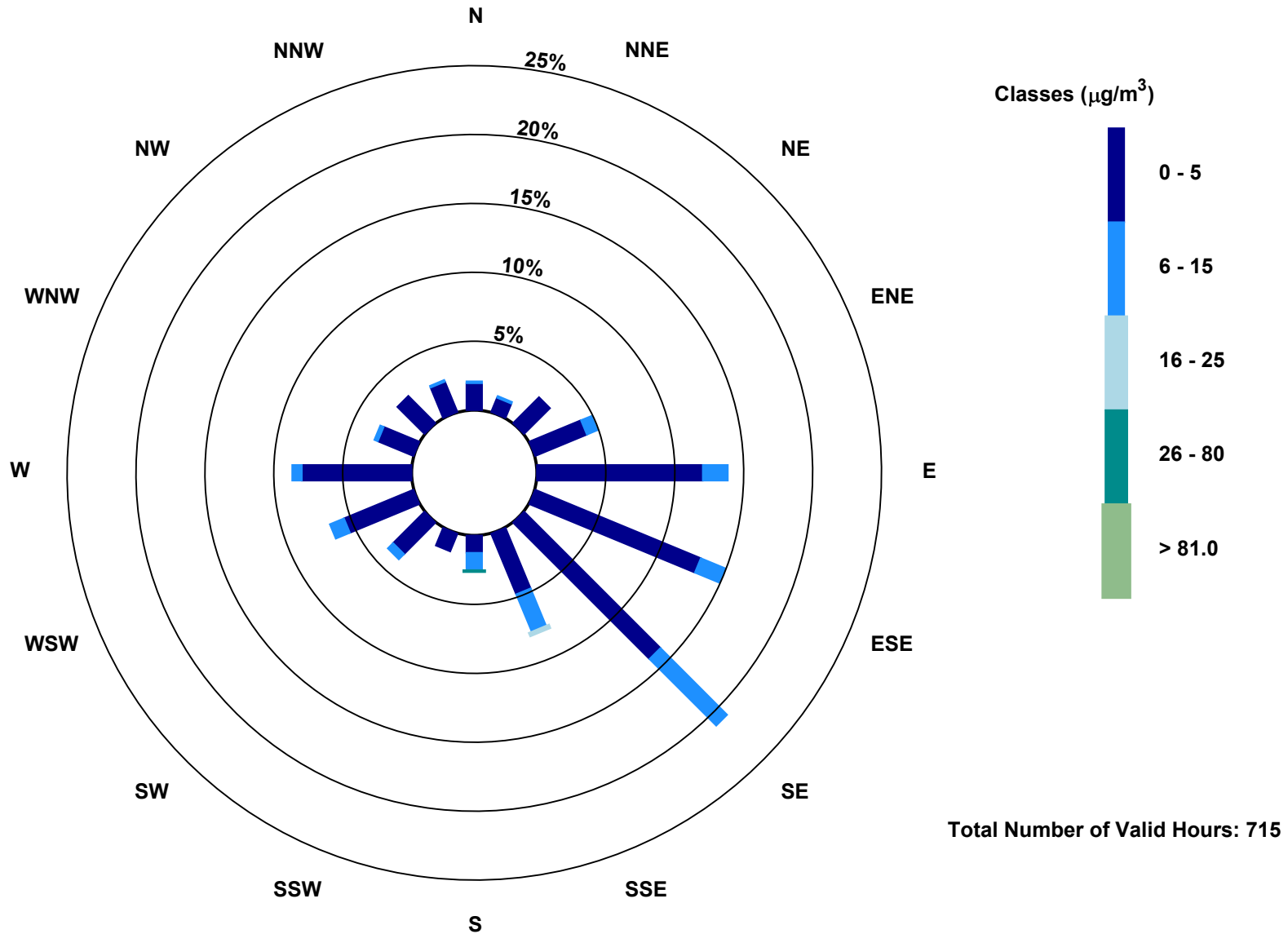
Total Number of Valid Hours: 715

Total Number of Hours: 720



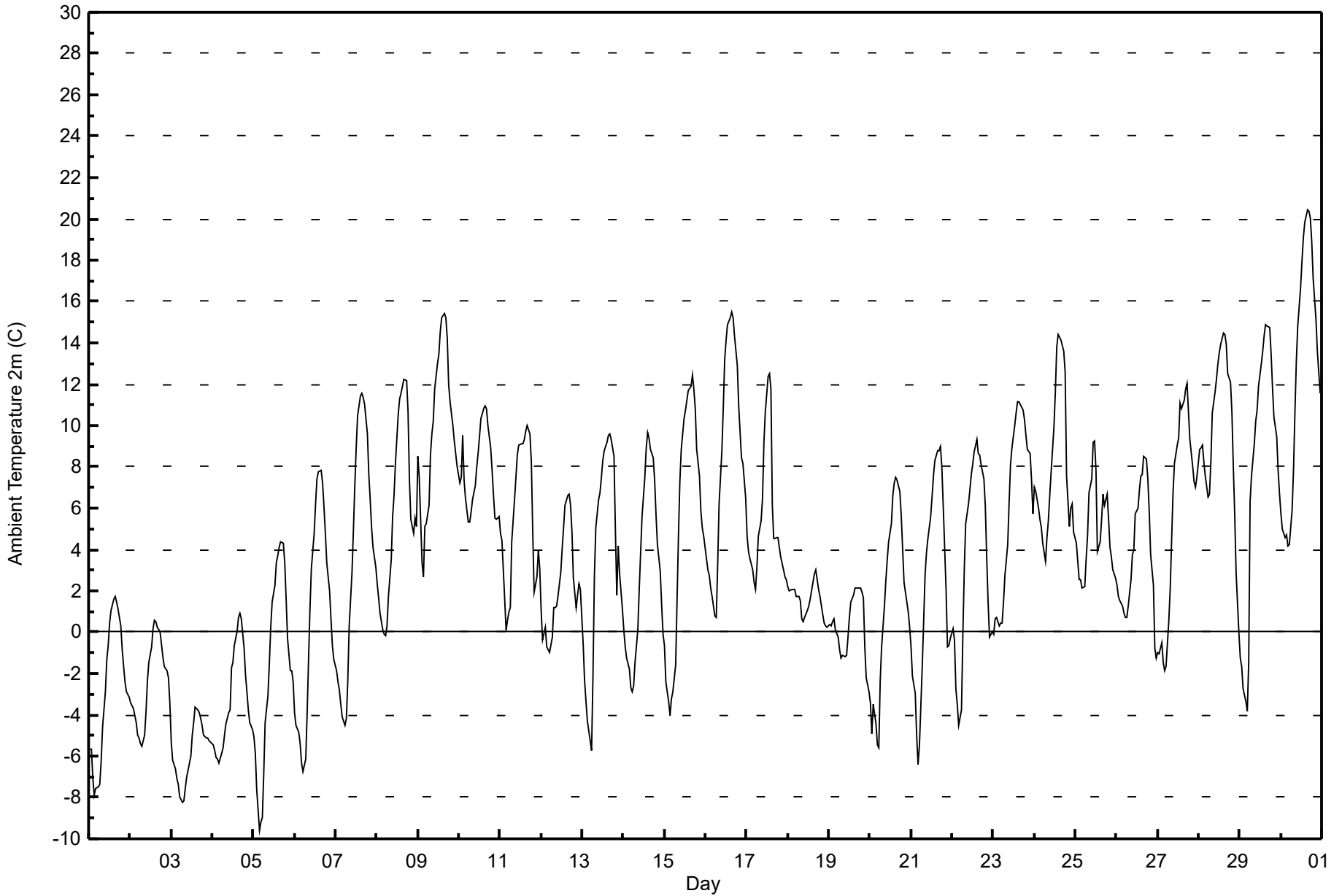
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Anzac





Maximum Value: 20.4 C on Apr 30 16:00																				Maximum Daily Average: 12.7 C on Apr 30					Hours in Service: 720																							
Minimum Value: -9.6 C on Apr 5 04:00																				Minimum Daily Average: -5.8 C on Apr 3					Hours of Data: 720																							
Maximum Diurnal Average: 8.6 C at hour 16																				Minimum Diurnal Average: -1.4 C at hour 6					Hours of Missing Data: 0																							
Monthly Average: 3.79 C																				Percentiles: P ₁ = -7.6 P ₁₀ = -4.2 Q ₁ = -0.4 Median = 3.6 Q ₃ = 8.1 P ₉₀ = 11.4 P ₉₉ = 17.0					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-Apr	-5.7	-5.7	-7.0	-7.9	-7.6	-7.5	-7.4	-6.2	-4.6	-2.9	-1.3	-0.7	0.5	1.1	1.6	1.8	1.5	1.1	0.3	-0.9	-1.7	-2.4	-2.9	-3.2	-2.8	1.8																						
2-Apr	-3.4	-3.5	-3.7	-4.4	-5.0	-5.1	-5.4	-5.5	-5.0	-3.8	-2.3	-1.5	-0.7	0.1	0.6	0.5	0.2	0.0	-0.6	-1.2	-1.7	-1.8	-2.2	-3.4	-2.4	0.6																						
3-Apr	-5.3	-6.2	-6.6	-7.1	-7.4	-7.9	-8.2	-8.2	-7.5	-7.0	-6.7	-6.0	-5.0	-4.4	-3.6	-3.8	-3.9	-4.2	-4.5	-5.0	-5.1	-5.1	-5.2	-5.3	-5.8	-3.6																						
4-Apr	-5.4	-5.7	-6.0	-6.2	-6.3	-5.8	-5.6	-5.0	-4.4	-3.9	-3.7	-1.7	-1.5	-0.6	0.1	0.7	0.9	0.6	-0.8	-2.1	-2.9	-3.7	-4.4	-4.7	-3.3	0.9																						
5-Apr	-5.1	-5.8	-7.7	-9.6	-9.2	-9.0	-6.9	-4.4	-3.1	-1.5	0.2	1.5	2.3	3.3	3.7	4.1	4.3	4.3	3.4	1.6	-0.3	-1.9	-1.9	-2.4	-1.7	4.3																						
6-Apr	-3.9	-4.5	-4.8	-5.4	-6.3	-6.7	-6.1	-3.9	-1.4	1.1	3.1	4.8	6.2	7.4	7.7	7.9	7.2	6.1	4.8	3.3	2.0	0.6	-0.6	-1.4	0.7	7.9																						
7-Apr	-1.9	-2.4	-2.8	-3.5	-4.1	-4.5	-4.2	-2.3	0.3	2.9	4.9	7.1	8.9	10.5	11.4	11.5	11.3	11.0	9.6	7.6	6.4	5.1	4.1	3.2	3.8	11.5																						
8-Apr	2.3	1.7	0.9	0.1	-0.1	-0.2	0.3	1.7	3.5	5.6	6.6	8.2	10.5	11.3	11.6	11.9	12.3	12.2	10.6	7.4	5.5	4.8	5.5	5.1	5.8	12.3																						
9-Apr	8.5	7.5	3.4	2.7	5.1	5.2	6.1	8.6	9.6	10.2	11.8	13.0	13.4	14.6	15.2	15.4	15.2	14.2	12.0	11.2	10.0	9.2	8.7	8.0	10.0	15.4																						
10-Apr	7.2	7.5	9.5	7.4	6.5	5.3	5.3	5.8	6.4	7.1	8.0	8.6	9.5	10.4	10.8	10.9	10.8	10.0	8.9	7.9	6.6	5.5	5.5	5.6	7.8	10.9																						
11-Apr	4.8	4.4	3.0	0.1	0.6	1.0	1.2	4.4	6.4	7.5	8.6	9.1	9.1	9.1	9.3	9.8	10.0	9.6	8.2	4.8	1.9	2.7	3.9	3.1	5.5	10.0																						
12-Apr	1.0	-0.3	0.2	-0.7	-0.8	-1.0	-0.2	1.2	1.2	1.3	1.7	2.9	4.0	5.0	6.1	6.6	6.7	6.2	4.8	2.6	1.2	1.8	2.4	2.1	2.3	6.7																						
13-Apr	-0.6	-2.4	-3.3	-4.3	-4.8	-5.8	-2.0	2.7	5.0	6.4	6.7	7.5	8.3	8.8	9.2	9.5	9.6	9.4	8.5	4.9	1.8	4.1	2.8	1.1	3.5	9.6																						
14-Apr	0.1	-0.7	-1.3	-1.8	-2.7	-2.9	-2.6	-1.5	0.1	2.1	3.8	5.6	7.5	8.9	9.7	9.4	8.9	8.5	7.3	5.7	4.2	2.9	1.3	-0.1	3.0	9.7																						
15-Apr	-0.6	-2.4	-3.4	-4.0	-3.2	-2.9	-1.6	1.5	4.6	7.3	8.8	10.3	10.7	11.2	11.7	11.9	12.5	11.8	10.8	8.9	7.6	5.9	5.1	4.6	5.3	12.5																						
16-Apr	3.6	3.0	2.7	2.1	1.8	0.8	0.7	3.3	6.2	8.8	10.9	13.2	14.1	14.9	15.2	15.5	15.2	14.3	12.9	11.0	9.6	8.4	8.2	6.5	8.5	15.5																						
17-Apr	4.7	3.9	3.6	3.0	2.4	2.1	3.1	4.6	5.4	6.4	9.2	10.7	12.3	12.5	11.7	6.1	4.5	4.6	4.6	4.1	3.7	3.0	2.7	2.5	5.5	12.5																						
18-Apr	2.2	2.0	2.1	2.1	2.0	1.7	1.8	1.5	0.6	0.5	0.7	1.0	1.3	1.6	2.0	2.8	3.0	2.5	2.1	1.7	0.8	0.4	0.3	0.2	1.5	3.0																						
19-Apr	0.4	0.3	0.5	0.6	0.1	-0.3	-0.8	-1.2	-1.2	-1.2	-1.1	-0.3	0.7	1.5	1.8	2.1	2.2	2.1	2.1	1.9	1.6	-0.7	-2.2	-2.9	0.3	2.2																						
20-Apr	-3.5	-4.9	-3.5	-4.4	-5.5	-5.6	-2.4	-0.7	1.2	2.5	3.5	4.4	5.3	6.6	7.2	7.5	7.3	6.8	5.6	4.0	2.4	1.4	0.9	0.2	1.5	7.5																						
21-Apr	-0.7	-2.2	-2.9	-5.0	-6.4	-5.4	-1.7	0.5	2.7	3.9	4.5	5.6	6.5	7.5	8.3	8.7	8.8	9.0	8.0	6.0	2.1	-0.7	-0.6	-0.3	2.3	9.0																						
22-Apr	0.1	-0.4	-2.8	-3.5	-4.5	-3.7	-0.1	3.0	5.2	6.2	6.9	7.7	8.1	8.7	9.3	8.7	8.5	8.1	7.4	6.2	3.6	1.4	-0.3	0.0	3.5	9.3																						
23-Apr	-0.1	0.7	0.7	0.3	0.4	0.4	1.4	2.7	4.2	6.3	8.1	8.9	10.0	10.6	11.2	11.2	11.0	10.7	10.3	9.5	8.9	8.6	7.3	5.7	6.2	11.2																						
24-Apr	7.0	6.8	6.0	5.4	5.1	4.3	3.4	4.6	5.4	6.6	7.8	9.9	11.6	13.8	14.4	14.1	13.8	13.6	12.6	7.6	5.1	6.0	6.2	4.8	8.2	14.4																						
25-Apr	4.3	3.4	2.5	2.6	2.1	2.2	3.6	4.7	6.7	7.5	9.2	9.2	7.8	3.9	4.4	5.4	6.7	6.1	6.6	5.5	4.1	3.7	3.0	2.6	4.9	9.2																						
26-Apr	2.3	1.7	1.5	1.2	0.9	0.7	0.7	1.3	2.6	3.8	3.9	5.8	6.0	6.9	7.5	7.6	8.5	8.4	7.4	5.8	3.8	2.2	-0.8	-1.2	3.7	8.5																						
27-Apr	-1.0	-1.0	-0.5	-1.4	-1.9	-1.7	0.6	2.1	4.5	6.7	8.2	9.0	9.4	11.1	10.8	11.2	11.8	12.0	10.7	9.3	8.0	7.3	7.0	7.5	5.8	12.0																						
28-Apr	8.9	8.9	9.1	8.2	7.6	6.5	6.7	8.3	10.6	11.6	12.3	13.0	13.5	14.0	14.5	14.4	13.9	12.5	12.1	10.7	8.0	5.7	2.9	0.0	9.7	14.5																						
29-Apr	-1.2	-1.7	-2.7	-3.3	-3.8	-1.4	6.3	7.5	9.2	10.2	10.7	11.9	13.0	13.6	14.3	14.9	14.8	14.7	13.4	11.8	10.4	9.4	7.8	6.7	7.8	14.9																						
30-Apr	5.7	5.0	4.6	4.7	4.2	4.2	5.9	7.9	10.7	13.1	14.8	16.6	17.9	19.1	19.8	20.4	20.4	20.1	18.9	17.1	15.2	13.6	12.6	11.5	12.7	20.4																						
																								0.8	0.2	-0.3	-1.1	-1.4	-1.4	-0.3	1.3	2.8	4.2	5.3	6.5	7.4	8.1	8.6	8.6	8.6	8.2	7.3	5.6	4.1	3.2	2.6	1.9	Diurnal Average
																								8.9	8.9	9.5	8.2	7.6	6.5	6.7	8.6	10.7	13.1	14.8	16.6	17.9	19.1	19.8	20.4	20.4	20.1	18.9	17.1	15.2	13.6	12.6	11.5	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C
Anzac - April 2023**

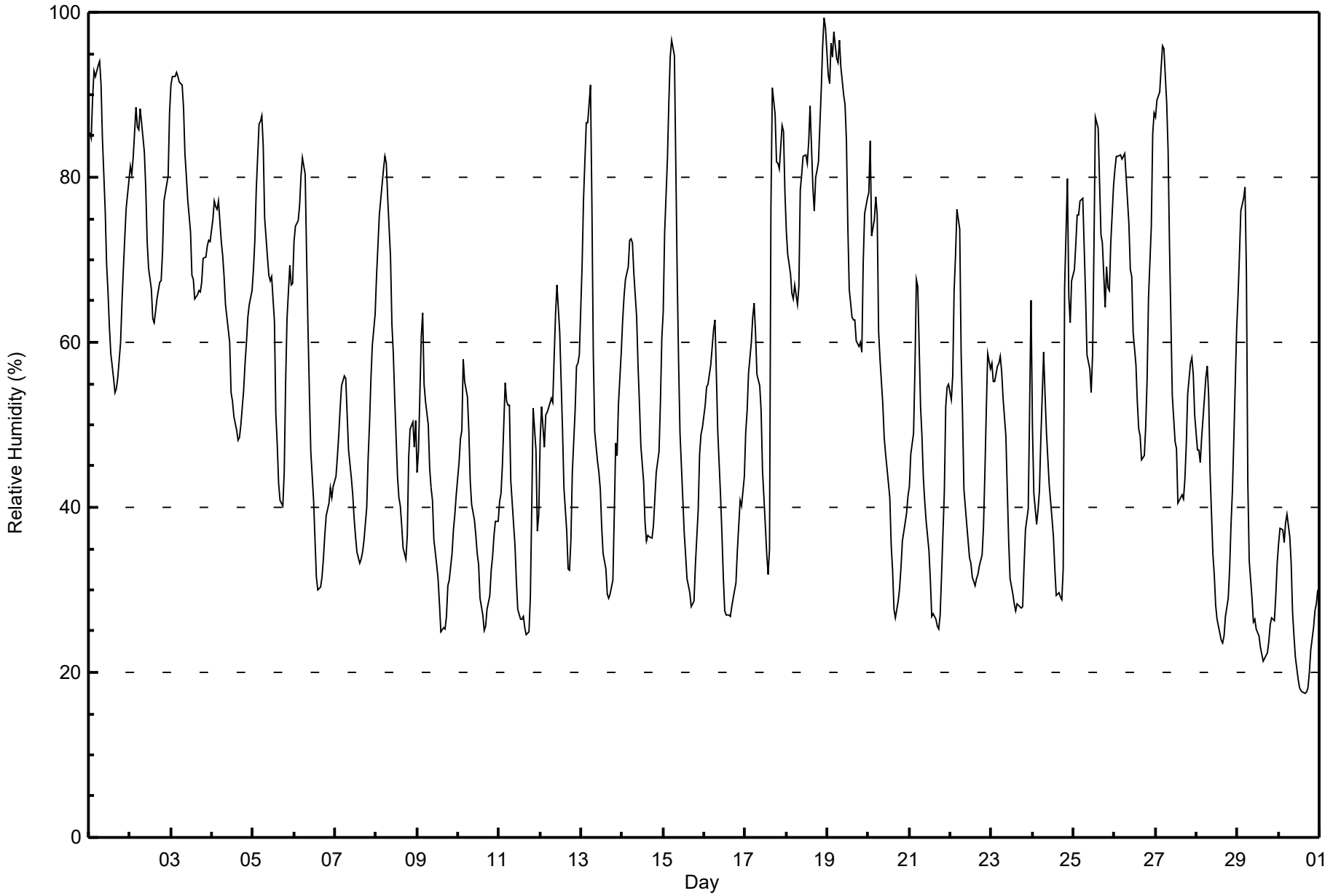
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	193	26.81	26.81
0 - 10	416	57.78	84.58
10 - 20	108	15.00	99.58
> 20	3	0.42	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 99.4 % on Apr 18 23:00 Maximum Daily Average: 79.3 % on Apr 19																						Hours in Service: 720 Hours of Data: 720																										
Minimum Value: 17.5 % on Apr 30 16:00 Minimum Daily Average: 26.9 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																										
Maximum Diurnal Average: 71.7 % at hour 6 Minimum Diurnal Average: 40.0 % at hour 17																						Percent Operational Time: 100.0																										
Monthly Average: 54.64 % Percentiles: P ₁ = 20.3 P ₁₀ = 28.6 Q ₁ = 37.5 Median = 52.9 Q ₃ = 70.4 P ₉₀ = 82.8 P ₉₉ = 95.9																																																
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-Apr	85.4	84.8	89.7	92.9	92.2	93.5	94.1	91.4	84.7	76.0	69.4	66.1	61.9	58.6	55.5	54.0	54.4	55.7	60.1	65.0	68.9	72.8	76.2	79.7	74.3	94.1																						
2-Apr	81.4	80.3	82.4	88.5	86.1	85.7	88.3	86.6	83.1	78.6	72.1	69.0	66.5	62.9	62.4	63.8	65.2	67.3	67.4	71.1	77.2	79.2	80.2	87.9	76.4	88.5																						
3-Apr	91.3	92.2	92.3	92.8	92.2	91.6	91.1	88.5	82.9	80.1	77.3	73.4	68.1	67.6	65.2	65.7	66.2	66.0	67.4	70.1	70.3	71.6	72.5	72.3	77.9	92.8																						
4-Apr	75.0	77.2	76.4	76.0	77.2	72.1	70.5	67.9	64.5	61.6	60.1	53.8	52.9	51.0	49.3	48.2	48.4	50.0	54.3	57.5	60.1	63.0	64.6	66.3	62.4	77.2																						
5-Apr	68.9	72.4	78.4	86.4	86.8	87.5	83.8	75.1	70.4	68.1	67.4	68.0	62.5	51.3	47.6	42.9	40.9	40.2	44.3	55.1	62.8	69.3	67.0	67.1	65.2	87.5																						
6-Apr	72.2	74.1	74.8	76.7	80.1	82.4	80.4	70.4	61.7	54.0	46.8	40.8	36.0	31.5	30.0	30.4	31.6	33.7	36.6	39.0	40.4	42.3	41.2	42.5	52.1	82.4																						
7-Apr	43.8	46.2	48.8	52.1	54.7	55.9	55.6	51.3	46.9	43.6	41.5	38.6	36.4	34.5	33.3	33.7	34.5	35.9	40.0	45.9	50.2	55.6	59.6	63.4	45.9	63.4																						
8-Apr	68.0	71.6	75.5	79.2	80.9	82.5	81.8	77.4	70.4	62.3	58.7	53.2	43.7	41.2	40.1	37.8	35.0	33.7	36.7	46.2	49.4	50.3	47.3	50.5	57.2	82.5																						
9-Apr	44.2	46.9	60.7	63.5	55.0	52.8	50.0	44.7	42.4	40.9	36.0	33.1	31.3	28.4	25.0	25.4	25.2	26.8	30.5	31.1	34.4	37.2	39.2	41.5	39.4	63.5																						
10-Apr	45.4	48.2	49.4	58.0	55.3	53.3	49.3	43.3	40.4	38.5	36.6	34.5	33.1	29.1	26.9	25.0	25.6	27.5	29.2	32.3	34.1	36.7	38.4	38.3	38.7	58.0																						
11-Apr	40.7	41.6	45.0	55.0	52.9	52.4	52.4	43.2	38.0	35.4	31.1	27.7	26.5	26.5	26.7	25.5	24.5	24.9	29.1	40.2	52.0	46.9	37.1	39.2	38.1	55.0																						
12-Apr	48.1	52.2	47.3	51.2	51.5	52.1	53.3	52.7	58.1	63.5	66.9	61.2	55.2	49.4	42.4	37.1	32.5	32.4	36.1	44.3	51.7	57.1	57.5	58.5	50.5	66.9																						
13-Apr	69.4	77.3	82.1	86.6	86.7	91.1	76.8	58.7	49.1	45.6	44.3	42.3	37.5	34.4	32.5	29.4	29.0	29.5	31.2	39.2	47.8	46.2	52.5	58.8	53.3	91.1																						
14-Apr	62.6	65.7	67.6	69.1	72.4	72.6	72.0	68.2	63.1	57.0	52.6	47.5	43.0	38.1	35.9	36.6	36.4	36.3	37.8	41.0	44.2	46.9	52.7	60.5	53.3	72.6																						
15-Apr	63.7	73.2	82.2	89.0	94.7	96.6	94.7	81.6	68.1	57.4	49.0	41.1	36.9	34.2	31.3	29.6	28.0	28.3	28.7	33.1	39.6	46.4	48.9	49.7	55.2	96.6																						
16-Apr	52.4	54.7	55.0	56.2	57.3	61.5	62.6	56.2	49.2	41.4	36.5	31.4	27.5	27.0	26.9	26.8	27.9	28.9	30.9	34.8	37.9	40.9	40.2	43.7	42.0	62.6																						
17-Apr	49.2	51.8	56.3	60.0	63.0	64.7	61.2	56.1	54.7	51.7	44.4	41.2	34.5	31.9	35.0	76.1	90.8	87.7	81.8	81.6	81.1	86.3	85.6	78.3	62.7	90.8																						
18-Apr	73.6	70.6	68.2	66.0	65.3	66.9	64.6	66.8	78.5	80.3	82.5	82.7	81.7	84.2	88.7	78.8	76.0	80.0	80.8	81.9	90.8	95.9	99.4	98.2	79.3	99.4																						
19-Apr	92.4	91.4	96.3	94.6	97.7	94.5	93.9	96.6	93.3	89.9	88.8	84.4	74.0	66.5	63.1	62.8	62.6	60.2	59.5	60.1	58.8	69.6	75.5	77.4	79.3	97.7																						
20-Apr	78.2	84.5	73.0	74.9	77.6	75.5	61.3	58.0	52.6	48.5	46.4	44.7	41.2	35.5	32.4	27.6	26.7	28.6	30.2	32.8	35.9	38.1	39.3	41.4	49.4	84.5																						
21-Apr	42.5	46.4	49.0	56.9	67.6	66.8	52.2	48.6	43.6	40.7	38.3	34.8	31.1	26.8	27.2	26.5	25.6	25.3	26.9	31.8	41.8	52.3	54.6	55.0	42.2	67.6																						
22-Apr	53.0	55.9	66.2	70.4	76.1	73.8	58.8	51.3	42.2	38.0	36.0	34.0	33.2	31.6	30.4	31.4	31.8	32.8	34.3	37.6	44.2	51.7	58.7	56.8	47.1	76.1																						
23-Apr	57.4	55.2	55.3	57.1	57.4	58.4	56.4	53.2	48.7	42.3	36.0	31.4	29.5	28.3	27.4	28.2	28.1	27.8	28.0	32.8	37.4	39.8	52.2	65.0	43.1	65.0																						
24-Apr	49.8	41.8	38.0	39.6	42.0	48.3	58.8	53.7	49.2	45.9	42.7	38.7	36.4	32.5	29.3	29.6	29.1	28.8	32.6	66.6	79.8	65.6	62.4	67.5	46.2	79.8																						
25-Apr	68.9	71.9	75.4	75.4	77.1	77.5	71.6	65.6	58.5	56.8	53.9	58.5	71.6	87.3	85.9	79.3	73.0	72.0	64.3	69.2	66.6	66.3	72.1	79.0	70.7	87.3																						
26-Apr	81.1	82.5	82.5	82.8	82.3	82.6	82.8	80.0	74.2	68.8	68.0	61.1	57.3	52.7	49.5	48.6	45.8	46.2	49.8	55.6	65.4	74.0	85.3	87.8	68.6	87.8																						
27-Apr	87.3	89.4	90.3	93.2	95.9	95.7	89.0	83.3	71.8	62.7	53.6	48.0	47.2	40.4	40.8	41.5	41.0	43.3	47.6	53.8	57.4	58.2	56.1	51.2	64.1	95.9																						
28-Apr	46.9	47.0	45.4	48.5	50.9	55.8	57.1	53.5	44.5	34.4	31.8	28.1	26.4	25.6	23.9	23.6	24.4	26.8	29.1	32.6	37.9	42.1	48.4	61.5	39.4	61.5																						
29-Apr	65.6	70.5	75.9	77.4	78.8	68.4	43.1	33.5	29.0	26.2	26.5	25.3	24.3	23.0	22.2	21.3	21.7	22.3	23.6	25.7	26.6	26.3	29.4	33.2	38.3	78.8																						
30-Apr	35.6	37.4	37.2	35.8	38.2	39.2	36.4	33.2	27.3	24.4	21.9	19.1	18.1	17.8	17.6	17.5	17.7	18.2	20.1	22.8	25.4	27.5	28.3	29.9	26.9	39.2																						
																								63.1	65.2	67.2	70.2	71.5	71.7	68.1	63.0	58.0	53.8	50.6	47.1	44.2	41.7	40.1	40.2	40.0	40.6	42.3	47.7	52.3	55.2	57.4	60.1	Diurnal Average
																								92.4	92.2	96.3	94.6	97.7	96.6	94.7	96.6	93.3	89.9	88.8	84.4	81.7	87.3	88.7	79.3	90.8	87.7	81.8	81.9	90.8	95.9	99.4	98.2	Diurnal Maximum





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Anzac - April 2023

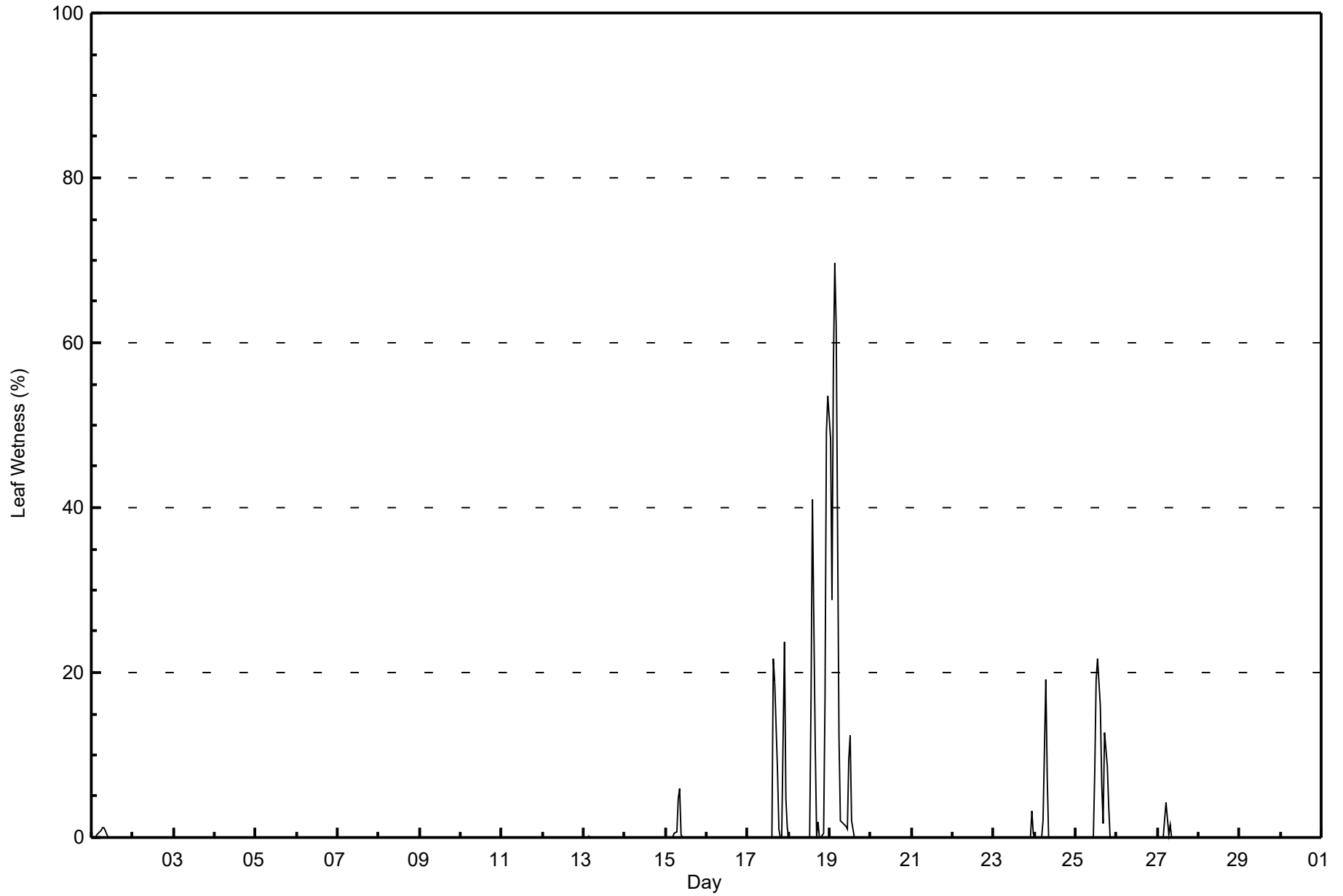
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	7	0.97	0.97
20 - 40	200	27.78	28.75
40 - 60	231	32.08	60.83
60 - 80	179	24.86	85.69
80 - 100	103	14.31	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 69.7 % on Apr 19 04:00		Maximum Daily Average: 12.9 % on Apr 19		Hours in Service: 720																							
Minimum Value: 0.0 % on Apr 1 01:00		Minimum Daily Average: 0.0 % on Apr 2		Hours of Data: 720																							
Maximum Diurnal Average: 2.3 % at hour 4		Minimum Diurnal Average: 0.0 % at hour 21		Hours of Missing Data: 0																							
Monthly Average: 1.02 %		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 27.8		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-Apr	0.0	0.0	0.0	0.3	0.5	0.9	1.1	1.2	0.8	0.0	0.0	0.0	0.0	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	
2-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	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	0.2	0.0
14-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.5	0.6	4.7	5.9	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	0.5	5.9	
16-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.6	18.7	8.2	1.0	0.0	0.0	23.8	4.8	1.2	3.3	23.8	
18-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	41.1	11.2	0.2	1.9	0.0	0.0	0.5	16.7	49.1	53.6	8.0	53.6	0.0	
19-Apr	48.3	28.7	57.5	69.7	62.1	12.2	2.1	1.9	1.6	1.3	0.9	9.5	12.3	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	69.7	
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.6	0.2	3.3
24-Apr	0.0	0.0	0.0	0.0	0.0	2.1	19.2	7.2	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	19.2	0.0
25-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	19.2	21.7	15.8	6.4	1.6	12.7	8.6	3.7	0.0	0.0	0.0	0.0	4.1	21.7	0.0
26-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	2.2	4.3	0.4	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.3	0.0
28-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	1.0	1.9	2.3	2.2	0.7	0.8	0.6	0.3	0.1	0.0	0.6	1.1	1.3	1.9	1.3	0.7	0.8	0.3	0.1	0.0	1.4	1.9	1.8	Diurnal Average	
		48.3	28.7	57.5	69.7	62.1	12.2	19.2	7.2	5.9	1.3	0.9	9.5	19.2	21.7	41.1	21.6	18.7	12.7	8.6	3.7	0.5	23.8	49.1	53.6	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Leaf Wetness (LW) - %
Anzac - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	664	92.22	92.22
0.4 - 0.5	4	0.56	92.78
0.6 - 0.7	2	0.28	93.06
0.8 - 1.4	8	1.11	94.17
1.5 - 10	21	2.92	97.08
> 10	21	2.92	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Speed: 36 km/h on Apr 10 16:00	Maximum Daily Speed Average: 22.4 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 29 07:00	Minimum Daily Speed Average: 2.6 km/h on Apr 13	Hours of Data: 720
Maximum Diurnal Speed Average: 6.3 km/h at hour 22	Minimum Diurnal Speed Average: 4.1 km/h at hour 5	Hours of Missing Data: 0
Monthly Average Velocity: 5.1 km/h 135.2 deg	Percentiles: P ₁ = 2 P ₁₀ = 6 Q ₁ = 8 Median = 11 Q ₃ = 15 P ₉₀ = 21 P ₉₉ = 30	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-Apr	E8	E9	E9	E9	E10	ESE11	ESE11	ESE13	ESE13	ESE13	E13	E14	E13	E14	E13	E13	E12	E14	E14	E15	E15	ESE16	E15	E15	E12.4	ESE16
2-Apr	ESE13	ESE14	ESE11	E10	E10	E11	E12	E13	E13	ESE12	SE13	ESE11	E11	ESE10	ESE8	ENE8	NE8	NE7	NE8	ENE6	NNE6	NE5	NNE4	NW6	E8.3	ESE14
3-Apr	W10	W11	W11	W11	W11	WNW12	WNW12	WNW12	WNW12	WNW11	W12	W11	WNW11	W10	WSW10	WSW9	W6	NNW6	NNW6	N7	NW3	W1	NW2	NW3	WNW8.1	WNW12
4-Apr	WSW1	W1	NNE4	N4	NNW6	N6	E3	NNE4	NE7	N6	N5	SE5	ENE5	ENE8	ENE9	E9	ENE8	ENE10	ENE11	E9	ESE9	SE10	SE11	SE12	ENE4.8	SE12
5-Apr	SE12	SE11	SE8	SE8	SE7	SE8	SE9	SE9	ESE12	SE14	ESE15	SE15	ESE15	SE16	SE17	SE13	SE10	SE8	SSE9	SSE6	SE6	SE6	SE8	SE11	SE10.3	SE17
6-Apr	SSE9	SE10	SE11	SE11	SE12	SE13	SE13	SE13	SE13	SE15	SE18	SE19	SE22	SSE24	SSE24	SSE22	SSE26	SSE25	SSE24	SSE23	SSE25	SSE25	SSE26	SSE25	SE18.3	SSE26
7-Apr	SE23	SE20	SE23	SE22	SE23	SE21	SE23	SE23	SE22	SE23	SE24	SE25	SE23	SE19	SE21	SE22	SE23	SE20	SE20	SE20	SSE21	SE20	SE15	SE9	SE21.0	SE25
8-Apr	SE10	ESE10	SE11	SE11	SE11	SE7	SE7	SSE7	SSE6	NE2	E2	ESE2	SE2	E7	SE9	SE9	ESE9	ESE9	SE7	SE7	SSE6	S6	SW7	SW10	SE6.1	SE11
9-Apr	SW14	SW8	SW5	WSW8	WSW9	WSW8	SW7	WSW13	WSW14	W12	WSW13	WSW17	WSW19	WSW15	SW11	S16	S17	S14	SSE11	SE13	SE15	SSE20	SSE20	SE20	SSW9.5	SSE20
10-Apr	SE21	SSE15	WSW29	WSW21	WSW31	WSW28	WSW25	WSW28	WSW30	WSW29	WSW26	WSW29	SW32	WSW32	WSW31	SW36	WSW29	WSW23	WSW20	WSW14	WSW11	SW12	WSW12	WSW15	WSW22.4	SW36
11-Apr	WSW10	WSW11	SW6	SW6	SSW8	SW8	SSW8	SW8	W8	W11	WNW9	W9	W9	W8	W7	W8	WNW5	N4	N4	SW2	S6	WNW9	NW14	WNW13	W6.2	NW14
12-Apr	WNW9	W11	W11	WSW12	W13	W12	W12	WNW13	W13	W12	W13	W14	NW15	NW16	WNW17	WNW19	WNW19	NW16	NW8	SW4	WSW8	W9	W8	W7	W11.5	WNW19
13-Apr	WSW6	SSW5	S6	S5	WSW2	NW1	WSW3	SSW1	SW3	S1	N5	N8	NNW11	NNW12	NNW12	NNW12	NW12	NNW10	N5	ENE5	ENE8	E11	E11	E11	N2.6	NNW12
14-Apr	ESE11	ESE10	ESE8	ESE9	ESE9	ESE10	ESE9	ESE11	E12	ESE11	E12	E13	ESE10	E10	ENE10	NE13	ENE13	ENE14	ENE13	ENE9	E10	E9	E8	ESE7	E9.7	ENE14
15-Apr	ESE8	SE5	SE7	E7	SE7	ESE7	ESE8	SE7	SE7	ESE8	ESE11	ESE11	ESE10	E10	ESE8	SE8	SE12	SSE11	ESE8	E10	ESE12	ESE10	SE12	ESE12	ESE8.6	ESE12
16-Apr	SE12	SE12	SE11	ESE11	SE12	ESE11	ESE9	SE11	ESE13	ESE15	SE17	ESE17	ESE20	ESE19	ESE22	E21	E21	E20	E15	E17	E19	ESE18	ESE17	ESE12	ESE15.1	ESE22
17-Apr	ESE11	E12	ESE14	E15	E13	E12	E14	ESE18	ESE19	E23	E24	E23	ESE26	ESE31	ESE30	ESE26	E21	E26	E26	E21	E20	E17	ENE18	ENE19	E19.4	ESE31
18-Apr	ENE18	ENE17	ENE16	E18	E16	E14	E15	E17	E14	E13	E13	ENE11	E7	NE8	NE8	NE7	ESE2	N6	NNW8	N7	N7	NNE5	N5	NNE6	ENE9.1	ENE18
19-Apr	E5	ESE12	ESE16	ESE15	E12	ESE15	ESE16	ESE13	ESE14	ESE15	ESE17	ESE16	ESE17	ESE18	ESE17	E15	E17	ESE12	ESE8	ENE8	E8	NE6	ENE8	ENE8	ESE12.3	ESE18
20-Apr	ESE6	ESE7	E7	E7	E7	ESE7	ESE7	ESE8	E6	E9	ENE12	NE13	NE13	E15	ENE14	ENE15	ENE15	ENE16	ENE15	ENE10	E11	E11	ESE11	ESE9	E9.8	ENE16
21-Apr	ESE8	ESE9	ESE9	ESE7	ESE7	SE7	SE7	SE8	ESE7	E7	E11	SE10	SE10	SSE8	E6	SE8	SE9	SE7	SE6	SE7	SE6	SSE6	S8	SSW10	SE7.2	E11
22-Apr	SW9	SW9	WSW6	WSW5	SSE7	SSE9	SSE8	SSE9	SE10	SE15	SSE18	SSE18	SE20	SSE17	SSE19	SSE16	SSE17	S14	S12	S10	S8	SSE7	SE7	SE8	SSE10.3	SE20
23-Apr	SE10	SE11	SE12	SE12	SE14	SE13	SE13	SE15	SE18	SE21	SE25	SE28	SSE27	SSE23	SSE22	SE19	SE20	SSE19	SSE13	SSE15	SSE10	SE11	SW14	SW4	SE15.4	SE28
24-Apr	E13	E12	E12	E10	E10	E10	E11	ESE13	ESE14	ESE13	E13	E15	ESE15	SSE15	SSE11	SSE12	SSE11	S8	WSW9	WSW8	S12	S11	SSE10	SE9.1	E15	
25-Apr	SE10	SE10	SE10	SE11	SE9	SE10	SE13	SE13	SE11	ESE11	SE11	S8	S7	W17	SSW7	S6	SSE6	SW8	SSW7	W17	W11	W11	W13	S5.8	W17	
26-Apr	W19	W17	W17	W18	W19	W19	W20	W19	W17	W16	W15	W16	WNW15	NW15	NW10	NNW9	NNW9	NNE10	NNE9	NE8	NE11	NE8	NE4	N1	WNW9.9	W20
27-Apr	NNW5	NNW6	NW6	W5	W6	W5	W6	WSW8	W8	WSW9	W11	W12	W11	W11	W12	W9	WSW7	SW10	SSW8	SSE8	SSE9	SSE10	SSE12	SSE14	WSW5.6	SSE14
28-Apr	SSW14	SW11	WSW16	W18	W17	W17	W15	W17	WNW23	WNW26	NW27	WNW27	WNW27	WNW26	NW26	NW26	NW27	NW20	NNW18	NNW13	N10	NNW9	NNW8	WNW6	WNW15.9	NW27
29-Apr	NW5	WSW3	WSW5	SW3	SW4	SW3	SSW0	ENE8	ESE7	E6	NE8	ENE5	NNE8	ENE6	ENE6	E5	NE8	E12	ESE14	E12	ESE11	ESE12	SE16	SE16	E4.8	SE16
30-Apr	SE15	SE17	SE17	SE17	SE15	SE16	SE16	SE17	SE16	SE16	SE21	SE23	SE23	SE21	SE20	SSE19	SE20	SE19	SE17	SE14	SE14	SE14	SE15	SE16	SE17.4	SE23

SE5.3 SE23	SE5.4 SE20	SSE4.7 WSW29	SE4.4 SE22	SSE4.1 WSW31	SE4.1 WSW28	SE5.0 WSW25	SE5.4 WSW28	SE4.9 WSW30	SE4.9 WSW29	SE5.4 NW27	SE5.2 WSW29	SE5.1 WSW32	SE4.8 WSW32	SE5.2 WSW31	SE5.5 ESE4.9	SE5.1 ESE5.1	SE5.1 ESE5.5	ESE4.9 ESE5.1	ESE5.1 ESE5.5	ESE5.5 ESE6.2	SE6.3 SE5.8	SE5.4 SE5.4	Diurnal Average	
SE23	SE20	WSW29	SE22	WSW31	WSW28	WSW25	WSW28	WSW30	WSW29	NW27	WSW29	WSW32	WSW32	WSW31	SW36	WSW29	E26	E26	SSE23	SSE25	SSE25	SSE26	SSE25	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

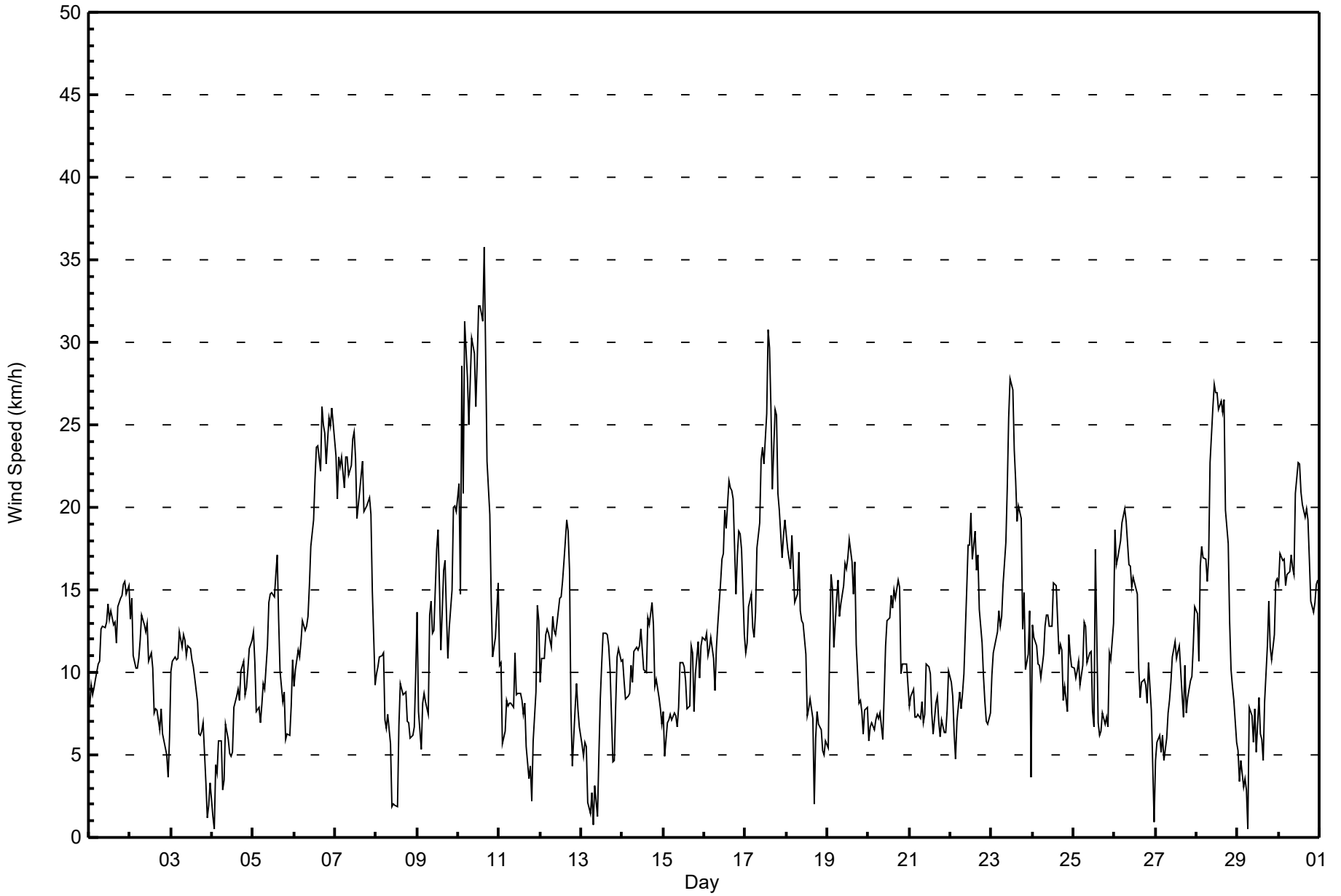
Wind Speed (WS) - km/h
Anzac - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on Apr 10 16:00 Minimum Value: 1 km/h on Apr 13 03:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 9														Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	2	2	1	2	2	2	2	3	3	4	3	3	3	3	3	3	3	4	3	3	4	4	3	4	4
2-Apr	4	4	3	2	2	2	3	3	3	3	3	3	3	2	2	2	1	1	2	1	1	1	1	3	4
3-Apr	2	2	3	2	3	3	3	3	3	3	3	3	2	2	3	2	2	2	1	1	1	2	1	2	3
4-Apr	1	2	1	1	1	2	1	2	2	3	2	3	2	2	2	3	2	2	2	2	2	2	2	2	3
5-Apr	2	2	2	2	1	2	2	2	3	3	3	3	3	4	4	4	3	3	2	1	1	1	1	1	4
6-Apr	1	2	2	2	2	2	2	2	3	3	4	4	5	6	5	5	6	5	5	6	5	5	5	4	6
7-Apr	4	4	4	5	4	4	4	4	4	4	5	5	5	5	5	5	5	4	5	4	4	4	3	3	5
8-Apr	3	2	3	2	2	2	1	1	1	1	2	1	1	2	2	2	2	2	1	1	1	1	1	3	3
9-Apr	3	2	1	2	2	2	2	5	4	3	3	6	6	4	5	5	5	4	2	3	3	3	3	4	6
10-Apr	5	6	9	6	10	8	7	8	8	8	7	8	9	10	9	10	8	7	6	4	3	3	3	4	10
11-Apr	3	3	2	1	1	1	2	2	2	2	2	2	2	2	2	3	2	2	2	2	1	4	2	3	4
12-Apr	3	1	2	2	2	3	3	3	3	4	3	3	4	4	4	5	5	4	4	1	2	2	1	1	5
13-Apr	1	1	1	1	1	1	1	1	1	2	2	3	4	4	4	4	4	2	2	1	1	2	2	2	4
14-Apr	3	2	2	3	3	2	3	3	3	3	3	3	2	2	4	3	3	3	3	2	2	1	2	2	4
15-Apr	2	1	1	1	1	1	2	1	1	2	3	3	4	4	4	3	4	3	2	2	3	2	2	2	4
16-Apr	2	2	2	2	2	2	2	3	3	4	4	5	5	5	5	6	6	6	5	4	5	4	5	3	6
17-Apr	2	2	3	3	3	3	4	5	5	6	6	6	7	8	8	9	6	6	7	5	5	5	4	5	9
18-Apr	4	4	4	5	5	4	4	5	4	4	3	3	2	2	2	2	1	2	1	2	2	1	1	1	5
19-Apr	2	3	4	4	3	4	4	4	4	4	5	5	5	5	5	4	4	3	3	2	2	1	2	1	5
20-Apr	2	1	1	1	1	1	2	2	2	3	4	4	4	4	4	5	4	4	4	2	2	2	2	2	5
21-Apr	1	1	2	1	1	1	1	2	2	3	4	4	4	4	4	4	4	3	2	1	1	1	1	2	4
22-Apr	2	1	1	1	1	1	1	1	2	4	6	5	6	5	6	4	4	4	4	2	1	1	1	1	6
23-Apr	2	2	2	2	2	2	3	3	4	5	6	6	7	6	6	5	6	5	3	5	4	5	5	4	7
24-Apr	4	2	3	2	2	2	2	3	4	3	3	3	5	5	5	3	3	3	2	2	3	3	3	1	5
25-Apr	2	2	2	2	2	2	3	2	2	3	3	4	6	6	3	2	2	9	3	3	2	3	3	4	9
26-Apr	5	4	4	5	5	5	5	5	5	4	4	4	4	5	4	3	3	3	2	2	2	1	2	1	5
27-Apr	1	1	1	1	2	2	2	2	2	3	3	4	3	3	3	3	2	3	2	1	1	1	2	2	4
28-Apr	4	3	5	4	4	4	3	4	7	8	7	8	8	7	7	6	6	6	4	3	2	1	2	1	8
29-Apr	1	2	3	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	4	3	2	4	3	3	4
30-Apr	3	3	3	3	3	3	3	4	4	3	6	5	6	6	5	5	5	4	4	4	3	3	3	3	6
														Diurnal Maximum											



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Anzac - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Anzac - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	57	7.92	7.92
6 - 11	318	44.17	52.08
12 - 19	249	34.58	86.67
20 - 28	84	11.67	98.33
29 - 38	12	1.67	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Anzac - April 2023**

Wind Speed 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	4	3	3	4	2	3	0	2	3	8	6	4	1	5	2	57
6 - 11	8	5	13	18	38	55	58	24	11	6	15	18	28	6	4	11	318
12 - 19	0	0	3	14	46	45	55	15	6	1	3	11	29	10	6	5	249
20 - 28	0	0	0	0	11	4	33	18	0	0	0	7	1	5	5	0	84
29 - 38	0	0	0	0	0	2	0	0	0	0	1	9	0	0	0	0	12
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	9	19	35	99	108	149	57	19	10	27	51	62	22	20	18	720

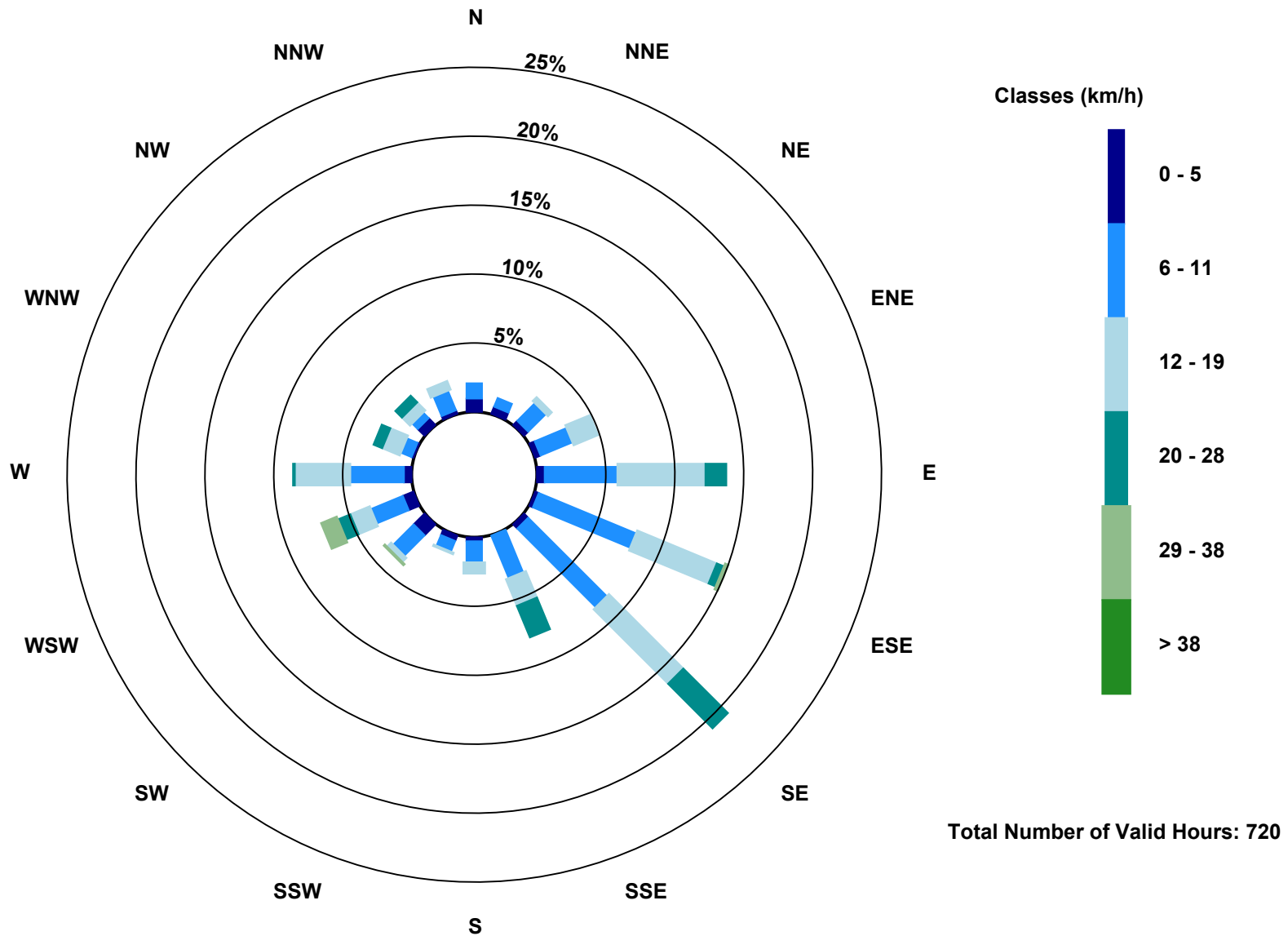
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Anzac





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Anzac - April 2023

Direction of Maximum Speed: 236 deg on Apr 10 16:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 242.0 deg on Apr 10	Hours of Data: 720
Direction of Minimum Speed: 195 deg on Apr 29 07:00	Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 2.6 deg on Apr 13	Percent Operational Time: 100.0
Monthly Average Direction: 135.2 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-Apr	89	92	94	94	99	105	103	104	106	106	91	82	79	82	85	93	95	89	92	93	98	102	100	96	94.5
2-Apr	103	105	112	95	94	95	99	101	101	108	129	117	99	103	121	76	45	36	52	61	32	52	32	312	92.7
3-Apr	271	274	277	280	280	287	284	287	290	288	276	277	295	261	252	248	280	327	339	353	320	263	323	323	284.5
4-Apr	253	264	16	11	334	10	92	32	36	5	358	129	73	69	75	84	71	77	66	85	111	128	127	126	75.4
5-Apr	126	127	124	124	127	128	130	126	123	126	122	125	113	124	145	145	124	140	167	161	130	129	140	147	131.2
6-Apr	158	139	136	136	137	137	133	131	125	126	125	128	140	155	157	158	155	155	156	150	153	154	153	149	146.0
7-Apr	142	140	144	142	136	131	128	132	141	142	140	135	137	135	134	135	137	140	142	142	147	145	145	133	138.4
8-Apr	125	121	132	143	135	141	144	156	148	49	80	109	125	100	134	128	119	119	126	140	154	188	229	233	139.1
9-Apr	233	232	224	242	253	244	236	239	252	268	252	249	243	242	234	187	185	182	167	136	131	153	156	141	207.8
10-Apr	142	160	248	258	253	254	249	253	248	244	243	242	236	238	243	236	242	250	255	246	253	236	244	245	242.0
11-Apr	249	243	216	227	212	220	205	221	266	268	288	275	278	279	275	280	283	354	360	229	190	296	326	300	264.9
12-Apr	282	262	267	257	264	262	269	288	271	273	263	272	304	307	292	291	294	306	313	216	250	266	274	273	279.3
13-Apr	239	193	181	185	245	319	242	207	231	173	357	353	336	328	329	336	325	336	6	57	62	80	98	90	355.8
14-Apr	102	102	105	111	103	102	123	118	101	115	89	91	105	86	64	47	62	59	63	77	93	87	92	108	90.2
15-Apr	116	127	140	89	132	123	113	134	138	111	109	111	115	99	108	124	127	150	116	101	103	115	126	121	118.2
16-Apr	127	126	127	123	125	120	119	127	110	107	132	109	112	114	105	100	86	88	92	87	94	103	113	102	108.1
17-Apr	102	99	102	99	99	93	98	105	105	93	101	91	114	112	119	118	83	86	90	88	93	101	78	75	98.4
18-Apr	76	77	77	85	92	91	95	101	96	98	82	77	81	42	35	39	102	1	340	349	3	17	9	16	71.2
19-Apr	82	106	119	117	89	102	113	115	119	111	106	108	112	102	105	97	97	106	104	77	82	55	62	72	102.6
20-Apr	105	109	96	98	95	106	110	103	95	79	64	55	56	86	73	72	61	66	61	72	85	92	102	123	81.3
21-Apr	123	102	102	103	112	127	132	142	116	97	100	127	130	155	101	135	128	142	138	142	137	154	171	199	129.2
22-Apr	231	227	249	245	163	153	164	147	145	142	154	157	145	151	150	157	161	176	179	177	171	160	143	138	162.7
23-Apr	136	134	130	131	135	125	129	135	135	139	145	144	152	147	149	132	140	153	159	165	149	141	220	232	144.8
24-Apr	85	95	98	96	96	90	91	108	115	116	119	87	96	120	158	155	150	160	174	258	241	178	173	150	125.0
25-Apr	134	131	135	127	124	140	141	136	141	121	140	174	172	261	213	180	160	229	212	229	255	266	263	266	174.9
26-Apr	266	269	270	273	275	274	275	278	279	277	273	273	298	323	308	343	338	19	27	40	47	47	48	349	293.5
27-Apr	347	335	311	262	259	267	265	250	264	247	259	261	271	259	266	269	251	221	200	161	156	161	154	159	238.9
28-Apr	193	224	258	267	272	272	272	273	285	303	305	302	295	301	307	320	324	326	338	334	351	346	341	286	298.7
29-Apr	309	257	241	221	216	236	195	74	113	89	35	64	16	59	76	87	39	100	103	98	112	122	133	133	99.0
30-Apr	132	140	141	136	129	127	131	133	132	129	135	143	146	145	133	151	139	134	135	130	126	134	134	135	136.0

140.6 139.0 149.1 144.4 149.7 144.2 144.9 144.9 144.6 134.2 133.4 136.1 136.4 138.7 141.0 135.6 122.9 119.2 114.2 118.1 119.7 130.8 135.4 139.5

Diurnal Average

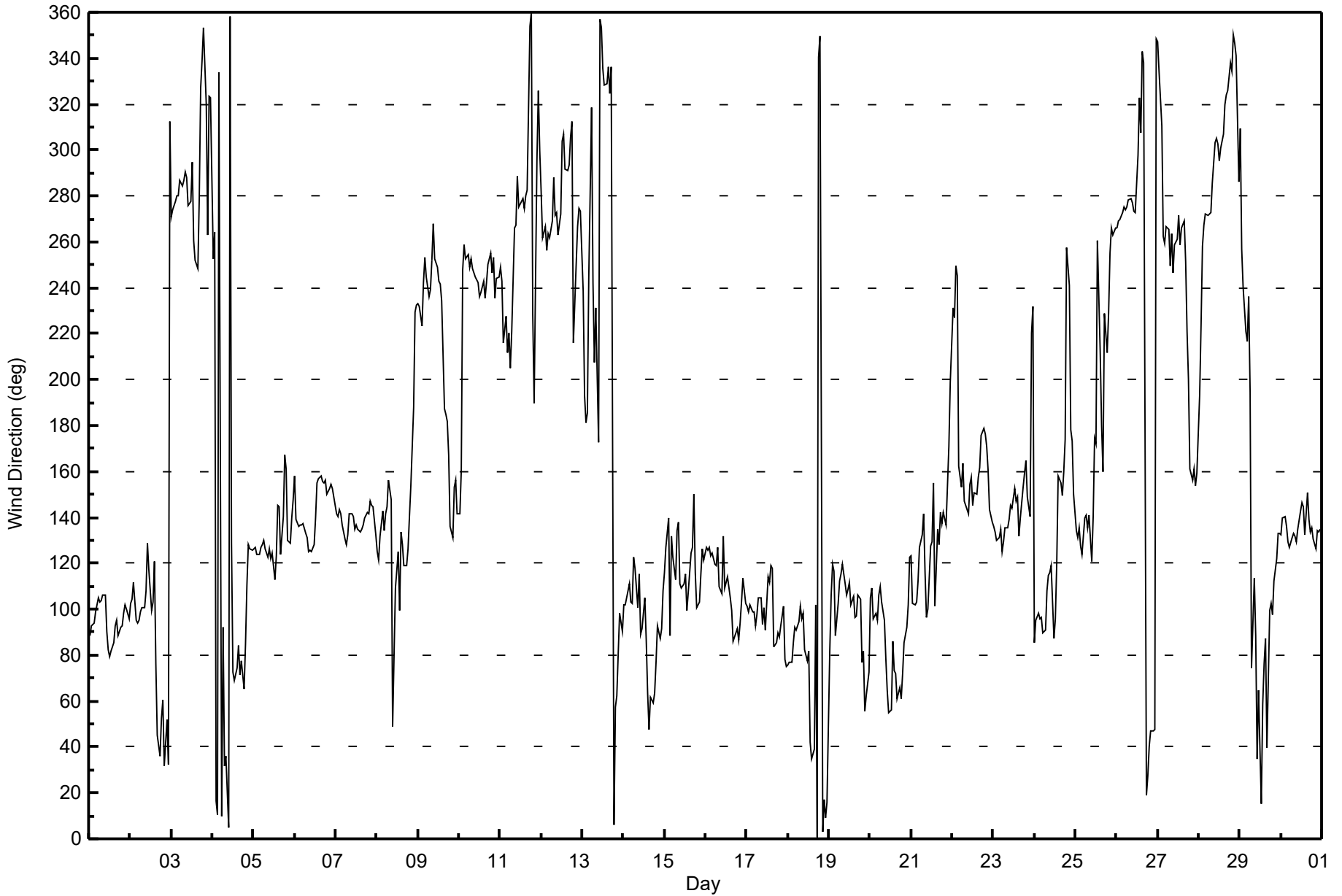
All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Anzac - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0										Hours in Service: 720															
Maximum Value: 92 deg on Apr 13 10:00										Hours of Data: 720															
Minimum Value: 5 deg on Apr 13 03:00										Hours of Missing Data: 0															
Percentiles: P ₁ = 7 P ₁₀ = 11 Q ₁ = 13 Median = 16 Q ₃ = 21 P ₉₀ = 32 P ₉₉ = 75										Hours of Calibration: 0															
										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-Apr	9	11	9	10	11	10	11	13	14	18	17	17	20	17	19	18	18	16	15	15	14	15	14	14	20
2-Apr	15	14	15	14	14	13	14	13	15	19	16	24	21	24	29	22	14	16	13	15	15	16	14	38	38
3-Apr	13	14	14	15	15	14	13	14	17	19	18	18	23	21	23	18	26	22	14	15	32	72	49	72	72
4-Apr	63	84	21	28	13	46	46	43	31	51	44	76	55	33	24	28	26	18	13	13	16	11	11	11	84
5-Apr	11	11	13	12	12	11	14	13	16	14	16	16	21	16	14	17	20	28	19	23	13	10	10	8	28
6-Apr	13	9	10	11	10	10	11	12	15	14	14	15	14	12	14	14	11	11	12	12	10	10	10	10	15
7-Apr	10	11	11	12	12	12	12	12	11	11	12	12	12	14	13	13	12	12	12	10	10	11	13	18	18
8-Apr	19	14	17	10	12	12	12	9	16	71	68	76	75	35	26	17	18	15	12	12	15	25	8	12	76
9-Apr	13	18	14	14	16	15	24	19	18	18	20	20	18	20	31	18	20	16	16	13	14	9	9	12	31
10-Apr	12	40	18	18	17	17	17	18	18	17	18	17	16	17	18	17	19	17	18	16	17	14	17	15	40
11-Apr	19	15	33	15	14	10	13	16	19	13	23	17	22	21	18	24	32	39	22	57	13	37	15	14	57
12-Apr	26	9	12	10	15	14	15	17	18	18	18	19	22	20	24	20	21	17	21	15	21	13	12	14	26
13-Apr	18	15	5	10	72	59	35	87	54	92	55	37	32	22	23	24	24	19	33	10	13	14	14	14	92
14-Apr	13	12	14	15	15	16	18	17	16	18	22	20	22	23	31	14	16	14	13	15	13	10	10	13	31
15-Apr	12	21	15	18	11	13	16	17	19	23	25	33	31	28	45	45	26	17	22	13	15	17	12	12	45
16-Apr	11	11	10	12	11	11	12	13	17	17	17	23	21	23	19	20	18	16	19	15	15	15	15	15	23
17-Apr	12	13	14	13	15	14	17	16	16	17	17	18	19	18	18	23	15	14	15	15	17	22	14	14	23
18-Apr	14	14	15	16	15	15	16	16	16	17	20	20	24	25	19	18	78	31	14	12	15	14	15	16	78
19-Apr	30	15	14	15	15	15	16	16	16	18	15	16	17	16	17	19	17	19	25	15	15	12	9	12	30
20-Apr	17	9	15	11	10	10	14	18	29	30	27	30	22	25	32	23	23	22	15	14	11	11	11	13	32
21-Apr	13	11	8	7	8	10	12	15	27	41	35	39	40	64	62	52	42	45	22	16	10	10	11	15	64
22-Apr	11	10	15	39	11	7	7	13	21	19	19	21	21	21	24	19	19	21	17	14	10	7	11	9	39
23-Apr	8	12	12	12	11	12	12	12	13	14	16	17	15	15	18	19	17	14	14	23	20	19	32	71	71
24-Apr	19	14	13	13	14	13	16	16	17	18	25	23	24	22	20	21	15	44	16	33	13	15	10	10	44
25-Apr	11	12	10	12	14	11	13	13	18	16	21	45	51	17	39	24	27	70	43	38	20	18	17	16	70
26-Apr	18	17	16	16	16	16	16	15	19	18	18	22	26	23	35	37	36	34	13	13	10	10	46	40	46
27-Apr	18	8	23	16	15	21	18	17	24	27	24	24	26	25	21	21	28	28	22	8	10	7	6	9	28
28-Apr	18	18	21	16	16	15	15	16	18	18	17	21	20	19	21	17	14	15	14	13	12	10	12	19	21
29-Apr	15	39	21	18	7	16	89	22	32	59	40	71	45	60	58	75	36	23	16	13	16	13	12	12	89
30-Apr	12	10	10	11	12	13	12	13	13	16	16	18	18	18	21	21	19	15	14	14	12	11	11	11	21
										Diurnal Maximum															
										63 84 33 39 72 59 89 87 54 92 68 76 75 64 62 75 78 70 44 57 33 72 49 71															





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS17
WAPASU
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
 APRIL 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	685	34	35	99.86	21.1	0	3.5	0
H2S (ppb) Average	684	35	36	99.86	0.8	0	0.2	0
THC (ppm) Average	685	34	35	99.86	2.4	-	2.3	-
O3 (ppb) Average	686	33	34	99.86	56.3	0	54.2	-
NO2 (ppb) Average	684	35	36	99.86	16.8	0	5.8	-
NO (ppb) Average	684	35	36	99.86	4.5	-	1.2	-
NOX (ppb) Average	684	35	36	99.86	17	-	6.3	-
PM2.5 (ug/m3) Average	717	2	3	99.86	13.9	0	7.1	0
Temperature 2 m (C) Average	719	0	1	99.86	19.7	-	13.2	-
Relative Humidity (%) Average	719	0	1	99.86	97.1	-	87	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	28	-	23	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-
Precipitation (mm) Total	719	0	1	99.86	0.9	-	3.8	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
APRIL 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	685	0.43	1.4	-	0	0	0	0	0.2	0.9	21.1
H2S (ppb) Average	684	0.06	0.1	-	0	0	0	0	0.1	0.2	0.8
THC (ppm) Average	685	2.22	0	-	2.1	2.2	2.2	2.2	2.2	2.3	2.4
O3 (ppb) Average	686	43.46	8.9	-	3.4	31.1	39.5	44.8	50.1	53.2	56.3
NO2 (ppb) Average	684	1.23	2.2	-	0	0	0	0.4	1.3	3.8	16.8
NO (ppb) Average	684	0.23	0.4	-	0	0	0	0.1	0.2	0.5	4.5
NOX (ppb) Average	684	1.46	2.4	-	0	0	0.1	0.5	1.5	4.4	17
PM2.5 (ug/m3) Average	717	4.15	2	-	0.2	2	2.8	3.7	5.4	6.6	13.9
Temperature 2 m (C) Average	719	3.54	5.8	-	-10.1	-4.2	-0.7	3.5	8	11.2	19.7
Relative Humidity (%) Average	719	55.73	21.7	-	18.4	27.8	35.8	53.9	74.4	88	97.1
Wind Speed 10 m (km/h) Average	719	10.7	5	-	0	4	7	10	14	18	28
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	719	-	-	9.43	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
APRIL 2023

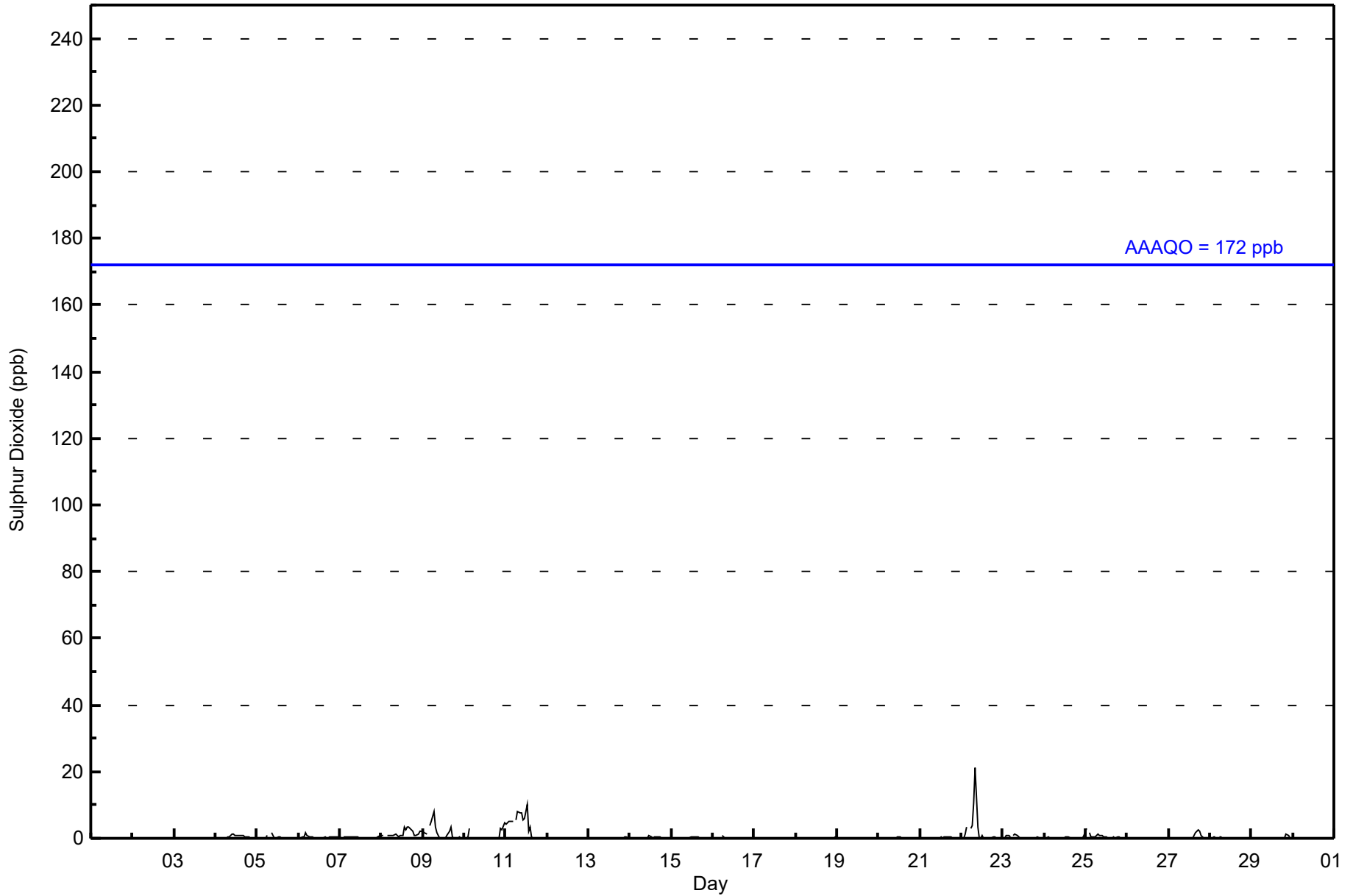
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	05 Apr 2023 08:00	05 Apr 2023 08:00	1	Maintenance - station logger/modem reset



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Wapasu - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	99.85	99.85
11 - 20	0	0.00	99.85
21 - 60	1	0.15	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	27	13	16	9	22	103	155	116	55	23	25	34	9	17	27	33	684
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	1	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
Totals	27	13	16	9	22	103	155	116	55	24	25	34	9	17	27	33	685

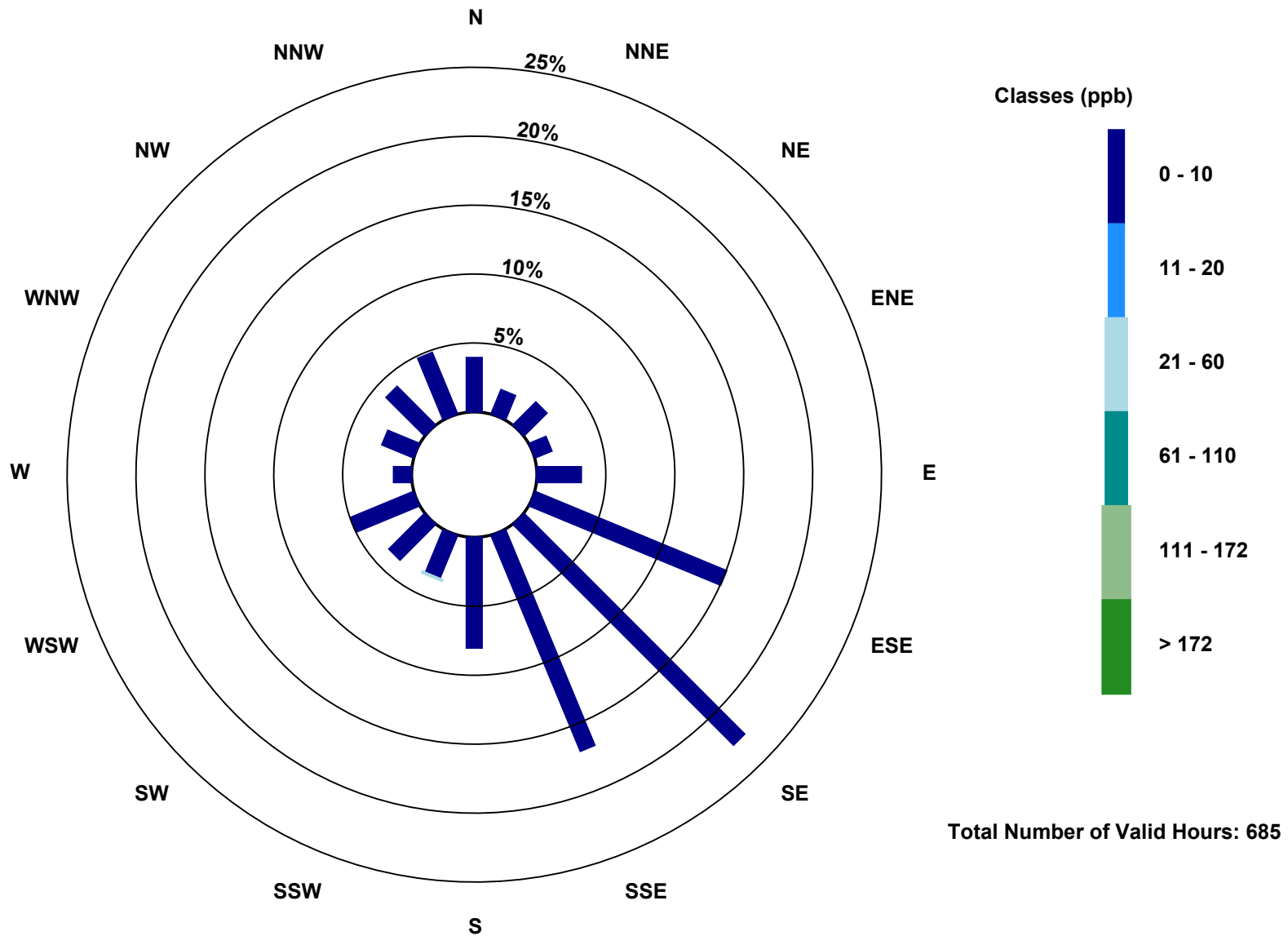
Total Number of Valid Hours: 685

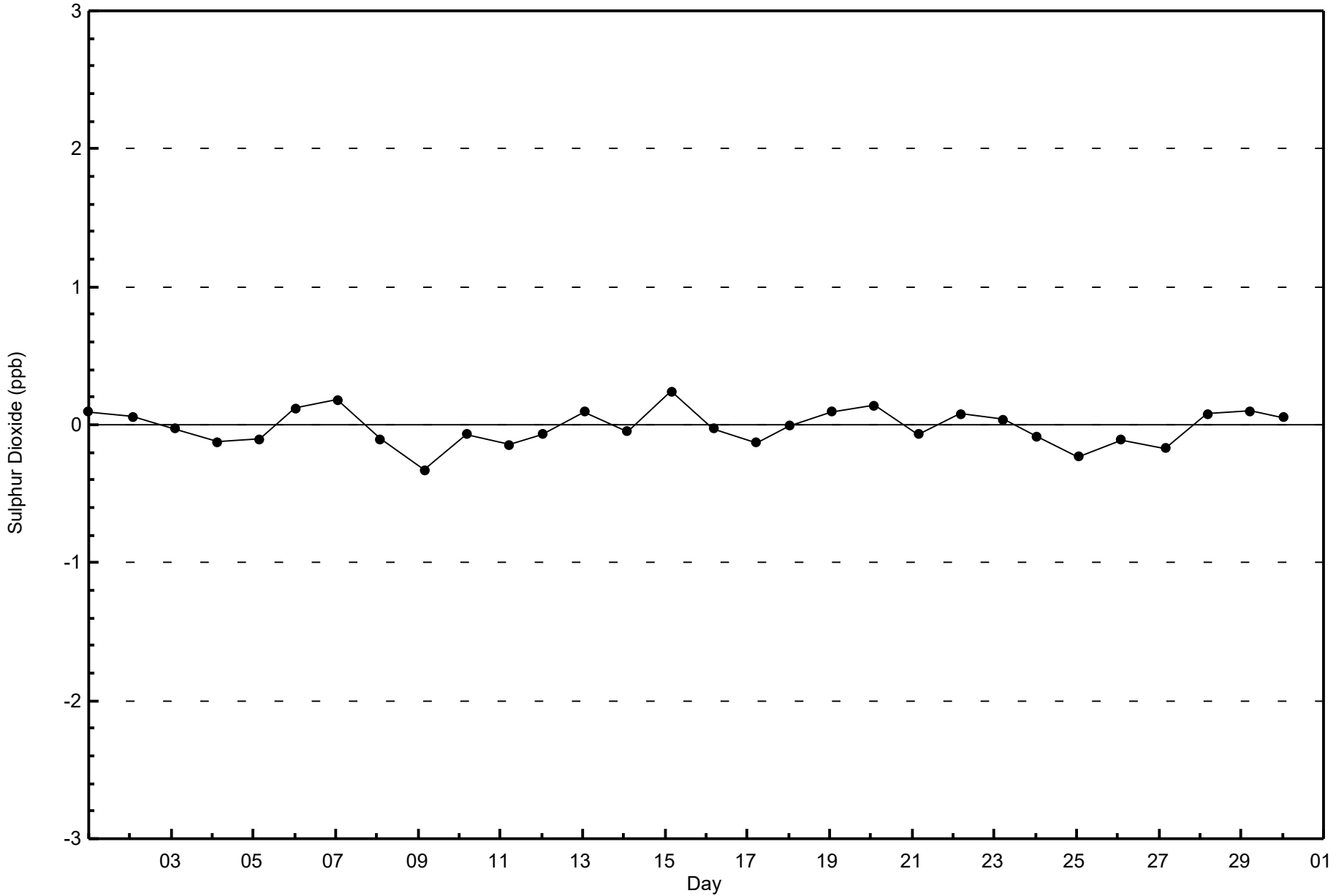
Total Number of Hours: 720

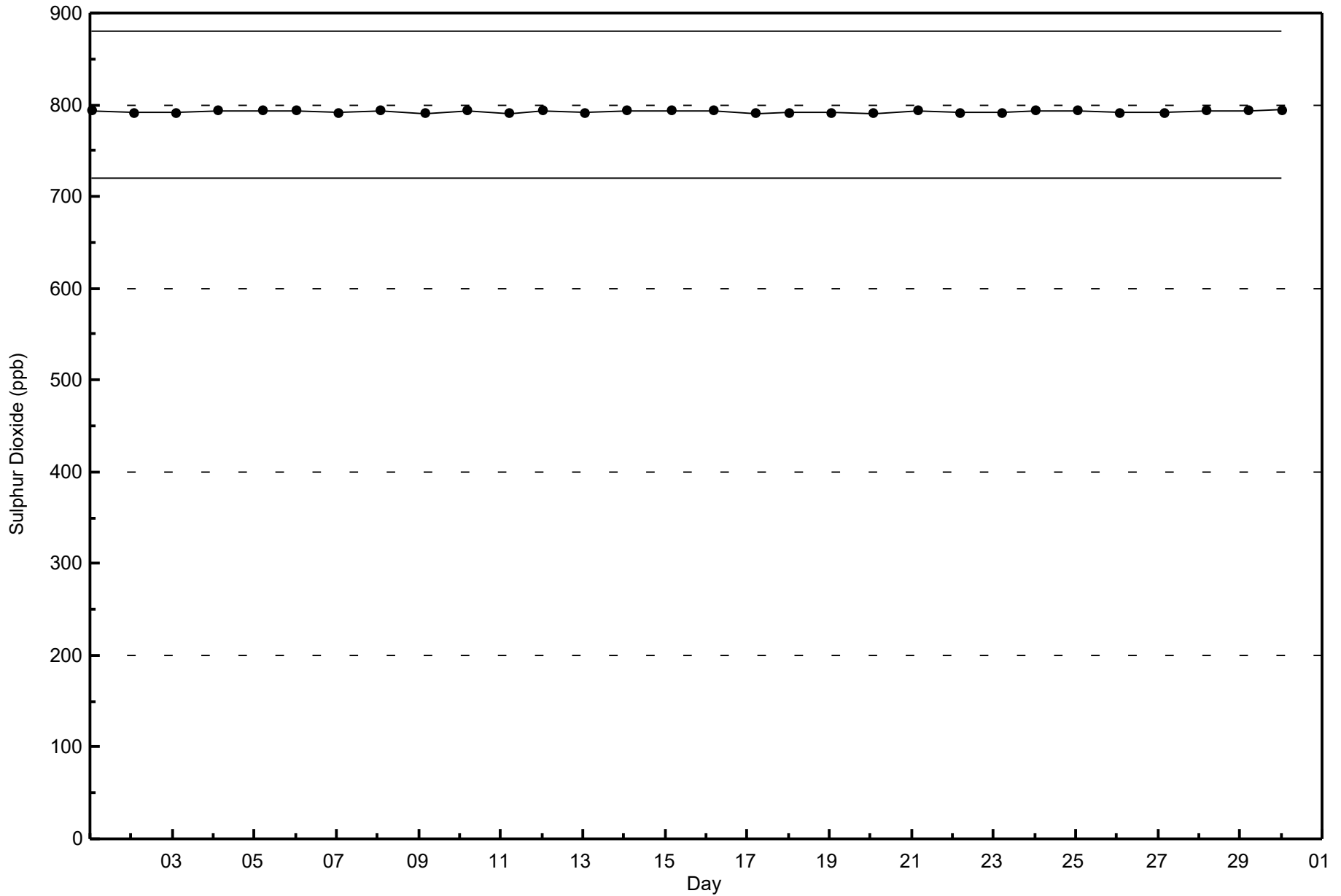


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Wapasu









Wood Buffalo Environmental Association
Summary of Hour Averages

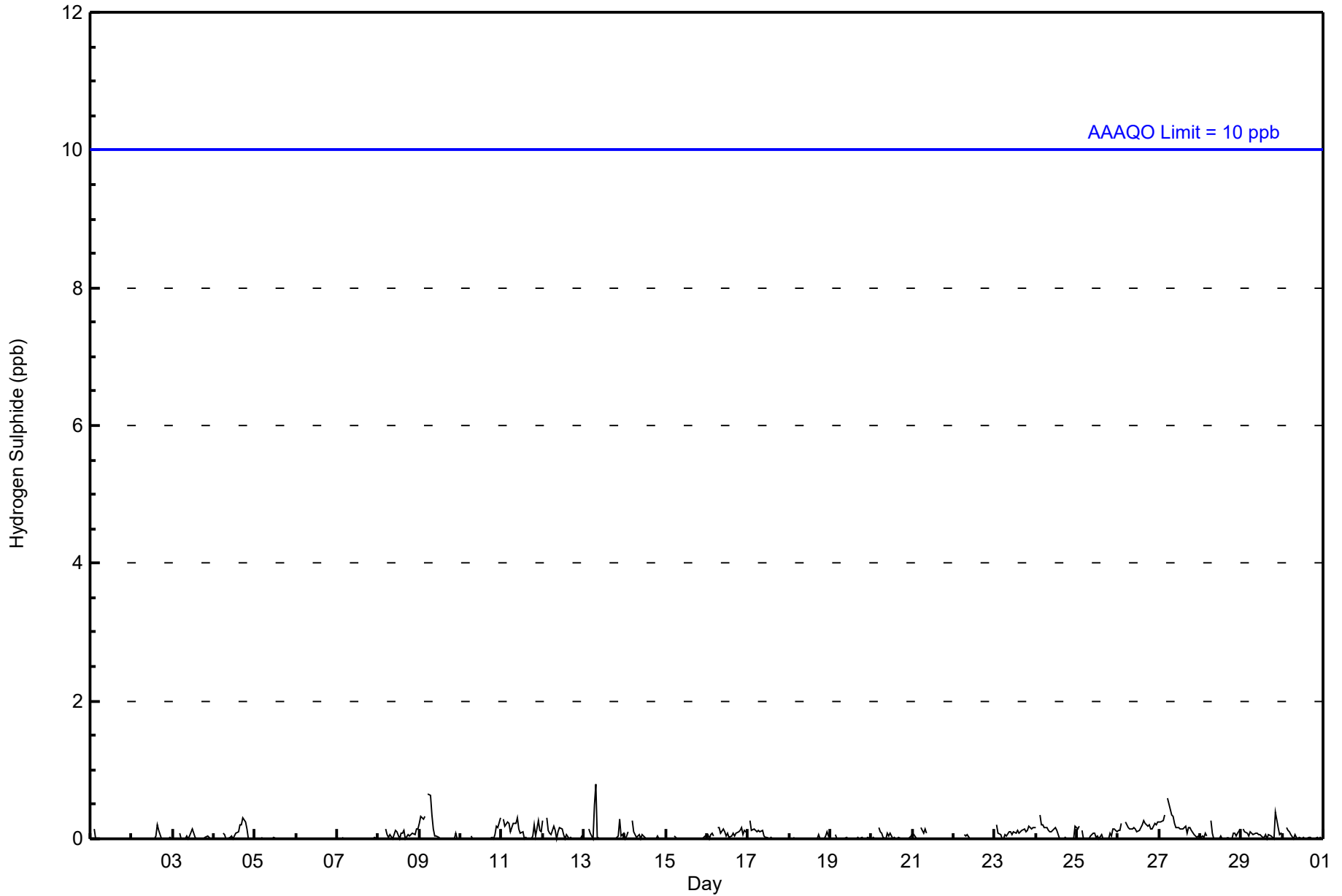
Hydrogen Sulphide (H₂S) - ppb
Wapasu - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 0.8 ppb on Apr 13 08:00 Maximum Daily Average: 0.2 ppb on Apr 27		Hours in Service: 720 Hours of Data: 684 Hours of Missing Data: 36 Hours of Calibration: 35 Percent Operational Time: 99.9																															
Minimum Value: 0.0 ppb on Apr 1 04:00 Maximum Diurnal Average: 0.1 ppb at hour 7 Monthly Average: 0.06 ppb		Minimum Daily Average: 0.0 ppb on Apr 6 Minimum Diurnal Average: 0.0 ppb at hour 14 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 = 0.4																															
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-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
2-Apr	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	0.2	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	0.2
3-Apr	0.0	0.0	0.0	Z	0.1	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4-Apr	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	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	0.3
5-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	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	0.0	0.0	0.0	0.0	0.1
6-Apr	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
7-Apr	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
8-Apr	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	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	0.1	0.1
9-Apr	0.2	0.3	0.3	0.3	Z	0.7	0.6	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	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
10-Apr	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	0.1	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.3
11-Apr	Z	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
12-Apr	0.3	Z	0.3	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.2	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	0.0	0.0	0.0	0.0	0.1
13-Apr	0.0	0.0	Z	0.1	0.1	0.0	0.5	0.8	0.0	0.0	0.0	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8
14-Apr	0.0	0.0	0.1	Z	0.3	0.1	0.1	0.0	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	0.3
15-Apr	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.1	0.0	0.1	0.1	0.0	Z	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	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
17-Apr	Z	0.3	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
18-Apr	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	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
19-Apr	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	0.0	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-Apr	0.0	0.0	0.0	Z	0.2	0.1	0.1	0.0	0.0	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
21-Apr	0.1	0.1	0.0	0.0	Z	0.2	0.1	0.1	0.1	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
22-Apr	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1
23-Apr	Z	0.2	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	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	
24-Apr	0.2	Z	0.4	0.2	0.2	0.2	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
25-Apr	0.1	0.2	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
26-Apr	0.1	0.1	0.2	Z	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.3	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	0.2	0.2	0.2	0.3
27-Apr	0.2	0.2	0.3	0.3	Z	0.6	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	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	0.0	0.6
28-Apr	0.0	0.0	0.0	0.1	0.0	Z	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	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3	
29-Apr	Z	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	
30-Apr	0.1	Z	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
																								Diurnal Average									
																								Diurnal Maximum									
																								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 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.0 0.1									
																								0.3 0.3 0.4 0.3 0.3 0.7 0.6 0.8 0.3 0.3 0.2 0.2 0.1 0.2 0.2 0.3 0.2 0.3 0.3 0.2 0.4 0.3 0.2 0.3									
Z - zerospan C - Calibration M - Maintenance																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																																	



Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Wapasu - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Wapasu - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	26	15	16	10	22	102	154	113	56	22	24	34	8	18	27	37	684
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
Totals	26	15	16	10	22	102	154	113	56	22	24	34	8	18	27	37	684

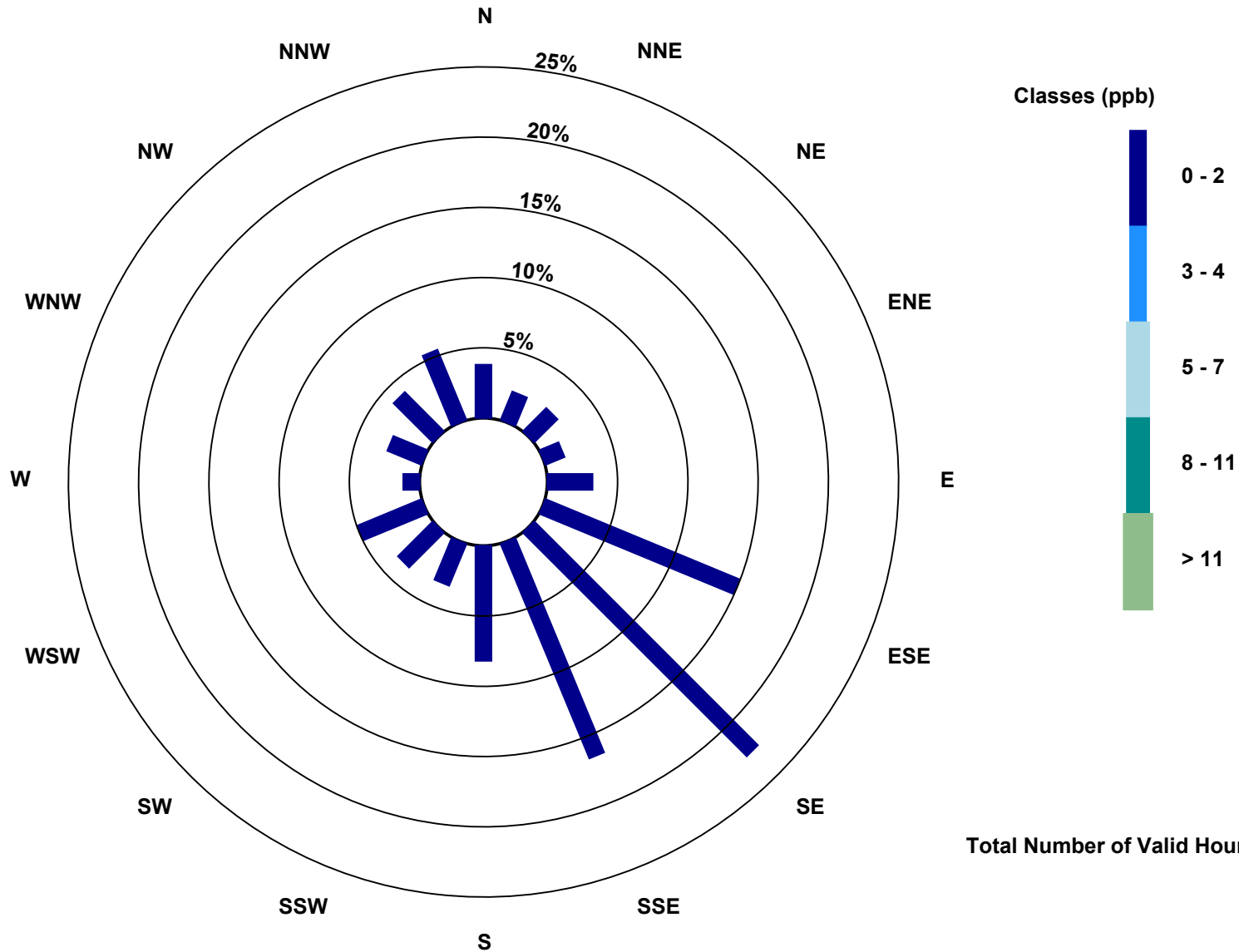
Total Number of Valid Hours: 684

Total Number of Hours: 720

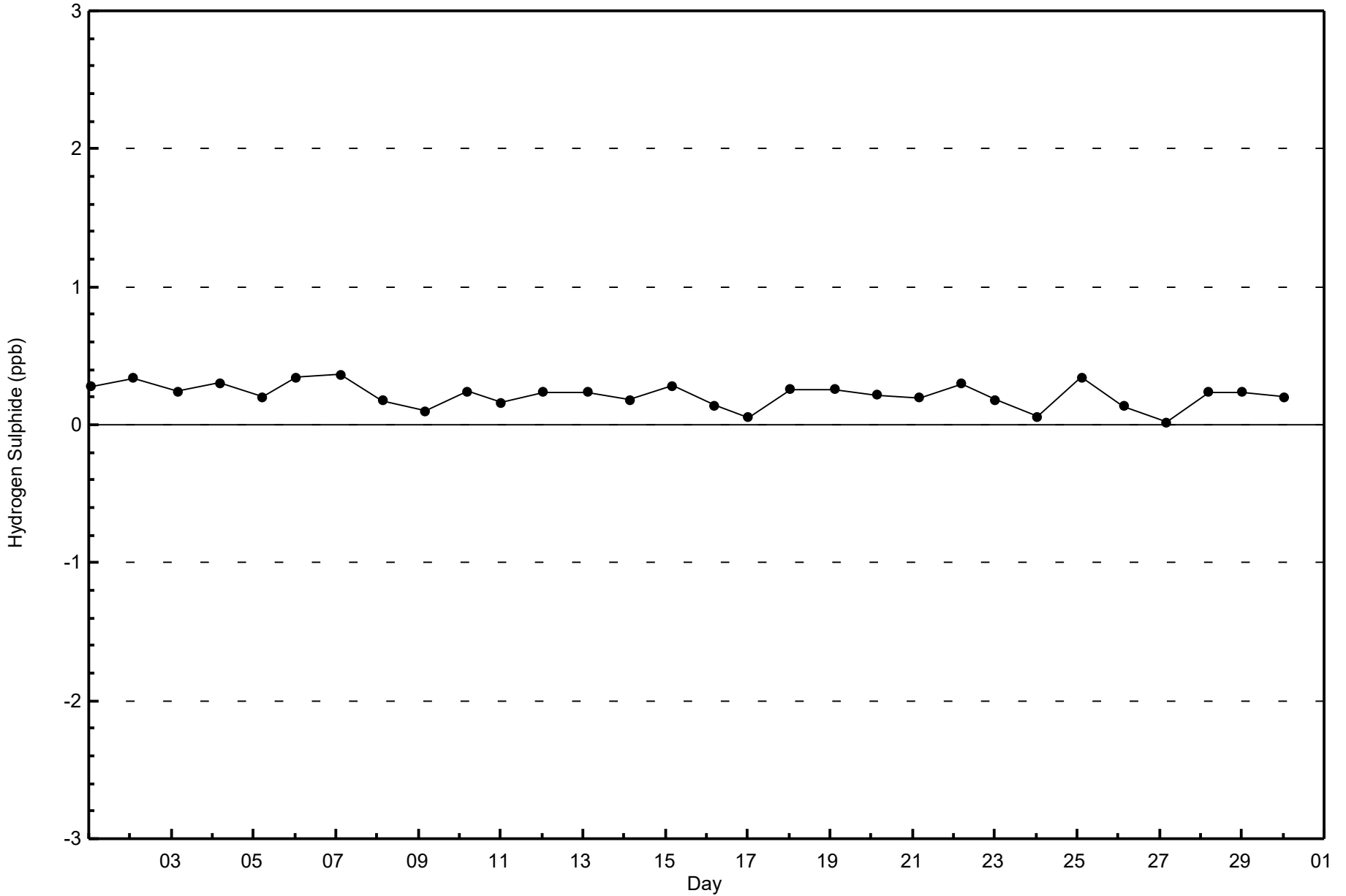


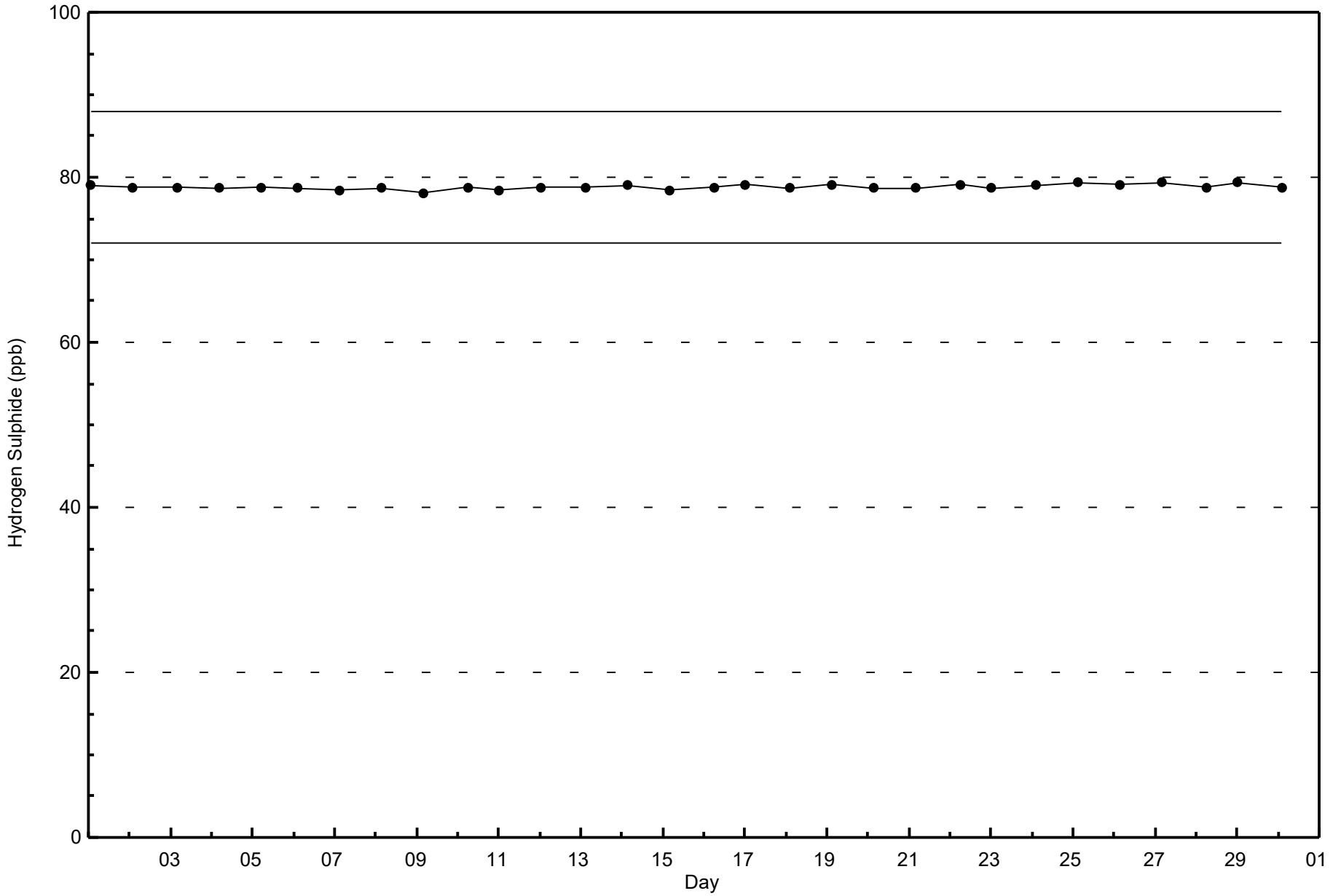
Wood Buffalo Environmental Association
Wind Rose Apr 2023

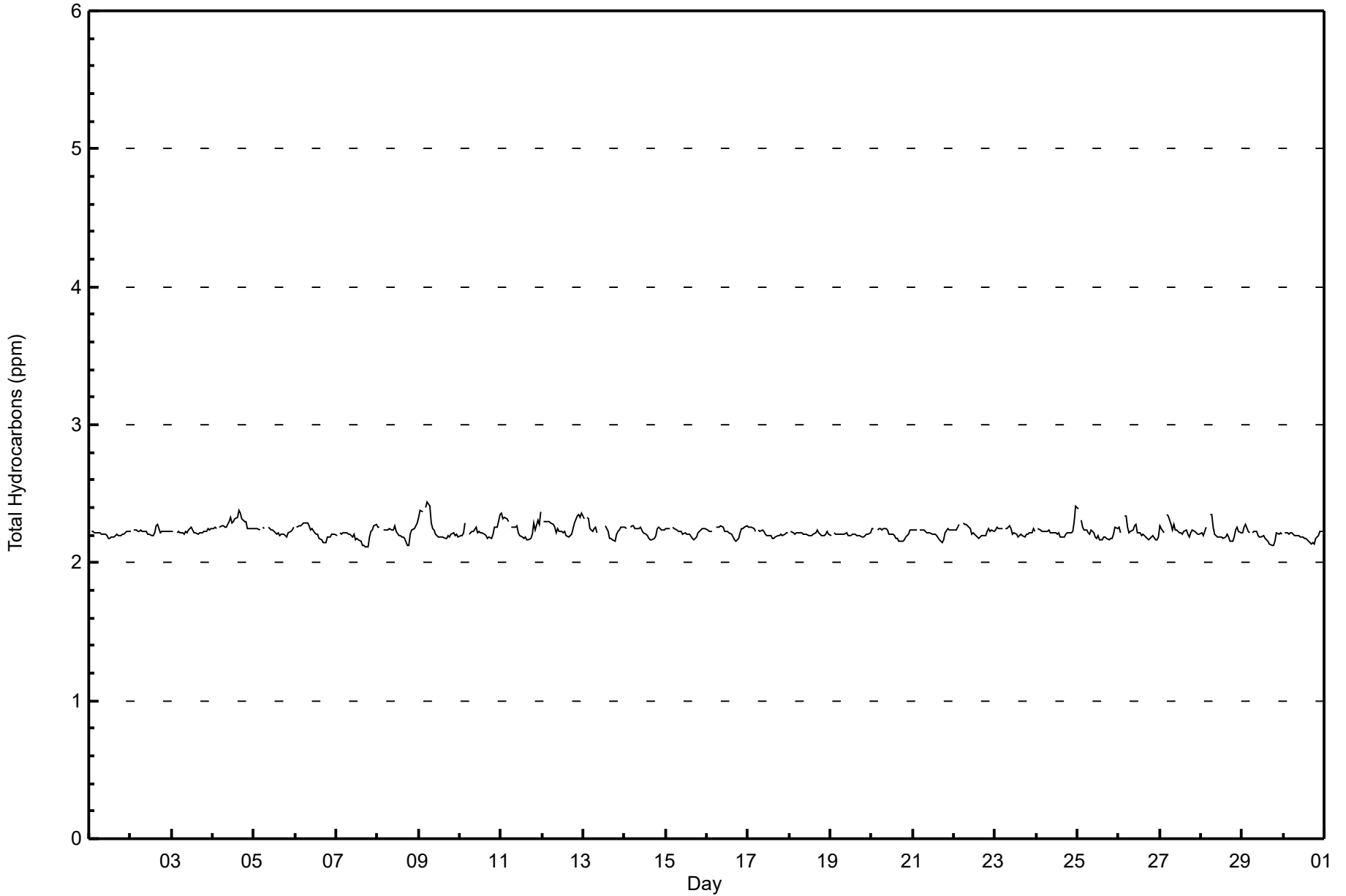
Hydrogen Sulphide (H₂S) - ppb
Wapasu



Total Number of Valid Hours: 684









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Wapasu - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	685	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Wapasu - April 2023

Concentration 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	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	27	13	16	9	22	103	155	116	55	24	25	34	9	17	27	33	685
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
Totals	27	13	16	9	22	103	155	116	55	24	25	34	9	17	27	33	685

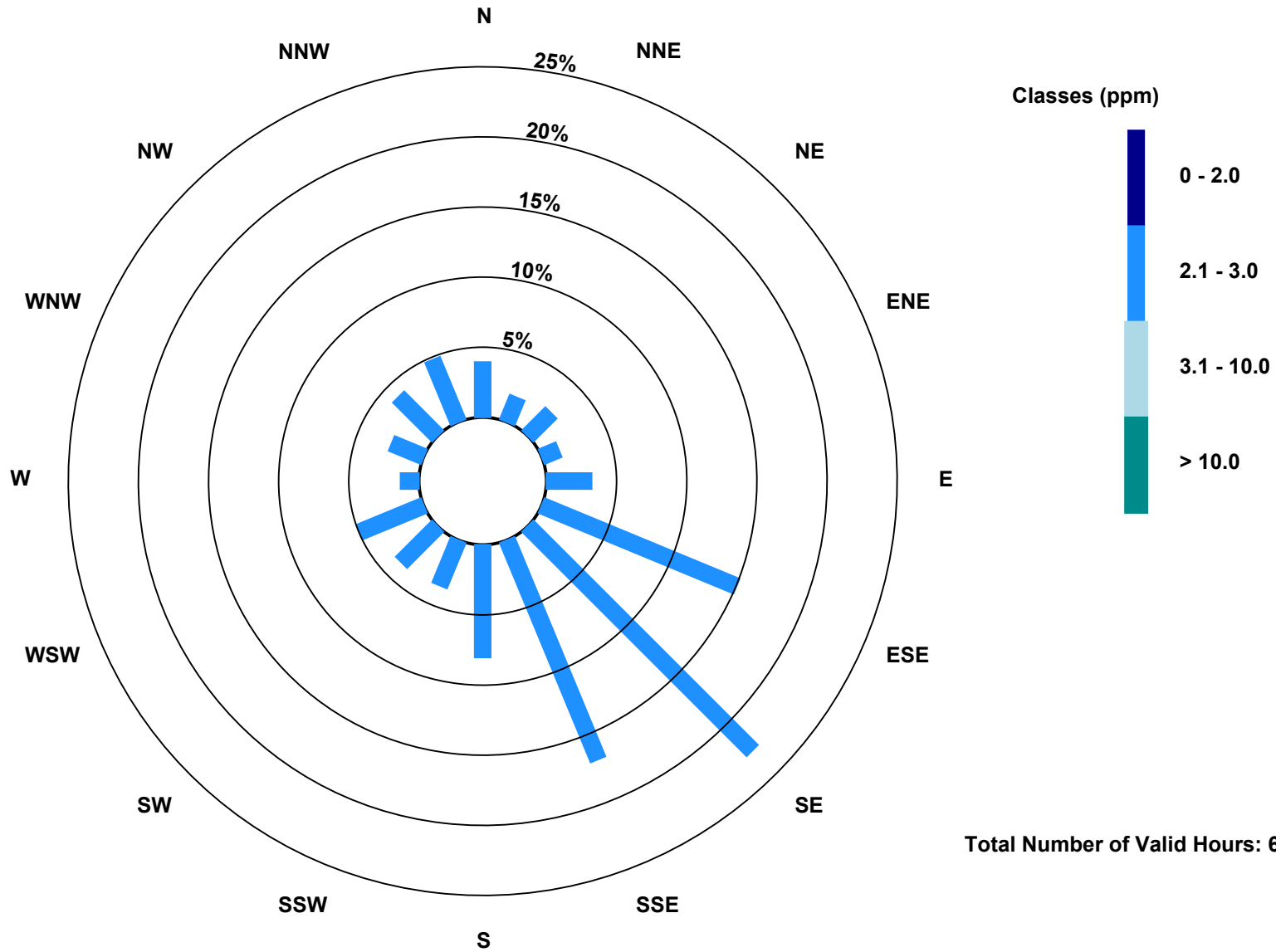
Total Number of Valid Hours: 685

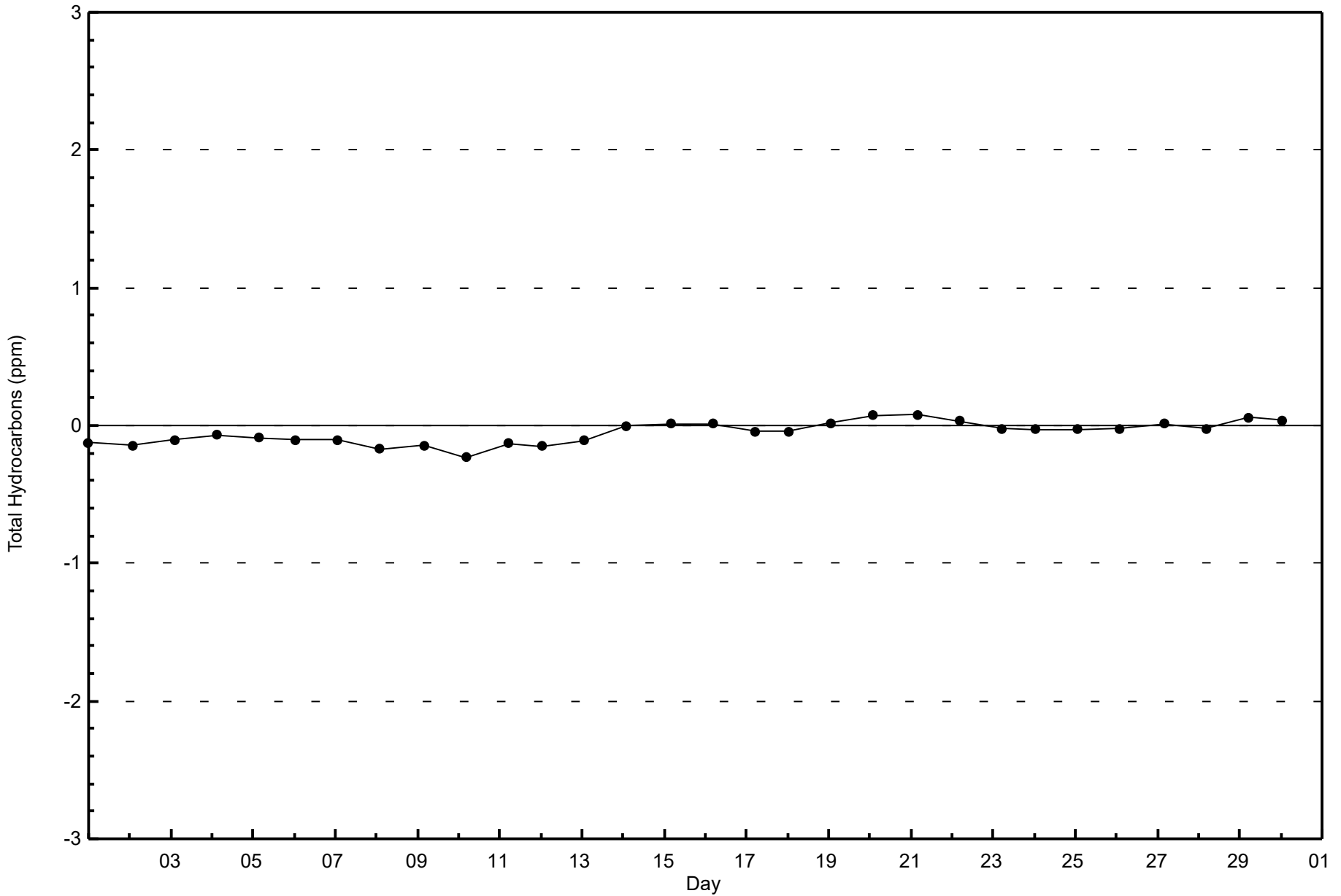
Total Number of Hours: 720

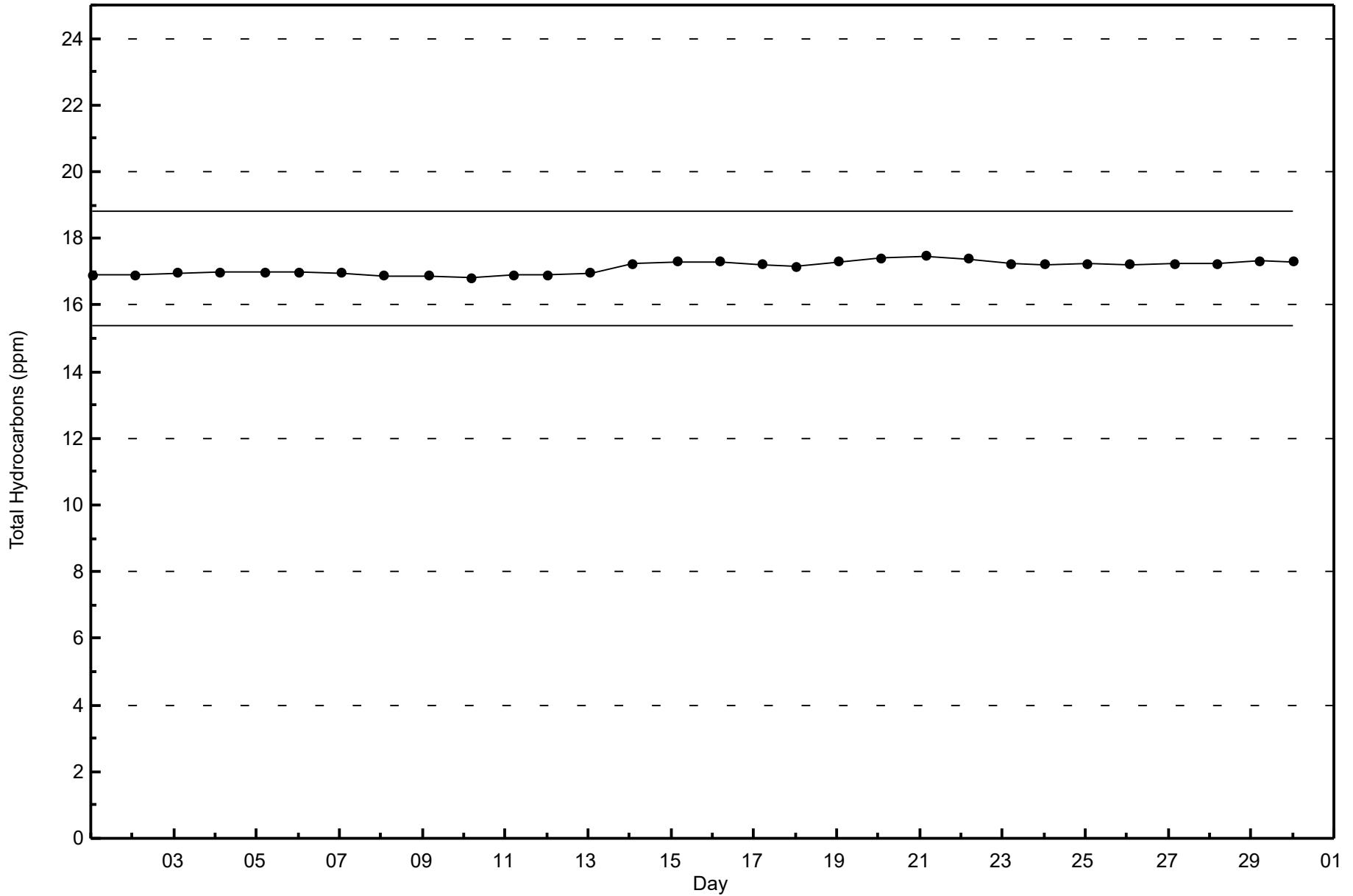


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Wapasu









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Wapasu - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 56.3 ppb on Apr 7 14:00	Maximum Daily Average: 54.2 ppb on Apr 7		Hours of Data:	686
Minimum Value: 3.4 ppb on Apr 27 05:00	Minimum Daily Average: 26.4 ppb on Apr 26		Hours of Missing Data:	34
Maximum Diurnal Average: 48.1 ppb at hour 15	Minimum Diurnal Average: 38.2 ppb at hour 4		Hours of Calibration:	33
Monthly Average: 43.46 ppb	Percentiles: P ₁ = 14.5 P ₁₀ = 31.1 Q ₁ = 39.5 Median = 44.8 Q ₃ = 50.1 P ₉₀ = 53.2 P ₉₉ = 55.0		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-Apr	42.8	42.3	Z	42.7	42.3	41.9	41.8	42.0	43.7	45.2	45.7	47.4	50.1	49.7	50.5	50.1	49.6	49.5	49.2	48.8	49.4	48.5	47.3	46.9	46.4	46.4	50.5
2-Apr	46.4	45.5	45.1	Z	43.8	43.4	42.6	41.1	40.5	40.4	40.5	41.1	41.0	39.4	37.3	34.5	33.6	38.8	39.3	39.2	38.4	41.4	41.1	41.0	40.7	46.4	
3-Apr	41.7	40.9	41.0	40.1	Z	40.9	41.1	42.2	42.4	42.3	41.0	39.2	41.0	41.9	43.1	44.2	44.4	44.5	43.9	42.5	40.5	38.2	36.8	37.8	41.4	44.5	
4-Apr	37.9	40.2	37.3	34.6	31.8	Z	28.1	31.2	40.4	39.8	40.1	41.0	41.4	42.1	40.7	38.1	37.1	37.3	35.5	36.5	44.4	46.1	46.4	46.9	38.9	46.9	
5-Apr	Z	46.3	45.6	45.1	44.8	44.3	45.2	M	49.0	51.1	52.5	52.1	52.7	53.4	54.0	54.4	54.5	55.0	54.7	52.6	51.9	51.4	51.5	51.5	50.6	55.0	
6-Apr	51.0	51.0	Z	51.4	52.0	51.6	51.5	52.2	52.2	52.2	52.8	53.1	53.7	54.9	55.3	54.9	54.5	54.1	54.2	54.9	54.7	54.3	54.6	53.2	55.3		
7-Apr	54.6	54.4	54.4	Z	54.3	54.1	53.6	53.2	53.7	54.5	55.4	55.9	56.1	56.3	55.6	54.8	54.2	54.4	53.0	52.0	52.3	52.5	53.2	53.1	54.2	56.3	
8-Apr	52.8	52.9	52.6	52.4	Z	50.5	49.6	48.5	46.9	46.9	47.8	49.1	52.4	50.7	51.5	50.5	50.5	49.4	47.1	47.8	44.7	48.9	46.0	42.5	49.2	52.9	
9-Apr	38.0	35.8	36.7	38.5	37.6	Z	36.6	40.3	44.8	48.0	50.6	52.9	53.7	53.8	53.5	54.4	53.7	54.3	53.2	51.8	52.1	53.1	53.4	53.7	47.9	54.4	
10-Apr	Z	53.7	51.9	45.3	45.9	48.2	49.0	49.9	50.5	50.9	51.1	50.7	50.8	51.5	51.8	52.3	52.3	53.7	53.7	52.4	48.7	49.4	47.5	44.0	50.2	53.7	
11-Apr	42.8	Z	39.5	37.9	36.7	36.5	37.4	39.1	42.3	43.3	C	C	C	51.6	50.9	52.2	52.2	50.7	46.7	32.9	41.9	29.9	29.5	20.7	40.7	52.2	
12-Apr	35.9	27.8	Z	26.1	26.1	23.6	27.9	30.6	32.9	31.3	32.7	36.2	36.8	37.5	39.8	41.5	41.1	40.5	38.5	31.0	22.1	20.6	19.8	18.0	31.2	41.5	
13-Apr	19.8	18.4	14.3	Z	28.6	29.5	28.5	37.1	41.6	40.8	41.7	42.2	42.9	42.1	44.3	45.0	46.0	47.0	47.5	44.4	39.4	38.3	39.7	39.1	37.3	47.5	
14-Apr	39.2	39.2	37.9	36.9	Z	36.4	36.8	37.4	37.4	38.5	40.1	40.8	43.2	45.3	45.9	45.9	42.4	41.3	41.4	40.1	39.5	38.4	36.5	37.1	39.9	45.9	
15-Apr	37.5	37.4	37.2	37.2	36.6	Z	38.2	40.8	43.9	47.1	49.9	51.1	50.9	50.6	51.4	51.5	52.5	52.5	50.7	49.1	48.6	44.0	41.2	42.8	45.3	52.5	
16-Apr	Z	45.5	44.3	44.4	44.6	45.2	46.1	48.3	51.5	54.7	54.6	53.6	53.4	54.1	54.2	53.9	53.8	53.3	52.4	52.1	51.5	50.5	50.8	50.5	50.6	54.7	
17-Apr	49.3	Z	48.0	47.0	46.6	46.5	46.4	47.2	48.6	50.5	53.6	53.5	52.9	52.2	52.0	51.4	49.8	48.1	45.3	44.7	44.6	44.0	44.0	44.8	48.3	53.6	
18-Apr	42.7	42.0	Z	41.0	41.5	40.8	40.5	40.3	41.1	41.2	40.0	41.3	41.7	42.6	42.1	41.6	40.1	38.1	38.7	38.2	37.0	34.8	34.3	37.0	39.9	42.7	
19-Apr	36.8	36.5	37.8	Z	40.0	42.4	44.0	45.6	46.9	46.6	47.3	47.7	48.5	49.1	49.1	48.1	48.7	47.6	44.1	34.1	21.6	24.8	32.2	31.0	41.3	49.1	
20-Apr	34.6	40.8	40.5	39.9	Z	40.7	41.5	41.3	43.7	44.6	44.4	44.3	45.8	47.1	48.1	48.5	49.3	49.3	49.1	48.1	45.0	44.6	44.2	44.1	44.3	49.3	
21-Apr	44.0	43.6	43.2	42.8	42.2	Z	42.9	46.7	48.4	48.6	49.3	50.1	51.2	51.6	52.1	52.1	52.9	53.2	52.7	46.3	33.1	38.9	44.6	46.1	46.8	53.2	
22-Apr	Z	46.3	43.2	39.0	37.7	37.9	39.5	40.8	41.9	50.1	52.4	52.4	53.1	53.1	52.8	53.2	53.7	54.0	55.5	53.6	49.1	49.4	50.1	49.9	48.2	55.5	
23-Apr	47.7	Z	49.0	48.9	47.8	47.2	46.9	46.6	47.4	49.3	52.2	52.7	52.7	53.2	53.5	53.2	53.8	53.1	53.4	53.1	51.6	46.3	46.1	43.2	50.0	53.8	
24-Apr	40.4	42.0	Z	45.9	50.1	47.1	44.2	45.0	46.1	46.9	45.4	42.6	41.6	43.8	44.0	44.5	43.5	40.2	38.7	38.4	36.1	32.7	27.8	21.7	41.2	50.1	
25-Apr	20.5	25.9	34.1	Z	44.3	44.8	46.0	45.1	44.3	43.8	44.6	44.1	43.4	48.1	49.7	46.3	46.1	45.8	44.7	43.4	38.0	24.3	19.4	18.8	39.4	49.7	
26-Apr	17.2	19.9	17.7	12.1	Z	21.2	27.3	25.8	27.7	26.4	26.3	32.4	30.8	30.8	29.3	30.3	30.7	31.8	35.1	30.5	30.1	29.1	26.4	18.2	26.4	35.1	
27-Apr	10.4	7.2	14.5	7.3	3.4	Z	13.9	23.3	25.4	30.9	34.7	41.5	41.1	43.5	40.8	41.9	44.1	42.5	39.7	37.9	37.4	38.1	38.3	39.1	30.3	44.1	
28-Apr	Z	38.4	36.6	31.1	27.4	24.0	27.7	39.4	48.1	49.7	50.8	50.3	50.1	50.2	49.9	49.5	47.8	48.0	47.9	45.9	42.6	32.8	28.5	36.7	41.4	50.8	
29-Apr	41.0	Z	17.6	21.3	20.8	19.8	31.5	42.7	44.6	46.0	47.1	48.3	47.8	48.7	49.1	49.7	49.3	49.2	47.8	45.2	43.0	45.0	44.2	43.8	41.0	49.7	
30-Apr	43.7	43.4	Z	45.4	46.1	45.7	45.3	46.0	46.4	47.6	49.0	50.4	49.9	50.4	50.3	49.7	49.6	49.4	47.8	45.7	45.6	46.4	46.7	47.5	47.3	50.4	

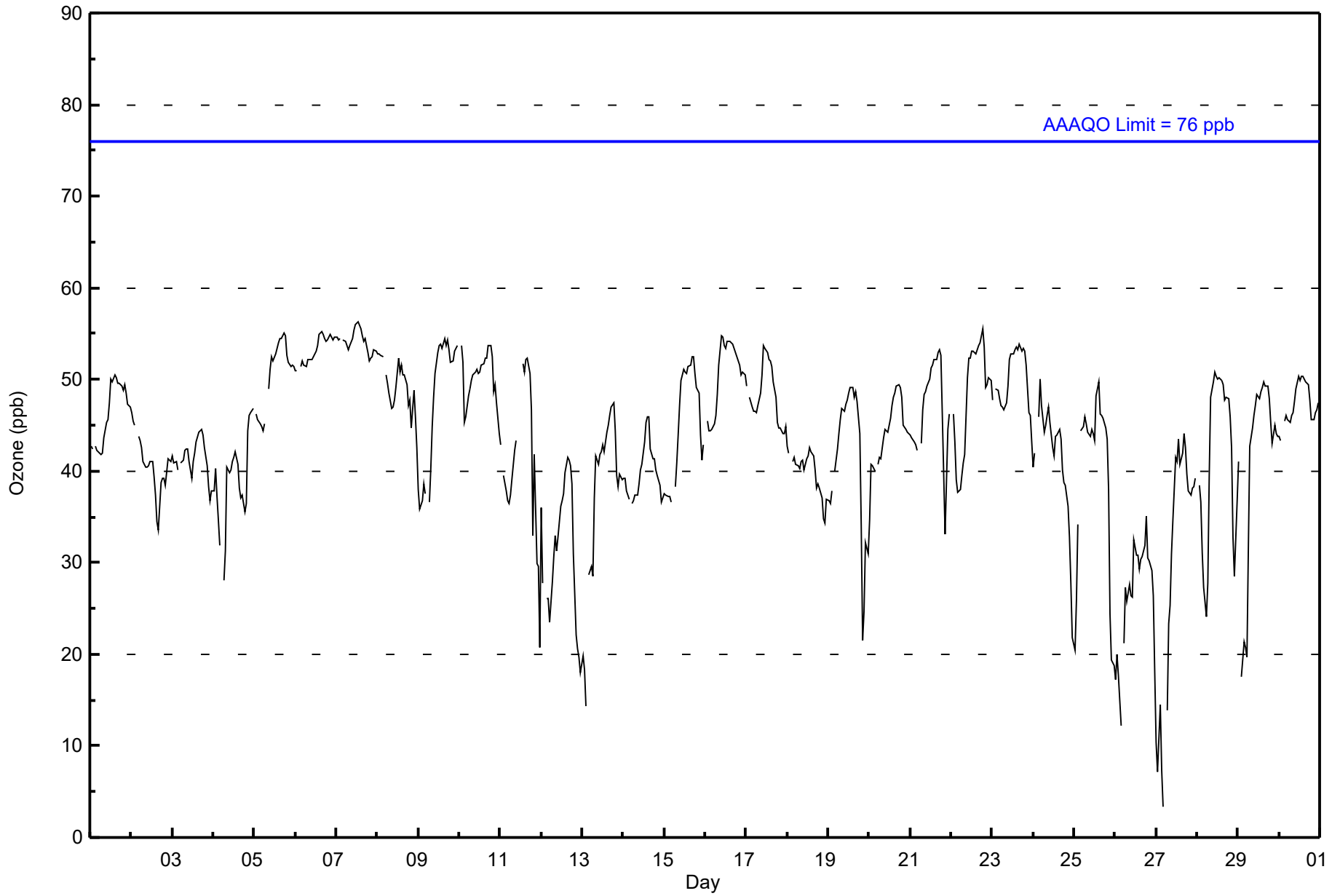
38.7	39.1	38.3	38.2	38.9	40.2	39.7	41.7	43.8	45.0	46.0	46.8	47.2	47.9	48.1	48.0	47.7	47.6	46.7	44.4	42.5	41.2	40.7	40.1	Diurnal Average	
54.6	54.4	54.4	52.4	54.3	54.1	53.6	53.2	53.7	54.7	55.4	55.9	56.1	56.3	55.6	55.3	54.9	55.0	55.5	54.2	54.9	54.7	54.3	54.6	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Wapasu - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	20	2.92	2.92
21 - 50	508	74.05	76.97
51 - 82	158	23.03	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Wapasu - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	1	0	0	1	3	1	5	0	0	0	1	4	2	0	2	0	20
21 - 50	26	15	16	9	19	90	121	56	32	17	15	10	5	16	24	37	508
51 - 82	0	0	0	0	0	12	26	59	23	5	8	20	2	2	1	0	158
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	27	15	16	10	22	103	152	115	55	22	24	34	9	18	27	37	686

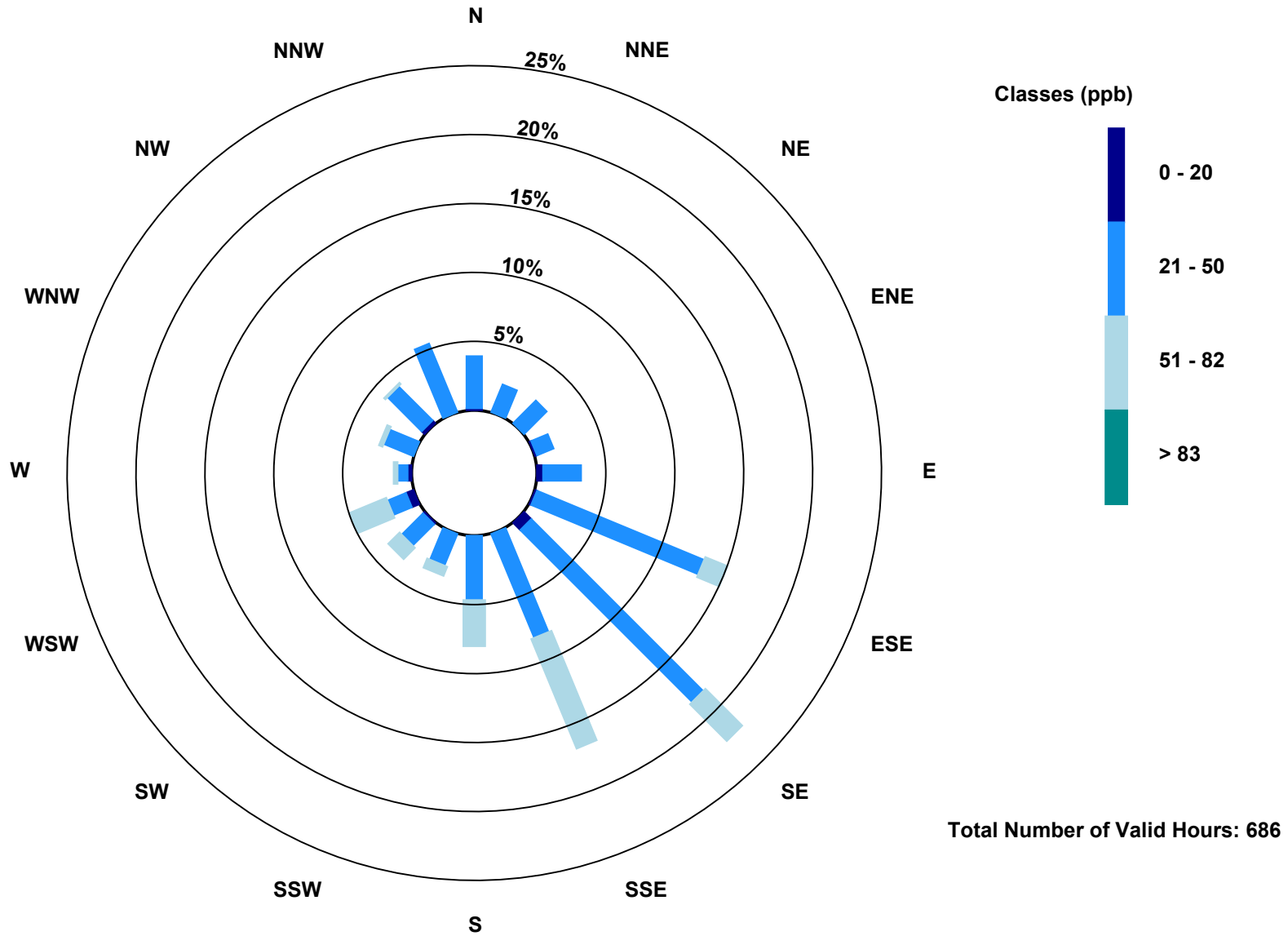
Total Number of Valid Hours: 686

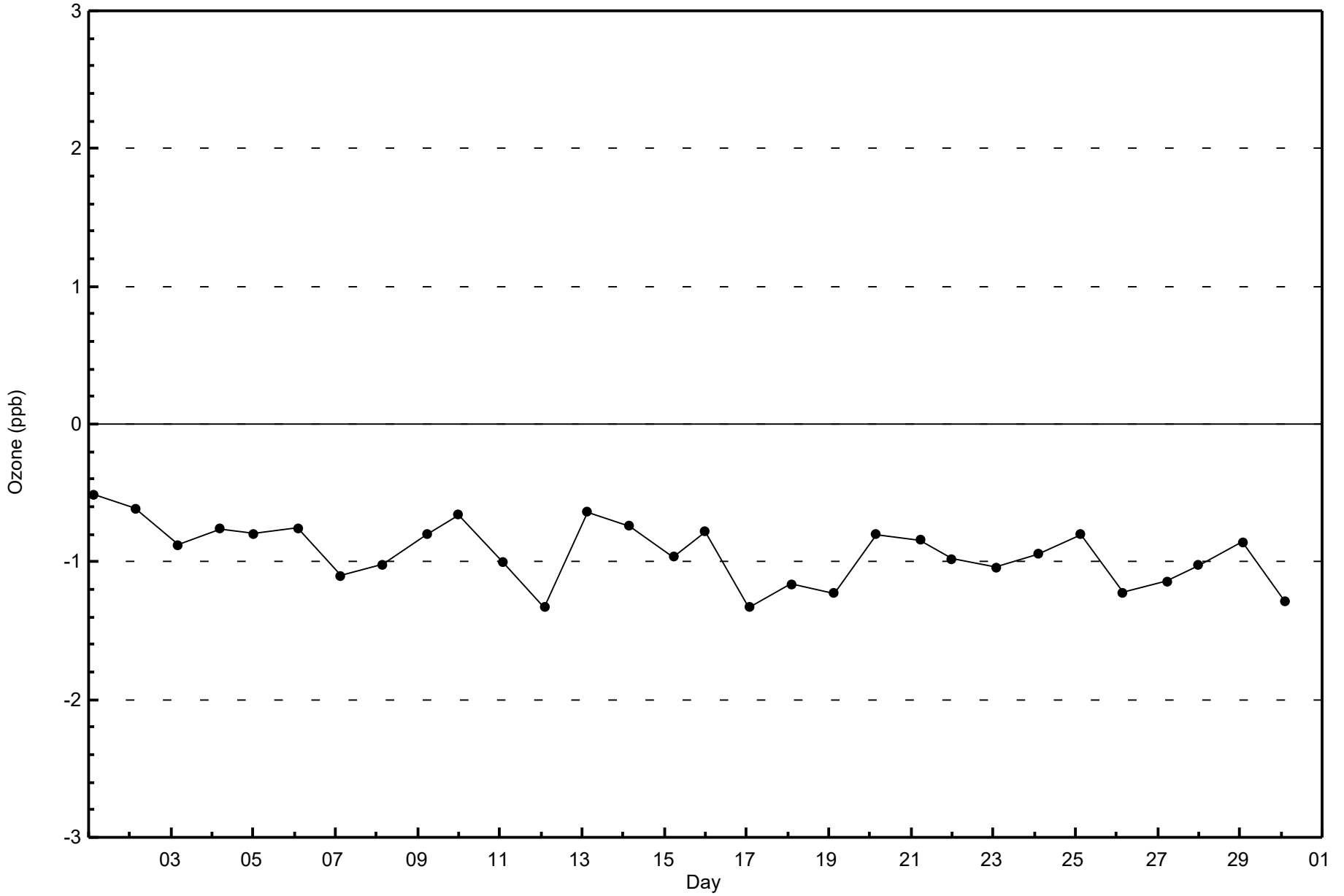
Total Number of Hours: 720

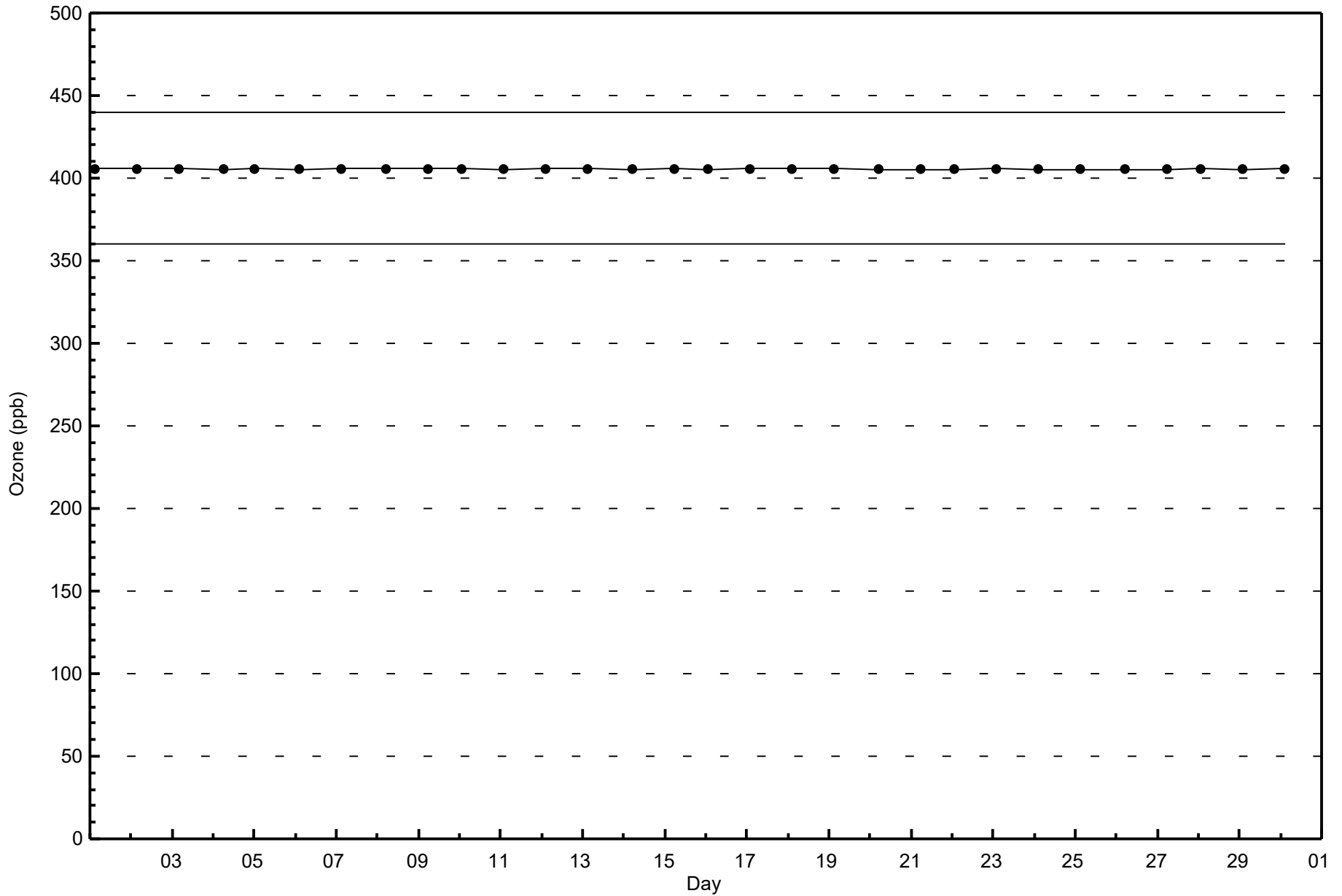


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Wapasu









Wood Buffalo Environmental Association
Summary of Hour Averages

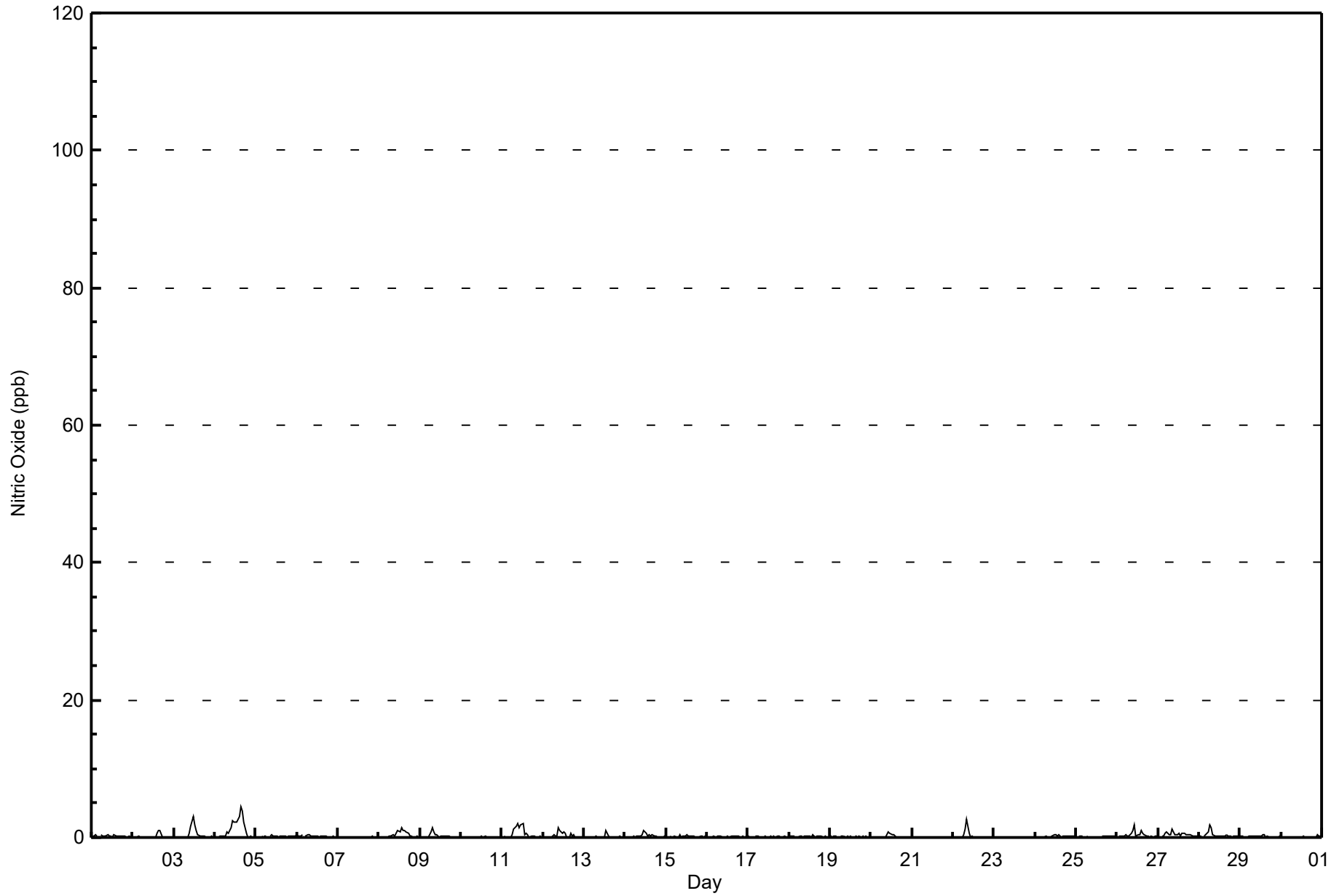
Nitric Oxide (NO) - ppb
Wapasu - April 2023

Maximum Value: 4.5 ppb on Apr 4 16:00																				Maximum Daily Average: 1.2 ppb on Apr 4					Hours in Service: 720	
Minimum Value: 0.0 ppb on Apr 1 22:00																				Minimum Daily Average: 0.0 ppb on Apr 23					Hours of Data: 684	
Maximum Diurnal Average: 0.5 ppb at hour 12																				Minimum Diurnal Average: 0.1 ppb at hour 21					Hours of Missing Data: 36	
Monthly Average: 0.23 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.5 P ₉₉ = 2.3					Hours of Calibration: 35	
																									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-Apr	0.3	0.3	0.5	0.3	Z	0.3	0.2	0.3	0.2	0.4	0.2	0.1	0.1	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.5
2-Apr	0.0	0.1	0.0	0.2	0.1	Z	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.6	1.0	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0
3-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	1.7	3.1	1.9	0.9	0.5	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.4	3.1
4-Apr	0.1	Z	0.1	0.2	0.1	0.2	0.2	0.7	0.6	1.4	2.4	2.3	2.3	2.2	2.9	4.5	3.8	2.2	0.5	0.0	0.0	0.2	0.0	0.1	1.2	4.5
5-Apr	0.0	0.0	Z	0.2	0.1	0.1	0.3	M	0.2	0.3	0.2	0.2	0.3	0.0	0.1	0.3	0.2	0.3	0.0	0.2	0.2	0.3	0.2	0.2	0.2	0.3
6-Apr	0.4	0.1	0.3	0.3	Z	0.1	0.3	0.4	0.2	0.2	0.2	0.3	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.4
7-Apr	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	0.0	0.1	0.1	0.0	0.0	0.0	0.1
8-Apr	Z	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.1	0.6	0.9	0.8	1.5	1.0	1.0	0.8	0.7	0.3	0.1	0.0	0.0	0.3	0.0	0.4	1.5
9-Apr	0.0	Z	0.1	0.0	0.0	0.1	0.9	1.5	0.8	0.4	0.4	0.1	0.2	0.1	0.3	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.5
10-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
11-Apr	0.0	0.0	0.2	Z	0.0	0.0	0.4	1.2	1.6	1.9	1.5	1.9	2.1	0.4	0.6	0.3	0.0	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.6	2.1
12-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.5	0.3	0.2	1.5	0.9	0.6	0.8	0.6	0.1	0.0	0.6	0.2	0.3	0.0	0.0	0.0	0.0	0.1	0.3	1.5
13-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.9	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.9
14-Apr	Z	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.2	0.3	0.4	1.1	0.7	0.2	0.4	0.1	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.2	0.2	1.1
15-Apr	0.1	Z	0.2	0.1	0.0	0.1	0.0	0.1	0.3	0.1	0.2	0.1	0.3	0.2	0.2	0.1	0.2	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.3
16-Apr	0.0	0.0	Z	0.0	0.2	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.2
17-Apr	0.1	0.0	0.0	Z	0.1	0.2	0.2	0.0	0.0	0.1	0.2	0.0	0.1	0.2	0.0	0.3	0.0	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.3
18-Apr	0.0	0.1	0.2	0.3	Z	0.1	0.2	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.4
19-Apr	0.1	0.0	0.3	0.1	0.2	Z	0.2	0.2	0.2	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.3
20-Apr	Z	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.8	0.6	0.5	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
21-Apr	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	0.1	0.0	0.0	0.1	0.0	0.0	0.1
22-Apr	0.0	0.1	Z	0.0	0.0	0.1	0.4	1.3	2.6	0.7	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	0.2	2.6
23-Apr	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
24-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.2	0.1	0.1	0.1	0.1	0.3	0.5	0.1	0.4	0.0	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.5
25-Apr	0.1	0.1	0.1	0.3	0.2	Z	0.1	0.0	0.1	0.0	C	C	C	C	C	0.1	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.3
26-Apr	Z	0.2	0.2	0.2	0.1	0.3	0.2	0.3	0.5	1.0	1.8	0.3	0.4	0.3	1.0	0.6	0.4	0.3	0.2	0.1	0.3	0.0	0.2	0.1	0.4	1.8
27-Apr	0.1	Z	0.1	0.2	0.6	0.8	0.5	0.5	1.1	0.8	0.5	0.5	0.7	0.3	0.6	0.5	0.5	0.4	0.4	0.4	0.1	0.2	0.3	0.2	0.5	1.1
28-Apr	0.3	0.3	Z	0.2	0.4	0.8	1.8	1.3	0.5	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.4	1.8
29-Apr	0.1	0.2	0.2	Z	0.1	0.2	0.1	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.3
30-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.1	0.3
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration M - Maintenance																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Wapasu - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Wapasu - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	15	16	10	22	104	155	113	51	24	23	34	10	17	26	37	684
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
Totals	27	15	16	10	22	104	155	113	51	24	23	34	10	17	26	37	684

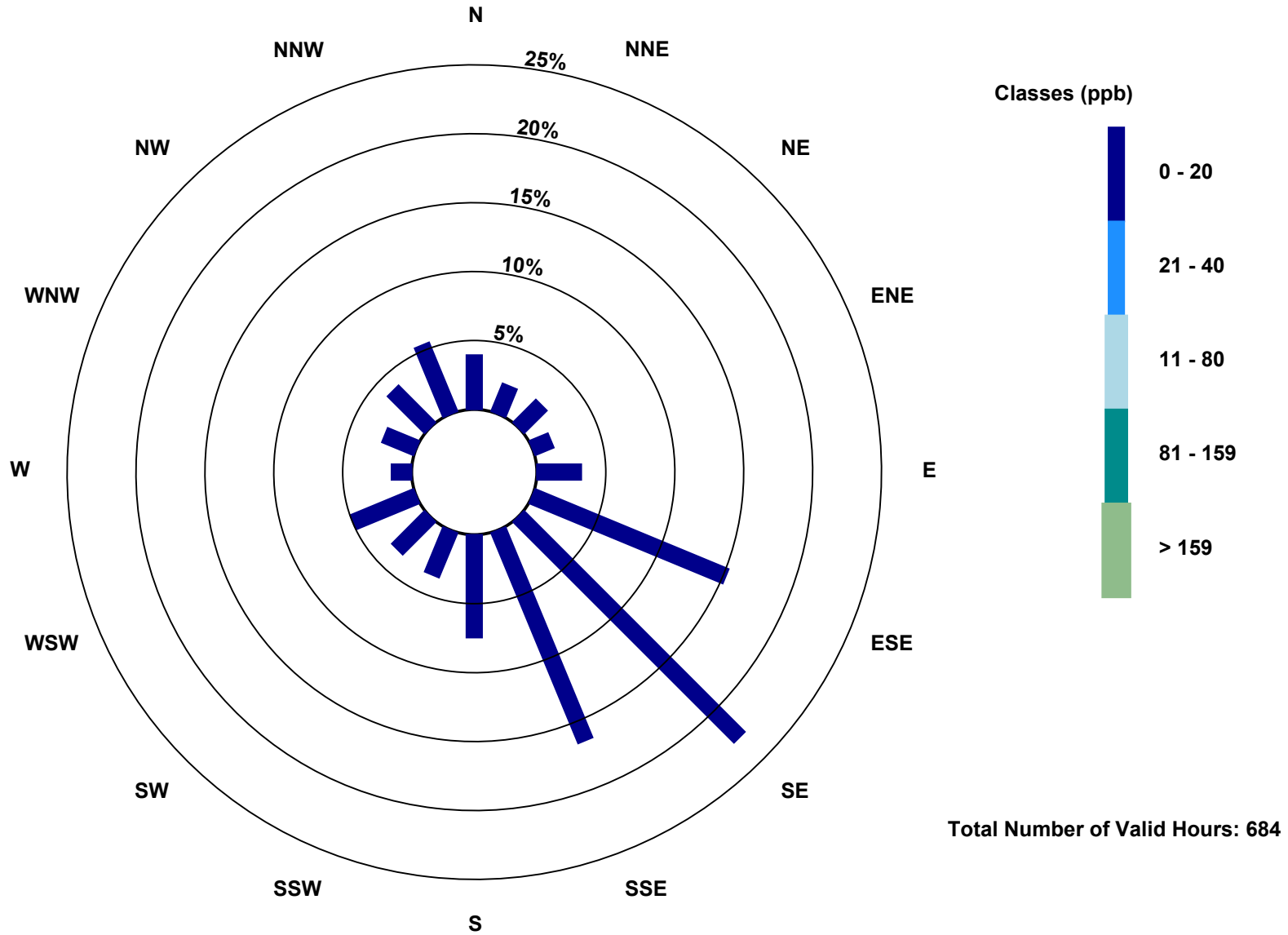
Total Number of Valid Hours: 684

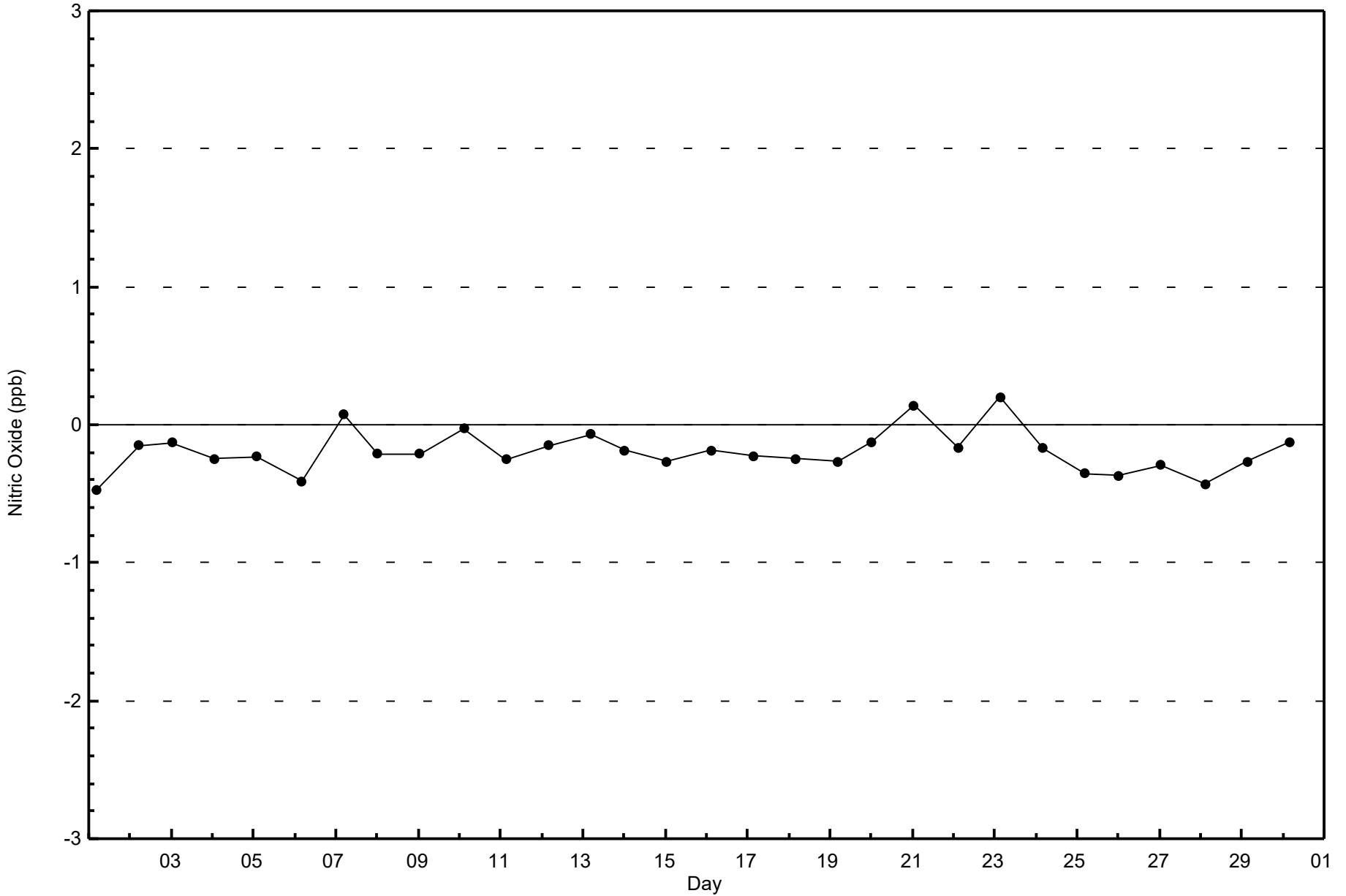
Total Number of Hours: 720

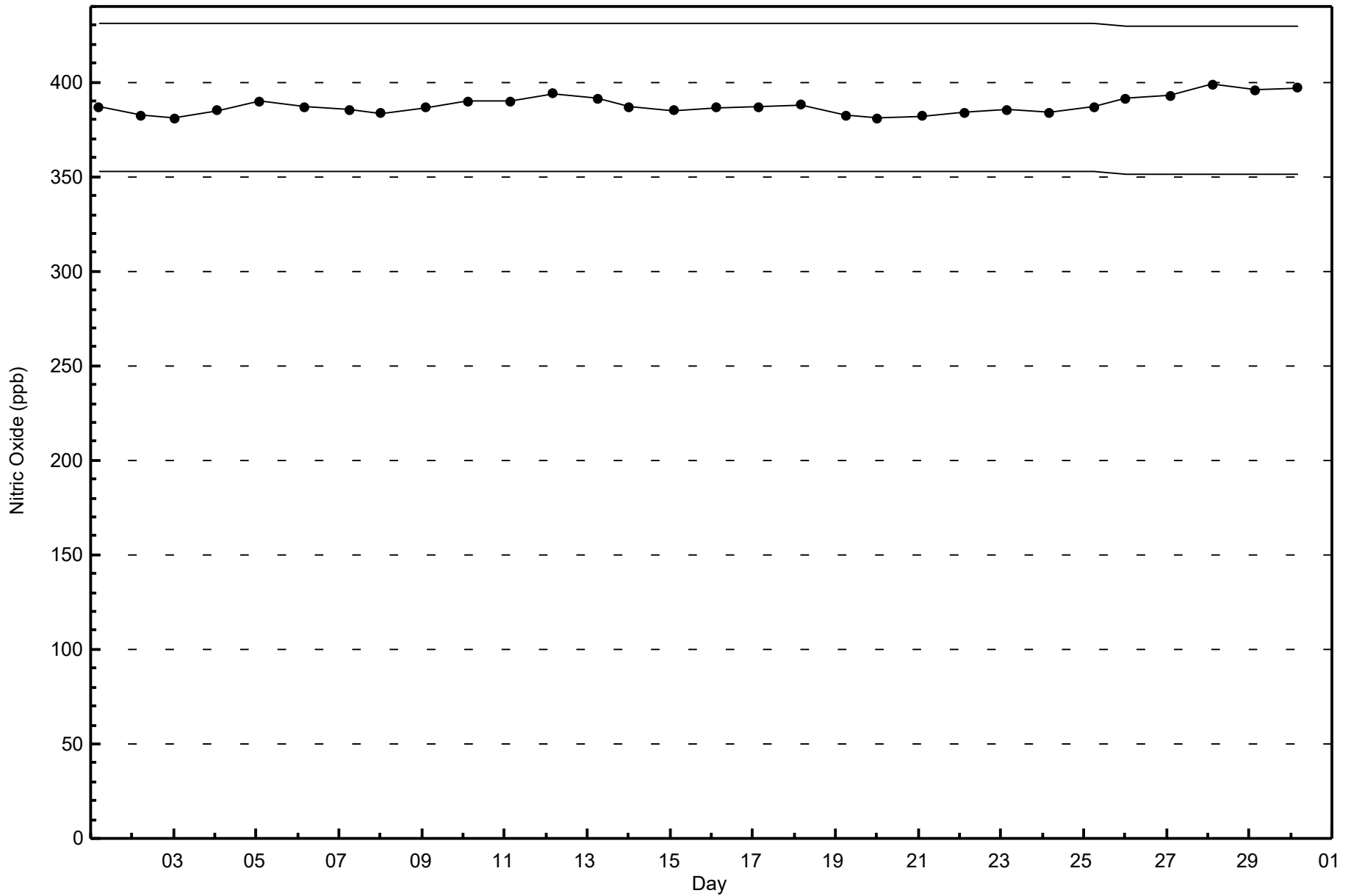


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Wapasu









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

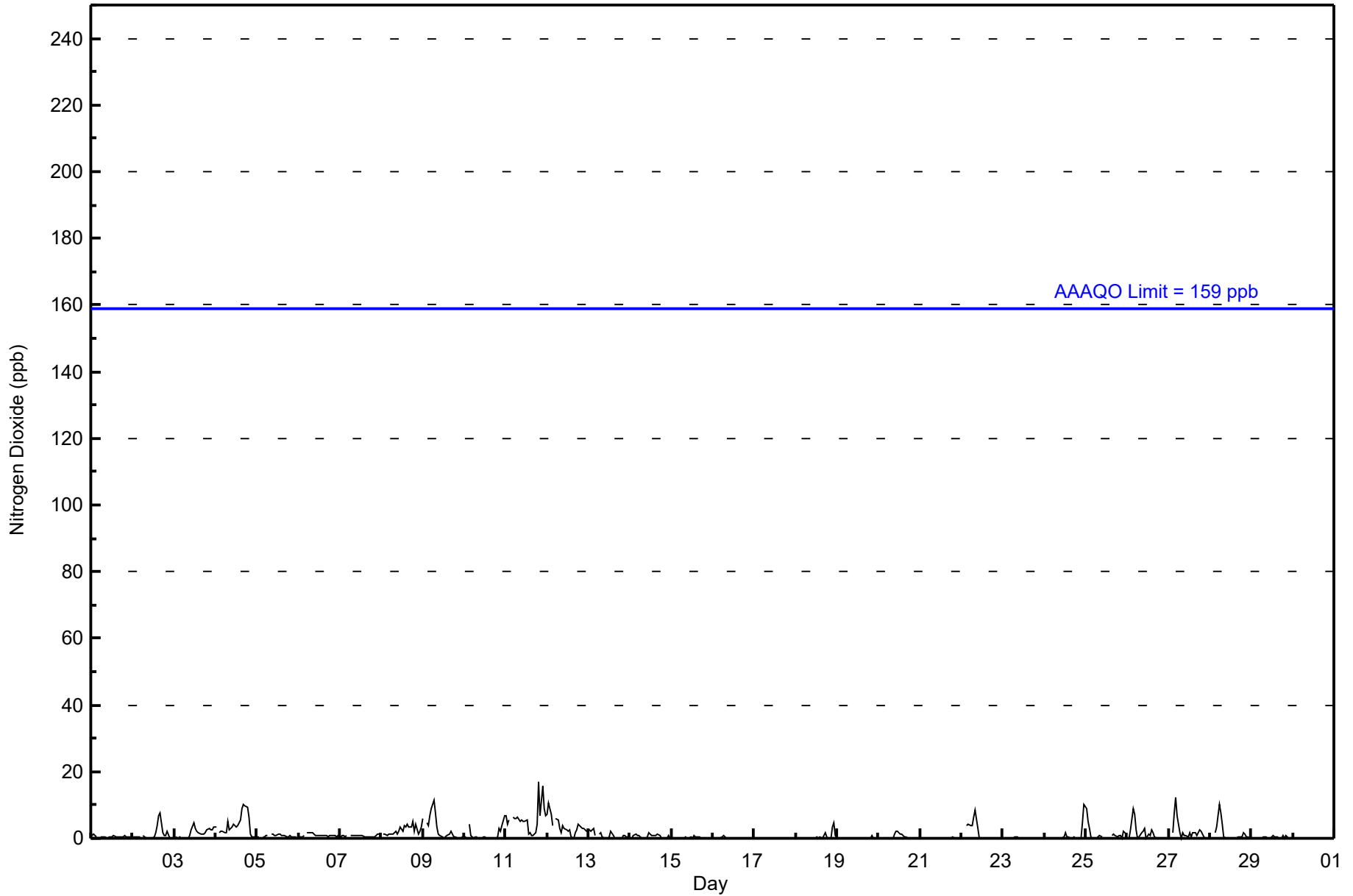
Wapasu - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 16.8 ppb on Apr 11 20:00	Maximum Daily Average: 5.8 ppb on Apr 11		Hours of Data:	684
Minimum Value: 0.0 ppb on Apr 3 00:00	Minimum Daily Average: 0.0 ppb on Apr 30		Hours of Missing Data:	36
Maximum Diurnal Average: 2.0 ppb at hour 6	Minimum Diurnal Average: 0.9 ppb at hour 14		Hours of Calibration:	35
Monthly Average: 1.23 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.4 Q ₃ = 1.3 P ₉₀ = 3.8 P ₉₉ = 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-Apr	0.9	1.4	1.0	0.4	Z	0.5	0.5	0.4	0.3	0.2	0.3	0.4	0.5	0.7	0.5	0.6	0.4	0.3	0.6	0.7	0.6	0.4	0.5	0.5	0.5	1.4	
2-Apr	0.5	0.5	0.3	0.4	0.4	Z	0.7	0.4	0.2	0.1	0.2	0.2	0.6	1.8	4.0	6.7	7.6	1.9	0.8	0.8	2.3	0.1	0.1	0.0	1.3	7.6	
3-Apr	Z	0.4	0.2	0.6	0.0	0.1	0.0	0.0	0.1	0.8	2.4	4.6	3.1	2.2	1.6	1.2	1.4	1.2	1.9	2.5	2.8	2.7	2.7	3.3	1.6	4.6	
4-Apr	3.4	Z	1.7	2.2	2.1	1.8	1.8	4.9	2.6	3.5	4.1	3.8	3.5	3.8	5.6	8.8	10.0	9.9	9.3	6.5	1.2	0.5	0.3	0.4	4.0	10.0	
5-Apr	0.3	0.3	Z	0.4	0.5	0.7	1.0	M	1.1	1.2	0.7	0.9	1.3	1.3	0.9	0.7	0.8	0.6	0.6	0.8	0.5	0.5	0.3	0.2	0.7	1.3	
6-Apr	0.2	0.5	0.6	0.9	Z	1.5	1.7	1.6	1.5	1.3	1.0	0.8	0.8	0.7	0.8	0.9	0.7	0.4	0.8	0.8	0.8	0.7	0.6	0.7	0.9	1.7	
7-Apr	0.5	0.7	0.7	0.6	0.7	Z	0.7	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.4	0.5	0.5	0.5	0.4	0.5	0.7	1.1	1.3	0.7	1.3	
8-Apr	Z	1.3	1.1	1.0	1.1	1.1	1.2	1.3	2.1	1.4	2.1	3.2	2.1	3.7	3.6	4.1	3.6	3.5	4.9	2.3	4.2	1.1	2.2	3.6	2.4	4.9	
9-Apr	6.0	Z	4.8	4.0	6.9	9.1	11.3	7.5	3.3	1.4	0.8	0.3	0.1	0.3	0.7	1.3	2.1	1.2	0.6	0.5	0.1	0.1	0.1	0.3	2.7	11.3	
10-Apr	0.4	0.2	Z	4.3	1.0	0.0	0.3	0.5	0.1	0.2	0.1	0.3	0.3	0.0	0.2	0.2	0.1	0.1	0.2	0.6	3.1	2.1	3.8	6.6	1.1	6.6	
11-Apr	6.9	4.4	5.3	Z	6.4	5.8	5.9	6.3	5.1	5.5	4.9	5.0	5.7	1.1	1.7	0.7	0.8	1.8	4.4	16.8	6.6	15.5	8.8	6.9	5.8	16.8	
12-Apr	7.0	10.8	7.0	3.9	Z	6.0	5.5	3.1	1.5	4.0	3.1	2.6	2.1	2.4	0.6	0.1	1.5	2.4	4.2	3.7	3.0	2.8	2.4	2.2	3.6	10.8	
13-Apr	2.4	2.3	2.4	2.9	0.7	Z	1.2	1.7	0.6	0.0	0.1	0.1	0.3	2.2	1.0	0.2	0.0	0.0	0.0	0.0	0.9	0.9	0.3	0.3	0.9	2.9	
14-Apr	Z	0.0	0.7	1.1	1.0	0.8	0.3	0.0	0.2	0.1	0.6	1.9	0.7	0.7	1.0	1.0	1.3	1.0	0.0	0.1	0.0	0.0	0.8	0.1	0.6	1.9	
15-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.1	0.4	0.2	0.7	0.6	0.6	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.7	
16-Apr	0.0	0.0	Z	0.0	0.0	0.3	0.7	0.3	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	0.0	0.1	0.7	
17-Apr	0.0	0.0	0.0	Z	0.1	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	0.1	0.1
18-Apr	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	0.0	0.4	0.0	0.8	1.7	0.4	0.0	0.0	3.4	4.7	0.7	0.5	4.7	
19-Apr	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	0.1	1.0	0.2	0.0	0.0	0.1	1.0	
20-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.0	2.1	1.4	1.1	0.9	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.1	
21-Apr	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	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.3
22-Apr	0.0	0.0	Z	4.0	4.1	3.8	3.9	6.2	8.3	2.9	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	1.4	8.3	
23-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.3	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	0.3	0.3
24-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.9	0.5	0.6	0.0	0.0	0.4	0.2	0.0	0.0	0.0	4.6	10.3	0.8	10.3	
25-Apr	8.8	5.2	2.8	0.4	0.0	Z	0.2	0.3	0.8	0.6	C	C	C	C	C	0.7	1.2	0.7	0.4	0.7	0.9	0.2	2.3	1.1	1.5	8.8	
26-Apr	Z	0.0	2.5	8.8	7.1	2.5	0.0	0.5	1.5	2.2	2.9	0.0	1.1	0.8	2.7	1.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	8.8	
27-Apr	0.0	Z	1.9	7.7	12.2	6.7	1.8	0.2	1.5	1.0	0.8	0.6	1.7	0.3	1.5	1.7	1.0	1.5	2.6	2.0	0.5	0.0	0.0	0.0	2.1	12.2	
28-Apr	0.0	0.0	Z	1.5	3.4	10.2	7.5	4.1	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.3	1.5	1.4	0.6	0.3	0.0	0.0	1.4	10.2	
29-Apr	0.0	0.0	0.1	Z	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.0	0.8	0.6	0.4	0.4	0.0	0.0	0.7	0.0	1.0	0.0	0.0	0.0	0.2	1.0	
30-Apr	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

1.5	1.1	1.3	1.7	2.0	2.0	1.5	1.4	1.1	1.0	0.9	1.0	1.0	0.9	1.0	1.1	1.2	1.0	1.1	1.4	1.0	1.1	1.2	1.3	Diurnal Average	
8.8	10.8	7.0	8.8	12.2	10.2	11.3	7.5	8.3	5.5	4.9	5.0	5.7	3.8	5.6	8.8	10.0	9.9	9.3	16.8	6.6	15.5	8.8	10.3	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 (NO₂) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Wapasu - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	27	15	16	10	22	104	155	113	51	24	23	34	10	17	26	37	684
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
Totals	27	15	16	10	22	104	155	113	51	24	23	34	10	17	26	37	684

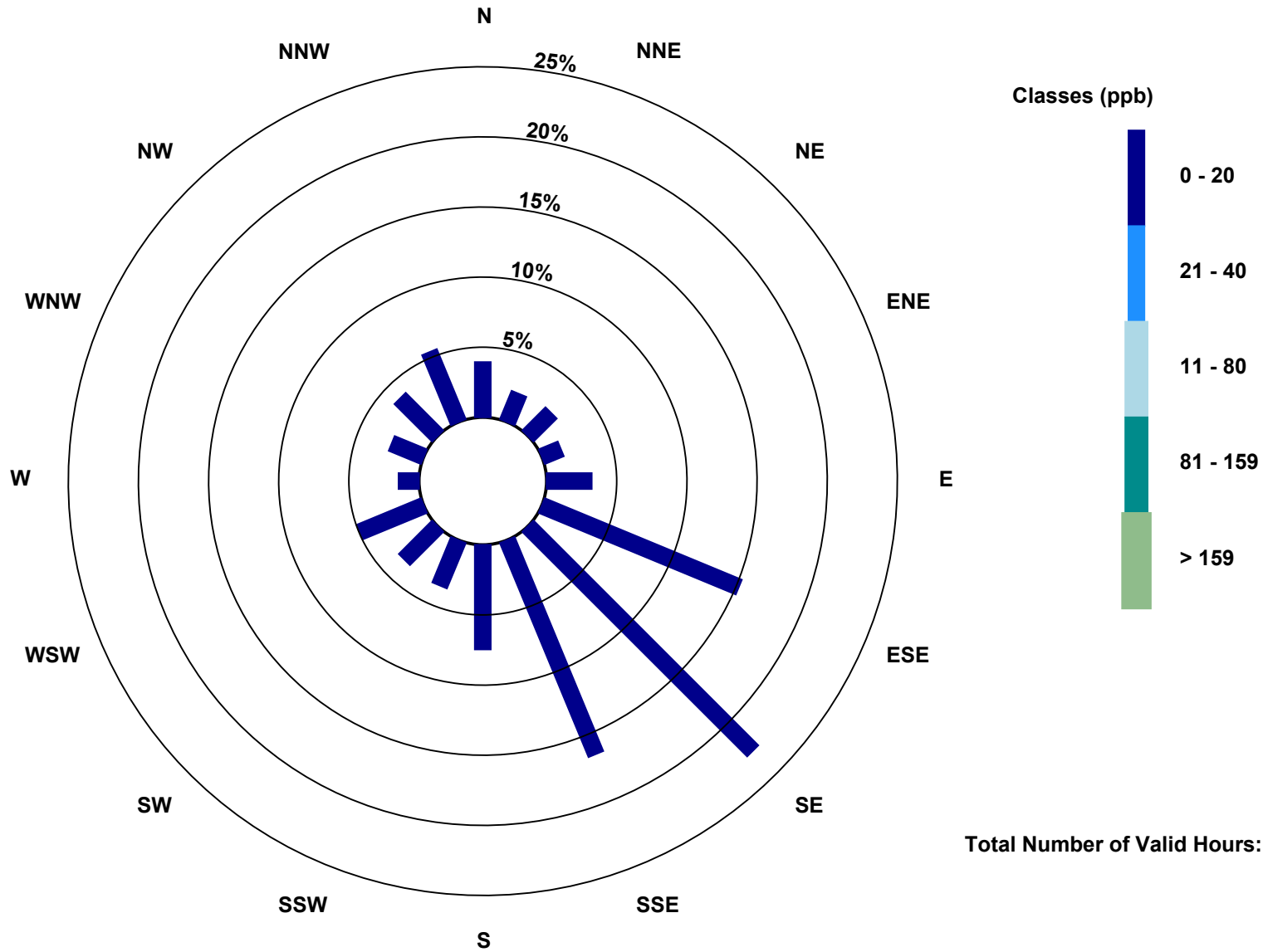
Total Number of Valid Hours: 684

Total Number of Hours: 720

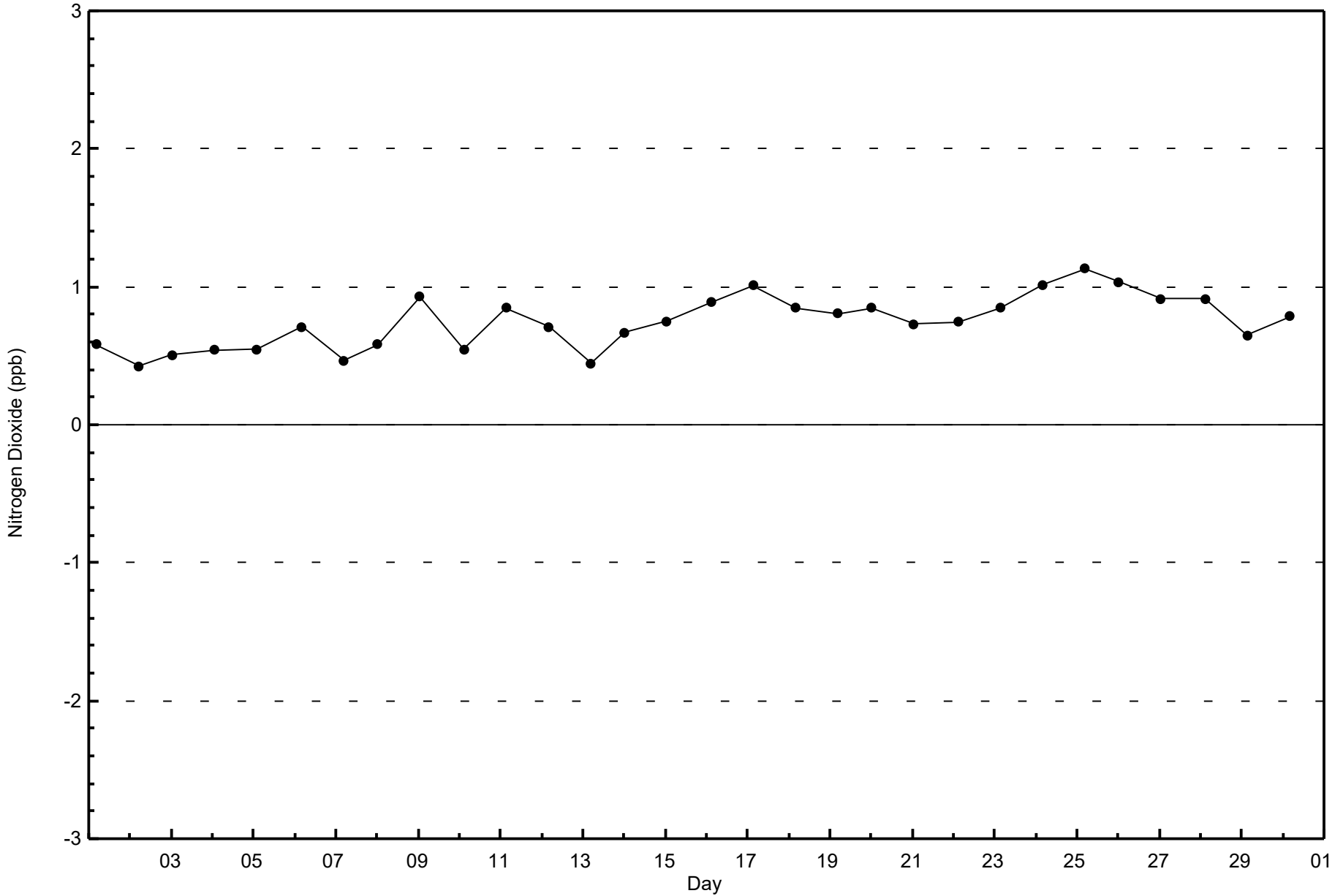


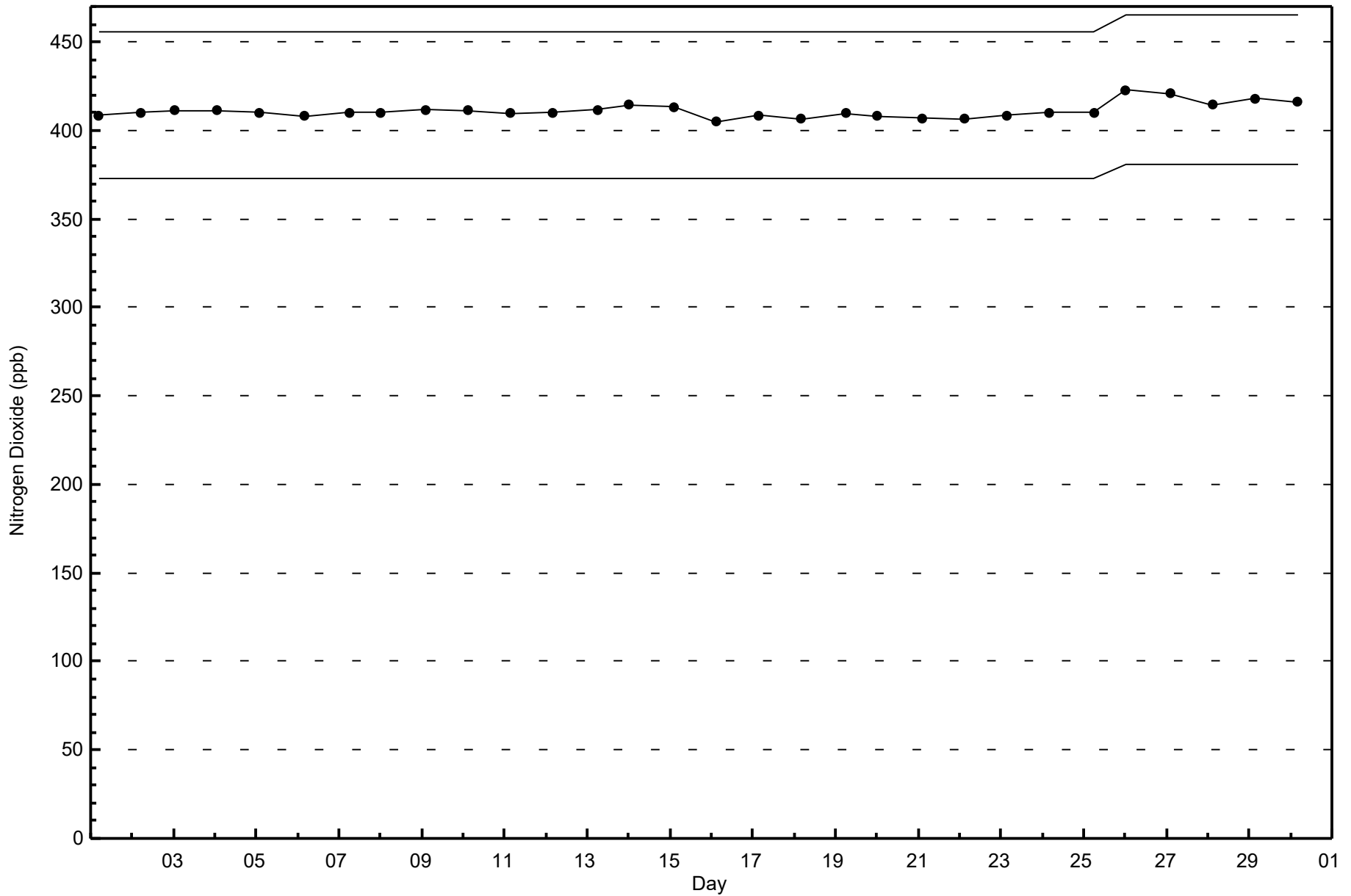
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Wapasu



Total Number of Valid Hours: 684







Wood Buffalo Environmental Association
Summary of Hour Averages

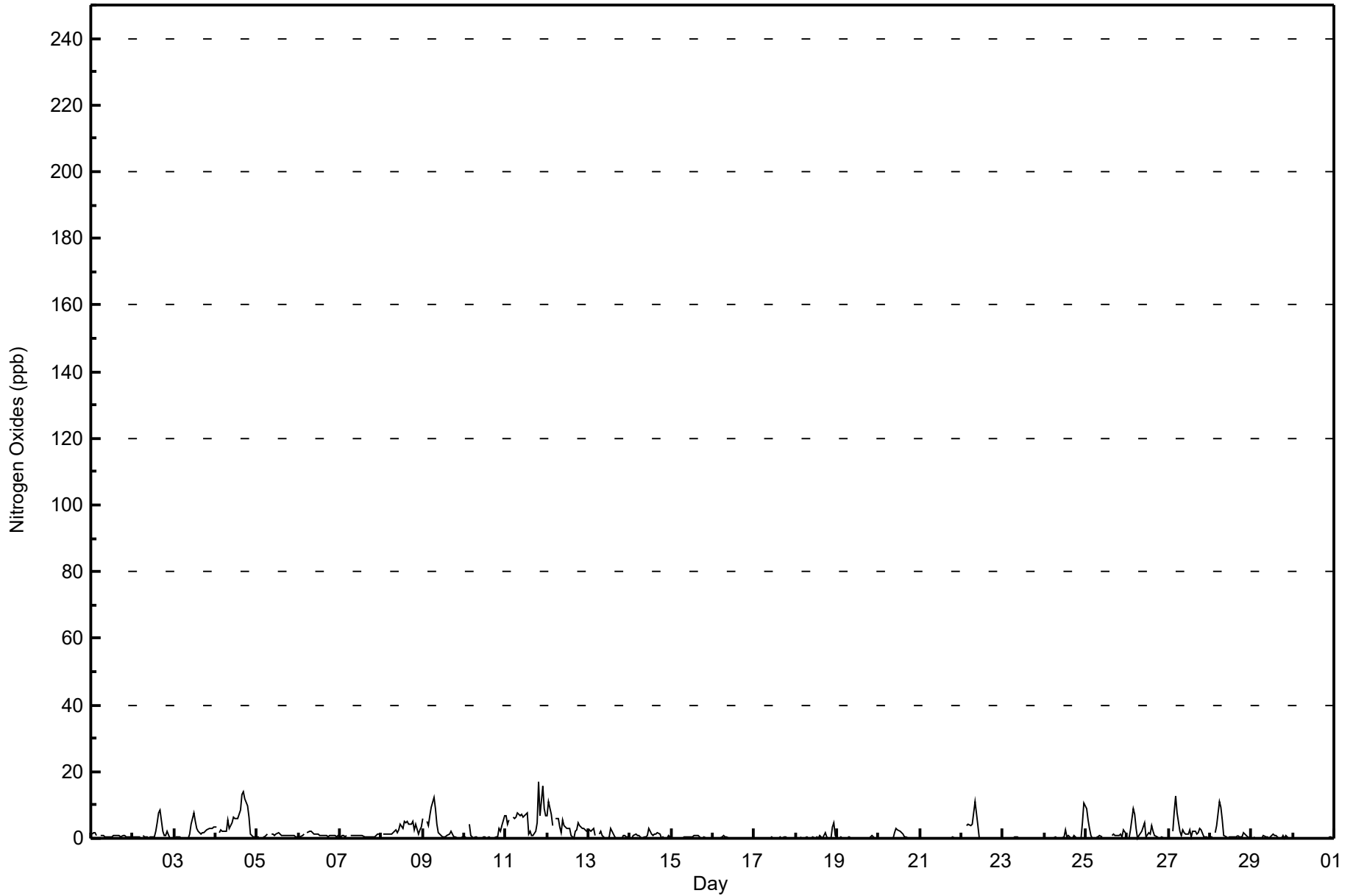
Nitrogen Oxides (NO_x) - ppb
Wapasu - April 2023

Maximum Value: 17.0 ppb on Apr 11 20:00																						Maximum Daily Average: 6.3 ppb on Apr 11																						Hours in Service: 720					
Minimum Value: 0.0 ppb on Apr 3 00:00																						Minimum Daily Average: 0.0 ppb on Apr 21																						Hours of Data: 684					
Maximum Diurnal Average: 2.2 ppb at hour 6																						Minimum Diurnal Average: 1.1 ppb at hour 21																						Hours of Missing Data: 36					
Monthly Average: 1.46 ppb																						Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.5 Q ₃ = 1.5 P ₉₀ = 4.4 P ₉₉ = 11.2																						Hours of Calibration: 35					
																						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-Apr	1.2	1.7	1.5	0.7	Z	0.8	0.7	0.7	0.5	0.6	0.5	0.5	0.6	1.0	0.7	0.8	0.7	0.4	0.7	0.8	0.6	0.4	0.6	0.6	0.8	1.7																							
2-Apr	0.5	0.6	0.3	0.6	0.5	Z	0.7	0.4	0.3	0.1	0.3	0.2	0.6	1.9	4.6	7.7	8.6	2.0	0.8	0.8	2.3	0.1	0.1	0.0	1.5	8.6																							
3-Apr	Z	0.4	0.2	0.6	0.0	0.1	0.0	0.1	0.1	1.3	4.1	7.7	5.0	3.1	2.1	1.4	1.5	1.5	2.0	2.6	2.9	2.8	2.8	3.4	2.0	7.7																							
4-Apr	3.5	Z	1.8	2.4	2.2	2.0	2.0	5.6	3.2	4.9	6.5	6.1	5.8	6.0	8.5	13.3	13.8	12.1	9.8	6.5	1.2	0.7	0.3	0.5	5.1	13.8																							
5-Apr	0.3	0.3	Z	0.6	0.6	0.8	1.3	M	1.3	1.5	0.9	1.1	1.6	1.3	1.0	1.0	1.0	0.9	0.6	1.0	0.7	0.8	0.5	0.4	0.9	1.6																							
6-Apr	0.6	0.6	0.9	1.2	Z	1.6	2.0	2.0	1.7	1.5	1.2	1.1	0.9	0.7	0.9	1.0	0.8	0.6	0.9	0.8	0.8	0.8	0.6	0.7	1.0	2.0																							
7-Apr	0.5	0.7	0.7	0.6	0.7	Z	0.7	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.4	0.5	0.6	0.5	0.4	0.6	0.8	1.1	1.3	0.7	1.3																							
8-Apr	Z	1.4	1.1	1.1	1.1	1.2	1.3	1.5	2.4	1.5	2.7	4.1	2.9	5.2	4.6	5.1	4.4	4.2	5.2	2.4	4.2	1.1	2.5	3.6	2.8	5.2																							
9-Apr	6.0	Z	4.9	4.0	6.9	9.2	12.2	9.0	4.1	1.8	1.2	0.4	0.3	0.4	1.0	1.4	2.3	1.3	0.6	0.5	0.1	0.1	0.1	0.3	3.0	12.2																							
10-Apr	0.4	0.2	Z	4.3	1.0	0.0	0.3	0.5	0.2	0.2	0.1	0.3	0.5	0.0	0.3	0.2	0.1	0.1	0.3	0.6	3.1	2.1	3.8	6.6	1.1	6.6																							
11-Apr	6.9	4.4	5.5	Z	6.4	5.8	6.3	7.5	6.7	7.4	6.4	6.9	7.8	1.5	2.3	1.0	0.8	2.0	4.6	17.0	6.7	15.5	8.9	6.9	6.3	17.0																							
12-Apr	7.0	10.8	7.0	3.9	Z	6.0	6.0	3.4	1.7	5.5	4.0	3.2	2.9	3.0	0.7	0.1	2.1	2.6	4.5	3.7	3.0	2.8	2.4	2.3	3.8	10.8																							
13-Apr	2.4	2.3	2.4	2.9	0.7	Z	1.2	1.9	0.7	0.0	0.1	0.1	0.4	3.1	1.2	0.2	0.1	0.0	0.0	0.0	0.9	1.0	0.3	0.4	1.0	3.1																							
14-Apr	Z	0.1	0.7	1.1	1.0	1.0	0.3	0.2	0.4	0.4	1.0	3.0	1.4	0.9	1.4	1.1	1.6	1.3	0.2	0.2	0.1	0.0	0.8	0.3	0.8	3.0																							
15-Apr	0.1	Z	0.2	0.1	0.0	0.1	0.0	0.3	0.6	0.3	0.3	0.5	0.5	0.9	0.8	0.7	0.5	0.0	0.0	0.3	0.1	0.2	0.1	0.1	0.3	0.9																							
16-Apr	0.0	0.0	Z	0.0	0.2	0.3	0.8	0.4	0.3	0.2	0.0	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.2	0.1	0.2	0.2	0.8																							
17-Apr	0.1	0.0	0.0	Z	0.2	0.2	0.2	0.0	0.0	0.1	0.3	0.0	0.1	0.2	0.0	0.3	0.0	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.3																							
18-Apr	0.0	0.1	0.2	0.3	Z	0.1	0.2	0.1	0.1	0.2	0.3	0.2	0.5	0.1	0.8	0.1	0.9	1.8	0.5	0.2	0.1	3.6	4.8	0.8	0.7	4.8																							
19-Apr	0.1	0.0	0.3	0.1	0.2	Z	0.2	0.2	0.2	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.2	1.0	0.3	0.0	0.0	0.2	1.0																							
20-Apr	Z	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	1.6	2.8	2.7	1.9	1.6	1.2	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.8																							
21-Apr	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	0.4	0.0	0.0	0.1	0.0	0.0	0.4																							
22-Apr	0.0	0.1	Z	4.0	4.1	3.9	4.3	7.5	10.9	3.6	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	1.7	10.9																							
23-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.3	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	0.3																							
24-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.2	0.1	0.1	0.1	0.1	0.6	2.4	0.6	1.0	0.0	0.1	0.7	0.4	0.2	0.2	0.2	4.8	10.4	1.0	10.4																							
25-Apr	8.9	5.3	2.9	0.7	0.2	Z	0.3	0.3	0.9	0.6	C	C	C	C	C	0.8	1.4	0.8	0.7	0.9	1.1	0.4	2.5	1.3	1.7	8.9																							
26-Apr	Z	0.2	2.7	9.0	7.2	2.8	0.2	0.8	2.0	3.2	4.7	0.3	1.5	1.1	3.7	2.1	1.0	0.3	0.2	0.1	0.3	0.0	0.2	0.1	1.9	9.0																							
27-Apr	0.1	Z	2.0	7.9	12.8	7.5	2.3	0.7	2.6	1.8	1.3	1.1	2.4	0.6	2.1	2.2	1.5	1.9	3.0	2.4	0.6	0.2	0.3	0.2	2.5	12.8																							
28-Apr	0.3	0.3	Z	1.7	3.8	11.0	9.3	5.4	0.9	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.7	0.6	0.4	1.6	1.5	0.8	0.5	0.2	1.8	11.0																							
29-Apr	0.1	0.2	0.3	Z	0.1	0.2	0.1	0.7	0.5	0.3	0.2	0.2	1.1	0.9	0.7	0.5	0.1	0.1	0.8	0.0	1.0	0.0	0.0	0.1	0.4	1.1																							
30-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.1	0.3																							
																								1.6	1.2	1.4	1.8	2.1	2.2	1.8	1.7	1.4	1.3	1.4	1.4	1.5	1.2	1.4	1.4	1.5	1.2	1.2	1.5	1.1	1.2	1.3	1.4	Diurnal Average	
																								8.9	10.8	7.0	9.0	12.8	11.0	12.2	9.0	10.9	7.4	6.5	7.7	7.8	6.0	8.5	13.3	13.8	12.1	9.8	17.0	6.7	15.5	8.9	10.4	Diurnal Maximum	
Z - zerospan																								C - Calibration				M - Maintenance																					



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Wapasu - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Wapasu - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Wapasu - April 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	27	15	16	10	22	104	155	113	51	24	23	34	10	17	26	37	684
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
Totals	27	15	16	10	22	104	155	113	51	24	23	34	10	17	26	37	684

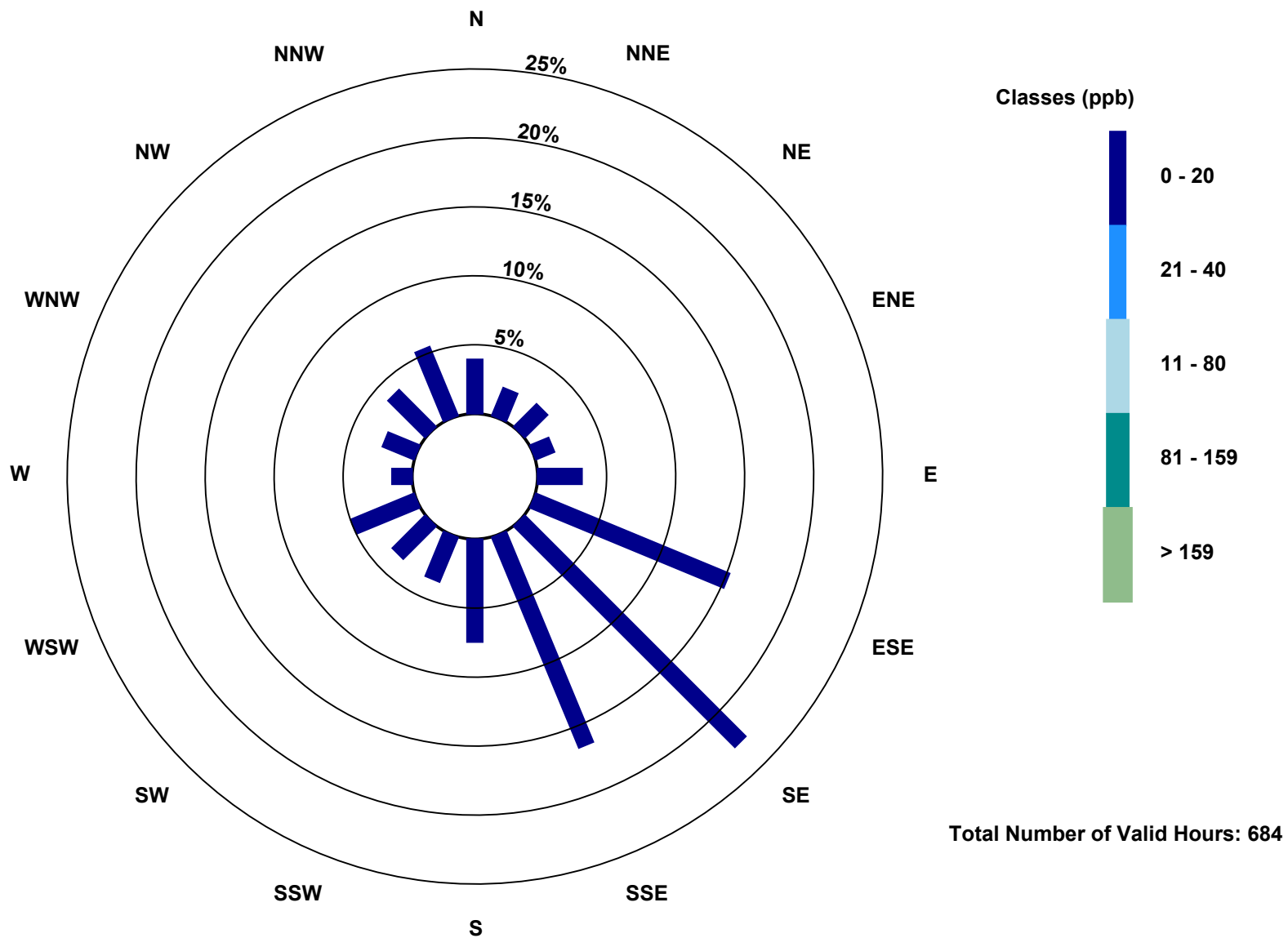
Total Number of Valid Hours: 684

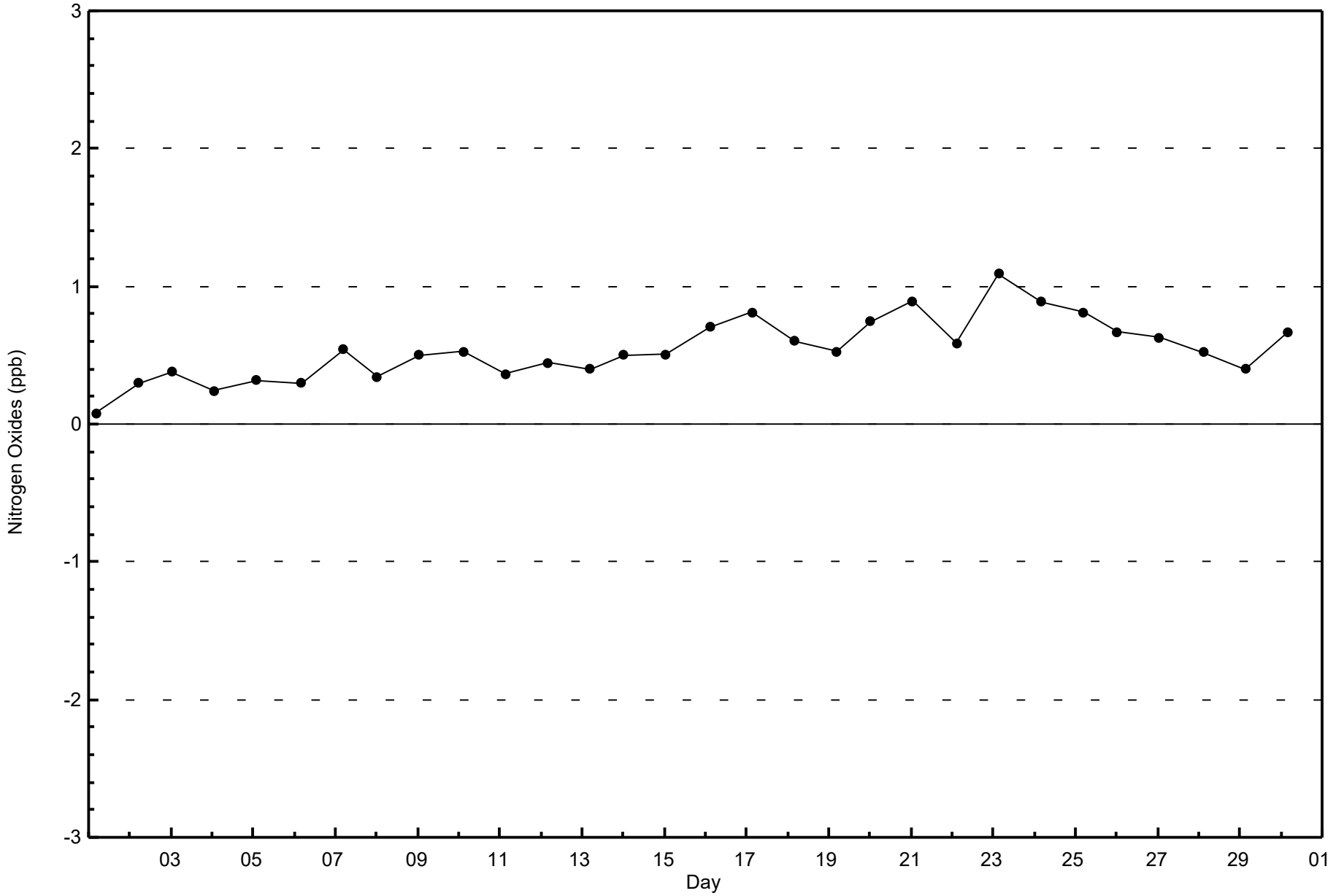
Total Number of Hours: 720

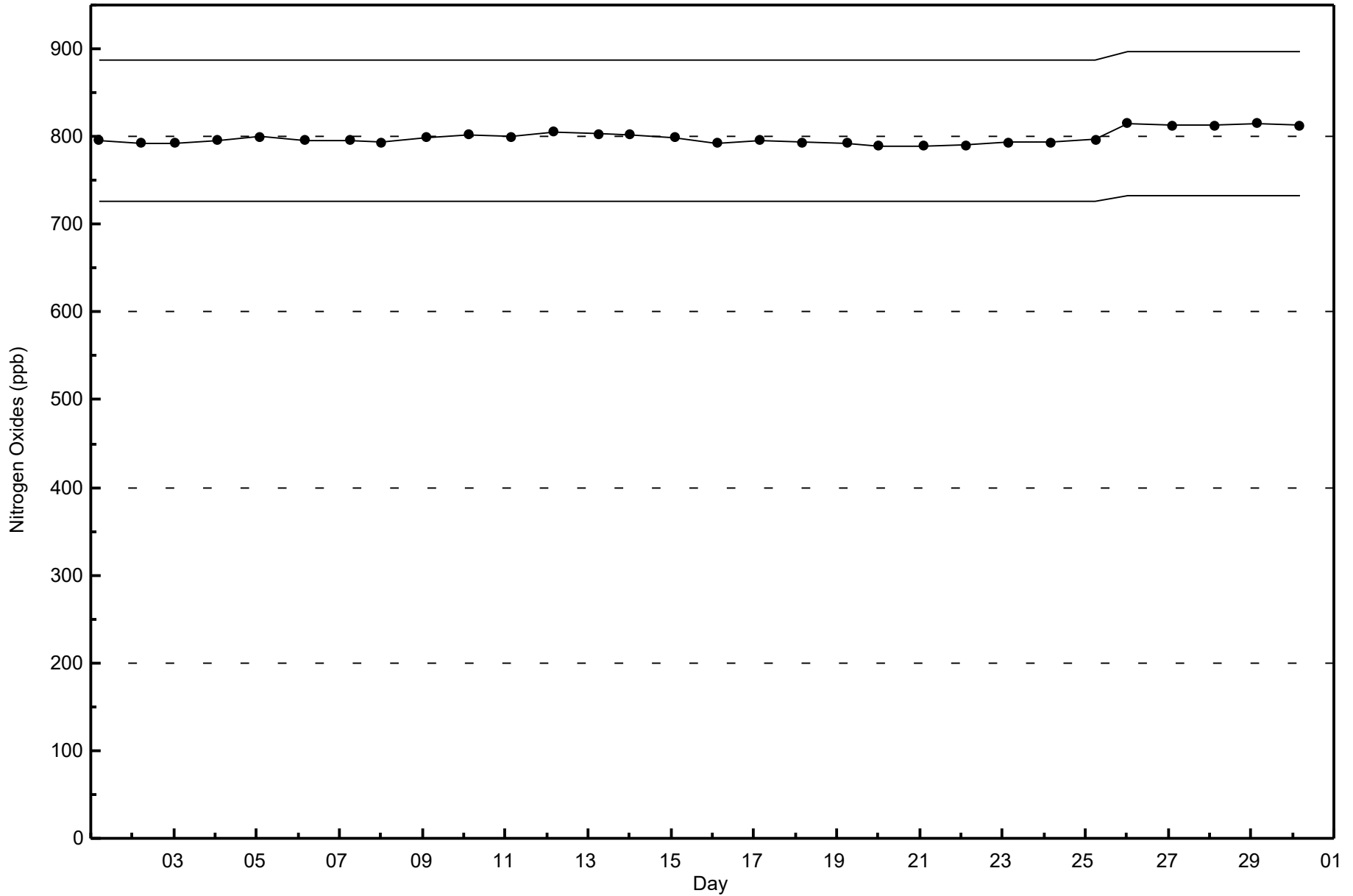


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Wapasu









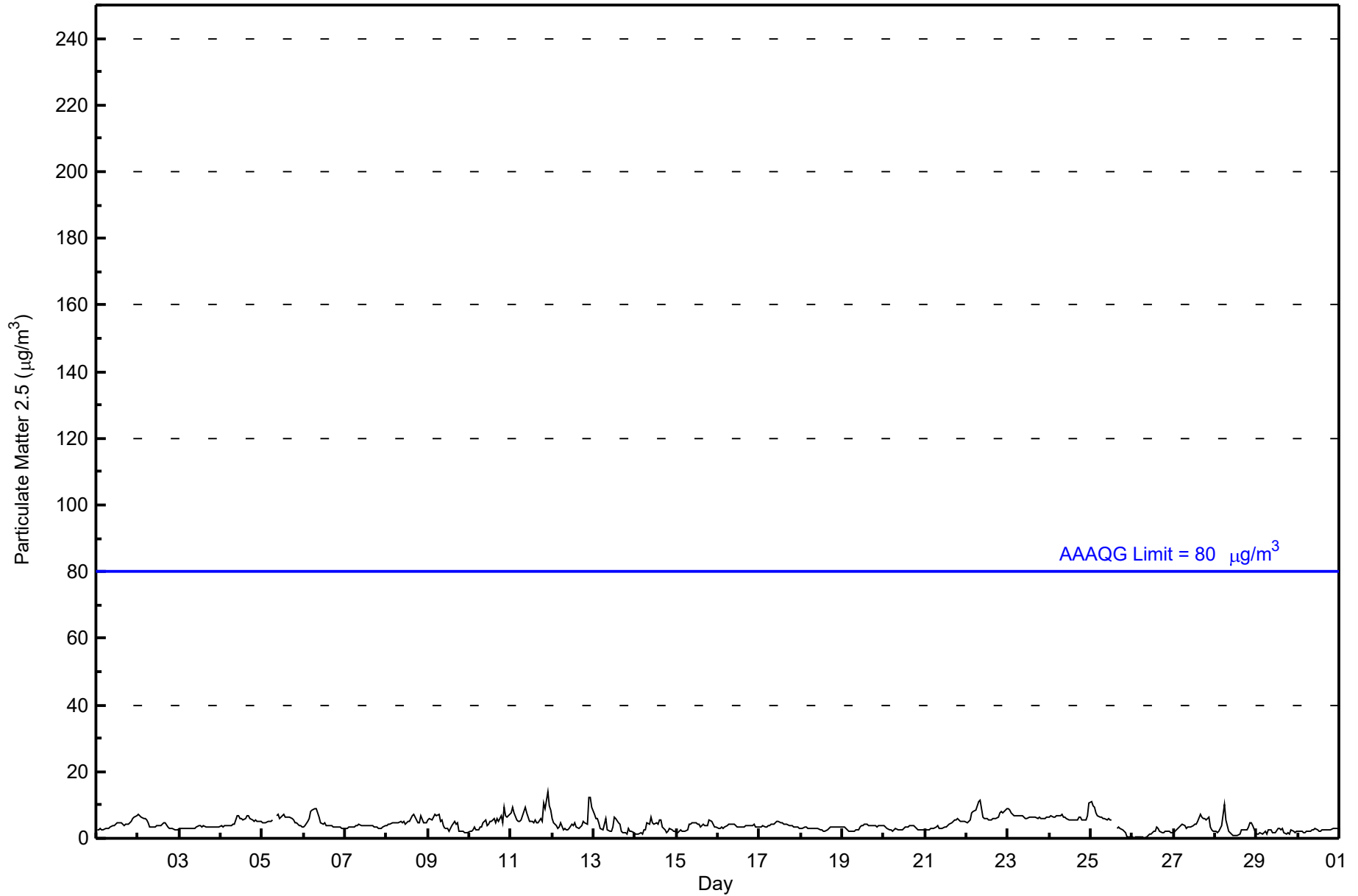
Wood Buffalo Environmental Association

Summary of Hour Averages

Particulate Matter 2.5 (PM_{2.5}) - µg/m³

Wapasu - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Hours of Data: 717																												
Maximum Value: 13.9 µg/m ³ on Apr 11 22:00		Maximum Daily Average: 7.1 µg/m ³ on Apr 22																	Hours of Missing Data: 3																														
Minimum Value: 0.2 µg/m ³ on Apr 26 08:00		Minimum Daily Average: 1.3 µg/m ³ on Apr 26																	Hours of Calibration: 2																														
Maximum Diurnal Average: 4.4 µg/m ³ at hour 22		Minimum Diurnal Average: 3.9 µg/m ³ at hour 4																	Percent Operational Time: 99.9																														
Monthly Average: 4.15 µg/m ³		Percentiles: P ₁ = 0.4 P ₁₀ = 2.0 Q ₁ = 2.8 Median = 3.7 Q ₃ = 5.4 P ₉₀ = 6.6 P ₉₉ = 10.5																																															
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-Apr	2.6	2.6	2.8	2.7	2.7	2.9	2.8	3.1	3.5	3.8	3.8	4.0	4.7	4.7	4.5	4.2	4.0	4.0	4.2	4.5	5.0	5.9	6.4	6.8	4.0	6.8																							
2-Apr	7.0	6.8	6.4	6.1	5.8	5.4	4.6	3.5	3.2	3.2	3.3	3.6	3.7	3.8	4.1	4.9	4.6	3.5	3.1	2.8	3.1	2.7	2.7	2.7	4.2	7.0																							
3-Apr	2.8	2.9	2.9	3.0	2.9	2.9	2.9	3.1	3.0	3.1	3.5	4.0	3.8	3.5	3.7	3.5	3.4	3.4	3.5	3.6	3.6	3.5	3.5	3.5	3.3	4.0																							
4-Apr	3.7	3.4	3.6	3.7	3.7	3.6	3.7	4.2	4.3	6.6	6.7	6.0	5.8	5.7	6.0	6.8	6.8	6.0	5.4	5.1	5.4	5.1	4.9	5.0	5.0	6.8																							
5-Apr	4.8	4.5	4.7	5.1	5.1	5.2	5.7	M	6.6	7.0	6.1	6.4	7.2	6.4	6.3	6.3	6.3	6.0	5.4	4.6	4.5	4.0	3.6	3.5	5.5	7.2																							
6-Apr	3.4	3.9	5.0	6.1	8.0	8.5	9.0	8.9	7.7	6.2	4.7	4.4	4.5	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.3	3.3	3.0	2.9	4.9	9.0																							
7-Apr	2.8	3.0	3.2	3.3	3.4	3.5	3.6	3.8	4.2	4.0	3.9	3.8	3.8	3.9	3.7	3.7	3.6	3.6	3.3	3.0	3.0	3.1	3.5	3.7	3.5	4.2																							
8-Apr	3.9	4.2	4.4	4.6	4.7	4.8	4.8	4.8	5.0	4.5	5.1	4.2	4.9	5.1	5.8	7.0	7.3	5.5	4.8	4.5	6.6	4.6	4.5	4.8	5.0	7.3																							
9-Apr	5.4	6.0	5.7	6.3	7.1	7.0	7.1	5.3	5.6	4.0	3.0	3.0	2.1	3.0	3.9	5.0	4.4	4.7	2.2	2.3	1.9	1.6	1.6	1.7	4.2	7.1																							
10-Apr	1.9	2.0	2.4	3.5	2.4	2.7	3.5	3.2	4.6	5.6	4.0	4.3	5.1	5.2	5.8	4.8	5.9	5.3	6.9	4.6	9.2	6.8	6.4	7.2	4.7	9.2																							
11-Apr	7.6	9.1	7.6	5.6	5.2	5.3	5.4	6.8	9.5	7.6	6.4	5.2	5.2	4.6	5.4	4.6	4.8	6.1	4.9	10.7	8.7	13.9	9.6	8.5	7.0	13.9																							
12-Apr	5.7	4.5	3.6	2.9	3.5	4.7	2.7	2.9	2.7	2.6	3.1	4.4	3.6	4.6	3.2	2.9	3.5	3.9	5.2	4.7	4.4	12.3	12.1	9.3	4.7	12.3																							
13-Apr	7.0	6.0	5.7	4.8	2.8	2.3	4.1	6.1	2.5	2.0	2.0	3.2	6.1	6.0	4.9	4.1	2.2	1.9	1.6	1.1	2.9	1.9	2.0	1.8	3.5	7.0																							
14-Apr	1.5	1.4	1.4	1.7	1.5	2.6	2.4	4.5	4.2	6.2	4.7	4.2	4.6	4.2	5.6	5.3	3.5	2.3	1.7	2.2	3.0	2.4	1.9	2.0	3.1	6.2																							
15-Apr	1.6	1.6	2.4	2.3	2.1	2.2	2.7	4.2	4.2	4.7	4.5	4.6	4.3	4.3	3.5	4.1	3.9	3.8	3.9	5.4	5.3	4.3	3.5	3.2	3.6	5.4																							
16-Apr	3.2	3.1	3.3	3.1	3.3	3.7	4.0	4.4	4.1	4.0	3.7	3.5	3.4	3.4	3.5	3.4	3.7	3.8	3.8	3.9	4.0	4.3	3.6	3.5	3.7	4.4																							
17-Apr	3.3	3.3	3.6	3.5	3.5	4.0	3.7	4.2	4.2	4.5	5.2	5.0	4.5	4.7	4.4	4.4	4.4	4.0	3.9	3.7	3.5	3.4	3.3	3.1	4.0	5.2																							
18-Apr	2.9	3.1	3.2	3.2	3.1	3.0	2.9	3.0	3.1	3.0	3.0	2.6	2.4	2.0	2.0	2.4	3.1	3.3	3.3	3.3	3.3	3.4	3.5	3.3	3.0	3.5																							
19-Apr	3.2	3.2	3.0	2.6	2.3	2.2	2.1	2.2	2.4	2.7	3.2	3.6	4.0	4.4	4.1	3.9	3.9	3.8	3.9	3.8	3.6	3.6	3.6	3.8	3.3	4.4																							
20-Apr	3.7	3.3	2.8	2.6	2.4	2.3	2.6	2.8	2.5	2.5	2.5	2.7	3.2	3.5	3.5	3.6	3.9	4.0	3.3	2.9	2.7	2.6	2.5	2.5	3.0	4.0																							
21-Apr	2.6	2.6	2.7	2.8	2.9	3.1	3.4	3.6	3.0	2.9	3.0	3.3	3.5	3.9	4.4	4.8	5.2	5.5	5.4	6.1	5.1	5.2	5.3	5.0	4.0	6.1																							
22-Apr	4.8	5.0	5.5	7.5	8.0	8.5	9.5	11.1	11.4	6.5	5.8	5.8	5.8	5.5	5.5	5.8	5.8	5.8	6.2	7.4	8.1	7.8	8.2	8.7	7.1	11.4																							
23-Apr	8.7	8.3	7.4	6.9	6.7	6.7	6.7	6.8	6.6	6.4	5.9	6.1	6.4	6.5	6.4	6.2	6.4	6.0	6.2	5.9	5.9	5.8	6.4	6.4	6.6	8.7																							
24-Apr	6.6	6.8	6.5	6.4	6.6	6.6	6.9	7.1	6.2	6.2	5.8	5.7	5.6	5.5	5.6	5.5	5.5	6.2	6.3	5.6	5.5	5.5	6.8	10.6	6.3	10.6																							
25-Apr	11.2	9.8	9.3	7.5	7.0	6.4	6.2	6.0	5.8	5.7	5.7	5.4	5.4	C	C	3.0	3.4	2.8	2.6	2.2	1.9	0.6	0.3	0.3	4.9	11.2																							
26-Apr	0.4	0.2	0.3	0.4	0.5	0.3	0.2	0.2	0.3	0.6	1.1	1.4	1.9	2.3	3.3	2.9	2.3	1.6	1.8	2.1	2.0	2.0	1.9	1.8	1.3	3.3																							
27-Apr	1.7	2.0	2.8	3.4	3.6	4.1	3.6	3.1	3.6	3.3	3.3	3.7	4.4	4.4	5.2	7.1	6.2	6.1	6.1	5.4	6.5	3.5	2.5	2.2	4.1	7.1																							
28-Apr	2.0	1.8	2.1	2.8	3.8	10.2	5.5	3.7	2.0	1.2	0.9	1.0	0.7	0.7	1.5	2.6	2.4	2.5	2.4	3.3	4.6	4.5	3.7	1.6	2.8	10.2																							
29-Apr	1.4	1.4	1.8	1.4	1.6	1.9	1.4	2.4	2.7	1.7	1.5	1.5	2.8	3.0	2.7	3.0	1.7	1.5	1.7	1.1	2.4	2.3	1.8	2.0	1.9	3.0																							
30-Apr	2.0	2.1	2.2	1.8	1.9	1.9	2.2	2.2	2.5	2.5	2.9	2.7	2.3	2.3	2.5	2.5	2.5	2.7	2.5	2.7	2.9	2.9	2.9	2.9	2.4	2.9																							
																								4.0	3.9	3.9	3.9	3.9	4.3	4.2	4.4	4.4	4.2	3.9	4.0	4.2	4.2	4.3	4.4	4.3	4.1	4.0	4.1	4.4	4.4	4.2	4.1	Diurnal Average	
																								11.2	9.8	9.3	7.5	8.0	10.2	9.5	11.1	11.4	7.6	6.7	6.4	7.2	6.5	6.4	7.1	7.3	6.2	6.9	10.7	9.2	13.9	12.1	10.6	Diurnal Maximum	
C - Calibration M - Maintenance																																																	
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wapasu - April 2023**

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	549	76.57	76.57
6 - 15	168	23.43	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: 717

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Wapasu - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	24	15	11	9	22	100	132	78	32	8	14	30	8	14	25	27	549
6 - 15	4	0	5	1	2	8	33	42	25	16	9	5	2	4	2	10	168
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
Totals	28	15	16	10	24	108	165	120	57	24	23	35	10	18	27	37	717

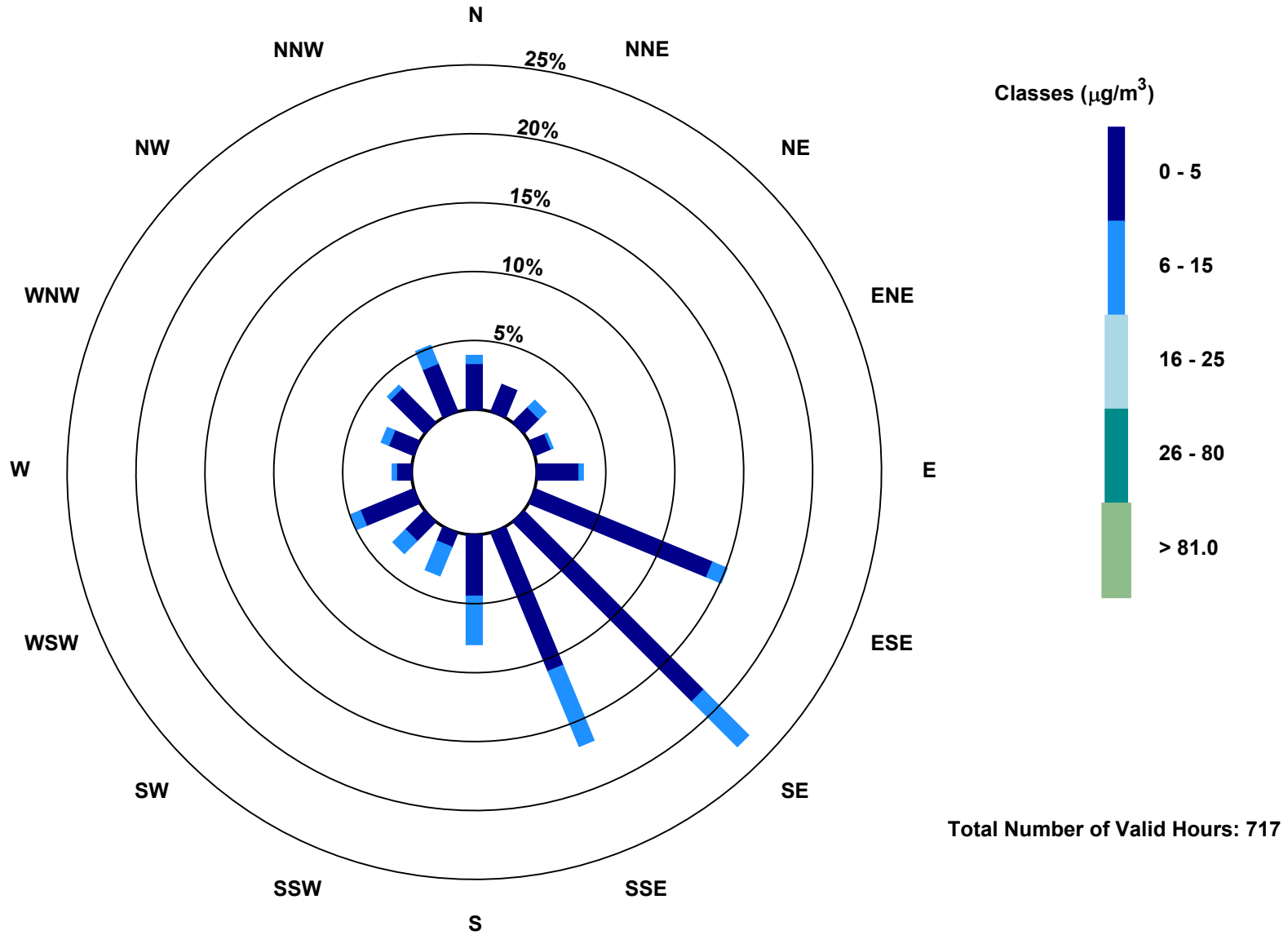
Total Number of Valid Hours: 717

Total Number of Hours: 720



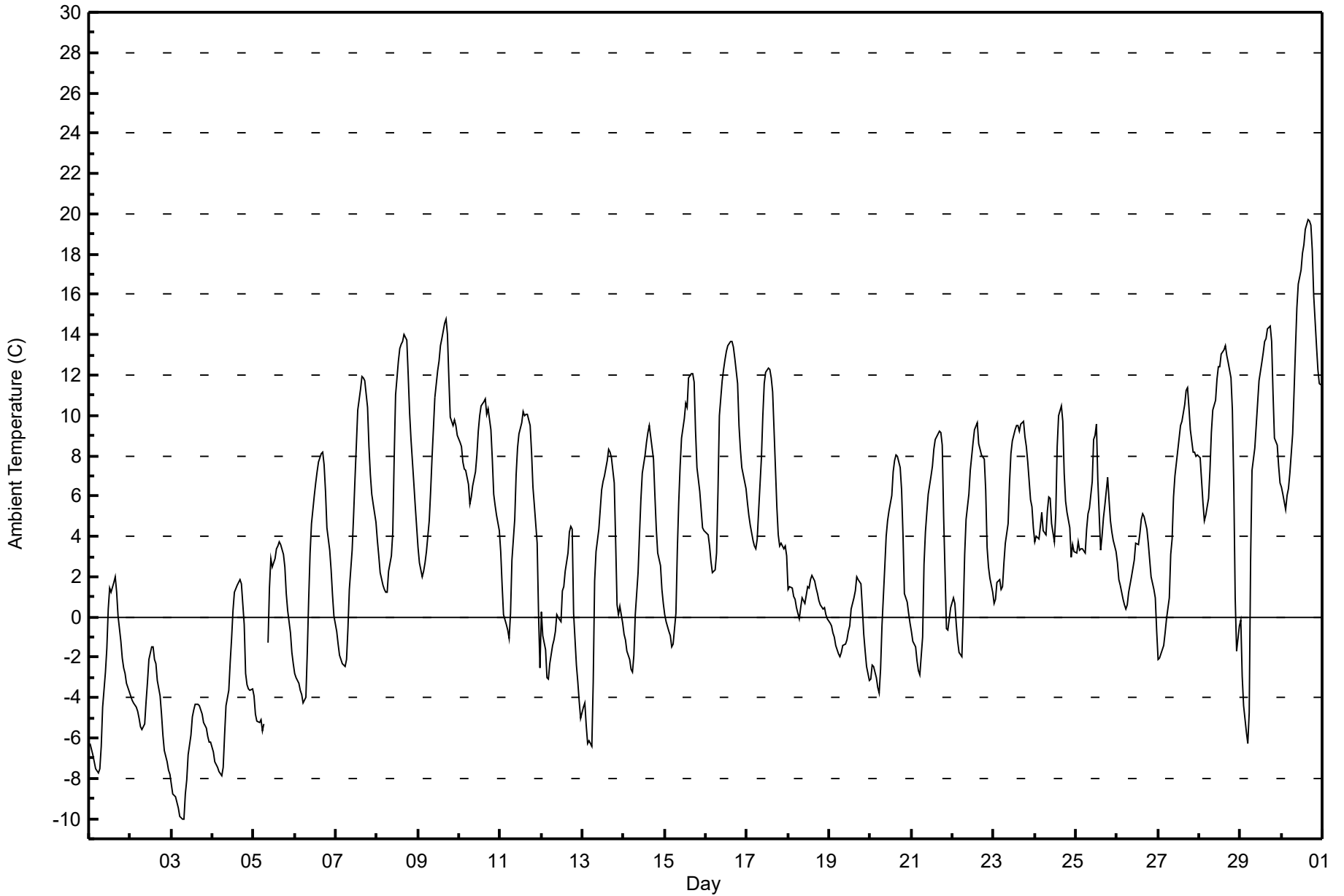
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Wapasu





Maximum Value: 19.7 C on Apr 30 16:00 Maximum Daily Average: 13.2 C on Apr 30																						Hours in Service: 720 Hours of Data: 719																										
Minimum Value: -10.1 C on Apr 3 07:00 Minimum Daily Average: -6.9 C on Apr 3 Maximum Diurnal Average: 8.1 C at hour 16 Minimum Diurnal Average: -1.1 C at hour 6 Monthly Average: 3.54 C Percentiles: P ₁ = -8.7 P ₁₀ = -4.2 Q ₁ = -0.7 Median = 3.5 Q ₃ = 8.0 P ₉₀ = 11.2 P ₉₉ = 17.1																						Hours of Missing Data: 1 Hours of Calibration: 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-Apr	-6.2	-6.5	-6.8	-7.2	-7.6	-7.7	-7.5	-6.4	-4.5	-2.7	-1.6	0.4	1.4	1.2	1.7	2.0	1.3	0.0	-1.2	-2.0	-2.5	-2.8	-3.3	-3.7	-3.0	2.0																						
2-Apr	-3.9	-4.1	-4.2	-4.4	-4.7	-5.1	-5.5	-5.5	-5.3	-4.2	-3.2	-2.1	-1.5	-1.5	-2.1	-2.3	-3.2	-3.9	-4.8	-5.9	-6.6	-7.2	-7.6	-7.8	-4.4	-1.5																						
3-Apr	-8.3	-8.8	-8.9	-9.2	-9.5	-9.9	-10.1	-10.0	-8.8	-8.1	-6.8	-5.9	-5.0	-4.6	-4.3	-4.3	-4.4	-4.6	-4.8	-5.2	-5.5	-5.9	-6.2	-6.2	-6.9	-4.3																						
4-Apr	-6.7	-7.2	-7.4	-7.4	-7.7	-7.9	-7.5	-5.9	-4.4	-3.6	-2.3	-1.1	0.3	1.2	1.6	1.7	1.9	1.6	-0.4	-2.8	-3.3	-3.6	-3.6	-3.6	-3.2	1.9																						
5-Apr	-3.9	-4.8	-5.2	-5.2	-5.1	-5.7	-5.3	M	-1.3	1.4	2.9	2.4	2.9	3.4	3.5	3.7	3.6	3.1	2.5	1.2	0.3	-0.8	-1.8	-2.3	-0.5	3.7																						
6-Apr	-2.8	-3.0	-3.3	-3.6	-3.9	-4.3	-4.0	-1.7	0.9	3.1	4.6	6.0	6.6	7.2	7.7	8.1	8.2	7.6	6.3	4.4	3.3	2.3	1.1	0.1	2.1	8.2																						
7-Apr	-0.7	-1.3	-1.9	-2.1	-2.3	-2.4	-2.1	-0.5	1.4	3.3	5.0	6.8	8.6	10.2	11.3	11.9	11.9	11.7	10.4	8.4	7.1	6.1	5.6	4.7	4.6	11.9																						
8-Apr	3.8	3.1	2.2	1.6	1.4	1.2	1.2	2.3	3.1	4.2	7.9	11.0	12.7	13.3	13.5	13.7	14.0	13.8	12.0	10.2	8.8	6.6	5.6	4.5	7.2	14.0																						
9-Apr	3.5	2.7	2.0	2.2	2.7	3.3	4.7	6.2	7.9	9.3	10.9	12.2	12.7	13.4	13.8	14.5	14.8	14.0	11.9	9.9	9.5	9.8	9.5	9.0	8.8	14.8																						
10-Apr	8.7	8.4	7.7	7.4	7.3	6.6	5.6	5.9	6.5	7.2	8.1	9.2	10.0	10.5	10.7	10.8	10.1	10.3	9.3	7.8	6.1	5.5	5.1	4.3	7.9	10.8																						
11-Apr	3.3	1.6	0.1	-0.3	-0.6	-1.1	0.2	2.8	4.9	7.0	8.4	9.1	9.6	10.2	10.0	10.1	10.1	9.5	8.2	6.4	5.6	3.7	0.1	-2.5	4.8	10.2																						
12-Apr	0.3	-0.9	-1.7	-3.0	-3.1	-2.3	-1.4	-1.1	-0.7	0.1	0.0	-0.2	1.3	1.5	2.3	3.2	4.2	4.5	4.3	0.2	-2.4	-3.2	-4.2	-5.0	-0.3	4.5																						
13-Apr	-4.4	-4.3	-5.4	-6.2	-6.1	-6.4	-3.2	1.8	3.2	4.3	5.3	6.3	6.7	7.0	7.8	8.3	8.2	7.9	6.6	3.8	0.6	0.1	0.5	-0.3	1.8	8.3																						
14-Apr	-0.8	-1.1	-1.7	-2.1	-2.6	-2.7	-1.9	0.1	2.2	4.1	5.8	7.1	8.0	8.7	9.2	9.5	8.9	7.8	6.1	4.3	3.2	2.6	1.3	0.7	3.2	9.5																						
15-Apr	0.1	-0.2	-0.7	-0.9	-1.4	-1.3	0.2	3.3	5.7	7.5	8.9	9.8	10.6	10.4	11.9	12.1	12.0	11.6	9.2	7.4	6.3	5.4	4.4	4.3	5.7	12.1																						
16-Apr	4.2	4.1	3.5	2.8	2.2	2.3	3.2	6.3	10.0	11.7	12.3	12.7	13.2	13.5	13.6	13.7	13.4	12.9	11.6	9.5	8.3	7.4	7.0	6.4	8.6	13.7																						
17-Apr	5.7	5.1	4.6	3.8	3.5	3.4	3.9	5.3	7.9	10.0	11.6	12.2	12.3	12.3	11.8	11.2	9.3	5.5	4.1	3.5	3.7	3.4	3.5	3.0	6.7	12.3																						
18-Apr	1.4	1.5	1.4	1.0	0.9	0.5	-0.1	0.4	1.0	0.8	0.7	1.5	1.5	1.8	2.1	1.8	1.5	1.2	0.8	0.6	0.4	0.5	0.1	-0.1	1.0	2.1																						
19-Apr	-0.3	-0.5	-0.8	-1.0	-1.4	-1.8	-1.9	-1.8	-1.4	-1.4	-1.1	-0.7	-0.4	0.4	1.0	1.3	2.0	1.9	1.7	0.5	-0.9	-1.7	-2.4	-3.1	-0.6	2.0																						
20-Apr	-3.1	-2.4	-2.5	-3.0	-3.5	-3.8	-2.6	-0.4	2.5	4.0	4.8	5.3	6.0	7.2	7.8	8.0	8.0	7.4	6.3	4.0	1.2	0.7	0.2	-0.3	2.2	8.0																						
21-Apr	-0.7	-1.2	-1.5	-2.2	-2.7	-2.9	-1.0	2.6	4.2	5.2	6.1	7.0	7.5	8.3	8.8	9.1	9.2	9.2	8.5	5.0	-0.6	-0.7	-0.1	0.5	3.2	9.2																						
22-Apr	0.9	0.7	-0.3	-1.2	-1.7	-2.0	0.3	3.1	4.8	6.1	7.3	8.0	8.6	9.3	9.6	8.6	8.3	8.0	7.8	6.3	3.5	2.5	1.9	1.2	4.2	9.6																						
23-Apr	0.7	0.9	1.7	1.9	1.3	1.5	2.7	3.7	4.7	6.7	8.1	8.7	9.3	9.5	9.5	9.2	9.6	9.7	8.9	8.4	7.7	5.8	5.4	4.4	5.8	9.7																						
24-Apr	3.7	4.0	3.9	4.5	5.2	4.3	4.1	5.3	5.9	5.9	4.7	3.8	5.1	8.4	10.0	10.5	9.7	7.1	5.8	5.2	4.4	3.0	3.6	3.3	5.5	10.5																						
25-Apr	3.2	3.7	3.3	3.4	3.4	3.2	4.4	5.1	5.4	6.7	8.8	9.0	9.5	6.8	3.3	4.0	4.9	5.5	6.9	5.8	4.8	4.2	3.8	3.3	5.1	9.5																						
26-Apr	2.7	1.9	1.5	0.8	0.6	0.4	0.6	1.2	2.0	2.4	2.8	3.7	3.6	4.1	4.9	5.2	5.0	4.4	3.7	2.8	2.0	1.4	1.0	-0.7	2.4	5.2																						
27-Apr	-2.1	-2.0	-1.6	-1.4	-0.8	-0.1	0.9	3.1	3.9	5.9	7.0	8.2	8.9	9.5	9.7	10.5	11.2	11.4	10.4	9.3	8.2	8.2	8.0	8.0	5.6	11.4																						
28-Apr	7.9	6.8	5.7	4.7	5.1	5.9	7.3	9.1	10.3	10.8	11.8	12.4	12.4	13.0	13.3	13.4	12.9	12.7	11.9	10.2	6.5	0.9	-1.7	-0.4	8.5	13.4																						
29-Apr	-0.2	-2.9	-4.4	-5.7	-6.3	-4.8	2.8	7.3	8.4	9.5	10.6	11.7	12.7	13.1	13.6	13.8	14.3	14.4	13.7	11.1	8.8	8.5	7.5	6.6	6.8	14.4																						
30-Apr	6.4	6.1	5.3	6.0	6.4	7.1	9.1	11.2	13.3	15.3	16.5	17.2	18.0	18.4	19.2	19.7	19.6	19.4	18.2	16.0	13.4	12.3	11.6	11.5	13.2	19.7																						
																								0.4	0.0	-0.5	-0.9	-1.0	-1.1	-0.1	1.8	3.1	4.4	5.5	6.4	7.1	7.6	7.9	8.1	8.0	7.5	6.5	4.9	3.4	2.5	1.9	1.3	Diurnal Average
																								8.7	8.4	7.7	7.4	7.3	7.1	9.1	11.2	13.3	15.3	16.5	17.2	18.0	18.4	19.2	19.7	19.6	19.4	18.2	16.0	13.4	12.3	11.6	11.5	Diurnal Maximum
M - Maintenance																																																





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Wapasu - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	205	28.51	28.51
0 - 10	414	57.58	86.09
10 - 20	100	13.91	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 719

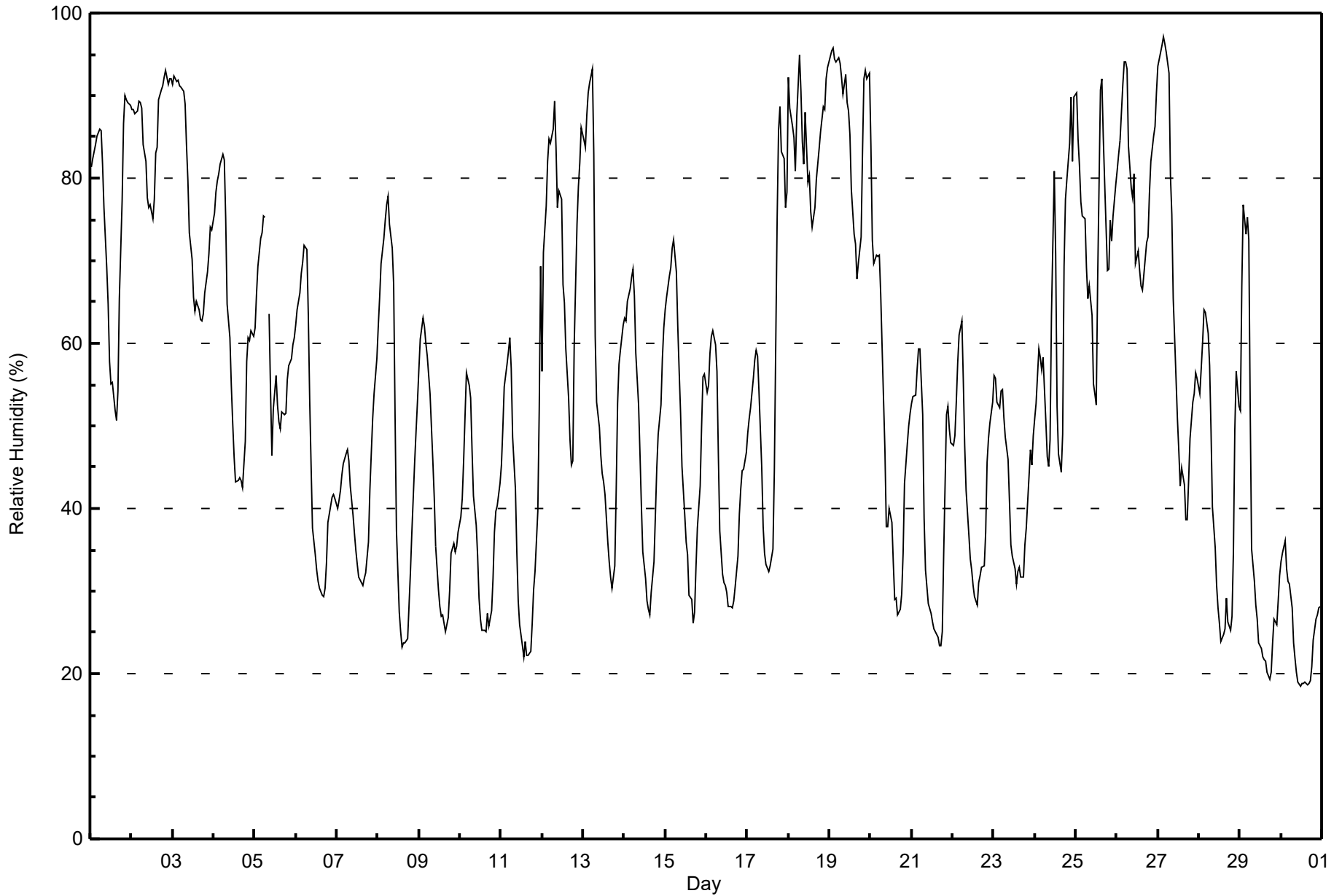
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Wapasu - April 2023

Maximum Value: 97.1 % on Apr 27 04:00 Maximum Daily Average: 87.0 % on Apr 19 Minimum Value: 18.4 % on Apr 30 12:00 Minimum Daily Average: 24.9 % on Apr 30 Maximum Diurnal Average: 71.6 % at hour 6 Minimum Diurnal Average: 41.1 % at hour 16 Monthly Average: 55.73 % Percentiles: P ₁ = 19.2 P ₁₀ = 27.8 Q ₁ = 35.8 Median = 53.9 Q ₃ = 74.4 P ₉₀ = 88.0 P ₉₉ = 94.7																						Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 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-Apr	81.4	82.3	83.2	84.1	85.1	85.9	85.7	81.7	76.5	69.2	64.7	57.7	55.0	55.2	51.9	50.7	54.3	65.4	77.4	86.7	90.1	89.5	89.1	88.8	74.6	90.1																						
2-Apr	88.3	88.2	87.9	88.1	89.3	89.1	88.5	84.1	82.0	77.7	76.5	76.8	75.0	77.4	83.0	83.7	89.5	90.7	91.2	92.1	93.1	91.3	92.1	92.1	86.1	93.1																						
3-Apr	91.4	92.3	91.7	91.8	91.3	91.0	90.5	89.0	84.0	79.6	73.4	70.2	65.6	64.0	65.1	64.1	62.9	62.6	63.6	66.0	68.6	70.8	74.1	73.7	76.6	92.3																						
4-Apr	75.7	78.4	79.6	80.4	81.8	82.9	82.3	75.2	64.7	60.6	54.9	50.3	46.2	43.2	43.3	43.8	43.4	42.5	48.1	57.8	60.7	60.4	61.6	60.8	61.6	82.9																						
5-Apr	61.8	65.9	69.3	72.7	73.4	75.5	75.3	M	63.5	54.4	46.4	52.0	56.1	52.5	50.5	49.7	51.8	51.3	51.6	55.6	57.3	58.2	59.8	60.7	59.4	75.5																						
6-Apr	62.1	64.1	66.1	68.6	69.8	71.9	71.3	63.5	53.2	45.3	37.6	34.3	32.6	31.2	30.3	29.5	29.3	30.3	33.4	38.3	40.3	41.3	41.8	41.1	47.0	71.9																						
7-Apr	40.0	41.0	42.3	44.0	45.5	46.5	47.2	45.7	42.7	39.2	37.0	34.9	33.3	31.6	31.0	30.7	31.5	32.3	36.0	42.2	46.7	50.9	53.8	58.1	41.0	58.1																						
8-Apr	62.1	65.6	69.6	72.7	74.9	76.7	77.7	74.4	71.6	67.1	51.3	37.3	27.5	25.0	23.3	23.8	23.8	24.2	28.3	32.4	37.1	45.6	49.3	52.9	49.8	77.7																						
9-Apr	56.8	60.6	63.1	62.0	60.1	58.5	54.0	49.9	45.8	41.4	35.4	30.2	28.2	27.0	27.1	25.1	25.9	26.8	30.0	34.5	35.8	34.8	35.3	37.1	41.1	63.1																						
10-Apr	38.9	41.3	45.8	51.2	56.5	54.9	53.4	47.1	41.5	37.9	34.2	29.1	26.7	25.3	25.3	25.0	27.3	25.8	27.7	31.5	37.0	39.6	40.4	43.1	37.8	56.5																						
11-Apr	45.2	49.7	54.7	57.5	58.9	60.7	56.9	48.6	42.3	34.8	28.7	26.0	23.5	22.0	23.9	22.2	22.1	22.7	26.2	30.2	32.4	39.7	51.8	69.3	39.6	69.3																						
12-Apr	56.6	71.0	76.6	82.0	84.8	84.2	86.0	89.4	83.7	76.4	78.5	77.4	67.1	65.0	59.3	53.4	48.4	45.3	45.7	59.8	74.4	78.9	81.9	86.2	71.3	89.4																						
13-Apr	84.6	83.8	87.6	90.3	91.6	93.2	82.9	60.9	52.9	49.9	46.4	44.2	43.3	41.7	35.9	33.6	31.6	30.3	33.1	42.2	52.8	57.5	59.1	62.2	58.0	93.2																						
14-Apr	63.1	62.6	65.1	66.7	68.0	69.0	65.7	58.7	52.6	46.6	40.4	34.7	31.5	28.8	27.8	27.2	29.9	33.6	39.2	44.9	49.0	52.6	58.2	61.8	49.1	69.0																						
15-Apr	64.0	65.5	68.2	69.2	71.5	72.6	68.7	62.0	56.6	51.5	45.0	39.2	36.0	34.4	29.5	28.9	26.1	27.5	33.0	37.6	42.7	49.8	55.9	56.3	49.7	72.6																						
16-Apr	54.1	55.0	58.9	60.9	61.5	59.8	56.6	46.4	37.3	32.0	31.0	30.7	29.8	28.1	28.1	27.9	28.8	30.6	34.2	39.4	42.4	44.5	44.7	46.7	42.1	61.5																						
17-Apr	49.1	50.9	52.2	55.7	57.9	59.2	58.4	54.3	44.9	37.8	34.6	33.2	32.4	33.1	34.1	35.0	44.6	75.0	85.8	88.7	83.2	82.4	76.5	78.4	55.7	88.7																						
18-Apr	92.2	88.5	86.2	84.9	80.8	87.5	94.8	90.5	84.4	81.6	88.0	79.4	80.4	76.0	74.0	76.4	79.8	81.8	83.5	85.7	88.6	88.4	92.0	93.4	84.9	94.8																						
19-Apr	94.7	95.4	95.7	94.4	94.0	94.6	94.0	92.2	90.3	92.5	89.2	88.2	85.2	78.6	73.2	72.1	67.8	69.6	72.9	83.3	92.1	93.1	92.0	92.8	87.0	95.7																						
20-Apr	83.9	72.6	69.7	70.6	70.5	70.7	66.0	59.5	47.1	37.7	37.9	40.0	38.2	33.3	29.0	29.2	27.0	27.9	29.6	34.5	43.0	47.8	50.0	51.5	48.6	83.9																						
21-Apr	52.7	53.5	53.8	56.9	59.3	59.3	51.4	38.8	32.6	30.5	28.5	27.3	26.3	25.4	25.0	24.4	23.3	23.3	25.1	34.6	51.4	52.4	49.6	48.0	39.7	59.3																						
22-Apr	47.6	48.7	52.8	57.6	61.0	62.7	55.5	47.6	42.1	36.7	33.9	32.5	30.6	29.3	28.3	31.1	31.8	32.9	33.1	37.1	45.6	48.5	50.3	53.0	42.9	62.7																						
23-Apr	56.1	55.7	52.9	52.3	54.2	54.4	51.1	48.6	46.0	40.9	35.7	34.2	32.8	30.9	32.5	32.9	31.7	31.7	35.6	37.7	40.9	47.1	45.3	48.7	42.9	56.1																						
24-Apr	50.9	52.8	59.3	58.3	56.8	58.3	50.6	46.3	45.1	48.3	63.4	80.8	70.9	52.3	46.5	44.4	49.0	69.4	77.5	79.9	84.2	89.9	82.1	89.8	62.8	89.9																						
25-Apr	90.3	84.7	81.5	77.1	75.4	75.1	69.1	65.5	67.0	63.5	55.0	53.9	52.5	67.5	90.6	92.0	85.1	79.6	68.8	68.9	74.9	72.4	75.5	79.3	73.6	92.0																						
26-Apr	81.1	82.9	84.6	91.4	94.1	94.1	93.3	83.9	78.9	77.7	80.4	69.7	71.2	68.9	67.0	66.4	68.4	72.2	72.9	78.1	82.1	85.1	86.3	90.3	80.0	94.1																						
27-Apr	93.5	94.4	96.0	97.1	96.2	95.3	92.7	80.3	75.5	65.5	60.6	50.9	46.9	42.8	44.9	42.9	38.7	38.7	43.4	48.5	53.0	53.8	56.4	55.8	65.2	97.1																						
28-Apr	53.9	56.9	60.2	64.1	63.7	61.2	57.3	49.5	40.2	35.3	30.7	27.9	26.1	24.0	24.8	25.4	29.2	26.3	25.2	26.9	34.8	49.6	56.6	52.4	41.8	64.1																						
29-Apr	51.8	67.0	76.8	73.3	75.3	72.5	52.0	35.1	31.2	28.3	26.6	23.7	23.0	22.0	21.7	21.6	20.2	19.3	20.3	23.8	26.6	26.0	28.7	31.9	37.4	76.8																						
30-Apr	33.6	34.7	36.1	32.7	31.1	30.8	27.9	23.7	21.8	20.2	18.9	18.4	18.9	18.9	18.9	18.6	18.8	19.2	20.8	24.2	26.6	27.1	27.9	28.1	24.9	36.1																						
																								65.3	66.9	68.9	70.3	71.1	71.6	68.6	61.8	56.6	52.0	48.8	46.2	43.8	41.8	41.5	41.1	41.4	43.6	46.4	51.4	56.2	59.0	60.6	62.8	Diurnal Average
																								94.7	95.4	96.0	97.1	96.2	95.3	94.8	92.2	90.3	92.5	89.2	88.2	85.2	78.6	90.6	92.0	89.5	90.7	91.2	92.1	93.1	93.1	92.1	93.4	Diurnal Maximum
M - Maintenance																																																





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Wapasu - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	9	1.25	1.25
20 - 40	202	28.09	29.35
40 - 60	212	29.49	58.83
60 - 80	162	22.53	81.36
80 - 100	134	18.64	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

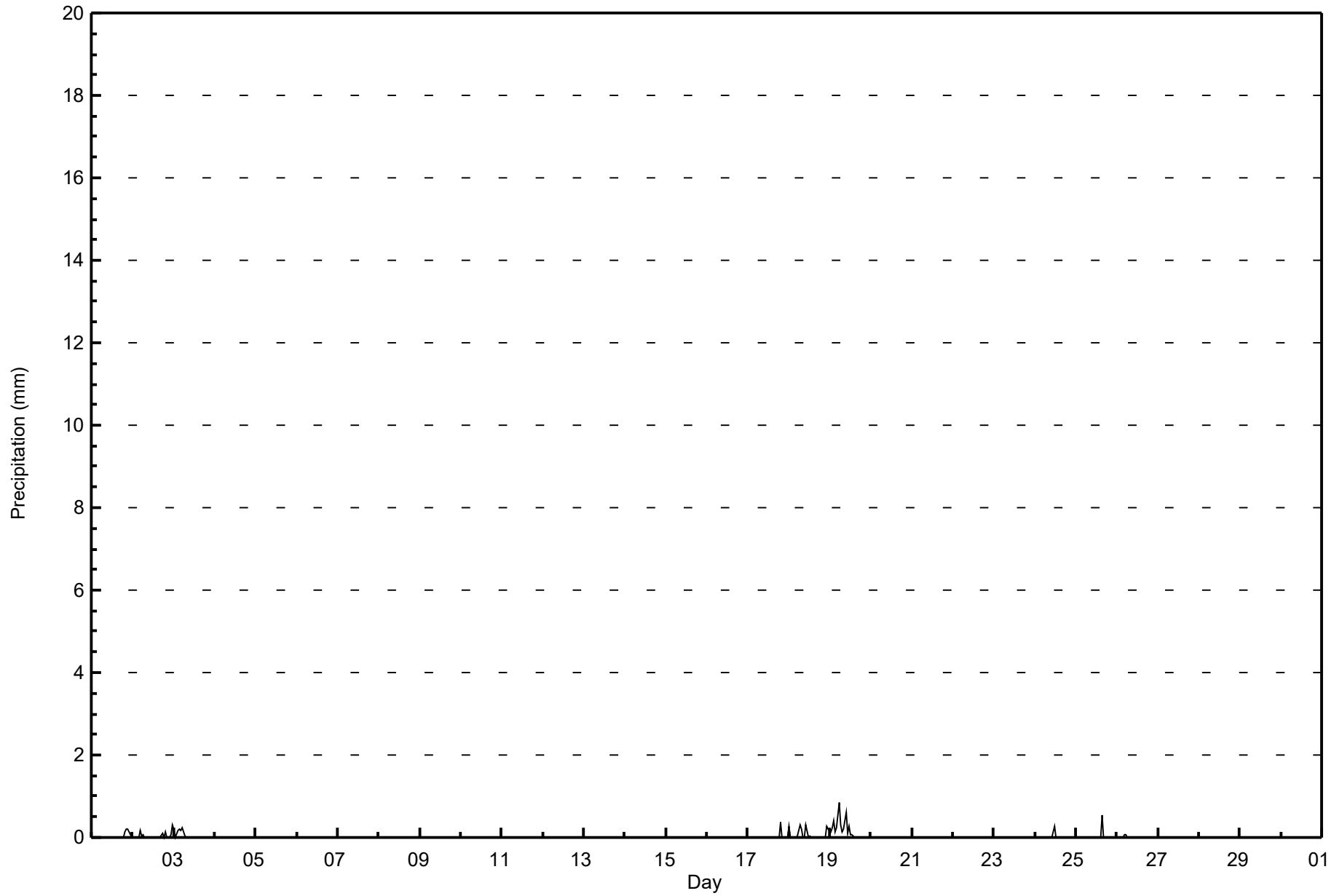
Wapasu - April 2023

Maximum Value: 0.9 mm on Apr 19 06:00																				Maximum Daily Total: 3.8 mm on Apr 19					Hours in Service: 720																							
Minimum Value: 0.0 mm on Apr 1 01:00																				Minimum Daily Total: 0.0 mm on Apr 4					Hours of Data: 719																							
Maximum Diurnal Total: 1.3 mm at hour 6																				Minimum Diurnal Total: 0.0 mm at hour 15					Hours of Missing Data: 1																							
Monthly Total: 9.43 mm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.3					Hours of Calibration: 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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.2	0.1	0.0	0.7	0.2																						
2-Apr	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.3	0.9	0.3																						
3-Apr	0.2	0.0	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	0.0	0.0	0.0	1.0	0.2																						
4-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.0	0.0	0.0																						
6-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.4																						
18-Apr	0.3	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	1.7	0.3																						
19-Apr	0.1	0.2	0.4	0.1	0.3	0.9	0.3	0.1	0.2	0.6	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.9																						
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3																						
25-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5																						
26-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1																						
27-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																						
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																						
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.6	0.4	0.6	1.3	0.7	0.3	0.2	0.6	0.4	0.5	0.1	0.1	0.0	0.5	0.0	0.1	0.0	0.7	0.2	0.2	0.5	0.5	Diurnal Average
																								0.3	0.2	0.4	0.2	0.3	0.9	0.3	0.2	0.2	0.6	0.3	0.3	0.1	0.1	0.0	0.5	0.0	0.1	0.0	0.4	0.2	0.2	0.3	0.3	Diurnal Maximum
M - Maintenance																																																



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Wapasu - April 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Wapasu - April 2023

Maximum Speed: 28 km/h on Apr 17 13:00	Maximum Daily Speed Average: 22.5 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 27 01:00	Minimum Daily Speed Average: 1.2 km/h on Apr 4	Hours of Data: 719
Maximum Diurnal Speed Average: 8.9 km/h at hour 24	Minimum Diurnal Speed Average: 3.4 km/h at hour 15	Hours of Missing Data: 1
Monthly Average Velocity: 6.0 km/h 146.7 deg	Percentiles: P ₁ = 2 P ₁₀ = 4 Q ₁ = 7 Median = 10 Q ₃ = 14 P ₉₀ = 18 P ₉₉ = 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-Apr	ESE17	ESE16	SE15	SE11	SE14	SE15	SE15	SE16	SE13	SSE6	SE8	SE8	SE9	SE11	SE10	ESE10	SE10	SE11	SE10	SE10	SE14	SE14	SE14	SE13	SE12.0	ESE17	
2-Apr	SE13	SE12	SE12	SE11	SE10	SE10	SE11	SE13	SE12	SE10	SE7	SSE3	SSW2	NNW3	NNW8	NNW9	NNW11	N10	N10	N10	N9	N10	N8	NNE7	E3.3	SE13	
3-Apr	N6	N6	NNE6	N6	N6	N6	NNE6	NNE8	NNE7	N9	NNW9	NNW7	NNW6	N6	N5	NNW7	NW6	NW4	NW3	N3	SE1	SE2	SE4	SE5	N4.5	N9	
4-Apr	SE7	SSE5	ESE2	NNE1	SE1	SE2	ESE2	ESE2	ENE2	N3	W4	WNW6	NW2	WNW4	SSW2	NNW8	NNW6	WNW6	N5	NNE3	SSE6	SE8	SE11	SE12	SE13	SE1.2	SE13
5-Apr	SE15	SE14	SE13	SE12	SE10	SE9	SE9	M	SE11	SSE11	S13	S12	SSW12	SSW10	SSE11	SSE10	S10	S10	SE9	SE9	SE11	SE12	SE13	SE13	SSE10.3	SE15	
6-Apr	SE12	SE11	SSE12	SE12	SE13	SSE14	SE15	SSE16	SSE16	SSE18	SSE19	S17	SSE19	SSE20	S20	S18	S17	S17	S16	S15	SSE17	SSE19	SSE17	SSE18	SSE15.8	SSE20	
7-Apr	SSE19	SSE18	SSE19	SSE22	SSE22	SSE22	SSE21	SSE19	SSE17	SSE19	SSE19	SSE19	SSE19	SSE20	SSE20	SSE20	SSE18	SSE18	SSE15	SSE15	SSE15	SSE15	S15	S14	SSE18.3	SSE22	
8-Apr	S13	SSE12	SSE12	SSE12	S10	S10	S10	S10	S10	S11	SSW9	SSW8	SW11	WSW10	SW11	SW10	SSW12	SW13	SW9	SSW6	S7	SSE6	S6	S6	SSW9.0	S13	
9-Apr	S6	S5	S6	S6	SSW6	SSW9	SSW10	SW13	SW14	WSW15	WSW16	WSW16	WSW17	WSW15	SW13	SW15	SW11	SSW8	SE7	SE10	SE11	SSE14	SSE16	SE17	SSW8.6	SE17	
10-Apr	SE18	SSE16	S13	SW15	WSW19	WSW19	WSW18	WSW21	WSW21	WSW20	WSW23	WSW25	WSW24	WSW22	WSW20	WSW23	WSW18	WSW21	WSW16	SW12	SW10	SW12	SW12	SW11	SW15.9	WSW25	
11-Apr	SSW8	S6	SSE6	SSE7	S7	SSE7	S7	S7	SSW8	SSW8	SSW9	SW12	WSW12	W11	WSW8	W7	WSW8	WNN7	NNW10	NW8	NNW7	NNW5	NW2	SE3	SW4.2	SW12	
12-Apr	NNW10	N4	ESE4	WNW3	WNW3	NNW5	NNW8	N9	NNW10	NNW9	N9	NNW7	NW9	NW10	NW11	WNN10	WNN9	WNN7	NW4	SE2	SE5	SE5	SE4	SE6	NNW4.1	NW11	
13-Apr	SE3	E4	ESE4	E5	E5	E4	E3	NE3	NNE6	N7	NNW7	N4	NNW9	NNW7	NNW7	N8	N9	NE9	NE8	NE7	ENE6	E8	ESE12	SE11	NE3.9	ESE12	
14-Apr	SE12	ESE12	ESE12	ESE11	ESE12	ESE13	ESE14	ESE13	ESE9	SE8	ESE7	E6	SE4	ESE4	NW1	SE1	ESE9	ESE10	ESE10	SE10	ESE10	ESE12	ESE13	ESE14	ESE9.3	ESE14	
15-Apr	SE13	SE13	SE12	SE11	SE9	SE8	SE6	SSE6	SSW5	S4	S4	SSW4	W1	WSW2	SSW2	WNN3	S6	SE6	ESE7	ESE8	ESE11	ESE14	SE14	SE15	SE6.6	SE15	
16-Apr	SE14	SE14	SE11	SE11	SE11	SE11	SE10	SE12	SE15	SE18	SE19	SE18	SE17	SE17	SE17	SE17	ESE19	ESE19	ESE18	ESE18	ESE19	ESE17	ESE19	SE18	SE15.6	ESE19	
17-Apr	SE17	ESE18	ESE18	ESE18	ESE19	ESE20	ESE21	ESE22	ESE25	ESE25	ESE23	ESE27	ESE28	ESE27	ESE24	SE26	SE24	SE18	ESE20	ESE22	ESE26	ESE24	ESE25	SE25	ESE22.5	ESE28	
18-Apr	ESE22	ESE20	ESE21	ESE20	ESE20	SE20	SE19	ESE18	ESE19	ESE19	ESE12	ESE13	ESE14	ESE15	ESE14	ESE13	E11	E8	E9	E10	E10	ESE10	ESE12	ESE11	ESE14.7	ESE22	
19-Apr	ESE12	ESE12	ESE13	SE14	ESE16	SE16	SE16	SE17	SE19	SE16	SE18	SE16	SE16	SE16	SE16	ESE11	ESE10	ESE7	ENE3	NE4	ENE4	ENE4	ENE5	ESE5	ESE11.5	SE19	
20-Apr	ESE8	ESE12	SE12	SE10	SE10	SE10	SE11	SE10	SE7	ESE8	E10	ESE11	ESE11	E12	ESE12	ESE13	ESE11	ESE13	ESE11	ESE8	ESE7	ESE9	ESE10	ESE10	ESE10.1	ESE13	
21-Apr	ESE11	SE11	SE11	SE9	SE8	SE7	SE7	SSE7	S7	SSE6	S6	SSE6	SW3	SSE4	SW6	SSE5	SE3	SSE5	SSE5	S2	ESE3	SE7	SE7	SSE9	SSE5.9	SE11	
22-Apr	SSE10	SSE9	S7	SSE6	SSE6	SSE6	SSE6	SSW6	SSW8	SSW10	S12	S13	SSE15	S13	S14	SSE14	SSE14	SSE13	SSE10	S5	SE5	SE6	SSE6	SE6	SSE8.8	SSE15	
23-Apr	SE7	SE8	SE10	SE11	SE11	SE11	SSE11	SSE11	SSE11	SSE11	SSE13	SSE14	SSE17	SSE15	SSE15	SSE13	SSE11	SSE10	SSE9	S6	S4	ESE2	ESE4	SE3	SSE9.7	SSE17	
24-Apr	SE4	SE4	ESE6	ESE8	ESE8	ESE8	ESE9	SE8	SSE7	SSE5	SE8	E7	NE9	ENE10	NE8	NNW6	N11	N13	N9	NE7	NE7	NE6	S11	S11	E3.9	N13	
25-Apr	S9	S8	SSE11	SSE12	SSE12	SSE12	SSE13	SSE12	S11	SSE13	S11	SSE14	SSE14	SW17	SW9	SSE8	SSE10	S9	SSE8	S6	SW8	WSW12	WSW9	WSW10	S9.0	SW17	
26-Apr	WSW10	WSW10	W9	W7	W5	NW7	WNW4	WNW8	WNN10	NW10	WNN9	NW11	NW7	NW7	NNW7	NNW7	NNE7	NNE8	NNE8	NE6	NE8	NE9	NNE4	NW2	NW5.0	NW11	
27-Apr	SW0	NW2	N3	ENE2	E2	E3	SE2	NW4	SW4	WSW6	W8	WNN6	W7	WSW9	WSW6	SW10	WSW10	SW10	SSW7	SSE7	SSE8	SSE9	SSE9	SSE10	SW3.6	SW10	
28-Apr	SSE10	S7	S4	E3	WNN3	W4	W7	WNN12	NW17	NW18	NW19	NW19	NW19	NW19	NNW18	NNW18	NNW18	NNW18	NNW16	NNW11	N5	NNE4	NE5	ENE5	NNW8.6	NW19	
29-Apr	E4	SE6	SE4	E4	E4	E5	E4	NW2	NW3	NE4	NW7	NNW5	NNE5	NW9	NW8	NNW6	NNE4	NE7	ENE7	E8	ESE9	ESE14	SE16	SE15	E3.1	SE16	
30-Apr	SE15	SE14	SE14	SSE15	SSE16	SSE16	SSE15	SSE15	SSE13	S12	SSE16	SSE18	SSE17	SSE17	SSE16	SSE13	SSE16	SSE17	SE17	SE16	SE18	SE19	SE17	SSE18	SSE15.5	SE19	

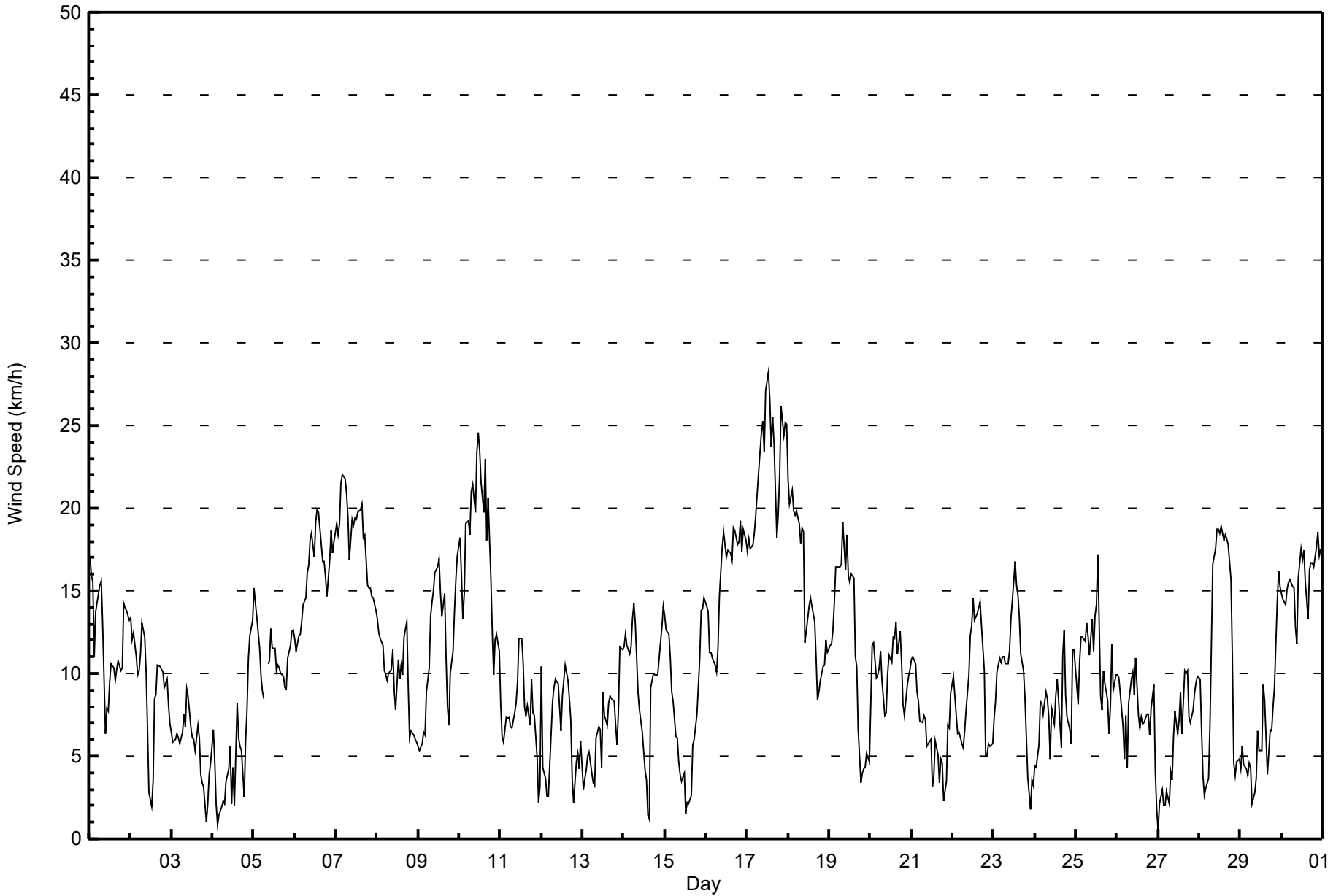
SE8.7 SE8.6 SE8.6 SE7.9 SE7.7 SE7.5 SE7.5 SSE6.6 SSE5.8 SSE5.3 S5.2 S5.2 S4.6 S4.1 S3.4 SSE3.8 SSE4.1 SSE3.7 SE4.0 SE5.0 SE6.4 SE7.4 SE8.2 SE8.9	Diurnal Average
ESE22 ESE20 ESE21 SSE22 SSE22 SSE22 ESE21 ESE22 ESE25 ESE25 ESE23 ESE27 ESE28 ESE27 ESE24 SE26 SE24 WSW21 ESE20 ESE22 ESE26 ESE24 ESE25 SE25	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
Wapasu - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Wapasu - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	116	16.13	16.13
6 - 11	323	44.92	61.06
12 - 19	237	32.96	94.02
20 - 28	43	5.98	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Wapasu - April 2023**

Wind Speed 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	6	4	7	13	10	20	7	7	5	3	1	4	7	9	6	116
6 - 11	20	9	12	3	10	34	69	40	32	17	11	12	6	10	12	26	323
12 - 19	1	0	0	0	1	44	72	65	17	2	11	12	0	1	6	5	237
20 - 28	0	0	0	0	0	20	4	8	1	0	0	10	0	0	0	0	43
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
Totals	28	15	16	10	24	108	165	120	57	24	25	35	10	18	27	37	719

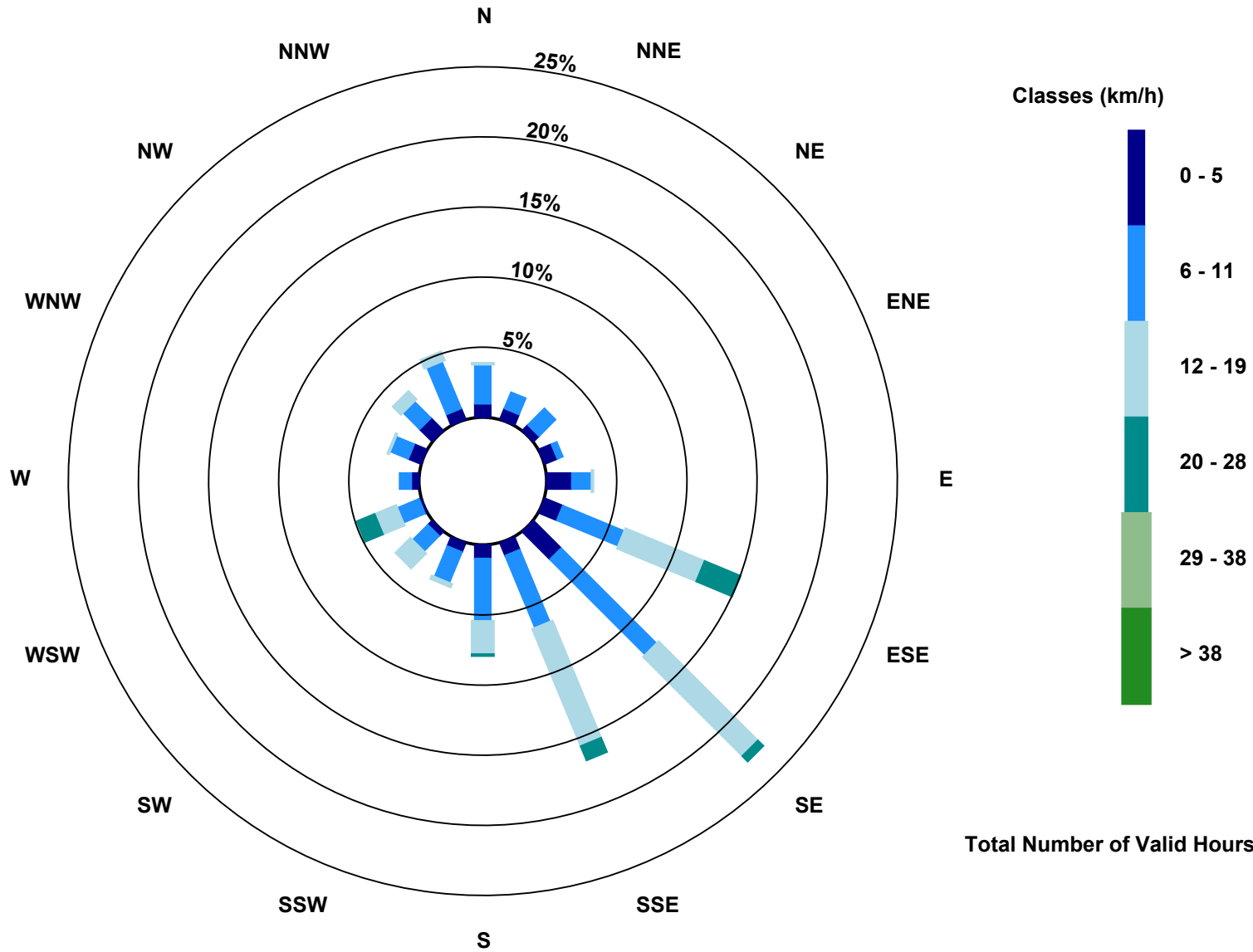
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Wapasu



Total Number of Valid Hours: 719



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Wapasu - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 9 km/h on Apr 17 13:00	Hours of Data: 719
Minimum Value: 0 km/h on Apr 29 05:00	Hours of Missing Data: 1
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 8	Hours of Calibration: 0
	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-Apr	5	4	4	5	4	4	4	4	4	2	3	3	3	3	3	3	3	3	3	3	4	4	4	3	5
2-Apr	4	3	3	3	3	3	3	4	3	3	3	1	1	3	2	2	2	3	3	3	3	3	3	2	4
3-Apr	2	2	2	2	2	2	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2	1	2	1	3
4-Apr	1	2	1	1	1	1	1	1	1	2	2	3	2	3	2	3	3	3	2	1	2	1	3	3	3
5-Apr	4	3	3	3	2	2	2	M	3	4	4	4	4	4	4	3	3	2	3	3	3	3	3	3	4
6-Apr	3	3	3	3	3	3	4	4	5	6	6	6	7	7	7	6	6	6	6	5	6	6	5	6	7
7-Apr	6	6	6	6	6	6	6	6	6	7	6	7	7	7	7	6	6	7	4	4	4	4	5	5	7
8-Apr	4	4	4	4	3	3	3	3	3	4	3	2	3	3	3	3	4	4	2	2	2	1	1	1	4
9-Apr	1	1	1	1	2	3	3	3	4	4	5	6	6	5	4	5	4	3	1	2	3	3	4	4	6
10-Apr	5	5	4	5	6	5	5	6	7	7	7	7	7	7	7	7	5	7	5	4	2	3	3	3	7
11-Apr	3	2	2	1	1	1	2	2	2	2	3	3	4	4	4	3	3	4	2	2	1	1	2	1	4
12-Apr	3	2	1	2	1	3	2	3	3	3	3	3	3	3	4	3	3	3	2	1	1	1	1	1	4
13-Apr	1	1	1	1	1	1	1	2	3	3	3	2	3	3	4	3	3	3	2	2	1	3	3	3	4
14-Apr	3	3	3	3	3	4	4	4	3	3	3	3	3	3	2	3	3	3	3	2	2	3	3	4	4
15-Apr	3	3	3	3	2	2	1	2	2	2	3	3	3	2	2	2	2	3	1	1	3	3	3	3	3
16-Apr	4	3	3	3	3	2	2	3	5	5	5	5	5	6	5	5	6	6	5	5	5	5	5	5	6
17-Apr	4	5	4	5	5	5	6	6	8	8	8	8	9	8	8	8	7	6	6	7	8	7	7	7	9
18-Apr	6	6	6	6	6	6	5	5	6	6	4	4	4	4	4	4	3	3	3	3	3	3	4	4	6
19-Apr	4	3	4	4	5	5	4	5	5	5	6	5	5	5	5	4	4	2	1	1	1	1	1	1	6
20-Apr	2	3	3	2	2	2	3	3	2	3	3	4	4	4	4	5	4	4	3	2	1	2	2	2	5
21-Apr	3	2	2	2	1	1	1	2	3	3	3	3	3	3	3	3	2	3	2	1	1	1	1	2	3
22-Apr	2	2	2	1	1	1	1	2	3	3	4	4	5	5	5	5	5	4	4	2	1	1	1	1	5
23-Apr	1	1	2	2	2	2	3	3	3	4	5	5	5	5	5	5	4	4	5	4	3	2	2	2	5
24-Apr	1	1	2	2	2	2	2	2	3	2	3	2	2	3	3	3	3	3	3	3	2	2	6	4	6
25-Apr	3	3	3	3	3	3	4	4	4	5	4	4	5	8	3	3	3	4	3	3	4	4	3	3	8
26-Apr	3	3	3	3	2	2	1	3	4	3	3	3	3	3	3	3	2	2	3	2	3	3	3	1	4
27-Apr	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	4	4	3	2	2	2	2	2	3	4
28-Apr	3	2	2	1	2	1	3	4	6	6	6	6	6	6	6	6	5	5	5	4	1	1	1	1	6
29-Apr	1	1	1	1	0	1	1	2	3	3	3	3	3	3	4	3	4	3	3	2	2	2	4	4	4
30-Apr	4	3	3	4	4	5	5	4	4	4	5	6	6	6	5	5	5	5	5	4	5	5	4	4	6

6	6	6	6	6	6	6	6	6	8	8	8	8	9	8	8	8	8	7	7	6	7	8	7	7	7		
Diurnal Maximum																											

M - Maintenance



Wood Buffalo Environmental Association
Summary of Hour Averages

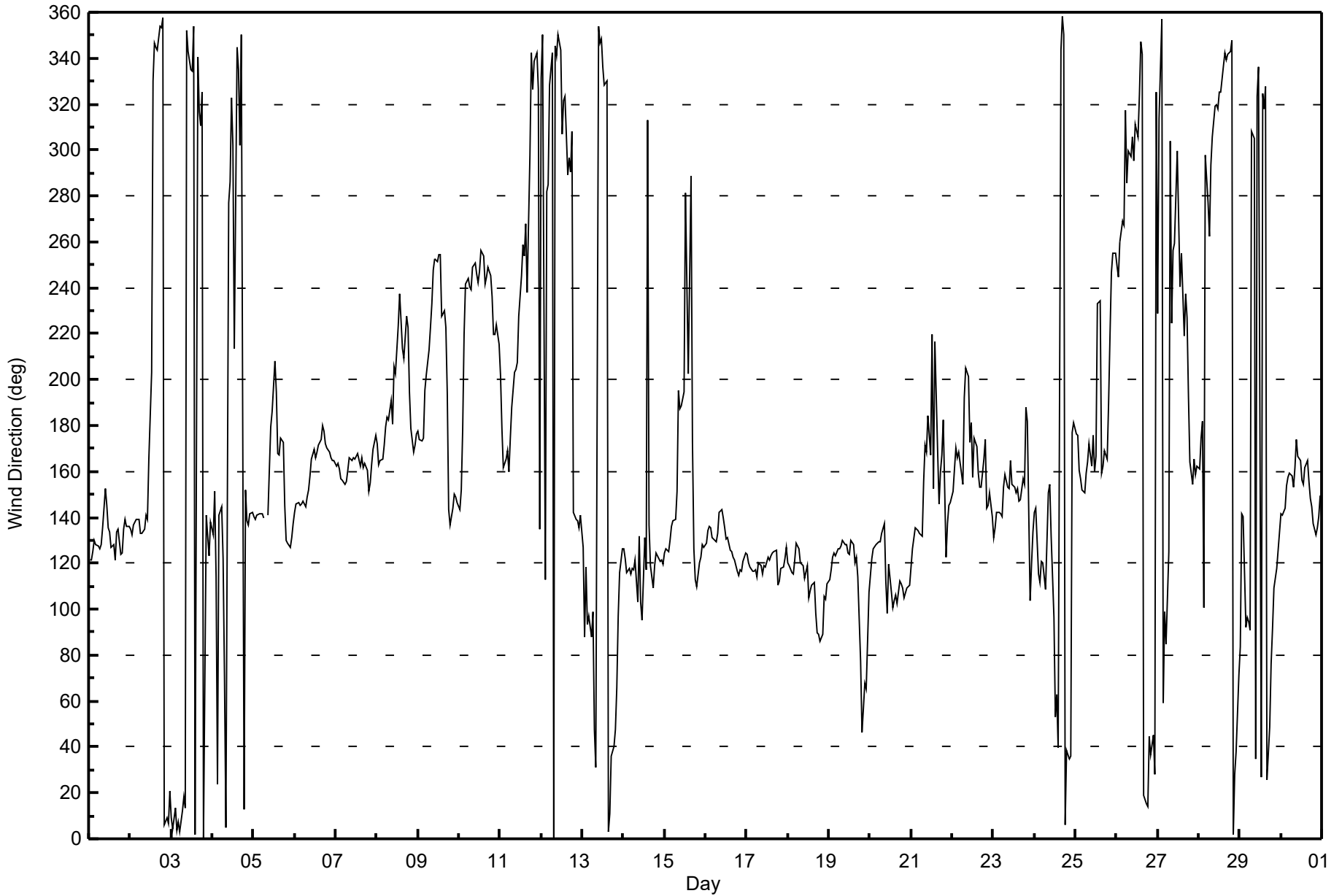
Wind Direction (WD) - deg
Wapasu - April 2023

Direction of Maximum Speed: 123 deg on Apr 17 13:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 119.7 deg on Apr 17	Hours of Data: 719
Direction of Minimum Speed: 229 deg on Apr 27 01:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 1.2 deg on Apr 4	Percent Operational Time: 99.9
Monthly Average Direction: 146.7 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-Apr	121	121	125	130	128	127	126	128	135	152	145	135	133	127	128	121	134	135	124	124	135	139	136	136	130.3
2-Apr	135	133	137	139	139	139	133	133	135	141	139	165	203	330	347	345	344	354	353	357	6	9	7	21	89.3
3-Apr	9	4	14	4	8	3	12	19	13	352	343	335	334	354	2	341	316	310	325	0	141	132	124	138	358.4
4-Apr	132	151	114	24	141	145	122	70	5	277	286	323	302	213	345	335	302	350	13	152	139	137	141	142	131.3
5-Apr	140	139	141	141	141	141	140	M	141	160	180	186	208	195	168	167	175	173	145	130	129	127	131	137	152.9
6-Apr	142	146	147	145	146	147	145	149	152	158	165	170	166	168	172	174	180	178	172	170	168	166	165	165	162.0
7-Apr	163	163	161	157	156	154	155	160	166	165	166	165	167	168	162	166	162	163	160	152	155	163	169	176	162.1
8-Apr	172	163	164	165	172	180	184	182	191	180	206	202	223	237	226	214	209	227	223	195	179	168	172	176	192.4
9-Apr	178	174	173	175	195	202	213	223	233	248	252	251	255	255	228	230	223	194	143	137	144	150	149	146	206.8
10-Apr	144	152	178	220	241	244	241	239	249	251	246	242	247	256	254	242	245	249	246	236	220	220	224	215	234.8
11-Apr	202	179	162	165	169	160	174	188	203	204	207	228	246	259	254	268	238	298	342	326	339	342	326	135	227.5
12-Apr	331	350	113	282	285	328	343	1	345	341	350	344	307	321	324	289	297	290	308	142	139	139	135	141	328.3
13-Apr	127	88	118	94	97	88	99	48	31	354	346	349	336	328	330	3	11	36	40	48	66	97	116	127	46.9
14-Apr	126	122	116	118	116	118	117	121	103	132	103	95	131	117	313	137	119	109	119	125	123	121	122	120	118.2
15-Apr	124	126	125	130	136	138	139	151	195	188	189	195	281	242	203	288	173	126	113	110	120	123	128	127	135.8
16-Apr	129	134	136	136	131	130	130	133	142	143	140	135	130	131	126	125	123	121	116	115	117	116	121	124	127.9
17-Apr	124	120	118	117	117	117	114	121	119	116	119	118	123	121	123	124	125	126	111	113	118	119	122	127	119.7
18-Apr	120	119	116	115	122	128	126	120	120	119	113	119	105	108	111	112	98	90	89	86	89	105	104	111	113.1
19-Apr	113	117	122	125	123	126	126	128	130	128	128	124	124	130	128	120	122	114	77	47	57	67	65	108	120.7
20-Apr	115	122	127	128	129	129	129	133	138	113	98	120	107	101	104	106	103	112	111	109	105	109	110	110	115.1
21-Apr	119	126	135	135	134	133	132	156	172	168	184	167	220	152	217	168	146	160	167	183	123	137	145	147	149.1
22-Apr	151	161	170	166	168	159	155	192	205	201	173	181	158	175	171	160	153	153	165	174	144	145	151	141	166.1
23-Apr	131	136	142	142	142	140	153	159	153	153	165	155	153	151	152	147	148	157	154	188	182	104	120	134	150.3
24-Apr	142	144	115	112	121	120	109	129	151	154	132	96	53	63	40	343	358	350	6	38	35	36	177	181	89.3
25-Apr	176	176	161	157	152	151	159	164	172	162	176	160	167	233	234	159	162	169	165	190	219	247	255	255	180.7
26-Apr	250	245	260	269	267	317	285	300	297	306	295	311	306	324	347	342	19	15	14	45	37	45	28	325	318.6
27-Apr	229	314	357	59	99	85	125	304	225	256	260	300	270	240	255	219	237	227	193	164	155	165	158	162	215.4
28-Apr	161	174	182	101	298	277	262	293	305	319	320	318	325	325	337	342	339	342	343	348	2	28	38	72	327.5
29-Apr	83	142	141	92	96	95	91	308	305	35	324	336	27	324	318	328	26	49	76	92	110	118	126	134	81.6
30-Apr	142	141	144	154	158	160	158	153	162	174	166	165	156	154	162	165	156	149	144	137	132	136	140	150	151.8

138.8	139.5	139.4	140.2	142.9	142.7	143.5	151.2	159.4	165.1	172.7	169.7	172.3	176.7	169.4	167.2	157.3	149.4	127.4	124.2	126.6	130.4	136.8	141.6
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
Wapasu - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 107 deg on Apr 15 13:00	Hours of Data: 719
Minimum Value: 4 deg on Apr 13 00:00	Hours of Missing Data: 1
Percentiles: P ₁ = 9 P ₁₀ = 16 Q ₁ = 19 Median = 24 Q ₃ = 30 P ₉₀ = 48 P ₉₉ = 90	Hours of Calibration: 0
	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-Apr	19	19	19	27	22	19	19	20	22	36	29	35	28	24	21	25	22	21	20	19	19	19	19	18	36
2-Apr	18	18	18	18	18	18	18	19	20	23	26	79	83	68	22	22	21	23	21	25	26	30	26	30	83
3-Apr	28	26	29	27	28	27	30	27	29	26	28	46	48	45	55	23	34	46	36	44	60	46	36	13	60
4-Apr	16	18	61	39	80	44	46	40	40	54	55	100	78	96	37	53	56	38	43	19	13	16	18	17	100
5-Apr	16	17	16	16	16	16	15	M	20	30	31	32	27	35	30	29	29	28	23	16	15	16	17	17	35
6-Apr	16	17	16	17	17	17	17	18	21	22	25	30	27	28	28	30	30	30	27	25	25	23	24	25	30
7-Apr	23	25	23	21	21	20	21	25	27	26	27	28	29	27	25	25	24	26	22	19	20	23	27	28	29
8-Apr	28	25	24	28	27	28	27	28	28	28	30	33	24	28	21	28	26	18	15	22	24	16	14	12	33
9-Apr	17	17	16	17	30	22	20	18	19	25	27	28	28	29	28	21	27	27	16	15	15	18	19	18	30
10-Apr	18	23	32	23	20	22	20	21	24	28	24	23	25	27	29	24	24	25	24	19	15	15	17	17	32
11-Apr	24	23	21	15	16	12	21	27	29	28	30	24	34	42	49	43	29	44	21	13	16	17	59	49	59
12-Apr	18	43	30	32	34	23	20	28	26	26	29	36	33	35	31	35	37	38	36	53	5	12	18	4	53
13-Apr	50	23	15	9	12	13	24	44	45	48	52	63	32	47	52	38	39	29	20	17	17	23	19	18	63
14-Apr	18	18	19	20	20	20	20	22	30	34	39	45	81	79	101	100	27	25	19	16	16	18	18	18	101
15-Apr	18	18	17	15	17	16	18	30	46	69	78	78	107	83	88	88	45	53	15	15	16	18	16	17	107
16-Apr	17	17	16	16	15	15	16	19	21	22	22	24	23	25	23	24	22	22	20	19	19	19	19	19	25
17-Apr	18	19	19	19	19	19	20	19	19	22	23	22	22	23	23	21	22	25	22	21	19	20	19	20	25
18-Apr	20	20	21	20	21	20	20	22	20	20	21	21	26	25	27	24	28	27	26	24	24	24	23	22	28
19-Apr	21	21	20	20	21	19	19	20	20	21	20	20	20	22	22	24	25	21	28	13	9	15	14	17	28
20-Apr	15	18	18	18	16	18	19	19	24	33	34	31	36	34	35	30	32	24	23	17	11	15	16	17	36
21-Apr	18	16	15	12	12	12	14	25	37	60	55	66	91	80	72	75	68	58	33	57	13	7	10	13	91
22-Apr	15	20	21	14	15	14	23	30	28	34	31	35	29	34	33	29	23	24	28	27	7	9	14	16	35
23-Apr	10	12	16	15	16	16	25	25	25	31	28	24	25	28	28	32	33	35	48	74	81	60	73	81	
24-Apr	21	20	18	17	21	22	21	23	29	44	24	30	22	33	45	79	26	20	29	29	23	25	44	28	79
25-Apr	27	30	20	21	18	18	23	26	35	27	30	25	29	38	23	31	24	29	28	30	27	23	26	27	38
26-Apr	24	23	28	26	33	19	35	27	28	26	36	27	38	39	34	42	36	34	31	27	24	22	69	63	69
27-Apr	91	61	24	49	48	16	34	73	69	55	50	51	47	35	69	31	28	26	28	19	17	23	20	24	91
28-Apr	25	27	63	49	71	33	24	29	26	25	26	27	25	27	24	28	24	26	22	27	28	18	17	10	71
29-Apr	12	13	19	6	5	5	14	81	86	91	56	68	78	48	54	66	73	44	29	20	16	19	18	17	91
30-Apr	18	17	17	19	22	23	22	22	27	31	30	29	30	29	32	33	26	24	19	18	18	18	18	18	33

91	61	63	49	80	44	46	81	86	91	78	100	107	96	101	100	73	58	43	57	74	81	69	73	
Diurnal Maximum																								

M - Maintenance



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS18 STONY MOUNTAIN APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
 APRIL 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	687	33	33	100	18.5	0	1.4	0
TRS(ppb) Average	684	36	36	100	0.3	0	0.2	0
THC(ppm) Average	687	33	33	100	2.2	-	2.1	-
NMHC(ppm) Average	687	33	33	100	0.011	-	0.001	-
CH4(ppm) Average	687	33	33	100	2.2	-	2.1	-
O3 (ppb) Average	686	34	34	100	52.5	0	48.7	-
NO2 (ppb) Average	685	35	35	100	13.4	0	2.3	-
NO (ppb) Average	685	35	35	100	4.5	-	0.8	-
NOX (ppb) Average	685	35	35	100	17.9	-	2.6	-
PM2.5 (ug/m3) Average	680	1	40	94.58	13.2	0	7.5	0
CO(ppm) Average	686	34	34	100	0.2	0	0.2	0
CO2(ppm) Average	686	34	34	100	483.1	0	450.5	0
Temperature 2 m (C) Average	720	0	0	100	19.5	-	11.8	-
Relative Humidity (%) Average	720	0	0	100	97.8	-	86.5	-
Wind Speed 20 m (km/h) Average	720	0	0	100	28	-	21	-
Wind Direction 20 m (deg) Average	720	0	0	100	-	-	-	-
Precipitation (mm) Total	718	0	2	99.72	1.4	-	3.8	-
Leaf Wetness (% of range) Average	720	0	0	100	37.1	-	8.7	-
Global Solar Radiation (W/m2) Average	720	0	0	100	894.3	-	304.5	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
 APRIL 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	687	0.41	0.9	-	0	0	0.1	0.2	0.5	0.9	18.5
TRS (ppb) Average	684	0.13	0	-	0.1	0.1	0.1	0.1	0.2	0.2	0.3
THC (ppm) Average	687	2.05	0	-	2	2	2	2	2.1	2.1	2.2
NMHC(ppm) Average	687	0	0.001	-	0	0	0	0	0	0	0.011
CH4(ppm) Average	687	2.05	0	-	2	2	2	2	2.1	2.1	2.2
O3 (ppb) Average	686	43	5.9	-	21.9	34.1	40.1	43.9	47.6	49.3	52.5
NO2 (ppb) Average	685	1.08	1	-	0.2	0.3	0.5	0.8	1.4	2.1	13.4
NO (ppb) Average	685	0.11	0.3	-	0	0	0	0	0.1	0.2	4.5
NOX (ppb) Average	685	1.18	1.3	-	0.2	0.3	0.5	0.9	1.4	2.3	17.9
PM2.5 (ug/m3) Average	680	4.17	2.2	-	0.3	1.7	2.7	3.8	5.5	6.9	13.2
CO(ppm) Average	686	0.15	0	-	0.1	0.1	0.1	0.1	0.2	0.2	0.2
CO2(ppm) Average	686	444.47	4.5	-	435.8	438.4	440.9	445	447.1	449.9	483.1
Temperature 2 m (C) Average	720	3.93	5.4	-	-8.2	-3.4	0.2	3.7	7.5	11.1	19.5
Relative Humidity (%) Average	720	52.56	21	-	16.1	26.2	34.8	50	69.5	83.2	97.8
Wind Speed 10 m (km/h) Average	720	12.2	5	-	2	6	8	12	15	20	28
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	718	-	-	9.28	-	-	-	-	-	-	-
Surface Wetness (% of range) Average	720	1.87	3.1	-	0	0.7	1	1.3	1.6	2	37.1
Global Solar Radiation (W/m2) Average	720	195.79	249.9	-	0	0	0.3	54	377.9	609.2	894.3

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
APRIL 2023

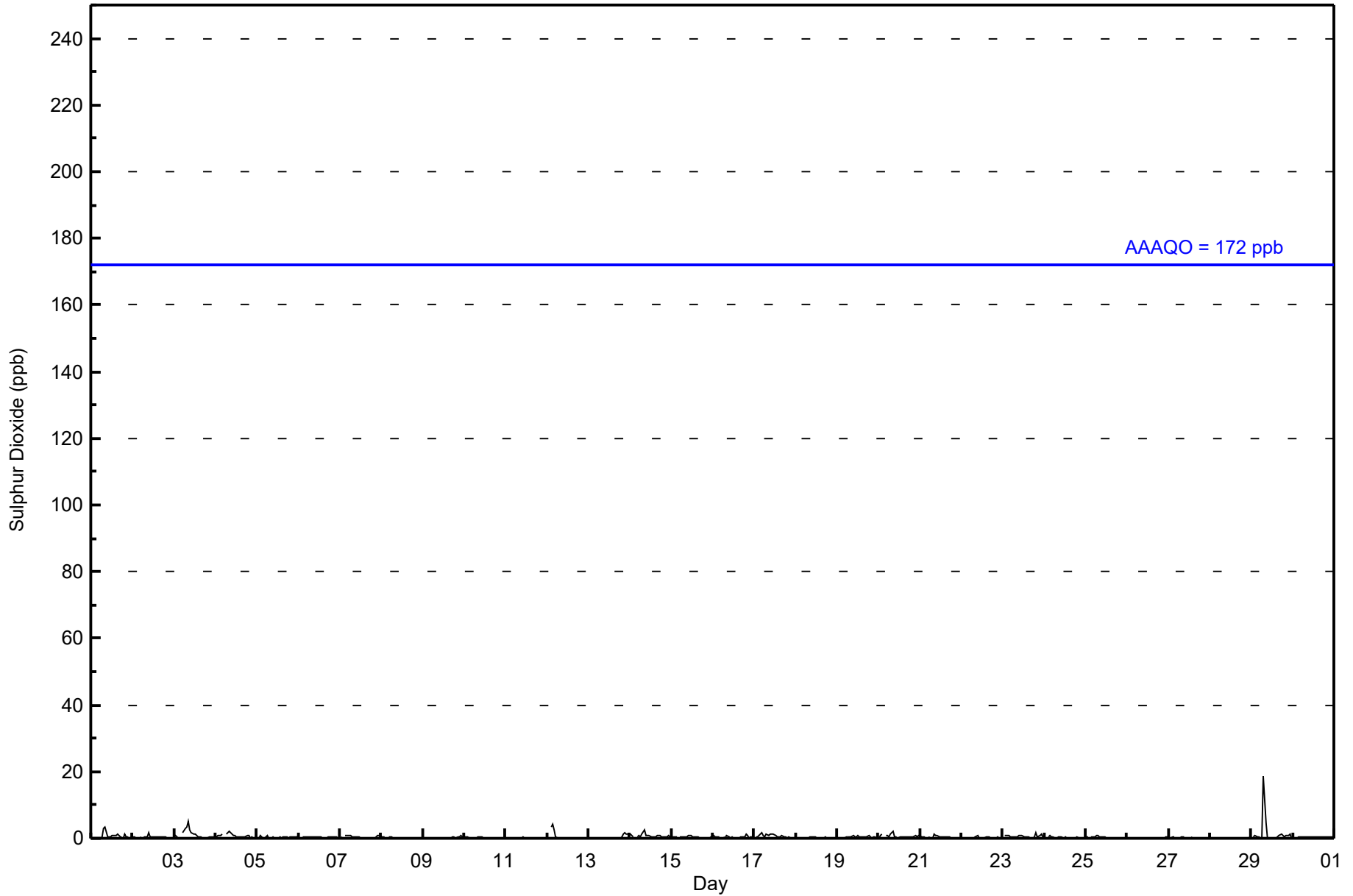
MONTHLY SUMMARY

Parameter	Period Start	Period End	Duration (Hours)	Notes
PM2.5	17 Apr 2023 21:00	19 Apr 2023 10:00	38	Analyzer Failure - inconsistent response
PM2.5	19 Apr 2023 11:00	19 Apr 2023 11:00	1	Maintenance - analyzer replaced
Precipitation Collector	20 Apr 2023 13:00	20 Apr 2023 14:00	2	Maintenance - sensor verification check



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Stony Mountain - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	686	99.85	99.85
11 - 20	1	0.15	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: 687

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Stony Mountain - April 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 10	19	23	20	40	51	64	55	95	93	31	36	27	34	37	32	29	686
11 - 20	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
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
Totals	19	23	20	40	51	65	55	95	93	31	36	27	34	37	32	29	687

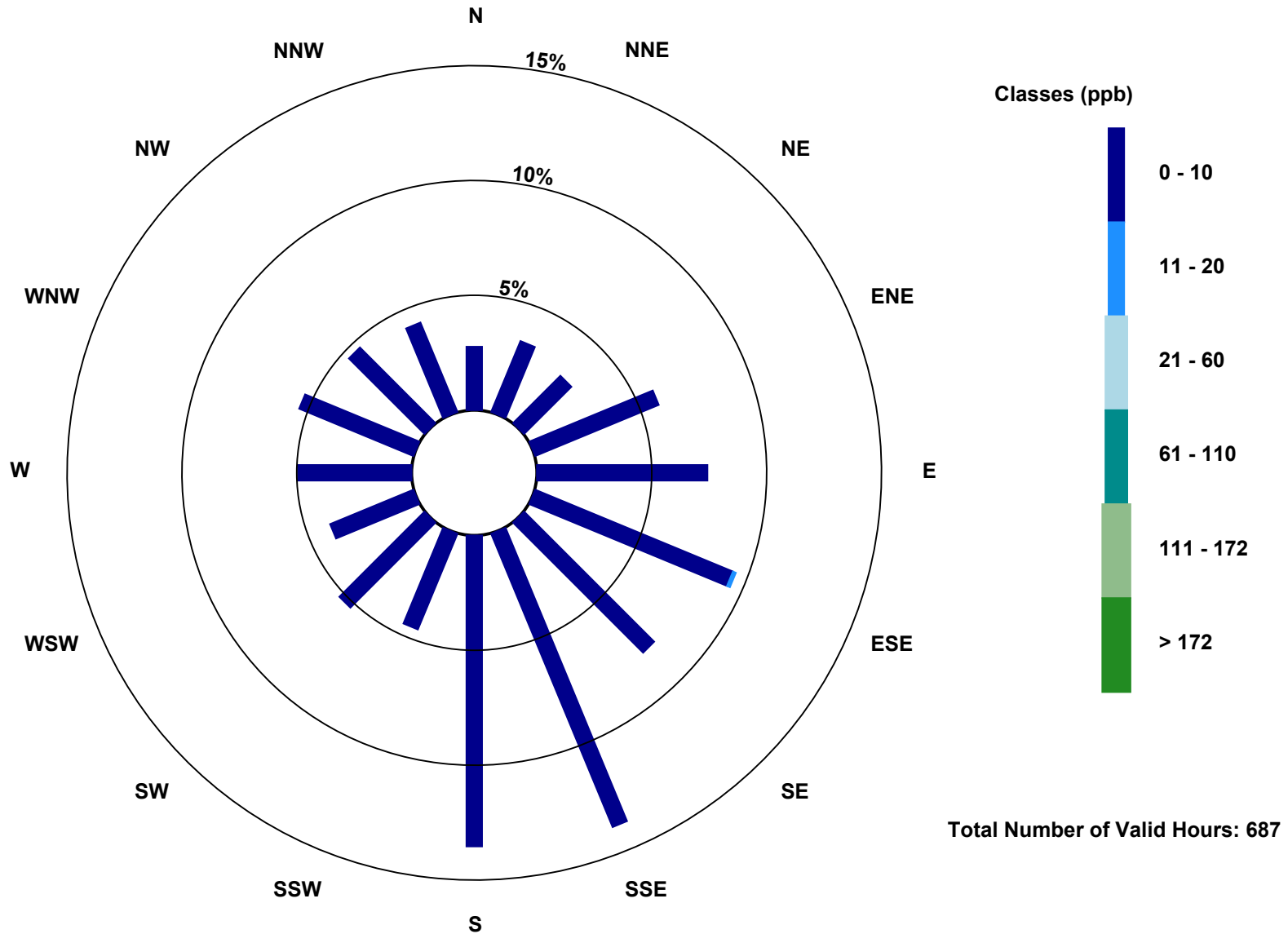
Total Number of Valid Hours: 687

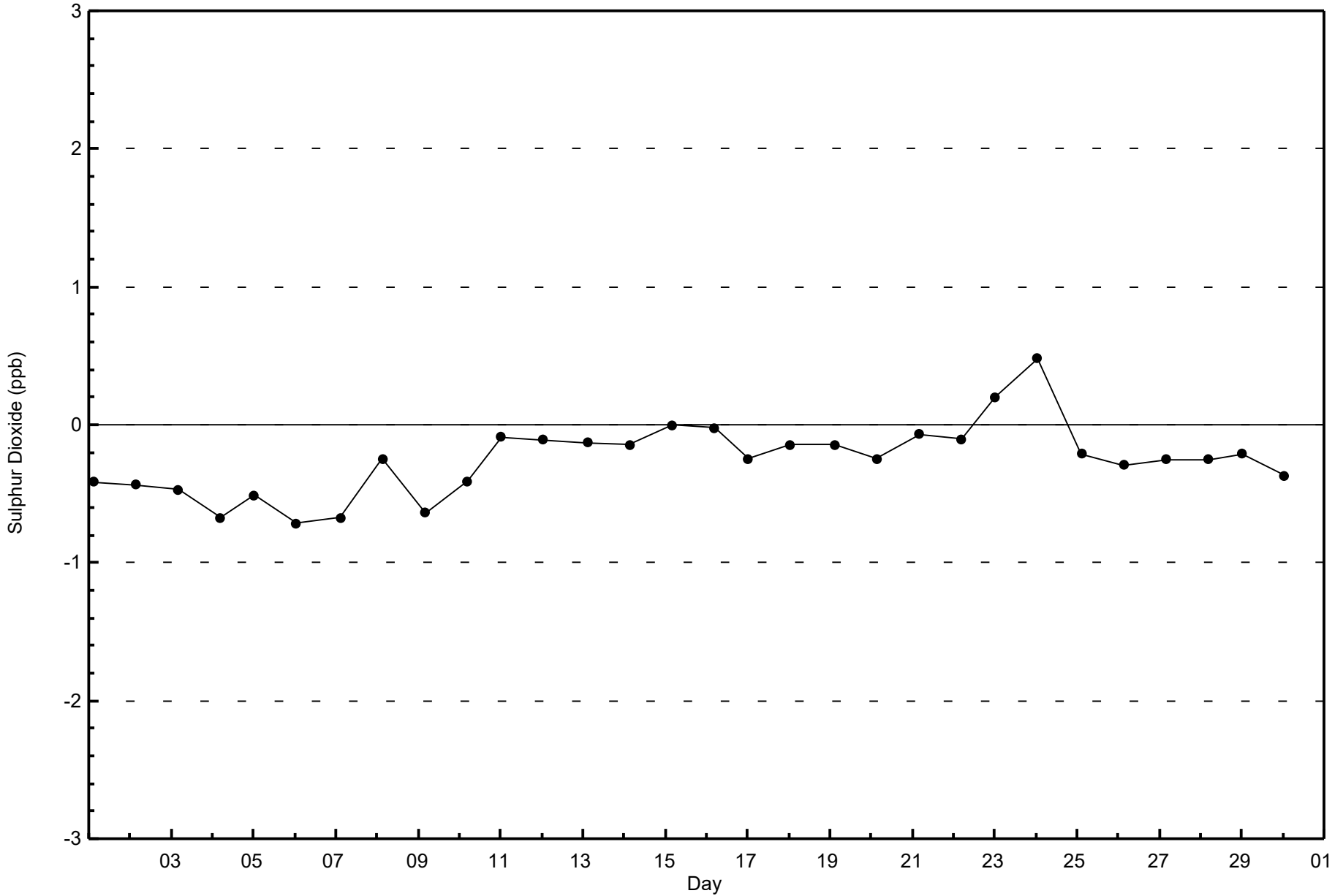
Total Number of Hours: 720

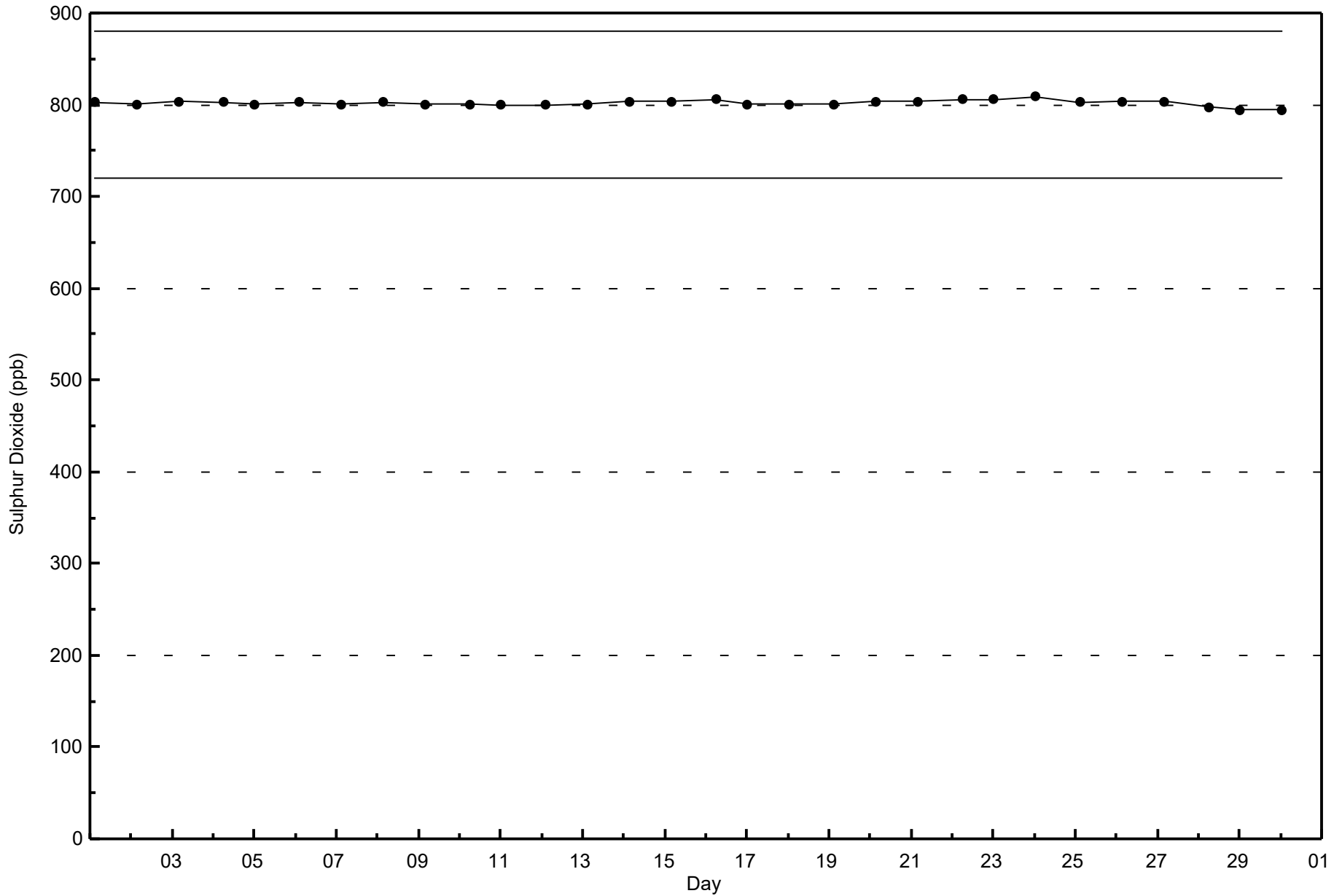


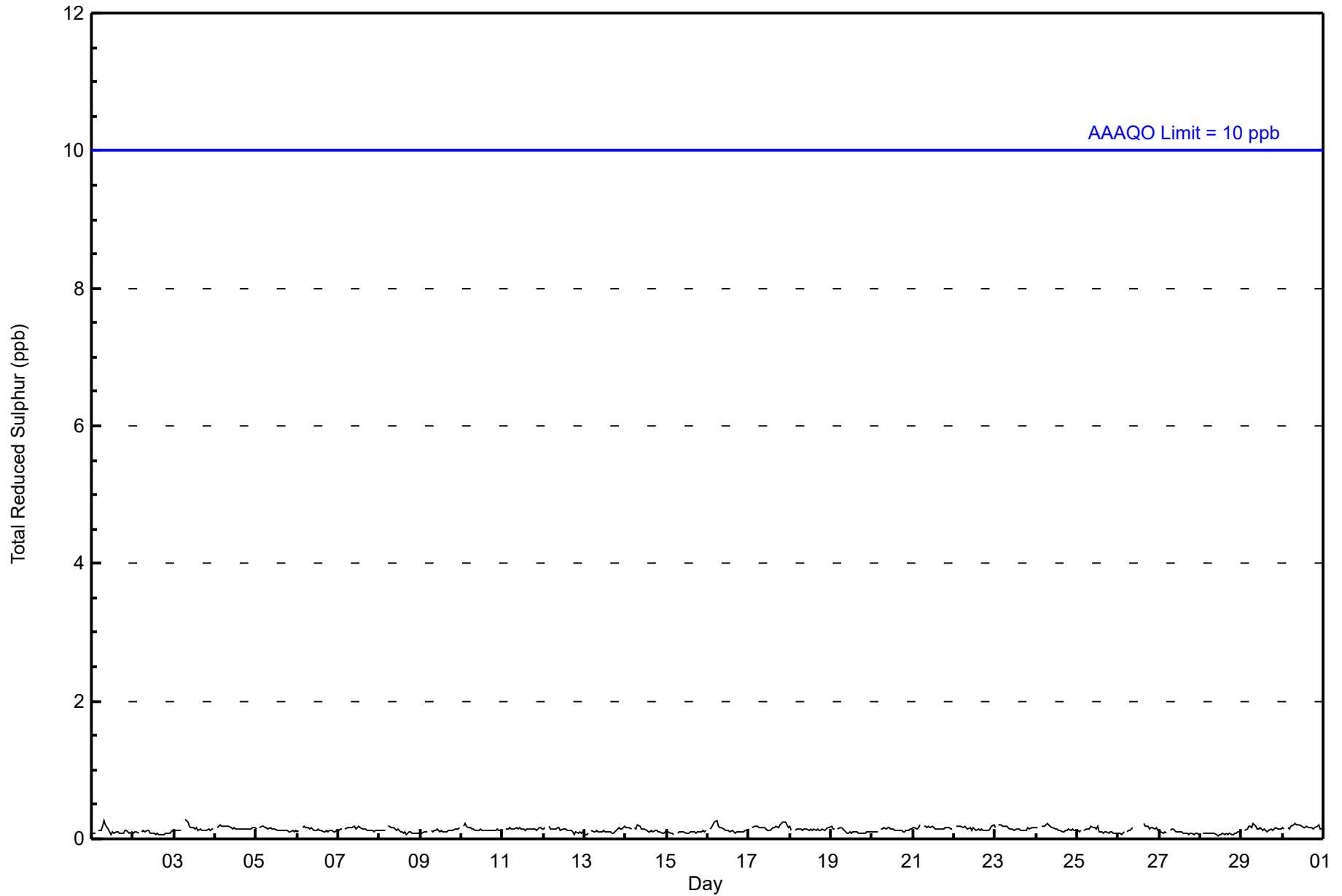
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Stony Mountain











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Stony Mountain - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Reduced Sulphur (TRS) - ppb
Stony Mountain - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	20	21	20	39	52	63	55	98	91	30	36	25	36	41	30	27	684
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
Totals	20	21	20	39	52	63	55	98	91	30	36	25	36	41	30	27	684

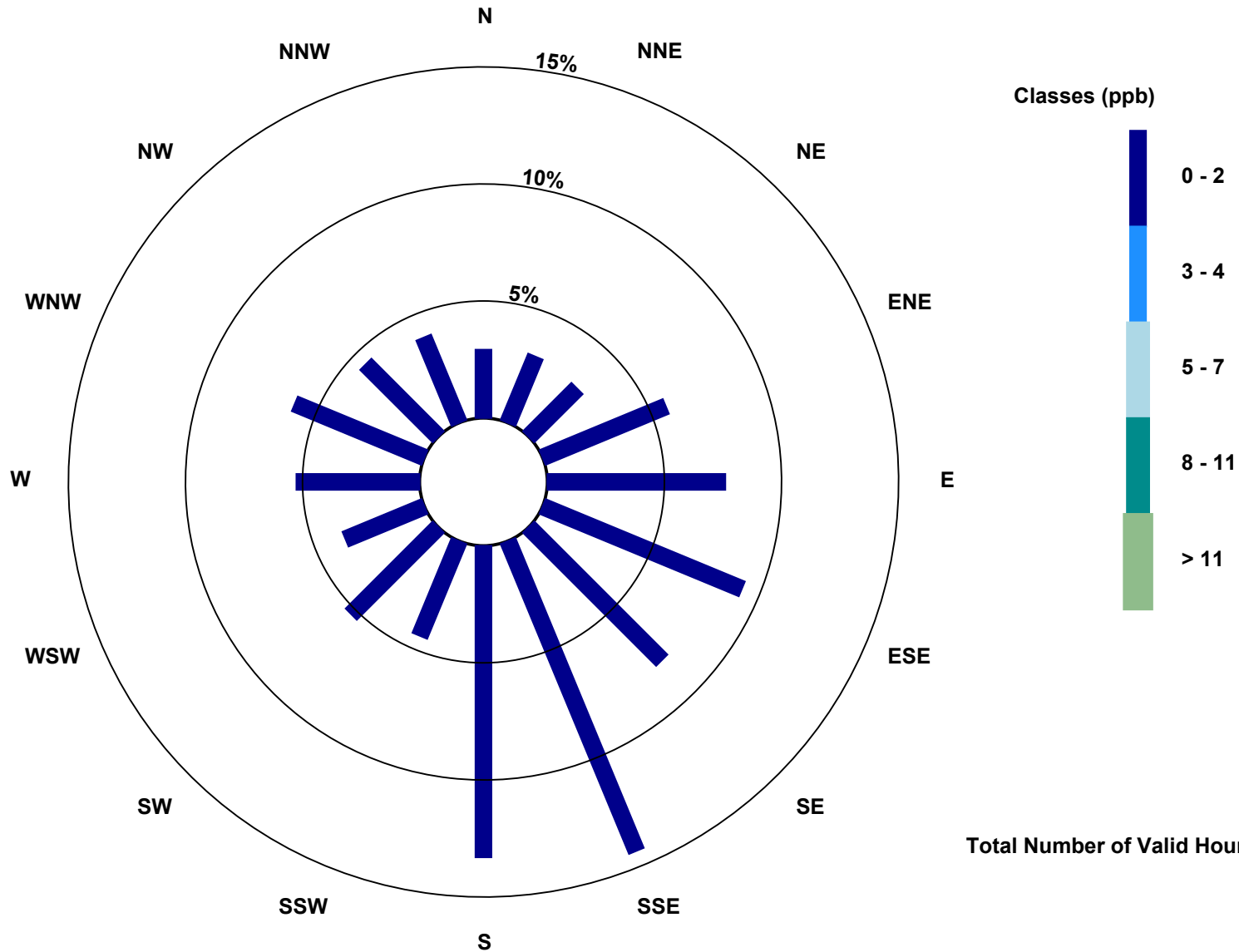
Total Number of Valid Hours: 684

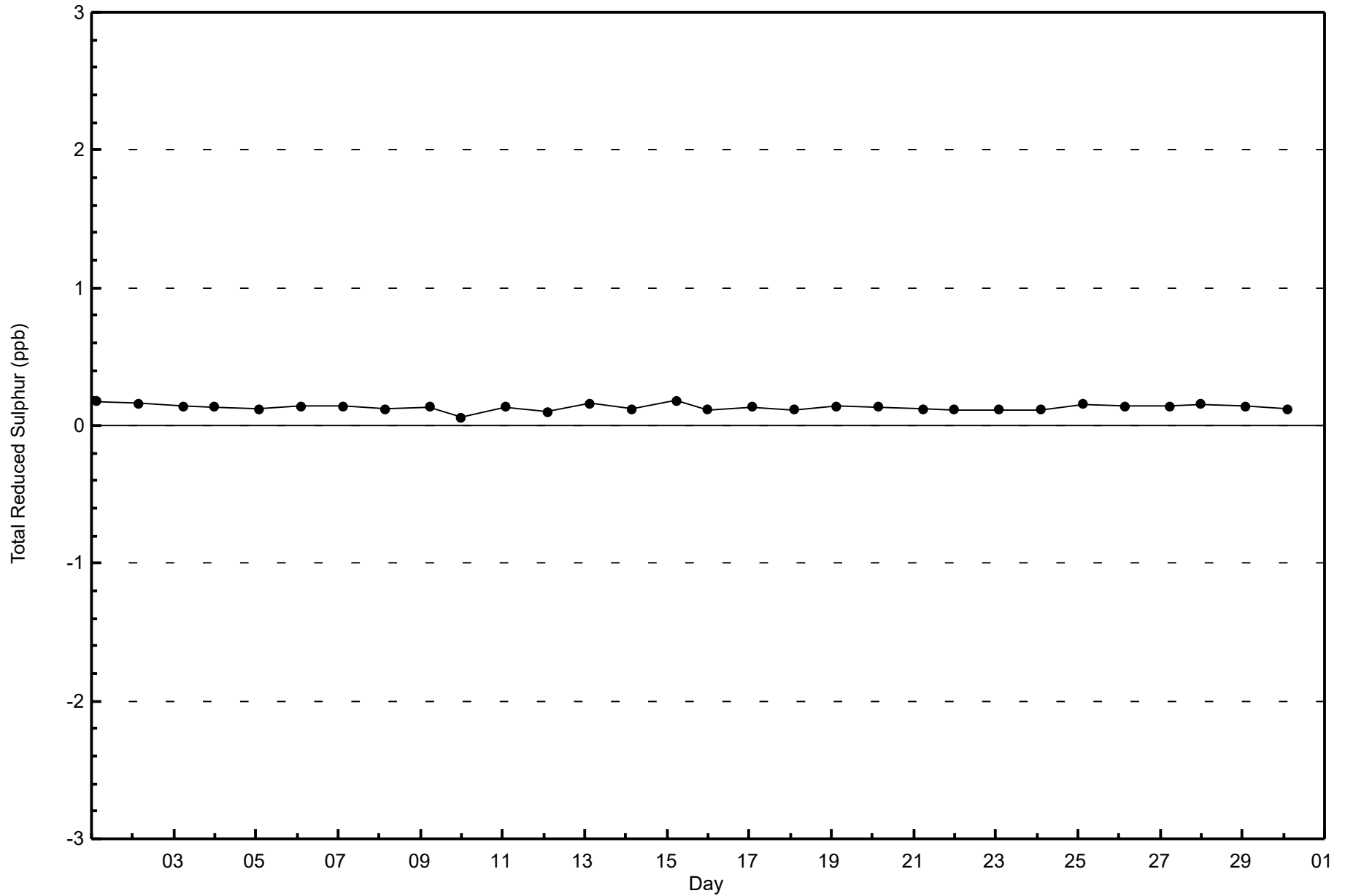
Total Number of Hours: 720

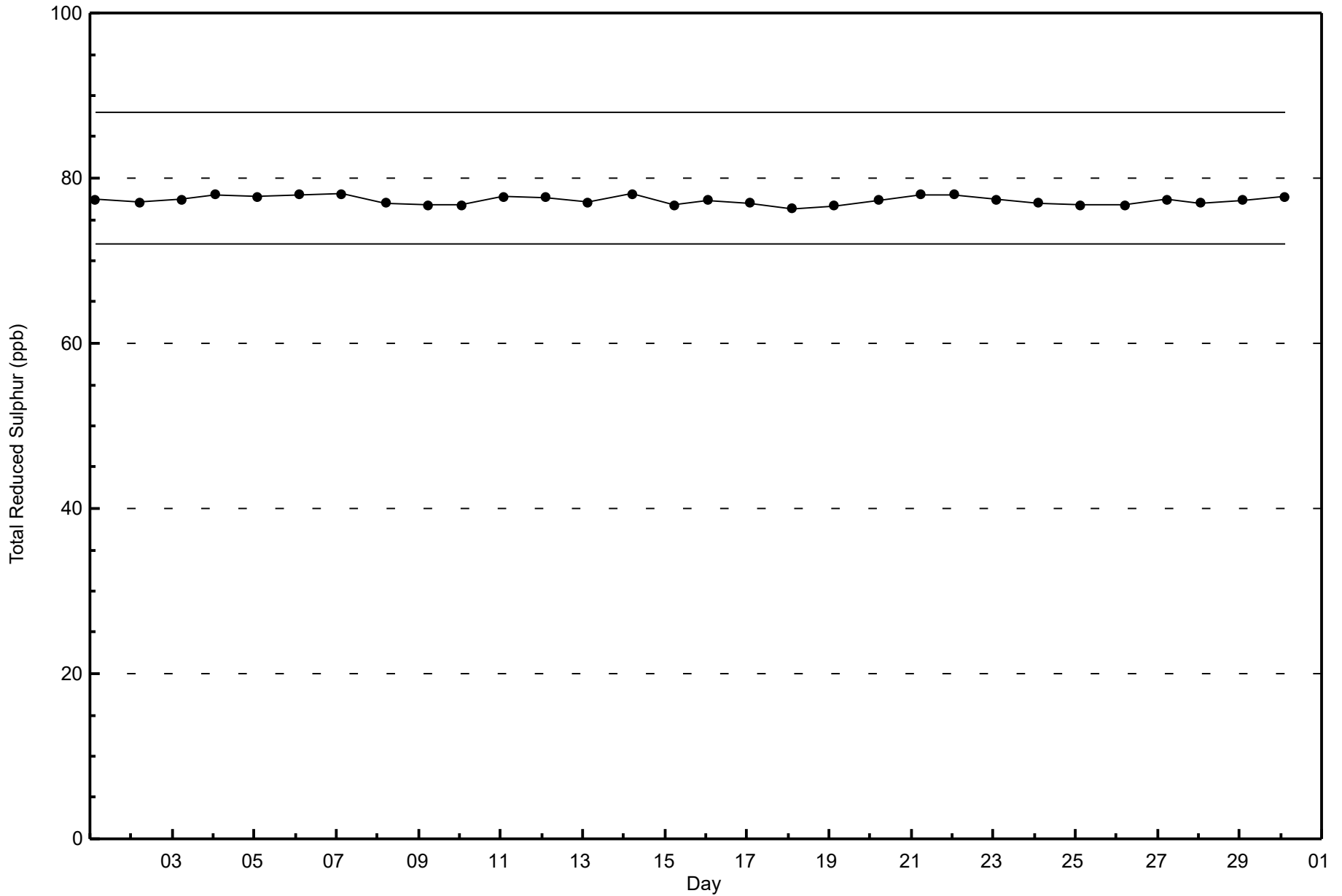


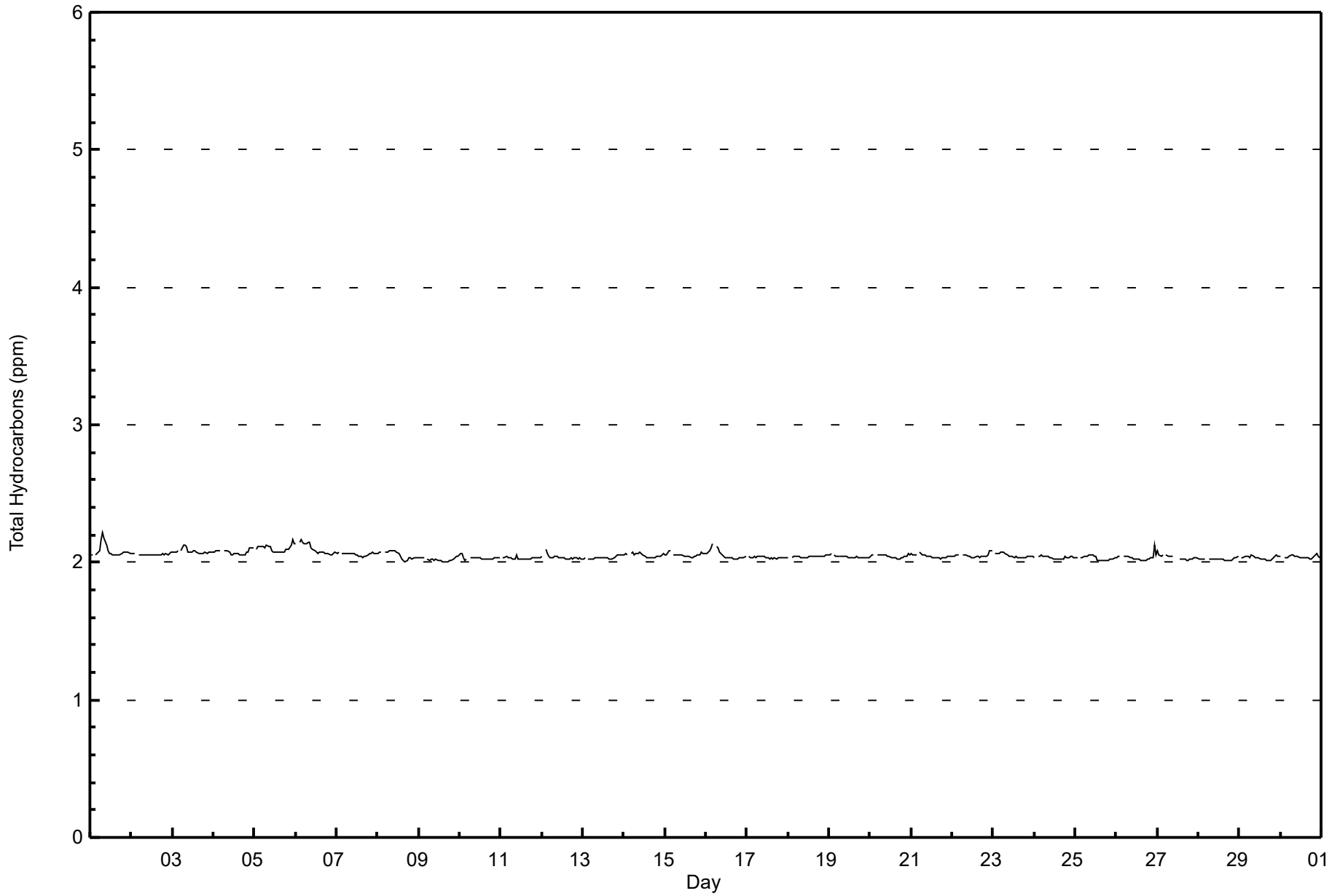
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Stony Mountain











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Stony Mountain - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	425	61.86	61.86
2.1 - 3.0	262	38.14	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Stony Mountain - April 2023

Concentration 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	15	13	20	27	38	40	61	24	10	28	25	33	34	20	22	425
2.1 - 3.0	4	8	7	20	24	27	15	34	69	21	8	2	1	3	12	7	262
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
Totals	19	23	20	40	51	65	55	95	93	31	36	27	34	37	32	29	687

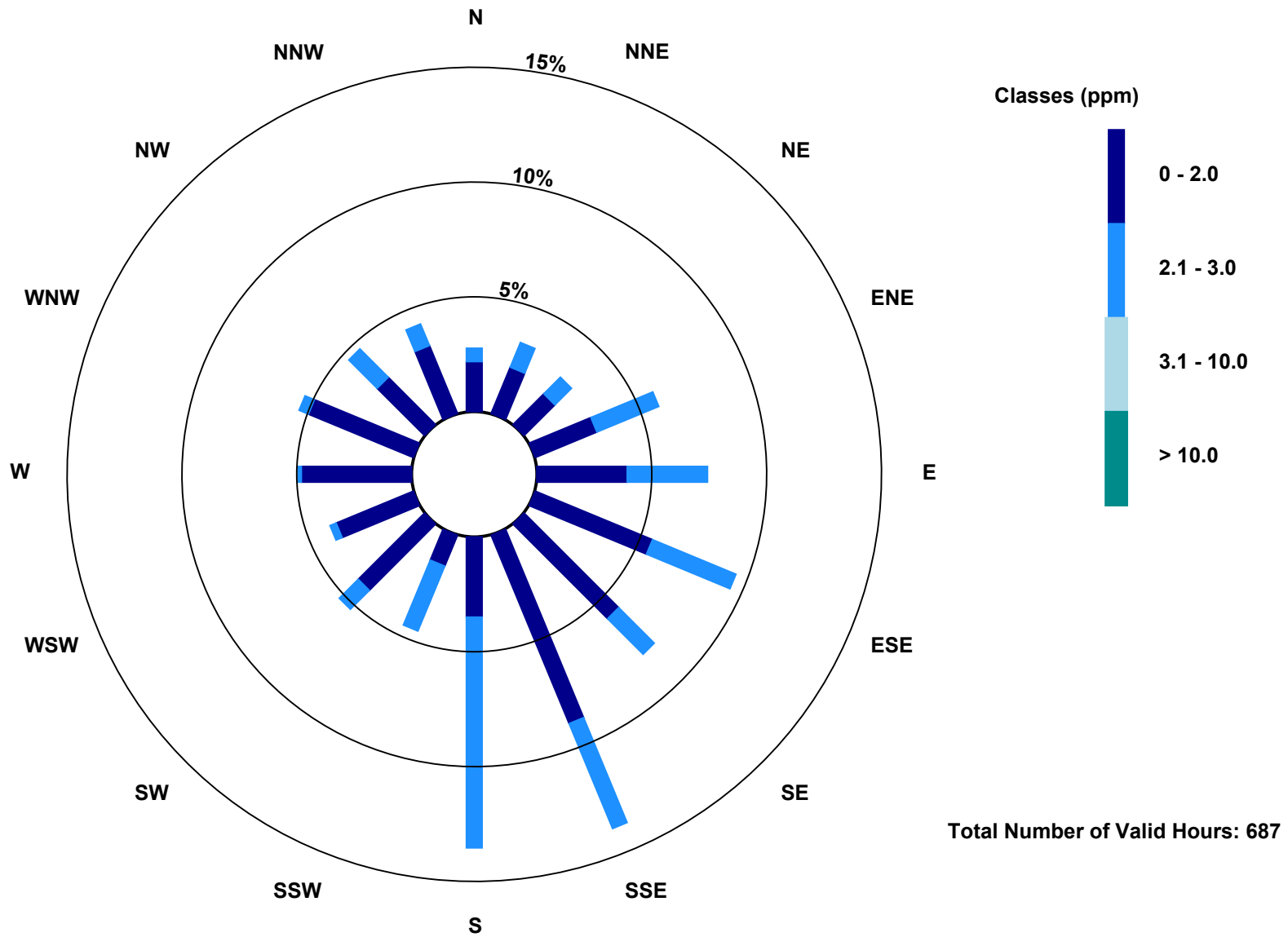
Total Number of Valid Hours: 687

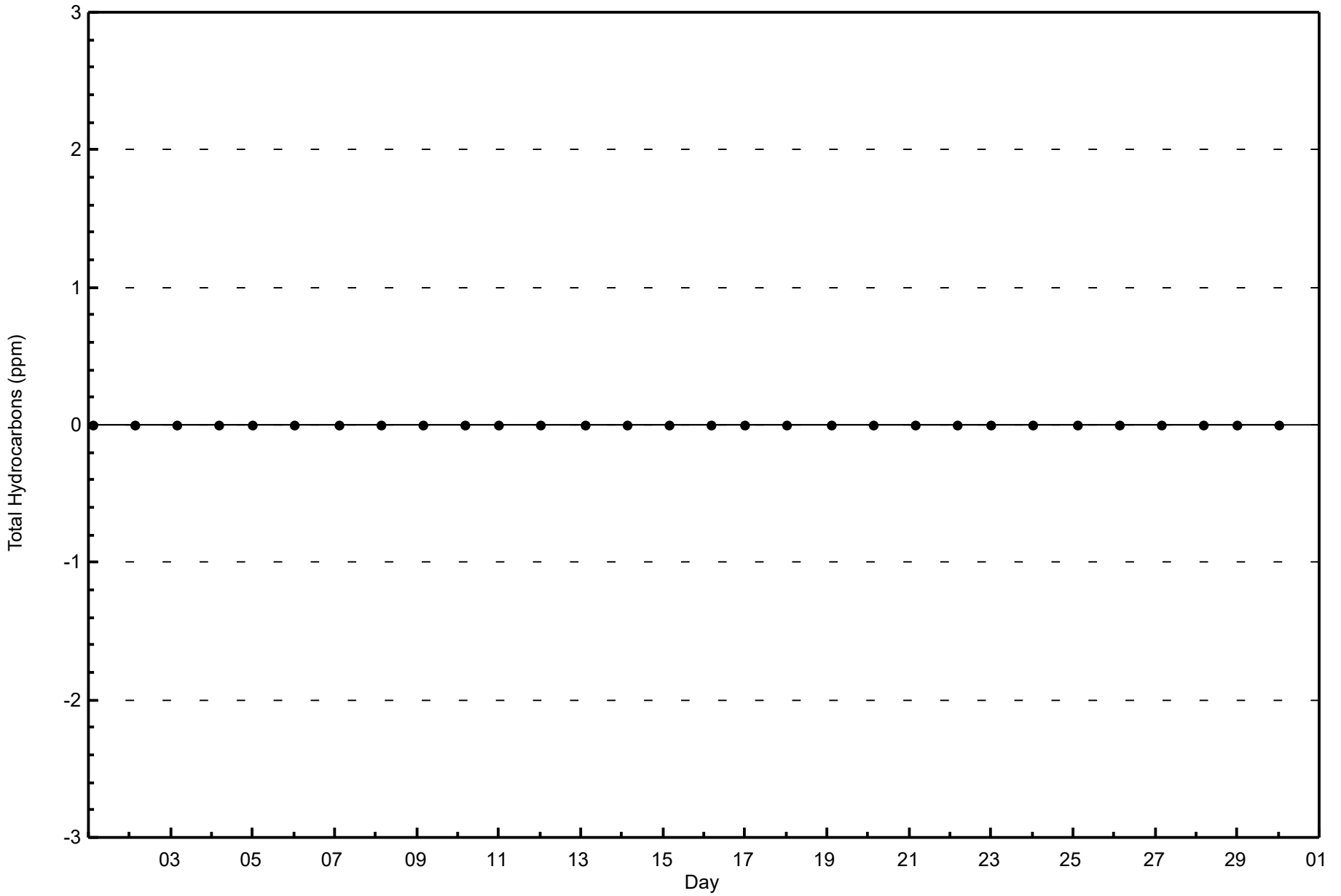
Total Number of Hours: 720

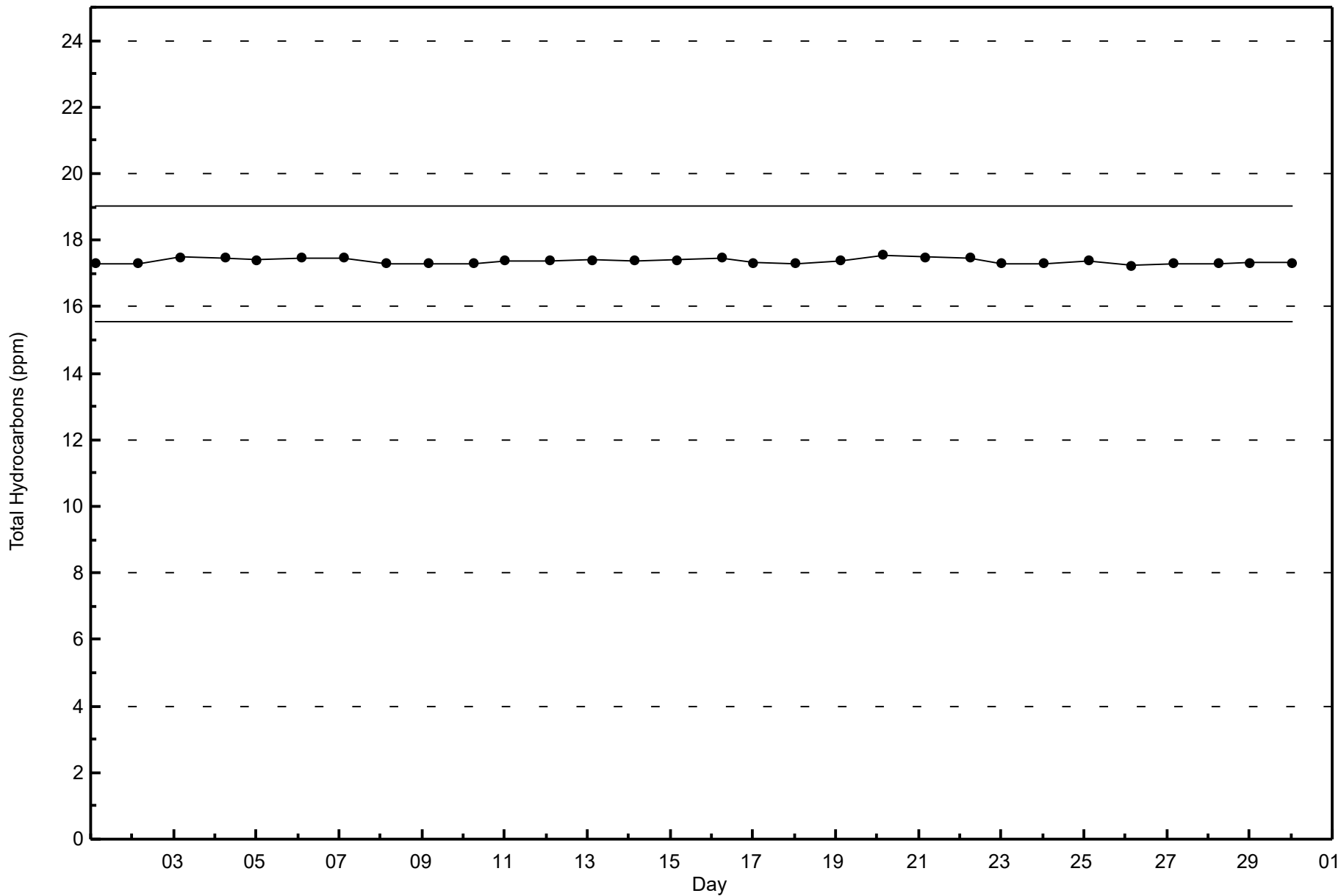


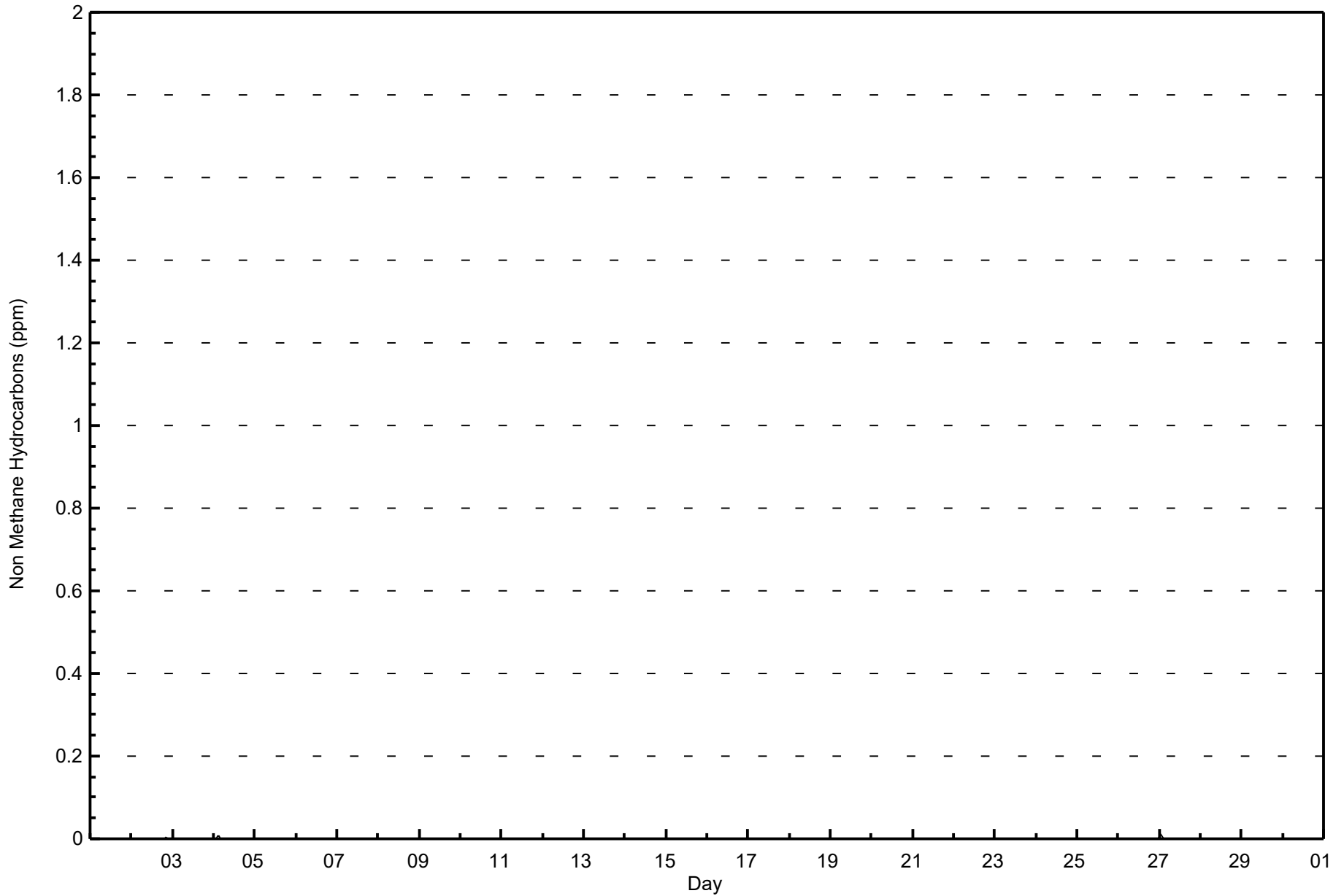
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Stony Mountain











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Stony Mountain - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	684	99.56	99.56
0.006 - 0.05	3	0.44	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Stony Mountain - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	18	23	20	39	51	64	55	95	93	31	36	27	34	37	32	29	684
0.006 - 0.05	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
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
Totals	19	23	20	40	51	65	55	95	93	31	36	27	34	37	32	29	687

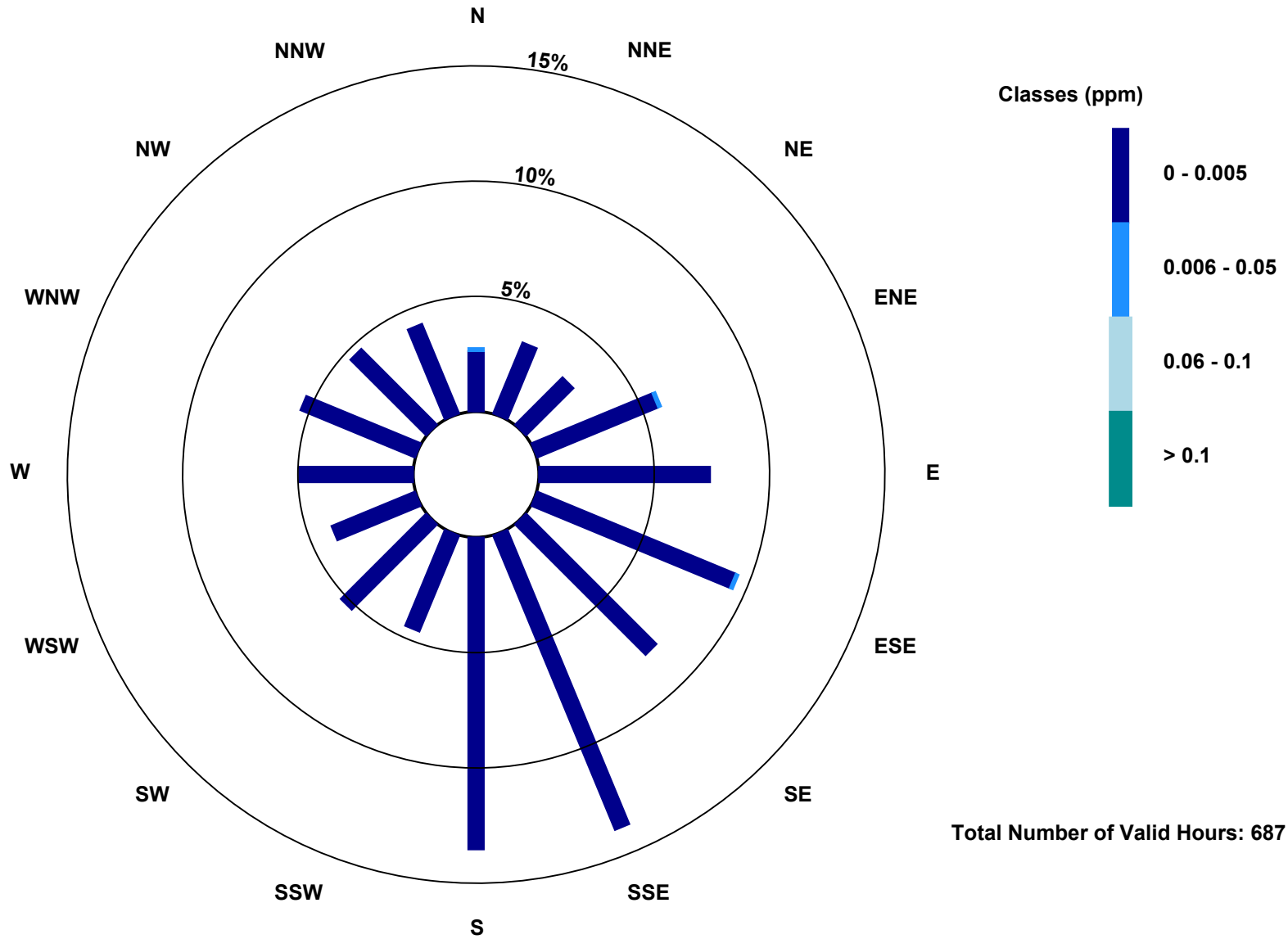
Total Number of Valid Hours: 687

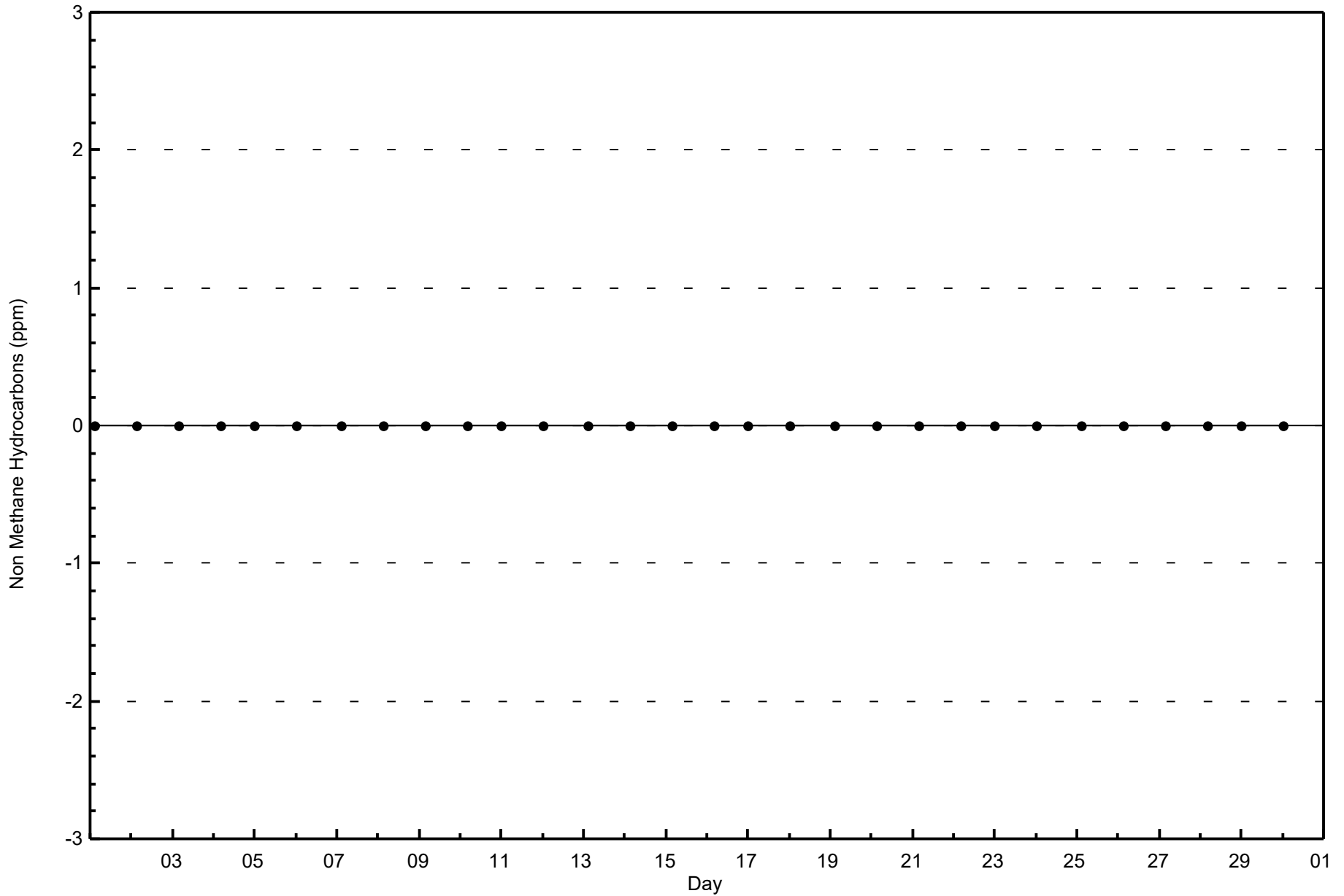
Total Number of Hours: 720

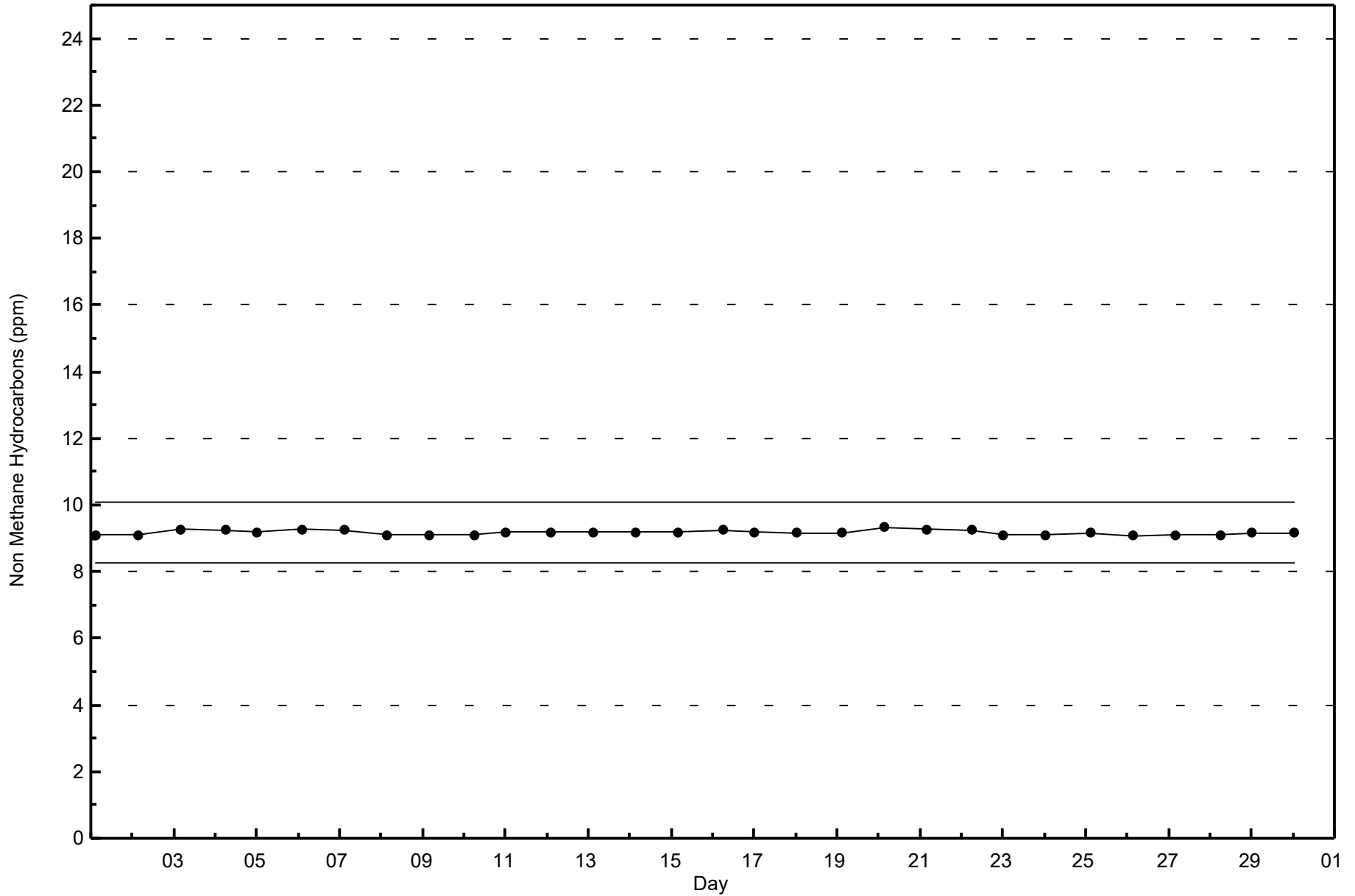


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Stony Mountain



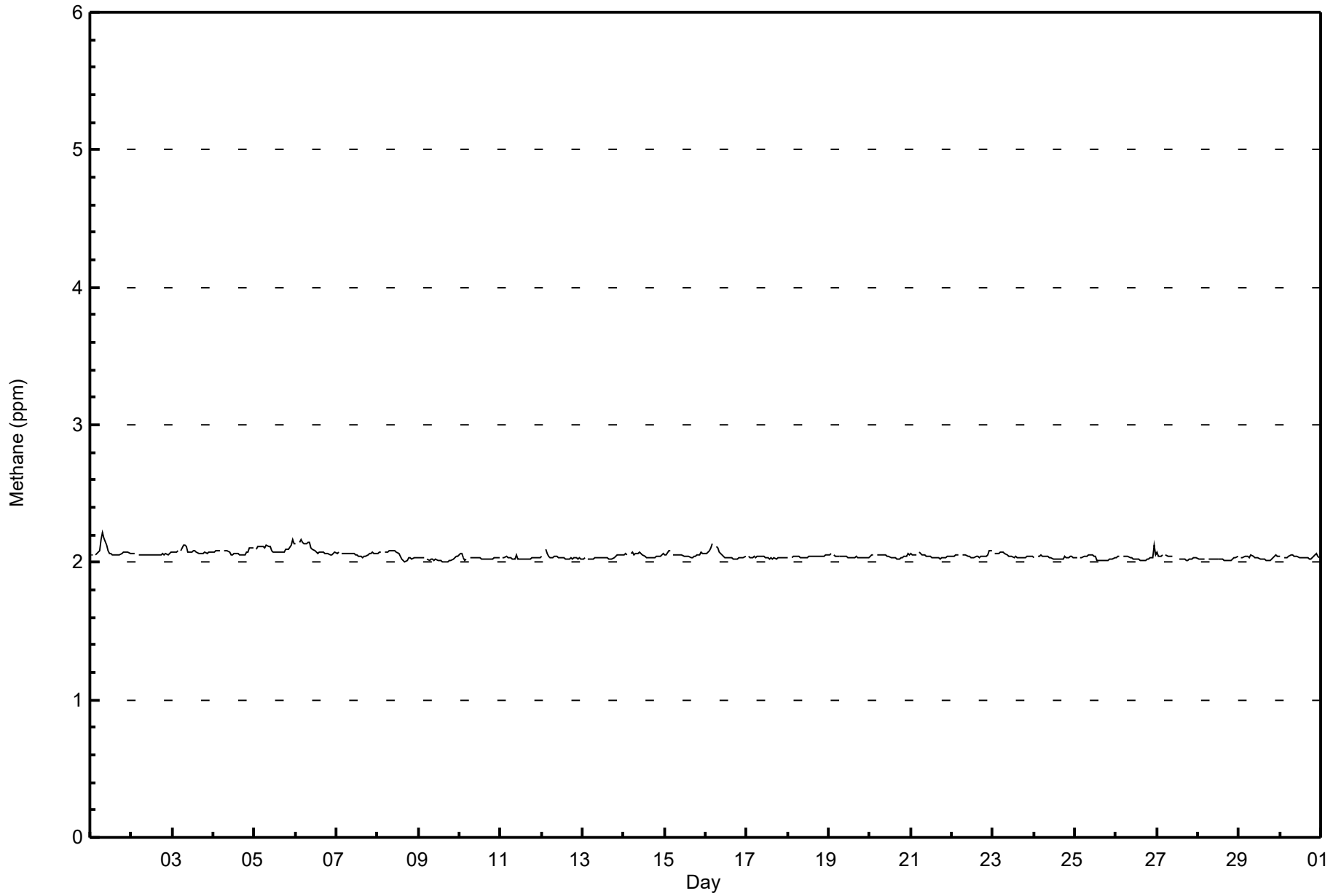






Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Stony Mountain - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	426	62.01	62.01
2.1 - 3.0	261	37.99	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Stony Mountain - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	16	15	13	20	27	38	40	61	24	10	28	25	33	34	20	22	426
2.1 - 3.0	3	8	7	20	24	27	15	34	69	21	8	2	1	3	12	7	261
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
Totals	19	23	20	40	51	65	55	95	93	31	36	27	34	37	32	29	687

