

**WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
ANNUAL AMBIENT AIR QUALITY MONITORING REPORT
2019
REPORT HISTORY**

Original report release date: March, 2020

Revised report release date: October 15, 2021

Revision 1: Resubmission of Ozone data at Patricia McInnes

A review of Ozone (O₃) data from Patricia McInnes Air Monitoring Station (AMS) compared to other air monitoring stations in the Wood Buffalo Environmental Association network revealed that measured values at Patricia McInnes AMS were higher compared to other stations. A review of the analyzer responses to the automated daily zeros checks and calibration zeros responses during the monthly multipoint calibrations showed a significant difference between these two values.

Further investigation determined that a longer than expected stabilization during the automated daily zero checks resulted in negative values recorded as analyzer responses. During acceptance for baseline correction, this resulted in an elevated baseline for this parameter. These negative values are artifacts of the external system and not the true response of the analyzer. Therefore, analyzer zero responses recorded during the monthly multipoint calibrations were used to baseline correct the ozone data.

As a result, O₃ data at Patricia McInnes AMS from June 2019 to May 2021 was revised. On October 12 through 15, 2021, the monthly reports and data reports, for each affected month, were re-submitted to the Electronic Transfer System (ETS).



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ENVIRONMENTAL ASSOCIATION**

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Wood Buffalo Environmental Association

ANNUAL REPORT – VOLUME 1

2019 CONTINUOUS DATA

March 2020

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





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

ANNUAL 2019

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

March 2020



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Total Reduced Sulphur (TRS)	102
Nitrogen Dioxide (NO ₂)	125
Oxides of Nitrogen (NO _x)	170
Nitrogen Oxide (NO)	215
Ozone (O ₃)	259
Total Hydrocarbon (THC)	282
Non-Methane Hydrocarbon (NMHC)	323
Methane (CH ₄)	342
Carbon Monoxide (CO)	361
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March 31, 2020

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

SUBMITTED VIA EMAIL

RE: Annual Ambient Air Quality Monitoring Report 2019 Wood Buffalo Environmental Association

Enclosed is the 2019 Annual Ambient Air Quality Monitoring Report for the Wood Buffalo Environmental Association regional air monitoring network.

The continuous ambient air quality monitoring network stations are:

AMS01 - Fort McKay - Bertha Ganter	AMS19 - Firebag
AMS02 - Mildred Lake	AMS20 - MacKay River
AMS03 - Lower Camp (Meteorology)	AMS21 - Conklin
AMS04 - Buffalo Viewpoint	AMS22 - Janvier
AMS05 - Mannix	AMS23 - Fort Hills
AMS06 - Patricia McInnes	AMS24 - Surmont
AMS07 - Athabasca Valley	AMS25 - Waskōw ohci Pimâtisiwin
AMS08 - Fort Chipewyan	AMS26 - Christina Lake
AMS09 - Barge Landing	AMS27 - Jackfish 2/3
AMS11 - Lower Camp (Air Quality)	AMS29 - Surmont 2
AMS13 - Fort McKay South	AMS501 - Leismer
AMS14 - Anzac	AMS505 - Sawbones Bay
AMS15 - Horizon	AMS506 - Jackfish 1
AMS17 - Wapasu	AMS507 - Kirby South
AMS18 - Stony Mountain	AMS508 - Kirby North

This report is submitted by the WBEA on behalf its members. This report may also satisfy the ambient air reporting requirements in industry members' EPEA Approvals (as amended):



Member	EPEA Approval No.
Athabasca Oil Corporation	289664-00-00; 241311-00-00
Canadian Natural Resources Ltd.	20809-02-00; 149968-01-00; 224816-01-00; 237382-00-00
Cenovus Energy Inc.	48522-01-00
Chinese National Offshore Oil Company Ltd.	137467-01-00; 236394-00-00
Connacher Oil and Gas Ltd.	240008-00-00
ConocoPhillips Canada Resources Corp.	48263-01-00
Fort Hills Energy Corporation	151469-01-00
Hammerstone Corporation	189942-00-00
Husky Oil Operations Ltd.	206355-01-00
Imperial Oil Resources Ltd.	00046586-00-00
Inter Pipeline Offgas Ltd.	73203-02-00
MEG Energy Corporation	00216466-01-00
Oxbow Sulphur Canada ULC	EIA Application
Parsons Creek Aggregates	231302-00
PetroChina Canada Ltd.	254465-00-00
Suncor Energy Inc.	094-02-00; 80105-01-00
Sunshine Oilsands Ltd.	305529-00-00
Surmont Energy	318401-00-00
Syncrude Canada Ltd.	026-02-00
Teck Resources Ltd.	00247548-00-00
Titan Tire Reclamation Corporation	364232-00-00
Total E&P Canada Ltd.	228044-00-00

Government and Non-Industrial Organizations

Alberta Energy Regulator	Keyano College
Alberta Environment and Parks	Parks Canada
Alberta Health	Pembina Institute for Appropriate Development
Alberta Health Services	Regional Municipality of Wood Buffalo
Environment and Climate Change Canada	
Health Canada	

Indigenous Communities

Chipewyan Prairie Dene First Nation	Fort McKay Métis Local 63
Christina River Dene Nation Council	Fort McMurray First Nation 468
Conklin Resource Development Advisory Council	Fort McMurray Métis Local 1935
Fort McKay First Nation	Lakeland Métis Local 1909



1. Introduction

The WBEA operates the largest airshed in the largest municipality in Canada. As a multi-stakeholder, community-based, not-for-profit association, the WBEA monitors the air in the Regional Municipality of Wood Buffalo 24 hours a day and 365 days a year. The WBEA works closely with the Environmental Monitoring and Science Division of Alberta Environment and Parks (AEP), and funding for this work was provided to the WBEA through the Oil Sands Monitoring Program (OSM).



Air Monitoring Parameters

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), ozone (O₃), fine particulate matter (PM_{2.5}) total hydrocarbons (THC), methane (CH₄), non-methane hydrocarbons (NMHC), carbon dioxide (CO₂), carbon monoxide (CO) 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	TYPE	STATION NAME	SO ₂	NO/NO ₂ /NO _x	O ₃	PM _{2.5}	TRS	H ₂ S	THC	Methane NMHC	CO	CO ₂
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	X	X	X		X	X	X	X
2	COMPLIANCE	MILDRED LAKE	X					X	X	X		
3	METEOROLOGICAL	LOWER CAMP MET TOWER										
4	COMPLIANCE	BUFFALO VIEWPOINT	X	X	X	X		X	X	X		
5	COMPLIANCE/ METEOROLOGICAL	MANNIX	X					X	X	X		
6	COMMUNITY	PATRICIA MCINNES	X	X	X	X	X		X	X		
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	X	X		X	X	X	
8	COMMUNITY/ COMPLIANCE	FORT CHIPEWYAN	X	X	X	X					X	X
9	ATTRIBUTION	BARGE LANDING	X	X		X	X		X			
11	COMPLIANCE	LOWER CAMP	X					X	X	X		
13	COMPLIANCE/ ATTRIBUTION	FORT MCKAY SOUTH	X	X	X	X	X		X			
14	COMPLIANCE/ COMMUNITY	ANZAC	X	X	X	X	X		X	X		
15	COMPLIANCE	HORIZON	X	X		X	X		X			
17	COMPLIANCE	WAPASU	X	X	X	X		X	X			
18	ENHANCED DEPOSITION/ BACKGROUND	STONY MOUNTAIN	X	X	X	X	X		X	X	X	X
19	COMPLIANCE	FIREBAG	X	X				X	X			
20	COMPLIANCE	MACKAY RIVER	X	X				X	X			
21	COMMUNITY	CONKLIN	X	X	X	X	X		X	X		
22	COMMUNITY	JANVIER	X	X	X	X	X		X	X		
23	COMPLIANCE	FORT HILLS	X	X		X	X		X			
24	COMPLIANCE	SURMONT	X	X		X		X	X			
25	EMERGENCY RESPONSE	WASKOW OHCI PIMATISIWIN	X					X				
26	COMPLIANCE	CHRISTINA LAKE	X	X				X				
27	COMPLIANCE	JACKFISH 2/3	X	X				X				
29	COMPLIANCE	SURMONT 2	X	X		X		X	X			
501	COMPLIANCE	LEISMER	X	X				X				
505	COMPLIANCE	SAWBONES BAY	X	X				X				
506	COMPLIANCE	JACKFISH 1	X	X				X				
507	COMPLIANCE	KIRBY SOUTH	X	X				X	X			
508	COMPLIANCE	KIRBY NORTH	X	X				X	X			



Table 2 provides a listing of stations and meteorological parameters measured by continuous methods. Parameters measured include ambient temperature, relative humidity, barometric pressure, 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	TYPE	STATION NAME	Temperature	RH	BP	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	COMPLIANCE	MILDRED LAKE	X	X		X	X				
3	METEOROLOGICAL	LOWER CAMP MET TOWER	X	X		X	X	X			
4	COMPLIANCE	BUFFALO VIEWPOINT	X	X		X	X				
5	COMPLIANCE/ METEOROLOGICAL	MANNIX	X	X		X	X	X			
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X				
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	X	X				
8	COMMUNITY/ COMPLIANCE	FORT CHIPEWYAN	X	X		X	X		X	X	X
9	ATTRIBUTION	BARGE LANDING	X	X	X	X	X				
11	COMPLIANCE	LOWER CAMP	X	X		X	X				
13	COMPLIANCE/ ATTRIBUTION	FORT MCKAY SOUTH	X	X		X	X				
14	COMPLIANCE/ COMMUNITY	ANZAC	X	X		X	X			X	X
15	COMPLIANCE	HORIZON	X	X		X	X		X	X	
17	COMPLIANCE	WAPASU	X	X		X	X			X	
18	ENHANCED DEPOSITION/ BACKGROUND	STONY MOUNTAIN	X	X		X	X		X	X	X
19	COMPLIANCE	FIREBAG	X	X		X	X				
20	COMPLIANCE	MACKAY RIVER	X	X		X	X			X	
21	COMMUNITY	CONKLIN	X	X		X	X				
22	COMMUNITY	JANVIER	X	X		X	X				
23	COMPLIANCE	FORT HILLS	X	X		X	X				
24	COMPLIANCE	SURMONT	X	X		X	X				
25	EMERGENCY RESPONSE	WASKOW OHCI PIMATISIWIN	X	X		X	X				
26	COMPLIANCE	CHRISTINA LAKE	X	X		X	X				
27	COMPLIANCE	JACKFISH 2/3	X	X		X	X				
29	COMPLIANCE	SURMONT 2	X	X		X	X				
501	COMPLIANCE	LEISMER	X	X		X	X				
505	COMPLIANCE	SAWBONES BAY	X	X		X	X				
506	COMPLIANCE	JACKFISH 1	X	X		X	X				
507	COMPLIANCE	KIRBY SOUTH	X	X		X	X				
508	COMPLIANCE	KIRBY NORTH	X	X		X	X				



Table 3 provides a listing of stations and air quality parameters measured by time integrated methods. Parameters measured include volatile organic compounds (VOC), particulate matter less than 2.5 µm aerodynamic diameter (PM_{2.5}) including associated metal and ion analysis, particulate matter less than 10 µm aerodynamic diameter (PM₁₀), including associated metal and ion analysis, polycyclic aromatic hydrocarbons (PAH), wet precipitation, including major ion analysis.

In 2019, changes to the WBEA’s time integrated sampling program resulted in the addition of precipitation (PRECIP) samples at Wapasu and Stony Mountain air monitoring stations.

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

WBEA ID	TYPE	STATION NAME	VOC	PM _{2.5} Mass, Metals and Ions	PM _{2.5} ECOC	PM ₁₀ Mass, Metals and Ions	PAH	PRECIP
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	X	X	X	X
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X	
7	COMMUNITY	ATHABASCA VALLEY	X	X		X	X	
9	ATTRIBUTION	BARGE LANDING	X					
13	COMPLIANCE/ATTRIBUTION	FORT MCKAY SOUTH	X			X		
14	COMPLIANCE/COMMUNITY	ANZAC	X	X		X	X	
15	COMPLIANCE	HORIZON	X	X		X		
17	COMPLIANCE	WAPASU			X			X
18	ENHANCED DEPOSITION/BACKGROUND	STONY MOUNTAIN			X			X
22	COMMUNITY	JANVIER	X					

Air 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 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 sites.



