



Wood Buffalo Environmental Association

ANNUAL 2015 REPORT

CONTINUOUS MONITORING
INTEGRATED MONITORING
March 04, 2016

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





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March 4, 2016

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

**RE: Annual Ambient Air Quality Monitoring Report 2015
Wood Buffalo Environmental Association**

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Enclosed is the 2015 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 12 - Millenium
- AMS 13 - Fort McKay South
- AMS 14 - Anzac
- AMS 15 - CNRL Horizon
- AMS 16 - Shell Muskeg River
- AMS 17 - Wapasu
- AMS 18 - Conklin Lookout
- AMS 19 - Firebag
- AMS 501 - Statoil Leismer
- AMS 502 - ConocoPhillips Surmont

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
Brion Energy	254465-00-00
Canadian Natural Resources Ltd.	149968-00-01
Cenovus Energy	48522-01-00



Member	EPEA Approval No.
Connacher Oil and Gas Ltd.	240008-00-03
ConocoPhillips Canada	48263-00-00
Devon Canada Corporation	224816-00-03
Finning Canada Ltd.	Not Applicable
Hammerstone Corporation	189942-00-02
Husky Oil Operations Ltd.	206355-00-00
Imperial Oil Ltd.	00046586-00-00
MEG Energy Corporation	00216466-00-04
Nexen Energy ULC.	137467-00-00
Shell Canada Energy	20809-01-00
Statoil Canada Ltd.	241311-00-02
Suncor Energy Inc.	094-02-00
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
Williams Energy (Canada) Inc.	73203-01-00

Aboriginal Communities

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

Government and Non-Industrial Organizations

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

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. In 2014, WBEA's became a working partner of the Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA).

WBEA operates the largest air shed 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 20 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 are 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 telephone 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			
4	INDUSTRIAL	BUFFALO VIEWPOINT*	X					X	X			
5	INDUSTRIAL	MANNIX	X					X	X			
6	COMMUNITY	FORT MCMURRAY PATRICIA MCINNES	X	X	X	X	X		X	X		X
7	COMMUNITY	FORT MCMURRAY 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			
12	INDUSTRIAL	MILLENNIUM**	X	X		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	CNRL HORIZON	X	X		X	X		X			
16	INDUSTRIAL	SHELL MUSKEG RIVER	X	X		X			X			
17	INDUSTRIAL	WAPASU*	X	X		X		X	X			
18	Enhanced	CONKLIN LOOKOUT*	X	X	X	X	X		X	X		
19	INDUSTRIAL	FIREBAG	X	X				X	X			
100	PORTABLE	AIM ^y				X						
101	PORTABLE	MAHIHKAN	X	X				X				
102	PORTABLE	NORTHERN LIGHTS	X	X				X				
103	PORTABLE	NISKA	X	X				X				
104	PORTABLE	HEMP ^y					X		X	X		

* Also functions as a JOSM enhanced deposition station.

** Decommissioned due to fire, August 29, 2015.

y Monitoring data used for research and development purposes only.

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	Precipitation	Leaf Wetness
1	COMMUNITY	BERTHA GANTER-FORT MCKAY*	X	X	X	X		X	X	X
2	INDUSTRIAL	MILDRED LAKE	X	X	X	X				
3		LOWER CAMP - meteorological	X	X	X	X	X			
4	INDUSTRIAL	BUFFALO VIEWPOINT*	X	X	X	X				
5	INDUSTRIAL	MANNIX	X	X	X	X	X			
6	COMMUNITY	FORT MCMURRAY PATRICIA MCINNES	X	X	X	X				
7	COMMUNITY	FORT MCMURRAY 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				
12	INDUSTRIAL	MILLENNIUM**	X	X	X	X				
13	INDUSTRIAL	FORT MCKAY SOUTH	X	X	X	X				
14	COMMUNITY	ANZAC	X	X	X	X			X	X
15	INDUSTRIAL	CNRL HORIZON	X	X	X	X		X	X	
16	INDUSTRIAL	SHELL MUSKEG RIVER	X	X	X	X				
17	INDUSTRIAL	WAPASU*	X	X	X	X			X	
18	ENHANCED	CONKLIN LOOKOUT*	X	X	X	X		X	X	X
19	INDUSTRIAL	FIREBAG	X	X	X	X				
100	PORTABLE	AIM ^y								
101	PORTABLE	MAHIHKAN	X	X	X	X				
102	PORTABLE	NORTHERN LIGHTS	X	X	X	X				
103	PORTABLE	NISKA	X	X	X	X				
104	PORTABLE	HEMP ^y	X	X	X	X				

* Also functions as a JOSM enhanced deposition station.

** Decommissioned due to fire, August 29, 2015.

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Table 3 provides a listing of stations and air quality parameters measured by integrated methods. Parameters measured include volatile organic compounds (VOC) and reduced sulphur compounds (RSC), particulate matter less than 2.5 µm aerodynamic diameter (PM_{2.5}) and associated metals and ions, particulate matter less than 10 µm aerodynamic diameter (PM₁₀) and associated metals and ions and polycyclic aromatic hydrocarbons (PAH).

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

WBEA ID	LOCALE	STATION NAME	VOC/RSC	PM _{2.5} Mass, Metals and Ions	PM ₁₀ Mass, Metals and Ions	PAH
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	X	X
6	COMMUNITY	FORT MCMURRAY PATRICIA MCINNES	X	X	X	X
7	COMMUNITY	FORT MCMURRAY ATHABASCA VALLEY	X	X	X	X
9	INDUSTRIAL	BARGE LANDING	X			
12	INDUSTRIAL	MILLENNIUM*	X		X	
13	INDUSTRIAL	FORT MCKAY SOUTH	X		X	
14	COMMUNITY	ANZAC	X	X	X	X
15	INDUSTRIAL	CNRL HORIZON	X		X	
16	INDUSTRIAL	SHELL MUSKEG RIVER			X	

* Decommissioned due to fire, August 29, 2015.

** Also functions as a JOSM enhanced deposition station.

All WBEA air monitoring data are fully quality-assured and then sent within four weeks of month-end to the AEMERA Airdata Warehouse (www.airdata.aemera.org), an on-line database for all of Alberta's air monitoring data. Currently WBEA operates 18 permanent, three portable, and two research and development air monitoring stations. The Millennium Mine air monitoring station was decommissioned due to fire on August 29, 2015. 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 for four Community Air Monitoring Stations in Wood Buffalo: Fort Chipewyan, Fort McKay South, Athabasca Valley and Anzac.

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.

Odour Monitoring

The Human Exposure Monitoring Program (HEMP) is focused on better understanding the frequency and nature of regional odours through an array of specialized air analyzers designed to chemically characterize odour events. In 2015, HEMP coordinated the third year of the volunteer based Community Odour Monitoring Project in Fort McMurray.

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.

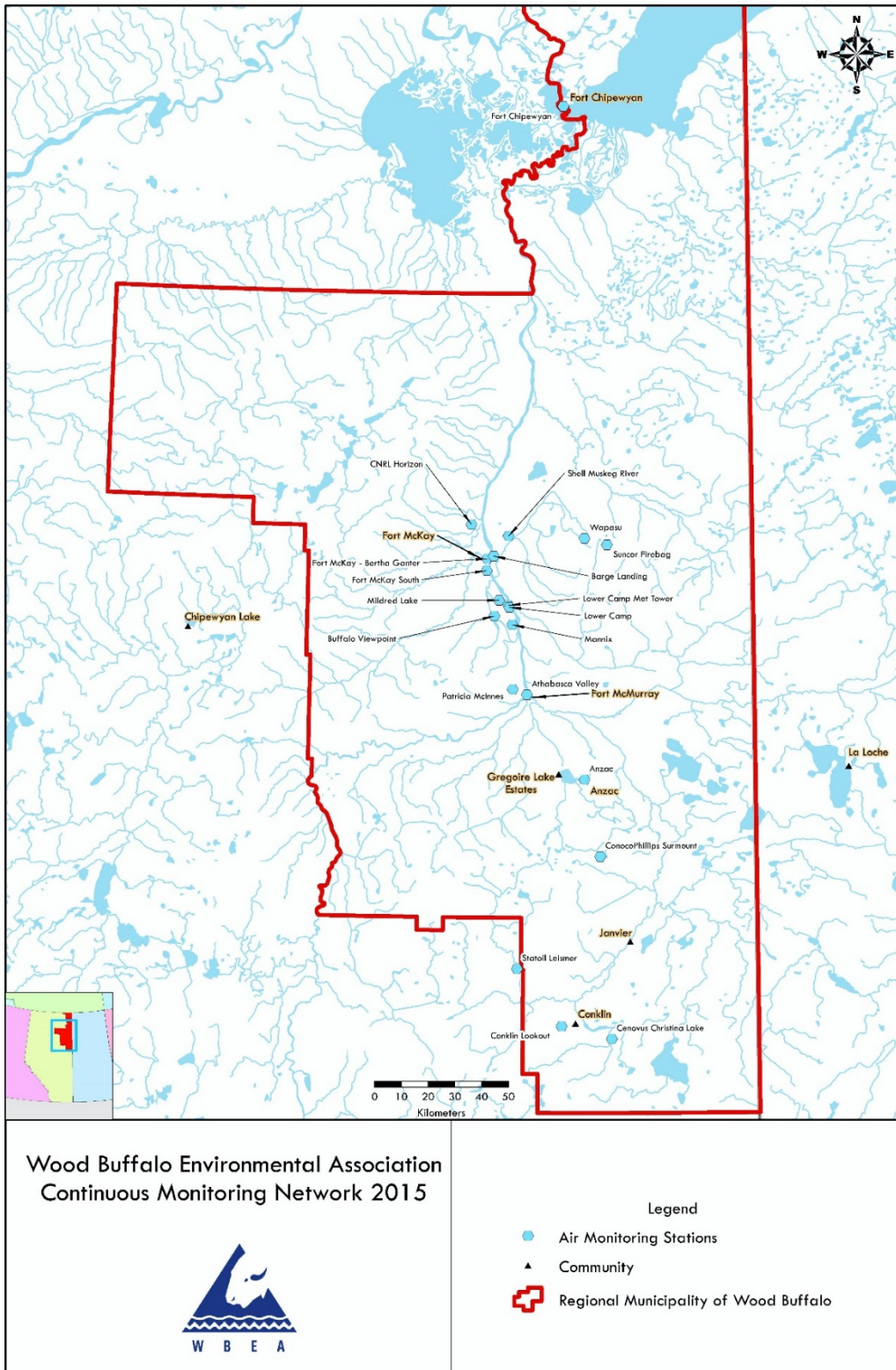


Figure 1: Continuous Air Monitoring Station Locations

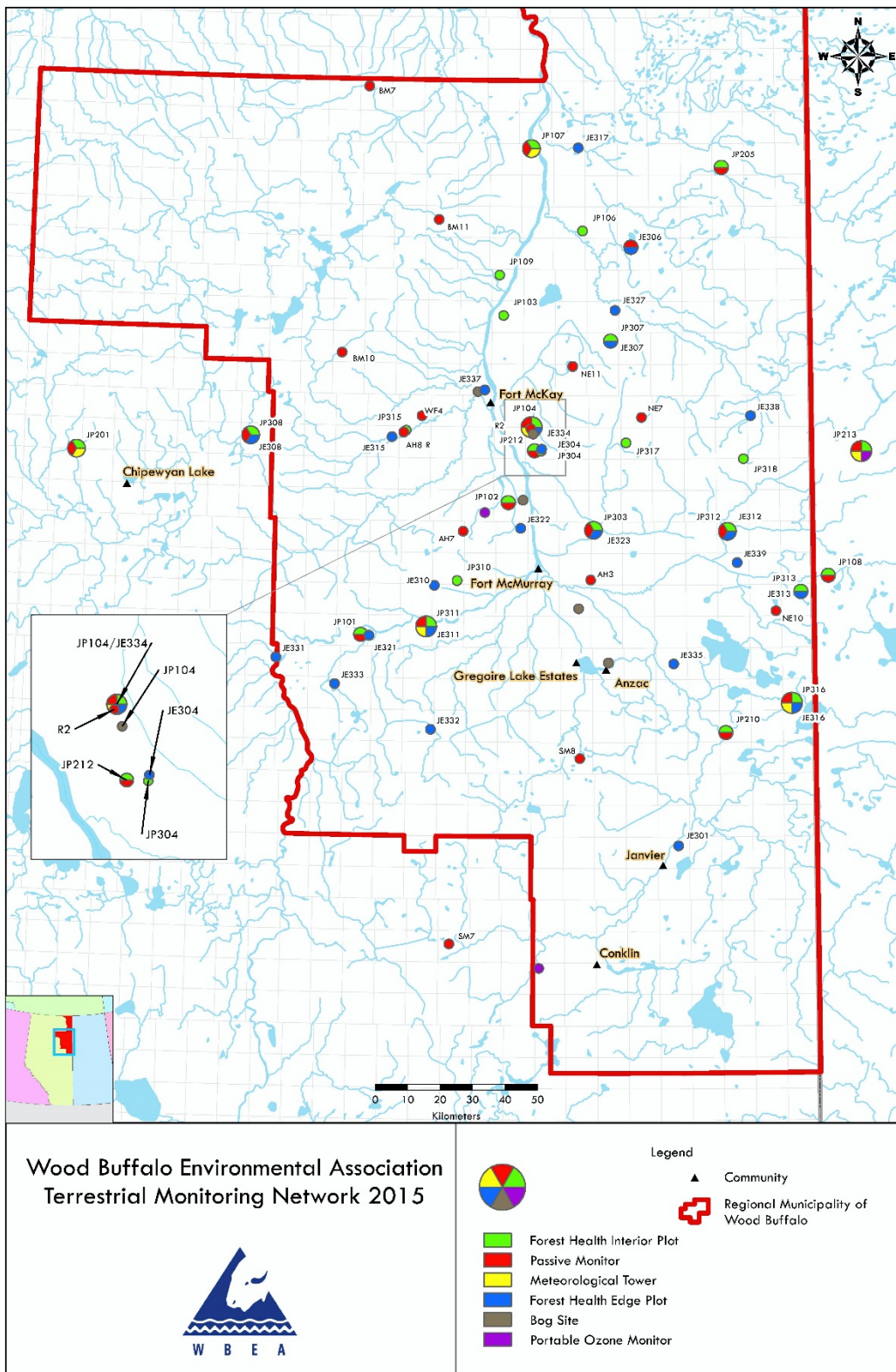


Figure 2: Passive Monitoring Site Locations

2. Summary of Changes to the WBEA Air Monitoring Network

The WBEA air monitoring network expanded in 2015 to include 1 additional permanent air monitoring station.

WBEA commissioned a permanent air monitoring station approximately 5.5 km west of the community of Conklin on August 1, 2015. 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, wind speed and direction, relative humidity, solar radiation, precipitation, and surface wetness are also continuously measured. It is being operated by WBEA as one of four enhanced deposition monitoring stations commissioned under the Joint Canada – Alberta Implementation Plan for Oil Sands Monitoring.

WBEA commenced an ambient air quality monitoring survey at the Statoil Leismer facility on October 1, 2015 until April 2016, 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.

At AMS 12 - Millenium, the SO₂, TRS, THC, NO, NO₂, NO_x, PM_{2.5}, and meteorological analyzers routine operations were discontinued due to a fire at the station on August 29, 2015. The analyzers, supporting equipment, and shelter were completely destroyed as a result of the fire. The WBEA Ambient Air Technical Committee discussed the monitoring options for the current location at their regular meeting on September 15, 2015. The committee reviewed the data collected at AMS 12, the safety and access concerns associated with the current location and the value of continued monitoring at this location. Based on the data available, information collected at the station is not representative of ambient air or fence-line monitoring. The monitoring location is within a developmental area and no longer representative of mining activities. As a result the committee unanimously recommended WBEA not replace AMS12 at the current location. (AEP reference 302917 and 304106)

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

Table 4: Parameter changes to the WBEA network – 2015

Station	Station Name	Parameter	Date Effective	Comment
AMS 1	Fort McKay - Bertha Ganter	Precipitation	25-Sep-15	Tipping bucket replaced with weighing rain gauge
AMS 12	Millenium	SO2	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	TRS	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	THC	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	NO, NO2, NOx	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	PM2.5	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	Wind speed and direction	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	Temperature	29-Aug-15	Station fire – operation discontinued
AMS 12	Millenium	Relative humidity	29-Aug-15	Station fire – operation discontinued
AMS 17	Wapasu	Precipitation	24-Nov-15	Pluvio weighing rain gauge added
AMS 18	Conklin Lookout	SO2	1-Aug-15	New station
AMS 18	Conklin Lookout	TRS	1-Aug-15	New station
AMS 18	Conklin Lookout	THC, CH4, NMHC	1-Sep-15	New station
AMS 18	Conklin Lookout	O3	1-Aug-15	New station
AMS 18	Conklin Lookout	NO, NO2, NOx	1-Aug-15	New station
AMS 18	Conklin Lookout	PM2.5	1-Aug-15	New station
AMS 18	Conklin Lookout	Wind speed and direction	1-Aug-15	New station
AMS 18	Conklin Lookout	Temperature	1-Aug-15	New station
AMS 18	Conklin Lookout	Relative Humidity	1-Aug-15	New station
AMS 18	Conklin Lookout	Solar Radiation	1-Aug-15	New station
AMS 18	Conklin Lookout	Leaf Wetness	29-Sep-15	New station
AMS 18	Conklin Lookout	Precipitation	25-Nov-15	New station

3. Concentrations in Excess of Alberta Ambient Air Quality Objectives

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 AAAQOs, 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 2. The H₂S summary includes the TRS concentrations in excess of the H₂S objectives.

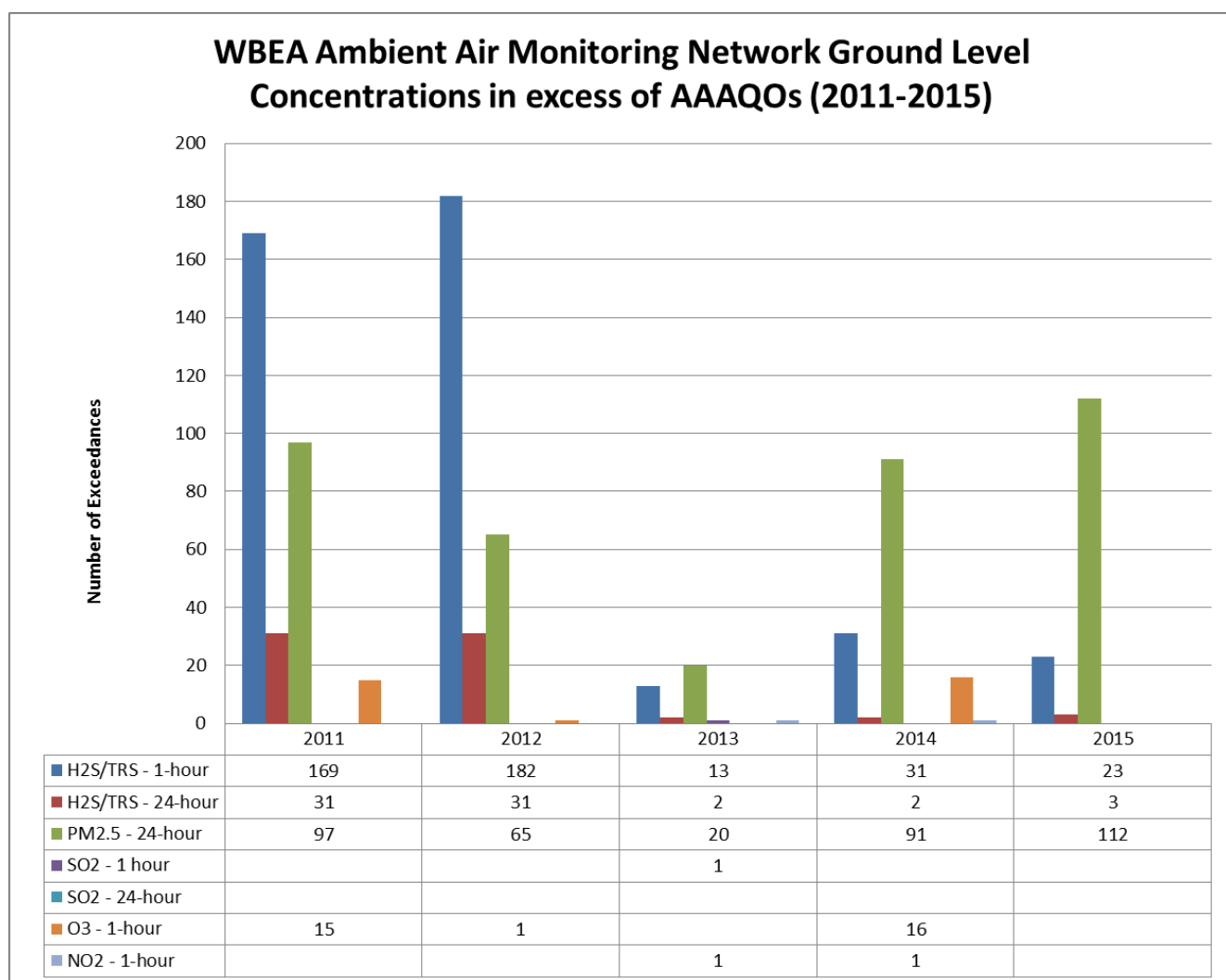


Figure 3 Ambient Air Concentrations in excess of the AAAQOs (2011-2015)

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

In 2015, there were 9 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

There were no external audits of WBEA ambient air monitoring stations conducted for the 2015 reporting period.

6. Monthly Report Revisions

The June 2015 monthly report was revised and re-submitted with the July 2015 report to include incidents of invalid data associated with filter loading effects from forest fire smoke. The NO₂ analyzer at AMS 8 – Fort Chipewyan required re-evaluation and flagging. Information in the subsequent month led to the discovery of conditions that while appearing valid, would result in the data not meeting validation criteria.

There was 1 revision made to the August 2015 WBEA Air Monitoring Network Summary for reported ozone (O₃) concentrations at AMS 18. The updated summary was attached with the September 2015 monthly report.

Historical data stored at the AEMERA (formerly CASA) Airdata Warehouse was re-submitted to correct the following errors in the data for AMS 18 – Conklin Lookout:

- Ozone was reported as THC
- THC (online September 2015) was reported as ozone
- RH was not uploaded in the correct column

Affected data ranged from August to November 2015 and has since been corrected, reviewed and verified to reflect station parameters at AMS 18. The errors were attributed to human error in the setup of a new station configuration file required to upload data to the AEMERA Airdata Warehouse.

7. 2011-2015 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. 2015 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 AAAQOs, and frequency distributions of 1-hour data. The results of passive and integrated monitoring of VOC, PM_{2.5}, PM₁₀, PAH, and precipitation are also included in this report. The integrated results for daily and annual averages are provided for all species analyzed, as well as the monthly averages for passive monitoring.

March 4, 2016
Alberta Environment and Parks
WBEA Annual Monitoring Report, 2015

If additional information is required, please contact either Sanjay Prasad at (780) 215 4800 or the Wood Buffalo Environmental Association at (780) 799 4420.

Yours sincerely,

Wood Buffalo Environmental Association

Michael Martineau
Data Technician

Sanjay Prasad
Air Quality Scientist

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APPROVAL NUMBERS	REPORT DATE						
	MONTH	YEAR					
	Jan - Dec	2015					
289664-00-00	CONTINUOUS AMBIENT MONITORING						
254465-00-00							
149968-00-01							
48522-01-00				ONE-HOUR AVERAGE		24-HOUR AVERAGE	
240008-00-03	PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
48263-00-00	SO2(ppm)	1	99.32	0.053	0	0.006	0
224816-00-03	SO2(ppm)	2	99.83	0.120	0	0.025	0
189942-00-02	SO2(ppm)	4	98.94	0.045	0	0.008	0
206355-00-00	SO2(ppm)	5	99.95	0.136	0	0.023	0
46586-00-00	SO2(ppm)	6	99.85	0.086	0	0.012	0
216466-00-04	SO2(ppm)	7	99.81	0.103	0	0.013	0
137467-00-00	SO2(ppm)	8	99.87	0.011	0	0.002	0
20809-01-00	SO2(ppm)	11	99.52	0.172	0	0.025	0
241311-00-00	SO2(ppm)	12	97.85	0.067	0	0.014	0
094-02-00	SO2(ppm)	13	99.34	0.049	0	0.008	0
305529-00-00	SO2(ppm)	14	98.44	0.023	0	0.006	0
026-02-00	SO2(ppm)	15	99.99	0.072	0	0.009	0
228044-00-00	SO2(ppm)	16	99.98	0.065	0	0.011	0
73203-01-00	SO2(ppm)	17	99.16	0.060	0	0.010	0
	SO2(ppm)	18	99.92	0.013	0	0.002	0
	SO2(ppm)	19	99.99	0.036	0	0.012	0
	SO2(ppm)	501	98.74	0.022	0	0.006	0
	SO2(ppm)	502	98.53	0.018	0	0.006	0
	H2S(ppm)	2	99.75	0.016	1	0.002	0
	H2S(ppm)	4	97.58	0.006	0	0.001	0
	H2S(ppm)	5	99.75	0.036	18	0.006	3
	H2S(ppm)	11	98.64	0.021	2	0.003	0
	H2S(ppm)	17	99.02	0.007	0	0.002	0
	H2S(ppm)	19	99.90	0.007	0	0.001	0
	H2S(ppm)	501	97.52	0.003	0	0.001	0
	H2S(ppm)	502	99.55	0.006	0	0.003	0
	TRS(ppm)	1	98.97	0.005	0	0.002	0
	TRS(ppm)	6	99.21	0.003	0	0.001	0
	TRS(ppm)	7	99.85	0.005	0	0.002	0
	TRS(ppm)	9	99.94	0.005	0	0.001	0
	TRS(ppm)	12	98.03	0.008	0	0.001	0
	TRS(ppm)	13	99.06	0.016	2	0.002	0
	TRS(ppm)	14	99.66	0.008	0	0.002	0
	TRS(ppm)	15	99.89	0.002	0	0.001	0
	TRS(ppm)	18	99.97	0.001	0	0.000	0
	THC(ppm)	1	95.56	3.9	-	2.6	-
	THC(ppm)	2	99.70	6.8	-	3.3	-
	THC(ppm)	4	99.27	7.3	-	3.4	-
	THC(ppm)	5	99.81	7.5	-	3.2	-
	THC(ppm)	6	99.14	3.3	-	2.4	-
	THC(ppm)	7	99.44	4.1	-	2.5	-
	THC(ppm)	9	99.85	5.3	-	3.3	-
	THC(ppm)	11	98.41	6.1	-	3.3	-
	THC(ppm)	12	97.74	6.8	-	3.6	-
	THC(ppm)	13	98.97	6.2	-	3.2	-
	THC(ppm)	14	98.88	3.7	-	2.4	-
	THC(ppm)	15	99.49	9.0	-	3.2	-
	THC(ppm)	16	99.38	6.5	-	4.1	-
	THC(ppm)	17	99.73	7.0	-	2.8	-
	THC(ppm)	18	100.00	2.4	-	2.3	-
	THC(ppm)	19	99.98	3.1	-	2.6	-
	O3(ppm)	1	99.01	0.078	0	0.049	-
	O3(ppm)	6	99.81	0.062	0	0.045	-
	O3(ppm)	7	99.77	0.064	0	0.045	-
	O3(ppm)	8	99.59	0.069	0	0.055	-

APPROVAL NUMBERS	REPORT DATE						
	MONTH	YEAR					
	Jan - Dec	2015					
289664-00-00 254465-00-00 149968-00-01 48522-01-00 240008-00-03 48263-00-00 224816-00-03 189942-00-02 206355-00-00 46586-00-00 216466-00-04 137467-00-00 20809-01-00 241311-00-02 094-02-00 305529-00-00 026-02-00 228044-00-00 73203-01-00	CONTINUOUS AMBIENT MONITORING						
			ONE-HOUR AVERAGE		24-HOUR AVERAGE		
PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	
O3(ppm)	13	99.37	0.062	0	0.038	-	
O3(ppm)	14	99.35	0.065	0	0.052	-	
O3(ppm)	17	99.46	0.068	0	0.053	-	
O3(ppm)	18	99.89	0.054	0	0.043	-	
NO2(ppm)	1	98.21	0.039	0	0.029	-	
NO2(ppm)	6	99.71	0.048	0	0.024	-	
NO2(ppm)	7	99.74	0.049	0	0.026	-	
NO2(ppm)	8	98.94	0.024	0	0.012	-	
NO2(ppm)	12	97.06	0.060	0	0.034	-	
NO2(ppm)	13	98.95	0.048	0	0.023	-	
NO2(ppm)	14	99.49	0.028	0	0.014	-	
NO2(ppm)	15	99.93	0.061	0	0.025	-	
NO2(ppm)	16	99.68	0.054	0	0.031	-	
NO2(ppm)	17	99.66	0.032	0	0.017	-	
NO2(ppm)	18	92.70	0.011	0	0.009	-	
NO2(ppm)	19	99.68	0.097	0	0.015	-	
NO2(ppm)	501	100.00	0.016	0	0.009	-	
NO2(ppm)	502	99.78	0.038	0	0.019	-	
CO(ppm)	7	99.67	2.6	0	1.1	-	
NH3(ppm)	1	92.49	0.018	0	0.005	-	
NH3(ppm)	6	93.96	0.068	0	0.026	-	
PM2.5(ug/m3)	1	99.06	472.1	-	162.2	11	
PM2.5(ug/m3)	6	99.62	1331.6	-	221.2	9	
PM2.5(ug/m3)	7	99.17	434.7	-	145.1	10	
PM2.5(ug/m3)	8	99.11	1507.5	-	397.3	13	
PM2.5(ug/m3)	12	96.50	740.0	-	161.9	16	
PM2.5(ug/m3)	13	98.54	422.3	-	158.2	8	
PM2.5(ug/m3)	14	98.94	337.0	-	145.2	7	
PM2.5(ug/m3)	15	99.68	470.3	-	175.7	11	
PM2.5(ug/m3)	16	99.65	466.8	-	171.2	15	
PM2.5(ug/m3)	17	99.45	503.1	-	203.5	12	
PM2.5(ug/m3)	18	98.34	36.5	-	12.6	0	
WIND	1	97.91	-	-	-	-	
WIND	2	99.59	-	-	-	-	
WIND	4	99.59	-	-	-	-	
WIND	5	98.70	-	-	-	-	
WIND	6	99.74	-	-	-	-	
WIND	7	99.75	-	-	-	-	
WIND	8	99.61	-	-	-	-	
WIND	9	98.74	-	-	-	-	
WIND	11	99.27	-	-	-	-	
WIND	12	97.31	-	-	-	-	
WIND	13	96.87	-	-	-	-	
WIND	14	99.12	-	-	-	-	
WIND	15	98.53	-	-	-	-	
WIND	16	98.36	-	-	-	-	
WIND	17	98.58	-	-	-	-	
WIND	18	99.86	-	-	-	-	
WIND	19	98.77	-	-	-	-	
WIND	501	99.68	-	-	-	-	
WIND	502	99.03	-	-	-	-	
SIGNATURE OF ASSOCIATION REPRESENTATIVE				FOR ALBERTA ENVIRONMENT USE ONLY			



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

ANNUAL 2015

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

March 04, 2016



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SULPHUR DIOXIDE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	710	1.3	23	0	3	0	99.86	0.14	0	0	0	0
Feb	100	638	1.6	33	0	5	0	99.53	0.47	0	0	0	0
Mar	99.87	708	1.5	44	0	6	0	99.29	0.71	0	0	0	0
Apr	98.89	677	0.9	26	0	5	0	99.7	0.3	0	0	0	0
May	100	707	1.6	53	0	6	0	99.29	0.71	0	0	0	0
Jun	99.86	683	1.1	37	0	6	0	99.71	0.29	0	0	0	0
Jul	99.87	708	0.4	15	0	2	0	100	0	0	0	0	0
Aug	97.31	686	0.9	40	0	5	0	99.13	0.87	0	0	0	0
Sep	98.47	675	0.6	19	0	3	0	100	0	0	0	0	0
Oct	97.72	689	1.3	27	0	5	0	99.13	0.87	0	0	0	0
Nov	100	685	0.8	8	0	2	0	100	0	0	0	0	0
Dec	99.87	707	0.6	17	0	2	0	100	0	0	0	0	0
Annual	99.32	8273	1.0	53	0	6	0	99.63	0.37	0	0	0	0



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	99.06	700	4.0	71	0	25	0	93.86	5.86	0.29	0	0	0
Feb	100	640	2.6	48	0	10	0	98.75	1.25	0	0	0	0
Mar	100	710	2.4	46	0	7	0	99.15	0.85	0	0	0	0
Apr	100	683	2.1	25	0	8	0	99.71	0.29	0	0	0	0
May	99.73	707	2.5	47	0	8	0	98.3	1.7	0	0	0	0
Jun	100	685	2.0	38	0	9	0	99.27	0.73	0	0	0	0
Jul	100	709	1.5	31	0	4	0	99.58	0.42	0	0	0	0
Aug	99.33	700	2.6	40	0	13	0	98.57	1.43	0	0	0	0
Sep	100	685	2.3	80	0	14	0	98.39	1.02	0.58	0	0	0
Oct	99.87	709	2.4	53	0	8	0	99.44	0.56	0	0	0	0
Nov	100	687	1.6	45	0	7	0	98.98	1.02	0	0	0	0
Dec	100	709	2.2	120	0	13	0	98.17	1.55	0.14	0.14	0	0
Annual	99.83	8324	2.4	120	0	25	0	98.5	1.4	0.08	0.01	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	99.06	702	0.5	11	0	2	0	100	0	0	0	0	0
Feb	100	640	0.9	25	0	6	0	99.84	0.16	0	0	0	0
Mar	100	709	0.9	17	0	3	0	100	0	0	0	0	0
Apr	100	686	0.6	28	0	5	0	99.56	0.44	0	0	0	0
May	100	709	1.3	45	0	8	0	99.01	0.99	0	0	0	0
Jun	99.86	680	1.0	30	0	5	0	99.85	0.15	0	0	0	0
Jul	100	709	0.7	13	0	2	0	100	0	0	0	0	0
Aug	93.55	663	0.7	14	0	2	0	100	0	0	0	0	0
Sep	100	687	0.7	28	0	5	0	99.71	0.29	0	0	0	0
Oct	100	710	0.5	8	0	2	0	100	0	0	0	0	0
Nov	100	686	0.4	3	0	1	0	100	0	0	0	0	0
Dec	95.03	674	0.4	12	0	2	0	100	0	0	0	0	0
Annual	98.94	8255	0.7	45	0	8	0	99.83	0.17	0	0	0	0



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	709	1.8	60	0	7	0	98.87	1.13	0	0	0	0
Feb	100	638	3.0	91	0	11	0	97.49	2.19	0.31	0	0	0
Mar	100	709	3.0	67	0	16	0	96.33	3.53	0.14	0	0	0
Apr	99.72	685	3.0	76	0	20	0	95.18	4.23	0.58	0	0	0
May	99.87	708	2.7	74	0	20	0	97.18	2.26	0.56	0	0	0
Jun	100	684	2.2	62	0	9	0	99.12	0.58	0.29	0	0	0
Jul	100	708	1.6	65	0	6	0	99.29	0.56	0.14	0	0	0
Aug	100	710	0.6	34	0	2	0	99.86	0.14	0	0	0	0
Sep	100	686	1.8	63	0	10	0	98.54	1.31	0.15	0	0	0
Oct	99.87	708	1.8	75	0	10	0	98.73	0.85	0.42	0	0	0
Nov	100	685	1.0	40	0	10	0	98.83	1.17	0	0	0	0
Dec	100	710	2.0	136	0	23	0	98.17	1.41	0.28	0.14	0	0
Annual	99.95	8340	2.0	136	0	23	0	98.19	1.55	0.24	0.01	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
 Annual Summary for the Year 2015
 Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range						
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340	
Jan	99.87	706	1.5	29	0	6	0	99.43	0.57	0	0	0	0	0
Feb	100	639	1.4	17	0	4	0	100	0	0	0	0	0	0
Mar	100	709	1.0	20	0	5	0	100	0	0	0	0	0	0
Apr	99.86	684	1.0	36	0	5	0	99.71	0.29	0	0	0	0	0
May	99.46	702	0.6	7	0	2	0	100	0	0	0	0	0	0
Jun	100	682	0.7	21	0	4	0	99.85	0.15	0	0	0	0	0
Jul	99.73	707	0.6	13	0	2	0	100	0	0	0	0	0	0
Aug	99.46	702	0.4	12	0	3	0	100	0	0	0	0	0	0
Sep	100	682	0.8	86	0	12	0	98.97	0.88	0.15	0	0	0	0
Oct	100	707	0.8	17	0	4	0	100	0	0	0	0	0	0
Nov	99.86	685	0.3	8	0	2	0	100	0	0	0	0	0	0
Dec	100	707	0.9	21	0	7	0	99.86	0.14	0	0	0	0	0
Annual	99.85	8312	0.8	86	0	12	0	99.82	0.17	0.01	0	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	707	1.0	18	0	5	0	100	0	0	0	0	0
Feb	100	637	1.5	19	0	4	0	100	0	0	0	0	0
Mar	99.19	702	1.3	19	0	6	0	100	0	0	0	0	0
Apr	100	684	1.0	14	0	3	0	100	0	0	0	0	0
May	99.87	709	1.0	13	0	3	0	100	0	0	0	0	0
Jun	99.86	682	1.2	21	0	4	0	99.85	0.15	0	0	0	0
Jul	100	707	1.1	16	0	5	0	100	0	0	0	0	0
Aug	98.79	701	1.0	11	0	2	0	100	0	0	0	0	0
Sep	100	683	1.5	103	0	13	0	99.41	0.44	0.15	0	0	0
Oct	100	708	1.3	12	0	3	0	100	0	0	0	0	0
Nov	100	685	0.4	9	0	2	0	100	0	0	0	0	0
Dec	100	709	0.9	51	0	8	0	99.72	0.28	0	0	0	0
Annual	99.81	8314	1.1	103	0	13	0	99.92	0.07	0.01	0	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	707	0.3	9	0	2	0	100	0	0	0	0	0
Feb	100	637	0.3	11	0	1	0	100	0	0	0	0	0
Mar	100	708	0.2	2	0	1	0	100	0	0	0	0	0
Apr	100	684	0.1	4	0	1	0	100	0	0	0	0	0
May	100	707	0.2	5	0	1	0	100	0	0	0	0	0
Jun	99.03	678	0.2	5	0	1	0	100	0	0	0	0	0
Jul	99.87	708	0.1	1	0	0	0	100	0	0	0	0	0
Aug	99.87	706	0.0	2	0	0	0	100	0	0	0	0	0
Sep	99.72	683	0.1	2	0	1	0	100	0	0	0	0	0
Oct	100	708	0.2	6	0	1	0	100	0	0	0	0	0
Nov	100	686	0.3	4	0	1	0	100	0	0	0	0	0
Dec	100	708	0.1	4	0	1	0	100	0	0	0	0	0
Annual	99.87	8320	0.2	11	0	2	0	100	0	0	0	0	0



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	99.87	706	1.9	39	0	8	0	99.29	0.71	0	0	0	0
Feb	100	638	2.5	54	0	14	0	97.65	2.35	0	0	0	0
Mar	100	709	1.9	45	0	5	0	98.45	1.55	0	0	0	0
Apr	96.67	663	2.6	172	0	15	0	98.04	1.81	0	0	0.15	0
May	98.52	697	2.8	60	0	8	0	97.99	2.01	0	0	0	0
Jun	99.86	686	2.8	66	0	11	0	98.4	1.46	0.15	0	0	0
Jul	100	707	1.9	38	0	7	0	98.73	1.27	0	0	0	0
Aug	100	710	2.9	146	0	17	0	97.61	2.11	0.14	0.14	0	0
Sep	100	687	2.3	50	0	5	0	98.25	1.75	0	0	0	0
Oct	99.33	704	2.0	63	0	8	0	98.44	1.42	0.14	0	0	0
Nov	100	686	2.1	43	0	7	0	98.25	1.75	0	0	0	0
Dec	100	709	2.5	119	0	25	0	96.76	2.54	0.42	0.28	0	0
Annual	99.52	8302	2.4	172	0	25	0	98.15	1.73	0.07	0.04	0.01	0