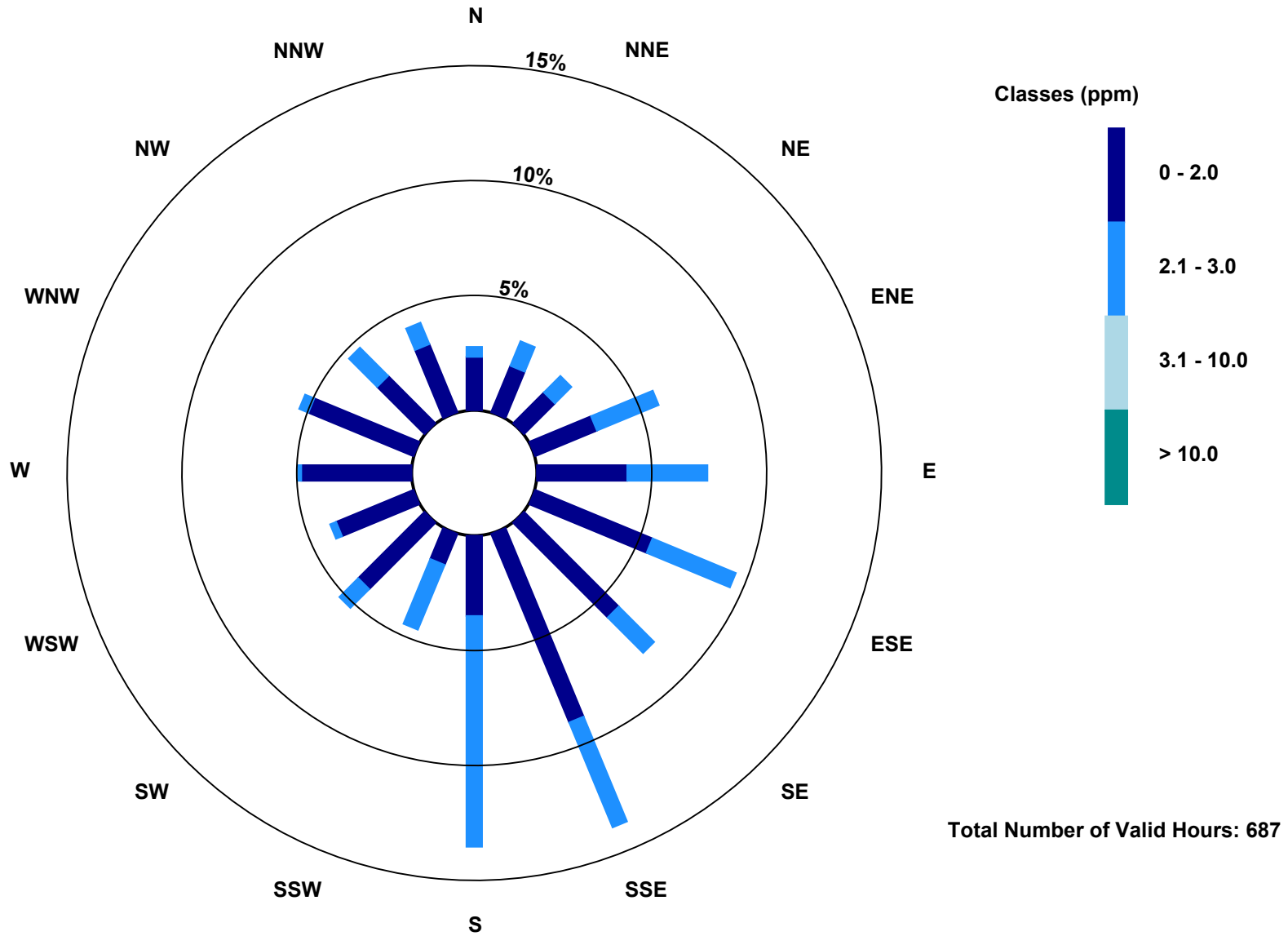
Total Number of Valid Hours: 687

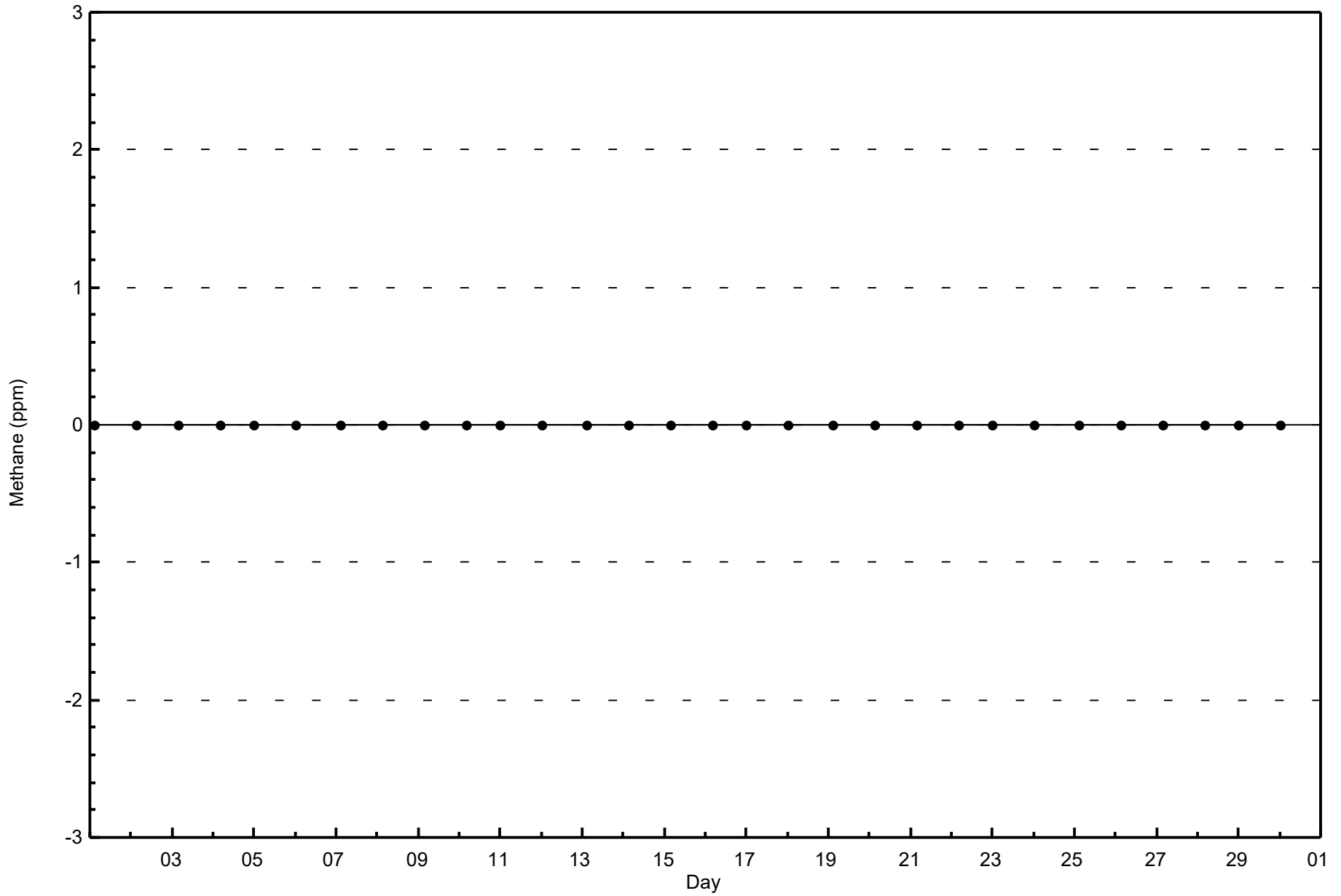
Total Number of Hours: 720

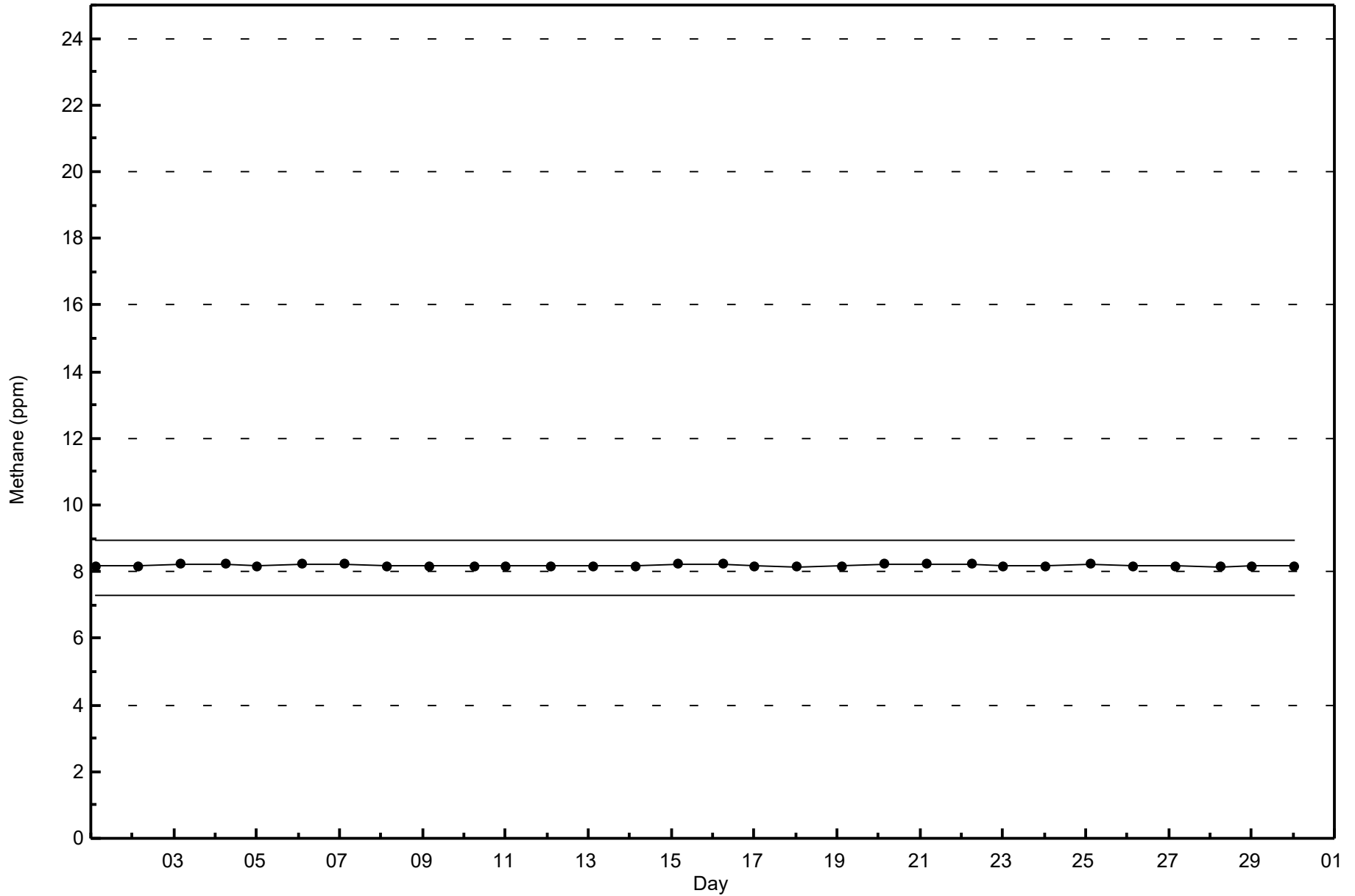


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Stony Mountain









Wood Buffalo Environmental Association
Summary of Hour Averages

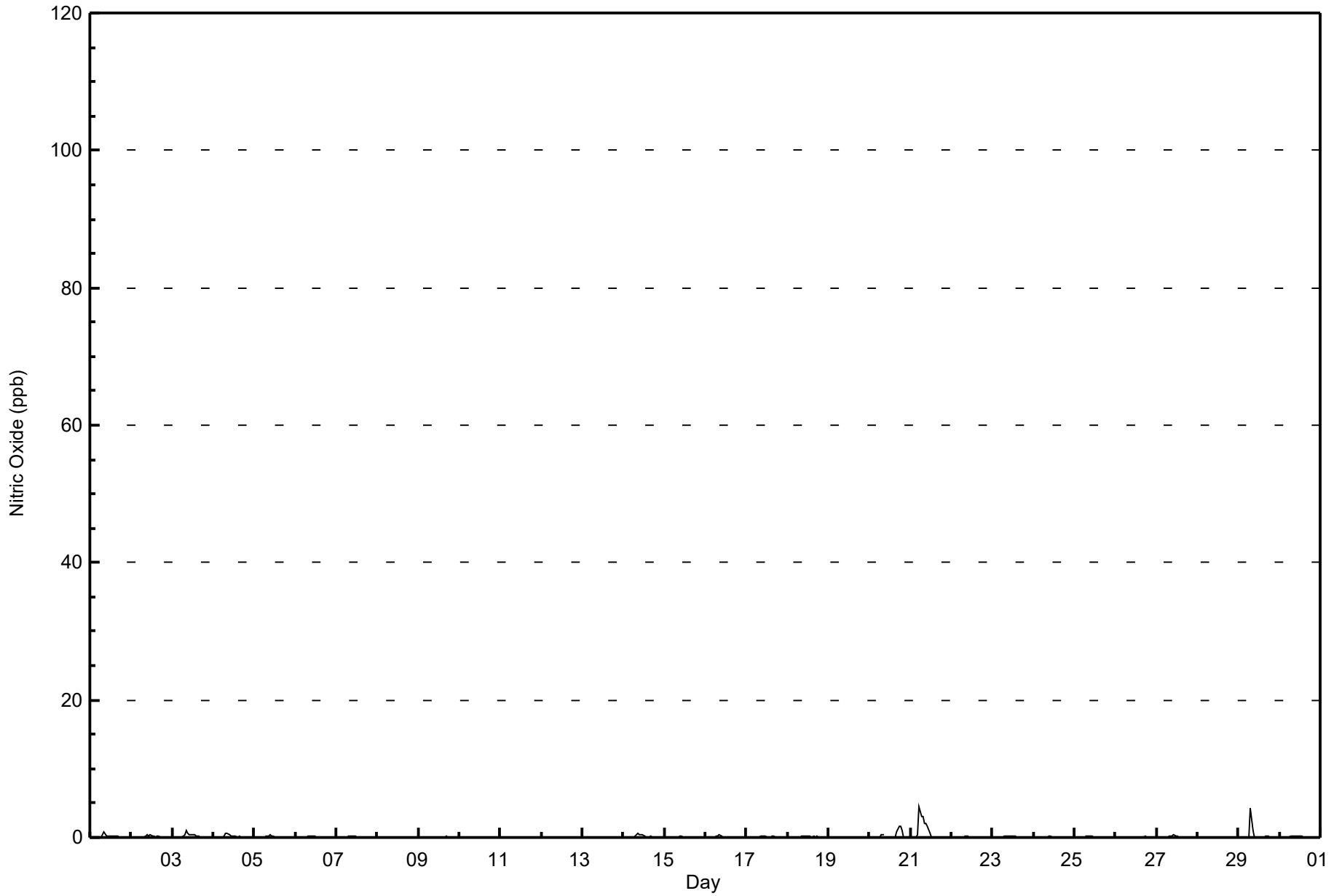
Nitric Oxide (NO) - ppb
Stony Mountain - April 2023

Maximum Value: 4.5 ppb on Apr 21 06:00 Maximum Daily Average: 0.8 ppb on Apr 21		Hours in Service: 720 Hours of Data: 685 Hours of Missing Data: 35 Hours of Calibration: 35 Percent Operational Time: 100.0																								
Minimum Value: 0.0 ppb on Apr 6 20:00 Minimum Daily Average: 0.0 ppb on Apr 11 Maximum Diurnal Average: 0.4 ppb at hour 8 Minimum Diurnal Average: 0.0 ppb at hour 3 Monthly Average: 0.11 ppb 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 = 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-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.4	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
2-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.2	0.4	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	0.4
3-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.4	0.9	0.6	0.3	0.4	0.5	0.5	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9
4-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.6	0.7	0.4	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
5-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	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	0.0	0.0	0.1	0.3
6-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.1	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	0.0	0.0	0.0	0.1	0.2
7-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.2	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	0.0	0.0	0.1	0.3
8-Apr	Z	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	0.0	0.0	0.0	0.0	0.1
9-Apr	0.0	Z	0.0	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	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
10-Apr	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11-Apr	0.0	0.0	0.0	Z	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	0.1
12-Apr	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	0.0	0.1
13-Apr	0.0	0.0	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.1
14-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.4	0.3	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
15-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	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	0.2
16-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.4	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	0.0	0.1	0.4
17-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2
18-Apr	0.0	0.0	0.0	0.0	Z	0.0	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	0.0	0.0	0.0	0.0	0.0	0.1	0.2
19-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	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	0.1
20-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.5	C	C	C	C	C	0.0	0.0	0.8	1.7	1.6	1.1	0.0	0.0	0.0	0.0	0.3	1.7
21-Apr	0.0	Z	0.0	0.0	0.3	4.5	3.0	3.0	2.0	2.1	1.6	0.5	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.5
22-Apr	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
23-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
24-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
25-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.2	0.2	0.2	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	0.3
26-Apr	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	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
27-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.4	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	0.4
28-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
29-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.1	4.2	1.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.3	4.2
30-Apr	0.0	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.1	0.2
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Stony Mountain - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Stony Mountain - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	18	24	21	35	51	64	54	97	90	30	34	28	33	43	32	31	685
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
Totals	18	24	21	35	51	64	54	97	90	30	34	28	33	43	32	31	685

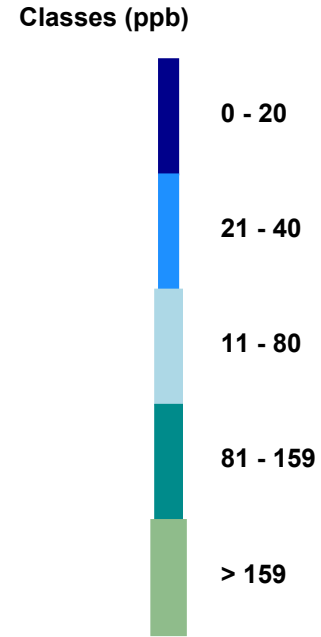
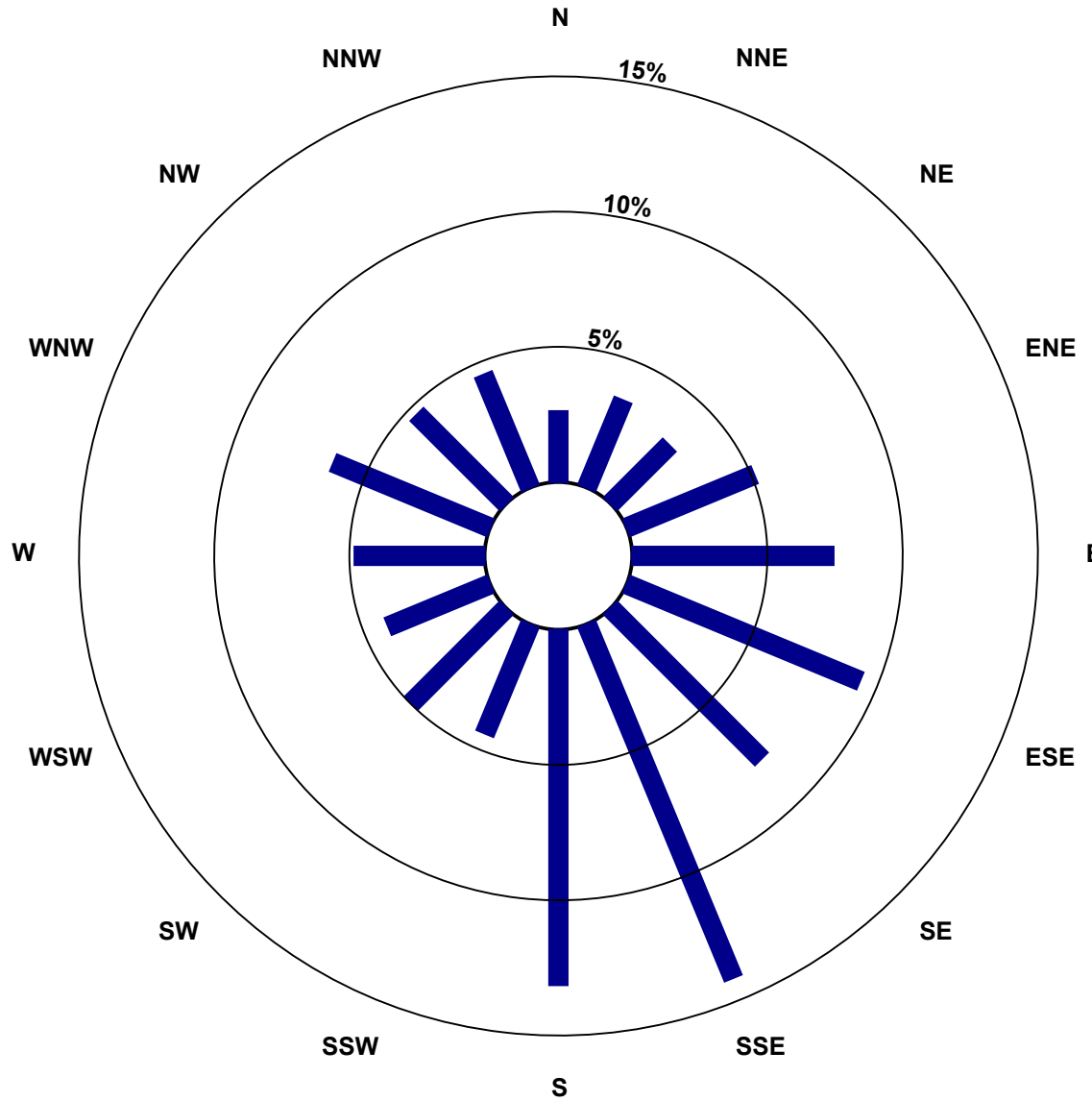
Total Number of Valid Hours: 685

Total Number of Hours: 720

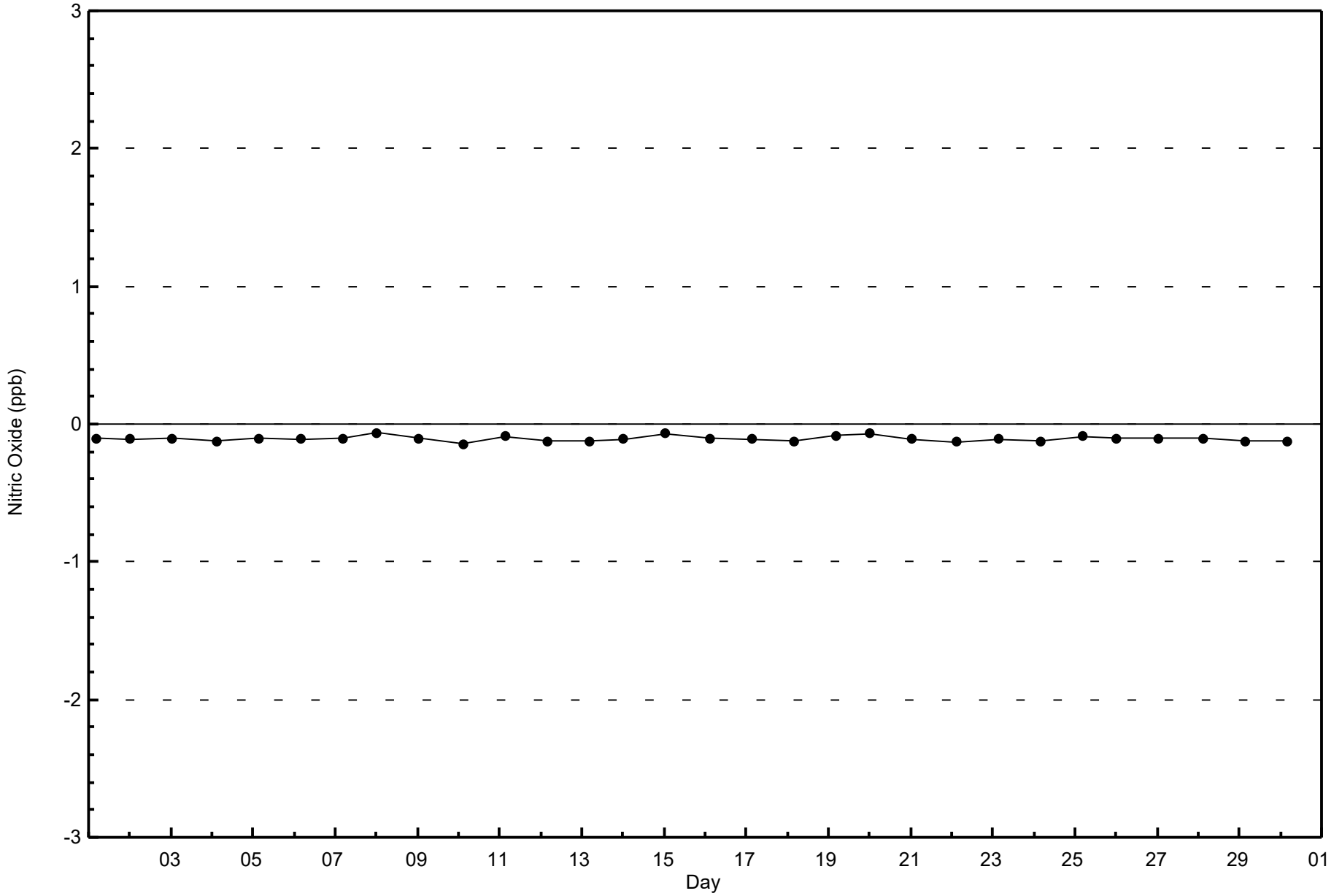


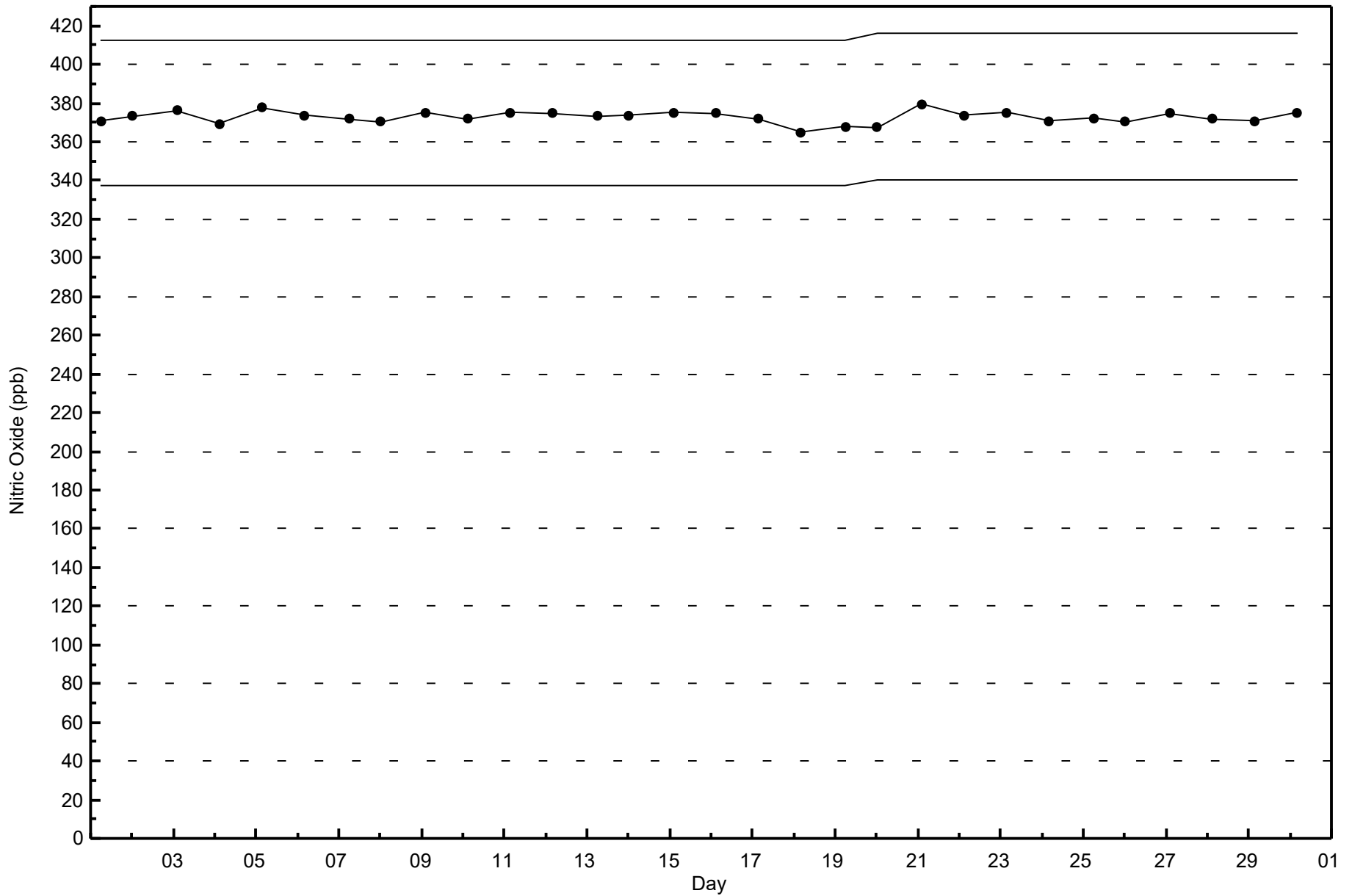
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Stony Mountain



Total Number of Valid Hours: 685







Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb
Stony Mountain - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 13.4 ppb on Apr 21 06:00	Maximum Daily Average: 2.3 ppb on Apr 1		Hours of Data:	685
Minimum Value: 0.2 ppb on Apr 10 11:00	Minimum Daily Average: 0.3 ppb on Apr 26		Hours of Missing Data:	35
Maximum Diurnal Average: 1.8 ppb at hour 8	Minimum Diurnal Average: 0.7 ppb at hour 16		Hours of Calibration:	35
Monthly Average: 1.08 ppb	Percentiles: P ₁ = 0.2 P ₁₀ = 0.3 Q ₁ = 0.5 Median = 0.8 Q ₃ = 1.4 P ₉₀ = 2.1 P ₉₉ = 3.7		Percent Operational Time:	100.0

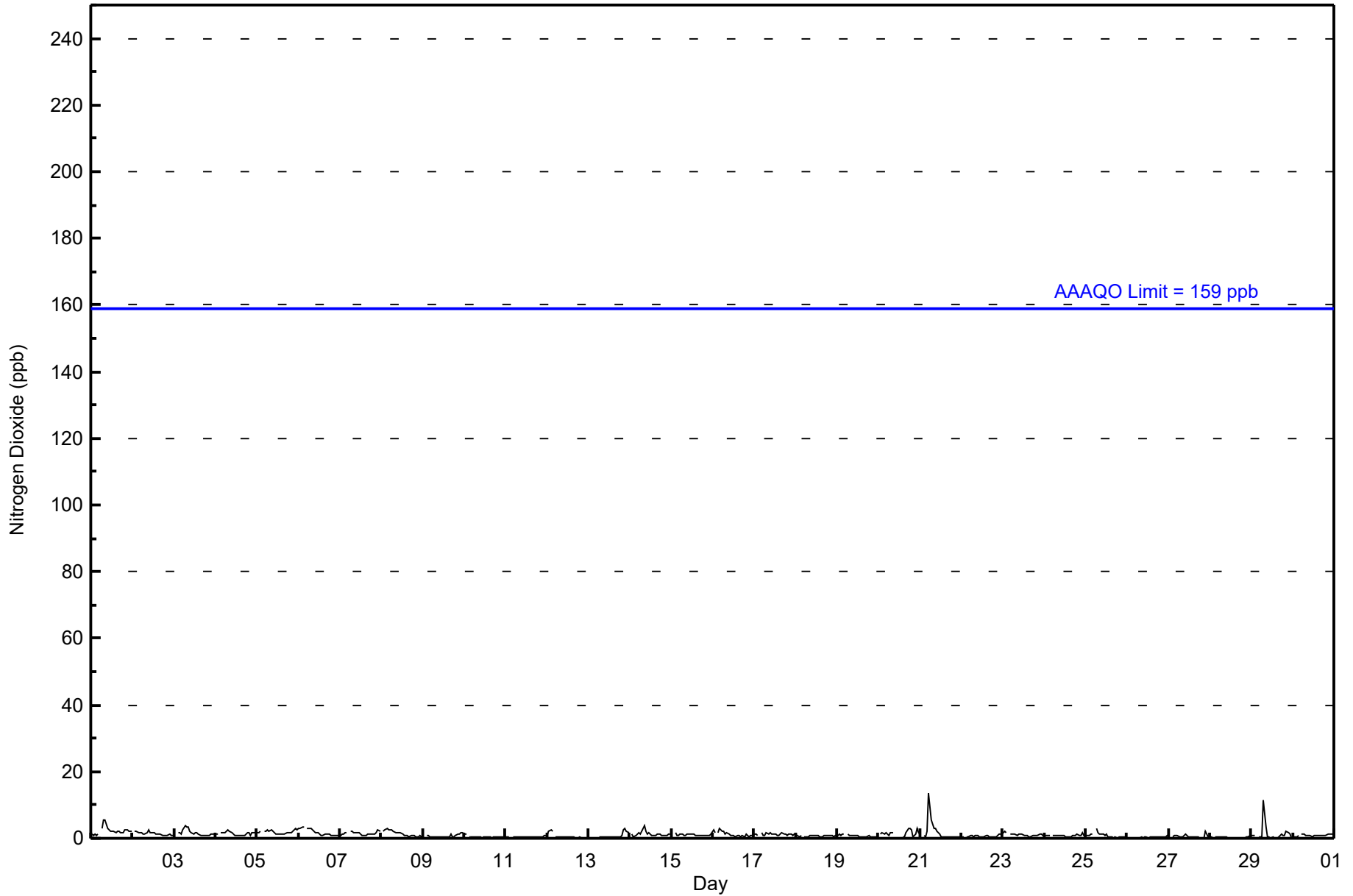
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	1.1	1.0	1.2	0.9	1.3	Z	2.8	5.7	5.7	3.0	2.4	2.2	2.2	2.1	1.7	2.0	2.0	1.6	1.7	2.7	2.5	2.6	2.0	2.2	2.3	5.7																							
2-Apr	Z	2.1	2.0	1.6	1.9	1.7	1.3	1.4	1.6	2.5	1.5	1.8	1.6	1.3	1.2	1.2	1.2	0.8	0.9	0.8	0.8	1.1	0.9	1.0	1.4	2.5																							
3-Apr	0.8	Z	1.5	1.5	1.4	2.5	3.7	3.3	3.2	2.1	1.6	1.4	1.8	1.8	1.3	0.9	0.8	0.9	0.8	1.0	0.9	1.4	1.3	1.3	1.6	3.7																							
4-Apr	1.2	1.4	Z	1.6	1.7	1.8	2.2	2.6	2.0	1.5	1.1	1.0	0.9	0.8	0.8	0.9	0.9	1.8	1.5	0.8	1.5	1.8	1.8	1.8	1.4	2.6																							
5-Apr	1.8	1.8	2.2	Z	2.0	2.2	2.5	2.2	2.6	2.2	1.6	1.4	1.4	1.4	1.3	1.4	1.5	1.8	1.8	1.6	2.5	2.8	2.5	1.9	2.8																								
6-Apr	2.8	2.9	3.5	3.2	Z	3.1	2.8	2.8	2.5	2.1	1.7	1.5	1.2	1.0	1.0	1.1	1.2	1.2	1.1	1.0	0.9	0.8	0.8	1.0	1.8	3.5																							
7-Apr	1.0	1.1	1.3	1.7	1.7	Z	2.1	2.0	1.8	1.7	1.8	1.5	1.1	1.0	1.0	1.0	1.1	1.2	1.2	1.4	1.4	1.8	2.4	2.2	1.5	2.4																							
8-Apr	Z	2.3	2.5	3.1	2.7	2.5	2.5	2.1	1.9	1.9	1.8	1.6	1.3	1.0	0.9	0.7	0.6	0.7	0.8	0.7	0.6	0.6	0.7	0.6	1.5	3.1																							
9-Apr	0.7	Z	0.8	0.7	0.6	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.3	0.6	0.5	0.7	1.4	1.3	1.8	1.7	0.7	1.8																							
10-Apr	1.4	1.3	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	1.4																							
11-Apr	0.3	0.3	0.3	Z	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.5	0.8	0.8	0.4	0.8																							
12-Apr	1.0	2.0	2.5	2.3	Z	0.6	0.4	0.4	0.4	0.5	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.6	2.5																							
13-Apr	0.2	0.2	0.2	0.2	0.2	Z	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.4	1.0	2.6	2.9	2.2	1.6	0.7	2.9																								
14-Apr	Z	1.1	0.6	0.7	1.1	1.9	1.3	2.1	3.7	2.0	1.4	1.5	0.9	0.7	0.7	1.3	1.3	1.0	0.9	0.7	0.7	1.1	1.2	1.2	1.2	3.7																							
15-Apr	1.1	Z	1.6	1.0	0.9	1.2	1.2	1.0	1.0	1.2	1.3	1.2	1.1	1.1	1.0	1.0	0.8	1.0	1.0	0.8	0.8	0.9	1.0	1.4	1.1	1.6																							
16-Apr	2.5	1.5	Z	1.6	2.9	2.3	2.1	1.2	1.6	1.2	0.7	0.7	0.7	0.6	0.7	0.7	0.6	0.7	0.6	1.4	0.9	0.6	0.7	0.7	1.2	2.9																							
17-Apr	1.1	1.1	0.8	Z	1.7	1.0	0.9	1.5	1.4	1.5	1.3	1.3	1.1	1.0	1.0	1.3	1.6	1.4	1.1	1.0	1.2	1.3	0.9	1.2	1.2	1.7																							
18-Apr	1.2	0.8	0.4	0.7	Z	0.6	0.5	0.6	0.9	0.9	1.0	0.8	0.7	0.7	0.6	0.6	0.7	0.8	0.7	0.7	0.7	0.7	0.6	1.0	0.7	1.2																							
19-Apr	0.9	1.2	0.9	1.2	1.3	Z	1.3	1.0	0.9	1.0	0.7	0.7	0.8	0.6	0.6	0.4	0.4	0.5	0.8	0.6	0.4	0.6	0.5	0.4	0.8	1.3																							
20-Apr	Z	1.4	1.5	1.3	1.5	1.1	0.7	1.5	1.7	C	C	C	C	C	0.4	0.4	1.6	3.0	2.9	2.5	0.5	1.3	3.1	1.5	1.6	3.1																							
21-Apr	1.2	Z	0.7	0.5	2.0	13.4	5.7	4.4	3.0	2.8	2.3	1.1	0.4	0.5	0.5	0.6	0.3	0.5	0.4	0.3	0.5	0.6	0.4	0.4	1.8	13.4																							
22-Apr	0.4	0.4	Z	0.5	0.6	0.7	0.7	0.6	0.7	0.7	0.3	0.4	0.4	0.5	0.7	0.8	0.6	0.6	0.6	0.6	0.6	0.8	1.1	1.4	0.6	1.4																							
23-Apr	1.5	2.1	1.9	Z	1.2	1.2	1.2	1.1	0.9	1.2	1.1	1.1	0.8	0.9	0.7	0.6	0.5	0.8	1.0	0.7	0.7	1.2	1.3	1.0	1.1	2.1																							
24-Apr	0.8	0.8	0.8	0.7	Z	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.5	0.6	0.6	0.7	0.8	1.0	1.2	0.9	0.9	1.9	0.9	0.8	1.9																							
25-Apr	0.8	0.8	0.8	1.2	1.1	Z	3.1	1.7	1.3	1.1	1.1	1.0	1.1	0.4	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.8	3.1																							
26-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.3	0.6	0.7	0.3	0.7																							
27-Apr	0.6	Z	0.5	0.9	0.9	0.8	0.4	0.6	0.6	0.7	1.1	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.2	2.3	1.1	0.4	0.7	2.3																							
28-Apr	0.4	0.3	Z	0.4	0.4	0.4	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	0.6	0.8	0.3	0.8																							
29-Apr	0.8	0.7	0.8	Z	0.4	0.5	0.4	11.5	3.2	0.3	0.4	0.2	0.3	0.2	0.2	0.2	0.6	1.1	0.8	0.8	2.0	1.6	1.2	0.2	1.2	11.5																							
30-Apr	0.2	0.4	0.4	0.7	Z	1.3	1.2	0.9	0.9	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.8	0.7	0.8	0.7	0.9	1.2	1.1	1.3	1.3	0.8	1.3																						
																								1.0	1.2	1.2	1.2	1.2	1.7	1.5	1.8	1.6	1.2	1.0	0.9	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.1	1.2	1.1	Diurnal Average	
																								2.8	2.9	3.5	3.2	2.9	13.4	5.7	11.5	5.7	3.0	2.4	2.2	2.2	2.1	1.7	2.0	2.0	3.0	2.9	2.7	2.6	2.9	3.1	2.5	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Stony Mountain - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Stony Mountain - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	18	24	21	35	51	64	54	97	90	30	34	28	33	43	32	31	685
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
Totals	18	24	21	35	51	64	54	97	90	30	34	28	33	43	32	31	685

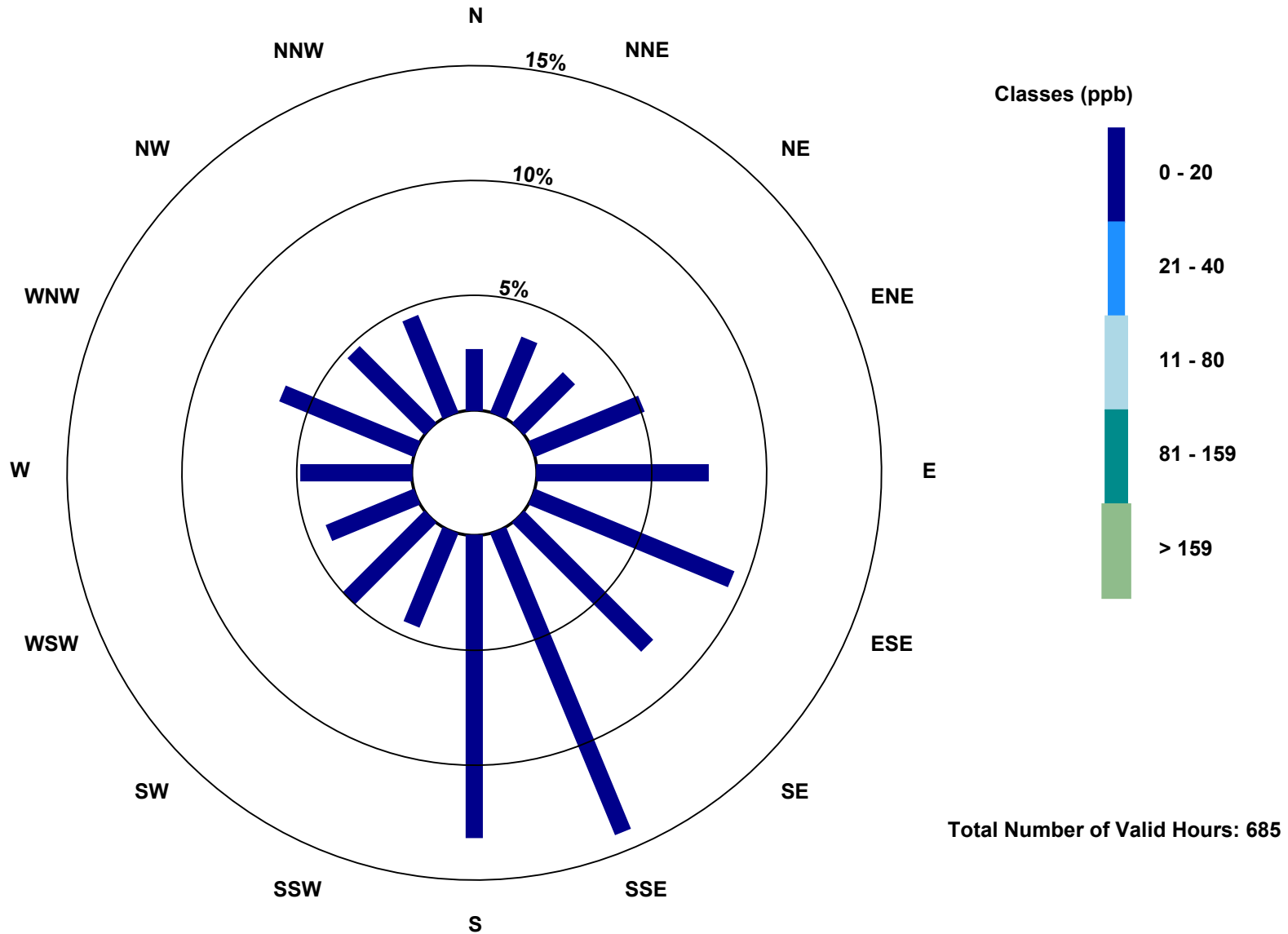
Total Number of Valid Hours: 685

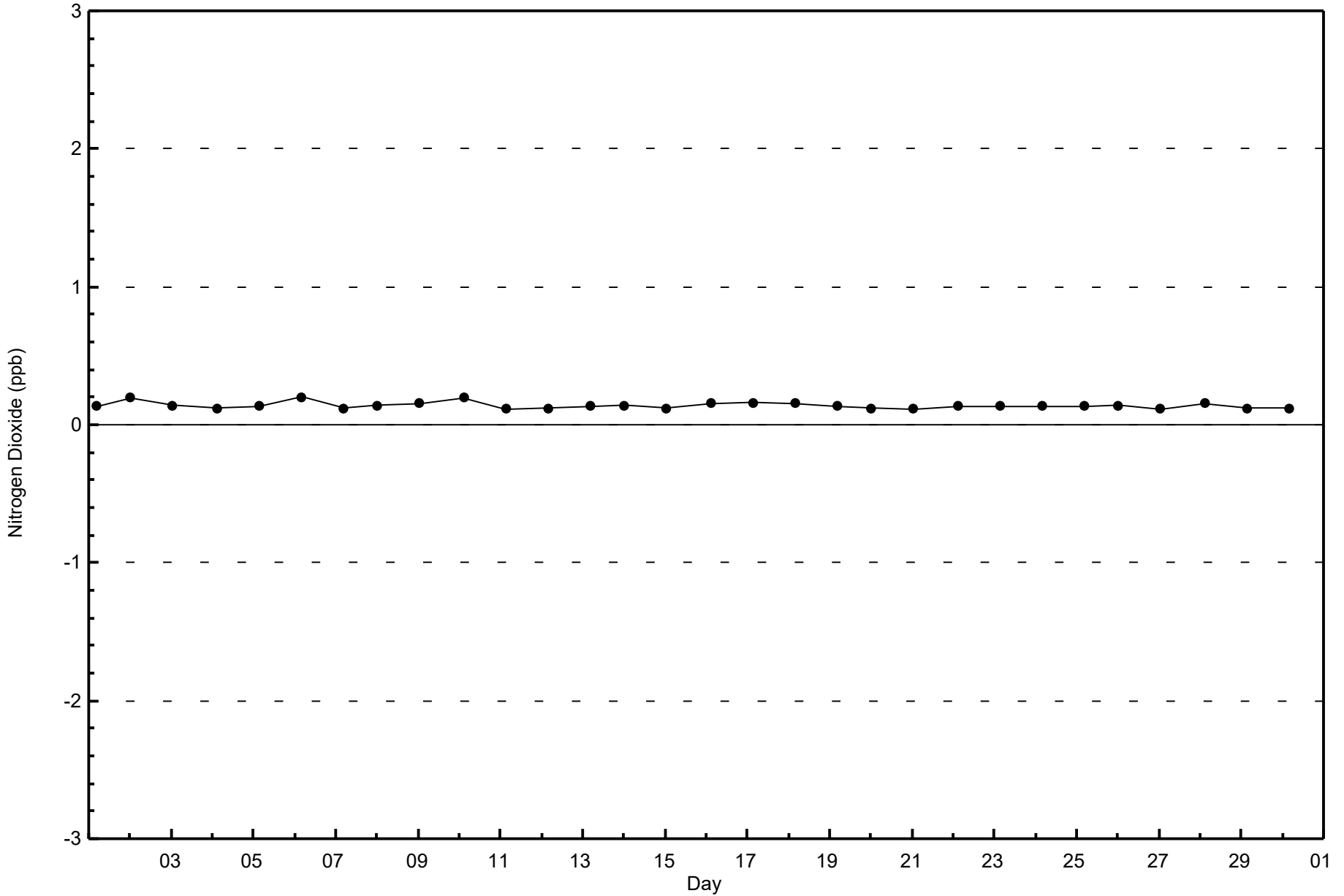
Total Number of Hours: 720

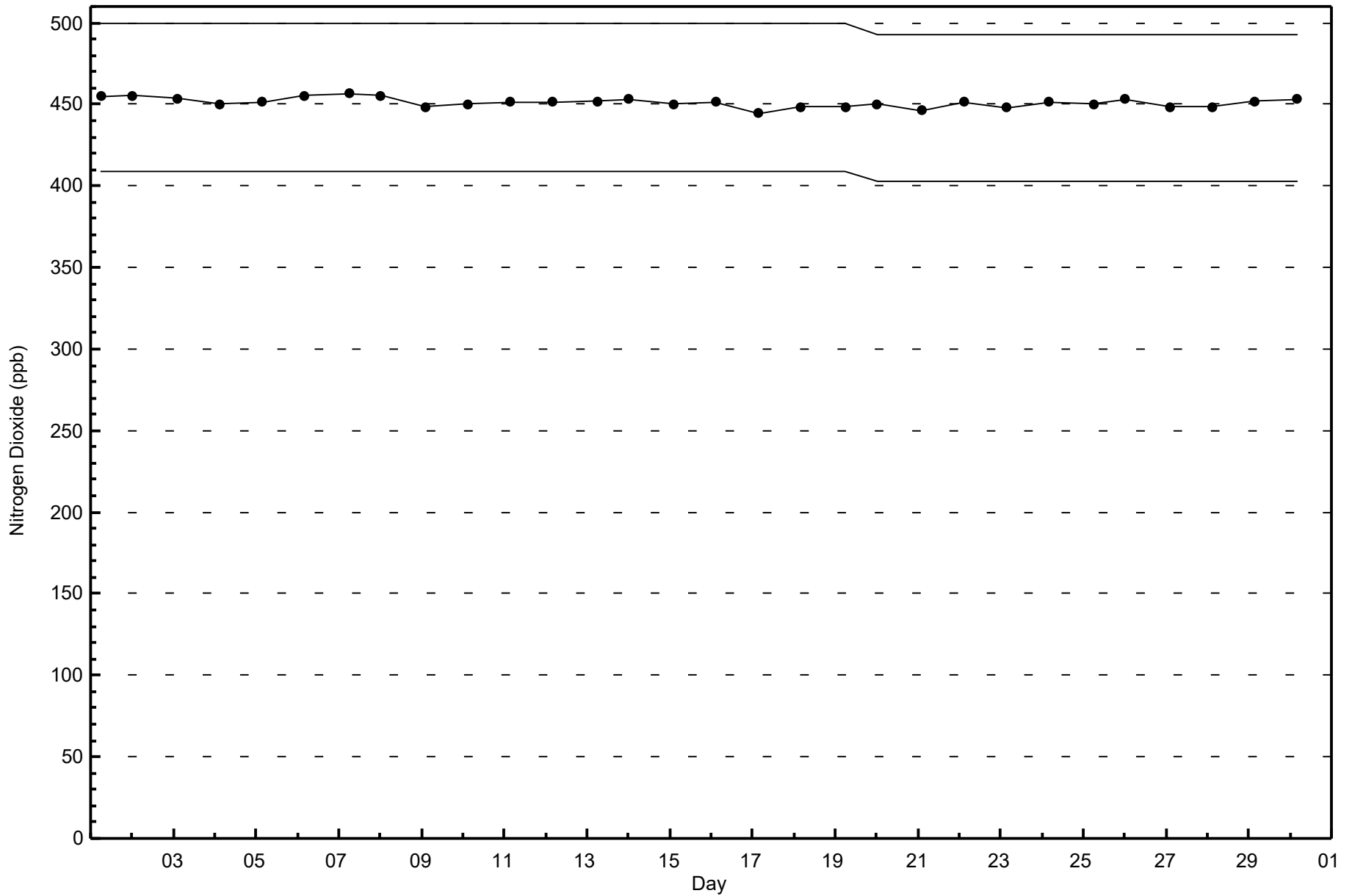


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Stony Mountain









Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb
Stony Mountain - April 2023

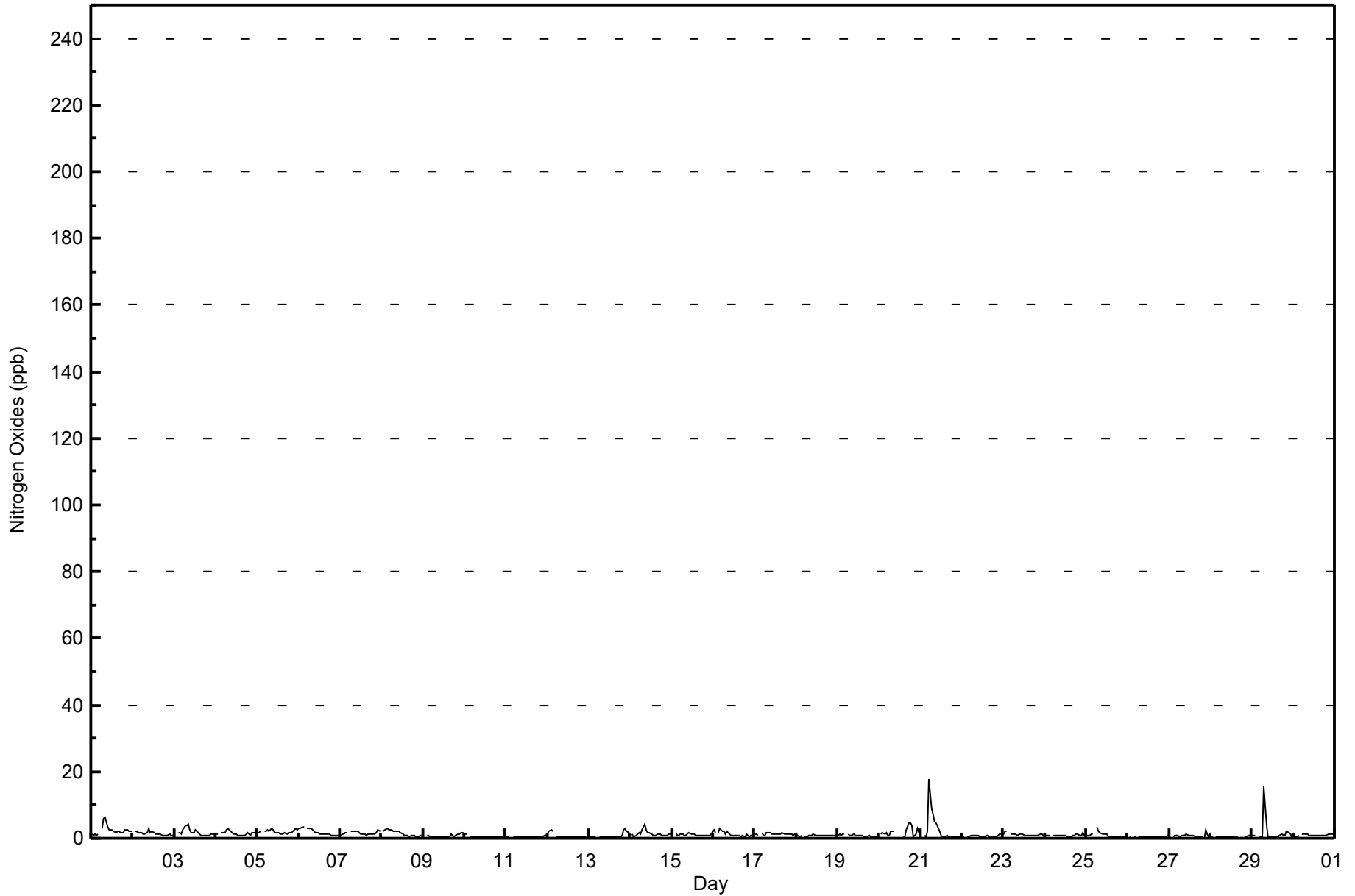
Maximum Value: 17.9 ppb on Apr 21 06:00																				Maximum Daily Average: 2.6 ppb on Apr 21					Hours in Service: 720	
Minimum Value: 0.2 ppb on Apr 26 07:00																				Minimum Daily Average: 0.3 ppb on Apr 26					Hours of Data: 685	
Maximum Diurnal Average: 2.2 ppb at hour 8																				Minimum Diurnal Average: 0.7 ppb at hour 16					Hours of Missing Data: 35	
Monthly Average: 1.18 ppb																				Percentiles: P ₁ = 0.2 P ₁₀ = 0.3 Q ₁ = 0.5 Median = 0.9 Q ₃ = 1.4 P ₉₀ = 2.3 P ₉₉ = 4.9					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-Apr	1.1	1.0	1.2	0.9	1.3	Z	2.9	6.1	6.4	3.2	2.6	2.4	2.4	2.3	1.9	2.2	2.2	1.6	1.7	2.7	2.5	2.6	2.0	2.2	2.4	6.4
2-Apr	Z	2.1	2.0	1.6	1.9	1.7	1.3	1.4	1.7	2.9	1.7	2.2	1.9	1.4	1.3	1.4	1.3	0.8	0.9	0.8	0.8	1.1	0.9	1.0	1.5	2.9
3-Apr	0.8	Z	1.5	1.5	1.4	2.5	3.8	3.7	4.1	2.7	1.9	1.8	2.3	2.3	1.6	1.0	0.9	0.9	0.8	1.0	0.9	1.4	1.3	1.3	1.8	4.1
4-Apr	1.2	1.4	Z	1.6	1.7	1.8	2.3	3.2	2.7	1.9	1.3	1.3	1.1	1.0	0.9	0.9	1.0	0.9	1.8	1.5	0.8	1.5	1.8	1.8	1.5	3.2
5-Apr	1.8	1.8	2.2	Z	2.0	2.2	2.5	2.3	2.9	2.5	1.8	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.8	1.8	1.6	2.5	2.8	2.5	2.0	2.9
6-Apr	2.8	2.9	3.5	3.2	Z	3.1	2.9	2.9	2.7	2.2	1.8	1.6	1.3	1.1	1.1	1.2	1.3	1.2	1.1	1.0	0.9	0.8	0.8	1.0	1.8	3.5
7-Apr	1.0	1.1	1.3	1.7	1.7	Z	2.2	2.2	2.0	2.0	2.1	1.6	1.2	1.1	1.1	1.0	1.1	1.2	1.2	1.4	1.4	1.8	2.4	2.2	1.6	2.4
8-Apr	Z	2.3	2.5	3.1	2.7	2.5	2.5	2.2	2.0	2.0	1.9	1.7	1.3	1.0	0.9	0.7	0.6	0.7	0.8	0.7	0.6	0.6	0.7	0.6	1.5	3.1
9-Apr	0.7	Z	0.8	0.7	0.6	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	1.5	0.7	0.5	0.7	1.4	1.3	1.8	1.7	0.8	1.8
10-Apr	1.4	1.3	Z	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	1.4
11-Apr	0.3	0.3	0.3	Z	0.4	0.3	0.4	0.4	0.4	0.6	0.5	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.5	0.8	0.8	0.4	0.8
12-Apr	1.0	2.0	2.5	2.3	Z	0.6	0.4	0.4	0.5	0.6	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.6	2.5
13-Apr	0.2	0.2	0.2	0.2	0.2	Z	0.4	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.4	1.0	2.6	2.9	2.2	1.6	0.7	2.9	
14-Apr	Z	1.1	0.6	0.7	1.1	1.9	1.4	2.4	4.2	2.5	1.8	1.8	1.1	0.7	0.7	0.8	1.4	1.4	1.0	0.9	0.7	0.7	1.1	1.2	1.4	4.2
15-Apr	1.1	Z	1.6	1.0	0.9	1.2	1.2	1.1	1.1	1.3	1.5	1.3	1.2	1.1	1.0	1.0	0.8	1.0	1.0	0.8	0.8	0.9	1.0	1.4	1.1	1.6
16-Apr	2.5	1.5	Z	1.6	2.9	2.3	2.2	1.3	2.0	1.4	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.7	0.6	1.4	0.9	0.6	0.7	0.7	1.2	2.9
17-Apr	1.1	1.1	0.8	Z	1.7	1.0	0.9	1.6	1.6	1.7	1.5	1.4	1.2	1.1	1.1	1.4	1.8	1.5	1.1	1.1	1.3	1.4	0.9	1.2	1.3	1.8
18-Apr	1.2	0.8	0.4	0.7	Z	0.6	0.6	0.7	1.0	1.1	1.1	0.9	0.8	0.8	0.7	0.7	0.8	0.9	0.8	0.7	0.7	0.7	0.6	1.0	0.8	1.2
19-Apr	0.9	1.2	0.9	1.2	1.3	Z	1.3	1.0	0.9	1.1	0.7	0.8	0.9	0.7	0.6	0.4	0.4	0.5	0.8	0.6	0.4	0.6	0.5	0.4	0.8	1.3
20-Apr	Z	1.4	1.5	1.3	1.5	1.1	0.8	1.9	2.2	C	C	C	C	C	0.4	0.4	2.4	4.7	4.5	3.6	0.5	1.3	3.1	1.5	1.9	4.7
21-Apr	1.2	Z	0.7	0.5	2.3	17.9	8.7	7.4	5.0	4.9	3.9	1.6	0.5	0.6	0.6	0.7	0.4	0.5	0.4	0.3	0.5	0.6	0.4	0.4	2.6	17.9
22-Apr	0.4	0.4	Z	0.5	0.6	0.8	0.8	0.7	0.8	0.8	0.4	0.5	0.5	0.6	0.8	0.9	0.6	0.6	0.6	0.6	0.6	0.8	1.1	1.4	0.7	1.4
23-Apr	1.5	2.1	1.9	Z	1.2	1.2	1.3	1.2	1.0	1.4	1.3	1.3	1.0	1.0	0.8	0.7	0.6	0.8	1.0	0.7	0.7	1.2	1.3	1.0	1.1	2.1
24-Apr	0.8	0.8	0.8	0.7	Z	0.7	0.9	0.9	0.9	0.9	0.9	0.8	0.7	0.6	0.6	0.7	0.9	1.1	1.2	0.9	0.9	0.9	1.9	0.9	0.9	1.9
25-Apr	0.8	0.8	0.8	1.2	1.1	Z	3.4	1.9	1.5	1.3	1.2	1.1	1.2	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.9	3.4
26-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.3	0.4	0.4	0.3	0.6	0.7	0.3	0.7
27-Apr	0.6	Z	0.5	0.9	0.9	0.8	0.5	0.8	0.7	0.9	1.5	0.7	0.7	0.7	0.7	0.6	0.4	0.3	0.2	0.2	0.2	2.3	1.1	0.4	0.7	2.3
28-Apr	0.4	0.3	Z	0.4	0.4	0.4	0.4	0.4	0.4	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	0.6	0.8	0.3	0.8
29-Apr	0.8	0.7	0.8	Z	0.4	0.5	0.5	15.7	4.2	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.7	1.3	0.9	0.8	2.0	1.6	1.2	0.2	1.5	15.7
30-Apr	0.2	0.4	0.4	0.7	Z	1.4	1.3	1.1	1.1	0.9	0.9	0.7	0.8	0.9	0.8	0.8	0.8	0.9	0.8	0.9	1.2	1.1	1.3	1.3	0.9	1.4
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerospan C - Calibration



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Stony Mountain - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Stony Mountain - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Stony Mountain - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	18	24	21	35	51	64	54	97	90	30	34	28	33	43	32	31	685
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
Totals	18	24	21	35	51	64	54	97	90	30	34	28	33	43	32	31	685

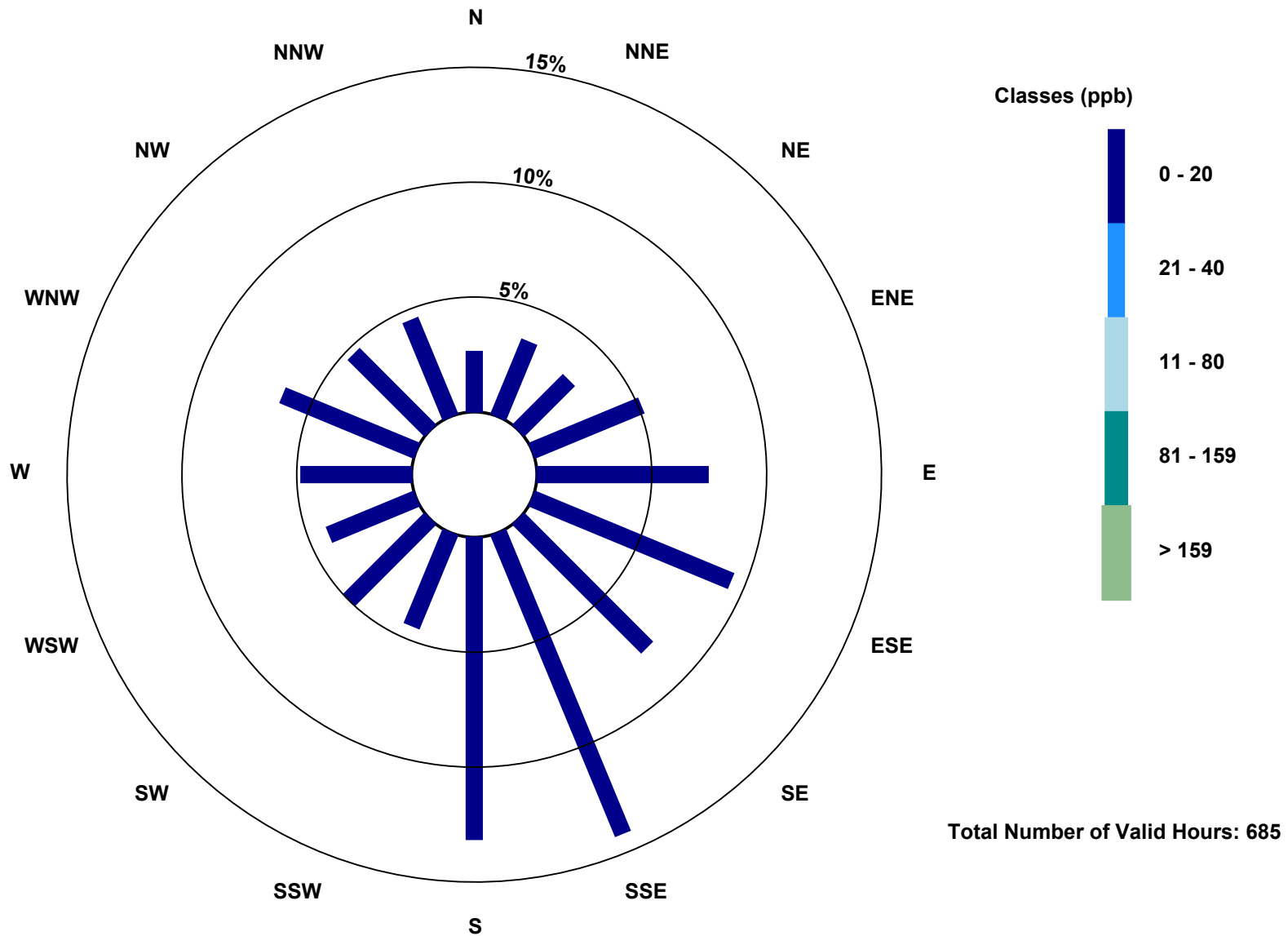
Total Number of Valid Hours: 685

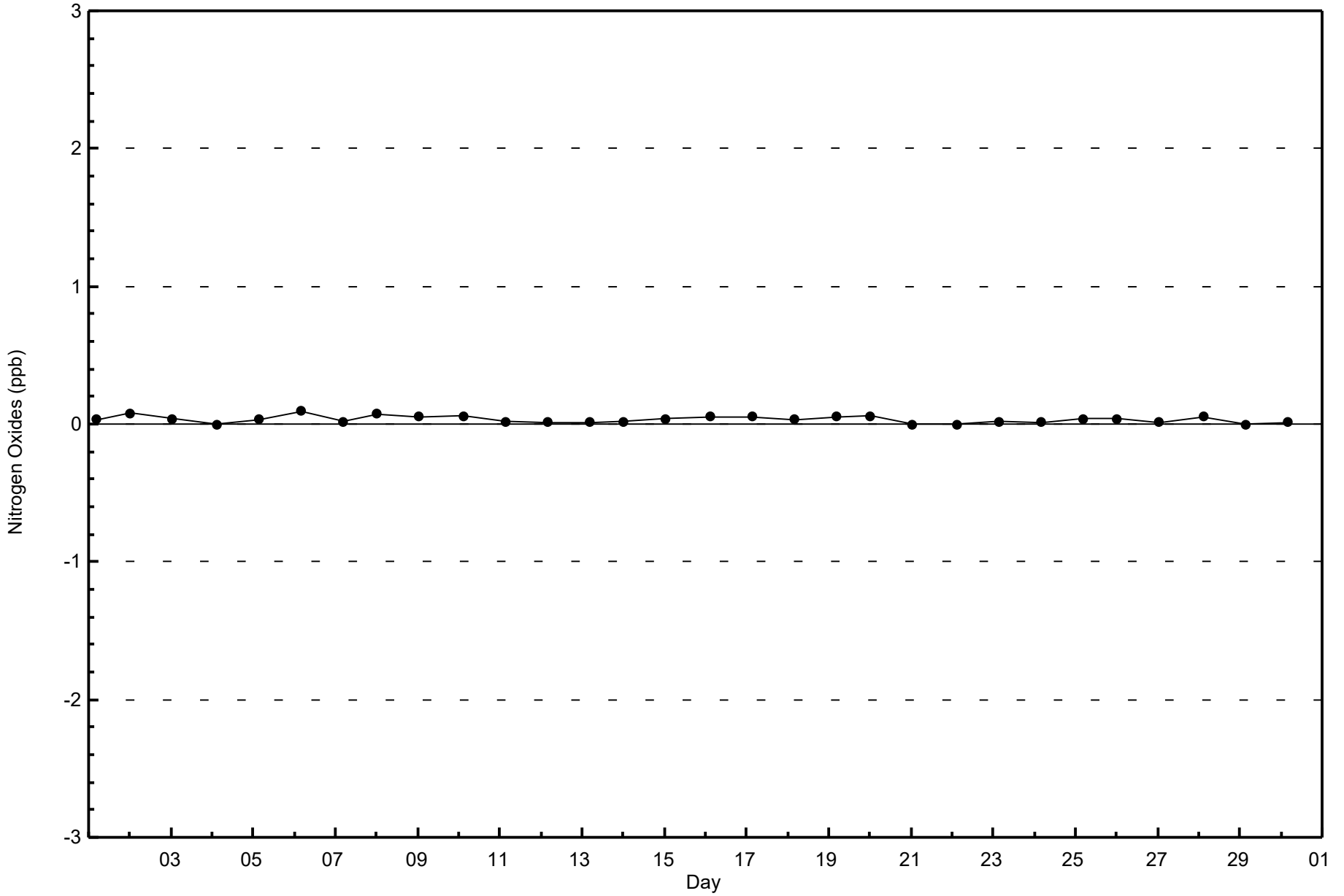
Total Number of Hours: 720

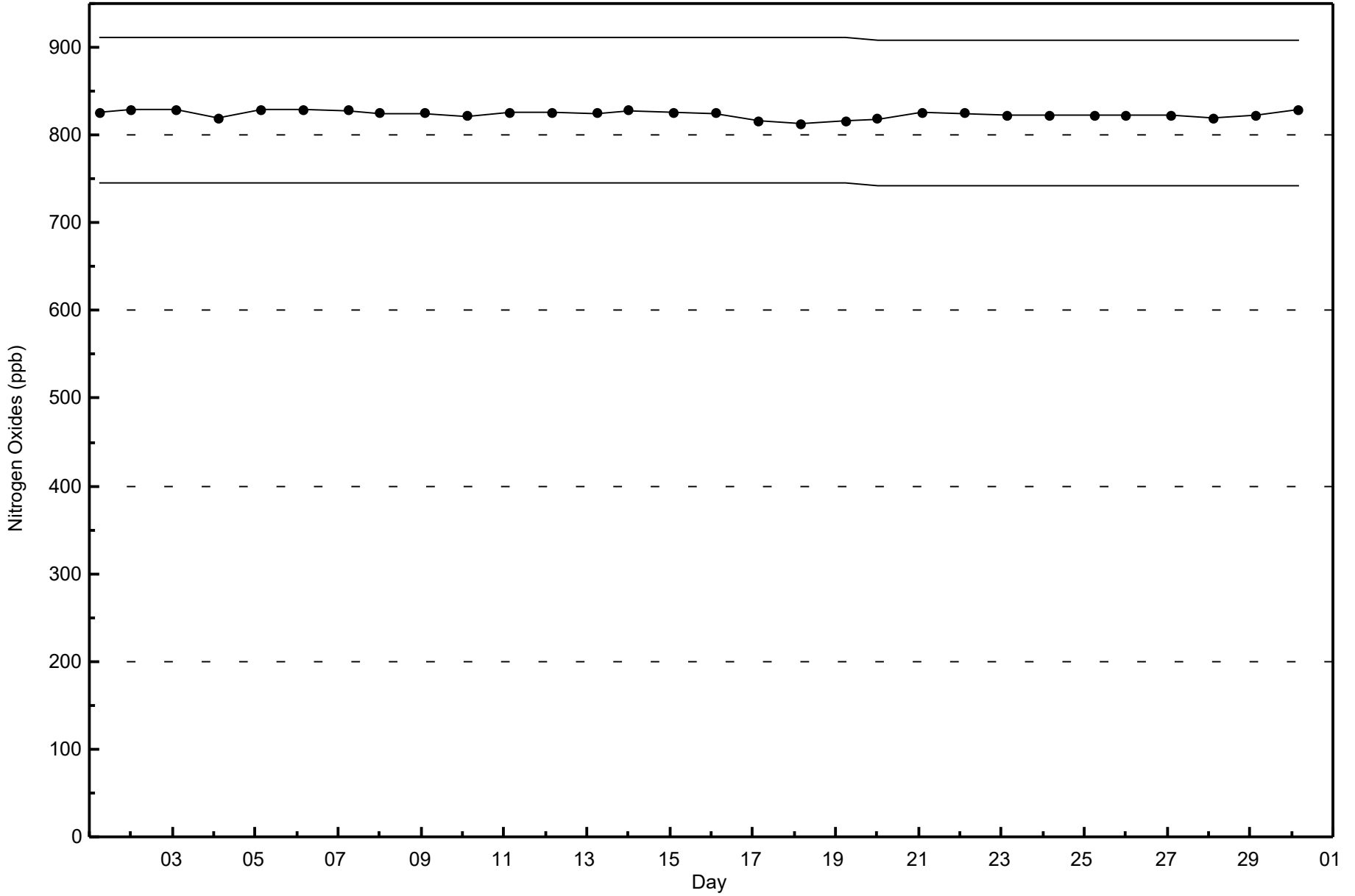


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Stony Mountain









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Stony Mountain - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 52.5 ppb on Apr 15 18:00	Maximum Daily Average: 48.7 ppb on Apr 6		Hours of Data:	686
Minimum Value: 21.9 ppb on Apr 19 02:00	Minimum Daily Average: 30.4 ppb on Apr 18		Hours of Missing Data:	34
Maximum Diurnal Average: 45.8 ppb at hour 17	Minimum Diurnal Average: 39.3 ppb at hour 8		Hours of Calibration:	34
Monthly Average: 43.00 ppb	Percentiles: P ₁ = 27.3 P ₁₀ = 34.1 Q ₁ = 40.1 Median = 43.9 Q ₃ = 47.6 P ₉₀ = 49.3 P ₉₉ = 51.3		Percent Operational Time:	100.0

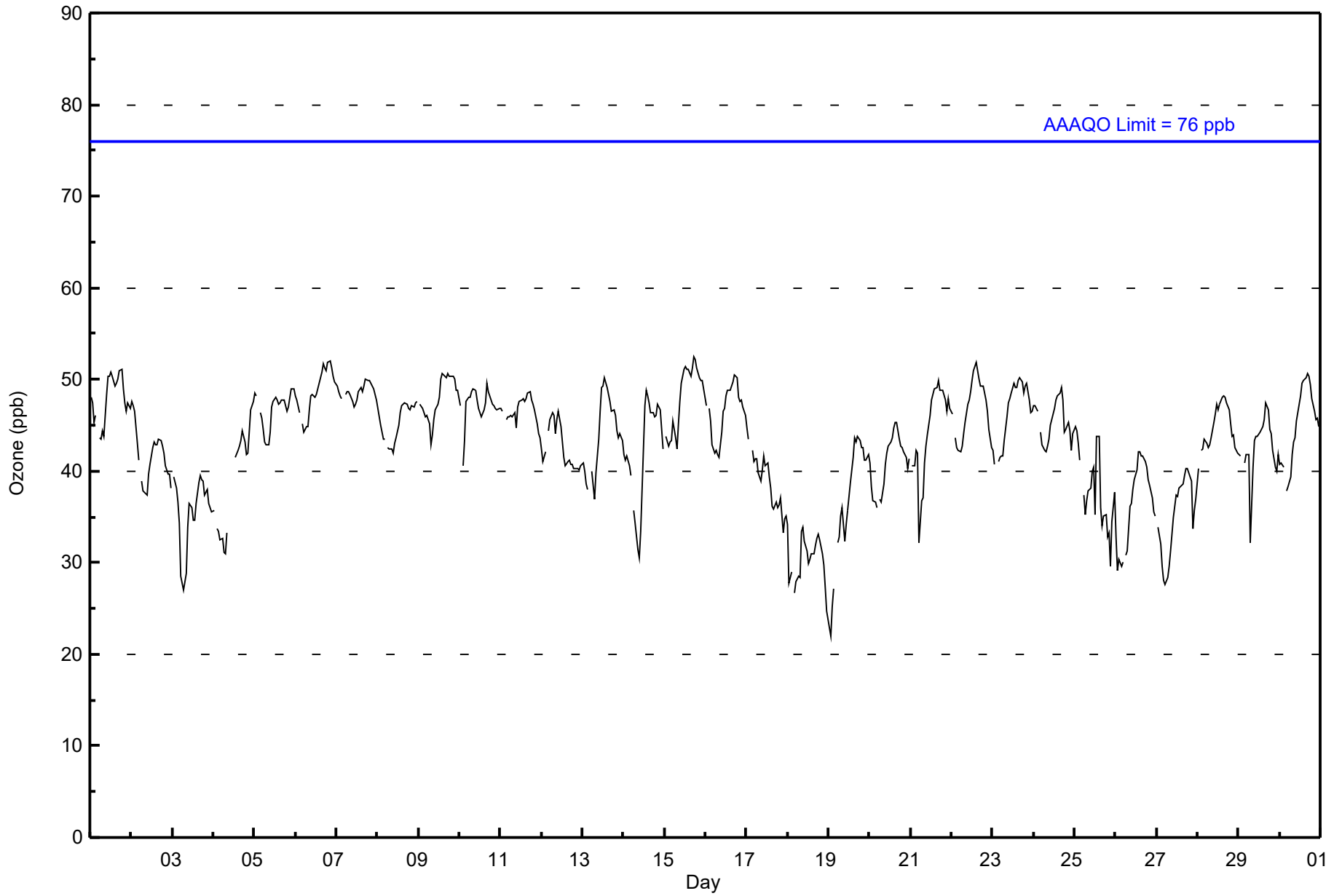
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																								
1-Apr	48.1	47.4	45.3	46.0	Z	43.6	43.5	44.4	43.8	48.4	50.3	50.3	50.7	50.4	49.2	49.5	50.0	51.0	51.1	49.0	47.5	46.6	47.4	46.9	47.8	51.1																						
2-Apr	47.6	47.2	46.5	43.1	41.1	Z	39.0	37.8	37.6	37.3	39.6	40.8	42.6	43.2	42.9	42.9	43.4	43.4	42.7	42.0	40.6	39.7	39.6	38.2	41.7	47.6																						
3-Apr	Z	39.4	38.1	36.6	34.2	28.5	27.0	27.9	28.9	33.8	36.4	36.0	34.6	34.7	36.4	38.8	39.5	39.0	38.9	37.4	37.9	36.5	35.9	35.5	35.3	39.5																						
4-Apr	35.7	Z	33.7	33.4	32.6	32.6	31.1	31.0	33.3	C	C	C	C	41.5	42.2	42.8	43.3	44.4	43.1	41.9	41.9	44.2	46.7	47.6	39.1	47.6																						
5-Apr	48.5	48.1	Z	46.4	45.8	44.6	43.2	42.9	42.8	44.2	46.9	47.6	48.0	47.8	47.3	47.5	47.8	47.7	47.2	46.5	47.0	49.0	49.0	48.9	46.7	49.0																						
6-Apr	48.2	47.7	46.4	Z	45.1	44.3	44.8	44.8	46.7	48.2	48.4	48.0	48.3	49.0	49.7	50.7	51.7	51.3	50.9	51.9	52.0	51.3	50.3	49.7	48.7	52.0																						
7-Apr	49.2	48.6	48.2	48.0	Z	48.4	48.6	48.6	48.3	47.6	47.1	47.4	47.8	48.7	49.1	48.7	49.3	50.0	49.9	49.8	49.6	49.2	48.9	47.8	48.6	50.0																						
8-Apr	46.9	46.0	45.0	43.4	43.5	Z	42.5	42.4	42.3	41.9	43.0	43.6	45.1	46.4	47.1	47.3	47.4	47.3	46.9	46.7	47.1	47.0	47.4	47.6	45.4	47.6																						
9-Apr	Z	47.3	46.8	46.3	46.0	46.0	45.2	42.9	43.9	45.6	46.6	47.3	48.1	50.1	50.7	50.4	50.1	50.7	50.4	50.3	50.3	50.0	48.8	48.8	47.9	50.7																						
10-Apr	47.2	Z	40.5	43.3	47.6	48.0	48.1	48.6	49.0	48.8	47.8	46.8	46.4	45.9	46.7	47.4	49.5	48.6	47.8	47.3	47.1	46.8	46.7	46.8	47.1	49.5																						
11-Apr	46.8	46.5	Z	45.6	46.0	45.9	46.1	45.9	46.4	44.8	47.0	47.6	47.7	47.9	47.5	47.9	48.5	48.7	47.8	47.2	46.7	45.2	44.0	43.7	46.6	48.7																						
12-Apr	42.5	41.0	42.1	Z	44.4	45.5	46.4	46.0	44.0	45.6	46.5	44.8	43.1	41.4	40.6	41.0	41.2	40.8	40.7	40.3	40.3	40.3	40.1	40.6	42.6	46.5																						
13-Apr	40.8	40.0	38.6	37.9	Z	40.0	38.5	36.9	39.8	43.5	46.6	49.1	49.3	50.2	49.2	48.4	47.6	46.5	46.6	46.1	44.4	43.7	44.1	43.4	44.0	50.2																						
14-Apr	41.8	41.2	41.7	40.5	39.5	Z	35.8	34.3	31.5	30.5	33.4	38.0	47.1	48.8	48.1	47.5	46.4	46.4	45.9	46.0	47.4	46.7	44.5	42.4	42.0	48.8																						
15-Apr	Z	43.8	42.7	43.1	43.3	45.5	43.7	42.4	45.1	47.6	49.6	51.2	51.3	51.1	51.2	50.3	51.2	52.5	52.2	51.3	50.1	49.9	49.9	48.9	48.2	52.5																						
16-Apr	47.1	Z	46.8	45.5	42.9	42.0	42.2	41.8	41.5	44.2	46.6	46.8	48.2	48.8	48.7	49.2	49.8	50.5	50.1	48.0	47.6	47.7	47.0	46.1	46.5	50.5																						
17-Apr	44.7	43.5	Z	42.2	41.0	41.4	41.3	39.7	39.0	40.1	41.6	40.5	40.8	39.3	38.2	36.2	35.8	36.7	36.0	36.3	37.0	33.2	34.8	35.1	38.9	44.7																						
18-Apr	34.2	27.7	29.0	Z	26.7	27.9	28.6	28.4	33.4	33.8	32.3	31.2	29.9	30.3	31.0	30.9	31.9	32.7	33.1	32.6	30.9	29.7	27.3	24.8	30.4	34.2																						
19-Apr	22.9	21.9	25.1	27.1	Z	32.2	32.8	35.1	36.0	32.4	34.1	35.8	37.3	38.7	41.5	43.6	43.2	43.8	43.3	42.6	42.5	41.2	41.2	41.8	36.3	43.8																						
20-Apr	40.9	38.3	36.7	36.6	36.0	Z	36.9	36.5	38.7	40.7	41.9	42.8	43.1	43.6	44.7	45.3	45.3	43.4	42.8	42.5	42.1	41.5	40.3	41.3	40.9	45.3																						
21-Apr	Z	40.5	40.6	42.2	41.9	32.2	36.8	37.0	40.8	42.8	43.9	46.1	47.7	48.4	48.9	49.1	49.9	48.9	48.9	48.8	47.8	46.6	47.9	46.8	44.5	49.9																						
22-Apr	46.2	Z	43.7	42.6	42.3	42.1	42.7	44.1	45.4	47.2	47.8	48.7	49.8	51.0	51.9	50.9	50.0	49.3	49.3	48.5	47.7	46.6	44.6	42.6	46.7	51.9																						
23-Apr	42.3	40.7	Z	41.0	41.5	41.6	41.6	43.3	46.0	47.4	47.9	48.4	49.6	49.1	49.2	49.9	50.1	49.7	48.5	49.2	49.7	47.7	46.3	46.5	46.4	50.1																						
24-Apr	47.1	47.2	46.6	Z	44.3	42.8	42.3	42.2	42.7	43.5	45.0	46.3	46.8	47.7	48.2	48.6	49.1	47.8	44.2	44.5	45.4	44.4	42.3	44.1	45.4	49.1																						
25-Apr	44.9	44.3	43.1	41.2	Z	37.3	35.2	36.8	37.8	38.1	40.0	40.4	35.2	43.8	43.8	35.9	34.0	35.1	35.2	32.8	33.2	29.6	34.5	37.7	37.8	44.9																						
26-Apr	32.8	29.2	30.3	29.5	30.1	Z	30.8	31.3	36.2	36.4	37.9	39.0	40.1	42.0	42.1	41.7	41.7	41.1	40.4	39.1	38.4	37.1	35.6	35.1	36.4	42.1																						
27-Apr	Z	33.8	32.1	29.6	28.1	27.7	28.3	29.7	31.3	33.2	34.9	37.4	37.2	38.1	38.3	38.6	39.5	40.2	40.3	39.8	38.9	33.7	35.7	36.9	34.9	40.3																						
28-Apr	40.2	Z	42.2	42.4	43.4	43.0	42.5	42.9	43.7	45.3	46.2	47.3	46.7	47.3	48.0	48.1	48.0	47.4	46.7	45.2	43.8	43.9	42.6	41.9	44.7	48.1																						
29-Apr	41.8	41.6	Z	40.8	41.9	41.7	41.8	32.2	40.5	43.3	43.8	43.8	44.2	44.6	44.9	45.6	47.5	46.6	44.5	44.0	42.2	40.4	40.0	41.7	42.6	47.5																						
30-Apr	40.7	40.8	40.4	Z	37.8	38.3	39.3	41.8	43.2	43.7	45.4	47.3	48.2	49.6	49.9	50.2	50.6	50.3	49.4	47.9	46.5	45.6	45.8	44.8	45.1	50.6																						
																								42.8	41.4	40.5	40.6	40.3	40.1	39.5	39.3	40.6	42.1	43.4	44.1	44.7	45.3	45.6	45.5	45.8	45.7	45.2	44.5	44.1	43.2	43.0	42.8	Diurnal Average
																								49.2	48.6	48.2	48.0	47.6	48.4	48.6	48.6	49.0	48.8	50.3	51.2	51.3	51.1	51.9	50.9	51.7	52.5	52.2	51.9	52.0	51.3	50.3	49.7	Diurnal Maximum

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



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Stony Mountain - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
21 - 50	662	96.50	96.50
51 - 82	24	3.50	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Stony Mountain - April 2023**

Concentration 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	0	0	0	0	0	0	0	0	0	0	0	0
21 - 50	19	22	19	39	47	65	54	92	77	28	34	26	36	42	31	31	662
51 - 82	0	0	0	1	1	1	0	6	12	2	1	0	0	0	0	0	24
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	22	19	40	48	66	54	98	89	30	35	26	36	42	31	31	686

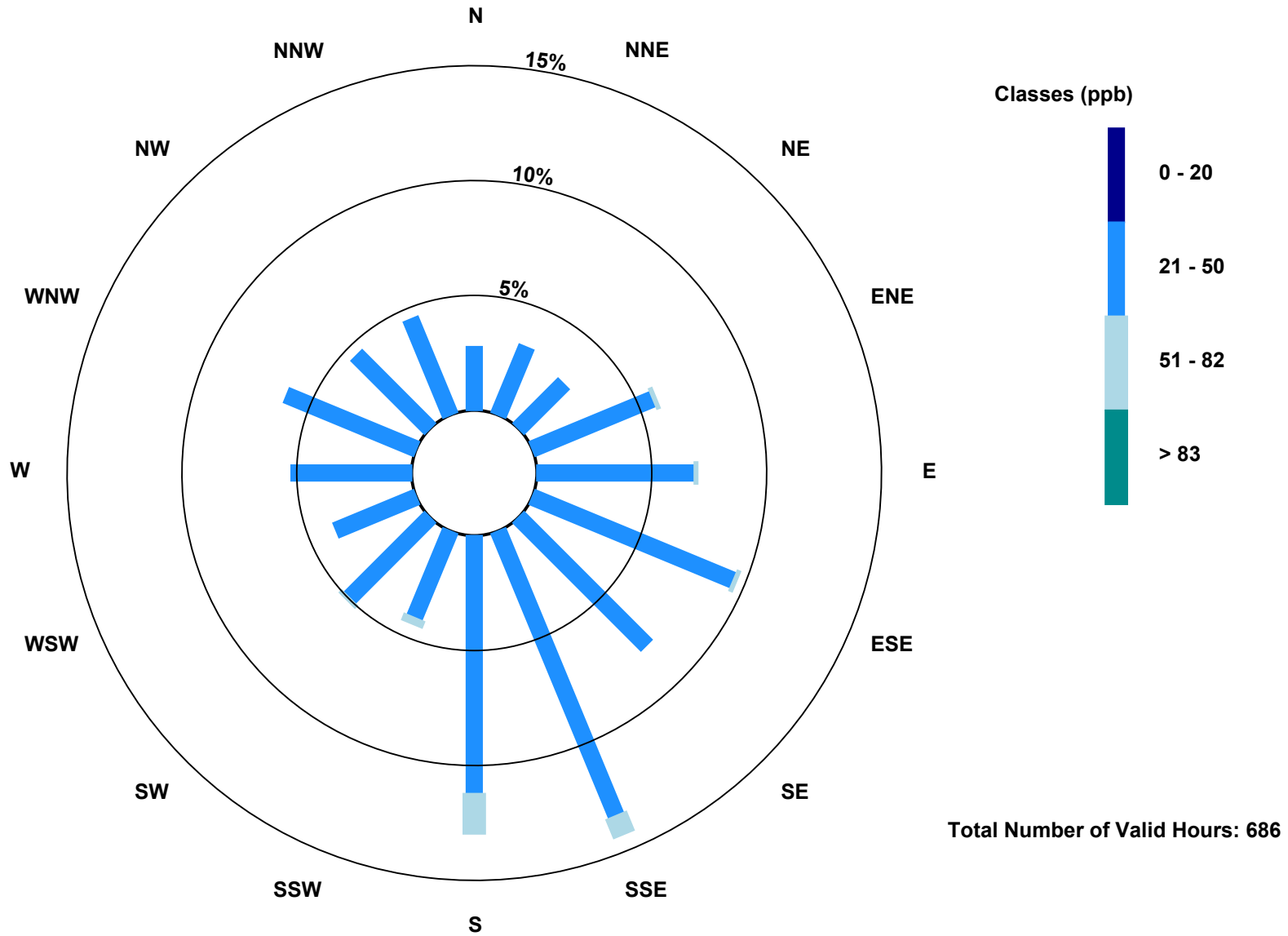
Total Number of Valid Hours: 686

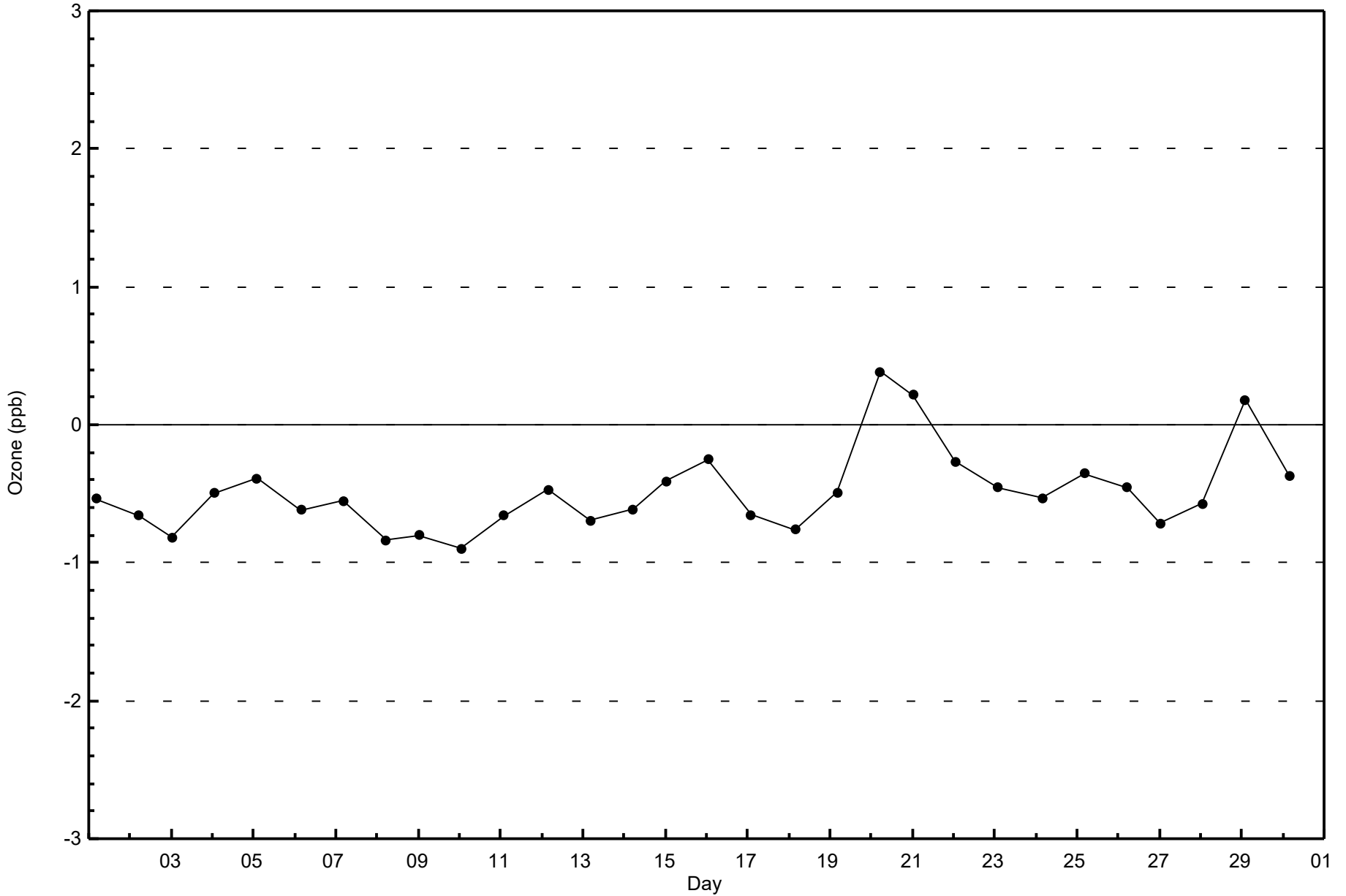
Total Number of Hours: 720

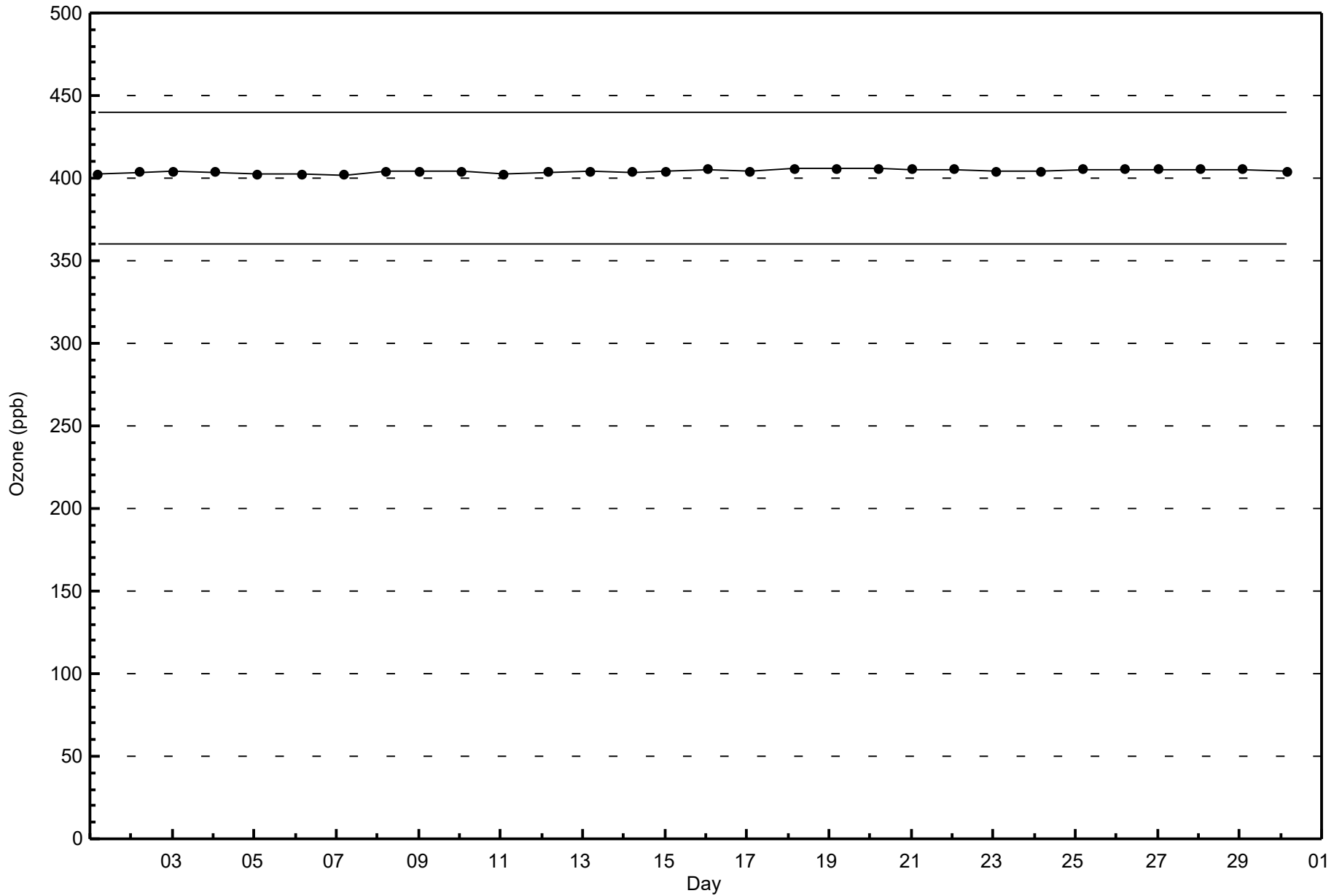


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Stony Mountain

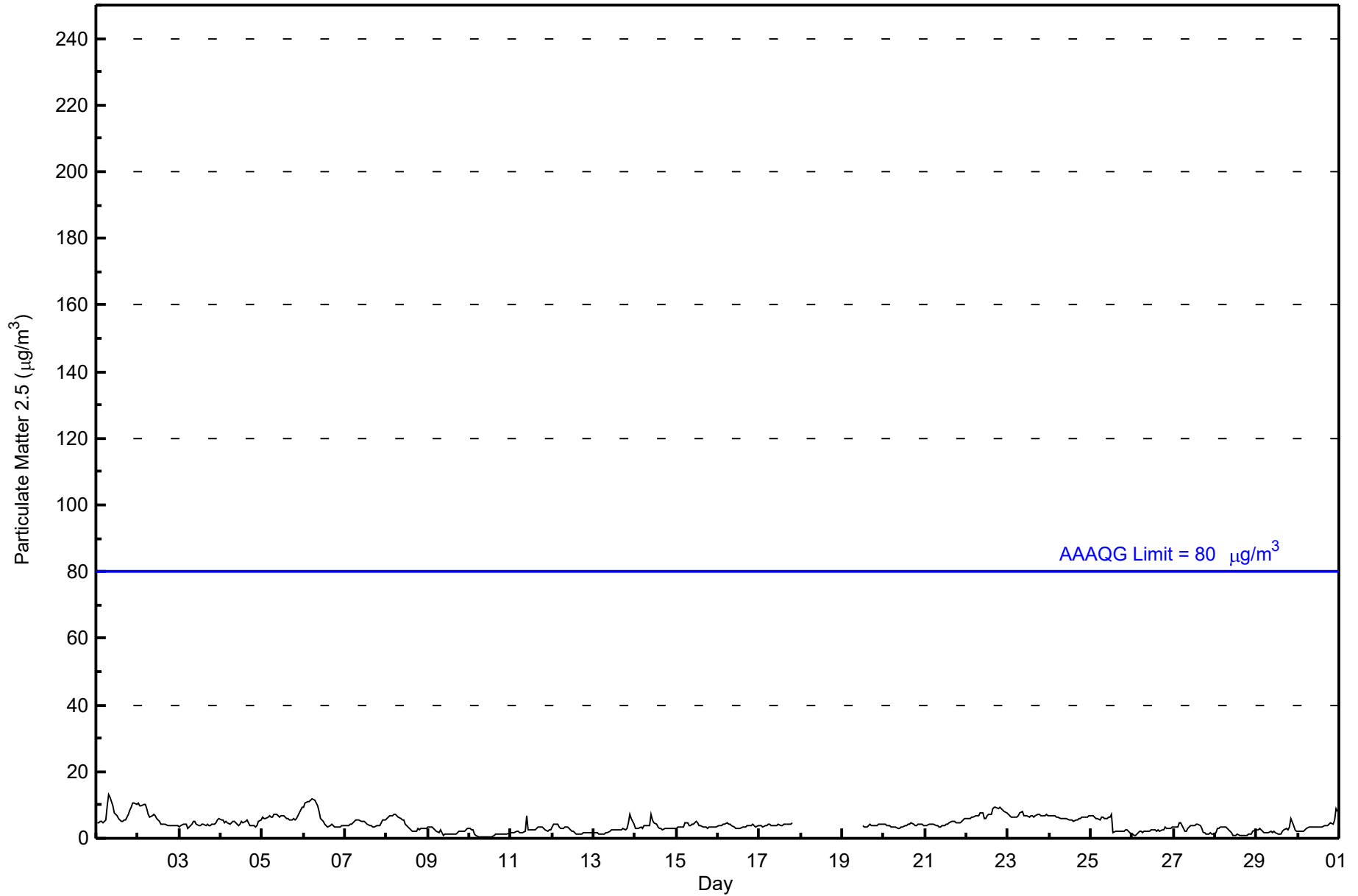








Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 13.2 µg/m ³ on Apr 1 08:00 Maximum Daily Average: 7.5 µg/m ³ on Apr 1		Hours in Service: 720 Hours of Data: 680 Hours of Missing Data: 40 Hours of Calibration: 1 Percent Operational Time: 94.6																																														
Minimum Value: 0.3 µg/m ³ on Apr 10 12:00 Maximum Diurnal Average: 4.6 µg/m ³ at hour 8 Monthly Average: 4.17 µg/m ³		Minimum Daily Average: 1.1 µg/m ³ on Apr 10 Minimum Diurnal Average: 3.6 µg/m ³ at hour 15 Percentiles: P ₁ = 0.5 P ₁₀ = 1.7 Q ₁ = 2.7 Median = 3.8 Q ₃ = 5.5 P ₉₀ = 6.9 P ₉₉ = 10.7																																														
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-Apr	4.6	4.7	4.9	5.0	4.8	5.5	9.7	13.2	12.2	9.8	7.7	7.2	6.8	6.0	5.2	5.3	5.7	5.6	7.3	8.5	9.5	10.5	10.7	10.2	7.5	13.2																						
2-Apr	10.4	9.8	9.8	10.2	10.3	8.9	7.1	6.5	6.9	7.2	6.7	5.7	4.9	4.4	4.3	4.4	4.3	3.9	3.8	3.8	3.7	3.8	3.6	3.7	6.2	10.4																						
3-Apr	3.5	3.7	4.1	4.2	4.1	3.1	3.7	4.2	5.2	4.9	4.2	3.6	3.9	4.1	4.1	4.0	4.2	4.0	3.7	4.1	4.0	4.6	5.5	5.9	4.2	5.9																						
4-Apr	5.6	5.6	4.8	5.0	4.6	4.4	4.8	5.0	5.0	4.4	3.7	4.3	5.0	4.6	5.1	5.4	4.5	3.7	3.7	3.9	3.5	4.0	5.1	5.5	4.6	5.6																						
5-Apr	6.2	6.0	5.9	6.2	6.6	6.4	6.4	7.0	7.2	6.9	6.4	6.8	6.7	6.2	5.7	5.8	5.5	5.4	5.9	5.7	5.8	7.5	8.7	9.2	6.5	9.2																						
6-Apr	9.5	10.4	11.0	10.9	11.4	12.0	11.3	10.7	9.7	7.8	5.9	5.1	4.2	3.6	3.5	3.7	4.1	3.9	3.6	3.4	3.2	3.3	3.6	3.7	6.6	12.0																						
7-Apr	3.7	3.8	4.0	4.1	4.4	5.0	5.5	5.7	5.4	5.1	5.2	5.0	4.5	4.1	3.9	3.7	3.4	3.5	3.7	3.7	4.0	4.5	5.6	5.6	4.5	5.7																						
8-Apr	5.9	6.2	6.6	6.7	7.0	7.1	7.0	6.4	6.0	5.6	5.4	4.1	3.3	2.8	2.5	2.1	2.1	2.3	2.9	2.7	3.0	3.1	3.2	3.1	4.5	7.1																						
9-Apr	3.3	3.2	3.2	3.0	2.7	2.2	1.8	2.4	1.7	1.0	1.1	1.2	1.1	1.1	1.2	1.3	1.5	1.8	2.1	2.3	2.2	2.1	2.6	2.9	2.0	3.3																						
10-Apr	2.8	2.5	2.5	1.1	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.4	0.9	1.1	1.5	1.4	1.4	1.3	1.3	1.3	1.3	1.7	1.1	2.8																						
11-Apr	1.8	1.9	1.7	2.0	1.9	1.8	1.8	1.8	2.3	6.6	2.6	2.6	2.6	2.7	2.7	3.1	3.3	3.4	3.6	3.0	2.7	2.3	2.5	2.7	2.6	6.6																						
12-Apr	3.3	4.4	4.3	4.4	3.5	3.0	3.2	3.2	3.5	3.4	3.1	2.3	2.0	1.7	1.2	1.4	1.4	1.3	1.5	1.6	1.8	1.8	1.7	1.6	2.5	4.4																						
13-Apr	1.8	1.8	1.6	1.4	1.2	1.3	1.4	1.6	1.9	2.2	2.4	2.4	2.5	2.6	2.6	2.6	2.8	2.5	2.8	4.7	7.2	5.7	4.2	2.7	7.2																							
14-Apr	3.2	2.9	3.0	3.3	3.1	3.9	3.7	3.9	4.0	7.3	5.5	4.6	4.3	3.3	3.0	2.8	2.7	2.9	3.1	3.1	3.0	2.8	3.0	3.1	3.6	7.3																						
15-Apr	3.1	3.2	3.3	3.3	3.6	4.7	4.5	3.9	3.7	4.1	4.2	5.2	4.6	3.9	3.9	3.4	3.3	3.3	3.2	3.3	3.6	3.4	3.4	3.6	3.7	5.2																						
16-Apr	3.8	3.8	3.9	4.1	4.3	4.6	4.4	4.3	3.8	3.4	3.1	3.1	3.1	3.2	3.4	3.5	3.5	3.7	3.8	3.7	4.1	3.8	3.5	3.7	3.7	4.6																						
17-Apr	3.8	3.6	3.5	3.7	4.0	4.1	4.0	3.7	3.6	3.7	4.0	4.1	3.9	4.0	4.1	4.4	4.3	4.2	4.4	4.7	AF	AF	AF	AF	4.0	4.7																						
18-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--																						
19-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	M	C	3.6	3.6	3.5	3.9	4.1	3.8	3.8	3.8	3.9	4.0	4.4	4.3	--	4.4																						
20-Apr	4.2	4.1	4.0	3.6	3.5	3.4	3.4	3.3	3.1	3.2	3.3	3.4	3.6	3.7	4.0	4.2	4.5	4.1	3.9	4.0	4.3	4.3	4.2	4.0	3.8	4.5																						
21-Apr	3.8	3.9	4.0	4.1	4.2	4.2	3.9	4.0	3.5	3.4	3.6	3.8	4.1	4.3	4.5	5.0	5.2	5.0	4.8	4.8	4.8	5.3	5.6	5.9	4.4	5.9																						
22-Apr	5.9	6.1	6.0	6.2	6.5	6.6	6.9	6.9	7.5	7.5	6.1	5.9	6.8	7.2	7.3	8.7	9.3	9.4	8.9	9.2	8.9	8.3	8.0	7.7	7.4	9.4																						
23-Apr	7.1	6.8	6.5	6.2	6.2	6.4	6.7	7.7	8.2	6.9	6.9	6.8	6.5	6.9	6.8	6.5	6.7	7.3	7.3	6.9	6.7	7.0	7.1	6.7	6.9	8.2																						
24-Apr	6.9	6.9	6.9	6.7	6.5	6.3	6.1	6.0	6.0	6.1	5.9	5.6	5.4	5.3	5.3	5.4	5.6	5.7	6.1	6.2	6.4	6.5	6.4	6.7	6.1	6.9																						
25-Apr	6.7	6.6	6.4	6.1	5.8	5.6	6.4	6.2	6.1	6.1	6.5	6.5	7.2	1.8	2.1	2.0	2.1	2.3	2.3	2.3	2.5	2.6	2.0	1.3	4.4	7.2																						
26-Apr	1.1	0.7	1.0	1.6	2.0	2.0	1.8	2.0	2.1	2.2	2.1	2.4	2.6	2.7	2.3	2.3	2.3	2.7	2.7	3.2	2.9	2.9	3.1	3.2	2.2	3.2																						
27-Apr	3.3	3.5	3.6	4.5	4.5	4.0	2.2	2.3	2.8	3.5	3.7	3.8	4.0	4.2	4.3	3.7	2.9	1.9	1.7	1.5	1.3	1.5	1.4	1.2	3.0	4.5																						
28-Apr	1.9	3.1	2.9	3.4	3.6	3.5	3.2	3.0	2.4	1.7	0.9	1.0	0.8	1.1	1.0	1.0	1.0	1.0	0.9	1.2	1.3	1.3	2.2	2.6	1.9	3.6																						
29-Apr	2.5	2.5	2.8	2.2	1.7	1.7	1.6	1.7	2.0	1.7	1.9	1.6	1.3	1.2	1.5	2.2	2.5	3.1	2.6	3.5	5.8	3.9	2.6	2.1	2.3	5.8																						
30-Apr	2.1	1.9	2.0	2.2	2.4	3.1	3.5	3.2	3.4	3.2	3.5	3.3	3.3	3.4	3.4	3.7	3.8	4.0	4.1	4.6	4.4	5.4	9.0	8.0	3.8	9.0																						
																								4.3	4.4	4.4	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.1	4.0	3.9	3.6	3.6	3.7	3.7	3.7	3.8	3.9	4.1	4.3	4.5	4.4	Diurnal Average
																								10.4	10.4	11.0	10.9	11.4	12.0	11.3	13.2	12.2	9.8	7.7	7.2	7.2	7.2	7.3	8.7	9.3	9.4	8.9	9.2	9.5	10.5	10.7	10.2	Diurnal Maximum
C - Calibration M - Maintenance AF - Analyzer Failure																																																
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Stony Mountain - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	508	74.71	74.71
6 - 15	172	25.29	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: 680

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Stony Mountain - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	18	12	10	30	45	45	34	55	46	19	30	24	36	43	32	29	508
6 - 15	0	0	1	6	7	18	16	46	50	13	7	5	0	0	1	2	172
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
Totals	18	12	11	36	52	63	50	101	96	32	37	29	36	43	33	31	680

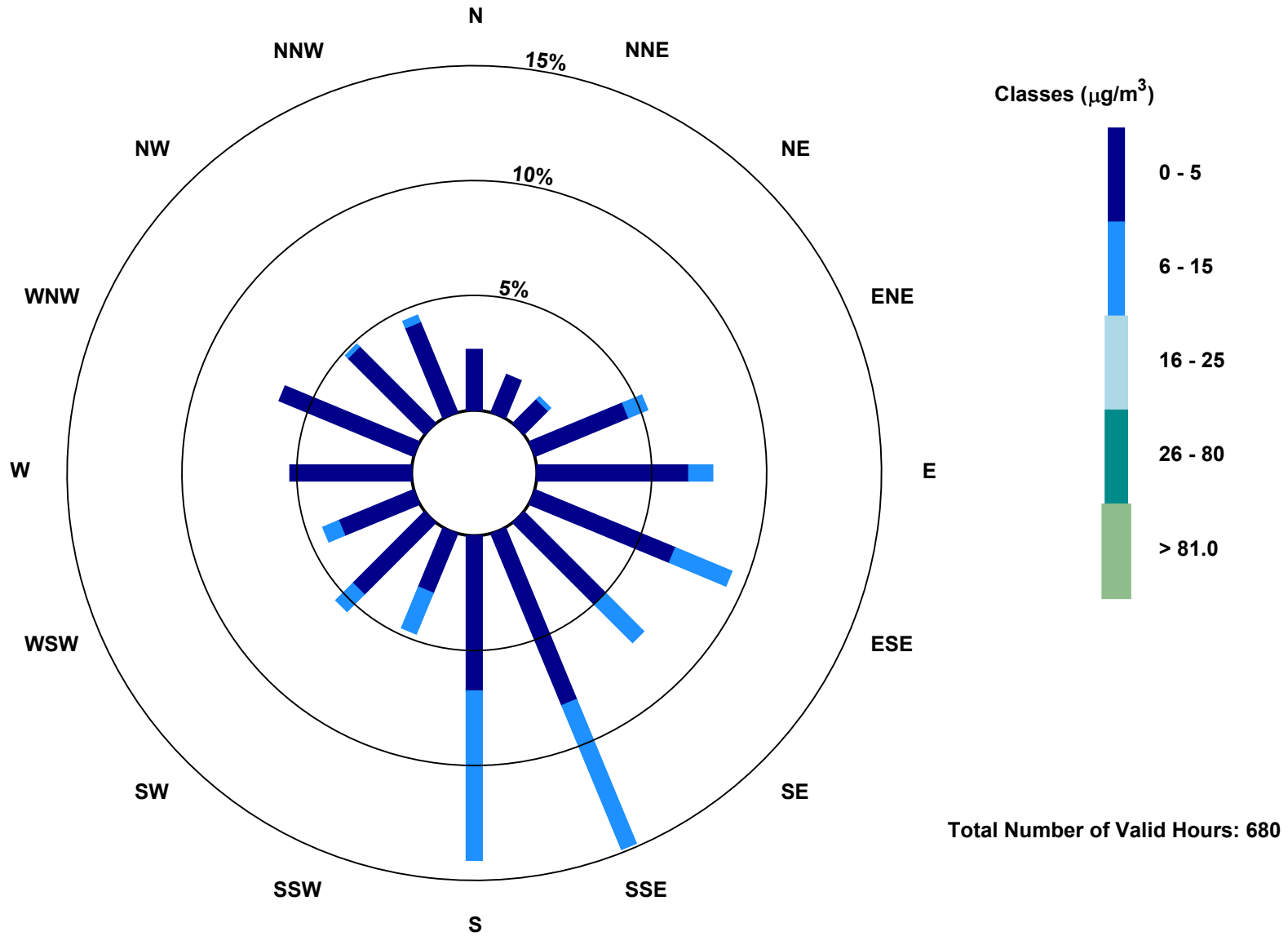
Total Number of Valid Hours: 680

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

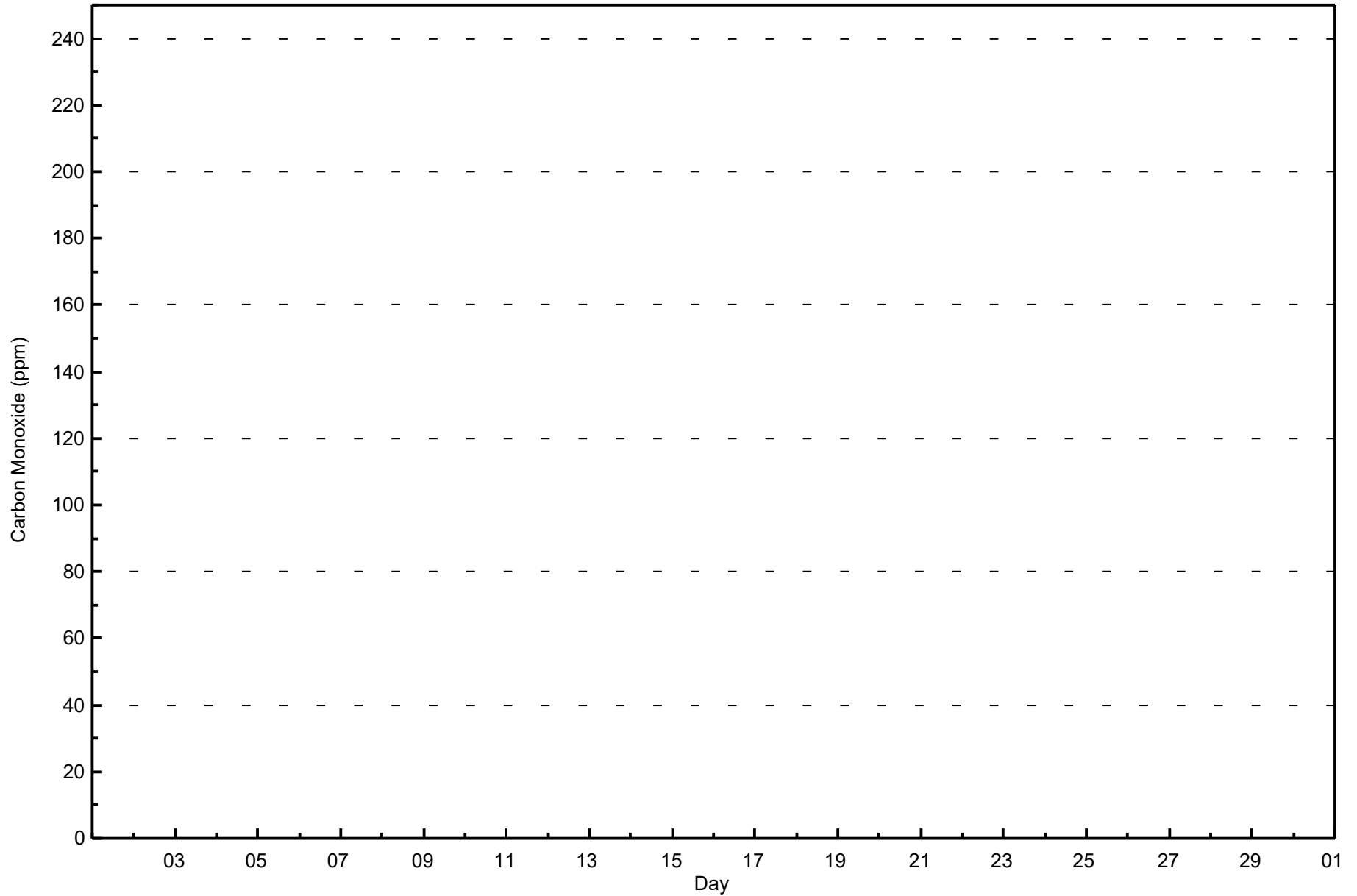
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Stony Mountain





Wood Buffalo Environmental Association
Hourly Averages

Carbon Monoxide (CO) - ppm
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Monoxide (CO) - ppm
Stony Mountain - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	686	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Monoxide (CO) - ppm
Stony Mountain - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	21	23	20	37	51	66	56	98	88	31	34	28	34	38	31	30	686
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
Totals	21	23	20	37	51	66	56	98	88	31	34	28	34	38	31	30	686

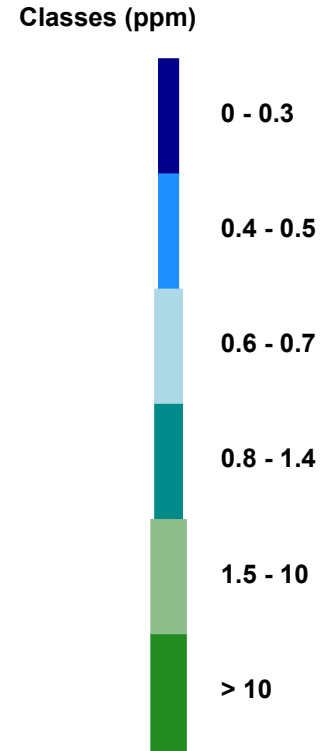
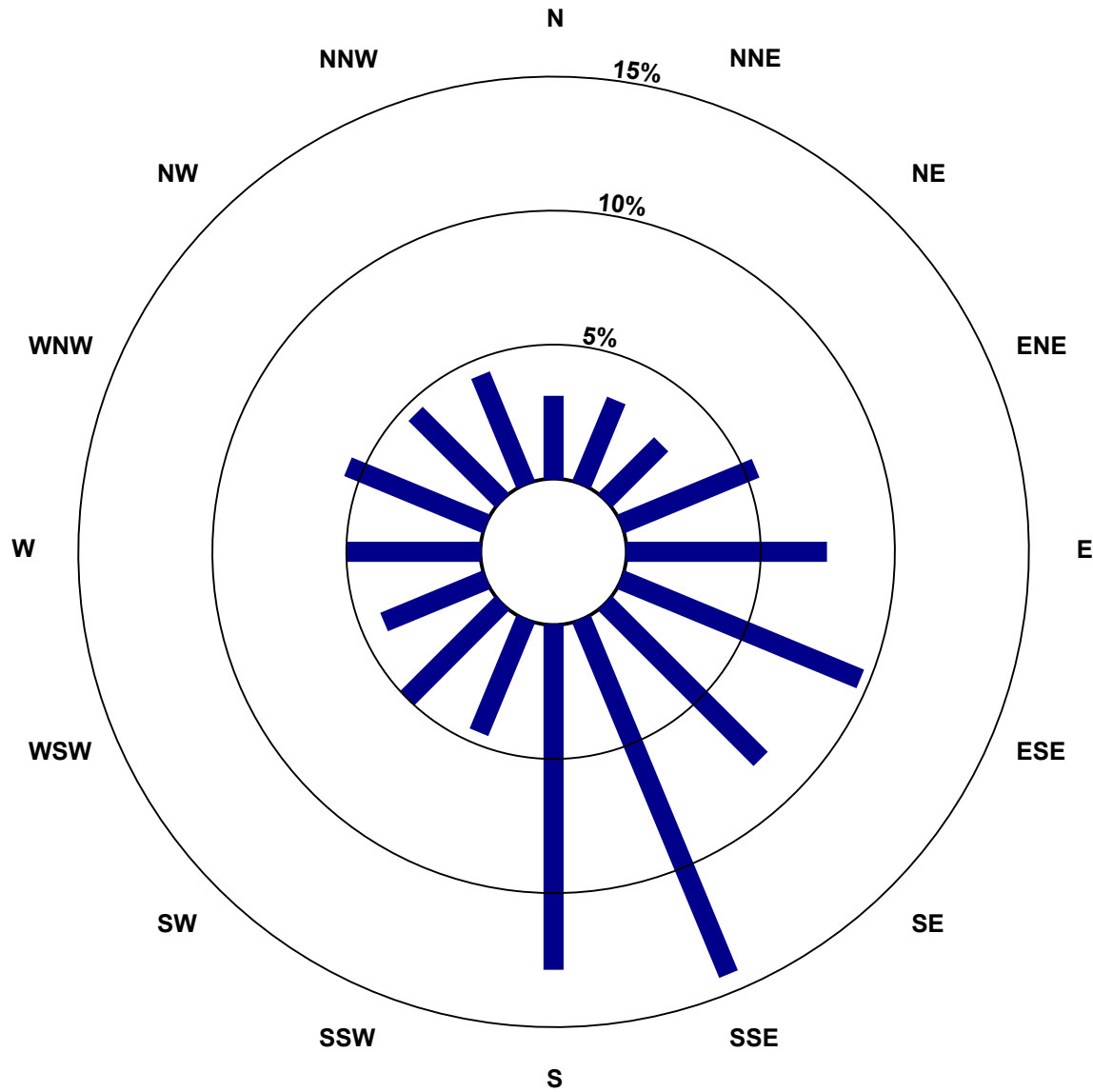
Total Number of Valid Hours: 686

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Carbon Monoxide (CO) - ppm
Stony Mountain



Total Number of Valid Hours: 686



Wood Buffalo Environmental Association
Summary of Hour Averages

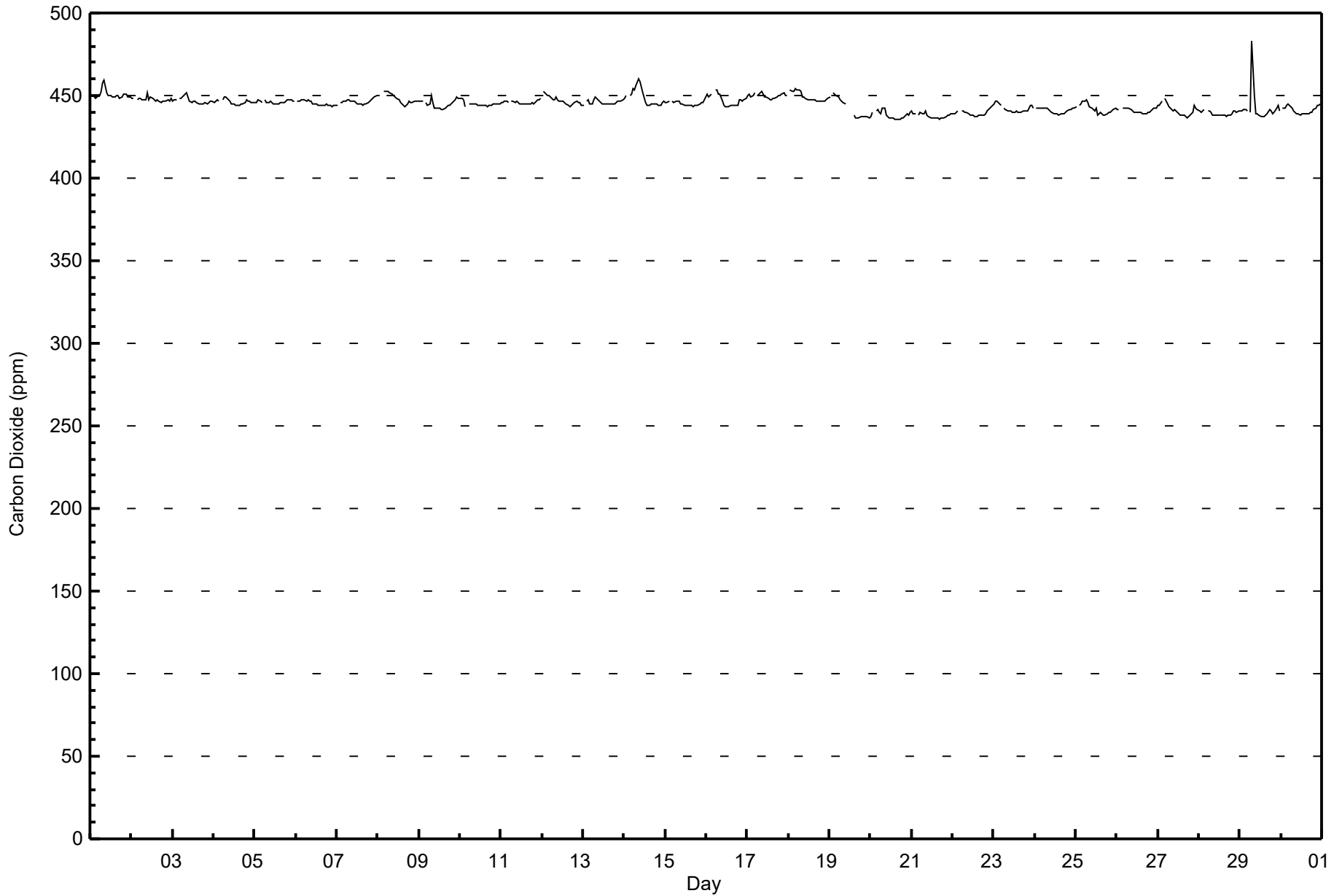
Carbon Dioxide (CO₂) - ppm
Stony Mountain - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service:																	720						
Maximum Value: 483.1 ppm on Apr 29 08:00		Maximum Daily Average: 450.5 ppm on Apr 1																	Hours of Data:		686						
Minimum Value: 435.8 ppm on Apr 20 16:00		Minimum Daily Average: 437.9 ppm on Apr 21																	Hours of Missing Data:		34						
Maximum Diurnal Average: 447.9 ppm at hour 8		Minimum Diurnal Average: 442.2 ppm at hour 17																	Hours of Calibration:		34						
Monthly Average: 444.47 ppm		Percentiles: P ₁ = 436.2 P ₁₀ = 438.4 Q ₁ = 440.9 Median = 445.0 Q ₃ = 447.1 P ₉₀ = 449.9 P ₉₉ = 454.1																	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-Apr	448.3	Z	449.1	448.5	448.8	450.1	452.6	457.6	458.9	451.7	450.1	449.6	449.7	449.5	449.1	450.1	450.0	448.7	448.9	450.9	451.0	451.3	449.0	448.9	450.5	458.9	
2-Apr	448.0	448.3	Z	447.8	448.1	448.0	447.4	447.2	447.8	451.3	447.7	448.7	448.4	447.4	447.0	447.1	446.6	446.0	446.2	446.4	446.6	447.1	447.0	448.3	447.6	451.3	
3-Apr	446.5	447.3	447.2	Z	447.9	448.5	450.1	450.6	451.4	448.9	446.4	446.1	446.6	446.5	445.8	445.1	445.0	444.9	445.0	445.4	445.2	446.2	446.3	446.4	446.9	451.4	
4-Apr	446.2	446.9	447.2	446.7	Z	447.7	449.0	449.6	448.3	446.4	444.5	444.7	445.1	444.3	444.2	444.1	444.8	445.0	446.0	447.3	446.7	446.7	445.8	446.0	446.2	449.6	
5-Apr	445.8	445.8	447.5	446.2	445.7	Z	447.9	446.2	446.1	446.8	445.9	445.0	445.1	445.0	445.0	445.3	445.9	446.1	446.3	447.4	447.5	447.1	446.7	446.6	446.2	447.9	
6-Apr	Z	446.9	447.0	447.2	447.5	447.6	447.0	447.1	446.6	446.2	445.3	445.1	444.6	444.2	444.0	444.2	444.3	444.5	444.6	444.3	443.8	443.3	443.7	444.1	445.4	447.6	
7-Apr	444.4	Z	445.5	445.7	446.5	446.9	447.1	447.1	446.8	446.5	446.4	445.5	445.0	444.7	444.6	444.3	444.5	445.1	445.5	446.4	447.1	448.2	449.5	450.0	446.2	450.0	
8-Apr	450.0	450.3	Z	452.9	452.3	452.6	452.4	451.9	450.9	450.2	449.2	448.7	447.1	445.9	445.0	443.9	443.4	444.5	446.3	446.0	445.5	446.4	446.3	446.4	448.2	452.9	
9-Apr	447.0	446.4	446.4	Z	445.3	444.1	445.3	449.8	446.0	442.3	442.2	442.2	442.1	441.8	441.7	442.2	442.8	443.7	444.0	444.6	446.3	447.1	448.8	448.6	444.8	449.8	
10-Apr	448.6	448.0	447.1	443.6	Z	444.8	445.1	445.0	444.7	444.6	444.4	444.3	444.3	444.2	443.9	443.8	443.5	443.7	444.0	444.6	444.8	445.3	445.2	445.1	444.9	448.6	
11-Apr	445.6	445.4	446.8	446.3	446.0	Z	446.3	446.7	445.9	446.6	445.4	444.9	444.9	445.2	445.3	445.1	445.2	445.1	445.4	445.2	445.5	447.5	447.8	448.1	445.9	448.1	
12-Apr	Z	452.3	450.6	449.6	450.1	448.8	447.6	447.8	449.0	447.6	446.6	446.2	446.4	446.1	445.0	443.8	443.4	443.8	444.6	445.6	446.2	446.1	445.5	444.5	446.8	452.3	
13-Apr	444.4	Z	446.4	447.4	445.3	445.3	447.7	449.2	448.3	446.3	445.4	445.0	445.0	444.8	445.0	444.8	444.7	445.1	444.9	445.4	446.3	446.9	446.5	447.1	446.0	449.2	
14-Apr	448.1	450.2	Z	450.4	450.7	453.9	453.7	455.5	460.2	458.7	455.3	451.4	445.5	444.5	444.0	443.7	444.6	445.3	444.5	444.6	443.8	444.4	446.1	446.4	448.9	460.2	
15-Apr	445.9	445.7	446.9	Z	446.2	445.4	446.8	446.8	446.8	445.0	444.9	444.3	444.1	444.0	444.0	444.1	443.6	443.9	444.1	444.1	445.3	445.8	446.0	447.8	445.3	447.8	
16-Apr	450.4	449.0	449.7	450.5	Z	453.2	453.1	451.1	450.7	446.4	444.1	443.6	443.3	443.3	443.8	444.1	444.0	443.9	444.1	447.6	447.1	446.9	447.6	448.6	447.2	453.2	
17-Apr	450.4	450.4	449.5	450.3	451.4	Z	450.4	451.3	452.3	450.8	449.1	449.3	448.2	447.4	447.7	448.5	448.3	448.8	449.7	450.2	450.7	451.8	450.2	450.4	449.9	452.3	
18-Apr	Z	453.1	452.3	452.2	453.8	453.7	453.1	452.2	449.4	449.1	448.7	447.6	447.1	447.4	447.8	447.3	446.5	446.5	446.4	446.4	446.5	446.7	447.3	448.2	449.1	453.8	
19-Apr	448.8	Z	451.4	451.1	450.3	448.9	447.9	446.8	445.6	445.3	Z	Z	Z	Z	437.8	436.9	436.8	436.7	437.4	437.0	437.1	437.7	437.4	436.3	442.5	451.4	
20-Apr	437.2	440.0	Z	441.0	441.1	439.8	439.1	442.0	442.0	438.3	437.1	436.6	436.3	436.1	435.9	435.8	435.9	436.0	436.3	436.5	437.3	438.6	438.1	439.8	438.1	442.0	
21-Apr	441.0	439.2	439.1	Z	438.0	439.6	439.0	439.3	440.3	438.2	437.6	436.8	436.2	436.3	436.2	436.9	435.8	436.3	436.2	436.5	437.3	438.1	438.5	438.7	437.9	441.0	
22-Apr	438.9	439.3	440.1	440.6	Z	441.1	441.1	439.8	439.8	438.7	437.9	437.9	437.8	437.5	437.6	438.3	438.3	438.5	438.5	439.4	440.4	441.3	442.1	443.9	439.5	443.9	
23-Apr	445.2	446.8	446.6	444.8	443.9	Z	442.6	441.4	440.4	440.5	440.3	440.2	440.0	440.3	439.9	439.6	440.0	440.5	440.6	440.4	440.8	443.8	443.9	442.3	441.9	446.8	
24-Apr	Z	442.2	442.1	442.3	442.2	442.5	442.7	442.3	441.3	440.6	439.8	439.3	439.1	438.7	438.5	438.6	438.7	439.1	439.7	440.7	441.3	441.8	442.5	442.7	440.8	442.7	
25-Apr	443.1	Z	444.1	445.2	446.6	446.9	447.1	445.6	443.5	442.4	441.7	440.8	442.1	438.4	439.4	438.6	438.4	438.3	439.1	439.7	440.2	439.8	440.8	441.8	442.1	442.0	447.1
26-Apr	441.7	441.5	Z	442.1	442.1	442.3	442.1	442.0	441.1	440.9	440.0	439.7	439.5	439.6	439.7	439.1	439.2	439.2	439.5	440.2	441.0	442.0	442.5	442.6	440.9	442.6	
27-Apr	443.8	444.0	446.7	Z	448.5	446.7	443.2	442.1	441.4	440.9	441.2	439.8	439.1	438.3	438.2	437.9	437.2	436.7	437.3	438.5	439.4	443.7	442.0	441.4	441.2	448.5	
28-Apr	441.0	440.0	440.6	441.2	Z	441.0	440.9	440.1	437.9	438.3	438.2	438.1	437.9	437.8	437.8	437.8	437.7	437.7	438.1	439.0	441.0	440.5	440.2	440.4	439.3	441.2	
29-Apr	440.6	440.4	441.4	441.5	440.6	Z	440.2	483.1	450.3	439.0	438.9	437.8	437.4	437.5	437.7	437.8	439.1	441.2	440.3	439.3	439.8	442.1	444.5	440.8	442.2	483.1	
30-Apr	Z	442.2	442.1	443.8	444.9	444.4	442.6	440.5	439.6	439.3	438.8	438.5	438.9	439.1	438.9	439.1	439.2	439.6	440.1	441.2	442.5	443.8	444.4	445.2	441.2	445.2	
445.2 445.7 446.1 446.4 446.6 446.5 446.4 447.9 446.4 444.9 443.9 443.4 443.0 442.6 442.3 442.3 442.2 442.5 442.8 443.4 443.8 444.6 444.8 444.9																								Diurnal Average			
450.4 453.1 452.3 452.9 453.8 453.9 453.7 483.1 460.2 458.7 455.3 451.4 449.7 449.5 449.1 450.1 450.0 448.8 449.7 450.9 451.0 451.8 450.2 450.4																								Diurnal Maximum			
Z - zerospan		C - Calibration																									



Wood Buffalo Environmental Association
Hourly Averages

Carbon Dioxide (CO₂) - ppm
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Carbon Dioxide (CO₂) - ppm
Stony Mountain - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	0	0.00	0.00
420 - 440	158	23.03	23.03
440 - 460	527	76.82	99.85
460 - 480	0	0.00	99.85
480 - 500	1	0.15	100.00
> 500	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Carbon Dioxide (CO₂) - ppm
Stony Mountain - April 2023**

Concentration 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	6	3	1	13	20	19	12	29	14	3	6	5	5	4	3	15	158
440 - 460	15	20	19	25	30	43	43	66	78	28	27	23	30	36	29	15	527
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	1	0	0	0	0	0	0	0	0	0	0	1
> 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	21	23	20	38	50	63	55	95	92	31	33	28	35	40	32	30	686

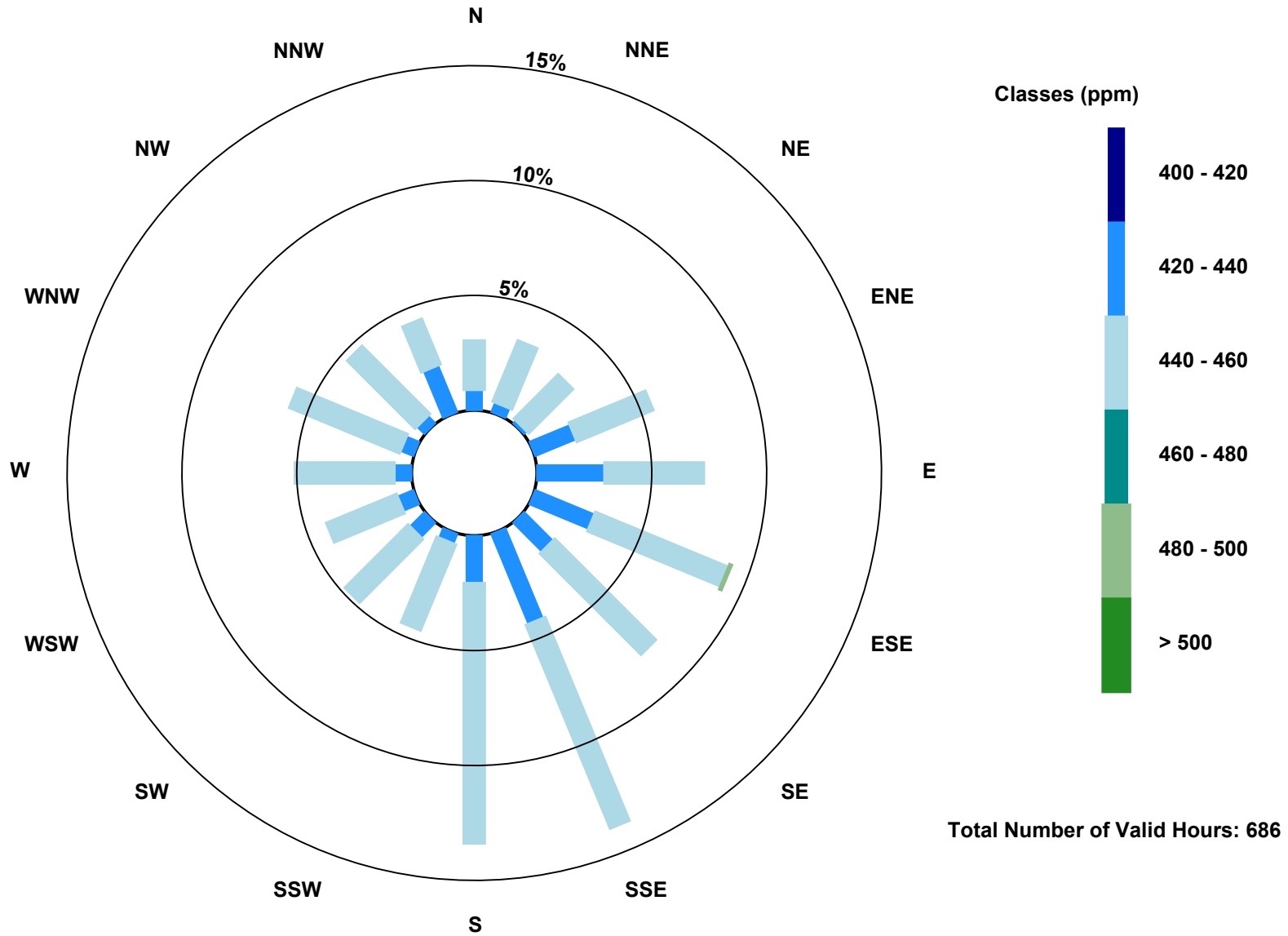
Total Number of Valid Hours: 686

Total Number of Hours: 720



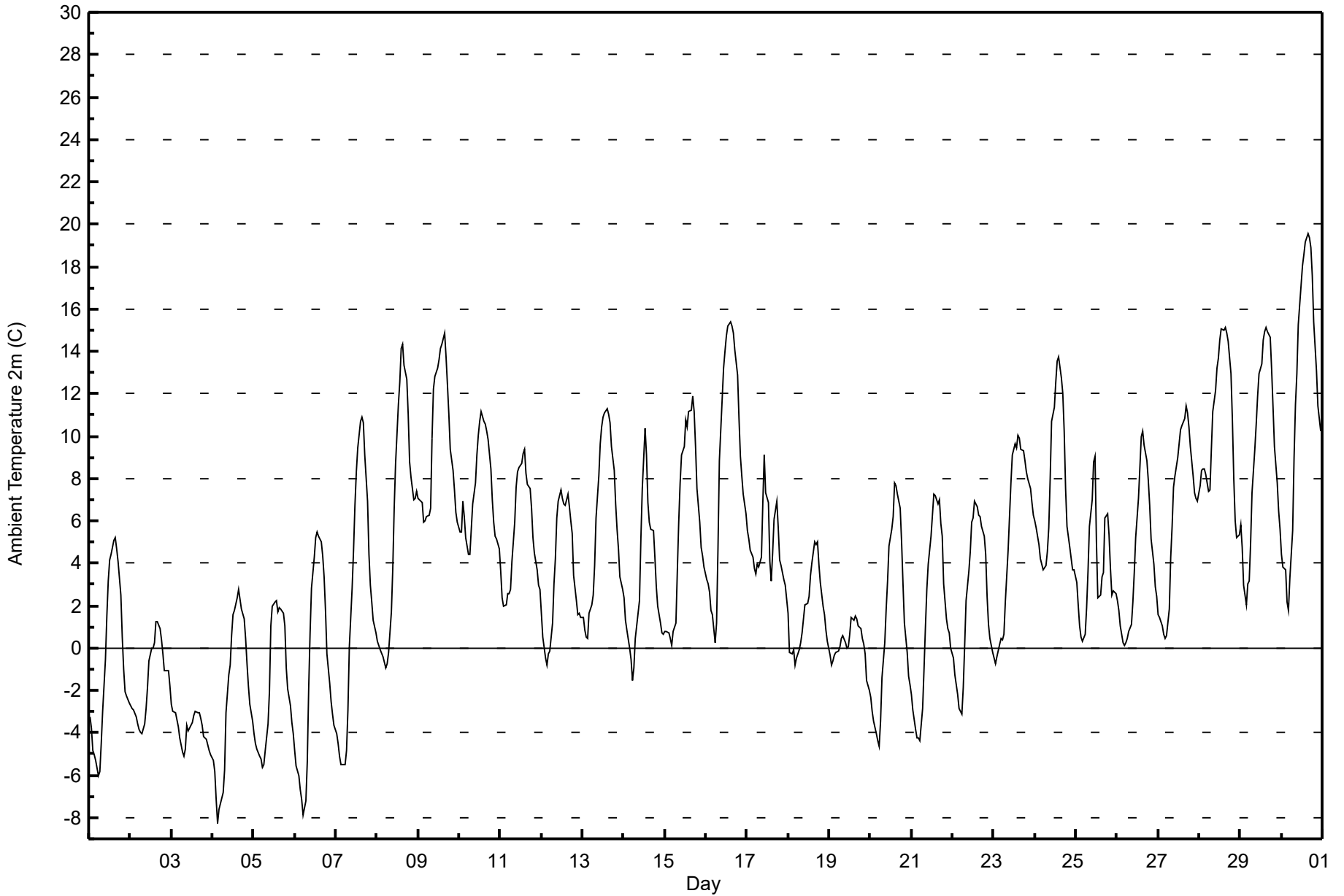
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Carbon Dioxide (CO₂) - ppm
Stony Mountain





Maximum Value: 19.5 C on Apr 30 16:00		Maximum Daily Average: 11.8 C on Apr 30		Hours in Service: 720																																												
Minimum Value: -8.2 C on Apr 4 04:00		Minimum Daily Average: -3.8 C on Apr 3		Hours of Data: 720																																												
Maximum Diurnal Average: 8.4 C at hour 16		Minimum Diurnal Average: -0.5 C at hour 6		Hours of Missing Data: 0																																												
Monthly Average: 3.93 C		Percentiles: P ₁ = -6.8 P ₁₀ = -3.4 Q ₁ = 0.2 Median = 3.7 Q ₃ = 7.5 P ₉₀ = 11.1 P ₉₉ = 16.8		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-Apr	-3.2	-3.8	-4.9	-5.1	-5.3	-6.0	-5.8	-4.5	-3.0	-0.5	1.5	3.2	4.2	4.4	5.1	5.2	4.7	4.1	2.5	0.5	-1.0	-2.1	-2.3	-2.6	-0.6	5.2																						
2-Apr	-2.8	-2.8	-2.9	-3.2	-3.6	-3.8	-4.0	-4.0	-3.6	-2.9	-1.9	-0.6	0.0	0.0	0.2	1.2	1.3	0.9	0.4	-0.3	-1.0	-1.1	-1.1	-1.8	-1.6	1.3																						
3-Apr	-2.7	-3.0	-3.1	-3.4	-3.7	-4.2	-4.9	-5.1	-4.7	-3.6	-3.9	-3.7	-3.5	-3.2	-3.0	-3.0	-3.0	-3.3	-3.7	-4.2	-4.3	-4.6	-4.8	-5.0	-3.8	-2.7																						
4-Apr	-5.3	-5.8	-7.1	-8.2	-7.6	-7.1	-6.8	-5.8	-3.1	-1.3	-0.8	0.6	1.6	1.8	2.4	2.7	2.3	1.8	1.4	0.5	-0.7	-1.8	-2.7	-3.5	-2.2	2.7																						
5-Apr	-4.0	-4.5	-4.8	-5.1	-5.2	-5.6	-5.5	-4.9	-3.6	-2.0	1.0	2.0	2.2	2.2	1.7	1.9	1.8	1.6	1.1	-0.9	-2.0	-2.7	-3.5	-4.1	-1.8	2.2																						
6-Apr	-4.9	-5.6	-6.0	-6.7	-7.1	-7.8	-7.2	-5.4	-1.9	0.7	2.8	4.3	5.2	5.5	5.3	5.0	4.4	3.4	1.8	-0.3	-1.7	-2.5	-3.1	-3.7	-1.1	5.5																						
7-Apr	-4.0	-4.5	-5.1	-5.5	-5.5	-5.5	-4.9	-2.9	0.1	2.8	4.6	6.7	8.3	9.4	10.7	10.9	10.6	9.1	7.0	4.4	3.0	2.1	1.3	0.7	2.2	10.9																						
8-Apr	0.3	0.1	-0.1	-0.4	-0.7	-0.9	-0.8	-0.2	1.7	3.7	6.6	8.7	11.5	12.5	14.2	14.4	13.4	12.7	11.0	8.8	8.0	7.0	7.1	7.4	6.1	14.4																						
9-Apr	7.1	7.0	6.8	6.0	6.0	6.2	6.3	6.6	9.9	12.2	12.8	13.2	13.6	14.2	14.3	14.9	13.7	12.4	11.1	9.4	8.4	7.5	6.4	5.9	9.7	14.9																						
10-Apr	5.5	5.5	6.9	6.2	5.2	4.4	4.4	5.6	6.8	7.8	9.1	10.0	10.7	11.2	10.7	10.6	10.2	9.8	8.5	7.0	6.0	5.3	5.1	4.7	7.4	11.2																						
11-Apr	3.6	2.4	1.9	2.1	2.6	2.5	2.8	4.1	6.0	7.6	8.3	8.5	8.7	9.2	9.4	8.3	7.7	7.6	6.6	5.2	4.5	3.7	3.0	2.8	5.4	9.4																						
12-Apr	1.7	0.5	-0.5	-0.8	-0.3	-0.1	1.2	3.0	4.2	6.1	6.9	7.5	7.1	6.8	6.7	7.3	6.6	6.0	5.4	3.4	2.2	1.6	1.6	1.5	3.6	7.5																						
13-Apr	1.5	0.9	0.5	0.5	1.6	2.0	2.5	3.9	6.1	8.1	9.6	10.5	10.9	11.1	11.3	11.1	10.6	9.5	8.4	6.8	5.6	4.7	3.3	2.8	6.0	11.3																						
14-Apr	2.4	1.3	0.8	0.0	-0.5	-1.5	-0.9	0.5	1.6	2.3	5.1	7.5	10.4	9.1	6.9	5.9	5.6	5.6	4.3	2.9	2.0	1.2	0.7	0.6	3.1	10.4																						
15-Apr	0.8	0.8	0.7	0.5	0.1	0.8	1.2	3.6	5.9	7.8	9.1	9.5	10.7	10.4	11.2	11.2	11.9	11.1	9.5	7.5	5.9	4.7	4.4	3.8	6.0	11.9																						
16-Apr	3.3	3.0	2.6	1.7	1.5	0.3	1.2	4.7	8.8	11.7	13.2	14.0	14.8	15.2	15.4	15.2	14.9	14.1	12.9	10.8	9.1	8.1	7.3	6.4	8.8	15.4																						
17-Apr	5.5	5.1	4.6	4.3	3.8	3.5	3.9	3.8	4.3	6.8	9.1	7.3	6.8	4.1	3.1	4.5	6.1	6.9	5.7	4.1	3.9	3.2	3.0	2.3	4.8	9.1																						
18-Apr	1.7	-0.2	-0.2	-0.1	-0.8	-0.5	-0.1	0.3	0.7	1.4	2.0	2.1	2.4	3.4	4.0	5.0	4.9	5.0	4.0	3.1	2.0	1.6	0.8	0.3	1.8	5.0																						
19-Apr	-0.4	-0.8	-0.6	-0.3	-0.2	-0.1	0.1	0.4	0.6	0.3	0.0	0.0	0.6	1.5	1.3	1.5	1.4	1.1	0.9	0.5	0.2	-0.3	-1.5	-2.0	0.2	1.5																						
20-Apr	-2.4	-3.0	-3.4	-4.0	-4.4	-4.6	-3.5	-1.4	0.2	1.8	3.1	4.8	5.6	6.2	7.8	7.6	7.3	6.6	5.0	3.0	1.2	-0.2	-1.3	-1.7	1.3	7.8																						
21-Apr	-2.2	-2.9	-3.8	-4.3	-4.2	-4.3	-2.9	-1.0	1.0	2.8	3.9	5.3	6.2	7.2	7.2	6.8	7.0	5.9	5.3	3.0	1.4	0.9	0.7	0.0	1.6	7.2																						
22-Apr	-0.5	-1.2	-1.7	-2.2	-2.9	-3.1	-1.9	0.1	2.3	3.6	4.5	5.9	6.1	6.9	6.7	6.3	6.2	5.7	5.3	4.4	2.4	1.1	0.5	-0.2	2.3	6.9																						
23-Apr	-0.5	-0.7	-0.4	0.2	0.5	0.4	0.7	2.2	4.6	6.2	7.8	9.1	9.6	9.5	10.0	9.9	9.4	9.3	8.8	8.3	8.0	7.5	6.9	6.3	5.6	10.0																						
24-Apr	6.0	5.6	4.9	4.2	3.9	3.7	3.9	4.6	5.7	8.0	10.7	11.4	12.6	13.6	13.8	12.8	12.0	10.3	7.5	5.7	4.7	4.2	3.7	3.7	7.4	13.8																						
25-Apr	3.1	2.0	1.1	0.5	0.3	0.6	1.9	3.6	5.7	7.0	8.8	9.0	5.0	2.4	2.5	3.3	3.6	6.1	6.3	5.3	3.8	2.5	2.7	2.6	3.7	9.0																						
26-Apr	2.2	1.8	1.0	0.3	0.1	0.2	0.4	0.8	1.1	2.2	3.6	5.2	7.0	8.5	10.0	10.2	9.6	8.9	7.9	6.7	5.1	4.0	2.9	2.4	4.3	10.2																						
27-Apr	1.5	1.4	1.1	0.6	0.5	0.6	1.8	4.3	5.7	7.6	8.1	9.0	9.6	10.3	10.5	10.8	11.4	11.1	10.5	9.5	8.1	7.3	7.1	7.0	6.5	11.4																						
28-Apr	7.7	8.4	8.4	8.5	8.2	7.4	7.4	9.4	11.1	12.2	13.2	13.6	14.5	15.1	15.0	15.1	14.9	14.4	13.0	10.7	8.0	6.0	5.2	5.3	10.5	15.1																						
29-Apr	5.8	4.8	3.0	2.1	3.0	3.2	5.0	7.3	9.4	10.5	11.9	13.0	13.4	14.5	14.9	15.1	14.9	14.7	13.1	11.4	9.5	7.8	6.4	5.6	9.2	15.1																						
30-Apr	4.4	3.8	3.7	2.2	1.8	3.3	5.6	9.0	11.5	12.9	15.3	17.1	18.0	18.6	19.1	19.5	19.4	18.9	17.6	15.4	13.1	11.4	10.9	10.3	11.8	19.5																						
																								1.0	0.5	0.1	-0.3	-0.4	-0.5	0.0	1.4	3.2	4.8	6.2	7.2	7.8	8.1	8.3	8.4	8.2	7.7	6.6	5.1	3.8	2.9	2.4	1.9	Diurnal Average
																								7.7	8.4	8.4	8.5	8.2	7.4	7.4	9.4	11.5	12.9	15.3	17.1	18.0	18.6	19.1	19.5	19.4	18.9	17.6	15.4	13.1	11.4	10.9	10.3	Diurnal Maximum





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature 2m (AT 2m) - C
Stony Mountain - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	168	23.33	23.33
0 - 10	447	62.08	85.42
10 - 20	105	14.58	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

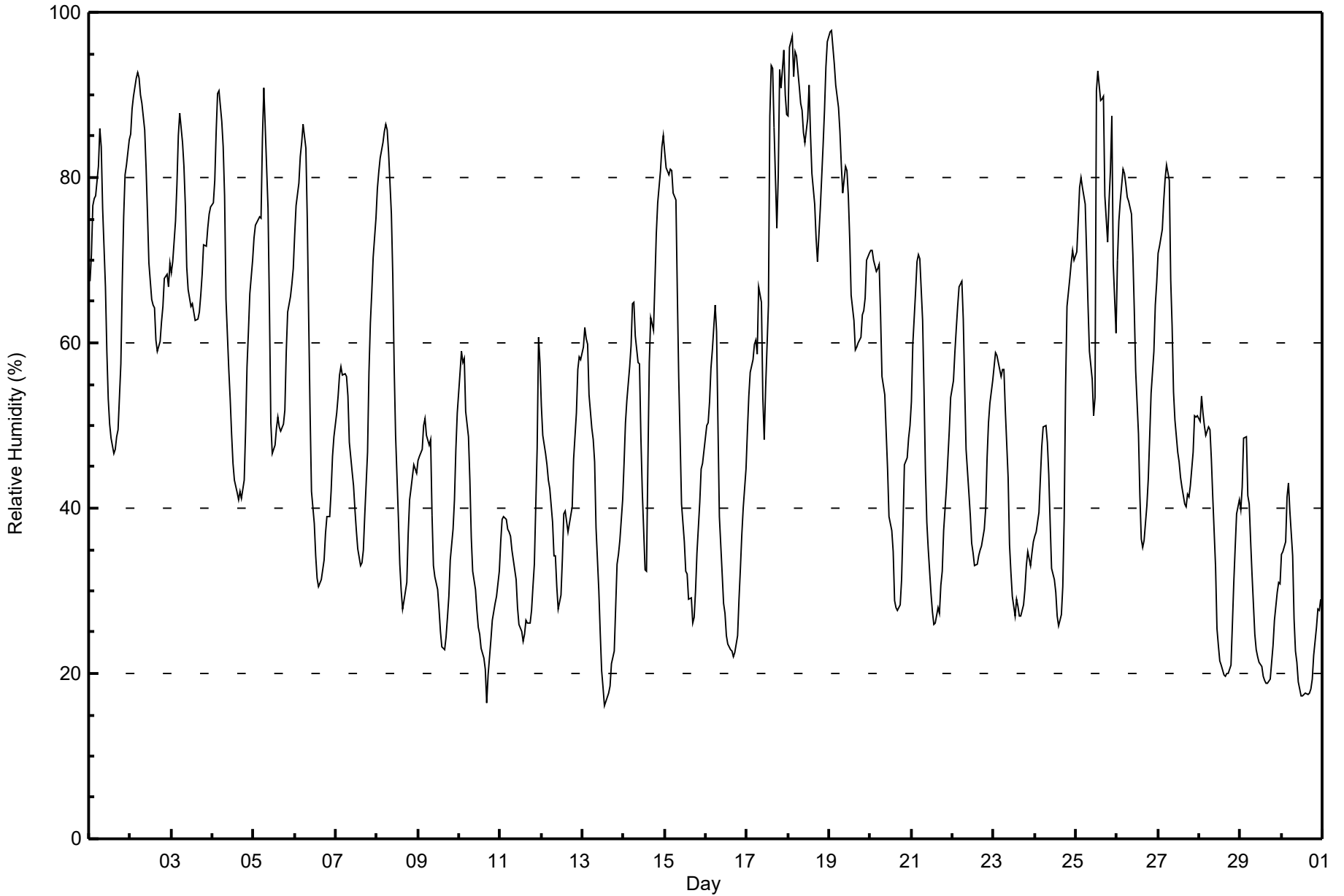
Relative Humidity (RH) - %
Stony Mountain - April 2023

Maximum Value: 97.8 % on Apr 19 02:00 Maximum Daily Average: 86.5 % on Apr 18																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 16.1 % on Apr 13 14:00 Minimum Daily Average: 26.1 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																											
Maximum Diurnal Average: 67.4 % at hour 6 Minimum Diurnal Average: 39.4 % at hour 17																						Percent Operational Time: 100.0																											
Monthly Average: 52.56 % Percentiles: P ₁ = 17.6 P ₁₀ = 26.2 Q ₁ = 34.8 Median = 50.0 Q ₃ = 69.5 P ₉₀ = 83.2 P ₉₉ = 95.2																																																	
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-Apr	67.5	70.7	76.6	77.4	77.8	81.3	86.0	83.7	76.3	66.8	59.0	53.2	50.1	48.5	46.7	47.1	48.7	49.5	57.5	67.4	75.2	80.3	81.5	84.6	67.2	86.0																							
2-Apr	85.2	88.3	89.8	92.1	92.7	92.1	90.0	89.0	85.8	81.1	75.7	69.7	65.2	64.6	64.3	60.3	59.0	60.2	62.5	64.3	67.7	68.3	66.8	69.6	75.2	92.7																							
3-Apr	68.5	69.9	74.8	79.2	85.1	87.7	84.3	81.3	76.5	69.2	66.4	64.4	64.8	63.7	62.6	62.9	63.7	65.7	68.3	71.9	71.7	73.9	75.5	76.5	72.0	87.7																							
4-Apr	77.0	79.6	85.7	90.2	90.5	86.8	83.8	77.8	65.3	56.8	53.3	49.1	45.3	43.4	41.8	41.1	42.0	41.3	43.3	49.5	57.1	61.3	66.0	70.0	62.4	90.5																							
5-Apr	72.8	74.3	74.6	75.2	75.2	84.8	90.9	86.1	76.3	64.3	50.3	46.6	47.6	49.6	51.1	49.8	49.3	50.2	51.9	59.1	63.8	65.6	67.2	69.0	64.4	90.9																							
6-Apr	73.0	76.6	79.4	82.5	84.2	86.4	83.5	75.0	62.9	51.5	42.1	38.2	34.2	31.6	30.6	31.4	32.5	33.7	36.9	39.1	38.9	42.0	46.2	48.6	53.4	86.4																							
7-Apr	51.5	53.5	56.0	57.2	56.1	56.3	55.9	53.6	48.0	44.4	42.6	39.9	37.3	35.1	33.1	33.5	34.9	39.2	46.7	56.4	62.4	66.0	70.4	75.1	50.2	75.1																							
8-Apr	78.7	80.7	82.4	84.3	85.5	86.4	85.7	83.1	75.6	68.1	56.9	48.8	38.7	33.3	30.0	27.7	28.8	31.0	37.0	41.0	42.3	45.3	44.8	44.2	56.7	86.4																							
9-Apr	45.7	46.2	47.1	50.0	50.9	48.8	47.7	48.4	39.1	33.0	31.7	30.1	27.8	25.0	23.3	22.8	24.5	26.7	29.3	33.8	37.4	40.9	47.0	51.6	37.9	51.6																							
10-Apr	56.5	58.9	57.6	58.2	51.7	48.6	43.4	36.5	32.5	30.2	27.6	25.5	24.7	23.1	21.9	20.4	16.4	19.8	24.1	26.4	27.4	28.5	29.4	32.4	34.2	58.9																							
11-Apr	35.9	38.6	39.0	38.6	37.5	37.1	36.6	34.9	32.5	31.4	27.9	26.0	25.1	23.9	24.7	26.5	26.0	26.1	27.6	30.5	33.3	47.3	60.7	57.6	34.4	60.7																							
12-Apr	52.5	48.8	46.6	45.3	43.4	42.4	38.4	34.3	34.3	30.5	27.7	29.6	33.9	39.3	39.6	37.0	38.1	39.2	40.1	46.0	51.5	56.8	58.3	58.0	42.1	58.3																							
13-Apr	59.5	61.9	60.4	59.9	53.7	49.7	48.3	45.6	37.6	30.0	24.9	20.4	18.2	16.1	17.1	17.6	18.5	21.2	22.7	28.0	33.2	34.4	36.1	41.0	35.7	61.9																							
14-Apr	45.4	50.4	53.0	57.1	59.6	64.8	64.8	60.9	57.6	57.5	48.7	42.0	32.5	32.3	45.4	57.6	63.1	61.4	67.3	73.2	76.9	80.8	83.7	85.1	59.2	85.1																							
15-Apr	83.0	81.3	80.4	81.1	80.9	78.2	77.3	66.1	55.7	48.3	40.4	35.9	32.4	32.1	29.0	29.2	26.2	26.7	30.0	34.6	40.7	44.8	45.4	47.0	51.1	83.0																							
16-Apr	50.1	50.3	52.8	57.0	59.1	64.6	61.4	50.1	39.0	32.1	28.5	27.3	24.6	23.5	22.9	22.7	22.0	22.5	24.5	28.9	32.8	36.8	39.9	44.7	38.3	64.6																							
17-Apr	49.4	53.5	56.5	58.0	59.8	60.4	58.6	66.8	64.8	53.4	48.2	54.7	64.6	87.5	93.6	93.3	86.1	73.9	80.2	93.0	90.9	95.4	90.0	87.6	71.7	95.4																							
18-Apr	87.4	95.8	97.1	92.2	95.3	94.8	91.1	89.1	88.2	85.5	84.2	87.1	91.3	85.3	80.5	76.7	72.7	69.8	73.0	76.3	83.9	88.2	93.5	96.5	86.5	97.1																							
19-Apr	97.6	97.8	95.8	93.7	91.2	88.4	85.6	81.6	78.1	81.4	80.9	77.8	72.5	65.8	62.8	59.2	59.6	60.1	60.7	63.4	64.0	65.4	69.9	70.8	76.0	97.8																							
20-Apr	71.3	71.2	70.1	68.7	69.0	69.4	63.3	56.0	53.6	49.2	44.7	39.0	37.3	34.8	28.8	28.0	27.7	28.3	31.3	37.8	45.3	46.1	48.4	50.0	48.7	71.3																							
21-Apr	52.8	59.8	66.3	69.8	70.7	70.2	62.7	54.2	44.5	38.4	35.0	29.6	27.5	25.9	26.1	28.0	27.3	30.8	32.4	37.3	42.5	45.9	49.4	53.4	45.0	70.7																							
22-Apr	55.4	58.8	61.7	64.4	66.7	67.5	62.9	54.8	47.1	41.8	39.1	35.7	34.6	33.1	33.2	34.3	35.0	35.5	37.4	39.9	46.1	50.4	52.6	55.5	47.6	67.5																							
23-Apr	57.0	58.8	58.4	56.8	56.0	56.9	56.8	51.8	43.8	35.5	32.2	29.3	27.0	28.9	28.1	26.9	27.0	28.3	30.2	33.0	34.7	33.1	34.5	35.9	40.0	58.8																							
24-Apr	36.6	37.1	39.5	43.5	47.4	49.8	50.0	48.0	44.0	38.1	32.7	31.3	29.9	26.9	25.7	27.2	30.4	38.9	54.7	64.4	67.8	69.6	71.3	69.9	44.8	71.3																							
25-Apr	71.0	74.7	78.9	80.0	78.9	76.8	70.8	64.6	59.0	55.5	51.2	53.4	90.4	92.9	89.3	89.5	89.9	77.8	72.2	77.2	80.8	87.5	69.4	61.1	74.7	92.9																							
26-Apr	70.0	74.8	77.2	81.1	80.5	79.2	77.7	77.2	75.6	70.7	64.0	56.6	48.9	41.5	36.3	35.3	36.1	40.4	43.6	48.6	53.9	59.0	64.6	67.2	60.8	81.1																							
27-Apr	70.8	71.7	73.8	77.1	79.8	81.5	79.6	67.6	62.0	54.1	50.7	46.7	45.6	43.8	42.5	40.5	40.2	41.6	41.3	42.8	46.8	51.3	51.0	51.1	56.4	81.5																							
28-Apr	50.5	53.5	51.5	49.9	48.8	49.9	49.5	45.9	41.3	32.8	25.4	23.4	21.5	21.0	19.8	19.6	19.9	20.0	21.1	26.0	31.0	35.2	39.3	40.9	34.9	53.5																							
29-Apr	39.9	42.5	48.4	48.7	41.5	40.4	36.1	32.0	24.7	22.8	22.0	21.3	20.8	19.6	19.2	18.7	18.8	19.4	21.4	23.5	26.4	29.8	31.0	30.8	29.2	48.7																							
30-Apr	34.5	34.8	35.9	41.3	43.1	39.6	34.3	26.6	22.6	21.3	19.1	17.3	17.2	17.4	17.7	17.4	17.6	18.2	19.3	22.2	25.6	27.7	27.6	29.0	26.1	43.1																							
																								61.6	63.8	65.6	67.0	67.1	67.4	65.2	60.7	54.8	49.2	44.4	41.7	41.1	40.3	39.6	39.4	39.4	39.9	43.0	47.8	51.7	55.3	57.0	58.5	Diurnal Average	
																								97.6	97.8	97.1	93.7	95.3	94.8	91.1	89.1	88.2	85.5	84.2	87.1	91.3	92.9	93.6	93.3	89.9	77.8	80.2	93.0	90.9	95.4	93.5	96.5	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Stony Mountain - April 2023



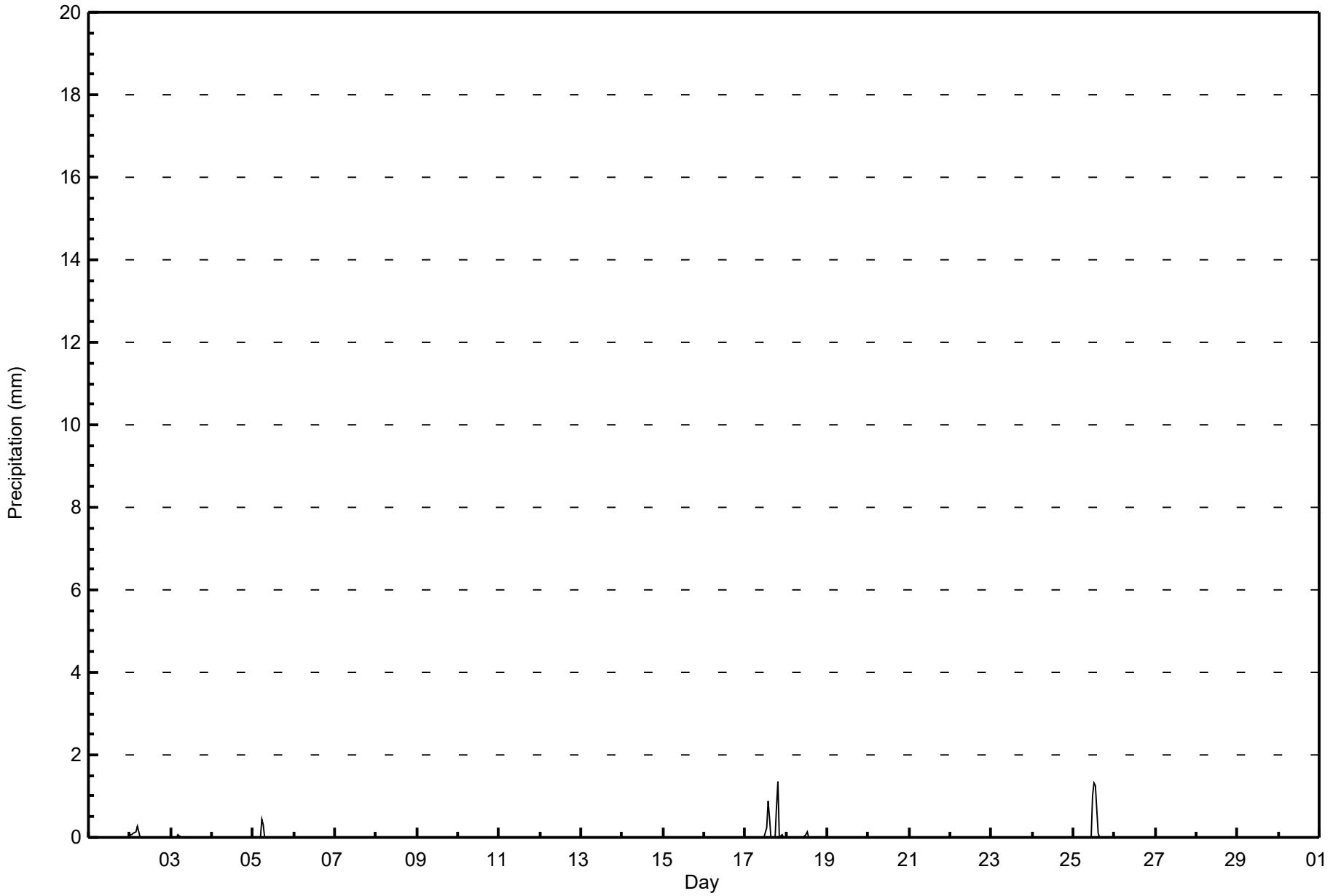


Maximum Value: 1.4 mm on Apr 17 20:00		Maximum Daily Total: 3.8 mm on Apr 17		Hours in Service: 720																																			
Minimum Value: 0.0 mm on Apr 1 01:00		Minimum Daily Total: 0.0 mm on Apr 1		Hours of Data: 718																																			
Maximum Diurnal Total: 2.1 mm at hour 14		Minimum Diurnal Total: 0.0 mm at hour 8		Hours of Missing Data: 2																																			
Monthly Total: 9.28 mm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.4		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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.1	0.1	0.1	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.3		
3-Apr	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	0.0	0.0	0.0	0.0	0.0	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			
4-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.4		
6-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.5	0.0	0.0	0.0	0.8	1.4	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	3.8	1.4	
18-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	
19-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	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	0.0	0.0	0.0	0.0	
21-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.3	1.2	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	0.0	0.0	3.7	1.3
26-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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															
																								M - Maintenance															



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Stony Mountain - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Precipitation (PC) - mm
Stony Mountain - April 2023**

Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	710	98.89	98.89
0.4 - 0.5	2	0.28	99.16
0.6 - 0.7	0	0.00	99.16
0.8 - 1.4	6	0.84	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Leaf Wetness (LW) - %

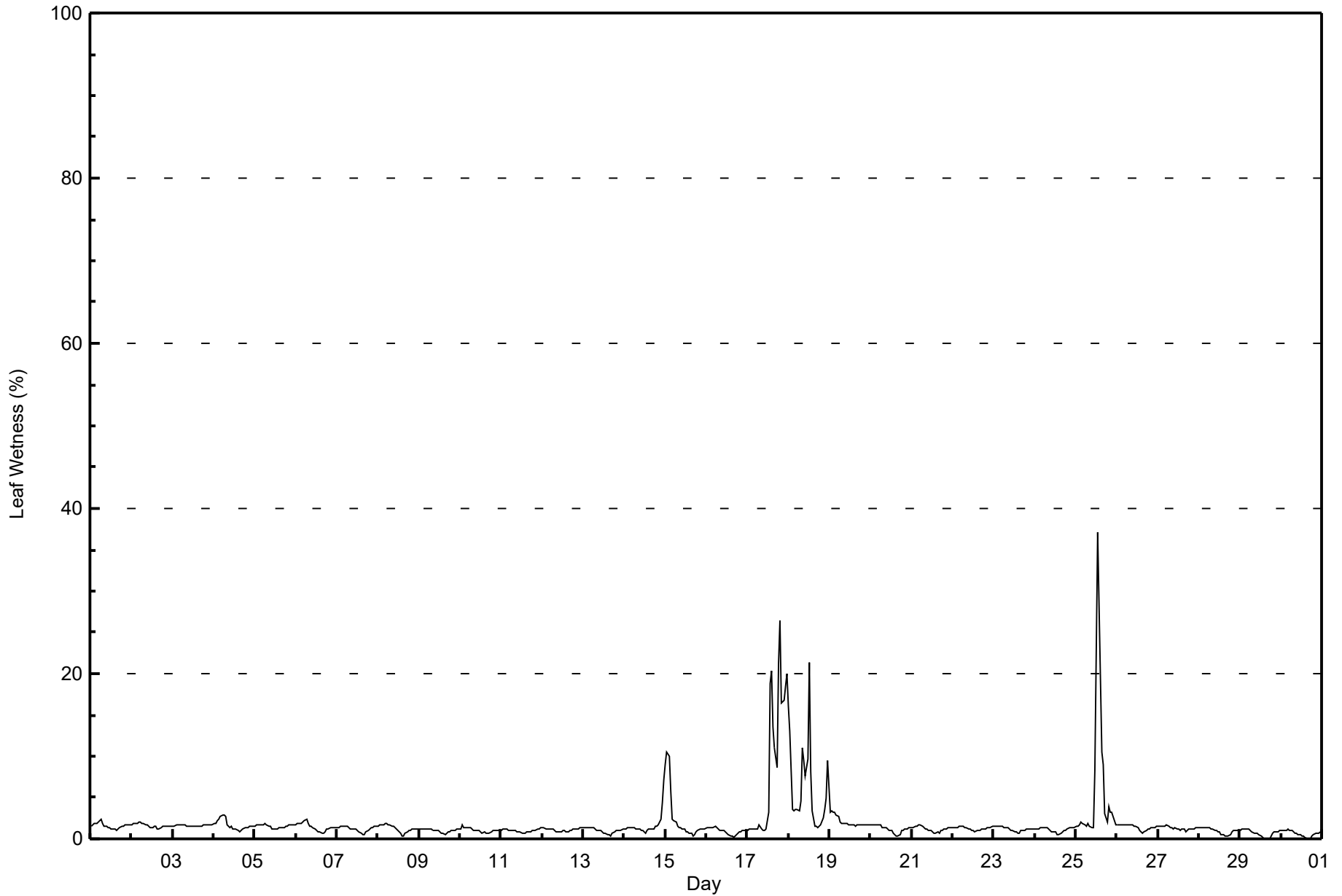
Stony Mountain - April 2023

Maximum Value: 37.1 % on Apr 25 14:00 Maximum Daily Average: 8.7 % on Apr 17																				Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0							
Minimum Value: 0.0 % on Apr 29 17:00 Minimum Daily Average: 0.6 % on Apr 30 Maximum Diurnal Average: 2.9 % at hour 14 Minimum Diurnal Average: 1.2 % at hour 18 Monthly Average: 1.87 % Percentiles: P ₁ = 0.1 P ₁₀ = 0.7 Q ₁ = 1.0 Median = 1.3 Q ₃ = 1.6 P ₉₀ = 2.0 P ₉₉ = 19.2																											
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-Apr	1.6	1.7	1.9	1.9	1.9	2.2	2.4	1.9	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	1.2	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.6	2.4	
2-Apr	1.8	1.8	1.9	1.9	2.0	2.0	1.9	1.8	1.7	1.6	1.5	1.3	1.4	1.5	1.5	1.1	1.1	1.4	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6	2.0
3-Apr	1.6	1.6	1.6	1.6	1.7	1.8	1.8	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.6	1.8	
4-Apr	1.8	1.9	2.3	2.5	2.8	2.9	2.8	2.7	1.7	1.4	1.5	1.2	1.1	1.1	1.0	0.8	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.7	2.9	
5-Apr	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.5	1.4	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.7	1.7	1.5	1.8	
6-Apr	1.7	1.8	1.8	1.9	2.0	2.3	2.4	1.9	1.5	1.5	1.4	1.2	1.1	0.9	0.8	0.7	0.7	0.9	1.2	1.2	1.3	1.3	1.4	1.4	1.4	2.4	
7-Apr	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.2	1.2	1.2	1.1	1.0	0.8	0.6	0.6	0.6	0.8	1.1	1.2	1.3	1.4	1.5	1.5	1.2	1.5	
8-Apr	1.6	1.6	1.7	1.8	1.8	1.8	1.8	1.7	1.5	1.4	1.3	1.2	0.8	0.6	0.4	0.3	0.6	0.9	1.0	1.1	1.1	1.1	1.2	1.1	1.2	1.8	
9-Apr	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.0	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.2	1.0	1.2	
10-Apr	1.2	1.7	1.3	1.4	1.3	1.3	1.3	1.2	1.1	1.0	1.0	1.0	0.9	0.7	0.8	0.7	0.7	0.7	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.7	
11-Apr	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.1	1.1	1.3	1.3	1.0	1.3	
12-Apr	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.0	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.8	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.1	1.3	
13-Apr	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.0	1.0	0.8	0.7	0.6	0.4	0.5	0.4	0.7	0.9	1.0	1.1	1.1	1.1	1.1	1.0	1.4	
14-Apr	1.2	1.2	1.3	1.3	1.3	1.4	1.3	1.2	1.2	1.2	1.0	1.0	0.6	0.9	1.2	1.2	1.2	1.4	1.6	1.7	2.4	4.3	7.1	7.1	1.7	7.1	
15-Apr	9.0	10.5	10.0	5.7	2.3	2.2	2.0	1.6	1.4	1.4	1.2	1.1	0.9	0.9	0.7	0.7	0.4	0.6	0.9	1.0	1.1	1.2	1.2	1.2	2.5	10.5	
16-Apr	1.3	1.3	1.3	1.4	1.4	1.5	1.4	1.2	1.0	1.0	1.0	0.8	0.6	0.5	0.3	0.3	0.2	0.4	0.7	0.9	0.9	1.0	1.0	1.0	0.9	1.5	
17-Apr	1.1	1.2	1.2	1.2	1.3	1.3	1.2	1.7	1.2	1.1	1.1	1.3	3.2	18.8	20.4	13.6	11.0	8.6	21.2	26.4	16.5	16.8	18.4	20.0	8.7	26.4	
18-Apr	16.0	13.0	3.5	3.4	3.5	3.5	3.4	4.6	11.0	9.6	7.6	9.7	21.3	8.1	3.4	1.6	1.5	1.4	1.6	1.7	2.6	3.6	4.9	9.5	6.3	21.3	
19-Apr	3.2	3.3	3.2	3.1	3.0	2.7	2.1	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	2.1	3.3	
20-Apr	1.8	1.8	1.7	1.7	1.7	1.8	1.6	1.4	1.3	1.3	1.2	1.1	0.9	0.7	0.5	0.4	0.4	0.5	0.9	1.1	1.2	1.2	1.3	1.3	1.2	1.8	
21-Apr	1.4	1.4	1.5	1.6	1.6	1.6	1.5	1.3	1.2	1.1	1.1	1.0	0.9	0.7	0.6	0.8	0.7	1.0	1.1	1.2	1.3	1.3	1.3	1.3	1.2	1.6	
22-Apr	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.3	1.2	1.2	1.1	1.1	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.4	1.3	1.5	
23-Apr	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.7	0.8	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.5	
24-Apr	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.1	0.9	0.8	0.6	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.3	1.4	1.4	1.4	1.1	1.4	
25-Apr	1.4	1.5	1.7	2.0	1.8	1.7	1.5	1.8	1.5	1.4	1.3	8.4	22.8	37.1	19.3	10.5	8.9	3.0	2.1	3.9	3.3	3.2	2.8	1.7	6.0	37.1	
26-Apr	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.3	1.1	0.9	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.8	
27-Apr	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.3	1.3	1.2	1.3	1.2	1.2	1.1	1.1	1.1	0.9	0.9	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.6	
28-Apr	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.0	0.9	0.8	0.6	0.5	0.4	0.4	0.4	0.6	0.8	0.9	1.0	1.0	1.1	1.0	1.3	
29-Apr	1.1	1.1	1.1	1.2	1.2	1.2	1.1	0.8	0.6	0.6	0.6	0.5	0.4	0.2	0.1	0.0	0.0	0.0	0.4	0.7	0.8	0.9	0.9	1.0	0.7	1.2	
30-Apr	1.0	1.1	1.1	1.1	1.1	1.1	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.3	0.1	0.0	0.0	0.0	0.3	0.6	0.7	0.7	0.8	0.8	0.6	1.1	
																								Diurnal Average			
																								Diurnal Maximum			



Wood Buffalo Environmental Association
Hourly Averages

Leaf Wetness (LW) - %
Stony Mountain - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Leaf Wetness (LW) - %
Stony Mountain - April 2023**

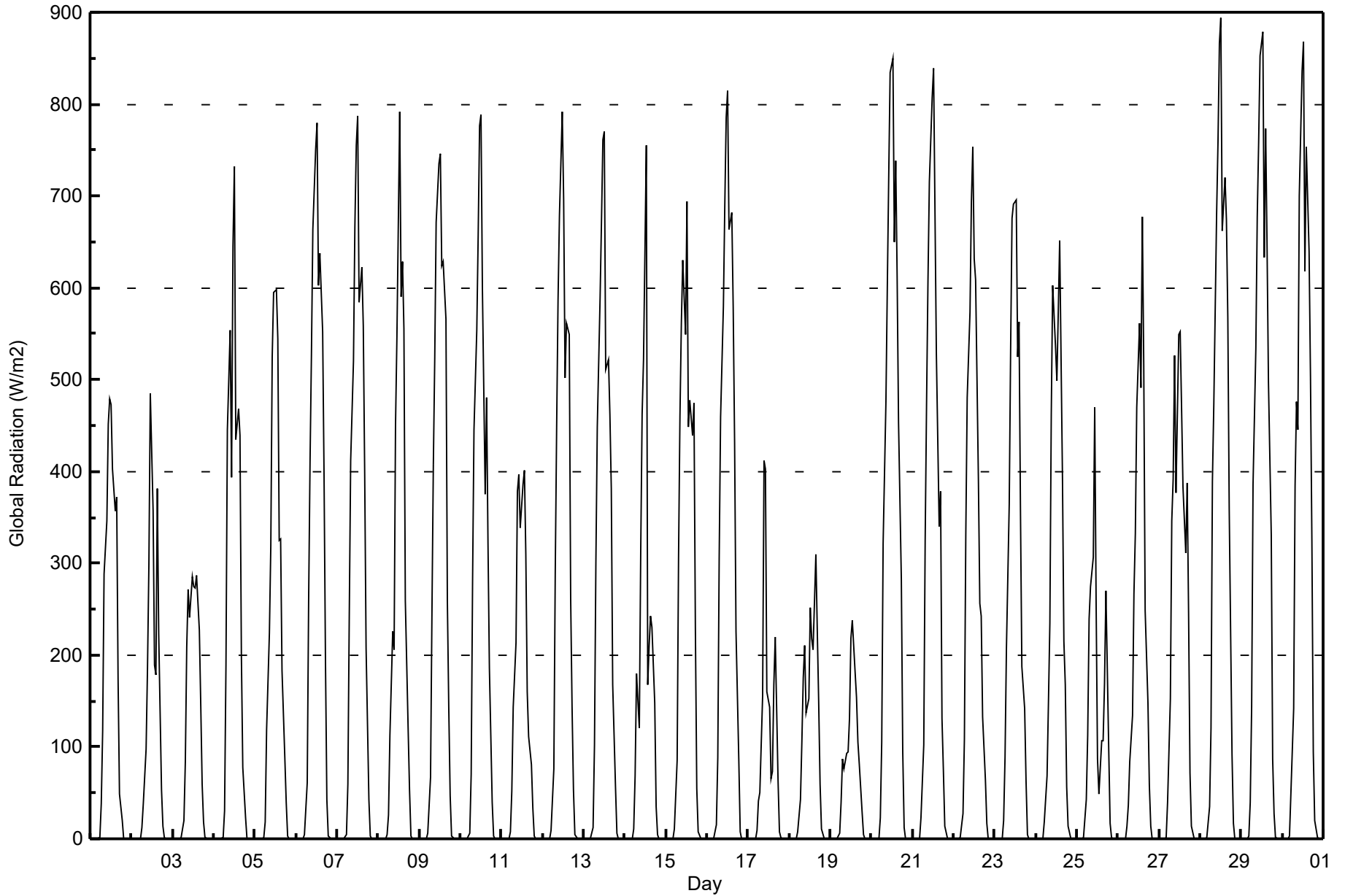
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	16	2.22	2.22
0.4 - 0.5	22	3.06	5.28
0.6 - 0.7	45	6.25	11.53
0.8 - 1.4	393	54.58	66.11
1.5 - 10	198	27.50	93.61
> 10	20	2.78	96.39

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 894.3 W/m2 on Apr 28 13:00 Maximum Daily Average: 304.5 W/m2 on Apr 28																							Hours in Service:	720		
Minimum Value: 0.0 W/m2 on Apr 1 01:00 Minimum Daily Average: 64.1 W/m2 on Apr 19																							Hours of Data:	720		
Maximum Diurnal Average: 613.6 W/m2 at hour 13 Minimum Diurnal Average: 0.1 W/m2 at hour 4																							Hours of Missing Data:	0		
Monthly Average: 195.79 W/m2 Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.3 Median = 54.0 Q ₃ = 377.9 P ₉₀ = 609.2 P ₉₉ = 835.2																							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-Apr	0.0	0.0	0.0	0.0	0.0	1.2	38.6	117.0	288.3	346.1	452.2	478.4	472.8	402.3	356.6	371.8	174.4	49.0	20.5	0.6	0.0	0.0	0.0	0.0	148.7	478.4
2-Apr	0.0	0.0	0.0	0.0	0.0	0.6	11.5	38.6	97.5	186.4	298.4	485.7	356.8	188.5	179.1	381.6	223.3	52.7	13.4	0.8	0.0	0.0	0.0	0.2	104.8	485.7
3-Apr	0.1	0.0	0.0	0.0	0.0	0.9	20.4	84.5	209.1	271.7	240.8	285.4	274.0	272.7	286.6	227.4	146.7	59.0	18.1	1.2	0.0	0.0	0.0	0.0	99.9	286.6
4-Apr	0.0	0.1	0.3	0.0	0.0	1.5	30.0	188.9	445.5	554.0	393.2	644.5	731.8	434.9	468.1	439.3	200.0	78.4	22.7	0.6	0.2	0.5	0.4	0.4	193.1	731.8
5-Apr	0.3	0.4	0.1	0.0	0.0	1.2	17.9	118.6	224.7	319.0	524.3	594.6	597.3	544.6	324.2	326.5	182.5	88.3	39.4	2.4	0.6	0.5	0.5	0.6	162.9	597.3
6-Apr	0.4	0.3	0.3	0.4	0.4	4.2	61.5	259.7	409.6	528.0	664.3	750.6	779.0	602.1	637.6	552.4	394.8	195.1	42.7	2.8	0.2	0.2	0.2	0.1	245.3	779.0
7-Apr	0.3	0.2	0.1	0.1	0.1	4.6	59.0	243.8	411.7	520.2	666.8	754.4	786.5	584.6	622.3	558.5	398.2	207.8	43.4	2.5	0.1	0.0	0.0	0.0	244.4	786.5
8-Apr	0.0	0.0	0.0	0.0	0.1	5.1	25.3	113.2	225.1	206.2	449.9	545.5	791.9	590.3	628.1	554.7	259.5	119.8	54.1	3.4	0.3	0.3	0.3	0.0	190.5	791.9
9-Apr	0.0	0.0	0.0	0.0	0.0	5.8	67.9	245.5	407.5	523.7	671.7	735.8	745.9	623.2	628.9	566.1	259.8	142.6	46.7	2.6	0.0	0.0	0.0	0.0	236.4	745.9
10-Apr	0.1	0.0	0.0	0.0	0.0	6.8	69.5	280.8	445.6	554.1	657.6	776.4	788.3	600.6	375.4	481.2	322.6	186.8	39.7	3.7	0.4	0.5	0.1	0.0	232.9	788.3
11-Apr	0.2	0.4	0.3	0.5	0.3	7.4	52.5	143.8	213.5	377.6	396.6	338.1	386.0	401.8	309.2	159.8	110.8	80.8	33.5	3.5	0.3	0.2	0.1	0.0	125.7	401.8
12-Apr	0.0	0.0	0.0	0.1	0.0	8.5	76.6	290.0	448.9	587.9	678.6	792.0	695.6	502.1	561.1	548.9	262.2	142.7	53.9	5.1	0.2	0.0	0.0	0.3	235.6	792.0
13-Apr	0.4	0.4	0.2	0.1	0.2	12.1	102.7	300.4	448.5	588.2	672.7	761.7	770.2	511.6	522.3	462.1	381.6	168.1	56.5	6.2	0.0	0.0	0.6	0.3	240.3	770.2
14-Apr	0.0	0.5	0.2	0.0	0.1	9.9	69.2	180.0	120.5	313.0	461.5	521.2	754.9	168.1	210.5	242.0	229.7	148.2	34.8	5.1	0.1	0.5	0.6	0.7	144.6	754.9
15-Apr	0.7	0.7	0.7	0.6	0.6	10.2	85.4	306.9	460.4	561.4	630.2	548.5	694.2	448.0	478.0	440.0	473.9	230.4	54.3	8.1	0.6	0.5	0.6	0.6	226.5	694.2
16-Apr	0.3	0.3	0.3	0.0	0.2	14.8	87.8	307.3	459.0	579.6	689.6	785.4	814.3	663.5	681.9	578.7	432.3	225.3	86.0	7.5	0.0	0.0	0.0	0.0	267.3	814.3
17-Apr	0.0	0.0	0.0	0.0	0.1	9.3	41.9	50.3	155.3	411.3	403.0	159.7	143.1	66.0	73.9	167.2	219.7	64.0	8.0	0.8	0.3	0.2	0.1	0.0	82.3	411.3
18-Apr	0.0	0.1	0.2	0.3	0.3	6.9	42.9	105.6	176.0	210.5	137.8	152.4	252.4	218.0	205.8	310.1	227.1	149.3	59.4	10.5	0.0	0.0	0.0	0.0	94.4	310.1
19-Apr	0.4	0.5	0.3	0.4	0.4	5.7	40.1	87.3	75.7	92.3	94.7	131.4	217.9	237.5	181.4	153.4	104.8	80.2	29.6	4.6	0.0	0.1	0.0	0.3	64.1	237.5
20-Apr	0.1	0.3	0.2	0.2	0.5	22.3	105.5	321.8	475.4	603.3	720.9	834.4	849.0	649.4	737.6	612.4	453.8	282.0	94.2	11.9	0.3	0.2	0.4	0.3	282.3	849.0
21-Apr	0.4	0.5	0.4	0.4	0.6	23.1	102.8	324.6	473.7	606.9	714.9	806.6	838.5	682.8	527.8	340.3	378.8	131.7	75.1	13.0	0.5	0.4	0.3	0.3	251.9	838.5
22-Apr	0.3	0.6	0.5	0.5	1.1	27.6	108.9	331.1	480.6	574.0	694.8	753.4	632.3	608.8	391.1	256.9	242.8	132.2	63.9	16.3	0.3	0.2	0.3	0.3	221.6	753.4
23-Apr	0.2	0.2	0.1	0.1	0.6	19.1	88.7	207.8	364.0	533.5	676.0	691.6	695.1	524.0	563.6	360.0	187.1	141.1	62.4	5.3	0.0	0.0	0.0	0.0	213.4	695.1
24-Apr	0.0	0.0	0.0	0.0	0.5	19.0	68.2	150.1	234.9	462.1	602.0	536.6	498.4	573.4	651.0	391.5	214.5	167.5	56.8	13.7	0.3	0.0	0.0	0.0	193.4	651.0
25-Apr	0.1	0.2	0.1	0.3	1.4	43.3	112.8	239.2	274.2	306.4	469.6	257.6	86.6	48.2	106.3	106.0	169.2	269.3	97.0	17.1	0.8	0.6	0.5	0.1	108.6	469.6
26-Apr	0.1	0.1	0.0	0.1	0.6	14.1	37.2	84.1	133.5	267.7	333.1	469.8	561.0	491.9	677.5	515.7	248.0	148.1	57.7	13.3	0.3	0.0	0.0	0.0	168.9	677.5
27-Apr	0.0	0.0	0.0	0.0	2.2	39.9	152.7	346.8	392.6	525.9	376.6	548.7	552.7	468.7	382.7	311.8	387.5	245.0	71.8	13.1	0.4	0.0	0.1	0.0	200.8	552.7
28-Apr	0.0	0.0	0.0	0.0	1.5	35.0	121.1	388.7	473.1	679.7	758.9	866.0	894.3	661.3	720.1	674.6	567.7	359.0	91.0	16.0	0.4	0.0	0.0	0.0	304.5	894.3
29-Apr	0.0	0.0	0.0	0.0	3.0	39.5	143.2	385.6	533.8	676.5	757.9	853.0	879.2	632.5	773.4	645.1	497.4	330.6	86.2	28.2	0.8	0.0	0.0	0.1	302.7	879.2
30-Apr	0.1	0.1	0.3	0.2	3.2	48.8	141.6	384.9	475.7	445.3	700.0	835.4	868.3	617.1	753.9	639.7	502.1	322.8	94.8	20.5	0.8	0.2	0.2	0.1	285.7	868.3
																							Diurnal Average			
																							Diurnal Maximum			





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Global Radiation (GR) - W/m2
Stony Mountain - April 2023

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	328	45.56	45.56
21 - 100	74	10.28	55.83
101 - 300	108	15.00	70.83
301 - 600	132	18.33	89.17
601 - 900	78	10.83	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed 20 m (WS20m) - km/h
Stony Mountain - April 2023

Maximum Speed: 28 km/h on Apr 10 17:00	Maximum Daily Speed Average: 20.4 km/h on Apr 7	Hours in Service: 720
Minimum Speed Value: 2 km/h on Apr 14 21:00	Minimum Daily Speed Average: 2.7 km/h on Apr 4	Hours of Data: 720
Maximum Diurnal Speed Average: 6.9 km/h at hour 24	Minimum Diurnal Speed Average: 2.4 km/h at hour 10	Hours of Missing Data: 0
Monthly Average Velocity: 4.2 km/h 170.0 deg	Percentiles: P ₁ = 3 P ₁₀ = 6 Q ₁ = 8 Median = 12 Q ₃ = 15 P ₉₀ = 20 P ₉₉ = 25	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-Apr	ENE3	NNE3	N6	NE7	E9	ESE9	ESE9	SE8	SE7	SE12	SE10	SE9	ESE9	ESE10	E10	ENE13	ENE12	ENE10	E15	ESE14	ESE13	ESE13	ESE14	ESE10	E8.6	E15
2-Apr	ESE11	ESE8	E7	E8	ESE7	E6	E7	E7	ENE7	ENE7	ENE7	ENE10	ENE7	NE5	NNE4	ENE5	ENE6	NNE4	E6	E5	ENE5	NE3	ESE8	S13	E5.8	S13
3-Apr	S14	SSW13	SSW15	SW14	W8	NW9	NNW11	NNW11	NNW10	NW9	NW9	NW9	NW9	NW7	NW10	WNW9	NW9	NW8	NNW8	N8	NNE4	E5	ESE6	ESE7	WNW4.4	SSW15
4-Apr	ESE6	ESE7	ESE8	ENE4	ENE5	NE7	ENE6	ENE6	E7	E5	NW4	NNE6	N4	ENE2	N5	NE6	E5	ESE3	SE5	S6	S9	SSW13	SSW13	SSW14	ESE2.7	SSW14
5-Apr	SSW14	SSW13	S13	S13	S12	S10	S10	S11	SSE11	S10	SSE12	SSE14	SSE17	S18	S15	S13	S11	S9	SSE10	SSE10	S13	S14	S15	S15	S12.4	S18
6-Apr	S16	S16	S16	S16	S16	S16	S16	S14	S15	SSE20	S20	S19	SSE21	SSE23	SSE24	SSE23	SSE24	S22	S21	S23	S22	S21	S21	S20	S19.2	SSE24
7-Apr	S21	S22	SSE22	SSE22	SSE23	S23	S24	SSE22	SSE21	S18	S22	SSE22	S24	SSE22	SSE18	SSE20	SSE19	S19	S19	S15	S17	SSE17	S20	S18	SSE20.4	S24
8-Apr	S15	S19	S16	S12	SW9	S13	SSW11	SSW10	SW11	WSW6	WNW7	W5	NW3	SW4	WNW7	WNW9	WNW10	WSW7	SW12	SW11	SW12	SW12	WSW14	WSW15	SW8.3	S19
9-Apr	WSW14	W9	W11	W12	WNW14	WNW15	W11	WSW12	WSW10	W13	WSW14	SW15	SW18	SW19	SW20	SW15	S18	S16	SSE14	SSE17	SSE15	SSE14	SSE17	SSE19	SW10.6	SW20
10-Apr	S19	SSW22	W25	WNW28	WNW28	WNW24	W21	WNW25	WNW26	WNW24	W24	W25	W25	W24	W25	W25	W28	W18	W14	W13	WSW12	WSW13	W13	WNW12	W19.7	W28
11-Apr	W9	WSW8	SW11	SW11	SW11	SW10	SW9	SW8	SW6	NNW4	WNW7	NW7	W4	WNW6	NNW5	NNW9	WNW3	SSE2	W4	WSW6	W7	WSW13	WSW14	WNW13	W6.3	WSW14
12-Apr	NNW12	NNW10	NW9	WNW9	W11	W12	W11	W13	WNW13	WNW16	NW18	WNW18	WNW21	NW19	NW20	NW19	NW16	NW12	NW10	NW8	WNW8	WNW9	WNW8	W8	WNW12.4	WNW21
13-Apr	WSW9	WSW11	WSW9	WSW12	WSW13	WSW12	WSW12	WSW11	W9	WNW10	WNW12	WNW14	WNW15	WNW15	NNW12	NNW11	N12	N10	NE9	ENE10	ENE10	E8	SE7	SE10	WNW4.9	WNW15
14-Apr	SE11	S11	SSW5	SSE7	ESE6	NE5	E7	ENE4	E4	NNW7	NE5	ESE10	ESE8	SW5	SSW13	SE14	E8	ENE8	SE6	SW3	W2	SSE8	S8	SSW9	SE4.3	SE14
15-Apr	SSW11	SSW10	SW11	SW12	WSW11	WSW10	SW4	SSW7	SSW8	SSW9	S9	SSW9	S7	SSW4	SSE8	SSE10	S11	S11	SSE6	S10	S11	S11	S12	S12	SSW8.7	S12
16-Apr	S12	S12	SSE12	SSE12	SSE13	SSE10	SE9	SE9	ESE11	ESE15	ESE20	SE19	SE21	SE22	SE20	SE20	SE18	SE18	SE14	ESE17	SE18	SE19	ESE17	SE15.1	SE22	
17-Apr	SE16	SE17	ESE18	ESE19	E15	E17	ESE17	ESE13	E16	ESE18	ESE19	ESE19	ESE20	ESE20	SE14	E9	E7	E6	SE14	E7	NNE12	N9	NE11	NE9	ESE12.5	ESE20
18-Apr	NE9	N9	NNE9	NE11	N8	NNE7	NNE6	NNE6	ENE9	NE5	NNE4	N4	NNE5	NE6	NE2	NNE7	ENE12	ENE11	NE8	NNE8	NE10	NNE9	NNE9	NE10	NNE7.3	ENE12
19-Apr	ENE8	SE12	SE11	ESE10	SE8	SE9	ESE10	SE12	SE11	ESE12	ESE13	ESE16	ESE14	ESE14	ESE14	ESE13	ESE14	ESE12	ESE8	ENE6	E8	ESE7	E8	ESE7	ESE10.4	ESE16
20-Apr	E8	ESE9	ESE9	ESE9	ESE8	E7	E7	E7	E10	ENE10	ENE14	ENE13	ENE14	ENE16	E14	E14	E16	E14	E14	E13	E10	ESE10	SE9	SE10	E10.5	E16
21-Apr	SSE11	SSE10	S9	SSE8	ESE6	ENE7	E7	E9	E10	E14	ENE13	ESE11	SE10	ESE8	ESE9	E11	SSE9	SE11	SSE9	SSE8	S9	SW12	WSW13	WSW12	SE6.5	E14
22-Apr	WSW13	WSW11	SW10	SW9	SW8	SW8	SSW7	SSW9	SSW9	S12	SSE14	SSE14	SSE14	S16	SSE14	S15	S13	S14	S11	S8	SSE8	SSE9	SSE11	SSE11	S9.9	S16
23-Apr	SSE12	S12	S14	S14	S14	S15	S13	S14	SSE15	SSE24	SSE23	SSE17	SSE21	SSE20	SE20	SSE20	SSE19	SSE18	SE15	SSE13	SE12	ESE13	SE12	SSE13	SSE15.4	SSE24
24-Apr	SSE14	SSE16	SSE13	SE10	SSE10	SSE13	SE13	SE12	SE12	SE10	SE13	SE15	SE14	SE15	SSE16	SSE18	SSE16	S18	S20	SSE16	SSE12	SSE11	SSE11	SSE11	SSE13.2	S20
25-Apr	SSE12	SSE12	S12	S13	S13	S14	SSW14	SSW14	SSW12	S10	SSW12	SW10	NW6	NW19	W6	SW7	SSW8	WSW8	W8	SW9	SW11	SW13	W12	WNW15	SW8.0	NW19
26-Apr	NW13	NW14	WNW12	WNW14	WNW16	NW14	NW13	NNW13	NNW17	NW12	NNW13	NNW10	NNW10	N12	NNW10	N9	NNE9	NE10	ENE9	ENE8	ENE9	E9	E9	E6	NNW7.5	NNW17
27-Apr	NNE5	N6	NNW7	NNW8	NNW9	NNE6	NE6	NNE4	N5	N9	NW11	WNW13	WNW13	NW12	WNW10	NW10	WNW9	W10	W8	W6	S6	S11	SSW14	SSW17	WNW4.9	SSW17
28-Apr	SSW18	SW18	SW15	W14	W16	WNW17	NW17	NNW17	NNW20	NNW22	NNW24	NNW25	NNW23	NNW23	NNW24	NNW25	NNW24	NNW20	N18	N13	N10	N8	N8	NNE8	NW14.0	NNW25
29-Apr	NNE8	NNE9	N8	N7	NE8	ENE7	E7	ESE8	E10	E10	E9	E7	ENE8	ENE7	ENE11	ESE7	ESE10	E13	ESE12	ESE10	ESE10	SE12	SE15	SE16	E7.8	SE16
30-Apr	SSE15	SSE15	SSE15	SSE14	SSE15	S16	S18	S17	S16	SSE16	SSE16	SSE18	SE19	SSE18	SSE16	SE16	SSE17	SSE16	SE16	SE14	SSE14	SSE15	SSE18	SSE17	SSE15.8	SE19
S6.4 S6.8 SSW5.6 SSW4.8 SSW4.2 SSW3.6 S3.5 S3.6 SSE3.0 SSE2.4 SSE2.5 SSE3.1 SSE3.4 S2.8 S3.2 SSE3.4 SSE3.7 SSE4.4 SSE5.1 SSE5.0 SSE5.1 SSE6.3 SSE6.6 S6.9																								Diurnal Average		
S21 SSW22 W25 WNW28 WNW28 WNW24 SSE24 WNW25 WNW26 SSE24 NNW24 W25 W25 W24 W25 W25 W28 S22 S21 S23 S22 S21 S21 S20																								Diurnal Maximum		

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

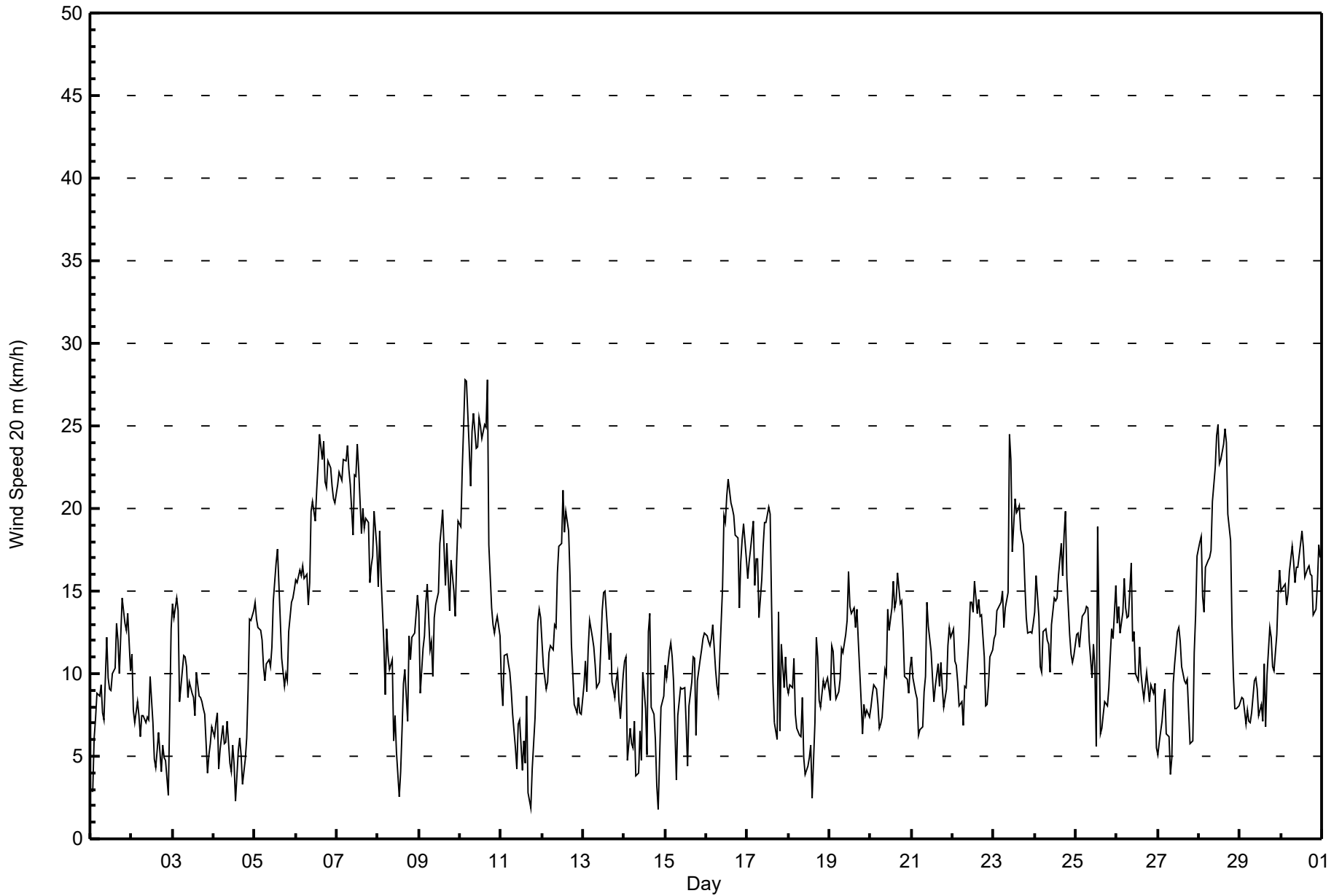
Wind Speed 20 m (WS20m) - km/h
Stony Mountain - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on Apr 10 17:00 Minimum Value: 1 km/h on Apr 11 20:00 Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 6 P ₉₉ = 8																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1	2	2	1	2	1	2	2	3	3	3	3	4	3	3	3	3	4	3	3	3	3	3	3	4
2-Apr	3	2	2	2	2	1	2	2	2	2	2	3	3	2	2	2	2	2	1	2	1	1	3	3	3
3-Apr	3	3	4	4	3	3	3	3	3	3	3	3	3	4	3	3	2	2	3	1	2	1	1	1	4
4-Apr	1	1	1	1	1	1	2	2	2	2	3	3	2	2	2	2	2	1	2	2	2	3	3	3	3
5-Apr	3	3	2	3	3	2	2	2	3	3	6	5	5	6	5	5	3	3	3	2	2	3	3	3	6
6-Apr	3	3	3	3	4	3	3	3	4	5	6	6	6	7	8	7	7	7	6	6	6	6	5	6	8
7-Apr	6	6	6	5	6	6	6	6	5	6	7	7	7	6	6	6	6	6	5	4	4	5	5	4	7
8-Apr	4	5	4	3	3	3	3	3	3	3	2	3	3	3	4	3	4	4	4	2	2	2	2	3	5
9-Apr	3	3	3	3	4	4	3	3	4	4	4	5	5	6	6	5	6	5	3	4	4	3	4	4	6
10-Apr	5	6	8	9	9	8	7	8	8	8	8	8	8	9	8	9	10	6	4	4	3	3	3	3	10
11-Apr	2	2	2	2	2	2	1	1	2	2	3	3	2	3	2	4	3	2	1	1	1	5	4	4	5
12-Apr	3	2	2	1	2	3	3	4	4	5	6	6	6	7	6	6	5	4	3	2	1	2	1	1	7
13-Apr	2	2	2	3	3	3	3	3	4	3	4	5	5	6	5	4	4	3	2	2	3	1	1	2	6
14-Apr	2	2	3	3	1	1	2	1	3	3	2	2	3	6	5	4	3	3	2	1	2	1	1	1	6
15-Apr	2	1	2	2	2	2	2	2	3	3	3	4	3	3	4	3	4	4	1	2	2	2	2	2	4
16-Apr	2	2	2	2	2	2	2	3	3	6	6	6	7	7	6	6	6	6	5	4	4	4	5	4	7
17-Apr	4	4	4	5	4	4	4	3	4	5	6	6	6	6	5	2	2	3	6	4	3	2	3	2	6
18-Apr	2	1	2	3	1	1	1	3	2	2	1	1	2	2	2	2	3	3	3	2	2	2	2	2	3
19-Apr	2	2	3	2	2	2	2	4	3	3	4	5	3	4	4	4	4	4	2	1	2	2	2	2	5
20-Apr	2	1	2	2	1	1	2	2	4	4	4	5	5	5	5	5	4	4	4	3	2	2	2	2	5
21-Apr	2	2	1	1	1	1	2	2	3	4	5	5	4	4	4	3	4	4	3	1	1	2	3	3	5
22-Apr	3	2	2	2	1	1	1	3	3	4	6	5	5	5	5	4	5	4	3	3	1	1	2	2	6
23-Apr	2	2	2	3	3	3	3	5	5	7	7	6	6	6	6	7	6	5	5	4	4	3	3	4	7
24-Apr	4	4	4	3	3	3	3	3	3	3	4	4	5	6	6	5	5	6	6	4	4	3	2	3	6
25-Apr	3	2	2	2	2	2	3	4	3	3	4	4	4	7	7	3	2	2	2	2	2	3	4	4	7
26-Apr	4	5	4	4	5	4	4	4	5	4	4	4	3	4	4	4	3	3	3	2	2	2	2	2	5
27-Apr	2	2	1	1	1	1	2	1	2	3	3	4	5	4	4	4	4	3	3	2	2	2	3	4	5
28-Apr	5	5	4	4	5	5	5	5	7	7	8	9	8	8	9	8	7	7	6	4	2	2	1	2	9
29-Apr	1	1	1	1	1	1	2	2	3	3	4	4	4	4	4	4	4	4	3	3	2	3	4	4	4
30-Apr	3	3	3	2	2	3	4	5	5	5	5	6	6	6	6	5	5	5	5	3	3	3	4	4	6
																	Diurnal Maximum								



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed 20 m (WS20m) - km/h
Stony Mountain - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Stony Mountain - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	48	6.67	6.67
6 - 11	312	43.33	50.00
12 - 19	287	39.86	89.86
20 - 28	73	10.14	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed 20 m (WS20m) - km/h
Stony Mountain - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4	8	6	7	5	1	1	1	0	2	4	0	3	2	2	2	48
6 - 11	13	15	15	25	35	38	20	24	22	14	19	13	15	14	16	14	312
12 - 19	4	1	0	8	12	26	29	55	60	15	13	16	9	20	14	5	287
20 - 28	0	0	0	0	0	3	6	21	14	1	1	0	9	7	1	10	73
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
Totals	21	24	21	40	52	68	56	101	96	32	37	29	36	43	33	31	720

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 20 m (WD20m) - deg

Stony Mountain - April 2023

Direction of Maximum Speed: 263 deg on Apr 10 17:00		Hours in Service:	720
Direction of Maximum Daily Speed Average: 168.4 deg on Apr 7		Hours of Data:	720
Direction of Minimum Speed: 265 deg on Apr 14 21:00		Hours of Missing Data:	0
Direction of Minimum Daily Speed Average: 2.7 deg on Apr 4		Percent Operational Time:	100.0
Monthly Average Direction: 170.0 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-Apr	77	31	358	39	94	117	113	125	140	137	133	132	105	103	83	78	69	75	91	104	102	111	119	109	100.9
2-Apr	116	112	94	97	107	101	89	81	78	78	64	68	65	37	25	63	67	23	89	81	68	48	111	178	87.1
3-Apr	190	196	204	221	259	309	333	334	330	318	315	320	318	305	305	302	307	323	342	357	33	83	107	102	299.0
4-Apr	110	108	122	78	61	42	61	78	98	95	323	17	2	64	5	40	90	116	130	173	181	200	203	202	117.3
5-Apr	203	200	188	178	182	184	173	170	167	172	166	167	168	178	185	177	179	171	160	166	184	181	182	189	178.6
6-Apr	183	186	191	191	187	190	188	181	169	168	177	169	164	159	164	165	166	169	172	170	171	172	172	170	173.5
7-Apr	172	169	166	164	167	169	169	165	165	171	169	165	174	168	164	164	164	170	180	175	170	163	170	173	168.4
8-Apr	177	177	176	183	222	188	200	211	217	244	286	278	305	236	295	283	301	243	216	220	228	228	239	241	221.0
9-Apr	247	273	280	279	284	285	267	240	252	273	253	229	220	225	220	214	191	183	164	158	160	164	160	164	220.0
10-Apr	182	209	279	288	291	284	275	282	284	287	278	274	266	261	266	261	263	266	275	260	248	248	278	287	269.3
11-Apr	276	252	228	228	229	225	226	223	233	332	285	311	280	291	345	347	285	148	281	243	271	254	258	282	260.1
12-Apr	319	329	321	291	278	281	278	280	290	296	305	298	299	306	309	304	316	324	321	312	296	289	285	266	300.7
13-Apr	248	242	258	250	253	256	244	239	270	303	291	291	297	300	335	342	5	11	43	58	75	94	132	139	290.4
14-Apr	135	182	197	157	102	47	87	71	94	347	52	106	111	227	204	142	91	73	128	218	265	163	177	194	137.9
15-Apr	202	203	215	220	241	243	222	203	197	205	169	206	186	194	167	165	191	172	163	176	186	186	186	188	195.1
16-Apr	177	170	167	149	154	152	146	145	118	106	113	127	135	133	134	138	135	139	137	135	123	125	125	121	135.3
17-Apr	124	124	119	112	100	99	106	111	100	108	108	106	117	123	140	91	79	84	142	98	21	11	45	44	104.3
18-Apr	38	353	19	42	2	15	14	31	62	48	20	357	29	36	49	27	59	59	38	33	40	33	32	46	33.7
19-Apr	69	131	137	122	141	125	122	131	131	103	116	109	108	107	109	119	108	111	103	74	88	113	88	104	112.5
20-Apr	100	106	103	103	104	89	80	94	97	74	62	71	77	64	89	93	97	85	87	91	101	115	126	142	91.7
21-Apr	157	167	169	160	118	77	80	88	92	86	77	118	132	116	109	90	158	138	153	159	190	217	241	240	136.9
22-Apr	244	240	234	235	228	221	210	203	205	179	168	157	166	174	168	189	183	182	183	180	156	152	150	159	187.2
23-Apr	166	171	180	186	188	187	179	172	159	160	149	154	164	156	145	150	148	156	146	152	136	122	134	152	158.3
24-Apr	154	154	149	141	148	147	142	139	132	132	130	138	127	136	161	156	162	175	181	164	155	152	162	159	151.3
25-Apr	160	163	176	176	185	188	192	198	197	191	205	227	314	316	279	223	209	237	260	227	235	230	276	298	217.5
26-Apr	311	307	302	288	290	309	316	330	331	309	331	330	345	352	332	1	14	46	63	77	70	81	99	98	338.6
27-Apr	16	358	346	333	341	15	51	21	353	350	305	295	300	323	300	306	297	272	273	268	187	190	201	199	300.2
28-Apr	212	223	234	261	281	295	319	336	338	331	335	333	332	341	335	333	328	339	352	354	352	2	6	22	323.9
29-Apr	33	27	9	7	42	77	100	102	94	86	93	97	77	61	76	115	110	92	103	111	110	126	134	144	92.0
30-Apr	156	163	166	160	168	185	181	177	172	158	152	149	141	164	164	144	159	157	146	145	149	154	160	161	159.7

176.5	183.8	193.2	194.4	206.4	201.9	181.6	180.1	165.3	154.3	158.4	162.1	160.2	169.9	173.3	154.5	153.4	148.2	146.7	150.7	150.9	162.2	165.5	172.6
Diurnal Average																							

All monthly, daily, and diurnal averages have been calculated using vector methods



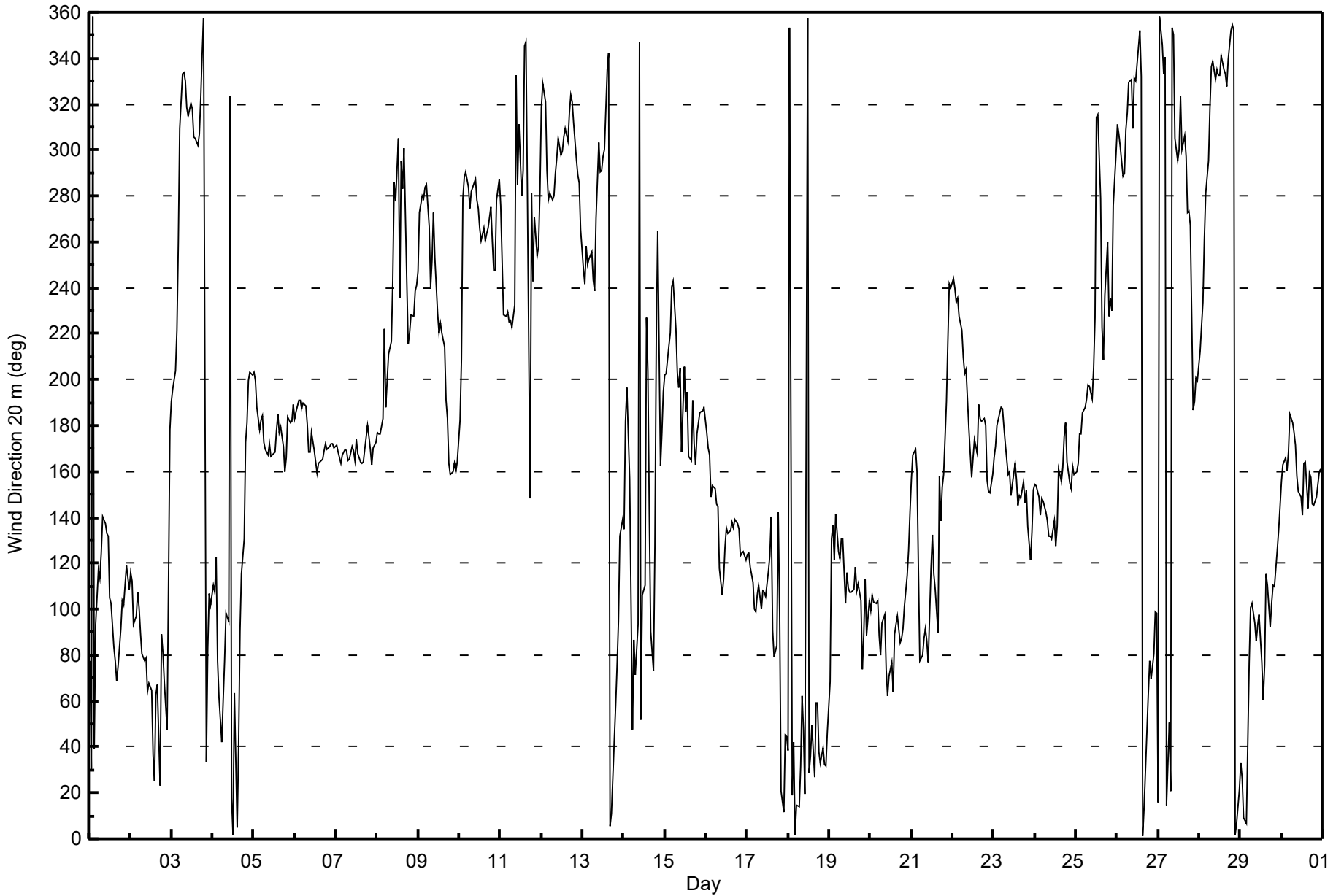
Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg

Stony Mountain - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 98 deg on Apr 8 13:00 Minimum Value: 8 deg on Apr 27 03:00 Percentiles: P ₁ = 10 P ₁₀ = 14 Q ₁ = 16 Median = 21 Q ₃ = 27 P ₉₀ = 36 P ₉₉ = 73																			Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	21	33	15	27	17	9	13	23	24	22	31	34	39	27	25	21	19	19	19	14	15	15	16	16	39
2-Apr	17	17	17	16	15	16	16	15	18	21	26	25	36	34	45	43	35	48	17	16	15	48	33	19	48
3-Apr	19	20	19	21	35	23	17	20	21	29	34	28	28	36	31	37	37	27	18	16	28	21	18	15	37
4-Apr	15	14	12	31	18	16	36	23	28	77	51	58	70	83	41	37	48	18	22	19	16	17	19	18	83
5-Apr	19	17	15	17	17	17	17	17	19	27	39	29	32	28	28	32	26	27	21	13	16	16	15	18	39
6-Apr	16	15	15	14	16	13	15	18	19	21	25	26	26	22	23	24	21	23	22	19	18	19	19	20	26
7-Apr	19	18	19	18	17	17	19	19	20	25	23	24	23	24	25	23	24	23	21	19	16	18	18	18	25
8-Apr	20	18	19	23	30	19	20	21	27	45	31	56	98	83	58	40	27	35	22	16	15	15	17	20	98
9-Apr	20	29	19	18	21	21	22	19	32	26	31	31	32	29	28	30	27	23	18	18	21	18	15	17	32
10-Apr	18	24	29	22	23	25	26	25	25	26	26	27	27	29	27	28	26	26	21	22	18	17	23	21	29
11-Apr	19	28	12	11	12	12	12	17	35	55	41	33	63	47	59	50	84	66	33	11	14	21	20	24	84
12-Apr	18	13	16	13	15	18	19	25	23	27	28	29	26	29	27	27	26	23	23	17	18	14	13	14	29
13-Apr	14	13	16	18	18	18	20	27	44	35	35	33	34	34	33	33	23	23	20	13	15	10	25	16	44
14-Apr	16	13	58	26	22	28	15	26	57	38	37	19	52	74	33	24	38	30	21	63	67	12	13	11	74
15-Apr	12	10	12	13	15	10	65	22	30	35	40	48	66	77	56	36	32	29	20	19	14	14	14	14	77
16-Apr	15	15	14	12	12	10	13	23	22	19	21	25	24	25	23	24	23	22	18	16	15	16	16	15	25
17-Apr	15	16	16	15	15	15	20	19	17	17	19	18	20	18	19	17	21	29	18	79	18	15	16	14	79
18-Apr	25	12	18	20	11	13	16	25	22	31	34	20	27	31	68	29	19	19	24	17	15	15	14	13	68
19-Apr	23	16	14	17	16	18	17	19	19	19	18	19	18	22	20	23	19	19	18	14	14	14	16	11	23
20-Apr	13	13	12	13	12	19	17	20	23	35	25	35	37	29	25	29	19	22	18	14	14	13	14	13	37
21-Apr	14	13	9	10	19	9	14	15	24	20	29	38	45	63	37	23	41	23	21	13	17	18	19	19	63
22-Apr	16	15	15	14	11	9	17	20	35	33	36	35	36	33	31	29	30	24	27	23	11	10	12	14	36
23-Apr	13	13	14	16	16	17	19	23	25	22	23	29	25	29	23	23	22	22	19	21	19	16	18	19	29
24-Apr	21	19	19	21	19	16	16	19	22	31	28	26	29	30	34	25	27	26	23	20	19	18	16	18	34
25-Apr	16	13	11	13	14	13	18	20	24	30	32	47	41	22	54	35	21	27	28	19	14	15	31	22	54
26-Apr	21	22	25	21	23	21	21	21	20	26	24	36	27	24	35	37	29	22	17	15	14	15	14	31	37
27-Apr	14	16	8	14	12	16	17	46	63	26	31	32	35	32	38	37	39	32	30	24	30	17	17	19	63
28-Apr	20	21	22	23	21	21	21	20	20	21	21	22	24	23	23	21	23	23	18	17	14	12	12	17	24
29-Apr	11	14	10	14	19	10	19	17	27	32	49	67	43	70	39	64	42	22	19	14	12	14	17	16	70
30-Apr	15	14	14	12	12	15	19	23	27	23	27	29	26	31	33	27	26	24	20	16	13	14	17	16	33
																			25 33 58 31 35 28 65 46 63 77 51 67 98 83 68 64 84 66 33 79 67 48 33 31						
Diurnal Maximum																									





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS19
FIREBAG
APRIL 2023**

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

Revised: June 21, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
 APRIL 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	685	35	35	100	9.6	0	3	0
H2S (ppb) Average	686	34	34	100	4.2	0	0.5	0
THC (ppm) Average	661	33	59	96.39	2.4	-	2.3	-
NO2 (ppb) Average	685	35	35	100	14.1	0	5.4	-
NO (ppb) Average	685	35	35	100	5.6	-	0.9	-
NOX (ppb) Average	685	35	35	100	15.1	-	6.2	-
Temperature 2 m (C) Average	720	0	0	100	17.8	-	11.4	-
Relative Humidity (%) Average	720	0	0	100	99.4	-	88.2	-
Wind Speed 10 m (km/h) Average	0	0	720	0	--	-	--	-
Wind Direction 10 m (deg) Average	0	0	720	0	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
 APRIL 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	685	0.49	1.1	-	0	0	0	0.1	0.4	1.2	9.6
H2S (ppb) Average	686	0.09	0.2	-	0	0	0	0	0.1	0.2	4.2
THC (ppm) Average	661	2.2	0	-	2	2.1	2.2	2.2	2.2	2.3	2.4
NO2 (ppb) Average	685	2.29	2.2	-	0.1	0.4	0.9	1.5	2.8	5.4	14.1
NO (ppb) Average	685	0.33	0.5	-	0	0	0.1	0.2	0.4	0.8	5.6
NOX (ppb) Average	685	2.62	2.5	-	0.2	0.4	1	1.9	3.4	6	15.1
Temperature 2 m (C) Average	720	2.53	5.5	-	-11	-5	-1.1	2.5	6.6	9.6	17.8
Relative Humidity (%) Average	720	57.79	21	-	20	31	39.7	56	74.9	88.6	99.4
Wind Speed 10 m (km/h) Average	0	--	--	-	--	0	0	0	0	0	--
Wind Direction 10 m (deg) Average	0	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC	13 Apr 2023 10:00	14 Apr 2023 11:00	26	Analyzer Failure - inconsistent response
Wind Speed, Wind Direction	01 Apr 2023 01:00	01 May 2023 00:00	720	Unstable Operation - tower misaligned



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

Firebag - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 9.6 ppb on Apr 22 08:00	Maximum Daily Average: 3.0 ppb on Apr 11		Hours of Data:	685
Minimum Value: 0.0 ppb on Apr 1 06:00	Minimum Daily Average: 0.0 ppb on Apr 2		Hours of Missing Data:	35
Maximum Diurnal Average: 0.9 ppb at hour 8	Minimum Diurnal Average: 0.2 ppb at hour 20		Hours of Calibration:	35
Monthly Average: 0.49 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.4 P ₉₀ = 1.2 P ₉₉ = 5.3		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-Apr	0.4	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	
2-Apr	0.0	0.0	Z	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	0.1	0.0	0.0	0.0	0.1	0.1
3-Apr	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.2
4-Apr	0.1	0.1	0.2	0.1	Z	0.2	0.1	0.2	0.6	1.6	1.4	1.2	1.2	1.0	1.0	1.0	1.0	0.9	0.5	0.3	0.2	0.1	0.0	0.1	0.1	0.6	1.6
5-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.6	1.1	0.5	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1
6-Apr	Z	0.1	0.2	0.6	0.4	0.4	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.2	0.2	0.4	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.5	0.4	0.6
7-Apr	0.5	Z	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.3	0.6
8-Apr	0.6	0.5	Z	0.4	0.7	0.9	0.8	0.7	0.6	0.4	0.4	0.3	0.3	0.8	2.6	1.8	2.1	1.4	0.5	0.2	0.9	1.3	1.5	1.6	0.9	2.6	
9-Apr	2.2	1.9	1.2	Z	4.0	4.6	6.5	3.7	2.6	1.5	0.2	0.1	0.3	0.6	2.5	3.3	1.4	0.1	0.1	0.1	0.3	0.6	0.2	0.2	1.7	6.5	
10-Apr	0.2	0.1	0.3	1.5	Z	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.1	1.0	3.3	3.8	4.3	0.7	4.3	
11-Apr	4.6	4.2	3.5	3.5	3.2	Z	5.5	8.8	5.5	4.0	4.7	7.1	4.3	3.5	3.0	2.2	0.5	0.5	0.0	0.0	0.1	0.0	0.1	0.1	3.0	8.8	
12-Apr	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3
13-Apr	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.2	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	5.3	2.8	0.1	0.4	5.3
14-Apr	0.1	0.0	Z	0.0	0.1	0.0	0.1	0.1	0.2	1.8	C	C	C	C	C	1.6	1.2	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	1.8
15-Apr	0.0	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.5	0.5	0.5	0.7	1.2	1.2	0.9	0.7	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.4	1.2	1.2
16-Apr	0.2	0.2	0.2	0.2	Z	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	0.8	0.5	0.3	0.1	0.1	0.1	0.0	0.2	0.8
17-Apr	0.1	0.1	0.1	0.0	0.0	Z	0.2	0.1	0.2	0.6	1.3	0.4	0.4	0.2	0.3	0.2	0.1	0.2	1.2	0.8	0.2	0.0	0.0	0.1	0.1	0.3	1.3
18-Apr	Z	0.3	1.2	0.9	0.1	0.1	0.1	0.5	0.2	0.2	0.4	0.2	1.2	1.0	1.4	1.6	1.0	0.4	0.6	0.5	0.5	0.9	1.1	1.9	0.7	1.9	
19-Apr	0.3	Z	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	0.5	0.4	0.1	0.2	0.2	0.1	0.0	0.2	0.2	0.5	0.5
20-Apr	0.4	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.8	0.6	0.3	0.3	0.4	0.3	0.3	0.4	0.9	1.0	0.0	1.2	0.0	0.0	0.1	0.3	1.2	1.2
21-Apr	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	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
22-Apr	0.0	0.0	0.4	2.1	Z	3.7	5.2	9.6	9.1	0.8	0.0	0.1	0.9	0.4	0.3	0.1	0.1	0.0	0.0	0.3	0.5	0.3	0.2	0.2	1.5	9.6	
23-Apr	0.3	0.2	0.1	0.1	0.0	Z	0.2	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.5	0.5
24-Apr	Z	0.1	0.1	0.5	0.3	1.3	0.3	0.2	0.2	0.1	0.1	0.4	0.3	0.4	0.5	0.5	0.4	0.2	0.2	0.1	0.1	0.4	0.7	1.6	0.4	1.6	
25-Apr	3.6	Z	1.3	0.4	0.3	0.3	0.3	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.1	0.2	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.5	3.6	
26-Apr	0.2	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.2
27-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.2	0.1	0.1	0.2	2.4	3.5	2.7	2.1	0.9	0.2	0.1	0.1	0.2	0.6	3.5	
28-Apr	0.3	0.2	0.4	1.1	Z	0.5	0.7	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.2	1.1	
29-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.6	0.3	0.1	2.9	1.2	0.1	0.0	0.3	2.9	
30-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	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	0.1	0.1	0.1	0.1	0.2

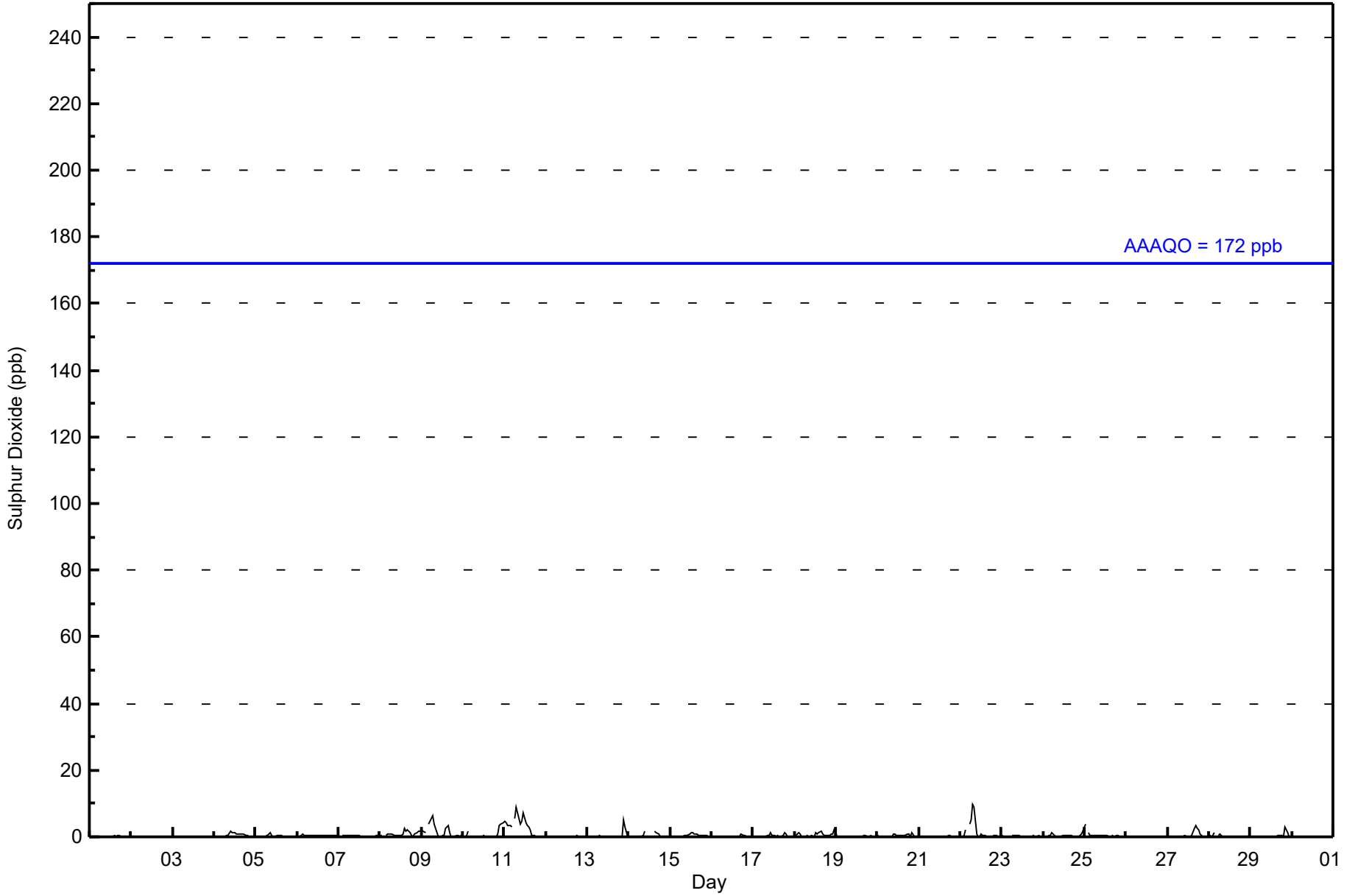
0.6	0.3	0.4	0.5	0.4	0.5	0.7	0.9	0.8	0.5	0.4	0.5	0.4	0.4	0.5	0.6	0.5	0.4	0.3	0.2	0.3	0.5	0.4	0.4	Diurnal Average	
4.6	4.2	3.5	3.5	4.0	4.6	6.5	9.6	9.1	4.0	4.7	7.1	4.3	3.5	3.0	3.3	3.5	2.7	2.1	0.9	2.9	5.3	3.8	4.3	Diurnal Maximum	

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 (SO₂) - ppb
Firebag - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Firebag - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Firebag - April 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

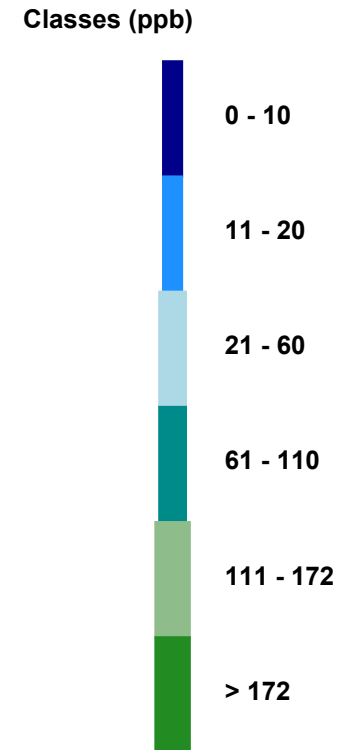
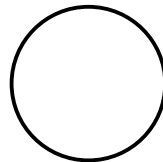
Total Number of Valid Hours: 0

Total Number of Hours: 720

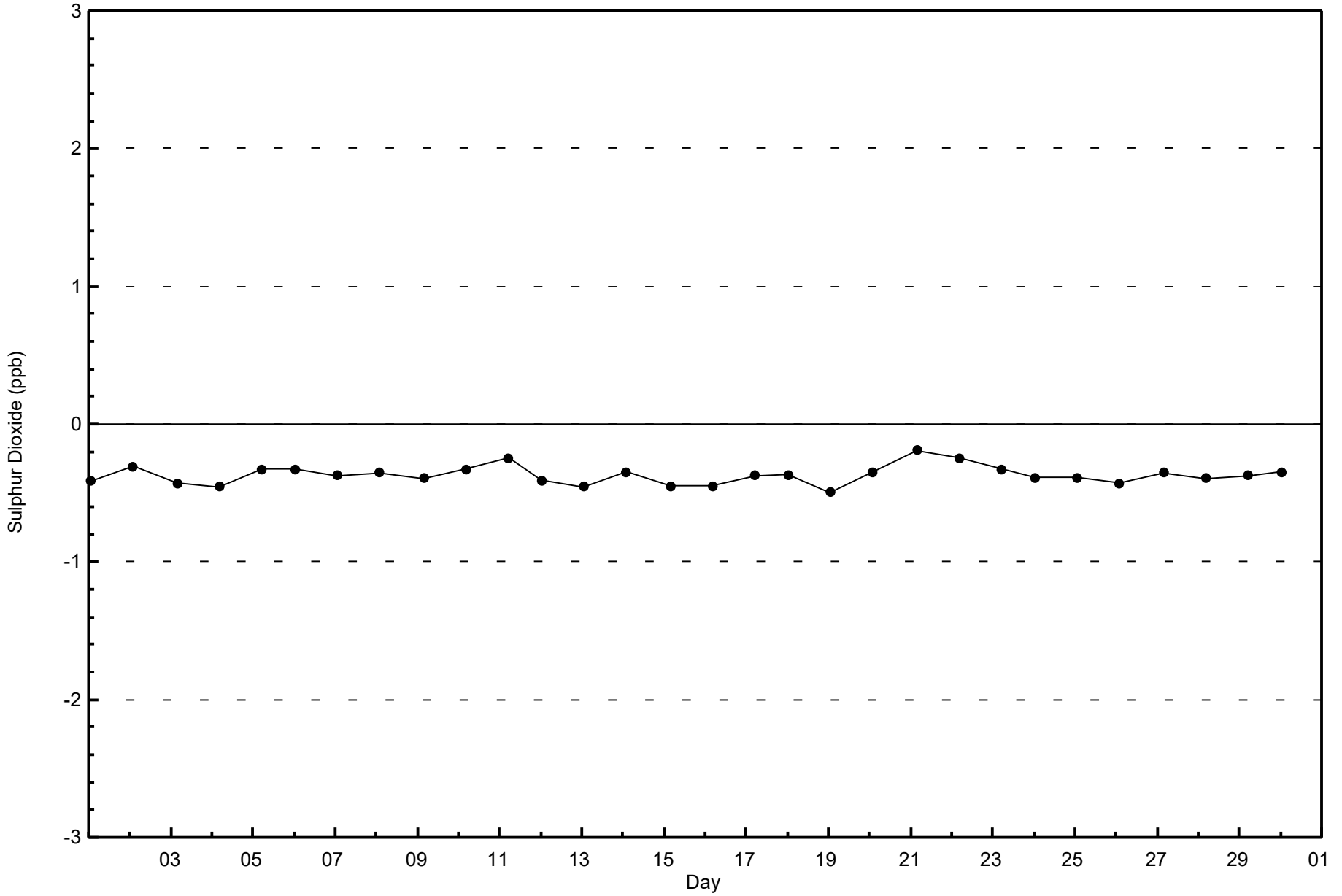


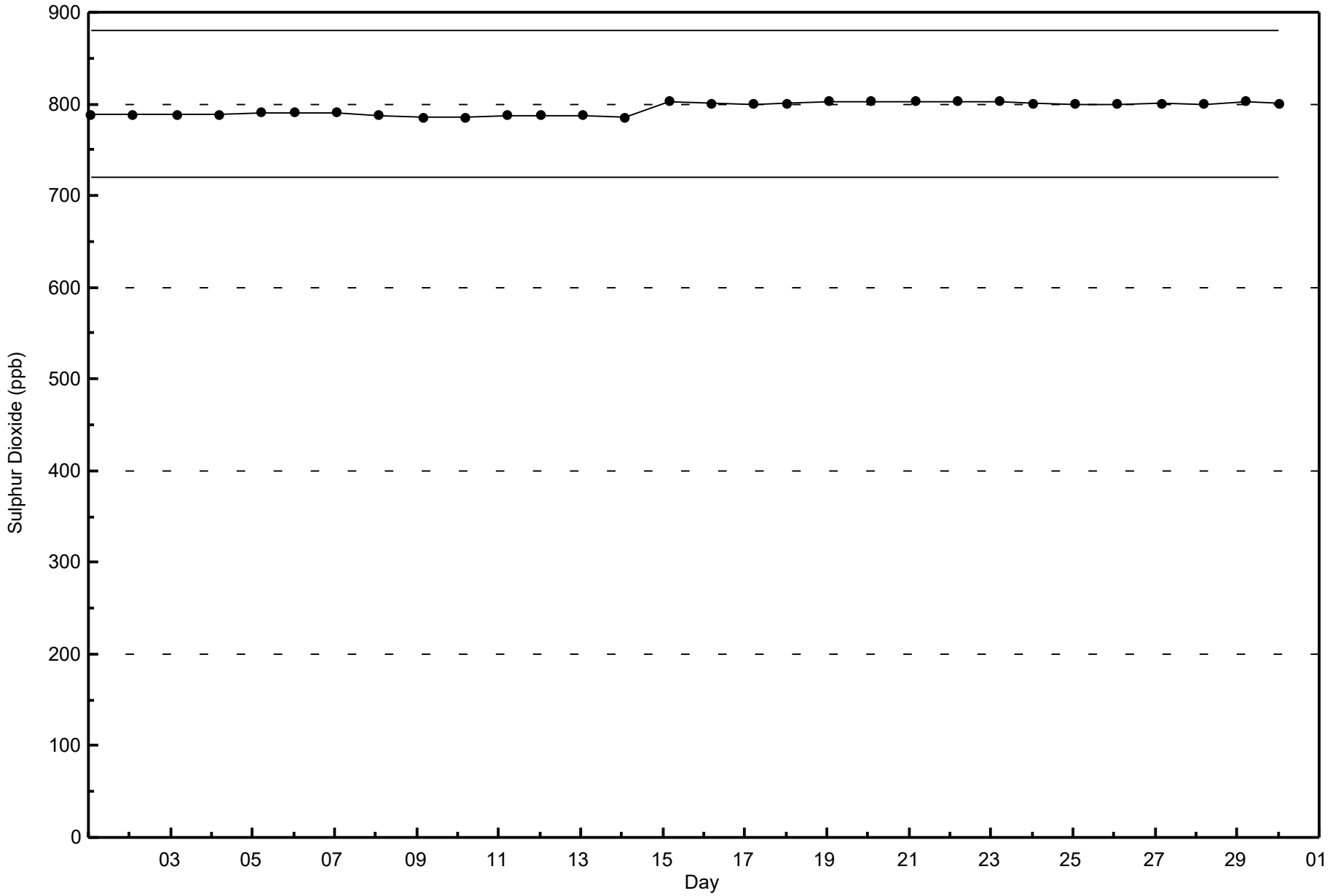
Wood Buffalo Environmental Association
Wind Rose Apr 2023

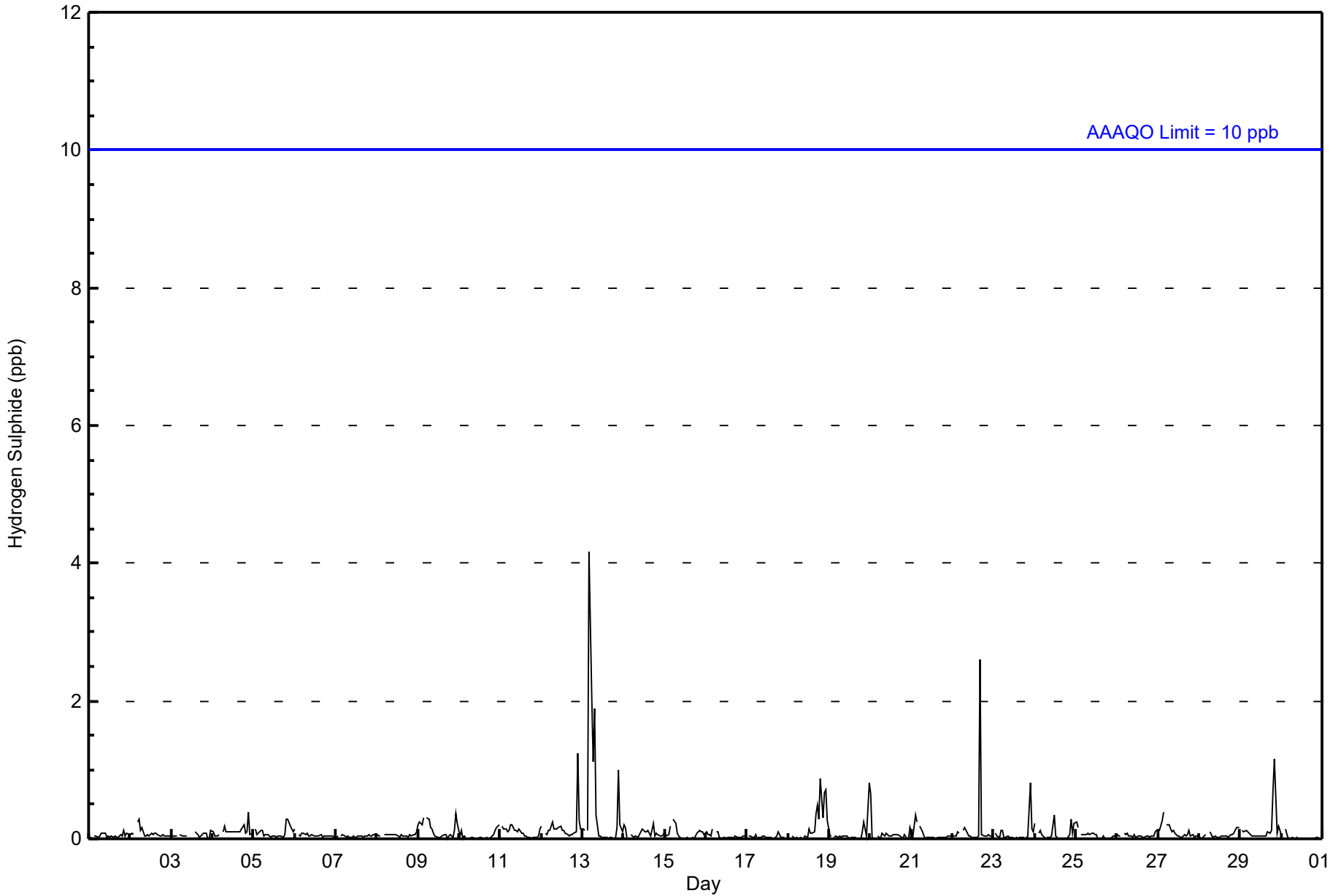
Sulphur Dioxide (SO₂) - ppb
Firebag



Total Number of Valid Hours: 0









**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Firebag - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	99.71	99.71
3 - 4	2	0.29	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Firebag - April 2023**

Concentration 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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

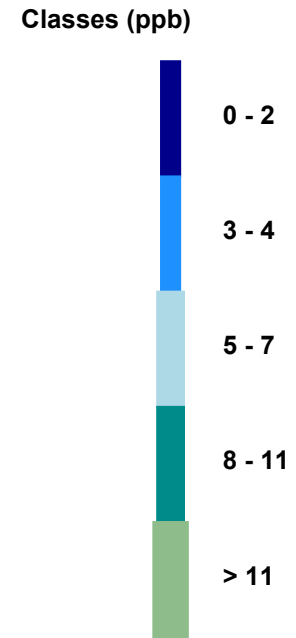
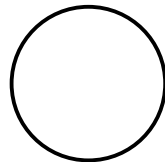
Total Number of Valid Hours: 0

Total Number of Hours: 720

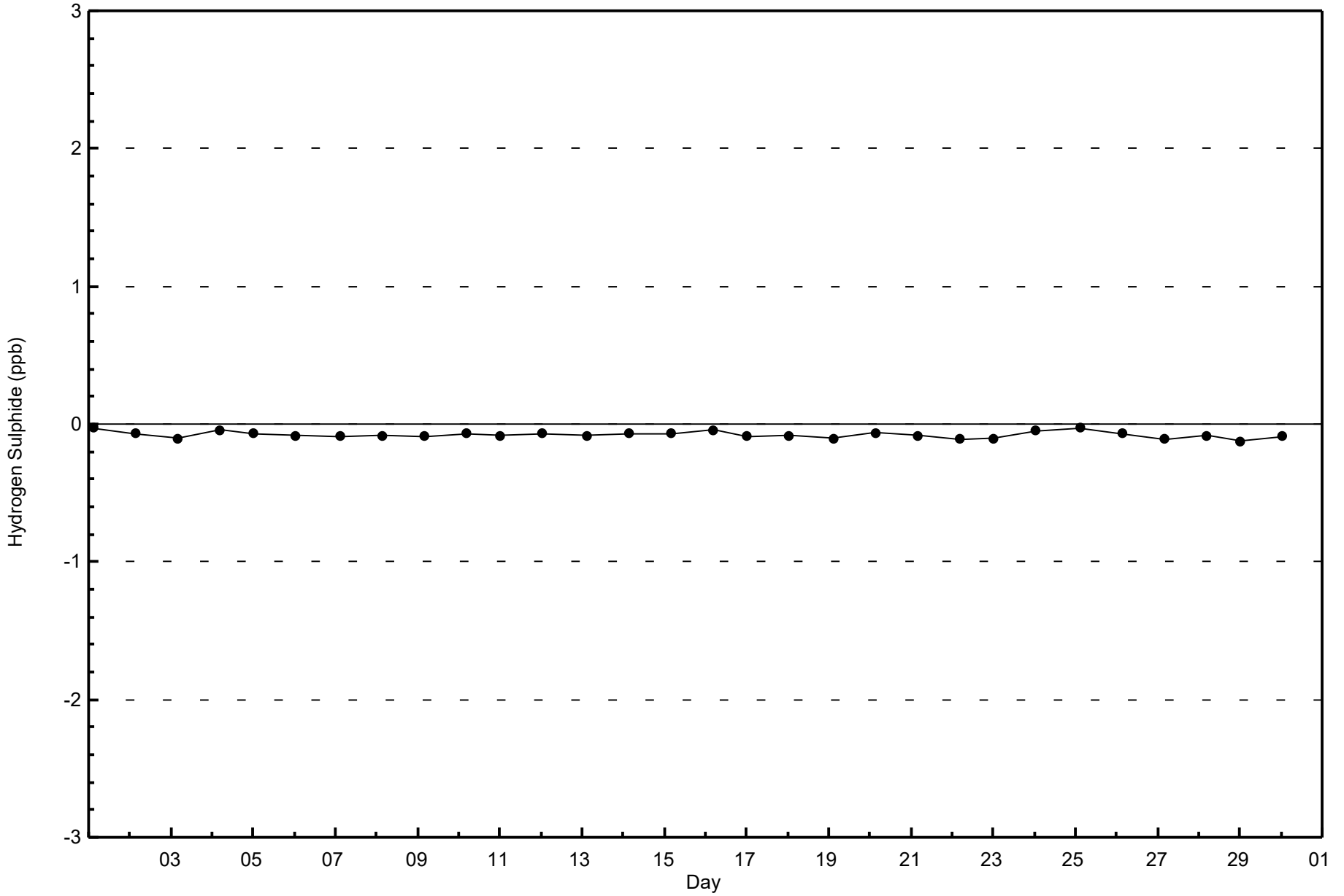


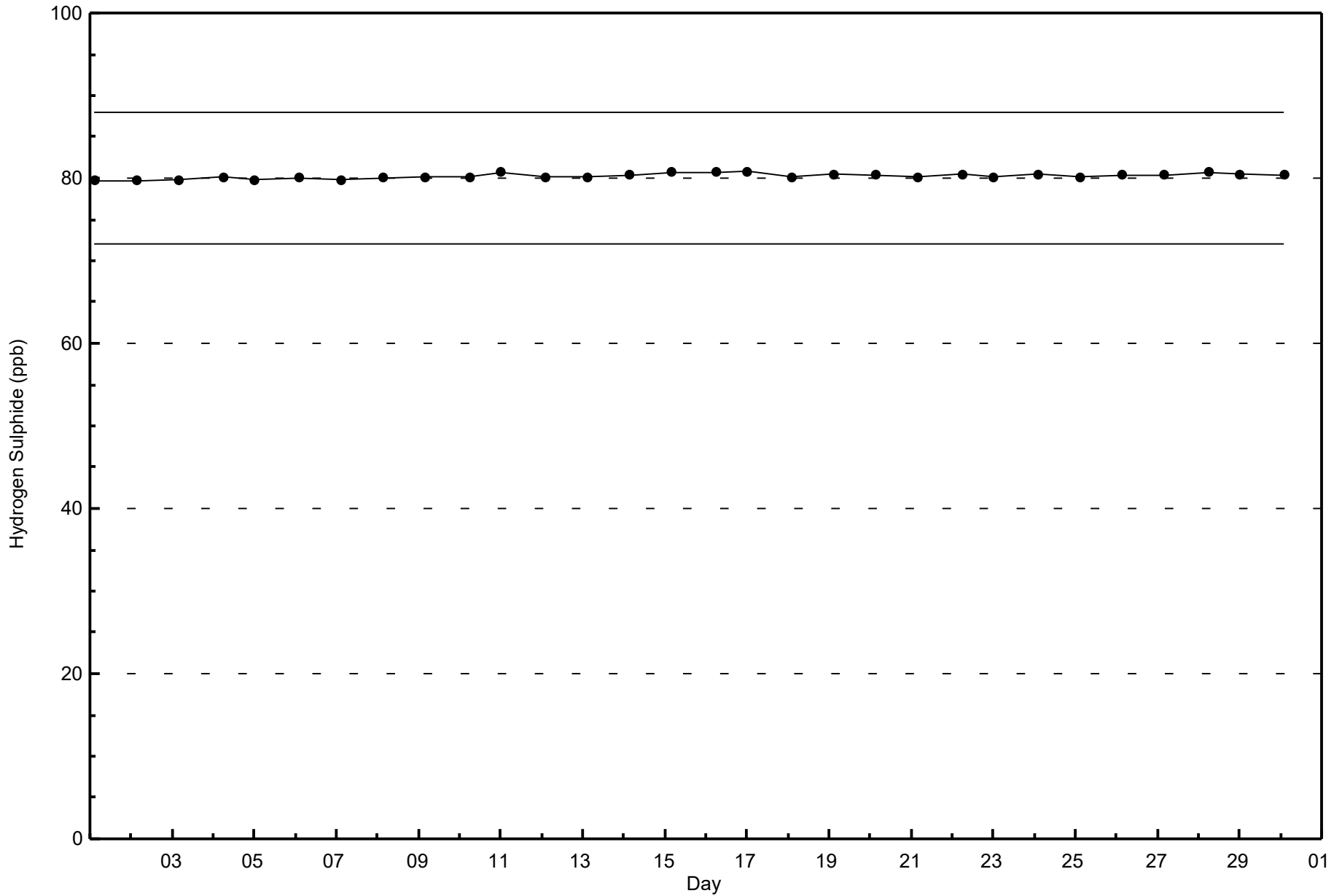
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Firebag



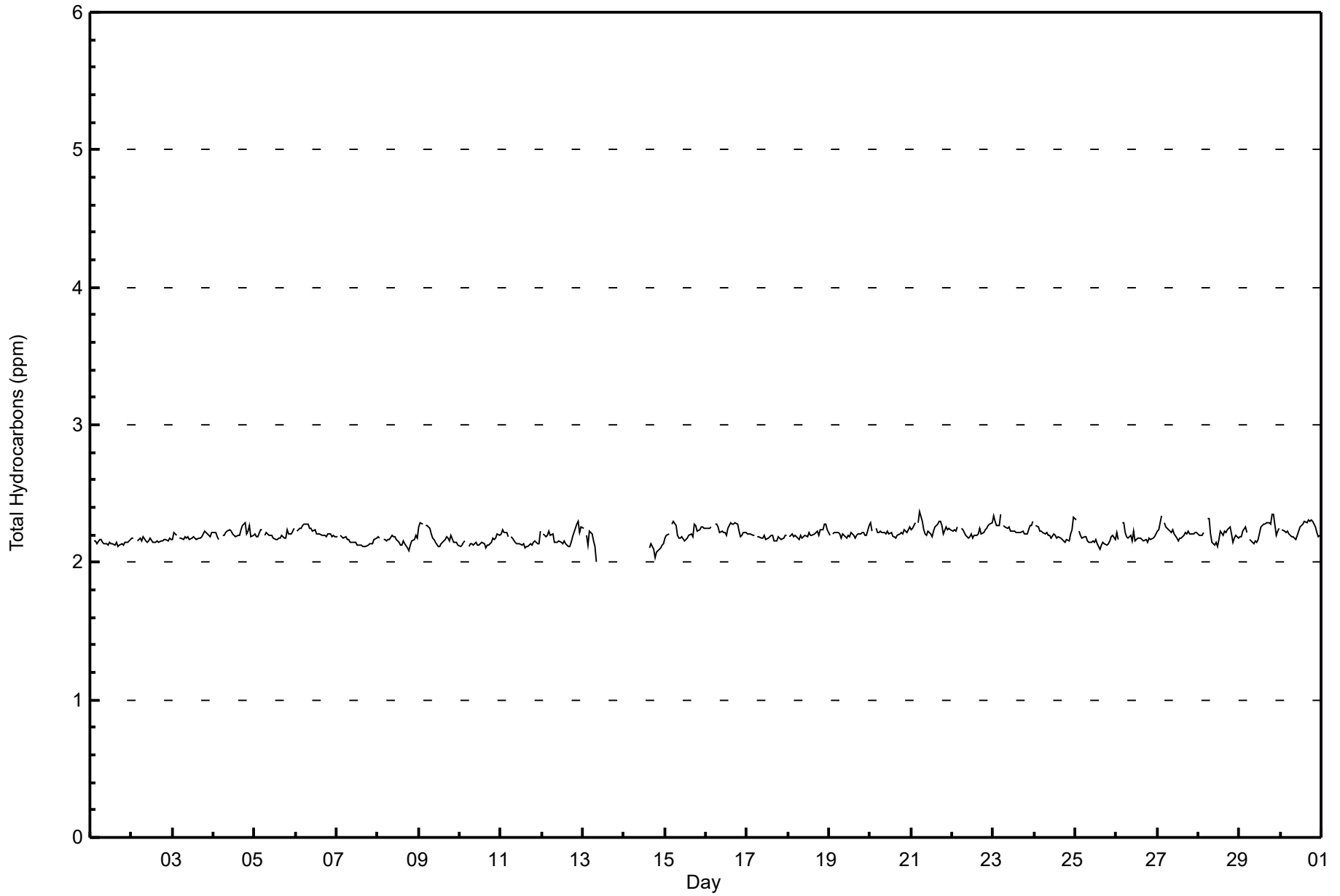
Total Number of Valid Hours: 0







Maximum Value: 2.4 ppm on Apr 21 06:00		Maximum Daily Average: 2.3 ppm on Apr 21		Hours in Service: 720																								
Minimum Value: 2.0 ppm on Apr 13 09:00		Minimum Daily Average: 2.1 ppm on Apr 1		Hours of Data: 661																								
Maximum Diurnal Average: 2.2 ppm at hour 5		Minimum Diurnal Average: 2.2 ppm at hour 12		Hours of Missing Data: 59																								
Monthly Average: 2.20 ppm		Percentiles: P ₁ = 2.1 P ₁₀ = 2.1 Q ₁ = 2.2 Median = 2.2 Q ₃ = 2.2 P ₉₀ = 2.3 P ₉₉ = 2.3		Hours of Calibration: 33																								
				Percent Operational Time: 96.4																								
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-Apr	2.1	Z	2.2	2.2	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	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.2	
2-Apr	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
3-Apr	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	2.2	2.2
4-Apr	2.2	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	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.3
5-Apr	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	2.2	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
6-Apr	Z	2.2	2.2	2.2	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	2.2	2.2	2.2	2.2	2.2	2.3
7-Apr	2.2	Z	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2
8-Apr	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	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
9-Apr	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
10-Apr	2.1	2.1	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	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2
11-Apr	2.2	2.2	2.2	2.2	2.2	Z	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	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.2
12-Apr	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.3
13-Apr	2.2	Z	2.2	2.1	2.2	2.2	2.2	2.1	2.0	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	2.2
14-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	C	C	C	C	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
15-Apr	2.2	2.2	2.2	Z	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	2.3	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.2	2.3
16-Apr	2.3	2.2	2.2	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
17-Apr	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	2.2	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
18-Apr	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	2.2	2.3	2.3	2.2	2.3
19-Apr	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	2.2	2.3	2.2	2.3
20-Apr	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	2.2	2.2	2.2	2.2	2.3	2.3
21-Apr	2.2	2.2	2.3	Z	2.3	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	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.4
22-Apr	2.2	2.2	2.2	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	2.3	2.3	2.3	2.2	2.3
23-Apr	2.3	2.3	2.3	2.3	2.3	Z	2.3	2.3	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	2.3	2.3	2.3	2.3	2.3	2.3
24-Apr	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	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3
25-Apr	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
26-Apr	2.2	2.2	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	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
27-Apr	2.2	2.2	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	2.2	2.2	2.2	2.3
28-Apr	2.2	2.2	2.2	2.2	Z	2.3	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	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3
29-Apr	2.2	2.2	2.2	2.3	2.2	Z	2.2	2.2	2.1	2.2	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.4
30-Apr	Z	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	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3
																								Diurnal Average				
																								Diurnal Maximum				
Z - zerospan C - Calibration AF - Analyzer Failure																												





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Firebag - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	2	0.30	0.30
2.1 - 3.0	659	99.70	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 661

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Firebag - April 2023**

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

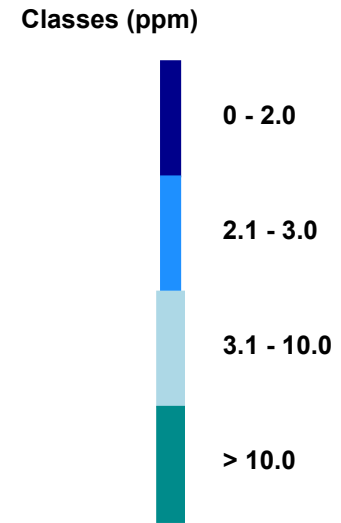
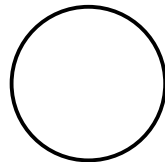
Total Number of Valid Hours: 0

Total Number of Hours: 720

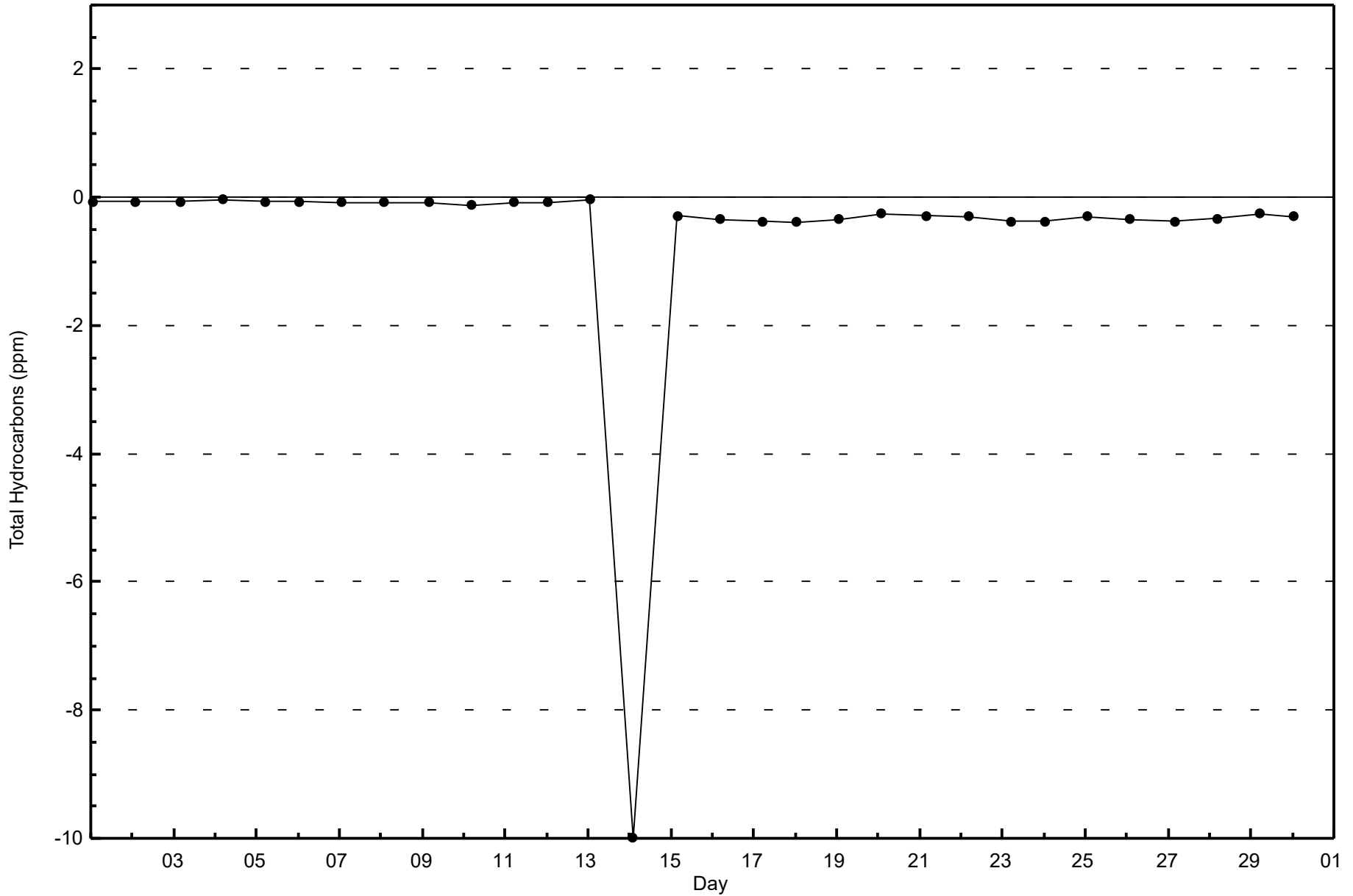


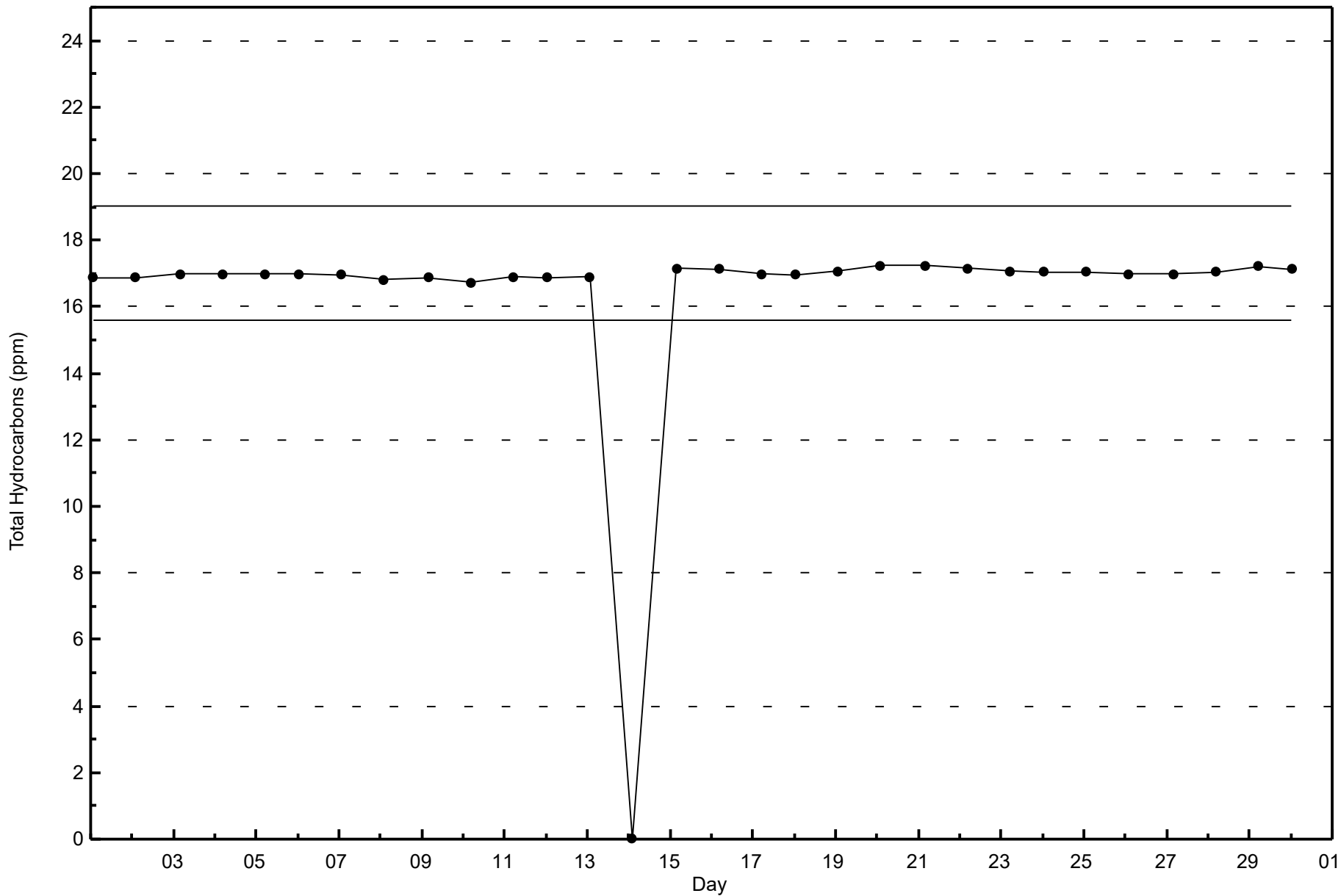
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Firebag



Total Number of Valid Hours: 0







Wood Buffalo Environmental Association
Summary of Hour Averages

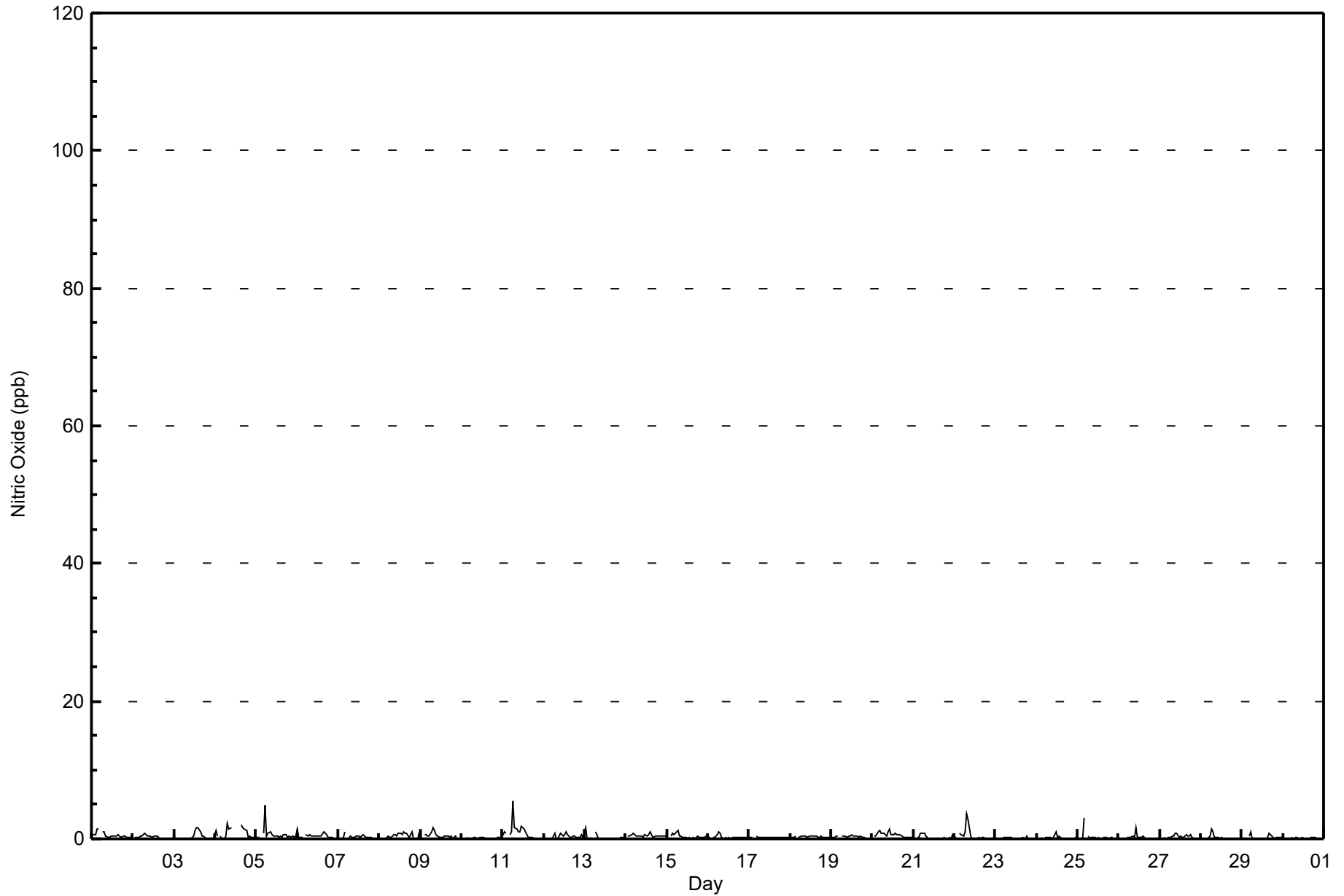
Nitric Oxide (NO) - ppb
Firebag - April 2023

Maximum Value: 5.6 ppb on Apr 11 07:00		Maximum Daily Average: 0.9 ppb on Apr 11		Hours in Service: 720																						
Minimum Value: 0.0 ppb on Apr 2 22:00		Minimum Daily Average: 0.1 ppb on Apr 10		Hours of Data: 685																						
Maximum Diurnal Average: 0.7 ppb at hour 7		Minimum Diurnal Average: 0.1 ppb at hour 22		Hours of Missing Data: 35																						
Monthly Average: 0.33 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.8 P ₉₉ = 1.8		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-Apr	0.7	0.6	0.7	1.4	1.4	Z	1.0	0.9	0.5	0.3	0.2	0.4	0.5	0.4	0.5	0.5	0.3	0.3	0.4	0.4	0.2	0.1	0.1	0.1	0.5	1.4
2-Apr	Z	0.1	0.1	0.2	0.4	0.4	0.7	0.8	0.5	0.4	0.4	0.2	0.4	0.4	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8
3-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3	1.7	1.6	1.0	0.4	0.4	0.2	0.0	0.0	0.0	0.1	0.3	1.7
4-Apr	1.2	0.3	Z	0.4	0.0	0.0	0.5	2.2	1.4	1.7	C	C	C	C	C	2.0	1.6	1.4	1.1	0.1	0.4	0.2	0.2	0.2	0.8	2.2
5-Apr	0.2	0.2	0.2	Z	0.8	4.9	0.4	0.8	1.1	0.6	0.4	0.4	0.3	0.3	0.3	0.2	0.6	0.6	0.2	0.4	0.2	0.3	0.1	0.4	0.6	4.9
6-Apr	1.4	0.2	0.2	0.2	Z	0.7	0.4	0.6	0.5	0.5	0.3	0.4	0.3	0.4	0.4	1.1	0.9	0.6	0.2	0.2	0.1	0.0	0.0	0.0	0.4	1.4
7-Apr	0.0	0.0	0.0	0.3	1.0	Z	0.2	0.3	0.2	0.2	0.5	0.4	0.3	0.2	0.5	0.4	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.2	1.0
8-Apr	Z	0.0	0.0	0.0	0.2	0.3	0.2	0.2	0.6	0.5	0.4	0.8	0.7	0.5	1.1	0.8	0.8	0.3	0.5	1.0	0.0	0.0	0.1	0.7	0.4	1.1
9-Apr	0.4	Z	0.6	0.7	0.5	0.4	1.1	1.6	1.3	0.7	0.4	0.2	0.2	0.2	0.4	0.5	0.3	0.3	0.4	0.1	0.4	0.0	0.0	0.1	0.5	1.6
10-Apr	0.1	0.0	Z	0.2	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.2	0.2	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
11-Apr	0.7	1.1	0.9	Z	0.6	1.1	5.6	1.7	1.4	1.1	1.1	1.8	1.4	1.0	0.5	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.6
12-Apr	0.0	0.0	0.0	0.0	Z	0.1	0.8	0.1	0.0	0.4	0.8	0.4	0.5	1.0	0.6	0.2	0.1	0.4	0.3	0.1	0.1	0.3	0.5	0.1	0.3	1.0
13-Apr	1.6	0.0	0.0	0.0	0.2	Z	1.0	0.6	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	0.1	0.3	0.3	0.2	1.6
14-Apr	Z	0.4	0.4	0.6	0.8	0.6	0.5	0.5	0.3	0.4	0.3	0.7	0.4	0.5	0.9	0.6	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.9
15-Apr	0.5	Z	0.5	0.9	0.6	0.8	1.3	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.3	0.3	0.3	1.3
16-Apr	0.3	0.2	Z	0.2	0.3	0.5	0.9	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.9
17-Apr	0.2	0.2	0.2	Z	0.4	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.4
18-Apr	0.2	0.2	0.1	0.3	Z	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.5	0.3	0.4	0.4	0.2	0.1	0.4	0.2	0.2	0.2	0.2	0.2	0.3	0.5
19-Apr	0.2	0.2	0.2	0.5	0.5	Z	0.4	0.4	0.4	0.3	0.4	0.4	0.5	0.3	0.4	0.5	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.3	0.5
20-Apr	Z	0.5	0.5	1.0	1.3	0.9	0.9	0.8	0.5	1.1	1.4	0.7	0.6	0.9	0.6	0.6	0.5	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.6	1.4
21-Apr	0.3	Z	0.3	0.2	0.7	0.8	0.9	0.4	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.2	0.1	0.7	0.2	0.9
22-Apr	0.2	0.0	Z	0.9	0.6	0.3	1.1	3.6	2.8	0.4	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5	3.6
23-Apr	0.0	0.0	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3
24-Apr	0.0	0.0	0.1	0.2	Z	0.2	0.2	0.3	0.1	0.1	0.1	1.0	0.3	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	1.0
25-Apr	0.0	0.0	0.0	0.2	3.1	Z	0.4	0.1	0.2	0.2	0.1	0.2	0.1	0.0	0.1	0.2	0.2	0.1	0.2	0.3	0.0	0.0	0.0	0.0	0.3	3.1
26-Apr	Z	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.3	0.2	1.7	0.1	0.2	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.7
27-Apr	0.0	Z	0.3	0.1	0.0	0.1	0.1	0.5	0.5	0.7	0.7	0.2	0.4	0.3	0.3	0.6	0.4	0.4	0.6	0.2	0.0	0.1	0.0	0.0	0.3	0.7
28-Apr	0.0	0.1	Z	0.0	0.0	0.4	1.5	1.0	0.1	0.2	0.1	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	0.2	1.5
29-Apr	0.0	0.0	0.0	Z	0.5	0.9	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.7	0.4	0.3	0.1	0.1	0.2	0.2	0.1	0.2	0.9
30-Apr	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2
																								Diurnal Average		
																								Diurnal Maximum		
																								0.3 0.2 0.2 0.3 0.6 0.6 0.7 0.7 0.5 0.4 0.4 0.3 0.3 0.3 0.4 0.4 0.3 0.3 0.2 0.2 0.1 0.1 0.1 0.2 0.1 0.1 0.7		
																								1.6 1.1 0.9 1.4 3.1 4.9 5.6 3.6 2.8 1.7 1.7 1.8 1.4 1.7 1.6 2.0 1.6 1.4 1.1 1.0 0.4 0.3 0.5 0.7		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Firebag - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Firebag - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Firebag - April 2023**

Concentration Ranges (ppb)	Wind Direction																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals	
0 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 40	0	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	0
81 - 159	0	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	0
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

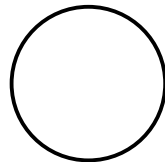
Total Number of Valid Hours: 0

Total Number of Hours: 720

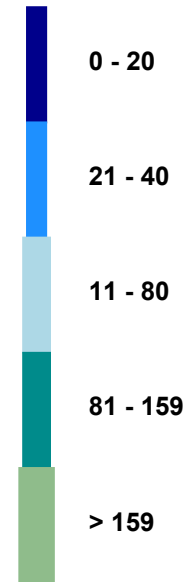


Wood Buffalo Environmental Association
Wind Rose Apr 2023

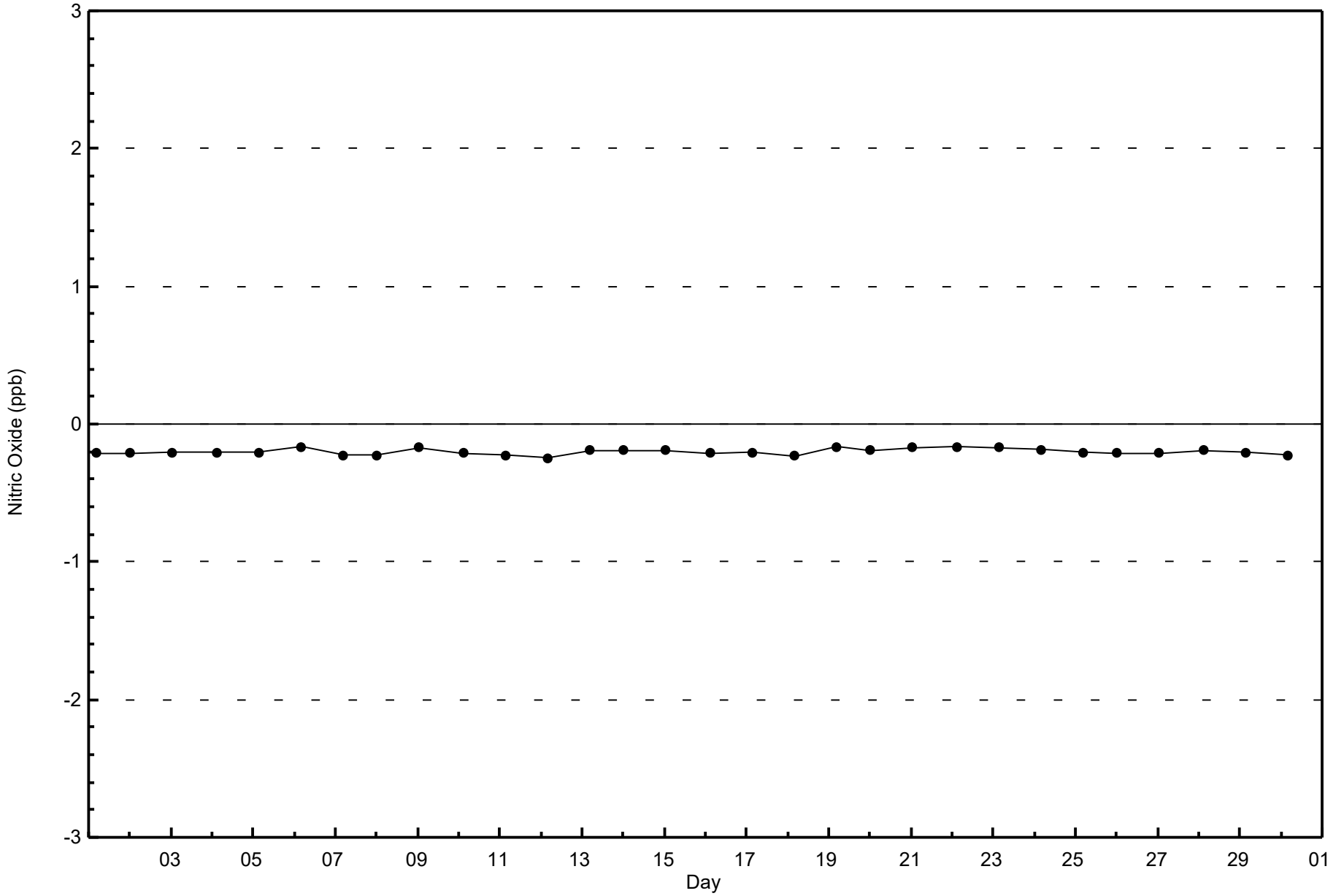
Nitric Oxide (NO) - ppb
Firebag



Classes (ppb)



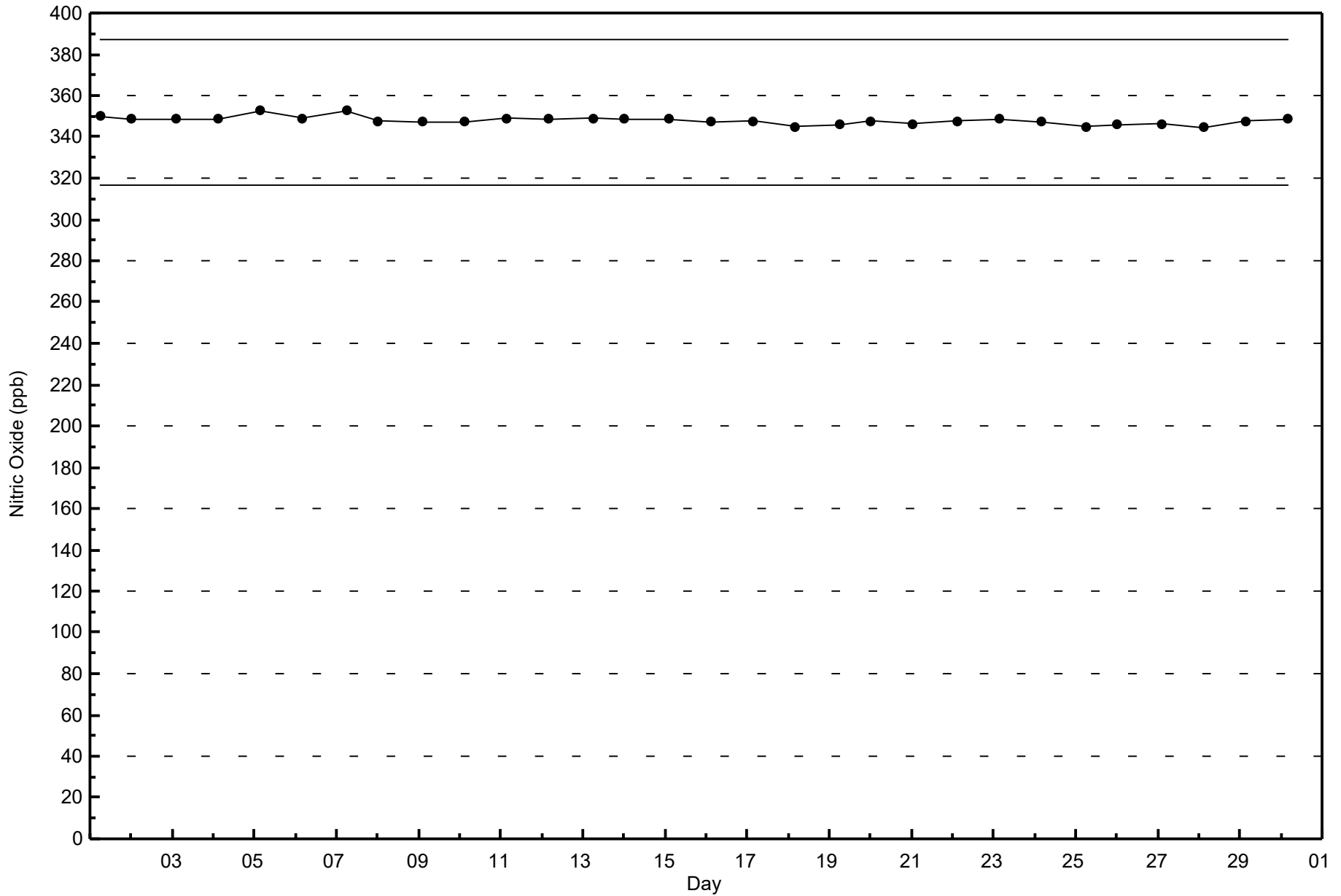
Total Number of Valid Hours: 0





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Firebag - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

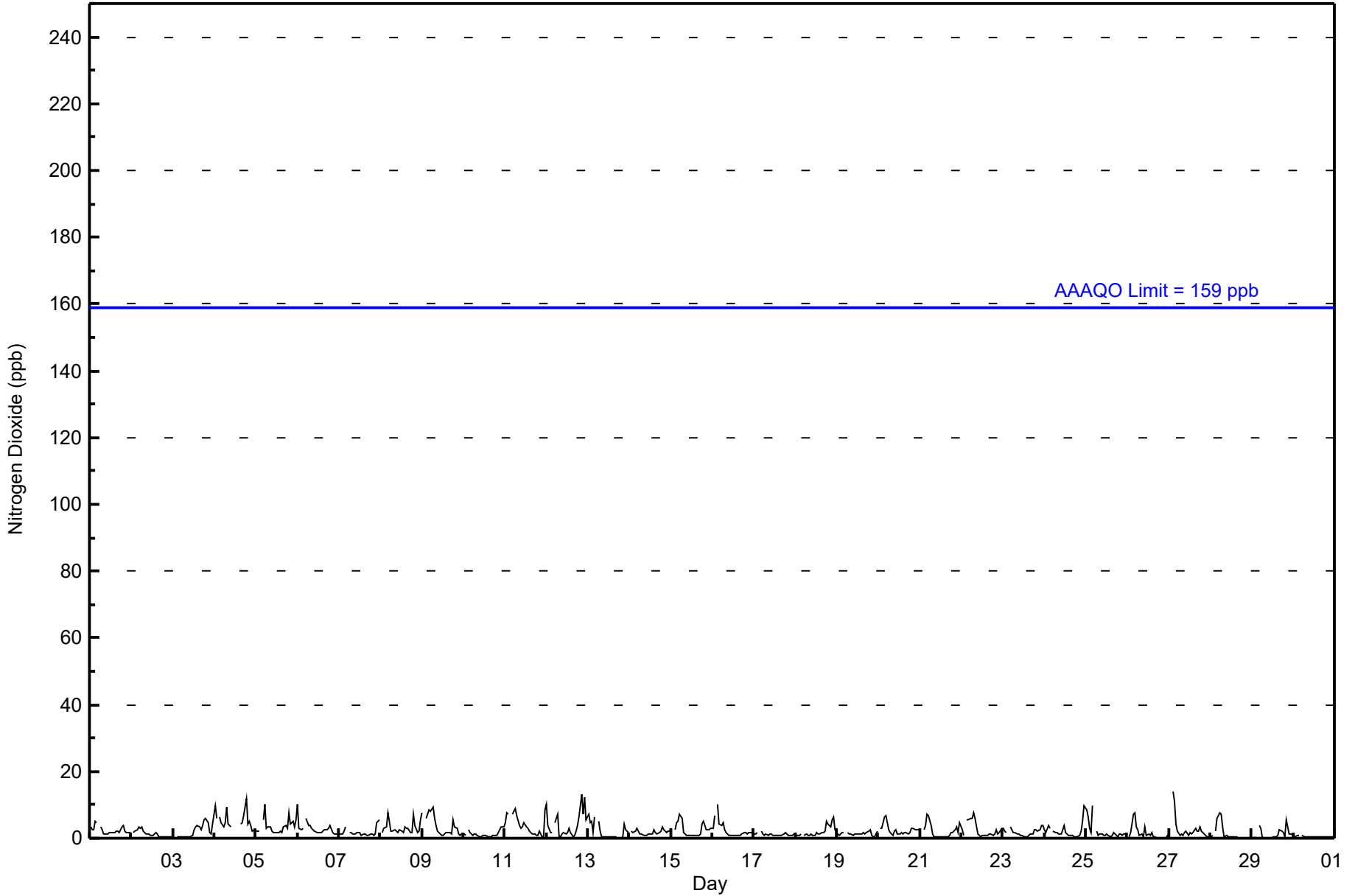
Firebag - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																																								
Maximum Value: 14.1 ppb on Apr 27 03:00		Maximum Daily Average: 5.4 ppb on Apr 4		Minimum Value: 0.1 ppb on Apr 29 11:00		Minimum Daily Average: 0.5 ppb on Apr 30		Hours of Data: 685																																								
Maximum Diurnal Average: 5.0 ppb at hour 5		Minimum Diurnal Average: 1.2 ppb at hour 12		Hours of Missing Data: 35		Hours of Calibration: 35		Percent Operational Time: 100.0																																								
Monthly Average: 2.29 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 0.9 Median = 1.5 Q ₃ = 2.8 P ₉₀ = 5.4 P ₉₉ = 10.1																																														
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-Apr	3.4	2.4	2.7	5.1	4.7	Z	3.6	2.4	1.2	1.1	1.1	1.5	1.7	1.6	1.9	2.3	2.0	1.8	3.6	3.9	2.1	1.6	1.6	1.8	2.4	5.1																						
2-Apr	Z	1.9	2.0	2.4	3.6	3.1	3.3	2.1	1.2	1.1	1.1	0.9	1.0	1.1	1.5	1.3	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	1.4	3.6																						
3-Apr	0.3	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	1.0	2.4	3.4	3.8	3.2	2.6	3.9	5.5	6.1	4.8	1.7	1.4	4.2	2.1	6.1																						
4-Apr	9.9	6.0	Z	6.2	4.5	3.6	4.8	9.4	4.4	3.6	C	C	C	C	C	4.2	4.6	6.6	11.8	4.1	5.1	3.9	2.2	2.4	5.4	11.8																						
5-Apr	2.0	2.3	2.1	Z	5.6	10.2	2.8	3.5	3.6	2.1	1.8	1.8	1.9	1.9	2.0	1.9	3.4	3.7	3.0	7.8	4.2	5.1	3.6	5.4	3.6	10.2																						
6-Apr	10.3	2.8	2.6	2.9	Z	5.8	4.0	3.9	3.1	2.4	2.1	1.9	1.8	1.7	1.7	2.6	2.6	2.4	2.8	4.0	1.8	1.2	1.2	1.2	2.9	10.3																						
7-Apr	1.3	1.3	1.3	2.0	3.4	Z	1.5	1.6	1.3	1.3	1.6	1.5	1.5	1.0	1.4	1.1	1.0	1.0	1.2	1.3	1.0	1.1	4.5	5.7	1.7	5.7																						
8-Apr	Z	1.9	3.1	3.6	7.8	4.9	2.2	2.0	2.5	2.3	1.7	2.4	2.2	1.8	3.4	2.8	2.8	1.8	1.8	7.3	3.9	1.8	2.2	5.3	3.1	7.8																						
9-Apr	7.5	Z	6.0	7.4	8.4	8.0	9.3	5.9	3.7	2.3	1.5	1.0	0.9	1.2	1.5	1.7	1.6	1.4	5.7	3.2	2.8	1.4	1.0	1.4	3.7	9.3																						
10-Apr	1.2	0.9	Z	2.7	1.8	1.0	1.2	1.2	0.7	0.4	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.7	1.0	1.7	2.4	3.5	3.5	1.3	3.5																						
11-Apr	4.7	7.6	7.4	Z	7.2	7.9	9.0	6.6	3.9	2.8	3.2	4.5	3.6	2.9	2.2	1.7	1.1	1.3	0.7	0.8	2.3	0.4	0.5	8.5	3.9	9.0																						
12-Apr	10.1	3.9	1.5	1.6	Z	4.8	7.2	0.5	0.4	1.1	1.9	1.2	1.5	2.8	1.5	0.6	0.7	2.0	3.7	6.3	13.2	7.0	12.3	5.4	4.0	13.2																						
13-Apr	7.1	4.5	5.2	1.9	6.3	Z	5.2	2.3	0.5	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.3	4.2	2.4	1.8	2.0	7.1																							
14-Apr	Z	2.3	1.7	2.3	2.8	2.1	1.3	1.1	0.8	0.8	0.8	1.4	1.1	1.4	2.5	1.7	1.2	1.8	2.3	3.3	2.5	1.9	2.0	2.0	1.8	3.3																						
15-Apr	2.8	Z	2.5	4.8	5.2	7.4	5.8	1.6	1.3	0.9	0.7	0.8	0.8	0.8	0.9	1.0	0.9	1.4	4.4	5.1	2.7	2.7	2.7	2.8	2.6	7.4																						
16-Apr	2.9	6.8	Z	10.0	4.3	4.0	4.5	2.7	1.5	0.9	1.0	0.9	0.9	0.8	0.9	1.0	0.9	1.1	1.5	1.9	1.4	1.5	1.5	1.5	2.4	10.0																						
17-Apr	1.4	1.4	1.8	Z	2.3	1.2	1.0	1.1	1.0	1.1	1.2	1.0	1.0	1.0	1.0	0.9	0.9	1.2	1.5	1.1	0.9	0.9	1.0	1.1	1.2	2.3																						
18-Apr	1.0	0.9	1.0	1.2	Z	0.9	1.1	0.9	1.0	1.2	1.0	1.0	1.7	1.2	1.1	1.7	1.9	2.1	5.0	4.4	3.2	5.5	6.5	2.6	2.1	6.5																						
19-Apr	1.1	1.0	1.1	1.8	1.7	Z	1.9	1.3	1.3	1.0	1.2	1.2	1.3	1.1	1.3	1.5	1.1	1.6	2.3	2.4	1.0	0.6	0.3	2.1	1.4	2.4																						
20-Apr	Z	2.9	3.1	6.5	6.8	4.5	2.7	1.8	0.9	2.0	2.4	1.2	1.3	1.9	1.3	1.6	1.8	1.4	1.5	3.0	2.9	2.6	2.5	2.5	2.6	6.8																						
21-Apr	2.5	Z	2.7	3.9	7.2	6.7	3.8	1.4	0.6	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.8	1.7	1.7	2.7	3.3	1.5	4.6	2.1	7.2																						
22-Apr	2.4	0.7	Z	5.5	5.7	5.8	6.0	7.6	5.8	1.4	0.7	0.6	0.7	0.7	0.8	0.7	1.4	1.3	1.0	1.1	2.4	1.4	1.6	3.1	2.5	7.6																						
23-Apr	2.8	2.3	1.6	Z	3.2	2.5	1.7	1.5	1.4	1.2	0.8	0.7	0.6	0.6	0.6	0.9	1.3	1.1	2.4	2.6	2.3	2.6	3.9	3.8	1.8	3.9																						
24-Apr	2.5	1.8	3.9	3.0	Z	2.0	1.7	1.6	1.1	1.1	1.2	4.0	1.6	1.3	0.7	0.8	0.7	0.4	0.4	0.4	0.7	2.1	5.1	9.9	2.1	9.9																						
25-Apr	8.3	6.3	2.9	1.8	9.9	Z	2.3	1.0	1.3	1.1	1.0	0.9	1.2	0.9	0.5	1.0	1.7	1.4	0.6	1.1	1.1	0.7	1.1	1.3	2.1	9.9																						
26-Apr	Z	0.5	1.7	7.4	7.6	3.2	2.4	1.0	1.3	0.6	3.2	0.8	1.2	1.0	1.5	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.7	1.6	7.6																						
27-Apr	0.5	Z	14.1	11.1	4.3	2.2	1.0	1.3	1.0	1.5	2.0	0.7	1.8	1.2	1.6	2.9	2.1	2.3	3.5	2.3	1.1	0.9	0.6	0.6	2.6	14.1																						
28-Apr	0.6	0.8	Z	2.3	6.0	7.8	7.2	3.5	0.6	0.9	0.6	0.4	0.6	0.6	0.5	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.5	7.8																						
29-Apr	0.2	0.2	0.6	Z	3.7	3.0	0.3	0.2	0.2	0.2	0.1	0.2	0.3	0.3	0.3	0.8	2.6	2.2	1.7	0.5	5.5	1.4	1.1	1.1	1.2	5.5																						
30-Apr	0.3	0.4	1.0	0.8	Z	0.7	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.6	0.4	0.5	0.6	0.5	0.6	0.4	0.5	0.5	1.0																						
																								3.5	2.6	3.0	3.9	5.0	4.1	3.3	2.4	1.6	1.3	1.2	1.2	1.3	1.2	1.3	1.4	1.5	1.6	2.4	2.6	2.5	2.0	2.3	2.9	Diurnal Average
																								10.3	7.6	14.1	11.1	9.9	10.2	9.3	9.4	5.8	3.6	3.2	4.5	3.6	3.4	3.8	4.2	4.6	6.6	11.8	7.8	13.2	7.0	12.3	9.9	Diurnal Maximum
Z - zerospan C - Calibration																																																
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																																																



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Firebag - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Firebag - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Firebag - April 2023**

Concentration 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	0	0	0	0	0	0	0	0	0	0	0	0
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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

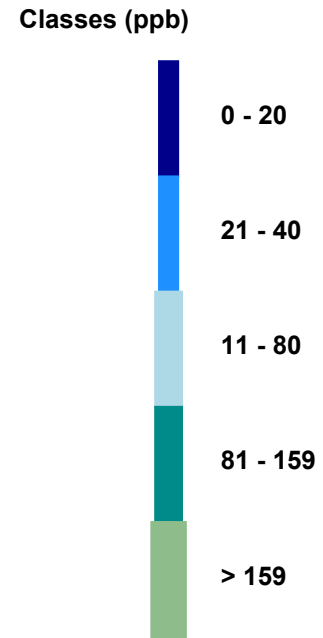
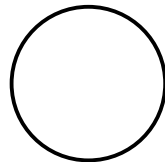
Total Number of Valid Hours: 0

Total Number of Hours: 720

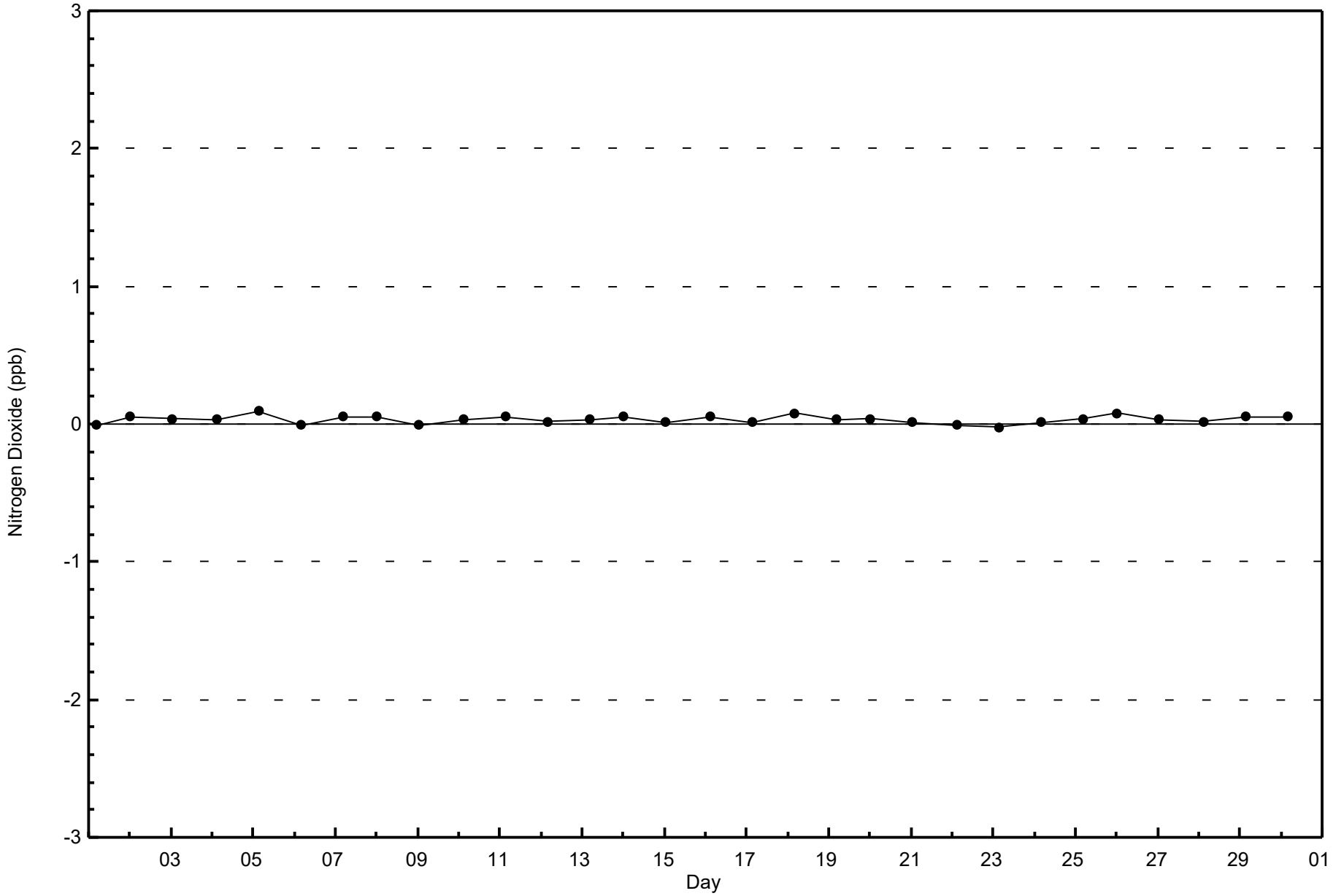


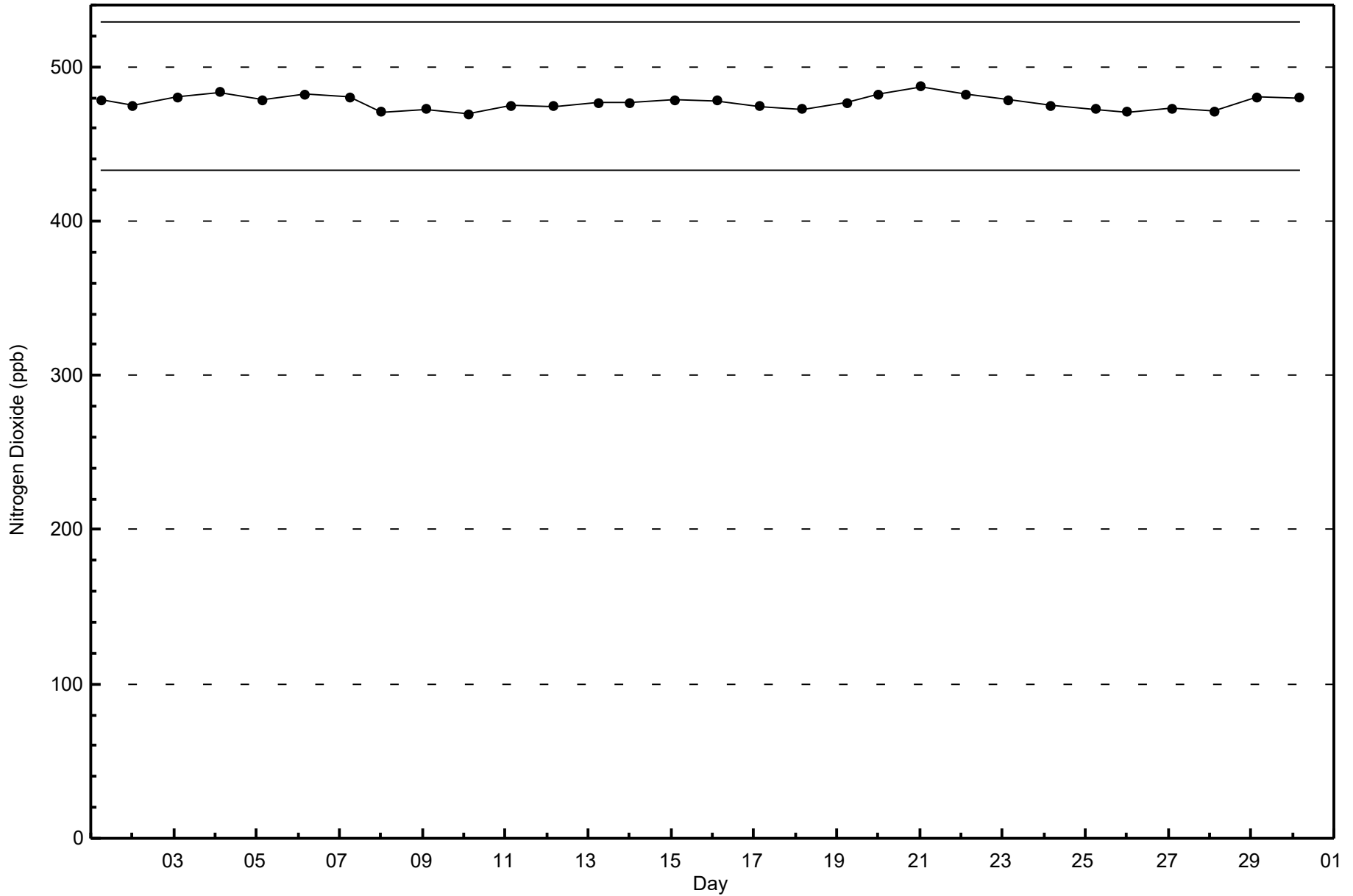
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Firebag



Total Number of Valid Hours: 0







Wood Buffalo Environmental Association
Summary of Hour Averages

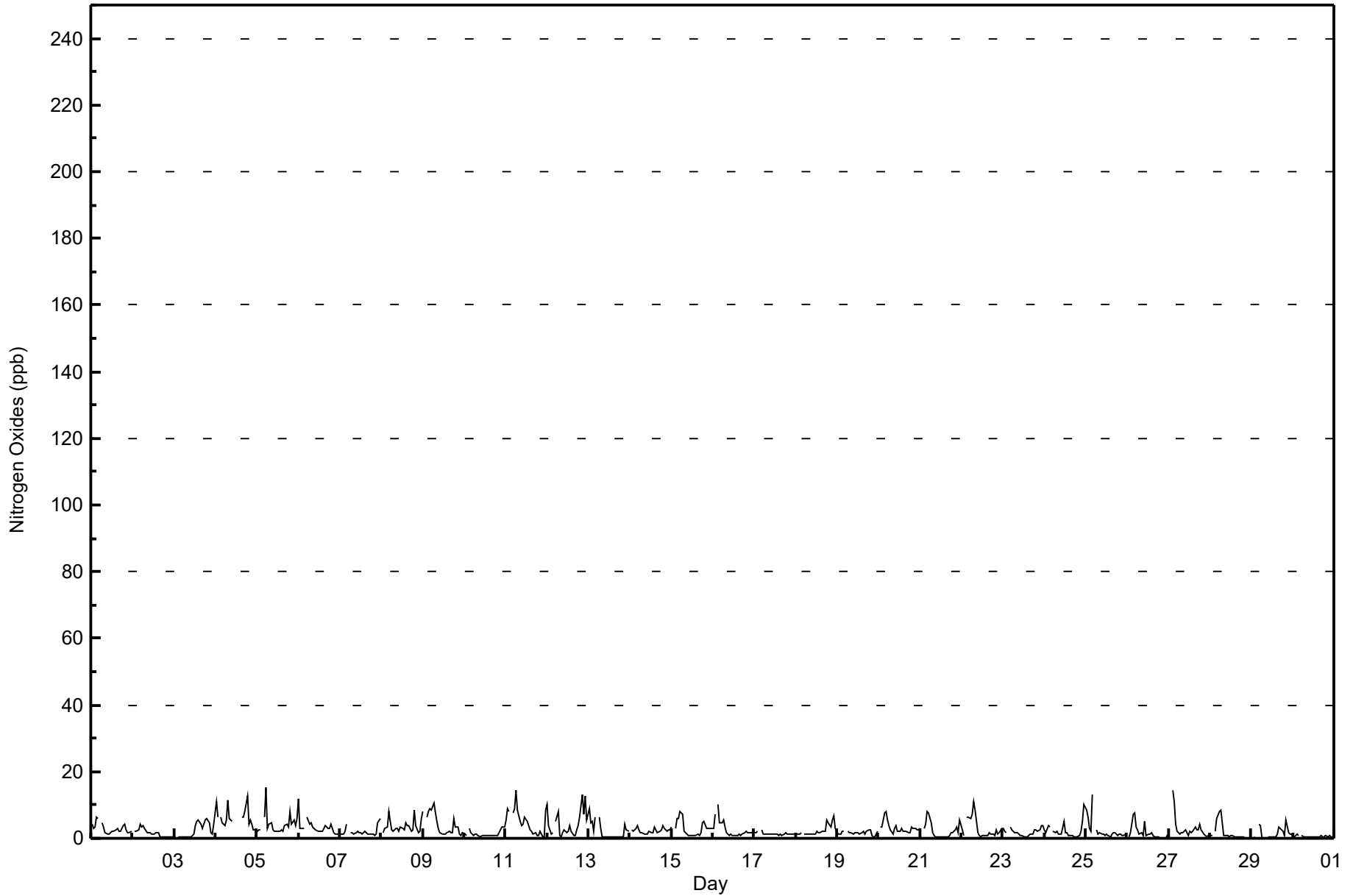
Nitrogen Oxides (NO_x) - ppb
Firebag - April 2023

Maximum Value: 15.1 ppb on Apr 5 06:00 Maximum Daily Average: 6.2 ppb on Apr 4																				Hours in Service: 720 Hours of Data: 685																													
Minimum Value: 0.2 ppb on Apr 29 02:00 Minimum Daily Average: 0.6 ppb on Apr 30 Maximum Diurnal Average: 5.5 ppb at hour 5 Minimum Diurnal Average: 1.6 ppb at hour 12 Monthly Average: 2.62 ppb Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 1.0 Median = 1.9 Q ₃ = 3.4 P ₉₀ = 6.0 P ₉₉ = 11.8																				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-Apr	4.1	3.0	3.4	6.5	6.1	Z	4.6	3.3	1.7	1.4	1.3	1.9	2.2	2.0	2.4	2.8	2.3	2.1	4.0	4.3	2.3	1.7	1.7	1.9	2.9	6.5																							
2-Apr	Z	2.0	2.1	2.6	4.0	3.5	4.0	2.9	1.7	1.5	1.5	1.1	1.4	1.5	1.9	1.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	1.6	4.0																							
3-Apr	0.3	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	1.3	3.7	5.1	5.4	4.2	3.0	4.3	5.7	6.1	4.8	1.7	1.4	4.3	2.4	6.1																							
4-Apr	11.1	6.3	Z	6.6	4.5	3.6	5.3	11.6	5.8	5.3	C	C	C	C	C	6.2	6.2	8.0	12.9	4.2	5.5	4.1	2.4	2.6	6.2	12.9																							
5-Apr	2.2	2.5	2.3	Z	6.4	15.1	3.2	4.3	4.7	2.7	2.2	2.2	2.2	2.2	2.3	2.1	4.0	4.3	3.2	8.2	4.4	5.4	3.7	5.8	4.2	15.1																							
6-Apr	11.7	3.0	2.8	3.1	Z	6.5	4.4	4.5	3.6	2.9	2.4	2.3	2.1	2.1	2.1	3.7	3.5	3.0	3.0	4.2	1.9	1.2	1.2	1.2	3.3	11.7																							
7-Apr	1.3	1.3	1.3	2.3	4.4	Z	1.7	1.9	1.5	1.5	2.1	1.9	1.8	1.2	1.9	1.5	1.1	1.2	1.3	1.4	1.0	1.1	4.6	5.8	2.0	5.8																							
8-Apr	Z	1.9	3.1	3.6	8.0	5.2	2.4	2.2	3.1	2.8	2.1	3.2	2.9	2.3	4.5	3.6	3.6	2.1	2.3	8.3	3.9	1.8	2.3	6.0	3.5	8.3																							
9-Apr	7.9	Z	6.6	8.1	8.9	8.4	10.4	7.5	5.0	3.0	1.9	1.2	1.1	1.4	1.9	2.2	1.9	1.7	6.1	3.3	3.2	1.4	1.0	1.5	4.2	10.4																							
10-Apr	1.3	0.9	Z	2.9	1.8	1.0	1.3	1.4	0.9	0.5	0.7	0.9	0.9	0.8	0.7	0.7	0.7	0.7	0.7	1.0	1.7	2.5	3.6	3.6	1.3	3.6																							
11-Apr	5.4	8.7	8.3	Z	7.8	9.0	14.6	8.3	5.3	3.9	4.3	6.3	5.0	3.9	2.7	2.0	1.2	1.5	0.7	0.8	2.3	0.4	0.5	8.5	4.8	14.6																							
12-Apr	10.1	3.9	1.5	1.6	Z	4.9	8.0	0.6	0.4	1.5	2.7	1.6	2.0	3.8	2.1	0.8	0.8	2.4	4.0	6.4	13.3	7.3	12.8	5.5	4.3	13.3																							
13-Apr	8.7	4.5	5.2	1.9	6.5	Z	6.2	2.9	0.6	0.3	0.4	0.4	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.3	4.3	2.7	2.1	2.2	8.7	2.2	8.7																						
14-Apr	Z	2.7	2.1	2.9	3.6	2.7	1.8	1.6	1.1	1.2	1.1	2.1	1.5	1.9	3.4	2.3	1.5	2.1	2.7	3.6	2.8	2.2	2.4	2.4	2.3	3.6	2.3	3.6																					
15-Apr	3.3	Z	3.0	5.7	5.8	8.2	7.1	2.0	1.7	1.1	0.8	0.9	0.9	0.9	1.0	1.1	1.0	1.5	4.8	5.3	2.9	2.9	3.0	3.1	3.0	8.2	3.0	8.2																					
16-Apr	3.2	7.0	Z	10.2	4.6	4.5	5.4	3.4	1.8	1.0	1.1	1.0	1.0	0.9	1.0	1.2	1.0	1.2	1.7	2.1	1.6	1.6	1.7	1.7	2.6	10.2	2.6	10.2																					
17-Apr	1.6	1.6	2.0	Z	2.7	1.4	1.2	1.4	1.2	1.4	1.4	1.2	1.1	1.2	1.1	1.1	1.0	1.4	1.7	1.3	1.1	1.1	1.2	1.4	1.4	2.7	1.4	2.7																					
18-Apr	1.2	1.1	1.1	1.5	Z	1.1	1.4	1.2	1.4	1.5	1.3	1.3	2.2	1.5	1.5	2.1	2.1	2.2	5.4	4.6	3.4	5.7	6.7	2.8	2.4	6.7	2.4	6.7																					
19-Apr	1.3	1.2	1.3	2.3	2.2	Z	2.3	1.7	1.7	1.3	1.6	1.6	1.8	1.4	1.7	2.0	1.3	1.9	2.6	2.5	1.0	0.6	0.3	2.1	1.6	2.6	1.6	2.6																					
20-Apr	Z	3.4	3.6	7.5	8.1	5.4	3.6	2.6	1.4	3.1	3.8	1.9	1.9	2.8	1.9	2.2	2.3	1.7	1.8	3.3	3.1	2.9	2.7	2.7	3.2	8.1	3.2	8.1																					
21-Apr	2.8	Z	3.0	4.1	7.9	7.5	4.7	1.8	0.8	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.6	0.9	1.9	1.8	2.7	3.5	1.6	5.3	2.3	7.9	2.3	7.9																					
22-Apr	2.6	0.7	Z	6.4	6.3	6.1	7.1	11.2	8.6	1.8	0.8	0.6	0.7	0.8	0.9	0.7	1.6	1.4	1.1	1.1	2.4	1.4	1.6	3.1	3.0	11.2	3.0	11.2																					
23-Apr	2.8	2.3	1.7	Z	3.4	2.7	1.9	1.6	1.6	1.3	0.9	0.8	0.6	0.6	0.6	1.0	1.5	1.2	2.7	2.7	2.3	2.6	3.9	3.8	1.9	3.9	1.9	3.9																					
24-Apr	2.5	1.8	4.0	3.2	Z	2.2	1.9	1.9	1.2	1.2	1.3	5.0	1.9	1.7	0.8	0.9	0.7	0.4	0.4	0.4	0.7	2.2	5.1	10.0	2.2	10.0	2.2	10.0																					
25-Apr	8.3	6.3	2.9	2.0	13.0	Z	2.7	1.1	1.5	1.3	1.2	1.0	1.4	1.0	0.5	1.1	1.9	1.6	0.7	1.3	1.4	0.7	1.1	1.3	2.4	13.0	2.4	13.0																					
26-Apr	Z	0.5	1.7	7.4	7.7	3.4	2.7	1.2	1.6	0.8	4.9	0.9	1.4	1.3	1.9	0.7	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.7	1.7	7.7	1.7	7.7																					
27-Apr	0.5	Z	14.4	11.2	4.3	2.3	1.1	1.8	1.5	2.2	2.7	0.9	2.2	1.5	1.9	3.5	2.5	2.7	4.1	2.5	1.1	1.0	0.6	0.6	2.9	14.4	2.9	14.4																					
28-Apr	0.6	0.9	Z	2.3	6.0	8.2	8.7	4.5	0.7	1.1	0.7	0.4	0.7	0.7	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.7	8.7	1.7	8.7																					
29-Apr	0.2	0.2	0.6	Z	4.2	3.9	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	1.1	3.3	2.6	2.0	0.6	5.6	1.6	1.3	1.2	1.3	5.6	1.3	5.6																				
30-Apr	0.4	0.5	1.1	0.9	Z	0.9	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.8	0.5	0.6	0.7	0.6	0.7	0.6	0.6	0.6	1.1	0.6	1.1																				
																								3.8	2.7	3.2	4.3	5.5	4.7	4.0	3.0	2.1	1.6	1.6	1.6	1.6	1.6	1.7	1.8	1.8	1.9	2.6	2.8	2.6	2.1	2.4	3.1	Diurnal Average	
																								11.7	8.7	14.4	11.2	13.0	15.1	14.6	11.6	8.6	5.3	4.9	6.3	5.0	5.1	5.4	6.2	6.2	8.0	12.9	8.3	13.3	7.3	12.8	10.0	Diurnal Maximum	
Z - zerospan C - Calibration																																																	



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Firebag - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Firebag - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Firebag - April 2023**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

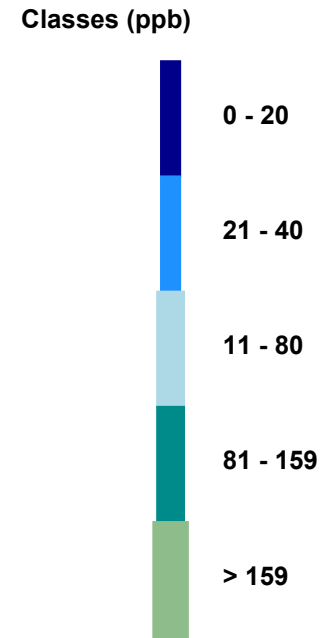
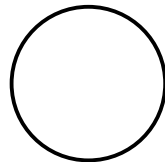
Total Number of Valid Hours: 0

Total Number of Hours: 720

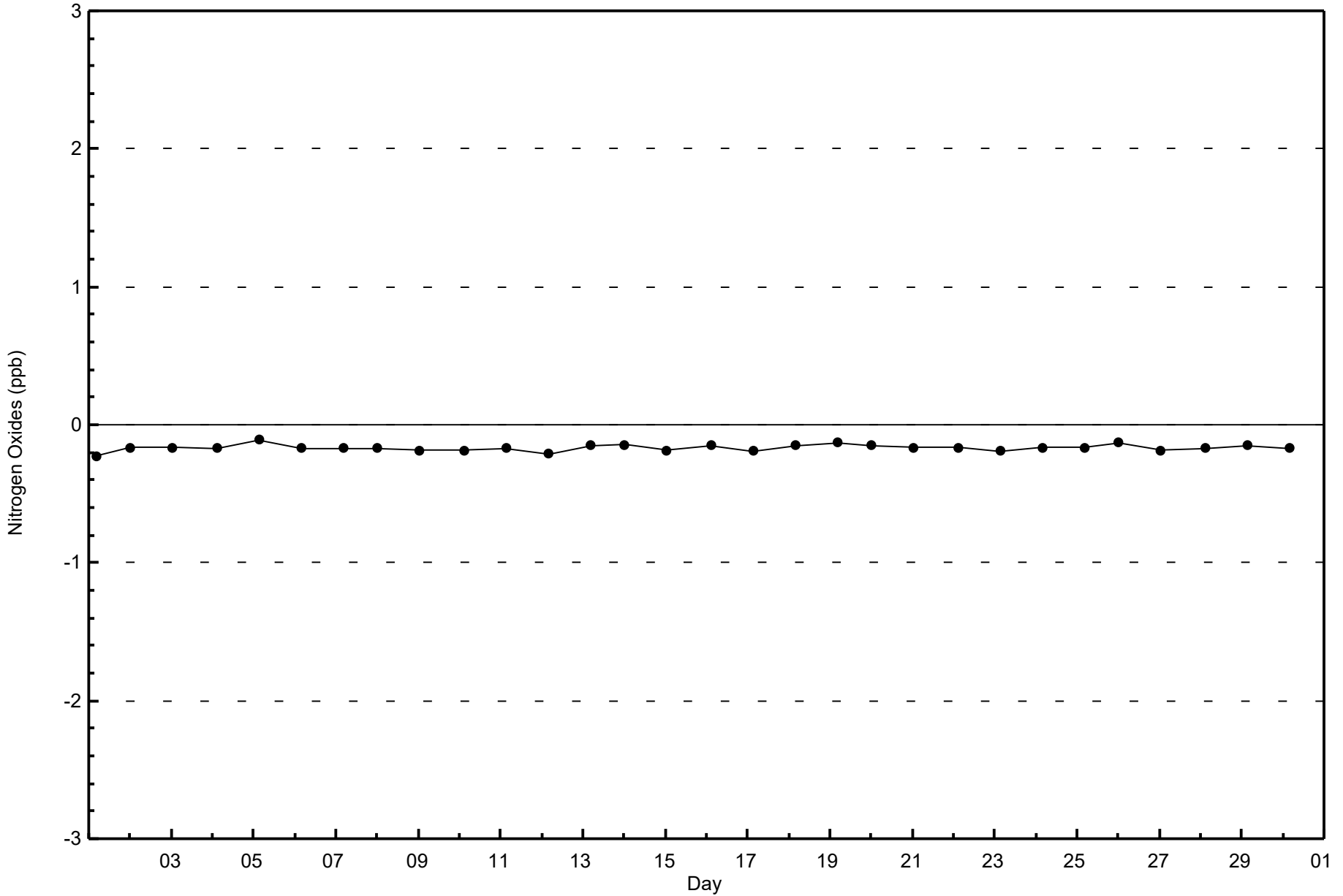


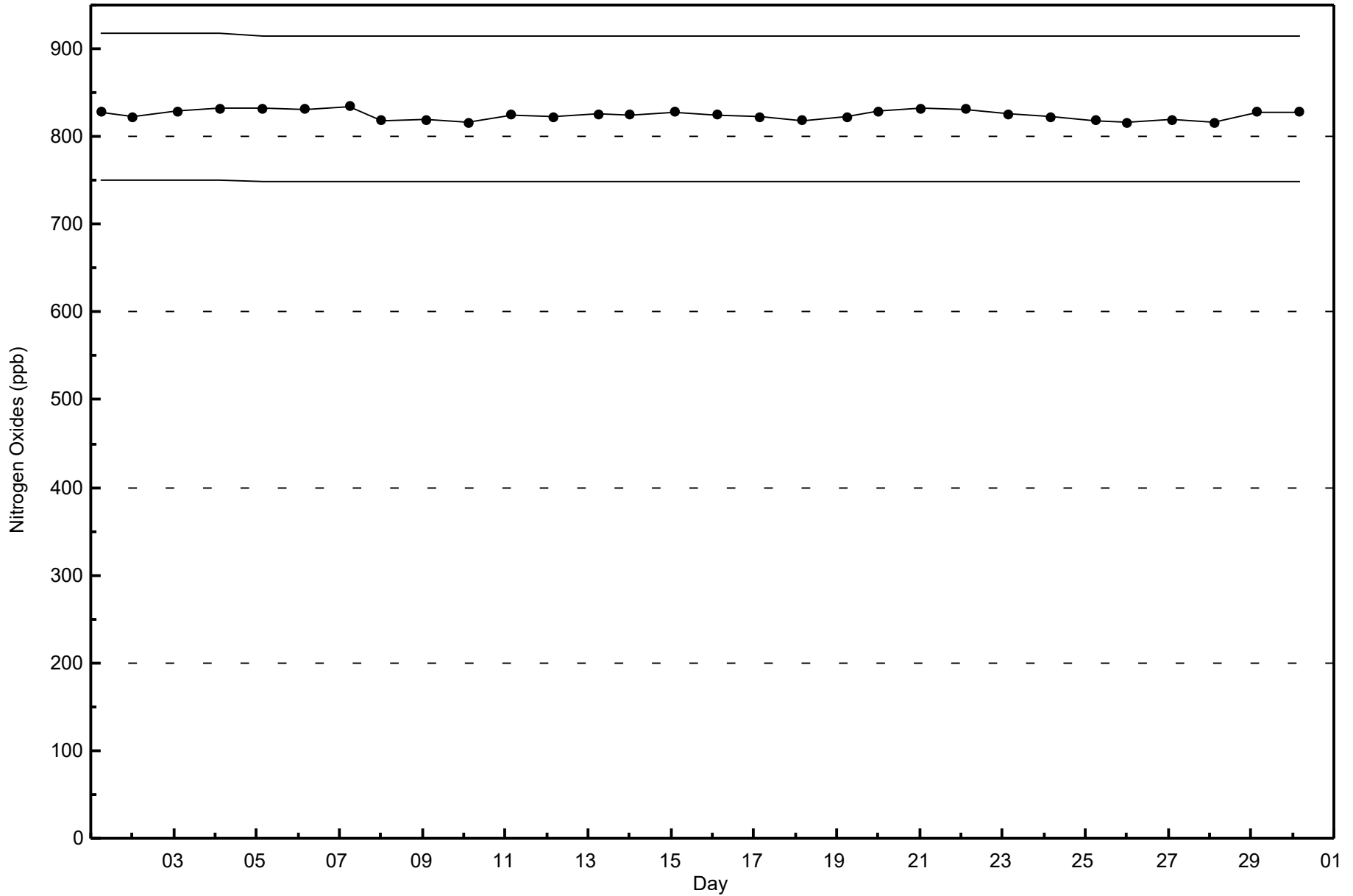
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Firebag



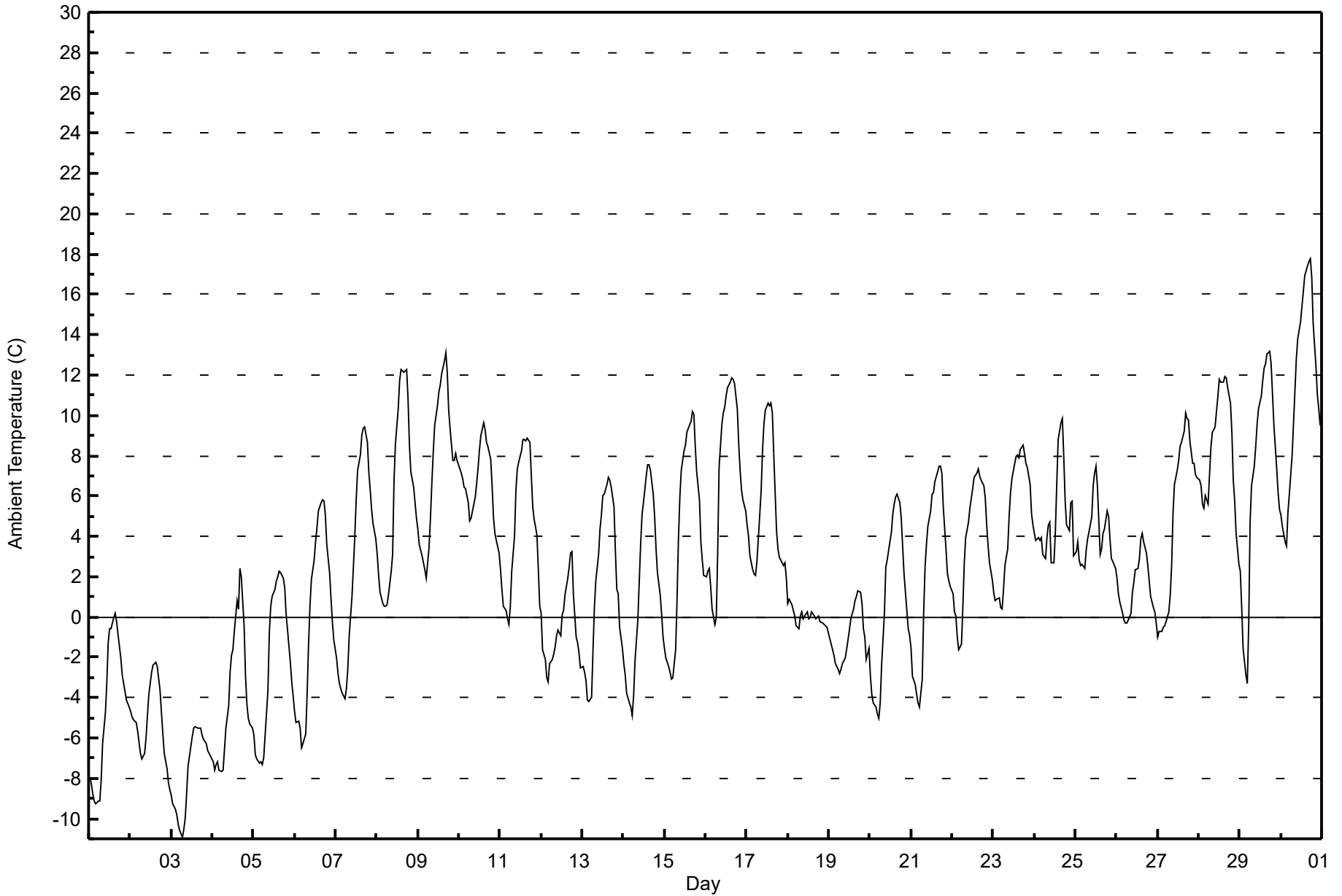
Total Number of Valid Hours: 0







Maximum Value: 17.8 C on Apr 30 18:00		Maximum Daily Average: 11.4 C on Apr 30		Hours in Service: 720																							
Minimum Value: -11.0 C on Apr 3 07:00		Minimum Daily Average: -7.7 C on Apr 3		Hours of Data: 720																							
Maximum Diurnal Average: 6.7 C at hour 17		Minimum Diurnal Average: -1.8 C at hour 6		Hours of Missing Data: 0																							
Monthly Average: 2.53 C		Percentiles: P ₁ = -9.3 P ₁₀ = -5.0 Q ₁ = -1.1 Median = 2.5 Q ₃ = 6.6 P ₉₀ = 9.6 P ₉₉ = 14.6		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-Apr	-8.0	-8.3	-8.8	-9.1	-9.3	-9.1	-9.1	-8.1	-6.3	-4.7	-3.3	-1.3	-0.6	-0.6	0.0	0.2	-0.2	-0.8	-2.0	-2.9	-3.3	-3.7	-4.1	-4.5	-4.5	0.2	
2-Apr	-4.7	-4.9	-5.1	-5.2	-5.6	-6.2	-6.8	-7.0	-6.8	-6.0	-4.9	-3.9	-2.7	-2.4	-2.3	-2.2	-2.5	-3.6	-4.7	-5.8	-6.8	-7.5	-8.2	-8.6	-5.2	-2.2	
3-Apr	-8.9	-9.3	-9.5	-9.8	-10.3	-10.6	-11.0	-10.5	-9.9	-8.7	-7.4	-6.4	-5.9	-5.5	-5.4	-5.5	-5.5	-5.5	-5.8	-6.1	-6.3	-6.6	-6.8	-6.9	-7.7	-5.4	
4-Apr	-7.2	-7.6	-7.3	-7.2	-7.6	-7.7	-7.6	-6.6	-5.5	-4.4	-2.7	-1.9	-1.6	-0.7	0.8	0.4	2.4	2.0	-0.5	-3.0	-4.4	-5.0	-5.3	-5.5	-3.9	2.4	
5-Apr	-5.8	-6.8	-7.0	-7.3	-7.2	-7.3	-7.0	-5.9	-3.6	-0.8	0.6	1.0	1.4	1.8	2.0	2.2	2.2	1.9	1.4	0.1	-0.6	-2.3	-3.2	-3.9	-2.3	2.2	
6-Apr	-4.7	-5.2	-5.1	-5.5	-6.4	-6.3	-5.8	-3.8	-1.3	0.5	1.9	2.8	3.8	4.4	5.3	5.7	5.8	5.7	5.0	3.6	2.2	1.0	-0.3	-1.1	0.1	5.8	
7-Apr	-2.1	-2.8	-3.3	-3.6	-3.8	-4.1	-3.6	-2.6	-0.9	1.1	2.5	4.0	5.8	7.2	8.0	9.0	9.3	9.5	8.7	7.2	6.3	5.3	4.6	3.9	2.7	9.5	
8-Apr	3.1	2.1	1.2	0.7	0.6	0.6	0.6	1.1	2.3	3.1	6.8	8.6	10.3	11.7	12.3	12.2	12.2	12.2	10.8	8.5	7.2	6.5	5.7	4.9	6.1	12.3	
9-Apr	4.3	3.6	3.1	2.7	2.3	2.0	3.5	4.9	6.6	8.2	9.5	10.5	11.2	11.5	12.1	12.7	13.1	12.1	10.3	9.3	7.8	7.8	8.1	7.8	7.7	13.1	
10-Apr	7.3	7.1	6.9	6.5	6.4	5.7	4.8	4.9	5.3	5.9	6.7	7.4	8.3	9.0	9.7	9.3	8.6	8.4	7.8	6.5	4.9	4.1	3.8	3.1	6.6	9.7	
11-Apr	2.3	1.3	0.5	0.3	-0.1	-0.3	0.6	2.3	4.0	6.3	7.3	7.7	8.3	8.8	8.8	8.9	8.6	7.0	5.5	4.8	4.1	2.3	0.5	4.5	8.9		
12-Apr	0.2	-1.6	-2.1	-3.0	-3.2	-2.3	-2.1	-1.8	-1.5	-0.9	-0.6	-0.9	0.2	0.4	1.1	1.9	2.5	3.2	3.2	1.2	-1.0	-1.2	-1.7	-2.5	-0.5	3.2	
13-Apr	-2.5	-2.8	-3.1	-4.1	-4.2	-4.0	-1.7	0.5	1.8	3.1	4.4	5.1	6.0	6.1	6.6	6.9	6.8	6.5	5.5	3.2	1.4	1.2	-0.5	-1.6	1.7	6.9	
14-Apr	-2.3	-2.9	-3.8	-4.3	-4.5	-4.9	-3.9	-2.2	-0.2	1.7	3.6	5.0	6.3	7.0	7.6	7.6	7.3	6.1	5.0	3.4	2.2	1.1	0.1	-1.0	1.4	7.6	
15-Apr	-1.6	-2.0	-2.4	-2.7	-3.1	-3.0	-1.6	0.9	3.9	6.0	7.3	8.3	8.5	9.2	9.4	9.7	10.2	10.1	8.5	7.2	5.8	3.7	2.8	2.1	4.0	10.2	
16-Apr	2.0	2.3	2.4	1.5	0.4	-0.4	0.0	3.2	7.4	9.6	10.1	10.4	11.0	11.4	11.7	11.9	11.8	11.6	10.3	8.6	7.3	6.3	5.8	5.3	6.7	11.9	
17-Apr	4.6	4.0	3.1	2.4	2.1	2.1	2.8	3.9	6.2	8.3	9.6	10.3	10.6	10.5	10.6	10.1	8.1	4.3	3.4	3.0	2.8	2.5	2.7	1.9	5.4	10.6	
18-Apr	0.7	0.9	0.6	0.3	0.1	-0.4	-0.6	0.0	0.3	-0.1	0.1	0.3	-0.1	0.0	0.2	0.0	-0.1	0.0	0.0	-0.2	-0.3	-0.4	-0.4	-0.5	0.0	0.9	
19-Apr	-1.1	-1.3	-1.6	-1.9	-2.3	-2.6	-2.8	-2.6	-2.3	-2.0	-1.6	-1.1	-0.6	-0.1	0.4	0.8	1.0	1.3	1.2	0.7	-0.6	-1.0	-2.1	-1.6	-1.0	1.3	
20-Apr	-2.9	-3.9	-4.3	-4.5	-4.8	-5.0	-4.2	-2.4	0.2	2.5	2.8	3.3	4.2	5.1	5.6	6.0	6.1	5.7	4.9	3.5	2.2	0.4	-0.6	-0.9	0.8	6.1	
21-Apr	-1.6	-3.0	-3.3	-3.8	-4.3	-4.5	-3.1	0.2	2.5	3.6	4.5	5.3	6.1	6.2	6.7	7.2	7.5	7.5	7.1	5.5	3.3	2.2	1.8	1.5	2.3	7.5	
22-Apr	1.2	0.3	0.0	-1.0	-1.6	-1.3	0.5	2.7	3.9	4.7	5.4	5.9	6.4	6.9	7.2	7.3	7.0	6.8	6.5	5.9	4.6	3.5	2.7	1.8	3.6	7.3	
23-Apr	1.3	0.8	0.9	1.0	0.5	0.4	1.4	2.6	3.4	5.0	6.2	6.8	7.6	8.0	8.0	7.9	8.3	8.5	8.1	7.6	7.4	6.6	5.1	4.5	4.9	8.5	
24-Apr	4.1	3.8	3.9	3.8	4.0	3.1	2.9	4.0	4.6	4.7	2.7	2.7	4.2	6.6	8.8	9.6	9.9	8.0	5.7	4.6	4.3	5.7	5.7	3.0	5.0	9.9	
25-Apr	3.2	3.7	2.8	2.5	2.6	2.4	3.3	3.9	4.2	5.0	6.5	7.1	7.5	6.5	3.1	3.4	4.1	4.4	5.3	5.0	3.9	2.9	2.8	2.4	4.1	7.5	
26-Apr	1.9	1.1	0.7	0.2	-0.2	-0.3	-0.3	-0.2	0.2	1.2	1.7	2.3	2.4	2.9	3.8	4.2	3.7	3.2	2.6	1.8	1.0	0.5	0.3	-0.3	1.4	4.2	
27-Apr	-1.0	-0.7	-0.7	-0.5	-0.5	-0.2	0.3	1.1	2.6	5.2	6.6	7.3	7.8	8.5	8.7	9.3	10.1	9.8	9.8	8.7	7.6	7.6	7.1	6.9	5.0	10.1	
28-Apr	6.8	6.5	5.6	5.4	6.0	5.6	7.0	8.4	9.1	9.5	10.2	10.9	11.8	11.6	11.6	11.9	11.8	11.4	10.6	9.1	6.8	5.7	4.2	2.6	8.4	11.9	
29-Apr	2.3	0.4	-1.5	-2.9	-3.3	-0.4	4.7	6.5	7.5	8.5	9.6	10.3	11.0	11.7	12.3	12.5	13.0	13.2	12.5	11.1	9.5	7.3	6.2	5.3	7.0	13.2	
30-Apr	5.1	4.5	3.7	3.5	5.2	6.1	8.0	9.7	11.2	12.8	13.8	14.7	15.4	16.2	16.9	17.4	17.7	17.8	16.9	14.6	12.4	11.0	10.4	9.5	11.4	17.8	
		-0.1	-0.7	-1.1	-1.5	-1.7	-1.8	-1.0	0.2	1.6	3.0	4.0	4.8	5.5	6.0	6.4	6.6	6.7	6.3	5.5	4.2	3.1	2.3	1.6	0.9	Diurnal Average	
		7.3	7.1	6.9	6.5	6.4	6.1	8.0	9.7	11.2	12.8	13.8	14.7	15.4	16.2	16.9	17.4	17.7	17.8	16.9	14.6	12.4	11.0	10.4	9.5	Diurnal Maximum	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Firebag - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	235	32.64	32.64
0 - 10	420	58.33	90.97
10 - 20	65	9.03	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



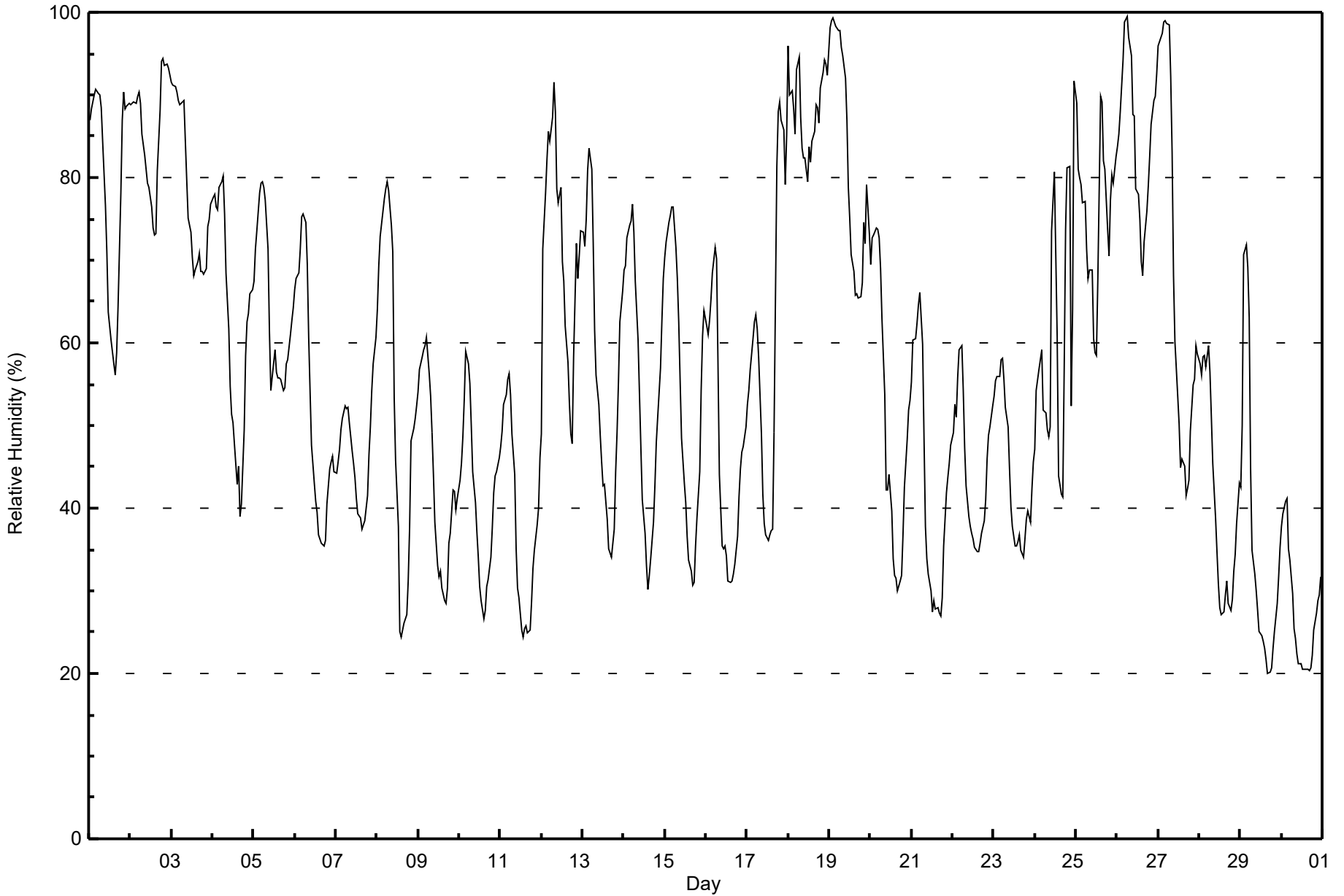
Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Firebag - April 2023