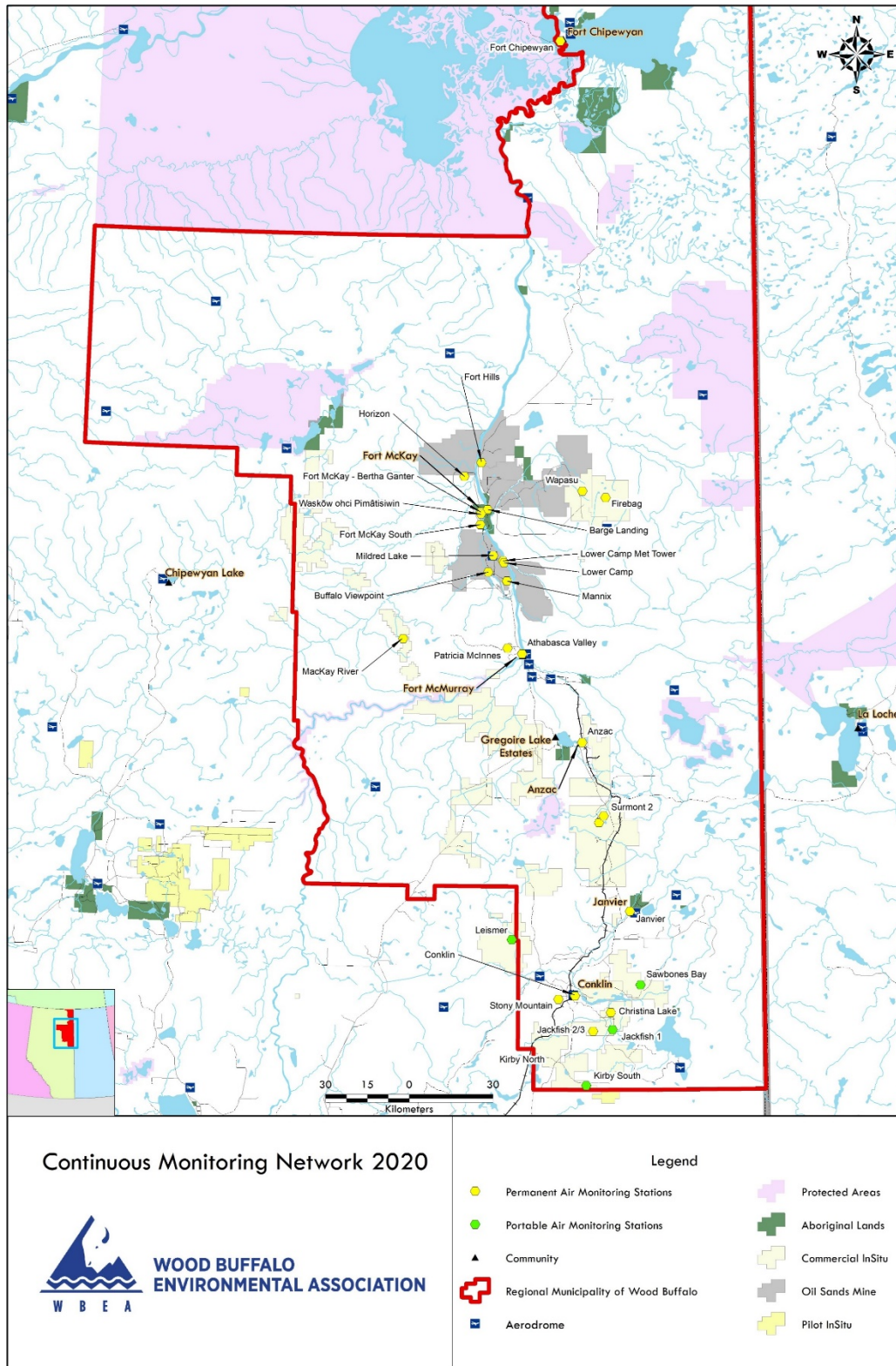


Figure 1: Continuous Air Monitoring Station Locations



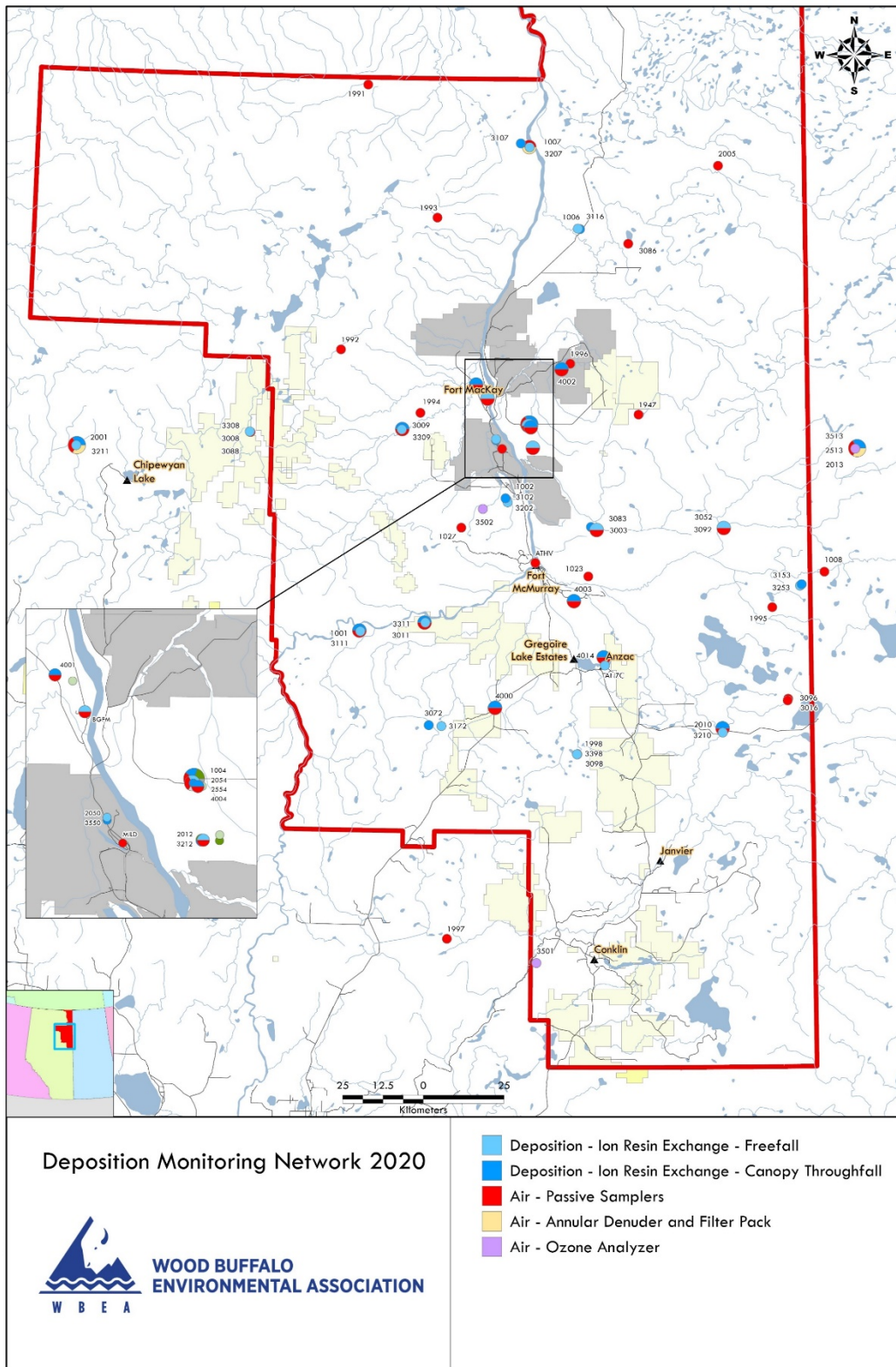


Figure 2: Passive Monitoring Site Locations



2. Summary of Changes to the WBEA Air Monitoring Network

The WBEA air monitoring network expanded in 2019 to include two additional permanent air monitoring stations.

The WBEA commissioned an air monitoring station, Kirby South, at the Canadian Natural Resources Limited Kirby facility on January 1, 2019 to fulfill the requirements of EPEA approval number 237382-01-00, as amended. 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.

The WBEA relocated Surmont air monitoring station to a new location within the ConocoPhillips Surmont facility. Surmont was removed from service on March 12 and was replaced with Surmont 2 on March 13. Surmont and Surmont 2 fulfill EPEA approval number 48263-01-00. This station is equipped with ambient air quality analyzers for SO₂, H₂S, THC, NO, NO₂, NO_x, PM_{2.5}, and meteorological sensors for ambient temperature, relative humidity, and wind speed and direction.

The WBEA relocated Kirby South air monitoring station to a new location within the Canadian Natural Resources Limited Kirby facility. Kirby South was removed from service on April 15 and was replaced with Kirby North on April 16. Kirby North and Kirby South fulfill EPEA approval number 237382-01-00. 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.

The WBEA commissioned an ambient air quality monitoring survey at Sawbones Bay air monitoring station, at the MEG Energy Christina Lake facility beginning July 1, 2019 to fulfill the requirements of EPEA approval number 00216466-01-00, as amended. The current EPEA approval for the MEG Energy Christina Lake facility requires ambient air monitoring at the facility for six months per calendar year. 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.

The WBEA completed ambient air quality monitoring at the Jackfish 1 air monitoring station, at the Canadian Natural Resources Limited Jackfish 1 facility on September 1, 2019. The monitoring was conducted from August 17, 2018 until September 1, 2019 to fulfill the requirements of EPEA approval number 224816-00-00, as amended. This station was 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.

The WBEA commissioned an ambient air quality monitoring at the Leismer air monitoring station, at the Athabasca Oil Leismer facility beginning October 1, 2019 to fulfill the requirements of EPEA approval number 241311-00-00, as amended. The current EPEA approval for the Athabasca Oil Leismer facility requires ambient air monitoring at the facility for three months per calendar year. This station was 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.



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

Table 4. Parameter changes to the WBEA network – 2019

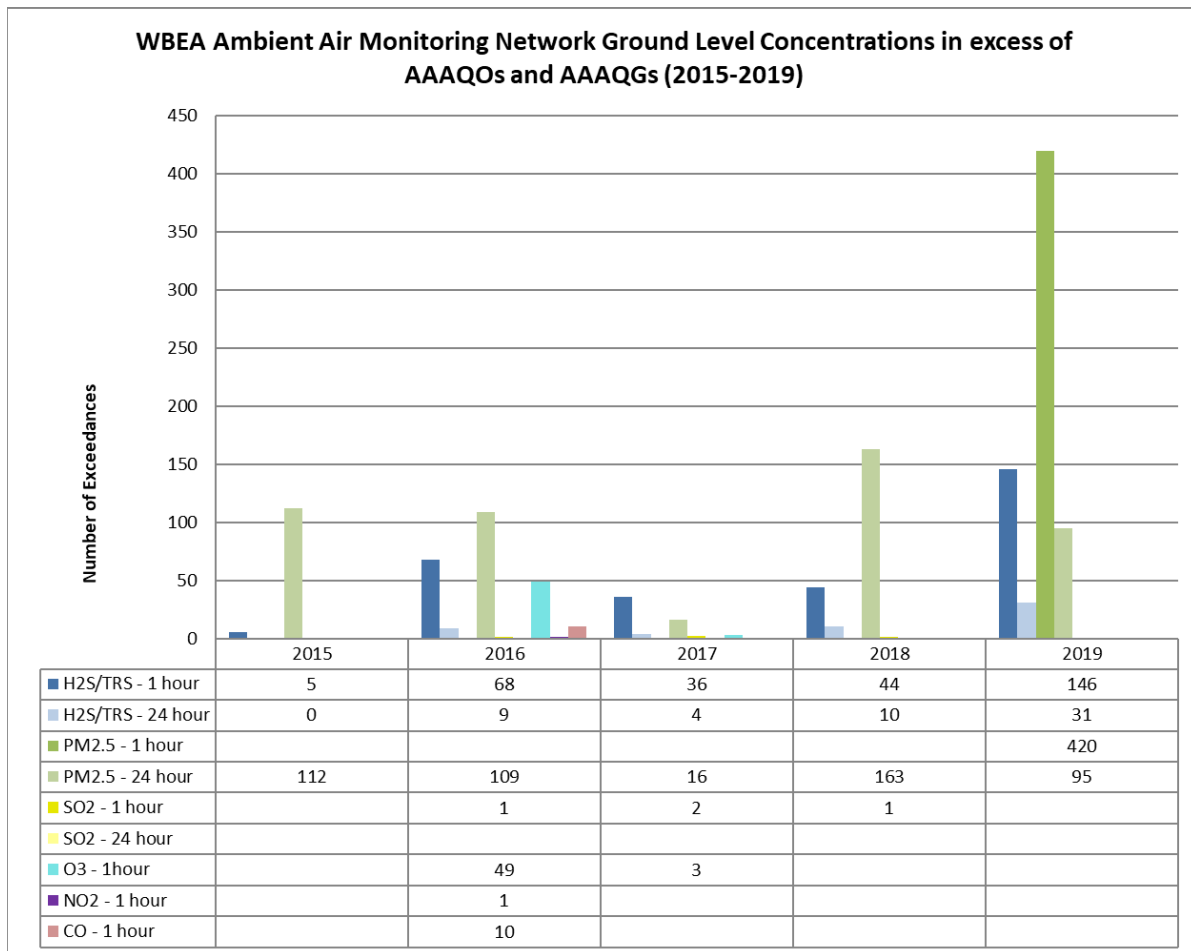
Station	Station Name	Parameter	Date Effective	Comment
AMS15	Horizon	Precipitation	01-Jan-2019	Removed Parameter
AMS04	Buffalo Viewpoint	NMHC	24-Jan-19	New Analyzer Type
AMS04	Buffalo Viewpoint	CH ₄	24-Jan-19	New Analyzer Type
AMS14	Anzac	Precipitation	01-Feb-19	Removed Parameter
AMS24	Surmont	SO ₂	12-Mar-19	Station Decommissioned
AMS24	Surmont	H ₂ S	12-Mar-19	Station Decommissioned
AMS24	Surmont	THC	12-Mar-19	Station Decommissioned
AMS24	Surmont	NO, NO ₂ , NO _x	12-Mar-19	Station Decommissioned
AMS24	Surmont	Temperature	12-Mar-19	Station Decommissioned
AMS24	Surmont	Relative Humidity	12-Mar-19	Station Decommissioned
AMS24	Surmont	Wind Speed and Direction	12-Mar-19	Station Decommissioned
AMS29	Surmont 2	SO ₂	13-Mar-19	New Station
AMS29	Surmont 2	H ₂ S	13-Mar-19	New Station
AMS29	Surmont 2	THC	13-Mar-19	New Station
AMS29	Surmont 2	NO, NO ₂ , NO _x	13-Mar-19	New Station
AMS29	Surmont 2	Temperature	13-Mar-19	New Station
AMS29	Surmont 2	Relative Humidity	13-Mar-19	New Station
AMS29	Surmont 2	Wind Speed and Direction	13-Mar-19	New Station
AMS11	Lower Camp	NMHC	22-Mar-19	New Analyzer Type
AMS11	Lower Camp	CH ₄	22-Mar-19	New Analyzer Type
AMS01	Bertha Ganter – Fort McKay	CO	01-Apr-19	New Parameter
AMS01	Bertha Ganter – Fort McKay	CO ₂	01-Apr-19	New Parameter
AMS08	Fort Chipewyan	CO	01-Apr-19	New Parameter
AMS08	Fort Chipewyan	CO ₂	01-Apr-19	New Parameter
AMS05	Mannix	NMHC	18-Apr-19	New Analyzer Type
AMS05	Mannix	CH ₄	18-Apr-19	New Analyzer Type
AMS03	Lower Camp – Meteorological Tower	AT167, RH167, WS 167, WD 167, VWS 167	01-Sept-19	Removed Parameters
AMS18	Stony Mountain	CO	01-Oct-19	New Parameter
AMS18	Stony Mountain	CO ₂	01-Oct-19	New Parameter
AMS08	Fort Chipewyan	Precipitation	01-Oct-19	Removed Parameter
AMS02	Mildred Lake	NMHC	26-Nov-19	New Analyzer Type
AMS02	Mildred Lake	CH ₄	26-Nov-19	New Analyzer Type



3. Concentrations in Excess of Alberta Ambient Air Quality Objectives

A detailed summary of ambient concentrations in excess of the Alberta Ambient Air Quality Objectives (AAAQOs) and Ambient Air Quality Guidelines (AAAQGs), 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 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 and AAAQGs are shown in Figure 3. The H₂S summary includes the TRS concentrations in excess of the H₂S objectives.



*The PM_{2.5} 1-hour AAAQG was established on January 1, 2019

Figure 3 Ambient Air Concentrations in excess of the AAAQO and AAAQG (2015-2019)



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

In 2019, there were 39 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

AEP audited the continuous monitoring stations of the WBEA air monitoring network from June 11 through 21 and October 16 through 23, 2019. All analyzers audited met or exceeded AMD Chapter8 Aud A.C.

6. Monthly Report Revisions

The following revisions were identified in the following monthly reports:

Month	Revision	Details
February	Resubmission of methane and non-methane hydrocarbons data at Buffalo Viewpoint for January 2019	Data was not uploaded to the Airdata Warehouse for new parameters installed at Buffalo Viewpoint in January 2019. Data was revised to include the newly collected methane and non-methane hydrocarbons data and was resubmitted to the Airdata Warehouse on March 29, 2019.
March	Correction of wind direction values at Surmont 2	During an internal audit, it was identified that the cross arm on the wind direction sensor had been misaligned. This misalignment began upon station installation in March 2019. Data was reviewed, and a correction was applied to account for the sensor misalignment. Data was resubmitted to the Airdata Warehouse on May 28. Revised summary tables for Surmont 2 Air Monitoring Station for March 2019 were submitted to Alberta Environment and Parks on May 28, 2019.
August	Resubmission of Wind Direction Data at Sawbones Bay for July 2019	During an internal audit, it was identified that the cross arm on the wind direction sensor had been misaligned. This misalignment began upon station installation in March 2019. Data was reviewed, and a correction was applied to account for the sensor misalignment.
September	Correction of particulate values at Fort Chipewyan	Particulate matter (PM2.5) data was revised and resubmitted to the AEP Airdata Warehouse for Fort Chipewyan air monitoring station (AMS08) for August 2019. Due to a power outage at the station which had previously been flagged as valid, 13 hours were flagged as invalid, resulting in 98% operational uptime in August 2019. Report revisions based on this correction affected the network, summary, downtime summary, station percentile, and station data summaries.