Wood Buffalo Environmental Association - Millennium (AMS 12)
 Annual Summary for the Year 2015
 Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	99.87	707	0.7	20	0	4	0	100	0	0	0	0	0
Feb	100	639	1.4	67	0	14	0	98.9	0.78	0.31	0	0	0
Mar	100	708	0.9	26	0	3	0	99.86	0.14	0	0	0	0
Apr	96.39	659	0.5	9	0	2	0	100	0	0	0	0	0
May	100	706	0.8	23	0	3	0	99.86	0.14	0	0	0	0
Jun	99.86	682	1.8	38	0	6	0	98.97	1.03	0	0	0	0
Jul	97.98	691	1.2	26	0	4	0	99.86	0.14	0	0	0	0
Aug	88.71	627	0.8	20	0	4	0	100	0	0	0	0	0
Annual	97.85	5419	1.0	67	0	14	0	99.68	0.28	0.04	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	707	1.0	11	0	2	0	100	0	0	0	0	0
Feb	100	637	0.9	13	0	2	0	100	0	0	0	0	0
Mar	100	706	1.3	31	0	5	0	99.72	0.28	0	0	0	0
Apr	98.47	672	1.3	38	0	5	0	99.85	0.15	0	0	0	0
May	99.87	706	2.0	49	0	7	0	98.87	1.13	0	0	0	0
Jun	99.86	684	1.7	30	0	8	0	98.83	1.17	0	0	0	0
Jul	100	708	0.6	12	0	2	0	100	0	0	0	0	0
Aug	95.43	674	0.9	34	0	5	0	99.55	0.45	0	0	0	0
Sep	99.58	682	0.7	26	0	4	0	99.85	0.15	0	0	0	0
Oct	100	708	1.1	39	0	7	0	99.15	0.85	0	0	0	0
Nov	98.89	676	0.3	8	0	1	0	100	0	0	0	0	0
Dec	100	708	0.4	8	0	3	0	100	0	0	0	0	0
Annual	99.34	8268	1.0	49	0	8	0	99.64	0.36	0	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	96.77	681	0.9	18	0	4	0	100	0	0	0	0	0
Feb	96.13	612	0.9	12	0	2	0	100	0	0	0	0	0
Mar	97.45	688	0.6	15	0	2	0	100	0	0	0	0	0
Apr	93.75	629	0.3	5	0	1	0	100	0	0	0	0	0
May	100	707	0.4	5	0	1	0	100	0	0	0	0	0
Jun	99.03	677	0.3	11	0	2	0	100	0	0	0	0	0
Jul	100	707	0.3	8	0	1	0	100	0	0	0	0	0
Aug	99.87	707	0.3	14	0	1	0	100	0	0	0	0	0
Sep	99.03	678	0.3	14	0	2	0	100	0	0	0	0	0
Oct	99.87	708	0.4	9	0	2	0	100	0	0	0	0	0
Nov	100	684	0.3	12	0	3	0	100	0	0	0	0	0
Dec	99.06	701	0.7	23	0	6	0	99.86	0.14	0	0	0	0
Annual	98.44	8179	0.5	23	0	6	0	99.99	0.01	0	0	0	0



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	707	0.7	15	0	4	0	100	0	0	0	0	0
Feb	100	639	1.0	23	0	8	0	99.53	0.47	0	0	0	0
Mar	100	707	0.8	24	0	6	0	99.72	0.28	0	0	0	0
Apr	100	683	0.5	27	0	3	0	99.85	0.15	0	0	0	0
May	100	707	1.0	27	0	5	0	99.86	0.14	0	0	0	0
Jun	100	685	1.5	72	0	9	0	98.83	1.02	0.15	0	0	0
Jul	100	707	0.5	14	0	2	0	100	0	0	0	0	0
Aug	100	707	0.6	34	0	3	0	99.86	0.14	0	0	0	0
Sep	100	685	0.6	20	0	3	0	100	0	0	0	0	0
Oct	100	708	0.7	16	0	6	0	100	0	0	0	0	0
Nov	99.86	683	0.3	10	0	2	0	100	0	0	0	0	0
Dec	100	708	0.6	15	0	4	0	100	0	0	0	0	0
Annual	99.99	8326	0.7	72	0	9	0	99.8	0.18	0.01	0	0	0



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
 Annual Summary for the Year 2015
 Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	99.87	707	2.0	65	0	11	0	99.43	0.42	0.14	0	0	0
Feb	99.85	636	1.6	29	0	9	0	99.21	0.79	0	0	0	0
Mar	100	708	1.4	23	0	7	0	99.29	0.71	0	0	0	0
Apr	100	683	1.0	25	0	5	0	99.56	0.44	0	0	0	0
May	100	708	1.3	15	0	3	0	100	0	0	0	0	0
Jun	100	684	1.0	16	0	4	0	100	0	0	0	0	0
Jul	100	707	0.7	10	0	3	0	100	0	0	0	0	0
Aug	100	708	0.8	31	0	5	0	99.72	0.28	0	0	0	0
Sep	100	681	0.9	18	0	3	0	100	0	0	0	0	0
Oct	100	709	1.0	20	0	4	0	100	0	0	0	0	0
Nov	100	685	1.0	12	0	5	0	100	0	0	0	0	0
Dec	100	708	0.9	30	0	5	0	99.72	0.28	0	0	0	0
Annual	99.98	8324	1.1	65	0	11	0	99.74	0.24	0.01	0	0	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	711	2.3	41	0	10	0	99.16	0.84	0	0	0	0
Feb	95.24	608	0.9	10	0	2	0	100	0	0	0	0	0
Mar	95.83	678	0.9	29	0	4	0	99.85	0.15	0	0	0	0
Apr	99.44	680	0.7	19	0	4	0	100	0	0	0	0	0
May	100	707	0.8	12	0	3	0	100	0	0	0	0	0
Jun	99.86	682	0.8	11	0	3	0	100	0	0	0	0	0
Jul	100	707	1.1	15	0	3	0	100	0	0	0	0	0
Aug	100	708	1.3	60	0	6	0	99.44	0.56	0	0	0	0
Sep	99.31	682	1.1	24	0	8	0	99.71	0.29	0	0	0	0
Oct	100	708	0.9	17	0	4	0	100	0	0	0	0	0
Nov	99.86	684	1.7	16	0	7	0	100	0	0	0	0	0
Dec	100	709	1.1	14	0	4	0	100	0	0	0	0	0
Annual	99.16	8264	1.1	60	0	10	0	99.84	0.16	0	0	0	0



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Aug	99.6	705	0.3	4	0	1	0	100	0	0	0	0	0
Sep	100	685	0.3	13	0	2	0	100	0	0	0	0	0
Oct	100	709	0.2	2	0	1	0	100	0	0	0	0	0
Nov	100	686	0.3	3	0	1	0	100	0	0	0	0	0
Dec	100	708	0.4	11	0	2	0	100	0	0	0	0	0
Annual	99.92	3493	0.3	13	0	2	0	100	0	0	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Jan	100	706	2.8	36	0	12	0	98.58	1.42	0	0	0	0
Feb	100	639	1.0	12	0	3	0	100	0	0	0	0	0
Mar	100	707	1.1	17	0	4	0	100	0	0	0	0	0
Apr	100	683	0.8	27	0	4	0	99.85	0.15	0	0	0	0
May	100	707	0.9	27	0	2	0	99.86	0.14	0	0	0	0
Jun	100	684	0.7	14	0	3	0	100	0	0	0	0	0
Jul	100	707	1.0	12	0	3	0	100	0	0	0	0	0
Aug	100	708	1.2	25	0	4	0	99.72	0.28	0	0	0	0
Sep	99.86	685	0.9	34	0	4	0	99.85	0.15	0	0	0	0
Oct	100	707	0.7	19	0	4	0	100	0	0	0	0	0
Nov	100	686	1.7	20	0	8	0	100	0	0	0	0	0
Dec	100	709	1.1	18	0	4	0	100	0	0	0	0	0
Annual	99.99	8328	1.2	36	0	12	0	99.84	0.16	0	0	0	0



Wood Buffalo Environmental Association - Statoil - Leismer (AMSS01)
Annual Summary for the Year 2015
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range					
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340
Oct	96.77	684	0.8	10	0	6	0	100	0	0	0	0	0
Nov	99.44	681	0.5	8	0	2	0	100	0	0	0	0	0
Dec	100	709	0.6	22	0	4	0	99.86	0.14	0	0	0	0
Annual	98.74	2074	0.6	22	0	6	0	99.95	0.05	0	0	0	0



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
 Annual Summary for the Year 2015
 Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range						
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340	>340	
Jan	97.85	697	1.7	13	0	5	0	100	0	0	0	0	0	0
Feb	97.02	618	1.3	18	0	6	0	100	0	0	0	0	0	0
Mar	98.39	696	0.9	10	0	4	0	100	0	0	0	0	0	0
Apr	97.78	667	0.7	8	0	3	0	100	0	0	0	0	0	0
May	93.01	654	0.6	8	0	2	0	100	0	0	0	0	0	0
Jun	98.33	672	1.0	10	0	3	0	100	0	0	0	0	0	0
Jul	100	707	0.9	8	0	3	0	100	0	0	0	0	0	0
Aug	100	706	0.7	7	0	2	0	100	0	0	0	0	0	0
Sep	99.86	684	0.7	12	0	3	0	100	0	0	0	0	0	0
Oct	100	708	0.9	12	0	4	0	100	0	0	0	0	0	0
Nov	100	686	0.9	14	0	6	0	100	0	0	0	0	0	0
Dec	100	707	0.8	11	0	3	0	100	0	0	0	0	0	0
Annual	98.53	8202	0.9	18	0	6	0	100	0	0	0	0	0	0



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
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ANNUAL REPORT

HYDROGEN SULPHIDE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2015
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 Guideline	Maximum 24-Hour Value	Exceeding 24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	98.52	699	0.7	9	0	2	0	98.86	1.14	0	0
Feb	100	639	0.6	6	0	2	0	99.69	0.31	0	0
Mar	100	710	0.6	4	0	2	0	99.44	0.56	0	0
Apr	99.86	684	0.5	4	0	1	0	99.56	0.44	0	0
May	100	709	0.4	3	0	1	0	100	0	0	0
Jun	99.72	685	0.5	3	0	1	0	100	0	0	0
Jul	99.73	707	0.7	16	1	2	0	98.44	1.41	0.14	0
Aug	99.33	704	0.7	6	0	2	0	97.02	2.98	0	0
Sep	99.86	685	0.6	5	0	2	0	98.69	1.31	0	0
Oct	100	709	0.5	5	0	1	0	99.58	0.42	0	0
Nov	100	687	0.4	3	0	1	0	100	0	0	0
Dec	100	709	0.4	8	0	2	0	99.58	0.42	0	0
Annual	99.75	8327	0.5	16	1	2	0	99.23	0.76	0.01	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2015
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 Guideline	Maximum 24-Hour Value	Exceeding 24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	80.38	571	0.2	3	0	1	0	100	0	0	0
Feb	100	639	0.3	3	0	1	0	100	0	0	0
Mar	100	707	0.3	6	0	1	0	99.86	0.14	0	0
Apr	100	682	0.2	2	0	0	0	100	0	0	0
May	100	709	0.2	4	0	1	0	99.86	0.14	0	0
Jun	98.33	678	0.3	3	0	1	0	100	0	0	0
Jul	100	709	0.5	4	0	1	0	99.86	0.14	0	0
Aug	93.28	661	0.5	6	0	1	0	99.85	0.15	0	0
Sep	100	686	0.2	2	0	1	0	100	0	0	0
Oct	100	710	0.2	2	0	0	0	100	0	0	0
Nov	100	686	0.2	3	0	1	0	100	0	0	0
Dec	99.46	705	0.3	3	0	1	0	100	0	0	0
Annual	97.58	8143	0.3	6	0	1	0	99.95	0.05	0	0



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
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 Guideline	Maximum 24-Hour Value	Exceeding 24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	100	708	0.6	4	0	1	0	99.86	0.14	0	0
Feb	100	638	0.6	3	0	2	0	100	0	0	0
Mar	99.46	704	0.6	6	0	2	0	99.57	0.43	0	0
Apr	100	686	0.4	8	0	1	0	99.42	0.58	0	0
May	100	709	0.4	3	0	1	0	100	0	0	0
Jun	99.86	686	0.7	11	1	2	0	98.1	1.75	0.15	0
Jul	99.87	707	1.3	17	10	5	2	90.24	8.35	1.41	0
Aug	98.25	697	0.9	36	7	6	1	94.84	4.16	1	0
Sep	99.86	683	0.6	9	0	3	0	96.49	3.51	0	0
Oct	100	709	0.5	5	0	1	0	99.72	0.28	0	0
Nov	99.86	685	0.4	4	0	1	0	99.71	0.29	0	0
Dec	99.87	709	0.6	5	0	2	0	98.73	1.27	0	0
Annual	99.75	8321	0.6	36	18	6	3	98.03	1.75	0.22	0



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2015
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 Guideline	Maximum 24-Hour Value	Exceeding 24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	100	708	0.8	10	0	3	0	97.88	2.12	0	0
Feb	100	637	0.9	8	0	3	0	97.96	2.04	0	0
Mar	98.25	696	0.8	7	0	2	0	98.99	1.01	0	0
Apr	92.5	632	0.9	19	1	2	0	98.58	1.27	0.16	0
May	98.92	702	0.7	21	1	2	0	99.57	0.28	0.14	0
Jun	99.72	684	0.9	7	0	2	0	98.68	1.32	0	0
Jul	100	709	1.0	6	0	2	0	97.32	2.68	0	0
Aug	99.33	703	0.7	8	0	1	0	98.29	1.71	0	0
Sep	99.72	684	0.6	5	0	1	0	98.83	1.17	0	0
Oct	95.56	678	0.5	9	0	1	0	99.56	0.44	0	0
Nov	100	686	0.6	6	0	1	0	99.13	0.87	0	0
Dec	99.73	707	0.6	9	0	2	0	98.02	1.98	0	0
Annual	98.64	8226	0.7	21	2	3	0	98.56	1.42	0.02	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
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 Exceeding 1-Hour Value	1-Hour Guideline	Maximum Exceeding 24-Hour Value	24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	99.46	707	0.5	7	0	2	0	99.01	0.99	0	0
Feb	98.51	628	0.3	1	0	0	0	100	0	0	0
Mar	98.92	700	0.3	1	0	0	0	100	0	0	0
Apr	97.5	667	0.2	1	0	0	0	100	0	0	0
May	99.06	702	0.3	1	0	0	0	100	0	0	0
Jun	100	686	0.3	2	0	1	0	100	0	0	0
Jul	95.83	678	0.3	1	0	1	0	100	0	0	0
Aug	99.6	704	0.2	2	0	0	0	100	0	0	0
Sep	99.58	682	0.3	1	0	0	0	100	0	0	0
Oct	99.87	707	0.2	1	0	0	0	100	0	0	0
Nov	99.86	685	0.3	6	0	1	0	99.85	0.15	0	0
Dec	100	710	0.3	1	0	0	0	100	0	0	0
Annual	99.02	8256	0.3	7	0	2	0	99.9	0.1	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
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 Exceeding 1-Hour Value	Maximum Exceeding 1-Hour Guideline	Maximum Exceeding 24-Hour Value	Maximum Exceeding 24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	99.87	708	0.5	4	0	1	0	99.86	0.14	0	0
Feb	99.4	636	0.4	3	0	1	0	100	0	0	0
Mar	100	708	0.4	7	0	1	0	99.72	0.28	0	0
Apr	100	686	0.3	4	0	1	0	99.85	0.15	0	0
May	99.87	708	0.3	2	0	0	0	100	0	0	0
Jun	100	685	0.3	2	0	1	0	100	0	0	0
Jul	100	709	0.3	3	0	1	0	100	0	0	0
Aug	100	709	0.2	3	0	1	0	100	0	0	0
Sep	99.72	683	0.2	2	0	1	0	100	0	0	0
Oct	99.87	708	0.2	2	0	0	0	100	0	0	0
Nov	100	686	0.2	3	0	0	0	100	0	0	0
Dec	100	710	0.2	2	0	0	0	100	0	0	0
Annual	99.9	8336	0.3	7	0	1	0	99.96	0.04	0	0



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
Annual Summary for the Year 2015
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 Guideline	Maximum 24-Hour Value	Exceeding 24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Oct	94.76	663	0.3	1	0	0	0	100	0	0	0
Nov	98.61	676	0.3	1	0	1	0	100	0	0	0
Dec	99.19	702	0.3	1	0	0	0	100	0	0	0
Annual	97.52	2041	0.3	1	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - ConocoPhillips - Surrmont (AMS502)
Annual Summary for the Year 2015
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values Exceeding Maximum		Number of Values Exceeding Maximum		% of Data in Each Concentration Range			
				1-Hour Value	1-Hour Guideline	24-Hour Value	24-Hour Guidance	0 - 3	4 - 10	11 - 50	> 50
Jan	99.19	704	0.5	6	0	2	0	99.15	0.85	0	0
Feb	99.55	638	0.5	2	0	1	0	100	0	0	0
Mar	99.6	704	0.2	2	0	1	0	100	0	0	0
Apr	99.58	682	0.2	4	0	1	0	99.85	0.15	0	0
May	99.19	702	0.3	3	0	1	0	100	0	0	0
Jun	99.58	683	0.3	2	0	1	0	100	0	0	0
Jul	99.6	706	0.6	6	0	2	0	99.01	0.99	0	0
Aug	99.46	706	0.5	5	0	3	0	97.45	2.55	0	0
Sep	99.58	683	0.3	3	0	1	0	100	0	0	0
Oct	99.87	709	0.2	1	0	1	0	100	0	0	0
Nov	100	686	0.2	3	0	1	0	100	0	0	0
Dec	99.46	706	0.2	1	0	1	0	100	0	0	0
Annual	99.55	8309	0.3	6	0	3	0	99.61	0.39	0	0



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

**TOTAL REDUCED SULPHUR
ANNUAL 2015**

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	99.46	706	0.8	5	0	1	0	99.86	0.14	0	0
Feb	98.36	628	0.7	2	0	1	0	100	0	0	0
Mar	98.52	698	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	100	709	0.5	3	0	1	0	100	0	0	0
Jun	99.72	684	0.5	2	0	1	0	100	0	0	0
Jul	100	709	0.5	3	0	1	0	100	0	0	0
Aug	95.7	677	0.5	3	0	1	0	100	0	0	0
Sep	98.47	675	0.4	2	0	1	0	100	0	0	0
Oct	98.12	695	0.4	3	0	1	0	100	0	0	0
Nov	100	686	0.6	4	0	1	0	99.85	0.15	0	0
Dec	99.87	709	0.6	4	0	2	0	99.86	0.14	0	0
Annual	98.97	8258	0.5	5	0	2	0	99.96	0.04	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	100	707	0.7	2	0	1	0	100	0	0	0
Feb	95.98	611	0.6	1	0	1	0	100	0	0	0
Mar	100	709	0.5	2	0	1	0	100	0	0	0
Apr	99.86	684	0.4	1	0	1	0	100	0	0	0
May	99.46	700	0.2	1	0	0	0	100	0	0	0
Jun	96.39	657	0.2	3	0	1	0	100	0	0	0
Jul	99.19	703	0.3	2	0	1	0	100	0	0	0
Aug	99.46	704	0.2	2	0	1	0	100	0	0	0
Sep	100	684	0.2	2	0	0	0	100	0	0	0
Oct	100	708	0.2	2	0	1	0	100	0	0	0
Nov	99.86	684	0.2	1	0	0	0	100	0	0	0
Dec	100	709	0.2	1	0	0	0	100	0	0	0
Annual	99.21	8260	0.3	3	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.4	2	0	1	0	100	0	0	0
Feb	100	639	0.4	1	0	1	0	100	0	0	0
Mar	99.33	704	0.4	2	0	1	0	100	0	0	0
Apr	100	686	0.2	1	0	0	0	100	0	0	0
May	99.87	708	0.3	1	0	0	0	100	0	0	0
Jun	100	682	0.3	2	0	1	0	100	0	0	0
Jul	99.87	709	0.3	1	0	1	0	100	0	0	0
Aug	99.6	707	0.3	1	0	1	0	100	0	0	0
Sep	99.86	683	0.3	1	0	1	0	100	0	0	0
Oct	99.87	709	0.3	5	0	2	0	99.86	0.14	0	0
Nov	99.86	686	0.3	2	0	1	0	100	0	0	0
Dec	100	710	0.4	1	0	1	0	100	0	0	0
Annual	99.85	8333	0.3	5	0	2	0	99.99	0.01	0	0



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	100	708	0.4	3	0	1	0	100	0	0	0
Feb	100	640	0.4	5	0	1	0	99.84	0.16	0	0
Mar	100	709	0.3	3	0	1	0	100	0	0	0
Apr	99.86	685	0.1	2	0	0	0	100	0	0	0
May	99.73	707	0.2	2	0	0	0	100	0	0	0
Jun	100	685	0.2	2	0	1	0	100	0	0	0
Jul	99.87	708	0.3	2	0	1	0	100	0	0	0
Aug	100	710	0.3	3	0	1	0	100	0	0	0
Sep	99.86	685	0.3	3	0	1	0	100	0	0	0
Oct	100	709	0.3	2	0	1	0	100	0	0	0
Nov	100	687	0.4	3	0	1	0	100	0	0	0
Dec	100	709	0.4	3	0	1	0	100	0	0	0
Annual	99.94	8342	0.3	5	0	1	0	99.99	0.01	0	0



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	100	709	0.4	2	0	1	0	100	0	0	0
Feb	99.85	640	0.4	3	0	1	0	100	0	0	0
Mar	99.87	708	0.4	2	0	1	0	100	0	0	0
Apr	98.06	671	0.2	1	0	0	0	100	0	0	0
May	100	708	0.2	2	0	0	0	100	0	0	0
Jun	100	685	0.4	2	0	1	0	100	0	0	0
Jul	97.98	694	0.6	8	0	1	0	99.28	0.72	0	0
Aug	88.44	624	0.5	5	0	1	0	99.68	0.32	0	0
Annual	98.03	5439	0.4	8	0	1	0	99.87	0.13	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	100	709	0.5	16	2	2	0	99.29	0.42	0.28	0
Feb	100	641	0.3	2	0	1	0	100	0	0	0
Mar	100	710	0.3	2	0	1	0	100	0	0	0
Apr	98.47	675	0.2	2	0	0	0	100	0	0	0
May	99.73	707	0.2	2	0	1	0	100	0	0	0
Jun	100	684	0.2	1	0	0	0	100	0	0	0
Jul	96.24	680	0.2	3	0	1	0	100	0	0	0
Aug	96.24	682	0.3	3	0	1	0	100	0	0	0
Sep	99.44	682	0.2	2	0	1	0	100	0	0	0
Oct	100	710	0.2	2	0	0	0	100	0	0	0
Nov	98.89	679	0.2	1	0	0	0	100	0	0	0
Dec	99.87	709	0.3	2	0	1	0	100	0	0	0
Annual	99.06	8268	0.3	16	2	2	0	99.94	0.04	0.02	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	99.73	708	0.4	8	0	2	0	99.15	0.85	0	0
Feb	100	641	0.3	2	0	0	0	100	0	0	0
Mar	100	710	0.3	2	0	1	0	100	0	0	0
Apr	99.31	681	0.2	1	0	0	0	100	0	0	0
May	100	707	0.3	4	0	0	0	99.86	0.14	0	0
Jun	99.03	679	0.3	4	0	0	0	99.85	0.15	0	0
Jul	99.87	708	0.3	3	0	1	0	100	0	0	0
Aug	99.87	708	0.3	7	0	1	0	99.86	0.14	0	0
Sep	98.75	677	0.2	2	0	0	0	100	0	0	0
Oct	99.46	706	0.2	3	0	0	0	100	0	0	0
Nov	99.86	686	0.2	2	0	0	0	100	0	0	0
Dec	100	710	0.4	2	0	1	0	100	0	0	0
Annual	99.66	8321	0.3	8	0	2	0	99.89	0.11	0	0



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Jan	100	710	0.3	1	0	1	0	100	0	0	0
Feb	100	640	0.3	2	0	1	0	100	0	0	0
Mar	100	709	0.3	1	0	0	0	100	0	0	0
Apr	99.72	684	0.2	1	0	0	0	100	0	0	0
May	100	709	0.2	1	0	0	0	100	0	0	0
Jun	99.72	683	0.2	1	0	1	0	100	0	0	0
Jul	99.73	708	0.2	2	0	1	0	100	0	0	0
Aug	99.87	707	0.2	2	0	1	0	100	0	0	0
Sep	99.72	683	0.2	1	0	0	0	100	0	0	0
Oct	100	707	0.2	1	0	0	0	100	0	0	0
Nov	99.86	686	0.2	1	0	0	0	100	0	0	0
Dec	100	710	0.3	1	0	0	0	100	0	0	0
Annual	99.89	8336	0.2	2	0	1	0	100	0	0	0



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Total Reduced Sulfur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
Aug	99.87	706	0.3	0	0	0	0	100	0	0	0
Sep	100	686	0.2	0	0	0	0	100	0	0	0
Oct	100	710	0.3	1	0	0	0	100	0	0	0
Nov	100	686	0.3	1	0	0	0	100	0	0	0
Dec	100	709	0.3	1	0	0	0	100	0	0	0
Annual	99.97	3497	0.3	1	0	0	0	100	0	0	0



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NITROGEN DIOXIDE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.87	708	13.4	39	0	29	100	0	0	0
Feb	100	637	11.3	39	0	23	100	0	0	0
Mar	100	708	9.5	38	0	19	100	0	0	0
Apr	99.44	681	4.4	30	0	10	100	0	0	0
May	100	707	4.4	28	0	7	100	0	0	0
Jun	99.86	685	2.7	26	0	6	100	0	0	0
Jul	86.56	612	2.5	21	0	8	100	0	0	0
Aug	97.31	686	2.1	18	0	6	100	0	0	0
Sep	98.19	669	2.7	17	0	7	100	0	0	0
Oct	97.58	689	5.4	30	0	11	100	0	0	0
Nov	100	685	8.1	34	0	20	100	0	0	0
Dec	100	707	10.8	32	0	25	100	0	0	0
Annual	98.21	8174	6.5	39	0	29	100	0	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.73	705	9.3	38	0	22	100	0	0	0
Feb	100	639	9.7	36	0	24	100	0	0	0
Mar	100	708	7.2	39	0	15	100	0	0	0
Apr	99.86	682	3.5	32	0	7	100	0	0	0
May	99.46	702	2.5	15	0	4	100	0	0	0
Jun	100	682	2.5	48	0	13	99.71	0.29	0	0
Jul	99.19	704	1.9	15	0	5	100	0	0	0
Aug	99.46	701	1.7	19	0	5	100	0	0	0
Sep	99.31	678	2.7	18	0	6	100	0	0	0
Oct	100	707	4.7	25	0	16	100	0	0	0
Nov	99.58	681	6.9	39	0	15	100	0	0	0
Dec	100	707	8.0	42	0	17	99.58	0.42	0	0
Annual	99.71	8296	5.0	48	0	24	99.94	0.06	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	707	12.8	40	0	23	100	0	0	0
Feb	100	638	12.0	44	0	25	99.84	0.16	0	0
Mar	99.33	703	10.3	48	0	26	99.57	0.43	0	0
Apr	100	684	4.9	30	0	11	100	0	0	0
May	99.73	703	4.7	24	0	7	100	0	0	0
Jun	99.72	681	4.4	49	0	14	99.71	0.29	0	0
Jul	99.19	701	3.9	17	0	6	100	0	0	0
Aug	98.92	699	3.2	18	0	7	100	0	0	0
Sep	100	684	5.1	23	0	8	100	0	0	0
Oct	100	708	7.1	31	0	18	100	0	0	0
Nov	100	685	11.0	41	0	22	99.85	0.15	0	0
Dec	100	709	10.2	31	0	19	100	0	0	0
Annual	99.74	8302	7.5	49	0	26	99.92	0.08	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	705	2.9	21	0	8	100	0	0	0
Feb	100	637	2.7	24	0	8	100	0	0	0
Mar	100	707	5.1	18	0	12	100	0	0	0
Apr	99.86	683	0.5	10	0	2	100	0	0	0
May	100	707	0.6	8	0	3	100	0	0	0
Jun	92.08	629	1.0	13	0	5	100	0	0	0
Jul	95.56	678	0.6	8	0	3	100	0	0	0
Aug	99.87	706	0.3	7	0	1	100	0	0	0
Sep	99.86	684	0.5	8	0	2	100	0	0	0
Oct	100	708	0.9	13	0	4	100	0	0	0
Nov	100	686	2.3	22	0	11	100	0	0	0
Dec	100	708	1.5	19	0	6	100	0	0	0
Annual	98.94	8238	1.6	24	0	12	100	0	0	0



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	707	17.2	49	0	30	98.59	1.41	0	0
Feb	100	639	16.1	60	0	34	96.4	3.6	0	0
Mar	99.87	707	15.7	57	0	32	95.33	4.67	0	0
Apr	96.53	660	8.2	44	0	17	99.24	0.76	0	0
May	100	706	9.7	53	0	17	98.87	1.13	0	0
Jun	99.86	682	7.8	48	0	27	99.41	0.59	0	0
Jul	92.74	654	7.3	28	0	13	100	0	0	0
Aug	87.5	618	6.8	27	0	11	100	0	0	0
Annual	97.06	5373	11.2	60	0	34	98.46	1.54	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	707	11.9	35	0	23	100	0	0	0
Feb	94.94	598	10.4	34	0	18	100	0	0	0
Mar	100	706	7.5	34	0	17	100	0	0	0
Apr	98.33	673	3.3	28	0	7	100	0	0	0
May	99.87	706	4.1	48	0	10	99.86	0.14	0	0
Jun	99.86	684	2.4	24	0	5	100	0	0	0
Jul	100	708	2.2	27	0	6	100	0	0	0
Aug	96.24	681	1.9	24	0	5	100	0	0	0
Sep	99.17	679	1.7	11	0	5	100	0	0	0
Oct	100	708	4.0	24	0	10	100	0	0	0
Nov	98.61	674	6.0	21	0	13	100	0	0	0
Dec	100	708	9.5	30	0	16	100	0	0	0
Annual	98.95	8232	5.4	48	0	23	99.99	0.01	0	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.73	702	4.6	28	0	14	100	0	0	0
Feb	100	639	4.2	27	0	9	100	0	0	0
Mar	100	707	2.3	20	0	6	100	0	0	0
Apr	100	673	1.0	9	0	2	100	0	0	0
May	100	707	1.2	17	0	2	100	0	0	0
Jun	99.03	677	1.2	14	0	3	100	0	0	0
Jul	100	707	1.2	17	0	3	100	0	0	0
Aug	99.87	707	0.8	9	0	2	100	0	0	0
Sep	98.89	678	0.8	8	0	2	100	0	0	0
Oct	99.87	707	1.6	14	0	5	100	0	0	0
Nov	96.39	659	2.3	21	0	7	100	0	0	0
Dec	100	707	3.2	19	0	9	100	0	0	0
Annual	99.49	8270	2.0	28	0	14	100	0	0	0



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	708	9.4	61	0	23	99.29	0.71	0	0
Feb	100	639	9.2	44	0	25	98.59	1.41	0	0
Mar	100	708	8.7	47	0	22	98.73	1.27	0	0
Apr	100	683	3.8	36	0	8	100	0	0	0
May	100	707	4.0	44	0	9	99.72	0.28	0	0
Jun	99.86	684	4.0	36	0	11	100	0	0	0
Jul	100	707	3.3	36	0	11	100	0	0	0
Aug	100	707	3.1	26	0	8	100	0	0	0
Sep	100	685	3.0	25	0	8	100	0	0	0
Oct	100	708	4.7	34	0	11	100	0	0	0
Nov	99.44	681	3.8	31	0	11	100	0	0	0
Dec	99.87	707	6.9	30	0	19	100	0	0	0
Annual	99.93	8324	5.3	61	0	25	99.7	0.3	0	0



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	96.37	685	14.9	52	0	26	99.85	0.15	0	0
Feb	100	639	16.2	47	0	31	97.5	2.5	0	0
Mar	100	707	14.3	54	0	25	98.3	1.7	0	0
Apr	100	683	7.9	42	0	18	99.85	0.15	0	0
May	100	708	7.9	39	0	14	100	0	0	0
Jun	100	684	7.2	32	0	20	100	0	0	0
Jul	100	707	6.0	32	0	12	100	0	0	0
Aug	100	708	4.6	38	0	12	100	0	0	0
Sep	100	681	5.9	29	0	11	100	0	0	0
Oct	99.87	707	7.9	38	0	18	100	0	0	0
Nov	100	685	10.2	38	0	20	100	0	0	0
Dec	100	708	11.3	43	0	24	99.86	0.14	0	0
Annual	99.68	8302	9.5	54	0	31	99.63	0.37	0	0



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	711	6.6	30	0	17	100	0	0	0
Feb	98.66	630	3.8	31	0	13	100	0	0	0
Mar	98.79	698	3.5	32	0	13	100	0	0	0
Apr	99.44	680	2.0	18	0	7	100	0	0	0
May	99.73	705	1.7	28	0	5	100	0	0	0
Jun	99.86	682	2.3	27	0	10	100	0	0	0
Jul	100	707	2.8	19	0	7	100	0	0	0
Aug	100	708	1.7	15	0	7	100	0	0	0
Sep	99.44	680	1.6	16	0	5	100	0	0	0
Oct	100	708	2.2	16	0	7	100	0	0	0
Nov	99.86	684	4.4	23	0	12	100	0	0	0
Dec	100	709	4.0	20	0	13	100	0	0	0
Annual	99.66	8302	3.1	32	0	17	100	0	0	0



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Aug	99.46	704	0.6	5	0	1	100	0	0	0
Sep	100	685	0.7	4	0	2	100	0	0	0
Oct	100	709	1.2	6	0	3	100	0	0	0
Nov	64.03	437	1.5	8	0	4	100	0	0	0
Dec	100	708	2.9	11	0	9	100	0	0	0
Annual	92.698	3243	1.3	11	0	9	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	100	706	6.8	54	0	15	99.86	0.14	0	0
Feb	100	639	4.9	51	0	14	99.69	0.31	0	0
Mar	100	706	6.1	97	0	15	99.15	0.71	0.14	0
Apr	100	684	3.2	39	0	8	100	0	0	0
May	96.64	684	2.6	32	0	6	100	0	0	0
Jun	100	684	2.7	26	0	7	100	0	0	0
Jul	100	705	3.0	23	0	7	100	0	0	0
Aug	100	708	2.4	18	0	5	100	0	0	0
Sep	99.58	683	2.2	19	0	6	100	0	0	0
Oct	100	708	2.5	18	0	8	100	0	0	0
Nov	100	686	3.6	23	0	9	100	0	0	0
Dec	100	709	4.3	30	0	9	100	0	0	0
Annual	99.68	8302	3.7	97	0	15	99.91	0.07	0.01	0



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Oct	100	708	1.9	12	0	7	100	0	0	0
Nov	100	685	1.8	12	0	3	100	0	0	0
Dec	100	709	2.9	16	0	9	100	0	0	0
Annual	100	2102	2.2	16	0	9	100	0	0	0



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
Annual Summary for the Year 2015
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
Jan	99.73	710	7.3	38	0	19	100	0	0	0
Feb	100	639	6.8	29	0	12	100	0	0	0
Mar	100	708	4.0	21	0	8	100	0	0	0
Apr	99.86	683	2.9	29	0	6	100	0	0	0
May	100	707	1.7	19	0	4	100	0	0	0
Jun	100	684	1.8	22	0	4	100	0	0	0
Jul	100	708	1.4	21	0	5	100	0	0	0
Aug	98.92	699	0.9	15	0	4	100	0	0	0
Sep	99.86	684	1.2	13	0	3	100	0	0	0
Oct	100	708	2.1	15	0	6	100	0	0	0
Nov	100	686	2.1	18	0	5	100	0	0	0
Dec	99.06	700	3.2	20	0	8	100	0	0	0
Annual	99.78	8316	2.9	38	0	19	100	0	0	0



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
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	708	19.0	91	46	89.27	10.31	0.42	0
Feb	100	637	15.1	106	46	94.35	3.92	1.73	0
Mar	100	708	11.9	58	26	97.88	2.12	0	0
Apr	99.44	681	5.3	40	11	100	0	0	0
May	100	707	5.4	70	9	99.58	0.42	0	0
Jun	99.86	685	3.3	40	8	100	0	0	0
Jul	86.56	612	3.2	50	10	99.67	0.33	0	0
Aug	97.31	686	3.1	63	9	99.71	0.29	0	0
Sep	98.19	669	3.8	40	9	100	0	0	0
Oct	97.58	689	6.8	45	15	99.85	0.15	0	0
Nov	100	685	9.8	60	23	97.81	2.19	0	0
Dec	100	707	15.5	113	45	94.91	3.96	1.13	0
Annual	98.21	8174	8.6	113	46	97.76	1.96	0.27	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
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	705	13.7	110	42	94.04	5.11	0.85	0
Feb	100	639	13.3	62	31	95.77	4.23	0	0
Mar	100	708	9.6	66	25	97.46	2.54	0	0
Apr	99.86	682	4.7	59	10	99.27	0.73	0	0
May	99.46	702	3.2	29	6	100	0	0	0
Jun	100	682	3.3	67	15	99.71	0.29	0	0
Jul	99.19	704	2.6	47	6	99.86	0.14	0	0
Aug	99.46	701	2.5	45	8	99.86	0.14	0	0
Sep	99.31	678	4.1	48	9	99.85	0.15	0	0
Oct	100	707	6.4	60	24	99.86	0.14	0	0
Nov	99.58	681	9.6	87	21	97.21	2.64	0.15	0
Dec	100	707	11.8	130	31	96.75	2.83	0.42	0
Annual	99.71	8296	7.0	130	42	98.39	1.51	0.1	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
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	707	20.3	129	44	89.11	9.9	0.99	0
Feb	100	638	17.5	118	37	91.38	8.15	0.47	0
Mar	99.33	703	14.2	164	46	94.74	4.69	0.43	0.14
Apr	100	684	5.9	38	13	100	0	0	0
May	99.73	703	5.6	33	9	100	0	0	0
Jun	99.72	681	5.7	83	20	99.41	0.44	0.15	0
Jul	99.19	701	5.3	37	12	100	0	0	0
Aug	98.92	699	4.3	51	10	99.86	0.14	0	0
Sep	100	684	7.7	36	13	100	0	0	0
Oct	100	708	10.4	62	31	98.87	1.13	0	0
Nov	100	685	18.2	181	58	89.93	8.61	1.31	0.15
Dec	100	709	16.7	94	40	92.1	7.48	0.42	0
Annual	99.74	8302	11.0	181	58	96.29	3.37	0.31	0.02



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
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	705	3.3	22	8	100	0	0	0
Feb	100	637	3.0	25	9	100	0	0	0
Mar	100	707	5.6	20	13	100	0	0	0
Apr	99.86	683	0.7	20	2	100	0	0	0
May	100	707	0.7	9	3	100	0	0	0
Jun	92.08	629	1.1	15	6	100	0	0	0
Jul	95.56	678	0.6	9	3	100	0	0	0
Aug	99.87	706	0.4	7	2	100	0	0	0
Sep	99.86	684	0.7	10	3	100	0	0	0
Oct	100	708	1.0	13	5	100	0	0	0
Nov	100	686	2.5	22	12	100	0	0	0
Dec	100	708	1.7	25	6	100	0	0	0
Annual	98.94	8238	1.8	25	13	100	0	0	0



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
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	707	31.8	223	78	73.55	18.39	6.51	1.56
Feb	100	639	27.9	324	106	78.56	14.87	5.01	1.56
Mar	99.87	707	28.0	283	69	80.06	12.73	5.8	1.41
Apr	96.53	660	11.8	131	26	93.33	5	1.67	0
May	100	706	14.5	203	35	90.65	7.22	1.98	0.14
Jun	99.86	682	11.1	107	40	95.89	3.37	0.73	0
Jul	92.74	654	10.7	92	17	98.47	1.38	0.15	0
Aug	87.5	618	12.4	116	23	95.95	3.56	0.49	0
Annual	97.06	5373	18.7	324	106	88.22	8.39	2.84	0.55



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
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	707	17.3	75	48	91.8	8.2	0	0
Feb	94.94	598	14.0	126	41	94.98	4.18	0.84	0
Mar	100	706	10.1	60	24	97.59	2.41	0	0
Apr	98.33	673	4.1	45	9	99.55	0.45	0	0
May	99.87	706	5.2	73	12	98.58	1.42	0	0
Jun	99.86	684	2.9	32	6	100	0	0	0
Jul	100	708	3.1	41	10	99.86	0.14	0	0
Aug	96.24	681	2.9	54	8	99.56	0.44	0	0
Sep	99.17	679	2.8	24	9	100	0	0	0
Oct	100	708	5.2	48	13	99.72	0.28	0	0
Nov	98.61	674	7.5	58	21	99.11	0.89	0	0
Dec	100	708	15.3	99	49	92.66	6.64	0.71	0
Annual	98.95	8232	7.5	126	49	97.82	2.05	0.13	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
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	702	5.7	95	22	98.86	1	0.14	0
Feb	100	639	5.1	62	12	99.69	0.31	0	0
Mar	100	707	2.7	45	7	99.86	0.14	0	0
Apr	100	673	1.3	14	2	100	0	0	0
May	100	707	1.4	32	3	100	0	0	0
Jun	99.03	677	1.5	22	3	100	0	0	0
Jul	100	707	1.4	22	3	100	0	0	0
Aug	99.87	707	1.0	10	2	100	0	0	0
Sep	98.89	678	1.1	12	3	100	0	0	0
Oct	99.87	707	1.9	20	6	100	0	0	0
Nov	96.39	659	2.7	34	7	100	0	0	0
Dec	100	707	3.7	27	10	100	0	0	0
Annual	99.49	8270	2.4	95	22	99.87	0.12	0.01	0



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
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	13.3	283	56	92.23	6.64	0.85	0.28
Feb	100	639	12.1	120	35	94.05	4.85	1.1	0
Mar	100	708	12.1	176	33	94.49	4.38	0.85	0.28
Apr	100	683	4.7	73	13	98.98	1.02	0	0
May	100	707	4.7	62	11	99.29	0.71	0	0
Jun	99.86	684	5.2	79	15	98.83	1.17	0	0
Jul	100	707	4.3	70	13	99.01	0.99	0	0
Aug	100	707	4.6	64	14	98.87	1.13	0	0
Sep	100	685	4.7	62	15	98.98	1.02	0	0
Oct	100	708	6.2	57	18	98.59	1.41	0	0
Nov	99.44	681	5.4	125	23	98.38	0.88	0.73	0
Dec	99.87	707	8.7	101	29	98.02	1.56	0.42	0
Annual	99.93	8324	7.1	283	56	97.52	2.1	0.33	0.05