Maximum Value: 99.4 % on Apr 26 07:00 Maximum Daily Average: 88.2 % on Apr 18																						Hours in Service: 720																											
Minimum Value: 20.0 % on Apr 29 17:00 Minimum Daily Average: 27.5 % on Apr 30																						Hours of Data: 720																											
Maximum Diurnal Average: 73.1 % at hour 6 Minimum Diurnal Average: 43.5 % at hour 16																						Hours of Missing Data: 0																											
Monthly Average: 57.79 % Percentiles: P₁ = 20.6 P₁₀ = 31.0 Q₁ = 39.7 Median = 56.0 Q₃ = 74.9 P₉₀ = 88.6 P₉₉ = 98.8																						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-Apr	86.9	88.4	89.2	90.0	90.6	90.2	89.9	88.4	84.5	76.7	71.0	63.8	62.0	60.4	57.5	56.0	58.8	64.4	78.2	86.9	90.4	88.4	88.6	89.0	78.8	90.6																							
2-Apr	88.8	89.0	89.1	88.9	89.9	90.3	89.1	85.3	82.7	81.1	79.4	78.9	76.5	73.9	73.1	73.3	80.8	88.1	94.0	94.5	93.6	93.8	93.2	92.3	85.8	94.5																							
3-Apr	91.6	91.2	91.1	90.4	89.4	88.8	89.1	89.3	84.4	79.6	75.1	73.4	70.3	68.1	68.8	69.8	70.8	68.6	68.7	68.3	69.0	74.0	74.9	76.8	78.4	91.6																							
4-Apr	77.7	77.9	76.4	76.1	78.8	79.6	80.2	75.6	68.5	61.8	54.7	51.3	50.4	47.8	42.8	45.0	39.0	40.5	49.6	58.5	62.5	63.5	66.0	66.4	62.1	80.2																							
5-Apr	67.4	71.3	73.6	78.1	79.3	79.5	78.8	77.3	71.3	61.4	54.2	55.9	59.1	56.4	55.8	55.7	55.7	54.2	54.6	57.4	57.9	61.0	62.7	64.3	64.3	79.5																							
6-Apr	66.4	67.8	68.5	71.3	75.3	75.7	74.6	69.6	60.7	54.1	47.6	43.1	40.9	39.5	36.9	35.7	35.5	35.4	36.1	40.5	44.8	45.5	46.3	44.4	52.3	75.7																							
7-Apr	44.2	45.6	47.1	49.4	50.9	52.4	52.1	52.1	50.3	47.0	45.5	43.7	41.1	39.3	38.9	37.5	37.9	38.5	41.6	46.5	49.8	54.3	57.4	60.7	46.8	60.7																							
8-Apr	64.1	69.3	72.8	75.9	77.5	78.7	79.4	78.5	74.2	71.1	53.4	45.8	37.8	25.1	24.4	25.3	26.1	27.1	31.2	37.7	48.1	49.6	50.9	52.3	53.2	79.4																							
9-Apr	54.0	56.8	58.3	59.2	59.6	60.7	56.3	53.5	49.2	44.1	38.3	33.0	31.7	32.4	30.4	28.9	28.4	30.4	35.7	36.9	42.3	42.0	39.9	41.2	43.5	60.7																							
10-Apr	43.4	45.5	48.7	53.2	59.0	57.5	55.1	50.0	44.4	40.6	37.2	34.1	30.6	28.8	26.6	27.7	30.4	31.4	34.1	37.7	41.8	44.0	44.5	46.0	41.3	59.0																							
11-Apr	47.4	49.4	52.5	53.7	55.6	56.2	53.7	48.9	44.0	35.2	30.3	29.1	25.3	24.5	25.5	25.7	24.8	25.2	28.6	32.8	34.9	38.0	40.0	46.0	38.6	56.2																							
12-Apr	48.9	71.4	78.1	82.2	85.6	84.4	87.4	91.4	87.9	78.6	76.9	78.8	69.8	67.4	62.0	57.7	52.8	48.9	47.8	58.4	71.9	67.7	70.5	73.5	70.8	91.4																							
13-Apr	73.4	71.7	74.9	80.8	83.6	81.1	72.0	61.5	56.1	52.6	48.8	45.6	42.8	42.9	38.7	35.1	34.6	34.1	37.4	44.4	49.2	55.2	62.6	66.2	56.1	83.6																							
14-Apr	68.8	69.4	72.7	74.3	74.8	76.8	73.3	67.5	60.3	53.7	47.2	41.1	37.0	33.1	30.1	31.9	33.9	38.3	42.8	47.9	51.0	57.0	62.8	67.8	54.7	76.8																							
15-Apr	70.3	72.3	74.6	75.4	76.4	76.5	71.5	67.8	62.5	55.4	48.5	43.1	40.7	36.6	33.7	32.4	30.6	31.1	35.4	38.7	44.4	54.2	60.8	63.9	54.0	76.5																							
16-Apr	62.0	60.9	62.8	65.3	68.5	71.5	70.2	57.6	44.1	35.5	35.1	35.3	34.3	31.1	31.1	31.2	32.0	33.3	36.7	41.3	44.8	46.7	47.4	49.9	47.0	71.5																							
17-Apr	52.5	54.2	56.8	60.5	62.6	63.4	61.7	58.3	48.9	41.7	38.1	36.8	36.0	36.8	37.2	37.4	49.1	81.4	88.1	89.2	86.9	85.7	79.2	85.0	59.5	89.2																							
18-Apr	96.0	90.0	90.6	88.3	85.3	93.0	94.5	87.3	83.6	82.4	82.4	79.5	83.8	81.8	84.4	85.6	88.7	88.5	86.6	90.8	92.7	94.2	93.8	92.4	88.2	96.0																							
19-Apr	98.2	99.0	99.3	98.9	98.3	97.8	97.7	95.7	94.7	92.1	87.0	78.8	75.1	70.6	68.6	65.7	66.0	65.4	65.6	67.4	74.7	72.1	79.2	73.2	82.5	99.3																							
20-Apr	69.4	72.6	73.0	73.9	73.8	72.8	68.9	63.0	53.7	42.2	42.2	44.1	39.7	33.9	31.9	31.5	30.0	31.1	31.9	36.7	42.5	48.2	51.8	53.0	50.5	73.9																							
21-Apr	55.2	60.3	60.5	62.4	64.5	66.1	59.9	48.4	37.8	33.9	32.1	30.0	27.4	28.7	27.8	28.0	27.3	27.0	29.1	35.4	41.8	43.8	45.4	47.5	42.5	66.1																							
22-Apr	49.2	52.5	51.0	55.7	59.1	59.6	54.2	47.2	42.8	39.0	37.8	37.0	36.3	35.3	34.8	34.7	35.8	36.9	38.5	41.0	45.9	48.8	49.8	52.4	44.8	59.6																							
23-Apr	53.6	55.4	55.9	56.0	58.0	58.1	55.6	52.1	49.8	44.7	40.1	37.8	35.5	35.4	35.9	36.7	34.9	34.1	36.2	38.7	39.6	38.4	42.3	45.5	44.6	58.1																							
24-Apr	47.1	54.2	56.7	57.9	59.1	51.9	51.5	49.5	48.6	49.8	73.5	80.7	70.7	60.6	43.9	41.7	41.4	56.7	73.7	81.2	81.4	52.3	64.1	91.7	60.0	91.7																							
25-Apr	89.0	81.0	80.0	79.2	76.9	77.2	71.4	67.8	68.8	68.8	60.6	58.8	58.5	67.6	89.9	89.1	82.1	81.0	73.7	70.5	77.2	80.3	79.4	82.5	75.5	89.9																							
26-Apr	83.8	85.3	87.9	94.3	98.9	99.1	99.4	97.0	94.7	87.6	87.5	78.7	78.0	74.9	69.9	68.1	72.2	75.9	79.0	82.5	86.4	89.4	89.8	92.6	85.5	99.4																							
27-Apr	95.9	96.5	97.5	98.9	99.0	98.6	98.5	92.2	83.0	68.1	60.1	53.5	50.2	44.9	45.9	45.1	41.6	42.3	43.5	49.3	54.9	55.5	59.7	58.7	68.1	99.0																							
28-Apr	57.4	56.2	58.3	58.5	57.1	59.6	56.4	51.0	45.4	38.8	34.7	30.9	27.9	27.1	27.4	29.5	31.2	28.5	27.6	29.0	32.3	34.4	38.2	43.1	40.9	59.6																							
29-Apr	42.6	50.0	70.6	71.8	69.2	63.1	44.7	34.9	32.0	30.1	27.6	25.0	24.6	24.0	23.0	21.7	20.0	20.1	20.7	23.0	25.1	28.5	31.8	35.2	35.8	71.8																							
30-Apr	37.8	39.4	40.9	41.2	35.0	33.8	29.6	25.5	24.2	22.4	21.2	21.2	20.5	20.5	20.6	20.4	20.3	20.6	22.2	25.2	27.4	28.9	29.5	31.7	27.5	41.2																							
																								66.1	68.1	70.3	72.1	73.1	73.1	70.6	66.1	61.1	55.7	52.3	49.6	47.2	45.0	43.9	43.5	43.8	46.0	49.0	52.9	56.8	57.8	60.1	62.8	Diurnal Average	
																								98.2	99.0	99.3	98.9	99.0	99.1	99.4	97.0	94.7	92.1	87.5	80.7	83.8	81.8	89.9	89.1	88.7	88.5	94.0	94.5	93.6	94.2	93.8	92.6	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Firebag - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	183	25.42	25.42
40 - 60	221	30.69	56.11
60 - 80	187	25.97	82.08
80 - 100	129	17.92	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Firebag - April 2023

Maximum Speed: -- km/h on Apr 1 00:00	Maximum Daily Speed Average: 0.0 km/h on Jan 1	Hours in Service: 720
Minimum Speed Value: -- km/h on Apr 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: 720
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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
2-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
3-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
4-Apr	UO	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
6-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
7-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
8-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
9-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
10-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
11-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
12-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
13-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
14-Apr	UO	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
16-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
17-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
18-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
19-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
20-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
21-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
22-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
23-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
24-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
25-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
26-Apr	UO	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-Apr	UO	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
29-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---
30-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	---	---

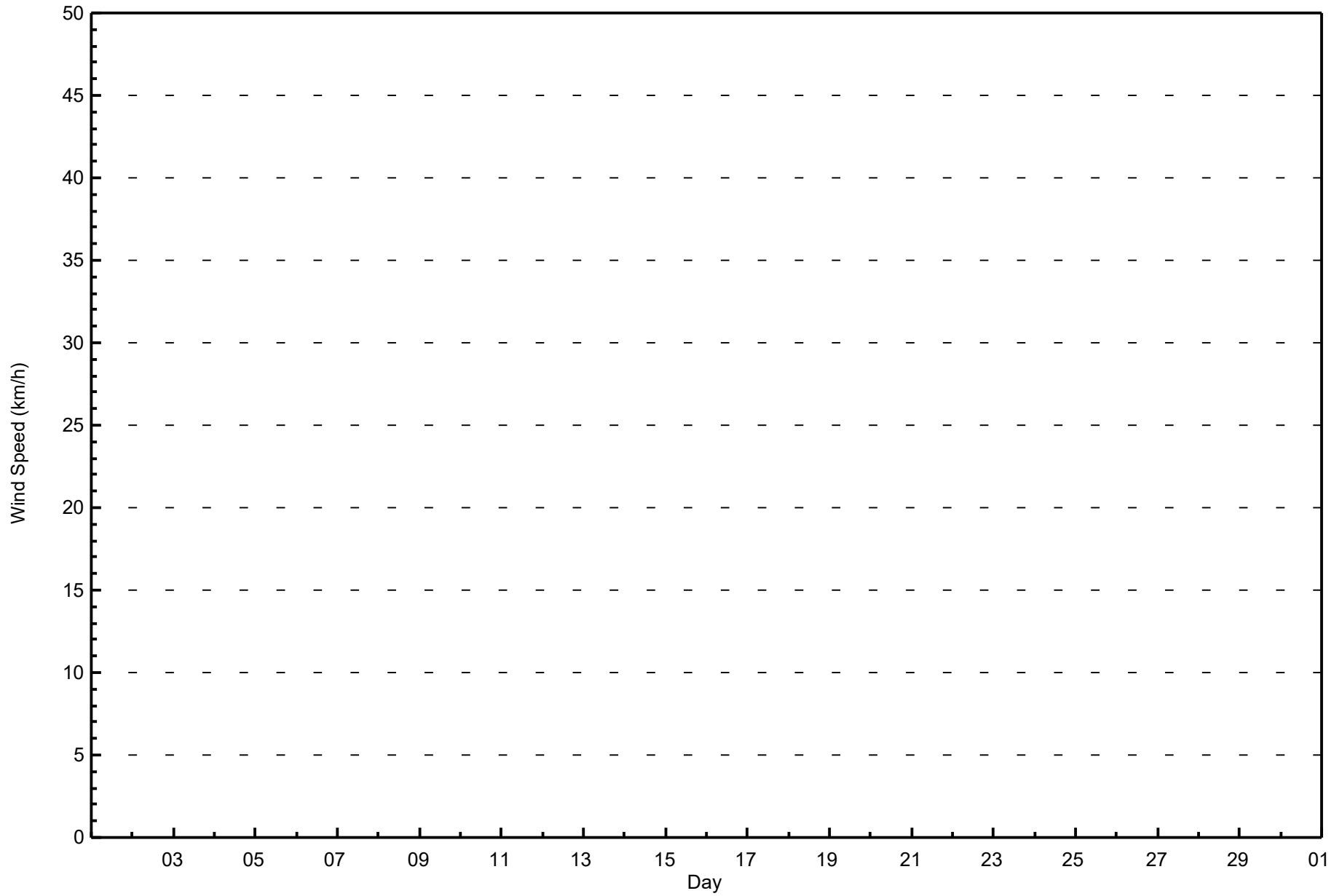
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Diurnal Average
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	Diurnal Maximum

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
Firebag - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Firebag - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
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: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Firebag - April 2023**

Wind Speed 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
Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

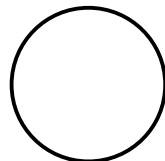
Total Number of Valid Hours: 0

Total Number of Hours: 720

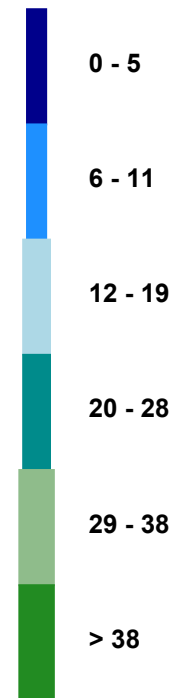


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Firebag



Classes (km/h)



Total Number of Valid Hours: 0



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Firebag - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: -- km/h on Apr 1 00:00	Hours of Data: 0
Minimum Value: -- km/h on Apr 1 00:00	Hours of Missing Data: 720
Percentiles: P ₁ = 0 P ₁₀ = 0 Q ₁ = 0 Median = 0 Q ₃ = 0 P ₉₀ = 0 P ₉₉ = 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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
2-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
3-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
4-Apr	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
6-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
7-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
8-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
9-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
10-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
11-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
12-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
13-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
14-Apr	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
16-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
17-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
18-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
19-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
20-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
21-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
22-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
23-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
24-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
25-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
26-Apr	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-Apr	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
29-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
30-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--

Diurnal Maximum

UO - Unstable Operation



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Firebag - April 2023

Direction of Maximum Speed: -- deg on Apr 1 00:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 0.0 deg on Jan 1	Hours of Data: 0
Direction of Minimum Speed: -- deg on Apr 1 00:00	Direction of Minimum Daily Speed Average: 0.0 deg on Jan 1
Direction of Minimum Daily Speed Average: 0.0 deg on Jan 1	Hours of Missing Data: 720
Monthly Average Direction: -- deg	Percent Operational Time: 0.0

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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
2-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
3-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
4-Apr	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
6-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
7-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
8-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
9-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
10-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
11-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
12-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
13-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
14-Apr	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
16-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
17-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
18-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
19-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
20-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
21-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
22-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
23-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
24-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
25-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
26-Apr	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-Apr	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
29-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
30-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--

Diurnal Average

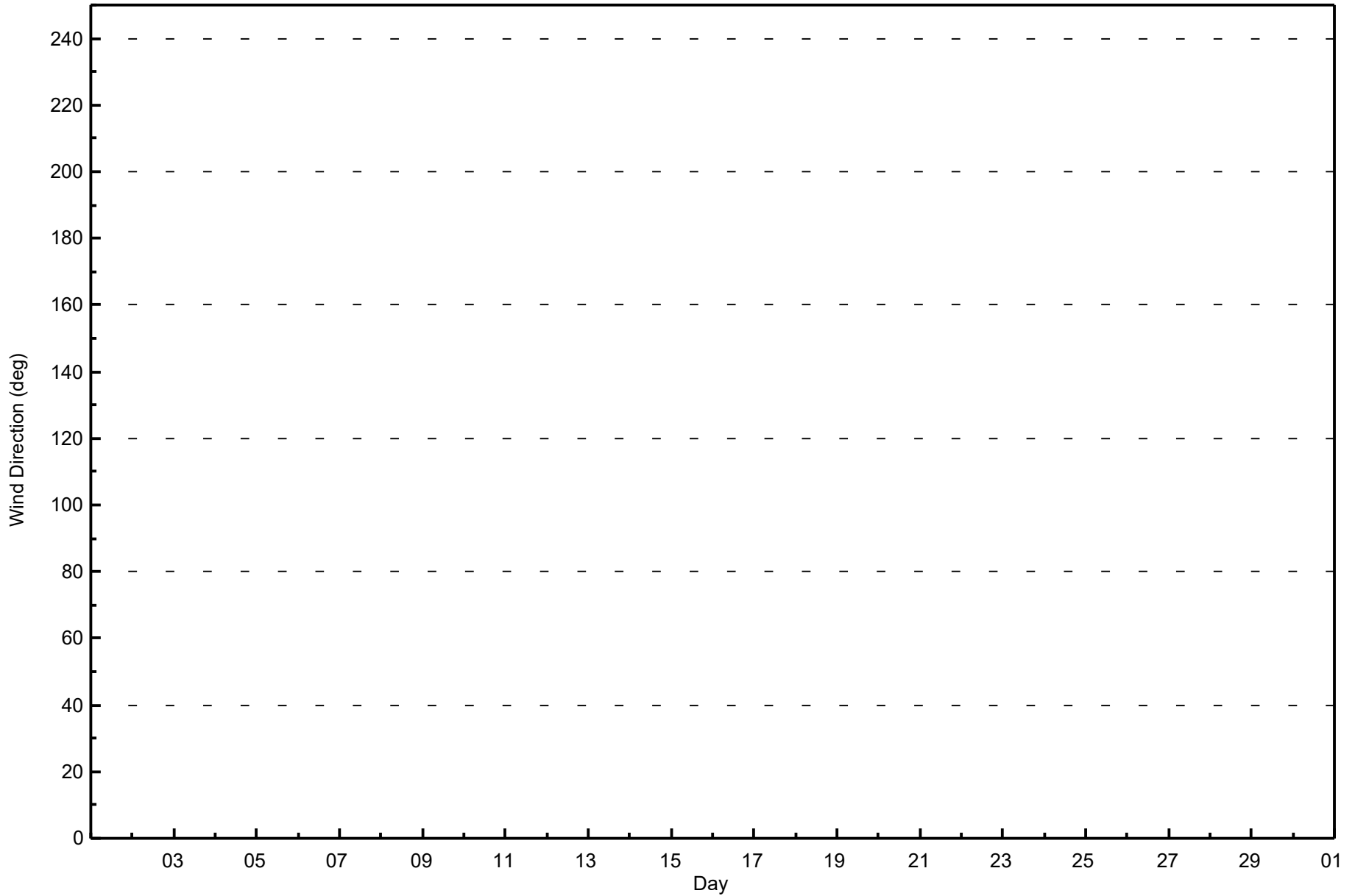
UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Firebag - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Firebag - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: -- deg on Apr 1 00:00	Hours of Data: 0
Minimum Value: -- deg on Apr 1 00:00	Hours of Missing Data: 720
Percentiles: P ₁ = 0 P ₁₀ = 0 Q ₁ = 0 Median = 0 Q ₃ = 0 P ₉₀ = 0 P ₉₉ = 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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	
2-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
3-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
4-Apr	UO	UO	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
6-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
7-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
8-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
9-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
10-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
11-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
12-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
13-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
14-Apr	UO	UO	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
16-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
17-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
18-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
19-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
20-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
21-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
22-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
23-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
24-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
25-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
26-Apr	UO	UO	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-Apr	UO	UO	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-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
29-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--
30-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--

Diurnal Maximum

UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS20 MACKAY RIVER APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)

APRIL 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	685	33	35	99.72	7.1	0	2.8	0
H2S (ppb) Average	681	35	39	99.44	1.7	0	0.4	0
THC (ppm) Average	685	33	35	99.72	2.9	-	2.4	-
NO2 (ppb) Average	685	35	35	100	15.4	0	4.2	-
NO (ppb) Average	685	35	35	100	9	-	1.4	-
NOX (ppb) Average	685	35	35	100	23	-	5.7	-
Temperature 2 m (C) Average	720	0	0	100	21.3	-	13.3	-
Relative Humidity (%) Average	720	0	0	100	98.2	-	93.3	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	21	-	16	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-
Precipitation (mm) Total	720	0	0	100	1.9	-	6.8	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)
 APRIL 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	685	0.54	1.1	-	0	0	0.1	0.2	0.4	1.4	7.1
H2S (ppb) Average	681	0.2	0.1	-	0	0.1	0.1	0.2	0.3	0.3	1.7
THC (ppm) Average	685	2.23	0.1	-	2.1	2.2	2.2	2.2	2.3	2.3	2.9
NO2 (ppb) Average	685	1.38	1.9	-	0.2	0.4	0.5	0.8	1.3	2.8	15.4
NO (ppb) Average	685	0.14	0.5	-	0	0	0	0	0.1	0.2	9
NOX (ppb) Average	685	1.51	2.2	-	0.2	0.4	0.5	0.8	1.4	3.4	23
Temperature 2 m (C) Average	720	3.56	6.2	-	-14.7	-4	-0.7	3.1	8.1	11.7	21.3
Relative Humidity (%) Average	720	57.76	22.9	-	18.4	27.8	37	56.2	79.3	89.7	98.2
Wind Speed 10 m (km/h) Average	719	8	4	-	1	3	5	7	10	14	21
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	720	-	-	19.39	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION -MACKAY RIVER (AMS20)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2, THC	19 Apr 2023 13:00	19 Apr 2023 14:00	2	Maintenance - sample manifold cleaned
H2S	05 Apr 2023 16:00	05 Apr 2023 16:00	1	Unstable Operation - excessive baseline drift
H2S	06 Apr 2023 23:00	06 Apr 2023 23:00	1	Unstable Operation - excessive baseline drift
Wind Speed, Wind Direction	29 Apr 2023 07:00	29 Apr 2023 07:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Summary of Hour Averages

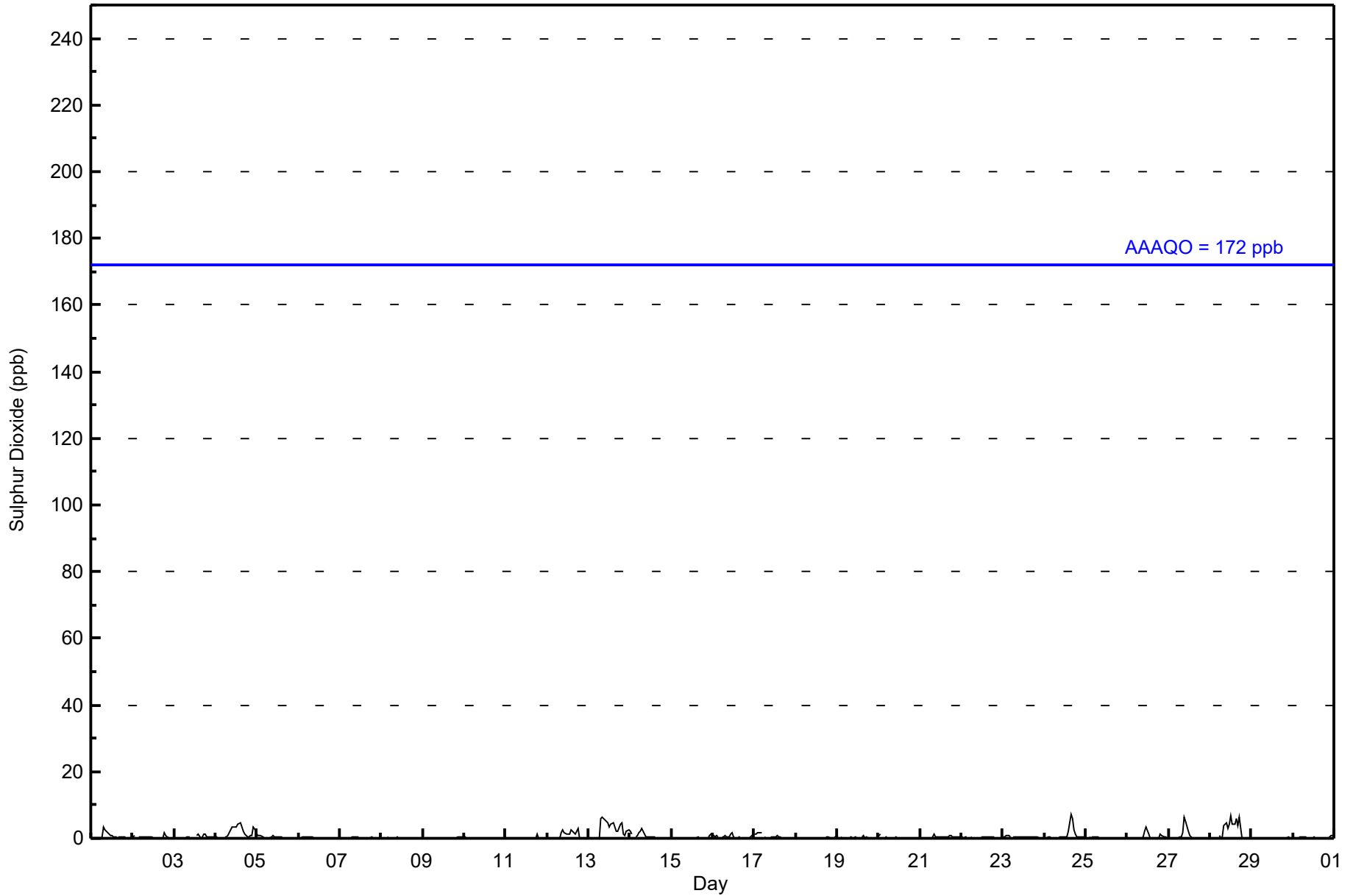
Sulphur Dioxide (SO₂) - ppb
Mackay River - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																																								
Maximum Value: 7.1 ppb on Apr 24 16:00		Maximum Daily Average: 2.8 ppb on Apr 13				Hours of Data:		685																																								
Minimum Value: 0.0 ppb on Apr 2 16:00		Minimum Daily Average: 0.0 ppb on Apr 29				Hours of Missing Data:		35																																								
Maximum Diurnal Average: 1.0 ppb at hour 10		Minimum Diurnal Average: 0.2 ppb at hour 22				Hours of Calibration:		33																																								
Monthly Average: 0.54 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 1.4 P ₉₉ = 5.8				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-Apr	0.0	Z	0.0	0.0	0.1	0.1	0.6	3.3	2.4	1.8	1.2	1.0	0.8	0.4	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.4	0.6	3.3																						
2-Apr	0.5	0.7	Z	0.6	0.5	0.6	0.5	0.4	0.4	0.5	0.4	0.2	0.2	0.1	0.1	0.0	0.1	0.1	1.6	0.8	0.4	0.1	0.1	0.1	0.4	1.6																						
3-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.4	0.4	C	C	C	0.9	1.3	0.1	0.4	1.4	1.3	0.2	0.2	0.4	0.3	0.3	0.4	1.4																						
4-Apr	0.3	0.2	0.1	0.2	Z	0.3	0.5	0.8	1.8	3.5	3.2	3.4	3.5	4.1	4.5	3.4	2.1	1.3	0.4	0.4	0.7	0.7	3.5	2.3	1.8	4.5																						
5-Apr	1.0	0.8	0.8	0.4	0.1	Z	0.0	0.2	0.3	1.0	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.2	0.3	1.0																						
6-Apr	Z	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.4																						
7-Apr	0.2	Z	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.3																						
8-Apr	0.2	0.2	Z	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2																						
9-Apr	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	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.5	0.3	0.3	0.1	0.5																						
10-Apr	0.3	0.2	0.2	0.1	Z	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	0.0	0.1	0.1	0.1	0.0	0.1	0.3																						
11-Apr	0.1	0.1	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	1.1	0.2	0.0	0.0	0.0	0.0	0.1	1.1																						
12-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.5	1.6	1.1	1.1	1.1	2.6	1.7	1.3	2.2	3.0	0.0	0.0	0.0	0.0	0.0	0.9	3.0																						
13-Apr	0.0	Z	0.0	0.1	0.0	0.0	0.1	6.1	6.2	5.5	5.1	4.5	3.4	4.1	4.5	3.3	2.2	2.3	4.4	4.8	1.4	1.0	2.2	2.7	2.8	6.2																						
14-Apr	2.1	1.3	Z	0.5	0.9	1.6	2.0	2.9	1.4	0.6	0.5	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.7	2.9																						
15-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.8	1.4	0.2	1.4																						
16-Apr	0.9	0.5	0.6	0.5	Z	0.5	0.5	0.7	0.6	0.6	1.1	1.6	0.3	0.0	0.2	0.3	0.2	0.0	0.0	0.1	0.0	0.1	0.6	1.3	0.5	1.6																						
17-Apr	1.2	1.2	1.8	1.7	1.7	Z	0.3	0.1	0.2	0.2	0.4	0.4	0.5	0.7	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.5	1.8																						
18-Apr	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	0.5	0.4	0.1	0.0	0.0	0.3	0.1	0.5																						
19-Apr	0.8	Z	0.4	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.6	M	M	0.5	0.8	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.2	0.8																						
20-Apr	0.7	1.1	Z	0.2	0.2	0.0	0.0	0.2	0.2	0.0	0.3	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	0.2	1.1																						
21-Apr	0.1	0.2	0.2	Z	0.2	0.2	0.2	0.6	1.2	0.5	0.5	0.5	0.3	0.3	0.3	0.4	0.6	0.7	0.7	0.4	0.3	0.3	0.3	0.4	0.4	1.2																						
22-Apr	0.3	0.2	0.3	0.2	Z	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.2	0.4																						
23-Apr	0.2	0.3	0.7	0.8	0.4	Z	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.5	0.4	0.5	0.3	0.4	0.3	0.4	0.3	0.1	0.1	0.0	0.4	0.8																						
24-Apr	Z	0.2	0.2	0.3	0.1	0.0	0.0	0.2	0.1	0.2	0.3	0.2	0.4	0.5	2.1	7.1	5.8	2.4	1.2	0.5	0.6	0.4	0.2	0.3	1.0	7.1																						
25-Apr	0.4	Z	0.2	0.1	0.2	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	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.4																						
26-Apr	0.1	0.1	Z	0.0	0.1	0.1	0.0	0.0	0.0	0.3	2.2	3.3	1.3	0.1	0.0	0.0	0.0	0.0	0.1	1.1	1.0	0.6	0.5	0.2	0.5	3.3																						
27-Apr	0.1	0.0	0.0	Z	0.0	0.0	0.6	0.6	1.9	6.4	5.0	2.2	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	6.4																						
28-Apr	0.1	0.1	0.1	0.1	Z	0.9	0.1	0.4	4.0	4.8	2.9	4.4	6.7	4.3	4.0	5.8	4.0	6.5	0.0	0.1	0.1	0.1	0.1	0.0	2.2	6.7																						
29-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.3																						
30-Apr	Z	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.6	0.2	0.8																						
																								0.4	0.3	0.2	0.3	0.2	0.2	0.3	0.6	0.9	1.0	0.9	0.9	0.8	0.7	0.8	0.9	0.6	0.6	0.6	0.4	0.2	0.2	0.4	0.4	Diurnal Average
																								2.1	1.3	1.8	1.7	1.7	1.6	2.0	6.1	6.2	6.4	5.1	4.5	6.7	4.3	4.5	7.1	5.8	6.5	4.4	4.8	1.4	1.0	3.5	2.7	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 (SO₂) - ppb
Mackay River - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mackay River - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	685	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Mackay River - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	21	31	28	24	56	147	102	57	55	19	27	35	31	28	11	12	684
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
Totals	21	31	28	24	56	147	102	57	55	19	27	35	31	28	11	12	684

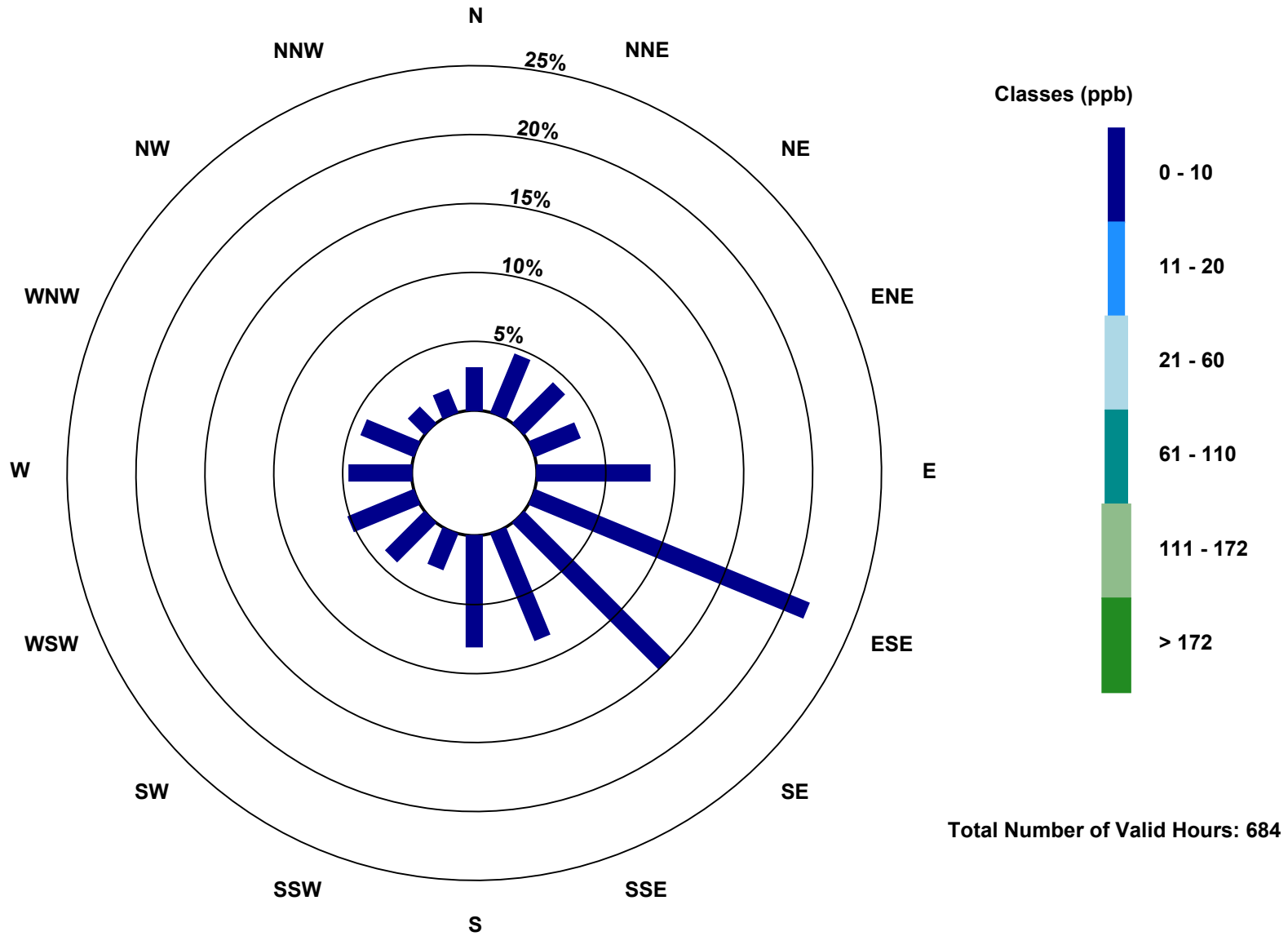
Total Number of Valid Hours: 684

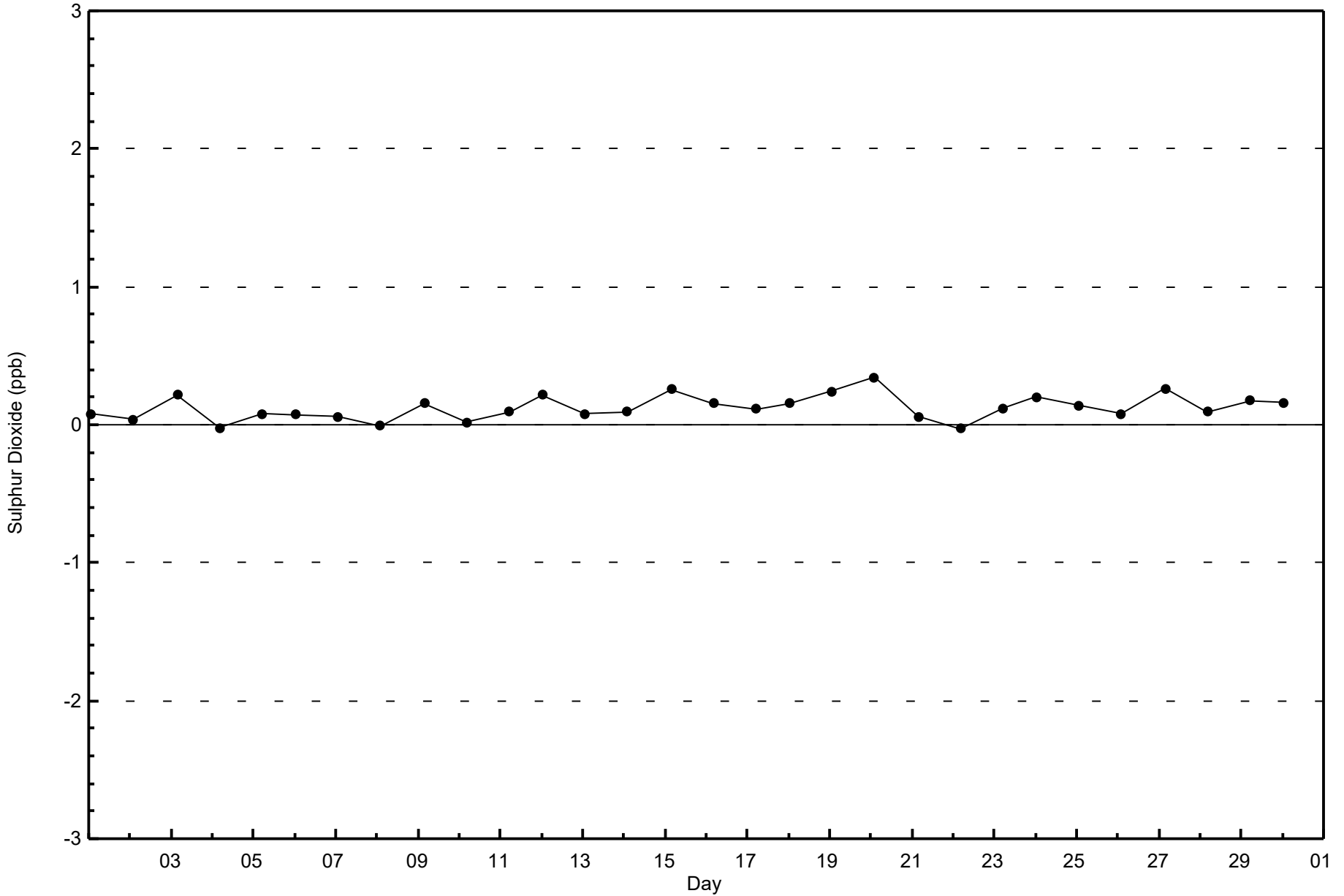
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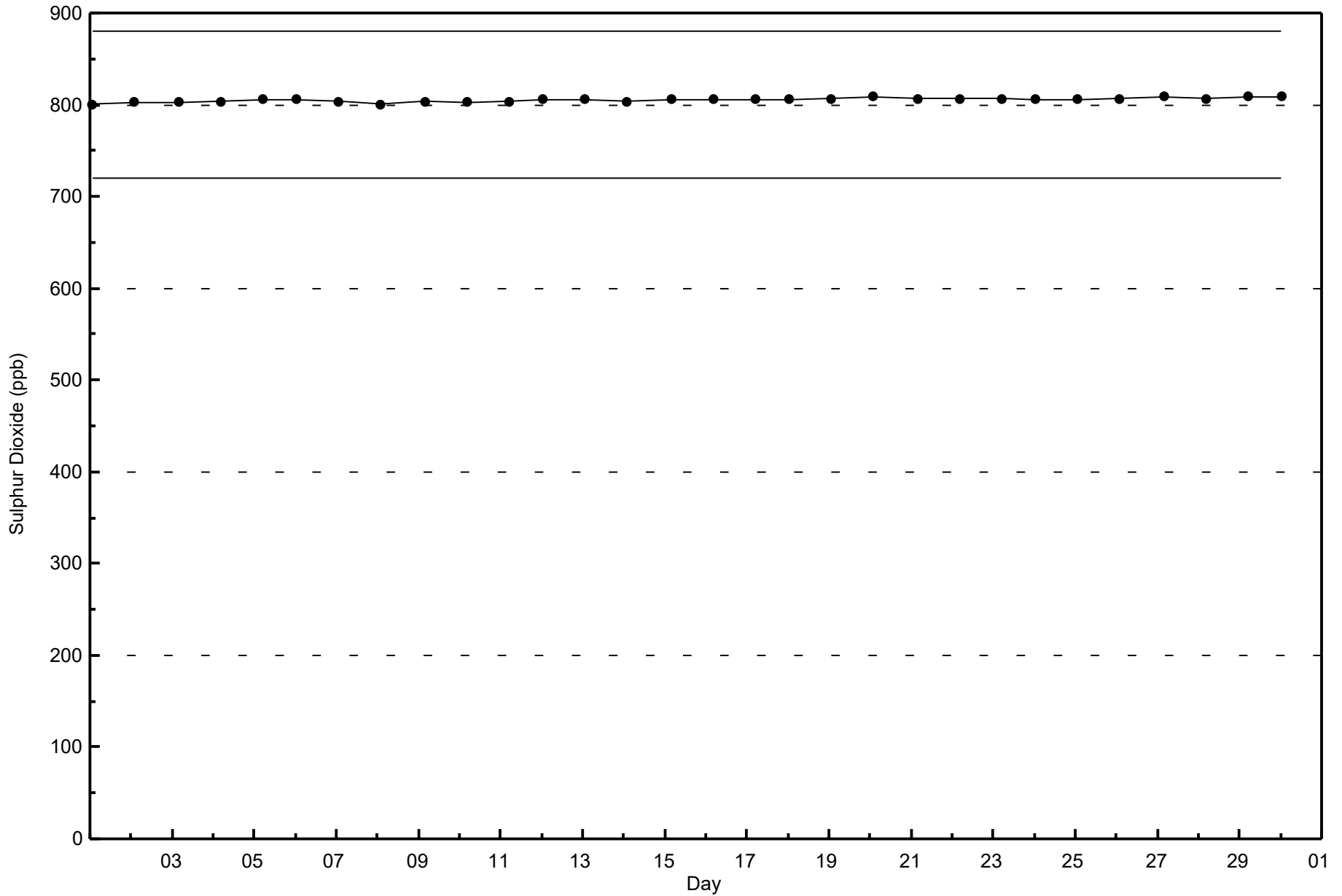


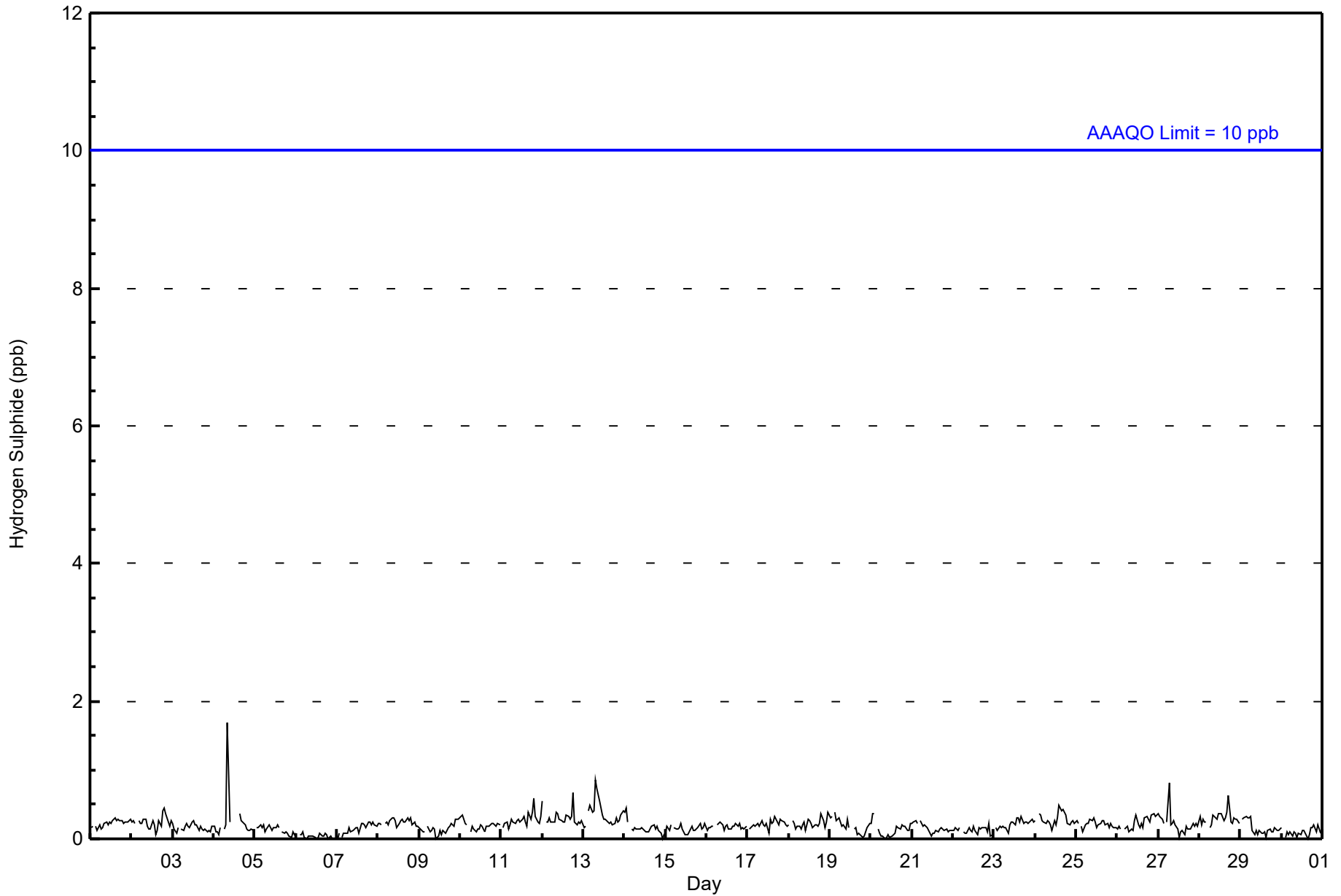
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Mackay River











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Mackay River - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	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: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	22	31	28	24	56	145	97	58	55	17	27	35	33	26	11	15	680
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
Totals	22	31	28	24	56	145	97	58	55	17	27	35	33	26	11	15	680

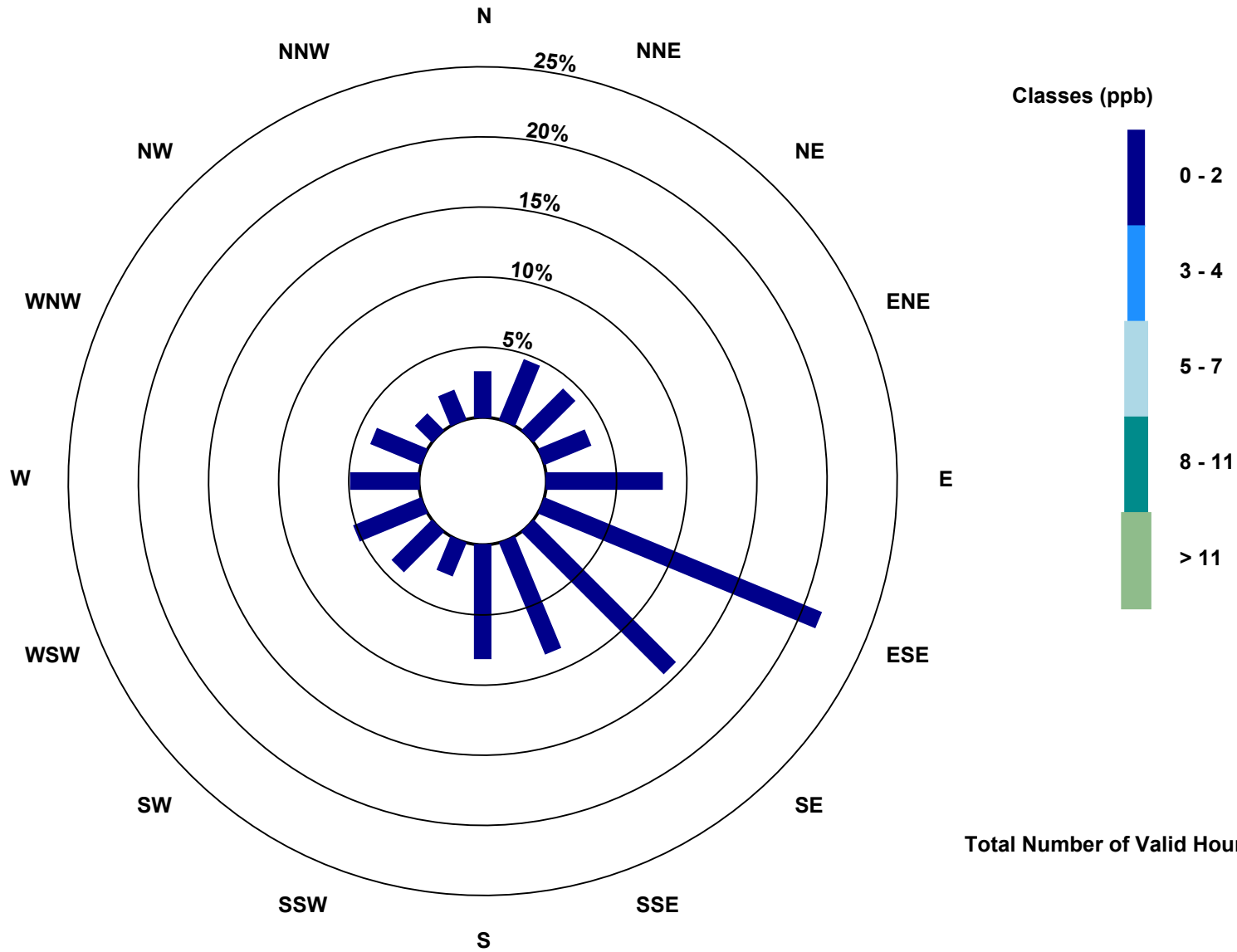
Total Number of Valid Hours: 680

Total Number of Hours: 720

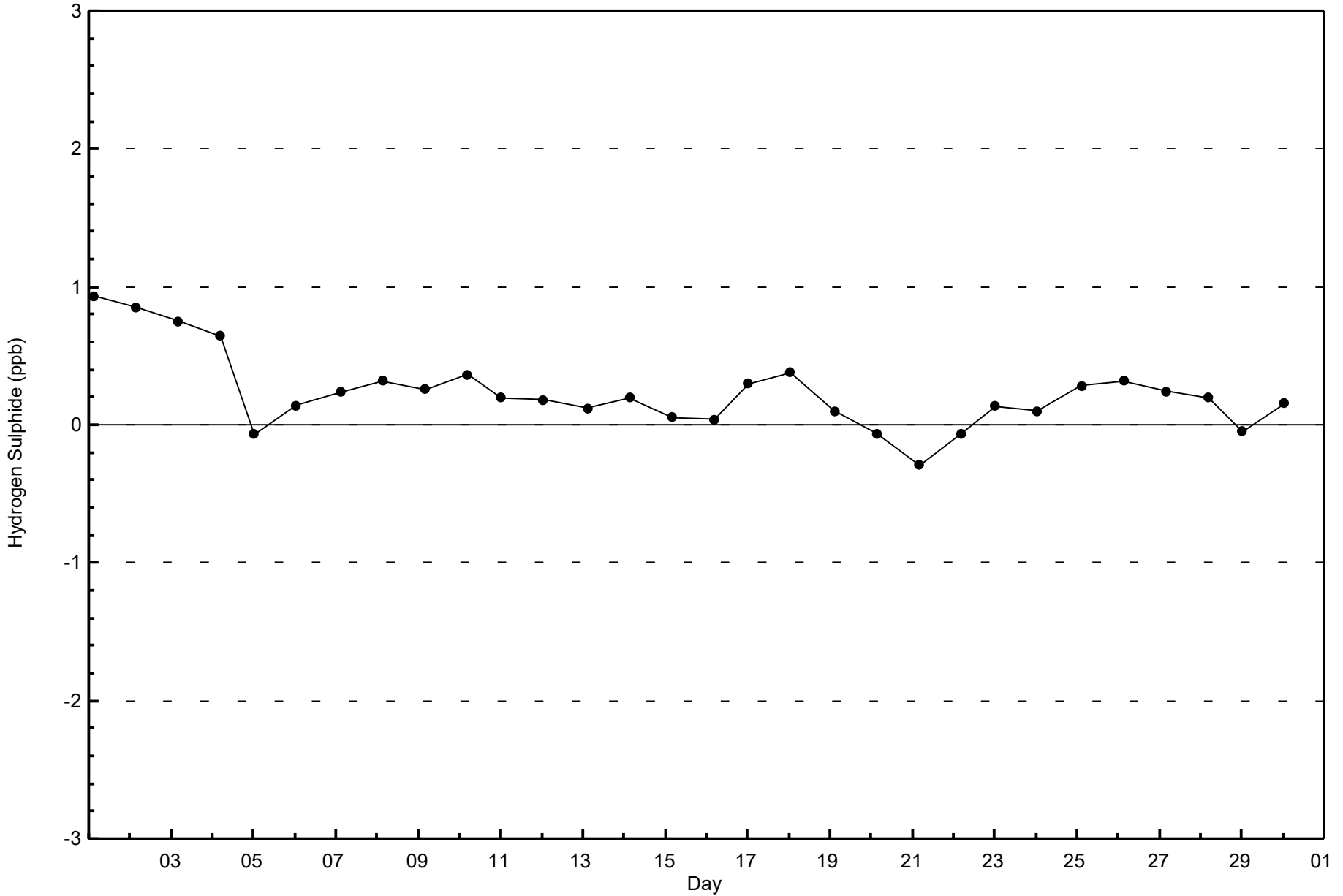


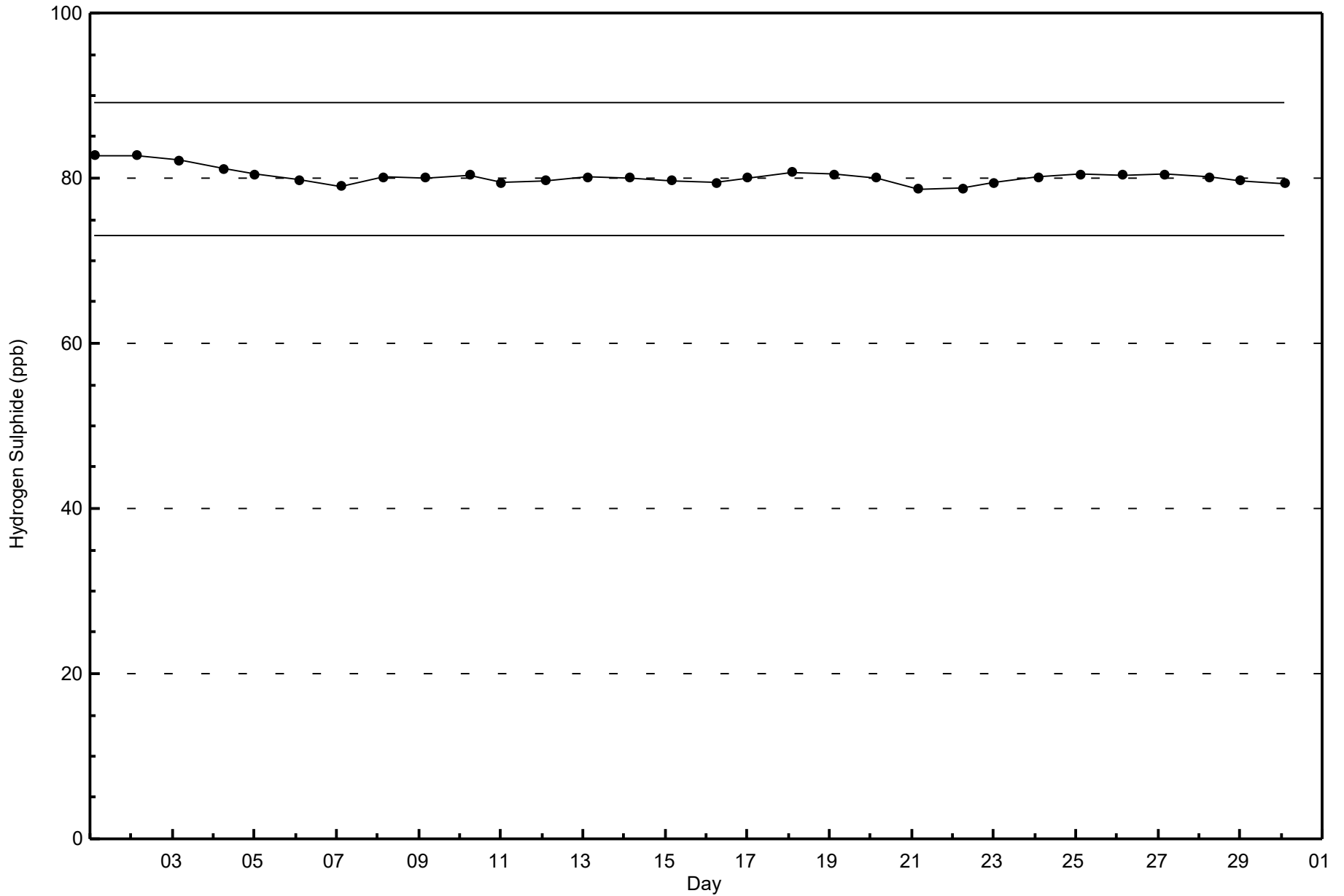
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Mackay River



Total Number of Valid Hours: 680

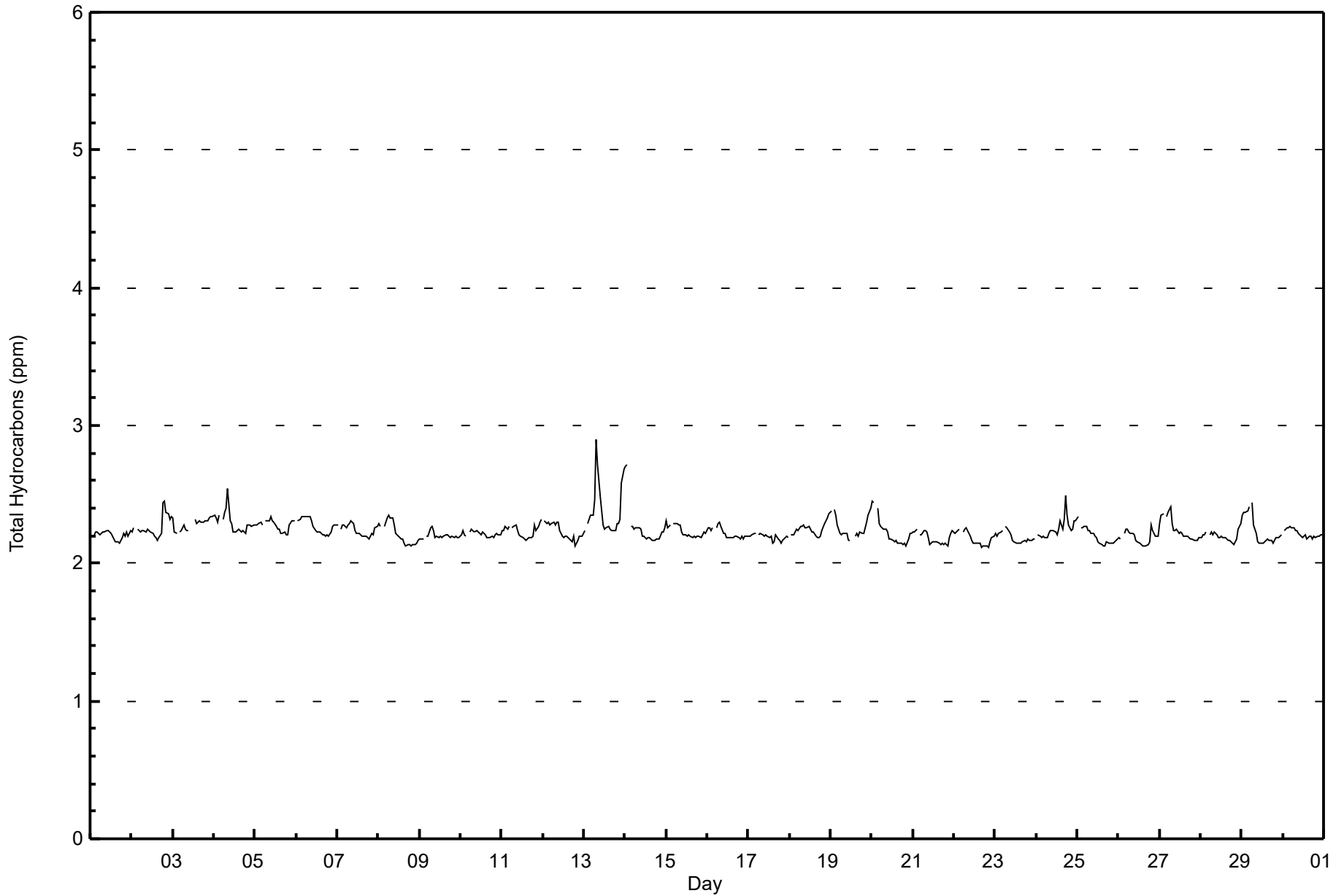






Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Mackay River - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mackay River - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	685	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Mackay River - April 2023

Concentration 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	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	21	31	28	24	56	147	102	57	55	19	27	35	31	28	11	12	684
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
Totals	21	31	28	24	56	147	102	57	55	19	27	35	31	28	11	12	684

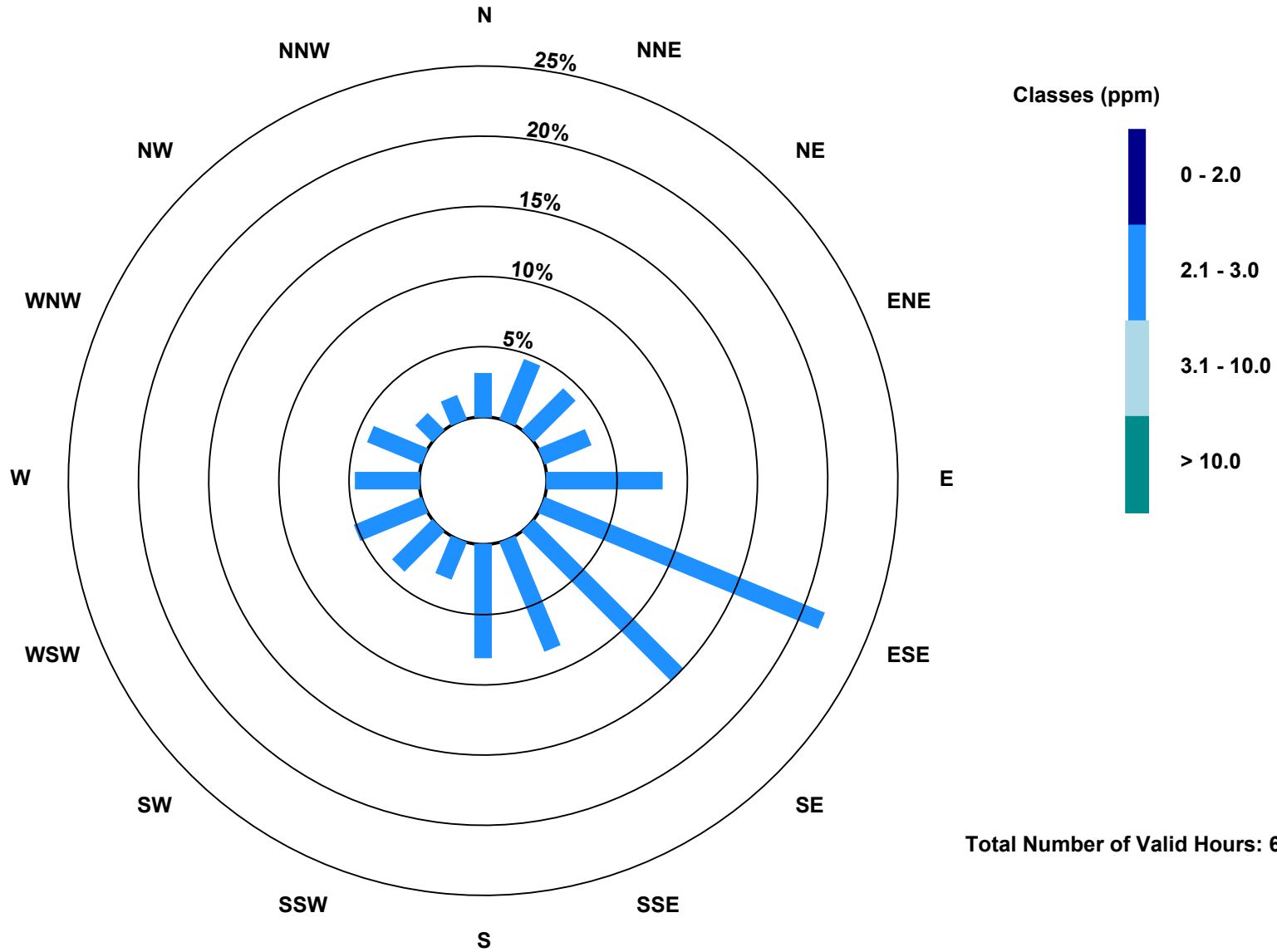
Total Number of Valid Hours: 684

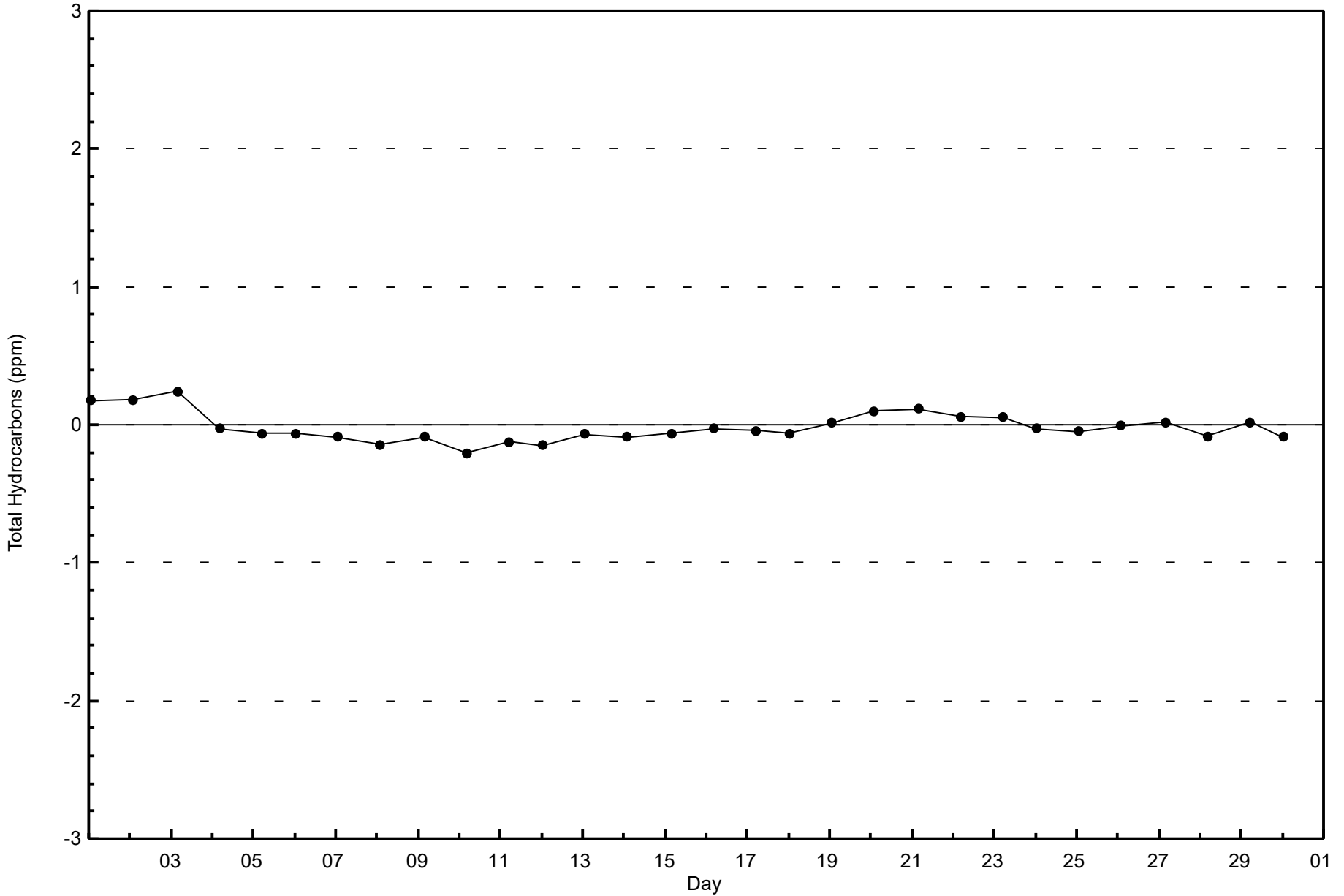
Total Number of Hours: 720

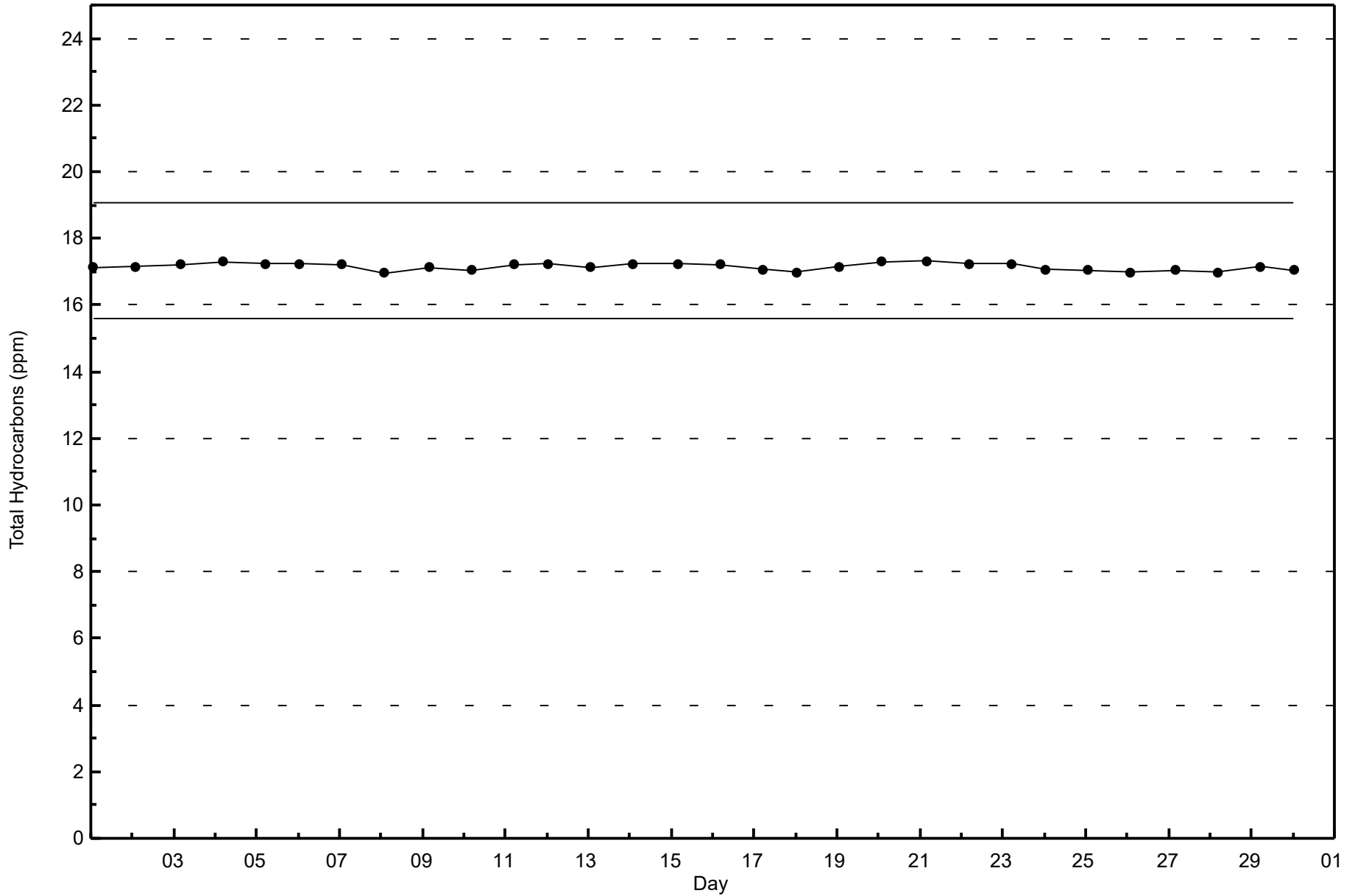


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Mackay River









Wood Buffalo Environmental Association
Summary of Hour Averages

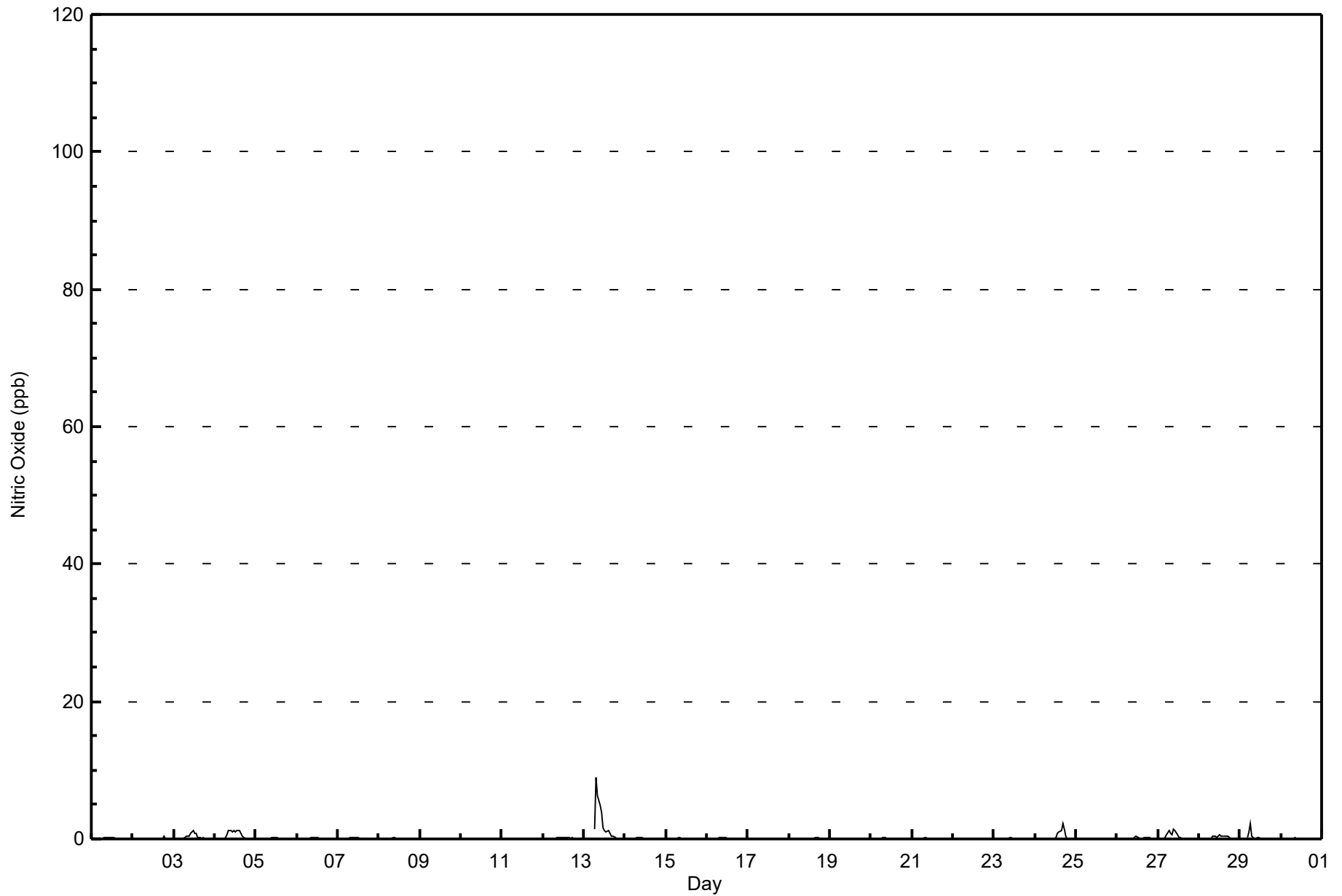
Nitric Oxide (NO) - ppb
Mackay River - April 2023

Maximum Value: 9.0 ppb on Apr 13 08:00		Maximum Daily Average: 1.4 ppb on Apr 13		Hours in Service: 720																						
Minimum Value: 0.0 ppb on Apr 3 04:00		Minimum Daily Average: 0.0 ppb on Apr 17		Hours of Data: 685																						
Maximum Diurnal Average: 0.4 ppb at hour 8		Minimum Diurnal Average: 0.0 ppb at hour 23		Hours of Missing Data: 35																						
Monthly Average: 0.14 ppb		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 = 1.5		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-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.2	0.2	0.2	0.2	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	0.1	0.2
2-Apr	Z	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	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.5
3-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.5	0.9	1.3	0.8	0.7	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	1.3
4-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.6	1.2	1.2	1.0	1.2	1.1	1.1	1.2	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.2
5-Apr	0.0	0.0	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
6-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
7-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.2	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	0.0	0.1	0.2
8-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	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-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10-Apr	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
11-Apr	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
12-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3
13-Apr	0.0	0.0	0.0	0.0	0.0	Z	1.5	9.0	6.4	5.0	3.9	1.7	1.3	1.0	1.2	0.8	0.4	0.4	0.3	0.1	0.0	0.0	0.0	0.0	1.4	9.0
14-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.2	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	0.1	0.3
15-Apr	0.0	Z	0.0	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	0.0	0.0	0.0	0.0	0.1
16-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.2	0.2	0.2	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	0.1	0.2
17-Apr	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
18-Apr	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	0.0	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2
19-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-Apr	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	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
21-Apr	0.0	Z	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	0.0	0.0	0.0	0.0	0.1
22-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
23-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.1
24-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.7	0.9	1.3	2.2	1.5	0.4	0.1	0.0	0.0	0.0	0.0	0.3	2.2
25-Apr	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
26-Apr	Z	0.0	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	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.3
27-Apr	0.0	Z	0.1	0.1	0.1	0.5	1.2	0.7	0.5	1.4	1.1	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.4
28-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.3	0.4	0.7	0.4	0.4	0.5	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7
29-Apr	0.0	0.0	0.0	Z	0.1	1.0	2.2	0.4	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	0.2	2.2
30-Apr	0.0	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.1
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Mackay River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	22	31	26	25	57	145	102	55	56	17	28	35	31	28	11	15	684
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
Totals	22	31	26	25	57	145	102	55	56	17	28	35	31	28	11	15	684

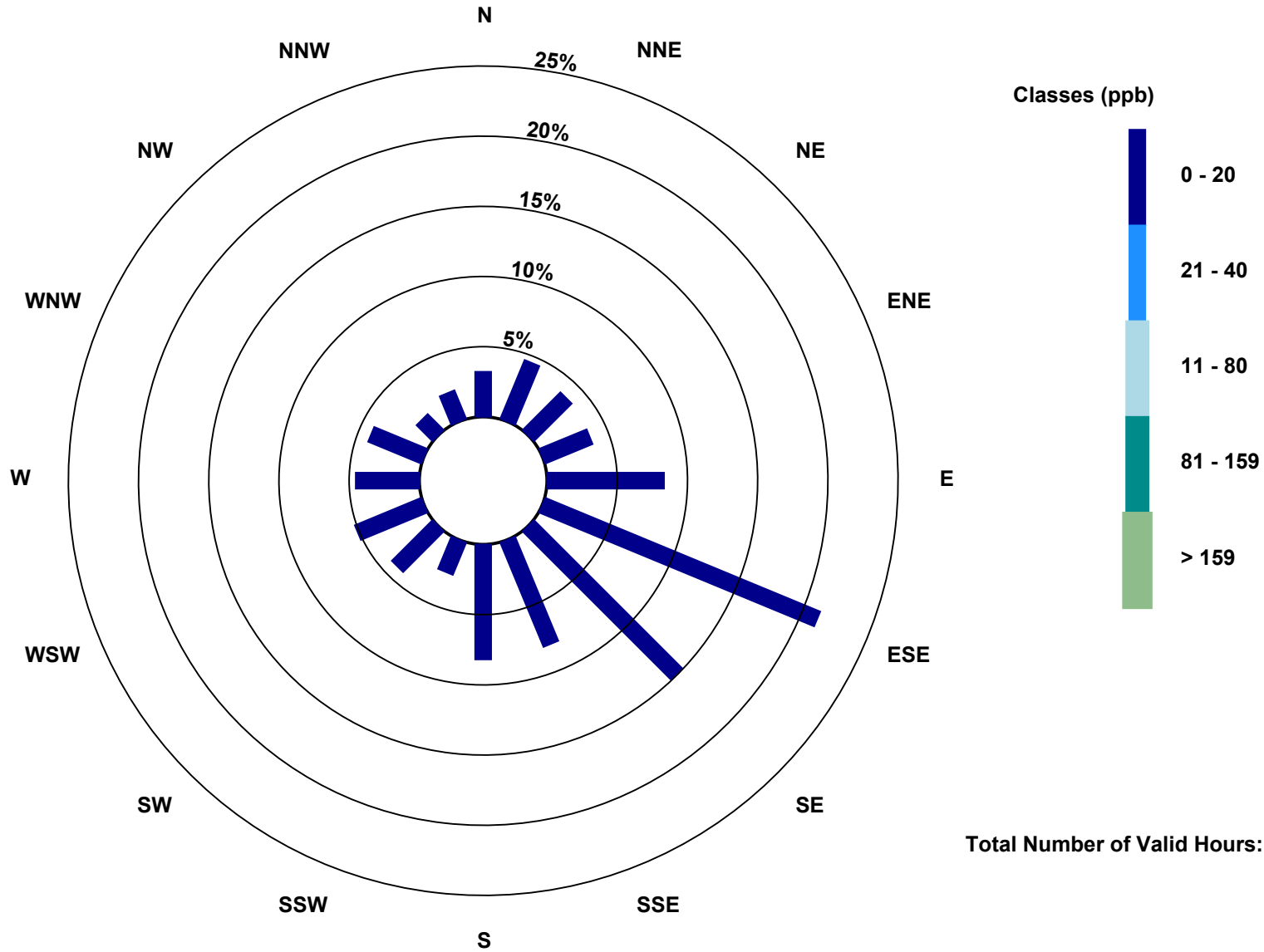
Total Number of Valid Hours: 684

Total Number of Hours: 720

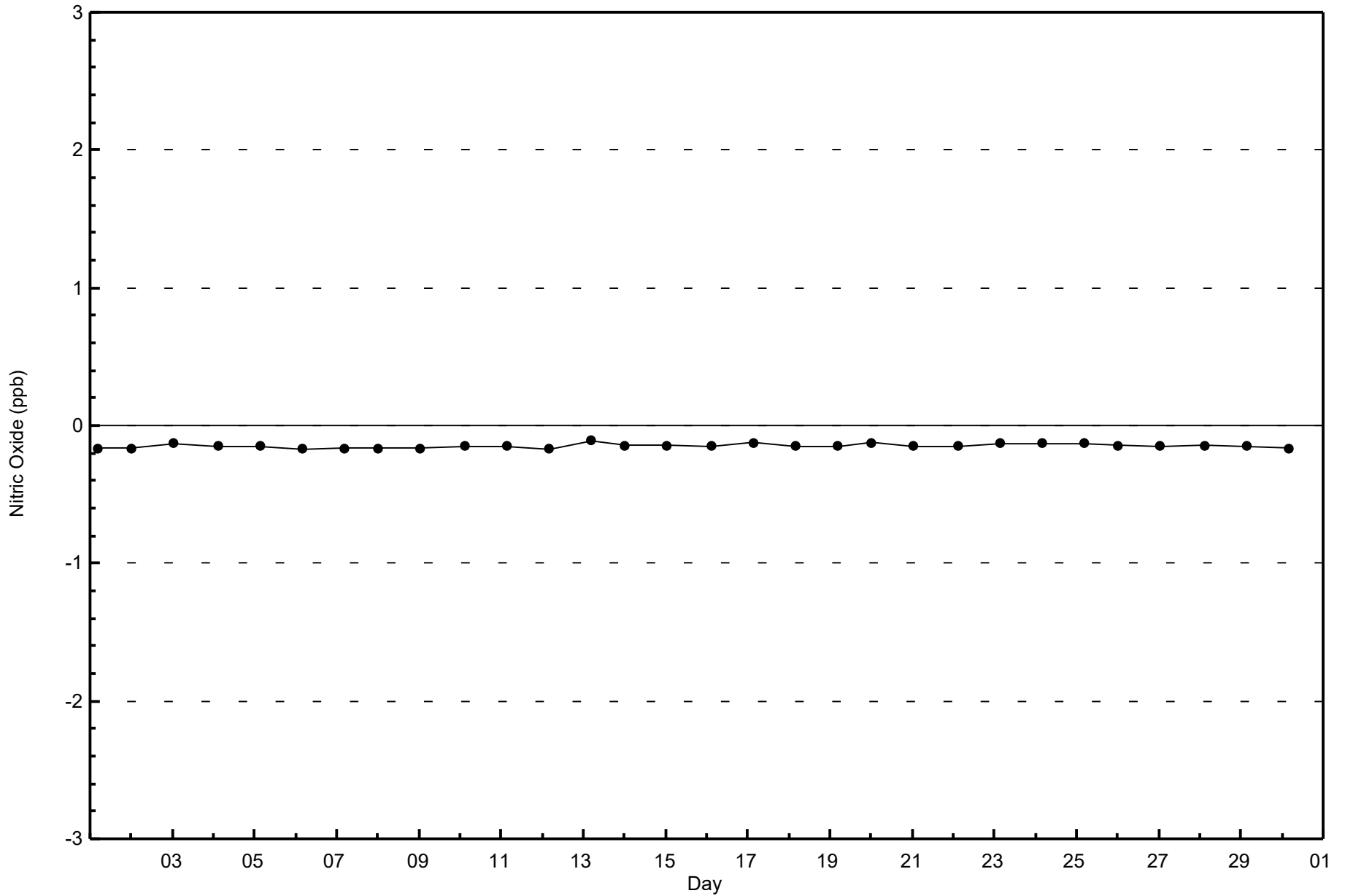


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Mackay River



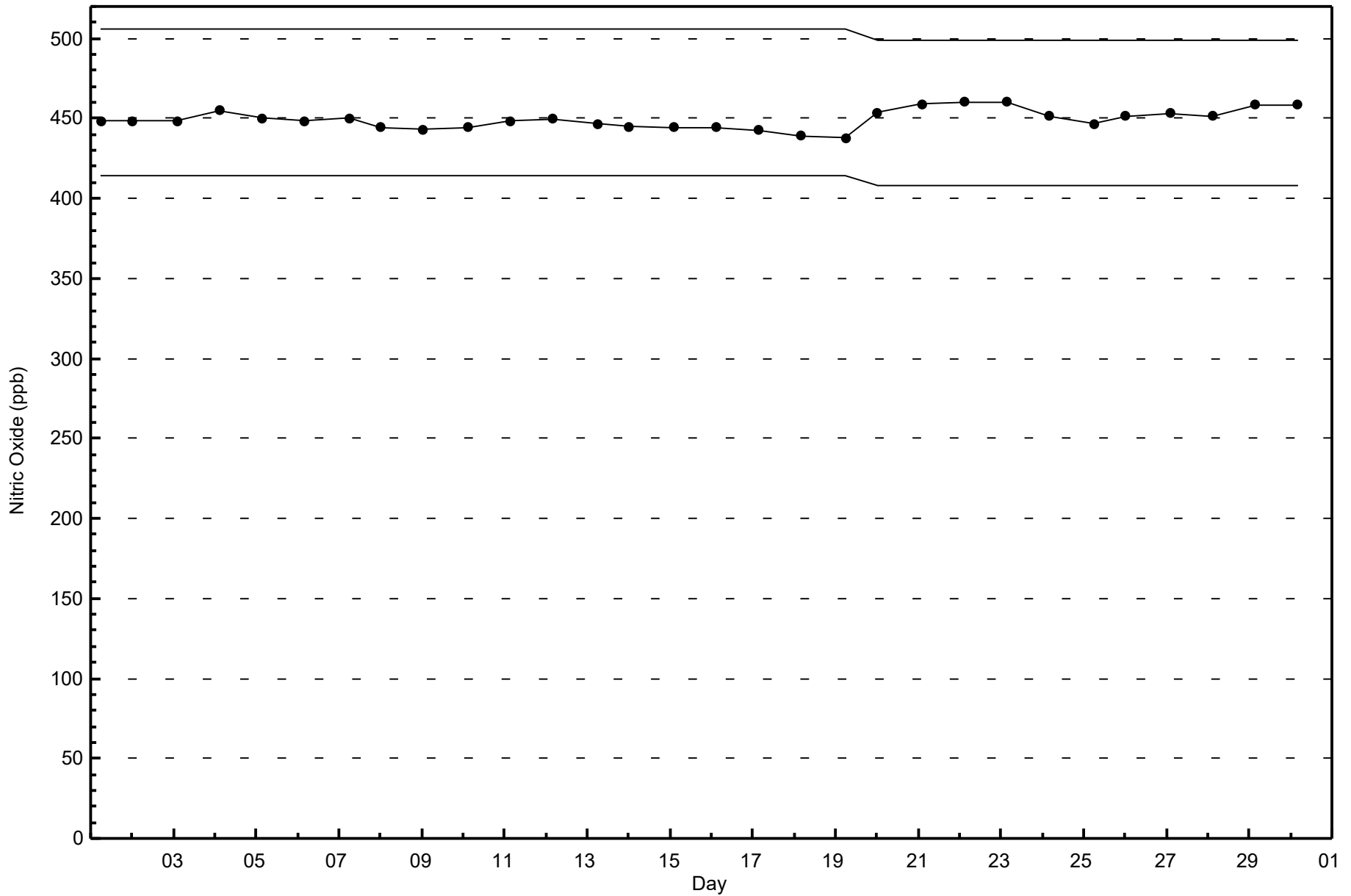
Total Number of Valid Hours: 684





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Mackay River - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

Mackay River - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 15.4 ppb on Apr 2 20:00	Maximum Daily Average: 4.2 ppb on Apr 13		Hours of Data:	685
Minimum Value: 0.2 ppb on Apr 12 04:00	Minimum Daily Average: 0.4 ppb on Apr 11		Hours of Missing Data:	35
Maximum Diurnal Average: 2.0 ppb at hour 3	Minimum Diurnal Average: 1.0 ppb at hour 14		Hours of Calibration:	35
Monthly Average: 1.38 ppb	Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 0.5 Median = 0.8 Q ₃ = 1.3 P ₉₀ = 2.8 P ₉₉ = 9.8		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-Apr	0.7	0.6	0.6	0.6	0.8	Z	1.0	1.4	1.2	1.2	1.1	1.2	1.5	1.6	1.4	1.3	1.2	1.4	1.2	2.4	1.0	0.9	1.0	1.3	1.2	2.4	
2-Apr	Z	1.6	1.6	1.5	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.8	12.5	15.4	8.9	7.9	7.5	8.5	3.5	15.4	
3-Apr	7.0	Z	1.6	1.5	1.2	1.8	4.0	3.0	1.9	1.7	2.2	2.3	2.3	1.7	1.5	1.2	1.1	1.5	1.5	1.3	1.3	1.9	2.4	2.4	2.1	7.0	
4-Apr	2.2	2.0	Z	1.6	1.6	1.9	1.9	2.0	2.4	2.4	2.2	2.2	2.3	2.5	2.7	2.5	2.0	1.7	1.3	1.2	1.1	1.0	1.3	1.0	1.9	2.7	
5-Apr	0.9	0.9	0.9	Z	1.0	1.1	1.1	1.2	1.4	1.7	1.5	1.7	1.8	1.6	1.4	1.1	1.2	1.1	1.1	1.0	0.8	0.8	1.0	1.1	1.2	1.8	
6-Apr	1.3	1.7	2.0	2.3	Z	2.5	2.5	2.7	2.5	1.9	1.3	1.2	1.1	1.0	1.0	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.9	0.9	1.4	2.7	
7-Apr	0.9	0.9	0.8	0.8	0.8	Z	1.1	1.1	1.2	1.2	1.3	1.2	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.2	1.0	1.3	
8-Apr	Z	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.8	1.4	
9-Apr	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.5	0.7
10-Apr	0.9	0.9	Z	0.6	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	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.9	0.9
11-Apr	0.4	0.4	0.4	Z	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	0.5	0.8	0.6	0.4	0.3	0.3	0.3	0.4	0.8	
12-Apr	0.3	0.4	0.3	0.2	Z	0.3	0.3	0.3	1.0	0.9	0.7	0.6	0.6	0.6	0.9	0.8	0.7	1.0	1.3	0.4	0.4	0.2	0.2	0.2	0.5	1.3	
13-Apr	0.2	0.2	0.2	0.2	0.3	Z	4.5	14.0	12.4	8.5	7.0	3.9	3.2	3.0	3.7	3.0	2.2	3.2	4.9	5.4	3.4	3.0	5.0	5.7	4.2	14.0	
14-Apr	Z	6.4	2.9	0.7	0.7	0.8	1.0	1.5	1.1	0.9	0.8	0.7	0.7	0.8	0.7	0.7	0.9	1.0	0.7	0.6	0.6	0.6	0.6	0.6	1.1	6.4	
15-Apr	0.6	Z	0.5	0.5	0.5	0.5	0.5	0.8	0.9	0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.8	1.0	1.0	0.7	1.0	
16-Apr	0.9	0.8	Z	0.9	1.0	1.1	1.3	1.5	1.4	1.2	1.1	1.1	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.8	0.9	1.5	
17-Apr	0.7	0.8	0.9	Z	0.8	0.7	0.7	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.8	1.1	
18-Apr	0.5	0.4	0.4	0.4	Z	0.4	0.4	0.5	0.6	0.5	0.5	0.6	0.5	0.6	0.5	1.3	1.5	2.4	2.1	2.4	4.2	3.1	8.2	10.4	1.8	10.4	
19-Apr	8.6	9.7	10.9	8.3	4.9	Z	0.7	0.6	0.6	0.6	C	C	C	C	C	0.7	0.4	0.5	0.3	0.2	1.1	3.5	4.9	8.2	3.6	10.9	
20-Apr	Z	8.8	6.7	5.2	3.5	1.8	0.9	0.8	0.6	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.3	1.5	8.8	
21-Apr	0.3	Z	0.3	0.3	0.3	0.4	0.5	0.8	0.8	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.8	
22-Apr	0.3	0.3	Z	0.3	0.3	0.4	0.5	0.6	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.7	
23-Apr	0.5	0.6	0.7	Z	0.7	0.7	0.9	1.1	1.1	1.1	1.0	0.8	0.8	1.0	0.9	0.9	0.8	0.7	0.8	0.8	0.7	0.6	0.6	0.7	0.8	1.1	
24-Apr	0.6	0.7	0.7	0.8	Z	0.7	0.8	0.9	0.8	0.9	1.0	0.7	0.9	2.3	3.6	5.5	9.0	12.1	6.3	3.0	2.1	2.5	2.6	2.6	2.7	12.1	
25-Apr	2.9	2.2	1.2	0.8	0.8	Z	0.8	0.8	0.9	0.8	0.8	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.7	2.9	
26-Apr	Z	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.4	0.9	1.2	0.7	0.4	0.4	0.3	0.9	1.1	2.1	4.4	3.5	2.8	2.2	2.2	1.1	4.4	
27-Apr	7.0	Z	7.9	5.4	3.4	2.7	3.5	1.9	1.9	4.7	4.2	2.1	1.2	0.9	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	2.2	7.9	
28-Apr	0.4	0.4	Z	0.5	0.9	0.7	0.3	0.4	1.3	1.5	1.0	1.4	1.9	1.5	1.4	1.9	1.6	2.3	0.2	0.3	0.6	1.4	4.0	4.5	1.3	4.5	
29-Apr	5.3	6.0	5.8	Z	6.3	5.6	5.3	1.4	0.3	0.4	0.7	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.6	0.9	0.3	0.3	1.9	6.3	
30-Apr	0.4	0.3	0.3	0.4	Z	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.9	0.9	0.6	0.9	

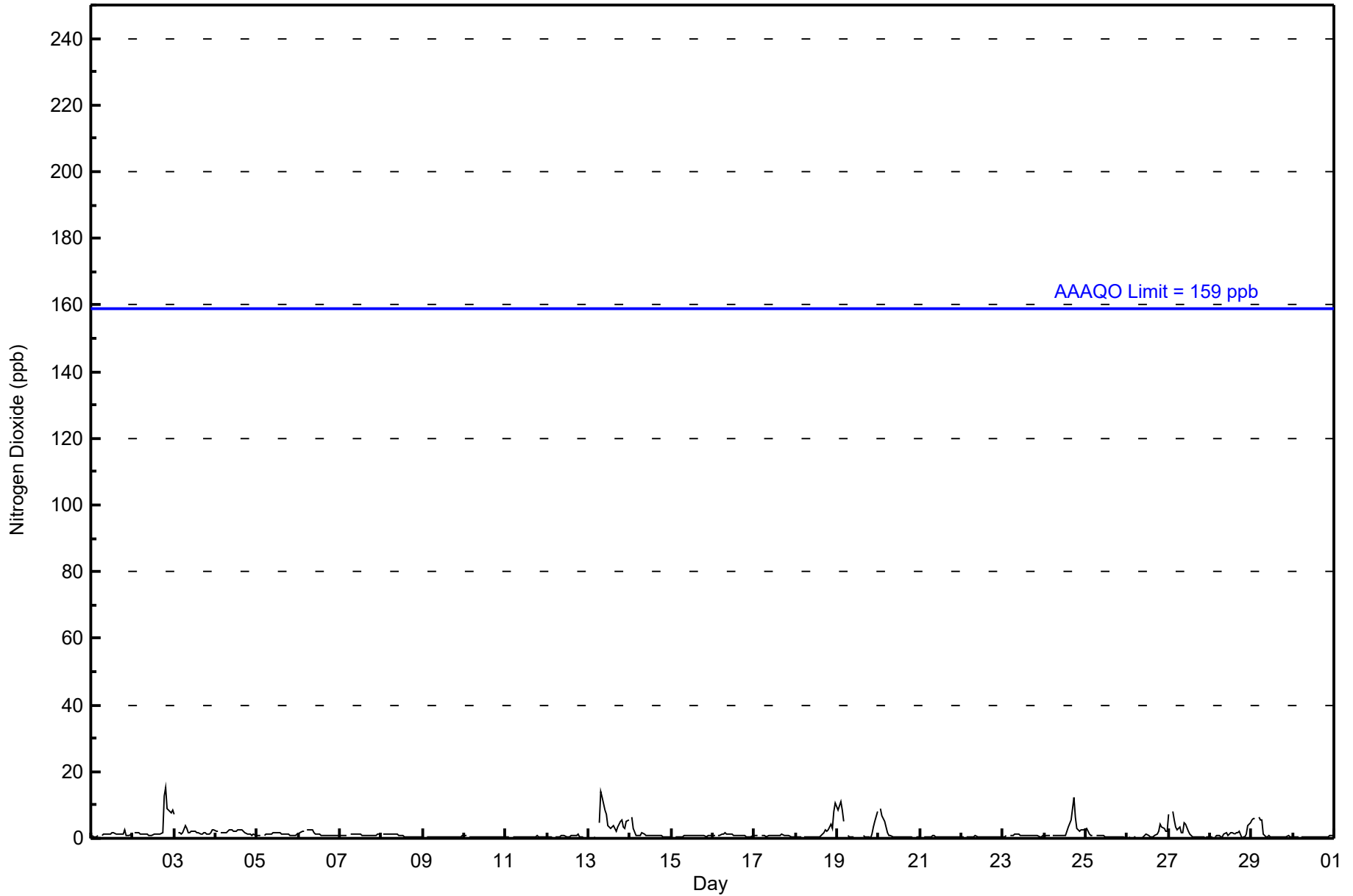
1.8	1.9	2.0	1.4	1.4	1.1	1.3	1.5	1.4	1.3	1.2	1.1	1.0	1.0	1.0	1.1	1.1	1.4	1.5	1.6	1.3	1.3	1.7	2.0	Diurnal Average	
8.6	9.7	10.9	8.3	6.3	5.6	5.3	14.0	12.4	8.5	7.0	3.9	3.2	3.0	3.7	5.5	9.0	12.1	12.5	15.4	8.9	7.9	8.2	10.4	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Mackay River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	22	31	26	25	57	145	102	55	56	17	28	35	31	28	11	15	684
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
Totals	22	31	26	25	57	145	102	55	56	17	28	35	31	28	11	15	684

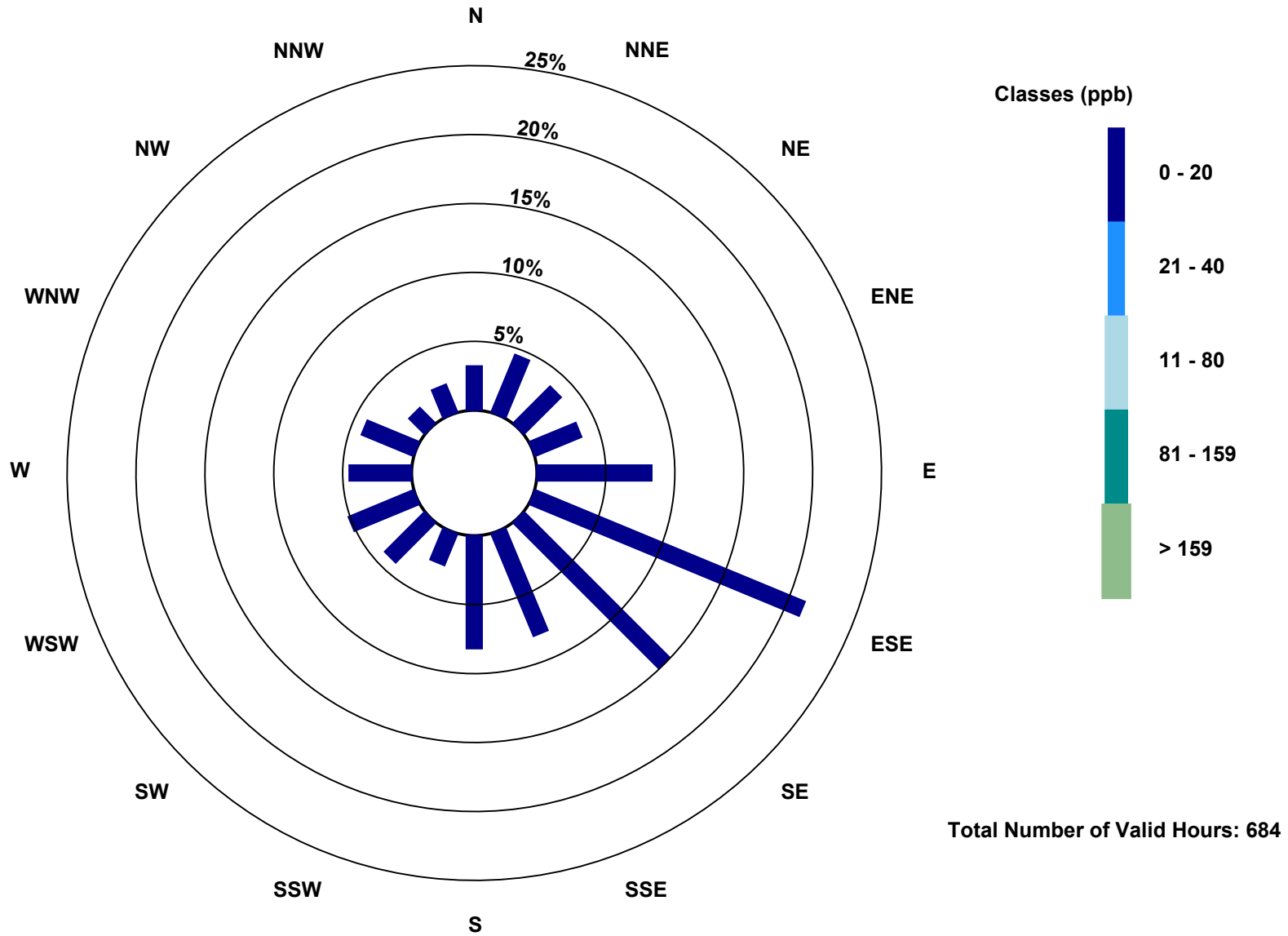
Total Number of Valid Hours: 684

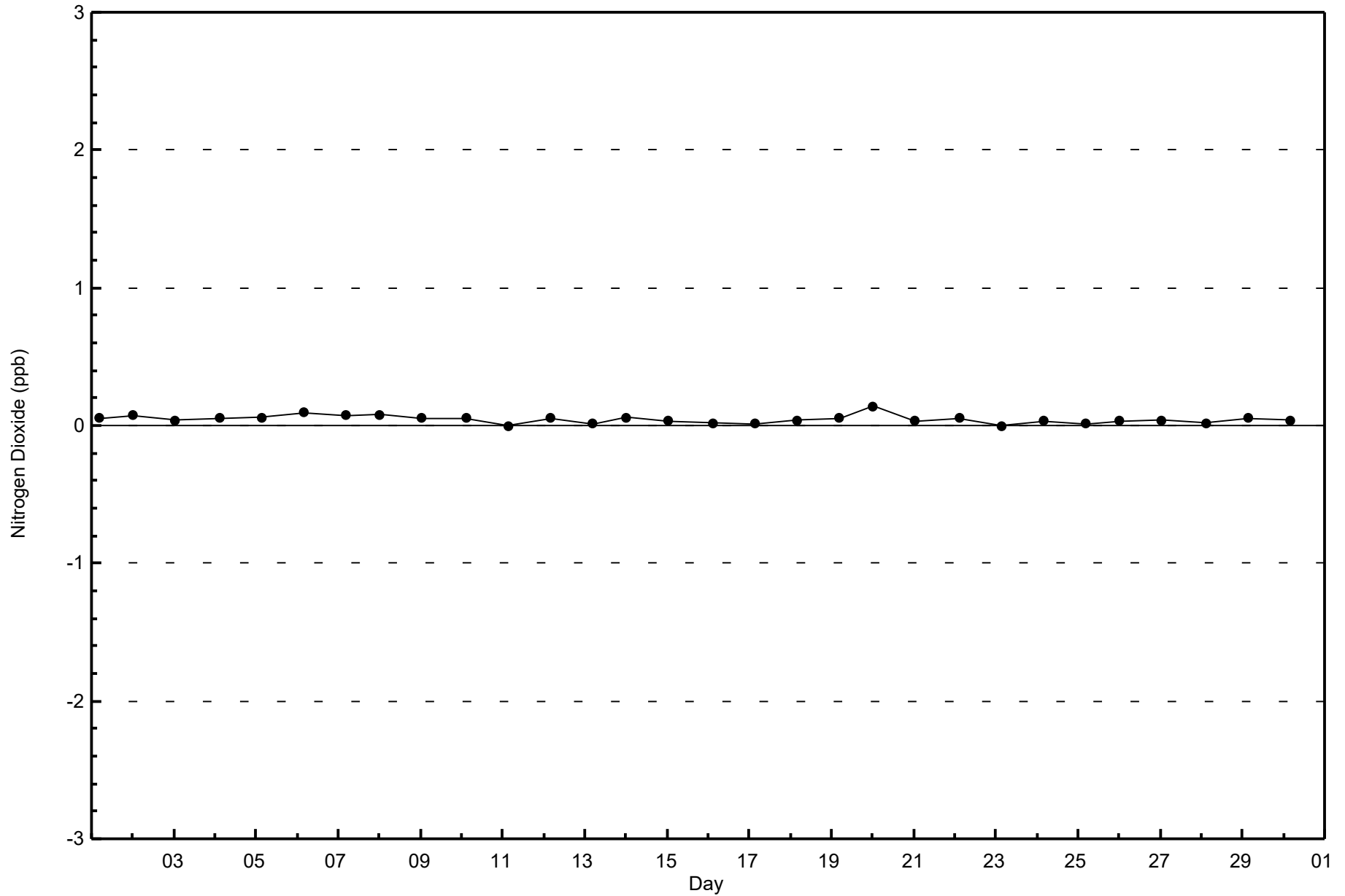
Total Number of Hours: 720

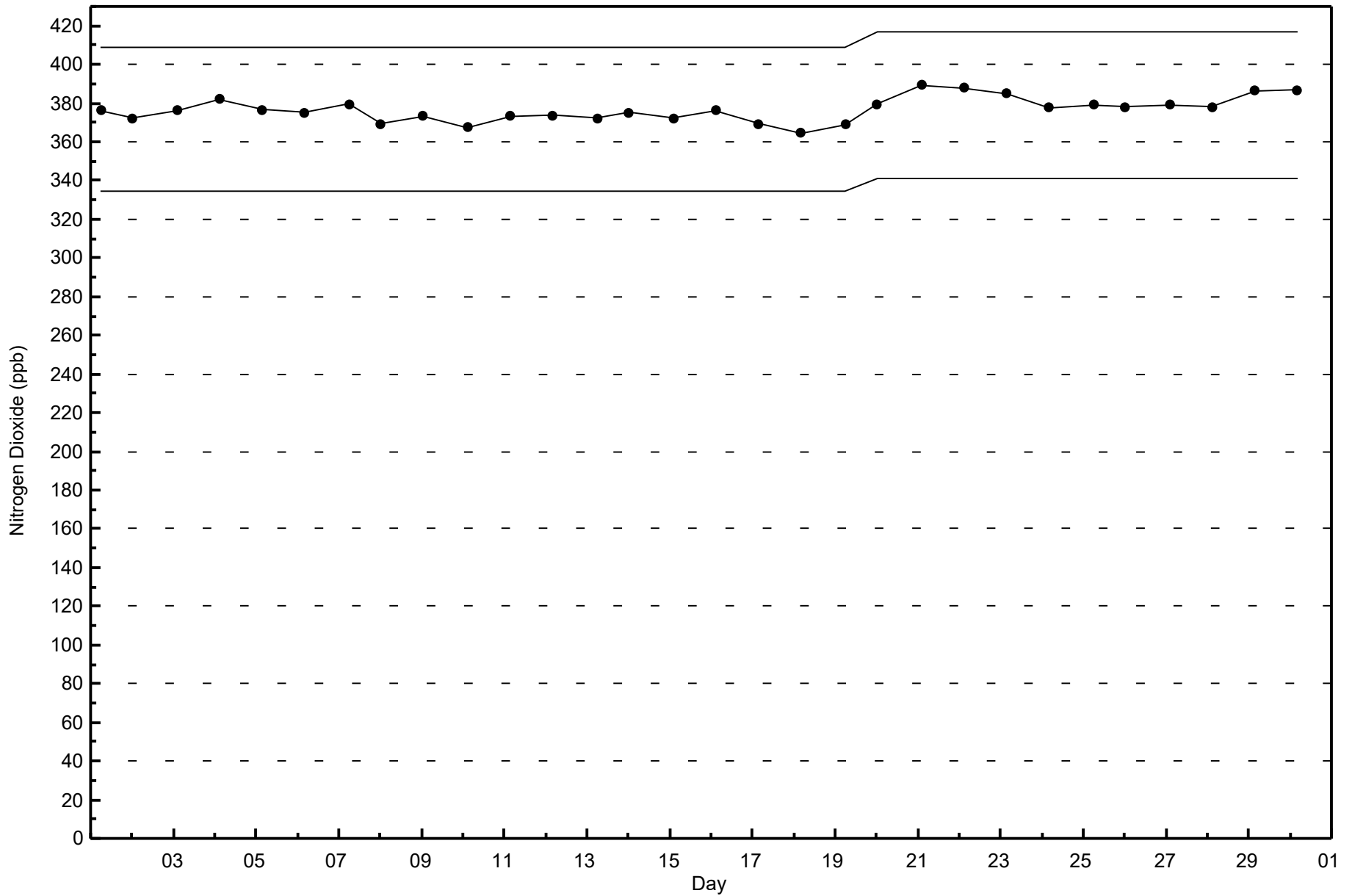


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Mackay River









Wood Buffalo Environmental Association
Summary of Hour Averages

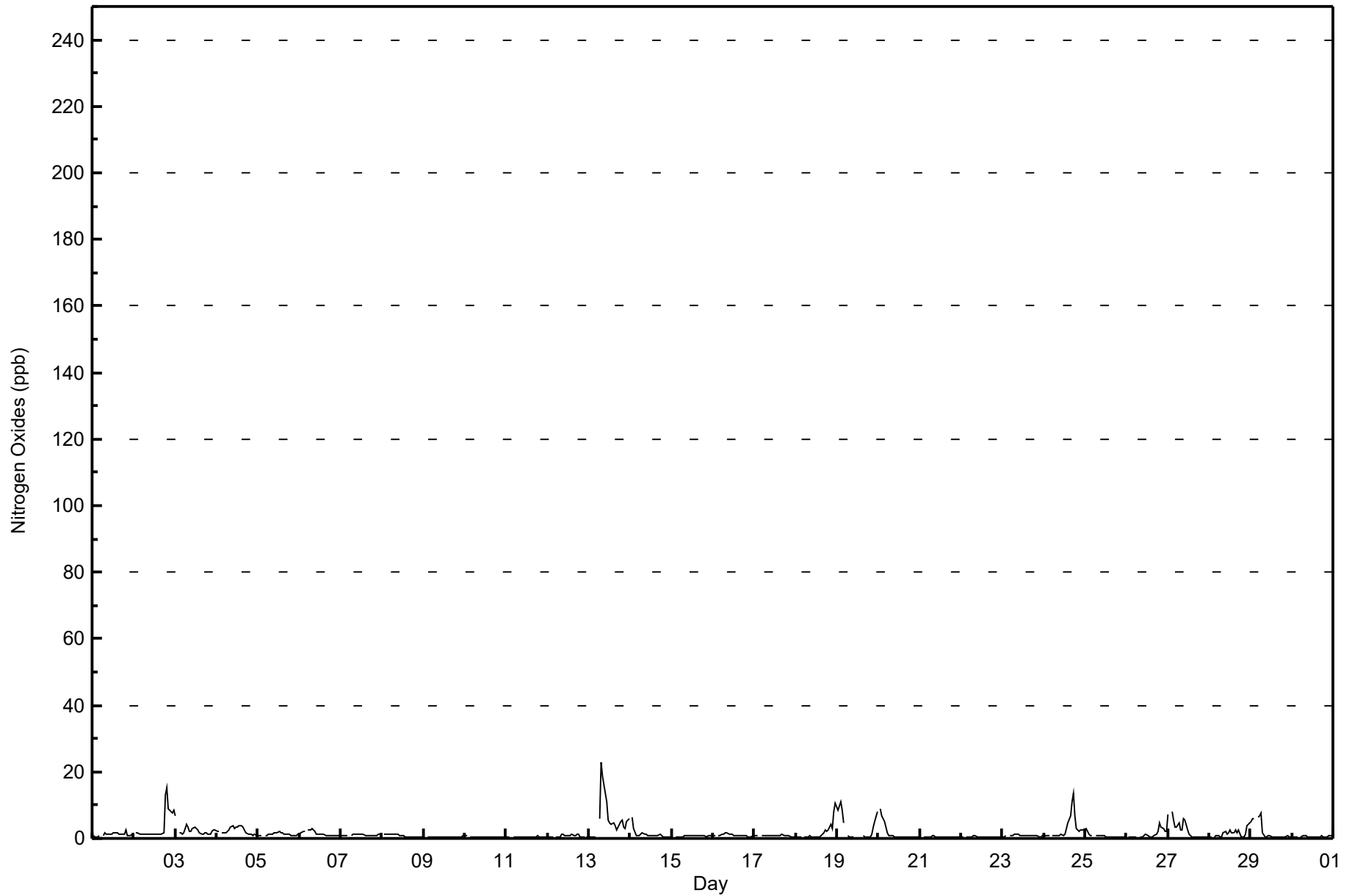
Nitrogen Oxides (NO_x) - ppb
Mackay River - April 2023

Maximum Value: 23.0 ppb on Apr 13 08:00																				Maximum Daily Average: 5.7 ppb on Apr 13					Hours in Service: 720		
Minimum Value: 0.2 ppb on Apr 26 08:00																				Minimum Daily Average: 0.4 ppb on Apr 11					Hours of Data: 685		
Maximum Diurnal Average: 2.0 ppb at hour 3																				Minimum Diurnal Average: 1.1 ppb at hour 14					Hours of Missing Data: 35		
Monthly Average: 1.51 ppb																				Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 0.5 Median = 0.8 Q ₃ = 1.4 P ₉₀ = 3.4 P ₉₉ = 11.0					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-Apr	0.7	0.6	0.6	0.6	0.8	Z	1.0	1.6	1.4	1.4	1.3	1.4	1.7	1.7	1.5	1.4	1.3	1.4	1.2	2.4	1.0	0.9	1.0	1.3	1.2	2.4	
2-Apr	Z	1.6	1.6	1.5	1.3	1.2	1.2	1.1	1.2	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.9	13.0	15.5	8.9	7.9	7.5	8.5	3.6	15.5	
3-Apr	7.0	Z	1.6	1.5	1.2	1.8	4.2	3.3	2.3	2.2	3.1	3.6	3.1	2.4	1.8	1.4	1.2	1.6	1.6	1.3	1.3	1.9	2.4	2.4	2.4	7.0	
4-Apr	2.2	2.0	Z	1.6	1.6	1.9	2.1	2.6	3.6	3.6	3.2	3.4	3.4	3.6	3.9	3.3	2.4	1.9	1.3	1.2	1.1	1.0	1.3	1.0	2.3	3.9	
5-Apr	0.9	0.9	0.9	Z	1.0	1.1	1.1	1.2	1.5	1.8	1.6	1.8	2.0	1.7	1.5	1.2	1.3	1.1	1.1	1.0	0.8	0.8	1.0	1.1	1.2	2.0	
6-Apr	1.3	1.7	2.0	2.3	Z	2.5	2.6	2.8	2.6	2.0	1.4	1.3	1.2	1.1	1.1	0.9	0.8	0.8	0.8	0.7	0.8	0.8	0.9	0.9	1.5	2.8	
7-Apr	0.9	0.9	0.8	0.8	0.8	Z	1.1	1.2	1.3	1.4	1.5	1.3	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	1.0	1.0	1.1	1.2	1.1	1.5	
8-Apr	Z	1.4	1.3	1.3	1.2	1.2	1.2	1.3	1.3	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.8	1.4	
9-Apr	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.5	0.7	
10-Apr	0.9	0.9	Z	0.6	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	0.4	0.4	0.4	0.5	0.4	0.5	0.9	
11-Apr	0.4	0.4	0.4	Z	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	0.5	0.8	0.6	0.4	0.3	0.3	0.3	0.4	0.8	
12-Apr	0.3	0.4	0.3	0.2	Z	0.3	0.3	0.3	1.3	1.1	0.9	0.8	0.8	0.8	1.2	1.0	0.8	1.2	1.4	0.4	0.4	0.2	0.2	0.2	0.6	1.4	
13-Apr	0.2	0.2	0.2	0.2	0.3	Z	6.0	23.0	18.8	13.5	10.9	5.6	4.5	4.0	4.9	3.8	2.6	3.6	5.2	5.5	3.4	3.0	5.0	5.7	5.7	23.0	
14-Apr	Z	6.4	2.9	0.7	0.7	0.8	1.1	1.8	1.4	1.1	1.0	0.8	0.8	0.9	0.8	0.7	1.0	1.1	0.7	0.6	0.6	0.6	0.6	0.6	1.2	6.4	
15-Apr	0.6	Z	0.5	0.5	0.5	0.5	0.6	0.9	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.8	1.0	1.0	0.8	1.0	
16-Apr	0.9	0.8	Z	0.9	1.0	1.1	1.4	1.7	1.6	1.4	1.3	1.3	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.8	0.9	1.7	
17-Apr	0.7	0.8	0.9	Z	0.8	0.7	0.7	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.8	1.1	
18-Apr	0.5	0.4	0.4	0.4	Z	0.4	0.4	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.5	1.5	1.6	2.6	2.2	2.4	4.2	3.1	8.2	10.4	1.9	10.4	
19-Apr	8.6	9.7	10.9	8.3	4.9	Z	0.7	0.6	0.6	0.6	C	C	C	C	C	0.7	0.4	0.5	0.3	0.2	1.1	3.5	4.9	8.2	3.6	10.9	
20-Apr	Z	8.8	6.7	5.2	3.5	1.9	1.0	1.0	0.7	0.4	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.3	1.5	8.8	
21-Apr	0.3	Z	0.3	0.3	0.3	0.4	0.6	0.9	0.9	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.5	0.9	
22-Apr	0.3	0.3	Z	0.3	0.3	0.4	0.5	0.7	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.8	
23-Apr	0.5	0.6	0.7	Z	0.7	0.7	0.9	1.1	1.2	1.2	1.1	0.8	0.8	1.0	1.0	0.9	0.8	0.7	0.8	0.8	0.7	0.6	0.6	0.7	0.8	1.2	
24-Apr	0.6	0.7	0.7	0.8	Z	0.7	0.8	0.9	0.9	1.0	1.1	0.8	1.1	3.0	4.5	6.8	11.2	13.6	6.7	3.1	2.1	2.5	2.6	2.6	3.0	13.6	
25-Apr	2.9	2.2	1.2	0.8	0.8	Z	0.8	0.8	0.9	0.9	0.9	0.7	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.7	2.9	
26-Apr	Z	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.4	1.1	1.5	0.8	0.4	0.4	0.3	1.0	1.2	2.3	4.5	3.5	2.8	2.2	2.2	1.1	4.5	
27-Apr	7.0	Z	8.0	5.5	3.5	3.2	4.7	2.6	2.4	6.1	5.3	2.7	1.4	1.0	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	2.5	8.0	
28-Apr	0.4	0.4	Z	0.5	0.9	0.7	0.3	0.5	1.6	2.0	1.3	1.8	2.6	1.9	1.8	2.4	1.9	2.7	0.2	0.3	0.6	1.4	4.0	4.5	1.5	4.5	
29-Apr	5.3	6.0	5.8	Z	6.4	6.6	7.5	1.8	0.4	0.5	0.8	0.7	0.6	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.6	0.9	0.3	0.3	2.1	7.5	
30-Apr	0.4	0.3	0.3	0.4	Z	0.6	0.6	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	0.6	0.7	0.9	0.9	0.6	0.9
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Mackay River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	99.85	99.85
21 - 40	1	0.15	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Mackay River - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	22	31	25	25	57	145	102	55	56	17	28	35	31	28	11	15	683
21 - 40	0	0	1	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
Totals	22	31	26	25	57	145	102	55	56	17	28	35	31	28	11	15	684

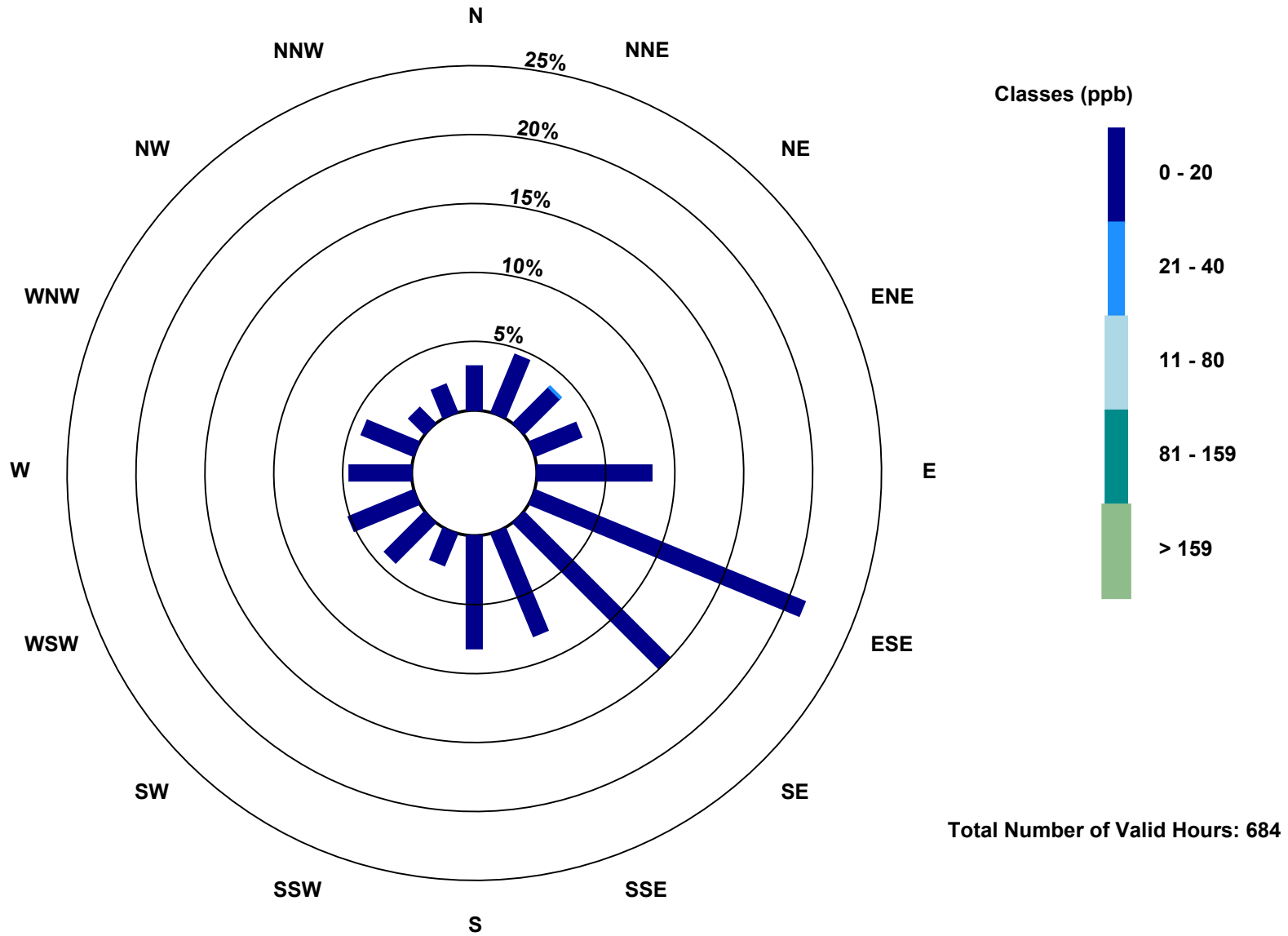
Total Number of Valid Hours: 684

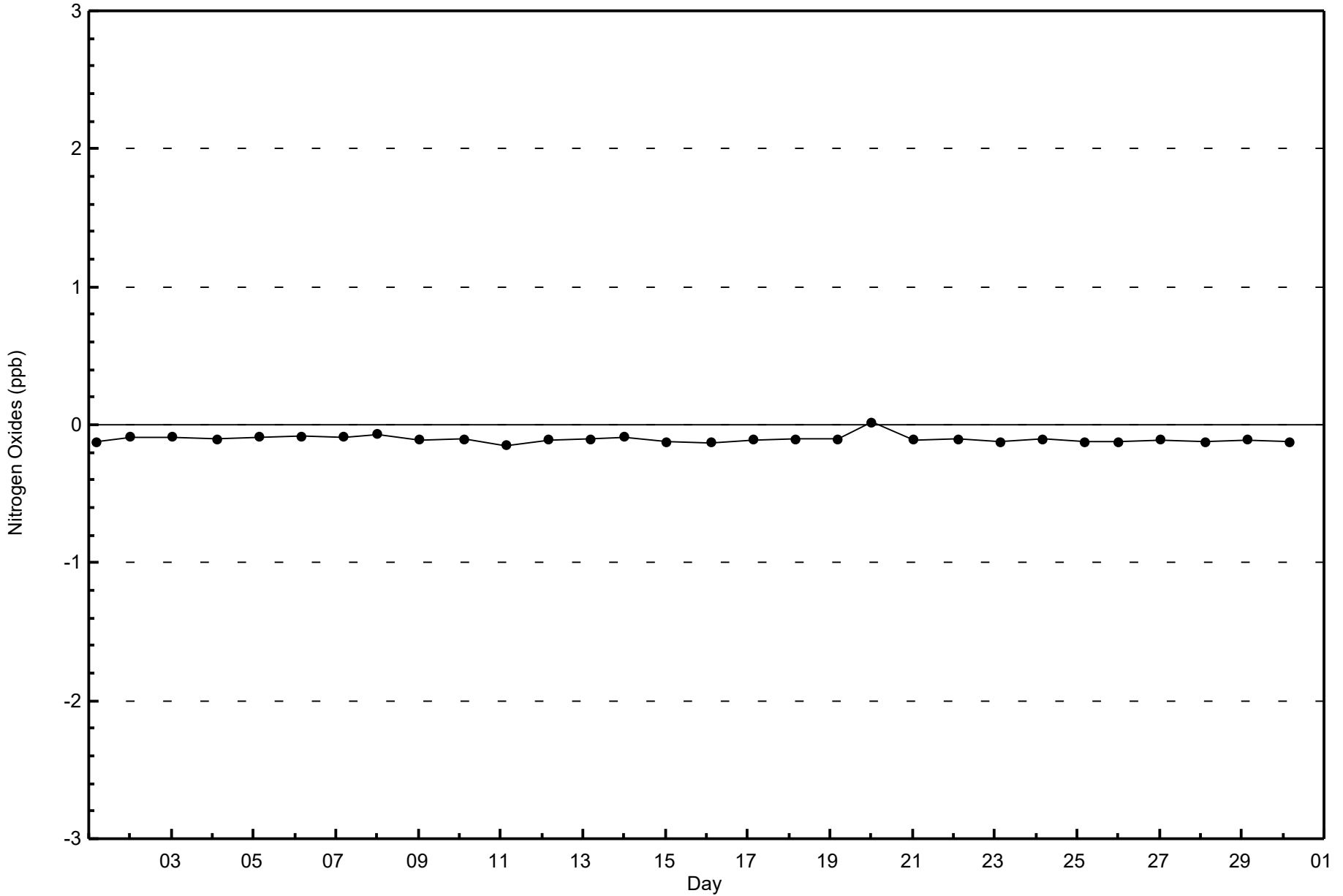
Total Number of Hours: 720

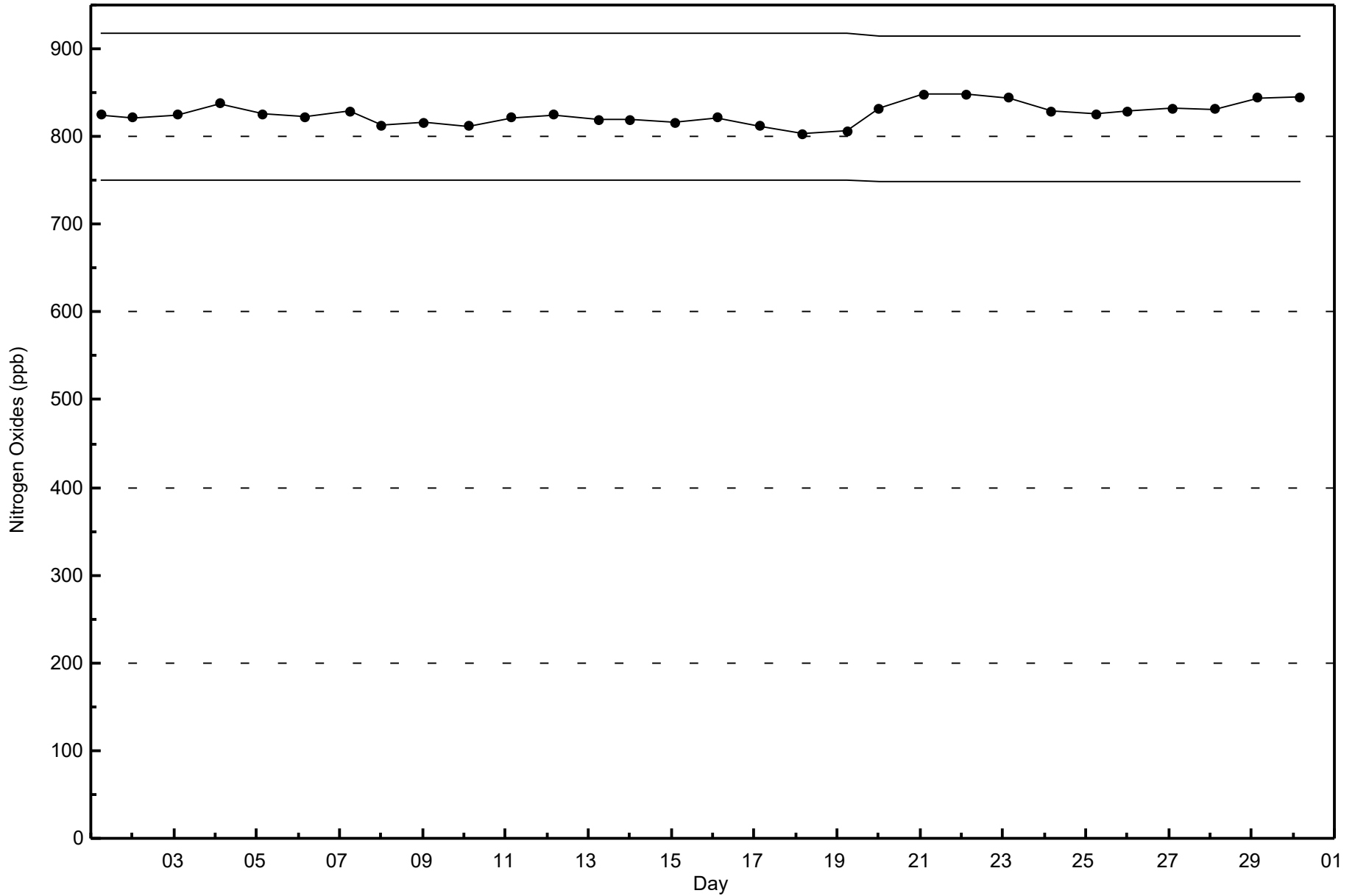


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Mackay River









Wood Buffalo Environmental Association
Summary of Hour Averages

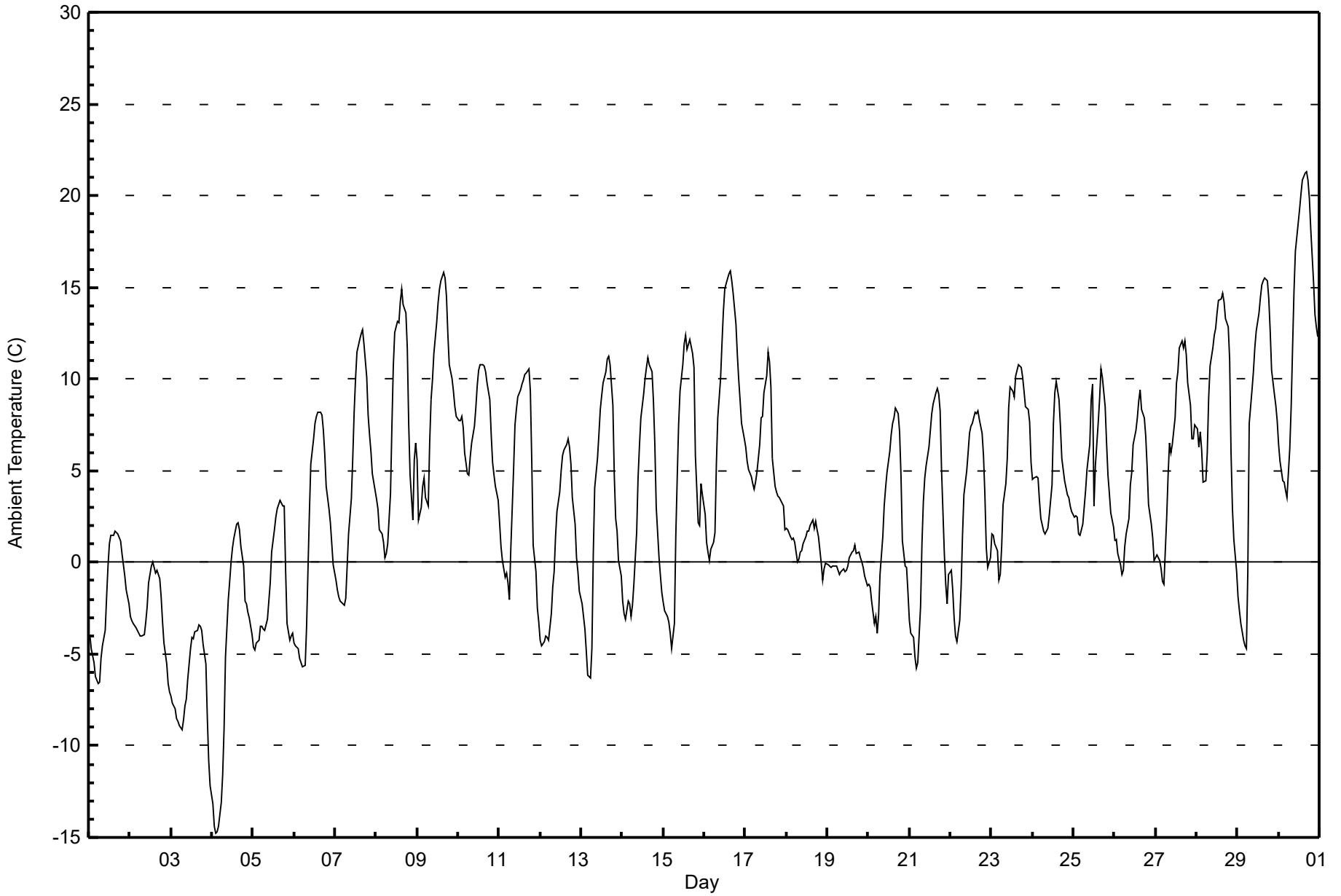
Ambient Temperature (AT) - C
Mackay River - April 2023

Maximum Value: 21.3 C on Apr 30 17:00 Maximum Daily Average: 13.3 C on Apr 30		Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0																								
Minimum Value: -14.7 C on Apr 4 03:00 Maximum Diurnal Average: 9.0 C at hour 16 Monthly Average: 3.56 C		Minimum Daily Average: -6.7 C on Apr 3 Minimum Diurnal Average: -1.9 C at hour 6 Percentiles: $P_1 = -11.4$ $P_{10} = -4.0$ $Q_1 = -0.7$ Median = 3.1 $Q_3 = 8.1$ $P_{90} = 11.7$ $P_{99} = 18.4$																								
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-Apr	-4.0	-4.7	-5.1	-5.4	-6.3	-6.6	-6.6	-5.3	-4.6	-3.7	-1.9	-0.2	1.0	1.5	1.4	1.7	1.6	1.6	1.1	0.5	-0.1	-0.7	-1.5	-2.3	-2.0	1.7
2-Apr	-3.0	-3.2	-3.4	-3.6	-3.7	-3.9	-4.0	-4.0	-3.9	-3.3	-2.4	-1.1	-0.2	0.0	-0.3	-0.6	-0.4	-0.9	-1.8	-3.2	-4.4	-5.5	-6.6	-7.1	-2.9	0.0
3-Apr	-7.3	-7.6	-8.0	-8.5	-8.6	-8.9	-9.1	-8.6	-7.8	-7.5	-6.4	-4.7	-4.1	-4.2	-3.8	-3.7	-3.4	-3.5	-3.7	-4.5	-5.5	-8.4	-10.8	-12.2	-6.7	-3.4
4-Apr	-13.2	-14.4	-14.7	-14.7	-14.4	-13.1	-11.5	-9.0	-5.1	-2.1	-1.1	0.0	0.8	1.3	2.1	2.2	1.8	0.9	-0.2	-2.1	-2.3	-2.7	-3.0	-3.9	-4.9	2.2
5-Apr	-4.6	-4.8	-4.4	-4.2	-3.5	-3.5	-3.6	-3.7	-3.1	-2.1	-1.2	0.5	1.7	2.5	2.9	3.1	3.4	3.1	3.1	-0.5	-3.3	-4.2	-4.0	-3.8	-1.4	3.4
6-Apr	-4.4	-4.5	-4.7	-5.2	-5.4	-5.7	-5.6	-3.5	-0.4	2.7	5.4	6.7	7.6	8.0	8.2	8.0	7.2	5.9	4.2	2.9	2.1	1.0	-0.1	1.6	8.2	
7-Apr	-1.0	-1.5	-1.9	-2.1	-2.2	-2.3	-2.0	-0.2	1.5	3.5	5.7	8.2	10.0	11.5	12.1	12.5	12.7	11.9	10.1	8.1	6.9	6.0	4.8	3.9	4.8	12.7
8-Apr	3.4	3.0	1.8	1.5	1.1	0.3	0.5	1.1	3.7	7.4	10.7	12.6	13.1	13.0	14.2	14.9	14.1	13.6	11.7	7.6	4.7	2.3	5.6	6.5	7.0	14.9
9-Apr	5.6	2.3	3.0	4.1	4.6	3.5	3.1	6.5	8.9	9.9	11.4	13.0	14.1	14.9	15.4	15.8	15.5	14.5	12.4	10.8	10.0	9.3	8.5	7.9	9.4	15.8
10-Apr	7.7	7.8	7.9	7.3	6.0	4.8	4.7	5.7	6.5	7.4	8.5	9.6	10.4	10.8	10.8	10.7	10.4	9.8	8.8	7.0	5.5	4.8	4.1	3.4	7.5	10.8
11-Apr	2.2	0.9	0.1	-0.8	-0.6	-1.1	-2.0	0.7	5.1	7.5	8.3	9.0	9.4	9.7	9.9	10.2	10.3	10.6	9.3	5.5	1.0	-0.5	-2.5	-3.3	4.1	10.6
12-Apr	-4.2	-4.5	-4.3	-4.0	-4.1	-4.2	-2.8	-1.3	-0.5	1.4	2.7	3.8	5.0	5.8	6.2	6.4	6.7	6.3	5.4	3.5	2.1	0.2	-0.5	-1.6	1.0	6.7
13-Apr	-2.3	-3.0	-3.6	-4.8	-6.2	-6.3	-4.7	0.5	4.0	5.6	7.0	8.3	9.1	9.8	10.4	11.1	11.3	10.8	8.6	4.7	2.4	1.7	0.1	-0.8	3.1	11.3
14-Apr	-2.1	-2.8	-3.1	-2.1	-2.3	-2.9	-2.4	-1.2	1.6	4.6	6.4	7.8	9.1	10.0	10.6	11.2	10.8	10.4	8.8	6.4	3.0	0.3	-0.8	-1.7	3.3	11.2
15-Apr	-2.2	-2.6	-2.9	-3.2	-3.8	-4.7	-3.3	1.5	4.6	7.5	9.3	10.7	11.9	12.4	11.6	12.1	11.8	11.4	10.6	5.8	2.1	2.0	4.3	3.7	4.6	12.4
16-Apr	2.6	1.1	0.6	0.1	0.7	1.1	1.6	5.4	7.9	10.0	12.0	13.7	14.9	15.2	15.7	15.9	15.4	14.7	13.0	11.3	9.9	8.8	7.6	6.7	8.6	15.9
17-Apr	6.3	5.5	5.1	4.7	4.3	4.0	4.4	4.9	6.4	7.9	9.2	10.2	11.5	10.9	9.5	5.7	4.1	3.8	3.6	3.5	3.2	3.0	1.8	5.9	11.5	
18-Apr	1.8	1.8	1.4	1.2	1.3	1.1	0.0	0.2	0.6	0.7	1.0	1.4	1.7	1.7	2.0	2.3	1.9	2.2	1.8	1.4	-0.1	-1.0	-0.4	0.0	1.1	2.3
19-Apr	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.5	-0.6	-0.5	-0.3	-0.5	-0.4	-0.2	0.3	0.5	0.6	0.9	0.5	0.6	0.3	0.0	-0.3	-0.7	-1.2	-0.1	0.9
20-Apr	-1.2	-1.4	-2.1	-3.4	-2.9	-3.8	-2.9	-0.7	1.4	3.1	4.1	4.9	6.1	7.0	7.5	7.9	8.4	8.1	7.1	4.8	1.2	-0.2	-0.3	-1.7	2.1	8.4
21-Apr	-3.2	-3.9	-4.1	-5.2	-5.8	-5.4	-2.4	1.0	3.3	4.6	5.3	6.3	7.2	8.1	8.6	9.3	9.5	9.2	8.3	5.0	0.5	-1.2	-2.3	-0.7	2.2	9.5
22-Apr	-0.4	-1.5	-3.0	-4.0	-4.4	-3.2	-1.3	1.5	3.7	5.0	6.0	7.1	7.4	7.6	8.2	8.1	8.2	7.8	7.0	5.8	3.7	0.8	-0.3	0.3	2.9	8.2
23-Apr	1.6	1.5	1.0	0.7	-1.0	-0.7	0.8	3.2	4.3	5.7	8.4	9.5	9.4	9.0	10.2	10.5	10.8	10.6	10.1	9.4	8.5	8.3	7.6	5.5	6.0	10.8
24-Apr	4.5	4.6	4.7	4.6	3.4	2.4	1.7	1.5	1.7	1.9	2.6	4.2	7.6	9.2	9.8	8.9	7.4	5.6	5.1	4.5	3.7	3.6	3.1	2.8	4.5	9.8
25-Apr	2.5	2.6	2.5	1.6	1.5	2.1	3.0	3.9	5.1	6.5	8.9	9.7	3.1	5.3	7.6	8.9	10.5	10.1	8.5	6.5	4.8	3.7	2.7	1.9	5.1	10.5
26-Apr	1.2	1.2	0.5	-0.1	-0.7	-0.4	0.9	1.5	2.4	4.2	4.9	6.4	7.2	7.9	8.8	9.4	8.4	7.9	6.9	5.2	3.1	2.1	1.3	0.1	3.8	9.4
27-Apr	0.3	0.4	0.1	-0.4	-1.1	-1.2	2.5	4.8	6.5	6.0	6.4	7.9	9.8	10.4	11.7	12.1	11.7	12.1	11.3	9.8	8.6	6.8	6.7	7.5	6.3	12.1
28-Apr	7.3	6.3	7.1	6.1	4.4	4.5	6.0	9.0	10.7	11.7	12.4	12.7	13.6	14.3	14.3	14.6	14.2	13.3	12.8	11.1	6.0	2.9	1.3	-0.5	9.0	14.6
29-Apr	-1.9	-2.7	-3.3	-4.3	-4.5	-4.7	-0.5	7.6	9.4	10.4	11.7	12.6	13.6	14.5	15.1	15.4	15.5	15.4	14.3	12.6	10.5	9.2	8.6	7.8	7.6	15.5
30-Apr	6.5	5.5	4.4	4.4	3.9	3.5	6.2	8.5	11.7	14.8	16.9	18.5	19.3	20.1	20.9	21.3	21.3	20.8	19.9	18.2	15.3	13.5	12.9	12.3	13.3	21.3
	-0.1	-0.6	-1.0	-1.3	-1.7	-1.9	-1.0	1.0	2.8	4.4	5.7	6.9	7.7	8.3	8.8	9.0	8.8	8.3	7.4	5.4	3.5	2.2	1.7	1.0	Diurnal Average	
	7.7	7.8	7.9	7.3	6.0	4.8	6.2	9.0	11.7	14.8	16.9	18.5	19.3	20.1	20.9	21.3	21.3	20.8	19.9	18.2	15.3	13.5	12.9	12.3	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Mackay River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Mackay River - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	223	30.97	30.97
0 - 10	379	52.64	83.61
10 - 20	113	15.69	99.31
> 20	5	0.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

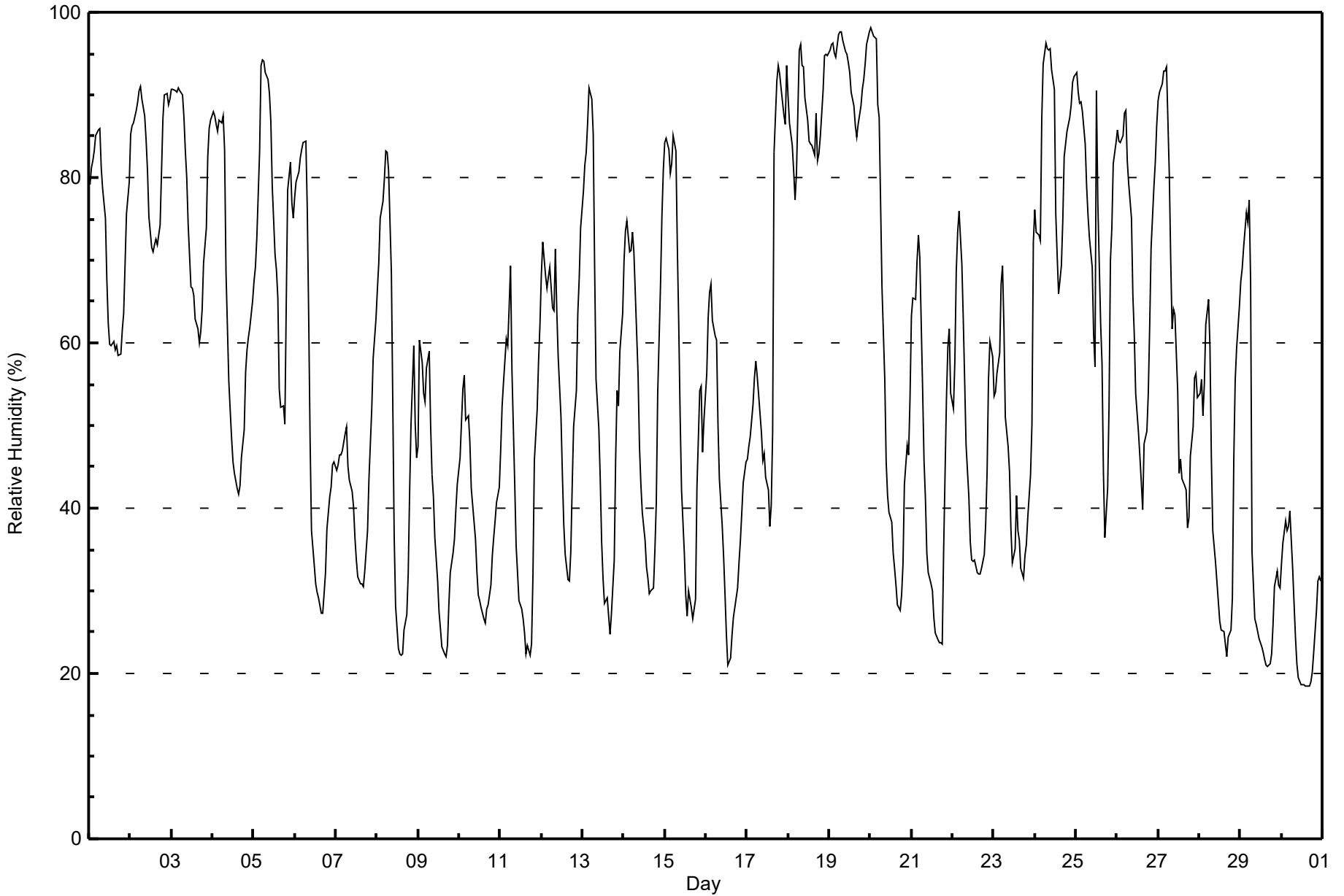
Relative Humidity (RH) - %
Mackay River - April 2023

Maximum Value: 98.2 % on Apr 20 01:00 Maximum Daily Average: 93.3 % on Apr 19 Minimum Value: 18.4 % on Apr 30 17:00 Minimum Daily Average: 26.8 % on Apr 30 Maximum Diurnal Average: 76.3 % at hour 6 Minimum Diurnal Average: 39.8 % at hour 16 Monthly Average: 57.76 % Percentiles: P ₁ = 19.6 P ₁₀ = 27.8 Q ₁ = 37.0 Median = 56.2 Q ₃ = 79.3 P ₉₀ = 89.7 P ₉₉ = 96.8																						Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 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-Apr	79.1	81.2	82.1	83.2	85.1	85.8	85.9	81.2	78.7	75.1	67.7	62.4	59.8	59.7	60.2	59.2	59.7	58.4	58.7	61.6	63.6	69.5	75.7	79.5	71.4	85.9																							
2-Apr	85.2	86.2	86.7	88.1	89.2	90.6	91.0	89.5	87.4	84.5	80.8	75.2	71.5	71.0	71.9	72.5	71.9	74.2	80.6	87.2	90.0	90.2	88.8	89.5	83.1	91.0																							
3-Apr	90.7	90.6	90.4	90.4	90.8	90.6	90.0	87.4	83.3	80.0	74.4	66.7	66.7	65.7	62.9	61.7	59.9	61.4	64.0	69.7	74.0	82.5	85.9	87.0	77.8	90.8																							
4-Apr	88.0	87.4	86.5	85.6	86.9	86.7	87.4	83.5	68.6	55.4	51.9	48.4	45.6	44.2	42.4	41.8	42.7	46.1	49.4	56.4	59.2	60.6	61.9	65.0	63.8	88.0																							
5-Apr	67.5	69.1	72.6	83.2	93.6	94.3	94.1	92.8	91.9	90.1	86.8	79.0	70.8	68.8	65.5	54.5	52.3	52.4	50.2	64.8	78.5	81.9	77.0	75.1	75.3	94.3																							
6-Apr	77.7	79.4	80.7	82.3	83.4	84.3	84.3	76.1	63.3	48.4	37.3	33.0	30.8	29.8	29.1	27.4	27.4	29.6	32.1	37.5	41.4	42.5	45.2	45.6	52.0	84.3																							
7-Apr	44.5	45.3	46.4	46.4	46.9	49.0	49.9	45.1	43.5	42.0	40.2	36.5	33.7	31.6	30.9	30.8	30.5	32.3	37.3	43.6	47.8	52.0	58.2	62.9	42.8	62.9																							
8-Apr	66.4	69.7	75.0	77.1	79.8	83.2	83.1	80.9	68.5	52.8	36.5	28.1	23.0	22.4	22.3	22.3	25.2	27.2	32.0	41.8	50.2	59.7	50.1	46.1	51.0	83.2																							
9-Apr	47.5	60.3	57.6	53.8	52.9	56.9	59.0	50.0	44.0	41.3	36.5	31.2	27.4	25.4	23.3	22.3	22.0	23.4	28.3	32.2	34.5	36.3	39.9	42.9	39.5	60.3																							
10-Apr	46.0	50.3	54.5	56.1	50.8	51.2	47.9	42.3	40.3	36.3	32.3	29.6	28.9	28.0	26.7	26.2	27.8	28.3	30.6	34.2	36.5	38.4	40.7	42.6	38.6	56.1																							
11-Apr	47.1	52.3	55.3	60.5	59.7	64.2	69.3	56.7	42.9	35.4	32.3	28.9	27.8	26.6	25.0	22.3	23.4	22.3	23.6	31.8	45.8	51.9	57.8	62.2	42.7	69.3																							
12-Apr	68.2	72.2	68.2	66.6	68.0	69.1	64.2	63.9	71.4	63.9	58.3	51.0	44.0	37.9	34.3	31.4	31.2	34.8	42.7	49.8	54.2	63.5	67.7	74.0	56.3	74.0																							
13-Apr	78.3	81.6	83.1	86.6	90.8	89.6	85.2	69.1	55.6	49.7	43.5	36.0	31.5	28.4	29.1	26.9	24.8	27.3	33.7	45.9	54.2	52.3	59.0	63.6	55.2	90.8																							
14-Apr	70.0	73.6	74.8	71.0	71.2	73.3	71.1	66.0	56.1	47.4	42.9	39.5	36.1	32.9	31.5	29.6	29.9	30.3	35.0	40.7	53.9	66.9	75.2	80.8	54.2	80.8																							
15-Apr	84.2	84.7	83.3	80.6	81.7	85.1	83.3	71.7	62.3	51.3	42.1	34.6	29.6	27.0	30.0	27.9	26.5	27.8	29.0	42.5	54.2	54.7	46.8	50.6	53.8	85.1																							
16-Apr	56.2	63.1	66.0	67.1	62.8	60.8	60.4	50.2	43.6	38.0	34.2	29.7	24.7	20.9	21.9	24.6	26.8	28.0	30.4	33.4	36.1	39.5	43.1	45.7	42.0	67.1																							
17-Apr	45.9	47.4	48.6	52.5	55.8	57.8	55.9	53.7	49.1	45.7	46.6	43.7	42.3	37.7	40.4	49.1	83.1	91.7	93.5	92.5	90.8	87.6	86.4	93.5	62.1	93.5																							
18-Apr	89.8	86.6	83.9	80.9	77.4	80.5	95.4	96.2	93.6	93.4	89.7	86.9	84.4	84.2	83.8	82.7	87.8	82.0	82.8	84.9	90.5	94.8	94.9	94.8	87.6	96.2																							
19-Apr	95.5	96.1	96.3	95.0	94.6	97.2	97.7	97.6	96.6	95.2	94.8	93.9	92.7	90.3	88.7	86.3	85.0	86.5	88.7	90.7	91.9	93.7	96.1	97.6	93.3	97.7																							
20-Apr	98.2	97.6	97.1	96.8	88.8	87.3	77.2	66.8	55.7	45.7	41.5	39.5	38.3	34.6	32.7	30.7	28.3	27.7	29.5	33.2	42.9	47.6	46.4	53.3	55.7	98.2																							
21-Apr	63.3	65.5	65.2	69.8	73.0	70.4	54.4	45.7	41.1	34.5	32.1	30.8	30.0	26.8	24.9	24.0	23.7	23.8	23.5	34.9	53.3	59.4	61.7	53.9	45.2	73.0																							
22-Apr	52.1	57.8	68.6	73.4	75.9	69.4	62.9	55.4	47.6	41.4	35.9	33.7	33.5	33.7	32.3	32.0	32.0	32.7	34.4	38.1	44.4	55.6	60.2	58.4	48.4	75.9																							
23-Apr	53.6	54.0	56.3	58.8	67.0	69.3	62.1	50.9	47.4	44.4	37.5	33.3	35.1	41.5	37.2	36.0	32.7	31.5	34.2	35.6	38.8	44.0	50.2	72.2	46.8	72.2																							
24-Apr	76.1	73.4	73.1	72.4	87.1	93.7	96.2	95.6	95.4	95.6	93.0	90.6	75.6	70.6	66.0	69.3	74.8	82.5	84.1	85.5	87.3	88.8	91.5	92.2	83.8	96.2																							
25-Apr	92.7	90.3	89.0	89.2	87.9	84.2	79.0	75.4	72.7	69.1	61.0	57.2	90.5	76.9	62.5	57.5	44.2	36.4	42.3	52.4	70.0	73.9	81.7	84.2	71.7	92.7																							
26-Apr	85.8	84.4	84.3	85.0	87.9	88.2	82.0	79.3	75.1	65.8	61.0	53.9	49.1	46.3	43.2	39.9	47.8	49.4	53.8	62.0	71.6	78.9	81.9	86.3	68.5	88.2																							
27-Apr	89.4	90.4	91.4	92.8	93.0	93.4	80.4	70.1	61.6	64.0	63.4	54.0	44.2	45.9	43.6	42.6	42.2	37.7	38.8	46.2	49.9	55.7	56.3	53.3	62.5	93.4																							
28-Apr	53.8	55.6	51.2	55.1	62.3	65.3	59.6	46.1	37.3	33.3	31.1	28.7	26.2	25.3	25.1	23.6	22.1	24.4	25.2	29.1	45.9	55.4	59.3	64.4	41.9	65.3																							
29-Apr	67.5	69.0	71.6	75.7	74.5	77.3	67.5	34.7	26.7	26.0	25.1	24.3	23.2	22.5	21.6	21.0	20.9	21.2	22.4	25.9	30.4	32.5	30.7	30.4	39.3	77.3																							
30-Apr	33.2	35.8	38.5	37.2	37.7	39.7	32.7	28.5	24.4	21.2	19.4	18.6	18.7	18.6	18.4	18.5	18.4	18.9	20.1	22.6	27.7	31.1	31.8	31.2	26.8	39.7																							
																								69.8	71.7	72.6	73.8	75.2	76.3	73.6	66.7	60.9	55.6	51.0	46.6	44.5	42.5	40.9	39.8	40.8	41.7	44.4	50.2	57.0	61.4	63.4	66.0	Diurnal Average	
																								98.2	97.6	97.1	96.8	94.6	97.2	97.7	97.6	96.6	95.6	94.8	93.9	92.7	90.3	88.7	86.3	87.8	91.7	93.5	92.5	91.9	94.8	96.1	97.6	Diurnal Maximum	



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Mackay River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Mackay River - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	8	1.11	1.11
20 - 40	196	27.22	28.33
40 - 60	187	25.97	54.31
60 - 80	152	21.11	75.42
80 - 100	177	24.58	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

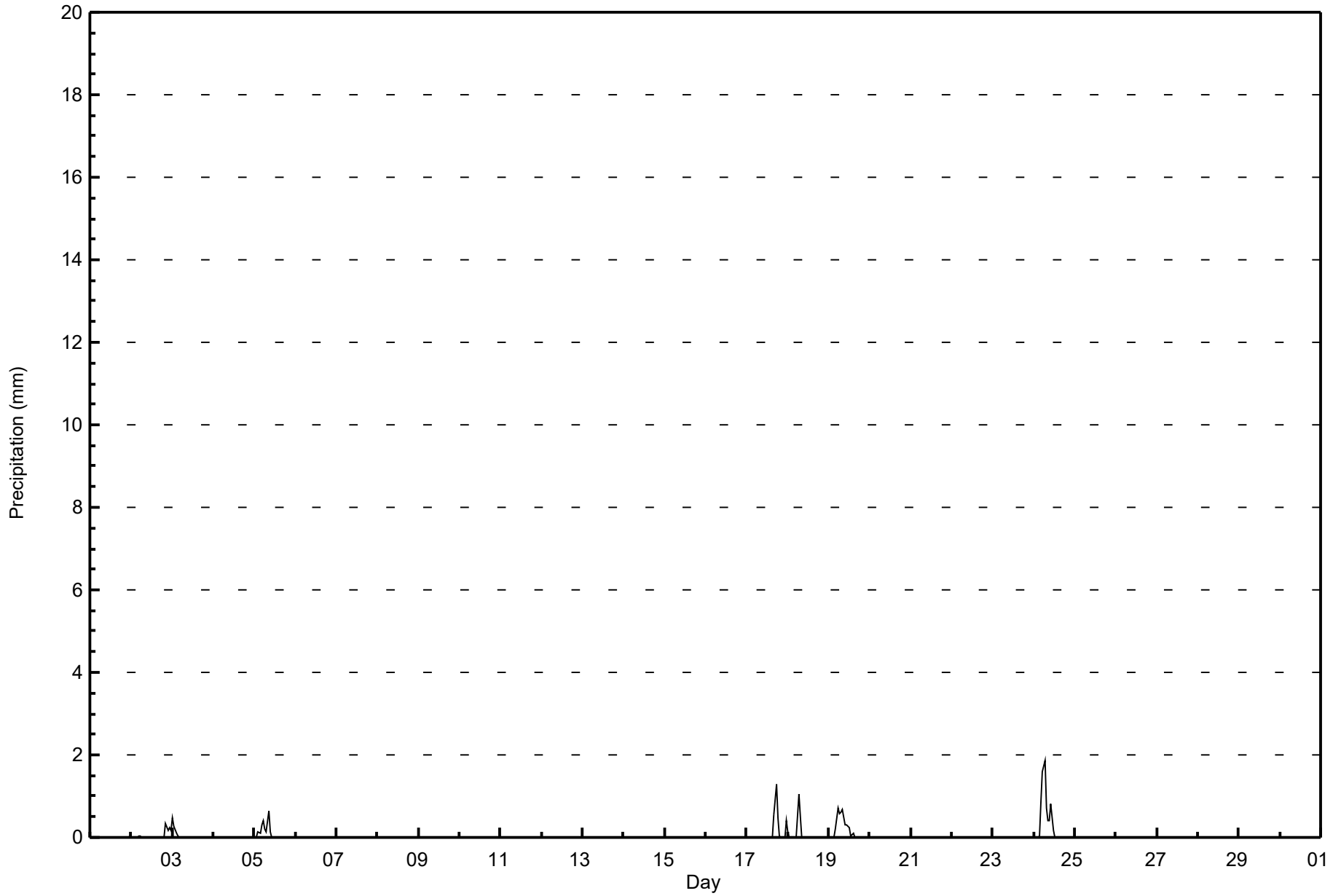
Mackay River - April 2023

Maximum Value: 1.9 mm on Apr 24 07:00 Maximum Daily Total: 6.8 mm on Apr 24																				Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 Percent Operational Time: 100.0						
Minimum Value: 0.0 mm on Apr 1 01:00 Minimum Daily Total: 0.0 mm on Apr 4 Maximum Diurnal Total: 3.7 mm at hour 7 Minimum Diurnal Total: 0.0 mm at hour 16 Monthly Total: 19.39 mm Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.7																										
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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	
2-Apr	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	0.0	0.0	0.3	0.2	0.2	0.2	1.0	0.3
3-Apr	0.5	0.3	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	0.9	0.5
4-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.1	0.1	0.3	0.4	0.2	0.1	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	2.1	0.7
6-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	0.5	0.0	0.0	0.0	0.0	0.4	2.8	1.3
18-Apr	0.1	0.0	0.0	0.0	0.0	0.0	1.1	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	0.0	0.0	0.0	0.0	1.7	1.1
19-Apr	0.0	0.0	0.0	0.0	0.2	0.7	0.6	0.6	0.7	0.3	0.3	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.7
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.1	0.9	1.6	1.9	0.7	0.4	0.4	0.8	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	6.8	1.9
25-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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		



Wood Buffalo Environmental Association
Hourly Averages

Precipitation (PC) - mm
Mackay River - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Precipitation (PC) - mm
Mackay River - April 2023

Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	700	97.22	97.22
0.4 - 0.5	8	1.11	98.33
0.6 - 0.7	6	0.83	99.17
0.8 - 1.4	4	0.56	99.72
1.5 - 10	2	0.28	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Mackay River - April 2023

Maximum Speed: 21 km/h on Apr 17 11:00	Maximum Daily Speed Average: 15.8 km/h on Apr 17	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 27 05:00	Minimum Daily Speed Average: 2.5 km/h on Apr 13	Hours of Data: 719
Maximum Diurnal Speed Average: 4.3 km/h at hour 24	Minimum Diurnal Speed Average: 2.7 km/h at hour 13	Hours of Missing Data: 1
Monthly Average Velocity: 3.3 km/h 137.1 deg	Percentiles: P ₁ = 1 P ₁₀ = 3 Q ₁ = 5 Median = 7 Q ₃ = 10 P ₉₀ = 14 P ₉₉ = 19	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-Apr	ESE9	E7	E6	E5	E5	E7	E6	ENE5	ESE7	E5	E6	E6	ESE7	E8	ESE10	ENE8	ENE9	ENE9	E6	ENE5	ENE5	E9	ESE8	ESE10	E6.8	ESE10	
2-Apr	ESE7	ESE8	ESE7	ESE7	ESE6	ESE7	ESE7	ESE7	ESE7	ESE6	ESE5	ENE4	NNW3	N7	N7	NNE7	NNE8	NNE7	NNE8	NNE9	NNE8	NNE9	NNE10	NNE8	ENE4.9	NNE10	
3-Apr	N7	N7	NNE6	N5	N6	N6	N6	NE6	NE6	NNW4	NNW5	N7	NNW6	N3	NW2	WNW2	NNE2	ENE3	ESE4	ESE6	ESE5	SE4	SE4	SE5	NNE3.0	N7	
4-Apr	SE4	SSE3	SSE3	SE3	SE4	SE3	WNW1	WSW1	N2	E2	SE3	SE6	E5	ESE7	ESE6	ESE8	ESE8	ESE9	ESE8	ESE7	ESE11	ESE10	ESE11	ESE8	ESE5.2	ESE11	
5-Apr	SE7	SE6	SE5	SE6	SE4	SSE5	SE6	SE5	SE5	SE6	S7	S8	S7	SSE6	SE8	SSE9	SSE8	ESE7	SE8	SE3	ESE3	ESE4	ESE5	SE6	SE5.6	SSE9	
6-Apr	SE5	SE6	SE7	SE7	SE8	SE9	SE9	SE11	SSE12	SSE14	SSE15	S17	S17	SSE18	SSE19	S20	S18	SSE17	SSE15	SSE11	SSE12	S15	SSE15	SSE14	SSE12.5	S20	
7-Apr	SSE15	SSE13	SSE13	SSE13	SSE12	SSE11	SSE11	S14	S15	S13	S14	S14	SSE14	SSE14	S16	SSE15	SSE14	SSE13	SSE9	SSE9	SSE9	S11	S11	S9	SSE12.5	S16	
8-Apr	SSE8	S6	SSE5	S6	S7	S6	S7	S6	SSW7	SW6	W7	W7	W8	WSW8	W10	WSW8	WSW7	WSW8	WSW4	SW3	SSW4	S4	SW7	WSW6	SW5.2	W10	
9-Apr	SW5	SSW5	SW6	SW7	SW7	SW6	SSW7	SW8	WSW10	W11	WSW9	W11	W10	WSW8	SW11	S11	S11	S8	SE7	SE9	SE9	SE11	SE10	SE10	SSW6.0	W11	
10-Apr	SSE10	SSW11	WSW13	WSW17	WSW17	WSW12	WSW13	WSW15	WSW16	WSW16	W17	WSW17	WSW17	SW19	SW21	WSW17	WSW15	WSW16	WSW12	WSW6	SW7	SW7	SW7	SSW7	WSW12.8	SW21	
11-Apr	SSW7	SSW7	S7	SSW5	SSW6	S4	SSE4	S5	WSW6	WSW5	WSW6	WSW7	W8	W10	W9	W8	W6	WSW6	WNW7	NNW4	NNW4	N2	NW2	SSE2	WSW4.2	WNW10	
12-Apr	SW2	SW3	WSW3	SW3	SW4	WSW4	WSW4	W5	WNW6	NW7	WNW6	WNW11	WNW11	WNW11	WNW12	WNW11	WNW10	WNW12	WNW9	W4	WSW2	SSE2	S3	S3	WNW5.3	WNW12	
13-Apr	SSW4	SSE1	ESE1	SE2	ESE1	SE2	NNE2	NE4	NNW3	NNW6	N6	NNW5	NNW6	NNW7	NNE4	N3	S3	E8	E5	NE4	NE5	NE5	NNE6	NE4	NNE2.5	E8	
14-Apr	NE3	E1	E4	ESE6	ESE7	E4	ESE8	E6	ENE8	E8	E8	ENE9	E9	E7	ENE7	ENE6	E7	E6	E7	ESE6	SE4	SE4	SE4	SE4	E5.7	E9	
15-Apr	ESE5	SE4	SE4	SE5	SE4	SE3	SE3	SE6	SE6	SE7	SE7	SSE8	ESE8	ESE7	ENE6	ESE8	SE8	SE6	ESE6	ESE4	ESE5	ESE5	ESE8	ESE8	SE5.6	ESE8	
16-Apr	ESE7	ESE6	ESE6	ESE6	ESE7	ESE8	ESE8	ESE9	ESE11	SE12	ESE12	ESE13	ESE14	SE14	SE14	E15	E16	E14	E14	E12	ESE13	ESE14	ESE13	ESE13	ESE11.1	E16	
17-Apr	ESE14	ESE14	ESE16	ESE17	ESE17	ESE17	E17	E16	ESE18	ESE20	ESE21	ESE21	ESE18	ESE19	SE14	SE15	ESE16	E15	E12	E10	ESE12	ESE15	ESE15	ESE14	ESE15.8	ESE21	
18-Apr	E13	E13	ESE13	E7	E6	E8	ESE8	E5	NE6	NE7	ENE7	E7	ENE6	ENE6	NE8	NE8	NE7	NNE7	NNE7	NNE5	N4	NNE3	NNE5	NNE6	ENE6.0	E13	
19-Apr	NNE5	NNE5	NNE5	NE4	ENE3	ESE4	ESE7	ESE9	ESE10	ESE12	ESE12	ESE14	ESE15	ESE15	ESE12	ESE9	E8	E8	ENE4	NE5	NE5	NE4	NE5	NNE4	E6.5	ESE15	
20-Apr	NE5	NE3	ENE2	E3	ESE6	ESE5	ESE8	ESE8	ESE8	E7	E9	E10	E11	ESE12	ESE12	ESE11	E10	ESE8	ESE10	ESE8	E5	ESE6	ESE6	ESE5	E7.0	ESE12	
21-Apr	ESE4	ESE4	ESE5	ESE3	ESE4	ESE5	ESE6	SE8	SE8	SE7	ESE8	ESE8	ESE8	ESE7	ESE5	ESE4	E7	ESE7	SE6	ESE5	SE4	ESE4	SE4	S7	ESE5.5	SE8	
22-Apr	S7	S7	S5	S6	S6	S7	S7	S7	S10	S11	SSE14	SSE13	S14	SSE13	S13	S13	SSE12	S10	S9	S7	S5	SE4	ESE4	ESE5	S8.4	SSE14	
23-Apr	SE6	ESE5	ESE4	SSE3	SE3	ESE2	ESE4	ESE7	ESE9	ESE9	SE11	SE13	SE12	SE12	ESE11	SE12	ESE10	SE9	SSE7	ESE6	SE6	SSE8	S9	SE5	SE7.4	SE13	
24-Apr	E4	ENE4	E5	ESE6	E5	E5	E6	ENE5	NE6	ENE6	NE5	NE6	E7	NNE9	NNE11	N12	N13	N10	N9	N7	SW2	SW3	SSW1	SE3	NE4.2	N13	
25-Apr	SE3	SE3	SE4	SE4	SE5	SSE7	SSE8	S9	S9	S9	SSE10	SSW12	WSW11	SSW2	SSW10	SSW10	SSW10	SW12	W14	W13	W12	W9	W8	W8	W8	SW5.7	W14
26-Apr	W8	W9	W10	W9	W7	W7	W9	W10	WNW10	WNW11	WNW11	NW10	NNW10	N6	N9	N7	NE9	NNE8	NE9	NE5	NE4	NE5	NNE4	NNE2	NW4.9	WNW11	
27-Apr	NE3	N3	NW3	NNW1	SSW1	SW1	W1	WNW1	W5	W8	WSW6	WNW4	SW4	SW8	SW9	SW8	SW6	SW5	SSW4	SSE4	SE4	SE5	SSE5	S8	SW2.8	SW9	
28-Apr	S8	SW6	W7	WNW7	W6	WNW8	W8	WNW13	WNW14	WNW17	WNW16	NW18	WNW17	NW18	NW17	NW17	NW17	NW17	NW14	NNW11	N6	NE2	ENE3	ENE2	SE2	WNW8.8	NW18
29-Apr	SE2	SE2	SE2	SSE1	SE2	ESE2	UO	ESE6	ESE8	SE9	ESE7	ESE8	ESE5	SE7	E9	E8	E10	ESE9	ESE10	ESE8	ESE8	ESE9	ESE10	ESE10	ESE6.5	ESE10	
30-Apr	SE9	SE9	SE8	SE8	SE8	SE8	SE9	SE10	SE13	SSE14	SE14	SE14	SE14	SSE15	SSE15	SSE15	SSE14	S13	SSE11	SE8	SE6	SE8	SE8	SE7	SE10.6	SSE15	

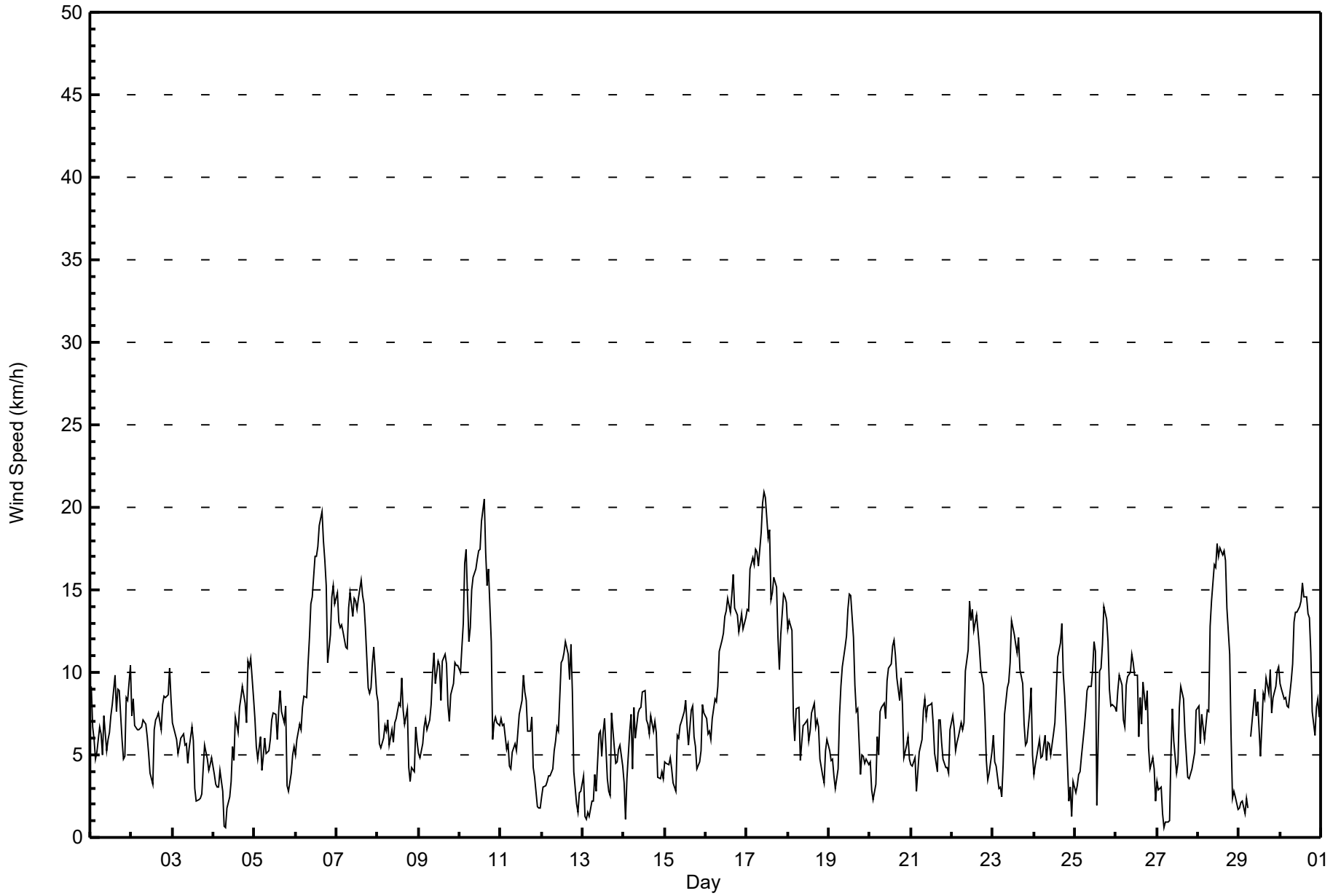
SE4.1 SE3.4 SE3.1 SE2.9 SE3.2 SE3.4 SE3.6 SE3.5 SSE3.4 SSE3.1 SSE3.3 SSE3.4 SE2.7 SE3.2 SSE3.1 SSE3.3 SE3.1 SE2.8 ESE2.8 ESE2.9 ESE3.4 SE4.1 SE4.2 SE4.3	Diurnal Average
SSE15 ESE14 ESE16 ESE17 WSW17 ESE17 E17 E16 ESE18 ESE20 ESE21 ESE21 ESE18 SW19 SW21 S20 S18 SSE17 SSE15 E12 ESE13 ESE15 SSE15 ESE14	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
Mackay River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Mackay River - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	208	28.93	28.93
6 - 11	373	51.88	80.81
12 - 19	133	18.50	99.30
20 - 28	5	0.70	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Mackay River - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	6	14	18	13	14	34	43	13	8	8	11	7	4	4	3	8	208
6 - 11	15	18	10	12	36	87	51	18	35	10	15	15	25	17	2	7	373
12 - 19	2	0	0	0	10	31	13	30	13	1	2	14	4	7	6	0	133
20 - 28	0	0	0	0	0	3	0	0	1	0	1	0	0	0	0	0	5
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
Totals	23	32	28	25	60	155	107	61	57	19	29	36	33	28	11	15	719

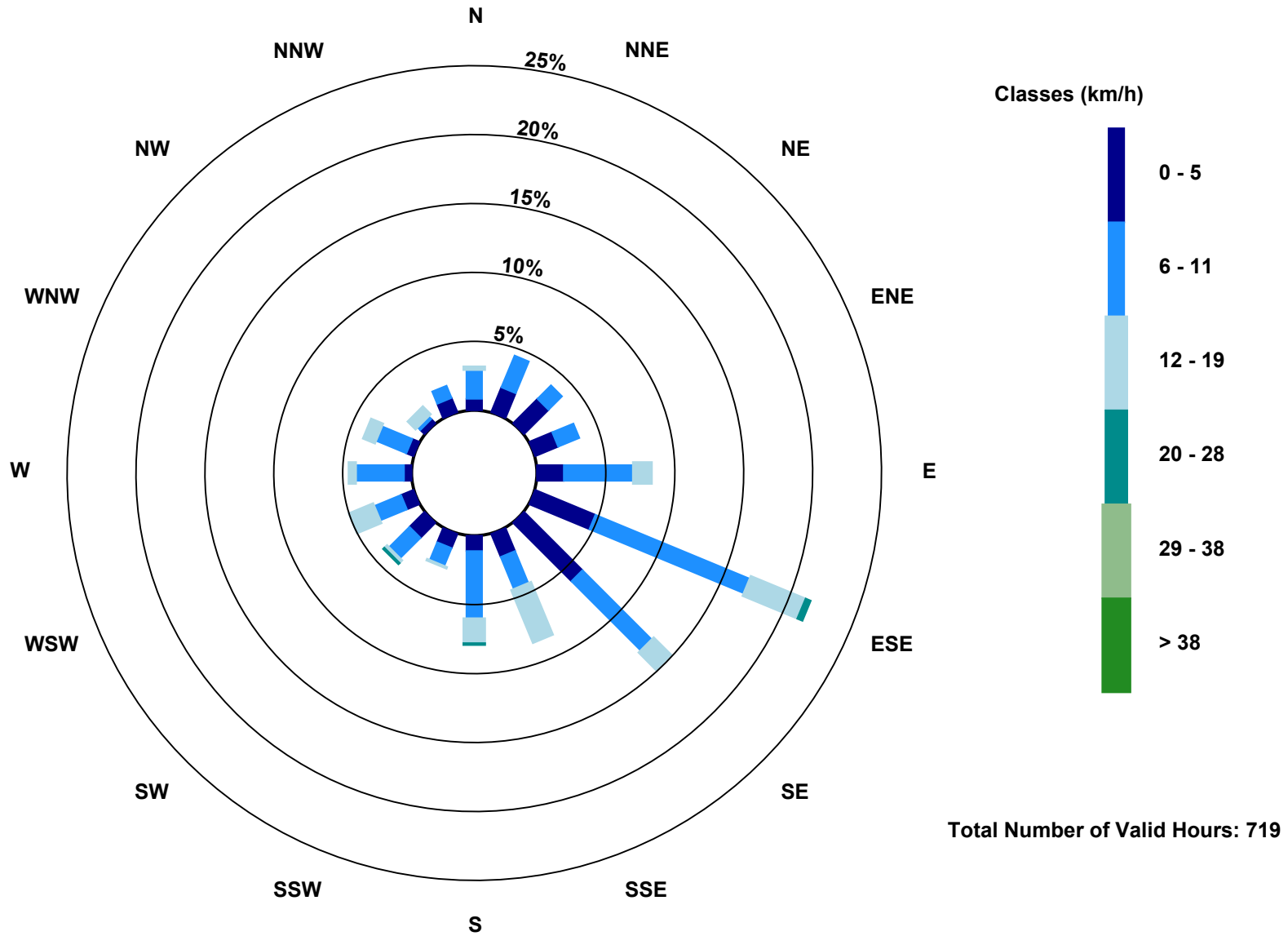
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Mackay River





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Mackay River - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 9 km/h on Apr 10 15:00	Hours of Data: 719
Minimum Value: 0 km/h on Apr 29 00:00	Hours of Missing Data: 1
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7	Hours of Calibration: 0
	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-Apr	2	2	2	2	2	2	3	2	2	2	2	2	3	3	3	3	3	3	2	2	3	2	3	3	
2-Apr	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	
3-Apr	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	
4-Apr	1	0	0	1	1	1	1	1	1	2	3	2	3	3	3	3	2	2	3	2	3	3	3	2	
5-Apr	2	2	2	2	1	1	1	2	2	2	2	3	3	2	3	3	3	2	3	1	1	1	1	1	
6-Apr	1	2	2	2	2	2	2	3	4	5	5	6	6	6	6	6	6	5	5	4	4	5	5	4	
7-Apr	5	4	4	4	4	4	4	4	5	4	5	5	4	5	5	5	5	4	3	3	3	3	3	3	
8-Apr	3	2	2	2	2	2	2	2	2	2	3	3	4	4	4	3	4	3	2	1	1	1	2	2	
9-Apr	1	1	2	2	3	2	2	3	4	5	4	4	4	4	4	4	4	3	2	3	3	3	3	3	
10-Apr	3	4	6	7	8	5	6	7	7	7	7	7	8	8	9	7	7	7	6	2	2	2	3	2	
11-Apr	2	2	2	1	1	1	1	2	2	2	2	3	4	5	4	3	3	3	4	2	1	1	1	1	
12-Apr	1	1	1	1	1	1	1	2	2	2	3	4	4	4	4	4	4	4	3	2	1	1	1	1	
13-Apr	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	2	2	3	3	2	2	2	1	1	
14-Apr	1	1	1	2	2	2	3	2	3	3	3	3	4	3	3	3	3	2	2	1	1	1	1	1	
15-Apr	1	1	1	1	1	1	2	1	2	2	3	3	3	3	3	4	4	3	2	1	1	1	2	2	
16-Apr	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	5	5	5	4	4	4	3	3	
17-Apr	4	4	4	4	5	4	5	6	6	6	7	7	5	6	6	6	6	6	4	4	4	4	4	4	
18-Apr	4	4	4	3	3	3	4	2	2	2	3	3	2	2	2	3	2	2	2	1	1	1	2	2	
19-Apr	2	1	1	1	1	2	2	3	3	3	3	4	4	4	4	3	3	4	1	2	2	1	1	1	
20-Apr	1	1	1	2	2	1	2	2	2	2	3	3	4	4	4	4	4	3	3	2	1	1	1	1	
21-Apr	1	1	1	1	1	1	2	2	2	3	3	4	4	3	4	3	3	3	2	1	1	1	1	2	
22-Apr	1	1	1	1	1	1	1	2	4	4	4	4	5	5	4	5	4	4	3	2	2	1	1	1	
23-Apr	1	1	1	1	1	1	1	2	3	3	3	4	4	5	4	4	3	3	3	2	2	3	4	3	
24-Apr	1	1	2	3	2	2	2	2	2	2	2	2	3	3	4	4	4	3	2	2	1	1	1	1	
25-Apr	1	1	1	1	1	2	2	3	3	3	3	6	6	2	4	4	5	6	6	5	4	4	3	3	
26-Apr	3	4	4	3	3	2	4	4	4	4	4	4	3	3	3	3	4	3	3	2	1	2	1	1	
27-Apr	1	1	1	1	1	1	1	2	3	3	2	2	3	4	4	4	3	2	1	1	1	1	1	2	
28-Apr	2	2	3	2	2	3	4	4	5	6	5	6	6	6	6	5	5	4	4	3	1	1	1	0	
29-Apr	0	1	1	1	0	1	UO	2	3	3	3	3	3	4	4	3	4	3	3	2	2	2	3	3	
30-Apr	2	2	2	2	2	2	3	3	4	4	4	4	4	5	5	5	5	4	4	3	2	1	2	2	

5	4	6	7	8	5	6	7	7	7	7	7	7	8	8	9	7	7	7	6	5	4	5	5	4
Diurnal Maximum																								

UO - Unstable Operation



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Mackay River - April 2023

Direction of Maximum Speed: 104 deg on Apr 17 11:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 106.0 deg on Apr 17	Hours of Data: 719
Direction of Minimum Speed: 211 deg on Apr 27 05:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 2.5 deg on Apr 13	Percent Operational Time: 99.9
Monthly Average Direction: 137.1 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-Apr	105	96	99	80	86	92	90	78	107	88	89	91	103	96	104	74	67	71	89	73	61	97	104	108	90.9
2-Apr	111	109	106	104	107	109	108	107	102	104	116	64	347	5	352	23	17	16	32	22	15	20	18	20	56.5
3-Apr	7	6	15	4	357	353	4	35	34	345	341	349	341	5	316	293	16	61	107	110	107	129	134	144	20.6
4-Apr	143	152	151	140	141	134	288	245	1	85	142	133	97	107	121	115	105	106	105	107	113	117	119	122	117.4
5-Apr	132	136	133	141	146	149	139	129	126	145	186	182	185	166	142	160	153	116	139	134	115	121	123	133	145.4
6-Apr	137	144	144	138	134	133	134	138	154	158	168	169	172	168	168	175	176	167	168	161	162	169	165	163	161.4
7-Apr	163	158	152	150	158	157	165	171	177	173	174	175	164	168	172	158	166	158	155	149	164	177	180	177	165.4
8-Apr	164	181	161	170	182	185	184	187	196	217	262	259	261	257	272	247	250	246	242	217	196	187	223	240	219.6
9-Apr	219	202	221	221	222	214	207	236	246	260	253	260	267	258	222	191	190	171	144	140	136	140	137	132	205.2
10-Apr	155	206	249	251	251	244	250	250	253	256	261	253	241	234	236	243	258	248	246	238	214	222	229	207	242.1
11-Apr	200	193	189	205	205	180	164	189	243	252	247	239	267	281	269	263	268	251	287	327	339	353	304	165	243.2
12-Apr	235	230	250	234	230	254	258	265	298	318	292	297	292	293	302	298	292	292	298	267	240	160	177	188	282.6
13-Apr	199	161	103	131	110	131	28	52	344	342	351	347	341	340	13	359	172	80	88	45	44	34	33	34	27.4
14-Apr	36	94	94	106	106	100	108	100	77	97	95	78	84	86	71	77	95	90	94	119	125	129	125	142	95.1
15-Apr	120	132	132	126	135	135	138	134	143	127	140	147	122	123	72	123	133	137	120	117	117	122	116	118	126.4
16-Apr	122	118	117	114	115	114	113	111	116	125	120	114	108	136	128	96	91	93	95	98	103	106	107	110	110.2
17-Apr	104	106	105	105	104	104	100	97	102	104	104	105	107	109	130	131	118	101	92	94	104	104	107	108	106.0
18-Apr	100	99	104	82	89	92	103	86	46	43	66	93	67	66	41	37	39	31	22	15	9	14	18	21	65.3
19-Apr	16	13	28	44	73	106	107	110	109	108	107	109	108	109	111	108	91	100	69	43	44	40	35	29	90.9
20-Apr	35	56	58	88	105	117	114	113	122	100	79	94	81	102	107	109	99	105	108	109	101	110	113	119	101.0
21-Apr	120	116	122	122	109	121	120	129	140	124	113	112	108	102	121	114	99	114	137	119	125	123	130	178	121.2
22-Apr	181	182	173	170	172	178	176	182	186	174	166	166	171	166	183	185	158	173	171	183	170	128	123	121	171.3
23-Apr	127	118	119	152	133	106	103	114	123	116	128	135	127	132	108	130	115	139	149	121	137	153	175	128	129.2
24-Apr	85	69	98	103	94	79	86	73	52	63	50	42	79	15	15	2	354	358	349	351	234	231	198	139	38.2
25-Apr	139	136	132	126	145	153	161	174	178	182	164	193	252	207	201	203	227	265	266	278	263	266	259	262	215.7
26-Apr	261	269	275	281	276	271	278	281	282	284	298	305	331	7	4	8	45	33	39	45	41	42	32	31	317.8
27-Apr	34	11	324	338	211	220	273	288	267	261	253	287	230	214	225	229	221	231	207	163	137	132	161	181	223.9
28-Apr	184	226	260	283	275	284	279	295	297	301	296	311	303	306	310	315	310	324	335	3	51	57	72	129	302.9
29-Apr	136	138	132	166	135	114	UO	123	123	127	116	116	107	140	97	95	98	104	103	104	113	119	122	116	114.3
30-Apr	125	131	134	127	131	133	140	139	142	150	139	145	130	149	150	147	161	175	164	146	127	131	133	136	142.9

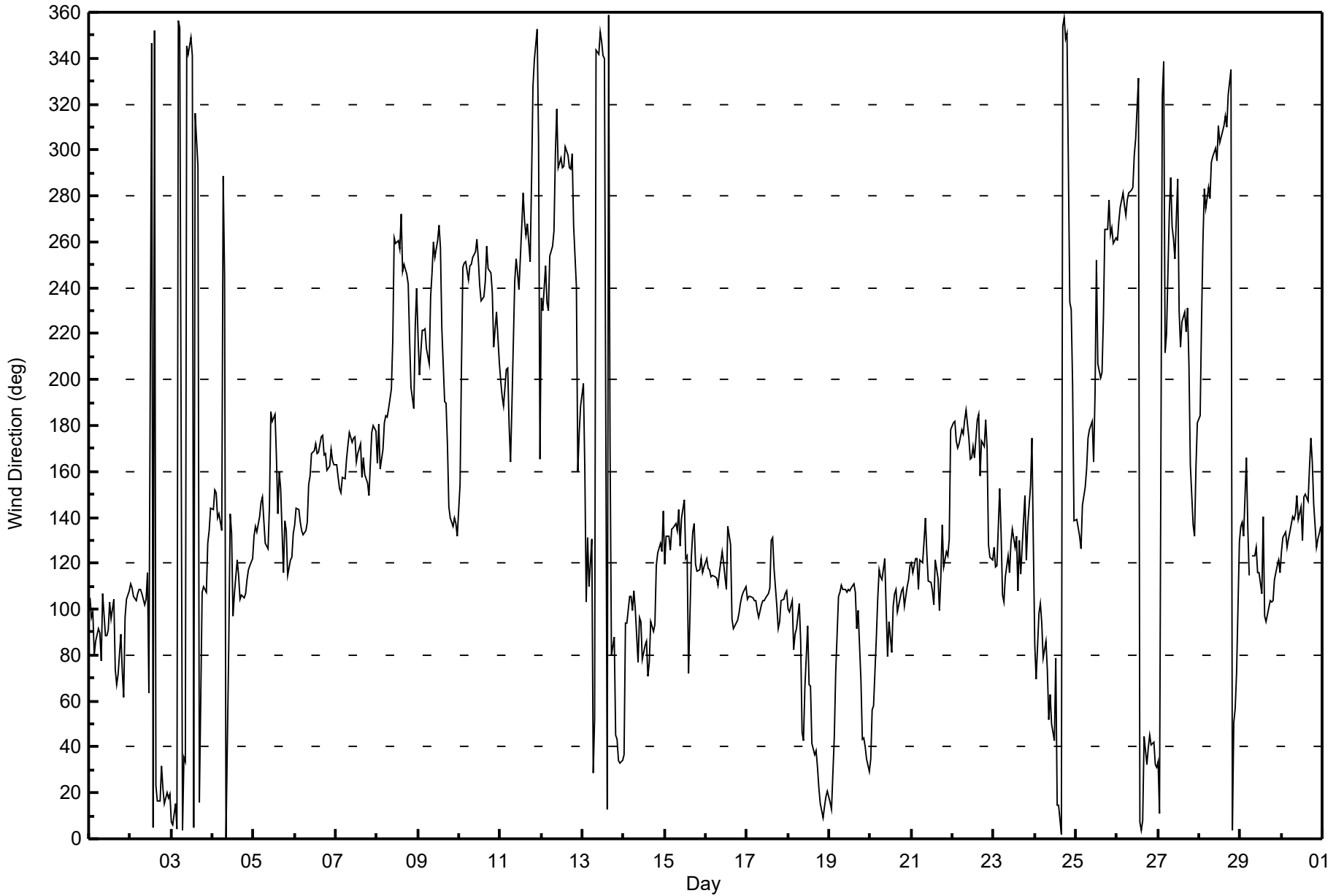
133.6	138.3	137.8	140.3	143.8	139.7	137.8	141.2	147.9	148.7	148.7	148.5	145.5	144.9	152.0	147.9	133.9	129.8	120.3	108.8	119.3	124.1	129.1	132.2
Diurnal Average																							

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
Mackay River - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Mackay River - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 99 deg on Apr 27 08:00	Hours of Data: 719
Minimum Value: 7 deg on Apr 29 01:00	Hours of Missing Data: 1
Percentiles: P ₁ = 11 P ₁₀ = 17 Q ₁ = 21 Median = 27 Q ₃ = 36 P ₉₀ = 49 P ₉₉ = 89	Hours of Calibration: 0
	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-Apr	18	27	24	30	31	28	32	32	28	32	37	36	29	30	23	35	32	33	34	38	28	24	19	18	38
2-Apr	19	19	20	19	18	17	17	19	20	29	32	49	86	35	29	29	26	25	23	24	28	27	25	24	86
3-Apr	26	26	26	25	25	22	26	27	28	49	49	41	45	67	87	88	87	69	27	17	23	12	12	8	88
4-Apr	10	9	13	15	11	68	75	94	75	92	86	64	79	50	50	37	27	22	19	18	17	19	18	18	94
5-Apr	21	21	21	23	24	24	21	23	23	30	27	37	42	42	37	30	36	24	29	22	21	14	17	20	42
6-Apr	22	24	22	22	21	19	20	20	26	25	28	26	28	28	27	27	24	26	26	27	25	24	25	25	28
7-Apr	25	25	26	25	27	28	27	26	25	27	26	29	28	29	28	27	27	27	28	24	28	24	22	23	29
8-Apr	25	31	28	23	19	18	20	28	32	40	51	48	51	53	42	50	54	44	44	25	22	28	29	45	54
9-Apr	34	17	34	30	31	23	23	43	49	41	46	44	45	54	41	32	28	25	24	23	21	23	23	19	54
10-Apr	31	30	48	48	45	49	48	49	48	48	46	46	44	41	39	46	47	46	50	45	23	31	39	22	50
11-Apr	20	19	16	20	17	19	16	25	48	51	46	41	51	44	46	45	52	52	36	14	18	46	38	23	52
12-Apr	31	21	50	38	29	28	44	43	33	47	55	35	38	35	29	36	36	30	27	40	44	16	26	23	55
13-Apr	20	65	58	32	49	26	28	27	64	44	51	65	63	49	92	95	80	38	38	23	18	18	17	20	95
14-Apr	20	74	28	25	18	28	25	29	34	34	34	38	38	54	56	59	43	32	29	19	21	19	22	24	74
15-Apr	13	12	12	12	13	14	27	21	31	35	47	48	41	56	48	39	26	30	18	13	15	14	15	15	56
16-Apr	13	12	12	11	13	15	16	19	21	26	27	26	29	29	31	31	31	30	26	25	21	18	18	18	31
17-Apr	21	19	20	18	20	19	23	28	25	23	23	21	23	21	28	29	25	24	29	35	24	20	20	20	35
18-Apr	24	24	20	31	32	30	22	33	27	22	31	29	31	30	29	26	27	26	23	22	20	25	22	26	33
19-Apr	24	24	25	26	29	21	20	19	18	18	18	19	19	20	22	24	28	23	30	25	27	28	20	22	30
20-Apr	22	25	21	24	16	17	17	17	22	38	33	33	37	35	35	34	40	34	24	17	16	14	14	13	40
21-Apr	12	12	11	17	10	12	16	20	32	45	45	46	57	62	75	91	45	40	25	13	11	14	17	17	91
22-Apr	14	14	15	13	12	14	19	28	32	33	31	32	34	35	33	30	31	29	25	21	27	19	15	17	35
23-Apr	16	17	16	37	21	41	18	20	23	25	32	32	29	35	39	34	25	31	34	30	30	34	25	39	41
24-Apr	27	33	31	25	29	33	32	29	20	26	26	31	39	35	29	29	27	27	25	24	53	38	70	19	70
25-Apr	25	23	21	19	25	27	27	26	26	26	28	46	51	86	33	36	44	45	43	34	47	47	51	47	86
26-Apr	51	45	38	31	34	34	38	34	39	37	33	36	32	73	39	54	29	29	22	25	21	22	21	38	73
27-Apr	24	50	22	31	90	59	99	99	67	44	46	70	75	50	47	47	47	56	41	23	20	18	25	20	99
28-Apr	18	43	41	25	26	29	35	26	28	28	30	26	25	29	28	27	25	25	27	30	17	23	33	18	43
29-Apr	7	34	29	58	13	8	UO	23	34	32	45	46	71	68	51	44	32	31	21	18	17	18	19	17	71
30-Apr	18	18	19	17	18	20	24	23	24	27	30	31	31	30	31	29	30	27	25	24	18	19	22	23	31

51	74	58	58	90	68	99	99	75	92	86	70	86	86	92	95	87	69	50	45	53	47	70	47	
Diurnal Maximum																								

UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS21
CONKLIN
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)
 APRIL 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	687	33	33	100	4.2	0	1	0
TRS(ppb) Average	685	35	35	100	0.6	0	0.5	0
THC(ppm) Average	671	36	49	98.19	2.5	-	2.2	-
NMHC(ppm) Average	671	36	49	98.19	0.031	-	0.002	-
CH4(ppm) Average	671	36	49	98.19	2.5	-	2.2	-
O3 (ppb) Average	687	33	33	100	55.1	0	51.4	-
NO2 (ppb) Average	685	35	35	100	9.5	0	2.6	-
NO (ppb) Average	685	35	35	100	4.7	-	0.4	-
NOX (ppb) Average	685	35	35	100	12.4	-	2.8	-
PM2.5 (ug/m3) Average	719	1	1	100	43.6	0	10.4	0
Temperature 2 m (C) Average	720	0	0	100	19.6	-	11.1	-
Relative Humidity (%) Average	720	0	0	100	97.5	-	84.3	-
Wind Speed 10 m (km/h) Average	720	0	0	100	22	-	15	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)
 APRIL 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	687	0.37	0.5	-	0	0	0.1	0.2	0.5	0.9	4.2
TRS (ppb) Average	685	0.4	0	-	0.2	0.4	0.4	0.4	0.4	0.4	0.6
THC (ppm) Average	671	2.07	0.1	-	2	2	2	2.1	2.1	2.2	2.5
NMHC(ppm) Average	671	0	0.002	-	0	0	0	0	0	0	0.031
CH4(ppm) Average	671	2.07	0.1	-	2	2	2	2.1	2.1	2.2	2.5
O3 (ppb) Average	687	39.76	12.3	-	4	19.5	33.3	43.7	49.5	51.6	55.1
NO2 (ppb) Average	685	1.49	1.1	-	0.1	0.5	0.8	1.2	1.8	2.6	9.5
NO (ppb) Average	685	0.18	0.4	-	0	0	0	0.1	0.2	0.4	4.7
NOX (ppb) Average	685	1.67	1.4	-	0.1	0.5	0.8	1.4	2	3.1	12.4
PM2.5 (ug/m3) Average	719	6.41	5	-	0.7	2.8	3.8	5.1	7.6	10.3	43.6
Temperature 2 m (C) Average	720	3.39	6.2	-	-10.2	-4.5	-1.9	3	7.8	11.7	19.6
Relative Humidity (%) Average	720	56.89	22.7	-	16.1	26.5	35.9	57.6	76.6	88	97.5
Wind Speed 10 m (km/h) Average	720	7.4	5	-	0	2	3	7	11	15	22
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS 21)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	16 Apr 2023 11:00	16 Apr 2023 13:00	3	Maintenance - adjusted chromatogram windows
THC/NMHC/CH4	18 Apr 2023 03:00	18 Apr 2023 10:00	8	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	18 Apr 2023 11:00	18 Apr 2023 12:00	2	Maintenance - analyzer replaced

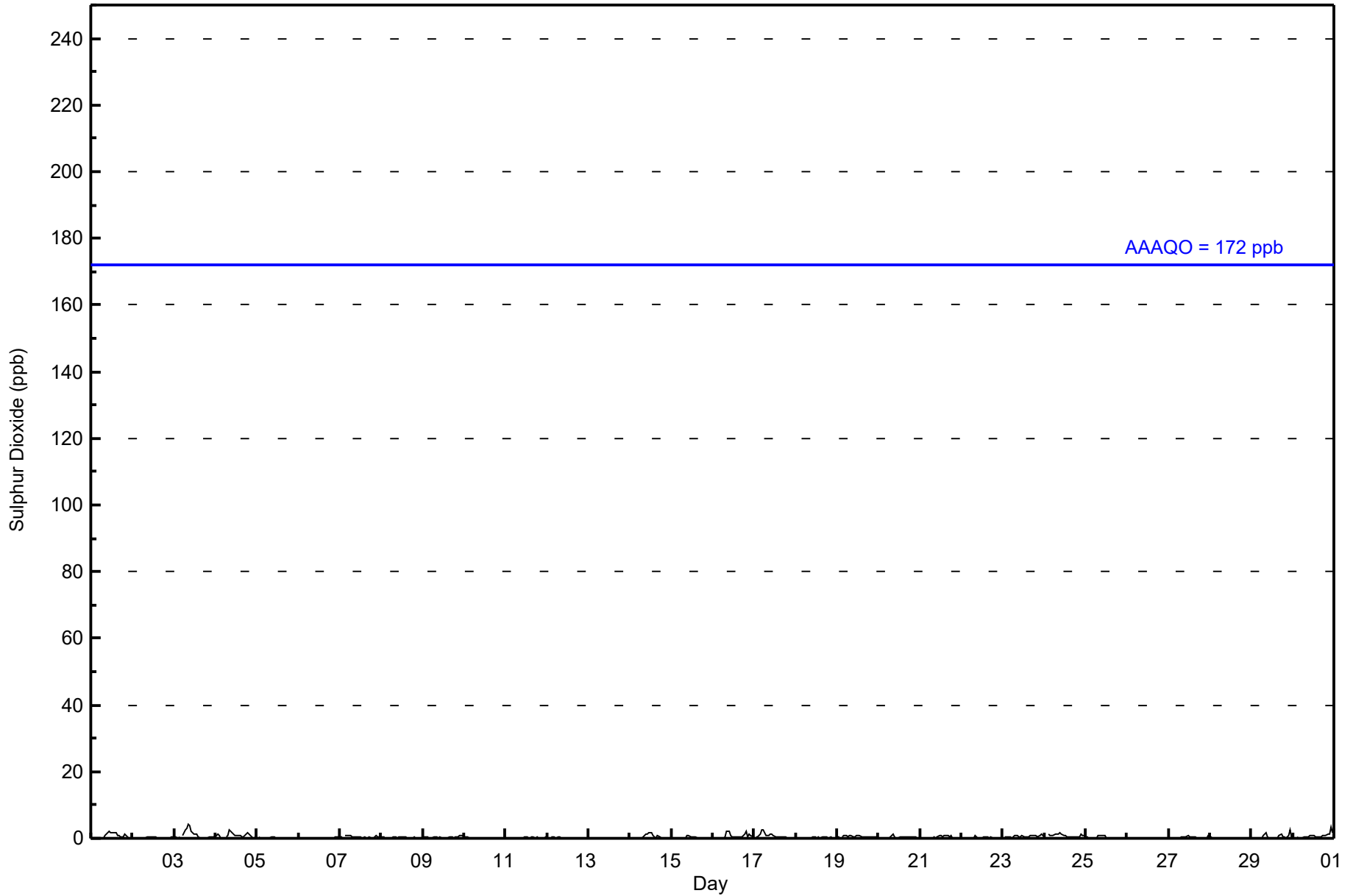


Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 4.2 ppb on Apr 3 09:00		Maximum Daily Average: 1.0 ppb on Apr 3		Hours of Data:														687								
Minimum Value: 0.0 ppb on Apr 6 03:00		Minimum Daily Average: 0.0 ppb on Apr 13		Hours of Missing Data:														33								
Maximum Diurnal Average: 0.7 ppb at hour 9		Minimum Diurnal Average: 0.2 ppb at hour 2		Hours of Calibration:														33								
Monthly Average: 0.37 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 0.9 P ₉₉ = 2.4		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-Apr	0.2	0.2	Z	0.2	0.1	0.2	0.1	0.1	0.7	1.5	2.3	1.7	1.8	1.7	1.5	1.0	0.7	0.3	0.5	1.1	0.7	0.3	0.2	0.2	0.8	2.3
2-Apr	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.0	0.3	0.3	0.2	0.6	0.4	0.4	0.2	0.2	0.1	0.2	0.0	0.0	0.1	0.1	0.3	0.4	0.2	0.6
3-Apr	0.2	0.2	0.1	0.2	Z	0.8	2.4	3.2	4.2	3.7	1.9	1.4	1.5	1.1	0.6	0.2	0.2	0.0	0.1	0.2	0.4	0.4	0.4	0.5	1.0	4.2
4-Apr	0.7	1.1	0.7	0.1	0.1	Z	0.2	0.8	2.3	1.8	1.1	1.0	0.8	0.6	0.7	0.6	0.6	0.7	1.8	1.2	0.7	0.3	0.1	0.2	0.8	2.3
5-Apr	Z	0.4	0.2	0.1	0.1	0.1	0.0	0.1	0.5	0.4	0.4	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5
6-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.2	0.4	0.3	0.1	0.4
7-Apr	0.4	0.4	Z	0.8	1.0	1.0	0.7	0.6	0.4	0.2	0.2	0.3	0.2	0.1	0.2	0.2	0.1	0.4	0.2	0.2	0.4	0.7	0.5	0.4	0.4	1.0
8-Apr	0.3	0.3	0.3	Z	0.2	0.0	0.1	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3
9-Apr	0.3	0.2	0.2	0.2	Z	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.5	0.6	0.9	1.0	0.9	0.4	1.0
10-Apr	0.4	0.5	0.4	0.2	0.1	Z	0.2	0.0	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	0.1	0.1	0.1	0.5
11-Apr	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.3
12-Apr	0.2	Z	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.4
13-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	C	C	C	0.0	0.0	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-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.6	1.4	1.2	1.9	1.5	0.7	0.2	0.1	0.7	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.4	1.9
15-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.2	1.0	0.9	0.4	0.3	0.3	0.4	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	1.0
16-Apr	0.0	0.0	0.0	0.0	0.1	Z	0.0	0.4	2.3	2.0	0.9	0.6	0.4	0.2	0.3	0.3	0.4	0.2	1.2	2.2	0.2	1.1	0.6	0.3	0.6	2.3
17-Apr	Z	0.3	0.3	1.2	2.5	2.4	1.6	0.9	0.8	1.3	1.1	0.8	0.5	0.2	0.3	0.4	0.3	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.7	2.5
18-Apr	0.0	Z	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.2	0.4
19-Apr	0.2	0.2	Z	0.4	0.8	0.8	0.4	1.0	0.7	0.6	0.4	0.8	0.9	0.8	0.5	0.5	0.4	0.4	0.3	0.2	0.3	0.2	0.3	0.2	0.5	1.0
20-Apr	0.2	0.2	0.2	Z	0.2	0.1	0.1	0.5	1.1	0.5	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.3	1.1
21-Apr	0.1	0.0	0.1	0.0	Z	0.0	0.0	0.0	0.3	0.2	0.3	0.9	0.7	0.6	0.8	0.8	0.7	0.4	0.6	0.2	0.0	0.0	0.0	0.0	0.3	0.9
22-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.8	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.8
23-Apr	Z	0.3	0.6	0.6	0.3	0.1	0.4	0.7	0.7	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.7	0.7	0.9	0.7	0.6	1.0	1.3	1.0	0.6	1.3
24-Apr	1.0	Z	1.2	0.9	1.0	0.8	1.1	1.1	1.3	1.6	1.3	1.0	1.1	0.4	0.3	0.2	0.3	0.3	0.5	0.3	0.5	1.5	0.9	1.0	0.9	1.6
25-Apr	0.5	0.4	Z	0.0	0.0	0.0	0.2	0.8	0.9	0.6	0.8	0.9	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.9
26-Apr	0.1	0.1	0.1	Z	0.1	0.1	0.1	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	0.2	0.2	0.2	0.1	0.1	0.2
27-Apr	0.1	0.1	0.2	0.1	Z	0.1	0.1	0.3	0.5	0.5	0.6	0.6	0.4	0.4	0.4	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.7	0.3	0.7
28-Apr	0.5	0.1	0.0	0.0	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.5
29-Apr	Z	0.1	0.0	0.0	0.1	0.1	0.1	1.0	1.8	0.2	0.2	0.1	0.1	0.1	0.0	0.2	0.8	1.1	0.3	0.2	0.2	0.8	2.6	0.4	0.4	2.6
30-Apr	1.3	Z	0.4	0.2	0.2	0.2	0.4	0.6	0.4	0.6	0.8	0.7	0.7	0.5	0.5	0.6	0.6	0.6	0.8	0.9	1.2	1.1	3.5	1.6	0.8	3.5
																								Diurnal Average		
																								Diurnal Maximum		
																								0.3 0.2 0.2 0.2 0.3 0.3 0.3 0.5 0.7 0.7 0.6 0.5 0.5 0.4 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.4 0.3		
																								1.3 1.1 1.2 1.2 2.5 2.4 2.4 3.2 4.2 3.7 2.3 1.9 1.8 1.7 1.5 1.0 0.8 1.1 1.8 2.2 1.2 1.5 3.5 1.6		
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 (SO₂) - ppb
Conklin - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	687	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: 687

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	20	11	9	12	30	86	72	122	88	46	29	17	20	38	44	43	687
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
Totals	20	11	9	12	30	86	72	122	88	46	29	17	20	38	44	43	687

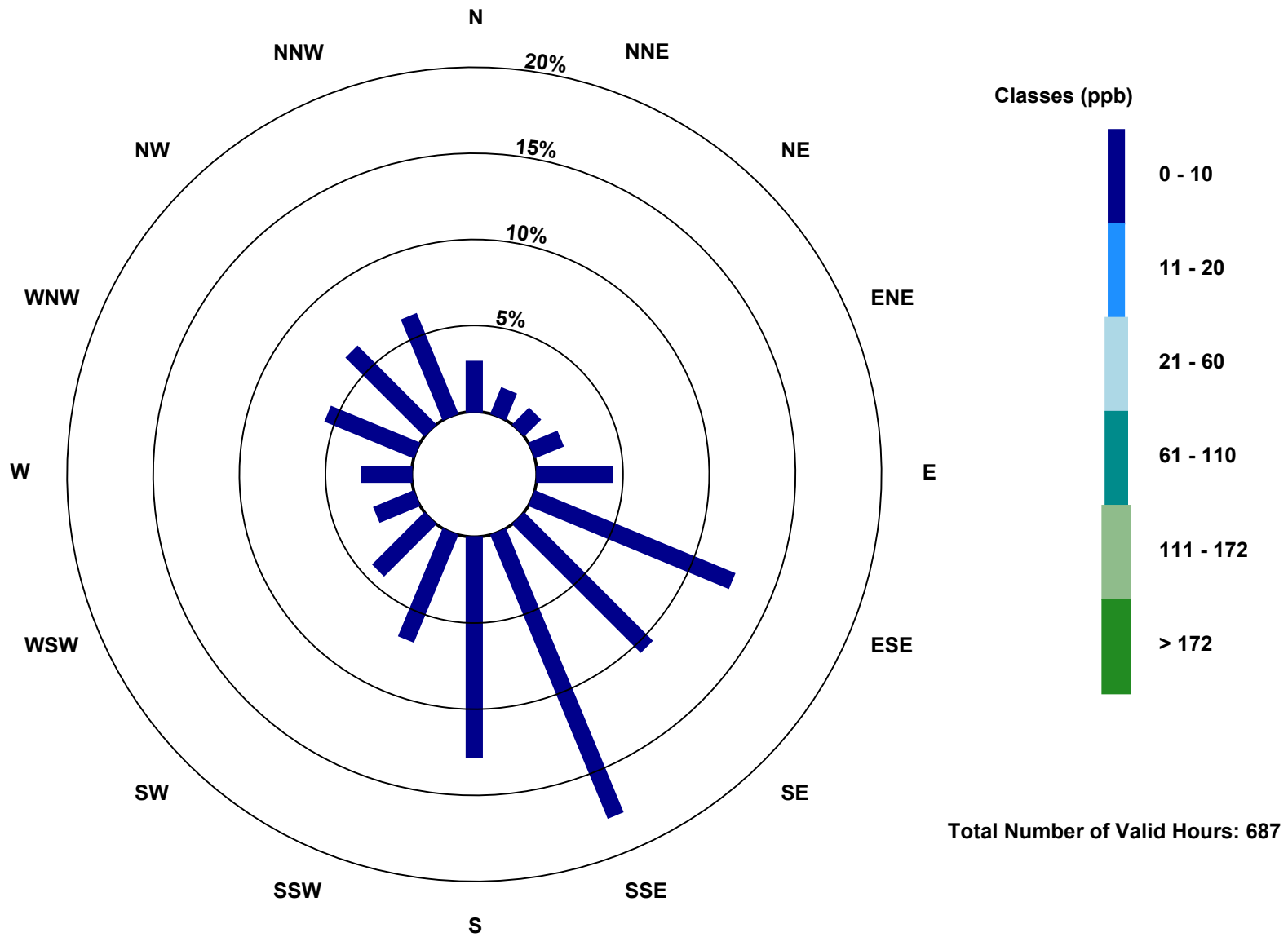
Total Number of Valid Hours: 687

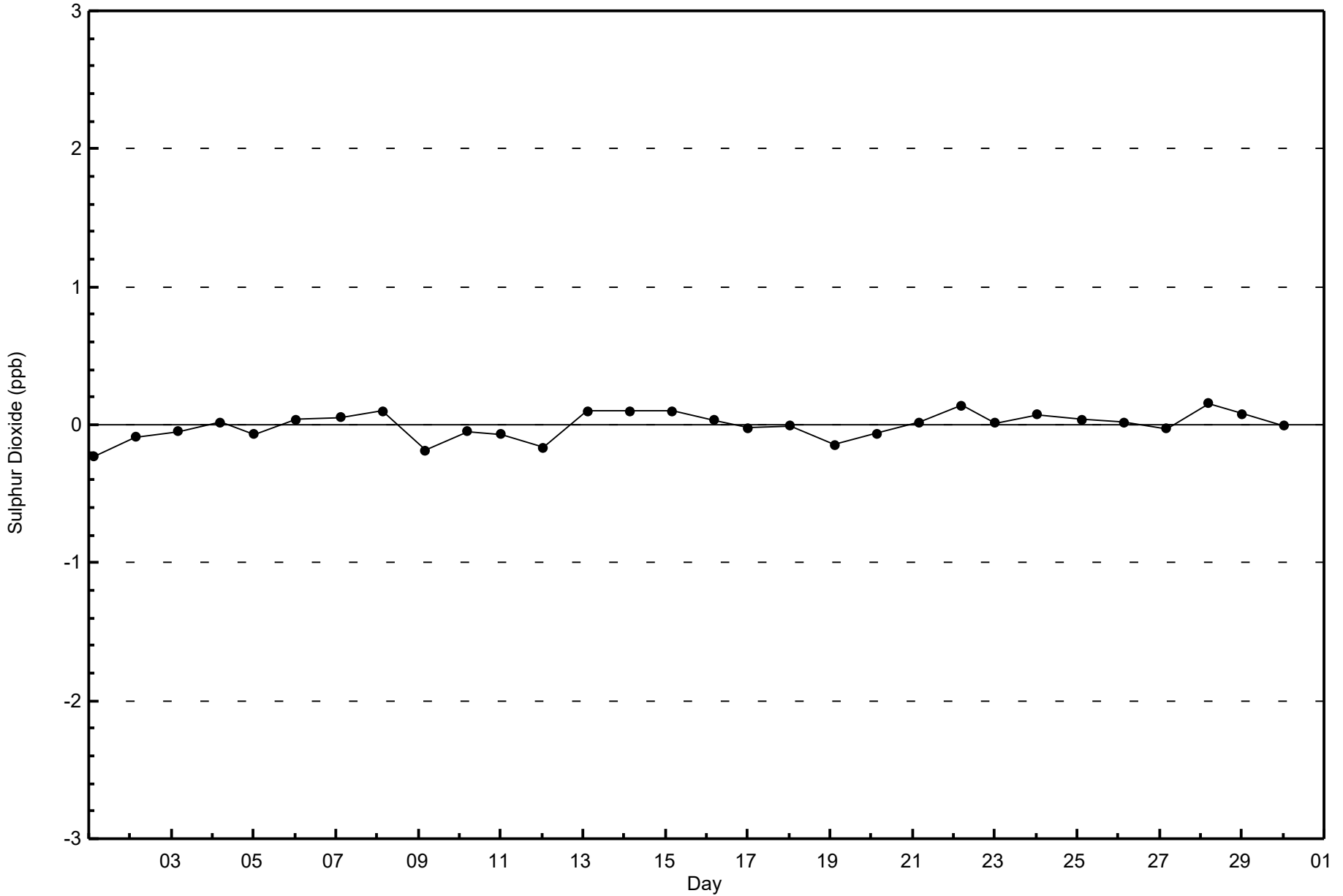
Total Number of Hours: 720

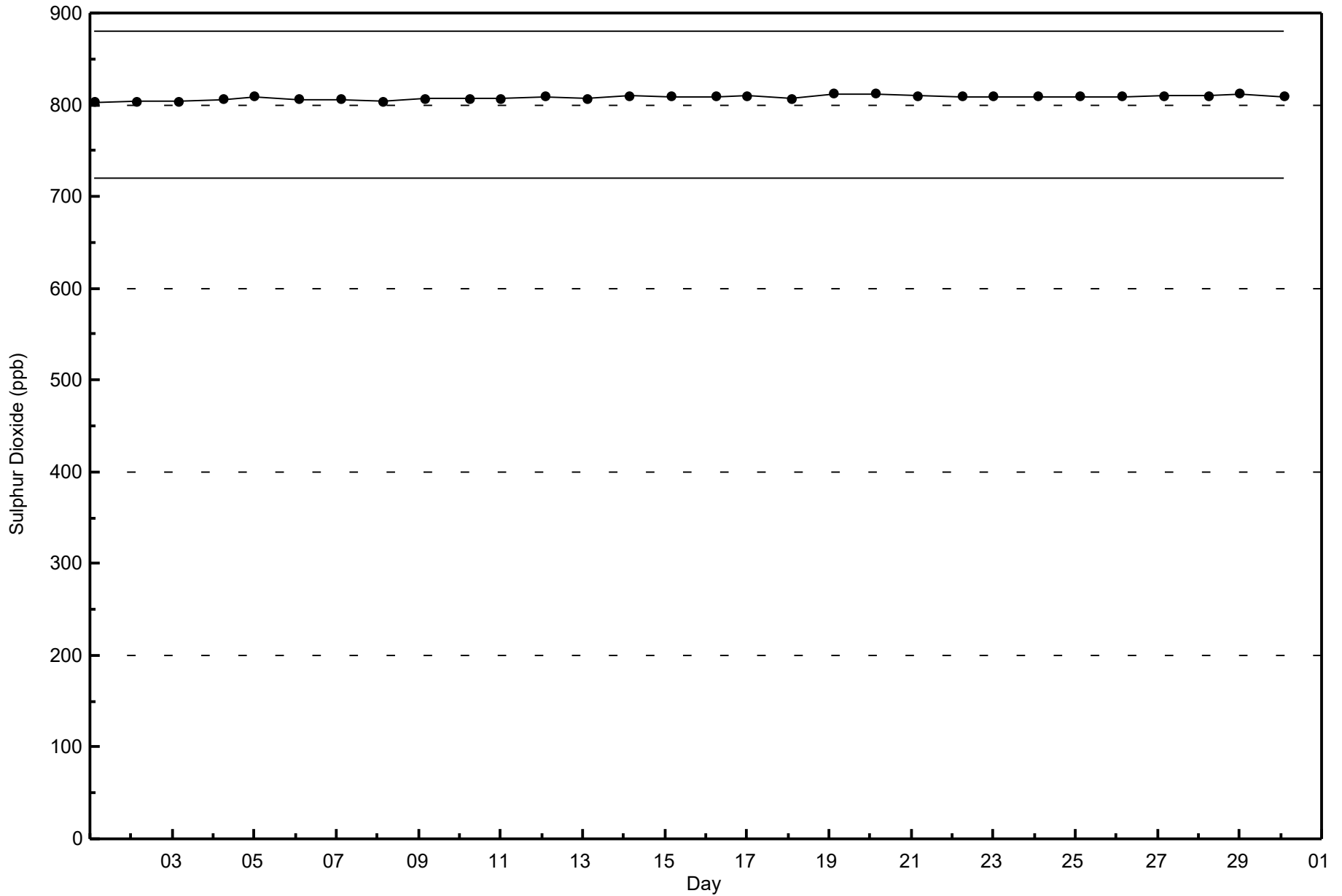


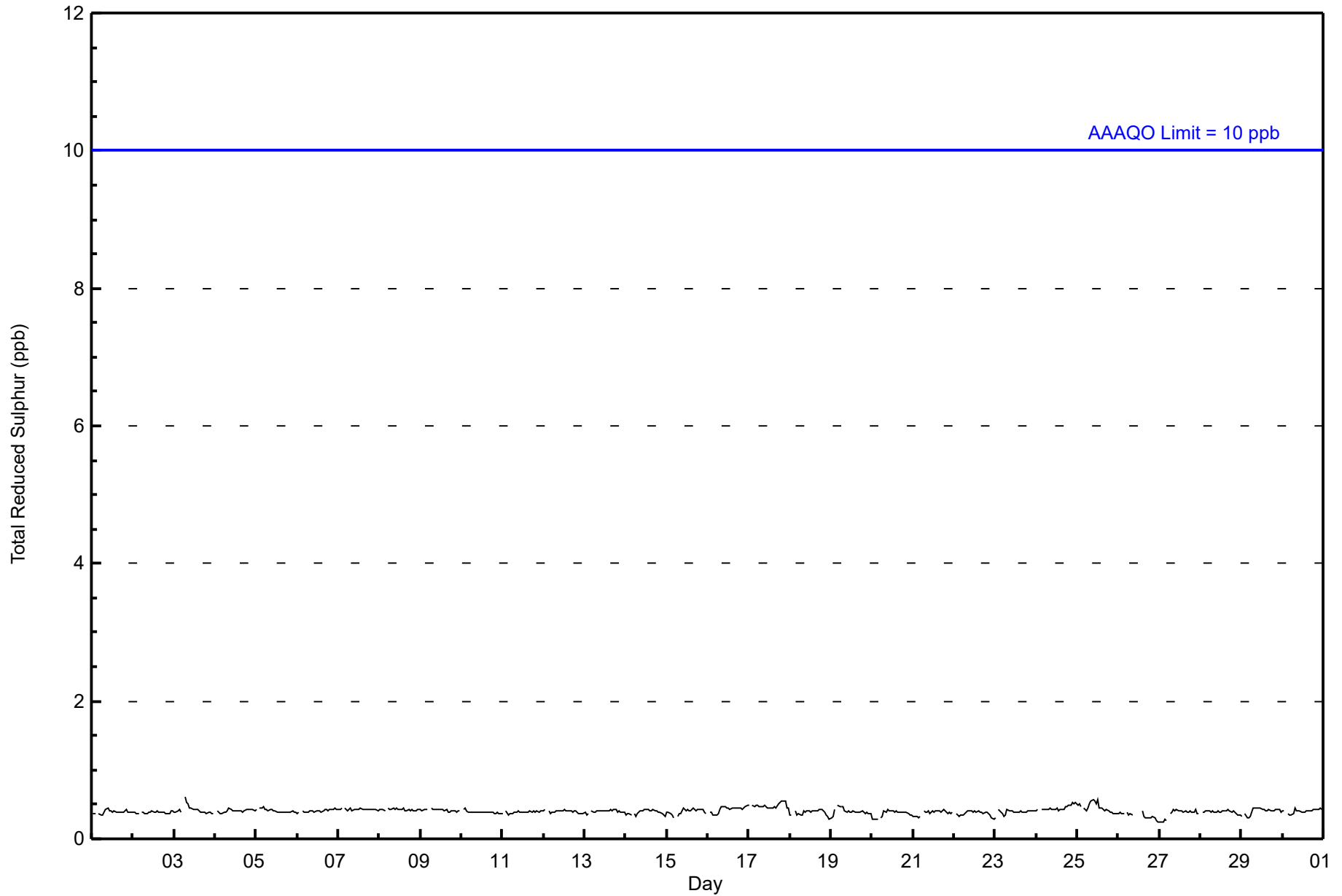
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Conklin











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	20	9	9	11	30	85	73	121	91	45	30	17	23	38	41	42	685
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
Totals	20	9	9	11	30	85	73	121	91	45	30	17	23	38	41	42	685

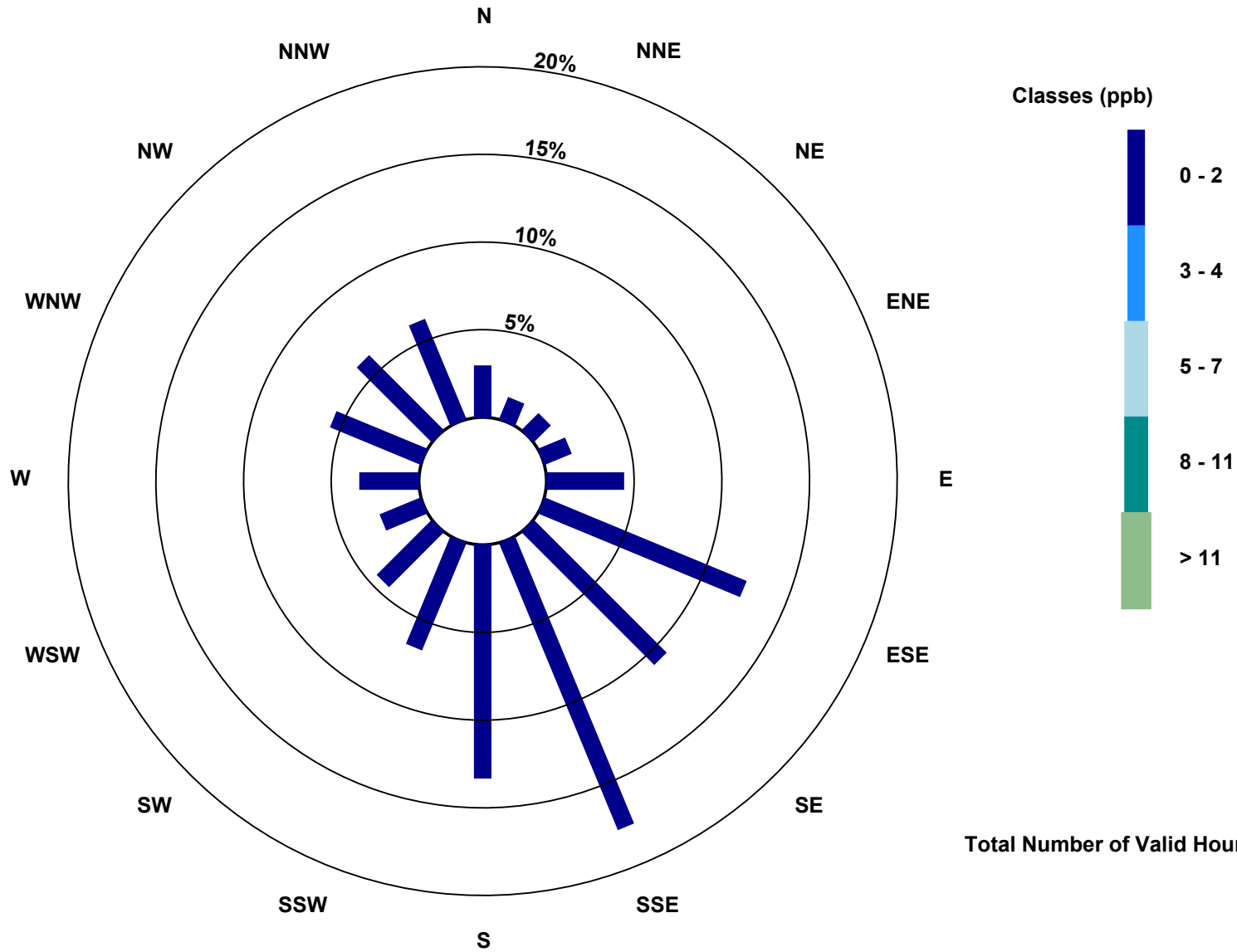
Total Number of Valid Hours: 685

Total Number of Hours: 720

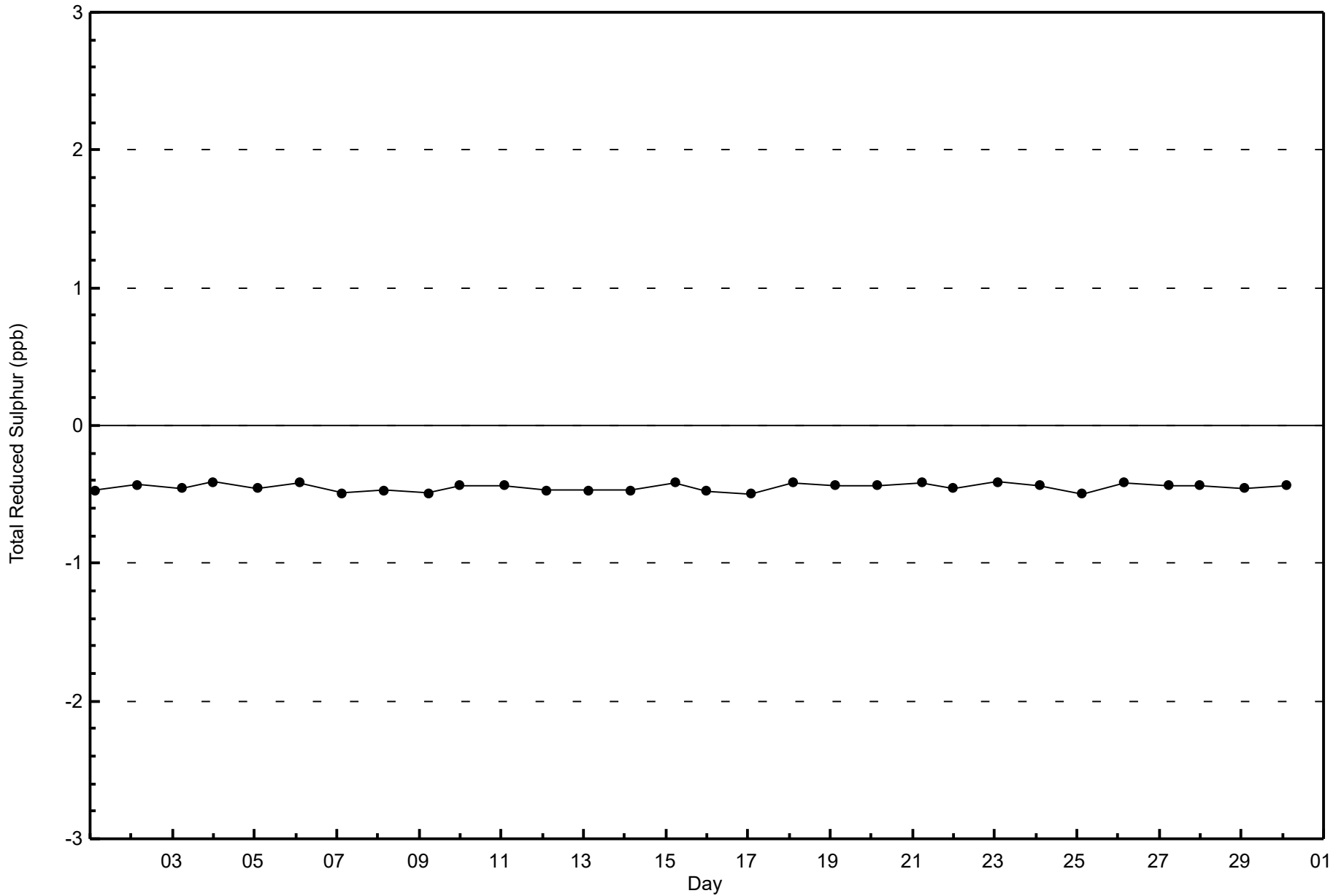


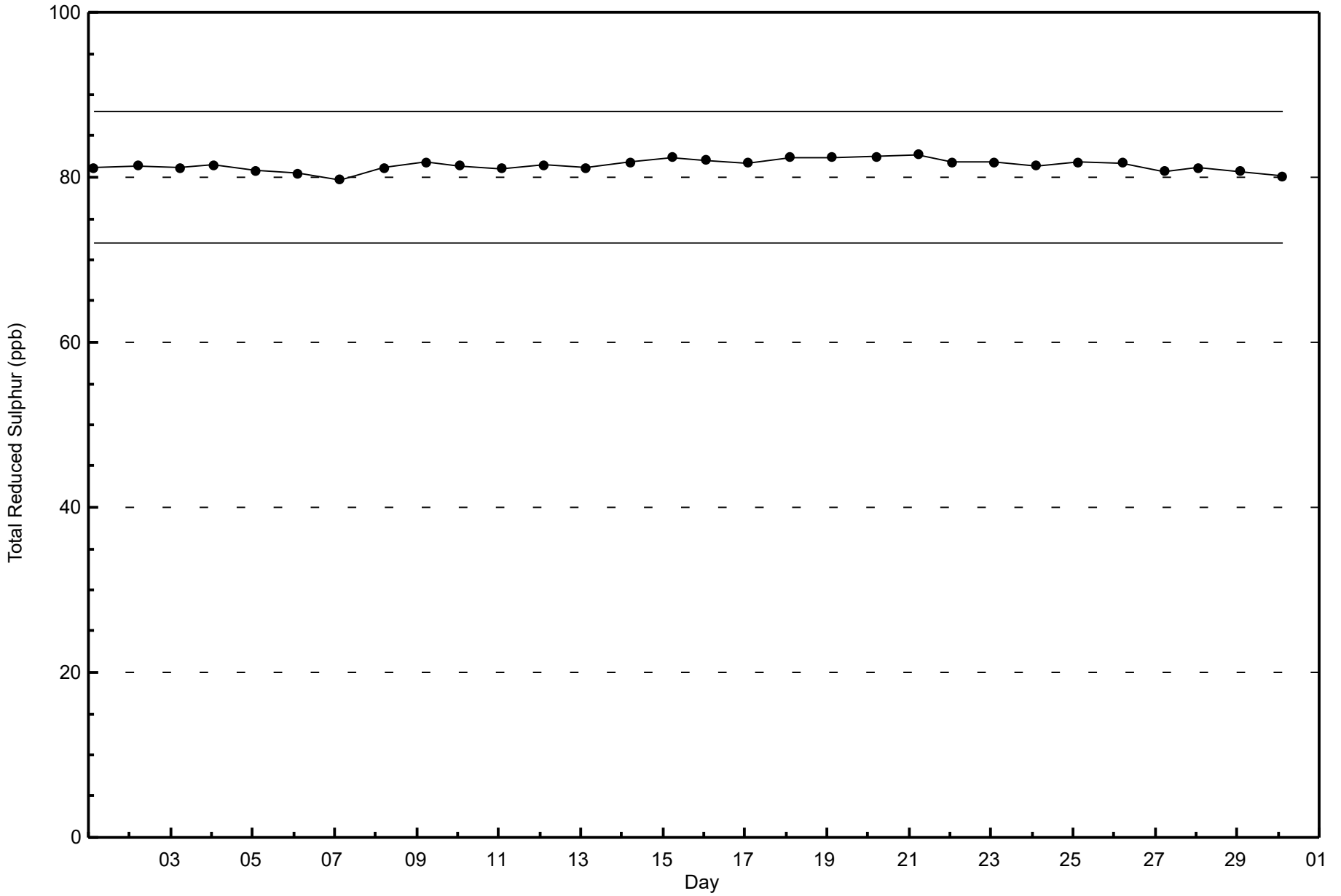
Wood Buffalo Environmental Association
Wind Rose Apr 2023

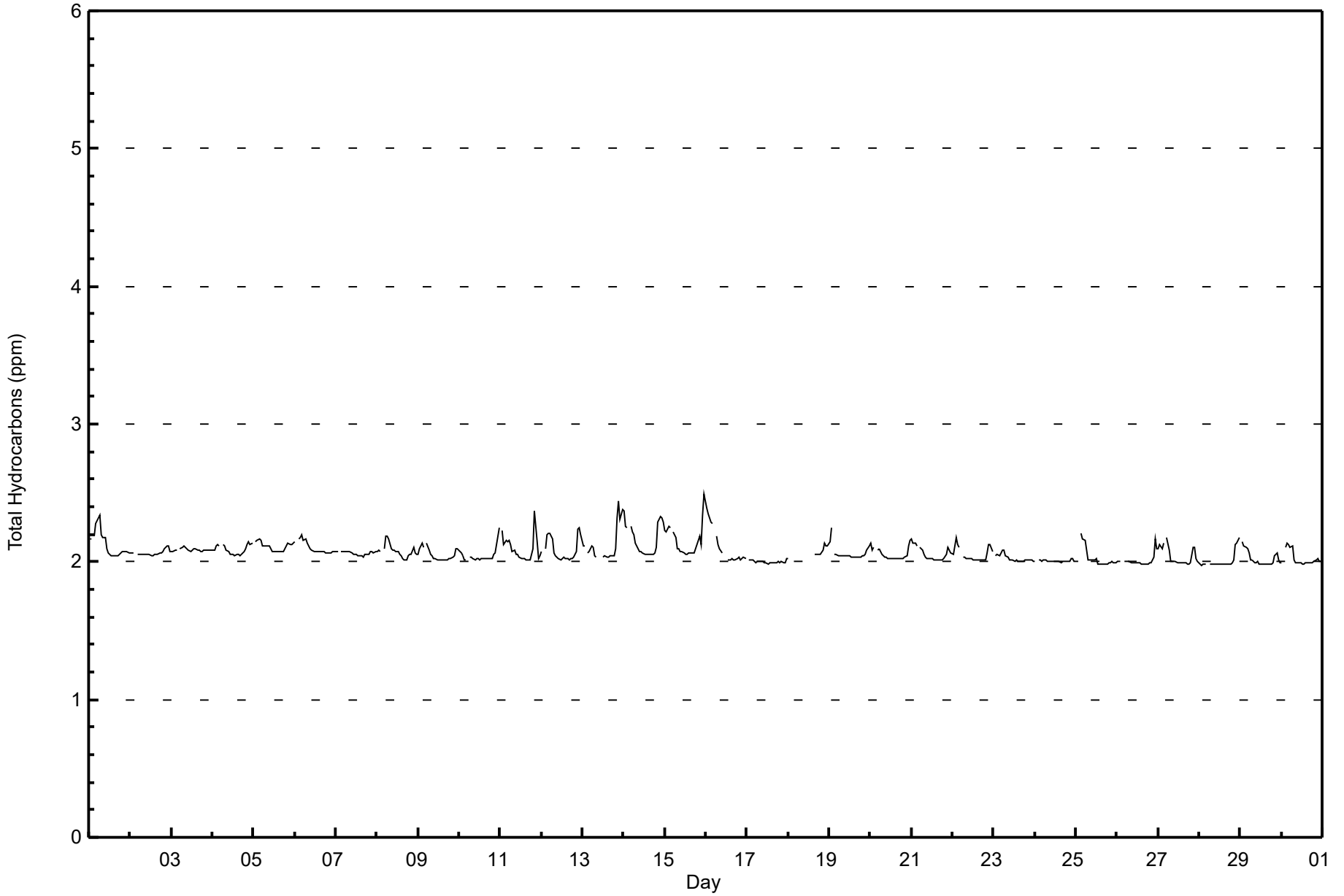
Total Reduced Sulphur (TRS) - ppb
Conklin



Total Number of Valid Hours: 685









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Conklin - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	324	48.29	48.29
2.1 - 3.0	347	51.71	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 671

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Conklin - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	7	1	4	7	16	55	43	47	23	10	18	13	18	25	21	16	324
2.1 - 3.0	11	8	5	4	14	29	28	75	65	36	11	4	2	13	22	20	347
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
Totals	18	9	9	11	30	84	71	122	88	46	29	17	20	38	43	36	671

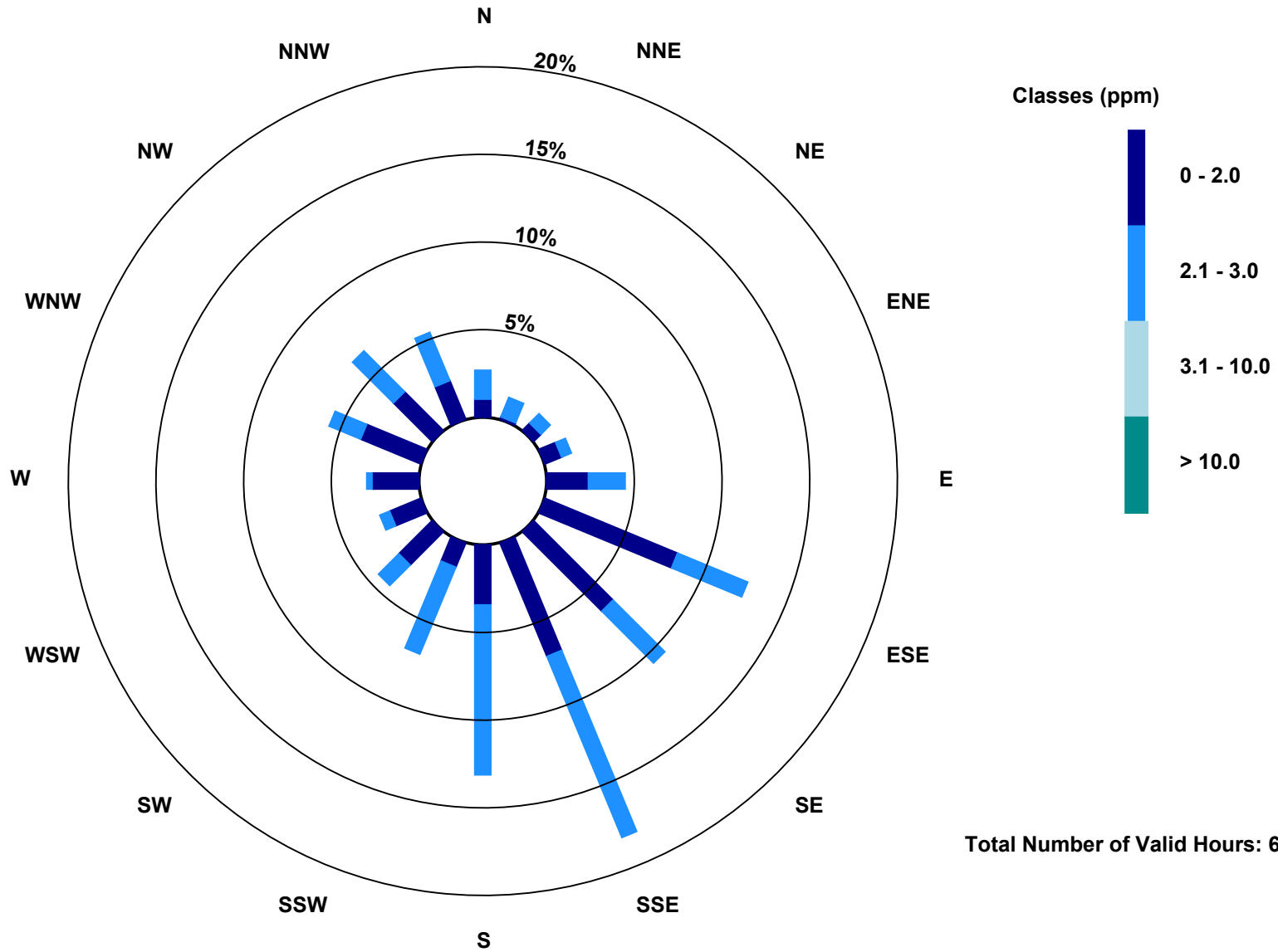
Total Number of Valid Hours: 671

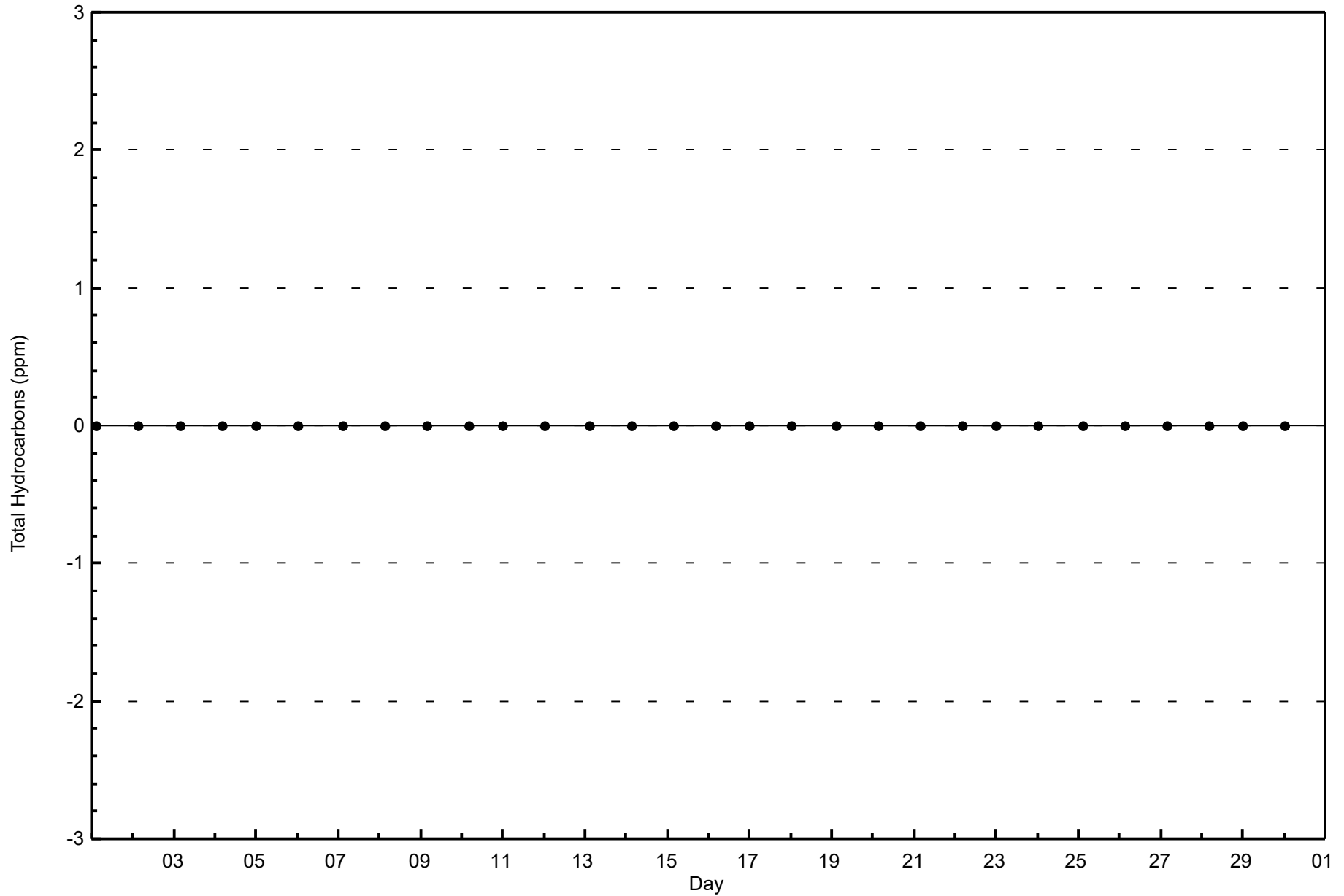
Total Number of Hours: 720

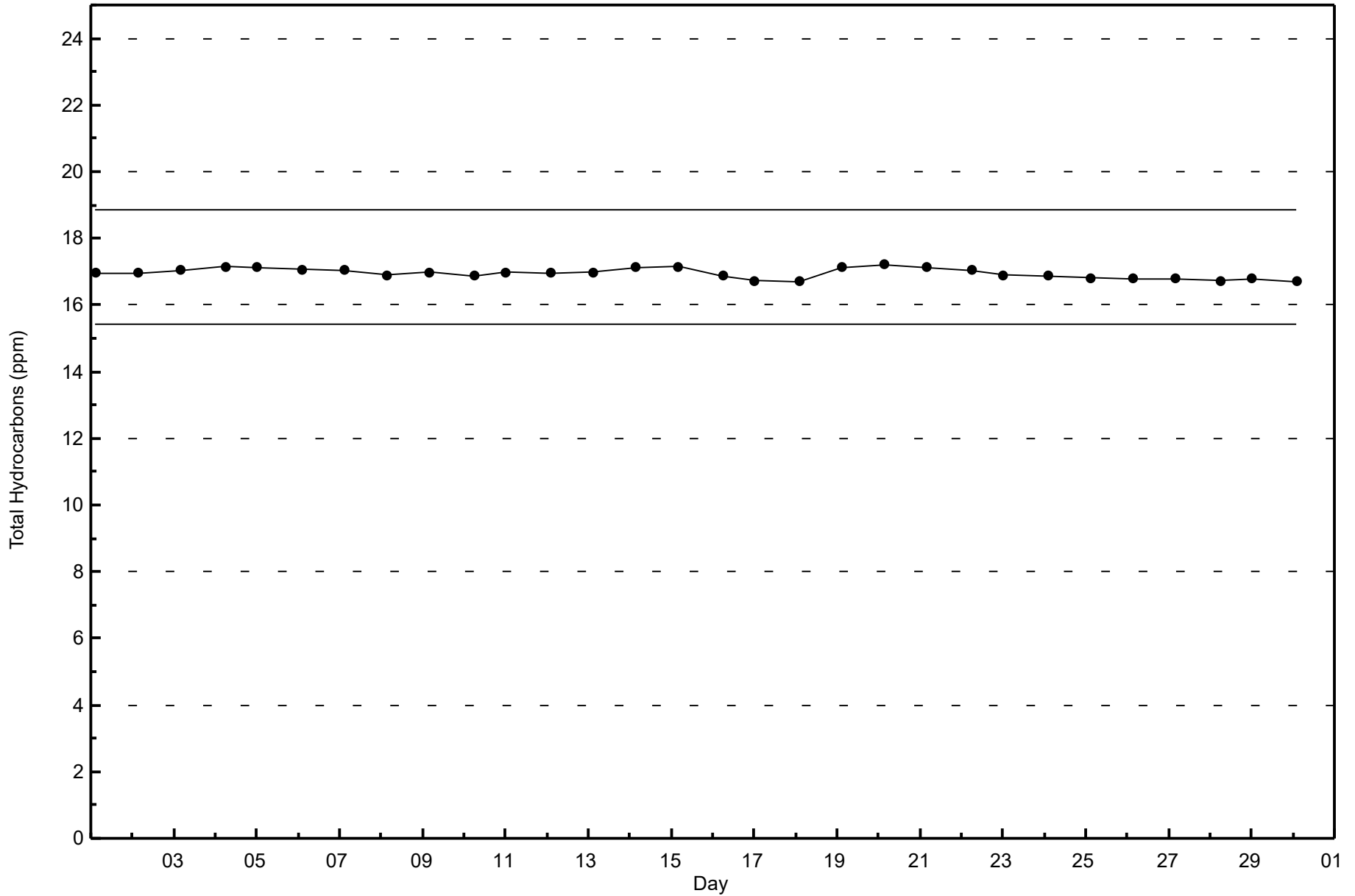


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Conklin





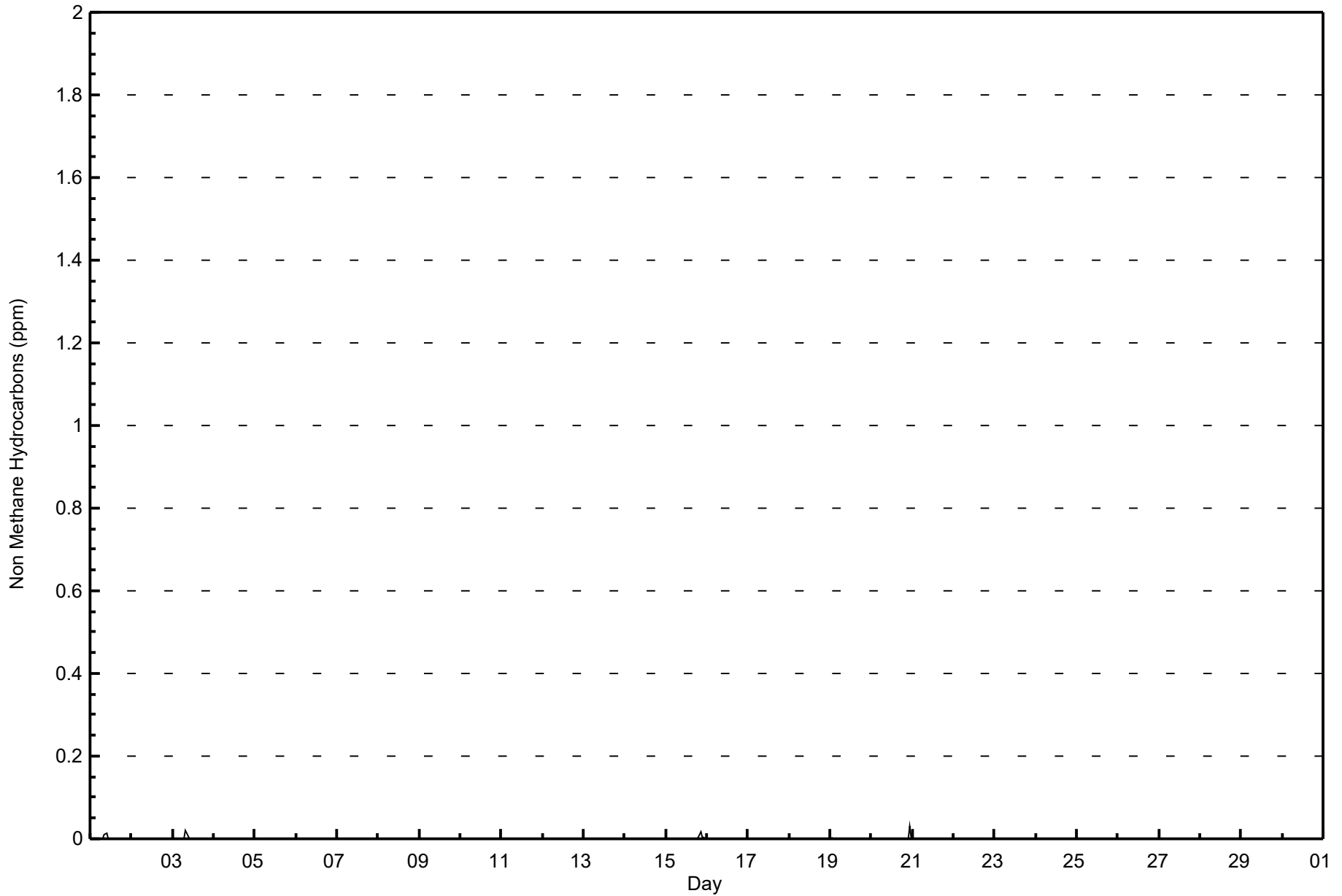




Summary of Hour Averages

Conklin - April 2023

Maximum Value: 0.031 ppm on Apr 20 23:00																				Maximum Daily Average: 0.002 ppm on Apr 3					Hours in Service:	720		
Minimum Value: 0.000 ppm on Apr 1 01:00																				Minimum Daily Average: 0.000 ppm on Apr 5					Hours of Data:	671		
Maximum Diurnal Average: 0.001 ppm at hour 23																				Minimum Diurnal Average: 0.000 ppm at hour 15					Hours of Missing Data:	49		
Monthly Average: 0.000 ppm																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.0					Hours of Calibration:	36		
																									Percent Operational Time:	98.2		
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-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.001	0.000	0.009	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.001	0.015		
2-Apr	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	0.001		
3-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.019	0.014	0.007	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	0.002	0.019		
4-Apr	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		
5-Apr	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		
6-Apr	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		
7-Apr	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	0.001	0.000	0.000	0.000	0.001		
8-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001		
9-Apr	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001		
10-Apr	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		
11-Apr	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	0.000	0.000	0.000	0.000	0.000	0.000	0.001		
12-Apr	0.000	Z	0.000	0.001	0.001	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	0.002		
13-Apr	0.000	0.000	Z	0.000	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	0.001	0.000	0.000	0.000	0.000	0.000	0.001		
14-Apr	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		
15-Apr	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	0.003	0.017	0.002	0.002	0.000	0.001	0.017		
16-Apr	0.001	0.001	0.000	0.000	0.000	Z	0.000	0.001	0.001	0.000	M	M	M	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		
17-Apr	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	0.001	0.000	0.000	0.001	0.000	0.000	0.001		
18-Apr	0.000	Z	UO	UO	UO	UO	UO	UO	UO	UO	M	M	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	0.000		
19-Apr	0.000	0.002	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	0.002		
20-Apr	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	0.031	0.005	0.002	0.031		
21-Apr	0.002	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	0.002		
22-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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-Apr	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		
29-Apr	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		
30-Apr	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 0.001 0.001 0.001 0.000					Diurnal Average			
																				0.002 0.002 0.000 0.001 0.001 0.002 0.001 0.019 0.014 0.015 0.001 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001 0.003 0.017 0.002 0.031 0.005					Diurnal Maximum			
Z - zerospan			C - Calibration				M - Maintenance				UO - Unstable Operation																	





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Conklin - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	664	98.96	98.96
0.006 - 0.05	7	1.04	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 671

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Conklin - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	18	9	9	11	29	84	71	122	88	45	28	16	20	36	42	36	664
0.006 - 0.05	0	0	0	0	1	0	0	0	0	1	1	1	0	2	1	0	7
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
Totals	18	9	9	11	30	84	71	122	88	46	29	17	20	38	43	36	671

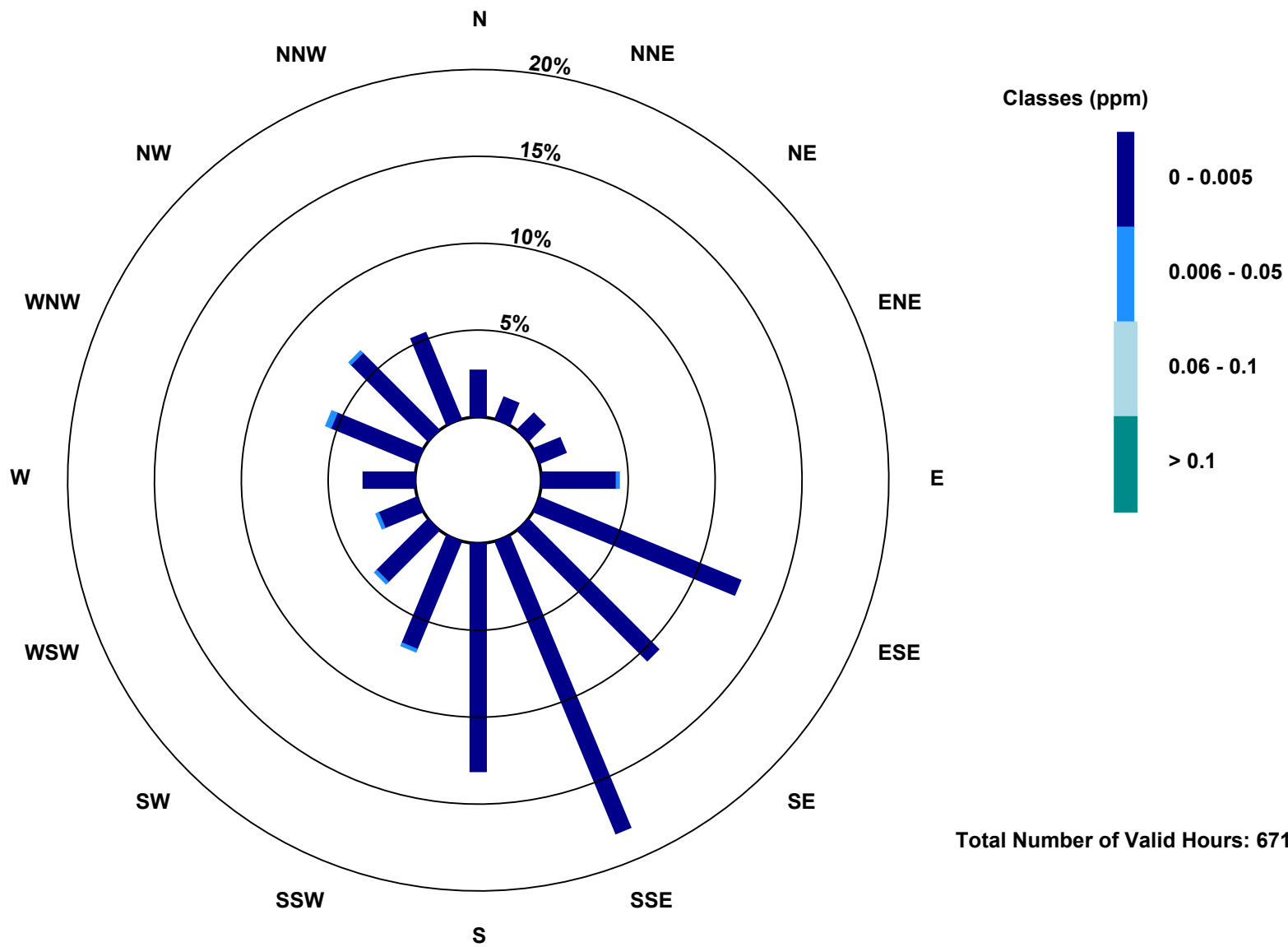
Total Number of Valid Hours: 671

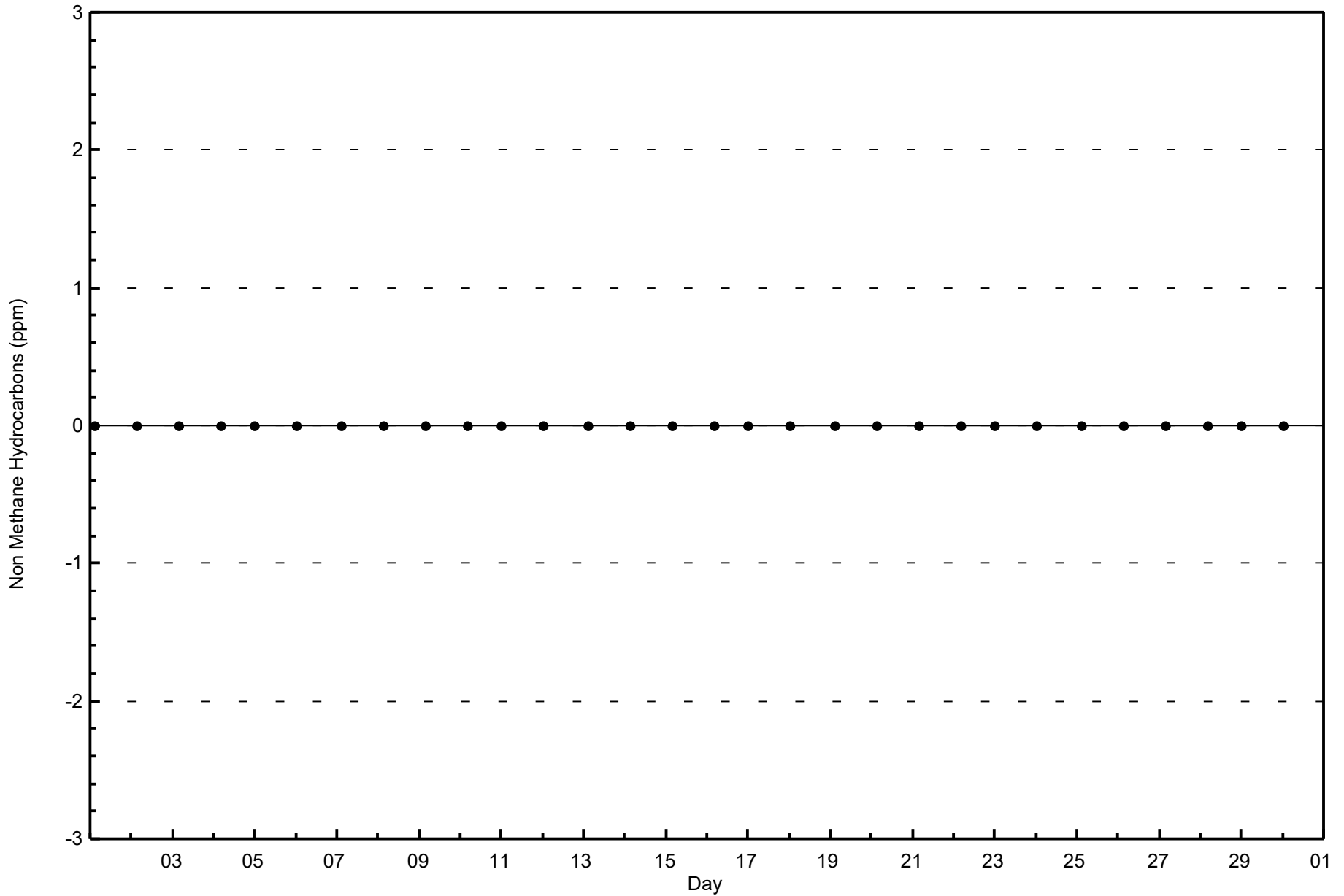
Total Number of Hours: 720

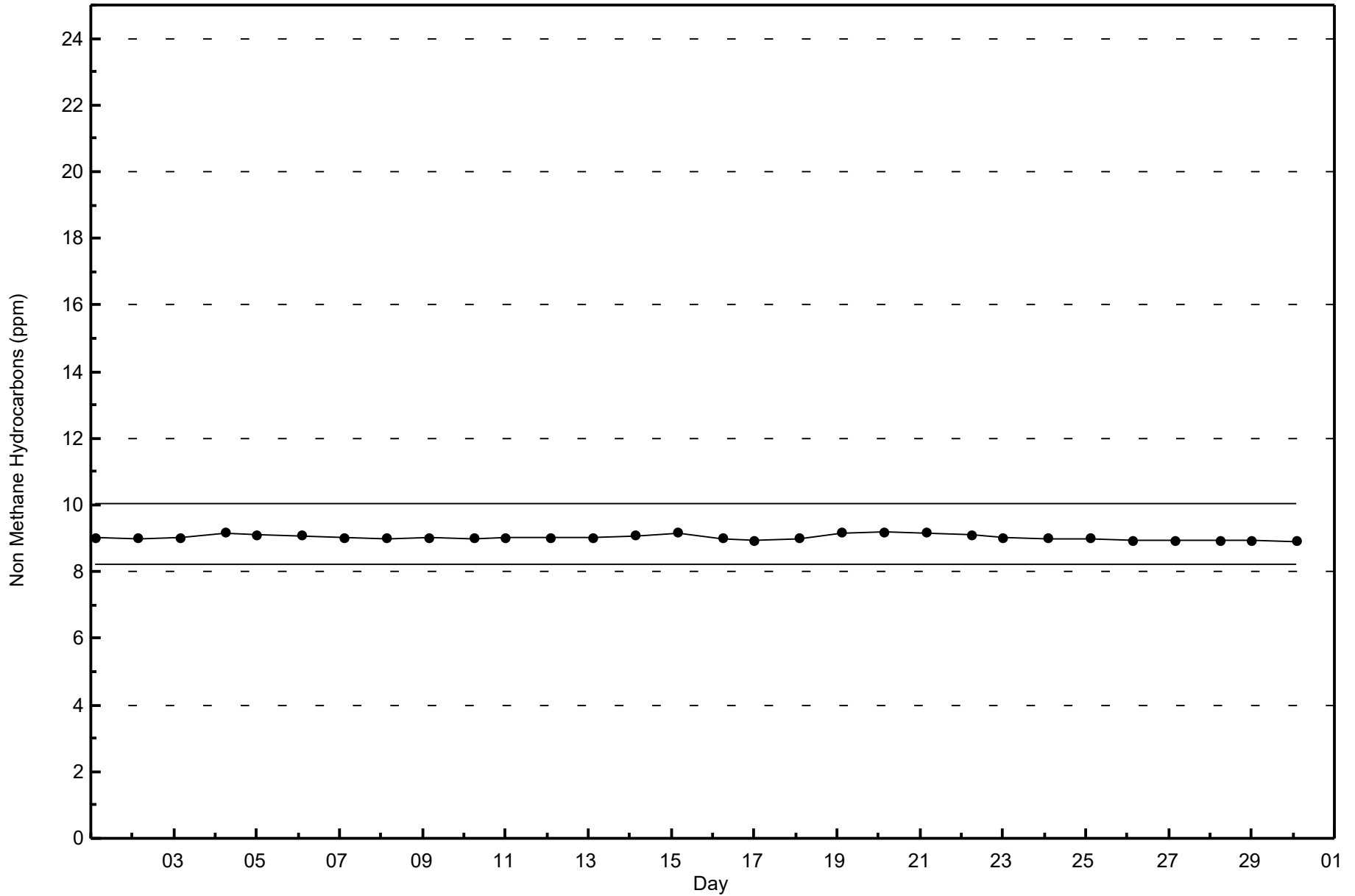


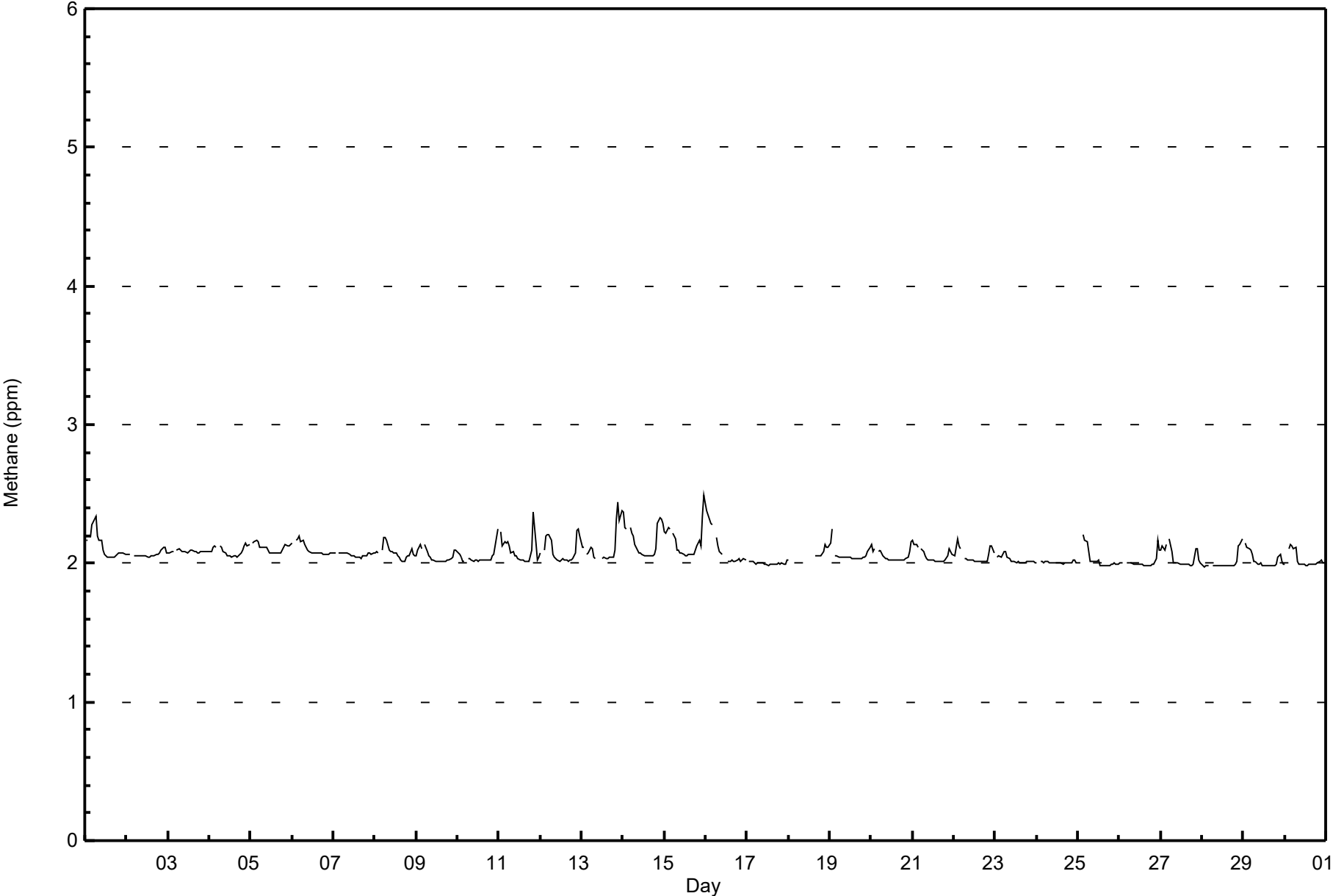
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Conklin











**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Conklin - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	324	48.29	48.29
2.1 - 3.0	347	51.71	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 671

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Conklin - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	7	1	4	7	16	55	43	47	23	10	18	13	18	25	21	16	324
2.1 - 3.0	11	8	5	4	14	29	28	75	65	36	11	4	2	13	22	20	347
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
Totals	18	9	9	11	30	84	71	122	88	46	29	17	20	38	43	36	671

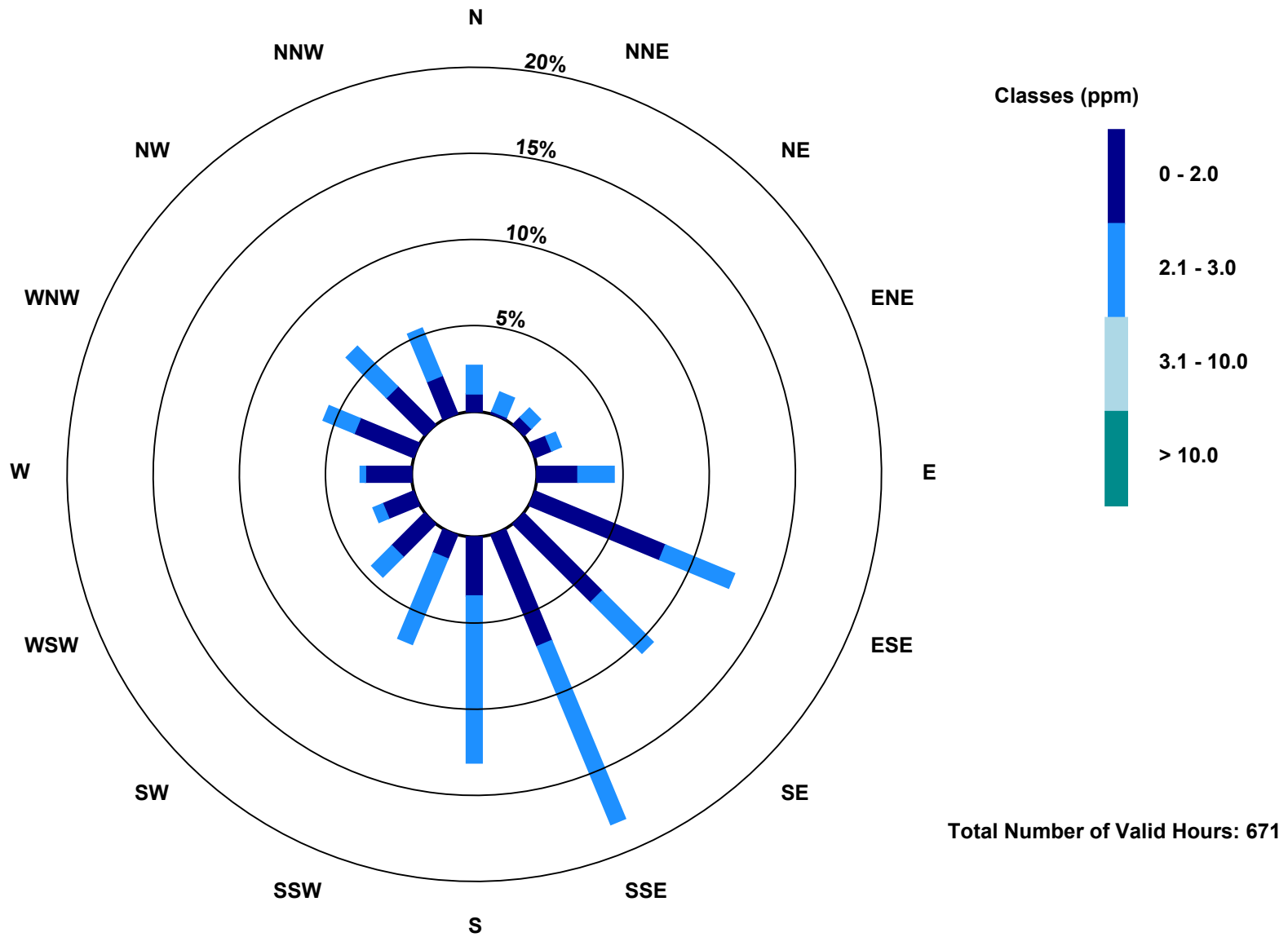
Total Number of Valid Hours: 671

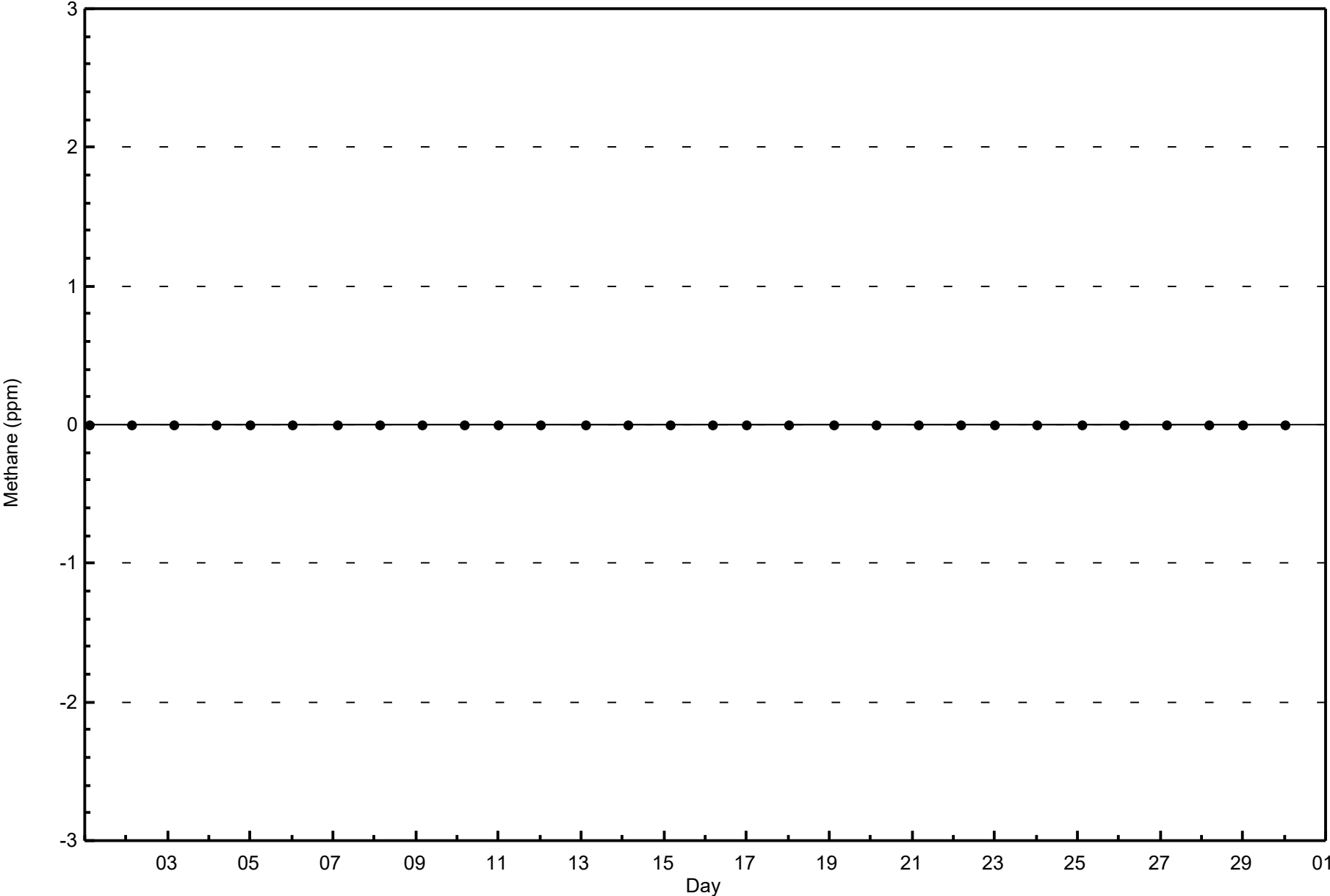
Total Number of Hours: 720

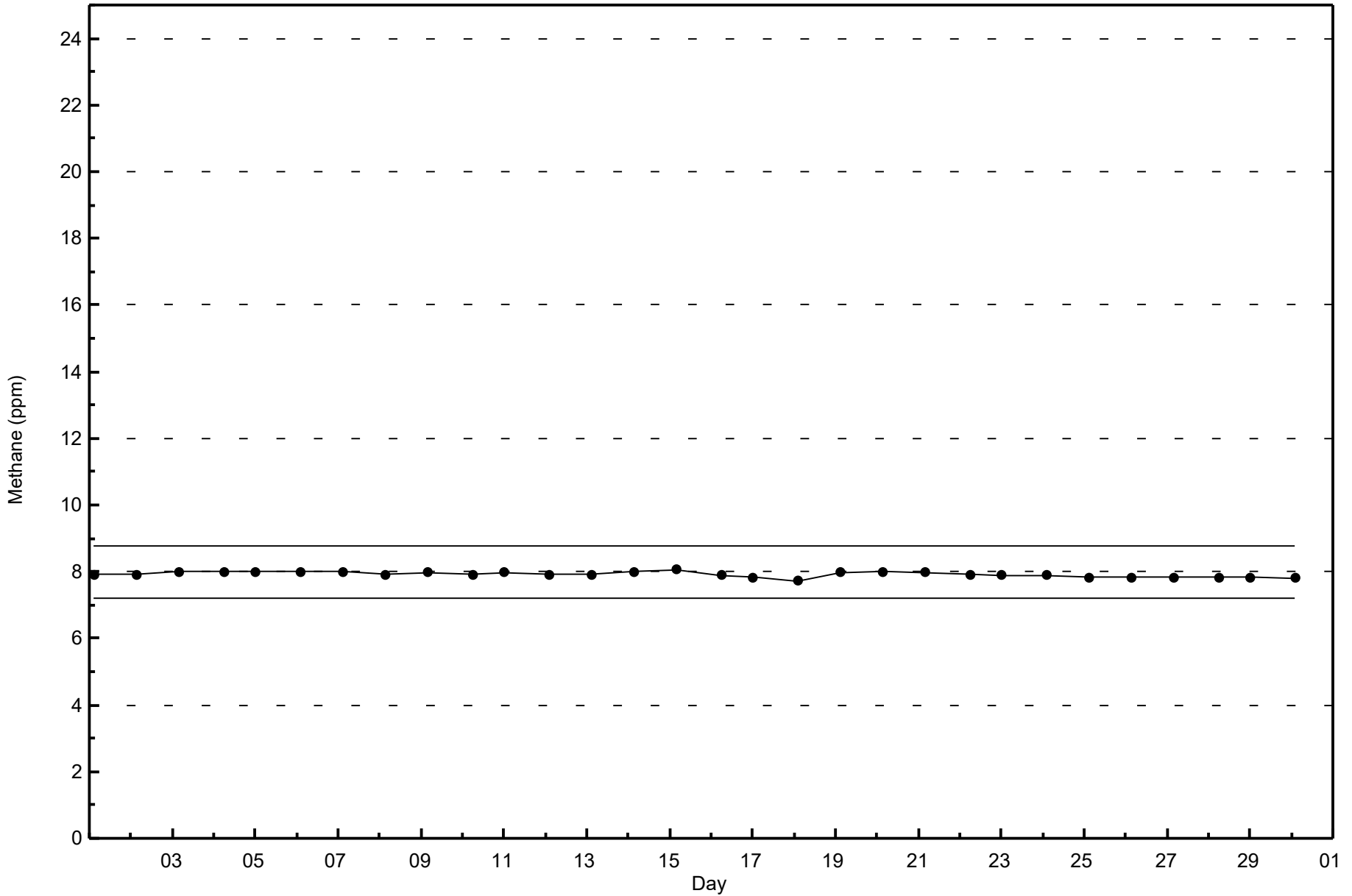


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Conklin









Wood Buffalo Environmental Association
Summary of Hour Averages

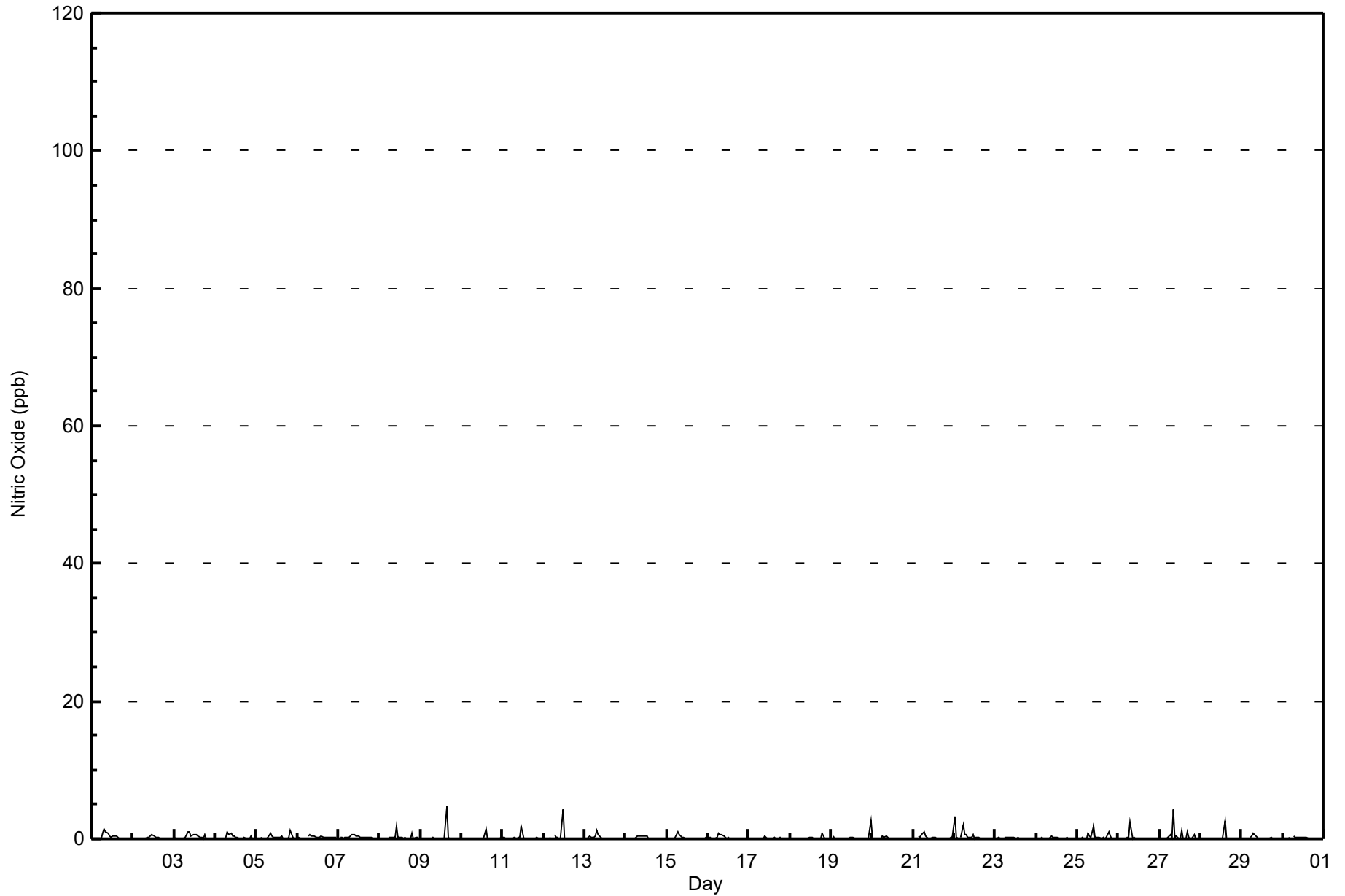
Nitric Oxide (NO) - ppb
Conklin - April 2023

Maximum Value: 4.7 ppb on Apr 9 16:00 Maximum Daily Average: 0.4 ppb on Apr 27																				Hours in Service: 720 Hours of Data: 685 Hours of Missing Data: 35 Hours of Calibration: 35 Percent Operational Time: 100.0						
Minimum Value: 0.0 ppb on Apr 3 05:00 Minimum Daily Average: 0.1 ppb on Apr 17 Maximum Diurnal Average: 0.5 ppb at hour 9 Minimum Diurnal Average: 0.0 ppb at hour 23 Monthly Average: 0.18 ppb Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.4 P ₉₉ = 2.2																										
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-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.8	1.3	1.1	0.8	0.4	0.3	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3	1.3	
2-Apr	0.1	Z	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.7	0.4	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	
3-Apr	0.1	0.1	Z	0.0	0.0	0.1	0.3	0.6	1.0	1.1	0.4	0.5	0.7	0.7	0.5	0.2	0.2	0.0	0.7	0.0	0.0	0.0	0.0	1.1		
4-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.3	0.9	0.7	0.7	0.5	0.3	0.3	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.4	0.0	0.1	0.9		
5-Apr	0.1	0.0	0.1	0.2	Z	0.0	0.0	0.2	0.7	0.5	0.3	0.1	0.2	0.1	0.2	0.4	0.1	0.1	0.1	0.2	1.3	0.2	0.1	1.3		
6-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.5	0.7	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.7		
7-Apr	Z	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.5		
8-Apr	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	1.9	0.3	0.1	0.1	0.0	0.3	0.1	0.1	0.0	0.8	0.1	0.2	0.1	1.9		
9-Apr	0.1	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	4.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	4.7		
10-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.5		
11-Apr	0.2	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.1	0.2	0.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	1.9		
12-Apr	0.0	0.0	0.0	0.1	0.3	Z	0.6	0.3	0.1	0.1	0.1	4.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	4.2		
13-Apr	Z	0.0	0.1	0.4	0.1	0.1	0.3	1.1	0.6	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	1.1		
14-Apr	0.1	Z	0.0	0.1	0.0	0.1	0.2	0.4	0.5	0.4	0.5	0.4	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.5		
15-Apr	0.1	0.0	Z	0.1	0.1	0.1	0.9	0.5	0.4	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	0.1	0.9		
16-Apr	0.1	0.1	0.0	Z	0.0	0.1	0.7	0.5	0.6	0.3	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7		
17-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.4	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.4		
18-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.0	0.1	0.0	0.8	0.1	0.0	0.0	0.8		
19-Apr	Z	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7		
20-Apr	0.3	Z	0.0	0.0	0.0	0.1	0.4	0.2	0.3	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	0.4		
21-Apr	0.0	0.0	Z	0.4	0.2	0.6	0.9	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.9		
22-Apr	3.3	0.1	0.1	Z	0.2	2.1	0.6	0.6	0.2	0.1	0.1	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	3.3		
23-Apr	0.1	0.1	0.2	0.1	Z	0.0	0.2	0.2	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.3		
24-Apr	0.0	0.0	0.0	0.1	0.0	Z	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.3		
25-Apr	Z	0.0	0.0	0.1	0.0	0.1	0.7	0.4	0.2	1.8	0.2	0.2	0.1	0.2	0.0	0.1	0.1	0.2	1.0	0.3	0.1	0.1	0.0	1.8		
26-Apr	0.0	Z	0.1	0.1	0.1	0.1	0.1	2.4	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	2.4		
27-Apr	0.0	0.0	Z	0.0	0.0	0.1	0.6	0.2	4.2	0.2	0.4	0.1	0.1	1.3	0.0	0.0	1.0	0.2	0.0	0.0	0.6	0.1	0.0	4.2		
28-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	C	C	C	C	C	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6		
29-Apr	0.0	0.0	0.0	0.0	Z	0.1	0.5	0.8	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.8		
30-Apr	0.0	0.0	0.0	0.0	0.2	Z	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.4		
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Conklin - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Conklin - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Conklin - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	19	10	9	12	29	86	72	126	88	45	28	17	23	38	41	42	685
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
Totals	19	10	9	12	29	86	72	126	88	45	28	17	23	38	41	42	685

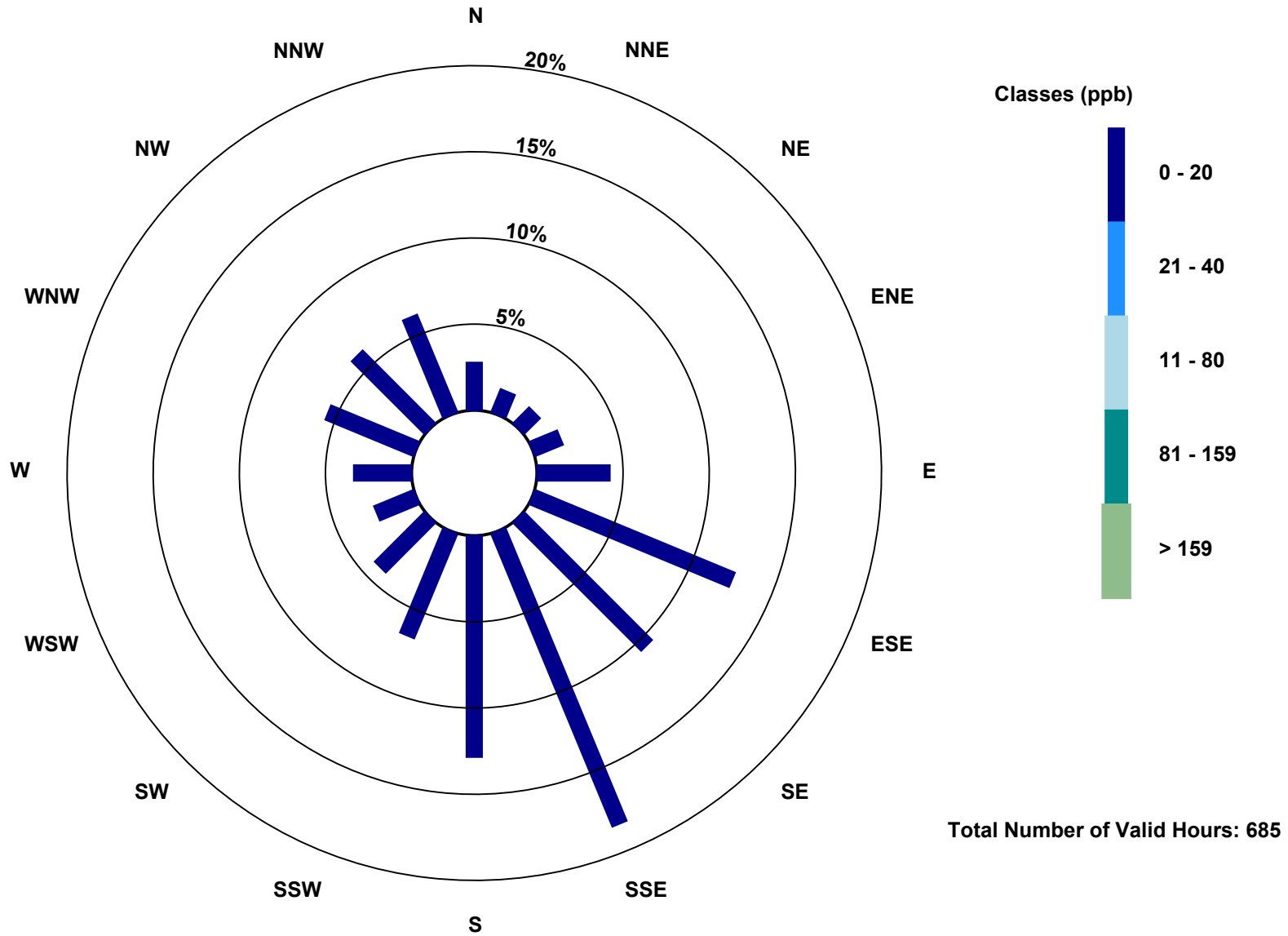
Total Number of Valid Hours: 685

Total Number of Hours: 720

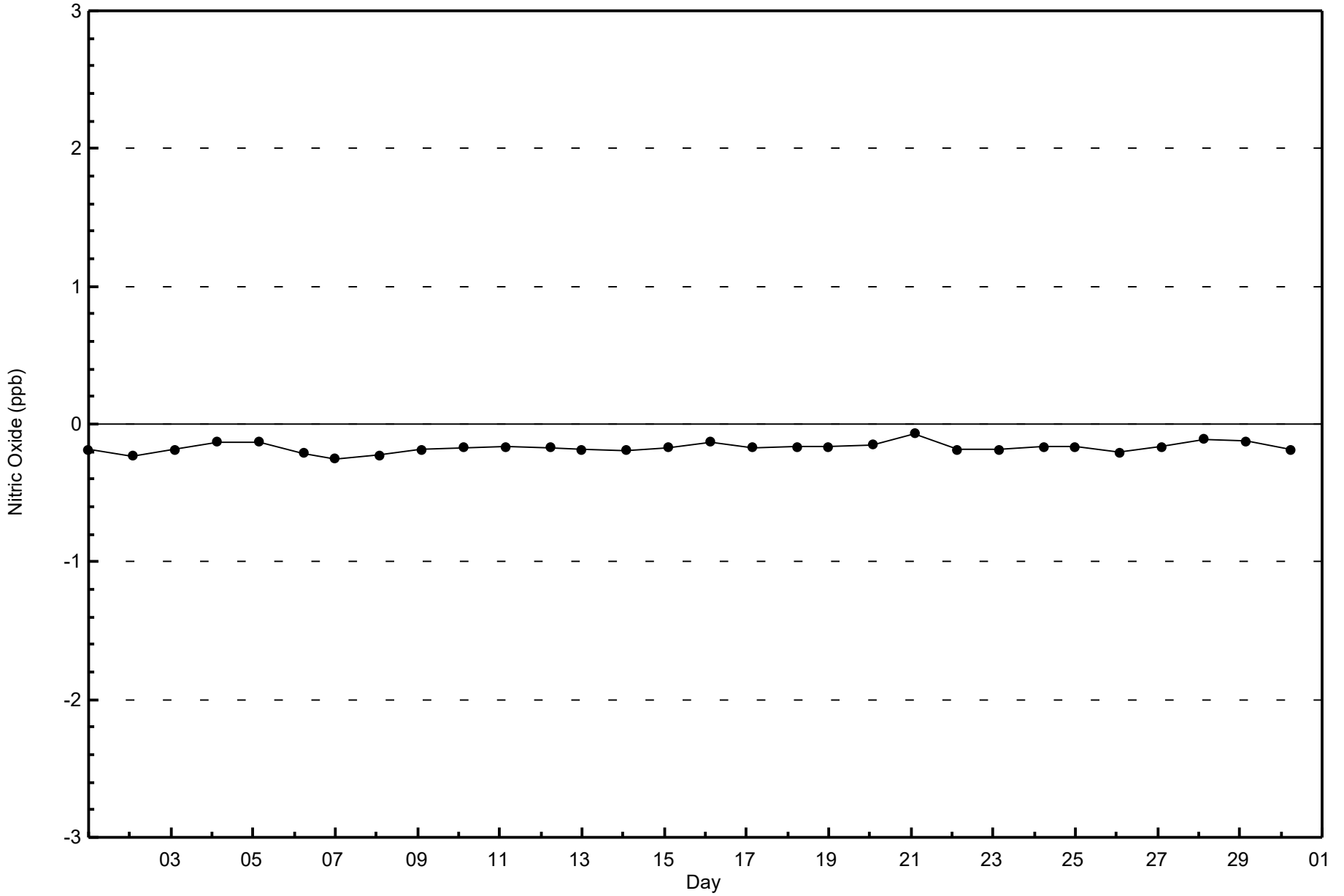


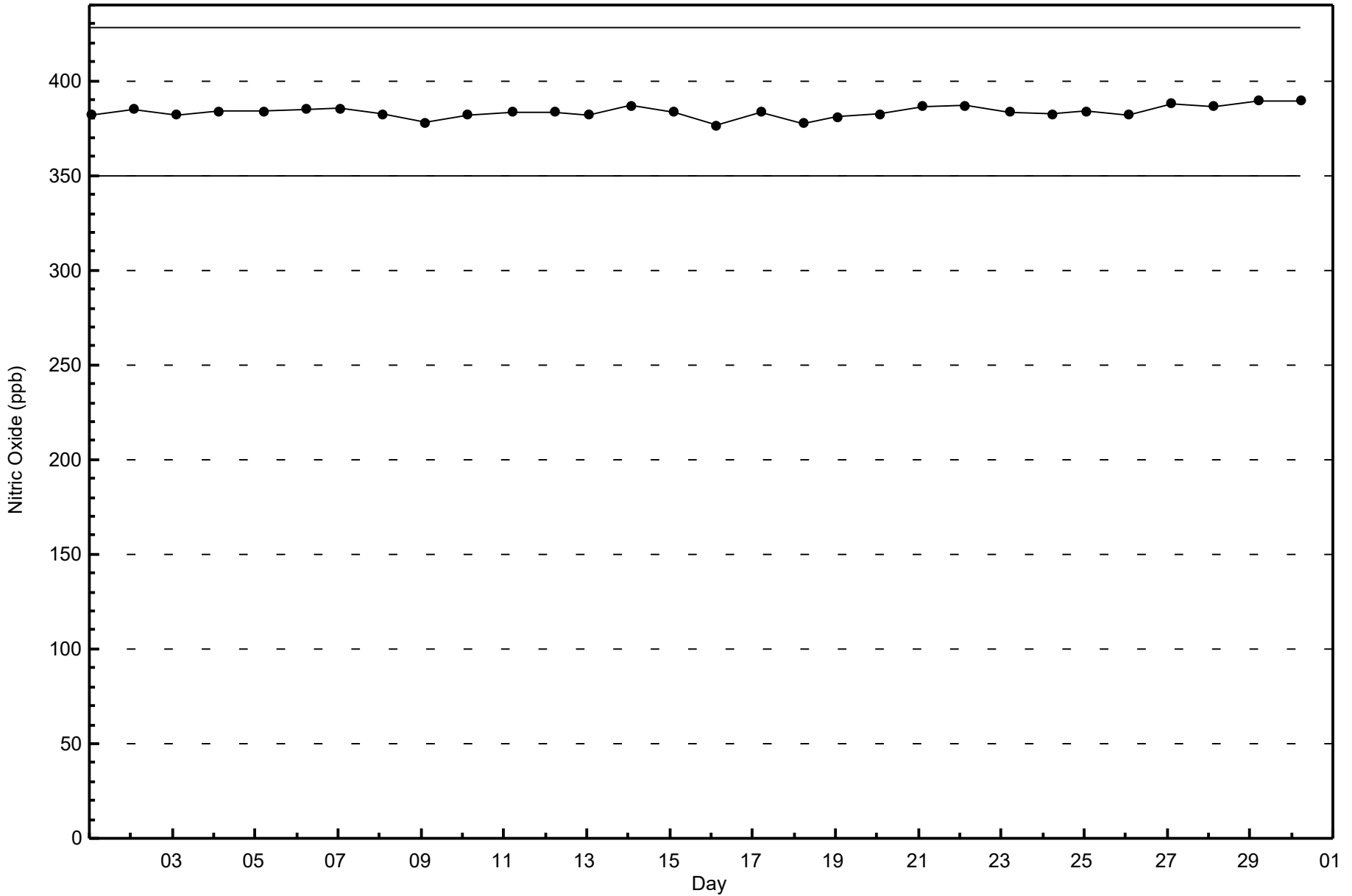
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Conklin



Total Number of Valid Hours: 685





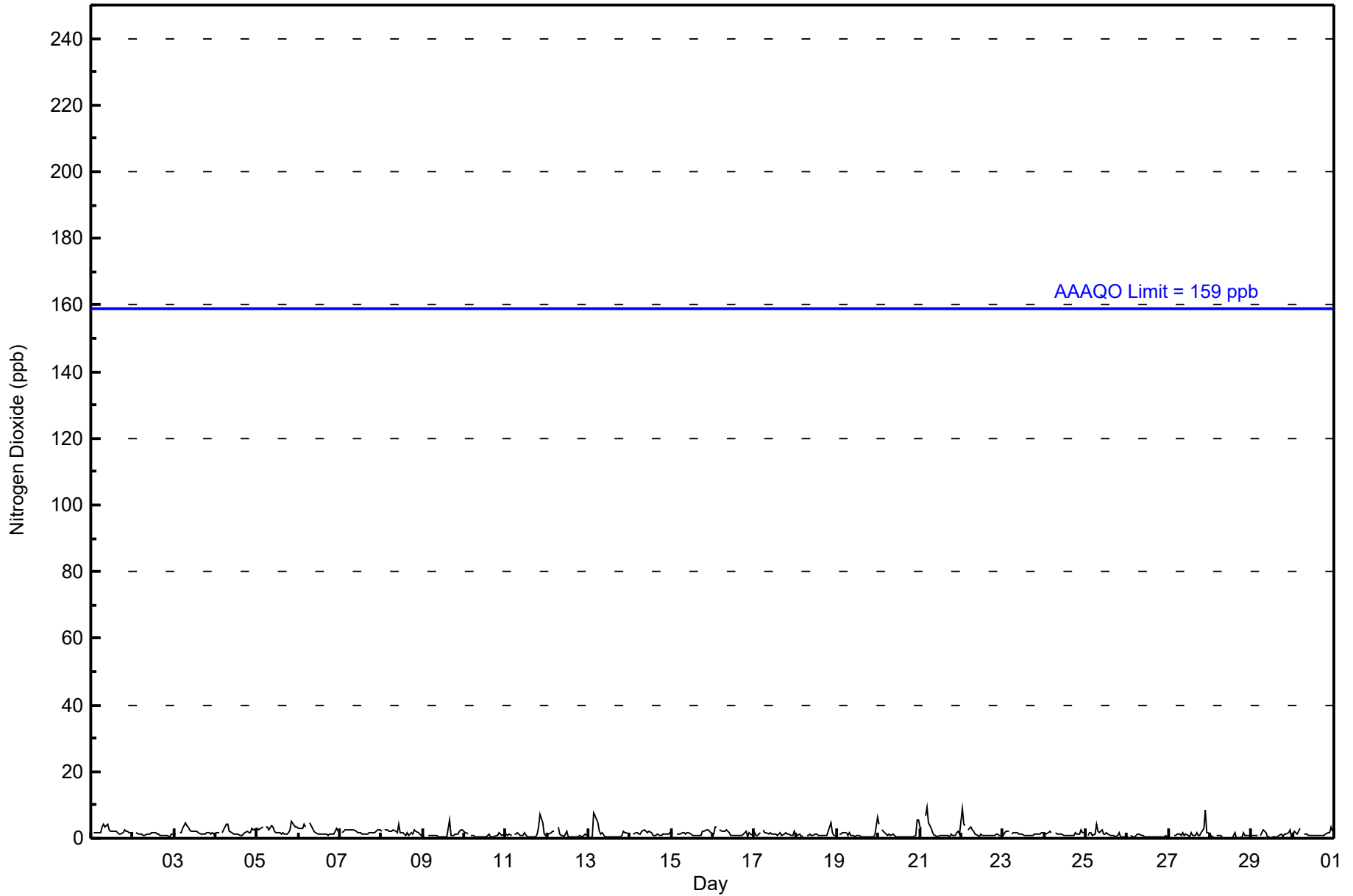


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720																											
Maximum Value: 9.5 ppb on Apr 21 05:00		Maximum Daily Average: 2.6 ppb on Apr 5																	Hours of Data:	685																													
Minimum Value: 0.1 ppb on Apr 28 16:00		Minimum Daily Average: 0.6 ppb on Apr 26																	Hours of Missing Data:	35																													
Maximum Diurnal Average: 2.2 ppb at hour 5		Minimum Diurnal Average: 0.8 ppb at hour 17																	Hours of Calibration:	35																													
Monthly Average: 1.49 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.5 Q ₁ = 0.8 Median = 1.2 Q ₃ = 1.8 P ₉₀ = 2.6 P ₉₉ = 6.4																	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-Apr	Z	1.9	1.6	1.8	1.8	1.5	3.3	4.1	3.4	4.1	2.7	2.1	2.2	2.1	2.0	1.7	1.4	1.4	1.6	2.5	2.2	2.0	1.8	1.7	2.2	4.1																							
2-Apr	1.6	Z	1.6	1.3	1.3	1.1	1.0	1.0	1.3	1.1	1.4	1.9	1.7	1.6	1.3	1.2	0.8	0.7	0.8	0.8	0.7	0.6	1.1	1.3	1.2	1.9																							
3-Apr	1.2	1.4	Z	1.6	1.6	2.8	4.5	3.9	3.3	2.6	2.1	2.0	2.0	1.7	1.3	1.2	1.2	1.3	1.7	1.6	1.4	1.5	1.4	2.0	4.5																								
4-Apr	1.6	1.7	1.7	Z	1.6	3.4	4.2	4.1	2.2	1.8	1.4	1.4	1.1	1.1	1.0	1.0	1.1	1.7	2.3	1.8	1.6	2.8	2.6	2.8	2.0	4.2																							
5-Apr	3.1	2.5	2.8	3.4	Z	3.3	3.2	2.5	3.8	3.2	2.0	1.5	1.6	1.6	1.4	1.9	1.3	1.4	1.8	2.4	5.2	3.7	3.2	3.2	2.6	5.2																							
6-Apr	2.8	3.1	2.9	4.1	3.5	Z	4.7	4.0	2.9	2.2	1.8	1.4	1.3	1.1	1.3	1.2	1.1	1.0	1.2	1.4	1.4	2.2	2.8	2.2	2.2	4.7																							
7-Apr	Z	1.8	2.2	2.5	2.4	2.7	2.6	2.6	2.4	2.0	1.9	1.8	1.6	1.4	1.2	1.1	1.2	1.5	1.6	1.5	1.9	2.3	2.4	2.6	2.0	2.7																							
8-Apr	2.1	Z	2.4	2.5	2.3	2.2	2.2	2.5	2.1	1.7	4.2	1.9	1.5	1.2	1.0	1.5	1.0	1.5	1.1	2.4	2.0	1.9	1.3	0.9	1.9	4.2																							
9-Apr	0.8	1.0	Z	0.9	1.0	0.9	1.0	0.8	0.7	0.5	0.5	0.5	0.4	0.4	0.4	5.4	1.0	0.8	0.8	1.2	1.1	2.0	2.6	2.4	1.2	5.4																							
10-Apr	1.9	1.7	1.4	Z	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	1.4	0.3	0.3	0.4	0.7	0.7	1.7	1.3	0.8	1.1	0.8	1.9																							
11-Apr	1.3	0.8	1.2	0.9	Z	1.3	1.1	1.5	1.0	1.0	0.9	1.5	0.5	0.5	0.5	0.4	0.6	0.4	1.4	3.4	7.0	4.8	1.1	0.9	1.5	7.0																							
12-Apr	1.0	1.4	1.5	2.1	2.1	Z	3.3	1.2	0.8	0.7	0.5	2.1	0.5	0.5	0.3	0.3	0.3	0.4	0.4	1.0	0.6	1.0	1.2	0.8	1.0	3.3																							
13-Apr	Z	0.6	0.6	7.5	6.8	4.6	2.0	1.3	1.7	0.6	0.6	0.6	0.5	0.6	0.4	0.5	0.4	0.4	0.7	2.2	1.9	1.7	1.2	1.7	1.7	7.5																							
14-Apr	1.3	Z	1.2	1.6	1.6	1.1	1.2	2.2	2.4	2.1	1.8	2.0	1.6	1.0	0.9	0.8	1.3	0.8	1.0	1.4	1.3	1.2	1.4	1.6	1.4	2.4																							
15-Apr	1.8	1.5	Z	1.3	1.1	1.1	1.5	1.6	1.4	1.5	1.5	1.1	1.0	0.9	0.9	0.8	0.8	1.0	2.1	2.1	2.4	2.5	2.0	1.7	1.5	2.5																							
16-Apr	1.4	3.3	3.2	Z	2.5	2.2	2.3	2.1	2.6	1.8	1.0	0.9	1.0	0.8	0.8	0.8	0.8	0.7	1.5	2.2	0.6	1.5	1.1	0.9	1.6	3.3																							
17-Apr	1.6	0.8	0.9	1.8	Z	2.4	1.9	1.8	1.4	1.6	1.4	1.2	1.1	1.0	1.4	1.5	0.9	1.4	1.8	1.2	1.1	0.8	0.9	2.3	1.4	2.4																							
18-Apr	0.8	0.9	1.1	0.6	0.9	Z	1.0	0.7	1.1	0.7	0.7	1.4	1.2	1.0	1.0	0.8	0.8	0.8	0.9	2.2	4.7	1.6	1.0	0.9	1.2	4.7																							
19-Apr	Z	1.2	1.3	1.5	1.9	1.6	0.9	1.5	0.9	0.7	0.6	1.0	1.0	0.9	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.6	0.7	6.3	1.1	6.3																							
20-Apr	4.1	Z	2.6	1.6	1.2	0.7	1.3	1.0	1.2	1.0	0.4	0.4	0.6	0.4	0.4	0.5	0.4	0.3	0.4	0.4	0.6	0.7	5.6	5.4	1.4	5.6																							
21-Apr	3.2	2.8	Z	6.7	9.5	4.7	3.0	1.8	1.0	0.7	0.6	0.9	0.8	0.8	0.8	0.8	0.9	0.6	1.2	1.0	0.9	1.9	2.0	1.2	2.1	9.5																							
22-Apr	9.1	4.4	3.8	Z	2.6	3.5	2.5	2.0	1.1	0.7	0.6	1.4	0.7	0.8	0.9	0.8	0.7	0.8	0.8	1.0	1.3	1.1	0.9	0.8	1.8	9.1																							
23-Apr	1.0	1.6	2.0	2.2	Z	1.4	1.5	1.8	1.5	1.2	1.3	1.1	0.8	0.9	0.7	0.7	0.9	0.9	1.3	1.1	1.1	1.3	1.5	1.6	1.3	2.2																							
24-Apr	1.5	1.3	1.7	2.0	1.7	Z	1.6	1.4	1.3	1.3	1.1	1.0	0.9	0.7	0.7	0.7	0.8	0.9	1.5	1.2	1.4	2.7	1.7	1.7	1.3	2.7																							
25-Apr	Z	1.0	1.7	1.6	0.8	1.1	4.4	2.2	1.6	2.7	1.4	1.3	1.6	1.2	0.8	1.0	0.8	0.6	0.9	1.6	0.5	0.6	0.5	0.6	1.3	4.4																							
26-Apr	0.9	Z	0.7	0.6	0.5	0.9	1.2	1.4	0.7	0.7	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.9	0.4	0.6	1.4																							
27-Apr	0.5	0.5	Z	0.7	0.8	1.1	1.4	0.8	1.7	0.8	1.1	0.8	0.6	1.6	0.8	0.7	1.5	0.8	0.8	1.8	3.0	8.5	1.6	1.5	1.5	8.5																							
28-Apr	0.7	0.4	0.5	Z	0.7	0.7	0.8	0.3	C	C	C	C	C	0.2	1.6	0.1	0.2	0.2	0.3	1.6	1.0	1.0	0.8	0.8	0.7	1.6																							
29-Apr	0.9	0.8	0.9	0.8	Z	1.0	1.6	2.5	1.6	0.6	0.4	0.2	0.3	0.3	0.3	0.3	0.8	1.3	0.5	1.3	1.1	1.5	2.5	0.4	1.0	2.5																							
30-Apr	1.4	2.0	1.2	2.0	3.1	Z	1.4	1.2	1.1	1.0	0.9	0.8	0.9	0.7	0.7	0.7	0.8	0.9	1.1	1.7	1.7	3.6	2.1	1.4	1.4	3.6																							
																								Diurnal Average																									
																								Diurnal Maximum																									
																								1.9	1.6	1.7	2.1	2.2	1.9	2.1	1.9	1.7	1.4	1.2	1.2	1.0	0.9	1.0	0.8	0.9	1.1	1.5	1.8	1.9	1.8	1.8	1.8	1.8	1.8
																								9.1	4.4	3.8	7.5	9.5	4.7	4.7	4.1	3.8	4.1	4.2	2.1	2.2	2.1	2.0	5.4	1.5	1.7	2.3	3.4	7.0	8.5	5.6	6.3	6.3	6.3
Z - zerospan C - Calibration																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																																																	



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Conklin - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	19	10	9	12	29	86	72	126	88	45	28	17	23	38	41	42	685
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
Totals	19	10	9	12	29	86	72	126	88	45	28	17	23	38	41	42	685

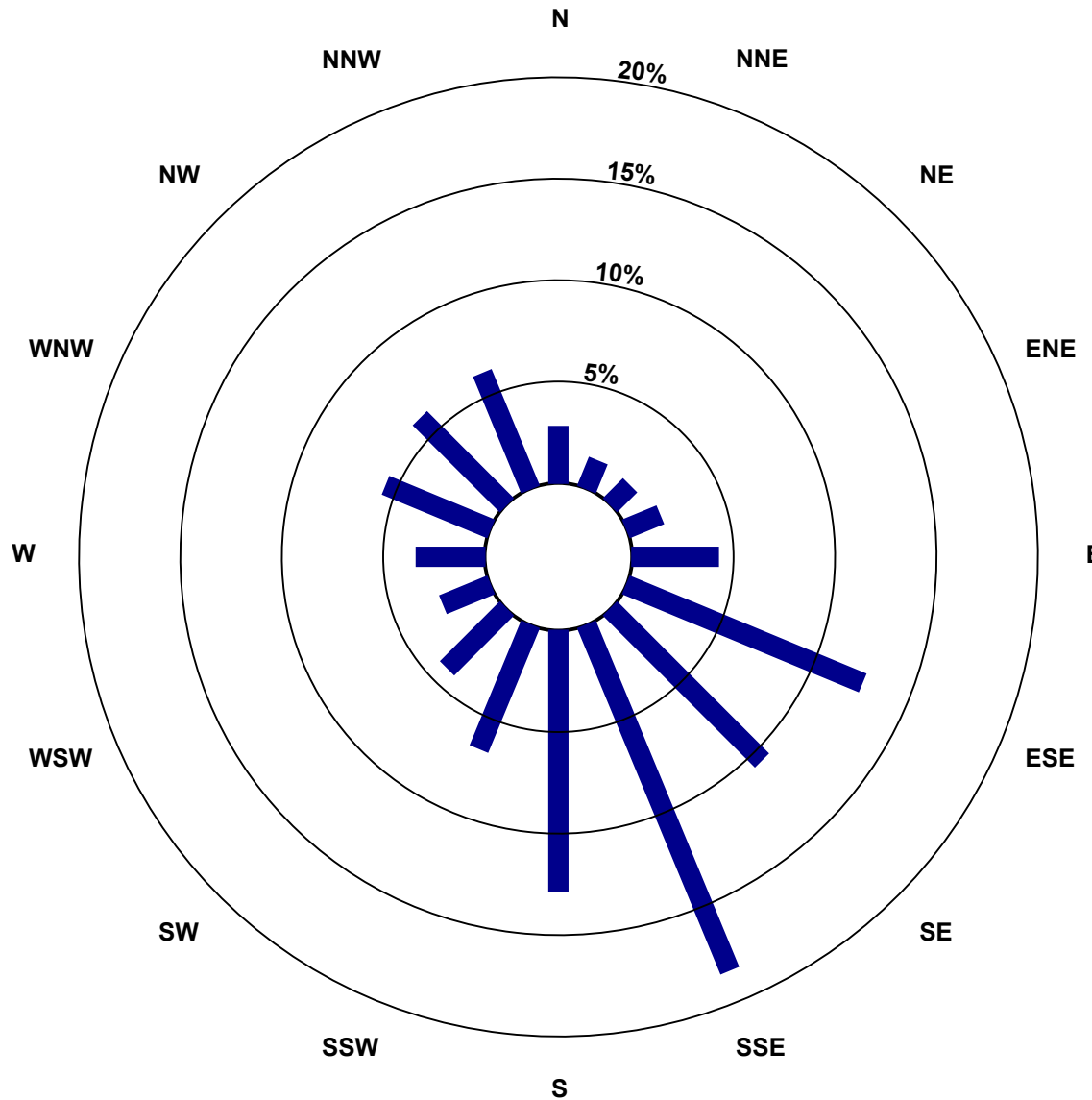
Total Number of Valid Hours: 685

Total Number of Hours: 720

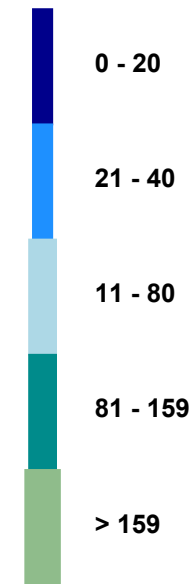


Wood Buffalo Environmental Association
Wind Rose Apr 2023

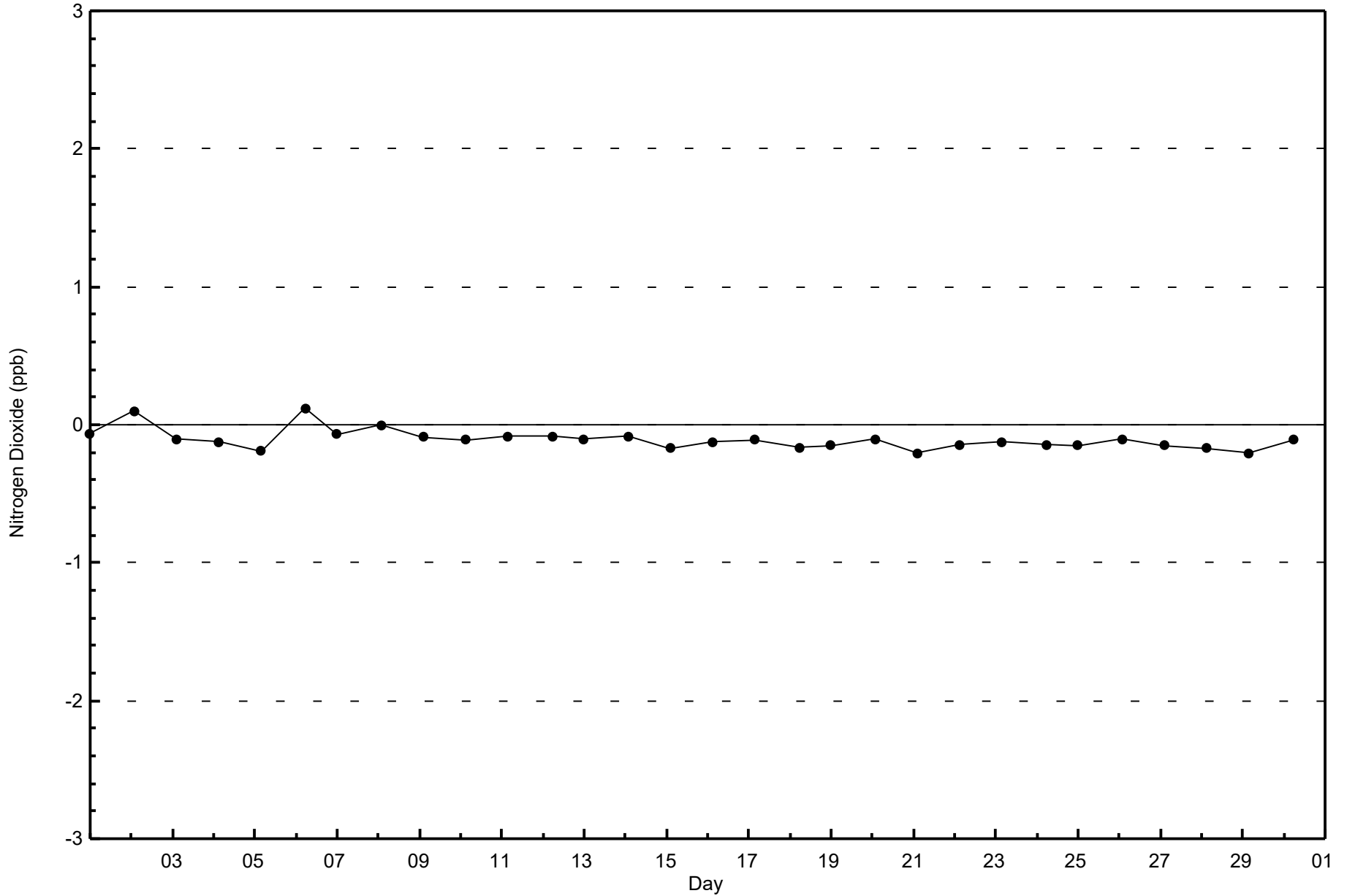
Nitrogen Dioxide (NO₂) - ppb
Conklin

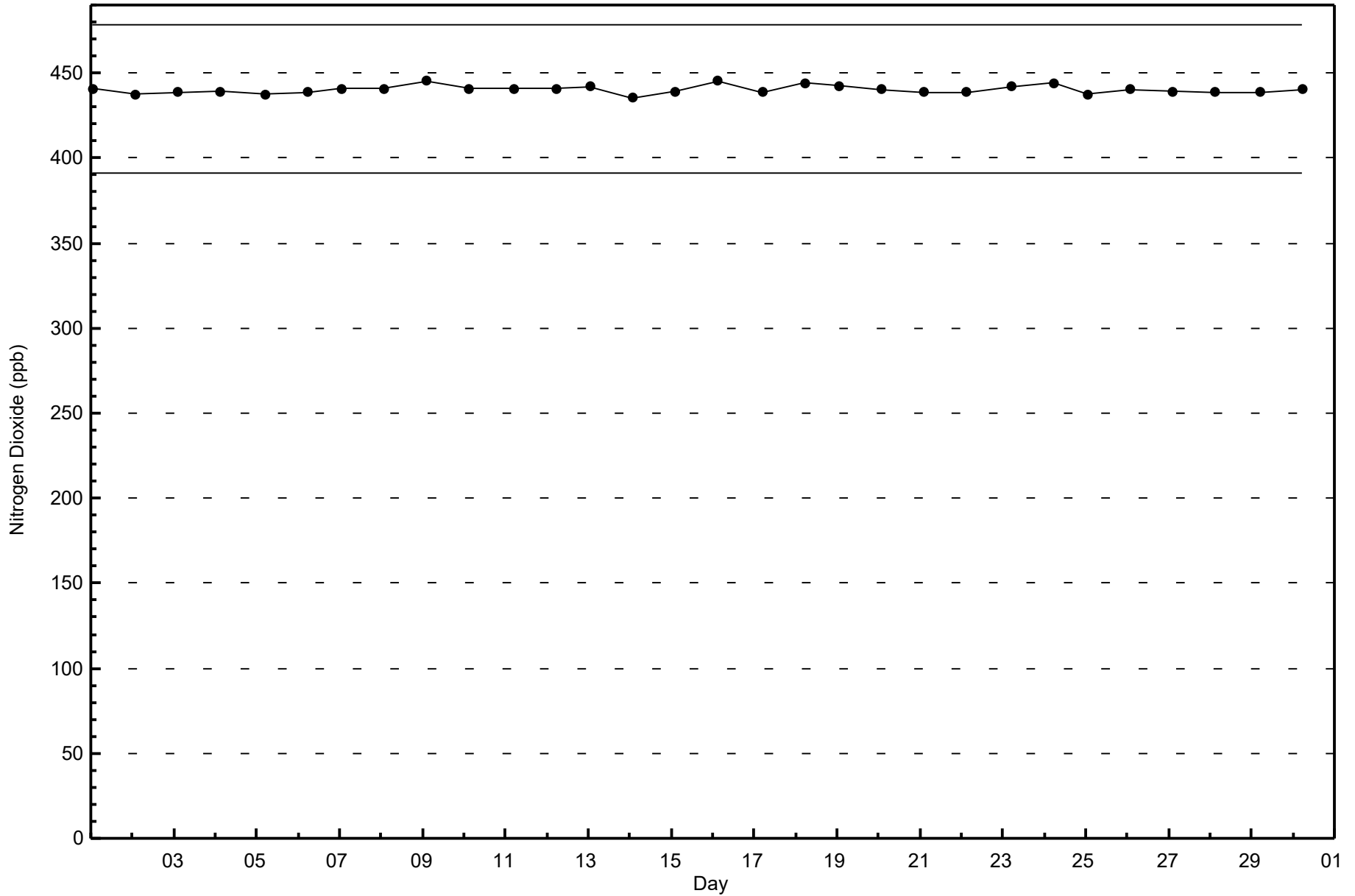


Classes (ppb)



Total Number of Valid Hours: 685







Wood Buffalo Environmental Association
Summary of Hour Averages

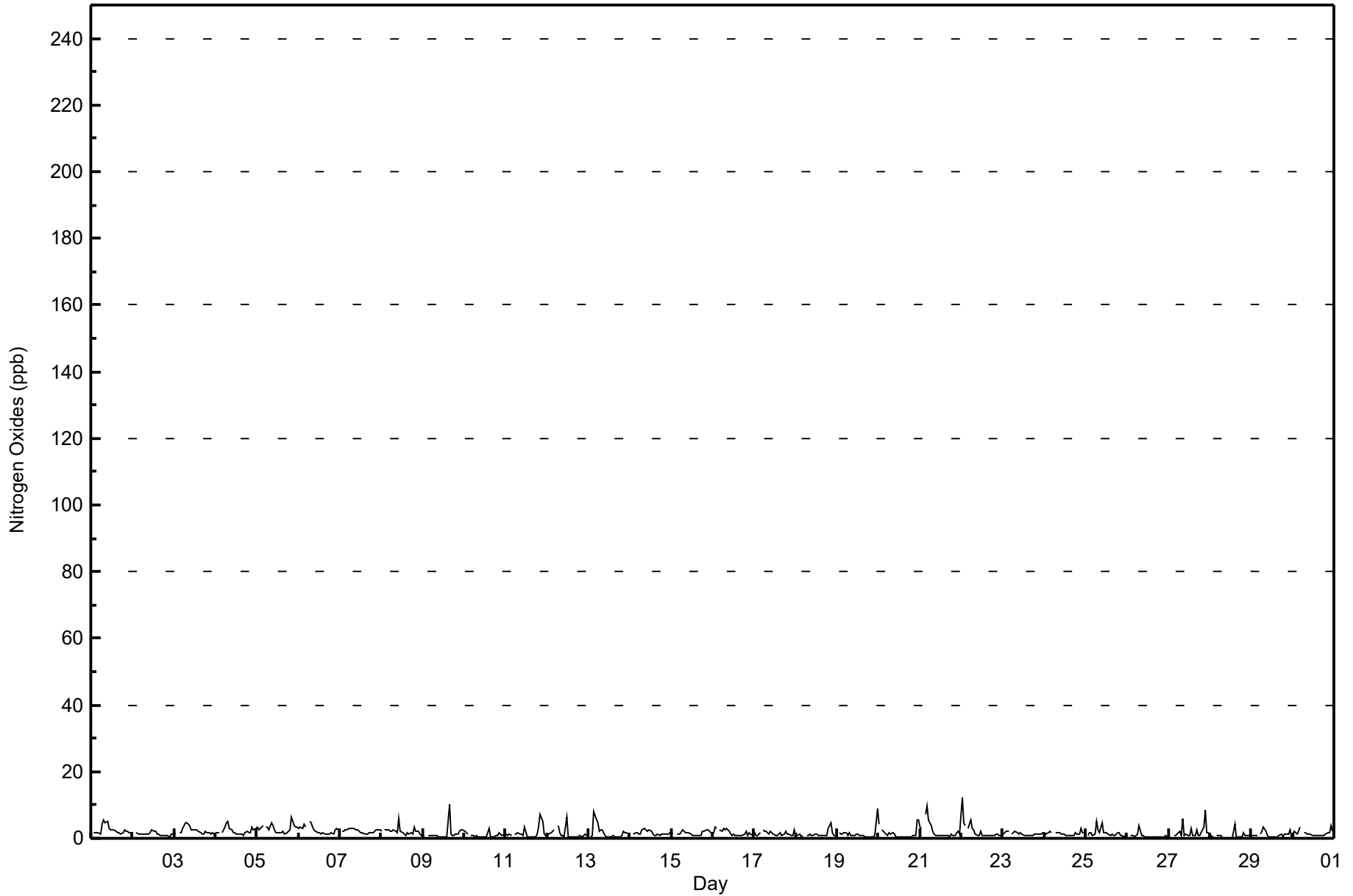
Nitrogen Oxides (NO_x) - ppb
Conklin - April 2023

Maximum Value: 12.4 ppb on Apr 22 01:00		Maximum Daily Average: 2.8 ppb on Apr 5		Hours in Service: 720																							
Minimum Value: 0.1 ppb on Apr 28 16:00		Minimum Daily Average: 0.8 ppb on Apr 26		Hours of Data: 685																							
Maximum Diurnal Average: 2.4 ppb at hour 7		Minimum Diurnal Average: 0.9 ppb at hour 18		Hours of Missing Data: 35																							
Monthly Average: 1.67 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.5 Q ₁ = 0.8 Median = 1.4 Q ₃ = 2.0 P ₉₀ = 3.1 P ₉₉ = 7.1		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-Apr	Z	1.9	1.6	1.8	1.8	1.5	4.1	5.4	4.5	4.9	3.1	2.4	2.5	2.4	2.3	1.9	1.5	1.4	1.6	2.5	2.3	2.0	1.8	1.8	2.5	5.4	
2-Apr	1.7	Z	1.6	1.4	1.4	1.1	1.1	1.1	1.4	1.3	1.7	2.6	2.1	1.9	1.4	1.3	0.9	0.7	0.8	0.8	0.7	0.6	1.1	1.4	1.3	2.6	
3-Apr	1.3	1.5	Z	1.6	1.6	2.9	4.8	4.5	4.3	3.7	2.5	2.5	2.7	2.7	2.2	1.5	1.4	1.2	2.0	1.7	1.6	1.4	1.5	1.4	2.3	4.8	
4-Apr	1.6	1.7	1.7	Z	1.6	3.4	4.5	5.0	2.9	2.5	1.9	1.7	1.4	1.4	1.1	1.1	1.1	1.8	2.3	1.8	1.6	3.2	2.6	2.9	2.2	5.0	
5-Apr	3.2	2.5	2.9	3.6	Z	3.3	3.2	2.7	4.5	3.7	2.3	1.6	1.8	1.7	1.6	2.3	1.4	1.5	1.9	2.6	6.5	3.9	3.3	3.3	2.8	6.5	
6-Apr	2.9	3.2	3.0	4.2	3.6	Z	5.2	4.7	3.4	2.5	2.1	1.6	1.5	1.3	1.6	1.4	1.3	1.1	1.3	1.5	1.5	2.4	2.9	2.4	2.5	5.2	
7-Apr	Z	1.9	2.3	2.6	2.5	2.8	2.8	3.1	2.9	2.5	2.4	2.2	1.9	1.7	1.4	1.3	1.3	1.7	1.7	1.6	2.0	2.4	2.5	2.7	2.2	3.1	
8-Apr	2.2	Z	2.5	2.6	2.4	2.3	2.3	2.7	2.3	1.9	6.1	2.2	1.6	1.3	1.0	1.8	1.1	1.6	1.1	3.2	2.1	2.1	1.4	0.9	2.1	6.1	
9-Apr	0.9	1.0	Z	0.9	1.0	0.9	1.1	0.9	0.8	0.6	0.5	0.5	0.4	0.4	0.4	10.1	1.1	0.8	0.8	1.2	1.1	2.0	2.6	2.4	1.4	10.1	
10-Apr	1.9	1.7	1.4	Z	0.7	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.3	2.9	0.3	0.3	0.4	0.7	0.7	1.7	1.4	0.9	1.2	0.9	2.9
11-Apr	1.5	0.9	1.3	1.0	Z	1.4	1.2	1.7	1.1	1.2	1.0	3.4	0.5	0.5	0.5	0.4	0.6	0.4	1.4	3.4	7.2	4.9	1.1	0.9	1.6	7.2	
12-Apr	1.0	1.4	1.5	2.2	2.4	Z	3.9	1.5	0.9	0.8	0.6	6.3	0.5	0.5	0.3	0.3	0.3	0.5	0.4	1.0	0.6	1.0	1.3	0.8	1.3	6.3	
13-Apr	Z	0.6	0.7	7.9	6.9	4.7	2.3	2.4	2.3	0.7	0.6	0.6	0.6	0.5	0.7	0.4	0.5	0.4	0.4	0.7	2.2	1.9	1.7	1.2	1.8	7.9	
14-Apr	1.4	Z	1.2	1.7	1.6	1.2	1.4	2.6	2.9	2.5	2.3	2.5	2.0	1.1	0.9	0.9	1.4	0.9	1.1	1.4	1.4	1.3	1.4	1.7	1.6	2.9	
15-Apr	1.9	1.5	Z	1.4	1.2	1.2	2.4	2.1	1.8	1.7	1.7	1.1	1.0	0.9	0.9	0.8	0.8	1.0	2.1	2.1	2.4	2.5	2.0	1.8	1.6	2.5	
16-Apr	1.5	3.4	3.2	Z	2.5	2.3	3.0	2.6	3.2	2.1	1.2	1.0	1.1	0.8	0.9	0.8	0.9	0.7	1.5	2.2	0.6	1.5	1.1	0.9	1.7	3.4	
17-Apr	1.6	0.8	0.9	1.8	Z	2.4	1.9	1.9	1.5	2.0	1.6	1.2	1.1	1.0	1.5	1.6	1.0	1.4	2.0	1.2	1.1	0.8	0.9	2.4	1.5	2.4	
18-Apr	0.8	0.9	1.1	0.6	0.9	Z	1.0	0.7	1.1	0.8	0.8	1.5	1.4	1.1	1.0	0.9	0.8	0.9	0.9	3.0	4.8	1.6	1.0	0.9	1.2	4.8	
19-Apr	Z	1.6	1.4	1.5	1.9	1.6	0.9	1.6	1.0	0.7	0.6	1.1	1.2	1.0	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.6	0.7	9.0	1.3	9.0	
20-Apr	4.4	Z	2.6	1.6	1.2	0.8	1.7	1.2	1.5	1.3	0.5	0.4	0.6	0.4	0.4	0.5	0.4	0.3	0.4	0.4	0.6	0.7	5.6	5.4	1.4	5.6	
21-Apr	3.2	2.8	Z	7.1	9.7	5.3	3.9	2.3	1.2	0.8	0.7	1.0	0.9	0.9	0.9	0.9	0.9	0.6	1.3	1.0	0.9	1.9	2.2	1.3	2.2	9.7	
22-Apr	12.4	4.5	3.9	Z	2.8	5.6	3.1	2.6	1.3	0.8	0.7	2.0	0.8	0.9	1.0	0.9	0.8	0.9	0.9	1.0	1.3	1.1	0.9	0.8	2.2	12.4	
23-Apr	1.1	1.7	2.2	2.3	Z	1.4	1.7	2.0	1.8	1.4	1.6	1.3	0.9	1.0	0.8	0.8	1.0	1.0	1.3	1.1	1.1	1.3	1.5	1.7	1.4	2.3	
24-Apr	1.5	1.3	1.7	2.1	1.7	Z	1.7	1.5	1.5	1.6	1.3	1.1	1.0	0.7	0.7	0.7	0.8	0.9	1.6	1.2	1.4	2.8	1.7	1.7	1.4	2.8	
25-Apr	Z	1.0	1.7	1.7	0.8	1.2	5.1	2.6	1.8	4.5	1.6	1.5	1.7	1.4	0.8	1.1	0.9	0.8	1.9	1.9	0.6	0.7	0.5	0.7	1.6	5.1	
26-Apr	0.9	Z	0.8	0.7	0.6	1.0	1.3	3.8	0.8	0.8	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.9	0.4	0.8	3.8	
27-Apr	0.5	0.5	Z	0.7	0.8	1.2	2.0	1.0	5.9	1.0	1.5	0.9	0.7	2.9	0.8	0.7	2.5	1.0	0.8	1.8	3.6	8.6	1.6	1.5	1.8	8.6	
28-Apr	0.7	0.4	0.5	Z	0.7	0.7	0.9	0.4	C	C	C	C	C	0.2	4.2	0.1	0.2	0.2	0.3	1.6	1.0	1.0	0.8	0.8	0.8	4.2	
29-Apr	0.9	0.8	0.9	0.8	Z	1.1	2.1	3.3	2.0	0.7	0.4	0.2	0.3	0.3	0.3	0.3	0.9	1.4	0.5	1.3	1.1	1.5	2.5	0.4	1.0	3.3	
30-Apr	1.4	2.0	1.2	2.0	3.3	Z	1.8	1.5	1.3	1.2	1.1	1.0	1.1	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.7	1.7	3.6	2.1	1.5	3.6	
																								Diurnal Average			
																								Diurnal Maximum			
																								2.1 1.7 1.8 2.2 2.2 2.1 2.4 2.3 2.2 1.8 1.5 1.6 1.2 1.1 1.1 1.2 0.9 0.9 1.2 1.5 1.9 2.0 1.8 1.9			
																								12.4 4.5 3.9 7.9 9.7 5.6 5.2 5.4 5.9 4.9 6.1 6.3 2.7 2.9 4.2 10.1 2.5 1.8 2.3 3.4 7.2 8.6 5.6 9.0			
Z - zerospan																								C - Calibration			



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Conklin - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Conklin - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Conklin - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	19	10	9	12	29	86	72	126	88	45	28	17	23	38	41	42	685
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
Totals	19	10	9	12	29	86	72	126	88	45	28	17	23	38	41	42	685

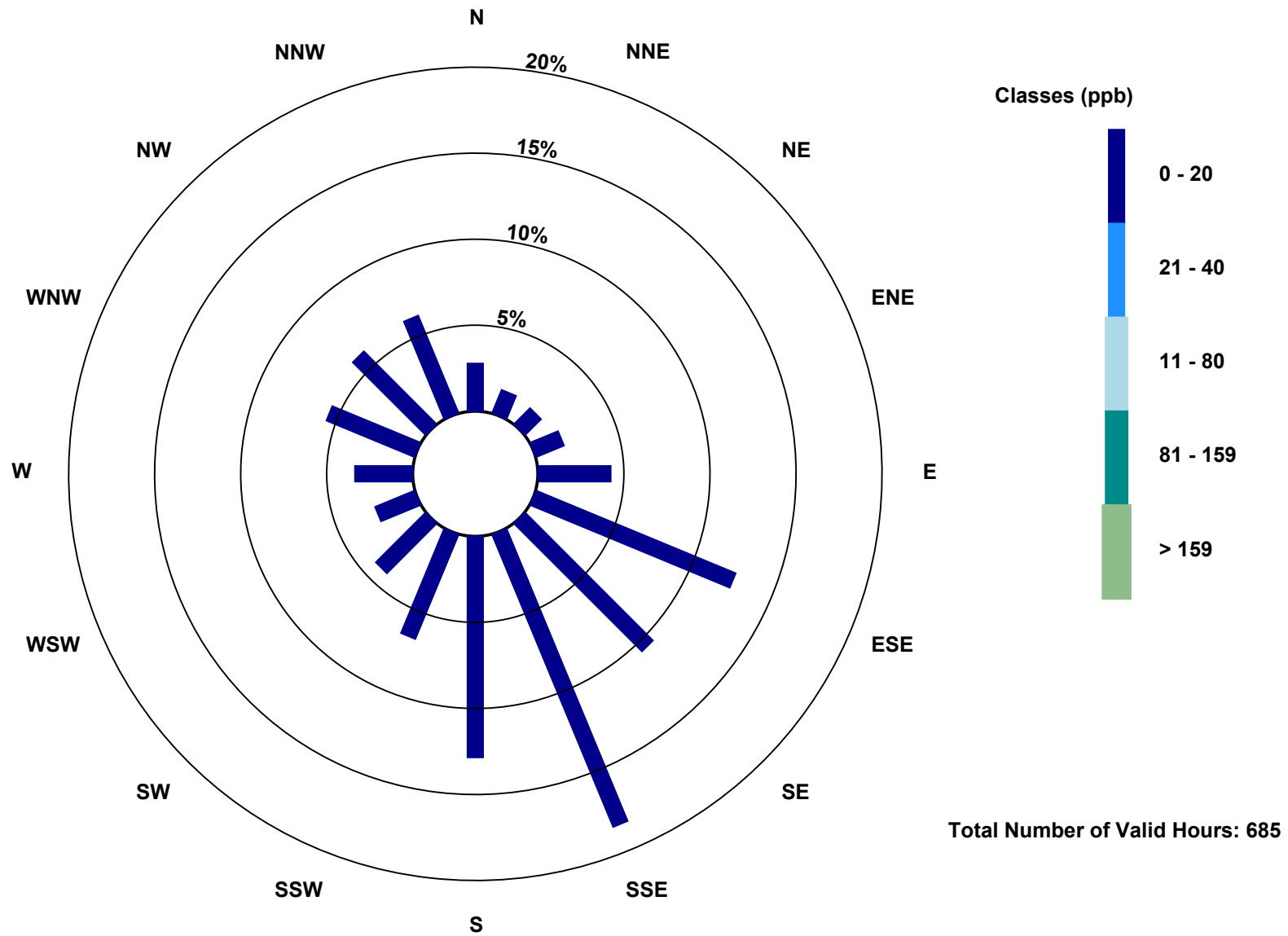
Total Number of Valid Hours: 685

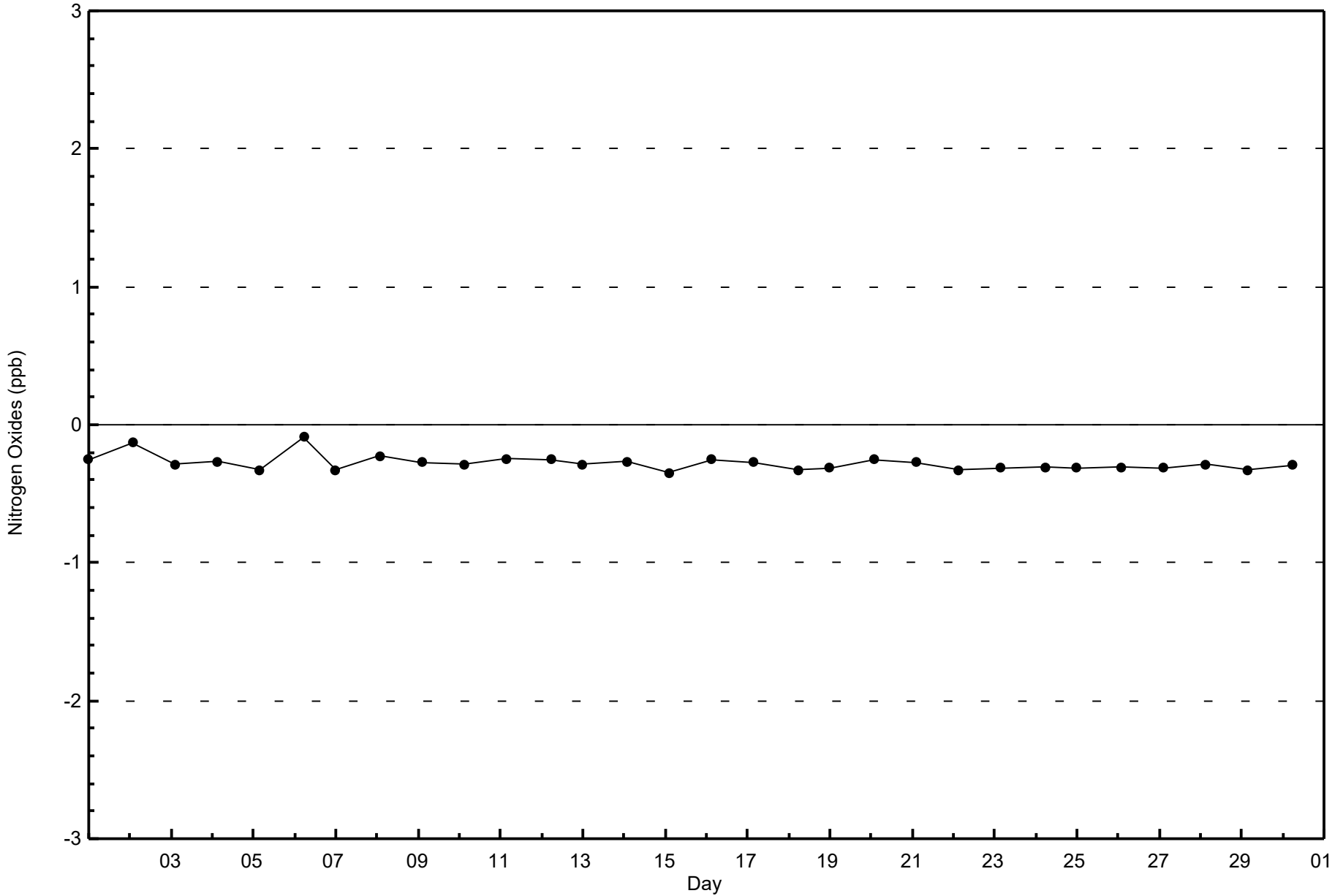
Total Number of Hours: 720

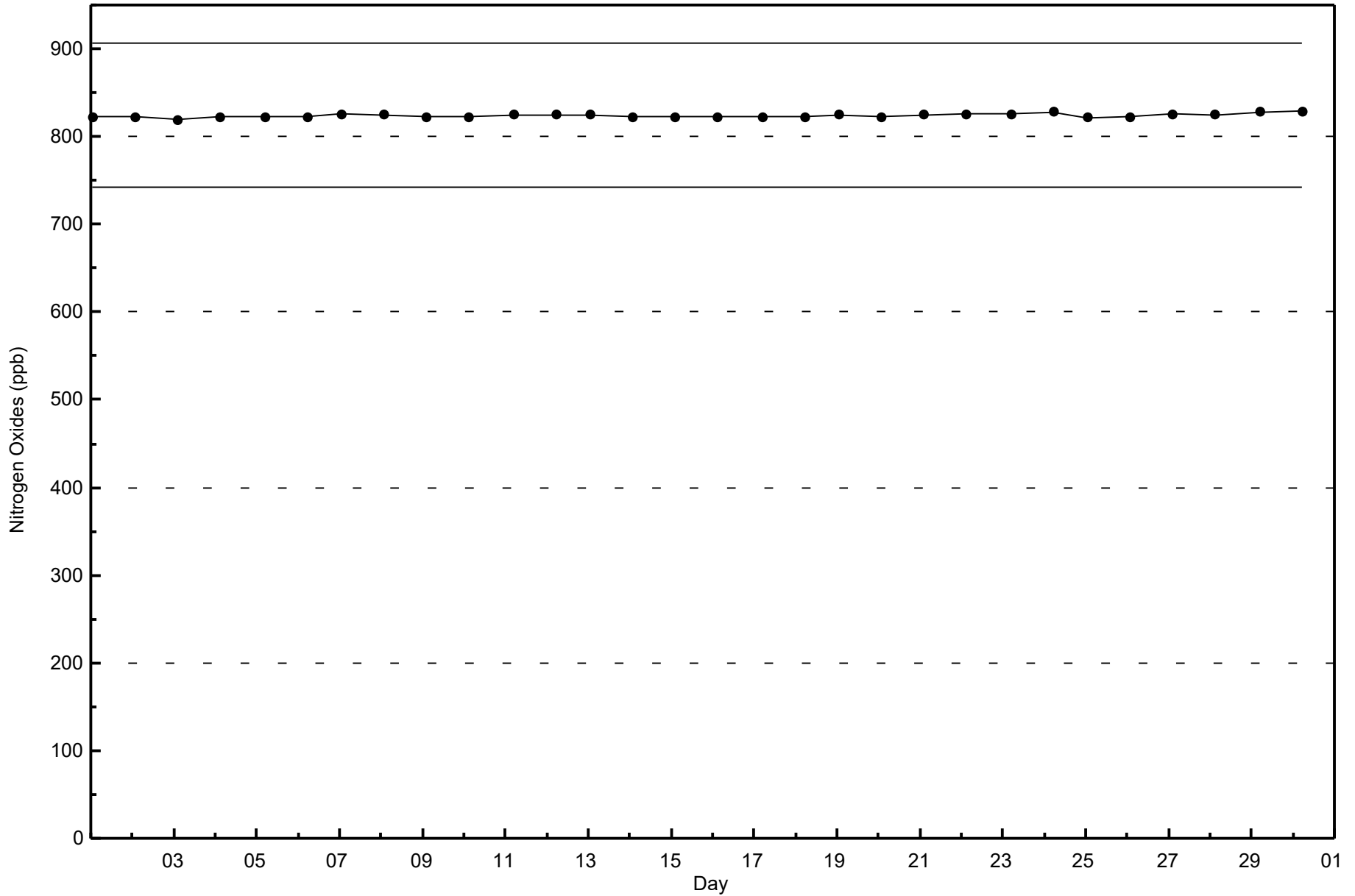


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Conklin









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

Conklin - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 55.1 ppb on Apr 1 18:00	Maximum Daily Average: 51.4 ppb on Apr 7		Hours of Data:	687
Minimum Value: 4.0 ppb on Apr 15 06:00	Minimum Daily Average: 26.1 ppb on Apr 18		Hours of Missing Data:	33
Maximum Diurnal Average: 48.4 ppb at hour 18	Minimum Diurnal Average: 26.9 ppb at hour 6		Hours of Calibration:	33
Monthly Average: 39.76 ppb	Percentiles: P ₁ = 7.1 P ₁₀ = 19.5 Q ₁ = 33.3 Median = 43.7 Q ₃ = 49.5 P ₉₀ = 51.6 P ₉₉ = 54.4		Percent Operational Time:	100.0