Month	Revision	Details
September, October, November, December	Correction of wind direction values at Stony Mountain	During routine data review, it was identified that the cross arm on the wind direction sensor had been misaligned. The misalignment began following the annual calibration of the wind speed and wind direction sensor in September 2019. Data was corrected based on the measurement of the misalignment and from review and comparison with nearby air monitoring stations. On January 30, data and revised summary tables were resubmitted to the Electronic Transfer System.
October, November, December	Correction of wind direction values at Buffalo Viewpoint	During routine field activities, it was identified that the cross arm on the wind direction sensor had been mis-aligned. This mis-alignment began following replacement of the wind direction sensor in October 2019. Data was corrected based on measurement of the mis-alignment and from review and comparison with nearby air monitoring stations. On February 4, data and revised summary tables were resubmitted to the Electronic Transfer System.
November, December	Resubmission of nitrogen dioxide data at Kirby North	Nitrogen dioxide (NO ₂) data for Kirby North Air Monitoring Station for November 2019 was revised to correctly flag data following a failed routine calibration in December 2019. On January 30, data and revised summary tables were resubmitted to the Electronic Transfer System
April 2019 through January 2020	Correction of wind direction values at Kirby North	During routine field activities, it was identified that the wind direction sensor had been misaligned. This misalignment began following installation of the station, in April 2019. Data was corrected based on measurement of the misalignment and from review and comparison with nearby air monitoring stations. On March 27, data and revised summary tables were resubmitted to the Electronic Transfer System.

7. 2015-2019 WBEA Data Compared to LARP Triggers and Limits

A summary of data from the 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. 2019 Annual Air Concentrations

This report contains a summary of operational times for the year, the monthly averages, and the number of readings in excess of the AAAQO/G, frequency distributions of 1-hour data, and annual average concentration plots over the past five years. Annual average concentration plots have been provided for stations for which there is more than one year of data, and for which 12-month monitoring is completed. Calculation of annual averages is cannot be provided for portable monitoring stations which are only required to monitor for 3 or 6 months per year, based on their EPEA approval.

Annual statistics for all integrated and passive results are provided for all species analyzed.



If additional information is required, please contact either Mike Martineau at (780) 747-8214 or the Wood Buffalo Environmental Association at (780) 799-4420.

Yours sincerely,

Wood Buffalo Environmental Association

The representative of the Person Responsible for this monitoring program is Mike Martineau, Data Lead WBEA.

Report prepared and submitted by Jayme Marcoux and Kendra Thomas of the WBEA and reviewed by Mike Martineau of WBEA. The WBEA has retained the services of Whiteley Enterprises to conduct reporting functions on its behalf, specifically, Level 3 – Independent Assessment. As required, the contact information for both WBEA staff is included below.

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Wood Buffalo Environmental Association
T: (780) 799-4420 | E: jmarcoux@wbea.org

Kendra Thomas, Data Technician
Wood Buffalo Environmental Association
T: (780) 747-8212 | E: kthomas@wbea.org

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

Mike Martineau
Data Lead

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R00_2019_Annual



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

2019
page 1 of 3


Prepared: February 7, 2020 11:00

APPROVAL NUMBERS	REPORT DATE						
	YEAR						
289664-00-00	2019						
241311-00-00	CONTINUOUS AMBIENT MONITORING						
20809-02-00				ONE-HOUR AVERAGE		24-HOUR AVERAGE	
149968-01-00	PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
237382-00-00							
48522-01-00	SO2(ppb)	1	100	91.5	0	12.9	0
240008-00-00	SO2(ppb)	2	100	66.7	0	13.5	0
48263-01-00	SO2(ppb)	4	100	60.9	0	9.0	0
224816-00-00	SO2(ppb)	5	100	81.9	0	20.9	0
151469-01-00	SO2(ppb)	6	100	41.0	0	8.9	0
189942-00-00	SO2(ppb)	7	100	39.8	0	7.9	0
206355-00-00	SO2(ppb)	8	100	11.2	0	2.8	0
46586-00-00	SO2(ppb)	9	100	45.8	0	6.7	0
73203-02-00	SO2(ppb)	11	99	123.6	0	15.8	0
216466-01-00	SO2(ppb)	13	100	42.8	0	6.9	0
137467-01-00	SO2(ppb)	14	98	12.4	0	3.6	0
236394-00-00	SO2(ppb)	15	100	30.0	0	6.3	0
254465-00-00	SO2(ppb)	17	100	25.0	0	6.0	0
094-02-00	SO2(ppb)	18	100	15.1	0	4.5	0
80105-01-00	SO2(ppb)	19	99	33.2	0	6.0	0
305529-00-00	SO2(ppb)	20	100	46.4	0	7.9	0
318401-00-00	SO2(ppb)	21	100	14.8	0	1.8	0
026-02-00	SO2(ppb)	22	100	5.8	0	1.8	0
364232-00-00	SO2(ppb)	23	100	43.6	0	8.8	0
228044-00-00	SO2(ppb)	24	98	35.4	0	8.7	0
231302-00-00	SO2(ppb)	26	97	76.3	0	10.9	0
	SO2(ppb)	26	100	88.4	0	18.1	0
	SO2(ppb)	27	97	23.4	0	5.4	0
	SO2(ppb)	29	98	6.3	0	1.8	0
	SO2(ppb)	501	100	20.4	0	7.8	0
	SO2(ppb)	505	100	56.8	0	15.9	0
	SO2(ppb)	506	100	28.1	0	10.3	0
	SO2(ppb)	507	100	20.5	0	4.6	0
	SO2(ppb)	508	100	25.5	0	4.0	0
	H2S(ppb)	2	100	16.8	22	5.3	6
	H2S(ppb)	4	100	14.7	1	1.7	0
	H2S(ppb)	5	100	53.2	87	21.3	21
	H2S(ppb)	11	100	22.6	32	5.1	4
	H2S(ppb)	17	99	5.2	0	0.8	0
	H2S(ppb)	19	99	6.1	0	1.1	0
	H2S(ppb)	20	99	3.2	0	0.8	0
	H2S(ppb)	24	99	1.0	0	0.4	0
	H2S(ppb)	25	98	8.3	0	1.5	0
	H2S(ppb)	26	99	7.5	0	1.4	0
	H2S(ppb)	27	99	1.1	0	0.6	0
	H2S(ppb)	29	99	1.0	0	0.4	0
	H2S(ppb)	501	99	3.6	0	0.7	0
	H2S(ppb)	505	99	2.2	0	0.6	0
	H2S(ppb)	506	94	21.7	1	2.2	0
	H2S(ppb)	507	99	5.2	0	1.6	0
	H2S(ppb)	508	91	4.7	0	0.7	0
	TRS(ppb)	1	100	8.2	0	1.9	0
	TRS(ppb)	6	100	3.4	0	1.1	0
	TRS(ppb)	7	92	9.6	0	0.9	0
	TRS(ppb)	9	100	4.9	0	1.5	0
	TRS(ppb)	13	99	8.3	0	2.5	0
	TRS(ppb)	14	100	3.5	0	0.5	0
	TRS(ppb)	15	85	3.2	0	0.8	0
	TRS(ppb)	18	98	0.9	0	0.5	0
	TRS(ppb)	21	100	1.1	0	0.5	0
	TRS(ppb)	22	97	1.5	0	0.4	0
	TRS(ppb)	23	98	15.3	3	2.2	0
	THC(ppm)	1	98	5.9	-	3.0	-
	THC(ppm)	2	100	17.0	-	4.5	-
	THC(ppm)	4	99	6.1	-	2.9	-
	THC(ppm)	5	99	7.0	-	3.4	-
	THC(ppm)	6	98	3.2	-	2.4	-
	THC(ppm)	7	99	4.8	-	2.7	-
	THC(ppm)	9	100	6.2	-	3.4	-
	THC(ppm)	11	98	5.7	-	2.9	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

		2019 page 2 of 3 Prepared: February 7, 2020 11:00						
		REPORT DATE						
		YEAR						
		2019						
APPROVAL NUMBERS		CONTINUOUS AMBIENT MONITORING						
					ONE-HOUR AVERAGE		24-HOUR AVERAGE	
		PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
289664-00-00								
241311-00-00								
20809-02-00		THC(ppm)	13	100	5.3	-	3.3	-
149968-01-00		THC(ppm)	14	98	2.9	-	2.3	-
237382-00-00		THC(ppm)	15	97	22.0	-	5.7	-
48522-01-00		THC(ppm)	17	100	3.4	-	2.4	-
240008-00-00		THC(ppm)	18	94	2.6	-	2.3	-
48263-01-00		THC(ppm)	19	99	5.5	-	2.3	-
224816-00-00		THC(ppm)	20	100	3.3	-	2.6	-
151469-01-00		THC(ppm)	21	100	4.1	-	2.4	-
189942-00-00		THC(ppm)	22	100	2.5	-	2.2	-
206355-00-00		THC(ppm)	23	100	9.8	-	4.4	-
46586-00-00		THC(ppm)	24	100	3.1	-	2.5	-
73203-02-00		THC(ppm)	29	94	3.0	-	2.4	-
216466-01-00		THC(ppm)	507	100	5.8	-	3.4	-
137467-01-00		THC(ppm)	508	99	44.0	-	4.2	-
236394-00-00		O3(ppb)	1	100	61.4	0	38.8	-
254465-00-00		O3(ppb)	4	99	69.4	0	51.5	-
094-02-00		O3(ppb)	6	100	71.8	0	50.2	-
80105-01-00		O3(ppb)	7	100	75.9	0	46.3	-
305529-00-00		O3(ppb)	8	99	62.7	0	49.3	-
318401-00-00		O3(ppb)	13	99	71.7	0	45.8	-
026-02-00		O3(ppb)	14	100	65.8	0	52.5	-
364232-00-00		O3(ppb)	17	100	72.4	0	52.1	-
228044-00-00		O3(ppb)	18	99	68.4	0	58.9	-
231302-00-00		O3(ppb)	21	100	67.8	0	53.1	-
		O3(ppb)	22	100	73.0	0	59.3	-
		NO2(ppb)	1	100	54.1	0	29.8	-
		NO2(ppb)	4	99	46.3	0	31.0	-
		NO2(ppb)	6	100	44.8	0	20.3	-
		NO2(ppb)	7	100	51.1	0	28.9	-
		NO2(ppb)	8	100	22.4	0	11.4	-
		NO2(ppb)	9	100	73.0	0	41.9	-
		NO2(ppb)	13	99	53.4	0	25.9	-
		NO2(ppb)	14	99	34.5	0	13.2	-
		NO2(ppb)	15	100	104.0	0	42.3	-
		NO2(ppb)	17	100	34.4	0	13.1	-
		NO2(ppb)	18	100	13.2	0	6.6	-
		NO2(ppb)	19	99	64.8	0	23.6	-
		NO2(ppb)	20	100	37.9	0	21.9	-
		NO2(ppb)	21	100	20.0	0	12.4	-
		NO2(ppb)	22	100	17.7	0	7.0	-
		NO2(ppb)	23	100	90.8	0	39.2	-
		NO2(ppb)	24	100	28.5	0	13.7	-
		NO2(ppb)	26	100	32.7	0	13.0	-
		NO2(ppb)	27	100	28.7	0	10.6	-
		NO2(ppb)	29	98	22.3	0	7.0	-
		NO2(ppb)	501	100	38.6	0	5.7	-
		NO2(ppb)	505	100	22.9	0	0.0	-
		NO2(ppb)	506	98	21.9	0	0.0	-
		NO2(ppb)	507	100	101.3	0	25.4	-
		NO2(ppb)	508	88	58.1	0	7.2	-
		CO(ppm)	1	94	0.6	0	0.3	-
		CO(ppm)	7	100	2.1	0	0.7	-
		CO(ppm)	8	99	1.8	0	0.3	-
		CO(ppm)	18	100	0.2	0	0.2	-
		CO2(ppm)	1	100	566.7	-	452.0	-
		CO2(ppm)	8	96	457.8	-	443.9	-
		CO2(ppm)	18	100	439.6	-	428.3	-
		NH3(ppb)	1	95	12.2	0	1.6	-
		NH3(ppb)	6	90	54.3	0	12.5	-
		PM2.5(ug/m3)	1	100	211.9	42	78.1	10
		PM2.5(ug/m3)	4	97	353.2	30	96.1	6
		PM2.5(ug/m3)	6	99	382.7	36	101.9	5
		PM2.5(ug/m3)	7	98	309.5	25	96.4	3
		PM2.5(ug/m3)	8	99	305.5	28	69.4	6
		PM2.5(ug/m3)	9	100	254.6	47	92.6	10
		PM2.5(ug/m3)	13	100	198.1	32	73.7	8

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY

APPROVAL NUMBERS	REPORT DATE						
	YEAR						
	2019						
	CONTINUOUS AMBIENT MONITORING						
289664-00-00				ONE-HOUR AVERAGE		24-HOUR AVERAGE	
241311-00-00	PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
20809-02-00	PM2.5(ug/m3)	14	98.01	261.1	27	67.5	4
149968-01-00	PM2.5(ug/m3)	15	100	223.1	17	67.3	10
237382-00-00	PM2.5(ug/m3)	17	98	210.8	18	41.0	4
48522-01-00	PM2.5(ug/m3)	18	99	145.1	11	54.7	3
240008-00-00	PM2.5(ug/m3)	21	98	337.7	24	55.6	4
48263-01-00	PM2.5(ug/m3)	22	100	163.1	21	66.9	6
224816-00-00	PM2.5(ug/m3)	23	97	270.8	19	42.3	6
151469-01-00	PM2.5(ug/m3)	24	100	41.5	0	23.1	0
189942-00-00	PM2.5(ug/m3)	29	99	266.4	43	90.9	10
206355-00-00	WIND	1	100	-	-	-	-
46586-00-00	WIND	2	99	-	-	-	-
73203-02-00	WIND	4	99	-	-	-	-
216466-01-00	WIND	5	99	-	-	-	-
137467-01-00	WIND	6	99	-	-	-	-
236394-00-00	WIND	7	100	-	-	-	-
254465-00-00	WIND	8	100	-	-	-	-
094-02-00	WIND	9	99	-	-	-	-
80105-01-00	WIND	11	99	-	-	-	-
305529-00-00	WIND	13	99	-	-	-	-
318401-00-00	WIND	14	95	-	-	-	-
026-02-00	WIND	15	99	-	-	-	-
364232-00-00	WIND	17	98	-	-	-	-
228044-00-00	WIND	18	99	-	-	-	-
231302-00-00	WIND	19	98	-	-	-	-
	WIND	20	98	-	-	-	-
	WIND	21	98	-	-	-	-
	WIND	22	99	-	-	-	-
	WIND	23	98	-	-	-	-
	WIND	24	100	-	-	-	-
	WIND	25	98	-	-	-	-
	WIND	26	99	-	-	-	-
	WIND	27	100	-	-	-	-
	WIND	29	92	-	-	-	-
	WIND	501	98	-	-	-	-
	WIND	505	99	-	-	-	-
	WIND	506	100	-	-	-	-
	WIND	507	90	-	-	-	-
	WIND	508	99	-	-	-	-
							