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
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	96.37	685	25.3	260	100	83.36	12.26	3.65	0.73
Feb	100	639	26.0	159	58	79.97	16.12	3.91	0
Mar	100	707	23.7	250	59	88.4	8.91	1.84	0.85
Apr	100	683	11.7	138	37	95.75	3.81	0.44	0
May	100	708	10.6	82	18	98.59	1.27	0.14	0
Jun	100	684	11.1	82	41	95.76	4.09	0.15	0
Jul	100	707	9.5	91	27	98.02	1.84	0.14	0
Aug	100	708	8.4	139	27	97.18	2.4	0.42	0
Sep	100	681	12.0	121	36	95.01	4.41	0.59	0
Oct	99.87	707	13.6	141	41	95.19	3.68	1.13	0
Nov	100	685	15.8	181	48	91.82	6.57	1.46	0.15
Dec	100	708	19.3	220	67	88.56	8.9	2.26	0.28
Annual	99.68	8302	15.5	260	100	92.72	5.91	1.25	0.12



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
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	711	7.7	46	22	99.72	0.28	0	0
Feb	98.66	630	4.6	44	15	99.84	0.16	0	0
Mar	98.79	698	4.3	36	15	100	0	0	0
Apr	99.44	680	2.6	28	7	100	0	0	0
May	99.73	705	2.3	35	5	100	0	0	0
Jun	99.86	682	2.9	30	11	100	0	0	0
Jul	100	707	3.5	22	9	100	0	0	0
Aug	100	708	2.3	20	8	100	0	0	0
Sep	99.44	680	2.0	18	5	100	0	0	0
Oct	100	708	2.6	18	8	100	0	0	0
Nov	99.86	684	4.9	31	14	100	0	0	0
Dec	100	709	4.5	37	14	100	0	0	0
Annual	99.66	8302	3.7	46	22	99.96	0.04	0	0



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
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	99.46	704	0.6	10	1	100	0	0	0
Sep	100	685	0.7	5	2	100	0	0	0
Oct	100	709	1.3	5	3	100	0	0	0
Nov	64.03	437	1.5	8	4	100	0	0	0
Dec	100	708	3.0	14	9	100	0	0	0
Annual	92.698	3243	1.4	14	9	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
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	9.3	160	23	97.45	1.98	0.42	0.14
Feb	100	639	7.0	151	22	98.9	0.78	0.31	0
Mar	100	706	8.7	315	32	96.6	2.69	0.42	0.28
Apr	100	684	4.3	63	13	98.54	1.46	0	0
May	96.64	684	3.1	48	7	99.56	0.44	0	0
Jun	100	684	3.1	39	8	100	0	0	0
Jul	100	705	3.6	32	9	100	0	0	0
Aug	100	708	3.2	29	6	100	0	0	0
Sep	99.58	683	3.2	36	11	100	0	0	0
Oct	100	708	3.2	38	11	100	0	0	0
Nov	100	686	4.0	31	10	100	0	0	0
Dec	100	709	5.2	39	10	100	0	0	0
Annual	99.68	8302	4.8	315	32	99.35	0.55	0.07	0.02



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
Annual Summary for the Year 2015
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	708	2.7	24	16	100	0	0	0
Nov	100	685	2.4	24	6	100	0	0	0
Dec	100	709	3.4	27	10	100	0	0	0
Annual	100	2102	2.9	27	16	100	0	0	0



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
Annual Summary for the Year 2015
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	710	17.7	323	99	91.69	4.93	2.54	0.85
Feb	100	639	12.7	115	25	96.09	3.6	0.31	0
Mar	100	708	5.7	32	15	100	0	0	0
Apr	99.86	683	4.8	215	34	99.27	0.15	0.29	0.29
May	100	707	2.8	22	6	100	0	0	0
Jun	100	684	3.5	47	7	99.85	0.15	0	0
Jul	100	708	3.2	33	7	100	0	0	0
Aug	98.92	699	4.1	35	18	100	0	0	0
Sep	99.86	684	2.1	25	6	100	0	0	0
Oct	100	708	3.3	25	11	100	0	0	0
Nov	100	686	3.2	35	15	100	0	0	0
Dec	99.06	700	4.6	22	9	100	0	0	0
Annual	99.78	8316	5.6	323	99	98.91	0.73	0.27	0.1



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

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Operations, Data Collection,
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Fort McMurray, Alberta

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
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	708	5.6	57	21	98.45	1.55	0	0
Feb	100	637	3.8	69	27	97.96	2.04	0	0
Mar	100	708	2.5	29	8	100	0	0	0
Apr	99.44	681	0.9	25	3	100	0	0	0
May	100	707	1.0	51	5	99.72	0.28	0	0
Jun	99.86	685	0.6	17	2	100	0	0	0
Jul	86.56	612	0.7	38	4	100	0	0	0
Aug	97.31	686	1.0	45	4	99.85	0.15	0	0
Sep	98.19	669	1.1	30	5	100	0	0	0
Oct	97.58	689	1.4	24	5	100	0	0	0
Nov	100	685	1.7	32	8	100	0	0	0
Dec	100	707	4.7	83	28	98.16	1.7	0.14	0
Annual	98.21	8174	2.1	83	28	99.5	0.49	0.01	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
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	705	4.4	74	23	97.87	2.13	0	0
Feb	100	639	3.7	32	9	100	0	0	0
Mar	100	708	2.4	32	10	100	0	0	0
Apr	99.86	682	1.2	28	3	100	0	0	0
May	99.46	702	0.8	17	3	100	0	0	0
Jun	100	682	0.7	19	2	100	0	0	0
Jul	99.19	704	0.7	32	3	100	0	0	0
Aug	99.46	701	0.8	34	3	100	0	0	0
Sep	99.31	678	1.4	32	5	100	0	0	0
Oct	100	707	1.7	37	7	100	0	0	0
Nov	99.58	681	2.7	48	7	99.71	0.29	0	0
Dec	100	707	3.8	88	14	99.43	0.42	0.14	0
Annual	99.71	8296	2.0	88	23	99.83	0.16	0.01	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
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	707	7.5	102	22	97.6	2.26	0.14	0
Feb	100	638	5.5	81	16	99.06	0.78	0.16	0
Mar	99.33	703	3.9	117	20	99.15	0.71	0.14	0
Apr	100	684	1.0	17	3	100	0	0	0
May	99.73	703	0.9	19	2	100	0	0	0
Jun	99.72	681	1.3	41	6	99.85	0.15	0	0
Jul	99.19	701	1.4	37	7	100	0	0	0
Aug	98.92	699	1.1	33	4	100	0	0	0
Sep	100	684	2.7	23	5	100	0	0	0
Oct	100	708	3.3	41	13	99.86	0.14	0	0
Nov	100	685	7.2	140	37	98.25	1.17	0.58	0
Dec	100	709	6.4	65	25	98.87	1.13	0	0
Annual	99.74	8302	3.5	140	37	99.38	0.53	0.08	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	% of Data in Each Concentration Range			
						0 - 40	41 - 80	81 - 159	>159
Jan	100	705	0.4	4	1	100	0	0	0
Feb	100	637	0.3	5	1	100	0	0	0
Mar	100	707	0.5	3	1	100	0	0	0
Apr	99.86	683	0.1	10	1	100	0	0	0
May	100	707	0.1	2	0	100	0	0	0
Jun	92.08	629	0.2	7	1	100	0	0	0
Jul	95.56	678	0.1	1	0	100	0	0	0
Aug	99.87	706	0.1	3	1	100	0	0	0
Sep	99.86	684	0.1	4	1	100	0	0	0
Oct	100	708	0.1	4	1	100	0	0	0
Nov	100	686	0.2	5	1	100	0	0	0
Dec	100	708	0.1	6	1	100	0	0	0
Annual	98.94	8238	0.2	10	1	100	0	0	0



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
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	707	14.6	189	49	89.67	6.08	3.54	0.71
Feb	100	639	11.9	264	73	91.71	6.26	1.41	0.63
Mar	99.87	707	12.3	226	46	91.65	5.52	2.26	0.57
Apr	96.53	660	3.5	96	12	97.88	1.82	0.3	0
May	100	706	4.8	156	21	97.59	1.7	0.71	0
Jun	99.86	682	3.3	85	14	98.68	1.03	0.29	0
Jul	92.74	654	3.4	64	9	99.69	0.31	0	0
Aug	87.5	618	5.6	98	14	98.38	1.29	0.32	0
Annual	97.0625	5373	7.5	264	73	95.67	2.99	1.11	0.23



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
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	707	5.4	61	28	98.59	1.41	0	0
Feb	94.94	598	3.6	95	24	98.16	1.51	0.33	0
Mar	100	706	2.6	40	9	100	0	0	0
Apr	98.33	673	0.8	32	3	100	0	0	0
May	99.87	706	1.1	44	3	99.86	0.14	0	0
Jun	99.86	684	0.5	17	2	100	0	0	0
Jul	100	708	0.9	34	5	100	0	0	0
Aug	96.24	681	0.9	36	4	100	0	0	0
Sep	99.17	679	1.1	22	6	100	0	0	0
Oct	100	708	1.2	32	5	100	0	0	0
Nov	98.61	674	1.6	41	8	99.7	0.3	0	0
Dec	100	708	5.8	72	34	97.18	2.82	0	0
Annual	98.95	8232	2.1	95	34	99.45	0.53	0.03	0



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
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	702	1.1	84	9	99.86	0	0.14	0
Feb	100	639	0.9	48	4	99.84	0.16	0	0
Mar	100	707	0.4	28	1	100	0	0	0
Apr	100	673	0.2	7	1	100	0	0	0
May	100	707	0.2	16	1	100	0	0	0
Jun	99.03	677	0.2	17	1	100	0	0	0
Jul	100	707	0.2	13	1	100	0	0	0
Aug	99.87	707	0.2	6	0	100	0	0	0
Sep	98.89	678	0.3	10	1	100	0	0	0
Oct	99.87	707	0.3	9	2	100	0	0	0
Nov	96.39	659	0.4	13	1	100	0	0	0
Dec	100	707	0.4	13	1	100	0	0	0
Annual	99.49	8270	0.4	84	9	99.98	0.01	0.01	0



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
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	3.9	222	32	98.73	0.42	0.56	0.28
Feb	100	639	2.9	78	14	98.9	1.1	0	0
Mar	100	708	3.4	132	18	98.73	0.71	0.56	0
Apr	100	683	0.9	37	5	100	0	0	0
May	100	707	0.7	26	3	100	0	0	0
Jun	99.86	684	1.2	50	4	99.71	0.29	0	0
Jul	100	707	1.0	49	4	99.72	0.28	0	0
Aug	100	707	1.5	56	8	99.58	0.42	0	0
Sep	100	685	1.6	54	7	99.71	0.29	0	0
Oct	100	708	1.6	45	9	99.86	0.14	0	0
Nov	99.44	681	1.6	101	17	99.27	0.29	0.44	0
Dec	99.87	707	1.8	79	14	99.29	0.71	0	0
Annual	99.93	8324	1.8	222	32	99.45	0.39	0.13	0.02



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
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	96.37	685	10.5	208	74	93.43	4.96	1.46	0.15
Feb	100	639	9.8	117	27	94.99	4.54	0.47	0
Mar	100	707	9.4	206	33	95.9	2.55	1.41	0.14
Apr	100	683	3.8	100	22	99.41	0.44	0.15	0
May	100	708	2.7	43	9	99.86	0.14	0	0
Jun	100	684	3.9	56	21	99.71	0.29	0	0
Jul	100	707	3.5	59	15	99.29	0.71	0	0
Aug	100	708	3.7	110	17	98.87	0.85	0.28	0
Sep	100	681	6.2	100	29	96.77	2.94	0.29	0
Oct	99.87	707	5.7	102	27	97.6	2.26	0.14	0
Nov	100	685	5.7	155	29	96.93	2.48	0.58	0
Dec	100	708	7.9	177	43	95.34	3.25	1.27	0.14
Annual	99.68	8302	6.0	208	74	97.58	1.96	0.44	0.02



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
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	711	1.1	23	5	100	0	0	0
Feb	98.66	630	0.8	12	2	100	0	0	0
Mar	98.79	698	0.8	15	2	100	0	0	0
Apr	99.44	680	0.6	10	1	100	0	0	0
May	99.73	705	0.6	7	1	100	0	0	0
Jun	99.86	682	0.7	6	1	100	0	0	0
Jul	100	707	0.7	11	2	100	0	0	0
Aug	100	708	0.6	7	2	100	0	0	0
Sep	99.44	680	0.3	5	1	100	0	0	0
Oct	100	708	0.3	7	2	100	0	0	0
Nov	99.86	684	0.4	11	2	100	0	0	0
Dec	100	709	0.5	18	2	100	0	0	0
Annual	99.66	8302	0.6	23	5	100	0	0	0



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
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	99.46	704	0.0	7	0	100	0	0	0
Sep	100	685	0.1	1	0	100	0	0	0
Oct	100	709	0.1	2	0	100	0	0	0
Nov	64.03	437	0.1	1	0	100	0	0	0
Dec	100	708	0.2	3	1	100	0	0	0
Annual	92.698	3243	0.1	7	1	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
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	2.5	107	10	99.43	0.42	0.14	0
Feb	100	639	2.1	101	12	99.69	0.16	0.16	0
Mar	100	706	2.7	218	19	99.29	0.42	0.14	0.14
Apr	100	684	1.0	41	5	99.85	0.15	0	0
May	96.64	684	0.5	22	1	100	0	0	0
Jun	100	684	0.4	14	2	100	0	0	0
Jul	100	705	0.6	16	2	100	0	0	0
Aug	100	708	0.8	15	3	100	0	0	0
Sep	99.58	683	1.0	20	5	100	0	0	0
Oct	100	708	0.7	22	4	100	0	0	0
Nov	100	686	0.4	12	2	100	0	0	0
Dec	100	709	0.9	16	4	100	0	0	0
Annual	99.68	8302	1.1	218	19	99.89	0.07	0.02	0.01



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
Annual Summary for the Year 2015
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	% of Data in Each Concentration Range			
						0 - 40	41 - 80	81 - 159	>159
Oct	100	708	0.8	17	9	100	0	0	0
Nov	100	685	0.6	13	3	100	0	0	0
Dec	100	709	0.6	13	3	100	0	0	0
Annual	100	2102	0.7	17	9	100	0	0	0



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
Annual Summary for the Year 2015
Nitrogen Oxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	% of Data in Each Concentration Range			
						0 - 40	41 - 80	81 - 159	>159
Jan	99.73	710	10.4	308	81	93.94	4.08	1.41	0.56
Feb	100	639	5.9	91	18	98.75	1.1	0.16	0
Mar	100	708	1.7	20	9	100	0	0	0
Apr	99.86	683	1.9	189	30	99.27	0.15	0.29	0.29
May	100	707	1.1	10	3	100	0	0	0
Jun	100	684	1.7	26	5	100	0	0	0
Jul	100	708	1.7	15	5	100	0	0	0
Aug	98.92	699	3.2	34	18	100	0	0	0
Sep	99.86	684	0.9	19	4	100	0	0	0
Oct	100	708	1.2	17	8	100	0	0	0
Nov	100	686	1.1	23	9	100	0	0	0
Dec	99.06	700	1.4	15	4	100	0	0	0
Annual	99.78	8316	2.7	308	81	99.32	0.45	0.16	0.07



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

OZONE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	99.87	709	16.6	39.3	0	34.9
Feb	100	641	21.8	42.0	0	37.5
Mar	99.87	708	24.6	46.5	0	37.7
Apr	99.58	683	33.0	52.3	0	43.9
May	100	710	35.8	67.8	0	49.3
Jun	97.78	672	32.7	77.5	0	45.5
Jul	99.87	709	23.1	71.7	0	40.5
Aug	97.72	692	23.1	54.8	0	31.2
Sep	98.75	676	18.7	38.9	0	30.5
Oct	97.85	692	19.5	49.7	0	33.9
Nov	99.86	685	20.1	39.2	0	31.8
Dec	97.04	687	13.3	34.2	0	24.5
Annual	99.01	8264	23.5	77.5	0	49.3



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	100	709	20.6	37.9	0	34.3
Feb	99.55	637	23.5	41.6	0	36.6
Mar	100	709	27.5	45.3	0	38.8
Apr	100	686	32.6	50.4	0	41.3
May	99.46	706	33.9	60.5	0	45.1
Jun	100	686	30.9	61.2	0	41.0
Jul	99.19	703	24.3	62.4	0	40.6
Aug	99.6	706	22.4	43.0	0	30.3
Sep	100	684	19.1	40.1	0	31.0
Oct	100	710	22.8	49.9	0	36.3
Nov	99.86	685	23.9	43.2	0	35.5
Dec	100	709	18.8	39.6	0	31.6
Annual	99.81	8330	25.0	62.4	0	45.1



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	100	705	14.2	35.5	0	28.6
Feb	100	639	19.9	37.7	0	32.7
Mar	99.19	704	22.4	46.2	0	35.0
Apr	100	684	31.5	51.3	0	41.8
May	99.87	704	33.0	64.1	0	44.5
Jun	100	686	26.9	59.0	0	37.5
Jul	98.92	699	19.7	58.5	0	34.6
Aug	99.6	706	17.3	38.9	0	24.8
Sep	100	687	12.8	35.2	0	22.7
Oct	99.87	709	14.5	42.5	0	29.5
Nov	99.86	686	12.3	33.5	0	25.4
Dec	100	710	11.0	31.7	0	21.3
Annual	99.77	8319	19.6	64.1	0	44.5



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	100	709	25.5	34.6	0	31.7
Feb	100	641	28.3	36.4	0	33.4
Mar	100	708	25.3	38.4	0	34.1
Apr	100	686	37.1	52.0	0	47.4
May	100	707	39.5	65.4	0	52.9
Jun	98.47	675	33.8	69.1	0	54.6
Jul	97.98	692	22.7	62.0	0	38.5
Aug	98.92	701	23.1	46.7	0	35.1
Sep	99.86	685	22.1	41.4	0	29.1
Oct	99.87	707	20.4	35.8	0	29.2
Nov	100	686	24.8	43.0	0	34.9
Dec	100	710	23.7	38.5	0	34.8
Annual	99.59	8307	27.2	69.1	0	54.6



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	100	710	13.9	36.5	0	29.6
Feb	100	640	18.8	37.0	0	32.1
Mar	100	710	18.9	41.0	0	32.0
Apr	98.47	674	27.1	47.9	0	38.2
May	99.6	706	26.4	55.6	0	35.9
Jun	100	686	23.9	62.3	0	37.6
Jul	99.87	708	14.3	55.6	0	26.6
Aug	96.24	683	14.2	40.9	0	22.7
Sep	99.58	684	11.6	33.7	0	24.4
Oct	100	710	13.3	44.2	0	28.0
Nov	98.89	679	13.4	34.9	0	23.7
Dec	99.87	709	9.3	32.9	0	19.5
Annual	99.37	8299	17.1	62.3	0	38.2



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	99.6	704	28.0	44.4	0	38.3
Feb	100	640	30.8	44.7	0	39.7
Mar	100	709	35.2	50.8	0	45.9
Apr	98.61	676	38.5	59.1	0	46.2
May	100	708	38.7	61.3	0	51.9
Jun	99.17	680	31.6	61.0	0	44.7
Jul	99.73	707	25.7	64.6	0	43.2
Aug	99.73	708	24.5	47.3	0	33.2
Sep	95.56	652	21.8	42.9	0	33.4
Oct	99.87	709	26.8	49.9	0	37.9
Nov	99.86	686	27.8	46.2	0	39.2
Dec	100	710	22.9	39.9	0	37.3
Annual	99.35	8289	29.4	64.6	0	51.9



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Jan	99.46	708	23.5	38.3	0	36.2
Feb	98.66	632	29.8	42.2	0	37.5
Mar	99.19	704	33.3	48.4	0	42.3
Apr	99.44	683	37.8	57.6	0	48.2
May	100	710	40.4	67.7	0	52.8
Jun	100	687	31.2	64.2	0	49.0
Jul	99.73	707	21.9	62.9	0	35.0
Aug	100	709	20.8	44.0	0	30.0
Sep	99.72	685	18.9	35.0	0	25.0
Oct	99.87	708	21.5	44.0	0	32.7
Nov	97.36	669	23.3	37.4	0	30.6
Dec	100	709	21.0	40.3	0	31.9
Annual	99.46	8311	26.9	67.7	0	52.8



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value
Aug	99.6	706	27.2	54.3	0	36.6
Sep	100	684	25.9	46.2	0	34.8
Oct	99.87	709	32.4	49.1	0	40.7
Nov	100	687	31.3	45.8	0	42.9
Dec	100	710	25.5	49.5	0	38.7
Annual	99.894	3496	28.4	54.3	0	42.9



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

TOTAL HYDROCARBON ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	709	2.0	3.9	2.3
Feb	99.7	636	2.0	2.6	2.1
Mar	99.73	707	2.0	3.1	2.3
Apr	99.44	681	1.9	3.0	2.1
May	97.58	682	1.9	2.4	1.9
Jun	99.86	685	1.9	2.5	2.1
Jul	91.13	647	1.9	2.4	2.0
Aug	97.45	687	1.9	2.7	2.0
Sep	89.17	607	1.9	3.5	2.2
Oct	90.19	632	2.0	3.1	2.4
Nov	83.06	564	2.1	3.1	2.5
Dec	99.6	706	2.1	3.7	2.6
Annual	95.56	7943	2.0	3.9	2.6



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	98.79	701	2.5	4.9	2.9
Feb	100	640	2.4	3.6	2.7
Mar	99.73	707	2.5	6.7	3.3
Apr	99.86	682	2.3	5.5	3.1
May	99.73	707	2.2	3.9	2.4
Jun	100	685	2.3	4.9	3.0
Jul	100	709	2.4	4.3	2.7
Aug	99.33	700	2.4	5.5	2.9
Sep	99.44	681	2.4	6.6	2.9
Oct	99.87	709	2.5	6.8	3.2
Nov	99.72	685	2.5	4.7	3.2
Dec	100	709	2.5	5.2	3.3
Annual	99.7	8315	2.4	6.8	3.3



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.06	703	2.4	4.0	2.8
Feb	100	640	2.3	4.3	2.6
Mar	100	709	2.4	5.6	3.4
Apr	100	687	2.2	3.5	2.4
May	100	709	2.2	3.5	2.5
Jun	99.72	679	2.3	4.0	2.9
Jul	100	709	2.3	3.6	2.6
Aug	93.41	662	2.4	5.0	3.3
Sep	99.86	686	2.2	7.3	2.6
Oct	99.87	709	2.3	7.1	3.1
Nov	100	686	2.3	3.6	2.6
Dec	99.46	706	2.4	4.0	2.8
Annual	99.27	8285	2.3	7.3	3.4



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	708	2.4	4.5	2.9
Feb	98.51	624	2.3	3.8	2.9
Mar	100	709	2.3	4.3	2.8
Apr	99.72	675	2.1	3.6	2.4
May	99.87	701	2.2	4.4	2.6
Jun	100	684	2.3	6.0	3.2
Jul	100	708	2.2	3.9	2.8
Aug	99.87	709	2.2	3.6	2.6
Sep	100	686	2.2	3.6	2.5
Oct	99.87	708	2.4	6.3	3.2
Nov	100	685	2.3	3.9	2.5
Dec	99.87	709	2.4	7.5	2.9
Annual	99.81	8306	2.3	7.5	3.2



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.06	700	2.0	3.0	2.3
Feb	99.85	638	2.0	2.4	2.2
Mar	100	709	1.9	2.4	2.0
Apr	99.44	681	1.9	2.2	2.0
May	93.41	658	1.9	2.1	1.9
Jun	100	682	1.9	3.3	2.2
Jul	99.33	705	1.9	2.3	2.0
Aug	99.19	700	1.9	2.6	2.0
Sep	100	683	1.9	2.2	2.0
Oct	100	707	2.0	2.8	2.4
Nov	99.86	685	2.0	2.4	2.1
Dec	99.73	705	2.1	2.9	2.3
Annual	99.14	8253	2.0	3.3	2.4



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	98.66	692	1.9	2.4	2.1
Feb	97.02	617	1.9	2.6	2.3
Mar	99.87	705	1.9	2.6	2.0
Apr	99.58	679	1.9	2.9	2.0
May	99.87	709	1.9	2.3	1.9
Jun	99.72	681	1.9	4.1	2.4
Jul	99.87	706	1.9	2.3	2.0
Aug	98.92	702	1.9	2.6	2.1
Sep	100	684	1.9	2.4	2.0
Oct	100	708	1.9	2.7	2.5
Nov	100	685	2.0	2.6	2.1
Dec	99.6	706	2.0	3.1	2.4
Annual	99.44	8274	1.9	4.1	2.5



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	710	2.4	5.0	3.3
Feb	100	641	2.3	3.8	2.6
Mar	100	707	2.4	5.3	2.8
Apr	99.58	675	2.2	3.3	2.5
May	100	709	2.2	3.5	2.4
Jun	100	687	2.2	3.4	2.6
Jul	100	710	2.2	3.4	2.6
Aug	100	709	2.2	3.9	2.4
Sep	98.61	677	2.2	3.5	2.5
Oct	100	708	2.3	4.6	2.7
Nov	100	686	2.3	3.2	2.8
Dec	100	709	2.5	4.3	2.9
Annual	99.85	8328	2.3	5.3	3.3



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	92.07	656	2.4	5.0	2.9
Feb	94.2	600	2.3	3.3	2.7
Mar	100	709	2.5	6.1	3.3
Apr	96.81	664	2.3	4.5	2.8
May	98.66	698	2.3	4.1	2.6
Jun	99.86	686	2.3	4.1	3.0
Jul	100	707	2.4	4.3	2.8
Aug	100	710	2.3	4.7	2.7
Sep	99.72	685	2.3	5.0	2.6
Oct	99.33	704	2.3	4.2	2.7
Nov	100	686	2.3	3.1	2.6
Dec	100	709	2.4	3.6	2.7
Annual	98.41	8214	2.3	6.1	3.3



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	707	2.5	6.8	3.1
Feb	99.7	637	2.4	6.7	3.0
Mar	99.6	704	2.5	6.5	3.0
Apr	95.97	655	2.2	4.3	2.4
May	100	706	2.3	5.6	2.9
Jun	99.86	684	2.3	5.3	3.6
Jul	97.98	692	2.5	4.5	2.8
Aug	88.84	627	2.5	6.0	2.9
Annual	97.74	5412	2.4	6.8	3.6



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	707	2.4	6.2	3.2
Feb	100	638	2.3	3.6	2.6
Mar	96.64	686	2.3	3.9	2.9
Apr	98.33	671	2.2	4.4	2.5
May	99.06	700	2.2	3.1	2.3
Jun	99.86	676	2.2	3.3	2.6
Jul	99.6	705	2.2	3.3	2.5
Aug	96.1	680	2.1	4.1	2.4
Sep	99.44	681	2.2	4.6	2.7
Oct	100	708	2.2	3.5	2.6
Nov	98.75	675	2.3	4.1	2.9
Dec	100	708	2.5	4.5	3.1
Annual	98.97	8235	2.3	6.2	3.2



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.73	705	1.9	3.0	2.1
Feb	99.4	635	1.9	2.5	2.1
Mar	100	707	1.9	2.4	2.1
Apr	100	681	1.9	2.4	2.0
May	99.73	705	1.9	3.3	2.1
Jun	95.97	656	1.9	3.7	2.2
Jul	99.87	706	1.9	3.2	2.2
Aug	99.33	703	1.9	2.5	2.0
Sep	97.78	669	1.9	2.3	1.9
Oct	94.76	672	1.9	2.2	1.9
Nov	100	684	1.9	2.1	1.9
Dec	100	708	2.0	3.3	2.4
Annual	98.88	8231	1.9	3.7	2.4



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	708	2.3	9.0	3.2
Feb	99.85	638	2.3	5.2	2.7
Mar	99.73	705	2.3	7.6	3.0
Apr	100	683	2.3	4.2	2.5
May	99.73	705	2.2	3.6	2.5
Jun	99.86	684	2.1	6.1	2.9
Jul	100	707	2.2	5.0	2.7
Aug	100	707	2.1	5.3	2.6
Sep	99.72	683	2.2	5.0	2.6
Oct	100	708	2.1	3.7	2.5
Nov	95.83	655	2.0	9.0	2.5
Dec	99.06	701	2.1	5.4	2.5
Annual	99.49	8284	2.2	9.0	3.2



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	708	2.6	6.2	4.1
Feb	93.9	601	2.5	4.8	3.1
Mar	100	707	2.6	6.5	3.1
Apr	100	683	2.3	4.6	3.1
May	100	708	2.3	3.5	2.8
Jun	100	684	2.4	4.9	2.9
Jul	100	707	2.4	5.2	2.9
Aug	100	708	2.3	5.5	2.8
Sep	98.19	670	2.3	4.4	2.5
Oct	100	709	2.3	5.4	3.0
Nov	100	685	2.4	6.0	2.8
Dec	100	708	2.5	5.6	3.2
Annual	99.38	8278	2.4	6.5	4.1



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	711	2.1	2.8	2.3
Feb	98.66	630	2.1	2.5	2.2
Mar	99.06	701	2.1	3.8	2.2
Apr	99.44	680	2.1	2.5	2.2
May	100	707	2.0	7.0	2.2
Jun	99.86	682	2.1	3.8	2.8
Jul	100	707	2.1	3.2	2.4
Aug	100	708	2.1	2.6	2.2
Sep	99.72	685	2.1	3.1	2.2
Oct	100	708	2.2	2.8	2.4
Nov	99.86	684	2.2	3.4	2.4
Dec	100	709	2.3	2.8	2.4
Annual	99.73	8312	2.1	7.0	2.8



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Sep	100	685	1.9	2.2	2.0
Oct	100	709	1.9	2.2	2.1
Nov	100	686	2.0	2.2	2.0
Dec	100	708	2.1	2.4	2.3
Annual	100	2788	2.0	2.4	2.3



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	707	2.2	2.8	2.3
Feb	100	639	2.2	2.6	2.3
Mar	100	707	2.2	2.5	2.2
Apr	100	685	2.1	2.6	2.2
May	100	707	2.1	3.0	2.2
Jun	100	685	2.1	3.0	2.6
Jul	100	706	2.2	3.1	2.4
Aug	100	708	2.1	3.1	2.4
Sep	99.72	684	2.1	2.7	2.3
Oct	100	708	2.2	2.7	2.3
Nov	100	686	2.2	2.7	2.3
Dec	100	709	2.2	2.6	2.3
Annual	99.98	8331	2.2	3.1	2.6



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NON-METHANE HYDROCARBON ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Non-Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	709	0.0	0.3	0.1
Feb	99.7	636	0.0	0.2	0.0
Mar	99.73	707	0.0	0.6	0.0
Apr	99.44	681	0.0	0.1	0.0
May	97.58	682	0.0	0.1	0.0
Jun	99.86	685	0.0	0.3	0.0
Jul	91.13	647	0.0	0.2	0.1
Aug	97.45	687	0.0	0.3	0.0
Sep	89.17	607	0.0	0.4	0.1
Oct	90.19	632	0.0	0.6	0.1
Nov	83.06	564	0.0	0.4	0.2
Dec	99.6	706	0.0	0.7	0.2
Annual	95.56	7943	0.0	0.7	0.2



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Non-Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.06	700	0.0	0.5	0.1
Feb	99.85	638	0.0	0.1	0.0
Mar	100	709	0.0	0.2	0.0
Apr	99.44	681	0.0	0.0	0.0
May	93.41	658	0.0	0.1	0.0
Jun	100	682	0.0	0.6	0.1
Jul	99.33	705	0.0	0.3	0.0
Aug	99.19	700	0.0	0.1	0.0
Sep	100	683	0.0	0.1	0.0
Oct	100	707	0.0	0.3	0.0
Nov	99.86	685	0.0	0.1	0.0
Dec	99.73	705	0.0	0.3	0.0
Annual	99.14	8253	0.0	0.6	0.1



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Non-Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	98.66	692	0.0	0.3	0.1
Feb	97.02	617	0.0	0.3	0.1
Mar	99.87	705	0.0	0.4	0.1
Apr	99.58	679	0.0	0.9	0.0
May	99.87	709	0.0	0.1	0.0
Jun	99.72	681	0.0	1.0	0.3
Jul	99.87	706	0.0	0.3	0.1
Aug	98.92	702	0.0	0.4	0.1
Sep	100	684	0.0	0.4	0.1
Oct	100	708	0.0	0.3	0.2
Nov	100	685	0.0	0.4	0.1
Dec	99.6	706	0.0	0.4	0.1
Annual	99.44	8274	0.0	1.0	0.3



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Non-Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.73	705	0.0	0.9	0.1
Feb	99.4	635	0.0	0.2	0.0
Mar	100	707	0.0	0.1	0.1
Apr	100	681	0.0	0.0	0.0
May	99.73	705	0.0	0.1	0.1
Jun	95.97	656	0.0	0.3	0.1
Jul	99.87	706	0.1	0.4	0.2
Aug	99.33	703	0.0	0.3	0.1
Sep	97.78	669	0.0	0.2	0.0
Oct	94.76	672	0.0	0.1	0.0
Nov	100	684	0.0	0.0	0.0
Dec	100	708	0.0	0.2	0.1
Annual	98.88	8231	0.0	0.9	0.2



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Non-Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Sep	100	685	0.0	0.1	0.0
Oct	100	709	0.0	0.1	0.0
Nov	100	686	0.0	0.3	0.0
Dec	100	708	0.0	0.1	0.1
Annual	100	2788	0.0	0.3	0.1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

METHANE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	709	2.01	3.83	2.33
Feb	99.7	636	1.96	2.58	2.14
Mar	99.73	707	1.99	3.09	2.32
Apr	99.44	681	1.90	2.97	2.07
May	97.58	682	1.88	2.40	1.95
Jun	99.86	685	1.87	2.38	2.05
Jul	91.13	647	1.86	2.36	1.99
Aug	97.45	687	1.85	2.65	1.95
Sep	89.17	607	1.90	3.08	2.11
Oct	90.19	632	1.96	2.76	2.26
Nov	83.06	564	2.06	2.70	2.30
Dec	99.6	706	2.09	3.23	2.44
Annual	95.56	7943	1.94	3.83	2.44



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.06	700	2.02	2.93	2.29
Feb	99.85	638	2.00	2.39	2.15
Mar	100	709	1.95	2.37	2.02
Apr	99.44	681	1.89	2.15	1.96
May	93.41	658	1.90	2.07	1.93
Jun	100	682	1.89	2.94	2.13
Jul	99.33	705	1.89	2.13	1.95
Aug	99.19	700	1.91	2.50	2.01
Sep	100	683	1.94	2.22	2.02
Oct	100	707	2.01	2.67	2.35
Nov	99.86	685	2.02	2.38	2.11
Dec	99.73	705	2.08	2.85	2.28
Annual	99.14	8253	1.96	2.94	2.35



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	98.66	692	1.93	2.21	2.03
Feb	97.02	617	1.91	2.28	2.13
Mar	99.87	705	1.90	2.26	1.97
Apr	99.58	679	1.86	2.35	1.95
May	99.87	709	1.86	2.28	1.89
Jun	99.72	681	1.84	3.13	2.13
Jul	99.87	706	1.87	2.09	1.92
Aug	98.92	702	1.89	2.23	2.00
Sep	100	684	1.91	2.28	1.99
Oct	100	708	1.93	2.38	2.22
Nov	100	685	1.96	2.40	2.10
Dec	99.6	706	2.02	2.72	2.26
Annual	99.44	8274	1.91	3.13	2.26



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.73	705	1.89	2.38	2.04
Feb	99.4	635	1.89	2.46	2.08
Mar	100	707	1.88	2.41	2.03
Apr	100	681	1.89	2.37	1.95
May	99.73	705	1.89	3.16	2.04
Jun	95.97	656	1.86	3.47	2.05
Jul	99.87	706	1.88	3.20	1.96
Aug	99.33	703	1.90	2.50	1.97
Sep	97.78	669	1.88	2.33	1.94
Oct	94.76	672	1.88	2.24	1.93
Nov	100	684	1.87	2.08	1.94
Dec	100	708	1.99	3.03	2.30
Annual	98.88	8231	1.89	3.47	2.30



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Sep	100	685	1.91	2.13	1.98
Oct	100	709	1.94	2.22	2.08
Nov	100	686	1.95	2.11	2.02
Dec	100	708	2.05	2.38	2.27
Annual	100	2788	1.96	2.38	2.27



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

CARBON MONOXIDE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
Jan	98.52	699	0.12	0.63	0.26
Feb	100	640	0.10	0.64	0.16
Mar	99.19	704	0.11	0.60	0.23
Apr	100	685	0.07	0.35	0.12
May	100	709	0.06	0.56	0.19
Jun	98.89	680	0.11	2.58	0.81
Jul	99.87	709	0.20	2.41	1.11
Aug	100	710	0.04	0.26	0.08
Sep	99.86	687	0.05	0.31	0.10
Oct	99.87	709	0.06	0.46	0.14
Nov	99.86	685	0.12	0.95	0.35
Dec	100	711	0.11	0.59	0.25
Annual	99.67	8328	0.09	2.58	1.11



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

AMMONIA ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Ammonia (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Guideline	Maximum 24-Hour Value	% of Data in Each Concentration Range		
							0 - 1000	1001 - 2000	> 2000
Jan	94.62	668	0	0	0	0	100	0	0
Feb	94.64	600	0	0	0	0	100	0	0
Mar	95.83	672	0	0	0	0	100	0	0
Apr	95.14	640	0	0	0	0	100	0	0
May	95.3	662	0	0	0	0	100	0	0
Jun	92.5	626	0	12	0	5	100	0	0
Jul	80.24	563	1	18	0	5	100	0	0
Aug	91.94	643	0	0	0	0	100	0	0
Sep	93.89	630	0	0	0	0	100	0	0
Oct	90.59	636	0	0	0	0	100	0	0
Nov	92.22	622	0	0	0	0	100	0	0
Dec	93.28	654	0	0	0	0	100	0	0
Annual	92.49	7616	0	18	0	5	100	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Ammonia (ppb) Average

Month	Operational Time (%)	Number of Data	Number of Values				% of Data in Each Concentration Range		
			Mean Value	Maximum 1-Hour Value	Exceeding 1-Hour Guideline	Maximum 24-Hour Value	0 - 1000	1001 - 2000	> 2000
Jan	92.47	651	0	0	0	0	100	0	0
Feb	99.11	625	0	0	0	0	100	0	0
Mar	90.32	620	0	0	0	0	100	0	0
Apr	93.61	633	0	0	0	0	100	0	0
May	93.68	648	0	13	0	2	100	0	0
Jun	94.44	632	1	68	0	14	100	0	0
Jul	93.41	656	2	67	0	26	100	0	0
Aug	93.15	645	0	14	0	1	100	0	0
Sep	95.28	639	0	0	0	0	100	0	0
Oct	93.55	656	0	0	0	0	100	0	0
Nov	93.06	627	0	10	0	0	100	0	0
Dec	95.97	672	0	11	0	0	100	0	0
Annual	93.96	7704	0	68	0	26	100	0	0



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

**PARTICULATE MATTER <2.5 μ M
ANNUAL 2015**

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	97.98	729	4.9	29.7	9.1	0	69.27	22.77	7.13	0.82	0
Feb	99.55	669	5.2	37.7	10.9	0	71.15	21.23	6.73	0.6	0.3
Mar	99.06	737	5.6	93.5	11.5	0	62.14	27	9.23	0.95	0.68
Apr	97.08	699	5.1	48.2	14.0	0	68.38	22.6	7.3	1	0.72
May	99.87	743	10.4	133.2	37.5	1	40.92	28.13	21	5.65	4.31
Jun	99.72	718	18.1	194.3	137.8	3	32.59	23.68	25.21	5.71	12.81
Jul	99.73	742	26.0	472.1	162.2	7	48.92	21.97	10.38	3.77	14.96
Aug	99.6	739	5.4	29.6	13.4	0	61.71	29.09	8.39	0.81	0
Sep	99.86	717	4.7	57.4	12.7	0	73.08	22.73	3.63	0.42	0.14
Oct	96.37	715	4.3	40.1	12.6	0	70.91	24.06	4.34	0.56	0.14
Nov	100	719	5.7	58.0	21.9	0	63.28	26.29	7.37	1.95	1.11
Dec	100	742	5.6	49.5	12.8	0	59.03	32.61	7.68	0.13	0.54
Annual	99.06	8669	8.5	472.1	162.2	11	60.2	25.2	9.99	1.89	2.72



