

**WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
ANNUAL AMBIENT AIR QUALITY MONITORING REPORT
2017
REPORT HISTORY**

Original report release date: March 28, 2018

Revised report release date: December 19, 2018

Nitrogen dioxide (NO₂) data was revised and resubmitted to the AEP Airdata Warehouse for Bertha Ganter – Fort McKay air monitoring station (AMS01) for May 2017 to correctly flag a daily zero/span sequence on May 25, 2017.



Wood Buffalo Environmental Association

ANNUAL REPORT – VOLUME 1

2017 CONTINUOUS DATA

March 28, 2018

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



Table of Contents

Continuous Monitoring Summaries

Annual Report Summary Letter	1
Annual Continuous Monitoring Network Summary	15
Continuous Air Quality Parameter Summaries	18
Sulphur Dioxide (SO ₂)	19
Hydrogen Sulphide (H ₂ S)	45
Total Reduced Sulphur (TRS)	59
Nitrogen Dioxide (NO ₂)	71
Oxides of Nitrogen (NO _x)	93
Nitrogen Oxide (NO)	115
Ozone (O ₃)	137
Total Hydrocarbon (THC)	148
Non-Methane Hydrocarbon (NMHC)	169
Methane (CH ₄)	177
Carbon Monoxide (CO)	185
Ammonia (NH ₃)	187
Particulate Matter <2.5 µm (PM _{2.5})	190
Continuous Meteorological Parameter Summaries	207
Ambient Temperature	207
Relative Humidity	238
Barometric Pressure	269
Solar Radiation	272
Precipitation	277
Surface Wetness	285
Vertical Wind Speed	290
Wind Speed and Direction	295
Wind roses	324
Appendices	358
I. AAAQO Exceedances	358
II. Summary of Monthly Operation Times Below 90 Percent and Non-Compliances	361
III. 2011-2017 WBEA Data vs. LARP Triggers and Limits	363



March 28, 2018

Director, Environmental Monitoring and Evaluation Branch
Alberta Environment and Parks
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9820 106 Street
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**RE: Annual Ambient Air Quality Monitoring Report 2017
Wood Buffalo Environmental Association**

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Enclosed is the 2017 Annual Ambient Air Quality Monitoring Report for the continuous ambient air quality monitoring stations of the Wood Buffalo Environmental Association regional air quality monitoring network.

The continuous ambient air quality monitoring network stations are:

AMS 1 - Fort McKay – Bertha Ganter
AMS 2 - Mildred Lake
AMS 3 - Lower Camp B (meteorology)
AMS 4 - Buffalo Viewpoint
AMS 5 - Mannix
AMS 6 - Patricia McInnes
AMS 7 - Athabasca Valley
AMS 8 - Fort Chipewyan
AMS 9 - Barge Landing
AMS 11 - Lower Camp (air quality)
AMS 13 - Fort McKay South
AMS 14 - Anzac
AMS 15 - Horizon
AMS 16 - Muskeg River
AMS 17 - Wapasu
AMS 18 - Stony Mountain
AMS 19 - Firebag
AMS 20 - MacKay River
AMS 21 - Conklin
AMS 22 - Janvier
AMS 23 - Fort Hills
AMS 24 - Surmont
AMS 25 - Waskōw ohci Pimâtisiwin
AMS 500 - Christina Lake
AMS 501 – Leismer
AMS 502 – Surmont (PAMS)
AMS 505 - Sawbones Bay

This report is submitted by WBEA on behalf its members and for some members to satisfy the requirements contained in their EPEA Approvals:

Member	EPEA Approval No.
Athabasca Oil Corporation	289664-00-00; 241311-00-00
Canadian Natural Resources Ltd.	149968-01-00
Canadian Natural Upgrading Ltd.	20809-02-00
Cenovus FCCL Ltd.	48522-01-00
Connacher Oil and Gas Ltd.	240008-00-00
ConocoPhillips Canada Resources Corp.	48263-01-00
Devon Canada Corporation	224816-00-00
Finning Canada Ltd.	Not Applicable
Fort Hills Energy Corporation	151469-01-00
Hammerstone Corporation	189942-00-00
Husky Oil Operations Ltd.	206355-01-00
Imperial Oil Resources Ltd.	00046586-00-00
Inter Pipeline Offgas Ltd.	73203-02-00
MEG Energy Corporation	00216466-01-00
Nexen Energy ULC.	137467-01-00; 236394-00-00
PetroChina Canada Ltd.	254465-00-00
Suncor Energy Inc.	094-02-00; 80105-01-00
Sunshine Oilsands Ltd.	305529-00-00
Syncrude Canada Ltd.	026-02-00
Teck Resources Ltd.	EIA Application
Total E&P Canada Ltd.	228044-00-00

Government and Non-Industrial Organizations

Alberta Energy Regulator
 Alberta Environment and Parks
 Alberta Health Services
 Alberta Health and Wellness
 Environment Canada
 Health Canada
 Parks Canada
 Pembina Institute for Appropriate Development
 Regional Municipality of Wood Buffalo
 Saskatchewan Environment

Aboriginal Communities

Chipewyan Prairie Dene First Nation	Fort McKay Métis Local 63
Christina River Dene Nation Council	Fort McMurray First Nation 468
Fort McKay First Nation	Fort McMurray Métis Local 1935

1. Introduction

An Air Quality Task Force was established in 1985 to address environmental concerns related to oil sands development raised by the Fort McKay First Nation. In 1990, this Task Force became the Regional Air Quality Coordinating Committee which, in 1996, was endorsed by the Clean Air Strategic Alliance (CASA) as a regional air shed. In 1998, the Wood Buffalo Environmental Association (WBEA) assumed responsibility for air quality monitoring in the regional air shed aligned with the boundary of the Regional Municipality of Wood Buffalo (RMWB), including the Athabasca Oil Sands Region. In 2014, WBEA's became a working partner of the Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA). On April 5, 2016, the functions of AEMERA were brought back into the department of Environment and Parks under a new Monitoring and Science division. WBEA continues to work with government partners within the new Environmental Monitoring and Science Division.

WBEA operates the largest airshed in the largest municipality in Canada. Today, as a multi-stakeholder, community-based, not-for-profit association, WBEA monitors the air in the RMWB 24 hours a day and 365 days a year. WBEA does this through a variety of air, land and human monitoring programs. The information collected from WBEA's air monitoring stations between Conklin and Fort Chipewyan - most located at or near oil sands plants - is openly and continuously shared with stakeholders and the public on our website www.wbea.org and through Community Reports and outreach activities.

Air Monitoring

Ambient air quality is measured both continuously and non-continuously by the Wood Buffalo Environmental Association.

Continuous monitoring is performed using electronic instrumentation. Atmospheric gas concentrations are measured by parameter-specific electronic analyzers housed in stationary shelters. Meteorological parameters are measured with sensors mounted on meteorological towers, with standard heights of 10 meters, and 20 meters in forested areas. Meteorological towers with heights of 90 and 167 meters, with an expanded program of meteorological measurements are in place at two locations. Air quality analyzer and meteorological sensor signals are measured approximately once per second by a computerized data acquisition system, and processed into averages every 5 minutes, 1 hour and 24 hours, depending on the parameter and data requirements. There is a maximum of 8760 hours in a year, during which 1-hour concentrations may be reported. Continuous monitoring sites are equipped with permanent electrical power, heating and air conditioning systems, and internet connections.

Non-continuous monitoring consists of collecting air samples or exposing pollutant-sensitive, chemically treated sample media to the atmosphere for a period of time. Air pollutant concentrations are determined by laboratory analysis of the samples and exposed media. Exposure periods range from 24 hours to 1 month for various sample modes. Non-continuous monitoring is often referred to as integrated sampling, and is performed by both active and passive methods. Active methods utilize a computer controlled pump to draw air through or into the sample collector. Active methods are limited to sites where electrical power is available. Passive methods simply expose a chemically treated medium to the atmosphere. Without the need for support equipment, passive sampling can be performed at remote and isolated locations.

Table 1 provides a listing of stations with their names and corresponding WBEA identification number and the air quality parameters measured by continuous methods at each site. Parameters measured include hydrogen sulphide (H₂S), total reduced sulphur (TRS), sulphur dioxide (SO₂), nitrogen dioxide (NO₂), total hydrocarbons (THC), methane (CH₄), non-methane hydrocarbons (NMHC) and ammonia. Sites are categorized as industrial or community, based on the setting in which they are located.

Table 1: Summary of stations and parameters measured continuously at WBEA sites.

WBEA ID	LOCALE	STATION NAME	SO ₂	NO/NO ₂ /NO _x	O ₃	PM _{2.5}	TRS	H ₂ S	THC	Methane NMHC	CO	NH ₃
1	COMMUNITY	BERTHA GANTER-FORT MCKAY*	X	X	X	X	X		X	X		X
2	INDUSTRIAL	MILDRED LAKE	X					X	X			
3	METEOROLOGICAL	LOWER CAMP MET TOWER										
4	INDUSTRIAL	BUFFALO VIEWPOINT*	X	X	X	X		X	X			
5	INDUSTRIAL	MANNIX	X					X	X			
6	COMMUNITY	PATRICIA MCINNES	X	X	X	X	X		X	X		X
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	X	X		X	X	X	
8	COMMUNITY	FORT CHIPEWYAN	X	X	X	X						
9	INDUSTRIAL	BARGE LANDING					X		X			
11	INDUSTRIAL	LOWER CAMP	X					X	X			
13	INDUSTRIAL	FORT MCKAY SOUTH	X	X	X	X	X		X			
14	COMMUNITY	ANZAC	X	X	X	X	X		X	X		
15	INDUSTRIAL	HORIZON	X	X		X	X		X			
16	INDUSTRIAL	MUSKEG RIVER	X	X		X			X			
17	INDUSTRIAL	WAPASU*	X	X	X	X		X	X			
18	ENHANCED	STONY MOUNTAIN*	X	X	X	X	X		X	X		
19	INDUSTRIAL	FIREBAG	X	X				X	X			
20	INDUSTRIAL	MACKAY RIVER	X	X				X	X			
21	COMMUNITY	CONKLIN	X	X	X	X	X		X	X		
22	COMMUNITY	JANVIER	X	X	X	X	X		X	X		
23	INDUSTRIAL	FORT HILLS	X	X		X	X		X			
24	INDUSTRIAL	SURMONT	X	X		X		X	X			
25	COMMUNITY	WASKOW OHCI PIMATISIWIN	X					X				
500	PORTABLE	CHRISTINA LAKE	X	X				X				
501	PORTABLE	LEISMER	X	X				X				
502	PORTABLE	SURMONT (PAMS)	X	X				X				
505	PORTABLE	SAWBONES BAY	X	X				X				

* Also functions as an enhanced deposition station.

Table 2 provides a listing of stations and meteorological parameters measured by continuous methods. Parameters measured include ambient temperature, relative humidity, wind speed, wind direction, vertical wind speed, solar radiation, precipitation, and leaf wetness.

Table 2: Summary of stations and meteorological parameters measured continuously at WBEA sites.

WBEA ID	LOCALE	STATION NAME	Temperature	RH	Wind Speed	Wind Direction	Vertical Wind Speed	Solar Radiation	Precip	Leaf Wetness
1	COMMUNITY	BERTHA GANTER-FORT MCKAY*	X	X	X	X		X	X	X
2	INDUSTRIAL	MILDRED LAKE	X	X	X	X				
3	METEOROLOGICAL	LOWER CAMP MET TOWER	X	X	X	X	X			
4	INDUSTRIAL	BUFFALO VIEWPOINT*	X	X	X	X				
5	INDUSTRIAL	MANNIX	X	X	X	X	X			
6	COMMUNITY	PATRICIA MCINNES	X	X	X	X				
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	X				
8	COMMUNITY	FORT CHIPEWYAN	X	X	X	X		X	X	X
9	INDUSTRIAL	BARGE LANDING	X	X	X	X				
11	INDUSTRIAL	LOWER CAMP	X	X	X	X				
13	INDUSTRIAL	FORT MCKAY SOUTH	X	X	X	X				
14	COMMUNITY	ANZAC	X	X	X	X			X	X
15	INDUSTRIAL	HORIZON	X	X	X	X		X	X	
16	INDUSTRIAL	MUSKEG RIVER	X	X	X	X				
17	INDUSTRIAL	WAPASU*	X	X	X	X			X	
18	ENHANCED	STONY MOUNTAIN*	X	X	X	X		X	X	X
19	INDUSTRIAL	FIREBAG	X	X	X	X				
20	INDUSTRIAL	MACKAY RIVER	X	X	X	X			X	
21	COMMUNITY	CONKLIN	X	X	X	X				
22	COMMUNITY	JANVIER	X	X	X	X				
23	INDUSTRIAL	FORT HILLS	X	X	X	X				
24	INDUSTRIAL	SURMONT	X	X	X	X				
25	COMMUNITY	WASKOW OHCI PIMATISIWIN	X	X	X	X				
500	PORTABLE	CHRISTINA LAKE	X	X	X	X				
501	PORTABLE	LEISMER	X	X	X	X				
502	PORTABLE	SURMONT (PAMS)	X	X	X	X				
505	PORTABLE	SAWBONES BAY	X	X	X	X				

* Also functions as an enhanced deposition station.

Table 3 provides a listing of stations and air quality parameters measured by integrated methods. Parameters measured include volatile organic compounds (VOC), particulate matter less than 2.5 µm aerodynamic diameter (PM_{2.5}) including associated metal and ion analysis, particulate matter less than 10 µm aerodynamic diameter

(PM₁₀), including associated metal and ion analysis, polycyclic aromatic hydrocarbons (PAH), wet precipitation, including major ion analysis. Particulate matter samples, coarse and fine (dichot) and sequential automated speciated samples (SASS) are collected on behalf of Environment Canada.

Table 3: Summary of parameters measured using integrated methods at WBEA sites

WBEA ID	LOCALE	STATION NAME	VOC	PM _{2.5} Mass, Metals and Ions	PM _{2.5} ECOC	PM ₁₀ Mass, Metals and Ions	PAH	DICHOT	SASS	PRECIP
1	COMMUNITY	BERTHA GANTER-FORT MCKAY*	X	X	X	X	X	X	X	X
4	INDUSTRIAL	BUFFALO VIEWPOINT*	X				X	X	X	
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X			X
7	COMMUNITY	ATHABASCA VALLEY	X	X		X	X			
9	INDUSTRIAL	BARGE LANDING	X							
11	INDUSTRIAL	LOWER CAMP*		X			X			
13	INDUSTRIAL	FORT MCKAY SOUTH*	X			X				X
14	COMMUNITY	ANZAC	X	X		X	X			
15	INDUSTRIAL	HORIZON	X			X				
16	INDUSTRIAL	MUSKEG RIVER				X				
17	INDUSTRIAL	WAPASU*					X	X		
18	ENHANCED	STONY MOUNTAIN*	X				X	X	X	
22	COMMUNITY	JANVIER	X							

* Also functions as an enhanced deposition station.

All WBEA air monitoring data are fully quality-assured and then sent within four weeks of month-end to the AEP Airdata Warehouse (www.airdata.alberta.ca), an on-line database for all of Alberta's air monitoring data. In 2017, WBEA operated 23 permanent, and four portable air monitoring stations. WBEA uses continuous, time-integrated and passive techniques to measure air quality in the air shed.

WBEA's air quality data are used by Alberta Environment and Parks to calculate the hourly Air Quality Health Index (AQHI), which is one measure of air quality. Fort McKay also operates their own Air Quality Index (FMAQI). WBEA transmits raw data, in real time, to AEP where the index is calculated. The AQHI is calculated every hour at nine Air Monitoring Stations in Wood Buffalo: Fort Chipewyan, Fort McKay, Fort McKay South, Athabasca Valley/Patricia McInnes (Fort McMurray), Anzac, Janvier, Conklin, and Stony Mountain.

Deposition Monitoring

The Terrestrial Environmental Effects Monitoring (TEEM) program monitors and reports on certain possible effects of air emissions on terrestrial ecosystems and plant life. TEEM does this through an integrated suite of measurements of air emission sources linked to terrestrial receptors. TEEM's monitoring work is centered upon a regional network of forest health and peat land monitoring sites. These sites were established to detect early warning of change in key indicators and medium-to-long term detection and quantification of effect or impact. TEEM also operates a Traditional Environmental Knowledge project focused on berry health.

a regional network of forest health and peat land monitoring sites. These sites were established to detect early warning of change in key indicators and medium-to-long term detection and quantification of effect or impact. TEEM also operates a Traditional Environmental Knowledge project focused on berry health.

Odour Monitoring

The Odour Monitoring Program (OMP) is focused on better understanding the frequency and nature of regional odours through an array of specialized air samplers designed to chemically characterize odour events.

Monitoring Site Locations

The map in Figure 1 shows the locations of all WBEA continuous air quality monitoring sites and the map in Figure 2 shows the locations of all WBEA passive sites. Continuous monitoring sites are located in areas of development, primarily along the Athabasca River valley and cover the region from Conklin to Fort Chipewyan. Passive sites are located throughout the region, including in remote forest health sites.

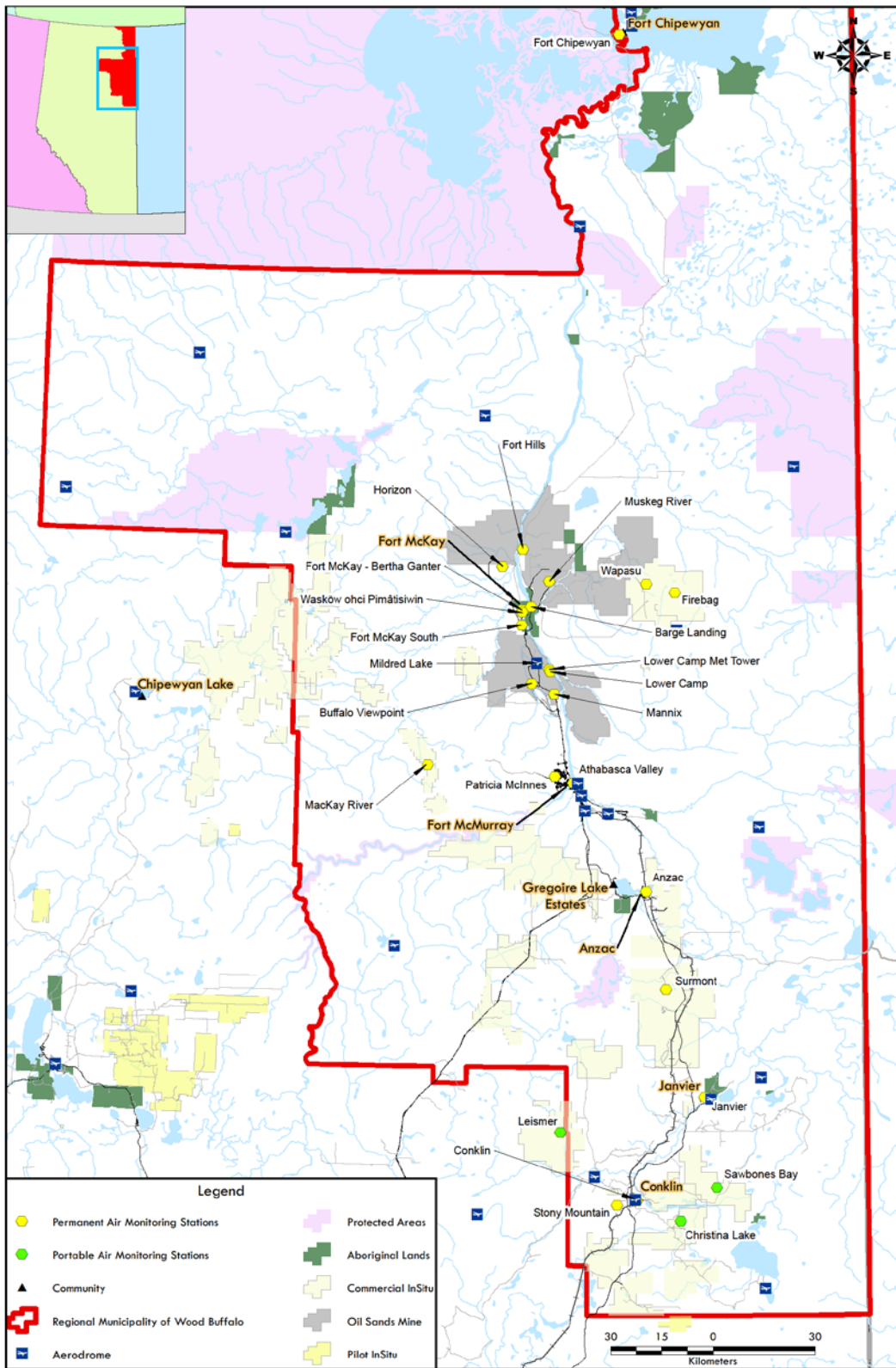


Figure 1: Continuous Air Monitoring Station Locations

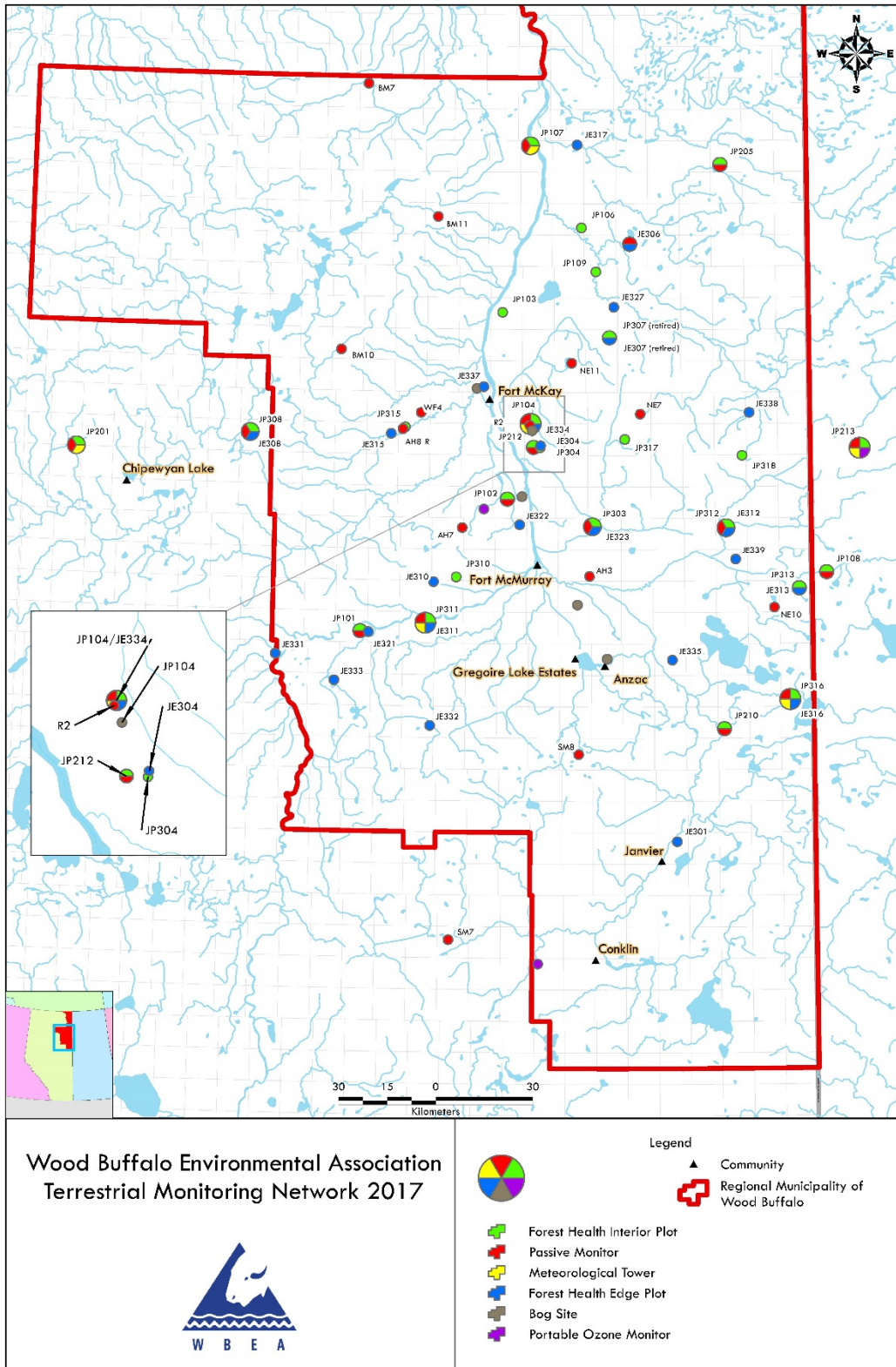


Figure 2: Passive Monitoring Site Locations

2. Summary of Changes to the WBEA Air Monitoring Network

The WBEA air monitoring network expanded in 2017 to include 4 additional permanent air monitoring stations.

The WBEA commissioned a permanent air monitoring station in the community of Janvier on January 1, 2017. This station is equipped with ambient air quality analyzers for SO₂, TRS, THC, CH₄, NMHC, NO, NO₂, NO_x, O₃, and PM_{2.5}. Temperature, humidity, and wind speed and direction are also continuously measured.

The WBEA commissioned a permanent air monitoring station at the Suncor Fort Hills facility on June 1, 2017 to fulfill Alberta Environment's Environmental Protection and Enhancement Act facility approval number 151469-01-00. This station is equipped with ambient air quality analyzers for SO₂, TRS, THC, NO, NO₂, NO_x, and PM_{2.5}. Temperature, wind speed and direction, and relative humidity are also continuously measured.

The WBEA commissioned a portable air monitoring station, Sawbones Bay, at the MEG Energy Christina Lake facility on July 1, 2017. The survey at this location will be conducted from July 2017 until June 2018 to fulfill Alberta Environment's Environmental Protection and Enhancement Act facility approval number 00216466-01-00. This station is equipped with ambient air quality analyzers for SO₂, TRS, THC, NO, NO₂, NO_x and meteorological sensors for ambient temperature, relative humidity, and wind speed and direction.

The WBEA commissioned a permanent air monitoring station in the community of Fort McKay at the Environment and Climate Change Canada Oski-Otin air monitoring compound on July 5, 2017. Waskōw ohci Pimâtisiwin air monitoring station was deployed to support the recommendations of the Recurrent Human Health Complaint Technical Report – Fort McKay (2016) by monitoring SO₂ and H₂S for acute emergency events. The purpose of this is to alert the Alberta Energy Regulator, Alberta Environment and Parks, and the community of Fort McKay to levels of SO₂ and H₂S that exceed certain thresholds, which may pose a risk to human health. This station is equipped with ambient air quality analyzers for SO₂ and H₂S. Temperature, humidity, and wind speed and direction are also continuously measured.

In August 2017, analyzers for NO, NO₂, NO_x O₃, and PM_{2.5} were installed at Buffalo Viewpoint to meet criteria for Environment and Climate Change Canada Enhanced Deposition sites.

The WBEA commissioned a permanent air monitoring station at the ConocoPhillips Surmont facility on September 19, 2017 to fulfill EPEA approval number 48263-01-00. A portable station had previously been deployed at this site, however the EPEA approval for the project requires ambient air monitoring at the facility continuously. This station is equipped with ambient air quality analyzers for SO₂, H₂S, THC, NO, NO₂, NO_x, and meteorological sensors for ambient temperature, relative humidity, and wind speed and direction. A PM_{2.5} analyzer was installed in the station on November 6, 2017.

The WBEA commenced an ambient air quality monitoring survey at the Statoil Leismer facility on October 1, 2017 until April 2018 to fulfill EPEA approval number 241311-00-02. This station is equipped with ambient air quality analyzers for SO₂, H₂S, NO, NO₂, NO_x, and meteorological sensors for ambient temperature, relative humidity, and wind speed and direction.

On November 1, 2017, the PM_{2.5} analyzer was removed from the Sawbones Bay portable air monitoring station. This analyzer was not a requirement of the MEG Energy EPEA approval and its primary function is for monitoring PM_{2.5} concentrations during forest fire events. This analyzer will be removed seasonally and operate from April through October when forest fire smoke is potentially an issue.

The following operational modifications are provided as per the Air Monitoring Directive requirements:

Table 4: Parameter changes to the WBEA network – 2017

Station	Station Name	Parameter	Date Effective	Comment
AMS 22	Janvier	SO ₂	01-Jan-17	New station
AMS 22	Janvier	TRS	01-Jan-17	New station
AMS 22	Janvier	THC, CH ₄ , NMHC	01-Jan-17	New station
AMS 22	Janvier	O ₃	01-Jan-17	New station
AMS 22	Janvier	NO, NO ₂ , NO _x	01-Jan-17	New station
AMS 22	Janvier	PM _{2.5}	01-Jan-17	New station
AMS 22	Janvier	Wind speed and direction	01-Jan-17	New station
AMS 22	Janvier	Temperature	01-Jan-17	New station
AMS 22	Janvier	Relative Humidity	01-Jan-17	New station
AMS 23	Fort Hills	SO ₂	01-Jun-17	New station
AMS 23	Fort Hills	TRS	01-Jun-17	New station
AMS 23	Fort Hills	THC	01-Jun-17	New station
AMS 23	Fort Hills	NO, NO ₂ , NO _x	01-Jun-17	New station
AMS 23	Fort Hills	PM _{2.5}	01-Jun-17	New station
AMS 23	Fort Hills	Wind speed and direction	01-Jun-17	New station
AMS 23	Fort Hills	Temperature	01-Jun-17	New station
AMS 23	Fort Hills	Relative Humidity	01-Jun-17	New Station
AMS 25	Waskōw ohci Pimâtisiwin	SO ₂	05-Jul-17	New Station
AMS 25	Waskōw ohci Pimâtisiwin	H ₂ S	05-Jul-17	New Station
AMS 25	Waskōw ohci Pimâtisiwin	Wind speed and direction	05-Jul-17	New Station
AMS 25	Waskōw ohci Pimâtisiwin	Temperature	05-Jul-17	New Station
AMS 25	Waskōw ohci Pimâtisiwin	Relative Humidity	05-Jul-17	New Station
AMS 4	Buffalo Viewpoint	O ₃	01-Aug-17	Additional Parameter
AMS 4	Buffalo Viewpoint	NO, NO ₂ , NO _x	01-Aug-17	Additional Parameter
AMS 4	Buffalo Viewpoint	PM _{2.5}	04-Aug-17	Additional Parameter
AMS 24	Surmont	SO ₂	19-Sept-17	New Station
AMS 24	Surmont	H ₂ S	19-Sept-17	New Station
AMS 24	Surmont	THC	19-Sept-17	New Station
AMS 24	Surmont	NO, NO ₂ , NO _x	19-Sept-17	New Station
AMS 24	Surmont	Wind speed and direction	19-Sept-17	New Station
AMS 24	Surmont	Temperature	19-Sept-17	New Station
AMS 24	Surmont	Relative Humidity	19-Sept-17	New Station
AMS 24	Surmont	PM _{2.5}	6-Nov-17	New Station

3. Concentrations in Excess of Alberta Ambient Air Quality Objectives (AAAQO)

The ambient concentrations in excess of the air quality objectives as indicated in the Air Monitoring Directive, Section III.A.3 (a & b) for CO, H₂S, NO₂, NH₃, O₃, PM_{2.5}, and SO₂ are provided in the Annual Network Summary. A detailed summary of ambient concentrations in excess of the AAAQO, including site, parameter, date & time, reference number, exceedance period, reported and final concentration, and status are included in Appendix I of the report.

The WBEA airshed reports to Alberta Environments and Parks (AEP) ambient air concentrations for total reduced sulphur (TRS) in excess of the H₂S Ambient Air Quality Objectives. The statistical summary of the previous 5-year comparisons for ambient concentrations in excess of the AAAQOs are shown in Figure 3. The H₂S summary includes the TRS concentrations in excess of the H₂S objectives.

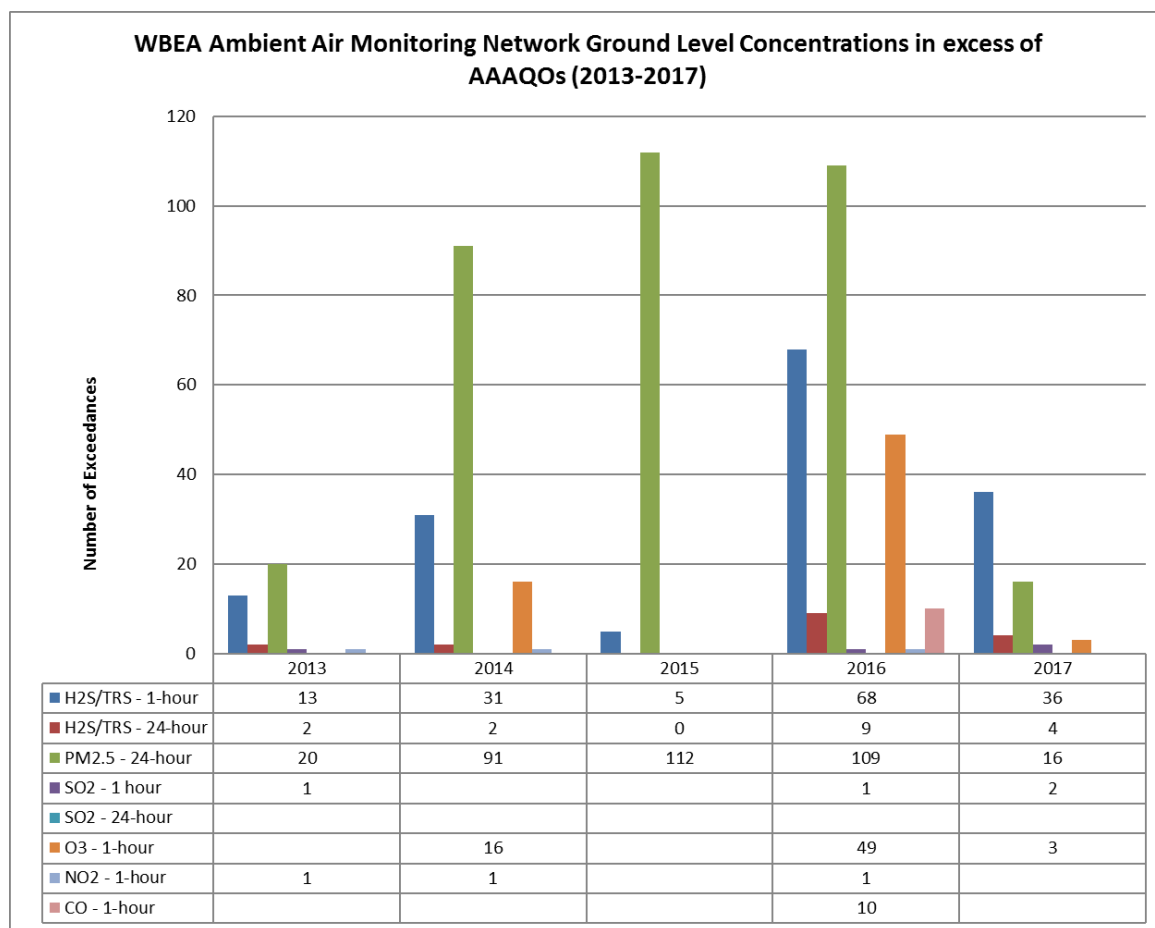


Figure 3 Ambient Air Concentrations in excess of the AAAQO (2013-2017)

4. Operational Status – Instrument Operation Below 90 Percent of the Time

In 2017, there were 12 incidents resulting in compliance monitoring instruments operating less than 90% of the time. A detailed summary of these incidents, including date, reference number, description, location, issue, and remedial action are included in Appendix II of the report.

5. External Audits and Results

Alberta Environment and Parks (AEP) audited the continuous monitoring stations of the Wood Buffalo Environmental Association’s (WBEA) ambient air quality monitoring network from October 16 to 27, 2017. During the audit, the following instruments and sensors were found to be outside the Alberta Air Monitoring Directive (AMD) – Chapter 8 Audit Assessment Criteria:

Station	Audit Findings	Cause	Corrective Actions
Athabasca Valley (AMS 7)	TRS analyzer response was 11% above the calculated audit gas concentration.	Calibration gas concentration not as indicated.	Data invalidated from October 23-31 when calibration gas with poor quality was in use.
Surmont (AMS 24)	NO ₂ analyzer did not meet audit criteria for response and linearity.	Incorrect MFC settings on calibrator.	Calibrator was adjusted; NO ₂ data reviewed and adjusted based on calibration curve derived from WBEA audit.
Sawbones Bay (AMS 505)	TRS analyzer response was unstable due to suspected breakthrough of the SO _x scrubber; audit was not completed.	SO _x scrubber breakthrough during audit.	Changed calibration SOP to meet AMD criteria for SO _x scrubber verification; reviewed data to ensure that any instances of high SO ₂ concentration did not affect TRS - none found.

Corrected data from Surmont AMS was uploaded to the AEP airdata warehouse on January 8, 2018.

6. Monthly Report Revisions

The following revisions were made to monthly reports and/or Airdata Warehouse data submissions:

Data for AMS 23 - Due to upload issues with the Airdata Warehouse, May 2017 data for Firebag AMS required re-upload to the Airdata Warehouse on September 12, 2017.

Data for AMS 4 - Data from August and September 2017 was re-uploaded to the AEP Airdata Warehouse to include new parameters (NO, NO₂, NO_x, O₃, and PM_{2.5}) that were added to Buffalo Viewpoint AMS on August 1, 2017.

Data for AMS 24 - As a result of the Alberta Environment and Parks (AEP) audit, data for Surmont (AMS 24) from September to November 2017 was re-submitted to reflect the adjustment to NO, NO₂, and NO_x data.

7. 2013-2017 WBEA Data Compared to LARP Triggers and Limits

A summary of data from WBEA air monitoring stations compared to the Lower Athabasca Regional Plan (LARP) trigger levels and limits for NO₂ and SO₂ is provided in Appendix III.

8. 2017 Annual Air Concentrations

This report contains a summary of operational times for the year, the monthly averages, the number of readings in excess of the AAAQO, and frequency distributions of 1-hour data.

The results of integrated monitoring of ECOC and precipitation are also included in this report. Annual statistics for all integrated and passive results are provided for all species analyzed.

If additional information is required, please contact the undersigned at (780) 715 1770 or the Wood Buffalo Environmental Association at (780) 799 4420.

Yours sincerely,

Wood Buffalo Environmental Association

Michael Martineau
Data Lead

Kendra Thomas
Data Technician

R00_2017_ANNUAL

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
 MONTHLY AIR MONITORING SUMMARY
 for AMD SECTION III.B.1(c)

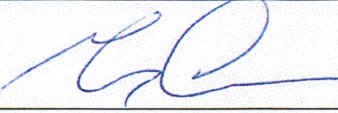
2017
 page 1 of 3
 Prepared: February 12, 2017 11:00

APPROVAL NUMBERS	REPORT DATE						
	YEAR						
289664-00-00	2017						
241311-00-00	CONTINUOUS AMBIENT MONITORING						
20809-02-00							
149968-01-00			ONE-HOUR AVERAGE		24-HOUR AVERAGE		
48522-01-00	PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
240008-00-00	SO2(ppm)	1	99.63	0.087	0	0.011	0
48263-01-00	SO2(ppm)	2	99.78	0.130	0	0.029	0
151469-01-00	SO2(ppm)	4	99.67	0.153	0	0.017	0
224816-00-00	SO2(ppm)	5	99.83	0.123	0	0.033	0
189942-00-00	SO2(ppm)	6	99.44	0.048	0	0.009	0
206355-00-00	SO2(ppm)	7	99.85	0.040	0	0.005	0
46586-00-00	SO2(ppm)	8	99.76	0.018	0	0.005	0
73203-02-00	SO2(ppm)	11	99.37	0.145	0	0.027	0
216466-01-00	SO2(ppm)	13	99.85	0.066	0	0.011	0
137467-01-00	SO2(ppm)	14	99.47	0.013	0	0.005	0
236394-00-00	SO2(ppm)	15	99.84	0.513	2	0.038	0
80105-01-00	SO2(ppm)	16	99.33	0.049	0	0.012	0
254465-00-00	SO2(ppm)	17	99.61	0.044	0	0.015	0
094-02-00	SO2(ppm)	18	99.57	0.010	0	0.003	0
305529-00-00	SO2(ppm)	19	99.91	0.106	0	0.023	0
026-02-00	SO2(ppm)	20	99.91	0.035	0	0.008	0
228044-00-00	SO2(ppm)	21	99.32	0.009	0	0.002	0
	SO2(ppm)	22	99.67	0.014	0	0.001	0
	SO2(ppm)	23	99.90	0.019	0	0.004	0
	SO2(ppm)	24	99.84	0.011	0	0.004	0
	SO2(ppm)	25	99.42	0.037	0	0.004	0
	SO2(ppm)	500	99.97	0.060	0	0.017	0
	SO2(ppm)	501	99.95	0.032	0	0.009	0
	SO2(ppm)	502	95.02	0.024	0	0.006	0
	SO2(ppm)	505	99.91	0.066	0	0.016	0
	H2S(ppm)	2	99.47	0.009	0	0.003	0
	H2S(ppm)	4	99.63	0.011	1	0.002	0
	H2S(ppm)	5	99.75	0.086	18	0.009	3
	H2S(ppm)	11	97.80	0.022	15	0.004	1
	H2S(ppm)	17	99.53	0.002	0	0.001	0
	H2S(ppm)	19	99.69	0.013	1	0.002	0
	H2S(ppm)	20	98.68	0.004	0	0.001	0
	H2S(ppm)	24	98.39	0.001	0	0.000	0
	H2S(ppm)	25	99.49	0.002	0	0.001	0
	H2S(ppm)	500	99.92	0.003	0	0.001	0
	H2S(ppm)	501	99.05	0.004	0	0.001	0
	H2S(ppm)	502	95.14	0.009	0	0.002	0
	H2S(ppm)	505	99.34	0.003	0	0.001	0
	TRS(ppm)	1	99.63	0.005	0	0.002	0
	TRS(ppm)	6	99.26	0.002	0	0.001	0
	TRS(ppm)	7	97.35	0.004	0	0.001	0
	TRS(ppm)	9	99.63	0.005	0	0.002	0
	TRS(ppm)	13	99.82	0.004	0	0.001	0
	TRS(ppm)	14	99.12	0.006	0	0.001	0
	TRS(ppm)	15	99.83	0.011	1	0.003	0
	TRS(ppm)	18	99.79	0.001	0	0.000	0
	TRS(ppm)	21	99.27	1.000	0	1.000	0
	TRS(ppm)	22	99.11	1.000	0	0.000	0
	TRS(ppm)	23	99.45	0.003	0	0.001	0
	THC(ppm)	1	98.96	5.5	-	3.4	-
	THC(ppm)	2	98.52	7.9	-	3.6	-
	THC(ppm)	4	98.30	12.2	-	4.5	-
	THC(ppm)	5	98.71	19.1	-	4.1	-
	THC(ppm)	6	98.69	2.9	-	2.3	-
	THC(ppm)	7	98.69	4.0	-	2.8	-
	THC(ppm)	9	99.74	6.3	-	3.5	-
	THC(ppm)	11	98.31	7.0	-	3.4	-
	THC(ppm)	13	99.85	7.5	-	4.4	-
	THC(ppm)	14	99.29	2.7	-	2.3	-
	THC(ppm)	15	99.81	9.3	-	3.7	-
	THC(ppm)	16	97.74	7.9	-	3.7	-
	THC(ppm)	17	99.61	4.5	-	2.4	-
	THC(ppm)	18	99.71	2.4	-	2.1	-
	THC(ppm)	19	99.70	3.3	-	2.5	-
	THC(ppm)	20	99.58	4.0	-	2.7	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
 MONTHLY AIR MONITORING SUMMARY
 for AMD SECTION III.B.1(c)

APPROVAL NUMBERS	REPORT DATE		CONTINUOUS AMBIENT MONITORING				
	YEAR		ONE-HOUR AVERAGE		24-HOUR AVERAGE		
	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	
289664-00-00							
241311-00-00							
20809-02-00							
149968-01-00	THC(ppm)	21	98.89	3.7	-	2.4	-
48522-01-00	THC(ppm)	22	98.63	2.8	-	2.2	-
240008-00-00	THC(ppm)	23	99.49	13.0	-	4.0	-
48263-01-00	THC(ppm)	24	90.77	0.0	-	0.0	-
151469-01-00	THC(ppm)	505	99.64	0.0	-	0.0	-
224816-00-00	O3(ppm)	1	99.00	0.065	0	0.044	-
189942-00-00	O3(ppm)	4	99.92	0.072	0	0.048	-
206355-00-00	O3(ppm)	6	99.47	0.088	2	0.050	-
46586-00-00	O3(ppm)	7	99.84	0.095	1	0.050	-
73203-02-00	O3(ppm)	8	99.73	0.072	0	0.052	-
216466-01-00	O3(ppm)	13	99.69	0.067	0	0.044	-
137467-01-00	O3(ppm)	14	99.76	0.069	0	0.048	-
236394-00-00	O3(ppm)	17	99.05	0.067	0	0.052	-
80105-01-00	O3(ppm)	18	98.81	0.077	0	0.059	-
254465-00-00	O3(ppm)	21	99.34	0.077	0	0.050	-
094-02-00	O3(ppm)	22	99.70	0.078	0	0.056	-
305529-00-00	NO2(ppm)	1	99.58	0.146	0	0.026	-
026-02-00	NO2(ppm)	4	99.05	0.045	0	0.026	-
228044-00-00	NO2(ppm)	6	99.27	0.046	0	0.021	-
	NO2(ppm)	7	98.04	0.045	0	0.026	-
	NO2(ppm)	8	94.27	0.027	0	0.012	-
	NO2(ppm)	13	99.00	0.041	0	0.026	-
	NO2(ppm)	14	99.66	0.027	0	0.011	-
	NO2(ppm)	15	99.54	0.045	0	0.021	-
	NO2(ppm)	16	99.00	0.064	0	0.029	-
	NO2(ppm)	17	99.50	0.033	0	0.015	-
	NO2(ppm)	18	99.92	0.017	0	0.008	-
	NO2(ppm)	19	99.90	0.054	0	0.019	-
	NO2(ppm)	20	99.89	0.041	0	0.013	-
	NO2(ppm)	21	98.11	0.024	0	0.008	-
	NO2(ppm)	22	100.00	0.022	0	0.009	-
	NO2(ppm)	23	99.88	0.065	0	0.033	-
	NO2(ppm)	24	100.00	0.017	0	0.007	-
	NO2(ppm)	500	99.51	0.035	0	0.016	-
	NO2(ppm)	501	100.00	0.040	0	0.010	-
	NO2(ppm)	502	95.59	0.032	0	0.013	-
	NO2(ppm)	505	99.14	0.029	0	0.011	-
	CO(ppm)	7	99.87	0.8	0	0.3	-
	NH3(ppm)	1	92.26	0.020	0	0.004	-
	NH3(ppm)	6	93.24	0.055	0	0.034	-
	PM2.5(ug/m3)	1	98.62	330.2	-	93.7	5
	PM2.5(ug/m3)	4	98.25	123.5	-	27.4	0
	PM2.5(ug/m3)	6	99.84	135.0	-	29.5	0
	PM2.5(ug/m3)	7	98.81	173.8	-	24.2	0
	PM2.5(ug/m3)	8	97.21	146.0	-	22.6	0
	PM2.5(ug/m3)	13	99.26	199.9	-	39.7	1
	PM2.5(ug/m3)	14	99.30	153.5	-	33.6	1
	PM2.5(ug/m3)	15	99.86	278.3	-	45.4	1
	PM2.5(ug/m3)	16	99.71	234.2	-	42.9	1
	PM2.5(ug/m3)	17	99.24	113.4	-	23.8	0
	PM2.5(ug/m3)	18	99.52	124.8	-	41.4	1
	PM2.5(ug/m3)	21	99.29	125.9	-	41.2	1
	PM2.5(ug/m3)	22	94.66	102.6	-	30.8	1
	PM2.5(ug/m3)	23	98.25	285.0	-	58.0	4
	PM2.5(ug/m3)	24	100.00	21.0	-	15.0	0
	WIND	1	99.12	-	-	-	-
	WIND	2	99.11	-	-	-	-
	WIND	4	99.13	-	-	-	-
	WIND	5	96.86	-	-	-	-
	WIND	6	99.67	-	-	-	-
	WIND	7	99.53	-	-	-	-
	WIND	8	99.50	-	-	-	-
	WIND	9	98.72	-	-	-	-
	WIND	11	99.33	-	-	-	-
	WIND	13	99.43	-	-	-	-
	WIND	14	99.34	-	-	-	-
	WIND	15	98.81	-	-	-	-
	WIND	16	99.67	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
 MONTHLY AIR MONITORING SUMMARY
 for AMD SECTION III.B.1(c)

APPROVAL NUMBERS	REPORT DATE		2017				
	YEAR		page 3 of 3				
	2017		Prepared: February 12, 2017 11:00				
CONTINUOUS AMBIENT MONITORING							
			ONE-HOUR AVERAGE		24-HOUR AVERAGE		
PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	
289664-00-00							
241311-00-00							
20809-02-00							
149968-01-00							
48522-01-00	WIND	17	98.20	-	-	-	
240008-00-00	WIND	18	98.68	-	-	-	
48263-01-00	WIND	19	98.5	-	-	-	
151469-01-00	WIND	20	99.21	-	-	-	
224816-00-00	WIND	21	99.32	-	-	-	
189942-00-00	WIND	22	99.11	-	-	-	
206355-00-00	WIND	23	98.99	-	-	-	
46586-00-00	WIND	24	100.00	-	-	-	
73203-02-00	WIND	25	98.35	-	-	-	
216466-01-00	WIND	500	99.43	-	-	-	
137467-01-00	WIND	501	99.50	-	-	-	
236394-00-00	WIND	502	98.43	-	-	-	
80105-01-00	WIND	505	99.37	-	-	-	
254465-00-00							
094-02-00							
305529-00-00							
026-02-00							
228044-00-00							
SIGNATURE OF ASSOCIATION REPRESENTATIVE			FOR ALBERTA ENVIRONMENT USE ONLY				



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

ANNUAL 2017

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

March 28, 2018



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SULPHUR DIOXIDE ANNUAL 2017

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

March 28, 2018



**Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.87	708	1.1	24	0	5	0	100	0	0	0	0
Feb	100	640	1.5	87	0	11	0	99	1	0	0	0
Mar	100	709	2.1	64	0	9	0	98	2	0	0	0
Apr	99.44	681	1.5	45	0	9	0	99	1	0	0	0
May	99.6	706	1.3	66	0	9	0	99	1	0	0	0
Jun	99.44	681	0.7	30	0	4	0	100	0	0	0	0
Jul	97.85	693	0.8	21	0	4	0	100	0	0	0	0
Aug	99.87	709	1.1	46	0	4	0	100	0	0	0	0
Sep	100	687	0.9	27	0	5	0	100	0	0	0	0
Oct	99.87	707	0.8	19	0	5	0	100	0	0	0	0
Nov	100	687	0.6	30	0	4	0	100	0	0	0	0
Dec	99.73	707	0.6	12	0	2	0	100	0	0	0	0
Annual	99.63	8315	1.1	87	0	11	0	99	1	0	0	0



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	710	3.2	47	0	12	0	96	4	0	0	0
Feb	100	637	2.8	49	0	10	0	97	3	0	0	0
Mar	100	710	2.4	41	0	9	0	98	2	0	0	0
Apr	99.31	681	1.6	30	0	7	0	99	1	0	0	0
May	99.87	708	3.2	130	0	29	0	96	3	1	0	0
Jun	100	686	1.4	48	0	7	0	99	1	0	0	0
Jul	99.46	705	2.5	44	0	9	0	97	3	0	0	0
Aug	99.87	709	2.9	44	0	12	0	97	3	0	0	0
Sep	100	687	2.3	69	0	16	0	98	1	0	0	0
Oct	99.06	701	1.8	30	0	9	0	99	1	0	0	0
Nov	99.86	685	1.7	107	0	9	0	99	1	0	0	0
Dec	100	709	1.9	88	0	24	0	98	2	0	0	0
Annual	99.78	8328	2.3	130	0	29	0	98	2	0	0	0



**Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	710	0.5	10	0	4	0	100	0	0	0	0
Feb	100	641	1.2	30	0	6	0	99	1	0	0	0
Mar	100	710	0.8	23	0	3	0	100	0	0	0	0
Apr	100	688	1.0	60	0	6	0	100	0	0	0	0
May	96.77	683	2.2	153	0	17	0	98	2	0	0	0
Jun	100	687	1.4	46	0	8	0	98	2	0	0	0
Jul	99.73	708	0.5	16	0	2	0	100	0	0	0	0
Aug	99.6	704	0.9	74	0	8	0	99	0	0	0	0
Sep	100	685	0.5	13	0	3	0	100	0	0	0	0
Oct	100	705	0.9	49	0	12	0	99	1	0	0	0
Nov	100	686	0.5	15	0	3	0	100	0	0	0	0
Dec	100	707	0.3	11	0	1	0	100	0	0	0	0
Annual	99.67	8314	0.9	153	0	17	0	99	0	0	0	0