SIGNATURE OF ASSOCIATION REPRESENTATIVE					FOR ALBERTA ENVIRONMENT USE ONLY		



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SULPHUR DIOXIDE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	706	1.1	20.8	0	5.1	0	100	0	0	0	0
February	100	639	1.9	91.5	0	12.9	0	99	1	0	0	0
March	100	707	1.2	38.4	0	5.9	0	99	1	0	0	0
April	100	686	1.1	25.2	0	8.8	0	99	1	0	0	0
May	100	708	1.2	30.6	0	6.4	0	99	1	0	0	0
June	100	681	0.5	15.0	0	3.7	0	100	0	0	0	0
July	100	708	1.0	23.1	0	3.5	0	100	0	0	0	0
August	100	708	0.7	19.4	0	4.2	0	100	0	0	0	0
September	100	684	0.6	24.0	0	2.5	0	100	0	0	0	0
October	100	708	0.6	9.4	0	2.6	0	100	0	0	0	0
November	100	683	0.5	14.8	0	1.9	0	100	0	0	0	0
December	100	709	0.7	6.2	0	1.8	0	100	0	0	0	0
Annual	100	8327	0.9	91.5	0	12.9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	99	705	2.0	25.8	0	7.8	0	99	1	0	0	0
February	100	640	1.4	9.4	0	4.0	0	100	0	0	0	0
March	100	710	1.2	33.3	0	5.5	0	100	0	0	0	0
April	100	686	1.7	37.1	0	7.1	0	99	1	0	0	0
May	100	709	2.0	66.7	0	13.5	0	99	1	0	0	0
June	100	685	0.9	26.1	0	4.4	0	100	0	0	0	0
July	100	708	1.1	47.8	0	4.1	0	100	0	0	0	0
August	100	709	1.1	40.8	0	7.1	0	99	1	0	0	0
September	99	680	1.2	35.7	0	8.4	0	99	1	0	0	0
October	100	709	0.6	10.1	0	1.7	0	100	0	0	0	0
November	100	687	1.0	43.8	0	10.7	0	99	1	0	0	0
December	100	708	1.6	48.1	0	4.5	0	100	0	0	0	0
Annual	100	8336	1.3	66.7	0	13.5	0	99	1	0	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	707	0.7	26.3	0	2.7	0	100	0	0	0	0
February	100	639	0.7	7.2	0	1.7	0	100	0	0	0	0
March	100	706	0.9	42.2	0	5.6	0	100	0	0	0	0
April	99	680	0.8	34.2	0	3.6	0	100	0	0	0	0
May	99	704	1.1	30.1	0	5.6	0	100	0	0	0	0
June	100	684	0.6	16.3	0	2.6	0	100	0	0	0	0
July	100	703	1.1	60.9	0	6.9	0	99	1	0	0	0
August	100	705	1.0	44.4	0	5.4	0	99	1	0	0	0
September	100	686	0.8	26.1	0	9.0	0	99	1	0	0	0
October	100	707	0.4	7.8	0	2.0	0	100	0	0	0	0
November	100	682	0.3	4.7	0	1.5	0	100	0	0	0	0
December	100	708	0.7	15.9	0	3.5	0	100	0	0	0	0
Annual	100	8311	0.8	60.9	0	9.0	0	100	0	0	0	0



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Maximum Exceeding		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	710	2.1	63.8	0	11.5	0	99	1	0	0	0
February	96	615	4.3	81.9	0	20.9	0	95	5	0	0	0
March	100	710	1.9	63.8	0	14.8	0	98	1	0	0	0
April	100	685	1.2	35.7	0	8.5	0	100	0	0	0	0
May	100	709	2.2	55.5	0	7.9	0	98	2	0	0	0
June	100	683	2.2	43.9	0	10.3	0	98	2	0	0	0
July	100	709	1.7	40.3	0	8.3	0	99	1	0	0	0
August	100	709	0.9	19.4	0	4.2	0	100	0	0	0	0
September	100	687	0.9	57.6	0	6.8	0	99	1	0	0	0
October	100	708	0.3	5.8	0	1.2	0	100	0	0	0	0
November	100	686	0.8	27.8	0	9.5	0	100	0	0	0	0
December	100	709	0.8	23.7	0	4.7	0	100	0	0	0	0
Annual	100	8320	1.6	81.9	0	20.9	0	99	1	0	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	707	1.2	15.0	0	4.8	0	100	0	0	0	0
February	100	638	1.8	41.0	0	8.9	0	100	0	0	0	0
March	100	709	1.0	24.6	0	3.4	0	100	0	0	0	0
April	100	681	0.6	8.9	0	1.7	0	100	0	0	0	0
May	100	708	1.1	15.7	0	3.5	0	100	0	0	0	0
June	99	678	0.8	12.3	0	2.5	0	100	0	0	0	0
July	100	710	0.7	9.4	0	2.1	0	100	0	0	0	0
August	100	709	0.9	12.1	0	2.2	0	100	0	0	0	0
September	100	686	0.3	10.0	0	1.8	0	100	0	0	0	0
October	100	708	0.3	8.3	0	1.2	0	100	0	0	0	0
November	100	681	0.5	10.3	0	2.2	0	100	0	0	0	0
December	100	708	1.4	31.9	0	6.9	0	100	0	0	0	0
Annual	100	8323	0.9	41.0	0	8.9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	709	0.6	11.4	0	4.4	0	100	0	0	0	0
February	100	638	0.9	39.8	0	7.9	0	100	0	0	0	0
March	100	708	0.8	23.1	0	4.9	0	100	0	0	0	0
April	100	684	0.5	7.6	0	1.7	0	100	0	0	0	0
May	100	706	0.8	14.3	0	2.9	0	100	0	0	0	0
June	100	683	0.5	15.6	0	2.0	0	100	0	0	0	0
July	100	707	0.5	11.4	0	2.0	0	100	0	0	0	0
August	100	709	0.8	18.0	0	2.6	0	100	0	0	0	0
September	100	685	0.2	9.2	0	1.5	0	100	0	0	0	0
October	99	701	0.2	2.6	0	0.8	0	100	0	0	0	0
November	100	681	0.5	22.6	0	5.0	0	100	0	0	0	0
December	100	708	0.5	12.3	0	1.8	0	100	0	0	0	0
Annual	100	8319	0.6	39.8	0	7.9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	707	0.3	5.4	0	1.4	0	100	0	0	0	0
February	99	633	0.5	7.5	0	1.7	0	100	0	0	0	0
March	99	704	0.3	6.9	0	1.8	0	100	0	0	0	0
April	100	682	0.1	1.9	0	0.5	0	100	0	0	0	0
May	100	706	0.1	3.2	0	0.5	0	100	0	0	0	0
June	100	685	0.1	2.0	0	0.4	0	100	0	0	0	0
July	100	706	0.1	4.7	0	0.9	0	100	0	0	0	0
August	98	696	0.1	4.4	0	0.9	0	100	0	0	0	0
September	100	685	0.1	2.5	0	0.7	0	100	0	0	0	0
October	99	703	0.1	2.0	0	1.0	0	100	0	0	0	0
November	100	685	0.4	11.2	0	2.2	0	100	0	0	0	0
December	100	708	0.5	6.4	0	2.8	0	100	0	0	0	0
Annual	100	8300	0.2	11.2	0	2.8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	99	706	1.0	45.8	0	6.7	0	99	1	0	0	0
February	100	639	1.0	27.5	0	5.1	0	100	0	0	0	0
March	100	708	0.7	16.8	0	4.0	0	100	0	0	0	0
April	100	685	0.4	9.1	0	1.5	0	100	0	0	0	0
May	100	706	0.8	17.4	0	3.1	0	100	0	0	0	0
June	99	677	0.4	16.9	0	3.8	0	100	0	0	0	0
July	99	702	0.8	20.3	0	3.3	0	100	0	0	0	0
August	100	708	0.5	18.8	0	2.4	0	100	0	0	0	0
September	100	685	0.4	12.7	0	1.6	0	100	0	0	0	0
October	100	707	0.4	9.2	0	2.2	0	100	0	0	0	0
November	100	685	0.4	8.1	0	1.5	0	100	0	0	0	0
December	100	708	0.8	10.6	0	2.6	0	100	0	0	0	0
Annual	100	8316	0.6	45.8	0	6.7	0	100	0	0	0	0



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	709	1.6	41.8	0	9.3	0	98	2	0	0	0
February	100	640	1.8	51.9	0	6.3	0	99	1	0	0	0
March	100	706	3.2	118.9	0	15.8	0	97	3	1	0	0
April	100	686	2.3	89.4	0	9.3	0	98	1	0	0	0
May	99	700	2.1	101.3	0	12.8	0	98	2	0	0	0
June	96	652	1.6	123.6	0	10.8	0	99	1	0	0	0
July	100	710	2.2	59.5	0	7.4	0	98	2	0	0	0
August	100	709	1.7	52.2	0	10.3	0	98	2	0	0	0
September	100	685	1.9	37.9	0	7.7	0	99	1	0	0	0
October	100	709	2.4	86.0	0	10.6	0	98	2	0	0	0
November	100	686	2.0	37.3	0	7.2	0	97	3	0	0	0
December	100	708	2.0	53.8	0	7.7	0	99	1	0	0	0
Annual	99	8300	2.1	123.6	0	15.8	0	98	2	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	708	1.1	20.5	0	3.9	0	100	0	0	0	0
February	100	639	1.3	42.8	0	5.5	0	100	0	0	0	0
March	100	709	1.0	27.1	0	4.7	0	99	1	0	0	0
April	100	683	1.0	24.4	0	6.9	0	100	0	0	0	0
May	98	691	1.2	28.2	0	6.0	0	99	1	0	0	0
June	100	680	0.5	25.4	0	4.2	0	100	0	0	0	0
July	100	708	0.9	26.1	0	4.3	0	100	0	0	0	0
August	100	706	0.6	15.3	0	2.6	0	100	0	0	0	0
September	100	683	0.7	20.1	0	3.5	0	100	0	0	0	0
October	100	708	0.6	9.0	0	2.0	0	100	0	0	0	0
November	100	683	0.5	13.0	0	1.7	0	100	0	0	0	0
December	100	708	0.7	6.9	0	1.7	0	100	0	0	0	0
Annual	100	8306	0.8	42.8	0	6.9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	99	702	0.7	7.2	0	2.6	0	100	0	0	0	0
February	100	636	0.9	9.9	0	3.6	0	100	0	0	0	0
March	99	699	0.6	12.0	0	2.5	0	100	0	0	0	0
April	100	681	0.5	4.1	0	1.1	0	100	0	0	0	0
May	100	707	0.6	5.2	0	1.9	0	100	0	0	0	0
June	100	684	0.3	4.4	0	1.0	0	100	0	0	0	0
July	100	708	0.4	9.1	0	1.8	0	100	0	0	0	0
August	99	697	0.5	6.4	0	2.0	0	100	0	0	0	0
September	92	623	0.4	5.2	0	0.9	0	100	0	0	0	0
October	98	687	0.3	2.4	0	1.3	0	100	0	0	0	0
November	97	662	0.6	7.5	0	2.5	0	100	0	0	0	0
December	100	708	0.8	12.4	0	3.0	0	100	0	0	0	0
Annual	98	8194	0.6	12.4	0	3.6	0	100	0	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	708	1.3	22.7	0	5.6	0	100	0	0	0	0
February	100	639	0.9	14.0	0	3.3	0	100	0	0	0	0
March	100	708	1.2	30.0	0	6.3	0	99	1	0	0	0
April	100	685	0.8	17.6	0	5.6	0	100	0	0	0	0
May	100	708	1.0	19.3	0	3.3	0	100	0	0	0	0
June	100	680	0.6	22.6	0	4.1	0	100	0	0	0	0
July	100	706	0.6	15.3	0	2.2	0	100	0	0	0	0
August	100	707	0.8	9.0	0	2.8	0	100	0	0	0	0
September	100	683	0.5	10.1	0	2.1	0	100	0	0	0	0
October	100	708	0.7	29.6	0	3.2	0	100	0	0	0	0
November	100	684	0.5	7.6	0	2.4	0	100	0	0	0	0
December	96	676	0.7	11.4	0	3.6	0	100	0	0	0	0
Annual	100	8292	0.8	30.0	0	6.3	0	100	0	0	0	0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range				
					1-Hour Objective		24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	708	0.9	19.0	0	3.6	0	100	0	0	0	0
February	100	639	1.5	25.0	0	6.0	0	100	0	0	0	0
March	100	708	0.9	18.0	0	3.9	0	100	0	0	0	0
April	100	685	0.6	12.6	0	2.3	0	100	0	0	0	0
May	100	708	0.6	11.4	0	2.4	0	100	0	0	0	0
June	100	682	0.4	14.7	0	2.1	0	100	0	0	0	0
July	100	708	0.8	16.5	0	2.9	0	100	0	0	0	0
August	100	708	0.6	20.0	0	3.0	0	100	0	0	0	0
September	100	685	0.5	17.1	0	3.1	0	100	0	0	0	0
October	100	707	0.5	13.5	0	2.2	0	100	0	0	0	0
November	100	685	1.0	21.5	0	5.7	0	100	0	0	0	0
December	100	707	1.2	18.5	0	4.0	0	100	0	0	0	0
Annual	100	8330	0.8	25.0	0	6.0	0	100	0	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range				
					1-Hour Objective		24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	706	0.6	8.7	0	1.3	0	100	0	0	0	0
February	100	638	1.0	15.1	0	4.5	0	100	0	0	0	0
March	100	708	0.6	7.5	0	1.9	0	100	0	0	0	0
April	100	685	0.4	5.5	0	0.9	0	100	0	0	0	0
May	100	708	0.4	3.8	0	0.9	0	100	0	0	0	0
June	100	685	0.2	1.7	0	0.5	0	100	0	0	0	0
July	100	706	0.2	1.3	0	0.3	0	100	0	0	0	0
August	99	699	0.2	6.3	0	0.5	0	100	0	0	0	0
September	100	682	0.3	6.4	0	0.9	0	100	0	0	0	0
October	99	697	0.3	2.2	0	0.7	0	100	0	0	0	0
November	100	685	0.4	3.0	0	1.1	0	100	0	0	0	0
December	100	707	0.5	7.5	0	1.9	0	100	0	0	0	0
Annual	100	8306	0.4	15.1	0	4.5	0	100	0	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	707	1.0	14.9	0	3.3	0	100	0	0	0	0
February	100	639	1.5	33.2	0	5.6	0	100	0	0	0	0
March	100	708	0.8	11.4	0	3.1	0	100	0	0	0	0
April	96	657	0.5	12.2	0	2.1	0	100	0	0	0	0
May	100	707	0.8	16.2	0	3.3	0	100	0	0	0	0
June	92	629	0.5	8.2	0	1.5	0	100	0	0	0	0
July	100	707	0.6	9.1	0	1.9	0	100	0	0	0	0
August	100	707	0.5	10.4	0	2.8	0	100	0	0	0	0
September	100	684	0.6	13.7	0	3.1	0	100	0	0	0	0
October	100	708	0.4	7.7	0	1.2	0	100	0	0	0	0
November	100	685	0.8	26.8	0	6.0	0	100	0	0	0	0
December	100	706	1.3	18.1	0	4.5	0	100	0	0	0	0
Annual	99	8244	0.8	33.2	0	6.0	0	100	0	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	708	1.2	13.1	0	6.4	0	100	0	0	0	0
February	99	633	1.0	25.2	0	7.9	0	100	0	0	0	0
March	100	707	0.7	15.5	0	2.4	0	100	0	0	0	0
April	100	686	0.6	12.2	0	2.7	0	100	0	0	0	0
May	99	700	1.0	15.3	0	3.1	0	100	0	0	0	0
June	100	684	0.7	9.4	0	2.4	0	100	0	0	0	0
July	100	708	0.5	7.5	0	1.8	0	100	0	0	0	0
August	99	703	0.5	8.4	0	1.4	0	100	0	0	0	0
September	100	685	0.6	15.4	0	2.9	0	100	0	0	0	0
October	100	708	0.4	7.5	0	1.5	0	100	0	0	0	0
November	100	685	0.6	15.4	0	4.0	0	100	0	0	0	0
December	100	707	1.2	46.4	0	6.0	0	100	0	0	0	0
Annual	100	8314	0.7	46.4	0	7.9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	707	0.4	6.2	0	0.8	0	100	0	0	0	0
February	100	639	0.6	12.6	0	1.8	0	100	0	0	0	0
March	100	708	0.6	7.7	0	1.7	0	100	0	0	0	0
April	100	685	0.4	3.0	0	1.0	0	100	0	0	0	0
May	100	708	0.4	4.3	0	0.9	0	100	0	0	0	0
June	100	685	0.2	3.8	0	0.6	0	100	0	0	0	0
July	100	706	0.2	2.6	0	0.5	0	100	0	0	0	0
August	100	708	0.2	2.0	0	0.7	0	100	0	0	0	0
September	100	684	0.3	4.2	0	0.9	0	100	0	0	0	0
October	100	706	0.2	2.0	0	0.8	0	100	0	0	0	0
November	100	685	0.2	3.2	0	0.8	0	100	0	0	0	0
December	100	707	0.4	14.8	0	1.7	0	100	0	0	0	0
Annual	100	8328	0.3	14.8	0	1.8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	707	0.4	5.8	0	1.3	0	100	0	0	0	0
February	100	635	0.6	4.0	0	1.6	0	100	0	0	0	0
March	100	707	0.6	4.1	0	1.3	0	100	0	0	0	0
April	100	682	0.3	2.7	0	1.0	0	100	0	0	0	0
May	99	704	0.3	3.3	0	0.9	0	100	0	0	0	0
June	100	683	0.2	1.6	0	0.6	0	100	0	0	0	0
July	99	700	0.4	2.0	0	0.8	0	100	0	0	0	0
August	99	703	0.2	1.8	0	0.5	0	100	0	0	0	0
September	100	684	0.2	2.7	0	0.5	0	100	0	0	0	0
October	100	705	0.3	2.9	0	1.8	0	100	0	0	0	0
November	100	685	0.3	4.0	0	0.9	0	100	0	0	0	0
December	100	708	0.5	4.7	0	1.3	0	100	0	0	0	0
Annual	100	8303	0.4	5.8	0	1.8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	709	1.3	43.6	0	7.4	0	99	1	0	0	0
February	100	639	1.4	42.2	0	8.8	0	99	1	0	0	0
March	100	708	0.9	21.8	0	5.9	0	100	0	0	0	0
April	100	685	0.5	10.9	0	4.6	0	100	0	0	0	0
May	100	708	0.6	16.8	0	2.0	0	100	0	0	0	0
June	100	682	0.5	17.6	0	3.6	0	100	0	0	0	0
July	100	706	0.6	11.0	0	1.9	0	100	0	0	0	0
August	100	708	0.5	8.5	0	2.5	0	100	0	0	0	0
September	100	684	0.4	7.9	0	1.7	0	100	0	0	0	0
October	100	708	0.5	6.5	0	1.8	0	100	0	0	0	0
November	100	686	0.4	15.5	0	2.3	0	100	0	0	0	0
December	100	707	0.8	38.7	0	5.8	0	100	0	0	0	0
Annual	100	8330	0.7	43.6	0	8.8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	97	681	1.4	20.4	0	8.7	0	100	0	0	0	0
February	100	644	1.7	35.4	0	5.2	0	99	1	0	0	0
March	100	261	1.9	11.6	0	4.8	0	100	0	0	0	0
Annual	99	1586	1.6	35.4	0	8.7	0	100	0	0	0	0