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.87	743	4.8	30.9	12.2	0	69.72	19.92	9.29	0.94	0.13
Feb	99.55	669	4.8	39.0	10.6	0	68.91	24.22	6.43	0.3	0.15
Mar	99.73	742	4.8	64.7	12.6	0	71.7	21.56	5.39	0.67	0.67
Apr	99.86	719	3.5	20.9	6.8	0	78.72	17.11	4.03	0.14	0
May	99.33	739	10.1	145.4	31.8	1	45.6	27.2	16.24	6.5	4.47
Jun	99.72	718	19.6	1331.6	221.2	2	38.3	28.97	19.08	5.57	7.8
Jul	99.6	741	23.6	373.5	128.5	6	46.83	20.51	14.17	3.51	14.98
Aug	99.73	741	4.4	22.9	9.3	0	70.58	24.83	4.32	0.27	0
Sep	100	720	3.5	27.7	6.1	0	83.33	13.33	3.06	0.28	0
Oct	100	742	4.1	54.5	13.0	0	78.3	15.36	4.72	1.21	0.4
Nov	98.06	705	5.8	118.2	29.8	0	74.18	16.45	5.96	0.57	2.84
Dec	100	741	5.0	37.9	12.9	0	66.67	22.94	9.58	0.67	0.13
Annual	99.62	8720	7.9	1331.6	221.2	9	66.03	21.05	8.5	1.74	2.66



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
				1-Hour Value	24-Hour Value		0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.46	740	5.6	24.1	10.3	0	64.05	27.97	7.16	0.81	0
Feb	95.98	645	6.0	21.9	9.9	0	52.56	39.53	7.75	0.16	0
Mar	99.6	741	5.5	30.0	13.3	0	60.59	32.52	6.07	0.81	0
Apr	99.44	716	6.7	54.2	16.8	0	51.12	35.89	10.34	1.82	0.84
May	99.33	739	12.1	144.6	38.8	2	30.85	30.99	25.71	6.9	5.55
Jun	99.86	719	18.5	434.7	130.7	2	17.66	46.04	21.28	6.12	8.9
Jul	98.79	735	28.5	386.9	145.1	6	28.71	30.48	18.64	3.95	18.23
Aug	99.6	740	5.1	26.6	10.4	0	64.73	29.86	5	0.41	0
Sep	98.06	704	4.6	18.8	7.3	0	75.43	20.6	3.98	0	0
Oct	99.6	739	4.6	20.9	11.4	0	73.07	21.79	5.01	0.14	0
Nov	100	719	6.5	76.8	23.3	0	54.94	36.02	6.68	0.28	2.09
Dec	100	742	5.4	36.4	11.4	0	59.03	30.19	9.97	0.27	0.54
Annual	99.17	8679	9.1	434.7	145.1	10	52.72	31.81	10.7	1.83	2.95



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
				1-Hour Value	24-Hour Value		0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.73	742	3.7	30.7	6.6	0	86.25	12.13	1.35	0.13	0.13
Feb	99.11	666	4.6	30.1	11.0	0	79.58	15.92	4.2	0.3	0
Mar	99.73	742	3.5	17.0	6.5	0	88.68	10.38	0.94	0	0
Apr	99.58	717	3.3	98.0	7.5	0	91.21	7.67	0.98	0	0.14
May	98.66	734	5.2	121.4	28.9	0	74.66	19.07	4.9	0.41	0.95
Jun	95	684	38.9	1507.5	397.3	5	44.59	16.23	12.28	5.99	20.47
Jul	99.87	743	31.2	973.5	309.2	8	62.45	7.67	4.71	2.69	22.48
Aug	99.73	741	3.8	20.0	7.5	0	85.83	13.09	1.08	0	0
Sep	99.72	718	5.6	46.5	15.3	0	70.06	18.11	10.31	0.97	0.56
Oct	100	742	3.5	16.3	8.3	0	81.13	17.25	1.62	0	0
Nov	98.06	704	5.8	39.0	25.6	0	71.02	19.89	4.4	3.84	0.85
Dec	100	743	4.3	32.6	8.4	0	74.83	22.21	2.69	0.13	0.13
Annual	99.11	8676	9.4	1507.5	397.3	13	76.17	14.78	4.06	1.18	3.77



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.06	737	6.5	38.4	20.1	0	54.82	30.66	12.08	1.76	0.68
Feb	99.85	671	7.1	39.7	18.2	0	44.56	42.32	9.99	2.24	0.89
Mar	97.58	726	6.5	31.7	13.8	0	50	34.99	13.77	1.1	0.14
Apr	97.64	703	6.9	86.7	16.3	0	53.34	31.72	11.66	2.42	0.85
May	95.3	709	20.4	740.0	70.2	4	29.2	26.52	24.12	8.04	12.13
Jun	97.08	699	22.6	222.7	157.1	5	14.74	27.61	29.9	12.59	15.16
Jul	97.18	723	27.5	446.9	161.9	7	39.97	27.39	11.07	3.32	18.26
Aug	88.31	656	7.6	38.8	14.6	0	41.62	38.11	17.68	2.13	0.46
Annual	96.5	5624	13.2	740.0	161.9	16	41.22	32.3	16.14	4.19	6.15



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.73	742	4.6	31.0	16.6	0	73.85	19.14	5.66	1.08	0.27
Feb	99.7	670	4.6	19.6	8.5	0	74.48	21.34	4.18	0	0
Mar	98.66	734	4.6	21.8	8.7	0	69.75	25.61	4.5	0.14	0
Apr	97.08	699	4.3	27.9	11.5	0	74.82	21.6	3	0.57	0
May	99.87	743	8.2	103.8	32.5	1	46.84	29.74	19.25	2.42	1.75
Jun	99.31	715	15.5	155.0	123.6	2	36.5	31.33	18.04	3.92	10.21
Jul	98.12	730	24.7	422.3	158.2	5	47.4	22.6	12.19	3.29	14.52
Aug	96.24	715	4.6	21.7	9.1	0	65.45	28.11	6.15	0.28	0
Sep	94.86	682	4.3	20.4	6.6	0	76.54	21.11	2.35	0	0
Oct	100	743	4.0	22.5	9.3	0	74.02	21.8	4.04	0.13	0
Nov	98.89	710	4.6	29.6	17.0	0	72.11	21.97	4.51	1.41	0
Dec	100	743	4.6	47.4	10.0	0	72.54	22.88	4.04	0.13	0.4
Annual	98.54	8626	7.4	422.3	158.2	8	64.95	24.01	7.52	1.16	2.35



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.87	743	3.5	50.8	8.5	0	84.39	10.77	4.17	0.4	0.27
Feb	99.85	671	4.0	19.4	7.8	0	81.22	16.24	2.53	0	0
Mar	99.06	737	3.0	13.2	7.1	0	87.79	10.31	1.9	0	0
Apr	98.89	712	3.1	12.6	6.2	0	85.96	12.92	1.12	0	0
May	99.73	742	6.4	174.9	27.3	0	69.27	15.5	10.65	1.48	3.1
Jun	95.69	689	11.9	257.2	80.8	2	51.81	25.54	13.93	2.61	6.1
Jul	97.31	724	21.9	337.0	145.2	5	43.78	29.01	8.15	3.73	15.33
Aug	100	742	4.9	63.3	8.5	0	66.58	26.42	6.6	0.27	0.13
Sep	100	719	3.6	37.6	7.9	0	83.73	12.93	2.5	0.7	0.14
Oct	97.04	720	2.9	40.3	7.5	0	87.22	10.28	2.08	0.14	0.28
Nov	99.86	718	4.5	87.7	20.9	0	81.89	12.81	3.2	0.56	1.53
Dec	100	742	3.3	12.5	6.3	0	89.35	10.38	0.27	0	0
Annual	98.94	8659	6.1	337.0	145.2	7	76.11	16.05	4.77	0.83	2.25



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.87	743	4.0	20.3	8.0	0	76.04	18.44	5.52	0	0
Feb	100	671	4.7	33.4	14.6	0	77.2	15.65	5.51	1.49	0.15
Mar	99.33	739	3.8	21.3	11.3	0	78.62	15.7	5.55	0.14	0
Apr	98.61	710	4.6	51.0	11.2	0	77.89	14.23	5.92	1.41	0.56
May	99.06	737	10.6	187.3	36.8	1	40.43	31.61	19.13	4.34	4.48
Jun	99.72	718	24.2	352.2	163.6	5	26.32	28.13	20.33	6.96	18.25
Jul	99.73	742	25.2	470.3	175.7	5	44.88	25.07	11.86	4.72	13.48
Aug	100	743	6.5	198.1	22.4	0	59.35	25.44	11.57	1.88	1.75
Sep	100	718	3.2	22.7	7.8	0	84.4	13.09	2.37	0.14	0
Oct	100	741	4.7	27.3	8.3	0	67.07	26.59	6.07	0.27	0
Nov	99.86	718	5.1	55.4	18.5	0	74.09	20.19	3.76	0.97	0.97
Dec	100	742	4.8	22.2	9.1	0	64.15	32.21	3.5	0.13	0
Annual	99.68	8722	8.5	470.3	175.7	11	63.92	22.32	8.51	1.9	3.36



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
				1-Hour Value	24-Hour Value		0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.87	743	5.5	40.4	15.5	0	65.81	25.03	7.67	0.81	0.67
Feb	99.85	671	5.9	55.0	11.1	0	59.61	33.98	5.37	0.75	0.3
Mar	99.73	742	5.8	37.3	11.9	0	60.65	27.22	10.38	1.62	0.13
Apr	99.72	718	6.5	62.3	15.2	0	53.9	32.73	10.72	2.09	0.56
May	97.58	726	13.7	216.9	44.8	4	35.95	29.61	18.46	6.47	9.5
Jun	99.58	717	21.9	192.7	152.3	5	22.18	30.26	23.85	7.11	16.6
Jul	99.87	743	27.3	466.8	171.2	6	40.92	24.5	15.34	3.77	15.48
Aug	100	743	7.0	45.6	15.0	0	50.07	29.48	17.23	2.69	0.54
Sep	100	719	5.3	25.1	8.0	0	59.67	34.35	5.84	0.14	0
Oct	99.6	737	5.9	51.8	14.7	0	62.14	28.49	7.73	0.68	0.95
Nov	100	718	5.9	61.8	24.3	0	61.98	28.83	5.99	1.25	1.95
Dec	100	742	6.0	82.8	21.8	0	56.2	34.23	8.36	0.27	0.94
Annual	99.65	8719	9.8	466.8	171.2	15	52.36	29.95	11.44	2.31	3.94



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Jan	99.87	743	4.4	56.8	11.1	0	75.64	19.65	4.04	0.4	0.27
Feb	98.36	661	4.1	23.0	8.5	0	80.48	15.43	3.93	0.15	0
Mar	98.79	735	3.3	27.4	5.9	0	86.94	11.84	1.09	0.14	0
Apr	99.31	715	3.3	11.0	7.4	0	87.41	12.31	0.28	0	0
May	99.73	742	5.9	214.2	26.9	0	67.39	23.18	7.28	0.4	1.75
Jun	99.72	718	23.2	285.0	200.0	4	43.87	23.96	12.53	4.32	15.32
Jul	99.73	742	31.5	503.1	203.5	8	38.68	30.05	8.89	3.91	18.46
Aug	100	743	5.1	33.1	9.0	0	64.87	27.19	7.4	0.4	0.13
Sep	99.44	714	2.8	18.7	6.8	0	84.73	14.15	1.12	0	0
Oct	98.52	731	2.7	19.4	8.1	0	87.96	10.67	1.37	0	0
Nov	99.86	717	4.7	60.5	13.8	0	70.71	23.01	4.46	0.84	0.98
Dec	100	743	3.9	20.7	7.2	0	77.39	19.65	2.83	0.13	0
Annual	99.45	8704	8.0	503.1	203.5	12	71.86	19.43	4.65	0.91	3.15



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Particulate Matter 2.5 (ug/m3) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Guidance	% of Data in Each Concentration Range				
							0 - 5	6 - 10	11 - 20	21 - 30	>30
Aug	99.87	742	3.4	26.0	10.7	0	82.88	14.29	2.56	0.27	0
Sep	95.69	688	2.1	8.8	5.4	0	96.22	3.78	0	0	0
Oct	99.19	736	2.5	9.2	4.7	0	92.39	7.61	0	0	0
Nov	97.22	698	4.4	36.5	12.6	0	72.64	20.92	4.87	1.43	0.14
Dec	99.73	740	4.4	20.9	11.5	0	69.19	25.41	5.14	0.27	0
Annual	98.34	3604	3.4	36.5	12.6	0	82.55	14.5	2.53	0.39	0.03



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

AMBIENT TEMPERATURE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Ambient Temperature 10m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	96.91	721	-33.0	6.9	-27.2	3.9	-14.6
February	100	672	-36.9	1.1	-26.3	-2.4	-17.0
March	100	744	-31.6	15.7	-21.1	7.0	-4.1
April	100	720	-15.1	24.1	-8.6	15.9	5.0
May	100	744	-3.9	28.0	1.6	20.0	11.6
June	99.86	719	0.1	31.9	9.7	24.3	17.4
July	100	744	5.8	31.2	13.4	23.4	18.1
August	99.33	739	1.8	29.8	10.5	23.7	17.3
September	99.86	719	-2.0	24.4	4.5	15.7	9.6
October	99.73	742	-3.8	24.6	-0.6	17.0	5.6
November	100	720	-20.1	8.7	-15.9	3.8	-4.2
December	100	744	-28.2	4.3	-24.3	-1.1	-10.9
Annual	99.63	8728	-36.9	31.9	-27.2	24.3	3.0



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.87	743	-34.0	6.5	-28.3	3.6	-15.2
February	100	672	-38.5	1.2	-27.0	-2.8	-17.6
March	100	744	-33.3	15.7	-22.4	6.1	-4.8
April	100	720	-16.3	24.3	-9.1	15.1	4.5
May	100	744	-5.4	29.8	1.5	19.4	11.1
June	99.86	719	-1.3	32.8	9.5	23.5	17.0
July	100	744	4.7	31.8	13.0	22.9	17.7
August	99.33	739	0.1	30.6	10.4	23.3	17.0
September	99.86	719	-3.3	24.6	3.5	15.0	9.0
October	99.73	742	-5.8	26.1	-0.6	15.8	5.1
November	100	720	-22.1	8.8	-17.3	3.2	-4.7
December	100	744	-29.7	3.6	-25.3	-2.0	-11.5
Annual	99.89	8750	-38.5	32.8	-28.3	23.5	2.4



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.06	737	-30.4	6.9	-26.1	4.0	-14.2
February	100	672	-35.9	2.1	-25.6	-2.5	-16.8
March	100	744	-30.9	13.2	-21.4	6.6	-4.0
April	100	720	-13.0	23.7	-8.5	16.0	4.9
May	100	744	-3.4	28.6	1.2	20.1	11.7
June	100	720	0.6	32.2	9.9	24.7	17.6
July	100	744	7.7	31.6	13.7	23.8	18.4
August	100	744	4.4	30.0	10.9	24.2	17.7
September	100	720	-1.3	23.7	5.1	15.8	9.9
October	100	744	-3.6	24.9	-0.9	16.8	5.8
November	100	720	-18.1	8.1	-15.1	3.4	-3.8
December	100	744	-25.1	5.9	-23.0	-1.2	-10.6
Annual	99.92	8753	-35.9	32.2	-26.1	24.7	3.2



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Ambient Temperature 20m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	53.23	396	-32.4	6.8	-27.0	3.9	-9.3
February	100	672	-35.6	2.1	-25.9	-1.8	-17.0
March	100	744	-29.4	15.2	-21.2	7.2	-3.7
April	100	720	-13.9	24.5	-8.0	16.6	5.2
May	100	744	-2.5	28.4	2.0	20.0	12.0
June	100	720	1.9	31.6	10.3	24.6	17.7
July	100	744	6.9	31.3	13.9	24.4	18.7
August	100	744	5.9	29.9	11.2	24.5	18.0
September	100	720	-1.0	24.0	5.0	16.4	10.3
October	100	744	-2.5	26.1	-0.3	17.0	6.2
November	100	720	-16.8	8.5	-14.7	4.1	-3.8
December	100	744	-27.3	6.0	-24.1	-1.0	-10.5
Annual	96.03	8412	-35.6	31.6	-27.0	24.6	4.3



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Ambient Temperature 45m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.87	743	-31.4	7.0	-27.2	4.1	-14.4
February	100	672	-34.2	2.3	-25.4	-1.9	-16.7
March	100	744	-29.3	15.3	-20.9	7.7	-3.6
April	100	720	-13.6	24.5	-8.2	16.7	5.2
May	100	744	-2.3	28.0	2.0	20.1	11.9
June	100	720	2.2	31.4	10.1	24.7	17.7
July	100	744	7.2	31.2	13.8	24.4	18.7
August	100	744	6.0	29.7	11.1	24.3	17.9
September	100	720	-0.9	24.0	5.2	16.5	10.3
October	100	744	-2.2	25.4	-0.4	17.2	6.2
November	100	720	-16.8	8.4	-14.5	4.2	-3.6
December	100	744	-26.9	6.2	-23.8	-0.9	-10.4
Annual	99.99	8759	-34.2	31.4	-27.2	24.7	3.4



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Ambient Temperature 100m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-29.2	7.8	-26.3	4.5	-13.7
February	100	672	-32.3	2.8	-24.4	-2.3	-16.4
March	100	744	-27.7	15.6	-20.7	8.7	-3.3
April	100	720	-13.5	23.9	-8.5	17.1	5.1
May	100	744	-1.6	27.3	1.6	20.7	11.9
June	100	720	2.5	30.8	9.6	24.7	17.5
July	100	744	7.6	30.7	13.5	24.6	18.5
August	100	744	5.8	29.1	10.7	24.0	17.7
September	100	720	-0.3	23.5	5.1	17.1	10.3
October	100	744	-2.0	25.1	-0.9	18.2	6.2
November	100	720	-16.5	8.1	-14.3	4.3	-3.0
December	100	744	-24.7	6.4	-22.4	-0.1	-10.1
Annual	100	8760	-32.3	30.8	-26.3	24.7	3.5



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Ambient Temperature 167m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-28.2	8.2	-26.2	4.5	-13.5
February	100	672	-30.0	3.0	-24.4	-2.6	-16.4
March	100	744	-25.3	15.3	-20.8	9.2	-3.1
April	100	720	-13.5	23.3	-8.4	17.2	5.0
May	100	744	-1.9	27.1	1.4	21.2	11.7
June	100	720	3.4	30.2	9.1	24.5	17.3
July	100	744	7.6	30.0	13.2	24.4	18.3
August	100	744	6.5	28.4	10.3	23.6	17.5
September	100	720	-0.6	23.1	4.7	17.2	10.3
October	100	744	-2.6	24.2	-1.4	18.6	6.0
November	100	720	-16.6	7.5	-13.8	4.4	-2.9
December	100	744	-22.9	6.4	-21.5	1.7	-9.9
Annual	100	8760	-30.0	30.2	-26.2	24.5	3.5



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	96.51	718	-32.7	6.7	-27.1	4.5	-14.2
February	100	672	-38.1	3.1	-26.0	-2.5	-16.9
March	100	744	-32.7	15.8	-21.2	8.4	-3.7
April	100	720	-15.4	24.2	-7.7	15.9	4.9
May	100	744	-4.1	29.0	1.1	20.3	11.7
June	100	720	1.4	32.4	9.9	24.9	17.3
July	100	744	6.9	31.2	13.1	22.8	18.1
August	99.87	743	2.2	29.7	11.1	23.3	17.6
September	100	720	-1.8	24.2	4.7	15.4	9.6
October	100	744	-4.3	26.0	-1.1	16.8	5.7
November	100	720	-21.8	8.3	-16.2	3.4	-4.0
December	100	744	-26.1	6.0	-22.5	-1.6	-10.8
Annual	99.69	8733	-38.1	32.4	-27.1	24.9	3.1



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	92.07	685	-30.5	6.3	-26.9	3.9	-14.4
February	100	672	-33.6	2.3	-24.8	-2.4	-16.6
March	98.39	732	-28.3	14.5	-20.9	7.3	-3.5
April	100	720	-12.7	24.4	-7.7	16.2	5.1
May	100	744	-2.9	28.3	2.4	19.9	11.7
June	100	720	0.9	31.1	9.7	23.9	17.2
July	95.56	711	6.8	31.0	13.2	22.1	18.0
August	100	744	4.2	29.5	10.5	23.3	17.3
September	99.17	714	-1.8	24.0	3.9	15.4	9.6
October	100	744	-4.1	25.3	-1.0	16.6	5.8
November	100	720	-19.1	7.6	-15.6	3.0	-4.2
December	100	744	-25.0	5.3	-21.4	-0.6	-10.5
Annual	98.74	8650	-33.6	31.1	-26.9	23.9	3.1



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Ambient Temperature 20m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	90.59	674	-30.4	7.2	-26.4	4.7	-14.1
February	100	672	-32.7	2.9	-24.6	-2.5	-16.5
March	98.39	732	-28.2	14.7	-20.7	8.7	-3.1
April	100	720	-13.1	23.8	-7.9	16.6	5.1
May	98.79	735	-1.4	27.2	2.2	20.5	12.0
June	100	720	3.2	30.9	9.4	24.5	17.4
July	95.56	711	7.2	30.9	13.3	22.7	18.2
August	100	744	4.7	29.2	10.4	23.6	17.5
September	99.17	714	-1.4	23.5	4.6	16.1	10.0
October	100	744	-2.8	25.2	-1.1	17.8	6.0
November	100	720	-17.5	7.9	-14.6	4.2	-3.5
December	100	744	-23.4	6.1	-21.1	0.2	-10.2
Annual	98.52	8630	-32.7	30.9	-26.4	24.5	3.4



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Ambient Temperature 45m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	87.23	649	-30.2	7.4	-26.3	4.9	-14.2
February	100	672	-32.3	3.0	-24.3	-2.6	-16.4
March	98.39	732	-27.9	14.8	-20.7	9.3	-3.0
April	100	720	-13.4	23.5	-8.1	16.8	5.0
May	98.79	735	-1.8	26.9	2.0	20.7	11.9
June	100	720	3.9	30.5	9.2	24.6	17.3
July	95.56	711	7.2	30.5	13.2	22.6	18.2
August	100	744	4.6	28.8	10.1	23.5	17.4
September	99.17	714	-1.4	23.1	4.5	16.2	10.0
October	100	744	-3.0	24.7	-1.3	18.1	6.0
November	100	720	-17.5	7.6	-14.4	4.6	-3.3
December	100	744	-23.0	6.2	-21.0	0.6	-10.1
Annual	98.23	8605	-32.3	30.5	-26.3	24.6	3.5



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Ambient Temperature 75m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	87.9	654	-28.2	7.4	-26.3	4.9	-13.9
February	100	672	-30.1	3.0	-24.0	-2.8	-16.4
March	98.39	732	-25.8	14.9	-20.9	9.5	-3.0
April	100	720	-13.7	23.2	-8.4	17.0	4.9
May	98.79	735	-2.2	26.6	1.7	21.0	11.8
June	100	720	3.9	30.2	9.0	24.6	17.2
July	95.56	711	7.3	30.1	13.1	22.6	18.1
August	100	744	5.1	28.5	9.9	23.4	17.3
September	99.17	714	-1.2	22.8	4.3	16.8	10.1
October	100	744	-2.7	24.3	-1.6	18.5	6.0
November	100	720	-16.4	7.3	-13.8	4.8	-3.1
December	100	744	-22.7	6.1	-21.1	1.3	-10.0
Annual	98.29	8610	-30.1	30.2	-26.3	24.6	3.5



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Ambient Temperature 90m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	88.17	656	-28.1	7.4	-26.3	4.9	-13.7
February	100	672	-29.1	3.0	-24.1	-2.9	-16.4
March	98.39	732	-25.0	14.8	-21.0	9.6	-2.9
April	100	720	-13.9	23.1	-8.5	17.2	4.9
May	98.92	736	-2.3	26.5	1.6	21.2	11.8
June	100	720	3.8	30.1	8.9	24.6	17.2
July	95.56	711	7.4	30.0	13.0	22.6	18.1
August	73.52	547	6.7	28.4	9.7	24.8	17.1
September	80.14	577	-1.1	22.7	4.3	15.6	9.9
October	100	744	-2.8	24.2	-1.7	18.6	6.0
November	100	720	-16.1	7.2	-13.6	4.9	-3.1
December	100	744	-22.5	6.1	-21.1	1.8	-10.0
Annual	94.51	8279	-29.1	30.1	-26.3	24.8	3.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-32.7	7.2	-27.7	4.0	-13.9
February	100	672	-37.5	2.2	-26.3	-1.7	-16.7
March	100	744	-32.7	15.4	-21.9	8.5	-3.3
April	100	720	-14.7	24.0	-7.9	15.5	4.8
May	100	744	-5.2	27.7	2.0	20.2	10.9
June	100	720	-0.4	31.0	9.3	23.9	16.9
July	99.73	742	4.8	31.0	13.2	23.3	18.1
August	100	744	2.2	29.1	9.9	22.9	16.9
September	100	720	-2.3	23.3	4.5	15.5	9.2
October	100	744	-5.4	25.2	-1.2	16.9	5.6
November	100	720	-19.8	8.7	-16.0	3.0	-3.9
December	100	744	-24.2	5.7	-21.1	-0.9	-10.3
Annual	99.98	8758	-37.5	31.0	-27.7	23.9	3.0



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-32.8	6.8	-28.3	3.7	-14.8
February	100	672	-35.7	2.3	-25.8	-1.2	-16.9
March	100	744	-31.2	16.7	-20.7	7.6	-3.3
April	100	720	-12.5	25.2	-7.0	15.4	5.1
May	100	744	-2.9	28.3	3.3	19.7	11.8
June	100	720	0.4	32.0	10.5	24.3	17.6
July	100	744	7.0	32.0	14.2	24.0	18.9
August	100	744	2.6	30.3	11.3	23.8	17.8
September	100	720	-0.8	24.5	5.3	15.1	9.9
October	100	744	-3.8	26.2	-0.3	16.4	6.1
November	100	720	-18.5	9.2	-14.8	3.0	-4.3
December	100	744	-24.8	5.2	-21.7	-1.8	-10.7
Annual	100	8760	-35.7	32.0	-28.3	24.3	3.2



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-35.3	1.7	-30.8	-4.6	-18.3
February	100	672	-36.2	-3.1	-28.5	-7.6	-21.1
March	100	744	-30.3	10.9	-24.0	4.7	-9.5
April	100	720	-21.0	18.1	-16.2	12.9	0.8
May	100	744	-4.4	27.2	0.8	17.2	9.4
June	100	720	0.7	29.3	7.5	23.4	16.7
July	100	744	5.9	27.5	12.5	22.2	17.4
August	99.87	743	7.3	28.7	10.4	21.5	16.9
September	100	720	-1.5	21.5	3.1	15.8	9.6
October	100	744	-2.9	20.2	-1.9	15.0	3.4
November	100	720	-20.1	5.7	-17.0	2.7	-5.8
December	100	744	-30.6	-0.4	-28.4	-3.5	-12.7
Annual	99.99	8759	-36.2	29.3	-30.8	23.4	0.7



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-32.7	6.3	-27.3	3.4	-14.9
February	100	672	-36.5	1.1	-26.1	-3.1	-17.2
March	100	744	-30.3	15.8	-22.0	6.6	-4.3
April	100	720	-14.6	24.6	-8.6	16.0	5.0
May	100	744	-4.1	29.3	1.6	20.3	11.8
June	100	720	-0.3	32.9	9.9	24.6	17.6
July	100	744	5.6	32.4	13.6	23.9	18.2
August	100	744	1.7	30.2	10.5	23.8	17.4
September	100	720	-2.5	24.3	4.5	15.3	9.5
October	100	744	-4.4	24.9	-0.9	17.0	5.5
November	100	720	-20.8	8.5	-16.2	3.5	-4.2
December	100	744	-30.0	4.0	-25.2	-1.6	-11.2
Annual	100	8760	-36.5	32.9	-27.3	24.6	2.9



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-33.7	6.2	-29.0	3.3	-15.0
February	100	672	-37.6	1.6	-26.4	-1.8	-17.3
March	100	744	-31.6	16.2	-22.6	5.8	-4.2
April	98.47	709	-13.2	25.1	-7.9	16.3	5.1
May	100	744	-2.4	28.6	2.5	19.7	12.1
June	100	720	1.9	32.7	10.5	24.5	17.8
July	100	744	6.8	32.1	14.2	24.4	18.7
August	100	744	5.4	30.6	11.4	24.7	18.0
September	100	720	-0.7	24.9	5.0	15.9	10.3
October	99.46	740	-3.3	24.3	0.0	16.2	6.0
November	100	720	-17.4	8.9	-15.0	3.9	-4.0
December	100	744	-27.9	5.5	-24.5	-1.3	-10.7
Annual	99.83	8745	-37.6	32.7	-29.0	24.7	3.2



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-31.7	7.2	-26.9	3.7	-14.3
February	100	672	-34.6	1.5	-25.0	-2.7	-16.8
March	100	744	-29.1	13.7	-21.4	7.3	-3.5
April	98.19	707	-13.1	24.5	-8.1	16.3	5.3
May	100	744	-2.2	28.2	2.2	19.8	11.7
June	100	720	1.7	31.6	9.6	23.9	17.3
July	100	744	6.6	31.0	13.3	23.3	18.2
August	89.52	666	4.8	29.7	10.5	23.5	17.4
Annual	98.46	5741	-34.6	31.6	-26.9	23.9	4.4



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.87	743	-35.3	6.8	-29.9	3.4	-15.9
February	100	672	-39.7	1.3	-27.6	-2.8	-18.3
March	100	744	-35.6	16.3	-23.6	5.4	-5.4
April	100	720	-18.6	25.0	-10.1	14.2	3.8
May	100	744	-7.6	29.2	1.4	18.2	10.1
June	100	720	-2.6	32.7	9.2	22.8	16.5
July	100	744	3.6	31.5	12.4	21.8	17.2
August	98.25	731	-1.6	30.3	9.9	24.0	16.3
September	99.86	719	-4.3	24.8	2.7	14.7	8.1
October	100	744	-7.7	25.3	-1.0	14.1	4.5
November	98.89	712	-24.6	8.6	-19.0	2.7	-6.1
December	100	744	-29.6	3.3	-25.6	-2.7	-12.3
Annual	99.74	8737	-39.7	32.7	-29.9	24.0	1.7



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-32.8	6.8	-27.9	4.9	-12.8
February	100	672	-35.8	2.8	-25.8	-2.0	-16.2
March	100	744	-31.2	15.5	-22.4	9.0	-2.8
April	100	720	-16.6	23.4	-8.5	14.9	4.1
May	100	744	-4.1	27.5	0.9	19.3	10.3
June	100	720	-2.0	30.1	8.4	23.3	16.0
July	100	744	5.5	29.9	12.5	22.9	17.5
August	100	744	0.9	28.3	9.2	22.4	16.3
September	100	720	-1.6	23.1	3.8	15.1	8.7
October	100	744	-6.7	25.2	-1.7	17.5	5.5
November	100	720	-21.9	7.8	-17.3	4.0	-3.4
December	100	744	-25.4	5.7	-21.0	1.7	-10.0
Annual	100	8760	-35.8	30.1	-27.9	23.3	2.9



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-34.4	7.0	-28.2	2.6	-15.4
February	100	672	-38.1	0.7	-27.0	-3.1	-17.7
March	100	744	-32.8	15.2	-22.6	5.9	-4.8
April	100	720	-16.8	24.3	-9.3	15.5	4.4
May	100	744	-7.1	28.3	1.0	19.5	11.1
June	100	720	-3.1	32.3	9.4	24.4	16.9
July	100	744	5.4	31.8	13.4	23.1	17.8
August	100	744	0.2	30.0	10.4	23.0	16.7
September	100	720	-4.4	24.7	3.1	15.5	8.7
October	100	744	-6.2	24.9	-1.8	16.0	4.6
November	99.86	719	-22.2	7.7	-17.6	2.0	-5.0
December	100	744	-30.1	4.2	-25.1	-1.9	-11.4
Annual	99.99	8759	-38.1	32.3	-28.2	24.4	2.3



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-33.4	5.6	-27.5	2.5	-15.1
February	100	672	-38.3	-0.1	-26.2	-3.5	-17.3
March	100	744	-32.3	15.6	-22.0	5.5	-4.9
April	100	720	-15.2	24.8	-8.7	14.9	4.4
May	100	744	-4.7	28.2	1.7	19.0	11.1
June	100	720	0.1	31.6	9.6	23.1	16.9
July	100	744	5.6	31.0	13.0	22.0	17.7
August	100	744	1.0	28.9	10.4	22.5	16.8
September	100	720	-3.6	23.9	3.5	14.9	8.9
October	100	744	-5.5	25.2	-1.3	16.1	5.0
November	100	720	-21.2	8.0	-16.7	2.6	-4.7
December	100	744	-31.3	3.7	-24.9	-1.6	-11.6
Annual	100	8760	-38.3	31.6	-27.5	23.1	2.4



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-35.3	4.1	-29.5	1.4	-15.3
February	100	672	-38.0	0.8	-26.7	-5.6	-17.8
March	100	744	-34.4	14.4	-25.0	7.8	-4.8
April	100	720	-21.9	22.0	-12.7	15.7	3.3
May	100	744	-7.5	26.4	0.2	19.1	10.1
June	100	720	-2.8	29.6	6.5	21.8	15.4
July	100	744	-0.4	29.5	10.6	21.9	16.6
August	100	744	3.4	27.6	8.2	21.6	15.7
September	100	720	-6.3	21.7	2.4	15.0	8.3
October	100	744	-5.0	23.4	-3.0	16.5	4.4
November	99.86	719	-19.2	5.6	-15.6	2.2	-4.9
December	100	744	-33.5	3.5	-26.1	0.6	-11.2
Annual	99.99	8759	-38.0	29.6	-29.5	21.9	1.8



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
August	100	744	3.6	28.7	8.3	21.3	15.5
September	100	720	-2.1	23.8	3.5	16.8	8.7
October	100	744	-6.4	24.1	-3.1	16.6	5.9
November	100	720	-17.1	7.4	-12.8	3.7	-3.2
December	100	744	-22.3	4.7	-19.0	0.5	-9.3
Annual	100	3672	-22.3	28.7	-19.0	21.3	3.5



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-33.9	3.4	-29.3	1.0	-15.3
February	100	672	-35.1	-0.4	-26.2	-6.3	-18.2
March	100	744	-30.3	12.6	-24.8	6.8	-5.2
April	100	720	-16.7	20.9	-11.6	15.1	2.7
May	100	744	-5.4	25.0	-0.3	19.2	9.9
June	100	720	-0.3	28.4	6.2	22.2	15.3
July	100	744	4.7	28.1	11.0	21.9	16.4
August	100	744	5.4	26.4	7.8	21.3	15.5
September	100	720	-2.8	20.6	2.1	14.5	8.2
October	100	744	-4.8	22.5	-3.8	16.7	4.0
November	100	720	-19.3	4.4	-15.7	1.3	-5.2
December	100	744	-31.3	2.9	-25.0	0.2	-11.7
Annual	100	8760	-35.1	28.4	-29.3	22.2	1.5



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
October	100	744	-7.6	24.1	-2.9	16.2	5.1
November	100	720	-20.9	6.9	-15.0	3.0	-3.8
December	100	744	-23.7	5.2	-20.0	-0.2	-9.8
Annual	100	2208	-23.7	24.1	-20.0	16.2	-2.8



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
Annual Summary for the Year 2015
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	-28.9	7.6	-26.5	4.7	-11.4
February	100	672	-31.1	1.9	-24.4	-1.6	-15.5
March	100	744	-25.0	14.8	-21.5	8.6	-2.3
April	100	720	-11.7	21.6	-7.4	16.2	4.2
May	100	744	-2.1	25.5	-0.3	21.2	10.6
June	100	720	1.5	28.8	8.4	23.8	16.1
July	100	744	6.5	28.9	12.1	23.6	17.6
August	100	744	5.3	27.3	8.8	22.1	16.1
September	100	720	-1.8	21.3	3.7	16.5	9.1
October	100	744	-4.4	23.5	-2.5	18.6	6.0
November	100	720	-17.3	9.2	-13.9	4.5	-2.9
December	100	744	-23.2	7.2	-20.1	3.2	-9.2
Annual	100	8760	-31.1	28.9	-26.5	23.8	3.3



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

RELATIVE HUMIDITY ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.87	743	49.1	98.7	66.6	97.4	77.5
February	100	672	39.1	89.8	62.2	82.1	70.3
March	100	744	17.8	97.2	38.9	89.7	66.2
April	100	720	13.1	97.8	32.7	72.7	47.8
May	100	744	9.9	97.8	29.6	89.0	48.4
June	99.86	719	17.6	98.5	39.1	75.5	57.7
July	100	744	23.2	99.1	43.3	87.8	72.5
August	99.33	739	23.8	99.3	49.7	86.8	68.8
September	99.86	719	29.9	99.2	54.0	94.9	75.0
October	99.73	742	27.2	98.2	49.8	89.7	72.7
November	100	720	38.9	96.7	52.7	95.0	77.6
December	100	744	54.2	94.4	73.1	93.1	81.4
Annual	99.89	8750	9.9	99.3	29.6	97.4	68.0



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	97.98	729	55.9	99.8	67.8	95.6	80.3
February	100	672	49.2	94.4	69.1	86.0	74.4
March	100	744	25.0	100.0	39.1	91.6	67.8
April	100	720	13.9	99.6	31.6	74.3	46.7
May	100	744	11.9	100.0	29.1	91.4	47.2
June	100	720	19.2	97.8	35.1	75.6	55.1
July	100	744	23.4	100.0	41.5	86.8	68.1
August	100	744	25.7	99.0	46.2	85.6	65.1
September	100	720	29.8	100.0	49.2	93.5	70.9
October	100	744	27.1	99.0	45.8	90.6	71.3
November	100	720	38.9	98.6	51.9	92.0	76.4
December	100	744	57.3	97.5	67.3	95.8	83.3
Annual	99.83	8745	11.9	100.0	29.1	95.8	67.2



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Relative Humidity 20m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	53.23	396	61.6	99.3	71.5	94.0	81.6
February	100	672	46.1	92.3	66.0	82.8	72.1
March	100	744	20.6	98.9	39.3	87.5	66.2
April	100	720	12.9	98.2	34.2	71.7	46.5
May	100	744	10.7	98.9	28.0	87.0	47.2
June	100	720	18.8	98.8	38.7	73.0	56.1
July	100	744	23.3	99.1	41.6	86.2	67.7
August	100	744	25.5	99.3	47.2	81.2	64.8
September	100	720	28.4	99.5	48.9	91.6	70.6
October	100	744	23.3	97.8	46.3	88.3	70.4
November	100	720	40.9	96.8	50.9	91.1	75.8
December	100	744	56.2	96.1	69.5	93.4	81.0
Annual	96.03	8412	10.7	99.5	28.0	94.0	66.1



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Relative Humidity 45m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.87	743	49.7	98.4	63.2	93.4	77.6
February	100	672	44.1	91.6	65.2	82.1	70.7
March	100	744	20.3	97.8	37.2	86.3	64.5
April	100	720	12.6	97.2	31.3	70.8	45.1
May	100	744	10.4	97.9	27.2	85.2	45.5
June	100	720	18.2	97.7	35.8	72.2	54.4
July	100	744	22.6	98.2	40.2	85.5	65.9
August	100	744	24.8	98.5	44.6	80.5	63.5
September	100	720	27.3	98.7	48.1	90.7	69.1
October	100	744	22.4	96.7	45.4	87.4	69.2
November	100	720	40.2	96.2	49.6	89.2	73.9
December	100	744	54.4	95.2	67.0	92.7	79.6
Annual	99.99	8759	10.4	98.7	27.2	93.4	64.9



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Relative Humidity 100m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	50.4	98.9	62.2	94.5	78.2
February	100	672	47.1	93.7	65.4	84.7	72.4
March	100	744	20.4	98.5	36.1	87.3	62.9
April	100	720	12.1	96.9	25.0	72.5	43.1
May	100	744	10.5	99.1	19.8	84.9	42.5
June	100	720	18.0	97.3	31.9	73.4	51.5
July	100	744	22.2	96.9	37.8	83.2	63.2
August	100	744	24.9	98.6	42.0	81.4	61.5
September	100	720	26.5	99.0	47.8	90.8	66.6
October	100	744	22.1	97.4	44.3	88.8	67.9
November	100	720	28.1	97.8	39.3	89.9	71.3
December	100	744	47.9	95.4	56.0	93.8	79.4
Annual	100	8760	10.5	99.1	19.8	94.5	63.4



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Relative Humidity 167m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	51.0	98.6	60.7	95.3	78.3
February	100	672	50.3	94.5	65.0	87.0	72.7
March	100	744	20.5	98.7	35.3	88.8	62.0
April	100	720	12.5	98.1	22.0	74.1	42.1
May	100	744	10.6	98.6	17.7	86.5	40.8
June	100	720	18.2	94.7	30.2	74.6	49.8
July	100	744	22.4	96.1	36.9	80.9	61.7
August	100	744	25.4	95.9	40.9	82.6	60.3
September	100	720	27.0	98.1	47.3	89.1	64.5
October	100	744	22.0	97.2	43.3	90.6	67.5
November	100	720	25.2	97.6	30.1	91.6	70.2
December	100	744	33.7	95.4	41.7	94.1	79.2
Annual	100	8760	10.6	98.7	17.7	95.3	62.4



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	75.94	565	52.6	99.8	70.5	95.4	80.9
February	100	672	43.8	93.8	64.9	85.7	74.1
March	100	744	25.9	99.5	42.8	88.9	66.5
April	100	720	13.3	98.9	31.1	75.7	46.7
May	100	744	11.9	99.2	28.8	88.6	47.7
June	100	720	18.4	98.8	33.8	77.6	56.8
July	100	744	24.1	98.8	43.8	85.7	69.3
August	99.87	743	25.0	98.5	44.6	84.7	65.1
September	100	720	28.6	98.9	48.9	93.2	72.0
October	100	744	22.2	98.2	43.7	90.0	71.0
November	100	720	31.4	97.8	49.3	91.9	75.5
December	100	744	53.9	95.8	65.2	94.3	82.8
Annual	97.95	8580	11.9	99.8	28.8	95.4	67.1