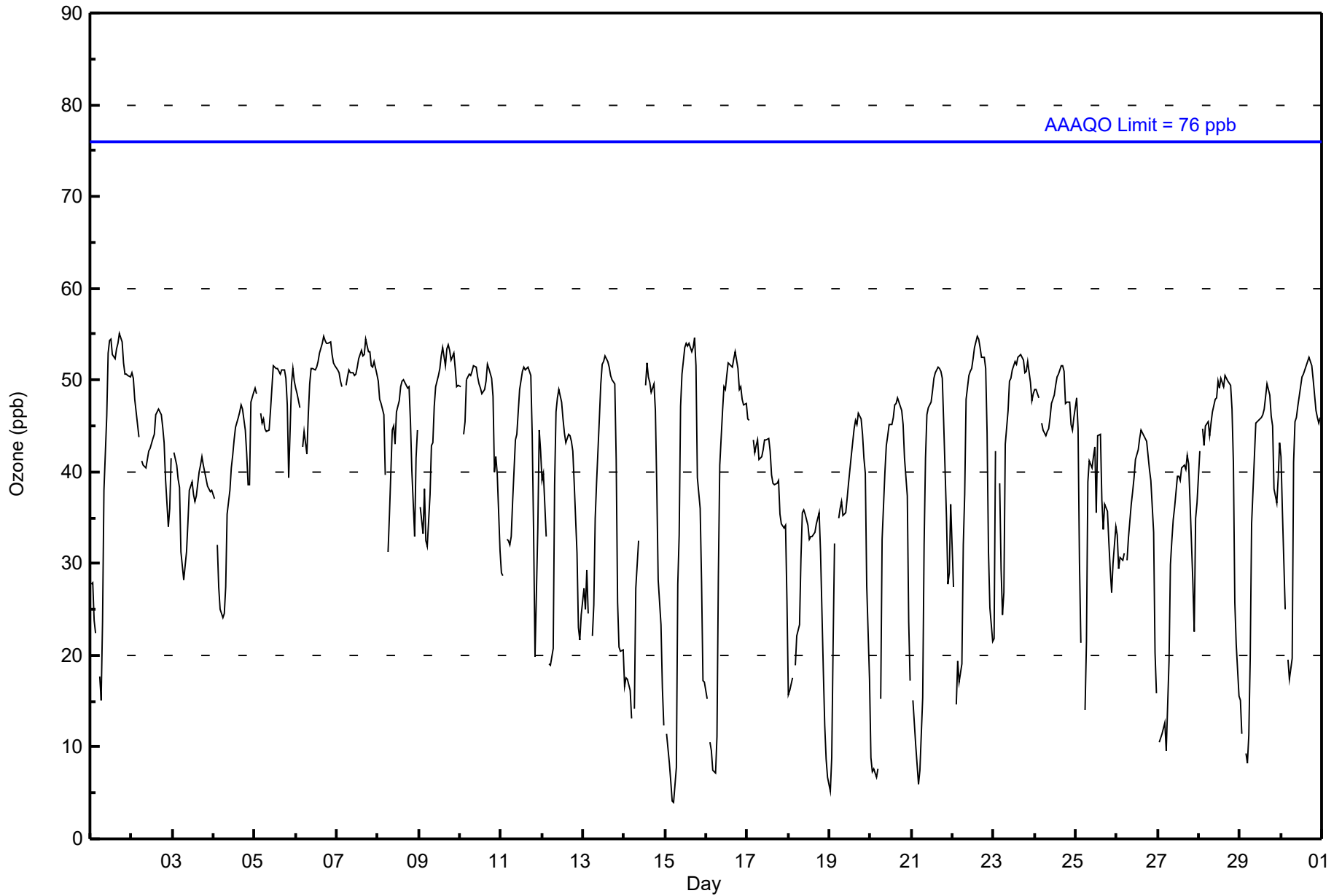
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	27.8	28.0	23.8	22.4	Z	17.7	15.1	23.6	38.0	46.0	52.9	54.4	54.4	52.7	52.3	53.4	54.0	55.1	54.2	51.9	50.7	50.6	50.4	50.4	42.6	55.1																							
2-Apr	50.9	50.2	47.9	45.2	43.8	Z	41.2	40.7	40.5	41.4	42.3	42.6	43.7	44.1	46.2	46.5	46.8	46.2	44.8	43.2	39.2	34.1	36.1	41.4	43.4	50.9																							
3-Apr	Z	42.1	40.7	39.3	38.3	31.2	28.2	29.8	31.3	34.4	37.9	38.8	37.6	36.8	37.4	39.9	40.7	41.6	40.8	39.9	38.5	38.2	37.9	38.0	37.4	42.1																							
4-Apr	37.1	Z	32.0	27.5	25.0	24.1	24.6	27.5	35.3	38.0	40.5	41.8	43.4	44.8	45.9	46.5	47.3	46.9	44.5	42.0	38.6	38.6	47.5	48.6	38.6	48.6																							
5-Apr	49.1	48.5	Z	46.3	45.4	45.7	44.7	44.4	44.5	46.7	49.2	51.6	51.3	51.3	50.9	50.7	51.1	51.1	50.1	47.2	39.3	49.5	51.3	49.9	48.3	51.6																							
6-Apr	49.2	48.6	47.0	Z	42.7	44.3	41.9	46.3	49.6	51.2	51.3	51.2	51.3	52.0	52.9	54.0	54.7	54.3	53.9	54.0	54.1	52.8	51.8	51.5	50.5	54.7																							
7-Apr	51.0	50.8	50.0	49.2	Z	49.4	50.3	51.0	50.8	50.8	50.5	50.6	51.4	52.4	53.3	52.7	52.8	54.4	53.1	53.0	51.6	51.4	52.0	50.7	51.4	54.4																							
8-Apr	49.8	47.9	47.4	46.2	39.7	Z	31.3	35.4	44.5	45.0	43.0	46.5	47.8	49.3	49.9	50.0	49.7	49.1	49.3	45.5	40.1	32.9	41.5	44.6	44.6	50.0																							
9-Apr	Z	36.2	33.2	38.1	32.5	31.9	37.5	42.9	43.2	47.2	49.3	50.4	51.3	52.7	53.6	51.5	53.4	53.9	53.2	52.1	52.9	51.3	49.3	49.5	46.4	53.9																							
10-Apr	49.2	Z	44.0	45.5	50.1	50.7	50.5	51.0	51.6	51.4	50.3	49.6	49.1	48.5	48.9	49.9	51.7	51.3	50.3	48.3	40.0	41.6	39.9	31.4	47.6	51.7																							
11-Apr	29.1	28.7	Z	32.6	32.5	32.1	32.9	36.7	43.5	44.1	46.6	49.0	51.0	51.4	51.0	51.2	51.3	50.4	43.9	33.2	19.8	33.8	44.6	42.2	40.5	51.4																							
12-Apr	39.0	39.8	33.0	Z	19.1	18.9	20.8	38.6	46.5	48.1	49.0	47.5	45.8	44.2	43.2	44.0	44.0	43.4	42.3	38.7	31.1	23.1	21.7	24.4	36.8	49.0																							
13-Apr	27.3	25.0	29.3	24.6	Z	22.1	25.5	34.9	38.8	45.9	49.5	51.6	52.0	52.6	52.0	51.5	50.6	50.1	49.6	41.3	25.8	20.9	20.5	20.6	37.5	52.6																							
14-Apr	16.6	17.6	17.5	16.2	13.1	Z	14.2	27.3	32.5	C	C	C	49.4	51.9	50.3	49.7	48.7	49.5	46.7	38.3	28.3	23.3	16.5	12.3	31.0	51.9																							
15-Apr	Z	11.5	8.3	6.2	4.2	4.0	7.8	27.8	33.2	47.1	50.6	53.6	53.9	53.8	54.0	53.0	53.6	54.7	51.6	39.4	36.0	27.8	17.3	17.0	33.3	54.7																							
16-Apr	15.3	Z	10.5	9.6	7.5	7.2	11.1	28.7	40.7	46.7	49.2	49.0	50.5	51.8	51.6	51.3	52.4	53.1	51.2	49.0	49.3	47.9	47.3	47.5	38.2	53.1																							
17-Apr	45.7	45.6	Z	43.5	42.1	42.9	43.4	41.4	41.7	42.3	43.5	43.5	43.7	42.2	39.6	38.8	38.5	38.8	39.0	35.4	34.3	33.8	34.2	26.0	40.0	45.7																							
18-Apr	15.7	16.1	17.6	Z	18.9	22.1	23.3	30.4	35.6	35.9	35.4	34.2	32.7	32.9	32.9	33.4	34.3	35.0	35.6	31.3	18.3	12.3	8.7	6.8	26.1	35.9																							
19-Apr	5.1	8.9	21.4	32.2	Z	34.9	36.0	36.8	35.3	35.5	37.1	38.7	40.3	41.8	44.6	45.6	45.2	46.4	45.7	44.2	41.4	39.8	27.7	17.4	34.9	46.4																							
20-Apr	8.8	7.3	7.7	6.7	7.6	Z	15.3	32.7	40.0	42.9	43.9	45.1	45.2	46.0	47.3	47.4	48.1	47.2	46.6	45.2	41.6	37.4	23.7	17.3	32.6	48.1																							
21-Apr	Z	15.1	10.2	8.2	5.9	7.4	15.4	32.0	41.6	46.2	46.9	47.7	48.9	50.3	50.7	51.4	51.3	50.9	50.2	45.3	34.9	27.8	28.9	36.5	34.9	51.4																							
22-Apr	27.4	Z	14.6	19.3	17.0	19.1	32.1	37.6	47.9	50.5	50.9	51.2	52.3	53.5	54.7	54.4	53.6	52.4	52.4	51.3	44.2	31.3	25.1	21.5	39.8	54.7																							
23-Apr	21.9	42.2	Z	38.8	29.4	24.4	26.8	43.0	46.7	49.9	50.2	51.1	52.0	51.7	52.5	52.7	52.7	52.2	50.8	51.0	52.0	49.7	47.7	48.5	45.1	52.7																							
24-Apr	49.0	48.9	48.1	Z	45.2	44.6	44.0	44.4	44.7	45.9	47.4	48.4	49.4	50.3	50.6	51.6	51.5	51.0	47.4	47.6	47.5	45.2	44.6	46.0	47.5	51.6																							
25-Apr	48.1	44.7	30.2	21.3	Z	14.0	21.4	38.9	41.2	40.4	41.6	42.7	35.6	43.9	44.1	36.9	33.7	36.4	35.7	32.4	29.3	26.9	30.0	34.0	34.9	48.1																							
26-Apr	33.1	29.4	30.6	30.4	31.1	Z	30.4	32.8	36.5	37.9	39.4	41.4	42.4	43.7	44.5	44.3	44.0	43.4	41.9	40.3	39.0	33.5	20.3	15.9	35.9	44.5																							
27-Apr	Z	10.5	11.5	12.0	12.7	9.6	19.4	29.9	32.5	34.8	36.1	39.5	39.5	39.1	40.5	40.7	40.3	41.8	40.9	36.8	28.1	22.6	35.0	36.6	30.0	41.8																							
28-Apr	42.3	Z	44.7	42.8	45.1	45.4	44.0	45.4	46.5	47.9	48.1	49.9	49.2	50.1	49.3	50.4	50.1	50.0	49.5	46.8	40.8	25.8	21.3	15.5	43.5	50.4																							
29-Apr	15.1	11.5	Z	9.3	8.2	11.3	19.7	34.3	41.7	45.3	45.5	45.6	45.9	46.3	46.8	48.2	49.5	48.3	46.1	44.9	38.1	36.6	39.3	43.2	35.7	49.5																							
30-Apr	41.7	35.7	25.1	Z	19.6	17.4	19.7	41.0	45.5	45.9	47.2	49.3	50.3	50.6	51.1	52.1	52.5	52.0	51.5	50.0	46.7	45.9	45.3	46.0	42.7	52.5																							
																								33.8	31.6	29.0	28.5	27.1	26.9	28.9	36.9	41.4	44.3	45.7	46.8	47.0	47.7	48.1	48.1	48.3	48.4	47.1	44.0	39.1	36.2	35.2	34.4	Diurnal Average	
																								51.0	50.8	50.0	49.2	50.1	50.7	50.5	51.0	51.6	51.4	52.9	54.4	54.4	53.8	54.7	54.4	54.7	55.1	54.2	54.0	54.1	52.8	52.0	51.5	Diurnal Maximum	

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



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Conklin - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Conklin - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	75	10.92	10.92
21 - 50	478	69.58	80.49
51 - 82	134	19.51	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Conklin - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	2	3	0	0	0	2	5	18	11	7	1	1	1	3	7	14	75
21 - 50	15	7	9	12	23	70	53	66	42	31	24	15	17	30	37	27	478
51 - 82	1	0	0	0	5	12	15	39	36	5	4	1	6	6	1	3	134
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	10	9	12	28	84	73	123	89	43	29	17	24	39	45	44	687

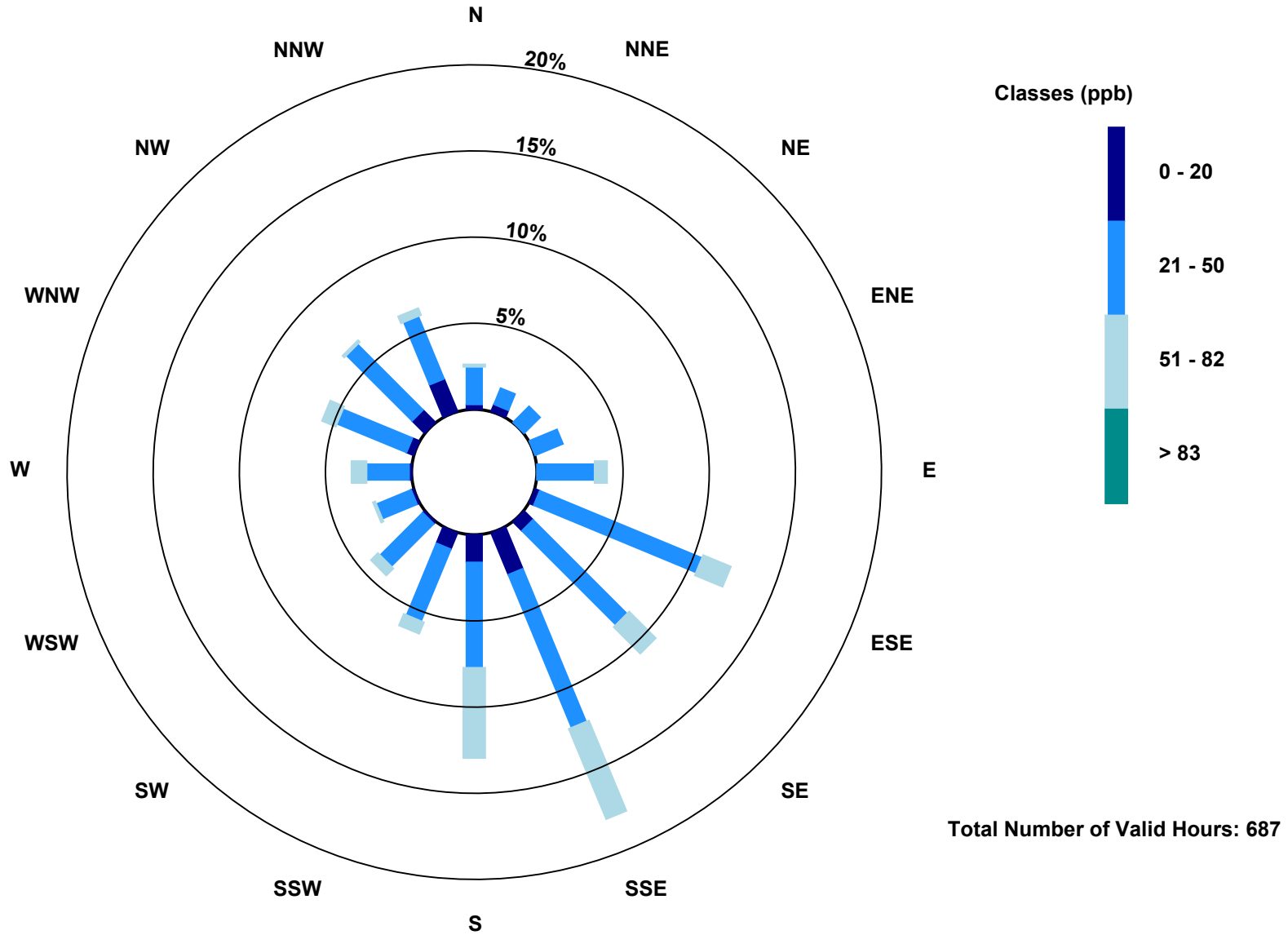
Total Number of Valid Hours: 687

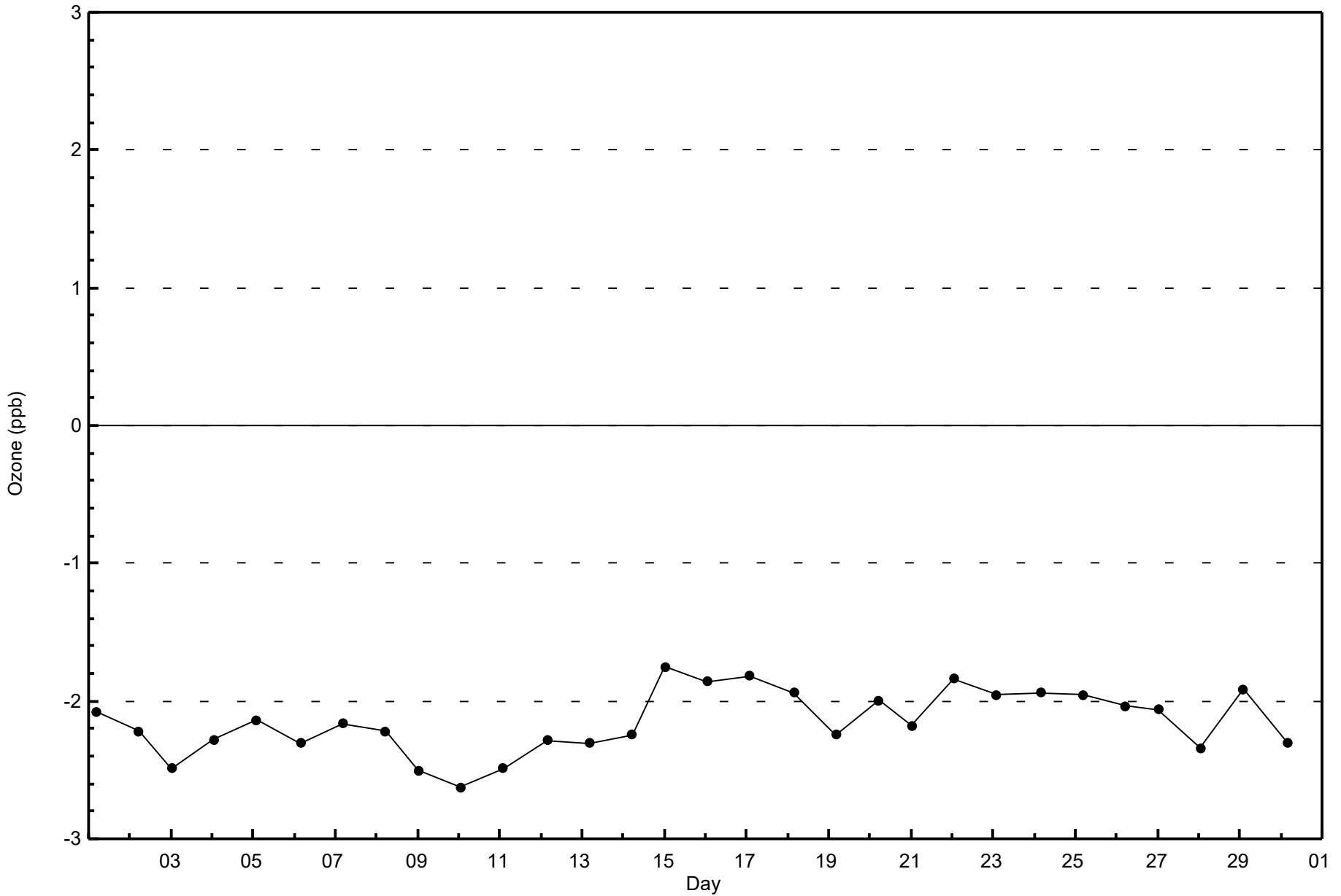
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Ozone (O₃) - ppb
Conklin

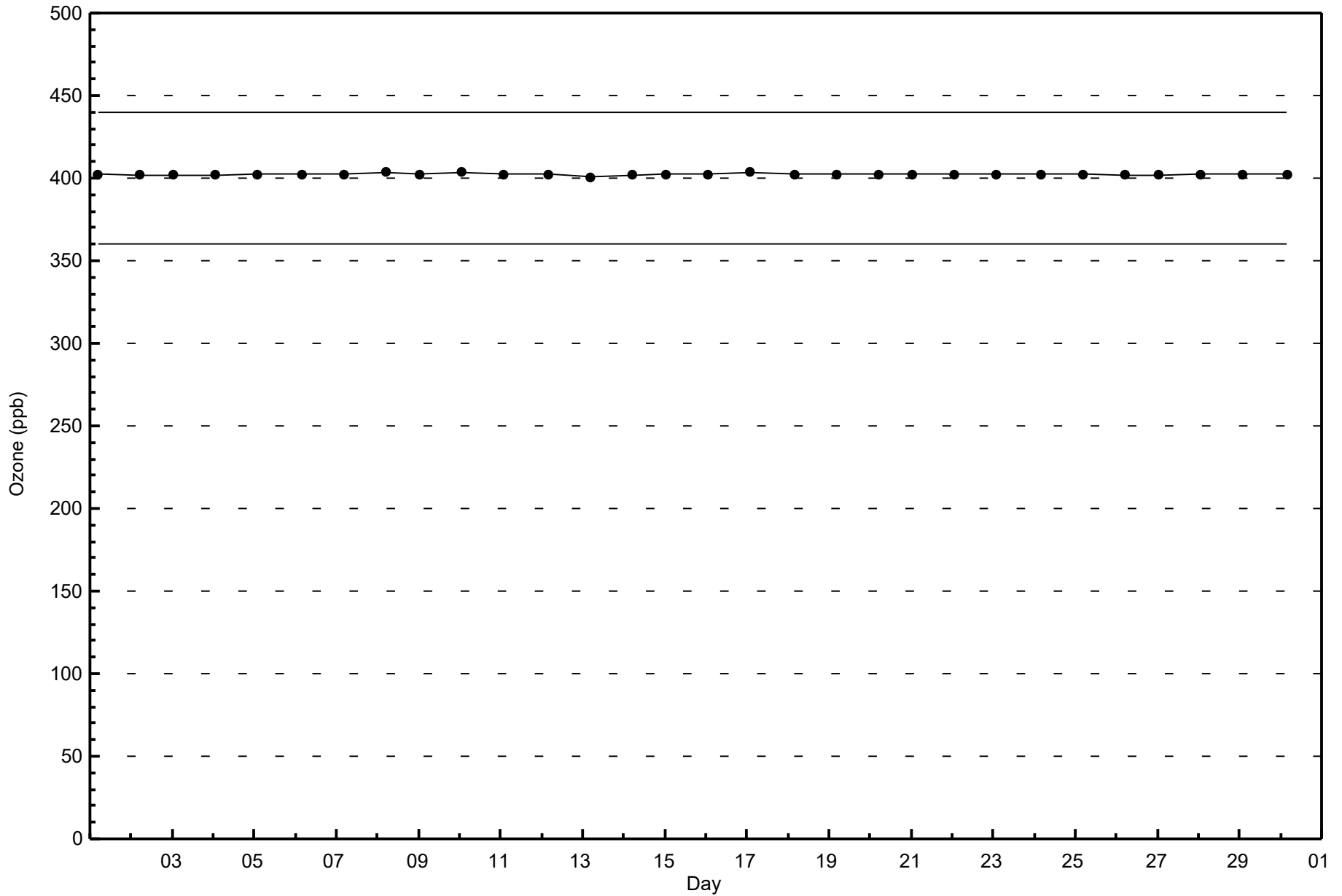






Wood Buffalo Environmental Association
Span Responses

Ozone (O₃) - ppb
Conklin - April 2023

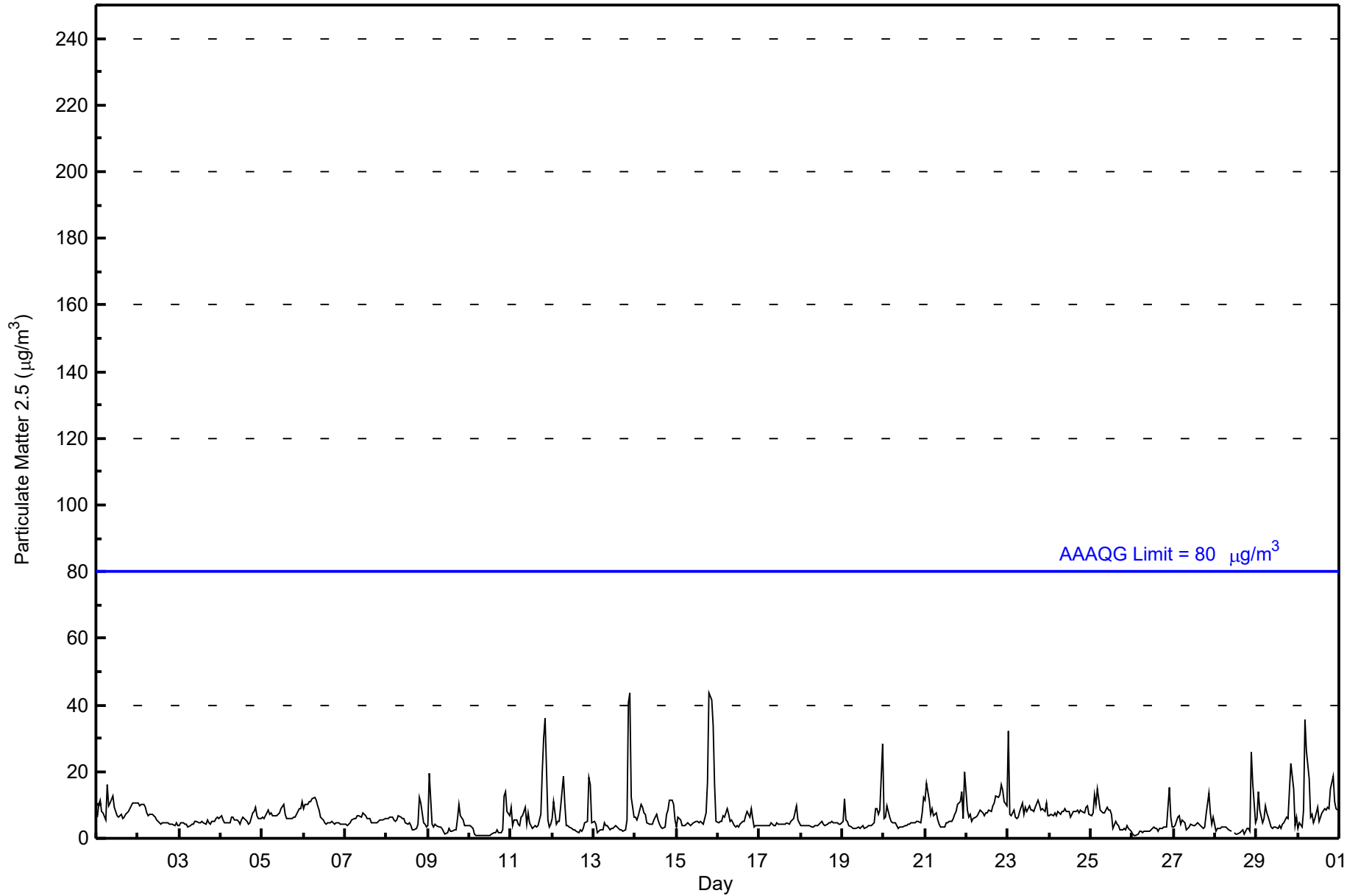




Summary of Hour Averages

Conklin - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																																								
Maximum Value: 43.6 µg/m ³ on Apr 15 20:00		Maximum Daily Average: 10.4 µg/m ³ on Apr 30				Hours of Data:		719																																								
Minimum Value: 0.7 µg/m ³ on Apr 10 11:00		Minimum Daily Average: 3.1 µg/m ³ on Apr 10				Hours of Missing Data:		1																																								
Maximum Diurnal Average: 11.5 µg/m ³ at hour 21		Minimum Diurnal Average: 4.5 µg/m ³ at hour 16				Hours of Calibration:		1																																								
Monthly Average: 6.41 µg/m ³		Percentiles: P ₁ = 0.8 P ₁₀ = 2.8 Q ₁ = 3.8 Median = 5.1 Q ₃ = 7.6 P ₉₀ = 10.3 P ₉₉ = 32.0				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-Apr	6.2	10.2	11.5	8.0	7.6	5.7	16.1	9.9	10.5	12.6	9.3	8.0	6.9	6.4	7.4	6.0	6.5	7.4	8.1	9.0	9.9	10.6	10.6	10.7	9.0	16.1																						
2-Apr	10.6	9.9	10.1	10.0	9.3	7.7	6.7	7.0	7.1	6.9	6.5	5.3	4.5	4.4	4.6	4.8	4.5	4.6	4.4	4.4	4.2	3.6	4.8	3.7	6.2	10.6																						
3-Apr	3.7	4.6	4.8	4.2	4.1	3.6	3.6	4.1	4.3	5.1	5.0	4.5	4.6	5.3	4.6	4.4	5.6	4.8	4.4	5.0	5.2	5.8	6.4	6.1	4.7	6.4																						
4-Apr	6.9	5.7	4.8	4.7	4.7	4.8	6.5	6.5	5.4	5.6	5.0	4.1	5.3	6.5	5.6	5.1	4.4	4.8	7.5	8.1	9.4	6.7	5.9	6.0	5.8	9.4																						
5-Apr	6.3	6.1	6.9	8.3	7.1	7.6	6.7	6.7	7.0	7.2	7.6	8.9	10.0	7.1	6.0	5.8	5.7	5.9	6.4	6.4	7.1	8.9	9.0	11.0	7.3	11.0																						
6-Apr	8.8	10.1	10.1	10.8	11.1	11.7	12.1	11.3	9.8	8.4	6.3	5.3	4.7	4.1	4.5	4.5	5.0	4.6	4.4	4.6	4.6	4.1	4.4	4.1	7.1	12.1																						
7-Apr	4.2	3.9	4.1	4.8	5.5	6.1	6.1	6.6	6.7	6.2	7.5	7.0	6.8	6.0	5.9	4.7	4.7	4.8	4.5	5.2	5.6	5.6	5.6	5.8	5.6	7.5																						
8-Apr	5.7	5.9	6.3	6.3	5.7	4.9	5.4	6.6	6.4	6.0	5.8	4.6	4.3	4.5	3.7	2.6	2.6	2.8	4.3	12.4	10.6	4.5	4.0	3.3	5.4	12.4																						
9-Apr	4.0	19.6	4.2	3.4	4.2	4.0	3.3	3.3	3.1	2.0	1.4	1.7	2.8	1.9	2.0	2.6	2.7	5.8	10.1	6.7	5.3	3.9	3.7	3.7	4.4	19.6																						
10-Apr	4.0	3.3	3.0	1.5	1.0	0.8	0.7	0.7	0.7	0.8	0.7	0.9	0.7	1.3	1.8	1.8	2.7	1.8	1.5	2.7	12.5	13.8	8.0	6.8	3.1	13.8																						
11-Apr	9.5	3.8	5.5	5.7	4.1	3.7	6.2	6.7	9.3	4.0	7.6	4.6	2.8	3.6	3.6	3.4	3.8	7.2	19.8	30.0	35.9	5.5	3.6	4.2	8.1	35.9																						
12-Apr	5.8	11.1	4.4	5.1	5.0	9.3	18.5	10.2	3.6	3.6	3.5	3.1	2.5	2.5	2.2	1.8	2.4	2.1	2.9	4.5	5.1	18.3	16.2	4.9	6.2	18.5																						
13-Apr	5.1	4.4	1.9	2.1	2.7	2.6	4.5	3.9	3.8	2.6	3.1	2.8	3.2	3.9	2.8	2.6	2.4	2.3	2.6	5.3	40.8	43.5	12.3	6.3	7.0	43.5																						
14-Apr	6.2	5.3	6.6	10.3	9.2	7.5	7.0	4.9	4.3	4.1	4.4	5.5	7.2	5.4	4.2	3.2	2.9	3.5	7.3	8.5	11.3	11.5	10.2	5.3	6.5	11.5																						
15-Apr	3.3	6.3	5.3	3.7	3.9	3.8	4.5	4.3	3.9	4.4	4.7	5.1	5.0	4.7	5.1	4.1	5.8	7.7	17.1	43.6	41.7	34.1	16.0	5.1	10.1	43.6																						
16-Apr	4.8	5.3	5.2	7.0	6.5	9.1	7.2	5.1	5.5	3.6	3.4	3.8	3.6	4.2	5.3	4.9	6.9	7.9	6.4	8.7	6.0	3.5	3.6	3.6	5.5	9.1																						
17-Apr	3.8	3.9	3.8	3.7	3.7	3.8	3.8	4.5	3.7	4.0	4.6	4.3	4.1	4.1	4.1	4.4	4.9	4.4	5.0	5.6	6.1	9.9	5.4	4.6	4.6	9.9																						
18-Apr	4.0	3.9	3.9	3.9	3.7	3.7	3.5	3.4	3.9	3.7	3.9	4.6	4.9	4.2	4.0	4.3	4.6	4.6	5.2	4.8	4.5	4.6	4.2	4.4	4.2	5.2																						
19-Apr	5.1	11.8	5.4	5.0	3.7	3.3	3.0	2.8	3.1	3.2	2.9	3.6	3.7	3.2	3.5	4.0	4.0	3.7	4.6	9.0	8.7	7.2	8.6	28.5	5.9	28.5																						
20-Apr	5.9	6.3	9.9	6.3	5.3	4.7	4.6	4.6	3.0	3.4	3.3	3.5	3.8	4.0	4.2	4.2	4.7	4.7	4.7	5.3	5.2	4.8	7.4	12.2	5.2	12.2																						
21-Apr	11.4	16.4	11.6	7.1	9.1	7.0	7.8	5.3	4.1	3.5	3.4	3.6	4.6	4.7	5.0	5.1	6.0	7.3	7.9	10.2	11.1	14.2	5.9	20.1	8.0	20.1																						
22-Apr	8.6	6.4	7.2	5.3	5.9	6.4	6.8	7.6	8.4	7.8	6.9	7.7	7.7	8.5	8.1	9.9	10.7	12.9	12.1	13.2	16.2	14.4	10.8	9.6	9.1	16.2																						
23-Apr	32.4	7.2	6.6	8.3	6.5	6.0	6.5	8.0	10.6	7.3	9.3	8.0	9.7	8.3	8.5	8.2	9.2	11.2	10.0	8.7	8.7	7.9	10.6	6.9	9.4	32.4																						
24-Apr	6.9	7.2	6.7	7.5	6.7	8.1	7.1	8.3	8.2	8.9	8.0	8.0	6.4	7.0	7.9	8.0	8.6	7.6	8.4	8.2	7.5	9.3	9.6	7.4	7.8	9.6																						
25-Apr	6.8	7.8	13.2	10.0	14.8	8.4	8.1	7.8	7.6	9.2	8.4	8.5	7.4	2.8	5.1	4.2	3.6	2.5	2.7	3.0	2.8	3.7	2.8	2.0	6.4	14.8																						
26-Apr	1.3	0.7	0.9	1.4	1.9	2.0	1.7	2.0	2.2	2.3	2.1	2.5	3.6	3.1	2.9	2.3	3.0	2.8	3.2	3.3	3.5	15.3	6.3	3.4	3.1	15.3																						
27-Apr	3.5	3.7	6.2	6.9	4.3	5.6	4.6	2.4	3.1	3.4	4.2	3.9	4.0	4.2	4.6	4.0	3.5	3.2	3.3	7.2	13.7	7.6	4.1	6.4	4.9	13.7																						
28-Apr	2.2	3.1	2.9	3.1	3.5	3.5	3.3	2.9	2.4	1.9	C	1.5	1.2	1.3	1.9	2.0	2.4	1.2	2.9	3.0	2.0	25.7	16.4	4.8	4.1	25.7																						
29-Apr	6.0	14.0	8.3	4.5	5.8	9.8	7.7	6.2	3.6	3.2	3.4	3.4	3.0	3.7	3.2	4.1	4.7	6.4	6.1	14.5	22.5	14.7	3.9	6.2	7.0	22.5																						
30-Apr	3.0	4.8	3.2	8.4	35.4	26.2	17.8	6.5	7.2	4.5	6.0	9.2	5.2	6.5	7.7	9.0	8.6	9.1	9.0	14.7	18.6	10.9	9.1	8.6	10.4	35.4																						
																								6.5	7.1	6.2	5.9	6.7	6.4	6.7	5.7	5.4	5.0	5.1	4.9	4.8	4.6	4.7	4.5	4.9	5.3	6.6	9.2	11.5	11.1	7.6	7.2	Diurnal Average
																								32.4	19.6	13.2	10.8	35.4	26.2	18.5	11.3	10.6	12.6	9.3	9.2	10.0	8.5	8.5	9.9	10.7	12.9	19.8	43.6	41.7	43.5	16.4	28.5	Diurnal Maximum
C - Calibration																																																
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Conklin - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	389	54.10	54.10
6 - 15	303	42.14	96.24
16 - 25	15	2.09	98.33
26 - 80	12	1.67	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Conklin - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	15	10	7	9	19	46	41	37	28	18	21	14	23	35	33	33	389
6 - 15	5	1	2	3	11	41	33	85	61	24	7	1	1	4	10	14	303
16 - 25	0	0	0	0	0	1	1	7	0	3	1	2	0	0	0	0	15
26 - 80	0	0	0	0	0	0	0	3	4	2	1	0	0	1	1	0	12
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	20	11	9	12	30	88	75	132	93	47	30	17	24	40	44	47	719

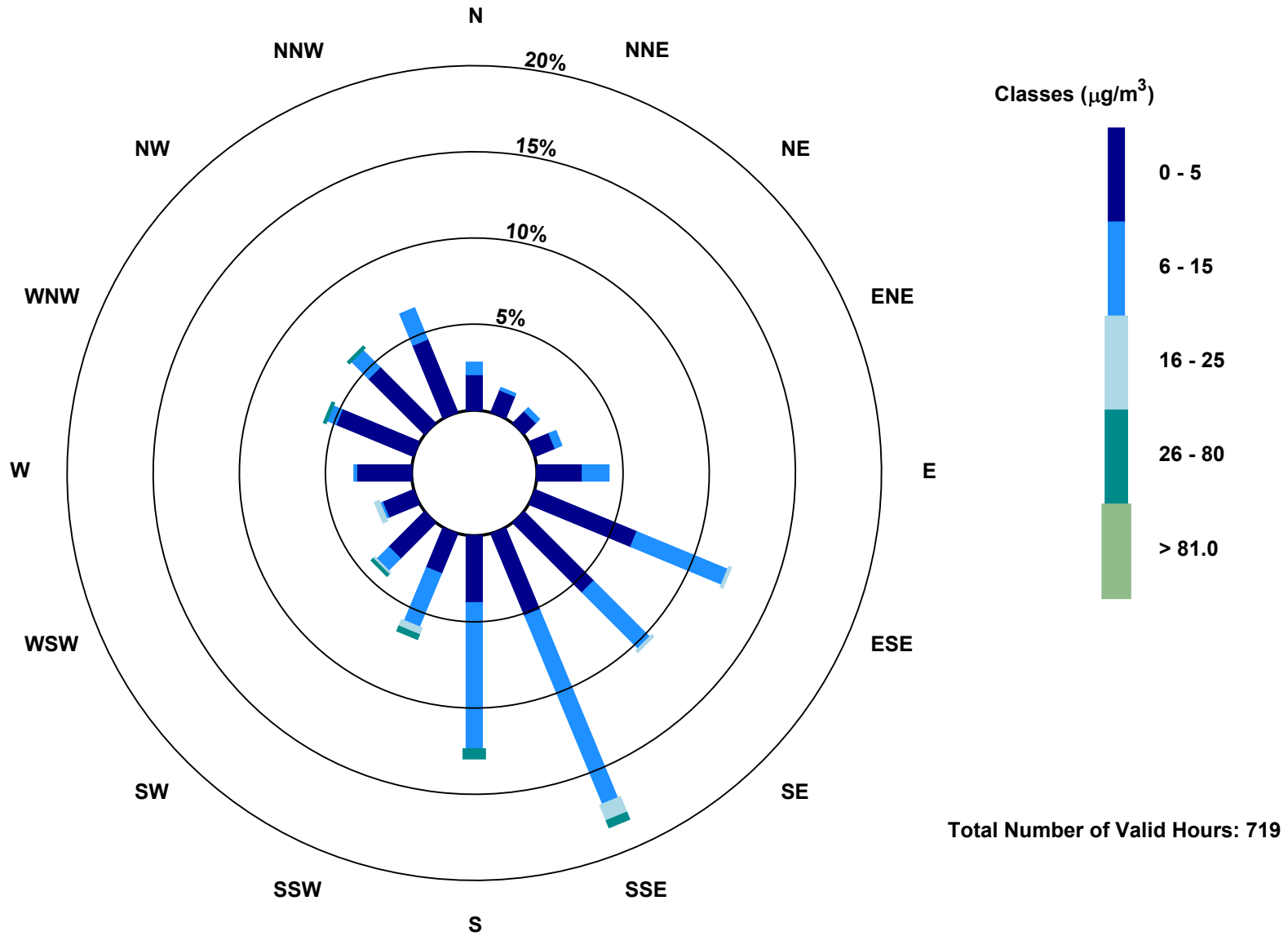
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Conklin



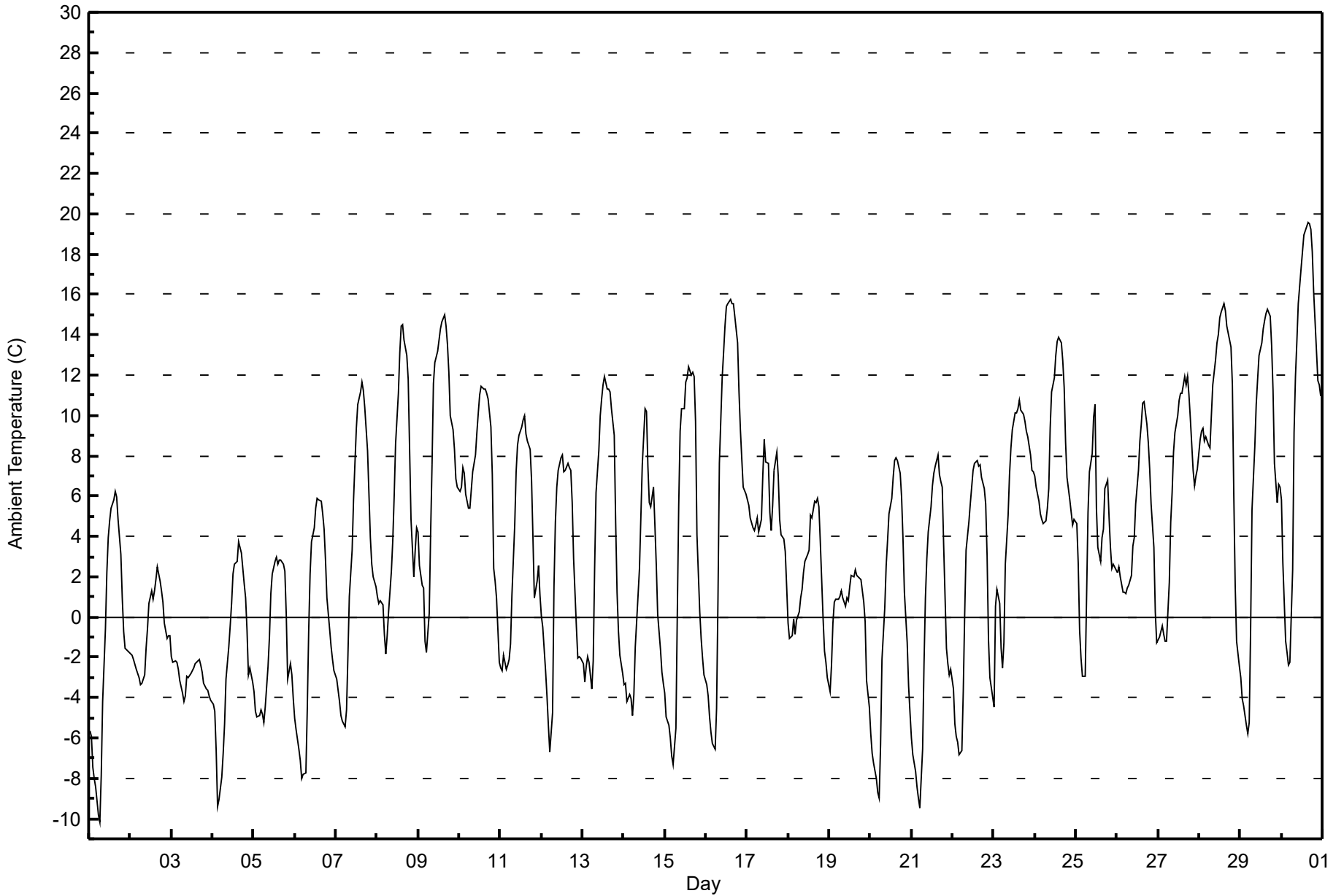


Maximum Value: 19.6 C on Apr 30 16:00 Maximum Daily Average: 11.1 C on Apr 30																						Hours in Service: 720 Hours of Data: 720				
Minimum Value: -10.2 C on Apr 1 07:00 Minimum Daily Average: -2.9 C on Apr 3 Maximum Diurnal Average: 9.0 C at hour 16 Minimum Diurnal Average: -3.0 C at hour 6 Monthly Average: 3.39 C Percentiles: $P_1 = -8.6$ $P_{10} = -4.5$ $Q_1 = -1.9$ Median = 3.0 $Q_3 = 7.8$ $P_{90} = 11.7$ $P_{99} = 17.0$																						Hours of Missing Data: 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-Apr	-5.7	-5.9	-7.4	-8.0	-8.5	-9.8	-10.2	-7.8	-4.2	-0.6	2.2	3.9	4.8	5.4	5.9	6.2	5.9	4.8	3.1	0.9	-0.7	-1.5	-1.6	-1.8	-1.3	6.2
2-Apr	-1.8	-1.9	-2.1	-2.6	-2.8	-3.0	-3.3	-3.3	-2.9	-1.6	-0.6	0.7	1.3	0.9	1.3	1.8	2.5	1.8	1.3	0.7	-0.3	-1.1	-0.9	-0.9	-0.7	2.5
3-Apr	-2.0	-2.2	-2.2	-2.3	-2.6	-3.1	-3.8	-4.2	-3.9	-2.9	-3.0	-2.8	-2.6	-2.5	-2.3	-2.2	-2.1	-2.4	-2.8	-3.3	-3.5	-3.7	-3.9	-4.1	-2.9	-2.0
4-Apr	-4.3	-4.7	-6.6	-9.4	-9.0	-7.9	-6.7	-5.3	-3.1	-1.5	-0.4	0.6	2.1	2.6	2.8	3.7	3.5	3.2	1.7	0.9	-0.6	-2.9	-2.5	-3.2	-2.0	3.7
5-Apr	-3.7	-4.7	-5.0	-4.9	-4.6	-4.8	-5.2	-4.4	-2.5	-1.0	1.2	2.1	2.8	3.0	2.6	2.8	2.8	2.6	2.3	0.1	-3.1	-2.3	-2.8	-4.0	-1.3	3.0
6-Apr	-5.0	-5.6	-6.5	-7.1	-8.0	-7.8	-7.7	-4.6	-0.7	2.1	3.8	4.4	5.4	5.9	5.8	5.7	5.1	4.4	2.8	0.9	-0.6	-1.5	-2.1	-2.6	-0.6	5.9
7-Apr	-3.1	-3.7	-4.2	-4.9	-5.2	-5.4	-4.6	-1.9	1.1	3.3	5.8	7.6	9.4	10.5	11.2	11.7	11.3	10.4	8.3	6.1	3.9	2.6	2.0	1.5	3.1	11.7
8-Apr	1.1	0.7	0.8	0.6	-0.9	-1.8	-0.9	0.2	2.3	3.8	6.0	8.6	11.1	13.1	14.4	14.5	13.8	13.0	11.8	8.3	4.8	2.0	3.3	4.4	5.6	14.5
9-Apr	4.2	2.5	1.6	1.4	-1.2	-1.8	0.2	4.2	7.6	11.6	12.6	13.2	13.7	14.3	14.6	15.0	14.4	13.5	12.2	10.0	9.3	8.3	6.8	6.5	8.1	15.0
10-Apr	6.3	6.4	7.4	7.1	6.1	5.4	5.4	6.3	7.2	8.1	9.2	10.1	11.1	11.5	11.3	11.3	11.1	10.8	9.4	7.1	2.4	1.8	1.0	-2.3	7.1	11.5
11-Apr	-2.5	-2.7	-1.9	-2.6	-2.4	-2.1	-1.3	1.1	4.6	7.2	8.5	9.0	9.4	9.8	10.0	9.1	8.8	8.3	6.8	3.9	1.0	1.8	2.6	1.1	3.6	10.0
12-Apr	0.0	-0.5	-2.7	-3.9	-5.3	-6.7	-4.7	1.5	4.7	6.5	7.2	7.9	8.0	7.2	7.3	7.6	7.4	7.2	5.7	2.9	-0.5	-2.0	-2.0	-2.0	2.1	8.0
13-Apr	-2.3	-3.2	-2.5	-2.0	-2.2	-3.5	-2.2	2.4	6.2	8.3	10.0	10.8	11.5	11.9	11.3	11.3	11.2	10.3	9.0	4.7	1.3	-0.7	-1.9	-2.8	4.0	11.9
14-Apr	-3.4	-3.3	-4.2	-3.9	-4.1	-4.9	-3.9	-1.5	1.1	2.4	4.9	7.6	10.4	10.2	7.5	5.7	5.5	6.4	4.6	2.5	0.1	-1.6	-2.8	-3.3	1.3	10.4
15-Apr	-3.8	-5.0	-5.4	-6.0	-6.9	-7.3	-5.5	0.3	5.5	9.2	10.3	10.4	11.7	11.9	12.4	12.0	12.1	11.9	9.7	4.1	0.3	-1.0	-2.0	-2.8	3.2	12.4
16-Apr	-3.4	-3.9	-5.0	-5.8	-6.3	-6.5	-4.6	0.9	7.7	11.9	13.1	14.4	15.4	15.5	15.8	15.6	15.6	14.9	13.6	11.2	9.3	7.8	6.4	6.1	6.7	15.8
17-Apr	5.8	5.6	4.9	4.4	4.3	4.5	4.9	4.2	4.8	7.1	8.8	7.7	7.6	5.2	4.3	5.5	7.3	8.2	7.0	4.9	4.1	3.9	3.2	1.5	5.4	8.8
18-Apr	-0.3	-1.1	-0.9	-0.1	-0.8	-0.2	0.2	0.9	1.3	2.2	2.8	3.1	3.3	5.0	4.9	5.7	5.7	5.9	5.5	3.8	-0.1	-1.7	-2.3	-3.0	1.7	5.9
19-Apr	-3.7	-2.4	-0.3	0.8	0.9	0.9	1.0	1.3	1.0	0.5	0.9	0.8	1.5	2.1	2.0	2.3	2.1	2.0	1.8	1.3	0.7	-0.2	-3.1	-4.5	0.4	2.3
20-Apr	-5.8	-6.8	-7.2	-8.0	-8.7	-9.0	-6.3	-2.1	0.5	2.6	3.8	5.1	5.9	6.9	7.7	7.9	7.7	7.1	6.0	3.9	1.3	-1.3	-3.4	-4.7	0.1	7.9
21-Apr	-6.0	-6.8	-7.7	-8.4	-9.0	-9.5	-6.6	-2.3	1.0	2.9	4.2	5.5	6.5	7.2	7.5	8.1	7.1	6.7	6.4	3.6	-1.6	-2.3	-2.8	-2.6	0.0	8.1
22-Apr	-3.6	-5.3	-5.9	-6.2	-6.9	-6.6	-3.7	0.1	3.3	4.7	5.6	6.5	7.3	7.6	7.8	7.5	7.6	6.9	6.4	5.6	3.0	-1.2	-3.0	-4.0	1.4	7.8
23-Apr	-4.5	0.6	1.4	0.7	-1.5	-2.5	-1.3	2.6	5.1	7.1	8.4	9.3	10.1	10.1	10.3	10.8	10.3	10.0	9.7	9.2	8.9	8.0	7.3	7.2	5.7	10.8
24-Apr	7.0	6.4	5.8	5.1	4.8	4.7	4.8	5.4	6.4	9.4	11.2	11.9	13.0	13.7	13.9	13.6	12.7	11.4	8.7	6.9	5.8	5.2	4.6	4.8	8.2	13.9
25-Apr	4.6	2.7	-0.7	-2.0	-2.9	-3.0	1.1	5.2	7.2	8.1	9.9	10.6	5.4	3.5	2.7	3.9	4.4	6.4	6.8	5.0	3.5	2.4	2.6	2.3	3.7	10.6
26-Apr	2.2	2.5	2.0	1.3	1.2	1.1	1.4	1.6	2.1	3.5	4.0	5.6	7.2	8.7	9.6	10.6	10.7	9.6	8.7	7.3	5.6	3.5	0.2	-1.2	4.5	10.7
27-Apr	-1.1	-1.0	-0.5	-0.8	-1.2	-1.2	1.7	4.7	6.2	8.2	9.2	10.0	10.7	11.1	11.1	12.0	11.5	11.9	11.0	9.9	7.3	6.5	7.0	7.4	6.3	12.0
28-Apr	8.8	9.2	9.3	8.8	8.9	8.5	8.4	10.0	11.5	12.8	13.6	14.0	14.8	15.1	15.5	15.2	14.4	14.1	13.4	11.5	6.1	1.6	-1.2	-2.4	10.1	15.5
29-Apr	-3.0	-4.0	-4.4	-5.3	-5.8	-5.2	-0.7	5.3	8.5	10.6	11.8	13.0	13.6	14.3	14.7	15.0	15.2	14.9	13.5	11.2	7.6	5.7	6.6	6.4	6.6	15.2
30-Apr	5.8	2.7	-1.2	-1.8	-2.4	-2.2	2.3	9.1	11.9	13.7	15.5	17.3	18.1	18.9	19.2	19.6	19.5	19.2	18.1	16.1	13.2	11.8	11.5	10.9	11.1	19.6
																								Diurnal Average		
																								Diurnal Maximum		



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Conklin - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Conklin - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	241	33.47	33.47
0 - 10	357	49.58	83.06
10 - 20	122	16.94	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



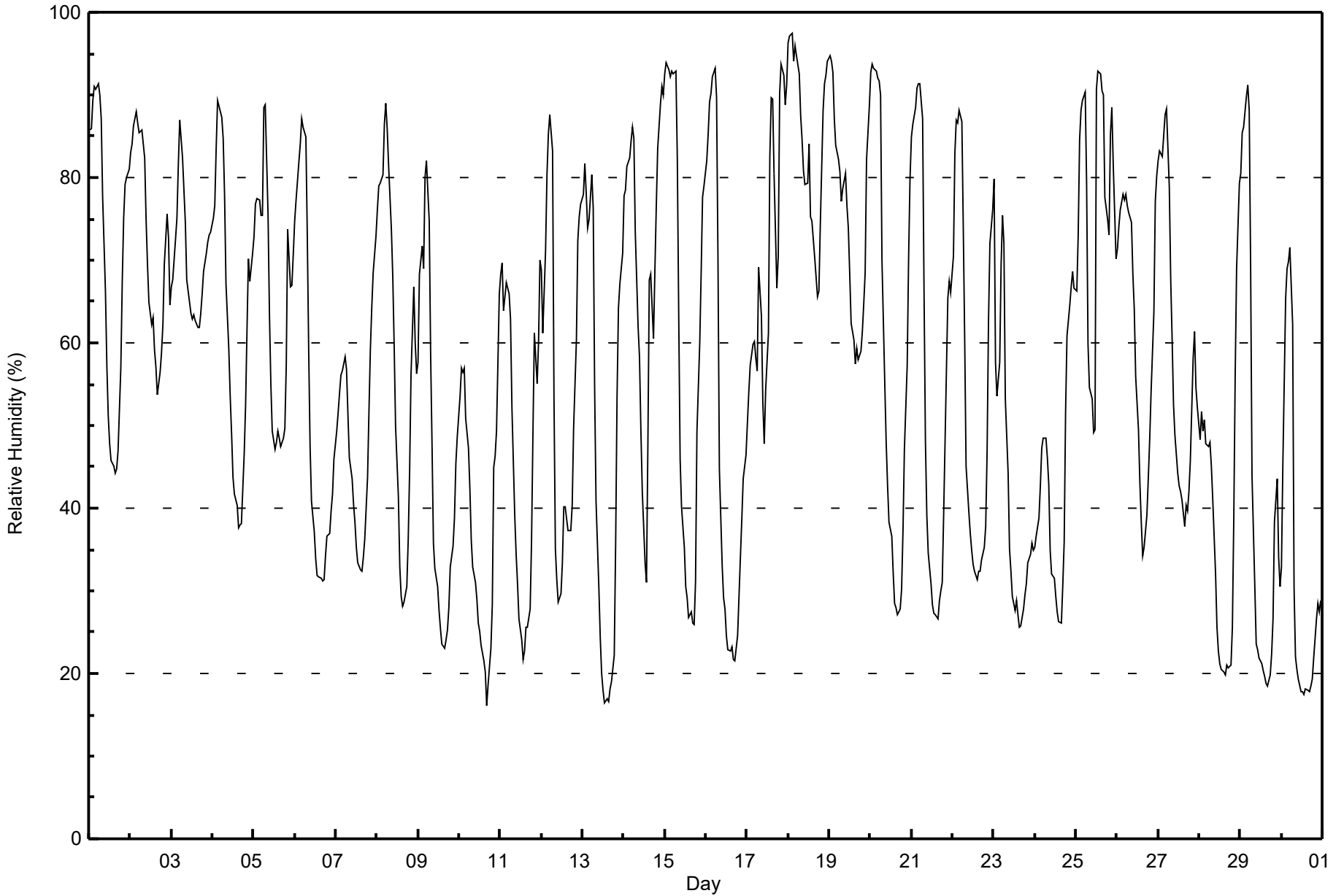
Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Conklin - April 2023

Maximum Value: 97.5 % on Apr 18 03:00 Maximum Daily Average: 84.3 % on Apr 18																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 16.1 % on Apr 10 17:00 Minimum Daily Average: 32.8 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																											
Maximum Diurnal Average: 79.6 % at hour 6 Minimum Diurnal Average: 38.3 % at hour 18																						Percent Operational Time: 100.0																											
Monthly Average: 56.89 % Percentiles: P ₁ = 17.9 P ₁₀ = 26.5 Q ₁ = 35.9 Median = 57.6 Q ₃ = 76.6 P ₉₀ = 88.0 P ₉₉ = 94.1																																																	
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-Apr	85.7	85.9	89.3	91.1	90.6	91.4	89.9	87.2	77.6	66.3	57.2	51.1	47.7	45.8	45.1	44.2	44.8	46.9	57.0	67.5	75.1	79.1	80.0	81.1	69.9	91.4																							
2-Apr	83.0	84.1	86.3	88.0	86.7	85.5	85.6	85.7	82.4	74.9	69.4	64.9	62.3	63.1	59.2	57.0	53.6	56.4	58.8	62.3	69.5	75.6	72.7	64.6	72.1	88.0																							
3-Apr	66.8	67.7	72.6	75.1	81.5	87.0	82.3	78.5	74.6	67.6	66.3	63.5	62.8	63.3	62.7	61.9	61.9	63.6	65.9	68.7	70.9	72.2	73.1	73.4	70.2	87.0																							
4-Apr	75.1	76.6	83.5	89.4	88.7	87.3	84.8	77.9	67.1	59.3	53.6	49.0	43.8	41.7	40.3	37.6	37.9	38.2	46.6	52.5	61.8	70.2	67.4	70.9	62.5	89.4																							
5-Apr	72.9	76.8	77.4	77.3	75.4	75.5	88.5	88.8	75.6	63.5	55.0	49.4	47.2	48.0	49.3	48.4	47.4	48.5	49.7	57.3	73.7	66.7	66.9	70.6	64.6	88.8																							
6-Apr	74.8	77.3	81.9	84.1	87.2	86.2	84.9	73.1	59.2	47.5	40.9	37.0	33.9	31.9	31.6	31.4	31.2	31.4	34.3	36.6	36.9	39.7	41.7	45.9	52.5	87.2																							
7-Apr	49.3	51.5	53.9	56.2	56.5	58.3	56.8	51.3	46.1	43.6	40.5	38.4	35.3	33.3	32.5	32.4	34.1	36.2	43.7	51.6	59.2	64.2	68.5	72.8	48.6	72.8																							
8-Apr	76.1	78.9	79.3	80.4	86.4	88.9	86.0	81.5	73.7	68.0	59.5	49.8	41.4	32.9	29.3	28.2	28.6	30.5	36.2	44.5	56.1	66.7	59.9	56.2	59.1	88.9																							
9-Apr	57.6	68.3	71.6	69.0	80.0	82.1	74.8	58.7	47.7	35.8	32.8	30.5	27.6	25.5	23.5	23.1	24.0	25.2	28.0	32.9	35.4	38.8	45.4	48.7	45.3	82.1																							
10-Apr	53.6	57.0	56.4	57.0	50.8	47.2	42.4	36.1	32.9	31.1	28.9	26.2	25.1	23.4	21.6	20.2	16.1	18.6	23.1	28.4	45.0	46.3	49.4	65.9	37.6	65.9																							
11-Apr	68.4	69.7	63.9	67.3	66.6	65.9	62.9	52.2	39.2	34.5	30.8	26.6	24.1	21.7	22.8	25.6	25.5	27.9	36.2	49.1	61.2	55.1	60.2	69.9	47.0	69.9																							
12-Apr	68.7	61.3	71.2	80.3	85.2	87.6	83.2	53.4	35.1	31.3	28.7	29.7	33.4	40.1	40.1	37.3	37.4	37.3	40.3	49.6	60.4	72.4	75.3	76.8	54.8	87.6																							
13-Apr	77.9	81.7	78.2	73.9	74.8	80.3	76.3	54.6	40.9	30.6	24.5	20.0	18.0	16.4	17.0	16.7	18.1	19.0	22.2	35.7	53.5	64.3	67.2	70.9	47.2	81.7																							
14-Apr	77.8	78.5	81.4	82.3	84.4	86.1	84.7	73.4	62.0	58.3	49.5	42.0	33.4	31.1	47.8	67.7	68.4	60.5	68.8	76.6	83.6	89.0	91.1	90.1	69.5	91.1																							
15-Apr	92.6	94.0	93.0	92.3	93.0	92.6	93.0	82.2	63.3	46.0	40.2	35.2	30.5	29.1	26.8	27.5	26.1	25.9	31.3	49.3	60.0	68.4	77.6	78.9	60.4	94.0																							
16-Apr	82.1	85.3	89.2	90.2	92.2	93.2	89.7	70.1	44.7	33.1	29.1	27.8	24.6	22.9	22.6	23.3	21.7	21.6	24.5	29.3	34.0	38.6	43.6	46.5	49.2	93.2																							
17-Apr	50.4	54.1	57.2	59.8	60.1	58.1	56.6	69.2	63.2	53.0	47.9	54.2	61.3	82.5	89.7	89.5	80.5	66.6	70.5	90.2	93.7	92.4	88.8	91.1	70.0	93.7																							
18-Apr	96.3	97.1	97.5	94.1	96.0	94.7	92.6	87.5	84.6	80.8	79.2	79.2	84.0	75.3	74.7	70.3	68.0	65.7	66.3	74.2	88.2	91.3	92.4	94.1	84.3	97.5																							
19-Apr	94.8	94.0	92.6	87.2	83.8	82.1	80.6	77.2	78.7	80.5	76.6	73.9	68.3	62.4	60.3	57.5	59.3	57.9	59.0	61.4	64.8	68.4	82.2	88.7	74.7	94.8																							
20-Apr	92.8	93.7	93.3	92.9	92.0	91.8	90.0	70.0	55.1	47.9	42.7	38.3	36.6	32.3	28.4	27.9	27.2	27.9	30.1	37.3	47.1	57.3	70.2	79.8	58.4	93.7																							
21-Apr	84.9	86.4	88.6	90.9	91.3	91.3	87.1	66.5	48.2	39.1	34.6	30.9	28.4	27.3	27.0	26.7	28.8	30.0	31.0	39.1	56.8	65.4	67.5	66.1	55.6	91.3																							
22-Apr	70.5	82.8	87.0	86.6	88.1	86.8	74.1	60.6	45.2	39.4	37.0	34.9	33.2	32.4	31.4	32.4	32.4	33.8	35.3	37.7	46.8	62.5	72.0	76.1	55.0	88.1																							
23-Apr	79.8	57.6	53.5	57.6	69.5	75.4	72.0	53.1	44.2	35.1	32.3	29.3	27.7	28.7	27.2	25.6	25.8	27.8	29.4	30.8	33.4	34.4	35.8	34.8	42.5	79.8																							
24-Apr	35.2	36.7	38.9	42.7	47.3	48.5	48.4	46.2	42.8	34.9	32.0	31.5	29.3	27.4	26.3	26.2	30.7	36.0	51.7	60.9	64.5	66.8	68.7	66.7	43.4	68.7																							
25-Apr	66.3	73.1	84.6	88.1	89.3	90.4	79.2	59.9	54.6	53.2	49.2	49.4	90.7	92.9	92.5	90.5	90.0	77.7	74.9	73.0	85.3	88.4	81.6	70.1	76.9	92.9																							
26-Apr	71.4	74.1	76.1	78.0	77.3	77.9	76.6	75.7	74.5	68.4	64.1	55.9	49.4	43.0	38.3	34.3	35.3	39.1	43.5	48.3	54.0	63.8	77.1	80.2	61.5	80.2																							
27-Apr	82.0	83.2	82.5	85.2	87.6	88.3	78.8	67.5	60.5	52.6	48.8	44.2	42.7	42.0	41.0	37.8	40.3	39.7	42.0	45.7	58.1	61.4	54.6	52.2	59.1	88.3																							
28-Apr	48.2	51.6	49.2	50.6	47.9	47.4	48.0	45.1	41.0	32.0	25.7	22.6	21.2	20.5	20.1	19.9	21.0	20.7	21.0	25.5	38.8	56.1	68.9	79.4	38.4	79.4																							
29-Apr	80.5	85.5	86.1	89.9	91.2	88.1	69.4	44.0	30.4	23.6	22.9	21.9	21.2	20.3	19.7	18.8	18.4	19.8	22.4	26.6	38.4	43.5	34.0	30.6	43.6	91.2																							
30-Apr	32.9	45.3	65.4	69.0	69.9	71.5	62.2	30.3	22.1	20.5	19.3	17.8	17.8	17.5	18.1	18.0	17.8	18.4	19.3	21.9	26.6	28.5	27.5	28.7	32.8	71.5																							
																								71.6	73.7	76.1	77.5	79.0	79.6	76.0	65.2	55.6	48.4	44.0	40.8	40.1	39.2	38.9	38.6	38.4	38.3	42.1	48.8	57.8	62.9	65.4	67.4	Diurnal Average	
																								96.3	97.1	97.5	94.1	96.0	94.7	93.0	88.8	84.6	80.8	79.2	79.2	90.7	92.9	92.5	90.5	90.0	77.7	74.9	90.2	93.7	92.4	92.4	94.1	Diurnal Maximum	



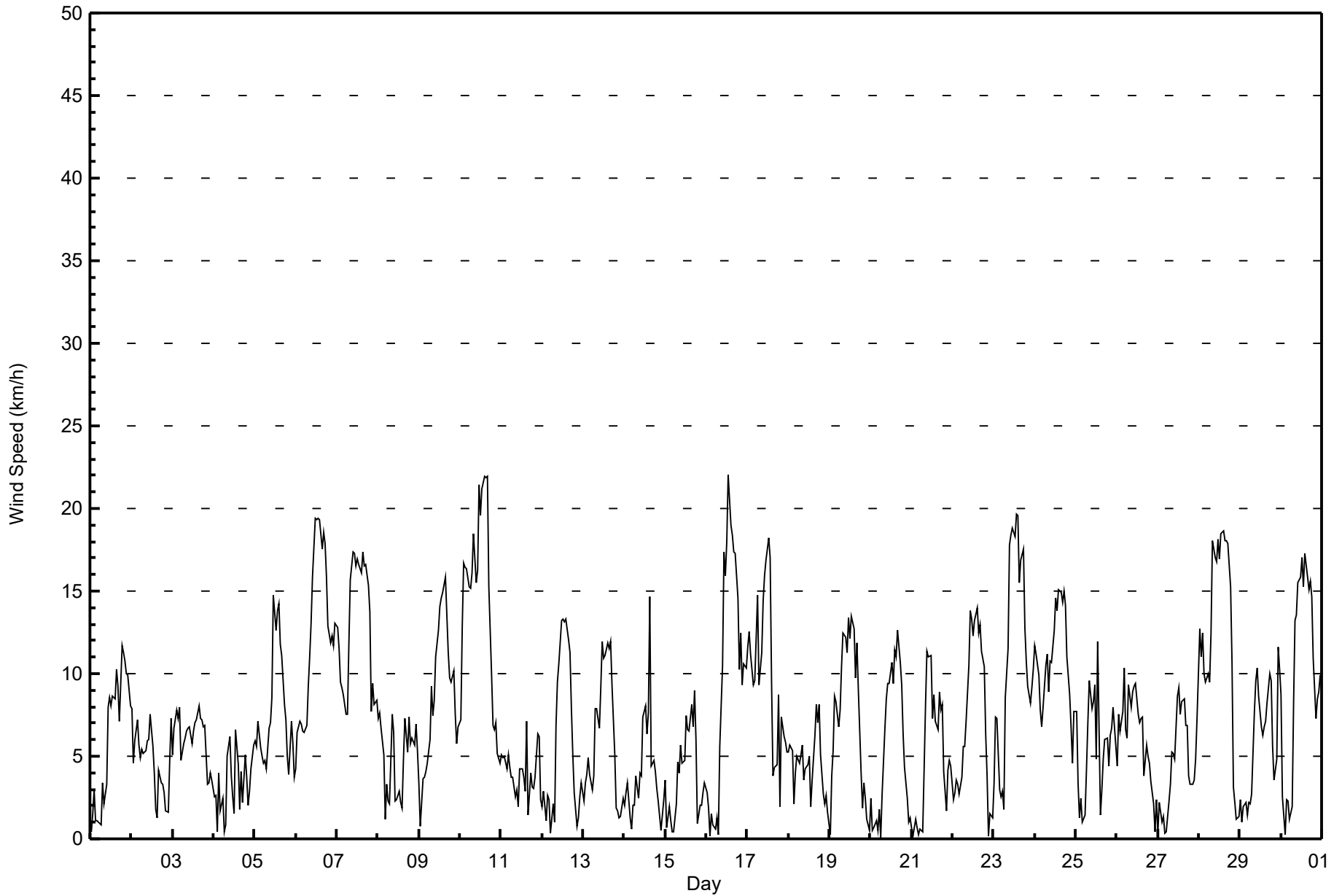


Maximum Speed: 22 km/h on Apr 16 14:00	Maximum Daily Speed Average: 13.3 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 20 07:00	Minimum Daily Speed Average: 1.0 km/h on Apr 4	Hours of Data: 720
Maximum Diurnal Speed Average: 4.4 km/h at hour 12	Minimum Diurnal Speed Average: 1.2 km/h at hour 6	Hours of Missing Data: 0
Monthly Average Velocity: 3.2 km/h 164.8 deg	Percentiles: P ₁ = 0 P ₁₀ = 2 Q ₁ = 3 Median = 7 Q ₃ = 11 P ₉₀ = 15 P ₉₉ = 20	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-Apr	SSE0	NNW2	NNW3	SSE1	S1	ESE1	WSW1	NW3	WSW2	E3	ESE8	ESE9	E8	ESE9	ESE8	ESE10	ESE9	E7	ESE12	ESE11	ESE11	ESE10	ESE10	ESE8	ESE5.3	ESE12
2-Apr	ESE8	E5	E6	ESE7	ESE6	E5	E5	E5	E5	ESE6	E6	ESE8	ESE6	SE4	SSW2	N1	NNE4	NNE3	E3	ESE3	N2	N2	SE5	SSE7	ESE3.9	ESE8
3-Apr	SSE5	S7	SSW8	SW7	SW8	WNW5	WNW6	WNW6	WNW7	NW7	WNW7	WNW6	NW7	NW7	NW7	NW8	NW7	NW7	NW7	N7	ENE3	ESE3	ESE4	ESE4	WNW3.2	NW8
4-Apr	ENE3	E3	SE0	NNW4	NNW2	NNW2	N0	NW1	SE5	SE6	WSW4	N3	SE2	SSE7	NNW5	NE2	WNW4	SE2	ESE5	SE4	SE2	SSW3	S4	SSW6	SE1.0	SSE7
5-Apr	SSW6	SSE6	SSE7	S6	S5	SSE5	SE5	SE4	SSE7	SSE7	SSE9	S15	S13	S14	S14	S12	S11	S8	SSE7	SSE5	S4	S7	SSW6	S4	S7.4	S15
6-Apr	S4	S6	SSE7	SSE7	SSE7	SSE6	S7	S9	S11	S13	S16	S19	S19	S19	S19	S18	SSE19	SSE18	SSE16	SSE13	SSE12	S12	S12	SSE13	S12.5	S19
7-Apr	SSE13	SSE12	SSE10	SSE9	SSE9	SSE8	SSE8	SSE12	S16	S17	S17	S17	SSE17	S17	SSE16	SSE17	S17	S17	S15	S14	SSE8	SSE9	SSE8	SSE8	SSE12.7	S17
8-Apr	SSE7	SSE8	SSE7	SSE5	NW1	SE3	SSE2	SE2	SSW8	SW6	SW2	WNW2	S3	SW2	SE2	W5	W7	WSW5	SW7	SSW6	SSW6	S6	SSW7	SSW5	SSW3.6	SSE8
9-Apr	SSW3	WSW1	S4	SSE4	SE4	SSE5	S6	SW9	SW7	WSW8	SW11	SW13	SW14	SW15	SW15	SSW16	SSW14	S11	SSE10	SSE9	SSE10	SSE8	SE6	SE7	SSW7.3	SSW16
10-Apr	SSE7	SSW13	WSW17	W16	W16	W15	W15	W16	W18	WNW15	W16	WSW21	W20	WSW21	WSW22	WSW22	WSW22	W15	W10	WSW7	SSW7	SW7	SSW5	S5	WSW13.3	WSW22
11-Apr	S5	SSE5	S5	S4	S5	SSE4	SSE4	S4	S3	NW3	WNW2	NW4	WNW4	WNW4	WNW3	NNW7	WNW1	ESE4	SSW3	S3	S4	SW6	SW6	SW2	SSW2.1	NNW7
12-Apr	NW2	NW3	NNW1	SSW3	SSW2	ESE0	SE2	W1	WNW7	WNW9	WNW11	WNW13	WNW13	NW13	NW13	NW12	NW11	WNW8	WNW5	W3	WNW1	SSE1	SSE3	S3	WNW4.9	WNW13
13-Apr	S2	SSE3	SSE4	SSE5	SSE4	SSE3	SSE4	SW8	WSW8	W7	W9	W12	WNW11	NW11	NNW12	NNW12	N12	N9	NNE5	NE2	SSW2	S1	SSE1	SE2	WNW2.7	N12
14-Apr	S2	SSE3	NNW3	S1	NNE1	NNW2	NNW2	NW4	NNE2	NNW4	NNE4	ESE7	ESE8	E6	S8	SE15	E4	ENE5	SE4	SSW3	S2	SSW0	SSE1	SSE2	ESE1.8	SE15
15-Apr	SSE4	SE1	SE2	S1	SSE0	NNE0	SSW2	S5	SE4	ESE6	SE5	SSW5	SE7	SE7	S7	SW8	S7	S9	SSE6	SSE1	SW2	S2	SSE3	SE3	SSE3.5	S9
16-Apr	SSE3	SSE2	W0	NNW1	NW1	SSE1	SSE1	E0	ESE6	ESE11	ESE17	ESE16	SE18	SE22	SE19	SE18	SE17	SE17	SE15	SE10	SE12	ESE9	ESE11	ESE10	SE9.5	SE22
17-Apr	ESE12	ESE13	ESE11	ESE9	ESE10	ESE12	ESE15	ESE9	ESE11	ESE14	ESE16	ESE17	ESE18	SE17	SE10	E4	ENE4	ESE4	S9	NE2	NNW7	N6	N6	NNW5	ESE8.1	ESE18
18-Apr	NNW5	NNW6	NNW5	N2	NW4	NNW5	NNW5	NNE5	ENE6	NNE4	NNW4	NNW4	N5	NNW2	NNW4	NE6	NE8	NE7	NNE8	N5	NW3	NW2	NNW3	NNW2	N3.8	NE8
19-Apr	NNE0	SSE4	SE5	SE9	SE8	ESE7	ESE8	SE10	ESE12	ESE12	ESE11	ESE13	ESE12	ESE13	ESE13	ESE10	ESE12	ESE9	E4	NE2	ESE3	ENE2	N1	WNW0	ESE7.3	ESE13
20-Apr	NNW2	SW1	NNW1	NNW1	NNW0	NNW2	NW0	SE3	ESE7	E9	ENE9	E9	ENE11	E9	E11	ESE11	ESE13	E11	E9	E6	ESE4	ESE2	SSW1	SSW1	E4.9	ESE13
21-Apr	S1	S0	WNW1	S1	SSE0	NW1	SSE0	ESE4	SE8	SE11	SE11	ESE11	E7	E9	E7	E7	ESE9	SSE8	S8	SSE4	SSW2	SSW4	SSW5	SSW4	SE4.2	SE11
22-Apr	SSE2	ESE3	SE4	SE3	SSE3	SSE4	S6	S6	S7	S11	SSE14	S13	S12	S13	S14	S12	S13	S11	S10	SSE6	SSE4	WNW0	NW1	SSW1	S6.9	S14
23-Apr	SSE3	SSE7	SSE7	S3	NNW3	NNW3	ESE2	SSE9	SSE11	SSE18	SSE18	SSE19	SE18	SSE20	SSE20	SSE16	SSE17	SSE18	SSE13	SSE11	SE9	ESE8	SE9	SSE10	SSE10.7	SSE20
24-Apr	SSE12	SSE11	SE10	ESE8	SE7	SE8	SE11	SE11	ESE9	ESE11	ESE11	SE13	ESE15	SE14	SE15	SSE15	SSE14	S15	S14	SSE11	SSE9	SSE7	SSE5	SSE8	SE10.2	SE15
25-Apr	SSE8	SE3	SE1	S2	N1	SE1	S4	SSW7	S10	SSW8	SSW8	SW9	NW5	NE12	SSW1	S3	S5	SW6	WSW6	WSW4	SW6	SSW7	SW8	W6	SW4.0	NW12
26-Apr	WNW4	WNW8	WNW7	W8	W10	WNW7	WNW6	NW9	WNW8	WNW9	NW9	NW9	NNW8	NNW7	NNW7	N7	NE4	NE6	ENE5	ENE5	ENE3	ENE2	WNW0	NW2	NW4.6	W10
27-Apr	SSW0	NNW2	N1	NNW1	S0	S0	N2	N3	NNW5	N5	WNW5	WNW9	WNW9	WNW8	W8	W8	NW7	W7	W4	SW3	S3	SSW4	SSW5	SSW7	W3.1	WNW9
28-Apr	SSW13	SW11	SW12	SW10	W10	WNW10	WNW9	NW12	NNW18	NW17	NW17	NW18	NW17	NW18	NW19	NW18	NNW18	NNW18	NNW15	NNW11	NNW3	NW2	SW1	SSW1	NW10.0	NW19
29-Apr	S2	SSW1	S2	S2	S1	S2	SSE2	ESE3	SE8	SE10	SE10	SE9	SE7	E6	ESE7	E7	ESE8	ESE10	ESE10	ESE6	ESE4	ESE5	SE12	SE10	SE5.5	SE12
30-Apr	SSE9	SE3	ESE0	SSE2	SSE2	SSW1	SSE2	SE8	SSE13	SSE14	SSE16	SSE16	SE17	SSE15	SE17	SE16	SSE15	SE16	SE15	SE11	SSE7	SSE9	SSE9	SSE10	SSE10.0	SE17

SSE3.6 SSE3.1 S2.5 S2.3 S1.6 S1.2 SSE1.8 S2.1 SSE3.1 SSE3.2 SSE3.6 S4.4 SSE3.8 SSE4.1 S4.2 S3.6 SSE3.4 SSE4.1 SSE4.2 SSE3.4 SSE3.2 SSE3.2 SSE3.6 SSE3.9	Diurnal Average
SSE13 SSW13 WSW17 W16 W16 W15 W15 W16 W18 SSE18 SSE18 WSW21 W20 SE22 WSW22 WSW22 WSW22 NNW18 SSE16 SSE14 SE12 S12 S12 SSE13	Diurnal Maximum

All monthly, daily, and diurnal averages have been calculated using vector methods





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Conklin - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	300	41.67	41.67
6 - 11	271	37.64	79.31
12 - 19	140	19.44	98.75
20 - 28	9	1.25	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Conklin - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	14	10	5	9	12	19	28	48	41	28	7	6	5	15	19	34	300
6 - 11	5	1	4	3	18	49	28	50	24	14	18	5	9	22	14	7	271
12 - 19	1	0	0	0	0	20	18	32	28	5	5	1	9	3	12	6	140
20 - 28	0	0	0	0	0	0	1	2	0	0	0	5	1	0	0	0	9
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
Totals	20	11	9	12	30	88	75	132	93	47	30	17	24	40	45	47	720

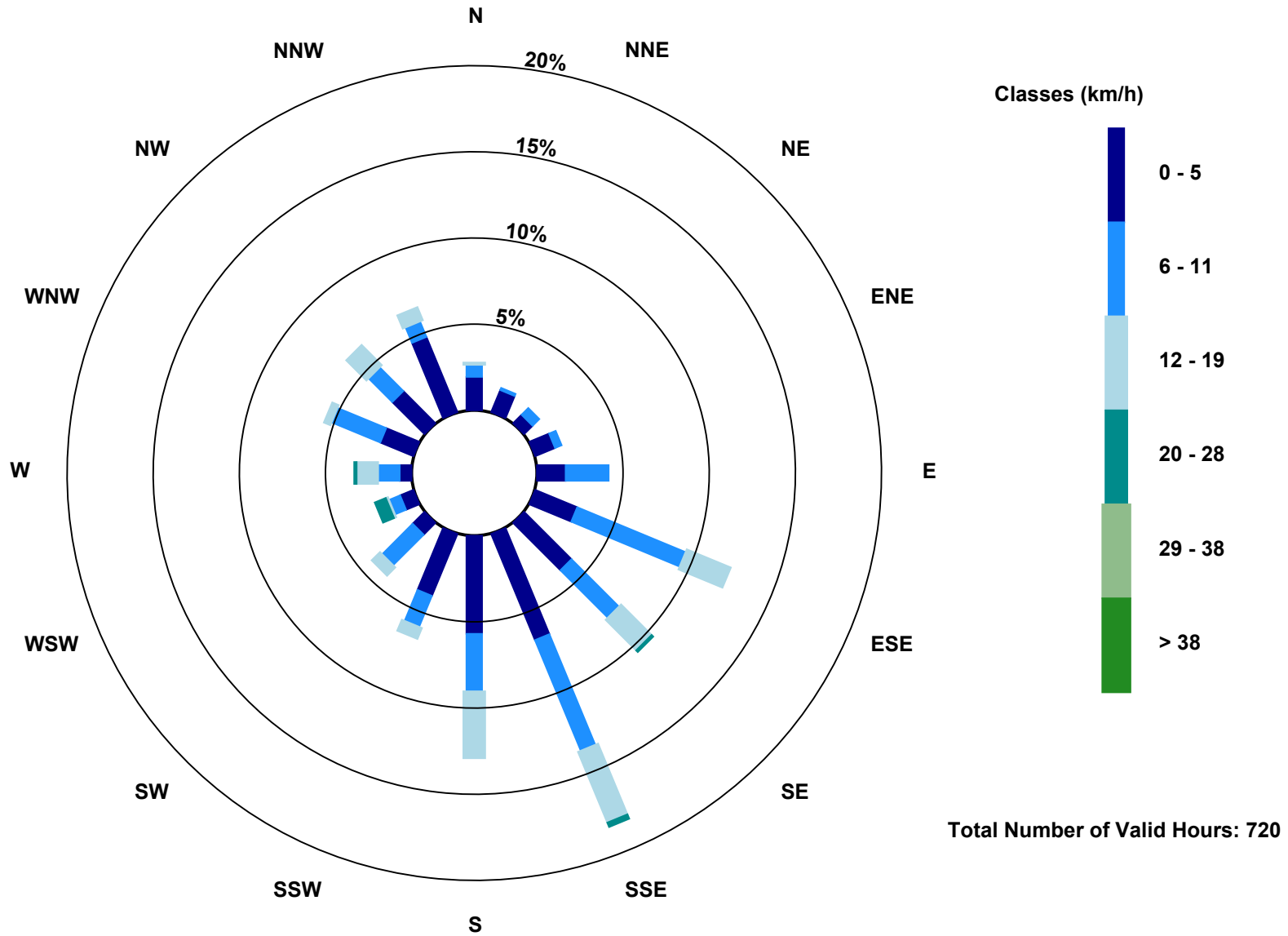
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Conklin





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Conklin - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 8 km/h on Apr 10 15:00 Minimum Value: 0 km/h on Apr 22 03:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 8																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	3	4	3	3	3	3	2	4
2-Apr	3	1	2	2	2	1	2	2	2	2	2	3	3	3	1	2	2	2	1	1	1	1	3	3	3
3-Apr	2	3	3	3	3	2	2	2	2	3	2	2	3	3	3	3	3	2	2	1	1	2	1	3	3
4-Apr	1	1	1	1	1	1	1	1	2	2	1	2	2	3	3	2	2	2	1	1	1	1	1	1	3
5-Apr	1	1	1	1	1	1	1	1	2	2	3	4	4	4	4	4	3	2	2	1	1	2	2	1	4
6-Apr	2	1	1	1	1	1	1	2	4	4	4	6	5	5	5	5	6	5	5	4	3	4	3	4	6
7-Apr	4	3	2	2	2	2	2	3	5	5	5	5	5	5	5	5	5	4	4	4	2	2	3	2	5
8-Apr	2	2	2	1	1	2	1	1	2	3	2	1	2	2	2	2	3	3	3	1	1	1	1	2	3
9-Apr	2	1	1	1	2	1	2	2	2	3	4	4	5	4	5	4	4	3	3	2	3	3	2	2	5
10-Apr	2	5	7	7	7	6	6	7	8	7	8	8	8	8	8	8	8	6	4	2	1	1	2	2	8
11-Apr	1	1	1	1	1	1	1	1	1	2	1	2	2	2	2	4	2	1	1	1	1	3	2	2	4
12-Apr	1	1	1	1	1	1	1	2	3	4	4	5	6	5	5	5	5	3	2	1	1	1	1	1	6
13-Apr	1	1	1	1	1	1	1	3	2	3	4	5	4	5	6	5	4	3	2	1	1	1	1	2	6
14-Apr	1	1	1	1	1	1	1	1	1	2	2	3	3	3	4	4	2	2	1	1	1	1	1	1	4
15-Apr	2	1	1	1	1	1	2	1	1	2	3	3	3	3	4	4	4	4	2	1	1	1	1	1	4
16-Apr	1	1	1	1	1	1	1	1	3	4	5	4	5	6	5	5	5	5	4	3	3	3	2	2	6
17-Apr	4	3	3	2	3	4	4	4	4	4	4	5	5	6	4	2	2	2	5	2	2	2	1	1	6
18-Apr	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	2	2	3	2	2	1	1	1	1	3
19-Apr	1	1	1	2	2	2	2	3	3	3	3	4	3	4	4	3	3	3	1	1	2	1	1	1	4
20-Apr	1	1	1	1	1	1	1	2	2	3	4	4	4	4	4	4	4	4	3	3	1	1	1	1	4
21-Apr	1	1	1	1	1	1	1	2	3	3	4	4	4	4	3	4	3	2	2	2	1	1	1	1	4
22-Apr	1	1	0	1	1	1	1	1	3	3	5	5	4	5	4	4	5	4	3	2	2	1	1	1	5
23-Apr	2	2	2	2	1	1	2	3	3	5	5	5	5	5	5	5	5	5	4	3	4	2	3	3	5
24-Apr	3	3	4	2	3	2	3	3	3	3	4	4	4	4	5	4	4	4	4	4	2	1	2	2	5
25-Apr	2	2	1	1	1	1	1	2	3	2	3	4	4	4	5	3	2	1	2	3	3	1	3	3	5
26-Apr	2	4	3	3	4	3	3	4	3	3	4	4	4	4	3	4	4	2	2	2	1	1	1	1	4
27-Apr	1	1	1	2	1	1	2	2	2	3	3	3	4	3	4	3	3	4	1	1	1	1	1	2	4
28-Apr	4	3	4	3	4	4	4	5	6	6	7	7	7	8	7	6	6	6	4	5	1	2	1	1	8
29-Apr	1	1	1	1	1	1	1	2	2	3	3	3	4	3	3	3	3	3	3	2	1	2	4	3	4
30-Apr	2	2	1	1	1	1	1	4	4	4	4	5	5	5	5	5	4	4	4	3	1	2	2	3	5
																	Diurnal Maximum								



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Conklin - April 2023

Direction of Maximum Speed: 138 deg on Apr 16 14:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 256.9 deg on Apr 10		Hours of Data: 720
Direction of Minimum Speed: 325 deg on Apr 20 07:00		Hours of Missing Data: 0
Direction of Minimum Daily Speed Average: 1.0 deg on Apr 4		Percent Operational Time: 100.0
Monthly Average Direction: 164.8 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-Apr	162	344	338	147	172	120	251	323	240	100	104	103	99	107	103	102	104	85	104	111	107	111	116	115	105.0
2-Apr	119	100	95	105	107	98	101	84	95	107	92	120	116	137	193	11	13	29	88	103	6	2	129	167	103.8
3-Apr	166	182	194	215	234	284	301	295	303	307	290	291	313	309	310	313	322	320	325	355	61	104	103	102	293.5
4-Apr	76	100	134	341	337	335	8	311	125	140	244	349	128	147	337	55	292	140	121	142	134	205	189	195	146.1
5-Apr	194	168	168	182	171	151	139	139	151	154	155	183	171	187	188	191	191	179	165	157	174	184	192	188	175.1
6-Apr	184	176	150	151	152	164	169	171	174	176	182	181	186	174	169	171	167	167	166	165	165	172	174	168	171.1
7-Apr	162	160	157	149	156	152	153	161	169	170	178	177	164	171	159	162	183	171	172	169	148	149	160	160	165.1
8-Apr	157	156	155	155	323	135	161	133	208	222	219	293	180	219	135	263	273	258	220	197	198	190	193	198	197.8
9-Apr	200	240	174	165	142	162	175	218	225	237	228	228	228	234	219	201	198	183	159	152	153	152	141	136	196.3
10-Apr	167	206	258	277	280	272	262	271	273	282	275	258	260	248	252	254	258	262	266	238	206	215	210	174	256.9
11-Apr	177	165	181	181	183	164	166	176	190	323	298	305	285	284	289	344	303	111	213	190	184	223	229	227	212.3
12-Apr	309	317	334	200	197	119	134	263	288	283	301	283	286	306	309	305	305	293	305	279	287	149	165	177	291.6
13-Apr	176	167	164	166	156	155	157	223	245	278	281	267	289	310	329	333	351	354	32	36	194	189	156	145	289.2
14-Apr	173	153	328	179	16	337	330	323	16	340	25	116	106	89	189	132	86	78	136	203	169	202	158	158	116.1
15-Apr	157	138	140	178	163	16	196	169	141	122	145	211	144	136	170	221	172	177	154	162	222	172	151	142	164.4
16-Apr	147	165	280	327	308	152	157	80	108	107	115	122	133	138	145	135	136	146	131	125	125	118	123	123	130.0
17-Apr	121	122	116	107	105	109	115	117	112	112	109	117	121	134	143	82	64	104	171	55	344	351	4	342	111.4
18-Apr	338	332	332	8	321	327	328	24	63	29	344	331	350	345	328	35	46	49	25	9	319	315	337	348	1.3
19-Apr	33	149	129	127	135	123	119	135	120	112	117	114	117	118	120	120	122	123	98	55	105	73	357	301	119.4
20-Apr	333	216	344	329	346	337	325	135	123	90	65	82	76	84	91	105	114	96	91	98	107	118	193	194	93.2
21-Apr	190	191	283	174	167	309	155	122	126	124	129	116	94	94	98	90	107	150	169	162	204	193	192	192	129.8
22-Apr	150	120	133	124	157	161	171	189	187	190	165	186	178	179	186	181	187	186	180	166	151	303	315	212	177.1
23-Apr	166	163	164	184	347	338	119	148	149	155	150	156	146	151	151	162	157	154	149	152	145	117	132	151	151.1
24-Apr	152	148	140	121	134	139	138	138	119	108	114	129	115	137	145	161	165	174	185	163	155	152	149	148	144.2
25-Apr	154	141	165	171	3	164	170	195	187	197	207	214	320	306	213	181	176	223	246	239	228	206	234	272	214.1
26-Apr	291	292	295	275	273	291	300	314	300	295	313	310	333	336	347	350	40	42	65	78	60	63	296	324	318.7
27-Apr	203	336	353	343	190	180	349	353	336	358	284	285	297	302	266	268	315	259	281	233	180	200	194	204	280.6
28-Apr	211	222	228	232	263	282	303	320	331	316	313	320	319	321	318	319	330	333	339	339	332	315	221	193	308.2
29-Apr	190	194	182	191	174	187	168	112	128	127	129	137	128	96	118	97	109	110	115	108	113	117	133	139	125.6
30-Apr	148	129	114	154	159	203	152	143	166	157	149	147	144	155	142	146	151	144	145	145	150	152	151	150	149.1

163.9 167.8 176.2 175.1 190.9 178.6 166.9 177.8 168.6 159.0 161.2 176.4 160.3 168.0 173.5 170.1 164.4 158.2 153.3 149.2 150.3 157.4 160.6 161.4

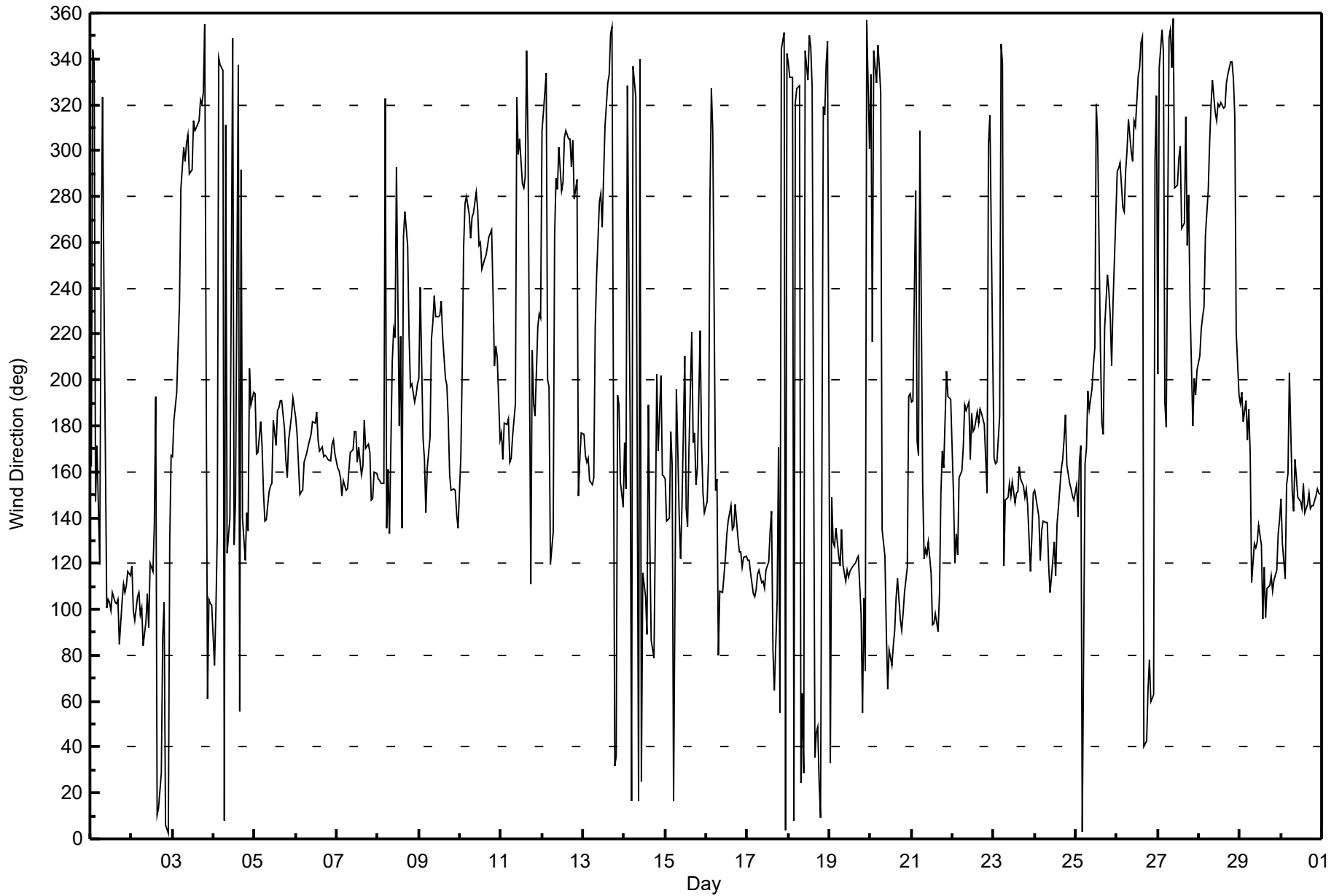
Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Conklin - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Conklin - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 99 deg on Apr 4 13:00 Minimum Value: 8 deg on Apr 16 00:00 Percentiles: P ₁ = 10 P ₁₀ = 16 Q ₁ = 19 Median = 27 Q ₃ = 39 P ₉₀ = 66 P ₉₉ = 95																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	93	58	43	62	61	63	72	19	38	82	27	28	30	26	29	28	25	34	24	17	19	18	16	18	93																
2-Apr	17	22	26	18	19	26	26	37	40	42	45	36	64	63	71	96	58	56	31	29	54	62	73	28	96																
3-Apr	30	23	21	25	21	34	28	30	29	33	35	35	34	31	30	27	31	28	27	26	34	36	35	28	36																
4-Apr	38	38	86	10	60	57	98	87	49	32	57	95	99	37	76	98	50	77	15	18	71	43	36	18	99																
5-Apr	18	19	13	14	18	17	16	23	23	25	39	23	28	27	22	24	25	20	17	18	25	16	17	25	39																
6-Apr	28	13	11	15	15	13	12	15	22	26	22	19	20	21	19	22	20	18	19	16	16	18	19	17	28																
7-Apr	18	17	17	15	15	13	17	20	20	19	21	23	20	23	20	20	20	18	16	15	24	14	18	16	24																
8-Apr	13	12	18	44	90	35	26	25	28	29	87	74	55	79	97	55	32	30	24	13	8	8	13	26	97																
9-Apr	79	85	28	17	45	16	24	22	20	24	29	31	26	23	26	21	21	20	16	13	15	17	19	18	85																
10-Apr	19	23	31	30	30	27	25	29	30	33	34	26	31	28	25	24	25	26	25	19	11	17	36	23	36																
11-Apr	13	20	18	17	16	16	20	21	34	64	88	57	49	69	68	46	86	19	36	24	17	28	24	72	88																
12-Apr	66	26	64	13	19	87	27	91	38	36	32	32	33	30	28	30	32	32	22	23	80	58	13	15	91																
13-Apr	49	39	23	22	28	25	25	26	29	45	39	35	35	32	32	32	31	22	21	56	54	15	56	40	56																
14-Apr	32	38	24	76	88	52	67	20	60	69	72	26	35	49	54	18	60	49	35	33	34	94	76	29	94																
15-Apr	42	93	48	57	77	86	62	19	34	36	65	74	47	48	54	33	49	24	14	76	48	46	20	8	93																
16-Apr	19	20	81	47	56	67	10	94	37	26	18	22	22	19	23	21	19	20	16	14	14	14	14	14	94																
17-Apr	15	15	17	19	25	20	19	23	20	21	19	18	17	16	25	46	34	31	24	93	13	27	18	15	93																
18-Apr	13	14	15	60	20	14	17	38	34	54	31	29	36	86	39	37	27	35	26	28	30	46	23	58	86																
19-Apr	85	20	17	15	14	15	15	16	17	18	18	19	20	20	19	19	17	18	32	42	34	50	45	59	85																
20-Apr	30	82	51	36	86	64	95	44	32	45	38	44	42	47	37	36	25	35	30	25	27	24	20	22	95																
21-Apr	61	72	67	47	80	77	56	36	21	21	27	30	60	48	50	63	30	22	18	15	49	12	10	18	80																
22-Apr	52	18	9	9	21	18	14	22	39	34	30	32	32	32	23	28	28	27	19	17	10	91	19	58	91																
23-Apr	33	17	17	64	33	20	61	18	21	23	23	22	21	21	21	23	18	19	17	18	28	16	18	19	64																
24-Apr	17	15	23	20	29	17	16	17	28	29	32	21	23	26	27	22	24	19	19	18	15	16	26	17	32																
25-Apr	17	32	64	15	73	70	16	27	23	25	33	34	39	28	95	64	23	37	30	48	44	16	25	38	95																
26-Apr	28	29	29	28	29	31	31	28	32	33	34	38	50	56	50	64	80	57	32	32	29	60	90	38	90																
27-Apr	90	48	86	75	65	82	71	62	48	59	75	37	36	40	39	38	36	47	40	30	24	30	19	23	90																
28-Apr	20	22	20	18	32	29	29	24	21	27	29	28	30	30	28	25	22	22	21	18	28	25	64	47	64																
29-Apr	19	33	17	19	75	18	29	60	21	30	25	38	76	66	68	44	33	25	17	17	20	27	16	13	76																
30-Apr	15	68	91	32	44	16	39	30	22	20	23	24	25	26	21	23	21	19	16	12	12	12	14	16	91																
																	93	93	91	76	90	87	98	94	60	82	88	95	99	86	97	98	86	77	40	93	80	94	90	72	
Diurnal Maximum																																									



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS22
JANVIER
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
 APRIL 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	686	33	34	99.86	4.4	0	1.2	0
TRS(ppb) Average	682	37	38	99.86	0.6	0	0.2	0
THC(ppm) Average	684	34	36	99.72	2.2	-	2.1	-
NMHC(ppm) Average	684	34	36	99.72	0.03	-	0.001	-
CH4(ppm) Average	684	34	36	99.72	2.2	-	2.1	-
O3 (ppb) Average	686	34	34	100	58.5	0	52.7	-
NO2 (ppb) Average	682	37	38	99.86	8.9	0	1.9	-
NO (ppb) Average	682	37	38	99.86	10.2	-	0.7	-
NOX (ppb) Average	682	37	38	99.86	17.6	-	2.2	-
PM2.5 (ug/m3) Average	718	2	2	100	126.4	2	10.7	0
Temperature 2 m (C) Average	720	0	0	100	20.1	-	11.6	-
Relative Humidity (%) Average	720	0	0	100	94.7	-	77.5	-
Wind Speed 20 m (km/h) Average	720	0	0	100	31	-	21	-
Wind Direction 20 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
 APRIL 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	686	0.32	0.5	-	0	0	0	0.2	0.4	0.8	4.4
TRS (ppb) Average	682	0.11	0	-	0	0.1	0.1	0.1	0.1	0.2	0.6
THC (ppm) Average	684	2.04	0	-	2	2	2	2	2.1	2.1	2.2
NMHC(ppm) Average	684	0	0.002	-	0	0	0	0	0	0	0.03
CH4(ppm) Average	684	2.04	0	-	2	2	2	2	2.1	2.1	2.2
O3 (ppb) Average	686	44.1	8.7	-	9.6	31.9	39.7	46	50.6	53.3	58.5
NO2 (ppb) Average	682	0.8	0.9	-	0	0	0.2	0.5	1.1	2	8.9
NO (ppb) Average	682	0.14	0.5	-	0	0	0	0	0.1	0.3	10.2
NOX (ppb) Average	682	0.94	1.3	-	0	0	0.2	0.6	1.2	2.2	17.6
PM2.5 (ug/m3) Average	718	5.08	6.7	-	0.4	1.9	3.2	4	5.8	7.2	126.4
Temperature 2 m (C) Average	720	4.48	5.9	-	-7.4	-3.2	0.1	4.2	8.7	12.4	20.1
Relative Humidity (%) Average	720	50.5	20.6	-	13.5	23.5	33.2	49.1	67	78.5	94.7
Wind Speed 20 m (km/h) Average	720	9.2	5	-	1	4	6	8	12	16	31
Wind Direction 20 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2, SO2, THC/NMHC/CH4, TRS	26 Apr 2023 16:00	26 Apr 2023 16:00	1	Maintenance - sample manifold cleaned
THC/NMHC/CH4	27 Apr 2023 13:00	27 Apr 2023 13:00	1	Maintenance - zero air generator maintenance

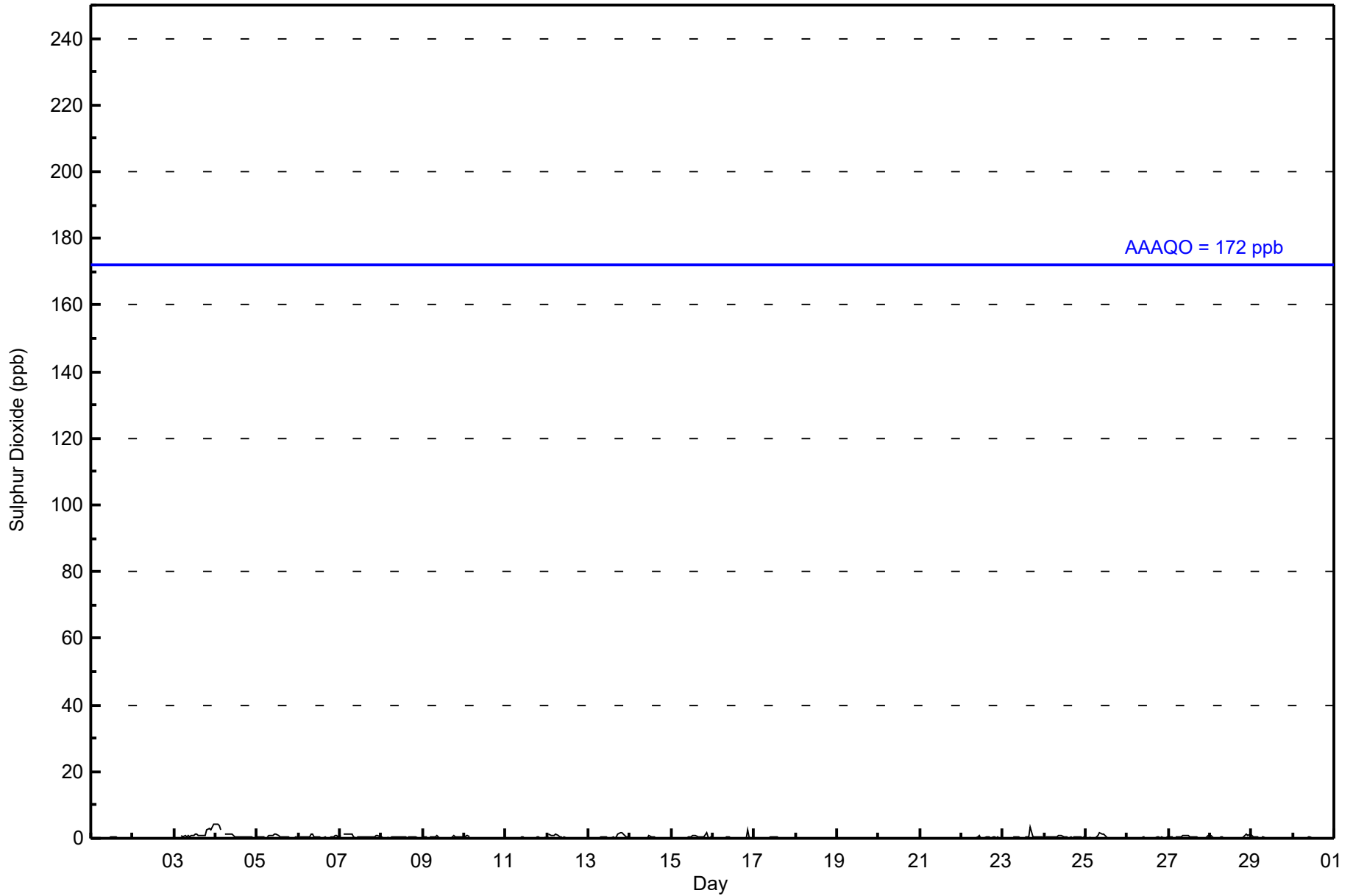


Number of Exceedences (AAAQO):		1-hr: 0 24-hr: 0		Hours in Service:		720																					
Maximum Value: 4.4 ppb on Apr 4 01:00		Maximum Daily Average: 1.2 ppb on Apr 3		Hours of Data:		686																					
Minimum Value: 0.0 ppb on Apr 1 01:00		Minimum Daily Average: 0.0 ppb on Apr 2		Hours of Missing Data:		34																					
Maximum Diurnal Average: 0.4 ppb at hour 21		Minimum Diurnal Average: 0.2 ppb at hour 16		Hours of Calibration:		33																					
Monthly Average: 0.32 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.8 P ₉₉ = 2.7		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-Apr	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.3	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	
2-Apr	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
3-Apr	0.0	0.0	0.0	Z	0.7	0.4	1.0	0.6	0.8	0.5	0.8	1.0	1.2	1.2	1.0	0.9	0.9	0.8	0.9	2.4	3.0	2.7	3.4	4.2	1.2	4.2	
4-Apr	4.4	4.1	3.8	2.5	Z	1.3	1.2	1.2	1.2	1.2	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	1.2	4.4	
5-Apr	0.3	0.3	0.6	0.3	0.3	Z	0.6	0.7	0.7	1.0	1.3	1.4	0.8	0.4	0.5	0.5	0.5	0.4	0.4	0.2	0.1	0.2	0.3	0.5	0.5	1.4	
6-Apr	Z	0.4	0.4	0.4	0.4	0.5	0.5	1.2	1.1	0.6	0.5	0.6	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.4	0.4	0.8	0.9	0.5	0.5	1.2	
7-Apr	0.7	Z	1.3	1.2	1.5	1.5	1.4	1.4	0.5	0.1	0.4	0.3	0.5	0.3	0.3	0.3	0.4	0.3	0.4	0.6	0.3	0.8	0.8	0.3	0.7	1.5	
8-Apr	0.2	0.1	Z	0.2	0.0	0.0	0.5	0.5	0.6	0.4	0.5	0.4	0.3	0.4	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.3	0.6	
9-Apr	0.3	0.4	0.3	Z	0.2	0.2	0.3	0.5	1.0	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.7	0.3	0.3	0.4	0.2	0.3	0.3	1.0	
10-Apr	0.6	0.9	0.7	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.9	
11-Apr	0.2	0.2	0.1	0.2	0.1	Z	0.2	0.1	0.1	0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.6	
12-Apr	Z	1.1	0.9	0.8	0.7	1.3	1.0	0.6	0.4	0.1	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.4	1.3	
13-Apr	0.2	Z	0.2	0.1	0.0	0.1	0.1	0.3	0.6	0.4	0.3	0.1	0.1	0.1	0.2	0.1	0.5	1.2	1.7	1.7	1.2	0.8	0.3	0.3	0.5	1.7	
14-Apr	0.2	0.1	Z	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.7	0.6	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.7	
15-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.8	1.0	0.7	0.6	0.4	0.4	0.5	0.3	1.8	0.2	0.2	0.3	0.4	1.8	
16-Apr	0.1	0.2	0.2	0.1	Z	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.2	2.5	0.3	0.1	0.0	0.3	2.5	
17-Apr	0.0	0.0	0.1	0.1	0.1	Z	0.1	0.2	0.1	0.4	0.5	0.5	0.4	0.3	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.5	
18-Apr	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
19-Apr	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	0.2	0.1	0.1	0.0	0.2	
20-Apr	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	
21-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
22-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.5	0.7	0.0	0.1	0.2	0.3	0.4	0.2	0.1	0.4	0.4	0.2	0.2	0.1	0.1	0.2	0.7	
23-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.4	0.6	0.6	0.3	0.1	0.2	0.2	0.3	0.4	0.6	3.3	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	3.3	
24-Apr	Z	0.4	0.4	0.3	0.3	0.2	0.3	0.4	0.7	0.9	0.7	0.5	0.3	0.3	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.4	0.9	
25-Apr	0.2	Z	0.3	0.2	0.2	0.1	0.3	0.8	1.5	1.3	1.2	0.7	0.5	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.4	1.5	
26-Apr	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.2	C	C	C	0.2	M	0.1	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.3	
27-Apr	0.4	0.3	0.4	Z	0.2	0.3	0.3	0.5	1.0	1.0	0.8	0.7	0.5	0.4	0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.7	1.0	
28-Apr	0.8	0.3	0.1	0.1	Z	0.1	0.5	0.4	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.5	0.9	1.4	0.9	1.1	0.3	1.4	
29-Apr	0.7	0.3	0.2	0.2	0.2	Z	0.3	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	0.1	0.7	
30-Apr	Z	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	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	
																								Diurnal Average			
																								Diurnal Maximum			
																								0.4 0.4 0.4 0.3 0.2 0.3 0.3 0.4 0.4 0.4 0.4 0.3 0.3 0.3 0.2 0.2 0.3 0.2 0.3 0.3 0.4 0.3 0.3 0.3 0.3			
																								4.4 4.1 3.8 2.5 1.5 1.5 1.4 1.4 1.5 1.3 1.3 1.4 1.2 1.2 1.0 0.9 3.3 1.2 1.7 2.4 3.0 2.7 3.4 4.2			
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 (SO₂) - ppb
Janvier - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	686	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Janvier - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	23	65	31	51	62	42	43	61	108	55	41	22	18	14	29	21	686
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
Totals	23	65	31	51	62	42	43	61	108	55	41	22	18	14	29	21	686

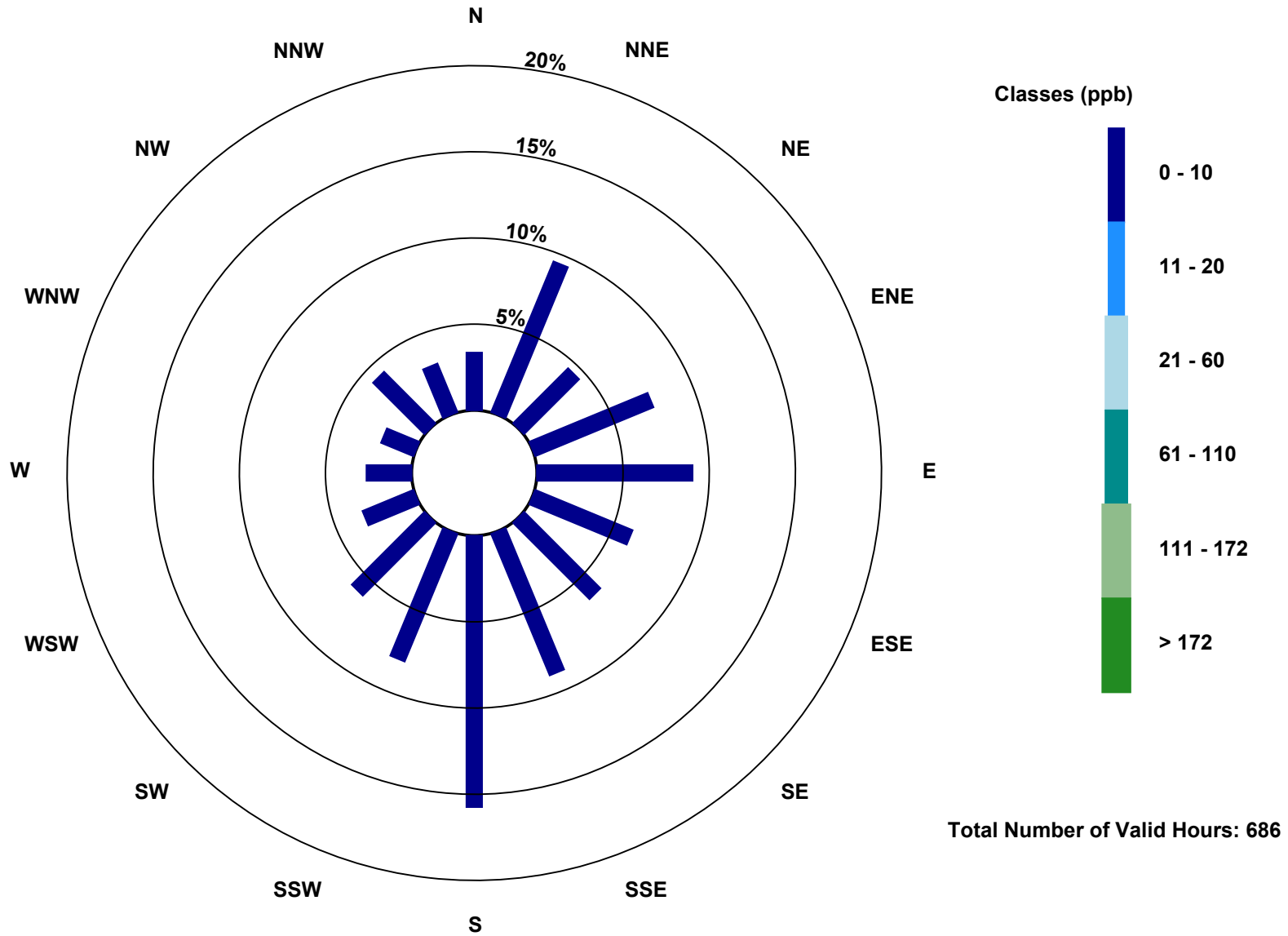
Total Number of Valid Hours: 686

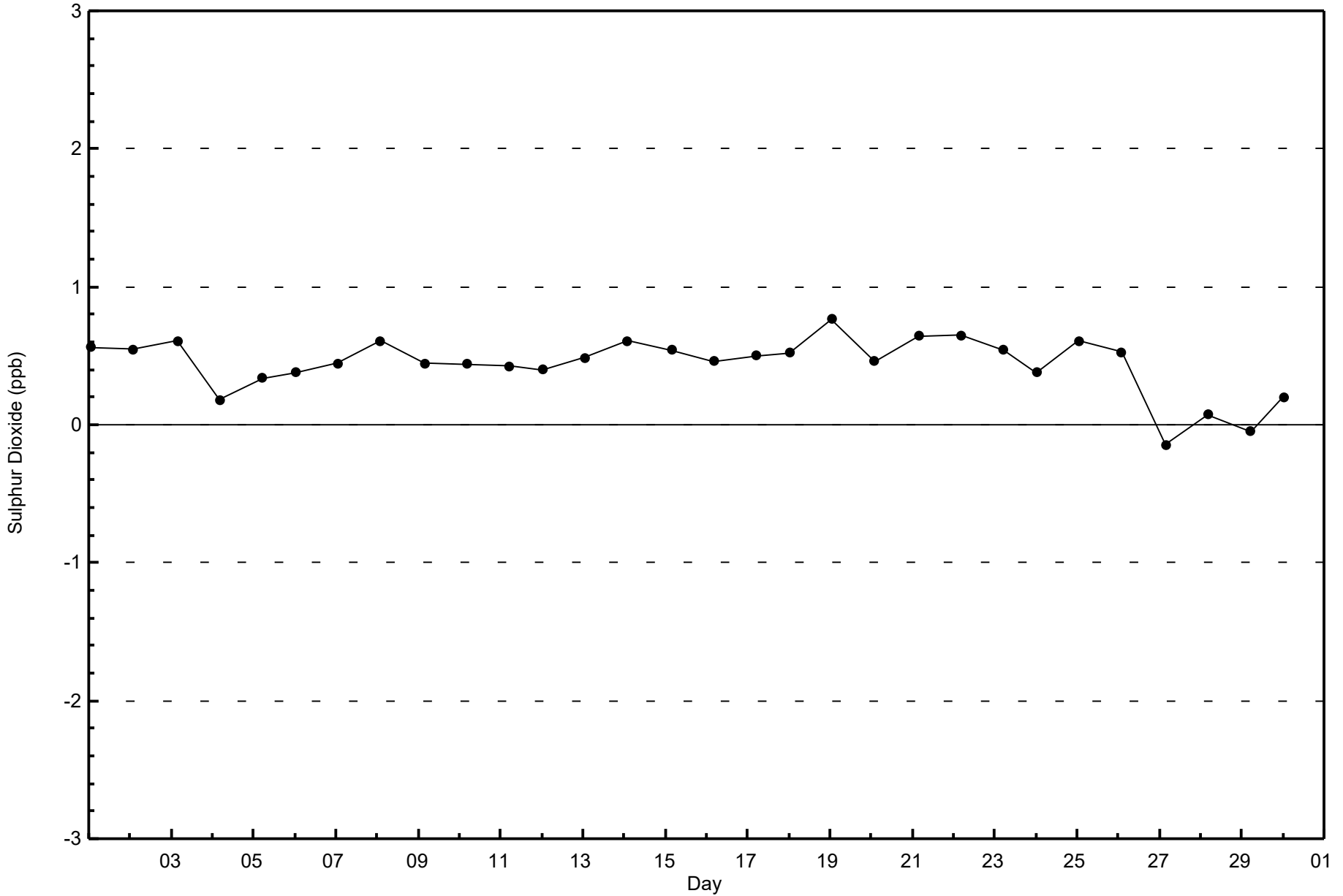
Total Number of Hours: 720

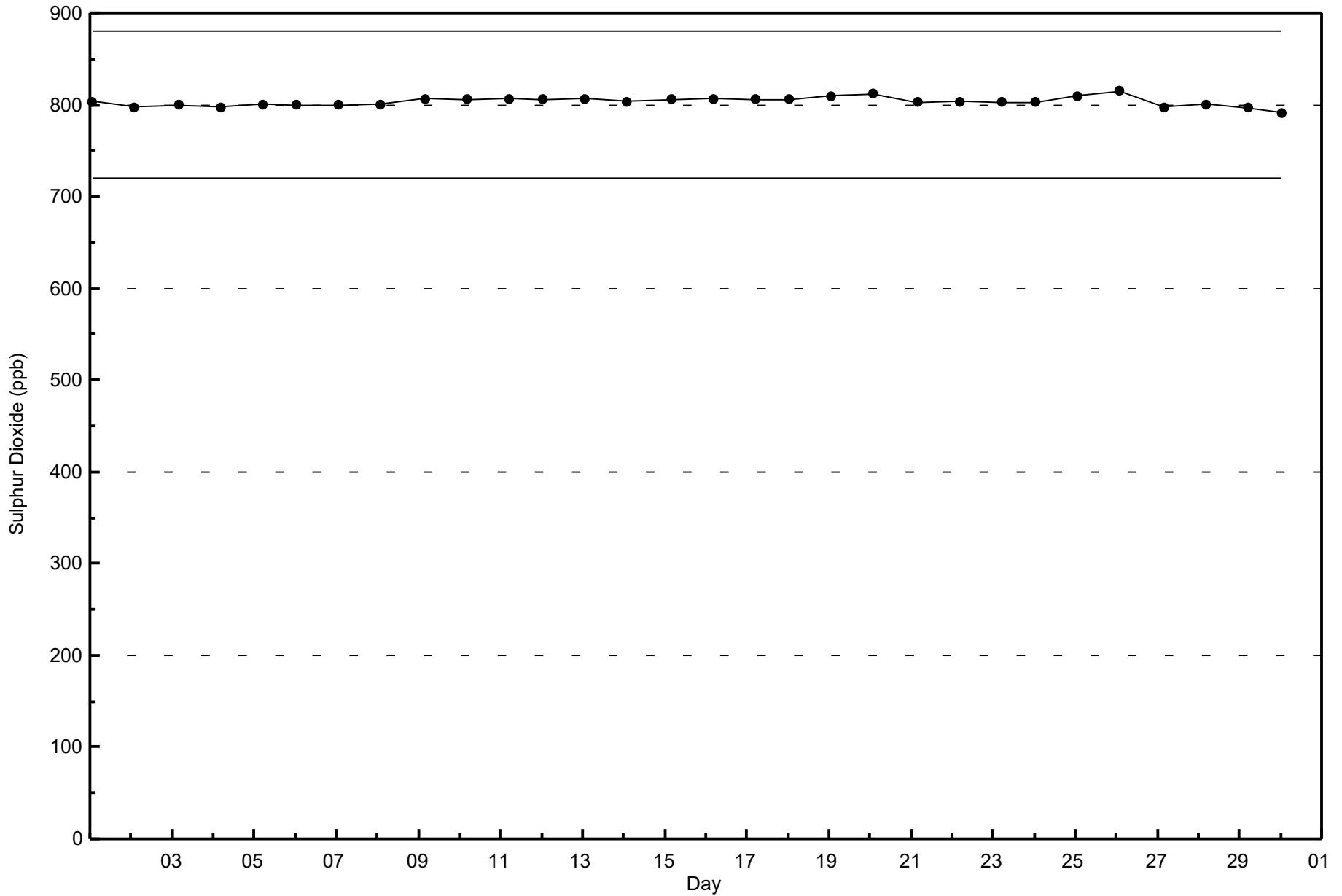


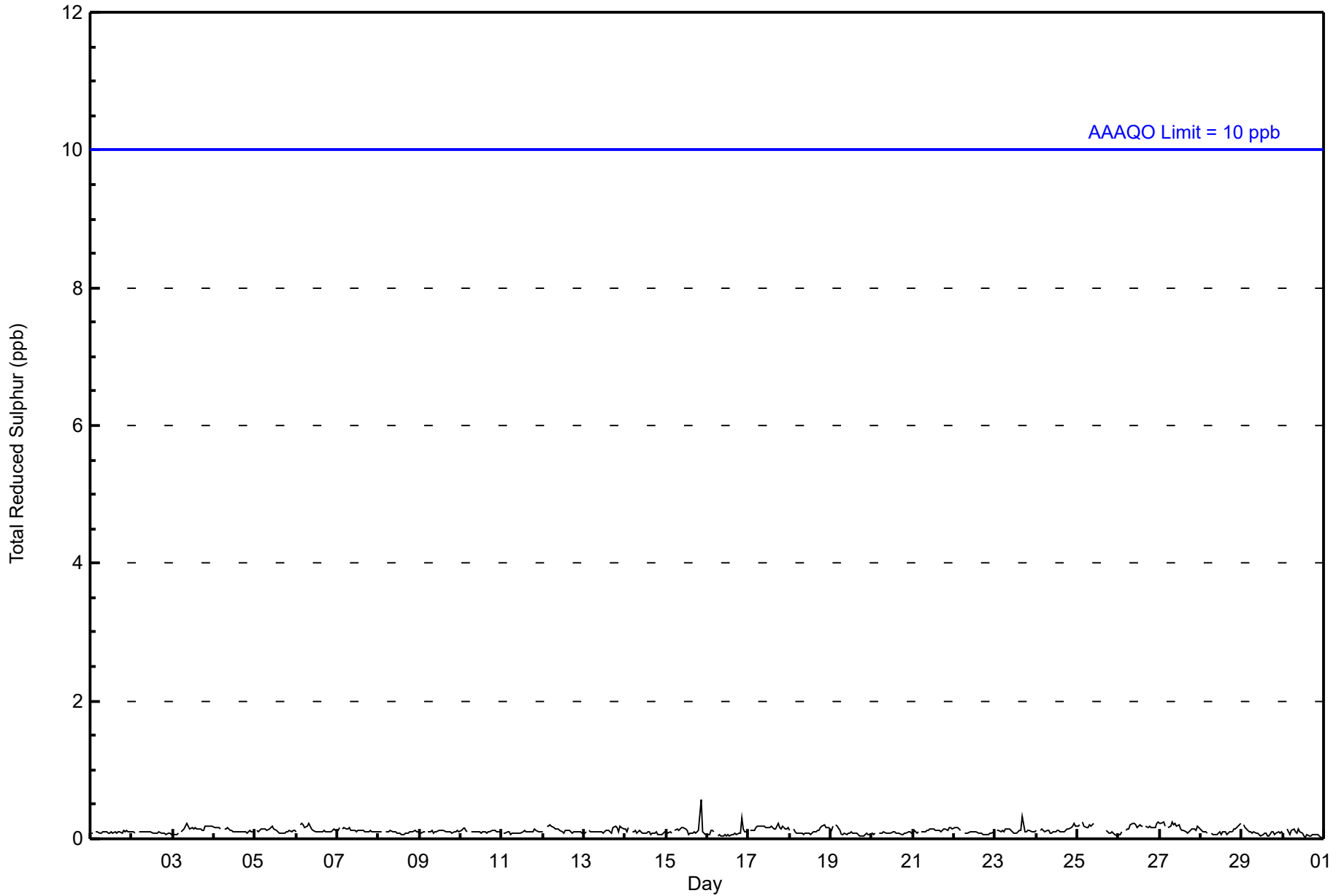
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Janvier











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	682	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: 682

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	21	64	32	51	62	41	44	62	107	54	41	21	19	13	29	21	682
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
Totals	21	64	32	51	62	41	44	62	107	54	41	21	19	13	29	21	682

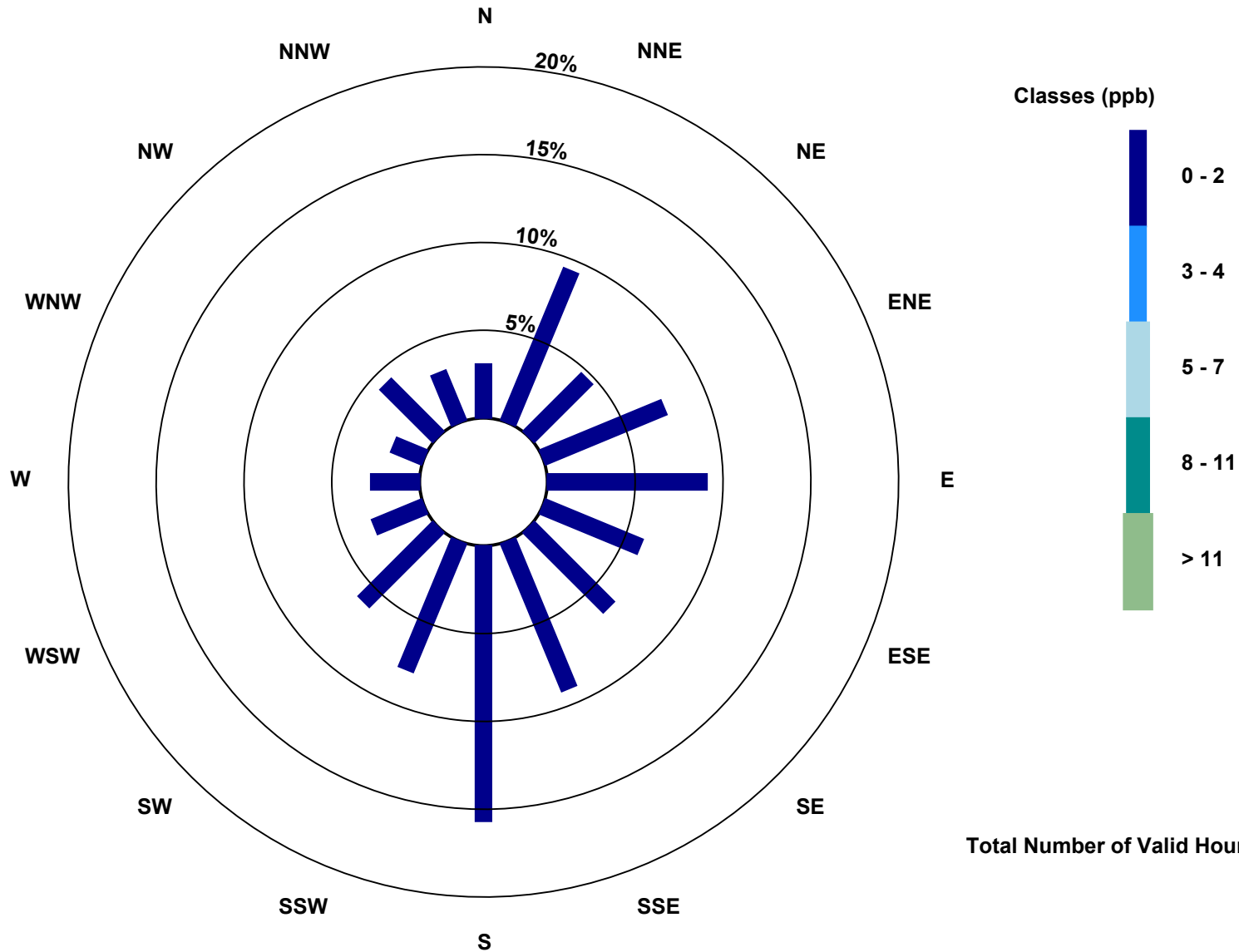
Total Number of Valid Hours: 682

Total Number of Hours: 720

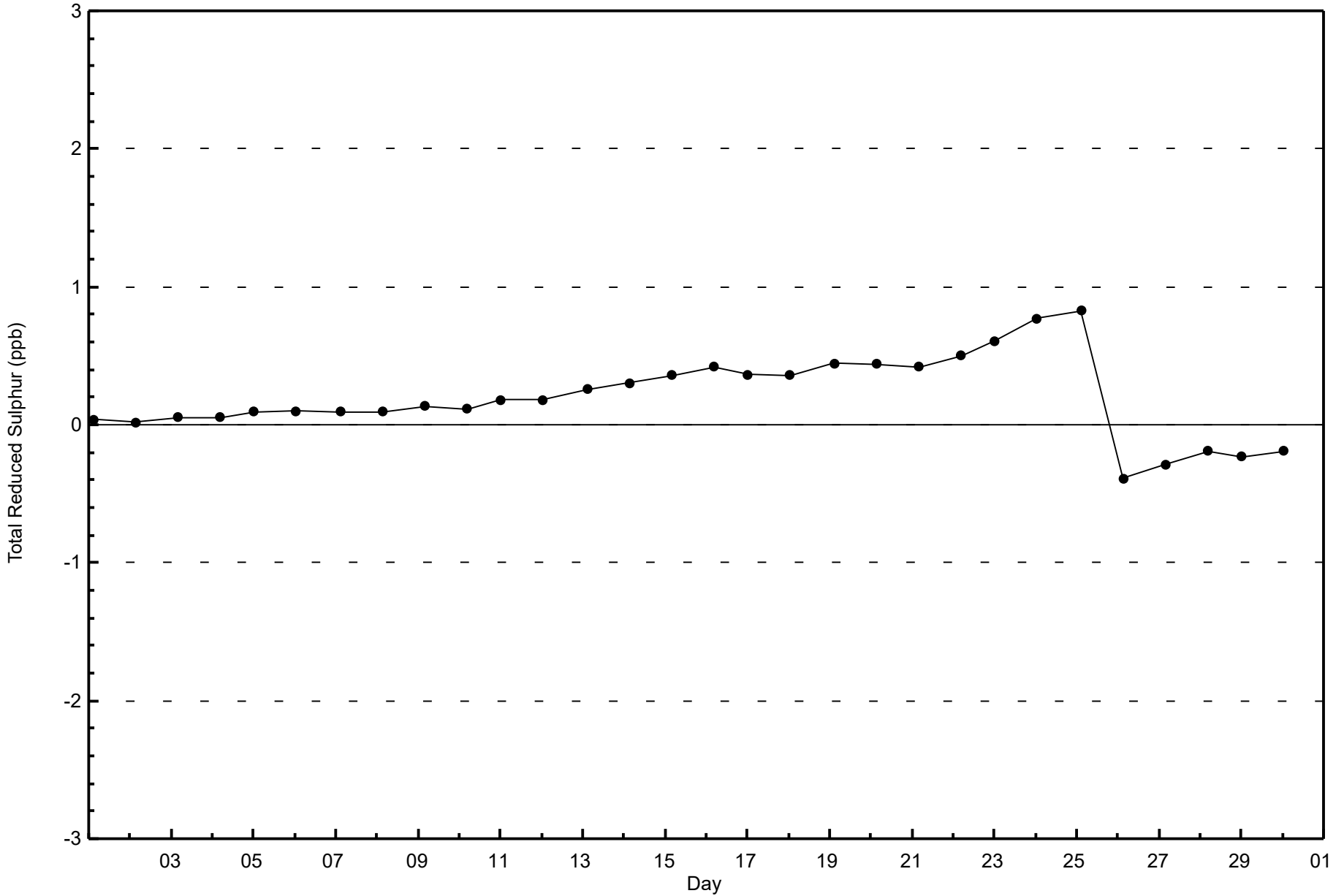


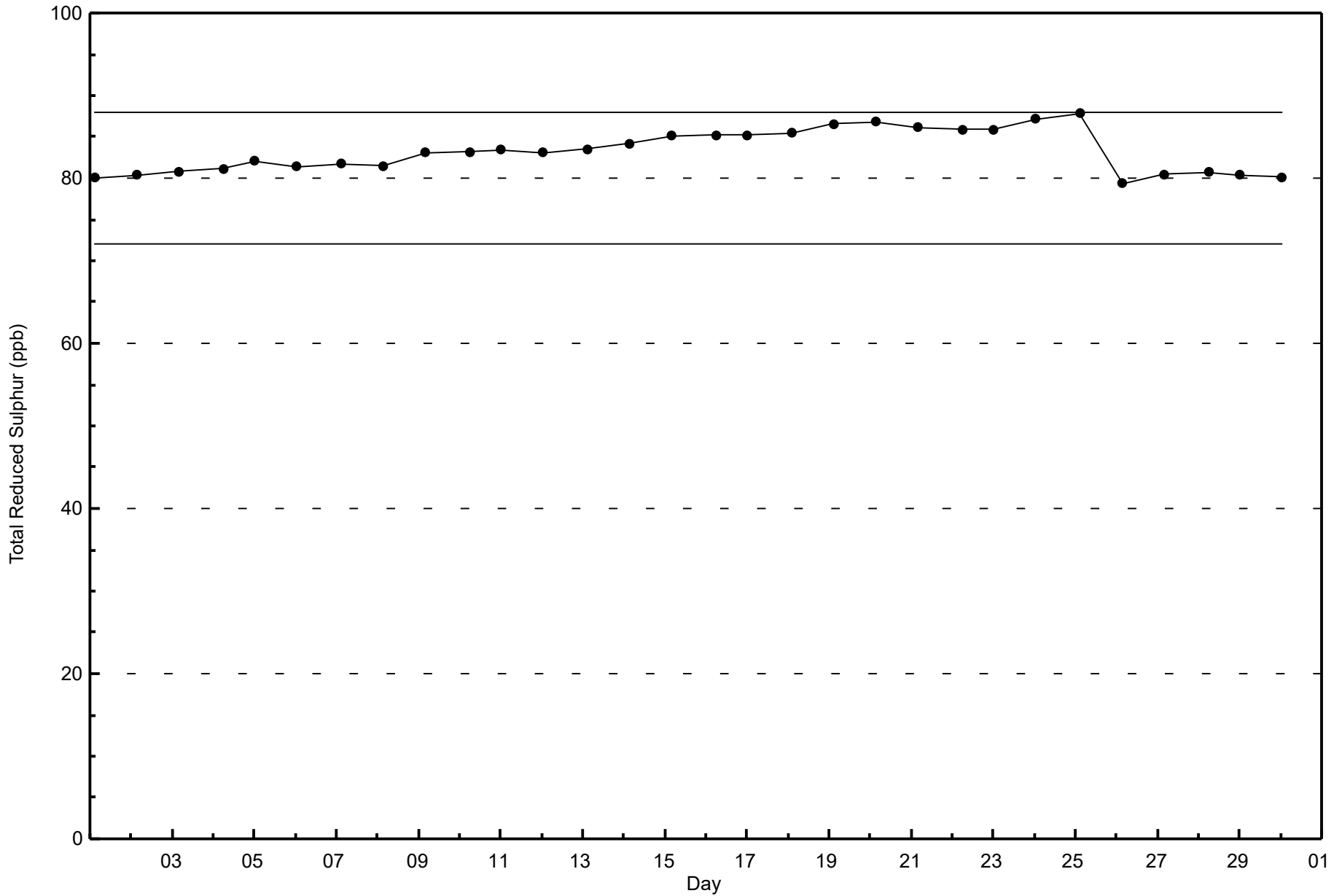
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Janvier



Total Number of Valid Hours: 682







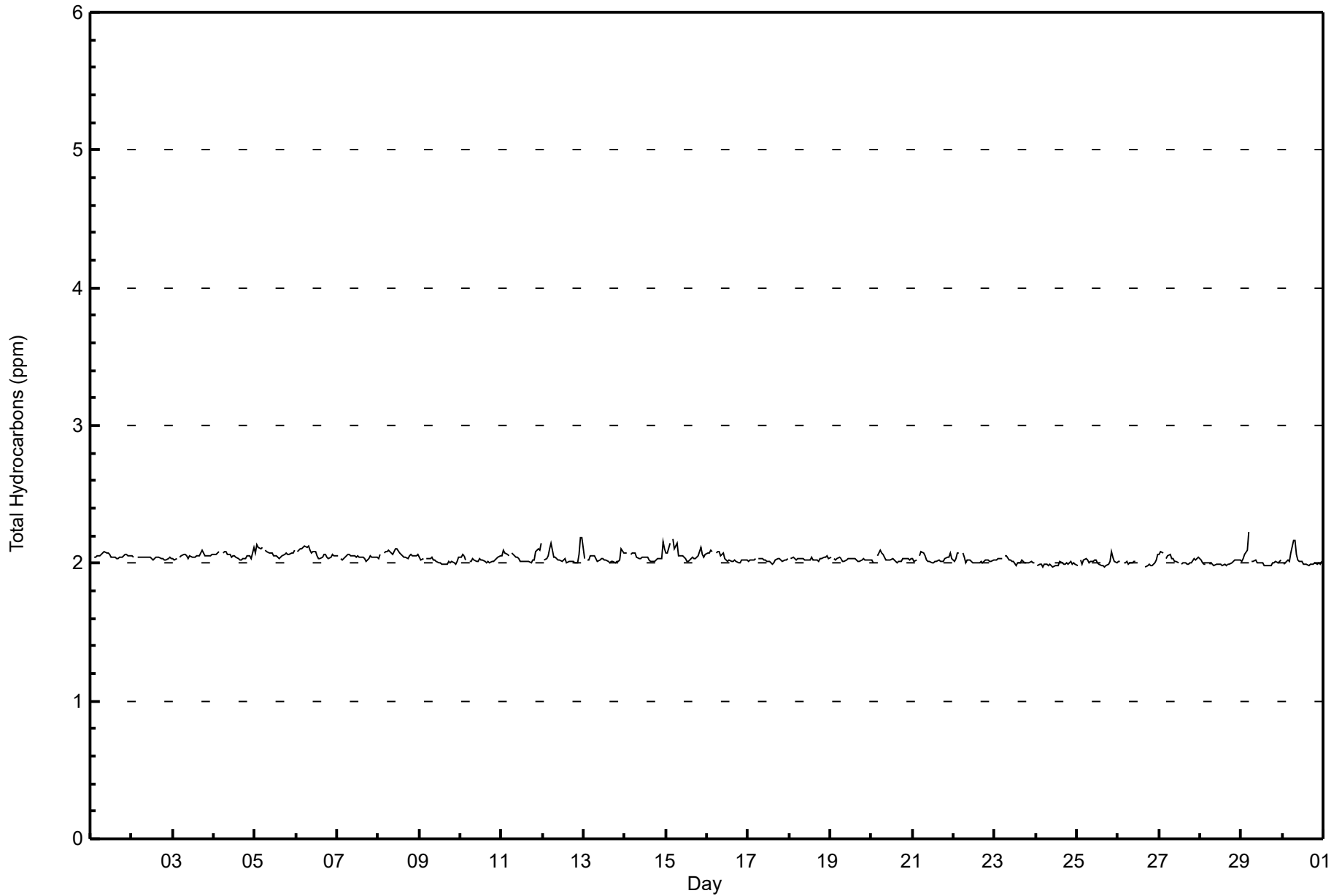
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Janvier - April 2023

Maximum Value: 2.2 ppm on Apr 29 05:00																				Maximum Daily Average: 2.1 ppm on Apr 5					Hours in Service: 720												
Minimum Value: 2.0 ppm on Apr 24 05:00																				Minimum Daily Average: 2.0 ppm on Apr 24					Hours of Data: 684												
Maximum Diurnal Average: 2.1 ppm at hour 5																				Minimum Diurnal Average: 2.0 ppm at hour 16					Hours of Missing Data: 36												
Monthly Average: 2.04 ppm																				Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.1 P ₉₉ = 2.2					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-Apr	2.1	Z	2.0	2.0	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	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.1	2.1								
2-Apr	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	2.0	2.0	2.0	2.0	2.0	2.1	2.1						
3-Apr	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	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-Apr	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	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	2.1	2.1	2.1						
5-Apr	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	2.1	2.1	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-Apr	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	2.1	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						
7-Apr	2.1	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	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					
8-Apr	2.0	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	2.0	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					
9-Apr	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	2.0	2.0	2.0	2.0	2.0				
10-Apr	2.0	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	2.0	2.0	2.1	2.0	2.1	2.1					
11-Apr	2.1	2.1	2.1	2.1	2.1	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	2.0	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				
12-Apr	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2				
13-Apr	2.0	Z	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	2.0	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				
14-Apr	2.1	2.1	Z	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	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1				
15-Apr	2.1	2.1	2.1	Z	2.2	2.1	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	2.1	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				
16-Apr	2.1	2.1	2.1	2.1	Z	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	2.0	2.0	2.0	2.0	2.0	2.1	2.1			
17-Apr	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
18-Apr	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	2.1	2.0	2.0	2.0	2.0	2.1	2.1			
19-Apr	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	2.0	2.0	2.0	2.0		
20-Apr	2.0	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1		
21-Apr	2.0	2.0	2.0	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	2.0	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	2.1	2.1		
22-Apr	2.0	2.0	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	2.0	2.0	2.0	2.0	2.0	2.1		
23-Apr	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1		
24-Apr	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	2.0	2.0	2.0	2.0	2.0		
25-Apr	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	2.1	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	2.1		
26-Apr	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	C	C	C	C	M	2.0	2.0	2.0	2.0	2.0	2.0	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		
27-Apr	2.1	2.1	2.1	Z	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	C	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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-Apr	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
29-Apr	2.0	2.0	2.1	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2
30-Apr	Z	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	
																								Diurnal Average													
																								Diurnal Maximum													
Z - zerospan C - Calibration M - Maintenance																																					





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Janvier - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	493	72.08	72.08
2.1 - 3.0	191	27.92	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Janvier - April 2023

Concentration 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	30	23	44	53	38	38	42	71	28	22	18	18	13	25	20	493
2.1 - 3.0	13	35	8	7	9	4	5	19	37	27	19	4	0	1	3	0	191
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
Totals	23	65	31	51	62	42	43	61	108	55	41	22	18	14	28	20	684

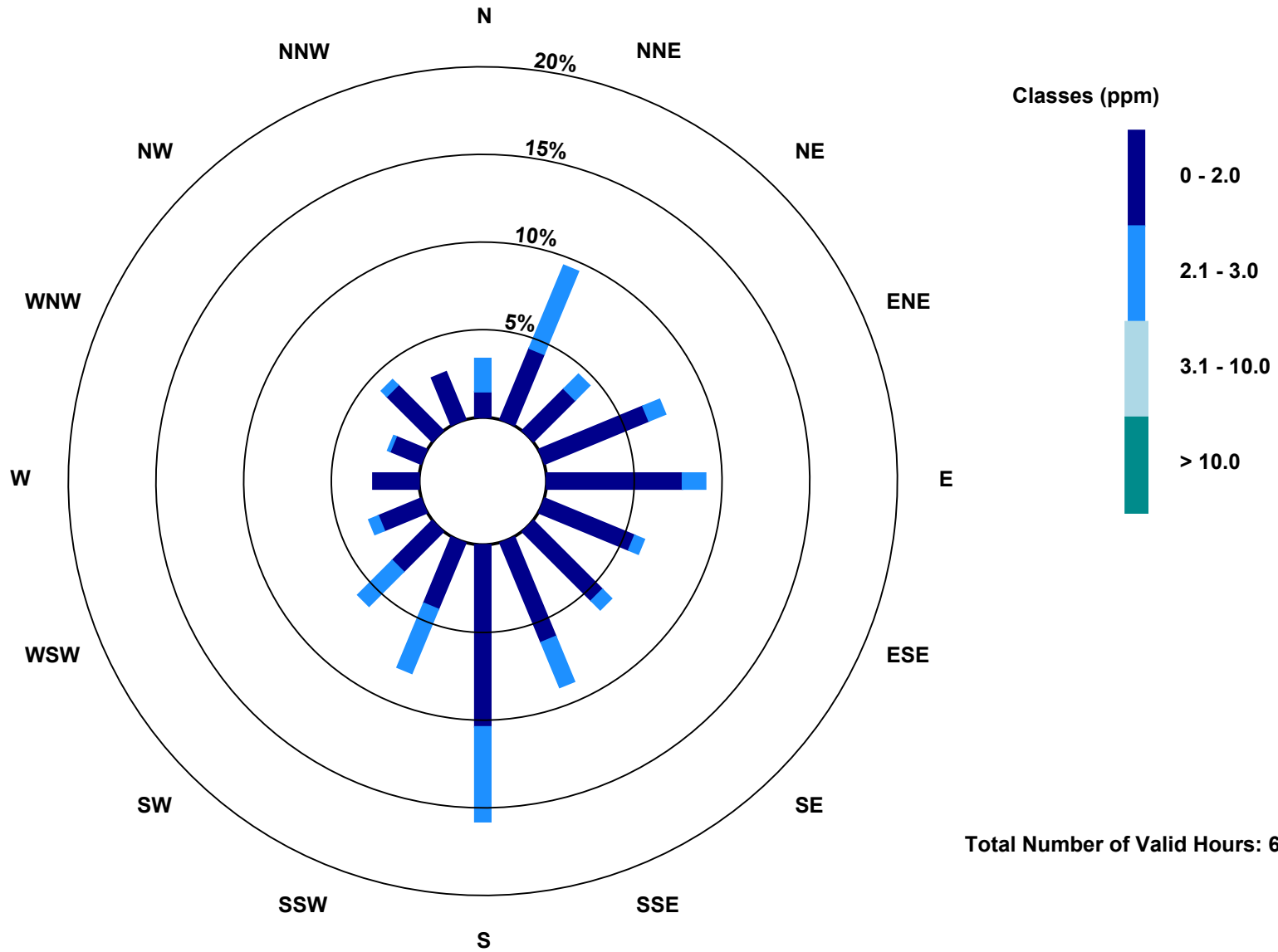
Total Number of Valid Hours: 684

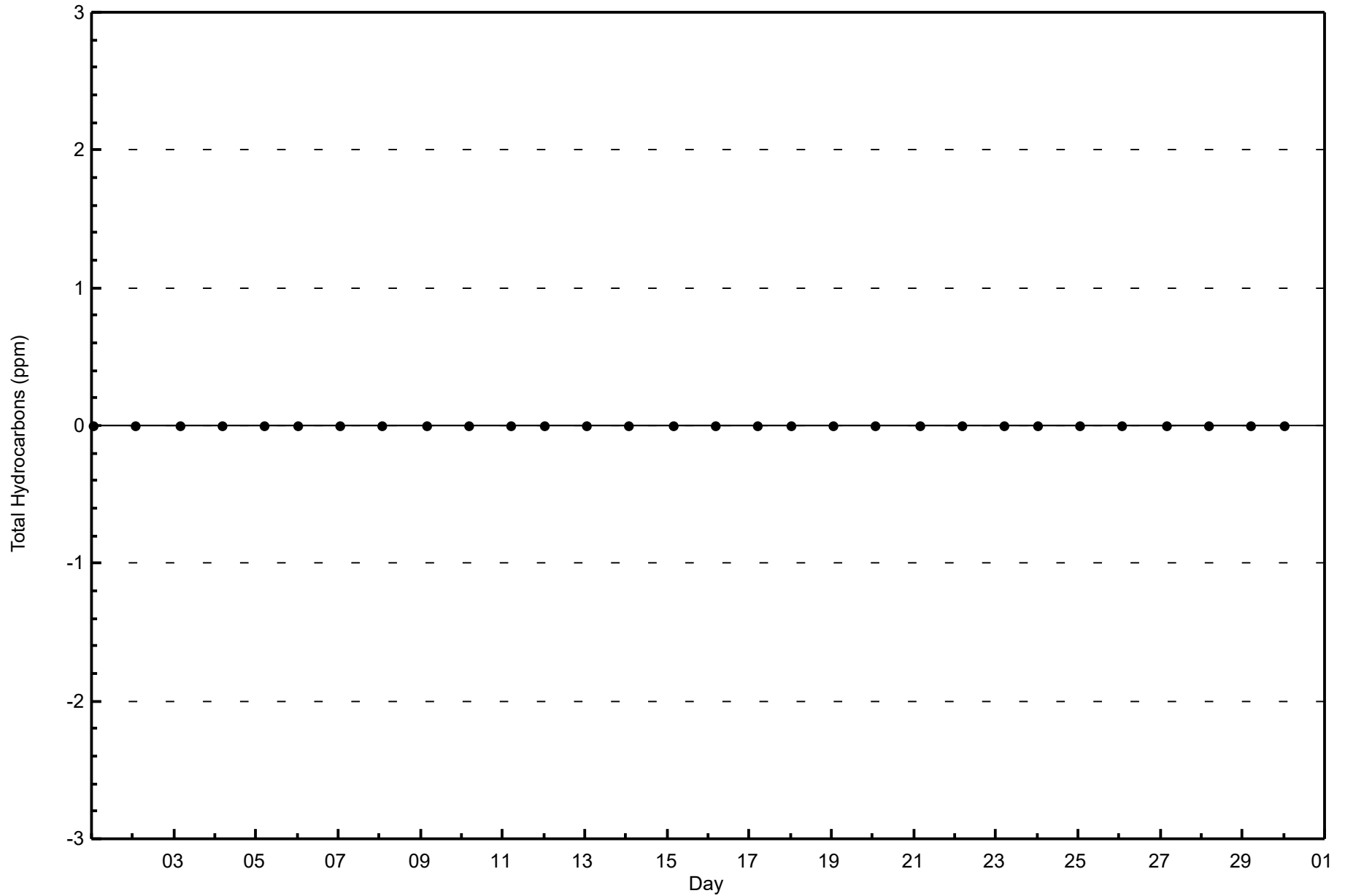
Total Number of Hours: 720

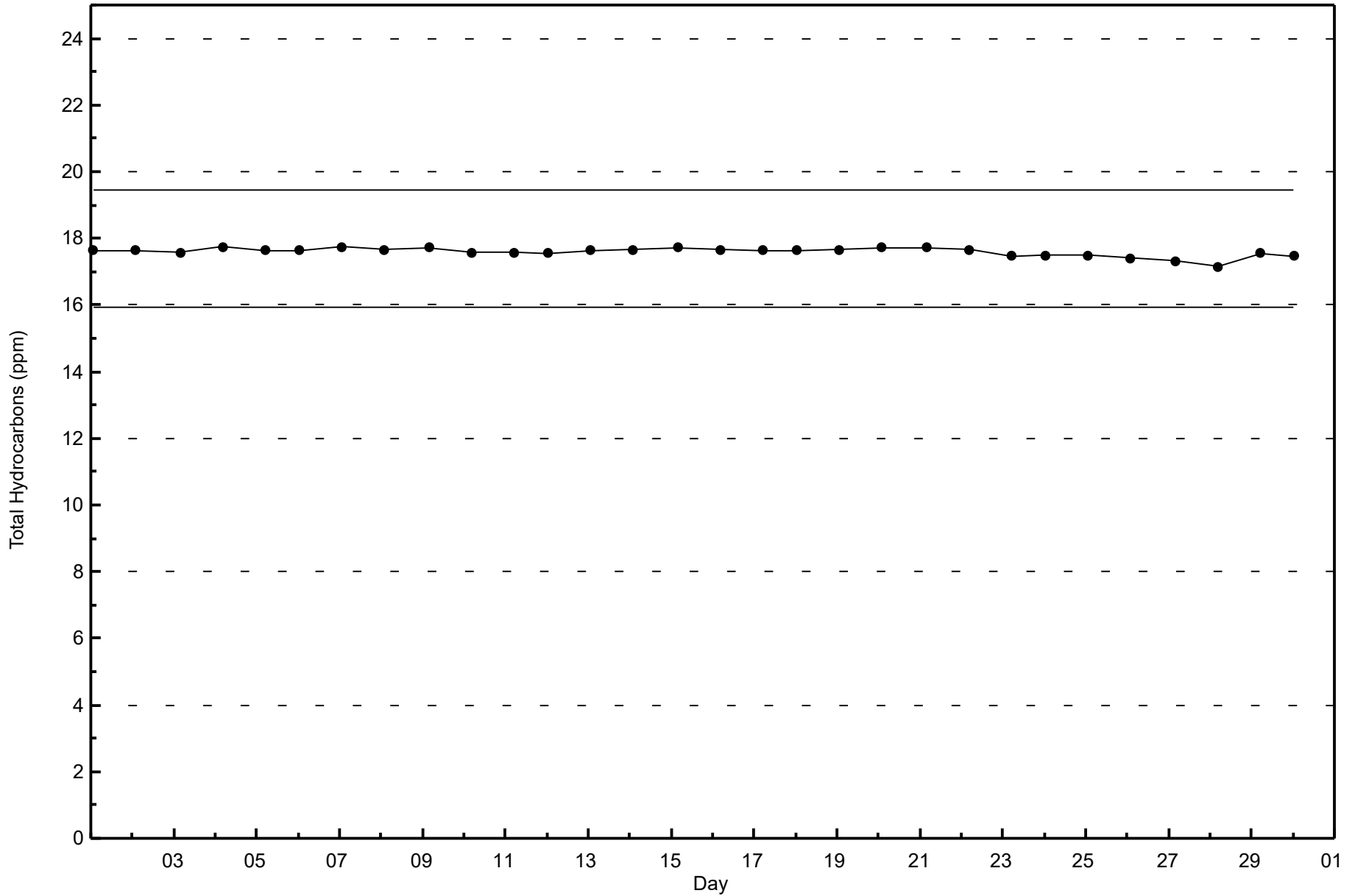


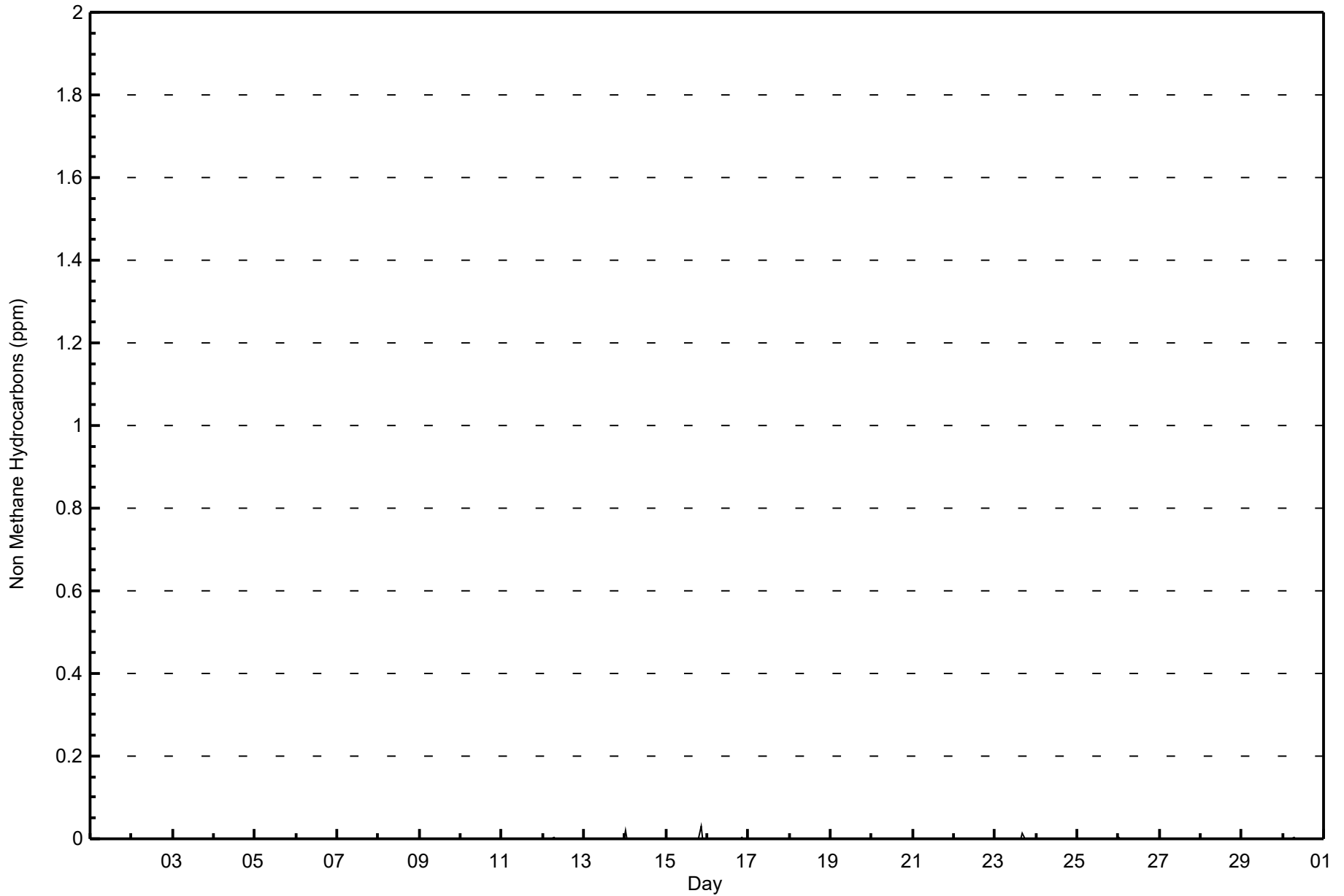
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Janvier











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Janvier - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	681	99.56	99.56
0.006 - 0.05	3	0.44	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Janvier - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	22	65	31	51	62	42	42	61	107	55	41	22	18	14	28	20	681
0.006 - 0.05	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3
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
Totals	23	65	31	51	62	42	43	61	108	55	41	22	18	14	28	20	684

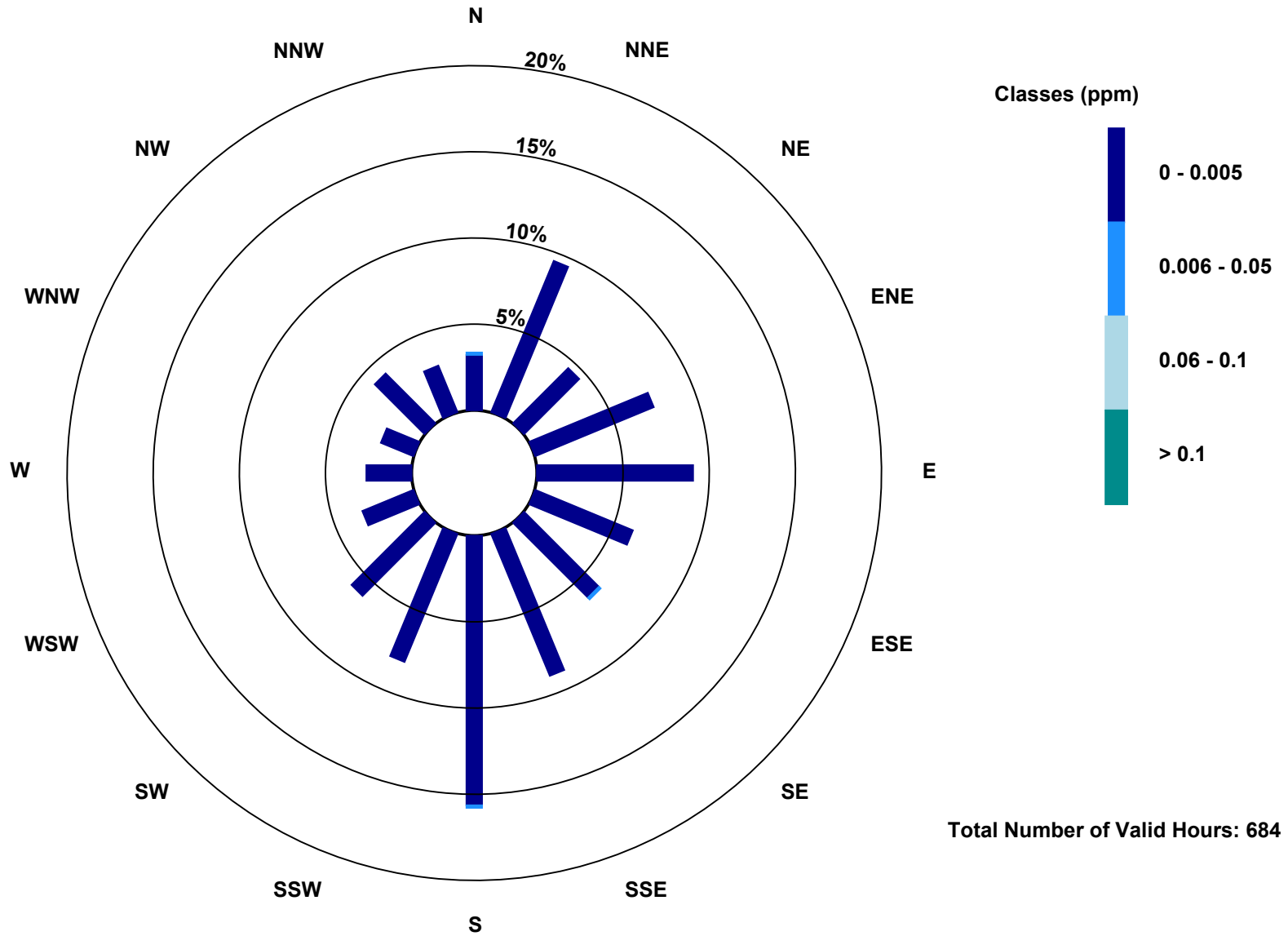
Total Number of Valid Hours: 684

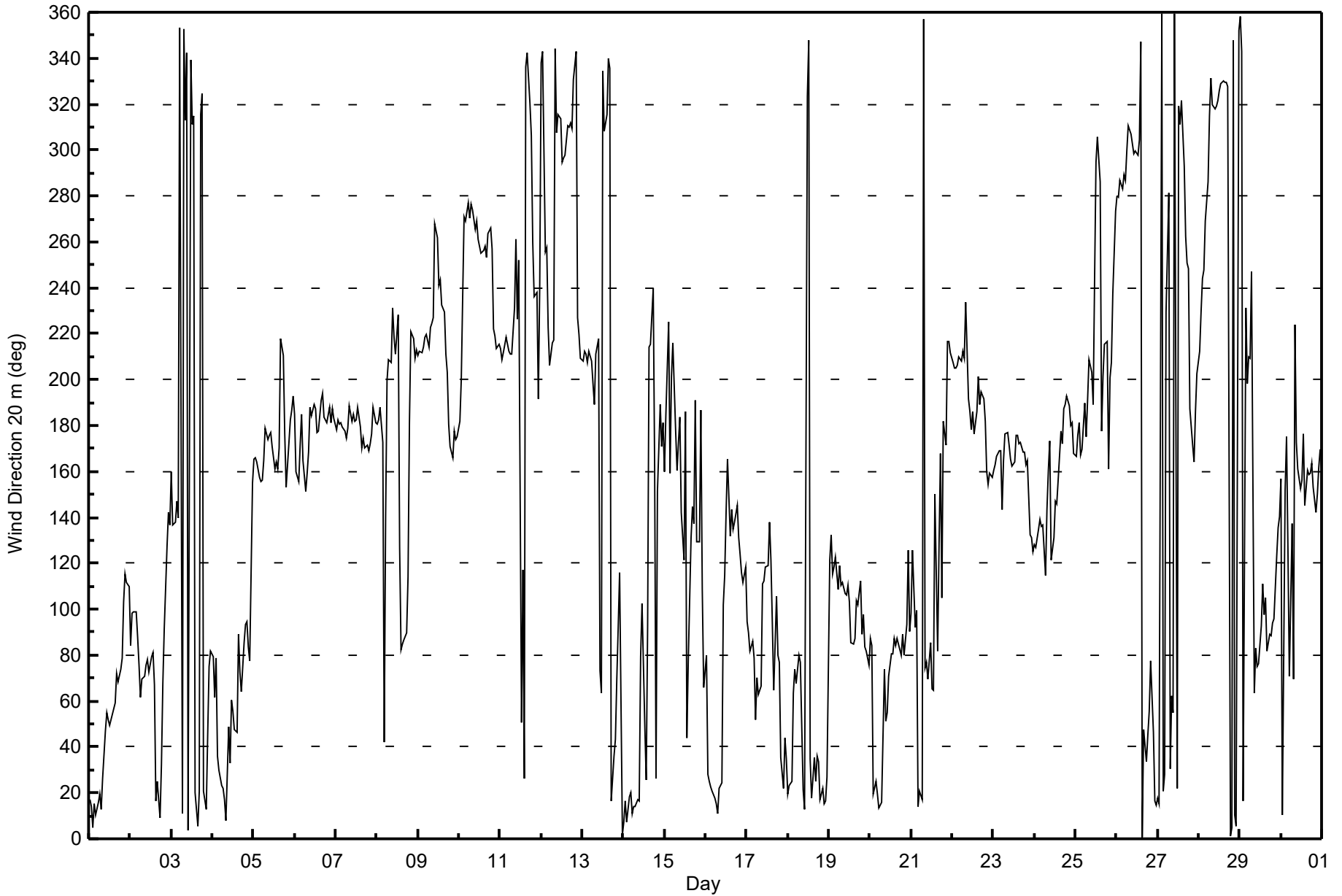
Total Number of Hours: 720

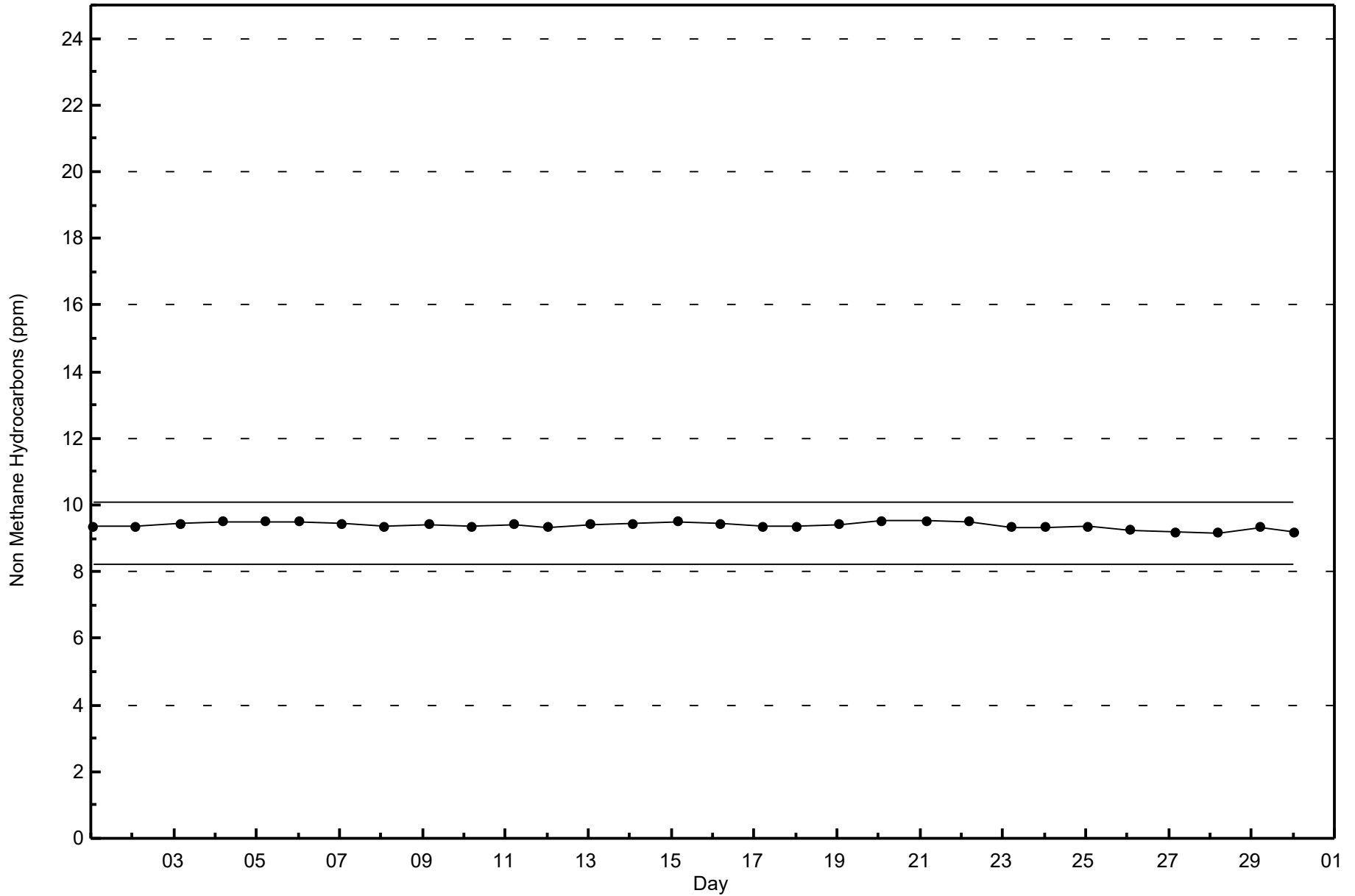


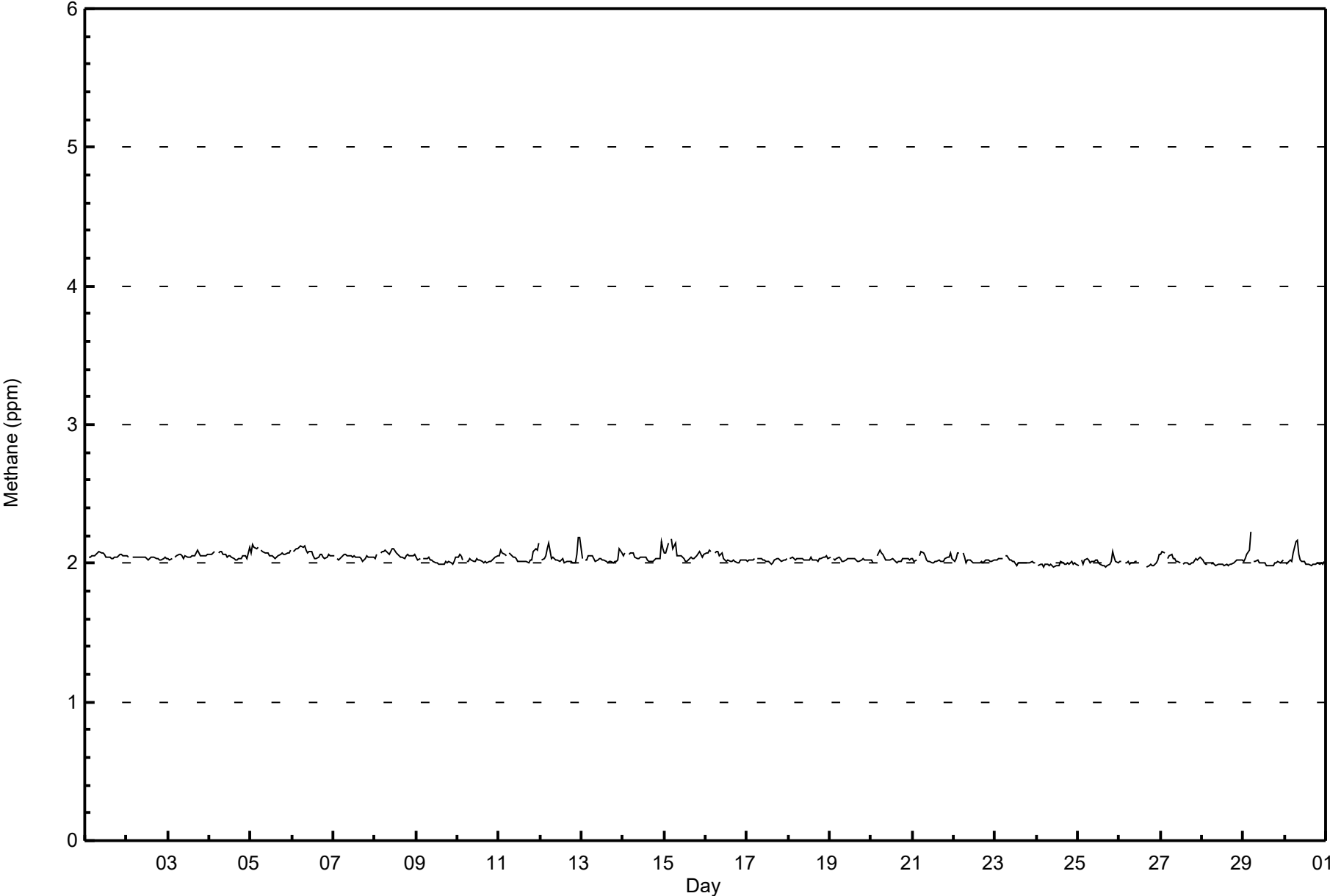
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Janvier











Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Janvier - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	493	72.08	72.08
2.1 - 3.0	191	27.92	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Janvier - April 2023**

Concentration 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	30	23	44	53	38	38	42	71	28	22	18	18	13	25	20	493
2.1 - 3.0	13	35	8	7	9	4	5	19	37	27	19	4	0	1	3	0	191
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
Totals	23	65	31	51	62	42	43	61	108	55	41	22	18	14	28	20	684

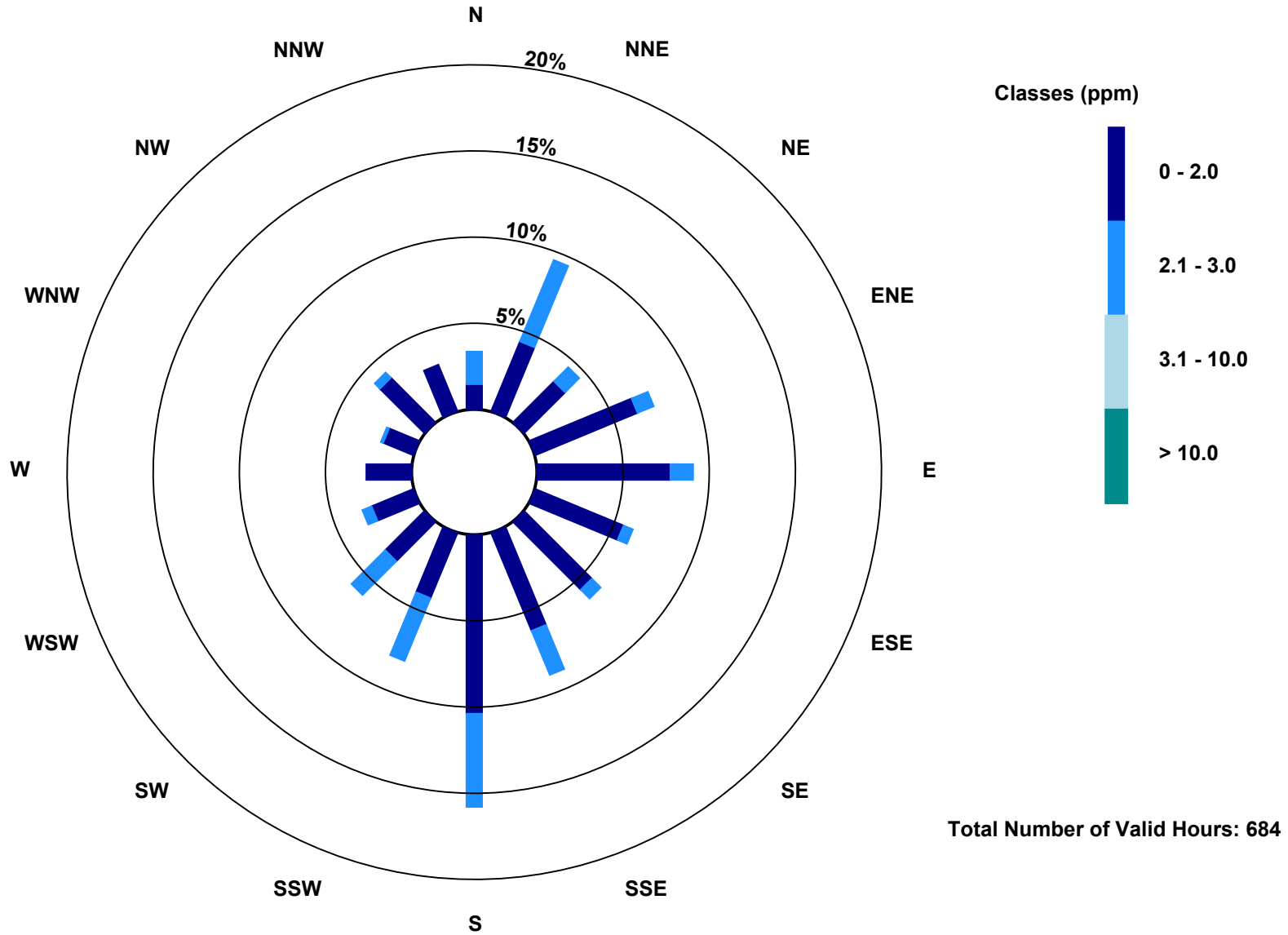
Total Number of Valid Hours: 684

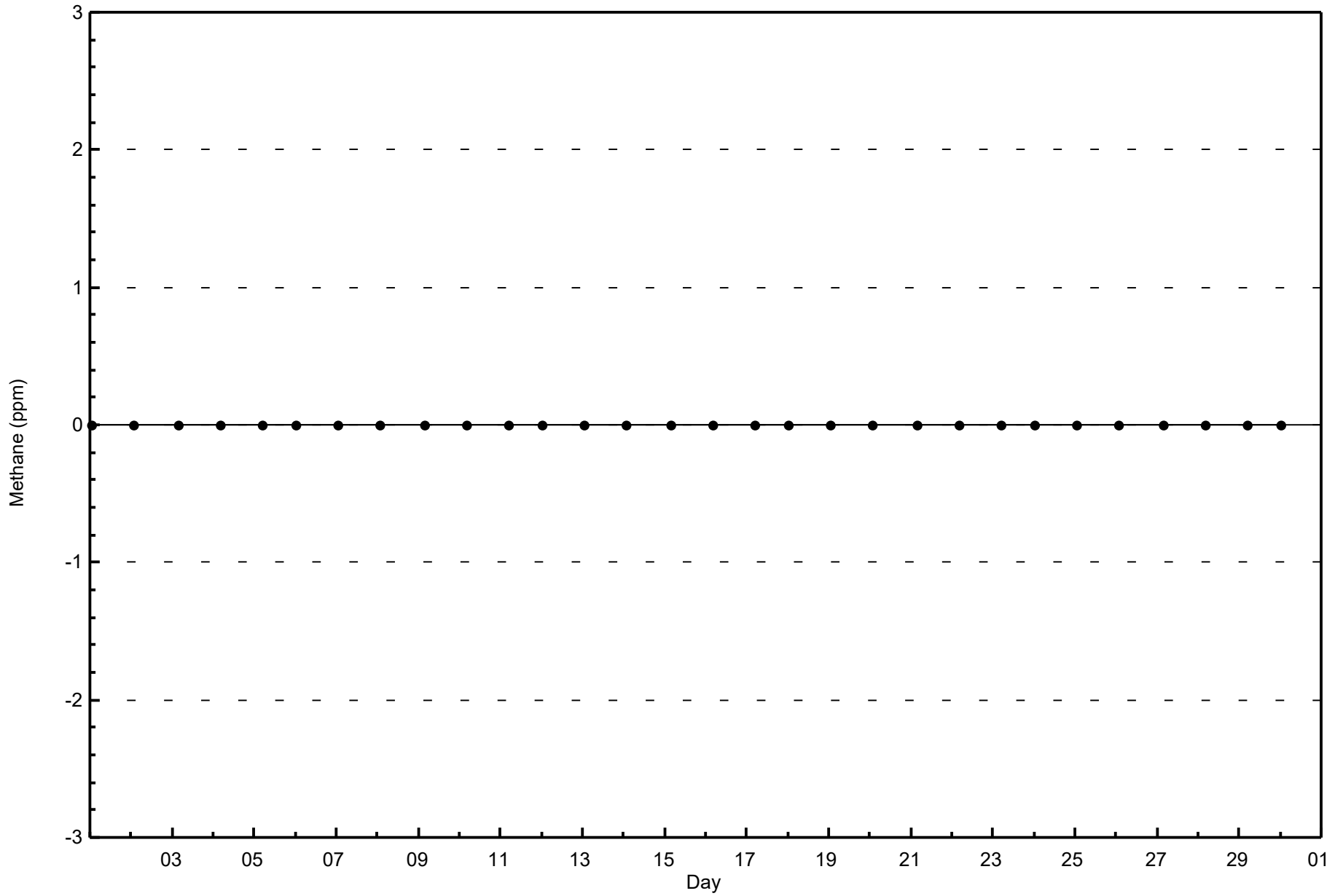
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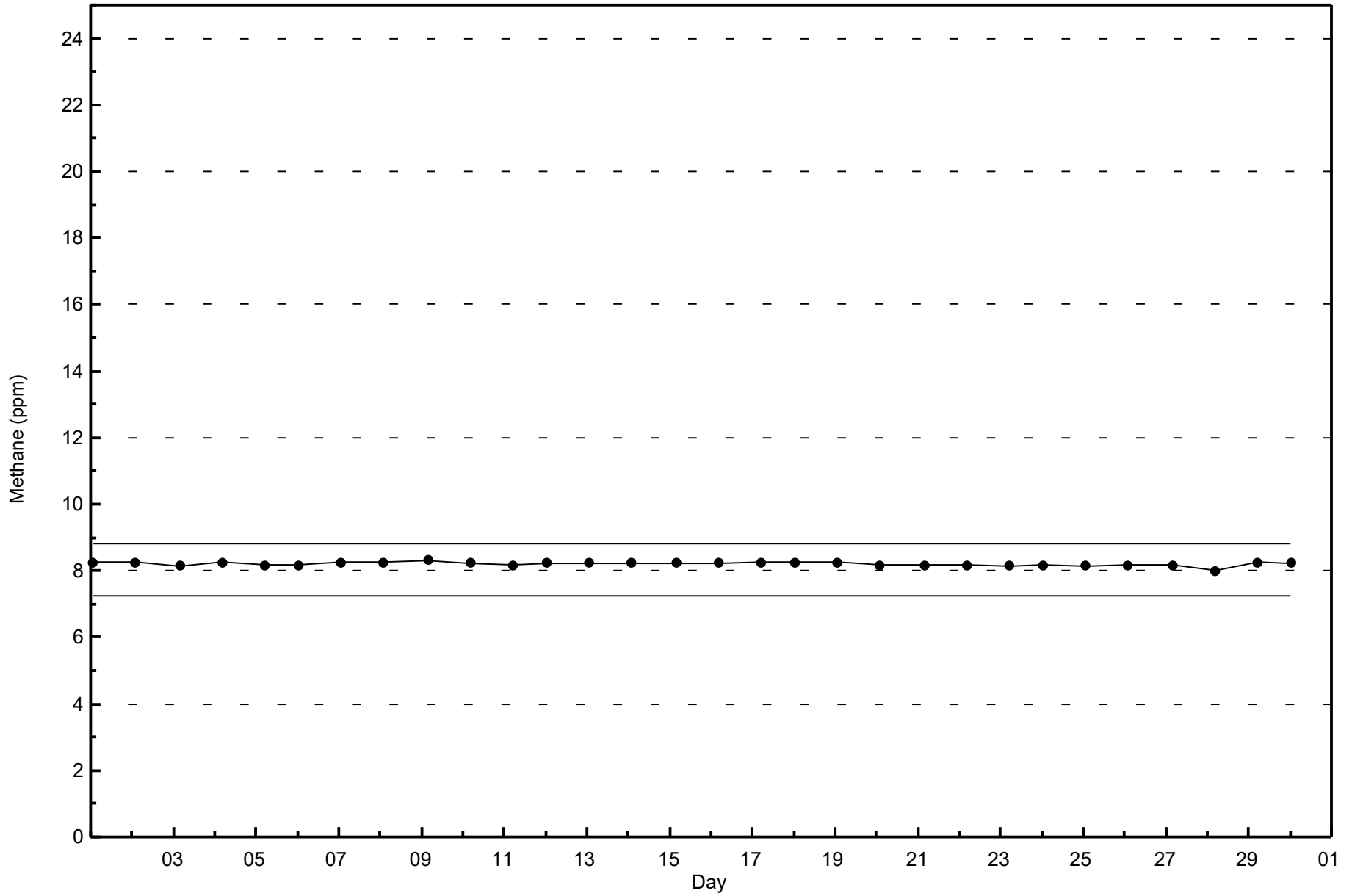


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Janvier



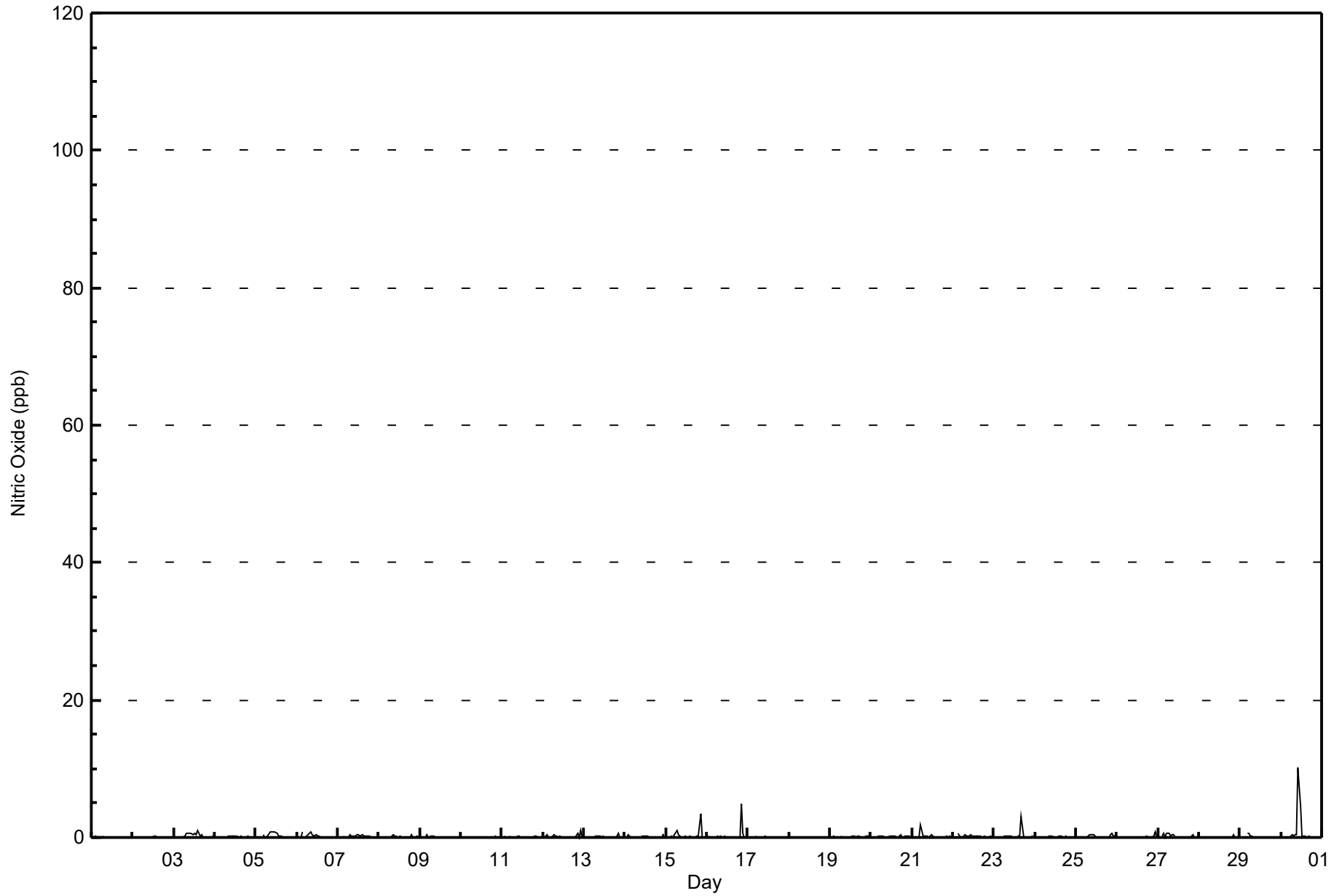






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Janvier - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Janvier - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	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: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Janvier - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	23	67	32	50	60	41	42	64	106	56	38	20	18	16	27	22	682
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
Totals	23	67	32	50	60	41	42	64	106	56	38	20	18	16	27	22	682

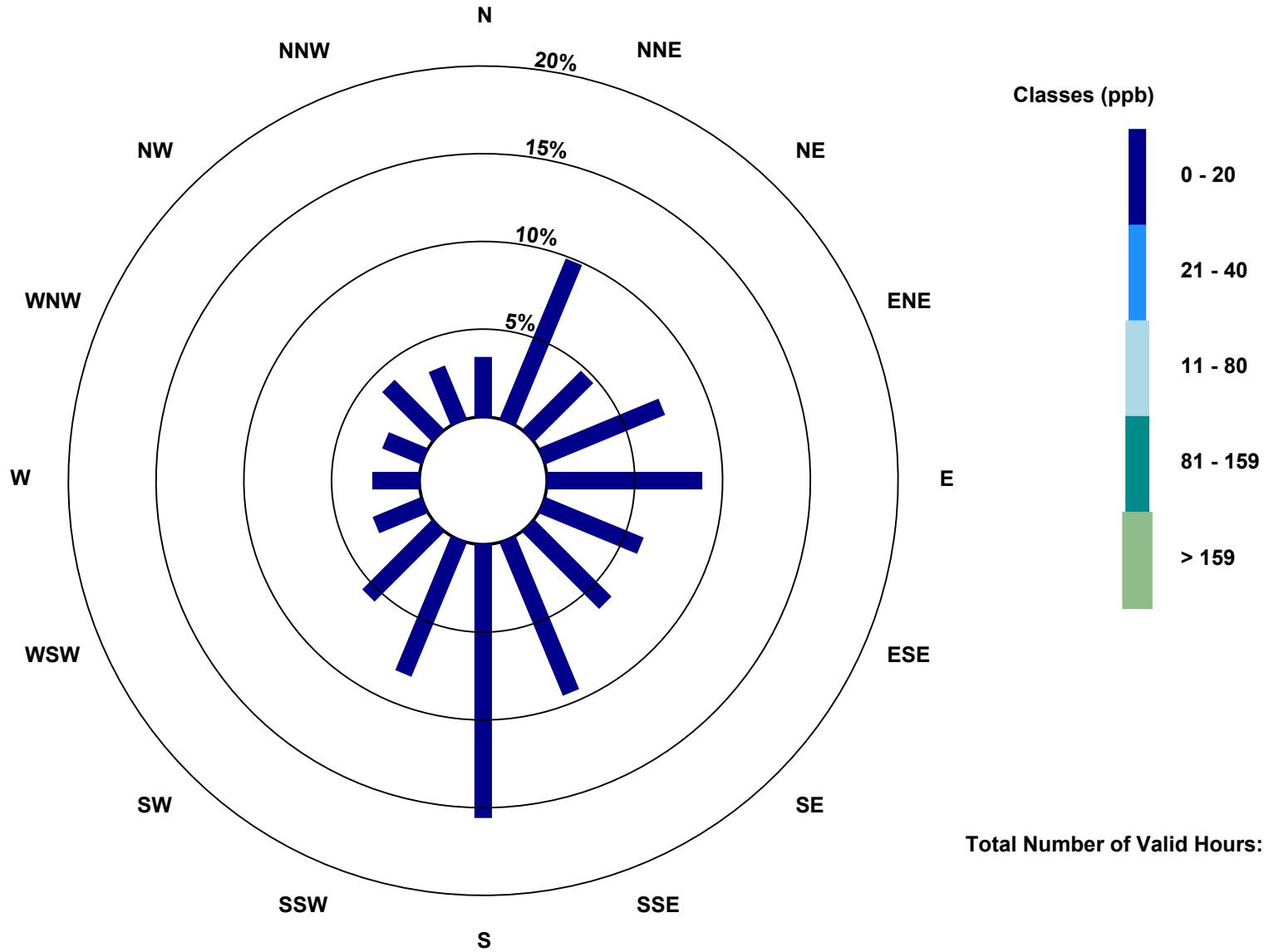
Total Number of Valid Hours: 682

Total Number of Hours: 720

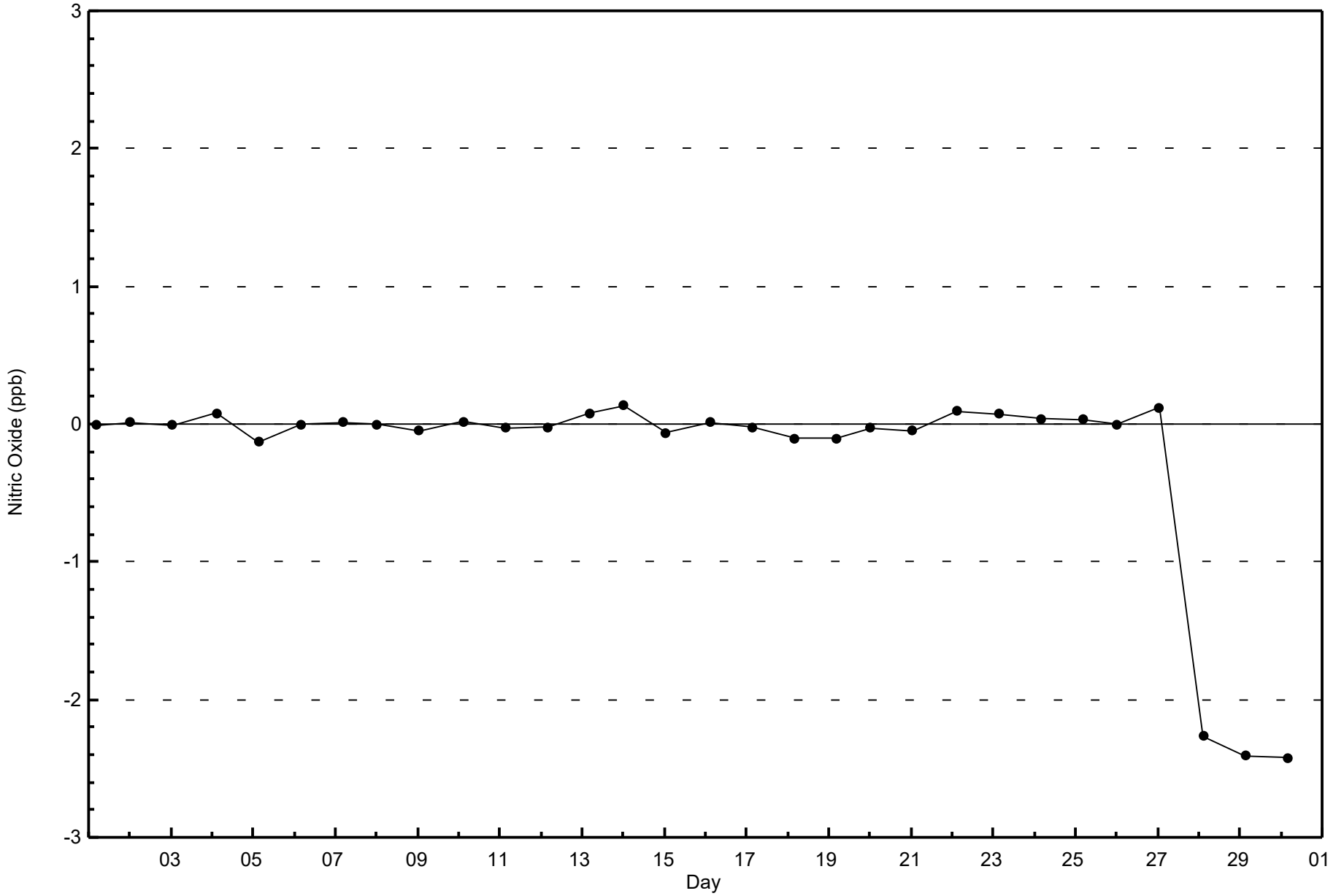


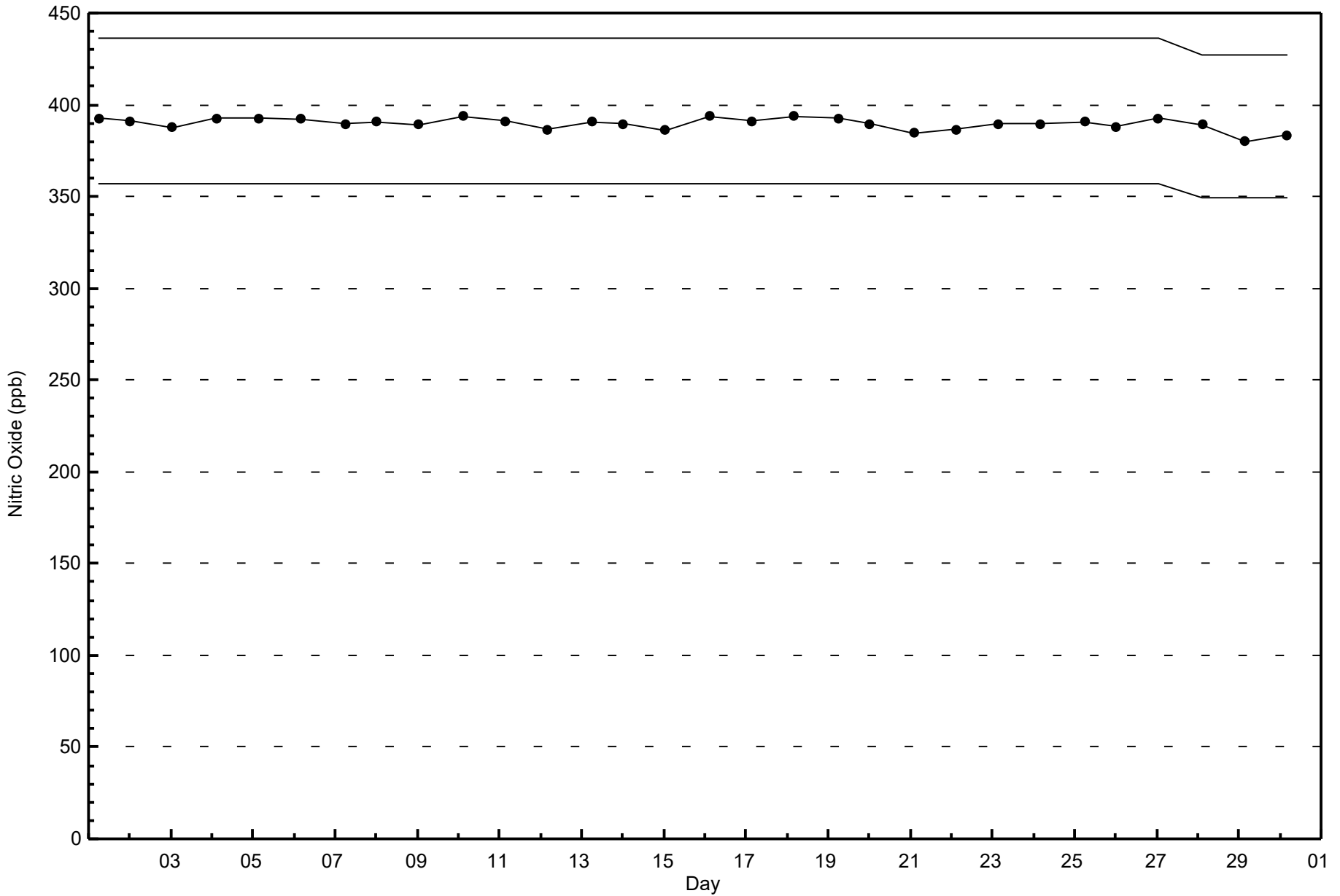
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Janvier



Total Number of Valid Hours: 682





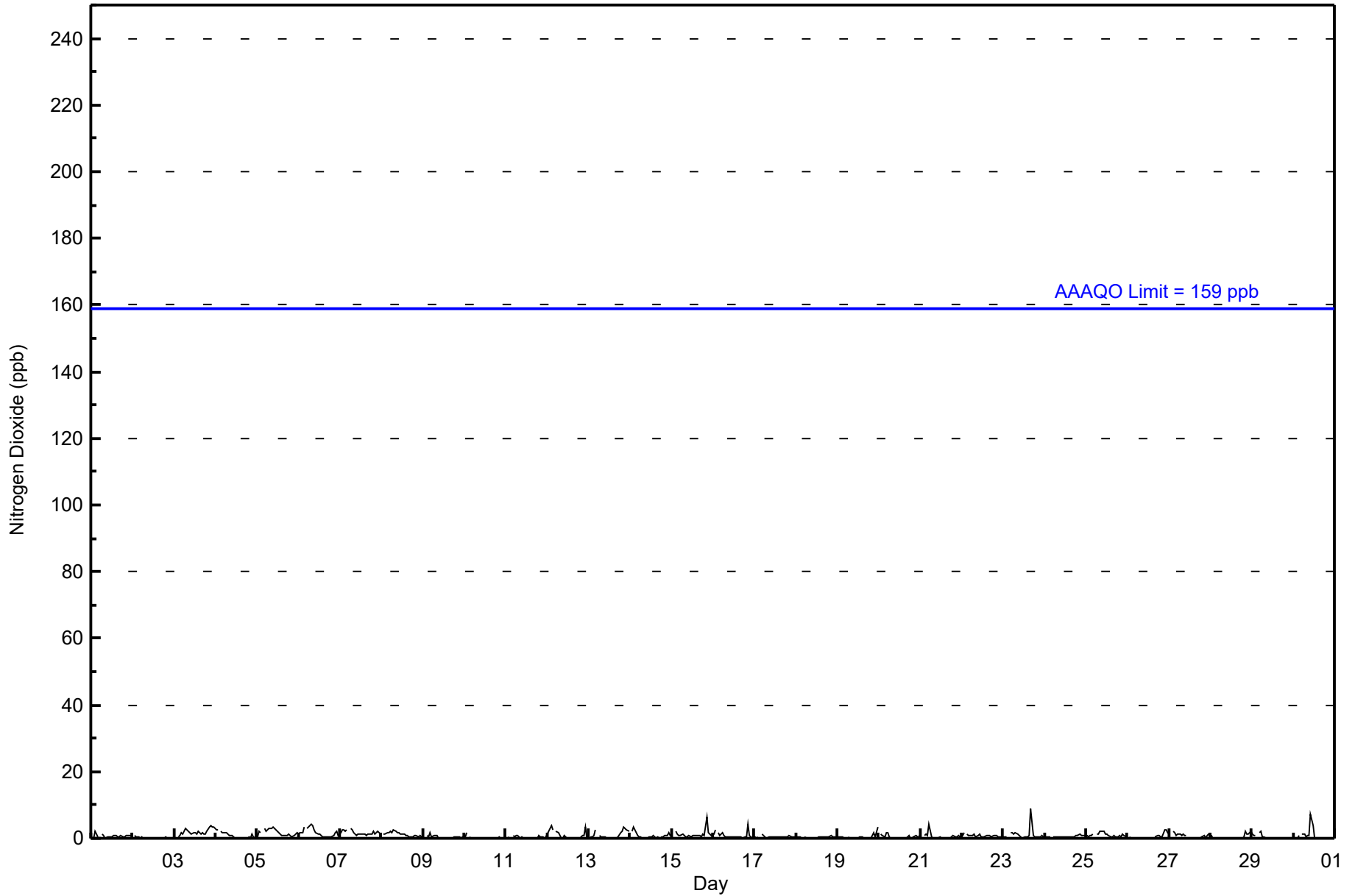


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720					
Maximum Value: 8.9 ppb on Apr 23 17:00		Maximum Daily Average: 1.9 ppb on Apr 3																	Hours of Data:	682							
Minimum Value: 0.0 ppb on Apr 2 10:00		Minimum Daily Average: 0.2 ppb on Apr 2																	Hours of Missing Data:	38							
Maximum Diurnal Average: 1.3 ppb at hour 6		Minimum Diurnal Average: 0.3 ppb at hour 16																	Hours of Calibration:	37							
Monthly Average: 0.80 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.2 Median = 0.5 Q ₃ = 1.1 P ₉₀ = 2.0 P ₉₉ = 3.7																	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-Apr	0.1	0.2	2.2	1.2	0.4	Z	1.4	0.8	0.2	0.4	0.5	0.6	0.6	0.8	0.7	0.5	0.6	0.7	0.5	0.6	0.8	0.8	1.0	1.0	0.7	2.2	
2-Apr	Z	0.9	0.4	0.3	0.2	0.6	0.2	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.2	0.9	
3-Apr	0.3	Z	0.4	0.7	1.6	1.4	2.9	2.7	2.0	1.5	1.3	1.7	1.7	1.4	2.0	1.2	1.9	1.4	1.4	2.2	3.3	3.7	3.3	3.3	1.9	3.7	
4-Apr	2.7	2.5	Z	2.3	1.9	1.6	1.6	1.2	0.9	0.7	0.3	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.3	0.1	1.1	0.5	0.2	0.8	2.7	
5-Apr	0.3	2.0	1.6	Z	2.8	2.3	2.5	2.9	3.0	3.2	3.1	2.4	1.9	1.1	0.9	1.0	0.7	0.8	1.2	1.0	0.6	0.9	1.4	1.5	1.7	3.2	
6-Apr	1.4	1.5	1.6	3.5	Z	2.9	3.7	4.1	3.7	2.5	1.7	1.4	1.1	0.8	0.5	0.4	0.5	0.5	0.4	0.6	1.0	1.9	2.1	1.0	1.7	4.1	
7-Apr	1.5	2.7	2.7	2.3	2.7	Z	3.1	2.7	1.5	1.0	1.2	1.1	1.4	1.2	1.2	1.0	1.3	1.1	1.4	2.0	1.2	1.9	2.1	1.2	1.7	3.1	
8-Apr	Z	1.3	1.2	1.7	1.6	2.1	1.9	2.4	2.2	1.5	1.5	1.3	1.2	1.2	0.9	0.7	0.5	0.6	0.5	0.8	0.8	0.5	0.8	0.4	1.2	2.4	
9-Apr	0.3	Z	0.8	0.4	1.8	0.3	0.9	0.8	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.4	0.6	0.6	0.2	0.3	0.4	1.8	
10-Apr	0.6	1.8	Z	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.2	0.0	0.2	1.8	
11-Apr	0.1	0.2	0.5	Z	0.8	0.5	1.0	0.7	0.1	0.4	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.4	0.6	0.2	0.4	0.3	1.0	
12-Apr	1.4	2.2	3.9	2.4	Z	2.2	1.6	0.9	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.0	3.2	0.1	0.9	3.9	
13-Apr	0.2	0.6	0.3	0.9	2.4	Z	0.7	0.3	0.5	0.3	0.2	0.2	0.1	0.0	0.0	0.1	0.6	1.6	2.2	3.2	2.9	2.6	2.2	1.0	3.2		
14-Apr	Z	2.1	3.5	1.7	0.9	0.3	0.3	0.2	0.2	0.1	0.1	0.4	0.3	0.8	0.3	0.1	0.3	0.2	0.6	0.5	0.8	0.9	1.5	1.0	0.7	3.5	
15-Apr	1.0	Z	2.1	1.2	0.9	1.0	1.1	0.7	0.5	0.6	0.7	0.6	0.8	0.9	0.7	0.7	0.7	0.6	1.4	0.7	6.2	1.7	1.1	0.7	1.2	6.2	
16-Apr	1.1	2.5	Z	1.6	1.0	1.8	0.9	0.6	0.5	0.5	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.3	4.2	0.9	0.3	0.2	0.8	4.2	
17-Apr	0.4	0.2	0.4	Z	1.1	0.9	0.4	0.2	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.7	0.6	0.4	0.4	0.5	1.1	
18-Apr	0.3	0.5	0.5	0.2	Z	0.5	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.4	0.3	0.4	0.4	0.5	0.5	0.8	0.3	0.3	0.3	0.3	0.8	
19-Apr	0.4	0.4	0.4	0.3	0.2	Z	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.9	1.7	0.3	3.3	0.5	3.3
20-Apr	Z	1.3	1.0	0.3	1.8	1.9	0.6	0.2	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.8	0.0	0.0	0.3	0.8	0.4	0.4	0.5	1.9	
21-Apr	1.1	Z	0.7	1.3	0.9	4.4	0.5	0.2	0.1	0.2	0.1	0.5	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.8	0.4	0.5	0.7	0.4	0.6	4.4	
22-Apr	0.9	1.6	Z	1.3	1.0	0.9	0.9	1.3	0.6	0.9	1.1	0.5	0.4	0.5	0.7	0.9	0.7	0.5	0.8	1.0	1.0	0.6	0.4	0.3	0.8	1.6	
23-Apr	0.3	0.3	0.3	Z	1.8	1.5	1.2	1.5	1.4	0.7	0.4	0.2	0.3	0.3	0.3	0.7	8.9	0.7	0.5	0.5	0.3	0.4	0.8	0.3	1.0	8.9	
24-Apr	0.4	0.4	0.3	0.3	Z	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.3	0.3	0.4	0.7	0.8	1.3	0.8	0.8	0.9	0.5	1.3	
25-Apr	0.7	0.6	0.7	0.9	1.4	Z	1.4	1.3	2.2	2.1	2.0	1.3	1.2	1.0	0.4	0.5	0.9	0.6	0.6	0.7	0.6	1.1	0.9	0.6	1.0	2.2	
26-Apr	Z	0.5	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	M	0.4	0.8	0.7	0.4	0.5	2.4	2.4	1.5	0.5	2.4	
27-Apr	1.2	Z	2.2	1.8	0.9	1.4	1.1	0.8	1.1	1.0	0.8	C	C	C	C	C	C	C	0.0	0.4	0.8	0.2	0.9	1.2	--	2.2	
28-Apr	1.0	0.1	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	0.4	2.3	1.4	1.3	2.1	0.4	2.3	
29-Apr	1.3	0.9	1.0	Z	1.5	2.0	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	0.3	2.0	
30-Apr	0.0	0.2	0.2	1.0	Z	1.1	1.1	0.4	0.8	1.0	7.4	3.7	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	7.4	
																								Diurnal Average			
																								Diurnal Maximum			
																								Z - zerospan C - Calibration M - Maintenance			
																								Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb			



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Janvier - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	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: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Janvier - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	23	67	32	50	60	41	42	64	106	56	38	20	18	16	27	22	682
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
Totals	23	67	32	50	60	41	42	64	106	56	38	20	18	16	27	22	682

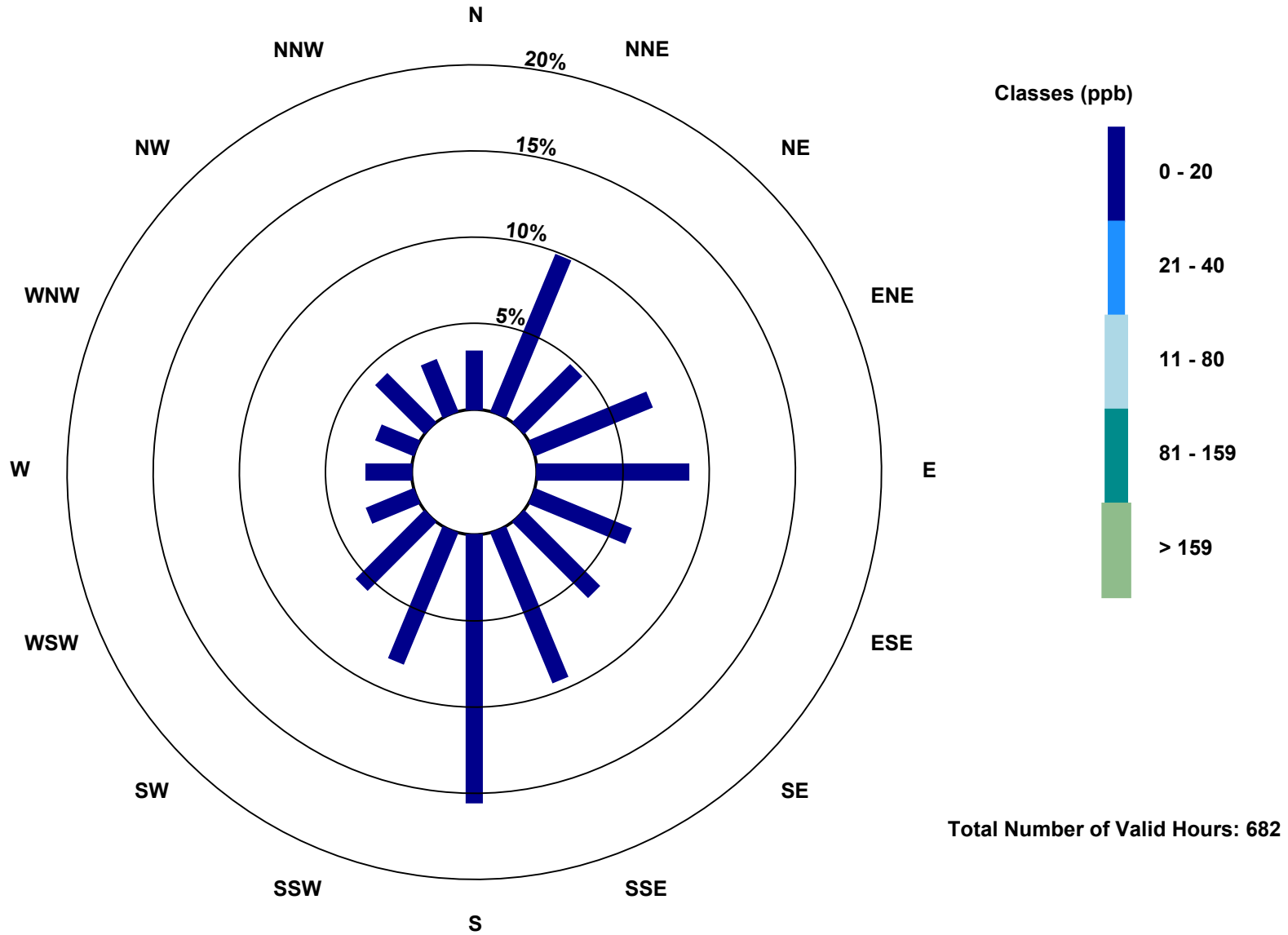
Total Number of Valid Hours: 682

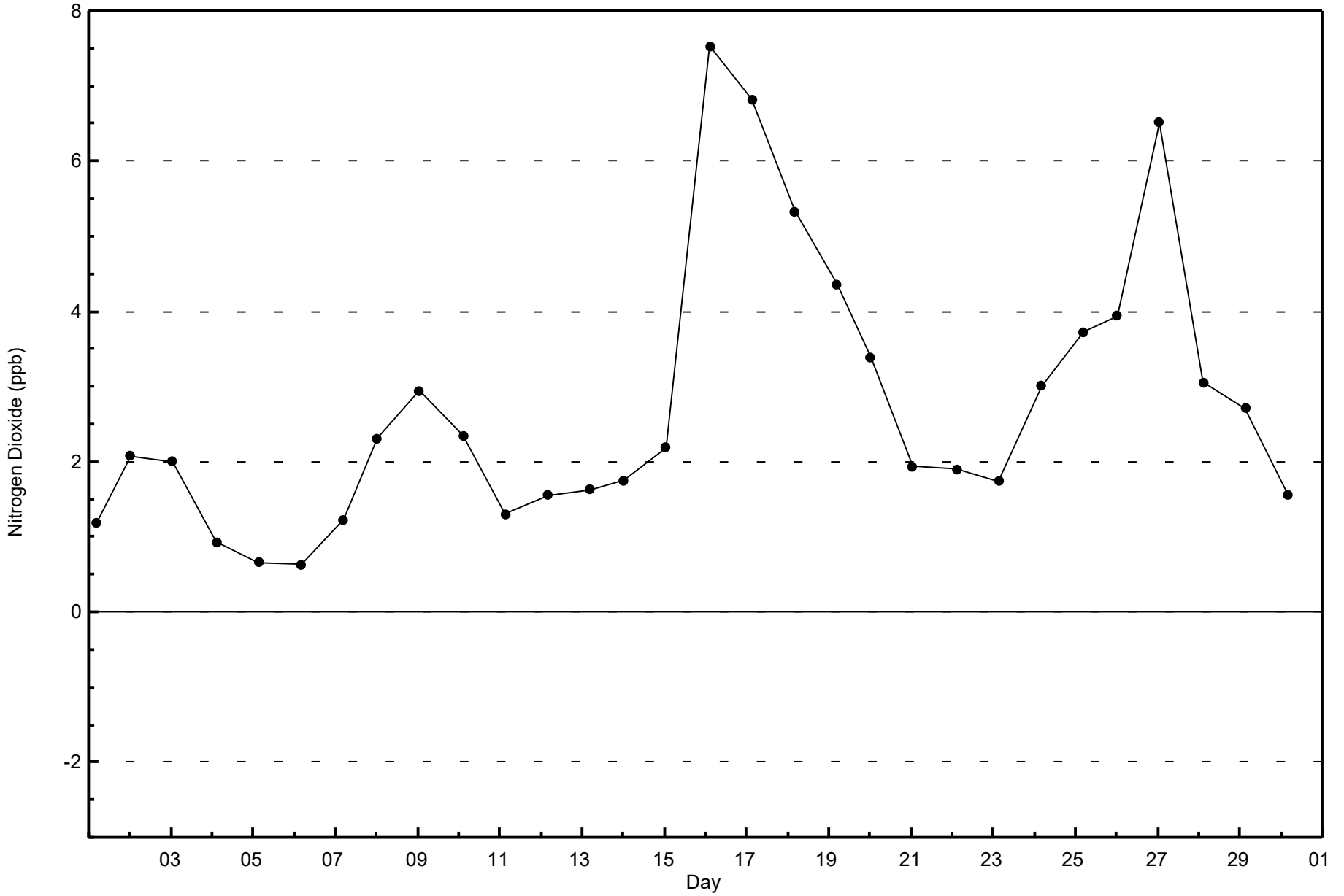
Total Number of Hours: 720

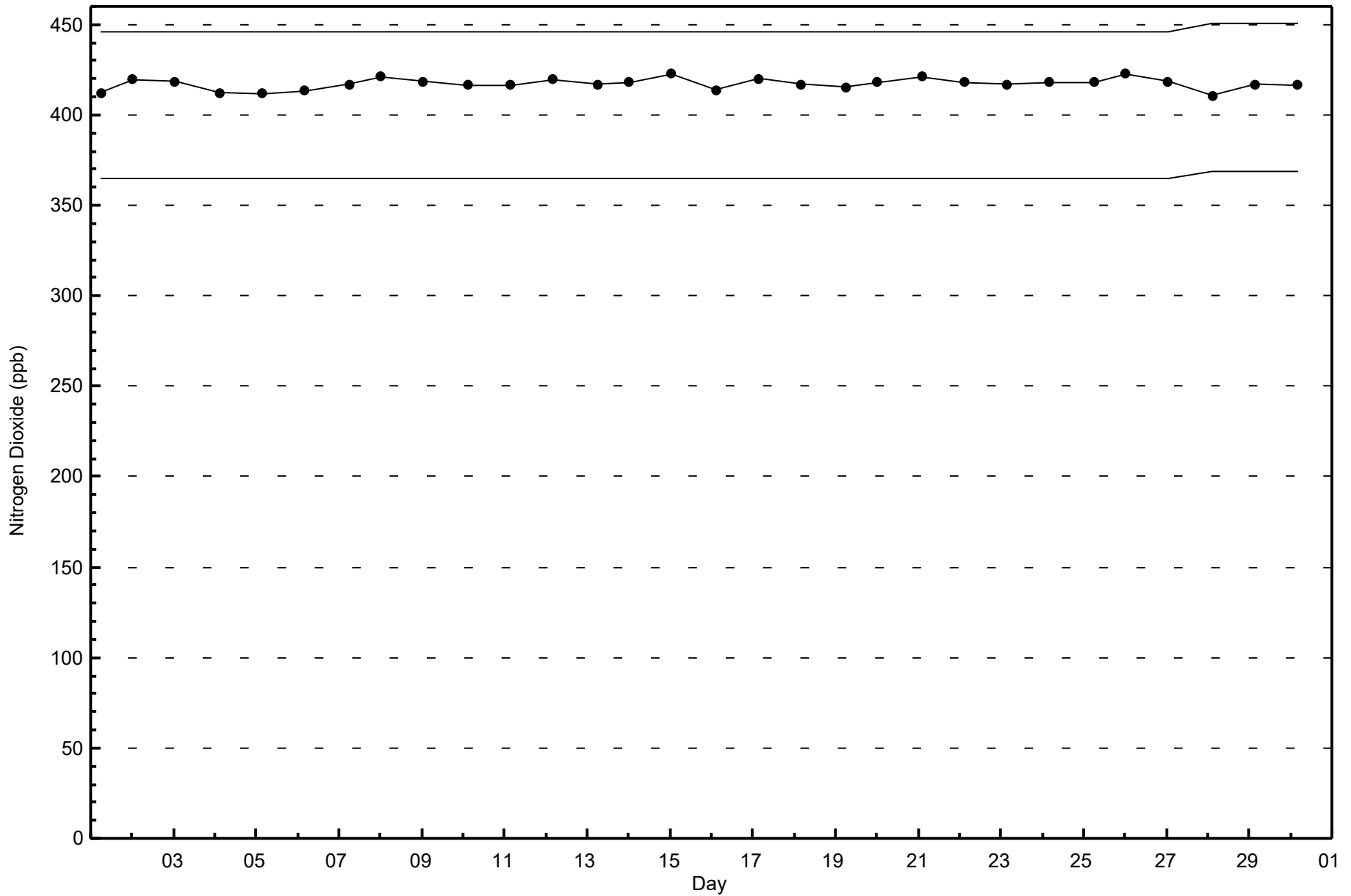


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Janvier









Wood Buffalo Environmental Association
Summary of Hour Averages

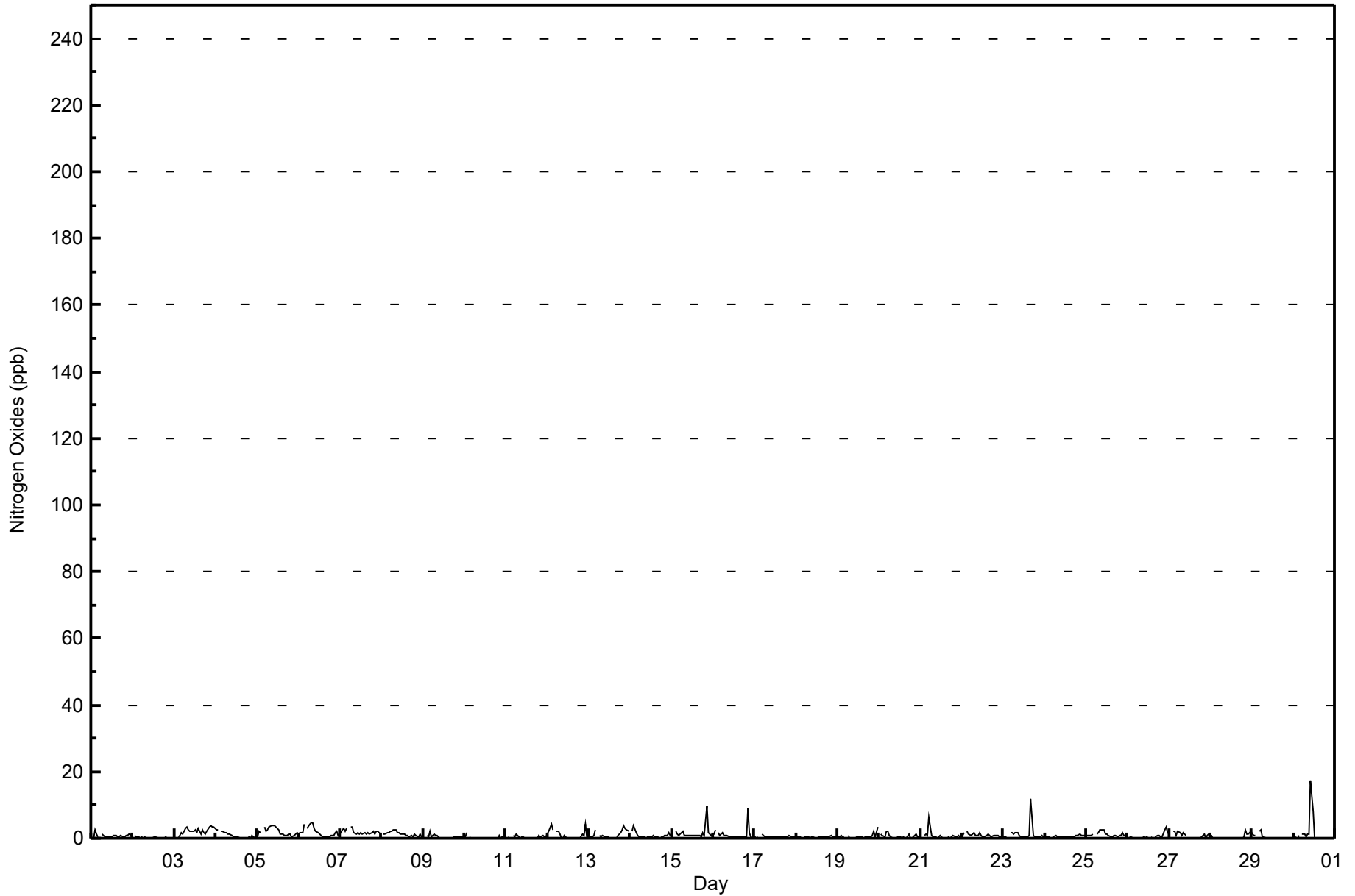
Nitrogen Oxides (NO_x) - ppb
Janvier - April 2023

Maximum Value: 17.6 ppb on Apr 30 11:00																				Maximum Daily Average: 2.2 ppb on Apr 3					Hours in Service: 720	
Minimum Value: 0.0 ppb on Apr 2 17:00																				Minimum Daily Average: 0.2 ppb on Apr 2					Hours of Data: 682	
Maximum Diurnal Average: 1.5 ppb at hour 21																				Minimum Diurnal Average: 0.4 ppb at hour 16					Hours of Missing Data: 38	
Monthly Average: 0.94 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.2 Median = 0.6 Q ₃ = 1.2 P ₉₀ = 2.2 P ₉₉ = 4.6					Hours of Calibration: 37	
																									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-Apr	0.1	0.2	2.4	1.2	0.4	Z	1.5	0.8	0.3	0.4	0.5	0.6	0.6	0.8	0.7	0.5	0.6	0.7	0.5	0.6	0.8	0.8	1.1	1.0	0.7	2.4
2-Apr	Z	0.9	0.4	0.3	0.2	0.6	0.2	0.2	0.1	0.1	0.1	0.0	0.3	0.3	0.2	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.2	0.9
3-Apr	0.4	Z	0.4	0.7	1.7	1.4	3.0	3.2	2.7	2.0	1.9	2.2	2.3	1.9	3.1	1.4	2.4	1.5	1.4	2.2	3.3	3.7	3.3	3.4	2.2	3.7
4-Apr	2.7	2.5	Z	2.3	1.9	1.6	1.6	1.2	1.1	0.9	0.4	0.3	0.3	0.4	0.2	0.1	0.2	0.2	0.5	0.1	1.1	0.5	0.2	0.9	0.9	2.7
5-Apr	0.3	2.0	1.6	Z	3.3	2.3	2.5	3.2	3.8	4.0	4.0	3.2	2.5	1.2	1.1	1.2	0.8	0.9	1.3	1.1	0.6	0.9	1.4	1.5	1.9	4.0
6-Apr	1.4	1.5	1.6	4.2	Z	2.9	4.0	4.8	4.5	3.0	2.0	1.8	1.3	0.9	0.5	0.5	0.6	0.5	0.4	0.6	1.0	1.9	2.1	1.0	1.9	4.8
7-Apr	1.5	2.7	2.8	2.3	2.9	Z	3.2	3.2	1.7	1.3	1.5	1.4	1.7	1.4	1.6	1.2	1.5	1.3	1.5	2.1	1.2	1.9	2.1	1.2	1.9	3.2
8-Apr	Z	1.3	1.2	1.7	1.7	2.1	2.0	2.5	2.5	1.7	1.7	1.4	1.4	1.3	0.9	0.7	0.6	0.6	0.5	1.1	0.9	0.5	1.1	0.4	1.3	2.5
9-Apr	0.3	Z	0.9	0.4	2.2	0.3	1.1	0.9	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.4	0.6	0.6	0.2	0.3	0.5	2.2
10-Apr	0.6	1.8	Z	0.6	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	0.1	0.8	0.1	0.2	0.1	0.2	1.8
11-Apr	0.1	0.2	0.6	Z	1.0	0.5	1.1	0.8	0.1	0.5	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.5	0.7	0.3	0.4	0.4	1.1
12-Apr	1.5	2.2	4.3	2.4	Z	2.2	2.0	1.1	0.1	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.0	4.2	0.2	1.0	4.3
13-Apr	0.3	0.6	0.4	0.9	2.4	Z	0.8	0.5	0.7	0.4	0.3	0.3	0.2	0.0	0.0	0.0	0.1	0.7	1.6	2.4	3.7	3.0	2.7	2.2	1.1	3.7
14-Apr	Z	2.1	3.8	1.7	0.9	0.3	0.3	0.3	0.3	0.1	0.3	0.5	0.5	1.0	0.4	0.2	0.3	0.2	0.6	0.5	0.9	1.0	1.8	1.0	0.8	3.8
15-Apr	1.0	Z	2.1	1.4	1.0	1.4	2.2	1.0	0.7	0.7	0.8	0.7	0.9	1.0	0.8	0.7	0.8	0.6	1.6	0.8	9.7	1.8	1.2	0.7	1.5	9.7
16-Apr	1.1	2.7	Z	1.6	1.0	1.8	1.0	0.7	0.7	0.5	0.5	0.3	0.5	0.3	0.4	0.3	0.3	0.3	0.4	0.3	9.0	1.5	0.3	0.2	1.1	9.0
17-Apr	0.5	0.2	0.4	Z	1.2	0.9	0.4	0.2	0.4	0.5	0.6	0.4	0.6	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.7	0.6	0.4	0.4	0.5	1.2
18-Apr	0.3	0.5	0.5	0.2	Z	0.5	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.4	0.3	0.5	0.5	0.5	0.6	0.9	0.3	0.3	0.3	0.4	0.9
19-Apr	0.4	0.4	0.6	0.3	0.2	Z	0.7	0.2	0.2	0.1	0.1	0.2	0.3	0.5	0.5	0.1	0.3	0.4	0.3	0.3	0.9	2.0	0.5	3.6	0.6	3.6
20-Apr	Z	1.4	1.0	0.3	2.0	2.0	0.8	0.3	0.1	0.0	0.2	0.2	0.3	0.2	0.3	0.1	0.1	1.2	0.0	0.0	0.5	1.1	0.6	0.4	0.6	2.0
21-Apr	1.2	Z	0.7	1.3	1.0	6.3	0.7	0.3	0.3	0.3	0.1	0.9	0.2	0.0	0.1	0.2	0.3	0.2	0.3	0.9	0.6	0.5	0.9	0.5	0.8	6.3
22-Apr	0.9	1.6	Z	1.9	1.2	1.0	1.1	1.7	0.8	1.1	1.5	0.7	0.5	0.6	0.8	1.1	0.9	0.5	0.9	1.0	1.0	0.7	0.5	0.4	1.0	1.9
23-Apr	0.4	0.3	0.3	Z	1.9	1.5	1.3	1.7	1.6	0.9	0.5	0.3	0.3	0.3	0.4	0.8	11.9	0.8	0.5	0.5	0.4	0.5	0.9	0.3	1.2	11.9
24-Apr	0.4	0.4	0.3	0.4	Z	0.6	0.7	0.6	0.6	0.5	0.6	0.4	0.4	0.4	0.6	0.4	0.4	0.5	0.8	0.9	1.3	0.8	0.8	0.9	0.6	1.3
25-Apr	0.7	0.7	0.7	1.0	1.4	Z	1.5	1.5	2.7	2.5	2.4	1.4	1.3	1.0	0.5	0.6	0.9	0.7	0.6	0.7	1.0	1.7	1.0	0.8	1.2	2.7
26-Apr	Z	0.5	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.3	0.1	0.2	0.2	0.2	0.3	M	0.4	0.9	0.7	0.4	0.5	2.7	3.2	1.6	0.6	3.2
27-Apr	1.2	Z	2.3	2.3	0.9	2.0	1.6	1.1	1.6	1.4	1.0	C	C	C	C	C	C	C	0.0	0.5	1.2	0.2	0.9	1.2	--	2.3
28-Apr	1.0	0.1	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	0.4	2.7	1.4	1.3	2.1	0.4	2.7
29-Apr	1.3	0.9	1.0	Z	2.2	2.6	0.5	0.4	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	0.0	0.0	0.1	0.4	2.6
30-Apr	0.0	0.2	0.2	1.0	Z	1.2	1.4	0.5	1.2	1.3	17.6	8.1	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.5	17.6
																								Diurnal Average		
																								Diurnal Maximum		
																								0.8 1.1 1.2 1.2 1.3 1.5 1.3 1.1 1.0 0.8 1.3 0.9 0.6 0.5 0.5 0.4 0.8 0.5 0.5 0.7 1.5 1.1 1.1 0.9		
																								2.7 2.7 4.3 4.2 3.3 6.3 4.0 4.8 4.5 4.0 17.6 8.1 2.5 1.9 3.1 1.4 11.9 1.5 1.6 2.4 9.7 3.7 4.2 3.6		
																								Z - zerospan C - Calibration M - Maintenance		



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Janvier - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	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: 682

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	23	67	32	50	60	41	42	64	106	56	38	20	18	16	27	22	682
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
Totals	23	67	32	50	60	41	42	64	106	56	38	20	18	16	27	22	682

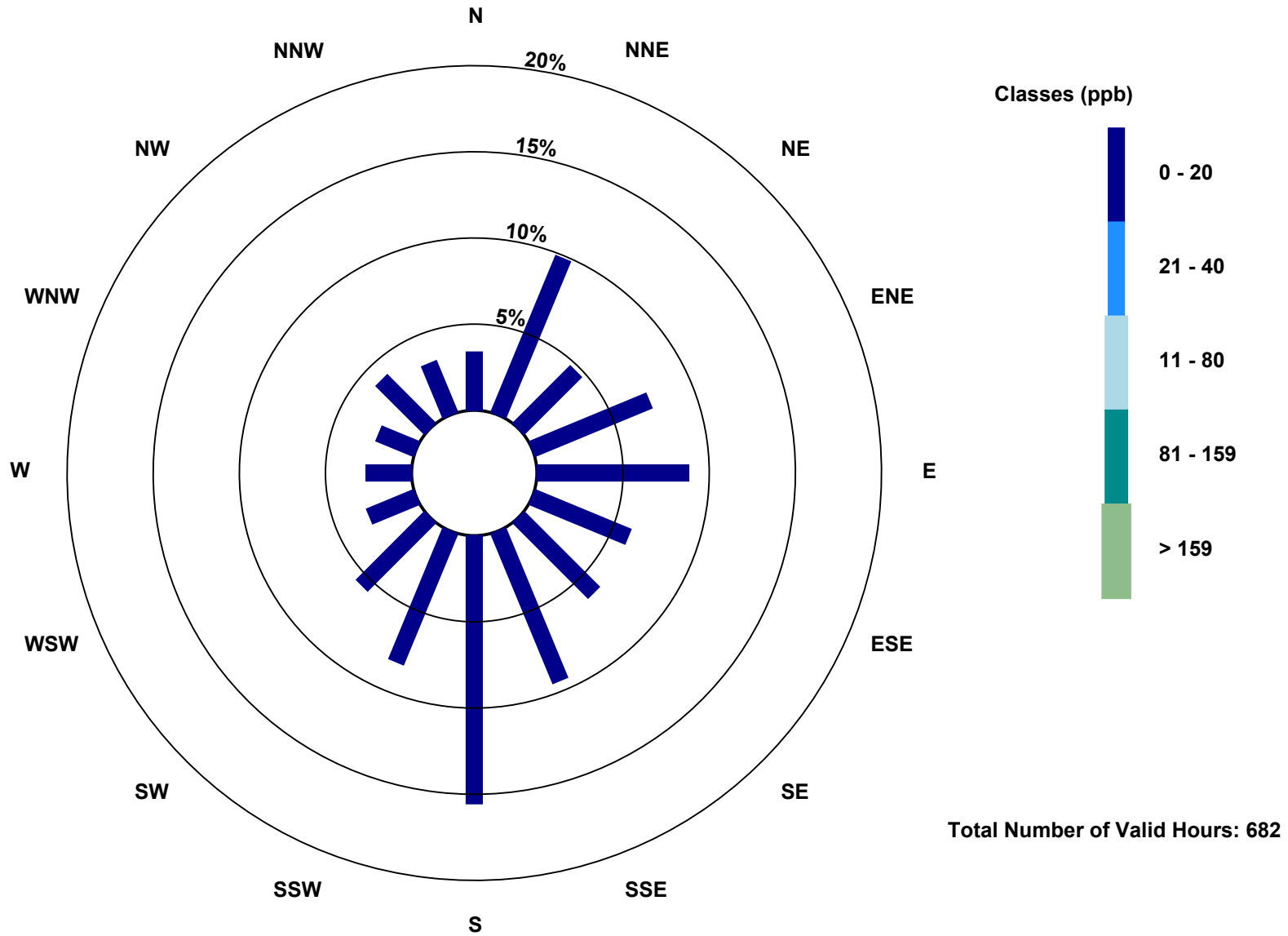
Total Number of Valid Hours: 682

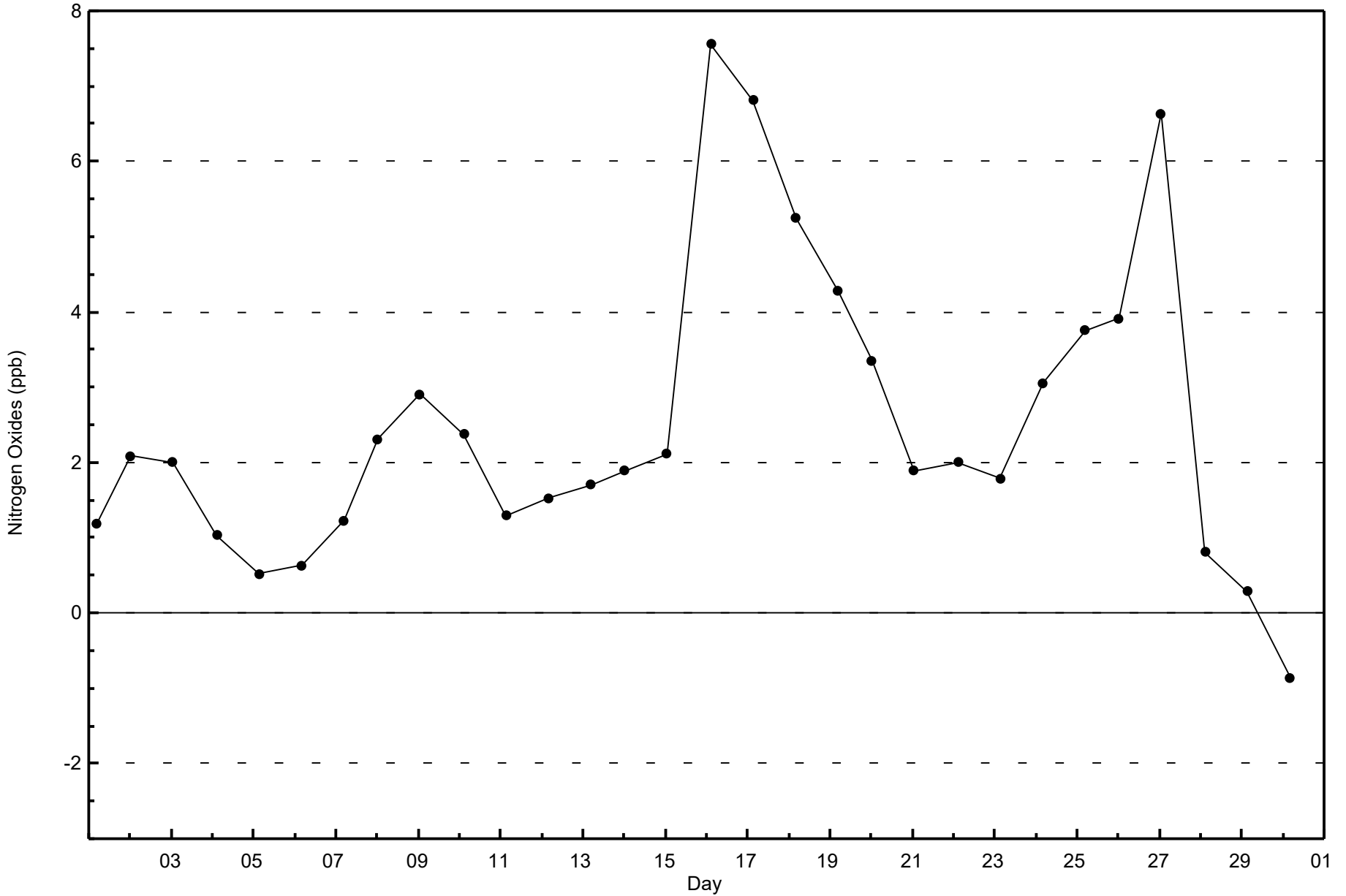
Total Number of Hours: 720

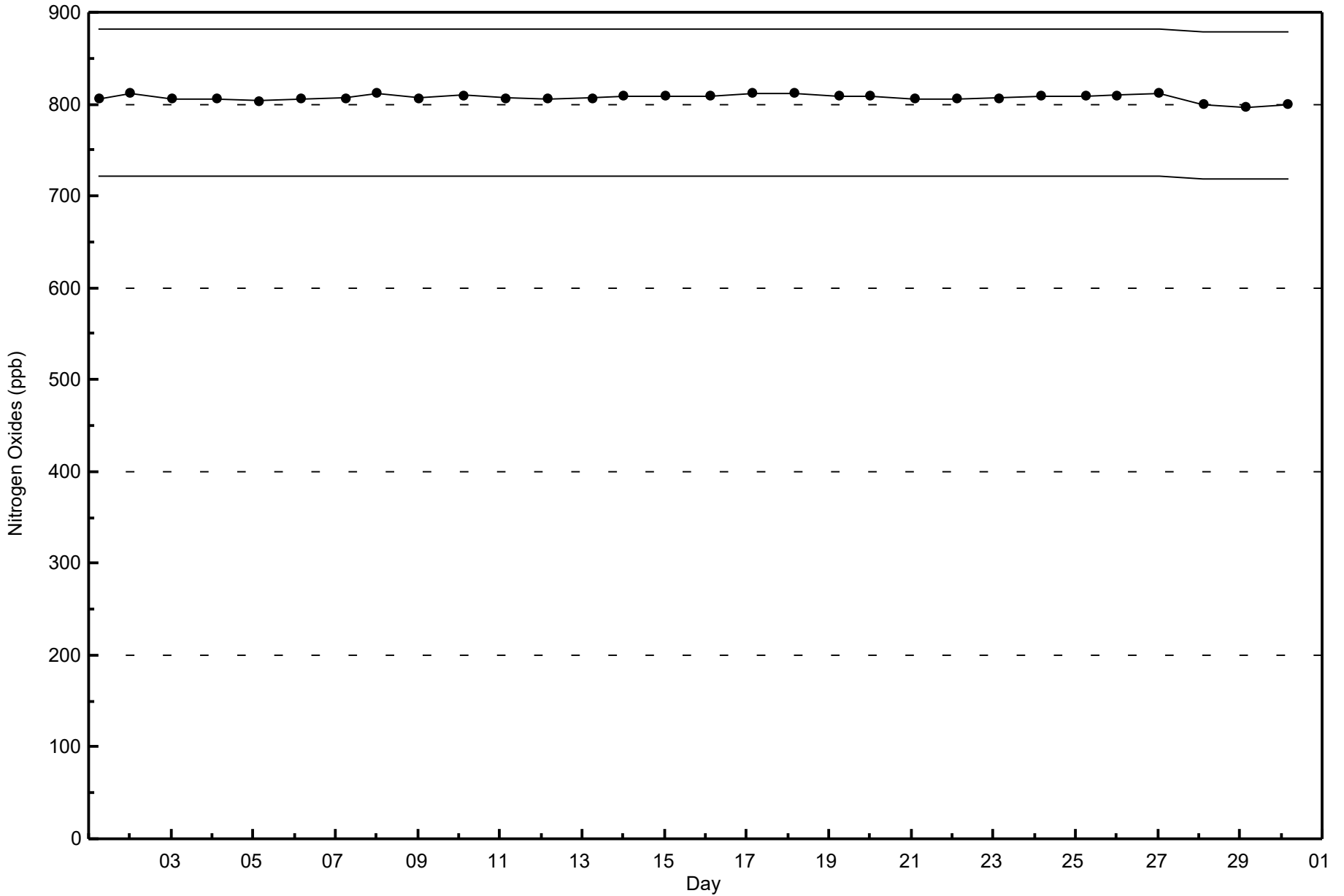


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Janvier









Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O₃) - ppb

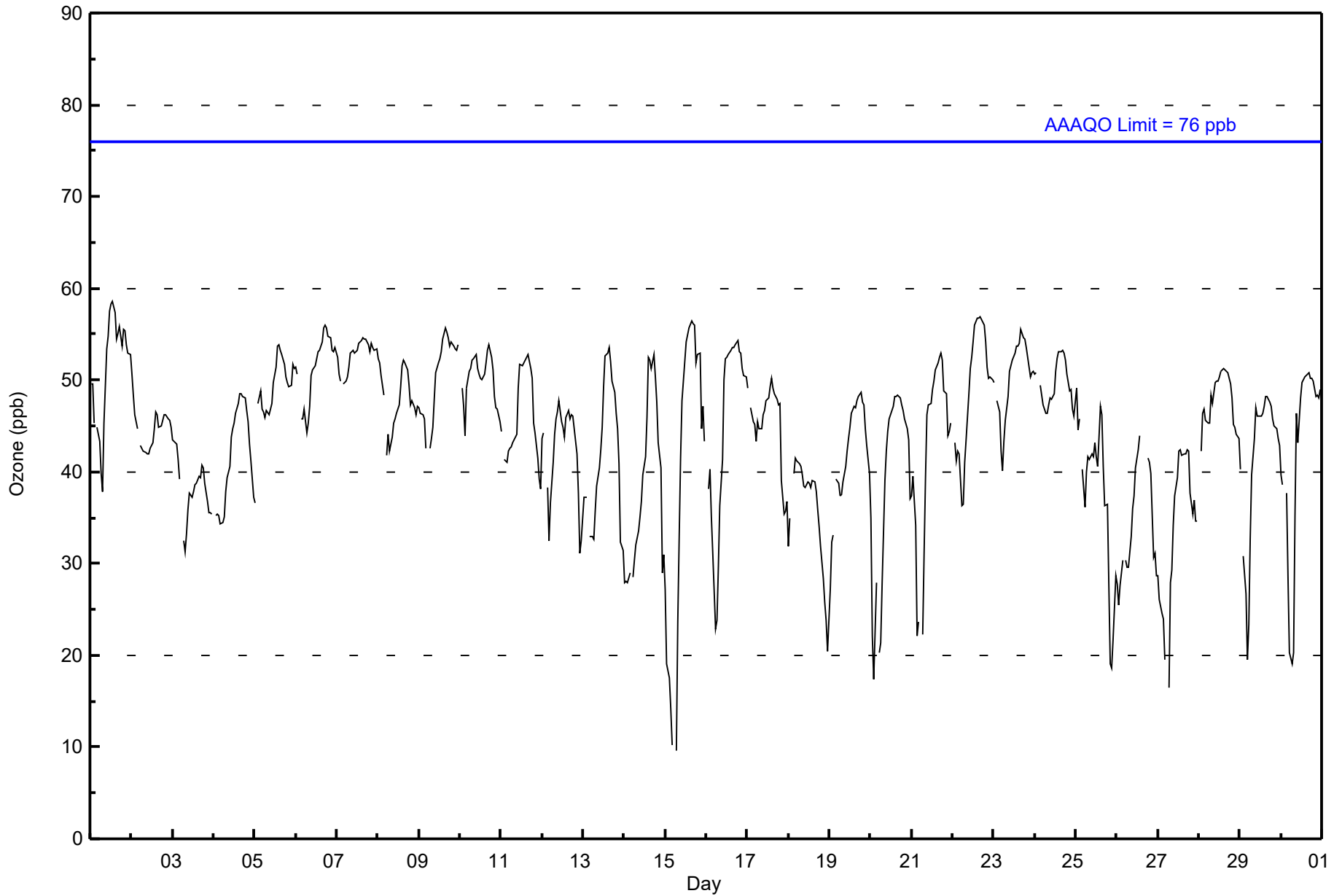
Janvier - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720																											
Maximum Value: 58.5 ppb on Apr 1 14:00		Maximum Daily Average: 52.7 ppb on Apr 7																	Hours of Data:	686																													
Minimum Value: 9.6 ppb on Apr 15 07:00		Minimum Daily Average: 34.0 ppb on Apr 27																	Hours of Missing Data:	34																													
Maximum Diurnal Average: 50.4 ppb at hour 16		Minimum Diurnal Average: 36.2 ppb at hour 7																	Hours of Calibration:	34																													
Monthly Average: 44.10 ppb		Percentiles: P ₁ = 19.0 P ₁₀ = 31.9 Q ₁ = 39.7 Median = 46.0 Q ₃ = 50.6 P ₉₀ = 53.3 P ₉₉ = 56.6																	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-Apr	49.6	49.5	45.3	Z	44.8	43.3	39.9	37.9	45.3	53.3	54.8	57.5	58.3	58.5	57.3	54.5	55.1	55.8	53.6	55.6	55.4	53.8	52.9	52.8	51.5	58.5																							
2-Apr	50.7	48.3	46.3	44.6	Z	42.9	42.6	42.2	42.1	41.9	41.9	42.5	43.2	44.7	46.5	46.2	44.8	45.0	45.6	46.3	46.2	45.8	45.6	44.9	44.8	50.7																							
3-Apr	43.4	43.3	43.0	41.3	39.2	Z	32.4	31.3	33.3	35.8	37.7	37.2	37.8	38.6	38.8	39.5	39.3	40.7	40.4	38.7	36.8	35.5	35.5	35.3	38.0	43.4																							
4-Apr	Z	35.2	35.5	35.3	34.3	34.4	35.0	37.8	39.4	40.6	43.9	44.7	45.4	46.4	47.5	48.5	48.4	48.1	48.1	46.6	45.4	42.9	41.2	37.2	41.8	48.5																							
5-Apr	36.5	Z	47.4	48.9	46.8	46.6	45.9	46.6	46.3	46.8	47.4	49.8	51.4	53.7	53.9	53.3	52.8	51.7	50.3	49.7	49.3	49.3	51.7	51.2	49.0	53.9																							
6-Apr	51.3	50.6	Z	45.7	45.8	46.8	44.2	45.2	47.1	50.5	51.1	51.5	52.4	53.0	53.3	54.1	55.8	56.0	55.6	54.8	54.5	53.3	53.1	53.5	51.3	56.0																							
7-Apr	52.5	50.6	49.9	Z	49.6	49.8	50.3	51.4	52.9	53.2	52.9	53.1	53.2	54.0	54.4	54.6	54.5	54.5	53.9	53.1	54.0	53.5	53.3	53.5	52.7	54.6																							
8-Apr	52.4	51.8	50.6	48.3	Z	41.8	44.0	42.3	43.8	45.4	45.7	46.4	47.4	49.2	51.6	52.1	51.8	51.0	49.5	47.3	47.8	46.9	46.3	47.1	47.8	52.4																							
9-Apr	47.0	46.4	46.2	45.8	42.6	Z	42.6	43.6	44.8	47.8	50.8	51.9	52.2	53.1	54.5	55.7	55.2	54.6	53.7	54.1	53.7	53.3	53.3	53.9	50.3	55.7																							
10-Apr	Z	49.2	47.2	43.9	49.1	50.9	51.3	52.1	52.3	52.8	51.2	50.6	50.3	50.0	50.6	51.8	53.2	53.9	52.5	51.2	48.3	47.0	46.9	45.4	50.1	53.9																							
11-Apr	44.3	Z	41.3	41.0	42.3	42.6	42.7	43.1	43.8	44.1	49.2	51.7	51.6	51.9	52.1	52.5	52.9	51.2	50.1	45.4	44.2	41.5	39.3	38.2	46.0	52.9																							
12-Apr	43.6	44.3	Z	38.3	32.4	36.6	41.0	44.1	45.7	46.5	47.7	45.4	44.8	43.8	45.9	46.7	45.8	46.2	46.1	44.8	42.0	37.7	31.1	32.5	42.3	47.7																							
13-Apr	37.3	37.3	37.2	Z	32.9	33.0	32.6	35.7	38.5	40.4	42.3	44.8	49.3	52.6	52.9	53.5	52.0	49.9	48.7	46.4	44.7	40.9	32.3	31.4	42.0	53.5																							
14-Apr	27.9	28.0	27.9	29.0	Z	28.6	30.4	32.0	33.6	35.1	36.8	39.7	41.7	45.9	52.5	52.2	51.2	52.7	50.4	47.5	43.1	40.5	28.9	31.0	38.5	52.7																							
15-Apr	27.2	19.1	17.6	14.2	10.3	Z	9.6	23.7	32.8	41.4	47.8	51.9	54.2	54.9	55.6	56.4	56.1	55.9	51.9	52.8	53.0	44.6	47.1	43.4	40.1	56.4																							
16-Apr	Z	38.2	40.2	35.1	31.1	22.8	23.8	29.6	36.4	41.3	50.0	52.3	52.5	52.7	53.3	53.5	53.5	53.8	54.3	53.1	52.9	51.3	50.5	50.3	44.9	54.3																							
17-Apr	49.2	Z	46.9	45.4	45.1	43.3	45.4	44.7	44.7	46.2	46.7	47.7	48.1	49.2	50.2	49.2	48.4	47.9	47.4	47.4	39.0	35.4	35.7	36.7	45.2	50.2																							
18-Apr	31.9	34.9	Z	39.8	41.4	41.1	40.9	40.6	39.7	38.4	38.3	38.9	38.8	38.4	39.1	38.8	37.8	35.9	34.0	31.9	28.4	25.8	23.7	20.4	35.6	41.4																							
19-Apr	27.3	32.3	33.2	Z	39.2	38.7	37.4	37.5	38.9	40.5	42.3	43.6	44.9	46.3	47.2	46.9	47.8	48.1	48.6	47.6	47.4	44.7	42.8	39.8	41.9	48.6																							
20-Apr	35.0	22.1	17.4	28.0	Z	20.4	21.4	27.7	39.0	42.3	44.4	45.8	46.7	47.1	48.2	48.2	48.3	48.1	47.2	46.7	45.8	44.8	43.5	37.0	38.9	48.3																							
21-Apr	37.3	39.5	34.1	22.1	23.7	Z	22.3	31.2	39.4	46.2	47.3	47.4	48.9	49.9	51.1	51.9	52.5	52.9	52.2	48.9	48.4	44.0	44.4	45.4	42.6	52.9																							
22-Apr	Z	43.1	41.2	42.3	41.9	36.3	36.4	41.0	43.5	48.5	51.3	52.4	54.1	55.9	56.7	56.7	56.9	56.6	55.9	54.1	51.4	50.2	50.3	50.1	49.0	56.9																							
23-Apr	49.8	Z	47.7	46.5	42.3	40.2	43.3	45.5	48.3	50.9	51.5	52.1	52.9	53.7	53.7	53.9	55.6	54.6	54.4	53.5	52.4	50.3	50.8	51.0	50.2	55.6																							
24-Apr	50.6	50.8	Z	49.4	48.4	47.3	46.3	46.3	47.2	48.0	47.9	48.5	50.9	52.3	53.1	53.1	53.3	52.9	52.2	50.6	48.8	49.0	46.9	46.1	49.6	53.3																							
25-Apr	49.1	44.5	45.8	Z	40.2	36.1	40.0	41.7	41.3	41.9	41.6	43.2	41.7	40.6	47.1	46.2	40.6	36.4	36.4	27.7	19.1	18.6	21.7	28.6	37.8	49.1																							
26-Apr	27.8	25.5	27.6	30.4	Z	30.4	29.6	29.5	33.0	36.0	37.4	40.4	42.4	43.9	C	C	C	C	41.5	41.0	39.7	30.6	31.2	28.7	34.0	43.9																							
27-Apr	28.7	26.1	24.5	23.9	19.5	Z	16.4	27.8	29.3	34.1	37.3	39.4	42.2	42.4	41.8	42.0	41.9	42.4	42.2	37.7	35.4	36.9	34.6	34.6	34.0	42.4																							
28-Apr	Z	42.2	46.4	46.8	45.7	45.3	45.3	48.3	47.5	49.7	49.8	49.9	50.3	50.9	51.2	51.1	50.9	50.7	49.6	48.1	45.1	44.8	44.0	43.6	47.7	51.2																							
29-Apr	40.3	Z	30.8	26.6	19.5	23.4	32.7	39.6	43.6	46.9	46.1	46.0	46.0	46.4	47.2	48.2	48.1	47.6	47.1	45.8	45.0	44.7	43.6	42.8	41.2	48.2																							
30-Apr	39.6	38.6	Z	37.7	28.5	20.3	19.0	20.3	35.3	46.3	43.2	48.0	49.8	50.1	50.4	50.7	50.8	50.2	50.1	49.9	48.2	48.3	48.1	49.0	42.3	50.8																							
																								41.2	39.7	38.8	38.0	37.5	37.7	36.2	38.7	41.6	44.4	45.9	47.2	48.1	49.0	50.3	50.4	50.2	49.8	48.8	47.3	45.5	43.5	42.3	41.8	Diurnal Average	
																								52.5	51.8	50.6	49.4	49.6	50.9	51.3	52.1	52.9	53.3	54.8	57.5	58.3	58.5	57.3	56.7	56.9	56.6	55.9	55.6	55.4	53.8	53.3	53.9	Diurnal Maximum	
Z - zerospan C - Calibration																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb																																																	



Wood Buffalo Environmental Association
Hourly Averages

Ozone (O₃) - ppb
Janvier - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ozone (O₃) - ppb
Janvier - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	16	2.33	2.33
21 - 50	492	71.72	74.05
51 - 82	178	25.95	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Ozone (O₃) - ppb
Janvier - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	0	4	0	2	0	0	1	1	2	4	1	0	0	1	0	0	16
21 - 50	23	60	23	42	53	31	25	39	47	41	33	13	9	15	27	11	492
51 - 82	0	1	7	7	7	10	19	20	61	10	5	8	11	0	3	9	178
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	65	30	51	60	41	45	60	110	55	39	21	20	16	30	20	686

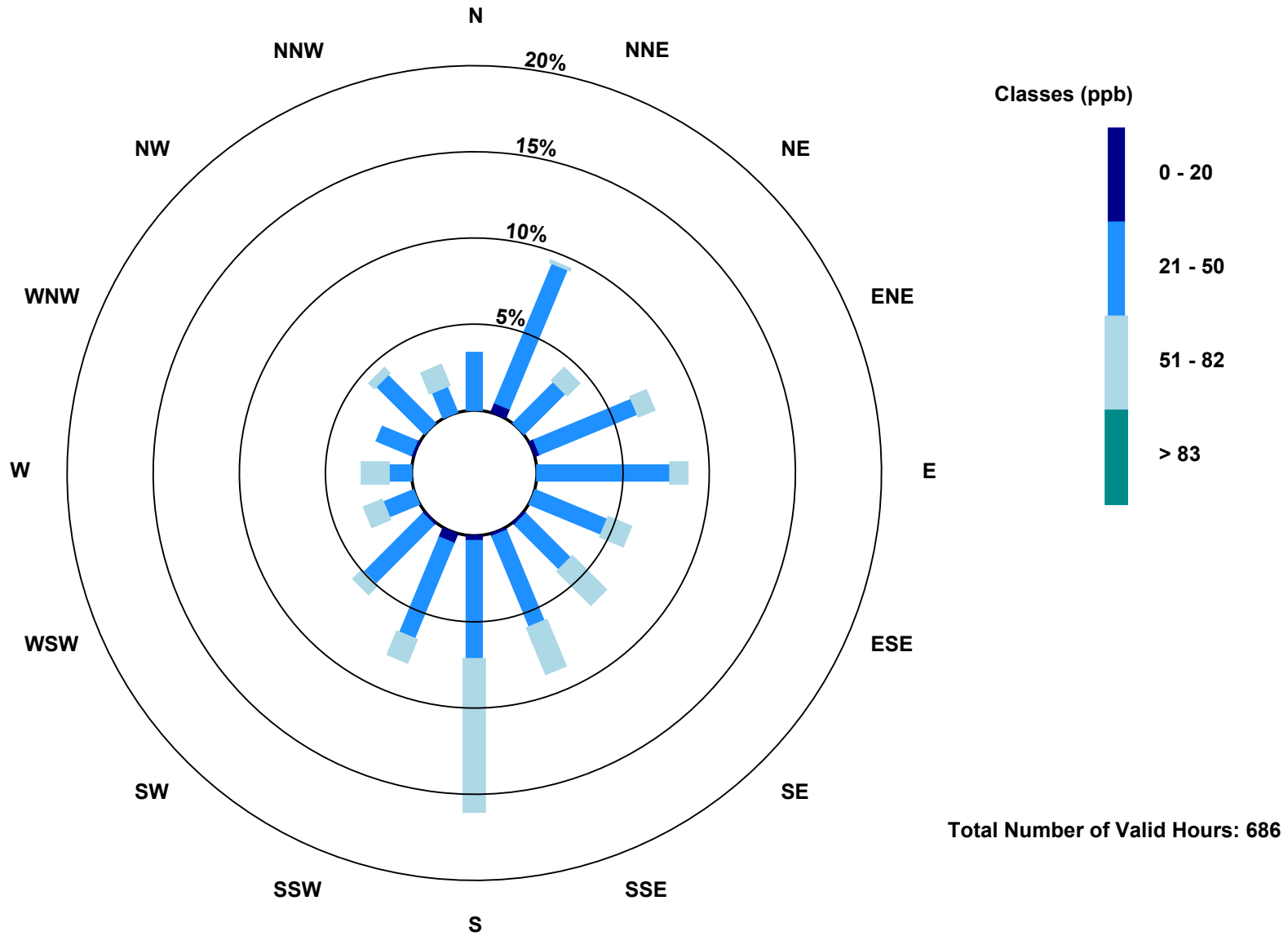
Total Number of Valid Hours: 686

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

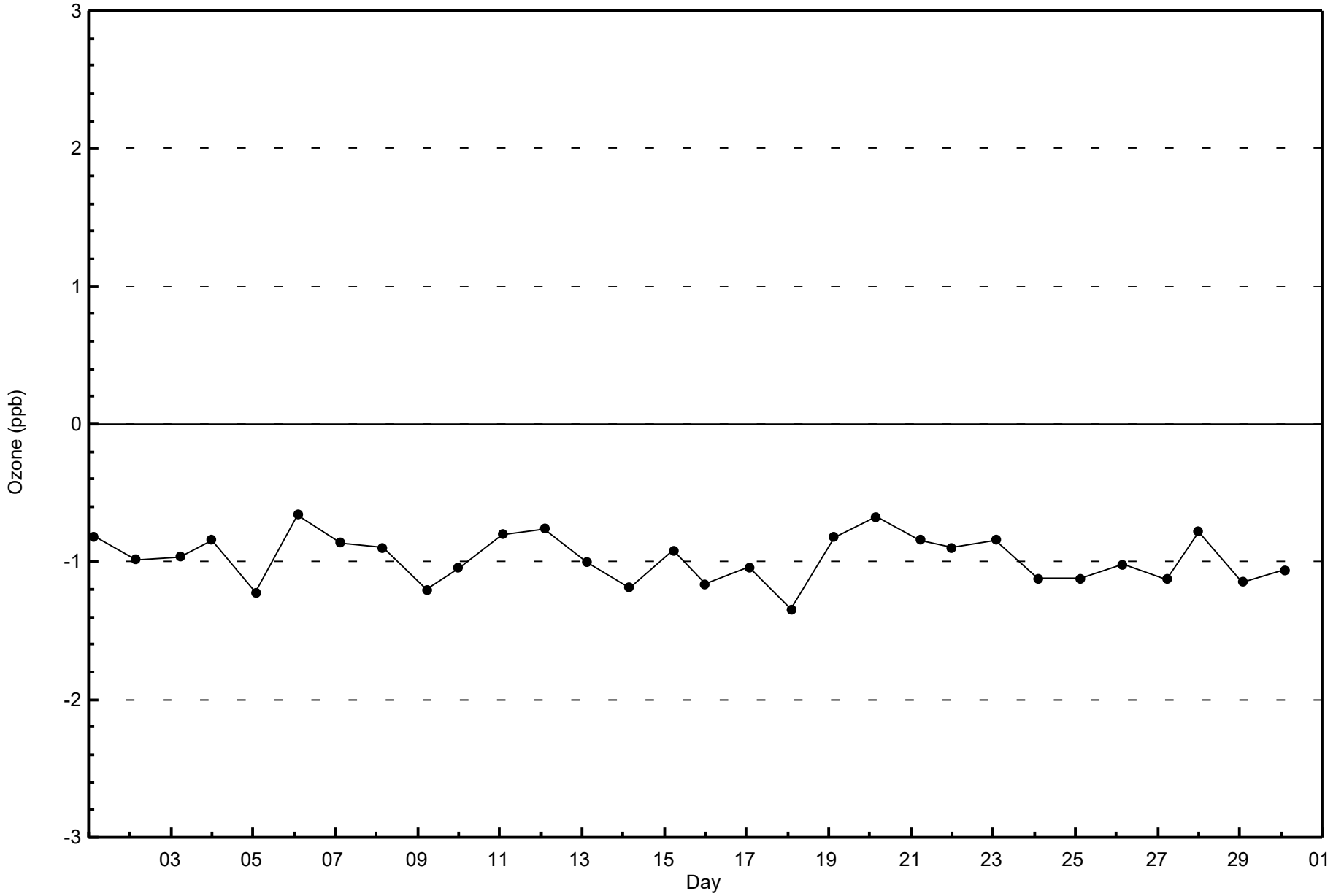
Ozone (O₃) - ppb
Janvier

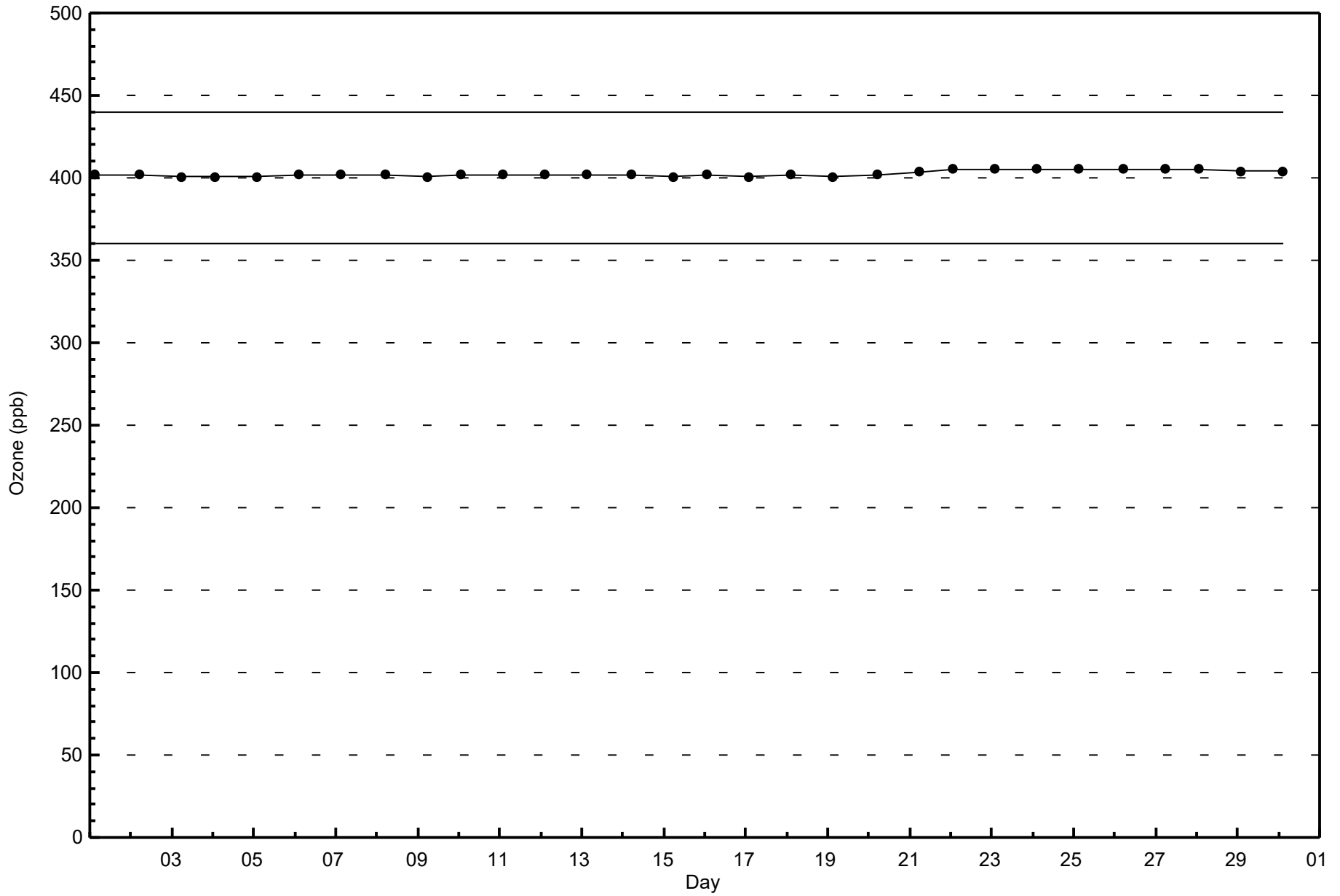




Wood Buffalo Environmental Association
Zero Responses

Ozone (O₃) - ppb
Janvier - April 2023



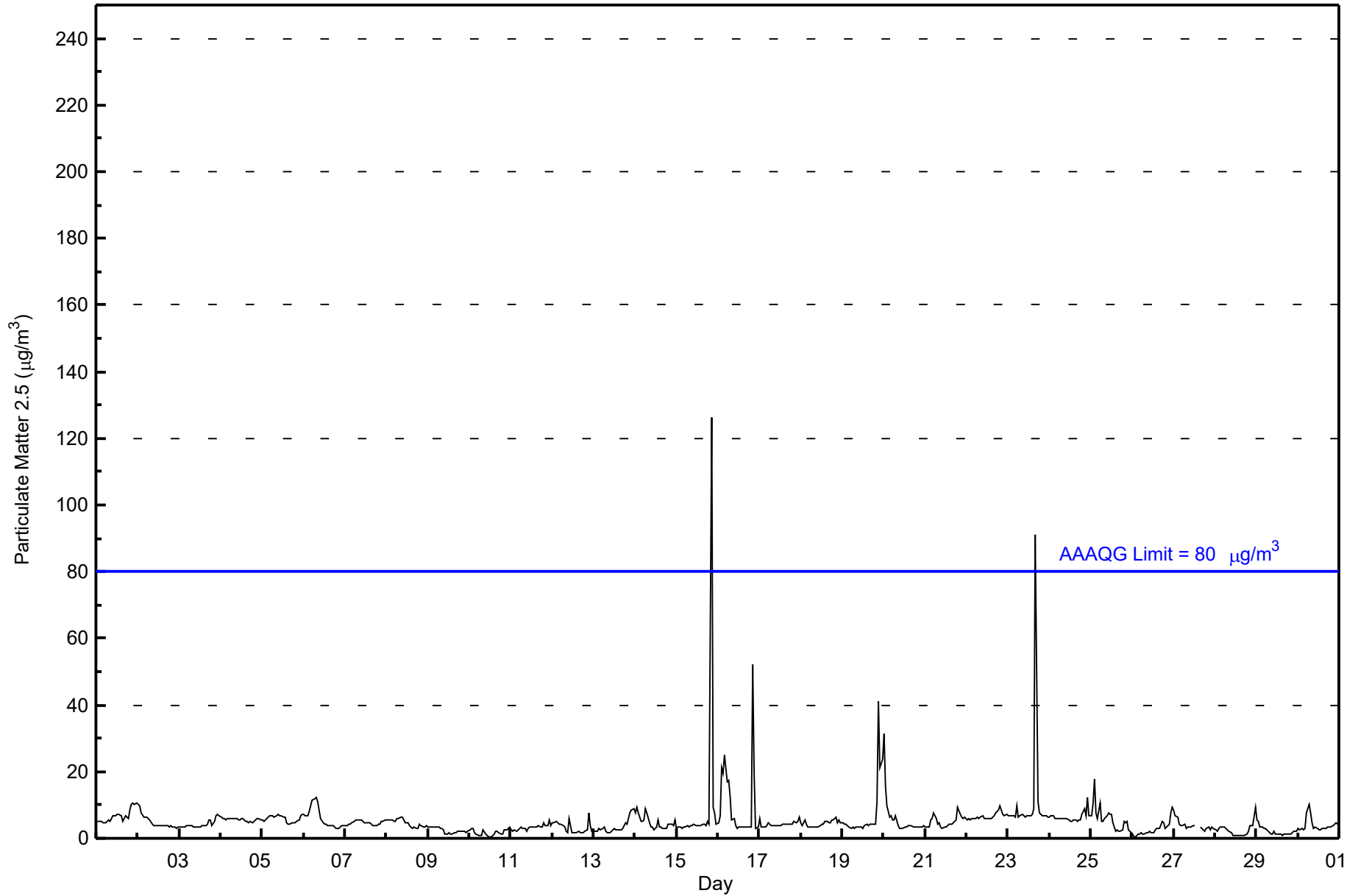




Summary of Hour Averages

Janvier - April 2023

Number of Exceedences (AAAQO):		1-hr: 2	24-hr: 0	Hours in Service:																	720					
Maximum Value: 126.4 µg/m ³ on Apr 15 21:00		Maximum Daily Average: 10.7 µg/m ³ on Apr 23																	Hours of Data:	718						
Minimum Value: 0.4 µg/m ³ on Apr 10 13:00		Minimum Daily Average: 1.7 µg/m ³ on Apr 10																	Hours of Missing Data:	2						
Maximum Diurnal Average: 10.5 µg/m ³ at hour 21		Minimum Diurnal Average: 3.7 µg/m ³ at hour 15																	Hours of Calibration:	2						
Monthly Average: 5.08 µg/m ³		Percentiles: P ₁ = 0.7 P ₁₀ = 1.9 Q ₁ = 3.2 Median = 4.0 Q ₃ = 5.8 P ₉₀ = 7.2 P ₉₉ = 21.2																	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-Apr	5.1	5.0	5.1	5.0	4.7	4.5	5.2	5.4	5.1	7.0	6.8	6.7	7.2	7.2	6.6	5.1	5.8	6.8	6.0	8.6	10.2	10.4	10.0	10.4	6.7	10.4
2-Apr	10.0	9.8	7.8	6.4	6.4	6.2	5.8	5.4	4.4	3.8	3.8	3.7	4.0	3.9	3.8	3.7	3.6	3.6	3.6	3.6	3.4	3.3	3.1	3.3	4.8	10.0
3-Apr	3.5	3.4	3.4	3.5	3.8	3.8	3.9	3.6	3.4	3.3	3.3	3.5	3.6	3.7	3.7	3.9	4.2	5.4	5.4	3.9	4.9	6.7	7.2	6.9	4.3	7.2
4-Apr	6.4	6.0	5.8	5.7	5.8	5.8	6.1	6.0	5.9	6.1	5.7	5.7	5.8	5.9	5.2	5.0	4.8	5.0	4.6	5.2	5.6	5.8	5.9	5.3	5.6	6.4
5-Apr	5.5	5.3	5.6	6.3	6.7	6.9	6.8	6.4	6.6	7.0	6.9	6.9	6.2	6.2	4.7	4.1	4.2	4.5	4.6	4.6	4.9	5.4	6.6	7.1	5.8	7.1
6-Apr	7.4	6.7	6.7	8.2	9.6	11.5	11.9	12.2	11.2	8.6	6.0	4.6	4.4	4.1	3.9	3.6	3.8	3.7	3.5	3.0	3.1	3.5	3.7	3.9	6.2	12.2
7-Apr	3.9	4.0	4.1	4.4	4.6	5.0	5.4	5.4	5.5	5.4	4.9	4.6	4.8	4.6	4.5	4.2	3.9	3.8	3.7	4.1	4.1	4.9	5.1	5.3	4.6	5.5
8-Apr	5.5	5.5	5.7	5.5	5.1	5.1	6.0	6.1	6.3	6.2	5.5	4.8	4.6	3.9	3.5	3.1	3.2	3.1	3.1	4.1	3.9	3.6	3.3	3.7	4.6	6.3
9-Apr	3.5	3.4	3.3	3.3	3.5	3.2	3.2	3.1	3.0	2.6	1.3	1.2	1.6	1.2	1.3	1.5	1.7	2.1	2.2	2.0	2.0	2.1	1.9	2.2	2.4	3.5
10-Apr	2.3	3.0	2.8	1.9	1.4	0.8	0.6	1.0	2.4	1.2	0.9	0.5	0.4	0.5	1.2	1.9	1.9	1.8	1.4	1.4	2.4	2.4	2.7	3.3	1.7	3.3
11-Apr	2.5	2.1	2.7	2.3	2.4	2.9	3.3	2.8	3.0	2.1	2.9	3.2	3.2	3.3	3.5	3.5	3.6	3.3	3.4	4.7	3.9	4.0	5.4	3.6	3.2	5.4
12-Apr	4.6	4.7	5.0	4.5	4.2	4.2	4.0	3.5	2.2	1.8	5.9	1.8	1.8	1.6	1.6	1.9	1.8	1.8	1.8	2.1	2.6	7.4	3.7	2.2	3.2	7.4
13-Apr	2.0	2.2	2.3	2.9	2.7	2.8	3.3	2.2	1.9	1.9	2.0	2.4	2.8	2.5	2.6	2.7	2.6	3.2	4.6	4.4	5.7	7.6	8.4	8.7	3.5	8.7
14-Apr	7.6	9.5	7.4	5.0	4.9	5.5	9.1	7.8	4.5	3.6	3.4	2.6	3.2	5.5	3.4	3.2	3.0	3.1	4.1	4.2	4.0	3.9	5.3	4.9	9.5	
15-Apr	3.2	3.5	3.4	3.2	3.4	3.4	3.7	3.5	3.7	3.9	4.1	4.0	3.7	3.9	4.0	4.1	4.4	3.9	5.0	4.4	126.4	9.2	7.6	4.3	9.3	126.4
16-Apr	4.8	6.7	21.0	19.4	25.1	17.1	17.2	12.6	5.4	6.1	3.8	3.1	3.2	3.2	3.3	3.3	3.4	3.4	3.4	3.5	52.1	19.7	3.1	3.2	10.3	52.1
17-Apr	5.8	3.6	3.5	3.6	3.9	4.5	4.4	3.9	4.0	3.7	4.0	4.0	3.9	4.0	4.1	4.1	4.0	4.1	4.1	4.0	5.1	4.6	5.3	6.2	4.3	6.2
18-Apr	4.5	3.9	5.6	4.1	3.2	3.3	3.4	3.4	3.4	3.5	3.4	3.9	4.1	4.2	5.1	4.9	4.5	4.7	5.6	5.5	6.2	4.9	5.4	4.6	4.4	6.2
19-Apr	4.4	4.2	4.1	3.8	3.4	3.1	3.2	3.0	3.2	3.5	3.4	3.3	3.1	3.8	4.1	3.9	4.1	4.1	4.2	4.1	10.9	41.0	21.3	23.8	7.1	41.0
20-Apr	31.3	15.8	9.8	6.5	6.6	5.5	5.4	6.7	3.6	3.1	3.0	3.1	3.3	3.6	3.8	3.7	3.7	3.4	3.4	3.3	3.5	3.5	3.4	3.9	6.0	31.3
21-Apr	3.4	3.3	3.5	5.4	5.7	7.8	5.9	4.1	4.5	3.4	3.1	3.3	3.4	3.7	4.1	4.4	4.8	5.1	5.6	9.4	7.3	6.5	6.0	6.2	5.0	9.4
22-Apr	5.7	5.7	5.6	5.9	6.1	6.0	6.4	6.1	6.5	6.6	5.9	5.8	5.7	6.1	6.1	6.5	6.7	7.8	8.3	9.9	8.3	7.4	6.9	7.1	6.6	9.9
23-Apr	7.0	6.9	6.7	6.6	6.5	9.6	6.3	6.6	7.3	6.7	6.5	6.6	6.7	6.8	7.1	8.9	90.9	11.1	7.6	7.1	6.7	6.8	6.9	6.3	10.7	90.9
24-Apr	6.5	6.6	6.6	6.1	6.0	5.9	5.8	5.9	5.8	5.8	5.7	5.5	5.2	5.1	5.6	5.3	5.3	5.6	5.6	7.0	8.7	6.9	12.1	7.0	6.3	12.1
25-Apr	6.9	10.6	17.9	7.8	5.9	10.6	5.1	5.0	6.0	6.7	7.7	7.1	7.0	4.5	1.9	2.4	2.2	2.3	2.6	5.0	4.5	5.1	2.7	1.8	5.8	17.9
26-Apr	1.3	0.6	0.6	1.1	1.3	1.6	1.3	1.4	1.7	1.7	1.9	1.5	1.9	2.6	2.9	3.1	3.0	5.1	4.6	3.0	3.2	4.1	7.6	9.4	2.8	9.4
27-Apr	8.3	7.0	6.4	4.4	3.9	3.9	4.2	2.8	3.2	3.2	3.6	3.8	3.9	C	C	3.4	3.1	2.5	2.1	2.8	3.3	2.7	3.3	2.9	3.9	8.3
28-Apr	2.5	1.9	3.0	3.4	3.4	3.3	3.0	2.7	2.2	1.7	1.0	0.7	0.7	0.9	0.7	0.7	0.7	0.7	1.1	2.0	3.9	3.7	3.9	9.5	2.4	9.5
29-Apr	5.3	4.9	3.5	3.5	3.0	3.0	2.4	2.2	1.5	1.2	2.0	1.2	1.4	1.1	1.1	1.0	1.1	1.1	1.2	1.1	1.3	2.3	2.3	2.3	2.1	5.3
30-Apr	3.1	2.5	2.8	2.4	2.8	7.8	10.3	7.8	4.8	3.0	3.2	3.0	2.7	2.6	2.9	3.0	3.1	3.2	3.4	3.6	3.6	4.3	4.6	4.1	3.9	10.3
																								Diurnal Average		
																								Diurnal Maximum		
5.8 5.3 5.7 5.1 5.2 5.5 5.4 5.0 4.4 4.1 4.1 3.7 3.8 3.8 3.7 3.7 6.4 4.0 4.0 4.4 10.5 6.8 5.8 5.8																								Diurnal Average		
31.3 15.8 21.0 19.4 25.1 17.1 17.2 12.6 11.2 8.6 7.7 7.1 7.2 7.2 7.1 8.9 90.9 11.1 8.3 9.9 126.4 41.0 21.3 23.8																								Diurnal Maximum		
C - Calibration																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - µg/m³
Janvier - April 2023

Concentration Ranges (µg/m³)	Number of Hours	%	Cumulative %
0 - 5	506	70.47	70.47
6 - 15	197	27.44	97.91
16 - 25	10	1.39	99.30
26 - 80	3	0.42	99.72
> 81.0	2	0.28	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Janvier - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	18	41	21	36	47	32	31	31	68	39	36	21	20	16	27	22	506
6 - 15	7	25	11	14	13	9	13	34	42	20	6	1	0	1	1	0	197
16 - 25	0	5	0	1	2	1	0	0	1	0	0	0	0	0	0	0	10
26 - 80	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	3
> 81.0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Totals	25	71	32	51	64	42	46	65	112	59	42	22	20	17	28	22	718

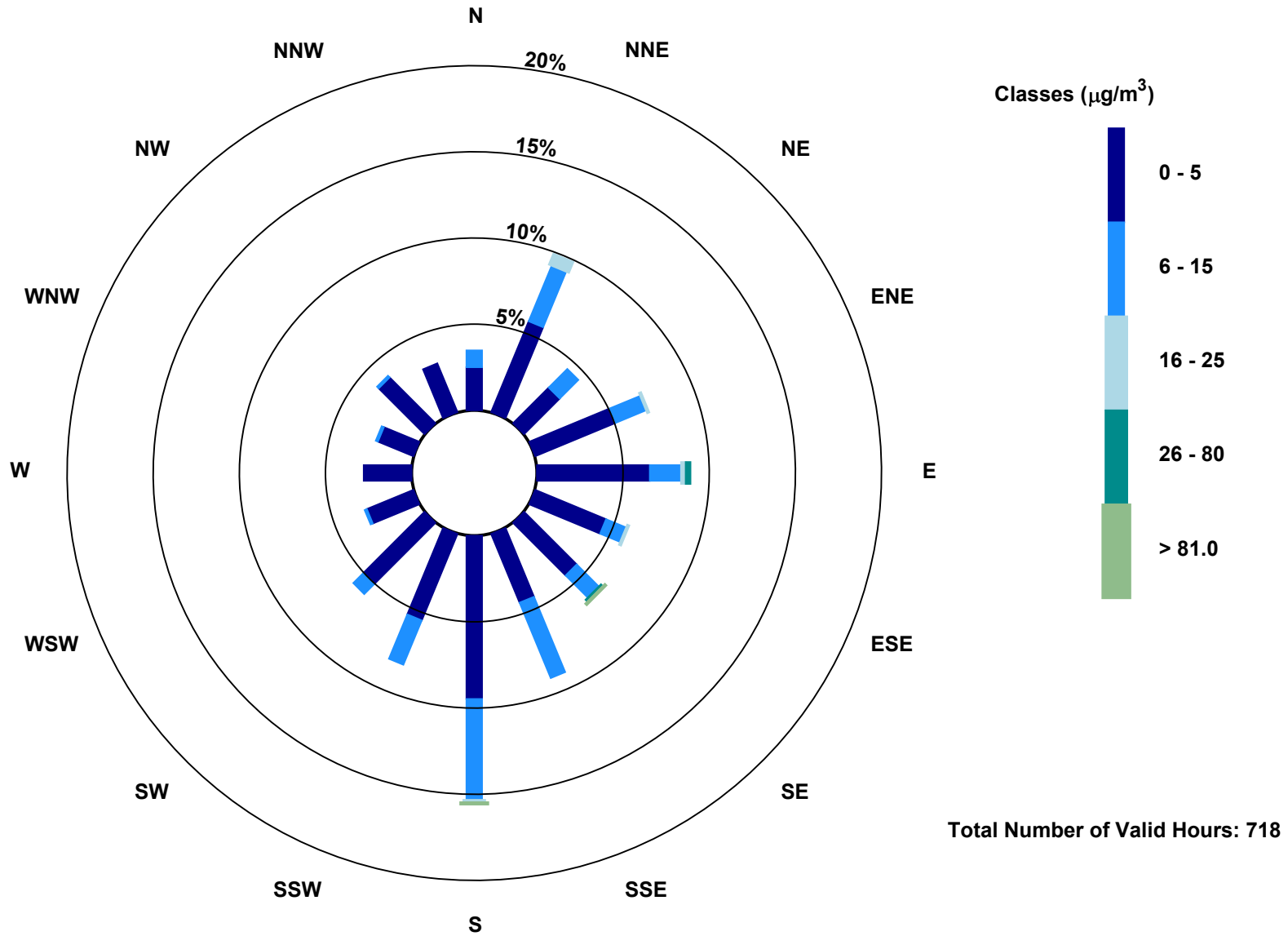
Total Number of Valid Hours: 718

Total Number of Hours: 720



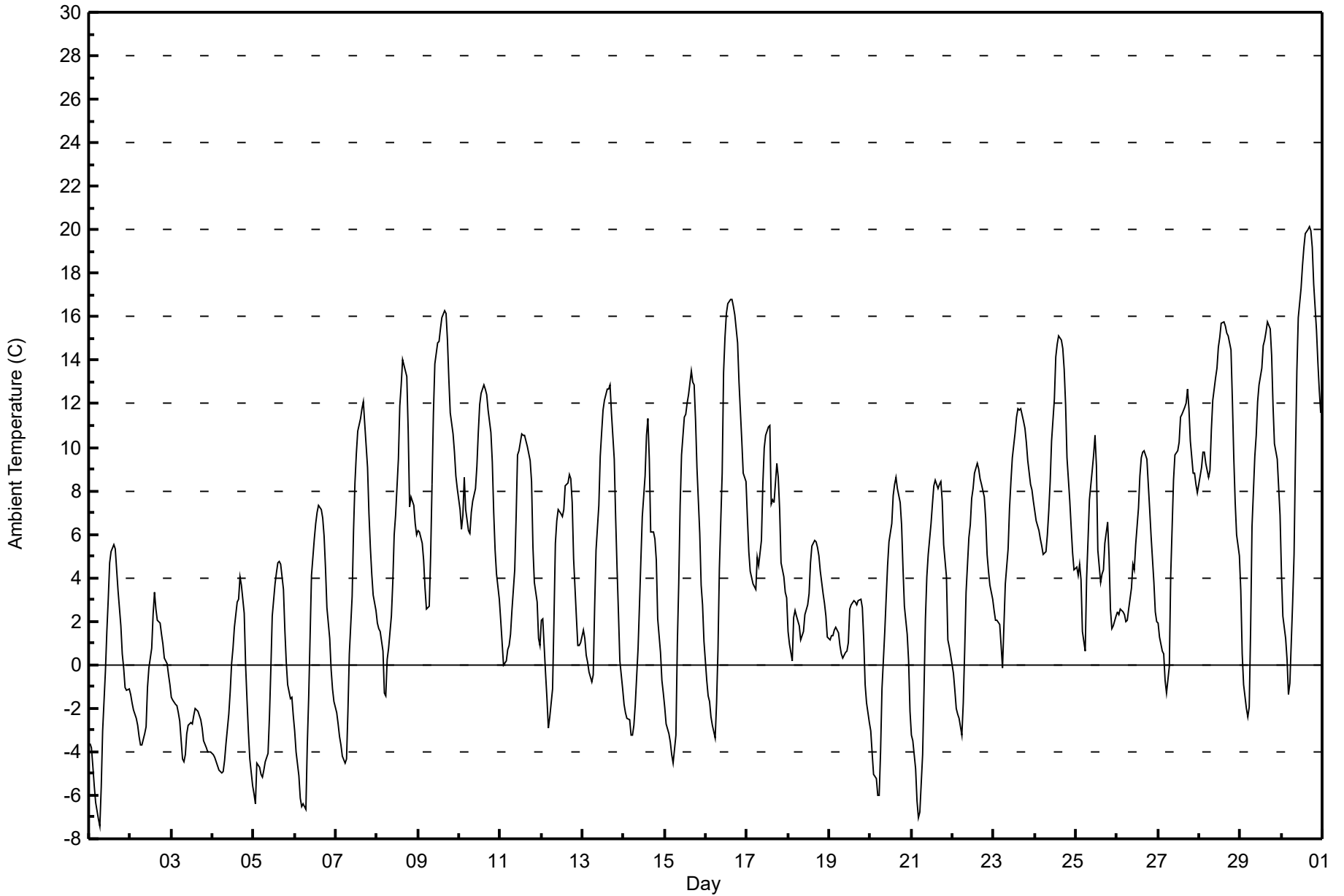
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Janvier





Maximum Value: 20.1 C on Apr 30 17:00 Maximum Daily Average: 11.6 C on Apr 30																						Hours in Service: 720 Hours of Data: 720				
Minimum Value: -7.4 C on Apr 1 07:00 Minimum Daily Average: -2.9 C on Apr 3 Maximum Diurnal Average: 9.7 C at hour 16 Minimum Diurnal Average: -1.2 C at hour 6 Monthly Average: 4.48 C Percentiles: $P_1 = -6.4$ $P_{10} = -3.2$ $Q_1 = 0.1$ Median = 4.2 $Q_3 = 8.7$ $P_{90} = 12.4$ $P_{99} = 17.5$																						Hours of Missing Data: 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-Apr	-3.7	-3.8	-4.7	-5.5	-6.3	-7.1	-7.4	-5.6	-3.1	-0.3	1.5	3.0	4.7	5.2	5.5	5.3	4.4	3.4	1.8	0.5	-0.1	-1.0	-1.2	-1.1	-0.7	5.5
2-Apr	-1.4	-1.7	-2.1	-2.5	-2.8	-3.3	-3.7	-3.7	-3.2	-2.8	-1.0	-0.2	0.8	2.3	3.3	2.6	2.1	1.9	1.4	0.9	0.3	0.1	-0.4	-0.9	-0.6	3.3
3-Apr	-1.5	-1.6	-1.8	-1.9	-2.2	-2.6	-4.3	-4.5	-4.1	-3.2	-2.8	-2.7	-2.3	-2.0	-2.1	-2.3	-2.5	-2.9	-3.5	-3.8	-4.0	-4.0	-4.0	-4.0	-2.9	-1.5
4-Apr	-4.1	-4.3	-4.4	-4.7	-4.8	-5.0	-4.9	-4.4	-3.6	-2.2	-1.2	0.1	0.8	1.7	2.9	3.0	4.0	3.7	2.4	0.0	-1.6	-3.1	-4.3	-5.6	-1.7	4.0
5-Apr	-6.0	-6.4	-4.5	-4.7	-5.0	-5.2	-4.8	-4.5	-4.1	-2.4	-0.2	2.3	3.7	4.2	4.7	4.7	4.6	3.4	1.6	0.1	-0.9	-1.6	-1.5	-2.3	-1.0	4.7
6-Apr	-3.0	-4.0	-5.1	-6.2	-6.5	-6.4	-6.6	-3.7	-1.5	1.3	4.1	5.8	6.5	7.0	7.3	7.2	6.7	5.9	4.4	2.6	1.2	-0.2	-1.1	-1.7	0.6	7.3
7-Apr	-2.2	-2.7	-3.3	-3.7	-4.2	-4.5	-4.3	-2.1	0.5	3.1	6.1	8.4	9.7	10.7	11.3	11.8	12.1	11.0	9.1	6.9	5.4	4.2	3.2	2.5	3.7	12.1
8-Apr	1.9	1.7	1.5	0.6	-1.3	-1.4	0.3	0.8	2.3	3.8	6.0	6.9	9.5	11.9	12.9	14.0	13.8	13.2	10.8	7.2	7.7	7.3	6.5	6.0	6.0	14.0
9-Apr	6.2	6.1	5.6	4.8	3.5	2.6	2.7	5.0	8.3	11.6	13.8	14.8	14.9	15.5	15.9	16.3	16.2	15.0	13.1	11.6	10.6	9.8	8.7	8.1	10.0	16.3
10-Apr	7.1	6.2	6.9	8.6	7.2	6.1	6.1	7.0	7.5	8.1	9.1	10.7	12.0	12.5	12.8	12.7	12.4	11.7	10.7	9.4	7.0	5.2	4.2	3.0	8.5	12.8
11-Apr	2.0	1.0	0.0	0.2	0.7	0.9	1.4	2.5	4.4	6.8	9.7	9.8	10.6	10.6	10.6	10.3	10.0	9.4	8.4	5.4	3.8	2.9	1.2	0.9	5.1	10.6
12-Apr	2.1	2.1	-0.4	-1.5	-2.9	-2.4	-1.1	2.1	5.6	6.6	7.1	6.9	6.8	7.1	8.2	8.3	8.7	8.6	7.5	4.9	2.2	0.9	0.9	1.0	3.7	8.7
13-Apr	1.6	1.2	0.4	0.1	-0.4	-0.8	-0.5	2.7	5.2	7.3	9.6	10.7	11.7	12.1	12.6	12.7	12.9	11.6	9.5	6.8	4.4	2.4	0.2	-1.1	5.5	12.9
14-Apr	-1.8	-2.2	-2.5	-2.6	-3.2	-3.2	-2.8	-1.8	0.8	2.7	4.8	6.8	8.7	10.6	11.3	9.5	6.1	6.1	5.8	4.8	2.1	0.6	-0.7	-1.3	2.4	11.3
15-Apr	-2.0	-2.7	-3.2	-3.6	-4.1	-4.5	-3.2	0.9	3.7	7.4	9.7	11.4	11.5	12.0	12.4	13.5	13.0	12.9	11.3	9.1	6.1	3.7	2.8	1.1	5.0	13.5
16-Apr	-0.7	-1.4	-1.7	-2.4	-2.8	-3.3	-1.8	0.7	4.5	8.8	13.4	15.0	16.1	16.6	16.8	16.8	16.4	16.1	14.8	13.0	11.7	10.3	8.8	8.4	8.1	16.8
17-Apr	6.8	5.2	4.3	3.7	3.6	3.5	5.0	4.6	5.7	8.3	10.0	10.6	10.9	11.0	7.4	7.6	7.5	9.2	8.6	7.2	4.7	4.1	3.3	3.1	6.5	11.0
18-Apr	1.5	1.0	0.2	2.2	2.5	2.3	1.8	1.2	1.4	1.6	2.3	2.8	3.2	4.7	5.5	5.7	5.6	5.4	5.0	4.3	3.2	2.8	2.2	1.3	2.9	5.7
19-Apr	1.1	1.3	1.4	1.6	1.7	1.5	0.9	0.5	0.3	0.6	0.6	1.0	2.5	2.7	3.0	2.9	2.8	2.9	3.0	2.6	1.1	-0.9	-1.8	-2.6	1.3	3.0
20-Apr	-3.0	-4.1	-5.0	-5.2	-6.0	-6.0	-4.0	-1.1	1.5	3.1	4.6	5.7	6.5	7.8	8.3	8.6	8.1	7.5	6.4	4.4	2.7	1.4	0.2	-2.1	1.7	8.6
21-Apr	-3.2	-3.5	-4.8	-6.3	-7.0	-6.8	-4.2	-1.2	2.1	4.0	5.1	6.5	7.4	8.2	8.5	8.1	8.3	8.4	7.5	5.6	4.1	1.1	0.8	0.4	2.1	8.5
22-Apr	-0.4	-1.2	-2.0	-2.2	-2.4	-3.2	-1.8	0.6	3.3	5.8	6.4	7.7	8.1	8.8	9.2	9.0	8.5	8.3	7.7	6.8	5.1	4.3	3.6	3.0	3.9	9.2
23-Apr	2.5	2.0	2.0	1.8	0.9	-0.2	1.8	3.7	5.4	7.2	8.4	9.5	10.7	11.4	11.8	11.7	11.7	11.2	10.9	10.2	9.4	8.3	8.0	7.5	7.0	11.8
24-Apr	7.1	6.6	6.1	5.8	5.5	5.1	5.2	6.0	7.1	8.4	10.3	12.2	14.1	14.8	15.1	14.9	14.5	13.6	12.0	9.6	7.5	6.3	5.1	4.4	9.1	15.1
25-Apr	4.5	4.1	4.6	3.9	1.5	0.6	4.0	5.7	7.6	8.9	9.7	10.5	9.1	5.2	3.8	4.2	4.3	5.6	6.6	5.0	2.6	1.6	1.8	2.2	4.9	10.5
26-Apr	2.5	2.3	2.6	2.4	2.3	2.0	2.1	2.6	3.5	4.6	4.4	5.6	7.2	8.7	9.5	9.8	9.8	9.4	8.3	7.1	5.9	3.8	2.5	2.0	5.0	9.8
27-Apr	1.9	1.3	0.6	0.5	-0.7	-1.3	-0.1	4.1	6.3	8.5	9.6	9.8	10.2	11.4	11.5	11.9	12.0	12.7	11.8	10.3	8.8	8.8	8.3	7.9	6.9	12.7
28-Apr	8.7	9.1	9.8	9.8	9.3	8.6	8.9	10.8	12.2	13.2	13.7	14.6	15.0	15.7	15.8	15.6	15.3	15.1	14.5	12.2	9.5	7.5	6.0	5.0	11.5	15.8
29-Apr	3.4	0.5	-0.9	-2.0	-2.4	-2.0	1.6	6.4	9.6	10.6	12.1	12.8	13.6	14.6	14.9	15.3	15.8	15.4	14.2	11.9	10.1	9.4	8.2	6.9	8.3	15.8
30-Apr	4.2	2.2	1.2	0.3	-1.4	-0.8	2.9	5.1	9.7	13.5	15.9	17.3	18.4	19.2	19.8	20.0	20.1	20.0	19.2	17.5	15.4	13.9	12.6	11.6	11.6	20.1
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Janvier - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	175	24.31	24.31
0 - 10	411	57.08	81.39
10 - 20	133	18.47	99.86
> 20	1	0.14	100.00

Total Number of Valid Hours: 720

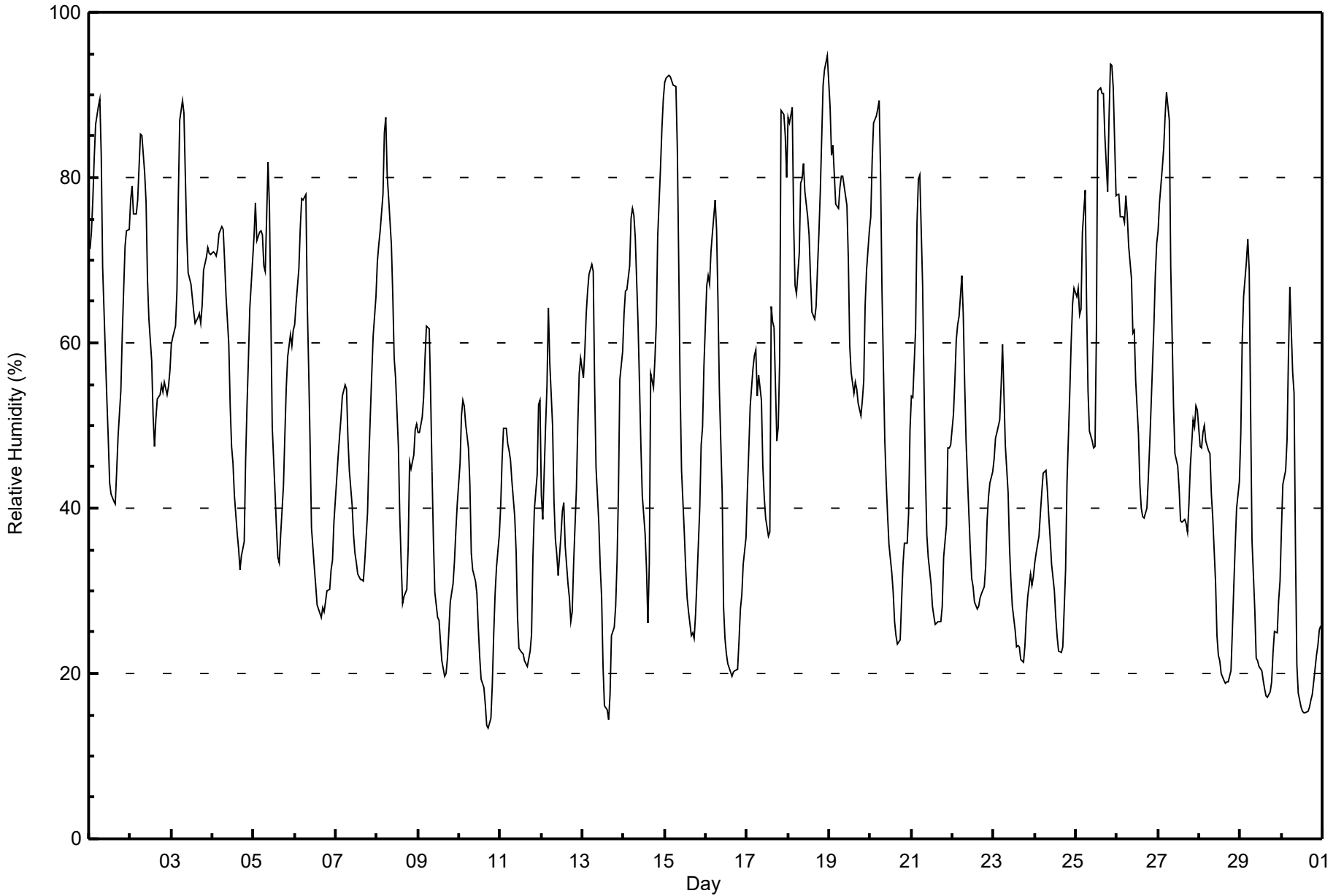
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Janvier - April 2023

Maximum Value: 94.7 % on Apr 19 00:00 Maximum Daily Average: 77.5 % on Apr 18																						Hours in Service: 720 Hours of Data: 720																											
Minimum Value: 13.5 % on Apr 10 18:00 Minimum Daily Average: 30.2 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																											
Maximum Diurnal Average: 70.8 % at hour 6 Minimum Diurnal Average: 33.8 % at hour 16																						Percent Operational Time: 100.0																											
Monthly Average: 50.50 % Percentiles: P ₁ = 15.5 P ₁₀ = 23.5 Q ₁ = 33.2 Median = 49.1 Q ₃ = 67.0 P ₉₀ = 78.5 P ₉₉ = 92.0																																																	
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-Apr	71.4	73.5	77.3	82.4	86.5	88.6	89.5	82.7	69.2	58.6	53.2	48.5	43.1	41.7	40.8	40.4	44.4	48.6	54.2	61.0	66.4	71.7	73.5	73.7	64.2	89.5																							
2-Apr	77.3	79.1	75.5	75.7	77.3	81.4	85.3	85.1	80.5	77.0	67.6	62.9	57.7	51.2	47.4	50.8	53.2	53.7	54.8	54.0	55.2	53.7	54.7	56.6	65.3	85.3																							
3-Apr	59.8	60.7	62.0	66.2	77.7	87.0	89.3	87.9	80.1	73.1	68.4	67.2	65.4	63.7	62.4	63.0	63.5	62.4	64.5	68.8	70.3	71.6	70.9	70.7	69.9	89.3																							
4-Apr	71.1	70.9	70.6	71.3	73.2	74.0	73.8	70.1	65.7	59.8	52.3	47.5	45.4	41.5	37.0	35.1	32.6	34.2	36.0	45.7	52.5	58.0	64.2	70.0	56.3	74.0																							
5-Apr	72.8	76.9	72.3	73.4	73.6	73.1	69.3	68.7	81.8	76.5	63.5	49.9	41.8	37.6	34.1	33.5	36.7	42.8	48.9	54.6	58.3	61.1	59.7	61.6	59.3	81.8																							
6-Apr	62.3	64.8	69.0	73.8	77.5	77.2	77.9	64.7	56.8	48.0	37.7	32.9	30.7	28.4	27.8	26.8	28.0	27.5	28.7	30.0	30.1	32.6	33.7	38.4	46.1	77.9																							
7-Apr	43.6	46.3	48.7	50.8	53.6	55.0	54.5	48.4	44.6	40.4	36.7	34.5	33.4	32.0	31.4	31.3	31.2	33.6	39.5	46.2	51.4	56.3	60.8	65.6	44.6	65.6																							
8-Apr	69.8	71.9	73.5	78.0	85.4	87.3	80.3	77.7	71.9	65.8	58.1	55.7	47.5	39.0	33.3	28.4	29.3	30.2	35.5	45.5	44.8	46.4	49.4	50.1	56.5	87.3																							
9-Apr	49.2	49.1	51.0	53.4	58.2	62.0	61.6	53.9	44.3	36.0	29.8	26.7	26.5	24.0	21.5	19.6	20.1	21.9	25.1	28.7	30.8	33.6	37.3	40.5	37.7	62.0																							
10-Apr	45.4	51.1	53.1	52.4	50.2	47.3	42.9	34.6	32.5	31.2	29.6	25.6	22.1	19.3	18.3	16.2	13.7	13.5	14.6	18.7	24.7	29.7	32.8	36.7	31.5	53.1																							
11-Apr	40.4	45.9	49.7	49.6	47.9	46.9	45.8	43.2	39.1	34.7	26.8	23.1	22.5	22.3	21.6	21.3	20.9	22.8	24.7	34.2	39.8	44.1	52.6	53.0	36.4	53.0																							
12-Apr	41.5	38.6	49.8	54.7	64.3	57.6	50.0	40.9	36.2	34.3	31.9	36.8	39.7	40.7	35.4	30.9	29.1	26.3	27.5	33.3	42.4	50.2	56.2	58.2	41.9	64.3																							
13-Apr	55.8	59.0	63.5	66.2	68.4	69.5	68.6	54.9	44.9	38.1	32.9	29.1	20.9	16.1	15.6	14.4	17.5	24.5	25.6	28.2	33.6	42.0	55.6	58.9	41.8	69.5																							
14-Apr	63.6	66.3	66.4	69.2	75.1	76.2	75.3	72.7	62.2	55.1	47.6	41.5	36.9	32.7	26.1	33.2	56.2	54.7	58.0	62.4	72.8	81.2	86.0	89.4	60.9	89.4																							
15-Apr	91.5	92.0	92.4	92.2	91.6	91.2	91.0	83.5	69.7	54.6	44.6	37.0	32.6	29.1	27.4	24.6	24.9	24.2	27.1	31.2	39.9	47.7	49.9	57.3	56.1	92.4																							
16-Apr	66.9	68.1	67.1	71.0	73.3	77.3	73.6	65.0	54.3	41.9	27.9	24.2	22.3	21.1	20.2	19.7	20.2	20.4	20.6	24.0	27.7	29.5	33.2	36.5	41.9	77.3																							
17-Apr	42.2	47.2	52.4	56.9	58.5	59.2	53.6	56.0	53.0	45.1	41.4	38.8	36.6	37.1	64.4	62.6	61.9	48.2	49.8	57.8	88.2	87.7	85.1	80.0	56.8	88.2																							
18-Apr	87.3	86.6	88.5	74.3	67.0	65.8	70.8	79.3	79.9	81.7	78.4	75.3	73.0	67.9	63.8	62.8	64.4	68.9	73.2	78.2	91.2	93.0	93.8	94.7	77.5	94.7																							
19-Apr	88.4	82.8	83.8	80.4	76.8	76.2	78.8	80.2	80.3	77.7	76.6	70.2	59.6	56.4	53.9	55.3	54.4	52.7	51.2	53.0	55.4	64.6	68.8	73.6	68.8	88.4																							
20-Apr	75.2	82.0	86.6	87.5	88.3	89.4	80.6	66.5	48.4	43.1	39.1	35.6	32.3	29.9	26.3	24.6	23.5	24.1	28.7	33.3	35.7	35.8	39.4	49.6	50.2	89.4																							
21-Apr	53.6	53.4	61.8	74.5	79.8	80.3	67.0	54.8	44.3	36.7	34.1	30.8	28.1	26.9	25.9	26.2	26.2	26.2	28.2	34.1	37.9	47.2	47.2	47.6	44.7	80.3																							
22-Apr	51.4	55.5	60.3	62.2	63.2	68.1	63.4	55.1	48.1	39.3	35.0	31.6	30.5	28.6	27.9	28.1	29.1	29.6	30.5	33.1	38.4	41.4	43.1	44.4	43.2	68.1																							
23-Apr	46.0	48.5	49.2	50.6	54.7	59.8	54.0	47.6	41.9	35.3	31.2	28.1	25.2	23.2	23.4	23.3	21.7	21.4	23.4	27.0	29.3	32.1	30.7	31.7	35.8	59.8																							
24-Apr	33.4	34.6	36.5	39.3	41.9	44.2	44.6	42.3	39.0	36.3	33.2	30.0	26.9	24.5	22.7	22.6	23.2	27.7	32.5	43.1	54.1	60.2	64.8	66.7	38.5	66.7																							
25-Apr	65.5	66.7	63.4	64.1	73.4	78.5	64.5	54.3	49.3	48.1	47.3	47.5	61.5	90.5	90.8	90.2	90.3	85.1	78.2	87.3	93.8	93.5	90.8	77.8	73.0	93.8																							
26-Apr	77.9	77.9	75.3	75.2	74.5	77.9	75.5	71.8	67.7	61.2	61.4	55.5	49.0	43.0	40.1	38.9	38.9	39.9	43.5	47.6	52.4	62.0	68.2	72.0	60.3	77.9																							
27-Apr	73.5	77.0	81.2	83.6	87.4	90.3	87.0	69.3	61.1	52.4	46.5	45.0	42.3	38.6	38.3	38.6	38.1	37.2	40.5	45.1	50.7	49.9	52.3	51.8	57.4	90.3																							
28-Apr	47.5	47.3	49.1	50.0	48.1	47.0	46.6	41.8	38.9	31.1	24.6	22.2	21.5	20.0	19.2	18.8	19.0	18.9	20.3	25.3	30.5	35.4	40.0	43.2	33.6	50.0																							
29-Apr	49.0	60.2	65.6	69.9	72.5	68.7	51.9	36.2	27.6	21.8	21.5	20.8	20.4	19.1	18.2	17.2	17.1	17.7	19.0	22.5	25.1	24.8	28.8	31.1	34.4	72.5																							
30-Apr	37.5	42.9	44.5	48.4	58.5	66.7	56.4	53.9	35.2	21.0	17.7	15.9	15.4	15.3	15.2	15.4	16.0	16.7	17.4	19.1	22.2	23.5	25.2	25.7	30.2	66.7																							
																								60.4	62.6	64.7	66.6	69.3	70.8	67.4	61.4	54.9	48.5	43.2	39.7	37.0	35.4	34.4	33.8	34.8	35.2	37.4	42.4	48.2	52.0	55.0	56.9	Diurnal Average	
																								91.5	92.0	92.4	92.2	91.6	91.2	91.0	87.9	81.8	81.7	78.4	75.3	73.0	90.5	90.8	90.2	90.3	85.1	78.2	87.3	93.8	93.5	93.8	94.7	Diurnal Maximum	





Maximum Speed: 31 km/h on Apr 10 09:00	Maximum Daily Speed Average: 19.5 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 15 14:00	Minimum Daily Speed Average: 1.0 km/h on Apr 13	Hours of Data: 720
Maximum Diurnal Speed Average: 4.9 km/h at hour 23	Minimum Diurnal Speed Average: 0.7 km/h at hour 8	Hours of Missing Data: 0
Monthly Average Velocity: 2.6 km/h 165.8 deg	Percentiles: P ₁ = 1 P ₁₀ = 4 Q ₁ = 6 Median = 8 Q ₃ = 12 P ₉₀ = 16 P ₉₉ = 27	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-Apr	NNE6	NNE6	N5	NNE4	N3	NNE4	NNE5	NNE4	NNE3	NE6	NE8	NE11	NE12	NE14	NE13	ENE14	ENE13	ENE13	ENE12	E12	ESE10	ESE11	ESE8	ESE6	ENE7.4	ENE14
2-Apr	E7	E9	E9	E8	E6	ENE5	ENE6	ENE8	ENE9	ENE9	ENE7	ENE10	E10	E6	ENE4	NNE5	NNE7	N6	NNE5	ENE7	E7	SE9	SE8	SE7	E6.3	ENE10
3-Apr	SSE5	SE7	SE8	SSE7	SE4	N3	N9	N6	NW6	NNW5	N6	NNW4	NW7	NW5	NNE5	N5	NNE4	NW6	NW5	NNE5	NNE6	NE5	ENE5	E4	NNE2.5	N9
4-Apr	E3	ENE4	E5	NE3	NNE2	NNE4	NNE4	NNE5	N5	NE4	NNE4	ENE5	NE8	NE6	NE6	E7	ENE6	ENE7	E7	E9	E7	E5	ENE2	SSE4	ENE4.5	E9
5-Apr	SSE6	SSE6	SSE9	SSE7	SSE6	SSE5	SSE6	S8	S7	S9	S8	S10	SSE10	SSE9	SSE10	S11	SW10	SSW9	S8	SSE8	SSE8	S10	S11	SSW12	S8.1	SSW12
6-Apr	S8	SSE6	SSE6	S5	S8	SSE6	SSE5	SSE3	SSE7	S16	S16	S18	S20	S20	S19	S21	SSW20	S19	S18	S18	S18	S12	S13	S13	S13.0	SSW21
7-Apr	S13	S11	S11	S10	S10	S10	S9	S10	S20	S17	S19	S20	S21	S20	S19	S17	S17	S18	S16	S14	S15	S13	S12	S11	S14.6	S21
8-Apr	S10	S10	S9	S6	NE1	SE8	SSW9	SSW8	SSW10	SW10	SW6	SSW6	SW4	SE5	E10	E9	E8	E7	ESE8	S4	SW8	SW9	SSW10	SSW10	S5.0	SSW10
9-Apr	SSW11	SSW9	SSW10	SW11	SW10	SW10	SW10	SW10	SW10	SW12	W14	W16	WSW17	WSW16	SW17	SW17	SSW18	SSW15	S12	S13	SSE11	S14	S13	S12	SW11.4	SSW18
10-Apr	S10	SSW8	SW16	W24	W27	W25	W22	W25	W31	W30	W28	W25	WSW23	WSW28	WSW28	WSW27	WSW29	W25	W19	WSW10	SW9	SW9	SSW9	SW10	WSW19.5	W31
11-Apr	SW9	SSW9	SSW10	SW9	SW10	SSW11	SSW9	SSW8	SW8	W5	SW6	WSW8	NE3	ESE6	NNE4	NNW6	NNW4	NW6	NW4	W4	SW5	WSW7	S6	WSW4	SW4.6	SSW11
12-Apr	NNW6	NNW5	WSW3	WSW6	SW6	SSW10	SW8	SW4	NNW5	NW9	NW13	NW14	WNW20	WNW18	WNW16	NW17	NW15	NW14	NW10	NNW4	NNW1	SW4	SW4	SSW7	WNW7.1	WNW20
13-Apr	SSW9	SSW9	SSW8	SSW9	SSW10	SSW8	SSW6	S5	SSW7	SW2	ENE5	ENE6	NNW4	NW12	NW10	NNW12	NNW9	NNE12	NE10	NE6	ENE4	E4	ESE6	N2	W1.0	NW12
14-Apr	N4	NNE5	N4	NNE6	NNE6	N5	NNE6	NNE6	NNE4	NNE4	E7	ESE4	NE5	NNE7	E7	SW10	SW10	SSW13	SSE7	NNE1	SSE5	S1	S5	S3	NE1.1	WSW13
15-Apr	SSE1	S3	SW1	SSE3	SSW3	SW5	S4	SSE3	S4	S2	SE4	ESE5	S3	NE1	ENE7	SE8	SE7	SE6	S5	SE7	SE8	S2	ESE3	ENE2	SSE3.2	SE8
16-Apr	E2	NNE4	NNE5	NNE5	NNE5	NNE4	NNE5	N6	NNE8	NNE7	ESE12	ESE15	SE16	SSE17	SE16	SE18	SE18	SE15	SE13	SE11	SE14	ESE12	ESE13	ESE14	ESE7.8	SE18
17-Apr	E10	E10	E9	E10	E9	NE7	ENE9	ENE6	ENE8	ESE14	ESE16	ESE18	ESE17	SE18	ESE21	E14	ENE10	ESE13	E13	ENE9	NE9	NNE7	NE7	NE8	E9.8	ESE21
18-Apr	NNE8	NNE8	NNE7	ENE10	ENE12	ENE10	E10	ENE9	NE8	NNE8	NNE5	NW4	NNW3	NE7	NNE5	NE6	NNE8	NE10	NNE9	NNE8	NNE8	NNE6	NNE6	NNE4	NE6.7	ENE12
19-Apr	ESE8	SE8	ESE5	ESE6	ESE8	ESE9	ESE14	ESE12	ESE13	ESE13	ESE14	ESE14	ESE12	E12	E13	E12	ESE10	ESE9	ESE6	E7	E6	E6	E6	ENE6	ESE9.2	ESE14
20-Apr	E5	E5	NNE4	NNE4	NNE4	NNE4	NNE4	NNE5	ENE7	NE7	NE11	ENE11	E15	E12	E14	E13	E15	E12	E11	E10	E7	E7	SE7	E3	ENE7.5	E15
21-Apr	E2	SE3	E3	E2	NNE3	NNE4	NNE4	N3	ENE5	ENE9	ENE11	E7	ENE9	ENE10	SSE4	E7	SE5	SSE3	ESE2	S6	S9	SW7	SW9	SSW9	ESE2.7	ENE11
22-Apr	SSW10	SSW9	SSW9	SSW8	SSW8	SSW7	SSW7	SSW6	SW6	SSW7	S13	S12	S14	S14	S15	SSW14	S15	SSW13	SSW13	S10	SSE8	SSE9	SSE11	SSE10	S9.8	S15
23-Apr	SSE10	SSE10	SSE9	S8	S5	SE3	SSE8	S9	S14	S17	SSE18	SSE20	SSE18	S20	S18	S19	S17	SSE16	SSE14	SSE8	SSE8	SE6	SE7	SE6	SSE11.8	S20
24-Apr	SE4	SE8	SE8	SE7	SE7	SE7	ESE5	SE7	SSE10	S10	ESE11	SE12	SSE13	SE15	SSE15	S15	S12	S19	S17	SSW16	S11	S8	S5	SSE7	SSE9.4	S19
25-Apr	SSE7	S4	S7	SSE5	S3	S5	S6	S11	SSW9	SSW9	S10	WSW9	WNW11	NW9	WNW8	S5	SSW7	SW8	SW4	SSE6	SSW8	SSW6	WSW8	W10	SSW5.4	WNW11
26-Apr	W13	W11	WNW9	WNW11	WNW12	WNW13	WNW14	NW14	NW16	WNW17	WNW14	WNW11	WNW14	NW13	NNW8	N9	NE9	NE10	NE9	NE9	ENE7	NE3	NNE5	NNE5	NW7.6	WNW17
27-Apr	NNE6	NNE5	N4	NNE4	NNE2	SW2	W2	NNE6	ENE5	NE8	N6	NNE4	NW8	NW10	NW8	WNW8	W8	WSW7	WSW7	S6	S6	SSE8	S10	SSW12	WNW1.5	SSW12
28-Apr	SSW14	SW13	WSW14	WSW13	W11	WNW9	NW12	NNW15	NW17	NW20	NW22	NW19	NW18	NNW19	NNW17	NNW18	NNW17	NNW18	N13	N9	NNW5	N4	N4	N4	NW10.8	NW22
29-Apr	N4	NNW3	NNE3	SW2	SSW3	SSW7	SSW5	WSW1	ENE5	E7	ENE7	ENE8	E10	ESE11	E11	ESE10	E9	E10	E9	E10	E9	ESE13	SE14	SE9	ESE5.6	SE14
30-Apr	SSE4	N1	SSE2	S3	SE3	ENE1	SE3	ENE3	SW2	S11	SSE14	SSE16	SSE16	S17	SE16	SSE16	SSE15	SSE14	SSE13	SSE11	SE11	SSE11	SSE10	S11	SSE8.8	S17

S3.0 SSE2.6	S2.7 SSW2.3	SSW1.9	SSW1.7	SSW1.3	SW0.7	SW1.5	SSW1.8	SSE2.0	SSE2.9	S2.5	S2.5	SE3.1	SSE2.9	SSE3.2	SSE2.9	SE3.4	SE4.2	SE4.7	SSE4.5	SSE4.9	SSE4.2	Diurnal Average						
SSW14	SW13	SW16	W24	W27	W25	W22	W25	W31	W30	W28	W25	WSW23	WSW28	WSW28	WSW27	WSW29	W25	W19	S18	S18	S14	SE14	ESE14	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

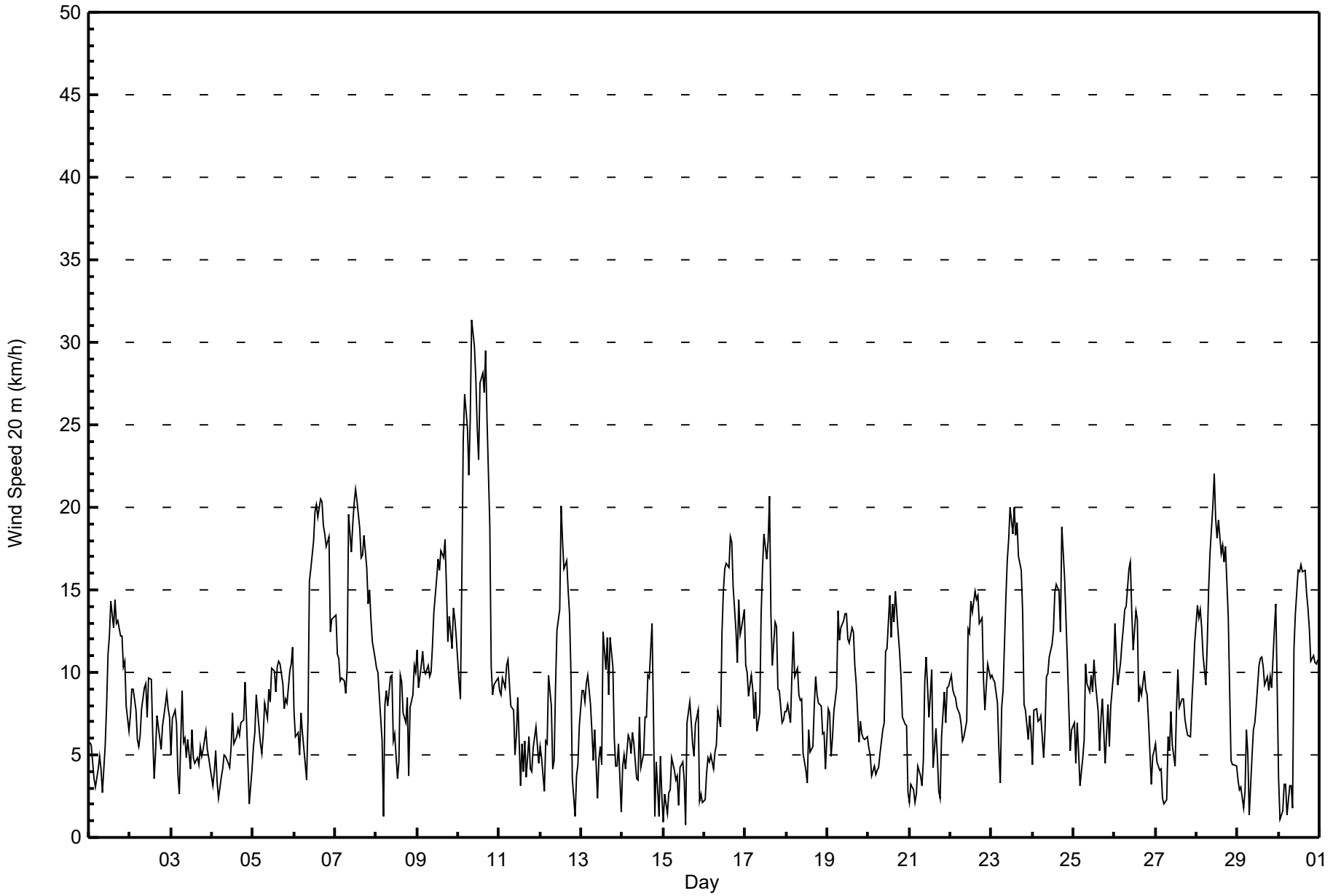
Janvier - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 10 km/h on Apr 14 16:00 Minimum Value: 1 km/h on Apr 29 04:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 9																	Hours in Service: 720 Hours of Data: 720 Hours of Missing Data: 0 Hours of Calibration: 0 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-Apr	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	4	4	3	3	3	3	3	2	4
2-Apr	2	3	2	3	2	2	2	2	2	2	2	2	3	3	2	2	1	2	1	3	2	3	2	2	3
3-Apr	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	3	2	2	2	1	1	1	3
4-Apr	1	1	2	2	1	1	1	1	1	1	2	2	3	2	3	2	2	1	2	2	2	1	1	2	3
5-Apr	2	2	2	2	1	1	2	3	2	3	2	4	4	4	5	4	4	3	2	2	2	2	2	2	5
6-Apr	2	1	2	1	2	2	1	1	3	4	5	6	5	5	6	6	5	5	5	5	5	4	3	4	6
7-Apr	4	3	3	3	2	2	2	3	5	5	6	6	6	6	6	5	5	6	5	4	5	4	3	3	6
8-Apr	2	2	2	1	1	2	2	2	3	3	2	2	2	3	2	2	3	2	2	1	2	1	1	2	3
9-Apr	2	2	2	2	2	2	2	3	3	3	5	5	6	5	6	6	5	4	4	4	4	4	4	4	6
10-Apr	3	3	5	7	9	7	7	9	10	9	9	7	8	9	9	9	8	9	7	4	2	2	2	2	10
11-Apr	2	2	2	2	2	2	1	2	2	2	3	3	2	3	4	3	1	2	1	1	1	1	1	2	4
12-Apr	2	2	2	1	1	3	2	1	3	4	5	6	6	6	6	5	6	5	4	1	1	1	1	2	6
13-Apr	1	1	1	2	2	1	1	1	2	2	2	2	5	4	4	5	3	3	4	1	1	3	2	1	5
14-Apr	2	1	1	1	1	2	2	2	1	2	2	3	2	2	2	10	6	4	3	1	2	1	1	1	10
15-Apr	1	1	1	2	1	1	1	1	1	2	3	2	3	2	2	3	3	3	1	1	2	1	2	1	3
16-Apr	1	2	1	1	1	1	1	2	2	2	6	5	6	5	5	6	6	6	5	3	4	3	4	4	6
17-Apr	4	2	2	3	3	2	3	2	2	4	5	6	6	8	7	5	3	5	4	4	2	2	2	2	8
18-Apr	1	1	1	3	4	3	4	3	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	4
19-Apr	2	3	2	2	2	2	4	4	4	3	4	4	4	4	5	4	3	3	2	2	2	1	1	1	5
20-Apr	1	1	1	1	1	1	1	2	2	2	4	4	4	4	4	4	4	4	3	3	1	1	2	1	4
21-Apr	1	1	1	1	1	1	1	1	2	3	3	4	4	4	3	3	3	2	2	2	2	1	1	1	4
22-Apr	1	1	1	1	1	1	1	1	2	5	5	5	5	5	5	5	4	4	4	3	2	2	3	3	5
23-Apr	3	3	3	2	2	2	3	4	4	5	7	6	6	6	6	6	5	6	4	3	2	2	2	2	7
24-Apr	1	2	2	3	3	2	2	2	3	3	4	4	5	5	5	4	5	5	4	3	3	1	2	5	5
25-Apr	2	2	2	2	1	2	2	3	3	3	3	3	7	6	5	2	2	3	2	2	1	3	2	2	7
26-Apr	3	3	2	3	3	4	5	6	5	4	4	4	4	4	3	4	4	3	2	3	2	1	1	1	6
27-Apr	1	1	1	1	1	1	1	2	2	3	3	3	4	3	3	3	3	2	2	2	1	2	2	2	4
28-Apr	3	3	3	3	3	3	5	6	7	7	8	7	7	8	7	7	6	7	5	3	2	1	1	1	8
29-Apr	1	1	1	1	1	1	2	1	2	2	3	4	4	4	4	3	3	3	3	2	2	4	4	4	4
30-Apr	1	1	1	2	1	1	1	1	3	3	5	4	5	6	5	5	5	4	4	3	3	3	3	3	6
Diurnal Maximum																									



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed 20 m (WS20m) - km/h
Janvier - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Janvier - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	180	25.00	25.00
6 - 11	350	48.61	73.61
12 - 19	161	22.36	95.97
20 - 28	26	3.61	99.58
29 - 38	3	0.42	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed 20 m (WS20m) - km/h
Janvier - April 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	16	45	8	14	12	6	9	14	20	3	11	4	2	1	4	11	180
6 - 11	8	25	22	30	41	17	25	36	41	45	26	8	4	7	11	4	350
12 - 19	1	1	2	7	11	18	12	14	44	9	5	5	4	8	13	7	161
20 - 28	0	0	0	0	0	1	0	1	7	2	0	4	8	1	2	0	26
29 - 38	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	25	71	32	51	64	42	46	65	112	59	42	22	20	17	30	22	720

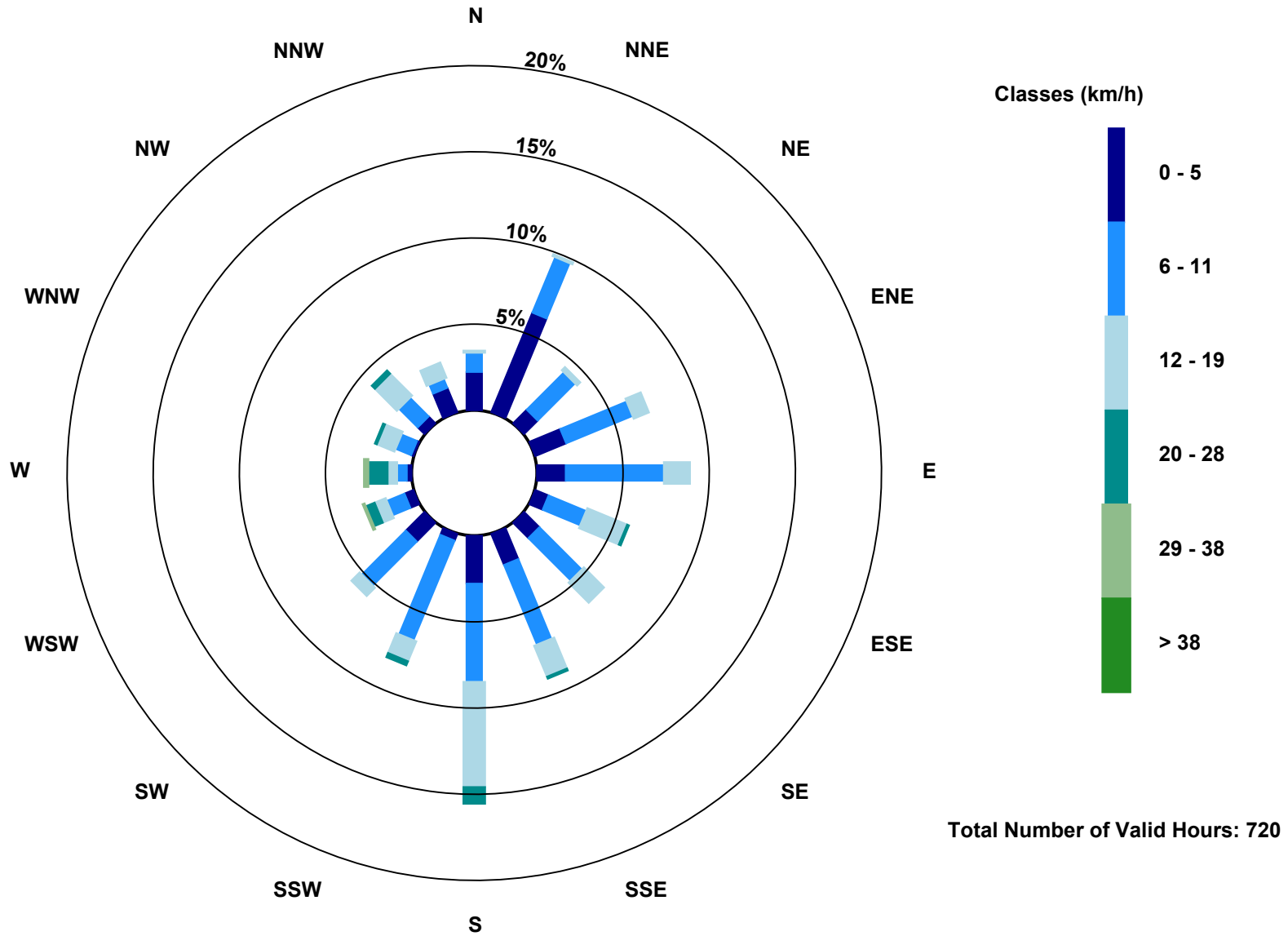
Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed 20 m (WS20m) - km/h
Janvier





Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction 20 m (WD20m) - deg
Janvier - April 2023

Direction of Maximum Speed: 274 deg on Apr 10 09:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 258.6 deg on Apr 10		Hours of Data: 720
Direction of Minimum Speed: 44 deg on Apr 15 14:00	Direction of Minimum Daily Speed Average: 1.0 deg on Apr 13	Hours of Missing Data: 0
Monthly Average Direction: 165.8 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-Apr	17	14	5	15	10	16	19	13	26	47	55	52	50	52	56	59	72	68	74	79	103	116	112	110	60.8
2-Apr	84	98	99	99	88	75	62	70	71	76	78	72	80	81	67	16	25	9	32	68	92	127	142	136	80.2
3-Apr	160	137	138	147	140	354	11	353	313	342	4	339	311	315	20	5	21	316	325	21	13	45	75	82	15.7
4-Apr	79	61	79	36	30	23	22	17	8	49	33	60	56	48	46	89	73	64	85	93	95	83	77	155	63.2
5-Apr	166	166	164	158	155	156	165	179	174	175	177	171	161	164	161	170	218	210	176	153	163	183	187	193	174.2
6-Apr	185	160	156	171	185	165	151	159	168	188	185	189	187	177	177	191	194	184	183	181	188	181	187	183	182.3
7-Apr	178	182	181	181	179	177	175	179	188	182	185	182	182	188	179	170	175	170	171	169	172	177	188	181	179.0
8-Apr	180	183	188	173	42	140	200	209	208	231	218	211	228	127	82	85	86	90	114	181	221	218	210	213	179.8
9-Apr	211	212	212	214	218	220	214	223	225	227	268	262	241	243	232	229	211	203	180	171	166	177	174	175	214.4
10-Apr	182	200	236	271	269	277	270	277	274	265	269	261	258	255	256	258	253	264	266	257	222	219	213	215	258.6
11-Apr	214	208	212	218	215	212	211	211	231	261	226	252	50	117	26	336	342	320	307	260	236	238	191	242	230.0
12-Apr	338	343	255	257	223	206	216	217	344	308	315	314	294	296	298	310	310	312	310	331	343	227	220	209	292.8
13-Apr	208	212	211	208	213	208	198	189	211	218	73	64	334	308	315	340	336	16	36	43	70	92	116	2	275.7
14-Apr	8	16	7	18	20	11	14	14	17	16	80	103	49	25	93	214	216	240	162	26	151	189	171	181	51.3
15-Apr	160	184	225	159	202	216	177	161	173	183	142	122	186	44	77	131	145	137	191	129	129	187	109	66	148.5
16-Apr	80	28	25	23	21	18	15	11	22	24	102	115	142	165	132	143	135	138	145	131	124	116	111	118	116.8
17-Apr	95	90	82	86	79	52	70	63	66	111	112	118	119	138	122	94	65	106	80	77	36	22	44	35	91.6
18-Apr	19	23	25	63	74	68	80	77	49	21	13	323	348	35	18	36	25	36	33	17	22	15	17	27	37.0
19-Apr	121	132	115	118	122	108	119	110	111	107	106	111	103	86	85	87	103	102	112	89	98	84	82	76	103.9
20-Apr	87	84	19	25	20	13	15	16	74	51	55	71	80	80	87	84	87	83	80	89	80	94	126	90	74.3
21-Apr	98	126	92	100	14	21	17	357	74	77	70	85	65	65	150	82	128	168	105	182	171	216	217	212	106.1
22-Apr	207	205	205	206	210	208	212	210	234	192	186	178	186	176	186	202	189	195	192	182	160	154	159	158	189.6
23-Apr	161	163	167	169	169	143	165	176	177	171	165	162	164	176	176	172	172	168	168	163	165	132	131	125	166.3
24-Apr	128	127	135	139	136	137	115	144	161	173	122	131	147	146	156	178	172	187	189	193	189	180	181	168	160.6
25-Apr	166	176	181	167	170	190	175	191	209	203	189	243	294	306	286	177	201	215	216	161	200	207	237	274	212.9
26-Apr	280	280	287	283	289	287	299	310	307	303	298	300	298	305	347	1	48	34	45	55	78	46	16	14	316.8
27-Apr	18	15	359	21	28	230	281	30	62	55	359	22	319	311	322	293	263	251	249	187	172	164	186	203	295.9
28-Apr	212	229	244	248	269	286	315	331	320	318	319	322	326	329	330	330	330	328	1	5	348	10	5	352	315.0
29-Apr	358	343	17	231	198	210	209	247	63	83	75	76	93	111	97	105	82	89	88	94	96	123	135	140	103.4
30-Apr	157	11	152	175	127	71	137	70	224	172	161	152	156	177	145	161	158	159	163	153	142	150	162	169	157.3

170.7 166.8 181.1 191.3 201.1 208.0 198.0 226.0 221.4 195.6 154.2 158.4 169.6 178.1 146.2 160.0 166.2 168.1 146.0 134.8 143.5 153.1 159.8 168.6

Diurnal Average

All monthly, daily, and diurnal averages have been calculated using vector methods



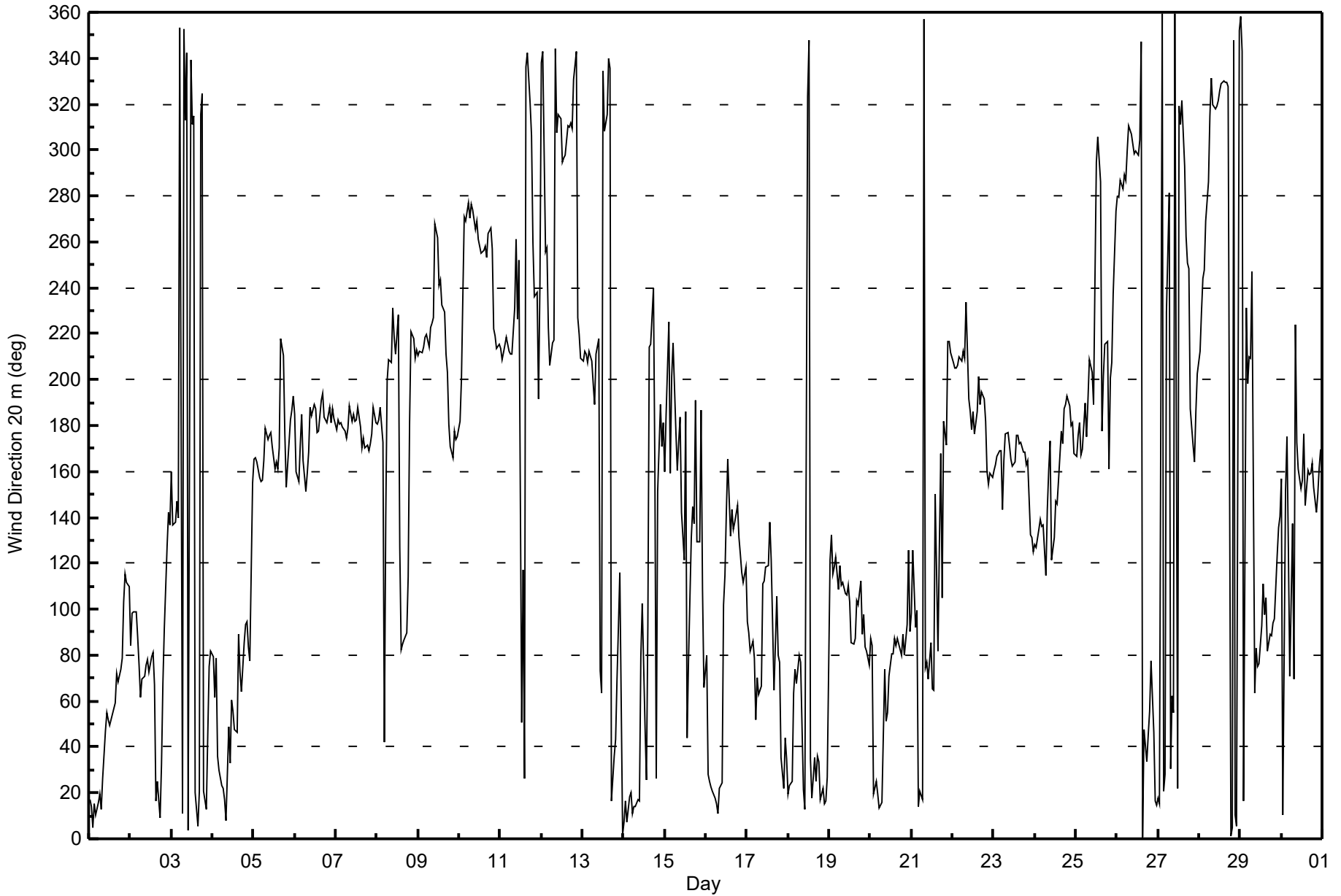
Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg

Janvier - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0										Hours in Service: 720															
Maximum Value: 97 deg on Apr 15 14:00										Hours of Data: 720															
Minimum Value: 6 deg on Apr 20 05:00										Hours of Missing Data: 0															
Percentiles: P ₁ = 9 P ₁₀ = 14 Q ₁ = 18 Median = 22 Q ₃ = 31 P ₉₀ = 47 P ₉₉ = 80										Hours of Calibration: 0															
										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-Apr	12	15	17	19	18	18	17	19	54	27	29	16	19	16	17	16	19	19	18	18	21	20	19	23	54
2-Apr	21	21	19	26	25	26	18	19	19	18	28	22	24	54	48	41	15	20	15	22	20	18	21	26	54
3-Apr	24	15	14	20	29	65	20	35	29	49	34	51	35	36	50	37	32	27	45	18	20	17	23	22	65
4-Apr	30	21	23	46	43	24	28	29	28	33	56	47	43	44	35	38	34	21	16	14	14	23	33	19	56
5-Apr	16	17	18	19	17	16	19	21	22	20	29	33	38	42	45	31	35	18	14	16	19	15	15	12	45
6-Apr	18	17	15	18	17	19	17	32	31	18	21	22	19	22	24	22	21	20	19	17	16	20	17	17	32
7-Apr	19	18	19	19	18	18	18	20	19	20	20	22	20	24	25	24	23	22	21	18	18	16	18	18	25
8-Apr	15	17	17	29	72	15	21	17	20	24	38	30	62	75	19	20	22	19	11	51	15	15	9	13	75
9-Apr	14	16	12	14	13	12	12	19	22	21	27	28	26	27	26	28	23	19	21	20	22	19	20	22	28
10-Apr	17	24	24	20	21	19	21	20	21	20	21	23	25	23	23	23	20	23	22	22	16	15	11	13	25
11-Apr	15	14	15	13	13	13	13	15	20	34	45	29	69	50	82	43	45	33	19	15	17	14	14	58	82
12-Apr	29	33	57	19	14	8	25	31	62	41	33	32	21	21	25	24	31	34	29	28	73	23	31	9	73
13-Apr	10	12	11	12	13	14	9	14	30	77	54	54	83	37	44	34	42	20	12	10	14	37	17	80	83
14-Apr	21	13	16	13	14	28	19	16	52	62	30	66	50	37	38	60	48	27	59	91	25	66	22	47	91
15-Apr	70	43	47	66	29	18	19	32	36	93	65	69	82	97	26	48	48	48	27	18	16	68	54	47	97
16-Apr	24	19	8	10	9	9	12	23	21	27	36	26	28	30	27	26	23	25	25	19	17	18	20	19	36
17-Apr	20	16	16	16	21	24	28	36	28	22	22	22	22	28	24	29	22	25	23	30	18	16	24	22	36
18-Apr	9	9	14	19	18	22	22	23	21	23	36	46	60	37	57	42	21	12	14	16	18	18	17	30	60
19-Apr	21	22	30	22	20	20	18	19	17	20	20	22	26	33	24	23	21	22	27	21	15	9	8	12	33
20-Apr	13	10	20	12	6	13	18	26	32	36	30	31	29	28	26	25	20	19	19	16	11	21	16	42	42
21-Apr	36	22	40	18	14	8	20	41	46	31	26	59	65	34	72	48	57	76	65	23	19	15	11	11	76
22-Apr	10	9	9	9	12	10	15	26	28	66	36	42	33	36	31	35	26	24	20	19	17	19	19	19	66
23-Apr	22	23	21	21	20	44	21	23	20	24	26	27	27	28	28	25	25	22	22	24	23	22	20	22	44
24-Apr	30	19	19	28	32	22	36	30	29	25	30	31	40	32	33	29	31	21	18	15	16	21	19	20	40
25-Apr	23	45	25	22	36	29	20	19	31	32	33	38	34	54	48	31	21	22	71	17	18	30	24	14	71
26-Apr	16	16	17	18	14	18	18	25	21	21	23	24	28	30	41	46	35	15	14	14	15	28	11	12	46
27-Apr	13	15	20	13	46	38	61	23	34	35	70	67	48	32	40	34	30	31	32	13	14	18	16	13	70
28-Apr	17	20	20	17	22	24	27	33	34	28	28	33	35	37	40	35	32	33	29	21	23	12	13	13	40
29-Apr	15	26	34	57	13	9	12	66	55	38	50	50	37	40	35	31	37	28	21	17	14	19	19	23	66
30-Apr	36	68	71	68	36	62	20	25	84	28	31	30	29	26	29	31	29	27	24	23	19	21	19	19	84
										70 68 71 68 72 65 61 66 84 93 70 69 83 97 82 60 57 76 71 91 73 68 54 80															
										Diurnal Maximum															





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS23
FORT HILLS
APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
 APRIL 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	647	32	73	94.31	17.3	0	4.1	0
TRS(ppb) Average	648	33	72	94.58	0.9	0	0.4	0
THC(ppm) Average	645	32	75	94.03	5.6	-	2.6	-
NMHC(ppm) Average	645	32	75	94.03	1.166	-	0.291	-
CH4(ppm) Average	645	32	75	94.03	4.6	-	2.4	-
NO2 (ppb) Average	646	33	74	94.31	47.2	0	23.5	-
NO (ppb) Average	646	33	74	94.31	154.6	-	24.4	-
NOX (ppb) Average	646	33	74	94.31	185.7	-	43.5	-
PM2.5 (ug/m3) Average	680	1	40	94.58	144.7	5	36.2	2
Temperature 2 m (C) Average	681	0	39	94.58	20.4	-	13	-
Relative Humidity (%) Average	681	0	39	94.58	97.9	-	86.4	-
Wind Speed 10 m (km/h) Average	681	0	39	94.58	38	-	23	-
Wind Direction 10 m (deg) Average	681	0	39	94.58	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
APRIL 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	647	0.93	1.9	-	0	0	0	0.2	0.8	3.1	17.3
TRS (ppb) Average	648	0.24	0.1	-	0.1	0.1	0.2	0.2	0.3	0.4	0.9
THC (ppm) Average	645	2.32	0.5	-	1.7	2	2	2.2	2.4	2.8	5.6
NMHC(ppm) Average	645	0.14	0.172	-	0	0	0	0.1	0.2	0.4	1.166
CH4(ppm) Average	645	2.18	0.3	-	1.7	2	2	2.1	2.2	2.5	4.6
NO2 (ppb) Average	646	13.38	11.7	-	0.1	1.7	3.6	9.5	21.2	32.4	47.2
NO (ppb) Average	646	7.82	17.9	-	0	0	0.2	1.2	6.6	21.4	154.6
NOX (ppb) Average	646	21.2	26.5	-	0.1	1.9	4.1	11.4	27.1	51.5	185.7
PM2.5 (ug/m3) Average	680	10.79	12.8	-	0.1	3.2	4.5	7.3	12	21.5	144.7
Temperature 2 m (C) Average	681	4.5	5.9	-	-10.2	-3.1	0.4	4.4	8.7	12.3	20.4
Relative Humidity (%) Average	681	56.71	21.6	-	18.3	26.4	38.4	57.7	74.9	85.2	97.9
Wind Speed 10 m (km/h) Average	681	11.6	7	-	0	4	6	10	15	22	38
Wind Direction 10 m (deg) Average	681	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
APRIL 2023

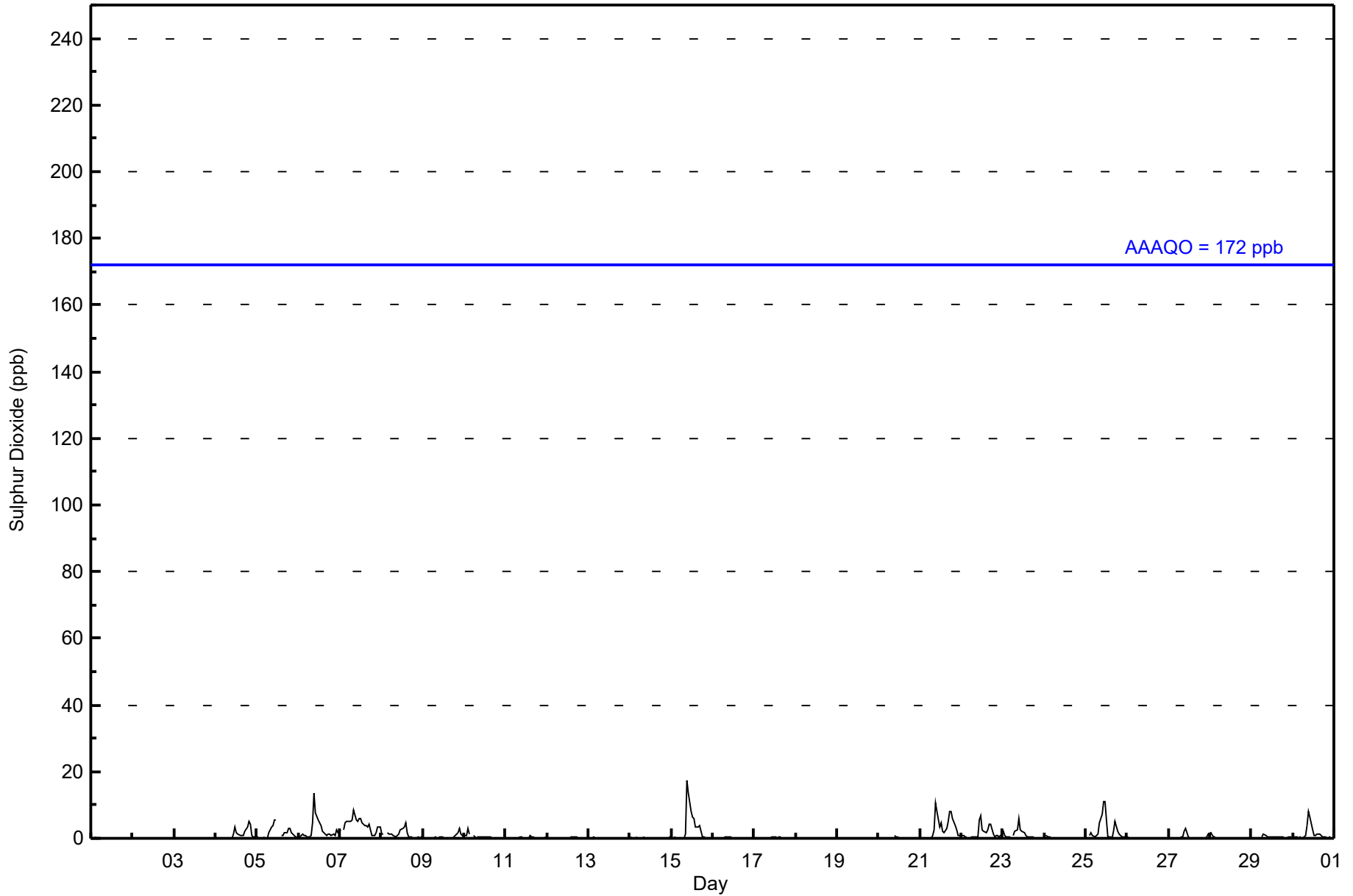
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	18 Apr 2023 19:00	20 Apr 2023 09:00	39	Station power failure
NO2, SO2, THC	05 Apr 2023 13:00	05 Apr 2023 14:00	2	Maintenance - sample manifold cleaned
NO2	26 Apr 2023 09:00	26 Apr 2023 10:00	2	Maintenance - verify daily QA response



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Fort Hills - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort Hills - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	641	99.07	99.07
11 - 20	6	0.93	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: 647

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Fort Hills - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	85	41	29	23	20	58	84	78	73	24	22	31	13	11	12	37	641
11 - 20	0	0	0	0	0	0	2	3	1	0	0	0	0	0	0	0	6
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
Totals	85	41	29	23	20	58	86	81	74	24	22	31	13	11	12	37	647

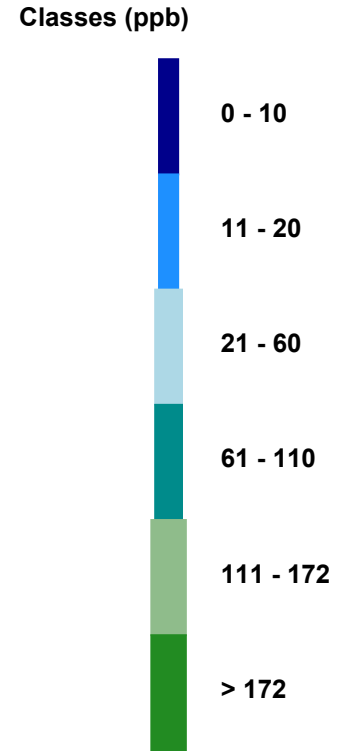
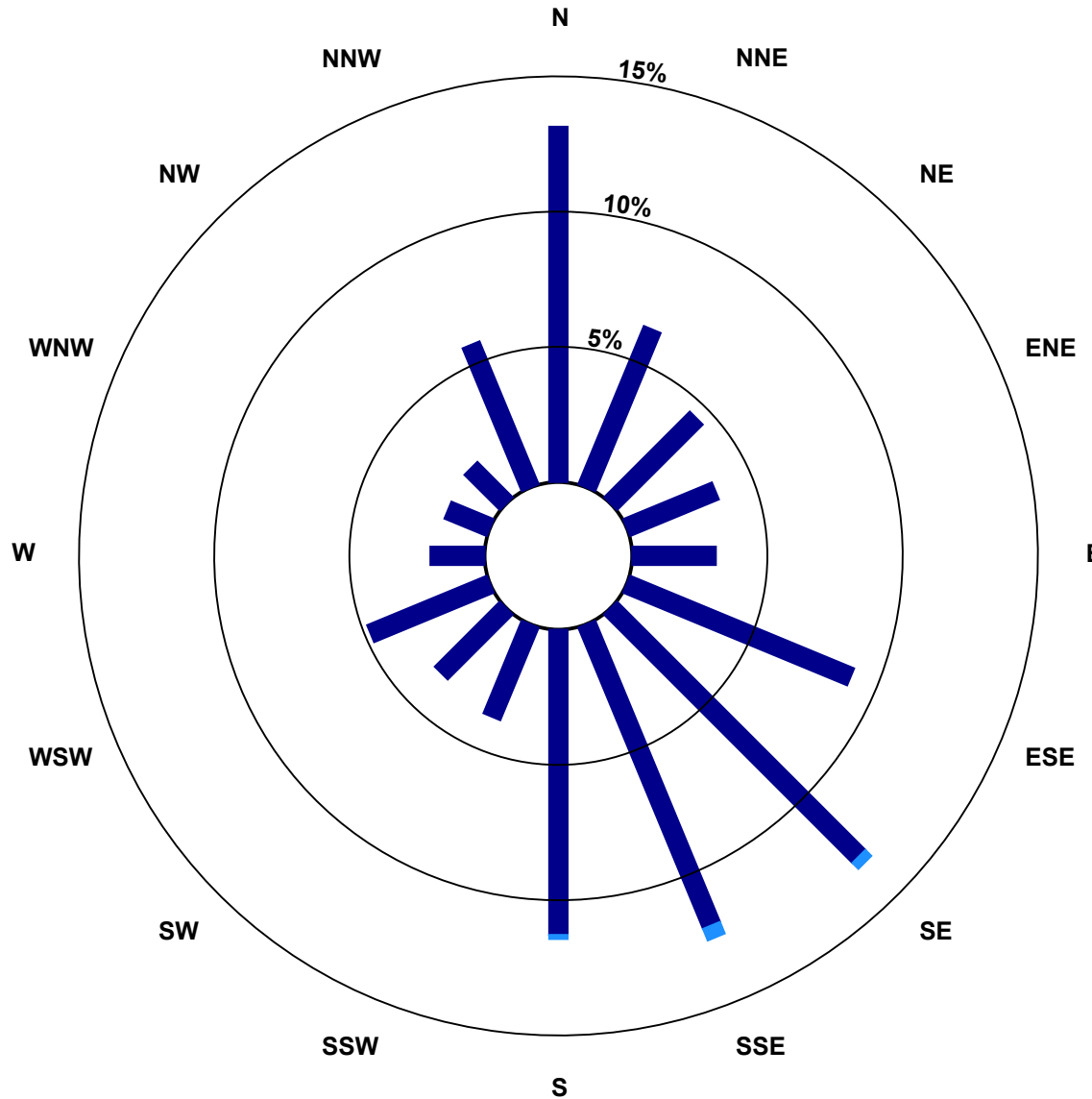
Total Number of Valid Hours: 647