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	709	0.9	16.3	0	4.1	0	100	0	0	0	0
February	97	625	1.6	76.3	0	10.9	0	99	0	0	0	0
March	98	693	1.1	29.9	0	5.0	0	100	0	0	0	0
April	96	656	1.0	22.2	0	6.3	0	100	0	0	0	0
May	98	695	1.2	24.9	0	5.5	0	100	0	0	0	0
June	92	626	0.7	12.5	0	3.6	0	100	0	0	0	0
July	93	658	1.1	20.6	0	3.5	0	100	0	0	0	0
August	100	708	1.0	15.2	0	3.7	0	100	0	0	0	0
September	93	639	0.6	20.6	0	2.4	0	100	0	0	0	0
October	94	659	0.6	6.9	0	2.1	0	100	0	0	0	0
November	100	687	0.5	7.8	0	1.2	0	100	0	0	0	0
December	100	706	0.6	4.5	0	1.7	0	100	0	0	0	0
Annual	97	8061	0.9	76.3	0	10.9	0	100	0	0	0	0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	705	1.4	24.0	0	6.7	0	99	1	0	0	0
February	100	640	1.3	24.3	0	6.2	0	100	0	0	0	0
March	100	708	3.8	88.4	0	18.1	0	96	3	0	0	0
April	100	685	2.1	52.0	0	12.3	0	98	2	0	0	0
May	100	709	1.1	28.4	0	5.3	0	100	0	0	0	0
June	100	683	2.6	36.8	0	16.0	0	97	3	0	0	0
July	100	708	1.8	68.5	0	12.1	0	99	1	0	0	0
August	100	708	3.0	45.5	0	14.9	0	97	3	0	0	0
September	100	685	1.3	35.6	0	6.6	0	99	1	0	0	0
October	100	705	1.9	25.9	0	10.4	0	99	1	0	0	0
November	100	686	1.8	41.5	0	13.9	0	98	2	0	0	0
December	100	709	1.0	18.2	0	2.6	0	100	0	0	0	0
Annual	100	8331	1.9	88.4	0	18.1	0	99	1	0	0	0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	706	0.6	8.4	0	1.7	0	100	0	0	0	0
February	100	639	1.3	23.4	0	5.4	0	100	0	0	0	0
March	100	707	1.0	12.5	0	3.1	0	100	0	0	0	0
April	100	685	0.9	14.3	0	2.8	0	100	0	0	0	0
May	100	708	0.6	9.4	0	1.9	0	100	0	0	0	0
June	100	684	0.4	5.2	0	1.2	0	100	0	0	0	0
July	96	681	0.7	19.3	0	3.2	0	100	0	0	0	0
August	91	642	0.8	12.5	0	1.6	0	100	0	0	0	0
September	92	631	0.5	6.4	0	1.7	0	100	0	0	0	0
October	93	655	0.5	6.4	0	1.6	0	100	0	0	0	0
November	94	646	0.6	6.1	0	1.7	0	100	0	0	0	0
December	100	708	0.9	10.0	0	2.6	0	100	0	0	0	0
Annual	97	8092	0.7	23.4	0	5.4	0	100	0	0	0	0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
March	93	393	0.6	6.3	0	1.4	0	100	0	0	0	0
April	91	618	0.3	3.4	0	0.9	0	100	0	0	0	0
May	99	698	0.4	4.5	0	1.2	0	100	0	0	0	0
June	100	684	0.4	5.4	0	1.3	0	100	0	0	0	0
July	92	648	0.3	2.9	0	0.7	0	100	0	0	0	0
August	100	707	0.4	6.0	0	1.8	0	100	0	0	0	0
September	100	685	0.2	1.6	0	0.5	0	100	0	0	0	0
October	100	703	0.3	4.4	0	0.8	0	100	0	0	0	0
November	100	685	0.4	5.8	0	1.0	0	100	0	0	0	0
December	99	704	0.6	5.5	0	1.7	0	100	0	0	0	0
Annual	97	6525	0.4	6.3	0	1.8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
October	100	703	0.9	18.9	0	7.0	0	100	0	0	0	0
November	100	684	1.1	20.4	0	7.8	0	100	0	0	0	0
December	100	708	0.8	16.6	0	3.2	0	100	0	0	0	0
Annual	100	2095	1.0	20.4	0	7.8	0	100	0	0	0	0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
June	100	379	0.6	31.0	0	3.2	0	100	0	0	0	0
July	100	708	1.4	41.6	0	15.9	0	99	1	0	0	0
August	100	708	2.1	50.3	0	12.8	0	97	3	0	0	0
September	100	683	1.7	51.5	0	13.7	0	97	3	0	0	0
October	100	706	2.4	50.8	0	11.9	0	96	4	0	0	0
November	99	680	2.1	56.8	0	10.4	0	97	3	0	0	0
December	100	707	2.1	38.7	0	14.0	0	97	3	0	0	0
Annual	100	4571	1.9	56.8	0	15.9	0	98	2	0	0	0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	709	1.0	15.8	0	6.0	0	100	0	0	0	0
February	100	639	1.1	13.3	0	3.0	0	100	0	0	0	0
March	100	709	1.9	26.5	0	6.4	0	100	0	0	0	0
April	100	687	1.6	25.3	0	6.6	0	100	0	0	0	0
May	100	707	1.2	20.0	0	8.2	0	100	0	0	0	0
June	100	685	1.0	26.9	0	5.3	0	100	0	0	0	0
July	100	709	1.0	28.1	0	10.3	0	99	1	0	0	0
August	100	708	1.0	11.7	0	4.1	0	100	0	0	0	0
Annual	100	5553	1.2	28.1	0	10.3	0	100	0	0	0	0



Wood Buffalo Environmental Association - Kirby South (AMS507)
 Annual Summary for the Year 2019
 Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	704	0.9	20.5	0	4.6	0	100	0	0	0	0
February	100	639	1.1	18.1	0	4.1	0	100	0	0	0	0
March	99	704	1.0	16.5	0	3.2	0	100	0	0	0	0
April	100	330	0.5	4.6	0	1.4	0	100	0	0	0	0
Annual	100	2377	0.9	20.5	0	4.6	0	100	0	0	0	0



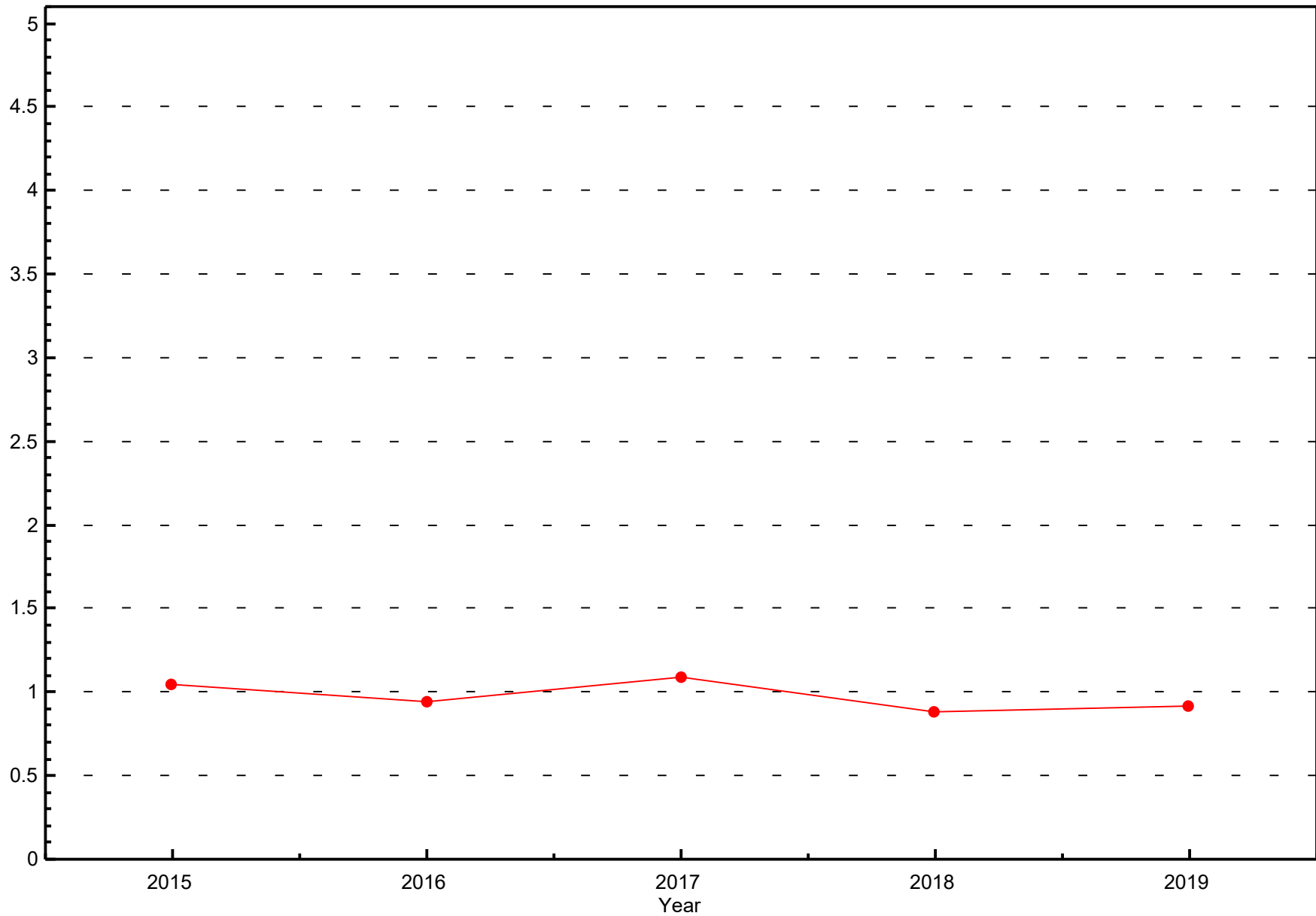
Wood Buffalo Environmental Association - Kirby North (AMS508)
 Annual Summary for the Year 2019
 Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range				
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
April	100	329	0.2	1.6	0	0.5	0	100	0	0	0	0
May	100	708	0.2	3.2	0	0.6	0	100	0	0	0	0
June	100	682	0.3	4.7	0	0.9	0	100	0	0	0	0
July	100	708	0.4	5.2	0	1.3	0	100	0	0	0	0
August	100	709	0.3	6.1	0	0.8	0	100	0	0	0	0
September	100	686	0.3	3.9	0	1.0	0	100	0	0	0	0
October	97	688	0.3	1.7	0	0.7	0	100	0	0	0	0
November	100	687	0.4	3.3	0	1.1	0	100	0	0	0	0
December	100	709	0.7	25.5	0	4.0	0	100	0	0	0	0
Annual	100	5906	0.3	25.5	0	4.0	0	100	0	0	0	0