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Relative Humidity 2m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	92.07	685	56.3	98.4	69.4	95.2	79.9
February	100	672	49.7	91.6	66.9	84.1	73.5
March	98.39	732	28.8	97.6	41.7	89.2	66.4
April	100	720	13.8	95.9	30.9	74.4	45.5
May	100	744	11.9	96.9	26.9	84.0	45.3
June	100	720	20.7	95.7	37.8	76.5	57.0
July	95.56	711	25.6	97.5	44.6	82.0	68.6
August	100	744	27.5	97.5	48.3	83.0	66.3
September	99.17	714	28.8	97.9	48.3	90.1	71.2
October	100	744	24.0	96.9	43.5	88.5	69.8
November	100	720	40.0	96.7	53.9	90.2	76.2
December	100	744	51.3	95.1	62.0	92.8	81.6
Annual	98.74	8650	11.9	98.4	26.9	95.2	66.7



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Relative Humidity 20m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	90.59	674	53.3	97.0	66.9	95.8	78.8
February	100	672	46.1	92.7	65.3	84.9	73.2
March	98.39	732	25.1	98.5	39.9	88.6	63.6
April	100	720	13.2	97.1	25.9	74.2	43.7
May	98.79	735	10.6	94.0	21.1	82.9	41.9
June	100	720	18.0	96.1	32.3	74.3	52.7
July	95.56	711	23.3	97.8	39.9	80.6	64.0
August	100	744	24.8	97.7	41.4	82.2	62.8
September	99.17	714	27.1	98.5	47.0	89.6	67.6
October	100	744	22.1	96.0	41.8	88.0	67.7
November	100	720	28.3	96.6	41.8	89.3	72.3
December	100	744	45.3	95.3	53.6	92.8	79.7
Annual	98.52	8630	10.6	98.5	21.1	95.8	63.9



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Relative Humidity 45m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	87.23	649	52.2	96.8	65.5	86.8	77.4
February	100	672	45.9	93.2	64.7	85.5	73.0
March	98.39	732	23.2	98.4	39.4	88.5	62.2
April	100	720	13.0	97.1	23.9	74.5	42.9
May	98.79	735	10.4	94.8	18.9	83.2	41.0
June	100	720	17.8	96.5	30.4	74.3	51.3
July	95.56	711	23.2	97.3	38.8	80.1	62.4
August	100	744	24.6	97.3	40.3	82.5	61.8
September	99.17	714	26.7	98.1	46.0	88.8	66.4
October	100	744	21.8	97.2	41.6	89.2	67.5
November	100	720	23.8	97.7	34.8	90.5	71.3
December	100	744	34.9	96.3	48.1	93.7	79.5
Annual	98.23	8605	10.4	98.4	18.9	93.7	62.9



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Relative Humidity 75m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	87.9	654	52.4	96.5	64.8	87.7	77.3
February	100	672	46.1	93.8	63.8	86.6	73.3
March	98.39	732	22.4	98.4	39.5	88.8	61.7
April	100	720	12.9	98.0	22.6	75.6	42.7
May	98.79	735	10.6	94.9	17.6	83.9	40.4
June	100	720	18.2	93.0	29.9	75.0	50.6
July	95.56	711	23.2	95.8	38.1	79.9	61.7
August	100	744	25.1	95.8	40.2	83.8	61.3
September	99.17	714	26.4	97.1	45.6	87.7	65.3
October	100	744	21.8	97.8	41.8	90.2	67.1
November	100	720	22.7	98.0	29.5	91.5	70.6
December	100	744	32.8	96.6	40.7	93.9	79.2
Annual	98.29	8610	10.6	98.4	17.6	93.9	62.4



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Relative Humidity 90m (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	88.17	656	52.4	96.8	63.7	88.5	77.8
February	100	672	47.2	94.5	64.2	87.6	73.9
March	98.39	732	22.3	98.8	40.0	89.3	62.0
April	100	720	13.1	98.8	22.4	76.5	42.9
May	98.92	736	10.8	95.7	17.4	84.6	40.6
June	100	720	18.5	93.7	29.8	75.6	50.6
July	95.56	711	23.2	95.6	37.9	79.9	61.6
August	73.52	547	25.4	96.7	44.0	84.6	62.7
September	80.14	577	26.3	97.6	45.6	87.9	65.5
October	100	744	21.9	98.1	42.0	90.9	67.2
November	100	720	22.3	98.2	28.2	92.0	70.4
December	100	744	32.8	96.8	38.3	94.1	79.3
Annual	94.51	8279	10.8	98.8	17.4	94.1	62.7



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	55.6	97.9	69.8	96.4	79.3
February	100	672	43.1	91.7	65.6	84.1	73.0
March	100	744	20.4	98.2	41.9	88.4	64.7
April	100	720	12.8	97.2	25.6	74.5	45.4
May	100	744	10.8	97.1	24.1	85.1	47.4
June	100	720	17.7	97.2	35.2	78.7	56.1
July	99.73	742	24.1	97.1	43.3	80.7	65.9
August	100	744	27.3	98.5	50.5	82.3	66.2
September	100	720	24.7	98.6	49.8	91.9	71.8
October	100	744	21.5	97.8	47.5	87.3	70.1
November	100	720	26.2	97.7	52.6	88.8	74.0
December	100	744	43.9	95.1	56.6	92.1	80.0
Annual	99.98	8758	10.8	98.6	24.1	96.4	66.1



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	56.0	99.2	68.1	97.6	79.4
February	100	672	41.7	94.3	63.9	82.7	71.9
March	100	744	26.6	98.6	43.2	88.0	66.4
April	100	720	12.0	97.8	34.3	73.3	47.1
May	100	744	11.0	98.6	27.0	81.4	47.6
June	100	720	19.3	94.1	41.7	76.0	57.2
July	100	744	24.7	96.9	44.9	79.6	66.4
August	100	744	26.7	99.2	49.1	81.5	66.0
September	100	720	28.4	99.3	47.7	90.8	72.1
October	100	744	21.0	96.0	45.8	89.1	70.3
November	100	720	38.7	97.6	56.2	88.3	77.2
December	100	744	54.3	95.5	72.5	92.8	81.2
Annual	100	8760	11.0	99.3	27.0	97.6	66.9



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	63.3	96.0	70.0	91.8	80.6
February	100	672	42.2	91.6	67.0	82.7	74.2
March	100	744	26.1	95.7	46.5	91.5	69.2
April	100	720	16.8	97.1	36.1	76.8	58.5
May	100	744	9.5	96.8	28.4	75.6	52.1
June	100	720	22.6	96.8	42.4	83.5	58.8
July	100	744	33.4	99.4	60.9	93.3	73.9
August	99.87	743	29.5	98.6	52.6	89.3	69.6
September	100	720	27.0	99.6	57.7	93.1	72.0
October	100	744	38.0	99.7	56.3	95.6	81.1
November	100	720	45.3	98.4	59.6	94.1	82.9
December	100	744	59.3	97.7	76.8	93.0	83.8
Annual	99.99	8759	9.5	99.7	28.4	95.6	71.4



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	48.8	99.4	67.6	98.3	80.4
February	100	672	43.2	90.9	66.0	83.7	73.1
March	100	744	21.6	98.0	42.5	86.8	66.9
April	100	720	13.4	98.3	29.9	72.7	46.6
May	100	744	10.5	98.8	25.5	87.5	46.0
June	100	720	17.7	98.6	35.9	72.9	55.3
July	100	744	23.4	98.9	41.0	85.8	69.3
August	100	744	24.9	98.6	48.0	85.7	66.9
September	100	720	30.2	99.3	52.8	93.0	72.7
October	100	744	27.6	98.3	47.8	90.2	72.2
November	100	720	37.7	98.0	53.1	95.8	77.3
December	100	744	53.0	96.0	67.8	94.0	83.4
Annual	100	8760	10.5	99.4	25.5	98.3	67.5



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	51.5	99.4	64.9	96.3	79.3
February	100	672	44.1	92.0	67.2	82.4	72.5
March	100	744	24.8	98.9	42.9	87.8	69.4
April	98.47	709	14.2	97.7	34.7	73.4	49.4
May	100	744	12.0	98.6	31.0	86.3	50.6
June	100	720	21.0	98.5	44.8	73.8	59.0
July	100	744	23.4	99.0	44.8	88.0	70.4
August	100	744	23.9	99.1	46.4	82.9	66.7
September	100	720	27.5	99.3	50.7	91.7	72.9
October	99.46	740	24.5	98.0	45.3	90.6	72.6
November	100	720	39.6	96.4	51.9	91.4	77.5
December	100	744	59.4	95.8	74.8	92.8	81.8
Annual	99.83	8745	12.0	99.4	31.0	96.3	68.5



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.6	741	58.2	100.0	71.0	97.2	81.9
February	100	672	50.3	94.2	68.7	86.0	75.6
March	100	744	27.5	99.7	44.5	90.0	68.4
April	98.19	707	14.2	99.2	33.7	76.8	46.7
May	100	744	10.6	97.9	27.6	86.5	46.2
June	100	720	19.5	97.5	37.6	75.7	56.2
July	100	744	24.9	99.1	41.5	84.4	68.8
August	89.52	666	26.8	98.8	48.4	84.9	65.8
Annual	65.5	5738	10.6	100.0	27.6	97.2	63.6



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	99.87	743	57.4	99.1	71.4	97.8	80.6
February	100	672	48.0	91.9	68.6	85.4	74.2
March	100	744	19.8	97.3	44.1	91.2	69.2
April	100	720	13.8	97.5	35.4	73.5	51.2
May	100	744	10.3	98.2	35.0	89.5	52.1
June	100	720	18.9	97.9	40.6	75.3	58.8
July	100	744	25.0	98.5	46.7	89.2	73.9
August	98.25	731	26.0	98.4	51.3	86.0	71.2
September	99.86	719	31.5	99.0	55.5	93.9	76.7
October	100	744	26.8	98.0	51.1	90.8	74.6
November	98.89	712	40.1	97.0	54.9	94.7	82.1
December	100	744	60.4	95.1	77.0	93.5	84.6
Annual	99.74	8737	10.3	99.1	35.0	97.8	70.8



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	45.2	98.4	66.8	90.4	79.7
February	100	672	36.8	93.8	62.9	88.1	76.2
March	100	744	18.2	98.9	43.4	89.3	65.2
April	100	720	13.3	97.7	30.0	76.6	48.1
May	100	744	12.1	98.2	28.7	91.0	49.2
June	100	720	19.5	97.5	43.1	86.1	60.2
July	100	744	26.6	98.5	42.9	83.5	68.2
August	100	744	28.9	98.6	48.5	91.6	68.5
September	100	720	29.7	98.4	50.7	93.7	74.6
October	100	744	21.1	98.5	46.1	94.5	71.2
November	100	720	21.9	97.2	41.7	92.0	74.3
December	100	744	32.9	96.0	57.8	94.4	82.3
Annual	100	8760	12.1	98.9	28.7	94.5	68.1



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	43.4	99.0	60.4	96.6	79.6
February	100	672	46.1	92.3	64.9	84.9	72.4
March	100	744	25.0	98.4	39.0	91.1	66.6
April	100	720	13.0	98.1	29.1	71.8	47.3
May	100	744	10.4	98.6	24.3	81.6	45.7
June	100	720	18.2	98.7	34.8	71.5	55.3
July	100	744	23.4	99.3	43.1	87.4	68.6
August	100	744	24.3	99.1	51.4	87.1	67.3
September	100	720	27.5	98.9	54.3	90.2	72.7
October	100	744	27.9	98.2	50.1	91.7	74.1
November	99.86	719	39.0	97.9	50.9	95.0	78.0
December	100	744	49.9	97.3	68.0	94.1	82.7
Annual	99.99	8759	10.4	99.3	24.3	96.6	67.5



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	48.6	100.0	67.9	98.9	81.8
February	100	672	43.8	88.0	67.7	83.5	74.2
March	100	744	26.1	99.4	43.8	88.0	69.7
April	100	720	14.7	97.9	34.4	74.6	49.4
May	100	744	10.0	99.1	30.2	86.8	48.3
June	100	720	19.9	98.4	40.2	74.6	57.6
July	100	744	27.2	99.6	45.4	85.7	71.4
August	100	744	27.5	99.2	54.9	85.1	69.2
September	100	720	32.3	99.8	54.1	91.0	74.4
October	100	744	27.8	99.2	51.0	90.0	74.0
November	100	720	39.1	98.3	54.6	94.4	78.8
December	100	744	51.6	96.2	69.3	94.5	84.3
Annual	100	8760	10.0	100.0	30.2	98.9	69.4



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	58.5	99.6	72.8	98.5	83.5
February	100	672	38.3	93.2	62.8	87.1	74.8
March	100	744	20.5	98.6	39.1	88.6	66.2
April	100	720	14.8	99.3	27.2	82.7	48.1
May	100	744	12.2	98.8	25.5	93.5	45.2
June	100	720	19.5	98.9	38.1	80.7	57.9
July	100	744	25.9	99.3	43.8	85.9	70.6
August	100	744	28.7	98.9	52.0	87.4	68.4
September	100	720	24.6	99.2	55.7	97.4	73.0
October	100	744	27.7	99.2	44.5	97.8	75.5
November	99.86	719	34.2	98.7	44.8	95.3	80.1
December	100	744	41.0	96.3	53.1	94.7	83.2
Annual	99.99	8759	12.2	99.6	25.5	98.5	68.9



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
August	100	744	28.5	99.4	51.2	98.1	71.2
September	100	720	28.1	99.0	48.4	95.5	74.5
October	100	744	27.1	98.9	46.1	93.8	67.4
November	100	720	18.5	98.2	29.0	95.2	73.5
December	100	744	20.6	97.2	34.1	96.0	81.5
Annual	41.93	3673	18.5	99.4	29.0	98.1	73.6



Wood Buffalo Environmental Association - Firebag (AMS 19)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	59.6	99.1	72.2	96.5	83.9
February	100	672	39.3	93.8	62.9	89.7	76.6
March	100	744	25.8	98.7	43.4	93.7	67.8
April	100	720	16.0	99.3	28.4	87.6	49.5
May	100	744	12.6	97.6	21.3	90.8	44.7
June	100	720	20.8	99.1	37.8	79.7	56.2
July	100	744	27.9	99.1	43.8	86.8	69.5
August	100	744	29.8	98.9	50.6	88.9	67.7
September	100	720	21.3	99.2	56.9	97.1	72.5
October	100	744	30.1	99.0	46.6	98.2	76.5
November	100	720	36.9	98.4	42.5	95.3	80.4
December	100	744	40.4	96.1	48.6	94.4	84.3
Annual	100	8760	12.6	99.3	21.3	98.2	69.1



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
September	28.19	203	30.7	98.4	50.2	73.8	62.8
October	100	744	26.9	99.1	46.5	96.6	70.1
November	100	720	18.1	98.3	31.0	94.1	74.5
December	100	744	22.8	96.7	38.9	95.3	82.6
Annual	27.52	2411	18.1	99.1	31.0	96.6	74.7



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
Annual Summary for the Year 2015
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hour Min	1-hour Max	24-hour Min	24-hour Max	Average
January	100	744	28.6	95.8	47.6	89.3	78.2
February	100	672	39.2	95.7	56.1	92.6	76.7
March	100	744	19.3	99.6	38.3	91.4	63.8
April	100	720	14.7	99.7	25.8	83.0	46.5
May	100	744	12.8	99.5	17.7	94.8	45.8
June	100	720	22.1	97.9	35.1	85.1	56.7
July	100	744	25.0	98.4	41.9	83.1	63.4
August	100	744	26.5	99.8	43.8	94.4	67.3
September	100	720	30.8	99.3	51.5	90.9	71.5
October	100	744	25.3	99.7	40.9	97.6	69.0
November	100	720	17.1	99.0	22.4	94.0	72.9
December	100	744	17.0	96.9	31.0	95.5	81.6
Annual	100	8760	12.8	99.8	17.7	97.6	66.1



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

BAROMETRIC PRESSURE ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
Annual Summary for the Year 2015
Barometric Pressure (inHg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	29.14	30.01	29.89
Feb	100	672	29.27	29.87	29.73
Mar	100	744	28.99	29.47	29.40
Apr	100	720	28.93	29.29	29.26
May	100	744	29.10	29.56	29.48
Jun	100	720	28.91	29.22	29.15
Jul	100	744	28.82	29.16	29.11
Aug	100	744	28.87	29.18	29.11
Sep	100	720	28.87	29.23	29.18
Oct	100	744	28.91	29.49	29.46
Nov	100	720	28.87	29.38	29.33
Dec	100	744	28.85	29.56	29.49
Annual	100	8760	28.96	30.01	29.89



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
Annual Summary for the Year 2015
Barometric Pressure (inHg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	29.03	29.87	29.76
Feb	100	672	29.17	29.74	29.61
Mar	100	744	28.90	29.39	29.32
Apr	100	720	28.83	29.20	29.17
May	100	744	29.01	29.45	29.37
Jun	100	720	28.82	29.13	29.07
Jul	100	744	28.73	29.06	29.02
Aug	100	744	28.77	29.10	29.02
Sep	100	720	28.76	29.13	29.08
Oct	100	744	28.81	29.41	29.37
Nov	100	720	28.76	29.27	29.23
Dec	100	744	28.75	29.46	29.40
Annual	100	8760	28.86	29.87	29.76



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SOLAR RADIATION ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	18.9	305.8	50.7
Feb	100	672	55.0	497.4	110.0
Mar	100	744	115.4	624.5	198.1
Apr	99.44	716	205.8	790.0	279.6
May	100	744	272.0	875.6	347.3
Jun	99.86	719	269.1	905.2	354.6
Jul	100	744	205.0	879.7	327.0
Aug	98.79	735	190.0	872.6	269.5
Sep	99.86	719	121.0	640.7	178.0
Oct	99.87	743	68.5	474.7	134.7
Nov	100	720	26.0	288.9	48.7
Dec	100	744	11.1	200.2	34.9
Annual	99.82	8744	130.0	905.2	354.6



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	29.8	390.6	80.5
Feb	100	672	75.3	521.5	134.8
Mar	100	744	148.5	695.1	218.6
Apr	98.47	709	242.2	847.4	304.3
May	79.84	594	306.8	907.9	376.6
Jun	0	0	-	-	-
Jul	0	0	-	-	-
Aug	85.35	635	216.9	871.6	310.9
Sep	85.97	619	139.3	682.1	213.8
Oct	95.83	713	59.5	531.2	153.6
Nov	100	720	29.7	314.2	56.7
Dec	100	744	13.9	234.5	40.4
Annual	78.7	6894	121.2	907.9	376.6



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Solar Radiation (W/m2) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	25.1	308.5	52.2
Feb	100	672	62.7	509.4	129.0
Mar	100	744	128.0	658.2	215.9
Apr	100	720	225.8	809.7	298.3
May	100	744	288.0	902.9	365.9
Jun	100	720	280.9	919.0	378.4
Jul	100	744	209.2	885.8	337.2
Aug	100	744	195.2	897.5	282.6
Sep	100	720	126.1	652.3	186.9
Oct	100	744	71.6	498.1	138.1
Nov	99.86	719	25.6	293.9	52.8
Dec	100	744	11.6	213.9	31.1
Annual	99.99	8759	137.8	919.0	378.4



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Aug	100	744	203.6	871.8	298.2
Sep	100	720	134.6	785.5	221.1
Oct	100	744	91.7	607.3	161.6
Nov	100	720	35.4	346.3	68.3
Dec	100	744	15.0	267.5	43.4
Annual	100	3672	96.2	871.8	298.2



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

PRECIPITATION ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	743	18	3	11
Feb	99.85	671	4	1	3
Mar	100	744	10	2	5
Apr	100	720	1	1	1
May	100	744	28	3	15
Jun	99.86	719	31	8	9
Jul	100	744	102	13	31
Aug	100	744	10	2	4
Sep	86.11	620	17	4	16
Oct	99.73	742	3	0	1
Nov	100	720	18	2	7
Dec	100	744	7	1	2
Annual	98.8	8655	251	13	31



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	2	1	1
Feb	100	672	0	0	0
Mar	100	744	4	2	2
Apr	100	720	1	0	1
May	100	744	4	1	2
Jun	100	720	29	6	13
Jul	100	744	70	6	15
Aug	99.87	743	53	9	18
Sep	100	720	22	3	12
Oct	100	744	38	3	8
Nov	100	720	2	1	2
Dec	100	744	0	0	0
Annual	99.99	8759	224	9	18



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	54.03	402	9	2	5
Feb	100	672	14	2	7
Mar	100	744	6	1	2
Apr	100	720	2	1	1
May	100	744	16	3	7
Jun	100	720	28	11	11
Jul	100	744	85	29	47
Aug	100	744	9	1	5
Sep	100	720	20	4	10
Oct	100	744	5	1	3
Nov	99.86	719	4	1	2
Dec	100	744	0	0	0
Annual	96.08	8417	199	29	47



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
Annual Summary for the Year 2015
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	19	3	11
Feb	100	672	13	1	5
Mar	100	744	17	3	9
Apr	100	720	2	1	1
May	100	744	21	6	9
Jun	100	720	33	7	11
Jul	100	744	72	16	19
Aug	100	744	26	2	6
Sep	100	720	44	4	19
Oct	100	744	8	1	3
Nov	99.86	719	13	3	5
Dec	100	744	1	0	1
Annual	99.99	8759	269	16	19



Wood Buffalo Environmental Association - Wapasu (AMS 17)
Annual Summary for the Year 2015
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Dec	100	744	8	1	2
Annual	100	744	8	1	2



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Precipitation Collector (mm) Total

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Dec	100	744	7	1	4
Annual	100	744	7	1	4



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SURFACE WETNESS ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
Annual Summary for the Year 2015
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	100	744	3.1	71.5	26.8
Feb	100	672	1.6	2.6	2.1
Mar	100	744	1.4	44.3	15.5
Apr	99.58	717	1.2	34.8	7.4
May	100	744	1.1	81.5	23.2
Jun	99.58	717	1.7	58.7	11.2
Jul	100	744	5.6	50.9	14.7
Aug	90.59	674	3.0	43.9	10.7
Sep	99.86	719	6.2	73.8	23.3
Oct	99.87	743	1.7	35.7	6.2
Nov	100	720	0.9	24.2	5.6
Dec	100	744	0.8	12.4	2.8
Annual	99.11	8682	2.4	81.5	26.8



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
Annual Summary for the Year 2015
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	99.87	743	3.7	13.2	10.8
Feb	100	672	2.2	5.5	3.0
Mar	98.79	735	2.1	7.6	4.1
Apr	97.5	702	1.6	16.4	3.1
May	18.01	134	2.4	31.6	6.7
Jun	0	0			
Jul	0	0			
Aug	84.68	630	1.5	18.7	5.3
Sep	84.31	607	2.9	35.6	19.1
Oct	94.22	701	6.0	68.0	47.9
Nov	100	720	1.6	3.5	2.4
Dec	100	744	2.4	8.4	7.9
Annual	72.92	6388	2.7	68.0	47.9



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Jan	57.53	428	2.8	96.9	19.9
Feb	100	672	0.8	34.8	4.2
Mar	100	744	1.6	30.7	6.8
Apr	69.44	500	1.2	34.7	8.7
May	100	744	1.9	53.5	16.3
Jun	100	720	2.9	67.6	21.7
Jul	100	744	4.9	69.4	19.5
Aug	100	744	4.6	62.7	17.0
Sep	100	720	9.0	67.3	25.2
Oct	99.87	743	3.6	79.3	18.3
Nov	100	720	1.7	48.4	6.8
Dec	100	744	0.8	6.6	1.4
Annual	93.87	8223	3.1	96.9	25.2



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
Annual Summary for the Year 2015
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
Oct	100	744	6.7	92.5	31.8
Nov	100	720	2.2	34.1	4.9
Dec	100	744	2.5	7.4	4.7
Annual	100	2208	3.8	92.5	31.8



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

VERTICAL WIND SPEED ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Vertical Wind Speed 20m (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	5.5	3	1.14	0.93	1.14	1.92	13.25	31.53	6.99	3.61	3.35	2.47	1.78	1.37	2.74	8.97	89.67
0.4 - 0.5	0.03	0.03	0.03	0	0	0	0.76	3.7	2.36	0.38	0	0.12	0.06	0.03	0.03	0.03	7.54
0.6 - 0.7	0.03	0.03	0	0	0	0	0.06	0.9	0.9	0.03	0	0	0	0	0	0	1.95
0.8 - 1.4	0	0	0	0	0	0	0	0.26	0.58	0	0	0	0	0	0	0	0.84
1.5 - 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	5.56	3.06	1.16	0.93	1.14	1.92	14.06	36.39	10.83	4.02	3.35	2.59	1.83	1.4	2.77	9	100

Total Number of Valid Hours 3435
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Vertical Wind Speed 45 (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	3.41	4.11	2.17	1.51	1.56	3.09	6	7.04	3.9	2.41	2.66	2.71	1.22	0.65	1.49	3.14	47.06
0.4 - 0.5	0.05	0.02	0.14	0.09	0.23	0.52	5.03	8.35	1.83	0.38	0.05	0.32	0.09	0.05	0.05	0.02	17.19
0.6 - 0.7	0.05	0	0.05	0	0.05	0.09	3.83	8.28	1.38	0.14	0	0.07	0.05	0	0.02	0	13.99
0.8 - 1.4	0	0.02	0	0.02	0	0.02	4.49	14.48	1.02	0	0	0.02	0	0	0	0	20.08
1.5 - 10	0	0	0	0	0	0	0.18	1.13	0.02	0	0	0	0	0	0	0	1.33
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	3.5	4.15	2.35	1.62	1.83	3.72	19.54	39.27	8.14	2.93	2.71	3.11	1.35	0.7	1.56	3.16	99.64

Total Number of Valid Hours 4433
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Vertical Wind Speed 100m (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	8.7	4.2	1.54	0.71	0.62	1.08	4.77	8.43	2.13	0.94	1.12	2.41	3.53	0.96	2.2	5.17	48.49
0.4 - 0.5	1.58	0.96	0.19	0.23	0.3	0.51	1.91	4.23	0.96	0.53	0.64	1.22	1.17	0.21	0.23	0.67	15.56
0.6 - 0.7	0.73	0.46	0.16	0.14	0.19	0.5	1.33	3.53	0.66	0.39	0.57	0.96	0.66	0.12	0.12	0.28	10.79
0.8 - 1.4	0.48	0.25	0.18	0.12	0.25	0.46	3.21	6.63	1.1	0.46	0.85	0.97	0.64	0.11	0.14	0.25	16.09
1.5 - 10	0.14	0	0	0.04	0.04	0.09	1.86	4.75	0.48	0.11	0.16	0.3	0.27	0.05	0.05	0.04	8.36
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	11.62	5.86	2.07	1.24	1.4	2.64	13.08	27.57	5.32	2.43	3.33	5.86	6.25	1.45	2.75	6.41	99.29

Total Number of Valid Hours 5644
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
Vertical Wind Speed 167m (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	7.33	2.35	0.75	0.46	0.31	0.58	2.68	4.57	0.82	0.45	0.61	1.02	2.16	1.36	2.59	5.69	33.76
0.4 - 0.5	2.4	1.11	0.37	0.18	0.15	0.37	1.87	4.35	0.69	0.27	0.3	0.51	1	0.43	0.51	1.14	15.66
0.6 - 0.7	1.12	0.63	0.19	0.12	0.19	0.33	1.48	3.78	0.72	0.34	0.18	0.57	1.11	0.28	0.33	0.67	12.06
0.8 - 1.4	1.17	0.72	0.36	0.3	0.4	0.64	2.94	6.26	1.39	0.69	0.96	2.01	2.92	0.39	0.39	0.88	22.43
1.5 - 10	0.28	0.16	0.1	0.1	0.18	0.36	2.67	5.25	1.51	0.78	1	1.14	0.91	0.13	0.16	0.22	14.99
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	12.3	4.98	1.78	1.17	1.24	2.29	11.64	24.2	5.14	2.53	3.06	5.25	8.11	2.61	3.99	8.62	98.91

Total Number of Valid Hours 6673
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Vertical Wind Speed 20m (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	1.75	5.67	3.3	1.95	2.35	3.81	15.2	17.66	5.54	1.33	0.86	1.51	5.05	0.97	0.93	1.33	69.22
0.4 - 0.5	0.02	0.4	0.78	0.93	1.13	1.97	6.34	9.75	0.22	0.09	0	0	0.42	0	0.04	0.02	22.11
0.6 - 0.7	0	0	0.09	0.49	0.42	0.73	1.79	3.99	0.04	0	0	0	0.02	0	0.02	0	7.6
0.8 - 1.4	0	0	0.02	0.13	0.16	0.07	0.2	0.47	0	0	0	0	0	0	0	0	1.04
1.5 - 10	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	1.77	6.09	4.19	3.5	4.05	6.58	23.53	31.86	5.81	1.42	0.86	1.51	5.5	0.97	1	1.35	100

Total Number of Valid Hours 4513
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Vertical Wind Speed 45m (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	2.31	5.75	2.15	1.04	1.15	1.19	3.28	5.22	3.64	2.31	1.62	2.21	3.89	1.72	1.13	1.78	40.38
0.4 - 0.5	0.27	1.04	1	0.86	0.94	1.39	5.38	5.38	1.62	0.39	0.25	0.25	0.23	0.14	0.25	0.2	19.59
0.6 - 0.7	0.14	0.31	0.49	0.68	0.82	1.47	5.32	6.37	0.9	0.22	0.08	0.06	0.02	0.1	0.14	0.12	17.22
0.8 - 1.4	0.04	0.1	0.1	0.57	0.51	1.76	6.82	10.3	0.72	0.12	0.06	0.04	0.06	0	0.02	0.06	21.27
1.5 - 10	0	0	0	0	0	0.06	0.16	0.94	0	0	0	0	0	0	0	0	1.15
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	2.76	7.19	3.73	3.15	3.42	5.86	20.95	28.21	6.88	3.03	2.01	2.56	4.2	1.95	1.54	2.15	99.61

Total Number of Valid Hours 5116
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Vertical Wind Speed 75m (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	4.76	5.88	1.77	1.18	1.62	2.3	7	9.84	3.42	2.09	2.13	4.46	6.24	4.54	2.8	3.14	63.16
0.4 - 0.5	0.99	2.04	0.82	0.69	0.47	1.06	1.38	5.58	0.97	0.21	0.19	0.58	1.27	1.03	0.37	0.49	18.13
0.6 - 0.7	0.67	0.8	0.5	0.34	0.3	0.63	0.78	3.92	0.47	0.11	0.19	0.22	0.21	0.37	0.34	0.39	10.25
0.8 - 1.4	0.6	0.47	0.3	0.49	0.22	0.65	0.63	2.91	0.3	0.09	0.07	0.11	0.26	0.37	0.15	0.3	7.94
1.5 - 10	0.02	0	0	0	0.02	0.04	0.04	0.24	0.02	0	0	0	0	0.02	0.02	0	0.41
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7.04	9.19	3.4	2.69	2.63	4.69	9.84	22.5	5.17	2.5	2.58	5.38	7.97	6.33	3.68	4.31	99.89

Total Number of Valid Hours 5356
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
Vertical Wind Speed 90m (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	3.02	2.61	0.84	0.86	0.49	1.33	4.54	1.67	2.01	1.9	1.87	0.84	0.31	0.28	0.29	0.81	23.67
0.4 - 0.5	1.52	0.99	0.27	0.12	0.18	0.28	1.49	1.86	1.81	1.43	1.18	0.93	0.44	0.24	0.28	0.81	13.82
0.6 - 0.7	1.52	0.71	0.09	0.04	0.01	0.15	0.74	2.52	1.45	0.6	0.71	1.09	0.44	0.29	0.37	0.78	11.52
0.8 - 1.4	3.08	1.06	0.03	0.04	0.04	0.09	0.55	4.7	2.09	1.09	1.83	3.18	1.98	1.14	1.84	3.13	25.88
1.5 - 10	0.83	0.04	0	0	0	0	0.04	2.03	0.66	0.06	0.9	5.03	6.03	4.6	2.46	1.22	23.92
> 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	9.97	5.41	1.22	1.06	0.72	1.84	7.36	12.78	8.02	5.09	6.49	11.07	9.2	6.55	5.25	6.75	98.79

Total Number of Valid Hours 6782
 Total Number of Hours 8760



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

WIND SPEED AND DIRECTION ANNUAL 2015

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

March 04, 2016



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS 1)
 Annual Summary for the Year 2015
 WS (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	5.71	3.02	1.57	1.17	1.12	0.79	1.03	2.3	4.77	6.57	4	3.55	3.23	3.78	4	4.15	50.76
6 - 11	5.06	3.3	1.4	0.94	0.97	0.64	0.8	3.76	8.19	3.85	1.73	1.78	1.71	2.89	2.41	1.73	41.17
12 - 19	0.51	0.86	0.07	0.03	0.09	0.05	0.12	0.59	2.09	0.65	0.16	0.24	0.27	0.49	1.01	0.7	7.95
20 - 28	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.05	0.05	0.12
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	11.3	7.18	3.04	2.15	2.18	1.48	1.95	6.65	15.05	11.07	5.89	5.57	5.21	7.17	7.48	6.62	100

Total Number of Valid Hours 8574
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mildred Lake (AMS 2)
 Annual Summary for the Year 2015
 WS (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	2.08	2.4	1.63	1.24	0.96	1.07	1.1	1.54	2.35	2.64	2.01	1.19	0.94	0.55	0.58	1.12	23.39
6 - 11	6.09	5.87	2.6	0.84	0.58	0.87	1.87	5.23	6.88	5.25	3.42	2.95	1.97	1.9	1.74	2.1	50.16
12 - 19	2.05	3.81	0.49	0.1	0.1	0.39	0.62	3.74	1.57	0.7	0.47	1.97	1.78	2.05	2.18	1.33	23.35
20 - 28	0.32	0.53	0.01	0	0	0.01	0.07	0.44	0.08	0.06	0.02	0.14	0.22	0.25	0.44	0.38	2.96
29 - 38	0.07	0.01	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0.05	0.14
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10.61	12.61	4.74	2.18	1.65	2.34	3.66	10.94	10.88	8.64	5.92	6.25	4.92	4.76	4.94	4.98	100

Total Number of Valid Hours 8722
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
WS20 (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	6.06	2.41	1.31	0.88	0.99	1.54	3.43	3.86	1.58	1.21	1.33	1.27	1.18	1.55	3.43	8.01	40.03
6 - 11	6.35	2.49	0.46	0.17	0.16	0.53	4.55	9.51	1.41	0.73	0.91	2.19	2.29	0.95	1.67	3.11	37.48
12 - 19	1.63	0.64	0.03	0.03	0.01	0.03	2.11	6.13	1.31	0.29	0.41	1.3	3.27	0.91	1.48	0.62	20.19
20 - 28	0.08	0.01	0	0	0	0	0.07	0.89	0.19	0.02	0.02	0.11	0.58	0.1	0.14	0.06	2.29
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14.12	5.55	1.8	1.09	1.16	2.1	10.15	20.4	4.49	2.26	2.67	4.87	7.32	3.51	6.72	11.79	100

Total Number of Valid Hours 8725
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
WS45 (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	3.58	1.62	0.96	0.72	0.75	1.14	1.96	2.55	1.25	0.98	0.95	0.93	0.81	1.11	2.83	5.01	27.15
6 - 11	6.13	1.92	0.59	0.28	0.38	0.71	4.35	7.36	1.47	0.79	0.89	1.33	1.18	0.88	1.22	5.16	34.63
12 - 19	3.73	1.57	0.24	0.07	0.03	0.25	2.93	8.02	1.45	0.44	0.62	1.77	2.62	0.88	1.85	1.32	27.77
20 - 28	0.62	0.41	0.01	0.02	0	0	0.88	2.06	0.33	0.05	0.21	0.77	2.35	0.59	0.75	0.31	9.36
29 - 38	0.07	0.01	0	0	0	0	0.05	0.41	0	0.01	0	0.06	0.37	0.05	0.06	0	1.08
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14.12	5.53	1.8	1.09	1.16	2.1	10.16	20.41	4.5	2.26	2.67	4.85	7.33	3.51	6.7	11.8	100

Total Number of Valid Hours 8717
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
WS100 (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	1.19	1.02	0.9	0.56	0.58	0.9	1.22	1.25	1.11	0.71	0.75	0.71	0.66	0.74	0.92	1.05	14.27
6 - 11	3.87	1.84	0.85	0.53	0.32	0.74	3.07	4.19	2.4	1.68	1.63	1.56	1.23	0.79	1.12	3.16	28.99
12 - 19	5.21	2.26	0.45	0.17	0.27	0.9	4.19	5.9	1.34	0.52	1.62	2.51	1.01	0.65	1.01	2.63	30.65
20 - 28	2.03	0.76	0.23	0.08	0.07	0.21	2.81	2.27	0.65	0.27	0.75	3.07	1.22	1.36	1.22	0.7	17.69
29 - 38	0.56	0.27	0	0.02	0	0.02	1.58	0.63	0.09	0.03	0.24	1.29	1.34	0.56	0.42	0.22	7.26
> 38	0.09	0.02	0	0	0	0	0.37	0.05	0.01	0	0	0.21	0.28	0.05	0.03	0.02	1.14
Totals	12.95	6.17	2.43	1.37	1.24	2.78	13.24	14.28	5.61	3.21	5	9.35	5.73	4.14	4.71	7.78	100

Total Number of Valid Hours 8633
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS 3)
Annual Summary for the Year 2015
WS167 (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	0.75	0.58	0.54	0.31	0.43	0.52	0.73	0.69	0.61	0.63	0.67	0.6	0.77	0.55	0.56	0.69	9.63
6 - 11	2.05	1.67	1.06	0.64	0.62	0.97	1.62	1.98	2.57	2.13	1.78	1.29	1.08	0.94	0.88	1.38	22.66
12 - 19	4.05	4.21	0.94	0.44	0.37	0.75	1.93	3.67	2.69	1.97	2.24	2.7	1.24	0.91	0.86	1.67	30.64
20 - 28	1.72	1.89	0.49	0.18	0.12	0.46	2.26	2.45	1.76	0.88	1.12	2.92	1.74	1.18	1.35	0.95	21.48
29 - 38	0.76	0.39	0.18	0.05	0.05	0.02	1.57	1.14	0.55	0.31	0.45	2.16	1.73	1.16	1.12	0.36	12
> 38	0.14	0.02	0	0	0.01	0	0.46	0.26	0.05	0.08	0.07	0.8	1.26	0.15	0.14	0.12	3.59
Totals	9.47	8.77	3.21	1.62	1.6	2.73	8.58	10.2	8.23	6.01	6.33	10.46	7.83	4.89	4.91	5.17	100

Total Number of Valid Hours 8392
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS 4)
 Annual Summary for the Year 2015
 WS (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	1.17	1.11	0.63	0.45	0.67	0.95	1.48	2.36	1.55	1.24	1.09	0.93	0.61	0.89	0.68	0.84	16.64
6 - 11	4.79	3.31	1.33	0.46	0.49	1.85	7.73	12.55	2.53	1.78	1.93	2.11	2.51	1.7	1.65	1.61	48.33
12 - 19	4.98	2.86	0.24	0.08	0.1	0.54	2.39	3.22	0.53	0.64	1.59	3.29	1.88	1.7	1.95	0.88	26.87
20 - 28	2.13	0.56	0.01	0.01	0	0.01	0.14	0.13	0.02	0.06	0.11	1.47	0.46	0.67	0.73	0.34	6.86
29 - 38	0.6	0.08	0	0	0	0	0	0	0	0	0	0.1	0.02	0.1	0.14	0.15	1.19
> 38	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Totals	13.75	7.93	2.21	1	1.26	3.35	11.73	18.26	4.63	3.72	4.73	7.9	5.48	5.06	5.15	3.84	100

Total Number of Valid Hours 8719
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
WS20 (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	1.04	0.94	0.83	0.81	0.9	1.16	1.7	2.08	1.64	1.32	1.17	1.24	1.36	0.83	0.88	1.1	19
6 - 11	3.07	2.61	1.21	0.79	0.9	1.83	6.72	9.98	2.82	1.9	1.92	2.63	2.32	1.5	1.61	2.71	44.52
12 - 19	2.26	3.42	0.3	0.3	0.35	0.58	3.84	5.12	0.74	0.6	1.23	2.64	2.87	1.65	1.03	1.71	28.64
20 - 28	0.86	0.54	0.05	0.03	0.01	0	0.42	0.23	0.05	0.06	0.23	1.12	1.55	0.95	0.43	0.37	6.89
29 - 38	0.08	0.06	0	0	0	0	0	0	0	0	0	0.22	0.36	0.17	0	0.05	0.94
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0.01
Totals	7.3	7.58	2.39	1.93	2.16	3.56	12.68	17.42	5.25	3.87	4.55	7.84	8.48	5.11	3.94	5.93	100