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.73	707	2.5	85	0	14	0	97	2	0	0	0
Feb	99.85	639	2.3	56	0	8	0	99	1	0	0	0
Mar	98.92	702	4.1	101	0	33	0	94	5	1	0	0
Apr	99.86	685	3.3	123	0	20	0	96	3	0	0	0
May	100	709	2.7	62	0	12	0	96	4	0	0	0
Jun	100	686	2.2	48	0	10	0	98	2	0	0	0
Jul	99.87	705	1.7	88	0	18	0	98	2	0	0	0
Aug	100	709	1.4	44	0	14	0	98	2	0	0	0
Sep	99.72	685	1.3	42	0	10	0	99	1	0	0	0
Oct	100	707	2.1	72	0	13	0	98	2	0	0	0
Nov	100	687	1.8	59	0	14	0	98	2	0	0	0
Dec	100	709	1.0	39	0	4	0	99	1	0	0	0
Annual	99.83	8330	2.2	123	0	33	0	98	2	0	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
					Objective		Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	710	1.1	26	0	7	0	100	0	0	0	0
Feb	100	640	0.9	18	0	4	0	100	0	0	0	0
Mar	99.87	708	1.1	48	0	9	0	100	0	0	0	0
Apr	99.86	682	0.7	20	0	4	0	100	0	0	0	0
May	99.6	705	0.7	19	0	6	0	100	0	0	0	0
Jun	99.31	678	0.8	46	0	4	0	100	0	0	0	0
Jul	100	710	0.5	12	0	3	0	100	0	0	0	0
Aug	99.87	707	0.4	21	0	4	0	100	0	0	0	0
Sep	99.44	681	0.6	11	0	2	0	100	0	0	0	0
Oct	100	705	0.5	14	0	5	0	100	0	0	0	0
Nov	100	684	0.7	18	0	5	0	100	0	0	0	0
Dec	95.43	675	0.7	21	0	5	0	100	0	0	0	0
Annual	99.44	8285	0.7	48	0	9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.87	707	0.8	14	0	5	0	100	0	0	0	0
Feb	100	638	0.7	18	0	3	0	100	0	0	0	0
Mar	99.87	707	1.0	40	0	5	0	100	0	0	0	0
Apr	100	684	0.4	10	0	2	0	100	0	0	0	0
May	99.73	706	0.7	25	0	4	0	100	0	0	0	0
Jun	99.86	684	0.8	34	0	4	0	100	0	0	0	0
Jul	99.87	707	0.5	9	0	2	0	100	0	0	0	0
Aug	99.87	708	0.5	14	0	2	0	100	0	0	0	0
Sep	100	686	0.6	11	0	2	0	100	0	0	0	0
Oct	99.19	699	0.5	10	0	3	0	100	0	0	0	0
Nov	100	683	0.6	9	0	2	0	100	0	0	0	0
Dec	100	708	0.5	7	0	1	0	100	0	0	0	0
Annual	99.85	8317	0.6	40	0	5	0	100	0	0	0	0



**Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.73	705	0.4	18	0	5	0	100	0	0	0	0
Feb	100	639	0.1	2	0	1	0	100	0	0	0	0
Mar	99.87	706	0.3	7	0	3	0	100	0	0	0	0
Apr	100	684	0.2	4	0	1	0	100	0	0	0	0
May	100	707	0.1	6	0	1	0	100	0	0	0	0
Jun	100	685	0.1	3	0	1	0	100	0	0	0	0
Jul	100	707	0.0	2	0	0	0	100	0	0	0	0
Aug	100	707	0.1	3	0	1	0	100	0	0	0	0
Sep	100	684	0.3	4	0	2	0	100	0	0	0	0
Oct	99.06	700	0.1	6	0	1	0	100	0	0	0	0
Nov	100	684	0.2	3	0	1	0	100	0	0	0	0
Dec	98.52	694	0.3	5	0	2	0	100	0	0	0	0
Annual	99.76	8302	0.2	18	0	5	0	100	0	0	0	0



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
					Objective		Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	709	3.0	125	0	20	0	97	2	1	0	0
Feb	100	641	3.3	86	0	16	0	96	3	1	0	0
Mar	100	710	2.2	83	0	22	0	98	2	1	0	0
Apr	100	687	2.6	145	0	19	0	98	2	0	0	0
May	99.06	703	4.0	125	0	25	0	95	4	1	0	0
Jun	94.17	646	2.8	137	0	27	0	98	1	1	0	0
Jul	99.87	709	2.6	87	0	10	0	97	2	0	0	0
Aug	99.73	708	4.8	94	0	12	0	94	6	0	0	0
Sep	100	687	2.1	84	0	12	0	98	2	0	0	0
Oct	99.87	707	3.3	85	0	12	0	95	5	0	0	0
Nov	100	687	2.3	58	0	11	0	98	2	0	0	0
Dec	99.73	706	0.9	29	0	3	0	100	0	0	0	0
Annual	99.37	8300	2.8	145	0	27	0	97	3	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	710	0.8	18	0	3	0	100	0	0	0	0
Feb	100	639	1.2	66	0	9	0	100	0	0	0	0
Mar	100	708	2.1	47	0	9	0	98	2	0	0	0
Apr	99.44	681	1.8	61	0	10	0	99	1	0	0	0
May	100	708	1.7	61	0	11	0	98	2	0	0	0
Jun	100	686	0.9	23	0	4	0	100	0	0	0	0
Jul	98.79	700	0.9	27	0	5	0	100	0	0	0	0
Aug	100	708	1.0	24	0	3	0	100	0	0	0	0
Sep	100	686	0.9	27	0	4	0	100	0	0	0	0
Oct	100	704	0.8	26	0	6	0	100	0	0	0	0
Nov	100	685	0.6	25	0	3	0	100	0	0	0	0
Dec	100	708	0.5	4	0	1	0	100	0	0	0	0
Annual	99.85	8323	1.1	66	0	11	0	99	1	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	98.92	701	0.6	13	0	5	0	100	0	0	0	0
Feb	99.85	636	0.9	13	0	4	0	100	0	0	0	0
Mar	100	708	0.6	10	0	3	0	100	0	0	0	0
Apr	99.72	683	0.3	6	0	2	0	100	0	0	0	0
May	99.87	707	0.3	4	0	1	0	100	0	0	0	0
Jun	100	686	0.3	6	0	1	0	100	0	0	0	0
Jul	100	708	0.3	7	0	1	0	100	0	0	0	0
Aug	100	708	0.3	2	0	1	0	100	0	0	0	0
Sep	98.75	676	0.4	10	0	2	0	100	0	0	0	0
Oct	99.87	705	0.3	4	0	1	0	100	0	0	0	0
Nov	96.67	661	0.5	7	0	2	0	100	0	0	0	0
Dec	100	708	0.5	12	0	2	0	100	0	0	0	0
Annual	99.47	8287	0.4	13	0	5	0	100	0	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.87	707	1.8	513	2	38	0	99	0	0	0	0
Feb	100	640	1.2	48	0	7	0	100	0	0	0	0
Mar	100	706	2.3	30	0	6	0	99	1	0	0	0
Apr	100	684	1.6	42	0	10	0	99	1	0	0	0
May	99.87	707	1.3	34	0	10	0	99	1	0	0	0
Jun	99.86	684	0.9	14	0	3	0	100	0	0	0	0
Jul	99.87	705	0.7	17	0	3	0	100	0	0	0	0
Aug	99.6	704	1.0	48	0	6	0	100	0	0	0	0
Sep	100	685	0.8	18	0	2	0	100	0	0	0	0
Oct	100	707	0.6	14	0	2	0	100	0	0	0	0
Nov	99.03	678	0.5	8	0	2	0	100	0	0	0	0
Dec	100	708	0.4	4	0	1	0	100	0	0	0	0
Annual	99.84	8315	1.1	513	2	38	0	100	0	0	0	0



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	708	1.8	27	0	12	0	100	0	0	0	0
Feb	94.49	603	1.3	29	0	7	0	99	1	0	0	0
Mar	100	707	1.1	36	0	6	0	100	0	0	0	0
Apr	100	684	1.2	49	0	6	0	99	1	0	0	0
May	99.87	707	0.9	30	0	4	0	99	1	0	0	0
Jun	99.58	681	0.5	29	0	4	0	100	0	0	0	0
Jul	99.87	706	0.5	20	0	3	0	100	0	0	0	0
Aug	100	708	0.7	28	0	3	0	100	0	0	0	0
Sep	99.58	682	0.9	23	0	4	0	100	0	0	0	0
Oct	100	706	0.8	18	0	4	0	100	0	0	0	0
Nov	99.86	684	0.6	12	0	4	0	100	0	0	0	0
Dec	98.25	695	0.9	20	0	8	0	100	0	0	0	0
Annual	99.33	8271	0.9	49	0	12	0	100	0	0	0	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	710	3.2	31	0	10	0	98	2	0	0	0
Feb	100	640	1.4	20	0	5	0	100	0	0	0	0
Mar	100	709	0.5	12	0	4	0	100	0	0	0	0
Apr	100	685	0.7	44	0	5	0	100	0	0	0	0
May	100	708	0.4	12	0	2	0	100	0	0	0	0
Jun	99.72	684	0.5	30	0	6	0	100	0	0	0	0
Jul	95.97	679	0.6	23	0	2	0	100	0	0	0	0
Aug	100	710	1.1	31	0	6	0	100	0	0	0	0
Sep	100	685	0.5	14	0	3	0	100	0	0	0	0
Oct	100	707	0.7	16	0	3	0	100	0	0	0	0
Nov	99.86	684	0.9	23	0	7	0	100	0	0	0	0
Dec	99.87	705	2.6	43	0	15	0	99	1	0	0	0
Annual	99.61	8306	1.1	44	0	15	0	100	0	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.87	708	0.5	5	0	1	0	100	0	0	0	0
Feb	100	639	0.5	5	0	2	0	100	0	0	0	0
Mar	100	708	0.6	8	0	3	0	100	0	0	0	0
Apr	100	685	0.3	2	0	1	0	100	0	0	0	0
May	100	708	0.4	10	0	2	0	100	0	0	0	0
Jun	99.72	685	0.2	2	0	1	0	100	0	0	0	0
Jul	100	707	0.2	1	0	0	0	100	0	0	0	0
Aug	100	708	0.3	2	0	1	0	100	0	0	0	0
Sep	99.86	684	0.3	5	0	1	0	100	0	0	0	0
Oct	95.43	674	0.3	3	0	1	0	100	0	0	0	0
Nov	100	685	0.4	3	0	1	0	100	0	0	0	0
Dec	100	707	0.4	5	0	1	0	100	0	0	0	0
Annual	99.57	8298	0.4	10	0	3	0	100	0	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	708	3.2	46	0	17	0	98	2	0	0	0
Feb	99.85	638	1.5	36	0	6	0	100	0	0	0	0
Mar	100	708	0.5	10	0	2	0	100	0	0	0	0
Apr	99.72	683	0.6	25	0	4	0	100	0	0	0	0
May	99.87	706	0.5	14	0	2	0	100	0	0	0	0
Jun	100	684	0.5	15	0	4	0	100	0	0	0	0
Jul	99.73	705	0.7	9	0	2	0	100	0	0	0	0
Aug	99.87	707	1.1	19	0	5	0	100	0	0	0	0
Sep	99.86	685	0.7	16	0	3	0	100	0	0	0	0
Oct	100	705	0.7	23	0	2	0	100	0	0	0	0
Nov	100	686	1.0	18	0	4	0	100	0	0	0	0
Dec	100	708	3.2	106	0	23	0	98	2	0	0	0
Annual	99.91	8323	1.2	106	0	23	0	100	0	0	0	0



**Wood Buffalo Environmental Association - MacKay River (AMS 20)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	706	0.8	21	0	8	0	100	0	0	0	0
Feb	99.7	636	0.2	12	0	2	0	100	0	0	0	0
Mar	100	707	0.9	14	0	4	0	100	0	0	0	0
Apr	99.86	685	1.0	33	0	6	0	99	1	0	0	0
May	99.87	707	0.4	14	0	2	0	100	0	0	0	0
Jun	100	685	0.3	16	0	3	0	100	0	0	0	0
Jul	100	709	0.2	7	0	1	0	100	0	0	0	0
Aug	99.73	707	0.3	16	0	3	0	100	0	0	0	0
Sep	100	685	0.5	14	0	2	0	100	0	0	0	0
Oct	99.87	706	0.5	8	0	3	0	100	0	0	0	0
Nov	100	685	0.8	35	0	4	0	100	0	0	0	0
Dec	99.87	707	0.5	15	0	3	0	100	0	0	0	0
Annual	99.91	8325	0.5	35	0	8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	707	0.4	4	0	1	0	100	0	0	0	0
Feb	100	639	0.4	6	0	2	0	100	0	0	0	0
Mar	100	707	0.5	7	0	2	0	100	0	0	0	0
Apr	100	685	0.3	3	0	1	0	100	0	0	0	0
May	100	707	0.3	9	0	2	0	100	0	0	0	0
Jun	99.58	682	0.2	3	0	1	0	100	0	0	0	0
Jul	99.87	709	0.2	2	0	1	0	100	0	0	0	0
Aug	99.87	707	0.2	2	0	1	0	100	0	0	0	0
Sep	99.58	683	0.2	5	0	1	0	100	0	0	0	0
Oct	99.87	706	0.2	2	0	1	0	100	0	0	0	0
Nov	100	685	0.3	3	0	1	0	100	0	0	0	0
Dec	93.15	659	0.2	6	0	1	0	100	0	0	0	0
Annual	99.32	8276	0.3	9	0	2	0	100	0	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.73	707	0.3	5	0	1	0	100	0	0	0	0
Feb	100	639	0.3	3	0	1	0	100	0	0	0	0
Mar	99.73	706	0.3	4	0	1	0	100	0	0	0	0
Apr	99.72	682	0.1	3	0	1	0	100	0	0	0	0
May	100	707	0.2	14	0	1	0	100	0	0	0	0
Jun	100	684	0.1	4	0	1	0	100	0	0	0	0
Jul	100	705	0.1	1	0	0	0	100	0	0	0	0
Aug	100	707	0.1	4	0	1	0	100	0	0	0	0
Sep	98.61	675	0.2	3	0	1	0	100	0	0	0	0
Oct	98.25	694	0.2	2	0	1	0	100	0	0	0	0
Nov	100	684	0.3	3	0	1	0	100	0	0	0	0
Dec	100	708	0.4	4	0	1	0	100	0	0	0	0
Annual	99.67	8298	0.2	14	0	1	0	100	0	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jun	100	685	0.4	14	0	2	0	100	0	0	0	0
Jul	100	707	0.4	19	0	3	0	100	0	0	0	0
Aug	99.73	706	0.6	17	0	3	0	100	0	0	0	0
Sep	99.58	683	0.8	18	0	4	0	100	0	0	0	0
Oct	100	703	0.5	12	0	3	0	100	0	0	0	0
Nov	100	685	0.5	10	0	2	0	100	0	0	0	0
Dec	100	708	0.5	12	0	3	0	100	0	0	0	0
Annual	99.90	4877	0.5	19	0	4	0	100	0	0	0	0

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Sep	100	273	0.4	2	0	1	0	100	0	0	0	0
Oct	100	703	0.6	11	0	3	0	100	0	0	0	0
Nov	99.44	683	0.5	5	0	1	0	100	0	0	0	0
Dec	100	707	0.9	10	0	4	0	100	0	0	0	0
Annual	99.86	2366	0.6	11	0	4	0	100	0	0	0	0

*This parameter became operational on September 19



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS 25)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jul	98.75	602	0.6	19	0	4	0	100	0	0	0	0
Aug	100	709	0.9	37	0	4	0	100	0	0	0	0
Sep	99.58	684	0.9	23	0	4	0	100	0	0	0	0
Oct	100	710	0.8	15	0	3	0	100	0	0	0	0
Nov	100	686	0.6	26	0	3	0	100	0	0	0	0
Dec	98.12	696	0.8	9	0	3	0	100	0	0	0	0
Annual	99.40	4087	0.8	37	0	4	0	100	0	0	0	0

*This parameter became operational on July 5



**Wood Buffalo Environmental Association -Christina Lake (AMS500)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range				
					1-Hour Objective		24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	100	708	0.6	13	0	3	0	100	0	0	0	0
Feb	100	640	0.8	15	0	2	0	100	0	0	0	0
Mar	100	710	0.8	25	0	4	0	100	0	0	0	0
Apr	100	685	0.3	10	0	2	0	100	0	0	0	0
May	100	708	0.9	25	0	5	0	100	0	0	0	0
Jun	100	686	1.0	19	0	5	0	100	0	0	0	0
Jul	100	707	1.4	43	0	6	0	99	1	0	0	0
Aug	100	708	0.8	28	0	5	0	100	0	0	0	0
Sep	99.72	684	1.4	53	0	9	0	99	1	0	0	0
Oct	99.87	706	2.3	57	0	17	0	97	3	0	0	0
Nov	100	685	1.8	60	0	16	0	98	2	0	0	0
Dec	100	708	1.7	29	0	5	0	100	0	0	0	0
Annual	99.97	8335	1.2	60	0	17	0	99	1	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Oct	99.87	706	1.6	32	0	8	0	99	1	0	0	0
Nov	100	684	1.2	21	0	9	0	100	0	0	0	0
Dec	100	707	1.8	28	0	6	0	99	1	0	0	0
Annual	99.95	2288	1.5	32	0	9	0	99	1	0	0	0

*This parameter became operational on October 1



Wood Buffalo Environmental Association - Surmont (AMS502)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jan	99.73	706	1.1	24	0	2	0	100	0	0	0	0
Feb	98.21	627	1.2	10	0	3	0	100	0	0	0	0
Mar	96.77	684	1.1	10	0	4	0	100	0	0	0	0
Apr	62.36	426	0.4	6	0	1	0	100	0	0	0	0
May	100	708	0.7	22	0	5	0	100	0	0	0	0
Jun	100	685	1.0	16	0	6	0	100	0	0	0	0
Jul	99.87	707	0.9	16	0	4	0	100	0	0	0	0
Aug	99.87	708	0.6	10	0	2	0	100	0	0	0	0
Sep	100	423	0.9	13	0	4	0	100	0	0	0	0
Annual	95.20	5674	0.9	24	0	6	0	100	0	0	0	0

*This parameter commenced operation on September 19



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2017
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
Jul	99.87	706	1.2	23	0	4	0	100	0	0	0	0
Aug	100	708	1.6	22	0	7	0	99	1	0	0	0
Sep	99.72	684	1.6	27	0	11	0	98	2	0	0	0
Oct	99.87	705	1.8	66	0	16	0	98	1	1	0	0
Nov	100	685	1.5	33	0	7	0	100	0	0	0	0
Dec	100	709	2.7	34	0	9	0	99	1	0	0	0
Annual	99.91	4197	1.7	66	0	16	0	99	1	0	0	0

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

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

March 28, 2018



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	709	0.8	9	0	3	0	97	3	0	0
Feb	100	640	0.7	5	0	2	0	97	3	0	0
Mar	100	709	0.6	7	0	1	0	99	1	0	0
Apr	99.31	682	0.4	5	0	1	0	99	1	0	0
May	100	710	0.3	3	0	1	0	100	0	0	0
Jun	100	687	0.4	2	0	1	0	100	0	0	0
Jul	99.46	705	0.5	6	0	2	0	98	2	0	0
Aug	99.87	709	0.6	7	0	2	0	97	3	0	0
Sep	100	684	0.5	8	0	2	0	99	1	0	0
Oct	98.79	698	0.4	2	0	1	0	100	0	0	0
Nov	96.25	661	0.4	5	0	1	0	100	0	0	0
Dec	100	708	0.6	6	0	1	0	100	0	0	0
Annual	99.47	8302	0.5	9	0	3	0	99	1	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	709	0.3	3	0	1	0	100	0	0	0
Feb	100	641	0.5	11	1	2	0	99	1	0	0
Mar	100	710	0.3	6	0	1	0	100	0	0	0
Apr	99.86	686	0.2	5	0	0	0	100	0	0	0
May	96.77	683	0.2	2	0	0	0	100	0	0	0
Jun	99.86	684	0.3	2	0	0	0	100	0	0	0
Jul	99.73	708	0.3	3	0	1	0	100	0	0	0
Aug	99.6	707	0.3	3	0	1	0	100	0	0	0
Sep	100	686	0.2	3	0	1	0	100	0	0	0
Oct	99.87	706	0.2	5	0	1	0	100	0	0	0
Nov	100	687	0.2	2	0	1	0	100	0	0	0
Dec	100	709	0.3	4	0	1	0	100	0	0	0
Annual	99.63	8316	0.3	11	1	2	0	100	0	0	0



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	99.19	701	0.6	10	0	3	0	98	2	0	0
Feb	99.7	639	0.7	5	0	1	0	98	2	0	0
Mar	98.66	696	0.5	5	0	2	0	99	1	0	0
Apr	99.86	686	0.9	86	5	9	1	98	1	0	0
May	100	710	0.6	24	1	2	0	99	1	0	0
Jun	100	686	0.5	5	0	2	0	99	1	0	0
Jul	100	710	0.9	32	5	5	1	93	7	1	0
Aug	100	708	0.6	14	5	4	1	96	3	1	0
Sep	99.58	683	0.7	15	2	3	0	98	2	0	0
Oct	100	706	0.4	5	0	2	0	99	1	0	0
Nov	100	686	0.4	4	0	1	0	100	0	0	0
Dec	100	710	0.5	5	0	1	0	100	0	0	0
Annual	99.75	8321	0.6	86	18	9	3	98	2	0	0



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	709	0.8	22	6	3	0	97	2	1	0
Feb	100	640	0.9	11	4	2	0	96	3	1	0
Mar	100	710	0.4	7	0	1	0	100	0	0	0
Apr	100	687	0.5	21	2	3	0	98	1	0	0
May	98.92	701	0.4	9	0	1	0	99	1	0	0
Jun	94.17	647	0.4	6	0	1	0	100	0	0	0
Jul	88.84	629	0.7	8	0	2	0	96	4	0	0
Aug	99.6	706	1.0	10	0	2	0	95	5	0	0
Sep	100	684	0.5	8	0	1	0	98	2	0	0
Oct	99.73	706	0.5	7	0	1	0	99	1	0	0
Nov	92.64	635	0.5	13	1	2	0	99	1	0	0
Dec	99.73	707	0.8	17	2	4	1	96	4	0	0
Annual	97.8	8161	0.6	22	15	4	1	98	2	0	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.3	1	0	0	0	100	0	0	0
Feb	100	641	0.2	2	0	0	0	100	0	0	0
Mar	100	709	0.1	1	0	0	0	100	0	0	0
Apr	100	687	0.1	1	0	0	0	100	0	0	0
May	99.19	703	0.1	2	0	0	0	100	0	0	0
Jun	99.58	684	0.1	2	0	0	0	100	0	0	0
Jul	96.24	684	0.1	1	0	0	0	100	0	0	0
Aug	100	710	0.1	1	0	0	0	100	0	0	0
Sep	99.86	686	0.1	1	0	0	0	100	0	0	0
Oct	100	708	0.1	1	0	0	0	100	0	0	0
Nov	99.72	685	0.2	1	0	0	0	100	0	0	0
Dec	99.87	709	0.3	1	0	1	0	100	0	0	0
Annual	99.53	8316	0.1	2	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.3	2	0	1	0	100	0	0	0
Feb	99.85	639	0.3	6	0	1	0	100	0	0	0
Mar	100	709	0.2	1	0	0	0	100	0	0	0
Apr	99.86	685	0.2	1	0	0	0	100	0	0	0
May	100	709	0.2	1	0	0	0	100	0	0	0
Jun	100	686	0.2	3	0	0	0	100	0	0	0
Jul	99.73	708	0.2	3	0	0	0	100	0	0	0
Aug	99.87	709	0.2	1	0	0	0	100	0	0	0
Sep	99.86	686	0.2	1	0	0	0	100	0	0	0
Oct	100	706	0.2	1	0	0	0	100	0	0	0
Nov	97.08	663	0.2	1	0	0	0	100	0	0	0
Dec	100	709	0.3	13	1	2	0	99	1	0	0
Annual	99.69	8319	0.2	13	1	2	0	100	0	0	0



Wood Buffalo Environmental Association -MacKay River (AMS 20)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	99.87	709	0.2	1	0	1	0	100	0	0	0
Feb	99.7	639	0.2	2	0	0	0	100	0	0	0
Mar	100	710	0.3	1	0	1	0	100	0	0	0
Apr	98.89	680	0.2	1	0	0	0	100	0	0	0
May	99.6	707	0.2	2	0	0	0	100	0	0	0
Jun	98.89	678	0.3	4	0	1	0	100	0	0	0
Jul	98.79	702	0.2	2	0	0	0	100	0	0	0
Aug	98.79	701	0.2	3	0	0	0	100	0	0	0
Sep	99.03	680	0.2	1	0	0	0	100	0	0	0
Oct	95.56	675	0.3	2	0	1	0	100	0	0	0
Nov	95	651	0.3	2	0	1	0	100	0	0	0
Dec	100	709	0.3	2	0	1	0	100	0	0	0
Annual	98.68	8241	0.3	4	0	1	0	100	0	0	0



Wood Buffalo Environmental Association -Surmont (AMS24)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Sep	100	272	0.2	1	0	0	0	100	0	0	0
Oct	100	705	0.2	1	0	0	0	100	0	0	0
Nov	100	686	0.2	1	0	0	0	100	0	0	0
Dec	94.62	668	0.2	1	0	0	0	100	0	0	0
Annual	98.7	2331	0.2	1	0	0	0	100	0	0	0

*This parameter was installed on September 19



**Wood Buffalo Environmental Association -Waskow ohci Pimatisiwin
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	>50
Jul	97.8	592	0.4	2	0	1	0	100	0	0	0
Aug	99.87	707	0.4	2	0	1	0	100	0	0	0
Sep	99.17	681	0.3	2	0	1	0	100	0	0	0
Oct	100	708	0.3	1	0	1	0	100	0	0	0
Nov	100	686	0.4	2	0	1	0	100	0	0	0
Dec	99.87	708	0.6	2	0	1	0	100	0	0	0
Annual	99.5	4082	0.4	2	0	1	0	100	0	0	0

*This parameter was installed on July 5



Wood Buffalo Environmental Association Christina Lake (AMS500)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4-10	11 - 50	>50
Jan	100	709	0.2	1	0	0	0	100	0	0	0
Feb	100	642	0.2	1	0	0	0	100	0	0	0
Mar	100	710	0.2	3	0	1	0	100	0	0	0
Apr	99.86	686	0.1	2	0	0	0	100	0	0	0
May	99.87	709	0.1	3	0	0	0	100	0	0	0
Jun	99.86	686	0.1	2	0	0	0	100	0	0	0
Jul	99.87	709	0.1	2	0	0	0	100	0	0	0
Aug	99.87	710	0.1	1	0	0	0	100	0	0	0
Sep	99.72	685	0.1	2	0	0	0	100	0	0	0
Oct	100	708	0.2	2	0	0	0	100	0	0	0
Nov	100	687	0.1	1	0	0	0	100	0	0	0
Dec	100	710	0.2	1	0	0	0	100	0	0	0
Annual	99.92	8351	0.2	3	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4-10	11 - 50	>50
Oct	97.72	688	0.2	1	0	0	0	100	0	0	0
Nov	99.72	684	0.2	4	0	1	0	100	0	0	0
Dec	99.73	707	0.2	2	0	0	0	100	0	0	0
Annual	99.1	2310	0.2	4	0	1	0	100	0	0	0

*This parameter became operational on October 1



Wood Buffalo Environmental Association - Surmont (AMS502)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4-10	11 - 50	>50
Jan	100	710	0.4	2	0	1	0	100	0	0	0
Feb	100	640	0.5	9	0	1	0	100	0	0	0
Mar	100	710	0.3	4	0	1	0	100	0	0	0
Apr	62.08	426	0.3	3	0	1	0	100	0	0	0
May	100	707	0.2	2	0	1	0	100	0	0	0
Jun	98.89	679	0.3	3	0	1	0	100	0	0	0
Jul	99.46	706	0.5	3	0	2	0	100	0	0	0
Aug	97.98	695	0.4	4	0	1	0	100	0	0	0
Sep	99.33	424	0.4	3	0	1	0	100	0	0	0
Annual	95.3	5697	0.4	9	0	2	0	100	0	0	0

*This parameter commenced operation on September 19



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2017
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4-10	11 - 50	>50
Jul	99.73	707	0.3	3	0	1	0	100	0	0	0
Aug	99.87	709	0.2	1	0	1	0	100	0	0	0
Sep	99.72	686	0.2	2	0	0	0	100	0	0	0
Oct	97.04	680	0.1	2	0	0	0	100	0	0	0
Nov	99.72	684	0.1	1	0	0	0	100	0	0	0
Dec	100	709	0.2	1	0	1	0	100	0	0	0
Annual	99.3	4175	0.2	3	0	1	0	100	0	0	0

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

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TOTAL REDUCED SULPHUR ANNUAL 2017

Operations, Data Collection,
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Wood Buffalo Environmental Association
Fort McMurray, Alberta

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	99.87	708	0.8	4	0	2	0	100	0	0	0
Feb	100	640	0.7	5	0	2	0	100	0	0	0
Mar	99.87	707	0.6	3	0	1	0	100	0	0	0
Apr	99.44	682	0.5	2	0	1	0	100	0	0	0
May	99.46	705	0.4	1	0	1	0	100	0	0	0
Jun	99.44	682	0.4	2	0	1	0	100	0	0	0
Jul	98.25	697	0.5	3	0	1	0	100	0	0	0
Aug	99.73	708	0.5	3	0	1	0	100	0	0	0
Sep	100	687	0.4	2	0	1	0	100	0	0	0
Oct	99.87	707	0.4	2	0	1	0	100	0	0	0
Nov	100	686	0.4	2	0	1	0	100	0	0	0
Dec	99.73	707	0.7	2	0	1	0	100	0	0	0
Annual	99.63	8316	0.5	5	0	2	0	100	0	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	708	0.3	2	0	1	0	100	0	0	0
Feb	100	640	0.3	2	0	1	0	100	0	0	0
Mar	100	706	0.2	1	0	1	0	100	0	0	0
Apr	99.86	683	0.2	1	0	0	0	100	0	0	0
May	98.12	695	0.3	1	0	0	0	100	0	0	0
Jun	99.44	682	0.3	1	0	1	0	100	0	0	0
Jul	99.73	706	0.3	2	0	1	0	100	0	0	0
Aug	99.87	708	0.3	2	0	1	0	100	0	0	0
Sep	99.72	682	0.3	1	0	0	0	100	0	0	0
Oct	99.06	697	0.3	2	0	1	0	100	0	0	0
Nov	100	685	0.4	2	0	1	0	100	0	0	0
Dec	95.43	677	0.4	1	0	1	0	100	0	0	0
Annual	99.26	8269	0.3	2	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	99.73	708	0.4	2	0	1	0	100	0	0	0
Feb	100	640	0.4	2	0	1	0	100	0	0	0
Mar	99.73	707	0.4	4	0	1	0	100	0	0	0
Apr	99.86	686	0.3	2	0	1	0	100	0	0	0
May	99.73	708	0.3	1	0	0	0	100	0	0	0
Jun	99.86	686	0.3	1	0	0	0	100	0	0	0
Jul	97.04	687	0.3	2	0	1	0	100	0	0	0
Aug	99.87	709	0.3	2	0	1	0	100	0	0	0
Sep	99.31	682	0.3	2	0	1	0	100	0	0	0
Oct	74.87	521	0.4	2	0	1	0	100	0	0	0
Nov	99.17	679	0.5	2	0	1	0	100	0	0	0
Dec	99.6	705	0.5	1	0	1	0	100	0	0	0
Annual	97.35	8118	0.4	4	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Number of Values Exceeding	Maximum	Number of Values Exceeding	% of Data in Each Concentration Range			
				1-Hour Value	1-Hour Objective	24-Hour Value	24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.6	3	0	2	0	100	0	0	0
Feb	100	640	0.6	4	0	1	0	100	0	0	0
Mar	100	709	0.4	3	0	1	0	100	0	0	0
Apr	99.17	681	0.3	1	0	1	0	100	0	0	0
May	100	709	0.3	2	0	0	0	100	0	0	0
Jun	98.19	674	0.3	1	0	0	0	100	0	0	0
Jul	98.92	702	0.4	3	0	1	0	100	0	0	0
Aug	100	710	0.4	3	0	1	0	100	0	0	0
Sep	99.86	683	0.3	5	0	1	0	100	0	0	0
Oct	100	707	0.3	2	0	1	0	100	0	0	0
Nov	100	684	0.3	3	0	1	0	100	0	0	0
Dec	99.46	705	0.5	2	0	1	0	100	0	0	0
Annual	99.63	8314	0.4	5	0	2	0	100	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Number of Values Exceeding	Maximum	Number of Values Exceeding	% of Data in Each Concentration Range			
				1-Hour Value	1-Hour Objective	24-Hour Value	24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.4	3	0	1	0	100	0	0	0
Feb	100	641	0.4	4	0	1	0	100	0	0	0
Mar	100	709	0.4	4	0	1	0	100	0	0	0
Apr	99.44	681	0.2	3	0	1	0	100	0	0	0
May	100	710	0.2	1	0	0	0	100	0	0	0
Jun	99.86	686	0.2	1	0	0	0	100	0	0	0
Jul	98.66	700	0.2	3	0	1	0	100	0	0	0
Aug	99.87	709	0.3	3	0	1	0	100	0	0	0
Sep	100	686	0.2	1	0	1	0	100	0	0	0
Oct	100	707	0.2	2	0	1	0	100	0	0	0
Nov	100	687	0.2	2	0	1	0	100	0	0	0
Dec	100	709	0.4	3	0	1	0	100	0	0	0
Annual	99.82	8335	0.3	4	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	99.06	702	0.3	5	0	1	0	100	0	0	0
Feb	99.85	640	0.3	2	0	0	0	100	0	0	0
Mar	100	710	0.3	2	0	1	0	100	0	0	0
Apr	99.58	683	0.2	1	0	0	0	100	0	0	0
May	99.33	704	0.2	1	0	0	0	100	0	0	0
Jun	100	686	0.2	1	0	0	0	100	0	0	0
Jul	100	710	0.2	6	0	1	0	100	0	0	0
Aug	95.56	679	0.2	1	0	0	0	100	0	0	0
Sep	99.03	679	0.2	1	0	0	0	100	0	0	0
Oct	100	707	0.2	1	0	0	0	100	0	0	0
Nov	97.08	662	0.1	1	0	0	0	100	0	0	0
Dec	100	708	0.2	1	0	0	0	100	0	0	0
Annual	99.12	8270	0.2	6	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	704	0.4	9	0	2	0	99	1	0	0
Feb	100	640	0.5	11	1	3	0	99	1	0	0
Mar	100	710	0.4	6	0	1	0	100	0	0	0
Apr	100	687	0.3	4	0	0	0	100	0	0	0
May	99.87	709	0.3	2	0	1	0	100	0	0	0
Jun	100	686	0.3	1	0	1	0	100	0	0	0
Jul	99.6	706	0.3	2	0	1	0	100	0	0	0
Aug	99.73	708	0.3	3	0	1	0	100	0	0	0
Sep	100	687	0.2	1	0	0	0	100	0	0	0
Oct	100	708	0.2	1	0	0	0	100	0	0	0
Nov	98.89	678	0.3	2	0	1	0	100	0	0	0
Dec	99.87	708	0.3	2	0	1	0	100	0	0	0
Annual	99.83	8331	0.3	11	1	3	0	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	99.87	709	0.3	1	0	0	0	100	0	0	0
Feb	100	640	0.3	1	0	0	0	100	0	0	0
Mar	100	709	0.3	0	0	0	0	100	0	0	0
Apr	100	687	0.3	0	0	0	0	100	0	0	0
May	99.73	706	0.3	1	0	0	0	100	0	0	0
Jun	99.72	684	0.3	0	0	0	0	100	0	0	0
Jul	99.87	708	0.3	0	0	0	0	100	0	0	0
Aug	100	710	0.3	1	0	0	0	100	0	0	0
Sep	100	687	0.3	1	0	0	0	100	0	0	0
Oct	98.39	689	0.3	0	0	0	0	100	0	0	0
Nov	100	686	0.3	0	0	0	0	100	0	0	0
Dec	100	709	0.3	1	0	0	0	100	0	0	0
Annual	99.79	8324	0.3	1	0	0	0	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.4	1	0	0	0	100	0	0	0
Feb	100	640	0.4	1	0	0	0	100	0	0	0
Mar	99.6	707	0.4	1	0	0	0	100	0	0	0
Apr	99.86	686	0.3	0	0	0	0	100	0	0	0
May	99.87	709	0.3	1	0	1	0	100	0	0	0
Jun	99.44	683	0.3	1	0	0	0	100	0	0	0
Jul	99.87	709	0.4	1	0	0	0	100	0	0	0
Aug	99.87	709	0.4	1	0	0	0	100	0	0	0
Sep	99.86	686	0.3	1	0	0	0	100	0	0	0
Oct	99.87	706	0.3	0	0	0	0	100	0	0	0
Nov	100	686	0.3	0	0	0	0	100	0	0	0
Dec	93.15	660	0.3	1	0	0	0	100	0	0	0
Annual	99.27	8291	0.3	1	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
Jan	99.73	708	0.2	0	0	0	0	100	0	0	0
Feb	100	640	0.2	0	0	0	0	100	0	0	0
Mar	99.6	706	0.2	1	0	0	0	100	0	0	0
Apr	100	685	0.2	0	0	0	0	100	0	0	0
May	99.87	709	0.2	1	0	0	0	100	0	0	0
Jun	100	687	0.2	0	0	0	0	100	0	0	0
Jul	94.22	668	0.2	1	0	0	0	100	0	0	0
Aug	99.19	703	0.2	1	0	0	0	100	0	0	0
Sep	98.19	674	0.1	0	0	0	0	100	0	0	0
Oct	98.66	698	0.1	0	0	0	0	100	0	0	0
Nov	100	686	0.2	0	0	0	0	100	0	0	0
Dec	100	709	0.2	0	0	0	0	100	0	0	0
Annual	99.11	8273	0.2	1	0	0	0	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jun	99.86	686	0.3	1	0	0	0	100	0	0	0
Jul	99.87	708	0.3	3	0	1	0	100	0	0	0
Aug	97.58	691	0.3	1	0	1	0	100	0	0	0
Sep	99.44	683	0.3	3	0	1	0	100	0	0	0
Oct	99.6	701	0.2	1	0	1	0	100	0	0	0
Nov	100	687	0.3	1	0	1	0	100	0	0	0
Dec	99.87	708	0.5	2	0	1	0	100	0	0	0
Annual	99.39	4864	0.3	3	0	1	0	100	0	0	0

*This parameter became operational on June 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NITROGEN DIOXIDE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.73	706	12.9	43	0	25	99	1	0	0
Feb	100	638	12.7	45	0	24	99	1	0	0
Mar	99.6	705	9.4	42	0	23	100	0	0	0
Apr	99.31	679	5.7	42	0	10	100	0	0	0
May	99.73	705	3.9	34	0	8	100	0	0	0
Jun	99.17	678	3.2	28	0	7	100	0	0	0
Jul	97.98	693	2.6	22	0	6	100	0	0	0
Aug	99.87	707	2.8	29	0	6	100	0	0	0
Sep	100	685	4.1	30	0	10	100	0	0	0
Oct	100	704	4.6	29	0	16	100	0	0	0
Nov	100	685	8.4	43	0	24	100	0	0	0
Dec	99.6	705	15.9	39	0	26	100	0	0	0
Annual	99.58	8290	7.2	45	0	26	100	0	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Aug	99.33	702	2.2	30	0	8	100	0	0	0
Sep	99.86	684	2.9	41	0	8	100	0	0	0
Oct	100	705	4.2	26	0	16	100	0	0	0
Nov	95.97	659	5.5	31	0	16	100	0	0	0
Dec	100	707	8.2	45	0	26	99	1	0	0
Annual	99.03	3457	4.6	45	0	26	100	0	0	0

*This parameter became operational on August 1



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.6	704	8.9	46	0	18	100	0	0	0
Feb	100	638	7.9	41	0	18	99	1	0	0
Mar	99.87	705	6.6	29	0	11	100	0	0	0
Apr	100	685	4.6	29	0	9	100	0	0	0
May	99.33	703	2.7	17	0	5	100	0	0	0
Jun	99.31	678	2.5	13	0	5	100	0	0	0
Jul	100	706	1.8	12	0	5	100	0	0	0
Aug	99.87	706	2.0	17	0	9	100	0	0	0
Sep	97.92	669	3.2	18	0	8	100	0	0	0
Oct	100	700	4.0	25	0	14	100	0	0	0
Nov	100	684	5.9	35	0	19	100	0	0	0
Dec	95.43	675	8.2	45	0	21	100	0	0	0
Annual	99.27	8253	4.8	46	0	21	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.46	704	14.3	45	0	26	100	0	0	0
Feb	100	639	12.2	44	0	25	99	1	0	0
Mar	99.87	707	7.9	45	0	17	100	0	0	0
Apr	100	684	5.1	32	0	11	100	0	0	0
May	96.51	682	3.8	23	0	8	100	0	0	0
Jun	95.42	655	3.7	14	0	6	100	0	0	0
Jul	95.43	675	3.2	13	0	6	100	0	0	0
Aug	99.87	708	3.7	19	0	8	100	0	0	0
Sep	100	686	5.5	28	0	10	100	0	0	0
Oct	99.19	699	6.5	29	0	15	100	0	0	0
Nov	100	683	8.9	40	0	18	100	0	0	0
Dec	90.99	643	14.0	40	0	25	100	0	0	0
Annual	98.04	8165	7.4	45	0	26	100	0	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.19	701	2.0	25	0	12	100	0	0	0
Feb	100	639	1.0	15	0	4	100	0	0	0
Mar	99.87	705	1.0	13	0	3	100	0	0	0
Apr	99.86	683	0.7	8	0	3	100	0	0	0
May	100	707	0.4	9	0	2	100	0	0	0
Jun	100	685	0.4	8	0	3	100	0	0	0
Jul	100	707	0.3	3	0	1	100	0	0	0
Aug	100	707	0.4	7	0	2	100	0	0	0
Sep	100	684	0.7	9	0	3	100	0	0	0
Oct	98.79	698	0.6	8	0	3	100	0	0	0
Nov	100	684	0.9	15	0	5	100	0	0	0
Dec	34.81	244	2.2	27	0	11	100	0	0	0
Annual	94.27	7844	0.8	27	0	12	100	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	707	11.1	36	0	22	100	0	0	0
Feb	100	639	11.5	40	0	22	100	0	0	0
Mar	100	708	8.6	39	0	19	100	0	0	0
Apr	98.75	676	5.1	36	0	9	100	0	0	0
May	100	708	3.6	38	0	8	100	0	0	0
Jun	100	686	3.1	30	0	8	100	0	0	0
Jul	98.39	697	2.6	24	0	7	100	0	0	0
Aug	91.13	640	2.8	20	0	5	100	0	0	0
Sep	100	686	3.4	30	0	9	100	0	0	0
Oct	100	704	4.4	29	0	16	100	0	0	0
Nov	100	685	7.7	41	0	24	100	0	0	0
Dec	100	708	14.8	40	0	26	100	0	0	0
Annual	99	8244	6.6	41	0	26	100	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values			% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	98.12	693	4.6	24	0	11	100	0	0	0
Feb	99.85	639	3.2	27	0	7	100	0	0	0
Mar	100	708	2.7	22	0	7	100	0	0	0
Apr	99.44	681	1.2	13	0	5	100	0	0	0
May	99.87	707	0.8	8	0	2	100	0	0	0
Jun	100	686	1.0	6	0	2	100	0	0	0
Jul	100	708	1.0	8	0	2	100	0	0	0
Aug	100	709	1.0	7	0	2	100	0	0	0
Sep	98.75	676	1.4	9	0	4	100	0	0	0
Oct	99.87	703	1.6	17	0	5	100	0	0	0
Nov	100	684	2.3	19	0	7	100	0	0	0
Dec	100	708	3.5	25	0	9	100	0	0	0
Annual	99.66	8302	2.0	27	0	11	100	0	0	0



**Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	6.1	36	0	16	100	0	0	0
Feb	100	640	8.1	39	0	21	100	0	0	0
Mar	100	708	7.7	39	0	18	100	0	0	0
Apr	100	684	3.6	45	0	14	100	0	0	0
May	96.37	682	3.5	27	0	8	100	0	0	0
Jun	99.86	684	3.5	24	0	8	100	0	0	0
Jul	99.87	705	2.8	27	0	8	100	0	0	0
Aug	99.46	703	3.0	30	0	8	100	0	0	0
Sep	100	685	4.2	35	0	13	100	0	0	0
Oct	100	706	4.8	32	0	16	100	0	0	0
Nov	99.03	678	6.6	38	0	19	100	0	0	0
Dec	100	708	8.9	45	0	20	100	0	0	0
Annual	99.54	8291	5.2	45	0	21	100	0	0	0



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	15.8	52	0	29	98	2	0	0
Feb	99.55	636	15.3	64	0	29	97	3	0	0
Mar	99.19	702	10.7	52	0	22	99	1	0	0
Apr	100	684	8.4	46	0	19	100	0	0	0
May	99.87	707	6.2	40	0	19	100	0	0	0
Jun	99.58	681	6.9	39	0	15	100	0	0	0
Jul	92.47	653	5.2	34	0	13	100	0	0	0
Aug	99.73	705	5.2	34	0	10	100	0	0	0
Sep	99.58	682	6.9	37	0	21	100	0	0	0
Oct	100	705	9.2	31	0	18	100	0	0	0
Nov	99.86	684	13.1	50	0	27	99	1	0	0
Dec	98.25	695	17.3	53	0	27	99	1	0	0
Annual	99	8242	10.0	64	0	29	99	1	0	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	5.7	30	0	11	100	0	0	0
Feb	100	640	4.0	33	0	10	100	0	0	0
Mar	100	709	1.4	20	0	6	100	0	0	0
Apr	100	685	1.1	19	0	4	100	0	0	0
May	99.6	705	1.0	16	0	2	100	0	0	0
Jun	99.58	683	1.3	19	0	4	100	0	0	0
Jul	95.83	679	1.5	14	0	3	100	0	0	0
Aug	100	709	2.0	12	0	5	100	0	0	0
Sep	100	685	1.5	11	0	3	100	0	0	0
Oct	100	706	2.8	20	0	7	100	0	0	0
Nov	99.58	682	3.8	27	0	10	100	0	0	0
Dec	99.46	702	6.3	30	0	15	100	0	0	0
Annual	99.5	8293	2.7	33	0	15	100	0	0	0



**Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.87	709	2.3	17	0	8	100	0	0	0
Feb	100	639	1.7	12	0	6	100	0	0	0
Mar	100	708	1.9	10	0	3	100	0	0	0
Apr	100	685	0.8	3	0	1	100	0	0	0
May	100	707	0.8	7	0	2	100	0	0	0
Jun	99.58	681	0.6	3	0	1	100	0	0	0
Jul	100	707	0.6	4	0	1	100	0	0	0
Aug	100	708	0.7	4	0	1	100	0	0	0
Sep	99.58	682	0.9	4	0	2	100	0	0	0
Oct	100	705	1.0	5	0	3	100	0	0	0
Nov	100	685	1.6	7	0	4	100	0	0	0
Dec	100	707	1.2	8	0	2	100	0	0	0
Annual	99.92	8323	1.2	17	0	8	100	0	0	0



**Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	708	5.0	27	0	14	100	0	0	0
Feb	99.85	638	5.1	54	0	19	99	1	0	0
Mar	100	709	3.6	36	0	10	100	0	0	0
Apr	99.72	683	1.9	16	0	4	100	0	0	0
May	99.87	707	1.7	25	0	4	100	0	0	0
Jun	100	685	1.5	16	0	5	100	0	0	0
Jul	99.6	705	1.9	16	0	4	100	0	0	0
Aug	99.87	707	2.2	19	0	5	100	0	0	0
Sep	99.86	685	2.2	15	0	5	100	0	0	0
Oct	100	704	2.9	23	0	7	100	0	0	0
Nov	100	686	3.4	30	0	12	100	0	0	0
Dec	100	708	6.0	31	0	15	100	0	0	0
Annual	99.9	8325	3.1	54	0	19	100	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS 20)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	706	2.6	21	0	13	100	0	0	0
Feb	99.26	633	2.6	41	0	10	100	0	0	0
Mar	100	707	3.9	32	0	13	100	0	0	0
Apr	99.86	685	1.8	23	0	6	100	0	0	0
May	99.87	707	0.9	13	0	3	100	0	0	0
Jun	100	685	1.2	20	0	6	100	0	0	0
Jul	100	709	0.7	11	0	2	100	0	0	0
Aug	99.73	707	0.7	11	0	4	100	0	0	0
Sep	100	685	1.0	11	0	4	100	0	0	0
Oct	100	706	1.2	21	0	10	100	0	0	0
Nov	100	685	2.2	29	0	11	100	0	0	0
Dec	99.87	707	2.2	28	0	8	100	0	0	0
Annual	99.89	8322	1.7	41	0	13	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	708	3.4	23	0	8	100	0	0	0
Feb	100	639	2.9	18	0	7	100	0	0	0
Mar	100	707	2.4	16	0	5	100	0	0	0
Apr	100	685	1.4	21	0	4	100	0	0	0
May	100	707	2.1	17	0	5	100	0	0	0
Jun	96.25	658	2.1	19	0	5	100	0	0	0
Jul	98.25	696	2.4	14	0	5	100	0	0	0
Aug	95.16	673	2.0	14	0	4	100	0	0	0
Sep	99.58	683	2.5	18	0	8	100	0	0	0
Oct	95.16	668	2.7	24	0	7	100	0	0	0
Nov	100	685	2.9	23	0	8	100	0	0	0
Dec	93.15	659	2.8	13	0	5	100	0	0	0
Annual	98.11	8168	2.5	24	0	8	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Maximum 24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	707	2.9	14	0	7	100	0	0	0
Feb	100	636	2.4	15	0	5	100	0	0	0
Mar	99.46	703	1.9	13	0	5	100	0	0	0
Apr	99.72	683	0.8	6	0	2	100	0	0	0
May	100	707	0.6	3	0	1	100	0	0	0
Jun	100	684	0.5	2	0	1	100	0	0	0
Jul	100	708	0.5	2	0	1	100	0	0	0
Aug	93.55	658	0.5	2	0	1	100	0	0	0
Sep	98.33	673	0.7	6	0	2	100	0	0	0
Oct	98.52	694	1.1	7	0	3	100	0	0	0
Nov	100	684	1.9	14	0	6	100	0	0	0
Dec	100	708	2.0	22	0	9	100	0	0	0
Annual	99.11	8245	1.3	22	0	9	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jun	100	685	4.7	31	0	10	100	0	0	0
Jul	100	707	3.7	29	0	9	100	0	0	0
Aug	99.6	705	4.1	30	0	12	100	0	0	0
Sep	99.58	683	5.7	32	0	13	100	0	0	0
Oct	100	703	5.5	32	0	14	100	0	0	0
Nov	100	685	10.5	62	0	31	98	2	0	0
Dec	100	708	19.8	65	0	33	95	5	0	0
Annual	99.9	4876	7.7	65	0	33	99	1	0	0

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Sep	100	273	1.2	10	0	2	100	0	0	0
Oct	100	702	1.7	17	0	6	100	0	0	0
Nov	100	682	2.1	17	0	5	100	0	0	0
Dec	100	707	2.4	17	0	7	100	0	0	0
Annual	100	2364	2.0	17	0	7	100	0	0	0

*This parameter became operational on September 19



**Wood Buffalo Environmental Association - Christina Lake (AMS 500)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	708	6.4	35	0	16	100	0	0	0
Feb	100	640	4.3	28	0	12	100	0	0	0
Mar	100	710	3.0	20	0	7	100	0	0	0
Apr	100	685	1.4	12	0	4	100	0	0	0
May	100	709	1.6	17	0	4	100	0	0	0
Jun	100	685	1.5	13	0	4	100	0	0	0
Jul	94.89	670	1.7	19	0	4	100	0	0	0
Aug	100	708	1.3	11	0	5	100	0	0	0
Sep	99.44	682	2.5	24	0	7	100	0	0	0
Oct	99.87	705	3.7	22	0	8	100	0	0	0
Nov	100	682	3.6	16	0	6	100	0	0	0
Dec	100	708	4.9	19	0	7	100	0	0	0
Annual	99.51	8292	3.0	35	0	16	100	0	0	0



**Wood Buffalo Environmental Association - Leismer (AMS 501)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Sep	100	191	1.2	12	0	2	100	0	0	0
Oct	100	705	1.6	13	0	4	100	0	0	0
Nov	100	684	2.7	37	0	9	100	0	0	0
Dec	100	707	3.9	40	0	10	100	0	0	0
Annual	100	2287	2.6	40	0	10	100	0	0	0

*This parameter became operational on October 1



**Wood Buffalo Environmental Association - Surmont (AMS 502)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.73	706	6.1	28	0	13	100	0	0	0
Feb	100	639	5.2	17	0	8	100	0	0	0
Mar	100	709	3.8	19	0	7	100	0	0	0
Apr	62.36	426	1.9	12	0	4	100	0	0	0
May	100	708	1.1	15	0	3	100	0	0	0
Jun	100	685	1.6	19	0	4	100	0	0	0
Jul	99.87	707	4.8	32	0	8	100	0	0	0
Aug	99.87	708	2.1	27	0	9	100	0	0	0
Sep	100	423	1.8	11	0	4	100	0	0	0
Annual	95.8	5711	3.3	32	0	13	100	0	0	0

*This parameter was decomissioned on September 19



Wood Buffalo Environmental Association - Sawbones Bay (AMS 505)
Annual Summary for the Year 2017
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jul	99.87	707	1.8	15	0	6	100	0	0	0
Aug	100	708	2.4	15	0	6	100	0	0	0
Sep	95	648	2.5	18	0	8	100	0	0	0
Oct	99.87	703	2.6	18	0	6	100	0	0	0
Nov	100	685	3.7	25	0	10	100	0	0	0
Dec	100	709	5.2	29	0	11	100	0	0	0
Annual	99.1	4160	3.0	29	0	11	100	0	0	0