Yearly Averages

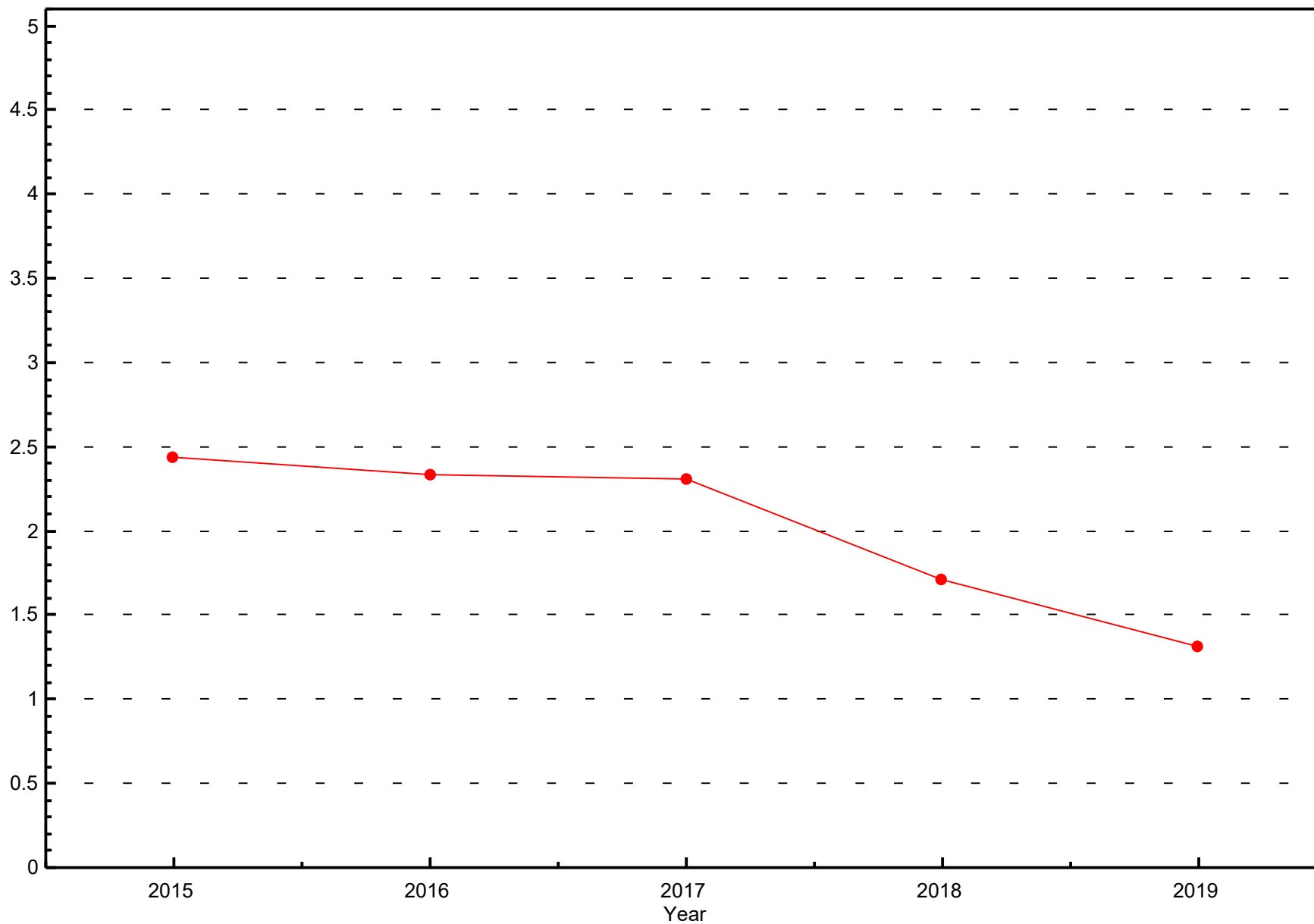
Sulphur Dioxide (SO₂) - ppb
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

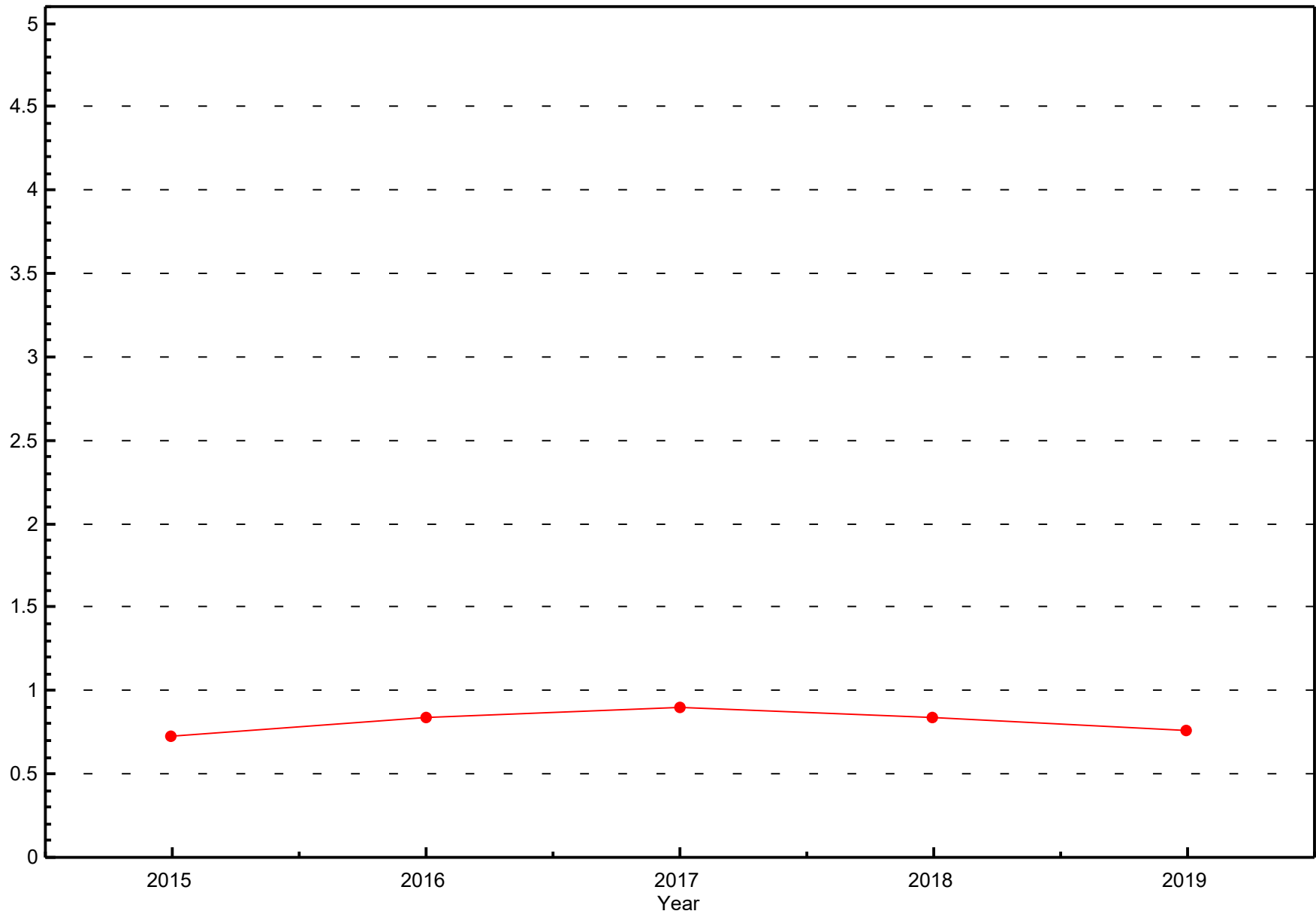
Sulphur Dioxide (SO₂) - ppb
Mildred Lake (2015 to 2019)





Yearly Averages

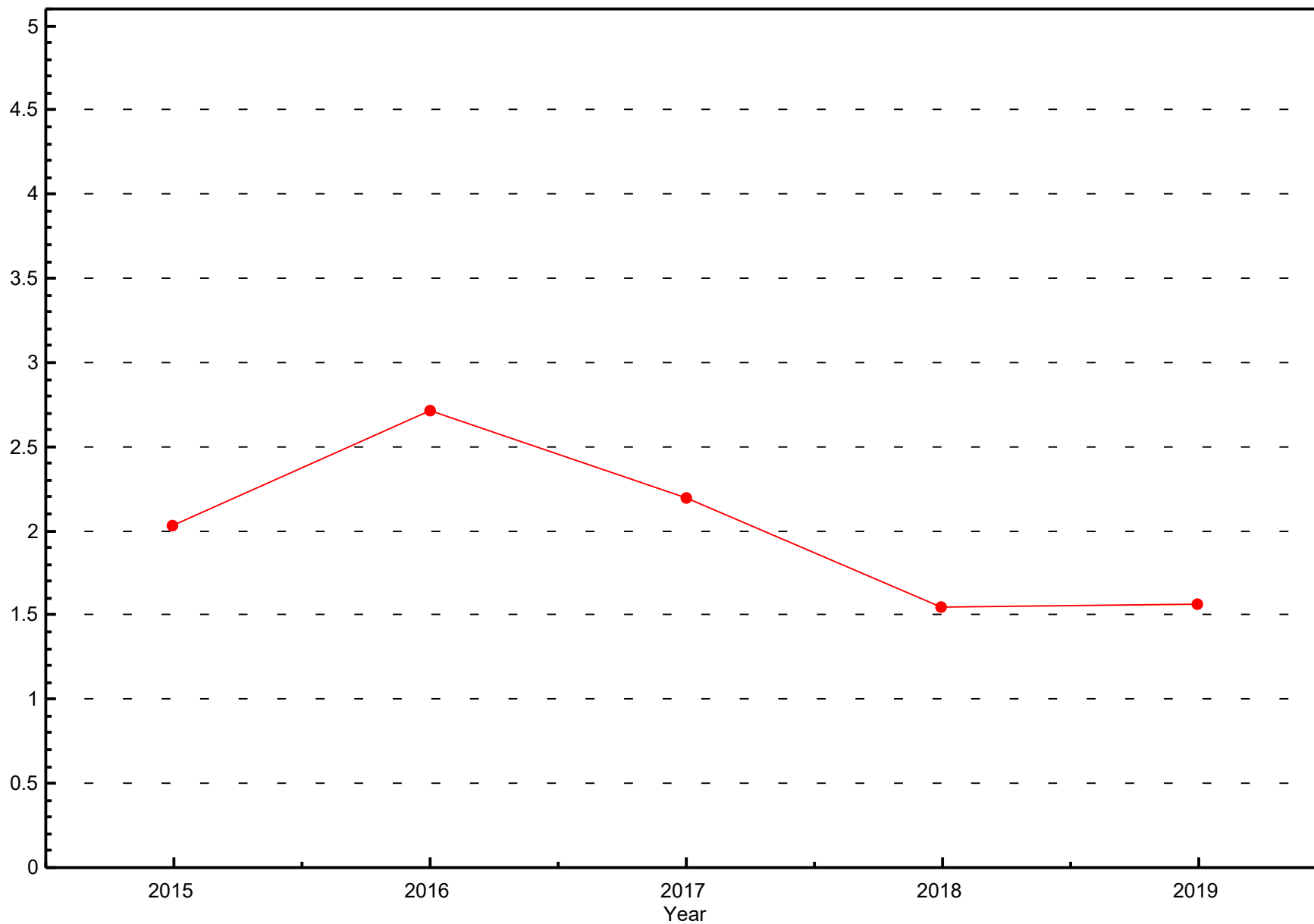
Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

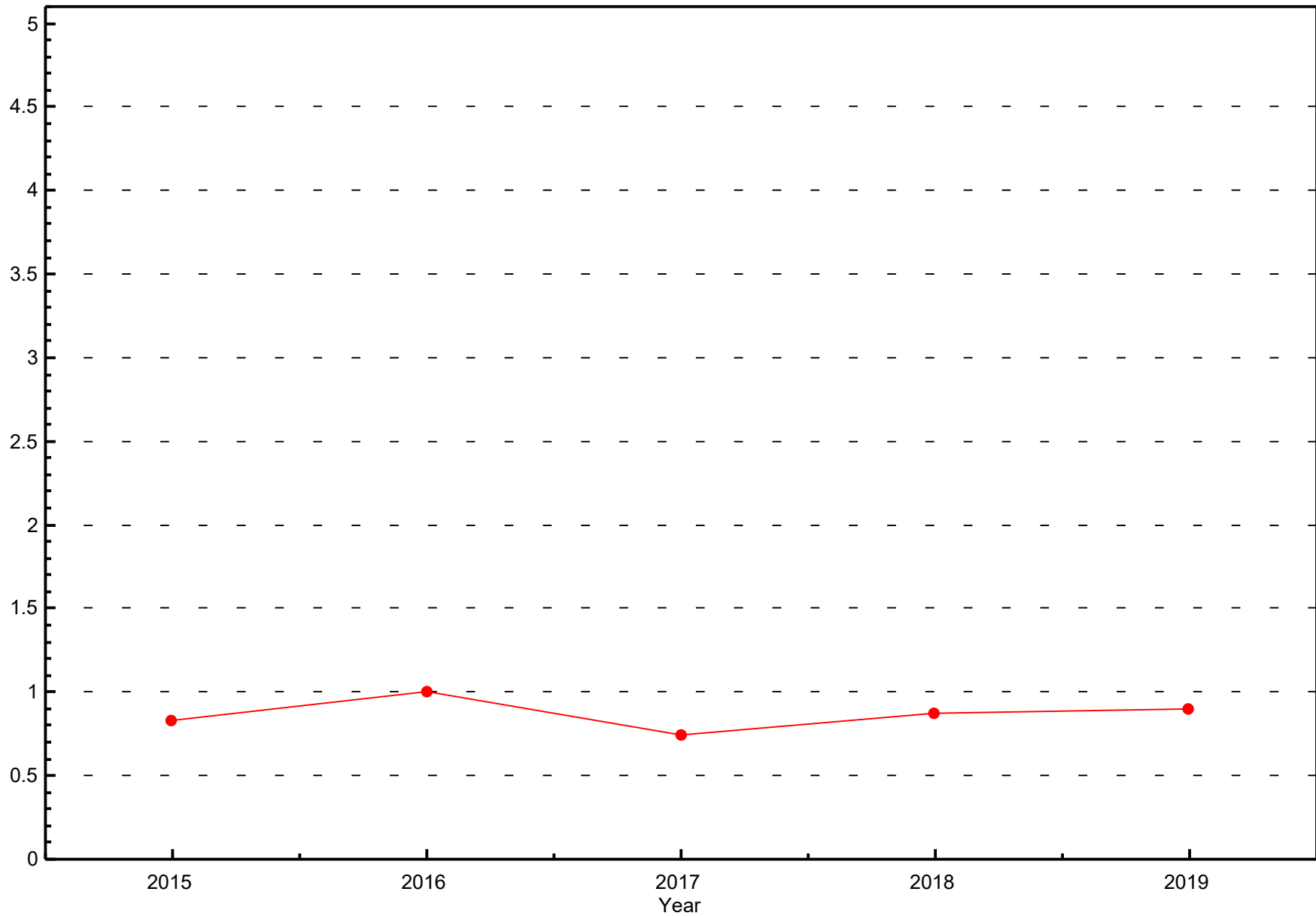
Sulphur Dioxide (SO₂) - ppb
Mannix (2015 to 2019)