Total Number of Valid Hours 8646
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
WS45 (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	2.06	1.6	0.96	0.97	0.96	1.77	3.16	3.49	1.99	1.26	1.05	1.45	1.49	1.36	1.49	1.94	26.98
6 - 11	3.1	3.46	0.64	0.39	0.69	1.89	5.65	7.52	2.22	1.82	2	2.57	2.85	1.17	1.4	2.01	39.4
12 - 19	1.52	1.4	0.14	0.08	0.04	0.3	1.86	3.46	1.1	0.61	1.19	2.15	1.84	1.78	0.65	1.01	19.13
20 - 28	0.55	0.34	0	0.02	0	0	0.14	0.11	0.05	0.07	0.15	0.82	0.71	0.77	0.21	0.25	4.19
29 - 38	0.09	0.05	0	0	0	0	0	0	0.01	0	0.02	0.04	0.07	0.06	0.01	0.01	0.36
> 38																	
Totals	7.89	7.35	2.36	2	2.36	4.63	11.78	15.43	5.91	4.32	4.96	7.53	7.8	5.66	4.28	5.74	100

Total Number of Valid Hours 8550
 Total Number of Valid Hours 8760
 Total Number of Hours

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
WS75 (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	0.47	0.47	0.44	0.6	0.92	1.19	0.79	0.5	0.49	0.39	0.49	0.65	0.33	0.4	0.57	9.18
6 - 11	1.61	1.35	0.91	0.84	1.1	2.3	3.03	2.12	1.38	1.19	1.08	0.97	1.17	1.01	1.22	1.47	22.76
12 - 19	2.88	3.18	0.95	0.53	0.51	1.09	4.53	4.39	2.53	1.97	1.85	1.97	2.37	1.1	1.2	1.54	32.58
20 - 28	1.48	2.68	0.27	0.14	0.06	0.04	2.87	3.76	2.16	0.98	1.75	2.81	2.35	1.89	0.89	1.23	25.36
29 - 38	0.91	0.65	0.04	0.04	0	0	0.43	1.36	0.6	0.24	0.47	1.51	1.03	0.96	0.34	0.51	9.09
> 38	0.21	0.17	0	0	0	0	0	0.02	0.02	0	0.02	0.21	0.14	0.14	0.02	0.06	1.03
Totals	7.56	8.5	2.64	1.99	2.28	4.35	12.05	12.45	7.18	4.86	5.57	7.95	7.72	5.43	4.08	5.38	100

Total Number of Valid Hours 8435
 Total Number of Hours 8760

Wood Buffalo Environmental Association - Mannix (AMS 5)
Annual Summary for the Year 2015
WS90 (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	0.39	0.45	0.33	0.41	0.46	0.78	0.8	0.65	0.41	0.44	0.41	0.52	0.48	0.41	0.4	0.55	7.89
6 - 11	1.43	1.28	0.8	0.71	0.86	1.76	2.11	1.46	1.31	1.11	0.98	1.15	1.24	0.98	1.18	1.44	19.78
12 - 19	3.13	2.6	0.71	0.57	0.73	2.66	3.43	3.44	2.06	1.83	1.96	2.1	2.2	1.13	1.25	1.64	31.44
20 - 28	2.27	2	0.21	0.24	0.2	1.04	3.74	2.92	1.97	1.36	1.79	3.33	2.53	1.61	0.92	1.33	27.47
29 - 38	1.44	0.29	0.11	0	0.01	0.06	1.14	1.98	0.88	0.34	0.65	1.99	1.03	1.01	0.47	0.53	11.94
> 38	0.42	0.04	0	0.01	0	0	0.05	0.2	0.01	0.02	0.05	0.26	0.12	0.15	0.06	0.09	1.48
Totals	9.08	6.67	2.16	1.93	2.26	6.29	11.26	10.65	6.65	5.09	5.83	9.36	7.6	5.3	4.28	5.59	100

Total Number of Valid Hours 8487
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Patricia McInnes (AMS 6)
 Annual Summary for the Year 2015
 WS (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	0.93	0.74	0.63	0.68	0.82	1.43	1.48	1.76	2.5	2.26	1.93	1.73	1.6	1.59	1.55	1.18	22.8
6 - 11	3.38	1.93	0.86	0.76	1.4	3.65	3.97	2.97	3.25	4.25	4.84	2.12	1.8	1.89	2.27	4.18	43.5
12 - 19	3.51	0.87	0.33	0.34	0.85	2.64	1.12	0.39	1.05	1.12	4.42	3.16	1.81	1.8	1.34	2.69	27.45
20 - 28	1.02	0.14	0	0.03	0.13	0.22	0.1	0.02	0.02	0.09	0.34	0.97	0.81	0.69	0.48	0.77	5.84
29 - 38	0.11	0	0	0	0	0	0	0	0	0	0.01	0.07	0.06	0.03	0.02	0.09	0.4
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	8.95	3.69	1.82	1.81	3.19	7.95	6.67	5.14	6.82	7.72	11.55	8.05	6.08	6	5.66	8.91	100

Total Number of Valid Hours 8735
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Athabasca Valley (AMS 7)
 Annual Summary for the Year 2015
 WS (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	1.84	1.28	0.92	1.41	2.36	2.83	4.78	3.52	2.72	2.04	2.21	1.63	1.37	1.51	1.45	1.9	33.77
6 - 11	3.6	0.68	0.35	0.48	1.19	2.37	11.17	3.7	0.81	1.48	3.33	2.07	0.78	0.41	1.13	5.53	39.08
12 - 19	1.92	0.29	0.11	0.18	0.39	0.64	4.23	0.78	0.1	0.18	1.9	2.11	1.44	1.14	1.16	4.91	21.49
20 - 28	0.4	0.02	0.01	0.01	0.06	0.07	0.16	0	0	0	0.11	0.62	0.94	0.76	0.73	0.97	4.86
29 - 38	0.01	0	0	0	0	0	0	0	0	0	0	0.01	0.17	0.24	0.17	0.18	0.79
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7.78	2.27	1.4	2.08	3.99	5.91	20.35	8	3.64	3.7	7.55	6.43	4.7	4.06	4.65	13.49	100

Total Number of Valid Hours 8738
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Chipewyan (AMS 8)
 Annual Summary for the Year 2015
 WS (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	0.64	0.44	0.39	0.52	0.94	0.54	0.49	0.42	0.39	0.42	0.56	0.5	0.71	0.86	0.84	0.99	9.65
6 - 11	1.6	0.71	0.5	1.62	4.4	2.07	1.1	0.69	0.8	1.05	2.43	2.11	3.4	4.32	4.63	3.36	34.8
12 - 19	0.56	0.17	0.62	2.36	7.27	2.81	0.99	0.97	1.09	1	1.46	2.64	4.33	2.93	3.4	1.83	34.43
20 - 28	0	0	0.39	3.11	5.73	1.21	0.69	0.49	1.11	0.47	0.14	0.79	1.47	0.66	0.83	0.31	17.4
29 - 38	0	0	0.23	1.04	1.19	0.1	0.03	0.07	0.18	0.09	0	0.05	0.09	0.08	0.13	0	3.29
> 38	0	0	0.06	0.21	0.14	0	0.03	0	0	0	0	0	0	0	0	0	0.44
Totals	2.81	1.32	2.19	8.85	19.67	6.74	3.33	2.65	3.58	3.04	4.58	6.09	10	8.86	9.82	6.49	100

Total Number of Valid Hours 8726
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Barge Landing (AMS 9)
 Annual Summary for the Year 2015
 WS (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	4.35	2.44	2	2.26	2.14	1.97	3.16	4.76	4.91	4.2	3.45	3	2.3	2.07	2.78	6.77	52.55
6 - 11	3.71	4.28	2.36	0.72	0.21	0.59	1.83	4.36	7.38	3.18	3.38	2.99	1.17	1	1.56	1.99	40.71
12 - 19	0.5	0.52	0.03	0.1	0	0.07	0.21	0.45	0.43	0.39	0.64	1.55	0.47	0.37	0.53	0.37	6.64
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0.1
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	8.56	7.24	4.4	3.08	2.35	2.63	5.2	9.57	12.72	7.78	7.46	7.64	3.95	3.44	4.87	9.13	100

Total Number of Valid Hours 8642
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp (AMS 11)
Annual Summary for the Year 2015
WS (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	2.08	2.04	1.47	1.45	1.82	2.56	2.71	1.4	0.66	0.56	0.55	0.75	1.45	4.34	4.92	3.36	32.13
6 - 11	3	1.5	0.52	0.24	0.6	2.22	11.62	2.81	0.7	0.64	0.75	1.74	1.53	1.59	3.53	4.47	37.45
12 - 19	3.07	1.16	0.17	0.1	0.18	1.71	6.99	0.86	0.08	0.17	0.49	2.9	2.36	1.63	0.98	1.15	24.03
20 - 28	0.68	0.17	0	0.03	0.01	0.47	1.2	0	0	0	0.03	0.89	1.17	0.87	0.28	0.17	5.98
29 - 38	0.06	0.02	0	0	0	0	0.2	0	0	0	0	0.05	0.03	0.05	0.01	0	0.41
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	8.89	4.89	2.16	1.83	2.61	6.97	22.72	5.07	1.44	1.38	1.83	6.31	6.54	8.48	9.72	9.16	100

Total Number of Valid Hours 8694
Total Number of Hours 8760



Wood Buffalo Environmental Association - Millennium (AMS 12)
Annual Summary for the Year 2015
WS (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	1.76	1.04	0.92	1.16	1.13	1.29	2.93	5.37	4.53	3.54	2.26	1.64	1.53	1.22	2.03	2.29	34.63
6 - 11	5.67	2.71	1.06	0.85	0.6	2.08	6.45	5.37	3.84	4.02	1.71	2.03	2.5	2.2	2.47	2.31	45.87
12 - 19	5.23	3.03	0.63	0.11	0.02	0.7	1.69	0.19	0.6	0.35	0.3	0.63	1.04	1.16	0.65	0.48	16.83
20 - 28	1.13	0.9	0.05	0.04	0	0	0.25	0	0	0	0	0.02	0.02	0	0	0	2.4
29 - 38	0.23	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.28
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	14.03	7.74	2.66	2.15	1.74	4.07	11.31	10.94	8.97	7.91	4.26	4.32	5.09	4.58	5.15	5.07	100

Total Number of Valid Hours 5675
Total Number of Hours 5832



Wood Buffalo Environmental Association - Fort McKay South (AMS 13)
 Annual Summary for the Year 2015
 WS (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	5.14	3.25	1.6	0.84	0.88	1.23	2.3	3.35	7.97	7.62	7.82	6.85	3.84	2.83	2.91	3.76	62.18
6 - 11	5.68	4.43	0.67	0.09	0.21	0.42	1.12	2.47	3.7	2.35	2.79	3.83	1.57	1.19	0.92	1.28	32.74
12 - 19	1.23	0.82	0.06	0.01	0	0.01	0.01	0.06	0.22	0.34	0.46	0.8	0.18	0.39	0.18	0.24	5.01
20 - 28	0.06	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0.07
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	12.1	8.51	2.33	0.94	1.1	1.66	3.43	5.88	11.89	10.31	11.08	11.49	5.59	4.41	4.01	5.28	100

Total Number of Valid Hours 8486
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Anzac (AMS 14)
Annual Summary for the Year 2015
WS (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	1.69	0.97	0.92	1.16	1.04	1.03	1.45	2.23	2.71	2.43	2.23	1.89	2.12	2.89	2.55	2.43	29.74
6 - 11	2.35	0.92	1	1.08	1.08	2.79	5.11	5.39	2.59	2	2.5	2.26	4.05	8.94	5.46	4.45	51.99
12 - 19	0.51	0.12	0.12	0.2	0.28	0.98	1.37	1.47	0.69	0.53	0.79	0.63	2.66	4.19	1.79	1.28	17.6
20 - 28	0.02	0	0	0	0	0.01	0.06	0	0	0.01	0.03	0.05	0.18	0.12	0.06	0.12	0.66
29 - 38	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0.01
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	4.57	2	2.04	2.44	2.4	4.8	7.99	9.1	5.99	4.98	5.58	4.83	9.02	16.14	9.85	8.27	100

Total Number of Valid Hours 8681
Total Number of Hours 8760



Wood Buffalo Environmental Association - CNRL Horizon (AMS 15)
 Annual Summary for the Year 2015
 WS (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	3.4	2.71	1.43	1.39	0.95	0.92	1.34	2.04	2.63	3.21	2.36	1.53	1.24	1.09	1.3	1.7	29.24
6 - 11	4.8	5.77	2.55	1.17	0.6	0.78	1.16	3.31	9.36	9.39	5.21	2.06	1.65	1.55	1.26	1.23	51.85
12 - 19	1.82	2.69	0.46	0.16	0.07	0.09	0.08	0.59	2.47	1.65	2.39	0.93	1.01	1.26	1	0.56	17.22
20 - 28	0.35	0.14	0.01	0	0	0	0	0.01	0.07	0.02	0.08	0.09	0.08	0.42	0.21	0.16	1.65
29 - 38	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.05
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10.38	11.32	4.45	2.72	1.62	1.78	2.58	5.96	14.53	14.26	10.05	4.61	3.97	4.32	3.78	3.65	100

Total Number of Valid Hours 8630
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Shell Muskeg River (AMS 16)
 Annual Summary for the Year 2015
 WS (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	0.52	0.71	1.47	1.38	1.18	1.63	2.3	4.11	3.29	1.76	1.15	0.87	0.66	0.98	0.62	23.18
6 - 11	1.29	1.52	2.62	2.7	0.99	0.63	1.15	2.72	10.96	9.38	3.06	1.49	1.22	1.07	1.46	1.69	43.95
12 - 19	1.86	3.9	5.35	0.74	0.12	0.09	0.21	0.78	2.47	1.99	2.41	2.11	1.07	0.98	0.84	0.82	25.74
20 - 28	0.45	1.86	1.1	0.06	0.01	0	0	0.05	0.08	0.02	0.66	1.1	0.44	0.45	0.3	0.13	6.72
29 - 38	0	0.12	0.02	0	0	0	0	0	0	0	0	0.15	0.08	0.03	0	0	0.41
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	4.16	7.92	9.81	4.98	2.5	1.9	2.98	5.84	17.62	14.67	7.91	6	3.68	3.19	3.58	3.26	100

Total Number of Valid Hours 8614
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Wapasu (AMS 17)
 Annual Summary for the Year 2015
 WS (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	2.06	2.48	1.71	1.32	1.46	1.89	2.8	2.68	2.13	1.66	1.31	1.04	0.97	1.03	1.4	1.41	27.36
6 - 11	4.04	2.64	1.34	0.67	0.89	2.98	6.34	9.01	5.72	3.98	4.15	2.62	1.68	1.97	2.34	4.04	54.42
12 - 19	1.01	0.22	0.09	0.14	0.39	1.17	3.54	2.09	1.45	0.85	1.58	1.42	0.6	0.5	0.87	1.47	17.39
20 - 28	0	0	0	0	0.01	0.16	0.1	0.22	0	0	0.03	0.07	0.02	0	0.03	0.16	0.82
29 - 38	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0.01
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7.11	5.34	3.15	2.13	2.76	6.2	12.79	14	9.3	6.49	7.07	5.15	3.28	3.5	4.64	7.09	100

Total Number of Valid Hours 8633
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Conklin Lookout (AMS 18)
 Annual Summary for the Year 2015
 WS (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	1.53	2.05	1.45	1.5	1.53	1.5	1.61	1.96	1.91	1.72	1.61	1.15	1.47	2.43	3.27	2.07	28.74
6 - 11	0.76	1.39	1.45	1.42	1.15	1.53	1.88	3.03	2.45	6.16	8.26	4.04	4.55	6.05	3.08	0.93	48.13
12 - 19	0	0.03	0.14	0.27	0	0.03	0.05	0.22	0.63	4.12	4.91	2.78	4.01	3.57	1.39	0.08	22.23
20 - 28	0	0	0	0	0	0	0	0	0	0.14	0.19	0	0.41	0.14	0.03	0	0.9
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	2.29	3.46	3.03	3.19	2.67	3.05	3.55	5.21	4.99	12.14	14.97	7.96	10.44	12.19	7.77	3.08	100

Total Number of Valid Hours 3667
 Total Number of Hours 3672



Wood Buffalo Environmental Association - Firebag (AMS 19)
 Annual Summary for the Year 2015
 WS (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	0.92	0.67	0.91	0.32	0.4	0.45	0.69	0.54	0.66	0.67	1.05	0.92	0.89	0.8	0.65	0.64	11.2
6 - 11	2.88	2.24	2	0.94	0.68	1.25	2.18	1.86	2.05	2.74	4.15	2.88	1.7	1.84	1.77	2.3	33.45
12 - 19	3.7	2.13	0.9	0.55	0.49	1.44	1.9	3.38	4.21	4.09	5.36	3.84	2.12	1.33	1.54	2.5	39.46
20 - 28	1.48	0.73	0.12	0.09	0.15	0.28	0.59	0.86	1.65	1.9	1.64	1.42	1.13	0.57	0.54	1.05	14.19
29 - 38	0.09	0.14	0	0	0.01	0.03	0.02	0.08	0.35	0.29	0.05	0.15	0.09	0.03	0.02	0.2	1.56
> 38	0.02	0	0	0	0	0	0	0.06	0.01	0	0	0	0	0	0	0.03	0.13
Totals	9.1	5.91	3.93	1.91	1.73	3.46	5.39	6.77	8.92	9.69	12.25	9.21	5.93	4.57	4.52	6.72	100

Total Number of Valid Hours 8651
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Statoil - Leismer (AMS501)
 Annual Summary for the Year 2015
 WS (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	1.86	1.41	0.59	0.82	1.09	1.5	2.32	1.95	3.41	4.86	2.5	2.09	2.95	1.14	1.09	1.27	30.85
6 - 11	1.41	0.64	0.41	0.68	1.68	4.86	4.91	5.68	2.91	5.32	1.41	0.68	4.91	4.32	0.64	2.64	43.07
12 - 19	0.86	0.14	0	0	0.5	0.36	0.5	0.91	0.27	1.09	0.05	0	2.14	5.95	2.59	2.41	17.76
20 - 28	0.64	0	0	0	0	0	0	0.05	0	0	0	0	0.59	3.23	2.04	0.82	7.36
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0.05	0.45	0.41	0.05	0.95
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	4.77	2.18	1	1.5	3.27	6.72	7.72	8.59	6.59	11.27	3.95	2.77	10.63	15.08	6.77	7.18	100

Total Number of Valid Hours 2201
 Total Number of Hours 2208



Wood Buffalo Environmental Association - ConocoPhillips - Surmont (AMS502)
 Annual Summary for the Year 2015
 WS (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	0.86	0.47	0.73	0.58	0.62	0.89	0.84	0.52	0.78	0.61	0.71	0.54	0.73	0.51	0.28	0.37	10.04
6 - 11	1.65	1.08	1.05	1.03	1.76	3	2.41	2.13	2.72	3.62	3.01	2.47	2.71	1.75	1.46	2.73	34.59
12 - 19	0.83	0.55	0.17	0.52	0.85	1.14	1.97	1.88	2.16	1.95	4.87	5.04	4.98	2.85	3.37	3.63	36.76
20 - 28	0.08	0.03	0.02	0.03	0.16	0.08	0.27	0.09	0.22	0.25	1.76	4.38	3.94	1.73	1.88	0.5	15.44
29 - 38	0	0	0	0	0	0	0	0	0	0	0.24	0.95	1.11	0.45	0.18	0.05	2.97
> 38	0	0	0	0	0	0	0	0	0	0	0	0.06	0.09	0.02	0.02	0	0.2
Totals	3.42	2.14	1.97	2.16	3.4	5.11	5.49	4.62	5.88	6.43	10.6	13.43	13.56	7.31	7.19	7.28	100

Total Number of Valid Hours 8673
 Total Number of Hours 8760



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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

WIND ROSES ANNUAL 2015

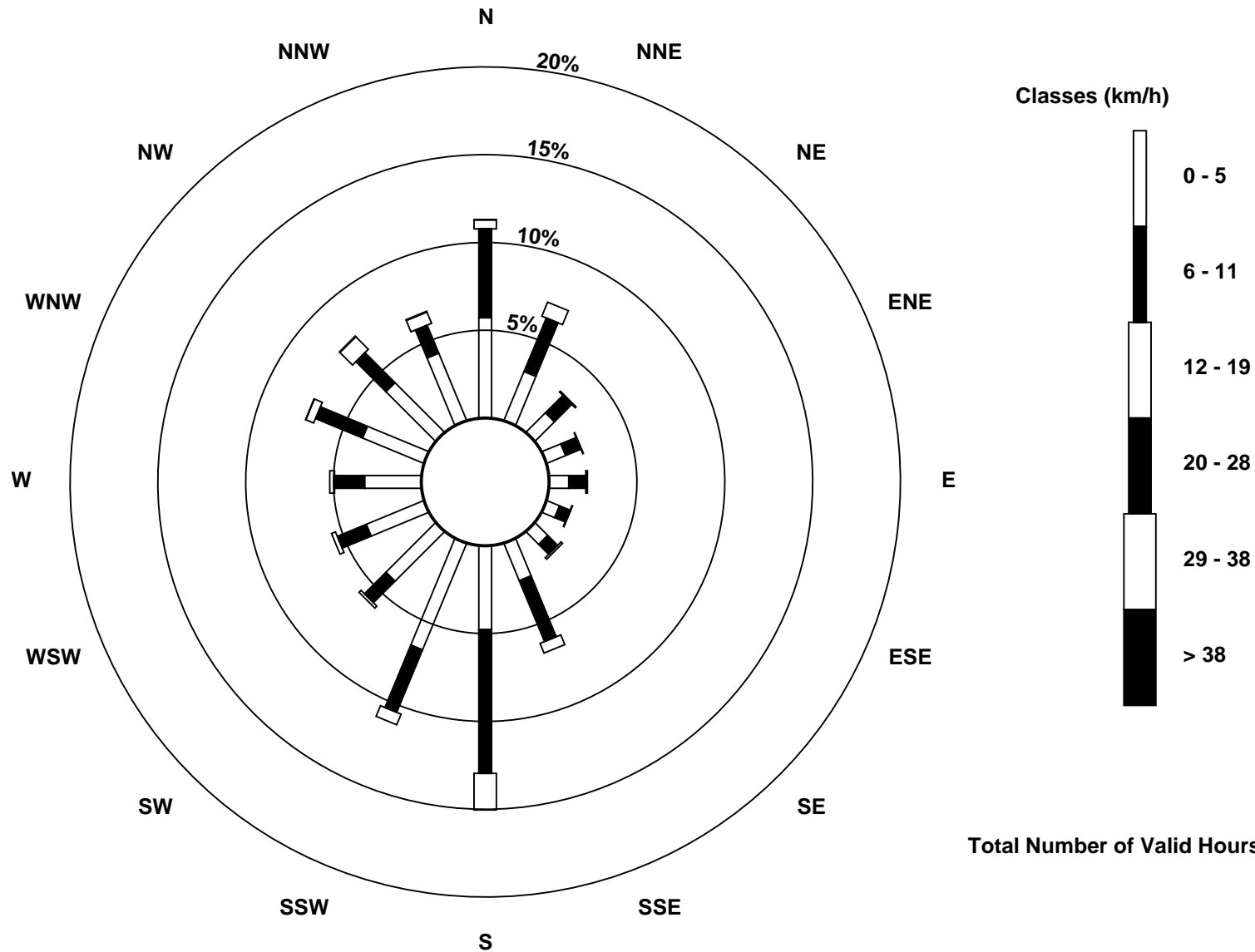
Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

March 04, 2016



Wood Buffalo Environmental Association
Wind Rose 2015

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

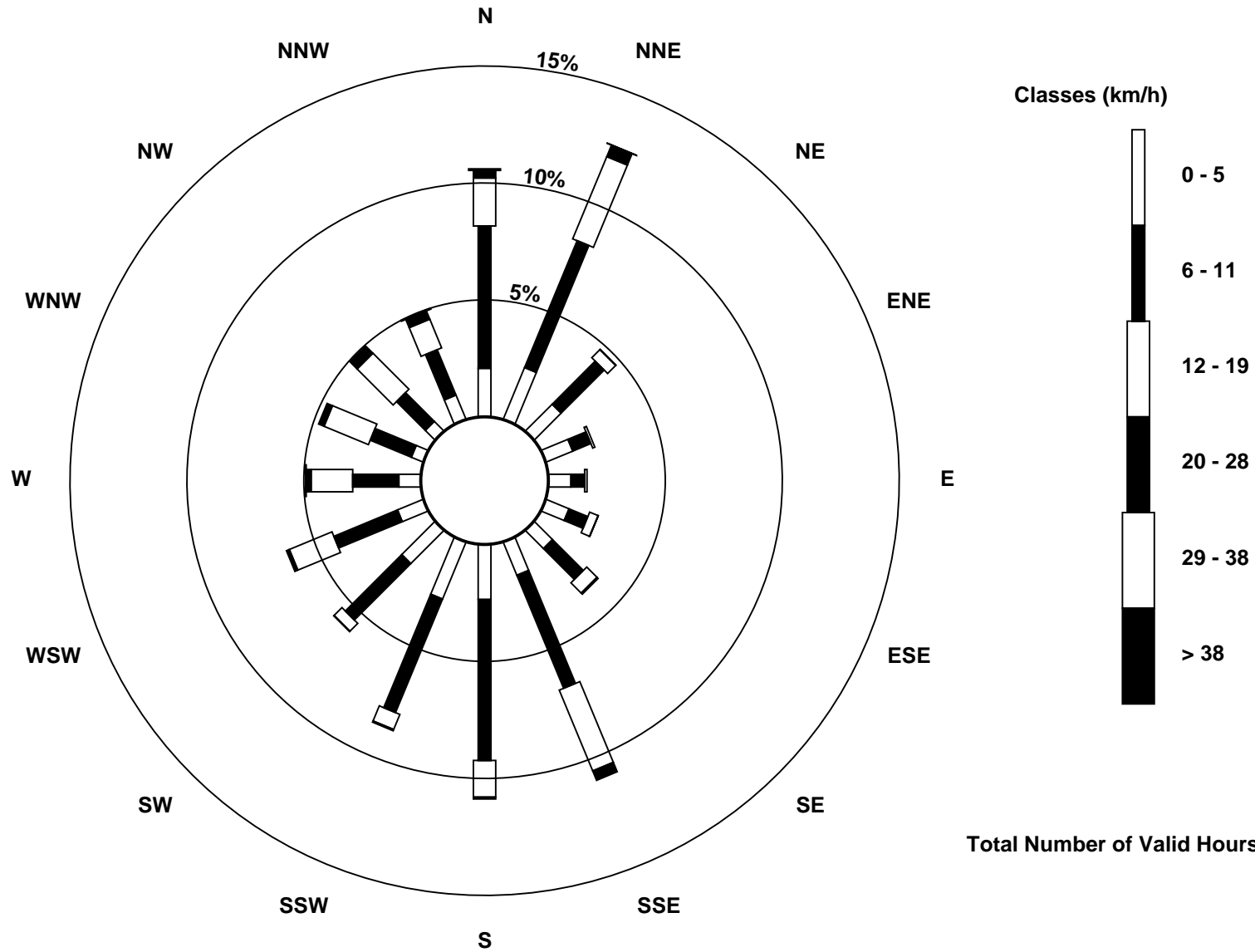


Total Number of Valid Hours: 8574



Wood Buffalo Environmental Association
Wind Rose 2015

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

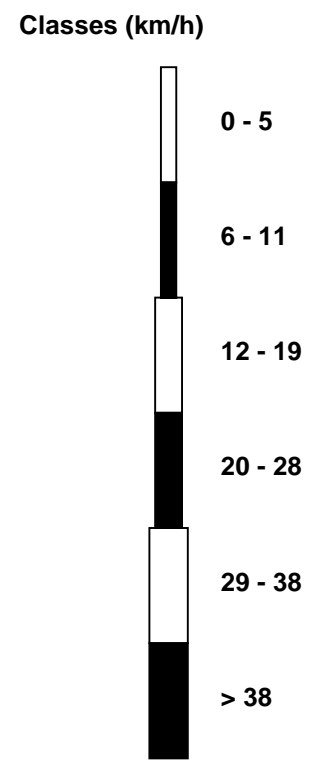
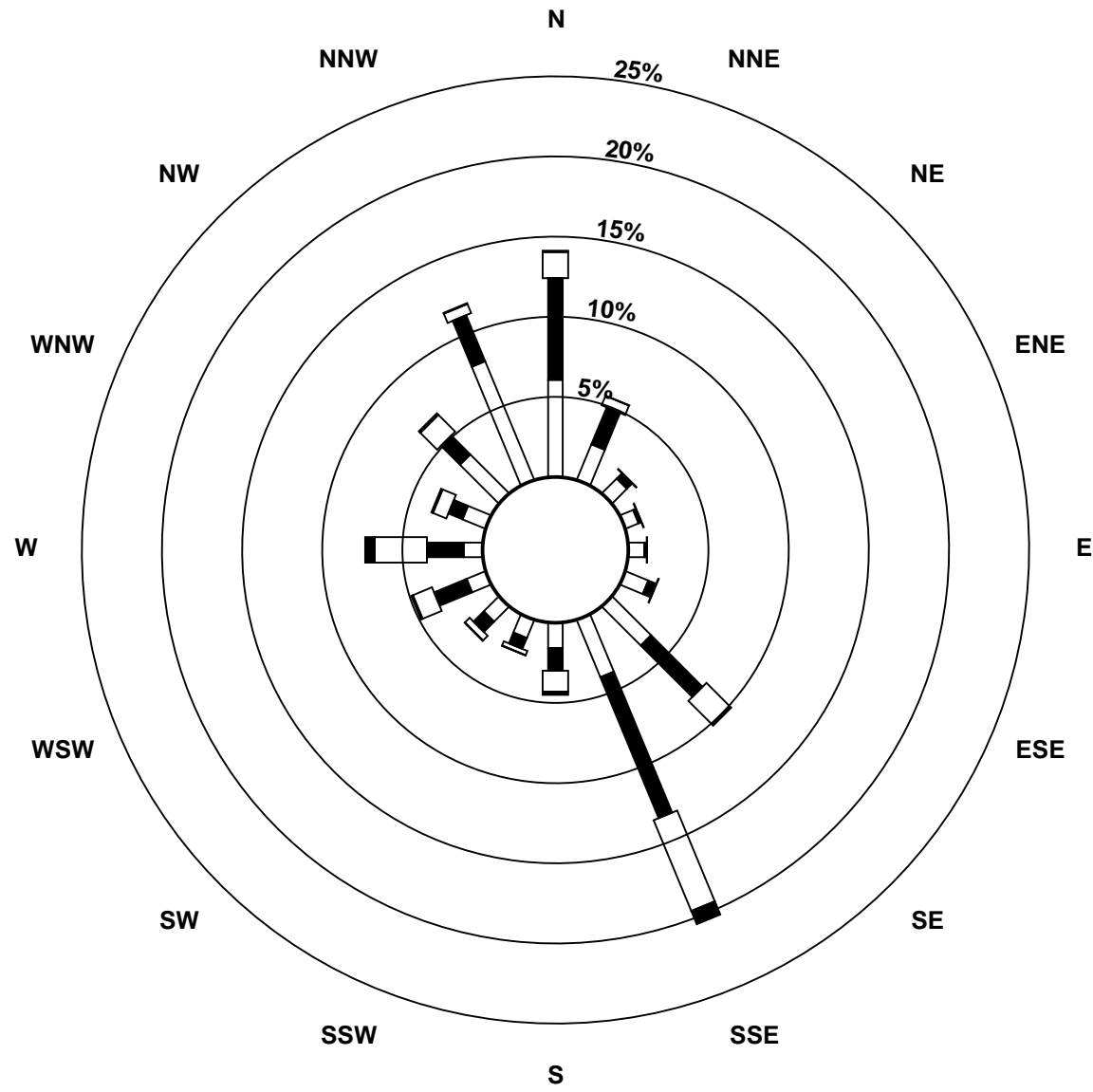