Total Number of Hours: 720

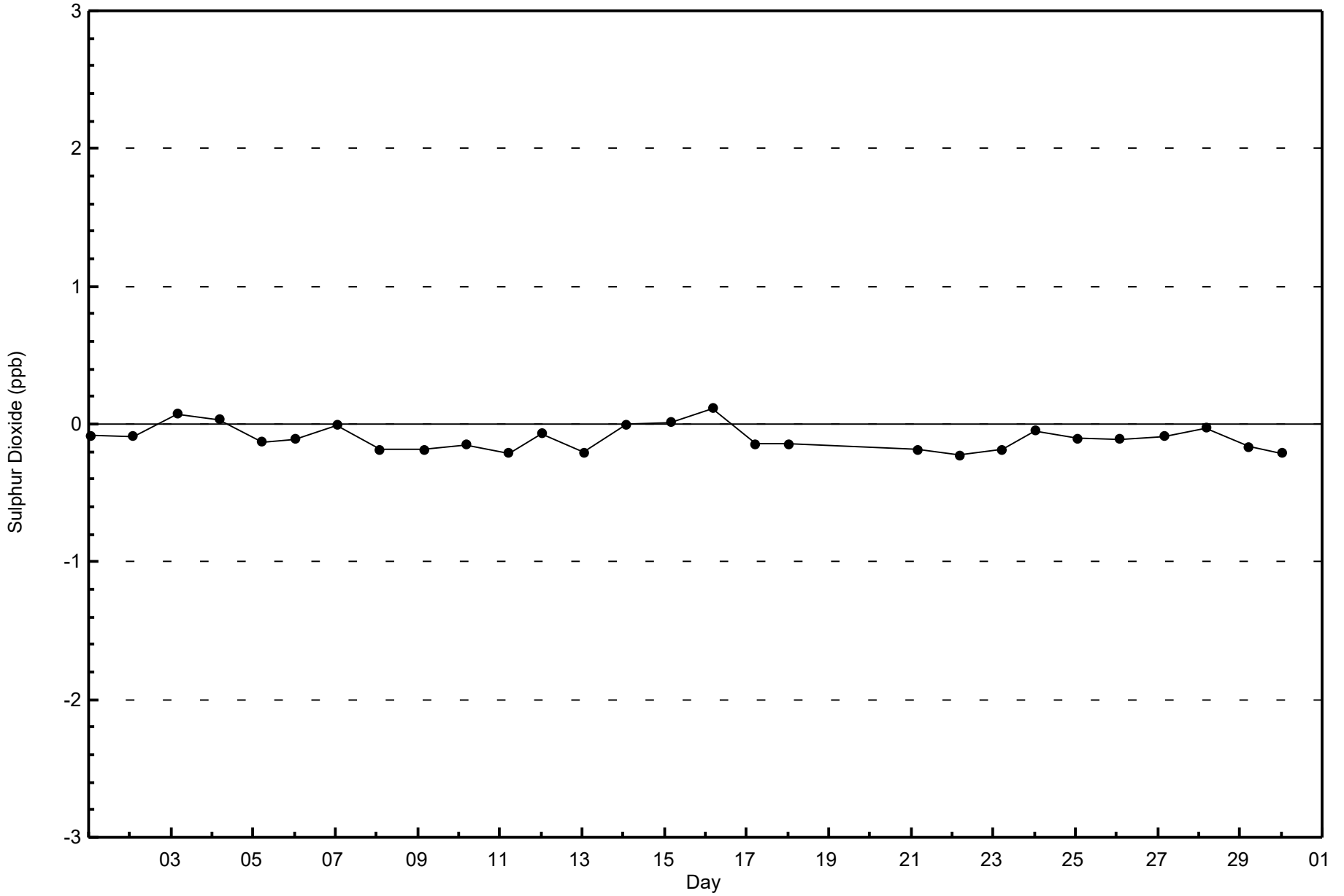


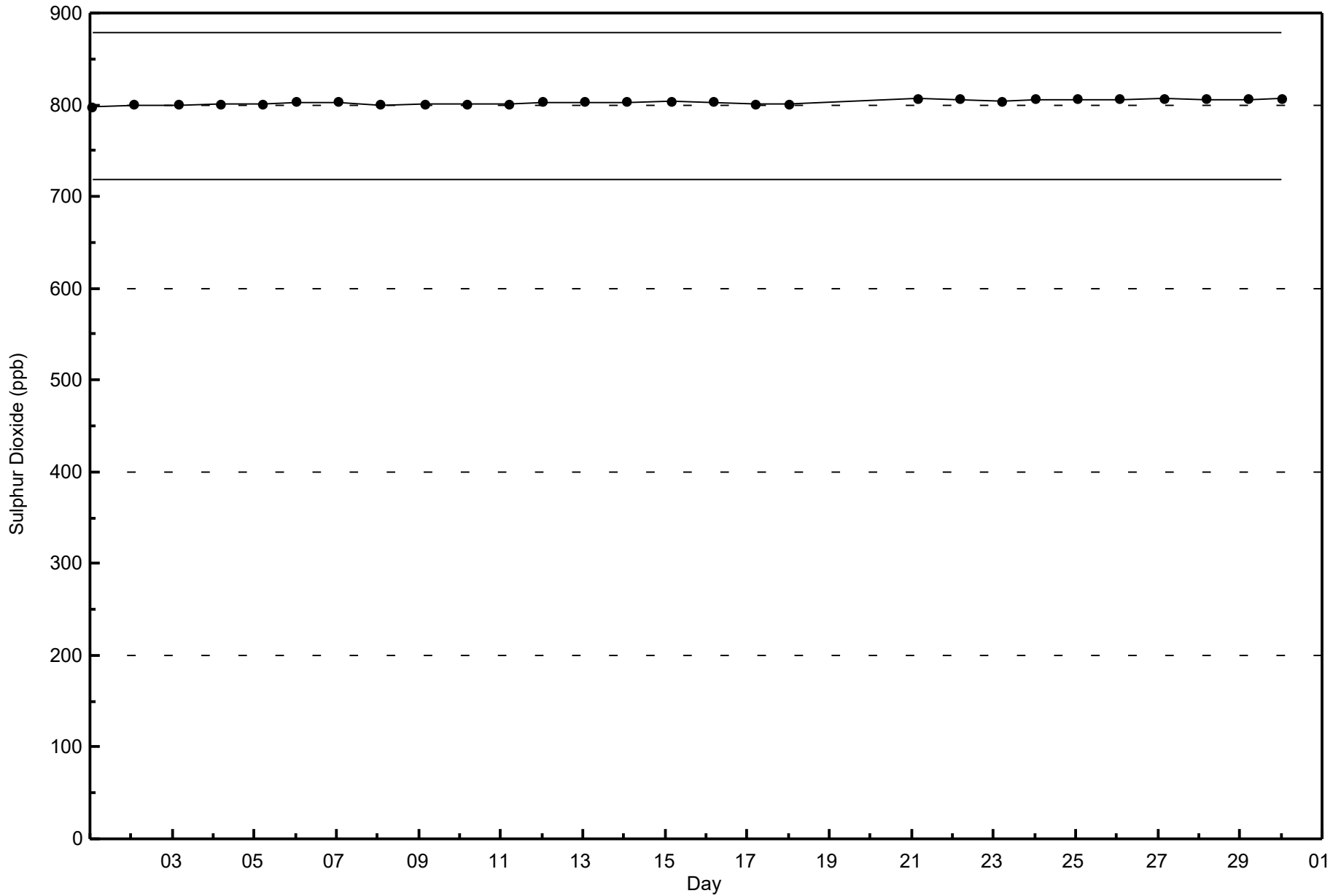
Wood Buffalo Environmental Association
Wind Rose Apr 2023

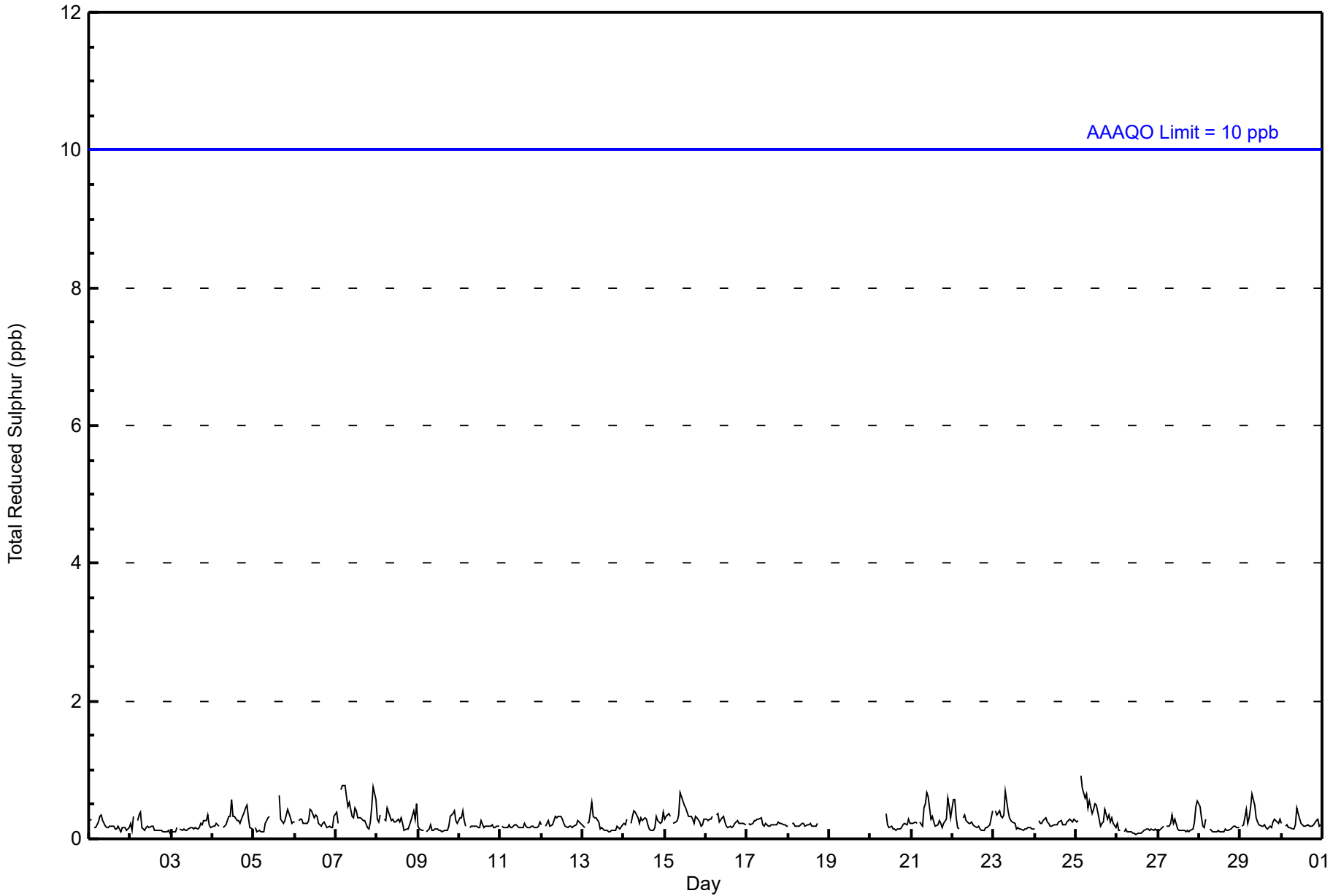
Sulphur Dioxide (SO₂) - ppb
Fort Hills



Total Number of Valid Hours: 647









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Fort Hills - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	648	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: 648

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Fort Hills - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	85	44	30	24	21	57	88	80	74	24	22	31	10	11	13	34	648
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
Totals	85	44	30	24	21	57	88	80	74	24	22	31	10	11	13	34	648

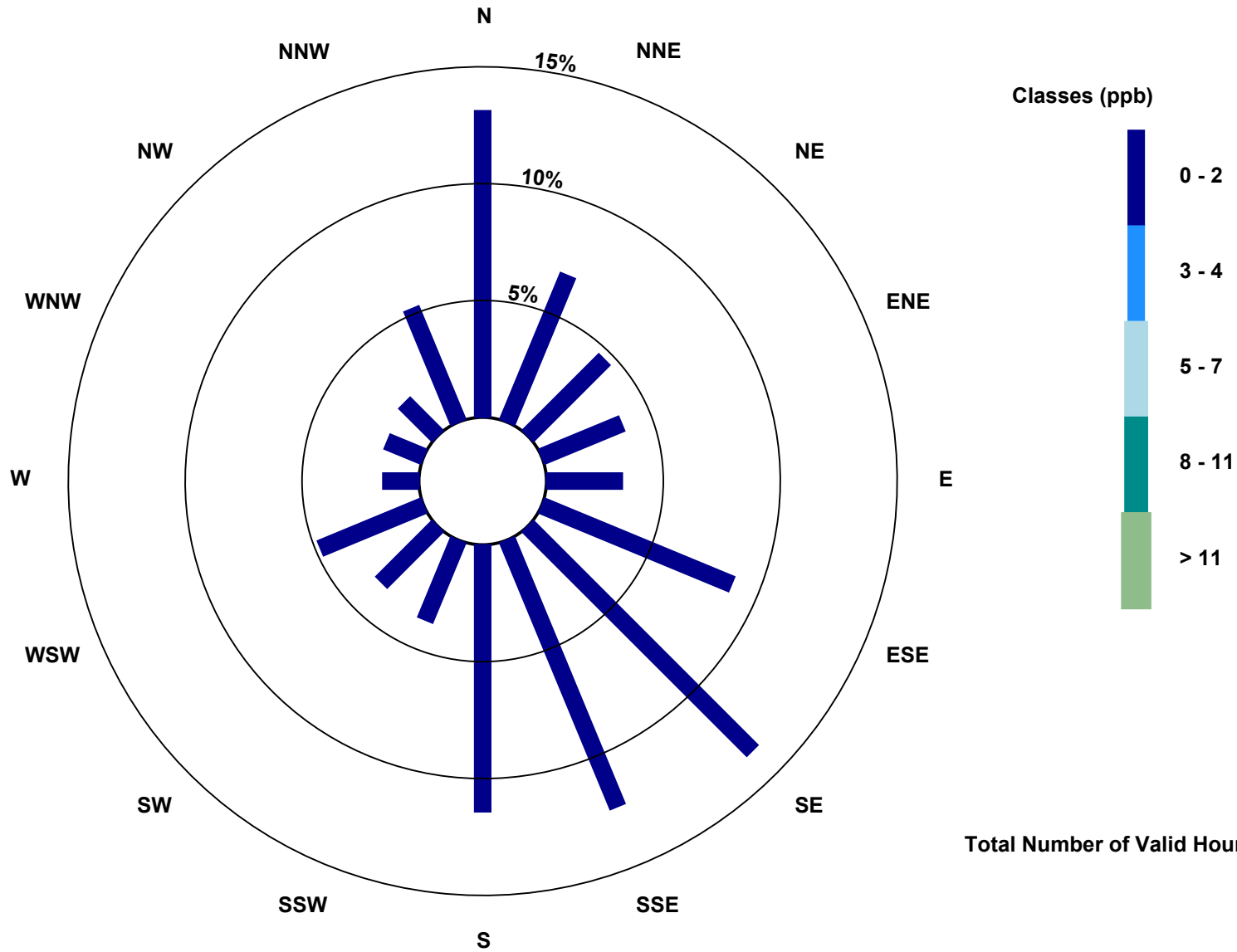
Total Number of Valid Hours: 648

Total Number of Hours: 720

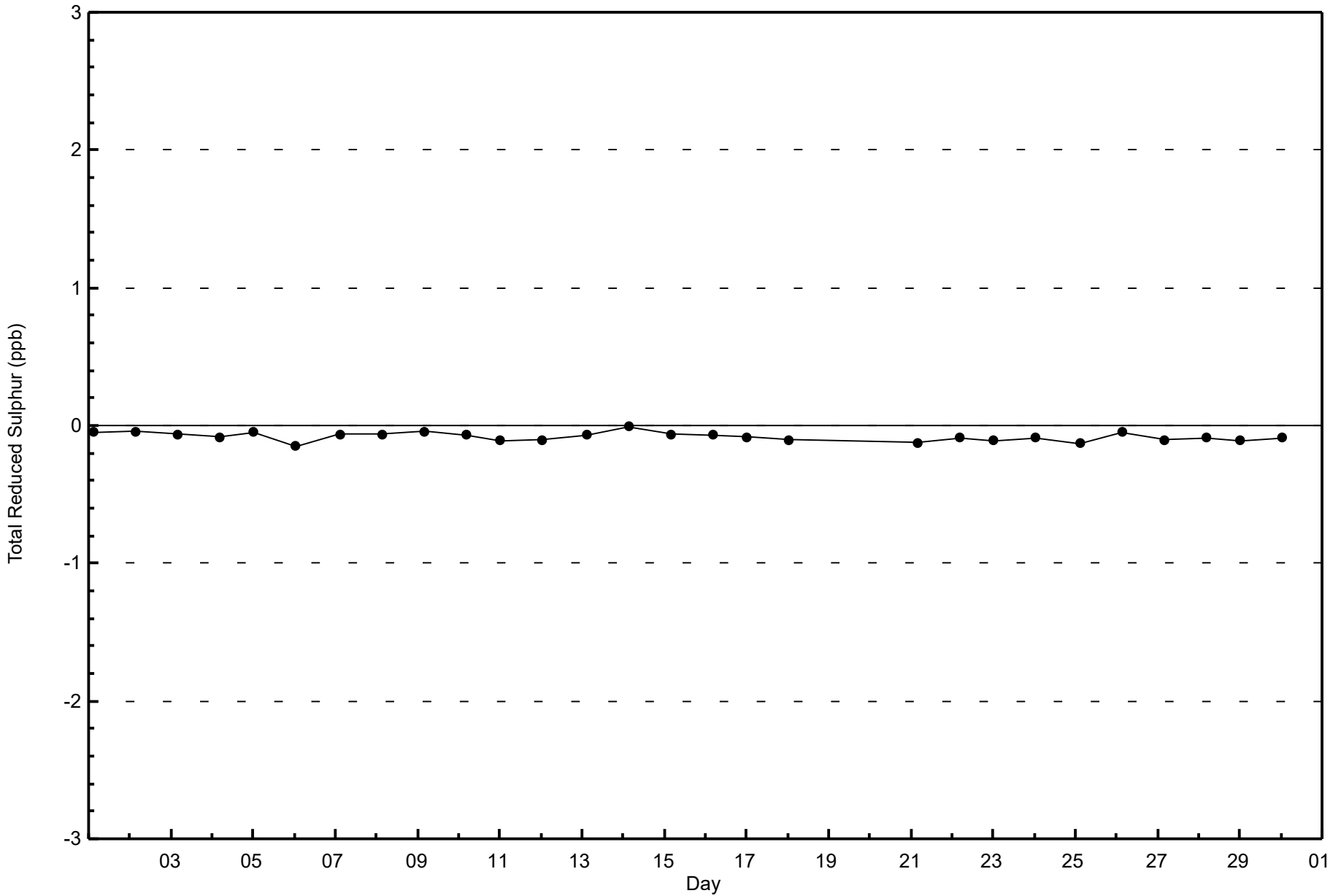


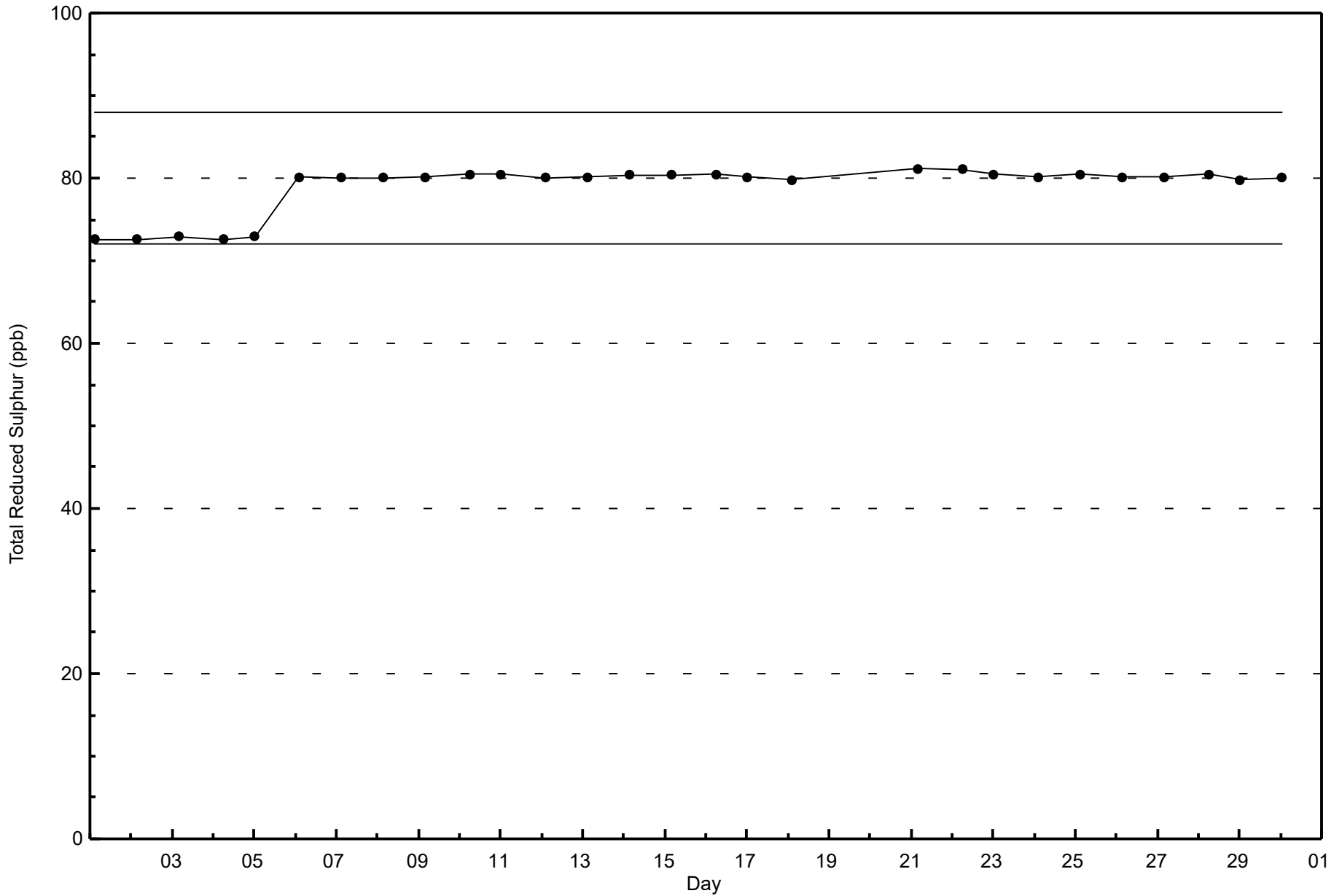
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Fort Hills



Total Number of Valid Hours: 648







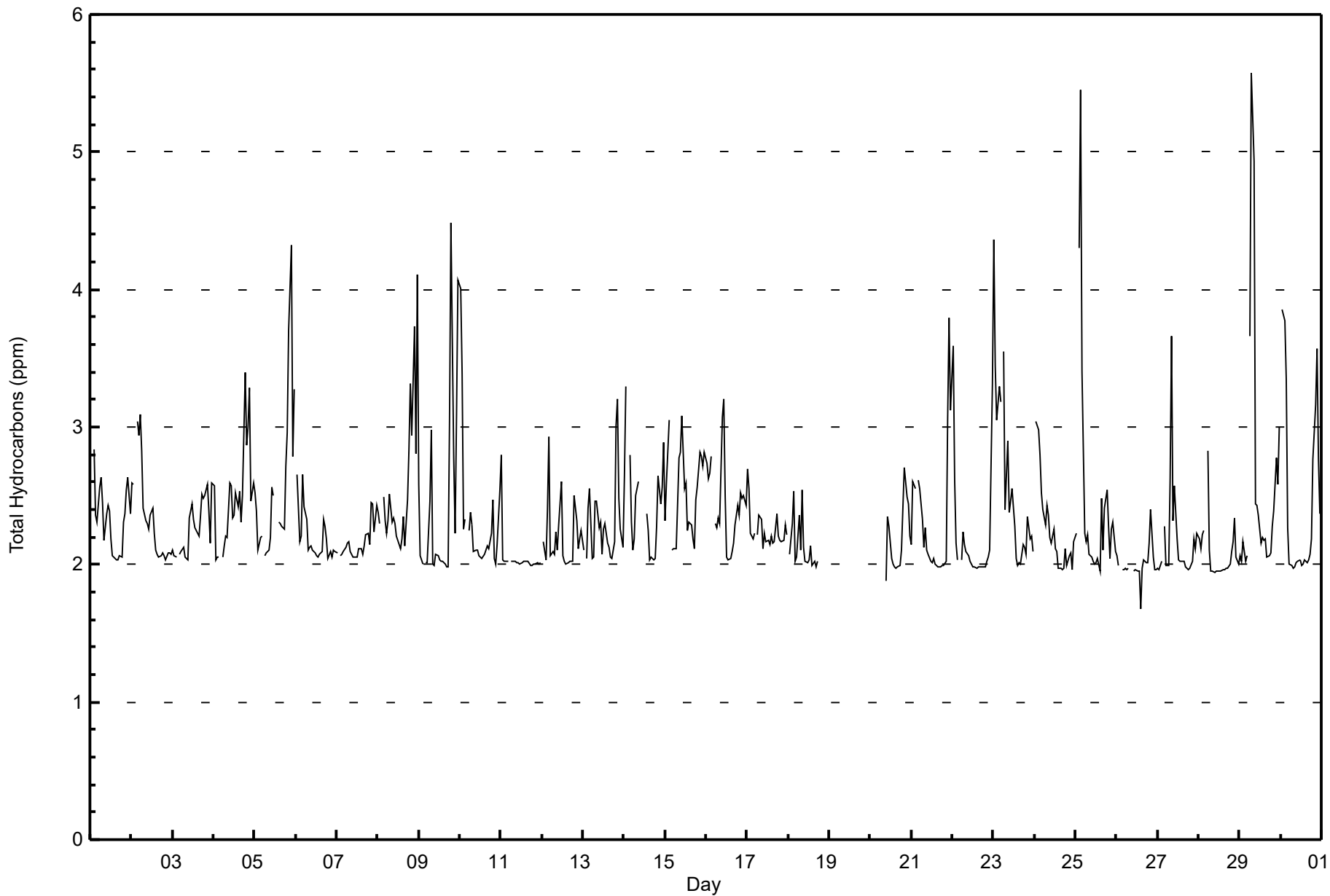
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort Hills - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 720														Daily Average		Daily Maximum					
Maximum Value: 5.6 ppm on Apr 29 08:00		Maximum Daily Average: 2.6 ppm on Apr 29		Hours of Data: 645														2.3		2.8							
Minimum Value: 1.7 ppm on Apr 26 15:00		Minimum Daily Average: 2.0 ppm on Apr 26		Hours of Missing Data: 75														2.4		3.1							
Maximum Diurnal Average: 2.6 ppm at hour 1		Minimum Diurnal Average: 2.1 ppm at hour 15		Hours of Calibration: 32														2.3		2.6							
Monthly Average: 2.32 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.2 Q ₃ = 2.4 P ₉₀ = 2.8 P ₉₉ = 4.2		Percent Operational Time: 94.0														2.5		3.4							
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-Apr	2.4	Z	2.8	2.4	2.3	2.6	2.6	2.4	2.2	2.4	2.4	2.2	2.1	2.0	2.0	2.0	2.1	2.1	2.3	2.4	2.5	2.6	2.4	2.3	2.8		
2-Apr	2.6	Z	3.0	2.9	3.1	2.8	2.4	2.3	2.3	2.3	2.4	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.4	3.1		
3-Apr	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.3	2.4	2.3	2.3	2.2	2.2	2.3	2.5	2.5	2.5	2.6	2.4	2.2	2.6	2.6			
4-Apr	2.6	2.0	2.1	Z	2.1	2.1	2.2	2.2	2.6	2.6	2.3	2.4	2.5	2.4	2.5	2.3	2.5	3.4	2.9	3.0	3.3	2.5	2.6	3.4			
5-Apr	2.5	2.4	2.1	2.2	Z	2.1	2.1	2.1	2.2	2.6	2.5	M	M	2.3	2.3	2.3	2.3	2.7	3.0	3.7	4.3	2.8	3.3	4.3			
6-Apr	Z	2.7	2.2	2.2	2.7	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.2	2.0	2.1	2.0	2.1	2.1	2.7			
7-Apr	2.1	Z	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	2.1	2.2	2.2	2.1	2.5	2.4	2.2	2.4	2.5			
8-Apr	2.4	2.3	Z	2.5	2.3	2.2	2.3	2.5	2.3	2.3	2.3	2.2	2.1	2.1	2.2	2.3	2.1	2.5	2.8	3.3	2.9	3.7	2.8	4.1			
9-Apr	2.6	2.1	2.0	Z	2.0	2.0	2.5	3.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	3.0	4.5	2.8	2.2	3.1	4.1	4.5			
10-Apr	4.0	3.4	2.3	2.3	Z	2.2	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.5	2.0	2.0	2.1	2.5	4.0			
11-Apr	2.8	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	2.8			
12-Apr	Z	2.2	2.0	2.4	2.9	2.1	2.1	2.1	2.2	2.1	2.3	2.6	2.1	2.0	2.0	2.0	2.0	2.0	2.5	2.3	2.1	2.2	2.2	2.9			
13-Apr	2.1	Z	2.0	2.4	2.6	2.0	2.1	2.5	2.5	2.3	2.3	2.1	2.3	2.2	2.1	2.1	2.0	2.2	3.0	3.2	2.5	2.3	2.1	3.2			
14-Apr	2.6	3.3	Z	2.8	2.3	2.1	2.2	2.5	2.6	C	C	C	C	2.4	2.3	2.0	2.1	2.0	2.0	2.3	2.6	2.4	2.6	2.9			
15-Apr	2.3	2.6	3.1	Z	2.1	2.1	2.1	2.4	2.8	2.8	3.1	2.6	2.6	2.3	2.3	2.3	2.2	2.1	2.5	2.6	2.8	2.7	2.8	3.1			
16-Apr	2.7	2.6	2.7	2.8	Z	2.3	2.3	2.3	2.3	3.1	3.2	2.5	2.1	2.0	2.0	2.1	2.2	2.3	2.4	2.4	2.5	2.5	2.4	3.2			
17-Apr	2.7	2.6	2.2	2.2	Z	2.2	2.4	2.3	2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.3	2.2	2.7			
18-Apr	Z	2.1	2.3	2.5	2.0	2.1	2.4	2.1	2.5	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	PF	PF	PF	PF	PF	2.5			
19-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	--			
20-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	1.9	2.4	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	2.7	2.5	2.4	2.7			
21-Apr	2.1	2.6	2.6	Z	2.6	2.6	2.3	2.1	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.1	3.8	3.1	2.3	3.8			
22-Apr	3.6	2.6	2.2	2.0	Z	2.0	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	2.1	3.3	3.6			
23-Apr	4.4	3.4	3.0	3.3	3.2	Z	3.6	2.4	2.9	2.4	2.5	2.6	2.3	2.0	2.0	2.0	2.1	2.1	2.1	2.3	2.2	2.2	2.1	4.4			
24-Apr	Z	3.0	3.0	2.8	2.5	2.4	2.3	2.4	2.4	2.2	2.2	2.3	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.2	3.0			
25-Apr	2.2	Z	4.3	5.4	3.4	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.5	2.1	2.4	2.5	2.3	2.0	2.3	2.1	5.4			
26-Apr	2.1	2.0	Z	2.0	2.0	2.0	2.0	2.0	M	M	2.0	2.0	2.0	2.0	1.7	2.0	2.0	2.0	2.2	2.4	2.1	2.0	2.0	2.4			
27-Apr	2.0	2.0	2.0	Z	2.3	2.0	2.0	2.6	3.7	2.3	2.6	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.2	3.7			
28-Apr	2.2	2.1	2.2	2.3	Z	2.8	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.0	2.8			
29-Apr	2.1	2.0	2.2	2.0	2.1	Z	3.7	5.6	4.9	2.4	2.4	2.4	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.3	2.4	2.8	3.0	5.6			
30-Apr	Z	3.9	3.8	3.3	2.3	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	2.8	3.2	3.6	2.8	2.4	3.9			
																								Diurnal Average		Diurnal Maximum	
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																								15.0		15.7	
																								15.1		15.8	
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Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort Hills - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	174	26.98	26.98
2.1 - 3.0	429	66.51	93.49
3.1 - 10.0	42	6.51	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 645

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Fort Hills - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	22	6	8	7	4	4	8	25	24	13	8	9	6	9	8	13	174
2.1 - 3.0	62	34	19	15	15	51	53	53	50	10	11	22	6	1	3	24	429
3.1 - 10.0	1	1	2	1	1	3	25	3	0	1	3	0	1	0	0	0	42
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	85	41	29	23	20	58	86	81	74	24	22	31	13	10	11	37	645

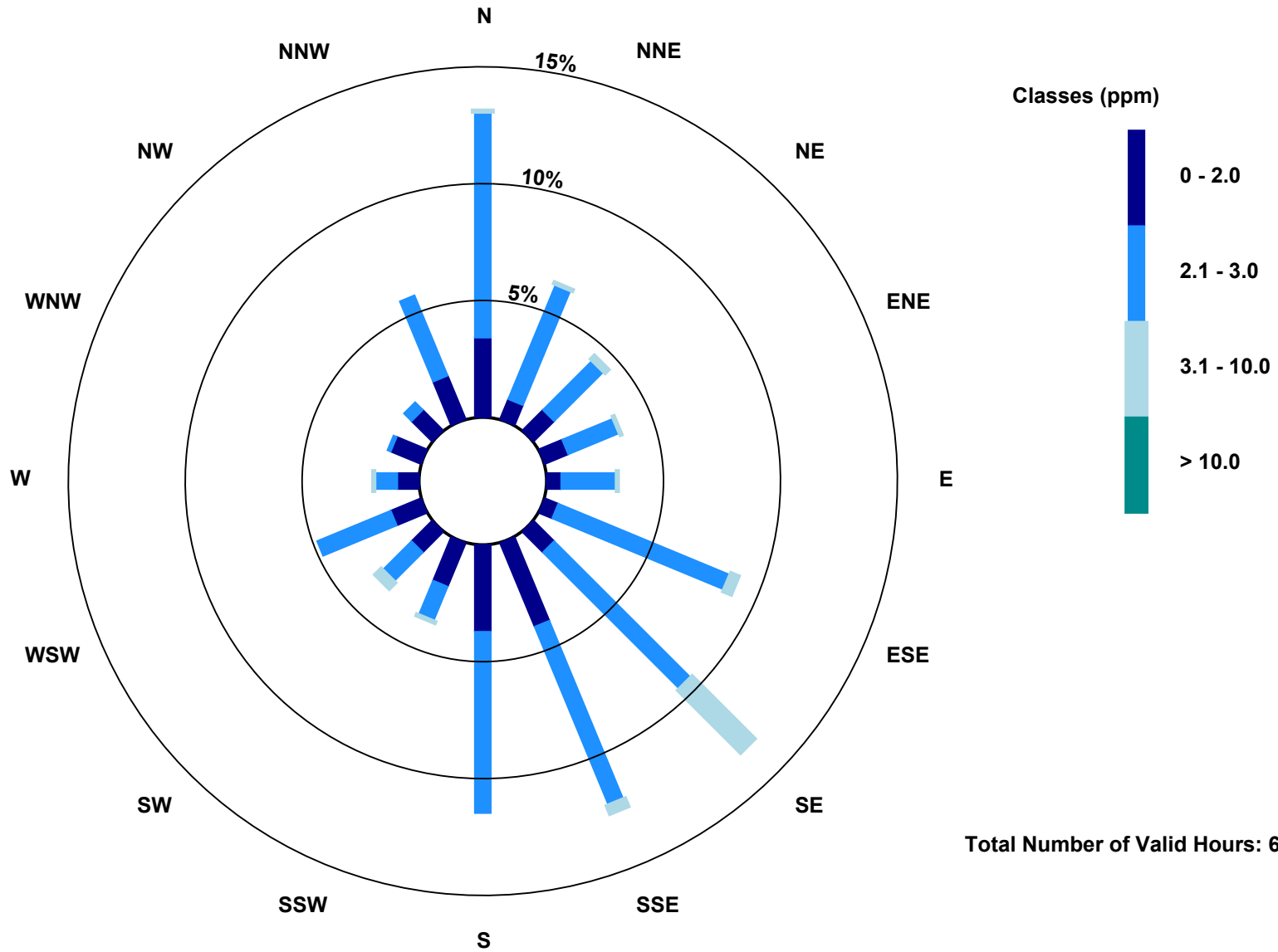
Total Number of Valid Hours: 645

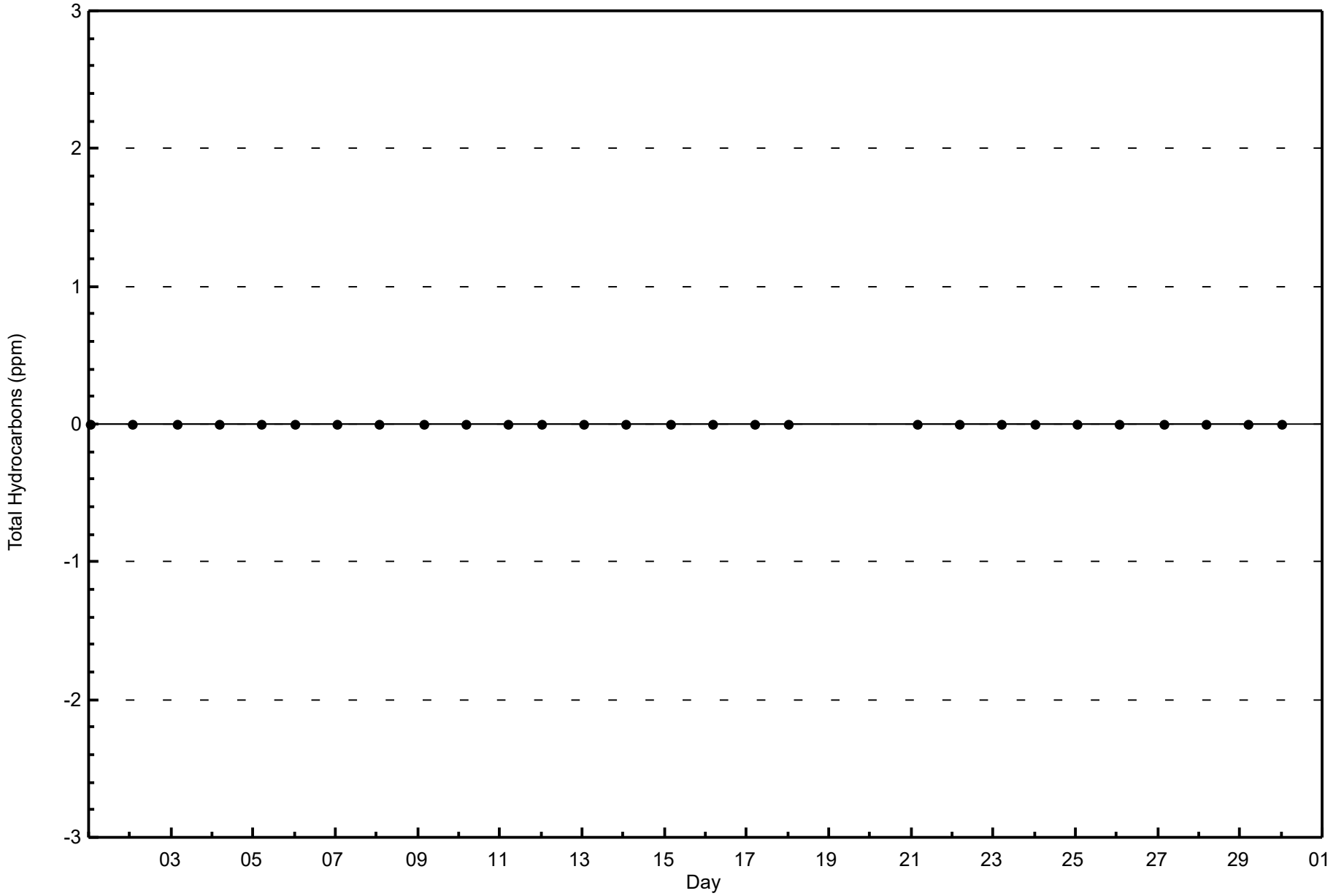
Total Number of Hours: 720

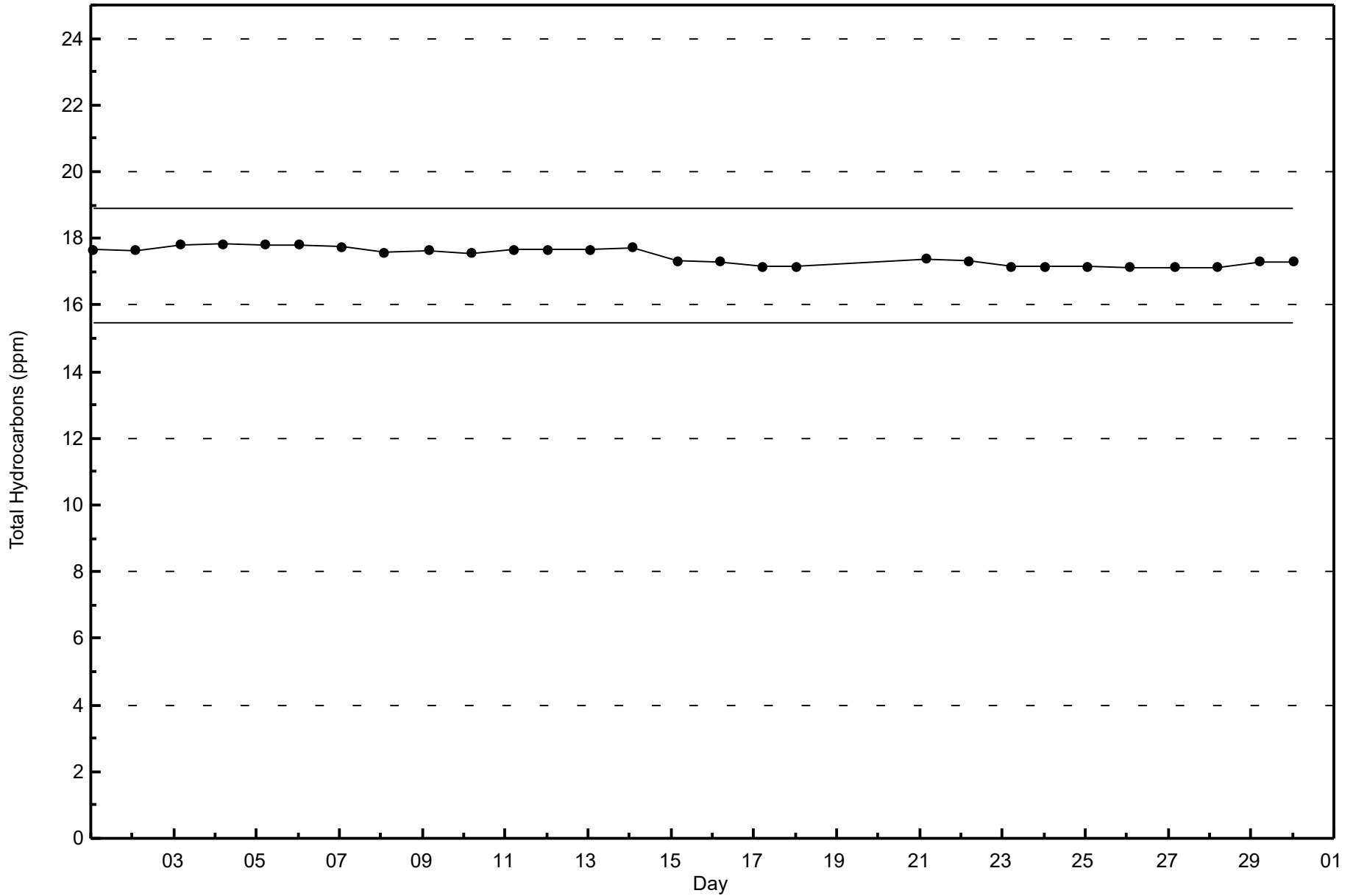


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Fort Hills





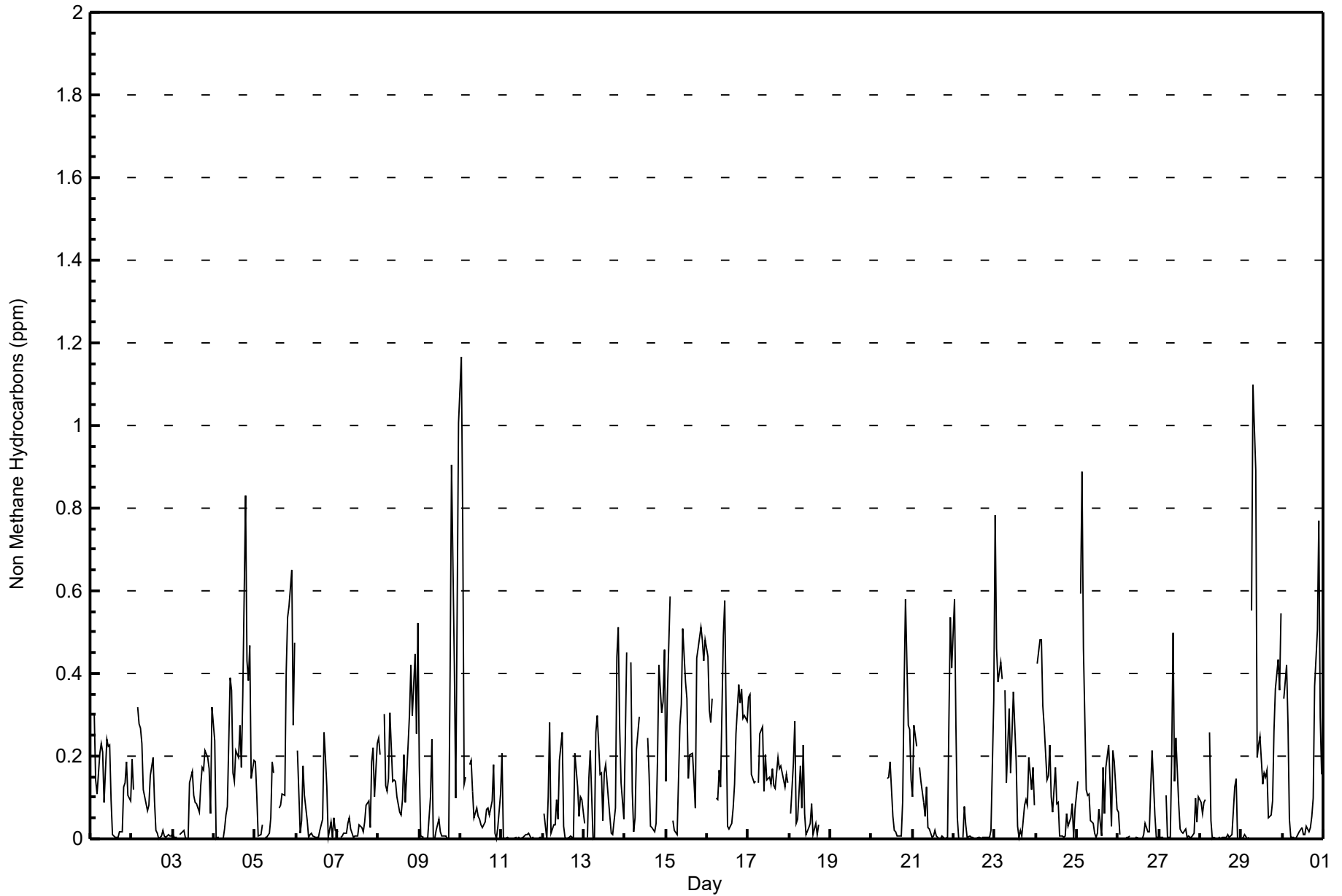




Summary of Hour Averages

Fort Hills - April 2023

Maximum Value: 1.166 ppm on Apr 10 01:00		Maximum Daily Average: 0.291 ppm on Apr 15		Hours in Service: 720																																													
Minimum Value: 0.000 ppm on Apr 2 17:00		Minimum Daily Average: 0.012 ppm on Apr 11		Hours of Data: 645																																													
Maximum Diurnal Average: 0.243 ppm at hour 1		Minimum Diurnal Average: 0.052 ppm at hour 15		Hours of Missing Data: 75																																													
Monthly Average: 0.140 ppm		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.4 P ₉₉ = 0.8		Hours of Calibration: 32																																													
				Percent Operational Time: 94.0																																													
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-Apr	0.196	Z	0.303	0.142	0.108	0.207	0.232	0.210	0.088	0.241	0.225	0.226	0.094	0.010	0.005	0.004	0.003	0.018	0.016	0.126	0.134	0.187	0.104	0.093	0.129	0.303																							
2-Apr	0.194	0.118	Z	0.319	0.279	0.267	0.230	0.119	0.083	0.066	0.081	0.151	0.196	0.092	0.021	0.012	0.000	0.006	0.020	0.008	0.002	0.009	0.008	0.006	0.099	0.319																							
3-Apr	0.014	0.004	0.002	Z	0.011	0.012	0.022	0.002	0.000	0.001	0.135	0.163	0.105	0.089	0.084	0.064	0.129	0.174	0.166	0.213	0.197	0.171	0.063	0.320	0.093	0.320																							
4-Apr	0.238	0.001	0.004	0.002	Z	0.000	0.022	0.056	0.078	0.389	0.361	0.160	0.139	0.215	0.198	0.276	0.172	0.346	0.831	0.432	0.384	0.468	0.146	0.189	0.222	0.831																							
5-Apr	0.188	0.106	0.006	0.010	0.035	Z	0.002	0.004	0.014	0.051	0.185	0.158	M	M	0.075	0.083	0.108	0.104	0.404	0.536	0.562	0.652	0.276	0.474	0.192	0.652																							
6-Apr	Z	0.212	0.013	0.043	0.176	0.104	0.044	0.003	0.010	0.012	0.008	0.003	0.002	0.003	0.020	0.048	0.258	0.198	0.126	0.003	0.040	0.002	0.050	0.019	0.061	0.258																							
7-Apr	0.015	Z	0.005	0.005	0.015	0.014	0.037	0.050	0.024	0.005	0.005	0.007	0.006	0.034	0.029	0.016	0.042	0.082	0.091	0.029	0.186	0.219	0.100	0.230	0.054	0.230																							
8-Apr	0.244	0.203	Z	0.302	0.127	0.117	0.145	0.307	0.140	0.141	0.139	0.103	0.066	0.056	0.094	0.203	0.088	0.226	0.303	0.420	0.299	0.449	0.256	0.522	0.215	0.522																							
9-Apr	0.176	0.008	0.002	Z	0.001	0.004	0.101	0.241	0.002	0.001	0.021	0.048	0.017	0.006	0.007	0.007	0.001	0.002	0.409	0.904	0.425	0.100	0.548	1.006	0.175	1.006																							
10-Apr	1.166	0.763	0.132	0.149	Z	0.179	0.190	0.115	0.050	0.074	0.054	0.048	0.033	0.027	0.041	0.070	0.076	0.057	0.090	0.180	0.013	0.001	0.028	0.109	0.158	1.166																							
11-Apr	0.208	0.004	0.002	0.002	0.002	Z	0.001	0.002	0.002	0.000	0.002	0.001	0.004	0.006	0.011	0.009	0.012	0.000	0.002	0.000	0.002	0.000	0.002	0.002	0.012	0.208																							
12-Apr	Z	0.063	0.001	0.100	0.282	0.013	0.033	0.032	0.096	0.046	0.190	0.256	0.031	0.005	0.000	0.004	0.006	0.005	0.005	0.206	0.124	0.056	0.101	0.093	0.076	0.282																							
13-Apr	0.036	Z	0.002	0.146	0.212	0.001	0.003	0.257	0.300	0.156	0.160	0.044	0.161	0.179	0.097	0.056	0.015	0.010	0.076	0.442	0.512	0.267	0.134	0.046	0.144	0.512																							
14-Apr	0.238	0.452	Z	0.429	0.114	0.017	0.052	0.217	0.293	C	C	C	C	0.245	0.156	0.031	0.028	0.018	0.036	0.191	0.421	0.305	0.333	0.457	0.212	0.457																							
15-Apr	0.138	0.342	0.585	Z	0.044	0.020	0.011	0.143	0.274	0.326	0.509	0.379	0.338	0.146	0.205	0.207	0.143	0.075	0.436	0.461	0.512	0.481	0.430	0.480	0.291	0.585																							
16-Apr	0.442	0.312	0.280	0.339	Z	0.098	0.094	0.166	0.126	0.491	0.576	0.296	0.029	0.025	0.036	0.075	0.134	0.255	0.374	0.328	0.364	0.290	0.299	0.284	0.248	0.576																							
17-Apr	0.343	0.349	0.157	0.134	0.138	Z	0.137	0.256	0.272	0.117	0.205	0.141	0.148	0.131	0.169	0.128	0.123	0.196	0.171	0.177	0.161	0.126	0.157	0.136	0.177	0.349																							
18-Apr	Z	0.061	0.183	0.284	0.036	0.048	0.177	0.076	0.227	0.062	0.009	0.026	0.037	0.084	0.011	0.036	0.011	0.033	PF	PF	PF	PF	PF	PF	--	0.284																							
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	0.144	0.149	0.185	0.055	0.020	0.017	0.007	0.007	0.008	0.093	0.362	0.581	0.274	0.264	0.142	--	0.581																						
21-Apr	0.101	0.274	0.223	Z	0.171	0.139	0.087	0.056	0.127	0.027	0.022	0.005	0.006	0.019	0.006	0.000	0.001	0.005	0.003	0.000	0.002	0.288	0.536	0.413	0.109	0.536																							
22-Apr	0.580	0.271	0.052	0.002	Z	0.004	0.079	0.034	0.005	0.005	0.005	0.004	0.001	0.000	0.004	0.003	0.001	0.005	0.004	0.002	0.003	0.003	0.020	0.336	0.062	0.580																							
23-Apr	0.782	0.460	0.381	0.427	0.388	Z	0.359	0.136	0.316	0.161	0.255	0.356	0.185	0.031	0.002	0.020	0.006	0.082	0.095	0.080	0.196	0.119	0.174	0.080	0.221	0.782																							
24-Apr	Z	0.424	0.482	0.483	0.322	0.272	0.142	0.153	0.226	0.101	0.066	0.173	0.085	0.087	0.007	0.006	0.003	0.006	0.061	0.031	0.049	0.085	0.003	0.070	0.145	0.483																							
25-Apr	0.137	Z	0.592	0.887	0.462	0.119	0.104	0.110	0.042	0.039	0.015	0.005	0.012	0.071	0.006	0.175	0.060	0.173	0.228	0.137	0.030	0.212	0.187	0.070	0.168	0.887																							
26-Apr	0.063	0.010	Z	0.001	0.001	0.003	0.002	0.006	M	M	0.004	0.004	0.001	0.001	0.000	0.010	0.038	0.018	0.017	0.121	0.214	0.057	0.003	0.003	0.027	0.214																							
27-Apr	0.003	0.004	0.003	Z	0.105	0.005	0.005	0.201	0.498	0.138	0.244	0.084	0.023	0.018	0.014	0.023	0.005	0.008	0.002	0.004	0.013	0.097	0.041	0.103	0.071	0.498																							
28-Apr	0.087	0.060	0.087	0.095	Z	0.258	0.044	0.001	0.003	0.001	0.001	0.003	0.001	0.002	0.002	0.002	0.010	0.002	0.012	0.069	0.124	0.147	0.000	0.001	0.044	0.258																							
29-Apr	0.001	0.002	0.009	0.001	0.003	Z	0.551	1.097	0.893	0.196	0.229	0.249	0.132	0.160	0.151	0.167	0.052	0.058	0.090	0.261	0.362	0.435	0.361	0.544	0.261	1.097																							
30-Apr	Z	0.338	0.420	0.277	0.046	0.004	0.003	0.000	0.003	0.011	0.018	0.027	0.009	0.009	0.030	0.017	0.028	0.053	0.097	0.370	0.506	0.771	0.295	0.157	0.152	0.771																							
																								0.243	0.202	0.164	0.199	0.134	0.083	0.104	0.145	0.155	0.111	0.138	0.118	0.071	0.063	0.052	0.061	0.054	0.077	0.152	0.218	0.229	0.224	0.176	0.228	Diurnal Average	
																								1.166	0.763	0.592	0.887	0.462	0.272	0.551	1.097	0.893	0.491	0.576	0.379	0.338	0.245	0.205	0.276	0.258	0.346	0.831	0.904	0.581	0.771	0.548	1.006	Diurnal Maximum	
Z - zerspan		C - Calibration				M - Maintenance				PF - Power Failure																																							





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Fort Hills - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	127	19.69	19.69
0.006 - 0.05	151	23.41	43.10
0.06 - 0.1	147	22.79	65.89
> 0.1	220	34.11	100.00

Total Number of Valid Hours: 645

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Fort Hills - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	18	5	0	0	0	2	3	13	31	13	3	3	2	8	9	17	127
0.006 - 0.05	21	10	9	8	5	4	7	32	20	3	8	13	3	1	1	6	151
0.06 - 0.1	24	10	6	5	2	15	20	21	12	3	5	9	5	1	1	8	147
> 0.1	22	16	14	10	13	37	56	15	11	5	6	6	3	0	0	6	220
Totals	85	41	29	23	20	58	86	81	74	24	22	31	13	10	11	37	645

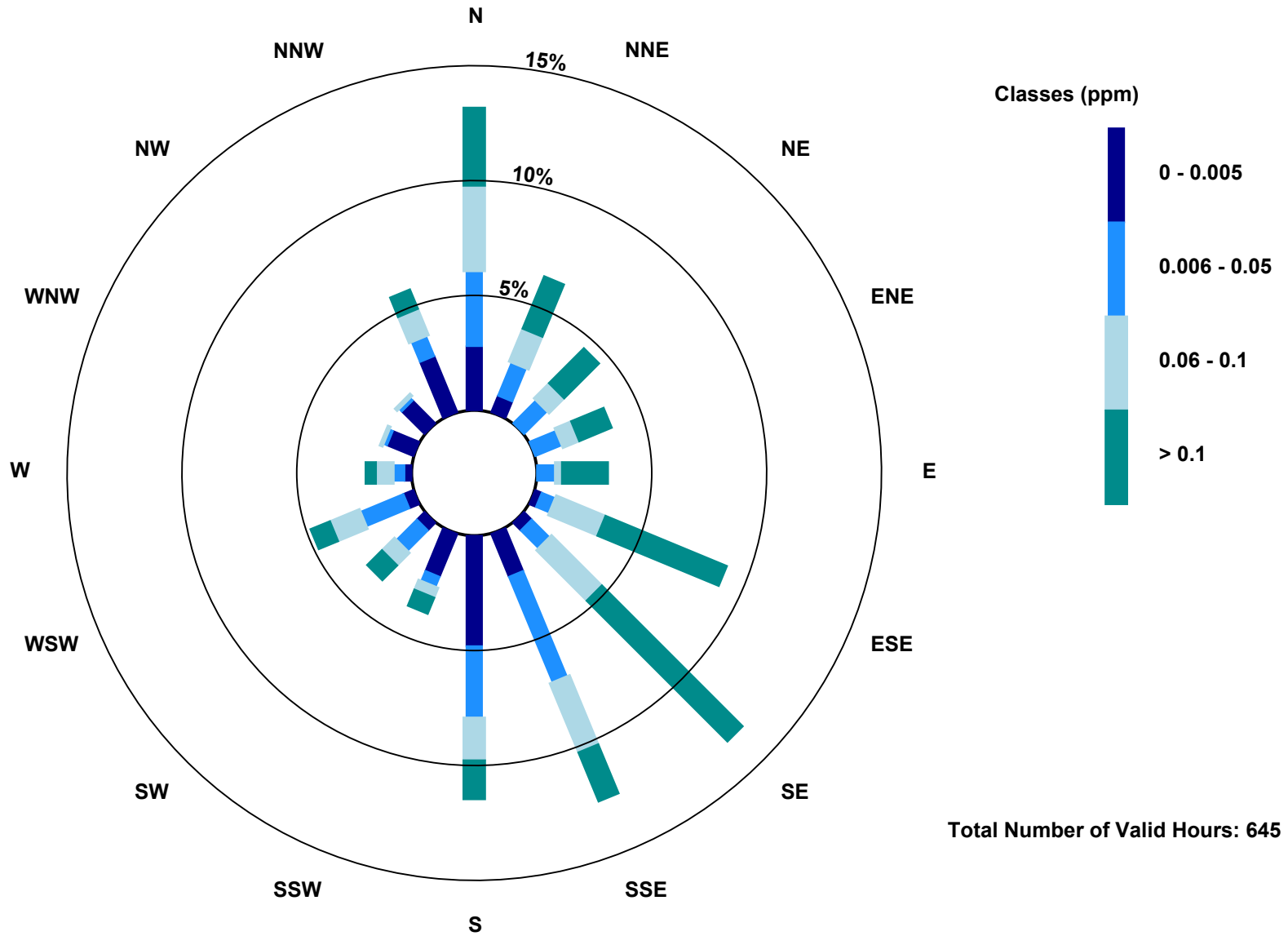
Total Number of Valid Hours: 645

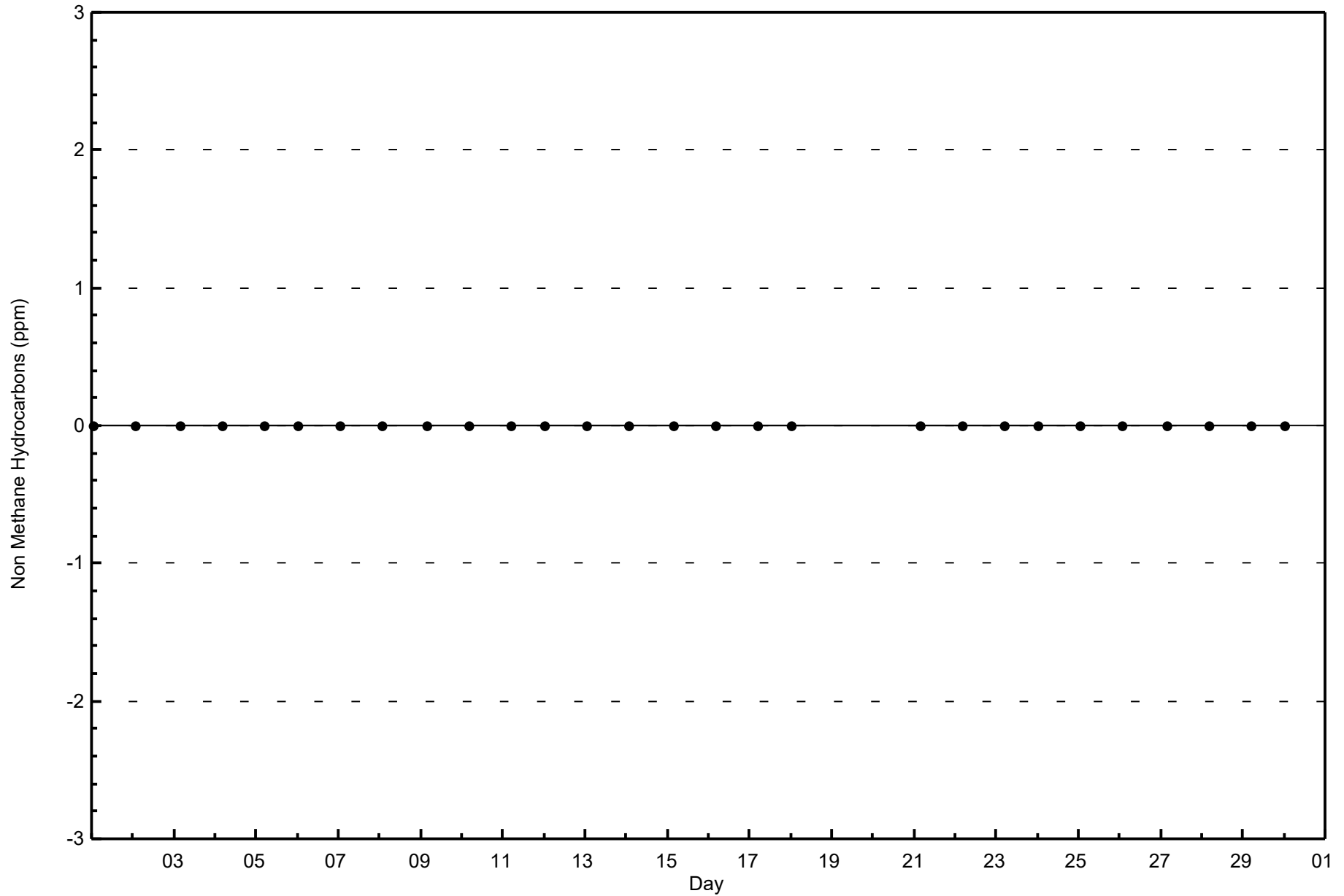
Total Number of Hours: 720

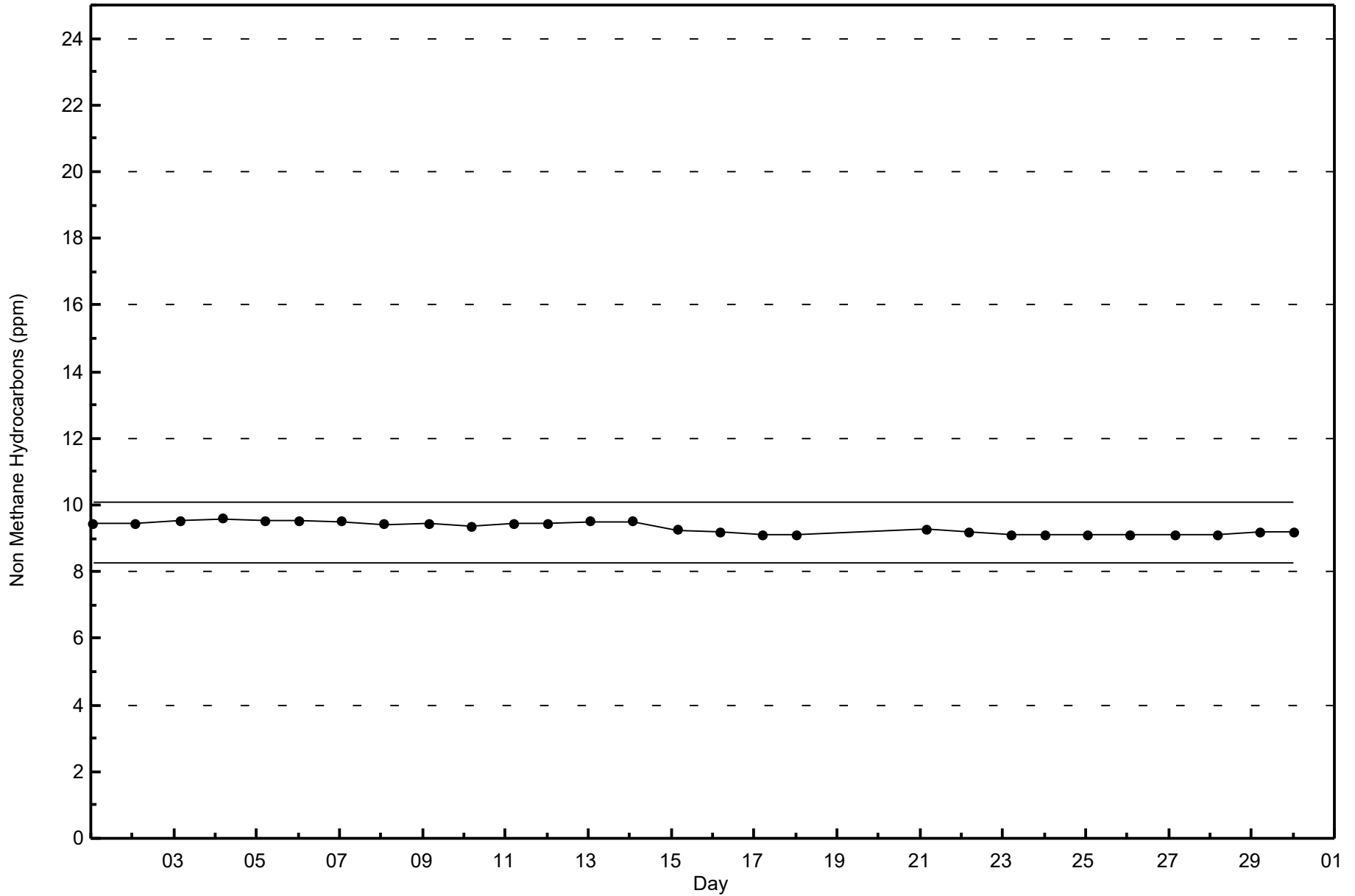


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Fort Hills









Wood Buffalo Environmental Association
Summary of Hour Averages

Methane (CH₄) - ppm
Fort Hills - April 2023

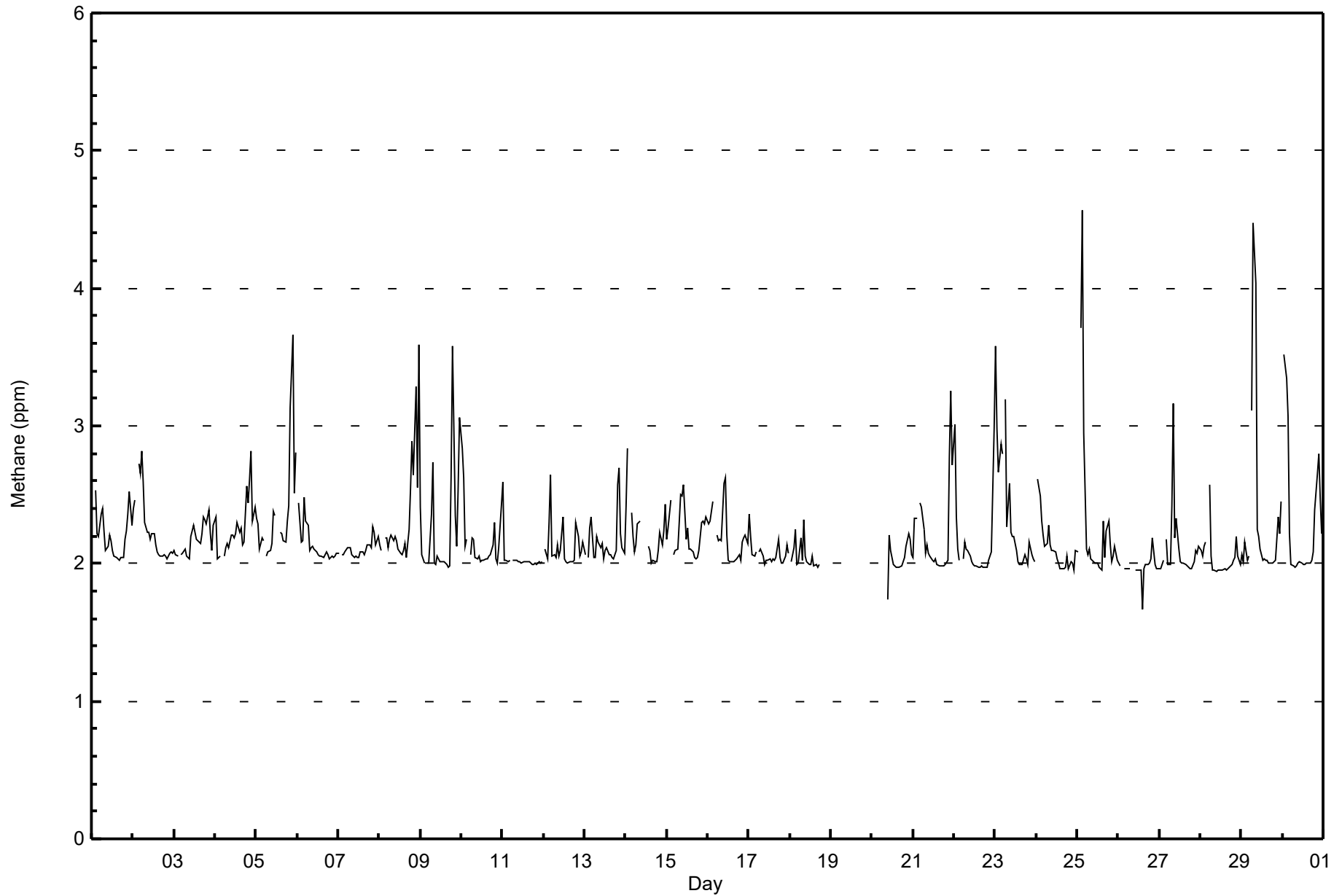
Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																			
Maximum Value: 4.6 ppm on Apr 25 04:00		Maximum Daily Average: 2.4 ppm on Apr 5		Minimum Value: 1.7 ppm on Apr 26 15:00		Minimum Daily Average: 2.0 ppm on Apr 26		Hours of Data: 645																			
Maximum Diurnal Average: 2.4 ppm at hour 4		Minimum Diurnal Average: 2.0 ppm at hour 15		Hours of Missing Data: 75		Hours of Calibration: 32		Percent Operational Time: 94.0																			
Monthly Average: 2.18 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.1 Q ₃ = 2.2 P ₉₀ = 2.5 P ₉₉ = 3.6																									
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-Apr	2.2	Z	2.5	2.2	2.2	2.4	2.4	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.4	2.5	2.3	2.2	2.5	
2-Apr	2.4	2.5	Z	2.7	2.7	2.8	2.6	2.3	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	2.1	2.1	2.1	2.3	2.8	
3-Apr	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.0	2.2	2.3	2.2	2.2	2.2	2.1	2.2	2.3	2.3	2.3	2.4	2.2	2.1	2.3	2.2	2.4	
4-Apr	2.3	2.0	2.0	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.3	2.1	2.2	2.6	2.4	2.6	2.8	2.3	2.4	2.3	2.8	
5-Apr	2.3	2.3	2.1	2.2	2.2	Z	2.1	2.1	2.1	2.1	2.4	2.3	M	M	2.2	2.2	2.2	2.2	2.3	2.4	3.1	3.7	2.5	2.8	2.4	3.7	
6-Apr	Z	2.4	2.2	2.2	2.5	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.5	
7-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.1	2.2	2.1	2.3	
8-Apr	2.1	2.1	Z	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.2	2.5	2.9	2.6	3.3	2.5	3.6	2.3	3.6	
9-Apr	2.4	2.1	2.0	Z	2.0	2.0	2.4	2.7	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.6	3.6	2.3	2.1	2.5	3.1	2.3	3.6	
10-Apr	2.8	2.6	2.1	2.2	Z	2.1	2.2	2.2	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.3	2.0	2.0	2.1	2.4	2.2	2.8	
11-Apr	2.6	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	2.6	
12-Apr	Z	2.1	2.0	2.3	2.6	2.1	2.1	2.0	2.1	2.1	2.1	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.1	2.1	2.2	2.1	2.6	
13-Apr	2.1	Z	2.0	2.3	2.3	2.0	2.0	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.6	2.7	2.2	2.1	2.1	2.1	2.2	2.7	
14-Apr	2.4	2.8	Z	2.4	2.2	2.1	2.1	2.3	2.3	C	C	C	C	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.1	2.2	2.4	2.4	2.2	2.8	
15-Apr	2.2	2.3	2.5	Z	2.1	2.1	2.1	2.3	2.5	2.5	2.6	2.2	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.3	2.3	2.3	2.3	2.2	2.6	
16-Apr	2.3	2.3	2.4	2.5	Z	2.2	2.2	2.2	2.2	2.6	2.6	2.2	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2	2.2	2.2	2.1	2.1	2.2	2.6	
17-Apr	2.4	2.2	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	2.2	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.4	
18-Apr	Z	2.0	2.1	2.3	2.0	2.0	2.2	2.0	2.3	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	PF	PF	PF	PF	PF	PF	PF	2.3	
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	1.7	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.1	--	2.2	
21-Apr	2.0	2.3	2.3	Z	2.4	2.4	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	2.8	3.3	2.7	2.2	3.3		
22-Apr	3.0	2.3	2.1	2.0	Z	2.0	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	2.1	3.0	2.1	3.0		
23-Apr	3.6	3.0	2.7	2.9	2.8	Z	3.2	2.3	2.6	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.2	2.1	2.0	2.0	2.3	3.6		
24-Apr	Z	2.6	2.5	2.3	2.2	2.1	2.1	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.6		
25-Apr	2.1	Z	3.7	4.6	2.9	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.3	2.0	2.2	2.3	2.1	2.0	2.0	2.1	2.0	2.3	4.6	
26-Apr	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	M	M	2.0	2.0	2.0	2.0	1.7	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	2.2	2.2	
27-Apr	2.0	2.0	2.0	Z	2.2	2.0	2.0	2.4	3.2	2.2	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	2.1	2.1	3.2	
28-Apr	2.1	2.1	2.1	2.2	Z	2.6	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.0	2.6	
29-Apr	2.1	2.0	2.2	2.0	2.1	Z	3.1	4.5	4.0	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.5	2.3	4.5	
30-Apr	Z	3.5	3.3	3.1	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	2.1	2.4	2.7	2.8	2.5	2.2	2.3	3.5		
																								Diurnal Average			
																								Diurnal Maximum			
																								2.3 3.6			
																								2.3 3.6			

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



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Fort Hills - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Methane (CH₄) - ppm
Fort Hills - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	249	38.60	38.60
2.1 - 3.0	378	58.60	97.21
3.1 - 10.0	18	2.79	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 645

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Methane (CH₄) - ppm
Fort Hills - April 2023**

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2.0	28	14	10	11	9	20	17	29	30	14	8	17	9	9	8	16	249
2.1 - 3.0	57	27	19	12	11	37	56	50	44	10	12	14	4	1	3	21	378
3.1 - 10.0	0	0	0	0	0	1	13	2	0	0	2	0	0	0	0	0	18
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	85	41	29	23	20	58	86	81	74	24	22	31	13	10	11	37	645

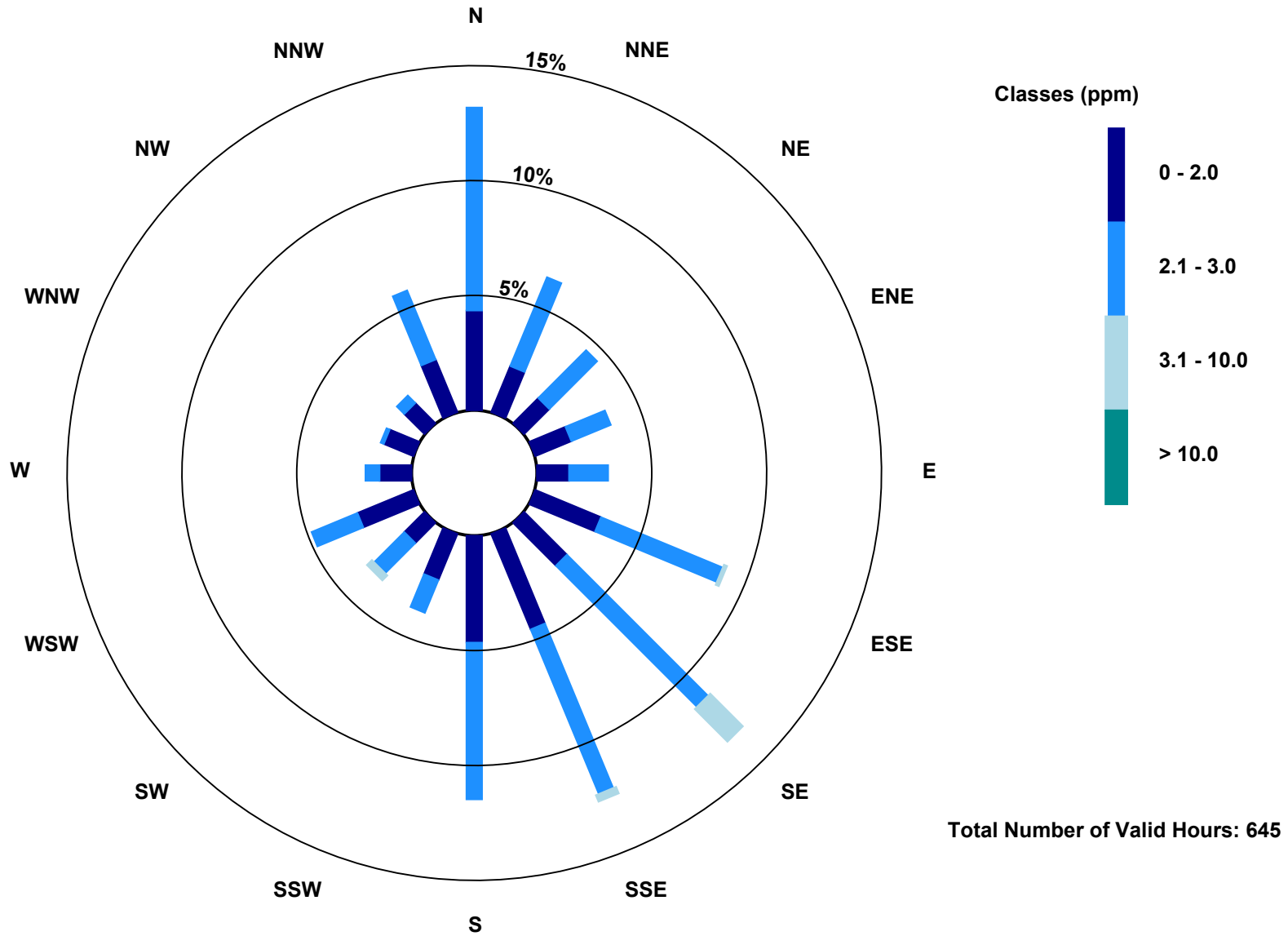
Total Number of Valid Hours: 645

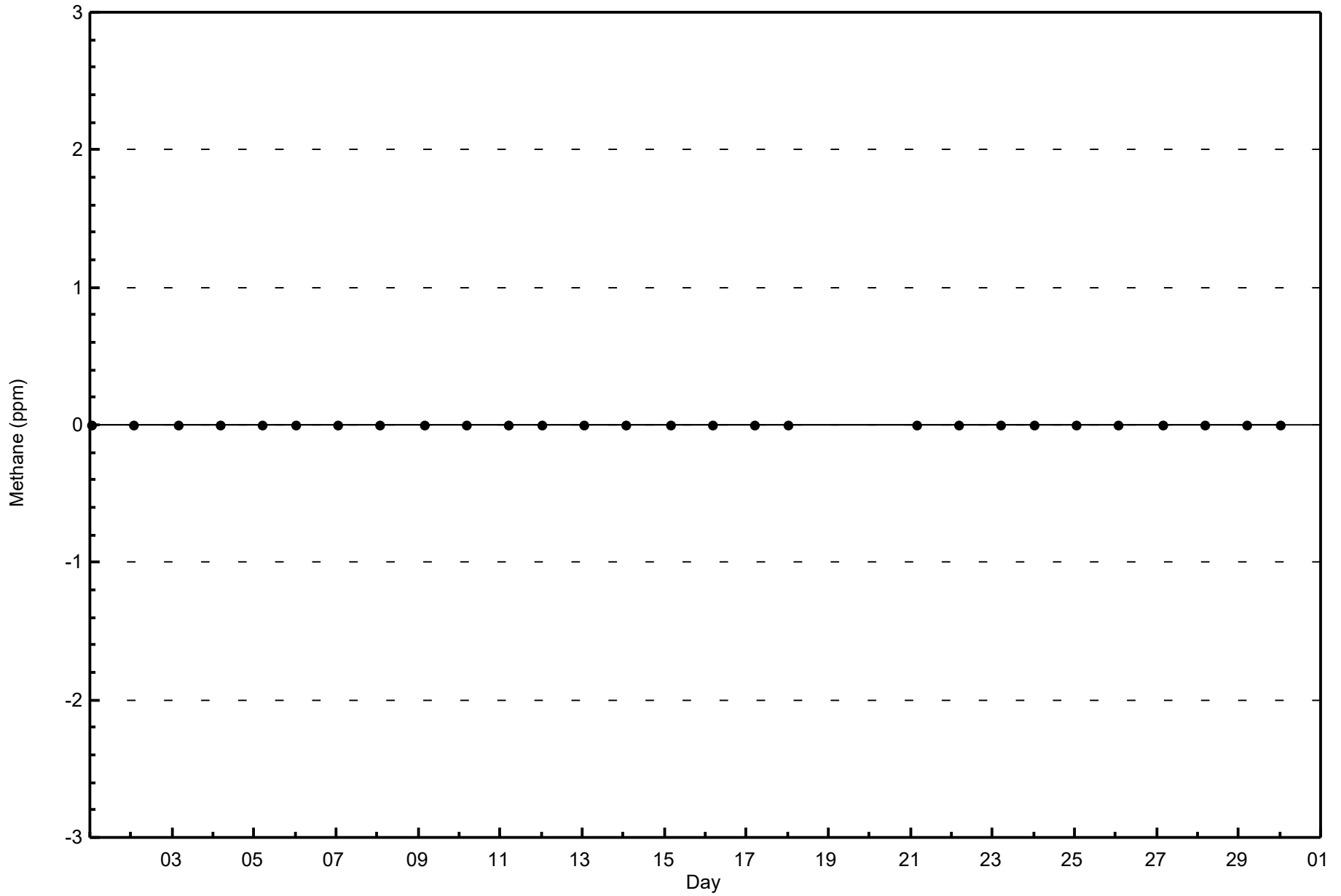
Total Number of Hours: 720

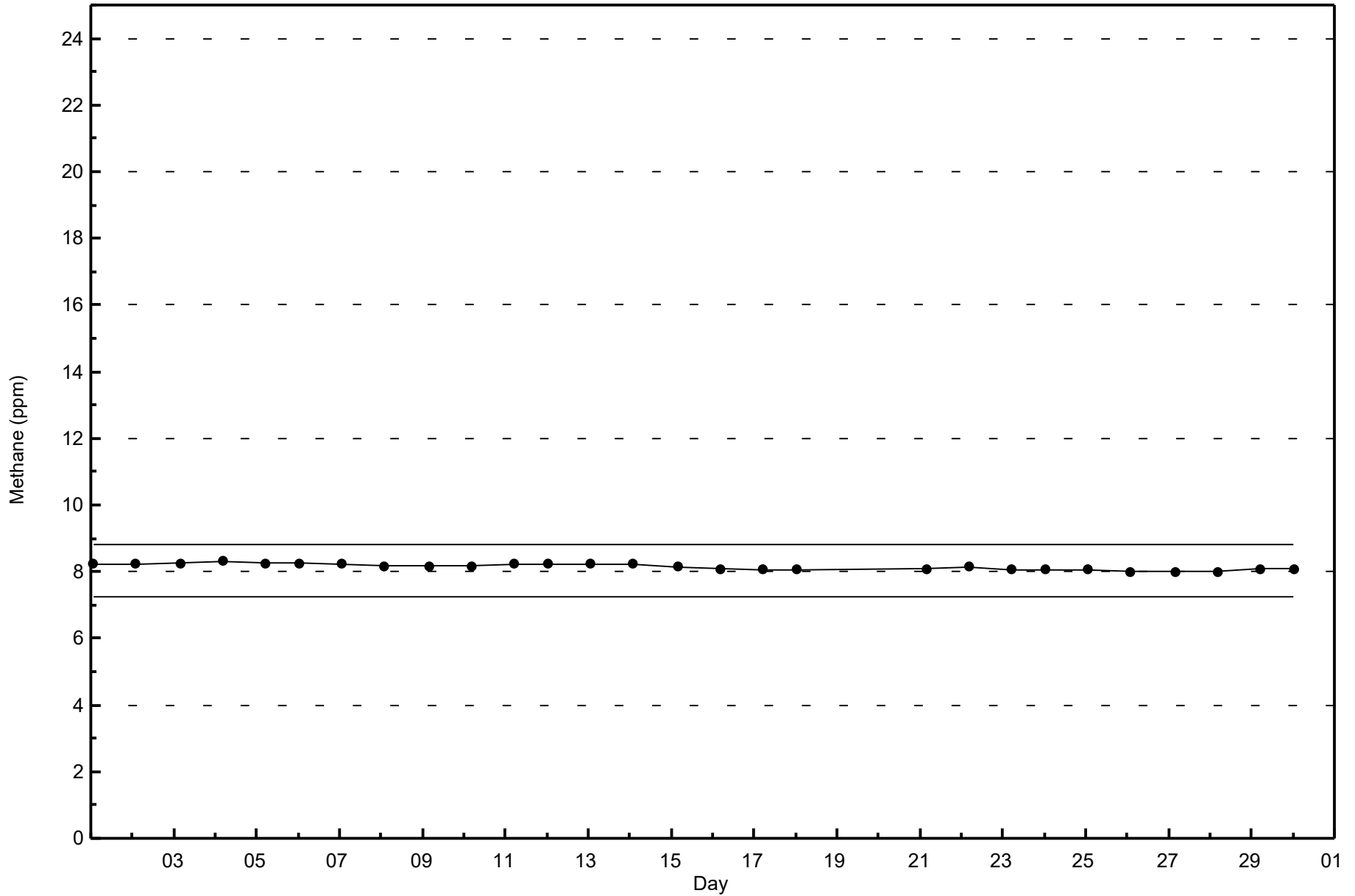


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Fort Hills









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

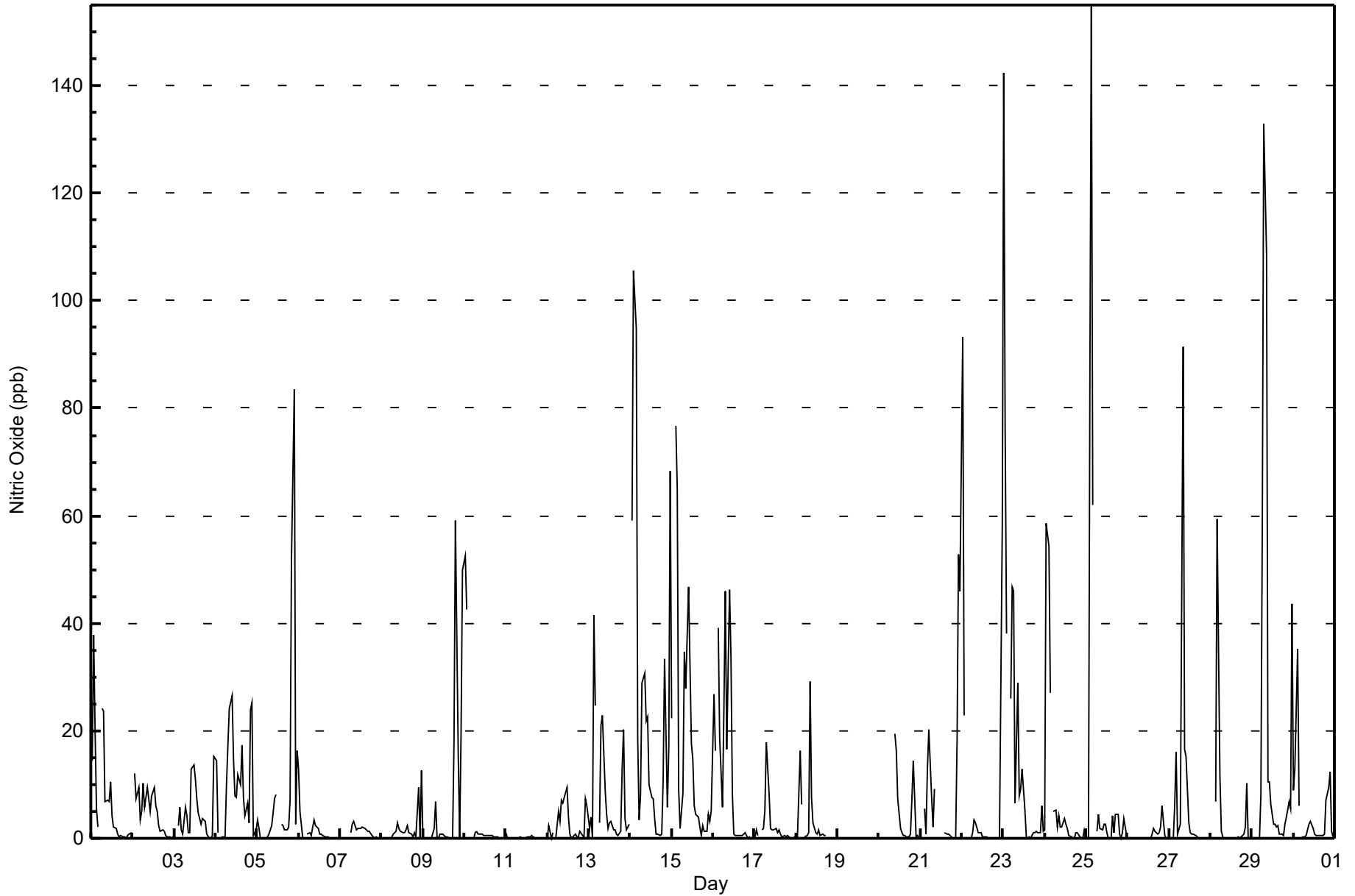
Fort Hills - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 154.6 ppb on Apr 25 04:00	Maximum Daily Average: 24.4 ppb on Apr 14		Hours of Data:	646
Minimum Value: 0.0 ppb on Apr 6 20:00	Minimum Daily Average: 0.1 ppb on Apr 11		Hours of Missing Data:	74
Maximum Diurnal Average: 20.4 ppb at hour 4	Minimum Diurnal Average: 0.9 ppb at hour 18		Hours of Calibration:	33
Monthly Average: 7.82 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.2 Median = 1.2 Q ₃ = 6.6 P ₉₀ = 21.4 P ₉₉ = 92.5		Percent Operational Time:	94.3

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-Apr	14.5	37.8	20.4	5.5	2.0	Z	24.3	23.7	6.8	7.1	6.9	10.4	4.1	2.1	1.9	0.9	0.2	0.6	0.2	0.3	0.1	0.4	0.9	1.1	7.5	37.8
2-Apr	Z	12.0	7.3	9.5	3.3	5.0	10.3	5.8	9.4	7.2	5.1	7.8	9.4	6.1	4.9	2.4	1.3	1.6	1.4	0.5	0.3	0.4	0.1	0.2	4.8	12.0
3-Apr	0.3	Z	2.4	5.8	1.7	0.7	5.7	4.2	1.0	1.0	12.8	13.6	11.1	7.3	4.6	2.6	3.8	3.3	3.3	0.7	0.1	0.1	0.4	15.3	4.4	15.3
4-Apr	14.3	0.9	Z	0.1	0.3	0.3	10.1	17.3	24.1	26.5	14.4	7.8	7.7	11.9	9.9	17.2	7.7	4.1	6.6	3.0	24.0	25.1	0.4	1.5	10.2	26.5
5-Apr	3.4	1.9	0.1	Z	0.1	0.0	0.3	0.7	2.2	4.8	7.4	8.2	M	M	2.6	2.3	1.5	1.5	2.2	7.2	52.2	83.7	2.7	16.4	9.6	83.7
6-Apr	12.9	5.0	0.1	0.0	Z	0.8	1.1	0.6	2.2	3.4	2.3	1.8	0.8	0.7	0.5	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	1.4	12.9
7-Apr	0.0	0.0	0.0	0.0	0.0	Z	1.0	2.7	3.1	1.6	1.9	1.9	1.8	2.1	1.7	1.4	1.4	1.2	0.5	0.1	0.1	0.2	0.0	0.0	1.0	3.1
8-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.7	1.4	3.0	1.8	1.3	1.2	1.1	1.6	2.5	1.1	0.8	0.2	0.9	0.3	9.5	0.1	12.7	1.8	12.7
9-Apr	0.1	Z	0.0	0.0	0.0	0.0	1.8	6.8	0.3	0.1	0.7	0.7	0.5	0.3	0.3	0.1	0.0	0.0	18.0	59.0	15.9	0.0	19.4	49.9	7.6	59.0
10-Apr	52.5	42.5	Z	0.0	0.0	0.0	1.1	1.2	0.8	0.9	0.9	0.5	0.5	0.4	0.5	0.5	0.6	0.3	0.3	0.1	0.0	0.0	0.0	0.2	4.5	52.5
11-Apr	0.9	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
12-Apr	0.0	2.4	0.0	1.0	Z	0.1	4.9	3.2	7.2	6.6	7.7	9.3	3.9	0.8	0.1	0.5	0.7	0.2	0.3	1.3	0.6	0.3	7.4	6.0	2.8	9.3
13-Apr	1.9	3.9	0.0	41.4	24.7	Z	2.8	20.9	22.9	9.0	4.5	1.7	2.8	3.2	1.6	1.5	0.7	0.5	1.3	13.2	20.2	3.7	1.7	2.6	8.1	41.4
14-Apr	Z	59.0	105.7	94.9	18.6	3.3	8.2	28.8	30.7	21.8	22.6	9.9	7.7	7.4	3.7	4.9	0.8	0.5	0.9	10.8	33.3	5.9	16.9	68.4	24.4	105.7
15-Apr	22.3	Z	76.6	65.0	9.0	1.9	8.5	34.6	27.7	37.5	46.7	17.7	14.7	6.1	4.4	4.0	2.0	0.4	2.2	1.3	1.4	4.6	3.1	5.1	17.3	76.6
16-Apr	26.7	16.2	Z	39.2	18.6	5.8	24.1	46.0	16.6	46.2	33.7	8.2	0.8	0.6	0.5	0.6	0.5	0.4	1.0	0.6	0.1	0.3	0.1	0.2	12.5	46.2
17-Apr	0.3	1.6	0.4	Z	1.5	1.7	5.3	17.8	8.1	1.9	1.6	1.5	1.7	1.2	1.5	0.8	0.4	0.5	0.1	0.5	0.3	0.1	0.1	0.2	2.1	17.8
18-Apr	0.1	0.1	16.3	6.3	Z	0.2	0.5	1.0	29.3	7.7	2.8	1.1	0.8	1.5	0.4	0.7	0.6	0.5	PF	PF	PF	PF	PF	PF	--	29.3
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	19.4	16.3	7.4	1.7	1.0	0.6	0.5	0.3	0.3	0.8	7.2	14.3	0.2	0.5	0.1	--	19.4
21-Apr	0.2	Z	5.4	0.7	12.9	20.3	7.6	2.0	9.2	C	C	C	C	C	1.0	0.8	0.7	0.6	0.2	0.0	0.0	18.2	52.8	45.9	9.9	52.8
22-Apr	93.3	23.0	Z	0.0	0.0	0.0	1.1	3.5	2.9	1.1	1.0	1.1	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	58.4	8.1	93.3
23-Apr	142.3	76.6	38.2	Z	26.1	46.9	46.1	6.5	28.8	7.8	9.3	12.8	5.2	0.4	0.0	0.4	0.0	0.9	1.0	1.2	1.0	1.1	6.0	1.3	20.0	142.3
24-Apr	1.6	58.5	54.3	27.1	Z	5.1	5.3	2.2	4.2	2.0	2.0	3.7	2.6	1.9	0.5	0.3	0.0	0.0	0.9	1.2	0.3	0.0	0.0	1.6	7.6	58.5
25-Apr	0.0	0.4	87.0	154.6	61.9	Z	1.4	4.5	1.9	1.6	2.6	2.5	1.1	0.0	0.1	4.2	1.1	4.4	4.4	0.9	0.0	1.1	3.7	0.6	14.8	154.6
26-Apr	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	0.8	1.9	1.3	0.8	1.0	2.2	6.1	0.5	0.0	0.0	0.6	6.1
27-Apr	0.0	Z	0.0	6.1	16.0	0.8	2.6	47.0	91.4	16.6	15.2	2.8	1.0	0.8	0.7	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	91.4
28-Apr	0.0	0.0	Z	6.7	59.3	11.5	1.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.5	0.7	2.1	10.2	0.0	0.0	4.0	59.3
29-Apr	0.0	0.0	0.0	Z	0.0	8.2	59.0	132.9	108.8	10.6	10.4	6.2	2.6	2.7	2.2	2.3	0.8	0.9	0.6	2.7	3.9	7.0	5.4	43.5	17.9	132.9
30-Apr	8.9	12.8	35.1	6.0	Z	0.1	0.3	0.6	1.6	2.7	3.0	1.8	0.7	0.5	0.5	0.4	0.4	0.6	0.7	7.2	9.3	12.3	1.2	0.2	4.6	35.1

16.5	15.4	19.5	20.4	11.1	4.7	8.4	14.8	15.8	8.9	8.3	5.1	3.1	2.2	1.6	1.8	1.0	0.9	1.7	4.4	6.6	6.6	4.4	11.8	Diurnal Average	
142.3	76.6	105.7	154.6	61.9	46.9	59.0	132.9	108.8	46.2	46.7	17.7	14.7	11.9	9.9	17.2	7.7	4.4	18.0	59.0	52.2	83.7	52.8	68.4	Diurnal Maximum	

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Hills - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	580	89.78	89.78
21 - 40	30	4.64	94.43
41 - 80	26	4.02	98.45
81 - 159	10	1.55	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 646

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Fort Hills - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	67	39	28	21	18	54	62	74	72	24	22	30	11	12	13	33	580
21 - 40	10	4	1	2	1	1	8	0	1	0	0	1	0	0	0	1	30
41 - 80	5	1	1	0	2	2	11	2	0	1	0	0	0	0	0	1	26
81 - 159	1	1	0	0	0	1	6	1	0	0	0	0	0	0	0	0	10
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	83	45	30	23	21	58	87	77	73	25	22	31	11	12	13	35	646

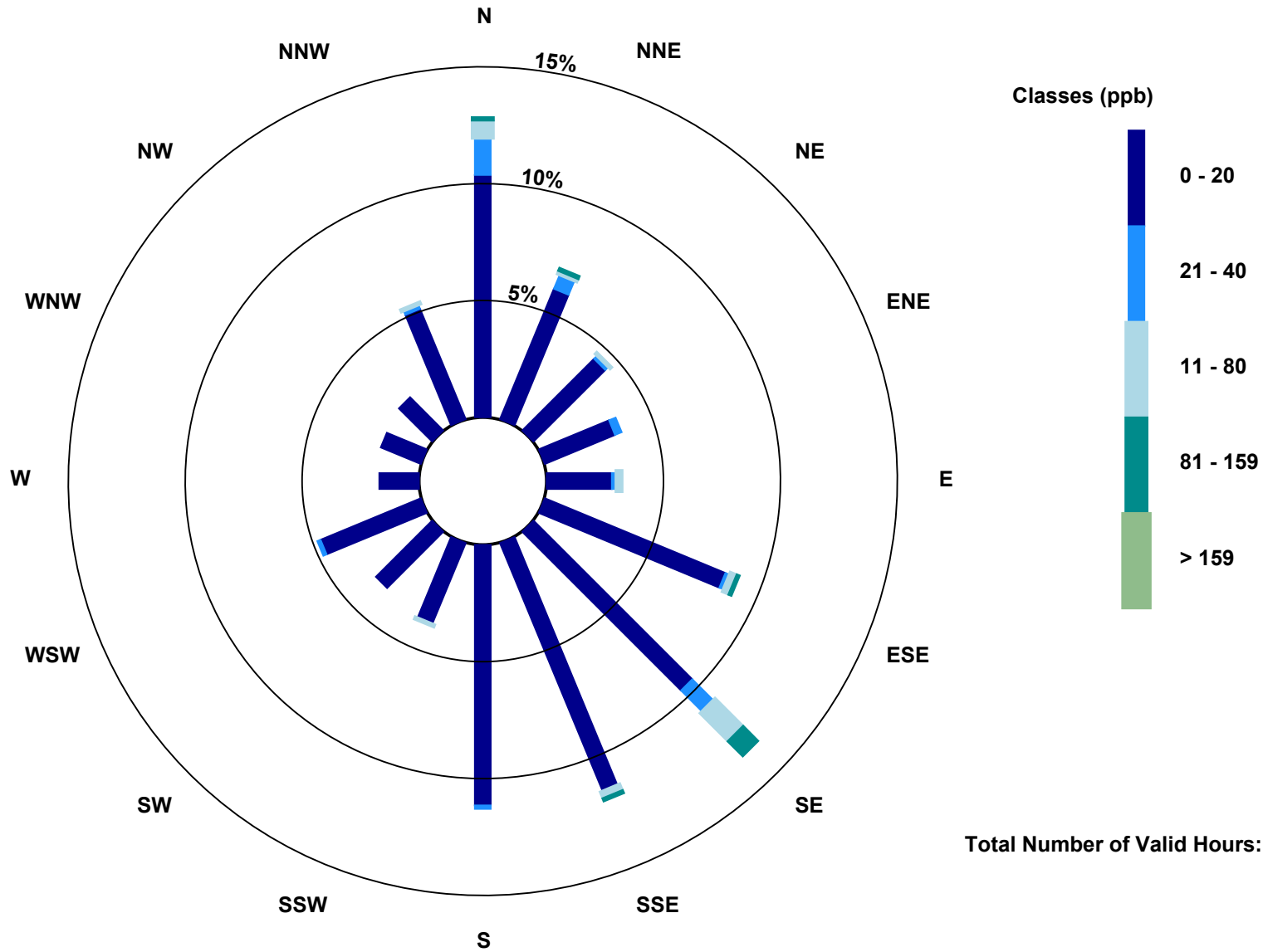
Total Number of Valid Hours: 646

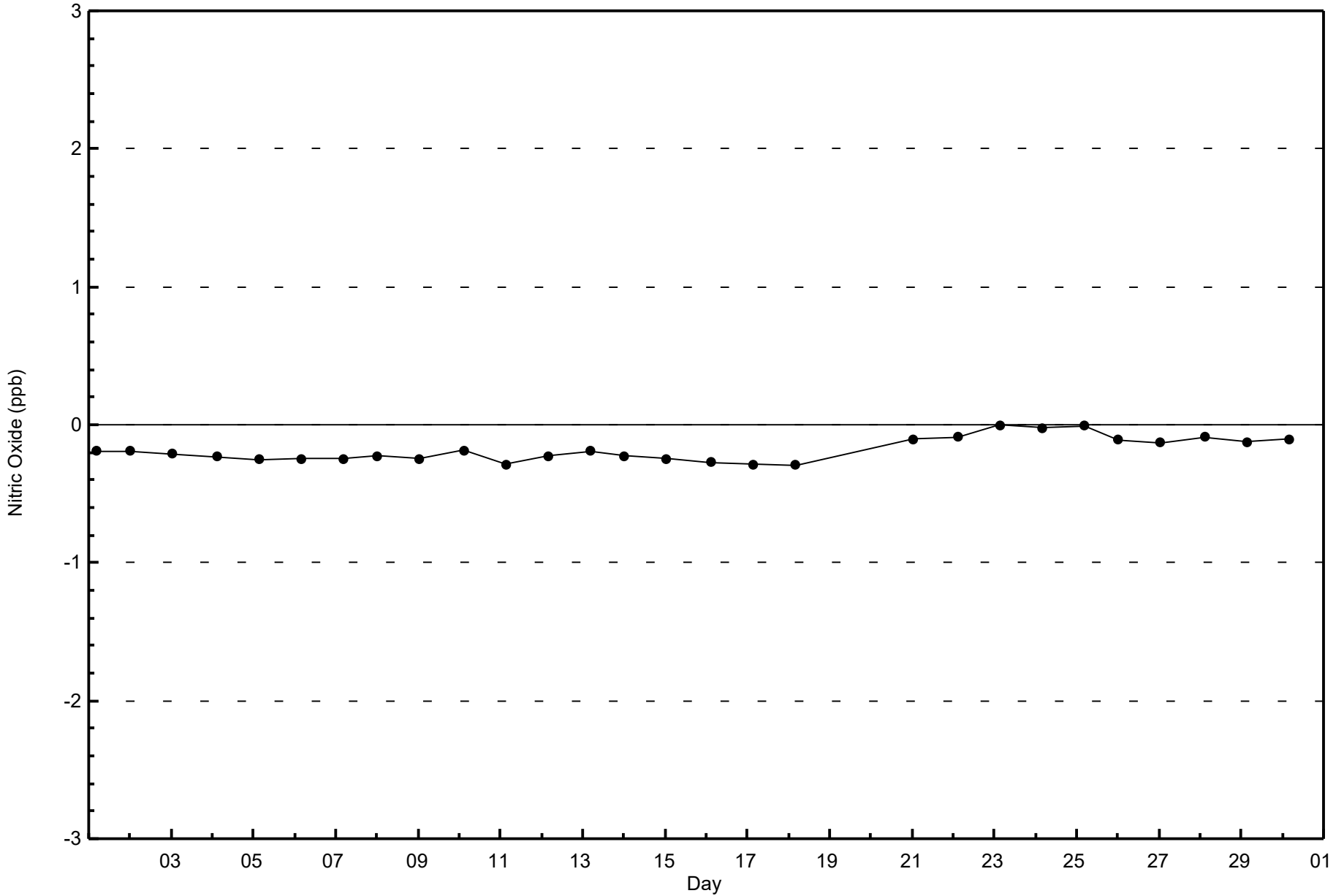
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Fort Hills

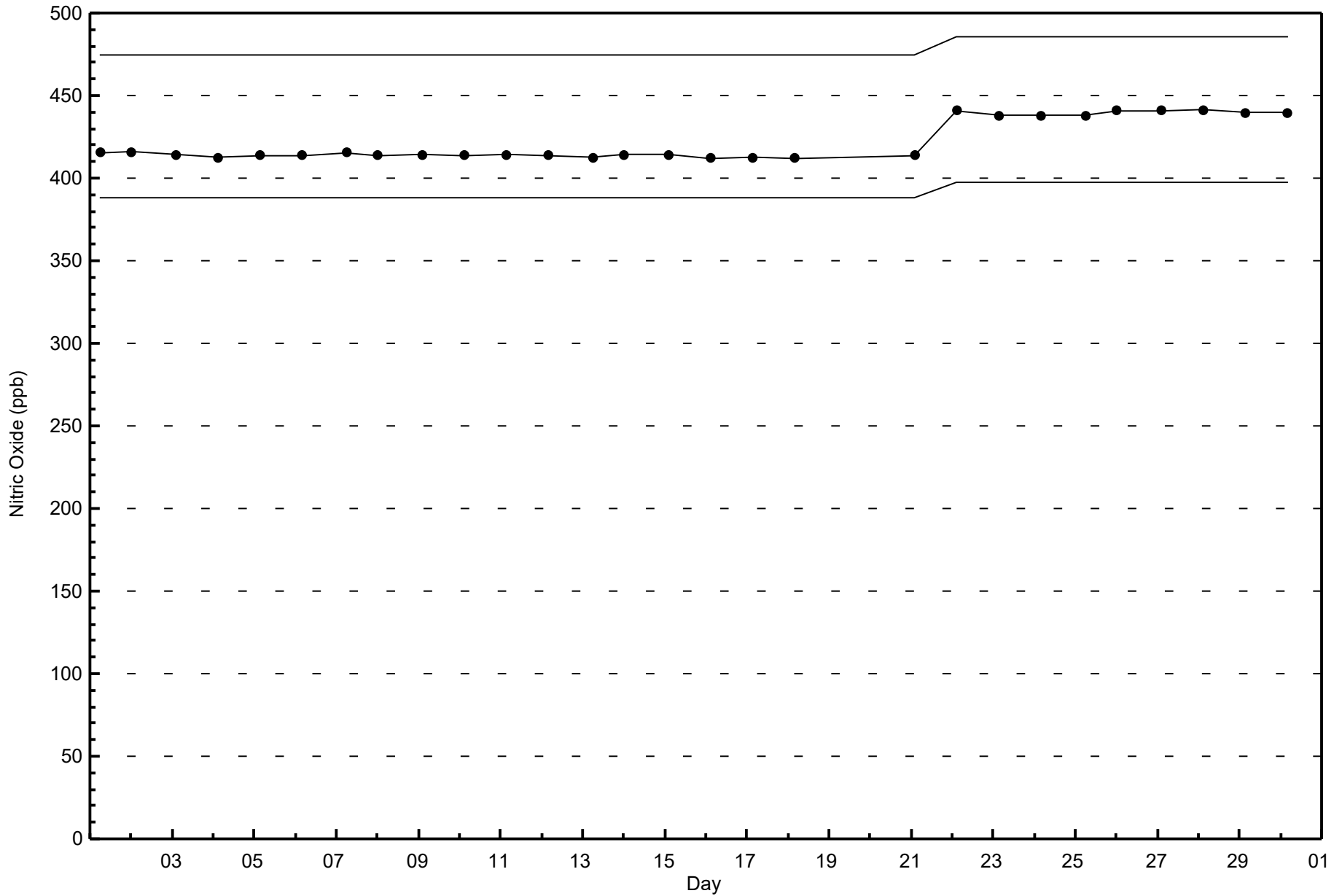






Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Fort Hills - April 2023





Wood Buffalo Environmental Association
Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb
Fort Hills - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 47.2 ppb on Apr 5 22:00	Maximum Daily Average: 23.5 ppb on Apr 23
Minimum Value: 0.1 ppb on Apr 26 04:00	Hours of Data: 646
Maximum Diurnal Average: 22.3 ppb at hour 1	Hours of Missing Data: 74
Monthly Average: 13.38 ppb	Hours of Calibration: 33
Minimum Daily Average: 2.7 ppb on Apr 11	Percent Operational Time: 94.3
Minimum Diurnal Average: 4.5 ppb at hour 15	
Percentiles: P ₁ = 0.2 P ₁₀ = 1.7 Q ₁ = 3.6 Median = 9.5 Q ₃ = 21.2 P ₉₀ = 32.4 P ₉₉ = 43.8	

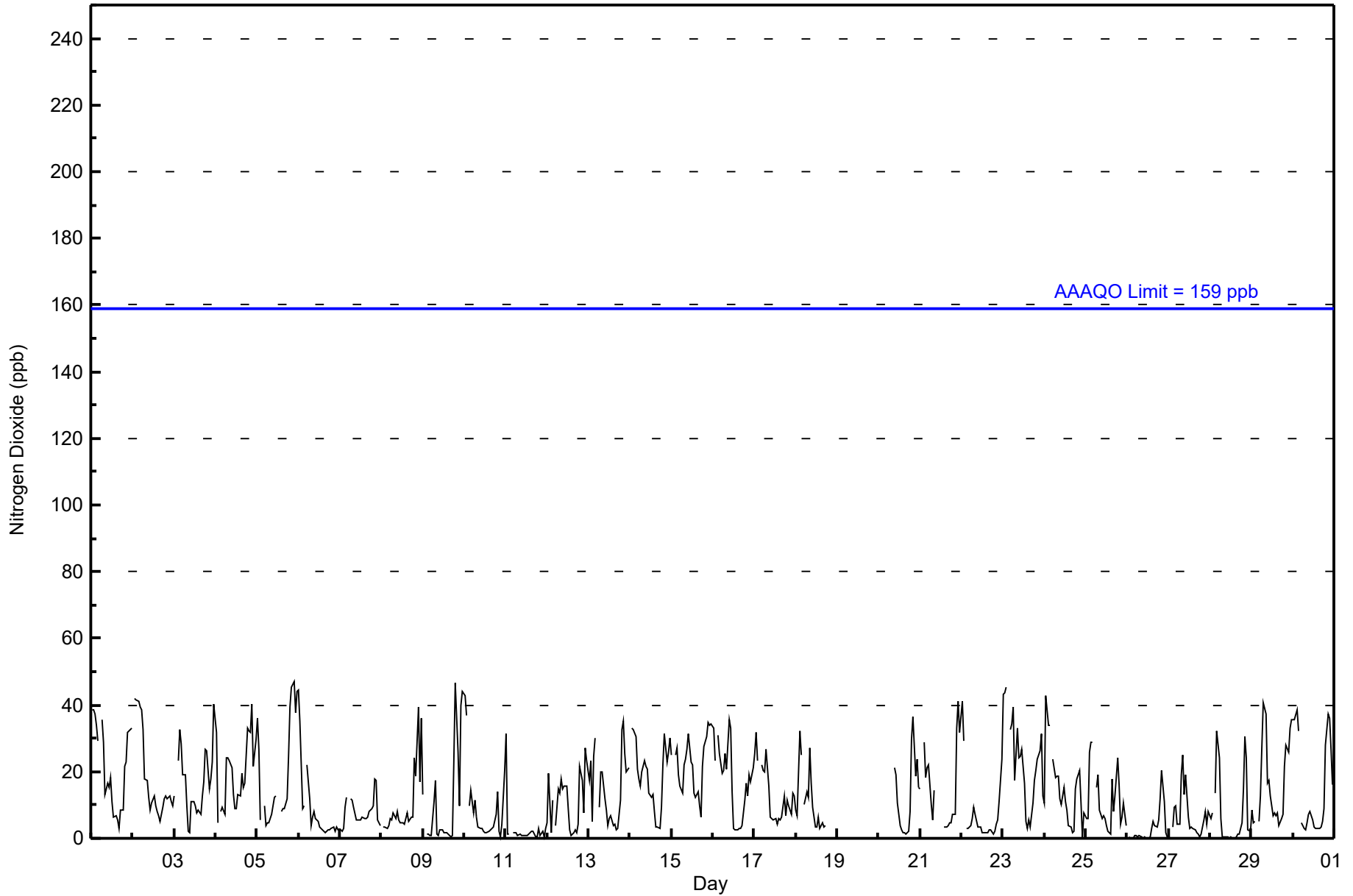
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	38.6	38.7	37.2	33.7	29.4	Z	35.4	28.8	13.3	16.5	15.1	18.2	11.2	6.5	6.6	5.4	3.1	8.3	8.5	21.6	22.7	31.7	32.1	33.1	21.6	38.7																							
2-Apr	Z	42.1	41.7	41.3	39.3	38.4	32.8	17.9	17.2	12.2	8.4	10.5	12.9	9.7	7.9	6.7	5.2	9.4	12.0	12.6	11.8	12.5	11.1	9.7	18.4	42.1																							
3-Apr	12.9	Z	23.1	32.7	28.6	18.9	19.1	9.8	2.3	1.7	11.1	11.2	9.9	7.6	8.5	7.2	12.7	16.8	26.9	26.4	15.0	17.6	23.0	40.2	16.7	40.2																							
4-Apr	31.7	4.7	Z	8.2	9.5	7.2	24.2	24.3	23.5	21.2	13.2	8.8	8.9	13.2	12.6	19.6	15.1	16.4	33.2	32.4	31.6	40.4	21.6	29.7	19.6	40.4																							
5-Apr	36.2	26.9	5.4	Z	9.6	3.9	4.5	4.8	7.1	9.6	12.2	12.5	M	M	8.2	8.8	8.7	12.0	24.6	39.5	45.2	47.2	37.9	43.9	19.5	47.2																							
6-Apr	44.7	35.1	8.7	9.8	Z	22.0	11.8	3.7	6.4	8.0	5.9	5.0	3.2	2.9	2.7	1.8	2.2	2.4	2.7	3.1	3.2	2.3	3.4	2.4	8.4	44.7																							
7-Apr	2.7	2.1	3.1	9.4	12.2	Z	12.0	11.5	9.2	5.7	5.4	5.6	5.4	6.3	5.9	5.8	6.5	8.0	8.7	9.9	17.8	17.3	5.7	4.0	7.8	17.8																							
8-Apr	Z	3.2	3.2	3.1	3.7	6.0	5.6	7.6	6.1	8.0	5.3	4.6	4.5	4.1	5.8	7.8	5.0	6.4	6.5	24.0	18.6	39.5	16.9	36.2	10.1	39.5																							
9-Apr	13.3	Z	1.3	1.3	1.0	0.8	11.0	17.5	1.4	0.9	2.4	2.5	1.9	1.6	1.5	1.0	0.5	0.9	23.0	46.5	25.7	9.7	40.0	43.9	10.9	46.5																							
10-Apr	43.0	36.9	Z	9.6	14.6	7.6	11.3	6.4	3.6	3.1	2.8	2.0	1.7	1.8	2.1	2.5	3.1	3.2	7.1	13.9	2.0	0.4	4.2	20.4	8.8	43.0																							
11-Apr	31.2	1.3	1.2	Z	1.8	1.8	1.6	0.8	1.1	0.8	0.9	0.8	1.0	1.1	1.7	2.2	2.1	0.4	0.6	3.0	0.9	2.3	0.4	3.1	2.7	31.2																							
12-Apr	4.7	19.4	1.9	11.3	Z	3.7	14.9	13.6	18.0	14.7	15.8	15.8	9.0	2.5	0.7	1.7	2.5	1.8	4.4	21.5	17.3	7.8	27.2	23.1	11.0	27.2																							
13-Apr	17.5	23.1	4.9	24.7	30.0	Z	9.5	20.1	19.8	12.0	8.5	4.0	5.9	6.8	4.0	4.3	2.6	3.1	11.5	32.5	35.2	25.6	19.9	21.0	15.1	35.2																							
14-Apr	Z	33.1	32.7	30.3	20.9	17.8	15.8	20.1	23.3	21.4	20.9	13.6	12.4	13.2	8.1	3.2	3.5	3.1	9.5	21.9	31.3	22.8	25.8	29.9	18.9	33.1																							
15-Apr	24.8	Z	25.2	27.0	19.0	15.7	13.6	22.1	23.9	26.9	31.2	22.8	22.1	13.6	12.1	13.9	9.8	6.4	21.4	27.4	30.6	34.9	34.1	34.4	22.3	34.9																							
16-Apr	33.1	23.2	Z	31.0	25.4	19.5	20.5	25.6	20.7	35.4	32.9	14.1	3.0	2.6	2.6	3.1	3.0	3.8	11.5	16.5	12.5	19.0	17.0	21.2	17.3	35.4																							
17-Apr	25.6	31.9	23.5	Z	22.1	20.3	19.8	26.5	15.8	6.3	5.9	5.5	6.1	4.4	5.9	5.6	6.5	12.6	6.8	11.4	9.6	7.3	13.4	12.5	13.3	31.9																							
18-Apr	8.4	6.8	32.2	25.1	Z	10.2	14.0	12.3	27.2	16.5	9.4	3.6	3.6	6.2	2.8	4.5	3.6	3.9	PF	PF	PF	PF	PF	PF	--	32.2																							
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	21.1	19.0	10.4	4.0	2.5	1.9	1.8	1.3	2.1	8.1	29.8	36.3	18.6	23.9	15.2	--	36.3																							
21-Apr	14.8	Z	28.9	18.4	21.3	22.1	10.0	5.3	14.2	C	C	C	C	C	3.5	3.3	3.7	4.6	4.7	7.2	7.3	33.2	40.9	31.7	15.3	40.9																							
22-Apr	40.9	29.4	Z	3.1	2.8	3.8	5.8	9.5	7.1	3.5	3.2	3.4	1.6	1.7	1.6	1.9	2.5	2.4	1.4	2.2	4.4	5.6	11.0	23.7	7.5	40.9																							
23-Apr	43.4	43.7	45.2	Z	32.6	34.2	39.5	17.4	32.9	24.3	24.5	26.7	16.5	4.9	2.8	5.5	3.6	10.7	17.3	20.3	23.8	26.4	31.3	12.9	23.5	45.2																							
24-Apr	10.7	42.9	34.1	33.7	Z	23.7	18.4	18.6	18.8	11.9	10.0	15.2	11.1	8.4	3.9	3.2	1.9	2.0	15.0	18.0	20.3	10.8	0.3	7.6	14.8	42.9																							
25-Apr	6.1	5.9	26.0	28.7	28.9	Z	15.4	19.1	8.5	5.9	6.8	6.0	3.9	2.1	1.3	17.6	8.0	12.5	24.1	15.7	4.1	6.5	10.4	4.0	11.6	28.9																							
26-Apr	Z	0.6	0.2	0.1	0.7	0.7	0.4	0.8	0.4	0.2	0.3	0.2	0.2	0.6	2.8	5.2	3.9	3.2	5.6	11.8	20.4	10.9	1.5	0.6	3.1	20.4																							
27-Apr	0.3	Z	3.3	9.4	9.7	4.2	4.1	19.0	25.1	13.2	19.1	6.5	3.0	3.3	2.8	2.5	1.6	1.2	0.5	1.4	5.6	7.9	4.1	8.0	6.8	25.1																							
28-Apr	5.9	7.5	Z	13.6	32.3	24.2	5.8	0.6	0.5	0.5	0.5	0.2	0.3	0.2	0.2	0.4	1.3	1.1	4.7	14.8	30.3	24.2	2.7	2.3	7.6	32.3																							
29-Apr	8.3	4.7	4.9	Z	5.0	12.6	27.0	40.8	37.2	16.6	17.5	12.5	6.9	7.5	6.9	7.8	3.9	6.0	7.4	21.8	27.9	25.8	32.9	35.5	16.4	40.8																							
30-Apr	35.8	35.5	38.7	32.3	Z	4.6	3.1	2.5	4.6	7.0	7.9	5.4	3.3	2.8	2.8	2.9	3.3	5.0	8.9	27.8	37.3	36.1	26.5	16.1	15.2	38.7																							
																								22.3	21.7	18.5	19.0	17.4	13.5	14.5	14.5	13.9	11.6	11.3	8.8	6.4	5.1	4.5	5.4	4.5	5.9	11.3	19.1	19.6	19.4	18.5	20.2	Diurnal Average	
																								44.7	43.7	45.2	41.3	39.3	38.4	39.5	40.8	37.2	35.4	32.9	26.7	22.1	13.6	12.6	19.6	15.1	16.8	33.2	46.5	45.2	47.2	40.9	43.9	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 (NO₂) - ppb
Fort Hills - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Hills - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	478	73.99	73.99
21 - 40	151	23.37	97.37
41 - 80	17	2.63	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 646

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Fort Hills - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	52	28	22	17	9	39	39	67	69	23	19	29	11	12	13	29	478
21 - 40	31	16	8	6	12	15	36	10	4	2	3	2	0	0	0	6	151
41 - 80	0	1	0	0	0	4	12	0	0	0	0	0	0	0	0	0	17
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
Totals	83	45	30	23	21	58	87	77	73	25	22	31	11	12	13	35	646

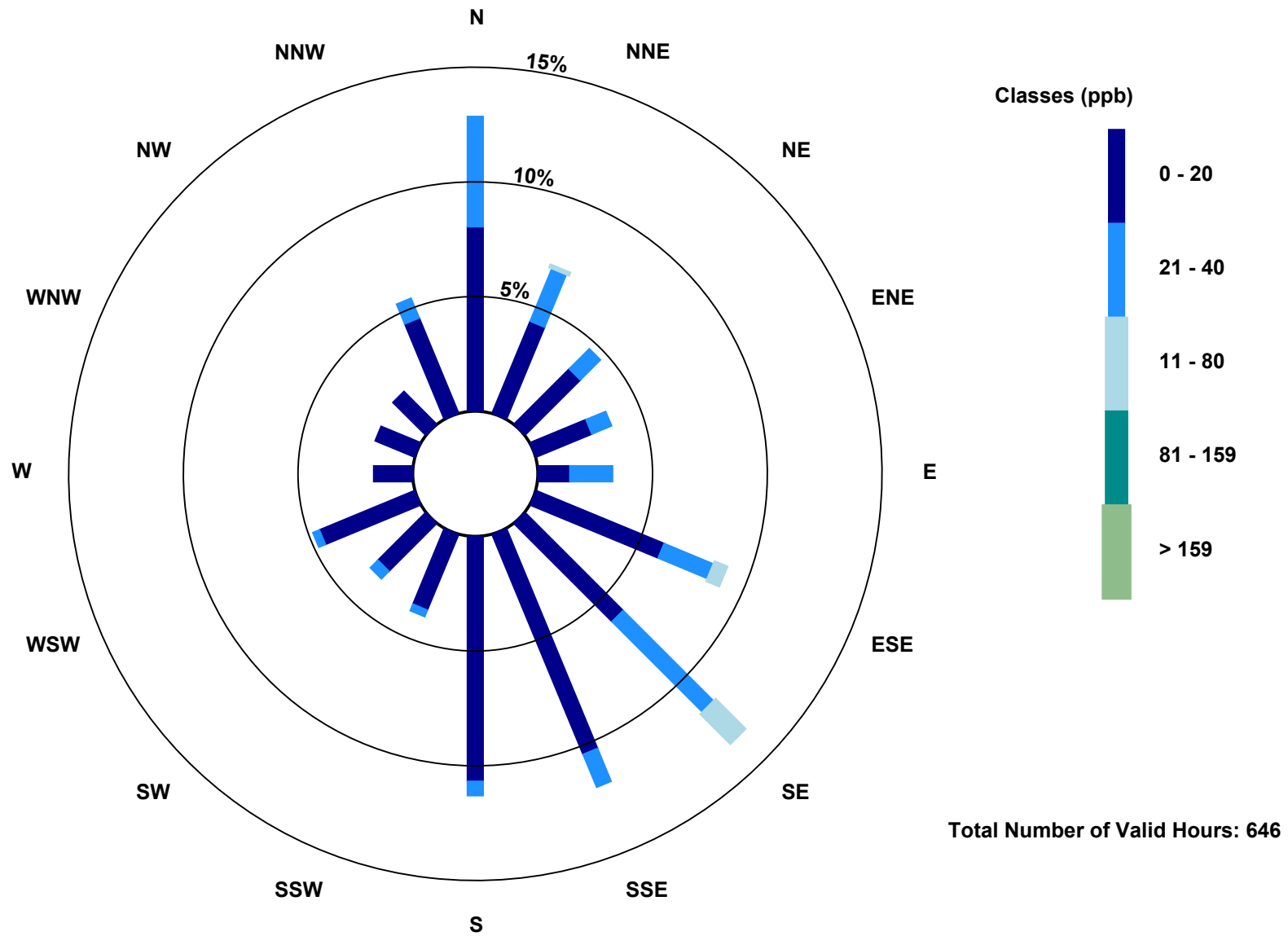
Total Number of Valid Hours: 646

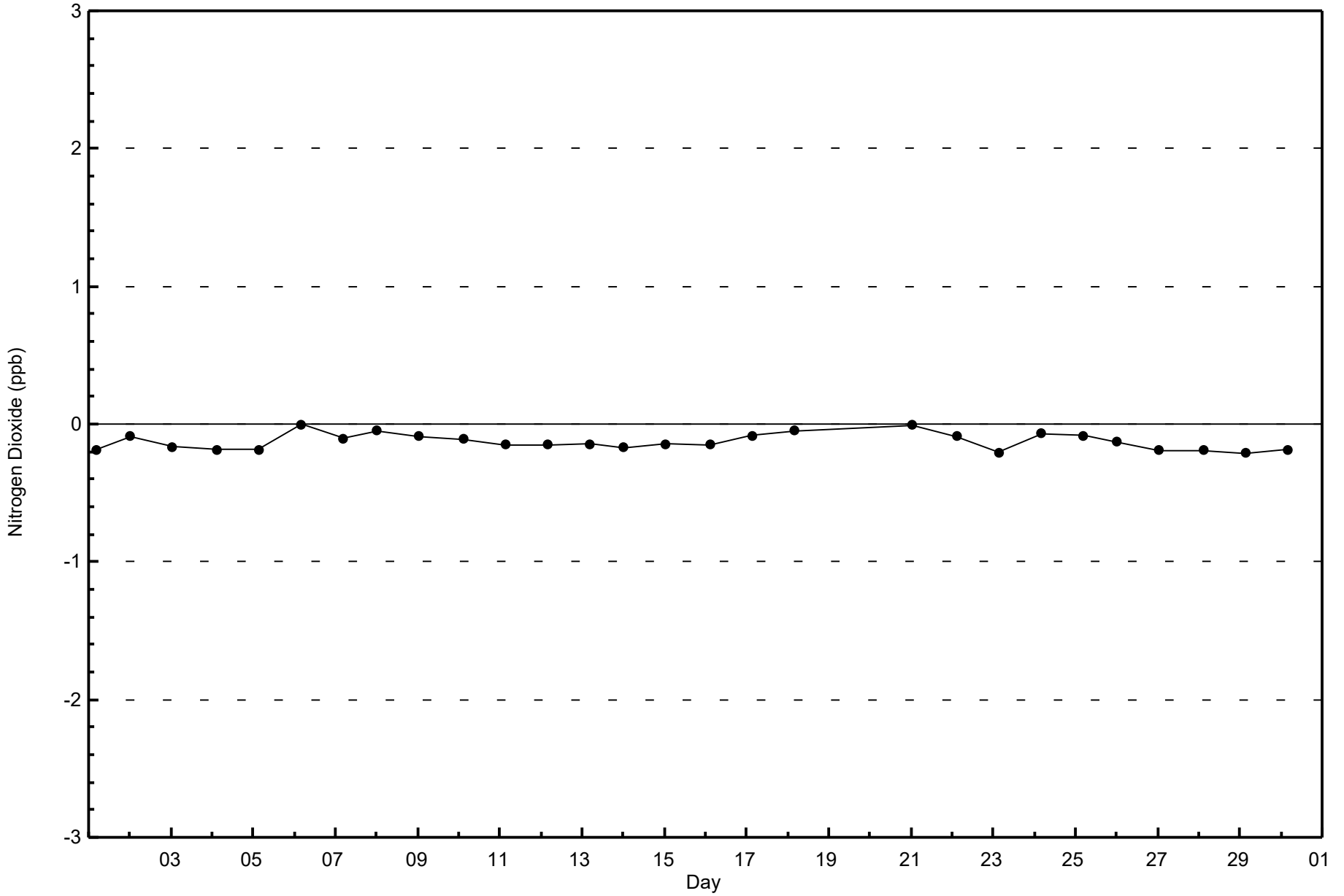
Total Number of Hours: 720

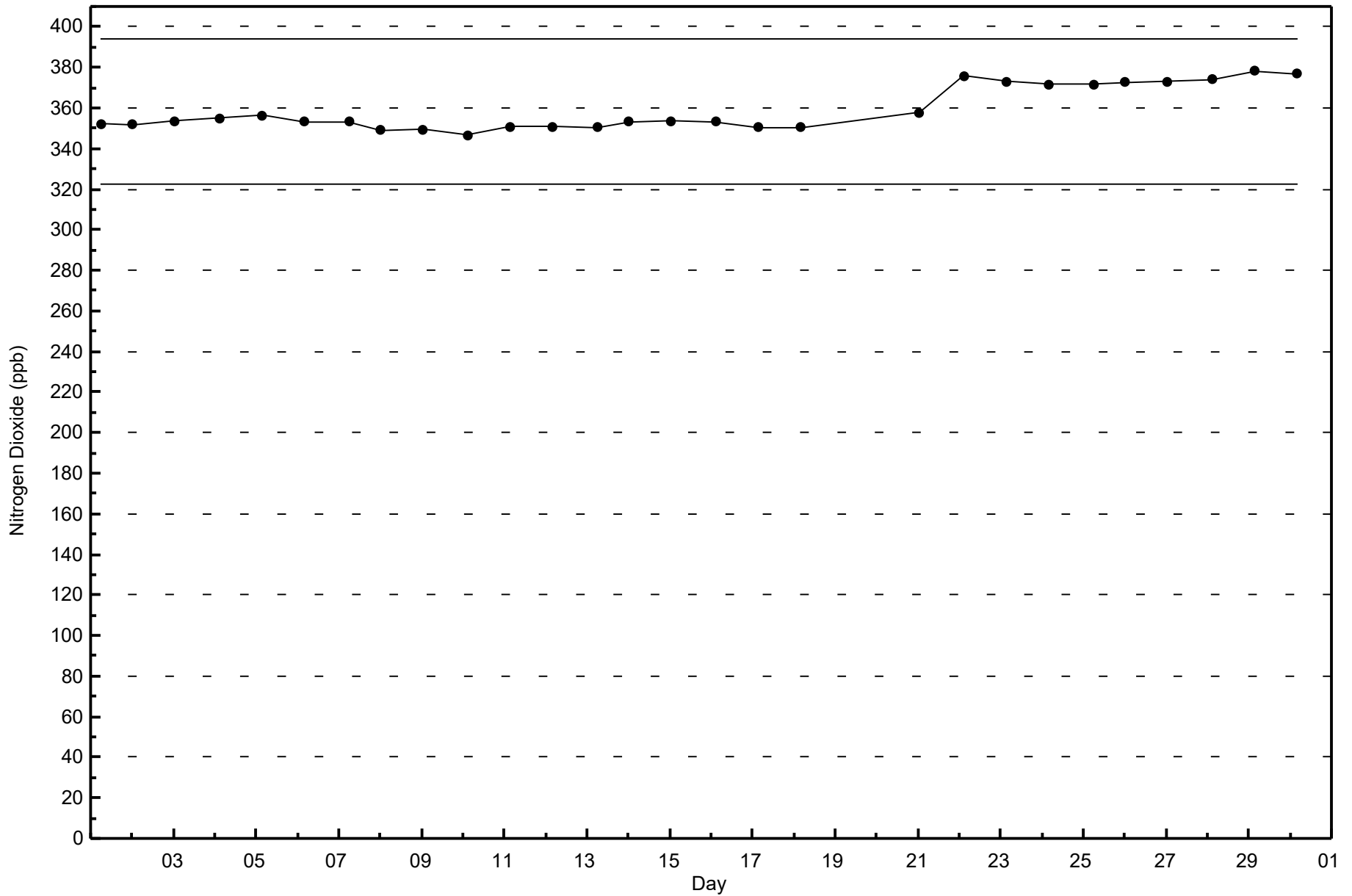


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Fort Hills









Wood Buffalo Environmental Association

Summary of Hour Averages

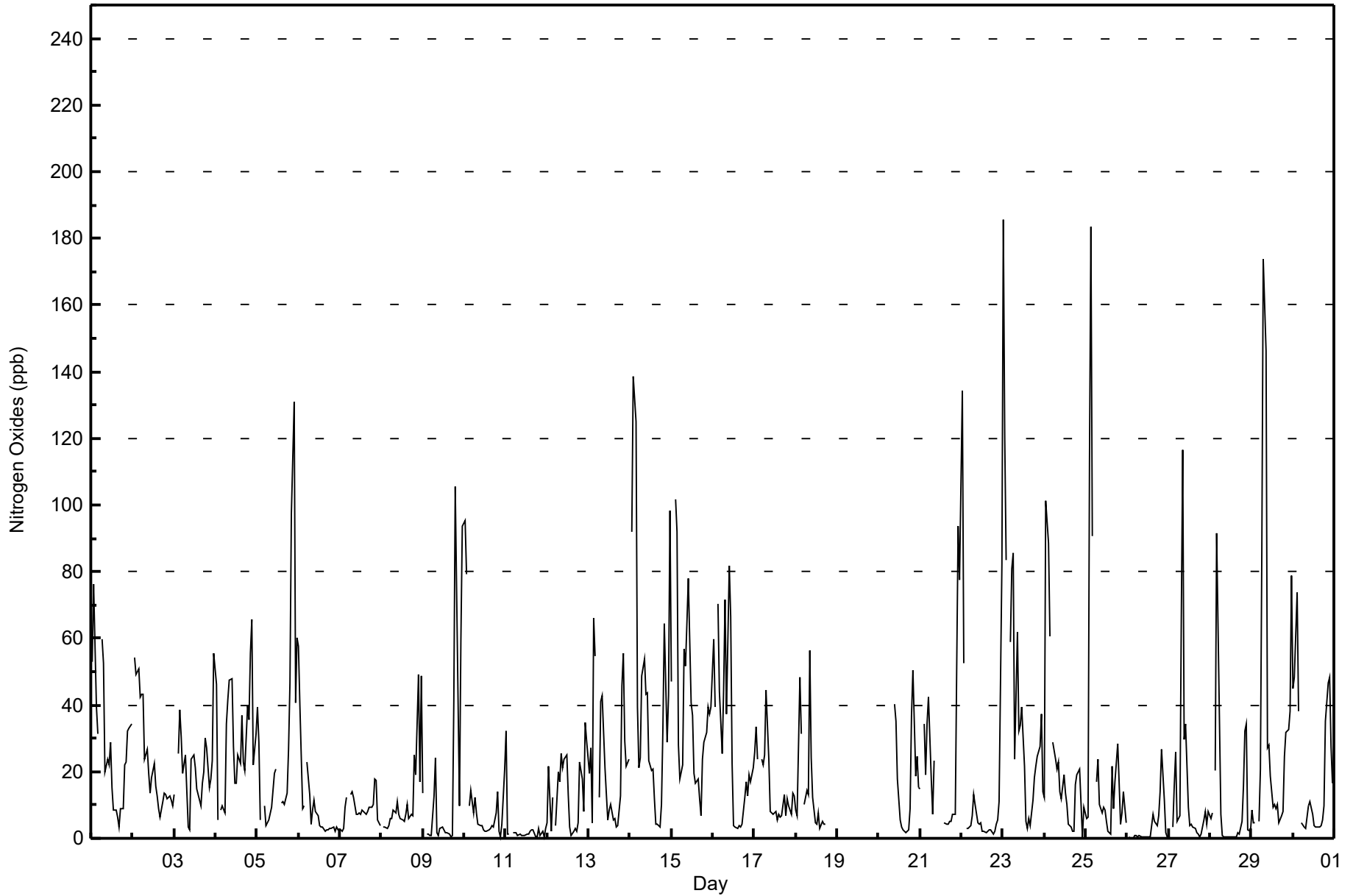
Nitrogen Oxides (NO_x) - ppb

Fort Hills - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 185.7 ppb on Apr 23 01:00	Maximum Daily Average: 43.5 ppb on Apr 23		Hours of Data:	646
Minimum Value: 0.1 ppb on Apr 26 04:00	Minimum Daily Average: 2.8 ppb on Apr 11		Hours of Missing Data:	74
Maximum Diurnal Average: 39.5 ppb at hour 4	Minimum Diurnal Average: 5.5 ppb at hour 17		Hours of Calibration:	33
Monthly Average: 21.20 ppb	Percentiles: P ₁ = 0.2 P ₁₀ = 1.9 Q ₁ = 4.1 Median = 11.4 Q ₃ = 27.1 P ₉₀ = 51.5 P ₉₉ = 128.4		Percent Operational Time:	94.3

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-Apr	53.1	76.5	57.6	39.2	31.4	Z	59.7	52.5	20.1	23.6	22.0	28.6	15.3	8.6	8.5	6.3	3.3	8.9	8.7	21.9	22.8	32.1	33.0	34.2	29.0	76.5
2-Apr	Z	54.1	49.0	50.8	42.6	43.4	43.1	23.7	26.6	19.4	13.6	18.3	22.3	15.8	12.8	9.1	6.5	11.0	13.4	13.1	12.1	12.9	11.2	9.9	23.2	54.1
3-Apr	13.2	Z	25.5	38.5	30.3	19.6	24.8	14.0	3.3	2.7	23.9	24.8	21.0	14.9	13.1	9.8	16.5	20.1	30.2	27.1	15.1	17.7	23.4	55.5	21.1	55.5
4-Apr	46.0	5.6	Z	8.3	9.8	7.5	34.3	41.6	47.6	47.7	27.6	16.6	16.6	25.1	22.5	36.8	22.8	20.5	39.8	35.4	55.6	65.5	22.0	31.2	29.8	65.5
5-Apr	39.6	28.8	5.5	Z	9.7	3.9	4.8	5.5	9.3	14.4	19.6	20.7	M	M	10.8	11.1	10.2	13.5	26.8	46.7	97.4	131.0	40.6	60.3	29.1	131.0
6-Apr	57.6	40.1	8.8	9.8	Z	22.8	12.9	4.3	8.6	11.4	8.2	6.8	4.0	3.6	3.2	2.0	2.4	2.6	2.8	3.1	3.2	2.3	3.4	2.4	9.9	57.6
7-Apr	2.7	2.1	3.1	9.4	12.2	Z	13.0	14.2	12.3	7.3	7.3	7.5	7.2	8.4	7.6	7.2	7.9	9.2	9.2	10.0	17.9	17.5	5.7	4.0	8.8	17.9
8-Apr	Z	3.2	3.2	3.1	3.7	6.0	5.8	8.3	7.5	11.0	7.1	5.9	5.7	5.2	7.4	10.3	6.1	7.2	6.7	24.9	18.9	49.0	17.0	48.9	11.8	49.0
9-Apr	13.4	Z	1.3	1.3	1.0	0.8	12.8	24.3	1.7	1.0	3.1	3.2	2.4	1.9	1.8	1.1	0.5	0.9	41.0	105.5	41.6	9.7	59.4	93.8	18.4	105.5
10-Apr	95.5	79.4	Z	9.6	14.6	7.6	12.4	7.6	4.4	4.0	3.7	2.5	2.2	2.2	2.6	3.0	3.7	3.5	7.4	14.0	2.0	0.4	4.2	20.6	13.4	95.5
11-Apr	32.1	1.3	1.2	Z	1.8	1.8	1.7	0.9	1.3	0.9	1.0	0.9	1.1	1.3	2.0	2.6	2.4	0.4	0.6	3.0	0.9	2.3	0.4	3.1	2.8	32.1
12-Apr	4.7	21.8	1.9	12.3	Z	3.8	19.8	16.8	25.2	21.3	23.5	25.1	12.9	3.3	0.8	2.2	3.2	2.0	4.7	22.8	17.9	8.1	34.6	29.1	13.8	34.6
13-Apr	19.4	27.0	4.9	66.1	54.7	Z	12.3	41.0	42.7	21.0	13.0	5.7	8.7	10.0	5.6	5.8	3.3	3.6	12.8	45.7	55.4	29.3	21.6	23.6	23.2	66.1
14-Apr	Z	92.1	138.4	125.2	39.5	21.1	24.0	48.9	54.0	43.2	43.5	20.1	20.6	11.8	4.1	4.3	3.6	10.4	32.7	64.6	28.7	42.7	98.3	43.3	138.4	
15-Apr	47.1	Z	101.8	92.0	28.0	17.6	22.1	56.7	51.6	64.4	77.9	40.5	36.8	19.7	16.5	17.9	11.8	6.8	23.6	28.7	32.0	39.5	37.2	39.5	39.5	101.8
16-Apr	59.8	39.4	Z	70.2	44.0	25.3	44.6	71.6	37.3	81.6	66.6	22.3	3.8	3.2	3.1	3.7	3.5	4.2	12.5	17.1	12.6	19.3	17.1	21.4	29.8	81.6
17-Apr	25.9	33.5	23.9	Z	23.6	22.0	25.1	44.3	23.9	8.2	7.5	7.0	7.8	5.6	7.4	6.4	6.9	13.1	6.9	11.9	9.9	7.4	13.5	12.7	15.4	44.3
18-Apr	8.5	6.9	48.5	31.4	Z	10.4	14.5	13.3	56.5	24.2	12.2	4.7	4.4	7.7	3.2	5.2	4.2	4.4	PF	PF	PF	PF	PF	PF	--	56.5
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	40.5	35.3	17.8	5.7	3.5	2.5	2.3	1.6	2.4	8.9	37.0	50.6	18.8	24.4	15.3	--	50.6
21-Apr	15.0	Z	34.3	19.1	34.2	42.4	17.6	7.3	23.4	C	C	C	C	C	4.5	4.1	4.4	5.2	4.9	7.2	7.3	51.4	93.7	77.6	25.2	93.7
22-Apr	134.2	52.4	Z	3.1	2.8	3.8	6.9	13.0	10.0	4.6	4.2	4.5	1.9	2.0	1.7	2.0	2.6	2.4	1.4	2.2	4.4	5.6	11.0	82.1	15.6	134.2
23-Apr	185.7	120.3	83.4	Z	58.7	81.1	85.6	23.9	61.7	32.1	33.8	39.5	21.7	5.3	2.8	5.9	3.6	11.6	18.3	21.5	24.8	27.5	37.3	14.2	43.5	185.7
24-Apr	12.3	101.4	88.4	60.8	Z	28.8	23.7	20.8	23.0	13.9	12.0	18.9	13.7	10.3	4.4	3.5	1.9	2.0	15.9	19.2	20.6	10.8	0.3	9.2	22.4	101.4
25-Apr	6.1	6.3	113.0	183.3	90.8	Z	16.8	23.6	10.4	7.5	9.4	8.5	5.0	2.1	1.4	21.8	9.1	16.9	28.5	16.6	4.1	7.6	14.1	4.6	26.4	183.3
26-Apr	Z	0.6	0.2	0.1	0.7	0.7	0.4	0.9	0.4	0.2	0.3	0.2	0.2	0.6	3.6	7.1	5.2	4.0	6.6	14.0	26.5	11.4	1.5	0.6	3.7	26.5
27-Apr	0.3	Z	3.3	15.5	25.7	5.0	6.7	66.0	116.5	29.8	34.3	9.3	4.0	4.1	3.5	3.0	1.9	1.2	0.5	1.4	5.6	7.9	4.1	8.0	15.6	116.5
28-Apr	5.9	7.5	Z	20.3	91.6	35.7	7.1	0.8	0.5	0.5	0.6	0.2	0.3	0.2	0.4	1.5	1.2	5.2	15.5	32.4	34.4	2.7	2.3	11.6	91.6	
29-Apr	8.3	4.7	4.9	Z	5.0	20.8	86.0	173.7	146.0	27.2	27.9	18.7	9.5	10.2	9.1	10.1	4.7	6.9	8.0	24.5	31.8	32.8	38.3	79.0	34.3	173.7
30-Apr	44.7	48.3	73.8	38.3	Z	4.7	3.4	3.1	6.2	9.7	10.9	7.2	4.0	3.3	3.3	3.3	3.7	5.6	9.6	35.0	46.6	48.4	27.7	16.3	19.9	73.8
																								Diurnal Average		
																								Diurnal Maximum		

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





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort Hills - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	419	64.86	64.86
21 - 40	128	19.81	84.67
41 - 80	69	10.68	95.36
81 - 159	26	4.02	99.38
> 159	3	0.46	99.85

Total Number of Valid Hours: 646

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Fort Hills - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	38	20	18	15	7	35	30	65	67	20	17	29	10	12	13	23	419
21 - 40	26	16	6	6	10	13	21	8	4	4	3	1	1	0	0	9	128
41 - 80	14	7	5	2	2	8	21	1	2	1	2	1	0	0	0	3	69
81 - 159	5	2	1	0	2	1	12	3	0	0	0	0	0	0	0	0	26
> 159	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
Totals	83	45	30	23	21	58	86	77	73	25	22	31	11	12	13	35	645

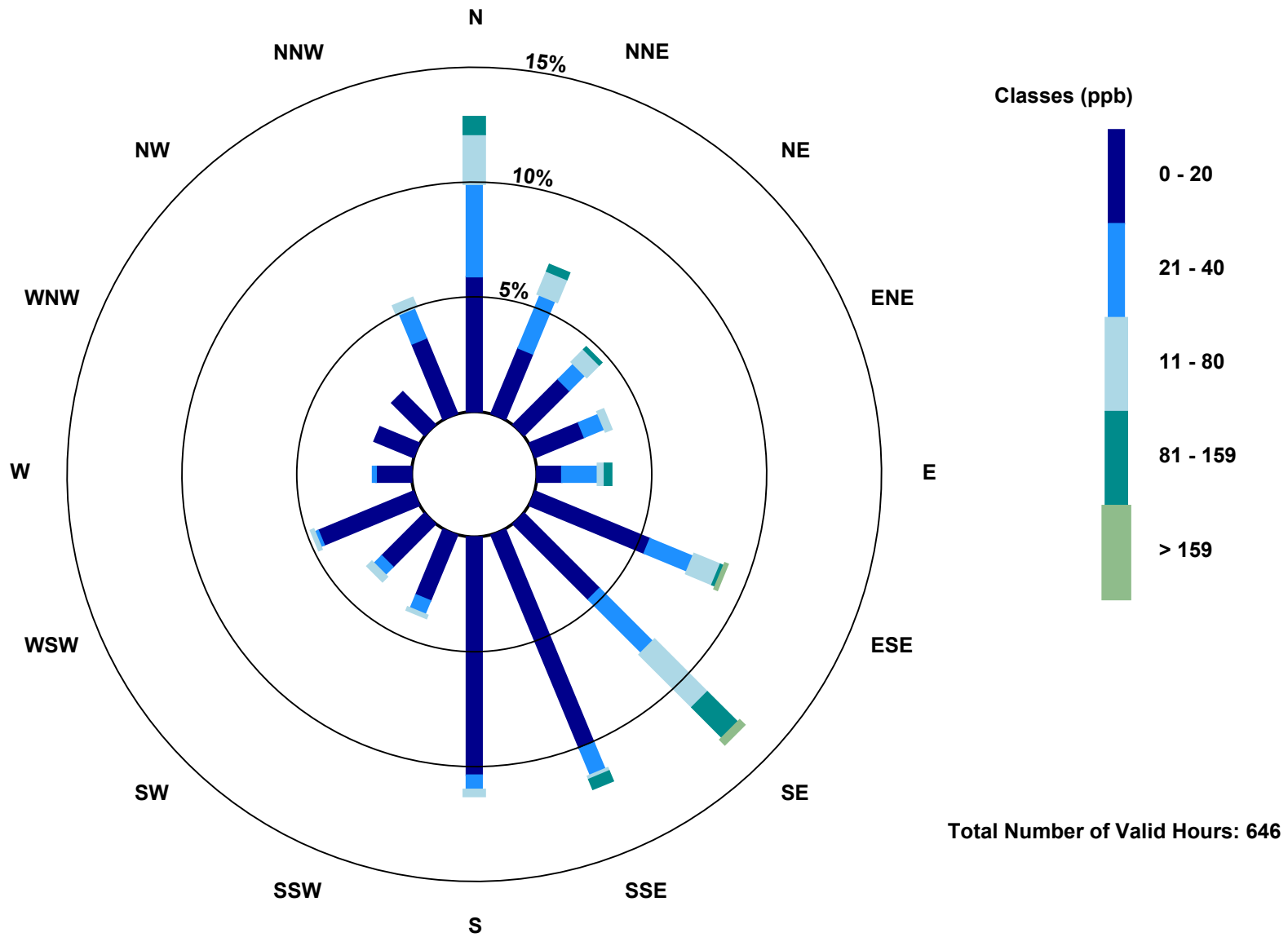
Total Number of Valid Hours: 646

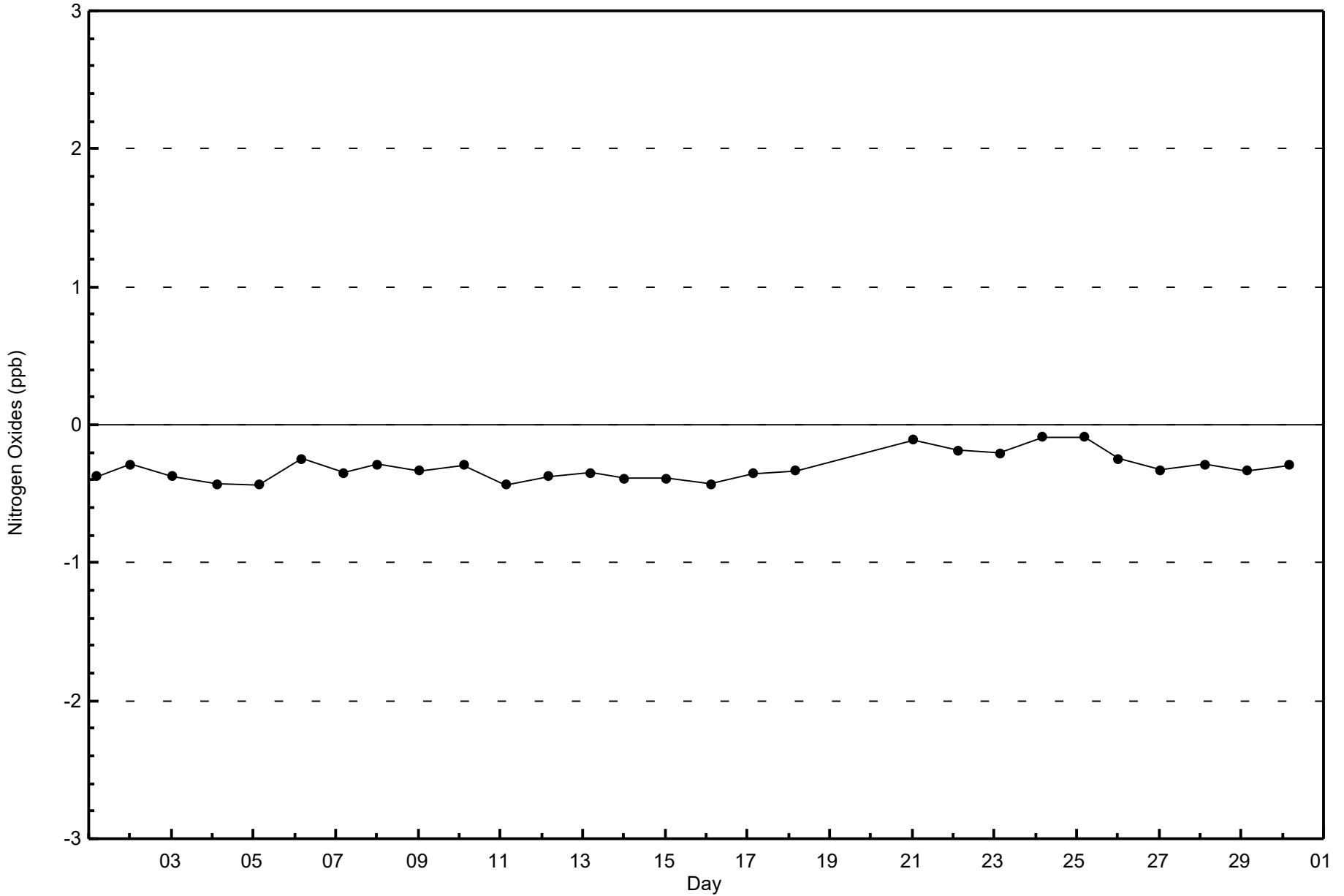
Total Number of Hours: 720

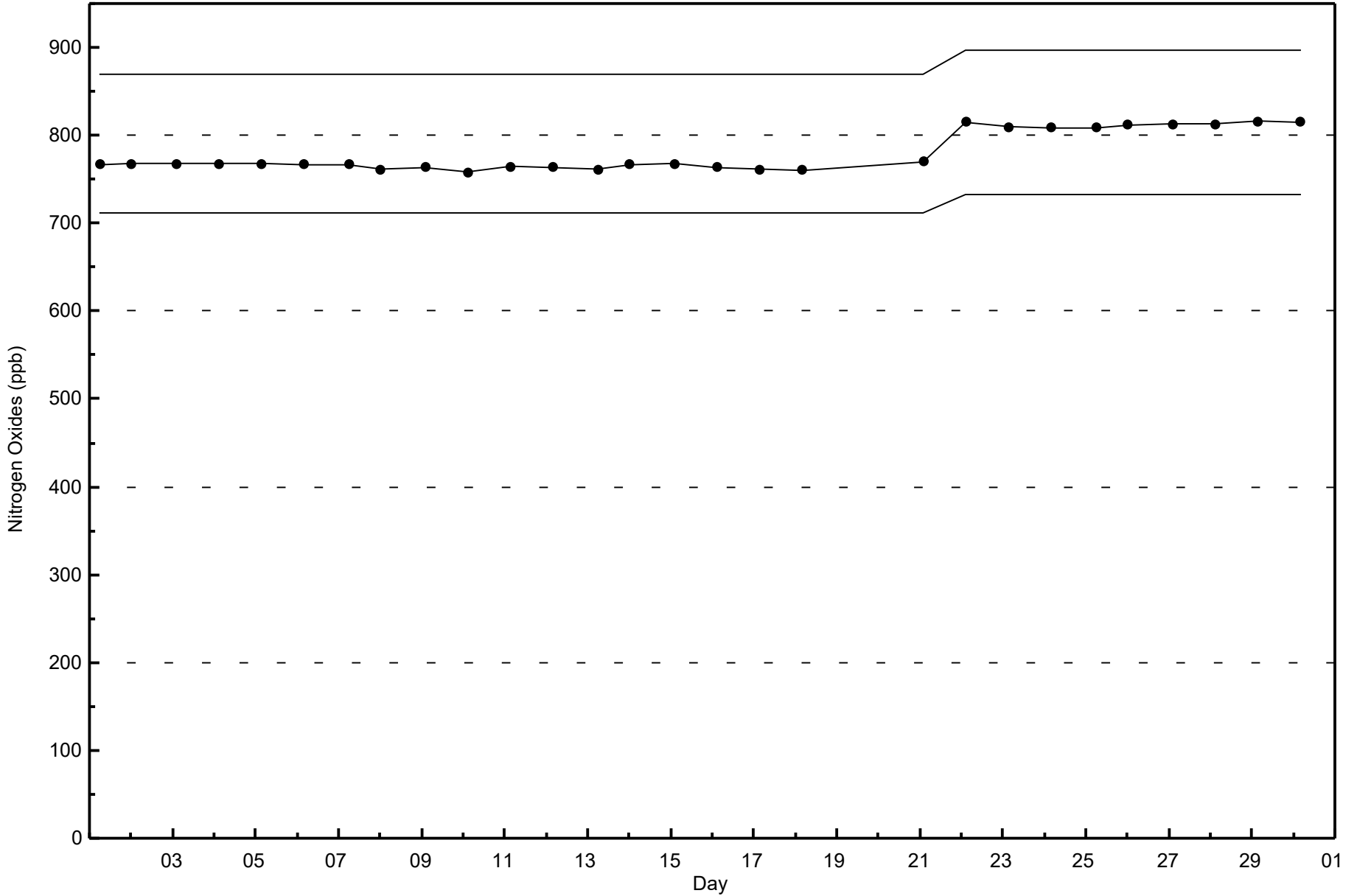


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Fort Hills









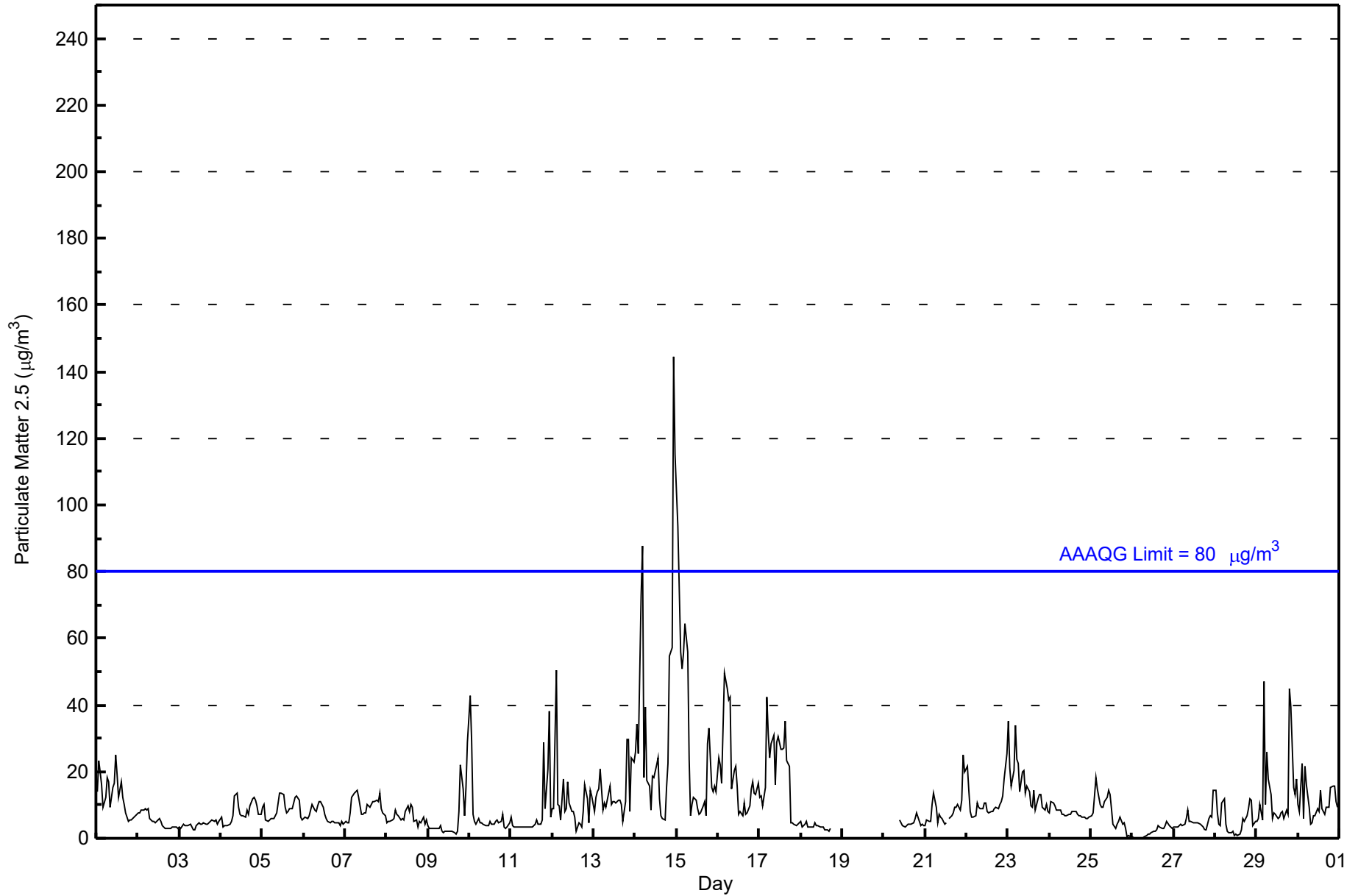
Summary of Hour Averages

Fort Hills - April 2023

Number of Exceedences (AAAQO):	1-hr: 5	24-hr: 2	Hours in Service:	720
Maximum Value: 144.7 µg/m ³ on Apr 14 23:00	Maximum Daily Average: 36.2 µg/m ³ on Apr 14		Hours of Data:	680
Minimum Value: 0.1 µg/m ³ on Apr 26 04:00	Minimum Daily Average: 1.9 µg/m ³ on Apr 26		Hours of Missing Data:	40
Maximum Diurnal Average: 17.7 µg/m ³ at hour 5	Minimum Diurnal Average: 6.8 µg/m ³ at hour 18		Hours of Calibration:	1
Monthly Average: 10.79 µg/m ³	Percentiles: P ₁ = 0.3 P ₁₀ = 3.2 Q ₁ = 4.5 Median = 7.3 Q ₃ = 12.0 P ₉₀ = 21.5 P ₉₉ = 58.9		Percent Operational Time:	94.6

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-Apr	14.1	23.2	19.7	16.1	9.3	12.4	18.4	17.0	9.4	15.4	16.7	25.0	18.9	12.2	17.1	12.4	10.1	7.7	5.1	5.4	5.7	5.9	6.1	7.0	12.9	25.0																							
2-Apr	7.6	7.8	8.6	8.7	8.8	8.5	8.8	6.0	5.2	5.2	4.9	5.0	5.8	5.1	3.7	3.3	2.9	2.8	2.9	3.0	3.2	3.3	3.3	3.1	5.3	8.8																							
3-Apr	3.2	3.1	4.0	3.8	3.7	3.7	4.3	3.3	2.6	2.7	4.0	4.5	4.4	4.3	4.5	4.3	4.4	4.8	5.0	5.7	5.2	5.5	4.4	5.2	4.2	5.7																							
4-Apr	6.2	3.4	4.0	4.0	3.9	4.3	5.0	6.6	12.7	13.4	9.4	7.3	6.8	6.7	6.4	8.4	7.2	9.6	12.0	12.4	11.5	9.9	7.3	7.1	7.7	13.4																							
5-Apr	9.2	10.1	5.7	5.0	5.7	5.8	5.8	6.1	7.6	10.8	13.6	13.5	12.9	9.4	7.7	8.2	8.8	9.0	10.5	12.3	12.6	11.3	6.1	5.5	8.9	13.6																							
6-Apr	6.0	6.3	6.0	6.9	8.6	10.1	8.4	8.0	9.8	11.1	11.0	9.3	7.0	5.8	5.1	4.5	4.9	4.9	4.5	4.5	4.6	3.8	5.1	4.4	6.7	11.1																							
7-Apr	5.1	4.7	4.6	7.8	12.5	13.5	14.1	14.3	12.5	7.0	7.3	7.6	7.8	10.1	9.2	10.1	11.2	11.0	11.3	11.0	13.4	9.1	7.7	6.7	9.6	14.3																							
8-Apr	4.7	5.0	5.2	5.5	6.0	8.4	7.3	6.7	5.7	5.9	5.7	8.2	9.7	8.3	10.1	9.3	5.2	5.6	3.5	4.9	4.8	6.5	4.3	5.3	6.3	10.1																							
9-Apr	3.7	3.1	2.9	2.9	2.8	2.8	3.1	3.7	2.2	1.7	2.0	2.2	2.1	2.0	2.0	1.6	1.1	2.1	8.0	22.1	14.6	6.8	15.3	28.8	5.8	28.8																							
10-Apr	42.7	29.4	7.1	5.0	4.2	5.8	4.5	4.5	4.0	3.8	3.7	3.6	5.3	4.1	4.4	5.0	5.4	4.8	5.2	7.0	3.3	3.0	3.5	4.6	7.3	42.7																							
11-Apr	6.2	3.6	3.6	3.5	3.6	3.5	3.4	3.3	3.3	3.3	3.2	3.2	3.5	3.9	4.1	5.7	4.3	4.4	5.6	28.8	8.9	20.6	38.2	6.3	7.4	38.2																							
12-Apr	8.8	8.9	50.3	10.0	9.7	5.7	17.7	8.1	9.1	16.9	10.7	8.2	7.9	6.3	2.3	4.8	4.3	3.3	8.1	16.0	12.1	4.6	14.2	12.9	10.9	50.3																							
13-Apr	8.2	12.3	14.1	14.7	20.8	8.4	10.7	9.5	11.5	15.8	10.1	11.0	11.0	10.7	11.4	11.6	10.1	5.0	10.9	29.6	29.8	8.0	24.4	22.9	13.8	29.8																							
14-Apr	25.9	34.4	25.2	72.8	87.9	18.3	39.4	17.3	15.6	8.5	18.7	18.4	22.0	24.1	11.8	6.6	6.1	5.6	15.3	22.5	54.7	57.4	144.7	115.3	36.2	144.7																							
15-Apr	104.4	93.5	55.8	50.7	55.5	64.6	56.0	23.6	6.7	10.0	12.2	11.5	9.1	7.2	7.8	9.6	10.9	7.0	28.3	32.9	15.1	13.9	15.7	14.2	29.8	104.4																							
16-Apr	24.2	22.0	16.4	32.9	49.4	45.0	41.5	42.2	14.7	20.3	21.5	15.7	7.3	8.0	6.6	10.6	7.0	7.5	9.9	14.7	17.1	13.7	13.0	16.6	19.9	49.4																							
17-Apr	12.4	12.7	9.6	15.3	42.4	31.3	24.1	28.3	30.7	15.9	28.8	30.6	26.6	26.8	27.1	35.0	23.1	21.5	4.8	4.5	4.1	3.8	4.1	4.8	19.5	42.4																							
18-Apr	5.1	3.4	4.1	5.1	3.4	3.4	3.6	3.5	4.5	4.0	3.8	3.4	3.4	3.5	2.6	2.5	2.3	3.0	PF	PF	PF	PF	PF	PF	3.6	5.1																							
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	5.3	4.6	3.9	3.5	3.8	4.4	4.3	4.3	4.6	5.9	7.4	6.4	3.8	4.4	3.9	--	7.4																							
21-Apr	3.9	5.4	5.1	5.3	10.3	13.7	9.1	4.8	7.2	6.5	6.0	4.1	4.5	C	5.7	6.7	7.8	9.1	9.4	10.1	8.5	11.5	24.9	20.1	8.7	24.9																							
22-Apr	21.5	14.3	8.0	6.4	6.4	7.0	10.5	9.5	8.9	8.9	10.6	10.4	8.0	7.6	7.8	8.2	8.9	9.2	9.0	10.0	11.1	12.8	18.0	25.4	10.8	25.4																							
23-Apr	35.0	21.2	15.5	20.3	33.7	23.8	22.3	13.8	19.8	20.2	13.7	15.7	14.1	9.6	9.1	14.4	8.4	11.9	13.2	13.1	9.3	8.4	10.2	8.2	16.0	35.0																							
24-Apr	7.5	10.9	10.6	9.6	8.5	8.7	8.6	7.3	7.3	6.9	6.7	7.4	7.3	8.2	8.1	8.1	7.1	6.7	6.6	6.5	6.2	6.1	6.0	6.3	7.6	10.9																							
25-Apr	6.8	7.8	12.8	18.3	14.7	10.0	9.3	9.3	11.0	12.4	14.2	13.0	9.0	4.1	3.0	4.2	5.0	6.5	4.4	4.8	2.8	0.6	1.0	0.3	7.7	18.3																							
26-Apr	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.4	0.8	1.3	1.5	1.9	2.1	2.1	2.7	3.8	3.5	2.9	2.8	4.0	4.9	3.7	3.2	3.0	1.9	4.9																							
27-Apr	3.2	3.4	3.6	4.0	4.4	4.0	4.1	5.9	8.7	5.0	5.1	4.6	4.6	4.5	4.7	4.4	3.8	3.4	2.5	2.6	5.9	6.8	6.4	14.6	5.0	14.6																							
28-Apr	14.6	7.6	4.1	3.6	10.7	12.0	4.3	2.2	1.9	1.6	2.1	1.0	1.1	0.9	1.1	2.4	5.9	4.9	6.9	8.8	11.8	11.3	4.0	5.1	5.4	14.6																							
29-Apr	5.1	6.1	10.2	5.6	47.0	10.2	25.8	17.8	13.2	6.0	7.5	7.4	5.8	6.3	7.7	7.9	5.9	8.6	7.1	45.0	39.3	15.3	13.1	17.7	14.2	47.0																							
30-Apr	10.2	7.9	22.6	6.1	21.6	16.3	9.1	4.4	4.5	6.9	6.9	9.1	7.9	14.4	8.7	7.1	9.1	9.3	9.3	15.4	15.7	15.5	11.0	9.5	10.8	22.6																							
																								14.5	13.3	12.1	12.5	17.7	12.9	13.6	10.3	9.0	8.7	9.2	9.2	8.3	7.9	7.1	7.8	6.9	6.8	8.1	13.0	12.2	10.1	15.0	13.7	Diurnal Average	
																								104.4	93.5	55.8	72.8	87.9	64.6	56.0	42.2	30.7	20.3	28.8	30.6	26.6	26.8	27.1	35.0	23.1	21.5	28.3	45.0	54.7	57.4	144.7	115.3	Diurnal Maximum	

C - Calibration PF - Power Failure
 Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m³ 24-hr 29 µg/m³





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Hills - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	243	35.74	35.74
6 - 15	328	48.24	83.97
16 - 25	62	9.12	93.09
26 - 80	42	6.18	99.26
> 81.0	5	0.74	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Fort Hills - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	21	16	11	12	5	18	15	11	29	16	20	23	10	9	10	17	243
6 - 15	40	16	12	8	10	34	49	71	47	9	2	8	2	2	2	16	328
16 - 25	17	10	2	3	2	3	21	1	1	0	0	1	1	0	0	0	62
26 - 80	10	4	4	1	4	5	5	0	0	1	0	1	0	1	1	5	42
> 81.0	3	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	5
Totals	91	46	30	25	21	60	90	83	77	26	22	33	13	12	13	38	680

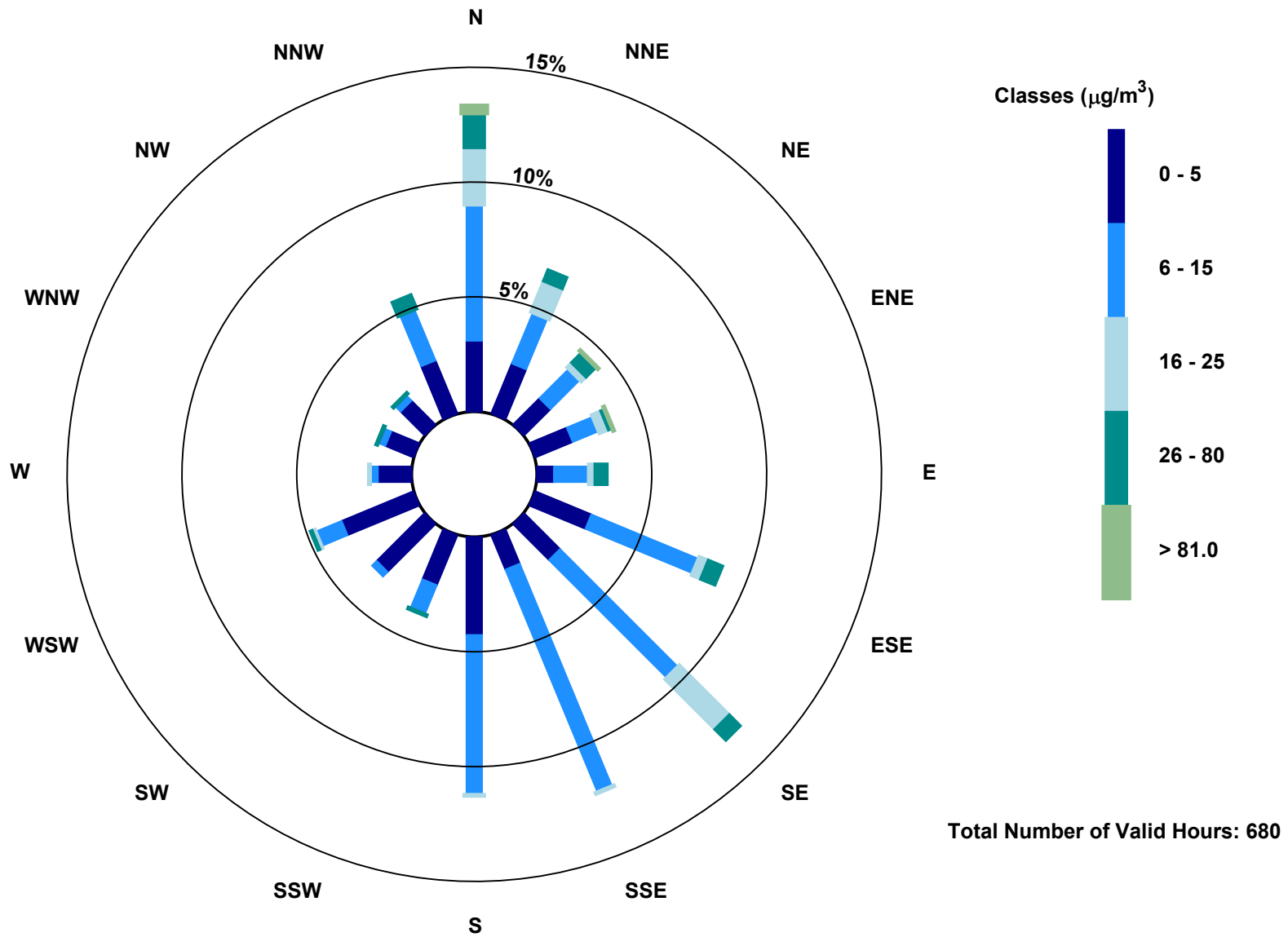
Total Number of Valid Hours: 680

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Hills

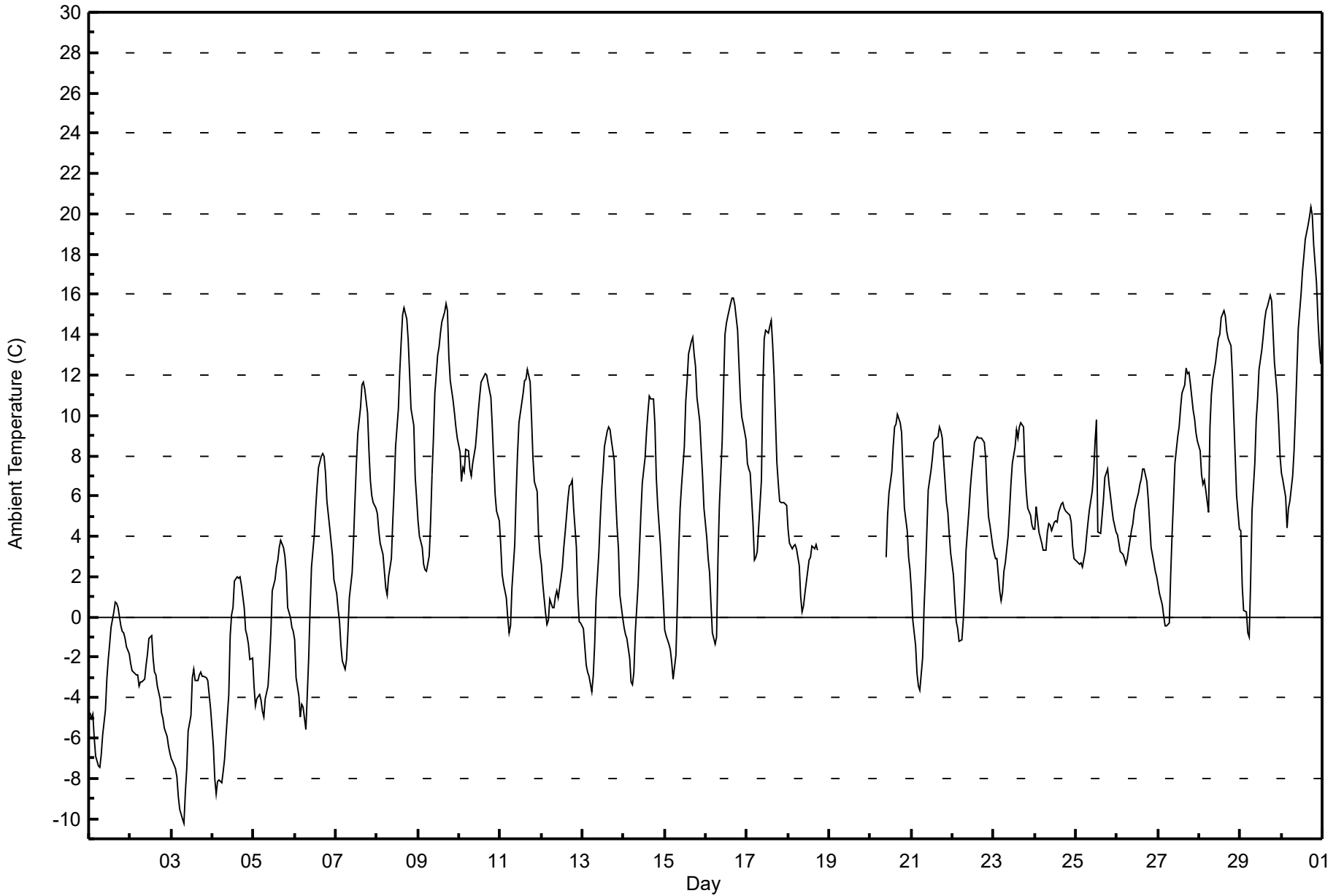




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Fort Hills - April 2023

Maximum Value: 20.4 C on Apr 30 18:00		Maximum Daily Average: 13.0 C on Apr 30		Hours in Service: 720																						
Minimum Value: -10.2 C on Apr 3 08:00		Minimum Daily Average: -5.5 C on Apr 3		Hours of Data: 681																						
Maximum Diurnal Average: 9.2 C at hour 17		Minimum Diurnal Average: -0.7 C at hour 6		Hours of Missing Data: 39																						
Monthly Average: 4.50 C		Percentiles: P ₁ = -8.2 P ₁₀ = -3.1 Q ₁ = 0.4 Median = 4.4 Q ₃ = 8.7 P ₉₀ = 12.3 P ₉₉ = 17.3		Hours of Calibration: 0																						
				Percent Operational Time: 94.6																						
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-Apr	-4.7	-5.0	-4.8	-6.0	-6.9	-7.4	-7.4	-6.8	-5.8	-4.6	-3.1	-2.1	-1.3	-0.5	0.2	0.8	0.7	0.4	-0.4	-0.7	-0.8	-1.1	-1.5	-1.8	-2.9	0.8
2-Apr	-2.3	-2.7	-2.8	-2.9	-2.9	-3.4	-3.2	-3.2	-3.1	-2.4	-1.8	-1.1	-0.9	-2.0	-2.7	-2.9	-3.4	-4.1	-4.7	-5.0	-5.5	-5.9	-6.4	-6.7	-3.4	-0.9
3-Apr	-7.0	-7.2	-7.5	-8.0	-8.9	-9.6	-10.0	-10.2	-8.7	-7.5	-5.7	-4.9	-3.0	-2.6	-3.2	-3.2	-2.9	-2.8	-2.9	-2.9	-3.0	-3.2	-3.9	-4.5	-5.5	-2.6
4-Apr	-6.4	-8.0	-8.8	-8.2	-8.1	-8.2	-7.7	-7.1	-5.9	-3.9	-0.9	0.1	0.5	1.8	2.0	1.9	2.0	1.6	0.5	-0.7	-0.9	-1.3	-2.1	-2.1	-2.9	2.0
5-Apr	-3.4	-4.4	-4.0	-3.8	-4.2	-4.7	-5.0	-4.0	-3.4	-2.3	-0.8	1.3	1.9	2.5	2.9	3.4	3.8	3.4	3.1	2.2	0.4	0.0	-0.5	-0.7	-0.7	3.8
6-Apr	-1.1	-3.0	-3.9	-5.0	-4.3	-4.5	-5.6	-3.8	-2.1	0.4	2.5	4.1	5.4	6.5	7.4	8.0	8.1	7.9	7.2	5.8	4.5	3.8	3.1	1.9	1.8	8.1
7-Apr	1.1	0.4	-0.2	-1.4	-2.2	-2.6	-2.1	-0.7	1.0	2.2	3.8	5.7	7.6	9.1	10.4	11.5	11.7	11.3	10.1	8.2	6.8	6.1	5.6	5.4	4.5	11.7
8-Apr	5.1	4.3	3.7	3.1	2.3	1.4	1.1	2.0	2.9	4.8	6.4	8.4	10.3	12.2	13.7	15.0	15.3	14.8	13.7	12.1	10.3	9.5	6.9	5.9	7.7	15.3
9-Apr	4.8	4.0	3.4	2.6	2.3	2.3	3.0	4.8	7.1	8.9	11.1	13.0	13.4	14.1	14.7	15.1	15.5	15.2	12.9	11.7	10.8	10.1	9.4	8.9	9.1	15.5
10-Apr	8.2	6.7	7.4	7.2	8.3	8.2	7.3	7.0	7.6	8.5	9.3	10.2	11.0	11.7	11.9	12.1	12.0	11.6	10.9	9.4	7.7	6.1	5.3	4.8	8.8	12.1
11-Apr	3.6	2.1	1.7	1.0	0.0	-0.8	-0.4	1.4	3.6	6.1	8.1	9.6	10.6	11.1	11.7	11.8	12.3	11.6	9.9	7.9	6.7	6.2	4.1	3.1	6.0	12.3
12-Apr	2.6	1.7	0.2	-0.3	-0.1	0.9	0.5	0.5	1.0	1.3	1.0	1.9	2.5	3.4	4.2	5.9	6.5	6.6	6.8	5.4	3.5	1.0	-0.2	-0.3	2.3	6.8
13-Apr	-0.6	-1.4	-2.4	-2.7	-2.9	-3.7	-2.9	-1.4	0.9	3.2	4.9	6.3	7.3	8.5	9.2	9.5	9.3	8.8	7.7	6.0	4.5	3.4	1.1	0.0	3.0	9.5
14-Apr	-0.5	-0.9	-1.1	-2.0	-3.2	-3.4	-2.7	-0.8	1.5	3.4	5.1	6.7	7.9	9.2	10.1	10.9	10.9	10.8	9.6	6.9	5.6	3.5	2.1	0.8	3.8	10.9
15-Apr	-0.7	-0.9	-1.4	-1.6	-2.2	-3.1	-1.9	0.5	3.3	5.4	6.5	8.5	10.7	11.7	13.1	13.7	13.9	13.1	12.4	10.9	9.7	8.3	7.0	5.4	5.9	13.9
16-Apr	4.0	2.9	2.2	0.7	-0.8	-1.4	-1.0	2.9	5.5	8.7	11.5	14.0	14.6	14.9	15.6	15.8	15.9	15.5	14.2	12.5	10.9	9.9	9.6	8.8	8.6	15.9
17-Apr	7.6	7.3	7.2	4.6	2.9	3.0	3.3	4.4	6.8	11.4	13.8	14.2	14.1	14.4	14.7	13.6	12.0	7.7	6.7	5.8	5.7	5.7	5.6	5.5	8.2	14.7
18-Apr	4.4	3.7	3.4	3.6	3.6	3.4	2.5	1.0	0.3	0.5	1.1	2.3	2.8	2.9	3.5	3.4	3.6	3.3	PF	PF	PF	PF	PF	PF	2.7	4.4
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	3.0	5.0	6.1	7.2	8.4	9.4	9.6	10.1	9.6	9.2	7.2	5.4	4.3	3.0	2.4	--	10.1
21-Apr	1.3	-0.2	-1.4	-2.8	-3.4	-3.6	-2.1	0.4	2.1	4.2	6.3	7.3	7.9	8.7	8.8	8.9	9.4	9.2	8.9	7.7	5.7	5.2	4.1	3.2	4.0	9.4
22-Apr	2.1	0.8	-0.3	-0.6	-1.2	-1.1	-0.1	1.3	3.3	5.3	6.4	7.2	7.9	8.7	8.9	8.9	8.9	8.9	8.7	7.9	6.2	5.0	4.6	3.5	4.6	8.9
23-Apr	3.2	2.9	2.9	1.3	0.8	1.2	2.3	2.7	4.0	5.3	6.6	7.6	8.5	9.3	8.9	9.5	9.6	9.4	7.3	6.2	5.4	5.1	4.5	4.4	5.4	9.6
24-Apr	4.3	5.5	4.2	4.0	3.6	3.3	3.3	4.2	4.7	4.5	4.3	4.7	4.8	4.7	5.2	5.6	5.7	5.4	5.3	5.2	5.1	4.7	3.5	2.9	4.5	5.7
25-Apr	2.8	2.7	2.6	2.7	2.5	3.2	4.0	4.7	5.4	6.2	7.1	8.7	9.8	4.2	4.2	5.0	5.8	6.9	7.4	6.6	6.0	5.4	4.8	4.2	5.1	9.8
26-Apr	4.0	3.7	3.3	3.1	2.9	2.6	2.9	3.4	4.3	4.7	5.3	5.6	6.1	6.6	6.9	7.4	7.4	6.7	5.8	4.6	3.4	2.7	2.3	2.0	4.5	7.4
27-Apr	1.6	1.2	0.6	0.1	-0.4	-0.4	-0.3	2.2	4.1	5.8	7.6	9.0	9.4	10.3	11.1	11.5	12.3	12.1	12.1	11.6	10.3	9.8	9.1	8.7	6.6	12.3
28-Apr	8.3	7.1	6.6	6.8	6.3	5.2	9.4	11.0	11.8	12.6	13.3	13.8	14.0	14.9	15.2	14.9	14.2	13.8	13.4	12.0	9.9	8.0	6.0	4.4	10.5	15.2
29-Apr	4.3	1.6	0.3	0.3	-0.8	-1.0	1.7	5.3	7.6	9.8	10.8	12.3	13.2	13.9	14.7	15.2	15.4	16.0	15.7	14.2	12.6	11.1	9.7	7.9	8.8	16.0
30-Apr	7.1	6.8	6.0	4.4	5.4	5.8	7.0	8.3	10.1	12.2	14.3	16.0	17.1	17.9	18.7	19.5	19.9	20.4	19.9	18.5	16.6	14.8	13.5	12.6	13.0	20.4
																								Diurnal Average		
																								Diurnal Maximum		
PF - Power Failure																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Fort Hills - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	163	23.94	23.94
0 - 10	397	58.30	82.23
10 - 20	120	17.62	99.85
> 20	1	0.15	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Fort Hills - April 2023

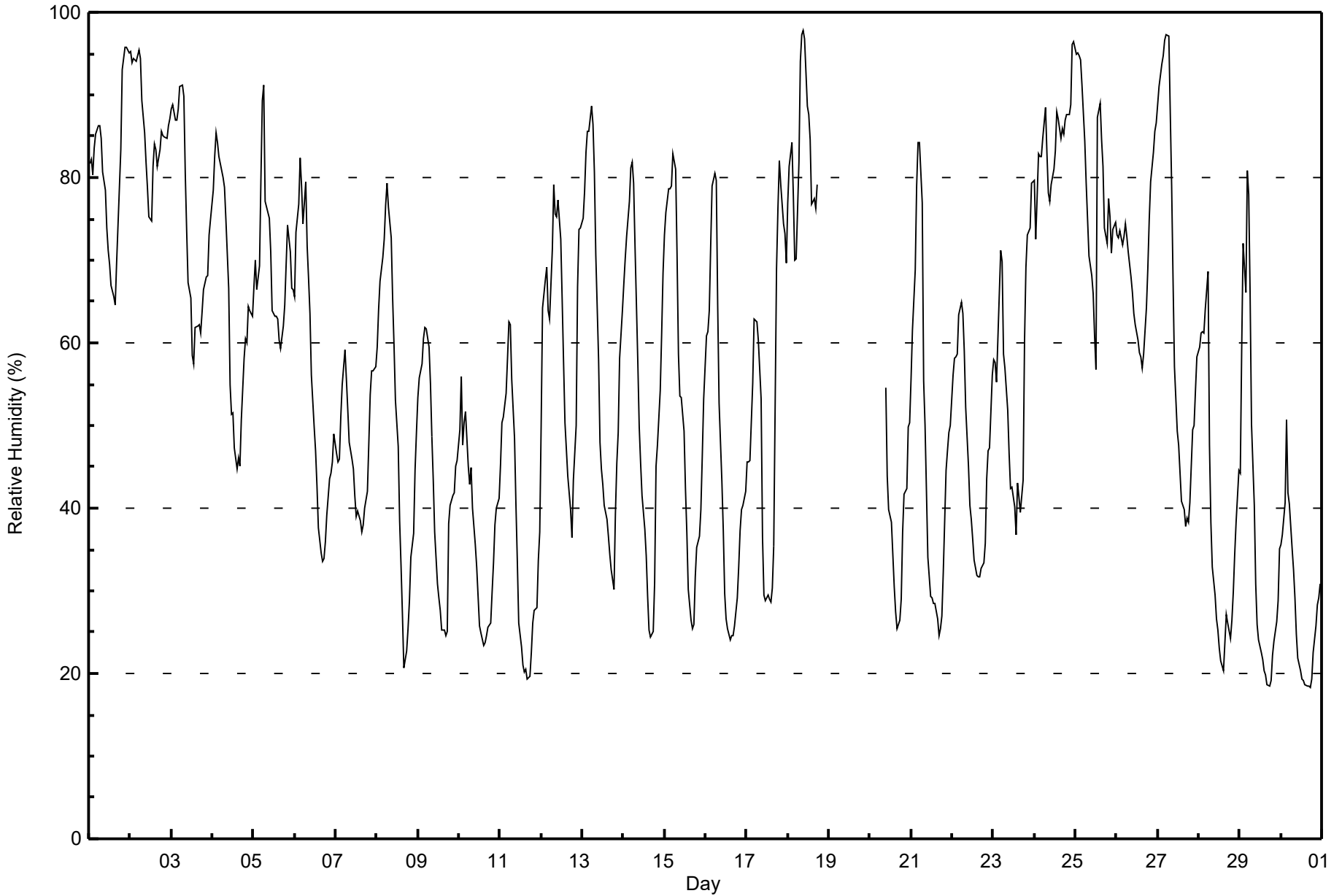
Maximum Value: 97.9 % on Apr 18 10:00		Maximum Daily Average: 86.4 % on Apr 2		Hours in Service: 720																																												
Minimum Value: 18.3 % on Apr 30 18:00		Minimum Daily Average: 28.3 % on Apr 30		Hours of Data: 681																																												
Maximum Diurnal Average: 75.0 % at hour 6		Minimum Diurnal Average: 41.0 % at hour 17		Hours of Missing Data: 39																																												
Monthly Average: 56.71 %		Percentiles: P ₁ = 19.2 P ₁₀ = 26.4 Q ₁ = 38.4 Median = 57.7 Q ₃ = 74.9 P ₉₀ = 85.2 P ₉₉ = 96.1		Hours of Calibration: 0																																												
				Percent Operational Time: 94.6																																												
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-Apr	81.7	82.2	80.4	83.6	85.3	86.2	86.3	84.8	80.7	78.5	73.8	71.2	69.6	67.0	65.5	64.7	69.7	74.3	83.4	93.0	94.4	95.8	95.8	95.1	80.9	95.8																						
2-Apr	95.2	93.9	94.4	94.0	94.8	95.4	94.3	89.3	85.5	81.8	78.8	75.3	74.8	81.3	84.2	83.3	81.4	83.4	85.6	85.0	84.9	84.7	86.2	87.1	86.4	95.4																						
3-Apr	88.3	88.8	86.9	86.9	88.4	90.9	91.3	89.8	80.6	73.6	67.3	65.4	58.4	57.5	61.9	62.1	62.1	61.1	63.7	66.5	67.9	68.2	73.1	74.9	74.0	91.3																						
4-Apr	78.5	82.5	85.5	84.2	82.5	80.9	79.9	78.7	74.9	66.6	54.8	51.4	51.5	47.2	44.7	46.2	45.1	50.7	58.2	60.5	59.9	64.4	63.8	63.2	64.8	85.5																						
5-Apr	66.8	70.0	66.4	69.4	79.8	89.4	91.3	77.2	75.7	75.0	71.0	63.8	63.1	63.2	62.9	60.3	59.3	62.1	64.6	69.6	74.3	71.0	66.6	66.5	70.0	91.3																						
6-Apr	65.6	73.4	76.7	82.4	78.9	74.4	79.6	71.6	67.8	63.5	56.0	49.8	46.9	42.7	37.6	34.5	33.5	33.9	35.9	39.1	43.6	44.3	45.6	49.0	55.3	82.4																						
7-Apr	46.6	45.6	46.0	51.1	54.8	59.1	55.7	51.9	47.9	45.9	44.8	41.5	39.0	39.7	38.5	37.1	38.0	39.9	42.1	47.8	53.7	56.6	56.6	57.2	47.4	59.1																						
8-Apr	59.4	64.1	67.5	70.4	72.5	76.6	79.4	76.5	72.6	65.4	59.7	53.1	47.5	38.4	33.0	27.2	20.7	22.8	25.4	28.7	34.1	37.0	44.6	49.2	51.1	79.4																						
9-Apr	53.3	55.7	57.5	60.6	61.8	61.6	59.4	55.1	48.7	43.5	37.2	30.8	29.2	27.6	25.3	25.3	24.5	25.0	38.1	40.3	41.6	41.9	45.0	45.8	43.1	61.8																						
10-Apr	49.6	55.9	47.6	50.3	51.7	45.0	42.9	44.8	39.9	35.6	32.8	29.4	25.7	25.0	23.3	23.6	24.6	25.7	26.1	29.8	33.3	37.9	40.0	41.2	36.7	55.9																						
11-Apr	45.3	50.4	51.1	53.9	58.1	62.5	62.3	55.6	48.5	40.5	33.6	26.1	23.3	21.1	20.1	20.5	19.4	19.7	22.5	26.2	27.7	28.0	33.7	37.1	37.0	62.5																						
12-Apr	50.0	64.2	67.6	69.2	63.9	62.8	71.4	79.1	75.7	75.3	77.3	72.6	65.3	57.6	50.4	43.8	41.8	39.9	36.5	43.3	50.0	66.8	73.8	74.0	61.3	79.1																						
13-Apr	75.0	78.4	83.0	85.6	85.6	88.6	86.4	80.6	70.7	57.9	48.0	44.7	42.9	40.4	38.6	36.7	34.4	32.6	30.1	39.3	45.4	49.1	58.2	63.9	58.2	88.6																						
14-Apr	67.1	70.2	72.9	77.2	81.2	81.9	79.2	71.6	57.7	49.8	45.4	41.6	37.5	34.3	29.4	25.3	24.3	25.1	31.1	45.0	47.6	54.3	61.0	68.4	53.3	81.9																						
15-Apr	73.0	75.8	78.7	78.6	78.9	82.9	81.0	70.7	58.6	53.6	53.4	49.3	42.3	36.9	30.2	26.4	25.4	25.9	31.7	35.2	36.6	39.9	46.3	53.2	52.7	82.9																						
16-Apr	60.8	61.3	64.0	71.8	79.0	80.5	79.6	64.6	52.7	43.2	37.3	29.6	26.7	25.4	24.1	24.6	24.5	25.7	29.1	32.9	37.3	39.8	40.4	42.1	45.7	80.5																						
17-Apr	45.6	45.5	45.8	55.1	63.0	62.7	62.6	60.3	53.2	36.5	29.4	28.7	29.5	28.9	28.6	30.4	35.5	68.9	76.2	82.0	79.1	74.3	73.2	69.7	52.7	82.0																						
18-Apr	76.9	81.3	84.2	77.8	69.9	70.2	81.8	94.0	97.3	97.9	96.7	88.6	87.6	84.6	76.7	77.4	76.3	79.1	PF	PF	PF	PF	PF	PF	83.2	97.9																						
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	54.5	43.9	39.8	38.3	34.4	30.6	27.4	25.4	26.5	28.9	37.1	41.7	42.3	49.9	50.4	--	54.5																						
21-Apr	55.6	61.5	68.8	79.0	84.2	84.2	76.9	55.5	50.1	42.1	34.0	29.4	29.2	28.4	28.4	26.6	24.6	25.5	27.0	32.1	44.5	47.0	49.1	50.0	47.2	84.2																						
22-Apr	56.1	58.2	58.3	58.6	63.4	64.9	63.6	59.0	52.1	45.2	40.4	38.6	36.2	33.7	31.9	31.8	31.8	32.8	33.4	35.7	43.5	47.0	47.2	56.1	46.6	64.9																						
23-Apr	58.1	57.6	55.2	65.9	71.2	69.8	58.6	57.0	51.9	46.6	42.4	42.6	40.2	36.8	43.1	41.4	39.5	43.5	60.1	69.1	73.0	73.8	79.3	79.5	56.5	79.5																						
24-Apr	79.7	72.6	83.0	82.5	82.5	84.8	88.5	82.8	78.2	77.2	79.1	81.0	83.2	87.9	87.1	84.8	85.9	85.2	86.9	87.6	87.7	88.7	96.0	96.5	84.6	96.5																						
25-Apr	94.9	95.0	94.7	94.3	91.2	84.5	79.3	74.9	70.5	68.1	66.0	60.8	56.7	87.2	88.9	84.6	81.3	73.9	72.1	77.5	75.2	70.8	73.7	74.6	78.8	95.0																						
26-Apr	73.0	72.8	73.5	71.9	72.9	74.4	72.9	71.0	68.0	66.2	63.5	62.2	60.4	58.7	58.3	56.9	58.7	64.2	68.9	74.9	79.5	83.1	85.5	86.6	69.9	86.6																						
27-Apr	88.9	91.0	93.8	94.8	96.6	97.3	97.1	87.9	79.0	67.6	57.2	49.4	47.6	44.3	40.9	39.8	37.8	38.8	38.3	40.6	49.5	50.1	54.3	58.3	64.2	97.3																						
28-Apr	59.5	61.2	61.4	61.3	64.1	68.7	47.7	38.2	32.8	29.5	26.6	25.2	23.1	21.5	20.4	23.8	27.1	26.0	24.2	26.4	29.9	34.5	38.3	44.6	38.2	68.7																						
29-Apr	44.2	59.3	72.1	66.0	80.9	78.0	66.0	50.2	40.4	30.8	26.0	24.1	22.5	21.7	20.3	19.8	18.7	18.5	19.2	22.3	23.8	26.2	28.9	35.1	38.1	80.9																						
30-Apr	35.5	36.9	40.6	50.7	41.9	40.6	35.2	32.6	29.1	24.7	21.9	20.3	19.3	19.1	18.7	18.4	18.5	18.3	19.4	22.6	25.8	28.4	29.2	30.8	28.3	50.7																						
																								65.1	68.0	69.9	72.4	74.3	75.0	73.2	68.1	62.2	56.4	51.7	47.8	45.4	44.6	42.9	41.5	41.0	43.1	45.0	49.7	53.0	55.2	58.4	60.7	Diurnal Average
																								95.2	95.0	94.7	94.8	96.6	97.3	97.1	94.0	97.3	97.9	96.7	88.6	87.6	87.9	88.9	84.8	85.9	85.2	86.9	93.0	94.4	95.8	96.0	96.5	Diurnal Maximum

PF - Power Failure



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Fort Hills - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Fort Hills - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	13	1.91	1.91
20 - 40	175	25.70	27.61
40 - 60	177	25.99	53.60
60 - 80	198	29.07	82.67
80 - 100	118	17.33	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Fort Hills - April 2023

Maximum Speed: 38 km/h on Apr 17 16:00	Maximum Daily Speed Average: 22.5 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 5 13:00	Minimum Daily Speed Average: 2.3 km/h on Apr 4	Hours of Data: 681
Maximum Diurnal Speed Average: 4.9 km/h at hour 16	Minimum Diurnal Speed Average: 0.8 km/h at hour 5	Hours of Missing Data: 39
Monthly Average Velocity: 2.9 km/h 142.5 deg	Percentiles: P ₁ = 1 P ₁₀ = 4 Q ₁ = 6 Median = 10 Q ₃ = 15 P ₉₀ = 22 P ₉₉ = 33	Percent Operational Time: 94.6

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-Apr	N10	NNE9	NNE9	N11	N9	N9	N10	N10	NNW9	N9	N6	N8	N11	N13	N12	N14	NNW12	N13	N13	ENE5	ESE7	SE8	SE11	SE10	N7.4	N14	
2-Apr	SE6	SE4	ESE3	ESE2	ESE5	ESE6	ESE6	SE10	SE10	ESE7	ESE7	ESE6	E4	NNE13	NNE19	NNE18	N21	N22	N22	NNE22	NNE22	NNE20	N20	N14	NNE8.4	NNE22	
3-Apr	N13	N13	NNE12	NNE11	NNE9	N8	N8	NNW6	N2	N5	E4	S4	SE3	SE4	SE4	SSE3	SE4	ESE4	SE4	E4	ESE4	ENE4	N5	NNE9	NNE3.7	N13	
4-Apr	NNW7	NNW7	NNW6	NNW5	NNW6	NNW7	NNW7	N9	N7	NNW4	ENE2	SE3	ESE6	ENE5	ESE5	SE7	SE9	SE10	SE7	SSE7	SE7	SE10	SSE10	SE12	E2.3	SE12	
5-Apr	SSE9	WSW2	SSE7	SSE10	SSE9	SSW5	SW3	S9	SSE6	S2	W2	N2	N0	WSW8	W8	WNW5	NNW4	ENE6	ENE6	E4	SE6	SE7	SE10	SE12	SSE3.1	SE12	
6-Apr	SE14	SSE8	SSE6	SSE6	SSE12	S10	SSW6	SSW8	S7	SSE16	S18	S22	SSE26	SSE27	SSE30	S28	S28	S26	S25	S22	SSE20	S20	S21	S17	SSE17.3	SSE30	
7-Apr	S21	S20	S18	S13	S10	S11	S12	S17	S21	SSW22	S20	S20	S22	SSE23	SSE22	SSE23	SSE23	SSE21	SSE21	SSE19	SSE18	SSE18	SSE15	S16	SSE18.2	SSE23	
8-Apr	S16	S14	S15	S15	S15	S13	S11	S16	S16	S13	SSE17	SSE15	SE13	SSE15	SSE20	S10	WSW20	WSW12	SW10	SW10	SW9	SW8	SW8	SW11	S11.4	SSE20	
9-Apr	SSW12	S10	S11	SSE9	SSW14	SSW13	SW12	SSW13	SSW15	SSW17	SW15	WSW17	SW18	WSW20	SW19	SW13	SSW9	SSW12	SE13	SE15	SSE17	SSE14	SE11	SE5	SSW11.2	WSW20	
10-Apr	NNE4	SSW4	S12	SW18	WSW23	WSW30	WSW27	WSW30	WSW34	WSW31	WSW30	WSW33	WSW36	WSW33	WSW35	WSW33	WSW33	WSW29	WSW25	WSW17	SW13	SSW11	SW10	SW14	WSW22.5	WSW36	
11-Apr	S5	S11	SSE7	S11	S8	S10	S10	S12	SSW13	S10	S13	SSW15	SW13	SW13	WSW10	WSW10	W13	NNW18	NNW16	N10	NNW12	N10	WNW5	NW8	SW4.7	NNW18	
12-Apr	N14	NNW7	WSW3	SSW4	NNW3	NNW12	NNE10	NNE10	NNE5	N10	NNE11	NE8	N8	N7	SW4	ESE3	SE4	SE4	NNE5	NE5	NW8	N14	N10	N10	N5.5	N14	
13-Apr	N14	N8	N5	N7	N7	N6	N7	N10	N10	NNE8	NE6	ENE6	NE7	ENE6	NE8	NE13	NE14	NE16	NE16	NE12	NE13	NE9	N7	N9	NNE8.5	NE16	
14-Apr	N10	N8	NNE7	N4	N6	N5	NNW4	N6	E1	SE6	ENE7	NE7	NNE8	NNE8	NE8	ENE8	NE11	NE13	NE13	NNE14	NE6	ENE4	NE4	N5	NNE6.4	NNE14	
15-Apr	N4	ENE4	NE4	N6	NNW4	NNW5	NNW2	WSW2	SE3	SE3	SE6	ESE7	ESE3	SE6	ESE4	E7	ESE8	ESE8	E9	E7	ESE9	ESE13	ESE8	NNE2	E3.9	ESE13	
16-Apr	N6	N7	NNE6	NNE3	N4	N4	N5	NNW4	N5	E2	ENE4	SE17	SE27	SE22	SE18	ESE20	ESE19	ESE18	ESE16	ESE13	ESE16	ESE17	ESE16	ESE18	ESE9.2	SE27	
17-Apr	SE10	E7	E9	N8	N11	N11	N16	N16	NNE18	ENE14	ESE23	ESE29	SE34	ESE32	SE33	N16	SE38	SE33	SE30	ESE19	ESE18	ESE18	ESE17	ESE12	SE22	ESE15.4	SE38
18-Apr	ESE24	ENE11	NE11	ENE8	ENE8	E9	SE15	ENE6	NNE10	NNE13	N15	E11	ENE11	NE14	ENE14	ENE16	ENE15	NE17	PF	PF	PF	PF	PF	PF	ENE10.5	ESE24	
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	N5	NE6	NE10	NE11	ENE11	E13	ESE10	E11	ESE11	E10	ESE10	ESE11	ESE11	SE13	---	SE13	
21-Apr	SE5	WSW3	SSE1	NW1	NNW2	S1	SSE5	SSE9	S6	SSE8	ESE7	ESE7	SE5	SSE4	SSE9	SSE10	S8	S9	S10	SSE8	SSE7	SE9	SE9	SE8	SSE5.6	SSE10	
22-Apr	SE8	S6	S11	SSE9	SSE9	SSE10	S10	S11	S10	S11	SSE20	SSE20	S22	SSE20	S24	S22	S21	S19	S15	S10	SSE10	S11	S11	SE9	S13.4	S24	
23-Apr	ESE10	SE11	SE10	W2	SE1	SE5	SSE8	SSE6	SE9	SE6	E5	NNE12	NNW11	SSE16	SE16	E10	SE10	NNE15	NNE22	NNE23	NNE20	N18	N14	NNW8	ENE5.1	NNE23	
24-Apr	NNE7	ESE4	N8	NNE9	N8	N6	NNW2	SE7	ESE7	SE9	SE6	ENE6	NNE6	N15	N15	N16	N18	N20	N19	N16	NNE10	NNW12	WNW8	SSW8	N6.7	N20	
25-Apr	SSW10	SE7	SE7	SE7	SSE7	SSE12	SSE14	SSE17	S19	S14	SE18	S18	S24	W26	SSE4	SE16	S13	SSE15	SSE6	NNW2	W12	W14	WSW14	W12	S9.2	W26	
26-Apr	W16	WNW14	WNW12	WNW9	NW5	W6	WNW9	W13	WNW14	NW15	WNW14	WNW14	WNW13	NW9	NNE11	NNE10	NE13	NE17	NE16	NNE14	NE14	N9	N10	NNW8	NNW7.7	NE17	
27-Apr	NNW6	NNW5	NNE4	ENE1	W3	WNW3	W1	ESE3	SE6	SW5	SSW6	SW9	SSW12	WSW10	WSW11	SW12	WSW11	SSW11	SSW13	S10	SSE12	SSE13	SSE12	SE9	SSW5.1	SSE13	
28-Apr	SSE9	SSE7	SSE6	ESE5	E2	SSW4	NW10	NW21	NNW24	NW25	NW27	NW24	NNW25	NNW25	NW24	N28	N26	N20	NNE21	NNE17	NNE12	NNW6	NNW7	NNW4	NNW12.2	N28	
29-Apr	N7	WSW3	WSW2	N1	NW2	SSW3	SE2	SE4	SE8	ESE9	SE8	SE6	SE5	SSE7	SE3	SE8	ESE8	ESE8	ESE9	E8	E8	ESE11	ESE12	SE9	ESE5.1	ESE12	
30-Apr	SE8	SE9	SE9	SE1	SE6	SE6	SSE9	S6	S11	SSE16	SSE17	SSE23	SSE28	SSE28	SSE29	SSE28	SSE27	SSE27	SSE25	SE22	SE21	SE21	SE20	SSE13	SSE16.8	SSE29	

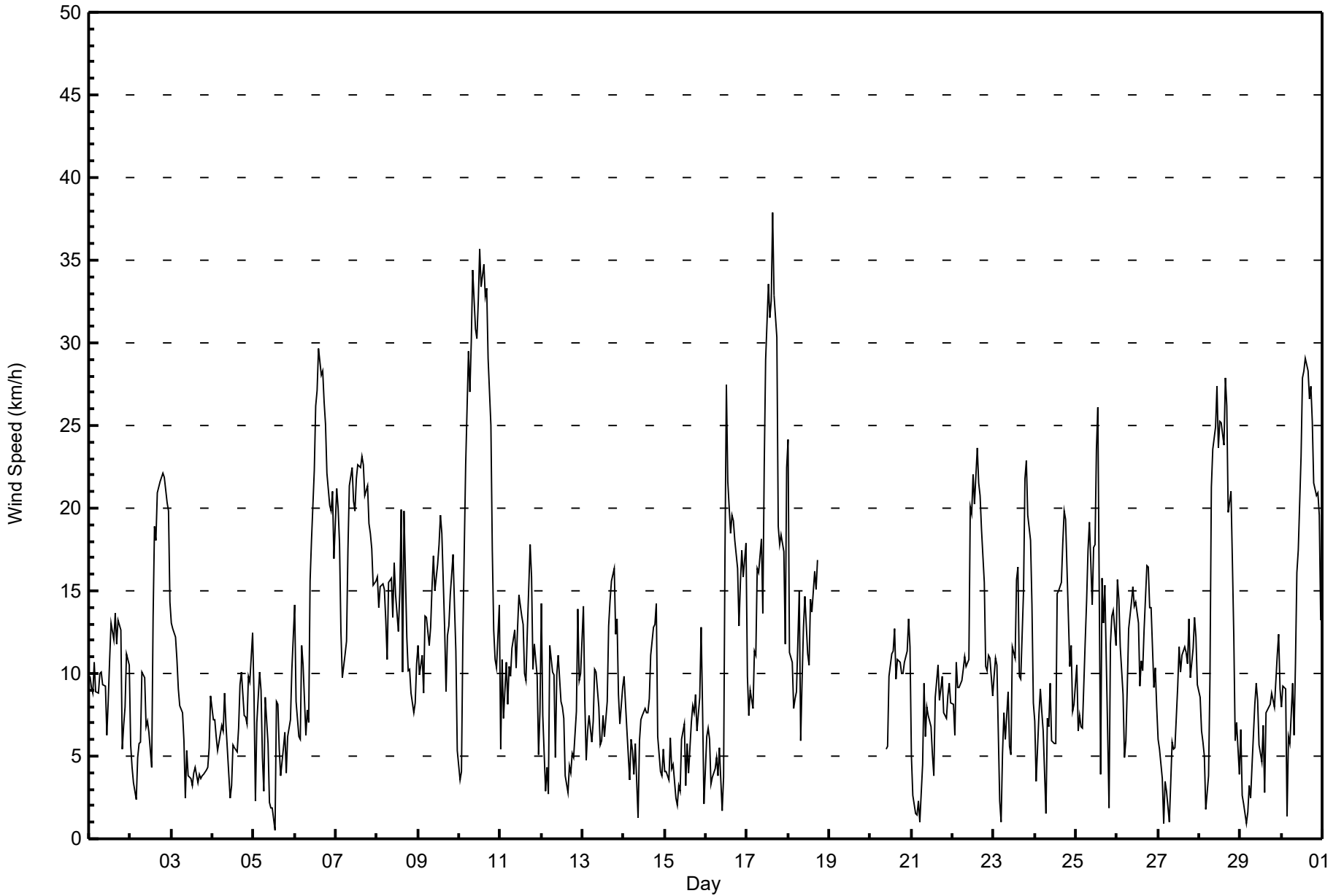
ESE2.4	SE1.6	SE2.2	SE1.2	S0.8	SSW1.5	SSW1.5	SSW2.4	SSW2.6	S2.7	SSE3.9	SSE4.6	SSE4.7	S3.4	SSE4.7	SE4.9	SE3.9	ESE4.6	E4.2	E4.5	ESE4.7	ESE4.7	SE4.0	SE3.7	Diurnal Average	
ESE24	S20	S18	SW18	WSW23	WSW30	WSW27	WSW30	WSW34	WSW31	WSW30	WSW33	WSW36	WSW33	WSW35	SE38	WSW33	SE30	SSE25	NNE23	NNE22	SE21	S21	SE22	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
Fort Hills - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Fort Hills - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	121	17.77	17.77
6 - 11	286	42.00	59.77
12 - 19	174	25.55	85.32
20 - 28	79	11.60	96.92
29 - 38	21	3.08	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Fort Hills - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	16	6	3	8	8	13	20	5	4	5	3	6	4	3	3	14	121
6 - 11	46	20	13	13	12	26	46	34	29	9	8	6	2	3	4	15	286
12 - 19	21	13	14	4	1	16	12	23	25	11	11	4	6	6	1	6	174
20 - 28	8	7	0	0	0	3	7	20	19	1	0	5	1	0	5	3	79
29 - 38	0	0	0	0	0	2	5	2	0	0	0	12	0	0	0	0	21
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	91	46	30	25	21	60	90	84	77	26	22	33	13	12	13	38	681

Total Number of Valid Hours: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Fort Hills - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 12 km/h on Apr 25 14:00	Hours in Service: 720 Hours of Data: 681 Hours of Missing Data: 39 Hours of Calibration: 0 Percent Operational Time: 94.6
Minimum Value: 1 km/h on Apr 4 02:00	
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 2 Q ₃ = 3 P ₉₀ = 5 P ₉₉ = 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-Apr	2	1	2	1	1	1	1	2	1	2	1	1	2	2	2	2	2	3	2	3	2	2	2	2	3	
2-Apr	1	1	1	1	1	1	1	1	1	2	2	2	1	6	3	3	3	3	3	4	4	3	3	3	6	
3-Apr	3	2	2	2	2	1	2	1	2	2	2	1	1	1	2	1	1	1	1	1	1	1	3	1	3	
4-Apr	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	2	1	1	2	2	2	2	2	2	
5-Apr	3	1	2	2	3	2	1	3	2	2	2	1	2	3	2	2	1	1	1	1	2	1	2	1	3	
6-Apr	2	1	2	1	2	3	1	2	2	4	3	4	4	4	5	5	5	5	4	3	3	3	3	3	5	
7-Apr	3	3	3	1	1	1	1	4	3	3	3	3	4	3	3	3	2	3	2	2	2	2	2	2	4	
8-Apr	2	2	2	1	2	1	1	3	3	2	3	2	2	2	3	4	4	3	1	2	2	1	1	2	4	
9-Apr	2	1	2	1	2	2	3	3	4	3	3	4	4	4	4	5	5	2	1	2	2	2	1	4	5	
10-Apr	2	4	2	4	6	7	5	6	6	6	6	6	8	7	7	6	7	6	5	4	2	1	2	2	8	
11-Apr	2	2	1	1	1	1	2	2	2	2	2	4	5	6	4	3	4	4	3	2	3	5	1	3	6	
12-Apr	3	3	1	1	3	4	3	3	2	5	3	2	3	3	3	2	2	2	2	2	4	2	4	2	5	
13-Apr	3	2	1	2	2	2	1	2	1	3	3	3	3	3	4	3	3	2	2	2	3	3	2	1	4	
14-Apr	1	1	2	1	1	1	1	1	2	2	2	3	2	3	3	3	3	3	3	4	2	1	1	1	4	
15-Apr	1	1	1	2	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	2	2	2	3	2	3	
16-Apr	2	2	2	2	1	1	1	1	1	2	2	9	5	5	5	6	6	5	5	4	5	4	4	4	9	
17-Apr	3	2	2	2	2	3	3	2	3	4	7	7	8	8	8	8	9	10	6	5	6	5	4	7	10	
18-Apr	7	3	2	3	2	3	3	2	2	2	2	3	2	3	3	4	3	3	PF	PF	PF	PF	PF	PF	7	
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	PF	1	2	4	4	5	4	4	4	4	3	3	3	2	2	2	5
21-Apr	3	1	1	1	1	1	2	2	2	2	2	3	3	2	4	4	4	4	3	1	1	2	2	1	4	
22-Apr	1	1	2	1	2	2	2	2	2	3	4	5	4	5	5	4	4	3	3	2	1	1	1	1	5	
23-Apr	1	1	3	2	1	2	2	2	2	2	2	4	3	8	6	5	4	6	5	4	4	3	3	2	8	
24-Apr	3	2	2	2	3	2	1	2	2	3	2	2	3	2	3	2	4	4	3	3	2	3	2	2	4	
25-Apr	1	2	1	1	1	2	2	2	3	3	3	3	3	9	12	4	2	3	3	3	4	2	3	3	12	
26-Apr	3	3	3	2	2	1	2	3	4	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	4	
27-Apr	2	1	1	1	1	1	1	2	2	3	2	4	4	3	5	5	5	3	2	1	1	1	1	2	5	
28-Apr	1	3	2	2	2	1	6	6	5	6	6	7	6	6	6	6	8	6	4	4	3	1	2	1	8	
29-Apr	1	1	1	1	1	2	1	1	2	3	3	2	3	3	3	4	3	3	2	2	2	2	2	4	4	
30-Apr	1	1	2	1	2	1	2	2	4	4	3	6	5	5	5	5	4	4	3	4	3	3	3	4	6	
Diurnal Maximum																										

PF - Power Failure



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Fort Hills - April 2023

Direction of Maximum Speed: 125 deg on Apr 17 16:00		Hours in Service:	720
Direction of Maximum Daily Speed Average: 244.4 deg on Apr 10		Hours of Data:	681
Direction of Minimum Speed: 6 deg on Apr 5 13:00		Hours of Missing Data:	39
Direction of Minimum Daily Speed Average: 2.3 deg on Apr 4		Percent Operational Time:	94.6
Monthly Average Direction: 142.5 deg			

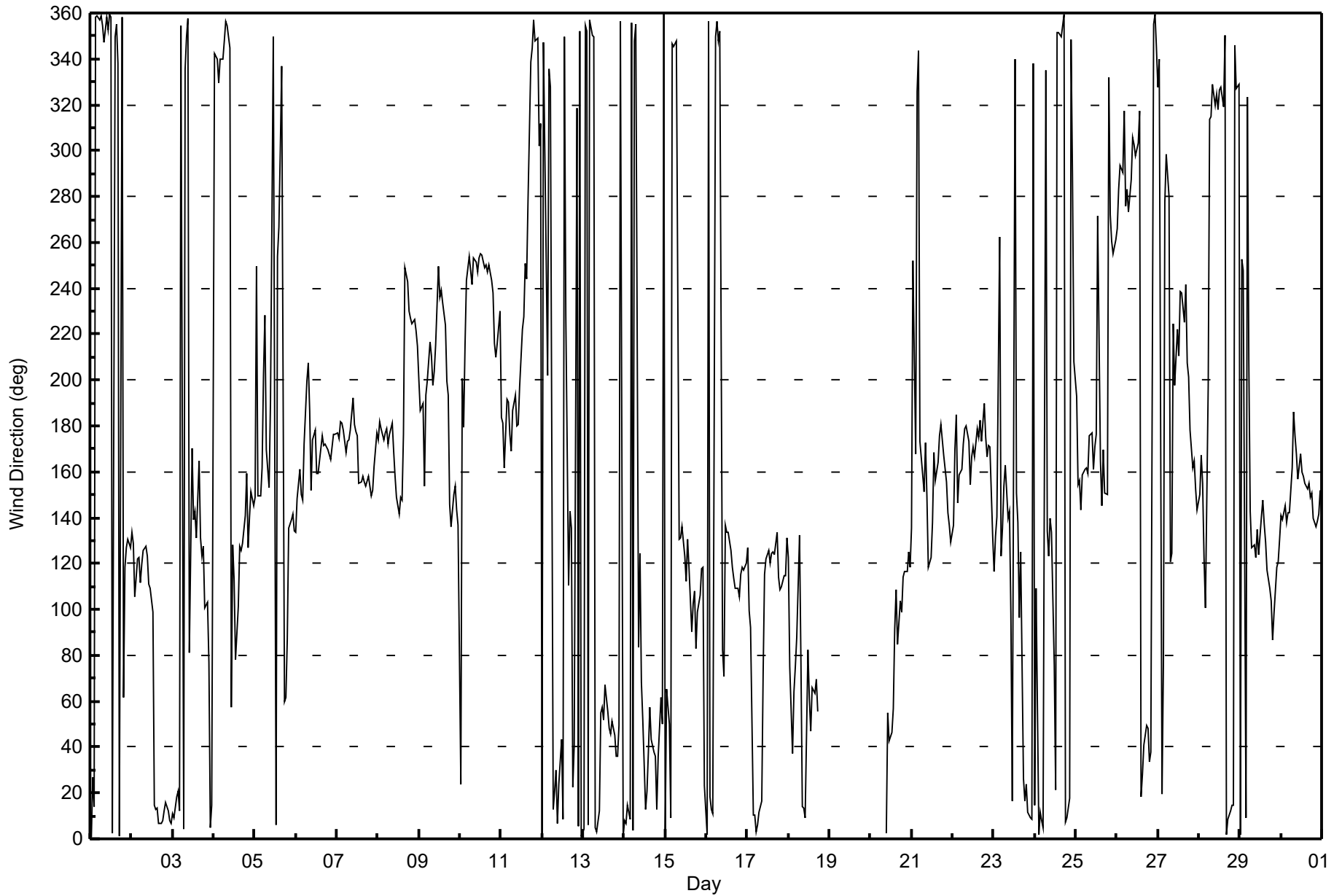
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-Apr	1	27	14	358	359	357	359	355	347	358	353	359	358	3	350	355	338	1	358	61	118	127	131	127	8.9
2-Apr	134	129	106	122	122	112	120	126	127	123	111	109	99	15	13	13	7	7	8	12	16	12	8	7	31.4
3-Apr	11	9	18	21	12	354	4	335	350	357	81	171	139	143	131	165	131	123	128	101	103	77	5	15	31.8
4-Apr	343	341	340	329	340	340	348	356	354	345	57	128	113	78	102	128	126	129	141	159	127	140	151	145	90.0
5-Apr	149	250	150	149	162	202	228	170	153	191	268	350	6	254	266	300	337	60	62	87	136	139	142	134	157.9
6-Apr	134	148	161	150	148	172	199	207	187	152	174	178	159	159	165	176	171	172	171	170	166	171	177	176	168.0
7-Apr	177	175	182	181	178	169	173	174	178	192	181	177	176	155	156	158	156	154	158	154	150	152	162	177	167.9
8-Apr	174	182	179	174	177	179	172	176	181	169	158	149	142	149	148	176	249	243	230	227	225	226	221	215	183.8
9-Apr	200	187	190	154	193	199	217	211	198	204	215	250	236	239	234	224	200	194	146	136	150	154	143	137	197.0
10-Apr	24	201	180	215	243	254	248	242	253	251	247	254	255	254	249	250	247	250	244	238	216	210	216	230	244.4
11-Apr	184	181	162	191	190	177	169	186	193	180	181	197	222	228	251	244	278	338	345	357	348	349	302	312	227.6
12-Apr	1	347	252	202	335	327	13	21	30	7	24	43	9	350	228	111	143	136	22	41	319	5	352	1	5.1
13-Apr	4	354	352	6	357	351	349	5	3	12	55	57	52	67	55	48	46	51	45	36	36	50	356	1	27.2
14-Apr	8	7	15	8	355	3	348	355	84	125	68	52	13	21	38	57	43	38	36	13	36	62	50	360	28.7
15-Apr	2	65	50	9	346	346	348	239	130	131	136	123	112	131	119	90	103	108	83	99	106	118	118	23	95.8
16-Apr	2	356	18	13	11	350	357	348	352	82	71	136	134	134	126	118	113	109	109	106	115	119	117	120	109.9
17-Apr	127	99	92	10	10	3	6	11	16	72	115	122	126	120	124	125	124	133	114	108	110	115	115	131	107.3
18-Apr	122	75	37	64	75	88	132	77	14	14	9	82	61	47	66	63	70	55	PF	PF	PF	PF	PF	PF	66.2
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	3	55	43	46	57	92	109	85	104	99	114	116	116	125	118	--
21-Apr	136	252	168	326	344	174	158	151	173	149	118	122	138	168	156	164	176	180	174	167	156	142	137	130	154.5
22-Apr	137	170	185	147	159	161	172	179	180	173	154	166	171	166	179	175	183	173	190	175	166	171	171	132	170.0
23-Apr	117	132	140	263	124	135	154	163	139	143	98	16	340	151	138	97	125	26	17	24	12	9	9	338	63.7
24-Apr	15	109	2	12	8	5	335	134	123	140	133	75	21	351	351	350	355	360	7	9	18	348	290	208	8.1
25-Apr	193	155	156	143	159	161	161	159	176	177	161	171	176	271	165	145	170	151	150	332	272	261	255	261	184.4
26-Apr	266	283	294	291	317	276	283	274	288	305	302	298	303	317	18	28	41	49	48	33	38	355	359	344	329.7
27-Apr	328	340	20	77	277	298	280	121	124	224	198	222	210	239	238	225	242	208	202	178	162	165	152	143	202.4
28-Apr	150	167	155	123	100	198	314	315	329	320	324	318	327	327	319	350	2	9	12	15	15	346	327	329	338.2
29-Apr	2	253	248	9	323	209	143	127	128	123	135	124	140	148	138	129	117	109	103	87	98	118	121	130	120.7
30-Apr	141	139	145	138	142	142	162	186	176	168	157	168	160	158	155	153	155	149	151	140	136	139	141	152	152.5

119.1 139.2 142.8 143.8 175.0 213.7 203.6 200.2 196.6 183.8 156.5 162.2 164.2 170.0 154.6 136.9 136.0 109.5 95.1 91.0 106.1 119.5 136.2 141.7

Diurnal Average

PF - Power Failure

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 Hills - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 96 deg on Apr 5 13:00	Hours of Data: 681
Minimum Value: 4 deg on Apr 21 20:00	Hours of Missing Data: 39
Percentiles: P ₁ = 5 P ₁₀ = 8 Q ₁ = 11 Median = 16 Q ₃ = 27 P ₉₀ = 45 P ₉₉ = 86	Hours of Calibration: 0
	Percent Operational Time: 94.6

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-Apr	10	16	16	10	12	9	12	15	13	13	14	14	13	12	13	13	16	13	12	56	17	15	9	10	56
2-Apr	8	9	21	35	7	14	11	9	9	25	21	24	26	17	9	8	10	12	10	9	8	10	11	12	35
3-Apr	9	10	9	10	9	16	13	7	69	34	56	38	54	32	33	19	24	30	18	19	31	18	43	13	69
4-Apr	13	7	11	14	20	13	19	12	12	31	72	56	29	29	41	19	8	9	8	13	18	14	10	9	72
5-Apr	23	60	12	7	12	48	35	22	29	65	84	65	96	33	26	31	36	10	7	18	21	18	8	6	96
6-Apr	7	7	12	5	9	18	14	19	32	15	17	16	8	9	11	13	11	9	8	7	8	8	8	7	32
7-Apr	8	8	8	6	8	4	5	9	11	9	15	12	16	7	7	8	7	6	6	5	7	7	6	6	16
8-Apr	7	6	8	7	7	7	10	9	9	12	16	15	16	9	8	56	12	15	8	8	12	17	6	7	56
9-Apr	7	7	8	14	13	8	13	15	12	9	17	19	20	20	16	34	27	23	8	7	8	11	6	74	74
10-Apr	56	77	8	18	12	11	11	10	11	11	13	13	13	13	12	13	11	11	10	11	7	6	13	8	77
11-Apr	51	16	18	12	23	15	16	11	11	17	19	19	35	26	31	41	30	12	12	12	10	21	25	36	51
12-Apr	15	27	40	26	51	17	18	16	36	18	15	28	25	43	63	83	61	72	59	46	39	13	29	12	83
13-Apr	11	16	15	12	10	15	14	12	14	35	54	53	40	50	44	18	15	11	10	9	11	16	23	10	54
14-Apr	7	9	11	17	12	12	17	16	90	34	37	44	31	45	42	35	19	16	22	11	14	22	16	13	90
15-Apr	20	15	29	11	13	19	29	41	48	59	31	31	87	71	73	43	29	23	18	22	19	15	30	58	87
16-Apr	25	13	20	19	13	20	17	18	16	87	63	26	12	19	20	21	23	23	24	23	22	19	19	16	87
17-Apr	15	24	18	36	10	22	12	8	7	39	21	17	14	18	17	13	16	16	23	23	24	22	22	14	39
18-Apr	16	28	14	30	19	27	14	28	13	10	10	25	19	14	16	13	13	11	PF	PF	PF	PF	PF	PF	30
19-Apr	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-Apr	PF	PF	PF	PF	PF	PF	PF	PF	PF	29	33	33	23	43	29	30	31	25	27	22	17	17	11	13	43
21-Apr	59	64	66	68	40	61	24	8	33	28	28	42	69	72	34	35	44	25	16	4	11	11	13	10	72
22-Apr	10	18	15	15	12	12	13	12	18	30	15	23	25	21	21	14	15	10	13	10	4	5	7	12	30
23-Apr	11	6	12	52	74	14	16	20	18	47	39	14	21	44	32	42	48	24	11	10	9	10	12	19	74
24-Apr	42	71	10	10	60	15	83	23	29	23	27	34	50	12	13	12	14	14	12	10	17	23	33	28	83
25-Apr	12	17	10	6	9	7	6	7	11	18	12	17	29	18	65	10	30	10	64	93	21	12	13	11	93
26-Apr	13	13	11	13	33	31	13	11	14	13	20	17	19	36	19	20	22	11	10	12	11	15	14	11	36
27-Apr	10	15	10	75	40	18	86	61	24	48	36	31	30	28	28	23	24	29	14	10	5	9	9	5	86
28-Apr	12	30	38	34	83	51	25	13	14	15	16	21	19	19	18	17	19	16	11	9	7	26	9	32	83
29-Apr	10	38	49	92	29	43	39	15	13	21	34	45	73	51	86	49	41	28	23	18	20	14	12	30	92
30-Apr	12	7	17	59	13	13	15	27	24	18	14	16	13	15	13	12	11	9	7	10	7	7	7	8	59
Diurnal Maximum																									
59 77 66 92 83 61 86 61 90 87 84 65 96 72 86 83 61 72 64 93 39 26 43 74																									

PF - Power Failure



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS25 WASKŌW OHCI PIMÂTISIWIN APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)
APRIL 2 023

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	682	34	38	99.44	22.4	0	4.9	0
H2S(ppb) Average	680	36	40	99.44	1.5	0	0.5	0
Temperature 2 m (C) Average	719	0	1	99.86	22.4	0	13.4	0
Relative Humidity (%) Average	719	0	1	99.86	98.4	-	90.7	-
Wind Speed 10 m (km/h) Average	706	0	14	98.06	22	0	11	0
Wind Direction 10 m (deg) Average	706	0	14	98.06	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMĀTISIWIN (AMS25)
 APRIL 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	682	1.32	3.1	-	0	0	0.1	0.2	0.8	4.2	22.4
H2S (ppb) Average	680	0.2	0.2	-	0	0.1	0.1	0.2	0.2	0.4	1.5
Temperature 2 m (C) Average	719	4.44	6.2	-	-8.9	-3.3	-0.4	3.9	9.1	13	22.4
Relative Humidity (%) Average	719	57.15	22.5	-	16.1	26	37.2	58.7	75.5	87.7	98.4
Wind Speed 10 m (km/h) Average	706	5.6	4	-	0	2	3	5	8	11	22
Wind Direction 10 m (deg) Average	706	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMĀTISIWIN (AMS25)
APRIL 2023

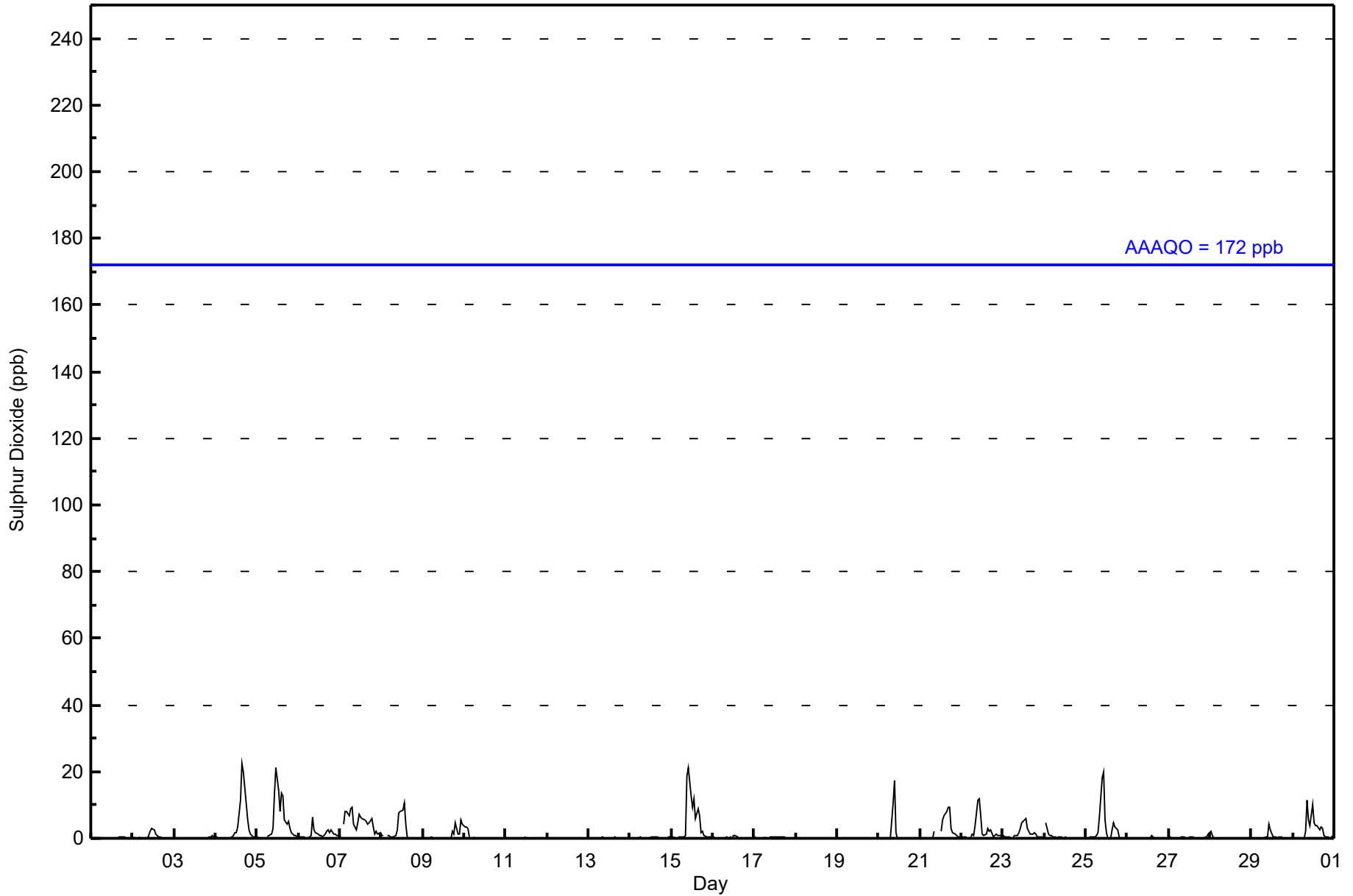
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	18 Apr 2023 08:00	18 Apr 2023 08:00	1	DAS Failure - data not recorded
H2S	19 Apr 2023 11:00	19 Apr 2023 13:00	3	Maintenance - WBEA internal audit
SO2	21 Apr 2023 10:00	21 Apr 2023 12:00	3	Maintenance - WBEA internal audit
Wind Speed, Wind Direction	01 Apr 2023 02:00	01 Apr 2023 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	05 Apr 2023 04:00	05 Apr 2023 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	13 Apr 2023 06:00	13 Apr 2023 06:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	20 Apr 2023 02:00	20 Apr 2023 07:00	6	Flat line in sensor output signal
Wind Speed, Wind Direction	23 Apr 2023 00:00	23 Apr 2023 02:00	3	Flat line in sensor output signal
Wind Speed, Wind Direction	30 Apr 2023 04:00	30 Apr 2023 04:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	661	96.92	96.92
11 - 20	18	2.64	99.56
21 - 60	3	0.44	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: 682

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	39	36	24	25	53	46	122	86	13	20	20	26	21	24	43	52	650
11 - 20	0	1	0	0	0	1	13	3	0	0	0	0	0	0	0	0	18
21 - 60	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
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
Totals	39	37	24	25	53	48	137	89	13	20	20	26	21	24	43	52	671

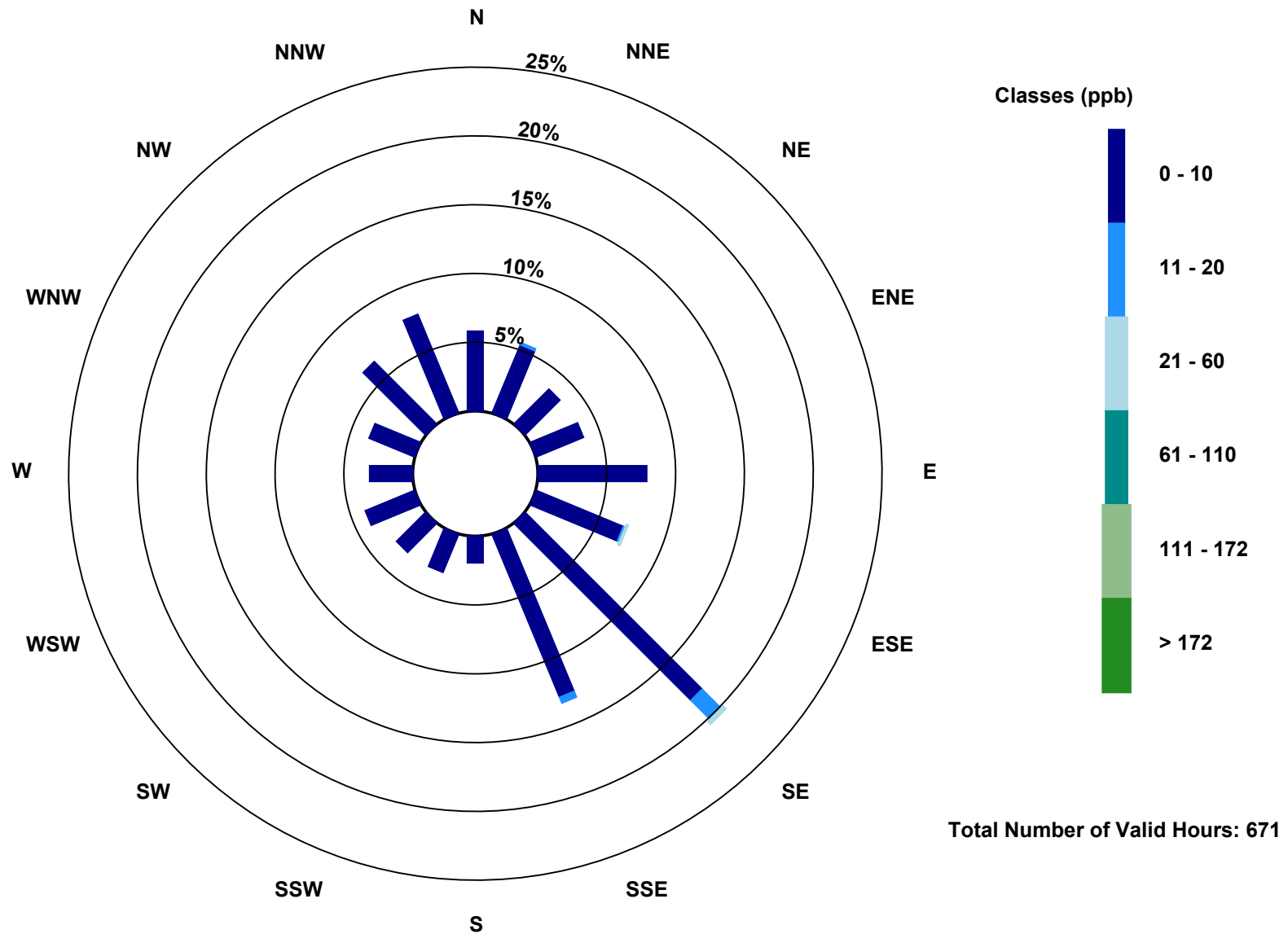
Total Number of Valid Hours: 671

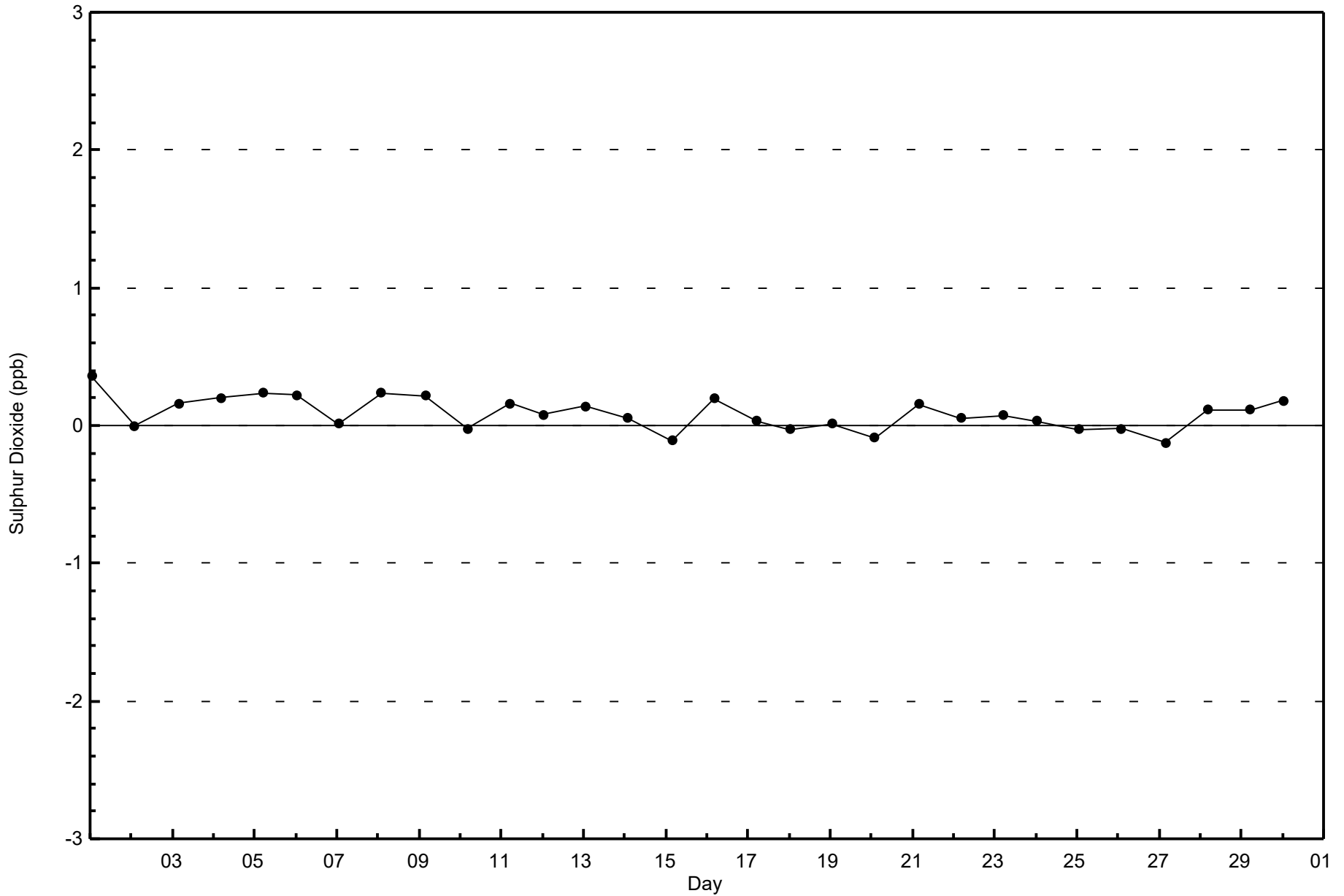
Total Number of Hours: 720

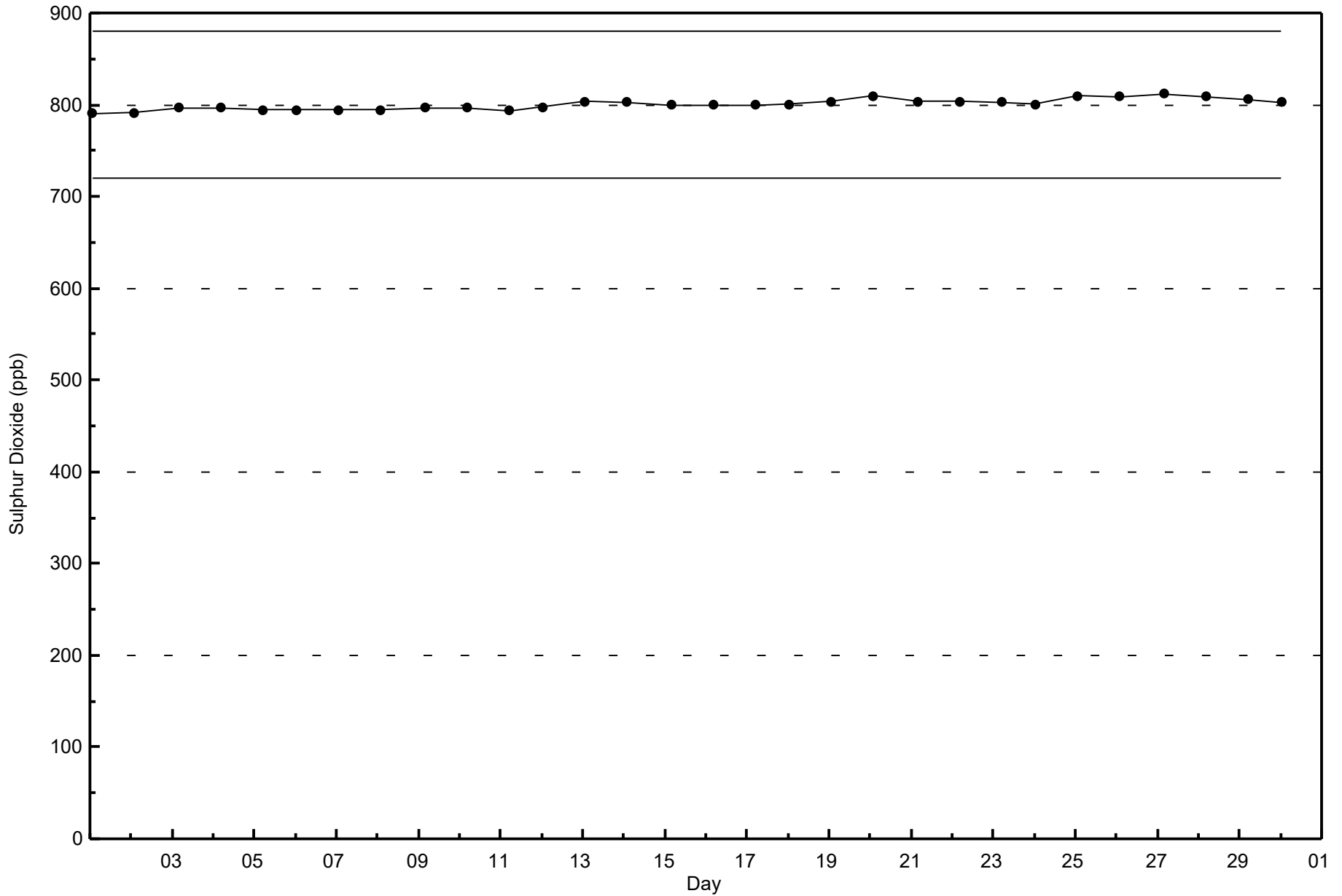


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin



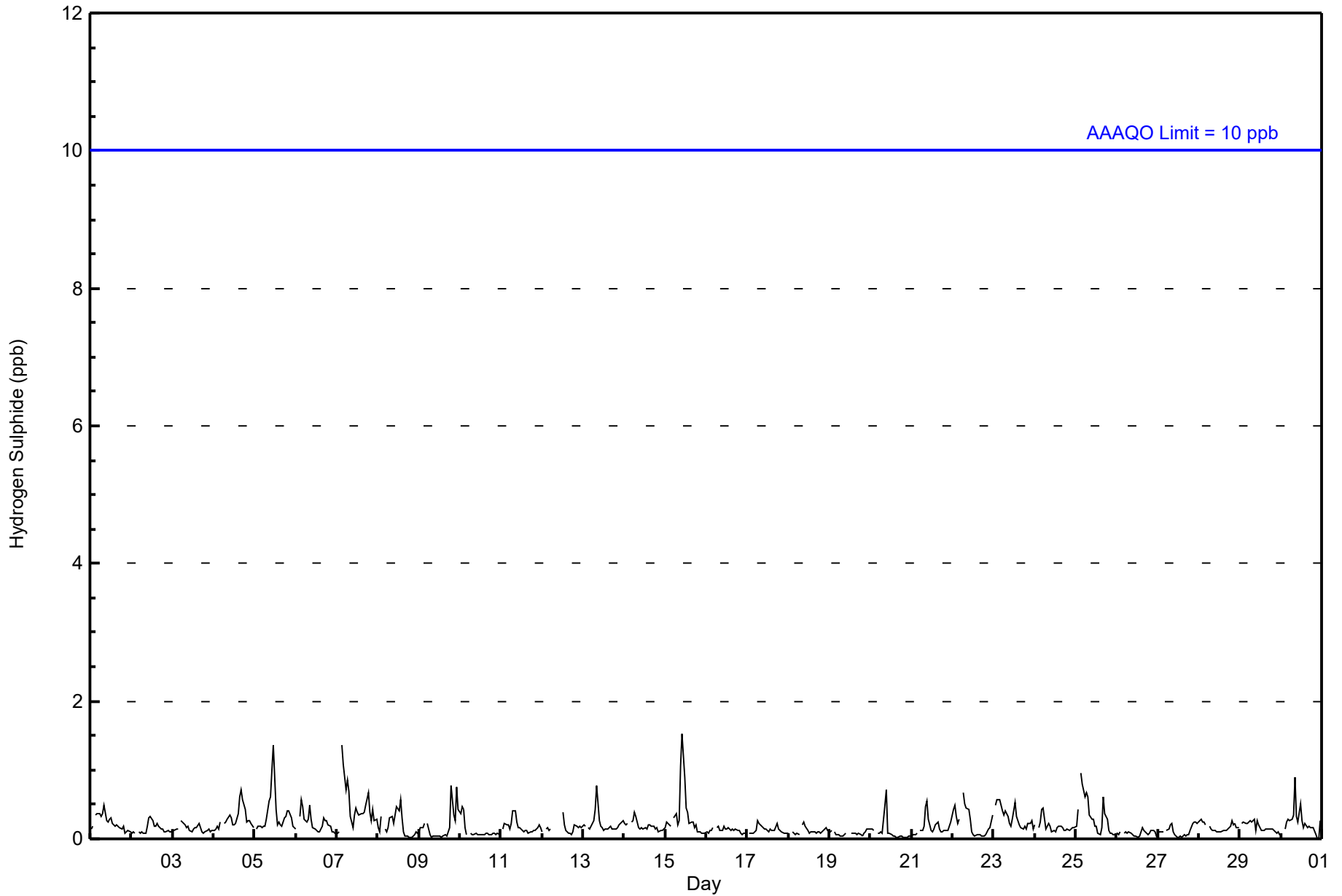






Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	680	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: 680

Total Number of Hours: 720



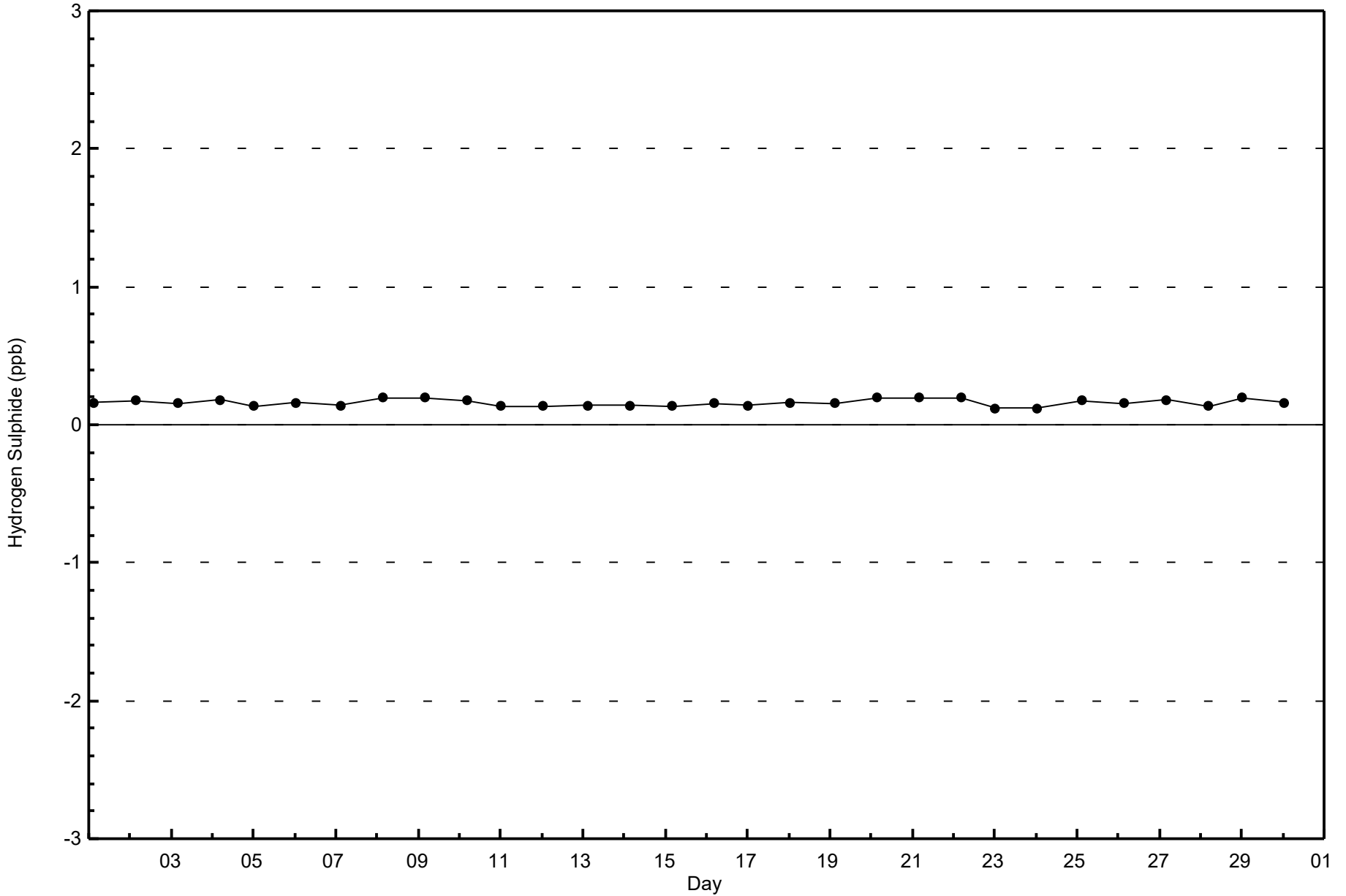
**Wood Buffalo Environmental Association
Frequency Distribution**

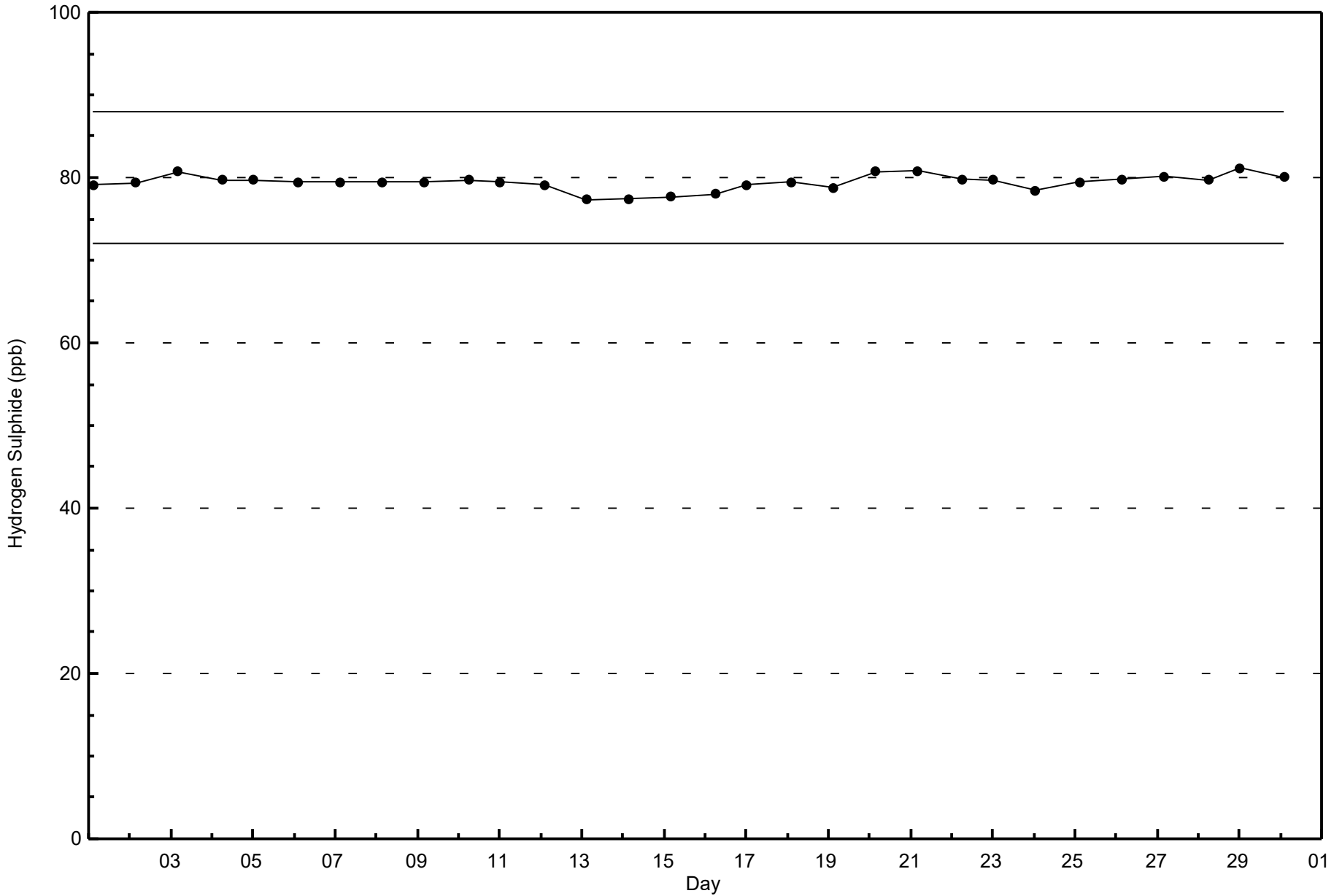
**Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	39	35	21	25	51	46	140	95	14	20	18	25	19	26	39	56	669
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
Totals	39	35	21	25	51	46	140	95	14	20	18	25	19	26	39	56	669

Total Number of Valid Hours: 669

Total Number of Hours: 720



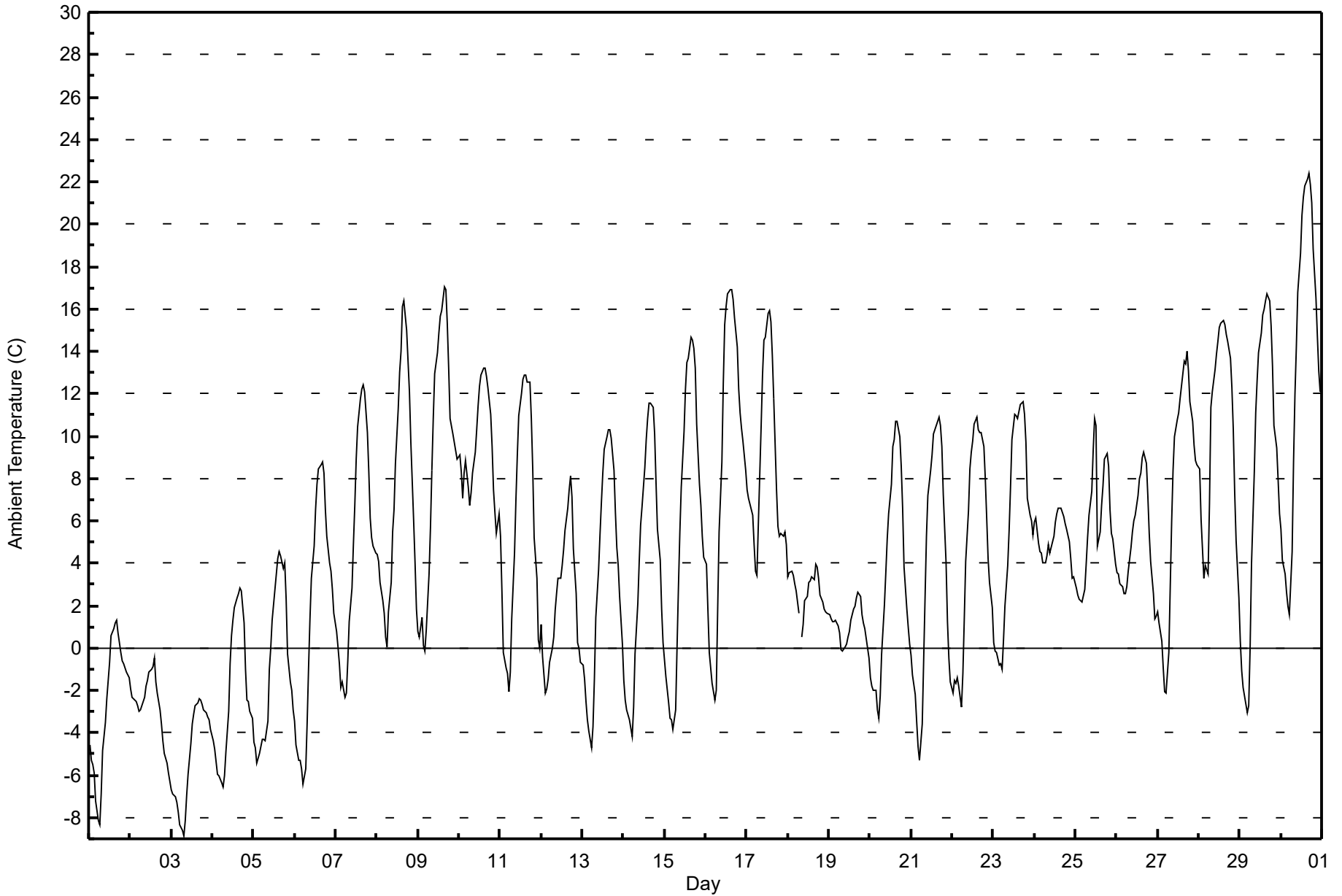




Wood Buffalo Environmental Association
Summary of Hour Averages

Ambient Temperature (AT) - C
Waskow ohci Pimatisiwin - April 2023

Maximum Value: 22.4 C on Apr 30 17:00																				Maximum Daily Average: 13.4 C on Apr 30					Hours in Service:	720																						
Minimum Value: -8.9 C on Apr 3 08:00																				Minimum Daily Average: -5.1 C on Apr 3					Hours of Data:	719																						
Maximum Diurnal Average: 9.9 C at hour 17																				Minimum Diurnal Average: -1.4 C at hour 6					Hours of Missing Data:	1																						
Monthly Average: 4.44 C																				Percentiles: P ₁ = -7.3 P ₁₀ = -3.3 Q ₁ = -0.4 Median = 3.9 Q ₃ = 9.1 P ₉₀ = 13.0 P ₉₉ = 18.8					Hours of Calibration:	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-Apr	-4.6	-5.3	-5.5	-5.9	-7.2	-8.1	-8.4	-6.9	-4.8	-3.5	-2.4	-1.6	-0.7	0.6	0.9	1.2	1.3	0.7	-0.2	-0.6	-0.7	-0.9	-1.2	-1.4	-2.7	1.3																						
2-Apr	-1.9	-2.4	-2.4	-2.5	-2.7	-3.0	-2.9	-2.8	-2.3	-1.8	-1.6	-1.1	-1.0	-0.9	-0.5	-1.6	-2.1	-2.9	-3.6	-4.4	-5.0	-5.4	-5.9	-6.3	-2.8	-0.5																						
3-Apr	-6.7	-6.9	-7.0	-7.3	-7.8	-8.4	-8.6	-8.9	-8.2	-6.9	-6.0	-4.5	-3.6	-3.1	-2.7	-2.6	-2.4	-2.5	-2.7	-2.9	-3.1	-3.2	-3.4	-3.8	-5.1	-2.4																						
4-Apr	-4.4	-4.8	-5.4	-6.0	-6.0	-6.4	-6.6	-6.0	-4.9	-3.0	-0.7	0.6	1.3	1.9	2.4	2.6	2.8	2.7	1.2	-1.0	-2.4	-2.5	-3.0	-3.3	-2.1	2.8																						
5-Apr	-4.5	-4.7	-5.4	-5.0	-4.6	-4.3	-4.3	-4.4	-3.4	-1.0	0.0	1.3	2.8	3.5	4.2	4.5	4.4	3.8	4.0	2.3	-0.3	-1.6	-2.0	-2.9	-0.7	4.5																						
6-Apr	-3.4	-4.5	-5.3	-5.3	-5.7	-6.4	-5.7	-3.5	-0.9	1.4	3.3	4.8	6.6	7.7	8.4	8.7	8.8	8.2	6.5	5.3	4.0	3.6	2.7	1.7	1.7	8.8																						
7-Apr	0.8	0.1	-0.7	-1.8	-1.6	-2.3	-2.1	-0.6	1.3	2.9	4.9	6.7	8.9	10.4	11.7	12.2	12.4	12.1	10.2	8.3	6.1	5.2	4.8	4.5	4.8	12.4																						
8-Apr	4.5	4.1	3.1	2.3	1.7	0.5	0.1	1.7	3.1	5.5	6.5	8.7	11.3	13.0	14.0	16.1	16.4	15.0	13.6	12.1	9.7	6.0	4.0	1.8	7.3	16.4																						
9-Apr	0.8	0.5	1.5	0.1	-0.2	0.8	3.5	5.7	8.4	10.8	13.0	13.9	14.8	15.6	15.9	17.0	16.9	15.4	13.2	10.9	10.1	9.7	9.3	8.9	9.0	17.0																						
10-Apr	9.1	8.3	7.0	8.3	8.9	7.6	6.7	7.3	8.2	9.3	10.3	11.4	12.4	12.8	13.2	13.2	12.8	12.3	11.0	9.5	7.5	6.4	5.4	6.3	9.4	13.2																						
11-Apr	5.3	2.7	-0.2	-1.0	-1.2	-2.1	-1.2	1.4	4.5	7.0	9.1	11.0	12.0	12.7	12.9	12.9	12.6	12.6	10.8	8.5	5.2	3.3	0.4	0.0	5.8	12.9																						
12-Apr	1.1	-0.4	-2.1	-1.9	-1.5	-0.7	0.0	0.5	1.8	2.5	3.3	3.3	3.9	4.6	5.5	6.6	7.5	8.1	7.1	4.7	2.5	0.2	0.0	-0.6	2.3	8.1																						
13-Apr	-0.8	-1.5	-2.5	-3.4	-3.9	-4.7	-3.7	-1.5	1.4	3.7	5.3	6.8	8.3	9.4	10.0	10.3	10.3	9.9	8.4	6.4	4.8	3.9	2.4	0.2	3.3	10.3																						
14-Apr	-1.5	-2.5	-2.9	-3.4	-3.7	-4.2	-2.8	-0.2	2.1	4.1	5.8	6.7	8.5	9.8	10.8	11.6	11.6	11.4	10.1	7.8	5.6	4.2	1.9	0.2	3.8	11.6																						
15-Apr	-0.5	-1.4	-2.6	-3.3	-3.4	-3.8	-2.9	0.1	2.9	5.5	7.6	10.3	12.2	13.5	13.7	14.7	14.5	14.2	13.2	10.6	7.7	6.7	5.3	4.3	5.8	14.7																						
16-Apr	4.0	1.9	-0.2	-1.0	-1.7	-2.5	-2.0	1.8	5.5	8.8	12.5	15.3	16.1	16.7	16.9	16.9	16.4	15.6	14.2	12.2	11.1	10.4	9.8	8.4	8.6	16.9																						
17-Apr	7.5	7.1	6.8	6.2	4.9	3.6	3.4	5.8	10.4	12.9	14.5	14.7	15.8	15.9	15.4	13.8	11.8	7.5	5.8	5.3	5.4	5.3	5.4	4.9	8.8	15.9																						
18-Apr	3.4	3.6	3.6	3.5	3.0	2.7	1.6	DF	0.5	1.1	2.2	2.5	3.1	3.2	3.3	3.3	3.9	3.8	3.3	2.5	2.2	1.9	1.7	1.6	2.7	3.9																						
19-Apr	1.6	1.4	1.3	1.2	1.3	1.0	0.7	-0.1	-0.1	0.0	0.2	0.5	0.8	1.3	1.8	2.0	2.3	2.6	2.4	1.5	1.2	0.9	0.5	-0.4	1.1	2.6																						
20-Apr	-1.4	-1.8	-2.0	-2.0	-2.9	-3.3	-2.3	-0.3	2.0	3.6	5.1	6.3	7.7	9.5	9.9	10.7	10.7	10.0	8.6	6.6	3.9	1.8	1.0	0.2	3.4	10.7																						
21-Apr	-0.3	-1.3	-2.2	-3.4	-4.7	-5.3	-3.6	-0.6	2.3	5.3	7.2	8.4	9.1	10.1	10.3	10.7	10.9	10.5	9.5	7.3	4.0	1.2	-0.4	-1.6	3.5	10.9																						
22-Apr	-2.1	-1.5	-1.7	-1.4	-1.8	-2.8	-1.2	1.4	4.1	6.5	8.4	9.2	9.8	10.6	10.9	10.3	10.2	10.2	9.5	8.0	6.1	4.2	3.1	1.9	4.7	10.9																						
23-Apr	0.3	-0.1	-0.2	-0.8	-0.7	-1.0	0.4	2.0	3.9	5.5	7.6	9.8	11.0	10.9	10.8	11.2	11.5	11.6	11.0	9.7	7.1	6.3	6.0	5.4	5.8	11.6																						
24-Apr	6.0	6.1	5.0	4.5	4.5	4.0	4.4	4.9	4.5	4.7	5.3	5.9	6.3	6.6	6.6	6.4	6.2	5.9	5.6	5.0	4.2	3.3	3.3	3.3	5.1	6.6																						
25-Apr	2.8	2.5	2.3	2.3	2.2	2.8	3.9	5.2	6.3	7.4	9.3	10.8	10.5	4.8	5.5	6.7	7.6	8.9	9.1	8.6	6.5	5.4	5.2	4.0	5.9	10.8																						
26-Apr	3.6	3.5	3.0	2.9	2.5	2.5	2.9	3.6	4.7	5.5	6.0	6.3	7.2	8.0	8.2	9.0	9.3	8.7	7.2	5.4	4.1	2.6	1.4	1.5	5.0	9.3																						
27-Apr	1.7	1.2	0.3	-0.9	-2.0	-2.1	-0.2	2.9	5.9	8.4	10.0	10.8	11.1	11.7	12.3	13.5	13.4	14.0	13.1	11.7	10.7	9.6	8.9	8.7	7.3	14.0																						
28-Apr	8.4	6.1	4.7	3.3	3.9	3.5	6.8	11.3	12.1	13.1	13.9	14.4	15.1	15.3	15.5	15.3	14.8	14.5	13.7	12.3	10.3	7.3	5.1	2.3	10.1	15.5																						
29-Apr	0.3	-1.1	-1.9	-2.6	-3.0	-2.7	0.0	3.9	8.4	11.1	12.6	13.9	14.8	15.7	16.0	16.4	16.7	16.4	15.2	13.2	10.5	9.5	7.9	6.4	8.2	16.7																						
30-Apr	5.6	4.2	3.5	2.6	2.0	1.6	4.6	8.8	12.0	14.2	16.8	18.7	20.4	21.3	21.8	22.1	22.4	21.9	21.0	18.8	16.5	14.8	13.1	12.1	13.4	22.4																						
																								1.1	0.4	-0.3	-0.7	-1.1	-1.4	-0.7	1.1	3.1	4.8	6.3	7.5	8.5	9.1	9.5	9.9	9.9	9.4	8.4	6.9	5.2	4.0	3.1	2.3	Diurnal Average
																								9.1	8.3	7.0	8.3	8.9	7.6	6.8	11.3	12.1	14.2	16.8	18.7	20.4	21.3	21.8	22.1	22.4	21.9	21.0	18.8	16.5	14.8	13.1	12.1	Diurnal Maximum
DF - DAS Failure																																																





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Waskow ohci Pimatisiwin - April 2023**

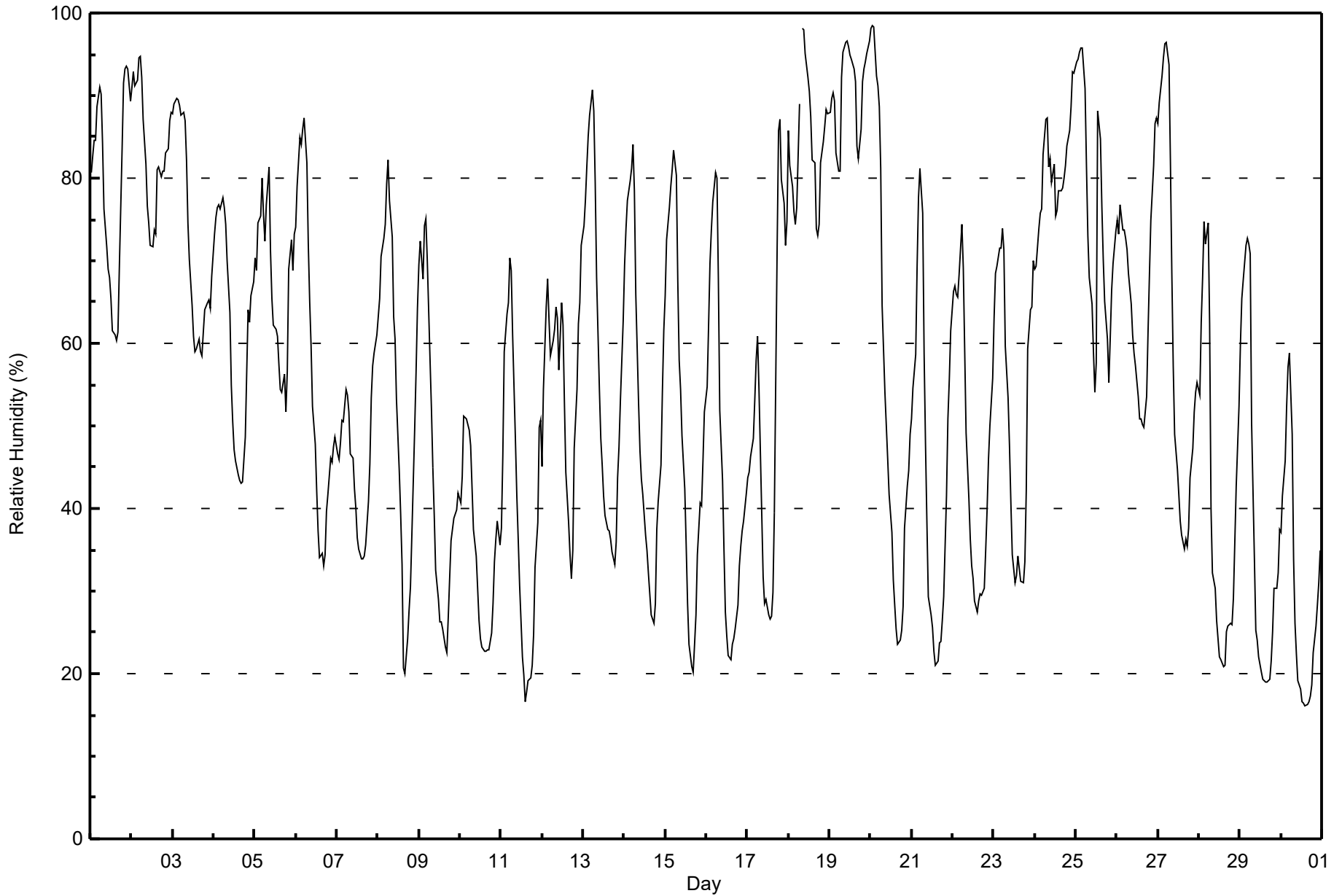
Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	197	27.40	27.40
0 - 10	368	51.18	78.58
10 - 20	147	20.45	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Maximum Value: 98.4 % on Apr 20 02:00 Maximum Daily Average: 90.7 % on Apr 19																						Hours in Service: 720 Hours of Data: 719																											
Minimum Value: 16.1 % on Apr 30 15:00 Minimum Daily Average: 30.1 % on Apr 30 Maximum Diurnal Average: 77.2 % at hour 6 Minimum Diurnal Average: 39.8 % at hour 17 Monthly Average: 57.15 % Percentiles: P ₁ = 17.9 P ₁₀ = 26.0 Q ₁ = 37.2 Median = 58.7 Q ₃ = 75.5 P ₉₀ = 87.7 P ₉₉ = 96.4																						Hours of Missing Data: 1 Hours of Calibration: 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-Apr	80.7	82.8	84.5	84.7	88.7	91.1	90.1	84.2	76.3	71.7	69.1	68.0	65.3	61.6	61.0	60.4	61.4	69.2	83.7	91.5	93.3	93.6	93.2	89.3	79.0	93.6																							
2-Apr	90.9	92.9	91.2	91.8	94.6	94.8	92.2	87.2	81.7	76.7	74.5	71.9	71.6	73.7	73.3	81.0	81.3	80.1	80.8	80.8	83.0	83.5	86.9	88.0	83.5	94.8																							
3-Apr	87.9	88.9	89.6	89.5	88.8	87.7	87.9	86.9	82.2	74.6	70.2	64.6	60.9	59.0	59.3	60.6	59.0	58.4	61.3	64.1	65.0	65.3	64.2	68.1	72.7	89.6																							
4-Apr	73.3	75.2	76.4	76.7	76.2	77.6	76.5	74.4	69.9	63.8	55.0	50.5	47.2	45.8	44.1	43.3	43.1	43.2	48.7	56.4	64.2	62.5	65.8	67.5	61.5	77.6																							
5-Apr	70.3	68.9	74.6	75.4	79.9	75.3	72.4	76.8	81.4	71.2	65.4	62.3	61.6	60.9	57.4	54.4	54.0	56.3	51.8	56.6	69.0	72.5	68.8	73.2	67.1	81.4																							
6-Apr	74.0	78.9	84.9	84.0	85.9	87.2	81.8	72.1	65.1	59.7	52.4	47.8	42.3	37.3	34.0	34.5	33.0	34.4	39.7	41.7	46.1	45.6	47.4	48.7	56.6	87.2																							
7-Apr	46.6	45.9	48.0	50.7	50.5	54.4	53.7	51.8	46.6	46.1	42.4	40.0	36.4	35.1	33.9	33.9	34.2	35.5	40.8	45.4	53.3	57.3	58.8	61.1	45.9	61.1																							
8-Apr	63.2	65.5	70.4	72.6	74.4	79.3	82.2	77.3	72.8	63.2	60.5	53.2	44.5	39.4	33.2	20.6	20.0	24.2	27.6	30.6	36.7	49.6	56.4	64.2	53.4	82.2																							
9-Apr	69.5	72.3	67.8	74.2	75.1	70.2	58.0	52.0	45.0	39.1	32.5	29.0	26.3	26.3	25.5	23.2	22.6	26.8	31.5	36.1	38.8	39.4	39.8	41.9	44.3	75.1																							
10-Apr	40.6	43.9	51.1	51.0	50.8	49.5	47.7	42.5	37.5	34.2	30.3	26.4	24.2	23.3	22.7	22.6	22.8	22.9	24.9	28.4	33.5	36.3	38.4	35.5	35.1	51.1																							
11-Apr	37.6	46.4	59.0	63.5	64.9	70.4	68.8	61.0	48.2	41.5	36.2	30.7	22.1	19.8	16.6	17.9	19.1	19.4	21.0	24.8	32.8	38.3	49.9	50.7	40.0	70.4																							
12-Apr	45.1	54.3	64.5	67.7	62.9	58.5	60.3	61.7	64.3	63.0	56.7	65.0	62.2	52.9	44.3	38.3	34.4	31.6	35.0	47.2	54.4	62.4	65.0	71.9	55.2	71.9																							
13-Apr	74.3	77.4	81.4	85.1	87.6	90.6	88.1	79.6	68.0	54.4	48.5	45.3	41.5	39.2	37.5	37.2	36.3	34.8	33.2	35.9	43.8	47.5	53.1	62.6	57.6	90.6																							
14-Apr	69.4	73.9	77.2	79.7	81.1	84.0	78.5	65.9	52.8	47.0	43.6	41.7	36.8	34.8	32.3	29.6	27.0	26.0	28.4	37.4	40.9	45.2	54.1	61.6	52.0	84.0																							
15-Apr	65.8	72.5	76.4	78.9	81.0	83.3	80.4	67.6	58.0	54.4	48.9	42.4	35.6	28.5	23.5	20.9	20.1	23.6	27.2	34.4	40.6	40.3	45.8	51.7	50.1	83.3																							
16-Apr	54.7	62.0	69.6	73.8	77.1	80.6	80.0	67.9	51.9	43.3	35.0	27.4	24.5	22.2	21.7	23.5	24.2	25.4	28.4	33.1	35.5	37.3	38.5	41.8	45.0	80.6																							
17-Apr	43.8	44.3	46.2	48.5	53.1	58.0	60.8	54.6	39.3	31.7	28.5	28.9	27.2	26.7	27.0	29.9	39.6	71.6	85.7	87.1	79.7	77.0	71.9	74.8	51.5	87.1																							
18-Apr	85.8	81.6	79.0	75.9	74.5	76.5	89.0	DF	98.2	98.0	95.1	92.3	90.6	87.4	82.1	81.9	74.0	73.0	74.4	81.9	84.3	86.2	88.2	87.8	84.2	98.2																							
19-Apr	88.0	89.7	90.4	89.4	83.0	80.9	80.9	92.2	95.3	96.4	96.7	96.0	94.9	94.3	93.2	91.6	83.9	82.4	86.0	91.6	93.2	94.1	95.0	96.6	90.7	96.7																							
20-Apr	98.2	98.4	98.4	92.4	91.2	88.7	81.2	64.6	54.1	49.9	45.9	41.7	37.1	31.3	28.3	25.5	23.6	24.0	25.3	28.1	37.6	42.8	44.5	48.9	54.2	98.4																							
21-Apr	50.9	54.6	58.7	69.4	77.7	81.1	75.8	58.7	47.8	38.4	29.4	27.1	25.5	22.8	21.0	21.6	23.7	23.9	26.4	29.4	41.6	50.9	55.6	61.6	44.7	81.1																							
22-Apr	66.2	66.9	66.0	65.6	68.3	74.5	69.2	59.2	49.1	41.1	36.3	33.1	31.6	28.8	27.4	28.8	29.7	29.5	30.3	34.9	39.8	45.9	50.0	55.8	47.0	74.5																							
23-Apr	63.0	68.5	69.3	71.5	71.6	73.9	71.4	59.7	53.4	47.6	40.7	34.5	31.0	31.9	34.3	32.7	31.2	31.0	33.6	42.3	59.3	64.1	64.4	70.0	52.1	73.9																							
24-Apr	69.0	69.3	73.9	75.8	76.3	82.8	87.2	87.3	81.4	82.4	79.5	81.7	75.4	76.1	78.5	78.5	78.9	80.0	81.5	83.8	85.7	88.7	92.8	92.6	80.8	92.8																							
25-Apr	94.0	94.4	95.2	95.8	95.8	90.9	81.6	73.1	67.9	64.8	59.0	54.1	57.6	88.2	84.8	76.6	70.2	65.1	60.5	55.3	60.7	66.4	69.7	73.5	74.8	95.8																							
26-Apr	74.9	73.3	76.8	73.8	73.8	72.8	71.4	68.5	64.7	61.1	58.8	57.3	53.6	50.8	50.9	50.2	49.8	53.5	61.3	68.2	74.9	81.5	86.7	87.3	66.5	87.3																							
27-Apr	86.6	89.2	92.4	94.5	96.2	96.4	93.7	81.9	68.4	57.3	49.0	44.7	41.8	38.5	36.8	35.0	36.3	35.4	37.7	43.7	47.3	51.7	54.0	55.3	61.0	96.4																							
28-Apr	53.8	62.6	67.9	74.7	72.0	74.5	62.4	40.1	32.2	30.3	26.4	24.3	22.1	21.6	20.9	21.0	25.1	25.8	26.1	25.9	29.2	35.9	42.7	52.3	40.4	74.7																							
29-Apr	59.8	65.5	67.6	71.8	72.7	72.0	70.8	50.4	33.9	25.3	24.0	22.1	20.2	19.4	19.2	18.9	19.0	19.2	21.6	25.1	30.4	30.3	32.3	37.4	38.7	72.7																							
30-Apr	37.1	41.6	45.7	52.2	57.1	58.8	48.9	33.9	26.2	22.4	19.1	18.1	16.6	16.4	16.1	16.3	16.6	17.3	18.6	22.6	25.8	28.4	31.1	35.0	30.1	58.8																							
																								67.2	70.0	73.1	75.0	76.1	77.2	74.8	66.7	60.5	55.0	50.3	47.4	44.3	43.1	41.4	40.3	39.8	41.5	44.4	48.8	54.0	57.3	60.2	63.6	Diurnal Average	
																								98.2	98.4	98.4	95.8	96.2	96.4	93.7	92.2	98.2	98.0	96.7	96.0	94.9	94.3	93.2	91.6	83.9	82.4	86.0	91.6	93.3	94.1	95.0	96.6	Diurnal Maximum	
DF - DAS Failure																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Waskow ohci Pimatisiwin - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	19	2.64	2.64
20 - 40	186	25.87	28.51
40 - 60	169	23.50	52.02
60 - 80	202	28.09	80.11
80 - 100	143	19.89	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

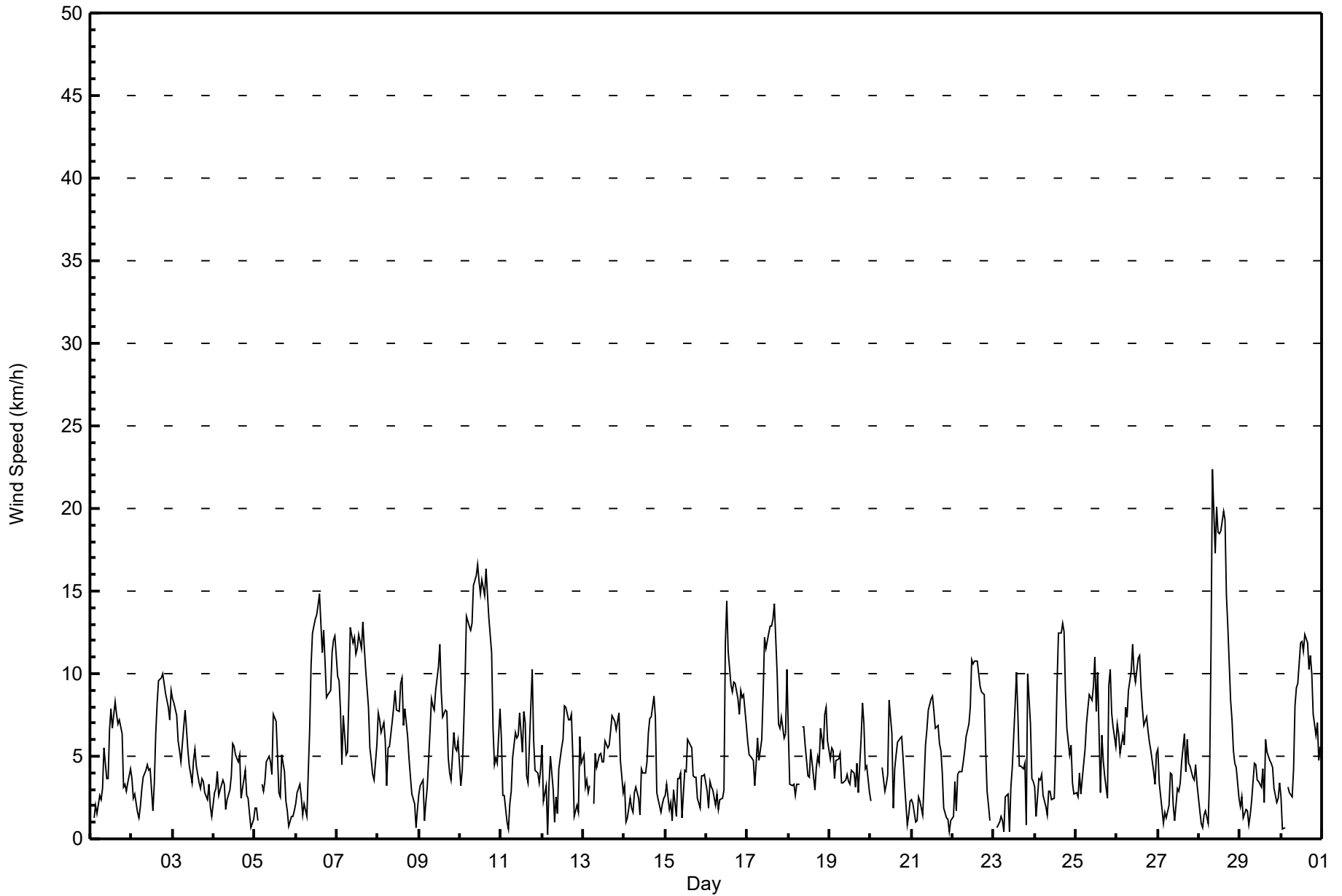


Maximum Speed: 22 km/h on Apr 28 09:00	Maximum Daily Speed Average: 10.4 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 12 04:00	Minimum Daily Speed Average: 1.0 km/h on Apr 4	Hours of Data: 706
Maximum Diurnal Speed Average: 3.1 km/h at hour 12	Minimum Diurnal Speed Average: 0.2 km/h at hour 4	Hours of Missing Data: 14
Monthly Average Velocity: 1.1 km/h 125.6 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 5 Q ₃ = 8 P ₉₀ = 11 P ₉₉ = 17	Percent Operational Time: 98.1

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-Apr	NW3	UO	NNE1	N2	N2	NNW3	NNW2	NNW3	N6	N4	NNE4	N7	NNW8	N7	NNW8	NNW8	NW7	NNW7	N6	NNE3	ESE3	E3	E3	E4	N3.5	NNW8				
2-Apr	ESE4	ESE2	E3	ESE2	ENE1	E2	E3	ESE4	ESE4	SE4	SE4	SE4	NNW2	NNW3	NNE6	NNE8	N10	N10	N10	N9	NNE9	N8	N7	NNW9	NNE3.4	N10				
3-Apr	NNW8	NNW8	NNW7	N6	N5	N5	NNW7	NNW8	N7	NNW5	ENE4	ENE3	ENE5	NE5	ENE4	E3	E3	SSE4	SE3	SE3	SSE2	SSE3	SE2	NW1	NNE2.6	NNW8				
4-Apr	NW3	NW3	NNW4	NNW3	NW3	NW4	NW3	N2	N2	ENE3	E4	SE6	SE6	ESE5	SE5	SE5	ESE2	SE3	SSE4	SE3	SE2	SE2	ESE1	E1	ESE1.0	SE6				
5-Apr	ESE2	SSE2	NNW1	UO	SE3	SE3	SE3	SSE5	SE5	SE5	SSE4	SE8	SE7	SSE5	SE3	SSE3	SSE5	SE4	SSE2	SSE2	SSE1	SSE1	SE1	SE2	SE3.1	SE8				
6-Apr	SSE2	SE3	SE3	SE3	SE1	SE2	E1	SSE4	SE7	SE11	SE12	SE13	SE14	SSE14	SE15	SE11	SSE13	SSE11	SSE9	SSE9	SSE9	SSE11	SSE12	SSE12	SE8.4	SE15				
7-Apr	SSE10	SSE10	SSE8	SSE5	SSE7	SSE5	SSE5	SE9	SSE13	SE12	SE12	SE11	SSE12	SSE12	SSE12	SSE13	SSE12	SSE10	SSE8	SSE5	SE5	SE4	SSE4	SSE6	SSE8.6	SSE13				
8-Apr	SSE8	SSE7	SSE6	SSE7	SSE6	SSE3	SSE5	SSE6	SSE7	SE8	SE9	SE8	SE8	SE9	SE10	SSW7	SSW8	SSW6	S5	SW4	SSW3	S2	SSW1	SW2	SSE5.4	SE10				
9-Apr	SSW3	SSW3	SSE4	SSE1	SSE2	S3	SW7	SW9	SW8	SW8	SW9	SW10	SW12	SSW9	SSW7	SSW8	S8	SE5	SSE4	SE4	SE6	SSE6	SSE5	SE6	SSW5.0	SW12				
10-Apr	SSE3	SSE4	SSE7	SW10	WSW13	WSW13	SW13	SW13	WSW15	WSW16	WSW17	WSW16	WSW15	WSW16	WSW15	WSW16	WSW15	WSW16	WSW15	WSW16	WSW15	WSW13	WSW11	SW7	S4	S5	SSW5	WSW8	SW10.4	WSW17
11-Apr	SW6	SSE3	SSE3	SSE1	ESE1	S2	SSE3	SSE5	SSE6	SE6	SE6	SE8	SSW5	SW8	WSW7	WSW4	NW3	NNW8	NW10	NNW6	WNW4	WNW4	WSW3	W4	SW1.7	NW10				
12-Apr	WNW6	WSW2	WSW3	SSW0	WSW3	W5	W3	WNW1	E3	NNE1	NW4	NE5	NNE6	N8	NNW8	NW7	WNW7	WNW8	NW5	WNW1	WSW2	NW2	NW6	NNW5	NW3.0	N8				
13-Apr	NNW5	NNW3	NW4	NNW3	NW3	UO	N2	N5	NNE4	NE5	ENE5	NE5	ENE5	ENE6	NE5	NE6	NNE7	NNE7	NNE7	NNE7	N7	NNE8	N5	NW3	NNE4.1	NNE8				
14-Apr	NW3	NW1	NNW1	NW2	NW2	NNW2	NNW3	N3	NNE2	ESE1	NE4	NE4	ENE4	NNE5	NNE6	NNE7	NNE7	N9	NNE7	E3	SSE2	E2	N2	NNW2	NNE2.8	N9				
15-Apr	N3	NNW3	NW2	NNW2	WNW1	NW3	NW1	SSE4	ESE4	SE4	ESE1	SE4	ESE4	SE6	SE6	SE6	ESE4	E4	E4	ESE2	SSE2	SSE4	SSE4	SSE4	SE2.0	SE6				
16-Apr	E3	NE2	NNW3	NW3	NNW3	NW2	NNW3	NNE2	E2	NNE2	E3	SE12	SE14	SE11	SE9	ESE9	E9	E9	E9	ESE8	ESE9	ESE9	ESE9	SE7	ESE4.7	SE14				
17-Apr	SE6	SE5	ESE5	E5	NNE3	NNW5	NNW6	NNE5	ENE6	ESE9	ESE12	ESE12	ESE12	ESE13	ESE13	ESE13	ESE14	ESE10	E7	E7	ESE7	ESE6	ESE6	ESE10	ESE7.1	ESE14				
18-Apr	E6	NE3	NE3	ENE3	NE3	E3	E3	DF	N7	N7	N6	ENE4	ENE4	NE5	ENE5	E3	ENE4	NE5	NE5	NE7	NE5	NNE8	N8	NNE6	NE4.2	N8				
19-Apr	NNE5	NNE6	NE5	ENE4	E5	E5	E5	E3	E3	E4	E4	E3	E3	E4	E4	E3	E5	NE3	NNW6	NNW8	NNW7	N4	NNW4	NW3	NE2.9	NNW8				
20-Apr	W2	UO	UO	UO	UO	UO	UO	SSE4	SE3	NNE3	NE4	N8	NNE6	SE2	ENE4	ENE5	E6	ESE6	E6	E5	E3	S1	ESE1	SE2	ENE2.6	N8				
21-Apr	SE2	SSE2	SE1	NNW1	WNW3	W2	NW1	SE4	SE6	SE7	SE8	SSE9	SSE9	SE8	SE7	SE7	SE6	SE5	SE4	SE2	SSW1	S1	ESE0	SE1	SE3.3	SSE9				
22-Apr	ESE1	SSE4	SE2	S4	SSE4	SSE4	SSE5	SE5	SE6	SE7	SE8	SE11	SE11	SE11	SE11	SE10	SE9	SSE9	S9	SSE5	SE3	SE2	SE1	UO	SE6.0	SSE11				
23-Apr	UO	UO	SSW1	WNW1	WNW1	WNW1	S0	SE3	SSE3	NNW0	NNE3	ESE4	SE8	SE10	SE8	E4	E4	SE4	SE5	N1	N10	NNW7	NW4	NW3	E1.4	SE10				
24-Apr	SE3	NNE1	N4	NNW4	N4	ESE3	E2	NNE1	SE3	SE3	E2	ENE2	NNE5	NNW9	NNW12	NNW13	NNW13	NNW9	NNW7	NNW5	WNW6	SW3	SSW3	NNW3.6	NNW13					
25-Apr	SE3	SSE3	SE4	SE3	SE4	SSE5	SSE7	SE8	SE9	SE8	SE9	SE11	SSW8	W10	E3	SE6	SE5	E4	W2	W9	W10	W8	W7	W6	S3.2	SE11				
26-Apr	W7	W6	W5	W6	W6	W8	W7	W9	NNW10	NW12	NNW10	WNW9	NW11	NNW11	N9	NNE8	NE7	NE7	NE7	NNE6	NNE5	NNW4	NNW3	NW5	NW5.2	NW12				
27-Apr	NNW5	NNW3	WNW2	WSW1	WSW2	S1	SE2	SE4	ESE4	ENE2	WSW1	ESE3	SSW3	SW3	SSW5	SW6	SW4	S6	SSE5	SSE4	SE4	SE4	SE5	SE3	S1.8	SW6				
28-Apr	SE2	SSE1	WSW1	SSE1	WSW2	WSW1	WNW4	NW12	NW22	NNW17	NW20	NW19	NW19	NW19	NW20	NW19	NNW15	N13	N8	N7	NNW5	WNW5	WNW4	W2	NW8.9	NW22				
29-Apr	SW2	W3	SW1	WSW2	SSW2	SSE1	ESE1	SE2	SE5	SE4	S4	SE3	E3	ENE4	NE2	NNE6	ENE5	E5	ENE5	ENE4	E3	SE2	ESE2	SE3	ESE2.0	NNE6				
30-Apr	ESE3	ESE1	SSE1	UO	NW3	NNW3	NW3	SE4	SE8	SE9	SE9	SE12	SE12	SE11	SE12	SE12	SE10	SE11	SE10	SE8	SE6	SE7	SE5	SE6	SE6.4	SE12				

SSE0.5 SSE0.6 SE0.4 SW0.2WSW0.7 SW0.9 SW0.5 SSE1.1 SE1.5 SE1.8 SE2.2 SE3.1 SE2.7 SE2.0 ESE1.9 ESE1.7 ESE2.0 E1.9 E1.6 ENE1.4 E1.2 ESE0.7 SE0.6 SSE0.9	Diurnal Average
SSE10 SSE10 SSE8 SW10WSW13WSW13 SW13 SW13 NNW2WNW17 NW20 NW19 NW19 NW19 NW20 NW19WSW15WSW13WSW11 N9 W10 SSE11 SSE12 SSE12	Diurnal Maximum

DF - DAS Failure 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
Waskow ohci Pimatisiwin - April 2023

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	415	58.78	58.78
6 - 11	231	32.72	91.50
12 - 19	57	8.07	99.58
20 - 28	3	0.42	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 706

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin - April 2023

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	16	18	19	23	47	30	71	60	11	13	7	13	8	21	30	28	415
6 - 11	23	20	5	2	8	12	62	27	3	7	10	4	13	7	5	23	231
12 - 19	1	0	0	0	0	7	10	12	0	0	3	12	0	1	6	5	57
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	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
Totals	40	38	24	25	55	49	143	99	14	20	20	29	21	29	44	56	706

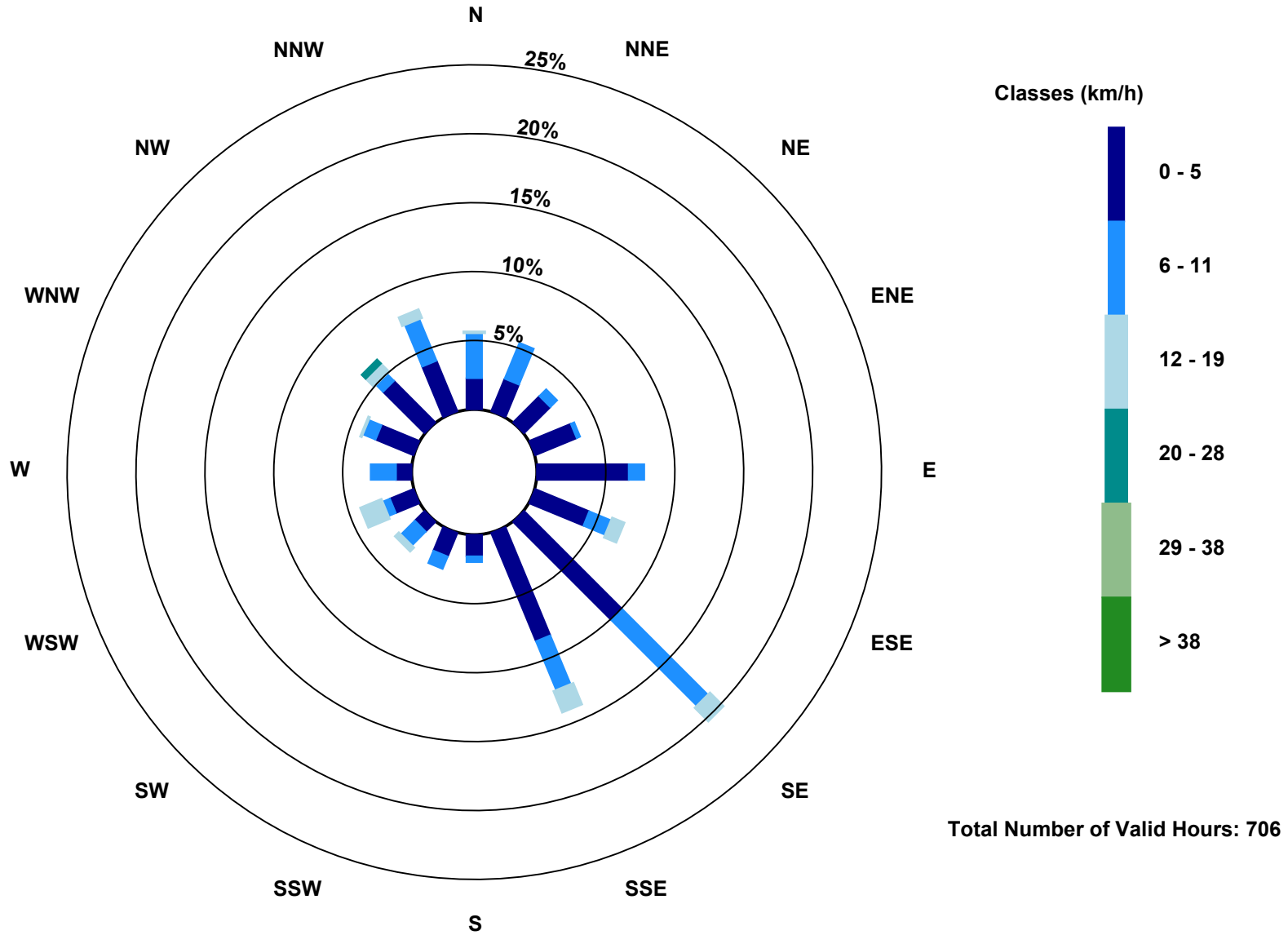
Total Number of Valid Hours: 706

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 7 km/h on Apr 10 13:00	Hours of Data: 706
Minimum Value: 0 km/h on Apr 16 03:00	Hours of Missing Data: 14
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 4 P ₉₉ = 7	Hours of Calibration: 0
	Percent Operational Time: 98.1

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-Apr	1	UO	1	1	1	1	1	1	2	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	2
2-Apr	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	2	2	2	3
3-Apr	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
4-Apr	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	2
5-Apr	1	1	1	UO	1	1	1	2	2	2	1	3	2	2	2	1	2	1	1	1	1	1	1	1	3
6-Apr	1	1	1	1	1	1	1	2	3	3	4	4	5	4	5	4	5	4	3	3	3	3	4	4	5
7-Apr	3	3	3	2	2	1	2	3	4	4	4	4	4	4	4	4	3	3	2	2	2	1	2	2	4
8-Apr	2	2	2	2	2	1	2	2	2	3	3	2	2	3	3	4	4	3	2	1	1	1	1	1	4
9-Apr	1	2	1	1	1	2	3	4	4	4	4	5	5	4	3	3	3	2	1	1	2	2	1	2	5
10-Apr	1	2	2	4	6	6	6	7	7	7	7	7	7	7	7	7	7	6	5	3	2	2	2	4	7
11-Apr	2	1	1	1	1	1	1	2	2	2	2	3	4	4	3	3	2	4	3	2	1	1	1	1	4
12-Apr	2	1	1	1	2	1	1	2	1	2	3	2	3	4	3	3	3	4	3	1	1	1	1	1	4
13-Apr	2	1	1	1	1	UO	2	2	2	2	1	2	2	2	2	3	3	3	3	2	2	3	2	1	3
14-Apr	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	3	3	3	3	2	1	1	1	1	3
15-Apr	1	1	1	1	1	1	1	1	1	1	2	1	1	2	2	2	2	1	2	2	1	1	1	1	2
16-Apr	1	1	0	1	1	1	1	1	1	1	2	5	5	4	4	3	3	3	3	3	3	3	3	3	5
17-Apr	2	2	2	2	1	1	2	1	2	4	5	4	4	5	5	5	5	4	3	2	3	2	3	5	5
18-Apr	3	1	1	1	1	3	2	DF	2	2	2	2	1	2	2	1	1	2	1	2	2	3	2	2	3
19-Apr	1	2	2	1	1	1	2	1	1	1	1	2	1	2	2	1	1	1	1	3	2	1	1	1	3
20-Apr	1	UO	UO	UO	UO	UO	UO	2	1	2	2	3	3	3	2	2	2	2	2	1	1	1	1	1	3
21-Apr	1	1	1	1	1	1	1	2	2	2	3	3	3	3	2	2	2	2	1	1	1	1	1	1	3
22-Apr	1	1	1	1	1	1	1	2	2	2	3	4	4	5	4	4	3	4	3	3	1	1	1	UO	5
23-Apr	UO	UO	1	1	1	1	1	1	1	1	1	3	3	4	3	3	2	2	3	3	3	3	2	2	4
24-Apr	1	2	1	2	1	1	2	1	2	1	1	2	3	3	3	3	3	4	2	2	1	1	1	1	4
25-Apr	1	1	1	1	1	1	2	2	3	3	3	4	7	6	1	2	3	1	2	5	4	3	2	2	7
26-Apr	3	3	2	2	2	3	3	3	4	4	3	4	4	4	3	3	2	3	2	2	2	1	1	1	4
27-Apr	1	1	1	1	1	1	2	1	1	2	2	2	3	2	3	3	3	3	2	1	1	1	2	1	3
28-Apr	1	1	2	1	2	1	2	6	6	6	6	6	6	7	6	6	7	5	4	3	1	1	1	1	7
29-Apr	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	2	1	1	1	1	1	1	1	3
30-Apr	1	1	1	UO	1	1	1	2	3	3	3	4	5	4	5	4	4	4	4	2	2	2	2	2	5
	3	3	3	4	6	6	6	7	7	7	7	7	7	7	7	7	7	6	5	5	4	3	4	5	

Diurnal Maximum

DF - DAS Failure UO - Unstable Operation



Wood Buffalo Environmental Association
Summary of Hour Averages

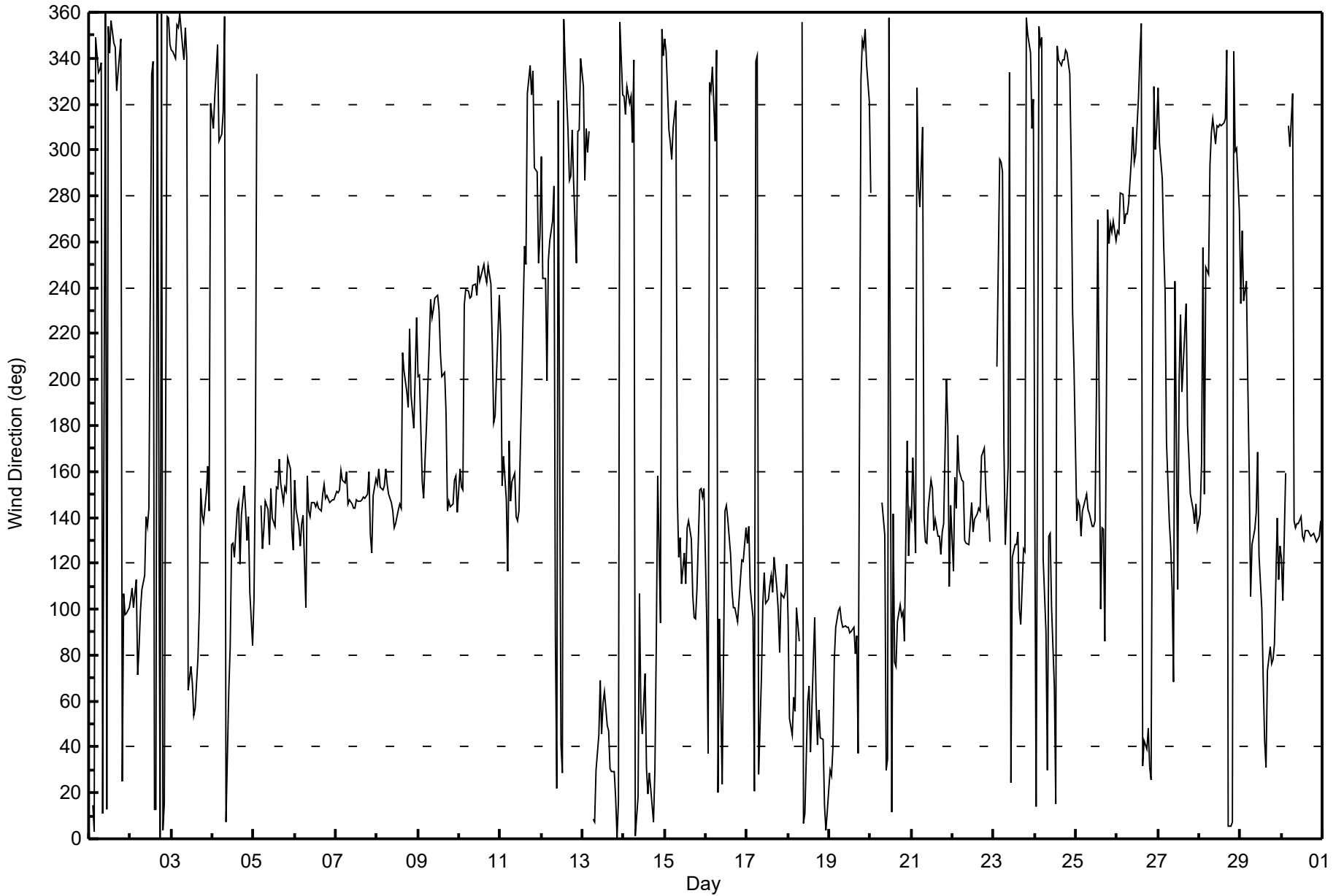
Wind Direction (WD) - deg
Waskow ohci Pimatisiwin - April 2023

Direction of Maximum Speed: 314 deg on Apr 28 09:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 235.4 deg on Apr 10		Hours of Data: 706
Direction of Minimum Speed: 200 deg on Apr 12 04:00	Direction of Minimum Daily Speed Average: 1.0 deg on Apr 4	Hours of Missing Data: 14
Monthly Average Direction: 125.6 deg		Percent Operational Time: 98.1

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-Apr	313	UO	15	3	349	334	335	338	11	360	13	354	342	356	347	345	326	334	349	25	107	98	98	101	357.0
2-Apr	104	109	100	113	72	84	100	109	115	141	136	144	333	339	13	13	359	0	360	3	16	358	357	346	23.8
3-Apr	343	343	340	355	353	359	345	339	354	340	65	75	68	54	57	79	101	153	141	138	151	162	143	320	17.1
4-Apr	309	323	333	346	304	307	317	358	7	65	84	128	129	123	143	146	120	141	154	143	130	140	107	84	107.9
5-Apr	105	167	333	UO	145	127	135	147	144	128	153	140	136	153	152	166	155	146	153	151	166	161	134	126	143.8
6-Apr	156	143	136	128	137	141	101	158	143	141	146	146	145	147	144	143	150	154	149	150	147	147	148	148	146.1
7-Apr	151	151	152	161	156	155	160	146	147	146	144	144	148	147	147	148	149	148	150	160	132	125	149	157	148.6
8-Apr	154	161	153	152	154	161	154	150	147	143	135	138	144	146	144	212	204	195	188	222	194	179	203	227	160.8
9-Apr	201	202	155	148	165	180	215	235	227	231	236	237	230	211	201	203	186	143	147	144	146	156	158	142	199.3
10-Apr	161	153	152	233	239	239	235	236	241	242	237	250	243	245	250	245	242	249	242	215	181	184	202	237	235.4
11-Apr	219	153	167	147	116	173	147	156	159	140	138	143	198	230	258	250	325	337	324	334	292	291	251	263	225.1
12-Apr	297	244	244	200	252	261	269	284	89	22	322	41	29	357	337	309	287	289	309	286	251	308	309	340	312.6
13-Apr	328	287	310	299	308	UO	8	7	30	45	69	46	59	64	50	47	31	29	29	17	0	16	356	324	19.7
14-Apr	323	316	328	320	323	303	339	2	18	107	55	46	72	30	19	29	22	7	30	85	158	94	352	341	20.4
15-Apr	349	343	309	303	296	309	321	150	123	131	111	125	111	136	139	130	106	96	96	108	152	152	149	152	124.4
16-Apr	94	37	329	326	336	304	343	20	96	24	81	143	145	139	124	108	101	101	95	104	113	121	121	135	112.6
17-Apr	129	136	109	96	21	339	341	28	70	103	116	102	104	110	115	107	123	109	99	81	107	105	107	120	103.2
18-Apr	97	53	45	61	55	101	86	DF	356	7	11	60	66	38	57	96	61	41	56	44	43	15	3	12	41.1
19-Apr	30	27	40	78	92	100	101	95	92	93	92	92	90	90	92	81	89	37	331	348	345	353	338	321	50.9
20-Apr	281	UO	UO	UO	UO	UO	UO	147	132	30	35	358	12	141	77	75	95	102	97	99	86	173	123	143	77.9
21-Apr	140	166	124	327	284	275	310	139	129	129	144	156	152	134	139	132	132	124	134	137	200	179	110	145	142.4
22-Apr	116	157	144	176	161	156	156	130	129	128	138	146	134	139	141	144	143	167	170	153	140	143	129	UO	145.7
23-Apr	UO	UO	205	296	295	290	171	128	163	334	24	123	128	128	133	100	93	126	125	358	351	342	309	322	95.6
24-Apr	146	14	354	346	349	122	90	30	132	133	101	66	15	345	339	337	339	339	343	342	333	295	229	205	345.9
25-Apr	138	147	145	132	143	148	150	144	142	136	136	139	193	269	100	136	135	86	274	260	268	264	269	260	175.2
26-Apr	265	264	281	281	268	272	272	277	297	310	295	298	323	341	355	32	43	39	48	31	26	328	300	310	316.7
27-Apr	327	303	287	258	238	173	138	128	109	68	243	109	199	228	194	220	233	180	166	150	143	137	146	135	175.9
28-Apr	142	164	257	150	249	246	293	308	314	303	311	310	311	311	312	314	344	6	5	7	343	300	301	273	317.5
29-Apr	233	265	234	243	199	159	105	128	135	142	169	124	100	69	43	31	73	84	77	78	85	140	113	128	104.7
30-Apr	122	104	159	UO	310	301	325	139	135	137	137	140	132	130	134	134	133	132	132	133	129	131	132	139	133.9

155.0	163.4	124.3	230.8	242.0	224.2	218.4	162.8	134.0	131.7	134.5	134.1	135.1	131.6	114.9	113.9	106.0	88.2	82.6	77.4	84.6	112.3	136.8	155.7
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 (WD) - deg
Waskow ohci Pimatisiwin - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 105 deg on Apr 27 11:00	Hours of Data: 706
Minimum Value: 10 deg on Apr 20 01:00	Hours of Missing Data: 14
Percentiles: P ₁ = 15 P ₁₀ = 20 Q ₁ = 23 Median = 30 Q ₃ = 42 P ₉₀ = 61 P ₉₉ = 92	Hours of Calibration: 0
	Percent Operational Time: 98.1

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-Apr	23	UO	35	63	56	20	30	31	22	31	43	24	21	26	19	17	18	17	16	41	28	23	22	25	63
2-Apr	24	24	30	47	24	17	22	26	25	32	34	30	82	43	23	21	23	21	21	22	23	20	19	17	82
3-Apr	16	16	16	18	21	24	17	19	35	45	39	67	31	27	25	25	23	27	23	32	28	21	64	61	67
4-Apr	25	25	19	23	30	23	44	38	37	42	27	32	33	41	33	58	42	23	27	27	51	85	14	85	
5-Apr	38	47	41	UO	24	26	30	28	31	34	44	26	26	43	71	60	32	24	37	31	59	56	31	28	71
6-Apr	29	30	25	44	38	48	48	26	29	24	22	22	21	21	23	24	25	24	23	25	25	22	21	22	48
7-Apr	23	22	22	29	22	22	20	21	23	21	23	21	21	21	21	22	22	21	22	21	28	35	51	20	51
8-Apr	19	21	20	20	19	19	18	23	22	24	22	22	24	21	23	57	48	33	29	33	35	44	74	38	74
9-Apr	61	56	28	88	71	61	41	40	45	57	47	43	45	47	41	42	38	35	18	24	21	17	19	22	88
10-Apr	47	34	19	42	38	36	38	42	41	39	42	38	43	41	43	39	42	40	39	40	34	32	40	41	47
11-Apr	43	31	15	72	70	54	40	23	27	25	26	30	66	58	49	72	64	37	16	15	15	22	16	14	72
12-Apr	36	38	28	103	55	21	62	99	56	79	82	30	51	45	44	52	42	41	55	58	37	52	14	16	103
13-Apr	23	27	29	33	19	UO	20	22	38	38	34	46	54	30	37	33	32	25	21	20	20	27	43	55	55
14-Apr	23	65	75	41	42	50	27	43	68	91	42	51	63	55	42	32	30	26	24	47	53	41	30	29	91
15-Apr	28	35	45	41	66	30	67	28	36	63	98	57	56	37	40	36	55	52	34	37	59	24	24	27	98
16-Apr	42	39	16	26	19	38	25	42	66	72	68	28	26	30	32	31	25	24	21	26	25	24	26	29	72
17-Apr	30	35	27	24	41	30	27	32	35	29	27	24	25	26	25	24	27	25	23	21	30	28	31	29	41
18-Apr	38	39	31	21	35	36	38	DF	19	19	24	31	34	23	44	32	23	26	20	23	21	24	20	22	44
19-Apr	20	18	20	24	20	23	23	24	24	24	27	37	27	23	28	21	19	35	17	21	18	24	17	22	37
20-Apr	10	UO	UO	UO	UO	UO	UO	30	72	51	47	34	62	100	73	48	35	38	20	16	20	73	53	57	100
21-Apr	51	38	49	40	20	12	19	52	24	27	31	34	35	33	43	30	35	30	27	23	39	38	56	48	56
22-Apr	36	18	57	22	17	17	21	27	26	25	33	34	27	30	28	28	27	35	31	31	32	35	39	UO	57
23-Apr	UO	UO	67	58	61	58	76	38	53	93	51	58	27	30	34	44	38	51	48	97	20	34	57	68	97
24-Apr	62	47	20	64	34	52	68	57	44	39	47	43	30	23	20	21	19	20	26	23	18	29	54	55	68
25-Apr	24	31	19	23	26	17	19	23	23	25	23	24	63	41	58	27	73	37	80	40	34	38	33	39	80
26-Apr	42	35	40	27	27	25	40	30	32	23	28	36	32	36	37	36	29	28	23	24	26	15	26	16	42
27-Apr	17	21	37	87	66	55	66	33	40	85	105	74	92	74	72	63	74	49	33	20	31	20	22	30	105
28-Apr	57	76	81	82	63	91	49	26	20	28	26	27	28	25	24	20	30	27	26	22	17	20	15	34	91
29-Apr	55	18	57	30	71	92	31	44	26	46	74	83	69	74	84	43	31	30	19	16	22	45	28	34	92
30-Apr	33	23	60	UO	21	21	26	41	27	26	29	25	26	28	27	30	27	24	25	22	23	21	22	27	60

62	76	81	103	71	92	76	99	72	93	105	83	92	100	84	72	74	52	80	97	59	73	85	68	
Diurnal Maximum																								

DF - DAS Failure UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS26 CHRISTINA LAKE APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
 APRIL 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	686	33	34	99.86	31.6	0	9	0
H2S (ppb) Average	685	34	35	99.86	1.5	0	0.5	0
NO2 (ppb) Average	683	37	37	100	16.8	0	6	-
NO (ppb) Average	683	37	37	100	24.4	-	3.2	-
NOX (ppb) Average	683	37	37	100	41.2	-	8.8	-
Temperature 2 m (C) Average	720	0	0	100	18.8	-	12.2	-
Relative Humidity (%) Average	720	0	0	100	95.3	-	79	-
Wind Speed 10 m (km/h) Average	716	0	4	99.44	30	-	21	-
Wind Direction 10 m (deg) Average	716	0	4	99.44	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
 APRIL 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	686	1.53	3.8	-	0	0	0.1	0.3	0.9	3.9	31.6
H2S (ppb) Average	685	0.14	0.2	-	0	0	0	0.1	0.2	0.3	1.5
NO2 (ppb) Average	683	2.83	2.8	-	0.2	0.6	1	1.9	3.5	6.4	16.8
NO (ppb) Average	683	0.88	1.9	-	0	0	0.1	0.2	0.7	2.6	24.4
NOX (ppb) Average	683	3.71	4.4	-	0.2	0.7	1.1	2.1	4.4	8.6	41.2
Temperature 2 m (C) Average	720	3.98	5.5	-	-7.7	-3.3	0	3.9	7.9	11.3	18.8
Relative Humidity (%) Average	720	54.44	19.7	-	18	28.5	37.7	53.8	71.8	80.8	95.3
Wind Speed 10 m (km/h) Average	716	11.8	6	-	1	4	7	11	15	21	30
Wind Direction 10 m (deg) Average	716	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
APRIL 2023

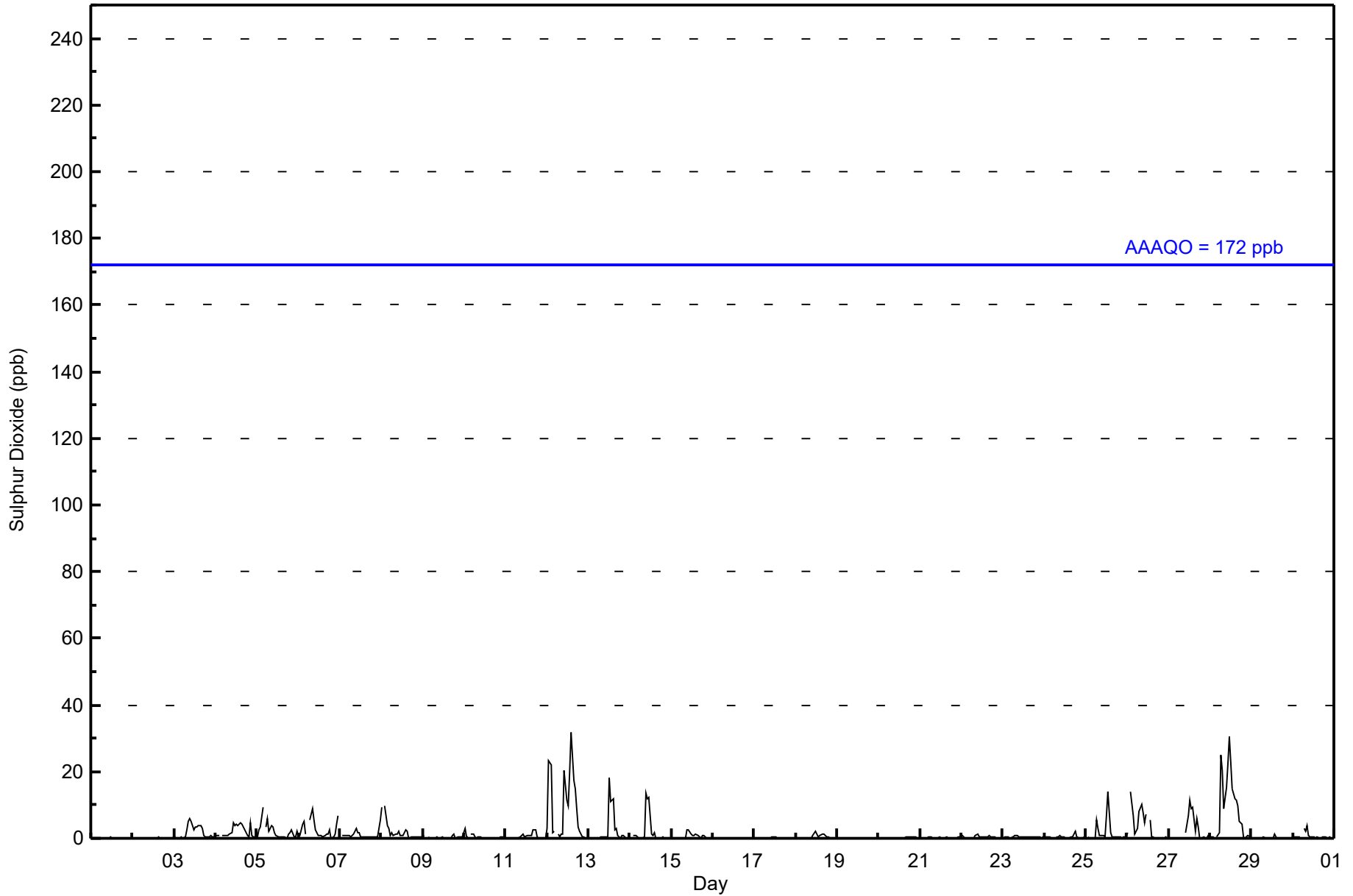
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2	26 Apr 2023 13:00	26 Apr 2023 13:00	1	Maintenance - sample manifold cleaned
Wind Speed, Wind Direction	15 Apr 2023 04:00	15 Apr 2023 07:00	4	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Christina Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Christina Lake - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	660	96.21	96.21
11 - 20	18	2.62	98.83
21 - 60	8	1.17	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: 686

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Christina Lake - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	7	22	25	45	48	70	62	122	76	56	33	36	24	12	11	7	656
11 - 20	1	0	2	0	0	0	0	0	0	0	0	0	0	6	9	0	18
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	0	8
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
Totals	8	22	27	45	48	70	62	122	76	56	33	36	24	21	25	7	682

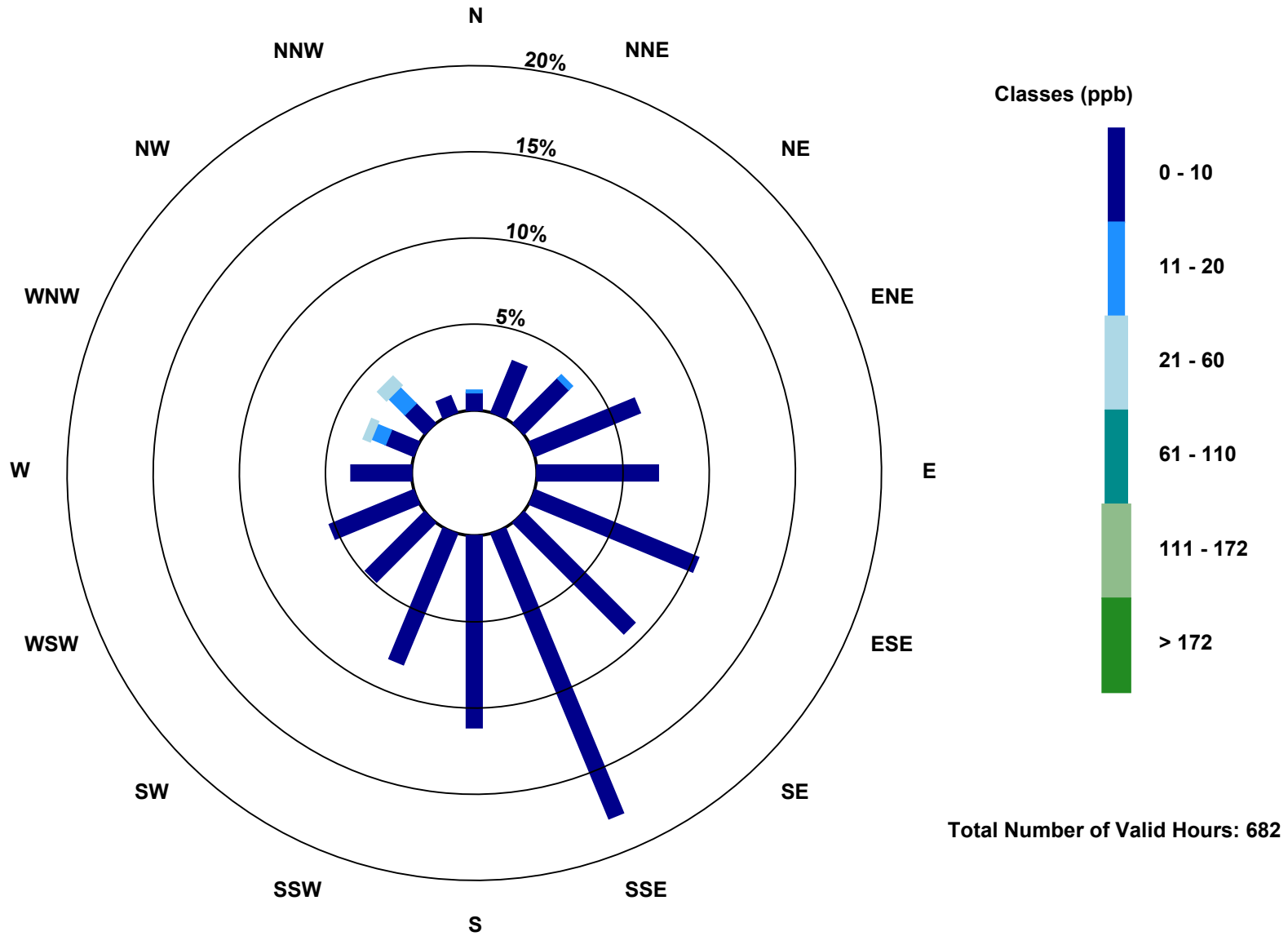
Total Number of Valid Hours: 682

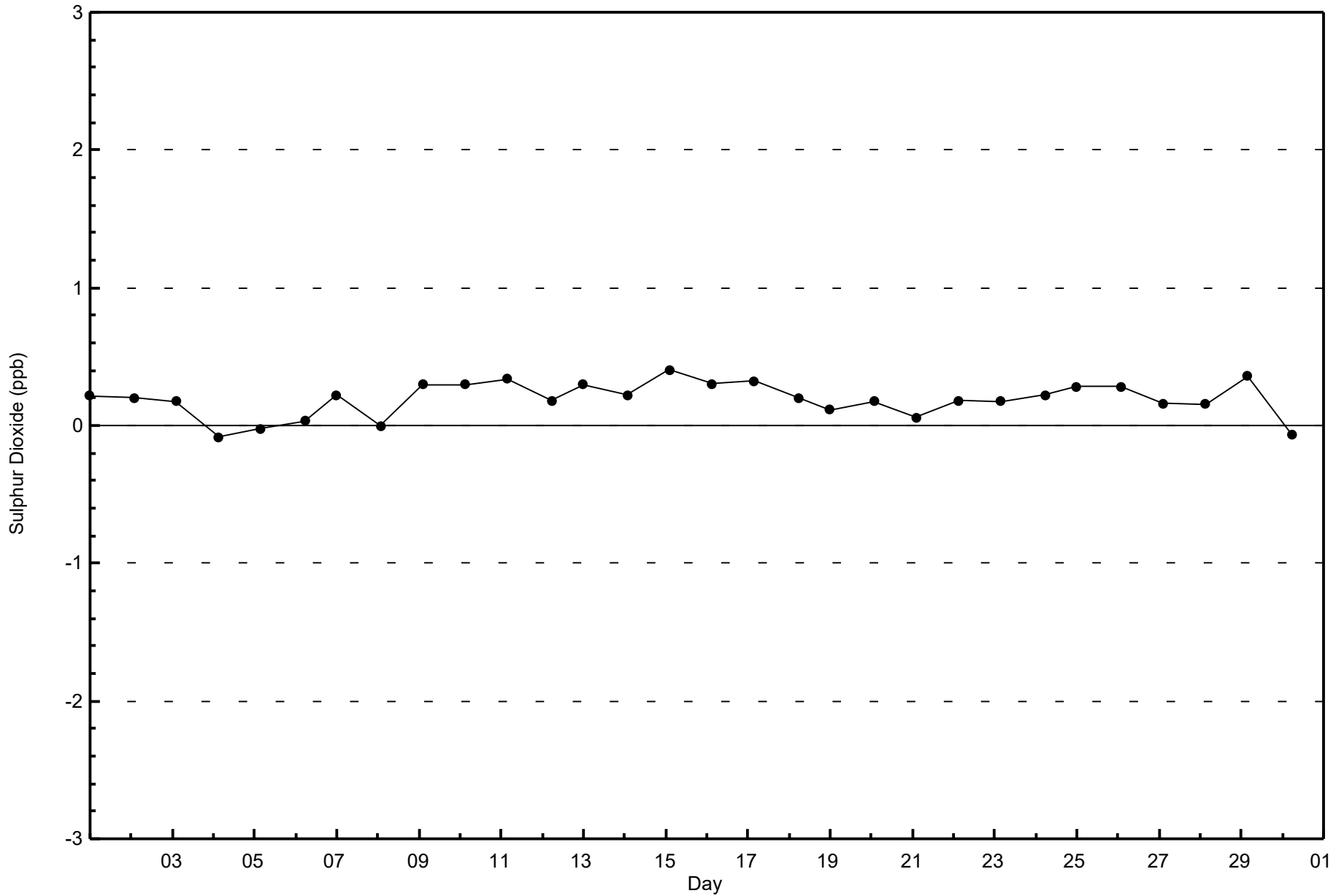
Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Christina Lake

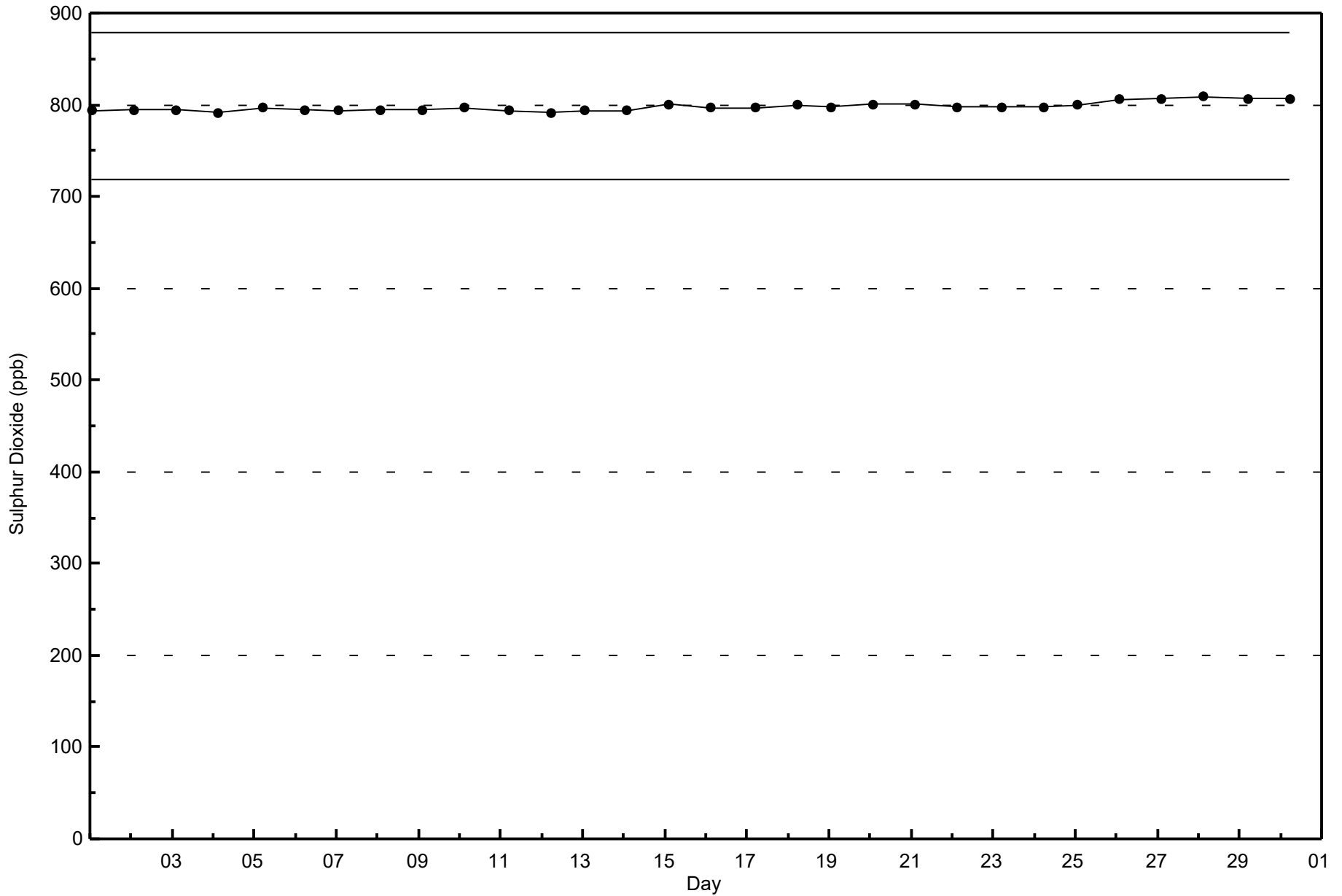


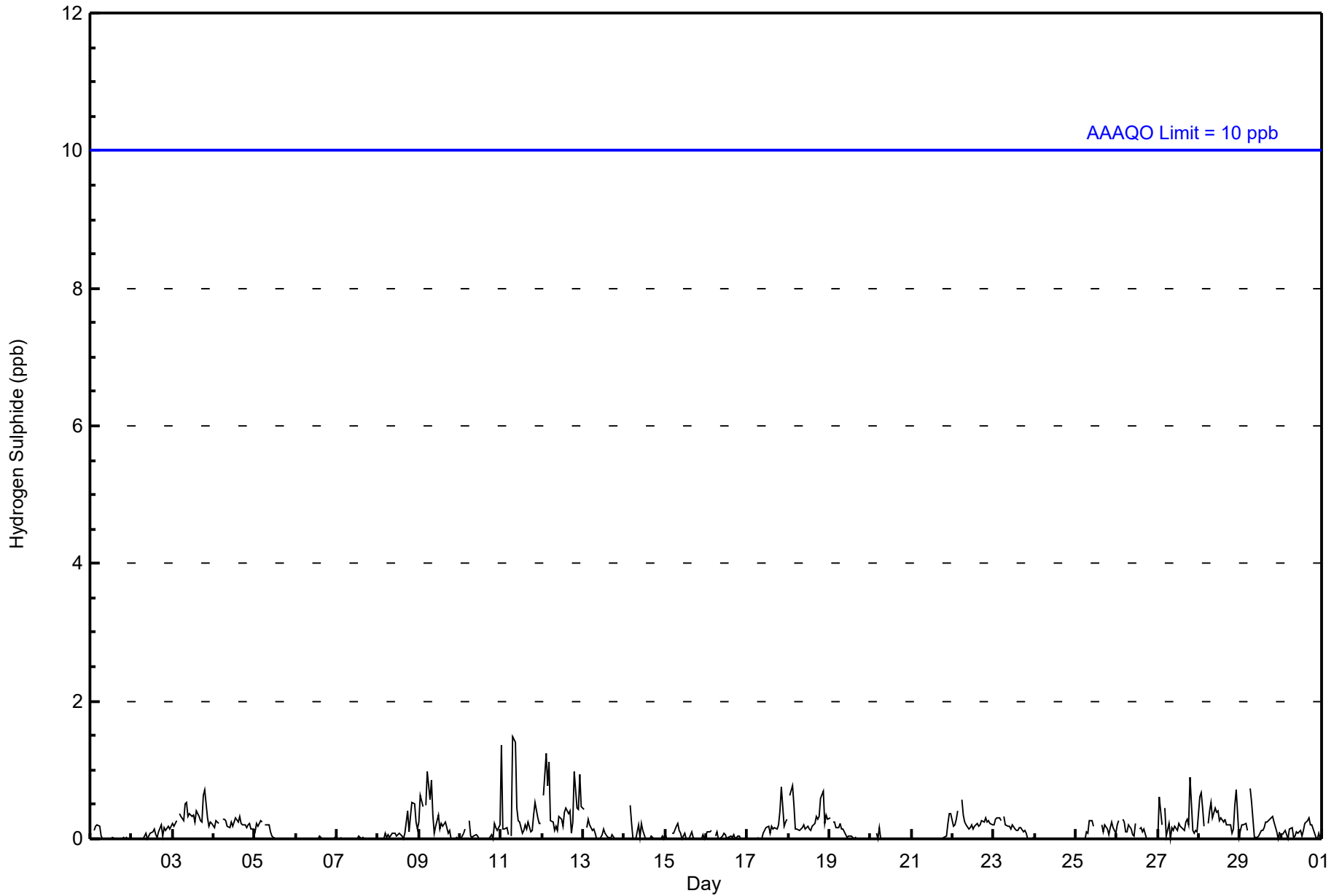




Wood Buffalo Environmental Association
Span Responses

Sulphur Dioxide (SO₂) - ppb
Christina Lake - April 2023







**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Christina Lake - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Christina Lake - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	9	22	28	44	49	73	61	121	76	57	33	36	22	19	24	8	682
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
Totals	9	22	28	44	49	73	61	121	76	57	33	36	22	19	24	8	682

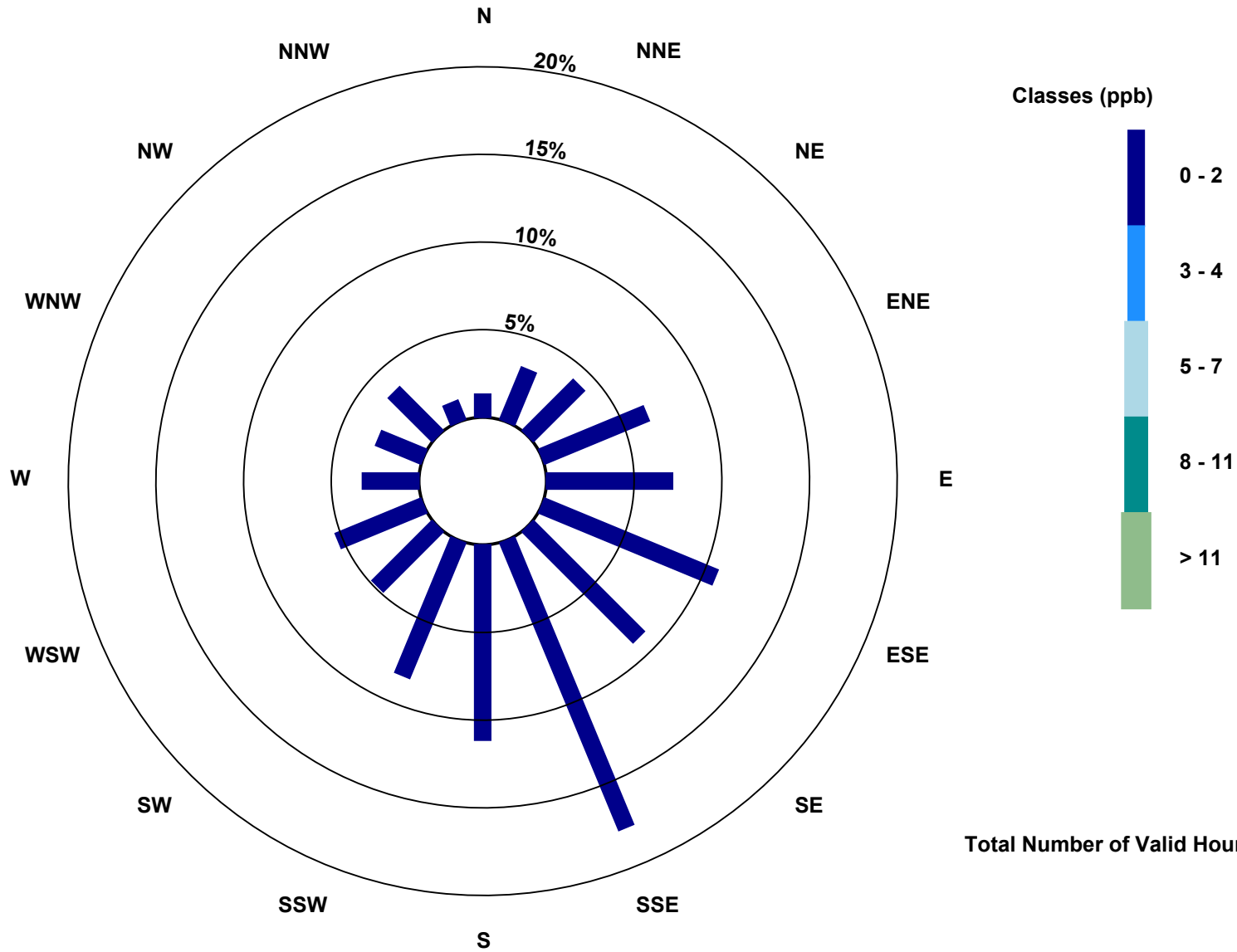
Total Number of Valid Hours: 682

Total Number of Hours: 720

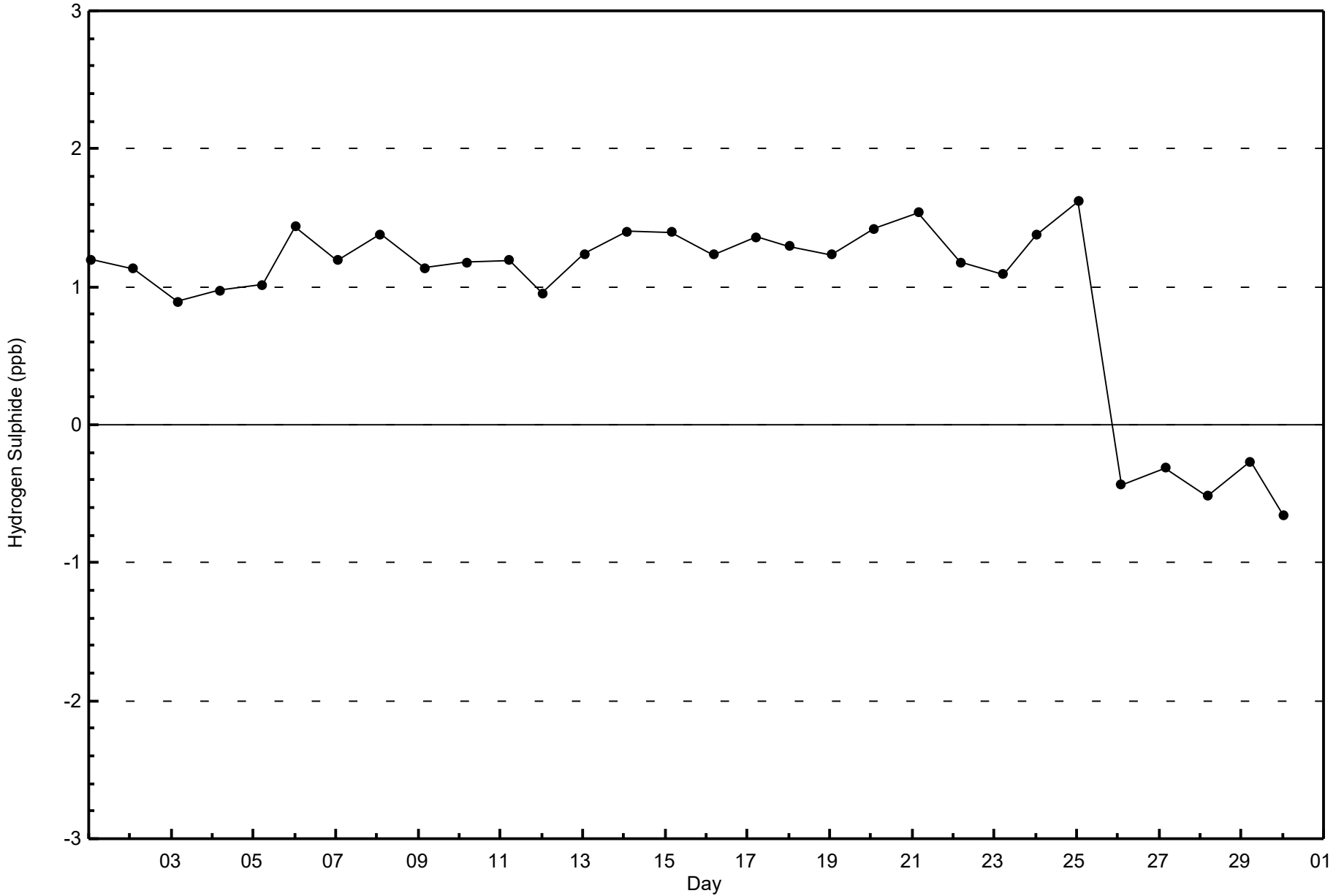


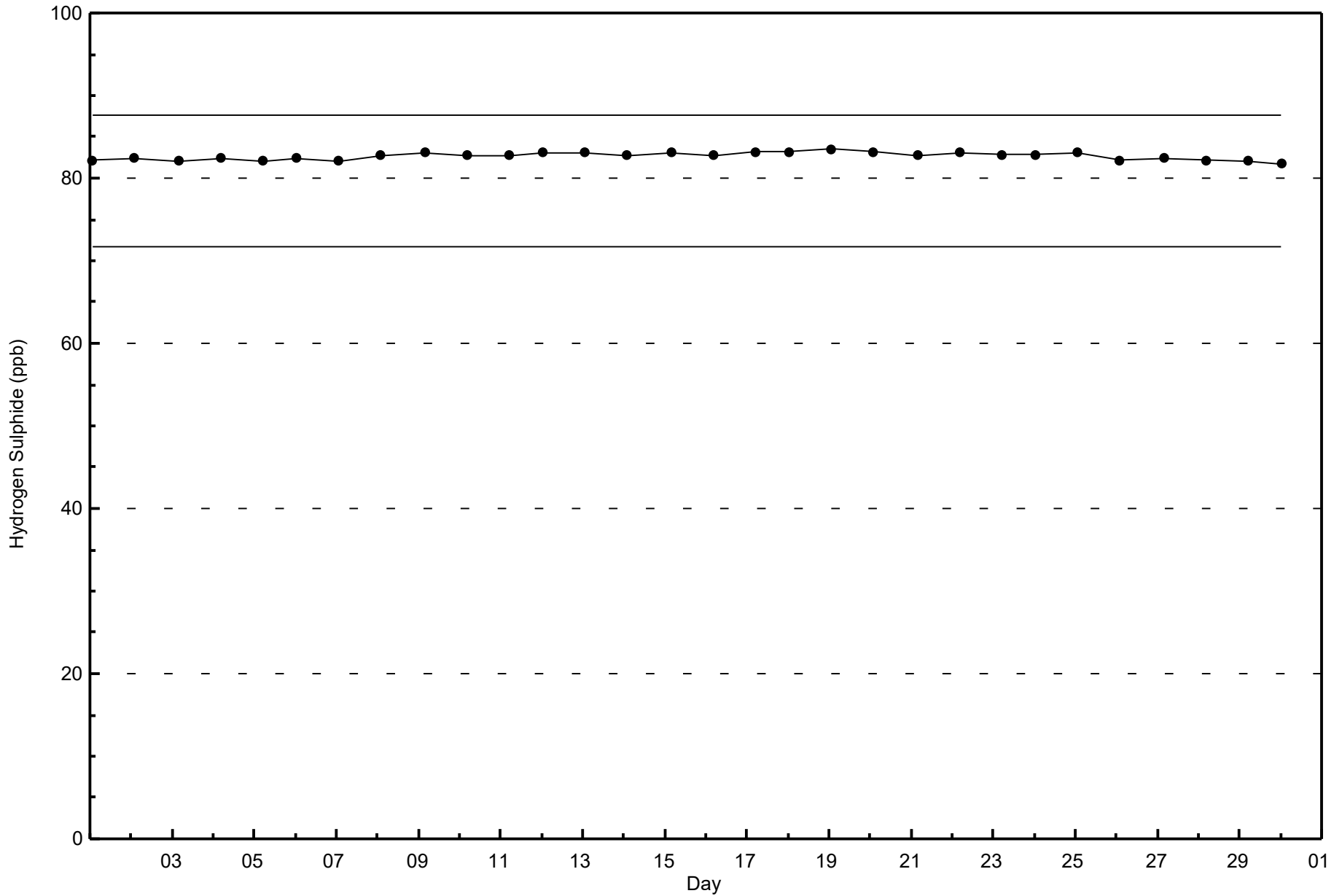
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Christina Lake



Total Number of Valid Hours: 682







Wood Buffalo Environmental Association
Summary of Hour Averages

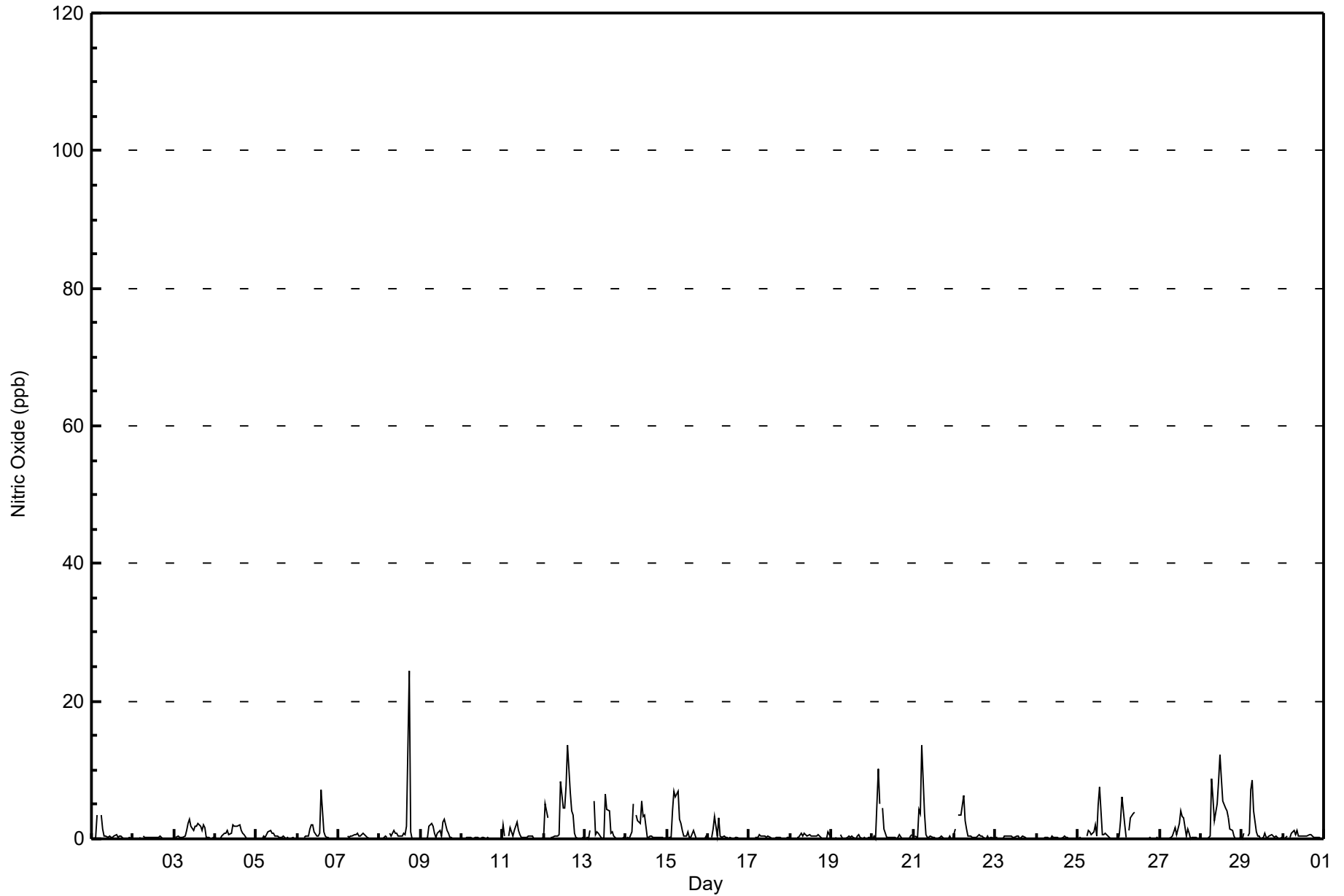
Nitric Oxide (NO) - ppb
Christina Lake - April 2023