Yearly Averages

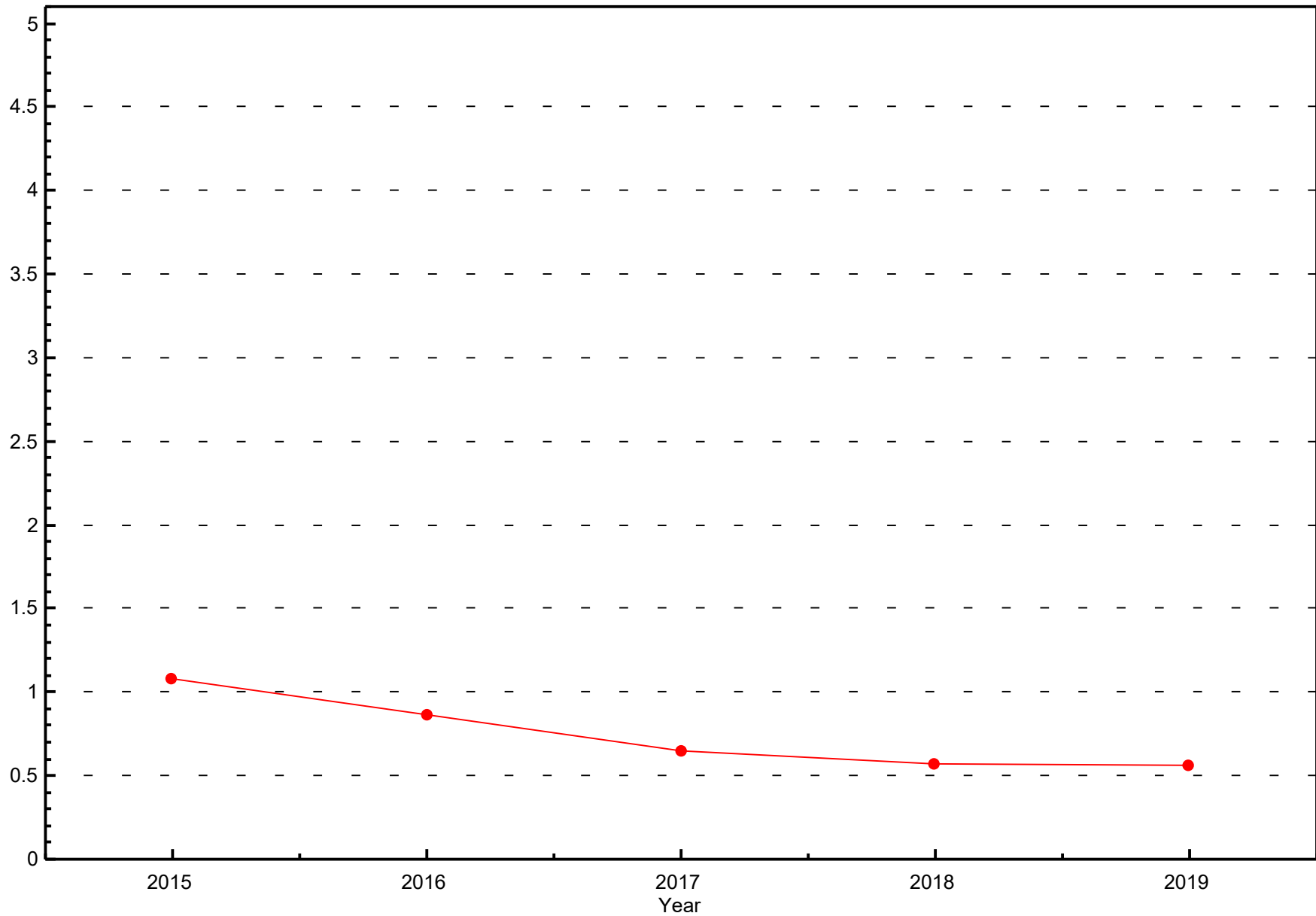
Sulphur Dioxide (SO₂) - ppb
Patricia McInnes (2015 to 2019)





Yearly Averages

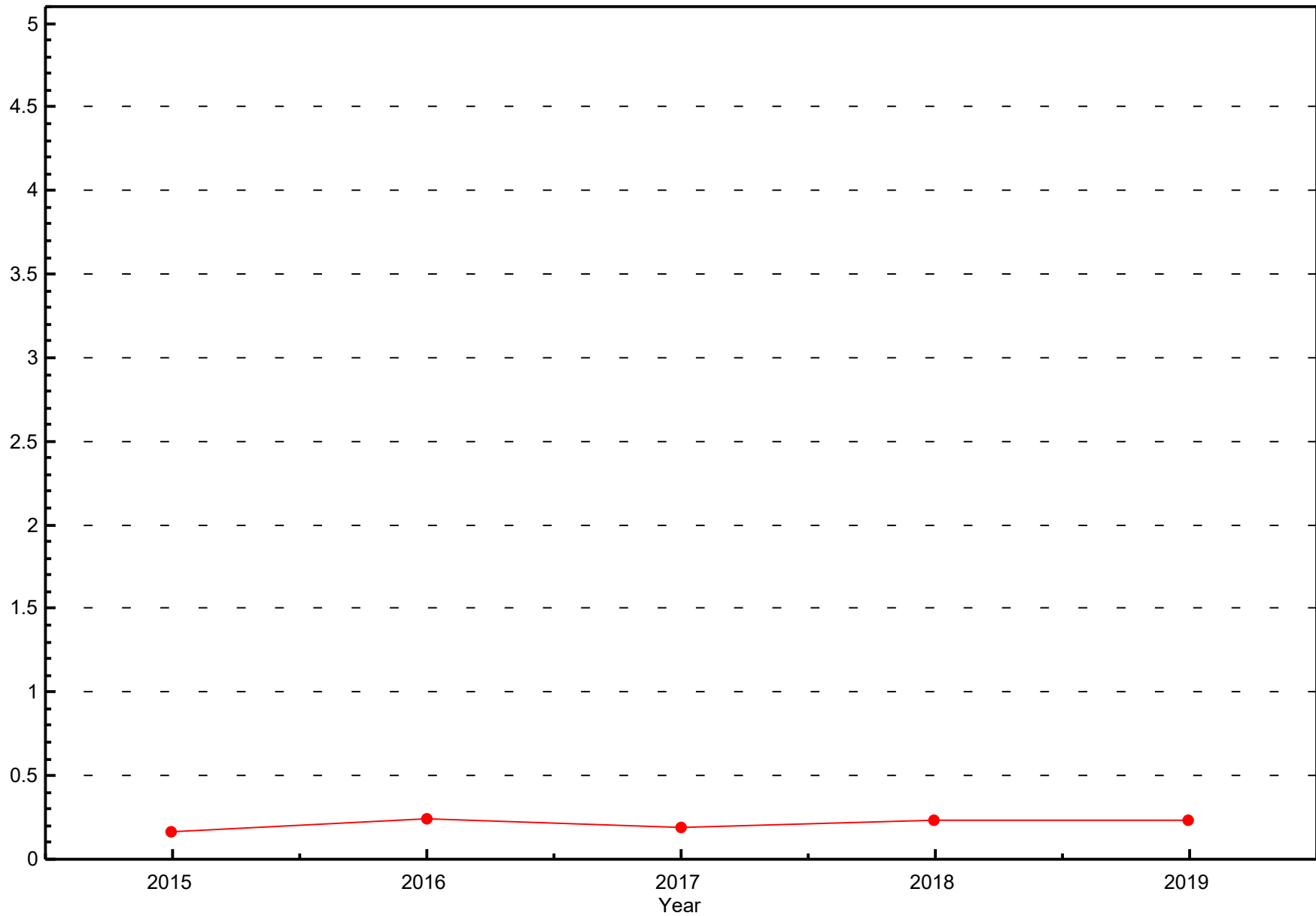
Sulphur Dioxide (SO₂) - ppb
Athabasca Valley (2015 to 2019)





Yearly Averages

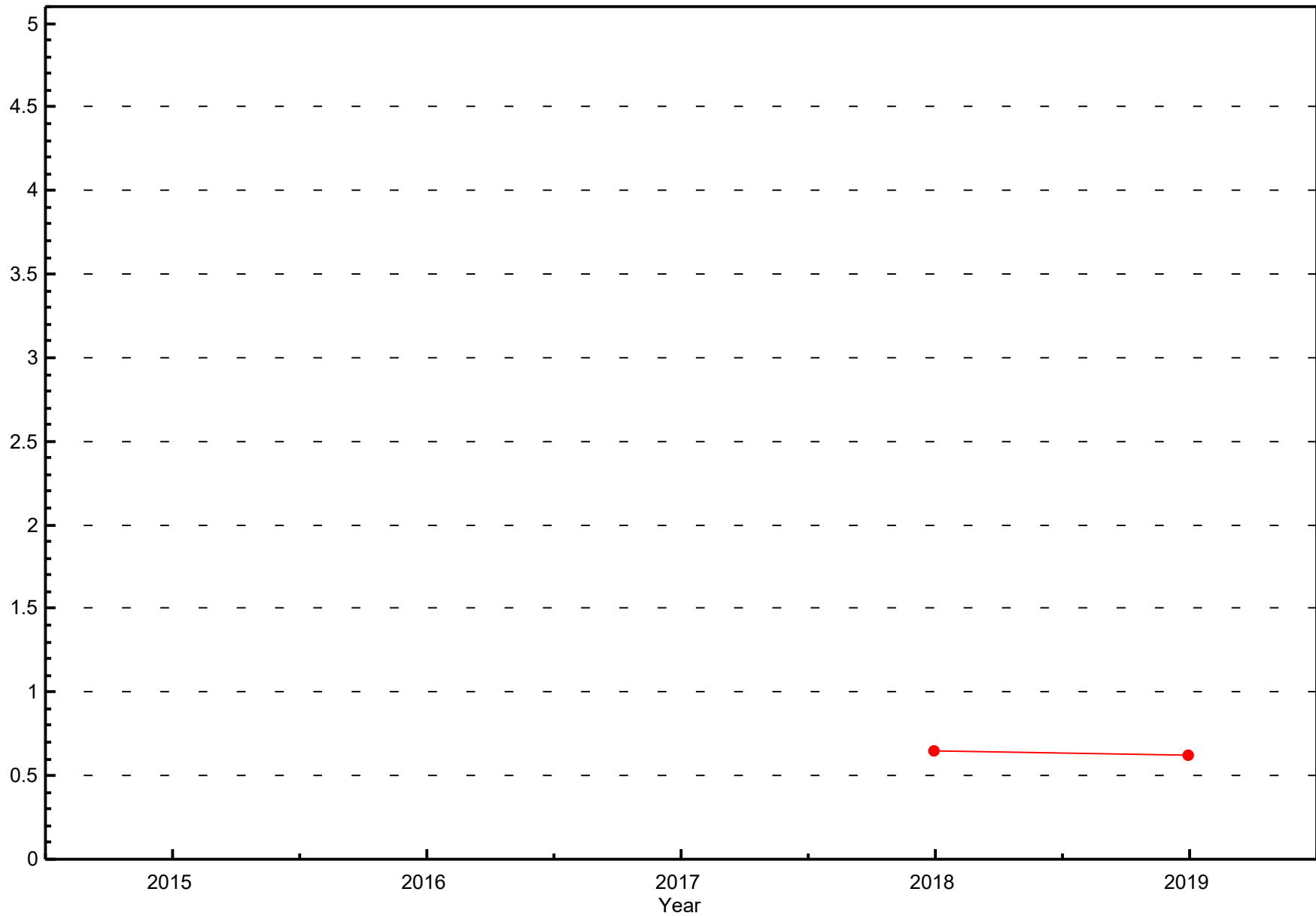
Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan (2015 to 2019)





Yearly Averages

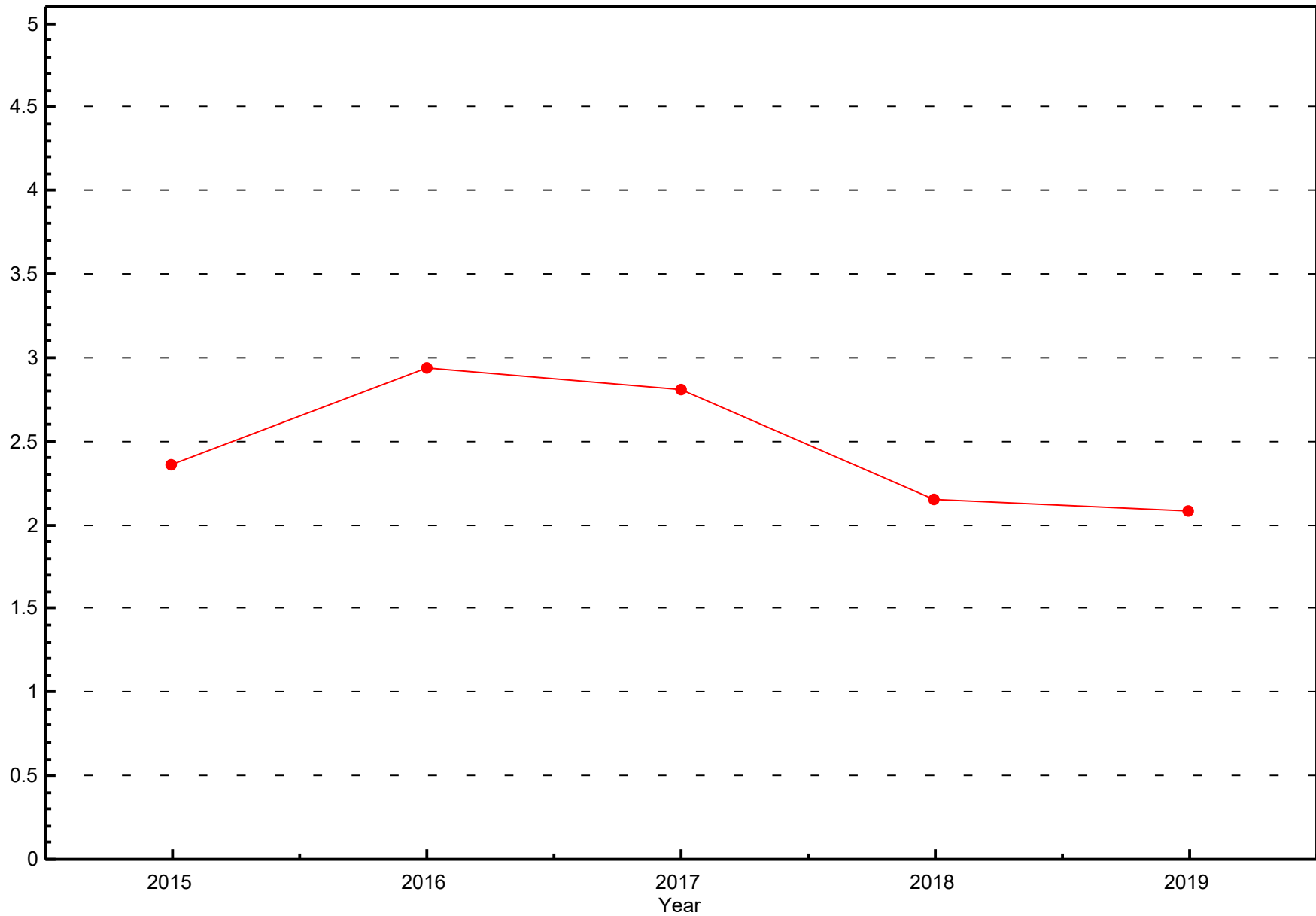
Sulphur Dioxide (SO₂) - ppb
Barge Landing (2015 to 2019)