Total Number of Valid Hours: 8722



Wood Buffalo Environmental Association
Wind Rose 2015

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

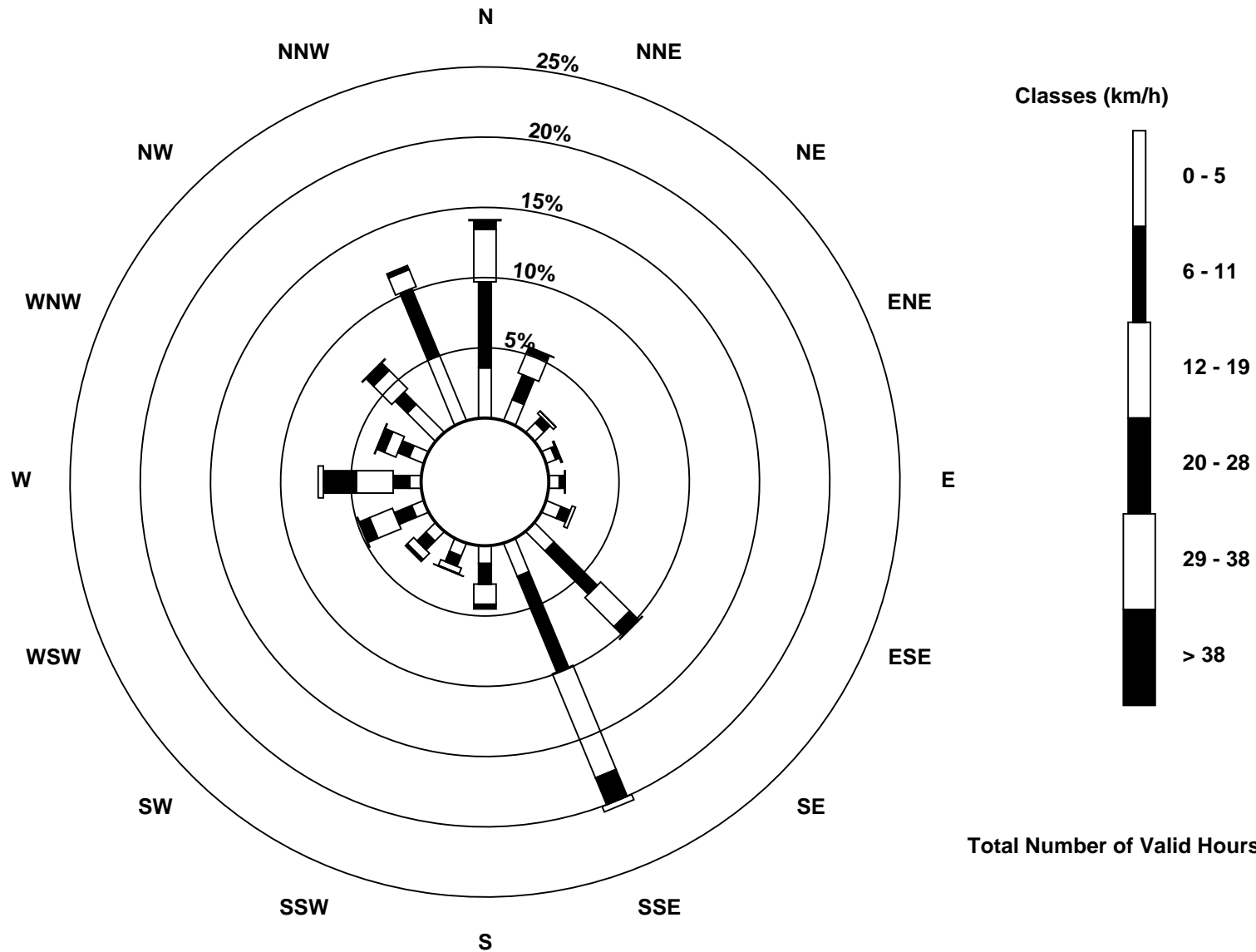


Total Number of Valid Hours: 8725



Wood Buffalo Environmental Association
Wind Rose 2015

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

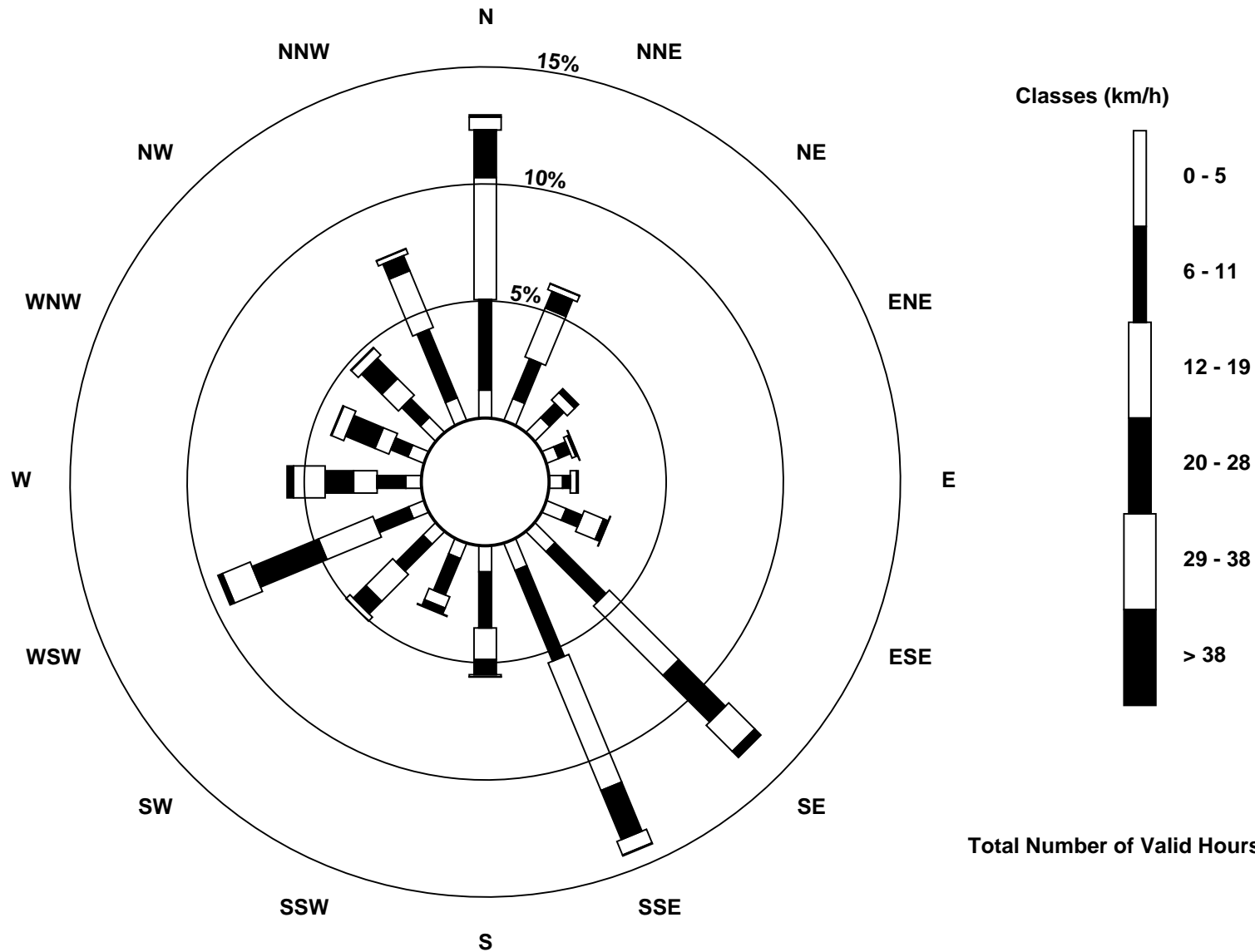


Total Number of Valid Hours: 8717



Wood Buffalo Environmental Association
Wind Rose 2015

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

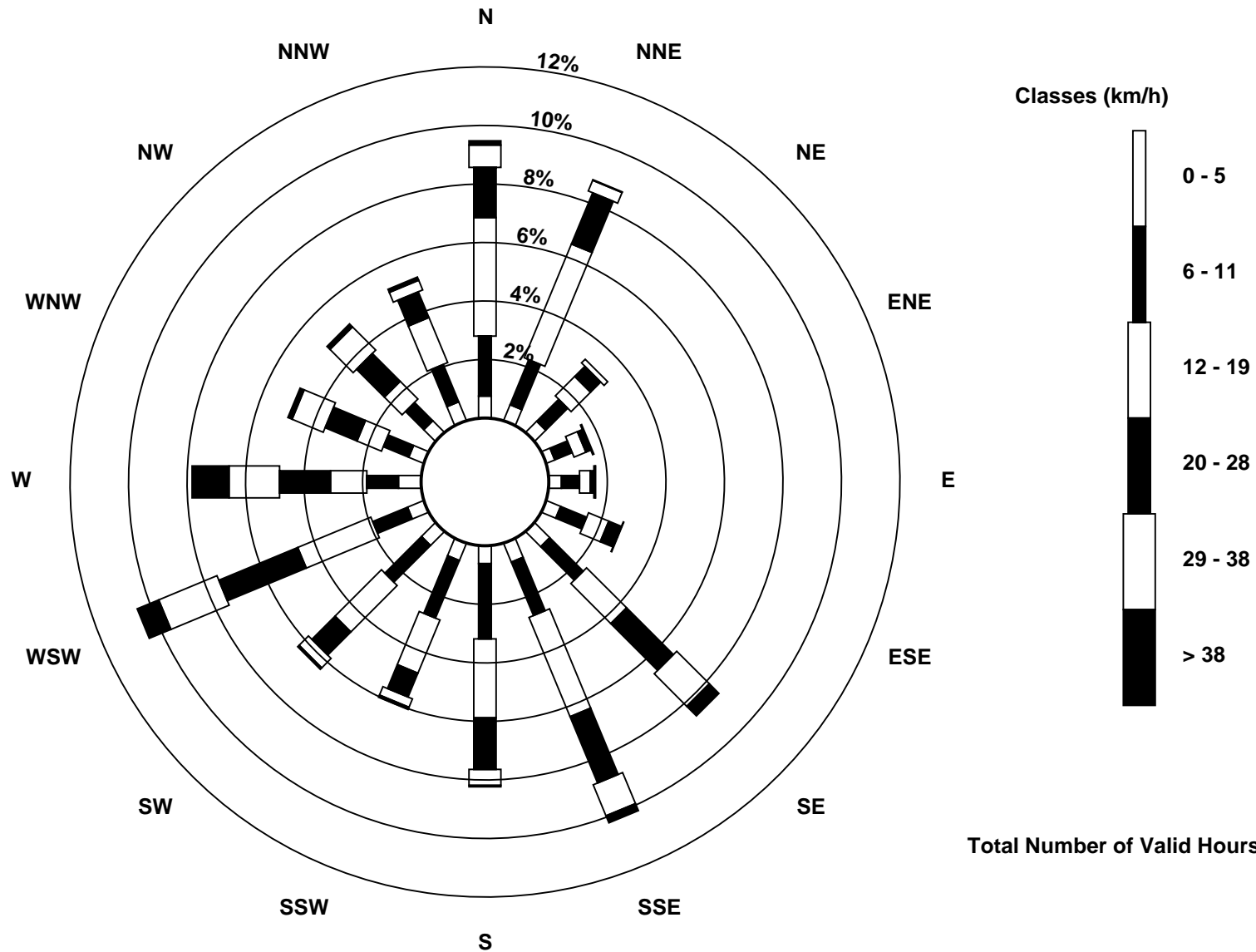


Total Number of Valid Hours: 8633



Wood Buffalo Environmental Association
Wind Rose 2015

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

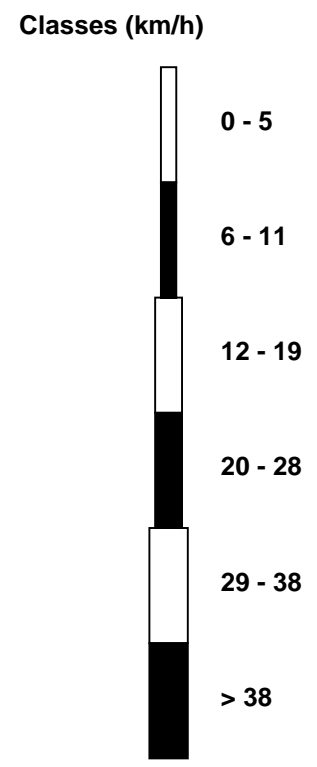
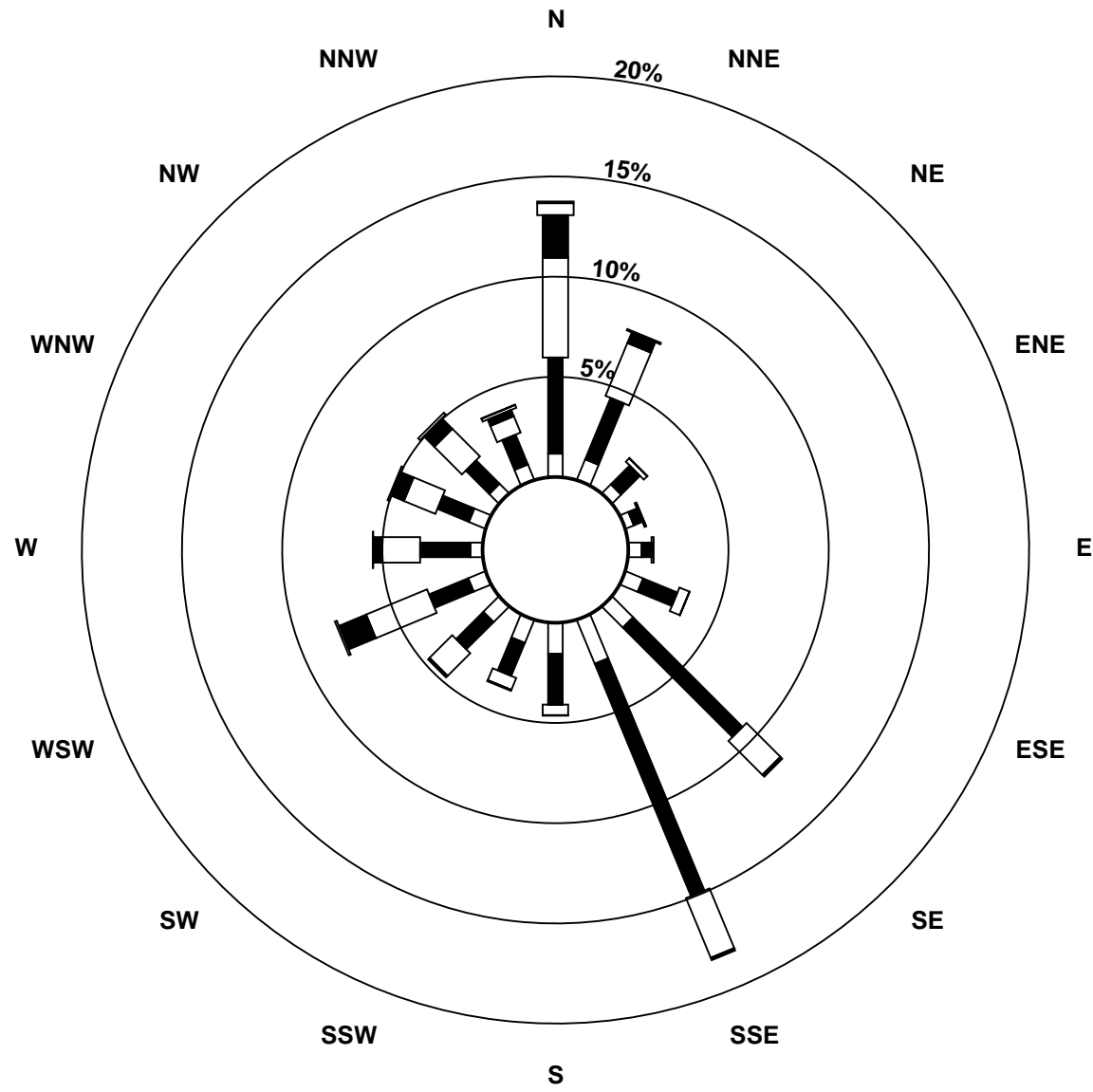


Total Number of Valid Hours: 8392



Wood Buffalo Environmental Association
Wind Rose 2015

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

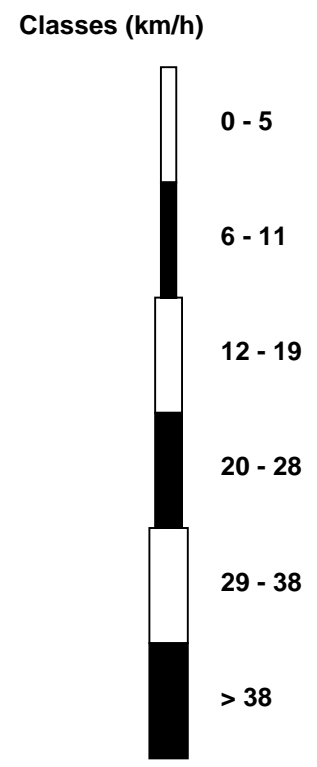
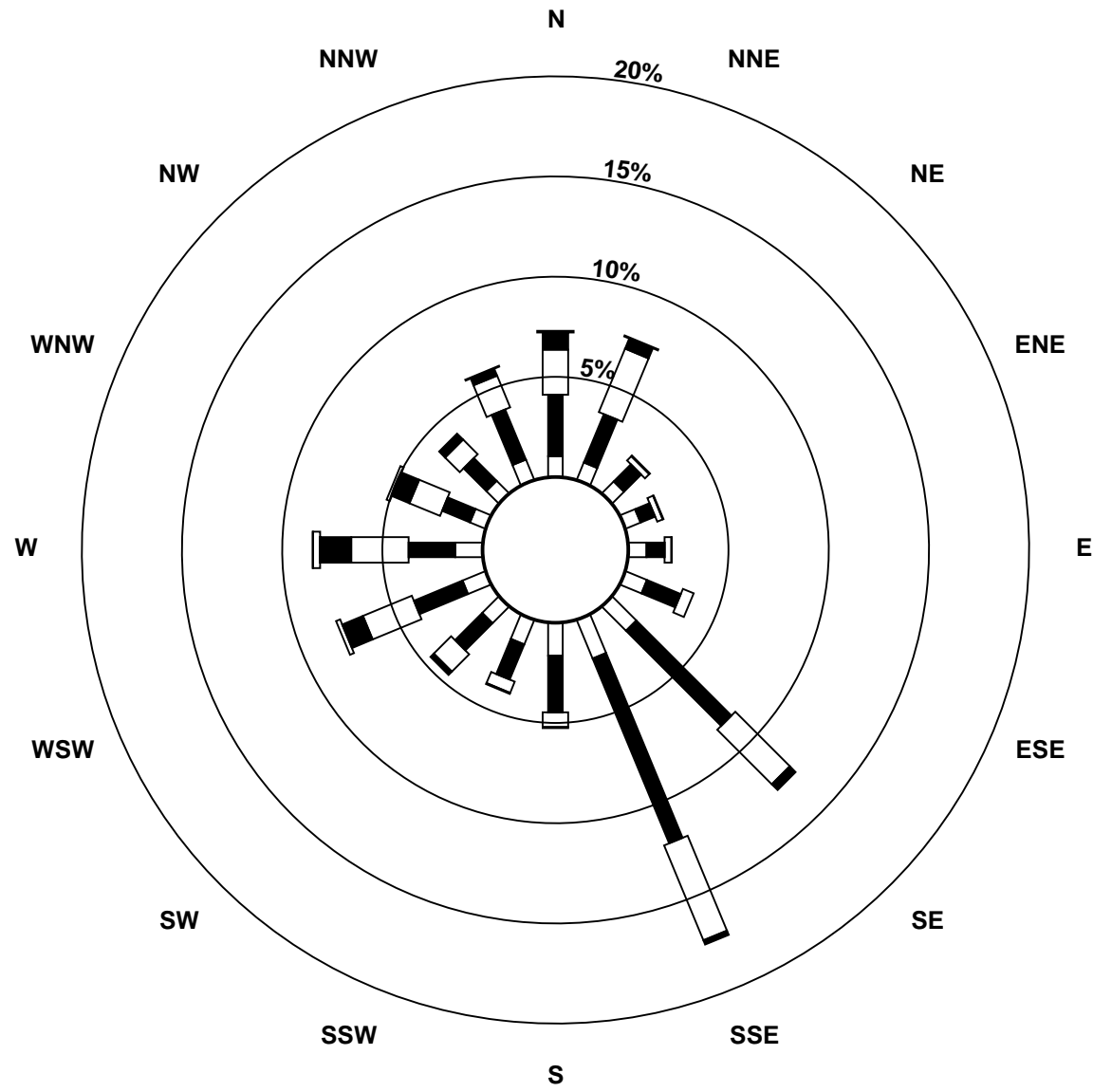


Total Number of Valid Hours: 8719



Wood Buffalo Environmental Association
Wind Rose 2015

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

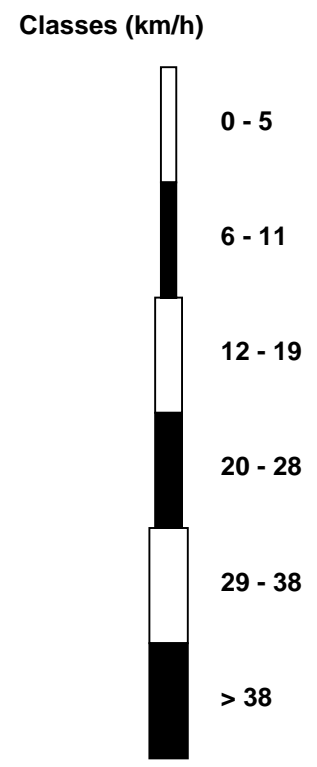
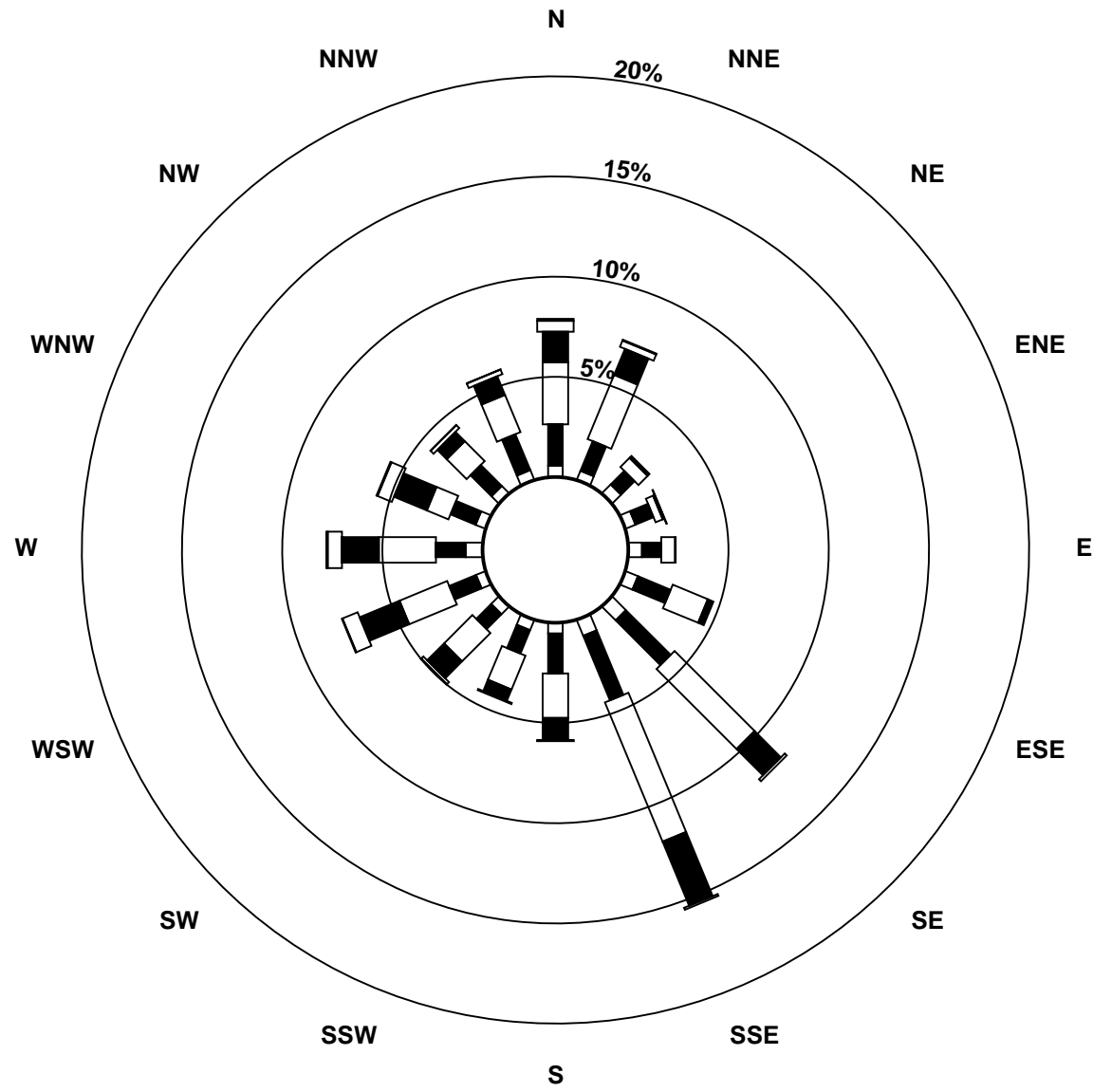


Total Number of Valid Hours: 8646



Wood Buffalo Environmental Association
Wind Rose 2015

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

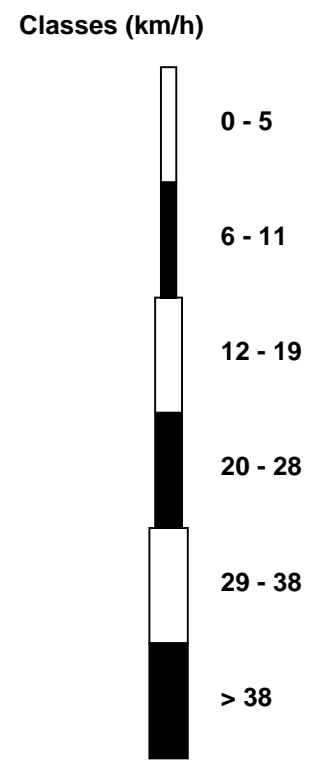
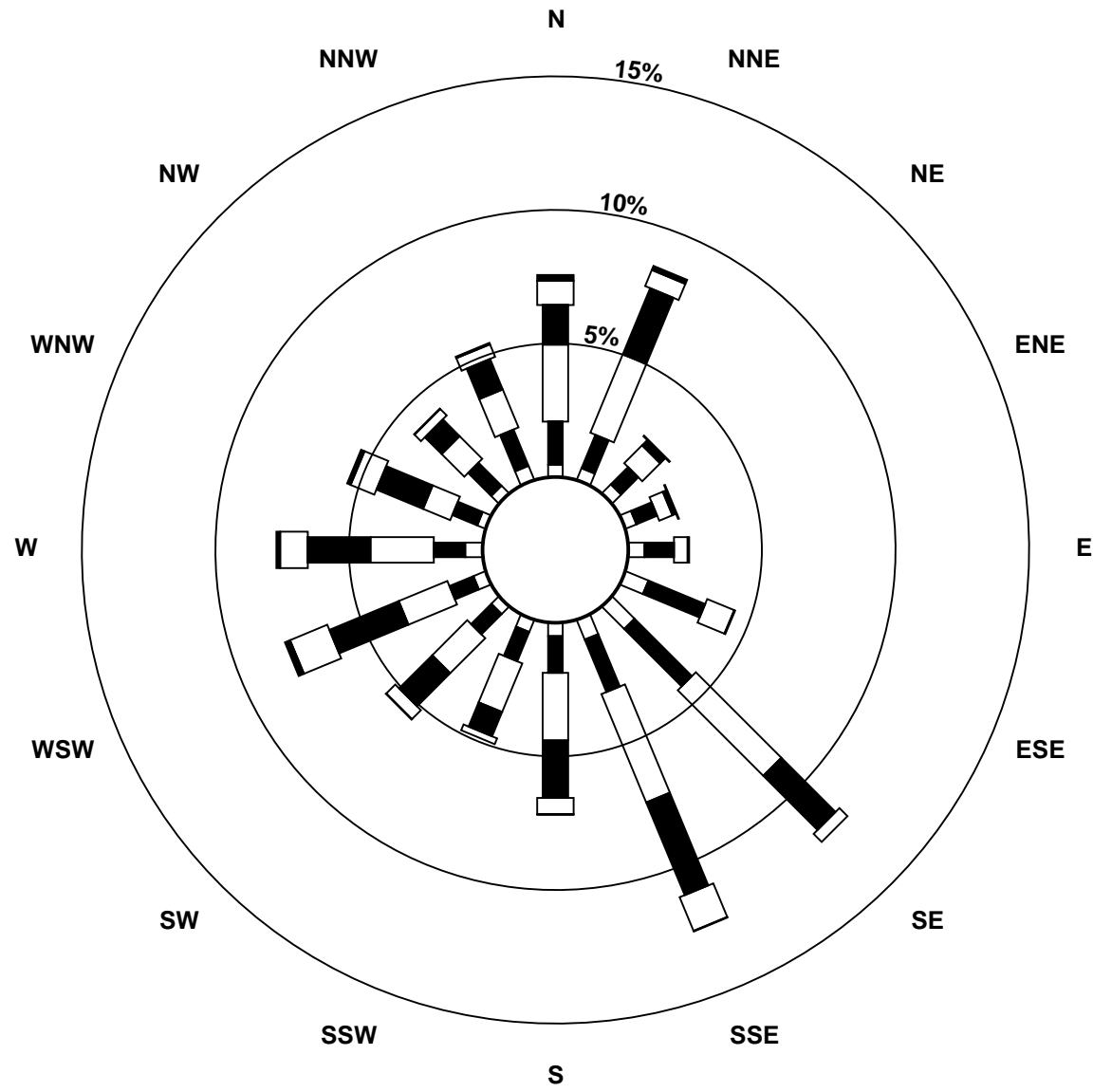


Total Number of Valid Hours: 8550



Wood Buffalo Environmental Association
Wind Rose 2015

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

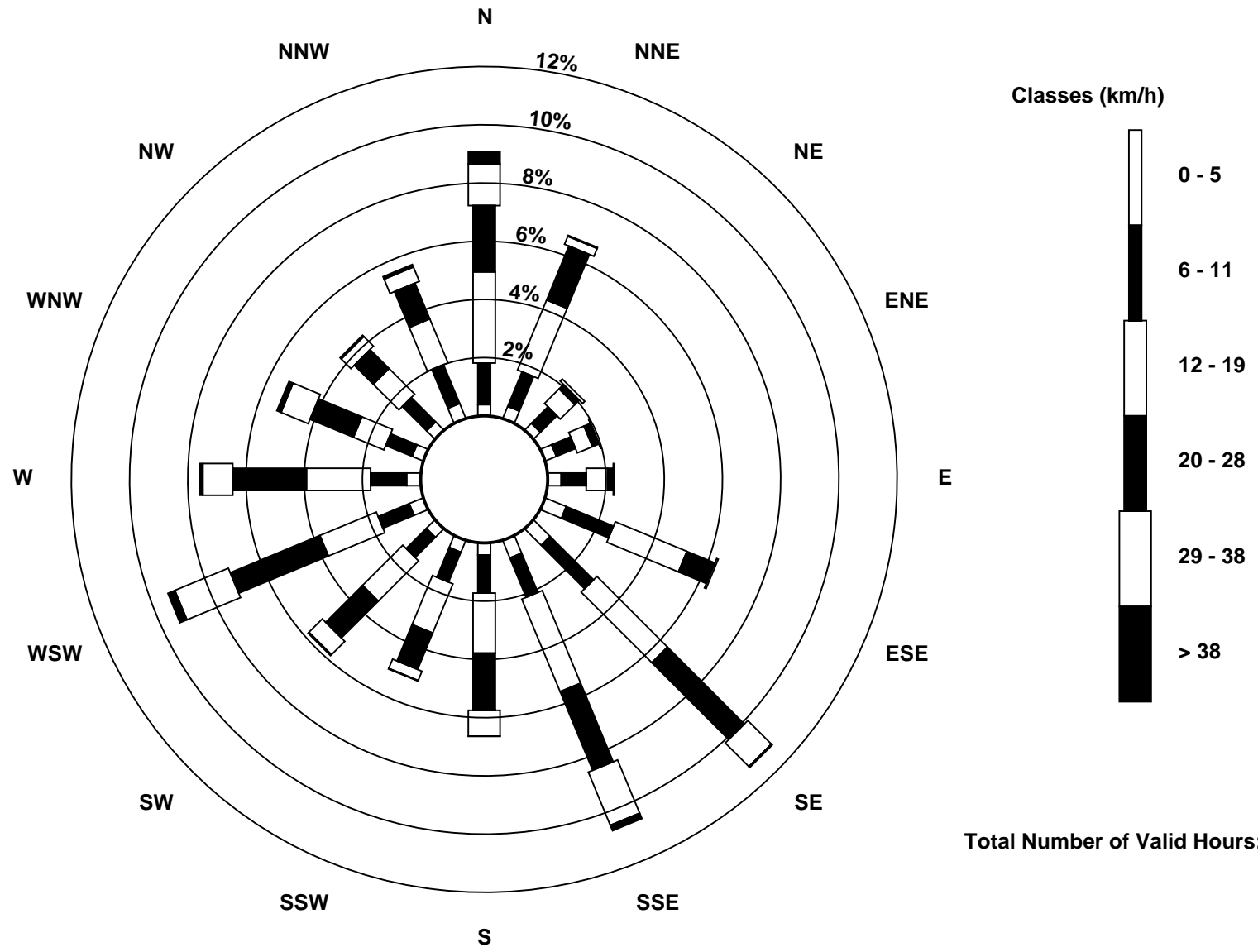


Total Number of Valid Hours: 8435



Wood Buffalo Environmental Association
Wind Rose 2015

Wind Speed 90 m (WS90m) - km/h
Mannix (AMS 5)

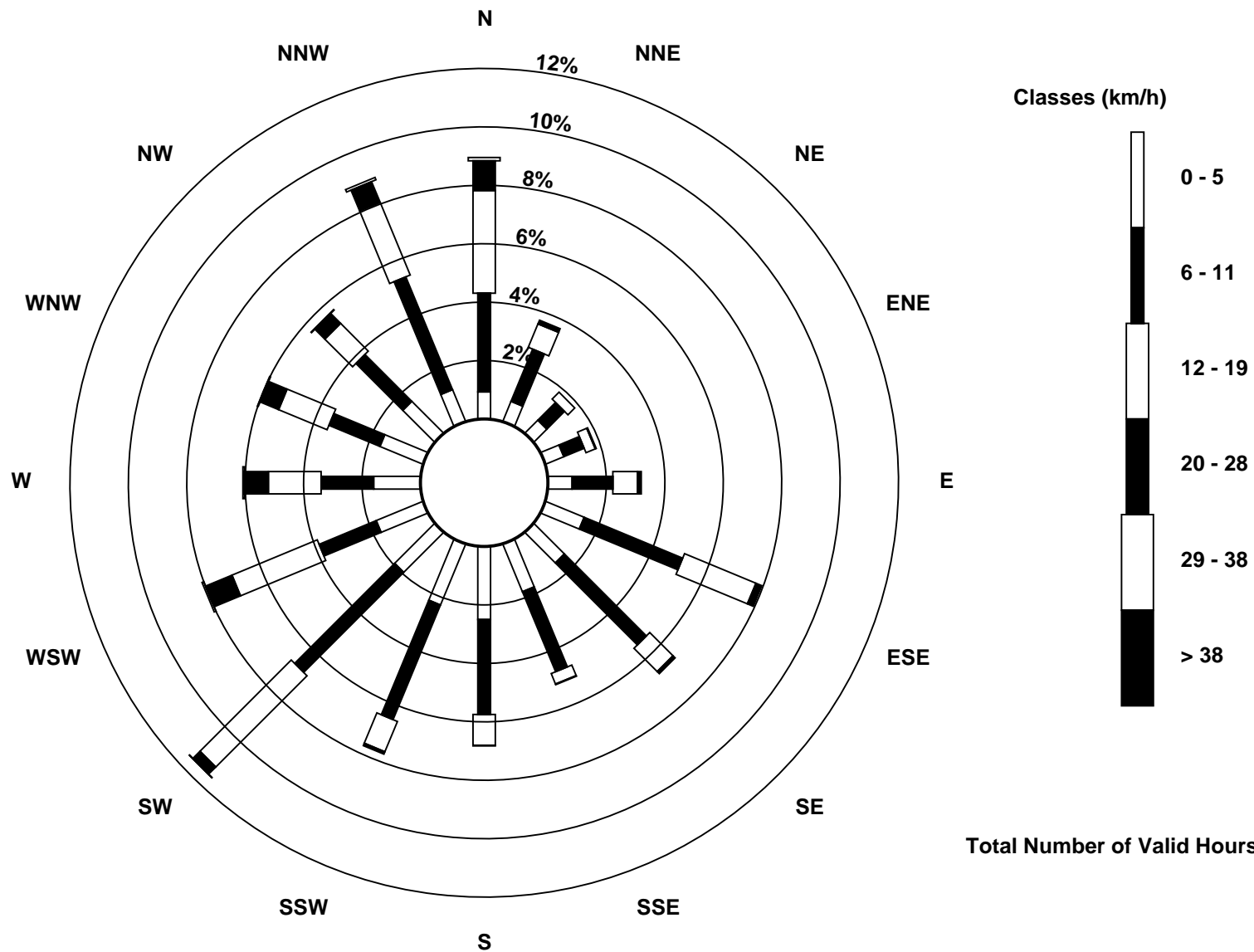


Total Number of Valid Hours: 8487



Wood Buffalo Environmental Association
Wind Rose 2015

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

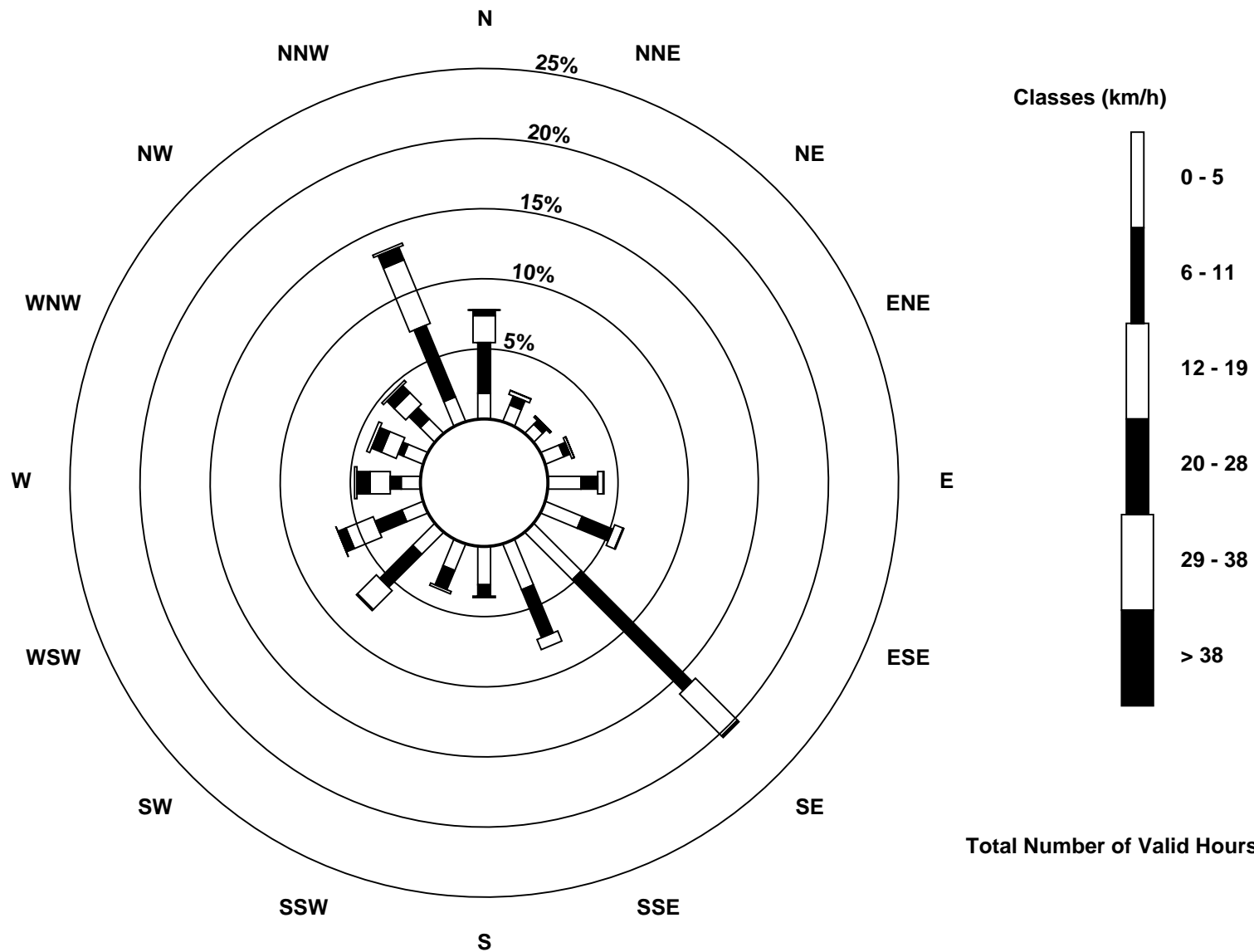


Total Number of Valid Hours: 8735



Wood Buffalo Environmental Association
Wind Rose 2015

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

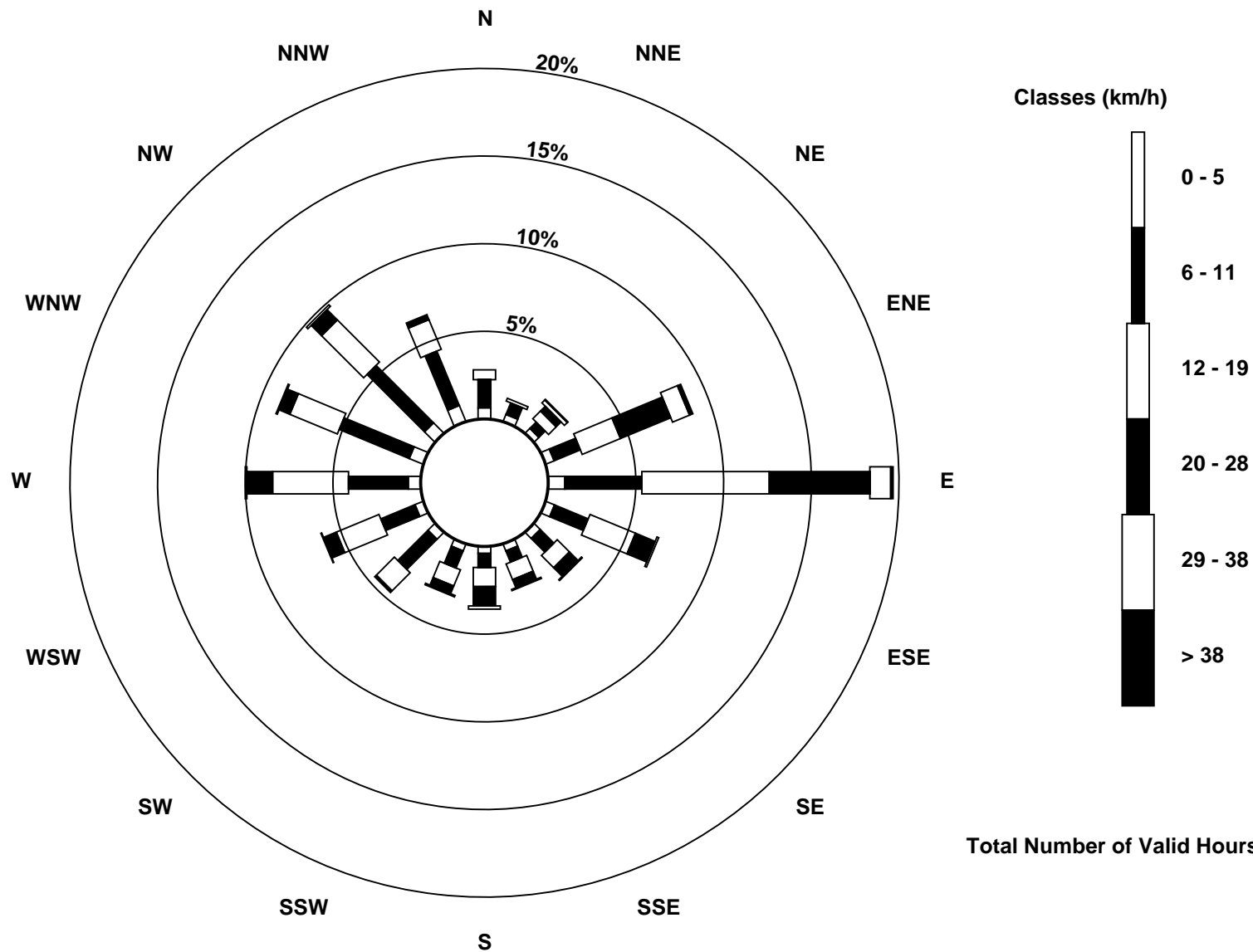


Total Number of Valid Hours: 8738



Wood Buffalo Environmental Association
Wind Rose 2015

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

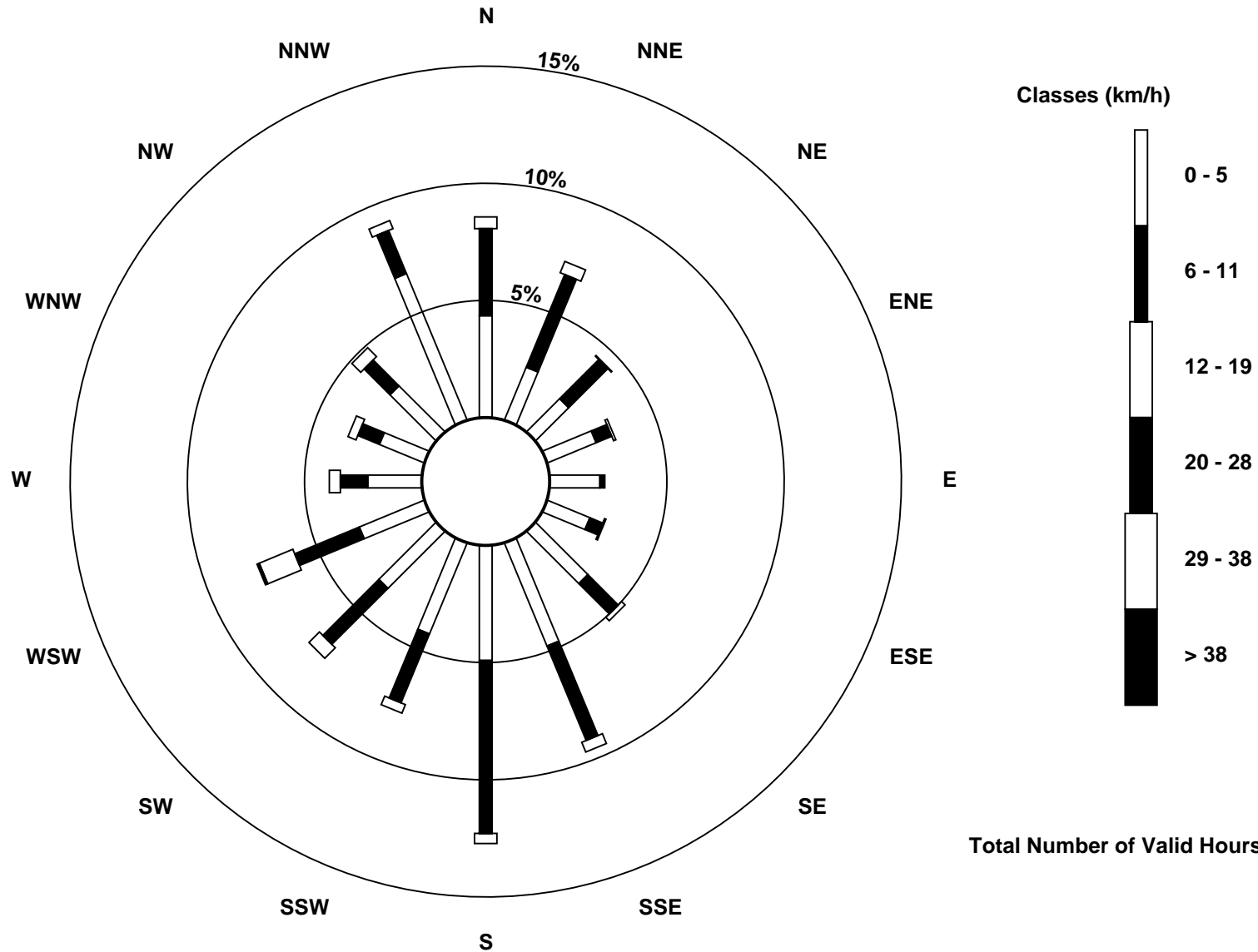


Total Number of Valid Hours: 8726



Wood Buffalo Environmental Association
Wind Rose 2015

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

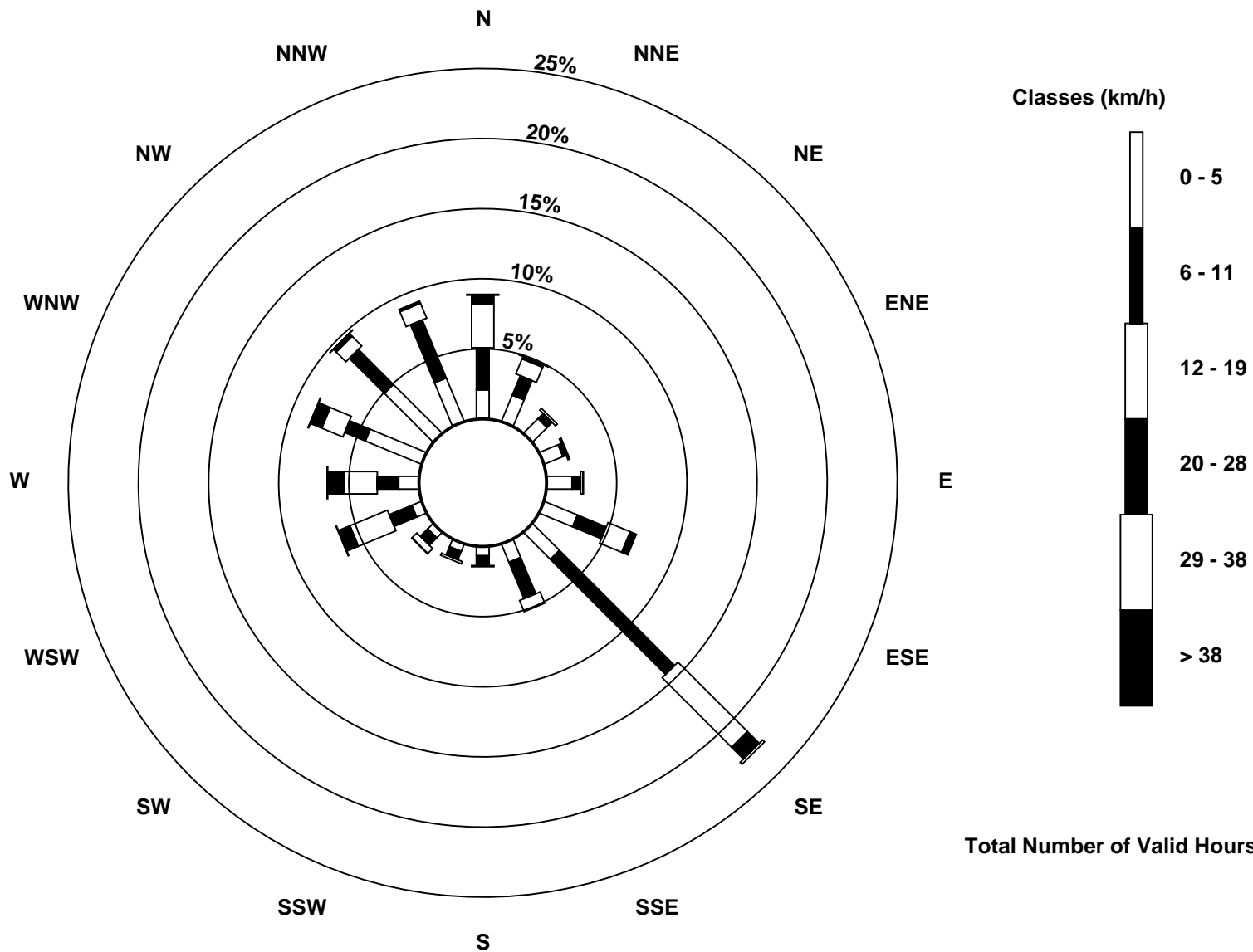


Total Number of Valid Hours: 8642



Wood Buffalo Environmental Association
Wind Rose 2015

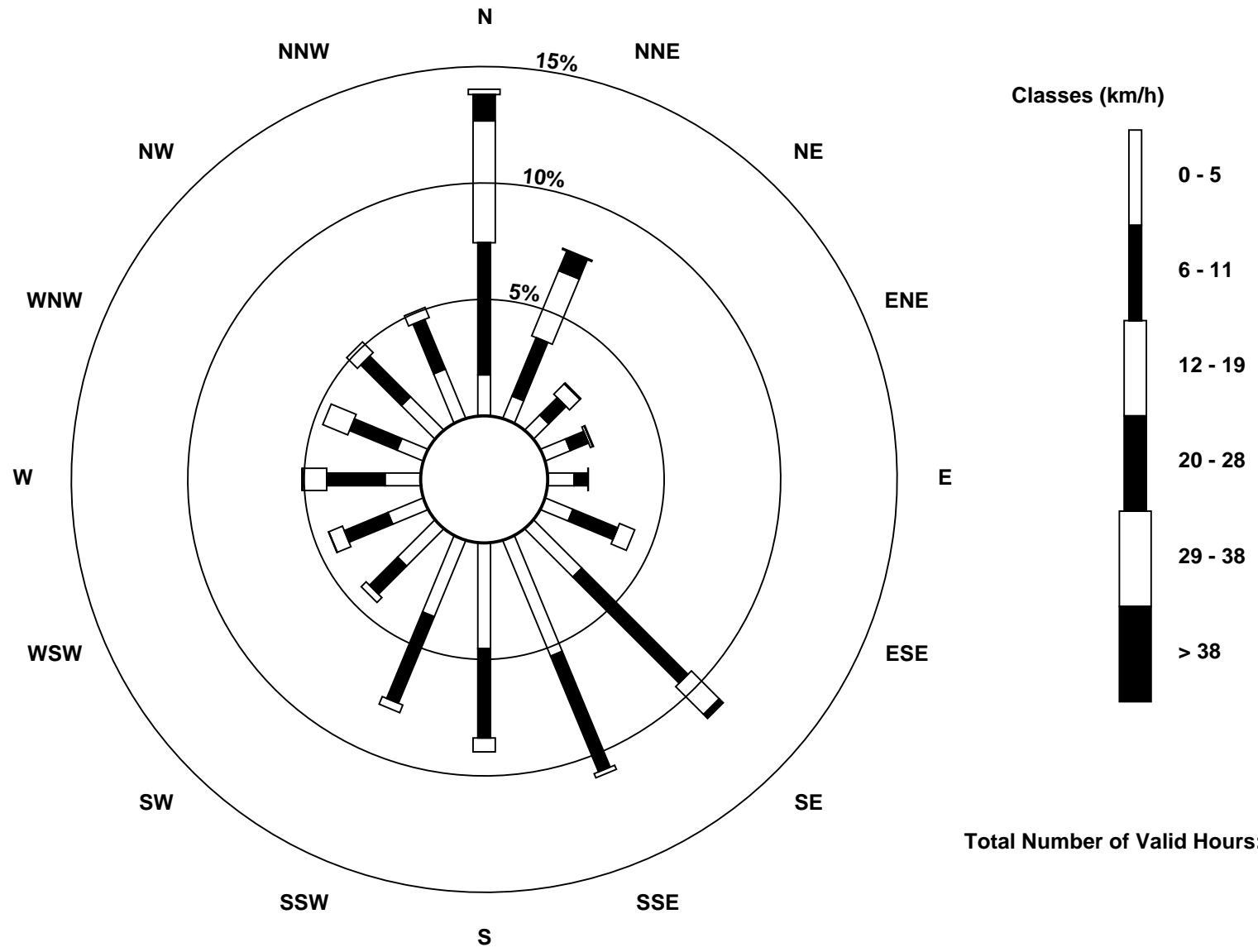
Wind Speed (WS) - km/h
Lower Camp (AMS 11)