Maximum Value: 24.4 ppb on Apr 8 18:00		Maximum Daily Average: 3.2 ppb on Apr 28		Hours in Service: 720																						
Minimum Value: 0.0 ppb on Apr 4 20:00		Minimum Daily Average: 0.1 ppb on Apr 10		Hours of Data: 683																						
Maximum Diurnal Average: 2.0 ppb at hour 6		Minimum Diurnal Average: 0.1 ppb at hour 21		Hours of Missing Data: 37																						
Monthly Average: 0.88 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.7 P ₉₀ = 2.6 P ₉₉ = 8.5		Hours of Calibration: 37																						
				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-Apr	0.0	0.1	0.2	3.4	Z	3.4	1.4	0.4	0.3	0.2	0.5	0.2	0.3	0.4	0.5	0.2	0.5	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.6	3.4
2-Apr	0.0	0.0	0.0	0.1	0.2	Z	0.3	0.2	0.3	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.4	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.4
3-Apr	Z	0.2	0.3	0.2	0.1	0.1	0.4	1.1	2.3	2.8	1.8	1.2	1.8	1.9	2.2	1.8	1.2	1.9	1.7	0.3	0.1	0.1	0.0	0.1	1.0	2.8
4-Apr	0.2	Z	0.1	0.0	0.5	0.9	0.8	1.1	0.7	0.7	2.1	1.8	1.8	2.0	1.3	0.9	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7	2.1
5-Apr	0.1	0.0	Z	0.1	0.3	0.3	0.6	1.0	1.1	0.7	0.8	0.5	0.3	0.2	0.1	0.3	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.3	1.1
6-Apr	0.0	0.0	0.1	Z	0.1	0.5	0.5	1.5	1.9	2.0	0.9	0.4	0.4	0.8	7.1	1.1	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.8	7.1
7-Apr	0.0	0.0	0.0	0.0	Z	0.4	0.3	0.4	0.5	0.7	0.6	0.7	0.3	0.5	0.7	0.5	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.7
8-Apr	0.1	0.0	0.1	0.3	0.2	Z	0.8	0.5	1.3	0.8	0.7	0.3	0.4	0.5	0.7	0.5	1.8	24.4	1.0	0.0	0.0	0.0	0.1	0.0	1.5	24.4
9-Apr	Z	0.0	0.1	0.0	0.2	1.8	2.2	1.9	0.9	0.2	0.9	1.3	0.4	2.5	2.9	1.2	0.8	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.8	2.9
10-Apr	0.1	Z	0.0	0.2	0.2	0.2	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
11-Apr	2.1	0.5	Z	0.5	1.5	1.1	0.4	1.2	2.5	1.3	0.5	0.2	0.2	0.3	0.2	0.4	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.5
12-Apr	0.4	5.0	3.1	Z	0.1	0.2	0.5	0.3	0.4	0.6	8.3	4.5	4.4	7.6	13.6	6.7	4.0	3.4	0.8	0.2	0.1	0.0	0.0	0.1	2.8	13.6
13-Apr	0.1	0.3	0.0	1.2	Z	5.5	0.7	1.0	0.8	0.3	0.1	0.2	6.5	4.3	4.2	0.7	1.0	0.3	0.0	0.0	0.0	0.0	0.3	1.2	6.5	
14-Apr	0.0	0.1	0.1	1.0	5.2	Z	3.4	2.6	2.3	5.4	3.2	3.4	0.3	0.2	0.5	0.5	0.2	0.2	0.1	0.1	0.3	0.2	0.1	0.2	1.3	5.4
15-Apr	Z	0.2	0.3	4.1	6.9	6.1	6.9	2.8	2.2	1.3	0.5	0.3	1.1	0.2	0.2	1.3	0.6	0.1	0.1	0.0	0.0	0.0	0.4	1.5	6.9	
16-Apr	0.0	Z	0.2	1.4	3.3	0.4	3.1	0.4	0.1	0.4	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.5	3.3
17-Apr	0.0	0.0	Z	0.2	0.1	0.1	0.6	0.3	0.3	0.3	0.3	0.3	0.5	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.3	0.3	0.2	0.6
18-Apr	0.0	0.0	0.0	Z	0.1	0.3	0.8	0.4	0.8	0.5	0.3	0.6	0.4	0.3	0.4	0.5	0.7	0.4	0.1	0.0	0.0	0.0	1.0	0.7	0.4	1.0
19-Apr	0.1	0.0	0.0	0.3	Z	0.6	0.3	0.1	0.1	0.2	0.5	0.2	0.4	0.2	0.1	0.3	0.5	0.1	0.0	0.2	0.0	0.1	0.2	0.1	0.2	0.6
20-Apr	0.0	0.5	0.0	10.3	5.0	Z	4.6	1.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.3	0.5	0.1	0.0	0.0	0.0	0.0	0.3	0.6	1.1	10.3
21-Apr	Z	0.3	0.3	4.3	3.7	13.7	3.7	0.6	0.3	0.2	0.3	0.1	0.2	0.1	0.0	0.2	0.4	0.1	0.0	0.1	0.0	0.3	0.0	0.0	1.3	13.7
22-Apr	1.5	Z	3.5	3.5	3.5	6.4	2.7	1.4	0.4	0.4	0.1	0.2	0.3	0.2	0.6	0.3	0.5	0.1	0.1	0.4	0.0	0.2	0.1	0.0	1.2	6.4
23-Apr	0.1	0.3	Z	0.0	0.1	0.3	0.4	0.5	0.3	0.4	0.2	0.2	0.4	0.4	0.1	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5
24-Apr	0.0	0.0	0.0	Z	0.0	0.2	0.2	0.1	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.5
25-Apr	0.1	0.2	0.0	0.0	Z	0.4	1.1	1.0	0.6	1.0	2.1	0.4	4.9	7.6	0.7	0.5	0.9	0.5	0.2	0.1	0.0	0.0	0.1	0.1	1.0	7.6
26-Apr	0.4	2.6	6.1	2.1	0.2	Z	1.2	3.1	3.7	3.8	C	C	C	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.3	0.0	--	6.1
27-Apr	Z	0.1	0.0	0.0	0.1	0.1	0.2	0.4	1.0	1.6	0.6	2.2	4.1	3.3	3.0	0.4	1.4	0.8	0.1	0.1	0.2	0.3	0.1	0.0	0.9	4.1
28-Apr	0.2	Z	0.0	0.0	0.0	0.3	8.8	5.9	2.7	5.0	8.3	12.3	8.8	5.5	4.5	4.1	3.1	1.3	1.2	0.4	0.1	0.0	0.1	0.2	3.2	12.3
29-Apr	0.1	0.8	Z	0.5	0.9	7.2	8.4	4.0	0.9	0.5	0.3	0.1	0.2	0.8	0.2	0.2	0.4	0.6	0.4	0.1	0.4	0.1	0.0	0.1	1.2	8.4
30-Apr	0.0	0.0	0.5	Z	0.2	0.7	1.2	0.7	1.1	0.4	0.4	0.4	0.4	0.3	0.4	0.5	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.4	1.2
																								Diurnal Average		
																								Diurnal Maximum		
																								0.2 2.1 0.5 5.0 0.6 6.1 1.3 10.3 1.3 6.9 2.0 13.7 1.9 8.8 1.2 5.9 1.0 3.7 1.1 5.4 1.2 8.3 1.1 12.3 1.3 8.8 1.4 7.6 1.6 13.6 0.8 6.7 0.8 4.0 1.2 1.7 0.2 0.4 0.1 0.4 0.1 0.3 1.0 0.7		
Z - zerospan		C - Calibration																								



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Christina Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Christina Lake - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	99.85	99.85
21 - 40	1	0.15	100.00
11 - 80	0	0.00	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Christina Lake - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	8	20	26	45	49	71	61	120	72	61	31	37	24	21	24	8	678
21 - 40	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
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
Totals	8	20	26	45	49	71	61	120	72	61	32	37	24	21	24	8	679

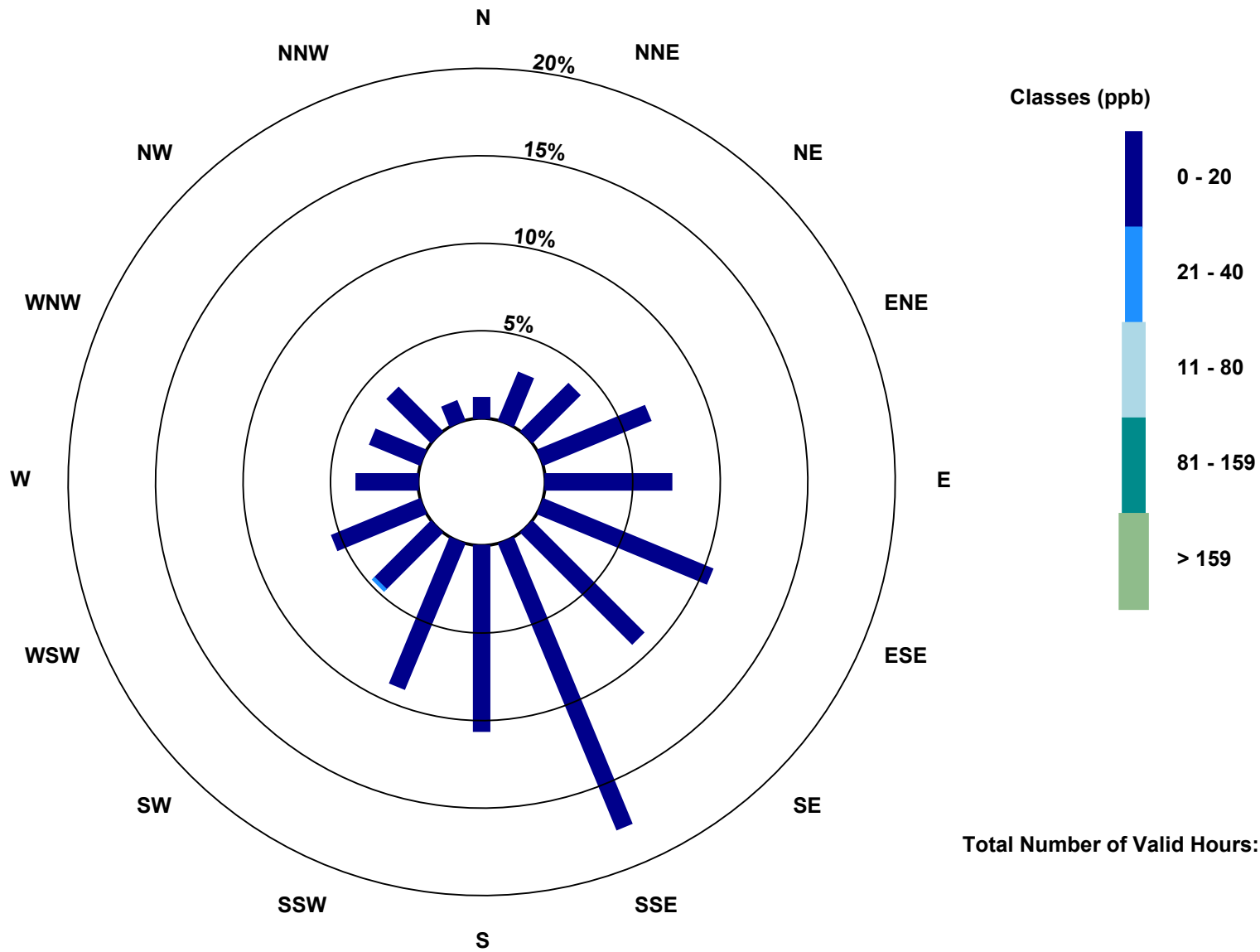
Total Number of Valid Hours: 679

Total Number of Hours: 720

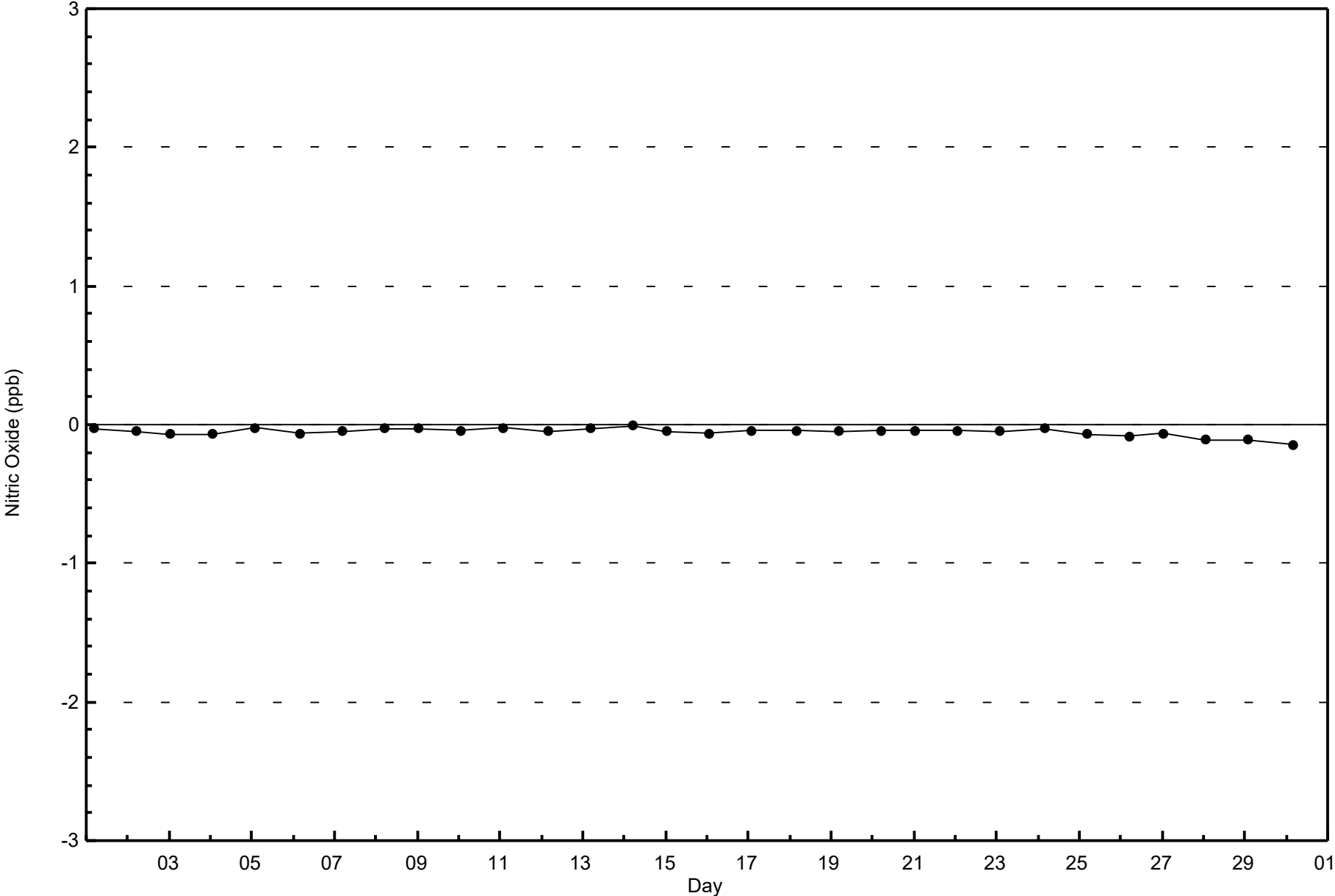


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Christina Lake



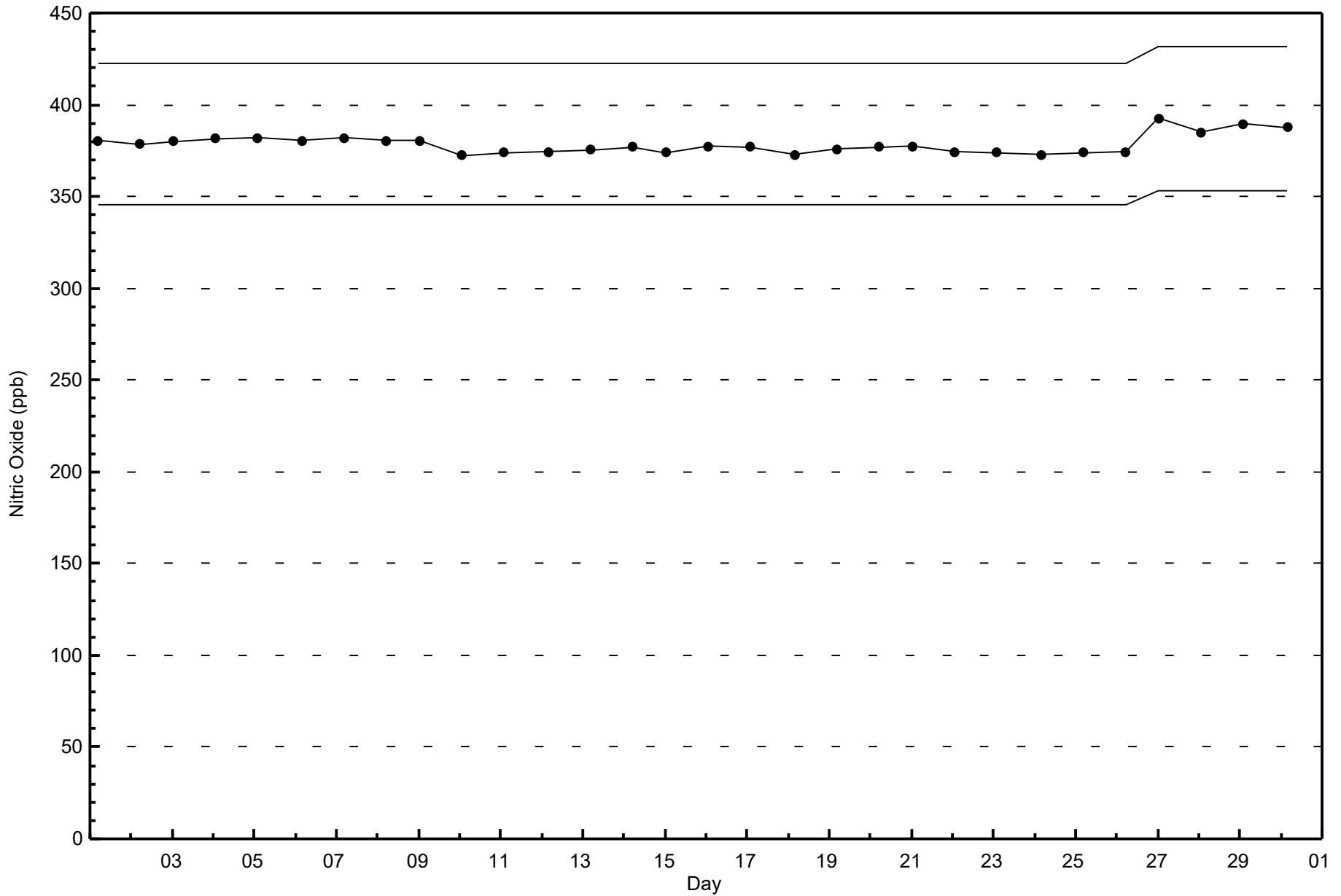
Total Number of Valid Hours: 679





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Christina Lake - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

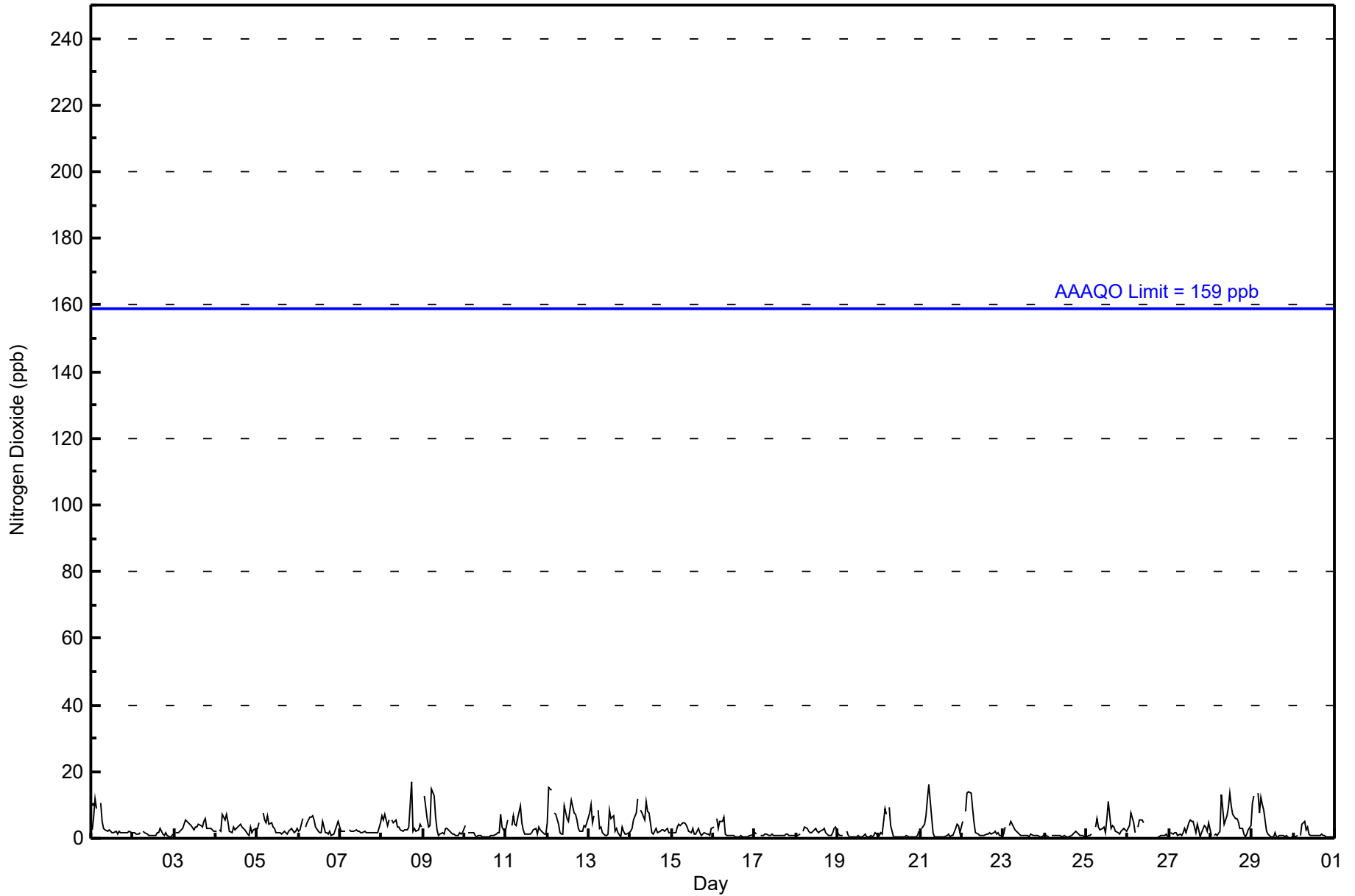
Christina Lake - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service: 720														720						
Maximum Value: 16.8 ppb on Apr 8 18:00		Maximum Daily Average: 6.0 ppb on Apr 12		Hours of Data: 683														683								
Minimum Value: 0.2 ppb on Apr 29 22:00		Minimum Daily Average: 0.7 ppb on Apr 19		Hours of Missing Data: 37														37								
Maximum Diurnal Average: 5.6 ppb at hour 6		Minimum Diurnal Average: 1.5 ppb at hour 19		Hours of Calibration: 37														37								
Monthly Average: 2.83 ppb		Percentiles: P ₁ = 0.3 P ₁₀ = 0.6 Q ₁ = 1.0 Median = 1.9 Q ₃ = 3.5 P ₉₀ = 6.4 P ₉₉ = 13.6		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-Apr	2.7	6.5	11.9	8.7	Z	10.8	4.9	3.0	2.7	2.1	2.4	2.0	1.6	1.8	2.1	1.4	2.1	1.6	1.6	1.7	1.8	1.8	2.1	1.8	3.4	11.9
2-Apr	1.7	1.7	1.4	1.3	1.5	Z	2.1	1.5	1.3	0.9	0.9	1.0	0.8	1.0	1.8	1.8	2.8	1.1	0.7	1.5	1.0	0.6	0.6	1.1	1.3	2.8
3-Apr	Z	1.6	1.9	2.0	2.4	3.1	5.5	5.2	4.5	4.3	4.0	2.7	3.5	3.2	4.1	3.9	3.5	5.0	5.8	2.9	2.8	2.9	2.4	2.3	3.5	5.8
4-Apr	2.3	Z	2.4	2.1	7.3	5.4	7.4	4.9	2.0	1.6	3.2	2.7	2.9	3.3	4.1	3.6	3.1	2.5	1.2	0.9	3.6	1.5	2.5	2.8	3.2	7.4
5-Apr	3.1	4.6	Z	7.7	5.7	4.6	6.8	4.3	4.5	3.6	2.8	1.9	1.9	1.6	1.3	1.5	2.0	1.2	2.3	2.4	3.1	1.9	2.1	3.1	3.2	7.7
6-Apr	2.1	2.7	5.8	Z	3.5	4.8	6.4	6.4	6.8	5.4	3.2	2.0	1.6	1.8	5.0	1.9	1.6	1.4	2.1	0.8	1.1	2.7	3.9	5.1	3.4	6.8
7-Apr	2.1	2.3	2.2	2.2	Z	2.6	2.0	2.3	2.2	2.5	2.1	2.1	1.6	1.7	2.1	1.8	1.6	1.8	1.9	1.8	1.7	1.5	1.6	4.7	2.1	4.7
8-Apr	6.6	5.3	7.0	4.0	5.3	Z	5.3	4.6	5.4	3.4	3.5	2.4	2.3	2.4	2.7	2.4	3.5	16.8	2.1	3.1	2.1	2.6	4.4	3.6	4.4	16.8
9-Apr	Z	12.6	6.1	3.6	3.9	14.8	12.8	6.4	2.7	1.0	1.3	1.9	1.1	2.9	3.0	2.0	1.8	1.3	1.4	0.7	0.9	1.6	1.4	1.6	3.8	14.8
10-Apr	3.8	Z	1.9	1.8	1.7	1.6	0.8	0.6	0.8	0.8	0.4	0.5	0.6	0.6	0.5	0.7	0.7	1.0	1.3	1.6	1.6	7.3	3.2	1.8	1.5	7.3
11-Apr	3.6	5.6	Z	3.9	6.6	4.1	3.7	6.0	9.7	4.7	2.6	1.3	1.2	1.3	1.4	1.6	2.7	3.0	1.2	3.2	2.4	1.7	1.1	1.2	3.2	9.7
12-Apr	4.8	15.4	14.3	Z	7.6	7.2	4.4	1.6	1.4	1.4	9.6	6.1	5.1	8.6	11.6	7.5	7.4	5.4	2.9	2.0	2.0	3.7	3.2	4.7	6.0	15.4
13-Apr	7.7	10.2	4.5	6.9	Z	8.4	3.1	3.3	1.6	1.0	0.7	1.1	8.5	6.1	6.9	2.2	3.1	1.5	0.4	3.2	2.0	1.1	1.2	1.6	3.8	10.2
14-Apr	2.1	2.8	5.3	7.7	11.7	Z	8.4	7.8	5.3	11.1	8.1	7.5	1.5	1.3	2.2	2.9	1.9	2.1	2.4	2.4	2.1	3.1	1.6	1.5	4.5	11.7
15-Apr	Z	1.5	1.5	3.3	4.3	4.0	4.7	4.5	4.2	3.3	2.0	1.9	2.8	1.4	1.3	2.8	1.6	0.8	1.2	1.9	1.1	1.1	1.0	3.0	2.4	4.7
16-Apr	3.2	Z	5.8	3.0	5.2	5.0	6.4	1.1	0.8	0.7	0.7	0.8	0.7	0.6	0.6	0.6	0.7	0.6	0.5	0.6	0.5	0.7	0.7	1.2	1.8	6.4
17-Apr	1.8	1.3	Z	0.9	0.8	0.8	1.2	1.2	1.0	1.0	1.1	1.0	0.9	0.8	0.9	0.8	0.8	0.9	1.2	1.2	1.0	0.9	0.9	1.0	1.0	1.8
18-Apr	0.8	1.0	1.1	Z	2.0	3.2	2.9	2.3	1.9	1.7	2.3	3.1	2.3	1.5	2.3	2.7	2.8	1.7	1.2	0.9	0.9	1.8	3.0	3.2	2.0	3.2
19-Apr	1.1	0.7	0.8	1.0	Z	2.0	0.7	0.4	0.4	0.5	0.6	0.4	0.7	0.4	0.3	0.7	1.2	0.5	0.4	0.8	0.4	0.7	1.5	0.9	0.7	2.0
20-Apr	0.8	1.9	1.4	9.0	7.1	Z	9.4	3.9	0.6	0.6	0.5	0.5	0.4	0.5	0.5	0.6	0.9	0.3	0.3	0.3	0.3	0.6	0.7	2.3	1.9	9.4
21-Apr	Z	2.9	4.4	6.9	11.8	16.1	6.4	1.8	0.6	0.4	0.6	0.4	0.5	0.4	0.4	0.7	1.1	0.5	1.0	1.0	2.8	4.4	3.7	1.9	3.1	16.1
22-Apr	5.1	Z	8.2	13.7	13.9	13.6	9.0	4.7	1.7	1.2	0.7	0.8	0.9	0.8	1.4	1.4	1.5	1.3	1.6	2.2	1.1	1.6	0.9	0.8	3.8	13.9
23-Apr	1.2	3.3	Z	3.7	5.0	4.2	3.5	2.7	1.8	1.1	0.9	0.9	1.0	0.9	0.7	0.6	1.3	1.0	0.9	0.8	0.7	0.5	0.6	0.8	1.7	5.0
24-Apr	1.1	0.7	0.5	Z	0.7	1.0	1.0	0.8	0.8	0.6	0.8	0.6	0.5	0.5	0.7	1.2	1.5	2.2	1.6	0.8	0.7	0.7	0.6	0.6	0.9	2.2
25-Apr	0.6	0.8	0.7	1.1	Z	3.3	5.9	3.6	2.4	3.1	3.5	1.6	6.1	11.0	2.8	3.7	3.3	2.1	1.9	1.2	2.2	2.7	2.9	2.2	3.0	11.0
26-Apr	2.9	3.9	7.5	4.7	1.5	Z	3.2	5.4	5.7	4.5	C	C	C	C	C	C	C	0.3	0.6	0.7	1.0	0.7	1.2	0.6	--	7.5
27-Apr	Z	1.8	1.1	1.7	1.7	1.0	1.1	1.0	1.9	2.8	1.7	4.5	5.5	5.2	5.1	1.9	4.2	2.6	0.5	1.9	3.8	3.3	2.0	4.7	2.7	5.5
28-Apr	1.0	Z	0.9	1.1	0.9	2.3	13.0	9.0	4.4	6.6	9.4	13.4	9.6	7.2	6.1	6.0	5.1	3.1	3.0	1.2	0.6	1.1	2.6	3.7	4.8	13.4
29-Apr	10.8	12.8	Z	13.4	7.7	12.2	10.2	8.4	2.3	1.3	0.9	0.4	0.4	1.7	0.6	0.6	1.0	0.8	0.7	0.3	0.9	0.2	0.2	0.3	3.8	13.4
30-Apr	0.3	0.3	0.7	Z	0.8	4.1	4.9	2.4	3.2	1.2	1.0	0.9	0.8	0.8	0.8	0.7	1.1	0.9	0.7	0.6	0.5	0.5	0.5	0.6	1.2	4.9
																								Diurnal Average		
																								Diurnal Maximum		
																								2.9 4.2 4.0 4.6 4.8 5.6 5.2 3.7 2.8 2.5 2.5 2.3 2.3 2.5 2.5 2.1 2.3 2.2 1.5 1.5 1.6 1.9 1.8 2.2		
																								10.8 15.4 14.3 13.7 13.9 16.1 13.0 9.0 9.7 11.1 9.6 13.4 9.6 11.0 11.6 7.5 7.4 16.8 5.8 3.2 3.8 7.3 4.4 5.1		
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Christina Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Christina Lake - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Christina Lake - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	8	20	26	45	49	71	61	120	72	61	32	37	24	21	24	8	679
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
Totals	8	20	26	45	49	71	61	120	72	61	32	37	24	21	24	8	679

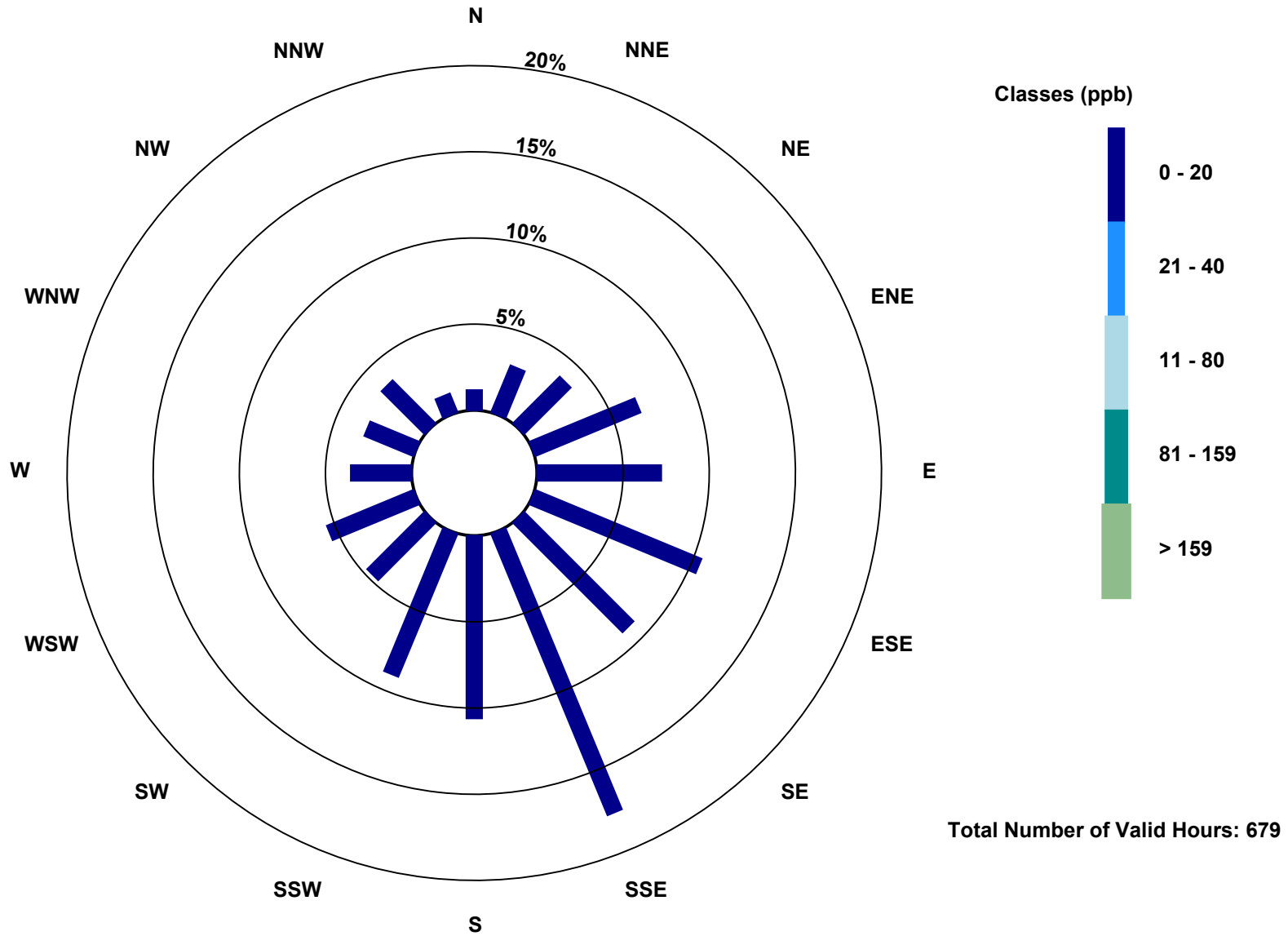
Total Number of Valid Hours: 679

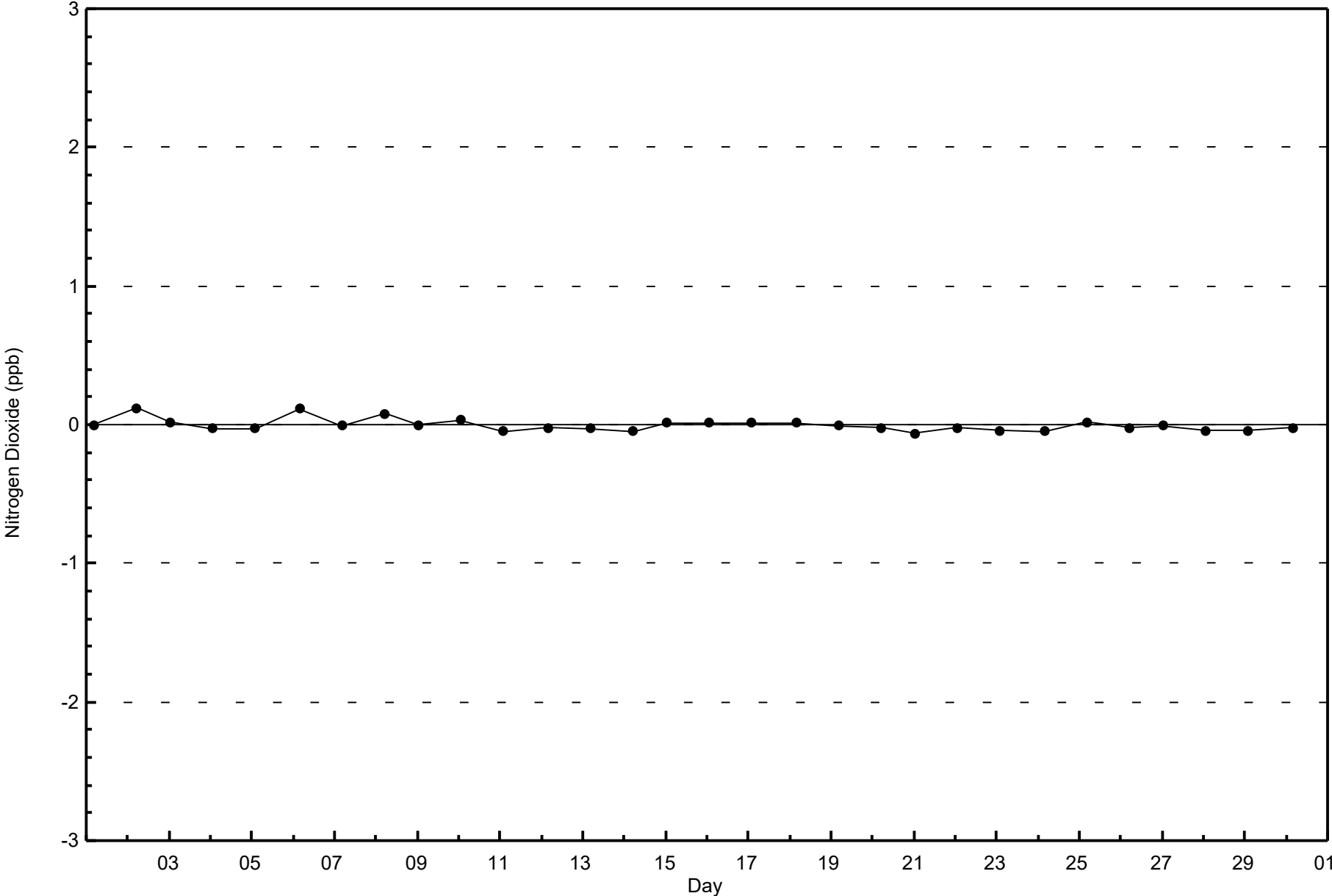
Total Number of Hours: 720

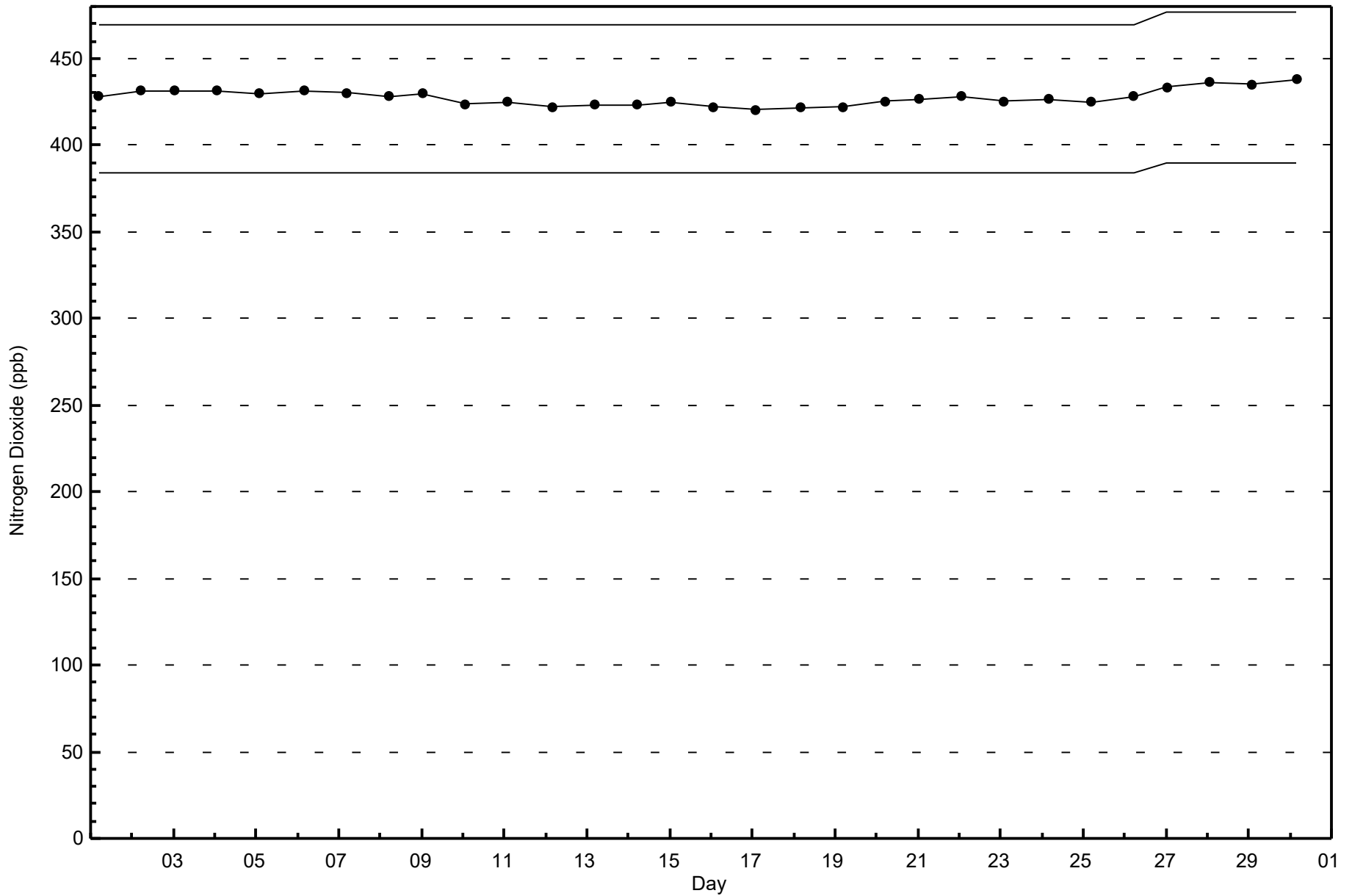


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Christina Lake









Wood Buffalo Environmental Association
Summary of Hour Averages

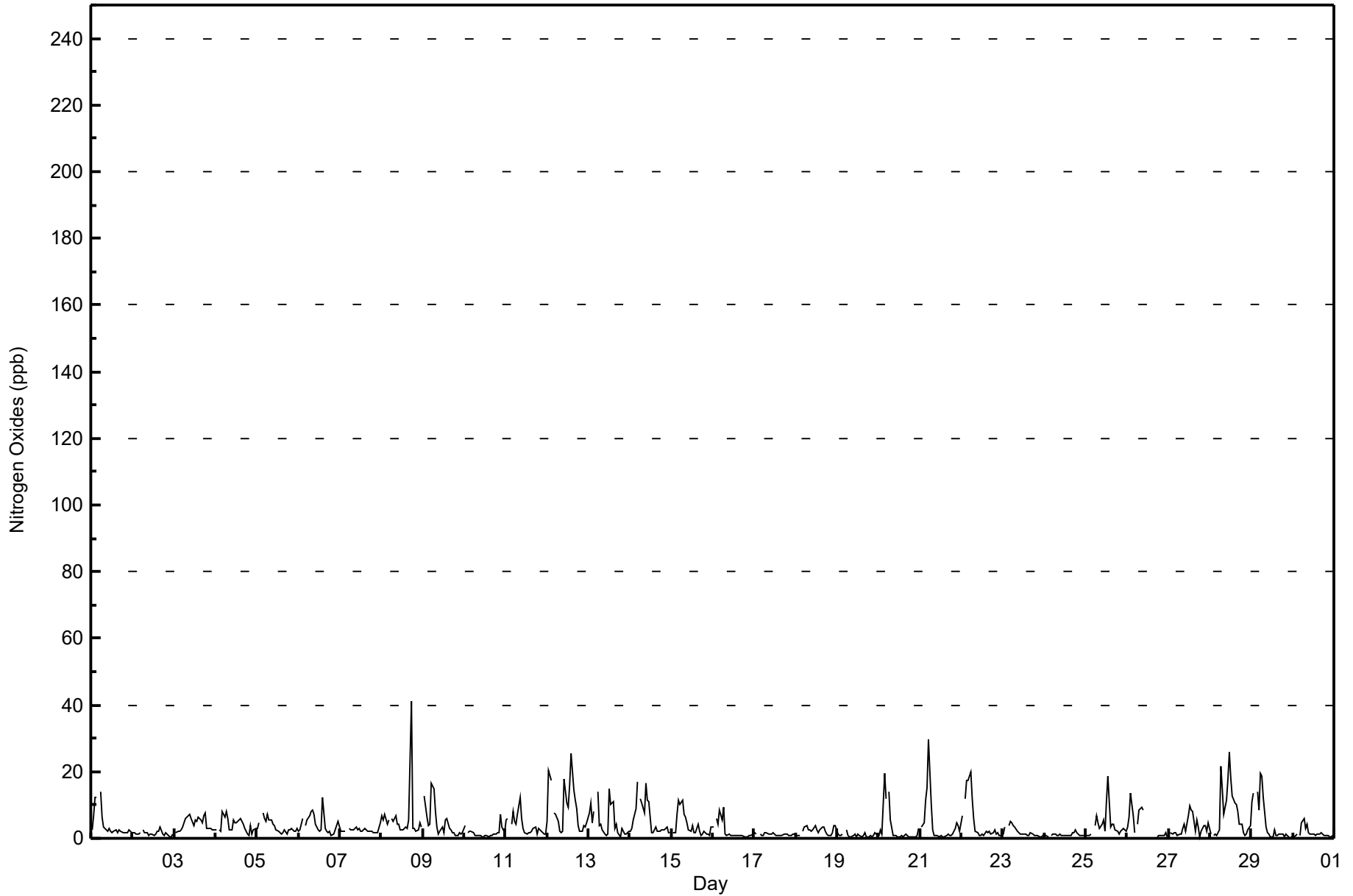
Nitrogen Oxides (NO_x) - ppb
Christina Lake - April 2023

Maximum Value: 41.2 ppb on Apr 8 18:00 Maximum Daily Average: 8.8 ppb on Apr 12																				Hours in Service: 720 Hours of Data: 683 Hours of Missing Data: 37 Hours of Calibration: 37 Percent Operational Time: 100.0						
Minimum Value: 0.2 ppb on Apr 29 23:00 Minimum Daily Average: 1.0 ppb on Apr 19 Maximum Diurnal Average: 7.7 ppb at hour 6 Minimum Diurnal Average: 1.6 ppb at hour 20 Monthly Average: 3.71 ppb Percentiles: P ₁ = 0.3 P ₁₀ = 0.7 Q ₁ = 1.1 Median = 2.1 Q ₃ = 4.4 P ₉₀ = 8.6 P ₉₉ = 19.5																										
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-Apr	2.7	6.6	12.1	12.1	Z	14.2	6.3	3.4	3.0	2.3	2.9	2.2	1.9	2.2	2.6	1.6	2.6	2.0	1.6	1.7	1.8	1.8	2.3	1.8	4.0	14.2
2-Apr	1.7	1.7	1.4	1.4	1.7	Z	2.4	1.7	1.6	1.0	1.1	1.3	1.0	1.1	2.0	2.0	3.2	1.2	0.7	1.6	1.1	0.6	0.6	1.1	1.4	3.2
3-Apr	Z	1.8	2.2	2.2	2.5	3.2	5.9	6.3	6.8	7.1	5.8	3.9	5.3	5.1	6.3	5.7	4.7	6.9	7.5	3.2	2.9	3.0	2.4	2.4	4.5	7.5
4-Apr	2.5	Z	2.5	2.1	7.8	6.3	8.2	6.0	2.7	2.3	5.3	4.5	4.7	5.1	6.1	4.9	4.0	3.0	1.2	0.9	3.7	1.5	2.5	2.8	3.9	8.2
5-Apr	3.2	4.6	Z	7.8	6.0	4.9	7.4	5.3	5.6	4.3	3.6	2.4	2.2	1.8	1.4	1.8	2.4	1.3	2.4	2.4	3.1	2.0	2.2	3.1	3.5	7.8
6-Apr	2.1	2.7	5.9	Z	3.6	5.3	6.9	7.9	8.7	7.4	4.1	2.4	2.0	2.6	12.1	3.0	2.0	1.6	2.3	0.8	1.1	2.7	3.9	5.1	4.2	12.1
7-Apr	2.1	2.3	2.2	2.2	Z	3.0	2.3	2.7	2.7	3.2	2.7	2.8	1.9	2.2	2.8	2.3	2.0	2.0	2.0	1.8	1.7	1.5	1.6	4.7	2.4	4.7
8-Apr	6.7	5.3	7.1	4.3	5.5	Z	6.1	5.1	6.7	4.2	4.2	2.7	2.7	2.9	3.4	2.9	5.3	41.2	3.1	3.1	2.1	2.6	4.5	3.6	5.9	41.2
9-Apr	Z	12.6	6.2	3.6	4.1	16.6	15.0	8.3	3.6	1.2	2.2	3.2	1.5	5.4	5.9	3.2	2.6	1.5	1.5	0.7	0.9	1.6	1.4	1.6	4.5	16.6
10-Apr	3.9	Z	1.9	2.0	1.9	1.8	0.8	0.7	1.0	1.0	0.5	0.6	0.7	0.8	0.5	0.8	0.8	1.1	1.3	1.6	1.6	7.3	3.2	1.8	1.6	7.3
11-Apr	5.7	6.1	Z	4.4	8.1	5.2	4.1	7.2	12.2	6.0	3.1	1.5	1.4	1.6	1.6	2.0	3.0	3.4	1.2	3.2	2.4	1.7	1.1	1.2	3.8	12.2
12-Apr	5.2	20.4	17.4	Z	7.7	7.4	4.9	1.9	1.8	2.0	17.9	10.6	9.5	16.2	25.2	14.2	11.4	8.8	3.7	2.2	2.1	3.7	3.2	4.8	8.8	25.2
13-Apr	7.8	10.5	4.5	8.1	Z	13.9	3.8	4.3	2.4	1.3	0.8	1.3	15.0	10.4	11.1	2.9	4.1	1.8	0.4	3.2	2.0	1.1	1.2	1.9	4.9	15.0
14-Apr	2.1	2.9	5.4	8.7	16.9	Z	11.8	10.4	7.6	16.5	11.3	10.9	1.8	1.5	2.7	3.4	2.1	2.3	2.5	2.5	2.4	3.3	1.7	1.7	5.8	16.9
15-Apr	Z	1.7	1.8	7.4	11.2	10.1	11.6	7.3	6.4	4.6	2.5	2.2	3.9	1.6	1.5	4.1	2.2	0.9	1.3	1.9	1.1	1.1	1.0	3.4	3.9	11.6
16-Apr	3.2	Z	6.0	4.4	8.5	5.4	9.5	1.5	0.9	1.1	0.8	1.0	0.8	0.8	0.7	0.7	0.9	0.7	0.6	0.6	0.6	0.8	0.7	1.2	2.2	9.5
17-Apr	1.8	1.3	Z	1.1	0.9	0.9	1.8	1.5	1.3	1.3	1.4	1.5	1.0	0.9	1.0	0.9	0.9	1.1	1.3	1.2	1.0	0.9	1.2	1.3	1.2	1.8
18-Apr	0.8	1.0	1.1	Z	2.1	3.5	3.7	2.7	2.7	2.2	2.6	3.7	2.7	1.8	2.7	3.2	3.5	2.1	1.3	0.9	0.9	1.8	4.0	3.9	2.4	4.0
19-Apr	1.2	0.7	0.8	1.3	Z	2.6	1.0	0.5	0.5	0.7	1.1	0.6	1.1	0.6	0.4	1.0	1.7	0.6	0.4	1.0	0.4	0.8	1.7	1.0	1.0	2.6
20-Apr	0.8	2.4	1.4	19.3	12.1	Z	14.0	5.3	0.9	0.8	0.7	0.6	0.5	0.6	0.5	0.9	1.4	0.4	0.3	0.3	0.3	0.6	1.0	2.9	3.0	19.3
21-Apr	Z	3.2	4.7	11.2	15.5	29.8	10.1	2.4	0.9	0.6	0.9	0.5	0.7	0.5	0.4	0.9	1.5	0.6	1.0	1.1	2.8	4.7	3.7	1.9	4.3	29.8
22-Apr	6.6	Z	11.7	17.2	17.4	20.0	11.7	6.1	2.1	1.6	0.8	1.0	1.2	1.0	2.0	1.7	2.0	1.4	1.7	2.6	1.1	1.8	1.0	0.8	5.0	20.0
23-Apr	1.3	3.6	Z	3.7	5.1	4.5	3.9	3.2	2.1	1.5	1.1	1.1	1.4	1.3	0.8	0.7	1.7	1.1	0.9	0.8	0.7	0.5	0.6	0.8	1.9	5.1
24-Apr	1.1	0.7	0.5	Z	0.7	1.2	1.2	0.9	0.9	1.1	0.7	1.0	0.7	0.6	0.6	0.8	1.7	1.7	2.4	1.6	0.8	0.7	0.7	0.7	1.0	2.4
25-Apr	0.7	1.0	0.7	1.1	Z	3.7	7.0	4.6	3.0	4.1	5.6	2.0	11.0	18.6	3.5	4.2	4.2	2.6	2.1	1.3	2.2	2.7	3.0	2.3	4.0	18.6
26-Apr	3.3	6.5	13.6	6.8	1.7	Z	4.4	8.5	9.4	8.3	C	C	C	C	C	C	C	0.4	0.7	0.7	1.0	0.7	1.5	0.6	--	13.6
27-Apr	Z	1.9	1.1	1.7	1.8	1.1	1.3	1.4	2.9	4.4	2.3	6.7	9.6	8.5	8.1	2.3	5.6	3.4	0.6	2.0	4.0	3.6	2.1	4.7	3.5	9.6
28-Apr	1.2	Z	0.9	1.1	0.9	2.6	21.8	14.9	7.1	11.6	17.7	25.7	18.4	12.7	10.6	10.1	8.2	4.4	4.2	1.6	0.7	1.1	2.7	3.9	8.0	25.7
29-Apr	10.9	13.6	Z	13.9	8.6	19.4	18.6	12.4	3.2	1.8	1.2	0.5	0.6	2.5	0.8	0.8	1.4	1.4	1.1	0.4	1.3	0.3	0.2	0.4	5.0	19.4
30-Apr	0.3	0.3	1.2	Z	1.0	4.8	6.1	3.1	4.3	1.6	1.4	1.3	1.2	1.1	1.2	1.2	1.6	1.3	1.0	0.8	0.7	0.6	0.6	0.7	1.6	6.1
																								Diurnal Average		
																								Diurnal Maximum		
																								3.2 4.6 4.6 6.0 6.1 7.7 7.1 4.9 3.8 3.6 3.7 3.4 3.7 3.9 4.1 2.9 3.1 3.4 1.8 1.6 1.6 1.9 1.9 2.3		
																								10.9 20.4 17.4 19.3 17.4 29.8 21.8 14.9 12.2 16.5 17.9 25.7 18.4 18.6 25.2 14.2 11.4 41.2 7.5 3.2 4.0 7.3 4.5 5.1		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Christina Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Christina Lake - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	678	99.27	99.27
21 - 40	4	0.59	99.85
41 - 80	1	0.15	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Christina Lake - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	8	20	26	45	49	71	60	120	72	61	31	37	24	20	22	8	674
21 - 40	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	0	4
41 - 80	0	0	0	0	0	0	0	0	0	0	1	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
Totals	8	20	26	45	49	71	61	120	72	61	32	37	24	21	24	8	679

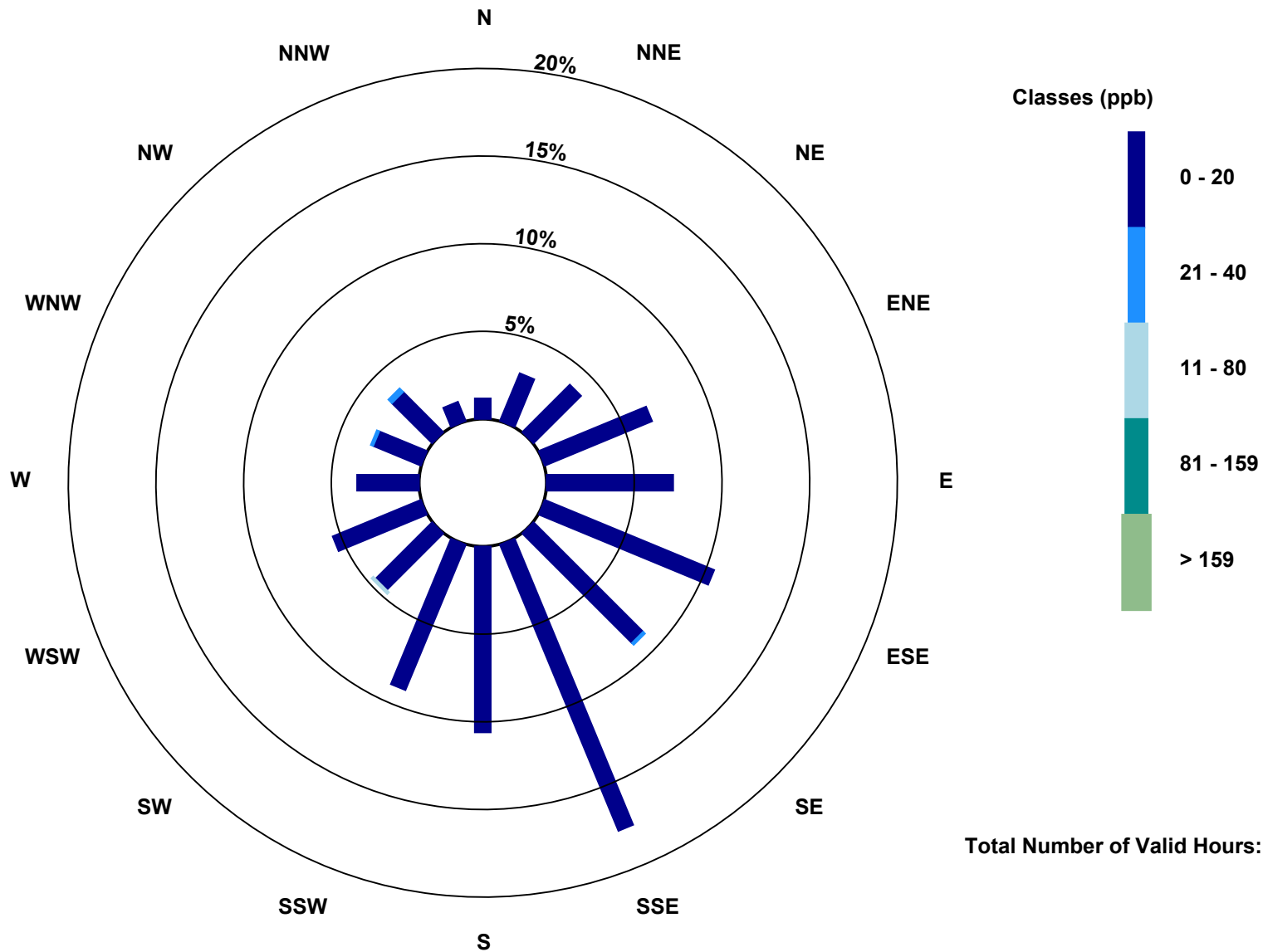
Total Number of Valid Hours: 679

Total Number of Hours: 720

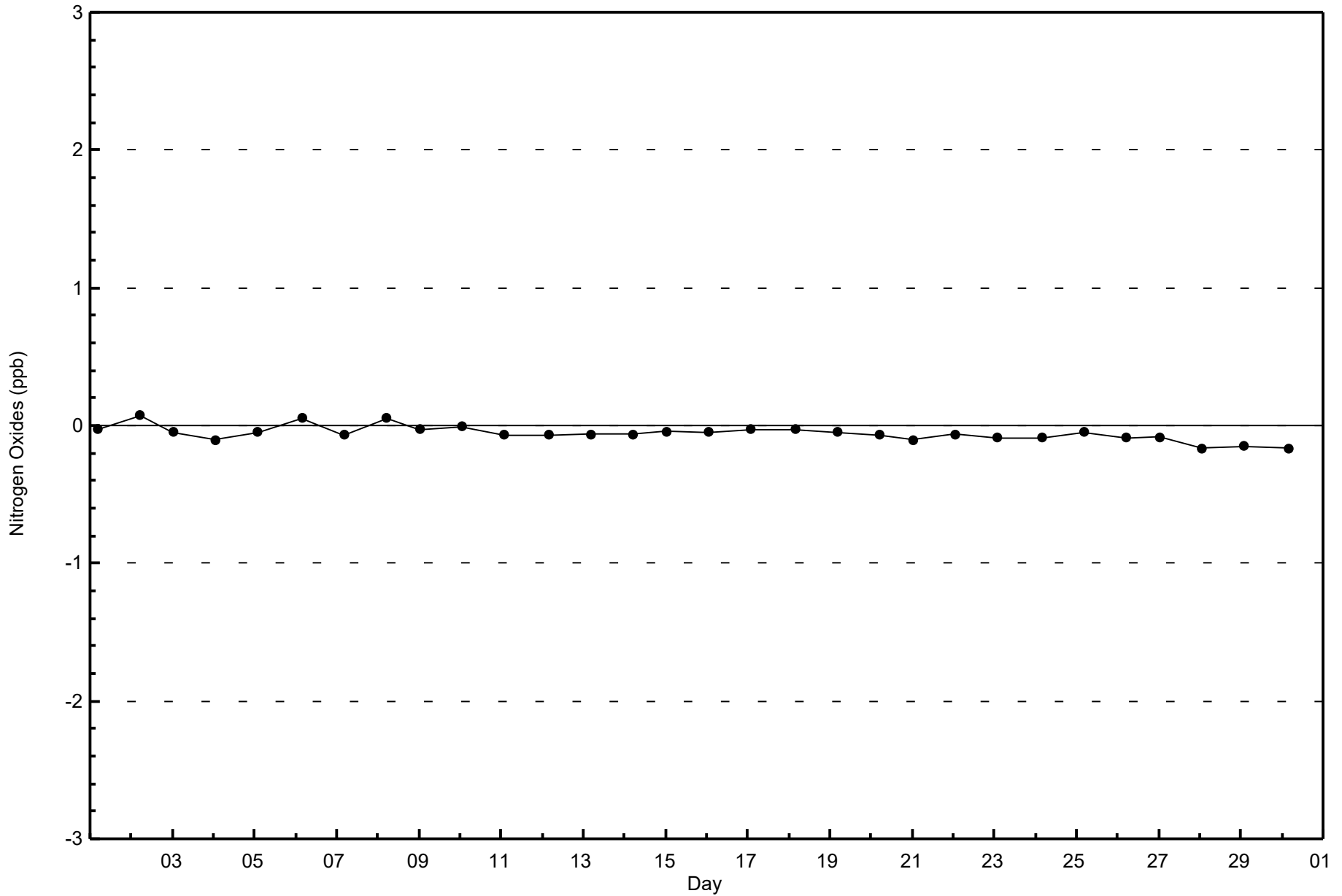


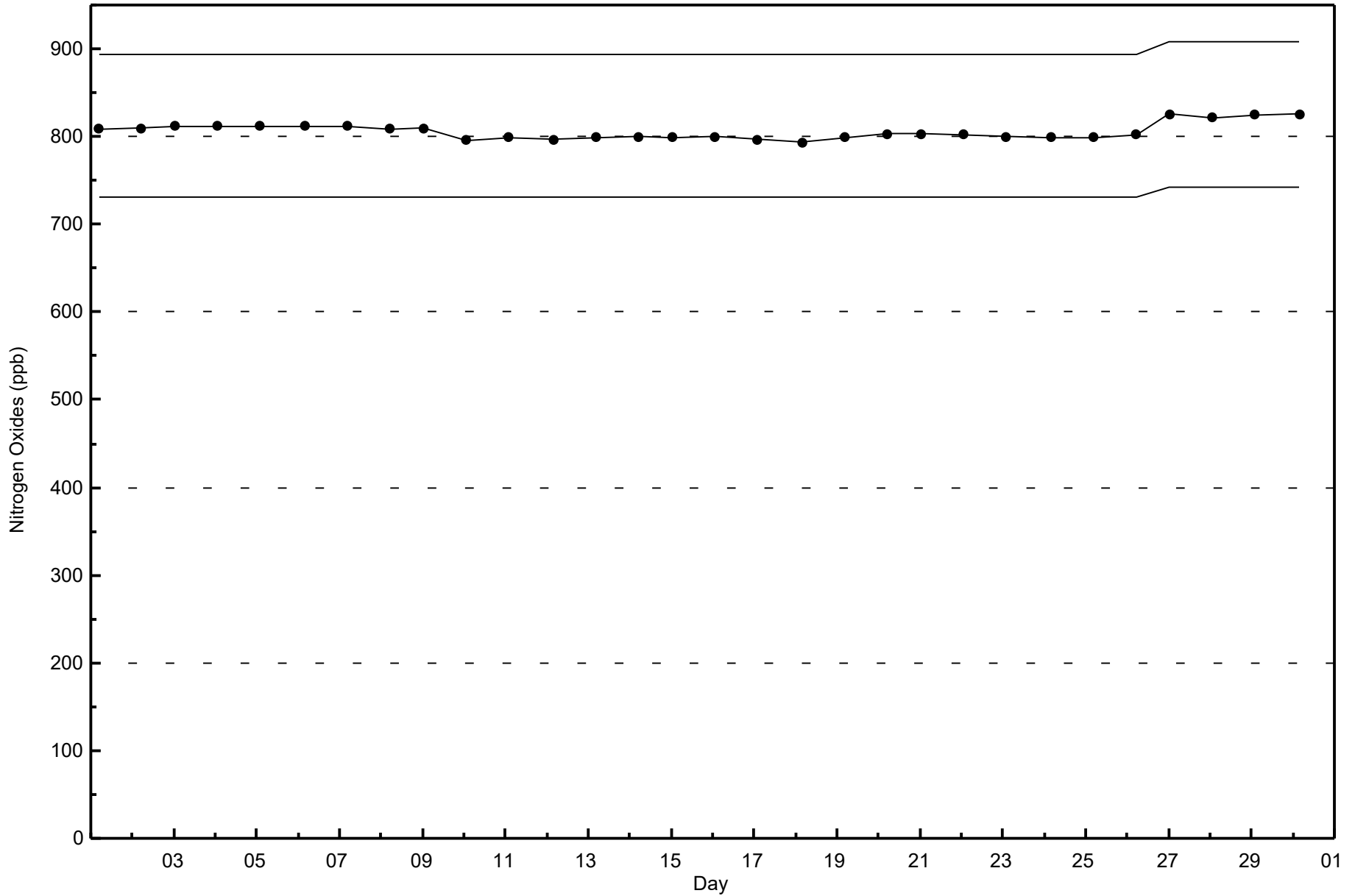
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Christina Lake



Total Number of Valid Hours: 679





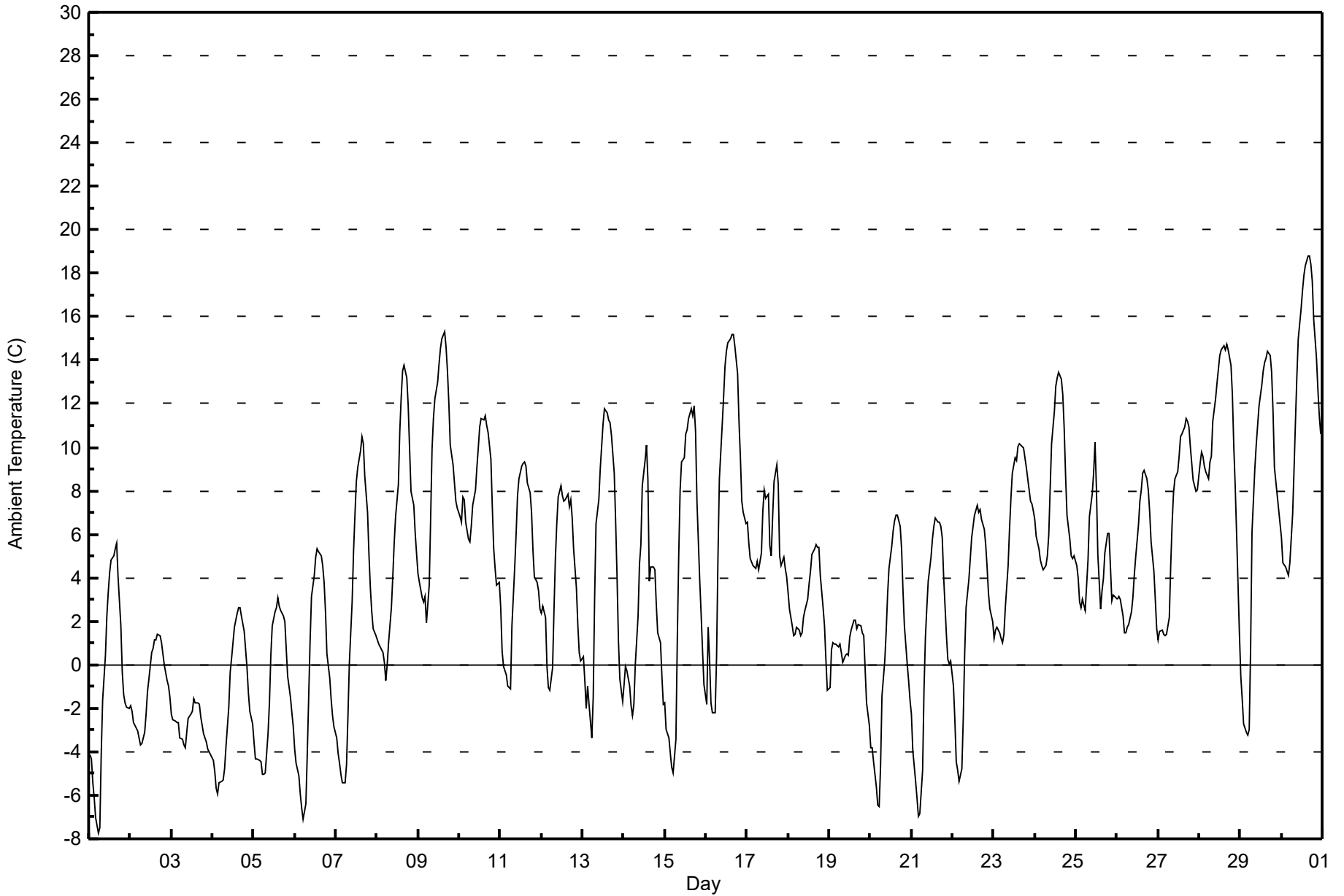


Maximum Value: 18.8 C on Apr 30 16:00																				Maximum Daily Average: 12.2 C on Apr 30					Hours in Service:	720																						
Minimum Value: -7.7 C on Apr 1 06:00																				Minimum Daily Average: -2.8 C on Apr 3					Hours of Data:	720																						
Maximum Diurnal Average: 8.4 C at hour 16																				Minimum Diurnal Average: -1.2 C at hour 6					Hours of Missing Data:	0																						
Monthly Average: 3.98 C																				Percentiles: P ₁ = -6.5 P ₁₀ = -3.3 Q ₁ = 0.0 Median = 3.9 Q ₃ = 7.9 P ₉₀ = 11.3 P ₉₉ = 16.3					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-Apr	-4.1	-4.3	-5.4	-6.1	-7.0	-7.7	-7.5	-4.1	-1.6	0.5	2.2	3.3	4.2	4.8	5.0	5.3	5.6	4.0	1.8	-0.3	-1.4	-1.7	-1.9	-2.0	-0.8	5.6																						
2-Apr	-1.9	-2.1	-2.6	-2.9	-3.0	-3.4	-3.7	-3.6	-3.1	-2.3	-1.3	-0.6	0.6	0.7	1.2	1.2	1.4	1.3	1.0	0.5	0.0	-0.7	-1.0	-1.5	-1.1	1.4																						
3-Apr	-2.3	-2.6	-2.6	-2.7	-2.7	-3.3	-3.4	-3.7	-3.8	-3.1	-2.4	-2.3	-2.1	-1.6	-1.7	-1.7	-1.8	-2.4	-2.8	-3.1	-3.6	-3.9	-4.0	-4.1	-2.8	-1.6																						
4-Apr	-4.4	-4.9	-5.7	-6.0	-5.4	-5.4	-5.3	-4.8	-3.8	-2.0	-0.3	0.3	1.0	1.7	2.4	2.6	2.6	2.3	1.5	0.7	-0.1	-1.3	-2.2	-2.7	-1.6	2.6																						
5-Apr	-3.5	-4.4	-4.3	-4.4	-4.5	-5.1	-5.1	-5.0	-3.2	-1.8	0.5	1.8	2.4	2.6	3.1	2.7	2.5	2.3	2.0	0.7	-0.5	-1.5	-2.2	-2.8	-1.2	3.1																						
6-Apr	-3.9	-4.5	-5.1	-5.9	-6.6	-7.1	-6.4	-4.1	-1.5	1.1	3.1	4.1	4.9	5.3	5.2	5.0	4.6	3.8	2.4	0.5	-0.6	-1.6	-2.3	-2.9	-0.5	5.3																						
7-Apr	-3.4	-4.1	-4.5	-5.0	-5.4	-5.5	-4.6	-2.4	0.1	2.9	5.2	6.9	8.4	9.1	9.9	10.5	10.1	8.7	7.0	5.1	3.5	2.4	1.7	1.4	2.4	10.5																						
8-Apr	1.1	1.0	0.8	0.6	0.1	-0.7	0.0	1.0	2.6	4.0	5.6	6.8	8.3	10.7	12.3	13.5	13.7	13.2	11.9	9.9	8.0	7.3	6.1	5.1	6.0	13.7																						
9-Apr	4.2	3.8	3.1	2.9	3.1	1.9	3.6	6.7	9.9	11.3	12.2	13.0	13.9	14.5	15.0	15.3	14.6	13.5	12.0	10.1	9.2	8.4	7.5	7.2	9.0	15.3																						
10-Apr	6.8	6.6	7.7	7.6	6.5	5.8	5.6	6.4	7.3	8.0	9.1	10.0	11.0	11.3	11.3	11.5	11.0	10.7	9.4	7.3	5.3	4.4	3.6	3.8	7.8	11.5																						
11-Apr	2.6	0.6	-0.1	-0.5	-1.0	-1.0	-1.1	1.8	4.5	6.1	7.8	8.6	9.1	9.3	9.3	9.1	8.4	7.9	7.0	5.3	4.0	3.8	3.4	2.6	4.5	9.3																						
12-Apr	2.4	2.7	2.2	-0.1	-1.0	-1.2	-0.1	2.5	4.8	6.5	7.7	8.2	7.8	7.5	7.6	7.9	7.2	7.6	6.8	5.3	3.6	1.9	0.6	0.2	4.1	8.2																						
13-Apr	0.3	-0.7	-2.0	-1.0	-1.8	-3.3	-1.5	3.1	6.5	7.6	9.0	10.1	11.0	11.8	11.6	11.3	11.2	10.5	8.8	6.6	4.0	1.1	-0.6	-1.7	4.7	11.8																						
14-Apr	-0.9	-0.1	-0.2	-1.0	-1.9	-2.3	-1.8	0.0	2.2	4.6	5.5	8.2	9.4	10.1	8.6	3.8	4.5	4.5	4.4	2.7	1.5	1.0	-0.5	-1.8	2.5	10.1																						
15-Apr	-1.7	-3.0	-3.4	-4.1	-4.7	-5.0	-3.4	1.2	5.0	8.0	9.4	9.5	10.6	10.8	11.3	11.8	11.4	11.9	10.7	7.5	3.8	2.3	0.6	-0.9	4.2	11.9																						
16-Apr	-1.8	1.7	0.3	-1.7	-2.2	-2.2	0.4	4.9	8.5	11.0	12.3	13.7	14.4	14.8	15.0	15.2	15.2	14.7	13.4	11.2	9.5	7.5	7.0	6.5	7.9	15.2																						
17-Apr	6.6	5.6	4.9	4.6	4.5	4.4	4.7	4.4	5.2	7.1	8.1	7.6	7.8	5.5	5.0	6.8	8.4	9.2	8.3	5.0	4.6	4.9	4.4	4.0	5.9	9.2																						
18-Apr	3.4	2.5	1.8	1.3	1.4	1.7	1.6	1.3	1.5	2.2	2.5	3.0	3.7	4.3	5.1	5.4	5.5	5.4	5.4	4.1	2.6	1.8	0.2	-1.2	2.8	5.5																						
19-Apr	-1.0	0.7	1.0	0.9	1.0	0.8	0.9	0.6	0.1	0.4	0.5	0.4	1.3	1.6	2.0	2.0	1.7	1.8	1.8	1.5	1.3	-0.2	-1.7	-2.8	0.7	2.0																						
20-Apr	-3.8	-3.8	-4.5	-5.6	-6.4	-6.5	-4.7	-1.4	0.2	1.5	3.2	4.5	5.5	6.2	6.6	6.8	6.9	6.4	5.3	3.4	1.8	0.1	-0.7	-1.6	0.8	6.9																						
21-Apr	-2.3	-3.9	-5.4	-6.1	-7.0	-6.8	-4.8	-1.1	1.3	2.6	3.9	5.0	5.8	6.4	6.7	6.5	6.6	6.4	5.8	4.1	1.3	0.3	0.1	0.2	1.1	6.7																						
22-Apr	-1.0	-2.6	-4.5	-4.9	-5.4	-4.8	-2.5	0.5	2.7	3.9	4.9	5.8	6.4	6.9	7.3	7.0	7.1	6.7	6.2	5.6	4.5	3.3	2.6	2.0	2.4	7.3																						
23-Apr	1.2	1.6	1.7	1.5	1.2	1.0	1.4	2.6	4.5	6.2	7.7	8.8	9.5	9.4	10.0	10.2	10.1	9.9	9.6	9.1	8.6	7.5	7.4	7.1	6.2	10.2																						
24-Apr	6.7	5.9	5.3	4.8	4.6	4.4	4.5	5.0	5.9	8.1	10.2	11.7	12.8	13.2	13.5	13.1	12.4	10.9	8.7	6.9	5.8	5.0	4.9	5.0	7.9	13.5																						
25-Apr	4.6	4.0	2.9	2.6	3.0	2.5	3.7	4.8	6.8	7.9	8.8	10.2	8.1	5.1	2.5	3.4	4.0	5.1	6.1	6.0	4.5	2.9	3.2	3.1	4.8	10.2																						
26-Apr	3.0	3.1	3.0	2.3	1.4	1.4	1.7	1.9	2.4	3.1	4.1	4.9	6.4	7.5	8.0	8.8	8.9	8.5	8.0	7.0	5.7	4.3	3.0	1.7	4.6	8.9																						
27-Apr	1.1	1.5	1.6	1.4	1.3	1.4	2.2	4.5	6.5	7.9	8.5	8.9	9.6	10.5	10.6	11.0	11.3	11.2	10.9	10.0	8.5	8.2	8.0	8.0	6.9	11.3																						
28-Apr	9.3	9.8	9.6	9.1	8.9	8.6	9.3	9.6	11.2	12.3	12.9	13.6	14.2	14.5	14.7	14.5	14.7	14.5	13.7	12.4	10.0	8.2	6.0	1.4	11.0	14.7																						
29-Apr	-0.5	-1.5	-2.7	-3.1	-3.2	-3.0	0.7	6.1	9.0	10.1	11.0	11.9	12.8	13.5	13.9	14.1	14.4	14.2	13.5	11.7	9.0	7.8	7.2	6.5	7.2	14.4																						
30-Apr	5.9	4.7	4.5	4.3	4.1	4.7	7.0	9.0	11.2	13.2	15.0	16.4	17.2	17.9	18.4	18.8	18.8	18.4	17.7	15.9	14.1	12.7	11.5	10.6	12.2	18.8																						
																								0.8	0.4	-0.1	-0.6	-0.9	-1.2	-0.3	1.6	3.4	5.0	6.2	7.1	7.9	8.2	8.4	8.4	8.4	8.1	7.3	5.8	4.3	3.2	2.4	1.7	Diurnal Average
																								9.3	9.8	9.6	9.1	8.9	8.6	9.3	9.6	11.2	13.2	15.0	16.4	17.2	17.9	18.4	18.8	18.8	18.4	17.7	15.9	14.1	12.7	11.5	10.6	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Christina Lake - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Ambient Temperature (AT) - C
Christina Lake - April 2023

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	180	25.00	25.00
0 - 10	430	59.72	84.72
10 - 20	110	15.28	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

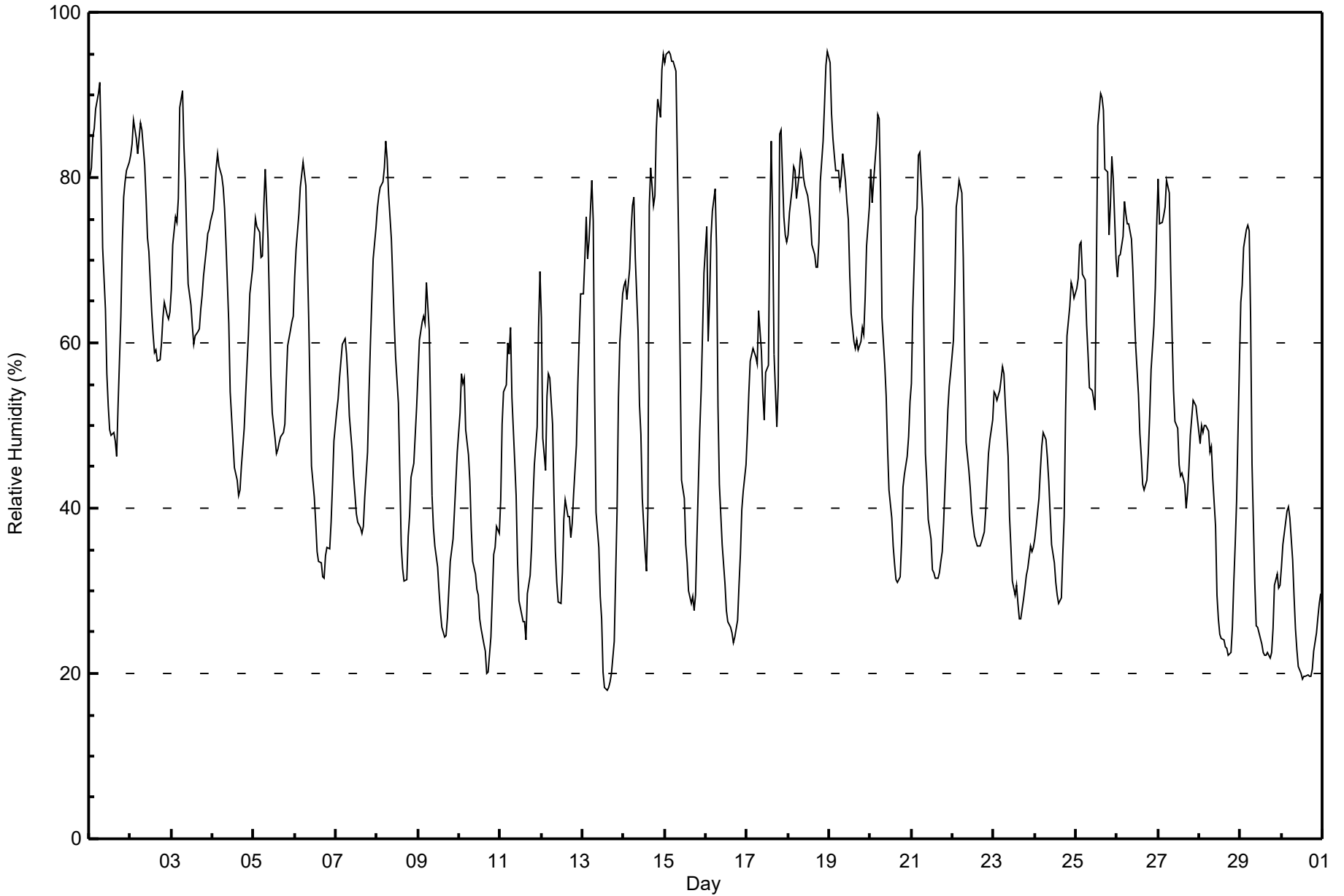
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Christina Lake - April 2023

Maximum Value: 95.3 % on Apr 19 00:00 Maximum Daily Average: 79.0 % on Apr 18																						Hours in Service: 720 Hours of Data: 720																										
Minimum Value: 18.0 % on Apr 13 15:00 Minimum Daily Average: 27.0 % on Apr 30																						Hours of Missing Data: 0 Hours of Calibration: 0																										
Maximum Diurnal Average: 71.8 % at hour 6 Minimum Diurnal Average: 40.2 % at hour 17																						Percent Operational Time: 100.0																										
Monthly Average: 54.44 % Percentiles: P ₁ = 19.7 P ₁₀ = 28.5 Q ₁ = 37.7 Median = 53.8 Q ₃ = 71.8 P ₉₀ = 80.8 P ₉₉ = 94.0																																																
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-Apr	80.2	81.3	84.9	85.9	88.3	90.2	91.5	83.3	71.6	64.0	56.3	52.3	49.5	48.8	49.2	48.2	46.3	52.4	63.1	71.8	77.6	79.5	80.8	81.9	70.0	91.5																						
2-Apr	82.7	84.1	86.9	84.7	82.9	84.7	86.6	85.7	81.5	77.5	72.7	71.0	63.8	61.1	58.8	59.1	57.8	58.0	59.9	63.0	64.9	63.3	62.8	63.7	71.6	86.9																						
3-Apr	66.5	71.8	75.2	74.5	77.5	88.4	90.5	83.8	79.5	72.6	67.2	64.6	62.1	59.8	60.9	61.3	61.6	64.0	65.7	68.2	71.3	73.2	73.8	74.7	71.2	90.5																						
4-Apr	76.1	78.4	81.1	82.9	81.3	80.2	78.8	76.3	72.0	62.3	54.1	51.0	48.0	45.0	43.4	41.5	42.2	45.1	49.7	53.6	57.3	61.1	65.9	69.0	62.3	82.9																						
5-Apr	72.2	75.1	74.1	73.4	70.4	70.6	76.7	81.0	72.6	64.6	56.1	51.5	48.6	46.6	47.0	48.0	48.6	49.2	50.2	55.4	59.7	61.5	62.5	63.2	61.6	81.0																						
6-Apr	67.9	71.3	75.6	78.8	80.3	81.9	78.9	70.4	63.1	53.6	45.2	41.4	38.3	34.8	33.5	33.4	31.8	31.6	34.2	35.2	35.2	38.4	43.0	48.1	51.9	81.9																						
7-Apr	51.6	53.2	55.8	57.9	59.8	60.5	58.6	55.5	51.1	47.0	44.0	41.7	39.4	38.4	37.6	36.9	37.8	41.4	46.8	53.6	59.6	65.0	70.2	73.8	51.5	73.8																						
8-Apr	76.3	77.8	78.7	79.5	81.1	84.3	82.2	78.0	72.5	67.6	62.6	58.3	52.8	44.3	35.6	32.6	31.2	31.4	36.6	39.1	43.7	45.4	48.9	52.2	58.0	84.3																						
9-Apr	56.2	60.3	62.5	63.2	62.4	67.2	61.6	51.8	41.6	37.7	35.4	32.9	30.1	27.5	25.6	24.3	24.6	26.8	30.1	33.6	36.3	39.7	43.2	46.7	42.6	67.2																						
10-Apr	51.5	56.3	55.2	55.7	49.5	46.4	43.2	37.5	33.6	32.0	30.1	29.4	26.7	25.4	23.5	22.7	20.1	20.2	24.4	29.3	34.4	35.3	37.7	36.9	35.7	56.3																						
11-Apr	41.0	50.2	54.0	55.0	60.0	58.6	61.8	53.4	45.6	41.5	33.5	28.8	27.1	26.2	26.3	24.1	29.6	31.8	35.3	40.8	45.3	49.8	61.8	68.7	43.8	68.7																						
12-Apr	63.0	48.5	44.7	53.5	56.3	55.7	50.2	41.6	34.8	31.0	28.6	28.5	32.2	38.7	41.0	39.0	39.0	36.5	38.1	41.8	47.7	55.0	60.8	65.9	44.7	65.9																						
13-Apr	66.0	70.2	75.2	70.3	72.4	79.6	74.7	53.9	39.5	35.2	29.4	26.7	20.2	18.4	18.0	18.3	19.0	20.0	24.0	31.9	39.6	53.5	60.1	66.0	45.1	79.6																						
14-Apr	66.9	67.4	65.2	68.9	73.6	76.6	77.6	70.3	61.3	52.5	48.9	41.2	34.7	32.3	39.8	76.6	81.2	76.7	77.8	85.7	89.5	87.2	93.0	94.9	68.3	94.9																						
15-Apr	93.9	95.0	95.2	94.8	94.1	94.0	92.9	82.5	71.8	57.8	43.5	41.2	35.6	33.4	30.0	28.5	29.2	27.6	29.5	36.4	49.2	54.2	61.1	68.4	60.0	95.2																						
16-Apr	74.1	60.2	65.1	72.7	75.9	78.7	71.4	52.3	43.0	35.6	33.2	30.8	27.7	26.2	25.6	25.0	23.8	24.3	26.4	30.7	34.4	39.9	42.0	45.2	44.3	78.7																						
17-Apr	49.1	53.9	57.8	59.4	58.8	58.4	57.5	63.8	58.9	53.9	50.8	56.4	57.3	74.8	84.5	74.5	58.7	49.8	55.0	85.3	85.8	75.3	73.0	72.3	63.5	85.8																						
18-Apr	73.0	75.7	78.8	81.4	80.8	77.5	80.5	83.1	82.2	80.0	79.0	77.7	76.4	75.0	71.9	70.6	69.2	69.2	72.1	79.5	84.4	88.8	93.5	95.3	79.0	95.3																						
19-Apr	94.0	87.9	84.7	82.7	80.8	80.9	78.9	80.1	82.8	79.4	76.9	74.9	68.4	63.6	60.2	59.4	60.3	59.2	60.2	61.9	61.1	65.5	71.7	76.4	73.0	94.0																						
20-Apr	81.0	76.9	79.5	84.0	87.6	87.2	78.3	63.1	57.4	53.6	47.3	42.1	38.9	35.4	33.2	31.3	31.0	31.7	36.0	42.6	44.2	46.3	48.6	52.9	54.6	87.6																						
21-Apr	55.0	64.3	75.3	76.3	82.8	83.0	76.2	59.9	46.6	43.2	38.7	36.2	32.5	32.2	31.6	31.6	32.2	33.5	34.7	38.4	47.3	51.9	54.7	56.4	50.6	83.0																						
22-Apr	60.3	67.1	76.4	77.8	79.6	78.2	70.3	58.5	47.9	44.7	42.4	39.5	37.9	36.6	35.4	35.4	35.4	36.0	37.1	39.6	43.2	46.6	48.3	50.6	51.0	79.6																						
23-Apr	54.2	53.8	53.1	54.2	55.6	57.1	56.3	52.6	46.3	39.1	35.2	31.3	29.5	30.7	28.5	26.7	26.7	29.0	30.4	31.8	32.7	35.4	34.8	35.3	40.0	57.1																						
24-Apr	36.3	37.8	41.3	44.6	47.4	49.1	48.4	46.1	43.2	39.3	35.6	33.4	31.0	29.4	28.4	29.2	34.4	39.0	51.8	60.9	64.5	67.3	66.6	65.5	44.6	67.3																						
25-Apr	66.6	67.7	71.9	72.2	68.2	67.6	62.3	58.7	54.5	54.3	53.2	51.8	69.6	86.4	90.2	89.6	88.2	81.0	80.6	73.1	76.7	82.5	79.8	70.2	71.5	90.2																						
26-Apr	68.0	70.6	70.6	72.9	77.1	75.7	74.4	74.3	72.6	68.8	63.8	59.7	53.8	49.0	46.3	42.9	42.2	43.5	46.6	51.2	56.8	62.0	66.6	74.2	61.8	77.1																						
27-Apr	79.9	74.5	74.6	75.4	76.5	79.7	78.1	68.7	60.9	54.3	50.6	49.6	45.3	43.9	44.3	42.9	40.0	41.9	44.9	48.9	53.1	52.8	52.3	50.9	57.7	79.9																						
28-Apr	47.8	50.0	49.2	50.0	50.0	49.3	46.8	47.4	43.5	37.8	29.5	26.7	24.8	24.2	24.1	23.2	23.0	22.2	22.6	25.5	31.0	35.6	40.9	57.3	36.8	57.3																						
29-Apr	64.9	66.9	71.5	73.7	74.3	73.5	63.1	45.4	30.8	25.7	25.7	25.0	23.5	22.6	22.2	22.3	22.5	21.9	22.5	25.5	30.7	32.0	30.4	30.7	39.5	74.3																						
30-Apr	32.8	35.6	38.3	39.7	40.2	38.8	33.8	29.3	25.5	22.8	20.9	19.9	19.4	19.6	19.7	19.7	19.6	19.7	20.5	22.7	24.9	26.7	28.5	29.7	27.0	40.2																						
																								65.0	66.1	68.4	69.9	70.9	71.8	69.4	62.9	56.3	51.0	46.3	43.8	41.5	41.0	40.5	40.6	40.2	40.5	43.6	48.6	52.7	55.7	58.6	61.2	Diurnal Average
																								94.0	95.0	95.2	94.8	94.1	94.0	92.9	85.7	82.8	80.0	79.0	77.7	76.4	86.4	90.2	89.6	88.2	81.0	80.6	85.7	89.5	88.8	93.5	95.3	Diurnal Maximum





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Christina Lake - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	12	1.67	1.67
20 - 40	199	27.64	29.31
40 - 60	213	29.58	58.89
60 - 80	217	30.14	89.03
80 - 100	79	10.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Christina Lake - April 2023

Maximum Speed: 30 km/h on Apr 10 15:00	Maximum Daily Speed Average: 19.0 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 11 18:00	Minimum Daily Speed Average: 1.9 km/h on Apr 14	Hours of Data: 716
Maximum Diurnal Speed Average: 7.6 km/h at hour 24	Minimum Diurnal Speed Average: 3.3 km/h at hour 6	Hours of Missing Data: 4
Monthly Average Velocity: 4.9 km/h 164.9 deg	Percentiles: P ₁ = 2 P ₁₀ = 4 Q ₁ = 7 Median = 11 Q ₃ = 15 P ₉₀ = 21 P ₉₉ = 27	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-Apr	SSW4	SSW2	NE2	SE3	ESE5	ESE5	E8	ESE7	ESE8	SE11	SE9	ESE8	SE10	ESE12	E13	E11	E12	ESE17	ESE18	ESE15	E15	ESE14	ESE13	ESE10	ESE9.1	ESE18
2-Apr	ESE9	ESE11	E12	ESE9	E7	E8	E6	ENE10	E8	E6	E8	ENE9	ENE9	ENE5	WSW1	SSW4	NE6	NNE7	NE9	ENE6	ESE8	SE11	SSE13	SSE14	E6.4	SSE14
3-Apr	S10	S12	SSW13	SSW13	SW10	SW9	WSW9	W13	NW11	W11	WNW8	W9	WNW9	WNW9	NW13	NW12	NW12	NNW15	NNW13	NNE11	NNE11	ENE9	ENE7	E5	WNW4.7	NNW15
4-Apr	E5	ENE4	E7	E5	ENE5	NE6	ENE7	ENE8	E9	ENE9	ENE4	ENE8	ENE8	NE7	NE8	NNE7	E6	SE6	SE9	SSE9	S10	S11	SSW11	SSW10	E4.5	SSW11
5-Apr	S9	S10	S14	S12	S11	SSE7	SSE9	SSE8	S9	SSE12	SSE13	SSE17	SSE15	S15	SSW17	SSW15	S13	S12	S10	SSE11	S12	S14	S14	S14	S11.9	SSE17
6-Apr	SSW12	S13	S10	SSE7	S7	SSE8	SSE8	S9	S14	S19	S21	SSE24	SSE23	SSE26	S25	S25	S26	S25	S20	SSE22	S21	S20	S20	S19	S17.5	S26
7-Apr	SSE21	SSE18	SSE18	SSE19	SSE15	SSE12	SSE12	SSE18	S20	S21	S23	S26	SSE24	SSE25	SSE21	SSE23	SSE22	SSE22	SSE18	SSE15	SSE13	SSE13	SSE13	S10	SSE18.2	S26
8-Apr	S12	S11	S11	S11	SSW6	S4	SSE6	SSW7	SSW9	WSW10	SW6	SSW9	SSW10	SSE5	ESE6	SE6	SSW9	SW11	WSW12	SW10	SW9	SSW10	SSW10	SSW6	SSW7.4	WSW12
9-Apr	SSE4	ENE3	SSW6	SW8	SW9	SW7	SW8	SW7	WSW12	WSW13	WSW16	SW16	WSW16	SW19	SW18	SW17	SSW19	S16	SSE14	SSE15	SSE16	SSE15	SSE15	SSE17	SSW10.3	SW19
10-Apr	S14	SSW15	WSW20	W24	W26	W25	W20	W21	W24	W27	WSW26	WSW25	WSW26	WSW27	WSW30	WSW25	WSW26	WSW19	WSW13	SW10	SW10	SSW12	SW10	SW10	WSW19.0	WSW30
11-Apr	SW9	SSW6	S5	SSW6	SSW5	S4	SSW4	SSW3	WSW1	NE4	SSE3	SSW3	E1	NNE6	N9	NNW6	NW10	NE1	SSW5	SSW7	SW9	WSW13	WSW16	WSW11	SW3.5	WSW16
12-Apr	W9	NNW11	NNW8	SW7	SW6	WSW13	WSW11	WSW11	WSW12	W15	NNW22	NNW20	W24	NNW24	NW25	NW21	NW18	NNW19	W14	NNW10	W2	SSW2	S2	SW8	W11.6	NW25
13-Apr	SSW5	SSW3	SSW7	SSW8	S4	SE4	SE4	SW7	WSW12	WSW11	WSW13	WSW14	NW21	NNW18	NNW17	NNW16	NNW16	N14	NNE11	ENE8	E5	SE4	S4	SE4	WNW4.3	NW21
14-Apr	SE4	SSW4	SE3	N3	SSE3	E3	E3	E1	NNE4	NE5	N6	NE3	SE4	ESE5	WSW7	N3	ENE7	ENE9	SSW6	SSE4	SSE7	SE4	ESE2	SSE6	ESE1.9	ENE9
15-Apr	SSW5	E4	SSE4	UO	UO	UO	UO	ESE1	ENE4	NE3	S6	SSE4	SSW6	SSW4	S5	S9	SSE10	S11	S11	SSE9	SSE9	SSE10	SSE5	SE4	SSE5.3	S11
16-Apr	SE5	SSE9	SE6	E7	E5	E5	ESE6	SE11	SE14	ESE22	ESE24	SE22	SSE26	SSE26	SSE25	SSE23	SE22	SE20	SE16	ESE13	ESE14	ESE14	ESE14	ESE13	SE14.3	SSE26
17-Apr	SE16	ESE16	ESE16	ESE18	ESE19	ESE21	ESE19	ESE13	ESE17	ESE20	ESE24	ESE21	SE23	SE21	SE14	ESE12	ESE15	ESE16	SE13	NNE7	NNE10	ENE12	E12	E10	ESE14.9	ESE24
18-Apr	ENE9	NNE9	NNE10	NNE9	ENE9	ENE8	E8	NE10	E7	NE5	NE7	NE6	NE4	ENE7	E7	NE7	NE12	NE12	NNE13	NNE9	NNE9	ENE5	NE4	ENE6	NE7.5	NNE13
19-Apr	ESE8	SE11	SE12	SE12	SE9	ESE9	ESE12	ESE15	ESE16	ESE15	ESE17	ESE19	ESE15	ESE16	ESE16	SE17	SE14	ESE10	E7	E8	ESE11	E6	ESE6	ESE5	ESE11.6	ESE19
20-Apr	E5	E6	E4	E2	ESE2	E3	E4	ENE4	ENE9	ENE14	ENE15	ENE16	ENE16	ENE17	ENE16	ENE17	E17	E16	E15	E11	ESE11	ESE7	SE9	SE7	E9.6	ENE17
21-Apr	SE7	SE6	ESE4	SE4	SE3	SE2	E3	ENE5	ENE11	ENE11	E13	ESE12	ESE12	E11	ESE10	ESE9	SE10	SSE11	SSE9	SSE8	S7	SSW9	SW9	SW9	SE6.0	ESE13
22-Apr	S4	S6	SSE4	SSW7	SSW6	S4	S5	SSW7	SSW10	SSW13	SSW15	SSE15	SSE17	SSE16	S14	S16	S15	S15	S14	S10	SE8	SE10	SSE11	SSE12	S10.0	SSE17
23-Apr	SSE12	SSE14	SSE16	SSE15	SSE13	SSE13	SSE14	SSE15	SSE18	SSE24	SSE25	SSE25	SE26	SSE25	SSE22	SSE24	SSE23	SSE22	SSE17	SSE11	SE9	ESE10	SE17	SSE17	SSE17.6	SE26
24-Apr	SSE15	SSE12	SE14	SE13	SE14	SE15	SE15	SE16	SE15	SE15	SSE16	SE18	SSE18	SSE17	SSE19	S19	S23	S22	SSE20	SSE13	SSE10	SSE11	SSE14	SSE14	SSE15.3	S23
25-Apr	SSE14	SSE12	SSE9	SSE10	SSE12	SSE9	S13	SSW12	SSW12	SW11	SW11	SSW12	NNW12	NW19	W9	S7	S8	SSW9	SSW9	WSW8	SW10	SSW11	WSW11	WSW12	SSW7.6	NW19
26-Apr	W13	W16	NNW20	W16	W14	W15	W16	NNW15	NNW17	W19	W17	NW16	NW12	N13	NNE13	NE10	NE12	NE12	ENE12	ENE9	ENE10	E8	E6	E3	NW6.7	NNW20
27-Apr	ESE1	NNE5	N3	W4	N7	N7	NE5	E3	NE4	NNW8	NW5	NNW12	NW15	NNW13	NNW12	W8	NW9	WSW5	WSW10	SW8	S7	S9	S11	SSW15	W3.7	NW15
28-Apr	SW23	SW24	SW18	SW15	WSW14	W17	NNW23	NW22	NW26	NW26	NW29	NW30	NW28	NW27	NW27	NW29	NW25	NW25	NNW21	NNW19	NNE11	NNE10	NNE6	SSE2	NW16.0	NW30
29-Apr	SSW6	SSW4	SSW4	SSW5	SSW6	SSW4	S3	ENE4	E7	ENE12	NE11	NNE6	ENE4	NNE6	NE10	NE7	ENE10	ESE12	ESE12	ESE8	ESE10	ESE13	SE14	SE13	ESE5.1	SE14
30-Apr	SSE10	SSE8	SSE10	SSE12	SSE13	SE6	S10	S15	S17	SSE17	SSE18	SE18	SSE20	SSE18	SSE19	SSE19	SE19	SE19	SE17	SE14	SSE14	SSE14	SSE14	SSE15	SSE14.5	SSE20
S6.7 S5.8 S5.4 S5.4 S4.6 SSE3.3 SSE3.8 S3.5 S3.6 S3.8 S4.4 S5.2 S4.6 SSE3.8 S3.9 SSE3.9 SSE4.4 SSE5.2 SSE5.7 SE5.1 SE6.1 SSE6.9 SSE7.2 SSE7.6																								Diurnal Average		
SW23 SW24 WSW20 W24 W26 W25 WNW23 NW22 NW26 W27 NW29 NW30 NW28 NW27 WSW30 NW29 WSW26 NW25 S22 SSE22 S21 S20 S20 S19																								Diurnal Maximum		

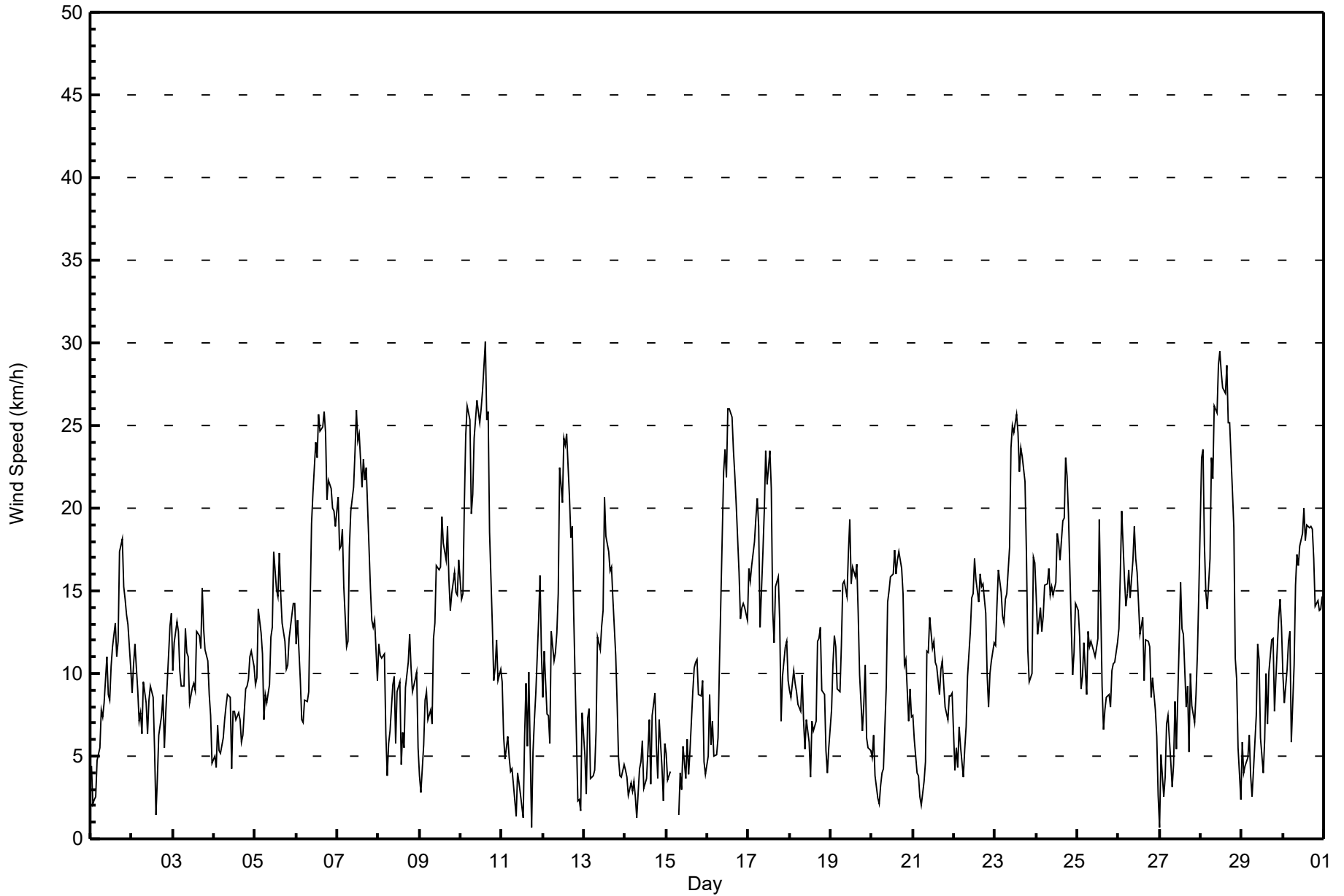
UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Christina Lake - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Christina Lake - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	114	15.92	15.92
6 - 11	266	37.15	53.07
12 - 19	246	34.36	87.43
20 - 28	86	12.01	99.44
29 - 38	4	0.56	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 716

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Christina Lake - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3	2	11	11	19	9	14	10	11	18	0	3	2	0	1	0	114
6 - 11	4	18	13	25	25	23	19	29	27	31	26	10	5	6	3	2	266
12 - 19	2	2	4	10	8	36	25	63	25	15	6	16	11	10	8	5	246
20 - 28	0	0	0	0	0	6	6	25	15	0	2	7	8	5	11	1	86
29 - 38	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	4
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	9	22	28	46	52	74	64	127	78	64	34	37	26	21	26	8	716

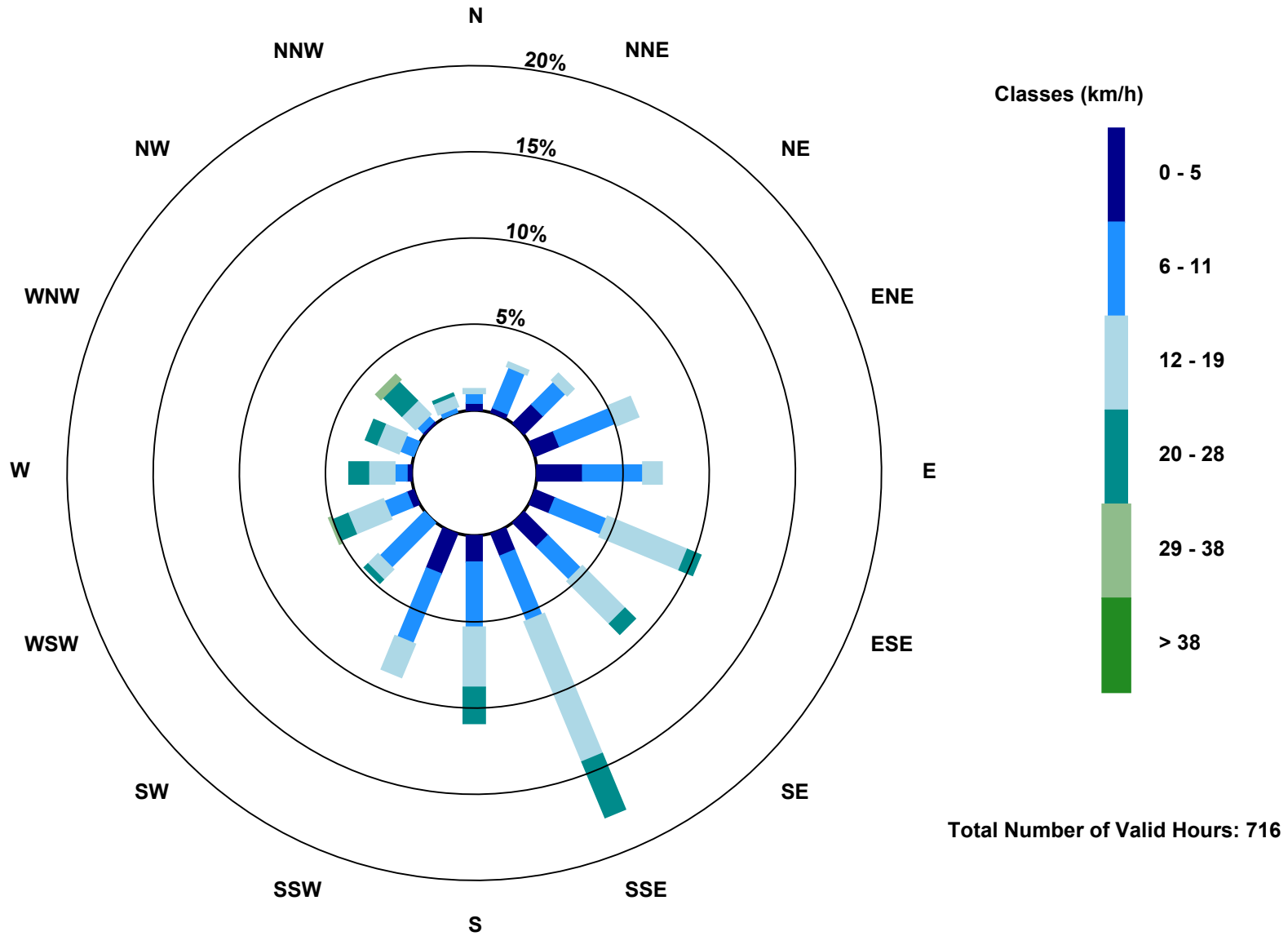
Total Number of Valid Hours: 716

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Christina Lake





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Christina Lake - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 11 km/h on Apr 25 14:00 Minimum Value: 0 km/h on Apr 20 00:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 8																	Hours in Service: 720 Hours of Data: 716 Hours of Missing Data: 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-Apr	1	1	1	1	1	1	1	2	3	4	3	4	3	3	3	3	3	4	4	3	3	3	3	2	4
2-Apr	2	2	2	2	1	1	1	2	2	2	2	2	3	2	2	3	2	1	1	1	3	3	3	3	3
3-Apr	2	3	3	3	2	2	2	4	3	3	3	3	4	3	4	3	3	3	3	2	1	2	2	1	4
4-Apr	1	1	1	1	1	1	1	1	1	2	2	2	3	2	3	3	3	1	1	1	1	2	2	2	3
5-Apr	2	3	3	3	3	2	2	2	3	3	3	4	4	3	5	4	3	3	2	2	2	2	3	3	5
6-Apr	2	3	4	3	2	2	2	3	4	4	5	4	5	5	6	6	6	6	5	5	5	5	5	5	6
7-Apr	4	3	4	4	3	2	4	5	5	5	5	6	6	5	5	5	5	5	4	3	4	3	3	3	6
8-Apr	3	3	3	3	2	2	2	2	2	2	3	2	2	2	2	3	4	3	3	2	1	1	1	2	4
9-Apr	2	2	2	1	1	1	1	2	4	4	4	4	5	5	5	4	5	4	3	3	3	3	3	3	5
10-Apr	4	3	6	7	8	8	6	6	7	9	7	7	7	8	7	7	8	6	4	1	1	1	1	1	9
11-Apr	1	2	2	4	1	1	1	1	1	1	1	2	2	4	3	4	6	3	1	1	1	3	3	3	6
12-Apr	3	4	4	3	3	1	2	2	3	4	6	5	7	6	6	6	5	5	5	3	3	2	1	3	7
13-Apr	3	2	2	1	1	1	1	3	3	3	4	6	6	6	5	5	5	4	2	2	2	1	1	2	6
14-Apr	1	2	2	2	1	1	1	1	2	1	1	2	3	2	8	4	3	2	2	2	2	2	1	2	8
15-Apr	2	1	1	UO	UO	UO	UO	1	2	2	3	4	3	4	4	5	3	4	3	1	1	1	2	1	5
16-Apr	1	1	2	1	1	1	3	3	5	6	5	6	6	6	5	5	5	5	5	3	2	3	3	3	6
17-Apr	3	3	4	3	4	4	4	4	4	5	5	4	6	7	4	3	5	3	7	3	2	3	2	3	7
18-Apr	2	2	2	2	2	2	2	3	2	2	2	1	3	2	2	4	2	2	2	1	2	1	1	1	4
19-Apr	1	3	3	3	2	3	3	3	3	3	3	4	4	4	4	3	4	2	1	2	2	1	1	0	4
20-Apr	0	1	2	1	0	1	1	2	3	4	5	5	5	5	5	5	4	3	3	1	2	1	1	1	5
21-Apr	1	1	1	1	1	1	1	2	2	4	4	4	5	4	4	4	3	2	3	1	1	1	2	2	5
22-Apr	1	1	1	1	2	1	2	1	3	4	4	5	6	5	5	4	5	4	3	3	1	1	1	2	6
23-Apr	2	2	3	2	2	2	3	3	4	5	6	6	6	5	6	5	5	5	4	3	3	2	3	3	6
24-Apr	3	3	3	2	3	3	4	4	3	3	4	4	5	5	5	5	5	5	5	4	2	2	3	3	5
25-Apr	3	2	2	2	2	2	5	3	3	2	3	3	8	11	9	2	2	2	2	3	2	1	3	3	11
26-Apr	4	5	5	4	4	4	5	4	5	5	4	4	4	5	4	4	3	2	3	2	2	2	1	1	5
27-Apr	1	1	1	1	3	2	2	2	3	3	4	4	4	4	4	4	4	2	3	1	1	2	2	4	4
28-Apr	5	5	4	3	3	5	6	4	5	6	6	7	7	6	7	6	6	6	6	4	3	1	2	1	7
29-Apr	1	2	1	1	1	1	1	1	3	4	4	3	4	4	4	4	4	3	3	1	2	3	3	3	4
30-Apr	3	1	2	2	2	2	5	4	4	5	5	5	5	6	5	4	4	4	4	3	2	2	2	3	6
Diurnal Maximum																									
UO - Unstable Operation																									



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Christina Lake - April 2023

Direction of Maximum Speed: 241 deg on Apr 10 15:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 251.2 deg on Apr 10	Hours of Data: 716
Direction of Minimum Speed: 36 deg on Apr 11 18:00	Hours of Missing Data: 4
Direction of Minimum Daily Speed Average: 1.9 deg on Apr 14	Percent Operational Time: 99.4
Monthly Average Direction: 164.9 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-Apr	204	199	36	138	119	110	89	120	112	140	135	117	124	117	87	96	92	103	115	116	100	111	114	114	112.1
2-Apr	107	110	99	104	95	88	95	76	85	83	92	67	66	65	256	206	46	33	37	78	107	131	163	166	96.9
3-Apr	179	188	198	202	221	225	239	280	310	272	285	264	283	296	316	312	309	327	338	18	33	60	70	97	284.1
4-Apr	93	67	97	99	62	52	57	71	85	67	77	69	58	49	48	24	94	124	137	151	178	188	202	194	100.2
5-Apr	191	180	181	174	176	152	168	150	169	161	152	160	162	170	200	197	189	187	183	165	176	187	188	191	176.5
6-Apr	192	182	173	158	177	152	158	171	178	181	173	166	166	168	183	182	184	184	170	168	171	170	173	173	174.2
7-Apr	164	159	164	163	163	154	154	166	175	173	171	175	168	163	162	163	160	161	162	154	153	154	162	175	164.0
8-Apr	173	177	173	183	202	170	159	199	209	239	227	209	202	148	102	130	213	225	237	219	218	209	206	198	198.7
9-Apr	163	57	207	218	231	227	228	217	245	247	238	231	241	232	218	222	199	184	166	154	156	157	155	151	203.4
10-Apr	179	204	249	270	274	272	264	260	264	266	257	258	256	250	241	255	254	253	242	227	218	210	226	228	251.2
11-Apr	216	195	184	198	196	184	194	206	249	39	164	211	94	30	356	346	313	36	196	212	221	237	242	246	230.3
12-Apr	273	293	282	223	220	241	243	245	256	262	299	289	277	303	304	305	306	287	279	293	262	197	188	215	279.7
13-Apr	206	194	203	211	172	133	133	214	250	253	250	306	296	296	328	330	349	28	59	87	142	179	133	282.8	
14-Apr	132	199	127	8	147	96	92	83	23	54	9	53	132	110	253	5	62	58	205	152	163	145	111	166	106.3
15-Apr	203	97	168	UO	UO	UO	UO	105	73	55	171	164	197	196	188	185	149	172	183	166	155	166	149	130	164.9
16-Apr	125	155	127	90	90	86	119	139	127	117	110	131	148	156	158	156	143	135	126	117	115	110	118	122	131.6
17-Apr	129	121	119	116	114	107	110	109	112	111	105	116	124	124	127	108	104	114	139	23	21	72	79	90	110.1
18-Apr	63	32	20	25	58	63	85	55	81	48	49	50	53	75	80	49	37	41	30	24	24	68	52	63	48.3
19-Apr	106	140	130	132	135	109	123	113	111	116	114	109	116	114	121	133	132	117	89	82	111	91	105	107	116.9
20-Apr	81	95	101	91	121	86	89	61	66	66	67	64	76	68	76	66	87	96	98	92	107	118	129	140	84.3
21-Apr	144	135	122	138	128	146	101	69	76	76	101	118	116	99	106	111	143	163	166	162	190	205	219	224	131.8
22-Apr	189	186	154	192	196	185	189	204	193	193	197	163	161	153	170	180	188	190	191	171	144	141	149	155	175.4
23-Apr	161	166	165	165	163	158	157	160	154	159	153	158	146	155	153	148	161	162	157	149	139	117	144	156	155.0
24-Apr	158	150	144	136	138	145	146	146	140	131	151	158	142	150	165	158	172	183	180	167	153	148	150	150	154.3
25-Apr	149	150	151	155	156	163	182	195	197	214	214	197	293	308	268	181	175	209	198	242	228	209	237	252	204.3
26-Apr	264	277	288	281	263	266	277	292	284	280	277	307	324	354	33	37	42	39	63	66	71	86	88	91	311.0
27-Apr	114	28	7	262	349	0	34	82	35	341	320	296	311	297	287	272	305	250	241	216	185	188	188	196	281.0
28-Apr	219	219	226	233	251	270	298	316	318	315	309	304	308	315	321	324	323	317	329	332	17	20	24	152	303.8
29-Apr	206	199	192	207	207	202	188	75	79	64	50	33	57	33	51	44	73	104	114	108	112	115	136	145	103.4
30-Apr	151	150	149	151	152	146	171	171	187	157	161	146	149	166	152	147	142	142	145	142	149	153	154	155	153.7

170.3 169.2 171.1 177.0 176.6 168.7 168.3 169.4 171.8 169.7 169.9 172.1 173.2 168.0 179.1 168.6 159.6 158.9 157.6 145.5 142.6 149.1 159.0 165.5

Diurnal Average

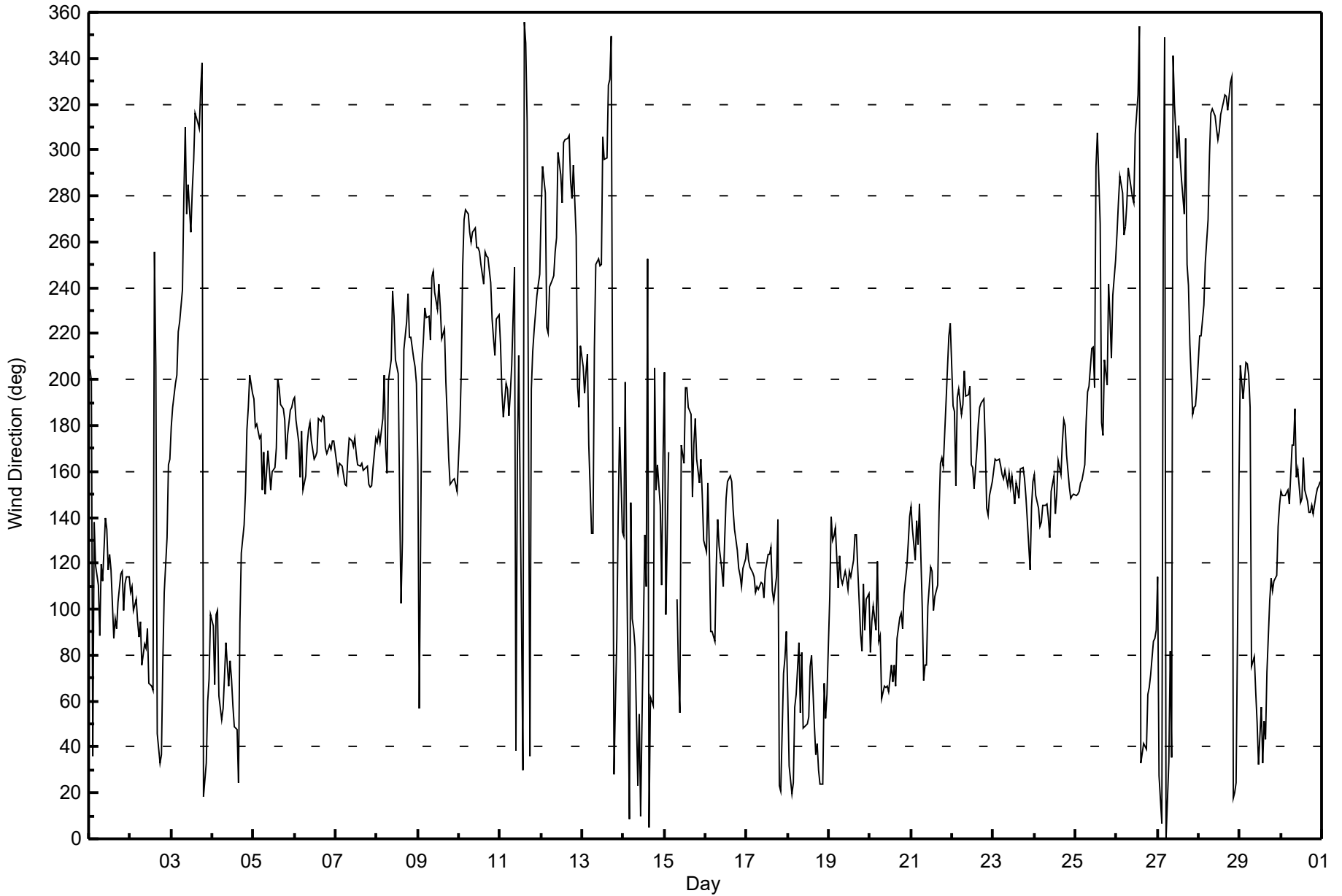
UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Direction (WD) - deg
Christina Lake - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Christina Lake - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 94 deg on Apr 11 13:00	Hours of Data: 716
Minimum Value: 4 deg on Apr 15 22:00	Hours of Missing Data: 4
	Hours of Calibration: 0
	Percent Operational Time: 99.4
Percentiles: P ₁ = 6 P ₁₀ = 10 Q ₁ = 12 Median = 17 Q ₃ = 24 P ₉₀ = 39 P ₉₉ = 79	

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-Apr	12	54	67	34	23	13	7	18	19	33	29	39	25	19	18	20	16	12	12	12	10	11	11	13	67
2-Apr	10	11	14	11	10	10	13	8	17	24	19	18	27	42	90	66	35	15	6	25	10	21	17	12	90
3-Apr	13	14	13	14	15	11	19	19	20	20	29	26	43	39	24	20	21	15	20	13	12	10	18	11	43
4-Apr	10	18	13	30	18	22	12	13	12	20	62	30	33	29	25	30	34	15	9	18	8	10	12	11	62
5-Apr	11	12	10	13	17	14	17	16	23	18	22	14	20	21	20	19	18	13	11	12	14	9	10	10	23
6-Apr	11	11	39	22	19	13	17	21	16	14	15	12	15	13	18	15	13	14	14	11	11	12	12	12	39
7-Apr	11	12	13	13	12	12	13	16	15	16	14	15	13	13	14	13	12	12	13	11	13	13	13	16	16
8-Apr	14	15	14	12	27	26	27	13	18	19	47	19	18	62	43	64	32	12	10	12	10	11	10	28	64
9-Apr	31	49	14	15	16	17	17	16	19	17	18	20	23	20	20	19	22	17	15	10	10	10	11	13	49
10-Apr	15	17	19	17	17	16	19	19	19	19	19	19	19	19	16	21	19	18	16	13	6	5	15	9	21
11-Apr	9	23	24	21	19	17	15	18	79	27	58	80	94	72	36	62	51	93	19	9	6	14	12	16	94
12-Apr	25	17	56	41	33	9	11	14	20	23	20	22	22	21	20	22	20	19	19	27	83	77	76	54	83
13-Apr	49	64	6	9	26	24	24	21	21	23	24	33	25	26	31	29	21	28	9	13	25	26	34	26	64
14-Apr	23	40	79	54	43	42	43	78	27	36	33	71	74	60	76	70	29	24	39	49	15	56	58	18	79
15-Apr	25	31	32	UO	UO	UO	UO	62	26	65	56	73	61	83	59	61	31	37	15	5	11	4	27	31	83
16-Apr	28	7	37	7	5	11	25	16	14	14	15	22	18	15	18	19	19	15	12	11	12	10	11	14	37
17-Apr	12	12	11	11	12	12	13	19	11	14	14	13	15	14	18	14	15	11	24	53	14	11	12	15	53
18-Apr	15	21	13	12	17	10	12	22	19	33	14	18	73	30	22	33	15	15	14	10	12	18	14	19	73
19-Apr	16	14	13	13	13	11	16	13	11	14	13	14	20	17	18	13	15	13	14	8	15	24	12	6	24
20-Apr	17	13	11	26	37	19	14	20	25	21	24	25	23	23	27	21	19	19	13	8	8	9	8	10	37
21-Apr	10	11	17	21	21	39	24	18	17	29	24	32	33	36	36	32	23	15	12	6	9	7	10	10	39
22-Apr	23	13	15	14	11	16	11	12	21	25	23	25	25	27	30	20	20	14	12	17	9	9	8	9	30
23-Apr	8	9	10	9	10	10	11	12	14	15	18	17	17	15	18	16	13	12	12	15	20	13	13	13	20
24-Apr	12	14	12	11	12	13	14	15	16	16	20	19	27	25	23	21	16	15	13	11	11	14	12	11	27
25-Apr	12	11	10	10	10	10	13	15	16	16	18	23	50	46	77	33	14	15	19	15	11	10	26	16	77
26-Apr	18	20	17	21	18	18	17	25	21	20	19	25	35	37	32	28	18	16	14	10	11	20	6	32	37
27-Apr	79	19	61	60	32	17	34	73	79	45	68	34	28	28	33	45	39	57	21	11	11	12	13	12	79
28-Apr	13	12	19	13	16	17	19	13	13	14	15	17	18	18	19	17	17	13	22	11	16	9	24	44	44
29-Apr	12	37	27	21	12	15	39	33	22	18	30	63	83	73	33	68	34	18	13	7	10	12	11	11	83
30-Apr	12	10	11	11	11	19	21	16	16	18	19	25	19	20	24	19	16	15	14	10	10	10	10	11	25
	79	64	79	60	43	42	43	78	79	65	68	80	94	83	90	70	51	93	39	53	83	77	76	54	

Diurnal Maximum

UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS27
JACKFISH 2/3
APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
 APRIL 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	684	34	36	99.72	4.6	0	1.2	0
H2S (ppb) Average	681	35	39	99.44	0.7	0	0.3	0
NO2 (ppb) Average	661	39	59	97.22	6.8	0	1.5	-
NO (ppb) Average	661	39	59	97.22	6.1	-	0.4	-
NOX (ppb) Average	661	39	59	97.22	9.6	-	1.5	-
Temperature 2 m (C) Average	719	0	1	99.86	18.7	-	11.1	-
Relative Humidity (%) Average	719	0	1	99.86	96.4	-	84.8	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	23	-	15	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
 APRIL 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	684	0.39	0.5	-	0	0	0.1	0.2	0.5	0.9	4.6
H2S (ppb) Average	681	0.16	0.1	-	0	0.1	0.1	0.1	0.2	0.3	0.7
NO2 (ppb) Average	661	0.65	0.7	-	0	0	0.1	0.5	0.9	1.5	6.8
NO (ppb) Average	661	0.14	0.3	-	0	0	0	0	0.2	0.4	6.1
NOX (ppb) Average	661	0.79	0.9	-	0	0	0.2	0.6	1.1	1.7	9.6
Temperature 2 m (C) Average	719	3.59	5.3	-	-8.8	-3.3	0	3.2	7.2	10.7	18.7
Relative Humidity (%) Average	719	54.04	20.2	-	15.7	27.6	37.1	53.4	69.2	82.9	96.4
Wind Speed 10 m (km/h) Average	719	7.5	3	-	0	4	5	7	9	12	23
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2	19 Apr 2023 11:00	19 Apr 2023 11:00	1	Maintenance - sample manifold cleaned
H2S	01 Apr 2023 20:00	01 Apr 2023 21:00	2	Unstable Operation - excessive baseline drift
ALL PARAMETERS	26 Apr 2023 08:00	26 Apr 2023 08:00	1	DAS Failure - data not recorded



Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 4.6 ppb on Apr 12 17:00	Maximum Daily Average: 1.2 ppb on Apr 12		Hours of Data:	684
Minimum Value: 0.0 ppb on Apr 1 03:00	Minimum Daily Average: 0.0 ppb on Apr 22		Hours of Missing Data:	36
Maximum Diurnal Average: 0.6 ppb at hour 14	Minimum Diurnal Average: 0.2 ppb at hour 6		Hours of Calibration:	34
Monthly Average: 0.39 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.5 P ₉₀ = 0.9 P ₉₉ = 3.0		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-Apr	0.2	Z	0.0	0.0	0.1	0.4	1.2	0.9	0.5	0.3	0.3	0.3	0.6	0.8	0.9	0.5	0.6	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.4	1.2
2-Apr	0.2	0.3	Z	0.1	0.1	0.1	0.2	0.2	1.0	3.0	0.7	1.4	1.8	1.6	1.0	1.6	2.2	1.7	0.9	0.5	0.4	0.3	0.4	0.7	0.9	3.0
3-Apr	0.3	0.5	0.4	Z	0.1	0.1	0.5	1.0	2.2	2.0	0.9	0.6	0.6	0.6	1.1	0.8	0.6	0.7	0.2	0.4	0.2	0.4	0.5	0.5	0.7	2.2
4-Apr	0.5	0.3	0.3	0.4	Z	0.2	0.2	0.4	3.0	C	C	C	C	1.1	0.8	0.7	0.5	0.4	0.0	0.0	0.0	0.1	0.0	0.0	0.5	3.0
5-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.2
6-Apr	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.5	0.6	0.6	0.2	0.6
7-Apr	0.6	Z	1.0	1.1	1.1	0.8	0.8	0.6	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.5	0.6	0.5	0.5	0.6	0.6	0.4	0.2	0.5	1.1
8-Apr	0.3	0.2	Z	0.0	0.1	0.2	0.2	0.2	0.2	0.5	1.1	0.8	0.9	1.8	0.8	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	1.8
9-Apr	0.2	0.2	0.5	Z	0.1	0.1	0.3	1.3	1.8	1.2	0.5	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.3	0.5	1.0	0.8	0.4	1.8
10-Apr	0.4	0.2	0.3	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.1	0.4	0.6	0.4	0.4	0.2	0.2	0.6
11-Apr	0.1	0.2	0.2	0.2	0.2	Z	0.0	0.0	0.2	0.6	0.4	0.6	1.5	1.4	0.5	0.2	0.2	0.1	0.5	0.2	0.1	0.4	0.8	0.7	0.4	1.5
12-Apr	Z	0.7	0.9	1.3	1.5	1.2	0.3	0.2	0.1	0.1	0.3	2.9	3.3	3.3	3.5	1.1	4.6	0.3	0.5	0.2	0.2	0.2	0.1	0.2	1.2	4.6
13-Apr	0.1	Z	0.0	0.2	0.3	0.2	0.1	0.0	0.6	0.1	0.1	0.2	0.6	1.1	0.1	0.3	0.0	0.2	0.2	0.5	0.7	1.3	0.8	0.4	0.4	1.3
14-Apr	0.3	0.3	Z	0.2	0.1	0.0	0.1	0.2	0.3	1.1	0.2	0.2	1.0	0.2	0.2	0.2	0.4	0.2	1.0	0.5	0.3	0.3	0.2	0.1	0.3	1.1
15-Apr	0.2	0.2	0.3	Z	0.1	0.0	0.1	0.3	0.7	0.5	0.9	0.5	0.3	0.4	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.9
16-Apr	0.4	0.6	0.5	0.5	Z	0.1	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6
17-Apr	0.1	0.0	0.2	0.2	0.2	Z	0.4	0.5	0.4	0.3	1.9	0.9	0.3	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3	1.9
18-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.3	0.4	0.3	0.4	0.6	1.7	1.2	0.7	1.1	0.5	0.2	0.3	0.3	0.2	0.4	1.7
19-Apr	0.2	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	M	0.6	0.5	0.3	0.6	0.3	0.2	0.1	0.1	0.4	0.2	0.1	0.1	0.1	0.2	0.6
20-Apr	0.2	0.0	Z	0.0	0.0	0.0	0.0	0.5	1.1	1.0	0.1	0.1	0.1	0.1	0.7	0.7	0.7	0.8	0.6	0.3	0.8	0.2	0.2	0.1	0.4	1.1
21-Apr	0.2	0.2	0.2	Z	0.0	0.0	0.7	3.3	0.7	0.9	0.3	0.7	0.0	0.4	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.3
22-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
23-Apr	0.0	0.0	0.4	0.5	0.4	Z	0.2	0.3	0.3	0.2	0.3	0.1	0.3	0.3	0.2	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.5
24-Apr	Z	0.3	0.3	0.2	0.3	0.2	0.2	0.4	0.6	0.6	0.5	0.4	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.3	0.6
25-Apr	0.1	Z	0.0	0.0	0.0	0.1	0.2	0.6	0.3	0.1	0.6	0.5	0.1	0.6	0.4	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.6
26-Apr	0.1	0.2	Z	0.0	0.0	0.0	0.2	DF	0.7	0.0	0.6	1.5	0.2	0.3	0.3	0.1	0.3	1.3	1.2	0.0	0.0	0.5	0.1	0.0	0.3	1.5
27-Apr	0.0	0.0	0.1	Z	0.0	0.0	0.7	2.0	0.8	0.6	0.8	0.9	0.8	0.4	0.9	0.9	0.6	0.2	0.1	0.3	0.2	0.1	0.1	0.1	0.5	2.0
28-Apr	0.2	0.1	0.1	0.3	Z	0.0	3.3	0.1	0.2	1.9	2.4	1.3	0.4	0.4	0.3	1.0	0.2	0.1	0.2	0.1	0.2	0.4	1.0	0.7	0.6	3.3
29-Apr	0.4	0.7	0.5	0.4	0.6	Z	0.8	1.8	1.5	0.1	0.9	1.7	1.7	1.8	1.9	1.6	1.0	0.9	0.3	0.2	0.3	0.2	0.1	0.1	0.9	1.9
30-Apr	Z	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.4	0.4	0.3	0.5	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.6

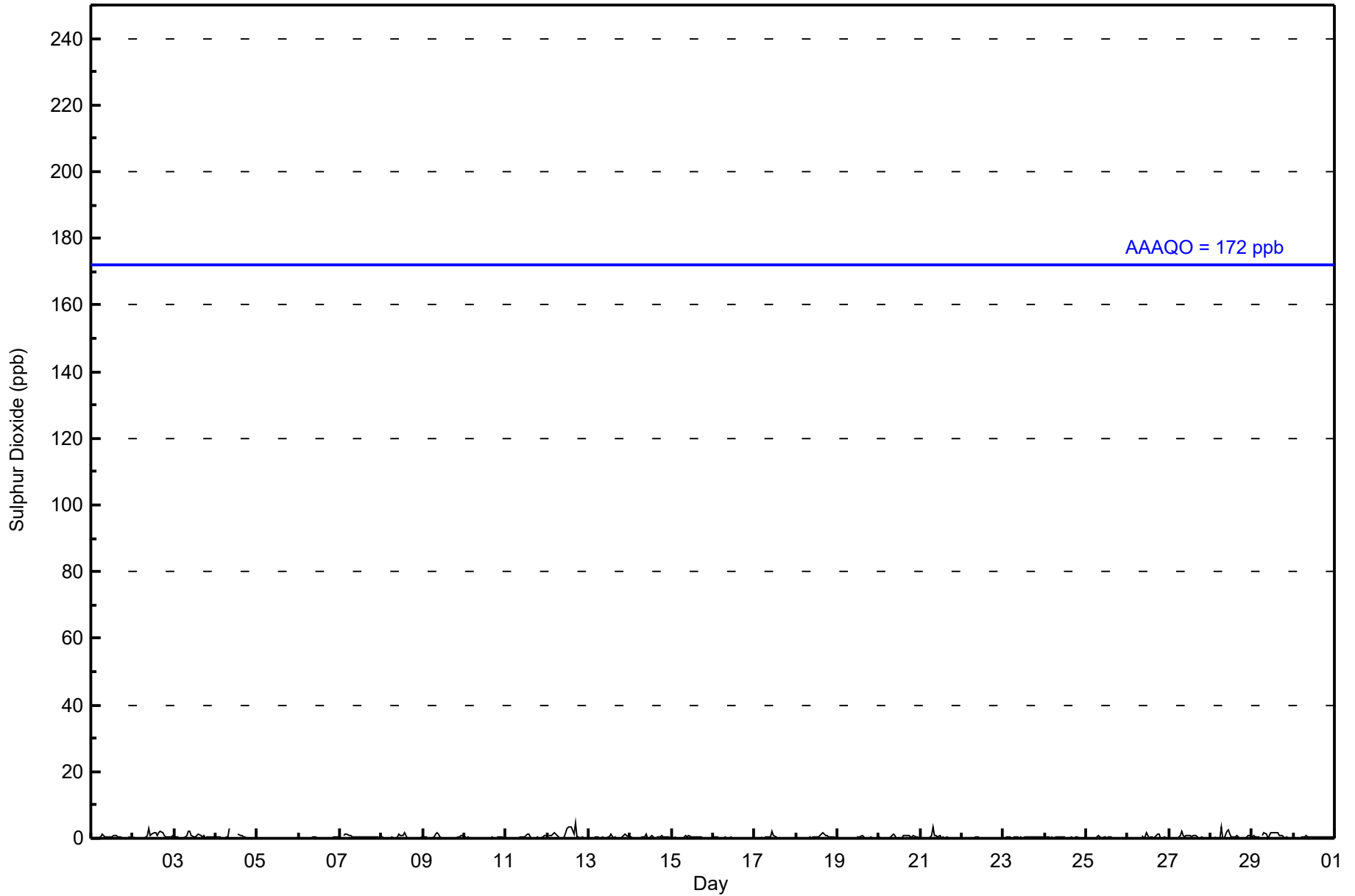
0.2	0.2	0.3	0.2	0.2	0.2	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.3	0.2	0.2	0.3	0.3	0.2	Diurnal Average	
0.6	0.7	1.0	1.3	1.5	1.2	3.3	3.3	3.0	3.0	3.0	2.4	2.9	3.3	3.3	3.5	1.7	4.6	1.7	1.2	0.5	0.8	1.3	1.0	0.8	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance 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 (SO₂) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	0	4	6	11	17	18	7	44	44	20	14	9	5	3	4	2	208
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
Totals	0	4	6	11	17	18	7	44	44	20	14	9	5	3	4	2	208

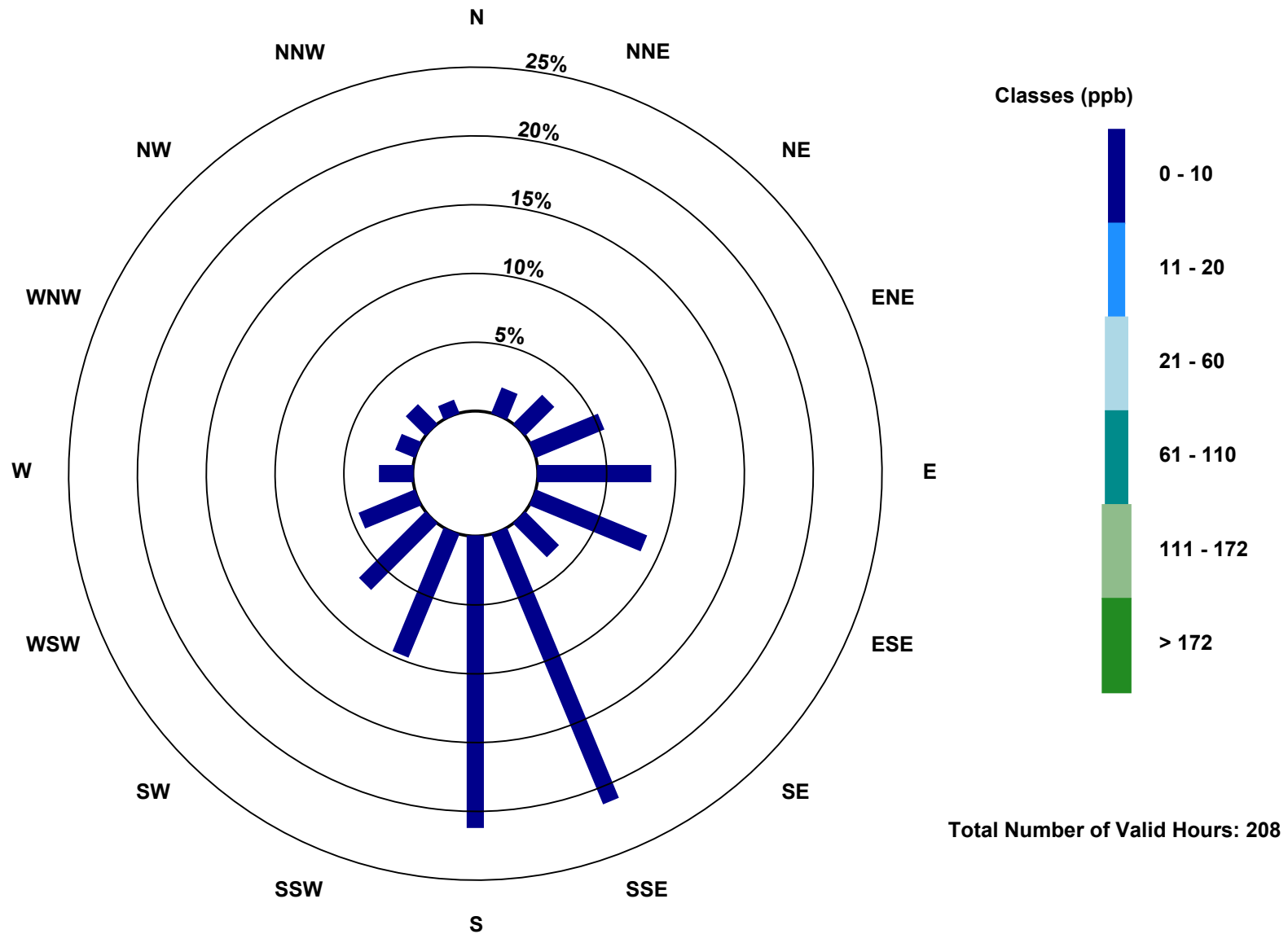
Total Number of Valid Hours: 208

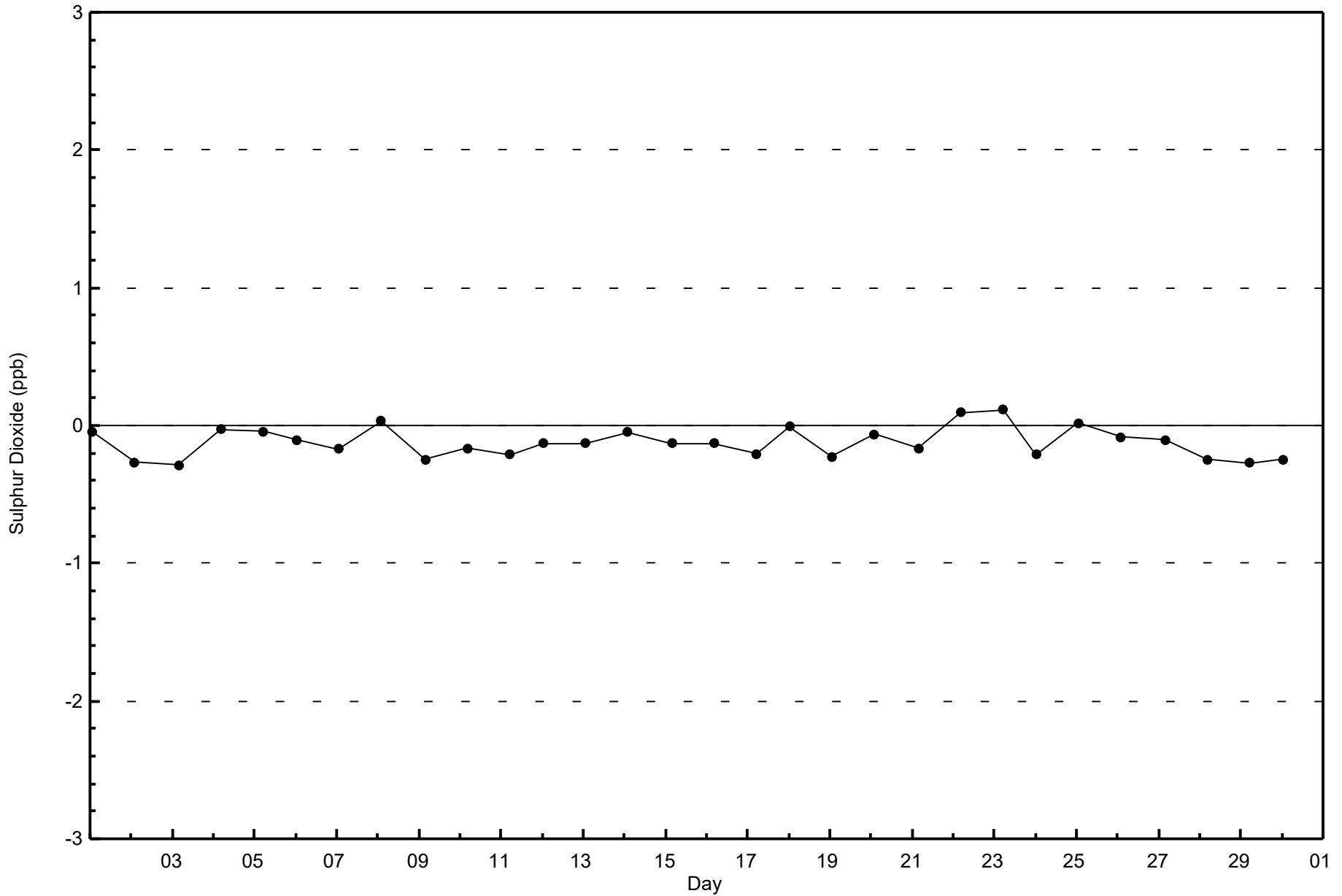
Total Number of Hours: 720

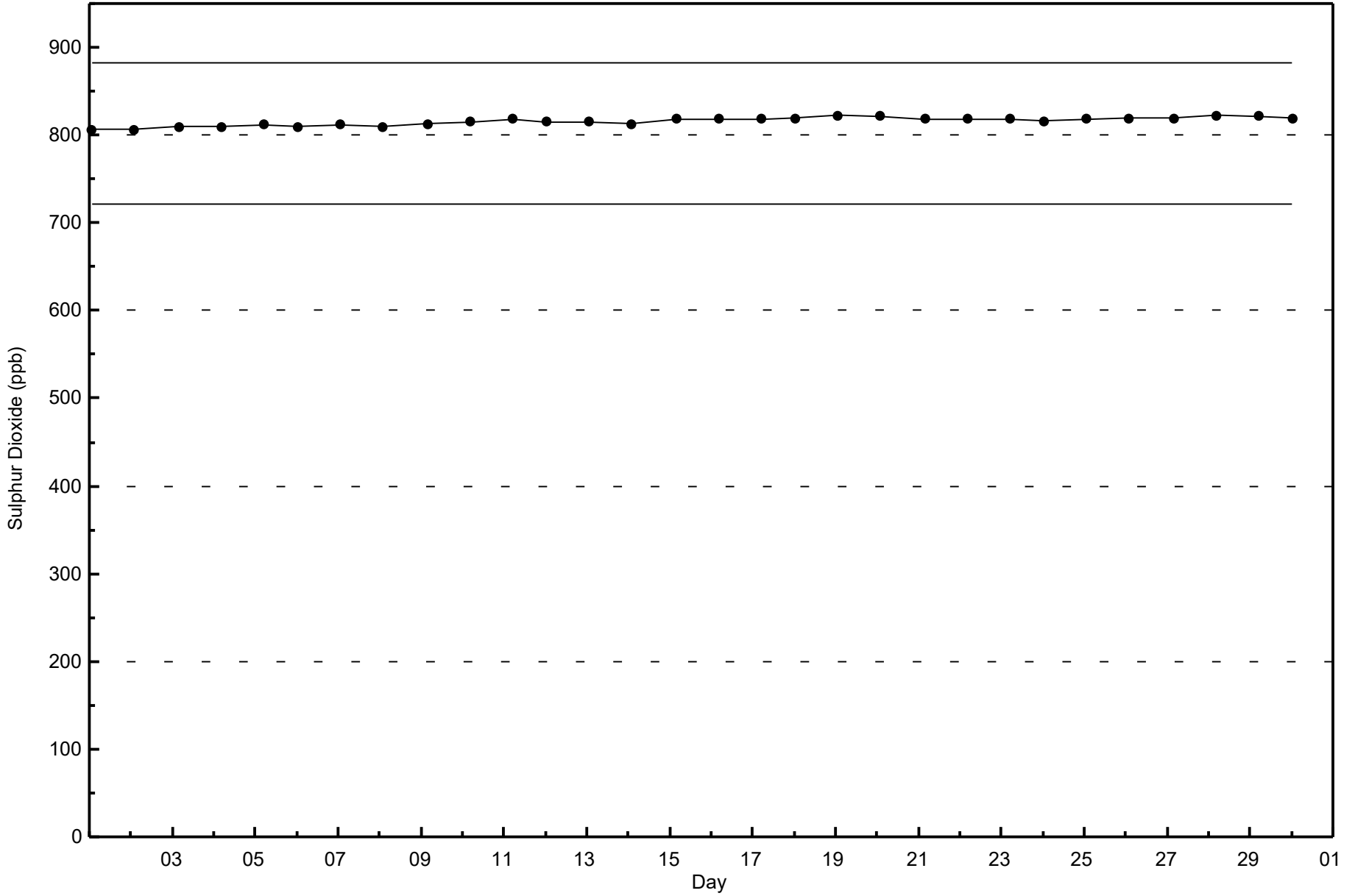


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3







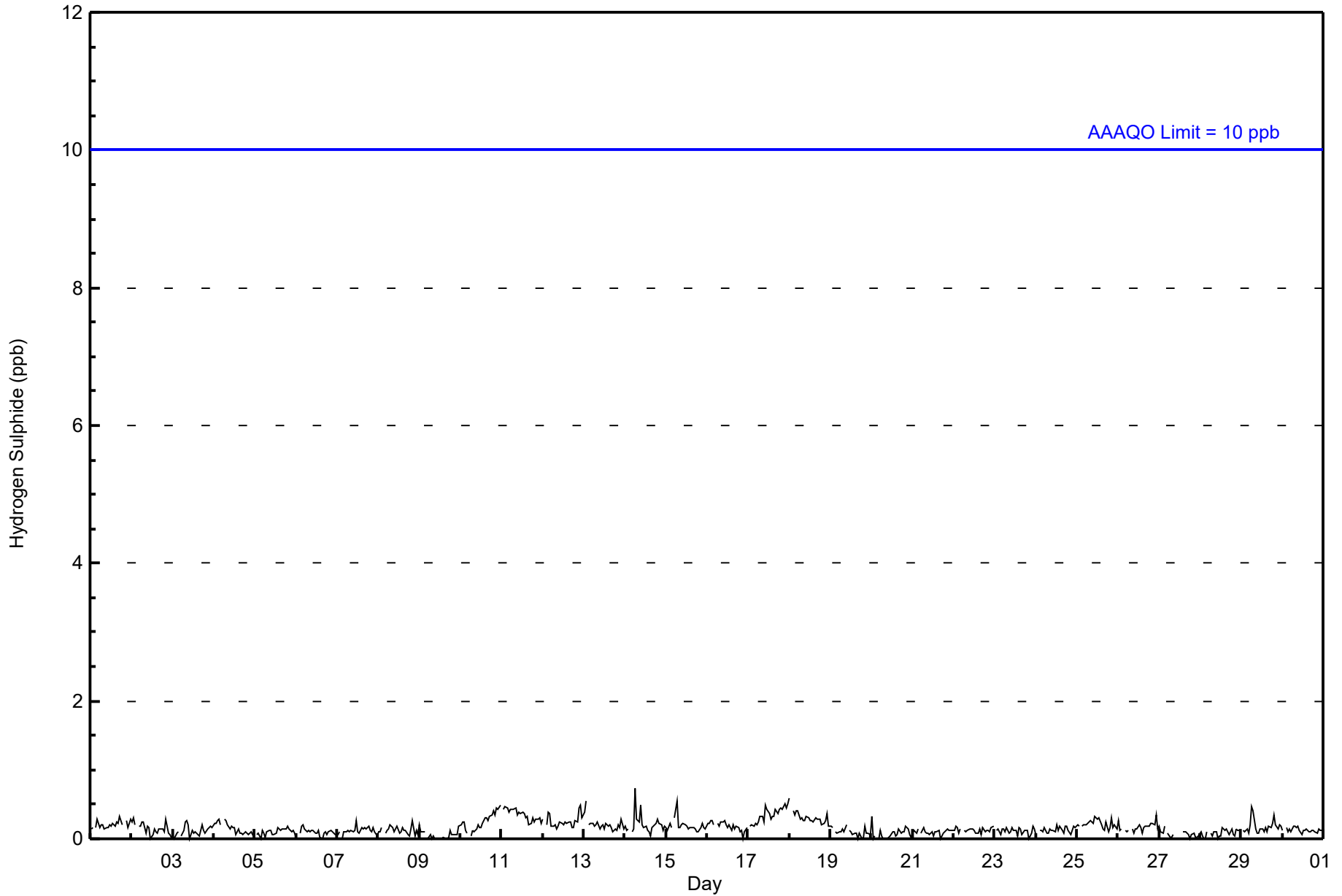


Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Daily Average		Daily Maximum																										
Maximum Value: 0.7 ppb on Apr 14 07:00		Maximum Daily Average: 0.3 ppb on Apr 11																	Hours of Data: 681		Hours of Missing Data: 39																												
Minimum Value: 0.0 ppb on Apr 2 12:00		Minimum Daily Average: 0.1 ppb on Apr 9																	Hours of Calibration: 35		Percent Operational Time: 99.4																												
Maximum Diurnal Average: 0.2 ppb at hour 7		Minimum Diurnal Average: 0.1 ppb at hour 17																																															
Monthly Average: 0.16 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.3 P ₉₉ = 0.5																																															
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-Apr	0.1	0.2	Z	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2	UO	UO	0.3	0.2	0.3	0.2	0.3																							
2-Apr	0.2	0.3	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.0	0.1	0.3																						
3-Apr	0.0	0.0	0.1	0.1	Z	0.0	0.1	0.2	0.3	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3																						
4-Apr	0.2	0.2	0.3	0.3	0.2	Z	0.3	0.3	0.2	0.1	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	0.2	0.3																						
5-Apr	Z	0.1	0.1	0.0	0.1	0.1	0.0	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	0.1	0.1	0.2																						
6-Apr	0.0	Z	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2																						
7-Apr	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.3																						
8-Apr	0.1	0.1	0.2	Z	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.0	0.1	0.1	0.1	0.3																						
9-Apr	0.2	0.1	0.1	0.1	Z	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	0.2	0.1	0.2																						
10-Apr	0.2	0.2	0.2	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.5	0.2	0.5																						
11-Apr	Z	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.5																						
12-Apr	0.3	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	0.3	0.2	0.2	0.2	0.3	0.2	0.4	0.5	0.3	0.3	0.5																							
13-Apr	0.4	0.5	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.2	0.5																							
14-Apr	0.2	0.1	0.1	Z	0.1	0.1	0.7	0.3	0.2	0.5	0.2	0.2	0.2	0.1	0.1	0.0	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.7																							
15-Apr	0.2	0.1	0.2	0.2	Z	0.3	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.6																							
16-Apr	0.2	0.2	0.3	0.3	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.2	0.3																							
17-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.3	0.5																							
18-Apr	0.6	Z	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.2	0.6																							
19-Apr	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	M	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.2																							
20-Apr	0.3	0.0	0.0	Z	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	0.1	0.1	0.0	0.1	0.3																							
21-Apr	0.1	0.1	0.1	0.1	Z	0.1	0.2	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	0.1	0.1	0.1	0.1	0.2																							
22-Apr	0.1	0.2	0.2	0.1	0.1	Z	0.1	0.1	0.1	0.2	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	0.2	0.2	0.2																							
23-Apr	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.2																							
24-Apr	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2																							
25-Apr	0.2	0.2	Z	0.2	0.2	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	0.2	0.3	0.2	0.2	0.1	0.3																							
26-Apr	0.3	0.1	0.2	Z	0.1	0.1	0.1	DF	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	0.2	0.3	0.1	0.2	0.3																							
27-Apr	0.2	0.1	0.1	0.2	Z	0.1	0.0	0.0	0.1	C	C	C	C	C	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2																							
28-Apr	0.1	0.0	0.0	0.0	0.1	Z	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2																							
29-Apr	Z	0.1	0.1	0.1	0.1	0.2	0.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.5																							
30-Apr	0.1	Z	0.2	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	0.1	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	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	Diurnal Average
																								0.6	0.5	0.5	0.4	0.4	0.4	0.7	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	Diurnal Maximum
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure UO - Unstable Operation																																																	
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb																																																	



Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	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: 681

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	11	26	29	38	49	50	46	101	103	45	55	51	35	23	13	6	681
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
Totals	11	26	29	38	49	50	46	101	103	45	55	51	35	23	13	6	681

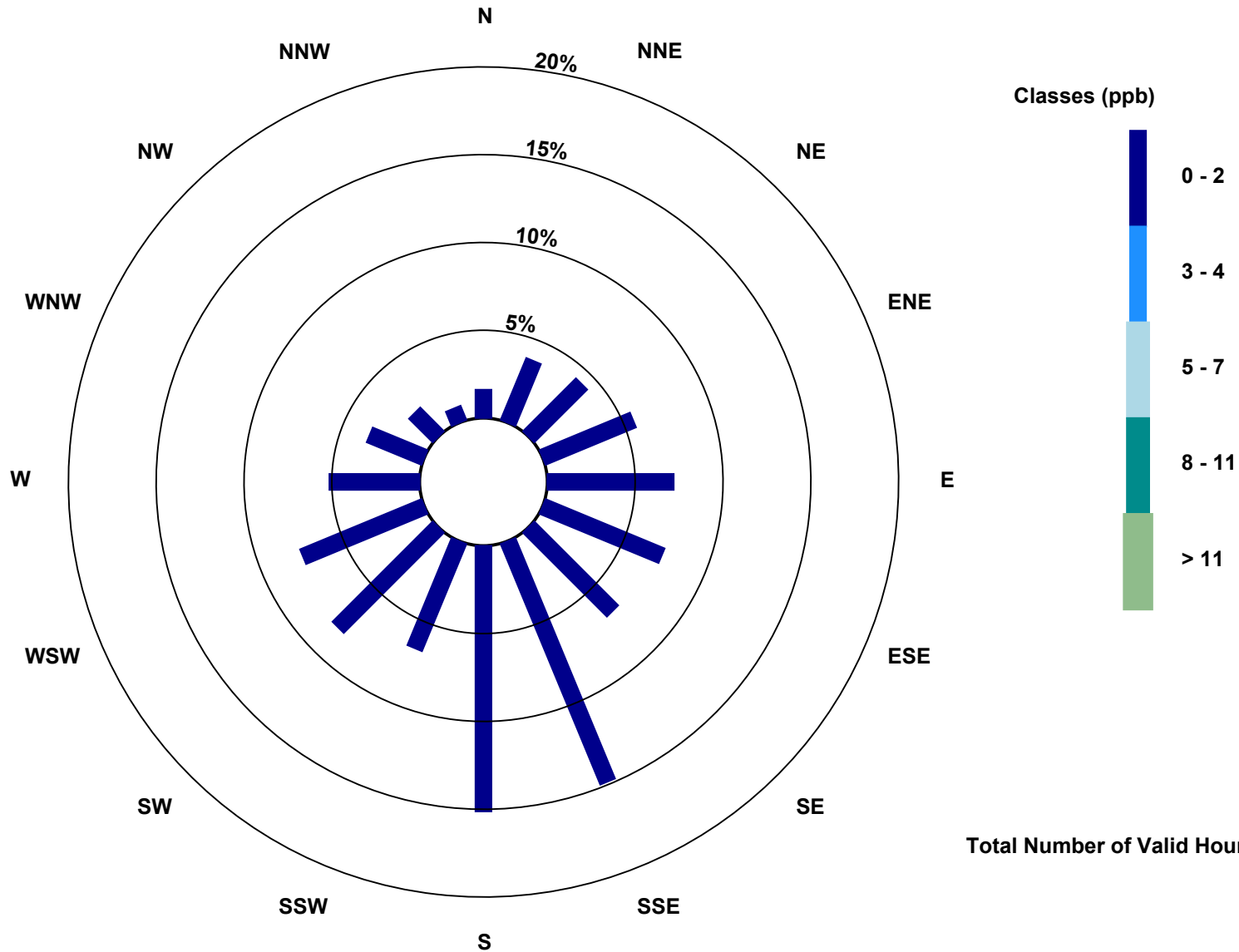
Total Number of Valid Hours: 681

Total Number of Hours: 720

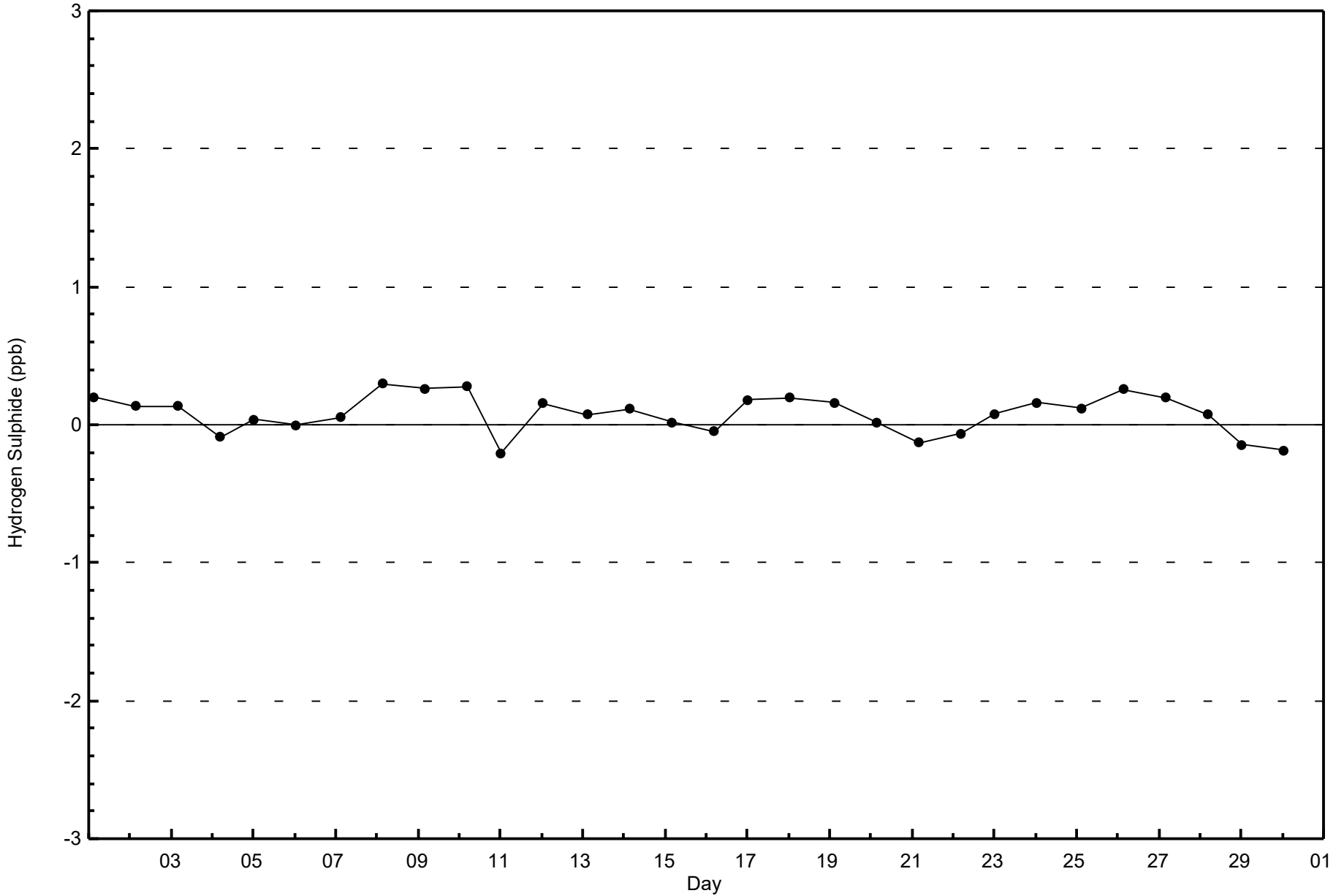


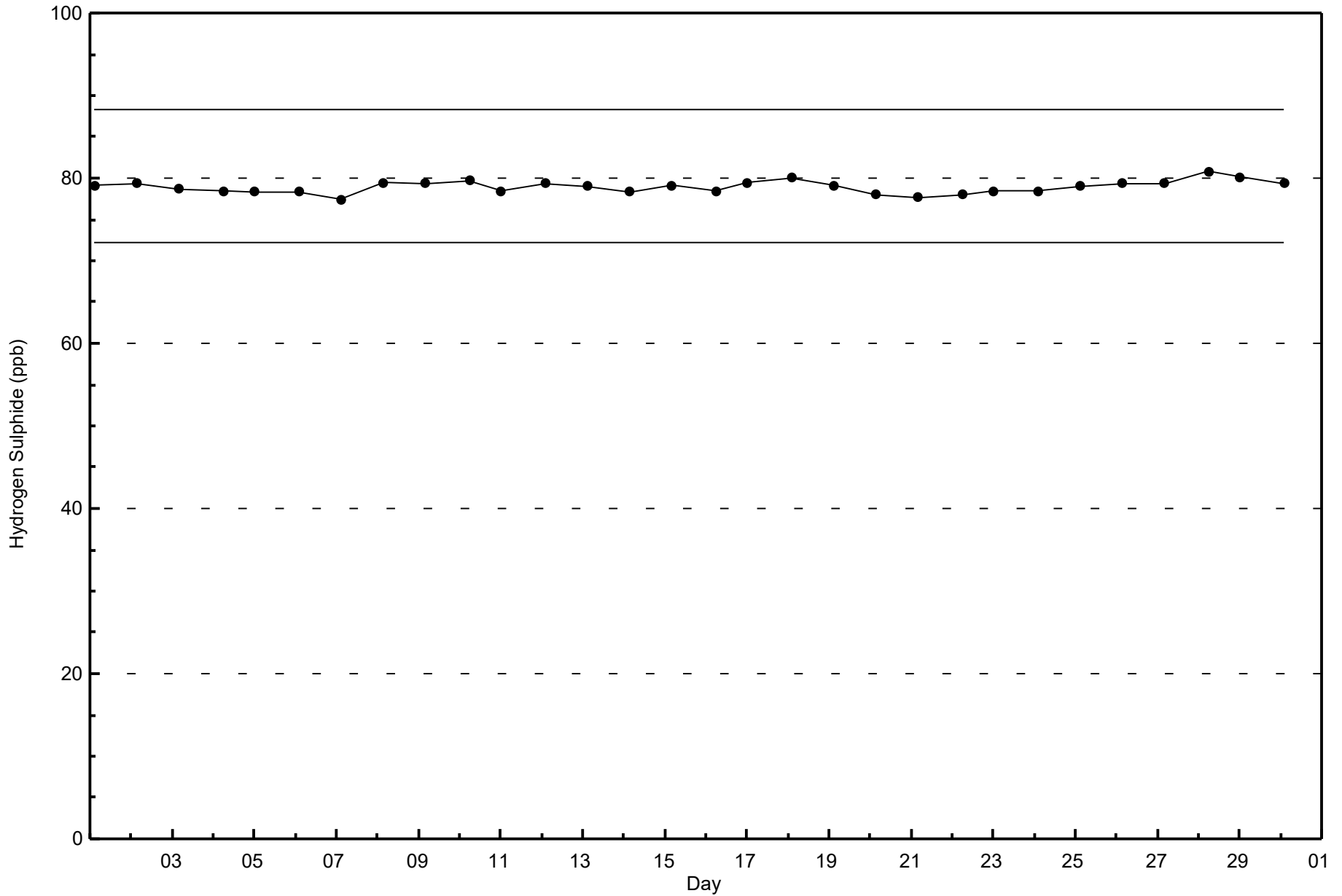
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3



Total Number of Valid Hours: 681

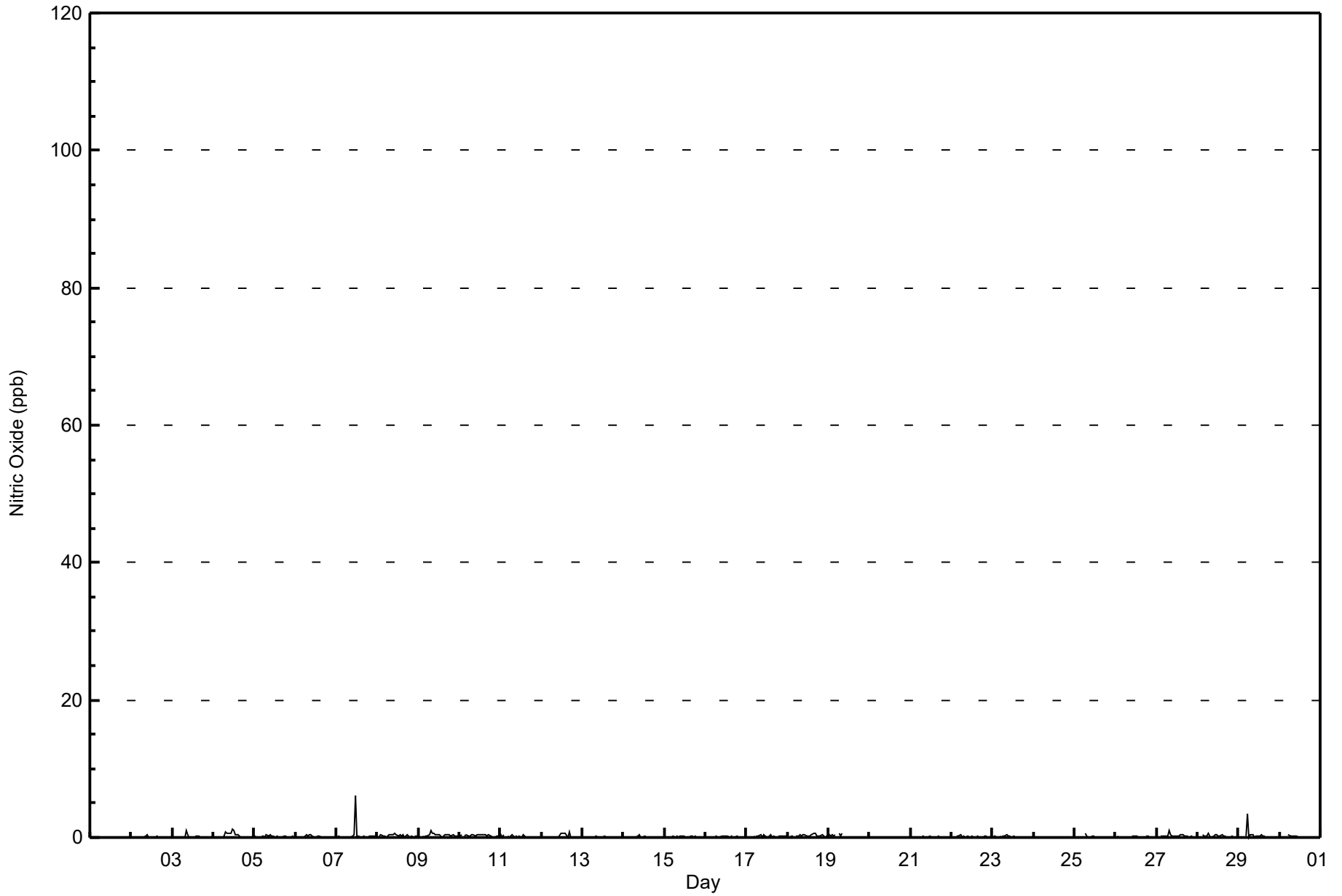






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	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: 661

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661
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
Totals	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661

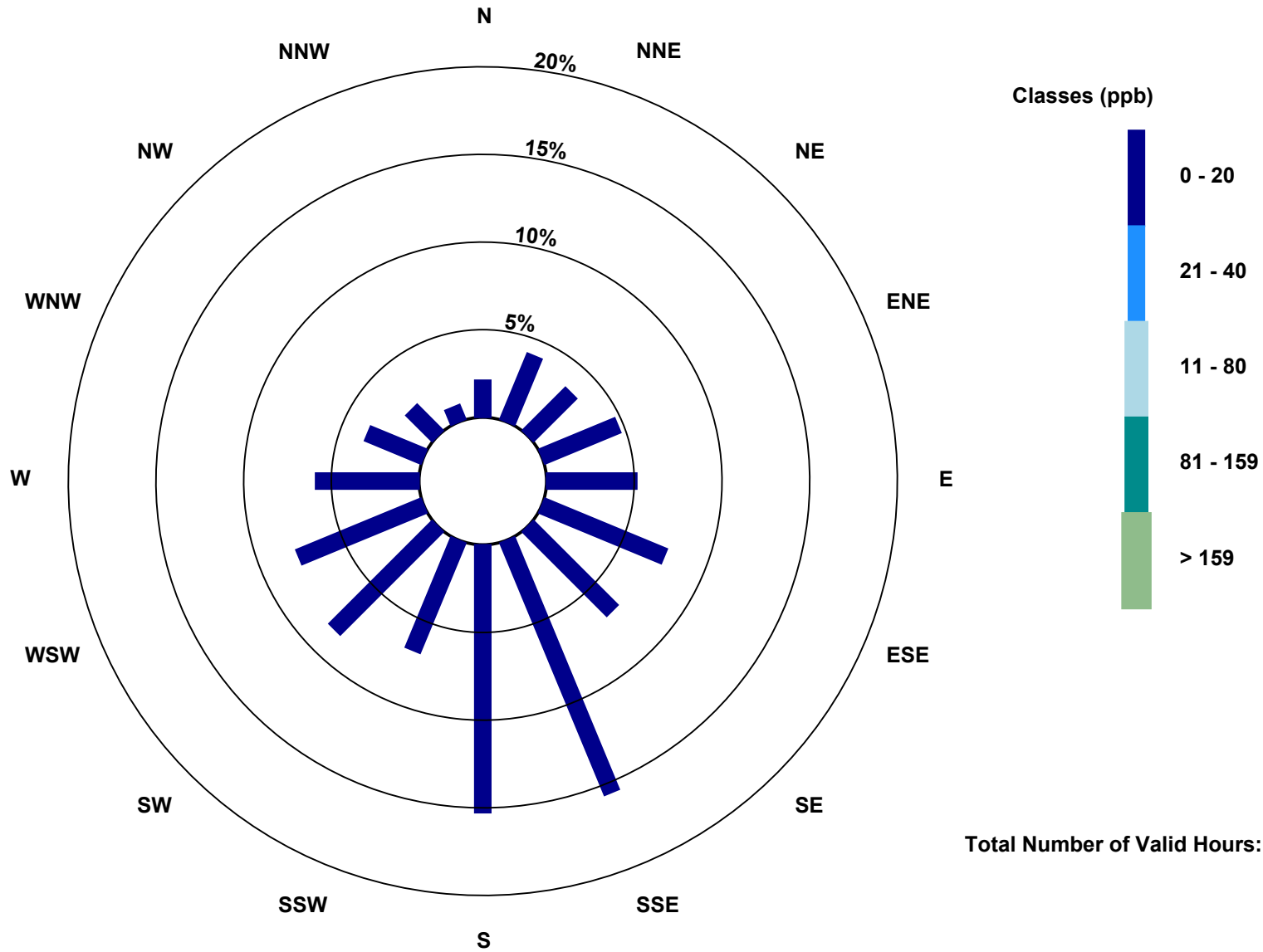
Total Number of Valid Hours: 661

Total Number of Hours: 720

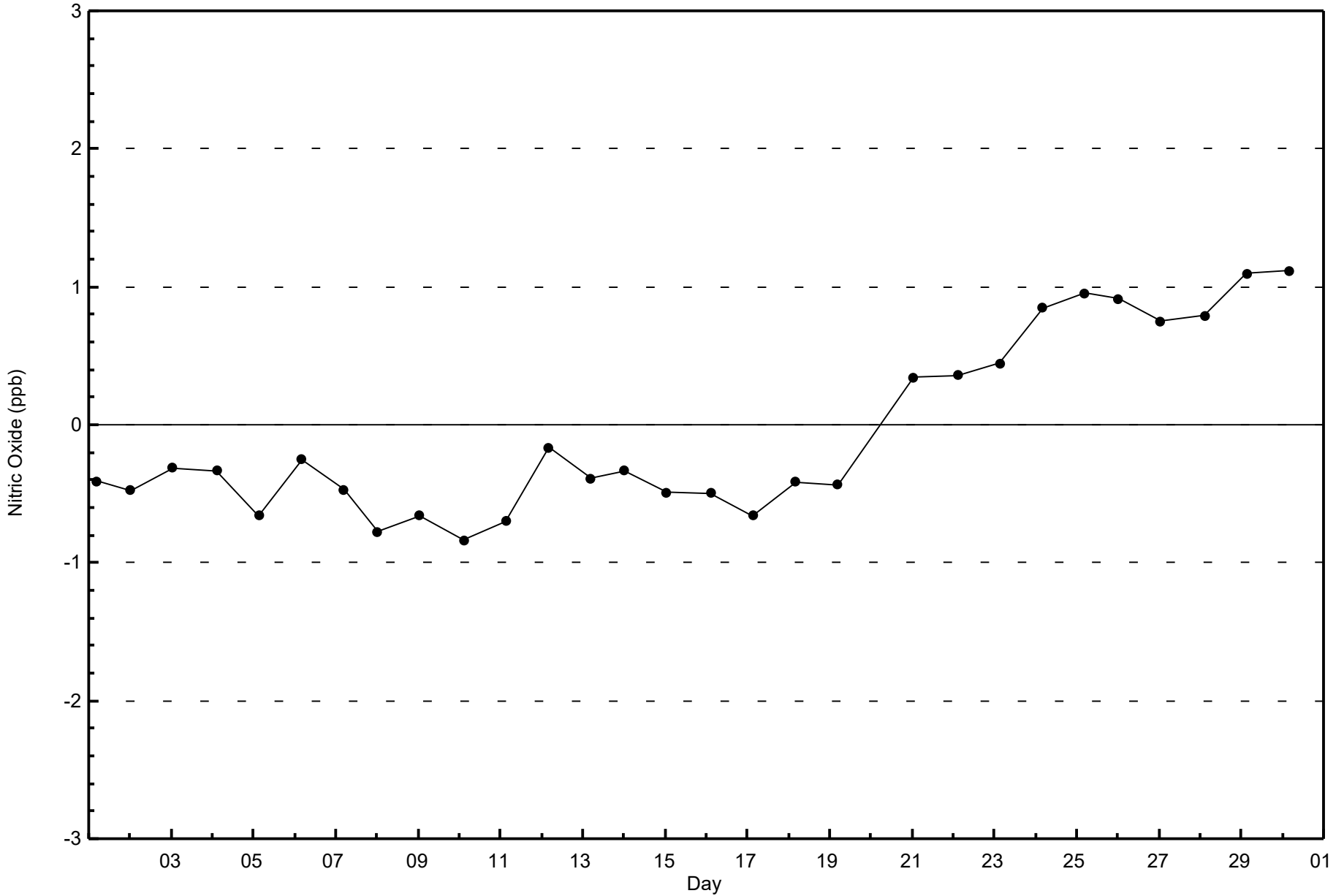


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Jackfish 2/3



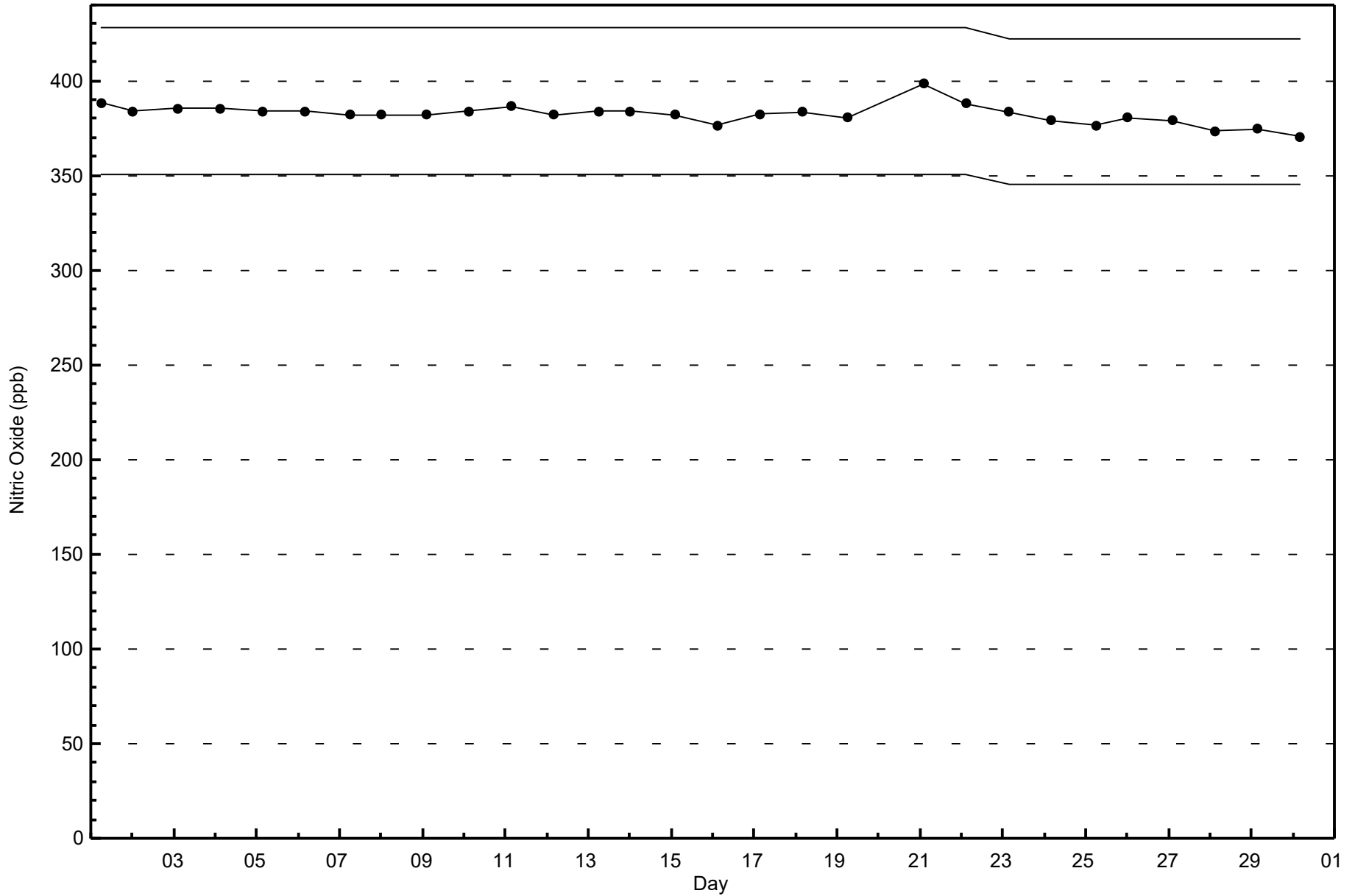
Total Number of Valid Hours: 661





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

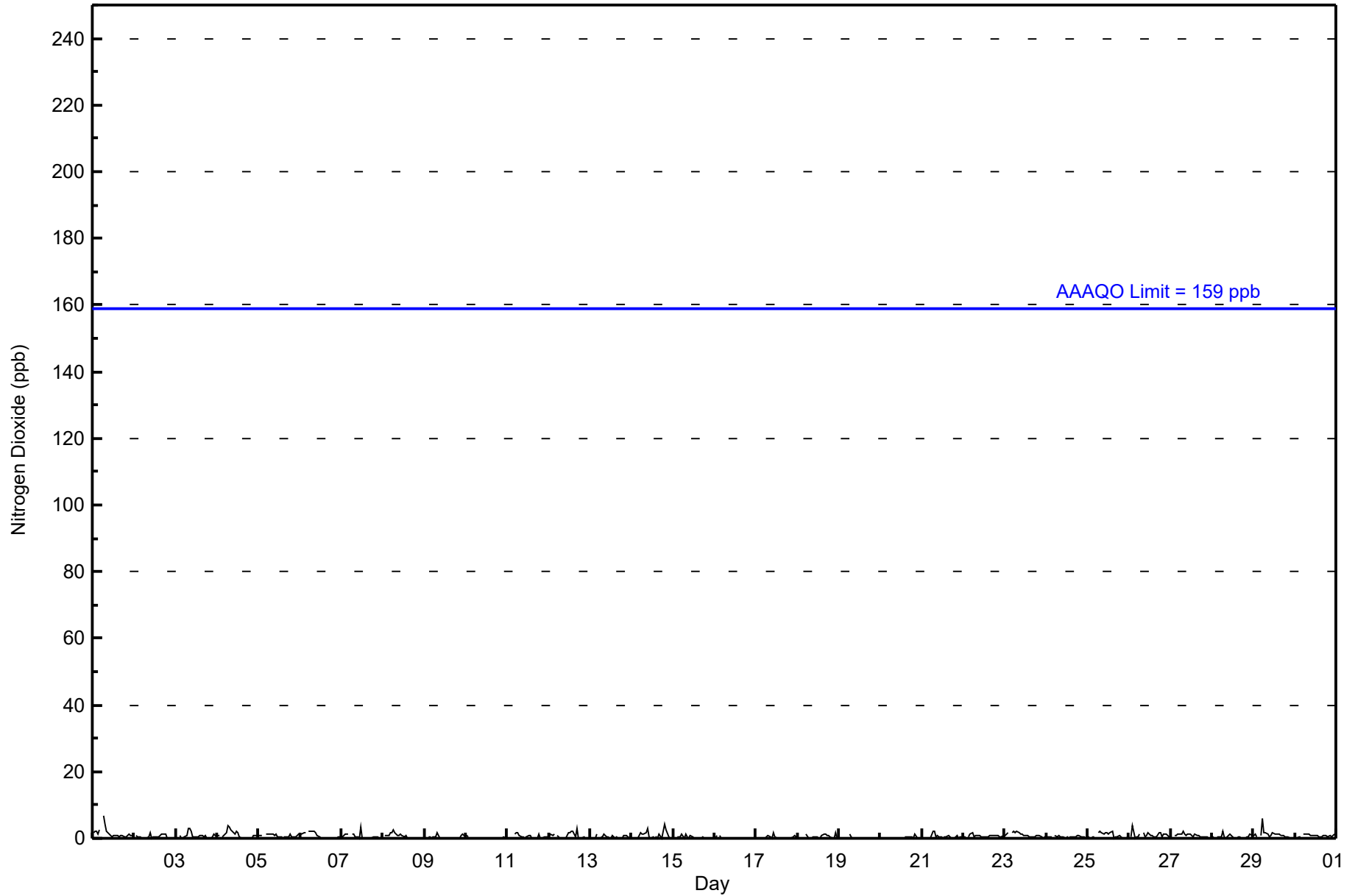
Jackfish 2/3 - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 6.8 ppb on Apr 1 07:00		Maximum Daily Average: 1.5 ppb on Apr 1		Hours of Data:														661								
Minimum Value: 0.0 ppb on Apr 2 07:00		Minimum Daily Average: 0.1 ppb on Apr 16		Hours of Missing Data:														59								
Maximum Diurnal Average: 1.4 ppb at hour 7		Minimum Diurnal Average: 0.4 ppb at hour 22		Hours of Calibration:														39								
Monthly Average: 0.65 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.5 Q ₃ = 0.9 P ₉₀ = 1.5 P ₉₉ = 3.4		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-Apr	1.9	2.1	2.2	1.3	2.4	Z	6.8	4.2	2.1	1.3	0.9	0.6	0.8	0.8	0.5	0.7	0.8	0.5	0.6	1.0	1.1	0.8	0.9	1.5	6.8	
2-Apr	Z	0.9	0.6	0.3	0.2	0.2	0.0	0.0	0.4	1.7	0.2	0.4	0.4	0.4	0.3	1.0	1.3	1.3	1.2	0.0	0.0	0.0	0.0	0.2	0.5	1.7
3-Apr	0.0	Z	0.9	0.0	0.0	0.3	0.9	2.8	2.9	2.1	0.6	0.3	0.4	0.5	0.9	0.8	0.4	0.7	0.1	0.1	0.1	0.6	1.1	0.9	0.8	2.9
4-Apr	0.8	0.7	Z	0.6	0.8	1.8	4.0	3.3	2.4	1.9	1.4	2.0	1.5	0.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	1.0	0.9	1.1	4.0
5-Apr	0.9	1.0	0.9	Z	1.3	1.3	1.3	1.3	1.2	1.0	1.2	0.6	0.4	0.5	0.2	0.3	0.3	0.6	1.2	0.6	0.6	0.9	1.1	0.8	1.3	1.3
6-Apr	1.4	1.4	1.6	1.9	Z	2.2	2.2	2.2	2.0	1.5	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.5	0.8	2.2	
7-Apr	0.6	0.7	1.3	1.2	1.4	Z	1.2	1.1	0.5	0.5	0.2	3.5	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.4	0.3	0.2	0.3	0.6	3.5
8-Apr	Z	0.8	0.9	0.9	1.5	1.6	2.4	1.6	1.0	0.9	1.1	0.9	0.4	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.4
9-Apr	0.0	Z	0.4	0.5	0.0	0.4	0.5	1.9	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.1	1.0	0.3	1.9	
10-Apr	0.9	0.5	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	0.1	0.2	0.3	0.0	0.1	0.9
11-Apr	0.0	0.0	0.0	Z	1.4	1.5	1.5	0.7	0.3	0.3	0.1	0.3	0.7	0.7	0.1	0.0	0.0	0.0	1.2	0.0	0.2	0.6	0.5	0.6	0.5	1.5
12-Apr	0.2	1.3	1.0	1.4	Z	0.7	0.1	0.0	0.0	0.0	0.0	1.7	1.9	2.0	2.0	0.6	3.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.7	3.0
13-Apr	0.0	0.0	0.1	0.2	1.1	Z	0.4	0.4	1.1	0.4	0.3	0.0	0.2	1.0	0.0	0.3	0.0	0.0	0.0	1.0	0.7	0.8	0.4	0.0	0.4	1.1
14-Apr	Z	0.2	0.0	0.0	0.9	1.5	1.4	1.4	1.9	3.0	0.5	0.0	0.6	0.0	0.3	0.2	1.3	0.2	2.2	4.4	2.5	0.3	0.0	0.1	1.0	4.4
15-Apr	0.0	Z	0.3	0.3	0.4	1.3	0.0	1.1	0.3	0.2	1.0	0.4	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.3	1.3	
16-Apr	0.2	0.8	Z	0.8	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	0.8
17-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.5	0.8	0.5	0.0	1.9	0.6	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.5	0.7	0.6	0.3	1.9
18-Apr	0.3	0.2	0.0	0.0	Z	1.3	0.2	0.2	0.1	0.4	0.5	0.6	0.0	0.1	0.7	1.2	1.3	1.0	0.9	0.6	0.0	0.2	1.6	0.0	0.5	1.6
19-Apr	0.0	0.0	0.2	0.0	0.0	Z	1.3	0.4	0.0	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	--	1.3
20-Apr	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	0.6	0.6	0.5	0.6	0.4	0.0	1.2	0.0	0.0	--	1.2
21-Apr	0.0	Z	0.1	0.0	0.0	0.1	2.3	2.0	0.5	0.8	0.3	0.6	0.1	0.5	0.4	0.7	0.5	0.2	0.2	0.1	0.7	0.1	0.3	0.5	0.5	2.3
22-Apr	0.4	0.4	Z	0.3	1.1	1.6	0.6	0.9	1.0	1.0	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.8	0.7	0.8	0.7	0.6	0.6	0.7	0.7	1.6
23-Apr	1.0	1.3	1.7	Z	1.7	2.1	1.9	2.0	1.6	1.2	1.1	0.7	0.8	0.7	0.6	0.6	0.6	0.6	0.8	0.7	0.7	0.3	0.2	0.4	1.0	2.1
24-Apr	0.6	0.4	0.4	0.3	Z	0.8	0.5	0.7	0.3	0.5	0.3	0.1	0.3	0.2	0.3	0.4	0.4	0.4	0.7	0.7	0.4	0.3	0.3	0.2	0.4	0.8
25-Apr	0.3	0.1	0.2	0.3	0.6	Z	1.8	2.0	1.6	1.1	1.9	1.5	1.1	1.6	2.1	0.2	0.5	0.6	0.9	0.6	0.1	0.2	0.1	0.3	0.9	2.1
26-Apr	Z	0.5	3.7	0.2	0.3	0.6	1.1	DF	1.5	0.5	1.0	1.7	0.7	0.7	0.6	0.5	0.6	1.8	1.5	0.4	1.4	1.1	0.7	0.5	1.0	3.7
27-Apr	0.5	Z	0.7	0.8	1.2	1.4	1.3	2.3	1.1	1.0	1.2	1.2	0.8	0.6	1.3	1.0	0.8	0.6	0.3	0.4	0.4	0.3	0.2	0.2	0.9	2.3
28-Apr	0.3	0.2	Z	0.4	0.5	0.5	2.2	0.3	0.2	1.0	1.4	0.8	0.3	0.2	0.2	0.6	0.3	0.1	0.1	0.2	0.3	0.5	1.1	0.9	0.5	2.2
29-Apr	0.8	1.1	0.6	Z	1.0	6.1	1.6	1.8	1.4	0.4	0.9	1.5	1.1	1.2	1.3	1.2	0.8	0.8	0.4	0.3	0.6	0.0	0.1	0.1	1.1	6.1
30-Apr	0.1	0.2	0.3	0.5	Z	1.1	1.3	1.3	1.2	0.9	0.7	0.8	0.7	0.8	0.6	0.5	0.7	0.7	0.7	0.5	0.7	0.6	1.0	1.1	0.7	1.3
																								Diurnal Average		
																								Diurnal Maximum		
0.4 0.6 0.8 0.5 0.7 1.2 1.4 1.3 1.0 0.8 0.7 0.8 0.5 0.5 0.5 0.4 0.5 0.4 0.5 0.4 0.5 0.4 0.5 0.4 0.5 0.4																										
1.9 2.1 3.7 1.9 2.4 6.1 6.8 4.2 2.9 3.0 1.9 3.5 1.9 2.0 2.1 1.2 3.0 1.8 2.2 4.4 2.5 1.1 1.6 1.1																										
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 (NO₂) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	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: 661

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661
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
Totals	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661

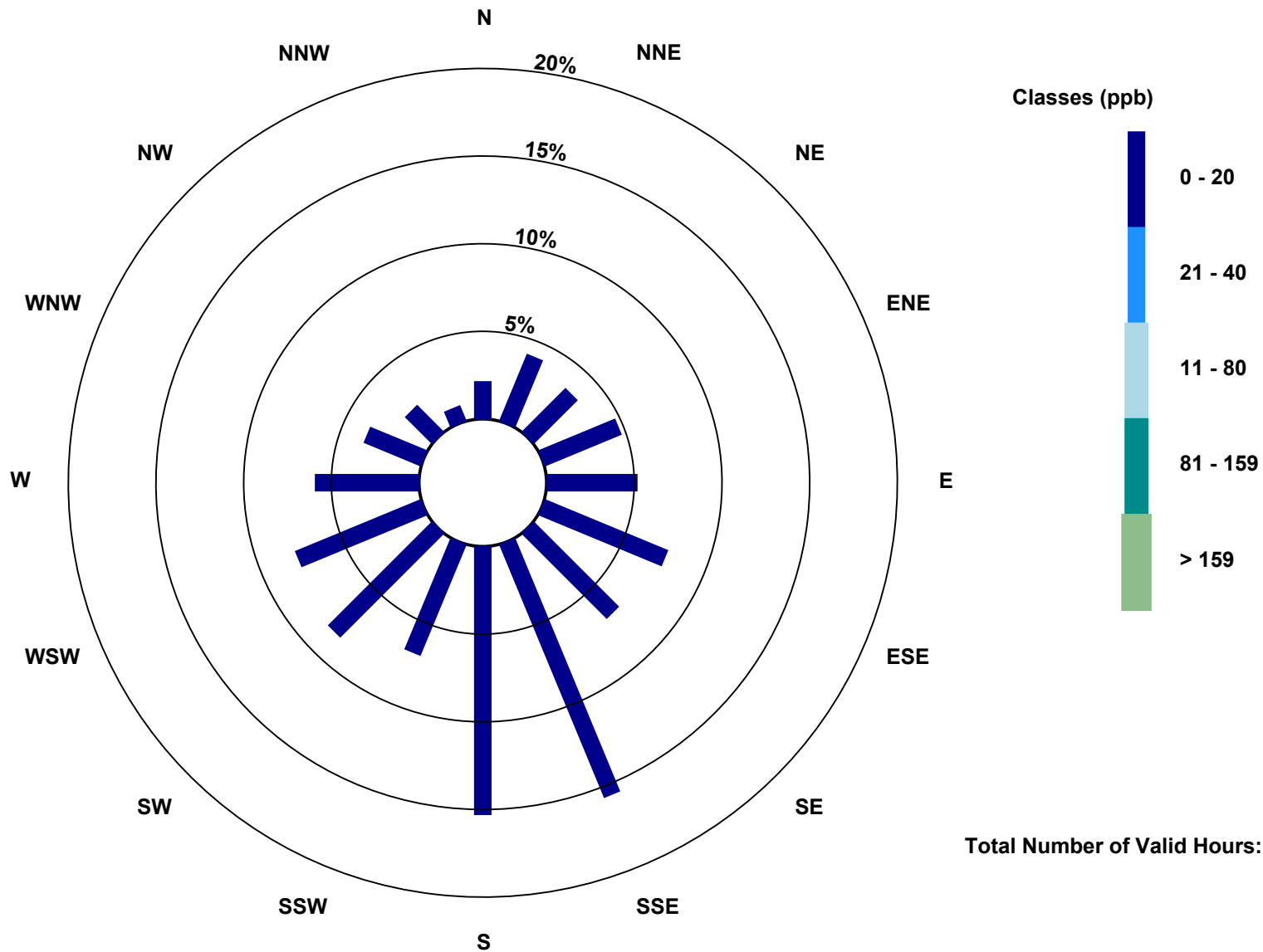
Total Number of Valid Hours: 661

Total Number of Hours: 720

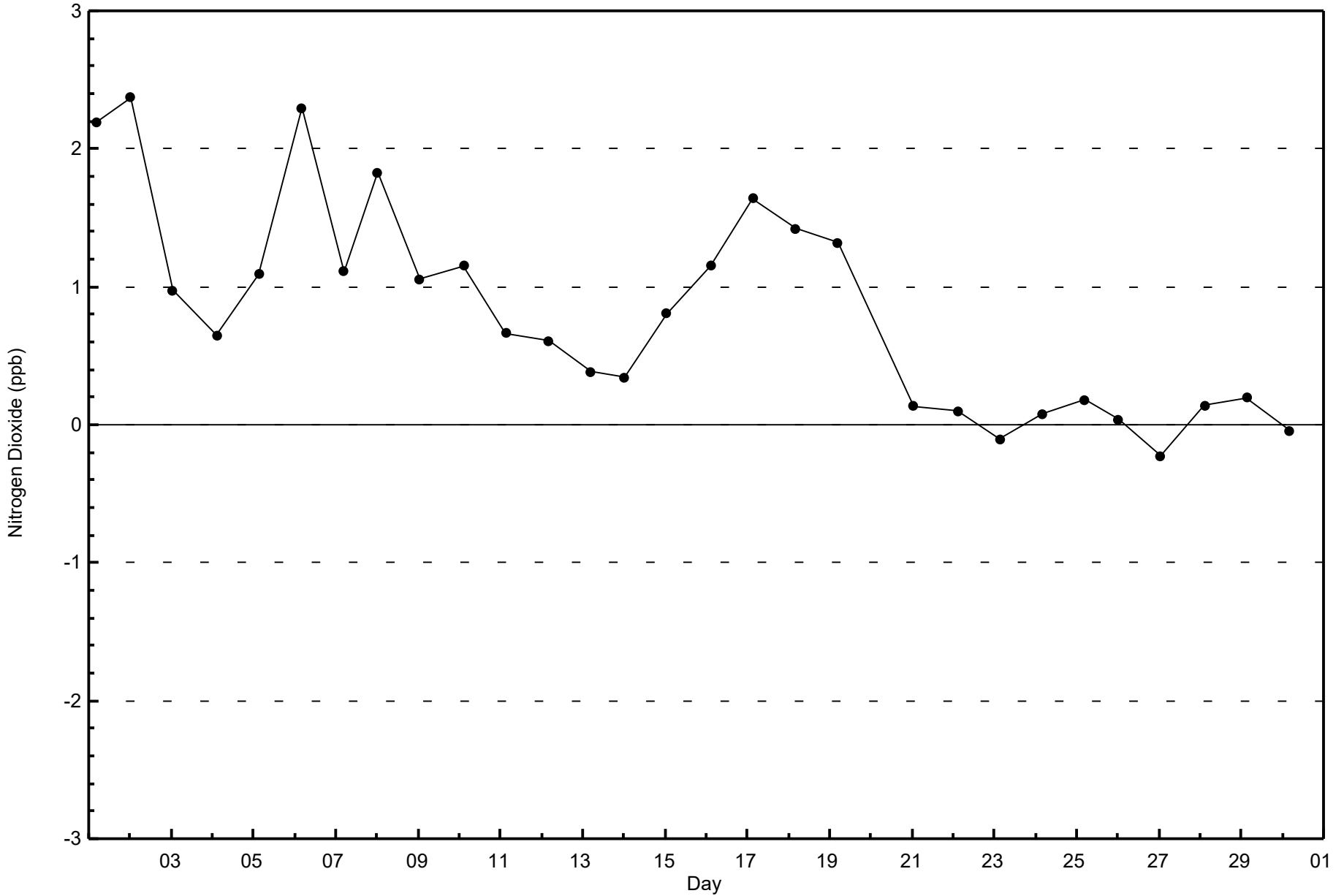


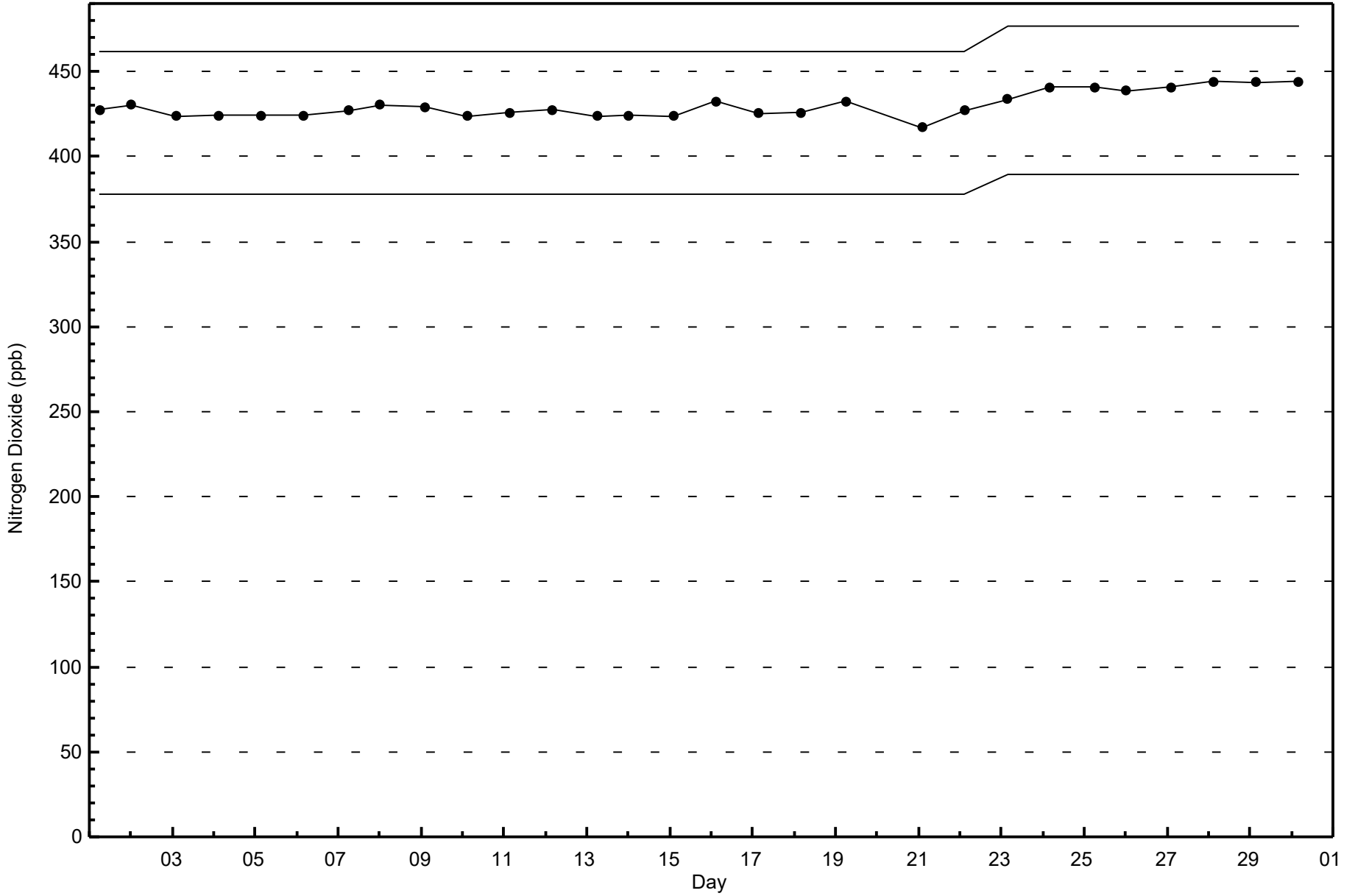
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3



Total Number of Valid Hours: 661







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

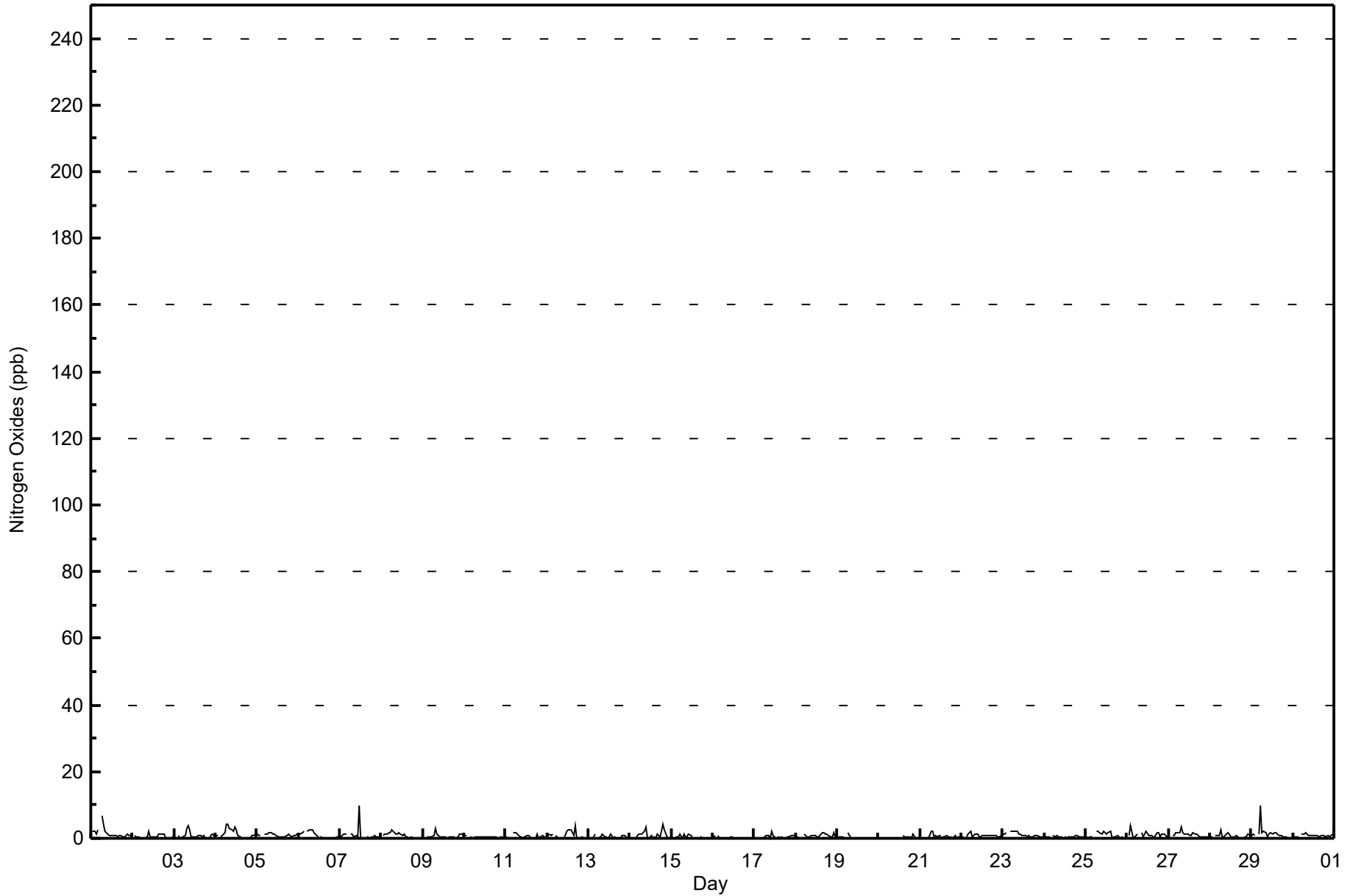
Jackfish 2/3 - April 2023

Maximum Value: 9.6 ppb on Apr 7 12:00																				Maximum Daily Average: 1.5 ppb on Apr 1					Hours in Service: 720				
Minimum Value: 0.0 ppb on Apr 2 07:00																				Minimum Daily Average: 0.2 ppb on Apr 16					Hours of Data: 661				
Maximum Diurnal Average: 1.6 ppb at hour 8																				Minimum Diurnal Average: 0.4 ppb at hour 22					Hours of Missing Data: 59				
Monthly Average: 0.79 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.2 Median = 0.6 Q ₃ = 1.1 P ₉₀ = 1.7 P ₉₉ = 4.0					Hours of Calibration: 39				
																									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-Apr	2.0	2.1	2.2	1.3	2.4	Z	6.8	4.2	2.1	1.3	0.9	0.6	0.8	0.8	0.5	0.7	0.8	0.5	0.6	1.0	1.1	0.8	0.9	1.5	6.8				
2-Apr	Z	0.9	0.6	0.3	0.2	0.2	0.0	0.0	0.6	2.1	0.3	0.4	0.4	0.4	0.3	1.1	1.3	1.3	1.2	0.0	0.0	0.0	0.0	0.2	0.5	2.1			
3-Apr	0.0	Z	0.9	0.0	0.0	0.3	0.9	2.9	3.9	2.6	0.6	0.3	0.4	0.6	1.0	0.9	0.4	0.7	0.1	0.1	0.1	0.6	1.1	0.9	0.8	3.9			
4-Apr	0.8	0.7	Z	0.6	0.8	1.8	4.2	4.1	2.9	2.4	2.1	3.3	2.5	1.0	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.9	1.0	1.2	1.3	4.2			
5-Apr	1.1	1.0	0.9	Z	1.5	1.5	1.3	1.7	1.5	1.4	1.5	0.7	0.5	0.6	0.2	0.3	0.3	0.8	1.4	0.7	0.6	0.7	1.0	1.1	1.0	1.7			
6-Apr	1.4	1.4	1.6	2.0	Z	2.2	2.5	2.5	2.4	1.8	1.2	0.4	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.5	0.9	2.5			
7-Apr	0.6	0.8	1.3	1.2	1.4	Z	1.2	1.1	0.5	0.7	0.6	9.6	0.4	0.1	0.0	0.1	0.2	0.0	0.5	0.4	0.7	0.5	0.4	0.6	1.0	9.6			
8-Apr	Z	1.0	1.2	1.2	1.6	1.6	2.6	2.0	1.4	1.3	1.6	1.3	0.7	1.2	0.4	0.4	0.1	0.3	0.1	0.0	0.2	0.1	0.1	0.1	0.9	2.6			
9-Apr	0.1	Z	0.6	0.5	0.3	0.6	0.9	3.0	1.4	0.7	0.4	0.3	0.3	0.3	0.1	0.3	0.3	0.3	0.3	0.1	0.4	1.1	1.4	1.2	0.7	3.0			
10-Apr	1.0	0.9	Z	0.1	0.3	0.2	0.2	0.4	0.4	0.2	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.1	0.2	0.2	0.5	0.1	0.4	1.0			
11-Apr	0.3	0.0	0.4	Z	1.6	1.6	1.7	1.1	0.3	0.5	0.1	0.4	0.8	1.0	0.3	0.0	0.0	0.0	1.2	0.0	0.2	0.6	0.5	0.6	0.6	1.7			
12-Apr	0.2	1.3	1.0	1.4	Z	0.7	0.1	0.0	0.0	0.0	0.0	2.3	2.5	2.6	2.6	0.7	3.7	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.9	3.7			
13-Apr	0.0	0.0	0.1	0.2	1.1	Z	0.4	0.4	1.3	0.4	0.3	0.0	0.2	1.1	0.0	0.3	0.0	0.0	0.0	1.0	0.7	0.8	0.4	0.0	0.4	1.3			
14-Apr	Z	0.2	0.0	0.0	0.9	1.5	1.4	1.4	2.1	3.4	0.5	0.0	0.9	0.0	0.3	0.2	1.3	0.3	2.2	4.4	2.6	0.3	0.0	0.1	1.0	4.4			
15-Apr	0.0	Z	0.3	0.3	0.4	1.4	0.0	1.3	0.4	0.4	1.2	0.6	0.0	0.1	0.0	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.3	1.4			
16-Apr	0.2	0.8	Z	0.8	0.1	0.0	0.2	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.8			
17-Apr	0.0	0.0	0.0	Z	0.2	0.0	0.6	1.0	0.9	0.1	2.3	0.9	0.0	0.2	0.3	0.0	0.4	0.1	0.0	0.3	0.3	0.7	0.9	0.8	0.4	2.3			
18-Apr	0.4	0.2	0.2	0.1	Z	1.5	0.4	0.5	0.3	0.8	0.8	0.8	0.3	0.4	1.0	1.8	1.9	1.3	1.2	0.8	0.3	0.4	1.6	0.2	0.8	1.9			
19-Apr	0.4	0.2	0.5	0.3	0.3	Z	1.9	0.7	0.6	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	--	1.9			
20-Apr	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	0.7	0.6	0.5	0.6	0.4	0.0	1.2	0.0	0.0	--	1.2			
21-Apr	0.0	Z	0.1	0.0	0.0	0.1	2.3	2.2	0.5	0.8	0.3	0.8	0.1	0.5	0.4	0.8	0.6	0.2	0.2	0.1	0.7	0.1	0.3	0.5	0.5	2.3			
22-Apr	0.4	0.4	Z	0.5	1.4	1.9	0.6	1.0	1.1	1.2	0.5	0.5	0.8	0.6	0.7	0.9	0.9	0.9	0.8	0.9	0.9	0.6	0.6	0.7	0.8	1.9			
23-Apr	1.1	1.4	1.9	Z	2.0	2.2	2.1	2.2	1.9	1.3	1.3	0.8	0.9	0.8	0.6	0.7	0.6	0.6	0.8	0.7	0.7	0.3	0.2	0.4	1.1	2.2			
24-Apr	0.6	0.4	0.4	0.3	Z	0.9	0.5	0.7	0.3	0.5	0.3	0.1	0.3	0.2	0.3	0.4	0.4	0.4	0.7	0.7	0.4	0.3	0.3	0.2	0.4	0.9			
25-Apr	0.3	0.1	0.2	0.3	0.6	Z	2.3	2.2	1.7	1.1	2.1	1.6	1.1	1.6	2.1	0.2	0.5	0.6	0.9	0.6	0.1	0.2	0.1	0.3	0.9	2.3			
26-Apr	Z	0.7	3.7	0.2	0.3	0.6	1.1	DF	1.5	0.6	1.2	1.9	0.9	0.7	0.7	0.5	0.6	1.8	1.6	0.5	1.5	1.2	0.7	0.6	1.0	3.7			
27-Apr	0.5	Z	1.0	1.0	1.5	1.6	1.5	3.2	1.5	1.3	1.4	1.3	1.0	0.7	1.7	1.5	1.1	0.8	0.5	0.5	0.5	0.3	0.3	0.2	1.1	3.2			
28-Apr	0.3	0.2	Z	0.8	0.7	0.8	2.7	0.5	0.3	1.2	1.9	1.2	0.4	0.4	0.6	0.9	0.4	0.2	0.1	0.2	0.5	0.5	1.1	0.9	0.7	2.7			
29-Apr	0.8	1.2	0.6	Z	1.1	9.6	1.6	2.2	1.7	0.5	1.1	1.8	1.3	1.6	1.6	1.3	0.9	0.8	0.4	0.3	0.6	0.0	0.1	0.1	1.4	9.6			
30-Apr	0.1	0.3	0.3	0.5	Z	1.4	1.5	1.5	1.4	1.0	0.8	0.8	0.7	0.8	0.6	0.5	0.7	0.7	0.7	0.5	0.7	0.6	1.0	1.1	0.8	1.5			
																								Diurnal Average					
																								Diurnal Maximum					
Z - zerspan																								C - Calibration		M - Maintenance		DF - DAS Failure	



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	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: 661

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661
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
Totals	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661

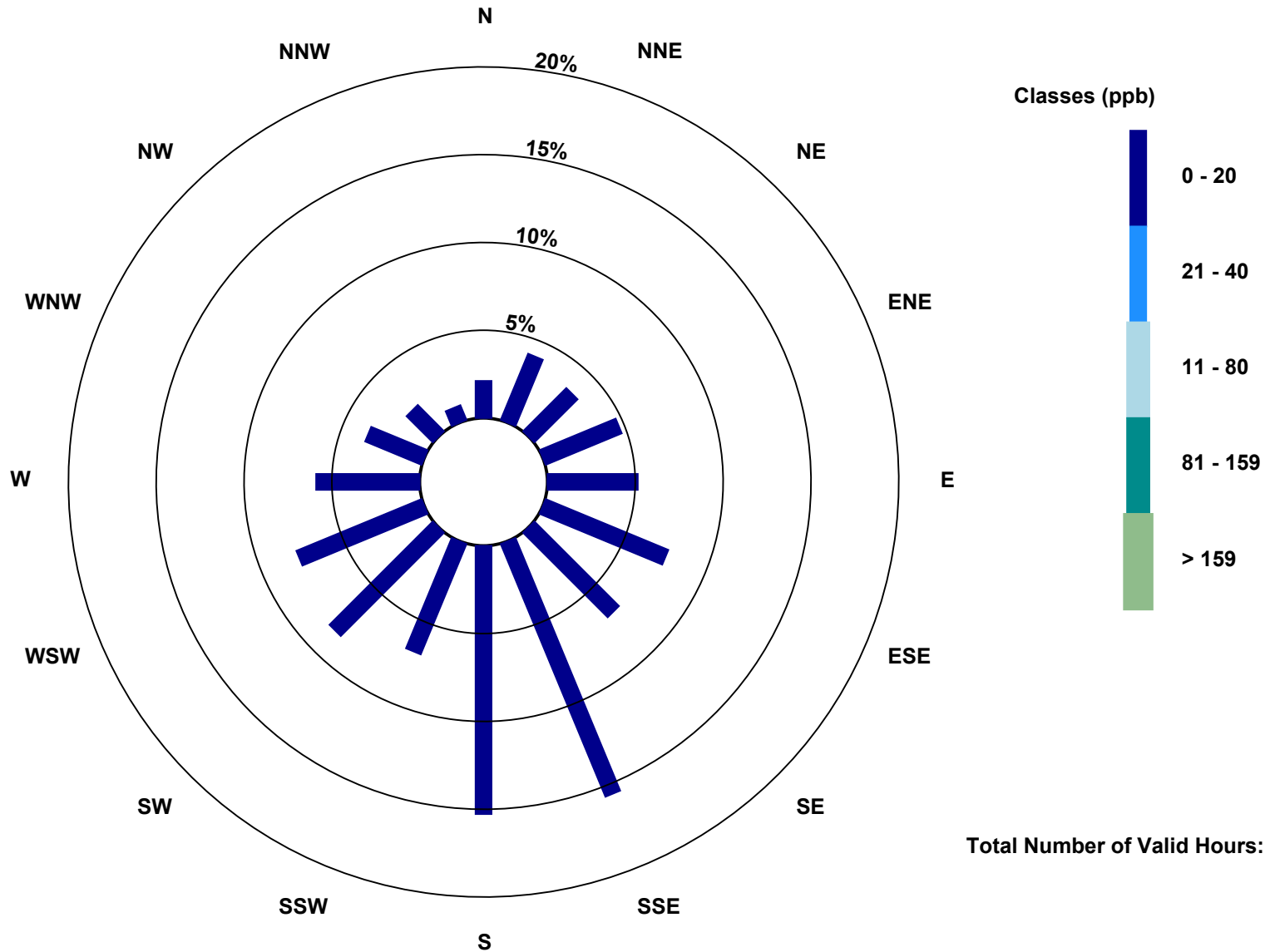
Total Number of Valid Hours: 661

Total Number of Hours: 720

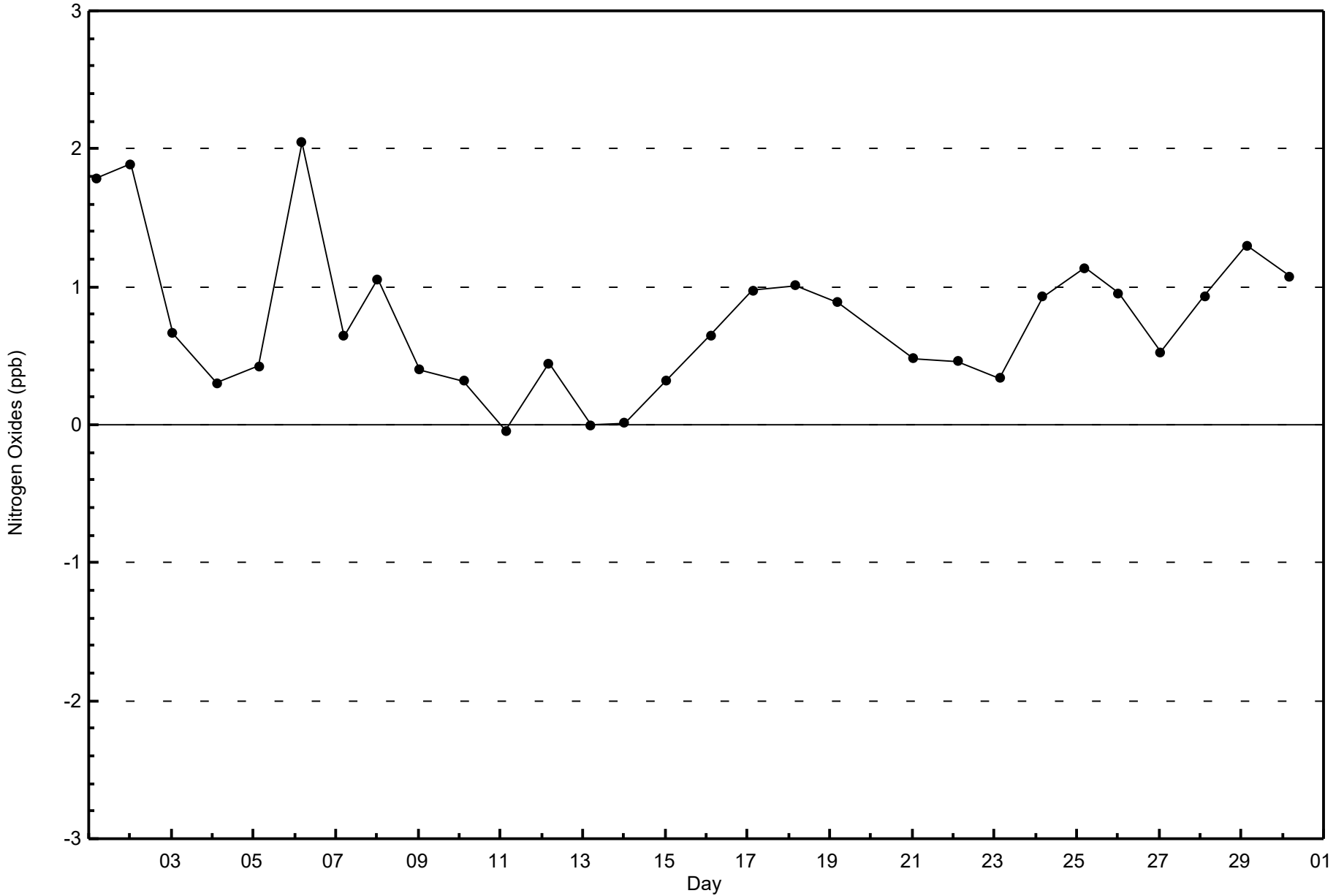


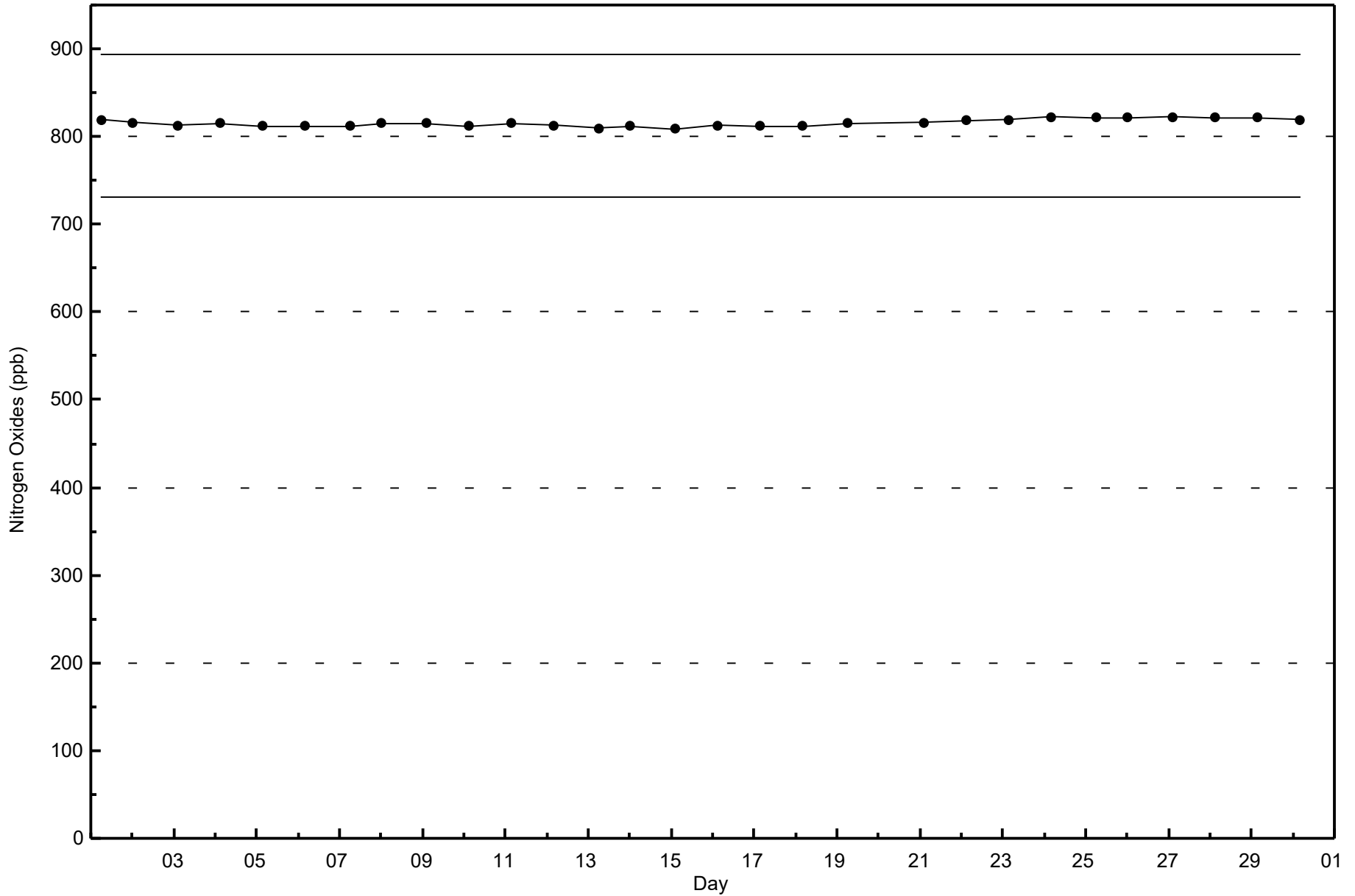
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3



Total Number of Valid Hours: 661







Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature (AT) - C

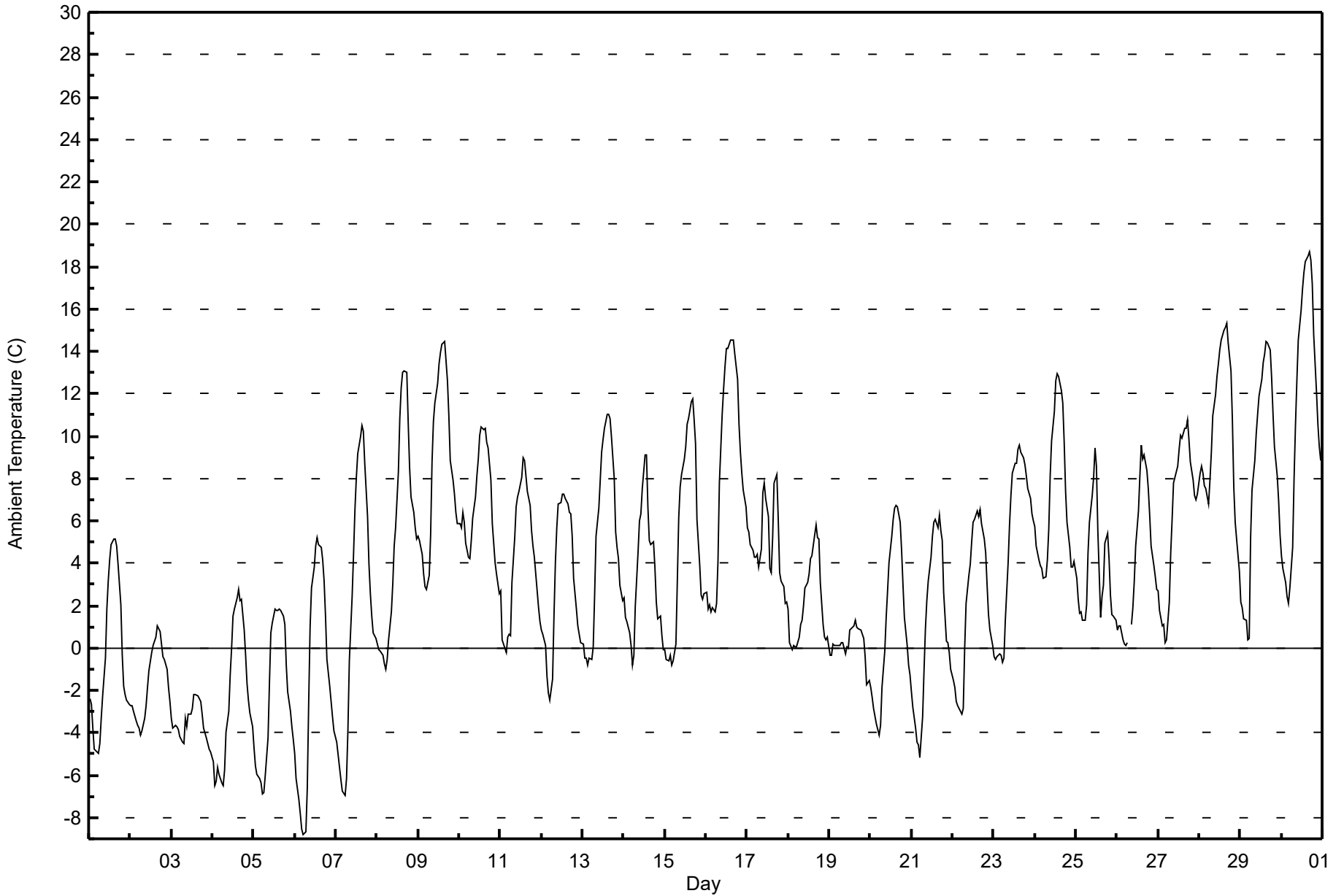
Jackfish 2/3 - April 2023

Maximum Value: 18.7 C on Apr 30 17:00		Maximum Daily Average: 11.1 C on Apr 30		Hours in Service: 720																							
Minimum Value: -8.8 C on Apr 6 06:00		Minimum Daily Average: -3.5 C on Apr 3		Hours of Data: 719																							
Maximum Diurnal Average: 8.0 C at hour 16		Minimum Diurnal Average: -1.0 C at hour 6		Hours of Missing Data: 1																							
Monthly Average: 3.59 C		Percentiles: P ₁ = -6.8 P ₁₀ = -3.3 Q ₁ = 0.0 Median = 3.2 Q ₃ = 7.2 P ₉₀ = 10.7 P ₉₉ = 15.8		Hours of Calibration: 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-Apr	-2.4	-2.7	-3.8	-4.8	-4.8	-5.0	-4.5	-3.3	-2.2	-0.5	1.8	3.1	4.2	4.9	5.1	5.2	4.8	3.9	2.0	-0.4	-1.8	-2.2	-2.5	-2.7	-0.3	5.2	
2-Apr	-2.7	-2.8	-3.0	-3.4	-3.6	-3.8	-4.1	-3.9	-3.3	-2.7	-1.9	-1.1	-0.2	0.1	0.3	0.5	1.1	0.8	0.2	-0.4	-0.5	-1.0	-1.8	-2.5	-1.7	1.1	
3-Apr	-3.3	-3.8	-3.6	-3.7	-3.9	-4.2	-4.4	-4.5	-3.3	-3.7	-3.1	-3.1	-2.9	-2.2	-2.2	-2.3	-2.4	-2.5	-3.1	-3.8	-4.3	-4.5	-4.8	-4.9	-3.5	-2.2	
4-Apr	-5.3	-6.5	-6.3	-5.7	-6.0	-6.4	-6.5	-5.8	-4.0	-3.0	-1.3	0.0	1.5	1.9	2.4	2.8	2.2	2.3	0.9	-0.3	-1.6	-2.4	-3.0	-3.7	-2.2	2.8	
5-Apr	-4.7	-5.5	-5.9	-6.1	-6.4	-6.9	-6.8	-6.1	-4.2	-1.7	0.7	1.2	1.8	1.8	1.8	1.8	1.8	1.5	1.1	-0.8	-2.0	-3.0	-3.7	-4.3	-2.3	1.8	
6-Apr	-5.0	-6.1	-7.1	-7.8	-8.5	-8.8	-8.7	-6.6	-2.6	1.0	2.8	3.8	4.8	5.2	4.9	4.8	4.2	3.2	1.5	-0.6	-1.8	-2.5	-3.2	-3.9	-1.5	5.2	
7-Apr	-4.5	-5.0	-5.6	-6.2	-6.8	-7.0	-6.1	-3.8	-0.6	2.5	4.4	6.5	8.1	9.2	10.0	10.5	10.2	8.7	6.2	4.0	2.6	1.5	0.7	0.5	1.7	10.5	
8-Apr	0.2	-0.1	-0.2	-0.3	-0.7	-1.0	-0.5	0.4	1.7	3.0	4.8	5.7	8.4	10.8	12.3	13.0	13.1	13.0	10.6	8.5	7.1	6.4	5.7	5.2	5.3	13.1	
9-Apr	5.3	5.1	4.4	3.5	2.9	2.8	3.4	5.4	8.8	10.7	11.6	12.5	13.4	13.9	14.3	14.5	13.5	12.6	11.0	8.8	7.9	7.3	6.4	5.9	8.6	14.5	
10-Apr	5.8	5.7	6.4	5.9	5.0	4.3	4.2	5.1	6.1	7.1	8.1	8.9	10.1	10.5	10.3	10.3	9.7	9.5	7.9	5.8	4.9	4.0	3.5	2.6	6.7	10.5	
11-Apr	2.7	0.4	0.2	-0.2	0.5	0.7	0.6	3.1	5.2	6.7	7.1	7.4	8.0	9.0	8.8	8.1	7.4	6.7	5.6	4.8	4.3	2.7	1.9	1.2	4.3	9.0	
12-Apr	0.9	0.7	0.1	-1.3	-2.1	-2.4	-1.4	1.5	4.0	5.7	6.8	6.9	7.3	7.3	7.0	6.8	6.4	6.3	5.3	3.3	1.9	1.0	0.6	0.3	3.0	7.3	
13-Apr	0.2	-0.5	-0.5	-0.8	-0.5	-0.6	0.0	2.5	5.3	6.6	7.9	9.3	9.8	10.4	11.0	11.0	10.8	9.9	8.0	5.5	4.8	4.2	2.9	2.3	5.0	11.0	
14-Apr	2.3	1.4	1.2	0.7	0.1	-0.8	-0.4	1.9	4.5	6.0	6.3	7.5	9.1	9.1	6.7	5.1	4.9	5.0	3.8	2.2	1.4	1.5	0.6	-0.1	3.3	9.1	
15-Apr	0.0	-0.6	-0.6	-0.3	-0.8	-0.6	0.2	3.1	6.2	7.6	8.2	8.9	9.5	10.6	10.9	11.6	11.8	10.8	9.6	6.1	3.9	2.5	2.3	2.6	5.1	11.8	
16-Apr	2.6	1.9	2.0	1.7	1.9	1.7	2.1	4.1	7.8	11.0	12.2	13.3	14.1	14.1	14.5	14.5	14.6	13.9	12.6	10.5	9.2	8.2	7.5	6.7	8.4	14.6	
17-Apr	5.7	5.5	4.9	4.6	4.3	4.3	4.4	3.8	4.7	7.3	7.8	7.1	6.2	3.8	3.5	5.2	7.8	8.2	6.1	3.5	3.2	2.9	2.1	2.2	5.0	8.2	
18-Apr	1.9	0.2	-0.1	0.1	0.0	0.0	0.5	1.1	1.3	2.0	2.8	3.1	3.5	4.2	4.4	5.4	5.8	5.2	5.2	3.1	1.1	0.5	0.4	0.5	2.2	5.8	
19-Apr	-0.4	-0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	-0.3	0.1	0.0	0.9	0.9	1.0	1.3	1.0	0.9	0.9	0.6	0.5	-0.4	-1.7	-1.5	0.2	1.3	
20-Apr	-1.9	-2.3	-2.9	-3.6	-3.9	-4.1	-3.6	-1.8	-0.1	1.5	2.7	4.0	5.3	6.1	6.6	6.7	6.7	5.9	4.6	3.0	1.5	0.1	-0.8	-1.3	1.2	6.7	
21-Apr	-2.0	-2.8	-3.7	-4.4	-4.6	-5.2	-3.2	-1.1	0.9	2.2	3.1	4.3	5.3	5.9	6.1	5.7	6.3	5.6	5.1	2.6	0.3	0.3	-0.2	-1.0	1.1	6.3	
22-Apr	-1.5	-1.9	-2.5	-2.7	-2.8	-3.1	-2.8	0.0	2.1	3.5	4.0	5.0	5.9	6.1	6.5	6.2	6.6	5.9	5.1	4.5	3.0	1.6	0.8	0.1	2.1	6.6	
23-Apr	-0.4	-0.6	-0.4	-0.3	-0.3	-0.7	-0.4	1.3	4.0	5.8	7.2	8.2	8.7	8.7	9.4	9.5	9.2	9.0	8.7	8.1	7.6	7.1	6.4	6.0	5.1	9.5	
24-Apr	5.7	4.8	4.1	3.9	3.7	3.3	3.4	4.1	5.6	8.1	9.7	11.2	12.6	12.9	12.8	12.2	11.6	9.7	7.4	5.9	4.7	3.8	3.8	4.1	7.1	12.9	
25-Apr	3.3	2.3	1.7	1.7	1.3	1.3	2.0	4.5	5.9	7.2	8.0	9.5	8.6	5.5	1.4	2.4	3.0	4.9	5.4	4.2	2.5	1.6	1.5	1.3	3.8	9.5	
26-Apr	0.8	1.1	1.1	0.4	0.2	0.1	0.3	DF	1.1	1.9	3.2	4.8	6.5	8.1	9.5	8.9	9.1	8.4	7.5	6.2	4.8	3.9	3.3	2.7	4.1	9.5	
27-Apr	2.7	1.8	1.1	1.1	0.3	0.4	2.2	4.5	6.1	7.8	8.1	8.6	9.4	10.0	9.9	10.4	10.4	10.8	9.8	8.8	7.9	7.2	7.0	7.3	6.4	10.8	
28-Apr	8.3	8.6	8.2	7.7	7.5	6.8	7.9	9.2	11.0	11.9	12.8	13.4	14.1	14.5	15.0	15.2	15.3	14.4	13.1	10.8	7.6	5.9	5.2	3.6	10.3	15.3	
29-Apr	2.2	1.9	1.4	1.3	0.4	0.5	5.2	7.5	8.8	10.1	11.0	11.9	12.7	13.5	13.9	14.5	14.4	14.1	12.7	11.0	9.5	8.1	6.9	5.3	8.3	14.5	
30-Apr	4.3	3.7	3.1	2.4	2.1	2.8	4.8	8.0	10.5	12.6	14.5	15.9	16.9	17.7	18.2	18.5	18.7	18.3	17.2	14.8	12.1	10.6	9.5	8.9	11.1	18.7	
		0.7	0.1	-0.2	-0.6	-0.8	-1.0	-0.4	1.2	3.1	4.6	5.7	6.6	7.4	7.8	7.9	8.0	8.0	7.6	6.4	4.7	3.4	2.6	1.9	1.4	Diurnal Average	
		8.3	8.6	8.2	7.7	7.5	6.8	7.9	9.2	11.0	12.6	14.5	15.9	16.9	17.7	18.2	18.5	18.7	18.3	17.2	14.8	12.1	10.6	9.5	8.9	Diurnal Maximum	
DF - DAS Failure																											



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Jackfish 2/3 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Jackfish 2/3 - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	180	25.03	25.03
0 - 10	450	62.59	87.62
10 - 20	89	12.38	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

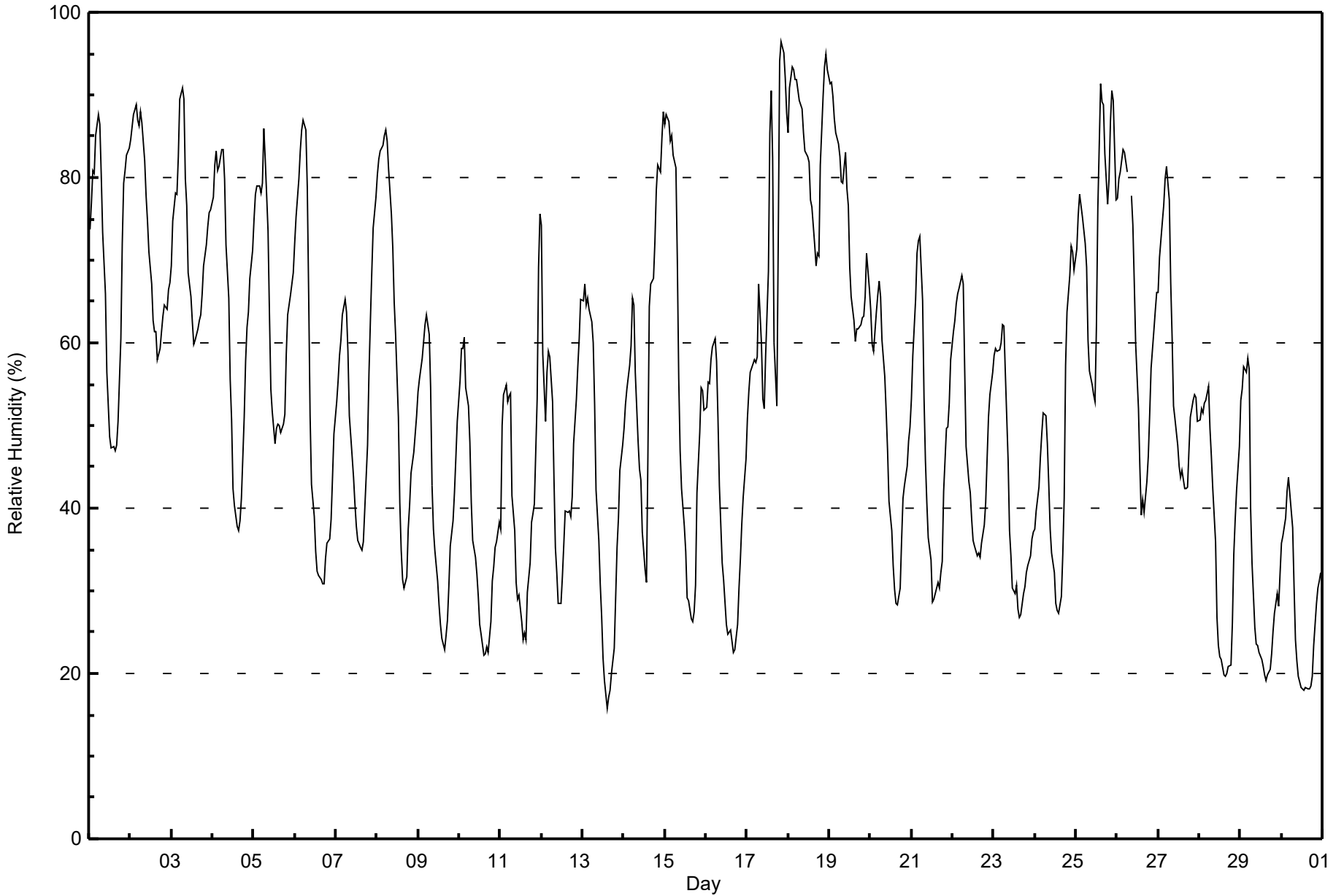
Relative Humidity (RH) - %
Jackfish 2/3 - April 2023

Maximum Value: 96.4 % on Apr 17 21:00 Minimum Value: 15.7 % on Apr 13 15:00 Maximum Diurnal Average: 70.2 % at hour 6 Monthly Average: 54.04 %		Maximum Daily Average: 84.8 % on Apr 18 Minimum Daily Average: 27.7 % on Apr 30 Minimum Diurnal Average: 39.3 % at hour 17 Percentiles: P ₁ = 18.3 P ₁₀ = 27.6 Q ₁ = 37.1 Median = 53.4 Q ₃ = 69.2 P ₉₀ = 82.9 P ₉₉ = 92.8		Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 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-Apr	73.8	76.9	80.9	80.6	85.1	87.6	86.4	80.3	73.3	66.0	56.4	52.5	48.7	47.4	47.4	46.9	47.6	50.5	60.5	72.0	79.4	80.8	82.7	83.5	68.6	87.6																						
2-Apr	84.5	86.2	87.7	88.8	86.9	86.3	88.0	86.6	82.0	77.8	74.7	70.9	67.0	62.7	61.3	61.3	57.9	59.3	61.3	63.3	64.5	64.1	66.5	67.3	73.2	88.8																						
3-Apr	69.3	74.7	78.2	77.9	82.6	89.4	90.9	89.6	79.8	76.6	68.4	65.7	62.5	59.9	60.3	61.7	62.8	63.3	66.0	69.3	71.8	74.1	75.8	76.2	72.8	90.9																						
4-Apr	77.7	81.6	83.2	80.9	81.3	83.3	83.5	79.8	71.9	65.5	55.7	50.6	42.4	40.3	37.8	37.3	38.5	41.2	51.0	57.8	61.8	63.8	67.9	71.1	62.7	83.5																						
5-Apr	75.0	78.0	79.0	79.0	78.1	79.4	86.0	82.2	73.6	63.5	54.4	47.7	49.7	49.7	50.1	50.0	49.2	50.2	51.3	58.7	63.4	65.8	67.2	68.5	64.7	86.0																						
6-Apr	72.1	75.2	79.8	83.2	85.7	87.0	85.8	78.7	65.7	51.1	42.8	39.0	34.8	32.3	31.9	31.4	30.8	34.0	35.7	36.3	38.7	43.7	49.0	53.2	87.0																							
7-Apr	52.8	55.4	58.4	60.3	63.4	65.3	63.8	59.0	51.2	46.3	43.7	40.5	37.8	36.0	35.2	34.9	35.9	39.9	47.7	56.2	62.6	68.4	74.0	77.6	52.8	77.6																						
8-Apr	80.4	82.2	83.2	83.9	85.0	85.8	84.4	81.1	75.7	71.5	64.9	61.0	51.0	40.6	34.9	31.4	30.3	31.7	37.5	40.3	44.2	46.8	49.0	51.3	59.5	85.8																						
9-Apr	54.1	55.6	58.1	60.2	62.2	63.4	61.1	54.6	42.8	37.4	35.0	31.3	28.3	25.9	24.2	22.8	24.6	26.4	30.5	35.4	38.5	41.9	46.1	50.5	42.1	63.4																						
10-Apr	55.4	59.3	59.4	60.6	54.6	52.3	47.9	40.6	36.0	34.0	32.1	29.4	25.9	24.8	22.3	22.4	23.1	22.6	26.3	31.2	32.9	35.2	35.9	38.2	37.6	60.6																						
11-Apr	37.5	50.1	53.7	54.9	52.9	53.5	53.9	41.5	37.4	31.1	29.0	29.5	26.3	24.1	24.9	24.0	29.8	33.4	38.2	39.4	40.5	53.2	69.2	75.7	41.8	75.7																						
12-Apr	74.2	58.7	50.6	56.4	58.9	58.3	52.8	43.6	35.2	32.1	28.6	28.5	31.6	35.6	39.6	39.6	39.7	38.9	41.3	47.8	53.2	57.2	60.6	65.2	47.0	74.2																						
13-Apr	65.0	67.1	64.6	65.4	64.0	62.6	60.0	52.5	42.2	36.0	30.8	27.0	21.8	19.1	15.7	17.2	18.0	20.0	23.0	29.1	35.2	38.8	44.5	47.6	40.3	67.1																						
14-Apr	49.6	52.6	54.4	57.2	59.7	65.4	64.6	56.5	48.1	44.8	43.4	37.2	32.5	31.1	46.0	64.3	67.1	67.8	72.2	78.4	81.5	80.7	84.8	87.9	59.5	87.9																						
15-Apr	86.5	87.7	86.7	84.3	85.2	82.8	81.1	70.1	55.8	47.0	42.4	37.7	34.7	29.2	28.8	26.6	26.2	27.5	30.8	41.8	49.1	54.5	54.3	51.8	54.3	87.7																						
16-Apr	52.1	55.3	55.1	58.0	59.5	60.6	57.9	50.8	42.7	33.5	31.3	28.6	25.9	24.7	25.2	24.0	22.5	22.9	25.9	30.3	33.9	38.1	41.3	45.9	39.4	60.6																						
17-Apr	50.9	54.0	56.5	57.4	58.0	57.7	58.4	67.1	60.1	53.3	52.0	58.4	68.6	85.5	90.5	82.3	60.0	52.3	72.3	94.1	96.4	95.1	92.0	87.8	69.2	96.4																						
18-Apr	85.4	90.9	93.4	93.0	91.8	91.9	89.3	88.9	88.3	85.4	83.2	82.6	81.9	77.2	76.4	71.9	69.3	70.9	70.5	81.6	89.9	93.3	95.0	93.0	84.8	95.0																						
19-Apr	91.3	91.6	89.8	87.2	85.4	84.0	82.5	79.5	79.4	83.0	78.6	76.6	69.2	65.6	62.8	60.2	61.8	61.7	62.2	63.0	63.3	65.6	70.8	66.6	74.2	91.6																						
20-Apr	63.8	59.9	59.0	63.8	65.7	67.5	65.5	60.4	56.0	51.7	47.0	40.8	37.4	33.1	30.1	28.5	28.3	30.3	36.0	41.2	42.8	45.1	48.1	49.9	48.0	67.5																						
21-Apr	53.2	58.6	65.2	70.8	72.4	72.8	65.1	53.4	45.7	40.7	36.5	33.6	28.6	29.0	29.7	31.0	30.4	32.2	33.5	42.0	49.7	49.8	52.6	57.9	47.3	72.8																						
22-Apr	61.3	62.7	64.8	65.9	66.7	68.1	67.1	56.9	47.5	43.3	41.8	38.7	36.1	35.4	34.3	34.6	34.2	35.8	37.9	40.6	45.9	51.1	53.7	56.4	49.2	68.1																						
23-Apr	58.4	59.4	59.0	59.1	60.0	62.2	62.0	56.5	45.8	37.3	34.2	30.3	29.7	30.7	27.8	26.8	27.1	29.6	30.5	32.2	33.0	34.3	36.2	37.0	41.6	62.2																						
24-Apr	37.5	39.6	42.6	46.1	48.9	51.5	51.2	47.8	42.9	37.5	34.6	32.2	28.5	27.7	27.4	29.3	34.3	41.2	57.3	63.7	68.1	71.7	71.1	68.8	45.9	71.7																						
25-Apr	71.4	75.5	77.9	76.6	75.2	72.1	69.2	60.3	56.7	55.0	53.7	52.9	62.0	76.3	91.4	89.1	88.8	82.9	76.7	79.9	86.7	90.6	89.4	77.3	74.5	91.4																						
26-Apr	77.4	79.8	80.6	83.4	83.0	81.9	80.7	DF	77.8	74.2	67.2	59.9	52.1	44.8	39.2	41.0	39.5	43.1	46.2	51.3	56.9	61.5	63.8	66.2	63.1	83.4																						
27-Apr	66.0	70.4	74.5	76.5	79.8	81.4	77.3	67.4	60.7	52.4	50.9	47.7	45.1	43.8	44.5	42.4	42.4	42.5	46.9	51.0	53.0	53.8	53.5	50.5	57.3	81.4																						
28-Apr	50.8	52.0	51.5	52.8	53.1	54.7	49.6	46.2	42.3	35.9	26.8	23.4	22.1	21.7	19.8	19.7	20.0	20.9	20.9	26.1	34.4	38.7	42.2	47.5	36.4	54.7																						
29-Apr	53.1	54.4	57.2	56.5	58.1	56.7	39.9	33.5	25.6	23.5	23.3	22.6	21.7	20.8	19.8	19.2	19.8	20.6	22.4	25.1	27.3	29.6	28.1	32.1	32.9	58.1																						
30-Apr	35.7	36.6	38.8	42.0	43.8	41.7	37.7	30.5	24.1	21.5	19.7	18.3	18.1	18.0	18.3	18.1	18.2	18.5	19.6	23.5	28.4	30.3	31.3	32.3	27.7	43.8																						
																								63.9	66.1	67.5	68.8	69.6	70.2	68.1	61.9	55.5	50.3	46.1	43.3	40.7	39.8	39.9	39.7	39.3	40.3	44.4	50.1	54.1	57.1	59.7	61.0	Diurnal Average
																								91.3	91.6	93.4	93.0	91.8	91.9	90.9	89.6	88.3	85.4	83.2	82.6	81.9	85.5	91.4	89.1	88.8	82.9	76.7	94.1	96.4	95.1	95.0	93.0	Diurnal Maximum
DF - DAS Failure																																																



Wood Buffalo Environmental Association
Hourly Averages

Relative Humidity (RH) - %
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Jackfish 2/3 - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	19	2.64	2.64
20 - 40	197	27.40	30.04
40 - 60	221	30.74	60.78
60 - 80	182	25.31	86.09
80 - 100	100	13.91	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Jackfish 2/3 - April 2023

Maximum Speed: 23 km/h on Apr 10 15:00	Maximum Daily Speed Average: 14.5 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 28 21:00	Minimum Daily Speed Average: 1.3 km/h on Apr 4	Hours of Data: 719
Maximum Diurnal Speed Average: 4.8 km/h at hour 1	Minimum Diurnal Speed Average: 2.4 km/h at hour 20	Hours of Missing Data: 1
Monthly Average Velocity: 3.3 km/h 176.6 deg	Percentiles: P ₁ = 1 P ₁₀ = 4 Q ₁ = 5 Median = 7 Q ₃ = 9 P ₉₀ = 12 P ₉₉ = 19	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-Apr	S4	S5	SE1	ENE2	SE3	SE5	ESE7	ESE6	SSE6	SE8	SE9	SE6	ESE6	E8	ENE8	ESE8	E8	E8	ESE9	SE8	ESE7	E8	ESE7	E7	ESE5.7	ESE9
2-Apr	E6	E6	E6	E7	E5	ENE5	E5	ENE5	ENE5	ENE5	ENE6	ENE7	ENE7	E5	NE3	NNE4	NNE3	NNE4	NE3	E3	ESE5	ESE5	S7	S8	E4.1	S8
3-Apr	S7	S7	SSW8	SSW9	SW9	SW7	WSW6	W5	WNW5	W6	W8	W8	W7	W8	W7	W7	W6	NW5	NNW5	N5	NNE5	NE5	ENE4	ENE3	WSW3.5	SSW9
4-Apr	ENE3	ENE3	ENE3	SE4	NNE2	NNE3	NNE3	ENE3	E5	E5	ENE2	WNW5	WSW4	SW7	SSW6	WSW6	WSW5	SW3	SSE2	S4	S4	S5	SSW6	SSW6	S1.3	SW7
5-Apr	S6	S7	SSE7	SSE8	S7	S7	S8	SSE7	SSE8	SSE6	S8	S9	SSE9	SSW10	S9	S8	S7	S6	S5	SSE4	S5	S6	S6	S7	S7.0	SSW10
6-Apr	S7	SSE8	S8	SSE8	S7	S9	SSE9	S9	S9	S10	S12	S12	S12	S13	S13	S13	S13	S13	S11	S10	S12	S11	S11	S11	S10.5	S13
7-Apr	SSE11	SSE12	S12	SSE11	SSE11	SSE10	SSE12	SSE12	S14	S13	S13	SSE13	SSE14	SSE12	SSE12	SSE12	S11	SSE10	SSE8	SSE6	S10	S10	S9	S9	SSE11.0	S14
8-Apr	S9	S9	S10	S9	SSW6	SSW6	S8	SSW9	SSW9	SW8	SW6	SW7	SW5	W5	WSW6	SW7	WSW7	WSW9	WSW9	SW7	SW6	SSW7	SSW7	SSW8	SW6.9	S10
9-Apr	SW7	SW8	SW9	WSW9	WSW9	SW9	SW9	SW9	WSW11	WSW11	WSW13	WSW12	SW13	SW15	SW13	SW15	SSW11	S8	SSE7	SSE6	SSE7	SSE8	SSE9	SSE10	SW8.7	SW15
10-Apr	S10	SSW12	WSW19	W17	W15	W14	WSW16	WSW17	WSW20	W19	WSW19	WSW22	WSW21	WSW20	WSW23	WSW23	WSW19	WSW14	SW9	SW7	SW8	SSW8	SW7	WSW7	WSW14.5	WSW23
11-Apr	SW7	S6	S5	S5	SSW6	SSW5	S5	S5	SW4	SW2	SW4	WSW4	WSW5	WNW4	NW5	NE3	NW4	WNW1	SSW3	SW6	SW7	SW11	SW10	SW10	SW4.1	SW11
12-Apr	W7	WNW4	W2	WSW4	WSW5	WSW8	WSW8	WSW9	WSW11	W11	W13	WNW14	WNW13	WNW12	WNW13	WNW10	WNW10	WNW7	WNW5	W4	W3	WSW3	WSW4	SW4	W7.3	WNW14
13-Apr	SW6	SW6	SW7	SW8	SW8	SW7	SW8	SW8	WSW10	WSW9	WSW10	WSW11	W10	W10	W11	NW7	N7	N6	NNE4	NE4	ENE5	E5	ESE5	ESE5	WSW4.1	WSW11
14-Apr	SE6	S7	S8	SSE6	S6	ENE1	ESE3	E1	N2	WNW1	SSE5	SE5	SE3	S6	WSW10	NE6	SW3	W5	NNE1	SSE1	SSE4	SSE5	S5	S5	SSE2.8	WSW10
15-Apr	S5	S5	S6	S6	SSW7	SW7	SSW5	SSW5	S4	SSW5	SW6	SW5	SW5	SW9	SSW6	S6	SSW9	SSW8	SSW4	S3	S3	S3	SSE5	SSE6	SSW5.1	SW9
16-Apr	SSE6	SSE6	SSE6	SSE6	SSE7	SSE7	SSE8	SSE8	SE8	ESE12	ESE12	SE12	SE12	SE13	SE12	SE12	SE11	SE11	SE9	ESE7	ESE10	ESE10	ESE10	ESE10	SE9.0	SE13
17-Apr	ESE9	ESE10	ESE10	ESE12	ESE11	E12	ESE9	E9	ESE10	ESE12	E12	ESE12	ESE10	ESE11	SE8	ESE7	ESE8	ESE8	S6	NNE4	NNE4	NE5	NE6	E6	ESE8.0	E12
18-Apr	ENE6	N2	NNE3	NE4	NE6	NNE3	NNE2	NE4	NNE5	NNE3	WNW2	WSW6	WSW7	NNE3	ENE5	NE6	NE7	NE6	NNE6	NNE5	NNE4	NE5	E5	ESE6	NE3.2	WSW7
19-Apr	SSE7	SE6	ESE6	ESE7	SE5	ESE6	ESE6	SE7	ESE8	ESE9	E9	E11	E10	E9	E11	E9	E8	E6	E3	ENE5	E8	E5	ENE5	E7	ESE6.8	E11
20-Apr	E6	ESE6	E5	E5	E5	ENE5	NE6	ENE4	ENE8	ENE11	NE10	NE12	NE11	NE11	ENE11	E11	ENE10	E10	E10	E10	E9	E6	ESE5	ESE5	ENE7.5	NE12
21-Apr	SSE4	SSE4	SSE2	SSE2	SE3	NE3	ENE5	ENE6	ENE7	E9	E10	E8	SE6	ESE7	ESE8	ESE5	SE7	SSE6	SSE4	SSE3	S3	SSW5	SW8	SW9	SE3.6	E10
22-Apr	SW7	SSW7	SSW7	SSW7	SSW7	S5	S5	SSW5	SSW8	S8	SSW9	S9	S9	SSE8	SSE9	S10	SSW10	S8	S6	S4	SE3	ESE4	SE4	SE5	S6.4	SSW10
23-Apr	SSE5	SSE6	SSE7	SSE7	SSE7	SSE6	SSE7	S7	SSE10	SSE14	SSE13	SSE13	SSE13	SSE11	SSE12	SSE11	SSE11	SSE10	SE8	SE5	ESE6	ESE7	SE8	SSE7	SSE8.7	SSE14
24-Apr	SSE7	SSE6	SE6	SSE7	SE8	SE9	SSE9	SE9	SE10	SE9	SE8	ESE10	SE11	SE10	SSE12	SSE10	S11	S10	S11	SSE8	SSE6	SSE5	SSE6	SSE8	SSE8.2	SSE12
25-Apr	SSE7	SSE6	SSE6	SSE6	SSE6	S7	S8	SSW9	SSW9	SSW8	SSW7	SSW9	W4	WNW11	W8	SSW7	S6	SSW7	SW7	SW8	SSW7	SSW7	SW7	WSW8	SSW5.7	WNW11
26-Apr	W6	W7	WNW8	W8	W8	W8	W9	DF	WNW7	W10	W9	NW8	NW7	NW7	NNW7	NE8	NNE6	NE8	NE7	ENE5	ENE5	ENE6	E6	ESE4	NW3.3	W10
27-Apr	S5	E0	N2	WSW1	N2	NNE4	N4	N4	N5	N5	NW5	W9	W10	WSW10	W9	W7	W7	WSW9	WSW7	SW4	S5	S4	S6	SSW9	W3.2	WSW10
28-Apr	SW14	SW14	SW11	SW10	WSW12	W9	WNW10	NW10	NW10	NW12	WNW14	WNW14	NW13	NW13	NW14	WNW12	NNW11	NNW11	NNW9	NNW6	NW0	N3	NNE3	NNE2	WNW7.5	WNW14
29-Apr	ESE1	NE1	NNE2	WNW1	N2	ENE2	E5	E4	NE8	NE8	NE7	N4	NE5	NNE7	SSE1	NE7	ENE6	E9	E7	E7	ESE7	ESE7	SE9	SE7	ENE4.1	SE9
30-Apr	SSE6	SSE8	SSE8	SSE8	SSE8	S8	S8	S10	S11	SSE10	SE11	SSE11	SE12	SSE12	SE11	SE10	SSE9	SSE9	SSE8	SE5	SE4	SSE6	SSE7	SSE8	SSE8.4	SE12

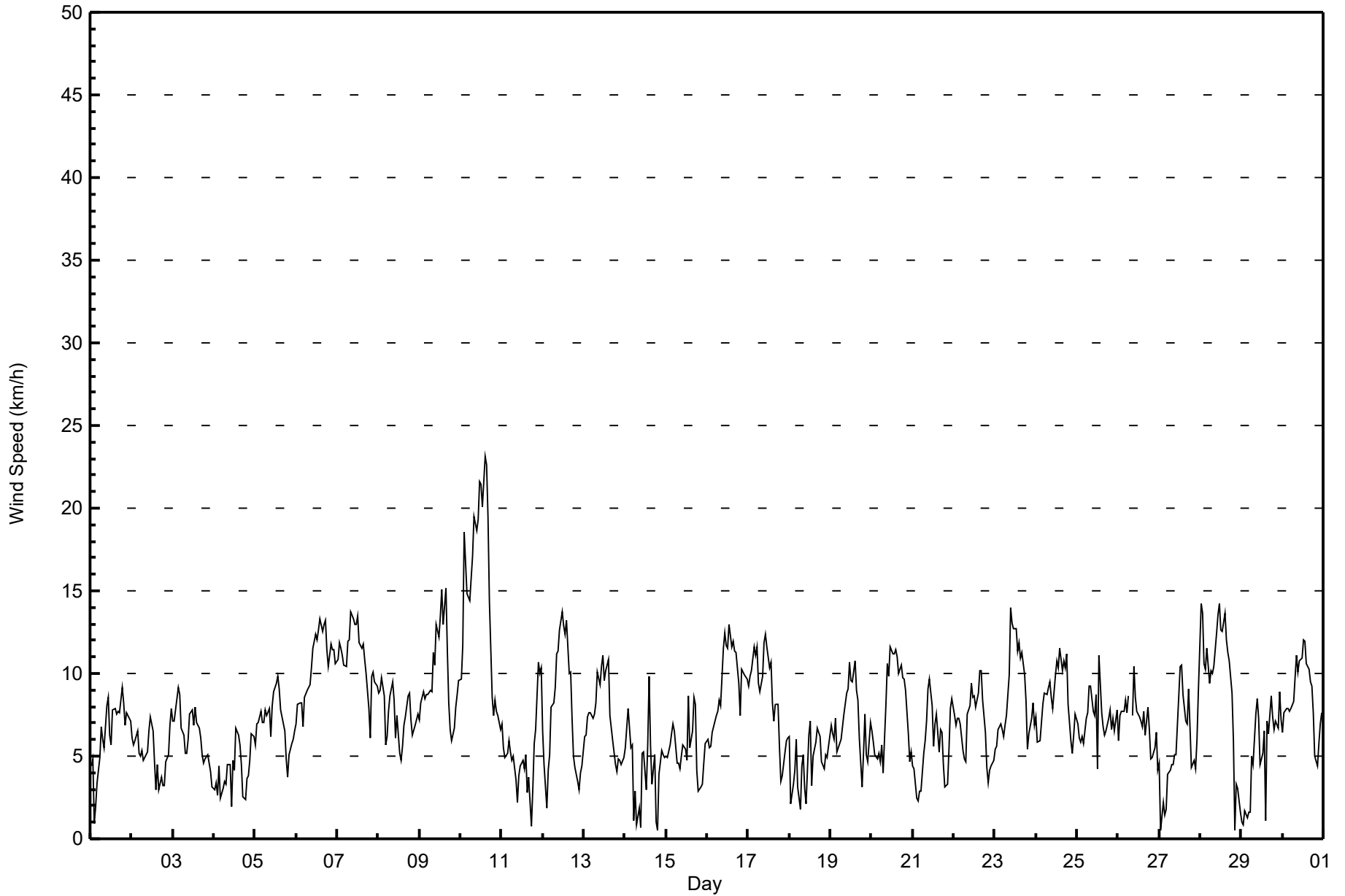
S4.8	S4.8	S4.2	S4.2	S3.7	S3.2	S3.3	S3.5	S3.0	S2.8	S3.1	SSW3.3	SSW3.2	SSW3.1	SSW3.4	S2.8	S2.9	S2.9	SSE2.6	SSE2.4	SE3.4	SSE3.8	SSE4.2	SSE4.6	Diurnal Average	
SW14	SW14	WSW19	W17	W15	W14	WSW16	WSW17	WSW20	W19	WSW19	WSW22	WSW21	WSW20	WSW23	WSW23	WSW19	WSW14	S11	S10	S12	S11	S11	S11	Diurnal Maximum	

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 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 2/3 - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	203	28.23	28.23
6 - 11	436	60.64	88.87
12 - 19	74	10.29	99.17
20 - 28	6	0.83	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 2/3 - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	12	23	12	24	16	11	13	17	26	8	9	10	7	10	4	1	203
6 - 11	2	4	16	14	34	38	29	77	68	37	43	28	28	7	6	5	436
12 - 19	0	0	1	0	2	5	6	15	13	1	6	9	5	7	4	0	74
20 - 28	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
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
Totals	14	27	29	38	52	54	48	109	107	46	58	53	40	24	14	6	719

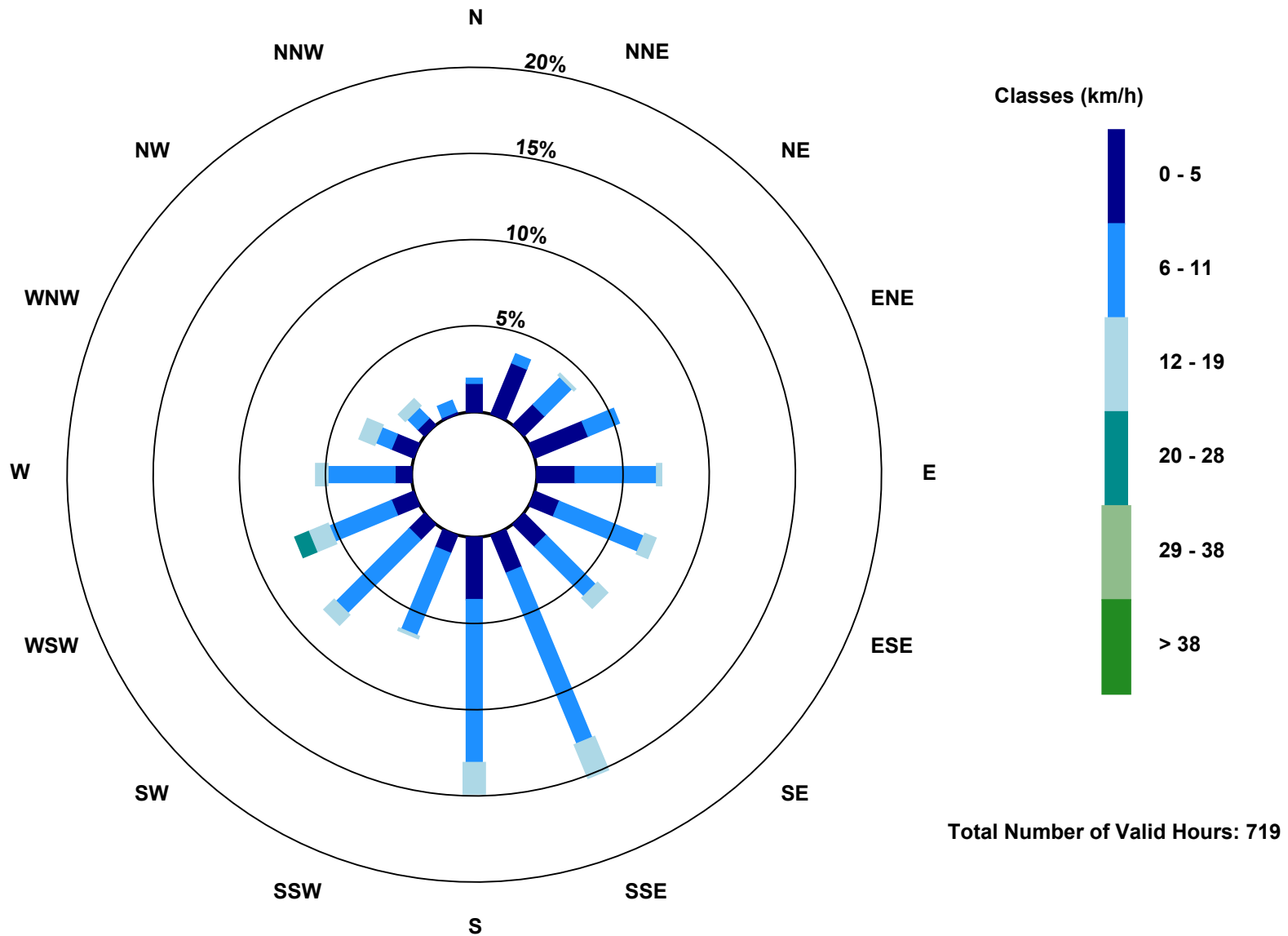
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 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 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0 Maximum Value: 7 km/h on Apr 10 15:00 Minimum Value: 1 km/h on Apr 29 01:00 Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 6																	Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1 Hours of Calibration: 0 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-Apr	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2-Apr	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	1	1	1	1	2	2	2	3
3-Apr	2	2	2	2	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	1	1	1	3
4-Apr	1	1	1	2	1	1	1	1	1	2	2	2	3	3	3	3	3	2	1	1	1	1	2	2	3
5-Apr	2	2	2	2	2	2	2	2	2	2	3	4	4	4	3	3	3	2	2	1	2	2	2	2	4
6-Apr	2	2	3	2	2	2	3	3	3	4	4	4	5	5	5	5	5	5	5	4	4	4	4	4	5
7-Apr	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	4	4	4	3	3	4	4	4	3	5
8-Apr	3	3	3	3	2	2	2	2	3	3	3	2	2	2	3	3	3	3	2	2	1	2	2	2	3
9-Apr	2	2	2	1	2	2	2	2	3	3	4	4	5	4	4	5	4	4	3	2	3	3	3	3	5
10-Apr	3	4	6	7	6	5	5	6	7	6	7	7	7	6	7	7	6	4	3	2	2	2	2	1	7
11-Apr	1	1	1	1	1	2	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2
12-Apr	2	2	1	1	1	1	2	2	3	4	5	6	5	5	5	5	4	3	2	1	1	1	1	2	6
13-Apr	1	1	1	2	1	1	2	2	3	3	3	4	4	4	4	3	3	3	2	2	1	1	1	2	4
14-Apr	2	2	2	3	1	1	1	1	2	2	2	2	3	2	4	3	4	2	1	1	1	1	1	1	4
15-Apr	1	1	1	1	1	1	1	1	2	2	3	2	2	3	3	3	3	3	2	1	1	1	1	2	3
16-Apr	2	2	2	2	2	3	2	3	3	5	5	5	5	5	5	5	5	5	4	3	4	4	4	4	5
17-Apr	4	4	4	4	4	4	4	3	4	5	5	5	5	5	4	3	3	3	4	1	1	1	2	3	5
18-Apr	2	1	1	1	2	1	1	2	2	2	2	2	2	2	2	3	2	2	1	1	1	2	2	3	3
19-Apr	3	2	2	3	2	2	2	3	3	3	3	4	3	4	4	3	3	2	1	2	3	1	1	2	4
20-Apr	2	2	2	2	1	1	2	2	3	4	4	5	4	4	4	4	4	4	3	3	3	2	2	2	5
21-Apr	2	2	1	1	1	1	2	2	3	4	4	4	3	3	3	3	3	2	2	1	1	2	2	2	4
22-Apr	2	1	2	2	1	1	1	1	3	3	4	4	4	3	4	4	4	3	2	2	1	1	2	2	4
23-Apr	2	2	3	2	2	2	2	3	4	5	5	5	5	5	5	4	4	4	3	3	2	3	4	3	5
24-Apr	3	2	3	3	3	3	3	4	4	4	3	4	4	4	4	4	4	4	4	3	3	2	3	3	4
25-Apr	3	2	2	2	2	2	2	3	3	3	3	3	3	3	6	4	1	1	2	2	2	2	2	2	6
26-Apr	2	3	3	3	4	3	3	DF	3	4	3	3	3	3	3	3	2	3	2	2	2	2	2	1	4
27-Apr	1	1	1	1	1	1	1	2	2	3	3	3	4	3	3	3	3	3	2	1	1	1	2	3	4
28-Apr	5	4	3	3	3	3	4	4	5	6	5	6	6	5	5	5	5	5	4	3	1	1	1	1	6
29-Apr	1	1	1	1	1	1	2	2	3	3	3	3	4	3	3	3	3	3	2	2	2	3	4	3	4
30-Apr	3	3	3	3	2	3	3	3	4	4	4	4	5	4	5	4	4	4	4	2	2	2	3	3	5
Diurnal Maximum																									
DF - DAS Failure																									



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Jackfish 2/3 - April 2023

Direction of Maximum Speed: 245 deg on Apr 10 15:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 245.1 deg on Apr 10	Hours of Data: 719
Direction of Minimum Speed: 311 deg on Apr 28 21:00	Hours of Missing Data: 1
Direction of Minimum Daily Speed Average: 1.3 deg on Apr 4	Percent Operational Time: 99.9
Monthly Average Direction: 176.6 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-Apr	188	188	146	78	138	145	104	117	156	134	144	136	111	94	76	103	79	99	112	127	118	101	110	98	116.8
2-Apr	98	96	93	92	94	74	82	68	70	65	61	78	57	79	37	25	21	21	43	80	105	123	171	172	83.3
3-Apr	187	182	196	200	218	231	248	265	297	264	269	261	275	271	274	269	262	304	343	10	33	48	58	61	255.3
4-Apr	57	67	78	128	23	25	31	60	91	100	77	286	250	224	213	256	255	214	158	185	179	178	198	193	181.9
5-Apr	184	171	167	166	172	172	170	168	168	165	177	169	157	192	188	184	190	175	174	149	170	173	174	179	173.8
6-Apr	179	167	170	168	178	171	167	169	170	171	181	169	173	173	176	173	173	183	172	171	169	173	172	173	172.8
7-Apr	166	168	169	167	166	168	168	168	175	177	178	167	167	165	164	161	169	158	160	162	169	170	177	182	168.6
8-Apr	184	185	183	190	205	205	189	209	211	233	233	228	231	267	242	224	242	239	237	218	214	208	203	213	214.2
9-Apr	215	225	236	243	239	231	231	224	237	245	238	242	231	227	217	219	197	186	162	161	159	158	158	167	215.7
10-Apr	178	200	247	263	263	260	252	247	257	261	252	250	251	246	245	245	242	242	236	225	225	207	233	240	245.1
11-Apr	225	174	176	181	194	196	180	191	218	222	236	239	244	288	304	55	316	299	204	221	220	236	236	231	222.3
12-Apr	263	289	271	241	249	245	240	239	248	261	273	285	284	286	288	292	284	299	289	271	262	252	241	226	269.4
13-Apr	216	216	222	223	236	229	214	223	242	258	244	250	272	270	269	309	355	352	18	53	67	81	115	110	249.6
14-Apr	137	169	169	162	173	66	103	86	11	294	149	140	135	179	239	34	222	263	27	162	154	160	173	179	168.1
15-Apr	174	176	182	191	213	220	203	201	175	208	229	227	224	218	193	183	212	207	193	172	171	168	163	197.9	
16-Apr	164	155	152	153	153	153	157	151	135	111	110	126	139	146	136	143	137	134	129	115	109	109	112	117	133.0
17-Apr	122	116	110	106	102	99	113	101	102	104	96	104	115	121	126	103	106	109	176	12	16	47	49	89	104.1
18-Apr	76	355	14	36	56	26	25	37	33	12	292	245	252	30	61	46	40	34	26	23	31	44	84	104	37.5
19-Apr	147	146	121	116	130	112	121	130	114	103	97	93	91	89	90	100	96	96	81	70	89	98	78	87	103.2
20-Apr	100	119	97	83	101	73	40	69	75	61	48	49	52	53	76	85	73	91	86	81	95	100	110	122	77.3
21-Apr	160	160	161	150	133	42	61	59	73	96	94	83	142	110	117	114	132	167	153	155	177	209	225	230	128.2
22-Apr	225	211	203	201	205	189	177	195	207	191	198	171	176	158	164	190	201	187	187	175	130	123	132	145	185.5
23-Apr	155	160	164	163	162	164	165	171	160	157	149	153	155	156	153	154	158	160	146	144	121	122	143	150	153.9
24-Apr	158	147	140	148	145	146	148	141	139	131	127	119	130	124	164	163	172	173	179	161	147	148	152	152	148.6
25-Apr	152	154	158	162	164	169	171	195	206	200	194	197	264	298	273	198	187	212	231	235	215	196	232	257	205.1
26-Apr	262	269	283	265	269	271	272	DF	292	268	277	311	307	318	338	36	33	46	47	65	60	75	83	112	312.9
27-Apr	172	94	11	254	358	17	11	5	352	352	308	268	260	258	265	272	262	252	243	214	184	181	190	198	259.1
28-Apr	219	215	215	230	247	264	286	313	312	305	297	301	317	305	309	300	328	338	327	327	311	356	12	29	291.3
29-Apr	107	46	24	299	11	77	84	89	55	54	54	10	52	15	155	47	60	90	95	91	102	122	130	141	76.7
30-Apr	155	161	164	165	168	177	170	173	174	166	144	154	143	162	138	146	147	157	149	135	135	149	160	166	157.0

174.3 175.8 180.1 180.6 187.7 186.7 178.6 178.2 185.5 180.8 187.1 194.1 195.7 201.5 198.3 178.8 180.8 172.0 160.6 148.1 142.9 147.7 159.5 166.0

Diurnal Average

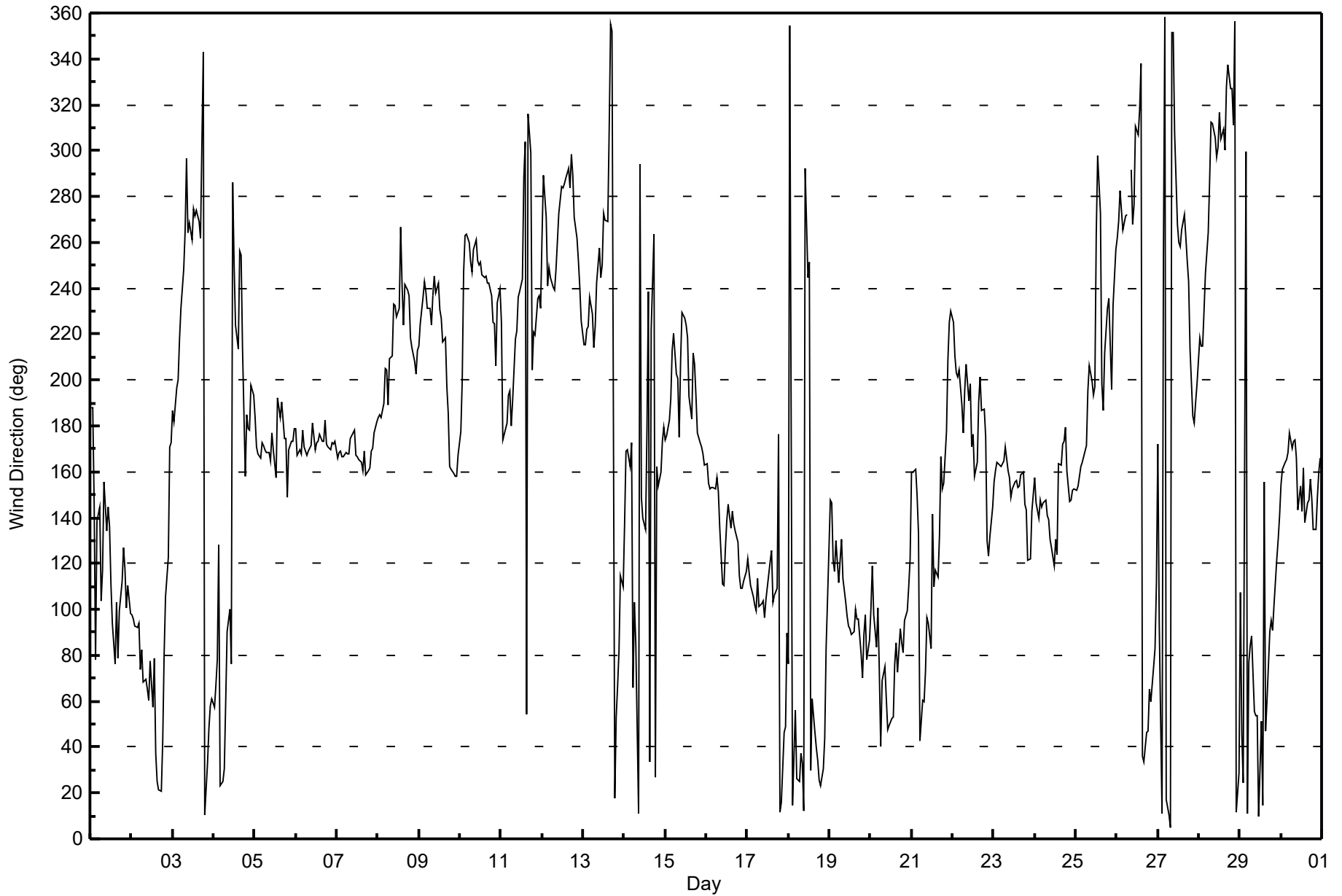
DF - DAS Failure

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 - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Jackfish 2/3 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 113 deg on Apr 28 21:00	Hours of Data: 719
Minimum Value: 10 deg on Apr 11 07:00	Hours of Missing Data: 1
Percentiles: P ₁ = 11 P ₁₀ = 19 Q ₁ = 26 Median = 35 Q ₃ = 42 P ₉₀ = 52 P ₉₉ = 86	Hours of Calibration: 0
	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-Apr	26	23	83	47	31	34	26	44	47	39	41	52	55	48	40	42	35	30	37	36	36	31	36	31	83
2-Apr	32	36	32	29	33	26	28	33	41	40	38	39	41	65	77	53	75	37	25	19	23	43	30	26	77
3-Apr	23	26	24	22	22	17	19	33	42	39	37	37	41	37	39	39	37	51	45	38	31	25	24	26	51
4-Apr	19	17	40	32	42	29	22	36	41	32	97	59	80	41	54	48	51	83	64	30	26	29	27	23	97
5-Apr	22	22	22	22	21	21	19	28	29	46	46	44	40	35	38	40	37	33	37	42	32	29	28	27	46
6-Apr	25	23	24	25	21	21	22	22	27	33	35	37	41	36	38	39	39	35	37	33	30	30	32	34	41
7-Apr	36	29	30	32	32	31	30	32	33	33	36	36	36	42	44	40	38	39	42	52	36	30	31	31	52
8-Apr	32	29	27	23	35	22	23	21	24	40	36	33	61	72	44	43	37	25	16	18	20	17	19	20	72
9-Apr	16	14	14	11	14	16	14	16	19	26	25	24	30	26	31	24	33	40	44	48	48	45	41	35	48
10-Apr	32	30	28	32	33	31	24	24	27	32	27	24	26	26	22	21	19	20	17	18	18	18	21	11	33
11-Apr	22	11	13	14	15	19	10	11	24	60	60	42	54	55	52	84	66	98	21	14	14	14	13	14	98
12-Apr	30	43	83	11	15	10	12	18	25	33	39	38	40	38	37	46	37	48	43	25	24	24	12	37	83
13-Apr	15	14	15	16	13	15	18	19	24	31	27	31	42	42	52	59	51	40	30	20	23	27	32	59	
14-Apr	34	21	15	46	14	79	29	84	91	99	51	42	86	52	37	54	88	56	78	80	21	22	14	12	99
15-Apr	14	15	14	17	19	16	15	17	48	49	48	42	58	38	64	50	40	28	45	37	32	30	20	26	64
16-Apr	31	35	41	37	33	33	28	34	38	38	39	42	43	41	42	43	41	43	43	35	37	36	36	38	43
17-Apr	38	38	37	32	31	31	41	33	34	37	32	34	41	42	45	38	38	36	64	40	31	23	19	33	64
18-Apr	31	65	34	29	21	29	57	34	33	54	76	25	35	68	37	38	37	30	31	25	14	15	25	28	76
19-Apr	44	49	41	36	41	37	41	50	39	34	34	29	31	38	35	35	35	36	40	30	28	23	24	25	50
20-Apr	29	38	35	33	24	30	22	57	39	36	40	39	39	43	41	38	38	31	27	24	25	27	30	41	57
21-Apr	47	34	33	30	32	23	24	31	41	41	42	58	72	66	47	58	51	36	41	34	25	18	17	15	72
22-Apr	16	17	15	17	16	15	11	29	35	49	43	49	50	48	48	40	35	37	35	45	37	33	43	50	50
23-Apr	45	42	38	30	35	37	33	33	40	41	42	41	46	44	43	44	39	42	44	46	42	41	43	51	51
24-Apr	45	48	50	44	38	34	36	37	37	45	49	44	46	48	39	39	41	39	30	39	47	59	44	40	59
25-Apr	39	40	40	34	41	28	23	25	28	37	41	31	65	42	44	22	17	23	17	16	20	17	25	26	65
26-Apr	27	33	33	31	36	31	32	DF	36	33	39	48	51	53	61	37	47	27	30	24	22	22	26	33	61
27-Apr	20	86	51	66	75	32	35	54	68	74	68	39	35	34	40	41	42	27	27	24	20	33	27	25	86
28-Apr	23	23	25	18	18	31	42	43	50	45	43	43	50	47	44	44	51	49	49	52	113	38	42	31	113
29-Apr	48	79	29	61	54	41	25	44	39	43	56	87	76	65	99	51	54	36	27	21	26	42	40	41	99
30-Apr	45	35	34	27	24	27	27	30	32	41	44	42	42	43	50	48	43	41	43	45	52	43	38	33	52

48	86	83	66	75	79	57	84	91	99	97	87	86	72	99	84	88	98	78	80	113	59	44	51	
Diurnal Maximum																								

DF - DAS Failure



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS29
SURMONT 2
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT2 (AMS29)
 APRIL 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	684	34	36	99.72	4.3	0	1.1	0
H2S (ppb) Average	682	36	38	99.72	0.2	0	0.1	0
THC(ppm) Average	684	34	36	99.72	2.8	-	2.2	-
NO2 (ppb) Average	684	36	36	100	7.2	0	3.2	-
NO (ppb) Average	684	36	36	100	2.6	-	0.4	-
NOX (ppb) Average	684	36	36	100	7.9	-	3.6	-
PM2.5 (ug/m3) Average	718	2	2	100	87.1	1	17.1	0
Temperature 2 m (C) Average	720	0	0	100	19.8	-	11.1	-
Relative Humidity (%) Average	720	0	0	100	100.1	-	83.2	-
Wind Speed 10 m (km/h) Average	711	0	9	98.75	21	-	15	-
Wind Direction 10 m (deg) Average	711	0	9	98.75	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)
 APRIL 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	684	0.33	0.5	-	0	0	0.1	0.2	0.4	0.8	4.3
H2S (ppb) Average	682	0.05	0	-	0	0	0	0	0.1	0.1	0.2
THC (ppm) Average	684	2.12	0.1	-	1.9	2	2.1	2.1	2.2	2.2	2.8
NO2 (ppb) Average	684	1.09	1	-	0.2	0.3	0.5	0.7	1.3	2.1	7.2
NO (ppb) Average	684	0.11	0.2	-	0	0	0	0	0.1	0.3	2.6
NOX (ppb) Average	684	1.19	1.1	-	0.2	0.4	0.5	0.8	1.4	2.3	7.9
PM2.5 (ug/m3) Average	718	5.26	6.1	-	0.2	2.2	3	3.9	5.7	8.1	87.1
Temperature 2 m (C) Average	720	3.33	6	-	-10.9	-4.5	-1.3	2.9	7.8	11.4	19.8
Relative Humidity (%) Average	720	56.53	22.2	-	16.6	26.9	36.8	54.7	77	86.4	100.1
Wind Speed 10 m (km/h) Average	711	6.4	4	-	0	2	3	6	9	12	21
Wind Direction 10 m (deg) Average	711	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2, THC	26 Apr 2023 14:00	26 Apr 2023 15:00	2	Maintenance - sample manifold cleaned
Wind Speed, Wind Direction	04 Apr 2023 00:00	04 Apr 2023 00:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	04 Apr 2023 05:00	04 Apr 2023 05:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	13 Apr 2023 00:00	13 Apr 2023 00:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	13 Apr 2023 03:00	13 Apr 2023 03:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	13 Apr 2023 06:00	13 Apr 2023 07:00	2	Flat line in sensor output signal
Wind Speed, Wind Direction	20 Apr 2023 06:00	20 Apr 2023 07:00	2	Flat line in sensor output signal
Wind Speed, Wind Direction	21 Apr 2023 06:00	21 Apr 2023 06:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

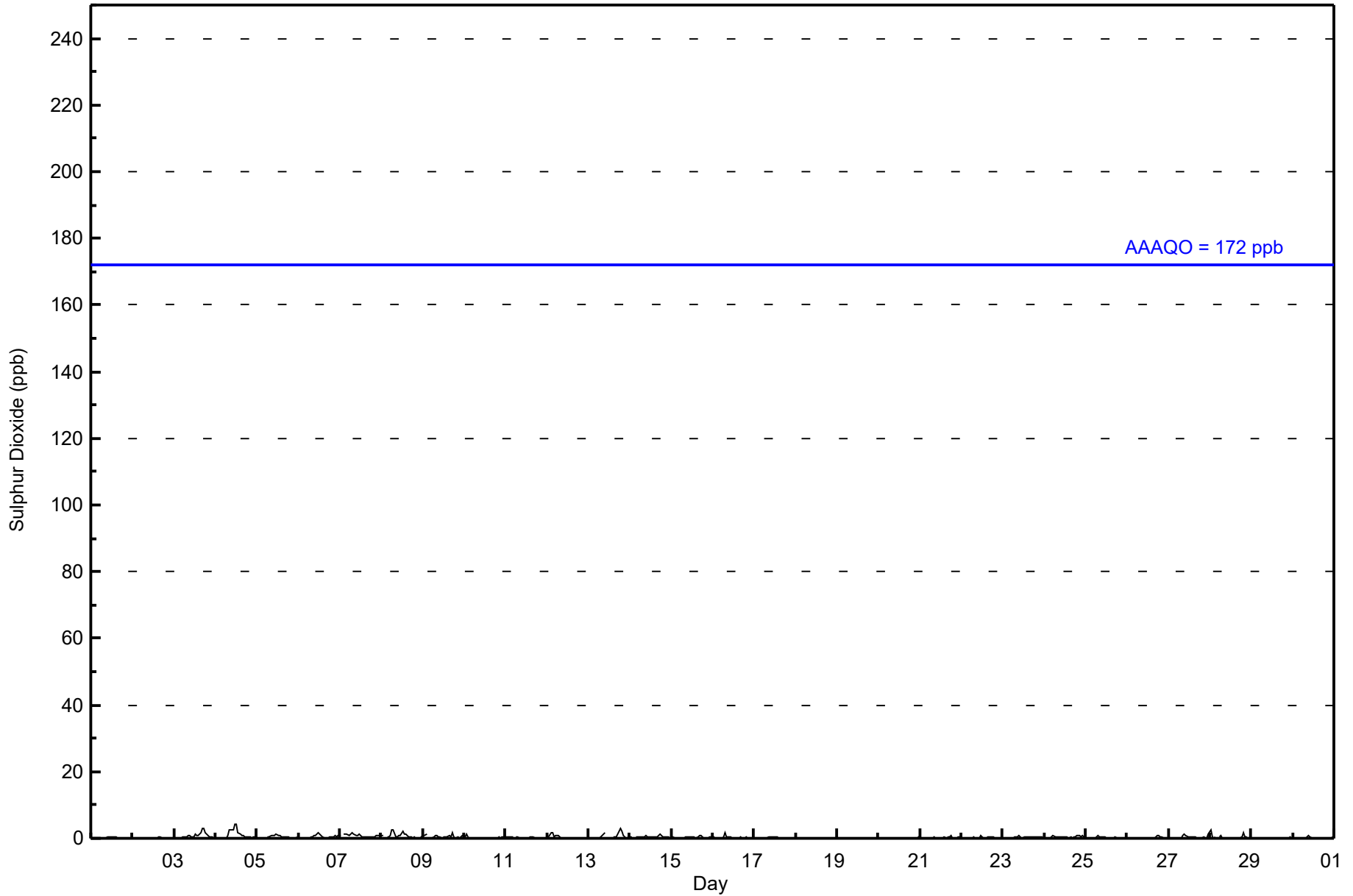
Surmont 2 - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 4.3 ppb on Apr 4 12:00		Maximum Daily Average: 1.1 ppb on Apr 4		Hours of Data:														684								
Minimum Value: 0.0 ppb on Apr 1 22:00		Minimum Daily Average: 0.0 ppb on Apr 18		Hours of Missing Data:														36								
Maximum Diurnal Average: 0.5 ppb at hour 10		Minimum Diurnal Average: 0.2 ppb at hour 5		Hours of Calibration:														34								
Monthly Average: 0.33 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 0.8 P ₉₉ = 2.6		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-Apr	0.0	Z	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.4	0.3	0.2	0.3	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4
2-Apr	0.0	0.0	Z	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
3-Apr	0.0	0.0	0.1	Z	0.2	0.5	0.4	0.4	0.8	1.0	0.5	0.5	1.1	1.0	1.0	1.7	2.9	3.1	1.8	1.1	0.6	0.5	0.4	0.2	0.9	3.1
4-Apr	0.1	0.1	0.0	0.1	Z	0.1	0.1	0.9	2.3	2.5	2.6	4.3	4.2	1.6	1.2	1.0	0.8	0.6	0.5	0.3	0.2	0.2	0.5	0.4	1.1	4.3
5-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.3	0.6	0.9	0.8	1.0	1.3	0.8	0.7	0.5	0.3	0.3	0.5	0.3	0.1	0.1	0.1	0.1	0.6	0.4	1.3
6-Apr	Z	0.2	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.6	0.9	1.7	1.1	0.7	0.2	0.1	0.2	0.2	0.2	0.3	0.6	0.7	0.5	0.7	0.4	1.7
7-Apr	0.8	Z	1.4	1.1	1.1	0.8	1.1	1.5	1.4	1.0	0.7	1.1	1.0	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	1.0	0.9	1.5
8-Apr	0.8	0.7	Z	0.5	0.3	0.6	2.4	2.4	0.4	0.5	0.7	0.6	1.9	1.2	1.2	0.8	0.4	0.3	0.1	0.2	0.1	0.1	0.1	0.4	0.7	2.4
9-Apr	0.8	0.7	1.2	Z	0.2	0.1	0.5	0.8	0.7	0.4	0.2	0.2	0.4	0.2	0.5	0.7	0.5	1.7	0.3	0.2	0.3	0.2	0.5	0.7	0.5	1.7
10-Apr	0.4	1.2	0.4	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.5	0.2	1.2
11-Apr	0.3	0.3	0.3	0.4	0.3	Z	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
12-Apr	Z	0.6	1.5	1.5	0.3	0.9	0.7	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	0.0	0.0	0.0	0.0	0.3	1.5
13-Apr	0.0	Z	0.1	0.2	0.2	0.0	0.0	0.3	0.7	1.5	C	C	C	C	0.5	0.3	0.4	1.5	3.0	2.2	0.9	0.5	0.2	0.2	0.7	3.0
14-Apr	0.3	0.2	Z	0.3	0.2	0.3	0.3	0.2	0.4	0.8	0.5	0.3	0.5	0.4	0.4	0.3	0.3	1.2	0.6	0.4	0.3	0.3	0.2	0.1	0.4	1.2
15-Apr	0.2	0.2	0.0	Z	0.0	0.0	0.0	0.1	0.3	0.4	0.2	0.3	0.3	0.3	0.2	0.4	0.8	0.7	0.4	0.2	0.1	0.2	0.4	0.5	0.3	0.8
16-Apr	0.2	0.2	0.1	0.1	Z	0.1	0.5	1.9	0.6	0.4	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.6	0.1	0.1	0.1	0.1	0.3	1.9
17-Apr	0.1	0.1	0.0	0.1	0.1	Z	0.2	0.1	0.3	0.4	0.5	0.4	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
18-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
19-Apr	0.0	Z	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.2
20-Apr	0.1	0.1	Z	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2
21-Apr	0.2	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.6	0.2	0.1	0.1	0.6	0.4	0.2	0.6
22-Apr	0.1	0.1	0.1	0.0	Z	0.2	0.1	0.4	0.0	0.1	0.1	0.7	0.3	0.2	0.1	0.2	0.4	0.3	0.3	0.2	0.1	0.0	0.1	0.0	0.2	0.7
23-Apr	0.0	0.0	0.1	0.1	0.0	Z	0.2	0.2	0.6	0.7	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.7
24-Apr	Z	0.2	0.1	0.1	0.6	1.0	0.6	0.3	0.3	0.4	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.6	0.8	0.6	0.7	0.4	0.4	1.0
25-Apr	0.2	Z	0.1	0.1	0.1	0.1	0.3	0.8	0.6	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.8
26-Apr	0.0	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	M	M	0.0	0.1	0.7	1.0	0.5	0.4	0.1	0.0	0.0	0.1	1.0
27-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.9	1.1	0.9	0.4	0.4	0.5	0.6	0.4	0.1	0.1	0.1	0.1	0.2	0.2	0.1	1.1	0.3	1.1
28-Apr	2.7	0.6	0.2	0.2	Z	0.4	0.7	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.4	1.5	0.3	0.3	0.1	0.0	0.4	2.7
29-Apr	0.1	0.1	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.1	0.3
30-Apr	Z	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.5	0.8	0.6	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.3	0.2	0.8
																								Diurnal Average		
																								Diurnal Maximum		
																								0.3 0.2 0.2 0.2 0.2 0.2 0.3 0.4 0.4 0.5 0.4 0.5 0.5 0.3 0.3 0.3 0.3 0.5 0.4 0.3 0.2 0.2 0.2 0.3		
																								2.7 1.2 1.5 1.5 1.1 1.0 2.4 2.4 2.3 2.5 2.6 4.3 4.2 1.6 1.2 1.7 2.9 3.1 3.0 2.2 0.9 0.7 0.7 1.1		
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 (SO₂) - ppb
Surmont 2 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Surmont 2 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	14	14	15	33	39	109	92	38	26	21	22	122	55	30	18	28	676
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
Totals	14	14	15	33	39	109	92	38	26	21	22	122	55	30	18	28	676

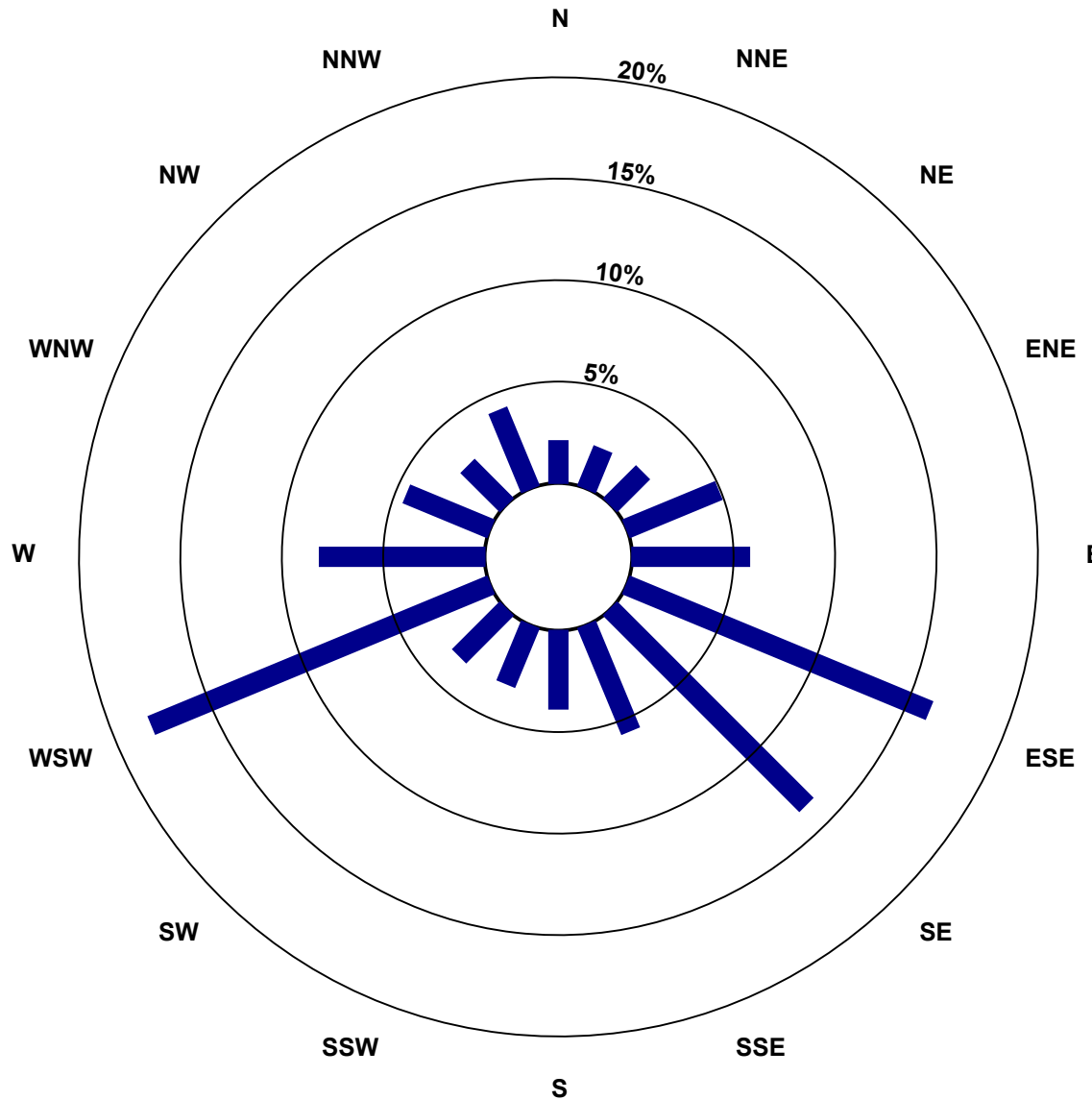
Total Number of Valid Hours: 676

Total Number of Hours: 720

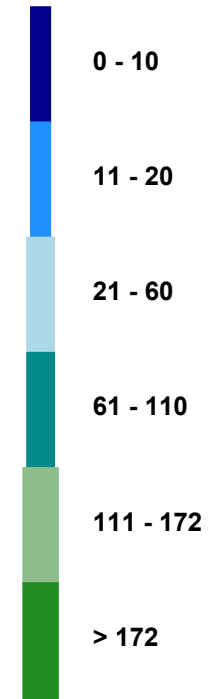


Wood Buffalo Environmental Association
Wind Rose Apr 2023

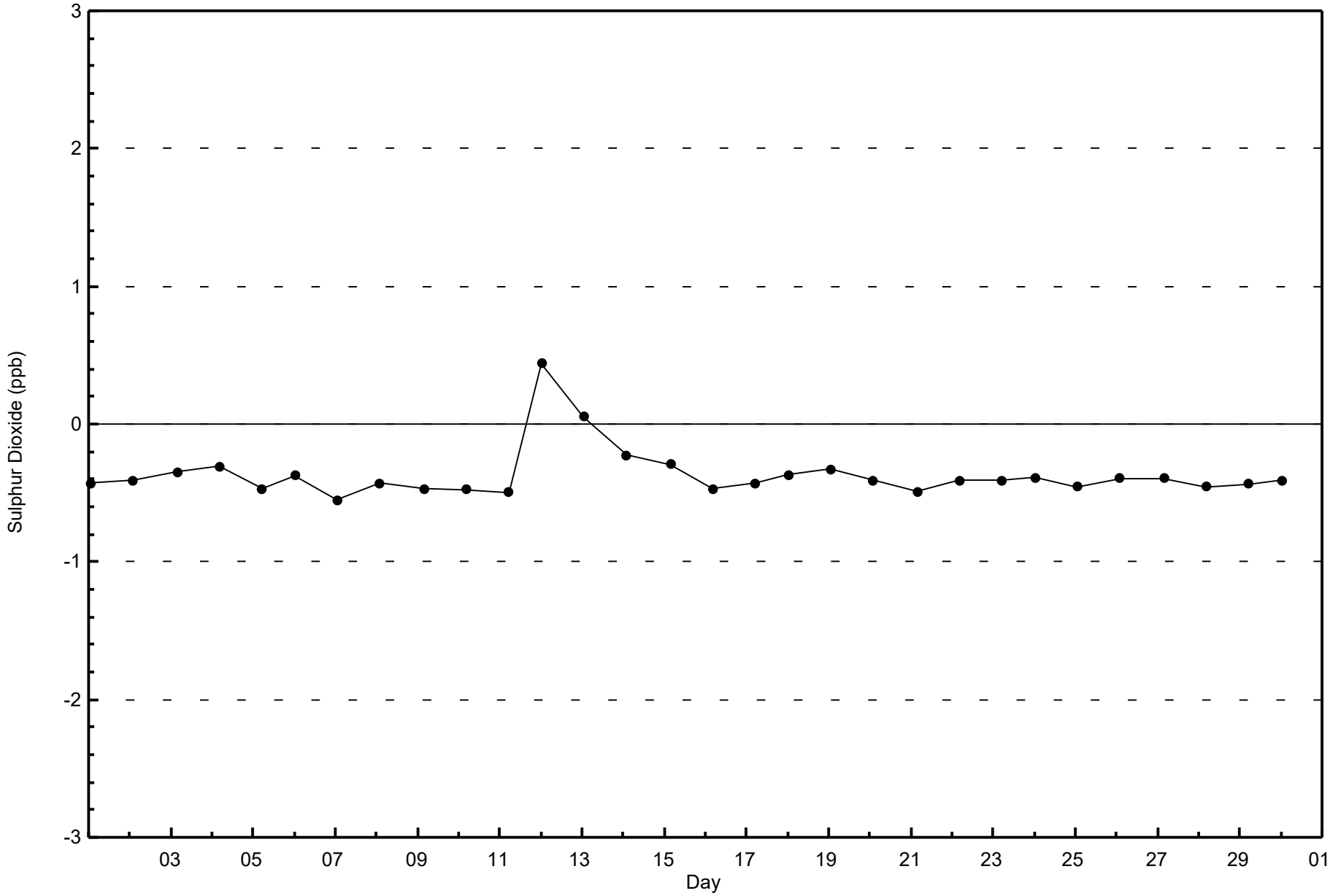
Sulphur Dioxide (SO₂) - ppb
Surmont 2

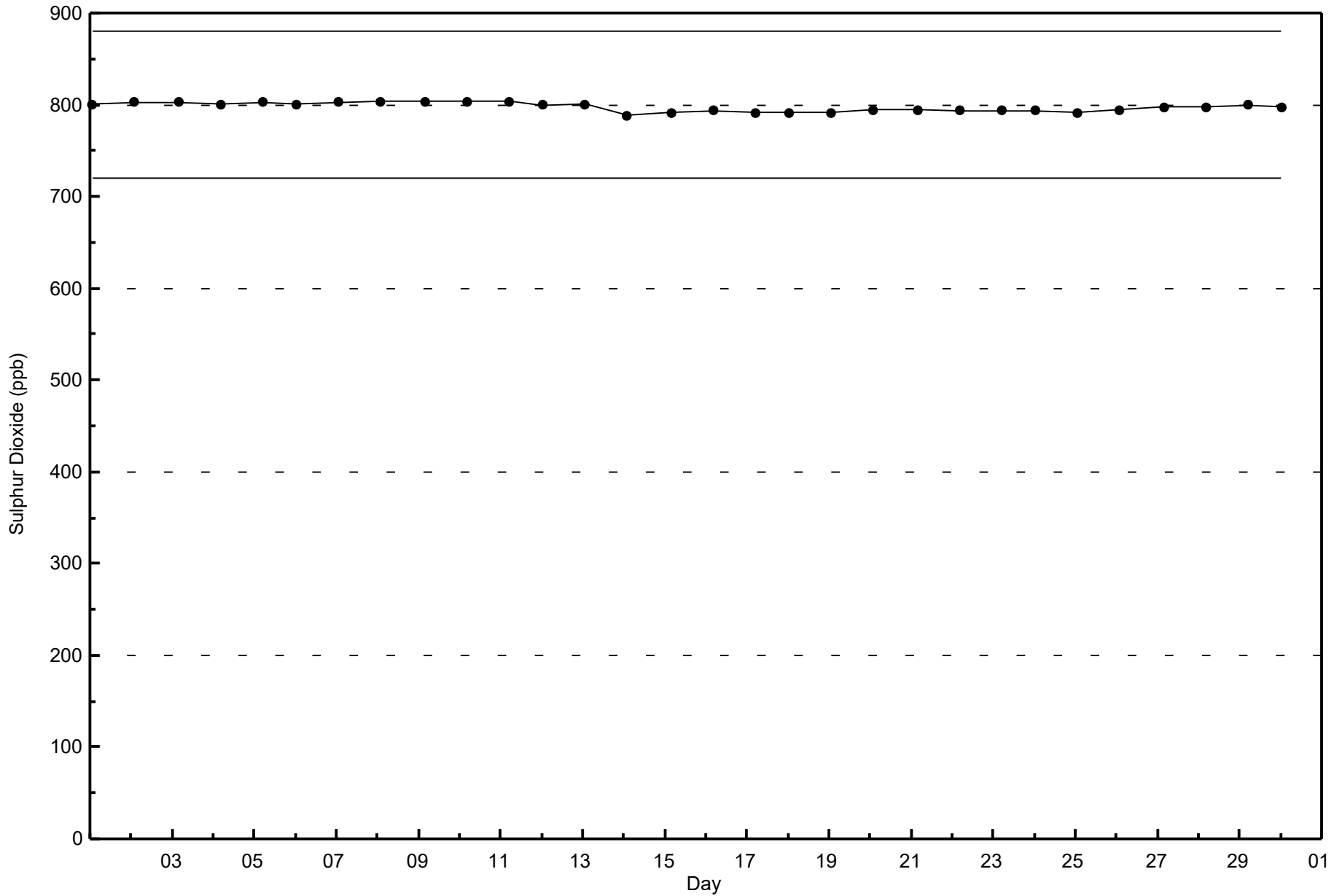


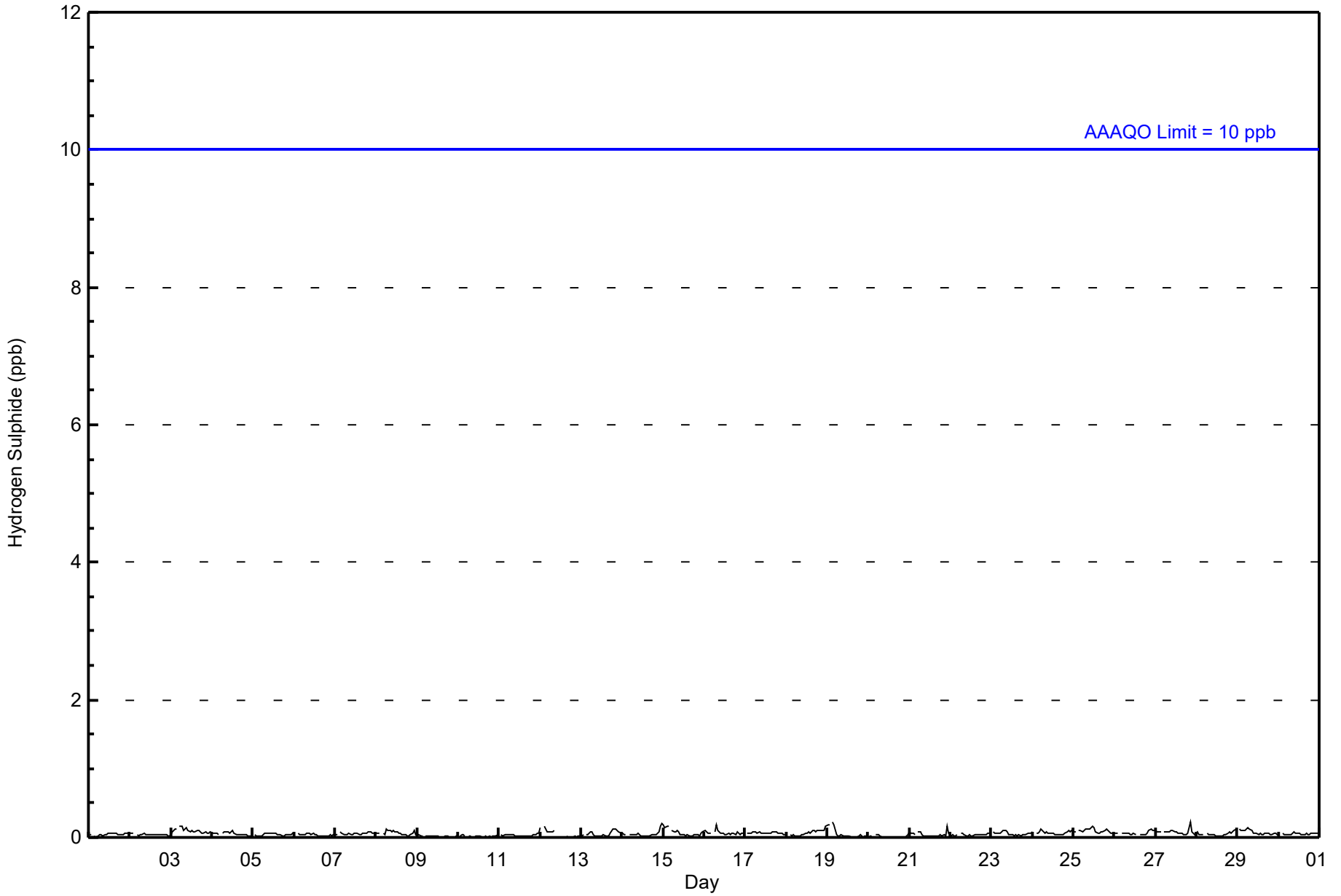
Classes (ppb)



Total Number of Valid Hours: 676









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Surmont 2 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	682	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: 682

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	14	17	17	33	40	108	94	38	28	19	22	120	54	26	18	26	674
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
Totals	14	17	17	33	40	108	94	38	28	19	22	120	54	26	18	26	674

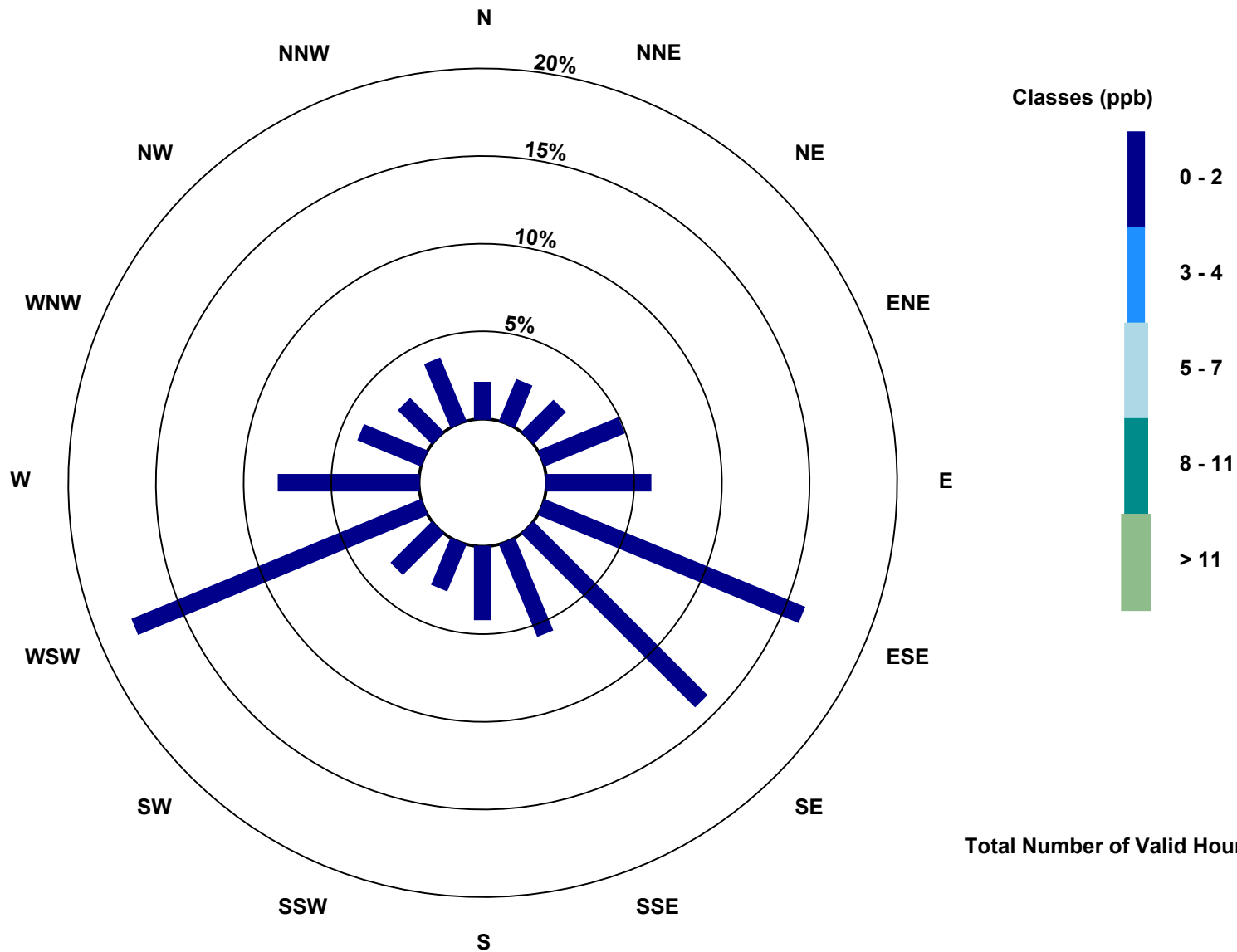
Total Number of Valid Hours: 674

Total Number of Hours: 720

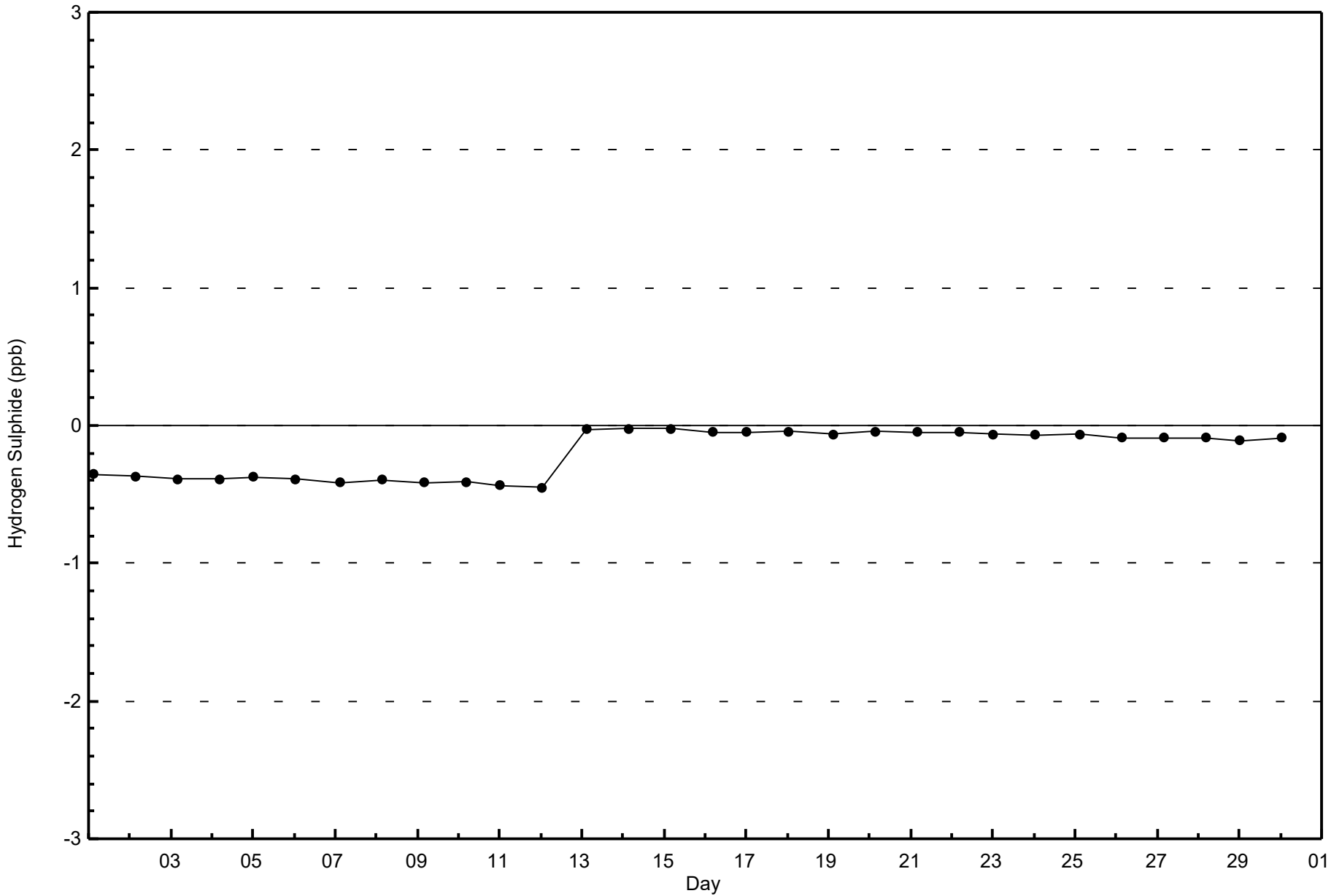


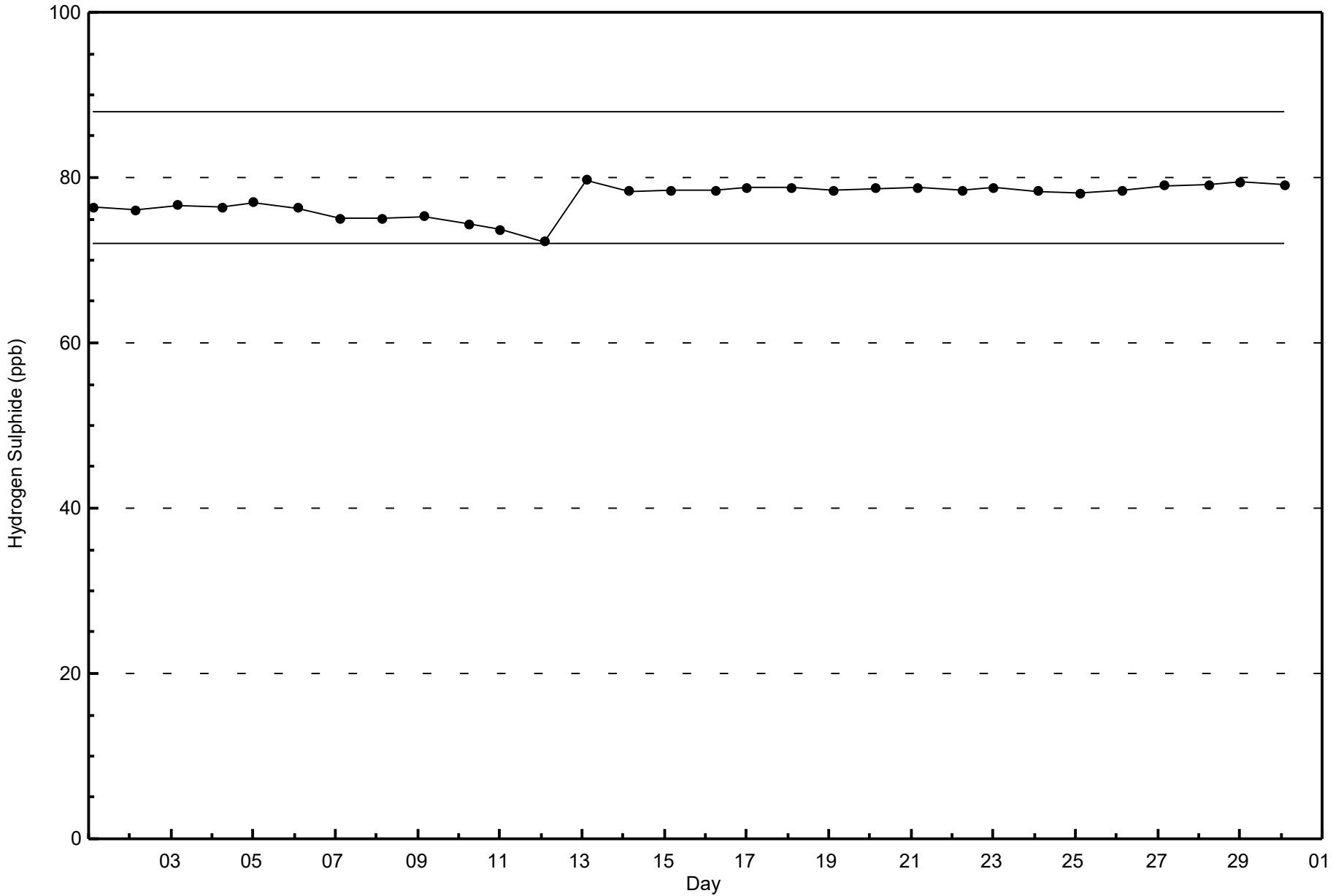
Wood Buffalo Environmental Association
Wind Rose Apr 2023

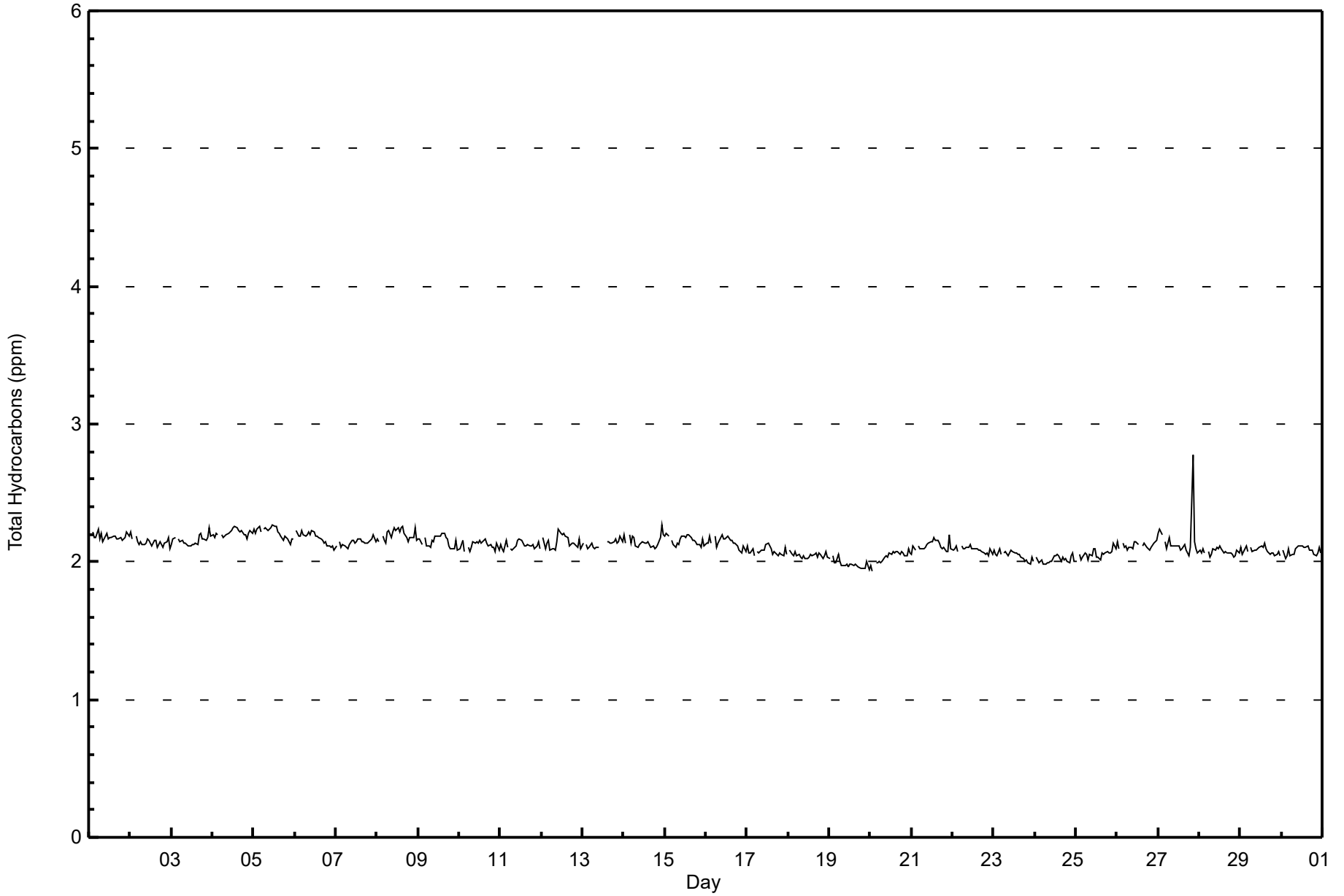
Hydrogen Sulphide (H₂S) - ppb
Surmont 2



Total Number of Valid Hours: 674









Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Surmont 2 - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	105	15.35	15.35
2.1 - 3.0	579	84.65	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Total Hydrocarbons (THC) - ppm
Surmont 2 - April 2023**

Concentration 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	1	3	8	7	27	17	5	7	3	2	12	3	2	4	1	103
2.1 - 3.0	13	13	12	25	32	82	75	33	19	18	20	110	52	28	14	27	573
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
Totals	14	14	15	33	39	109	92	38	26	21	22	122	55	30	18	28	676

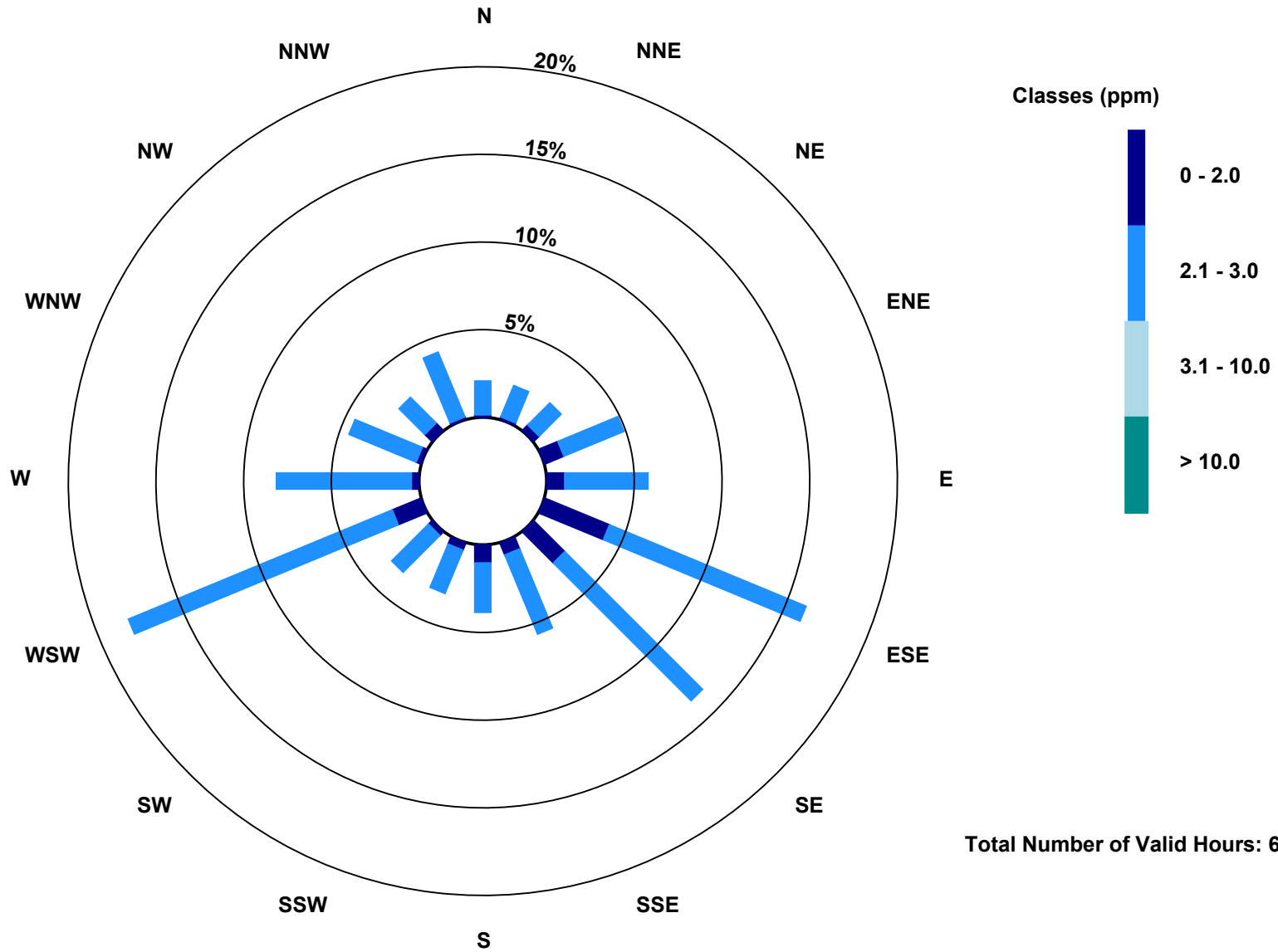
Total Number of Valid Hours: 676

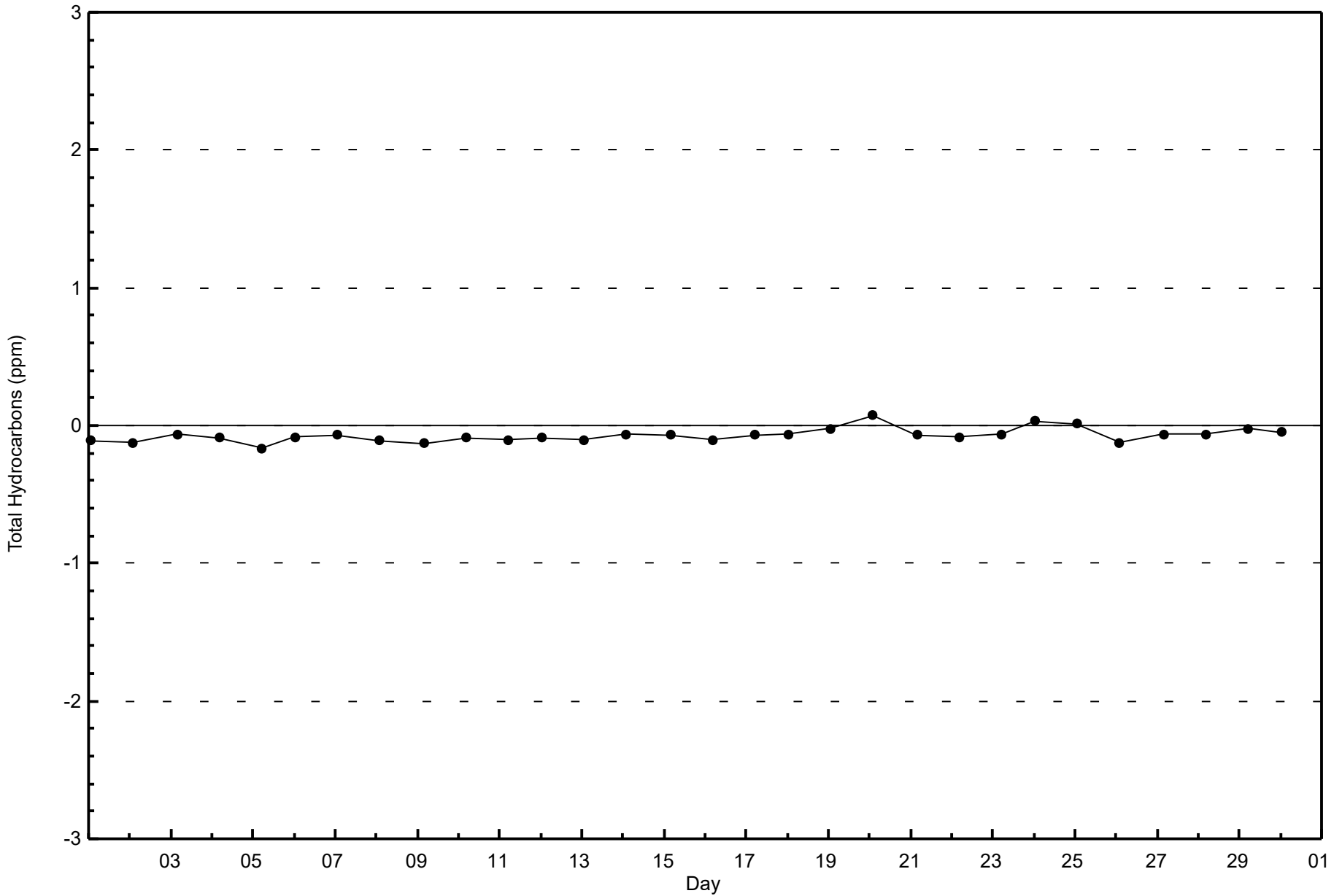
Total Number of Hours: 720

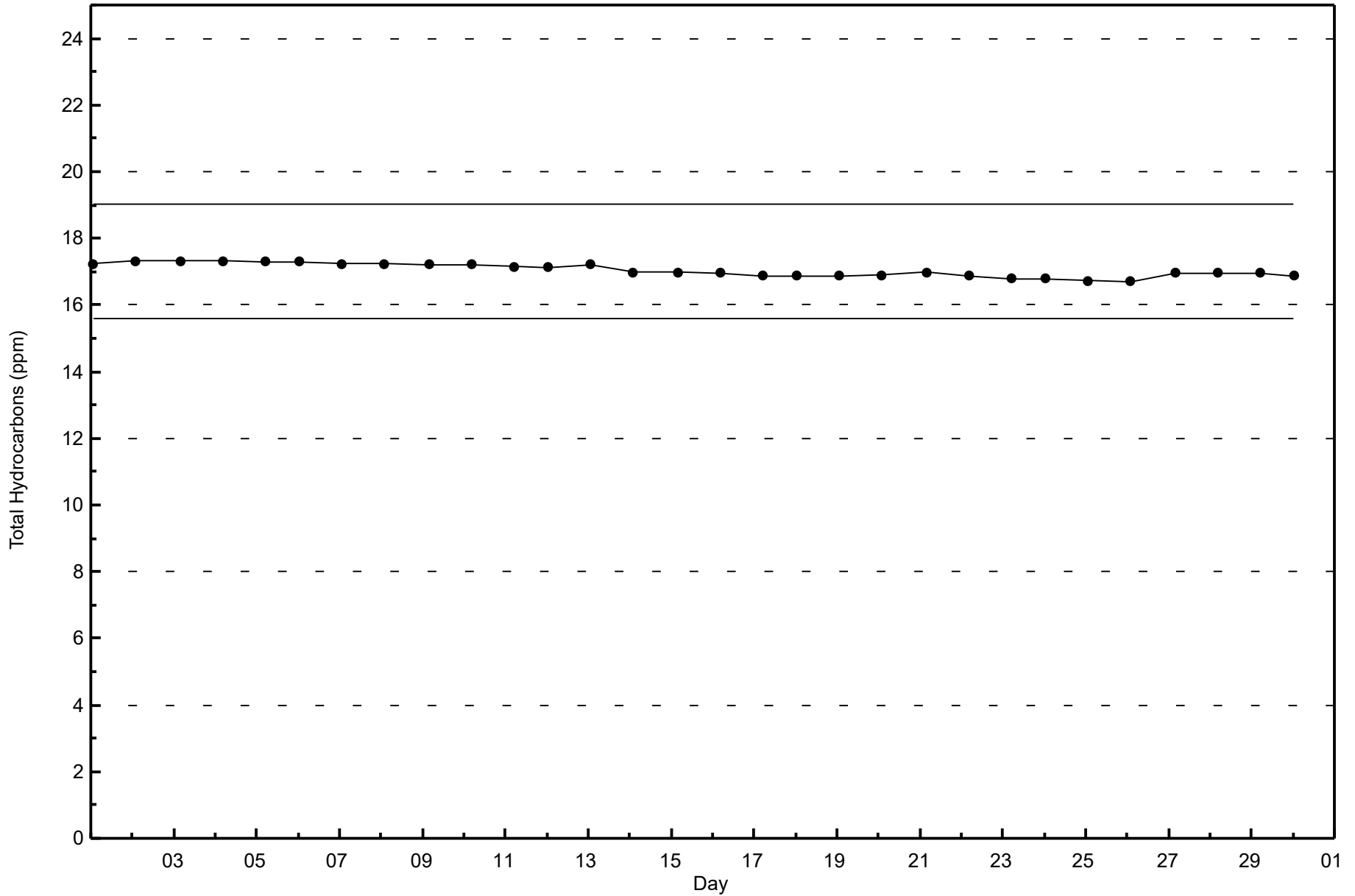


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Surmont 2









Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Surmont 2 - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 2.6 ppb on Apr 27 08:00	Maximum Daily Average: 0.4 ppb on Apr 3		Hours of Data:	684
Minimum Value: 0.0 ppb on Apr 12 20:00	Minimum Daily Average: 0.0 ppb on Apr 19		Hours of Missing Data:	36
Maximum Diurnal Average: 0.3 ppb at hour 8	Minimum Diurnal Average: 0.0 ppb at hour 2		Hours of Calibration:	36
Monthly Average: 0.11 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.1 P ₉₀ = 0.3 P ₉₉ = 0.9		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-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.6	1.1	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	0.0	0.0	0.0	0.1	1.1	
2-Apr	Z	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
3-Apr	0.0	Z	0.0	0.1	0.1	0.1	0.2	0.5	0.9	1.0	0.5	0.4	0.7	0.6	0.5	0.7	0.9	0.5	0.2	0.1	0.1	0.0	0.1	0.1	0.4	1.0	
4-Apr	0.1	0.1	Z	0.0	0.1	0.0	0.1	0.2	0.4	0.5	0.6	1.8	2.5	0.8	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.4	2.5	
5-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.2	0.4	0.5	0.7	0.8	0.5	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.8	
6-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.2	0.4	0.5	0.6	0.7	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	
7-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.3	0.4	0.4	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	
8-Apr	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.3	0.3	0.4	0.7	0.3	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	
9-Apr	0.0	Z	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	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	
10-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
11-Apr	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	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
12-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.4	
13-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.1	0.0	0.1	0.0	0.2	0.2	0.4	
14-Apr	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	
15-Apr	0.0	Z	0.1	0.0	0.0	0.1	0.2	0.3	0.4	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	0.0	0.1	0.4	
16-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.1	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	0.0	0.1	0.3	
17-Apr	0.0	0.0	0.0	Z	0.0	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	0.1	0.1	0.0	0.1	0.1	
18-Apr	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	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
19-Apr	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	
20-Apr	Z	0.0	0.0	0.0	0.0	0.1	0.3	0.3	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	0.1	0.3	
21-Apr	0.0	Z	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
22-Apr	0.0	0.0	Z	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	
23-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.3	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	0.1	0.3	
24-Apr	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	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	
25-Apr	0.1	0.1	0.1	0.0	0.1	Z	0.1	0.2	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	0.0	0.0	0.0	0.1	0.3	
26-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	C	C	C	C	C	C	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	--	0.1	
27-Apr	0.0	Z	0.1	0.1	0.1	0.1	0.8	2.6	1.6	0.6	0.4	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.3	2.6	
28-Apr	0.1	0.0	Z	0.0	0.0	0.1	0.1	0.0	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	0.0	0.0	0.0	0.0	0.1	
29-Apr	0.0	0.0	0.0	Z	0.1	0.2	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	
30-Apr	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.3	0.4	0.2	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	0.4	

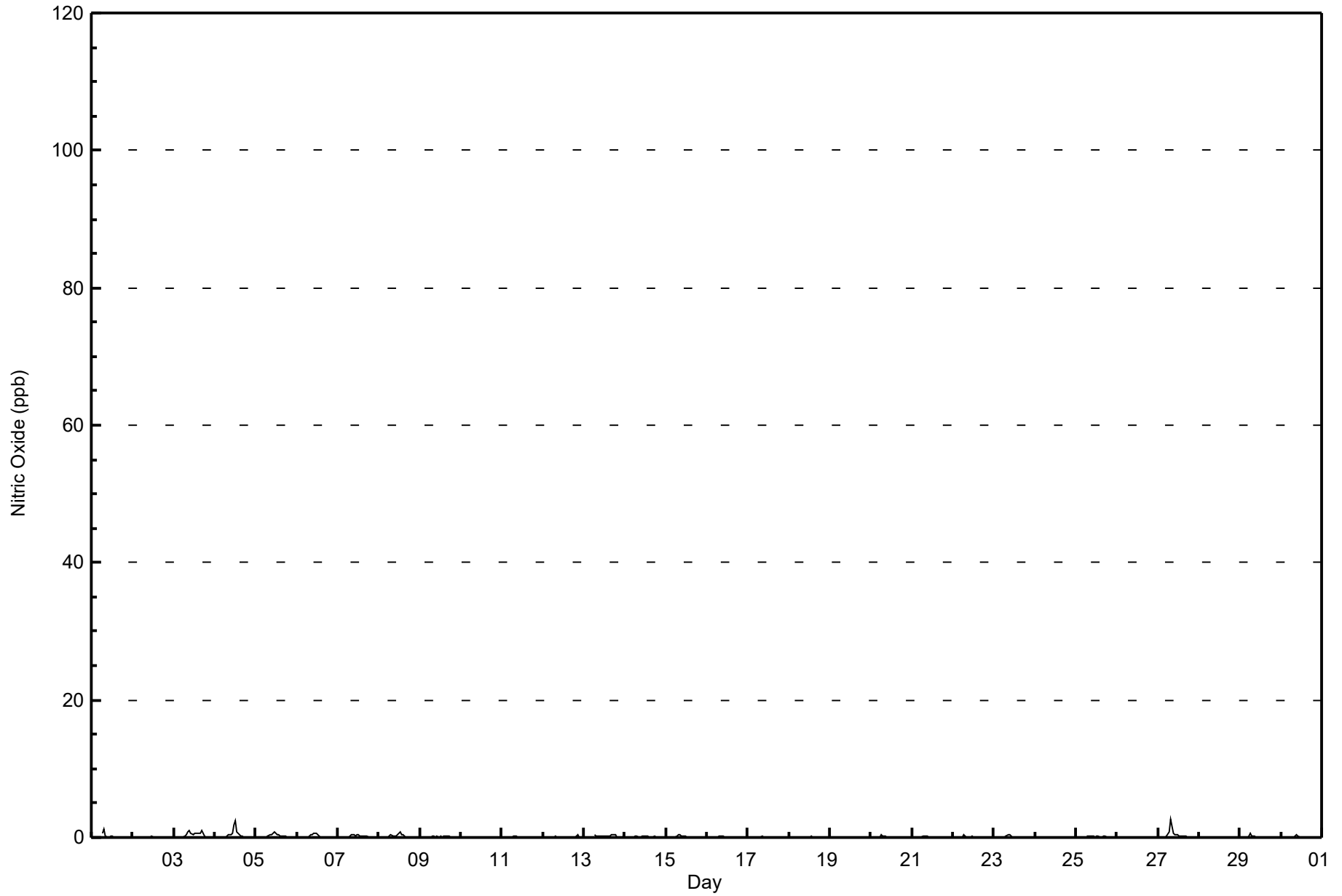
0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	Diurnal Average	
0.1	0.1	0.1	0.1	0.1	0.2	0.8	2.6	1.6	1.0	0.7	1.8	2.5	0.8	0.5	0.7	0.9	0.5	0.4	0.1	0.4	0.1	0.1	0.2	Diurnal Maximum		

Z - zerospan C - Calibration



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Surmont 2 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	13	16	17	32	40	107	92	38	27	23	22	118	54	31	17	29	676
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
Totals	13	16	17	32	40	107	92	38	27	23	22	118	54	31	17	29	676