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

OXIDES OF NITROGEN ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.73	706	18.6	126	63	90	9	1	0
Feb	100	638	17.0	111	40	89	10	0	0
Mar	99.6	705	12.2	69	35	98	2	0	0
Apr	99.31	679	7.1	81	16	99	1	0	0
May	99.73	705	4.9	47	10	99	0	0	0
Jun	99.17	678	4.2	40	11	100	0	0	0
Jul	97.98	693	3.3	38	8	100	0	0	0
Aug	99.87	707	3.8	46	9	100	0	0	0
Sep	100	685	5.8	74	18	99	1	0	0
Oct	100	704	7.0	76	33	98	2	0	0
Nov	100	685	12.0	189	52	92	7	1	0
Dec	99.6	705	22.4	118	53	86	13	1	0
Annual	99.58	8291	9.9	189	63	96	4	0	0



**Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Aug	99.33	702	2.9	58	17	99	1	0	0
Sep	99.86	684	3.8	80	13	99	1	0	0
Oct	100	705	6.5	73	42	97	3	0	0
Nov	95.97	659	6.7	85	25	98	2	0	0
Dec	100	707	10.0	124	43	96	3	1	0
Annual	99.03	3457	6.0	124	43	98	2	0	0

*This parameter became operational on August 1



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)

Annual Summary for the Year 2017

Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.6	704	13.6	133	40	93	6	2	0
Feb	100	638	10.2	81	25	96	4	0	0
Mar	99.87	705	8.5	45	18	100	0	0	0
Apr	100	685	5.8	57	10	100	0	0	0
May	99.33	703	3.6	33	7	100	0	0	0
Jun	99.31	678	3.4	30	8	100	0	0	0
Jul	100	706	2.4	17	6	100	0	0	0
Aug	99.87	706	2.8	45	14	100	0	0	0
Sep	97.92	669	4.3	51	10	100	0	0	0
Oct	100	700	6.6	60	43	97	3	0	0
Nov	100	684	8.2	63	29	98	2	0	0
Dec	95.43	675	11.2	113	34	95	4	1	0
Annual	99.27	8253	6.7	133	43	98	2	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.46	704	23.1	169	48	87	11	3	0
Feb	100	639	17.2	84	43	91	9	0	0
Mar	99.87	707	10.0	61	22	99	1	0	0
Apr	100	684	6.1	42	13	100	0	0	0
May	96.51	682	4.7	38	9	100	0	0	0
Jun	95.42	655	4.5	25	8	100	0	0	0
Jul	95.43	675	3.9	24	7	100	0	0	0
Aug	99.87	708	4.9	52	13	100	0	0	0
Sep	100	686	7.2	39	14	100	0	0	0
Oct	99.19	699	10.6	134	41	97	3	0	0
Nov	100	683	11.9	122	29	96	3	0	0
Dec	90.99	643	21.9	142	49	86	13	1	0
Annual	98.04	8165	10.4	169	49	96	3	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.19	701	2.2	25	15	100	0	0	0
Feb	100	639	1.1	15	4	100	0	0	0
Mar	99.87	705	1.2	15	3	100	0	0	0
Apr	99.86	683	0.9	10	4	100	0	0	0
May	100	707	0.5	9	2	100	0	0	0
Jun	100	685	0.4	9	3	100	0	0	0
Jul	100	707	0.3	3	1	100	0	0	0
Aug	100	707	0.5	7	2	100	0	0	0
Sep	100	684	0.8	13	3	100	0	0	0
Oct	98.79	698	0.7	14	4	100	0	0	0
Nov	100	684	1.1	15	6	100	0	0	0
Dec	34.81	244	2.3	28	12	100	0	0	0
Annual	94.27	7844	0.9	28	15	100	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	707	19.0	154	89	86	12	2	0
Feb	100	639	15.9	142	37	92	8	0	0
Mar	100	708	11.1	71	28	98	2	0	0
Apr	98.75	676	6.7	70	19	98	2	0	0
May	100	708	4.6	75	11	99	1	0	0
Jun	100	686	4.0	45	10	100	0	0	0
Jul	98.39	697	3.5	53	10	100	0	0	0
Aug	91.13	640	3.8	38	9	100	0	0	0
Sep	100	686	5.2	51	15	99	1	0	0
Oct	100	704	6.9	71	33	98	2	0	0
Nov	100	685	11.6	181	49	93	6	1	0
Dec	100	708	25.3	209	65	80	15	4	0
Annual	99	8244	9.8	209	89	95	4	1	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	98.12	693	5.6	45	18	100	0	0	0
Feb	99.85	639	3.8	56	8	100	0	0	0
Mar	100	708	3.3	23	9	100	0	0	0
Apr	99.44	681	1.5	17	6	100	0	0	0
May	99.87	707	1.0	15	3	100	0	0	0
Jun	100	686	1.3	14	3	100	0	0	0
Jul	100	708	1.3	10	3	100	0	0	0
Aug	100	709	1.2	9	3	100	0	0	0
Sep	98.75	676	1.7	12	5	100	0	0	0
Oct	99.87	703	1.9	22	6	100	0	0	0
Nov	100	684	2.6	25	9	100	0	0	0
Dec	100	708	3.9	35	10	100	0	0	0
Annual	99.66	8302	2.4	56	18	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	9.6	180	51	93	5	2	0
Feb	100	640	10.9	132	29	95	5	1	0
Mar	100	708	10.3	64	24	98	2	0	0
Apr	100	684	4.9	233	32	99	1	0	0
May	96.37	682	4.8	108	15	99	1	0	0
Jun	99.86	684	4.8	80	17	99	1	0	0
Jul	99.87	705	4.1	87	19	99	1	0	0
Aug	99.46	703	4.0	60	11	99	1	0	0
Sep	100	685	5.9	92	23	99	1	0	0
Oct	100	706	7.8	181	46	97	2	0	0
Nov	99.03	678	9.2	162	44	96	3	1	0
Dec	100	708	11.4	257	44	96	2	1	0
Annual	99.54	8291	7.3	257	51	97	2	0	0



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	24.2	118	63	84	14	2	0
Feb	99.55	636	26.7	332	94	80	13	6	1
Mar	99.19	702	18.4	139	46	90	7	3	0
Apr	100	684	14.6	118	38	94	5	1	0
May	99.87	707	11.1	116	45	94	5	1	0
Jun	99.58	681	11.9	113	39	95	5	0	0
Jul	92.47	653	8.4	122	34	97	2	1	0
Aug	99.73	705	8.3	107	26	98	2	0	0
Sep	99.58	682	12.0	203	66	94	6	0	0
Oct	100	705	16.0	159	38	93	6	1	0
Nov	99.86	684	20.9	172	67	87	10	3	0
Dec	98.25	695	24.1	170	53	84	14	2	0
Annual	99	8242	16.4	332	94	91	7	2	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	6.5	44	12	100	0	0	0
Feb	100	640	4.5	51	13	100	0	0	0
Mar	100	709	1.7	24	6	100	0	0	0
Apr	100	685	1.3	19	5	100	0	0	0
May	99.6	705	1.3	25	4	100	0	0	0
Jun	99.58	683	1.7	23	5	100	0	0	0
Jul	95.83	679	2.0	26	5	100	0	0	0
Aug	100	709	2.5	21	6	100	0	0	0
Sep	100	685	1.9	12	4	100	0	0	0
Oct	100	706	3.6	58	11	100	0	0	0
Nov	99.58	682	4.2	32	11	100	0	0	0
Dec	99.46	702	6.9	38	18	100	0	0	0
Annual	99.5	8293	3.2	58	18	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	709	2.4	19	9	100	0	0	0
Feb	100	639	1.8	12	7	100	0	0	0
Mar	100	708	2.0	10	4	100	0	0	0
Apr	100	685	0.9	4	1	100	0	0	0
May	100	707	0.8	10	2	100	0	0	0
Jun	99.58	681	0.7	3	1	100	0	0	0
Jul	100	707	0.7	4	1	100	0	0	0
Aug	100	708	0.8	4	1	100	0	0	0
Sep	99.58	682	0.9	4	2	100	0	0	0
Oct	100	705	1.1	19	3	100	0	0	0
Nov	100	685	1.7	7	4	100	0	0	0
Dec	100	707	1.2	8	2	100	0	0	0
Annual	99.92	8323	1.3	19	9	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	5.6	34	16	100	0	0	0
Feb	99.85	638	6.3	131	31	99	1	0	0
Mar	100	709	4.9	52	14	99	1	0	0
Apr	99.72	683	2.2	16	5	100	0	0	0
May	99.87	707	2.1	40	5	100	0	0	0
Jun	100	685	1.9	21	6	100	0	0	0
Jul	99.6	705	2.3	24	6	100	0	0	0
Aug	99.87	707	2.7	29	6	100	0	0	0
Sep	99.86	685	2.6	22	5	100	0	0	0
Oct	100	704	3.6	53	12	100	0	0	0
Nov	100	686	4.0	43	14	100	0	0	0
Dec	100	708	6.7	38	18	100	0	0	0
Annual	99.9	8325	3.7	131	31	100	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS 20)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	706	2.9	46	18	100	0	0	0
Feb	99.26	633	2.9	52	11	99	1	0	0
Mar	100	707	4.4	37	16	100	0	0	0
Apr	99.86	685	2.1	23	7	100	0	0	0
May	99.87	707	1.0	16	4	100	0	0	0
Jun	100	685	1.3	23	6	100	0	0	0
Jul	100	709	0.7	12	2	100	0	0	0
Aug	99.73	707	0.8	17	5	100	0	0	0
Sep	100	685	1.2	17	5	100	0	0	0
Oct	100	706	1.8	60	23	99	1	0	0
Nov	100	685	2.4	48	13	100	0	0	0
Dec	99.87	707	3.0	98	23	99	0	0	0
Annual	99.89	8322	2.0	98	23	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	4.1	40	9	100	0	0	0
Feb	100	639	3.5	26	8	100	0	0	0
Mar	100	707	2.8	17	6	100	0	0	0
Apr	100	685	1.6	27	5	100	0	0	0
May	100	707	2.8	28	6	100	0	0	0
Jun	96.25	658	3.3	41	8	100	0	0	0
Jul	98.25	696	4.0	32	8	100	0	0	0
Aug	95.16	673	3.6	32	7	100	0	0	0
Sep	99.58	683	3.8	34	13	100	0	0	0
Oct	95.16	668	3.7	40	11	100	0	0	0
Nov	100	685	3.4	31	9	100	0	0	0
Dec	93.15	659	3.3	17	6	100	0	0	0
Annual	98.11	8168	3.3	41	13	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	707	3.3	15	8	100	0	0	0
Feb	100	636	2.8	19	7	100	0	0	0
Mar	99.46	703	2.3	14	6	100	0	0	0
Apr	99.72	683	0.9	10	3	100	0	0	0
May	100	707	0.7	5	1	100	0	0	0
Jun	100	684	0.7	4	1	100	0	0	0
Jul	100	708	0.6	6	1	100	0	0	0
Aug	93.55	658	0.8	4	2	100	0	0	0
Sep	98.33	673	1.2	8	2	100	0	0	0
Oct	98.52	694	1.7	18	4	100	0	0	0
Nov	100	684	2.8	21	8	100	0	0	0
Dec	100	708	3.0	34	13	100	0	0	0
Annual	99.11	8245	1.7	34	13	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jun	100	685	6.3	56	16	99	1	0	0
Jul	100	707	5.3	75	13	99	1	0	0
Aug	99.6	705	5.8	100	23	99	1	0	0
Sep	99.58	683	8.7	146	28	98	2	0	0
Oct	100	703	9.0	144	29	96	3	1	0
Nov	100	685	19.0	274	100	88	7	4	2
Dec	100	708	35.4	405	88	73	18	6	3
Annual	99.88	4876	12.8	405	100	93	4	2	1

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Sep	100	273	1.6	14	4	100	0	0	0
Oct	100	702	3.6	65	20	99	1	0	0
Nov	100	682	3.0	29	7	100	0	0	0
Dec	100	707	3.5	29	13	100	0	0	0
Annual	100	2364	3.2	65	20	100	0	0	0

*This parameter became operational on September 19



Wood Buffalo Environmental Association - Christina Lake (AMS 500)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	8.4	67	23	99	1	0	0
Feb	100	640	5.5	44	18	100	0	0	0
Mar	100	710	4.0	37	10	100	0	0	0
Apr	100	685	1.7	17	5	100	0	0	0
May	100	709	2.2	30	6	100	0	0	0
Jun	100	685	2.3	23	7	100	0	0	0
Jul	94.89	670	2.8	51	7	100	0	0	0
Aug	100	708	2.0	20	8	100	0	0	0
Sep	99.44	682	3.7	50	10	100	0	0	0
Oct	99.87	705	5.4	44	14	100	0	0	0
Nov	100	682	4.8	33	12	100	0	0	0
Dec	100	708	6.0	33	10	100	0	0	0
Annual	99.51	8292	4.1	67	23	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS 501)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Oct	100	705	2.6	28	9	100	0	0	0
Nov	100	684	4.6	98	23	99	1	0	0
Dec	100	707	7.9	108	27	96	3	1	0
Annual	100	2287	4.8	108	27	99	1	0	0

*This parameter became operational on October 1



Wood Buffalo Environmental Association - Surmont (AMS 502)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.73	706	12.4	94	28	97	3	0	0
Feb	100	639	10.8	49	19	99	1	0	0
Mar	100	709	5.9	44	13	100	0	0	0
Apr	62.36	426	2.8	14	6	100	0	0	0
May	100	708	1.9	32	7	100	0	0	0
Jun	100	685	3.1	49	12	100	0	0	0
Jul	99.87	707	11.9	111	30	95	4	1	0
Aug	99.87	708	3.9	72	18	99	1	0	0
Sep	100	423	2.9	31	8	100	0	0	0
Annual	95.76	5711	6.5	111	30	99	1	0	0

*This parameter was decommissioned on September 19



Wood Buffalo Environmental Association - Sawbones Bay (AMS 505)
Annual Summary for the Year 2017
Oxides of Nitrogen (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jul	99.87	707	2.7	27	12	100	0	0	0
Aug	100	708	3.5	24	10	100	0	0	0
Sep	95	648	3.4	29	12	100	0	0	0
Oct	99.87	703	3.3	27	9	100	0	0	0
Nov	100	685	4.7	41	13	100	0	0	0
Dec	100	709	7.0	54	16	99	1	0	0
Annual	99.12	4160	4.1	54	16	100	0	0	0

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NITROGEN OXIDE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.73	706	5.7	92	44	98	2	1	0
Feb	100	638	4.3	69	18	99	1	0	0
Mar	99.6	705	2.8	43	13	100	0	0	0
Apr	99.31	679	1.4	42	6	100	0	0	0
May	99.73	705	1.0	27	4	100	0	0	0
Jun	99.17	678	0.9	24	4	100	0	0	0
Jul	97.98	693	0.7	21	3	100	0	0	0
Aug	99.87	707	1.0	31	4	100	0	0	0
Sep	100	685	1.7	45	8	100	0	0	0
Oct	100	704	2.4	54	17	100	0	0	0
Nov	100	685	3.7	146	31	99	1	0	0
Dec	99.6	705	6.5	90	31	97	3	0	0
Annual	99.58	8290	2.7	146	44	99	1	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Aug	99.33	702	0.8	42	10	100	0	0	0
Sep	99.86	684	0.9	39	6	100	0	0	0
Oct	100	705	2.3	55	26	100	0	0	0
Nov	95.97	659	1.1	57	9	100	0	0	0
Dec	100	707	1.8	79	16	99	1	0	0
Annual	99.03	3457	1.4	79	26	100	0	0	0

*This parameter became operational on August 1



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.6	704	4.8	89	22	98	2	0	0
Feb	100	638	2.3	47	8	100	0	0	0
Mar	99.87	705	1.9	26	7	100	0	0	0
Apr	100	685	1.1	28	3	100	0	0	0
May	99.33	703	0.9	15	2	100	0	0	0
Jun	99.31	678	0.9	19	3	100	0	0	0
Jul	100	706	0.5	6	1	100	0	0	0
Aug	99.87	706	0.8	28	5	100	0	0	0
Sep	97.92	669	1.1	35	4	100	0	0	0
Oct	100	700	2.6	39	29	100	0	0	0
Nov	100	684	2.3	33	11	100	0	0	0
Dec	95.43	675	2.9	69	13	99	1	0	0
Annual	99.27	8253	1.8	89	29	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.46	704	8.8	132	27	97	3	0	0
Feb	100	639	5.0	50	21	99	1	0	0
Mar	99.87	707	2.1	27	8	100	0	0	0
Apr	100	684	1.0	22	3	100	0	0	0
May	96.51	682	0.8	15	2	100	0	0	0
Jun	95.42	655	0.8	12	3	100	0	0	0
Jul	95.43	675	0.7	10	2	100	0	0	0
Aug	99.87	708	1.1	33	5	100	0	0	0
Sep	100	686	1.7	22	5	100	0	0	0
Oct	99.19	699	4.1	105	26	99	0	0	0
Nov	100	683	3.0	81	13	100	0	0	0
Dec	90.99	643	7.9	102	24	96	3	0	0
Annual	98.04	8165	3.1	132	27	99	1	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.19	701	0.2	13	3	100	0	0	0
Feb	100	639	0.1	3	0	100	0	0	0
Mar	99.87	705	0.2	4	1	100	0	0	0
Apr	99.86	683	0.1	4	1	100	0	0	0
May	100	707	0.1	1	0	100	0	0	0
Jun	100	685	0.1	2	0	100	0	0	0
Jul	100	707	0.1	1	0	100	0	0	0
Aug	100	707	0.1	1	0	100	0	0	0
Sep	100	684	0.1	5	1	100	0	0	0
Oct	98.79	698	0.2	6	1	100	0	0	0
Nov	100	684	0.2	3	1	100	0	0	0
Dec	34.81	244	0.2	2	1	100	0	0	0
Annual	94.27	7844	0.1	13	3	100	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	707	7.9	142	79	96	3	1	0
Feb	100	639	4.4	105	16	99	1	0	0
Mar	100	708	2.5	46	10	100	0	0	0
Apr	98.75	676	1.6	46	11	100	0	0	0
May	100	708	1.0	51	5	100	0	0	0
Jun	100	686	0.9	28	3	100	0	0	0
Jul	98.39	697	0.9	39	5	100	0	0	0
Aug	91.13	640	1.0	23	3	100	0	0	0
Sep	100	686	1.8	41	7	100	0	0	0
Oct	100	704	2.4	50	17	100	0	0	0
Nov	100	685	3.9	140	29	98	1	1	0
Dec	100	708	10.5	180	46	93	6	2	0
Annual	99	8244	3.3	180	79	99	1	0	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	98.12	693	1.0	32	7	100	0	0	0
Feb	99.85	639	0.6	29	2	100	0	0	0
Mar	100	708	0.5	9	2	100	0	0	0
Apr	99.44	681	0.3	9	1	100	0	0	0
May	99.87	707	0.2	15	1	100	0	0	0
Jun	100	686	0.3	8	1	100	0	0	0
Jul	100	708	0.3	5	0	100	0	0	0
Aug	100	709	0.3	7	1	100	0	0	0
Sep	98.75	676	0.3	5	1	100	0	0	0
Oct	99.87	703	0.3	7	1	100	0	0	0
Nov	100	684	0.3	7	1	100	0	0	0
Dec	100	708	0.5	15	2	100	0	0	0
Annual	99.66	8302	0.4	32	7	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	3.5	152	35	98	1	0	0
Feb	100	640	2.8	97	15	99	1	0	0
Mar	100	708	2.6	40	8	100	0	0	0
Apr	100	684	1.4	192	18	99	0	0	0
May	96.37	682	1.3	83	10	99	1	0	0
Jun	99.86	684	1.3	61	9	100	0	0	0
Jul	99.87	705	1.3	61	11	100	0	0	0
Aug	99.46	703	1.0	37	4	100	0	0	0
Sep	100	685	1.7	67	10	100	0	0	0
Oct	100	706	3.0	161	34	99	1	0	0
Nov	99.03	678	2.6	124	25	99	1	0	0
Dec	100	708	2.5	211	24	99	1	0	0
Annual	99.54	8291	2.1	211	35	99	1	0	0



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	8.4	96	41	97	2	0	0
Feb	99.55	636	11.5	268	66	93	5	2	0
Mar	99.19	702	7.8	103	24	96	3	1	0
Apr	100	684	6.2	73	19	99	1	0	0
May	99.87	707	4.9	87	26	99	1	0	0
Jun	99.58	681	5.1	91	24	99	1	0	0
Jul	92.47	653	3.2	99	21	99	1	0	0
Aug	99.73	705	3.1	80	16	99	1	0	0
Sep	99.58	682	5.2	176	45	96	3	0	0
Oct	100	705	6.8	131	23	97	2	1	0
Nov	99.86	684	7.8	130	41	96	2	2	0
Dec	98.25	695	6.8	117	26	98	1	1	0
Annual	99	8242	6.4	268	66	97	2	1	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	0.8	15	3	100	0	0	0
Feb	100	640	0.5	17	3	100	0	0	0
Mar	100	709	0.3	7	1	100	0	0	0
Apr	100	685	0.3	3	1	100	0	0	0
May	99.6	705	0.3	10	1	100	0	0	0
Jun	99.58	683	0.3	5	1	100	0	0	0
Jul	95.83	679	0.5	12	2	100	0	0	0
Aug	100	709	0.5	11	2	100	0	0	0
Sep	100	685	0.4	5	1	100	0	0	0
Oct	100	706	0.9	42	8	100	0	0	0
Nov	99.58	682	0.4	9	1	100	0	0	0
Dec	99.46	702	0.5	15	3	100	0	0	0
Annual	99.5	8293	0.5	42	8	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	709	0.1	3	1	100	0	0	0
Feb	100	639	0.1	4	1	100	0	0	0
Mar	100	708	0.2	4	1	100	0	0	0
Apr	100	685	0.1	1	0	100	0	0	0
May	100	707	0.1	3	0	100	0	0	0
Jun	99.58	681	0.1	1	0	100	0	0	0
Jul	100	707	0.1	1	0	100	0	0	0
Aug	100	708	0.1	1	0	100	0	0	0
Sep	99.58	682	0.1	1	0	100	0	0	0
Oct	100	705	0.1	16	1	100	0	0	0
Nov	100	685	0.1	1	0	100	0	0	0
Dec	100	707	0.0	3	0	100	0	0	0
Annual	99.92	8323	0.1	16	1	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	0.6	11	2	100	0	0	0
Feb	99.85	638	1.2	77	12	100	0	0	0
Mar	100	709	1.2	22	5	100	0	0	0
Apr	99.72	683	0.3	4	1	100	0	0	0
May	99.87	707	0.4	19	2	100	0	0	0
Jun	100	685	0.4	9	1	100	0	0	0
Jul	99.6	705	0.4	8	2	100	0	0	0
Aug	99.87	707	0.4	16	1	100	0	0	0
Sep	99.86	685	0.4	8	1	100	0	0	0
Oct	100	704	0.7	35	5	100	0	0	0
Nov	100	686	0.6	19	2	100	0	0	0
Dec	100	708	0.7	13	3	100	0	0	0
Annual	99.9	8325	0.6	77	12	100	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS 20)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	706	0.4	27	5	100	0	0	0
Feb	99.26	633	0.3	18	2	100	0	0	0
Mar	100	707	0.4	17	3	100	0	0	0
Apr	99.86	685	0.3	5	2	100	0	0	0
May	99.87	707	0.1	4	1	100	0	0	0
Jun	100	685	0.2	5	1	100	0	0	0
Jul	100	709	0.1	1	0	100	0	0	0
Aug	99.73	707	0.1	6	1	100	0	0	0
Sep	100	685	0.2	6	1	100	0	0	0
Oct	100	706	0.6	39	13	100	0	0	0
Nov	100	685	0.2	19	2	100	0	0	0
Dec	99.87	707	0.9	78	15	100	0	0	0
Annual	99.89	8322	0.3	78	15	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	0.7	18	2	100	0	0	0
Feb	100	639	0.6	18	2	100	0	0	0
Mar	100	707	0.4	8	1	100	0	0	0
Apr	100	685	0.3	6	1	100	0	0	0
May	100	707	0.7	15	3	100	0	0	0
Jun	96.25	658	1.1	32	4	100	0	0	0
Jul	98.25	696	1.6	25	5	100	0	0	0
Aug	95.16	673	1.6	25	4	100	0	0	0
Sep	99.58	683	1.3	22	5	100	0	0	0
Oct	100	698	1.0	16	4	100	0	0	0
Nov	100	685	0.5	9	2	100	0	0	0
Dec	93.15	659	0.6	9	1	100	0	0	0
Annual	98.52	8198	0.9	32	5	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.87	707	0.5	9	2	100	0	0	0
Feb	100	636	0.4	6	2	100	0	0	0
Mar	99.46	703	0.4	8	1	100	0	0	0
Apr	99.72	683	0.1	4	1	100	0	0	0
May	100	707	0.1	3	0	100	0	0	0
Jun	100	684	0.1	2	0	100	0	0	0
Jul	100	708	0.1	4	0	100	0	0	0
Aug	93.55	658	0.3	3	1	100	0	0	0
Sep	98.33	673	0.5	3	1	100	0	0	0
Oct	98.52	694	0.6	13	2	100	0	0	0
Nov	100	684	0.9	12	2	100	0	0	0
Dec	100	708	1.0	12	4	100	0	0	0
Annual	99.11	8245	0.4	13	4	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jun	100	685	1.6	32	6	100	0	0	0
Jul	100	707	1.6	46	6	100	0	0	0
Aug	99.6	705	1.7	76	11	99	1	0	0
Sep	99.58	683	3.1	123	19	100	0	0	0
Oct	100	703	3.5	112	18	98	2	0	0
Nov	100	685	8.5	216	69	94	4	2	1
Dec	100	708	15.6	341	59	90	7	3	1
Annual	99.9	4876	5.1	341	69	97	2	1	0

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Sep	100	273	0.4	8	2	100	0	0	0
Oct	100	702	1.9	48	13	100	0	0	0
Nov	100	682	0.9	12	3	100	0	0	0
Dec	100	707	1.1	17	7	100	0	0	0
Annual	100	2364	1.2	48	13	100	0	0	0

*This parameter became operational on September 19



Wood Buffalo Environmental Association - Christina Lake (AMS 500)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	100	708	2.0	32	7	100	0	0	0
Feb	100	640	1.2	26	6	100	0	0	0
Mar	100	710	1.0	18	4	100	0	0	0
Apr	100	685	0.3	5	1	100	0	0	0
May	100	709	0.7	16	2	100	0	0	0
Jun	100	685	0.8	12	3	100	0	0	0
Jul	94.89	670	1.1	32	5	100	0	0	0
Aug	100	708	0.7	9	3	100	0	0	0
Sep	99.44	682	1.2	26	5	100	0	0	0
Oct	99.87	705	1.8	23	7	100	0	0	0
Nov	100	682	1.3	18	5	100	0	0	0
Dec	100	708	1.1	14	3	100	0	0	0
Annual	99.51	8292	1.1	32	7	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS 501)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Oct	100	705	1.0	18	5	100	0	0	0
Nov	100	684	1.9	61	14	100	0	0	0
Dec	100	707	4.0	72	16	98	2	0	0
Annual	100	2287	2.2	72	16	99	1	0	0

*This parameter became operational on October 1



Wood Buffalo Environmental Association - Surmont (AMS 502)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jan	99.73	706	6.4	66	19	99	1	0	0
Feb	100	639	5.6	35	11	100	0	0	0
Mar	100	709	2.1	26	7	100	0	0	0
Apr	62.36	426	0.8	5	2	100	0	0	0
May	100	708	0.8	18	4	100	0	0	0
Jun	100	685	1.6	30	8	100	0	0	0
Jul	99.87	707	7.1	92	22	97	2	0	0
Aug	99.87	708	1.8	50	10	100	0	0	0
Sep	100	423	1.1	21	5	100	0	0	0
Annual	95.8	5711	3.2	92	22	100	0	0	0

*This parameter commenced operation on September 19



Wood Buffalo Environmental Association - Sawbones Bay (AMS 505)
Annual Summary for the Year 2017
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	% of Data in Each Concentration Range			
				1-Hour Value	24-Hour Value	0 - 40	41 - 80	81 - 159	>159
Jul	99.87	707	0.9	15	6	100	0	0	0
Aug	100	708	1.2	13	4	100	0	0	0
Sep	95	648	1.0	18	5	100	0	0	0
Oct	99.87	703	0.8	12	3	100	0	0	0
Nov	100	685	0.9	18	3	100	0	0	0
Dec	100	709	1.8	35	7	100	0	0	0
Annual	99.1	4160	1.1	35	7	100	0	0	0

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

OZONE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	96.1	674	18.4	40	0	34
Feb	99.4	637	22.3	47	0	44
Mar	99.73	708	24.9	50	0	41
Apr	99.44	682	30.9	57	0	42
May	96.64	684	30.1	59	0	42
Jun	99.58	683	24.4	56	0	38
Jul	97.72	690	21.9	51	0	31
Aug	99.87	709	21.7	56	0	41
Sep	100	686	18.8	65	0	35
Oct	99.87	707	18.0	40	0	35
Nov	100	687	21.4	39	0	32
Dec	99.73	708	13.6	38	0	30
Annual	99	8255	22.2	65	0	44



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Aug	99.73	708	25.9	58	0	48
Sep	100	687	24.8	72	0	48
Oct	99.87	708	22.1	45	0	39
Nov	100	687	25.9	40	0	36
Dec	100	711	24.3	42	0	39
Annual	42.29	3501	24.6	72	0	48

*This parameter became operational on August 1



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	100	710	25.7	47	0	41
Feb	100	640	30.3	49	0	48
Mar	99.87	708	31.4	52	0	41
Apr	99.86	685	34.9	57	0	44
May	99.6	706	36.9	61	0	50
Jun	99.44	682	32.5	88	2	45
Jul	100	709	29.9	60	0	41
Aug	99.87	708	28.6	58	0	49
Sep	99.72	683	26.9	71	0	43
Oct	100	707	23.1	44	0	38
Nov	100	686	26.3	41	0	36
Dec	95.43	676	25.1	44	0	40
Annual	99.47	8300	29.3	88	2	50



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	99.73	708	17.4	41	0	33
Feb	100	641	24.5	47	0	46
Mar	99.73	708	29.1	49	0	39
Apr	99.86	686	33.3	57	0	44
May	99.73	708	35.3	61	0	48
Jun	99.86	685	32.5	95	1	45
Jul	99.87	706	32.2	63	0	41
Aug	99.87	710	29.5	62	0	50
Sep	100	687	26.6	75	0	39
Oct	99.73	705	21.7	45	0	37
Nov	99.86	686	23.5	40	0	34
Dec	99.87	709	16.7	40	0	35
Annual	99.84	8339	26.8	95	1	50



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	99.6	707	30.4	42	0	39
Feb	100	641	35.5	47	0	42
Mar	99.87	703	34.9	54	0	43
Apr	100	687	36.6	52	0	47
May	100	709	37.1	59	0	48
Jun	100	687	30.6	59	0	45
Jul	100	710	24.7	50	0	37
Aug	99.87	708	26.4	68	0	48
Sep	100	687	25.5	72	0	52
Oct	98.92	701	22.3	35	0	30
Nov	100	687	31.7	40	0	36
Dec	98.52	700	26.9	41	0	36
Annual	99.73	8327	30.2	72	0	52



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	100	711	16.0	39	0	32
Feb	100	641	20.6	46	0	40
Mar	99.73	708	23.7	49	0	40
Apr	98.19	674	29.0	57	0	40
May	100	710	31.0	61	0	44
Jun	99.86	686	23.8	63	0	38
Jul	98.66	700	22.0	51	0	31
Aug	99.87	708	20.5	55	0	40
Sep	100	687	18.1	67	0	33
Oct	100	708	17.1	41	0	33
Nov	100	687	21.0	39	0	32
Dec	100	710	13.0	39	0	31
Annual	99.69	8330	21.3	67	0	44



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	98.92	703	28.8	49	0	43
Feb	99.85	640	34.1	48	0	48
Mar	100	710	34.3	51	0	42
Apr	99.72	685	37.1	55	0	46
May	99.87	709	35.9	59	0	48
Jun	100	687	29.3	58	0	43
Jul	100	710	26.7	58	0	37
Aug	99.87	709	26.3	55	0	45
Sep	99.03	680	26.9	69	0	46
Oct	99.87	707	25.2	44	0	39
Nov	100	686	29.7	40	0	38
Dec	100	709	31.2	44	0	42
Annual	99.76	8335	30.4	69	0	48



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	94.62	672	36.1	49	0	46
Feb	100	640	40.1	54	0	51
Mar	91.8	646	43.8	62	0	54
Apr	100	687	45.4	60	0	53
May	100	710	44.3	65	0	56
Jun	99.72	685	37.8	64	0	53
Jul	100	709	34.1	63	0	47
Aug	100	709	30.9	61	0	51
Sep	99.86	686	31.1	77	0	59
Oct	100	706	28.7	48	0	40
Nov	100	686	29.8	38	0	37
Dec	100	709	34.9	46	0	43
Annual	98.81	8245	36.3	77	0	59



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	100	710	31.6	47	0	44
Feb	100	641	35.8	52	0	50
Mar	100	710	36.3	56	0	46
Apr	99.86	687	39.0	57	0	46
May	99.87	709	35.8	64	0	49
Jun	99.58	684	31.5	66	0	49
Jul	100	709	25.7	62	0	38
Aug	100	710	24.4	59	0	46
Sep	99.86	685	24.7	77	0	43
Oct	99.87	707	25.5	44	0	37
Nov	100	687	30.8	41	0	38
Dec	93.15	660	33.6	47	0	43
Annual	99.34	8299	31.2	77	0	50



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
Jan	99.87	709	33.1	47	0	44
Feb	99.7	638	37.6	52	0	50
Mar	100	709	39.6	58	0	49
Apr	99.72	684	44.6	62	0	52
May	99.87	708	42.3	66	0	56
Jun	100	687	35.0	65	0	50
Jul	100	709	31.8	68	0	44
Aug	100	709	25.8	58	0	42
Sep	98.61	676	28.8	78	0	41
Oct	98.66	697	28.8	53	0	43
Nov	100	686	32.3	42	0	39
Dec	100	709	34.1	49	0	46
Annual	99.7	8321	34.5	78	0	56



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

TOTAL HYDROCARBON ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.73	707	2.3	5.4	3.4
Feb	100	640	2.2	5.0	2.9
Mar	99.46	705	2.1	4.2	2.5
Apr	99.31	680	2.0	3.2	2.4
May	99.19	703	2.0	3.9	2.2
Jun	99.31	680	2.0	3.4	2.2
Jul	97.72	692	2.1	5.5	2.3
Aug	99.6	707	2.1	4.6	2.3
Sep	96.53	663	2.1	3.2	2.3
Oct	99.46	703	2.1	3.5	2.5
Nov	100	687	2.1	4.7	2.8
Dec	97.31	689	2.2	3.2	2.7
Annual	98.96	8256	2.1	5.5	3.4



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	710	2.6	5.5	3.3
Feb	99.85	639	2.5	5.5	3.2
Mar	94.62	671	2.4	5.1	2.7
Apr	99.31	681	2.4	4.6	2.7
May	99.87	708	2.3	4.2	2.6
Jun	95.56	655	2.2	3.8	2.5
Jul	99.33	704	2.4	6.9	3.1
Aug	99.87	709	2.5	4.7	2.9
Sep	100	687	2.5	7.4	3.6
Oct	94.22	665	2.4	5.2	2.8
Nov	99.72	684	2.4	4.8	3.0
Dec	100	709	2.6	7.9	3.2
Annual	98.52	8222	2.4	7.9	3.6



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	710	2.4	6.2	3.2
Feb	100	641	2.5	12.2	4.5
Mar	100	710	2.4	6.2	2.9
Apr	100	688	2.3	4.8	2.7
May	84.14	589	2.4	3.9	2.7
Jun	96.39	662	2.3	3.5	2.6
Jul	99.73	708	2.3	3.5	2.7
Aug	99.6	704	2.3	3.8	2.6
Sep	100	685	2.3	4.8	2.7
Oct	100	706	2.3	4.9	2.9
Nov	100	686	2.3	3.6	2.7
Dec	100	707	2.3	3.9	2.8
Annual	98.3	8196	2.3	12.2	4.5



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	92.74	657	2.2	6.0	2.8
Feb	99.85	639	2.4	7.5	3.1
Mar	98.79	701	2.4	5.7	3.2
Apr	99.86	685	2.3	4.5	2.5
May	100	709	2.4	19.1	4.1
Jun	100	687	2.3	3.6	2.5
Jul	94.09	664	2.3	6.5	2.6
Aug	99.73	707	2.3	4.5	2.7
Sep	100	687	2.4	8.9	2.9
Oct	99.73	705	2.4	5.3	3.1
Nov	100	687	2.4	5.3	2.7
Dec	100	709	2.4	7.7	3.4
Annual	98.71	8237	2.3	19.1	4.1



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	97.18	689	2.0	2.9	2.2
Feb	100	640	1.9	2.8	2.2
Mar	98.52	698	2.0	2.3	2.0
Apr	99.86	682	2.0	2.5	2.0
May	97.18	688	1.9	2.9	2.0
Jun	99.31	678	1.9	2.6	2.0
Jul	100	710	1.9	2.7	2.1
Aug	99.87	707	1.9	2.4	2.1
Sep	97.64	669	1.9	2.3	2.0
Oct	99.73	704	1.9	2.6	2.3
Nov	99.86	683	2.0	2.6	2.2
Dec	95.3	674	2.0	2.4	2.1
Annual	98.69	8222	2.0	2.9	2.3



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.73	706	2.1	3.6	2.8
Feb	93.3	596	2.1	4.0	2.7
Mar	99.73	706	2.0	2.7	2.1
Apr	100	684	2.0	2.9	2.2
May	99.73	706	2.0	2.6	2.1
Jun	98.75	676	2.0	2.5	2.1
Jul	99.87	707	2.0	2.9	2.1
Aug	99.87	708	1.9	2.6	2.1
Sep	100	686	2.0	3.4	2.3
Oct	99.33	701	2.0	2.9	2.6
Nov	96.25	657	2.1	2.8	2.4
Dec	97.18	687	2.1	2.9	2.4
Annual	98.69	8220	2.0	4.0	2.8



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	710	2.5	5.4	3.5
Feb	99.85	639	2.4	6.3	3.1
Mar	100	710	2.4	6.0	2.9
Apr	99.17	680	2.2	4.3	2.4
May	100	710	2.2	3.5	2.5
Jun	99.72	685	2.2	3.4	2.5
Jul	98.52	699	2.2	3.3	2.4
Aug	100	711	2.2	3.9	2.5
Sep	99.72	684	2.2	4.0	2.6
Oct	100	708	2.2	3.3	2.8
Nov	100	687	2.3	4.9	3.0
Dec	99.87	709	2.4	4.0	3.0
Annual	99.74	8332	2.3	6.3	3.5



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	709	2.5	4.8	3.4
Feb	95.39	610	2.4	5.5	3.1
Mar	99.73	705	2.3	3.9	3.0
Apr	100	687	2.3	6.0	2.8
May	98.92	702	2.3	4.6	2.6
Jun	94.17	646	2.2	3.6	2.6
Jul	99.46	706	2.3	4.1	2.7
Aug	99.73	708	2.4	4.5	2.7
Sep	99.86	687	2.4	7.0	3.1
Oct	99.87	707	2.3	5.2	2.7
Nov	93.75	644	2.3	5.1	3.1
Dec	98.39	697	2.5	5.8	3.3
Annual	98.31	8208	2.4	7.0	3.4



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	710	2.5	6.8	4.4
Feb	100	639	2.4	7.5	3.4
Mar	100	708	2.4	4.2	3.1
Apr	99.44	682	2.3	4.9	2.7
May	100	708	2.2	3.1	2.4
Jun	100	686	2.2	3.3	2.3
Jul	98.79	700	2.2	3.7	2.5
Aug	100	708	2.3	3.7	2.5
Sep	100	686	2.3	3.7	2.7
Oct	100	705	2.3	4.7	2.8
Nov	100	685	2.3	5.3	3.1
Dec	100	708	2.6	6.0	3.0
Annual	99.85	8325	2.3	7.5	4.4



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	98.92	699	2.0	2.7	2.3
Feb	99.85	639	1.9	2.4	2.0
Mar	99.87	707	2.0	2.2	2.0
Apr	99.86	684	1.9	2.5	2.0
May	99.87	707	1.9	2.2	2.0
Jun	99.72	684	2.0	2.5	2.1
Jul	99.87	707	2.0	2.7	2.2
Aug	99.87	708	2.0	2.7	2.1
Sep	98.19	672	2.0	2.4	2.1
Oct	99.6	703	2.0	2.5	2.1
Nov	100	684	2.0	2.5	2.1
Dec	95.97	680	2.0	2.2	2.1
Annual	99.29	8274	2.0	2.7	2.3



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	708	2.3	8.1	3.7
Feb	100	640	2.3	7.0	3.2
Mar	100	708	2.3	4.0	2.6
Apr	100	684	2.2	6.6	2.8
May	99.87	707	2.2	5.1	2.6
Jun	99.86	684	2.2	4.7	2.6
Jul	99.87	705	2.2	4.8	2.7
Aug	99.73	705	2.2	5.5	2.6
Sep	99.86	684	2.2	4.8	2.8
Oct	100	707	2.2	7.3	3.2
Nov	98.75	676	2.3	5.2	2.8
Dec	99.73	706	2.3	9.3	3.0
Annual	99.81	8314	2.3	9.3	3.7



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	708	2.5	4.7	3.6
Feb	99.4	635	2.6	7.9	3.7
Mar	100	707	2.5	6.4	3.3
Apr	100	684	2.4	5.2	2.8
May	93.15	657	2.4	5.1	3.1
Jun	93.47	637	2.4	4.9	3.1
Jul	99.19	701	2.3	4.6	2.9
Aug	100	708	2.5	4.2	3.1
Sep	99.58	682	2.4	6.5	3.1
Oct	99.19	700	2.4	4.1	3.1
Nov	97.92	671	2.4	4.6	3.1
Dec	91.13	644	2.5	5.4	3.2
Annual	97.74	8134	2.5	7.9	3.7



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	710	2.3	4.5	2.4
Feb	100	640	2.2	2.8	2.3
Mar	99.87	708	2.2	2.5	2.3
Apr	100	686	2.1	2.5	2.2
May	100	708	2.1	2.5	2.2
Jun	99.86	685	2.1	2.6	2.2
Jul	96.1	681	2.1	2.8	2.3
Aug	100	710	2.1	2.8	2.2
Sep	100	685	2.1	2.5	2.2
Oct	100	707	2.1	3.4	2.4
Nov	99.72	683	2.2	2.7	2.3
Dec	99.87	705	2.2	2.7	2.4
Annual	99.61	8308	2.2	4.5	2.4



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	708	1.9	2.4	2.1
Feb	98.21	629	1.9	2.2	2.0
Mar	99.6	705	2.0	2.2	2.1
Apr	100	685	1.9	2.1	2.0
May	100	708	1.9	2.4	1.9
Jun	99.44	683	1.9	2.2	2.0
Jul	100	707	2.0	2.3	2.1
Aug	100	708	2.0	2.3	2.1
Sep	99.72	683	1.9	2.3	2.1
Oct	100	706	1.9	2.1	1.9
Nov	99.72	683	1.9	2.2	2.0
Dec	99.87	706	1.9	2.1	2.0
Annual	99.71	8311	1.9	2.4	2.1



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	707	2.3	2.6	2.4
Feb	99.85	638	2.1	2.8	2.3
Mar	99.33	703	2.2	2.5	2.3
Apr	99.72	685	2.2	2.6	2.3
May	99.87	707	2.1	2.6	2.2
Jun	100	685	2.1	3.0	2.3
Jul	99.73	706	2.2	2.8	2.3
Aug	99.87	707	2.2	3.0	2.4
Sep	99.86	685	2.2	3.1	2.3
Oct	100	704	2.2	3.3	2.4
Nov	99.72	684	2.2	2.7	2.3
Dec	98.66	698	2.2	2.9	2.5
Annual	99.7	8309	2.2	3.3	2.5



Wood Buffalo Environmental Association - MacKay River (AMS 20)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	706	2.2	4.0	2.4
Feb	100	639	2.2	3.1	2.4
Mar	100	707	2.3	2.7	2.4
Apr	99.86	685	2.2	2.6	2.3
May	99.87	707	2.1	3.2	2.2
Jun	100	685	2.1	2.6	2.2
Jul	100	709	2.1	2.9	2.3
Aug	99.6	706	2.1	2.6	2.3
Sep	100	685	2.2	2.6	2.3
Oct	100	707	2.3	3.1	2.7
Nov	100	685	2.3	2.9	2.4
Dec	95.7	677	2.3	2.7	2.4
Annual	99.58	8298	2.2	4.0	2.7



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	707	2.0	2.4	2.2
Feb	99.7	637	2.0	2.2	2.1
Mar	99.6	704	2.0	2.3	2.1
Apr	100	685	1.9	2.4	2.0
May	100	707	1.9	2.3	2.0
Jun	99.72	683	1.9	2.5	2.1
Jul	96.77	687	2.0	2.8	2.1
Aug	99.87	707	2.1	3.7	2.4
Sep	99.44	682	2.0	2.9	2.3
Oct	98.39	695	1.9	2.3	2.1
Nov	99.86	684	1.9	2.2	2.0
Dec	93.55	664	1.9	2.2	2.1
Annual	98.89	8242	2.0	3.7	2.4



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.19	703	2.0	2.2	2.1
Feb	99.7	634	1.9	2.2	2.0
Mar	99.33	702	2.0	2.1	2.0
Apr	99.44	681	1.9	2.1	2.0
May	100	707	1.8	2.0	1.9
Jun	99.58	681	1.9	2.1	1.9
Jul	94.22	667	1.9	2.4	2.1
Aug	100	707	2.0	2.8	2.2
Sep	94.86	649	1.9	2.2	2.1
Oct	97.85	689	1.9	2.1	2.0
Nov	100	685	1.9	2.1	2.0
Dec	99.46	704	1.9	2.1	2.0
Annual	98.63	8209	1.9	2.8	2.2



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jun	99.44	681	2.1	5.4	2.5
Jul	99.46	703	2.1	3.5	2.4
Aug	98.52	697	2.1	4.5	2.5
Sep	99.31	683	2.2	6.3	2.7
Oct	99.73	701	2.1	4.5	2.5
Nov	100	685	2.3	5.9	3.4
Dec	100	708	2.5	12.6	4.0
Annual	99.49	4858	2.2	12.6	4.0

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Sep	99.3	268	2.0	2.6	2.1
Oct	97.58	687	2.0	2.6	2.2
Nov	100	687	2.2	2.6	2.3
Dec	71.77	505	2.2	2.9	2.3
Annual	92.16	2147	2.1	2.9	2.3

*This parameter became operational on September 19



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NON-METHANE HYDROCARBON ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.73	707	0.0855	2.0568	0.5179
Feb	100	640	0.0577	1.2050	0.3046
Mar	99.46	705	0.0383	2.1781	0.1671
Apr	99.31	680	0.0243	0.4690	0.1662
May	99.19	703	0.0336	1.9662	0.1448
Jun	99.31	680	0.0487	1.3711	0.1316
Jul	97.72	692	0.0770	3.4359	0.2390
Aug	99.6	707	0.0622	2.7178	0.1966
Sep	96.53	663	0.0465	0.8865	0.1833
Oct	99.46	703	0.0314	0.5694	0.2408
Nov	100	687	0.0257	0.6258	0.2155
Dec	97.31	689	0.0779	0.8474	0.2017
Annual	98.96	8256	0.0508	3.4359	0.5179



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	97.18	689	0.0035	0.2343	0.0277
Feb	100	640	0.0029	0.2517	0.0333
Mar	98.52	698	0.0003	0.0571	0.0027
Apr	99.86	682	0.0004	0.0824	0.0055
May	97.18	688	0.0034	0.7677	0.0037
Jun	99.31	678	0.0005	0.1138	0.0080
Jul	100	710	0.0009	0.1563	0.0145
Aug	99.87	707	0.0006	0.0630	0.0038
Sep	97.64	669	0.0017	0.1744	0.0162
Oct	99.73	704	0.0025	0.1835	0.0523
Nov	99.86	683	0.0011	0.1791	0.0091
Dec	95.3	674	0.0021	0.2732	0.0224
Annual	98.69	8222	0.0016	0.7677	0.0523



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.73	706	0.0275	0.6505	0.2057
Feb	93.3	596	0.0157	0.3208	0.1112
Mar	99.73	706	0.0062	0.4680	0.0503
Apr	100	684	0.0046	0.4003	0.0893
May	99.73	706	0.0025	0.2719	0.0198
Jun	98.75	676	0.0064	0.2888	0.0487
Jul	99.87	707	0.0072	0.5038	0.1001
Aug	99.87	708	0.0059	0.3408	0.0650
Sep	100	686	0.0110	0.5586	0.1212
Oct	99.33	701	0.0191	0.4116	0.2865
Nov	96.25	657	0.0057	0.2888	0.0414
Dec	97.18	687	0.0120	0.4645	0.0891
Annual	98.69	8220	0.0103	0.6505	0.2865



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	98.92	699	0.0069	0.2814	0.0958
Feb	99.85	639	0.0030	0.1841	0.0320
Mar	99.87	707	0.0024	0.1457	0.0243
Apr	99.86	684	0.0005	0.0746	0.0032
May	99.87	707	0.0022	0.1506	0.0118
Jun	99.72	684	0.0157	0.2008	0.0484
Jul	99.87	707	0.0324	0.2793	0.1353
Aug	99.87	708	0.0214	0.2480	0.0559
Sep	98.47	672	0.0182	0.2725	0.0775
Oct	99.6	703	0.0047	0.1749	0.0431
Nov	100	684	0.0029	0.1272	0.0368
Dec	95.97	680	0.0025	0.1505	0.0143
Annual	99.32	8274	0.0095	0.2814	0.1353



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	708	0.0068	0.1174	0.0583
Feb	98.21	629	0.0026	0.0634	0.0216
Mar	99.6	705	0.0019	0.0720	0.0209
Apr	100	685	0.0007	0.0638	0.0090
May	100	708	0.0022	0.1141	0.0132
Jun	99.44	683	0.0319	0.2348	0.1030
Jul	100	707	0.0872	0.3403	0.1777
Aug	100	708	0.0614	0.1828	0.1272
Sep	99.72	683	0.0181	0.1991	0.0868
Oct	100	706	0.0022	0.1358	0.0070
Nov	99.72	683	0.0018	0.0713	0.0131
Dec	99.87	706	0.0011	0.0646	0.0076
Annual	99.71	8311	0.0184	0.3403	0.1777



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	707	0.0005	0.1016	0.0063
Feb	99.7	637	0.0002	0.0166	0.0011
Mar	99.6	704	0.0003	0.0248	0.0022
Apr	100	685	0.0003	0.0358	0.0033
May	100	707	0.0007	0.1039	0.0140
Jun	99.72	683	0.0007	0.0985	0.0107
Jul	96.77	687	0.0085	0.2797	0.0522
Aug	99.87	707	0.0080	0.2068	0.0342
Sep	99.44	682	0.0047	0.3563	0.0481
Oct	98.39	695	0.0009	0.0989	0.0093
Nov	99.86	684	0.0001	0.0249	0.0011
Dec	93.55	664	0.0006	0.1010	0.0075
Annual	98.89	8242	0.0021	0.3563	0.0522



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.19	703	0.0004	0.0269	0.0022
Feb	99.7	634	0.0003	0.0254	0.0012
Mar	99.33	702	0.0003	0.0704	0.0031
Apr	99.44	681	0.0001	0.0074	0.0003
May	100	707	0.0003	0.0602	0.0041
Jun	99.58	681	0.0001	0.0168	0.0014
Jul	94.22	667	0.0060	0.3103	0.0951
Aug	100	707	0.0017	0.0826	0.0068
Sep	94.86	649	0.0012	0.1125	0.0130
Oct	97.98	690	0.0003	0.0411	0.0023
Nov	100	685	0.0005	0.0748	0.0033
Dec	99.46	704	0.0004	0.0960	0.0049
Annual	98.64	8210	0.0009	0.3103	0.0951



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

METHANE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.73	707	2.17	4.23	3.00
Feb	100	640	2.12	3.80	2.61
Mar	99.46	705	2.09	3.05	2.32
Apr	99.31	680	2.01	2.81	2.21
May	99.19	703	1.99	2.37	2.05
Jun	99.31	680	2.00	2.59	2.09
Jul	97.72	692	2.00	2.46	2.12
Aug	99.6	707	2.00	2.77	2.14
Sep	96.53	663	2.03	2.91	2.20
Oct	99.46	703	2.03	2.94	2.29
Nov	100	687	2.09	4.15	2.56
Dec	97.31	689	2.16	2.92	2.51
Annual	98.96	8256	2.06	4.23	3.00



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	97.18	689	1.99	2.65	2.18
Feb	100	640	1.94	2.73	2.17
Mar	98.52	698	1.96	2.29	2.02
Apr	99.86	682	1.96	2.42	2.03
May	97.18	688	1.93	2.32	1.99
Jun	99.31	678	1.92	2.56	1.97
Jul	100	710	1.92	2.69	2.09
Aug	99.87	707	1.92	2.45	2.10
Sep	97.64	669	1.92	2.25	2.01
Oct	99.73	704	1.93	2.51	2.30
Nov	99.86	683	1.99	2.55	2.16
Dec	95.3	674	2.00	2.30	2.14
Annual	98.69	8222	1.95	2.73	2.30



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.73	706	2.10	3.56	2.76
Feb	93.3	596	2.06	3.95	2.63
Mar	99.73	706	2.00	2.26	2.10
Apr	100	684	1.97	2.62	2.10
May	99.73	706	1.99	2.57	2.05
Jun	98.75	676	1.97	2.46	2.09
Jul	99.87	707	1.97	2.38	2.04
Aug	99.87	708	1.93	2.49	2.02
Sep	100	686	1.97	3.39	2.26
Oct	99.33	701	1.97	2.58	2.28
Nov	96.25	657	2.06	2.75	2.32
Dec	97.18	687	2.07	2.60	2.27
Annual	98.69	8220	2.00	3.95	2.76