Wood Buffalo Environmental Association
Wind Rose 2015

Wind Speed (WS) - km/h
Millennium (AMS 12)

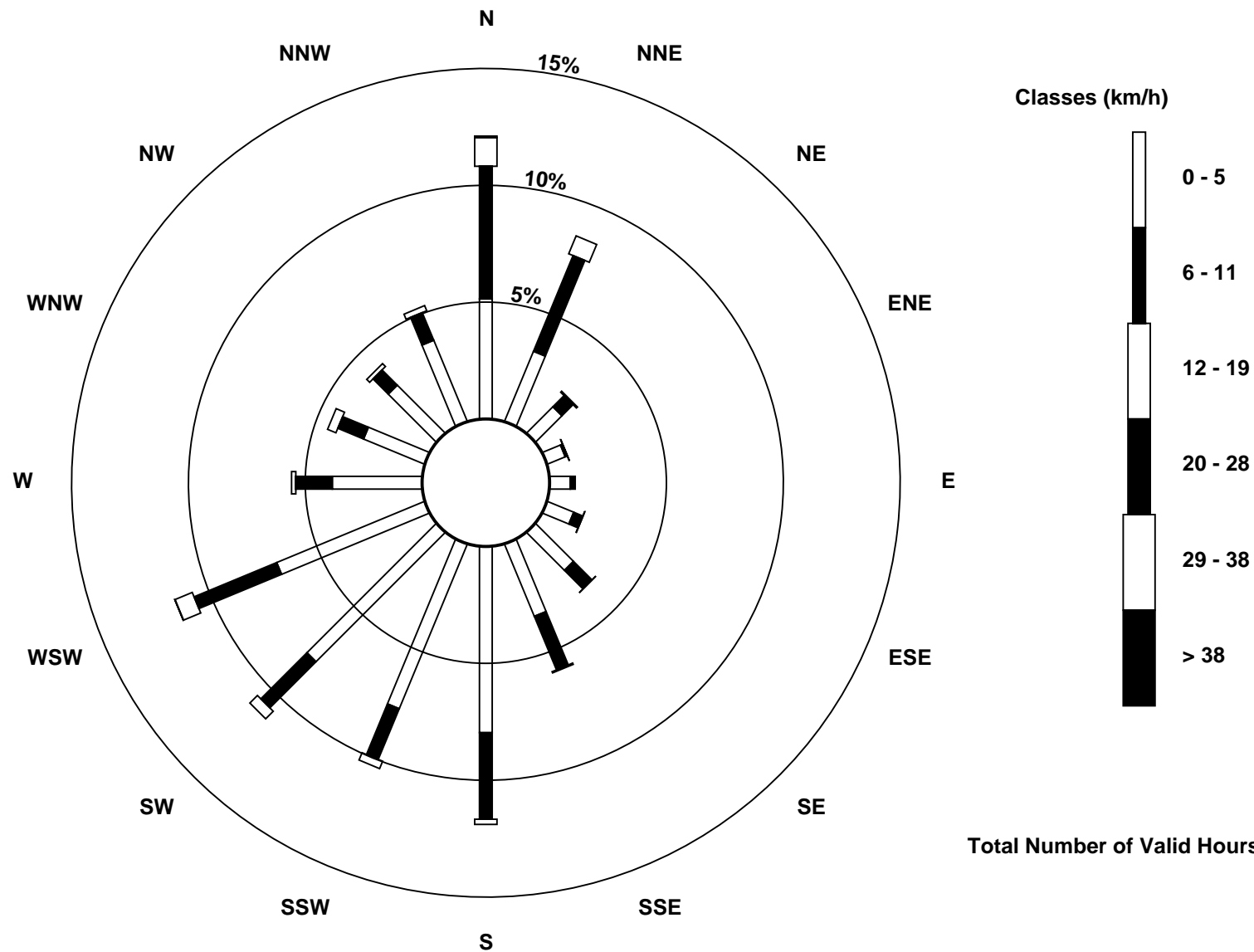


Total Number of Valid Hours: 5675



Wood Buffalo Environmental Association
Wind Rose 2015

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

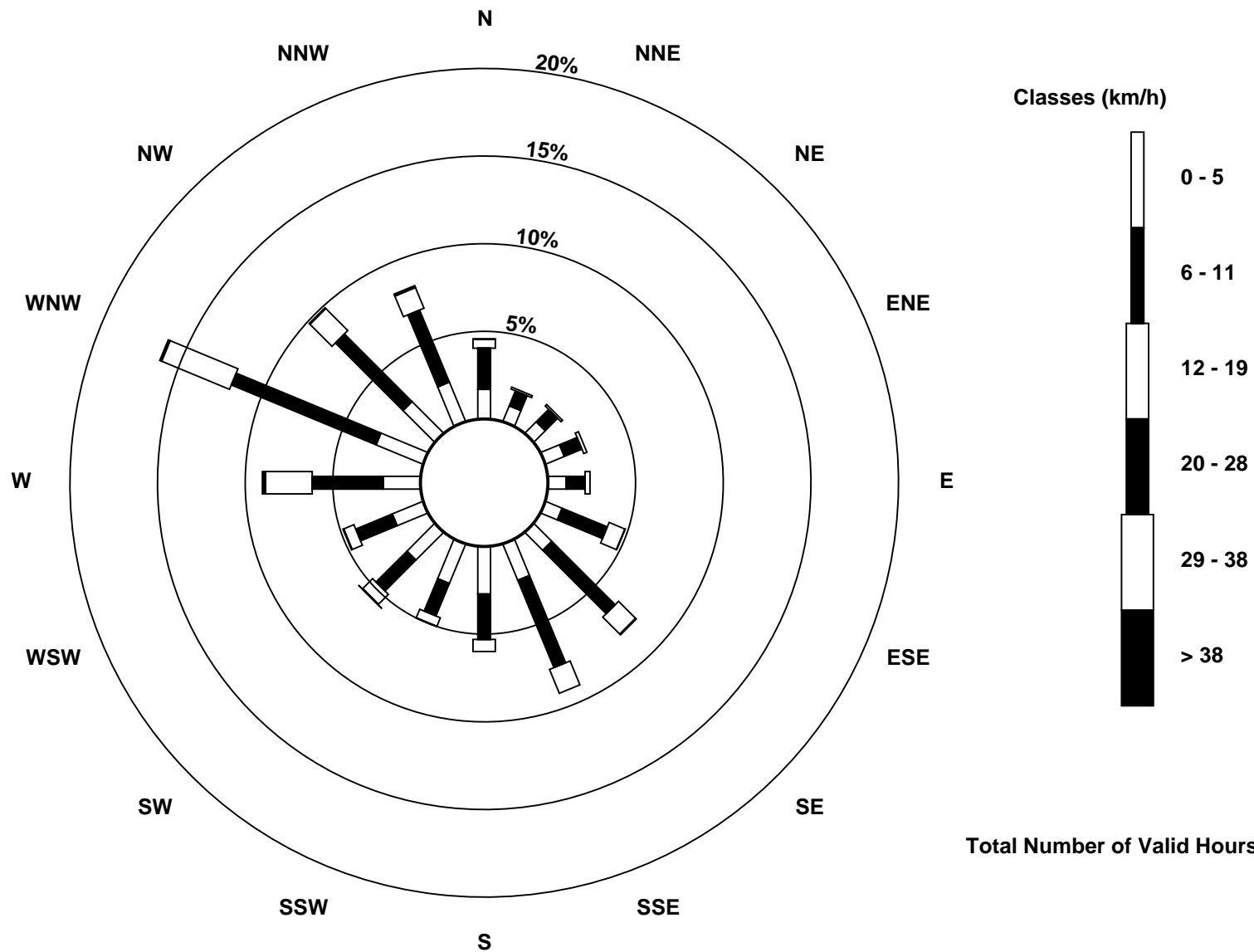


Total Number of Valid Hours: 8486



Wood Buffalo Environmental Association
Wind Rose 2015

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

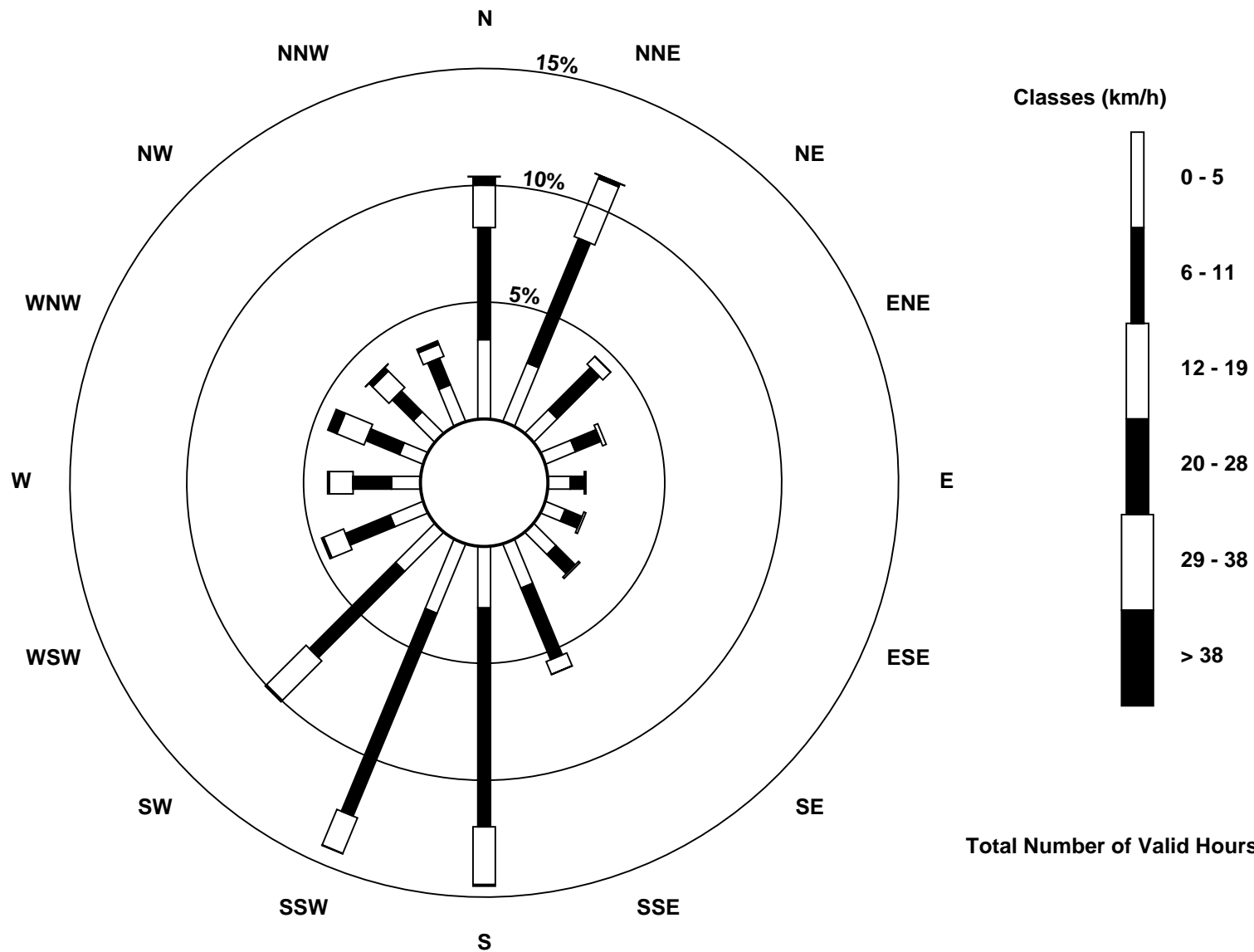


Total Number of Valid Hours: 8681



Wood Buffalo Environmental Association
Wind Rose 2015

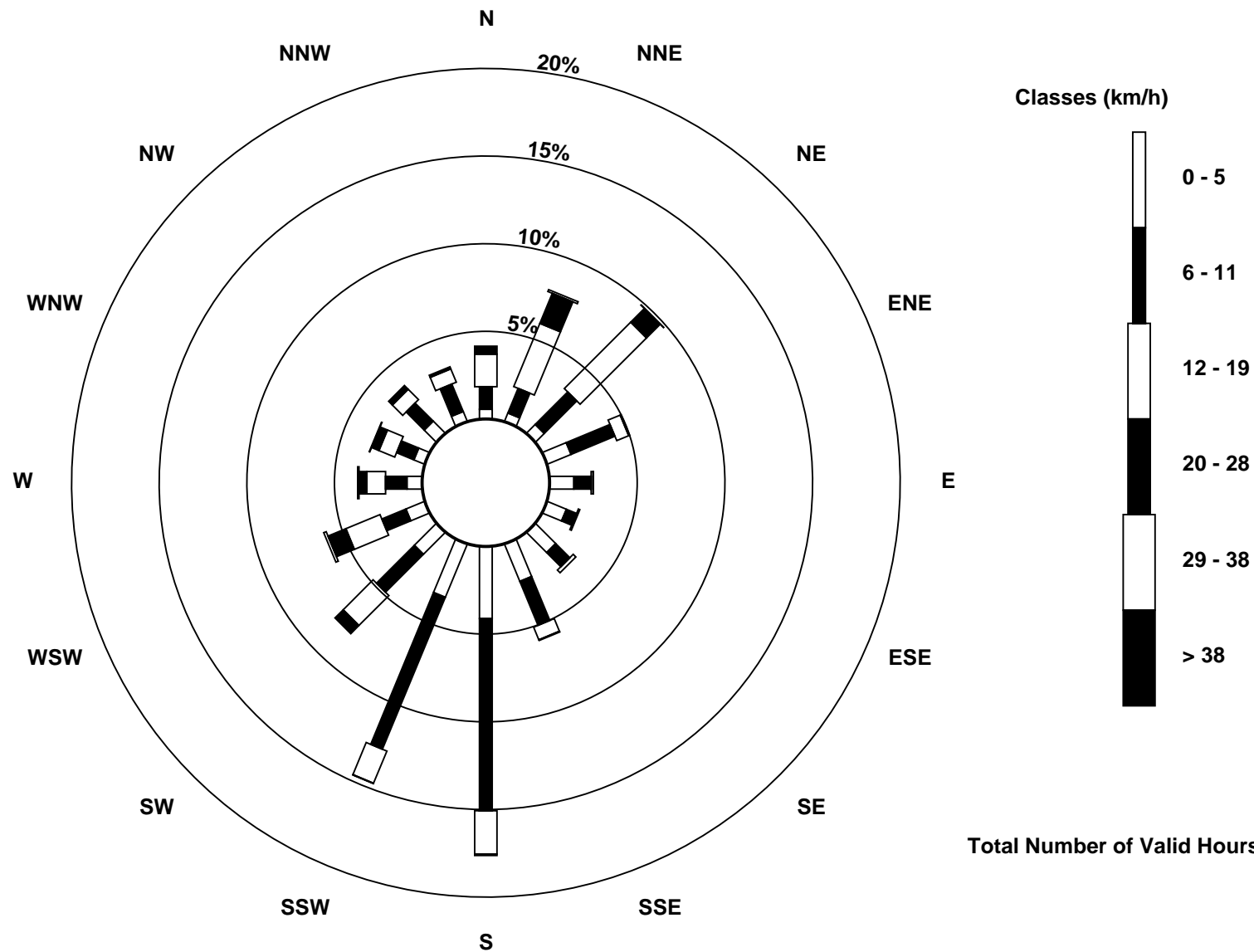
Wind Speed (WS) - km/h
CNRL Horizon (AMS 15)





Wood Buffalo Environmental Association
Wind Rose 2015

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

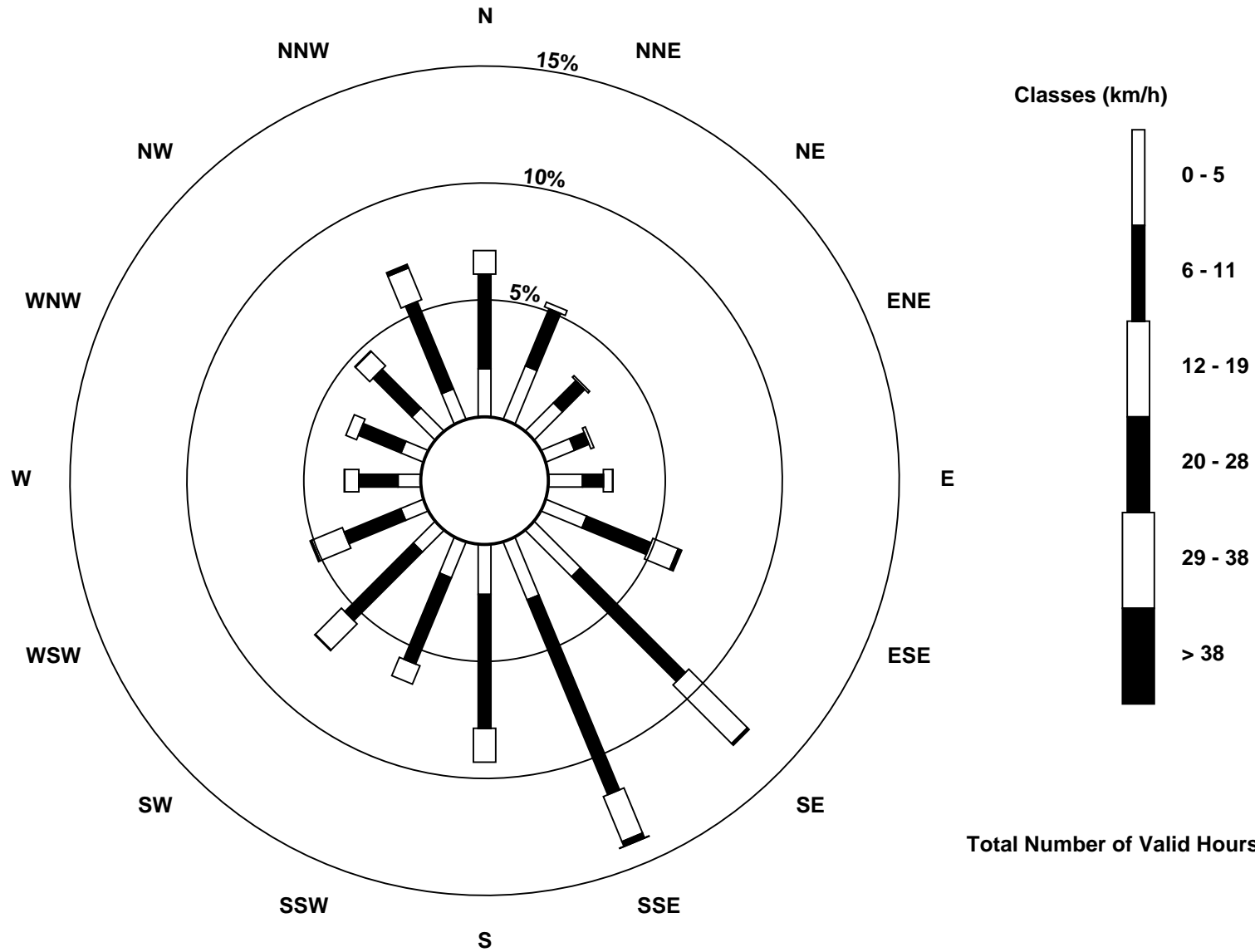


Total Number of Valid Hours: 8614



Wood Buffalo Environmental Association
Wind Rose 2015

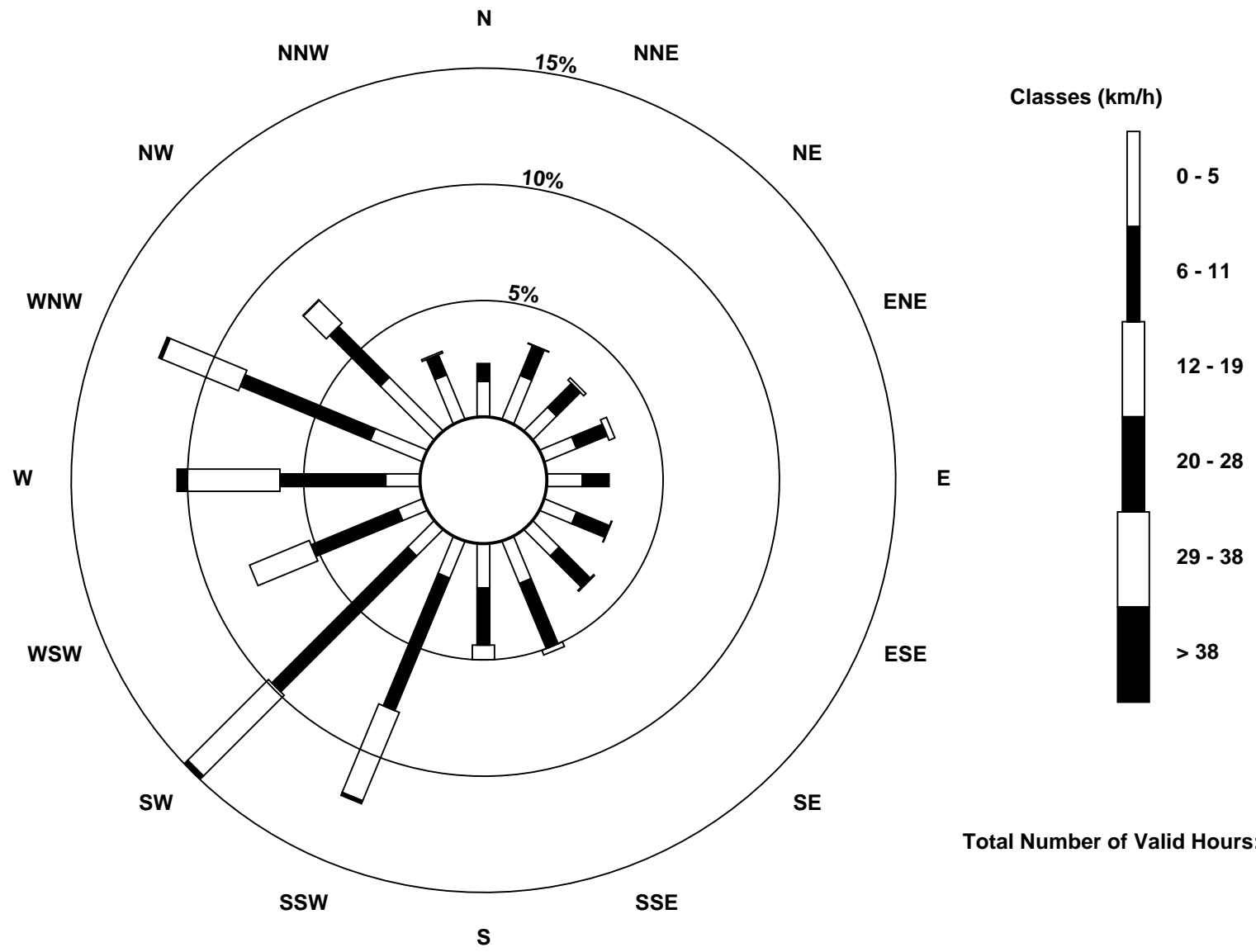
Wind Speed (WS) - km/h
Wapasu (AMS 17)





Wood Buffalo Environmental Association
Wind Rose 2015

Wind Speed (WS) - km/h
Conklin Lookout (AMS 18)

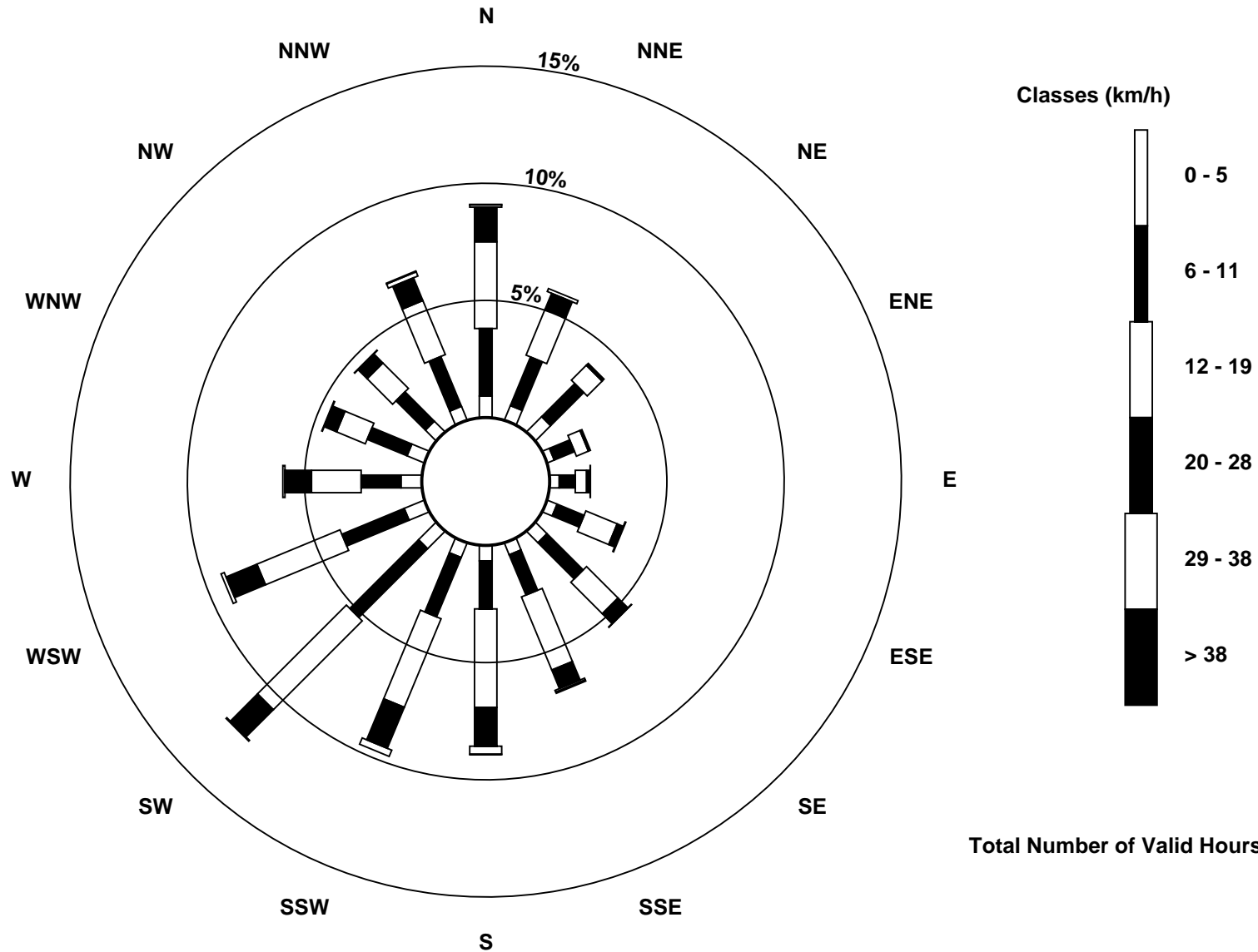


Total Number of Valid Hours: 3667



Wood Buffalo Environmental Association
Wind Rose 2015

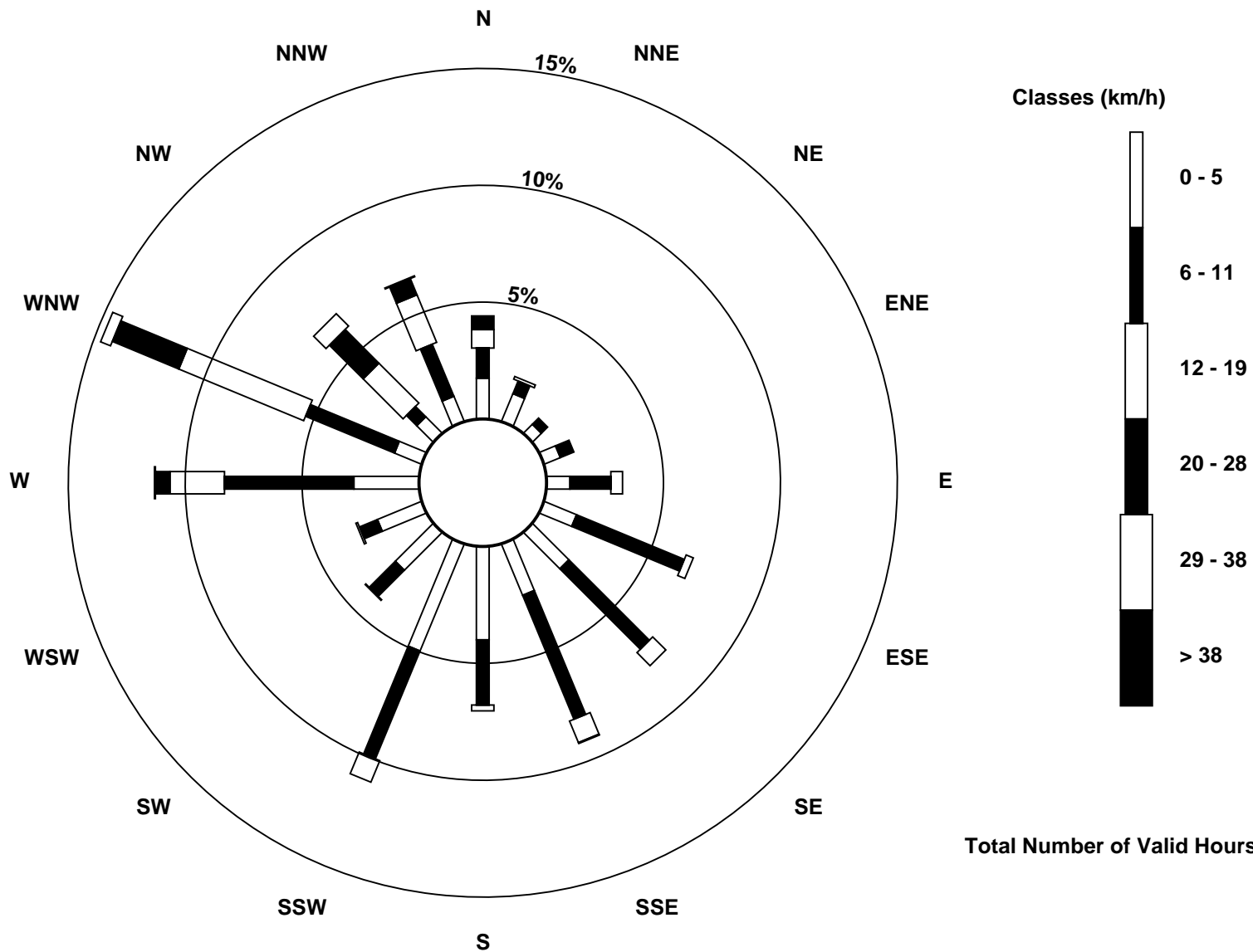
Wind Speed (WS) - km/h
Firebag (AMS 19)





Wood Buffalo Environmental Association
Wind Rose 2015

Wind Speed (WS) - km/h
Statoil - Leismer (AMS501)

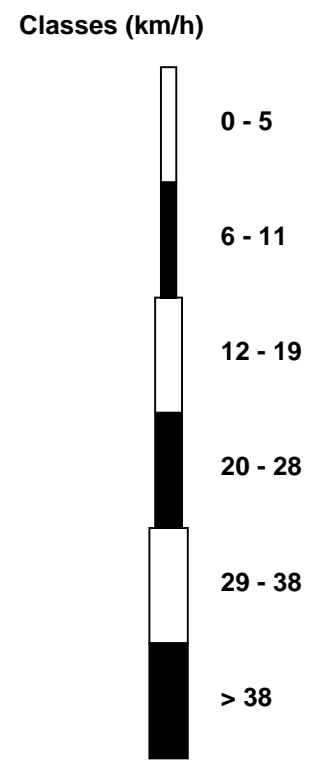
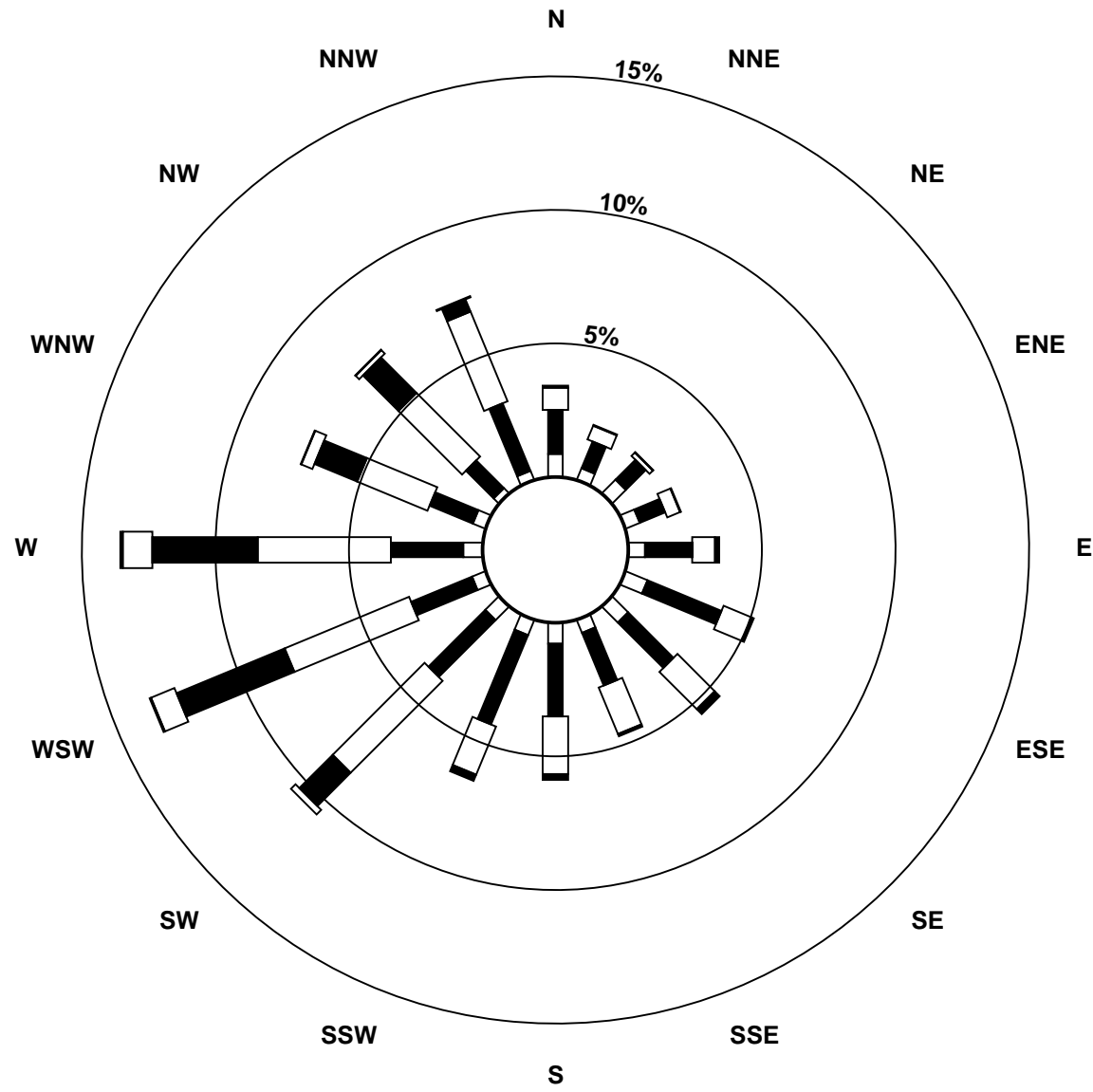


Total Number of Valid Hours: 2404



Wood Buffalo Environmental Association
Wind Rose 2015

Wind Speed (WS) - km/h
ConocoPhillips - Surmont (AMS502)



Total Number of Valid Hours: 8673



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