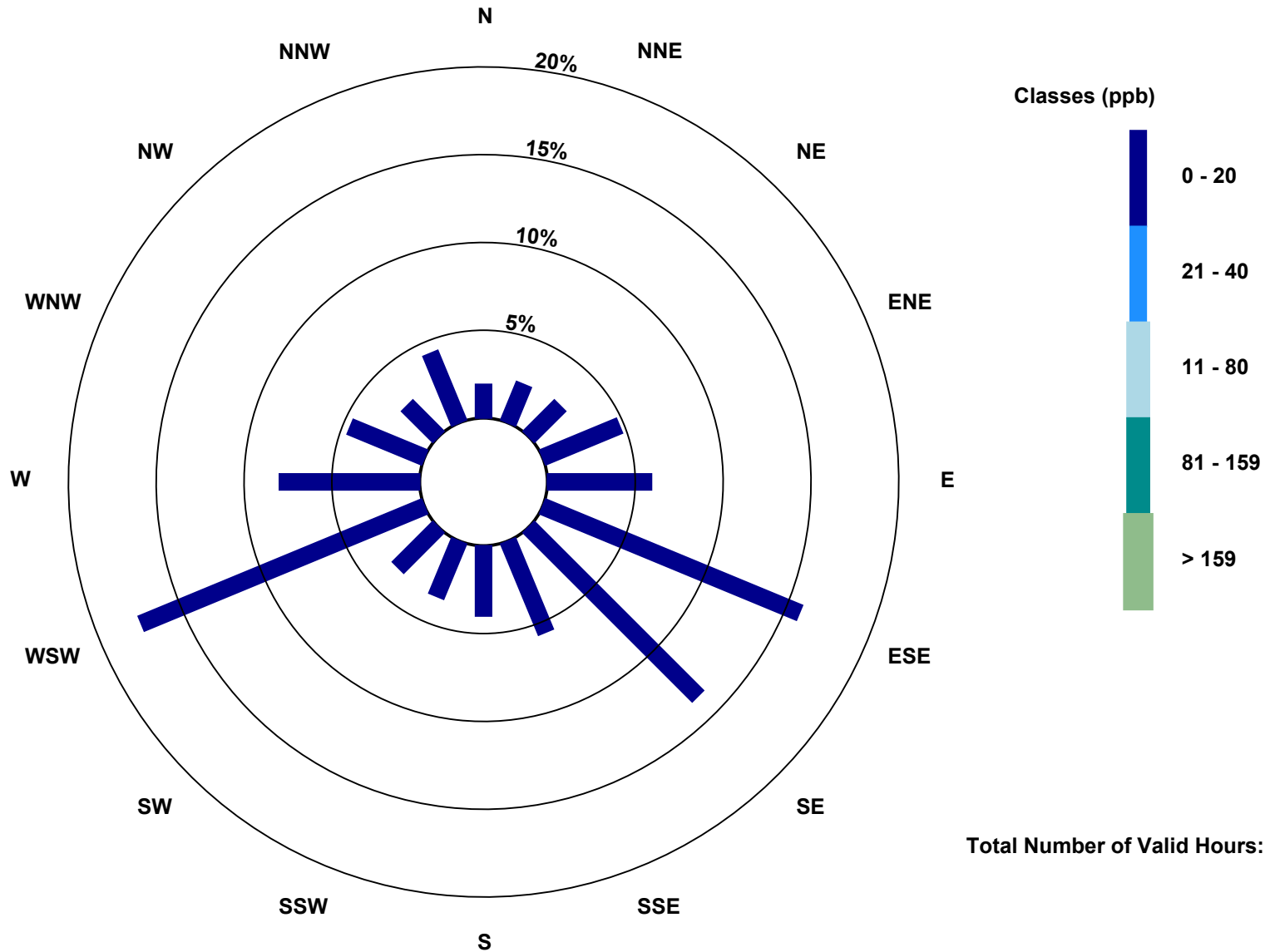
Total Number of Valid Hours: 676

Total Number of Hours: 720

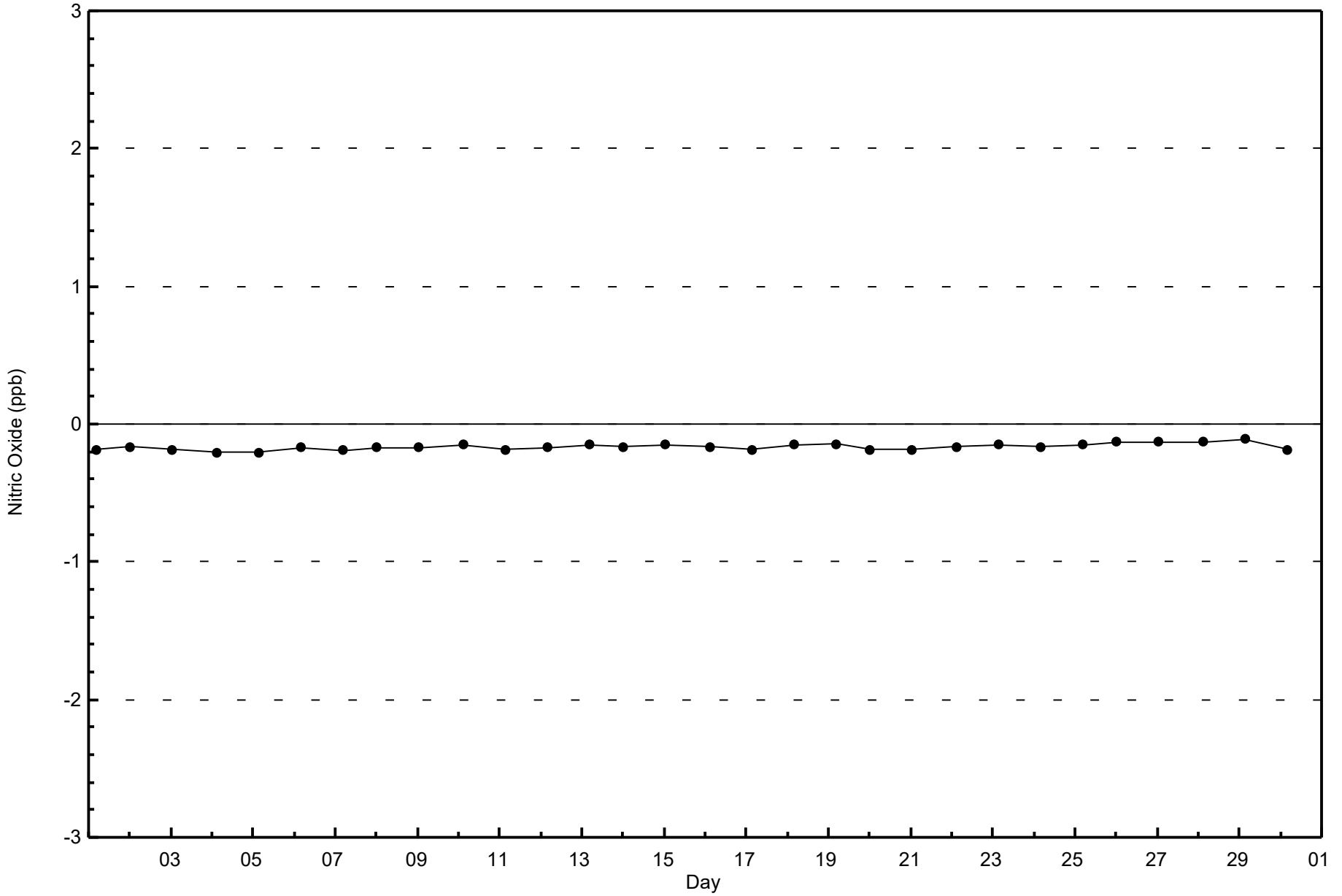


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Surmont 2



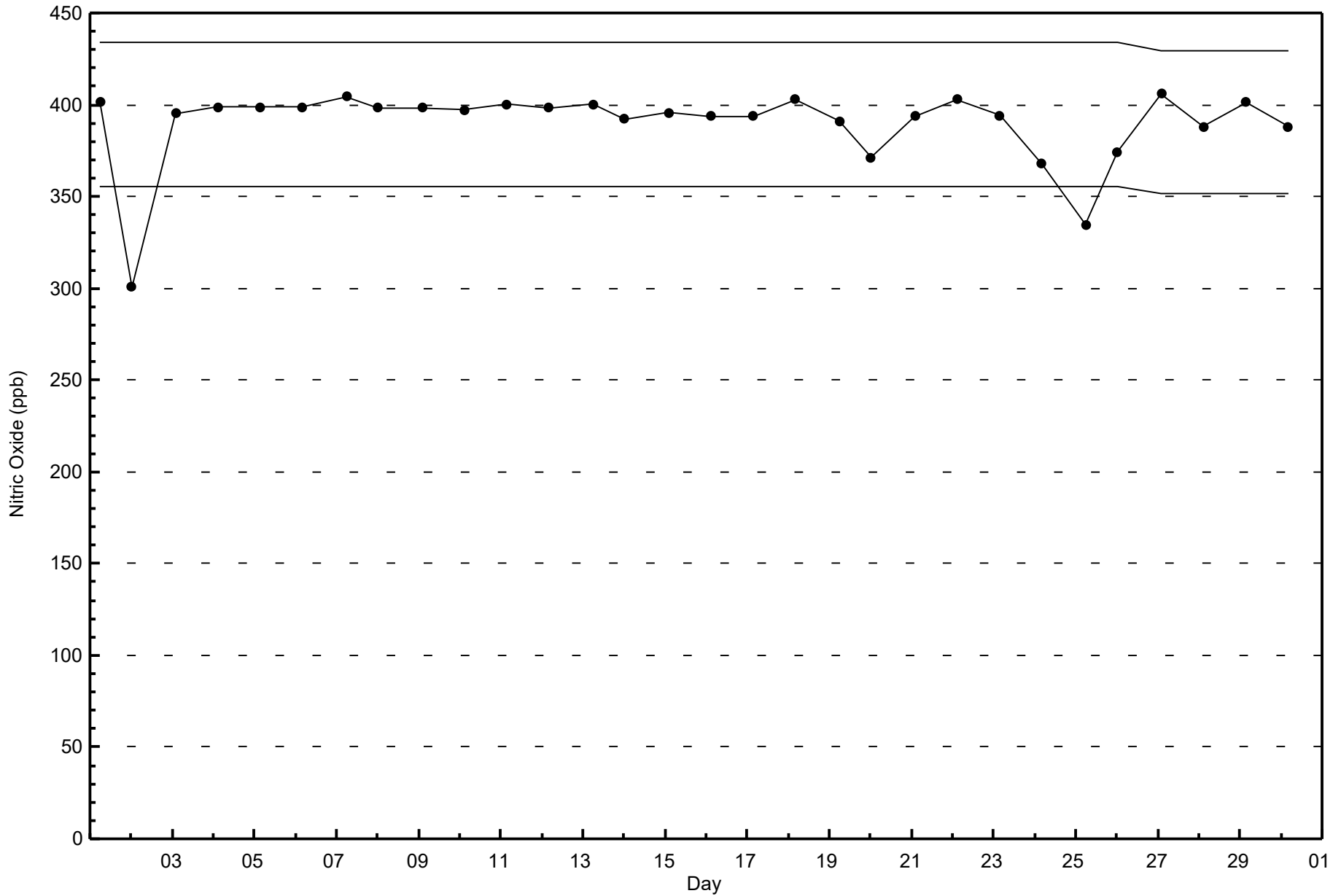
Total Number of Valid Hours: 676





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Surmont 2 - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

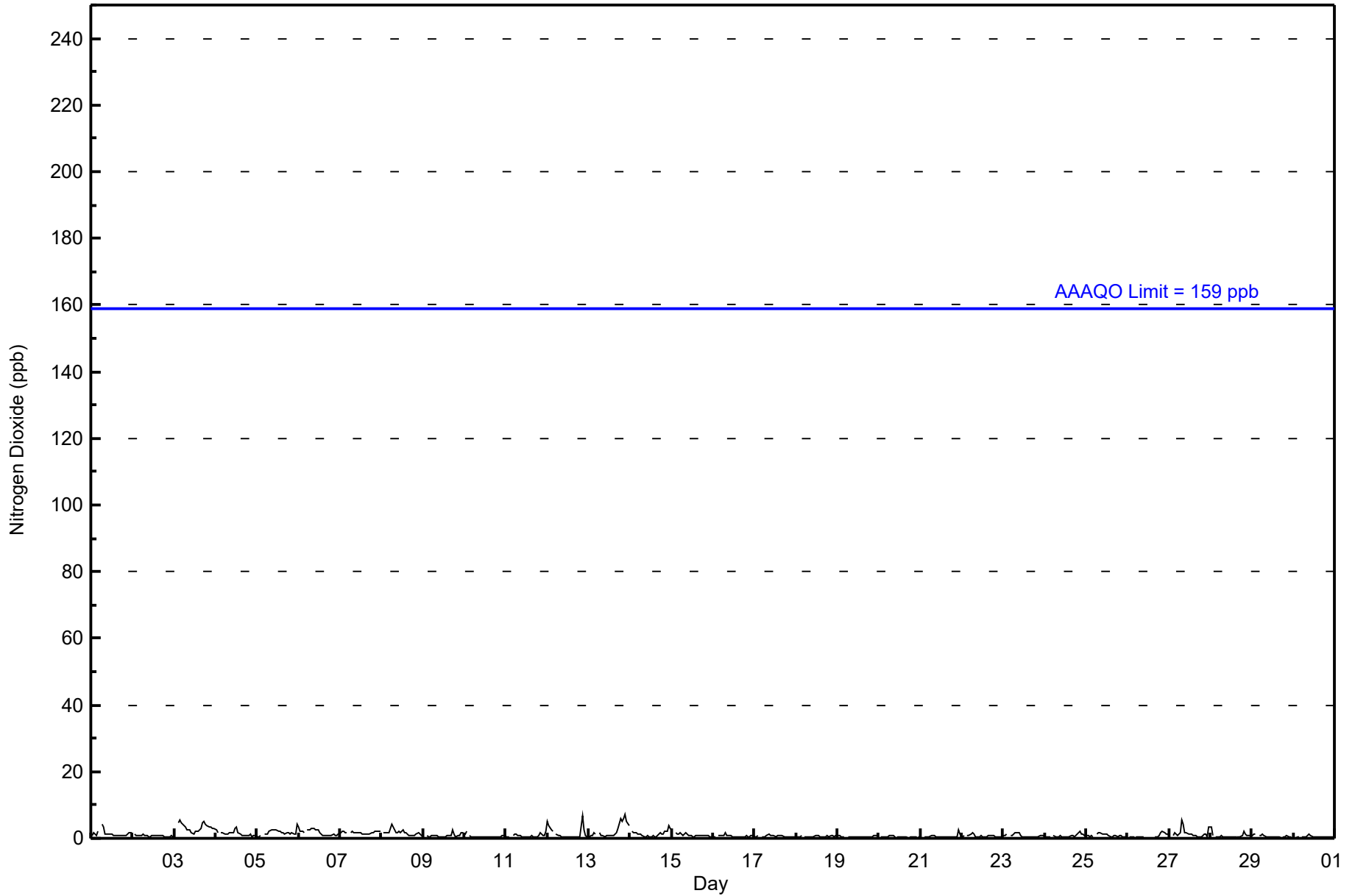
Surmont 2 - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 7.2 ppb on Apr 13 22:00		Maximum Daily Average: 3.2 ppb on Apr 3		Hours of Data:														684								
Minimum Value: 0.2 ppb on Apr 20 11:00		Minimum Daily Average: 0.4 ppb on Apr 20		Hours of Missing Data:														36								
Maximum Diurnal Average: 1.5 ppb at hour 21		Minimum Diurnal Average: 0.8 ppb at hour 15		Hours of Calibration:														36								
Monthly Average: 1.09 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.3 Q ₁ = 0.5 Median = 0.7 Q ₃ = 1.3 P ₉₀ = 2.1 P ₉₉ = 5.1		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-Apr	1.0	1.7	1.4	1.0	2.1	Z	4.3	3.6	1.1	1.1	1.3	1.3	1.2	1.0	1.0	0.9	1.0	1.0	0.9	0.9	1.0	1.3	1.5	1.6	1.4	4.3
2-Apr	Z	1.4	1.0	0.9	0.8	0.8	1.1	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.5	0.5	0.5	0.5	0.7	0.5	0.7	1.4
3-Apr	0.5	Z	4.5	5.6	4.5	4.2	3.6	2.6	2.6	2.6	1.6	1.3	2.1	2.1	2.1	3.0	4.8	5.1	4.2	3.9	3.6	3.2	2.9	2.8	3.2	5.6
4-Apr	2.7	1.8	Z	1.6	1.7	1.1	1.1	1.3	1.6	1.6	1.7	3.0	3.6	1.6	1.2	1.0	0.9	0.8	0.7	0.8	1.1	0.6	0.7	0.7	1.4	3.6
5-Apr	0.6	0.5	0.8	Z	1.1	1.1	1.4	2.1	2.5	2.5	2.5	2.6	2.0	2.0	1.8	1.5	1.3	1.6	1.9	1.3	1.5	1.3	1.2	4.4	1.7	4.4
6-Apr	3.2	2.1	2.1	1.9	Z	2.5	2.6	2.9	3.0	2.8	2.6	2.5	1.8	1.4	1.0	0.8	0.8	0.9	0.9	1.0	1.1	1.0	0.9	1.4	1.8	3.2
7-Apr	1.8	2.2	2.1	1.8	1.6	Z	1.6	2.0	1.9	1.8	1.5	1.6	1.6	1.3	1.3	1.3	1.3	1.4	1.5	1.7	2.0	2.1	2.0	2.0	1.7	2.2
8-Apr	Z	1.9	1.9	1.8	1.8	2.9	4.2	3.6	1.8	1.8	2.0	1.9	2.4	1.6	1.7	1.4	1.0	0.8	0.8	1.0	1.1	1.5	1.2	0.9	1.8	4.2
9-Apr	1.0	Z	0.9	0.6	0.6	0.8	0.9	0.8	0.7	0.5	0.6	0.5	0.6	0.5	0.7	0.9	1.0	2.5	1.1	0.5	0.8	0.9	1.7	1.8	0.9	2.5
10-Apr	1.3	2.3	Z	0.8	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.6	0.5	0.7	0.7	0.6	2.3
11-Apr	0.6	0.6	0.6	Z	0.8	1.2	1.4	0.9	0.7	0.5	0.4	0.4	0.5	0.5	0.6	0.7	0.5	0.6	0.6	0.8	1.5	0.7	0.7	2.1	0.8	2.1
12-Apr	5.2	4.0	2.7	2.2	Z	1.1	0.9	0.8	0.5	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.6	0.5	6.9	2.4	0.7	0.6	1.4	6.9
13-Apr	0.6	0.7	0.8	1.7	1.4	Z	1.7	0.9	0.7	0.5	0.7	0.8	0.9	0.9	0.9	1.2	1.8	3.0	5.8	5.0	5.9	7.2	4.9	3.7	2.2	7.2
14-Apr	Z	2.0	1.6	1.7	1.4	1.2	1.3	0.8	0.4	0.5	0.7	0.6	0.6	0.7	0.5	0.5	0.7	1.6	1.1	1.1	2.0	2.2	3.8	2.8	1.3	3.8
15-Apr	2.6	Z	1.9	1.2	1.1	1.8	1.0	1.1	1.7	1.2	0.8	0.8	0.6	0.6	0.7	0.7	0.9	0.9	0.9	0.7	0.7	0.7	0.6	0.6	1.0	2.6
16-Apr	0.6	0.5	Z	0.7	0.8	0.7	0.7	1.5	0.9	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.4	0.7	0.8	0.7	1.5
17-Apr	0.6	0.5	0.8	Z	0.5	0.6	0.6	0.8	1.2	0.7	0.7	0.7	0.6	0.7	0.7	0.9	0.8	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.7	1.2
18-Apr	0.6	0.4	0.6	0.7	Z	0.5	0.4	0.5	0.4	0.5	0.4	0.7	0.7	0.7	0.6	0.5	0.5	0.6	0.7	0.5	1.0	0.9	0.6	0.7	0.6	1.0
19-Apr	0.8	0.7	0.6	0.6	0.5	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.8	0.8	0.7	0.5	0.8
20-Apr	Z	0.4	0.3	0.3	0.4	0.5	1.0	1.0	0.7	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.5	0.3	0.2	0.3	0.4	1.0
21-Apr	0.3	Z	0.3	0.3	0.4	0.4	0.8	0.9	0.8	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	2.5	1.3	0.6	2.5
22-Apr	0.6	0.9	Z	0.7	0.7	1.2	1.5	1.2	0.5	0.5	0.5	0.8	0.6	0.5	0.6	0.7	0.9	0.8	0.8	0.6	0.6	0.6	0.6	0.5	0.7	1.5
23-Apr	0.7	0.9	1.1	Z	0.8	0.9	1.1	1.5	1.9	1.6	0.9	0.6	0.6	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.9	0.8	0.7	0.9	1.9
24-Apr	0.6	0.5	0.4	0.5	Z	0.7	0.6	0.5	0.5	0.7	0.6	0.5	0.5	0.4	0.5	0.7	0.7	0.6	0.7	1.4	2.0	1.3	1.4	1.0	0.8	2.0
25-Apr	0.9	0.7	0.6	0.7	0.6	Z	1.1	1.7	1.6	1.2	1.1	1.2	1.2	0.7	0.5	0.6	0.7	0.8	0.4	0.7	0.7	0.4	0.6	0.4	0.8	1.7
26-Apr	Z	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.3	C	C	C	C	C	C	0.4	0.5	0.8	1.6	2.3	1.7	1.3	1.2	--	2.3
27-Apr	0.9	Z	0.7	1.5	1.1	0.9	1.8	5.3	4.1	1.8	1.5	1.4	1.3	1.1	0.8	0.7	0.6	0.4	0.5	0.5	1.2	1.3	0.3	3.4	1.4	5.3
28-Apr	3.5	0.8	Z	0.6	0.6	0.6	0.7	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.5	1.0	2.0	1.2	1.0	0.9	0.9	0.8	3.5
29-Apr	0.7	1.2	1.2	Z	0.8	0.8	1.2	0.7	0.6	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.5	0.9	0.4	0.3	0.2	0.5	1.2
30-Apr	0.2	0.2	0.3	0.4	Z	0.3	0.3	0.5	1.0	1.2	0.9	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.6	0.5	1.2
																								Diurnal Average		
																								Diurnal Maximum		
																								1.3 1.2 1.2 1.2 1.1 1.1 1.3 1.4 1.2 1.0 0.9 0.9 0.9 0.8 0.8 0.8 0.8 1.0 1.0 1.0 1.5 1.3 1.2 1.3		
																								5.2 4.0 4.5 5.6 4.5 4.2 4.3 5.3 4.1 2.8 2.6 3.0 3.6 2.1 2.1 3.0 4.8 5.1 5.8 5.0 6.9 7.2 4.9 4.4		
Z - zerospan C - Calibration																										
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Dioxide (NO₂) - ppb
Surmont 2 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Surmont 2 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	13	16	17	32	40	107	92	38	27	23	22	118	54	31	17	29	676
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
Totals	13	16	17	32	40	107	92	38	27	23	22	118	54	31	17	29	676

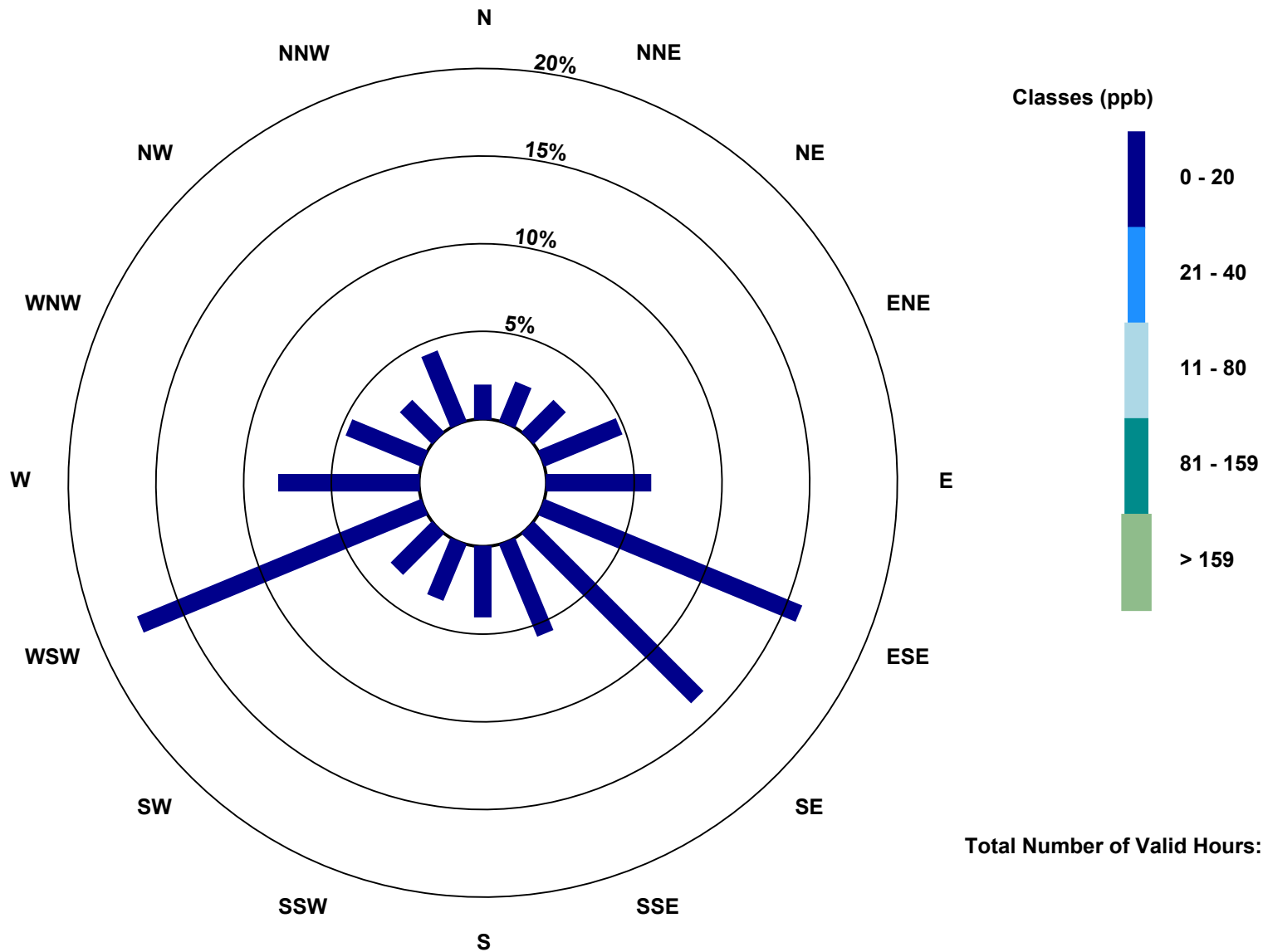
Total Number of Valid Hours: 676

Total Number of Hours: 720

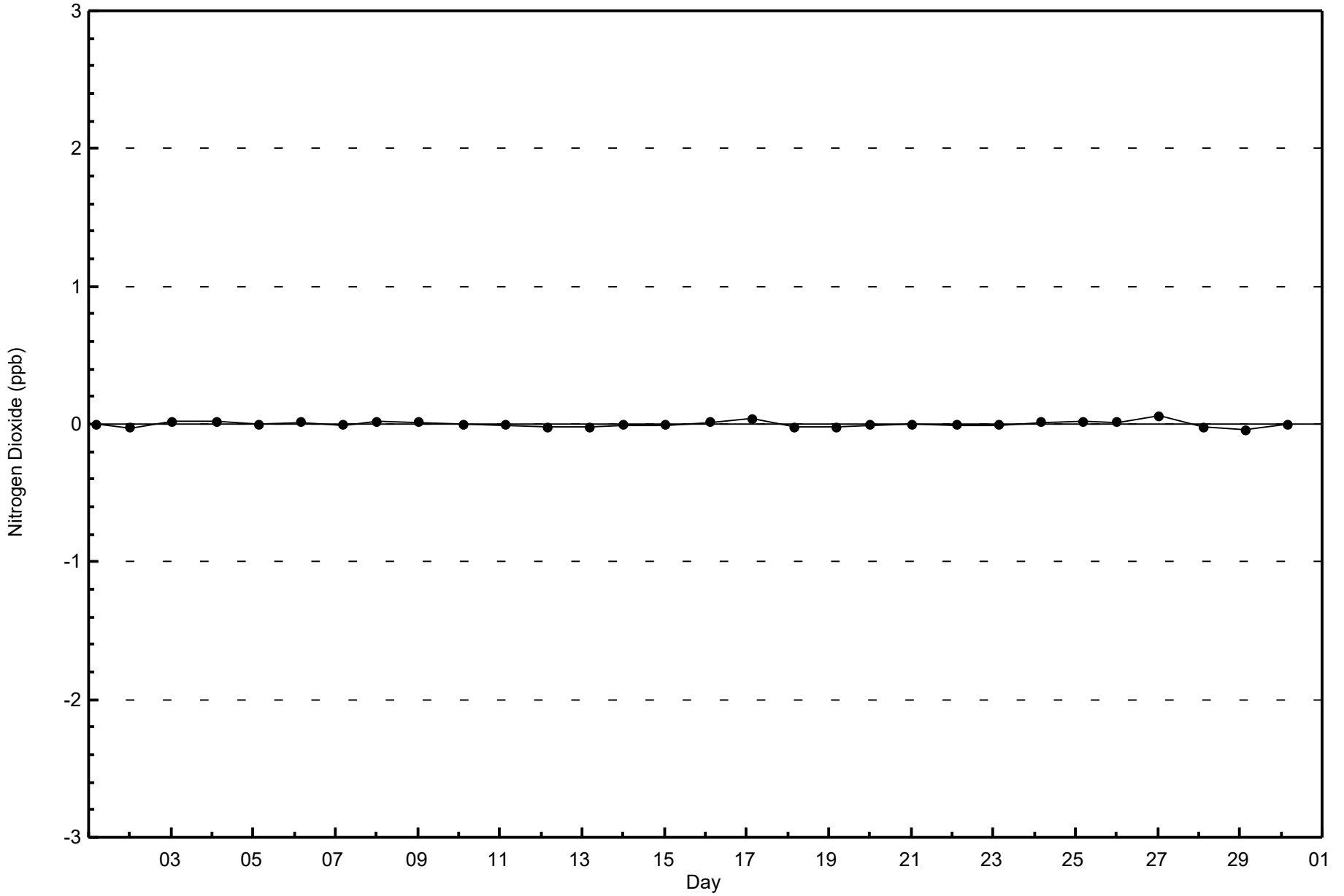


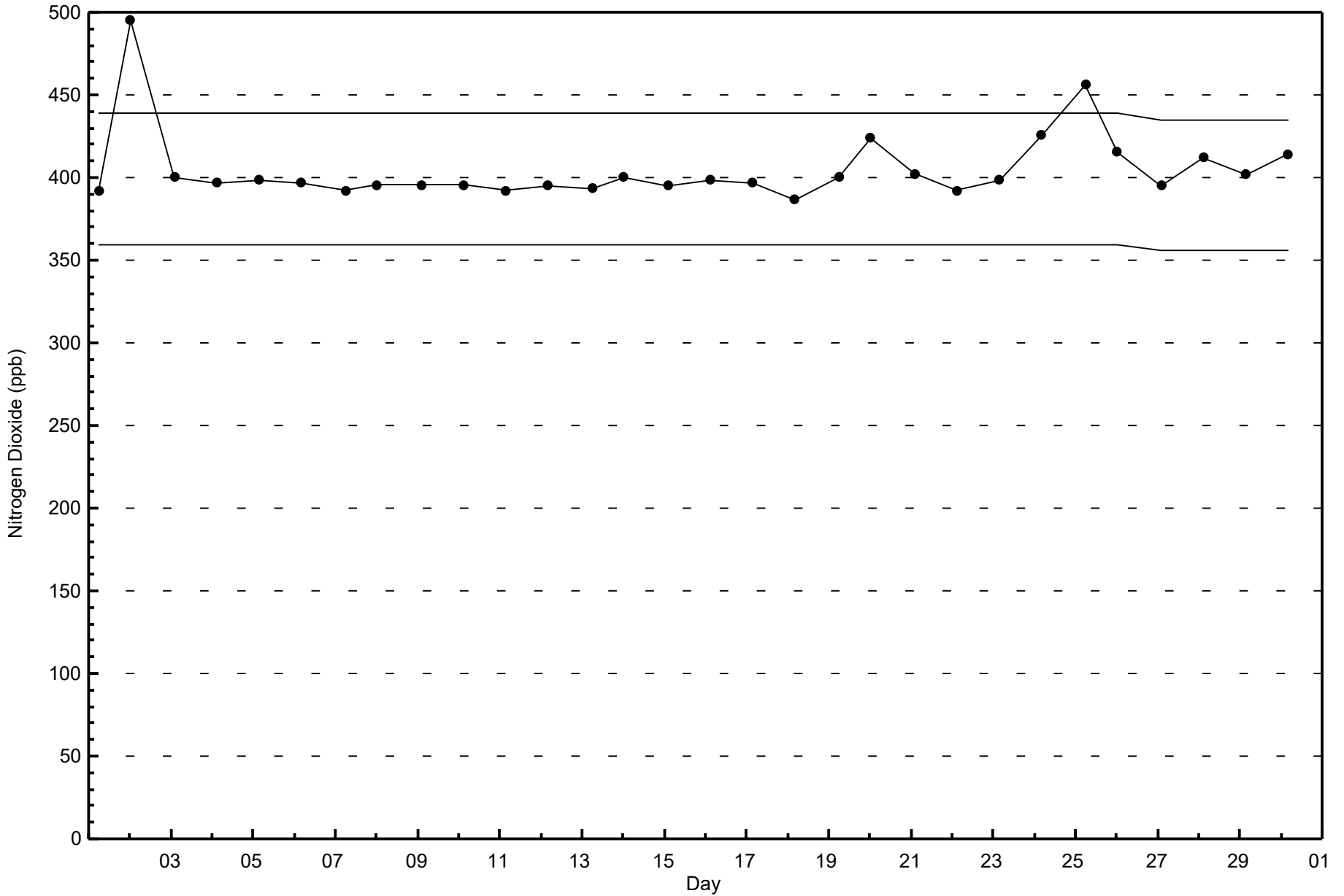
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Surmont 2



Total Number of Valid Hours: 676







Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_x) - ppb

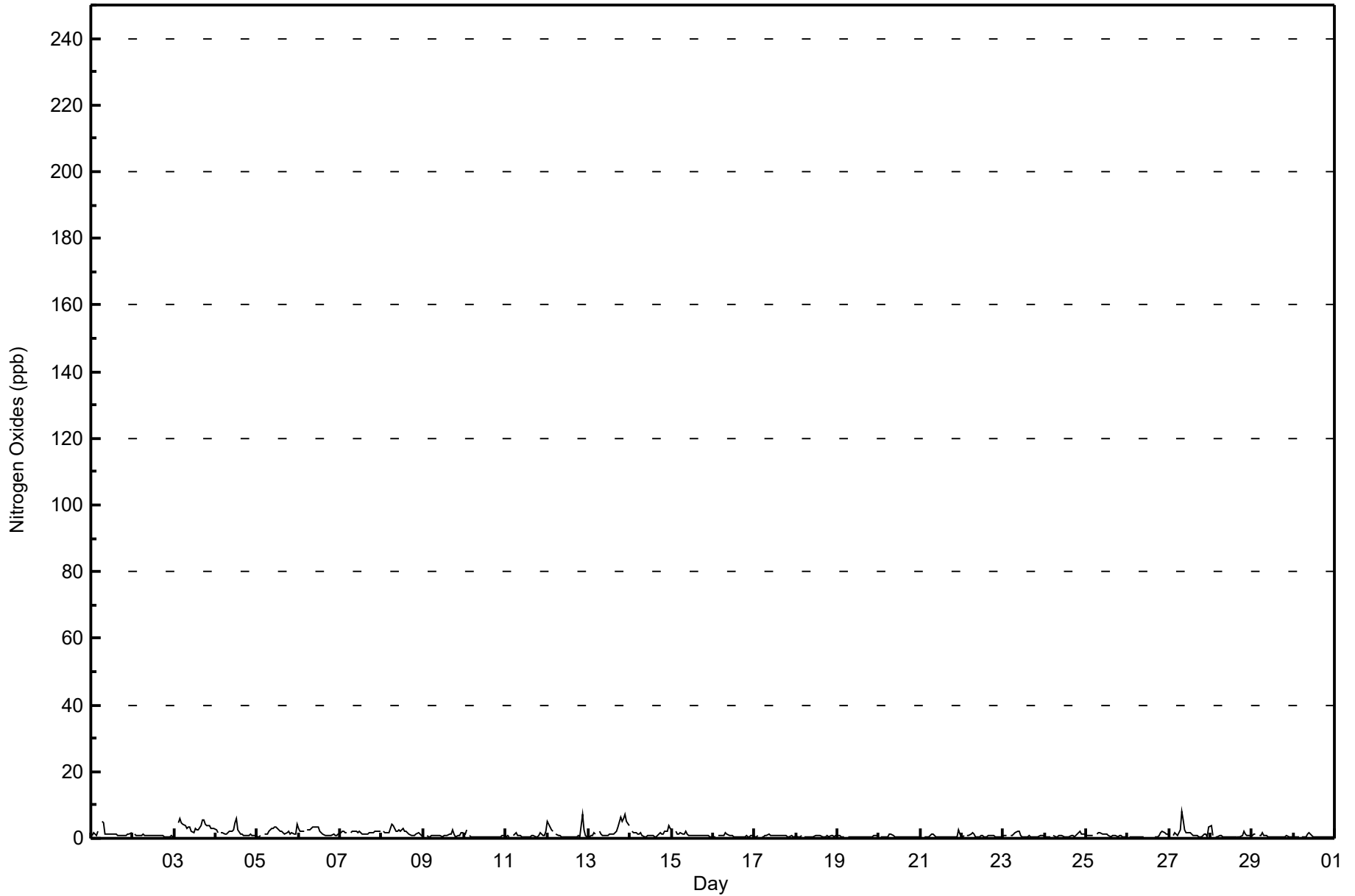
Surmont 2 - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720				
Maximum Value: 7.9 ppb on Apr 27 08:00		Maximum Daily Average: 3.6 ppb on Apr 3																			Hours of Data:	684				
Minimum Value: 0.2 ppb on Apr 20 23:00		Minimum Daily Average: 0.4 ppb on Apr 20																			Hours of Missing Data:	36				
Maximum Diurnal Average: 1.7 ppb at hour 8		Minimum Diurnal Average: 0.8 ppb at hour 15																			Hours of Calibration:	36				
Monthly Average: 1.19 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 0.5 Median = 0.8 Q ₃ = 1.4 P ₉₀ = 2.3 P ₉₉ = 5.7																			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-Apr	1.0	1.7	1.4	1.0	2.1	Z	4.9	4.7	1.3	1.2	1.4	1.4	1.3	1.1	1.1	1.0	1.0	1.0	0.9	0.9	1.0	1.3	1.5	1.6	1.5	4.9
2-Apr	Z	1.4	1.0	0.9	0.8	0.8	1.1	0.7	0.8	0.7	0.7	0.8	0.8	0.7	0.7	0.9	0.7	0.8	0.5	0.5	0.5	0.5	0.7	0.5	0.8	1.4
3-Apr	0.5	Z	4.5	5.7	4.6	4.3	3.8	3.1	3.5	3.6	2.1	1.7	2.8	2.7	2.6	3.7	5.7	5.6	4.4	4.0	3.7	3.2	3.0	2.9	3.6	5.7
4-Apr	2.8	1.9	Z	1.6	1.8	1.1	1.2	1.5	2.0	2.1	2.3	4.8	6.1	2.4	1.5	1.2	1.0	0.9	0.8	0.8	1.1	0.7	0.7	0.7	1.8	6.1
5-Apr	0.6	0.5	0.8	Z	1.1	1.1	1.5	2.3	2.9	3.0	3.2	3.4	2.5	2.3	2.1	1.6	1.4	1.7	2.0	1.3	1.5	1.3	1.2	4.4	1.9	4.4
6-Apr	3.2	2.1	2.1	1.9	Z	2.5	2.7	3.1	3.4	3.3	3.2	3.2	2.2	1.6	1.1	0.9	0.9	1.0	0.9	1.0	1.1	1.0	0.9	1.4	2.0	3.4
7-Apr	1.8	2.2	2.1	1.8	1.6	Z	1.7	2.3	2.3	2.2	1.8	2.0	1.9	1.5	1.5	1.4	1.4	1.5	1.6	1.7	2.0	2.1	2.0	2.0	1.8	2.3
8-Apr	Z	1.9	1.9	1.8	1.8	3.0	4.4	4.0	2.0	2.1	2.3	2.3	3.1	1.9	2.1	1.6	1.1	0.9	0.8	1.0	1.1	1.5	1.2	0.9	1.9	4.4
9-Apr	1.0	Z	0.9	0.6	0.6	0.8	1.0	0.9	0.8	0.6	0.7	0.6	0.7	0.6	0.8	1.1	1.2	2.7	1.2	0.5	0.8	0.9	1.7	1.8	1.0	2.7
10-Apr	1.3	2.3	Z	0.8	0.5	0.5	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.6	0.5	0.5	0.4	0.4	0.6	0.5	0.7	0.7	0.6	2.3
11-Apr	0.6	0.6	0.6	Z	0.8	1.2	1.5	1.0	0.8	0.6	0.5	0.5	0.5	0.6	0.6	0.8	0.6	0.6	0.6	0.8	1.5	0.7	0.7	2.1	0.8	2.1
12-Apr	5.2	4.0	2.7	2.2	Z	1.1	1.0	0.9	0.6	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.5	7.3	2.4	0.7	0.6	1.5	7.3
13-Apr	0.6	0.7	0.8	1.7	1.4	Z	2.0	1.2	0.9	0.6	0.8	1.0	1.1	1.1	1.1	1.5	2.2	3.4	6.2	5.1	5.9	7.3	4.9	3.9	2.4	7.3
14-Apr	Z	2.0	1.6	1.7	1.4	1.3	1.5	0.9	0.5	0.6	0.8	0.7	0.7	0.8	0.6	0.5	0.7	1.7	1.2	1.1	2.0	2.2	3.8	2.8	1.3	3.8
15-Apr	2.6	Z	2.0	1.2	1.1	1.9	1.2	1.4	2.1	1.4	0.9	0.9	0.7	0.7	0.7	0.9	0.9	0.9	0.9	0.7	0.7	0.7	0.6	0.6	1.1	2.6
16-Apr	0.6	0.5	Z	0.7	0.8	0.7	0.8	1.8	1.1	0.9	0.8	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.7	0.5	0.4	0.7	0.8	0.7	1.8
17-Apr	0.6	0.5	0.8	Z	0.5	0.6	0.7	0.9	1.3	0.8	0.8	0.8	0.7	0.7	0.7	1.0	0.9	0.7	0.7	0.6	0.6	0.7	0.6	0.5	0.7	1.3
18-Apr	0.6	0.4	0.6	0.7	Z	0.5	0.4	0.5	0.4	0.5	0.5	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.7	0.5	1.0	0.9	0.6	0.7	0.6	1.0
19-Apr	0.8	0.7	0.6	0.6	0.5	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.8	0.8	0.7	0.5	0.8
20-Apr	Z	0.4	0.3	0.3	0.4	0.6	1.3	1.3	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.5	0.3	0.2	0.3	0.4	1.3
21-Apr	0.3	Z	0.3	0.3	0.4	0.5	1.1	1.2	1.0	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	2.5	1.3	0.6	2.5
22-Apr	0.6	0.9	Z	0.7	0.7	1.3	1.8	1.4	0.6	0.6	0.5	1.0	0.7	0.6	0.6	0.7	0.9	0.8	0.8	0.6	0.6	0.6	0.6	0.5	0.8	1.8
23-Apr	0.7	0.9	1.1	Z	0.8	0.9	1.1	1.7	2.2	1.9	1.0	0.6	0.6	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.9	0.8	0.7	0.9	2.2
24-Apr	0.6	0.5	0.4	0.5	Z	0.7	0.6	0.6	0.6	0.8	0.7	0.6	0.6	0.5	0.6	0.8	0.7	0.6	0.7	1.4	2.1	1.4	1.4	1.1	0.8	2.1
25-Apr	1.0	0.8	0.7	0.7	0.7	Z	1.2	1.9	1.9	1.4	1.3	1.3	1.3	0.8	0.6	0.7	0.8	0.9	0.5	0.8	0.8	0.4	0.6	0.4	0.9	1.9
26-Apr	Z	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.5	0.3	C	C	C	C	C	C	0.4	0.6	0.9	1.6	2.3	1.7	1.3	1.2	--	2.3
27-Apr	0.9	Z	0.8	1.6	1.2	1.0	2.6	7.9	5.7	2.4	1.9	1.7	1.6	1.4	0.9	0.8	0.7	0.5	0.5	0.5	1.3	1.3	0.3	3.4	1.8	7.9
28-Apr	3.6	0.8	Z	0.6	0.6	0.7	0.8	0.4	0.4	0.4	0.5	0.4	0.3	0.5	0.4	0.4	0.4	0.5	1.0	2.0	1.2	1.0	0.9	0.9	0.8	3.6
29-Apr	0.7	1.2	1.2	Z	0.9	1.0	1.7	1.0	0.7	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.3	0.5	0.9	0.4	0.3	0.2	0.6	1.7
30-Apr	0.2	0.2	0.3	0.4	Z	0.4	0.4	0.6	1.3	1.6	1.1	0.6	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.6	0.5	1.6
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Surmont 2 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	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: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Surmont 2 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	13	16	17	32	40	107	92	38	27	23	22	118	54	31	17	29	676
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
Totals	13	16	17	32	40	107	92	38	27	23	22	118	54	31	17	29	676

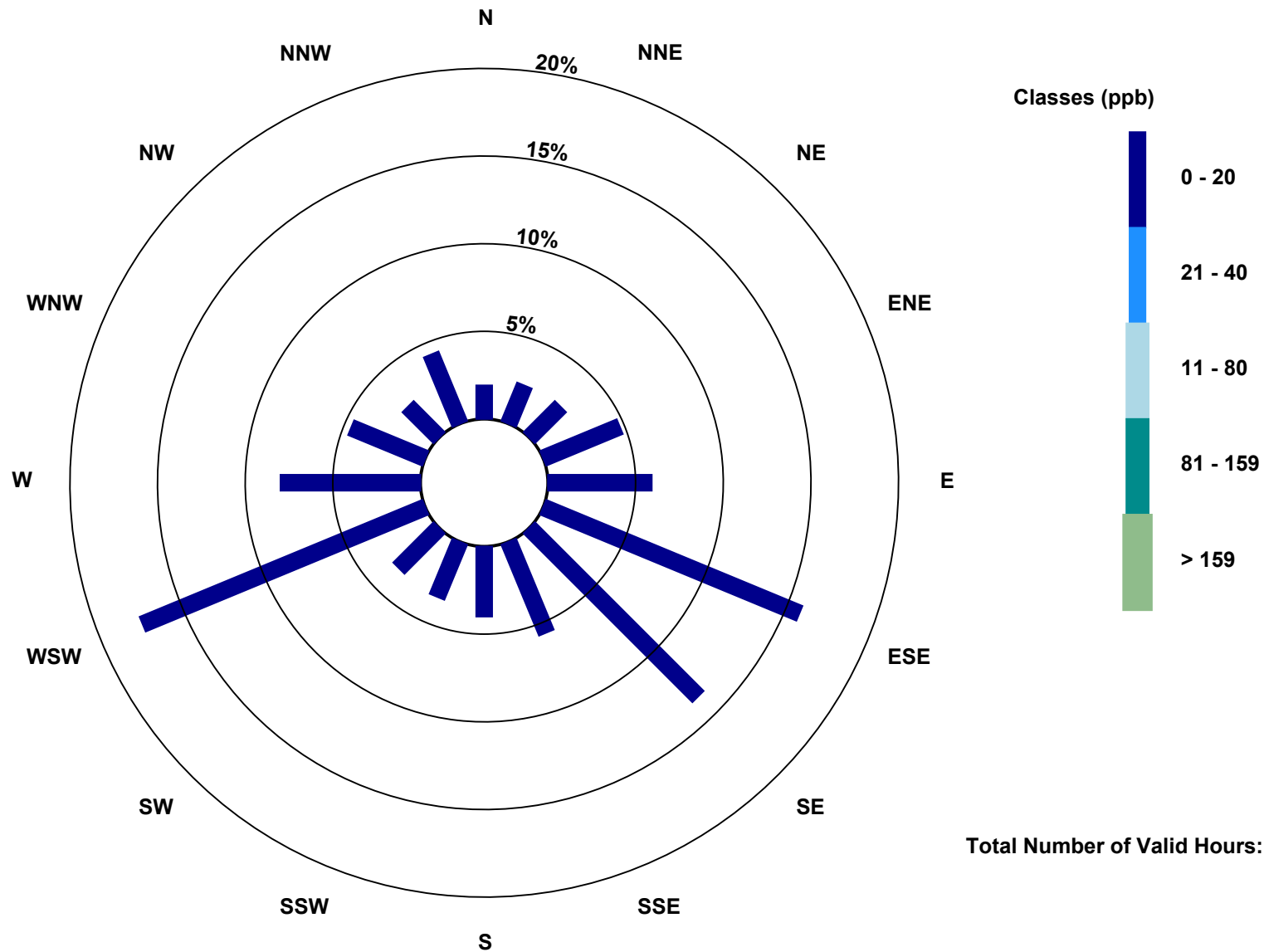
Total Number of Valid Hours: 676

Total Number of Hours: 720

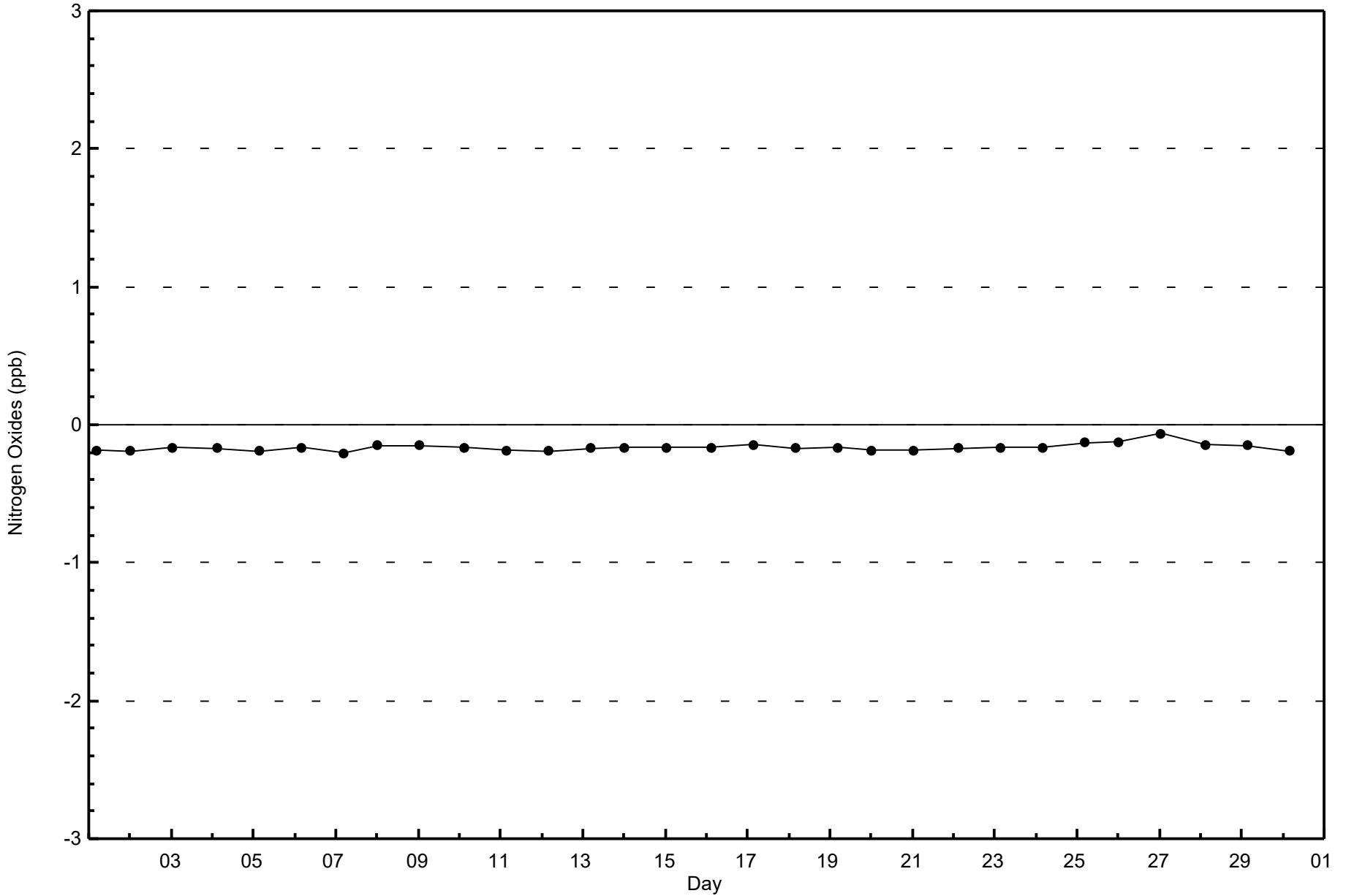


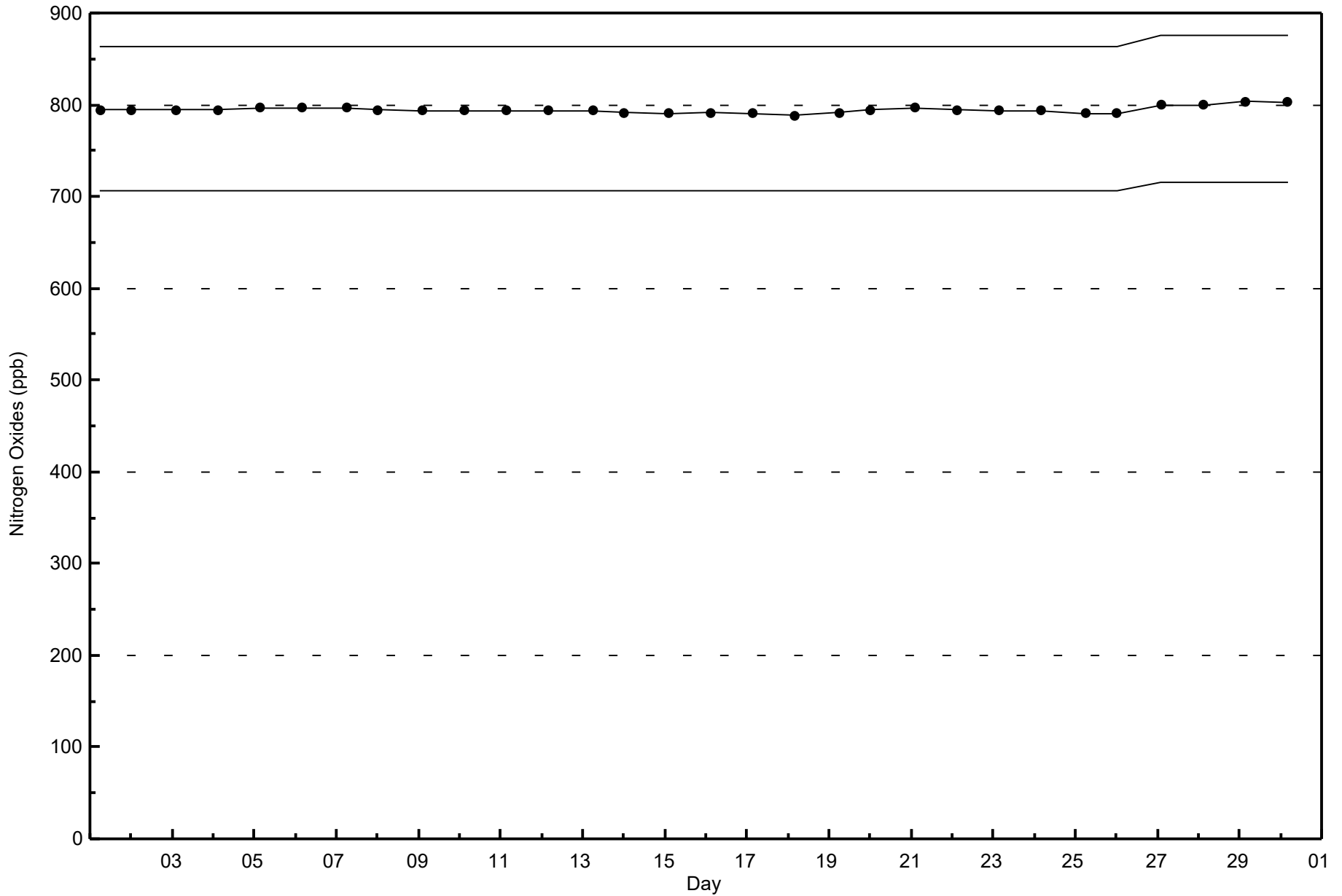
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Surmont 2



Total Number of Valid Hours: 676



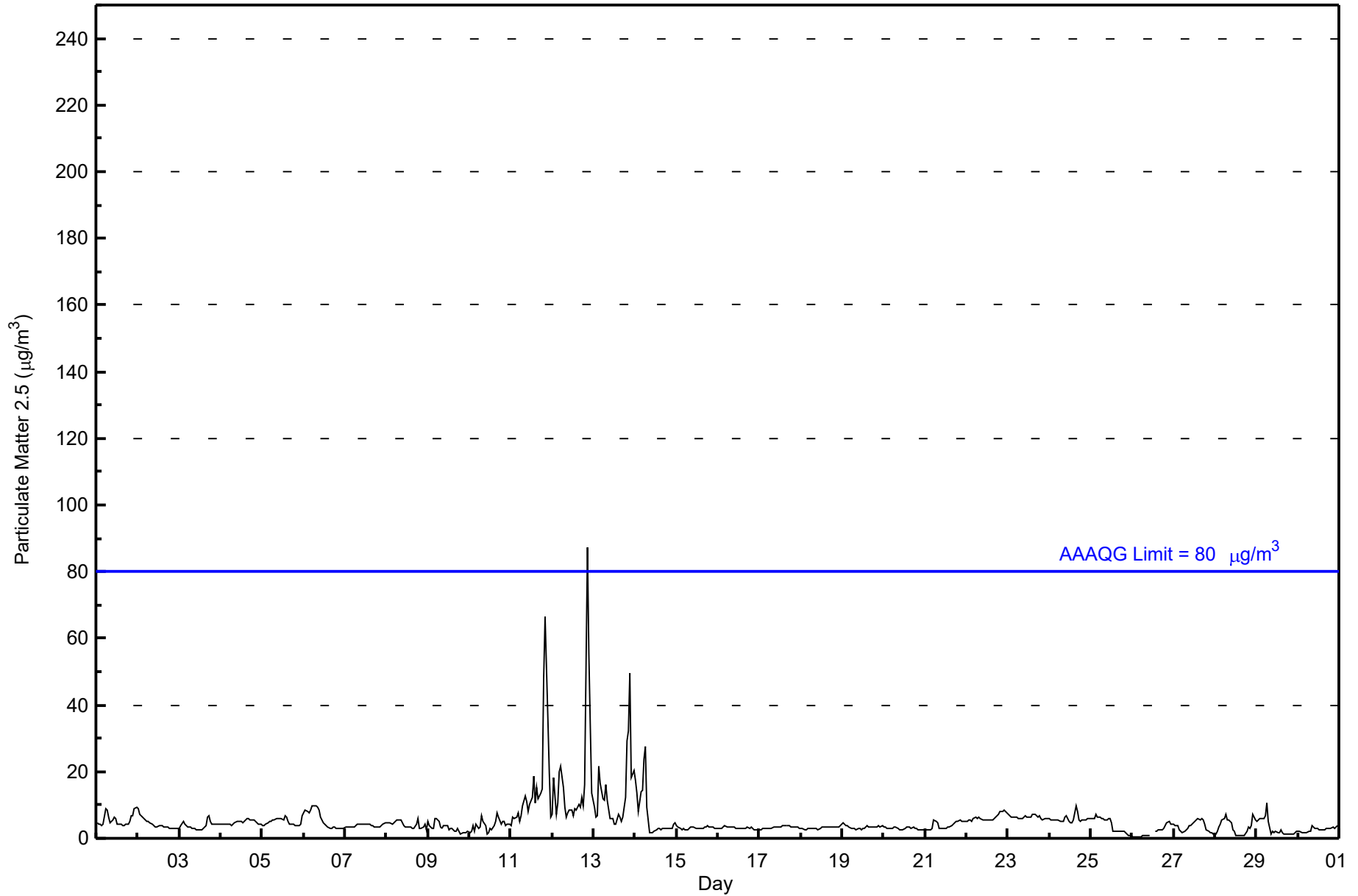




Summary of Hour Averages

Surmont 2 - April 2023

Number of Exceedences (AAAQO):		1-hr: 1	24-hr: 0	Hours in Service: 720																	720					
Maximum Value: 87.1 µg/m ³ on Apr 12 21:00		Maximum Daily Average: 17.1 µg/m ³ on Apr 12																	718							
Minimum Value: 0.2 µg/m ³ on Apr 26 02:00		Minimum Daily Average: 2.0 µg/m ³ on Apr 26																	2							
Maximum Diurnal Average: 9.6 µg/m ³ at hour 21		Minimum Diurnal Average: 4.1 µg/m ³ at hour 13																	2							
Monthly Average: 5.26 µg/m ³		Percentiles: P ₁ = 0.7 P ₁₀ = 2.2 Q ₁ = 3.0 Median = 3.9 Q ₃ = 5.7 P ₉₀ = 8.1 P ₉₉ = 31.8																	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-Apr	4.7	4.1	4.4	3.7	4.4	8.8	8.3	6.5	4.8	5.6	6.2	5.9	4.4	4.2	4.2	3.9	4.0	4.4	4.3	5.0	6.6	6.8	8.8	9.3	5.6	9.3
2-Apr	8.7	7.0	6.7	6.0	5.6	5.2	5.0	4.7	4.3	3.8	3.4	3.4	3.6	3.7	3.6	3.4	3.3	3.3	3.1	2.9	2.9	2.9	2.9	2.8	4.3	8.7
3-Apr	2.8	3.8	5.2	4.3	3.7	3.5	3.2	3.0	3.1	3.0	2.6	2.5	2.5	2.5	3.0	4.0	6.3	6.6	5.2	4.3	4.1	4.1	4.3	4.3	3.8	6.6
4-Apr	4.2	4.3	4.1	4.1	4.1	4.1	3.9	4.3	4.8	4.9	5.1	5.0	5.0	4.8	5.4	5.9	5.8	5.5	5.4	5.5	5.1	4.6	4.3	4.1	4.8	5.9
5-Apr	4.0	4.0	4.1	4.7	4.9	5.1	5.3	5.7	6.0	6.0	5.9	5.9	5.7	6.8	6.3	5.3	4.1	4.1	4.3	4.0	4.0	3.9	4.2	6.6	5.0	6.8
6-Apr	7.6	8.3	7.9	7.6	8.5	9.7	9.7	9.6	9.5	8.6	6.3	4.8	4.1	3.8	3.5	3.1	3.2	3.3	3.3	3.1	2.8	2.8	2.8	3.1	5.7	9.7
7-Apr	3.2	3.4	3.3	3.4	3.3	3.6	3.9	4.2	4.4	4.4	4.3	4.2	4.3	4.1	4.1	4.0	3.8	3.5	3.3	3.4	3.5	3.8	4.1	4.7	3.8	4.7
8-Apr	4.6	4.6	4.5	4.4	4.6	4.9	5.3	5.4	5.5	4.6	3.9	3.5	3.5	3.2	3.3	3.1	2.9	4.4	6.0	3.0	2.9	3.5	4.4	2.6	4.1	6.0
9-Apr	4.9	3.9	2.9	3.0	5.8	5.9	5.0	3.6	3.2	3.7	3.8	3.6	2.7	3.1	3.1	2.3	2.2	2.9	2.3	1.4	1.7	1.5	1.8	2.0	3.2	5.9
10-Apr	1.9	2.3	3.8	2.1	4.2	3.0	3.4	6.7	5.0	3.7	1.3	1.5	3.1	2.7	4.0	5.0	7.6	6.4	4.4	5.2	5.0	3.8	4.4	4.1	4.0	7.6
11-Apr	3.8	6.3	6.0	6.2	7.8	5.1	6.7	9.7	12.8	10.9	8.2	10.1	12.2	18.5	10.8	15.1	11.9	13.5	14.9	47.9	66.5	35.5	19.5	6.2	15.2	66.5
12-Apr	7.1	18.2	7.0	10.8	20.1	21.4	15.4	9.4	6.6	7.5	8.4	8.4	6.6	8.9	8.4	10.4	9.4	12.1	9.6	16.1	87.1	55.1	33.7	13.6	17.1	87.1
13-Apr	9.2	6.2	6.6	21.6	16.4	11.8	11.5	16.1	11.4	5.7	5.7	5.9	4.4	4.2	7.3	6.5	5.1	6.5	12.3	29.2	32.4	49.5	18.4	20.6	13.5	49.5
14-Apr	17.2	13.7	8.1	14.1	14.4	23.8	27.4	9.1	1.5	1.9	1.8	2.3	2.4	3.0	2.8	2.7	3.1	3.0	2.8	3.0	3.0	3.1	4.1	4.8	7.2	27.4
15-Apr	4.0	3.4	3.0	2.7	2.8	2.6	2.6	2.8	3.5	3.4	3.2	3.1	3.1	3.2	3.0	3.1	3.4	3.5	3.9	3.3	3.2	3.2	2.9	2.9	3.2	4.0
16-Apr	3.0	3.0	3.1	3.4	3.7	3.5	3.3	3.3	3.3	3.2	3.0	2.9	3.0	2.8	2.9	3.1	3.2	3.3	3.2	3.3	2.9	2.7	2.6	2.7	3.1	3.7
17-Apr	2.7	2.7	3.0	3.0	3.0	3.0	3.1	3.1	3.2	3.4	3.3	3.4	3.5	3.6	3.6	3.8	3.8	3.6	3.5	3.5	3.5	3.5	3.2	3.1	3.3	3.8
18-Apr	3.0	2.8	2.8	2.7	2.8	3.0	3.0	3.0	2.9	2.8	2.8	3.0	3.2	3.6	3.4	3.3	3.5	3.5	3.3	3.3	3.3	3.3	3.3	3.7	3.1	3.7
19-Apr	4.5	4.1	3.8	3.6	3.3	2.9	3.0	2.8	2.7	3.1	2.9	2.7	3.0	3.1	3.7	3.5	3.5	3.6	3.5	3.5	3.4	3.6	3.6	3.6	3.4	4.5
20-Apr	3.5	3.3	3.2	3.1	3.1	3.1	3.5	3.4	3.0	2.4	2.4	2.6	2.8	3.3	3.5	3.2	3.1	3.3	3.0	2.9	2.7	2.6	2.6	2.6	3.0	3.5
21-Apr	2.6	2.6	2.5	2.5	2.8	5.4	4.9	4.5	3.1	3.1	3.0	3.0	3.0	3.2	3.5	3.9	4.4	4.7	5.0	5.1	5.6	5.3	5.1	4.9	3.9	5.6
22-Apr	5.1	5.4	5.6	5.3	6.1	6.4	5.8	6.2	6.1	5.7	5.3	5.4	5.4	5.6	5.7	5.6	5.9	6.4	7.4	8.1	8.2	8.3	8.4	7.7	6.3	8.4
23-Apr	7.0	6.7	6.5	6.4	6.3	6.3	6.1	5.9	6.0	6.3	6.6	6.2	6.4	6.3	7.2	7.2	7.3	6.4	6.6	5.8	5.7	5.8	5.9	6.1	6.4	7.3
24-Apr	6.0	5.7	5.7	5.7	5.7	5.5	5.3	5.2	5.2	6.5	6.8	5.2	4.8	4.7	5.3	9.9	7.9	5.4	5.1	5.3	5.4	5.5	5.7	5.8	5.8	9.9
25-Apr	5.9	6.0	5.9	7.4	6.5	6.2	6.1	5.9	5.6	5.4	6.0	6.0	4.5	2.1	2.0	2.2	2.2	2.3	2.2	2.3	1.7	1.2	1.0	0.8	4.1	7.4
26-Apr	0.4	0.2	0.4	0.5	0.5	0.6	0.7	0.8	0.9	0.9	1.0	C	C	1.9	2.1	2.3	2.5	2.5	2.8	3.7	4.9	5.2	4.1	4.1	2.0	5.2
27-Apr	4.2	3.8	3.7	2.4	2.1	1.8	2.1	2.6	2.9	3.7	3.8	4.6	5.2	5.6	6.0	5.6	5.9	5.4	4.2	2.5	2.1	1.6	1.5	1.3	3.5	6.0
28-Apr	1.5	2.3	3.3	4.1	5.5	5.9	7.0	5.3	5.6	4.7	2.6	1.9	0.7	0.7	0.7	0.8	0.8	1.0	1.9	3.4	3.0	3.8	7.1	5.4	3.3	7.1
29-Apr	5.2	5.3	6.1	5.8	5.8	7.0	10.8	5.2	1.5	2.1	1.6	2.2	1.9	1.9	2.6	1.7	1.3	1.1	1.1	1.1	1.3	1.3	1.9	2.0	3.2	10.8
30-Apr	2.1	2.0	1.8	1.7	1.9	1.9	2.0	2.1	3.9	3.2	3.0	3.0	2.5	2.5	2.5	2.7	3.1	3.1	3.1	3.2	3.3	3.1	3.5	3.9	2.7	3.9
																								Diurnal Average		
																								Diurnal Maximum		
																								4.8 5.0 4.5 5.2 5.7 6.0 6.1 5.3 4.7 4.5 4.1 4.2 4.1 4.3 4.2 4.6 4.5 4.6 4.7 6.5 9.6 8.0 6.0 5.0		
																								17.2 18.2 8.1 21.6 20.1 23.8 27.4 16.1 12.8 10.9 8.4 10.1 12.2 18.5 10.8 15.1 11.9 13.5 14.9 47.9 87.1 55.1 33.7 20.6		
C - Calibration																										
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Surmont 2 - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	516	71.87	71.87
6 - 15	179	24.93	96.80
16 - 25	13	1.81	98.61
26 - 80	9	1.25	99.86
> 81.0	1	0.14	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Surmont 2 - April 2023

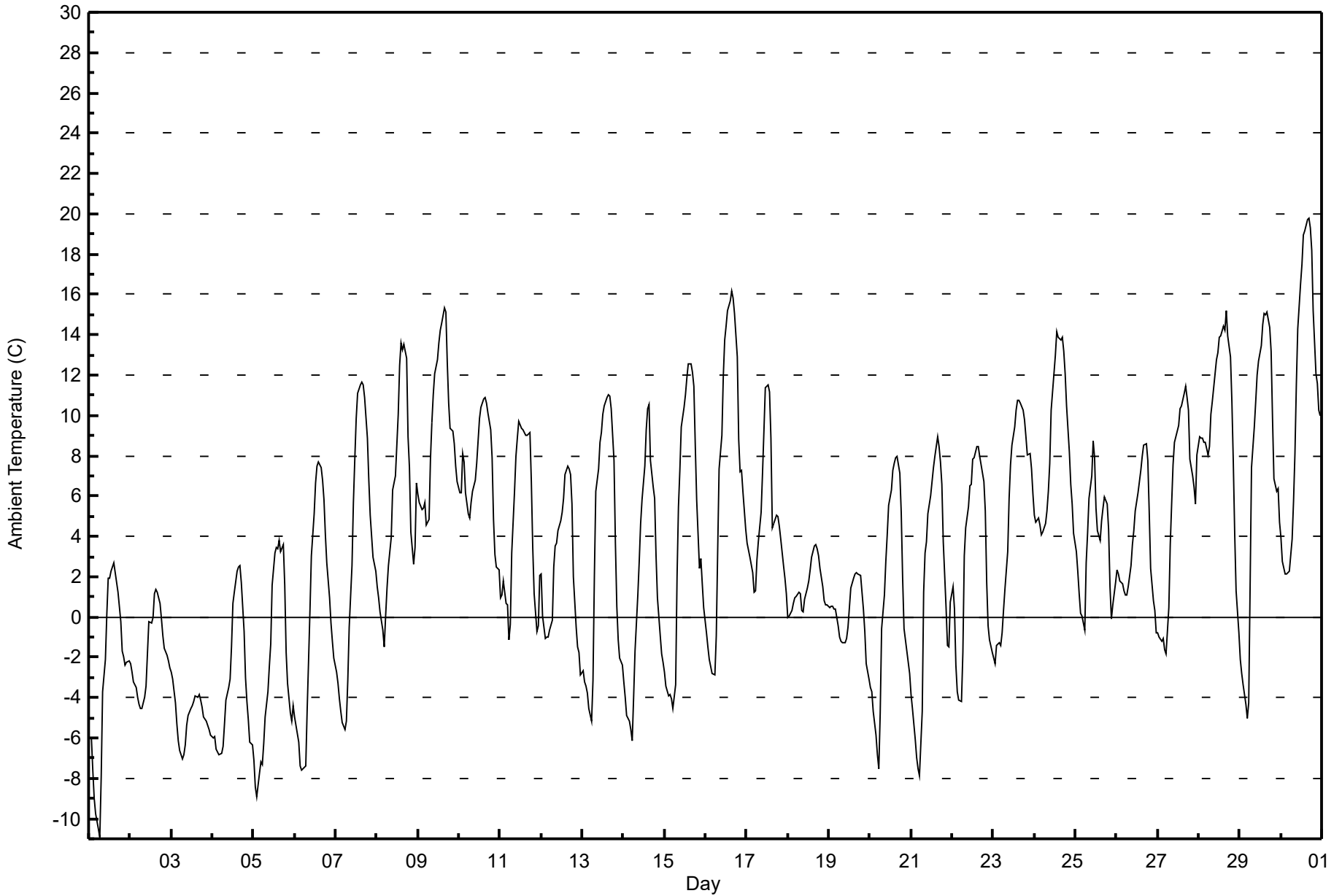
Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	11	14	14	31	32	92	59	26	18	19	22	81	40	15	14	23	511
6 - 15	3	4	3	2	8	21	35	12	10	4	0	33	15	17	2	6	175
16 - 25	0	0	0	0	0	0	0	1	0	0	0	7	4	0	1	0	13
26 - 80	1	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	9
> 81.0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Totals	15	18	17	33	40	113	94	39	28	23	22	130	59	32	17	29	709

Total Number of Valid Hours: 709

Total Number of Hours: 720



Maximum Value: 19.8 C on Apr 30 17:00 Maximum Daily Average: 11.1 C on Apr 30																						Hours in Service: 720 Hours of Data: 720				
Minimum Value: -10.9 C on Apr 1 07:00 Minimum Daily Average: -5.0 C on Apr 3 Maximum Diurnal Average: 8.8 C at hour 16 Minimum Diurnal Average: -2.3 C at hour 6 Monthly Average: 3.33 C Percentiles: $P_1 = -7.9$ $P_{10} = -4.5$ $Q_1 = -1.3$ Median = 2.9 $Q_3 = 7.8$ $P_{90} = 11.4$ $P_{99} = 16.4$																						Hours of Missing Data: 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-Apr	-6.0	-6.0	-7.6	-9.0	-9.8	-10.5	-10.9	-7.9	-3.7	-2.1	0.1	1.9	1.9	2.3	2.7	2.2	1.7	1.2	-0.3	-1.7	-2.0	-2.4	-2.3	-2.2	-2.9	2.7
2-Apr	-2.3	-2.7	-3.2	-3.5	-4.0	-4.3	-4.5	-4.5	-4.0	-3.4	-1.9	-0.2	-0.3	0.0	1.2	1.4	1.2	0.6	-0.1	-0.9	-1.5	-1.9	-2.2	-2.5	-1.8	1.4
3-Apr	-2.7	-3.1	-4.3	-5.3	-6.1	-6.6	-7.0	-6.8	-6.3	-5.4	-4.9	-4.6	-4.4	-4.2	-3.9	-4.0	-3.8	-4.1	-4.5	-5.0	-5.2	-5.3	-5.6	-5.9	-5.0	-2.7
4-Apr	-6.0	-5.9	-6.5	-6.7	-6.8	-6.8	-6.4	-5.3	-4.1	-3.5	-3.1	-1.5	0.7	1.2	2.3	2.5	2.5	1.7	-0.7	-3.0	-4.2	-5.1	-6.2	-6.4	-3.2	2.5
5-Apr	-7.1	-8.4	-8.9	-7.7	-7.2	-7.3	-6.3	-4.9	-3.7	-2.5	-1.4	1.6	3.2	3.4	3.4	3.8	3.3	3.6	1.6	-1.8	-3.3	-4.7	-5.2	-4.4	-2.5	3.8
6-Apr	-4.9	-5.4	-6.2	-7.4	-7.6	-7.6	-7.4	-4.6	-2.2	0.3	3.1	5.1	6.7	7.5	7.7	7.4	6.8	5.8	4.1	2.7	1.0	-0.3	-1.2	-2.0	0.1	7.7
7-Apr	-2.7	-3.3	-4.0	-4.7	-5.2	-5.6	-5.1	-3.2	-0.5	2.5	5.7	7.8	9.8	11.1	11.5	11.7	11.5	10.9	8.9	6.8	5.0	4.0	3.0	2.2	3.3	11.7
8-Apr	1.5	1.0	0.3	-0.6	-1.5	0.1	1.4	2.6	4.0	6.3	6.6	7.0	10.1	12.5	13.6	13.3	13.6	12.8	9.0	7.4	4.2	2.6	3.5	6.7	5.7	13.6
9-Apr	6.1	5.7	5.3	5.4	5.7	4.6	4.8	7.9	9.6	11.0	12.1	12.8	13.6	14.3	14.5	15.3	15.1	12.7	10.6	9.3	9.2	8.6	7.5	6.7	9.5	15.3
10-Apr	6.2	6.1	8.1	7.7	6.2	5.1	4.9	5.7	6.2	6.8	7.6	8.7	9.8	10.4	10.8	10.9	10.6	10.1	9.3	7.9	4.8	3.1	2.5	2.3	7.2	10.9
11-Apr	0.9	1.1	1.8	0.7	0.6	-1.1	-0.4	3.2	6.2	8.0	8.9	9.7	9.4	9.3	9.2	9.0	9.0	9.2	6.7	3.4	1.2	-0.7	-0.5	2.0	4.4	9.7
12-Apr	2.2	0.1	-1.0	-1.0	-1.0	-0.6	-0.2	2.5	3.5	3.7	4.3	4.8	5.2	5.9	7.1	7.5	7.3	7.1	5.6	2.0	-0.5	-1.4	-1.7	-2.9	2.4	7.5
13-Apr	-2.6	-3.2	-3.5	-3.8	-4.5	-5.2	-3.1	2.1	6.2	7.4	8.7	9.2	10.1	10.5	10.9	11.0	11.0	10.3	7.7	3.6	0.5	-1.1	-2.0	-2.4	3.2	11.0
14-Apr	-3.2	-3.9	-4.9	-5.2	-5.6	-6.1	-4.0	-1.7	1.1	2.8	4.6	5.8	7.5	9.3	10.3	10.5	7.7	6.5	5.9	3.1	1.0	-0.9	-1.8	-2.2	1.5	10.5
15-Apr	-2.7	-3.4	-3.9	-3.8	-4.0	-4.5	-3.4	2.0	5.5	7.3	9.4	10.4	11.0	11.9	12.5	12.6	12.1	11.5	8.5	5.8	2.4	2.9	1.6	0.5	4.3	12.6
16-Apr	-0.8	-1.5	-2.1	-2.5	-2.8	-2.9	-0.9	3.3	7.4	9.0	11.9	13.8	14.4	15.2	15.7	16.2	15.9	15.1	12.9	8.8	7.2	7.2	6.2	4.4	7.1	16.2
17-Apr	3.7	3.3	3.0	2.2	1.3	1.3	2.8	3.7	5.2	7.2	9.2	11.4	11.5	11.2	8.9	4.4	4.6	5.1	5.0	4.5	3.8	2.6	1.9	1.2	5.0	11.5
18-Apr	0.0	0.0	0.4	0.7	1.0	1.0	1.3	1.1	0.4	0.3	0.9	1.4	1.8	2.4	3.0	3.5	3.6	3.4	3.1	2.4	1.5	0.8	0.6	0.6	1.5	3.6
19-Apr	0.4	0.6	0.5	0.4	0.4	-0.4	-1.0	-1.2	-1.3	-1.3	-1.0	-0.5	0.5	1.4	1.9	2.2	2.2	2.1	2.1	1.3	0.4	-0.7	-2.3	-3.1	0.2	2.2
20-Apr	-3.5	-3.7	-4.7	-5.9	-6.8	-7.5	-4.7	-0.6	1.1	2.8	4.1	5.5	6.3	7.3	7.6	7.9	8.0	7.1	5.2	1.9	-0.6	-1.7	-2.3	-2.8	0.8	8.0
21-Apr	-3.9	-4.5	-6.1	-7.0	-7.5	-7.9	-4.7	1.2	3.2	3.7	5.1	6.0	6.7	7.4	8.0	8.9	8.4	7.7	6.6	3.7	0.4	-1.4	-1.4	0.7	1.4	8.9
22-Apr	1.5	0.4	-2.4	-3.7	-4.1	-4.2	-1.8	3.0	4.4	5.5	6.5	6.6	7.8	7.9	8.4	8.4	8.0	7.5	6.7	5.3	1.7	-0.5	-1.1	-1.7	2.9	8.4
23-Apr	-2.1	-2.3	-1.4	-1.3	-1.4	-0.8	0.3	1.4	3.3	5.9	7.6	8.6	9.4	10.2	10.8	10.8	10.6	10.3	9.8	8.9	8.1	8.1	7.4	6.1	5.3	10.8
24-Apr	5.0	4.7	4.9	4.6	4.0	4.2	4.6	5.2	6.2	7.7	10.3	12.0	13.0	14.2	13.9	13.7	13.9	13.2	12.1	10.5	8.2	6.5	5.6	4.2	8.4	14.2
25-Apr	3.3	2.2	1.1	0.2	0.1	-0.7	2.7	4.1	5.9	7.0	8.7	7.9	5.4	4.3	3.8	4.7	5.4	5.9	5.6	4.4	1.5	-0.1	0.6	1.7	3.6	8.7
26-Apr	2.4	2.1	1.8	1.6	1.3	1.1	1.1	1.5	2.6	3.6	4.3	5.3	6.2	6.8	7.3	8.0	8.5	8.6	7.8	5.2	2.4	0.8	0.3	-0.8	3.7	8.6
27-Apr	-0.8	-1.0	-1.2	-1.0	-1.6	-1.8	0.5	3.6	5.6	7.5	8.7	9.2	9.5	10.3	10.5	11.1	11.4	10.9	10.3	7.8	7.0	6.4	5.6	8.0	5.7	11.4
28-Apr	8.9	8.9	8.9	8.6	8.6	8.1	8.4	10.0	10.7	12.0	12.8	13.1	13.9	13.9	14.4	14.2	15.2	13.9	12.9	10.7	7.7	4.2	1.3	-0.8	10.0	15.2
29-Apr	-2.1	-2.8	-3.4	-4.3	-5.0	-4.3	1.5	7.4	9.4	10.7	12.0	12.7	13.5	14.5	15.1	15.0	15.1	14.4	13.2	9.9	6.9	6.2	6.4	4.7	6.9	15.1
30-Apr	3.9	2.8	2.1	2.1	2.2	2.3	3.9	5.8	8.1	11.5	14.3	16.5	17.5	18.9	19.2	19.7	19.8	19.3	18.2	15.2	12.1	11.6	10.3	10.0	11.1	19.8
																								Diurnal Average		
																								Diurnal Maximum		





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Surmont 2 - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	227	31.53	31.53
0 - 10	382	53.06	84.58
10 - 20	111	15.42	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Surmont 2 - April 2023

Maximum Value: 100.1 % on Apr 19 01:00 Maximum Daily Average: 83.2 % on Apr 18																						Hours in Service: 720				
Minimum Value: 16.6 % on Apr 30 14:00 Minimum Daily Average: 30.5 % on Apr 30																						Hours of Data: 720				
Maximum Diurnal Average: 76.2 % at hour 6 Minimum Diurnal Average: 38.2 % at hour 15																						Hours of Missing Data: 0				
Monthly Average: 56.53 % Percentiles: P₁ = 19.5 P₁₀ = 26.9 Q₁ = 36.8 Median = 54.7 Q₃ = 77.0 P₉₀ = 86.4 P₉₉ = 95.6																						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-Apr	81.3	84.8	85.2	87.5	88.8	88.7	88.1	80.2	75.7	68.7	59.4	54.2	55.8	53.5	51.2	52.0	54.0	56.5	61.9	67.5	70.1	73.1	76.5	78.5	70.6	88.8
2-Apr	79.8	80.4	81.2	82.5	86.1	88.7	88.5	87.0	84.0	81.4	74.3	65.0	65.7	63.6	58.5	57.6	58.9	62.2	64.9	66.4	67.0	66.2	67.8	69.1	72.8	88.7
3-Apr	69.1	75.3	87.3	89.2	90.0	90.0	90.0	87.2	82.8	76.9	73.7	71.7	70.7	70.3	69.6	70.7	71.6	72.8	74.8	76.7	78.7	79.3	82.0	84.3	78.5	90.0
4-Apr	85.8	81.6	85.7	86.4	86.6	85.6	82.3	74.8	67.5	63.5	61.9	55.8	48.7	46.4	43.6	42.3	42.7	44.0	53.0	62.9	68.4	70.1	75.2	74.9	66.2	86.6
5-Apr	78.0	81.6	84.3	85.1	83.0	83.7	80.7	75.5	74.3	74.8	76.0	61.0	49.8	46.2	43.0	39.0	38.7	41.2	52.7	66.4	70.5	74.5	77.1	75.0	67.2	85.1
6-Apr	76.9	77.8	80.2	83.4	85.6	85.3	84.3	72.9	62.2	53.1	42.1	35.5	30.2	28.0	27.1	26.2	27.6	29.5	31.1	34.0	38.1	35.8	36.8	39.8	51.0	85.6
7-Apr	43.5	47.1	50.7	53.9	56.4	58.5	57.5	51.0	45.1	40.5	36.7	34.5	32.4	31.0	30.8	30.9	31.9	34.4	39.9	46.8	53.8	57.8	62.6	66.5	45.6	66.5
8-Apr	71.1	74.2	78.1	82.7	86.8	82.5	78.6	74.8	68.7	58.8	56.6	55.4	45.7	35.0	31.9	33.0	32.1	32.9	40.3	47.5	60.6	69.1	67.0	49.8	58.9	86.8
9-Apr	52.1	53.8	55.2	54.7	52.7	56.0	55.3	45.3	39.9	36.8	34.0	30.9	28.1	25.3	24.1	23.5	23.4	27.5	31.5	34.2	34.8	36.8	40.2	43.7	39.2	56.0
10-Apr	46.4	49.2	51.7	56.0	55.5	53.6	50.6	41.0	39.0	37.0	35.3	32.4	29.3	27.0	24.7	22.7	21.4	23.0	24.0	27.7	37.4	43.5	44.3	46.8	38.3	56.0
11-Apr	54.6	53.7	49.5	55.9	56.8	66.2	64.6	49.3	36.1	29.4	24.6	21.6	23.6	23.4	22.4	23.5	24.5	26.3	35.3	47.7	60.0	68.9	67.3	43.9	42.9	68.9
12-Apr	40.0	48.2	52.2	49.9	49.4	47.2	48.1	45.2	46.0	48.7	49.1	48.2	46.1	40.9	35.0	31.6	30.0	30.2	30.1	44.0	56.9	69.8	71.8	80.1	47.4	80.1
13-Apr	81.2	83.8	86.4	87.4	88.6	89.7	85.5	62.5	43.7	38.0	35.4	34.3	33.1	32.3	29.5	27.1	24.6	23.9	30.5	46.0	58.3	68.0	75.6	77.5	56.0	89.7
14-Apr	80.8	82.7	85.7	86.3	87.1	88.4	82.8	70.5	59.2	53.0	47.9	45.2	39.8	35.2	31.9	30.2	44.2	54.7	67.9	76.2	83.8	87.2	89.2	89.2	65.3	89.2
15-Apr	90.4	91.9	91.9	92.8	93.4	93.6	93.1	78.9	63.2	54.5	45.0	37.6	30.9	29.6	26.2	24.9	26.3	29.3	34.8	42.7	55.8	54.7	61.7	67.9	58.8	93.6
16-Apr	73.8	76.5	79.3	81.1	81.4	83.9	75.4	57.4	43.1	37.3	31.8	26.6	26.1	25.7	24.8	21.6	21.3	22.4	26.9	35.7	41.3	42.8	44.8	50.1	47.1	83.9
17-Apr	51.7	53.3	57.3	62.2	67.9	69.5	62.3	59.0	54.6	48.4	43.3	37.4	35.1	32.4	52.7	88.5	89.3	83.9	80.0	77.4	82.4	95.7	95.3	94.0	65.6	95.7
18-Apr	95.1	91.5	87.4	84.2	78.1	75.1	70.9	71.5	81.6	84.2	83.2	81.5	80.5	79.2	81.1	74.5	73.9	76.6	78.5	82.7	91.5	96.9	98.6	99.1	83.2	99.1
19-Apr	100.1	98.7	93.7	93.7	92.8	91.0	90.8	91.0	92.2	91.2	88.6	83.6	75.0	66.6	61.6	59.7	59.1	58.8	59.7	67.4	73.8	75.8	81.5	84.7	80.4	100.1
20-Apr	84.3	77.6	82.8	85.8	89.7	91.4	83.1	60.6	51.8	44.5	42.5	38.2	37.2	31.0	27.3	27.7	26.5	26.3	30.4	41.0	50.7	57.5	54.1	55.5	54.1	91.4
21-Apr	64.2	67.7	78.0	83.2	83.4	86.7	75.6	48.4	38.4	36.6	33.9	30.8	29.1	27.8	26.7	25.1	26.2	28.7	32.6	40.1	52.1	70.3	68.4	53.2	50.3	86.7
22-Apr	48.7	53.9	70.2	76.1	77.9	77.1	71.5	49.9	42.6	39.3	36.1	35.1	31.8	31.7	30.7	30.8	31.5	32.3	35.1	39.5	51.2	65.6	66.5	69.3	49.8	77.9
23-Apr	70.9	72.8	69.4	67.9	68.2	65.5	60.1	56.5	51.0	42.1	33.7	30.6	28.6	27.1	26.0	26.3	26.3	25.1	26.4	32.4	36.4	37.4	41.3	46.2	44.5	72.8
24-Apr	46.9	43.9	42.0	43.9	47.7	48.5	46.8	45.9	43.4	40.2	34.7	32.4	31.1	28.0	27.7	26.7	25.8	27.6	31.7	39.2	51.7	60.3	64.0	69.7	41.7	69.7
25-Apr	73.3	77.4	82.2	85.4	86.2	88.7	76.5	67.1	59.6	57.2	53.7	66.6	88.3	89.5	89.5	86.7	84.1	83.1	92.3	95.1	99.8	99.4	89.1	82.8	81.4	99.8
26-Apr	80.8	77.9	77.2	77.5	78.7	78.1	77.6	76.0	71.1	65.6	63.2	58.7	53.0	51.9	49.5	45.8	43.4	44.9	46.9	58.6	70.9	77.4	81.5	85.2	66.3	85.2
27-Apr	86.6	87.9	89.0	92.0	93.8	93.9	84.4	72.6	64.0	55.6	50.0	43.9	42.0	40.9	40.7	40.7	40.0	44.5	48.7	60.5	61.1	61.6	65.3	49.5	62.9	93.9
28-Apr	45.1	46.2	46.3	46.4	46.1	48.2	48.6	44.8	42.1	31.6	28.2	25.9	23.0	22.7	21.2	20.9	20.4	22.6	24.4	29.8	38.5	51.7	63.3	71.8	37.9	71.8
29-Apr	76.6	77.3	78.8	82.8	85.3	82.2	63.1	38.9	26.7	24.0	22.0	22.2	21.6	19.7	19.5	19.9	20.1	21.2	22.0	30.1	36.6	36.1	34.0	39.1	41.7	85.3
30-Apr	42.3	45.7	46.8	46.6	46.3	46.7	41.4	37.1	32.0	25.7	20.7	17.8	17.1	16.6	16.7	16.8	16.9	18.1	20.2	26.3	33.2	32.1	34.0	34.1	30.5	46.8
																								Diurnal Average		
																								Diurnal Maximum		



**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Surmont 2 - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	10	1.39	1.39
20 - 40	197	27.36	28.75
40 - 60	197	27.36	56.11
60 - 80	166	23.06	79.17
80 - 100	149	20.69	99.86

Total Number of Valid Hours: 720

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Surmont 2 - April 2023

Maximum Speed: 21 km/h on Apr 10 10:00	Maximum Daily Speed Average: 14.4 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 22 04:00	Minimum Daily Speed Average: 0.6 km/h on Apr 14	Hours of Data: 711
Maximum Diurnal Speed Average: 3.2 km/h at hour 12	Minimum Diurnal Speed Average: 1.0 km/h at hour 7	Hours of Missing Data: 9
Monthly Average Velocity: 1.6 km/h 146.6 deg	Percentiles: P ₁ = 1 P ₁₀ = 2 Q ₁ = 3 Median = 6 Q ₃ = 9 P ₉₀ = 12 P ₉₉ = 20	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-Apr	W1	W2	WSW1	WSW1	WSW2	WSW1	WSW1	E1	ESE8	ESE8	ESE8	E8	ENE8	ENE8	ENE8	ENE8	ENE7	ENE8	ENE5	E4	E9	E7	ESE9	ESE8	E4.4	ESE9
2-Apr	ESE8	E7	ESE7	ESE6	ESE7	ESE4	ESE7	ESE7	ESE8	ESE8	ESE7	SE5	ESE8	S2	ENE1	ESE5	E5	E5	E5	NE3	ENE3	NNE3	N2	NNW2	E4.7	ESE8
3-Apr	NNW2	NNE4	NNE4	NNW5	NNW4	NNW5	NNW5	NNW5	NNW6	N6	NNW7	NNW7	N6	NNE5	NNW5	N5	NNE4	NE4	NNE2	NNW1	WNW2	W1	W1	UO	N3.8	NNW7
4-Apr	WSW1	W2	WSW1	WSW1	UO	WNW2	WNW1	NW2	NE1	NNW3	NW3	N1	ESE4	E3	ENE8	ENE8	ENE7	NE7	ENE4	W2	SW2	SSW2	SSW3	SW3	ENE1.0	ENE8
5-Apr	SSW3	SW2	SSW2	SSE3	SW2	S3	SE4	SE6	SE7	SE8	SE9	SE9	SE9	SE9	SE8	S6	S5	SSW4	SW3	WSW3	WSW3	WSW2	WSW3	SW3	SSE4.0	SE9
6-Apr	SSE3	SSE4	SSE3	SSE3	S2	SE3	ESE6	ESE8	ESE9	SE10	SE11	SSE11	SE12	SSE10	SSE11	SSE12	SSE12	SSE11	SSE11	SSE10	SE8	SSE10	SSE9	SE9	SSE8.0	SSE12
7-Apr	SE9	SE9	ESE10	ESE10	ESE9	ESE10	ESE11	SE11	SE11	SE13	SE14	SE13	SE13	SE14	SE14	SE14	SE13	SE12	SE10	SE9	SE9	SE9	SE8	SE8	SE10.8	SE14
8-Apr	SE5	SE5	ESE5	SSW1	S3	S4	SSW4	SW2	W4	ESE3	SSE4	SE6	ESE5	SE2	ESE4	ESE8	ESE7	WSW4	WSW3	WSW4	SW4	WSW3	W5	WSW8	S2.3	WSW8
9-Apr	W6	WSW7	W6	W7	W8	W6	WSW7	WSW9	W10	W12	W13	W14	WSW12	WSW10	WSW10	SW8	SW7	SW4	SSW4	SE5	SE6	SE7	SE7	SE8	WSW5.9	W14
10-Apr	SSE9	S6	W18	W18	W20	W18	W17	W19	W21	W21	WSW20	WSW20	WSW20	W20	W19	WSW21	W20	WSW16	W13	W9	WSW4	WSW5	SW4	SW5	W14.4	W21
11-Apr	WSW4	WSW6	WSW7	WSW6	WSW5	SSW2	N1	WSW3	WSW7	W7	WNW7	WNW6	NNW6	NW6	NNW6	WNW5	W6	W5	W3	WSW3	WSW3	WSW3	W4	WNW5	W4.2	WSW7
12-Apr	WNW5	WSW5	WSW7	WSW7	W6	W7	W6	NW6	NNW9	NNW8	WNW10	W13	WNW13	WNW12	WNW11	WNW11	WNW11	NW8	NNW6	W3	WSW5	WSW5	WSW4	UO	WNW6.9	W13
13-Apr	WSW1	WSW1	UO	WSW1	WSW1	UO	UO	SSE0	E1	N3	NE4	NE4	NNE8	NNE7	NNE8	NNE7	N8	NNE7	NNW4	WSW3	WSW3	WSW3	WSW2	WSW2	N2.3	N8
14-Apr	WSW1	WSW2	WSW1	WSW1	W1	WSW1	N1	SSE3	SE2	ESE5	E6	ENE6	NE3	ENE5	ENE7	NE7	WSW6	SW5	SSW2	SSW2	WSW4	WSW2	WSW2	WSW3	ESE0.6	ENE7
15-Apr	WSW2	W2	WSW2	WSW2	WSW3	SW2	WSW2	ESE2	ESE5	SSE6	ESE9	SE8	SSW6	ESE8	ESE5	S3	SSE6	ESE5	SW3	SSW3	SSW3	SSW3	SW4	WSW3	SSE2.6	ESE9
16-Apr	WSW4	WSW4	WSW3	WSW2	WSW3	WSW3	S3	SSE3	ESE6	ESE11	ESE12	ESE14	ESE14	ESE16	ESE14	ESE12	SE13	ESE12	SE8	ESE6	ESE7	ESE9	ESE6	SE4	ESE6.4	ESE16
17-Apr	ESE6	ESE6	ESE8	ESE6	SE4	ESE3	ESE7	ESE8	ESE11	ESE15	ESE16	E19	ESE20	ESE20	ESE17	E13	E10	E12	E9	E13	ESE12	ENE4	ENE5	ENE4	ESE10.0	ESE20
18-Apr	NNE1	NNW2	ENE3	NE2	ENE5	E6	E8	E10	E7	ENE6	ENE5	ENE3	NE2	NE3	NE5	ENE3	NE4	NNE3	N3	NNW3	N2	NW3	NW2	NW2	NE2.9	E10
19-Apr	NW1	ESE5	ESE8	ESE8	ESE7	ESE11	ESE11	ESE11	ESE10	ESE13	ESE11	ESE12	ESE8	ESE10	E13	ESE11	ESE11	ESE7	ESE4	SW0	SSE1	WSW2	WSW2	WSW3	ESE6.9	ESE13
20-Apr	WSW2	WSW2	WSW2	W2	W1	UO	UO	ENE0	ENE3	ENE7	ENE8	E9	ENE8	E10	E12	E10	E9	E10	E9	ESE4	WSW2	WSW2	WSW2	WSW3	E3.6	E12
21-Apr	WSW2	WSW2	WSW2	WSW2	WSW2	UO	WSW1	S1	E4	E8	E7	ESE9	SSE7	SE7	S3	ESE7	ESE4	ESE8	SE3	SW2	WSW3	WSW2	WSW2	WSW7	SE2.1	ESE9
22-Apr	W8	W6	WSW3	SW0	WSW2	WSW2	SSW1	ESE5	SE7	SE10	SE10	SSE9	SE10	SE10	SE9	S8	SE9	S7	SSE5	S4	WSW3	WSW2	WSW3	WSW2	SSE4.0	SE10
23-Apr	WSW2	WSW3	S3	SE4	S3	SE5	SE5	SSE6	SE8	SE11	SE14	ESE15	SE13	ESE14	ESE13	SE12	SE10	SE10	SE7	SE6	SE5	SSE5	S3	E2	SE7.1	ESE15
24-Apr	E4	ESE5	ESE5	ESE5	ESE6	ESE7	ESE8	ESE9	SE8	SE9	SE9	ESE10	SE10	SE10	SE9	ESE9	SE8	SE7	SSE7	S8	S7	SSW5	S4	ESE3	SE6.5	ESE10
25-Apr	SE4	S4	SSW3	SSW3	SSW3	WSW3	SE4	SE6	SE7	SE7	SSE7	SSE5	SW3	W10	WSW5	WSW4	SW4	ESE5	SE2	SSE3	WSW3	WSW4	WSW8	WSW8	SSW2.8	W10
26-Apr	W10	WNW12	WNW10	WNW12	WNW12	WNW13	WNW12	WNW12	NW12	WNW10	WNW11	NW9	WNW10	N6	NNE6	N5	N6	ENE6	NE6	ENE2	W2	W3	W3	WSW1	NW6.4	WNW13
27-Apr	WSW1	W1	W2	W3	W3	W3	NW3	NW6	NNW7	N8	NNW6	NW9	WNW8	W8	WNW8	WNW5	W9	W8	WSW6	SW2	WSW2	S2	S2	SSW5	WNW3.6	W9
28-Apr	SW7	WSW11	WSW11	W10	WNW8	WNW11	WNW10	NW11	WNW14	NW14	NNW13	NNW13	NW14	NW15	NNW14	NW14	NNW13	N11	N8	NNW5	WNW5	WSW3	WSW3	WSW3	NW8.5	NW15
29-Apr	WSW2	WSW1	WSW1	WSW1	WSW1	WSW1	N0	E2	ESE3	NE4	NE5	NNE4	ENE4	NE6	NNE6	E5	E7	E9	E9	ESE6	S2	SE5	SE5	S4	E2.5	E9
30-Apr	SSW3	SSW3	S3	SE4	SE5	ESE6	SE7	SE7	SE9	SE10	SSE11	ESE15	ESE14	SE12	SSE12	ESE12	SE11	SE11	ESE10	SE5	SSE4	SSE4	SSE4	SE6	SE7.4	ESE15

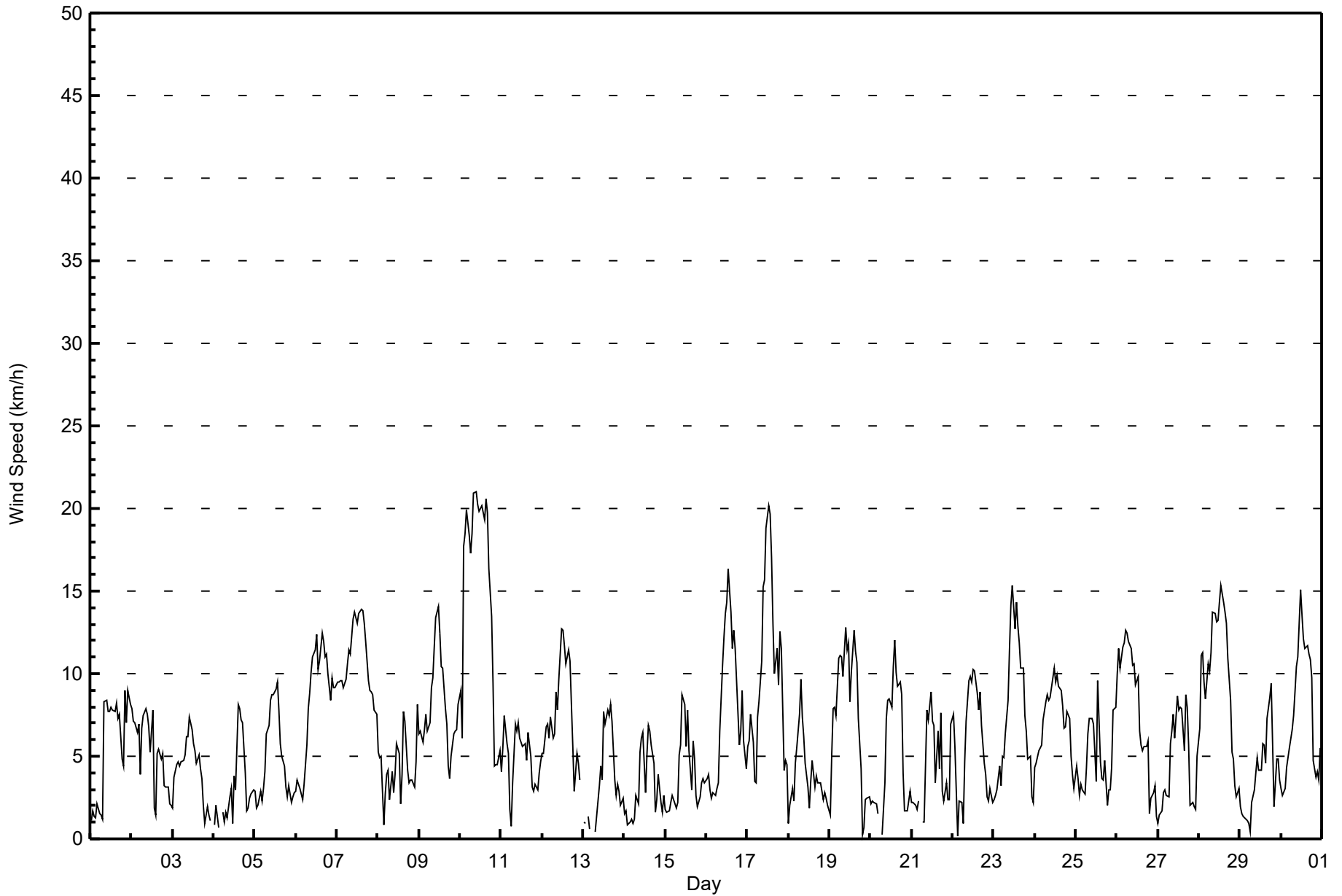
SSW1.6	SW1.7	SW1.7	SW1.5	WSW1.7	SW1.3	SSE1.0	SE1.3	ESE1.9	ESE3.0	ESE3.0	ESE3.2	SE2.7	ESE2.8	ESE3.0	ESE2.8	ESE2.6	ESE2.7	SE2.0	SSE1.8	S1.7	S1.8	SSW1.8	SSW2.0	Diurnal Average	
W10	WNW12	W18	W18	W20	W18	W17	W19	W21	W21	WSW20	WSW20	ESE20	W20	W19	WSW21	W20	WSW16	W13	E13	ESE12	SSE10	SSE9	SE9	Diurnal Maximum	

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
Surmont 2 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Surmont 2 - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	345	48.52	48.52
6 - 11	281	39.52	88.05
12 - 19	74	10.41	98.45
20 - 28	11	1.55	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 711

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Surmont 2 - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	10	9	13	17	12	24	22	18	22	22	19	105	23	9	6	14	345
6 - 11	5	9	4	16	22	68	57	18	6	1	3	19	20	15	7	11	281
12 - 19	0	0	0	0	6	19	15	3	0	0	0	2	11	9	5	4	74
20 - 28	0	0	0	0	0	2	0	0	0	0	0	4	5	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
Totals	15	18	17	33	40	113	94	39	28	23	22	130	59	33	18	29	711

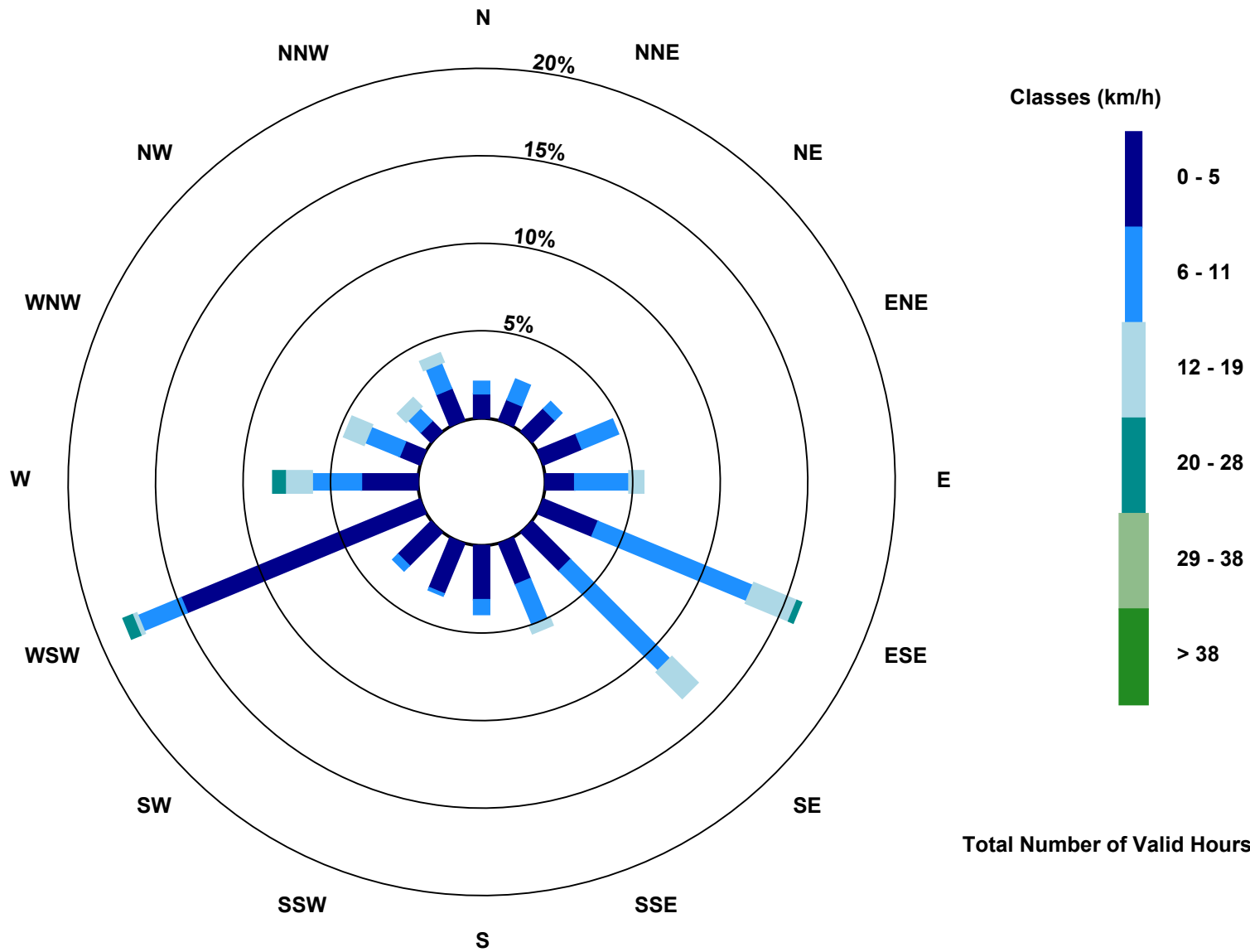
Total Number of Valid Hours: 711

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Surmont 2



Total Number of Valid Hours: 711



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Surmont 2 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 7 km/h on Apr 10 16:00	Hours of Data: 711
Minimum Value: 1 km/h on Apr 20 22:00	Hours of Missing Data: 9
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 3 P ₉₀ = 5 P ₉₉ = 7	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-Apr	1	1	1	1	1	1	1	2	2	3	2	3	2	3	3	3	2	3	2	2	3	2	2	2	3
2-Apr	2	3	2	2	2	1	2	2	2	2	2	3	3	2	2	2	2	2	2	1	1	1	1	1	1
3-Apr	1	2	1	2	1	2	1	2	2	2	3	2	2	2	2	2	2	1	1	1	1	1	1	UO	
4-Apr	1	1	1	1	UO	1	1	1	2	2	2	2	3	3	3	2	2	2	2	1	1	1	1	1	
5-Apr	1	1	1	1	1	1	1	2	2	2	3	3	3	4	3	3	2	2	2	1	2	1	1	1	
6-Apr	1	1	2	1	1	1	2	2	3	3	4	5	5	5	5	5	5	5	5	5	4	4	4	3	
7-Apr	3	3	3	3	2	3	3	4	4	5	5	5	5	5	5	4	5	4	4	4	3	3	3	3	
8-Apr	2	2	1	2	1	2	2	1	2	2	2	2	2	2	2	3	2	2	1	1	2	3	2	3	
9-Apr	2	2	2	2	2	2	3	3	3	4	4	5	5	4	4	3	3	2	2	2	3	2	2	3	
10-Apr	3	4	6	6	7	6	6	6	7	7	7	7	7	7	7	7	7	6	5	4	2	1	2	2	
11-Apr	1	2	2	3	3	2	1	2	2	2	3	3	2	2	2	2	2	2	1	1	2	1	2	1	
12-Apr	2	1	1	1	2	2	2	3	3	3	4	4	4	5	5	4	5	3	3	1	1	1	2	UO	
13-Apr	1	1	UO	1	1	UO	UO	1	1	2	2	3	3	3	3	3	3	3	2	2	2	1	2	3	
14-Apr	1	1	1	1	1	1	1	1	2	2	2	2	3	2	3	4	3	1	1	1	1	1	1	1	
15-Apr	1	1	1	1	1	1	1	2	2	2	3	3	3	4	3	3	2	2	1	1	1	1	1	1	
16-Apr	1	1	1	1	1	1	1	1	3	3	4	5	5	6	5	4	5	4	3	2	2	3	3	1	
17-Apr	2	2	2	2	1	1	3	3	4	5	5	6	6	6	6	6	3	4	3	4	5	1	1	2	
18-Apr	1	1	1	1	2	2	3	3	2	2	1	1	2	1	2	1	1	1	1	1	1	1	1	1	
19-Apr	1	4	2	2	2	3	4	3	3	3	3	3	3	3	4	4	3	3	1	1	1	1	1	1	
20-Apr	1	1	1	1	1	UO	UO	1	3	3	3	3	3	4	4	3	3	3	4	1	1	1	1	1	
21-Apr	1	1	1	1	1	UO	1	1	2	3	3	4	3	3	3	3	3	3	2	1	1	1	1	3	
22-Apr	3	2	1	1	1	1	1	2	2	3	4	5	4	4	4	4	4	3	2	2	1	1	1	1	
23-Apr	1	1	1	2	1	2	2	2	3	5	5	5	5	5	5	4	4	4	3	3	4	2	2	1	
24-Apr	1	1	2	2	2	2	2	3	3	3	4	4	3	4	3	3	3	3	4	4	3	2	2	1	
25-Apr	2	2	1	1	1	1	2	2	3	2	2	2	4	5	3	3	2	2	1	1	1	1	1	2	
26-Apr	3	4	4	4	5	4	4	4	4	4	3	3	4	3	3	3	3	2	2	2	1	1	1	1	
27-Apr	1	1	1	1	1	1	2	2	3	3	3	3	3	4	3	3	3	3	2	1	1	1	1	2	
28-Apr	3	4	3	3	3	3	4	4	5	5	5	6	6	6	5	6	5	4	4	2	1	1	1	1	
29-Apr	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	4	3	3	2	1	3	2	2	
30-Apr	2	1	2	2	2	2	2	3	3	4	4	5	5	5	4	4	5	4	4	2	1	2	2	2	
	3	4	6	6	7	6	6	6	7	7	7	7	7	7	7	7	7	6	5	5	5	4	4	3	
	Diurnal Maximum																								

UO - Unstable Operation



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Surmont 2 - April 2023

Direction of Maximum Speed: 262 deg on Apr 10 10:00		Hours in Service: 720
Direction of Maximum Daily Speed Average: 259.0 deg on Apr 10		Hours of Data: 711
Direction of Minimum Speed: 215 deg on Apr 22 04:00	Direction of Minimum Daily Speed Average: 0.6 deg on Apr 14	Hours of Missing Data: 9
Monthly Average Direction: 146.6 deg		Percent Operational Time: 98.8

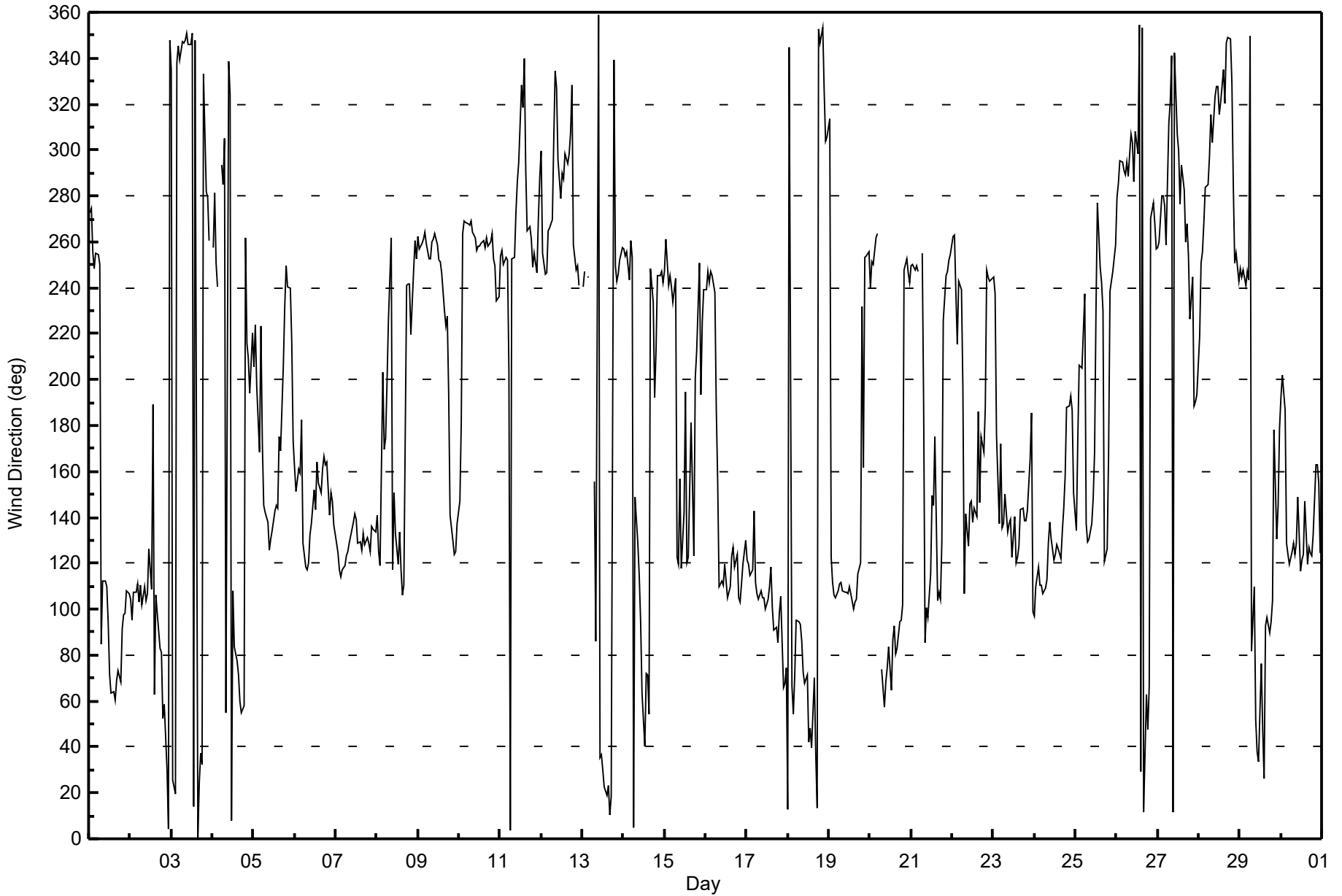
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-Apr	272	275	256	248	255	254	250	85	112	113	110	94	71	63	64	60	69	73	68	92	98	98	108	107	89.4
2-Apr	104	95	108	107	111	103	110	102	110	104	107	126	109	189	63	106	98	83	81	53	59	30	4	348	98.8
3-Apr	335	26	20	338	346	339	347	346	348	351	346	346	351	14	348	1	25	37	32	333	282	279	261	UO	353.3
4-Apr	257	281	251	240	UO	294	285	305	55	339	324	8	108	84	77	71	60	55	58	262	216	209	194	220	59.6
5-Apr	206	224	197	168	223	172	145	142	138	126	130	134	143	145	144	175	169	206	232	249	241	240	217	173	160.9
6-Apr	162	151	161	159	182	129	119	117	120	132	137	152	143	164	155	151	161	167	163	164	141	151	147	136	148.1
7-Apr	129	124	117	114	117	119	123	125	129	135	138	141	139	129	129	126	133	128	131	129	125	136	135	134	129.0
8-Apr	141	125	119	203	170	175	199	226	261	117	151	133	119	133	117	106	111	241	242	241	220	248	260	252	169.6
9-Apr	262	257	259	261	264	259	253	252	260	261	264	259	252	251	246	230	223	227	194	141	130	124	125	137	241.2
10-Apr	147	182	264	269	268	268	267	269	264	262	256	258	258	259	261	258	261	258	260	264	252	249	234	236	259.0
11-Apr	254	256	250	253	252	204	4	253	253	273	286	295	329	318	340	292	265	267	261	249	255	247	270	288	273.4
12-Apr	300	255	246	246	265	266	270	304	335	327	296	279	290	287	298	294	298	308	328	259	248	249	241	UO	286.5
13-Apr	240	247	UO	245	245	UO	UO	156	86	359	35	37	30	22	19	23	10	18	339	249	243	246	252	258	5.3
14-Apr	257	254	256	244	261	253	5	149	128	115	95	63	40	72	71	54	248	233	192	213	245	246	247	243	123.1
15-Apr	247	261	241	245	240	234	244	123	119	157	118	142	195	120	123	181	155	123	201	212	250	193	225	239	166.8
16-Apr	239	247	242	247	246	238	187	156	110	112	110	120	112	105	110	123	127	119	124	105	103	111	120	130	121.9
17-Apr	121	120	115	117	143	112	107	104	108	105	105	100	104	110	118	101	91	92	85	98	106	66	68	74	103.6
18-Apr	13	345	66	54	72	95	94	93	86	73	68	71	42	48	40	70	37	13	353	347	353	326	304	306	55.9
19-Apr	314	123	112	106	105	108	111	111	108	107	108	107	110	107	100	103	104	116	120	232	162	253	254	255	109.6
20-Apr	240	252	250	262	264	UO	UO	74	57	68	74	84	65	87	93	80	83	95	95	102	248	252	247	242	86.3
21-Apr	250	250	248	249	247	UO	255	188	85	101	96	116	149	145	175	104	107	104	130	226	246	247	252	254	143.9
22-Apr	262	263	238	215	243	239	196	106	142	128	146	147	138	144	141	186	146	175	168	188	248	244	243	244	166.8
23-Apr	245	237	176	137	172	135	137	150	134	137	139	123	140	120	123	128	144	144	139	139	143	165	186	99	138.3
24-Apr	97	110	118	110	110	107	109	113	129	138	130	122	124	128	126	122	134	144	158	188	189	193	187	151	132.3
25-Apr	134	173	206	206	205	238	138	129	130	137	148	168	230	277	249	242	230	121	127	168	238	243	247	258	194.4
26-Apr	279	285	295	294	291	289	295	289	307	303	286	308	298	354	29	353	11	63	48	66	270	277	268	257	304.3
27-Apr	257	260	280	280	276	259	312	321	341	11	342	307	300	276	293	283	260	268	254	226	245	189	190	194	287.5
28-Apr	219	251	256	268	284	285	297	315	303	323	328	328	316	321	335	320	346	349	349	330	285	251	255	243	308.1
29-Apr	248	244	247	241	247	243	349	82	110	52	38	33	76	48	26	93	96	90	95	104	178	131	145	179	89.6
30-Apr	192	202	186	129	124	120	125	129	124	129	149	117	121	124	147	120	127	124	123	132	163	163	155	125	131.6

207.2 218.7 219.5 230.0 238.0 219.4 166.5 137.2 122.1 113.3 122.6 123.7 126.2 115.8 106.9 112.6 123.4 119.0 123.9 156.3 178.3 181.9 192.1 194.3

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 (WD) - deg
Surmont 2 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 109 deg on Apr 8 04:00	Hours of Data: 711
Minimum Value: 7 deg on Apr 21 03:00	Hours of Missing Data: 9
Percentiles: P ₁ = 10 P ₁₀ = 21 Q ₁ = 29 Median = 40 Q ₃ = 53 P ₉₀ = 67 P ₉₉ = 94	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-Apr	45	27	40	42	11	34	38	73	24	26	36	43	34	35	38	35	32	31	38	65	24	27	21	20	73
2-Apr	22	30	30	23	22	34	18	22	30	28	43	68	37	84	94	42	33	38	31	49	45	37	53	50	94
3-Apr	66	42	30	34	27	25	22	28	27	34	31	33	29	39	46	37	45	48	87	71	34	54	30	UC	87
4-Apr	41	29	39	58	UC	18	31	43	95	70	70	99	82	92	37	38	36	31	67	40	51	52	61	43	99
5-Apr	55	38	46	62	53	69	54	41	45	32	41	44	50	54	53	63	58	53	51	14	24	41	49	66	69
6-Apr	60	55	65	68	68	63	39	29	34	38	44	54	53	57	55	50	53	59	61	53	54	51	52	53	68
7-Apr	43	41	30	30	32	35	38	39	44	43	47	51	48	39	41	36	41	41	44	45	40	46	49	52	52
8-Apr	61	57	41	109	65	64	53	67	36	83	56	39	51	104	78	27	42	45	31	29	42	20	17	16	109
9-Apr	20	17	16	18	22	19	19	22	26	28	29	30	37	35	37	56	60	60	61	50	49	43	43	48	61
10-Apr	45	69	30	28	29	28	28	28	29	29	28	30	29	28	30	29	29	29	28	25	25	22	27	28	69
11-Apr	25	22	20	23	31	72	75	44	25	35	45	60	44	43	38	44	30	45	23	12	33	16	28	29	75
12-Apr	36	13	10	11	22	24	23	36	38	45	40	33	35	36	47	39	36	42	36	22	15	17	21	UC	47
13-Apr	46	13	UC	14	51	UC	UC	91	91	95	71	92	47	53	44	45	39	42	43	24	26	47	13	17	95
14-Apr	32	38	53	80	50	45	80	66	92	51	46	41	87	60	40	42	86	50	72	41	20	25	41	21	92
15-Apr	43	18	34	15	32	30	10	66	46	48	38	56	62	53	69	80	54	42	60	62	42	54	36	26	80
16-Apr	23	16	18	13	17	25	55	56	34	29	29	36	32	24	34	42	38	32	39	24	24	23	41	52	56
17-Apr	35	38	24	33	57	66	26	24	25	26	26	26	23	25	36	23	26	26	27	21	23	42	29	40	66
18-Apr	82	80	75	87	61	40	33	26	29	40	49	68	88	63	45	73	44	56	48	35	47	32	42	17	88
19-Apr	70	70	27	23	21	21	22	23	21	18	20	21	34	27	24	24	27	42	49	94	64	13	16	11	94
20-Apr	41	10	10	35	29	UC	UC	102	93	48	46	40	50	42	33	40	37	30	27	32	44	24	22	26	102
21-Apr	10	8	7	32	9	UC	32	81	67	44	56	46	65	65	81	67	78	28	66	35	13	19	28	26	81
22-Apr	28	22	36	92	16	13	89	39	46	48	54	60	47	48	56	57	49	56	70	60	16	17	17	25	92
23-Apr	18	29	63	55	60	47	49	52	44	41	42	37	46	36	38	42	49	47	52	53	70	63	77	89	89
24-Apr	28	38	30	29	31	22	20	28	44	45	44	43	46	44	43	39	48	53	59	60	65	59	61	71	71
25-Apr	49	62	60	44	54	33	57	44	41	42	47	58	82	51	64	62	37	44	73	45	26	12	12	20	82
26-Apr	28	28	34	32	34	30	31	29	39	39	31	40	40	57	55	63	53	43	38	106	40	16	21	13	106
27-Apr	49	36	14	19	12	12	36	38	43	47	62	41	46	44	38	51	36	29	24	40	41	51	64	65	65
28-Apr	62	27	24	27	29	26	35	39	33	44	40	43	43	43	41	40	40	38	40	38	17	18	16	13	62
29-Apr	15	36	14	36	43	48	52	74	82	77	63	81	83	67	67	73	57	32	24	27	70	52	63	73	83
30-Apr	70	64	62	58	42	39	43	47	36	38	48	39	39	44	51	36	44	40	37	54	65	61	60	54	70
	82	80	75	109	68	72	89	102	95	95	71	99	88	104	94	80	86	60	87	106	70	63	77	89	

Diurnal Maximum

UC - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS30
ELLS RIVER
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
 APRIL 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	685	34	35	99.86	29.7	0	5.3	0
TRS (ppb) Average	684	35	36	99.86	1.4	0	0.7	0
THC (ppm) Average	685	34	35	99.86	3.4	-	2.3	-
NMHC (ppm) Average	685	34	35	99.86	0.326	-	0.066	-
CH4 (ppm) Average	685	34	35	99.86	3.4	-	2.3	-
NO2 (ppb) Average	684	35	36	99.86	43	0	13.3	-
NO (ppb) Average	684	35	36	99.86	58	-	10.6	-
NOX (ppb) Average	684	35	36	99.86	98.2	-	21	-
PM2.5 (ug/m3) Average	718	1	2	99.86	28.2	0	10.4	0
Temperature 2 m (C) Average	720	0	0	100	21.4	-	12.8	-
Relative Humidity (%) Average	720	0	0	100	95.6	-	89.4	-
Wind Speed 10 m (km/h) Average	711	0	9	98.75	32	-	19	-
Wind Direction 10 m (deg) Average	711	0	9	98.75	-	-	-	-
Global Solar Radiation (W/m2) Average	720	0	0	100	818.9	-	280.8	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
 APRIL 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	685	1.17	2.8	-	0	0	0	0.1	0.5	3.5	29.7
TRS (ppb) Average	684	0.51	0.1	-	0.3	0.4	0.4	0.5	0.5	0.6	1.4
THC (ppm) Average	685	2.09	0.2	-	1.9	2	2	2	2.1	2.2	3.4
NMHC(ppm) Average	685	0.006	0.029	-	0	0	0	0	0	0	0.326
CH4(ppm) Average	685	2.09	0.2	-	1.9	2	2	2	2.1	2.2	3.4
NO2 (ppb) Average	684	6.42	7.2	-	0.2	0.4	1.2	4.2	8.6	15.6	43
NO (ppb) Average	684	1.59	4.8	-	0	0	0	0.1	1.2	3.9	58
NOX (ppb) Average	684	8.01	10.3	-	0.2	0.4	1.3	4.7	10.3	18.4	98.2
PM2.5 (ug/m3) Average	718	5.55	3.4	-	0.1	2.4	3.4	4.7	7.3	9.4	28.2
Temperature 2 m (C) Average	720	4.3	6.1	-	-10.1	-3.2	0	3.8	8.8	12.6	21.4
Relative Humidity (%) Average	720	56.45	22.3	-	17	26.7	36.8	55.5	76.4	86.6	95.6
Wind Speed 10 m (km/h) Average	711	10.6	7	-	0	3	6	9	14	20	32
Wind Direction 10 m (deg) Average	711	98	-	-	-	-	-	-	-	-	-
Global Solar Radiation (W/m2) Average	720	182.37	227.7	-	0	0	0.3	60.4	340.8	583.9	818.9

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
APRIL 2023

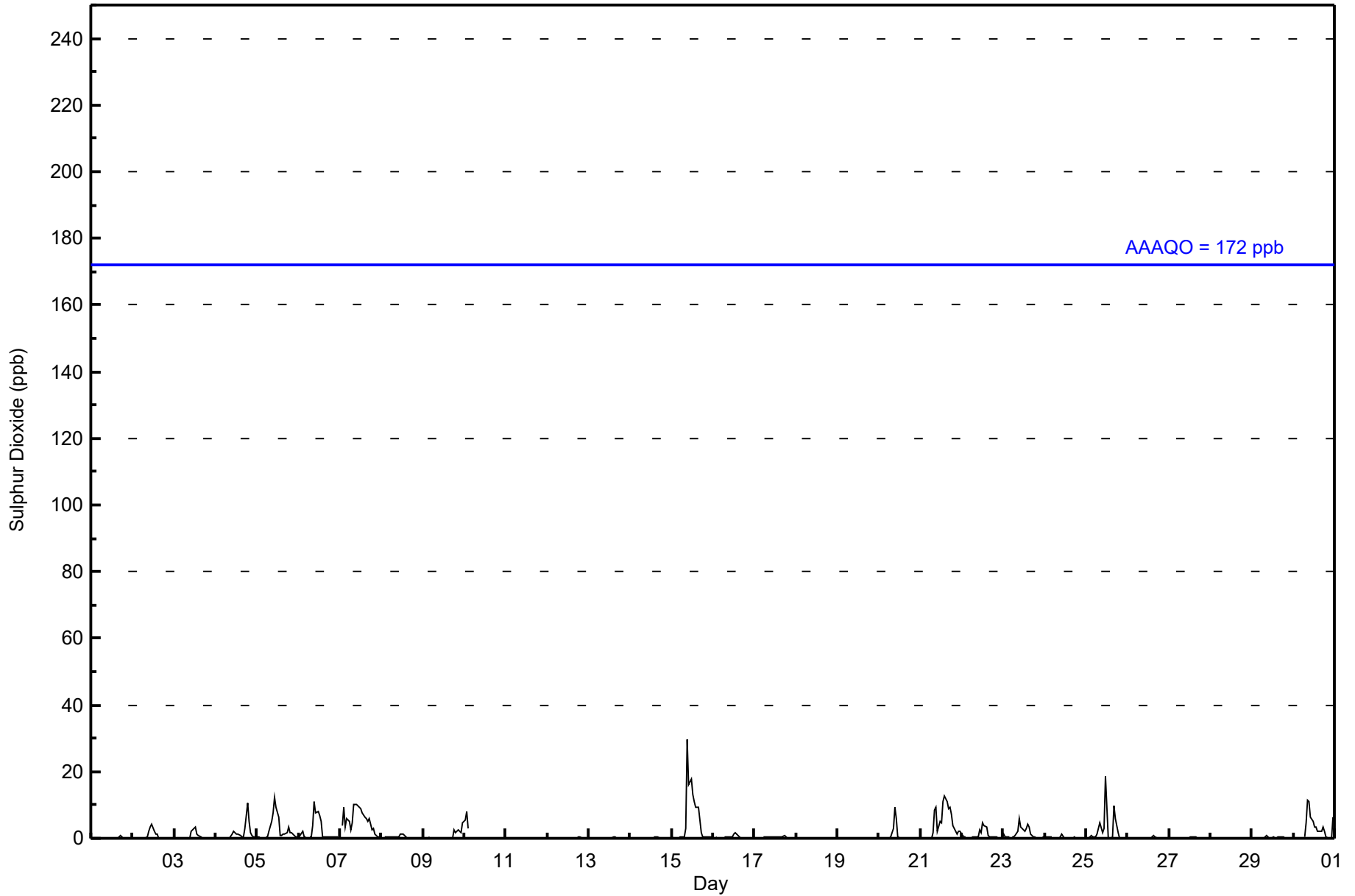
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	18 Apr 2023 08:00	18 Apr 2023 08:00	1	Station power failure
Wind Speed, Wind Direction	20 Apr 2023 01:00	20 Apr 2023 07:00	7	Flat line in sensor output signal - Sensor frozen
Wind Speed, Wind Direction	21 Apr 2023 06:00	21 Apr 2023 07:00	2	Flat line in sensor output signal - Sensor frozen



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Ells River - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Ells River - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	671	97.96	97.96
11 - 20	13	1.90	99.85
21 - 60	1	0.15	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: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Ells River - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	58	76	35	26	27	42	53	78	78	20	25	41	15	23	39	27	663
11 - 20	1	1	0	0	0	1	0	5	4	1	0	0	0	0	0	0	13
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
Totals	59	77	35	26	27	43	53	83	82	21	25	41	15	23	39	28	677

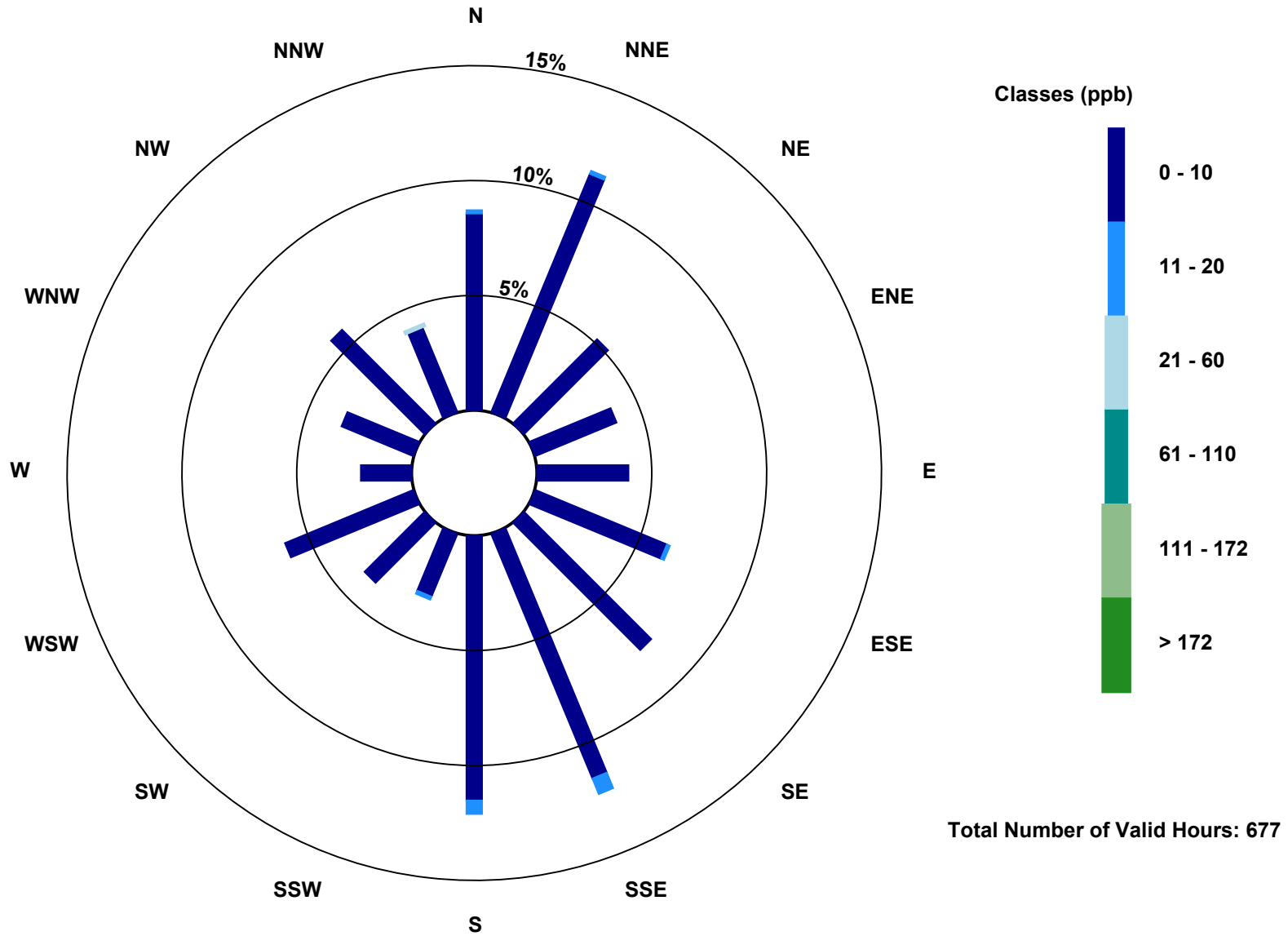
Total Number of Valid Hours: 677

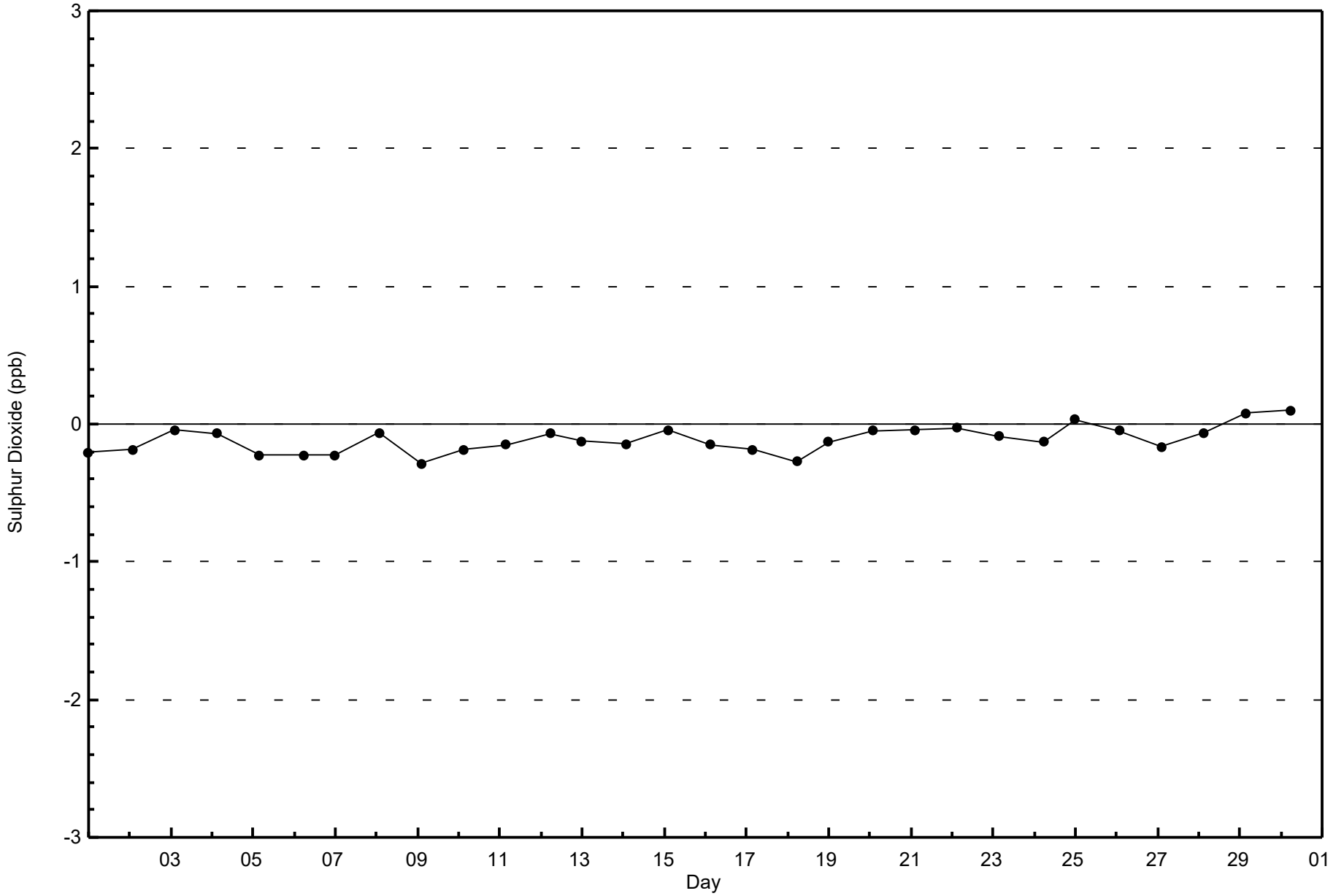
Total Number of Hours: 720

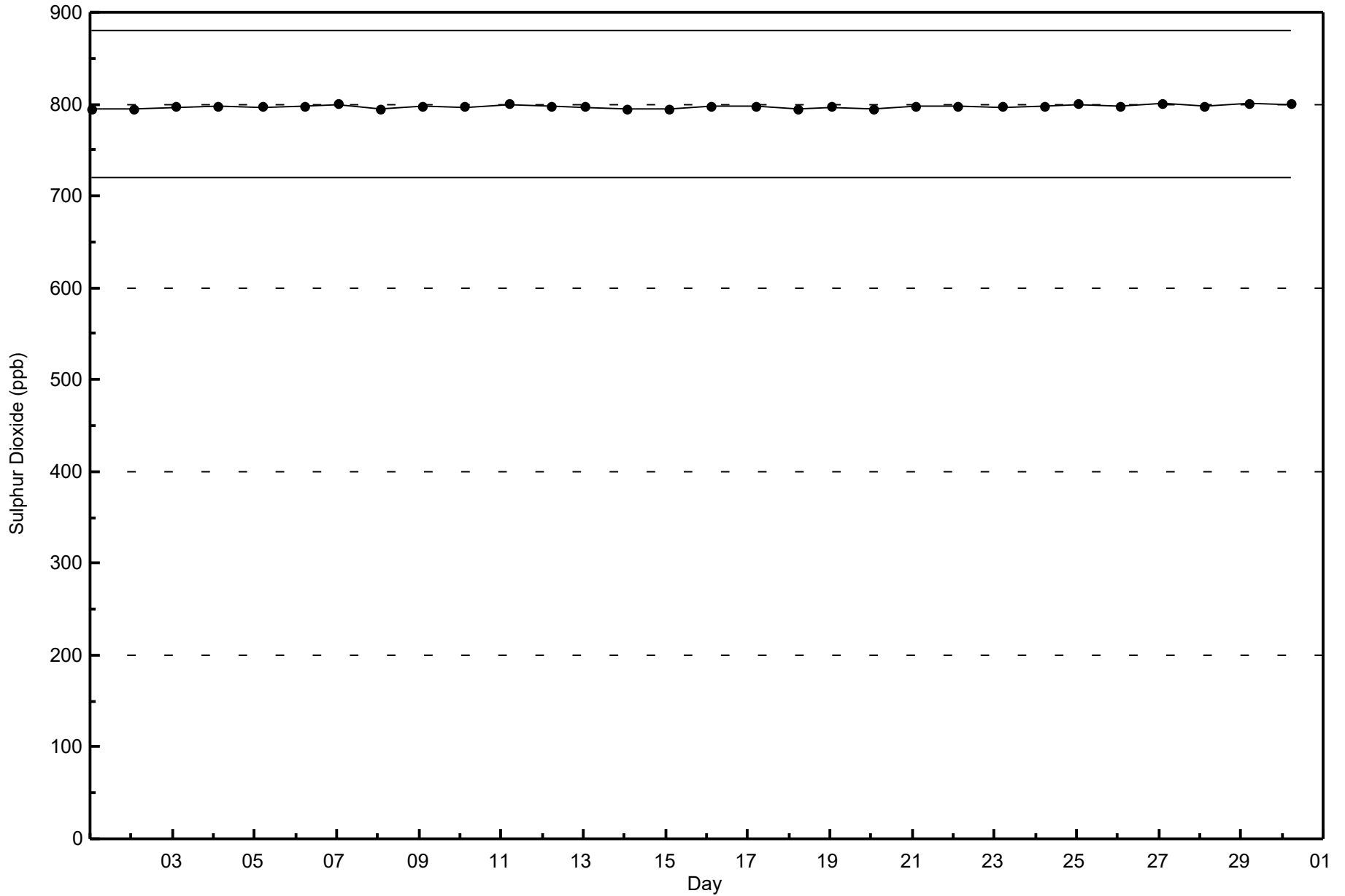


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Ells River









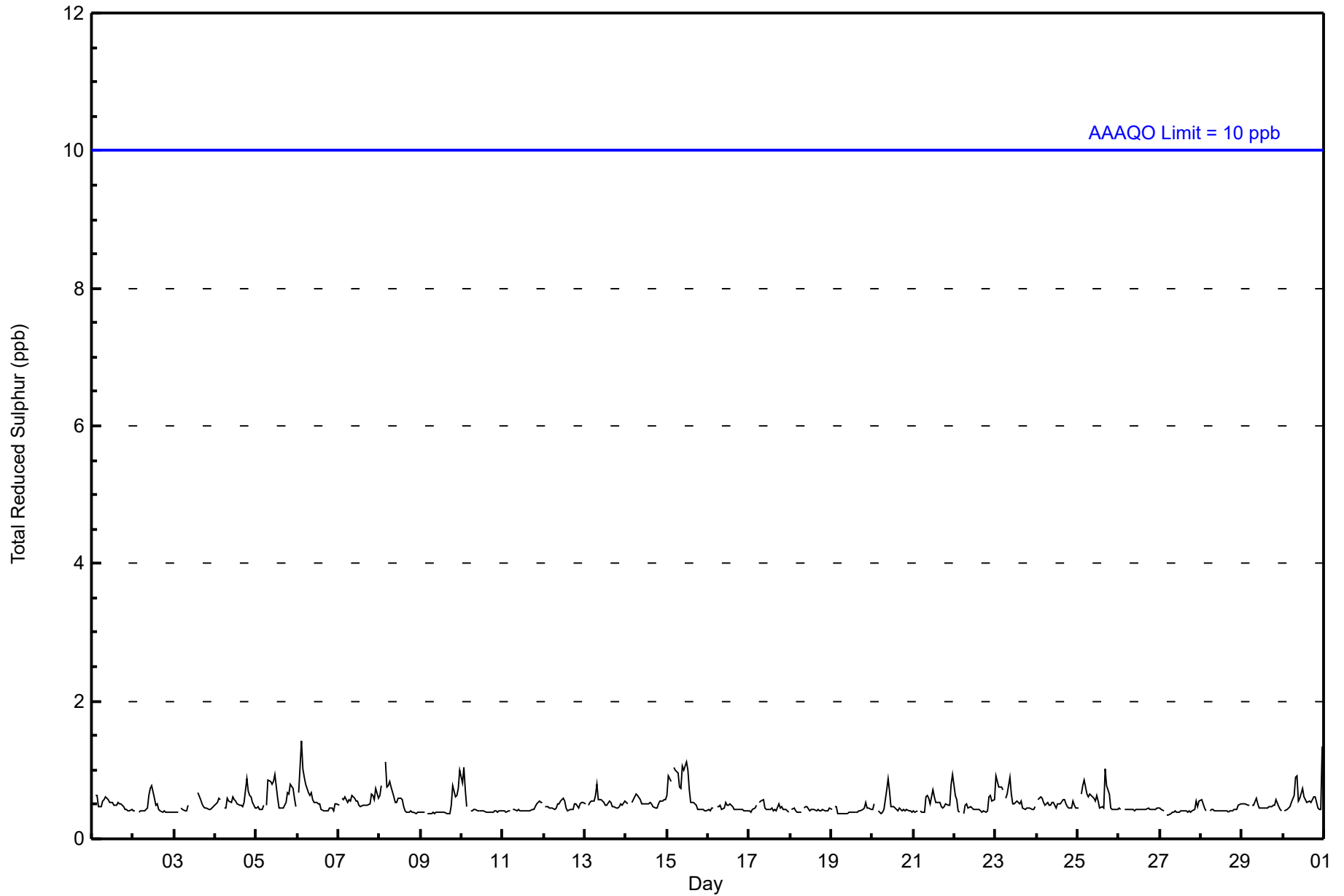
Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Ells River - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:														720						
Maximum Value: 1.4 ppb on Apr 6 03:00		Maximum Daily Average: 0.7 ppb on Apr 15		Hours of Data:														684								
Minimum Value: 0.3 ppb on Apr 27 06:00		Minimum Daily Average: 0.4 ppb on Apr 19		Hours of Missing Data:														36								
Maximum Diurnal Average: 0.6 ppb at hour 9		Minimum Diurnal Average: 0.5 ppb at hour 16		Hours of Calibration:														35								
Monthly Average: 0.51 ppb		Percentiles: P ₁ = 0.4 P ₁₀ = 0.4 Q ₁ = 0.4 Median = 0.5 Q ₃ = 0.5 P ₉₀ = 0.6 P ₉₉ = 1.0		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-Apr	0.5	Z	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6
2-Apr	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.8
3-Apr	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.5	C	C	C	C	C	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.7	
4-Apr	0.5	0.5	0.6	0.6	Z	0.5	0.5	0.6	0.6	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.9	0.7	0.6	0.6	0.5	0.5	0.9	
5-Apr	0.4	0.5	0.4	0.4	0.5	Z	0.5	0.9	0.8	0.8	0.8	0.9	0.6	0.4	0.4	0.5	0.5	0.7	0.6	0.8	0.7	0.6	0.5	0.6	0.9	
6-Apr	Z	0.7	1.4	1.0	0.9	0.8	0.7	0.6	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	1.4	
7-Apr	0.5	Z	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.6	0.6	0.7	0.6	0.7	
8-Apr	0.6	0.8	Z	1.1	0.7	0.8	0.8	0.8	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.1	
9-Apr	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	0.5	0.8	0.6	0.6	0.7	1.0	1.0	
10-Apr	0.8	1.0	0.7	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	1.0	
11-Apr	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	0.5	0.5	0.5	0.5	0.5	0.5	
12-Apr	Z	0.5	0.5	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	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	
13-Apr	0.5	Z	0.5	0.5	0.5	0.5	0.6	0.8	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.8	
14-Apr	0.5	0.5	Z	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.6	0.5	0.6	0.6	0.6	
15-Apr	0.6	0.9	0.8	Z	1.0	1.0	1.0	0.8	0.7	1.1	1.0	1.1	1.0	0.7	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	1.1	
16-Apr	0.4	0.4	0.4	0.4	Z	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	0.4	0.4	0.4	0.5	
17-Apr	0.4	0.4	0.4	0.4	0.5	Z	0.5	0.5	0.6	0.5	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	0.6	
18-Apr	Z	0.4	0.4	0.4	0.4	0.4	0.4	PF	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	0.5	
19-Apr	0.4	Z	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	0.5	0.5	0.4	0.4	0.4	0.4	0.5	
20-Apr	0.4	0.5	Z	0.4	0.4	0.4	0.4	0.4	0.7	0.9	0.7	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	0.9	
21-Apr	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.6	0.6	0.6	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.9	0.9	
22-Apr	0.6	0.6	0.4	0.4	Z	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	0.4	0.6	0.6	0.6	0.6	0.6	
23-Apr	0.9	0.8	0.8	0.7	0.7	Z	0.6	0.6	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.9	0.9	
24-Apr	Z	0.6	0.6	0.6	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	0.4	0.5	0.6	0.5	0.5	0.5	0.6	
25-Apr	0.5	Z	0.6	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.5	0.5	1.0	0.8	0.6	0.4	0.4	0.4	0.4	0.4	1.0	
26-Apr	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	0.5	0.4	0.5	
27-Apr	0.4	0.4	0.4	Z	0.4	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	0.6	0.5	0.5	0.6	
28-Apr	0.6	0.5	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	0.5	0.5	0.5	0.6	
29-Apr	0.5	0.5	0.5	0.5	0.5	Z	0.5	0.5	0.6	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.6	
30-Apr	Z	0.4	0.4	0.5	0.5	0.5	0.6	0.9	0.9	0.5	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.4	0.4	1.3	1.3	
																								Diurnal Average		
																								Diurnal Maximum		
																								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 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5		
																								0.9 1.0 1.4 1.1 1.0 1.0 1.0 1.0 0.9 0.9 1.1 1.0 1.1 1.0 0.7 0.7 0.6 1.0 0.8 0.9 0.8 0.8 0.7 0.8 1.3 1.3		
Z - zerspan 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
Ells River - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Reduced Sulphur (TRS) - ppb
Ells River - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	53	81	34	25	28	42	54	78	83	24	26	41	15	26	39	27	676
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
Totals	53	81	34	25	28	42	54	78	83	24	26	41	15	26	39	27	676

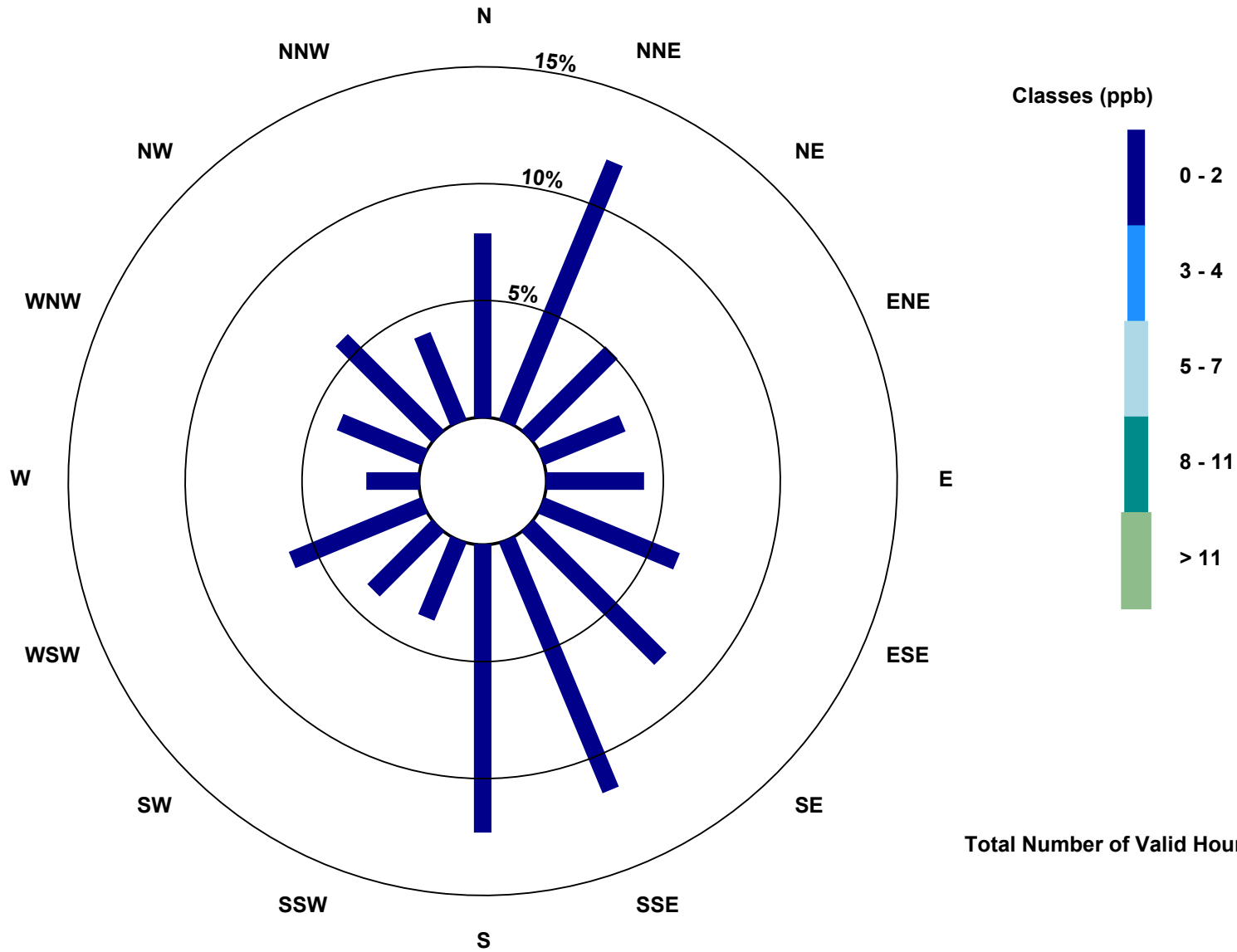
Total Number of Valid Hours: 676

Total Number of Hours: 720

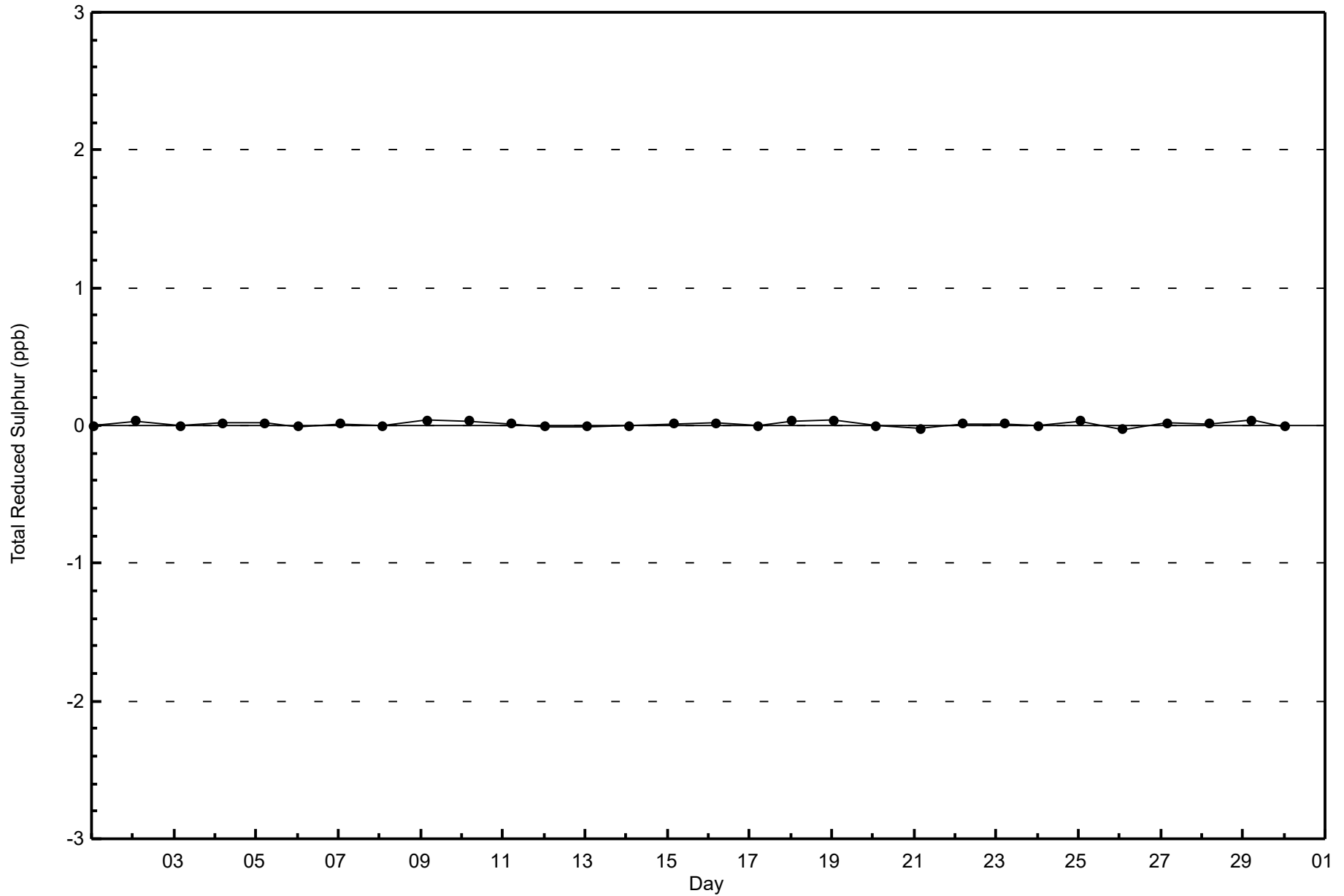


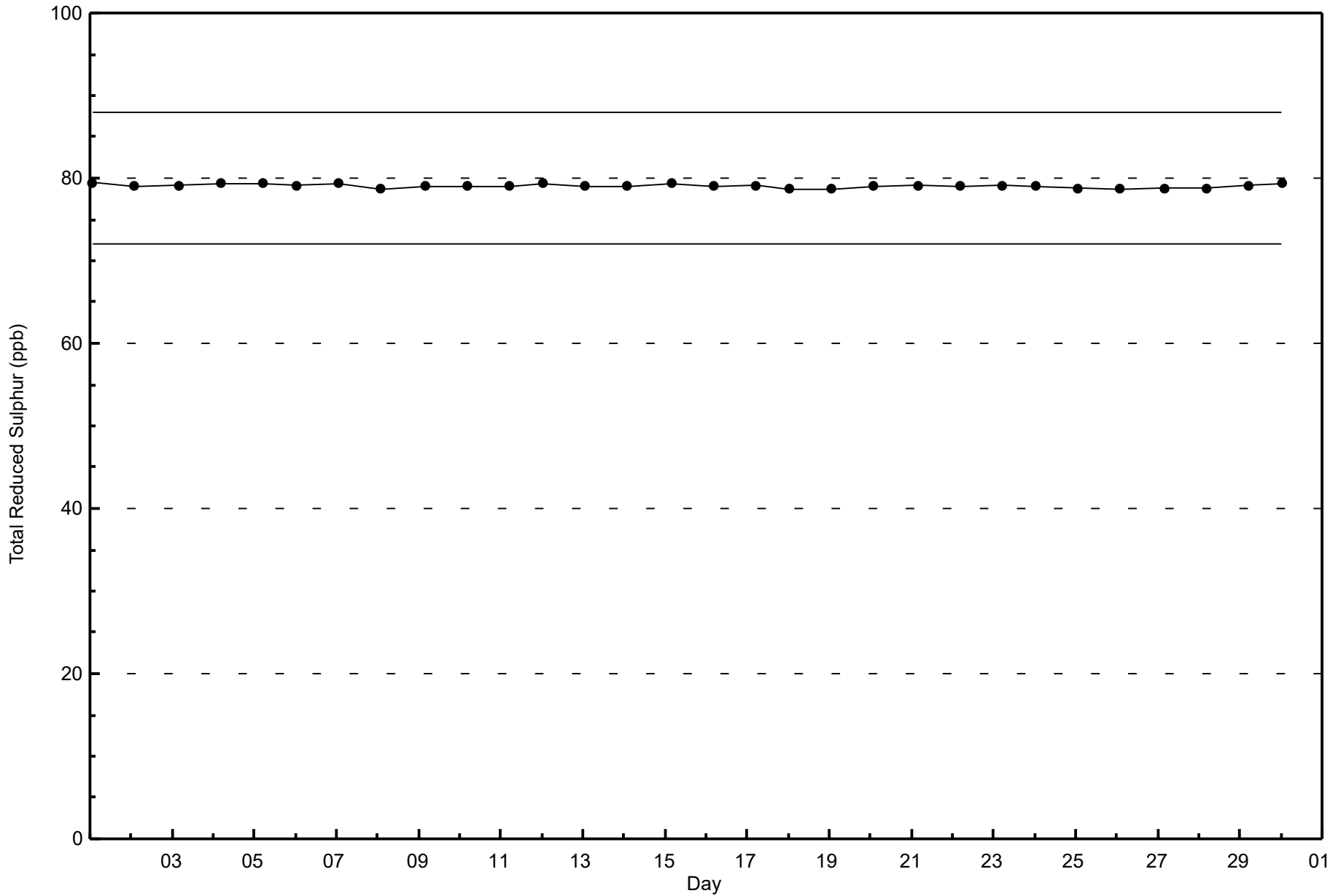
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Reduced Sulphur (TRS) - ppb
Ells River



Total Number of Valid Hours: 676





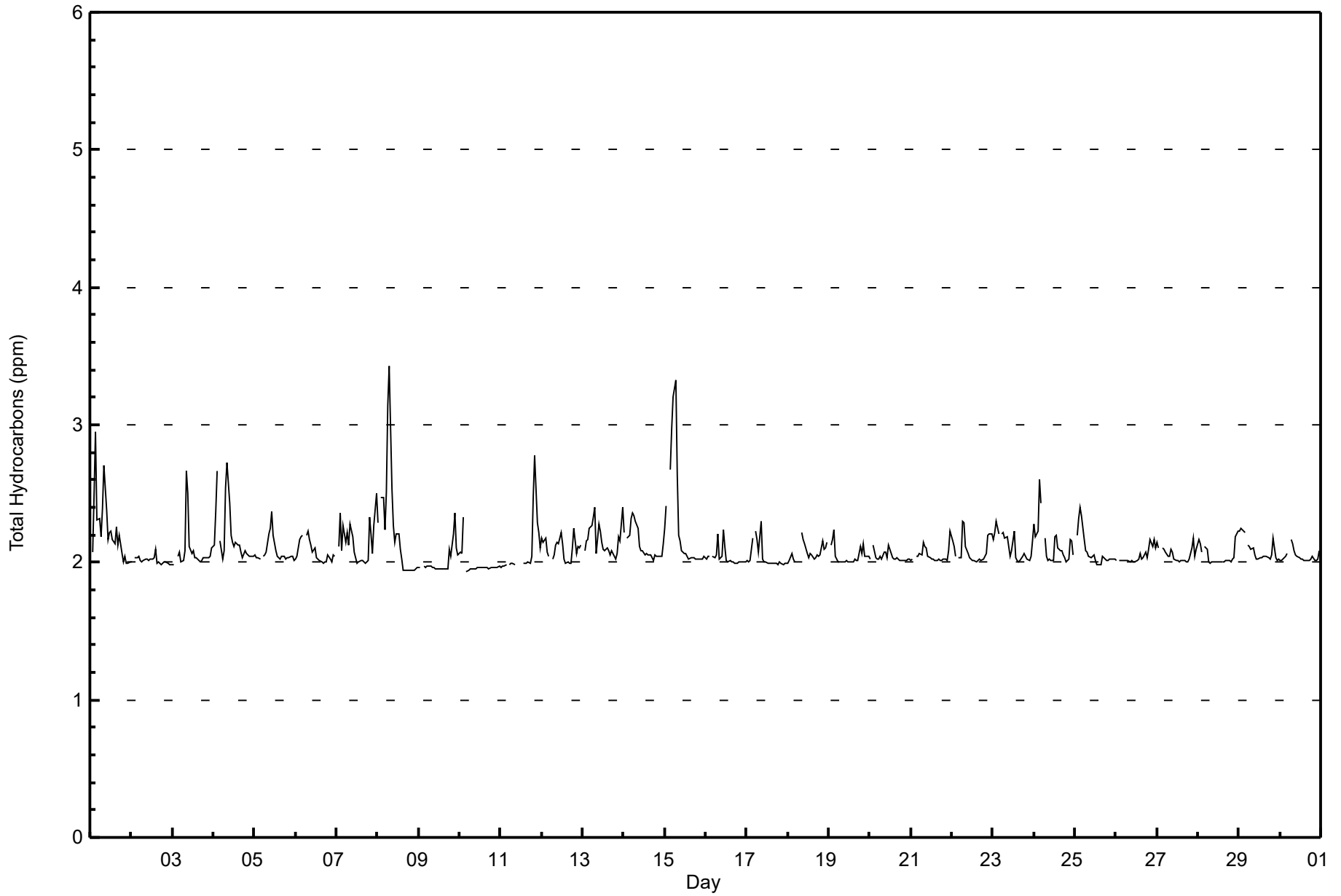


Maximum Value: 3.4 ppm on Apr 8 08:00		Maximum Daily Average: 2.3 ppm on Apr 15		Hours in Service: 720																						
Minimum Value: 1.9 ppm on Apr 10 05:00		Minimum Daily Average: 2.0 ppm on Apr 10		Hours of Data: 685																						
Maximum Diurnal Average: 2.2 ppm at hour 4		Minimum Diurnal Average: 2.0 ppm at hour 18		Hours of Missing Data: 35																						
Monthly Average: 2.09 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 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-Apr	Z	2.1	2.5	3.0	2.3	2.3	2.2	2.4	2.7	2.4	2.2	2.2	2.2	2.1	2.3	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.2	3.0
2-Apr	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
3-Apr	2.0	2.0	Z	2.0	2.1	2.0	2.0	2.1	2.7	2.5	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	2.7	
4-Apr	2.1	2.4	2.7	Z	2.2	2.0	2.1	2.5	2.7	2.4	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	2.2	2.7	
5-Apr	2.1	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.2	2.3	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4	
6-Apr	2.0	2.0	2.2	2.2	2.2	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	2.1	2.0	2.0	2.1	2.0	2.2	
7-Apr	Z	2.1	2.4	2.1	2.3	2.1	2.2	2.1	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.1	2.3	2.5	2.5	
8-Apr	2.3	Z	2.5	2.5	2.2	2.5	3.1	3.4	2.5	2.3	2.1	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	3.4	
9-Apr	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.2	2.4	2.1	2.1	2.4	
10-Apr	2.1	2.1	2.3	Z	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	2.0	2.3	
11-Apr	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.8	2.3	2.2	2.1	2.8	
12-Apr	2.2	2.1	2.2	2.1	2.0	Z	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.2	
13-Apr	Z	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.1	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.2	2.2	2.4	2.4	
14-Apr	2.2	Z	2.2	2.2	2.3	2.4	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.4	
15-Apr	2.3	2.4	Z	2.7	3.0	3.2	3.3	2.6	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	3.3	
16-Apr	2.0	2.0	2.0	Z	2.0	2.0	2.1	2.2	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	2.2	
17-Apr	2.0	2.0	2.0	2.2	Z	2.2	2.2	2.1	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	
18-Apr	2.0	2.0	2.1	2.0	2.0	Z	2.0	PF	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.2	
19-Apr	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	2.1	2.1	2.1	2.0	2.0	2.0	2.2	
20-Apr	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	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	2.1	
21-Apr	2.0	2.0	Z	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	2.0	2.0	2.1	2.2	2.2	
22-Apr	2.2	2.1	2.0	Z	2.0	2.0	2.3	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.3	
23-Apr	2.2	2.2	2.3	2.2	Z	2.2	2.2	2.2	2.2	2.1	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.2	2.3	
24-Apr	2.3	2.2	2.2	2.6	2.4	Z	2.2	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	2.0	2.2	2.2	2.1	2.6	
25-Apr	Z	2.2	2.3	2.4	2.3	2.2	2.1	2.1	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	2.4	
26-Apr	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	2.1	2.0	2.1	2.2	2.1	2.2	2.1	2.0	2.2	
27-Apr	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.1	2.1	2.2	
28-Apr	2.2	2.1	2.1	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	2.0	2.0	2.0	2.0	2.2	2.2	2.0	2.2	
29-Apr	2.2	2.2	2.2	2.2	Z	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	2.1	2.2	2.0	2.0	2.0	2.2	
30-Apr	2.0	2.0	2.0	2.0	2.1	Z	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	2.0	2.1	2.0	2.2	
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerospan C - Calibration PF - Power Failure																										



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Ells River - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Ells River - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	386	56.35	56.35
2.1 - 3.0	295	43.07	99.42
3.1 - 10.0	4	0.58	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Ells River - April 2023

Concentration 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	31	8	15	25	34	45	53	29	16	22	38	11	12	20	9	381
2.1 - 3.0	46	46	27	11	2	9	8	30	51	5	3	3	4	11	18	18	292
3.1 - 10.0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	1	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	77	35	26	27	43	53	83	82	21	25	41	15	23	39	28	677

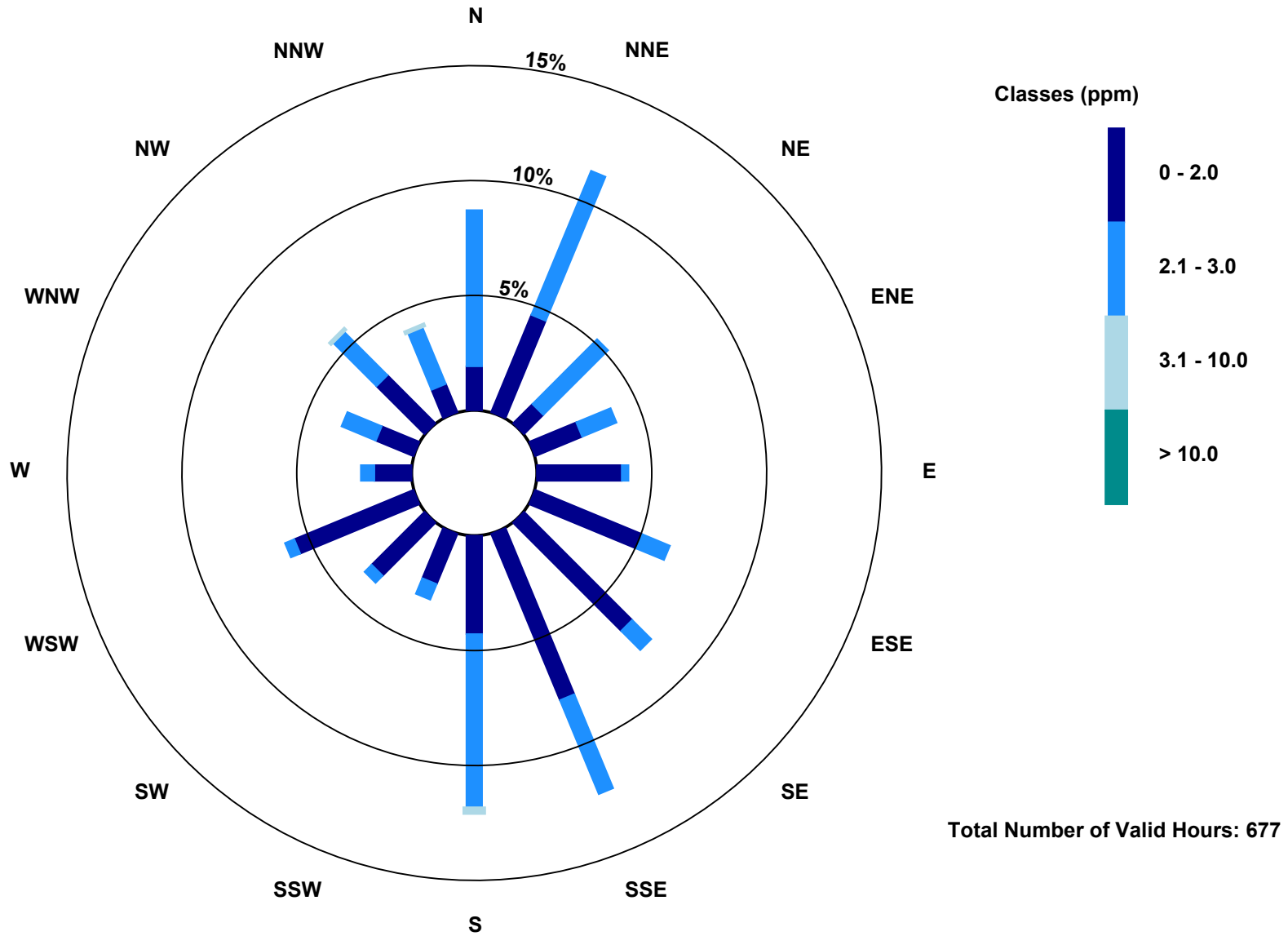
Total Number of Valid Hours: 677

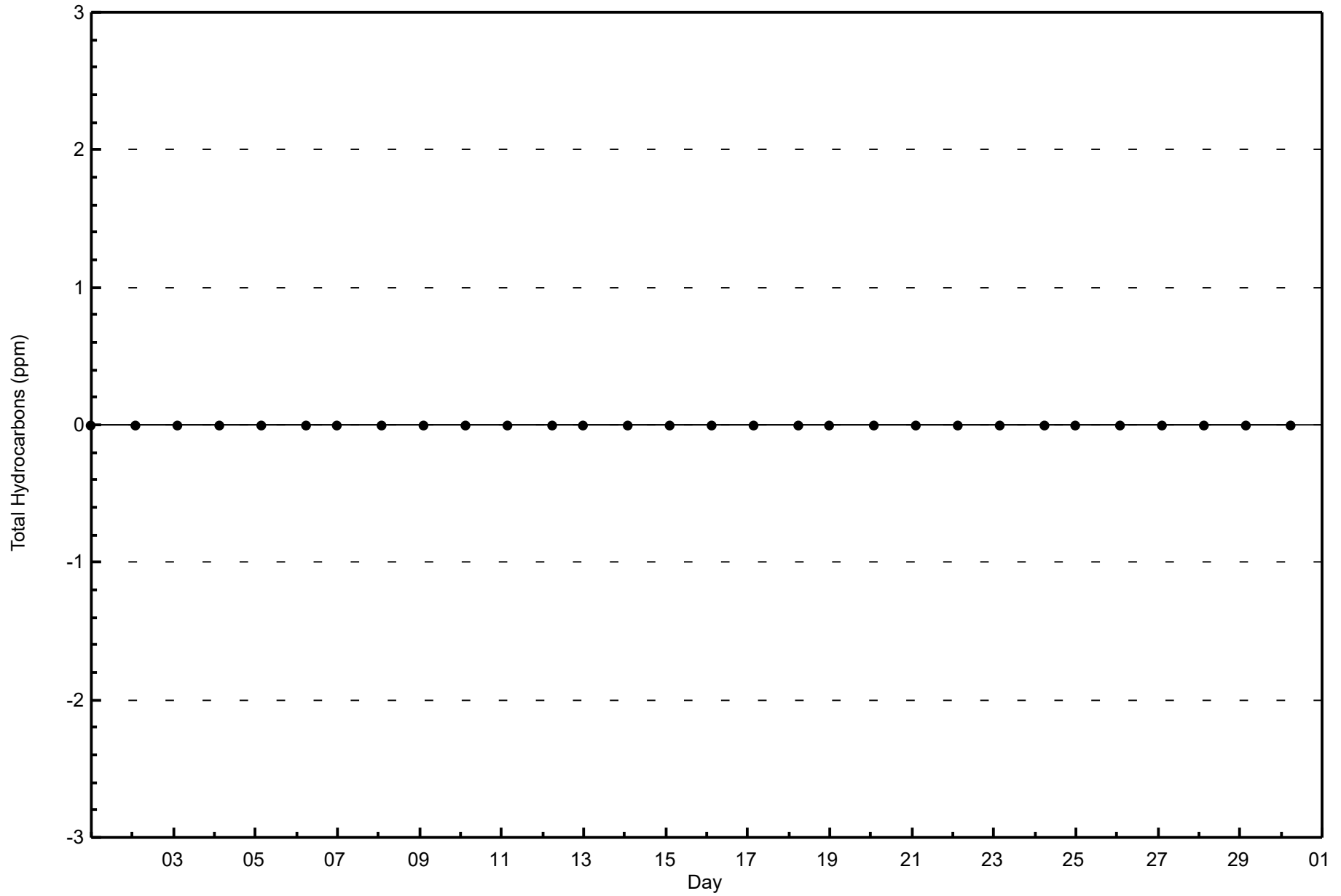
Total Number of Hours: 720

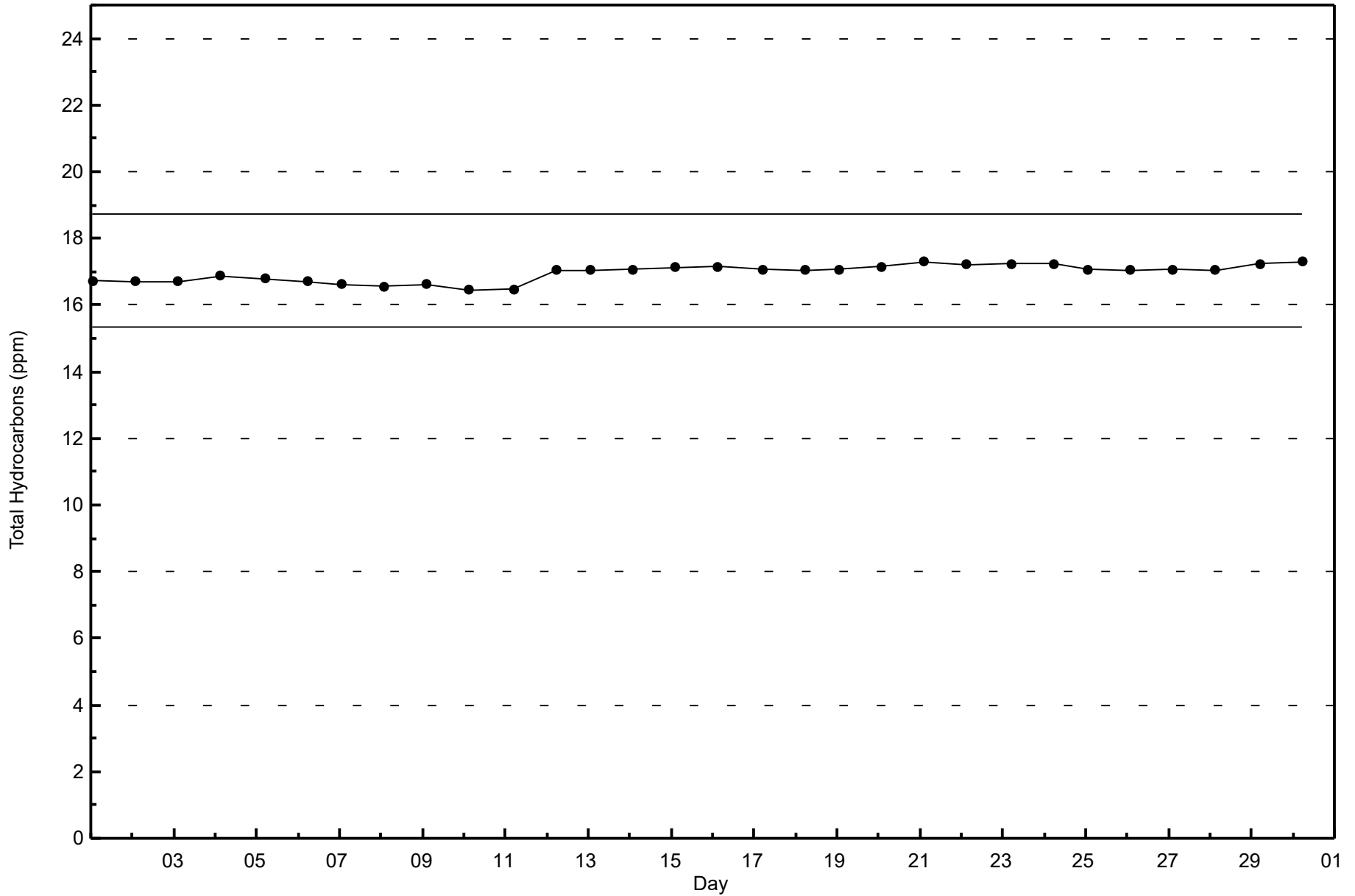


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Ells River









Summary of Hour Averages

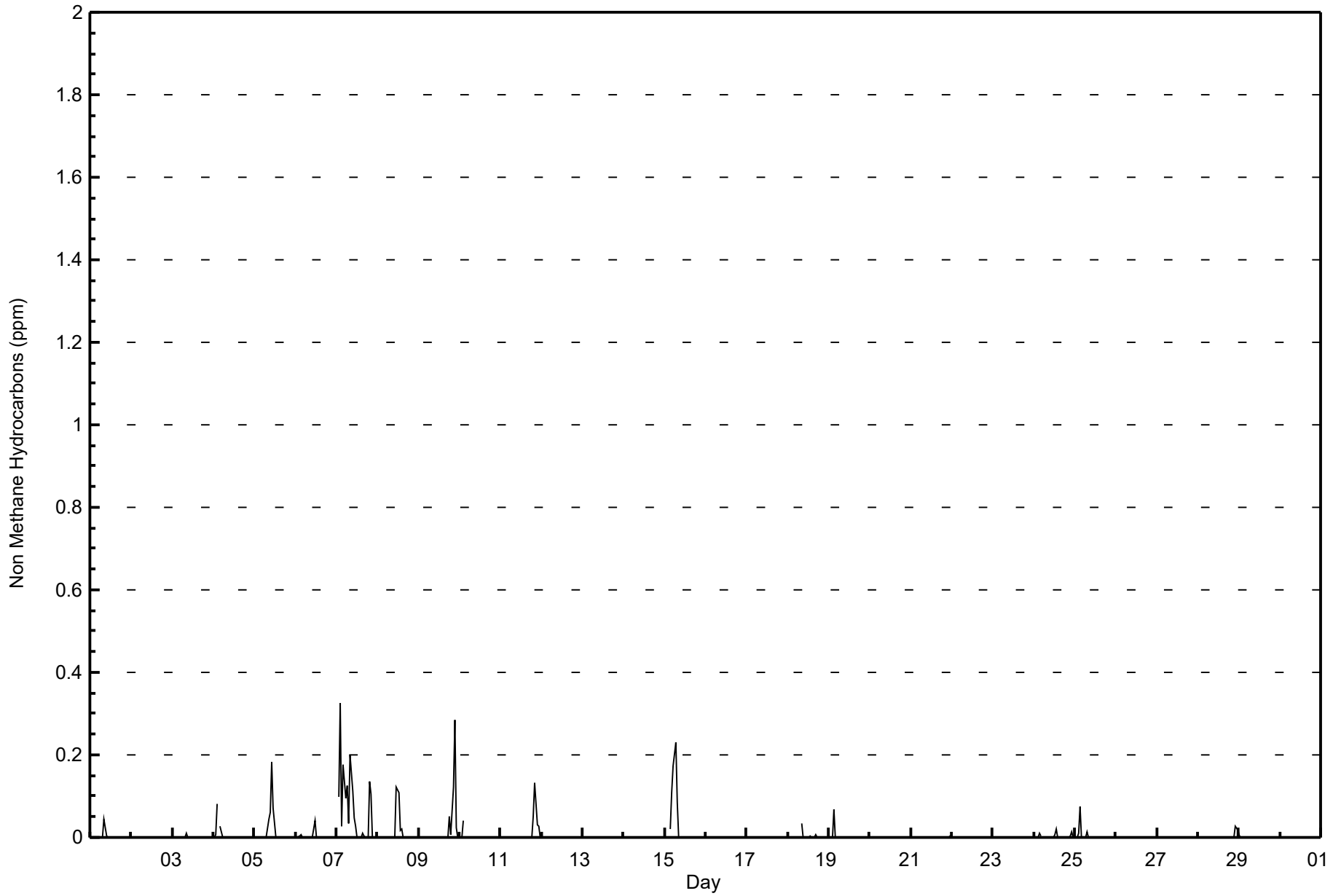
Ells River - April 2023

Maximum Value: 0.326 ppm on Apr 7 03:00	Maximum Daily Average: 0.066 ppm on Apr 7	Hours in Service: 720
Minimum Value: 0.000 ppm on Apr 1 02:00	Minimum Daily Average: 0.000 ppm on Apr 2	Hours of Data: 685
Maximum Diurnal Average: 0.018 ppm at hour 3	Minimum Diurnal Average: 0.000 ppm at hour 18	Hours of Missing Data: 35
Monthly Average: 0.006 ppm	Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.0 Q ₃ = 0.0 P ₉₀ = 0.0 P ₉₉ = 0.1	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-Apr	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043	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	0.002	0.043	
2-Apr	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
3-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
4-Apr	0.000	0.007	0.081	Z	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.081	
5-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.046	0.061	0.183	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.183	
6-Apr	0.000	0.000	0.003	0.007	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.042	
7-Apr	Z	0.098	0.326	0.028	0.178	0.095	0.125	0.033	0.200	0.111	0.046	0.028	0.000	0.000	0.000	0.009	0.003	0.000	0.000	0.137	0.107	0.000	0.000	0.000	0.066	0.326	
8-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.122	0.108	0.015	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.122	
9-Apr	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	0.052	0.007	0.122	0.286	0.024	0.021	0.286	
10-Apr	0.000	0.001	0.039	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	0.039	
11-Apr	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.052	0.132	0.030	0.027	0.000	0.013	0.132	
12-Apr	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
13-Apr	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
14-Apr	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
15-Apr	0.000	0.000	Z	0.019	0.110	0.173	0.231	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.231	
16-Apr	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
17-Apr	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
18-Apr	0.000	0.000	0.000	0.000	0.000	Z	0.000	PF	0.033	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.005	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.002	0.033	
19-Apr	Z	0.000	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.067	
20-Apr	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
21-Apr	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	0.004	0.000	0.004	
22-Apr	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
23-Apr	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
24-Apr	0.000	0.000	0.000	0.011	0.004	Z	0.000	0.000	0.000	0.000	0.000	0.005	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.015	0.002	0.020	
25-Apr	Z	0.000	0.009	0.076	0.000	0.000	0.001	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.076	
26-Apr	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
27-Apr	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
28-Apr	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	0.027	0.018	0.002	0.027
29-Apr	0.002	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	0.002
30-Apr	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	0.004	0.018	0.008	0.013	0.011	0.012	0.005	0.011	0.006	0.008	0.009	0.004	0.001	0.001	0.000	0.000	0.000	0.002	0.007	0.012	0.011	0.003	0.001	Diurnal Average	
0.002	0.098	0.326	0.076	0.178	0.173	0.231	0.085	0.200	0.111	0.183	0.122	0.108	0.020	0.019	0.009	0.005	0.000	0.052	0.137	0.132	0.286	0.027	0.018	Diurnal Maximum	

Z - zerospan C - Calibration PF - Power Failure





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Non Methane Hydrocarbons (NMHC) - ppm
Ells River - April 2023**

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	631	92.12	92.12
0.006 - 0.05	30	4.38	96.50
0.06 - 0.1	17	2.48	98.98
> 0.1	7	1.02	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm
Ells River - April 2023

Concentration Ranges (ppm)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.005	56	75	35	25	27	42	52	73	63	21	24	41	13	20	32	24	623
0.006 - 0.05	2	2	0	0	0	0	0	7	7	0	1	0	2	2	4	3	30
0.06 - 0.1	0	0	0	1	0	1	1	3	8	0	0	0	0	1	2	0	17
> 0.1	1	0	0	0	0	0	0	0	4	0	0	0	0	0	1	1	7
Totals	59	77	35	26	27	43	53	83	82	21	25	41	15	23	39	28	677

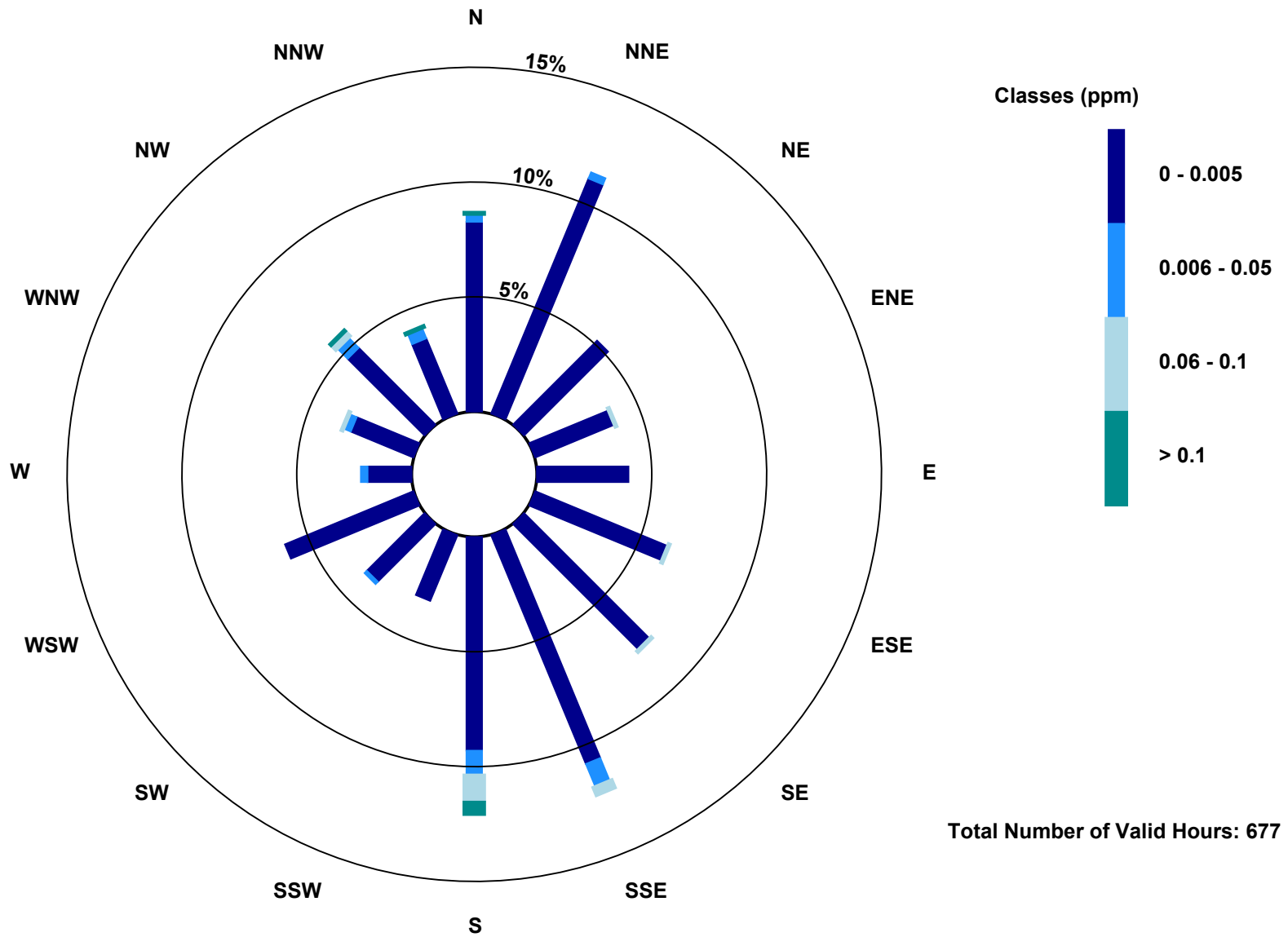
Total Number of Valid Hours: 677

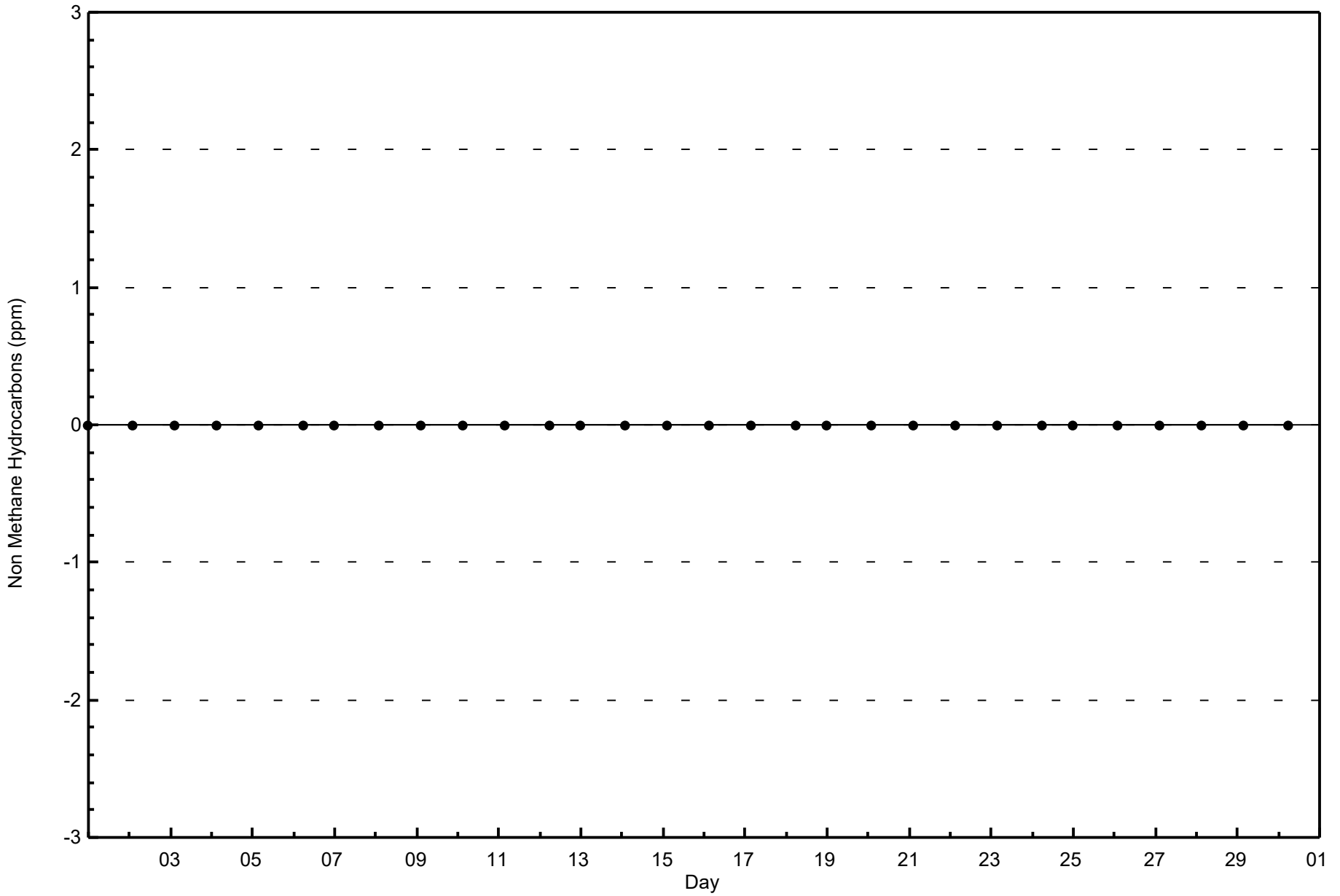
Total Number of Hours: 720

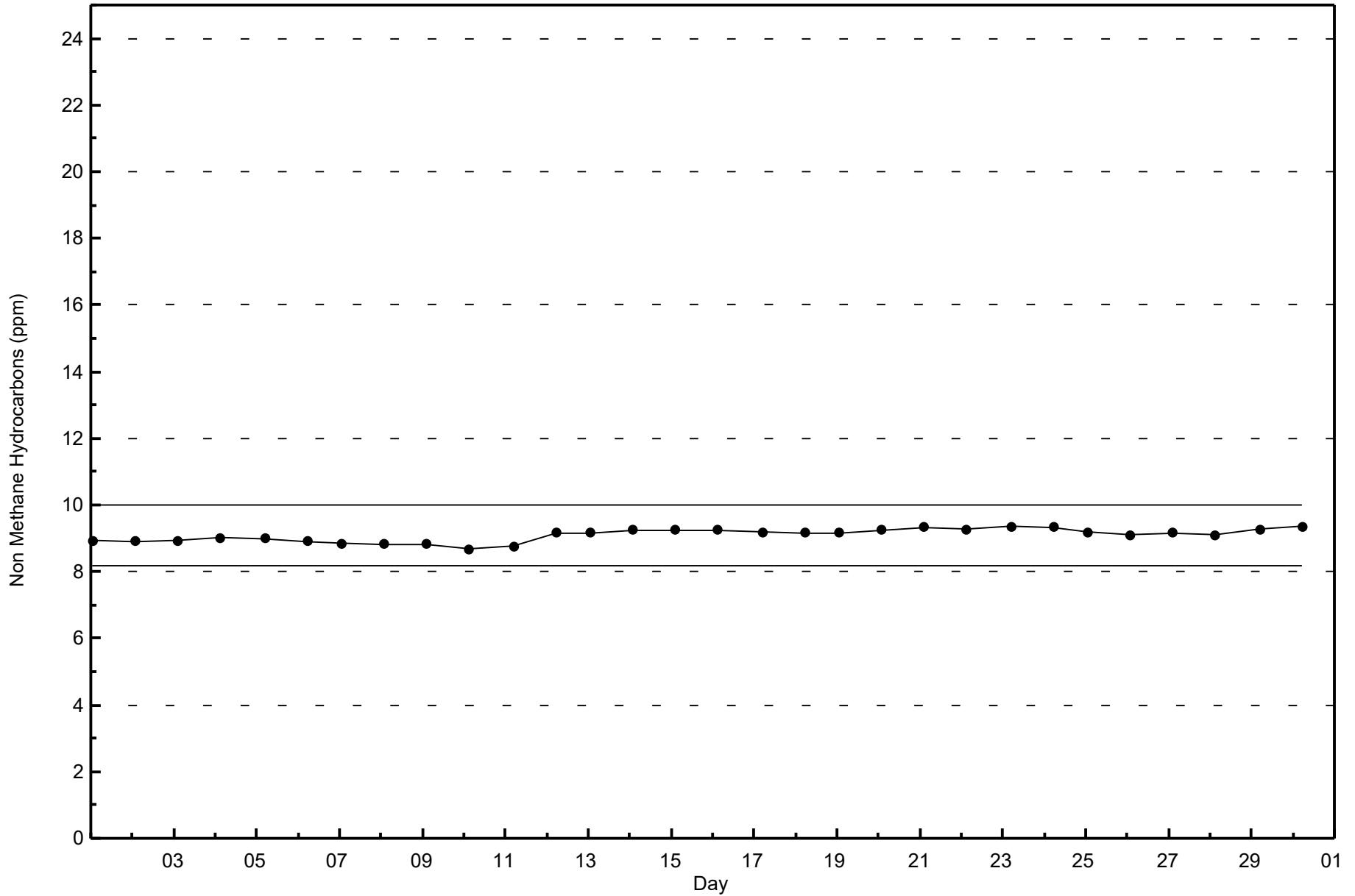


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Non Methane Hydrocarbons (NMHC) - ppm
Ells River









Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH₄) - ppm

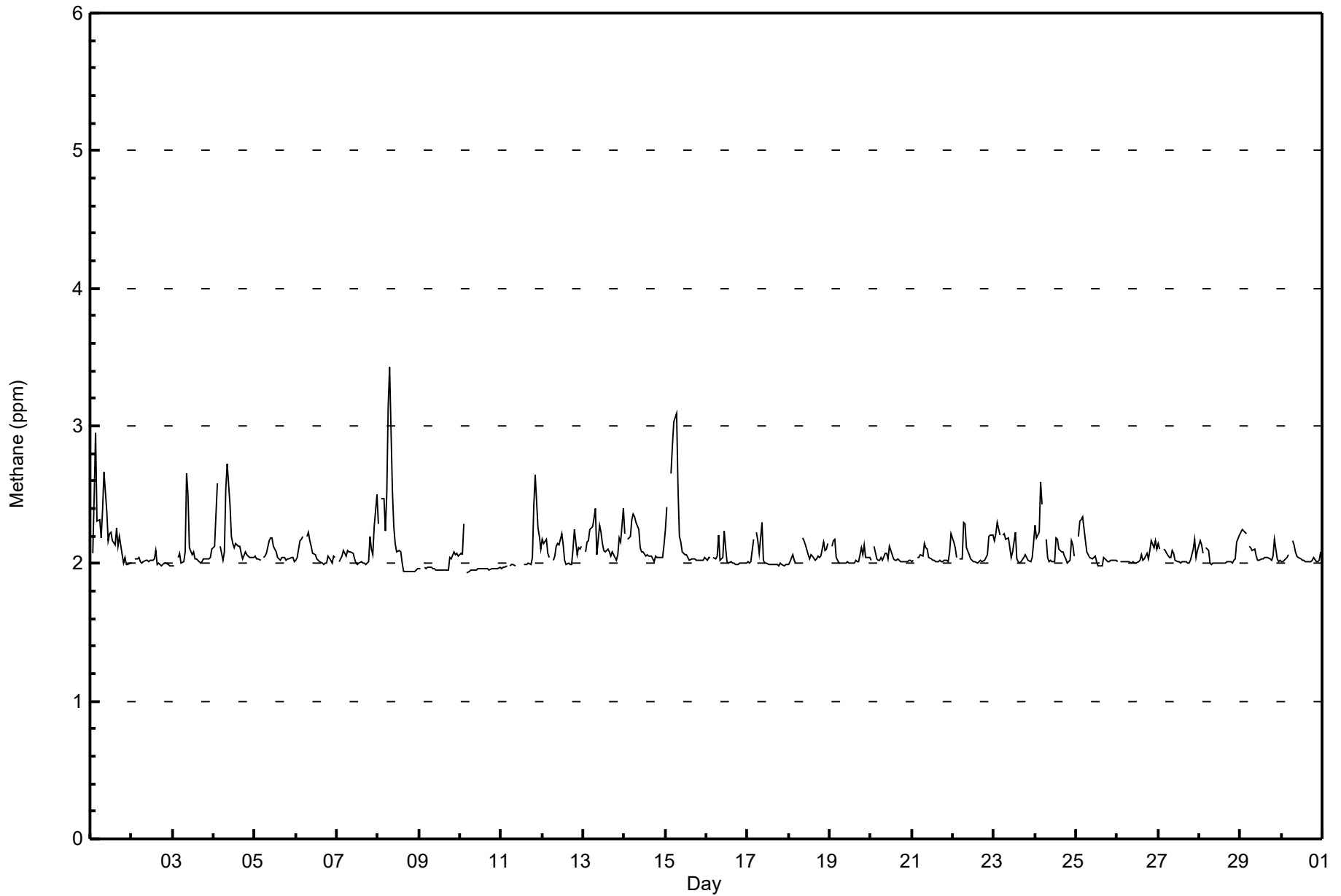
Ells River - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:																720				
Maximum Value: 3.4 ppm on Apr 8 08:00		Maximum Daily Average: 2.3 ppm on Apr 15		Hours of Data:																685						
Minimum Value: 1.9 ppm on Apr 10 05:00		Minimum Daily Average: 2.0 ppm on Apr 10		Hours of Missing Data:																35						
Maximum Diurnal Average: 2.2 ppm at hour 4		Minimum Diurnal Average: 2.0 ppm at hour 18		Hours of Calibration:																34						
Monthly Average: 2.09 ppm		Percentiles: P ₁ = 1.9 P ₁₀ = 2.0 Q ₁ = 2.0 Median = 2.0 Q ₃ = 2.1 P ₉₀ = 2.2 P ₉₉ = 2.7		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-Apr	Z	2.1	2.5	3.0	2.3	2.3	2.2	2.4	2.7	2.4	2.2	2.2	2.2	2.2	2.1	2.3	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.2	3.0
2-Apr	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	2.1	2.1
3-Apr	2.0	2.0	Z	2.0	2.1	2.0	2.0	2.1	2.7	2.5	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	2.7	
4-Apr	2.1	2.4	2.6	Z	2.1	2.0	2.1	2.5	2.7	2.4	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	2.2	2.7	
5-Apr	2.1	2.0	2.0	2.0	Z	2.0	2.1	2.1	2.2	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	2.1	2.2	
6-Apr	2.0	2.0	2.2	2.2	2.2	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	2.1	2.0	2.0	2.1	2.0	2.2	
7-Apr	Z	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.1	2.3	2.5	2.5	
8-Apr	2.3	Z	2.5	2.5	2.2	2.5	3.1	3.4	2.5	2.3	2.1	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	3.4	
9-Apr	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	
10-Apr	2.1	2.1	2.3	Z	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	2.0	2.3	
11-Apr	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.4	2.6	2.3	2.2	2.1	2.6	
12-Apr	2.2	2.1	2.2	2.1	2.0	Z	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.2	
13-Apr	Z	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.1	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.2	2.2	2.4	2.4	
14-Apr	2.2	Z	2.2	2.2	2.3	2.4	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.4	
15-Apr	2.3	2.4	Z	2.7	2.9	3.0	3.1	2.5	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	3.1	
16-Apr	2.0	2.0	2.0	Z	2.0	2.0	2.1	2.2	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	2.2	
17-Apr	2.0	2.0	2.0	2.2	Z	2.2	2.2	2.1	2.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	
18-Apr	2.0	2.0	2.1	2.0	2.0	Z	2.0	PF	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.2	2.1	2.1	2.1	2.2	
19-Apr	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	2.1	2.1	2.1	2.0	2.0	2.0	2.2	
20-Apr	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	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	2.1	
21-Apr	2.0	2.0	Z	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	2.0	2.0	2.1	2.2	2.2	
22-Apr	2.2	2.1	2.0	Z	2.0	2.0	2.3	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.3	
23-Apr	2.2	2.2	2.3	2.2	Z	2.2	2.2	2.2	2.2	2.1	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.2	2.3	
24-Apr	2.3	2.2	2.2	2.6	2.4	Z	2.2	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	2.0	2.2	2.1	2.1	2.6	
25-Apr	Z	2.2	2.3	2.3	2.3	2.2	2.1	2.1	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	2.3	
26-Apr	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	2.1	2.0	2.1	2.2	2.1	2.2	2.1	2.0	2.2	
27-Apr	2.1	2.1	Z	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.1	2.1	2.2	
28-Apr	2.2	2.1	2.1	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	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.2	
29-Apr	2.2	2.2	2.2	2.2	Z	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	2.1	2.2	2.0	2.0	2.0	2.2	
30-Apr	2.0	2.0	2.0	2.0	2.1	Z	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	2.0	2.0	2.1	2.2	
																								Diurnal Average		
																								Diurnal Maximum		
																								2.1 2.1 2.2 2.2 2.1 2.1 2.2 2.2 2.2 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 2.1		
																								2.3 2.4 2.6 3.0 2.9 3.0 3.1 3.4 2.7 2.5 2.2 2.2 2.2 2.2 2.1 2.3 2.1 2.2 2.1 2.4 2.6 2.3 2.3 2.5		
																								Z - zerspan C - Calibration PF - Power Failure		



Wood Buffalo Environmental Association
Hourly Averages

Methane (CH₄) - ppm
Ells River - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Methane (CH₄) - ppm
Ells River - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	390	56.93	56.93
2.1 - 3.0	292	42.63	99.56
3.1 - 10.0	3	0.44	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Methane (CH₄) - ppm
Ells River - April 2023

Concentration 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	31	8	15	25	34	45	54	32	16	22	38	11	12	20	9	385
2.1 - 3.0	46	46	27	11	2	9	8	29	48	5	3	3	4	11	19	18	289
3.1 - 10.0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	3
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	77	35	26	27	43	53	83	82	21	25	41	15	23	39	28	677

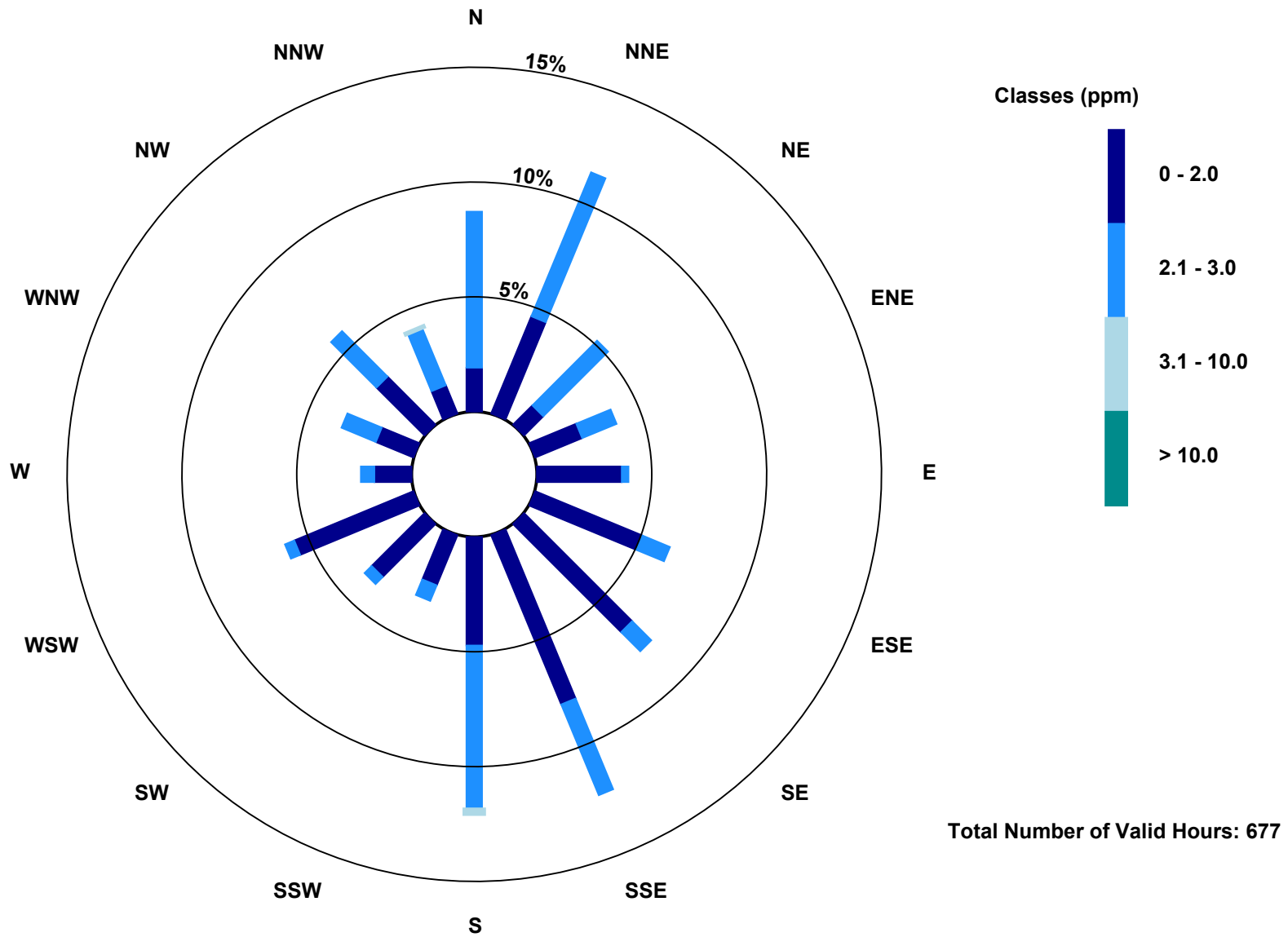
Total Number of Valid Hours: 677

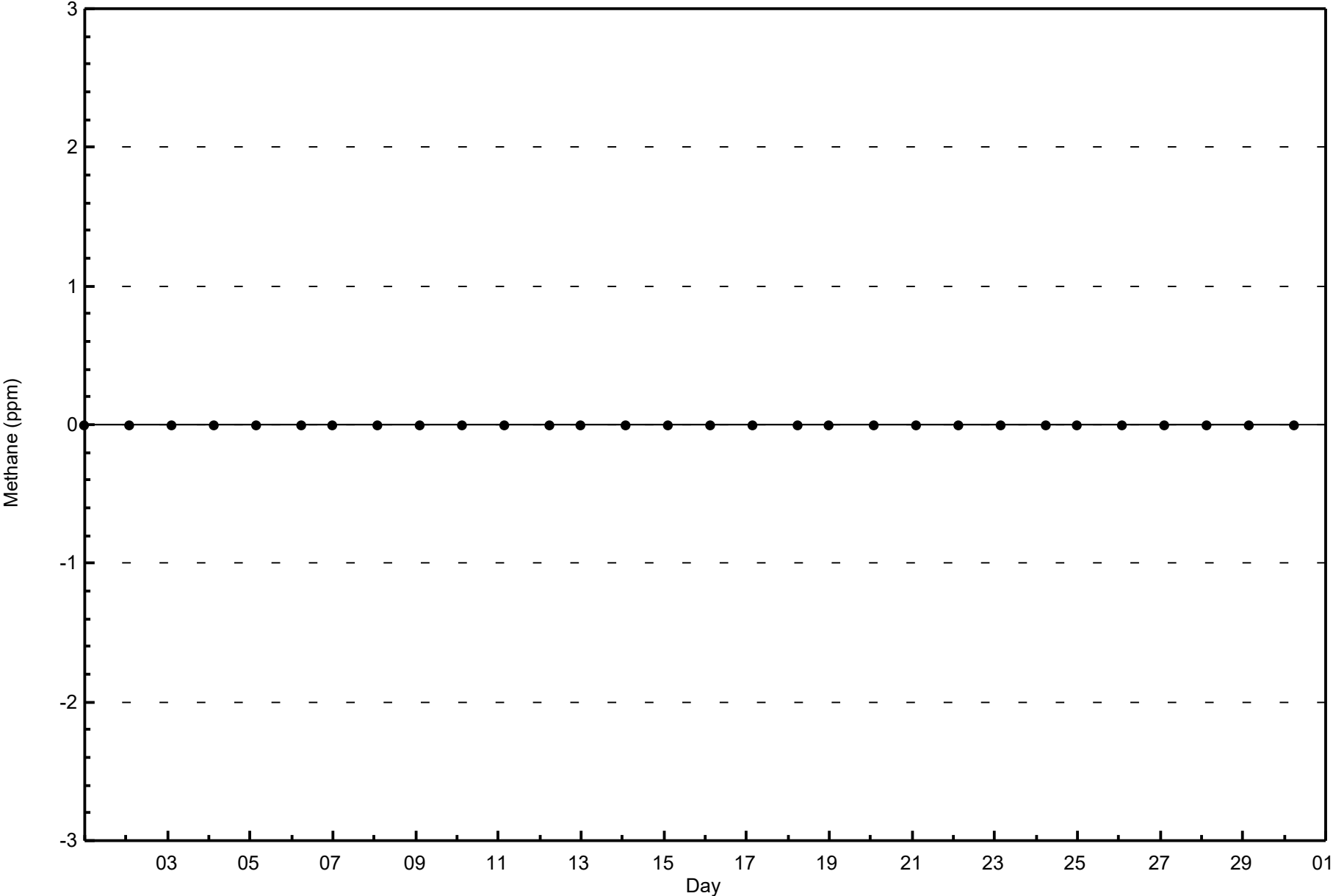
Total Number of Hours: 720

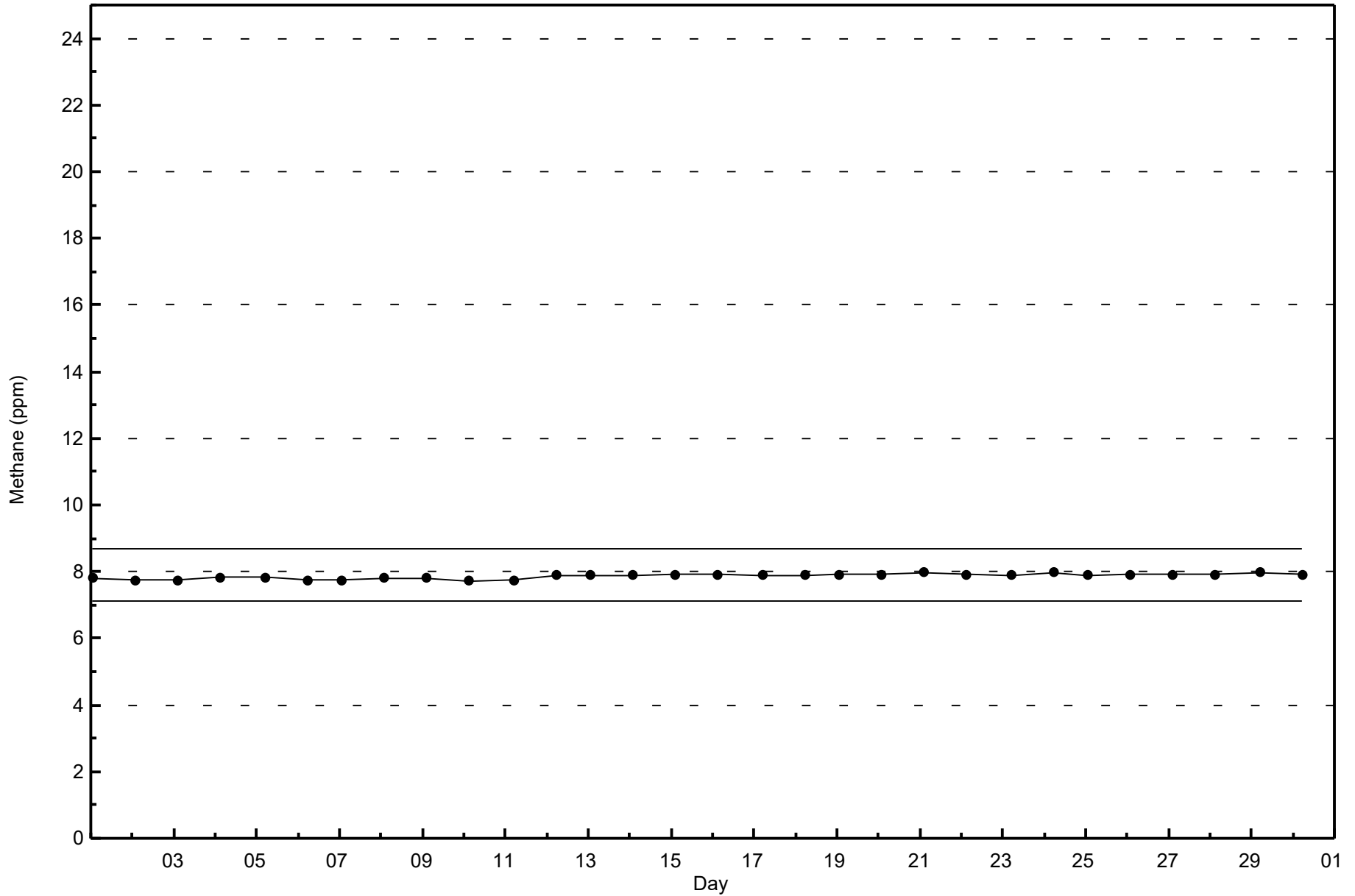


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Methane (CH₄) - ppm
Ells River









Wood Buffalo Environmental Association
Summary of Hour Averages

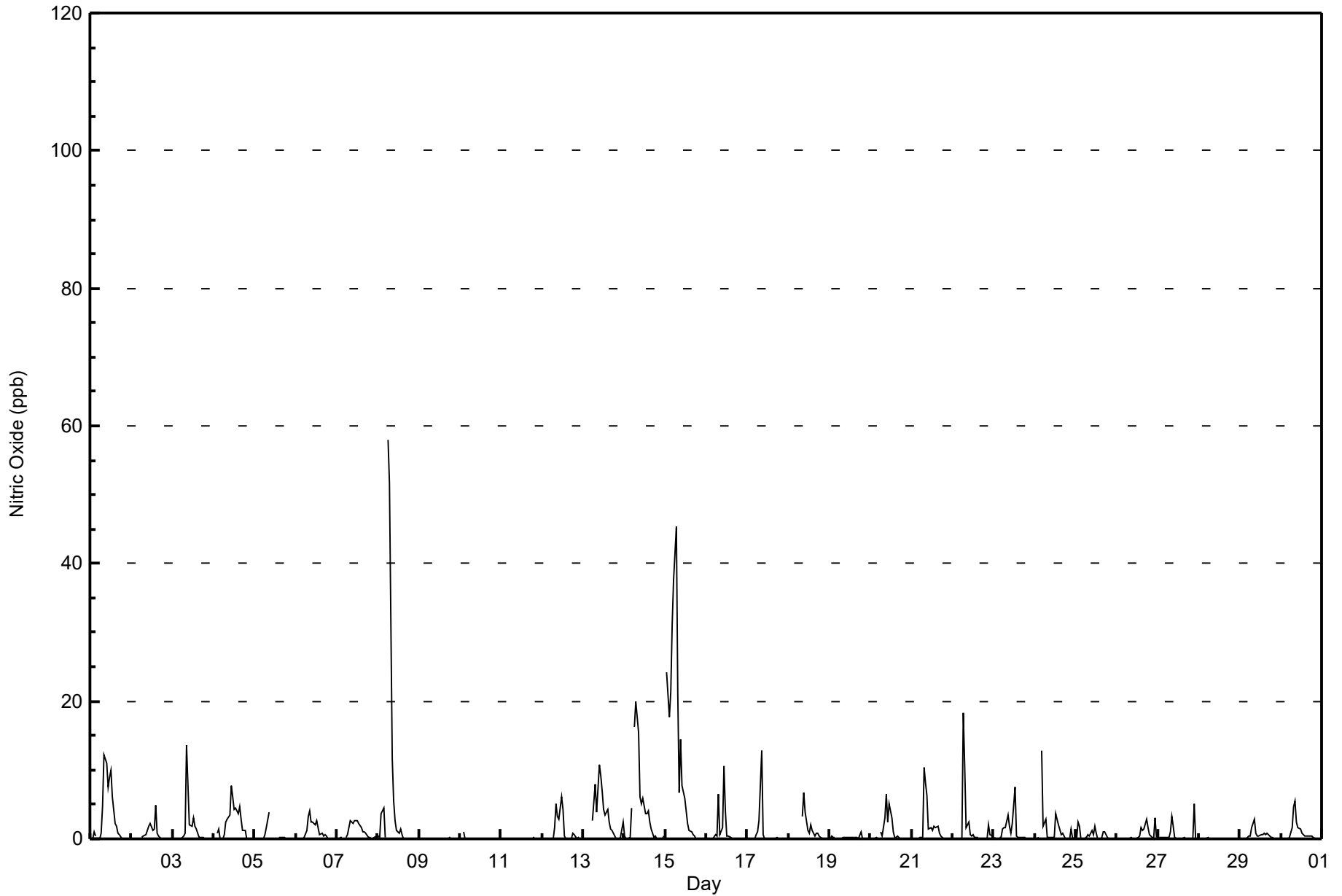
Nitric Oxide (NO) - ppb
Ells River - April 2023

Maximum Value: 58.0 ppb on Apr 8 07:00		Maximum Daily Average: 10.6 ppb on Apr 15		Hours in Service: 720																						
Minimum Value: 0.0 ppb on Apr 2 18:00		Minimum Daily Average: 0.0 ppb on Apr 9		Hours of Data: 684																						
Maximum Diurnal Average: 5.4 ppb at hour 8		Minimum Diurnal Average: 0.0 ppb at hour 21		Hours of Missing Data: 36																						
Monthly Average: 1.59 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.1 Q ₃ = 1.2 P ₉₀ = 3.9 P ₉₉ = 21.2		Hours of Calibration: 35																						
				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-Apr	0.0	0.0	1.0	0.4	Z	0.1	0.7	4.7	12.3	11.1	7.6	9.0	10.0	6.1	2.3	1.9	0.9	0.6	0.1	0.0	0.0	0.0	0.0	0.0	3.0	12.3
2-Apr	0.0	0.1	0.0	0.0	0.0	Z	0.1	0.3	0.6	1.3	1.8	2.3	1.3	1.4	4.8	0.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.8
3-Apr	Z	0.0	0.0	0.1	0.1	0.1	0.3	0.7	13.7	7.9	2.1	1.9	3.1	1.8	1.3	0.3	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	1.5	13.7
4-Apr	0.0	Z	0.9	1.5	0.1	0.0	0.5	2.5	2.9	3.4	7.8	6.2	4.2	4.4	3.7	4.7	2.9	1.2	1.3	0.1	0.0	0.0	0.0	0.0	2.1	7.8
5-Apr	0.0	0.0	Z	0.0	0.0	0.1	0.7	1.6	3.8	C	C	C	C	C	0.2	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.4	3.8
6-Apr	0.0	0.0	0.0	Z	0.1	0.2	1.2	3.3	4.1	2.3	2.5	1.9	2.6	1.7	0.7	0.8	0.5	0.5	0.3	0.1	0.0	0.1	0.1	0.1	1.0	4.1
7-Apr	0.1	0.1	0.1	0.1	Z	0.1	0.5	1.7	2.7	2.2	2.6	2.6	2.6	2.2	1.7	1.1	1.1	0.8	0.2	0.1	0.1	0.1	0.1	0.5	1.0	2.7
8-Apr	0.3	0.2	3.6	4.5	0.2	Z	58.0	51.6	11.6	5.5	2.7	1.2	0.9	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	58.0
9-Apr	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	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1
10-Apr	0.1	Z	1.0	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	1.0
11-Apr	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	0.2	0.1	0.0	0.0	0.0	0.0	0.2
12-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.0	1.6	5.0	3.3	2.8	6.0	4.3	0.5	0.0	0.0	0.0	0.0	0.8	0.5	0.0	0.1	0.0	0.0	1.1	6.0
13-Apr	0.0	0.0	0.0	0.1	Z	2.7	5.2	7.8	3.8	10.7	9.2	6.8	4.3	3.6	4.2	2.4	1.4	1.3	0.5	0.0	0.0	0.0	0.1	2.5	2.9	10.7
14-Apr	0.3	0.0	0.1	0.2	4.4	Z	16.2	20.0	15.4	6.0	5.1	5.9	3.6	3.7	4.0	2.5	1.4	0.3	0.4	0.1	0.0	0.0	0.0	0.3	3.9	20.0
15-Apr	Z	24.2	17.7	21.3	31.1	37.6	45.3	21.2	6.7	14.4	7.8	6.0	4.2	2.3	1.2	1.1	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	10.6	45.3
16-Apr	0.0	Z	0.1	0.1	0.1	0.6	0.4	6.5	0.5	1.6	10.5	4.0	0.4	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.1	10.5
17-Apr	0.0	0.0	Z	0.1	0.1	0.6	1.1	2.6	12.9	0.6	0.1	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	0.8	12.9
18-Apr	0.0	0.0	0.0	Z	0.1	0.0	0.0	PF	3.2	6.7	4.0	1.3	0.8	2.0	1.2	0.5	0.7	0.8	0.3	0.1	0.1	0.0	0.0	0.1	1.0	6.7
19-Apr	0.0	0.5	0.3	0.1	Z	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.1	1.0	0.1	0.0	0.0	0.0	0.0	0.2	1.0
20-Apr	0.0	0.0	0.0	0.1	0.1	Z	1.0	0.5	3.1	6.4	2.5	5.1	3.0	1.1	0.3	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	6.4
21-Apr	Z	0.0	0.0	0.0	0.0	0.2	0.2	10.5	8.1	6.4	1.5	1.6	1.2	1.9	1.7	1.8	0.9	0.4	0.2	0.1	0.0	0.0	0.0	0.0	1.6	10.5
22-Apr	0.0	Z	0.0	0.0	0.0	0.0	18.4	10.5	1.6	2.4	0.6	0.5	0.6	0.3	0.2	0.1	0.1	0.0	0.0	0.1	0.1	2.1	0.7	0.4	1.7	18.4
23-Apr	0.1	0.1	Z	0.1	0.2	1.5	1.6	1.7	3.4	1.8	0.8	2.1	7.5	0.5	0.3	0.2	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.1	1.0	7.5
24-Apr	0.1	0.1	0.1	Z	12.9	1.8	2.8	0.3	0.2	0.3	0.3	0.1	3.7	2.8	2.0	0.7	0.9	0.4	0.0	0.0	0.0	1.5	0.1	0.0	1.3	12.9
25-Apr	0.0	2.4	1.9	0.1	Z	0.1	0.3	0.6	0.4	1.1	0.7	1.9	0.8	0.0	0.0	0.2	0.9	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.6	2.4
26-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.0	0.2	0.4	1.6	1.1	1.4	2.8	1.6	0.7	0.4	0.1	3.0	0.2	0.6	3.0
27-Apr	Z	0.1	0.1	0.1	0.2	0.3	0.2	0.9	3.3	1.9	0.1	0.0	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.1	0.6	5.1
28-Apr	0.1	Z	0.1	0.0	0.1	0.2	0.0	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	0.0	0.0	0.0	0.0	0.2
29-Apr	0.0	0.1	Z	0.0	0.1	0.4	0.5	1.7	2.9	0.9	0.3	0.5	0.6	0.5	0.7	0.7	0.8	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.5	2.9
30-Apr	0.0	0.0	0.0	Z	0.1	0.3	1.6	4.8	5.5	2.4	1.6	1.4	0.7	0.7	0.4	0.4	0.4	0.4	0.3	0.1	0.1	0.0	0.0	0.1	0.9	5.5
																								Diurnal Average		
																								Diurnal Maximum		
																								0.3 24.2 17.7 21.3 31.1 37.6 58.0 51.6 15.4 14.4 10.5 9.0 10.0 6.1 4.8 4.7 2.9 2.8 1.6 0.7 0.4 5.1 3.0 2.5		
																								Z - zerospan C - Calibration PF - Power Failure		



Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Ells River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Ells River - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	676	98.83	98.83
21 - 40	5	0.73	99.56
41 - 80	3	0.44	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Ells River - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	58	76	37	25	26	41	53	81	79	23	24	42	15	25	35	28	668
21 - 40	0	1	0	0	0	0	1	0	0	0	0	0	0	2	1	0	5
41 - 80	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	3
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
Totals	58	77	37	25	26	41	54	81	81	23	24	42	15	27	36	29	676

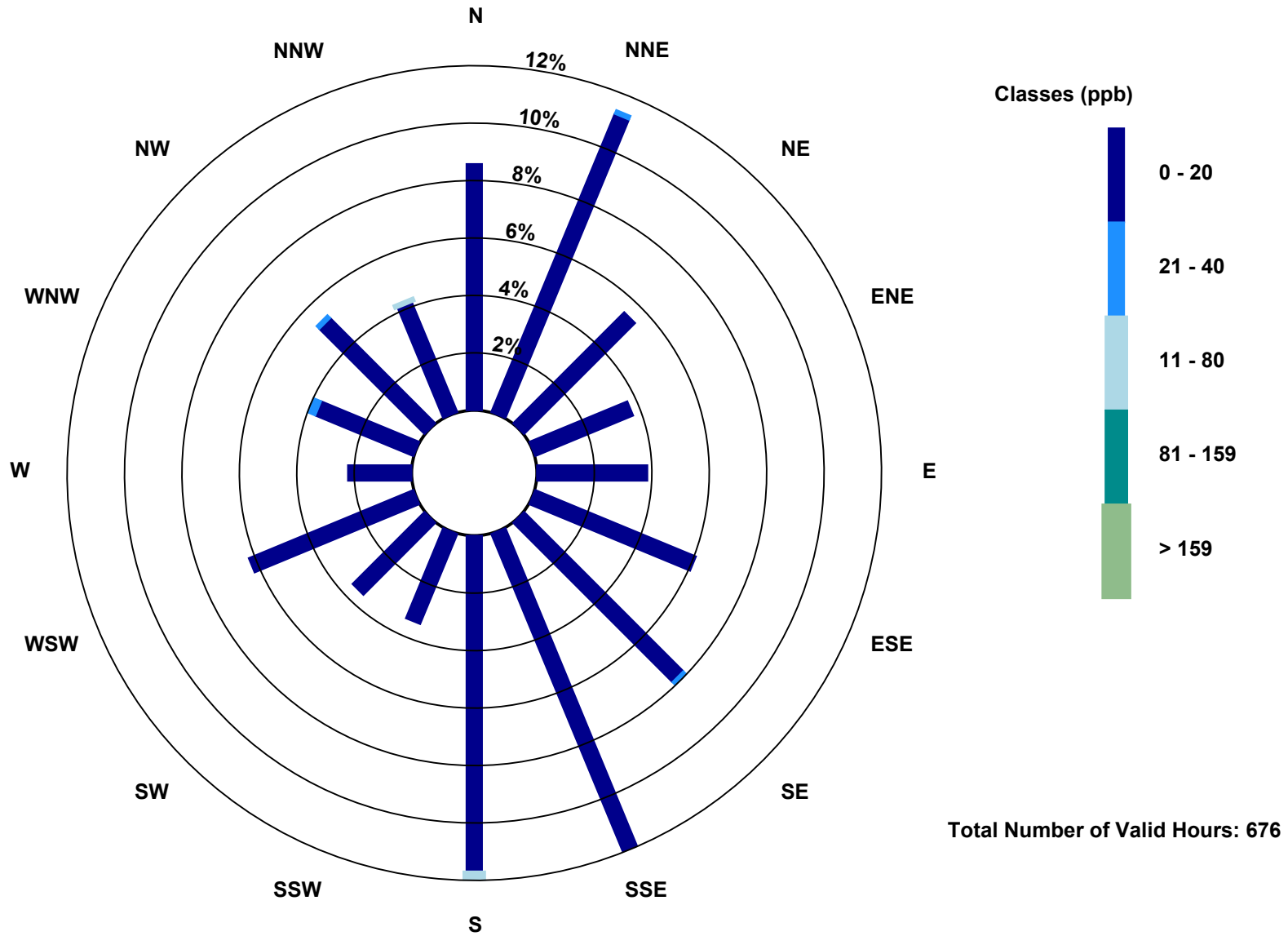
Total Number of Valid Hours: 676

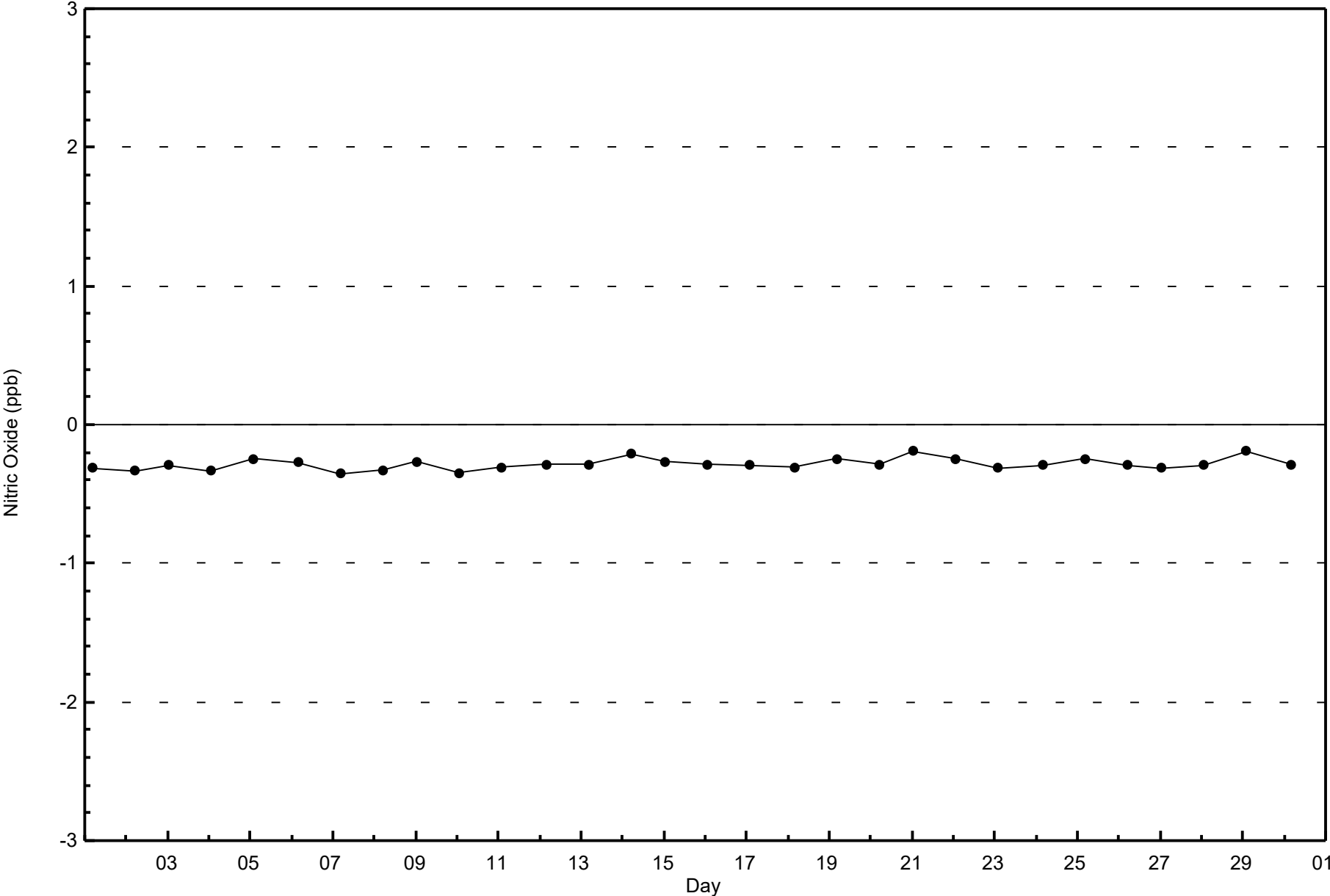
Total Number of Hours: 720

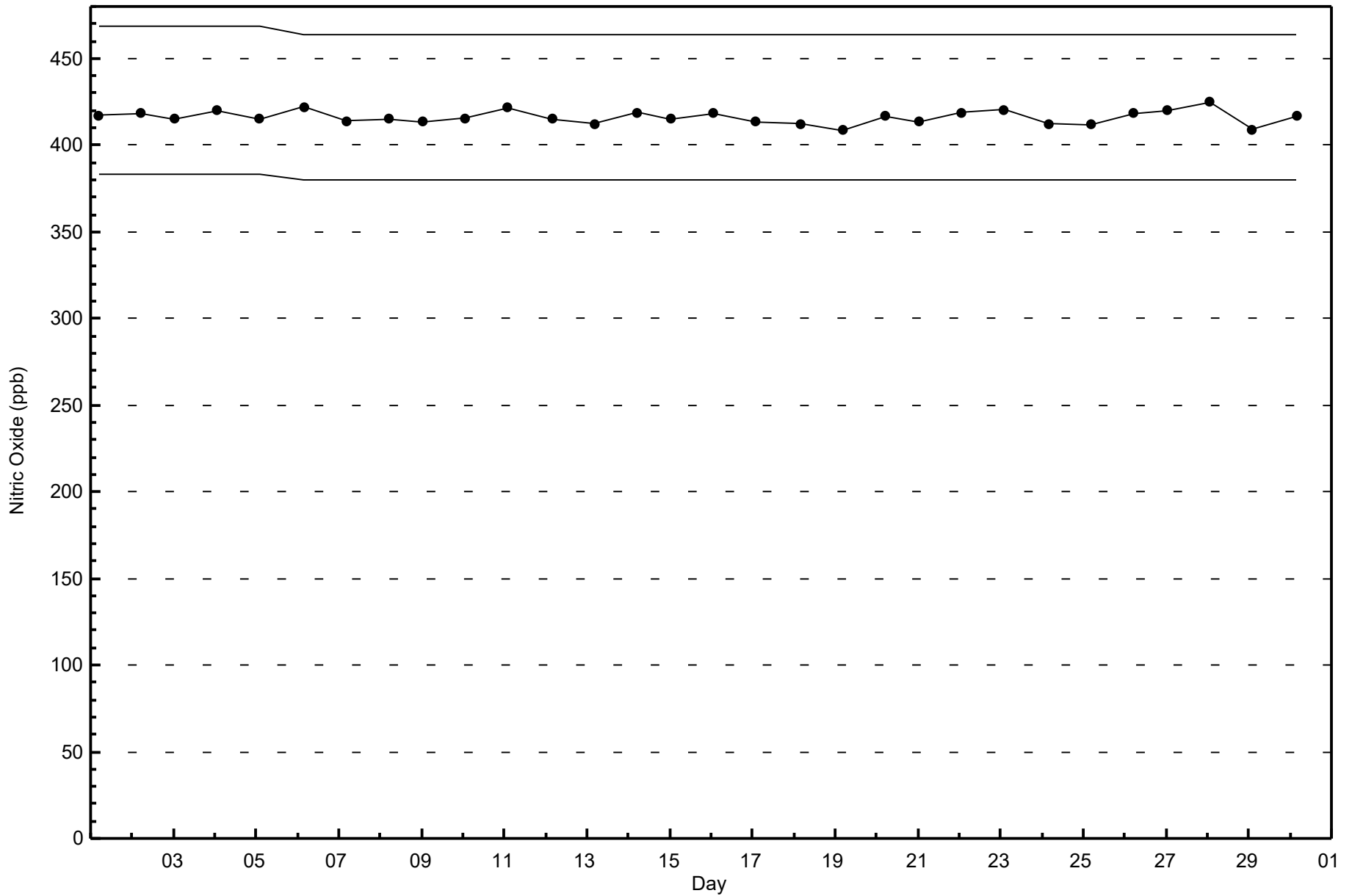


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Ells River









Wood Buffalo Environmental Association
Summary of Hour Averages

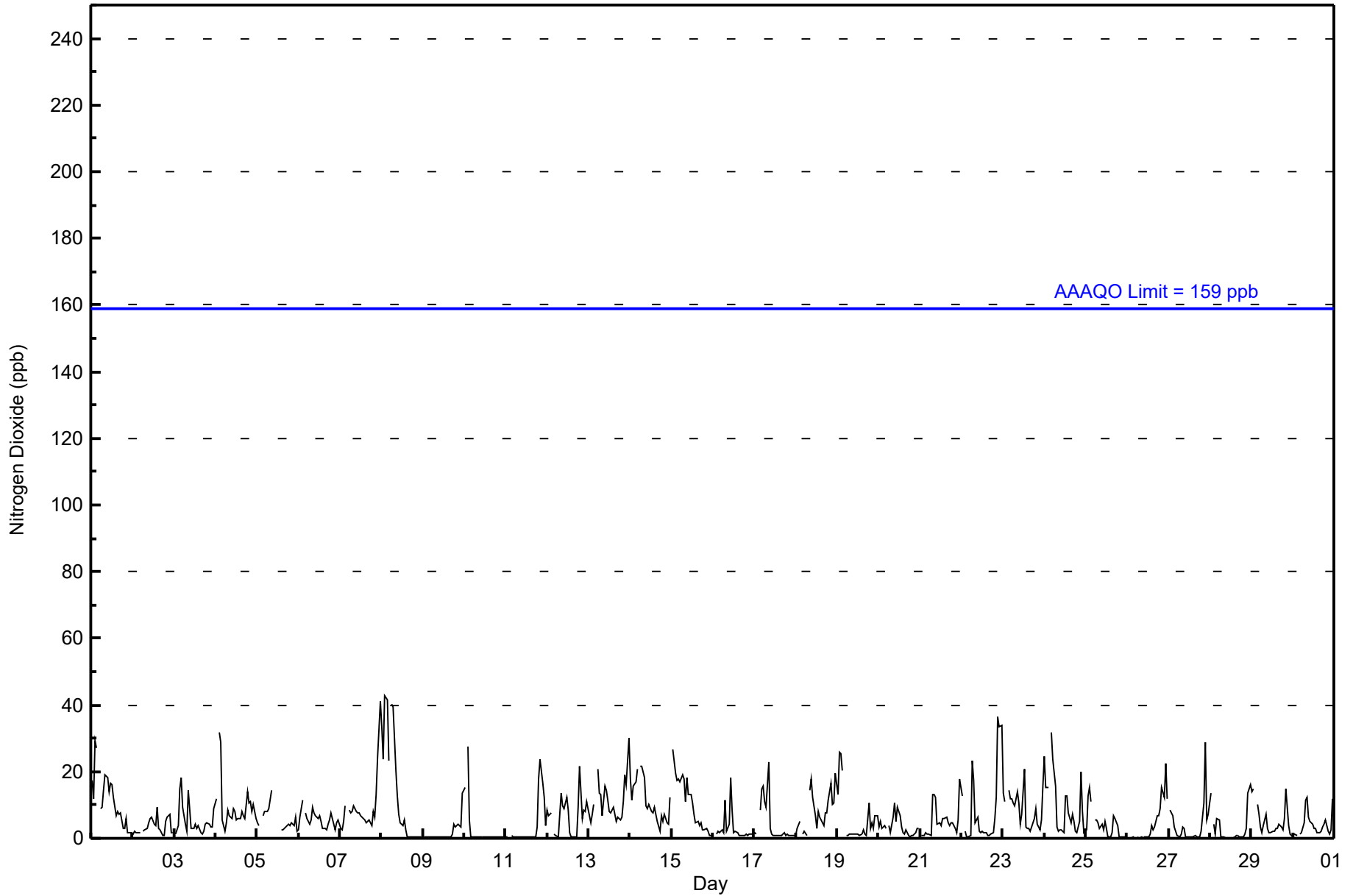
Nitrogen Dioxide (NO₂) - ppb
Ells River - April 2023

Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 43.0 ppb on Apr 8 03:00	Maximum Daily Average: 13.3 ppb on Apr 8		Hours of Data:	684
Minimum Value: 0.2 ppb on Apr 26 08:00	Minimum Daily Average: 1.8 ppb on Apr 9		Hours of Missing Data:	36
Maximum Diurnal Average: 11.4 ppb at hour 3	Minimum Diurnal Average: 2.9 ppb at hour 17		Hours of Calibration:	35
Monthly Average: 6.42 ppb	Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 1.2 Median = 4.2 Q ₃ = 8.6 P ₉₀ = 15.6 P ₉₉ = 33.7		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-Apr	17.3	11.7	29.3	27.2	Z	8.8	9.2	14.2	18.9	18.3	13.9	16.7	16.1	12.2	6.9	7.9	7.0	7.5	2.9	2.9	6.1	1.6	1.5	1.9	11.3	29.3
2-Apr	1.4	2.1	1.6	1.7	1.9	Z	2.3	2.7	3.1	4.6	5.9	6.5	4.3	3.9	9.5	3.1	2.6	0.8	0.9	5.2	6.2	7.2	1.5	1.6	3.5	9.5
3-Apr	Z	1.4	4.0	14.8	18.2	9.4	4.4	2.3	14.6	9.1	3.0	2.8	4.1	3.0	4.0	1.8	1.4	2.3	4.3	4.6	4.1	3.4	3.3	8.7	5.6	18.2
4-Apr	12.0	Z	31.7	28.9	5.5	2.0	4.8	8.5	6.9	5.8	8.8	7.9	5.5	6.0	5.8	8.1	6.9	6.1	14.1	10.5	10.9	7.9	10.3	6.1	9.6	31.7
5-Apr	4.5	3.7	Z	6.8	8.1	8.1	8.1	9.1	14.6	C	C	C	C	C	2.5	2.5	2.9	3.9	4.3	4.0	4.8	4.0	6.3	2.1	5.6	14.6
6-Apr	2.5	6.4	11.5	Z	7.7	5.9	4.4	5.4	9.2	7.6	6.9	6.0	6.9	5.0	2.8	3.1	2.6	4.2	5.5	7.6	4.1	2.5	4.7	5.3	5.6	11.5
7-Apr	2.9	2.4	5.1	9.8	Z	8.3	7.7	8.0	9.8	7.9	7.5	7.6	6.9	6.2	5.4	4.5	5.1	5.6	3.8	7.9	6.4	13.3	24.3	41.2	9.0	41.2
8-Apr	33.6	23.9	43.0	41.6	23.1	Z	40.2	39.4	20.2	12.7	7.0	4.6	4.0	5.5	2.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	13.3	43.0
9-Apr	Z	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	1.3	4.2	3.4	4.2	3.9	3.3	13.7	1.8	13.7
10-Apr	15.2	Z	27.6	5.4	0.5	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	0.4	0.4	0.4	0.4	0.4	2.4	27.6
11-Apr	0.4	0.4	Z	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.3	0.3	0.4	0.5	3.3	17.9	23.9	16.4	12.3	3.7	3.7	23.9
12-Apr	8.3	6.8	7.8	Z	1.2	0.7	0.5	7.2	13.7	9.9	8.7	12.2	8.4	1.6	0.4	0.3	0.3	0.5	9.4	21.7	5.8	8.3	7.9	11.0	6.6	21.7
13-Apr	6.7	4.7	7.4	10.3	Z	20.7	13.4	13.3	6.9	15.6	14.3	11.6	8.2	7.6	9.5	7.0	5.2	6.5	5.7	6.3	11.1	18.9	16.3	29.9	11.2	29.9
14-Apr	17.9	11.6	15.8	17.0	20.7	Z	21.5	21.6	18.1	9.6	8.7	10.3	7.9	7.6	9.3	7.4	5.2	2.1	6.8	5.0	7.0	4.7	4.2	12.4	11.0	21.6
15-Apr	Z	26.8	19.5	17.4	17.7	17.1	18.9	17.6	11.2	18.2	13.3	13.0	10.6	7.2	4.8	5.2	3.9	4.5	2.4	2.4	3.0	2.3	1.0	1.0	10.4	26.8
16-Apr	0.8	Z	1.4	2.3	1.8	2.7	1.6	11.5	2.1	4.4	18.3	8.3	1.9	2.1	1.5	0.8	0.8	0.7	0.9	1.1	1.0	1.1	1.2	1.2	3.0	18.3
17-Apr	1.8	1.2	Z	8.4	14.7	15.7	11.0	9.3	22.7	3.1	1.1	1.0	0.9	0.8	0.8	1.0	1.0	1.6	0.9	1.3	1.0	0.7	0.8	0.8	4.4	22.7
18-Apr	0.7	2.8	5.1	Z	1.4	2.1	1.0	PF	14.4	17.9	12.3	6.9	3.1	8.1	6.3	4.5	4.0	7.7	7.8	11.6	16.6	10.2	10.7	19.5	7.9	19.5
19-Apr	13.0	25.8	25.4	20.4	Z	0.9	1.0	1.1	1.1	1.2	1.4	1.2	1.3	1.0	1.1	2.6	1.4	1.0	10.8	2.8	4.6	2.9	6.6	6.7	5.9	25.8
20-Apr	3.5	5.2	3.0	4.0	2.8	Z	3.7	1.7	6.5	10.4	5.0	9.4	6.6	3.4	1.6	1.4	2.6	0.7	0.6	0.8	0.9	1.5	2.8	2.9	3.5	10.4
21-Apr	Z	1.0	0.9	1.5	1.1	1.1	0.7	13.1	13.3	12.3	4.3	4.5	3.9	6.0	6.0	6.4	4.7	4.0	4.8	4.7	3.1	1.7	5.5	17.9	5.3	17.9
22-Apr	12.5	Z	2.1	0.6	0.5	0.8	23.1	17.5	4.8	6.3	2.3	1.8	2.1	1.5	1.5	0.8	1.0	1.2	1.9	6.0	12.2	36.6	33.6	33.9	8.9	36.6
23-Apr	13.6	11.2	Z	14.3	11.8	11.9	10.6	9.7	14.0	10.7	4.4	7.3	20.9	3.3	3.0	2.9	2.3	4.5	6.1	8.8	4.4	2.5	5.6	15.6	8.7	20.9
24-Apr	24.4	15.3	15.3	Z	31.6	23.8	15.6	3.6	2.2	2.5	2.4	1.5	12.6	12.7	7.8	4.7	7.3	4.9	2.0	1.6	5.1	20.0	7.9	1.5	9.8	31.6
25-Apr	2.7	12.8	15.1	11.1	Z	5.5	5.5	4.5	2.8	4.4	2.7	5.0	3.0	0.4	0.6	1.7	6.9	5.8	4.0	0.5	0.3	0.3	0.3	0.3	4.2	15.1
26-Apr	0.2	0.2	0.2	0.3	0.2	Z	0.4	0.2	0.3	0.2	0.3	0.3	0.6	1.3	4.0	2.7	3.5	6.8	6.6	9.0	15.4	12.4	22.5	11.7	4.3	22.5
27-Apr	Z	8.4	6.9	3.4	2.0	0.9	0.4	1.2	3.4	2.8	0.6	0.4	0.6	0.5	0.5	0.9	0.5	0.3	0.3	2.1	10.7	29.0	5.6	7.4	3.9	29.0
28-Apr	13.5	Z	4.4	1.1	5.9	5.5	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.7	1.0	0.6	0.6	0.6	1.2	3.0	13.6	15.9	3.1	15.9
29-Apr	14.0	14.8	Z	10.0	7.2	3.2	1.6	3.9	7.1	2.9	1.5	1.8	2.1	2.3	2.9	3.0	4.1	3.2	2.7	5.9	14.9	3.8	1.2	1.0	5.0	14.9
30-Apr	0.8	1.1	0.8	Z	1.2	1.9	4.6	11.6	12.1	6.5	4.9	4.3	2.9	3.0	1.9	1.9	2.2	3.3	4.3	5.3	2.1	1.4	2.7	11.8	4.0	12.1

9.0	8.1	11.4	10.4	7.5	6.3	7.3	8.3	8.5	7.1	5.5	5.3	5.1	3.9	3.5	2.9	2.9	3.1	4.1	5.4	6.4	7.4	7.3	9.6	Diurnal Average	
33.6	26.8	43.0	41.6	31.6	23.8	40.2	39.4	22.7	18.3	18.3	16.7	20.9	12.7	9.5	8.1	7.3	7.7	14.1	21.7	23.9	36.6	33.6	41.2	Diurnal Maximum	

Z - zerospan C - Calibration PF - Power Failure
 Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Ells River - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	649	94.88	94.88
21 - 40	32	4.68	99.56
41 - 80	3	0.44	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Ells River - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	51	74	33	25	26	41	54	79	68	23	24	42	15	26	34	26	641
21 - 40	7	3	4	0	0	0	0	2	10	0	0	0	0	1	2	3	32
11 - 80	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
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
Totals	58	77	37	25	26	41	54	81	81	23	24	42	15	27	36	29	676

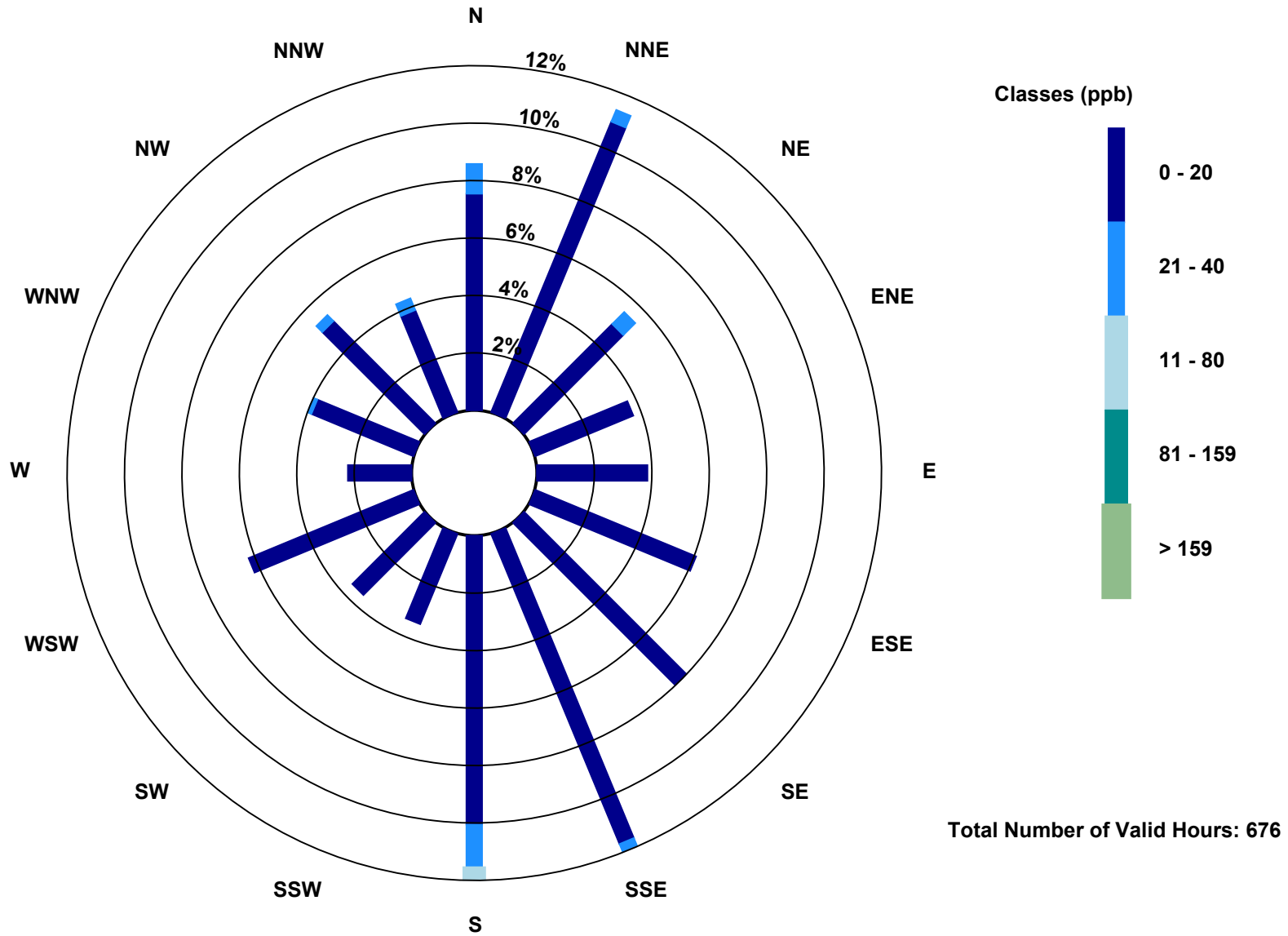
Total Number of Valid Hours: 676

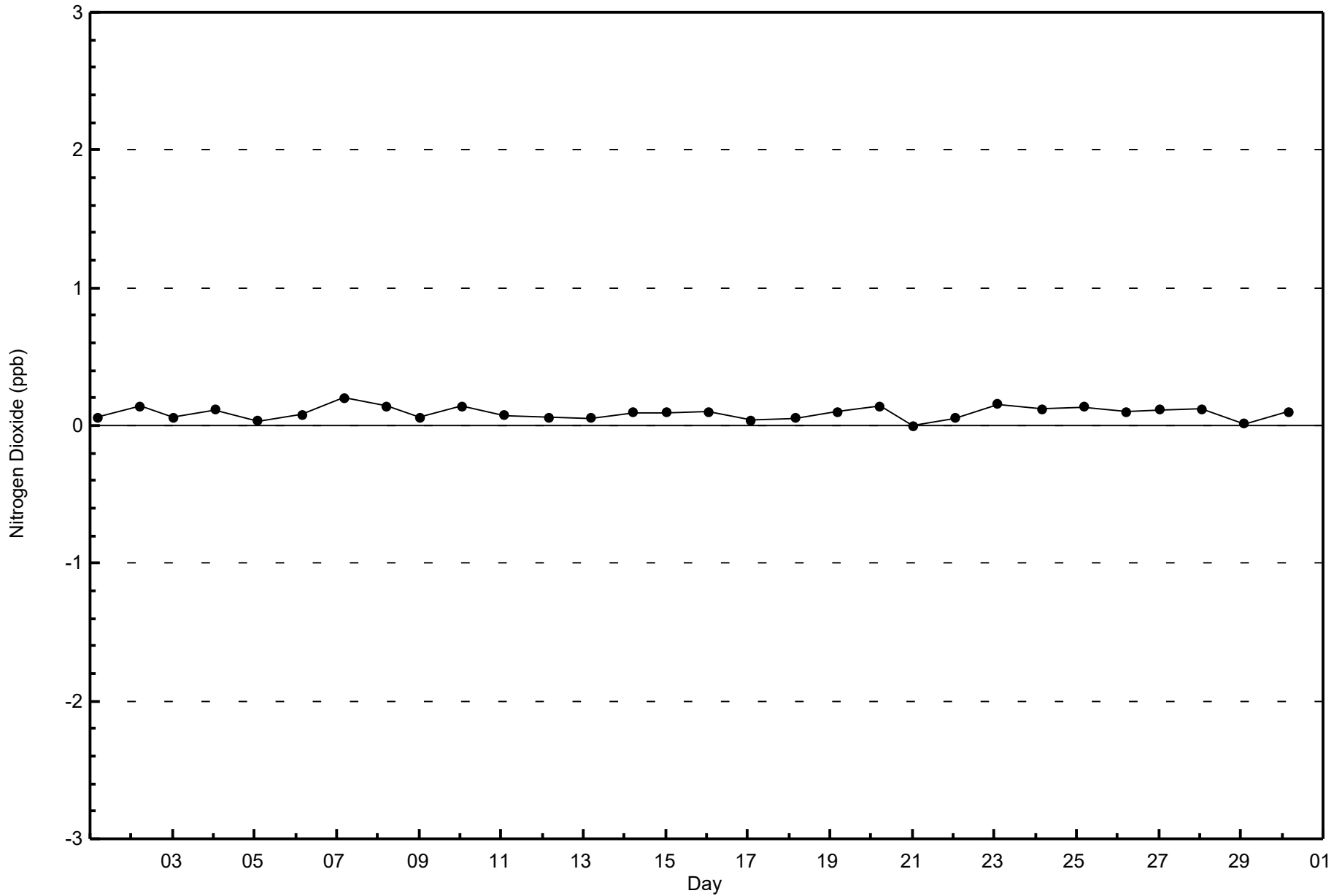
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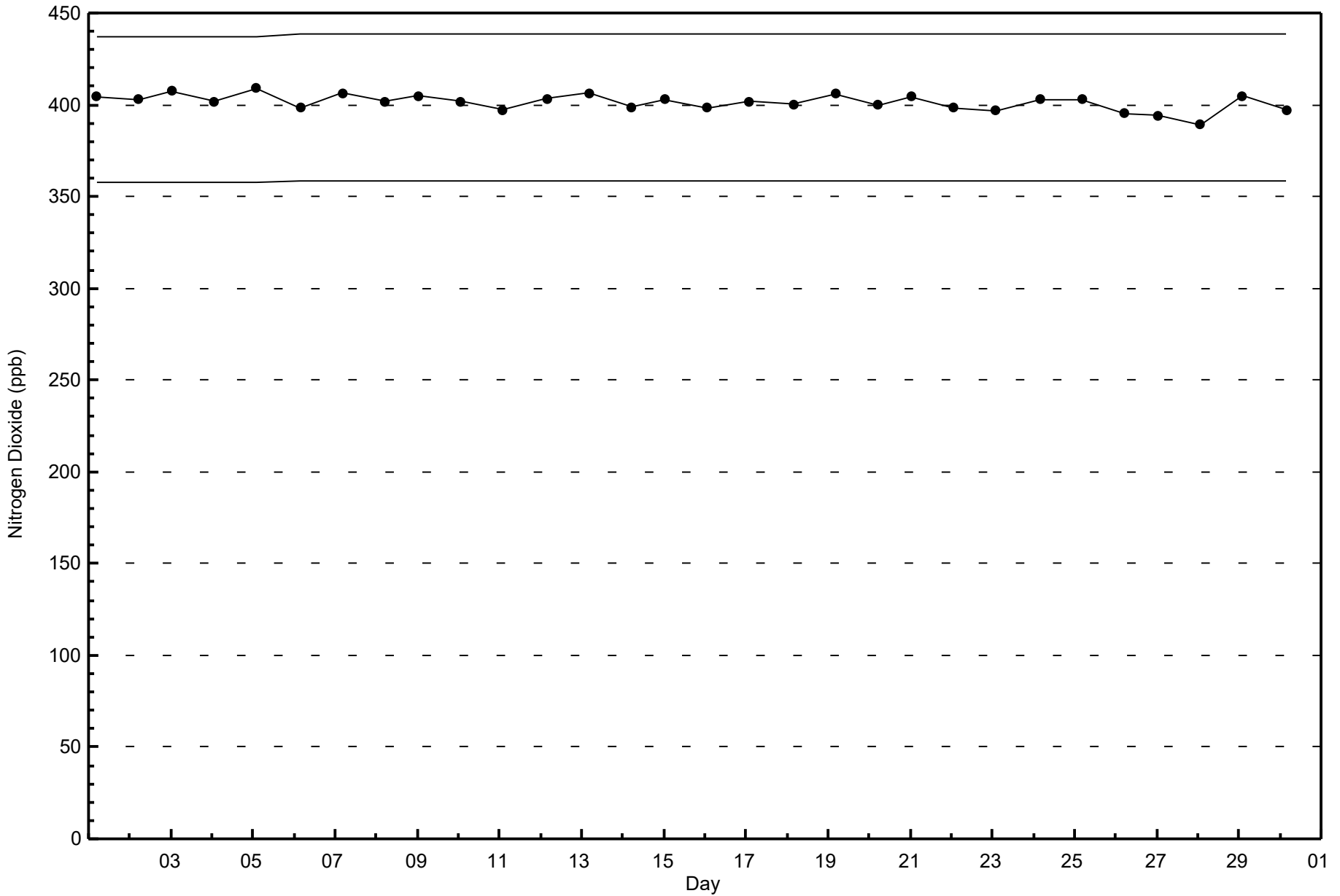


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Ells River









Wood Buffalo Environmental Association
Summary of Hour Averages

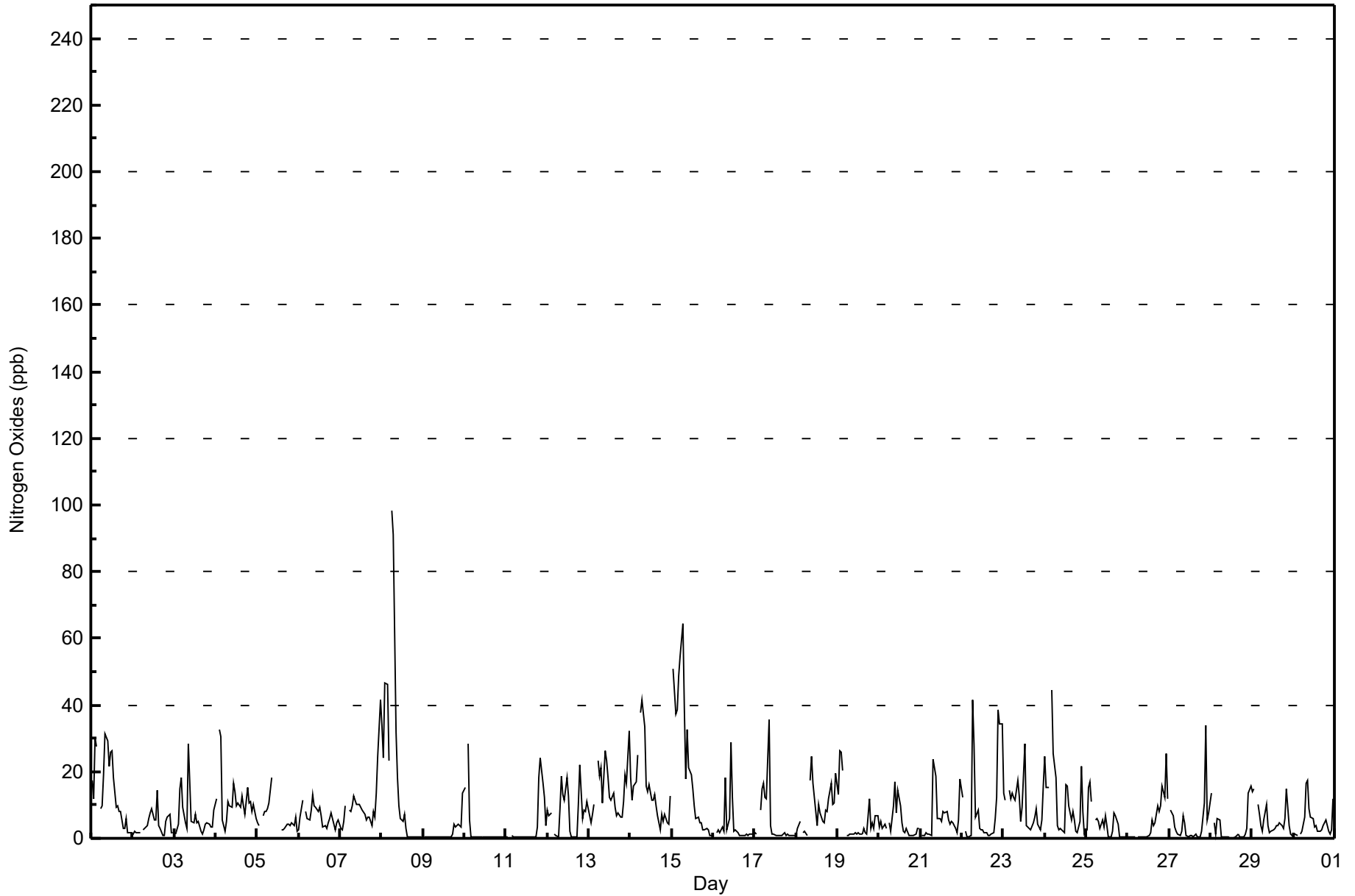
Nitrogen Oxides (NO_x) - ppb
Ells River - April 2023

Maximum Value: 98.2 ppb on Apr 8 07:00		Maximum Daily Average: 21.0 ppb on Apr 15		Hours in Service: 720																																													
Minimum Value: 0.2 ppb on Apr 28 14:00		Minimum Daily Average: 1.8 ppb on Apr 9		Hours of Data: 684																																													
Maximum Diurnal Average: 13.7 ppb at hour 8		Minimum Diurnal Average: 3.5 ppb at hour 17		Hours of Missing Data: 36																																													
Monthly Average: 8.01 ppb		Percentiles: P ₁ = 0.2 P ₁₀ = 0.4 Q ₁ = 1.3 Median = 4.7 Q ₃ = 10.3 P ₉₀ = 18.4 P ₉₉ = 46.2		Hours of Calibration: 35																																													
				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-Apr	17.3	11.7	30.3	27.6	Z	8.9	9.9	18.9	31.2	29.4	21.5	25.7	26.1	18.3	9.2	9.8	7.9	8.1	3.0	2.9	6.1	1.6	1.5	1.9	14.3	31.2																							
2-Apr	1.4	2.2	1.6	1.7	1.9	Z	2.4	3.0	3.7	5.9	7.7	8.8	5.6	5.3	14.3	3.9	3.0	0.8	0.9	5.2	6.2	7.2	1.5	1.6	4.2	14.3																							
3-Apr	Z	1.4	4.0	14.9	18.3	9.5	4.7	3.0	28.3	17.0	5.1	4.7	7.2	4.8	5.3	2.1	1.5	2.5	4.4	4.6	4.1	3.4	3.3	8.7	7.1	28.3																							
4-Apr	12.0	Z	32.6	30.4	5.6	2.0	5.3	11.0	9.8	9.2	16.6	14.1	9.7	10.4	9.5	12.8	9.8	7.3	15.4	10.6	10.9	7.9	10.3	6.1	11.7	32.6																							
5-Apr	4.5	3.7	Z	6.8	8.1	8.2	8.8	10.7	18.4	C	C	C	C	C	2.7	2.6	3.1	4.1	4.4	4.0	4.8	4.0	6.3	2.1	6.0	18.4																							
6-Apr	2.5	6.4	11.5	Z	7.8	6.1	5.6	8.7	13.3	9.9	9.4	7.9	9.5	6.7	3.5	3.9	3.1	4.7	5.8	7.7	4.1	2.6	4.8	5.4	6.6	13.3																							
7-Apr	3.0	2.5	5.2	9.9	Z	8.4	8.2	9.7	12.5	10.1	10.1	10.2	9.5	8.4	7.1	5.6	6.2	6.4	4.0	8.0	6.5	13.4	24.4	41.7	10.1	41.7																							
8-Apr	33.9	24.1	46.6	46.1	23.3	Z	98.2	91.0	31.8	18.2	9.7	5.8	4.9	7.0	2.9	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	19.5	98.2																							
9-Apr	Z	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	1.4	4.3	3.4	4.2	4.0	3.4	13.8	1.8	13.8																							
10-Apr	15.3	Z	28.6	5.5	0.5	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	0.4	0.4	0.4	0.4	0.4	2.5	28.6																							
11-Apr	0.4	0.4	Z	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.3	0.3	0.4	0.5	3.4	18.1	24.0	16.4	12.3	3.7	3.7	24.0																							
12-Apr	8.3	6.8	7.8	Z	1.2	0.7	0.5	8.8	18.7	13.2	11.5	18.2	12.7	2.1	0.4	0.3	0.3	0.5	10.2	22.2	5.8	8.4	7.9	11.0	7.7	22.2																							
13-Apr	6.7	4.7	7.4	10.4	Z	23.4	18.6	21.1	10.7	26.3	23.5	18.4	12.5	11.2	13.7	9.4	6.6	7.8	6.2	6.3	11.1	18.9	16.4	32.4	14.1	32.4																							
14-Apr	18.2	11.6	15.9	17.2	25.1	Z	37.7	41.6	33.5	15.6	13.8	16.2	11.5	11.3	13.3	9.9	6.6	2.4	7.2	5.1	7.0	4.7	4.2	12.7	14.9	41.6																							
15-Apr	Z	51.0	37.2	38.7	48.8	54.7	64.2	38.8	17.9	32.6	21.1	19.0	14.8	9.5	6.0	6.3	4.5	4.8	2.5	2.4	3.0	2.3	1.0	1.0	21.0	64.2																							
16-Apr	0.8	Z	1.5	2.4	1.9	3.3	2.0	18.0	2.6	6.0	28.8	12.3	2.3	2.5	1.7	0.9	0.9	0.7	0.9	1.1	1.0	1.1	1.3	1.2	4.2	28.8																							
17-Apr	1.8	1.2	Z	8.5	14.8	16.3	12.1	11.9	35.6	3.7	1.2	1.1	1.0	0.9	0.9	1.0	1.0	1.7	0.9	1.3	1.0	0.7	0.8	0.8	5.2	35.6																							
18-Apr	0.7	2.8	5.1	Z	1.5	2.1	1.0	PF	17.6	24.6	16.3	8.2	3.9	10.1	7.5	5.0	4.7	8.5	8.1	11.7	16.7	10.2	10.7	19.6	8.9	24.6																							
19-Apr	13.0	26.3	25.7	20.5	Z	0.9	1.0	1.1	1.2	1.3	1.6	1.4	1.5	1.2	1.2	2.9	1.6	1.1	11.8	2.9	4.6	2.9	6.6	6.7	6.0	26.3																							
20-Apr	3.5	5.2	3.0	4.1	2.9	Z	4.7	2.2	9.6	16.8	7.5	14.5	9.6	4.5	1.9	1.7	3.1	0.7	0.6	0.8	0.9	1.5	2.8	2.9	4.6	16.8																							
21-Apr	Z	1.0	0.9	1.5	1.1	1.3	0.9	23.6	21.4	18.7	5.8	6.1	5.1	7.9	7.7	8.2	5.6	4.4	5.0	4.8	3.1	1.7	5.5	17.9	6.9	23.6																							
22-Apr	12.5	Z	2.1	0.6	0.5	0.8	41.5	28.0	6.4	8.7	2.9	2.3	2.7	1.8	1.7	0.9	1.1	1.2	1.9	6.1	12.3	38.7	34.3	34.3	10.6	41.5																							
23-Apr	13.7	11.3	Z	14.4	12.0	13.4	12.2	11.4	17.4	12.5	5.2	9.4	28.4	3.8	3.3	3.1	2.4	4.7	6.3	8.9	4.4	2.5	5.6	15.7	9.7	28.4																							
24-Apr	24.5	15.4	15.4	Z	44.5	25.6	18.4	3.9	2.4	2.8	2.7	1.6	16.3	15.5	9.8	5.4	8.2	5.3	2.0	1.6	5.1	21.5	8.0	1.5	11.2	44.5																							
25-Apr	2.7	15.2	17.0	11.2	Z	5.6	5.8	5.1	3.2	5.5	3.4	6.9	3.8	0.4	0.6	1.9	7.8	6.9	4.3	0.5	0.3	0.3	0.3	0.3	4.7	17.0																							
26-Apr	0.2	0.2	0.2	0.3	0.2	Z	0.4	0.3	0.4	0.3	0.4	0.3	0.8	1.7	5.6	3.8	4.9	9.6	8.2	9.7	15.8	12.5	25.5	11.9	4.9	25.5																							
27-Apr	Z	8.5	7.0	3.5	2.2	1.2	0.6	2.1	6.7	4.7	0.7	0.4	0.7	0.6	0.6	1.2	0.5	0.3	0.3	2.1	10.7	34.1	5.6	7.5	4.4	34.1																							
28-Apr	13.6	Z	4.5	1.1	6.0	5.7	0.6	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.7	1.1	0.6	0.6	0.6	1.2	3.0	13.6	15.9	3.1	15.9																							
29-Apr	14.0	14.9	Z	10.0	7.3	3.6	2.1	5.6	10.0	3.8	1.8	2.3	2.7	2.8	3.6	3.7	4.9	3.6	2.9	6.0	15.0	3.8	1.2	1.0	5.5	15.0																							
30-Apr	0.8	1.1	0.8	Z	1.3	2.2	6.2	16.4	17.6	8.9	6.5	5.7	3.6	3.7	2.3	2.3	2.6	3.7	4.6	5.4	2.2	1.4	2.7	11.9	4.9	17.6																							
																								9.0	9.2	12.5	11.5	9.5	8.2	12.5	13.7	12.8	10.6	8.1	7.7	7.2	5.3	4.6	3.7	3.5	3.5	4.4	5.5	6.4	7.7	7.4	9.7	Diurnal Average	
																								33.9	51.0	46.6	46.1	48.8	54.7	98.2	91.0	35.6	32.6	28.8	25.7	28.4	18.3	14.3	12.8	9.8	9.6	15.4	22.2	24.0	38.7	34.3	41.7	Diurnal Maximum	
Z - zerospan		C - Calibration				PF - Power Failure																																											



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Ells River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Ells River - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	624	91.23	91.23
21 - 40	48	7.02	98.25
41 - 80	10	1.46	99.71
81 - 159	2	0.29	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Ells River - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	47	67	33	25	26	40	53	77	66	23	24	42	15	24	33	21	616
21 - 40	10	9	3	0	0	1	1	4	9	0	0	0	0	2	2	7	48
11 - 80	1	1	1	0	0	0	0	0	4	0	0	0	0	1	1	1	10
81 - 159	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	58	77	37	25	26	41	54	81	81	23	24	42	15	27	36	29	676

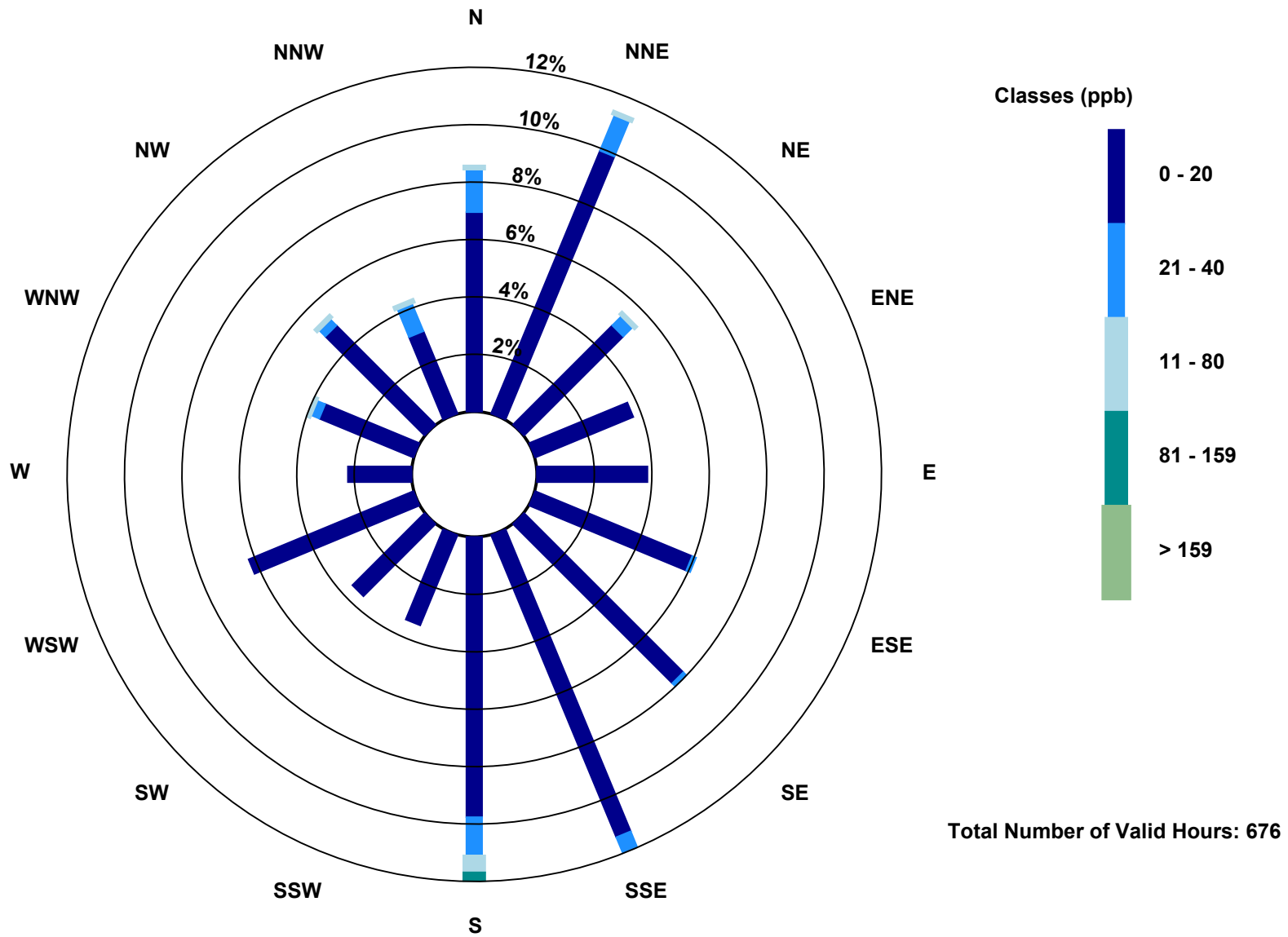
Total Number of Valid Hours: 676

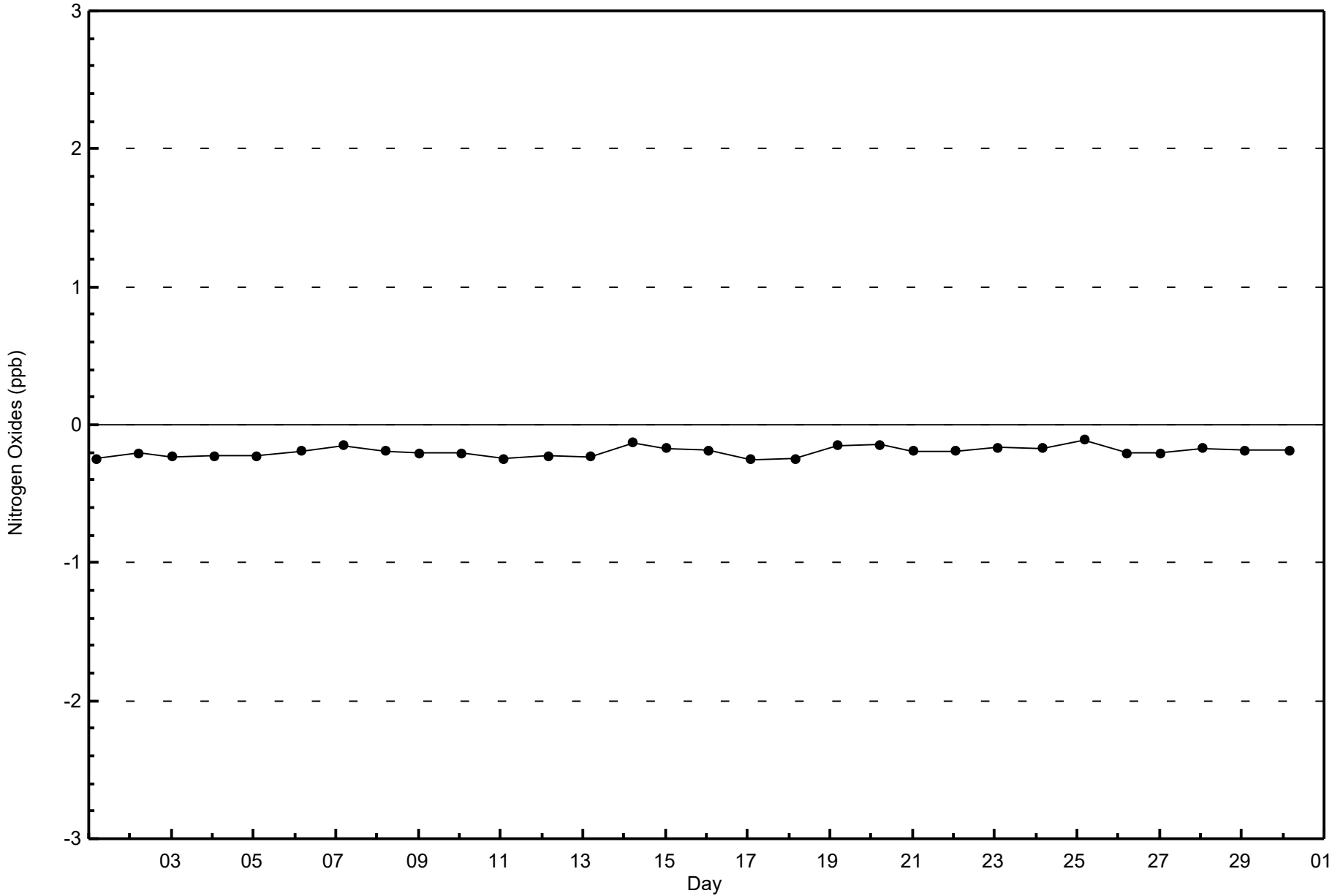
Total Number of Hours: 720

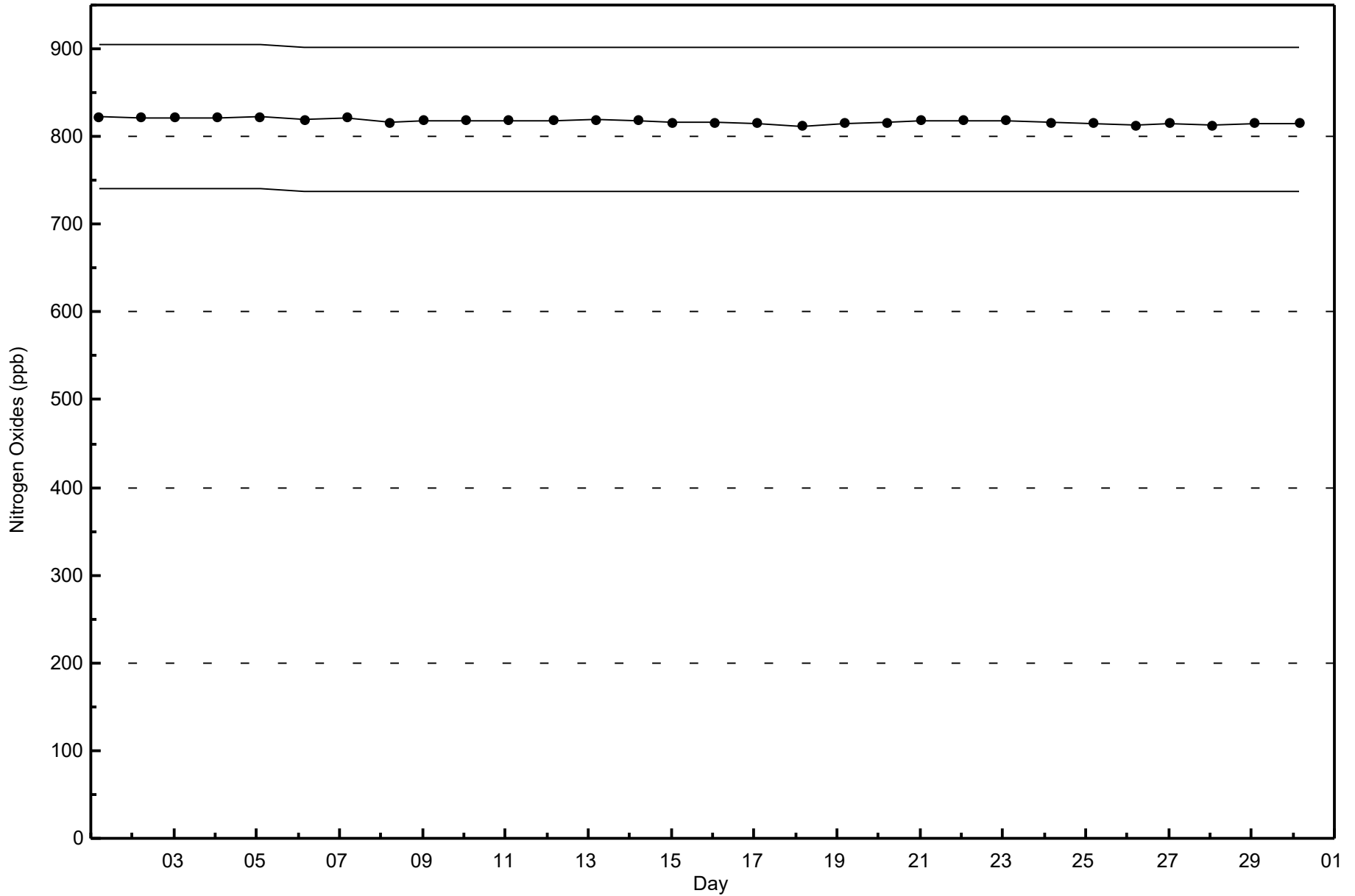


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Ells River





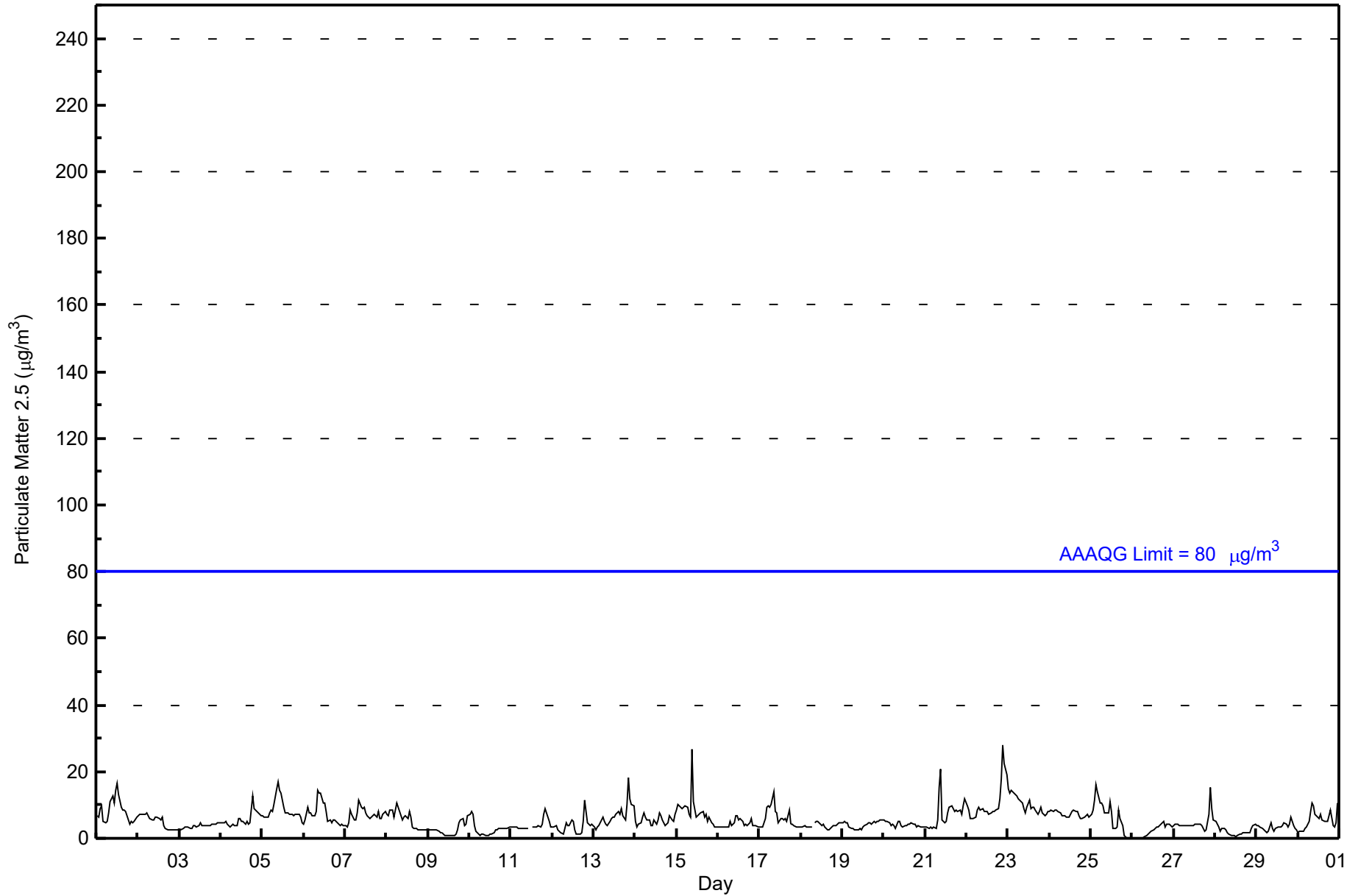




Summary of Hour Averages

Ells River - April 2023

Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0																		Hours in Service:	720																											
Maximum Value: 28.2 µg/m ³ on Apr 22 22:00		Maximum Daily Average: 10.4 µg/m ³ on Apr 22																	Hours of Data:	718																													
Minimum Value: 0.1 µg/m ³ on Apr 26 05:00		Minimum Daily Average: 2.1 µg/m ³ on Apr 28																	Hours of Missing Data:	2																													
Maximum Diurnal Average: 7.1 µg/m ³ at hour 10		Minimum Diurnal Average: 5.0 µg/m ³ at hour 18																	Hours of Calibration:	1																													
Monthly Average: 5.55 µg/m ³		Percentiles: P ₁ = 0.2 P ₁₀ = 2.4 Q ₁ = 3.4 Median = 4.7 Q ₃ = 7.3 P ₉₀ = 9.4 P ₉₉ = 16.9																	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-Apr	6.7	6.2	9.1	9.9	5.2	4.5	4.9	7.4	10.8	12.6	10.4	14.3	16.6	13.2	9.2	8.4	8.7	8.1	5.5	4.1	5.0	4.8	5.2	6.2	8.2	16.6																							
2-Apr	6.8	7.2	7.2	7.2	7.3	7.5	6.9	5.8	5.3	5.7	6.3	6.4	5.8	5.5	6.2	3.6	3.1	2.5	2.4	2.6	2.6	2.7	2.6	2.6	5.1	7.5																							
3-Apr	2.6	2.6	2.8	3.4	3.6	3.2	3.1	3.0	3.8	3.7	3.5	3.9	4.5	4.0	4.0	3.8	3.7	3.7	4.0	4.1	4.2	4.2	4.5	4.5	3.7	4.5																							
4-Apr	4.6	4.6	4.7	5.1	4.4	3.6	3.9	4.3	3.8	3.8	6.1	5.7	5.1	4.9	4.4	5.0	4.3	4.7	12.7	8.8	8.3	7.9	7.7	6.9	5.6	12.7																							
5-Apr	6.6	6.4	6.3	6.5	7.7	8.4	8.0	10.0	15.0	17.0	14.4	13.4	9.3	7.5	7.5	7.6	7.4	7.1	6.8	7.0	7.4	7.0	6.2	4.7	8.5	17.0																							
6-Apr	4.2	5.5	9.3	7.6	7.5	6.9	6.7	8.0	14.3	13.6	13.8	10.6	10.7	8.0	5.1	5.6	4.8	5.6	5.5	5.2	4.3	3.7	4.0	3.9	7.3	14.3																							
7-Apr	3.6	3.5	4.5	8.3	7.3	5.7	5.6	7.8	11.3	9.5	8.9	9.4	7.4	6.6	6.1	6.5	6.9	7.4	6.4	8.0	6.1	6.1	7.2	7.9	7.0	11.3																							
8-Apr	7.3	6.6	8.4	8.3	6.5	8.3	10.5	9.4	6.7	5.7	6.3	6.6	6.1	8.2	6.3	3.3	3.1	2.8	2.7	2.5	2.5	2.4	2.6	2.6	5.7	10.5																							
9-Apr	2.6	2.7	2.7	2.5	2.4	2.3	2.2	1.9	1.6	1.3	0.9	0.8	0.9	0.9	0.8	0.9	1.1	2.7	4.5	5.4	5.9	3.8	4.3	6.9	2.6	6.9																							
10-Apr	7.4	8.0	7.3	3.7	2.0	1.4	0.9	1.1	1.3	0.8	1.0	1.0	1.4	1.4	1.7	2.5	2.6	2.8	2.8	3.0	3.1	2.9	3.1	3.3	2.8	8.0																							
11-Apr	3.4	3.4	3.4	3.4	3.1	3.1	2.9	3.1	3.1	3.1	3.0	C	3.2	3.4	3.5	3.5	3.6	3.6	4.3	7.1	8.7	6.6	5.2	3.5	4.0	8.7																							
12-Apr	3.2	3.2	3.7	2.8	2.1	1.7	1.3	2.8	4.7	4.0	3.7	5.5	4.9	2.5	1.4	1.2	1.2	1.7	5.2	11.5	4.5	4.1	3.9	4.1	3.5	11.5																							
13-Apr	3.2	2.7	3.4	3.9	4.8	6.2	5.1	4.4	4.0	5.0	6.0	6.5	6.3	7.3	8.2	7.3	8.9	6.9	5.4	10.2	18.1	11.7	10.2	9.9	6.9	18.1																							
14-Apr	4.9	3.4	4.4	4.9	6.5	7.8	6.5	5.6	5.6	4.0	3.8	5.5	4.4	5.3	7.5	6.9	5.6	4.0	4.1	4.8	6.7	5.5	5.1	7.1	5.4	7.8																							
15-Apr	8.6	10.0	9.2	8.8	9.3	9.9	9.3	7.2	6.2	26.6	10.9	6.5	6.6	7.2	7.6	8.1	6.4	7.0	5.1	6.3	4.7	4.3	3.4	3.4	8.0	26.6																							
16-Apr	3.4	3.2	3.3	3.4	3.4	3.5	3.3	5.2	3.7	4.5	6.6	6.6	5.7	6.1	5.1	3.8	4.0	3.8	4.6	5.8	3.8	3.7	3.6	3.4	4.3	6.6																							
17-Apr	3.4	3.4	3.5	5.9	9.3	9.9	9.5	10.3	14.2	7.9	7.6	4.9	5.8	5.9	5.5	5.8	5.1	8.6	4.3	4.0	3.7	3.5	3.4	3.3	6.2	14.2																							
18-Apr	3.3	3.6	3.7	3.3	3.3	3.3	3.3	PF	4.6	5.0	5.0	4.3	3.6	4.1	3.2	2.7	2.4	2.9	3.2	3.8	4.0	4.3	4.7	4.6	3.7	5.0																							
19-Apr	4.6	4.9	4.9	4.8	3.3	2.8	2.8	2.6	2.5	2.5	2.8	2.7	3.3	3.8	4.1	4.5	4.6	4.2	4.9	4.6	5.0	4.9	5.5	5.7	4.0	5.7																							
20-Apr	5.3	5.0	4.9	4.8	4.0	4.1	3.8	3.0	4.9	5.2	3.8	3.6	3.9	4.0	4.3	4.3	4.7	4.2	4.3	3.5	3.7	3.5	3.5	3.3	4.1	5.3																							
21-Apr	3.2	3.2	3.2	3.3	3.2	3.2	3.1	5.5	15.1	20.8	5.6	4.5	5.2	7.6	9.5	9.8	8.9	8.2	8.6	8.1	8.5	7.1	9.6	11.7	7.4	20.8																							
22-Apr	9.8	8.3	6.0	5.9	6.1	6.4	8.5	9.4	8.5	8.7	8.2	7.8	7.9	7.3	7.6	7.9	8.1	8.6	9.0	11.8	17.6	28.2	22.4	18.9	10.4	28.2																							
23-Apr	14.8	13.6	14.3	13.6	12.9	12.8	11.7	11.6	10.8	8.8	7.8	9.2	11.4	9.0	9.5	9.1	8.3	7.4	8.3	9.3	7.5	6.8	7.2	8.0	10.1	14.8																							
24-Apr	8.3	8.4	8.2	8.6	8.4	8.1	7.8	6.7	6.7	6.8	6.5	6.3	7.4	8.0	8.5	8.0	8.0	6.9	6.1	6.0	6.4	6.7	7.0	6.3	7.3	8.6																							
25-Apr	7.2	8.4	11.3	16.1	13.9	10.7	10.6	9.7	7.5	7.5	7.5	10.9	8.0	2.8	2.8	3.2	8.3	5.8	3.8	0.7	0.2	0.2	0.2	0.1	6.6	16.1																							
26-Apr	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.6	1.0	1.5	1.8	2.1	2.6	3.1	3.6	3.2	3.7	4.6	4.9	3.6	4.2	4.3	3.8	3.4	2.2	4.9																							
27-Apr	3.7	4.0	4.2	3.8	3.8	3.8	3.8	3.9	4.0	3.6	3.6	4.0	4.3	4.2	4.3	4.0	3.7	2.9	2.3	2.7	7.1	15.2	9.0	5.3	4.6	15.2																							
28-Apr	5.1	4.1	3.2	2.1	2.9	3.1	2.4	1.9	1.2	1.0	0.9	0.6	0.6	0.7	1.1	1.2	1.5	1.9	1.7	1.6	1.7	2.8	3.9	4.1	2.1	5.1																							
29-Apr	4.0	3.7	3.5	3.0	2.4	2.0	1.8	2.1	4.6	2.8	2.1	2.9	3.5	3.3	3.4	3.6	4.5	4.4	3.6	4.2	6.2	4.0	2.9	2.6	3.4	6.2																							
30-Apr	1.8	2.3	2.2	2.3	2.8	3.5	5.2	8.1	10.7	9.9	7.3	6.2	6.0	7.4	5.6	5.2	5.1	5.2	6.8	8.6	4.0	3.5	4.7	10.5	5.6	10.7																							
																								5.1	5.1	5.4	5.6	5.3	5.3	5.2	5.6	6.6	7.1	5.9	6.0	5.8	5.4	5.3	5.0	5.1	5.0	5.1	5.6	5.9	5.9	5.6	5.6	Diurnal Average	
																								14.8	13.6	14.3	16.1	13.9	12.8	11.7	11.6	15.1	26.6	14.4	14.3	16.6	13.2	9.5	9.8	8.9	8.6	12.7	11.8	18.1	28.2	22.4	18.9	Diurnal Maximum	
C - Calibration																								PF - Power Failure																									
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 µg/m ³ 24-hr 29 µg/m ³																																																	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Ells River - April 2023

Concentration Ranges ($\mu\text{g}/\text{m}^3$)	Number of Hours	%	Cumulative %
0 - 5	415	57.80	57.80
6 - 15	293	40.81	98.61
16 - 25	8	1.11	99.72
26 - 80	2	0.28	100.00
> 81.0	0	0.00	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Particulate Matter 2.5 (PM_{2.5}) - μg/m³
Ells River - April 2023

Concentration Ranges (μg/m ³)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	24	48	27	20	24	24	28	21	17	13	24	43	14	22	37	20	406
6 - 15	35	33	10	6	4	19	26	60	66	11	3	0	2	7	2	9	293
16 - 25	1	1	0	0	0	1	1	2	2	0	0	0	0	0	0	0	8
26 - 80	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	82	37	26	28	44	55	83	86	24	27	43	16	29	39	30	709

Total Number of Valid Hours: 709

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

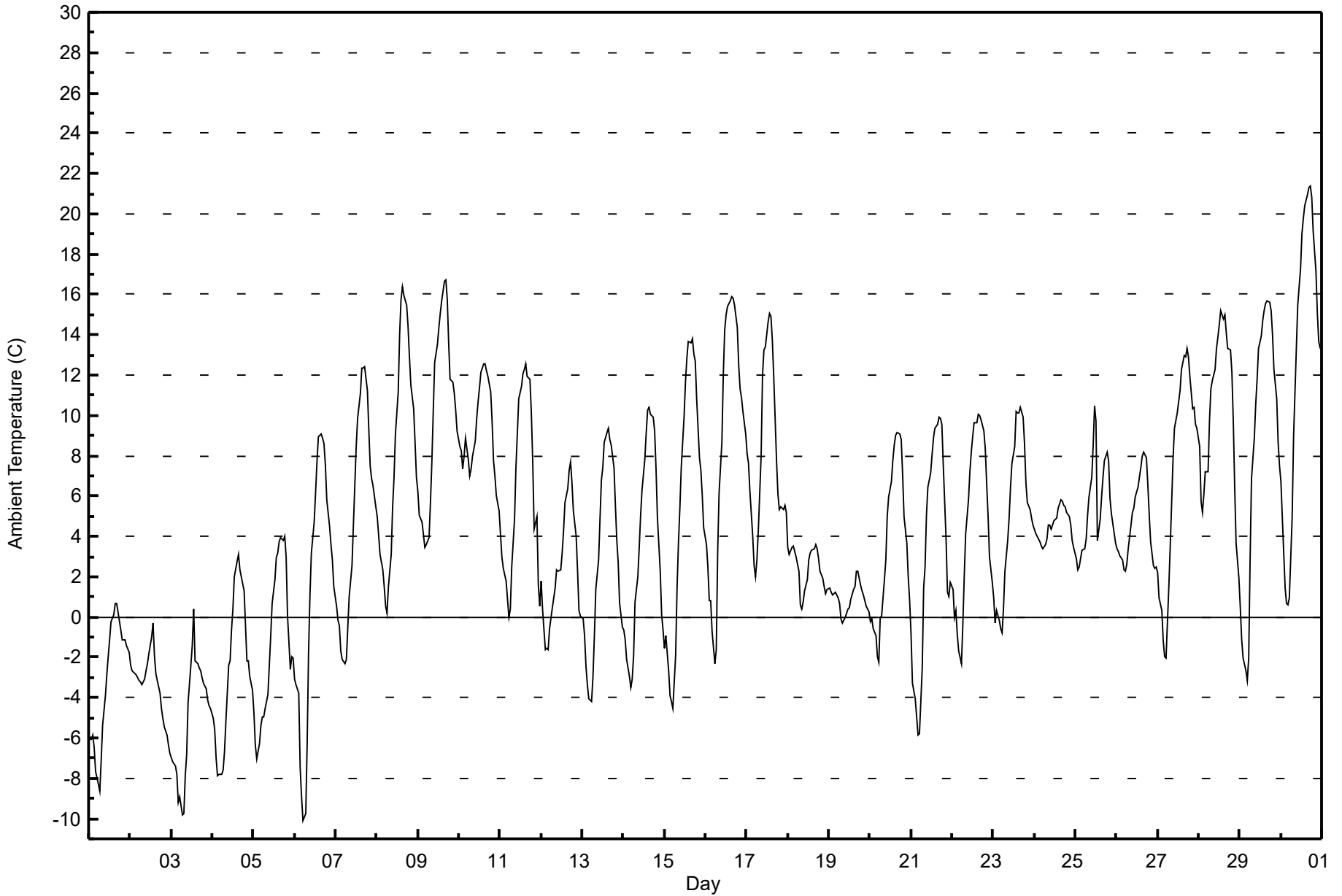
Ambient Temperature (AT) - C
Ells River - April 2023

Maximum Value: 21.4 C on Apr 30 18:00		Maximum Daily Average: 12.8 C on Apr 30		Hours in Service: 720																																												
Minimum Value: -10.1 C on Apr 6 06:00		Minimum Daily Average: -5.1 C on Apr 3		Hours of Data: 720																																												
Maximum Diurnal Average: 9.3 C at hour 16		Minimum Diurnal Average: -1.4 C at hour 6		Hours of Missing Data: 0																																												
Monthly Average: 4.30 C		Percentiles: P ₁ = -8.6 P ₁₀ = -3.2 Q ₁ = 0.0 Median = 3.8 Q ₃ = 8.8 P ₉₀ = 12.6 P ₉₉ = 18.7		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-Apr	-6.1	-6.1	-5.9	-6.5	-7.6	-8.3	-8.6	-7.1	-5.4	-3.9	-2.9	-2.0	-1.1	-0.2	0.1	0.7	0.6	0.2	-0.6	-1.1	-1.1	-1.1	-1.4	-1.8	-3.2	0.7																						
2-Apr	-2.4	-2.7	-2.7	-2.8	-3.0	-3.2	-3.2	-3.4	-3.1	-2.6	-2.3	-1.8	-1.0	-0.3	-1.9	-2.8	-3.2	-3.8	-4.6	-5.0	-5.4	-5.8	-6.4	-6.8	-3.3	-0.3																						
3-Apr	-7.0	-7.2	-7.4	-7.8	-9.2	-8.9	-9.8	-9.7	-7.9	-6.8	-4.3	-2.3	-1.4	0.4	-2.2	-2.3	-2.5	-2.7	-3.0	-3.3	-3.5	-4.1	-4.4	-4.5	-5.1	0.4																						
4-Apr	-5.0	-5.6	-7.0	-7.9	-7.8	-7.8	-7.6	-6.7	-5.1	-2.4	-2.2	-0.7	0.4	2.0	2.8	3.1	2.3	2.0	1.3	-0.5	-2.1	-2.2	-2.9	-3.6	-2.6	3.1																						
5-Apr	-4.8	-6.3	-7.0	-6.3	-5.4	-4.9	-5.0	-4.5	-3.8	-2.4	-0.9	0.7	1.9	2.9	3.2	3.7	3.9	3.8	4.0	2.9	0.0	-2.6	-2.0	-2.1	-1.3	4.0																						
6-Apr	-3.1	-3.4	-3.8	-7.5	-8.9	-10.1	-9.7	-6.3	-1.8	1.1	3.2	4.7	6.1	7.7	8.9	9.1	8.9	8.6	7.6	5.8	4.5	3.6	2.8	1.5	1.2	9.1																						
7-Apr	0.5	-0.1	-0.4	-1.7	-2.1	-2.3	-2.1	-0.5	1.0	2.5	4.5	6.5	8.5	9.9	11.1	12.4	12.4	12.4	11.3	9.3	7.5	6.9	6.5	5.5	5.0	12.4																						
8-Apr	5.0	4.1	3.1	2.3	1.5	0.6	0.2	1.5	3.1	5.4	6.9	9.1	11.2	14.0	15.7	16.4	16.0	15.5	14.4	12.9	11.5	10.3	8.7	6.9	8.2	16.4																						
9-Apr	6.2	5.1	4.7	4.1	3.5	3.6	4.0	5.7	7.7	10.2	12.6	13.5	14.4	15.0	15.7	16.6	16.7	15.7	13.6	11.8	11.7	11.1	10.3	9.2	10.1	16.7																						
10-Apr	8.4	8.2	7.4	8.0	8.9	7.8	7.0	7.3	8.0	8.8	9.8	10.7	11.4	12.1	12.6	12.5	12.2	12.0	11.1	9.7	7.8	7.0	6.1	5.2	9.2	12.6																						
11-Apr	4.1	3.0	2.4	1.8	0.9	0.0	0.4	2.5	4.9	7.4	9.1	10.8	11.5	12.1	12.3	12.5	11.9	11.8	10.1	7.7	4.4	5.0	1.6	0.5	6.2	12.5																						
12-Apr	1.8	0.4	-1.6	-1.5	-1.6	-0.6	0.5	0.9	1.4	2.3	2.2	2.3	3.2	4.3	5.7	6.4	7.3	7.7	6.7	5.3	4.0	2.3	0.3	0.1	2.5	7.7																						
13-Apr	-0.1	-0.9	-2.5	-3.4	-4.1	-4.2	-2.9	-0.9	1.3	2.8	4.9	6.8	7.4	8.6	9.1	9.4	8.8	8.5	7.4	5.5	3.8	2.7	0.7	-0.5	2.8	9.4																						
14-Apr	-0.6	-1.1	-2.1	-3.0	-3.5	-3.1	-1.9	0.7	2.0	3.5	5.1	6.3	7.8	9.2	10.3	10.4	10.0	9.9	9.2	7.4	4.9	2.3	0.1	-0.6	3.5	10.4																						
15-Apr	-1.5	-0.9	-2.7	-3.9	-4.2	-4.6	-1.9	1.5	3.7	5.4	7.4	9.9	11.7	12.9	13.7	13.6	13.8	13.1	12.7	10.8	7.9	7.3	6.0	4.4	5.7	13.8																						
16-Apr	3.6	2.5	0.8	0.8	-0.7	-2.3	-1.6	3.3	6.1	8.7	12.0	14.2	15.0	15.4	15.7	15.9	15.9	15.5	14.4	12.5	11.3	10.9	10.2	9.1	8.7	15.9																						
17-Apr	8.1	7.7	6.2	4.0	2.6	2.0	2.8	4.3	7.9	12.0	13.3	13.4	14.6	15.0	15.0	13.8	11.9	7.7	6.1	5.4	5.5	5.3	5.5	5.2	8.1	15.0																						
18-Apr	3.4	3.1	3.4	3.5	3.3	3.0	2.2	0.6	0.4	0.8	1.3	1.9	2.8	3.2	3.3	3.4	3.6	3.4	2.9	2.3	1.9	1.5	1.2	1.4	2.4	3.6																						
19-Apr	1.4	1.3	1.1	1.2	1.2	1.0	0.7	-0.1	-0.3	0.0	0.2	0.4	0.4	0.9	1.3	1.5	2.3	2.3	1.6	1.3	1.1	0.8	0.6	0.2	0.9	2.3																						
20-Apr	-0.2	-0.1	-0.6	-0.9	-2.0	-2.3	0.0	0.1	1.8	2.8	5.0	6.0	6.7	7.8	8.5	9.0	9.2	9.1	8.8	7.0	5.0	3.6	2.0	0.8	3.6	9.2																						
21-Apr	-0.9	-3.3	-4.1	-5.0	-5.9	-5.8	-2.6	1.4	2.5	5.0	6.4	7.1	8.0	8.8	9.4	9.6	9.9	9.8	9.6	7.6	3.9	1.2	1.0	1.7	3.1	9.9																						
22-Apr	1.4	0.0	0.3	-0.8	-1.7	-2.3	-0.3	2.1	4.2	5.8	7.2	8.2	9.0	9.6	9.6	10.0	10.0	9.8	9.2	8.3	6.6	5.0	3.0	1.7	4.8	10.0																						
23-Apr	1.0	-0.3	0.3	-0.2	-0.5	-0.8	0.4	2.3	3.8	4.9	6.5	7.6	8.4	10.2	10.1	10.1	10.4	9.9	8.6	6.6	5.7	5.3	4.9	4.6	5.0	10.4																						
24-Apr	4.4	4.2	3.9	3.8	3.5	3.4	3.6	3.9	4.5	4.6	4.3	4.7	4.8	4.9	5.4	5.8	5.7	5.5	5.5	5.2	5.0	4.6	3.8	3.4	4.5	5.8																						
25-Apr	2.9	2.4	2.5	2.9	3.3	3.4	3.9	5.0	5.9	6.9	8.5	10.4	9.7	3.8	4.8	5.9	6.9	7.8	8.2	7.8	5.9	5.1	4.7	3.6	5.5	10.4																						
26-Apr	3.4	3.2	3.0	2.8	2.3	2.2	2.6	3.4	4.6	5.2	5.4	6.0	6.4	6.9	7.4	7.9	8.2	7.9	6.6	5.1	3.7	2.5	2.4	2.5	4.7	8.2																						
27-Apr	2.2	0.9	0.3	-1.2	-2.0	-2.0	1.5	3.5	5.7	7.8	9.4	10.1	10.7	11.3	12.3	13.0	12.9	13.3	12.9	12.0	10.3	10.4	9.5	9.4	7.3	13.3																						
28-Apr	8.4	5.8	5.2	6.1	7.2	7.2	9.7	11.3	11.7	12.3	13.3	13.9	14.5	15.2	14.8	15.0	14.1	13.3	13.3	12.1	9.7	6.4	3.6	1.9	10.3	15.2																						
29-Apr	0.4	-1.1	-2.0	-2.6	-3.1	-2.0	2.8	6.9	8.9	10.5	11.8	13.3	13.9	14.7	15.2	15.6	15.7	15.6	15.2	14.0	12.3	10.8	8.7	7.5	8.5	15.7																						
30-Apr	6.7	4.9	1.5	0.7	0.6	1.0	4.9	8.9	11.1	13.3	15.5	17.3	19.0	19.8	20.4	21.0	21.3	21.4	20.8	19.2	17.1	15.1	13.6	13.3	12.8	21.4																						
																								1.4	0.6	-0.1	-0.7	-1.2	-1.4	-0.3	1.3	2.8	4.4	5.8	7.0	7.9	8.6	9.0	9.3	9.2	8.9	8.2	6.8	5.4	4.4	3.4	2.7	Diurnal Average
																								8.4	8.2	7.4	8.0	8.9	7.8	9.7	11.3	11.7	13.3	15.5	17.3	19.0	19.8	20.4	21.0	21.3	21.4	20.8	19.2	17.1	15.1	13.6	13.3	Diurnal Maximum



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Ells River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Ells River - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	180	25.00	25.00
0 - 10	404	56.11	81.11
10 - 20	131	18.19	99.31
> 20	5	0.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



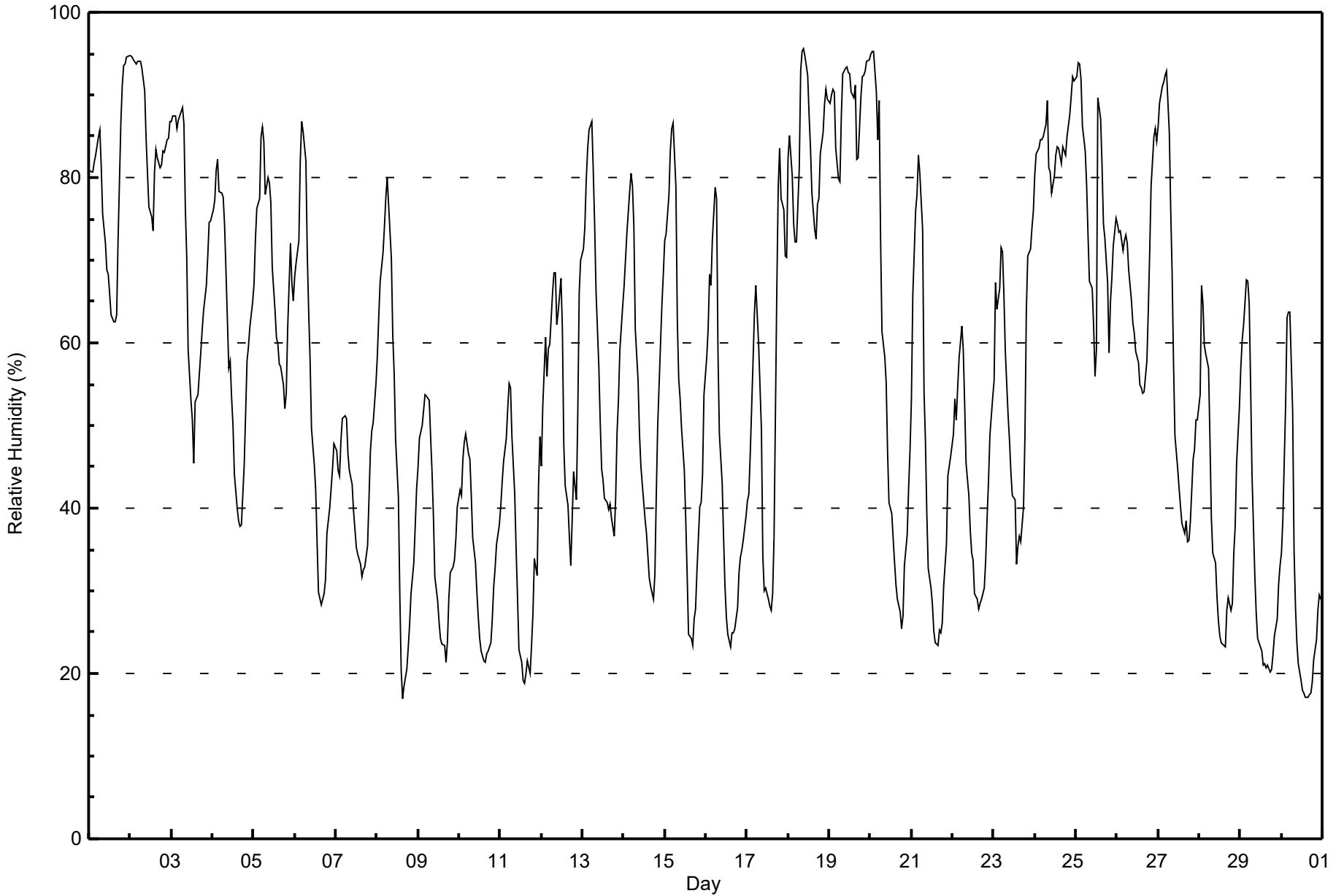
Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Ells River - April 2023

Maximum Value: 95.6 % on Apr 18 10:00		Maximum Daily Average: 89.4 % on Apr 19		Hours in Service: 720																							
Minimum Value: 17.0 % on Apr 8 16:00		Minimum Daily Average: 31.3 % on Apr 30		Hours of Data: 720																							
Maximum Diurnal Average: 74.4 % at hour 6		Minimum Diurnal Average: 40.8 % at hour 17		Hours of Missing Data: 0																							
Monthly Average: 56.45 %		Percentiles: P ₁ = 18.5 P ₁₀ = 26.7 Q ₁ = 36.8 Median = 55.5 Q ₃ = 76.4 P ₉₀ = 86.6 P ₉₉ = 94.7		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-Apr	80.9	80.7	80.7	81.8	82.8	84.9	85.7	81.4	75.7	72.1	68.9	68.3	66.0	63.5	62.5	62.5	63.4	72.4	86.6	91.2	93.5	93.7	94.6	94.8	78.7	94.8	
2-Apr	94.7	94.6	94.3	93.8	94.0	94.0	94.1	93.1	90.6	84.8	80.5	76.5	75.3	73.6	80.6	83.4	82.3	81.1	81.6	83.2	83.0	84.5	84.8	86.8	86.1	94.7	
3-Apr	86.7	87.4	87.4	86.0	86.9	87.5	88.5	86.4	76.3	70.4	59.1	53.0	50.7	45.4	52.9	53.7	56.2	58.8	61.5	63.8	67.0	70.5	74.6	74.7	70.2	88.5	
4-Apr	76.1	77.3	80.9	82.1	78.4	78.1	77.6	74.2	68.6	56.9	57.8	53.3	50.0	44.0	40.0	38.4	37.8	38.0	45.3	51.4	57.8	59.5	61.9	64.9	60.4	82.1	
5-Apr	67.2	72.6	76.3	77.4	85.0	86.2	84.4	78.0	80.0	79.3	76.9	69.1	63.9	60.6	59.8	57.4	57.0	54.9	52.1	53.8	61.8	72.1	67.2	65.0	69.1	86.2	
6-Apr	67.9	69.7	72.4	82.1	86.8	85.6	82.0	70.6	63.8	57.9	49.6	45.3	42.2	35.8	29.8	28.4	29.1	29.6	31.4	37.0	40.0	42.5	44.8	47.8	53.0	86.8	
7-Apr	47.0	44.6	43.9	48.1	50.9	51.2	50.9	46.7	44.6	42.8	39.7	37.5	35.3	34.4	33.3	31.7	32.5	33.0	35.5	41.0	46.8	49.4	50.3	55.1	42.8	55.1	
8-Apr	58.5	63.2	67.5	70.9	73.9	77.5	80.0	76.9	70.1	60.8	56.2	48.4	41.3	29.6	20.4	17.0	18.4	20.4	23.1	25.9	29.6	33.4	37.8	42.4	47.6	80.0	
9-Apr	44.9	48.5	50.0	51.8	53.8	53.5	53.0	48.7	44.4	38.9	31.8	28.8	26.3	24.2	23.6	23.4	21.4	23.9	29.2	32.3	32.9	33.8	36.2	40.1	37.3	53.8	
10-Apr	42.3	41.6	46.0	48.0	49.0	46.7	46.0	41.6	36.5	33.3	29.8	26.7	24.3	22.7	21.5	21.3	22.4	22.6	23.7	26.7	30.5	32.8	35.7	38.0	33.7	49.0	
11-Apr	40.2	43.1	45.6	48.4	52.0	55.2	54.6	48.7	41.6	35.0	29.1	22.9	21.4	19.1	18.8	20.0	21.5	20.0	23.4	27.2	33.9	31.8	42.9	48.7	35.2	55.2	
12-Apr	45.1	52.3	60.7	55.9	59.4	59.8	66.2	68.5	68.4	62.2	63.7	67.8	61.7	47.7	42.7	40.4	36.4	33.1	38.7	44.5	40.9	51.6	66.2	70.0	54.3	70.0	
13-Apr	71.4	74.0	79.6	83.5	85.8	86.7	81.0	74.3	66.2	57.1	50.3	44.8	43.3	41.2	40.7	39.8	40.6	38.8	36.6	41.2	49.1	53.1	59.2	64.4	58.4	86.7	
14-Apr	66.8	70.0	73.2	78.2	80.5	79.0	74.1	61.8	55.5	49.1	45.1	42.8	38.6	36.9	34.2	31.6	30.5	29.0	32.0	41.8	50.1	59.9	64.6	68.3	53.9	80.5	
15-Apr	72.3	73.3	77.9	83.3	86.0	86.6	78.7	62.7	55.5	53.3	49.7	44.6	38.6	32.0	24.8	24.2	23.4	26.6	27.8	32.4	40.2	40.6	44.1	53.7	51.4	86.6	
16-Apr	58.3	61.6	68.3	67.0	72.5	78.8	77.5	59.0	49.0	43.1	36.4	30.6	26.8	24.7	23.2	24.9	25.5	27.9	32.2	34.1	34.9	36.1	39.1	44.0	44.0	78.8	
17-Apr	40.9	41.7	46.5	57.6	63.5	67.0	63.4	59.9	49.5	34.2	29.9	30.4	28.9	28.1	27.6	29.7	36.5	66.8	79.1	83.6	77.4	76.2	70.5	70.4	52.5	83.6	
18-Apr	82.3	85.1	80.2	74.3	72.3	72.1	81.2	92.8	95.3	95.6	94.8	92.3	87.6	83.5	78.2	73.7	72.5	76.8	77.4	82.9	85.5	88.8	90.7	89.5	83.6	95.6	
19-Apr	88.9	90.0	90.8	90.3	83.6	79.9	79.5	87.5	92.5	93.3	93.4	92.7	92.5	90.4	89.7	91.2	82.2	82.3	89.9	92.2	92.4	92.9	94.0	94.2	89.4	94.2	
20-Apr	95.0	95.2	95.2	90.3	84.6	89.4	72.7	61.4	58.2	55.2	46.8	40.6	39.3	36.3	33.5	30.6	28.9	27.5	25.5	26.9	33.1	36.8	42.3	47.0	53.9	95.2	
21-Apr	53.0	65.8	75.9	77.9	82.8	80.4	73.8	54.3	48.2	39.4	32.7	30.3	28.4	25.1	23.8	23.3	25.2	24.9	26.1	30.5	35.6	44.0	45.1	46.3	45.5	82.8	
22-Apr	49.0	53.2	50.7	54.6	58.1	62.0	59.2	52.5	45.4	41.6	37.3	34.6	33.7	29.7	29.0	27.8	28.5	29.1	30.3	33.7	38.9	43.2	48.8	53.3	42.7	62.0	
23-Apr	55.4	67.3	64.0	66.6	71.6	71.0	65.7	59.0	51.1	48.1	44.3	41.5	41.0	33.3	35.4	36.5	35.9	40.2	48.7	64.0	70.5	71.3	73.9	76.0	55.5	76.0	
24-Apr	80.4	82.8	83.6	84.6	84.6	85.0	86.4	89.3	81.2	80.6	78.2	80.2	82.6	83.7	83.5	81.7	83.7	83.3	82.7	84.9	87.7	89.8	92.2	91.7	84.3	92.2	
25-Apr	92.2	94.0	93.7	91.9	86.3	83.3	79.1	73.1	67.5	66.6	62.0	55.9	59.1	89.7	87.1	81.6	74.4	72.6	67.3	58.9	64.9	67.9	71.8	75.0	75.7	94.0	
26-Apr	74.5	73.5	73.5	71.2	72.3	73.1	72.0	68.8	65.0	62.4	61.1	59.0	57.6	54.9	54.5	54.0	54.1	57.8	64.0	71.1	78.9	84.9	85.9	84.4	67.9	85.9	
27-Apr	86.1	89.1	91.0	91.6	92.4	92.9	85.5	76.0	68.5	57.6	48.9	44.7	42.3	40.1	38.1	37.0	38.5	35.9	36.0	38.3	46.0	47.2	50.7	50.7	59.4	92.9	
28-Apr	53.7	66.9	64.7	59.7	58.7	56.9	48.3	38.8	34.6	33.3	29.4	26.5	24.6	23.8	23.3	23.2	27.6	29.2	27.6	28.4	34.5	37.9	45.5	52.2	39.5	66.9	
29-Apr	57.0	60.4	62.3	67.6	67.5	64.7	54.8	44.1	31.8	27.3	24.3	23.8	22.6	21.1	21.2	20.7	21.0	20.1	20.5	22.4	24.5	26.6	30.8	33.0	36.3	67.6	
30-Apr	34.6	38.6	52.8	63.0	63.7	63.8	51.7	34.9	28.1	23.7	21.1	19.2	18.0	17.6	17.1	17.1	17.4	17.6	19.0	21.6	24.0	27.7	29.5	28.9	31.3	63.8	
		65.4	68.6	71.0	72.7	74.0	74.4	71.6	65.5	60.1	55.2	51.0	47.7	45.5	43.1	41.7	40.9	40.8	42.4	45.0	48.8	52.8	56.0	59.1	61.5	Diurnal Average	
		95.0	95.2	95.2	93.8	94.0	94.0	94.1	93.1	95.3	95.6	94.8	92.7	92.5	90.4	89.7	91.2	83.7	83.3	89.9	92.2	93.5	93.7	94.6	94.8	Diurnal Maximum	





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Ells River - April 2023

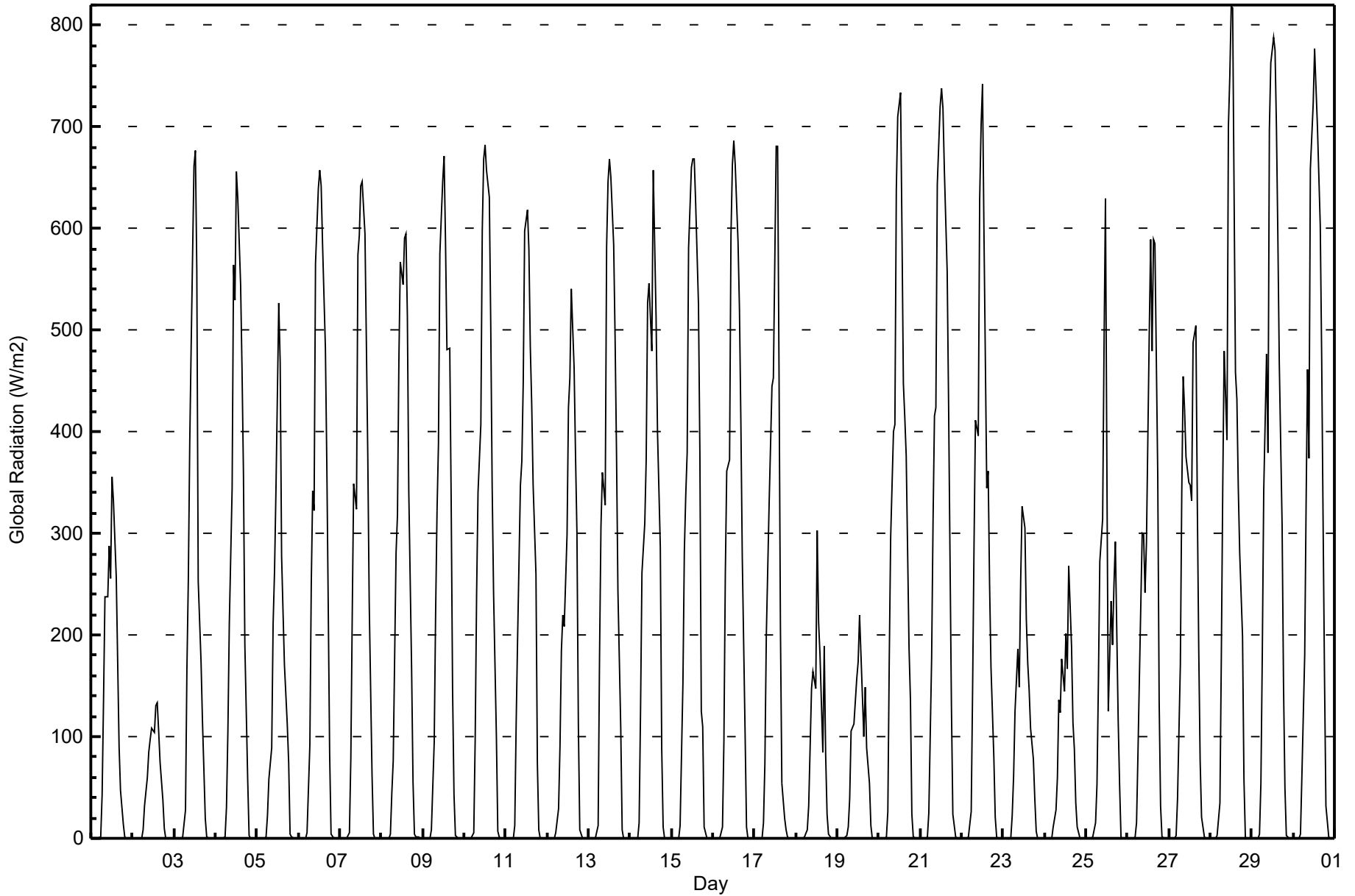
Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	12	1.67	1.67
20 - 40	196	27.22	28.89
40 - 60	192	26.67	55.56
60 - 80	171	23.75	79.31
80 - 100	149	20.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720



Maximum Value: 818.9 W/m2 on Apr 28 13:00 Maximum Daily Average: 280.8 W/m2 on Apr 29																							Hours in Service:	720		
Minimum Value: 0.0 W/m2 on Apr 1 02:00 Minimum Daily Average: 41.2 W/m2 on Apr 2																							Hours of Data:	720		
Maximum Diurnal Average: 551.2 W/m2 at hour 13 Minimum Diurnal Average: 0.1 W/m2 at hour 1																							Hours of Missing Data:	0		
Monthly Average: 182.37 W/m2 Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.3 Median = 60.4 Q ₃ = 340.8 P ₉₀ = 583.9 P ₉₉ = 741.3																							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-Apr	0.0	0.0	0.0	0.0	0.0	0.8	43.7	136.1	238.1	237.3	287.6	255.2	356.2	332.1	257.5	174.3	90.8	47.9	13.7	0.7	0.0	0.0	0.0	0.0	103.0	356.2
2-Apr	0.0	0.0	0.0	0.0	0.0	0.4	9.0	32.1	60.4	85.3	97.2	108.0	104.7	130.1	133.2	105.5	75.6	37.8	9.4	0.4	0.0	0.0	0.0	0.0	41.2	133.2
3-Apr	0.0	0.0	0.0	0.0	0.0	1.4	27.7	166.4	254.0	388.7	484.2	662.2	676.5	558.7	253.2	173.8	115.8	67.4	19.4	1.3	0.0	0.0	0.0	0.0	160.4	676.5
4-Apr	0.0	0.0	0.1	0.0	0.0	1.5	30.1	105.7	211.3	345.0	564.4	529.2	656.2	629.6	544.5	461.2	359.4	189.8	58.3	2.7	0.3	0.0	0.1	0.1	195.4	656.2
5-Apr	0.4	0.1	0.0	0.0	0.0	1.7	22.1	58.5	88.4	210.7	262.5	342.4	526.7	468.6	278.3	224.5	171.4	112.4	74.8	3.6	0.7	0.6	0.3	0.3	118.7	526.7
6-Apr	0.1	0.2	0.6	0.4	0.1	5.2	92.0	249.7	342.2	322.2	565.5	638.8	657.7	641.7	583.7	482.1	368.9	229.5	83.5	3.7	0.2	0.1	0.1	0.1	219.5	657.7
7-Apr	0.4	0.1	0.1	0.4	0.2	5.1	79.8	221.0	349.1	324.0	574.4	593.3	641.8	646.0	594.2	486.8	375.7	231.7	61.9	3.7	0.3	0.0	0.3	0.1	216.3	646.0
8-Apr	0.0	0.1	0.1	0.1	0.2	3.7	44.5	76.6	281.1	318.2	470.3	566.6	544.3	590.5	594.8	513.9	342.5	166.2	55.7	3.8	0.7	0.7	0.4	0.4	190.6	594.8
9-Apr	0.2	0.3	0.2	0.4	0.4	8.0	94.8	222.6	322.6	387.1	575.9	646.0	671.9	586.0	480.3	482.1	332.1	145.4	42.8	3.1	0.0	0.0	0.0	0.0	208.4	671.9
10-Apr	0.0	0.0	0.0	0.0	0.0	5.0	98.2	239.8	341.1	407.5	597.9	668.8	682.8	657.9	630.6	505.9	347.2	241.4	100.7	7.0	0.7	0.6	0.4	0.2	230.6	682.8
11-Apr	0.6	0.6	0.5	0.5	0.3	12.8	114.0	196.2	347.7	370.4	448.9	597.3	618.5	579.0	484.2	426.8	347.7	259.6	73.9	8.7	0.4	0.3	0.6	0.0	203.7	618.5
12-Apr	0.0	0.5	0.1	0.0	0.0	5.4	29.7	90.9	184.4	220.1	208.1	298.4	423.7	453.2	540.7	463.5	376.8	300.8	112.3	7.7	0.5	0.3	0.2	0.0	154.9	540.7
13-Apr	0.0	0.2	0.2	0.1	0.3	13.1	180.8	307.8	360.5	328.2	582.6	646.7	668.8	649.8	583.2	491.5	378.8	243.3	108.6	8.9	0.0	0.0	0.4	0.3	231.4	668.8
14-Apr	0.0	0.0	0.2	0.1	0.2	14.8	124.9	261.2	309.7	372.3	526.5	545.6	480.1	657.2	585.2	512.2	400.8	286.9	87.2	10.6	0.6	0.4	0.3	0.1	215.7	657.2
15-Apr	0.0	0.0	0.3	0.2	0.2	12.7	152.5	281.7	337.6	380.1	581.5	660.0	668.6	668.7	625.0	525.9	379.9	124.4	110.4	11.7	0.6	0.2	0.4	0.4	230.1	668.7
16-Apr	0.1	0.4	0.2	0.0	0.6	11.4	96.0	259.3	361.5	372.4	593.7	662.8	686.0	663.2	587.1	520.8	409.7	276.0	102.7	10.6	0.3	0.0	0.0	0.1	234.0	686.0
17-Apr	0.2	0.2	0.4	0.2	0.2	15.9	73.7	198.7	330.1	386.6	444.4	452.8	680.4	681.5	460.0	206.7	53.6	19.1	9.0	1.5	0.0	0.0	0.0	0.0	167.3	681.5
18-Apr	0.0	0.0	0.0	0.0	0.1	2.0	8.4	32.2	89.5	147.2	163.8	148.0	303.0	213.1	180.5	84.7	189.7	81.5	24.1	4.0	0.0	0.0	0.0	0.0	69.7	303.0
19-Apr	0.0	0.0	0.0	0.0	0.0	2.3	11.4	38.5	105.6	112.3	135.1	156.4	173.5	219.9	139.8	99.5	149.4	89.3	54.7	12.3	0.1	0.0	0.0	0.0	62.5	219.9
20-Apr	0.0	0.0	0.1	0.0	0.9	27.0	174.6	295.5	400.0	407.9	638.2	710.3	733.5	597.9	447.4	413.6	376.6	187.9	136.2	24.0	0.8	0.4	0.5	0.5	232.2	733.5
21-Apr	0.6	0.4	0.1	0.3	0.8	24.8	177.6	312.2	415.5	423.5	643.0	719.7	737.8	718.5	657.6	557.0	426.7	277.0	130.4	23.3	0.8	0.4	0.3	0.5	260.4	737.8
22-Apr	0.3	0.6	0.3	0.6	1.2	26.9	148.7	289.3	411.3	396.4	630.0	701.6	742.0	599.2	344.5	361.0	249.7	168.1	81.0	21.5	0.9	0.5	0.2	0.3	215.7	742.0
23-Apr	0.3	0.0	0.0	0.0	0.7	22.7	61.2	124.6	186.6	148.5	253.5	326.1	306.2	215.7	172.4	146.1	108.7	77.7	39.0	7.6	0.2	0.0	0.0	0.0	91.6	326.1
24-Apr	0.0	0.0	0.0	0.0	0.6	10.6	27.8	60.3	135.7	124.3	176.4	143.9	201.0	166.2	267.7	188.4	113.6	87.8	34.1	11.5	0.2	0.0	0.0	0.0	72.9	267.7
25-Apr	0.0	0.0	0.0	0.0	1.2	15.6	53.3	152.4	272.9	313.8	484.1	629.5	366.6	125.1	233.3	190.1	249.4	292.5	116.9	52.9	0.8	0.0	0.1	0.0	147.9	629.5
26-Apr	0.0	0.0	0.0	0.0	0.8	14.9	82.8	156.7	300.8	299.4	242.3	289.8	497.5	589.3	478.9	589.2	585.7	356.8	134.9	31.3	1.0	0.1	0.0	0.0	193.8	589.3
27-Apr	0.0	0.0	0.1	0.4	2.4	38.2	170.7	340.7	454.8	420.6	375.8	350.3	347.5	332.4	487.9	504.8	330.0	188.0	76.4	20.5	0.8	0.0	0.0	0.0	185.1	504.8
28-Apr	0.3	0.3	0.1	0.0	2.5	35.0	179.4	346.4	479.0	391.7	700.8	750.7	818.9	817.9	458.6	432.0	344.9	280.1	199.3	58.2	1.8	0.5	0.3	0.4	262.5	818.9
29-Apr	0.1	0.4	0.5	0.3	4.6	53.9	183.3	342.4	477.3	379.0	697.9	762.8	787.4	775.3	699.0	592.3	468.8	309.2	151.5	49.8	2.2	0.4	0.5	0.3	280.8	787.4
30-Apr	0.2	0.5	0.2	0.0	4.1	60.8	180.2	331.2	461.4	373.7	659.3	722.0	776.5	738.2	700.9	602.6	474.3	312.4	160.4	32.0	1.6	0.1	0.1	0.1	274.7	776.5
																							Diurnal Average			
																							Diurnal Maximum			





Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Ells River - April 2023

Maximum Speed: 32 km/h on Apr 6 16:00	Maximum Daily Speed Average: 18.0 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 2 13:00	Minimum Daily Speed Average: 0.6 km/h on Apr 4	Hours of Data: 711
Maximum Diurnal Speed Average: 4.8 km/h at hour 19	Minimum Diurnal Speed Average: 0.7 km/h at hour 2	Hours of Missing Data: 9
Monthly Average Velocity: 2.1 km/h 141.2 deg	Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 6$ Median = 9 $Q_3 = 14$ $P_{90} = 20$ $P_{99} = 29$	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-Apr	NNE9	N6	N6	N7	NNE7	NNE7	NNE7	N8	N8	N5	NNE6	NNE9	N9	N9	N11	N11	N10	N8	NNE9	NNE9	ENE4	ESE6	ESE6	ESE7	NNE6.6	N11
2-Apr	SE7	SE5	ESE4	ESE5	ESE5	ESE5	ESE5	SE7	SE7	SE7	SE6	SE4	SSW0	N3	NNE15	NNE16	NNE19	NNE20	NNE20	NNE18	NNE19	NNE16	NNE17	NNE14	NE7.3	NNE20
3-Apr	NNE14	NNE13	NNE13	NE12	NNE10	NNE12	NNE11	N6	NNW6	NNE6	NNW3	NE3	ENE4	N2	E4	WSW5	SSW4	SSW6	SSE9	SSE8	NNW1	WSW1	NW4	NW3	NNE3.7	NNE14
4-Apr	NW4	NW5	NW4	WNW6	WNW4	WNW5	WNW5	NNW4	NNE4	NE2	NNE6	NNE5	N6	N5	NNW5	NE5	ESE8	SE8	S8	SSE9	SE7	SSE10	SSE5	ESE4	NE0.6	SSE10
5-Apr	ESE4	WNW1	NNE3	E3	SE6	SSE3	SE3	SSE8	S5	ESE2	N4	SSE5	S10	SSW9	S8	SE1	N3	SSE9	SSE9	SSE6	SSE4	SSE4	SSE8	SSE8	SSE4.1	S10
6-Apr	SSE9	S11	SSW7	W3	NE0	WNW3	WNW4	WNW4	SSE7	S16	S20	SSE22	SSE23	SSE26	S30	S32	S28	S27	S24	S17	S15	S16	S17	S14	S14.6	S32
7-Apr	S12	S15	S16	S10	S12	S12	S12	S17	S19	S18	S19	S21	SSE25	SSE27	SSE27	SSE25	SSE21	SSE17	S12	S11	S13	S11	S11	S16.6	SSE27	
8-Apr	S12	S10	S11	S10	S10	S9	S9	S9	S14	S16	S15	S17	SSE16	S15	SW12	WSW16	WSW11	WSW10	SW7	SW7	SW8	SW7	WSW8	WSW10	SSW9.9	S17
9-Apr	SW11	WSW10	SW11	WSW9	SW10	SW14	WSW14	WSW15	SW15	WSW14	WSW14	WSW16	W16	W17	SW11	SW8	SW12	S13	SSE10	SSE10	SSE15	S15	SSE14	SSE11	SW10.4	W17
10-Apr	ESE2	S8	S12	WSW16	WSW23	WSW19	WSW19	WSW23	WSW24	W23	WSW24	WSW25	WSW27	WSW25	WSW25	WSW29	WSW27	WSW25	WSW20	WSW12	SSW10	SW11	SW12	WSW11	WSW18.0	WSW29
11-Apr	SW9	SW10	SW10	SW11	WSW8	SW6	SSW6	SSW9	SSW11	SSW9	S10	SW12	SSW10	WSW11	NW7	NW8	N10	NNW18	NNW14	NNW9	NW8	NNW9	NW3	WNW6	WSW5.1	NNW18
12-Apr	N7	NW4	WSW5	SW6	W4	WNW6	NW8	NNE6	NE3	NE2	NNE10	NNE9	NNE8	NNW15	NW9	NW11	WNW7	NNW9	NE8	NNW1	WNW6	NNW10	NNW7	NNE8	NNW5.3	NNW15
13-Apr	NNE11	N6	NNW4	NW4	NW3	NNW5	NW5	N7	NNE8	N7	NNE5	N4	N7	NNE5	ENE8	NE10	NE15	NE18	NE17	NNE13	NNE10	NNE10	NNW6	N5	NNE7.3	NE18
14-Apr	NNE5	N3	N3	N3	N3	N3	N4	NE6	N4	N4	N6	NE5	NE5	ENE8	ENE10	ENE10	NNE13	NNE15	NE15	NNE14	NE3	N3	N3	NNE4	NNE5.9	NNE15
15-Apr	N4	NNE5	NNW3	WNW3	WNW3	WNW3	NNW1	SE3	NNE2	NNW1	NNE3	SSE5	ESE2	SSE6	SSW6	SE10	SSE12	ESE11	E13	ESE8	ESE7	SE10	SSE9	SE3	SE3.1	E13
16-Apr	E5	E3	ESE5	ESE5	SE4	WNW1	NW2	NNE1	SSE9	E3	ESE7	SSE16	SSE28	SSE23	SSE21	SE21	ESE21	ESE22	ESE19	ESE15	SE16	SE21	SE21	SE18	SE11.9	SSE28
17-Apr	SE12	SE9	E4	NNE5	NNE9	N7	N14	NNE15	NE16	ESE20	SE29	SE28	ESE30	SE30	SE32	SE29	SE31	SE26	ESE18	E18	ESE18	ESE14	SE14	SE20	ESE15.0	SE32
18-Apr	ESE13	NE9	NE10	ENE10	ENE8	E7	ESE10	NE6	NNE11	NNE14	NNE14	NE11	ENE13	ENE14	ENE15	ENE11	ENE12	NE15	NE15	ENE15	NE14	NNE14	NNE14	NE13	NE11.1	ENE15
19-Apr	NE12	NE13	NE12	ENE11	ESE12	ESE13	ESE10	ESE9	E10	E9	E9	E11	ESE11	E12	E10	ENE7	E9	ENE7	N11	NNE15	NNE13	NNE12	NNE10	N7	ENE8.5	NNE15
20-Apr	UO	UO	UO	UO	UO	UO	UO	SE7	ESE4	N4	N5	ENE10	NE11	NE12	E12	E14	ENE16	E15	E14	SE11	ESE9	SE10	SE6	SE7	---	ENE16
21-Apr	SE3	NW2	NNW2	N2	NW2	UO	UO	SSE4	SSE7	SE5	S8	SE11	SSE10	SSW11	S12	SSE11	S9	SSE11	SSE9	SE6	SSE6	S7	S9	S10	SSE6.1	S12
22-Apr	S10	SSW6	SW8	SSW8	S8	S7	S10	S10	S10	SSE14	S16	S19	SSE21	S21	S21	S20	SSW18	SSW17	SSW14	S9	S8	S8	SSE6	SSE6	S11.9	SSE21
23-Apr	SSE5	SE5	SSE4	WNW2	NE1	SSE2	SSE3	SE3	SSE10	ESE4	ENE8	NNE9	NNE13	SSE19	SSE19	SSE7	ENE8	NE13	N18	NNE22	NNE21	NNE14	N10	N5	ENE4.3	NNE22
24-Apr	N1	N2	N4	NNE8	N6	NNE3	ESE3	ENE4	E6	ESE8	SE8	E6	NNE10	N13	N14	N17	N17	N18	NNE14	NNE15	N11	NNW11	W8	SW8	NE6.2	N18
25-Apr	S5	SSE8	SSE8	S10	S11	S9	S9	S12	S15	S13	S15	S18	SSW19	W15	SE6	SSE14	SSE12	SE9	WSW3	WSW15	W12	W10	W8	W9	SSW8.1	SSW19
26-Apr	W9	W10	WNW12	WNW9	WNW9	WNW10	W10	WNW11	NW16	NW18	NW15	NW13	NNW14	N17	N12	NNE12	NE13	NE17	ENE18	NE15	NE10	N7	N9	N8	NNW8.2	NW18
27-Apr	NNW6	NW5	WNW1	SSW3	SSW4	SSW3	WSW3	NNE4	NE5	WNW5	WNW2	WSW5	SW9	WSW9	WSW9	WSW11	SSW8	SW10	SSW10	S7	SSE8	S10	SSE12	S9	SW3.9	SSE12
28-Apr	S4	NW3	SW5	WNW7	NNW7	NW7	NW14	NW23	NW28	NW24	NW24	NW28	NW27	NW26	NNW25	NNW26	N23	NNE26	NNE21	NNE17	NNE9	NNW4	NW6	NW5	NNW14.1	NW28
29-Apr	NW5	WSW2	WSW1	NW2	SW3	W2	W0	ENE2	SSE7	SE6	SSE8	ESE6	E8	ESE9	ENE13	ENE12	E13	E14	E12	E10	E10	ESE10	SE7	SSE10	ESE5.0	E14
30-Apr	SSE11	SE2	WNW3	WNW4	WNW3	WNW4	NNW3	SE5	SSE10	SSE12	SE15	SE23	SSE23	SE27	SSE27	SE27	SSE27	SSE26	SSE24	SSE18	SE16	SSE17	SSE15	SSE14	SSE13.5	SE27
SE1.6 S0.7 SSW0.9 W1.1 WSW1.3 WSW1.4 WSW1.4 SSW0.9 S1.7 S1.9 SSE2.6 SSE4.2 SSE3.7 SSE3.5 SE4.2 SE3.5 ESE4.0 ESE4.8 E4.8 E4.2 E3.3 SE2.8 SSE2.6 SSE2.9																								Diurnal Average		
NNE14 S15 S16 WSW16 WSW23 WSW19 WSW19 WSW23 NW28 NW24 SE29 SE28 ESE30 SE30 SE32 S32 SE31 S27 SSE24 NNE22 NNE21 SE21 SE21 SE20																								Diurnal Maximum		

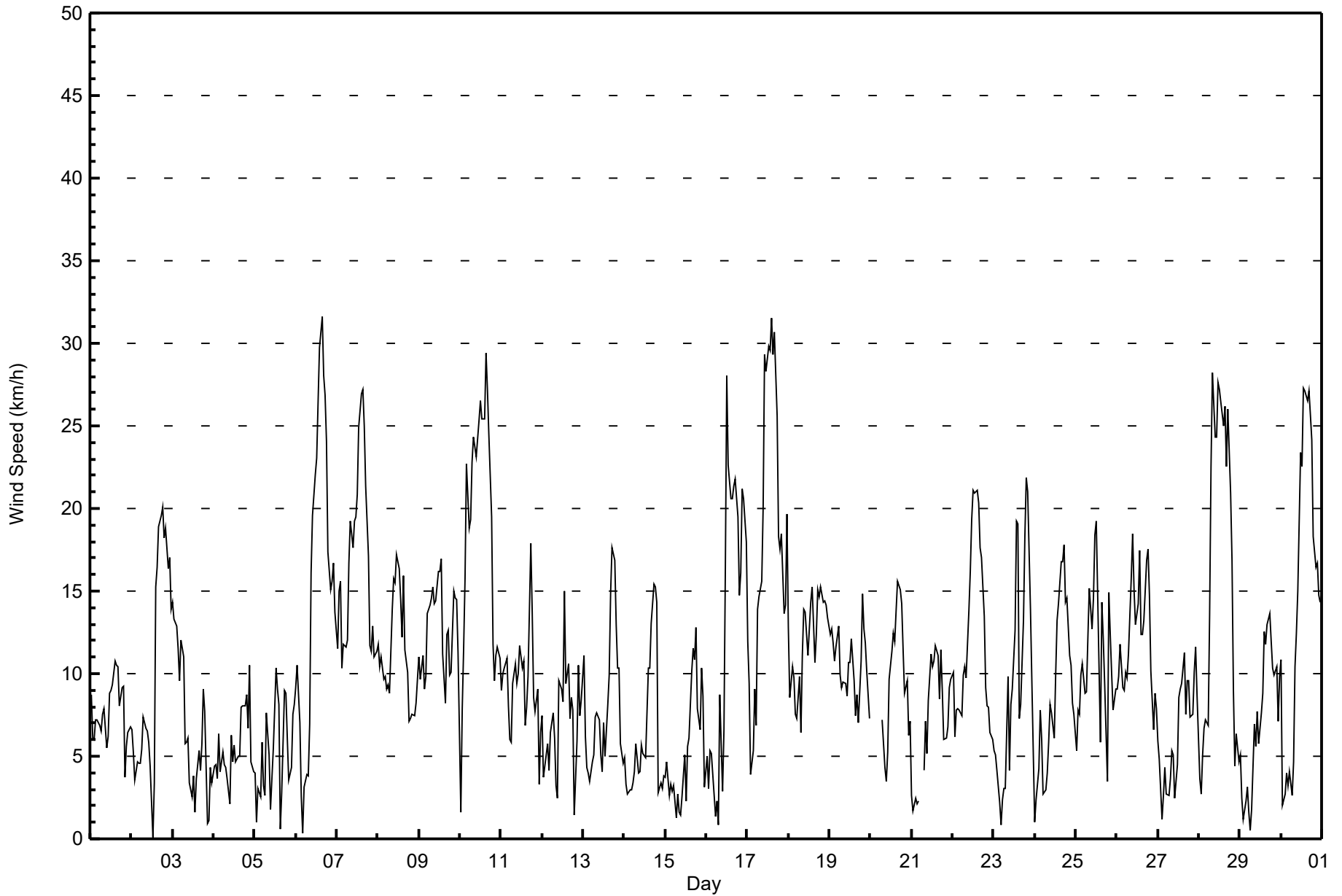
UO - Unstable Operation

All monthly, daily, and diurnal averages have been calculated using vector methods



Wood Buffalo Environmental Association
Hourly Averages

Wind Speed (WS) - km/h
Ells River - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Ells River - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	172	24.19	24.19
6 - 11	287	40.37	64.56
12 - 19	178	25.04	89.59
20 - 28	65	9.14	98.73
29 - 38	9	1.27	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 711

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Ells River - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	23	16	11	4	6	15	13	11	3	5	2	8	4	18	19	14	172
6 - 11	27	30	9	13	12	17	23	36	38	15	20	12	7	10	8	10	287
12 - 19	9	30	18	9	10	8	6	18	35	5	5	11	4	1	5	4	178
20 - 28	1	6	0	0	0	3	8	18	8	0	0	11	1	0	7	2	65
29 - 38	0	0	0	0	0	1	5	0	2	0	0	1	0	0	0	0	9
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	82	38	26	28	44	55	83	86	25	27	43	16	29	39	30	711