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	98.92	699	1.97	2.41	2.19
Feb	99.85	639	1.94	2.26	2.00
Mar	99.87	707	1.95	2.13	2.02
Apr	99.86	684	1.91	2.47	1.97
May	99.87	707	1.90	2.19	1.96
Jun	99.72	684	1.96	2.32	2.04
Jul	99.87	707	1.98	2.51	2.09
Aug	99.87	708	1.98	2.47	2.05
Sep	98.19	672	1.99	2.24	2.07
Oct	99.6	703	1.98	2.37	2.08
Nov	100	684	1.99	2.35	2.07
Dec	95.97	680	1.98	2.19	2.07
Annual	99.29	8274	1.96	2.51	2.19



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.87	708	1.93	2.29	2.05
Feb	98.21	629	1.91	2.19	1.99
Mar	99.6	705	1.99	2.21	2.08
Apr	100	685	1.94	2.12	2.02
May	100	708	1.90	2.24	1.93
Jun	99.44	683	1.89	2.02	1.95
Jul	100	707	1.90	2.08	2.01
Aug	100	708	1.93	2.16	2.00
Sep	99.72	683	1.93	2.25	2.06
Oct	100	706	1.88	2.02	1.93
Nov	99.72	683	1.91	2.21	2.02
Dec	99.87	706	1.92	2.12	1.98
Annual	99.71	8311	1.92	2.29	2.08



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	707	1.99	2.40	2.20
Feb	99.7	637	1.98	2.25	2.05
Mar	99.6	704	1.97	2.27	2.08
Apr	100	685	1.92	2.36	2.02
May	100	707	1.92	2.28	1.98
Jun	99.72	683	1.94	2.50	2.05
Jul	96.77	687	1.96	2.78	2.08
Aug	99.87	707	2.06	3.72	2.38
Sep	100	682	2.00	2.82	2.29
Oct	98.39	695	1.94	2.30	2.07
Nov	99.86	684	1.94	2.18	2.00
Dec	93.55	664	1.95	2.18	2.06
Annual	98.94	8242	1.96	3.72	2.38



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.19	703	2.00	2.21	2.13
Feb	99.7	634	1.94	2.21	2.01
Mar	99.33	702	1.96	2.09	2.02
Apr	99.44	681	1.90	2.06	1.97
May	100	707	1.84	1.97	1.87
Jun	99.58	681	1.88	2.12	1.92
Jul	94.22	667	1.92	2.41	2.12
Aug	100	707	1.97	2.76	2.15
Sep	94.86	649	1.92	2.25	2.05
Oct	97.98	690	1.90	2.11	1.97
Nov	100	685	1.92	2.15	1.98
Dec	99.46	704	1.91	2.12	2.00
Annual	98.64	8210	1.92	2.76	2.15



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

CARBON MONOXIDE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
Jan	99.73	709	0.18	0.75	0.32
Feb	100	641	0.15	0.59	0.28
Mar	99.73	708	0.13	0.48	0.22
Apr	99.86	686	0.12	0.25	0.14
May	100	710	0.11	0.26	0.13
Jun	99.86	686	0.10	0.38	0.16
Jul	99.87	709	0.11	0.34	0.16
Aug	100	709	0.14	0.84	0.30
Sep	100	687	0.13	0.68	0.23
Oct	99.6	704	0.11	0.36	0.16
Nov	100	688	0.13	0.44	0.19
Dec	99.87	709	0.19	0.78	0.34
Annual	99.87	8346	0.13	0.84	0.34



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

AMMONIA ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.6	739	7.7	62	30	0	51	26	17	4	2
Feb	100	670	7.1	60	16	0	57	24	16	2	2
Mar	97.31	722	8.2	62	12	0	33	43	21	2	0
Apr	95.97	688	5.0	79	10	0	72	18	8	1	1
May	98.25	729	5.7	47	21	0	64	23	11	1	1
Jun	98.33	706	8.2	192	38	1	51	27	17	4	2
Jul	98.12	728	8.4	42	18	0	42	27	25	5	1
Aug	100	742	9.2	105	25	0	42	27	23	6	2
Sep	98.19	705	6.8	47	18	0	57	21	18	3	1
Oct	100	742	3.9	35	15	0	77	16	6	1	0
Nov	100	719	5.7	57	19	0	66	22	9	1	2
Dec	97.72	723	13.6	330	94	4	60	15	11	3	10
Annual	98.62	8613	7.5	330	94	5	56	24	15	3	2



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Aug	100	665	8.2	123	27	0	51	29	14	4	3
Sep	99.86	717	6.0	76	18	0	69	17	11	1	2
Oct	92.74	688	2.8	40	18	0	87	8	3	1	0
Nov	98.89	709	4.2	17	10	0	70	24	6	0	0
Dec	100	743	3.4	32	10	0	86	9	4	1	0
Annual	40.67	3522	4.9	123	27	0	73	17	7	1	1

*This parameter became operational on August 4



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	100	743	5.1	58	17	0	71	16	10	2	1
Feb	100	670	3.8	35	8	0	78	16	6	0	0
Mar	100	742	5.1	30	8	0	69	26	4	1	0
Apr	100	718	4.1	32	8	0	81	16	3	0	0
May	100	741	4.6	25	10	0	70	24	6	0	0
Jun	99.44	713	5.9	135	21	0	61	29	9	1	1
Jul	100	742	6.8	29	14	0	53	27	17	3	0
Aug	100	742	8.4	98	30	0	48	30	14	6	3
Sep	100	718	6.5	90	18	0	64	21	9	3	2
Oct	98.66	729	3.2	66	19	0	88	6	3	2	1
Nov	100	719	4.7	25	10	0	67	27	6	0	0
Dec	100	743	4.2	42	9	0	77	16	6	1	0
Annual	99.84	8720	5.2	135	30	0	69	21	8	2	1



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	98.92	735	7.0	37	14	0	46	35	18	1	0
Feb	98.81	663	6.1	30	12	0	54	35	10	1	0
Mar	99.06	735	7.3	62	13	0	29	59	11	1	0
Apr	99.17	712	5.4	26	8	0	62	34	4	0	0
May	98.79	734	5.3	28	12	0	61	31	7	1	0
Jun	98.89	711	6.7	174	22	0	57	29	12	3	1
Jul	97.31	723	7.8	68	19	0	50	25	19	5	1
Aug	99.87	741	8.4	87	24	0	35	45	14	5	1
Sep	100	719	7.6	52	20	0	53	26	16	2	2
Oct	99.06	733	4.7	27	16	0	78	17	4	1	0
Nov	98.75	708	6.4	31	13	0	52	33	14	1	0
Dec	97.18	722	6.2	24	12	0	51	37	12	1	0
Annual	98.81	8636	6.6	174	24	0	52	34	12	2	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	100	742	3.4	19	11	0	86	11	3	0	0
Feb	100	668	2.4	55	6	0	95	4	1	0	0
Mar	100	740	3.6	37	7	0	90	9	1	1	0
Apr	100	718	2.7	22	8	0	96	4	0	0	0
May	92.34	683	2.1	15	5	0	96	4	0	0	0
Jun	87.08	625	3.3	22	8	0	91	6	3	0	0
Jul	97.04	720	4.9	45	15	0	70	21	8	1	0
Aug	99.73	741	6.8	146	23	0	63	20	9	5	3
Sep	99.03	711	3.9	76	11	0	79	11	7	1	2
Oct	94.62	702	2.4	58	16	0	92	5	1	1	1
Nov	99.86	716	3.9	40	15	0	82	11	5	1	1
Dec	97.04	720	3.0	39	11	0	85	10	4	0	0
Annual	97.21	8486	3.6	146	23	0	85	10	4	1	1



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.19	736	5.3	33	21	0	65	23	10	2	0
Feb	99.26	666	4.2	24	9	0	78	16	6	0	0
Mar	99.73	740	6.9	69	12	0	42	47	10	1	0
Apr	99.44	715	4.4	15	7	0	70	27	3	0	0
May	100	742	5.4	98	20	0	65	26	6	1	1
Jun	99.31	714	7.5	200	40	1	49	34	14	1	2
Jul	98.79	734	7.8	41	18	0	44	29	22	4	1
Aug	99.6	740	7.7	104	25	0	46	32	19	3	1
Sep	98.47	708	5.4	38	16	0	65	25	8	2	1
Oct	99.33	736	3.4	28	14	0	86	11	2	1	0
Nov	98.75	709	4.1	44	9	0	71	23	6	0	0
Dec	99.19	737	4.5	25	9	0	71	24	4	1	0
Annual	99.26	8677	5.6	200	40	1	63	26	9	1	1



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.06	736	5.8	153	34	1	75	17	4	1	2
Feb	93.75	628	2.9	35	6	0	88	8	3	0	0
Mar	100	743	4.1	60	10	0	79	17	3	0	0
Apr	100	719	2.6	35	6	0	89	9	1	0	0
May	100	742	3.8	66	8	0	85	12	3	1	0
Jun	99.86	717	5.3	43	10	0	68	19	10	2	0
Jul	100	743	7.2	51	15	0	51	29	16	3	1
Aug	100	743	6.9	60	18	0	55	29	11	3	1
Sep	98.47	707	6.1	49	20	0	64	23	9	2	2
Oct	100	742	2.8	11	6	0	94	5	0	0	0
Nov	100	719	3.7	23	10	0	79	17	3	0	0
Dec	100	741	3.1	62	8	0	88	9	2	0	0
Annual	99.3	8680	4.5	153	34	1	76	16	5	1	1



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	100	743	5.6	40	15	0	69	16	14	1	0
Feb	100	669	4.5	24	11	0	78	16	5	0	0
Mar	100	742	7.2	34	10	0	37	47	15	0	0
Apr	99.58	716	4.6	34	13	0	78	16	5	1	0
May	100	743	6.5	37	21	0	63	18	13	5	0
Jun	100	719	9.4	278	45	1	42	33	19	3	3
Jul	99.73	741	8.1	37	17	0	43	32	21	4	1
Aug	100	743	8.7	86	21	0	42	31	20	6	2
Sep	100	719	6.5	61	20	0	60	23	12	4	1
Oct	100	742	3.3	26	9	0	82	15	3	0	0
Nov	99.03	710	5.2	35	12	0	65	25	9	1	0
Dec	100	743	4.3	47	12	0	78	16	5	1	1
Annual	99.86	8730	6.2	278	45	1	61	24	12	2	1



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2016
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	100	743	6.6	66	23	0	53	30	15	1	1
Feb	100	669	5.5	30	14	0	66	19	13	2	0
Mar	100	742	6.9	78	18	0	48	38	12	1	1
Apr	100	719	5.2	45	9	0	70	22	7	1	0
May	99.87	742	6.1	79	15	0	61	27	9	2	1
Jun	99.44	715	8.9	234	43	1	50	24	18	4	3
Jul	99.87	742	10.4	81	21	0	35	29	26	7	3
Aug	100	743	10.2	166	28	0	37	32	20	7	4
Sep	99.03	711	6.9	47	18	0	56	26	13	3	2
Oct	100	743	4.4	43	13	0	77	16	5	1	1
Nov	100	718	5.2	34	11	0	62	30	7	1	0
Dec	98.39	731	5.8	40	15	0	63	26	8	2	1
Annual	99.71	8718	6.9	234	43	1	56	27	13	3	1



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	100	743	5.3	50	14	0	65	27	7	1	0
Feb	99.85	670	3.5	22	8	0	86	12	2	0	0
Mar	99.6	739	4.3	17	7	0	82	18	1	0	0
Apr	99.58	716	3.4	11	6	0	89	11	0	0	0
May	100	743	3.6	23	8	0	84	14	2	0	0
Jun	100	720	5.6	75	20	0	68	23	7	1	1
Jul	96.37	716	8.0	32	15	0	38	37	21	4	1
Aug	100	743	8.2	113	24	0	47	32	13	7	1
Sep	96.67	695	5.6	69	20	0	66	21	10	1	2
Oct	100	743	3.0	27	9	0	88	8	4	1	0
Nov	100	717	4.6	67	11	0	72	20	7	0	0
Dec	98.79	734	4.6	39	15	0	71	20	7	1	0
Annual	99.24	8679	5.0	113	24	0	71	21	7	1	0



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	100	742	4.1	22	15	0	86	9	5	0	0
Feb	99.7	669	3.1	10	7	0	94	6	0	0	0
Mar	99.73	738	4.1	13	7	0	79	20	1	0	0
Apr	100	718	3.0	12	5	0	96	3	0	0	0
May	94.89	706	3.7	14	11	0	86	12	2	0	0
Jun	100	717	4.6	12	8	0	70	29	1	0	0
Jul	100	742	7.3	28	14	0	46	31	22	2	0
Aug	100	742	7.4	125	41	1	53	33	7	5	2
Sep	100	718	5.1	56	22	0	74	16	8	2	1
Oct	100	741	2.5	13	6	0	95	5	0	0	0
Nov	100	716	4.8	23	13	0	72	22	6	0	0
Dec	100	742	3.2	17	7	0	89	8	2	0	0
Annual	99.52	8691	4.4	125	41	1	78	16	5	1	0



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.6	740	4.0	29	16	0	80	14	5	1	0
Feb	99.55	667	2.7	17	9	0	90	8	2	0	0
Mar	99.6	740	4.0	72	14	0	82	15	3	0	0
Apr	96.94	697	3.0	24	6	0	95	3	2	0	0
May	100	743	4.2	77	9	0	80	15	4	1	0
Jun	99.72	717	5.5	57	12	0	66	26	5	2	1
Jul	100	742	9.0	126	24	0	46	25	22	4	3
Aug	100	743	8.2	125	41	1	51	31	10	6	2
Sep	97.22	699	6.3	67	24	0	68	15	11	3	2
Oct	100	741	2.5	35	7	0	94	4	3	0	0
Nov	100	719	4.4	23	13	0	72	23	4	1	0
Dec	98.79	734	2.8	18	7	0	87	12	1	0	0
Annual	99.29	8682	4.7	126	41	1	76	16	6	1	1



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	96.24	712	4.3	55	14	0	79	13	7	1	0
Feb	90.03	602	3.3	36	6	0	87	10	3	0	0
Mar	91.67	678	3.9	26	8	0	80	16	3	0	0
Apr	96.67	691	2.9	37	6	0	91	8	1	0	0
May	94.76	703	2.6	57	7	0	90	8	1	0	0
Jun	95.14	682	3.7	24	7	0	80	17	3	0	0
Jul	93.82	696	6.3	39	14	0	56	22	20	1	0
Aug	98.79	732	7.6	103	31	1	51	30	13	4	2
Sep	98.75	709	5.4	70	22	0	73	15	9	1	1
Oct	90.99	673	2.8	28	5	0	91	8	1	0	0
Nov	98.75	708	4.2	18	12	0	75	20	5	0	0
Dec	90.19	668	3.5	21	8	0	82	16	2	0	0
Annual	94.66	8254	4.3	103	31	1	78	15	6	1	0



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jun	98.33	706	13.2	285	58	2	24	34	28	8	7
Jul	96.77	717	10.8	122	21	0	29	30	31	8	2
Aug	99.33	737	10.3	125	35	1	40	25	23	8	4
Sep	97.08	698	8.5	68	26	0	51	24	17	4	4
Oct	96.24	715	4.2	64	10	0	74	18	7	1	0
Nov	100	718	7.2	141	32	1	54	29	15	1	2
Dec	100	742	7.4	76	16	0	49	33	12	5	2
Annual	69.35	5033	8.8	285	58	4	46	27	19	5	3

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Nov	100	587	6.0	21	15	0	56	34	10	1	0
Dec	100	742	3.9	20	8	0	81	16	3	0	0
Annual	18.62	1329	4.8	21	15	0	70	24	6	0	0

*This parameter became operational on November 6



Wood Buffalo Environmental Association - Sawbones Bay (AMS 505)
Annual Summary for the Year 2017
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jul	65.19	485	10.1	45	17	0	33	22	34	8	2
Aug	100	744	9.4	82	27	0	39	30	21	6	5
Sep	100	720	7.0	58	23	0	53	22	19	5	2
Oct	100	744	4.2	74	9	0	70	19	10	1	0
Annual	37.04	2693	7.5	82	27	0	50	23	20	5	2

*This parameter was operational from July 1 - November 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

AMBIENT TEMPERATURE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Ambient Temperature 2 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.6	7.7	-31.2	2.0	-12.9
February	100	672	-33.5	10.0	-28.1	4.8	-11.5
March	100	744	-33.9	13.8	-24.9	7.2	-8.6
April	100	720	-14.4	18.3	-6.1	9.6	2.3
May	100	744	-1.0	32.9	4.4	23.0	12.8
June	100	720	3.3	29.4	10.8	22.3	16.2
July	100	744	5.3	32.3	13.0	24.4	19.6
August	100	744	4.3	32.0	13.2	24.2	18.0
September	100	720	-2.3	32.5	4.2	21.2	11.9
October	100	744	-6.0	24.1	-1.7	14.3	3.2
November	100	720	-22.1	0.1	-18.1	-4.1	-11.6
December	100	744	-42.7	4.3	-35.8	1.6	-14.6
Annual	100	8760	-42.7	32.9	-35.8	24.4	2.1

Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Ambient Temperature 10 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.2	7.6	-30.2	3.2	-12.3
February	100	672	-31.8	10.6	-27.1	6.2	-10.9
March	100	744	-32.7	13.7	-24.2	7.2	-8.2
April	100	720	-12.3	18.0	-6.4	10.6	2.5
May	100	744	0.9	31.8	4.4	23.1	13.0
June	100	720	4.5	28.1	11.0	22.5	16.2
July	100	744	7.2	31.8	13.0	24.6	19.7
August	100	744	6.0	30.7	13.3	24.4	18.3
September	100	720	-1.5	31.9	4.6	21.9	12.3
October	100	744	-5.6	23.8	-1.6	14.7	3.4
November	100	720	-20.8	0.8	-17.6	-3.2	-11.3
December	100	744	-41.9	4.6	-35.3	2.4	-13.9
Annual	100	8760	-41.9	31.9	-35.3	24.6	2.5



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.7	6.8	-29.1	3.0	-12.3
February	100	672	-30.8	10.6	-26.9	5.8	-10.8
March	100	744	-30.6	12.5	-23.6	6.5	-8.2
April	100	720	-11.7	17.5	-6.4	10.5	2.4
May	100	744	0.1	32.1	3.8	23.6	12.9
June	100	720	4.3	28.3	10.9	22.7	16.3
July	100	744	7.7	32.1	13.0	24.7	19.9
August	100	744	5.4	30.7	13.3	24.9	18.4
September	100	720	-1.2	31.6	4.8	22.8	12.5
October	100	744	-4.7	23.0	-2.0	14.3	3.5
November	100	720	-20.3	0.4	-17.7	-1.9	-11.3
December	100	744	-38.5	5.3	-33.2	2.7	-13.1
Annual	100	8760	-38.5	32.1	-33.2	24.9	2.6



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Ambient Temperature 20 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.7	8.0	-31.3	3.4	-12.6
February	100	672	-31.4	11.2	-27.9	6.0	-10.9
March	100	744	-33.6	13.7	-24.7	7.3	-8.0
April	100	720	-11.4	16.8	-5.6	10.3	2.8
May	99.33	739	1.0	32.0	4.4	23.9	13.3
June	100	720	5.2	28.0	11.5	22.7	16.6
July	100	744	8.5	31.9	13.3	25.0	20.1
August	100	744	6.4	30.3	14.2	25.0	18.8
September	96.25	693	0.7	31.6	5.4	22.6	12.7
October	99.87	743	-4.5	23.6	-1.8	14.7	4.0
November	100	720	-20.1	1.0	-17.2	-2.3	-10.8
December	100	744	-40.8	4.9	-35.0	2.3	-13.8
Annual	99.62	8727	-40.8	32.0	-35.0	25.0	2.7

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Ambient Temperature 45 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-34.6	8.1	-30.5	3.9	-12.3
February	100	672	-30.8	11.3	-27.3	6.5	-10.6
March	100	744	-32.3	13.7	-24.2	7.4	-7.9
April	100	720	-11.1	16.4	-6.0	10.5	2.7
May	99.33	739	1.2	31.9	4.4	23.8	13.3
June	100	720	5.7	27.8	11.2	22.7	16.6
July	100	744	8.9	32.0	13.3	24.9	20.1
August	82.26	612	8.4	30.1	14.1	24.9	18.7
September	38.47	277	2.4	25.2	5.4	17.6	11.3
October	95.7	712	-4.5	23.6	-2.0	14.7	3.9
November	100	720	-20.0	1.1	-17.2	-1.8	-10.7
December	100	744	-38.9	5.2	-34.2	2.6	-13.3
Annual	93.01	8148	-38.9	32.0	-34.2	24.9	2.0



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Ambient Temperature 100 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-33.1	8.4	-27.9	4.9	-11.3
February	100	672	-29.2	13.0	-25.3	7.6	-10.1
March	100	744	-29.1	13.2	-23.0	7.2	-7.9
April	100	720	-10.7	16.1	-6.7	11.0	2.6
May	99.33	739	1.9	31.4	3.9	23.5	13.1
June	100	720	6.5	27.4	10.8	22.5	16.4
July	100	744	8.8	31.7	12.9	24.8	19.8
August	100	744	8.7	29.6	13.6	24.8	18.6
September	96.25	693	0.7	31.0	4.8	23.1	12.7
October	99.87	743	-4.9	23.1	-2.5	15.1	3.7
November	100	720	-20.5	1.0	-17.4	-0.9	-10.9
December	100	744	-34.7	5.7	-31.6	3.2	-12.1
Annual	99.62	8727	-34.7	31.7	-31.6	24.8	2.9

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Ambient Temperature 167 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.1	8.6	-27.4	5.1	-10.9
February	100	672	-27.7	14.1	-24.2	9.0	-10.0
March	100	744	-26.8	12.6	-22.9	6.9	-8.0
April	100	720	-11.3	15.5	-7.1	11.1	2.3
May	99.33	739	1.3	30.7	3.3	23.3	12.9
June	100	720	6.0	26.8	10.4	22.1	16.1
July	100	744	8.6	31.2	12.4	24.7	19.6
August	100	744	9.2	29.0	13.1	24.5	18.4
September	99.03	713	0.5	30.4	4.3	23.3	12.8
October	99.87	743	-4.8	22.5	-2.7	15.3	3.4
November	100	720	-20.8	0.6	-17.1	-0.7	-11.0
December	100	744	-34.2	6.4	-31.4	3.6	-11.6
Annual	99.85	8747	-34.2	31.2	-31.4	24.7	2.9



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.8	7.8	-29.4	3.6	-12.3
February	100	672	-33.9	12.1	-27.3	6.0	-10.7
March	100	744	-30.5	13.2	-23.4	7.0	-8.2
April	100	720	-10.9	17.3	-5.8	10.2	2.4
May	99.33	739	1.1	31.7	3.7	23.1	12.9
June	100	720	5.7	27.6	11.2	21.8	16.0
July	100	744	8.5	31.4	12.9	23.9	19.5
August	100	744	6.2	30.6	13.2	23.7	18.0
September	100	720	-2.1	31.6	5.0	22.3	12.3
October	100	744	-4.9	23.1	-2.0	14.6	3.4
November	100	720	-21.0	1.0	-17.5	-1.0	-11.4
December	100	744	-40.2	5.2	-34.8	3.1	-13.3
Annual	99.94	8755	-40.2	31.7	-34.8	23.9	2.5



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Ambient Temperature 2 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-34.5	7.0	-29.0	3.1	-12.4
February	100	672	-30.7	11.2	-26.5	5.4	-10.6
March	100	744	-29.6	13.8	-23.0	6.5	-7.7
April	98.75	711	-9.9	17.6	-5.7	10.6	2.6
May	100	744	1.6	31.8	3.9	22.9	13.1
June	100	720	4.9	27.3	11.4	21.7	16.1
July	100	744	7.9	31.3	13.0	23.4	19.4
August	100	744	6.0	30.8	12.9	24.1	17.8
September	100	720	-1.3	31.6	4.9	21.2	12.2
October	100	744	-5.3	23.3	-1.7	14.2	3.2
November	100	720	-20.1	0.8	-16.6	-2.0	-11.2
December	100	744	-37.4	4.6	-33.5	2.4	-13.5
Annual	99.9	8751	-37.4	31.8	-33.5	24.1	2.5

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Ambient Temperature 20 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	96.37	717	-30.2	8.0	-28.1	4.5	-11.0
February	98.36	661	-29.1	11.8	-23.0	7.1	-9.8
March	100	744	-28.0	13.2	-22.8	6.7	-7.8
April	98.75	711	-10.4	16.3	-6.4	10.9	2.6
May	100	744	1.9	31.4	3.7	23.3	13.1
June	100	720	6.6	27.5	11.1	22.2	16.3
July	100	744	9.1	31.1	12.9	24.0	19.7
August	100	744	8.6	29.8	13.2	24.3	18.3
September	100	720	-0.7	30.9	4.8	22.3	12.7
October	100	744	-5.1	22.8	-2.1	14.7	3.4
November	100	720	-20.4	1.3	-16.4	-0.6	-11.0
December	95.43	710	-35.7	5.5	-32.5	3.7	-11.7
Annual	99.08	8679	-35.7	31.4	-32.5	24.3	3.1



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Ambient Temperature 45 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-33.9	8.1	-27.9	5.0	-11.3
February	100	672	-30.1	13.5	-25.0	7.6	-10.0
March	100	744	-27.1	12.9	-22.8	6.7	-7.9
April	98.75	711	-10.8	15.9	-6.8	10.9	2.4
May	100	744	1.7	31.0	3.5	23.2	13.0
June	100	720	6.5	27.3	10.8	22.0	16.2
July	100	744	9.1	31.2	12.6	24.0	19.6
August	100	744	8.9	29.4	13.1	24.2	18.2
September	100	720	-0.8	30.5	4.6	22.5	12.7
October	100	744	-5.0	22.6	-2.3	15.0	3.4
November	100	720	-20.6	1.2	-16.6	-0.3	-11.1
December	100	744	-34.3	5.7	-31.8	4.1	-12.1
Annual	99.9	8751	-34.3	31.2	-31.8	24.2	2.8

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Ambient Temperature 75 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.6	8.1	-27.4	5.3	-11.0
February	100	672	-28.5	13.6	-24.2	8.7	-10.0
March	100	744	-26.8	12.6	-23.0	6.6	-8.1
April	98.75	711	-11.1	15.6	-7.1	10.8	2.2
May	100	744	1.4	30.7	3.2	23.1	12.8
June	100	720	6.5	26.9	10.5	21.8	16.0
July	100	744	9.0	31.1	12.3	24.1	19.5
August	100	744	9.0	29.1	12.9	24.0	18.2
September	100	720	-0.7	30.2	4.3	22.8	12.7
October	100	744	-4.7	22.3	-2.5	15.1	3.2
November	100	720	-20.8	1.0	-16.7	-0.3	-11.2
December	100	744	-34.3	5.7	-31.3	4.1	-11.6
Annual	99.9	8751	-34.3	31.1	-31.3	24.1	2.8



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Ambient Temperature 90 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.0	8.1	-27.3	5.3	-10.9
February	100	672	-27.7	13.7	-23.7	9.0	-9.9
March	100	744	-26.7	12.4	-23.0	6.5	-8.1
April	98.47	709	-11.3	15.5	-7.2	10.8	2.1
May	100	744	1.3	30.5	3.0	23.0	12.8
June	100	720	6.4	26.8	10.4	21.7	15.9
July	100	744	9.0	31.0	12.2	24.1	19.4
August	100	744	9.1	29.0	12.8	24.0	18.2
September	100	720	-0.7	30.1	4.2	22.9	12.7
October	100	744	-4.5	22.2	-2.4	15.1	3.2
November	100	720	-20.9	1.0	-16.7	-0.3	-11.2
December	100	744	-34.3	5.7	-31.2	4.1	-11.5
Annual	99.87	8749	-34.3	31.0	-31.2	24.1	2.8



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.2	7.7	-29.0	3.1	-12.0
February	100	672	-32.4	13.7	-27.6	5.9	-10.3
March	100	744	-31.7	13.4	-24.3	6.3	-7.7
April	100	720	-10.1	16.9	-5.5	8.9	2.3
May	100	744	0.5	31.8	3.4	23.2	12.8
June	100	720	2.9	28.5	10.9	22.7	16.2
July	100	744	8.2	32.5	12.7	24.0	19.4
August	100	744	3.4	30.6	13.2	23.9	17.6
September	100	720	-2.6	31.3	4.8	20.8	12.1
October	100	744	-7.4	22.6	-3.0	14.6	3.3
November	100	720	-22.7	2.0	-16.1	-1.1	-11.1
December	100	744	-40.1	7.0	-33.4	4.4	-12.4
Annual	100	8760	-40.1	32.5	-33.4	24.0	2.6



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.4	7.6	-32.1	1.4	-14.0
February	100	672	-33.6	10.3	-28.8	4.1	-10.9
March	99.87	743	-31.9	14.2	-24.7	6.7	-7.5
April	100	720	-8.4	16.7	-4.7	9.9	2.8
May	100	744	1.7	33.0	4.3	24.1	13.5
June	100	720	5.3	28.8	12.2	23.2	16.9
July	100	744	10.3	33.6	13.9	24.5	20.3
August	100	744	6.2	31.1	14.3	24.3	18.4
September	100	720	-1.4	32.4	5.9	21.5	12.8
October	99.87	743	-5.1	23.5	-1.6	14.8	4.0
November	100	720	-22.6	2.3	-16.6	-3.4	-10.6
December	100	744	-39.8	6.2	-35.1	1.0	-14.7
Annual	99.98	8758	-39.8	33.6	-35.1	24.5	2.7



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.1	4.0	-31.3	1.7	-14.4
February	100	672	-31.2	6.8	-26.6	3.2	-14.7
March	100	744	-32.3	8.1	-26.0	3.4	-12.0
April	100	720	-14.7	14.8	-9.5	8.7	-0.4
May	100	744	-0.1	25.6	2.0	20.5	10.6
June	100	720	5.4	27.4	9.5	22.1	15.6
July	99.73	742	6.3	28.1	12.3	23.6	18.8
August	100	744	9.1	30.1	13.1	24.2	18.3
September	100	720	3.9	29.1	6.0	21.6	11.8
October	100	744	-6.7	12.5	-2.3	8.4	1.8
November	100	720	-21.7	-1.5	-18.5	-4.5	-12.7
December	100	744	-37.6	1.6	-34.4	-1.8	-17.0
Annual	99.98	8758	-37.6	30.1	-34.4	24.2	0.6



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.4	7.1	-30.1	2.5	-12.6
February	100	672	-32.4	10.9	-27.4	5.2	-11.3
March	100	744	-33.3	14.4	-24.7	7.3	-8.4
April	100	720	-12.2	18.6	-6.3	10.8	2.5
May	100	744	0.1	33.2	3.9	23.7	13.0
June	100	720	3.8	29.5	11.3	22.8	16.3
July	100	744	6.5	32.6	13.0	24.8	19.9
August	100	744	4.3	32.1	13.2	24.4	18.3
September	100	720	-2.5	32.5	4.9	22.2	12.2
October	100	744	-6.6	23.7	-1.8	14.6	3.1
November	100	720	-20.9	0.5	-18.0	-4.0	-11.6
December	100	744	-41.0	4.0	-34.8	1.7	-14.2
Annual	100	8760	-41.0	33.2	-34.8	24.8	2.3



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.7	6.9	-32.7	2.1	-13.3
February	100	672	-33.8	10.6	-28.8	4.4	-11.5
March	100	744	-34.2	14.4	-25.4	7.2	-8.2
April	100	720	-11.1	17.8	-5.4	10.2	2.6
May	99.73	742	1.2	32.7	4.8	23.7	13.3
June	100	720	5.4	27.7	11.6	22.4	16.5
July	100	744	8.5	32.6	13.5	25.0	20.1
August	100	744	6.0	31.4	14.1	24.9	18.7
September	100	720	0.9	33.0	5.6	22.6	12.7
October	100	744	-4.8	24.1	-1.7	14.8	4.0
November	100	720	-21.9	1.0	-17.1	-3.2	-10.8
December	100	744	-42.3	4.7	-35.7	1.3	-14.6
Annual	99.98	8758	-42.3	33.0	-35.7	25.0	2.5



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-38.9	7.2	-32.4	1.2	-13.7
February	100	672	-35.4	10.4	-29.4	4.5	-12.1
March	100	744	-35.2	14.3	-26.0	7.2	-8.9
April	100	720	-16.7	18.1	-6.2	9.1	1.8
May	100	744	-2.6	33.3	4.2	23.1	12.3
June	100	720	1.1	29.2	10.4	22.4	15.7
July	100	744	6.2	32.2	12.9	23.9	19.2
August	100	744	1.8	31.7	13.0	23.5	17.5
September	100	720	-4.1	32.5	3.6	20.2	11.3
October	100	744	-6.4	23.9	-1.8	13.5	2.9
November	100	720	-24.3	0.7	-18.4	-3.9	-12.0
December	100	744	-43.5	4.7	-37.4	1.1	-15.5
Annual	100	8760	-43.5	33.3	-37.4	23.9	1.6



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.6	9.3	-28.5	4.0	-11.5
February	100	672	-32.4	15.2	-26.2	8.3	-10.2
March	100	744	-33.0	12.3	-25.9	6.2	-8.0
April	100	720	-11.6	16.5	-5.0	9.0	1.7
May	100	744	-1.6	31.1	1.9	22.5	11.9
June	100	720	2.4	27.6	9.8	21.9	15.1
July	100	744	7.4	31.3	11.9	23.4	18.7
August	100	744	4.9	29.1	12.8	22.3	17.0
September	100	720	-2.2	30.1	3.8	21.9	11.7
October	100	744	-4.7	23.0	-2.7	15.5	2.9
November	100	720	-20.8	4.2	-15.8	0.6	-11.2
December	100	744	-36.1	6.2	-32.0	4.2	-11.7
Annual	100	8760	-36.6	31.3	-32.0	23.4	2.3



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.1	6.8	-30.3	1.2	-12.9
February	100	672	-35.1	10.8	-28.5	4.7	-11.8
March	100	744	-33.4	13.9	-25.2	6.8	-8.9
April	100	720	-12.0	18.3	-6.9	9.5	1.9
May	100	744	-1.3	32.5	3.8	22.1	12.4
June	100	720	2.2	29.3	10.6	22.2	15.9
July	99.73	742	6.5	32.4	12.8	24.0	19.3
August	100	744	3.1	31.6	13.0	23.6	17.6
September	100	720	-2.9	32.6	2.7	20.7	11.5
October	100	744	-8.2	23.8	-2.1	13.6	2.5
November	100	720	-22.6	0.4	-18.6	-3.7	-11.9
December	100	744	-40.4	5.1	-34.3	2.4	-14.2
Annual	99.98	8758	-40.4	32.6	-34.3	24.0	1.9



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-38.1	6.3	-30.4	1.5	-13.3
February	100	672	-35.3	10.6	-28.9	3.9	-12.1
March	100	744	-32.2	13.5	-24.1	6.4	-8.8
April	100	720	-13.9	18.3	-6.8	10.0	2.0
May	100	744	-1.4	31.9	3.9	22.4	12.4
June	100	720	2.8	29.0	10.7	22.1	15.7
July	100	744	6.4	31.7	12.6	23.4	19.0
August	100	744	2.3	31.4	12.8	23.7	17.3
September	100	720	-3.1	31.6	4.7	21.0	11.5
October	100	744	-8.3	22.9	-2.2	13.3	2.6
November	100	720	-23.3	-0.4	-18.5	-5.3	-12.1
December	98.79	735	-43.5	3.2	-35.3	0.1	-14.8
Annual	99.9	8751	-43.5	31.9	-35.3	23.7	1.7



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-40.0	5.5	-32.3	2.6	-12.9
February	100	672	-34.1	12.6	-27.7	7.8	-12.2
March	100	744	-38.1	11.2	-28.6	6.0	-9.1
April	100	720	-16.1	15.9	-7.8	9.6	1.0
May	100	744	-2.4	30.2	2.5	23.1	11.2
June	100	720	-1.3	26.7	8.1	20.9	14.8
July	97.98	729	1.0	29.6	10.5	23.1	18.0
August	100	744	0.0	28.8	10.6	23.1	16.5
September	100	720	-2.6	30.2	3.0	22.9	11.0
October	100	744	-7.3	21.1	-2.4	13.2	1.5
November	100	720	-24.0	-0.9	-17.9	-2.9	-12.4
December	100	744	-40.8	2.6	-34.1	0.6	-14.2
Annual	99.83	8745	-40.8	30.2	-34.1	23.1	1.2



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-33.0	7.1	-27.3	3.6	-10.6
February	100	672	-28.1	12.7	-23.5	7.2	-9.2
March	100	744	-28.6	10.8	-23.0	4.8	-7.2
April	100	720	-12.8	15.7	-6.3	9.9	1.4
May	99.87	743	-0.5	28.7	0.8	21.0	11.6
June	100	720	4.1	26.0	9.6	19.7	14.2
July	100	744	7.4	28.7	10.8	21.5	17.4
August	100	744	7.5	26.4	12.0	20.2	15.8
September	100	720	0.5	28.0	2.9	20.6	11.1
October	100	744	-5.9	19.2	-4.2	12.8	2.6
November	100	720	-19.1	3.0	-17.0	-0.7	-10.7
December	100	744	-34.3	7.7	-31.4	4.9	-10.5
Annual	99.99	8759	-34.3	28.7	-31.4	21.5	2.2



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.8	4.5	-31.3	2.0	-13.1
February	99.85	671	-31.4	11.3	-26.8	7.0	-12.6
March	100	744	-33.2	9.6	-27.0	5.0	-9.8
April	100	720	-15.3	14.6	-8.5	9.1	0.4
May	100	744	0.4	28.6	1.8	21.7	10.8
June	100	720	2.7	25.3	7.6	19.9	14.3
July	100	744	4.3	28.7	10.1	23.1	17.6
August	100	744	4.6	27.8	10.7	22.2	16.3
September	99.86	719	-0.1	28.6	2.6	21.9	10.6
October	100	744	-6.2	19.9	-3.4	12.5	0.9
November	100	720	-23.1	-1.8	-17.5	-3.7	-13.0
December	100	744	-38.0	1.9	-34.0	0.0	-14.5
Annual	99.98	8758	-38.0	28.7	-34.0	23.1	0.7



Wood Buffalo Environmental Association - MacKay River (AMS 20)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-38.2	6.5	-29.3	2.3	-12.6
February	100	672	-34.3	13.8	-28.1	7.1	-11.1
March	100	744	-35.1	12.0	-25.9	6.0	-8.6
April	100	720	-17.6	15.7	-7.0	8.2	0.7
May	100	744	-2.6	30.7	2.1	22.2	11.1
June	99.86	719	-0.4	27.6	9.5	21.2	14.6
July	100	744	3.2	31.8	11.0	22.7	18.0
August	100	744	0.1	29.8	11.5	22.8	16.2
September	100	720	-4.2	30.2	3.2	21.3	10.6
October	100	744	-9.4	22.4	-3.6	13.3	2.1
November	100	720	-24.1	0.9	-18.2	-2.5	-12.2
December	100	744	-38.8	3.9	-35.0	1.0	-13.1
Annual	99.99	8759	-38.8	31.8	-35.0	22.8	1.4



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.6	7.2	-29.3	3.6	-11.7
February	100	672	-35.6	13.1	-28.6	6.0	-9.9
March	100	744	-36.9	12.0	-26.6	4.3	-7.6
April	100	720	-15.2	16.1	-6.2	7.8	1.3
May	100	744	-4.9	29.2	1.3	20.6	10.8
June	100	720	0.5	26.5	10.0	20.2	14.2
July	100	744	7.0	30.1	11.7	21.0	17.3
August	100	744	1.7	27.4	11.9	21.0	15.5
September	100	720	-3.8	28.8	3.5	17.7	10.5
October	100	744	-8.2	20.0	-3.4	13.2	2.5
November	100	720	-23.5	3.7	-16.3	-0.3	-10.4
December	100	744	-36.2	7.5	-32.8	5.1	-10.9
Annual	100	8760	-37.6	30.1	-32.8	21.0	1.9



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.9	8.1	-28.4	3.5	-11.3
February	100	672	-32.3	13.9	-26.3	6.7	-9.6
March	100	744	-32.9	12.9	-24.5	5.4	-7.1
April	100	720	-11.4	17.1	-5.4	10.4	2.1
May	100	744	-2.7	29.9	2.1	20.8	11.7
June	100	720	1.1	26.8	10.3	19.8	14.6
July	100	744	4.6	29.9	11.6	21.6	17.7
August	100	744	4.8	27.5	12.2	20.2	15.8
September	100	720	-2.1	28.8	4.3	18.4	11.0
October	100	744	-6.2	21.5	-2.8	13.9	2.9
November	100	720	-20.3	3.5	-15.1	-0.5	-10.4
December	100	744	-35.9	8.3	-32.2	4.9	-10.9
Annual	100	8760	-35.9	29.9	-32.2	21.6	2.3



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
June	100	720	6.0	29.5	10.9	22.4	16.4
July	100	744	7.5	31.1	13.3	24.1	19.7
August	100	744	6.5	30.5	13.6	24.1	18.2
September	100	720	-0.7	30.9	4.5	21.4	12.2
October	100	744	-5.1	22.6	-1.7	13.5	3.1
November	100	720	-21.2	-0.4	-18.3	-4.2	-11.6
December	100	744	-39.9	4.7	-34.7	1.6	-14.4
Annual	100	5136	-39.9	31.1	-34.7	24.1	6.2

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
September	100	288	2.3	24.4	3.1	16.4	9.6
October	100	744	-5.3	21.0	-3.4	14.4	2.5
November	100	720	-19.3	3.5	-16.5	-1.0	-11.3
December	100	744	-32.9	6.3	-30.4	3.9	-10.5
Annual	100	2496	-32.9	24.4	-30.4	16.4	-4.5

*This parameter became operational on September 19



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS 25)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
July	99.37	630	6.2	31.8	13.0	24.2	19.5
August	100	744	4.4	31.5	13.3	24.0	17.9
September	99.72	718	-2.4	32.1	4.2	20.9	11.8
October	100	744	-5.9	23.8	-1.6	14.1	3.2
November	100	720	-22.1	0.3	-18.1	-4.2	-11.6
December	100	744	-42.7	4.1	-36.1	1.3	-14.9
Annual	99.8	4300	-42.7	32.1	-36.1	24.2	4.0

*This parameter became operational on July 5



Wood Buffalo Environmental Association - Christina Lake (AMS 500)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.1	8.3	-27.3	4.2	-10.9
February	100	672	-35.1	14.1	-27.6	6.8	-9.1
March	100	744	-33.7	12.2	-24.5	5.2	-6.9
April	100	720	-15.4	15.9	-6.2	9.9	1.7
May	100	744	-3.3	28.8	1.4	21.8	11.6
June	100	720	1.6	26.1	10.4	19.8	14.7
July	100	744	8.4	29.2	11.7	22.4	18.1
August	100	744	3.9	26.9	12.4	21.5	16.4
September	100	720	-3.4	28.4	4.1	19.5	11.4
October	100	744	-5.6	20.7	-2.9	14.2	3.2
November	100	720	-22.1	3.6	-15.5	-0.2	-9.9
December	100	744	-33.7	8.6	-31.1	5.5	-10.1
Annual	100	8760	-35.1	29.2	-31.1	22.4	2.6



Wood Buffalo Environmental Association - Leismer (AMS 501)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
October	100	744	-7.3	20.8	-4.4	12.2	2.2
November	100	720	-20.8	2.8	-17.0	-2.0	-11.3
December	100	744	-35.2	6.5	-32.5	3.5	-11.3
Annual	100	2456	-35.2	23.6	-32.5	15.7	-5.1

*This parameter became operational on October 1



Wood Buffalo Environmental Association - Surmont (AMS 502)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.8	6.7	-26.8	4.5	-10.1
February	100	672	-27.1	14.7	-23.2	9.8	-9.5
March	100	744	-27.9	11.4	-23.2	6.0	-7.6
April	100	720	-10.1	15.0	-5.5	10.0	1.3
May	100	744	-0.2	29.0	0.8	21.1	11.6
June	100	720	5.1	25.3	9.5	20.6	14.9
July	100	744	6.4	29.0	11.0	22.6	18.2
August	100	744	8.5	26.5	11.8	21.4	16.6
September	100	448	2.8	27.9	5.2	22.3	12.7
Annual	100	6280	-32.8	29.0	-26.8	22.6	5.2

*This parameter commenced operation on September 19



Wood Buffalo Environmental Association - Sawbones Bay (AMS 505)
Annual Summary for the Year 2017
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
July	100	744	7.5	29.4	11.6	22.4	18.1
August	100	744	4.4	27.1	13.0	21.6	16.6
September	100	720	-2.7	29.0	3.7	20.0	11.5
October	100	744	-4.5	20.5	-3.6	13.6	2.9
November	100	720	-20.4	3.6	-15.9	-0.1	-10.3
December	100	744	-34.4	7.1	-31.6	4.6	-10.7
Annual	100	4416	-34.4	29.4	-31.6	22.4	4.7

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

RELATIVE HUMIDITY ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	52.2	96.5	67.3	93.7	78.1
February	100	672	36.6	95.6	50.3	89.9	69.8
March	100	744	24.9	97.0	49.1	88.3	65.5
April	100	720	14.6	97.6	37.9	81.0	58.3
May	100	744	15.6	98.3	38.6	93.0	54.0
June	100	720	20.7	98.0	43.7	90.6	64.0
July	100	744	24.2	98.7	42.2	76.7	62.4
August	100	744	22.5	98.6	46.7	89.2	62.1
September	100	720	20.7	98.6	47.6	91.9	69.7
October	100	744	27.2	98.6	45.0	97.9	74.5
November	100	720	50.2	95.5	64.3	91.3	77.0
December	100	744	59.7	97.3	65.6	91.8	79.6
Annual	100	8760	14.6	98.7	37.9	97.9	67.9



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	52.8	98.3	70.3	94.9	81.2
February	100	672	42.7	98.3	54.0	89.6	72.7
March	100	744	28.2	98.5	47.1	89.7	67.3
April	100	720	17.6	99.2	36.8	81.9	59.3
May	100	744	18.4	98.0	31.5	93.2	53.4
June	100	720	21.6	99.5	40.1	91.4	63.2
July	100	744	26.2	99.0	42.9	78.7	61.5
August	100	744	24.3	98.7	42.4	87.4	61.2
September	100	720	23.3	99.7	47.2	93.7	67.6
October	100	744	28.7	100.0	44.2	99.2	75.3
November	100	720	53.1	94.7	66.5	89.7	79.6
December	100	744	54.7	99.2	67.1	93.3	80.9
Annual	100	8760	17.6	100.0	31.5	99.2	68.6



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Relative Humidity 20 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	49.0	97.5	66.5	93.1	79.1
February	100	672	37.4	97.3	50.3	86.8	71.1
March	100	744	30.5	98.2	45.7	86.1	65.5
April	100	720	18.5	98.4	38.9	82.1	58.1
May	99.33	739	17.5	97.9	33.1	89.7	53.4
June	100	720	22.0	98.9	41.8	86.8	62.6
July	100	744	24.1	98.8	41.7	77.7	61.3
August	100	744	23.5	99.3	43.0	86.3	60.8
September	96.25	693	22.0	99.2	49.2	90.2	67.4
October	99.87	743	30.2	99.7	43.7	97.3	72.9
November	100	720	49.0	92.1	62.0	86.2	76.3
December	100	744	57.3	98.1	66.6	92.7	80.1
Annual	99.62	8727	17.5	99.7	33.1	97.3	67.4

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Relative Humidity 45 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	47.7	97.1	64.1	92.9	77.7
February	100	672	37.1	96.8	48.6	86.4	69.7
March	100	744	29.0	96.8	44.6	84.3	64.3
April	100	720	17.9	97.7	36.3	80.6	56.9
May	99.33	739	17.4	96.4	31.8	88.5	51.9
June	100	720	21.0	98.3	40.8	84.7	61.0
July	100	744	23.0	98.2	40.7	76.7	60.0
August	82.26	612	25.2	98.7	42.3	85.5	61.3
September	38.47	277	31.5	98.3	55.2	88.5	71.5
October	95.7	712	30.2	99.8	43.0	98.2	73.2
November	100	720	49.5	92.1	61.7	86.1	76.0
December	100	744	57.7	97.9	64.4	91.2	79.0
Annual	93.01	8148	17.4	99.8	31.8	98.2	66.7



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Relative Humidity 100m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	47.2	95.1	59.3	92.8	77.6
February	100	672	34.4	96.8	45.7	87.8	69.1
March	100	744	22.8	96.2	44.7	84.7	64.4
April	100	720	15.0	98.1	33.2	78.1	56.3
May	99.33	739	17.5	95.1	29.2	88.8	49.6
June	100	720	20.6	97.6	36.0	84.8	59.1
July	100	744	22.5	98.7	40.5	74.8	57.9
August	100	744	22.3	96.1	40.3	85.0	57.2
September	96.25	693	21.8	98.6	45.4	88.7	63.7
October	99.87	743	27.5	99.7	40.4	98.0	71.8
November	100	720	50.1	93.6	61.7	86.8	76.5
December	100	744	52.9	97.4	59.7	88.5	77.1
Annual	99.62	8727	15.0	99.7	29.2	98.0	65.0

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Relative Humidity 167m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	46.5	94.4	57.1	91.9	76.6
February	100	672	34.1	97.1	45.2	88.6	68.6
March	100	744	22.8	96.4	45.9	86.0	64.7
April	100	720	13.4	97.9	32.2	77.4	56.4
May	99.33	739	18.1	95.4	27.4	89.8	48.7
June	100	720	20.6	97.6	34.6	85.6	58.0
July	100	744	22.6	98.4	40.9	72.4	56.8
August	100	744	22.5	94.3	40.0	84.1	55.9
September	99.03	713	22.6	98.6	43.2	90.4	62.0
October	99.87	743	25.6	99.3	39.4	97.2	71.8
November	100	720	49.9	93.8	62.2	88.7	76.8
December	100	744	46.9	98.4	56.4	87.8	75.6
Annual	99.85	8747	13.4	99.3	27.4	97.2	64.3



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	47.6	96.9	64.1	93.7	79.3
February	100	672	37.6	97.4	48.8	90.7	71.3
March	100	744	25.5	97.9	44.6	88.4	67.2
April	100	720	17.9	98.7	38.7	83.0	61.0
May	99.33	739	19.1	98.3	32.5	92.4	54.1
June	100	720	22.4	97.9	44.6	90.4	65.3
July	100	744	25.9	99.0	43.5	80.8	62.8
August	100	744	23.8	98.1	45.7	87.3	61.9
September	100	720	22.7	98.3	47.0	93.8	67.6
October	100	744	27.1	99.0	41.7	97.6	74.7
November	100	720	52.9	93.1	65.2	89.6	78.7
December	100	744	55.8	98.8	61.0	92.6	79.1
Annual	99.94	8755	17.9	99.0	32.5	97.6	68.6



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Relative Humidity 2 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	50.6	95.4	69.9	93.4	80.0
February	100	672	40.2	96.4	51.2	88.8	71.2
March	100	744	27.5	94.8	45.8	86.3	66.1
April	98.75	711	17.5	98.2	36.7	78.6	58.4
May	100	744	17.5	96.1	29.7	89.6	51.5
June	100	720	24.0	97.2	41.9	93.2	63.6
July	100	744	25.5	97.9	42.8	80.8	62.6
August	100	744	24.4	96.7	43.2	87.7	62.5
September	100	720	22.2	97.4	46.5	91.8	66.6
October	100	744	29.2	98.0	42.4	94.7	75.3
November	100	720	54.4	91.8	66.8	87.7	78.1
December	100	744	56.1	97.0	63.5	92.5	80.1
Annual	99.9	8751	17.5	98.2	29.7	94.7	68.0

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Relative Humidity 20 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	96.37	717	45.6	94.8	62.0	92.4	77.9
February	98.36	661	36.2	96.5	46.5	88.7	69.1
March	100	744	22.9	94.8	43.8	85.9	65.0
April	98.75	711	15.9	97.9	33.9	77.0	57.0
May	100	744	18.2	92.9	29.0	88.6	49.4
June	100	720	20.6	95.7	38.0	88.2	59.4
July	100	744	21.6	98.4	40.0	77.0	58.1
August	100	744	22.8	94.7	40.9	85.2	57.9
September	100	720	21.9	98.1	44.2	89.4	63.1
October	100	744	27.5	98.3	40.2	96.1	72.9
November	100	720	50.4	92.2	63.7	87.2	76.6
December	95.43	710	52.0	97.2	56.8	88.9	77.9
Annual	99.08	8679	15.9	98.4	29.0	96.1	65.3



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Relative Humidity 45 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	45.2	94.8	59.1	92.2	77.0
February	100	672	34.5	97.0	45.6	89.4	68.8
March	100	744	21.4	96.0	43.6	86.6	65.0
April	98.75	711	15.1	98.2	32.8	77.3	57.1
May	100	744	18.0	94.0	28.0	89.6	48.8
June	100	720	20.4	97.4	34.5	87.8	58.7
July	100	744	21.2	98.7	39.8	75.8	57.3
August	100	744	22.7	94.8	40.8	85.1	57.1
September	100	720	22.1	98.4	44.1	89.7	62.5
October	100	744	26.0	98.6	39.6	96.7	72.7
November	100	720	50.1	93.3	63.5	87.4	76.9
December	100	744	50.8	97.9	54.6	88.7	76.7
Annual	99.9	8751	15.1	98.7	28.0	96.7	64.9