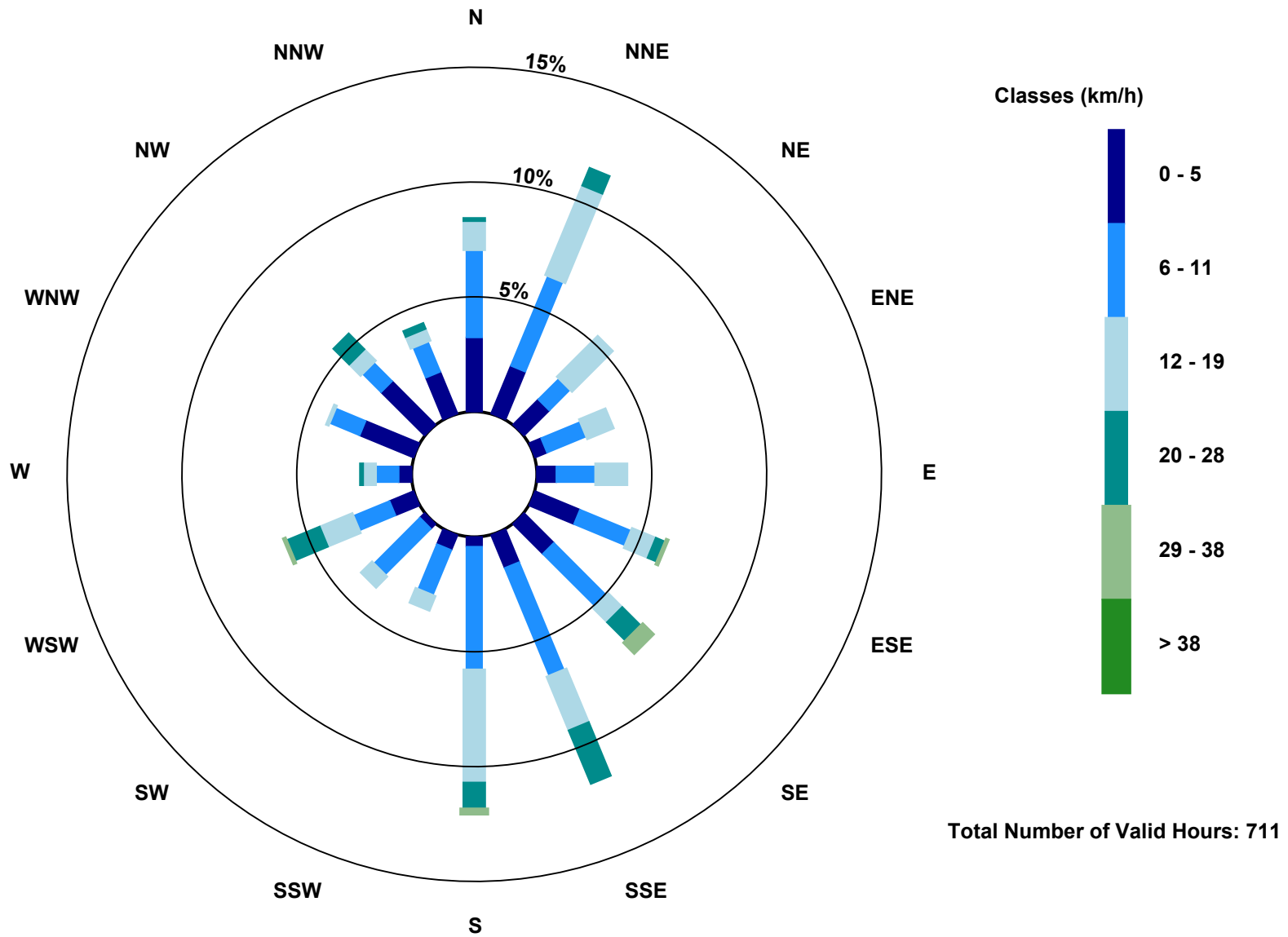
Total Number of Valid Hours: 711

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

Wind Speed (WS) - km/h
Ells River





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Ells River - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 8 km/h on Apr 10 15:00	Hours of Data: 711
Minimum Value: 0 km/h on Apr 21 21:00	Hours of Missing Data: 9
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 1 Median = 2 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 8	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-Apr	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	2	2	2	1	2	1	1	1	1	2
2-Apr	1	1	3	1	1	1	1	1	1	1	1	1	1	2	3	2	2	3	3	3	3	2	2	2	3
3-Apr	2	2	2	2	1	1	2	1	1	3	1	1	1	1	1	3	2	2	2	2	1	1	1	1	3
4-Apr	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	3	2	1	1	2	1	2	2	3
5-Apr	1	1	1	1	1	2	1	2	1	1	1	4	4	4	3	2	2	4	1	1	2	1	1	1	4
6-Apr	1	1	3	1	1	1	1	1	6	4	4	4	5	5	6	7	6	6	5	4	3	3	3	2	7
7-Apr	2	3	4	1	2	2	2	4	4	4	4	4	4	5	4	5	4	4	3	2	2	2	2	2	5
8-Apr	2	2	1	1	1	1	1	2	3	3	3	3	3	3	4	5	4	3	2	1	1	1	2	2	5
9-Apr	2	2	3	3	3	3	4	4	4	4	5	5	6	5	4	5	4	2	1	1	3	3	3	3	6
10-Apr	2	3	1	5	7	6	6	7	7	7	7	8	7	8	8	8	8	8	6	3	1	3	3	3	8
11-Apr	2	2	2	3	3	2	1	2	2	2	3	4	5	5	4	3	4	4	3	2	2	2	1	2	5
12-Apr	3	2	2	1	2	1	2	2	2	1	4	3	4	4	4	4	4	4	3	2	2	3	1	3	4
13-Apr	2	3	1	1	1	1	1	1	2	1	2	2	3	3	3	4	3	3	3	1	1	1	2	1	4
14-Apr	2	1	1	1	1	1	1	2	1	1	2	2	3	4	4	4	3	3	2	2	3	1	1	1	4
15-Apr	1	1	1	1	1	1	1	2	1	1	2	3	2	4	3	4	5	3	3	3	2	2	1	1	5
16-Apr	1	1	1	1	1	2	2	3	3	2	3	8	5	5	5	5	6	5	4	4	4	4	4	3	8
17-Apr	2	2	2	1	2	2	4	2	2	5	7	5	7	7	7	7	7	7	5	4	5	3	4	5	7
18-Apr	5	1	1	2	1	2	2	2	1	2	2	2	2	3	2	3	3	3	3	3	2	2	2	2	5
19-Apr	2	2	2	1	3	3	3	2	2	2	2	2	3	3	2	2	3	2	2	2	1	1	1	1	3
20-Apr	UO	UO	UO	UO	UO	UO	UO	2	1	1	4	4	5	5	5	5	4	4	3	3	1	1	1	1	5
21-Apr	2	1	1	1	1	UO	UO	4	2	2	4	6	4	5	5	4	4	3	2	1	0	1	1	1	6
22-Apr	1	2	2	1	1	1	1	2	2	3	4	5	6	6	5	6	4	4	3	1	2	1	1	1	6
23-Apr	1	2	2	2	1	2	2	3	3	2	4	4	4	7	5	4	6	3	6	3	2	3	3	3	7
24-Apr	2	2	1	3	2	2	3	1	2	1	2	2	3	2	2	2	3	2	2	2	2	1	1	1	3
25-Apr	1	1	2	1	1	1	2	4	3	3	3	5	7	7	3	2	4	3	4	4	4	3	3	4	7
26-Apr	3	3	4	3	2	3	3	3	5	4	4	3	4	5	4	5	4	3	3	2	3	1	1	2	5
27-Apr	1	2	1	2	1	1	1	1	1	2	2	3	4	3	4	5	4	4	2	1	2	2	1	3	5
28-Apr	3	3	2	1	3	1	6	6	6	6	6	6	6	6	7	6	7	8	4	4	2	1	1	1	8
29-Apr	2	1	1	1	2	1	1	1	2	3	4	4	4	4	4	5	4	4	3	2	1	3	1	2	5
30-Apr	2	2	1	1	1	1	1	2	4	3	4	5	5	6	5	5	5	4	4	3	3	2	2	2	6
Diurnal Maximum																									
5 3 4 5 7 6 6 7 7 7 8 8 8 8 8 8 8 8 8 6 4 5 4 4 5																									

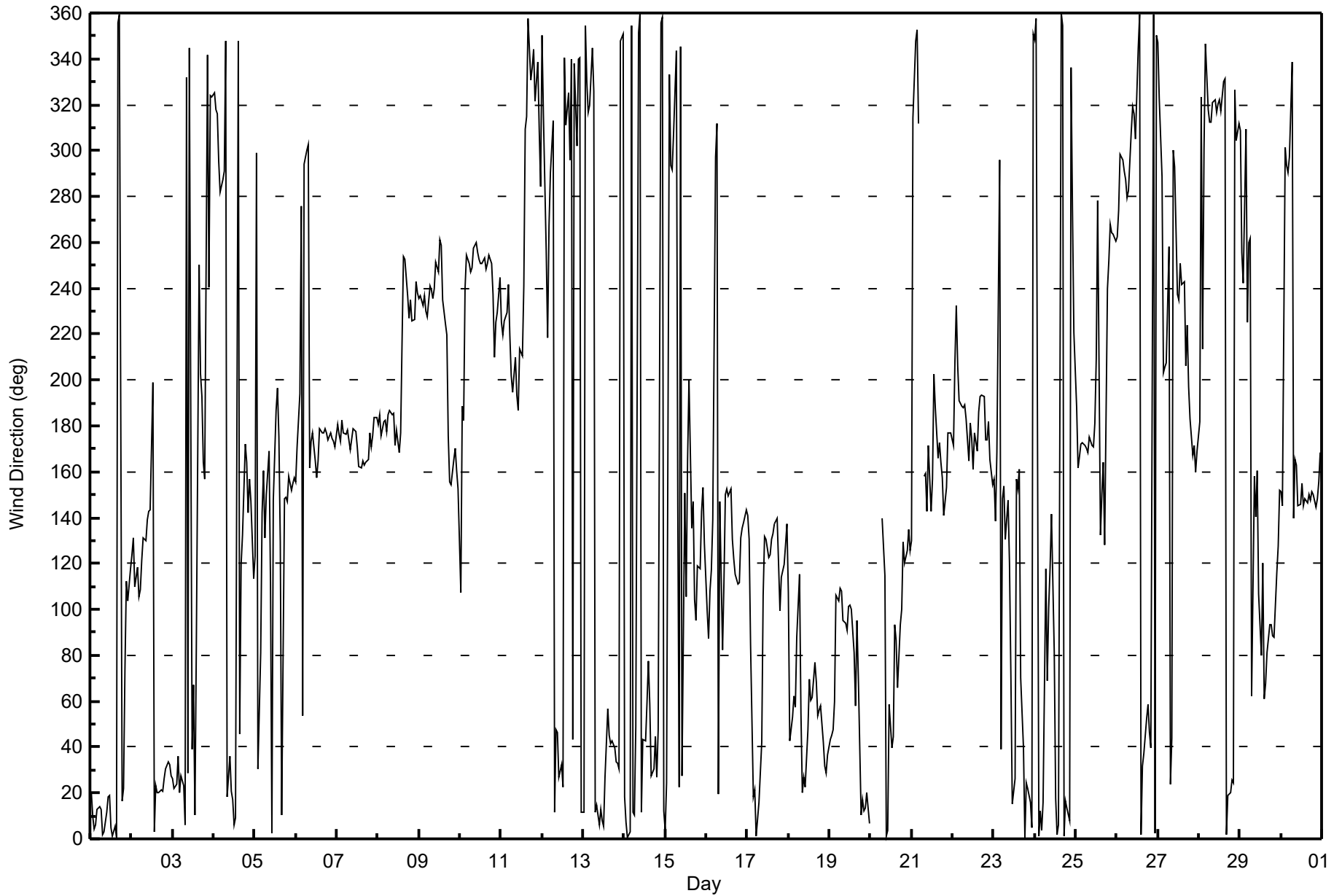
UO - Unstable Operation



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Ells River - April 2023

Direction of Maximum Speed: 177 deg on Apr 6 16:00																						Hours in Service: 720			
Direction of Maximum Daily Speed Average: 246.7 deg on Apr 10																						Hours of Data: 711			
Direction of Minimum Speed: 199 deg on Apr 2 13:00											Direction of Minimum Daily Speed Average: 0.6 deg on Apr 4											Hours of Missing Data: 9			
Monthly Average Direction: 141.2 deg																						Percent Operational Time: 98.8			
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-Apr	20	10	4	6	13	14	13	2	3	11	19	19	5	1	6	1	356	359	17	22	74	112	104	118	16.4
2-Apr	124	131	110	118	106	108	122	131	130	139	142	144	199	3	23	20	20	21	21	27	31	33	32	27	46.0
3-Apr	26	22	24	36	20	27	23	6	332	29	345	39	67	11	84	250	202	193	164	157	342	240	324	323	24.5
4-Apr	325	318	316	295	282	288	291	348	18	36	21	17	6	9	348	45	120	133	172	164	142	157	147	114	56.2
5-Apr	123	299	30	81	142	161	131	150	169	112	2	148	187	196	175	129	10	148	149	147	158	152	155	157	154.1
6-Apr	156	171	194	276	54	294	300	303	162	173	177	165	157	165	179	177	177	179	177	174	177	175	173	171	174.6
7-Apr	180	176	174	182	177	177	178	174	169	179	178	177	171	162	162	165	163	164	165	177	171	176	184	184	171.8
8-Apr	181	185	176	182	183	178	185	187	185	185	171	178	168	177	217	254	253	237	227	235	226	227	243	238	199.1
9-Apr	236	237	232	237	230	228	241	239	236	240	251	247	261	259	235	224	220	176	156	155	165	170	161	153	219.9
10-Apr	108	189	183	239	255	251	247	249	258	260	256	252	251	251	253	248	251	255	251	238	210	225	229	245	246.7
11-Apr	225	220	226	230	242	220	202	195	210	194	186	214	211	241	309	315	358	331	336	344	322	339	309	284	256.3
12-Apr	350	316	256	218	267	291	313	12	48	46	27	33	23	341	311	325	296	340	43	338	302	340	340	12	340.6
13-Apr	12	355	330	317	320	345	326	11	15	6	13	8	6	27	57	45	42	43	40	33	33	30	348	351	20.7
14-Apr	18	7	1	3	354	11	10	49	352	360	11	43	43	59	77	59	28	31	45	27	48	356	358	12	31.5
15-Apr	4	24	333	294	292	308	343	145	23	345	27	151	106	165	200	136	147	104	95	119	118	143	153	128	124.9
16-Apr	100	87	108	117	139	297	312	20	147	82	112	150	153	149	152	130	122	116	111	112	131	135	138	143	132.6
17-Apr	141	131	85	18	22	1	9	16	42	106	132	131	123	124	130	133	138	140	120	100	114	120	128	137	117.0
18-Apr	108	43	53	62	58	88	115	55	20	27	23	47	70	61	62	77	68	54	56	58	42	32	29	37	53.9
19-Apr	44	45	48	60	106	104	109	108	95	94	91	101	102	100	81	58	95	71	11	17	12	13	20	7	65.7
20-Apr	UO	UO	UO	UO	UO	UO	UO	140	115	1	3	59	40	45	93	87	66	94	100	129	120	126	135	126	--
21-Apr	130	314	348	352	312	UO	UO	158	159	143	171	143	157	202	188	166	173	164	157	141	153	177	177	177	167.1
22-Apr	172	208	233	206	191	188	188	189	183	165	181	175	161	177	169	186	193	193	193	174	174	182	165	154	181.4
23-Apr	157	139	168	296	39	149	154	130	148	120	71	15	26	157	153	161	70	40	1	25	22	16	5	351	60.2
24-Apr	349	357	1	12	4	16	118	69	101	118	142	81	18	2	6	360	354	1	16	14	8	336	275	221	10.9
25-Apr	188	162	167	172	173	172	170	169	175	172	171	181	209	278	132	150	164	128	240	252	268	264	264	260	192.5
26-Apr	262	274	298	296	291	288	279	282	308	319	316	305	345	360	2	32	37	53	59	47	40	360	2	350	340.5
27-Apr	347	323	288	203	205	207	258	24	44	300	293	237	235	251	241	243	206	224	197	183	167	171	160	169	216.3
28-Apr	182	324	214	301	346	318	312	313	321	322	317	320	322	317	330	331	2	19	20	25	24	327	305	312	332.9
29-Apr	309	256	242	309	225	260	262	62	158	141	161	107	80	120	61	68	81	93	94	88	88	116	127	152	102.9
30-Apr	151	145	301	294	291	297	339	140	165	163	145	146	155	146	149	146	150	148	151	150	145	148	156	168	151.8
129.8 173.7 206.9 261.0 239.5 245.0 250.1 203.2 182.6 169.5 165.2 159.4 153.3 166.0 145.2 142.1 120.9 104.6 94.0 85.6 99.0 127.1 146.7 155.8																									
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
Ells River - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 107 deg on Apr 23 05:00	Hours of Data: 711
Minimum Value: 5 deg on Apr 1 06:00	Hours of Missing Data: 9
Percentiles: P ₁ = 6 P ₁₀ = 8 Q ₁ = 11 Median = 17 Q ₃ = 27 P ₉₀ = 50 P ₉₉ = 88	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-Apr	9	16	20	14	5	5	5	11	11	18	11	22	12	12	14	13	11	15	6	9	46	12	12	14	46
2-Apr	11	9	34	14	13	11	11	9	12	16	12	14	93	27	12	6	8	8	7	7	7	8	7	7	93
3-Apr	7	6	8	7	7	7	6	21	18	35	23	54	25	66	27	60	47	31	12	13	79	64	12	14	79
4-Apr	17	16	15	10	26	15	14	20	16	24	11	22	15	35	22	54	29	17	15	8	12	8	19	32	54
5-Apr	22	79	27	42	9	51	49	8	27	73	19	57	35	52	30	91	21	12	8	10	50	16	6	6	91
6-Apr	9	9	9	31	90	20	8	19	78	16	14	12	11	13	15	13	13	13	11	10	10	9	9	9	90
7-Apr	10	10	9	9	9	8	9	12	12	15	16	13	15	12	10	11	10	10	9	11	7	10	9	9	16
8-Apr	9	11	9	8	6	6	8	12	13	12	14	13	16	15	40	23	31	26	16	15	13	12	15	13	40
9-Apr	15	18	17	20	17	17	19	18	19	20	24	24	26	24	36	54	26	16	6	7	10	10	10	10	54
10-Apr	88	17	8	23	18	22	19	21	19	22	22	23	21	23	24	22	21	21	20	20	12	16	18	19	88
11-Apr	18	15	16	17	23	24	20	15	20	22	23	33	52	44	54	50	39	14	10	13	12	19	45	18	54
12-Apr	41	61	45	21	28	14	14	46	38	45	22	19	45	24	42	30	50	41	29	66	13	16	16	17	66
13-Apr	12	20	16	21	18	17	23	8	16	18	33	70	37	66	45	31	16	11	8	5	6	6	21	22	70
14-Apr	13	19	40	33	20	24	18	32	14	20	42	56	53	41	36	32	18	14	7	9	66	21	23	17	66
15-Apr	25	14	19	16	11	25	55	69	83	92	71	59	87	67	69	38	28	20	13	11	10	9	8	55	92
16-Apr	39	32	12	18	19	69	22	67	19	70	44	23	12	16	15	19	17	14	11	13	10	9	8	9	70
17-Apr	9	10	43	18	10	20	17	9	12	22	14	13	17	15	14	13	18	20	13	12	14	13	12	14	43
18-Apr	29	18	8	12	10	25	13	27	5	7	8	27	14	11	14	16	14	11	8	10	7	9	6	8	29
19-Apr	8	8	7	12	14	12	15	16	13	14	13	13	14	14	17	11	16	23	13	6	7	10	6	17	23
20-Apr	UO	UO	UO	UO	UO	UO	UO	16	34	26	45	37	34	34	43	27	23	16	16	9	7	8	7	8	45
21-Apr	65	30	34	19	26	UO	UO	32	22	45	44	40	48	44	37	33	39	18	28	6	7	10	5	6	65
22-Apr	6	29	22	12	9	11	9	16	22	20	24	24	19	23	18	20	19	16	15	11	8	5	15	7	29
23-Apr	12	11	56	77	107	61	68	33	20	38	17	32	35	22	19	44	54	15	18	7	8	8	25	47	107
24-Apr	92	79	15	11	33	54	65	21	28	15	20	21	22	14	13	12	13	15	10	8	12	16	16	19	92
25-Apr	36	7	8	8	8	10	11	13	14	21	21	18	43	22	74	11	44	17	70	19	18	19	27	21	74
26-Apr	21	19	16	17	15	18	19	18	21	12	20	26	22	23	26	34	23	15	11	9	10	16	10	19	34
27-Apr	16	43	83	52	29	63	47	28	19	57	92	67	41	29	37	32	41	30	13	10	7	9	6	17	92
28-Apr	63	55	60	36	32	16	14	13	13	16	17	15	18	17	19	16	30	15	11	7	8	34	9	14	63
29-Apr	23	32	60	42	49	62	87	36	22	45	39	78	51	53	29	36	33	17	13	12	8	11	14	11	87
30-Apr	6	88	33	12	15	25	37	67	23	27	15	12	20	12	15	12	10	9	8	7	7	6	8	8	88
Diurnal Maximum																									
92 88 83 77 107 69 87 69 83 92 92 78 93 67 74 91 54 41 70 66 79 64 45 55																									

UO - Unstable Operation



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

**AMS506
JACKFISH 1
APRIL 2023**

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
 APRIL 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	686	34	34	100	39.5	0	7.5	0
H2S (ppb) Average	686	34	34	100	0.7	0	0.2	0
NO2 (ppb) Average	685	35	35	100	13.5	0	3.8	-
NO (ppb) Average	685	35	35	100	10.5	-	1.5	-
NOX (ppb) Average	685	35	35	100	24	-	5.4	-
Temperature 2 m (C) Average	720	0	0	100	19.1	-	11.7	-
Relative Humidity (%) Average	720	0	0	100	95	-	79.7	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	19	-	13	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
 APRIL 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	686	0.83	2.7	-	0	0	0	0.1	0.4	1.4	39.5
H2S (ppb) Average	686	0.07	0.1	-	0	0	0	0	0.1	0.2	0.7
NO2 (ppb) Average	685	1.61	1.5	-	0	0.4	0.7	1.2	1.9	3.4	13.5
NO (ppb) Average	685	0.41	0.8	-	0	0	0	0.1	0.4	1.2	10.5
NOX (ppb) Average	685	2.03	2.3	-	0.1	0.4	0.7	1.3	2.3	4.5	24
Temperature 2 m (C) Average	720	3.93	5.5	-	-8.2	-3.3	0.1	3.7	7.7	11.4	19.1
Relative Humidity (%) Average	720	53.92	20.2	-	16.5	27	37.3	54	70.4	82.1	95
Wind Speed 10 m (km/h) Average	719	7	4	-	0	3	4	6	9	12	19
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
APRIL 2023

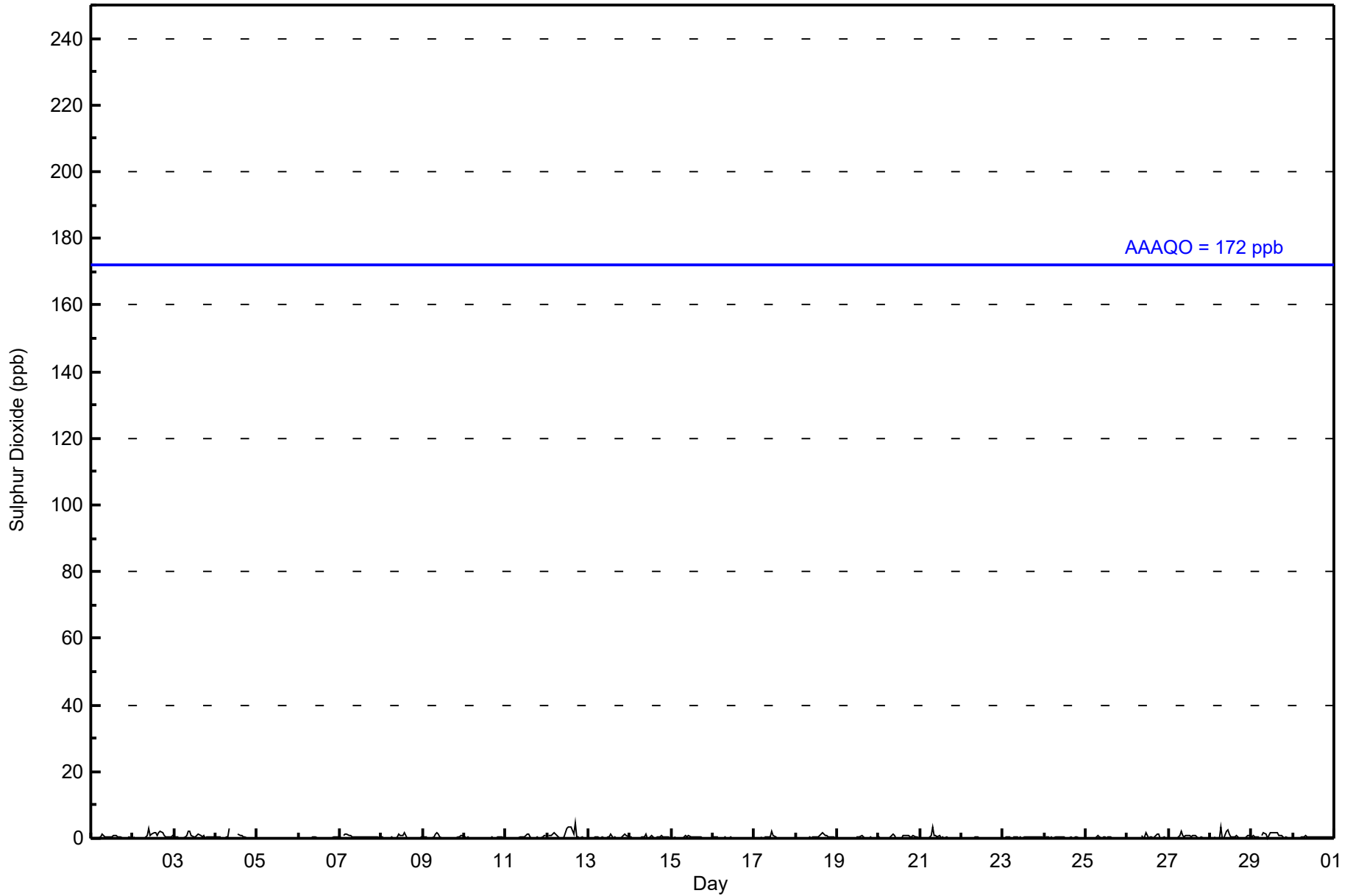
OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction	29 Apr 2023 07:00	29 Apr 2023 07:00	1	Flat line in sensor output signal



Wood Buffalo Environmental Association
Hourly Averages

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	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: 684

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	9	22	28	40	49	72	61	121	76	58	33	36	23	19	26	8	681
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
Totals	9	22	28	40	49	72	61	121	76	58	33	36	23	19	26	8	681

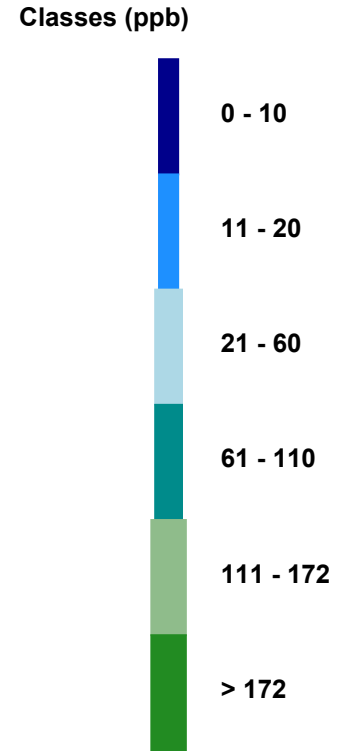
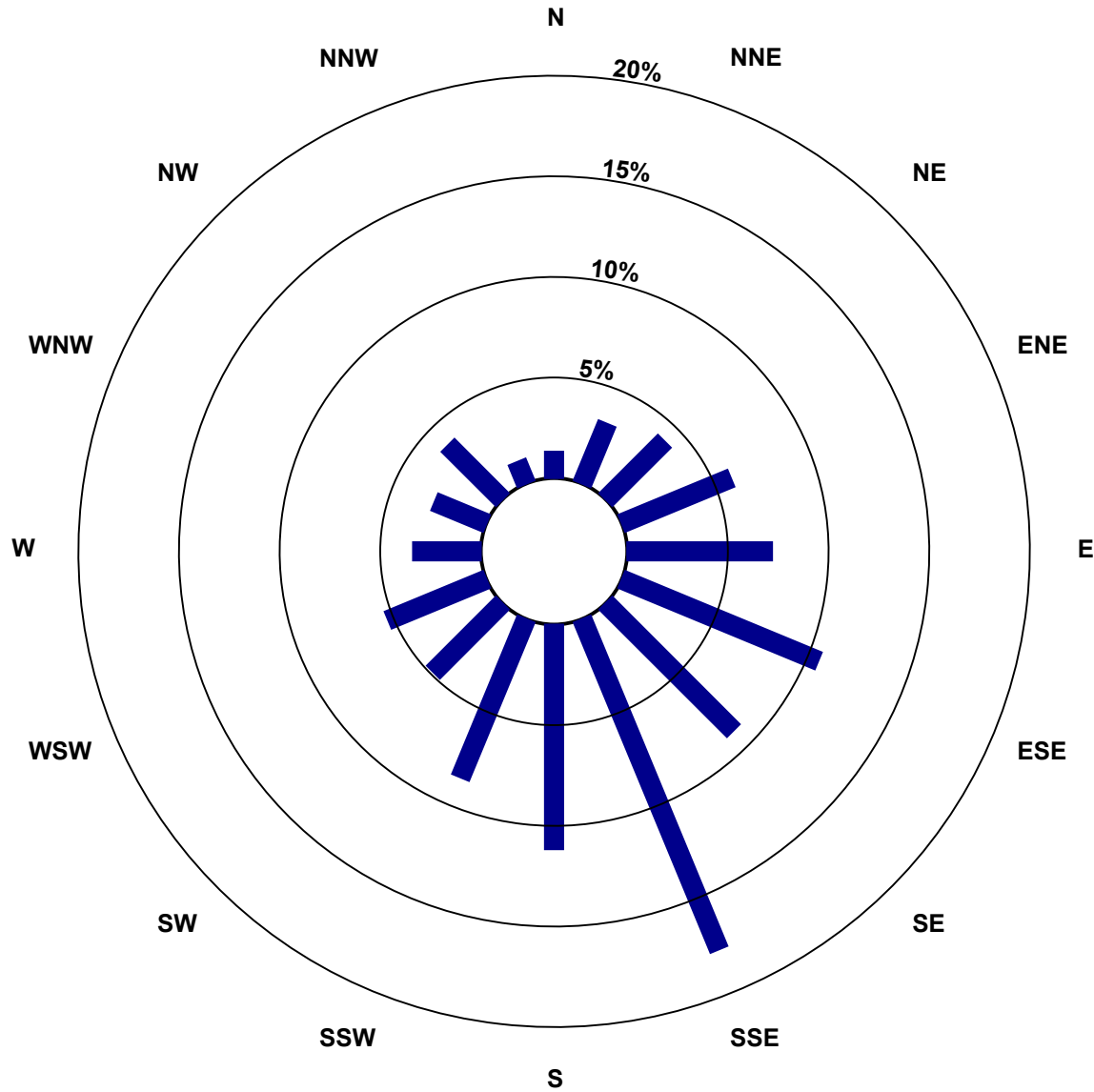
Total Number of Valid Hours: 681

Total Number of Hours: 720

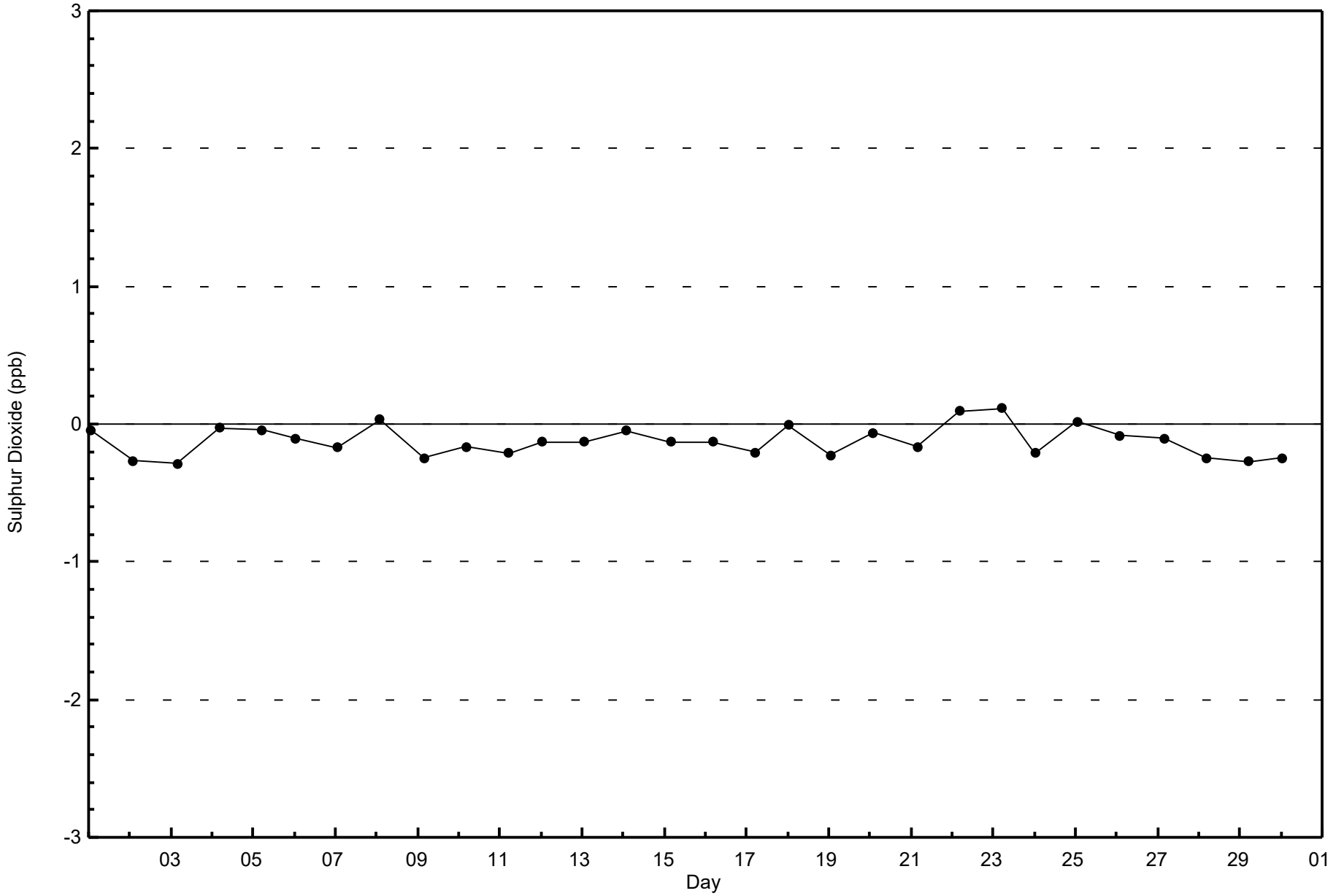


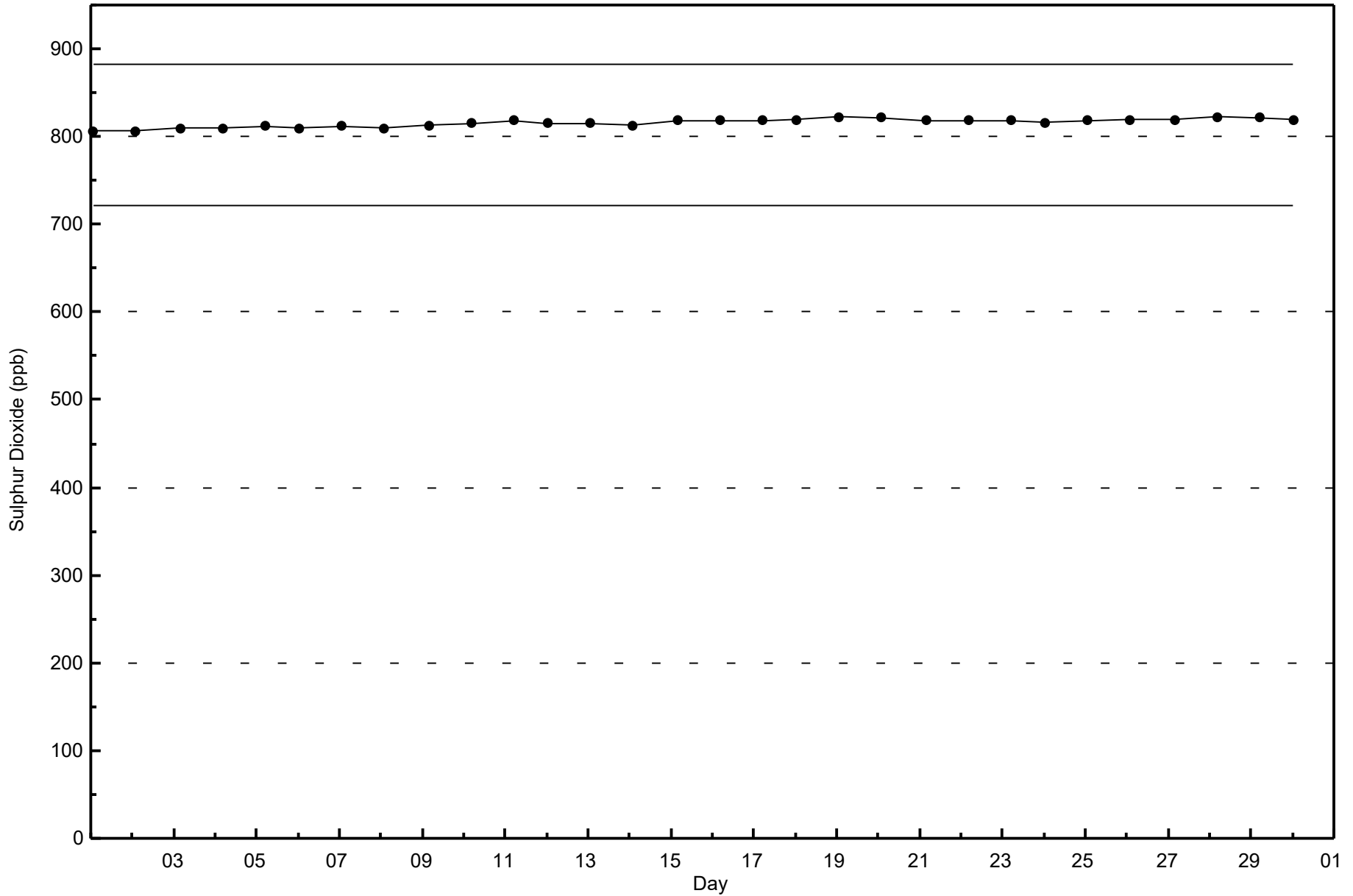
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3



Total Number of Valid Hours: 681







Number of Exceedences (AAAQO):	1-hr: 0	24-hr: 0	Hours in Service:	720
Maximum Value: 0.7 ppb on Apr 14 07:00	Maximum Daily Average: 0.3 ppb on Apr 11		Hours of Data:	681
Minimum Value: 0.0 ppb on Apr 2 12:00	Minimum Daily Average: 0.1 ppb on Apr 9		Hours of Missing Data:	39
Maximum Diurnal Average: 0.2 ppb at hour 7	Minimum Diurnal Average: 0.1 ppb at hour 17		Hours of Calibration:	35
Monthly Average: 0.16 ppb	Percentiles: P ₁ = 0.0 P ₁₀ = 0.1 Q ₁ = 0.1 Median = 0.1 Q ₃ = 0.2 P ₉₀ = 0.3 P ₉₉ = 0.5		Percent Operational Time:	99.4

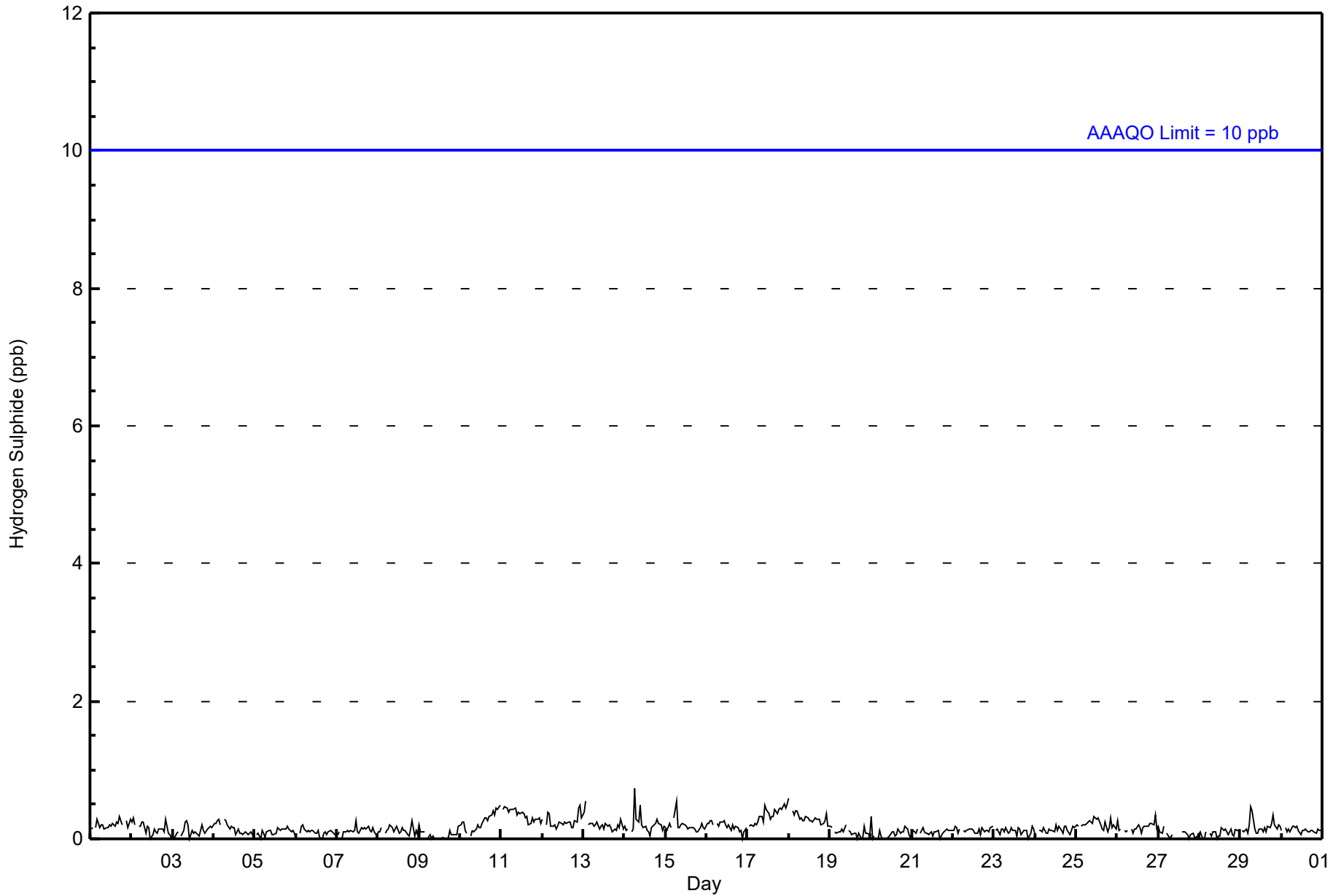
Day	Hourly Period Ending At (MST)																								Daily Average	Daily Maximum																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																									
1-Apr	0.1	0.2	Z	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2	UO	UO	0.3	0.2	0.3	0.2	0.3																							
2-Apr	0.2	0.3	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.2	0.2	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	0.0	0.1	0.3																						
3-Apr	0.0	0.0	0.1	0.1	Z	0.0	0.1	0.2	0.3	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3																						
4-Apr	0.2	0.2	0.3	0.3	0.2	Z	0.3	0.3	0.2	0.1	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	0.2	0.3																						
5-Apr	Z	0.1	0.1	0.0	0.1	0.1	0.0	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	0.1	0.1	0.2																						
6-Apr	0.0	Z	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2																						
7-Apr	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.3																						
8-Apr	0.1	0.1	0.2	Z	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.0	0.1	0.1	0.1	0.3																						
9-Apr	0.2	0.1	0.1	0.1	Z	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	0.2	0.1	0.2																						
10-Apr	0.2	0.2	0.2	0.1	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.5	0.2	0.5																						
11-Apr	Z	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.5																						
12-Apr	0.3	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	0.3	0.2	0.2	0.2	0.3	0.2	0.4	0.5	0.3	0.3	0.5																							
13-Apr	0.4	0.5	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.2	0.5																							
14-Apr	0.2	0.1	0.1	Z	0.1	0.1	0.7	0.3	0.2	0.5	0.2	0.2	0.2	0.1	0.1	0.0	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.7																							
15-Apr	0.2	0.1	0.2	0.2	Z	0.3	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.6																							
16-Apr	0.2	0.2	0.3	0.3	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.2	0.3																							
17-Apr	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.3	0.5																							
18-Apr	0.6	Z	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.2	0.3	0.6																							
19-Apr	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	M	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.2																							
20-Apr	0.3	0.0	0.0	Z	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	0.1	0.1	0.0	0.1	0.3																							
21-Apr	0.1	0.1	0.1	0.1	Z	0.1	0.2	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	0.1	0.1	0.1	0.1	0.2																							
22-Apr	0.1	0.2	0.2	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2																							
23-Apr	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.2																							
24-Apr	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2																							
25-Apr	0.2	0.2	Z	0.2	0.2	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	0.2	0.3	0.2	0.2	0.1	0.3																							
26-Apr	0.3	0.1	0.2	Z	0.1	0.1	0.1	DF	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	0.2	0.3	0.1	0.2	0.3																							
27-Apr	0.2	0.1	0.1	0.2	Z	0.1	0.0	0.0	0.1	C	C	C	C	C	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2																							
28-Apr	0.1	0.0	0.0	0.0	0.1	Z	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2																							
29-Apr	Z	0.1	0.1	0.1	0.1	0.2	0.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.5																							
30-Apr	0.1	Z	0.2	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	0.1	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	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	Diurnal Average
																								0.6	0.5	0.5	0.4	0.4	0.4	0.7	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	Diurnal Maximum

Z - zerospan	C - Calibration	M - Maintenance	DF - DAS Failure	UO - Unstable Operation
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb				



Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	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: 681

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	11	26	29	38	49	50	46	101	103	45	55	51	35	23	13	6	681
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
Totals	11	26	29	38	49	50	46	101	103	45	55	51	35	23	13	6	681

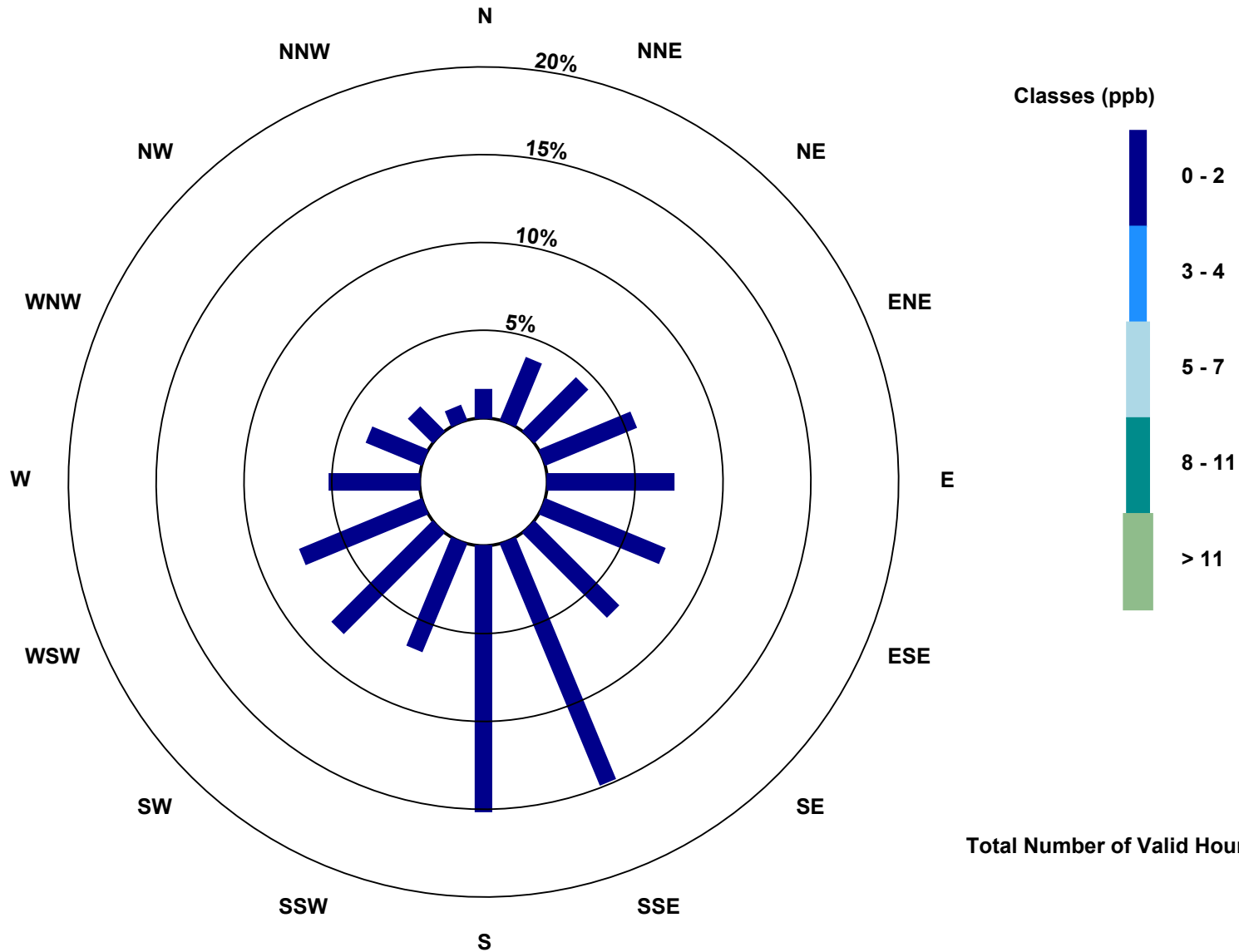
Total Number of Valid Hours: 681

Total Number of Hours: 720

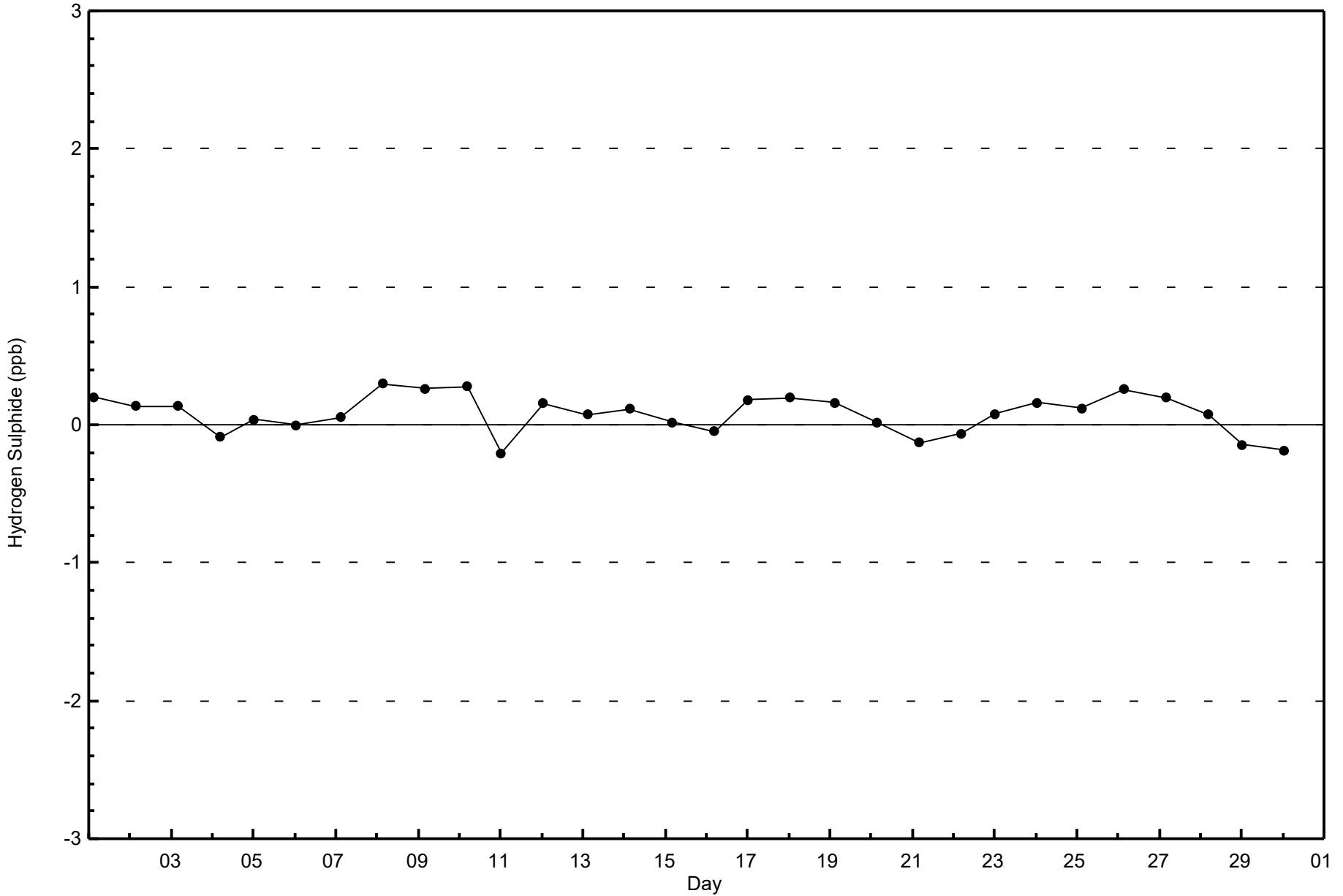


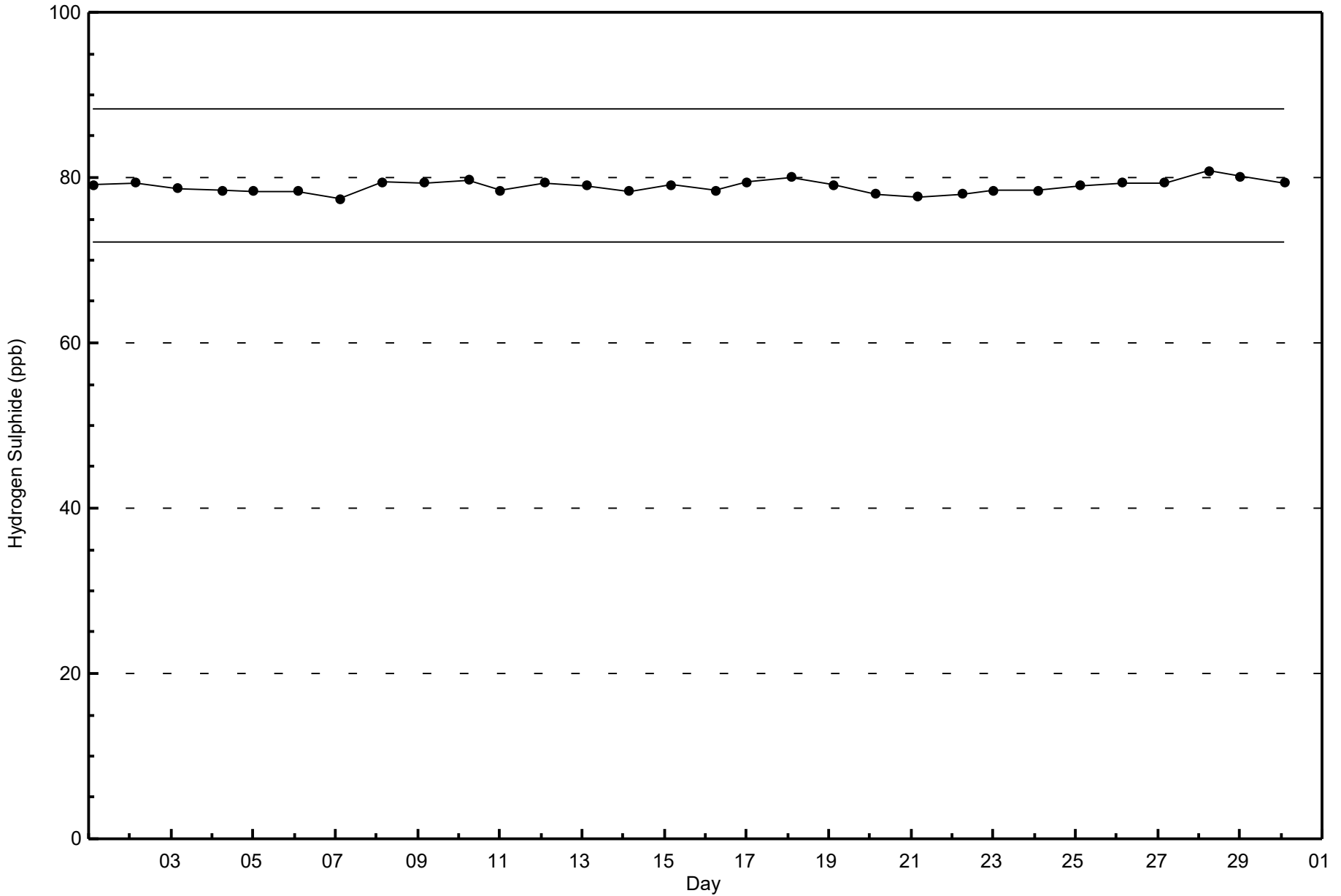
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Jackfish 2/3



Total Number of Valid Hours: 681

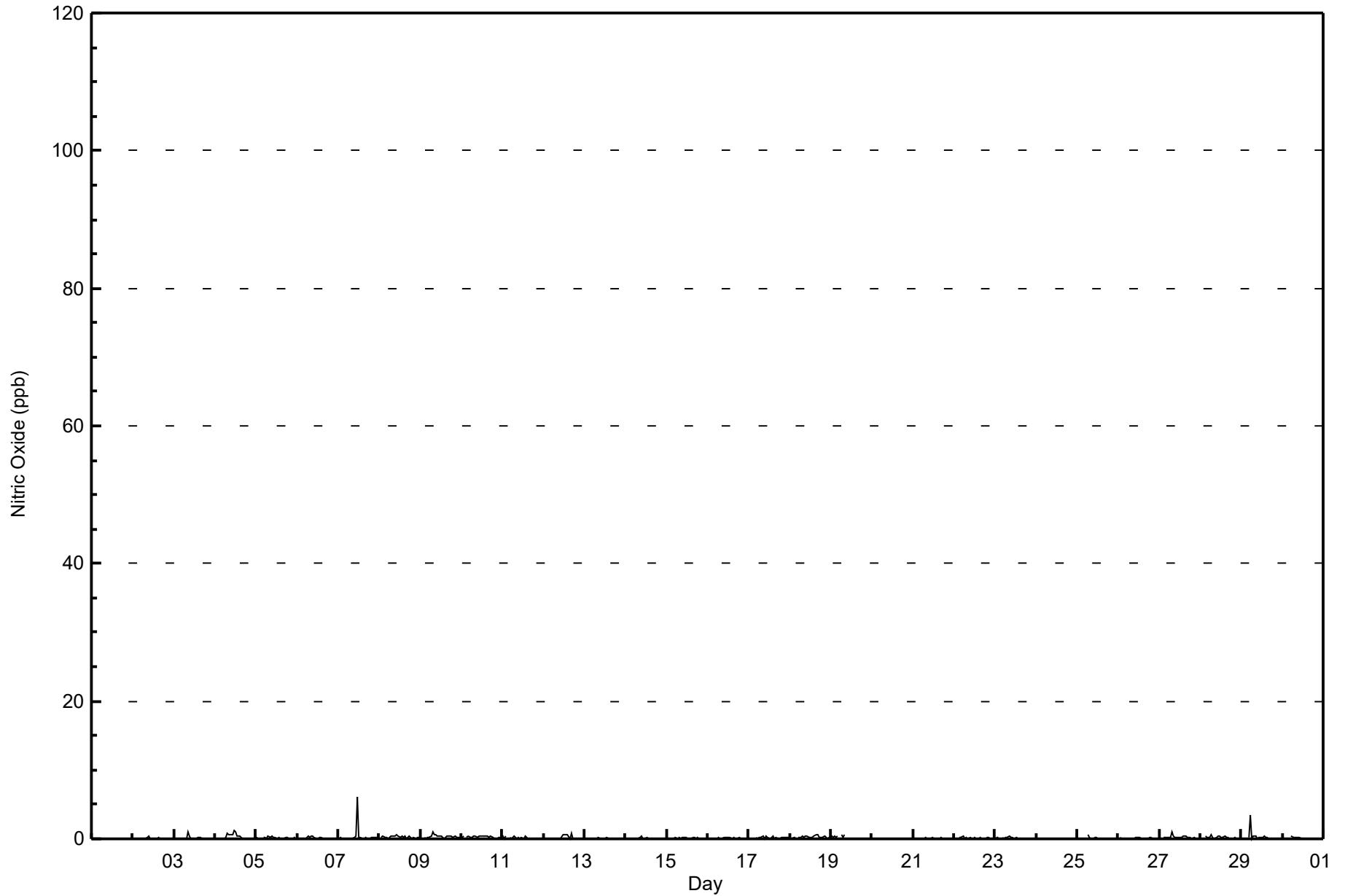






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	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: 661

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Totals
0 - 20	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661
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
Totals	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661

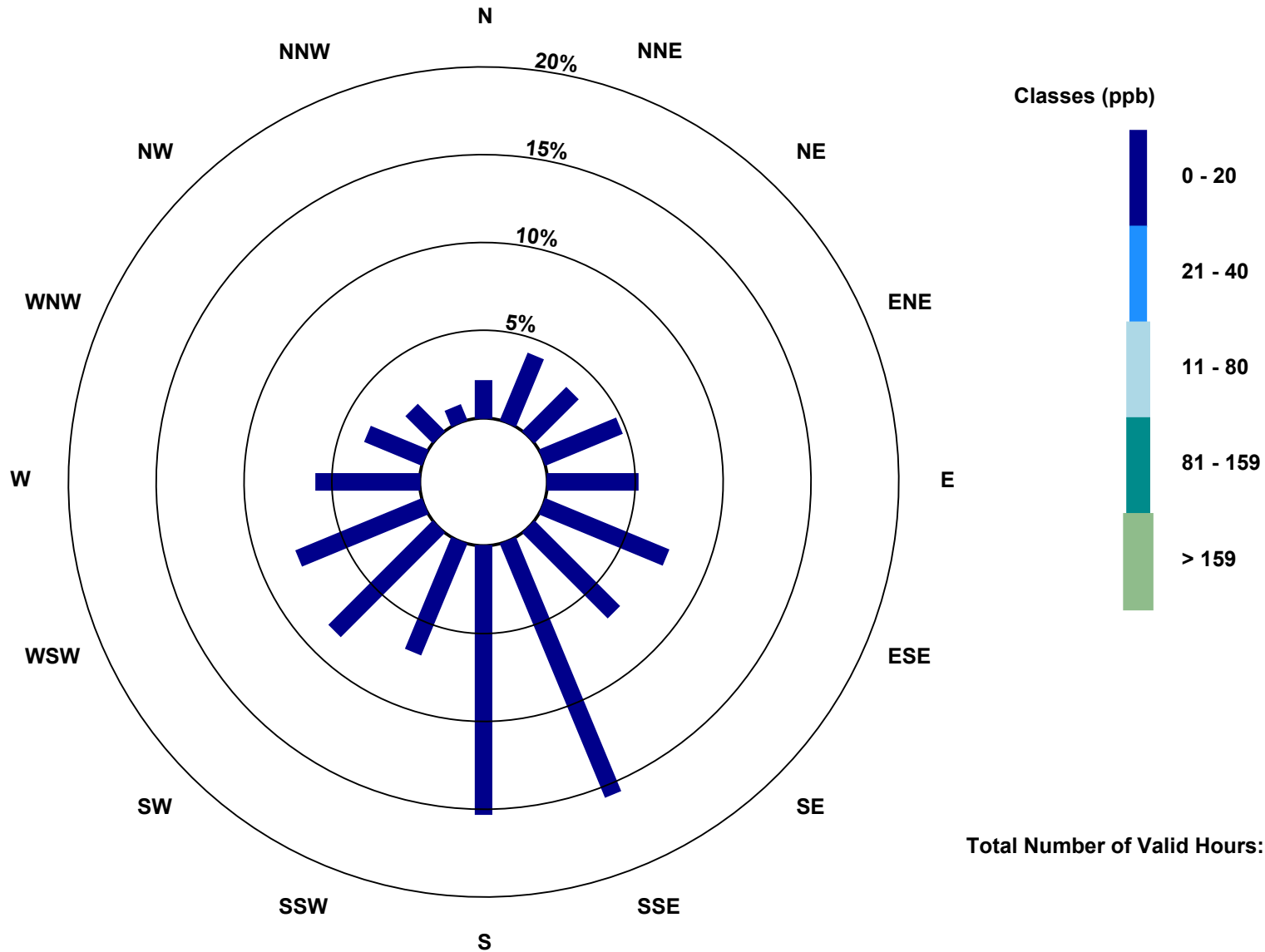
Total Number of Valid Hours: 661

Total Number of Hours: 720

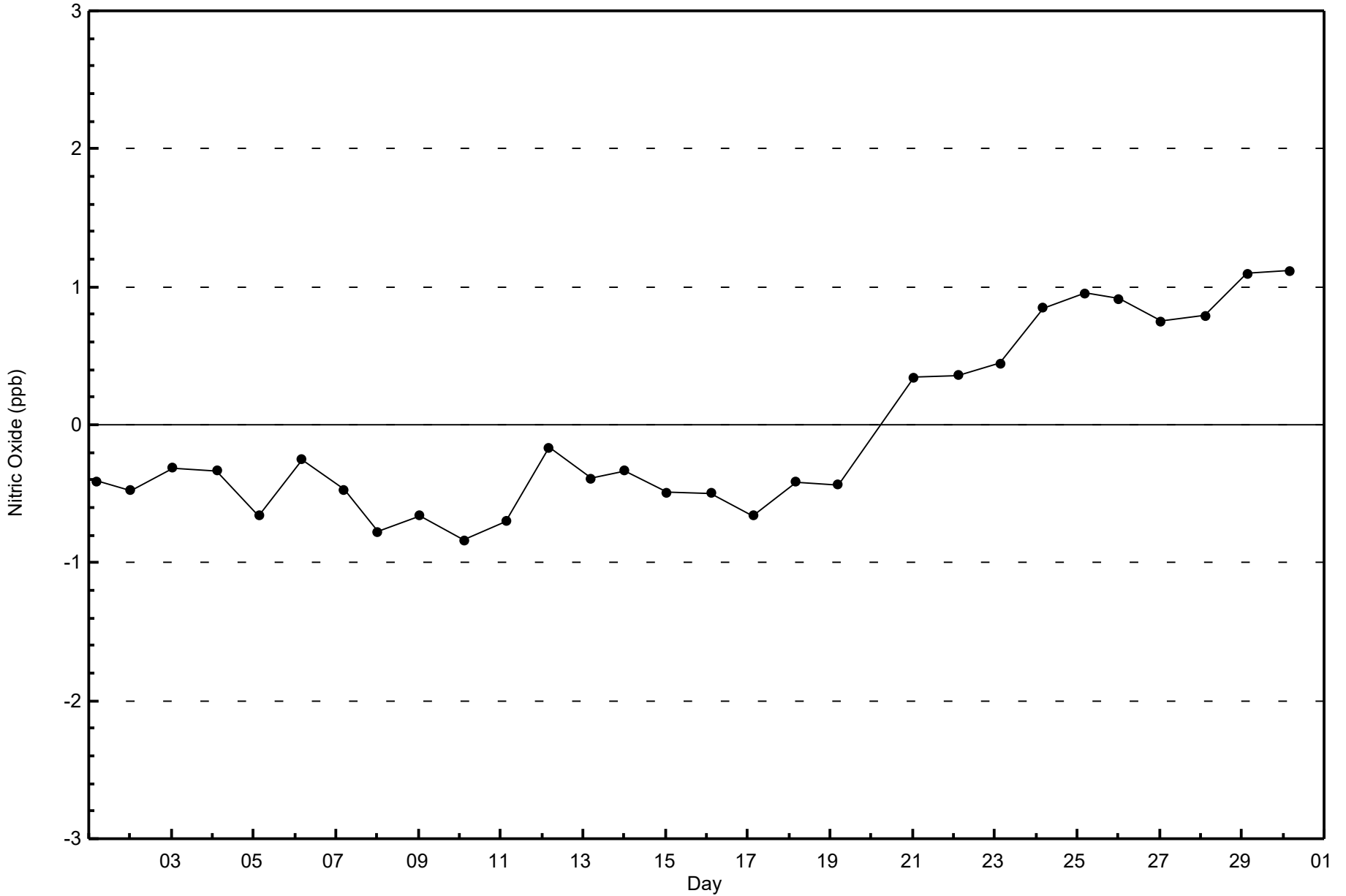


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitric Oxide (NO) - ppb
Jackfish 2/3



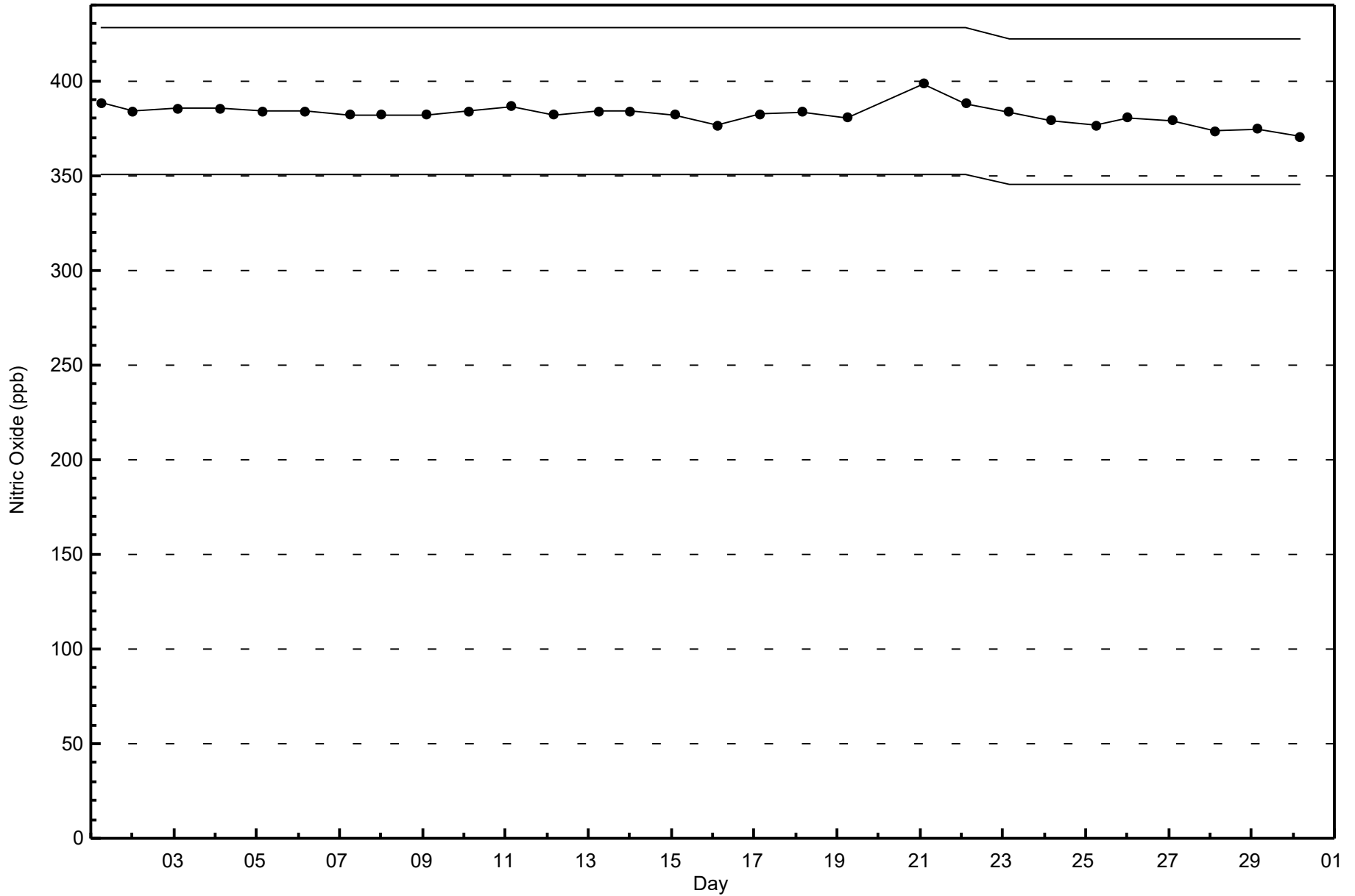
Total Number of Valid Hours: 661





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

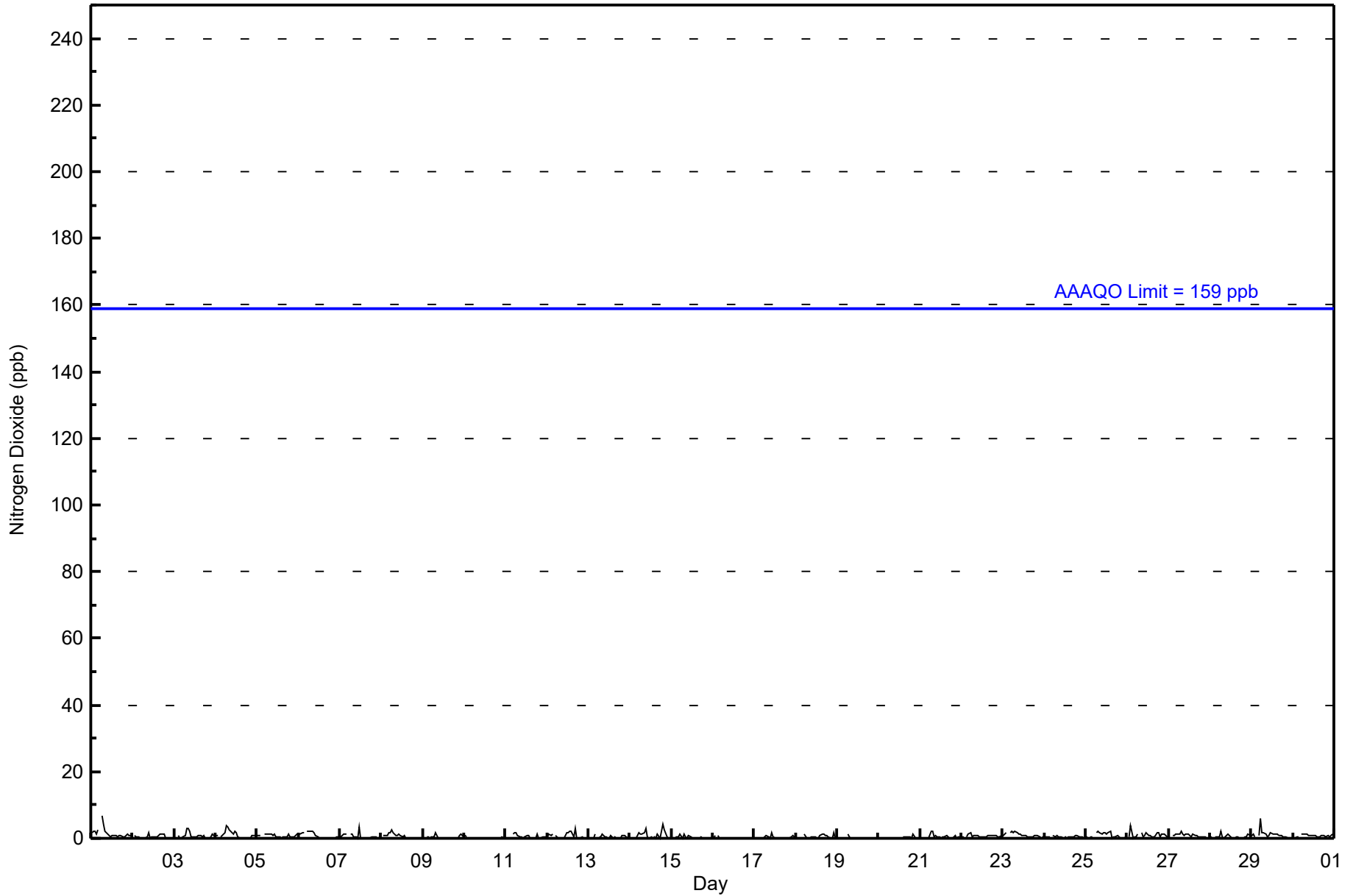
Jackfish 2/3 - April 2023

Number of Exceedences (AAAQO):		1-hr: 0		24-hr: 0		Hours in Service:		720																		
Maximum Value: 6.8 ppb on Apr 1 07:00		Maximum Daily Average: 1.5 ppb on Apr 1				Hours of Data:		661																		
Minimum Value: 0.0 ppb on Apr 2 07:00		Minimum Daily Average: 0.1 ppb on Apr 16				Hours of Missing Data:		59																		
Maximum Diurnal Average: 1.4 ppb at hour 7		Minimum Diurnal Average: 0.4 ppb at hour 22				Hours of Calibration:		39																		
Monthly Average: 0.65 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.1 Median = 0.5 Q ₃ = 0.9 P ₉₀ = 1.5 P ₉₉ = 3.4				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-Apr	1.9	2.1	2.2	1.3	2.4	Z	6.8	4.2	2.1	1.3	0.9	0.6	0.8	0.8	0.5	0.7	0.8	0.5	0.6	1.0	1.1	0.8	0.9	1.5	6.8	
2-Apr	Z	0.9	0.6	0.3	0.2	0.2	0.0	0.0	0.4	1.7	0.2	0.4	0.4	0.4	0.3	1.0	1.3	1.3	1.2	0.0	0.0	0.0	0.0	0.2	0.5	1.7
3-Apr	0.0	Z	0.9	0.0	0.0	0.3	0.9	2.8	2.9	2.1	0.6	0.3	0.4	0.5	0.9	0.8	0.4	0.7	0.1	0.1	0.1	0.6	1.1	0.9	0.8	2.9
4-Apr	0.8	0.7	Z	0.6	0.8	1.8	4.0	3.3	2.4	1.9	1.4	2.0	1.5	0.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	1.0	0.9	1.1	4.0
5-Apr	0.9	1.0	0.9	Z	1.3	1.3	1.3	1.3	1.2	1.0	1.2	0.6	0.4	0.5	0.2	0.3	0.3	0.6	1.2	0.6	0.6	0.9	1.1	0.8	1.3	1.3
6-Apr	1.4	1.4	1.6	1.9	Z	2.2	2.2	2.2	2.0	1.5	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.5	0.8	2.2	
7-Apr	0.6	0.7	1.3	1.2	1.4	Z	1.2	1.1	0.5	0.5	0.2	3.5	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.4	0.3	0.2	0.3	0.6	3.5
8-Apr	Z	0.8	0.9	0.9	1.5	1.6	2.4	1.6	1.0	0.9	1.1	0.9	0.4	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.4
9-Apr	0.0	Z	0.4	0.5	0.0	0.4	0.5	1.9	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.1	1.0	0.3	1.9	
10-Apr	0.9	0.5	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	0.1	0.2	0.3	0.0	0.1	0.9
11-Apr	0.0	0.0	0.0	Z	1.4	1.5	1.5	0.7	0.3	0.3	0.1	0.3	0.7	0.7	0.1	0.0	0.0	0.0	1.2	0.0	0.2	0.6	0.5	0.6	0.5	1.5
12-Apr	0.2	1.3	1.0	1.4	Z	0.7	0.1	0.0	0.0	0.0	0.0	1.7	1.9	2.0	2.0	0.6	3.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.7	3.0
13-Apr	0.0	0.0	0.1	0.2	1.1	Z	0.4	0.4	1.1	0.4	0.3	0.0	0.2	1.0	0.0	0.3	0.0	0.0	0.0	1.0	0.7	0.8	0.4	0.0	0.4	1.1
14-Apr	Z	0.2	0.0	0.0	0.9	1.5	1.4	1.4	1.9	3.0	0.5	0.0	0.6	0.0	0.3	0.2	1.3	0.2	2.2	4.4	2.5	0.3	0.0	0.1	1.0	4.4
15-Apr	0.0	Z	0.3	0.3	0.4	1.3	0.0	1.1	0.3	0.2	1.0	0.4	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.3
16-Apr	0.2	0.8	Z	0.8	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	0.8
17-Apr	0.0	0.0	0.0	Z	0.0	0.0	0.5	0.8	0.5	0.0	1.9	0.6	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.5	0.7	0.6	0.3	1.9
18-Apr	0.3	0.2	0.0	0.0	Z	1.3	0.2	0.2	0.1	0.4	0.5	0.6	0.0	0.1	0.7	1.2	1.3	1.0	0.9	0.6	0.0	0.2	1.6	0.0	0.5	1.6
19-Apr	0.0	0.0	0.2	0.0	0.0	Z	1.3	0.4	0.0	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	--	1.3
20-Apr	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	0.6	0.6	0.5	0.6	0.4	0.0	1.2	0.0	0.0	--	1.2
21-Apr	0.0	Z	0.1	0.0	0.0	0.1	2.3	2.0	0.5	0.8	0.3	0.6	0.1	0.5	0.4	0.7	0.5	0.2	0.2	0.1	0.7	0.1	0.3	0.5	0.5	2.3
22-Apr	0.4	0.4	Z	0.3	1.1	1.6	0.6	0.9	1.0	1.0	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.8	0.7	0.8	0.7	0.6	0.6	0.7	0.7	1.6
23-Apr	1.0	1.3	1.7	Z	1.7	2.1	1.9	2.0	1.6	1.2	1.1	0.7	0.8	0.7	0.6	0.6	0.6	0.6	0.8	0.7	0.7	0.3	0.2	0.4	1.0	2.1
24-Apr	0.6	0.4	0.4	0.3	Z	0.8	0.5	0.7	0.3	0.5	0.3	0.1	0.3	0.2	0.3	0.4	0.4	0.4	0.7	0.7	0.4	0.3	0.3	0.2	0.4	0.8
25-Apr	0.3	0.1	0.2	0.3	0.6	Z	1.8	2.0	1.6	1.1	1.9	1.5	1.1	1.6	2.1	0.2	0.5	0.6	0.9	0.6	0.1	0.2	0.1	0.3	0.9	2.1
26-Apr	Z	0.5	3.7	0.2	0.3	0.6	1.1	DF	1.5	0.5	1.0	1.7	0.7	0.7	0.6	0.5	0.6	1.8	1.5	0.4	1.4	1.1	0.7	0.5	1.0	3.7
27-Apr	0.5	Z	0.7	0.8	1.2	1.4	1.3	2.3	1.1	1.0	1.2	1.2	0.8	0.6	1.3	1.0	0.8	0.6	0.3	0.4	0.4	0.3	0.2	0.2	0.9	2.3
28-Apr	0.3	0.2	Z	0.4	0.5	0.5	2.2	0.3	0.2	1.0	1.4	0.8	0.3	0.2	0.2	0.6	0.3	0.1	0.1	0.2	0.3	0.5	1.1	0.9	0.5	2.2
29-Apr	0.8	1.1	0.6	Z	1.0	6.1	1.6	1.8	1.4	0.4	0.9	1.5	1.1	1.2	1.3	1.2	0.8	0.8	0.4	0.3	0.6	0.0	0.1	0.1	1.1	6.1
30-Apr	0.1	0.2	0.3	0.5	Z	1.1	1.3	1.3	1.2	0.9	0.7	0.8	0.7	0.8	0.6	0.5	0.7	0.7	0.7	0.5	0.7	0.6	1.0	1.1	0.7	1.3
																								Diurnal Average		
																								Diurnal Maximum		
																								1.9 2.1 3.7 1.9 2.4 6.1 6.8 4.2 2.9 3.0 1.9 3.5 1.9 2.0 2.1 1.2 3.0 1.8 2.2 4.4 2.5 1.1 1.6 1.1		
																								0.4 0.6 0.8 0.5 0.7 1.2 1.4 1.3 1.0 0.8 0.7 0.8 0.5 0.5 0.5 0.4 0.5 0.4 0.5 0.4 0.5 0.4 0.5 0.4		
																								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 (NO₂) - ppb
Jackfish 2/3 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	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: 661

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661
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
Totals	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661

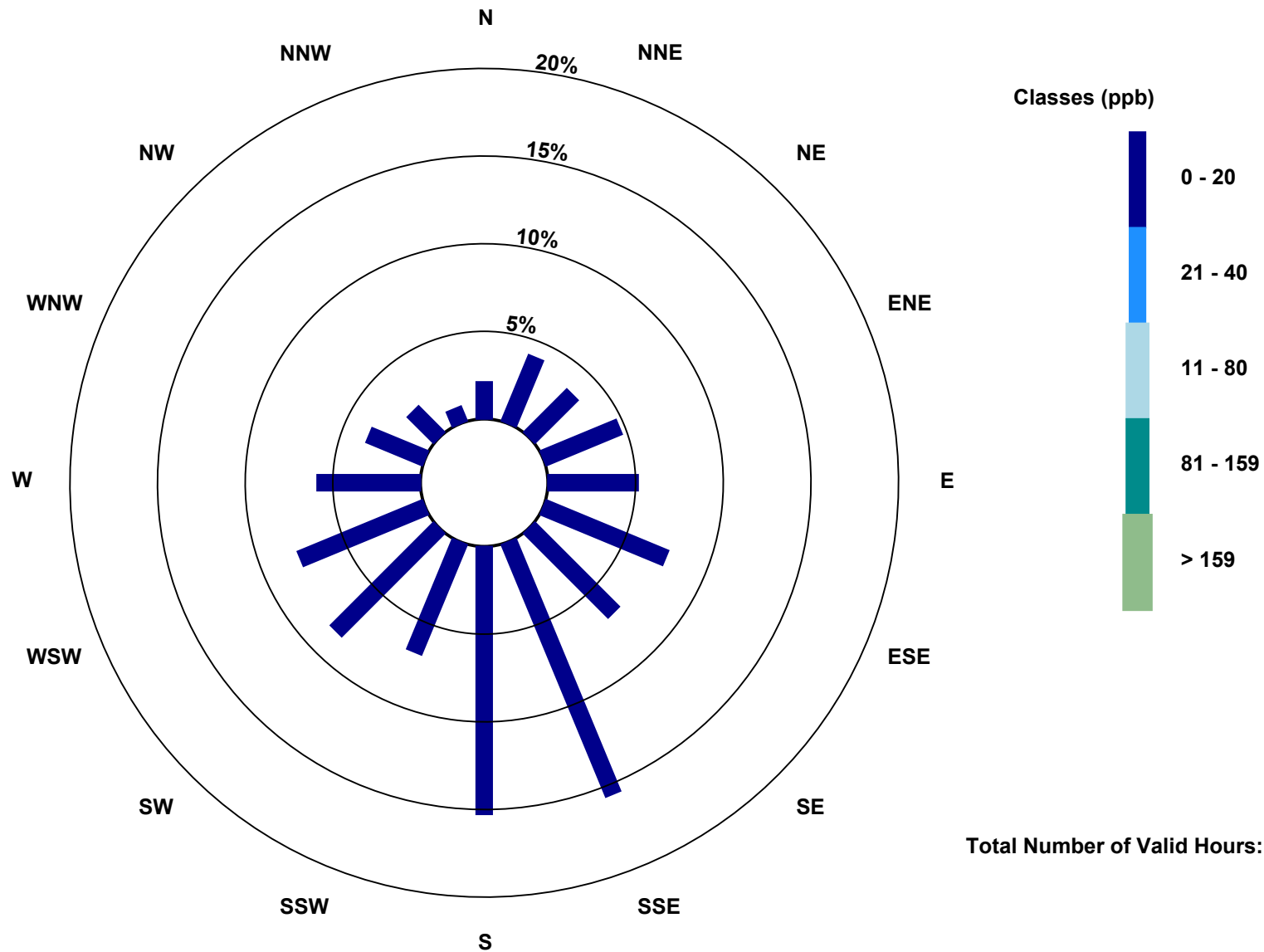
Total Number of Valid Hours: 661

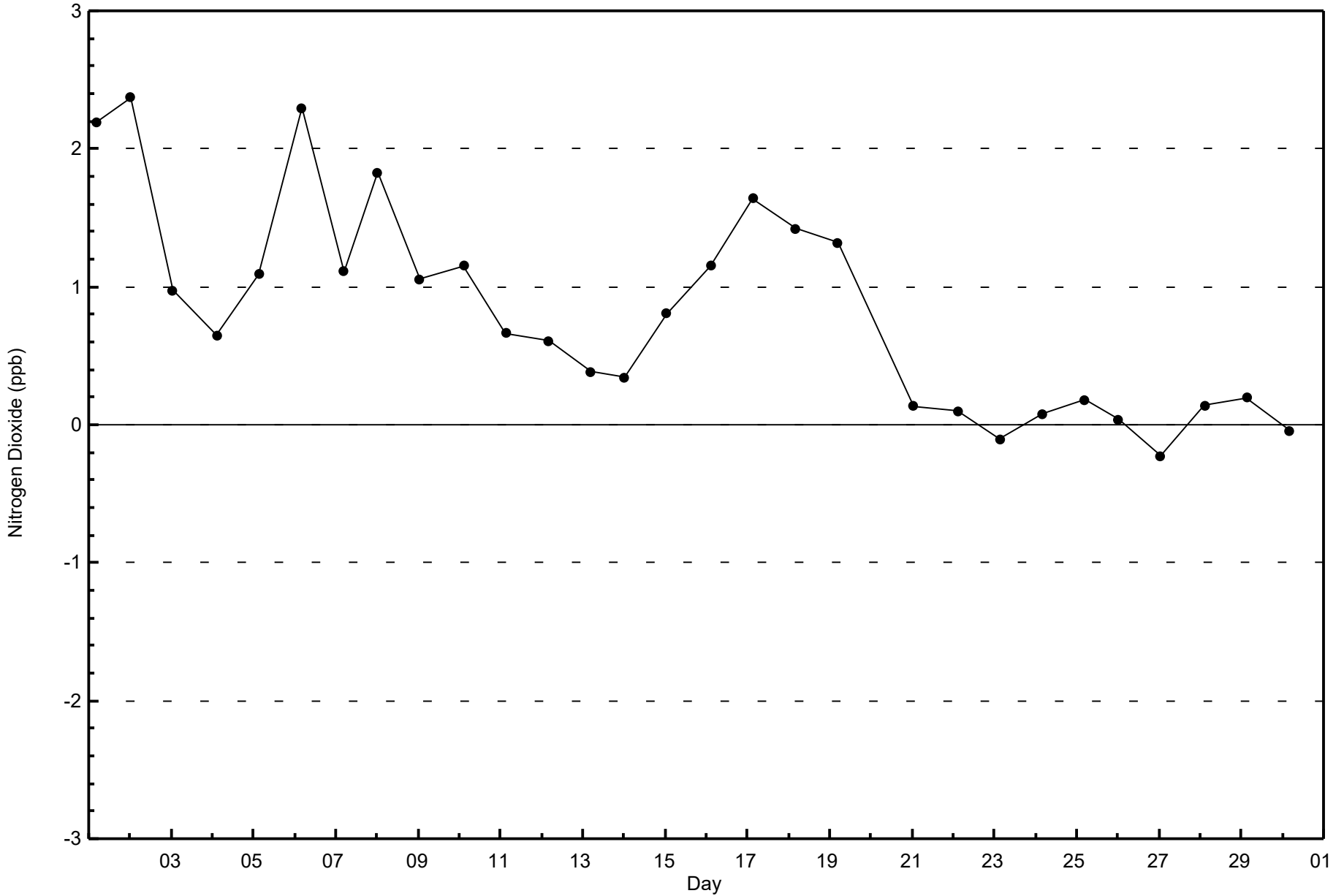
Total Number of Hours: 720

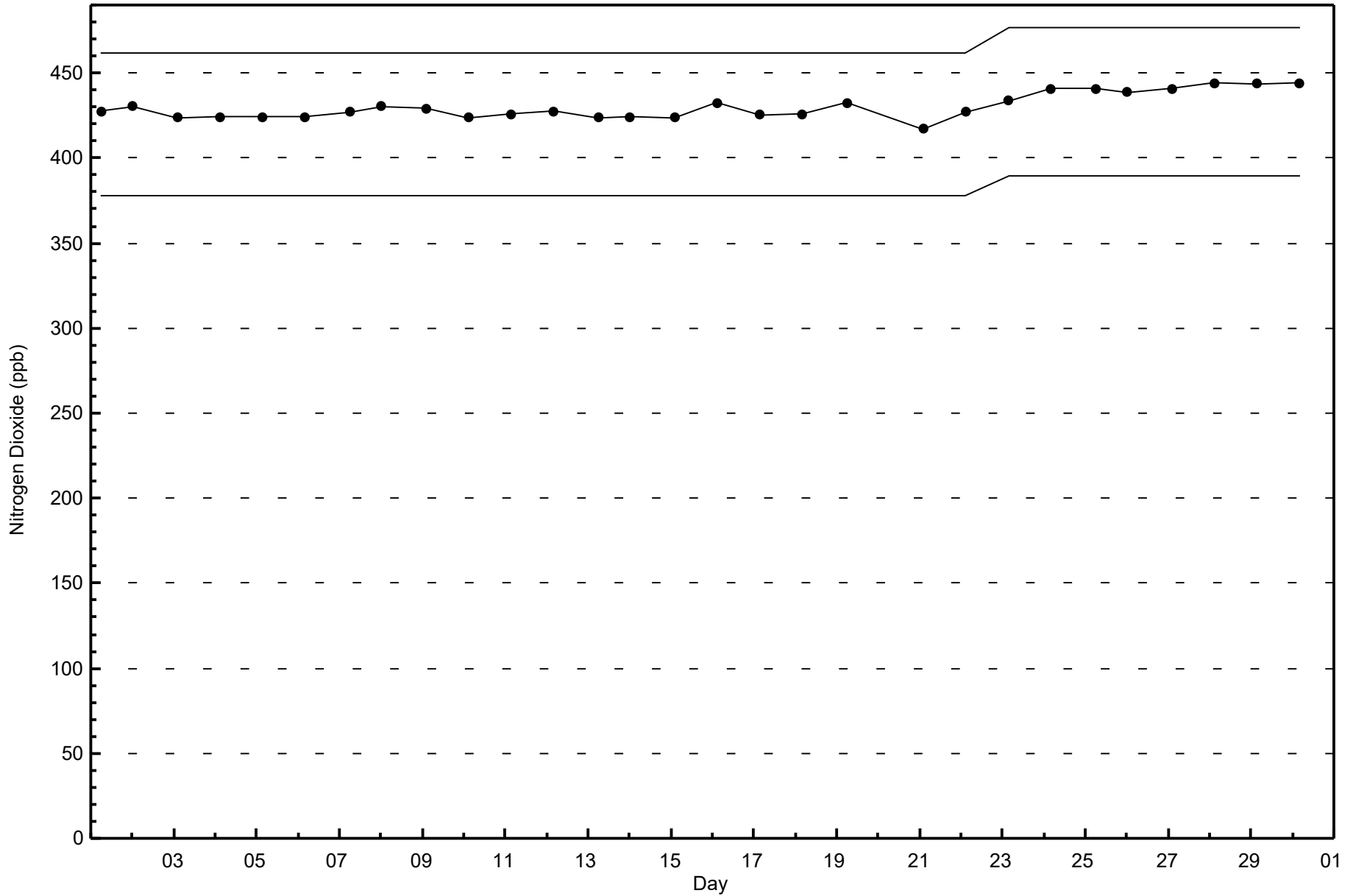


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3









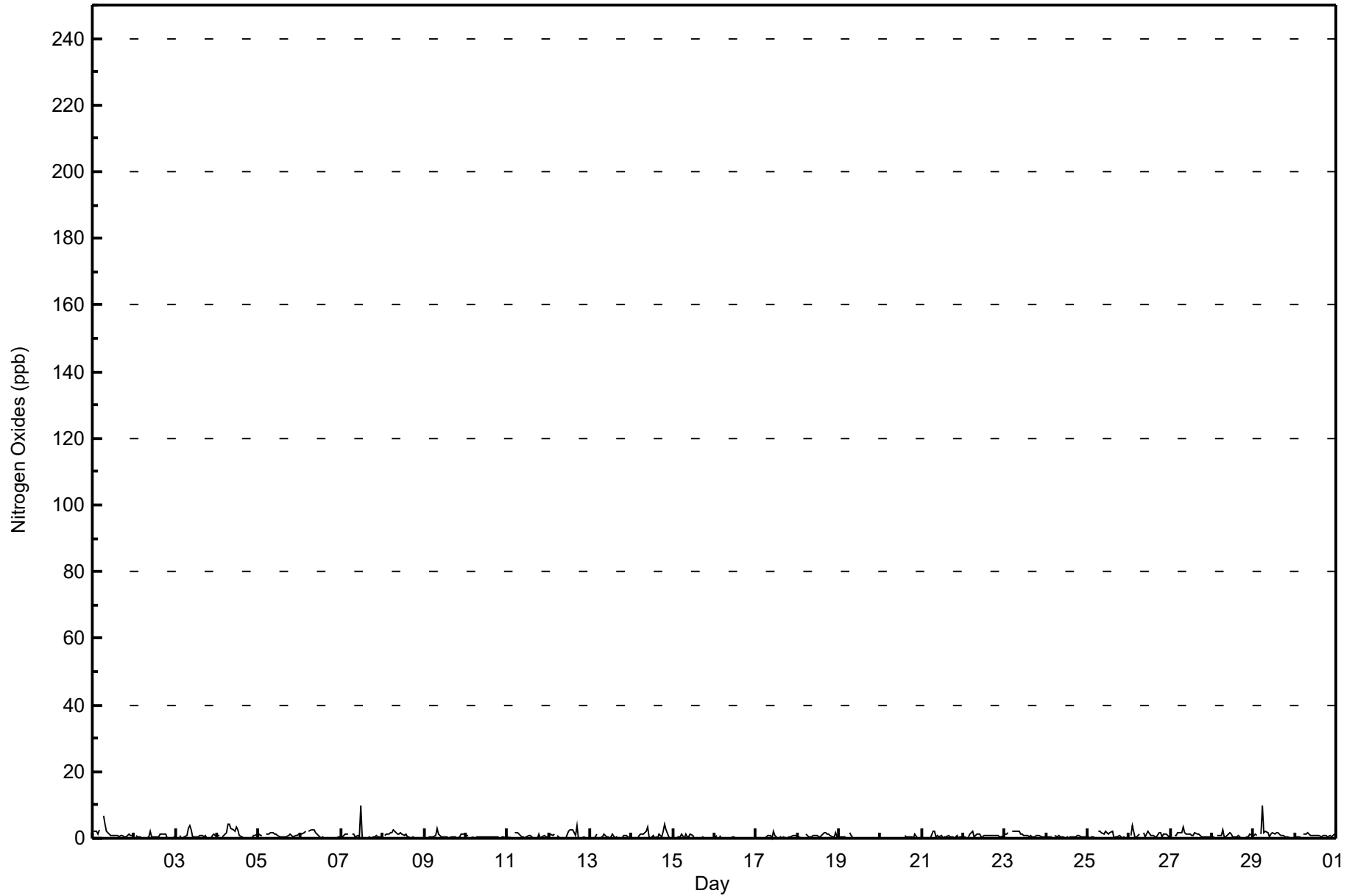
Maximum Value: 9.6 ppb on Apr 7 12:00																				Maximum Daily Average: 1.5 ppb on Apr 1					Hours in Service: 720	
Minimum Value: 0.0 ppb on Apr 2 07:00																				Minimum Daily Average: 0.2 ppb on Apr 16					Hours of Data: 661	
Maximum Diurnal Average: 1.6 ppb at hour 8																				Minimum Diurnal Average: 0.4 ppb at hour 22					Hours of Missing Data: 59	
Monthly Average: 0.79 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.2 Median = 0.6 Q ₃ = 1.1 P ₉₀ = 1.7 P ₉₉ = 4.0					Hours of Calibration: 39	
																									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-Apr	2.0	2.1	2.2	1.3	2.4	Z	6.8	4.2	2.1	1.3	0.9	0.6	0.8	0.8	0.5	0.7	0.8	0.5	0.6	1.0	1.1	0.8	0.9	1.5	6.8	
2-Apr	Z	0.9	0.6	0.3	0.2	0.2	0.0	0.0	0.6	2.1	0.3	0.4	0.4	0.4	0.3	1.1	1.3	1.3	1.2	0.0	0.0	0.0	0.0	0.2	0.5	2.1
3-Apr	0.0	Z	0.9	0.0	0.0	0.3	0.9	2.9	3.9	2.6	0.6	0.3	0.4	0.6	1.0	0.9	0.4	0.7	0.1	0.1	0.1	0.6	1.1	0.9	0.8	3.9
4-Apr	0.8	0.7	Z	0.6	0.8	1.8	4.2	4.1	2.9	2.4	2.1	3.3	2.5	1.0	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.9	1.0	1.2	1.3	4.2
5-Apr	1.1	1.0	0.9	Z	1.5	1.5	1.3	1.7	1.5	1.4	1.5	0.7	0.5	0.6	0.2	0.3	0.3	0.8	1.4	0.7	0.6	0.7	1.0	1.1	1.0	1.7
6-Apr	1.4	1.4	1.6	2.0	Z	2.2	2.5	2.5	2.4	1.8	1.2	0.4	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.5	0.9	2.5
7-Apr	0.6	0.8	1.3	1.2	1.4	Z	1.2	1.1	0.5	0.7	0.6	9.6	0.4	0.1	0.0	0.1	0.2	0.0	0.5	0.4	0.7	0.5	0.4	0.6	1.0	9.6
8-Apr	Z	1.0	1.2	1.2	1.6	1.6	2.6	2.0	1.4	1.3	1.6	1.3	0.7	1.2	0.4	0.4	0.1	0.3	0.1	0.0	0.2	0.1	0.1	0.1	0.9	2.6
9-Apr	0.1	Z	0.6	0.5	0.3	0.6	0.9	3.0	1.4	0.7	0.4	0.3	0.3	0.3	0.1	0.3	0.3	0.3	0.3	0.1	0.4	1.1	1.4	1.2	0.7	3.0
10-Apr	1.0	0.9	Z	0.1	0.3	0.2	0.2	0.4	0.4	0.2	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.1	0.2	0.2	0.5	0.1	0.4	1.0
11-Apr	0.3	0.0	0.4	Z	1.6	1.6	1.7	1.1	0.3	0.5	0.1	0.4	0.8	1.0	0.3	0.0	0.0	0.0	1.2	0.0	0.2	0.6	0.5	0.6	0.6	1.7
12-Apr	0.2	1.3	1.0	1.4	Z	0.7	0.1	0.0	0.0	0.0	0.0	2.3	2.5	2.6	2.6	0.7	3.7	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.9	3.7
13-Apr	0.0	0.0	0.1	0.2	1.1	Z	0.4	0.4	1.3	0.4	0.3	0.0	0.2	1.1	0.0	0.3	0.0	0.0	0.0	1.0	0.7	0.8	0.4	0.0	0.4	1.3
14-Apr	Z	0.2	0.0	0.0	0.9	1.5	1.4	1.4	2.1	3.4	0.5	0.0	0.9	0.0	0.3	0.2	1.3	0.3	2.2	4.4	2.6	0.3	0.0	0.1	1.0	4.4
15-Apr	0.0	Z	0.3	0.3	0.4	1.4	0.0	1.3	0.4	0.4	1.2	0.6	0.0	0.1	0.0	0.1	0.1	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.3	1.4
16-Apr	0.2	0.8	Z	0.8	0.1	0.0	0.2	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.8
17-Apr	0.0	0.0	0.0	Z	0.2	0.0	0.6	1.0	0.9	0.1	2.3	0.9	0.0	0.2	0.3	0.0	0.4	0.1	0.0	0.3	0.3	0.7	0.9	0.8	0.4	2.3
18-Apr	0.4	0.2	0.2	0.1	Z	1.5	0.4	0.5	0.3	0.8	0.8	0.8	0.3	0.4	1.0	1.8	1.9	1.3	1.2	0.8	0.3	0.4	1.6	0.2	0.8	1.9
19-Apr	0.4	0.2	0.5	0.3	0.3	Z	1.9	0.7	0.6	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	--	1.9
20-Apr	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	0.7	0.6	0.5	0.6	0.4	0.0	1.2	0.0	0.0	--	1.2
21-Apr	0.0	Z	0.1	0.0	0.0	0.1	2.3	2.2	0.5	0.8	0.3	0.8	0.1	0.5	0.4	0.8	0.6	0.2	0.2	0.1	0.7	0.1	0.3	0.5	0.5	2.3
22-Apr	0.4	0.4	Z	0.5	1.4	1.9	0.6	1.0	1.1	1.2	0.5	0.5	0.8	0.6	0.7	0.9	0.9	0.9	0.8	0.9	0.9	0.6	0.6	0.7	0.8	1.9
23-Apr	1.1	1.4	1.9	Z	2.0	2.2	2.1	2.2	1.9	1.3	1.3	0.8	0.9	0.8	0.6	0.7	0.6	0.6	0.8	0.7	0.7	0.3	0.2	0.4	1.1	2.2
24-Apr	0.6	0.4	0.4	0.3	Z	0.9	0.5	0.7	0.3	0.5	0.3	0.1	0.3	0.2	0.3	0.4	0.4	0.4	0.7	0.7	0.4	0.3	0.3	0.2	0.4	0.9
25-Apr	0.3	0.1	0.2	0.3	0.6	Z	2.3	2.2	1.7	1.1	2.1	1.6	1.1	1.6	2.1	0.2	0.5	0.6	0.9	0.6	0.1	0.2	0.1	0.3	0.9	2.3
26-Apr	Z	0.7	3.7	0.2	0.3	0.6	1.1	DF	1.5	0.6	1.2	1.9	0.9	0.7	0.7	0.5	0.6	1.8	1.6	0.5	1.5	1.2	0.7	0.6	1.0	3.7
27-Apr	0.5	Z	1.0	1.0	1.5	1.6	1.5	3.2	1.5	1.3	1.4	1.3	1.0	0.7	1.7	1.5	1.1	0.8	0.5	0.5	0.5	0.3	0.3	0.2	1.1	3.2
28-Apr	0.3	0.2	Z	0.8	0.7	0.8	2.7	0.5	0.3	1.2	1.9	1.2	0.4	0.4	0.6	0.9	0.4	0.2	0.1	0.2	0.5	0.5	1.1	0.9	0.7	2.7
29-Apr	0.8	1.2	0.6	Z	1.1	9.6	1.6	2.2	1.7	0.5	1.1	1.8	1.3	1.6	1.6	1.3	0.9	0.8	0.4	0.3	0.6	0.0	0.1	0.1	1.4	9.6
30-Apr	0.1	0.3	0.3	0.5	Z	1.4	1.5	1.5	1.4	1.0	0.8	0.8	0.7	0.8	0.6	0.5	0.7	0.7	0.7	0.5	0.7	0.6	1.0	1.1	0.8	1.5
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		
																								Diurnal Average		
																								Diurnal Maximum		

Z - zerspan C - Calibration M - Maintenance DF - DAS Failure



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	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: 661

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3 - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661
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
Totals	14	27	23	31	34	50	45	103	101	45	55	51	39	23	14	6	661

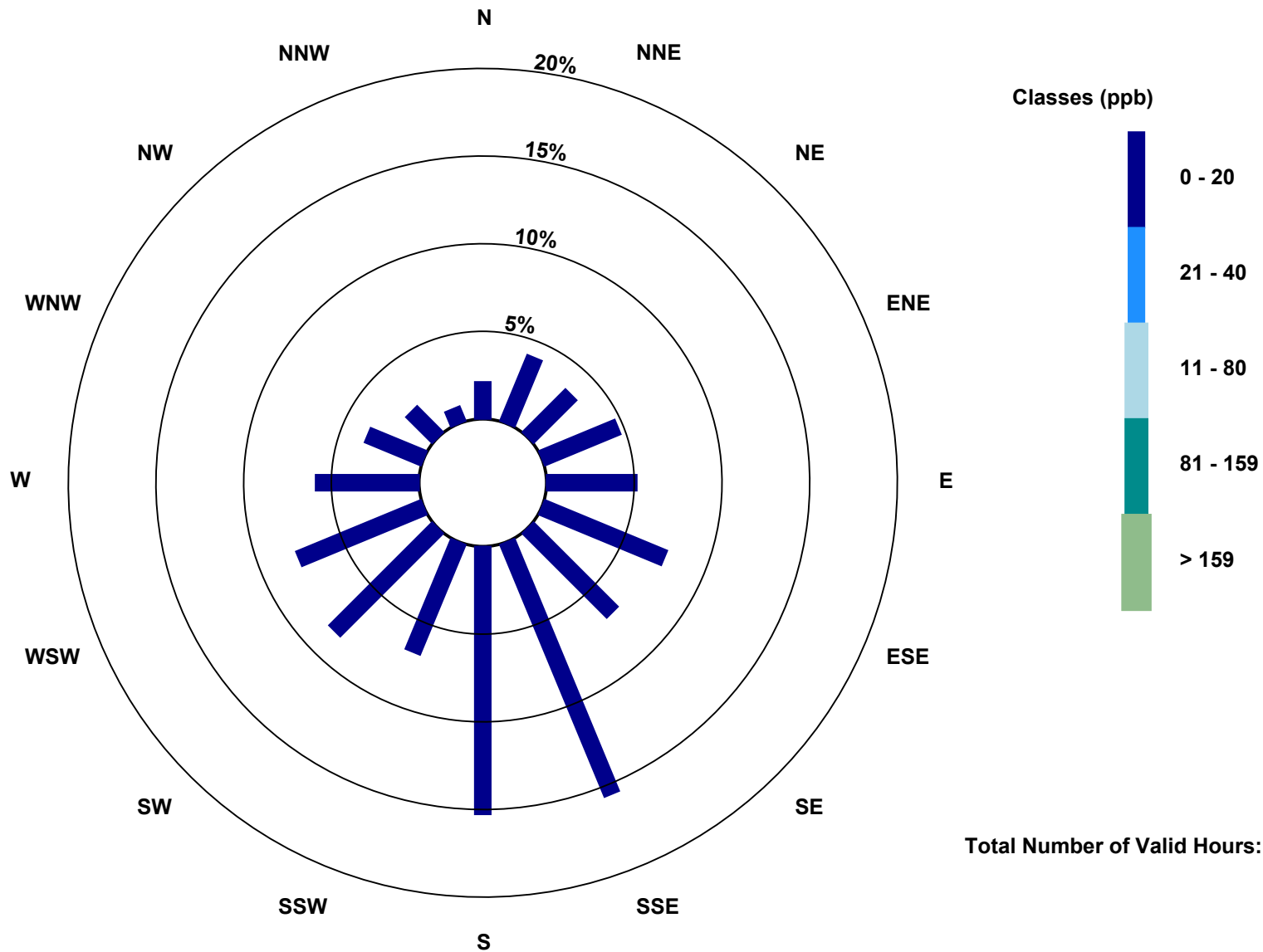
Total Number of Valid Hours: 661

Total Number of Hours: 720

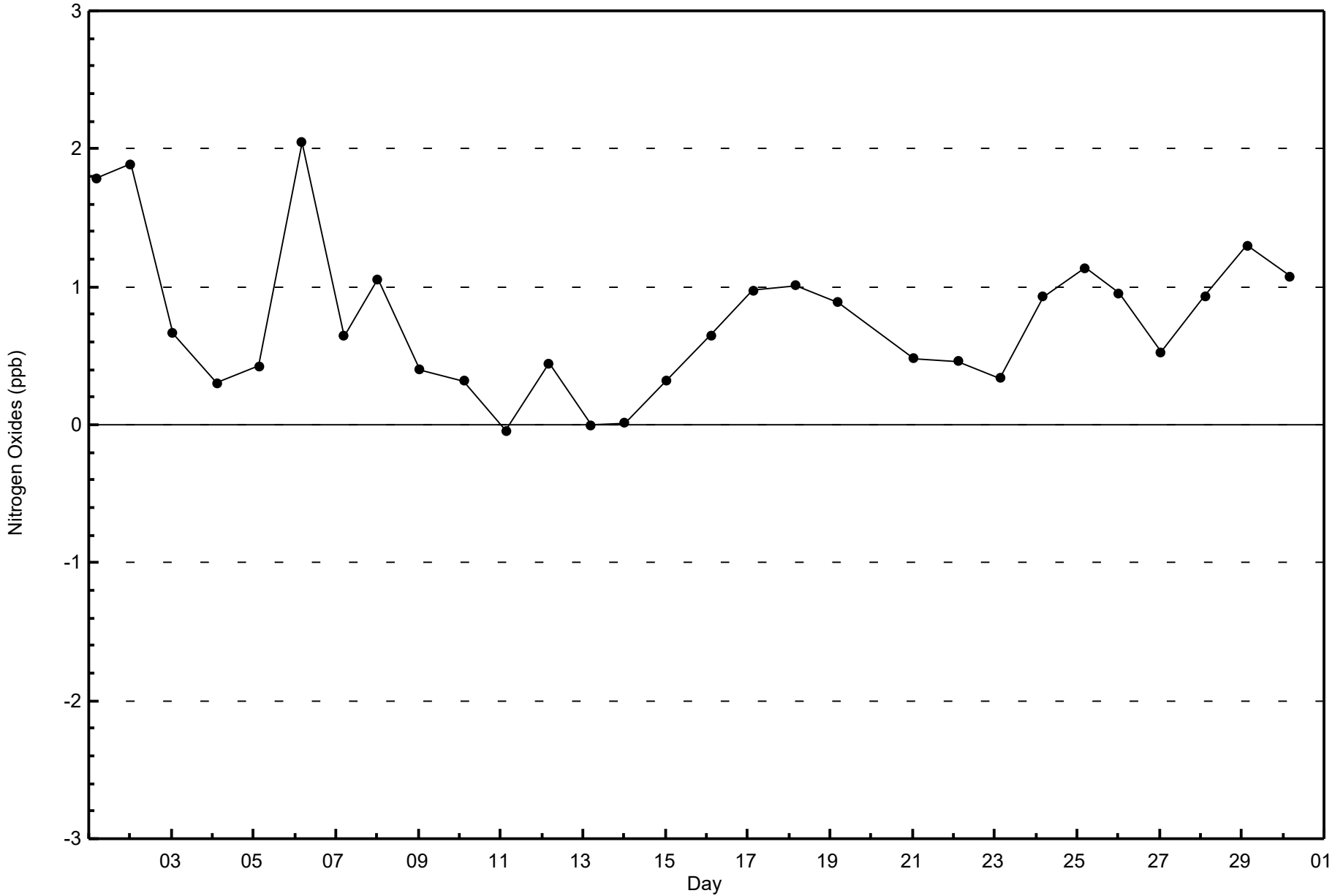


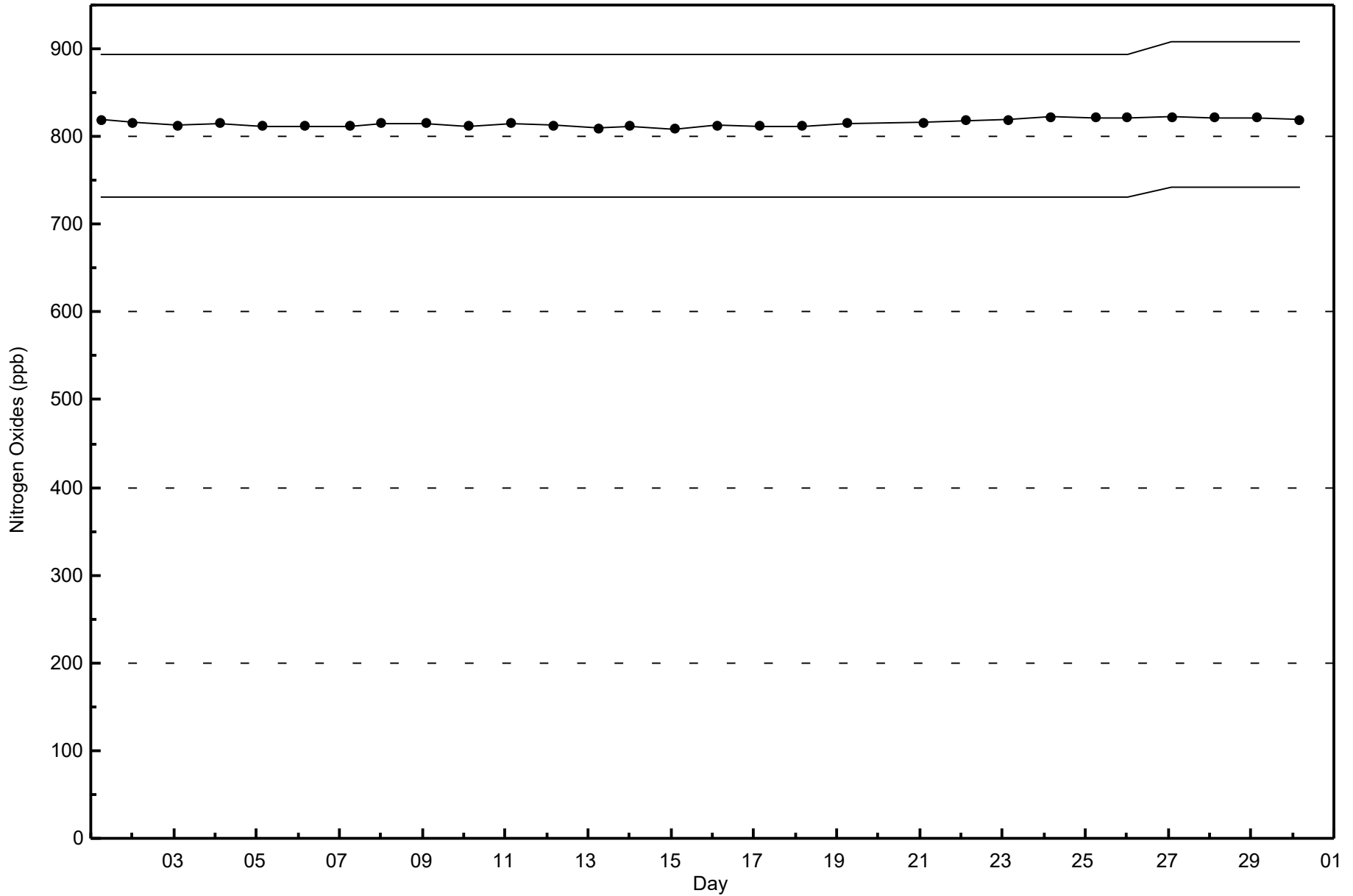
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Jackfish 2/3



Total Number of Valid Hours: 661







Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature (AT) - C

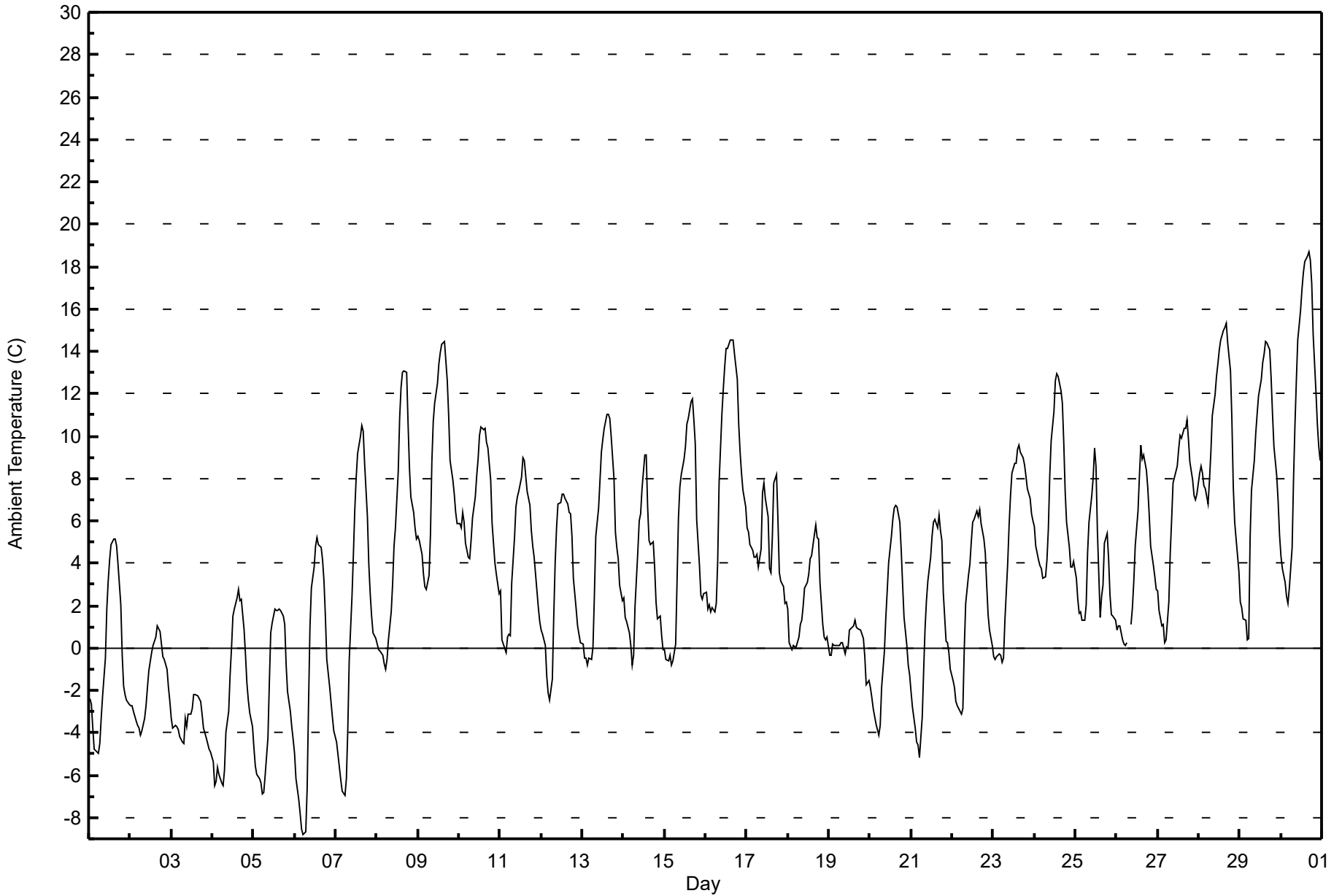
Jackfish 2/3 - April 2023

Maximum Value: 18.7 C on Apr 30 17:00		Maximum Daily Average: 11.1 C on Apr 30		Hours in Service: 720																							
Minimum Value: -8.8 C on Apr 6 06:00		Minimum Daily Average: -3.5 C on Apr 3		Hours of Data: 719																							
Maximum Diurnal Average: 8.0 C at hour 16		Minimum Diurnal Average: -1.0 C at hour 6		Hours of Missing Data: 1																							
Monthly Average: 3.59 C		Percentiles: P ₁ = -6.8 P ₁₀ = -3.3 Q ₁ = 0.0 Median = 3.2 Q ₃ = 7.2 P ₉₀ = 10.7 P ₉₉ = 15.8		Hours of Calibration: 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-Apr	-2.4	-2.7	-3.8	-4.8	-4.8	-5.0	-4.5	-3.3	-2.2	-0.5	1.8	3.1	4.2	4.9	5.1	5.2	4.8	3.9	2.0	-0.4	-1.8	-2.2	-2.5	-2.7	-0.3	5.2	
2-Apr	-2.7	-2.8	-3.0	-3.4	-3.6	-3.8	-4.1	-3.9	-3.3	-2.7	-1.9	-1.1	-0.2	0.1	0.3	0.5	1.1	0.8	0.2	-0.4	-0.5	-1.0	-1.8	-2.5	-1.7	1.1	
3-Apr	-3.3	-3.8	-3.6	-3.7	-3.9	-4.2	-4.4	-4.5	-3.3	-3.7	-3.1	-3.1	-2.9	-2.2	-2.2	-2.3	-2.4	-2.5	-3.1	-3.8	-4.3	-4.5	-4.8	-4.9	-3.5	-2.2	
4-Apr	-5.3	-6.5	-6.3	-5.7	-6.0	-6.4	-6.5	-5.8	-4.0	-3.0	-1.3	0.0	1.5	1.9	2.4	2.8	2.2	2.3	0.9	-0.3	-1.6	-2.4	-3.0	-3.7	-2.2	2.8	
5-Apr	-4.7	-5.5	-5.9	-6.1	-6.4	-6.9	-6.8	-6.1	-4.2	-1.7	0.7	1.2	1.8	1.8	1.8	1.8	1.8	1.5	1.1	-0.8	-2.0	-3.0	-3.7	-4.3	-2.3	1.8	
6-Apr	-5.0	-6.1	-7.1	-7.8	-8.5	-8.8	-8.7	-6.6	-2.6	1.0	2.8	3.8	4.8	5.2	4.9	4.8	4.2	3.2	1.5	-0.6	-1.8	-2.5	-3.2	-3.9	-1.5	5.2	
7-Apr	-4.5	-5.0	-5.6	-6.2	-6.8	-7.0	-6.1	-3.8	-0.6	2.5	4.4	6.5	8.1	9.2	10.0	10.5	10.2	8.7	6.2	4.0	2.6	1.5	0.7	0.5	1.7	10.5	
8-Apr	0.2	-0.1	-0.2	-0.3	-0.7	-1.0	-0.5	0.4	1.7	3.0	4.8	5.7	8.4	10.8	12.3	13.0	13.1	13.0	10.6	8.5	7.1	6.4	5.7	5.2	5.3	13.1	
9-Apr	5.3	5.1	4.4	3.5	2.9	2.8	3.4	5.4	8.8	10.7	11.6	12.5	13.4	13.9	14.3	14.5	13.5	12.6	11.0	8.8	7.9	7.3	6.4	5.9	8.6	14.5	
10-Apr	5.8	5.7	6.4	5.9	5.0	4.3	4.2	5.1	6.1	7.1	8.1	8.9	10.1	10.5	10.3	10.3	9.7	9.5	7.9	5.8	4.9	4.0	3.5	2.6	6.7	10.5	
11-Apr	2.7	0.4	0.2	-0.2	0.5	0.7	0.6	3.1	5.2	6.7	7.1	7.4	8.0	9.0	8.8	8.1	7.4	6.7	5.6	4.8	4.3	2.7	1.9	1.2	4.3	9.0	
12-Apr	0.9	0.7	0.1	-1.3	-2.1	-2.4	-1.4	1.5	4.0	5.7	6.8	6.9	7.3	7.3	7.0	6.8	6.4	6.3	5.3	3.3	1.9	1.0	0.6	0.3	3.0	7.3	
13-Apr	0.2	-0.5	-0.5	-0.8	-0.5	-0.6	0.0	2.5	5.3	6.6	7.9	9.3	9.8	10.4	11.0	11.0	10.8	9.9	8.0	5.5	4.8	4.2	2.9	2.3	5.0	11.0	
14-Apr	2.3	1.4	1.2	0.7	0.1	-0.8	-0.4	1.9	4.5	6.0	6.3	7.5	9.1	9.1	6.7	5.1	4.9	5.0	3.8	2.2	1.4	1.5	0.6	-0.1	3.3	9.1	
15-Apr	0.0	-0.6	-0.6	-0.3	-0.8	-0.6	0.2	3.1	6.2	7.6	8.2	8.9	9.5	10.6	10.9	11.6	11.8	10.8	9.6	6.1	3.9	2.5	2.3	2.6	5.1	11.8	
16-Apr	2.6	1.9	2.0	1.7	1.9	1.7	2.1	4.1	7.8	11.0	12.2	13.3	14.1	14.1	14.5	14.5	14.6	13.9	12.6	10.5	9.2	8.2	7.5	6.7	8.4	14.6	
17-Apr	5.7	5.5	4.9	4.6	4.3	4.3	4.4	3.8	4.7	7.3	7.8	7.1	6.2	3.8	3.5	5.2	7.8	8.2	6.1	3.5	3.2	2.9	2.1	2.2	5.0	8.2	
18-Apr	1.9	0.2	-0.1	0.1	0.0	0.0	0.5	1.1	1.3	2.0	2.8	3.1	3.5	4.2	4.4	5.4	5.8	5.2	5.2	3.1	1.1	0.5	0.4	0.5	2.2	5.8	
19-Apr	-0.4	-0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	-0.3	0.1	0.0	0.9	0.9	1.0	1.3	1.0	0.9	0.9	0.6	0.5	-0.4	-1.7	-1.5	0.2	1.3	
20-Apr	-1.9	-2.3	-2.9	-3.6	-3.9	-4.1	-3.6	-1.8	-0.1	1.5	2.7	4.0	5.3	6.1	6.6	6.7	6.7	5.9	4.6	3.0	1.5	0.1	-0.8	-1.3	1.2	6.7	
21-Apr	-2.0	-2.8	-3.7	-4.4	-4.6	-5.2	-3.2	-1.1	0.9	2.2	3.1	4.3	5.3	5.9	6.1	5.7	6.3	5.6	5.1	2.6	0.3	0.3	-0.2	-1.0	1.1	6.3	
22-Apr	-1.5	-1.9	-2.5	-2.7	-2.8	-3.1	-2.8	0.0	2.1	3.5	4.0	5.0	5.9	6.1	6.5	6.2	6.6	5.9	5.1	4.5	3.0	1.6	0.8	0.1	2.1	6.6	
23-Apr	-0.4	-0.6	-0.4	-0.3	-0.3	-0.7	-0.4	1.3	4.0	5.8	7.2	8.2	8.7	8.7	9.4	9.5	9.2	9.0	8.7	8.1	7.6	7.1	6.4	6.0	5.1	9.5	
24-Apr	5.7	4.8	4.1	3.9	3.7	3.3	3.4	4.1	5.6	8.1	9.7	11.2	12.6	12.9	12.8	12.2	11.6	9.7	7.4	5.9	4.7	3.8	3.8	4.1	7.1	12.9	
25-Apr	3.3	2.3	1.7	1.7	1.3	1.3	2.0	4.5	5.9	7.2	8.0	9.5	8.6	5.5	1.4	2.4	3.0	4.9	5.4	4.2	2.5	1.6	1.5	1.3	3.8	9.5	
26-Apr	0.8	1.1	1.1	0.4	0.2	0.1	0.3	DF	1.1	1.9	3.2	4.8	6.5	8.1	9.5	8.9	9.1	8.4	7.5	6.2	4.8	3.9	3.3	2.7	4.1	9.5	
27-Apr	2.7	1.8	1.1	1.1	0.3	0.4	2.2	4.5	6.1	7.8	8.1	8.6	9.4	10.0	9.9	10.4	10.4	10.8	9.8	8.8	7.9	7.2	7.0	7.3	6.4	10.8	
28-Apr	8.3	8.6	8.2	7.7	7.5	6.8	7.9	9.2	11.0	11.9	12.8	13.4	14.1	14.5	15.0	15.2	15.3	14.4	13.1	10.8	7.6	5.9	5.2	3.6	10.3	15.3	
29-Apr	2.2	1.9	1.4	1.3	0.4	0.5	5.2	7.5	8.8	10.1	11.0	11.9	12.7	13.5	13.9	14.5	14.4	14.1	12.7	11.0	9.5	8.1	6.9	5.3	8.3	14.5	
30-Apr	4.3	3.7	3.1	2.4	2.1	2.8	4.8	8.0	10.5	12.6	14.5	15.9	16.9	17.7	18.2	18.5	18.7	18.3	17.2	14.8	12.1	10.6	9.5	8.9	11.1	18.7	
		0.7	0.1	-0.2	-0.6	-0.8	-1.0	-0.4	1.2	3.1	4.6	5.7	6.6	7.4	7.8	7.9	8.0	8.0	7.6	6.4	4.7	3.4	2.6	1.9	1.4	Diurnal Average	
		8.3	8.6	8.2	7.7	7.5	6.8	7.9	9.2	11.0	12.6	14.5	15.9	16.9	17.7	18.2	18.5	18.7	18.3	17.2	14.8	12.1	10.6	9.5	8.9	Diurnal Maximum	
DF - DAS Failure																											



Wood Buffalo Environmental Association
Hourly Averages

Ambient Temperature (AT) - C
Jackfish 2/3 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Jackfish 2/3 - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	180	25.03	25.03
0 - 10	450	62.59	87.62
10 - 20	89	12.38	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 719

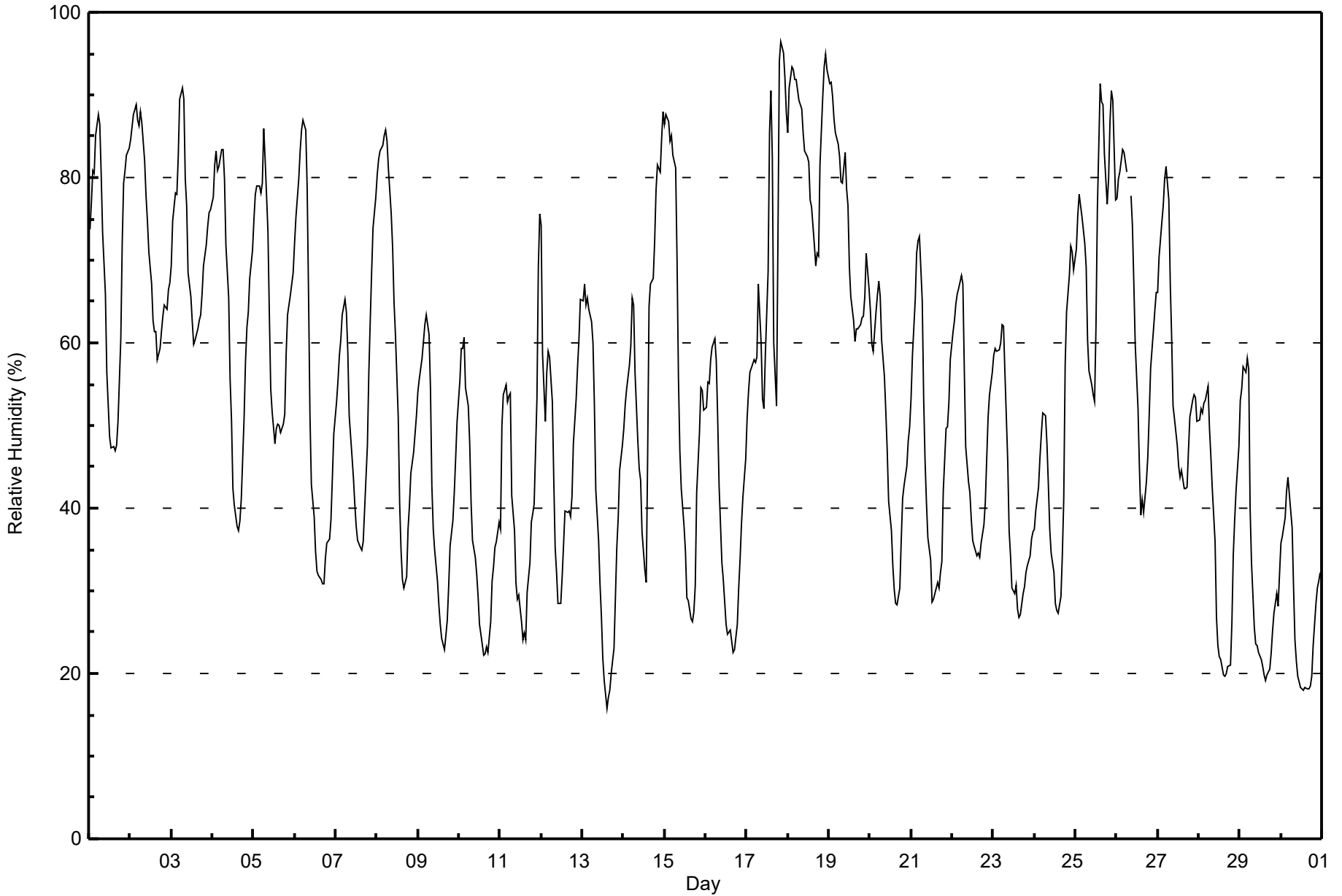
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Jackfish 2/3 - April 2023

Maximum Value: 96.4 % on Apr 17 21:00 Maximum Daily Average: 84.8 % on Apr 18																						Hours in Service: 720 Hours of Data: 719				
Minimum Value: 15.7 % on Apr 13 15:00 Minimum Daily Average: 27.7 % on Apr 30 Maximum Diurnal Average: 70.2 % at hour 6 Minimum Diurnal Average: 39.3 % at hour 17 Monthly Average: 54.04 % Percentiles: P ₁ = 18.3 P ₁₀ = 27.6 Q ₁ = 37.1 Median = 53.4 Q ₃ = 69.2 P ₉₀ = 82.9 P ₉₉ = 92.8																						Hours of Missing Data: 1 Hours of Calibration: 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-Apr	73.8	76.9	80.9	80.6	85.1	87.6	86.4	80.3	73.3	66.0	56.4	52.5	48.7	47.4	47.4	46.9	47.6	50.5	60.5	72.0	79.4	80.8	82.7	83.5	68.6	87.6
2-Apr	84.5	86.2	87.7	88.8	86.9	86.3	88.0	86.6	82.0	77.8	74.7	70.9	67.0	62.7	61.3	61.3	57.9	59.3	61.3	63.3	64.5	64.1	66.5	67.3	73.2	88.8
3-Apr	69.3	74.7	78.2	77.9	82.6	89.4	90.9	89.6	79.8	76.6	68.4	65.7	62.5	59.9	60.3	61.7	62.8	63.3	66.0	69.3	71.8	74.1	75.8	76.2	72.8	90.9
4-Apr	77.7	81.6	83.2	80.9	81.3	83.3	83.5	79.8	71.9	65.5	55.7	50.6	42.4	40.3	37.8	37.3	38.5	41.2	51.0	57.8	61.8	63.8	67.9	71.1	62.7	83.5
5-Apr	75.0	78.0	79.0	79.0	78.1	79.4	86.0	82.2	73.6	63.5	54.4	47.7	49.7	49.7	50.1	50.0	49.2	50.2	51.3	58.7	63.4	65.8	67.2	68.5	64.7	86.0
6-Apr	72.1	75.2	79.8	83.2	85.7	87.0	85.8	78.7	65.7	51.1	42.8	39.0	34.8	32.3	31.9	31.4	30.8	30.8	34.0	35.7	36.3	38.7	43.7	49.0	53.2	87.0
7-Apr	52.8	55.4	58.4	60.3	63.4	65.3	63.8	59.0	51.2	46.3	43.7	40.5	37.8	36.0	35.2	34.9	35.9	39.9	47.7	56.2	62.6	68.4	74.0	77.6	52.8	77.6
8-Apr	80.4	82.2	83.2	83.9	85.0	85.8	84.4	81.1	75.7	71.5	64.9	61.0	51.0	40.6	34.9	31.4	30.3	31.7	37.5	40.3	44.2	46.8	49.0	51.3	59.5	85.8
9-Apr	54.1	55.6	58.1	60.2	62.2	63.4	61.1	54.6	42.8	37.4	35.0	31.3	28.3	25.9	24.2	22.8	24.6	26.4	30.5	35.4	38.5	41.9	46.1	50.5	42.1	63.4
10-Apr	55.4	59.3	59.4	60.6	54.6	52.3	47.9	40.6	36.0	34.0	32.1	29.4	25.9	24.8	22.3	22.4	23.1	22.6	26.3	31.2	32.9	35.2	35.9	38.2	37.6	60.6
11-Apr	37.5	50.1	53.7	54.9	52.9	53.5	53.9	41.5	37.4	31.1	29.0	29.5	26.3	24.1	24.9	24.0	29.8	33.4	38.2	39.4	40.5	53.2	69.2	75.7	41.8	75.7
12-Apr	74.2	58.7	50.6	56.4	58.9	58.3	52.8	43.6	35.2	32.1	28.6	28.5	31.6	35.6	39.6	39.6	39.7	38.9	41.3	47.8	53.2	57.2	60.6	65.2	47.0	74.2
13-Apr	65.0	67.1	64.6	65.4	64.0	62.6	60.0	52.5	42.2	36.0	30.8	27.0	21.8	19.1	15.7	17.2	18.0	20.0	23.0	29.1	35.2	38.8	44.5	47.6	40.3	67.1
14-Apr	49.6	52.6	54.4	57.2	59.7	65.4	64.6	56.5	48.1	44.8	43.4	37.2	32.5	31.1	46.0	64.3	67.1	67.8	72.2	78.4	81.5	80.7	84.8	87.9	59.5	87.9
15-Apr	86.5	87.7	86.7	84.3	85.2	82.8	81.1	70.1	55.8	47.0	42.4	37.7	34.7	29.2	28.8	26.6	26.2	27.5	30.8	41.8	49.1	54.5	54.3	51.8	54.3	87.7
16-Apr	52.1	55.3	55.1	58.0	59.5	60.6	57.9	50.8	42.7	33.5	31.3	28.6	25.9	24.7	25.2	24.0	22.5	22.9	25.9	30.3	33.9	38.1	41.3	45.9	39.4	60.6
17-Apr	50.9	54.0	56.5	57.4	58.0	57.7	58.4	67.1	60.1	53.3	52.0	58.4	68.6	85.5	90.5	82.3	60.0	52.3	72.3	94.1	96.4	95.1	92.0	87.8	69.2	96.4
18-Apr	85.4	90.9	93.4	93.0	91.8	91.9	89.3	88.9	88.3	85.4	83.2	82.6	81.9	77.2	76.4	71.9	69.3	70.9	70.5	81.6	89.9	93.3	95.0	93.0	84.8	95.0
19-Apr	91.3	91.6	89.8	87.2	85.4	84.0	82.5	79.5	79.4	83.0	78.6	76.6	69.2	65.6	62.8	60.2	61.8	61.7	62.2	63.0	63.3	65.6	70.8	66.6	74.2	91.6
20-Apr	63.8	59.9	59.0	63.8	65.7	67.5	65.5	60.4	56.0	51.7	47.0	40.8	37.4	33.1	30.1	28.5	28.3	30.3	36.0	41.2	42.8	45.1	48.1	49.9	48.0	67.5
21-Apr	53.2	58.6	65.2	70.8	72.4	72.8	65.1	53.4	45.7	40.7	36.5	33.6	28.6	29.0	29.7	31.0	30.4	32.2	33.5	42.0	49.7	49.8	52.6	57.9	47.3	72.8
22-Apr	61.3	62.7	64.8	65.9	66.7	68.1	67.1	56.9	47.5	43.3	41.8	38.7	36.1	35.4	34.3	34.6	34.2	35.8	37.9	40.6	45.9	51.1	53.7	56.4	49.2	68.1
23-Apr	58.4	59.4	59.0	59.1	60.0	62.2	62.0	56.5	45.8	37.3	34.2	30.3	29.7	30.7	27.8	26.8	27.1	29.6	30.5	32.2	33.0	34.3	36.2	37.0	41.6	62.2
24-Apr	37.5	39.6	42.6	46.1	48.9	51.5	51.2	47.8	42.9	37.5	34.6	32.2	28.5	27.7	27.4	29.3	34.3	41.2	57.3	63.7	68.1	71.7	71.1	68.8	45.9	71.7
25-Apr	71.4	75.5	77.9	76.6	75.2	72.1	69.2	60.3	56.7	55.0	53.7	52.9	62.0	76.3	91.4	89.1	88.8	82.9	76.7	79.9	86.7	90.6	89.4	77.3	74.5	91.4
26-Apr	77.4	79.8	80.6	83.4	83.0	81.9	80.7	DF	77.8	74.2	67.2	59.9	52.1	44.8	39.2	41.0	39.5	43.1	46.2	51.3	56.9	61.5	63.8	66.2	63.1	83.4
27-Apr	66.0	70.4	74.5	76.5	79.8	81.4	77.3	67.4	60.7	52.4	50.9	47.7	45.1	43.8	44.5	42.4	42.4	42.5	46.9	51.0	53.0	53.8	53.5	50.5	57.3	81.4
28-Apr	50.8	52.0	51.5	52.8	53.1	54.7	49.6	46.2	42.3	35.9	26.8	23.4	22.1	21.7	19.8	19.7	20.0	20.9	20.9	26.1	34.4	38.7	42.2	47.5	36.4	54.7
29-Apr	53.1	54.4	57.2	56.5	58.1	56.7	39.9	33.5	25.6	23.5	23.3	22.6	21.7	20.8	19.8	19.2	19.8	20.6	22.4	25.1	27.3	29.6	28.1	32.1	32.9	58.1
30-Apr	35.7	36.6	38.8	42.0	43.8	41.7	37.7	30.5	24.1	21.5	19.7	18.3	18.1	18.0	18.3	18.1	18.2	18.5	19.6	23.5	28.4	30.3	31.3	32.3	27.7	43.8
																								Diurnal Average		
																								Diurnal Maximum		
DF - DAS Failure																										





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Relative Humidity (RH) - %
Jackfish 2/3 - April 2023

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	19	2.64	2.64
20 - 40	197	27.40	30.04
40 - 60	221	30.74	60.78
60 - 80	182	25.31	86.09
80 - 100	100	13.91	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Jackfish 2/3 - April 2023

Maximum Speed: 23 km/h on Apr 10 15:00	Maximum Daily Speed Average: 14.5 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 0 km/h on Apr 28 21:00	Minimum Daily Speed Average: 1.3 km/h on Apr 4	Hours of Data: 719
Maximum Diurnal Speed Average: 4.8 km/h at hour 1	Minimum Diurnal Speed Average: 2.4 km/h at hour 20	Hours of Missing Data: 1
Monthly Average Velocity: 3.3 km/h 176.6 deg	Percentiles: P ₁ = 1 P ₁₀ = 4 Q ₁ = 5 Median = 7 Q ₃ = 9 P ₉₀ = 12 P ₉₉ = 19	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-Apr	S4	S5	SE1	ENE2	SE3	SE5	ESE7	ESE6	SSE6	SE8	SE9	SE6	ESE6	E8	ENE8	ESE8	E8	E8	ESE9	SE8	ESE7	E8	ESE7	E7	ESE5.7	ESE9
2-Apr	E6	E6	E6	E7	E5	ENE5	E5	ENE5	ENE5	ENE5	ENE6	ENE7	ENE7	E5	NE3	NNE4	NNE3	NNE4	NE3	E3	ESE5	ESE5	S7	S8	E4.1	S8
3-Apr	S7	S7	SSW8	SSW9	SW9	SW7	WSW6	W5	WNW5	W6	W8	W8	W7	W8	W7	W7	W6	NW5	NNW5	N5	NNE5	NE5	ENE4	ENE3	WSW3.5	SSW9
4-Apr	ENE3	ENE3	ENE3	SE4	NNE2	NNE3	NNE3	ENE3	E5	E5	ENE2	WNW5	WSW4	SW7	SSW6	WSW6	WSW5	SW3	SSE2	S4	S4	S5	SSW6	SSW6	S1.3	SW7
5-Apr	S6	S7	SSE7	SSE8	S7	S7	S8	SSE7	SSE8	SSE6	S8	S9	SSE9	SSW10	S9	S8	S7	S6	S5	SSE4	S5	S6	S6	S7	S7.0	SSW10
6-Apr	S7	SSE8	S8	SSE8	S7	S9	SSE9	S9	S9	S10	S12	S12	S12	S13	S13	S13	S13	S13	S11	S10	S12	S11	S11	S11	S10.5	S13
7-Apr	SSE11	SSE12	S12	SSE11	SSE11	SSE10	SSE12	SSE12	S14	S13	S13	SSE13	SSE14	SSE12	SSE12	SSE12	S11	SSE10	SSE8	SSE6	S10	S10	S9	S9	SSE11.0	S14
8-Apr	S9	S9	S10	S9	SSW6	SSW6	S8	SSW9	SSW9	SW8	SW6	SW7	SW5	W5	WSW6	SW7	WSW7	WSW9	WSW9	SW7	SW6	SSW7	SSW7	SSW8	SW6.9	S10
9-Apr	SW7	SW8	SW9	WSW9	WSW9	SW9	SW9	SW9	WSW11	WSW11	WSW13	WSW12	SW13	SW15	SW13	SW15	SSW11	S8	SSE7	SSE6	SSE7	SSE8	SSE9	SSE10	SW8.7	SW15
10-Apr	S10	SSW12	WSW19	W17	W15	W14	WSW16	WSW17	WSW20	W19	WSW19	WSW22	WSW21	WSW20	WSW23	WSW23	WSW19	WSW14	SW9	SW7	SW8	SSW8	SW7	WSW7	WSW14.5	WSW23
11-Apr	SW7	S6	S5	S5	SSW6	SSW5	S5	S5	SW4	SW2	SW4	WSW4	WSW5	WNW4	NW5	NE3	NW4	WNW1	SSW3	SW6	SW7	SW11	SW10	SW10	SW4.1	SW11
12-Apr	W7	WNW4	W2	WSW4	WSW5	WSW8	WSW8	WSW9	WSW11	W11	W13	WNW14	WNW13	WNW12	WNW13	WNW10	WNW10	WNW7	WNW5	W4	W3	WSW3	WSW4	SW4	W7.3	WNW14
13-Apr	SW6	SW6	SW7	SW8	SW8	SW7	SW8	SW8	WSW10	WSW9	WSW10	WSW11	W10	W10	W11	NW7	N7	N6	NNE4	NE4	ENE5	E5	ESE5	ESE5	WSW4.1	WSW11
14-Apr	SE6	S7	S8	SSE6	S6	ENE1	ESE3	E1	N2	WNW1	SSE5	SE5	SE3	S6	WSW10	NE6	SW3	W5	NNE1	SSE1	SSE4	SSE5	S5	S5	SSE2.8	WSW10
15-Apr	S5	S5	S6	S6	SSW7	SW7	SSW5	SSW5	S4	SSW5	SW6	SW5	SW5	SW9	SSW6	S6	SSW9	SSW8	SSW4	S3	S3	S3	SSE5	SSE6	SSW5.1	SW9
16-Apr	SSE6	SSE6	SSE6	SSE6	SSE7	SSE7	SSE8	SSE8	SE8	ESE12	ESE12	SE12	SE12	SE13	SE12	SE12	SE11	SE11	SE9	ESE7	ESE10	ESE10	ESE10	ESE10	SE9.0	SE13
17-Apr	ESE9	ESE10	ESE10	ESE12	ESE11	E12	ESE9	E9	ESE10	ESE12	E12	ESE12	ESE10	ESE11	SE8	ESE7	ESE8	ESE8	S6	NNE4	NNE4	NE5	NE6	E6	ESE8.0	E12
18-Apr	ENE6	N2	NNE3	NE4	NE6	NNE3	NNE2	NE4	NNE5	NNE3	WNW2	WSW6	WSW7	NNE3	ENE5	NE6	NE7	NE6	NNE6	NNE5	NNE4	NE5	E5	ESE6	NE3.2	WSW7
19-Apr	SSE7	SE6	ESE6	ESE7	SE5	ESE6	ESE6	SE7	ESE8	ESE9	E9	E11	E10	E9	E11	E9	E8	E6	E3	ENE5	E8	E5	ENE5	E7	ESE6.8	E11
20-Apr	E6	ESE6	E5	E5	E5	ENE5	NE6	ENE4	ENE8	ENE11	NE10	NE12	NE11	NE11	ENE11	E11	ENE10	E10	E10	E10	E9	E6	ESE5	ESE5	ENE7.5	NE12
21-Apr	SSE4	SSE4	SSE2	SSE2	SE3	NE3	ENE5	ENE6	ENE7	E9	E10	E8	SE6	ESE7	ESE8	ESE5	SE7	SSE6	SSE4	SSE3	S3	SSW5	SW8	SW9	SE3.6	E10
22-Apr	SW7	SSW7	SSW7	SSW7	SSW7	S5	S5	SSW5	SSW8	S8	SSW9	S9	S9	SSE8	SSE9	S10	SSW10	S8	S6	S4	SE3	ESE4	SE4	SE5	S6.4	SSW10
23-Apr	SSE5	SSE6	SSE7	SSE7	SSE7	SSE6	SSE7	S7	SSE10	SSE14	SSE13	SSE13	SSE13	SSE11	SSE12	SSE11	SSE11	SSE10	SE8	SE5	ESE6	ESE7	SE8	SSE7	SSE8.7	SSE14
24-Apr	SSE7	SSE6	SE6	SSE7	SE8	SE9	SSE9	SE9	SE10	SE9	SE8	ESE10	SE11	SE10	SSE12	SSE10	S11	S10	S11	SSE8	SSE6	SSE5	SSE6	SSE8	SSE8.2	SSE12
25-Apr	SSE7	SSE6	SSE6	SSE6	SSE6	S7	S8	SSW9	SSW9	SSW8	SSW7	SSW9	W4	WNW11	W8	SSW7	S6	SSW7	SW7	SW8	SSW7	SSW7	SW7	WSW8	SSW5.7	WNW11
26-Apr	W6	W7	WNW8	W8	W8	W8	W9	DF	WNW7	W10	W9	NW8	NW7	NW7	NNW7	NE8	NNE6	NE8	NE7	ENE5	ENE5	ENE6	E6	ESE4	NW3.3	W10
27-Apr	S5	E0	N2	WSW1	N2	NNE4	N4	N4	N5	N5	NW5	W9	W10	WSW10	W9	W7	W7	WSW9	WSW7	SW4	S5	S4	S6	SSW9	W3.2	WSW10
28-Apr	SW14	SW14	SW11	SW10	WSW12	W9	WNW10	NW10	NW10	NW12	WNW14	WNW14	NW13	NW13	NW14	WNW12	NNW11	NNW11	NNW9	NNW6	NW0	N3	NNE3	NNE2	WNW7.5	WNW14
29-Apr	ESE1	NE1	NNE2	WNW1	N2	ENE2	E5	E4	NE8	NE8	NE7	N4	NE5	NNE7	SSE1	NE7	ENE6	E9	E7	E7	ESE7	ESE7	SE9	SE7	ENE4.1	SE9
30-Apr	SSE6	SSE8	SSE8	SSE8	SSE8	S8	S8	S10	S11	SSE10	SE11	SSE11	SE12	SSE12	SE11	SE10	SSE9	SSE9	SSE8	SE5	SE4	SSE6	SSE7	SSE8	SSE8.4	SE12

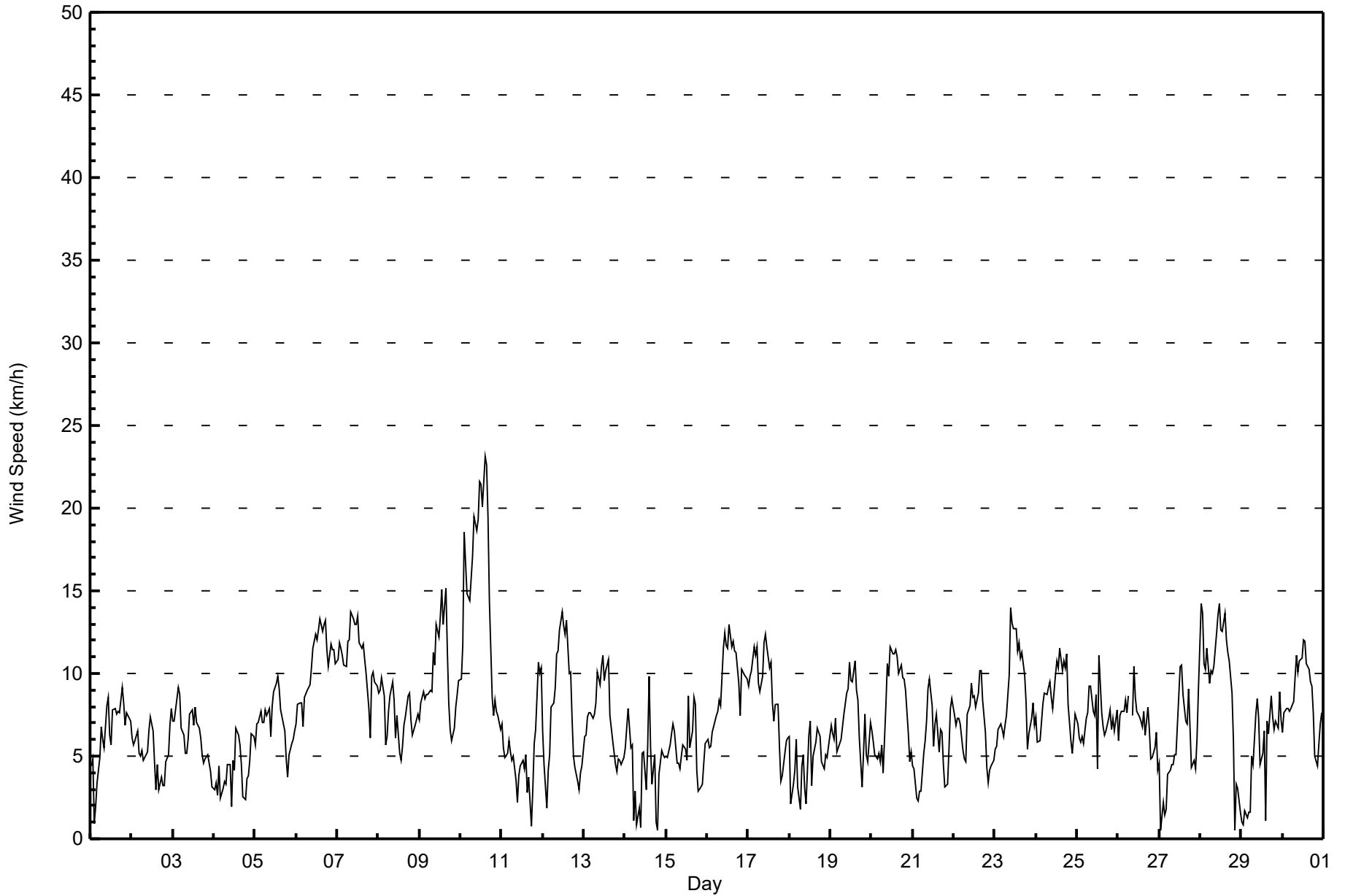
S4.8	S4.8	S4.2	S4.2	S3.7	S3.2	S3.3	S3.5	S3.0	S2.8	S3.1	SSW3.3	SSW3.2	SSW3.1	SSW3.4	S2.8	S2.9	S2.9	SSE2.6	SSE2.4	SE3.4	SSE3.8	SSE4.2	SSE4.6	Diurnal Average	
SW14	SW14	WSW19	W17	W15	W14	WSW16	WSW17	WSW20	W19	WSW19	WSW22	WSW21	WSW20	WSW23	WSW23	WSW19	WSW14	S11	S10	S12	S11	S11	S11	Diurnal Maximum	

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 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 2/3 - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	203	28.23	28.23
6 - 11	436	60.64	88.87
12 - 19	74	10.29	99.17
20 - 28	6	0.83	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Jackfish 2/3 - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	12	23	12	24	16	11	13	17	26	8	9	10	7	10	4	1	203
6 - 11	2	4	16	14	34	38	29	77	68	37	43	28	28	7	6	5	436
12 - 19	0	0	1	0	2	5	6	15	13	1	6	9	5	7	4	0	74
20 - 28	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
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
Totals	14	27	29	38	52	54	48	109	107	46	58	53	40	24	14	6	719

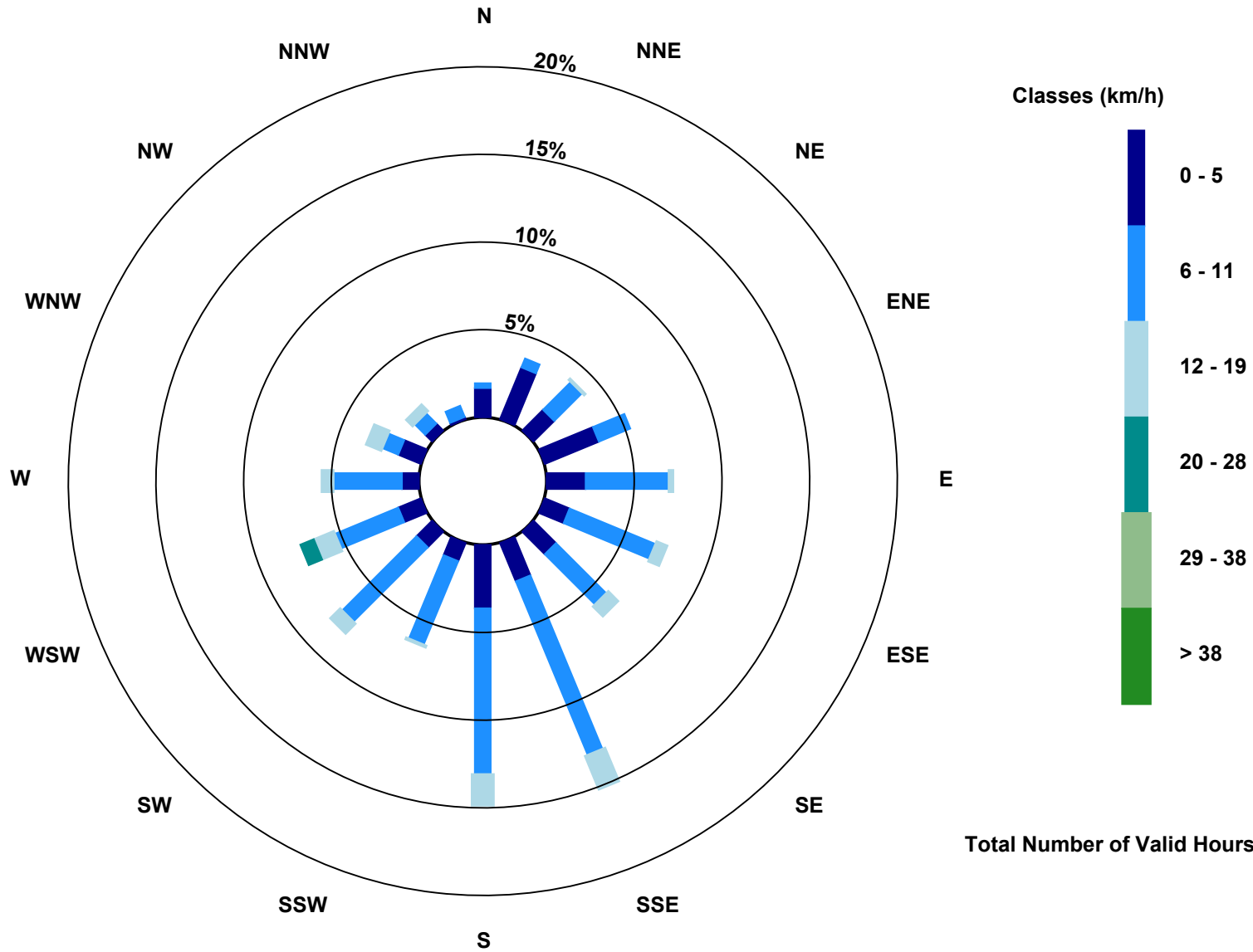
Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 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 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 7 km/h on Apr 10 15:00	Hours of Data: 719
Minimum Value: 1 km/h on Apr 29 01:00	Hours of Missing Data: 1
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 6	Hours of Calibration: 0
	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-Apr	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2-Apr	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	1	1	1	1	2	2	2	2	3
3-Apr	2	2	2	2	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	3
4-Apr	1	1	1	2	1	1	1	1	1	2	2	2	3	3	3	3	3	2	1	1	1	1	2	2	2	3
5-Apr	2	2	2	2	2	2	2	2	2	2	3	4	4	4	3	3	3	2	2	1	2	2	2	2	4	
6-Apr	2	2	3	2	2	2	3	3	3	4	4	4	5	5	5	5	5	5	5	4	4	4	4	4	5	
7-Apr	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	4	4	4	3	3	4	4	4	3	5	
8-Apr	3	3	3	3	2	2	2	2	3	3	3	2	2	2	3	3	3	3	2	2	1	2	2	2	3	
9-Apr	2	2	2	1	2	2	2	2	3	3	4	4	5	4	4	5	4	4	3	2	3	3	3	3	5	
10-Apr	3	4	6	7	6	5	5	6	7	6	7	7	7	6	7	7	6	4	3	2	2	2	2	1	7	
11-Apr	1	1	1	1	1	2	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	
12-Apr	2	2	1	1	1	1	2	2	3	4	5	6	5	5	5	5	4	3	2	1	1	1	1	2	6	
13-Apr	1	1	1	2	1	1	2	2	3	3	3	4	4	4	4	3	3	3	2	2	1	1	1	2	4	
14-Apr	2	2	2	3	1	1	1	1	2	2	2	2	3	2	4	3	4	2	1	1	1	1	1	1	4	
15-Apr	1	1	1	1	1	1	1	1	2	2	3	2	2	3	3	3	3	3	2	1	1	1	1	2	3	
16-Apr	2	2	2	2	2	3	2	3	3	5	5	5	5	5	5	5	5	5	4	3	4	4	4	4	5	
17-Apr	4	4	4	4	4	4	4	3	4	5	5	5	5	5	4	3	3	3	4	1	1	1	2	3	5	
18-Apr	2	1	1	1	2	1	1	2	2	2	2	2	2	2	2	3	2	2	1	1	1	2	2	3	3	
19-Apr	3	2	2	3	2	2	2	3	3	3	3	4	3	4	4	3	3	2	1	2	3	1	1	2	4	
20-Apr	2	2	2	2	1	1	2	2	3	4	4	5	4	4	4	4	4	4	3	3	3	2	2	2	5	
21-Apr	2	2	1	1	1	1	2	2	3	4	4	4	3	3	3	3	3	2	2	1	1	2	2	2	4	
22-Apr	2	1	2	2	1	1	1	1	3	3	4	4	4	3	4	4	4	3	2	2	1	1	2	2	4	
23-Apr	2	2	3	2	2	2	2	3	4	5	5	5	5	5	5	4	4	4	3	3	2	3	4	3	5	
24-Apr	3	2	3	3	3	3	3	4	4	4	3	4	4	4	4	4	4	4	4	3	3	2	3	3	4	
25-Apr	3	2	2	2	2	2	2	3	3	3	3	3	3	3	6	4	1	1	2	2	2	2	2	2	6	
26-Apr	2	3	3	3	4	3	3	DF	3	4	3	3	3	3	3	3	2	3	2	2	2	2	2	1	4	
27-Apr	1	1	1	1	1	1	1	2	2	3	3	3	4	3	3	3	3	3	2	1	1	1	2	3	4	
28-Apr	5	4	3	3	3	3	4	4	5	6	5	6	6	5	5	5	5	5	4	3	1	1	1	1	6	
29-Apr	1	1	1	1	1	1	2	2	3	3	3	3	4	3	3	3	3	3	2	2	2	3	4	3	4	
30-Apr	3	3	3	3	2	3	3	3	4	4	4	4	5	4	5	4	4	4	4	2	2	2	3	3	5	
Diurnal Maximum																										

DF - DAS Failure



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Jackfish 2/3 - April 2023

Direction of Maximum Speed: 245 deg on Apr 10 15:00 Direction of Maximum Daily Speed Average: 245.1 deg on Apr 10	Hours in Service: 720 Hours of Data: 719 Hours of Missing Data: 1
Direction of Minimum Speed: 311 deg on Apr 28 21:00 Direction of Minimum Daily Speed Average: 1.3 deg on Apr 4	Percent Operational Time: 99.9
Monthly Average Direction: 176.6 deg	

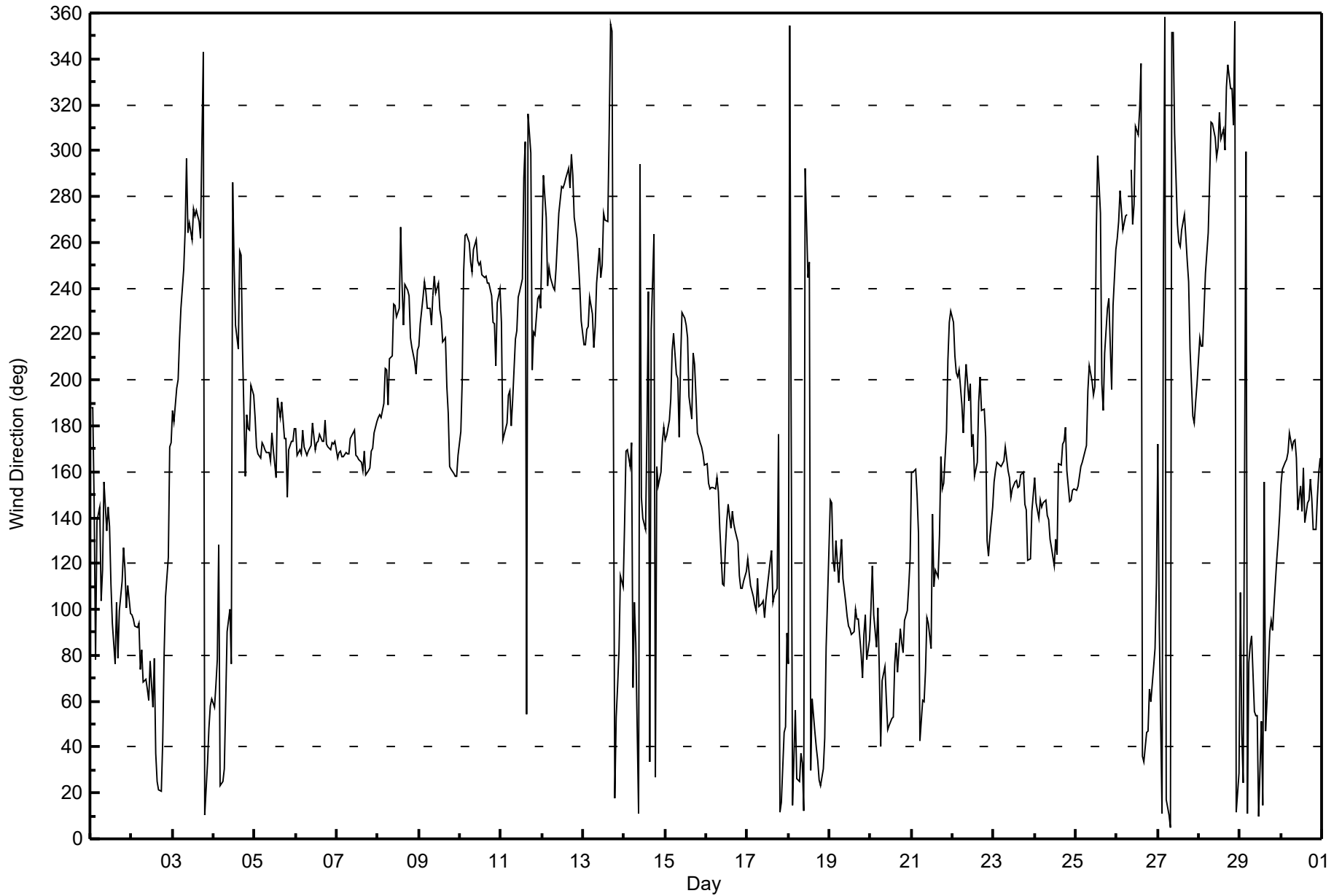
Day	Hourly Period Ending At (MST)																								Daily Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1-Apr	188	188	146	78	138	145	104	117	156	134	144	136	111	94	76	103	79	99	112	127	118	101	110	98	116.8
2-Apr	98	96	93	92	94	74	82	68	70	65	61	78	57	79	37	25	21	21	43	80	105	123	171	172	83.3
3-Apr	187	182	196	200	218	231	248	265	297	264	269	261	275	271	274	269	262	304	343	10	33	48	58	61	255.3
4-Apr	57	67	78	128	23	25	31	60	91	100	77	286	250	224	213	256	255	214	158	185	179	178	198	193	181.9
5-Apr	184	171	167	166	172	172	170	168	168	165	177	169	157	192	188	184	190	175	174	149	170	173	174	179	173.8
6-Apr	179	167	170	168	178	171	167	169	170	171	181	169	173	173	176	173	173	183	172	171	169	173	172	173	172.8
7-Apr	166	168	169	167	166	168	168	168	175	177	178	167	167	165	164	161	169	158	160	162	169	170	177	182	168.6
8-Apr	184	185	183	190	205	205	189	209	211	233	233	228	231	267	242	224	242	239	237	218	214	208	203	213	214.2
9-Apr	215	225	236	243	239	231	231	224	237	245	238	242	231	227	217	219	197	186	162	161	159	158	158	167	215.7
10-Apr	178	200	247	263	263	260	252	247	257	261	252	250	251	246	245	245	242	242	236	225	225	207	233	240	245.1
11-Apr	225	174	176	181	194	196	180	191	218	222	236	239	244	288	304	55	316	299	204	221	220	236	236	231	222.3
12-Apr	263	289	271	241	249	245	240	239	248	261	273	285	284	286	288	292	284	299	289	271	262	252	241	226	269.4
13-Apr	216	216	222	223	236	229	214	223	242	258	244	250	272	270	269	309	355	352	18	53	67	81	115	110	249.6
14-Apr	137	169	169	162	173	66	103	86	11	294	149	140	135	179	239	34	222	263	27	162	154	160	173	179	168.1
15-Apr	174	176	182	191	213	220	203	201	175	208	229	227	224	218	193	183	212	207	193	172	171	168	163	197.9	
16-Apr	164	155	152	153	153	153	157	151	135	111	110	126	139	146	136	143	137	134	129	115	109	109	112	117	133.0
17-Apr	122	116	110	106	102	99	113	101	102	104	96	104	115	121	126	103	106	109	176	12	16	47	49	89	104.1
18-Apr	76	355	14	36	56	26	25	37	33	12	292	245	252	30	61	46	40	34	26	23	31	44	84	104	37.5
19-Apr	147	146	121	116	130	112	121	130	114	103	97	93	91	89	90	100	96	96	81	70	89	98	78	87	103.2
20-Apr	100	119	97	83	101	73	40	69	75	61	48	49	52	53	76	85	73	91	86	81	95	100	110	122	77.3
21-Apr	160	160	161	150	133	42	61	59	73	96	94	83	142	110	117	114	132	167	153	155	177	209	225	230	128.2
22-Apr	225	211	203	201	205	189	177	195	207	191	198	171	176	158	164	190	201	187	187	175	130	123	132	145	185.5
23-Apr	155	160	164	163	162	164	165	171	160	157	149	153	155	156	153	154	158	160	146	144	121	122	143	150	153.9
24-Apr	158	147	140	148	145	146	148	141	139	131	127	119	130	124	164	163	172	173	179	161	147	148	152	152	148.6
25-Apr	152	154	158	162	164	169	171	195	206	200	194	197	264	298	273	198	187	212	231	235	215	196	232	257	205.1
26-Apr	262	269	283	265	269	271	272	DF	292	268	277	311	307	318	338	36	33	46	47	65	60	75	83	112	312.9
27-Apr	172	94	11	254	358	17	11	5	352	352	308	268	260	258	265	272	262	252	243	214	184	181	190	198	259.1
28-Apr	219	215	215	230	247	264	286	313	312	305	297	301	317	305	309	300	328	338	327	327	311	356	12	29	291.3
29-Apr	107	46	24	299	11	77	84	89	55	54	54	10	52	15	155	47	60	90	95	91	102	122	130	141	76.7
30-Apr	155	161	164	165	168	177	170	173	174	166	144	154	143	162	138	146	147	157	149	135	135	149	160	166	157.0
174.3 175.8 180.1 180.6 187.7 186.7 178.6 178.2 185.5 180.8 187.1 194.1 195.7 201.5 198.3 178.8 180.8 172.0 160.6 148.1 142.9 147.7 159.5 166.0																									
Diurnal Average																									

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 - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Jackfish 2/3 - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 113 deg on Apr 28 21:00	Hours of Data: 719
Minimum Value: 10 deg on Apr 11 07:00	Hours of Missing Data: 1
Percentiles: P ₁ = 11 P ₁₀ = 19 Q ₁ = 26 Median = 35 Q ₃ = 42 P ₉₀ = 52 P ₉₉ = 86	Hours of Calibration: 0
	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-Apr	26	23	83	47	31	34	26	44	47	39	41	52	55	48	40	42	35	30	37	36	36	31	36	31	83
2-Apr	32	36	32	29	33	26	28	33	41	40	38	39	41	65	77	53	75	37	25	19	23	43	30	26	77
3-Apr	23	26	24	22	22	17	19	33	42	39	37	37	41	37	39	39	37	51	45	38	31	25	24	26	51
4-Apr	19	17	40	32	42	29	22	36	41	32	97	59	80	41	54	48	51	83	64	30	26	29	27	23	97
5-Apr	22	22	22	22	21	21	19	28	29	46	46	44	40	35	38	40	37	33	37	42	32	29	28	27	46
6-Apr	25	23	24	25	21	21	22	22	27	33	35	37	41	36	38	39	39	35	37	33	30	30	32	34	41
7-Apr	36	29	30	32	32	31	30	32	33	33	36	36	36	42	44	40	38	39	42	52	36	30	31	31	52
8-Apr	32	29	27	23	35	22	23	21	24	40	36	33	61	72	44	43	37	25	16	18	20	17	19	20	72
9-Apr	16	14	14	11	14	16	14	16	19	26	25	24	30	26	31	24	33	40	44	48	48	45	41	35	48
10-Apr	32	30	28	32	33	31	24	24	27	32	27	24	26	26	22	21	19	20	17	18	18	18	21	11	33
11-Apr	22	11	13	14	15	19	10	11	24	60	60	42	54	55	52	84	66	98	21	14	14	14	13	14	98
12-Apr	30	43	83	11	15	10	12	18	25	33	39	38	40	38	37	46	37	48	43	25	24	24	12	37	83
13-Apr	15	14	15	16	13	15	18	19	24	31	27	31	42	42	52	59	51	40	30	20	23	27	32	59	
14-Apr	34	21	15	46	14	79	29	84	91	99	51	42	86	52	37	54	88	56	78	80	21	22	14	12	99
15-Apr	14	15	14	17	19	16	15	17	48	49	48	42	58	38	64	50	40	28	45	37	32	30	20	26	64
16-Apr	31	35	41	37	33	33	28	34	38	38	39	42	43	41	42	43	41	43	43	35	37	36	36	38	43
17-Apr	38	38	37	32	31	31	41	33	34	37	32	34	41	42	45	38	38	36	64	40	31	23	19	33	64
18-Apr	31	65	34	29	21	29	57	34	33	54	76	25	35	68	37	38	37	30	31	25	14	15	25	28	76
19-Apr	44	49	41	36	41	37	41	50	39	34	34	29	31	38	35	35	35	36	40	30	28	23	24	25	50
20-Apr	29	38	35	33	24	30	22	57	39	36	40	39	39	43	41	38	38	31	27	24	25	27	30	41	57
21-Apr	47	34	33	30	32	23	24	31	41	41	42	58	72	66	47	58	51	36	41	34	25	18	17	15	72
22-Apr	16	17	15	17	16	15	11	29	35	49	43	49	50	48	48	40	35	37	35	45	37	33	43	50	50
23-Apr	45	42	38	30	35	37	33	33	40	41	42	41	46	44	43	44	39	42	44	46	42	41	43	51	51
24-Apr	45	48	50	44	38	34	36	37	37	45	49	44	46	48	39	39	41	39	30	39	47	59	44	40	59
25-Apr	39	40	40	34	41	28	23	25	28	37	41	31	65	42	44	22	17	23	17	16	20	17	25	26	65
26-Apr	27	33	33	31	36	31	32	DF	36	33	39	48	51	53	61	37	47	27	30	24	22	22	26	33	61
27-Apr	20	86	51	66	75	32	35	54	68	74	68	39	35	34	40	41	42	27	27	24	20	33	27	25	86
28-Apr	23	23	25	18	18	31	42	43	50	45	43	43	50	47	44	44	51	49	49	52	113	38	42	31	113
29-Apr	48	79	29	61	54	41	25	44	39	43	56	87	76	65	99	51	54	36	27	21	26	42	40	41	99
30-Apr	45	35	34	27	24	27	27	30	32	41	44	42	42	43	50	48	43	41	43	45	52	43	38	33	52

48	86	83	66	75	79	57	84	91	99	97	87	86	72	99	84	88	98	78	80	113	59	44	51	
Diurnal Maximum																								

DF - DAS Failure



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS508
KIRBY NORTH
APRIL 2023

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

May 31, 2023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS 508)
 APRIL 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	685	34	35	99.86	13.9	0	2.9	0
H2S (ppb) Average	666	39	54	97.92	0.6	0	0.1	0
THC (ppm) Average	685	34	35	99.86	3.9	-	2.6	-
NO2 (ppb) Average	683	35	37	99.72	9.1	0	3.3	-
NO (ppb) Average	683	35	37	99.72	4.9	-	1.5	-
NOX (ppb) Average	683	35	37	99.72	12.1	-	4.8	-
Temperature 2 m (C) Average	719	0	1	99.86	18.7	-	11.6	-
Relative Humidity (%) Average	719	0	1	99.86	97.5	-	86.3	-
Wind Speed 10 m (km/h) Average	716	0	4	99.44	29	-	20	-
Wind Direction 10 m (deg) Average	716	0	4	99.44	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)
 APRIL 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	685	0.48	1.2	-	0	0	0	0.2	0.4	1.1	13.9
H2S (ppb) Average	666	0.06	0.1	-	0	0	0	0	0.1	0.1	0.6
THC (ppm) Average	685	2.31	0.2	-	1.9	2.1	2.2	2.3	2.4	2.4	3.9
NO2 (ppb) Average	683	1.29	1.1	-	0	0.3	0.6	1	1.7	2.5	9.1
NO (ppb) Average	683	0.17	0.5	-	0	0	0	0	0.1	0.5	4.9
NOX (ppb) Average	683	1.46	1.4	-	0	0.3	0.6	1.1	1.9	2.8	12.1
Temperature 2 m (C) Average	719	3.45	5.3	-	-8.8	-3.5	0	3.1	6.9	10.5	18.7
Relative Humidity (%) Average	719	54.91	21	-	17	27.6	36.7	53.8	70.9	85.9	97.5
Wind Speed 10 m (km/h) Average	716	11.2	5	-	1	5	7	10	14	19	29
Wind Direction 10 m (deg) Average	716	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)
APRIL 2023

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	27 Apr 2023 13:00	27 Apr 2023 13:00	1	Maintenance - power distribution card replaced
H2S, NO2	21 Apr 2023 12:00	21 Apr 2023 12:00	1	Maintenance - sample manifold cleaned
H2S	19 Apr 2023 19:00	20 Apr 2023 07:00	13	Maintenance - stabilization post Sox scrubber replacement
Wind Speed, Wind Direction	18 Apr 2023 05:00	18 Apr 2023 07:00	3	Flat line in sensor output signal



Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO₂) - ppb

Kirby North - April 2023

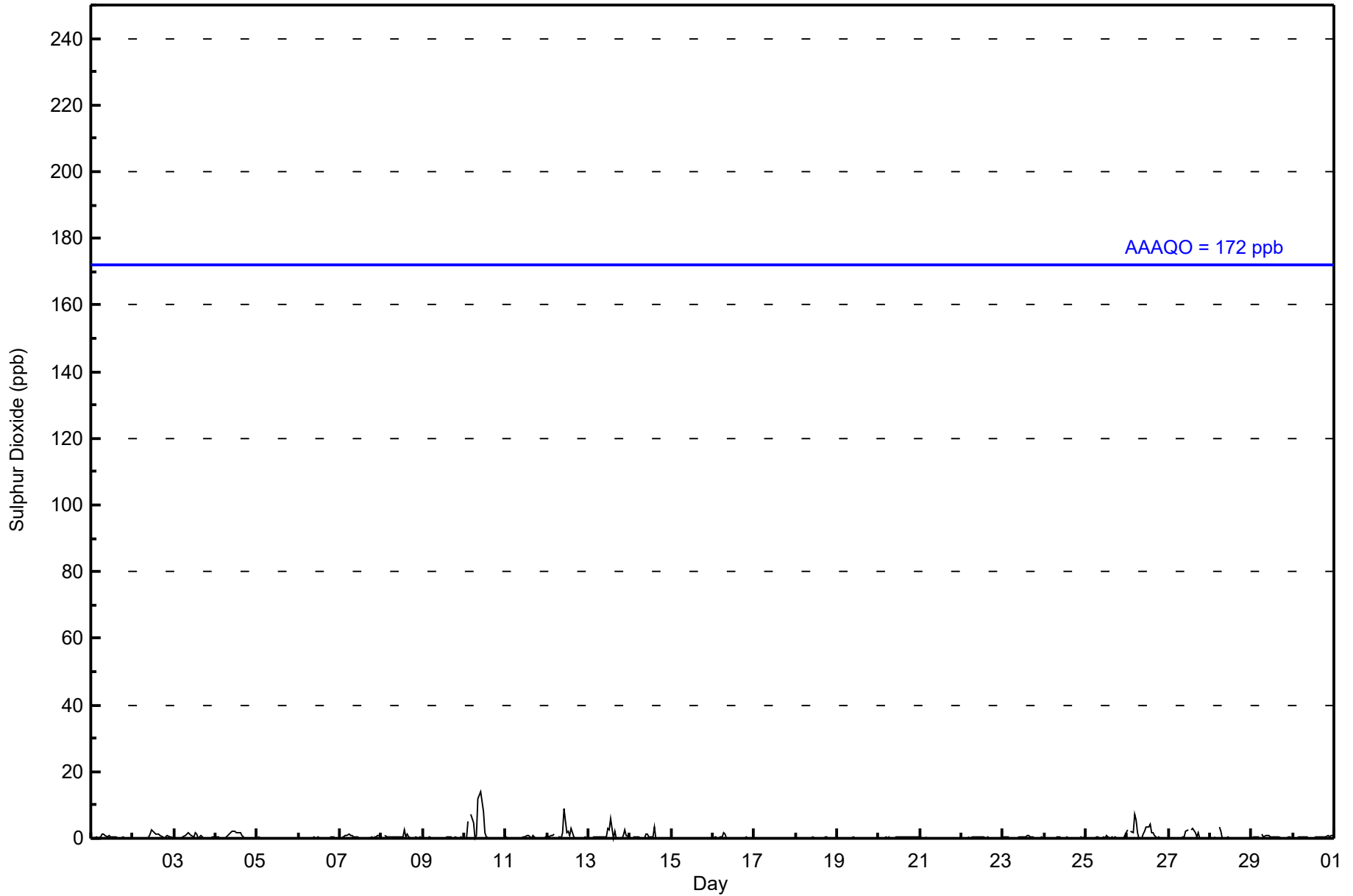
Number of Exceedences (AAAQO):		1-hr: 0	24-hr: 0	Hours in Service: 720																	Daily Average		Daily Maximum				
Maximum Value: 13.9 ppb on Apr 10 10:00		Maximum Daily Average: 2.9 ppb on Apr 10		Hours of Data: 685																	0.4		1.2				
Minimum Value: 0.0 ppb on Apr 2 07:00		Minimum Daily Average: 0.0 ppb on Apr 17		Hours of Missing Data: 35																	0.1		0.3				
Maximum Diurnal Average: 1.2 ppb at hour 11		Minimum Diurnal Average: 0.1 ppb at hour 19		Hours of Calibration: 34																	0.2		0.5				
Monthly Average: 0.48 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.0 Q ₁ = 0.0 Median = 0.2 Q ₃ = 0.4 P ₉₀ = 1.1 P ₉₉ = 6.2		Percent Operational Time: 99.9																	0.2		0.5				
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-Apr	Z	0.2	0.2	0.2	0.2	0.4	1.1	1.2	0.9	0.4	0.7	0.5	0.5	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.4	1.2	
2-Apr	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	2.5	1.5	1.2	1.2	1.2	0.7	0.3	0.1	0.5	0.7	0.4	0.2	0.0	0.5	2.5	
3-Apr	0.2	0.2	Z	0.1	0.1	0.4	0.8	1.2	1.6	1.1	0.9	0.6	1.9	1.2	0.2	0.9	0.3	0.0	0.1	0.0	0.0	0.0	0.2	0.5	0.5	1.9	
4-Apr	0.4	0.3	0.3	Z	0.1	0.0	0.2	0.8	1.4	2.1	2.1	2.3	1.8	1.8	1.8	0.7	0.3	0.1	0.1	0.2	0.0	0.1	0.1	0.2	0.8	2.3	
5-Apr	0.2	0.2	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.2	
6-Apr	0.0	0.1	0.0	0.0	0.2	Z	0.2	0.1	0.0	0.3	0.1	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.1	0.3	
7-Apr	Z	0.2	0.6	1.0	1.1	1.1	0.8	0.7	0.5	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.6	0.7	0.7	0.4	1.1	
8-Apr	0.6	Z	0.7	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	2.5	0.6	1.3	0.4	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.5	2.5	
9-Apr	0.2	0.3	Z	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.5	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.5	
10-Apr	0.1	0.1	5.3	Z	7.2	4.6	0.1	1.0	12.0	13.9	10.9	8.0	1.6	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	2.9	13.9	
11-Apr	0.2	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.1	0.1	0.4	0.2	0.9	1.0	0.3	0.0	0.9	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.2	1.0	
12-Apr	0.8	0.3	0.8	0.8	1.1	Z	0.2	0.2	0.1	1.8	8.9	1.8	2.2	1.0	2.8	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	1.0	8.9	
13-Apr	Z	0.0	0.0	0.4	0.6	0.6	0.5	0.5	0.4	0.5	0.5	3.0	2.7	6.0	0.1	2.2	0.2	0.0	0.0	0.0	1.0	2.3	0.8	0.5	1.0	6.0	
14-Apr	0.4	Z	0.3	0.3	0.3	0.2	0.1	0.1	0.2	1.5	1.4	0.3	0.2	0.4	3.4	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	3.4	
15-Apr	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.1	0.1	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	0.2	0.1	0.2	
16-Apr	0.1	0.3	0.5	Z	0.4	0.6	1.8	1.2	0.2	0.1	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.3	1.8	
17-Apr	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	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	0.2	
18-Apr	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.5	
19-Apr	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	
20-Apr	0.0	Z	0.1	0.1	0.2	0.2	0.3	0.1	0.0	0.1	0.2	0.6	0.5	0.5	0.4	0.2	0.4	0.4	0.3	0.4	0.4	0.4	0.2	0.2	0.3	0.6	
21-Apr	0.4	0.3	Z	0.2	0.2	0.0	0.0	0.0	0.0	C	C	C	C	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	
22-Apr	0.0	0.0	0.0	Z	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4	
23-Apr	0.4	0.5	0.3	0.3	Z	0.2	0.1	0.2	0.2	0.5	0.5	0.4	0.4	0.6	0.7	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.4	0.0	0.3	0.7	
24-Apr	0.0	0.0	0.1	0.1	0.1	Z	0.1	0.2	0.3	0.4	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.2	0.1	0.6	
25-Apr	Z	0.0	0.0	0.2	0.1	0.1	0.4	0.2	0.0	0.2	0.3	0.2	0.8	0.5	0.0	0.6	0.1	0.6	0.0	0.0	0.0	0.1	0.2	1.7	0.3	1.7	
26-Apr	2.5	Z	2.2	1.6	7.1	5.4	1.9	0.0	0.0	1.4	2.3	3.6	3.6	4.1	1.9	1.9	0.7	0.0	0.2	0.1	0.0	0.0	0.0	0.0	1.8	7.1	
27-Apr	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.3	0.3	2.0	2.4	M	2.6	3.2	1.9	0.5	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.2	
28-Apr	0.0	0.0	0.0	0.4	Z	3.4	2.0	0.0	0.0	0.0	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	3.4	
29-Apr	0.2	0.5	0.4	0.2	0.3	Z	1.1	0.3	0.9	1.0	0.7	0.5	0.5	0.6	0.5	0.6	0.3	0.2	0.0	0.0	0.0	0.5	0.2	0.1	0.4	1.1	
30-Apr	Z	0.2	0.2	0.3	0.4	0.5	0.5	0.5	0.3	0.1	0.0	0.0	0.2	0.4	0.3	0.5	0.5	0.3	0.6	0.5	0.7	0.4	0.8	0.7	0.4	0.8	
																								Diurnal Average		Diurnal Maximum	
																								0.3		2.5	
																								0.1		0.5	
																								0.5		5.3	
																								0.3		1.6	
																								0.8		7.2	
																								0.8		5.4	
																								0.4		2.0	
																								0.3		1.2	
																								0.7		12.0	
																								1.0		13.9	
																								1.2		10.9	
																								1.0		8.0	
																								0.8		3.6	
																								0.9		6.0	
																								0.6		3.4	
																								0.5		2.2	
																								0.2		0.9	
																								0.2		1.7	
																								0.1		0.6	
																								0.1		1.0	
																								0.1		2.3	
																								0.2		0.8	
																								0.2		1.7	

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 (SO₂) - ppb
Kirby North - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Sulphur Dioxide (SO₂) - ppb
Kirby North - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	682	99.56	99.56
11 - 20	3	0.44	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: 685

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Sulphur Dioxide (SO₂) - ppb
Kirby North - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 10	13	13	28	32	42	53	72	80	139	55	40	22	13	31	32	15	680
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
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
Totals	13	13	28	32	42	53	72	80	139	55	40	22	16	31	32	15	683

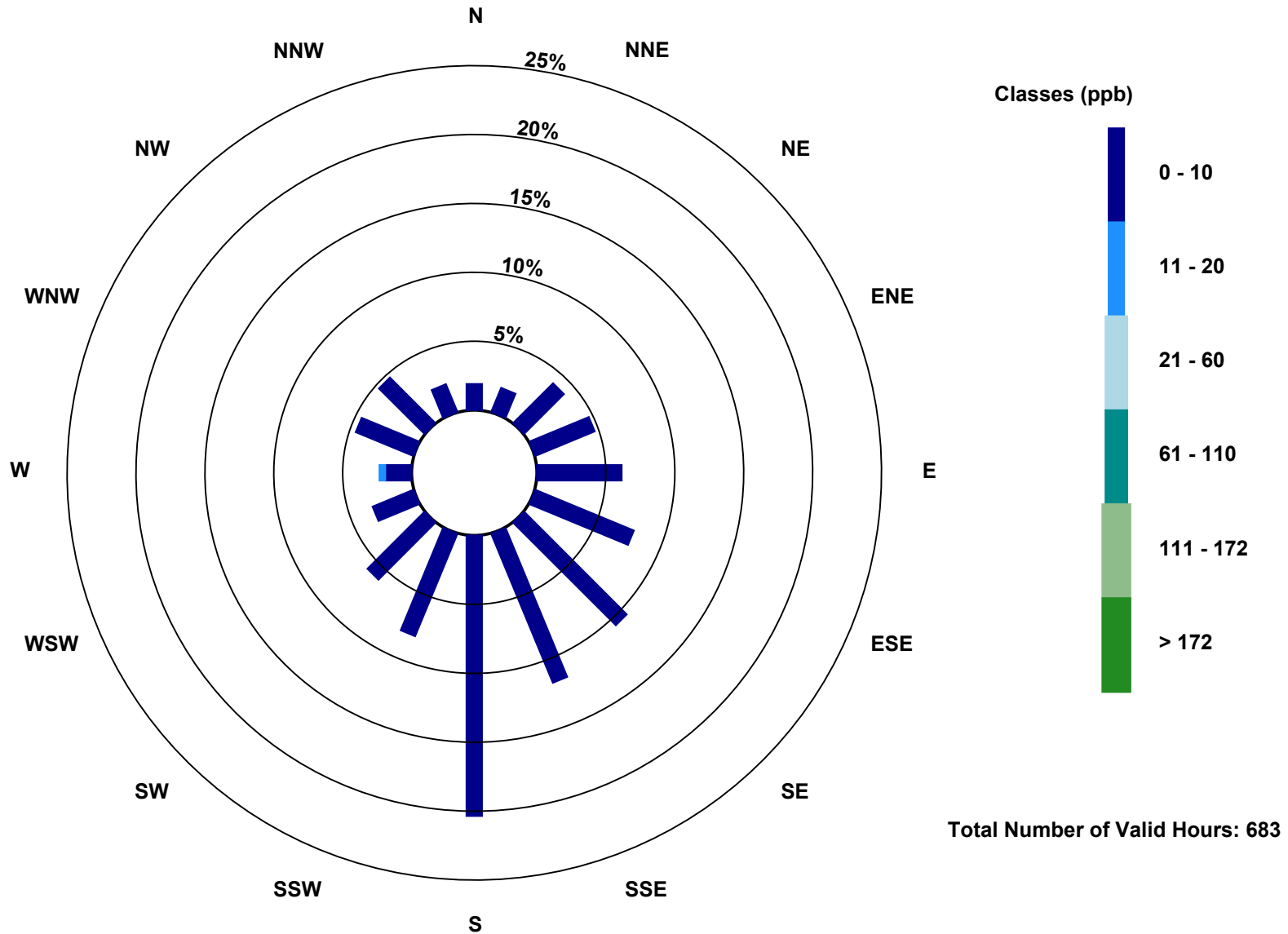
Total Number of Valid Hours: 683

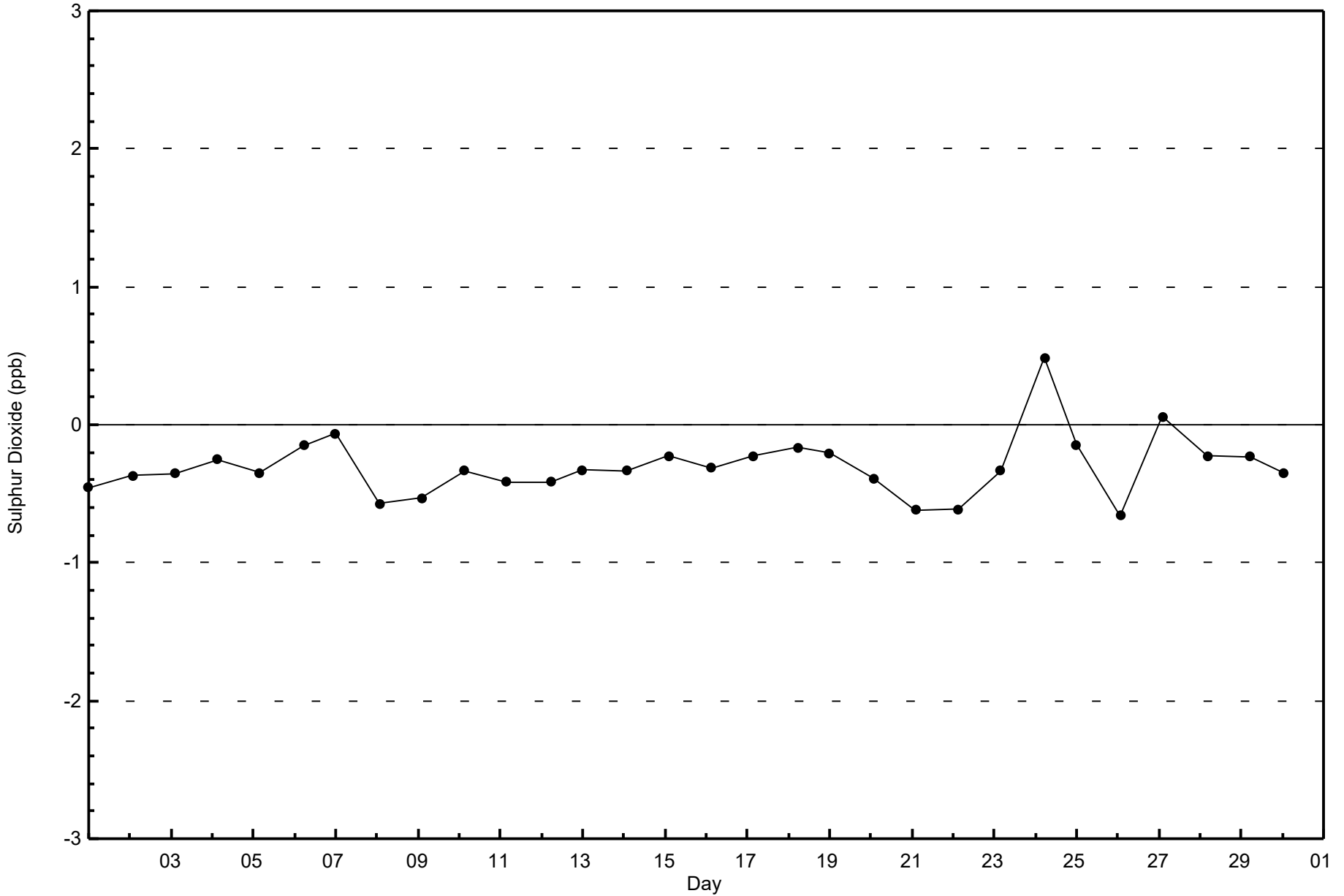
Total Number of Hours: 720

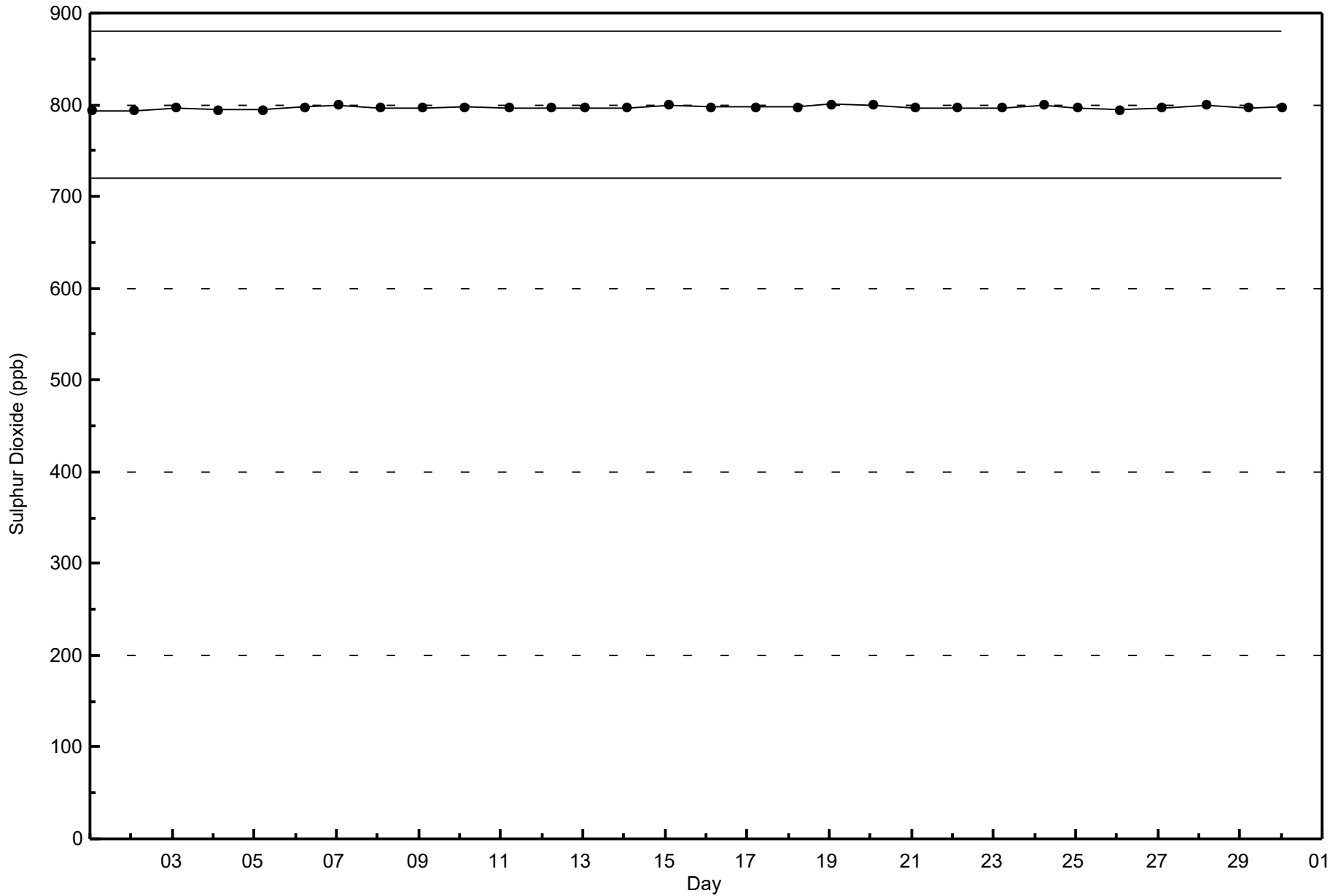


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Sulphur Dioxide (SO₂) - ppb
Kirby North



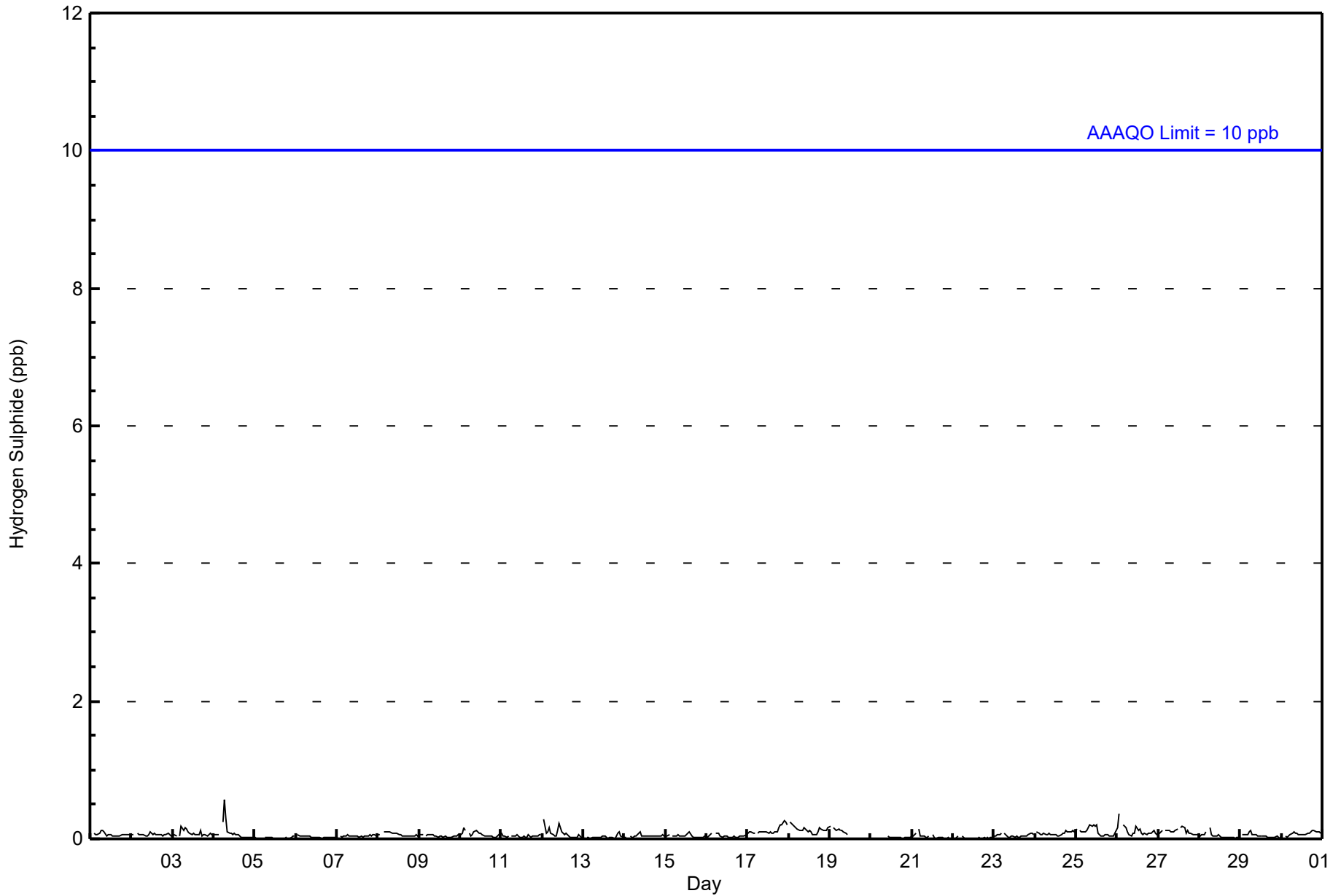






Wood Buffalo Environmental Association
Hourly Averages

Hydrogen Sulphide (H₂S) - ppb
Kirby North - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Hydrogen Sulphide (H₂S) - ppb
Kirby North - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	666	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: 666

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Hydrogen Sulphide (H₂S) - ppb
Kirby North - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 2	11	13	28	28	34	46	75	78	142	53	39	24	15	30	32	15	663
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
Totals	11	13	28	28	34	46	75	78	142	53	39	24	15	30	32	15	663

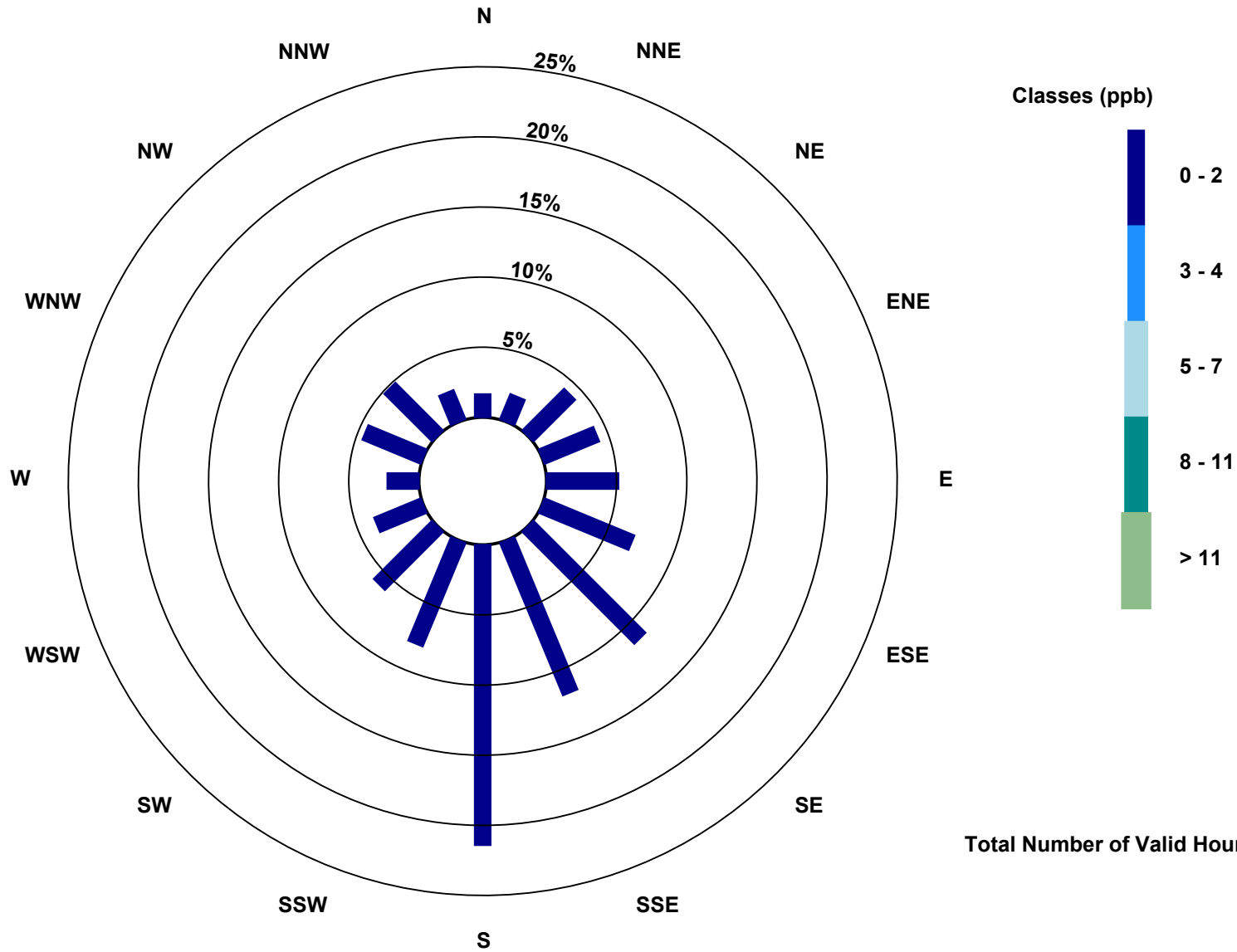
Total Number of Valid Hours: 663

Total Number of Hours: 720

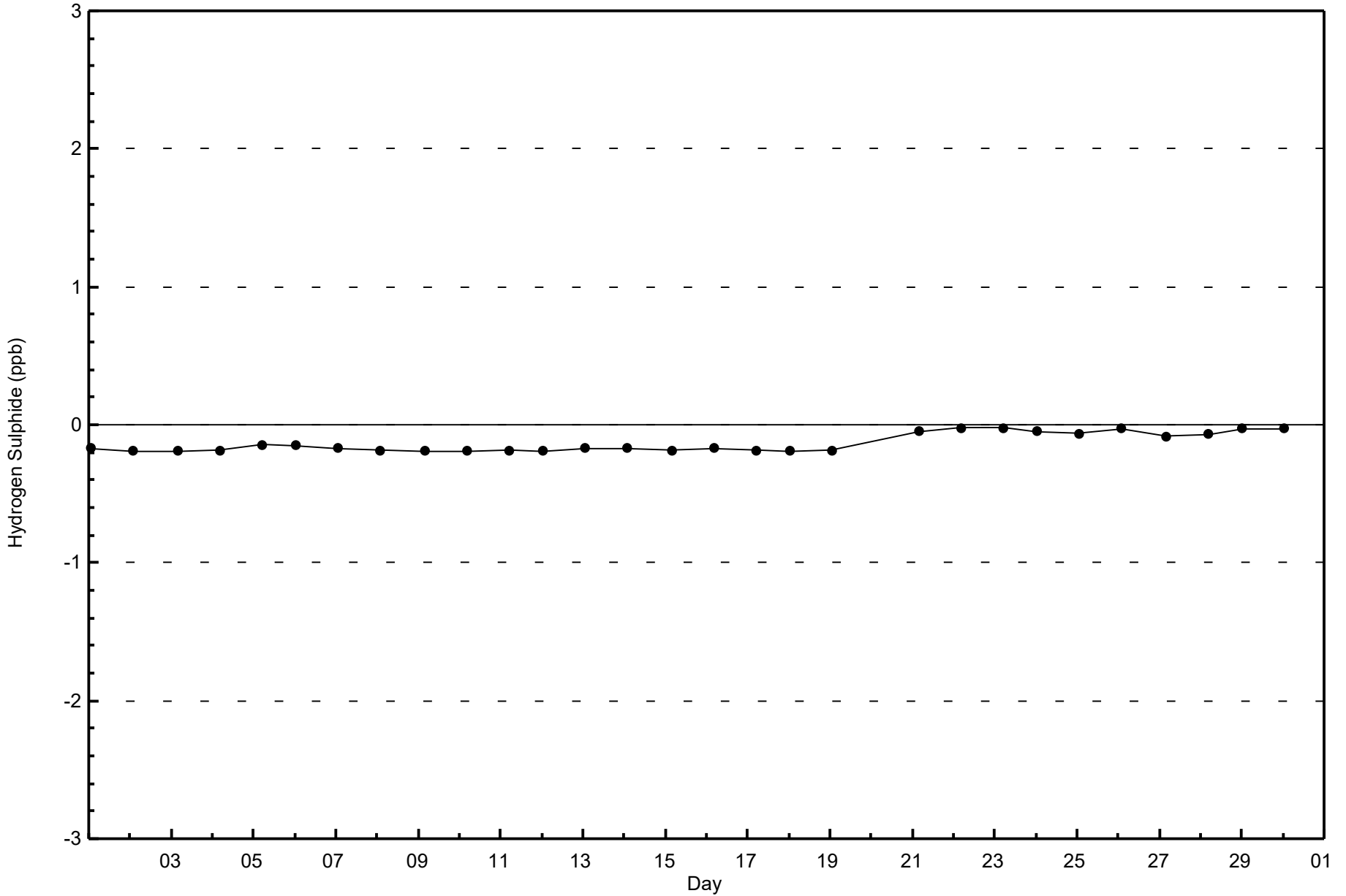


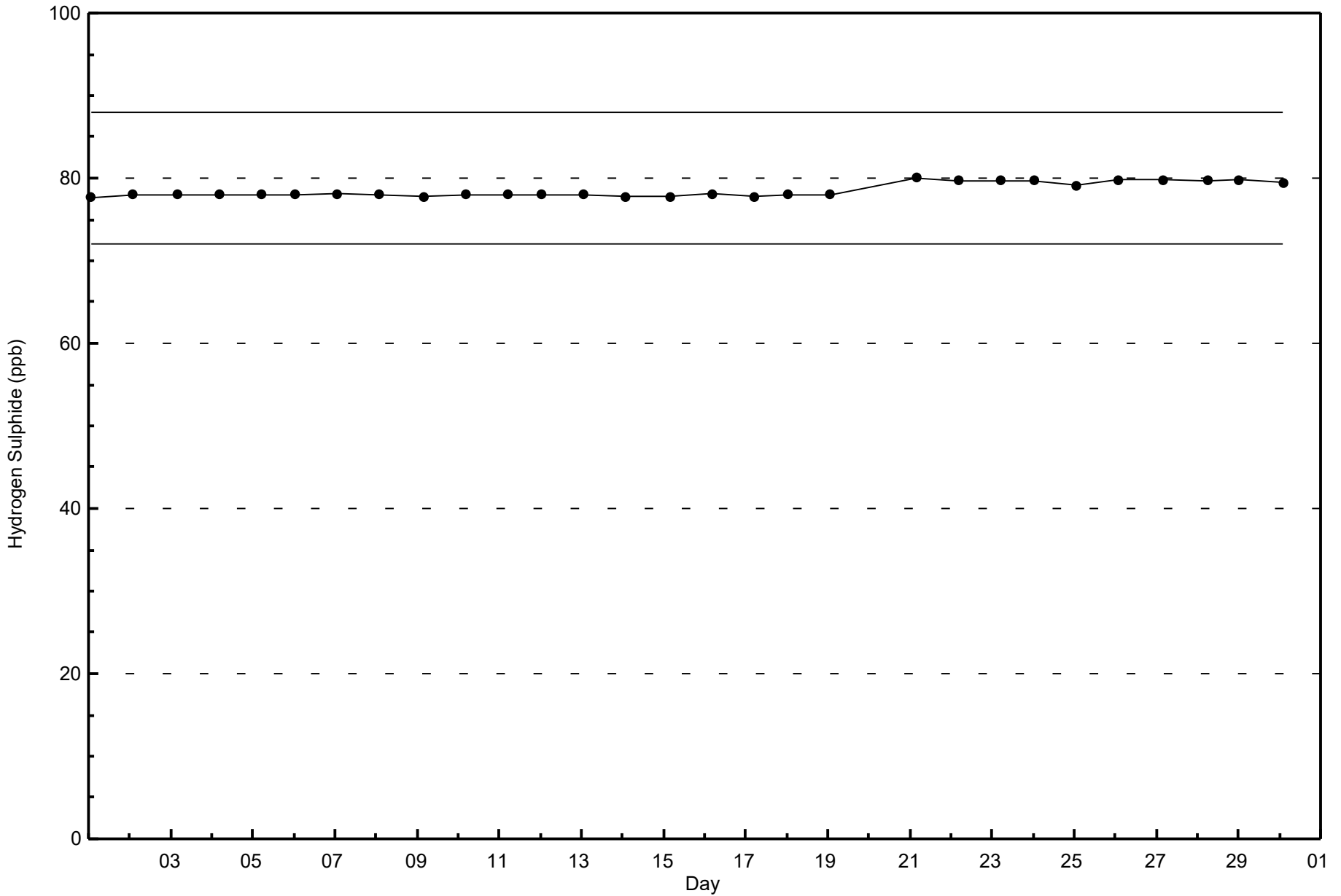
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Hydrogen Sulphide (H₂S) - ppb
Kirby North



Total Number of Valid Hours: 663







Wood Buffalo Environmental Association
Summary of Hour Averages

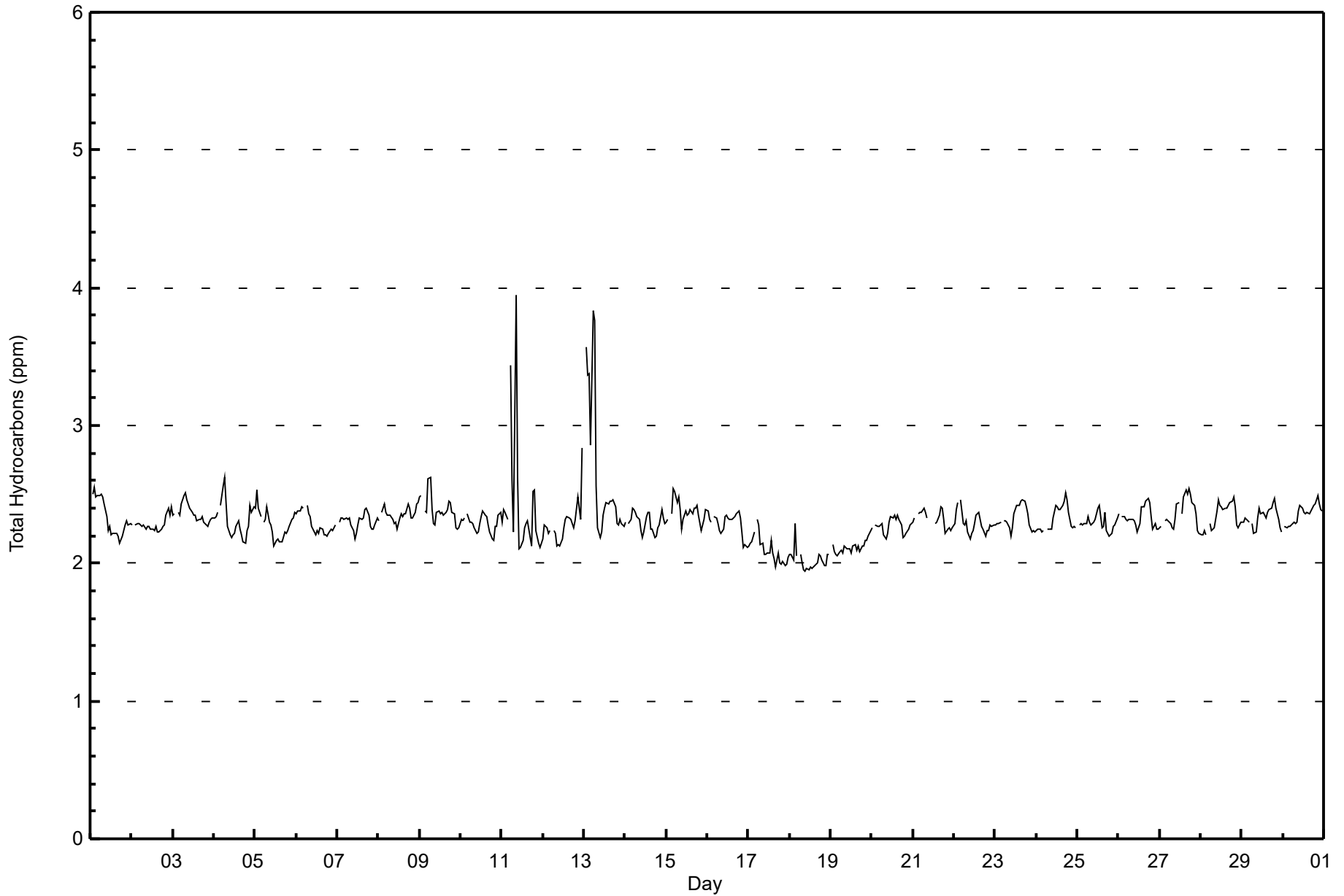
Total Hydrocarbons (THC) - ppm
Kirby North - April 2023

Maximum Value: 3.9 ppm on Apr 11 09:00		Maximum Daily Average: 2.6 ppm on Apr 13		Hours in Service: 720																							
Minimum Value: 1.9 ppm on Apr 18 10:00		Minimum Daily Average: 2.0 ppm on Apr 18		Hours of Data: 685																							
Maximum Diurnal Average: 2.5 ppm at hour 6		Minimum Diurnal Average: 2.3 ppm at hour 10		Hours of Missing Data: 35																							
Monthly Average: 2.31 ppm		Percentiles: P ₁ = 2.0 P ₁₀ = 2.1 Q ₁ = 2.2 Median = 2.3 Q ₃ = 2.4 P ₉₀ = 2.4 P ₉₉ = 2.9		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-Apr	Z	2.5	2.6	2.5	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.3	2.2	2.2	2.2	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-Apr	2.3	Z	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	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.4	2.3	2.4
3-Apr	2.4	2.4	Z	2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.4	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	2.3	2.3	2.3
4-Apr	2.3	2.3	2.4	Z	2.4	2.6	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.4
5-Apr	2.4	2.5	2.4	2.3	Z	2.3	2.3	2.4	2.3	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.5
6-Apr	2.4	2.4	2.4	2.4	2.4	Z	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3
7-Apr	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3
8-Apr	2.3	Z	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	2.4	2.4
9-Apr	2.5	2.5	Z	2.4	2.4	2.6	2.6	2.4	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.3	2.4	2.4	2.6
10-Apr	2.3	2.3	2.3	Z	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.4
11-Apr	2.3	2.4	2.4	2.3	Z	3.4	2.6	2.2	3.9	2.6	2.1	2.1	2.2	2.3	2.3	2.3	2.2	2.1	2.5	2.5	2.2	2.1	2.1	2.1	2.4	3.9	2.4
12-Apr	2.2	2.3	2.3	2.2	2.2	Z	2.2	2.2	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	2.5	2.4	2.3	2.8	2.3	2.8
13-Apr	Z	3.6	3.4	3.4	2.9	3.8	3.8	2.6	2.3	2.2	2.2	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.6
14-Apr	2.3	Z	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.3	2.4	2.4	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3
15-Apr	2.3	2.3	Z	2.4	2.5	2.5	2.4	2.5	2.4	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.3	2.3	2.4	2.4	2.4	2.5
16-Apr	2.4	2.3	2.3	Z	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	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.3	2.4	2.3
17-Apr	2.1	2.1	2.2	2.2	Z	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
18-Apr	2.1	2.1	2.0	2.3	2.1	Z	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.3
19-Apr	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	2.2	2.2	2.2	2.2	2.2	2.1
20-Apr	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3
21-Apr	2.3	2.3	Z	2.4	2.4	2.4	2.4	2.4	2.3	C	C	C	C	2.3	2.3	2.3	2.4	2.4	2.3	2.2	2.2	2.3	2.2	2.3	2.2	2.3	2.3
22-Apr	2.3	2.4	2.4	Z	2.5	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3
23-Apr	2.3	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.2	2.3	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.3	2.5
24-Apr	2.2	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3
25-Apr	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4
26-Apr	2.4	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.4	2.4	2.4	2.4	2.5	2.4	2.3	2.2	2.3	2.2	2.2	2.2	2.3	2.5
27-Apr	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.4	2.4	M	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.2	2.2	2.2	2.4	2.5
28-Apr	2.2	2.2	2.2	2.2	Z	2.3	2.2	2.2	2.3	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3
29-Apr	2.3	2.3	2.3	2.3	2.3	Z	2.3	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.3	2.3	2.2	2.3	2.5
30-Apr	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.5
																								Diurnal Average			
																								Diurnal Maximum			
Z - zerospan C - Calibration M - Maintenance																											



Wood Buffalo Environmental Association
Hourly Averages

Total Hydrocarbons (THC) - ppm
Kirby North - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm
Kirby North - April 2023

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	22	3.21	3.21
2.1 - 3.0	656	95.77	98.98
3.1 - 10.0	7	1.02	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Total Hydrocarbons (THC) - ppm
Kirby North - April 2023

Concentration 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	4	7	0	0	3	0	0	0	0	2	1	0	1	1	1	22
2.1 - 3.0	11	9	21	32	42	50	72	79	136	53	38	20	16	30	31	14	654
3.1 - 10.0	0	0	0	0	0	0	0	1	3	2	0	1	0	0	0	0	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	13	13	28	32	42	53	72	80	139	55	40	22	16	31	32	15	683

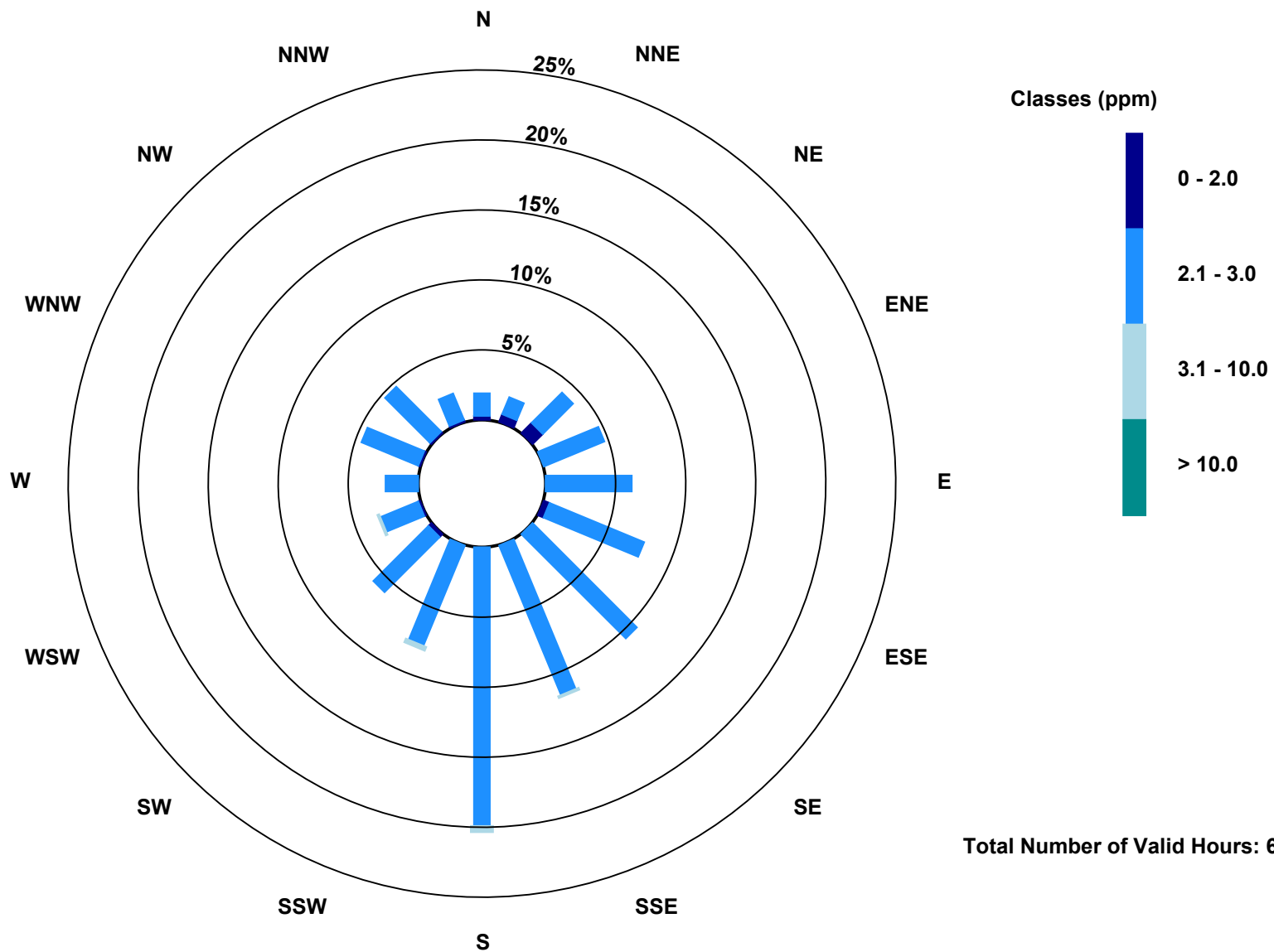
Total Number of Valid Hours: 683

Total Number of Hours: 720

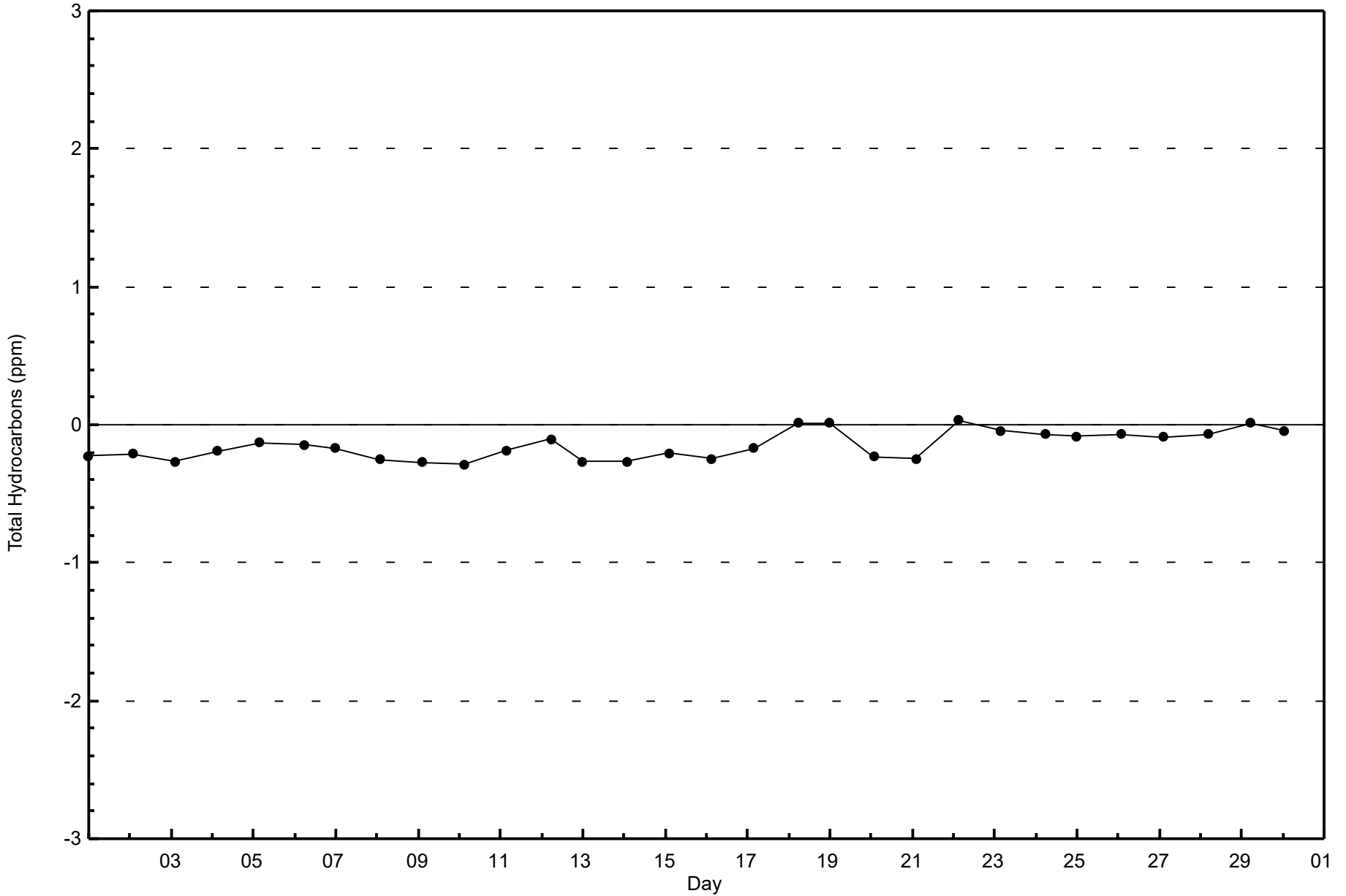


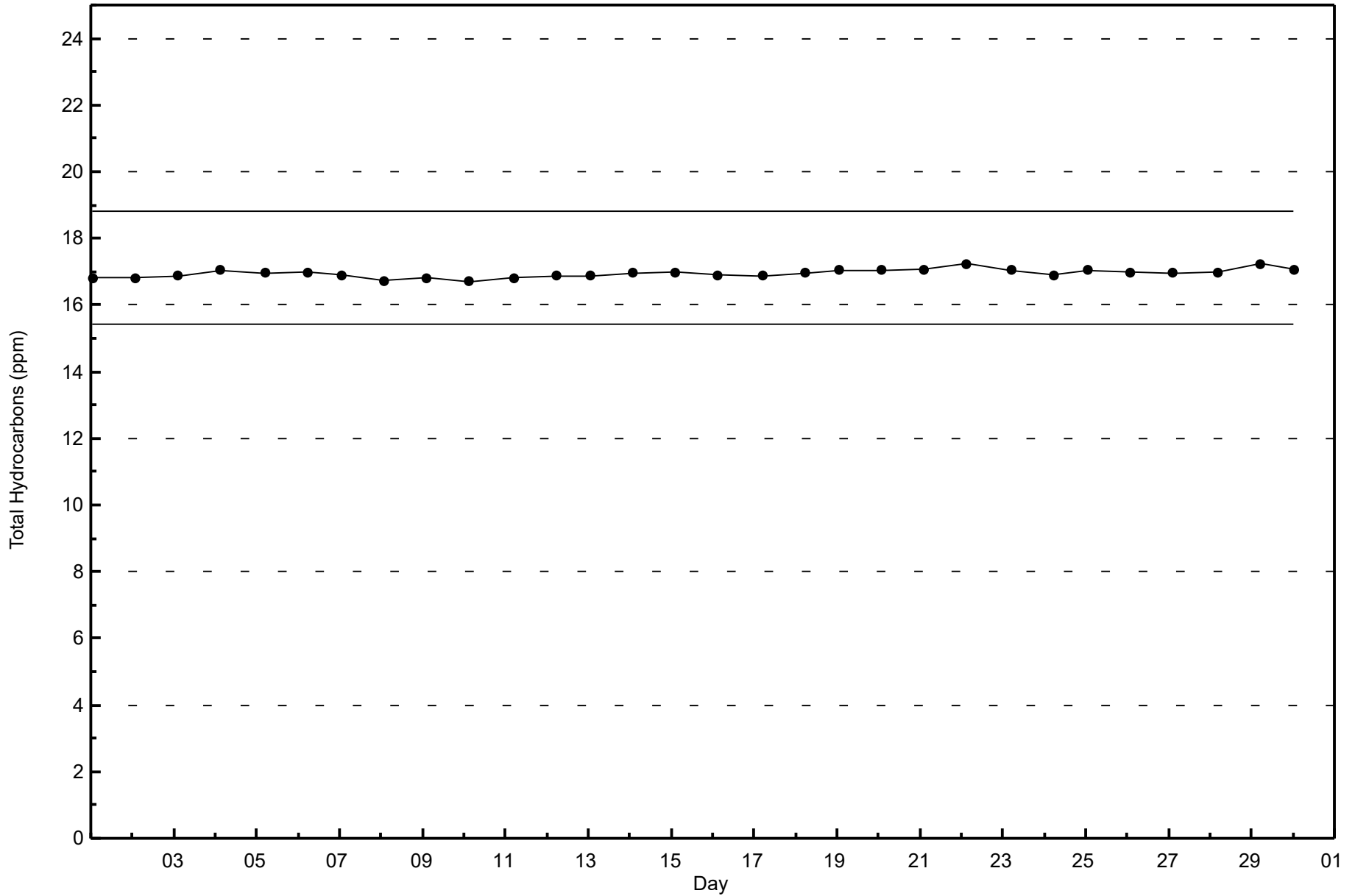
Wood Buffalo Environmental Association
Wind Rose Apr 2023

Total Hydrocarbons (THC) - ppm
Kirby North



Total Number of Valid Hours: 683

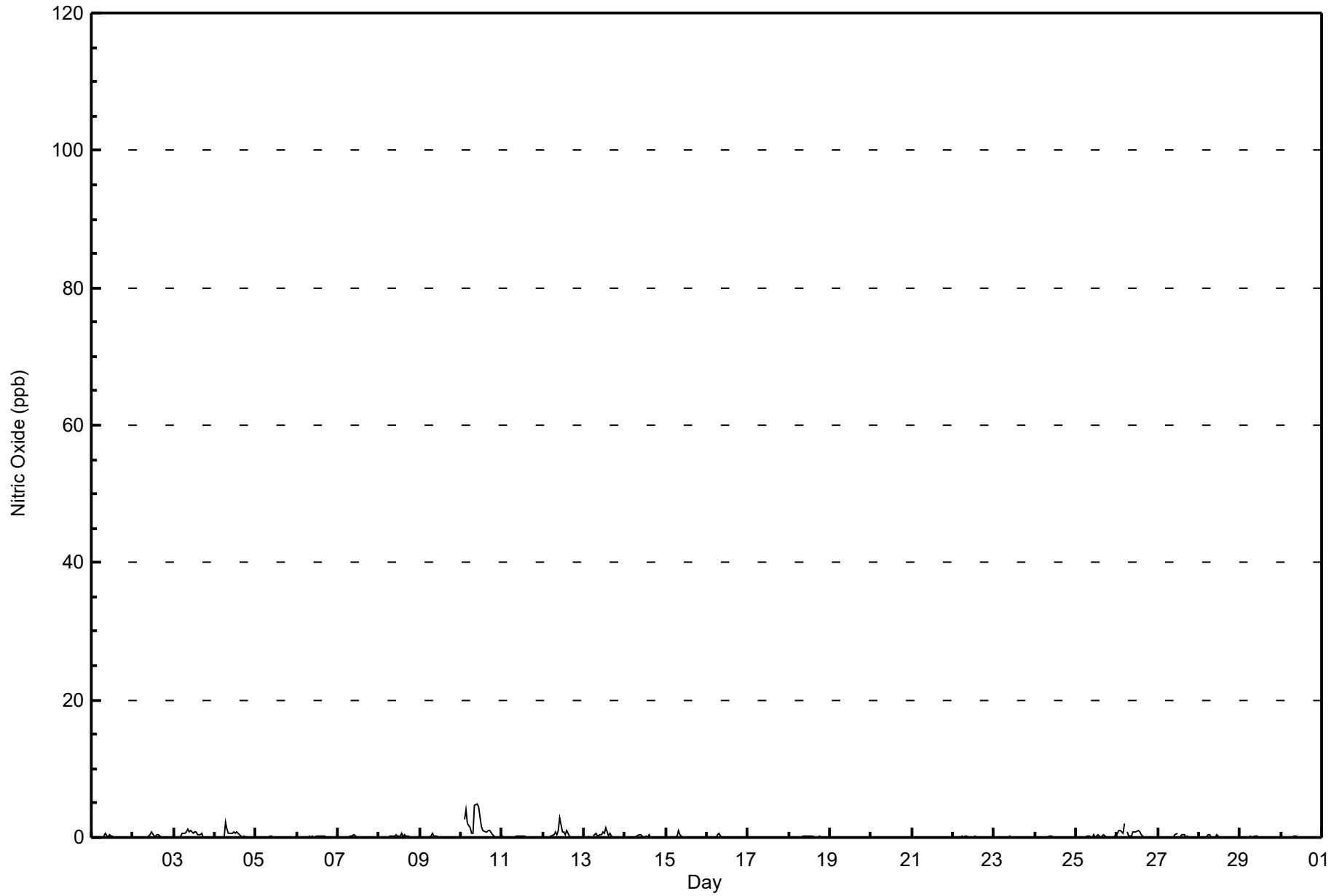






Wood Buffalo Environmental Association
Hourly Averages

Nitric Oxide (NO) - ppb
Kirby North - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Nitric Oxide (NO) - ppb
Kirby North - April 2023**

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitric Oxide (NO) - ppb
Kirby North - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	13	14	25	28	40	56	73	80	142	52	39	23	18	30	32	15	680
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
Totals	13	14	25	28	40	56	73	80	142	52	39	23	18	30	32	15	680

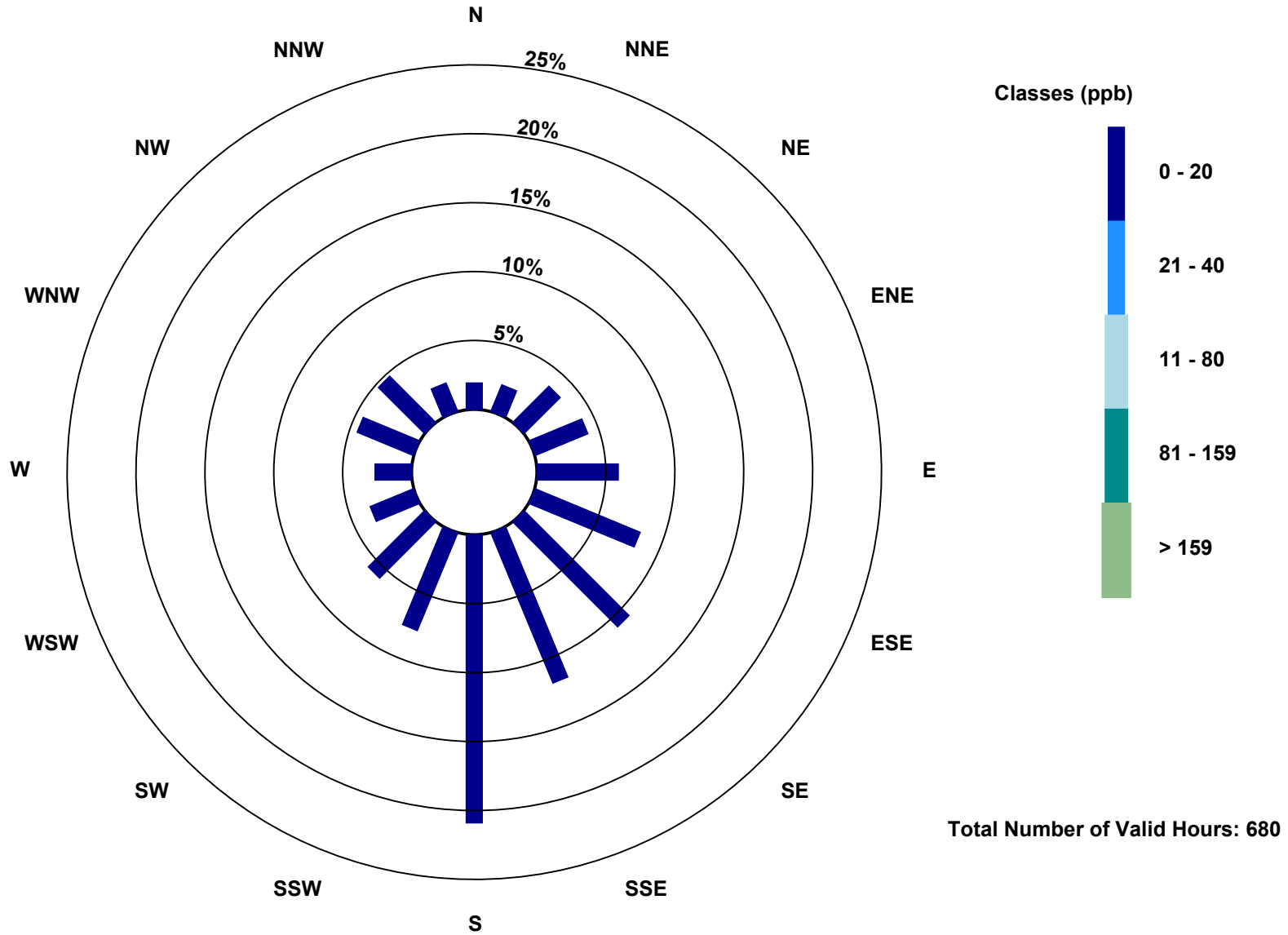
Total Number of Valid Hours: 680

Total Number of Hours: 720



Wood Buffalo Environmental Association
Wind Rose Apr 2023

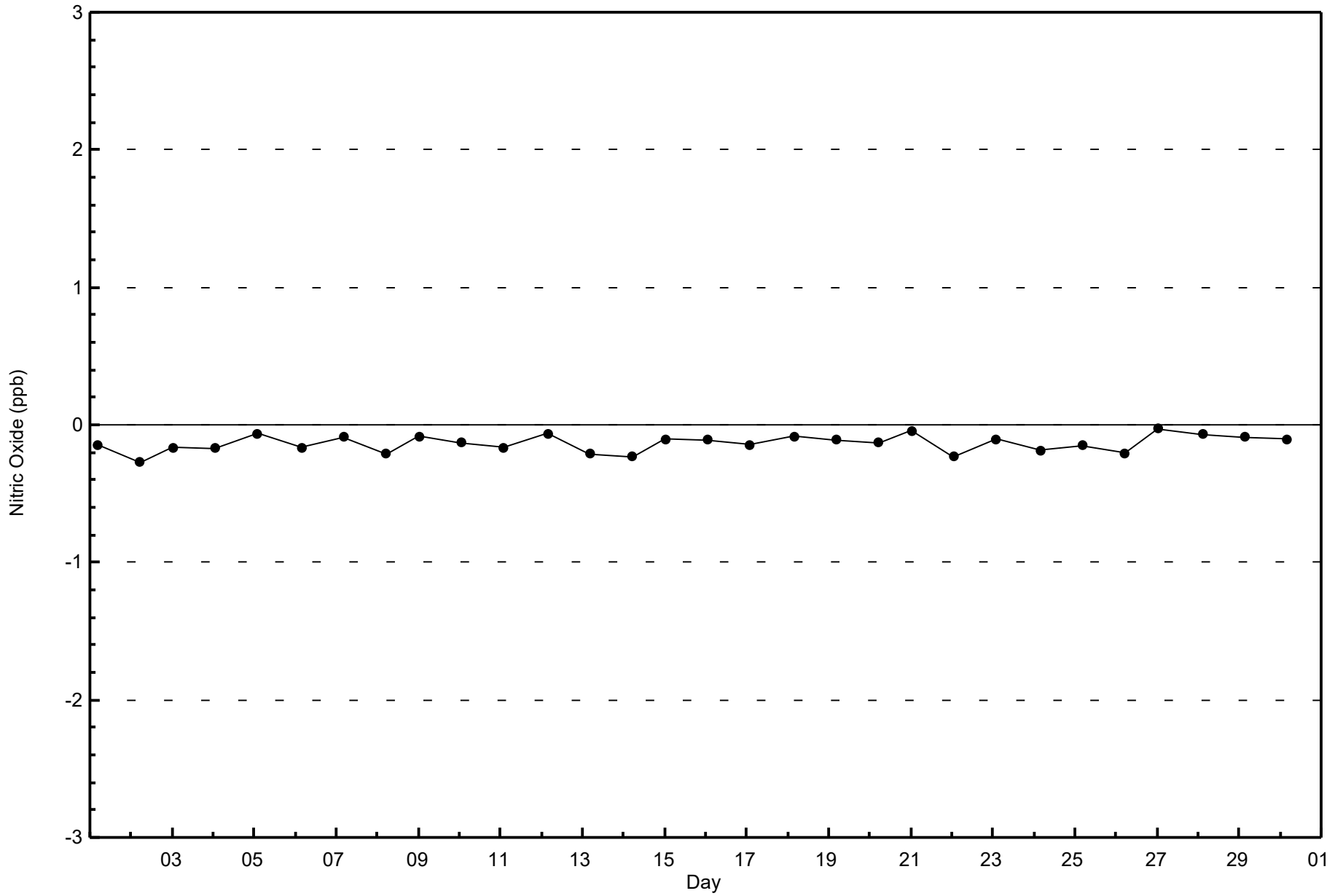
Nitric Oxide (NO) - ppb
Kirby North





Wood Buffalo Environmental Association
Zero Responses

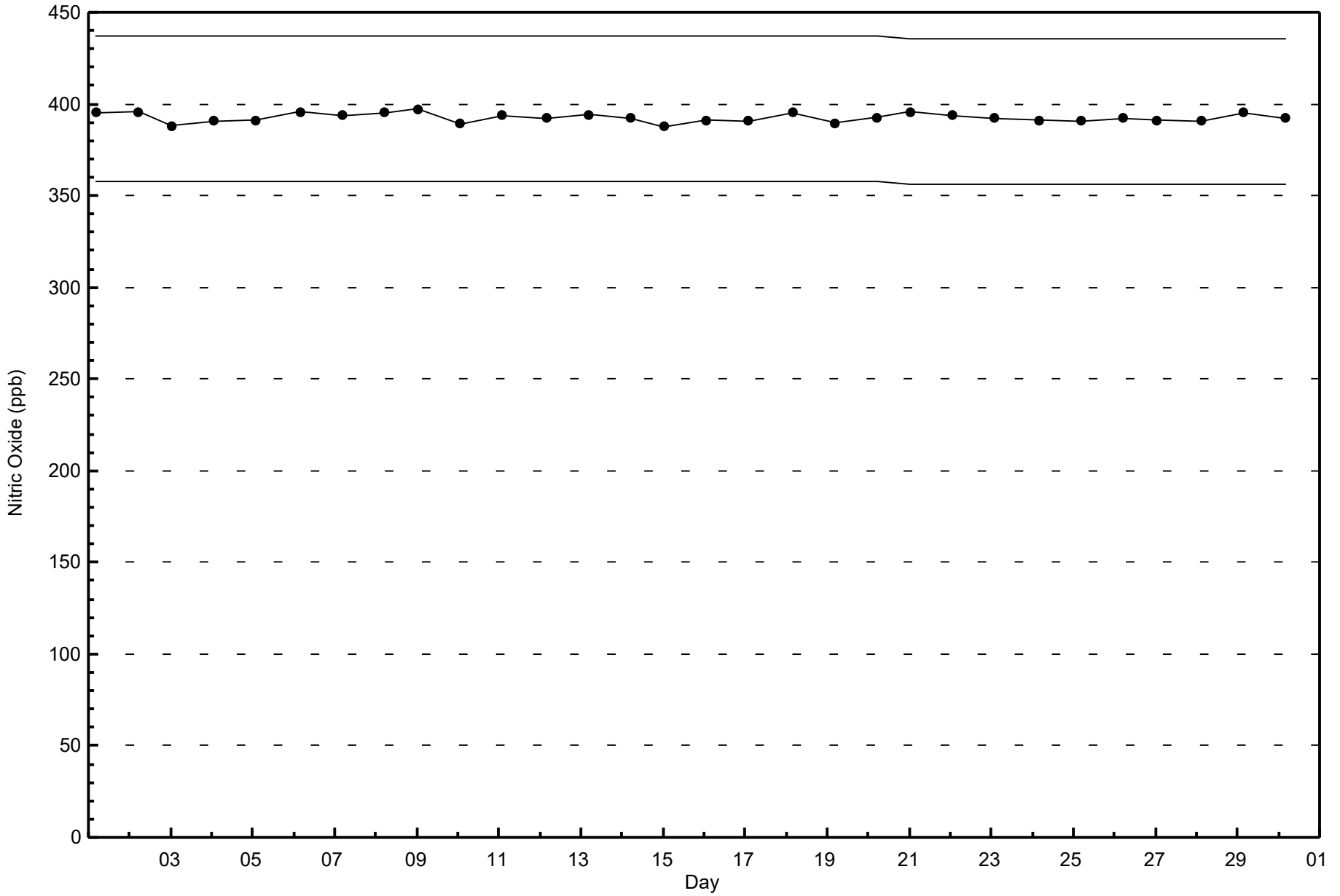
Nitric Oxide (NO) - ppb
Kirby North - April 2023





Wood Buffalo Environmental Association
Span Responses

Nitric Oxide (NO) - ppb
Kirby North - April 2023





Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO₂) - ppb

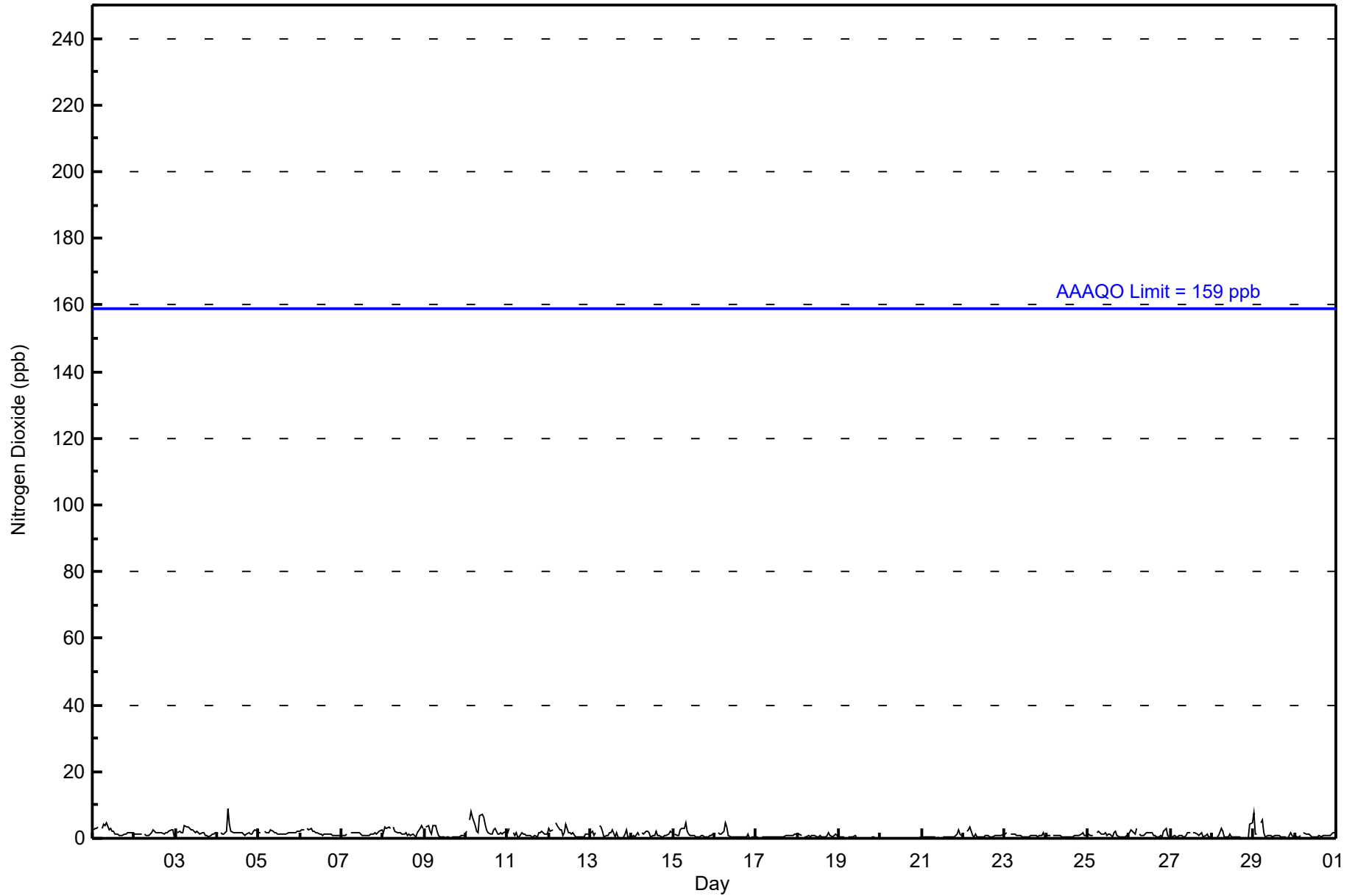
Kirby North - April 2023

Number of Exceedences (AAAQO):		1-hr: 0 24-hr: 0		Hours in Service:		720																				
Maximum Value: 9.1 ppb on Apr 4 07:00		Maximum Daily Average: 3.3 ppb on Apr 10		Hours of Data:		683																				
Minimum Value: 0.0 ppb on Apr 19 13:00		Minimum Daily Average: 0.1 ppb on Apr 20		Hours of Missing Data:		37																				
Maximum Diurnal Average: 2.2 ppb at hour 6		Minimum Diurnal Average: 0.8 ppb at hour 18		Hours of Calibration:		35																				
Monthly Average: 1.29 ppb		Percentiles: P ₁ = 0.0 P ₁₀ = 0.3 Q ₁ = 0.6 Median = 1.0 Q ₃ = 1.7 P ₉₀ = 2.5 P ₉₉ = 5.8		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-Apr	2.6	2.8	2.8	3.3	Z	2.9	4.4	4.0	4.6	2.5	3.0	2.3	2.2	1.4	1.3	1.0	1.0	0.9	1.1	1.3	1.5	1.6	1.6	1.5	2.2	4.6
2-Apr	1.4	1.4	1.4	1.3	1.2	Z	1.1	0.9	0.9	1.2	1.8	2.4	1.6	1.7	1.9	1.8	1.5	1.3	1.7	1.6	2.0	2.4	2.4	0.5	1.5	2.4
3-Apr	Z	1.6	2.3	1.6	1.6	3.9	3.2	3.5	3.1	2.6	2.5	1.7	2.0	1.8	1.3	1.7	1.5	0.8	0.7	0.6	0.7	1.1	1.2	1.5	1.8	3.9
4-Apr	1.6	Z	1.5	1.3	1.3	2.3	9.1	4.4	2.0	1.8	1.5	1.8	1.6	1.8	1.8	1.1	0.7	1.2	1.6	1.1	1.1	2.0	2.6	2.1	2.1	9.1
5-Apr	1.8	1.6	Z	2.0	1.8	1.8	1.9	2.4	2.2	1.9	1.6	1.3	1.3	1.2	1.2	1.1	1.2	1.5	1.5	1.5	1.7	1.9	2.2	2.2	1.7	2.4
6-Apr	2.2	2.5	2.7	Z	2.8	2.7	2.9	2.3	2.2	1.9	1.7	1.2	1.2	1.0	1.2	1.3	1.2	1.1	1.3	0.9	0.7	0.7	0.8	0.8	1.6	2.9
7-Apr	0.8	0.8	1.0	1.1	Z	1.8	1.9	1.8	1.9	1.9	1.5	1.1	1.0	1.0	0.8	0.8	0.9	1.1	1.3	1.9	1.4	1.7	2.1	2.5	1.4	2.5
8-Apr	1.9	3.2	3.1	3.6	2.9	Z	3.4	2.1	1.6	1.5	1.9	1.4	1.4	1.8	0.8	1.4	1.0	1.4	0.8	0.5	1.7	3.0	3.7	2.9	2.0	3.7
9-Apr	Z	3.4	4.0	2.3	1.1	3.7	4.0	2.3	0.7	0.5	0.6	0.3	0.2	0.3	0.3	0.2	0.4	0.5	0.4	0.4	0.6	0.7	0.8	1.0	1.2	4.0
10-Apr	2.0	Z	5.4	8.0	6.2	3.8	2.3	1.7	6.9	7.1	6.3	4.2	2.6	1.6	1.4	1.4	2.4	3.0	1.4	1.2	1.8	1.1	1.7	2.0	3.3	8.0
11-Apr	1.7	3.1	Z	1.6	0.7	1.9	0.3	0.5	1.9	1.3	1.1	0.7	0.9	0.9	0.6	0.5	1.0	0.3	1.7	1.9	2.1	1.2	1.1	1.1	1.2	3.1
12-Apr	3.0	2.1	2.5	Z	4.5	3.9	2.7	2.5	1.0	1.7	4.2	1.7	1.6	1.1	1.7	0.4	0.5	0.4	0.5	0.3	0.3	1.3	1.3	1.3	1.8	4.5
13-Apr	1.9	2.1	0.8	1.7	Z	3.7	3.4	2.3	0.6	0.8	0.8	1.5	1.5	2.6	0.6	1.5	0.6	0.2	0.2	0.3	1.2	2.4	0.6	0.3	1.4	3.7
14-Apr	0.3	0.7	0.5	1.7	1.0	Z	1.5	1.2	2.0	2.0	1.5	0.6	0.7	0.8	2.1	0.7	0.8	0.6	0.5	0.7	1.0	1.2	2.1	1.5	1.1	2.1
15-Apr	Z	1.1	1.0	0.9	2.5	3.0	3.1	4.5	2.3	1.2	0.8	0.8	0.8	0.6	0.6	0.7	0.7	0.5	0.6	0.6	0.7	0.9	1.3	1.3	1.3	4.5
16-Apr	1.1	Z	1.5	1.2	1.3	2.3	4.7	3.4	0.9	0.3	0.5	0.6	0.4	0.5	0.4	0.3	0.4	0.4	0.5	1.1	0.2	0.2	0.3	0.4	1.0	4.7
17-Apr	0.5	0.5	Z	0.5	0.3	0.3	0.3	0.5	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.7	0.8	0.7	1.1	1.3	0.6	1.3
18-Apr	1.0	1.2	0.9	Z	0.6	0.4	0.8	0.6	0.7	0.8	0.9	0.5	0.5	0.7	0.5	0.3	0.3	0.7	1.5	0.9	0.5	0.9	1.2	1.0	0.8	1.5
19-Apr	0.5	0.5	0.6	0.5	Z	0.6	0.6	0.5	0.4	0.8	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.1	0.1	0.3	0.8
20-Apr	0.1	0.1	0.0	0.0	0.1	Z	0.1	0.2	0.0	C	C	C	C	C	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.3	0.1	0.3
21-Apr	Z	0.6	0.6	0.5	0.5	0.3	0.6	0.3	0.1	0.1	0.3	M	0.3	0.4	0.4	0.5	0.5	0.4	0.5	0.5	1.1	2.7	1.1	0.8	0.6	2.7
22-Apr	1.0	Z	2.3	2.6	3.2	0.8	0.6	1.3	0.6	0.5	0.5	0.5	0.6	0.7	0.9	0.5	0.5	0.6	0.8	0.9	0.7	1.0	0.9	1.3	1.0	3.2
23-Apr	1.4	1.7	Z	1.3	1.2	1.1	1.2	1.0	0.8	0.8	0.6	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.8	0.6	1.0	0.7	1.5	0.6	0.9	1.7
24-Apr	0.8	0.7	0.8	Z	0.8	0.7	0.7	0.8	0.8	0.6	0.6	0.6	0.6	0.4	0.5	0.5	0.9	1.0	1.0	0.9	1.3	1.9	0.8	0.7	0.8	1.9
25-Apr	1.2	0.8	0.8	1.0	Z	1.8	2.3	1.8	1.2	1.2	1.5	1.0	1.3	1.2	0.6	1.6	2.1	1.0	0.5	0.3	0.3	0.5	0.5	1.3	1.1	2.3
26-Apr	1.7	2.4	2.0	1.4	2.8	Z	1.3	0.7	0.9	1.2	1.6	1.6	1.8	1.5	1.0	1.0	0.6	0.3	0.8	0.5	2.0	3.1	0.8	0.3	1.4	3.1
27-Apr	Z	0.4	0.7	0.6	0.5	0.8	0.7	0.6	0.6	0.7	1.5	1.7	M	1.5	1.5	1.4	0.8	1.1	1.7	0.5	1.0	1.2	0.5	0.6	0.9	1.7
28-Apr	0.2	0.2	Z	0.3	0.9	2.8	2.1	0.3	0.3	0.6	1.2	0.6	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	4.2	4.7	0.9	4.7
29-Apr	7.8	1.4	1.2	Z	4.5	5.7	1.5	0.5	0.8	0.9	0.9	0.6	0.7	0.7	0.8	0.7	0.6	0.3	0.3	0.2	0.2	1.7	0.7	0.3	1.4	7.8
30-Apr	1.3	0.3	0.4	0.8	Z	1.5	1.4	1.3	1.3	0.7	0.6	0.5	0.5	0.6	0.7	0.6	0.7	0.7	0.8	0.9	1.0	1.3	1.6	1.7	0.9	1.7
																								Diurnal Average		
																								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 (NO₂) - ppb
Kirby North - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Dioxide (NO₂) - ppb
Kirby North - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	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: 683

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Nitrogen Dioxide (NO₂) - ppb
Kirby North - April 2023**

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	13	14	25	28	40	56	73	80	142	52	39	23	18	30	32	15	680
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
Totals	13	14	25	28	40	56	73	80	142	52	39	23	18	30	32	15	680

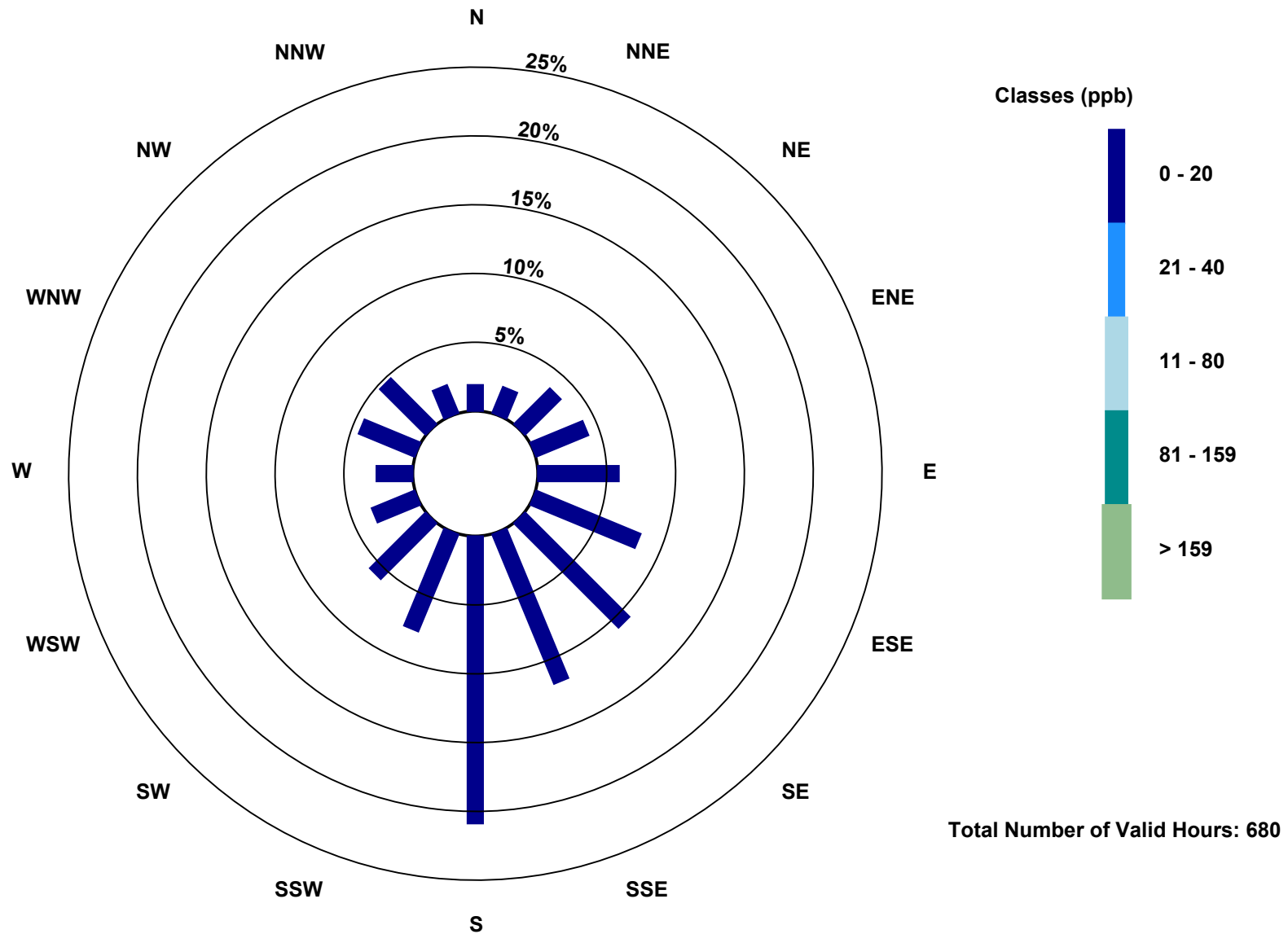
Total Number of Valid Hours: 680

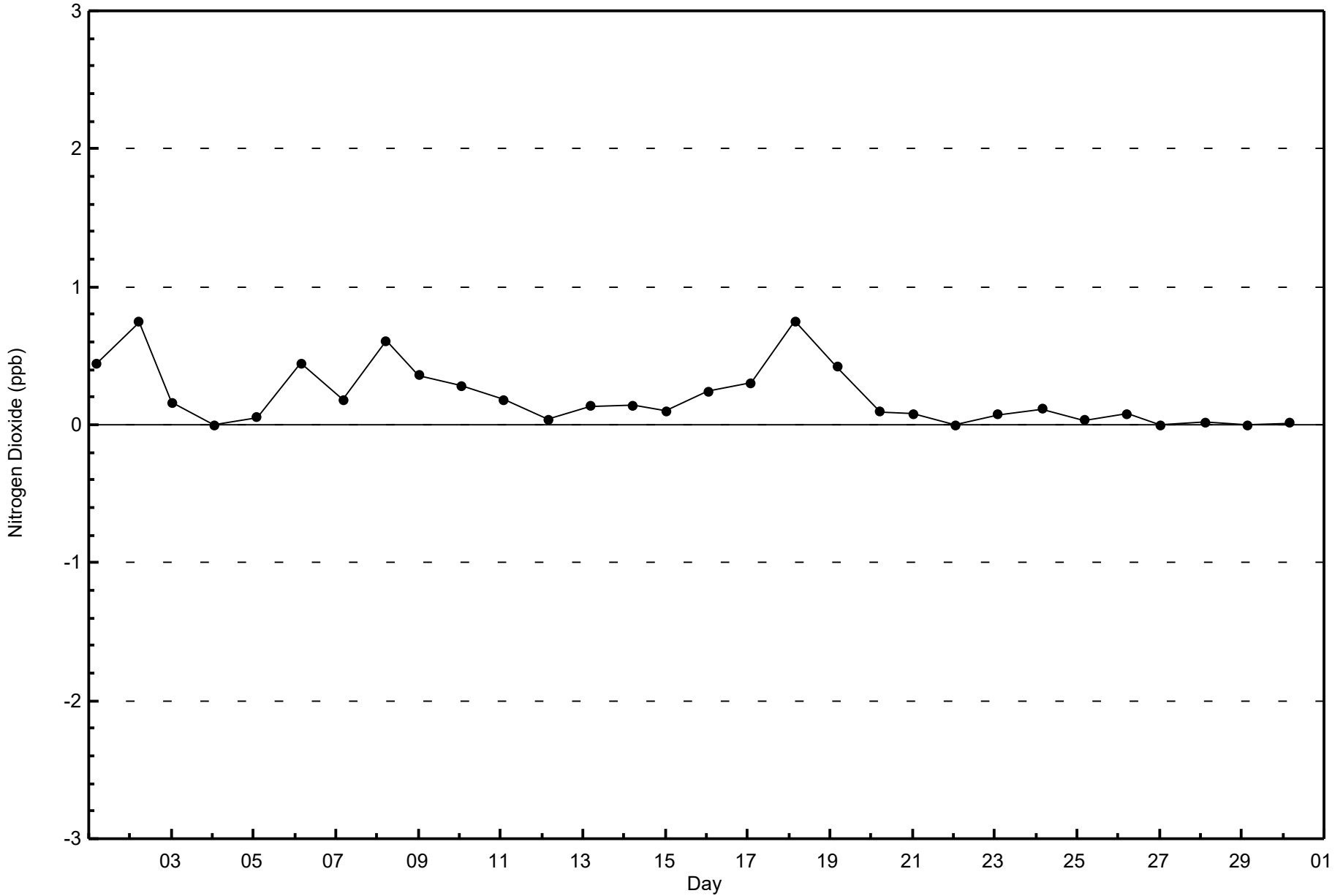
Total Number of Hours: 720

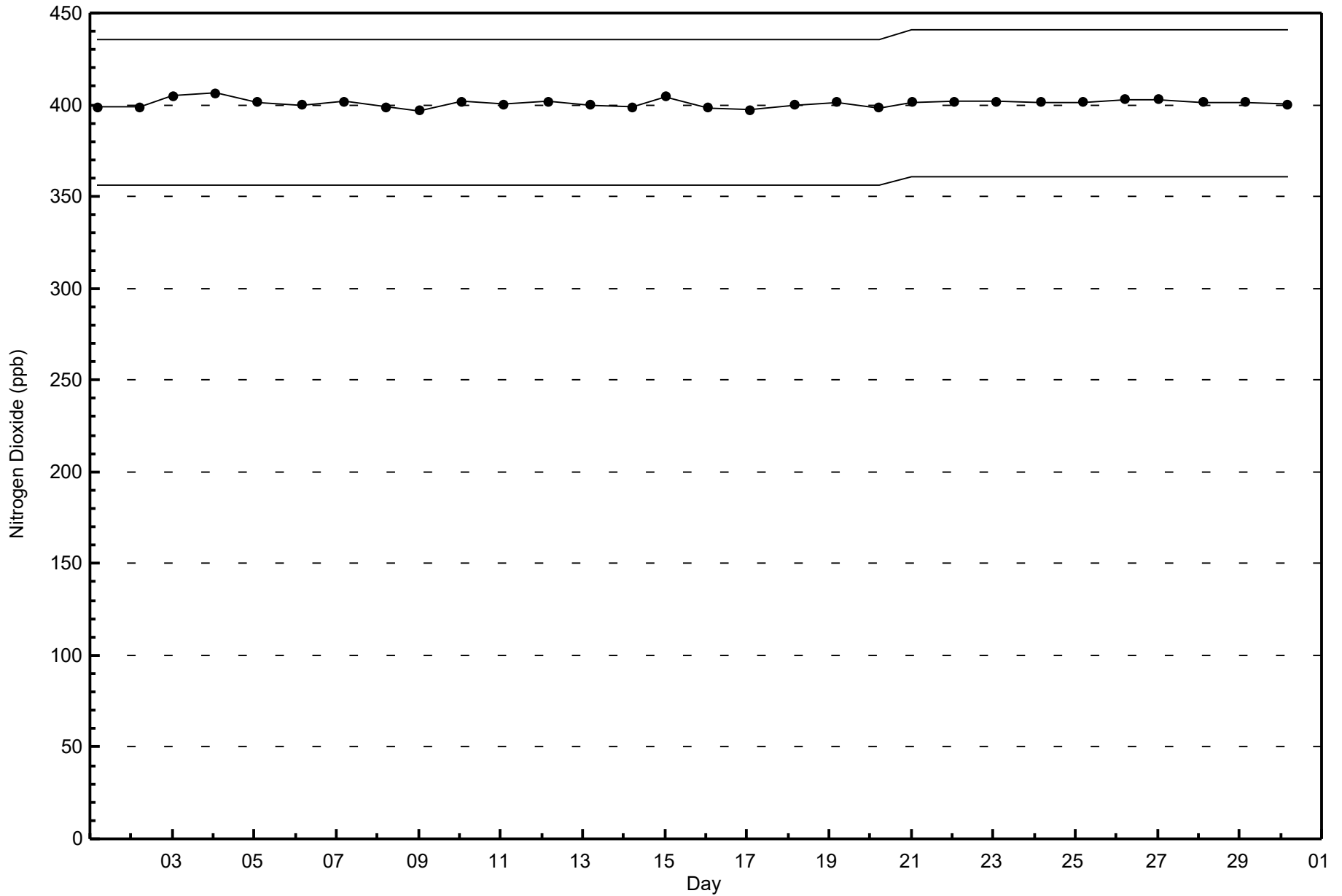


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Dioxide (NO₂) - ppb
Kirby North









Wood Buffalo Environmental Association
Summary of Hour Averages

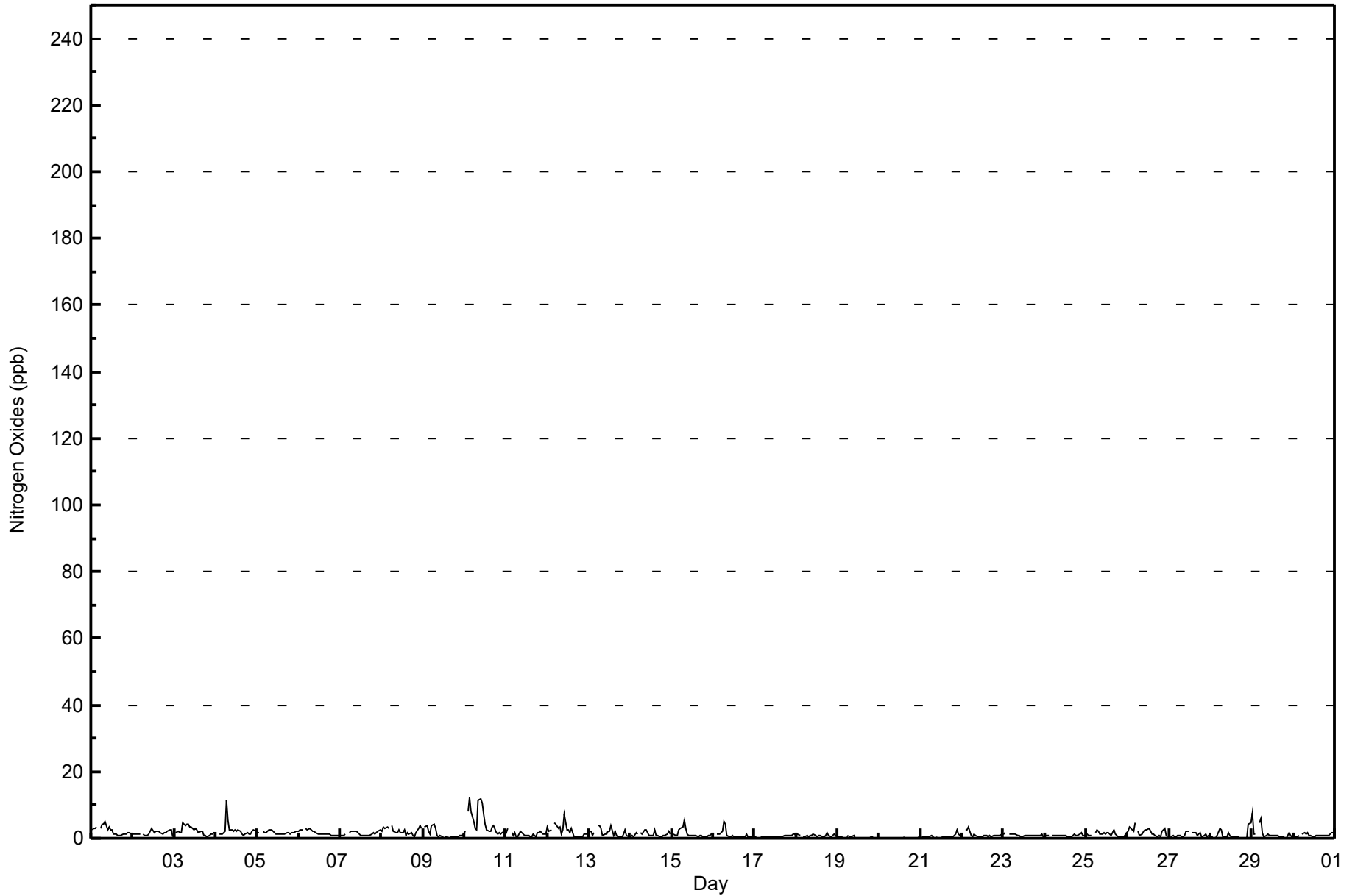
Nitrogen Oxides (NO_x) - ppb
Kirby North - April 2023

Maximum Value: 12.1 ppb on Apr 10 04:00																				Maximum Daily Average: 4.8 ppb on Apr 10					Hours in Service: 720	
Minimum Value: 0.0 ppb on Apr 19 13:00																				Minimum Daily Average: 0.1 ppb on Apr 20					Hours of Data: 683	
Maximum Diurnal Average: 2.4 ppb at hour 7																				Minimum Diurnal Average: 0.8 ppb at hour 20					Hours of Missing Data: 37	
Monthly Average: 1.46 ppb																				Percentiles: P ₁ = 0.0 P ₁₀ = 0.3 Q ₁ = 0.6 Median = 1.1 Q ₃ = 1.9 P ₉₀ = 2.8 P ₉₉ = 7.8					Hours of Calibration: 35	
Percentiles: P ₁ = 0.0 P ₁₀ = 0.3 Q ₁ = 0.6 Median = 1.1 Q ₃ = 1.9 P ₉₀ = 2.8 P ₉₉ = 7.8																				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-Apr	2.6	2.8	2.8	3.3	Z	2.9	4.4	4.1	5.1	2.5	3.4	2.5	2.4	1.4	1.3	1.0	1.0	0.9	1.1	1.3	1.5	1.6	1.6	1.5	2.3	5.1
2-Apr	1.4	1.4	1.4	1.3	1.2	Z	1.1	0.9	0.9	1.3	2.2	3.2	1.9	1.9	2.2	2.1	1.7	1.3	1.7	1.6	2.0	2.4	2.4	0.5	1.7	3.2
3-Apr	Z	1.6	2.3	1.6	1.8	4.6	3.8	4.4	4.2	3.4	3.5	2.4	2.9	2.5	1.8	2.2	2.0	0.8	0.7	0.6	0.7	1.1	1.2	1.5	2.2	4.6
4-Apr	1.6	Z	1.5	1.3	1.3	2.3	11.3	5.7	2.7	2.4	2.1	2.5	2.1	2.6	2.2	1.3	0.7	1.4	1.7	1.1	1.1	2.0	2.6	2.1	2.4	11.3
5-Apr	1.8	1.6	Z	2.0	1.8	1.8	1.9	2.4	2.4	2.1	1.7	1.3	1.3	1.2	1.1	1.2	1.6	1.5	1.5	1.7	1.9	2.2	2.2	1.7	2.4	2.4
6-Apr	2.2	2.5	2.7	Z	2.8	2.7	2.9	2.5	2.3	2.1	1.8	1.4	1.3	1.1	1.4	1.4	1.3	1.2	1.3	0.9	0.7	0.7	0.8	0.8	1.7	2.9
7-Apr	0.8	0.8	1.0	1.1	Z	1.8	2.0	2.0	2.2	2.3	1.7	1.2	1.0	1.0	0.8	0.8	0.9	1.1	1.4	1.9	1.4	1.7	2.1	2.5	1.4	2.5
8-Apr	1.9	3.2	3.1	3.6	2.9	Z	3.6	2.3	1.7	1.7	2.4	1.6	1.6	2.4	0.9	1.9	1.1	1.7	0.8	0.5	1.7	3.0	3.7	2.9	2.2	3.7
9-Apr	Z	3.4	4.0	2.3	1.1	3.7	4.2	2.8	0.8	0.6	0.8	0.3	0.2	0.4	0.3	0.2	0.4	0.5	0.4	0.4	0.6	0.7	0.8	1.0	1.3	4.2
10-Apr	2.0	Z	8.0	12.1	8.2	5.1	2.9	2.4	11.6	12.0	10.8	7.2	4.3	2.6	2.3	2.2	3.4	4.0	1.8	1.4	1.8	1.1	1.7	2.1	4.8	12.1
11-Apr	1.9	3.1	Z	1.6	0.7	1.9	0.3	0.6	2.2	1.6	1.4	0.8	1.1	1.0	0.6	0.5	1.1	0.3	1.8	1.9	2.1	1.2	1.1	1.1	1.3	3.1
12-Apr	3.3	2.1	2.5	Z	4.7	4.1	3.0	3.3	1.4	2.7	7.1	2.6	2.5	1.5	2.8	0.6	0.5	0.4	0.5	0.3	0.3	1.3	1.3	1.4	2.2	7.1
13-Apr	1.9	2.1	0.9	1.8	Z	3.8	3.9	2.9	0.9	1.2	1.2	2.3	2.2	4.0	0.8	2.0	0.7	0.3	0.3	0.4	1.2	2.5	0.7	0.4	1.7	4.0
14-Apr	0.4	0.8	0.6	1.8	1.1	Z	1.6	1.4	2.4	2.5	1.7	0.7	0.8	0.8	2.4	0.7	0.8	0.6	0.5	0.7	1.0	1.2	2.1	1.5	1.2	2.5
15-Apr	Z	1.1	1.0	0.9	2.5	3.0	3.4	5.4	2.8	1.4	0.9	0.8	0.8	0.6	0.6	0.6	0.7	0.7	0.5	0.6	0.6	0.7	0.9	1.3	1.4	5.4
16-Apr	1.1	Z	1.5	1.2	1.3	2.3	5.1	4.0	1.0	0.4	0.5	0.7	0.4	0.5	0.4	0.3	0.4	0.4	0.5	1.1	0.2	0.2	0.3	0.4	1.1	5.1
17-Apr	0.5	0.5	Z	0.5	0.3	0.3	0.3	0.5	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.7	0.8	0.7	1.1	1.3	0.6	1.3
18-Apr	1.0	1.2	0.9	Z	0.6	0.4	0.8	0.6	0.8	0.9	1.2	0.7	0.6	0.9	0.7	0.4	0.3	0.8	1.6	0.9	0.5	0.9	1.2	1.0	0.8	1.6
19-Apr	0.5	0.5	0.6	0.5	Z	0.6	0.6	0.5	0.4	0.9	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.1	0.1	0.3	0.9
20-Apr	0.1	0.1	0.0	0.0	0.1	Z	0.1	0.2	0.0	C	C	C	C	C	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.3	0.1	0.3
21-Apr	Z	0.6	0.6	0.5	0.5	0.3	0.7	0.3	0.1	0.1	0.3	M	0.3	0.4	0.5	0.5	0.5	0.4	0.5	0.5	1.1	2.7	1.2	0.9	0.6	2.7
22-Apr	1.1	Z	2.4	2.6	3.3	0.9	0.6	1.5	0.7	0.6	0.5	0.5	0.6	0.8	1.0	0.6	0.6	0.6	0.8	0.9	0.7	1.0	0.9	1.3	1.1	3.3
23-Apr	1.4	1.7	Z	1.3	1.2	1.1	1.2	1.1	0.9	0.9	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.6	1.0	0.7	1.5	0.6	0.9	1.7
24-Apr	0.8	0.8	0.8	Z	0.8	0.7	0.8	0.8	0.9	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.9	1.1	1.0	0.9	1.3	1.9	0.8	0.7	0.8	1.9
25-Apr	1.2	0.8	0.8	1.0	Z	1.8	2.5	2.0	1.4	1.3	1.8	1.1	1.5	1.5	0.7	1.8	2.5	1.2	0.5	0.3	0.3	0.5	0.6	1.7	1.2	2.5
26-Apr	2.3	3.5	3.0	2.1	4.8	Z	2.1	0.8	1.1	2.0	2.4	2.5	2.8	2.3	1.4	1.3	0.7	0.3	0.8	0.5	2.0	3.1	0.8	0.3	1.9	4.8
27-Apr	Z	0.4	0.7	0.6	0.5	0.8	0.7	0.6	0.6	0.7	2.0	2.2	M	1.8	1.8	1.8	0.8	1.3	1.7	0.5	1.0	1.2	0.5	0.6	1.0	2.2
28-Apr	0.2	0.2	Z	0.3	0.9	3.2	2.6	0.3	0.3	0.6	1.6	0.8	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	4.2	4.7	1.0	4.7
29-Apr	7.8	1.4	1.2	Z	4.5	5.8	1.6	0.5	1.0	1.1	1.0	0.7	0.8	0.8	0.8	0.7	0.6	0.3	0.3	0.2	0.2	1.7	0.7	0.3	1.5	7.8
30-Apr	1.3	0.3	0.4	0.8	Z	1.5	1.5	1.4	1.5	0.9	0.7	0.5	0.5	0.7	0.8	0.7	0.7	0.7	0.8	0.9	1.0	1.3	1.6	1.8	1.0	1.8
																								Diurnal Average		
																								Diurnal Maximum		
Z - zerspan C - Calibration M - Maintenance																										



Wood Buffalo Environmental Association
Hourly Averages

Nitrogen Oxides (NO_x) - ppb
Kirby North - April 2023





Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Kirby North - April 2023

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	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: 683

Total Number of Hours: 720



Wood Buffalo Environmental Association
Frequency Distribution

Nitrogen Oxides (NO_x) - ppb
Kirby North - April 2023

Concentration Ranges (ppb)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	13	14	25	28	40	56	73	80	142	52	39	23	18	30	32	15	680
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
Totals	13	14	25	28	40	56	73	80	142	52	39	23	18	30	32	15	680

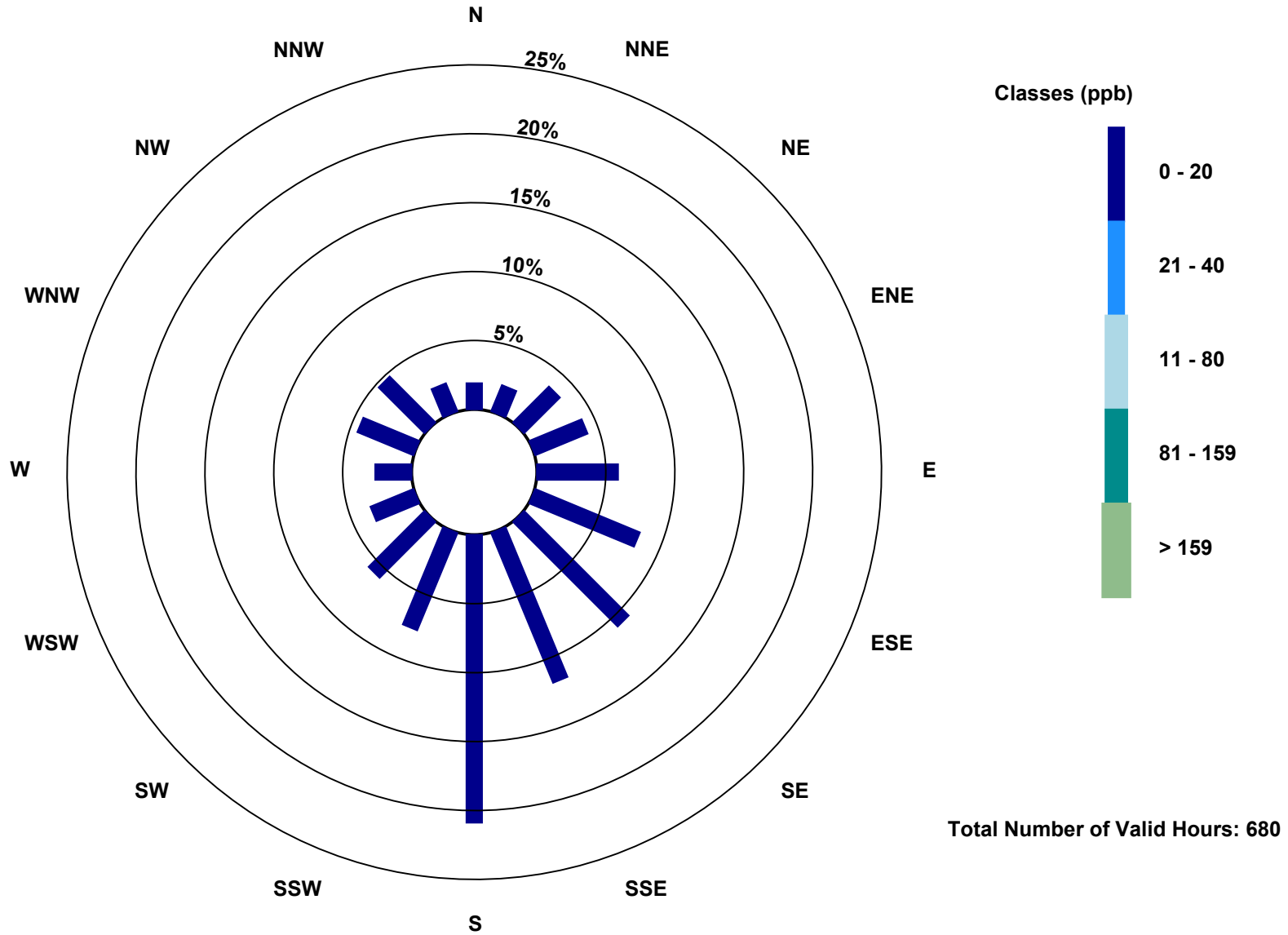
Total Number of Valid Hours: 680

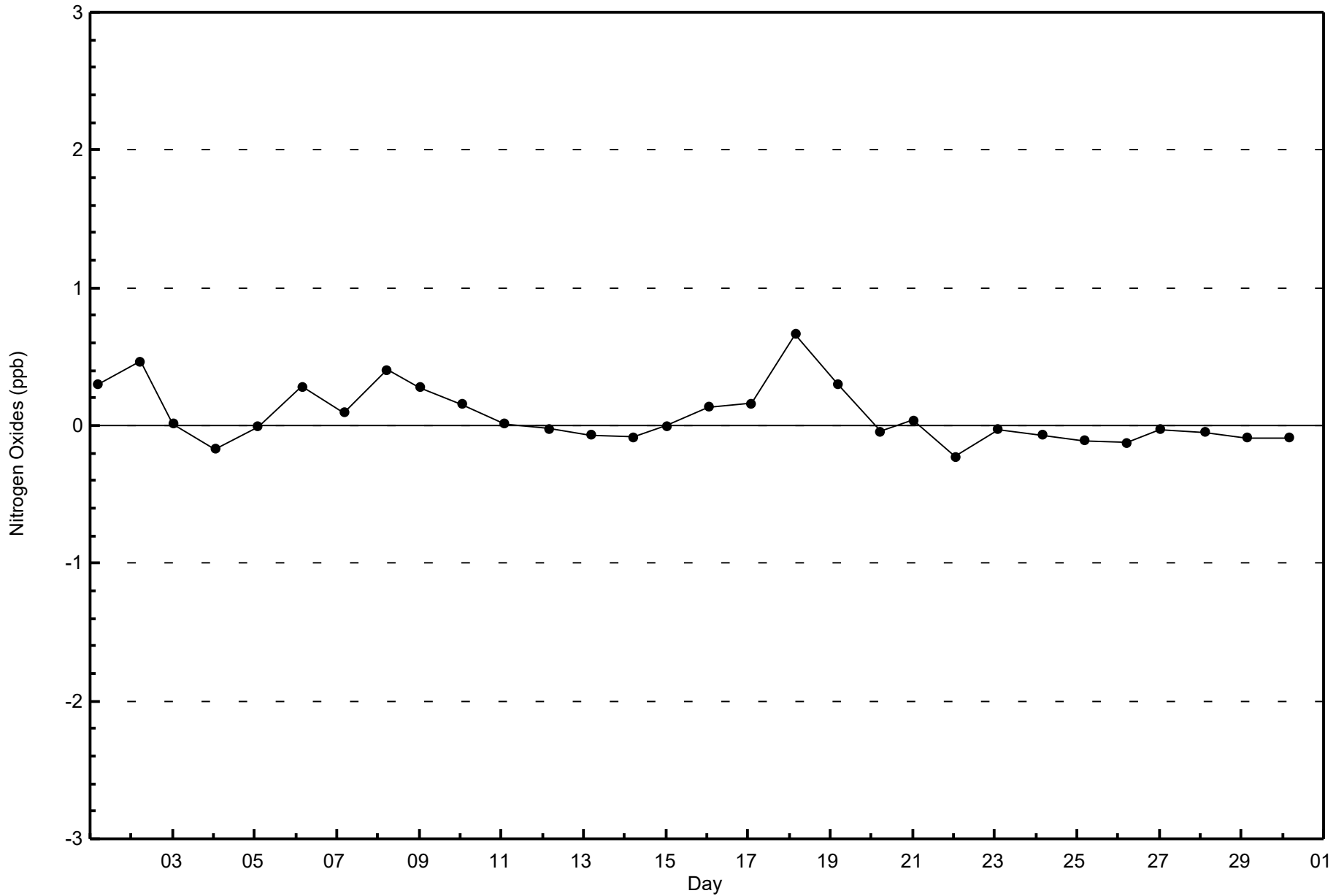
Total Number of Hours: 720

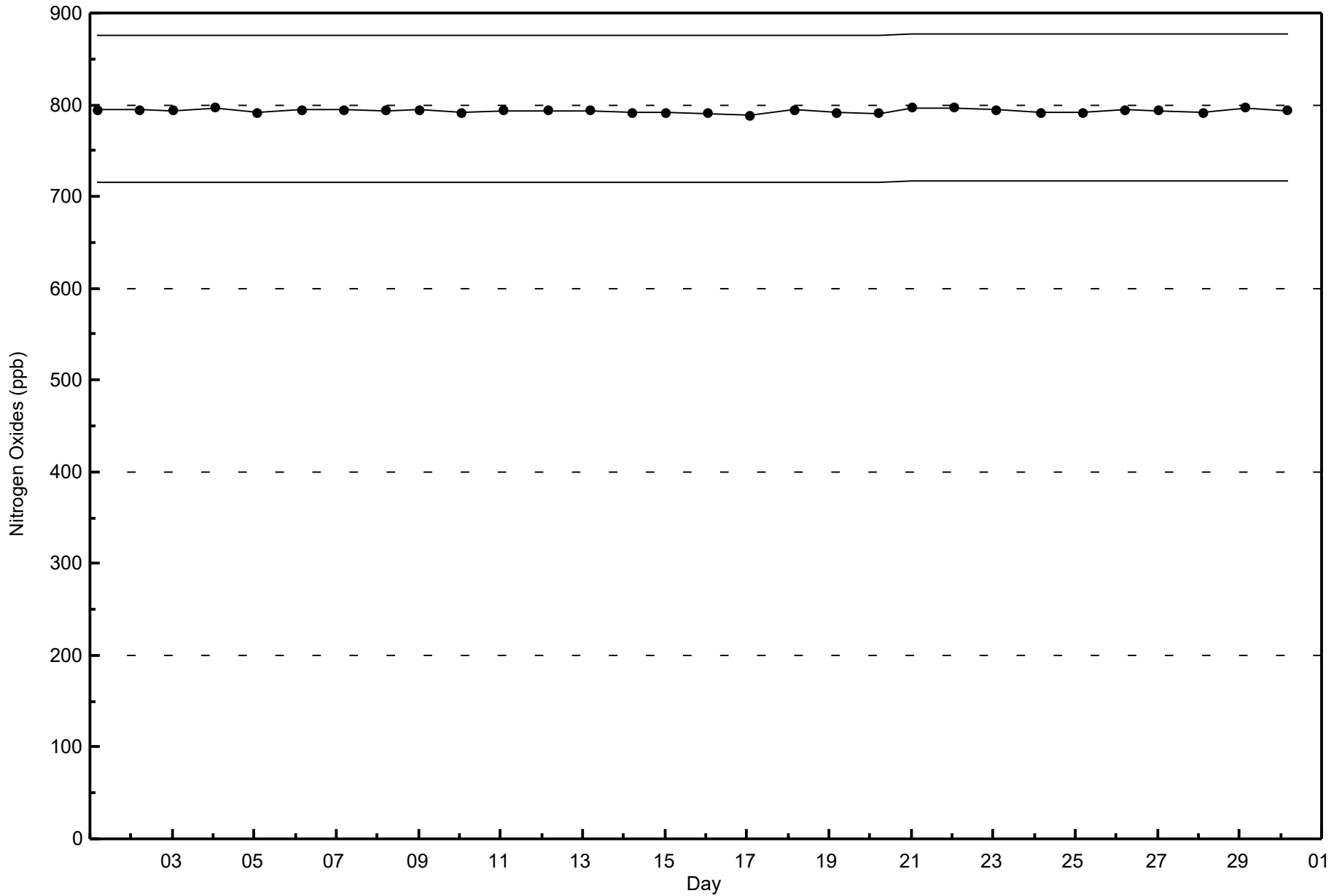


Wood Buffalo Environmental Association
Wind Rose Apr 2023

Nitrogen Oxides (NO_x) - ppb
Kirby North









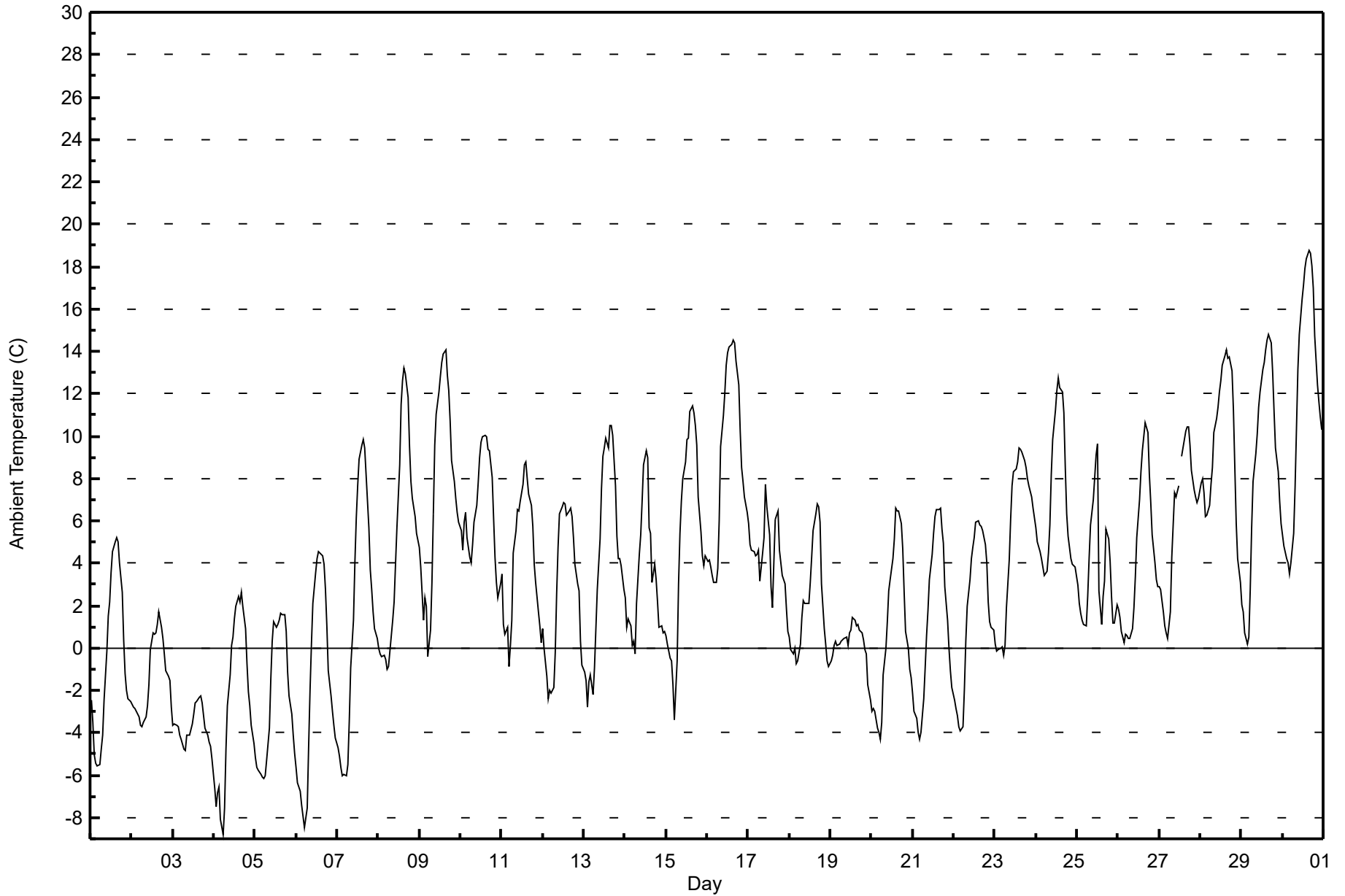
Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature (AT) - C

Kirby North - April 2023

Maximum Value: 18.7 C on Apr 30 16:00		Maximum Daily Average: 11.6 C on Apr 30		Hours in Service: 720																						
Minimum Value: -8.8 C on Apr 4 06:00		Minimum Daily Average: -3.7 C on Apr 3		Hours of Data: 719																						
Maximum Diurnal Average: 7.9 C at hour 16		Minimum Diurnal Average: -1.1 C at hour 6		Hours of Missing Data: 1																						
Monthly Average: 3.45 C		Percentiles: P ₁ = -7.3 P ₁₀ = -3.5 Q ₁ = 0.0 Median = 3.1 Q ₃ = 6.9 P ₉₀ = 10.5 P ₉₉ = 16.2		Hours of Calibration: 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-Apr	-2.5	-3.5	-5.0	-5.4	-5.6	-5.5	-4.8	-4.1	-2.5	-0.2	1.5	2.1	3.6	4.6	5.0	5.2	5.0	4.1	2.6	0.4	-1.2	-2.0	-2.4	-2.5	-0.6	5.2
2-Apr	-2.7	-2.8	-2.9	-3.1	-3.2	-3.7	-3.7	-3.5	-3.2	-2.7	-1.7	0.0	0.7	0.6	0.7	1.1	1.7	1.0	0.4	-0.3	-1.1	-1.3	-1.5	-2.8	-1.4	1.7
3-Apr	-3.6	-3.6	-3.7	-3.7	-4.1	-4.3	-4.8	-4.9	-4.1	-4.1	-4.1	-3.6	-3.1	-2.6	-2.5	-2.4	-2.3	-2.6	-3.2	-3.8	-4.1	-4.5	-4.6	-5.3	-3.7	-2.3
4-Apr	-6.6	-7.5	-6.8	-6.5	-8.1	-8.8	-7.5	-4.7	-2.7	-1.3	0.1	0.5	1.4	2.0	2.4	2.2	2.6	2.0	0.9	-0.7	-2.1	-2.7	-3.6	-4.5	-2.5	2.6
5-Apr	-5.2	-5.6	-5.7	-5.9	-6.1	-6.2	-6.0	-5.3	-3.8	-1.5	0.3	1.3	1.0	1.1	1.3	1.7	1.6	1.6	0.8	-1.1	-2.2	-3.1	-4.1	-5.0	-2.3	1.7
6-Apr	-5.7	-6.4	-6.8	-7.4	-7.9	-8.5	-7.5	-4.6	-2.0	0.2	2.1	3.5	4.2	4.6	4.5	4.3	4.0	2.8	1.0	-1.0	-2.3	-3.0	-3.6	-4.2	-1.7	4.6
7-Apr	-4.7	-5.1	-5.6	-6.0	-6.0	-6.0	-5.5	-3.4	-0.9	1.3	4.0	6.2	7.7	8.9	9.5	9.8	9.4	8.2	5.7	3.7	2.8	1.7	0.9	0.4	1.5	9.8
8-Apr	0.0	-0.3	-0.4	-0.3	-0.5	-1.0	-0.9	-0.1	1.3	2.2	3.9	5.6	8.6	11.5	12.6	13.2	12.9	11.9	9.5	7.9	7.1	6.2	5.4	5.1	5.1	13.2
9-Apr	4.7	3.8	1.3	2.3	1.9	-0.4	0.9	3.1	6.4	9.6	11.1	12.1	12.8	13.5	13.9	14.1	12.9	12.2	10.7	8.9	7.9	7.0	6.4	5.9	7.6	14.1
10-Apr	5.5	4.6	6.0	6.4	5.2	4.3	4.0	4.9	6.0	6.8	7.8	9.0	9.7	10.0	10.0	10.0	9.4	9.3	8.1	6.1	4.3	3.1	2.4	3.1	6.5	10.0
11-Apr	3.5	1.1	0.7	1.0	-0.9	0.1	1.3	4.5	5.5	6.6	6.4	6.9	7.7	8.7	8.8	8.0	7.2	6.7	5.7	3.9	3.1	1.7	1.1	0.2	4.1	8.8
12-Apr	0.9	0.0	-1.3	-2.4	-2.0	-2.1	-1.8	-0.2	2.6	4.7	6.3	6.7	6.8	6.8	6.3	6.5	6.6	6.2	5.2	4.0	3.0	2.7	0.3	-0.8	2.7	6.8
13-Apr	-1.1	-1.6	-2.8	-1.6	-1.3	-2.2	-0.9	0.9	2.8	5.1	7.5	9.0	9.5	9.9	10.5	10.5	10.1	7.7	5.3	4.2	4.2	3.9	2.8	4.2	10.5	4.2
14-Apr	2.4	1.0	1.4	1.0	0.1	0.3	-0.3	2.1	4.4	5.3	6.9	8.6	9.3	9.0	5.7	5.4	3.1	4.0	3.2	2.2	1.0	1.1	0.7	0.8	3.3	9.3
15-Apr	0.6	0.2	-0.5	-0.6	-1.7	-3.4	-0.6	3.0	5.4	7.0	8.0	8.8	9.8	9.9	11.2	11.4	11.1	10.5	9.6	7.2	5.5	4.3	3.9	4.4	5.2	11.4
16-Apr	4.1	4.1	3.9	3.4	3.1	3.1	3.7	6.0	9.5	11.0	12.0	13.4	13.9	14.2	14.3	14.5	14.4	13.6	12.4	10.3	8.5	7.8	7.1	6.4	8.9	14.5
17-Apr	5.9	4.9	4.6	4.6	4.4	4.4	4.6	3.1	4.5	5.2	7.7	6.6	5.4	2.9	1.9	4.0	6.1	6.5	4.6	4.0	3.4	3.1	1.9	0.8	4.4	7.7
18-Apr	0.5	-0.1	-0.3	0.0	-0.7	-0.6	0.2	1.4	2.2	2.1	2.1	2.1	3.1	4.3	5.5	6.3	6.8	6.6	5.9	3.0	0.9	0.2	-0.6	-0.8	2.1	6.8
19-Apr	-0.6	-0.4	0.1	0.3	0.1	0.2	0.3	0.4	0.5	0.5	0.1	0.7	0.8	1.4	1.3	1.1	1.1	0.9	0.7	0.4	-0.1	-0.3	-1.7	-2.5	0.2	1.4
20-Apr	-3.0	-2.8	-3.0	-3.8	-4.0	-4.3	-3.5	-1.3	0.0	1.2	2.7	3.3	4.3	5.2	6.6	6.5	6.4	5.9	4.7	2.6	0.8	0.0	-1.0	-1.4	0.9	6.6
21-Apr	-2.1	-3.0	-3.3	-4.0	-4.3	-4.0	-2.4	-1.0	0.6	1.8	3.2	4.4	5.4	6.2	6.6	6.5	6.6	5.6	5.0	2.9	1.3	0.0	-1.1	-1.8	1.2	6.6
22-Apr	-2.4	-2.9	-3.2	-3.7	-3.9	-3.7	-1.9	0.4	2.0	3.2	4.2	4.7	5.2	5.9	6.0	5.8	5.7	5.5	4.9	4.0	2.2	1.2	1.0	0.8	1.7	6.0
23-Apr	0.2	-0.2	-0.1	0.0	0.0	-0.3	0.2	1.9	4.1	6.1	7.7	8.3	8.4	8.8	9.4	9.4	9.2	8.9	8.5	8.0	7.7	7.1	6.6	6.1	5.3	9.4
24-Apr	5.7	5.0	4.5	4.2	3.8	3.5	3.6	4.5	5.8	8.2	9.8	11.2	12.1	12.7	12.3	12.1	11.1	8.5	6.4	5.3	4.2	4.0	3.9	3.9	6.9	12.7
25-Apr	3.0	2.1	1.6	1.3	1.1	1.1	2.4	4.2	5.8	7.0	8.0	9.1	9.6	2.7	1.1	2.4	3.2	5.6	5.1	4.1	2.4	1.2	1.2	2.0	3.6	9.6
26-Apr	1.8	1.5	0.8	0.3	0.7	0.6	0.5	0.5	0.9	1.9	3.3	5.2	7.0	8.3	9.3	10.0	10.6	10.1	8.2	6.8	5.3	4.0	3.2	2.9	4.3	10.6
27-Apr	2.9	2.8	1.7	1.1	0.7	0.5	1.7	4.3	5.8	7.3	7.1	7.6	M	9.0	9.5	10.2	10.5	10.4	9.5	8.4	7.5	7.1	6.9	7.1	6.1	10.5
28-Apr	7.8	8.0	7.3	6.2	6.3	6.7	7.8	8.5	10.2	10.8	11.4	12.1	12.6	13.4	13.8	14.1	13.6	13.7	13.1	11.2	8.5	5.9	4.2	3.1	9.6	14.1
29-Apr	2.0	1.7	0.7	0.2	0.5	2.7	5.7	7.8	9.2	10.1	11.3	12.1	13.1	13.5	14.1	14.5	14.8	14.4	13.0	11.1	9.5	8.3	7.0	5.9	8.5	14.8
30-Apr	5.3	4.8	4.2	4.0	3.5	4.0	5.4	7.6	10.4	13.1	14.8	16.4	17.1	17.9	18.4	18.7	18.6	18.0	16.9	14.7	12.4	11.6	10.9	10.3	11.6	18.7
																								Diurnal Average		
																								Diurnal Maximum		
M - Maintenance																										





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Ambient Temperature (AT) - C
Kirby North - April 2023**

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	184	25.59	25.59
0 - 10	452	62.87	88.46
10 - 20	83	11.54	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 719

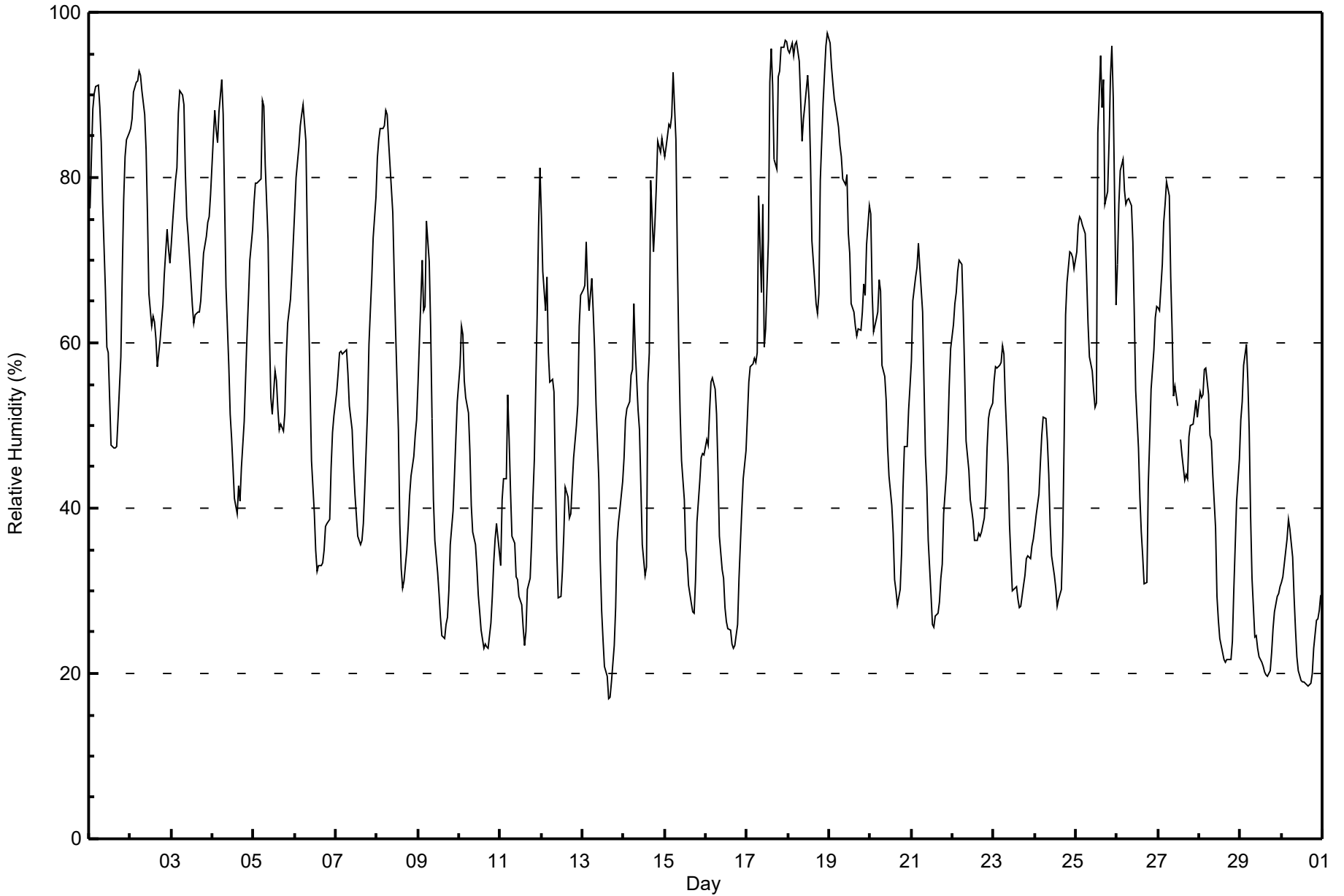
Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Relative Humidity (RH) - %
Kirby North - April 2023

Maximum Value: 97.5 % on Apr 19 00:00		Maximum Daily Average: 86.3 % on Apr 18		Hours in Service: 720																							
Minimum Value: 17.0 % on Apr 13 16:00		Minimum Daily Average: 26.1 % on Apr 30		Hours of Data: 719																							
Maximum Diurnal Average: 70.7 % at hour 6		Minimum Diurnal Average: 40.1 % at hour 16		Hours of Missing Data: 1																							
Monthly Average: 54.91 %		Percentiles: P ₁ = 19.0 P ₁₀ = 27.6 Q ₁ = 36.7 Median = 53.8 Q ₃ = 70.9 P ₉₀ = 85.9 P ₉₉ = 95.9		Hours of Calibration: 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-Apr	76.3	82.4	88.4	90.2	91.0	91.1	88.4	84.3	76.9	66.3	59.4	58.8	53.2	47.7	47.3	47.4	47.4	50.9	58.2	68.5	77.2	82.6	84.5	85.4	71.0	91.1	
2-Apr	86.0	87.1	90.4	91.6	91.7	92.9	92.3	90.6	87.6	83.4	75.5	66.0	62.1	63.3	62.6	60.5	57.2	60.4	62.6	64.6	68.3	73.8	71.4	69.7	75.5	92.9	
3-Apr	72.0	74.8	79.7	81.1	87.8	90.5	89.9	88.7	80.6	75.3	73.1	67.4	64.5	62.4	63.4	63.7	63.8	65.1	68.0	70.9	73.0	74.6	75.2	77.9	74.3	90.5	
4-Apr	85.0	88.1	85.8	84.3	88.0	91.8	87.6	77.1	66.7	57.2	51.3	48.4	44.9	41.1	39.3	42.7	40.8	45.0	50.4	55.7	60.9	65.3	70.1	73.7	64.2	91.8	
5-Apr	76.9	79.3	79.4	79.7	79.9	89.4	88.6	81.5	72.6	61.2	53.5	51.4	56.6	55.4	58.6	52.1	49.5	50.2	49.3	51.5	58.2	62.5	65.2	68.5	72.3	66.0	89.4
6-Apr	75.9	80.0	83.8	86.3	87.7	88.8	84.5	73.0	63.4	54.4	45.8	39.5	34.8	32.4	33.1	33.1	33.4	35.0	37.8	38.2	38.6	44.9	49.1	51.2	55.2	88.8	
7-Apr	54.1	56.2	58.7	58.9	58.6	59.0	59.2	56.3	52.4	49.5	45.1	41.8	39.1	36.6	35.6	36.2	38.1	42.3	51.8	59.8	63.9	67.7	72.6	77.5	53.0	77.5	
8-Apr	82.4	84.6	85.9	85.9	86.3	88.2	87.6	84.4	78.6	75.7	68.3	61.5	49.5	38.1	32.7	30.3	31.2	35.0	37.8	41.6	43.9	46.3	48.8	50.7	60.6	88.2	
9-Apr	55.1	60.2	69.9	63.9	64.5	74.7	69.9	62.1	50.9	41.0	36.1	32.1	29.7	26.8	24.6	24.3	25.9	26.9	30.1	35.6	39.7	43.9	48.4	52.9	45.4	74.7	
10-Apr	57.3	62.0	61.1	55.4	53.4	51.5	46.9	40.3	37.0	35.6	32.8	29.5	27.5	25.3	23.1	23.5	23.2	23.0	26.2	29.2	33.3	36.4	38.1	34.7	37.8	62.0	
11-Apr	33.1	40.9	43.5	43.6	53.7	48.3	42.0	36.6	35.7	31.7	31.4	29.3	28.3	25.6	23.4	25.0	30.1	31.4	35.8	41.3	45.9	63.4	74.1	81.1	40.6	81.1	
12-Apr	75.4	68.7	63.9	68.0	58.8	55.3	55.7	54.0	44.1	34.9	29.1	29.3	32.3	36.7	42.6	41.4	38.9	39.3	42.8	46.1	50.0	52.5	62.0	65.8	49.5	75.4	
13-Apr	66.4	67.0	72.2	66.8	64.0	67.8	63.7	59.1	52.5	43.4	33.8	27.6	24.1	20.9	19.7	17.0	17.1	18.9	23.4	27.9	36.0	38.3	39.9	43.2	42.1	72.2	
14-Apr	46.2	50.7	52.0	52.9	56.1	56.7	64.8	59.2	51.9	49.4	42.6	35.6	31.8	32.9	55.1	58.9	79.6	71.0	74.4	78.8	84.4	83.0	84.8	83.5	59.9	84.8	
15-Apr	82.6	83.7	86.4	86.1	87.4	92.8	84.7	70.8	59.9	51.5	45.8	41.0	34.9	33.7	30.7	28.5	27.5	27.2	31.3	38.3	43.3	46.1	46.6	46.4	54.5	92.8	
16-Apr	48.3	47.7	51.7	55.2	55.8	54.4	51.3	44.7	36.5	32.6	31.5	28.0	26.2	25.4	25.3	23.5	23.0	23.4	25.9	31.4	35.8	39.9	43.6	47.0	37.8	55.8	
17-Apr	51.0	55.2	57.2	57.5	58.1	57.6	58.8	77.9	66.1	76.8	59.6	61.7	72.5	91.6	95.6	91.2	82.3	81.0	92.2	93.0	95.8	95.8	96.5	96.4	75.9	96.5	
18-Apr	95.4	95.1	96.3	94.7	96.1	96.5	94.1	89.3	84.4	87.2	88.8	92.4	89.2	82.3	72.4	67.5	64.8	63.5	65.9	79.6	89.0	92.6	96.0	97.5	86.3	97.5	
19-Apr	96.3	93.4	91.4	89.5	88.5	86.2	83.9	82.6	79.9	79.1	80.3	73.3	70.8	64.7	63.8	62.0	60.8	61.7	61.5	63.8	67.0	65.7	71.8	76.7	75.6	96.3	
20-Apr	75.5	66.1	61.4	62.9	63.7	67.7	66.2	57.3	56.0	53.1	47.5	43.8	40.4	37.0	31.3	30.0	28.3	30.1	34.5	42.3	47.4	47.5	51.8	54.7	49.9	75.5	
21-Apr	57.8	65.1	68.0	69.2	72.0	69.2	63.8	54.9	46.5	42.5	36.0	29.4	25.9	25.6	27.0	27.3	28.6	31.6	33.1	39.2	44.2	49.0	54.8	59.2	46.7	72.0	
22-Apr	62.2	64.7	66.2	68.7	70.0	69.5	63.6	56.3	48.1	44.5	41.1	39.9	38.4	36.2	36.1	37.0	36.7	37.2	38.9	41.5	47.2	50.8	51.9	52.7	50.0	70.0	
23-Apr	55.4	57.1	56.9	57.3	57.6	59.7	58.6	53.1	45.0	37.9	33.9	30.0	30.3	30.6	29.1	27.9	28.1	30.7	31.8	34.0	34.2	33.9	35.4	36.2	41.0	59.7	
24-Apr	37.6	39.2	41.7	45.4	48.8	51.0	50.9	48.1	44.0	37.9	34.2	31.8	30.3	28.1	28.9	30.2	36.6	48.9	63.3	67.2	71.0	70.8	70.3	69.0	46.9	71.0	
25-Apr	71.0	74.3	75.2	74.9	74.2	73.2	68.1	62.3	58.3	56.6	54.2	52.3	52.7	85.5	94.7	88.5	91.8	76.7	78.3	84.2	92.2	95.9	89.6	64.7	74.6	95.9	
26-Apr	69.5	76.8	80.8	82.2	78.4	76.8	77.2	77.5	76.6	72.1	63.6	54.3	47.2	41.3	37.1	34.3	30.9	31.0	42.8	48.3	54.5	59.2	63.1	64.5	60.0	82.2	
27-Apr	64.2	63.9	69.6	74.5	76.7	79.5	77.8	67.9	61.5	53.6	54.7	52.3	M	48.3	46.5	43.4	44.1	43.5	48.7	50.0	50.2	51.6	53.1	50.9	57.7	79.5	
28-Apr	54.0	53.5	53.8	56.8	56.9	53.8	48.7	48.1	44.1	37.6	29.3	26.4	24.2	23.4	21.7	21.3	21.7	21.6	21.6	23.9	29.9	35.5	40.8	45.8	37.3	56.9	
29-Apr	50.7	52.9	57.2	59.9	55.6	49.3	38.9	31.6	24.3	24.5	23.0	22.1	21.3	20.9	20.1	19.9	19.7	20.4	22.6	25.3	27.4	29.4	29.6	30.4	32.4	59.9	
30-Apr	31.0	31.7	34.8	36.4	38.6	37.4	34.0	29.3	25.4	22.1	20.4	19.1	19.0	19.0	18.8	18.4	18.6	18.8	20.0	23.1	26.5	26.6	27.7	29.5	26.1	38.6	
		64.8	66.7	68.8	69.3	70.0	70.7	68.1	63.3	56.9	52.3	47.4	43.9	41.4	41.3	41.1	40.1	40.7	41.4	45.4	50.1	54.4	57.6	60.3	61.4	Diurnal Average	
		96.3	95.1	96.3	94.7	96.1	96.5	94.1	90.6	87.6	87.2	88.8	92.4	89.2	91.6	95.6	91.2	91.8	81.0	92.2	93.0	95.8	95.9	96.5	97.5	Diurnal Maximum	
M - Maintenance																											





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Relative Humidity (RH) - %
Kirby North - April 2023**

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	14	1.95	1.95
20 - 40	201	27.96	29.90
40 - 60	217	30.18	60.08
60 - 80	177	24.62	84.70
80 - 100	110	15.30	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Speed (WS) - km/h
Kirby North - April 2023

Maximum Speed: 29 km/h on Apr 10 15:00	Maximum Daily Speed Average: 18.4 km/h on Apr 10	Hours in Service: 720
Minimum Speed Value: 1 km/h on Apr 25 15:00	Minimum Daily Speed Average: 1.3 km/h on Apr 4	Hours of Data: 716
Maximum Diurnal Speed Average: 7.6 km/h at hour 24	Minimum Diurnal Speed Average: 3.5 km/h at hour 15	Hours of Missing Data: 4
Monthly Average Velocity: 5.0 km/h 167.7 deg	Percentiles: P ₁ = 2 P ₁₀ = 5 Q ₁ = 7 Median = 10 Q ₃ = 14 P ₉₀ = 19 P ₉₉ = 26	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-Apr	S7	S5	N2	E6	E7	SE8	ESE8	SE7	S6	SSE12	SSE9	S8	SSE5	ESE9	E10	ESE10	E10	E8	ESE14	SE15	SE13	ESE13	ESE11	ESE10	SE7.7	SE15	
2-Apr	ESE8	ESE7	E6	ESE7	E6	E6	E7	ENE6	E6	E6	ENE8	ENE9	NE7	N8	NNE8	NE7	NE5	NE7	NE6	ESE7	SE4	NNE2	SSE6	SSE10	E5.2	SSE10	
3-Apr	S9	S11	S12	SSW10	SW9	W7	WNW8	NW7	NW9	NW11	WNW10	NW10	NW11	NW11	NW11	WNW10	NW11	NW10	N8	N7	NE6	ENE7	E5	ESE5	WNW4.2	S12	
4-Apr	E3	ENE3	SE5	SE5	NNE4	NE5	NE5	ENE6	ENE7	ENE3	NNW5	NW5	NNW6	WNW4	WNW5	SW8	SW7	SW8	SSW7	S6	S7	S8	S8	S9	S1.3	S9	
5-Apr	S9	SSE10	SSE11	S10	S9	SSE9	SSE10	SSE10	S10	S11	S14	S16	S14	S13	S13	S11	SSE9	S8	SSE9	S8	S9	SSE11	S10	S10	S10.4	S16	
6-Apr	S10	S11	S11	S11	S11	S11	S11	S12	S14	S16	S16	S19	S20	SSW19	S20	S19	S19	S20	S18	S16	S18	S17	S17	S17	S15.5	S20	
7-Apr	S18	S18	S18	S19	S18	S19	S19	S19	S20	S18	S18	S19	S20	S19	SSE20	S19	S16	S17	S18	S14	S16	S15	S17	S16	S17.9	SSE20	
8-Apr	S16	S15	S18	S15	SSW9	S8	S9	SSW9	SSW11	SSW9	SW10	SSW9	SW8	WSW5	SW6	WSW7	SW9	SW12	SSW9	S7	S8	S8	S9	S9	SSW9.2	S18	
9-Apr	S8	S8	S5	SW9	SW7	S6	S10	SSW9	SW11	SW12	SW15	SW15	SW17	SW16	SSW17	SSW18	SSW15	S13	S12	SSE14	SSE13	SSE14	SSE15	S17	SSW11.2	SSW18	
10-Apr	S15	SSW13	WSW22	W25	W19	WSW20	WSW19	WSW22	W29	W28	W29	W26	WSW26	WSW27	WSW29	WSW28	WSW24	WSW18	WSW12	SW10	SSW8	SSW8	SSW7	WSW6	WSW18.4	WSW29	
11-Apr	SW6	S5	S5	S3	S3	SSE5	SSE6	S4	WSW3	SW4	SW8	SW7	SW4	NNW5	NW7	NNW3	NNE6	E5	SSW4	SSW4	SW9	SSW9	SSW9	SSW9	SSW3.4	SSW9	
12-Apr	W8	NNW3	NW2	SW5	W6	WSW8	SW7	SSW8	SW10	WSW16	W21	WNW20	WNW21	WNW21	WNW20	NW18	NW17	NW15	NW10	NW7	NW6	WNW7	SSW4	S4	WNW9.4	WNW21	
13-Apr	S8	SSW7	S5	SSW8	SSW8	S9	S8	SSW9	SW11	SW10	WSW11	W14	WNW14	WNW15	NW10	NW9	NNW7	N8	NE7	ENE9	E11	ESE8	SE6	ESE7	SW3.1	WNW15	
14-Apr	SSE6	SSE7	SSE8	S8	SSE5	SSE7	E2	ENE1	NNE4	NNW1	ENE6	SE3	S5	SSW7	WNW5	SSW7	SW18	SSW8	E3	NE4	SSE4	SE4	SE6	SSE6	SSE3.6	SW18	
15-Apr	SSE7	S8	SSE7	S7	S4	SSE4	S6	S6	SSW7	SW8	WSW9	SW7	SW8	SSW7	S11	SSW8	S9	S9	SSE9	S7	SSE8	SSE8	SSE9	SSE10	S6.8	S11	
16-Apr	SE11	SE13	SE14	SE10	SE10	SE12	SE14	SE12	ESE12	ESE17	ESE19	SE18	SE19	SSE20	SSE19	SSE18	SE18	SE17	SE16	SE12	ESE15	ESE19	ESE20	SE19	SE15.2	SSE20	
17-Apr	SE19	ESE19	ESE19	ESE22	ESE20	ESE21	ESE18	ESE17	ESE18	ESE16	ESE19	ESE20	ESE21	SE19	ESE11	ESE12	ESE6	SSW2	ESE13	NE7	NE9	NNE10	NNE8	NE7	ESE13.2	ESE22	
18-Apr	N7	N8	NE9	ENE11	UO	UO	UO	N5	NNE5	SW5	WSW9	SW9	NW4	WNW7	NNW8	N11	NNE12	NE11	NE12	NE10	NE10	NE10	NE8	NNE5	NNE5.4	NNE12	
19-Apr	SE8	SSE10	SE11	SE10	SE8	SE9	SE8	SE9	SE10	ESE10	ESE14	ESE13	ESE14	ESE12	E14	ESE13	ESE12	ESE10	ESE8	ENE6	ENE7	E8	E5	ENE8	ESE9.2	E14	
20-Apr	E10	ESE11	ESE12	E10	ESE11	E9	E8	E10	E11	ENE16	ENE15	NE15	NE16	ENE14	E16	E16	ESE15	E14	E16	E12	E10	ESE11	SE8	SE9	E11.6	E16	
21-Apr	SE8	SSE7	SE6	SE6	ESE7	ESE6	ENE5	E10	E11	E15	E13	ESE11	ESE11	SSE10	SE8	SSE9	SE11	SE11	SE8	SSE6	S7	SSW6	SSW7	SSW7	SE7.1	E15	
22-Apr	S7	S8	S8	S7	S7	SSE7	SSE6	SSW7	SSW9	S11	S13	S13	SSE12	S13	S13	SSW13	S12	SSW12	S9	S6	SE6	SE7	SE11	SSE11	S9.1	S13	
23-Apr	SSE11	SSE11	SSE12	SSE11	SSE11	S10	S11	S13	SSE18	SSE21	SSE18	SE21	SSE19	SE21	SE20	SE21	SE19	SE16	SE14	SE13	ESE13	SE14	SE15	SSE16	SSE14.9	SE21	
24-Apr	SSE15	SSE15	SSE15	SE16	SSE14	SSE13	SSE14	SSE13	SE12	SE14	SE13	SSE14	SE13	SSE18	SSE16	SSE16	S16	S17	SSE15	SSE13	SE12	SSE13	SSE12	SSE13	SSE13.9	SSE18	
25-Apr	SSE11	SSE9	S8	S9	S10	S10	S11	SSW11	SSW13	S10	SSW11	S10	WSW8	NW22	S1	SSW4	S7	SW10	SW11	SSW9	SSW7	SSW8	SW9	WSW13	SSW7.6	NW22	
26-Apr	W12	W13	WNW15	W15	WNW19	WNW19	WNW17	WNW14	WNW14	WNW14	WNW12	NW14	WNW14	WNW14	WNW11	NW10	NNW10	N9	ENE12	ENE9	ENE6	ENE9	ENE9	E8	NW8.2	WNW19	
27-Apr	E6	S4	NNE3	N5	NNW6	NNE6	NE7	N6	NNW7	NNW8	WNW12	WNW12	M	W10	WNW11	W13	NW9	W9	SW4	SSW6	S6	S9	S10	SSW12	W3.3	W13	
28-Apr	SSW15	SSW13	SW10	SW10	SW12	W12	WNW18	NW17	NNW20	NW22	WNW26	NW25	NW26	NW23	NW24	NW23	NW21	NNW19	NNW17	N12	N8	NNE6	ENE5	NE6	NW12.1	WNW26	
29-Apr	ENE6	ENE6	ENE2	NE7	NE7	ENE4	E6	E8	E11	E9	NE8	NE6	ENE8	ESE7	E8	E8	ENE9	ESE10	E13	E12	ESE13	SE13	SE17	SE18	E7.8	SE18	
30-Apr	SE14	SSE14	SSE14	SSE15	SSE14	S12	S13	S15	S16	S17	SSE16	SE17	SE19	SE17	SE18	SE18	SE18	SE18	SE18	SE15	SSE11	SE11	SSE15	SSE17	SSE18	SSE14.9	SE19

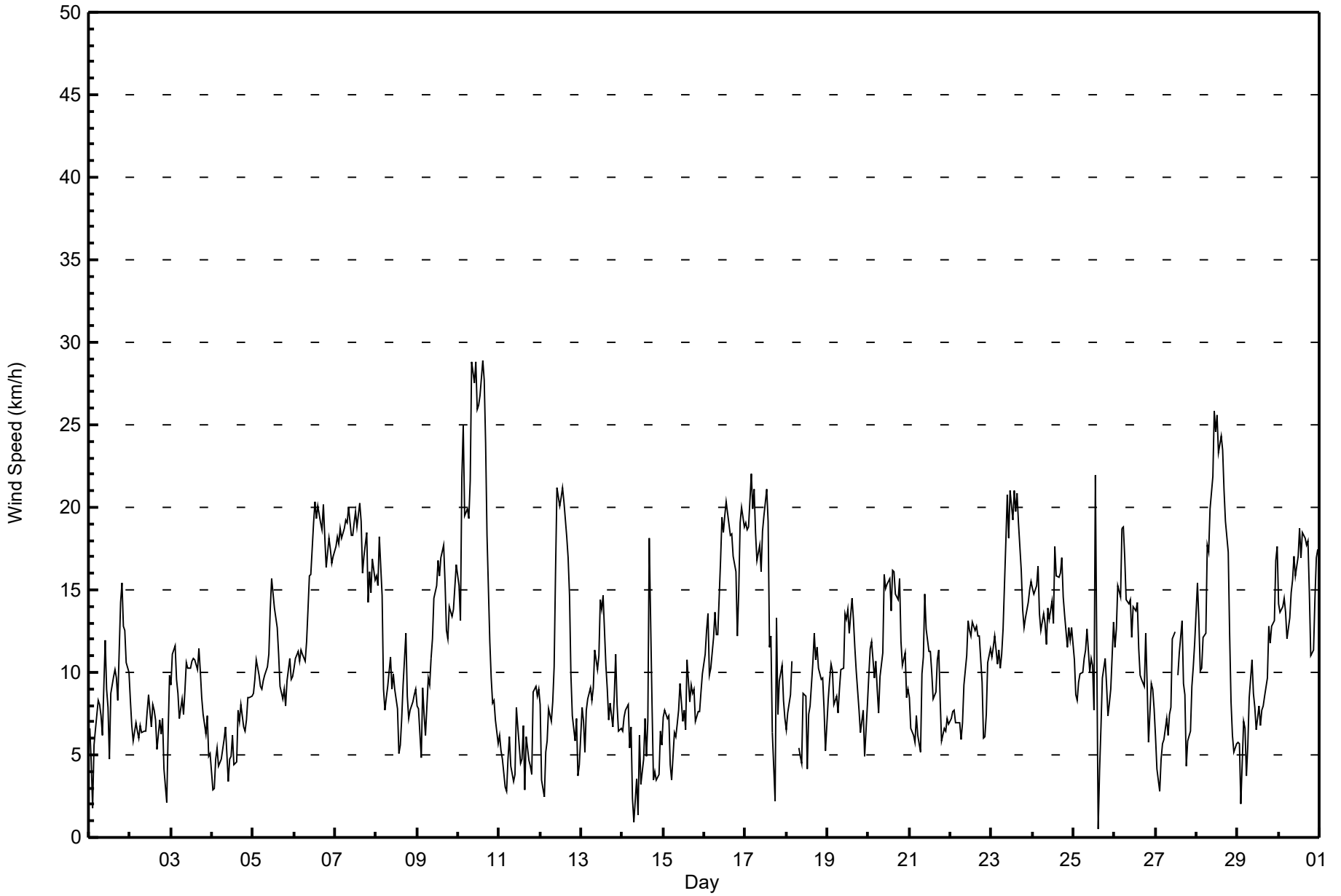
SSE7.3 SSE7.2 SSE6.3 SSE6.0 S5.3 SSE5.1 SSE4.8 S4.4 S4.2 S4.6 SSW4.6 SSW4.5 S4.0 SSW4.2 S3.5 S4.4 S4.0 S4.0 S4.0 SE5.2 SE4.9 SE5.8 SE6.6 SSE7.5 SSE7.6	Diurnal Average
SE19 ESE19 WSW22 W25 ESE20 ESE21 WSW19 WSW22 W29 W28 W29 W26 WSW26 WSW27 WSW29 WSW28 WSW24 S20 S18 S16 S18 ESE19 ESE20 SE19	Diurnal Maximum

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 - April 2023





**Wood Buffalo Environmental Association
Cumulative Frequency Distribution**

**Wind Speed (WS) - km/h
Kirby North - April 2023**

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	73	10.20	10.20
6 - 11	361	50.42	60.61
12 - 19	236	32.96	93.58
20 - 28	43	6.01	99.58
29 - 38	3	0.42	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 716

Total Number of Hours: 720



**Wood Buffalo Environmental Association
Frequency Distribution**

**Wind Speed (WS) - km/h
Kirby North - April 2023**

Wind Speed Ranges (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3	6	4	8	5	1	5	5	13	5	4	3	0	3	3	5	73
6 - 11	9	7	21	21	29	25	28	39	71	39	29	7	5	8	16	7	361
12 - 19	1	1	3	4	10	26	40	38	60	11	7	6	7	15	5	2	236
20 - 28	0	0	0	0	0	6	4	3	5	0	0	7	4	5	8	1	43
29 - 38	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	13	14	28	33	44	58	77	85	149	55	40	24	18	31	32	15	716

Total Number of Valid Hours: 716

Total Number of Hours: 720



Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Speed (WS) - km/h
Kirby North - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 8 km/h on Apr 25 14:00	Hours of Data: 716
Minimum Value: 0 km/h on Apr 28 23:00	Hours of Missing Data: 4
Percentiles: P ₁ = 1 P ₁₀ = 1 Q ₁ = 2 Median = 3 Q ₃ = 4 P ₉₀ = 5 P ₉₉ = 7	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-Apr	2	1	1	1	1	2	3	2	3	3	3	3	3	3	3	4	3	2	4	4	4	3	3	3	4
2-Apr	2	2	1	2	2	1	2	1	1	1	2	3	3	2	2	2	3	2	2	2	3	2	3	2	3
3-Apr	2	3	3	2	2	2	2	2	2	2	3	3	3	3	3	3	3	2	2	2	1	2	1	1	3
4-Apr	1	1	1	3	2	1	1	2	2	2	3	3	2	3	3	3	2	2	2	1	2	2	2	2	3
5-Apr	2	2	2	2	2	2	2	2	3	3	5	5	5	4	4	3	3	3	2	2	2	2	2	2	5
6-Apr	2	2	3	2	3	2	2	3	4	5	5	5	6	6	6	6	6	6	5	4	5	5	5	4	6
7-Apr	5	5	5	4	4	5	5	5	6	5	5	5	6	6	5	6	5	5	5	4	5	4	4	4	6
8-Apr	4	4	4	4	3	2	2	2	3	2	2	2	3	2	3	3	3	3	2	1	1	1	1	1	4
9-Apr	1	1	2	2	2	2	2	2	2	3	3	4	4	4	5	5	5	5	3	4	4	4	4	4	5
10-Apr	4	4	7	6	4	5	5	6	7	7	7	7	6	7	7	7	5	5	3	1	1	1	2	2	7
11-Apr	2	2	2	2	3	2	1	1	1	3	2	2	2	3	3	3	4	2	1	3	3	2	2	3	4
12-Apr	3	1	1	3	3	2	2	2	3	4	5	5	5	5	5	5	4	5	3	2	1	1	1	2	5
13-Apr	1	1	2	1	1	1	1	2	2	2	3	5	4	4	3	4	3	2	2	1	1	2	2	2	5
14-Apr	2	1	1	1	2	1	1	2	2	2	2	3	4	3	5	6	5	4	2	1	4	2	1	2	6
15-Apr	1	1	1	1	2	2	2	2	2	3	3	3	4	3	4	4	3	3	2	1	1	1	2	2	4
16-Apr	2	3	3	2	2	2	3	3	3	5	5	5	5	5	5	5	5	5	5	3	5	4	4	4	5
17-Apr	4	4	4	5	5	5	5	4	4	4	5	6	6	6	4	3	3	3	4	3	2	2	2	1	6
18-Apr	2	1	2	3	UO	UO	UO	1	1	4	2	3	2	2	3	3	3	3	3	2	1	1	1	2	4
19-Apr	3	3	4	3	2	2	2	2	3	2	4	4	4	4	4	4	3	3	2	1	2	2	1	1	4
20-Apr	1	2	2	2	2	2	2	2	3	4	4	5	5	5	5	5	4	4	4	3	2	2	2	2	5
21-Apr	2	1	1	1	1	1	2	2	3	4	4	4	5	4	4	4	4	3	2	1	1	1	1	1	5
22-Apr	1	1	1	1	1	1	1	2	3	4	5	4	5	4	5	4	4	4	3	2	1	1	2	3	5
23-Apr	2	3	3	2	3	2	3	4	6	6	5	6	6	6	5	6	5	4	4	4	3	4	4	5	6
24-Apr	4	4	4	5	4	3	4	4	3	4	3	4	5	5	5	5	6	4	4	3	3	3	3	3	6
25-Apr	3	2	2	2	2	2	3	3	3	3	3	3	4	8	4	2	2	3	3	2	2	2	3	3	8
26-Apr	2	4	4	4	5	5	5	4	4	4	4	5	5	4	4	4	3	4	3	2	2	2	2	2	5
27-Apr	2	1	2	1	1	1	1	2	3	3	3	3	M	4	4	4	4	3	1	1	1	2	2	4	4
28-Apr	4	3	2	2	4	3	5	4	5	6	7	7	6	7	7	6	6	6	5	3	2	1	0	1	7
29-Apr	1	1	2	1	2	1	2	2	3	3	4	4	4	4	5	4	4	3	3	3	3	3	4	4	5
30-Apr	4	3	3	3	3	3	3	4	5	5	5	5	5	5	5	5	5	5	4	3	2	4	4	4	5

5	5	7	6	5	5	5	6	7	7	7	7	7	6	8	7	7	6	6	5	4	5	5	5	5	
Diurnal Maximum																									

M - Maintenance UO - Unstable Operation



Wood Buffalo Environmental Association
Summary of Hour Averages

Wind Direction (WD) - deg
Kirby North - April 2023

Direction of Maximum Speed: 250 deg on Apr 10 15:00	Hours in Service: 720
Direction of Maximum Daily Speed Average: 250.1 deg on Apr 10	Hours of Data: 716
Direction of Minimum Speed: 191 deg on Apr 25 15:00	Hours of Missing Data: 4
Direction of Minimum Daily Speed Average: 1.3 deg on Apr 4	Percent Operational Time: 99.4
Monthly Average Direction: 167.7 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-Apr	173	176	5	80	98	124	109	142	184	150	166	186	148	105	83	113	99	91	117	125	124	120	117	121	124.6
2-Apr	115	116	90	102	99	81	88	77	91	96	68	69	53	3	23	56	44	36	51	107	136	22	152	165	82.0
3-Apr	174	183	185	198	221	275	303	316	316	306	294	305	307	309	308	302	304	320	353	11	35	70	95	104	297.4
4-Apr	96	77	124	126	31	50	49	66	69	57	342	326	327	284	298	222	231	228	205	175	170	182	186	181	173.4
5-Apr	173	168	167	172	176	168	163	166	169	183	183	181	178	186	177	168	183	162	174	178	167	173	179	174.8	
6-Apr	177	174	172	177	174	175	176	173	175	177	181	172	178	194	179	183	179	179	175	173	171	174	175	171	176.8
7-Apr	171	174	175	171	173	173	172	174	180	178	178	171	170	175	164	176	180	175	181	184	178	174	177	181	175.0
8-Apr	183	187	185	187	200	191	190	204	212	213	225	213	223	249	223	251	233	227	210	191	185	177	184	185	202.1
9-Apr	179	183	184	228	217	182	180	194	214	227	226	223	229	224	213	212	200	187	170	162	156	166	167	173	197.1
10-Apr	181	195	257	270	260	255	251	253	268	266	265	262	254	249	250	250	249	250	238	230	209	204	212	247	250.1
11-Apr	228	184	172	183	173	160	168	178	237	228	234	226	222	332	326	336	31	81	211	205	216	208	205	203	209.6
12-Apr	265	331	322	236	262	238	221	210	226	256	279	298	298	303	298	315	313	307	304	304	305	295	206	190	285.0
13-Apr	186	197	190	200	209	185	188	202	215	234	238	266	286	289	311	307	348	354	42	72	84	107	135	115	230.2
14-Apr	155	156	147	169	164	154	92	58	32	330	74	142	190	197	293	213	220	203	79	35	160	144	145	152	168.4
15-Apr	168	172	168	176	185	154	176	186	200	228	239	233	220	197	189	201	172	187	165	171	166	154	148	149	183.1
16-Apr	144	144	143	146	144	131	125	129	114	109	119	139	142	155	147	150	145	146	141	129	109	114	119	124	133.6
17-Apr	125	120	116	107	111	106	118	112	112	120	113	111	117	124	121	106	117	210	121	51	36	21	21	35	107.9
18-Apr	4	11	35	57	UO	UO	UO	4	30	217	239	236	314	302	343	10	25	48	40	42	50	49	47	32	21.7
19-Apr	144	154	144	139	124	138	131	143	139	123	111	110	103	113	94	108	111	102	108	72	74	96	93	78	115.3
20-Apr	90	109	116	98	103	96	95	86	80	69	72	54	55	69	88	93	105	91	81	85	98	116	127	126	89.2
21-Apr	132	150	136	126	120	114	72	79	89	81	86	123	111	154	144	163	146	128	131	164	175	193	199	194	128.6
22-Apr	190	183	185	179	173	157	162	192	195	184	175	186	167	169	181	196	182	195	190	172	142	141	137	147	175.4
23-Apr	152	158	166	168	167	172	171	167	162	162	143	148	139	145	145	146	145	145	138	119	124	137	155	150.8	
24-Apr	153	148	149	144	152	150	153	155	145	137	146	153	146	154	156	149	175	182	165	147	141	150	161	151	153.0
25-Apr	150	164	173	173	178	181	181	192	205	191	205	191	241	305	191	198	175	232	218	206	198	196	228	258	203.9
26-Apr	267	281	289	263	282	290	296	303	300	295	298	305	302	290	297	309	345	358	59	72	62	68	72	97	306.1
27-Apr	88	179	31	7	341	24	43	8	335	332	299	303	M	276	284	260	308	273	220	198	174	181	191	204	280.7
28-Apr	213	208	215	216	236	261	301	324	328	313	302	312	312	314	315	320	323	338	343	351	355	28	66	54	309.7
29-Apr	62	69	64	50	48	62	85	97	80	87	41	54	63	113	81	94	72	106	100	95	111	130	130	136	93.1
30-Apr	145	154	158	164	163	173	172	179	181	177	155	143	136	143	140	136	138	140	144	149	144	150	154	162	153.4

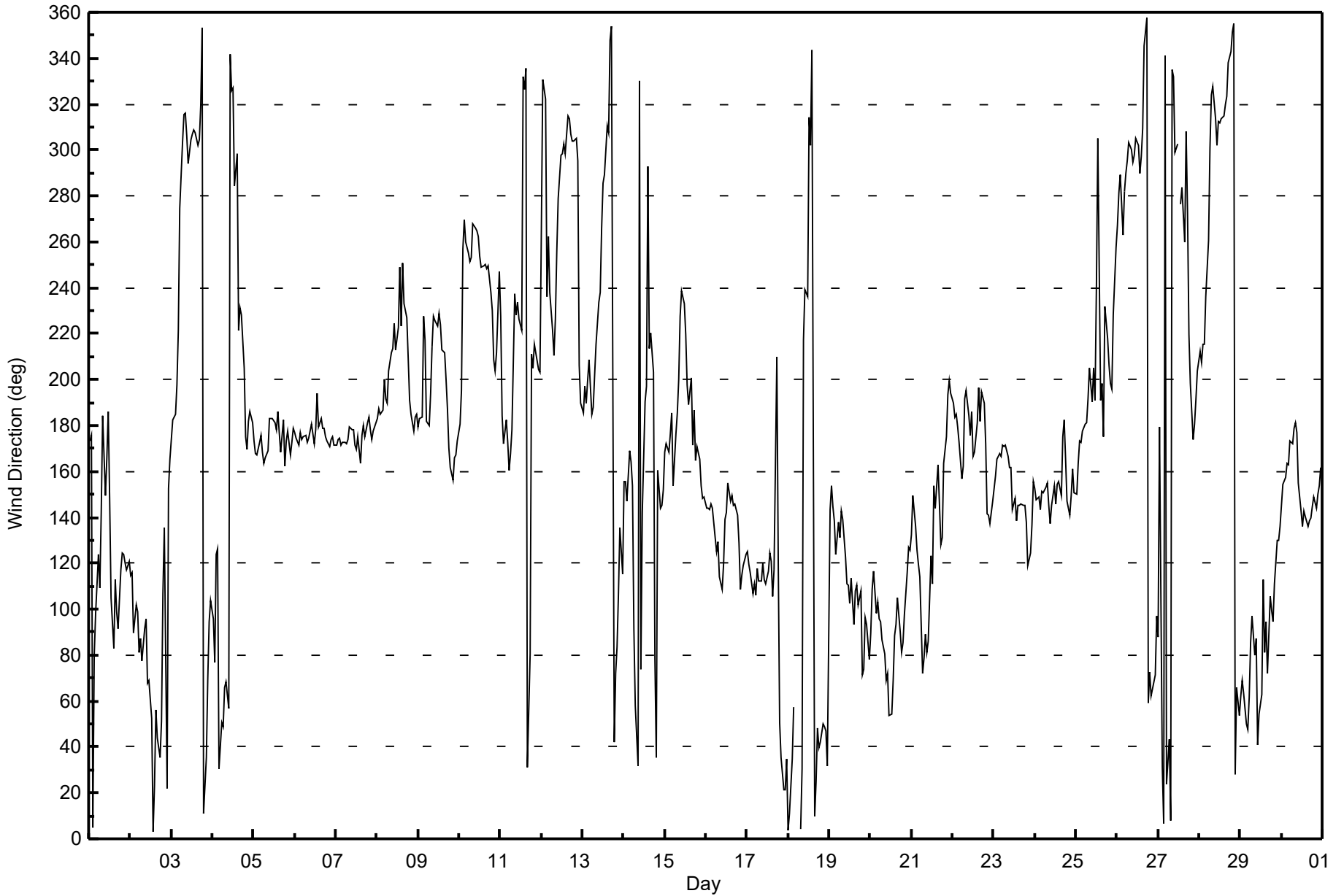
162.6	164.3	166.0	167.5	174.2	168.6	166.2	169.3	181.1	184.8	198.0	193.9	188.0	206.5	190.6	186.1	176.7	173.5	144.3	137.5	138.1	142.4	151.1	156.4
Diurnal Average																							

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 - April 2023





Wood Buffalo Environmental Association
Summary of Hour Standard Deviations

Wind Direction (WD) - deg
Kirby North - April 2023

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0	Hours in Service: 720
Maximum Value: 93 deg on Apr 14 10:00	Hours of Data: 716
Minimum Value: 4 deg on Apr 29 02:00	Hours of Missing Data: 4
	Hours of Calibration: 0
	Percent Operational Time: 99.4
Percentiles: P ₁ = 7 P ₁₀ = 13 Q ₁ = 16 Median = 19 Q ₃ = 25 P ₉₀ = 38 P ₉₉ = 78	

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-Apr	18	28	76	19	24	11	25	22	36	21	28	34	61	36	35	23	23	19	23	14	17	16	17	18	76
2-Apr	16	16	18	19	17	16	16	15	19	19	24	29	38	24	29	33	51	30	22	15	39	56	33	15	56
3-Apr	18	17	18	20	21	30	14	18	21	18	25	21	23	22	17	25	18	17	20	14	25	13	17	14	30
4-Apr	17	28	12	54	22	10	13	26	22	79	63	59	39	69	67	32	33	21	24	14	17	17	18	15	79
5-Apr	18	15	15	17	16	14	16	16	16	17	21	24	25	25	25	26	22	22	15	15	18	16	17	17	26
6-Apr	16	16	16	16	17	16	17	19	19	21	22	21	22	22	23	23	22	20	19	19	18	19	19	18	23
7-Apr	18	18	18	17	17	17	18	18	20	19	21	21	19	22	19	21	22	20	19	19	18	18	18	18	22
8-Apr	19	18	16	19	21	21	19	19	18	19	17	22	28	59	61	45	27	14	17	18	12	10	12	13	61
9-Apr	12	11	32	13	21	29	17	17	14	15	16	18	16	19	19	21	23	23	17	16	18	18	18	18	32
10-Apr	17	21	26	15	13	14	13	14	15	14	13	14	14	14	14	14	13	12	11	12	16	11	20	25	26
11-Apr	36	30	19	68	43	24	9	21	28	55	15	31	61	57	34	86	64	46	36	60	15	15	16	16	86
12-Apr	29	30	33	28	27	22	28	22	16	18	19	18	20	20	22	20	20	18	14	14	11	13	35	28	35
13-Apr	9	11	52	12	11	9	14	17	15	20	19	27	30	23	24	38	63	23	14	7	7	30	37	32	63
14-Apr	39	14	11	14	14	12	51	67	28	93	41	88	66	52	92	37	16	31	44	35	77	49	11	17	93
15-Apr	13	12	9	12	17	19	11	20	26	35	35	50	65	51	38	47	28	30	18	16	14	12	14	15	65
16-Apr	16	15	15	15	15	14	13	15	19	19	17	21	21	19	23	20	20	19	16	15	15	14	13	14	23
17-Apr	13	13	14	14	15	15	18	16	16	14	16	17	17	17	22	16	23	65	21	40	13	14	9	9	65
18-Apr	23	13	16	19	UO	UO	UO	35	29	78	20	22	43	31	35	38	23	21	15	15	9	10	11	35	78
19-Apr	27	20	19	19	16	16	16	20	20	15	17	21	23	23	21	21	22	19	18	17	20	17	19	8	27
20-Apr	10	13	13	14	14	13	14	21	27	19	25	22	22	29	23	28	21	19	16	11	11	12	11	12	29
21-Apr	15	13	10	6	5	7	26	15	23	20	32	39	41	41	52	41	36	24	22	15	14	13	12	12	52
22-Apr	11	10	9	10	8	5	14	26	29	33	30	27	34	29	31	25	29	28	22	24	10	12	13	16	34
23-Apr	15	16	16	16	16	16	17	20	20	20	22	21	22	19	19	19	18	17	16	18	14	16	17	18	22
24-Apr	17	17	17	18	18	18	18	19	20	20	21	25	28	23	27	22	25	21	21	18	15	18	18	17	28
25-Apr	16	17	15	16	17	16	18	20	21	27	28	30	49	17	85	65	29	31	21	16	13	16	24	14	85
26-Apr	17	17	17	19	19	14	15	18	17	21	22	29	27	33	42	43	34	31	15	12	27	15	13	24	43
27-Apr	37	35	84	26	11	19	16	38	36	44	20	22	M	40	30	23	32	31	37	21	13	19	19	19	84
28-Apr	16	17	18	14	18	18	18	19	21	20	18	21	20	20	19	22	21	21	19	17	16	18	12	5	22
29-Apr	6	4	63	5	8	11	19	24	24	41	62	77	60	71	62	61	51	33	17	13	14	13	14	14	77
30-Apr	16	16	17	16	17	17	18	20	22	23	25	24	20	26	21	22	20	17	17	16	14	15	15	15	26
	39	35	84	68	43	30	51	67	36	93	63	88	66	71	92	86	64	65	44	60	77	56	37	35	

Diurnal Maximum

M - Maintenance

UO - Unstable Operation



End of Report