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Relative Humidity 75 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	45.3	94.5	57.4	91.4	76.5
February	100	672	34.0	96.8	44.2	89.8	68.8
March	100	744	21.3	96.3	43.9	87.5	65.3
April	98.75	711	14.6	98.0	32.2	77.6	57.3
May	100	744	18.1	94.4	26.8	90.3	48.5
June	100	720	20.6	97.7	33.7	87.5	58.2
July	100	744	21.2	98.3	39.9	73.7	56.7
August	100	744	22.9	94.4	40.5	84.3	56.2
September	100	720	22.3	98.2	43.5	89.7	61.7
October	100	744	25.9	98.2	39.2	96.4	72.5
November	100	720	50.4	93.1	63.8	88.6	77.2
December	100	744	49.8	97.7	53.8	87.8	75.8
Annual	99.9	8751	14.6	98.3	26.8	96.4	64.5



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Relative Humidity 90 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	45.6	94.5	57.0	91.2	76.4
February	100	672	33.5	96.7	43.2	90.0	68.8
March	100	744	21.4	96.7	44.0	88.1	65.5
April	98.47	709	14.3	98.1	32.0	78.3	57.6
May	100	744	18.3	94.6	26.5	91.0	48.5
June	100	720	20.8	98.1	33.6	87.7	58.2
July	100	744	21.3	98.4	39.9	73.4	56.7
August	100	744	22.9	94.3	40.5	84.1	56.0
September	100	720	22.5	98.4	43.0	90.2	61.7
October	100	744	25.9	98.2	39.2	96.2	72.5
November	100	720	50.6	93.4	64.1	89.2	77.4
December	100	744	49.5	97.7	53.7	87.7	75.6
Annual	99.87	8749	14.3	98.4	26.5	96.2	64.6



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	45.9	96.3	63.0	94.0	77.6
February	100	672	35.6	96.7	47.8	85.9	69.1
March	100	744	23.5	96.8	45.9	85.4	65.2
April	100	720	18.6	99.0	40.6	89.2	61.6
May	100	744	18.0	96.6	32.2	92.1	52.0
June	100	720	22.4	99.2	38.7	88.5	60.7
July	100	744	24.9	99.7	40.4	80.6	60.0
August	100	744	23.8	99.6	44.4	88.3	61.2
September	100	720	21.6	99.1	49.7	92.9	65.3
October	100	744	26.4	99.2	45.3	94.2	73.9
November	100	720	51.6	93.5	65.6	89.6	77.1
December	100	744	43.4	99.0	54.2	90.7	76.6
Annual	100	8760	18.0	99.7	32.2	94.2	66.7



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	48.7	96.2	67.4	92.3	79.0
February	100	672	35.0	96.9	47.3	87.7	71.0
March	99.87	743	27.4	97.1	42.9	82.8	64.8
April	100	720	19.0	98.6	44.8	82.9	61.2
May	100	744	16.5	95.8	32.5	87.8	52.4
June	100	720	21.3	98.4	40.0	85.7	61.3
July	100	744	25.5	97.5	39.2	78.2	60.0
August	100	744	24.1	96.8	45.3	85.3	61.7
September	100	720	20.4	96.8	50.6	89.8	66.3
October	99.87	743	26.1	98.8	44.8	93.8	73.5
November	100	720	48.6	91.9	60.6	85.0	74.9
December	100	744	51.8	96.8	66.8	93.4	79.6
Annual	99.98	8758	16.5	98.8	32.5	93.8	67.1



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	65.6	98.6	70.7	96.8	83.5
February	100	672	48.0	99.6	63.9	92.9	78.3
March	100	744	39.3	100.0	56.9	94.0	70.8
April	100	720	19.7	95.6	44.6	77.0	60.5
May	100	744	15.8	97.9	39.2	81.4	59.8
June	100	720	23.5	100.0	46.0	85.4	63.7
July	99.73	742	24.4	100.0	46.3	86.3	66.6
August	100	744	24.7	98.7	48.3	90.2	65.2
September	100	720	32.4	98.0	50.3	92.7	72.0
October	100	744	36.0	98.6	61.9	98.0	83.8
November	100	720	54.4	91.7	67.2	85.7	80.8
December	100	744	65.5	95.0	71.0	91.2	82.1
Annual	99.98	8758	15.8	100.0	39.2	98.0	72.2



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	55.6	98.1	71.5	95.3	81.2
February	100	672	38.7	97.5	51.7	91.8	72.1
March	100	744	23.5	98.4	48.2	89.6	67.1
April	100	720	14.2	98.3	37.7	82.5	58.4
May	100	744	16.4	98.8	32.8	96.7	54.4
June	100	720	21.1	98.6	41.5	92.8	64.1
July	100	744	25.2	98.8	43.4	77.3	62.0
August	100	744	22.2	98.5	44.1	89.3	61.6
September	100	720	21.5	99.1	48.8	91.4	68.7
October	100	744	27.9	99.3	46.2	98.7	75.4
November	100	720	52.8	93.9	66.6	88.9	79.4
December	100	744	62.2	98.5	70.5	95.0	82.6
Annual	100	8760	14.2	99.3	32.8	98.7	68.9



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	52.8	96.2	69.5	92.8	79.1
February	100	672	40.0	96.1	51.3	87.8	71.8
March	100	744	27.3	98.0	50.2	87.7	67.3
April	100	720	17.4	97.7	41.8	81.9	60.0
May	99.73	742	18.1	97.8	37.5	88.7	54.9
June	100	720	21.5	98.5	48.2	87.6	65.1
July	100	744	22.8	97.9	40.3	79.5	62.9
August	100	744	23.7	98.6	48.4	87.2	63.0
September	100	720	20.3	98.4	47.9	88.9	69.2
October	100	744	29.7	98.6	46.1	95.1	74.1
November	100	720	51.0	93.4	63.3	85.1	76.7
December	100	744	59.3	97.3	69.8	93.9	80.8
Annual	99.98	8758	17.4	98.6	37.5	95.1	68.7



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	55.0	97.3	69.9	94.5	80.5
February	100	672	37.5	96.3	51.3	91.1	72.3
March	100	744	22.9	96.9	47.4	89.3	67.5
April	100	720	13.4	97.7	39.6	81.9	60.4
May	100	744	17.5	98.0	38.3	93.2	55.4
June	100	720	19.7	97.5	43.1	91.1	64.9
July	100	744	24.9	98.2	42.5	76.2	63.1
August	100	744	23.0	98.2	47.4	89.0	63.3
September	100	720	21.5	98.0	50.3	91.1	71.3
October	100	744	27.7	98.9	46.5	98.1	75.5
November	100	720	51.1	93.1	64.7	88.1	78.7
December	100	744	61.3	98.0	68.2	93.2	81.0
Annual	100	8760	13.4	98.9	38.3	98.1	69.5



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	42.9	95.9	58.2	92.7	78.4
February	100	672	29.6	96.8	45.9	89.8	70.5
March	100	744	30.1	98.6	47.8	91.4	66.9
April	100	720	22.0	98.6	43.1	94.3	65.4
May	100	744	18.4	98.5	28.7	96.1	53.9
June	100	720	23.9	98.6	42.9	89.6	64.9
July	100	744	28.7	97.9	41.4	80.8	63.1
August	100	744	25.7	98.5	48.3	87.9	63.5
September	100	720	24.1	98.5	47.7	95.6	67.1
October	100	744	30.0	98.5	41.9	97.3	76.0
November	100	720	53.3	94.7	68.3	88.6	79.9
December	100	744	47.9	98.2	53.8	90.0	76.9
Annual	100	8760	18.4	98.6	28.7	97.3	68.9



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	55.0	97.9	68.1	94.8	80.5
February	100	672	41.8	97.5	58.8	92.7	72.2
March	100	744	27.5	98.7	50.7	92.7	67.1
April	100	720	16.1	98.8	36.5	79.5	57.9
May	100	744	16.1	99.1	38.3	94.5	54.3
June	100	720	17.4	98.9	39.6	87.3	62.3
July	99.73	742	24.6	99.3	44.6	75.2	62.8
August	100	744	20.8	99.4	45.9	89.7	62.3
September	100	720	19.6	99.7	49.8	92.4	69.5
October	100	744	29.3	99.6	48.5	99.4	76.5
November	100	720	48.8	92.7	63.6	87.9	78.0
December	100	744	50.7	98.5	65.1	93.3	79.0
Annual	99.98	8758	16.1	99.7	36.5	99.4	68.5



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	53.8	98.8	72.0	96.0	83.0
February	100	672	44.4	97.6	61.0	88.9	74.0
March	100	744	30.1	98.4	47.0	90.7	69.1
April	100	720	18.2	97.9	41.1	80.4	59.3
May	100	744	18.4	99.3	36.7	93.1	55.5
June	100	720	21.8	98.5	43.0	91.0	64.6
July	100	744	26.9	98.8	47.0	76.2	64.3
August	100	744	24.7	98.6	45.0	90.8	64.6
September	100	720	22.6	99.3	51.2	89.3	70.0
October	100	744	31.1	100.0	49.6	98.6	76.9
November	100	720	53.3	96.0	68.2	90.9	79.8
December	98.79	735	65.2	98.8	71.7	94.9	83.6
Annual	99.9	8751	18.2	100.0	36.7	98.6	70.4



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	58.8	97.7	72.2	94.5	82.9
February	100	672	33.8	98.8	47.3	94.4	74.7
March	100	744	24.7	99.4	39.5	90.4	66.4
April	100	720	18.4	97.6	37.2	82.7	59.5
May	100	744	17.7	99.2	27.7	94.3	54.1
June	100	720	20.8	99.5	33.5	96.4	62.4
July	97.98	729	26.8	99.4	45.3	79.7	62.8
August	100	744	25.7	99.9	43.0	95.0	63.3
September	100	720	22.6	100.0	40.5	98.5	69.1
October	100	744	35.0	100.0	51.9	98.0	83.2
November	100	720	62.4	95.9	76.3	92.7	83.9
December	100	744	67.8	99.6	71.7	94.6	84.2
Annual	99.83	8745	17.7	100.0	27.7	98.5	70.6



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	50.8	97.1	64.3	93.5	78.0
February	100	672	32.2	98.8	46.7	95.1	72.7
March	100	744	25.9	98.6	49.2	95.7	69.1
April	100	720	25.7	99.5	37.7	97.3	70.4
May	99.87	743	17.3	100.0	33.7	98.7	55.1
June	100	720	23.8	100.0	46.4	96.3	69.4
July	100	744	33.5	100.0	46.9	95.8	71.1
August	100	744	29.5	100.0	55.0	91.5	71.7
September	100	720	26.7	99.8	52.5	99.0	70.1
October	100	744	29.0	99.4	44.2	98.7	75.3
November	100	720	51.0	97.6	69.3	91.2	82.5
December	100	744	35.2	99.7	45.6	90.3	75.5
Annual	99.99	8759	17.3	100.0	33.7	99.0	71.7



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	62.9	97.4	72.8	92.7	83.3
February	99.85	671	34.0	98.9	48.7	93.9	75.9
March	100	744	29.0	99.7	43.2	93.0	69.0
April	100	720	19.4	98.2	37.9	88.1	60.8
May	100	744	17.9	98.6	27.7	94.3	53.6
June	100	720	21.2	99.3	33.3	96.8	62.6
July	100	744	26.2	99.8	44.7	82.4	63.4
August	100	744	27.1	99.4	43.8	94.8	62.7
September	99.86	719	24.7	99.9	41.8	98.9	69.5
October	100	744	35.5	100.0	52.6	98.0	84.5
November	100	720	67.4	96.7	79.2	92.4	85.5
December	100	744	69.1	99.5	71.8	94.4	84.2
Annual	99.98	8758	17.9	100.0	27.7	98.9	71.2



Wood Buffalo Environmental Association - MacKay River (AMS 20)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	54.9	96.9	70.2	93.8	81.1
February	100	672	31.1	98.0	51.6	90.3	72.2
March	100	744	23.0	98.8	48.6	90.8	68.2
April	100	720	18.1	97.9	39.1	94.3	66.1
May	100	744	19.6	98.9	31.0	96.2	56.6
June	99.86	719	21.7	98.4	40.9	93.3	65.3
July	100	744	23.9	99.1	42.9	79.5	63.4
August	100	744	24.7	98.9	45.2	93.1	64.6
September	100	720	21.2	99.5	48.4	96.3	70.1
October	100	744	26.0	98.8	48.6	96.1	77.9
November	100	720	57.3	94.7	74.0	92.0	82.1
December	100	744	59.1	98.5	70.2	92.1	81.0
Annual	99.99	8759	18.1	99.5	31.0	96.3	70.7



Wood Buffalo Environmental Association - Conklin (AMS 21)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	50.3	95.2	62.2	91.5	76.7
February	100	672	31.2	98.0	45.3	92.6	71.4
March	100	744	28.3	97.9	51.8	92.8	67.9
April	100	720	26.9	98.2	52.2	96.4	70.4
May	100	744	17.3	99.0	37.0	97.1	60.0
June	100	720	22.4	99.1	45.1	93.1	69.4
July	100	744	30.7	99.1	46.5	94.8	70.2
August	100	744	25.6	98.8	52.5	90.8	71.5
September	100	720	26.0	98.3	50.9	96.1	71.8
October	100	744	28.7	98.5	48.0	97.6	76.3
November	100	720	48.6	95.5	67.5	88.4	79.1
December	100	744	37.4	97.4	46.4	86.8	73.5
Annual	100	8760	17.3	99.1	37.0	97.6	71.5



Wood Buffalo Environmental Association - Janvier (AMS 22)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	50.3	96.1	62.9	92.3	76.1
February	100	672	29.4	97.7	43.6	90.3	69.0
March	100	744	24.0	98.4	50.3	89.2	64.6
April	100	720	22.8	98.4	37.9	96.0	65.7
May	100	744	15.7	98.5	34.9	95.1	56.2
June	100	720	21.2	98.8	48.6	91.3	69.9
July	100	744	31.3	98.8	46.3	93.6	71.2
August	100	744	28.2	98.9	59.5	91.6	73.6
September	100	720	25.8	98.1	51.4	95.7	72.3
October	100	744	26.9	99.0	45.6	98.6	75.8
November	100	720	47.2	95.8	68.2	87.9	78.1
December	100	744	38.0	97.2	47.7	84.0	73.8
Annual	100	8760	15.7	99.0	34.9	98.6	70.5



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
June	100	720	20.3	96.1	39.9	83.8	60.1
July	100	744	26.9	98.6	45.9	72.0	61.2
August	100	744	21.6	95.5	45.1	87.1	61.2
September	100	720	22.7	98.5	49.9	90.5	68.2
October	100	744	31.0	98.8	48.8	98.5	75.2
November	100	720	52.7	94.2	64.0	89.7	78.0
December	100	744	49.0	97.4	68.2	92.4	79.4
Annual	100	5136	20.3	98.8	39.9	98.5	69.0

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
September	100	288	28.8	99.0	52.8	96.7	75.0
October	100	744	30.6	98.5	41.5	97.2	74.7
November	100	720	49.2	95.3	72.8	90.7	80.8
December	100	744	43.7	97.8	51.9	86.1	74.4
Annual	100	2496	28.8	99.0	41.5	97.2	76.4

*This parameter became operational on September 19



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS 25)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
July	99.37	630	25.1	98.0	47.7	74.8	62.4
August	100	744	21.6	98.3	47.0	89.0	62.1
September	99.72	718	21.1	98.1	47.9	90.9	69.9
October	100	744	27.1	98.7	45.0	97.7	74.3
November	100	720	49.0	94.8	62.9	90.5	77.3
December	100	744	60.1	98.0	68.5	92.4	81.0
Annual	99.85	4300	21.1	98.7	45.0	97.7	71.4

*This parameter became operational on July 5



Wood Buffalo Environmental Association - Christina Lake (AMS500)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	46.1	95.5	57.8	92.1	76.2
February	100	672	30.7	98.1	45.0	92.0	70.4
March	100	744	26.7	98.0	50.6	92.7	67.2
April	100	720	29.1	98.3	43.4	96.8	69.6
May	100	744	18.9	98.2	34.7	96.7	56.8
June	100	720	23.3	98.4	46.1	91.9	66.5
July	100	744	30.3	98.7	43.2	90.6	66.8
August	100	744	26.6	97.9	50.4	88.2	67.2
September	100	720	26.7	96.8	53.0	94.4	68.1
October	100	744	29.9	98.6	44.6	97.8	73.6
November	100	720	53.2	97.1	66.8	93.4	79.0
December	100	744	35.1	96.3	44.7	84.4	72.7
Annual	100	8760	18.9	98.7	34.7	97.8	69.5



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
October	100	744	31.4	99.2	48.6	98.1	77.0
November	100	720	59.5	96.0	73.4	90.0	83.2
December	100	744	40.9	97.8	51.5	91.3	78.1
Annual	100	2456	31.4	99.7	48.6	98.1	79.0

*This parameter became operational on October 1



Wood Buffalo Environmental Association - Surmont (AMS 502)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	48.5	94.9	63.2	90.9	78.5
February	100	672	27.8	98.3	42.1	94.1	73.0
March	100	744	29.2	99.6	47.2	95.3	69.1
April	100	720	24.7	99.5	38.1	97.2	67.3
May	100	744	19.5	99.9	29.2	98.7	53.6
June	100	720	24.4	100.0	42.1	90.2	63.6
July	100	744	31.6	99.6	44.5	86.3	63.9
August	100	744	28.3	99.8	43.4	88.4	64.6
September	100	448	26.5	99.5	44.6	78.6	61.1
Annual	100	6280	19.5	100.0	29.2	98.7	66.3



Wood Buffalo Environmental Association - Sawbones Bay (AMS 505)
Annual Summary for the Year 2017
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
July	100	744	28.5	98.2	42.2	92.8	66.0
August	100	744	25.5	98.3	49.5	89.1	65.8
September	100	720	24.7	96.9	50.2	94.5	66.8
October	100	744	27.5	97.2	42.9	96.8	74.4
November	100	720	48.9	94.4	66.7	89.3	77.7
December	100	744	39.3	95.7	46.7	84.6	72.4
Annual	100	4416	24.7	98.3	42.2	96.8	70.5

* This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

BAROMETRIC PRESSURE ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2017
Barometric Pressure (in Hg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	29.0	29.6	29.5
Feb	100	672	28.9	29.6	29.5
Mar	99.87	743	29.1	29.9	29.8
Apr	100	720	29.0	29.5	29.5
May	100	744	28.9	29.3	29.3
Jun	100	720	28.8	29.3	29.2
Jul	100	744	28.9	29.3	29.2
Aug	100	744	28.9	29.4	29.4
Sep	100	720	28.9	29.4	29.3
Oct	99.87	743	28.9	29.4	29.3
Nov	100	720	29.0	29.6	29.5
Dec	99.87	743	29.1	29.9	29.8
Annual	99.97	8757	29.0	29.9	29.8



Wood Buffalo Environmental Association - Muskeg River (AMS 16)
Annual Summary for the Year 2017
Barometric Pressure (in Hg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	28.9	29.5	29.4
Feb	100	672	28.8	29.5	29.4
Mar	100	744	29.0	29.8	29.7
Apr	100	720	28.9	29.5	29.4
May	100	744	28.8	29.2	29.2
Jun	100	720	28.7	29.2	29.1
Jul	100	744	28.8	29.2	29.1
Aug	100	744	28.8	29.3	29.3
Sep	100	720	28.8	29.3	29.2
Oct	100	744	28.8	29.3	29.2
Nov	100	720	28.9	29.5	29.4
Dec	99.87	743	29.0	29.8	29.7
Annual	99.99	8759	28.9	29.8	29.7



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SOLAR RADIATION ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	25.9	299.7	59.3
Feb	100	672	57.8	468.5	124.2
Mar	100	744	113.9	632.1	177.6
Apr	100	720	169.6	757.6	251.1
May	100	744	239.3	897.9	348.8
Jun	100	720	230.9	989.6	355.3
Jul	100	744	246.2	896.6	336.9
Aug	100	744	202.5	801.9	298.3
Sep	100	720	130.4	669.0	221.6
Oct	100	744	53.6	463.9	122.5
Nov	100	720	25.5	285.0	58.0
Dec	100	744	15.5	203.4	33.3
Annual	100	8760	126.3	989.6	355.3



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	26.3	310.4	61.0
Feb	100	672	66.7	560.5	146.3
Mar	100	744	137.5	670.2	196.3
Apr	100	720	228.5	823.5	305.3
May	100	744	282.1	909.8	384.5
Jun	99.31	715	264.1	935.6	395.3
Jul	100	744	249.7	919.2	367.7
Aug	100	744	224.8	859.7	326.9
Sep	100	720	133.7	678.9	222.0
Oct	100	744	49.8	507.4	136.6
Nov	100	720	28.5	323.5	66.5
Dec	100	744	20.2	244.5	44.6
Annual	99.94	8755	143.0	935.6	395.3



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	25.9	315.9	58.6
Feb	100	672	56.3	528.5	131.2
Mar	100	744	118.4	625.7	182.5
Apr	100	720	183.2	843.7	264.7
May	100	744	249.2	923.7	365.0
Jun	100	720	239.1	930.2	369.0
Jul	99.73	742	250.8	913.8	354.1
Aug	100	744	211.4	834.5	313.4
Sep	100	720	136.3	701.4	224.3
Oct	100	744	54.6	493.6	124.9
Nov	100	720	25.4	286.3	56.6
Dec	100	744	15.2	216.7	30.5
Annual	99.98	8758	130.9	930.2	369.0



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	29.8	377.5	69.7
Feb	100	672	67.2	619.3	153.8
Mar	100	744	130.5	775.2	227.7
Apr	100	720	168.6	891.7	269.3
May	100	744	229.2	967.9	354.9
Jun	100	720	222.1	989.2	339.8
Jul	100	744	242.7	1007.6	348.0
Aug	100	744	196.2	888.4	296.1
Sep	100	720	146.3	753.8	234.9
Oct	100	744	66.2	554.2	151.7
Nov	100	720	24.0	371.4	69.3
Dec	100	744	27.6	294.9	46.1
Annual	100	8760	129.6	1007.6	354.9



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

PRECIPITATION ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	1.5	0.2	0.4
Feb	100	672	0.8	0.2	0.4
Mar	100	744	5.5	0.9	1.9
Apr	100	720	7.2	0.9	3.5
May	99.87	743	50.8	3.5	21.8
Jun	100	720	76.1	14.0	22.8
Jul	100	744	18.8	2.3	4.8
Aug	100	744	23.3	5.9	8.6
Sep	100	720	31.8	3.6	12.4
Oct	100	744	24.2	2.4	12.8
Nov	90.14	649	39.9	4.1	15.5
Dec	90.46	673	25.7	2.6	12.1
Annual	98.37	8617	305.6	14.0	22.8



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	0	0	-	-	-
Feb	69.2	465	3.3	0.5	2.5
Mar	100	744	0.3	0.3	0.3
Apr	100	720	1.3	0.5	1.3
May	100	744	9.9	1.0	2.3
Jun	100	720	31.0	11.4	17.5
Jul	100	744	26.4	5.6	6.9
Aug	100	744	57.7	9.9	24.4
Sep	100	720	16.3	2.3	7.6
Oct	74.87	557	25.7	2.3	6.1
Nov	0	0	-	-	-
Dec	75.81	564	1.5	0.3	0.8
Annual	76.74	6722	173.2	11.4	24.4



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	0.0	0.0	0.0
Feb	100	672	2.8	0.5	2.0
Mar	100	744	3.8	1.0	1.5
Apr	100	720	16.8	2.3	13.0
May	100	744	23.1	2.5	11.2
Jun	100	720	27.7	7.9	9.7
Jul	100	744	14.7	5.3	5.8
Aug	100	744	8.6	2.3	2.8
Sep	100	720	5.1	0.8	2.5
Oct	100	744	10.2	0.8	3.0
Nov	100	720	17.5	1.0	6.1
Dec	100	744	7.6	0.8	2.5
Annual	100	8760	137.9	7.9	13.0



Wood Buffalo Environmental Association - Horizon (AMS 15)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	0.5	0.3	0.3
Feb	100	672	5.6	1.5	5.3
Mar	100	744	7.1	3.3	4.8
Apr	100	720	14.0	2.5	8.4
May	100	744	54.1	4.1	24.4
Jun	100	720	37.3	4.3	8.1
Jul	99.73	742	72.1	17.0	21.8
Aug	100	744	19.1	3.8	8.1
Sep	100	720	49.3	3.0	19.3
Oct	100	744	9.4	1.5	5.8
Nov	100	720	41.7	4.1	24.6
Dec	100	744	15.2	2.8	8.4
Annual	99.98	8758	325.4	17.0	24.6



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	42.34	315	2.5	0.5	0.9
Feb	100	672	0.0	0.0	0.0
Mar	100	744	4.8	1.1	1.7
Apr	100	720	15.9	3.9	6.3
May	99.87	743	35.5	4.2	14.1
Jun	100	720	89.9	14.2	27.1
Jul	97.98	729	25.2	8.5	8.5
Aug	100	744	30.8	3.3	9.6
Sep	100	720	44.9	5.4	26.9
Oct	100	744	60.7	4.4	18.0
Nov	90	648	50.0	4.5	22.1
Dec	82.12	611	40.3	2.9	12.0
Annual	92.58	8110	400.6	14.2	27.1



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	4.6	1.2	2.3
Feb	100	672	18.6	2.1	11.8
Mar	100	744	17.4	2.8	8.8
Apr	100	720	57.1	2.6	22.0
May	100	744	46.5	2.7	21.3
Jun	99.86	719	111.8	18.2	31.5
Jul	100	744	104.4	6.6	26.1
Aug	100	744	30.2	3.0	8.2
Sep	100	720	187.4	30.2	59.9
Oct	99.6	741	114.1	10.3	28.6
Nov	100	720	18.0	1.1	8.2
Dec	100	744	12.7	1.9	4.4
Annual	99.95	8756	722.9	30.2	59.9



Wood Buffalo Environmental Association - McKay River (AMS 20)
Annual Summary for the Year 2017
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	99.73	742	3.2	0.5	1.3
Feb	100	672	0.9	0.2	0.4
Mar	99.87	743	8.6	1.9	3.3
Apr	100	720	38.6	1.8	24.1
May	99.87	743	48.5	5.6	20.3
Jun	99.86	719	62.9	6.1	22.9
Jul	100	744	25.3	5.9	6.8
Aug	100	744	27.4	4.3	12.4
Sep	100	720	64.2	5.9	37.0
Oct	100	744	58.6	4.5	15.5
Nov	90.14	649	41.6	3.9	17.4
Dec	75.4	561	14.9	1.2	5.2
Annual	97.04	8501	394.8	6.1	37.0



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SURFACE WETNESS ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	1.4	10.8	8.9
Feb	100	672	0.4	11.7	2.4
Mar	100	744	0.3	31.5	3.4
Apr	100	720	0.3	28.5	6.5
May	99.87	743	2.9	61.1	28.9
Jun	100	720	3.3	55.7	14.2
Jul	100	744	2.9	80.4	21.1
Aug	100	744	2.8	53.7	22.5
Sep	100	720	5.1	68.7	28.3
Oct	100	744	2.0	68.1	19.1
Nov	100	720	0.2	2.5	1.3
Dec	100	744	2.3	68.3	16.8
Annual	99.99	8759	2.0	80.4	28.9



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2017
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	3.5	26.3	9.1
Feb	100	672	1.5	15.1	9.7
Mar	100	744	0.2	8.3	1.2
Apr	100	720	0.1	16.7	1.7
May	99.87	743	0.9	27.5	5.7
Jun	99.72	718	1.5	54.3	9.4
Jul	100	744	1.2	31.9	5.3
Aug	100	744	1.4	32.9	7.6
Sep	100	720	1.8	43.6	11.8
Oct	100	744	3.3	70.5	11.7
Nov	100	720	0.6	2.4	1.7
Dec	100	744	1.8	13.4	8.0
Annual	99.97	8757	1.5	70.5	11.8



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	1.5	8.5	5.2
Feb	100	672	1.1	43.8	9.1
Mar	100	744	0.7	47.0	4.1
Apr	100	720	1.6	65.0	15.9
May	100	744	2.8	87.8	35.1
Jun	100	720	4.1	61.5	17.0
Jul	100	744	3.4	51.8	12.0
Aug	100	744	3.7	54.1	12.7
Sep	95.28	686	3.5	44.1	28.1
Oct	94.76	705	3.8	97.4	24.8
Nov	100	720	1.1	5.0	4.7
Dec	100	744	1.8	90.4	17.8
Annual	99.17	8687	2.4	97.4	35.1



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
Annual Summary for the Year 2017
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	100	744	3.0	14.5	5.7
Feb	100	672	2.6	33.3	6.8
Mar	100	744	2.2	21.7	5.2
Apr	100	720	3.1	65.3	11.7
May	100	744	3.2	73.0	26.4
Jun	100	720	5.5	46.7	15.6
Jul	100	744	5.0	43.7	18.3
Aug	100	744	4.5	33.5	14.7
Sep	100	720	5.7	36.5	28.8
Oct	100	744	4.1	49.4	16.8
Nov	100	720	2.6	4.9	3.4
Dec	100	744	3.1	41.2	11.1
Annual	100	8760	3.7	73.0	28.8



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

VERTICAL WIND SPEED ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Vertical Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	4.54	3.21	1.22	1.06	1.09	2.64	16.06	24.45	6.14	4.75	3.26	2.15	1.66	1.93	2.83	6.63	83.59
0.4 - 0.5	0.16	0.11	0.00	0.03	0.03	0.05	2.80	4.54	2.39	0.60	0.03	0.11	0.05	0.00	0.03	0.03	10.95
0.6 - 0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.76	1.41	1.82	0.03	0.00	0.00	0.00	0.00	0.00	0.00	4.02
0.8 - 1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.68	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.70	3.31	1.22	1.09	1.11	2.69	19.91	31.08	10.81	5.38	3.29	2.25	1.71	1.93	2.85	6.66	100.00

Total Number of Valid Hours 8695
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Vertical Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	4.71	4.43	1.65	1.67	2.03	2.99	7.89	7.99	4.14	2.70	2.58	3.09	1.75	1.39	2.11	5.31	56.44
0.4 - 0.5	0.12	0.17	0.07	0.10	0.19	1.08	5.84	7.58	1.53	0.38	0.10	0.22	0.14	0.10	0.05	0.02	17.68
0.6 - 0.7	0.07	0.02	0.00	0.02	0.05	0.26	4.31	6.08	0.91	0.10	0.00	0.05	0.07	0.00	0.00	0.00	11.94
0.8 - 1.4	0.02	0.00	0.00	0.00	0.02	0.07	3.23	8.68	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.02	13.16
1.5 - 10	0.00	0.02	0.00	0.00	0.00	0.00	0.19	0.43	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.93	4.64	1.72	1.79	2.30	4.40	21.46	30.77	7.70	3.18	2.68	3.35	1.96	1.48	2.15	5.36	99.88

Total Number of Valid Hours 7482
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Vertical Wind Speed 100 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	8.02	3.72	1.17	1.04	0.82	1.31	5.07	6.19	2.09	1.36	0.92	1.65	3.08	1.65	2.52	5.20	45.80
0.4 - 0.5	1.89	1.04	0.15	0.22	0.39	0.60	2.16	2.92	1.04	0.71	0.51	1.11	1.53	0.27	0.37	0.71	15.62
0.6 - 0.7	0.63	0.60	0.10	0.07	0.24	0.56	1.60	2.74	0.83	0.37	0.63	0.95	0.92	0.20	0.07	0.26	10.76
0.8 - 1.4	0.41	0.22	0.14	0.15	0.22	0.82	4.51	6.02	0.90	0.56	1.05	1.94	1.43	0.20	0.10	0.19	18.85
1.5 - 10	0.00	0.02	0.00	0.00	0.03	0.14	1.79	4.71	0.48	0.05	0.26	0.14	0.36	0.12	0.12	0.05	8.25
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.95	5.59	1.56	1.48	1.70	3.42	15.11	22.58	5.34	3.06	3.37	5.78	7.31	2.45	3.18	6.41	99.29

Total Number of Valid Hours 8520
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Vertical Wind Speed 167 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	6.64	2.48	0.61	0.51	0.37	0.96	3.89	4.28	1.29	0.40	0.54	1.05	2.02	1.62	2.24	5.22	34.12
0.4 - 0.5	3.01	1.02	0.33	0.33	0.25	0.34	2.09	2.93	0.87	0.36	0.15	0.51	0.99	0.60	0.63	1.51	15.91
0.6 - 0.7	1.38	0.87	0.21	0.27	0.25	0.36	1.84	2.66	0.67	0.25	0.25	0.76	1.05	0.40	0.21	0.60	12.04
0.8 - 1.4	1.29	0.91	0.33	0.54	0.54	0.88	3.40	4.85	1.48	1.05	0.88	1.68	2.50	0.52	0.46	1.00	22.30
1.5 - 10	0.19	0.06	0.06	0.10	0.21	0.42	2.26	4.56	0.94	1.05	1.24	1.32	1.39	0.24	0.22	0.19	14.46
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Totals	12.50	5.34	1.54	1.75	1.63	2.96	13.48	19.28	5.25	3.11	3.07	5.31	7.94	3.38	3.78	8.53	98.85

Total Number of Valid Hours 8441
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Vertical Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	4.11	7.66	1.52	0.81	0.61	1.00	3.32	10.19	5.18	1.15	0.86	1.15	3.05	1.09	1.09	1.34	44.13
0.4 - 0.5	0.08	0.92	1.19	0.88	0.96	1.23	6.08	8.90	0.33	0.00	0.04	0.00	0.04	0.00	0.02	0.19	20.86
0.6 - 0.7	0.00	0.31	0.46	0.88	1.02	1.29	7.96	5.76	0.02	0.02	0.00	0.02	0.00	0.00	0.00	0.06	17.82
0.8 - 1.4	0.00	0.06	0.33	1.40	1.90	2.99	6.27	3.70	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.67
1.5 - 10	0.00	0.00	0.02	0.13	0.15	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.20	8.96	3.53	4.09	4.64	6.54	23.64	28.55	5.56	1.17	0.90	1.17	3.09	1.09	1.11	1.59	99.81

Total Number of Valid Hours 8485
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Vertical Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	0.71	1.73	1.90	1.62	0.80	0.95	1.64	3.14	2.72	3.01	2.46	2.32	2.08	0.91	0.62	0.58	27.17
0.4 - 0.5	0.07	0.18	0.49	1.06	1.59	1.11	2.08	3.39	1.95	1.19	0.40	0.15	0.27	0.13	0.04	0.22	14.32
0.6 - 0.7	0.11	0.09	0.15	0.86	0.89	1.44	3.70	3.32	1.48	0.40	0.09	0.07	0.09	0.02	0.04	0.07	12.81
0.8 - 1.4	0.02	0.00	0.09	0.60	1.50	3.01	13.50	13.30	2.15	0.20	0.02	0.07	0.04	0.00	0.02	0.07	34.59
1.5 - 10	0.00	0.00	0.00	0.00	0.04	0.22	3.12	5.44	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.23
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	0.91	1.99	2.63	4.14	4.82	6.73	24.03	28.59	8.70	4.80	2.97	2.61	2.48	1.06	0.73	0.93	98.12

Total Number of Valid Hours 8456
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Vertical Wind Speed 75 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	2.87	2.43	1.44	1.86	1.58	2.13	8.20	7.61	3.94	2.87	3.77	6.60	6.50	3.91	2.03	1.78	59.50
0.4 - 0.5	0.54	0.23	0.35	0.74	0.97	1.11	2.61	3.69	1.22	0.49	0.42	0.99	1.88	1.07	0.67	0.39	17.37
0.6 - 0.7	0.23	0.12	0.20	0.15	0.44	0.74	1.93	3.49	0.65	0.10	0.15	0.60	1.04	0.40	0.17	0.13	10.54
0.8 - 1.4	0.15	0.07	0.05	0.17	0.17	0.82	1.71	6.45	0.59	0.12	0.02	0.18	0.91	0.37	0.20	0.18	12.15
1.5 - 10	0.02	0.00	0.00	0.00	0.00	0.02	0.05	0.13	0.02	0.00	0.02	0.00	0.02	0.00	0.00	0.02	0.28
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.80	2.85	2.04	2.92	3.15	4.81	14.50	21.37	6.42	3.57	4.37	8.38	10.34	5.75	3.07	2.50	99.85

Total Number of Valid Hours 8434
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Vertical Wind Speed 90 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 0.3	3.00	1.97	1.09	1.12	1.77	3.17	4.73	6.59	4.80	1.72	1.67	4.18	5.44	3.30	2.71	3.60	50.86
0.4 - 0.5	2.60	1.92	0.66	0.57	0.79	1.07	2.87	4.01	0.46	0.19	0.24	0.62	1.12	1.39	1.42	1.29	21.22
0.6 - 0.7	2.38	1.55	0.43	0.55	0.57	0.79	2.19	2.21	0.30	0.05	0.02	0.19	0.50	0.77	0.69	0.69	13.88
0.8 - 1.4	3.25	1.80	0.60	0.73	0.47	0.58	0.90	0.85	0.09	0.05	0.05	0.17	0.36	0.49	0.82	1.17	12.38
1.5 - 10	0.71	0.09	0.03	0.08	0.00	0.02	0.02	0.05	0.02	0.03	0.06	0.05	0.02	0.05	0.03	0.11	1.36
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	11.94	7.34	2.81	3.04	3.60	5.63	10.71	13.71	5.66	2.04	2.04	5.21	7.45	5.99	5.68	6.86	99.70

Total Number of Valid Hours 8511
 Total Number of Hours 8760



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
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ANNUAL REPORT

WIND SPEED AND DIRECTION ANNUAL 2017

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

March 28, 2018



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.30	1.52	1.19	1.03	0.98	0.99	1.52	3.10	6.24	3.74	3.00	2.41	2.85	3.74	2.53	2.29	39.43
6 - 11	5.39	2.21	0.79	0.76	0.65	0.36	1.41	5.37	8.67	2.45	1.89	1.96	2.55	2.70	1.47	2.42	41.04
12 - 19	5.28	0.67	0.02	0.03	0.10	0.12	0.24	2.81	1.79	0.37	0.18	0.20	0.41	1.23	1.28	1.28	16.01
20 - 28	1.35	0.05	0.00	0.00	0.00	0.03	0.00	0.35	0.07	0.00	0.00	0.00	0.00	0.18	0.73	0.44	3.19
29 - 38	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.08	0.31
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Totals	14.40	4.45	2.00	1.82	1.73	1.50	3.17	11.62	16.77	6.57	5.07	4.56	5.81	7.86	6.17	6.51	100.00

Total Number of Valid Hours 8681
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.94	1.67	1.45	1.29	0.99	1.33	1.62	2.18	2.47	2.90	2.32	1.44	0.90	0.66	0.80	1.13	25.07
6 - 11	5.47	4.60	1.98	0.88	0.88	1.34	2.66	5.05	5.80	3.59	2.80	2.60	2.05	2.14	1.51	2.25	45.59
12 - 19	2.74	4.31	0.55	0.16	0.37	0.65	0.73	3.38	1.87	1.09	0.53	2.04	1.88	2.26	1.36	1.39	25.30
20 - 28	0.62	0.85	0.03	0.00	0.00	0.03	0.05	0.51	0.10	0.12	0.00	0.13	0.18	0.38	0.27	0.53	3.80
29 - 38	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.17	0.23
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.80	11.43	4.02	2.33	2.24	3.34	5.06	11.11	10.23	7.71	5.65	6.21	5.01	5.44	3.96	5.47	100.00

Total Number of Valid Hours 8679
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	5.53	1.96	1.09	1.17	1.02	1.60	3.66	3.81	1.61	1.16	1.10	1.13	1.24	1.64	3.45	7.36	38.54
6 - 11	5.99	2.25	0.32	0.32	0.38	0.86	5.78	7.87	1.36	0.92	0.72	2.20	2.40	1.32	1.52	2.93	37.16
12 - 19	2.43	1.04	0.07	0.02	0.05	0.16	2.44	4.93	1.74	0.47	0.74	1.43	3.27	1.29	1.23	0.75	22.04
20 - 28	0.12	0.02	0.00	0.00	0.00	0.00	0.06	0.61	0.22	0.01	0.07	0.20	0.41	0.21	0.25	0.08	2.25
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	14.07	5.27	1.48	1.52	1.45	2.62	11.94	17.22	4.92	2.56	2.63	4.95	7.33	4.46	6.46	11.12	100.00

Total Number of Valid Hours 8695
Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.81	1.28	0.92	0.74	0.94	1.30	2.55	2.09	1.08	0.99	0.83	1.04	0.87	1.27	2.47	5.47	26.64
6 - 11	4.78	1.51	0.48	0.55	0.48	0.91	7.91	4.20	0.94	1.00	0.92	1.75	1.16	0.74	1.20	5.12	33.65
12 - 19	4.60	1.48	0.27	0.13	0.28	0.60	6.48	4.56	1.48	0.70	0.90	2.09	1.79	0.91	1.46	1.59	29.31
20 - 28	1.16	0.43	0.03	0.00	0.01	0.07	1.67	1.20	0.32	0.08	0.37	1.27	1.38	0.70	0.31	0.48	9.48
29 - 38	0.11	0.03	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.03	0.33	0.16	0.08	0.04	0.07	0.90
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03
Totals	13.46	4.73	1.70	1.42	1.71	2.87	18.67	12.04	3.82	2.77	3.05	6.51	5.36	3.69	5.48	12.72	100.00

Total Number of Valid Hours 7482
Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Wind Speed 100 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.22	0.97	0.93	0.67	0.75	0.92	1.04	1.30	1.15	1.03	0.70	0.58	0.65	0.67	0.77	0.89	14.25
6 - 11	3.30	1.60	0.81	0.63	0.55	0.93	2.70	3.86	1.96	1.49	1.43	1.97	1.09	0.73	1.12	2.42	26.58
12 - 19	4.44	1.64	0.32	0.29	0.46	0.93	4.32	5.42	1.42	0.87	1.35	2.45	1.22	0.76	1.34	2.17	29.40
20 - 28	3.03	1.02	0.14	0.19	0.19	0.43	2.49	2.85	0.99	0.42	1.00	3.06	1.34	1.23	1.04	1.03	20.46
29 - 38	0.82	0.54	0.01	0.01	0.02	0.07	1.33	0.58	0.02	0.04	0.31	1.48	1.24	0.80	0.34	0.28	7.89
> 38	0.13	0.05	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.01	0.31	0.31	0.12	0.18	0.08	1.42
Totals	12.93	5.82	2.21	1.80	1.97	3.27	12.12	14.01	5.54	3.85	4.80	9.85	5.85	4.31	4.79	6.88	100.00

Total Number of Valid Hours 8520
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2017
Wind Speed 167 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.65	0.52	0.51	0.34	0.47	0.44	0.54	0.65	0.78	0.73	0.66	0.52	0.67	0.58	0.46	0.60	9.15
6 - 11	1.92	1.62	0.97	0.73	0.78	0.98	1.35	1.93	1.95	2.00	1.62	1.43	1.10	0.85	0.78	1.12	21.16
12 - 19	3.17	3.04	0.94	0.50	0.52	1.12	2.15	3.86	2.78	2.12	2.10	2.19	1.34	0.85	0.84	1.42	28.95
20 - 28	2.66	2.30	0.41	0.22	0.33	0.58	2.00	2.62	2.24	1.03	1.15	2.46	1.70	1.20	1.20	1.05	23.16
29 - 38	1.17	0.83	0.08	0.13	0.09	0.17	1.43	1.22	0.60	0.15	0.51	1.89	1.99	1.31	0.71	0.52	12.82
> 38	0.30	0.22	0.00	0.00	0.04	0.02	0.37	0.17	0.00	0.00	0.14	1.16	1.48	0.39	0.31	0.17	4.76
Totals	9.87	8.54	2.91	1.93	2.24	3.32	7.85	10.44	8.36	6.04	6.18	9.66	8.29	5.19	4.30	4.89	100.00

Total Number of Valid Hours 8446
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.29	1.08	0.94	0.59	0.55	0.66	1.59	2.94	2.04	1.75	1.16	0.97	0.94	0.93	0.88	0.74	19.05
6 - 11	3.25	3.40	1.77	0.78	0.67	1.23	5.08	12.28	4.36	2.03	1.93	2.00	2.25	2.07	1.65	1.49	46.23
12 - 19	3.54	3.12	0.41	0.20	0.46	0.63	1.27	2.04	0.96	0.94	1.24	3.04	2.90	1.64	1.68	1.00	25.07
20 - 28	2.44	1.42	0.03	0.01	0.00	0.05	0.05	0.08	0.01	0.01	0.09	0.85	1.37	0.45	0.60	0.75	8.21
29 - 38	0.48	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.14	0.07	0.09	0.18	1.35
> 38	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.09
Totals	11.02	9.36	3.17	1.58	1.68	2.57	7.98	17.33	7.37	4.73	4.43	6.91	7.61	5.16	4.91	4.19	100.00

Total Number of Valid Hours 8684
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.00	0.65	0.71	0.75	0.71	0.91	1.64	1.89	1.54	1.04	1.08	1.08	1.37	0.87	0.84	0.92	16.99
6 - 11	2.70	2.44	0.86	0.98	1.05	1.80	6.52	8.92	2.53	1.66	2.02	2.52	2.36	1.44	1.47	2.09	41.36
12 - 19	3.05	2.33	0.32	0.49	0.75	0.94	4.56	5.10	0.86	1.01	1.43	3.41	2.73	1.48	1.08	2.03	31.60
20 - 28	1.44	0.73	0.14	0.09	0.14	0.05	0.65	0.33	0.09	0.04	0.24	1.18	1.64	0.78	0.37	0.65	8.54
29 - 38	0.18	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.16	0.53	0.14	0.27	0.11	1.48
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02
Totals	8.37	6.21	2.03	2.32	2.65	3.70	13.36	16.24	5.03	3.75	4.80	8.36	8.63	4.74	4.03	5.79	100.00

Total Number of Valid Hours 8485
Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.56	0.56	0.44	0.44	0.53	0.67	0.89	0.65	0.69	0.57	0.60	0.53	0.67	0.60	0.50	0.67	9.57
6 - 11	1.82	1.54	0.93	0.95	1.28	1.83	3.41	2.57	1.81	1.32	1.34	1.66	1.48	1.08	1.05	1.50	25.56
12 - 19	3.05	1.48	0.39	0.67	0.92	2.18	7.00	6.08	1.99	1.18	1.89	2.87	2.26	1.22	1.50	1.79	36.47
20 - 28	3.07	0.51	0.22	0.25	0.28	0.53	2.64	2.93	0.96	0.90	1.56	2.85	2.05	0.98	0.86	1.58	22.19
29 - 38	1.31	0.11	0.05	0.05	0.02	0.01	0.24	0.18	0.07	0.05	0.26	0.99	0.70	0.46	0.43	0.48	5.40
> 38	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.14	0.12	0.14	0.09	0.82
Totals	9.98	4.19	2.03	2.35	3.04	5.23	14.17	12.41	5.51	4.02	5.72	8.99	7.30	4.46	4.48	6.13	100.00

Total Number of Valid Hours 8456
Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Wind Speed 75 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.55	0.38	0.51	0.49	0.49	0.82	0.68	0.69	0.55	0.59	0.55	0.44	0.46	0.51	0.59	0.53	8.81
6 - 11	1.15	1.20	0.91	0.97	1.57	2.67	2.70	1.71	1.66	1.28	1.27	1.23	1.21	0.92	0.97	1.10	22.53
12 - 19	2.50	1.96	0.52	0.81	0.84	1.49	4.56	3.78	1.71	1.46	1.38	2.29	1.94	1.11	1.43	1.55	29.35
20 - 28	2.96	1.46	0.24	0.34	0.21	0.06	3.96	4.08	1.73	1.23	1.65	3.14	2.55	0.98	0.84	1.54	26.99
29 - 38	1.80	0.26	0.17	0.09	0.01	0.00	0.68	1.17	0.34	0.28	0.72	1.74	1.22	0.79	0.37	0.79	10.46
> 38	0.50	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.23	0.25	0.13	0.37	0.25	1.87
Totals	9.46	5.30	2.35	2.70	3.12	5.04	12.58	11.43	5.99	4.85	5.67	9.07	7.64	4.46	4.58	5.77	100.00

Total Number of Valid Hours 8434
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2017
Wind Speed 90 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.34	0.42	0.33	0.39	0.39	0.54	0.51	0.61	0.49	0.62	0.58	0.43	0.39	0.49	0.53	0.59	7.65
6 - 11	1.21	1.14	0.83	0.88	0.94	1.95	2.09	1.54	1.37	1.59	1.35	1.30	1.08	0.86	1.03	1.13	20.30
12 - 19	2.26	1.94	0.56	0.70	1.02	2.63	3.15	3.43	1.88	1.63	1.40	2.24	1.89	1.10	1.30	1.42	28.57
20 - 28	2.95	1.61	0.23	0.29	0.41	0.76	3.15	3.78	2.14	1.34	1.35	2.89	2.48	1.21	0.87	1.47	26.94
29 - 38	1.90	0.48	0.20	0.11	0.12	0.07	1.08	1.43	0.76	0.42	0.80	2.41	1.56	1.20	0.45	0.93	13.92
> 38	0.66	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.36	0.41	0.23	0.39	0.36	2.63
Totals	9.32	5.70	2.16	2.37	2.88	5.96	9.97	10.80	6.65	5.61	5.57	9.64	7.81	5.10	4.57	5.90	100.00

Total Number of Valid Hours 8513
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.99	0.60	0.68	0.66	0.66	0.96	1.00	2.04	2.60	2.57	1.76	1.29	1.25	1.09	1.31	1.37	20.82
6 - 11	3.45	1.57	1.02	0.79	1.73	2.99	4.16	2.77	3.41	4.72	5.05	2.36	1.52	1.88	1.82	2.77	42.02
12 - 19	4.22	1.47	0.45	0.32	0.87	2.35	1.68	0.54	1.05	1.24	2.93	3.53	2.31	2.15	1.29	2.05	28.45
20 - 28	2.21	0.31	0.06	0.02	0.11	0.27	0.36	0.11	0.29	0.07	0.22	0.70	1.04	0.80	0.76	0.61	7.94
29 - 38	0.26	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.11	0.13	0.07	0.76
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Totals	11.12	3.97	2.20	1.80	3.38	6.58	7.19	5.46	7.35	8.59	9.97	7.98	6.17	6.04	5.32	6.87	100.00

Total Number of Valid Hours 8730
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.66	1.31	0.93	1.37	2.17	2.95	4.05	3.63	2.51	2.66	2.54	1.88	1.66	1.30	1.85	1.88	34.34
6 - 11	2.81	0.72	0.25	0.56	1.34	2.29	9.99	3.32	1.17	1.46	3.75	1.46	0.63	0.70	1.11	4.38	35.95
12 - 19	2.25	0.26	0.15	0.25	0.80	0.78	4.02	0.64	0.55	0.42	1.81	1.94	1.53	1.16	1.15	5.02	22.74
20 - 28	0.37	0.05	0.03	0.05	0.05	0.10	0.34	0.06	0.00	0.00	0.09	0.57	1.10	0.89	0.73	1.66	6.10
29 - 38	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.14	0.18	0.30	0.18	0.86
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Totals	7.12	2.34	1.37	2.23	4.36	6.13	18.41	7.64	4.23	4.54	8.19	5.86	5.06	4.23	5.15	13.14	100.00

Total Number of Valid Hours 8717
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.55	0.50	0.30	0.63	1.07	0.64	0.67	0.45	0.53	0.69	0.69	0.84	1.00	0.96	0.94	1.19	11.65
6 - 11	2.19	0.95	0.67	1.73	3.97	1.82	0.76	0.62	0.62	1.04	1.80	1.86	4.04	4.92	3.82	3.67	34.50
12 - 19	1.45	0.41	0.73	2.20	6.77	2.00	1.11	1.19	1.03	0.94	1.31	1.60	4.42	2.98	3.03	3.18	34.36
20 - 28	0.03	0.01	0.71	3.74	3.91	0.64	0.85	1.25	1.17	0.40	0.14	0.41	0.99	0.20	0.76	0.18	15.40
29 - 38	0.00	0.00	0.53	1.50	0.63	0.16	0.02	0.14	0.25	0.11	0.01	0.02	0.18	0.03	0.05	0.00	3.65
> 38	0.00	0.00	0.11	0.17	0.08	0.05	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.45
Totals	4.22	1.88	3.05	9.98	16.43	5.31	3.41	3.65	3.63	3.20	3.95	4.73	10.63	9.10	8.60	8.23	100.00

Total Number of Valid Hours 8714
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	4.49	2.54	1.97	2.05	1.85	2.08	3.77	5.48	5.13	3.73	3.31	2.80	2.22	1.97	2.22	4.89	50.50
6 - 11	3.70	4.97	2.20	1.11	0.69	0.47	1.83	4.25	5.84	3.22	2.70	3.77	1.69	1.03	1.47	1.95	40.89
12 - 19	0.90	1.52	0.32	0.10	0.00	0.07	0.15	0.78	0.66	0.37	0.38	1.17	0.74	0.29	0.42	0.60	8.48
20 - 28	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.00	0.05	0.00	0.13
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	9.11	9.02	4.49	3.27	2.55	2.63	5.75	10.50	11.62	7.32	6.39	7.80	4.67	3.29	4.16	7.43	100.00

Total Number of Valid Hours 8637
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.88	1.61	1.35	1.32	1.75	2.43	2.82	1.77	0.97	0.77	0.48	0.60	1.55	4.03	4.69	3.66	31.69
6 - 11	2.52	1.37	0.66	0.67	0.45	1.50	8.76	5.49	1.82	0.76	0.76	1.46	2.05	1.55	2.69	3.67	36.20
12 - 19	3.52	1.43	0.32	0.18	0.33	1.38	4.91	2.95	0.38	0.12	0.50	2.21	2.44	1.32	1.59	1.67	25.26
20 - 28	0.89	0.45	0.05	0.02	0.01	0.31	1.05	0.17	0.00	0.00	0.02	0.71	1.28	0.38	0.54	0.43	6.31
29 - 38	0.08	0.02	0.00	0.00	0.00	0.02	0.05	0.01	0.00	0.00	0.00	0.12	0.03	0.06	0.02	0.13	0.54
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	8.89	4.88	2.37	2.20	2.55	5.64	17.59	10.40	3.17	1.65	1.76	5.10	7.36	7.35	9.54	9.56	100.00

Total Number of Valid Hours 8683
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.48	1.68	1.17	0.69	0.64	0.91	0.98	2.12	6.04	5.95	4.63	4.43	2.80	2.22	2.38	2.70	41.81
6 - 11	4.77	3.05	1.11	0.41	0.24	0.38	1.57	3.51	5.39	3.22	2.93	2.89	2.35	1.69	1.46	2.31	37.28
12 - 19	4.66	2.32	0.14	0.05	0.06	0.07	0.38	2.34	2.12	0.68	0.63	1.04	0.46	0.54	0.69	1.21	17.38
20 - 28	1.55	0.56	0.00	0.00	0.00	0.00	0.05	0.47	0.39	0.01	0.01	0.00	0.00	0.00	0.11	0.28	3.43
29 - 38	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	13.54	7.62	2.42	1.15	0.94	1.35	2.97	8.45	13.94	9.85	8.20	8.37	5.61	4.44	4.64	6.49	100.00

Total Number of Valid Hours 8709
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.00	0.47	0.64	0.76	0.62	0.99	1.31	1.37	2.10	1.87	1.56	1.55	1.86	2.16	1.66	1.08	21.01
6 - 11	2.44	1.31	0.98	0.94	1.21	2.46	4.11	5.21	3.07	1.77	2.55	1.64	3.01	8.24	3.55	3.53	46.02
12 - 19	1.71	0.45	0.33	0.32	0.68	1.34	1.80	2.52	1.25	0.57	1.05	0.87	3.44	7.23	2.64	2.78	29.00
20 - 28	0.38	0.05	0.07	0.08	0.07	0.23	0.07	0.13	0.08	0.00	0.02	0.11	0.51	0.99	0.61	0.39	3.78
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.10	0.01	0.18
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	5.53	2.28	2.02	2.10	2.57	5.02	7.30	9.22	6.51	4.22	5.18	4.18	8.83	18.68	8.56	7.79	100.00

Total Number of Valid Hours 8700
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Horizon (AMS 15)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.56	2.59	1.89	1.53	0.95	1.04	1.17	1.47	2.14	3.33	2.67	1.26	0.94	0.76	1.03	1.19	25.50
6 - 11	1.20	6.85	4.10	1.37	0.94	0.83	0.76	1.54	4.99	10.36	5.40	2.43	1.48	1.31	0.82	0.60	44.98
12 - 19	0.83	4.21	2.03	0.49	0.21	0.14	0.07	0.55	1.48	4.04	3.64	2.06	1.05	1.69	1.20	0.73	24.41
20 - 28	0.42	0.84	0.21	0.00	0.00	0.00	0.00	0.03	0.09	0.14	0.22	0.42	0.21	0.89	0.65	0.55	4.67
29 - 38	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.10	0.09	0.17	0.43
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Totals	4.02	14.52	8.24	3.39	2.09	2.01	2.00	3.59	8.70	17.87	11.92	6.16	3.69	4.75	3.80	3.25	100.00

Total Number of Valid Hours 8655
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Muskeg River (AMS 16)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.36	0.50	0.66	1.08	1.35	1.17	1.39	2.25	4.79	3.79	1.52	1.04	0.81	0.70	0.50	0.53	22.44
6 - 11	0.72	1.42	2.68	2.14	1.15	0.80	1.02	2.99	9.53	8.51	3.23	1.42	1.19	1.10	1.44	1.27	40.62
12 - 19	2.07	3.60	4.36	0.96	0.23	0.13	0.45	1.35	2.47	1.66	2.29	2.11	1.20	1.12	0.87	1.20	26.08
20 - 28	2.04	3.07	0.93	0.17	0.00	0.03	0.00	0.36	0.50	0.02	0.31	0.99	0.34	0.55	0.17	0.32	9.81
29 - 38	0.16	0.48	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.21	0.02	0.05	0.05	0.00	1.03
> 38	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02
Totals	5.36	9.07	8.66	4.35	2.73	2.13	2.85	6.95	17.30	13.99	7.39	5.76	3.57	3.52	3.05	3.32	100.00

Total Number of Valid Hours 8730
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Wapasu (AMS 17)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.29	2.17	1.31	1.28	1.28	1.78	2.55	3.77	3.06	1.31	1.02	0.71	0.92	0.90	0.81	0.87	25.03
6 - 11	4.50	3.22	1.84	0.76	0.86	1.79	3.67	7.78	7.07	4.09	3.91	2.52	1.53	1.31	1.42	2.51	48.79
12 - 19	3.07	1.13	0.31	0.34	0.57	1.16	2.19	3.99	1.80	1.37	2.80	1.83	0.44	0.52	0.63	2.28	24.43
20 - 28	0.41	0.06	0.00	0.00	0.00	0.07	0.22	0.28	0.06	0.01	0.07	0.19	0.00	0.00	0.05	0.35	1.76
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	9.27	6.58	3.46	2.37	2.71	4.80	8.63	15.81	11.99	6.79	7.80	5.24	2.90	2.73	2.91	6.01	100.00

Total Number of Valid Hours 8601
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Stony Mountain (AMS 18)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.98	1.68	1.30	1.21	1.45	1.41	1.31	1.26	1.60	2.29	1.64	1.33	1.81	3.02	2.97	2.41	28.66
6 - 11	1.41	2.19	2.35	1.65	1.83	1.64	1.81	2.45	3.08	5.46	5.57	3.86	5.83	6.21	2.86	1.71	49.92
12 - 19	0.21	0.66	0.72	0.34	0.46	0.38	0.31	0.53	1.31	3.18	2.79	1.99	4.73	2.45	0.64	0.13	20.83
20 - 28	0.00	0.00	0.02	0.00	0.00	0.06	0.00	0.00	0.00	0.15	0.09	0.02	0.06	0.19	0.00	0.00	0.59
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.60	4.52	4.39	3.21	3.74	3.49	3.43	4.25	5.98	11.09	10.09	7.21	12.43	11.87	6.47	4.25	100.00

Total Number of Valid Hours 8642
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Firebag (AMS 19)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.32	0.67	0.60	0.49	0.34	0.27	0.51	0.57	0.81	1.07	1.58	0.93	0.61	0.61	0.72	0.80	11.89
6 - 11	2.32	1.98	1.36	1.10	0.78	2.28	1.94	1.50	1.90	2.90	3.63	2.50	1.81	1.69	1.47	2.34	31.49
12 - 19	3.23	1.88	0.68	0.71	1.08	1.98	2.04	3.51	3.52	3.82	4.02	4.02	2.29	1.43	1.32	2.70	38.25
20 - 28	1.58	1.09	0.23	0.23	0.59	0.88	0.72	1.04	1.98	1.32	1.29	1.59	0.75	0.49	0.52	1.70	16.01
29 - 38	0.41	0.12	0.00	0.01	0.09	0.12	0.05	0.35	0.41	0.09	0.12	0.19	0.09	0.02	0.05	0.24	2.34
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
Totals	8.85	5.74	2.87	2.54	2.87	5.53	5.25	6.97	8.63	9.20	10.63	9.23	5.56	4.24	4.08	7.80	100.00

Total Number of Valid Hours 8628
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Mackay River (AMS 20)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.10	2.14	2.08	1.30	1.34	2.13	3.97	5.37	3.35	2.69	3.22	3.51	3.03	1.39	1.08	1.27	38.98
6 - 11	1.23	3.38	2.64	1.09	1.39	2.77	2.41	2.50	5.74	4.96	3.18	4.65	5.47	3.46	2.04	1.75	48.66
12 - 19	0.58	1.53	0.70	0.17	0.33	0.61	0.32	0.66	1.07	0.68	0.20	0.56	0.78	1.28	1.46	0.92	11.85
20 - 28	0.02	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.15	0.09	0.51
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	2.93	7.24	5.42	2.57	3.06	5.51	6.70	8.53	10.16	8.33	6.59	8.72	9.28	6.19	4.73	4.03	100.00

Total Number of Valid Hours 8689
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Conklin (AMS 21)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.04	1.13	0.95	0.87	0.94	1.39	2.12	3.67	5.28	5.29	2.59	1.67	1.68	2.47	3.90	4.52	40.50
6 - 11	2.36	2.41	1.20	0.75	1.12	2.07	1.43	1.75	2.22	4.25	4.91	2.47	3.29	4.90	4.79	2.86	42.77
12 - 19	1.21	0.61	0.25	0.09	0.09	0.39	0.60	0.91	1.36	1.13	1.87	1.24	1.55	0.95	1.37	2.27	15.89
20 - 28	0.17	0.00	0.00	0.00	0.00	0.03	0.01	0.09	0.02	0.00	0.01	0.08	0.01	0.00	0.07	0.33	0.84
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	5.77	4.15	2.40	1.71	2.15	3.89	4.15	6.42	8.88	10.67	9.38	5.46	6.53	8.32	10.13	9.98	100.00

Total Number of Valid Hours 8697
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Janvier (AMS 22)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3.50	4.16	1.80	1.69	1.42	2.49	4.45	4.71	6.96	4.29	2.98	1.72	1.13	1.07	1.06	1.35	44.77
6 - 11	3.15	5.36	2.02	1.27	0.84	0.76	0.85	1.49	5.69	11.63	3.51	2.87	3.17	1.53	0.44	0.30	44.87
12 - 19	0.71	1.80	0.60	0.24	0.10	0.02	0.06	0.21	1.19	1.44	0.54	1.08	1.81	0.29	0.01	0.00	10.10
20 - 28	0.00	0.10	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.25
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	7.36	11.42	4.44	3.20	2.36	3.27	5.36	6.42	13.85	17.35	7.04	5.67	6.21	2.89	1.51	1.65	100.00

Total Number of Valid Hours 8679
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Hills (AMS 23)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.83	1.12	0.89	0.51	0.53	1.04	1.32	2.85	2.99	2.07	1.65	1.22	0.79	1.46	0.96	1.99	23.21
6 - 11	2.05	3.19	1.59	0.63	0.26	0.45	1.38	6.29	6.08	4.54	3.54	1.44	1.28	1.91	1.63	1.59	37.84
12 - 19	1.77	4.46	1.16	0.18	0.00	0.02	0.31	2.54	3.34	4.23	4.09	1.51	0.79	1.24	1.26	1.16	28.07
20 - 28	1.14	2.60	0.10	0.04	0.02	0.00	0.00	0.33	0.67	0.73	0.96	0.61	0.39	0.39	0.41	0.77	9.17
29 - 38	0.14	0.65	0.06	0.00	0.00	0.00	0.00	0.10	0.28	0.00	0.04	0.22	0.04	0.08	0.04	0.08	1.71
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	6.92	12.02	3.80	1.36	0.81	1.51	3.01	12.12	13.36	11.57	10.29	5.00	3.28	5.07	4.31	5.59	100.00

Total Number of Valid Hours 5084
 Total Number of Hours 5136

*This parameter became operational on June 1



Wood Buffalo Environmental Association - Surmont (AMS 24)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.16	0.20	0.20	0.28	0.36	0.20	0.24	0.72	1.04	1.24	1.04	0.68	0.48	0.20	0.12	0.08	7.25
6 - 11	0.56	0.68	1.20	0.52	0.20	0.32	1.08	2.16	2.28	4.13	3.37	2.76	3.37	3.57	1.28	0.72	28.21
12 - 19	1.52	2.28	1.68	0.28	0.28	0.04	0.80	0.84	0.44	1.68	1.28	1.92	5.29	6.85	6.49	4.25	35.94
20 - 28	1.04	2.96	0.52	0.16	0.36	0.04	0.00	0.00	0.00	0.04	0.08	0.00	2.84	4.17	4.61	5.65	22.48
29 - 38	0.64	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	1.72	1.08	1.08	5.69
> 38	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.32	0.00	0.44
Totals	3.93	6.61	3.61	1.24	1.20	0.60	2.12	3.73	3.77	7.09	5.77	5.37	12.74	16.55	13.90	11.78	100.00

Total Number of Valid Hours 2496
 Total Number of Hours 2496

*This parameter became operational on September 19



Wood Buffalo Environmental Association - Cenovus Christina Lake (AMS 500)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.25	0.66	0.66	0.82	1.19	1.51	2.22	3.29	4.21	2.17	1.07	0.80	0.37	0.18	0.18	0.18	19.78
6 - 11	1.19	2.03	0.96	1.05	0.87	1.49	1.42	2.35	5.42	6.47	7.75	5.44	1.14	1.46	0.85	0.89	40.79
12 - 19	1.83	1.46	0.37	0.34	0.53	0.64	0.87	1.42	1.83	1.65	3.06	7.34	3.11	3.20	2.65	0.91	31.21
20 - 28	0.07	0.30	0.09	0.02	0.02	0.07	0.16	0.46	0.11	0.09	0.14	0.62	1.44	1.78	1.58	0.59	7.54
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.39	0.05	0.02	0.69
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.34	4.46	2.08	2.24	2.61	3.70	4.66	7.52	11.57	10.38	12.03	14.20	6.29	7.02	5.30	2.61	100.00

Total Number of Valid Hours 4374
 Total Number of Hours 4416



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.77	0.96	0.41	0.41	0.50	0.68	1.27	1.18	2.59	4.51	2.55	2.18	2.96	3.50	0.73	0.86	26.08
6 - 11	3.32	1.00	0.59	0.91	1.41	1.50	1.91	0.50	0.96	3.64	2.96	1.14	3.91	6.05	1.27	2.18	33.27
12 - 19	2.64	0.86	0.50	0.23	0.23	0.96	0.91	0.46	0.27	0.36	0.82	0.05	1.32	6.69	3.64	3.91	23.85
20 - 28	0.77	0.23	0.00	0.00	0.00	0.05	0.00	0.00	0.18	0.00	0.00	0.00	0.36	3.73	5.01	3.23	13.56
29 - 38	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.55	1.05	1.14	2.96
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.09	0.00	0.27
Totals	7.69	3.05	1.50	1.55	2.14	3.19	4.10	2.14	4.01	8.51	6.33	3.37	8.60	20.71	11.79	11.33	100.00

Total Number of Valid Hours 2197
 Total Number of Hours 2208

*This parameter became operational on October 1



Wood Buffalo Environmental Association -Surmont (AMS502)
 Annual Summary for the Year 2017
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.46	0.59	0.54	0.77	0.77	0.75	0.65	0.42	0.55	0.77	0.77	1.11	0.57	0.65	0.52	0.49	10.35
6 - 11	2.23	1.63	1.25	1.37	1.34	2.93	3.55	1.40	2.08	3.09	4.14	4.01	2.62	2.59	1.27	1.34	36.83
12 - 19	2.82	0.63	0.36	0.46	1.16	0.85	2.65	2.36	2.77	1.16	1.35	4.71	4.25	4.36	1.79	3.57	35.23
20 - 28	0.52	0.20	0.24	0.08	0.03	0.33	0.10	0.86	0.60	0.16	0.11	2.34	3.96	2.00	0.49	2.88	14.91
29 - 38	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.60	1.14	0.59	0.03	0.26	2.67
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	6.06	3.04	2.39	2.67	3.29	4.87	6.95	5.05	6.01	5.18	6.37	12.76	12.54	10.19	4.10	8.53	100.00

Total Number of Valid Hours 6142
 Total Number of Hours 6240

*This parameter was decomissioned on September 19



Wood Buffalo Environmental Association -Sawbones Bay (AMSS05)
Annual Summary for the Year 2017
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.71	0.64	0.52	0.82	1.07	1.25	1.34	1.78	2.64	1.23	0.96	0.64	0.71	0.64	0.71	0.68	16.34
6 - 11	2.21	1.96	1.00	0.25	0.75	1.50	2.44	3.08	4.49	5.22	3.37	1.87	1.50	3.10	3.30	1.98	38.04
12 - 19	1.55	1.57	0.48	0.00	0.18	0.52	0.77	1.37	2.05	1.71	3.69	3.40	5.49	6.38	2.92	1.41	33.50
20 - 28	0.71	0.11	0.00	0.00	0.00	0.00	0.02	0.36	0.41	0.07	0.30	0.91	2.87	3.10	1.53	0.43	10.82
29 - 38	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.16	0.41	0.36	0.09	1.21
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09
Totals	5.22	4.28	2.01	1.07	2.01	3.28	4.58	6.59	9.59	8.23	8.32	6.95	10.73	13.72	8.82	4.60	100.00

Total Number of Valid Hours 4388

Total Number of Hours 4416

*This parameter became operational on July 1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

WIND ROSES ANNUAL 2017

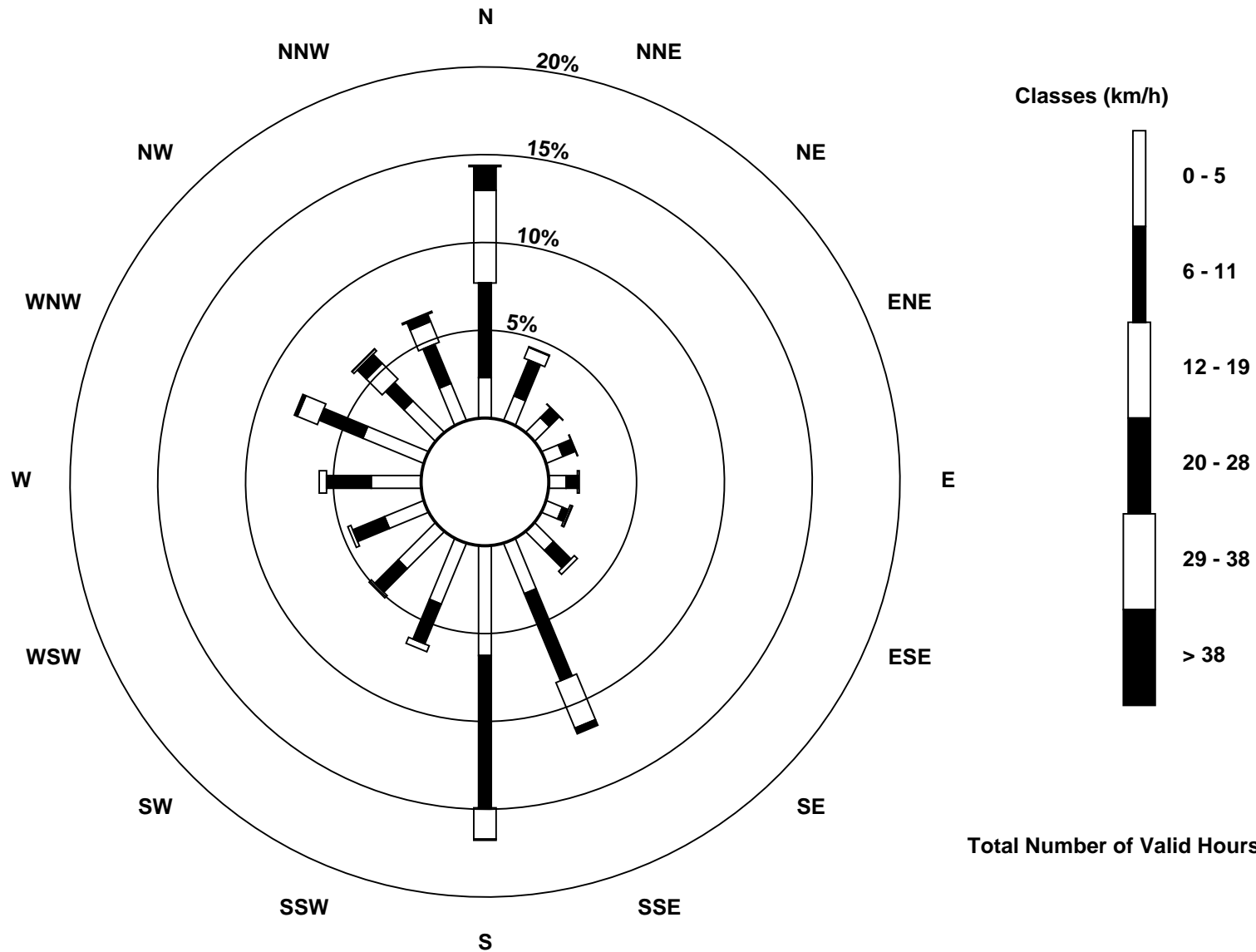
Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

March 2018



Wood Buffalo Environmental Association
Wind Rose 2017

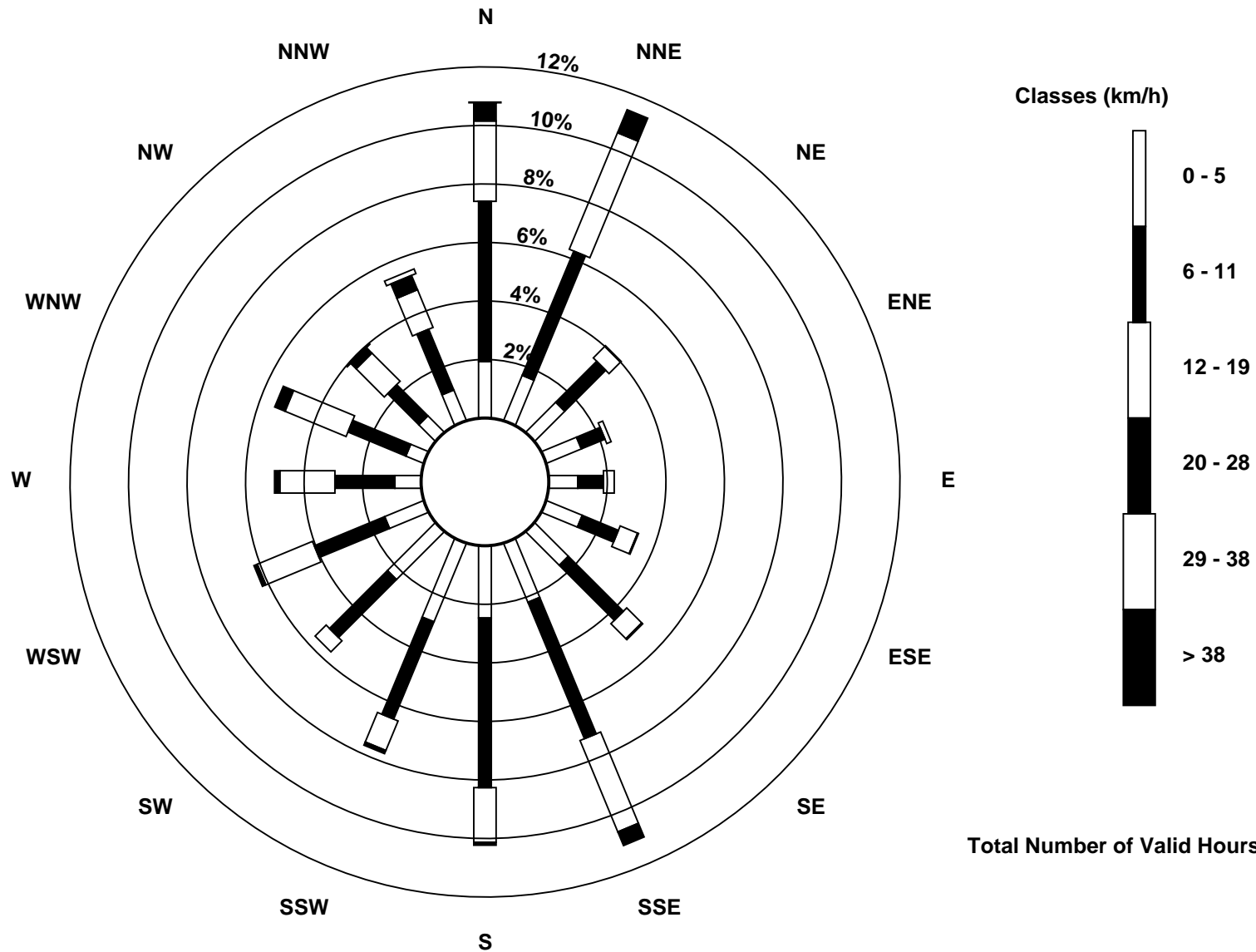
Wind Speed (WS) - km/h
Fort McKay - Bertha Ganter (AMS 1)





Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Mildred Lake (AMS 2)

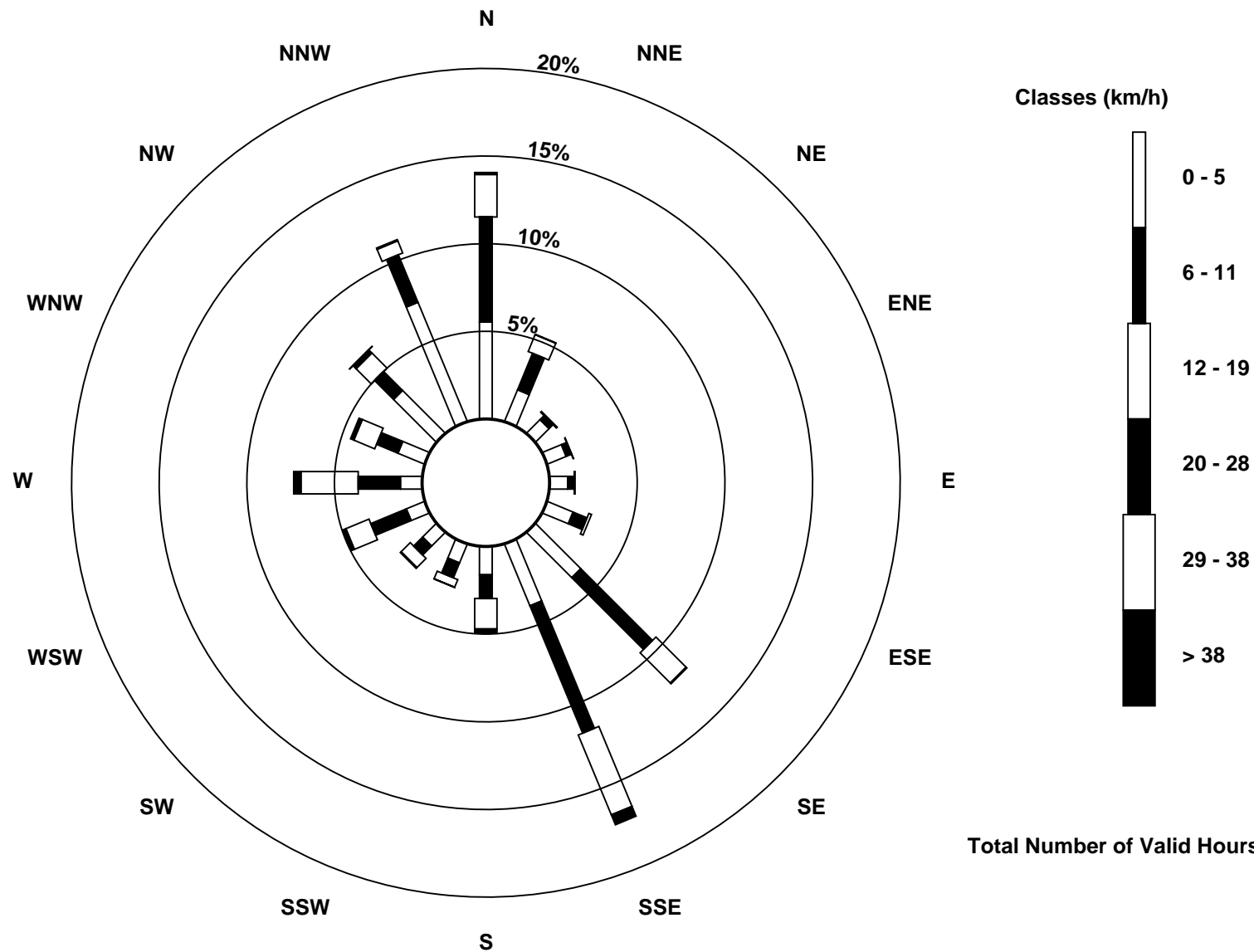


Total Number of Valid Hours: 8679



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Wind Rose 2017

Wind Speed 20 m (WS20m) - km/h
Lower Camp Met Tower (AMS 3)

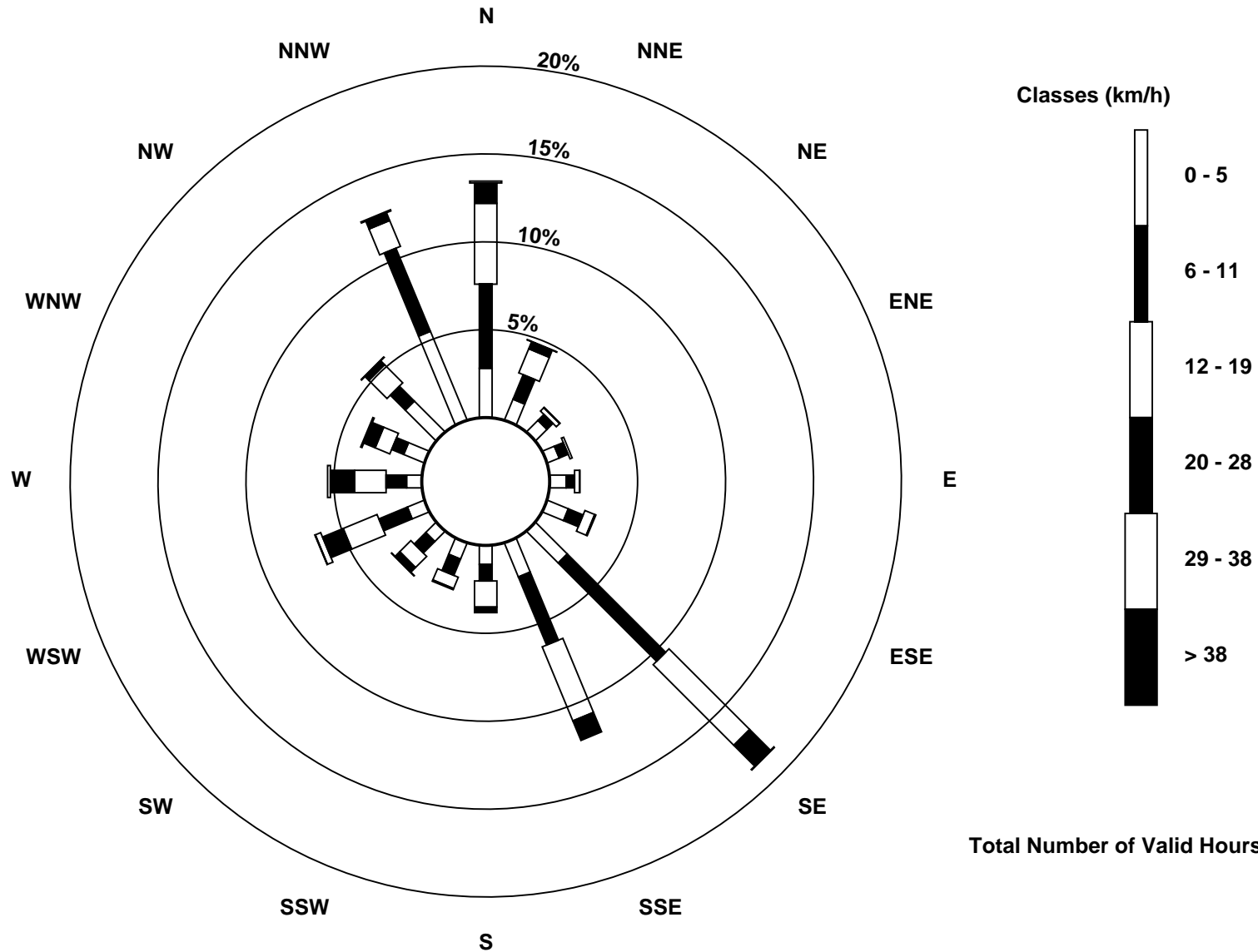


Total Number of Valid Hours: 8695



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed 45 m (WS45m) - km/h
Lower Camp Met Tower (AMS 3)

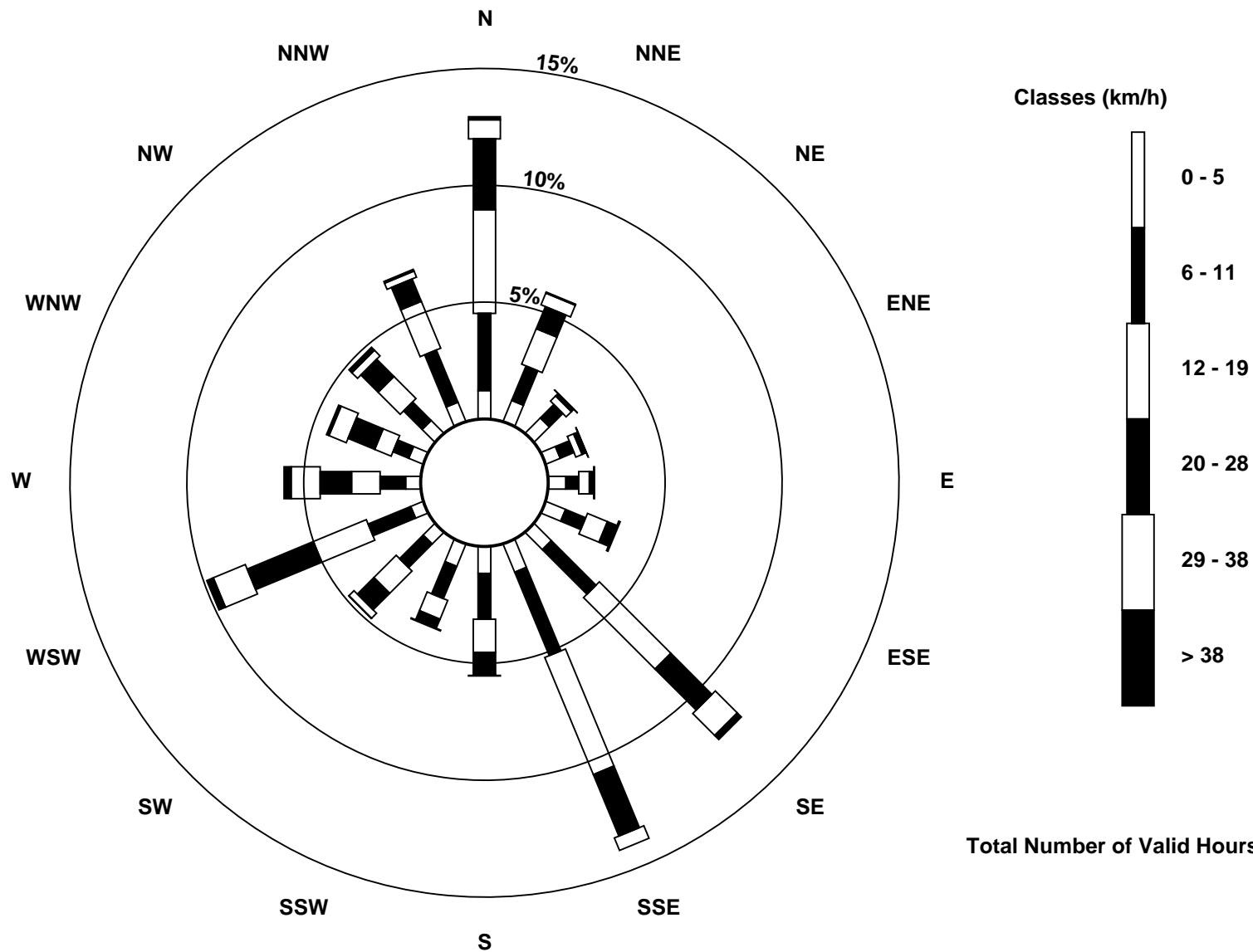


Total Number of Valid Hours: 7482



Wood Buffalo Environmental Association
Wind Rose 2017

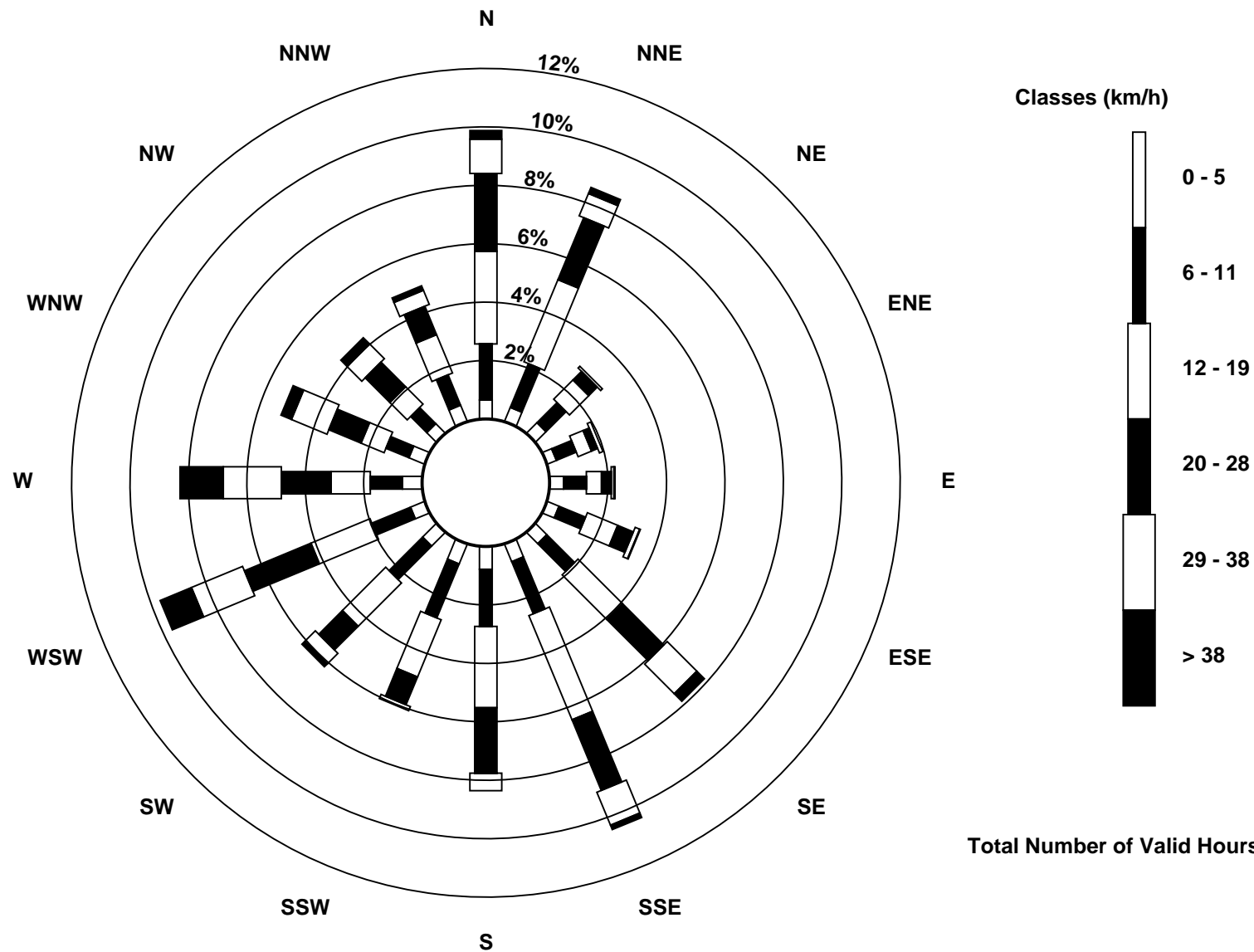
Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower (AMS 3)





Wood Buffalo Environmental Association
Wind Rose 2017

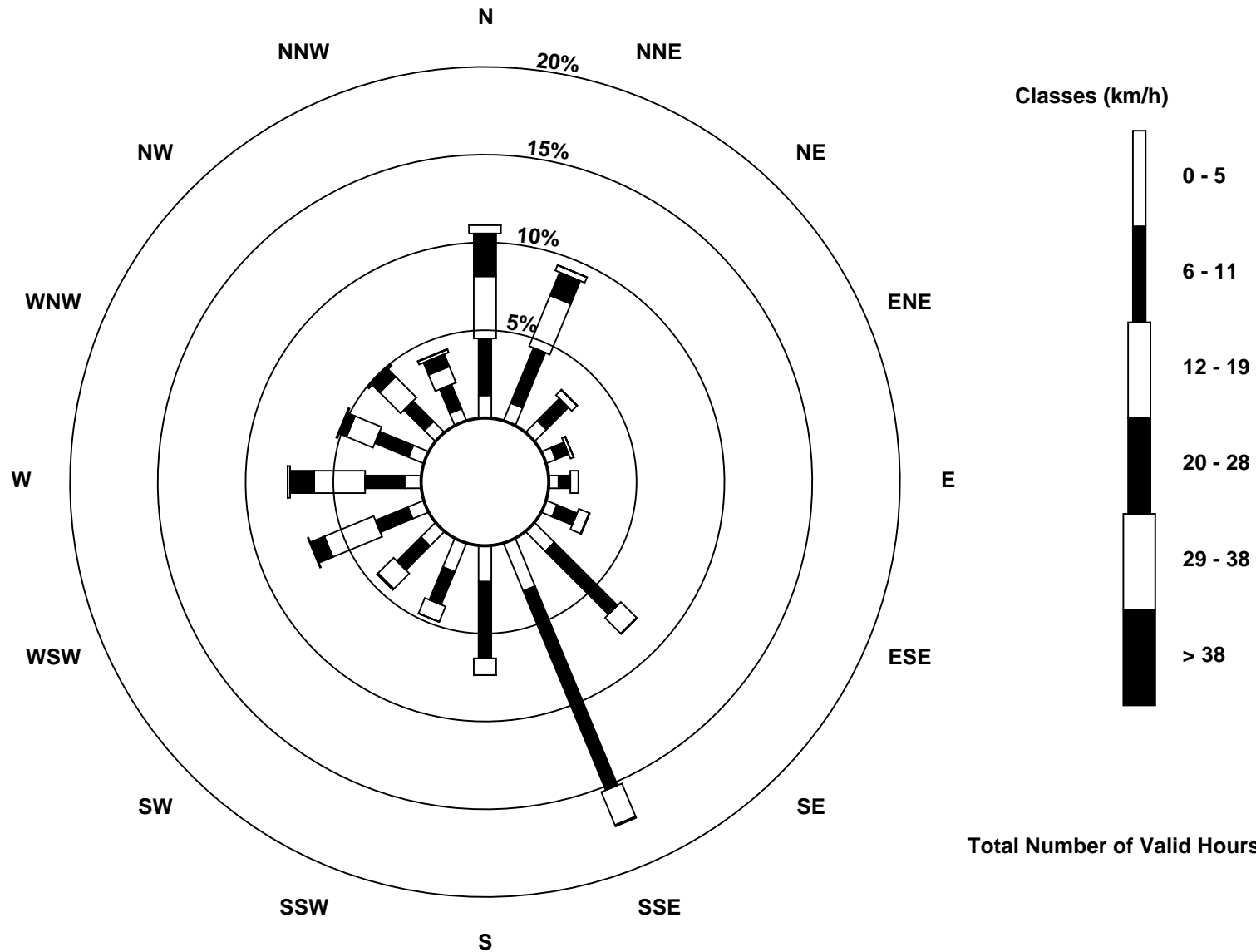
Wind Speed 167 m (WS167m) - km/h
Lower Camp Met Tower (AMS 3)





Wood Buffalo Environmental Association
Wind Rose 2017

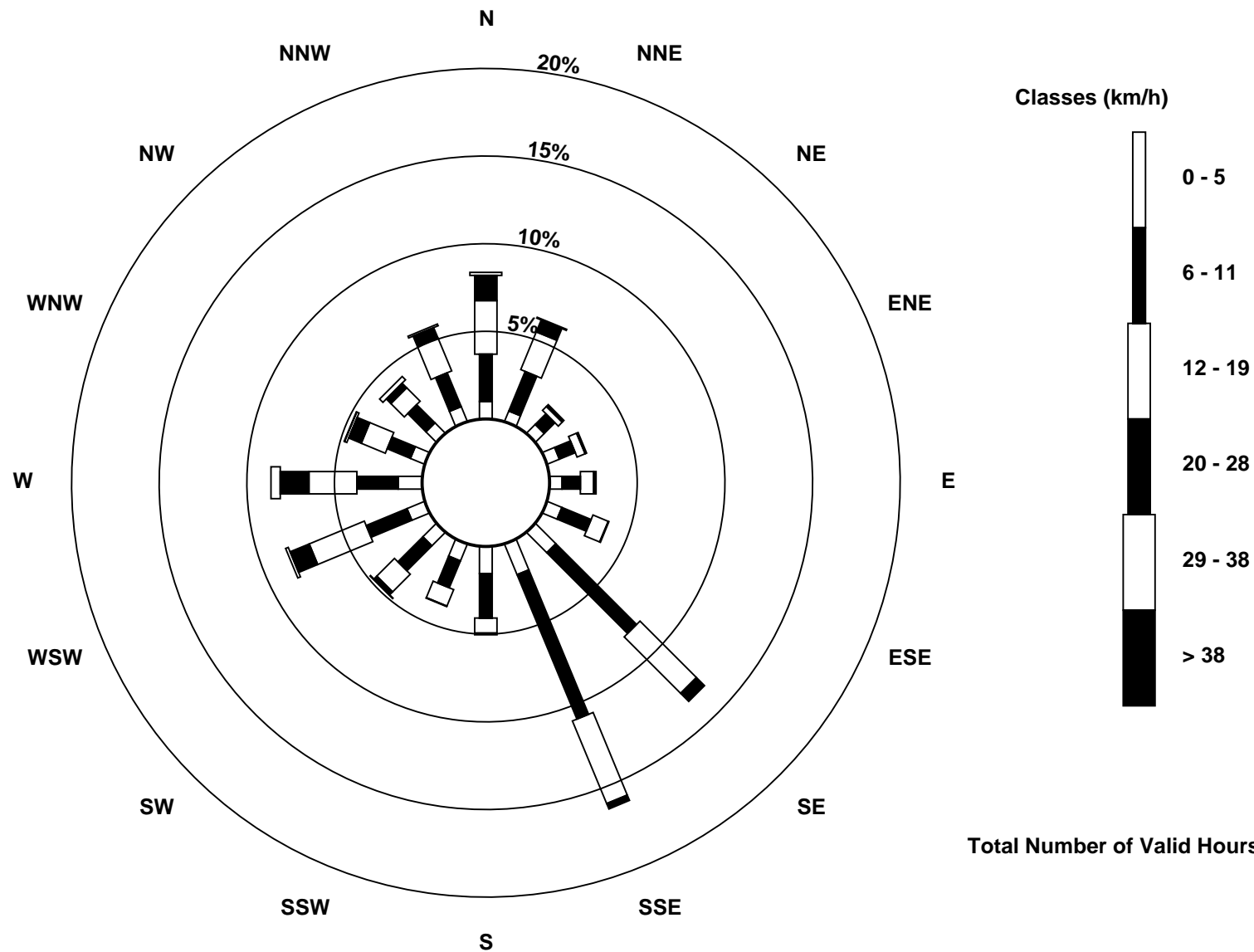
Wind Speed (WS) - km/h
Buffalo Viewpoint (AMS 4)





Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed 20 m (WS20m) - km/h
Mannix (AMS 5)

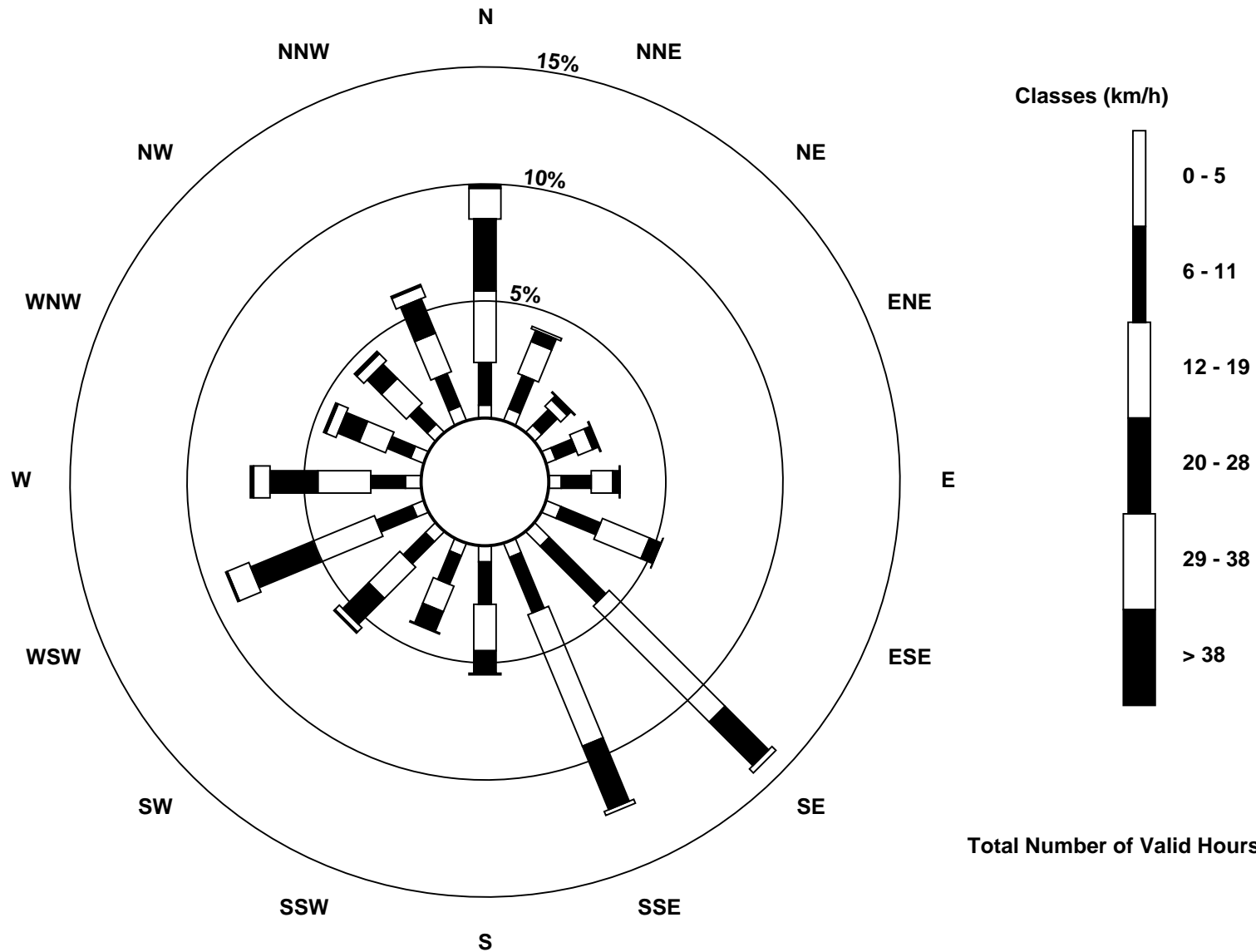


Total Number of Valid Hours: 8485



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed 45 m (WS45m) - km/h
Mannix (AMS 5)

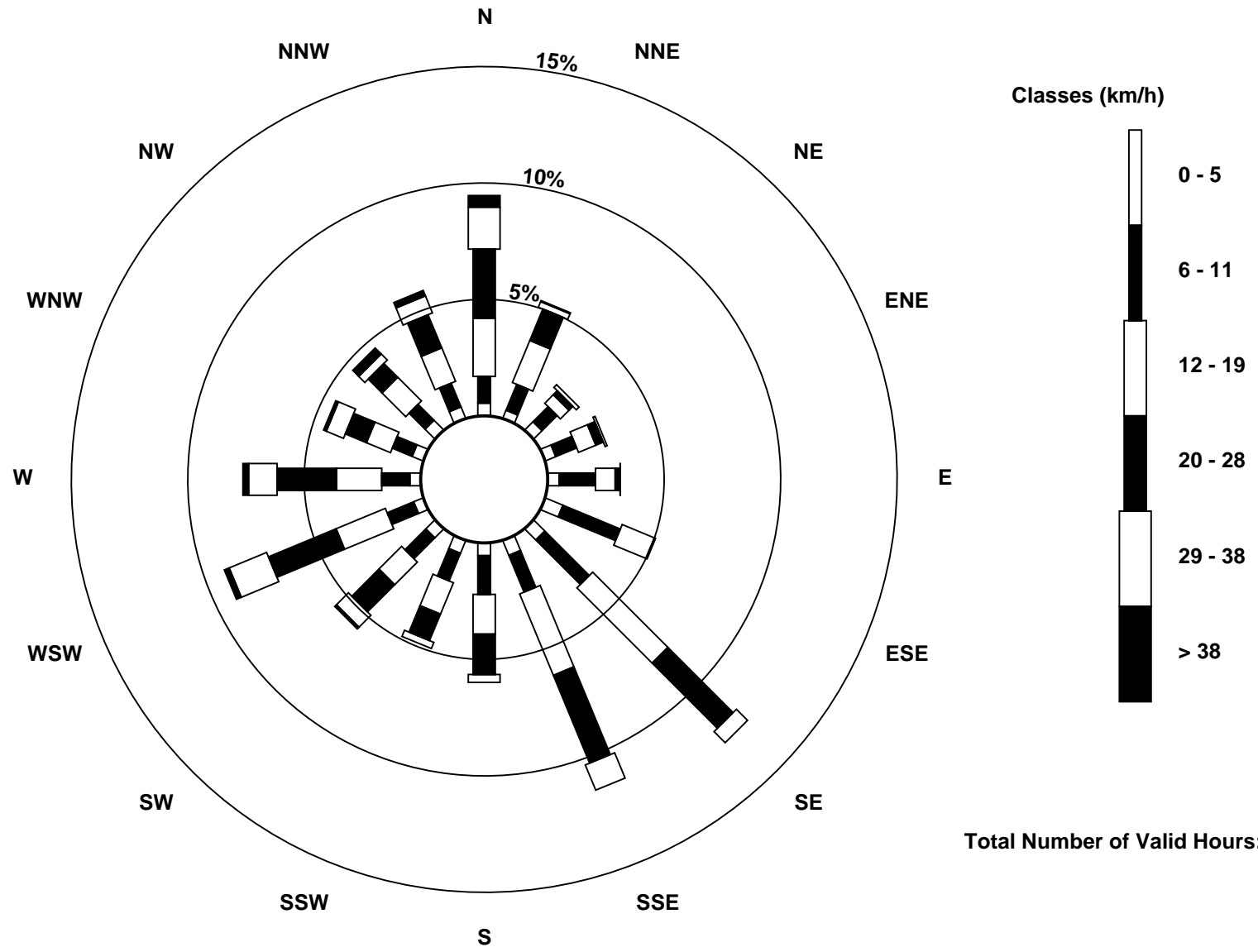


Total Number of Valid Hours: 8456

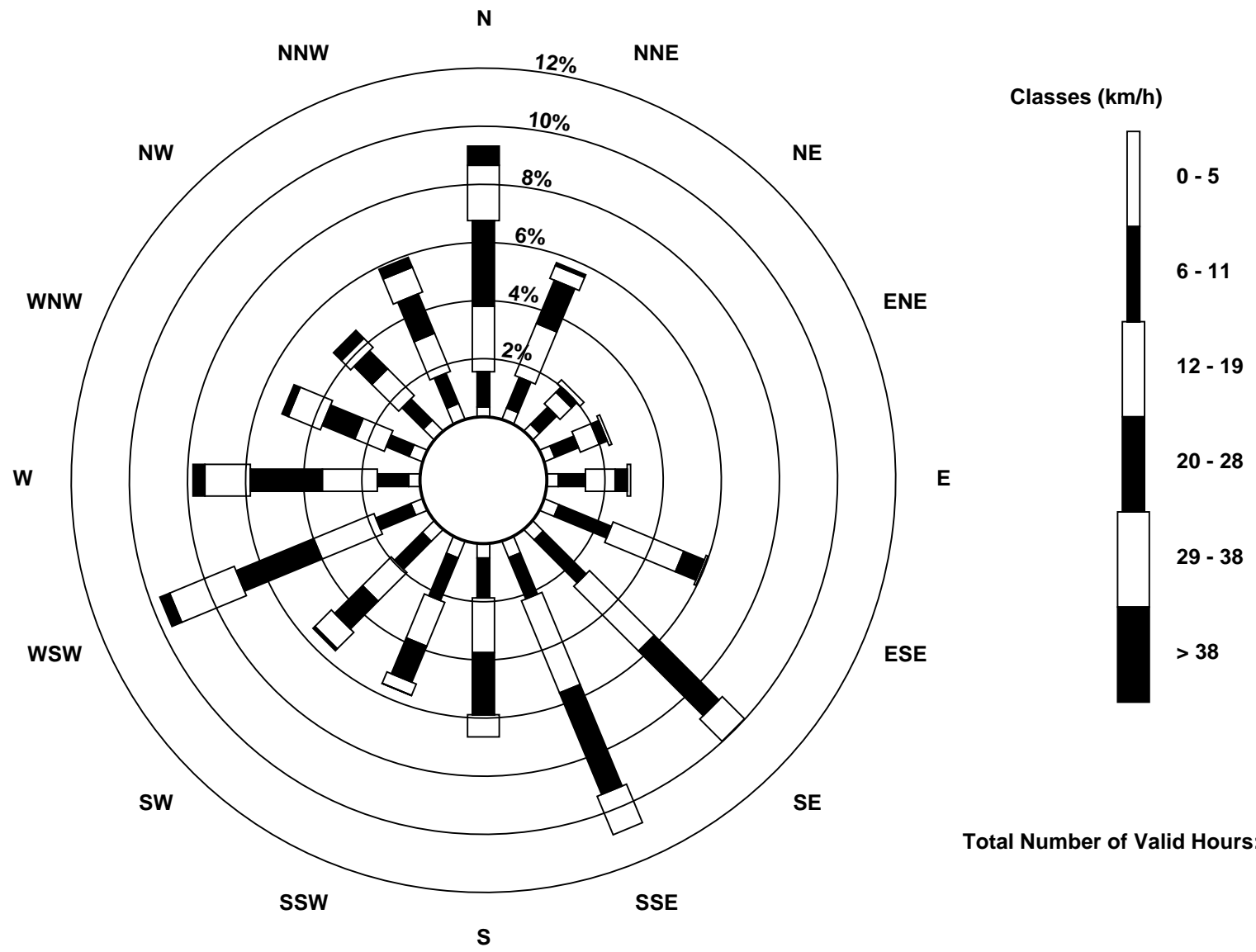


Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed 75 m (WS75m) - km/h
Mannix (AMS 5)



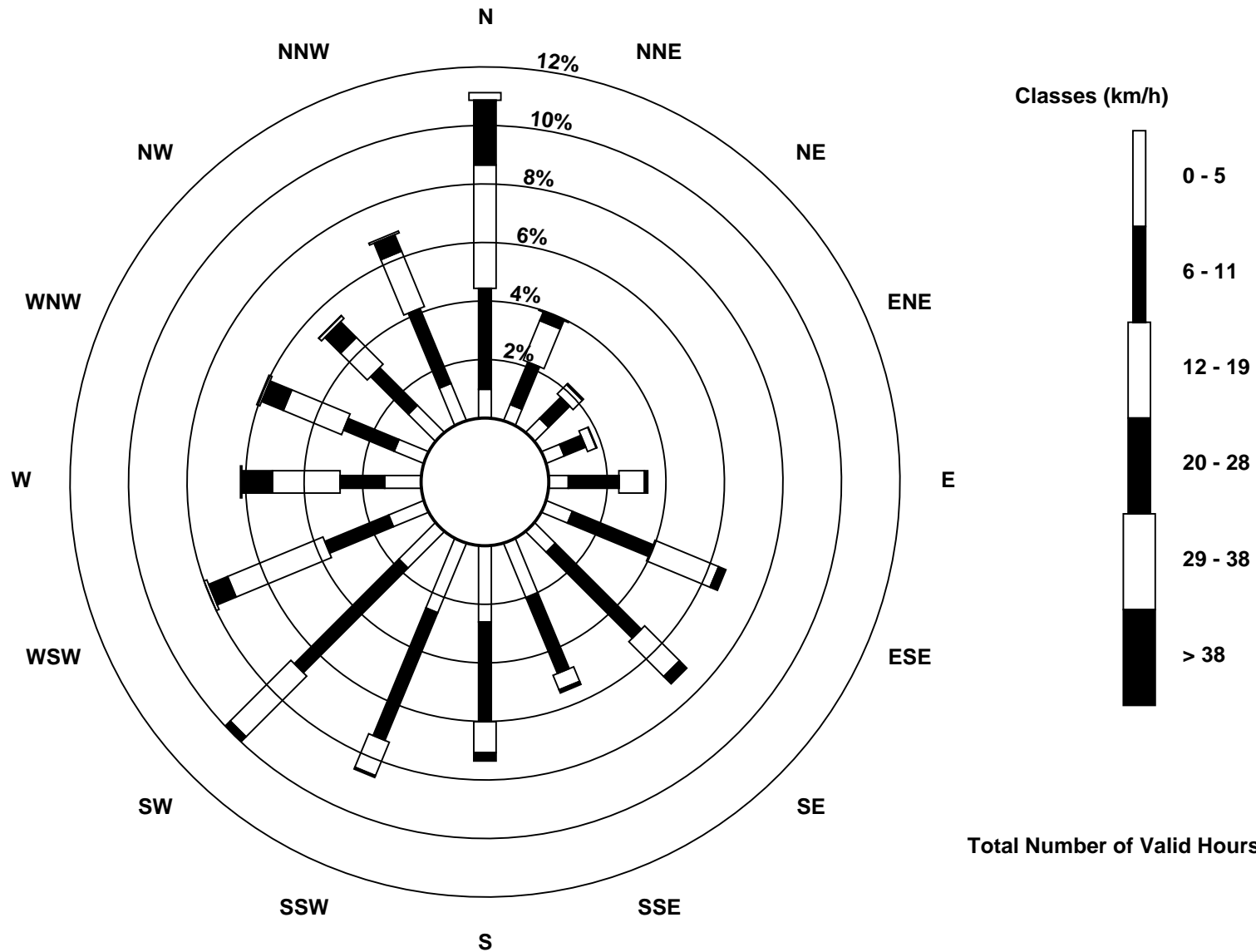
Total Number of Valid Hours: 8434





Wood Buffalo Environmental Association
Wind Rose 2017

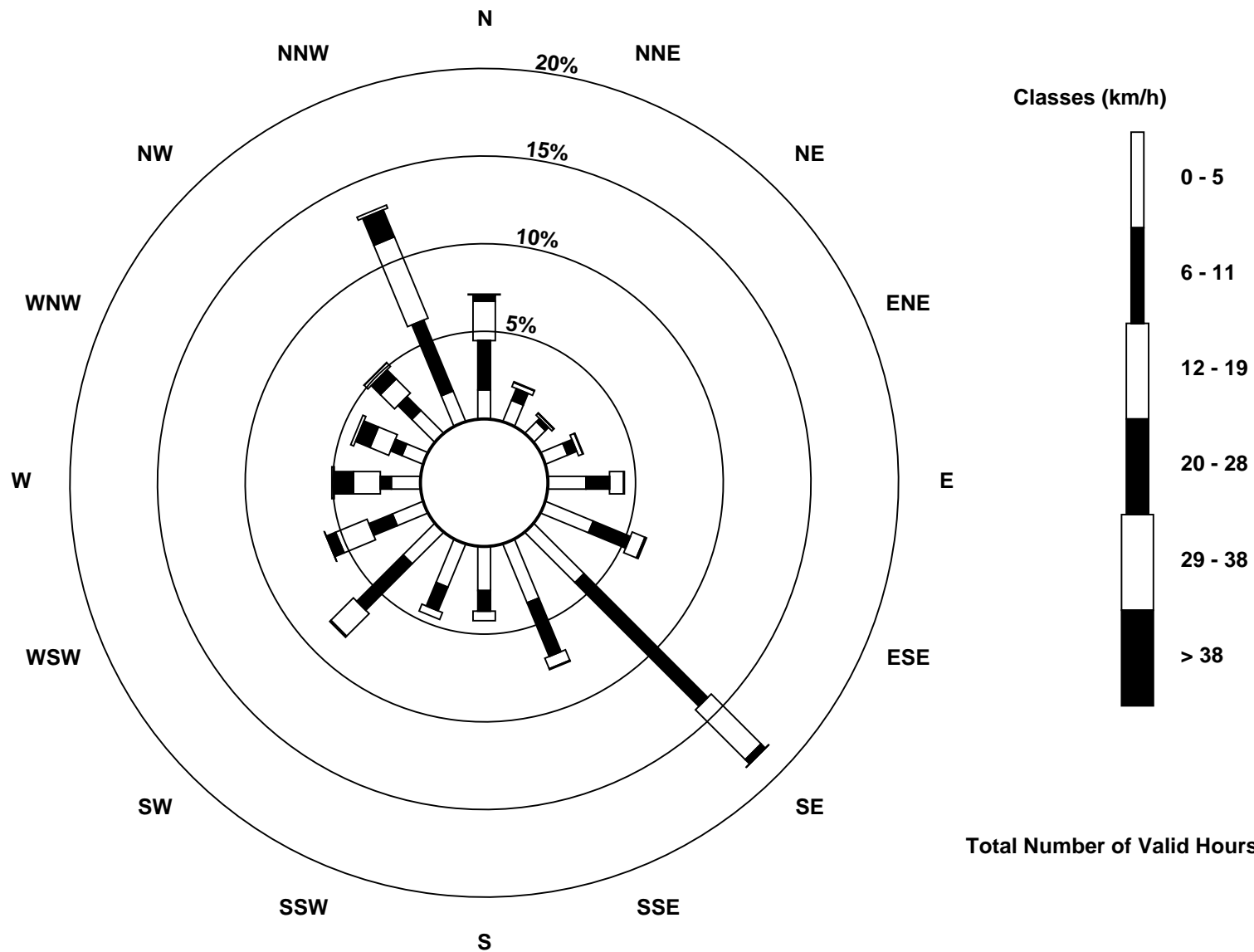
Wind Speed (WS) - km/h
Patricia McInnes (AMS 6)





Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Athabasca Valley (AMS 7)

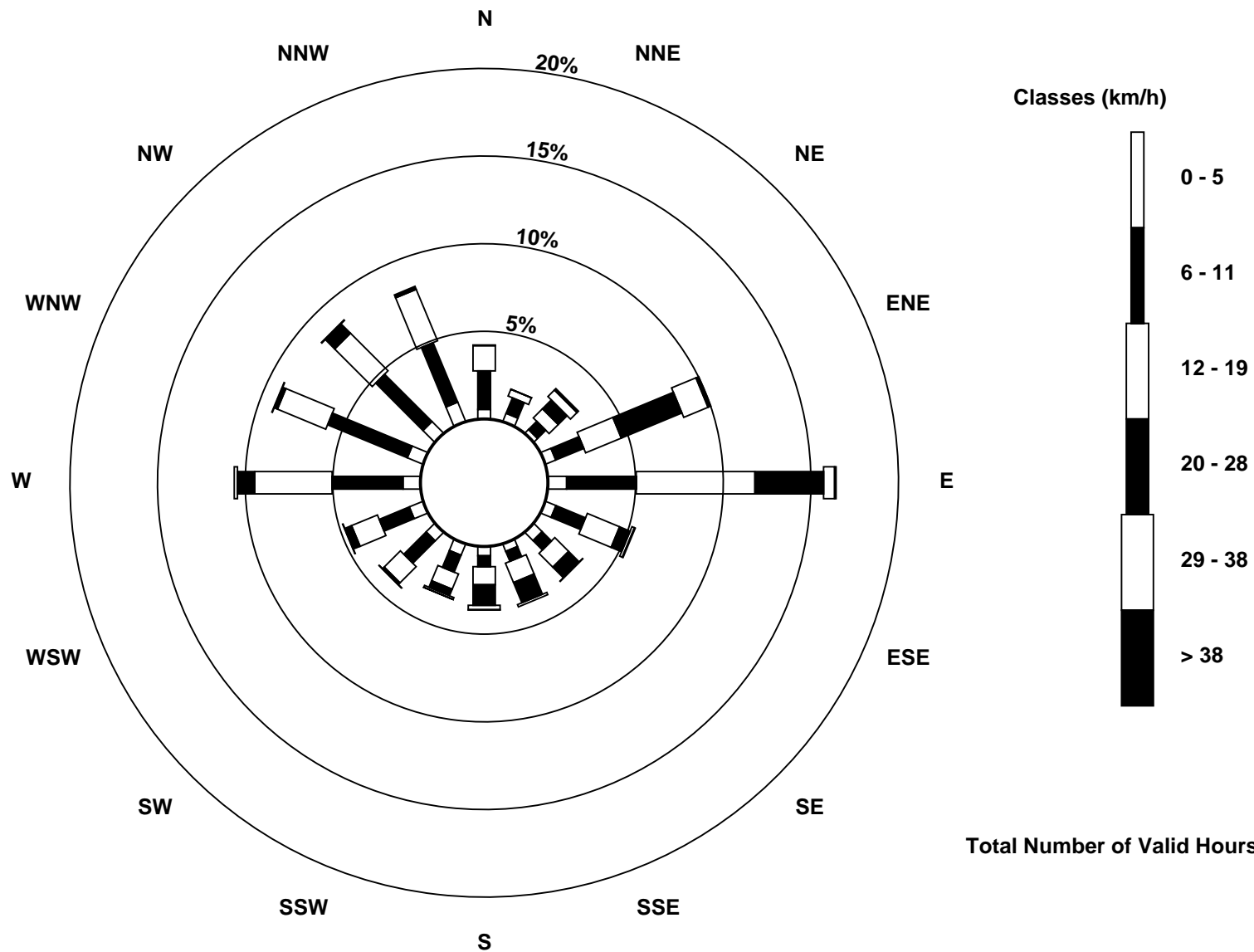


Total Number of Valid Hours: 8717



Wood Buffalo Environmental Association
Wind Rose 2017

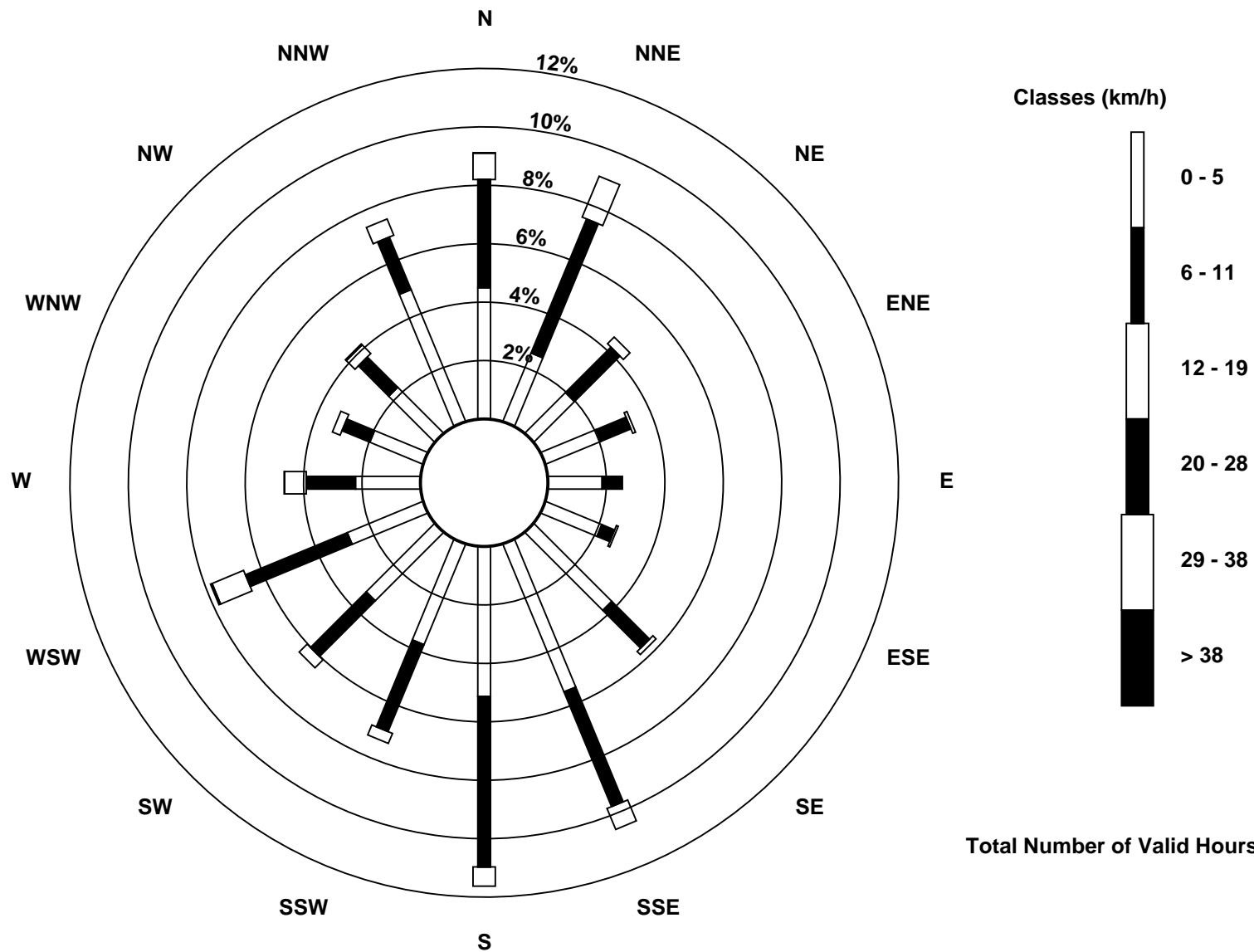
Wind Speed (WS) - km/h
Fort Chipewyan (AMS 8)





Wood Buffalo Environmental Association
Wind Rose 2017

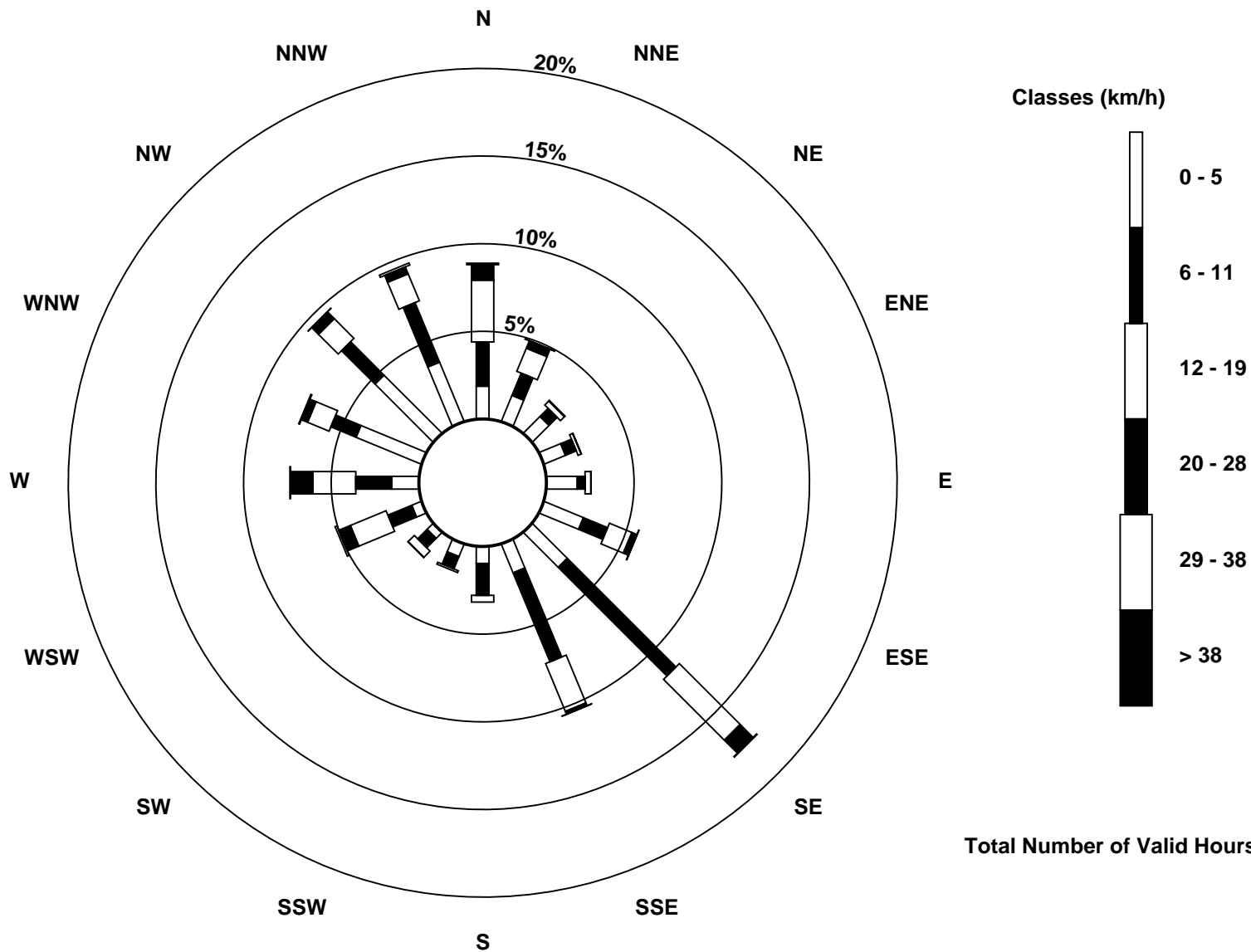
Wind Speed (WS) - km/h
Barge Landing (AMS 9)





Wood Buffalo Environmental Association
Wind Rose 2017

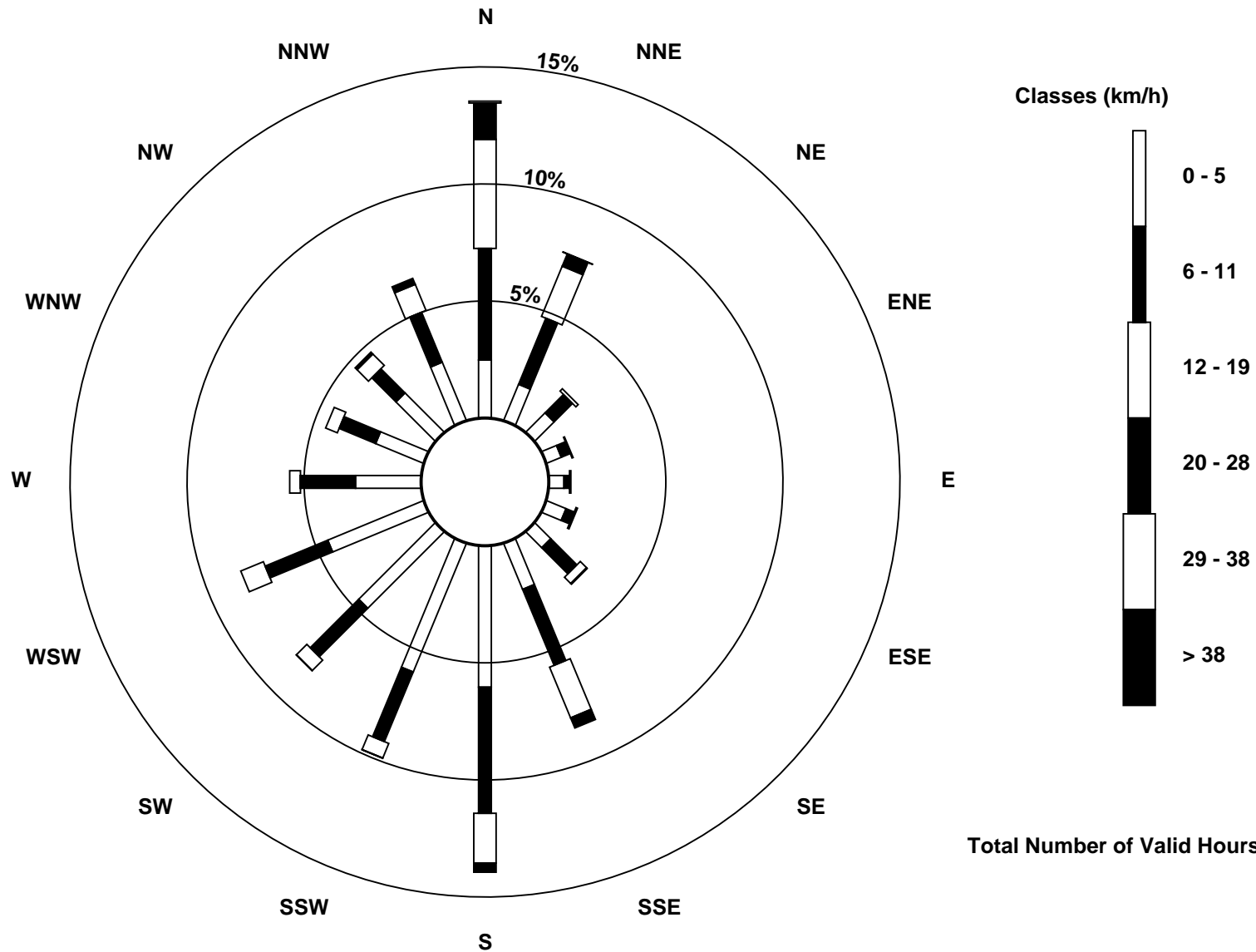
Wind Speed (WS) - km/h
Lower Camp (AMS 11)





Wood Buffalo Environmental Association
Wind Rose 2017

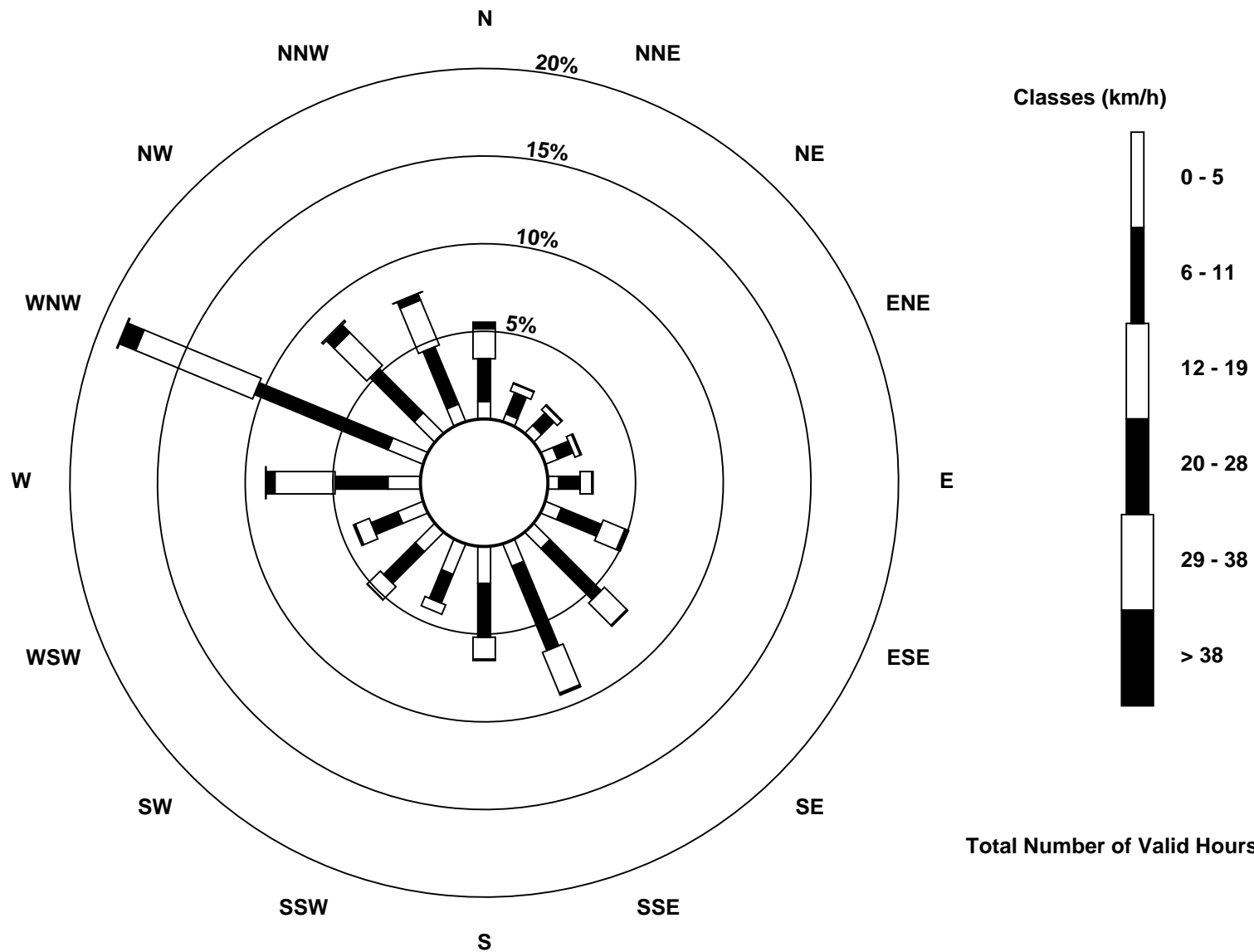
Wind Speed (WS) - km/h
Fort McKay South (AMS 13)





Wood Buffalo Environmental Association
Wind Rose 2017

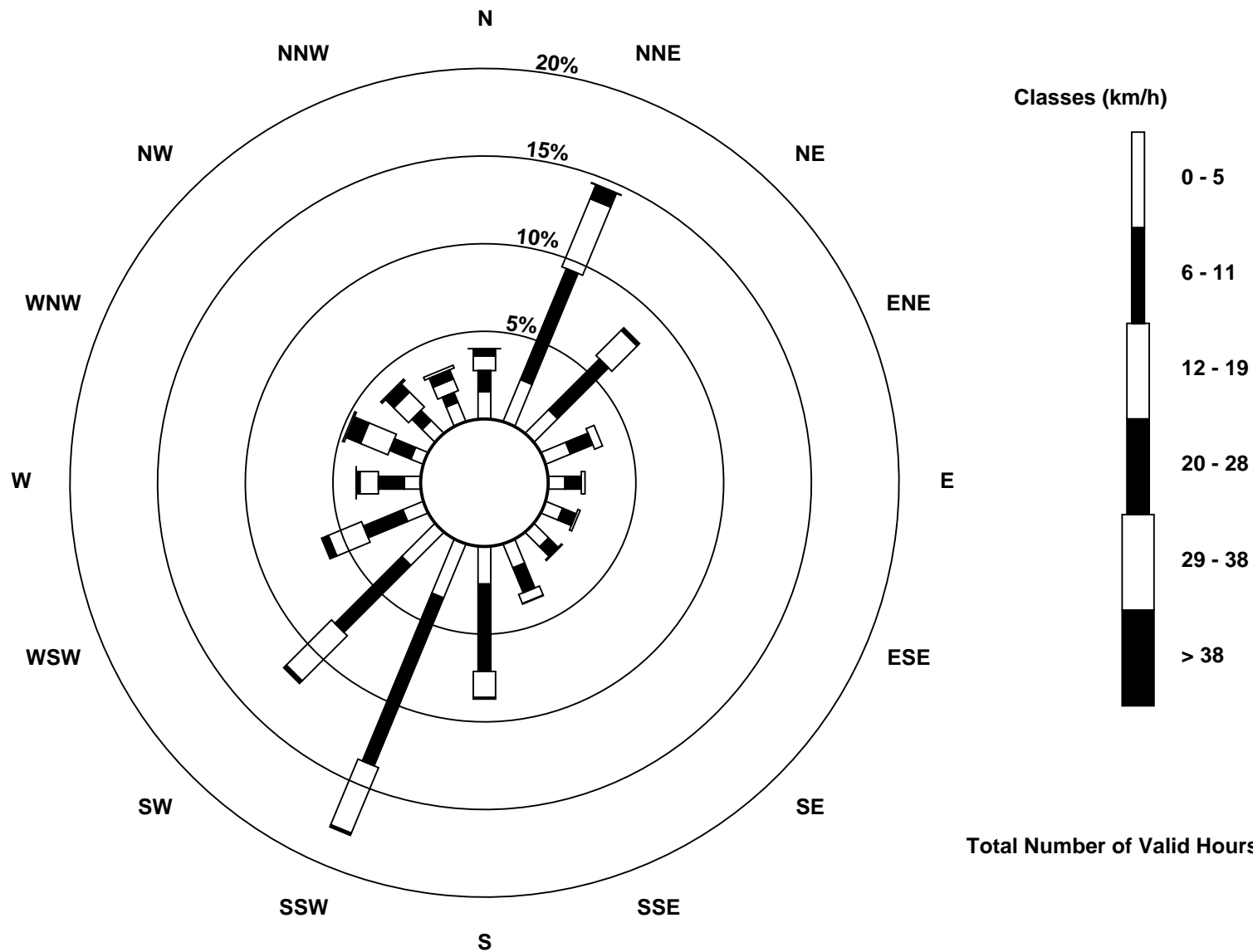
Wind Speed (WS) - km/h
Anzac (AMS 14)





Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Horizon (AMS 15)

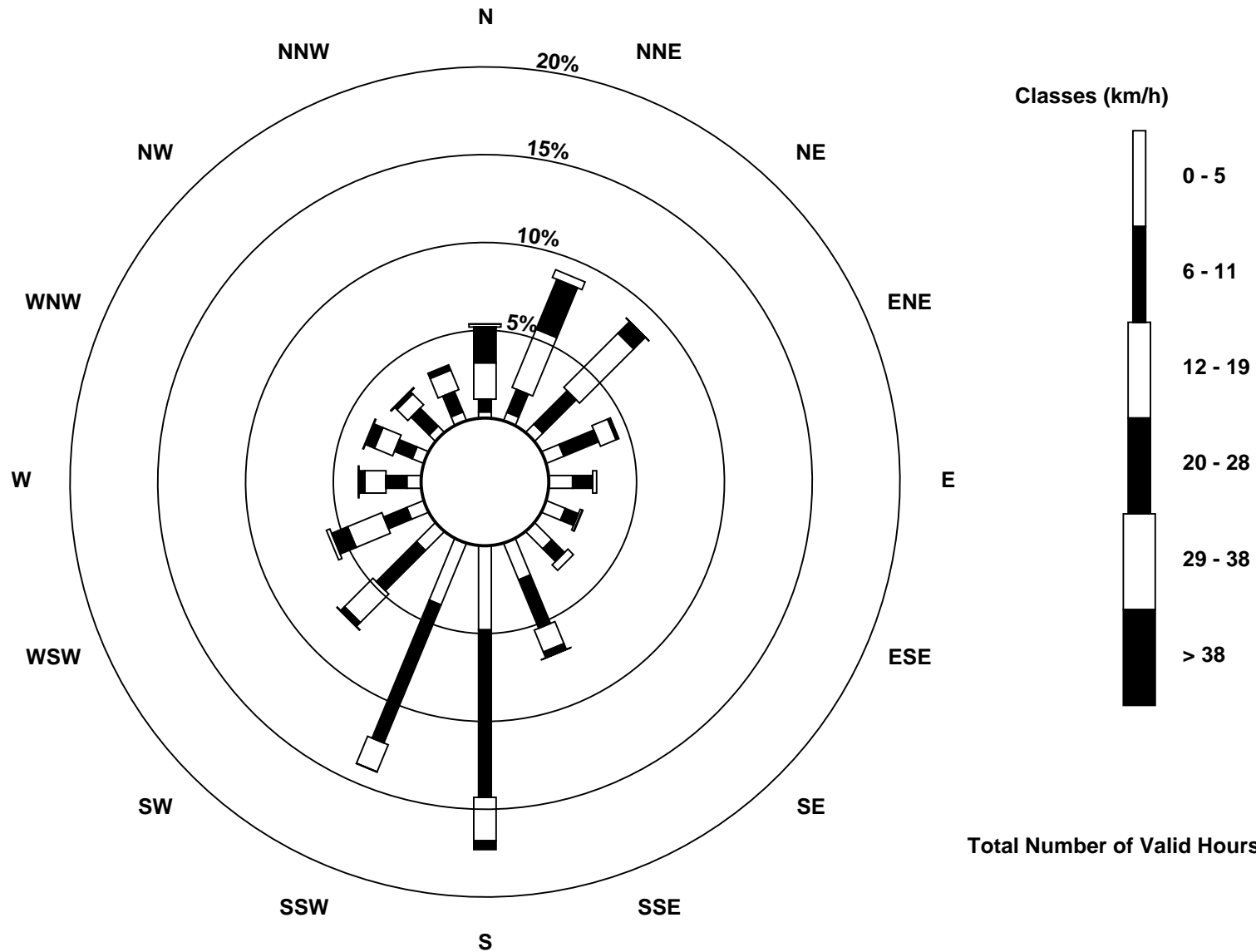


Total Number of Valid Hours: 8655



Wood Buffalo Environmental Association
Wind Rose 2017

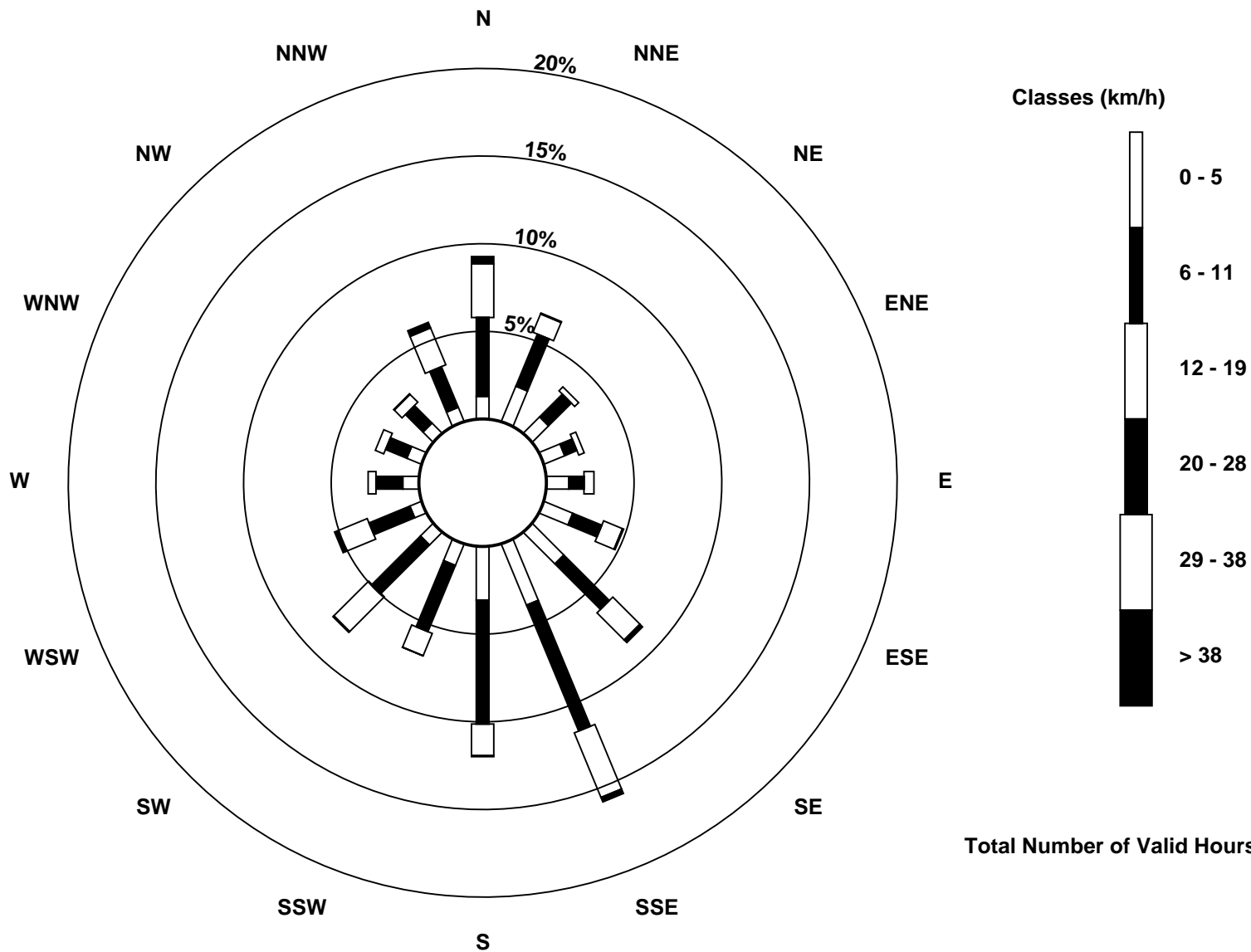
Wind Speed (WS) - km/h
Muskeg River (AMS 16)





Wood Buffalo Environmental Association
Wind Rose 2017

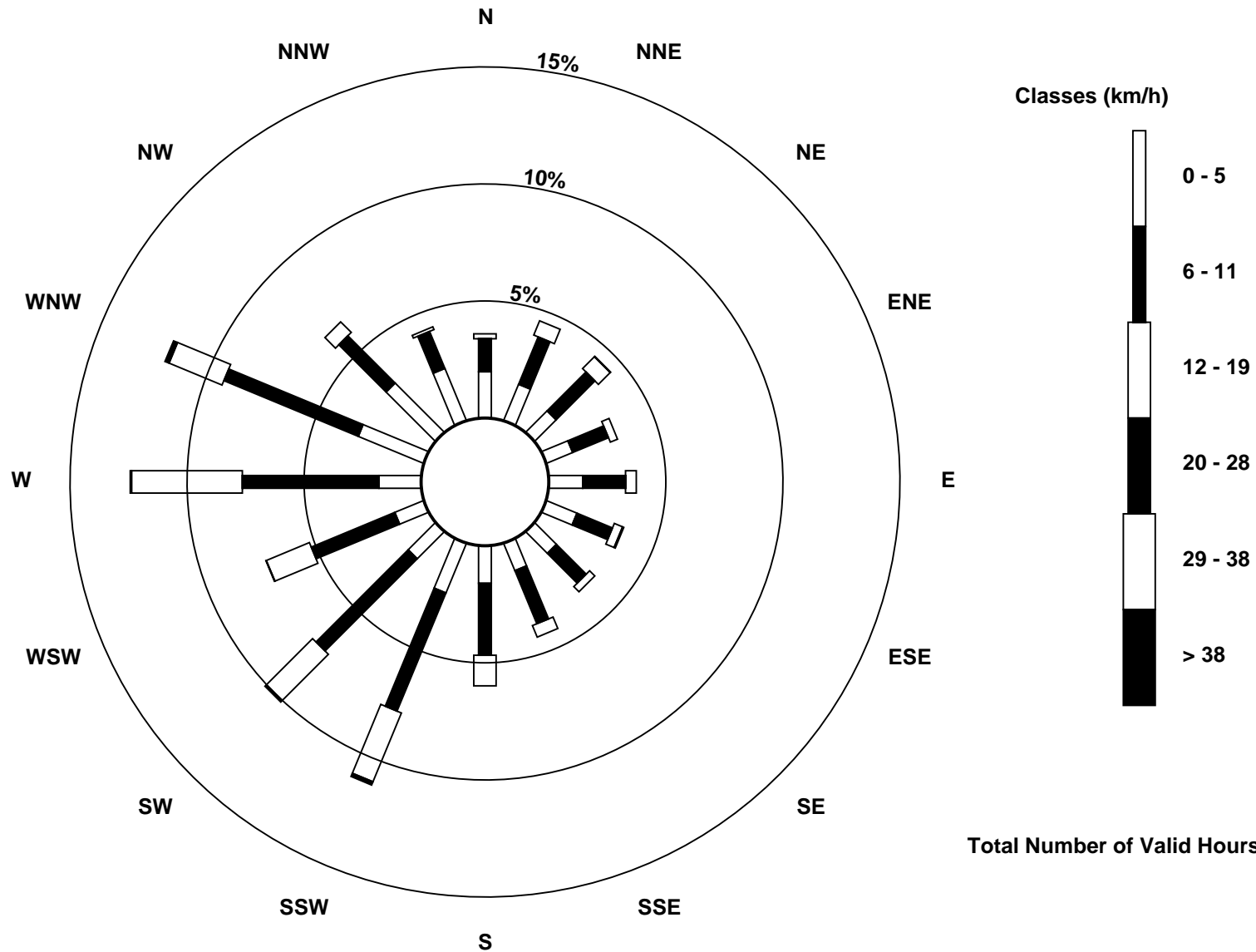
Wind Speed (WS) - km/h
Wapasu (AMS 17)





Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Stony Mountain (AMS 18)

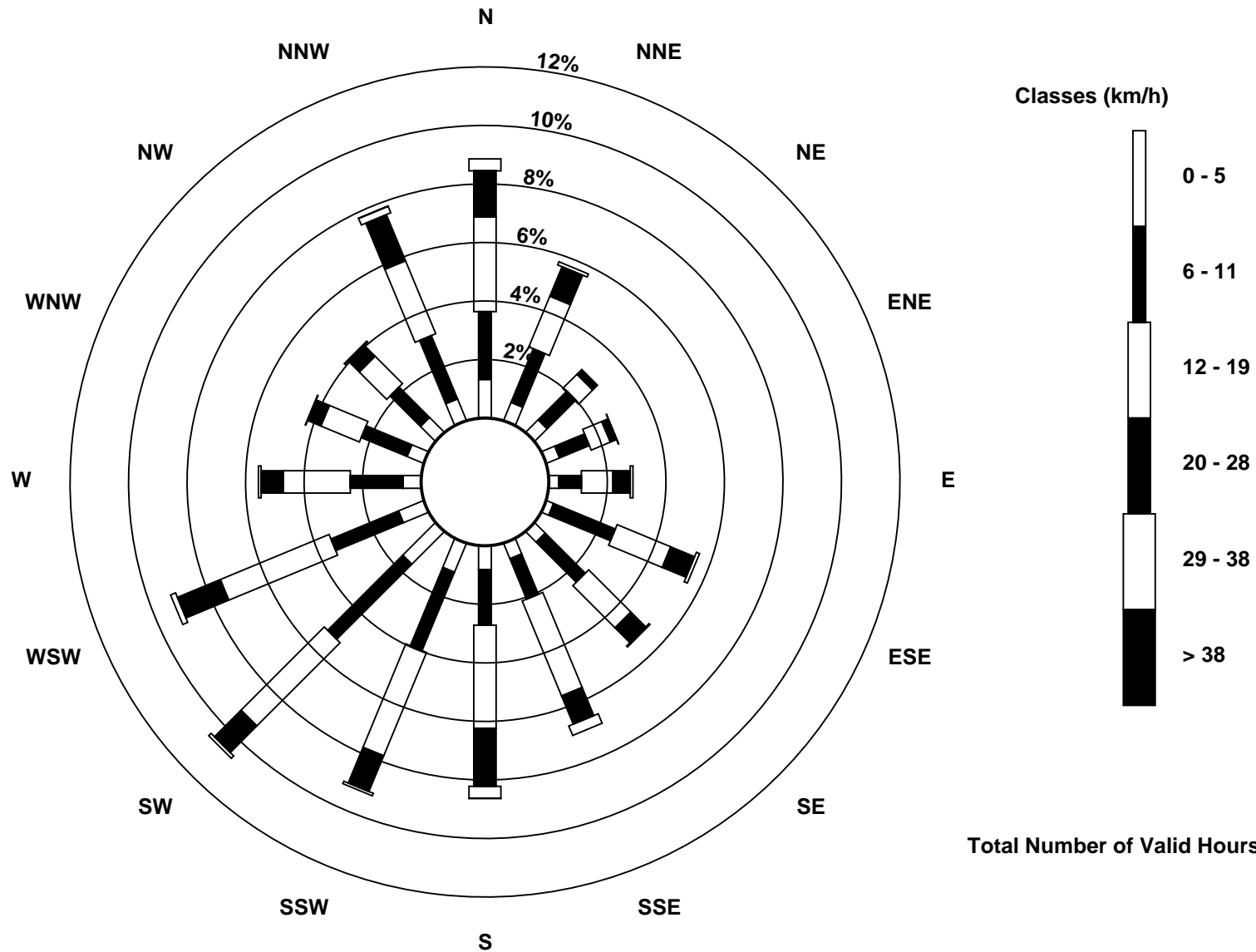


Total Number of Valid Hours: 8642



Wood Buffalo Environmental Association
Wind Rose 2017

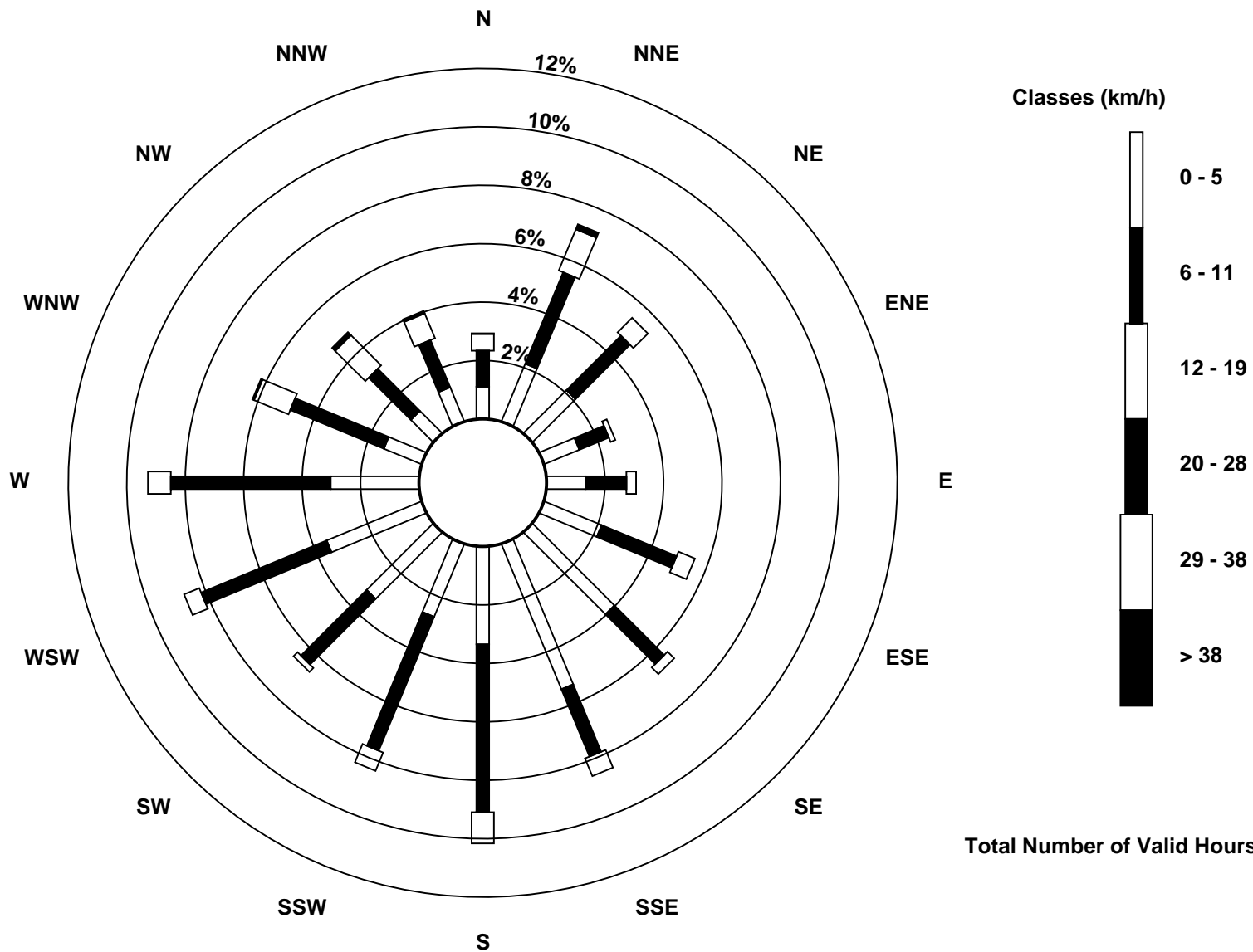
Wind Speed (WS) - km/h
Firebag (AMS 19)





Wood Buffalo Environmental Association
Wind Rose 2017

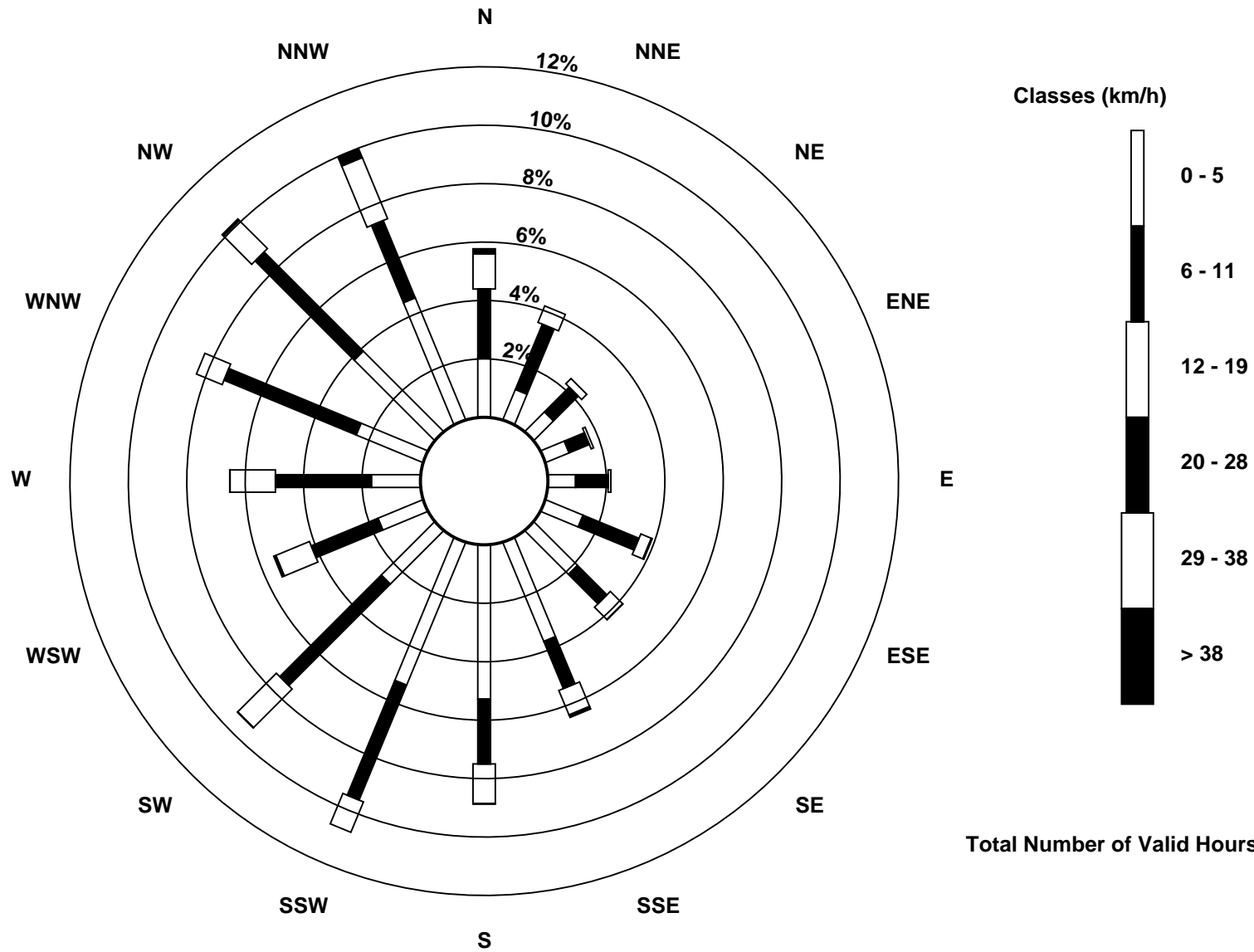
Wind Speed (WS) - km/h
Mackay River (AMS 20)





Wood Buffalo Environmental Association
Wind Rose 2017

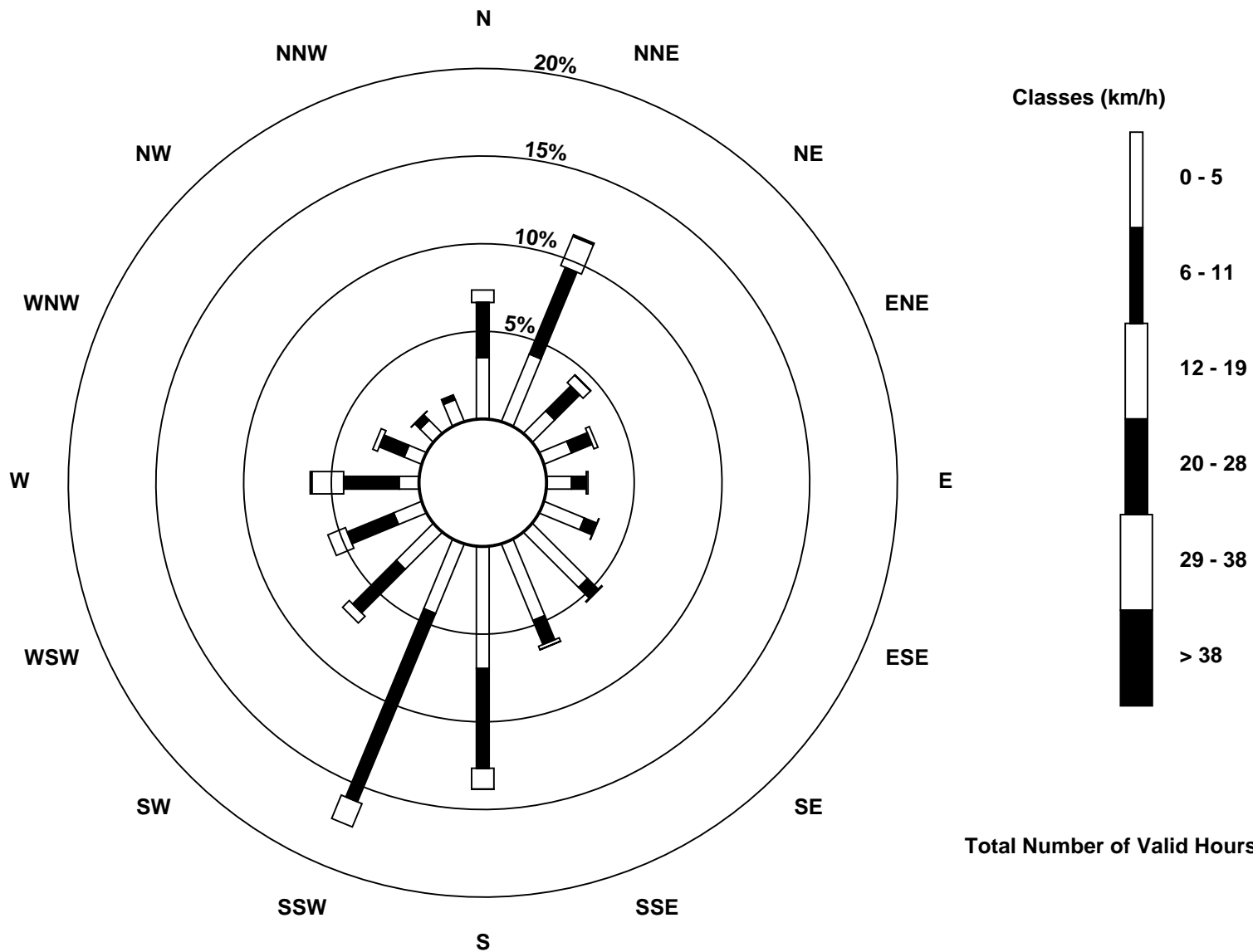
Wind Speed (WS) - km/h
Conklin (AMS 21)





Wood Buffalo Environmental Association
Wind Rose 2017

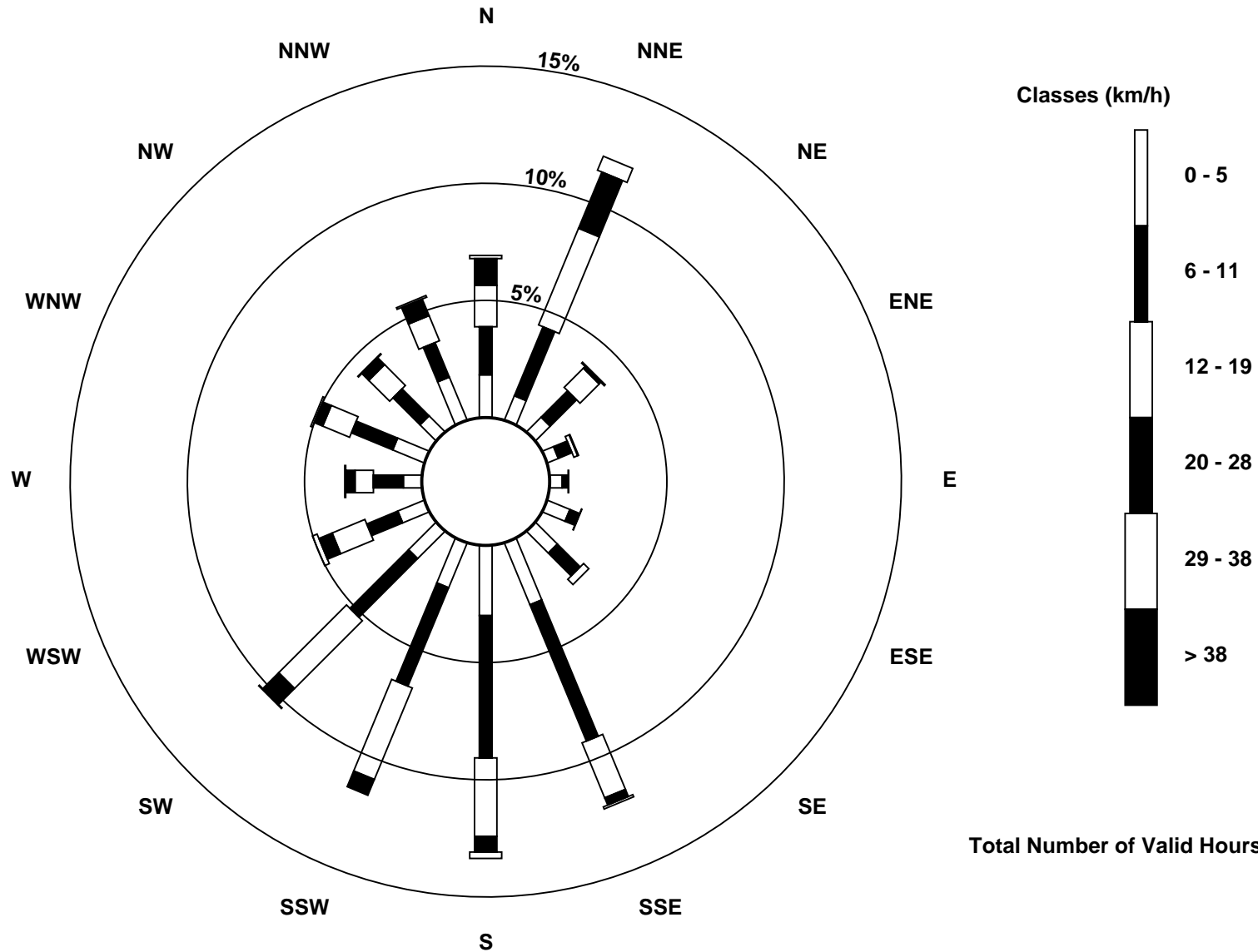
Wind Speed (WS) - km/h
Janvier (AMS 22)





Wood Buffalo Environmental Association
Wind Rose 2017

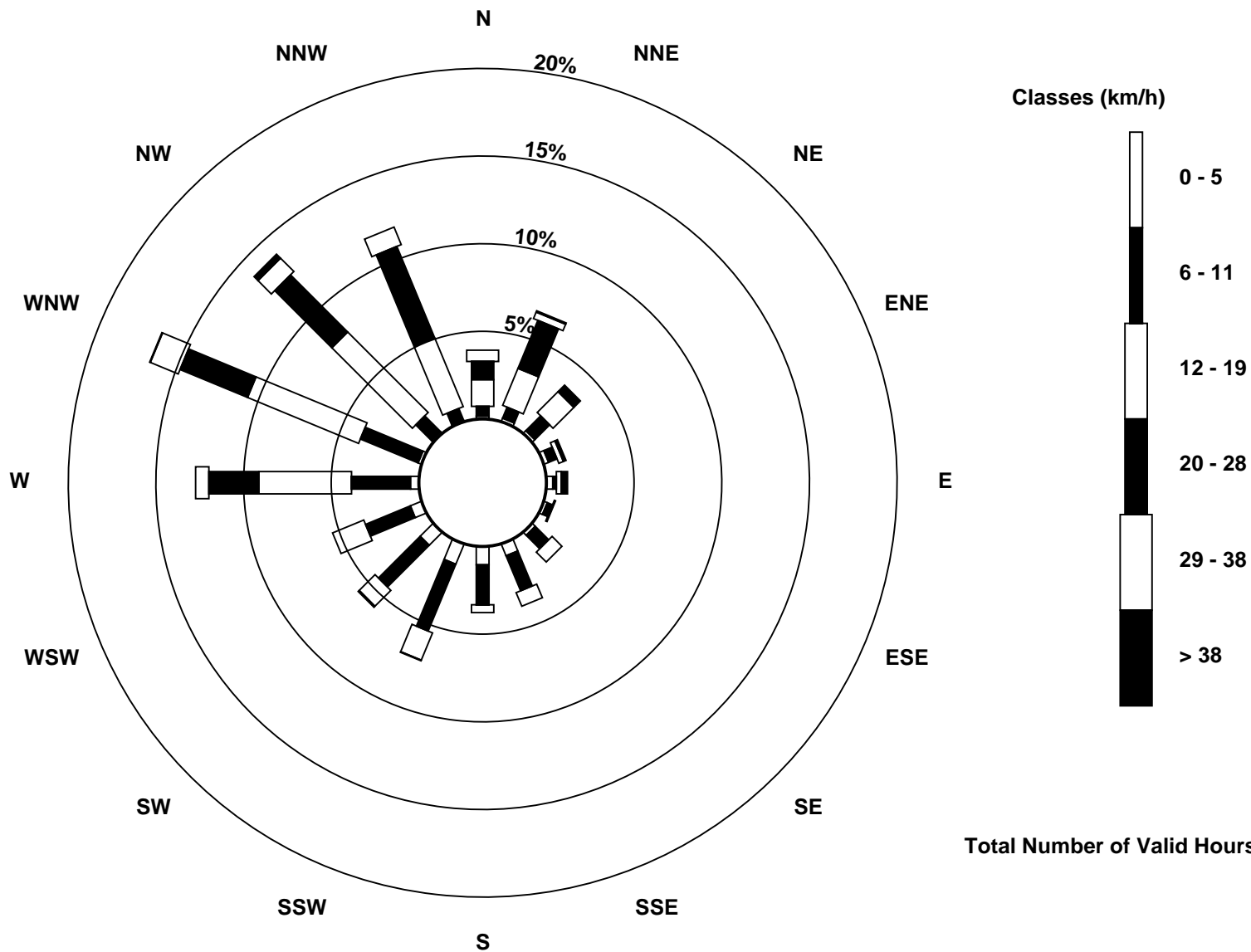
Wind Speed (WS) - km/h
Fort Hills (AMS 23)





Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Surmont (AMS 24)

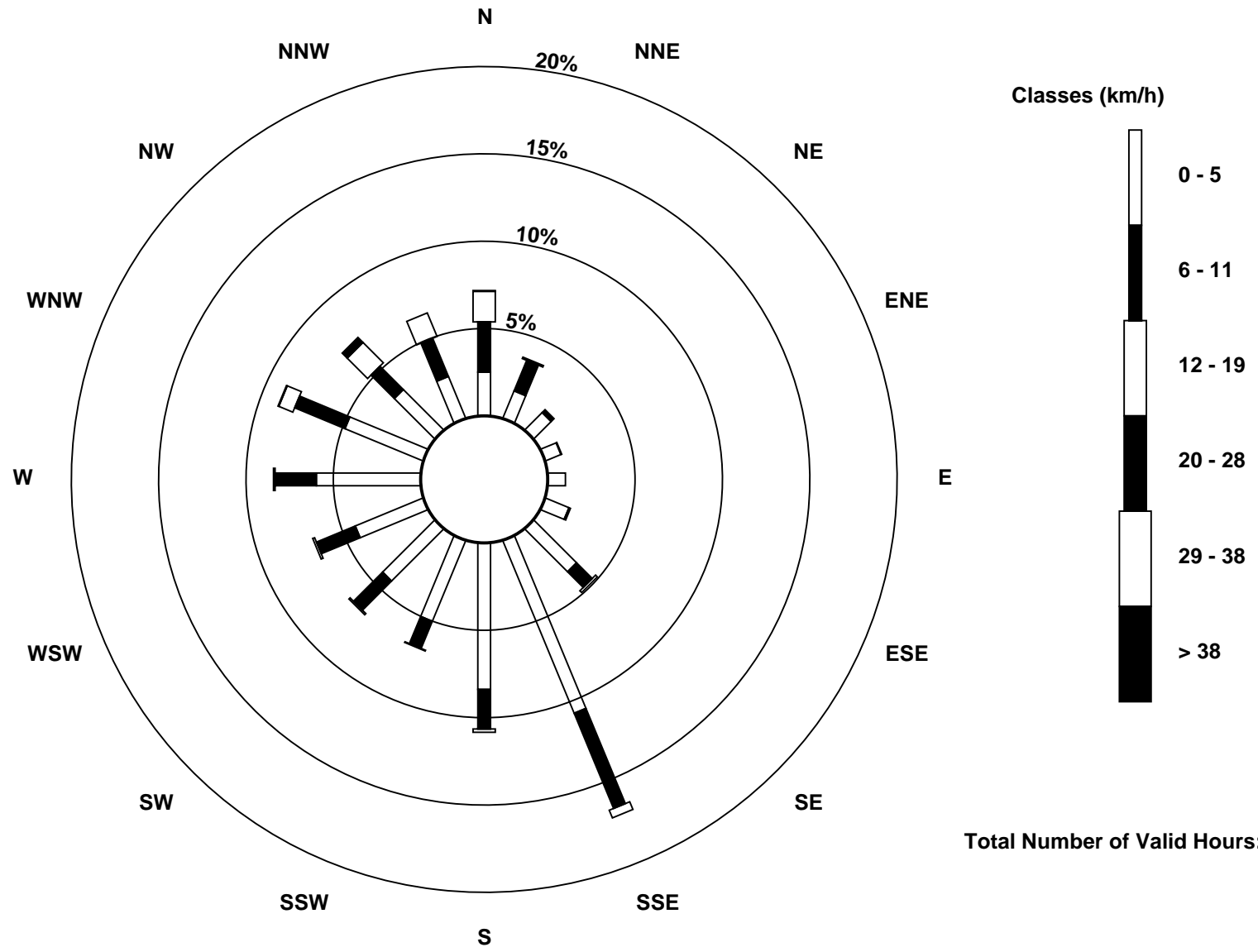


Total Number of Valid Hours: 2496



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin (AMS 25)

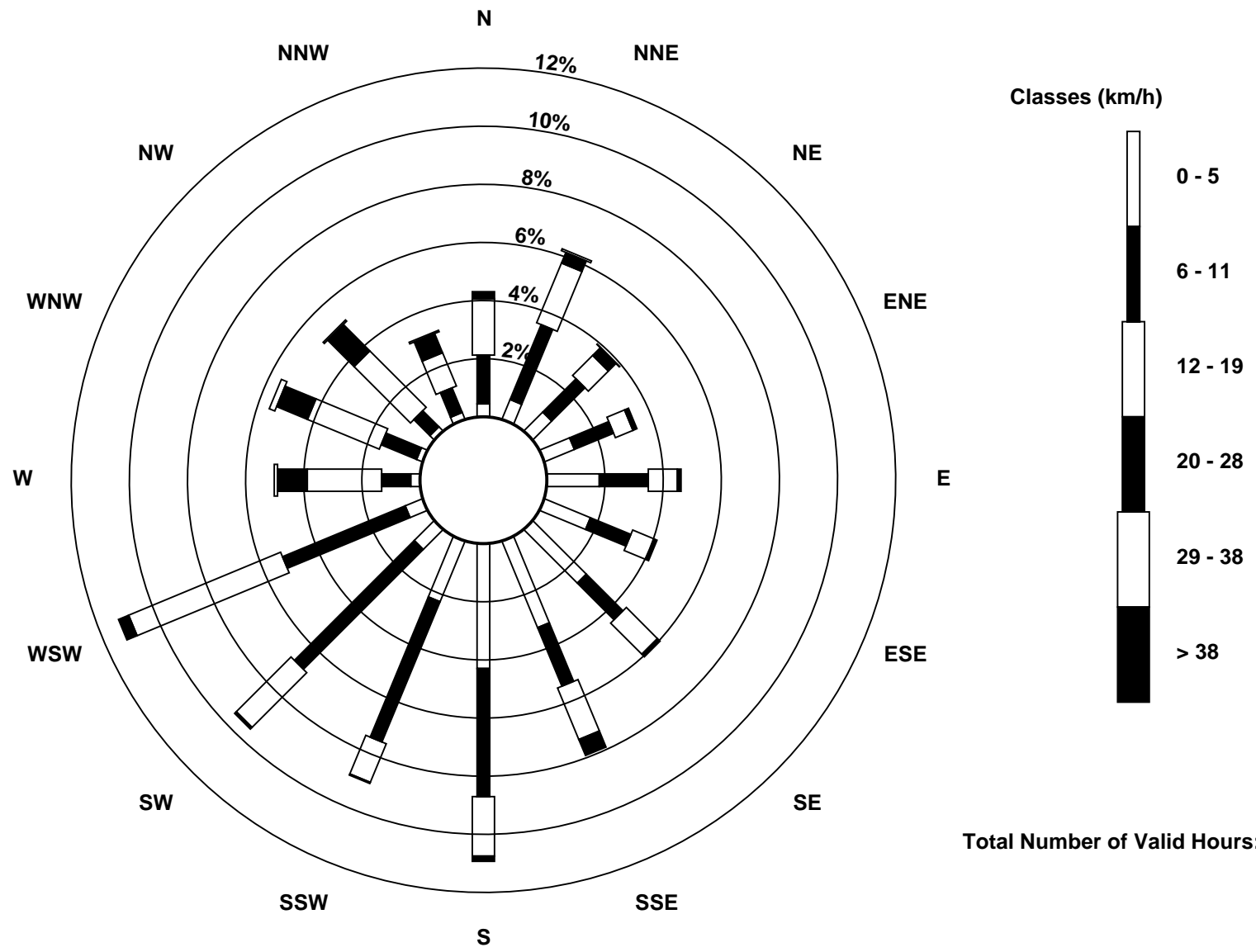


Total Number of Valid Hours: 4235



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Christina Lake (AMS 500)

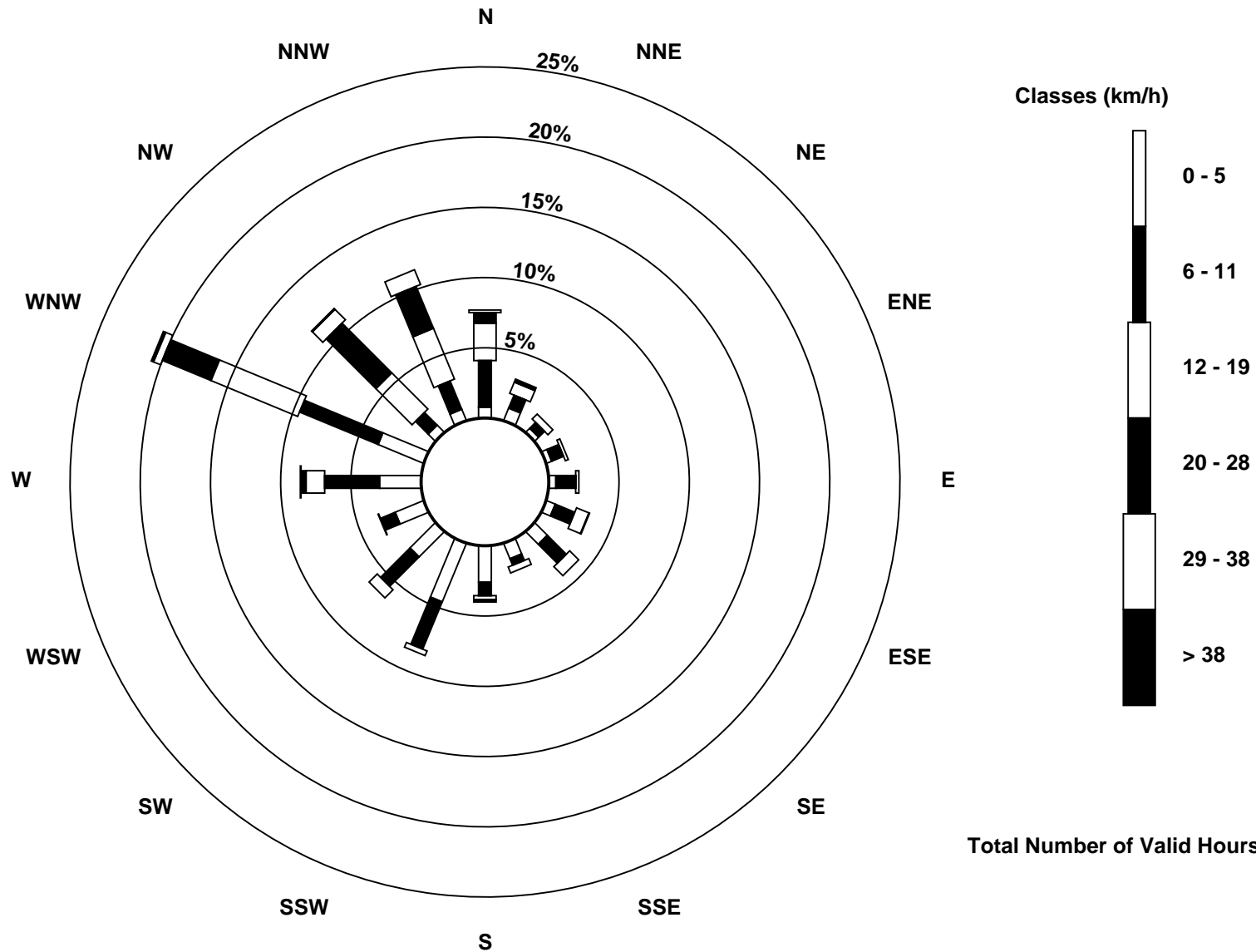


Total Number of Valid Hours: 8709



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Leismer (AMS 501)

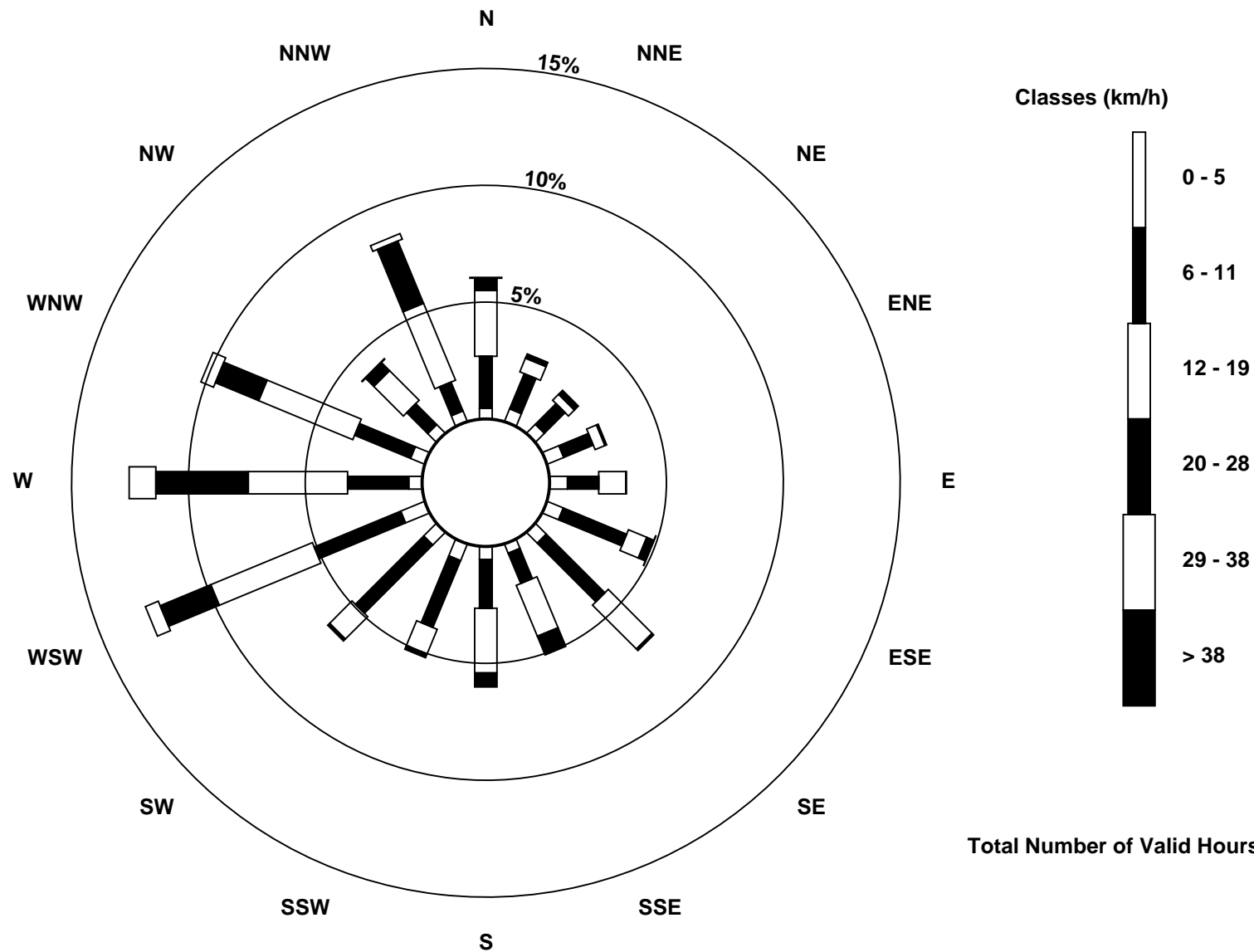


Total Number of Valid Hours: 2197



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Surmont PAMS (AMS 502)

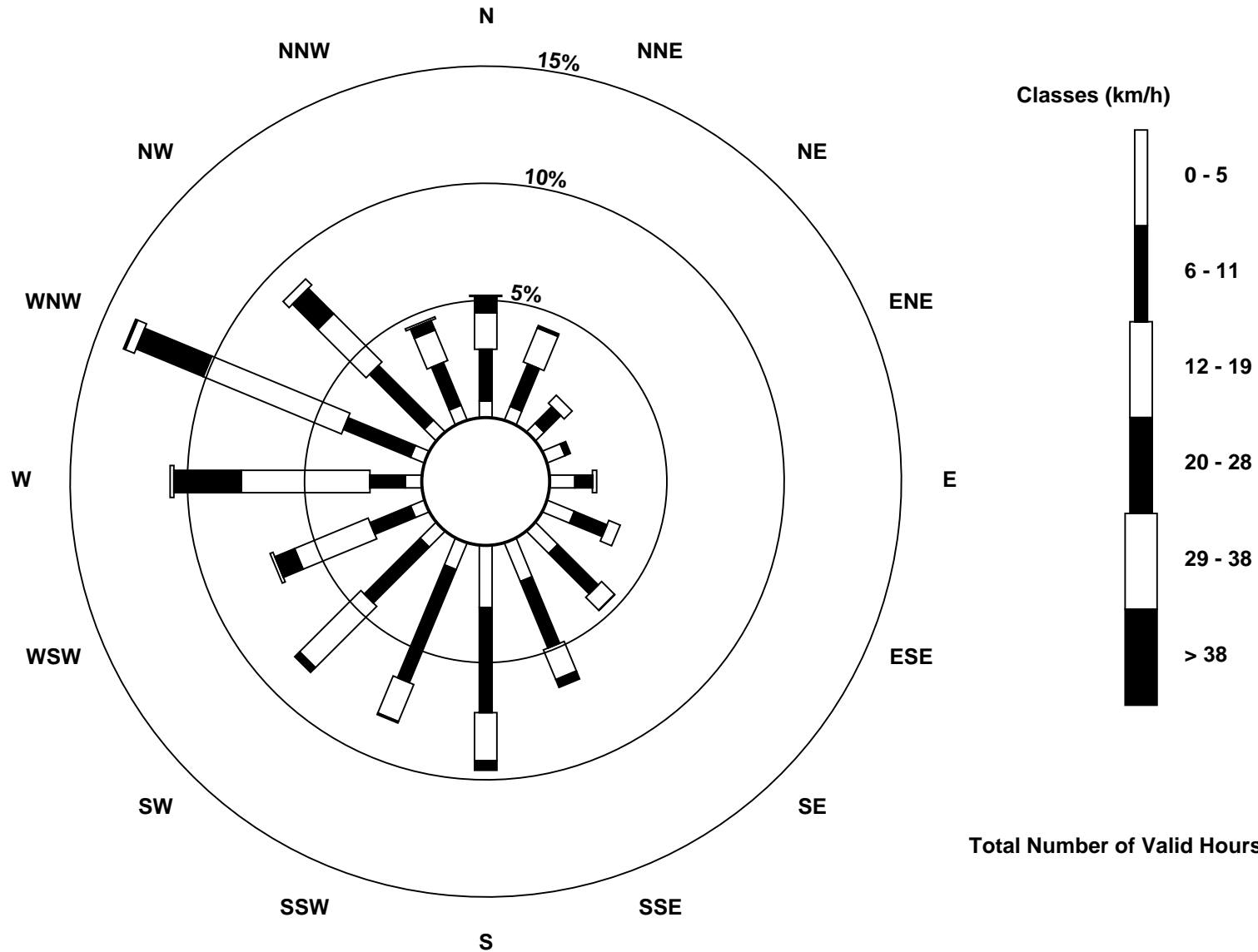


Total Number of Valid Hours: 6142



Wood Buffalo Environmental Association
Wind Rose 2017

Wind Speed (WS) - km/h
Sawbones Bay (AMS 505)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

APPENDIX I: AAAQO EXCEEDANCES 2017

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

March 2018



Site	Parameter	Date/Time	Reference	Period	Reported	Final	Status
AMS 5 Mannix	H2S	07Jan17, 11:00	319760	1hr	10	10	nae
AMS 5 Mannix	H2S	07Jan17, 12:00	319760	1hr	10	9	nae
AMS 11 Lower Camp	H2S	01Jan17, 16:00	319600	1hr	10	10	nae
AMS 11 Lower Camp	H2S	15Jan17, 15:00	320012	1hr	12	12	exc
AMS 11 Lower Camp	H2S	15Jan17, 16:00	320013	1hr	11	11	exc
AMS 11 Lower Camp	H2S	15Jan17, 17:00	320015	1hr	10	11	exc
AMS 11 Lower Camp	H2S	29Jan17, 16:00	320496	1hr	22	22	exc
AMS 11 Lower Camp	H2S	29Jan17, 17:00	320497	1hr	20	20	exc
AMS 11 Lower Camp	H2S	30Jan17, 03:00	320499	1hr	14	14	exc
AMS 14 Anzac	PM2.5	19Jan17, 24:00	320201	24hr	33	33.6	exc
AMS 15 CNRL Horizon	SO2	12Jan17, 17:00	319926	1hr	514	513	exc
AMS 15 CNRL Horizon	SO2	12Jan17, 18:00	319930	1hr	178	177	exc
AMS 4 Buffalo Viewpoint	H2S	06Feb17, 18:00	320749	1hr	11	11	exc
AMS 11 Lower Camp	H2S	05Feb17, 16:00	320714	1hr	11	11	exc
AMS 11 Lower Camp	H2S	08Feb17, 18:00	320839	1hr	10	11	exc
AMS 11 Lower Camp	H2S	08Feb17, 20:00	320840	1hr	11	11	exc
AMS 11 Lower Camp	H2S	16Feb17, 01:00	321083	1hr	10	10	nae
AMS 11 Lower Camp	H2S	27Feb17, 19:00	321474	1hr	11	11	exc
AMS 15 CNRL Horizon	TRS	10Feb17, 24:00	320912	1hr	12	11	exc
AMS 5 Mannix	H2S	28Apr17, 22:00	323651	1hr	86	86	exc
AMS 5 Mannix	H2S	28Apr17, 23:00	323651	1hr	38	37	exc
AMS 5 Mannix	H2S	28Apr17, 24:00	323651	1hr	66	66	exc
AMS 5 Mannix	H2S	28Apr17, 24:00	323651	24hr	9	9.5	exc
AMS 5 Mannix	H2S	29Apr17, 10:00	323658	1hr	11	11	exc
AMS 5 Mannix	H2S	30Apr17, 23:00	323685	1 hr	19	18	exc
AMS 11 Lower Camp	H2S	19Apr17, 21:00	323318	1hr	13	13	exc
AMS 11 Lower Camp	H2S	29Apr17, 21:00	323665	1hr	21	21	exc
AMS 5 Mannix	H2S	02May17, 05:00	323734	1hr	10	9	nae
AMS 5 Mannix	H2S	16May17, 21:00	324419	1hr	24	24	exc
AMS 1 Fort McKay	PM2.5	02June17, 24:00	325182	24hr	38	38	exc
AMS 13 Fort McKay South	PM2.5	02June17, 24:00	325183	24hr	40	40	exc
AMS 15 Horizon	PM2.5	02June17, 24:00	325179	24hr	44	45	exc
AMS 16 Muskeg River	PM2.5	02June17, 24:00	325180	24hr	43	43	exc
AMS 23 Fort Hills	PM2.5	01June17, 24:00	325120	24hr	35	35	exc
AMS 23 Fort Hills	PM2.5	02June17, 24:00	325120	24hr	58	58	exc
AMS 6 Patricia McInnes	O3	02June17, 13:00	327615	1hr	87	87	late
AMS 6 Patricia McInnes	O3	02June17, 14:00	327615	1hr	88	88	late
AMS 7 Athabasca Valley	O3	02June17, 14:00	327617	1hr	95	95	late
AMS 5 Mannix	H2S	14July17, 24:00	326980	1hr	10	10	nae
AMS 5 Mannix	H2S	15July17, 01:00	326981	1hr	32	32	exc
AMS 5 Mannix	H2S	15July17, 02:00	326981	1hr	17	17	exc
AMS 5 Mannix	H2S	16July17, 04:00	327010	1hr	13	13	exc
AMS 5 Mannix	H2S	16July17, 05:00	327010	1hr	14	14	exc
AMS 5 Mannix	H2S	20July17, 01:00	327241	1hr	14	14	exc
AMS 5 Mannix	H2S	24July17, 24:00	327445	24hr	5	4.8	exc
AMS 5 Mannix	H2S	01Aug17, 22:00	327861	1hr	14	14	exc
AMS 5 Mannix	H2S	01Aug17, 23:00	327862	1hr	13	13	exc
AMS 5 Mannix	H2S	22Aug17. 04:00	328674	1hr	10	10	nae
AMS 5 Mannix	H2S	22Aug17. 05:00	328674	1hr	14	14	exc
AMS 5 Mannix	H2S	22Aug17. 06:00	328674	1hr	11	11	exc
AMS 5 Mannix	H2S	22Aug17. 07:00	328674	1hr	11	11	exc
AMS 5 Mannix	H2S	22Aug17. 09:00	328674	1hr	10	9	nae
AMS 5 Mannix	H2S	22Aug17. 024:00	328674	24hr	4	4.1	exc
AMS 18 Stony Mountain	PM2.5	14Aug17, 24:00	328354	24hr	41	41.4	exc
AMS 21 Conklin	PM2.5	14Aug17, 24:00	328356	24hr	41	41.2	exc
AMS 22 Janvier	PM2.5	14Aug17, 24:00	328355	24hr	31	30.8	exc
AMS 23 Fort Hills	PM2.5	14Aug17, 24:00	328357	24hr	35	35.1	exc
AMS 5 Mannix	H2S	14Sep17, 06:00	329688	1hr	15	15	exc
AMS 5 Mannix	H2S	14Sep17, 07:00	329688	1hr	13	13	exc
AMS 2 Mildred Lake	H2S	16Oct17, 12:00	330813	1hr	36	-	ret
AMS 9 Barge Landing	TRS	14Oct17, 06:00	330745	1hr	25	-	ret
AMS 13 Fort McKay South	TRS	14Oct17, 07:00	330744	1hr	23	-	ret
AMS 13 Fort McKay South	SO2	14Oct17, 06:00	330744	1hr	233	-	ret
AMS 11 Lower Camp	H2S	22Nov17, 17:00	332094	1hr	13	13	exc
AMS 11 Lower Camp	H2S	30Nov17, 02:00	332313	1hr	23	-	ret
AMS 23 Fort Hills	PM2.5	08Nov17, 24:00	331671	24hr	31	32	exc



Site	Parameter	Date/Time	Reference	Period	Reported	Final	Status
AMS 11 Lower Camp	H2S	02Dec17, 15:00	332401	1hr	10	10	nae
AMS 11 Lower Camp	H2S	02Dec17, 16:00	332401	1hr	12	12	exc
AMS 11 Lower Camp	H2S	02Dec17, 17:00	332401	1hr	10	10	nae
AMS 11 Lower Camp	H2S	02Dec17, 24:00	332406	24hr	4	4	exc
AMS 11 Lower Camp	H2S	24Dec17, 15:00	333113	1hr	17	17	exc
AMS 19 Firebag	H2S	30Dec17, 20:00	333246	1hr	13	13	exc
AMS 1 Fort McKay	PM2.5	08Dec17, 24:00	332627	24hr	94	93.7	exc
AMS 1 Fort McKay	PM2.5	09Dec17, 24:00	332648	24hr	55	55.1	exc
AMS 1 Fort McKay	PM2.5	12Dec17, 24:00	332748	24hr	39	38.8	exc
AMS 1 Fort McKay	PM2.5	29Dec17, 24:00	333228	24hr	35	34.8	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.



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

**APPENDIX II:
SUMMARY OF MONTHLY OPERATIONAL
TIMES BELOW 90 PERCENT
AND NON-COMPLIANCES
2017**

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

March 2018

Date Reported	AEP Reference Number	Reporting Period	Location	Brief Description	Issue	Remedial Action
8-Feb-17	320819	January	AMS 5	AMS 5, Mannix, 20 m WS/WD/VWS operated less than 90% of the time due to flat line periods caused by ice buildup	The 20 m elevation wind speed, wind direction, and vertical wind speed sensors at Mannix operated 80% of the time in January 2017. This is due to flat-line periods in the sensor's output signals which were attributed to ice build up on the sonic sensors.	n/a
27-Mar-17	322253	February 2015-September 2016	AMS 5	AMS 5, Mannix, H2S analyzer did not pass the AEP audit.	The AMS 5 H2S analyzer was found to be 32% above the calculated gas concentration during the AEP audit. WBEA believes this was due to a contaminated cylinder.	New cylinder installed September 28, 2016. Also created new internal audit protocol.
27-Mar-17	322254	June-September 2016	AMS 15	AMS 15, Horizon, PM 2.5 analyzer did not pass the AEP audit.	The AMS 5 PM 2.5 analyzer was found to be 35% below the audit correction factor during the AEP audit. As a result, data was invalidated back to the last foil calibration, which occurred on June 21, 2016.	WBEA modified the PM 2.5 analyzer SOP, to dedicate one certified foil set to each SHARP monitor in the network, as well as two reference foil sets at the reference center.
8-May-17	323840	April	AMS 502	All continuous analyzers at AMS 502, Cenovus, operated less than 90% of the time due to a broken manifold.	The manifold was discovered to be broken on April 26, preventing the analyzers from sampling ambient air. Review of manifold diagnostics indicated that the break occurred on April 16.	Manifold pressure sensors were installed and an alarm was set to notify the WBEA when changes in manifold pressure occur, indicating a potentially broken manifold.
28-Jun-17	326230	May	AMS 4	The THC analyzer at AMS 4, Buffalo Viewpoint, operated less than 90% of the time in May 2017.	There were multiple issues associated with the operation of the THC analyzer, resulting in 118 hours of downtime. A power outage, station shelter upgrade, maintenance to adjust baseline response and recalibrate, replacement of the analyzer for in shop maintenance, and station temperature fluctuations contributed to the downtime.	n/a
24-Jul-17	327347	June	AMS 8	The Fine Particulate Matter (PM2.5) analyzer at AMS 8, Fort Chipwyan, operated less than 90% of the time in June 2017.	Debris was found in the sample chamber and a broken sample tape resulted in numerous hours of downtime.	Replaced with backup unit. Failed analyzer to be investigated and repaired in shop.
25-Aug-17	328739	July	AMS 11	The H2S analyzer at AMS 11, Lower Camp, operated less than 90% of the time in July due to station temperature fluctuations.	The station temperature control at AMS 11 failed to operate properly June 29 to 30. This resulted in high internal station temperatures during those periods. The elevated internal station temperature during that period affected the baseline response of the analyzer.	Portable air conditioner installed; HVAC repairs to be scheduled based on availability.
25-Aug-17	328738	July	AMS 1	The NH3 analyzer at AMS 1, Fort McKay-Bertha Ganter operated less than 90% of the time in July due to stabilization time and station power outages.	Stabilization following daily spans and three station power outages resulted in downtime.	Maintenance to replace the converter core was completed on August 22 with the intent of improving analyzer response time and reducing the amount of recovery time associated with stabilization following the daily performance checks.
20-Sep-17	329898	August	AMS 1	The NH3 analyzer at AMS 1, Fort McKay-Bertha Ganter operated less than 90% of the time in July due to stabilization time and analyzer maintenance.	Stabilization following daily spans and maintenance to replace the converter core resulted in downtime.	Maintenance to replace the converter core was completed on August 22 with the intent of improving analyzer response time and reducing the amount of recovery time associated with stabilization following the daily performance checks.
23-Nov-17	332125	October	AMS 7	The TRS analyzer at AMS 7, Athabasca Valley operated less than 90% of the time in October due to a calibration cylinder change, which resulted in a failure in the AEP audit.	AEP conducted an audit of the analyzers at Athabasca Valley AMS on October 24 th and found the TRS analyzer to be 11% above criteria. Investigation revealed that the change in analyzer performance was associated with the calibration cylinder change during the monthly calibration. Data has been invalidated from October 23 rd , when the calibration cylinder was changed until October 31 st , when a new calibration cylinder was installed and the TRS analyzer was verified with WBEA audit equipment.	New cylinder installed October 31, 2017.
14-Dec-17	332827	December	AMS 8	The NO2 analyzer at AMS 8, Fort Chipwyan, operated less than 90% of the time in December 2017.	On December 2, the NO2 analyzer did not meet operational criteria for daily zero/span response due to being greater than 10% below the span target concentration. Remote diagnostic investigation did not reveal the source of the issue. On-site investigation on December 7 revealed possible moisture contamination; on-site repairs were unsuccessful in returning the analyzer to operating conditions. The NO2 analyzer was flagged for maintenance and a backup analyzer was installed on December 21, as the current analyzer will require in-shop repairs.	Analyzer replaced with backup unit.
25-Jan-18	334069	December	AMS 24	The THC analyzer at AMS 24, Surmont, operated less than 90% of the time in December due to station temperature fluctuations.	Fluctuating internal station temperatures during the month of December affected the baseline response of the THC analyzer until temperatures stabilized.	Portable heater installed; HVAC repairs to be scheduled based on availability.



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

APPENDIX III: 2012-2017 WBEA DATA COMPARED TO LARP TRIGGERS AND LIMITS 2017

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

March 2018



Comparison of WBEA 2011 to 2017 Data With LARP Triggers and Limits (all data as ppb)

LARP Index	Year	Air Monitoring Stations										
		AMS 1 Bertha Ganter	AMS 4 Buffalo Viewpoint	AMS 6 Patricia McInnes	AMS 7 Athabasca Valley	AMS 8 Fort Chipewyan	AMS 12* Millennium Mine	AMS 13 Fort McKay South	AMS 14 Anzac	AMS 15 Horizon	AMS 16 Muskeg River	AMS 17 Wapasu
NO ₂ Annual average	2017	7	5	5	7	1		7	2	5	10	3
	2016	7		6	7	1		6	2	6	9	3
	2015	6		5	8	2	11	5	2	5	9	3
	2014	8		6	11	1	12	7	3	7	12	6
	2013	8		6	10	1	13	7	3	7	12	
	2012	7		6	9	1	13	7	3	6	11	
	2011	7		6	11	1	15	6	3	5	12	
NO ₂ hourly 99th Percentile	2017	33	27	29	32	9		31	14	31	38	17
	2016	28		27	30	11		26	17	30	36	16
	2015	30		28	33	13	43	27	14	33	37	19
	2014	33		29	48	11	43	31	18	34	40	21
	2013	35		31	38	9	43	33	19	39	40	25
	2012	34		29	34	11	42	31	15	36	40	
	2011	34		30	39	13	50	32	20	33	41	
LARP Index	Year	Air Monitoring Stations										
		AMS 18 Stony Mountain	AMS 19 Firebag	AMS 20 Brion MacKay River	AMS 21 Conklin	AMS 22 Janvier	AMS 23 Fort Hills	AMS 24 Surmont	AMS 500 Christina Lake	AMS 501 Leismer	AMS 502 Surmont	AMS 505 Sawbones Bay
NO ₂ Annual average	2017	1	3	2	2	1	8	2	3	3	3	3
	2016	1	3	3	1				3	2	2	
	2015	1	4							2	3	
	2014		4						5	2	5	
	2013								5	5	5	
	2012										8	
	2011										7	
NO ₂ hourly 99th Percentile	2017	6	20	18	12	8	40	12	17	23	17	15
	2016	8	18	23	8				18	10	13	
	2015	8	24							9	18	
	2014		23						32	8	22	
	2013								17	41	22	
	2012										45	
	2011										36	

* - AMS 12 - Millennium destroyed due to structure fire, Aug 29, 2015

Data Collection less than 12 months

Limit	24
Level 3 Trigger	16
Level 2 Trigger	8

Level 4 Trigger	92
Level 3 Trigger	62
Level 2 Trigger	30



Comparison of WBEA 2011 to 2017 Data With LARP Triggers and Limits (all data as ppb)

LARP Index	Year	Air Monitoring Stations												
		AMS 1 Bertha Ganter	AMS 2 Mildred Lake	AMS 4 Buffalo Viewpoint	AMS 5 Mannix	AMS 6 Patricia McInnes	AMS 7 Athabasca Valley	AMS 8 Fort Chipewyan	AMS11 Lower Camp	AMS 12* Millennium Mine	AMS 13 Fort McKay South	AMS 14 Anzac	AMS 15 Horizon	AMS 16 Muskeg River
SO ₂ Annual average	2017	1	2	1	2	1	1	0	3		1	0	1	1
	2016	1	2	1	3	1	1	0	3		1	1	1	1
	2015	1	2	1	2	1	1	0	2	1	1	0	1	1
	2014	1	2	1	2	1	1	0	1	1	1	1	1	1
	2013	1	2	1	2	1	1	0	1	1	1	1	1	1
	2012	1	2	1	2	1	0	0	1	1	1	1	1	1
	2011	2	3	1	2	1	1	0	2	1	1	1	1	1
SO ₂ hourly 99th Percentile	2017	16	27	14	34	10	7	3	42		16	5	12	13
	2016	15	29	14	36	12	11	5	43		15	5	12	15
	2015	14	26	9	31	10	9	2	27	14	14	5	10	14
	2014	15	28	10	32	12	9	3	16	19	17	6	15	16
	2013	16	22	16	31	14	10	4	16	14	17	9	15	20
	2012	17	32	13	28	11	8	4	21	15	18	9	16	20
	2011	17	45	22	29	13	10	4	26	16	17	6	13	13

LARP Index	Year	Air Monitoring Stations												
		AMS 17 Wapasu	AMS 18 Stony Mountain	AMS 19 Firebag	AMS 20 MacKay River	AMS 21 Conklin	AMS 22 Janvier	AMS 23 Fort Hills	AMS 24 Surmont	AMS 25 Waskow ohci Pimatisiwin	AMS 500 Christina Lake	AMS 501 Leismer	AMS 502 Surmont	AMS 505 Sawbones Bay
SO ₂ Annual average	2017	1	1	1	0	1	1	0	0	1	1	1	1	
	2016	1	0	1	1	0					1	1	1	
	2015	1	0	1								1	1	
	2014	1		1							1	1	1	
	2013	2									0	0	1	
	2012												2	
	2011												3	
SO ₂ hourly 99th Percentile	2017	13	3	14	9	2	2	7	6	9	15	18	7	21
	2016	12	2	12	8	1					9	6	11	
	2015	11	2	12								7	7	
	2014	11		13							7	4	9	
	2013	23									3	3	13	
	2012												26	
	2011												36	

* - AMS 12 - Millennium destroyed due to structure fire, Aug 29, 2015

Data Collection less than 12 months

Limit	8	Level 4 Trigger	36
Level 3 Trigger	5	Level 3 Trigger	24
Level 2 Trigger	3	Level 2 Trigger	12



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