Yearly Averages

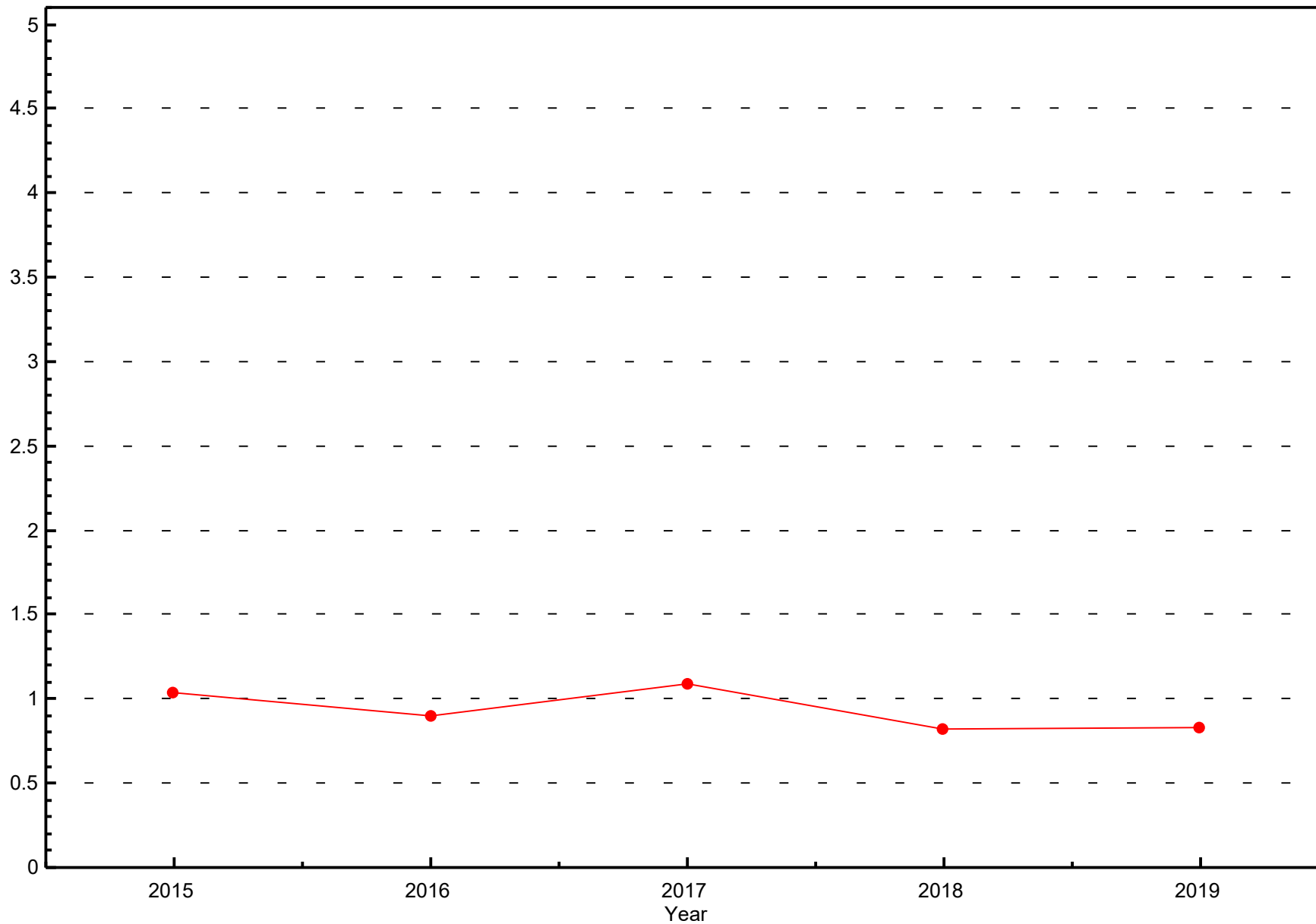
Sulphur Dioxide (SO₂) - ppb
Lower Camp (2015 to 2019)





Yearly Averages

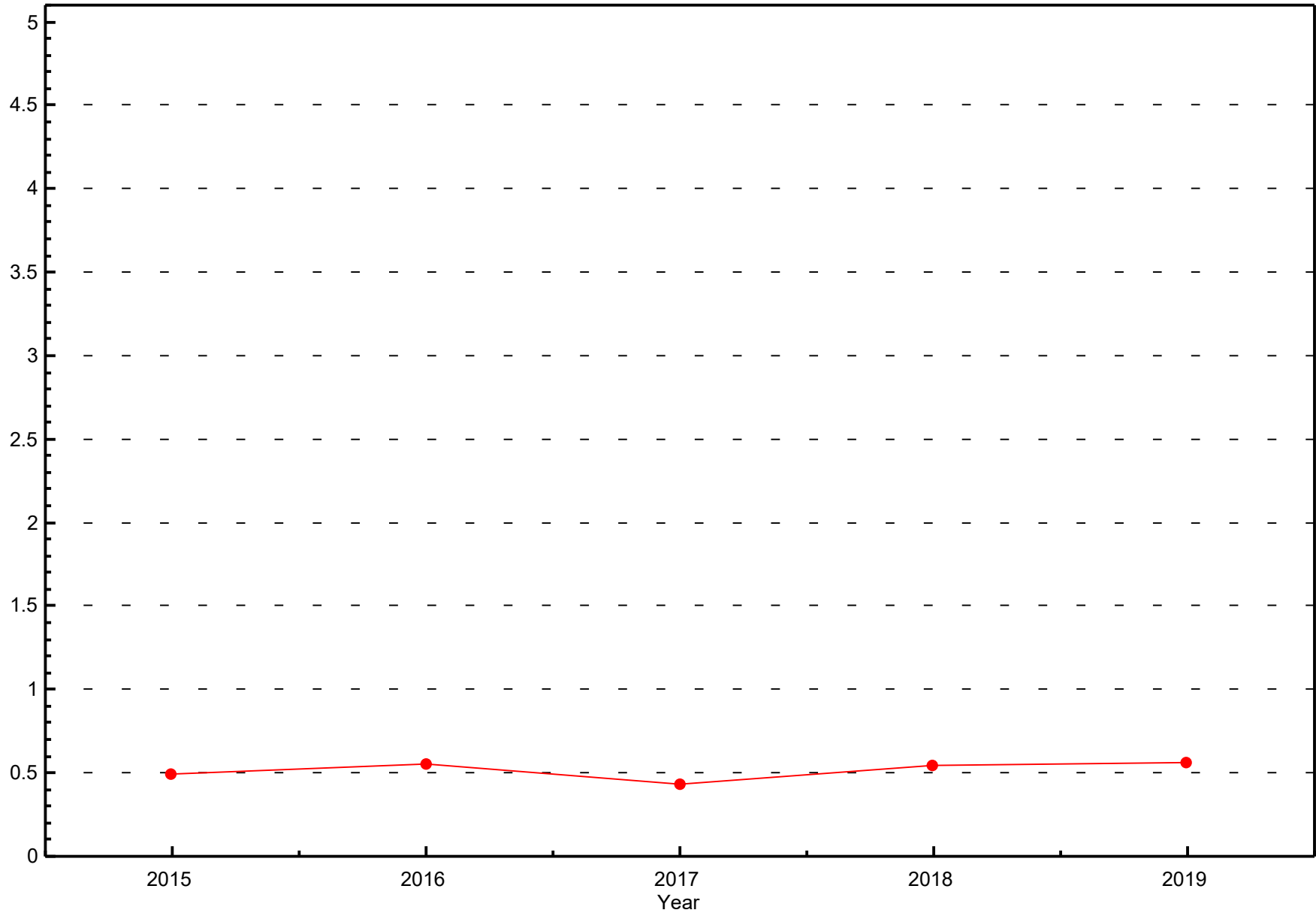
Sulphur Dioxide (SO₂) - ppb
Fort McKay South (2015 to 2019)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Anzac (2015 to 2019)

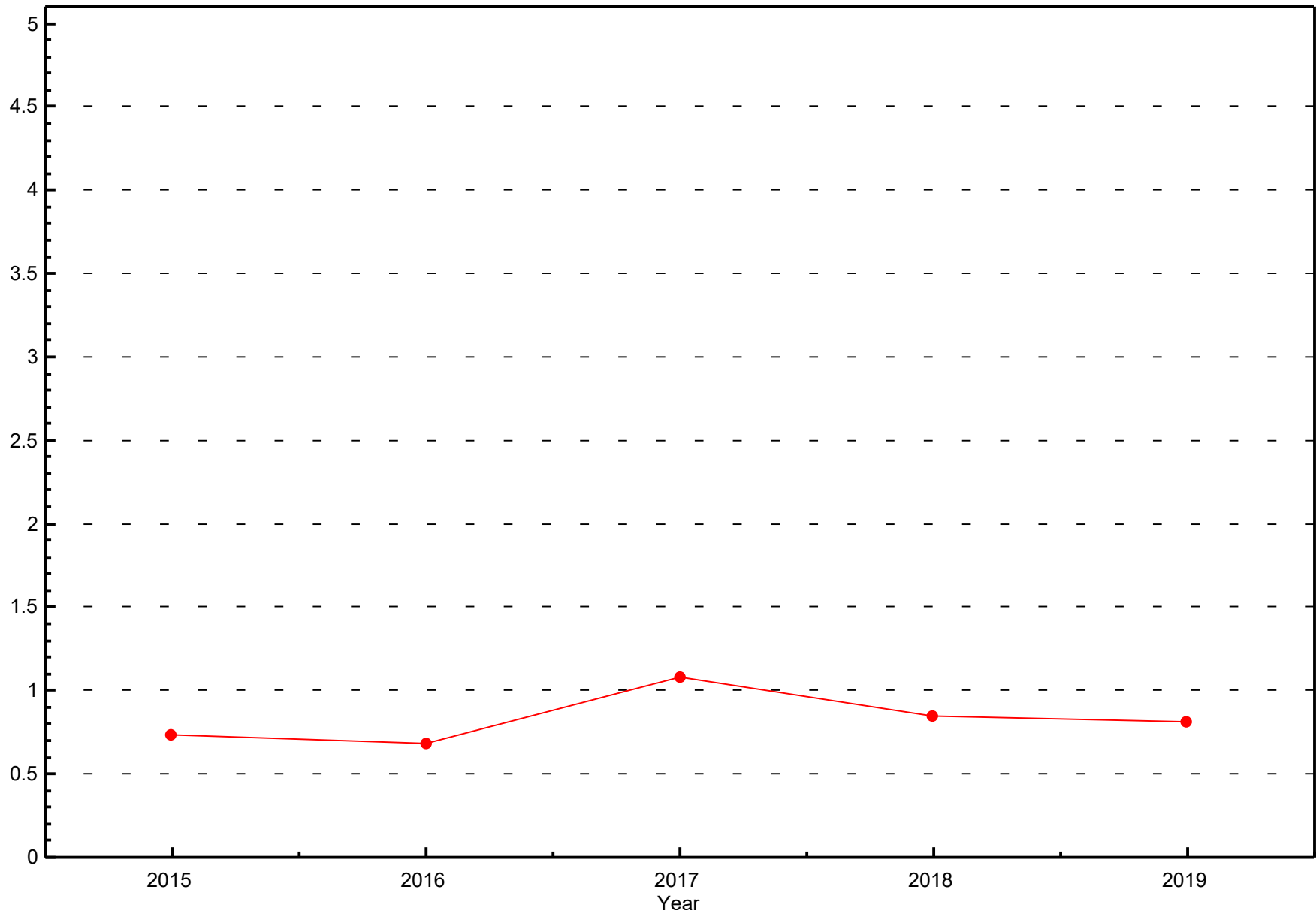




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

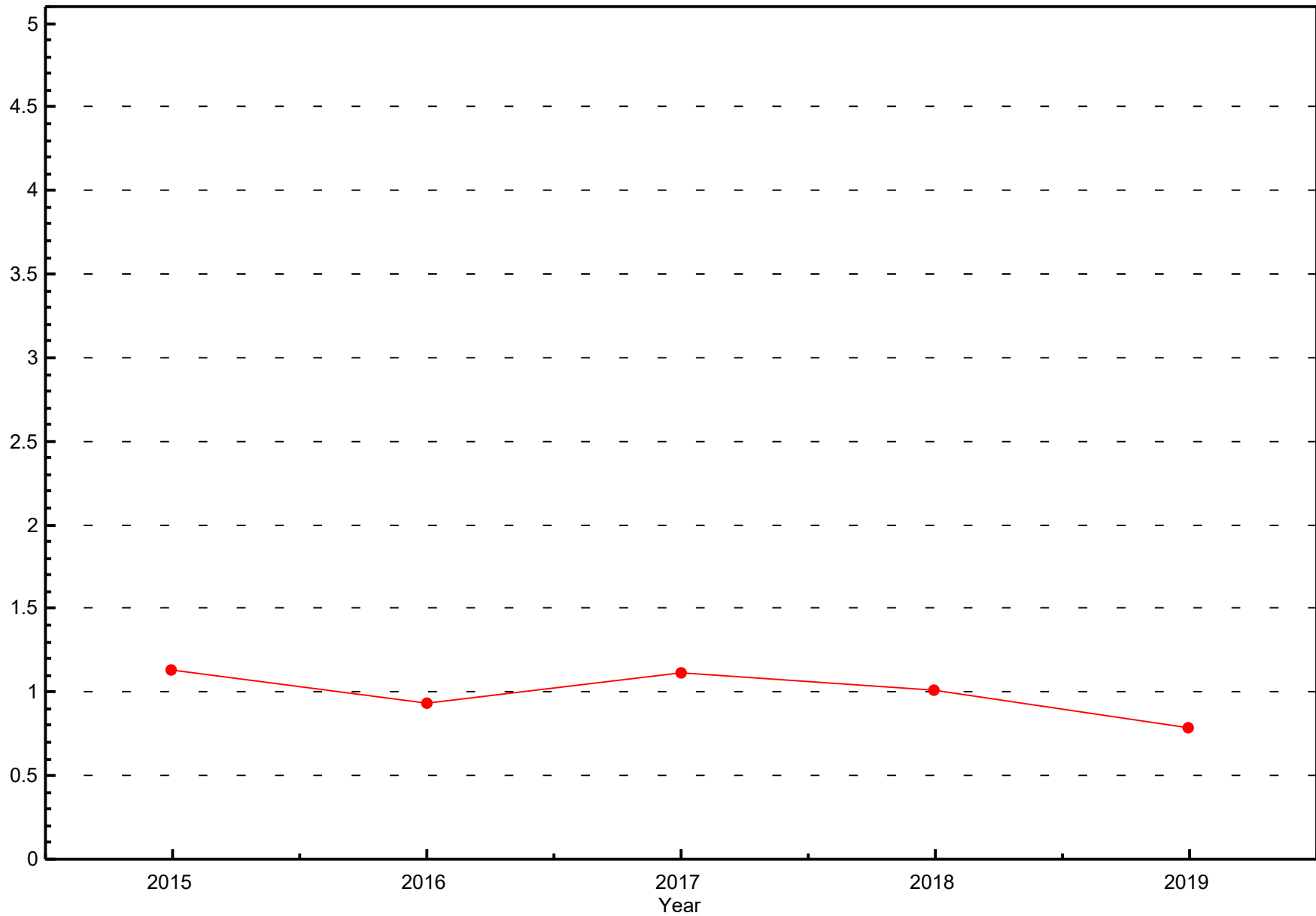
Horizon (2015 to 2019)





Yearly Averages

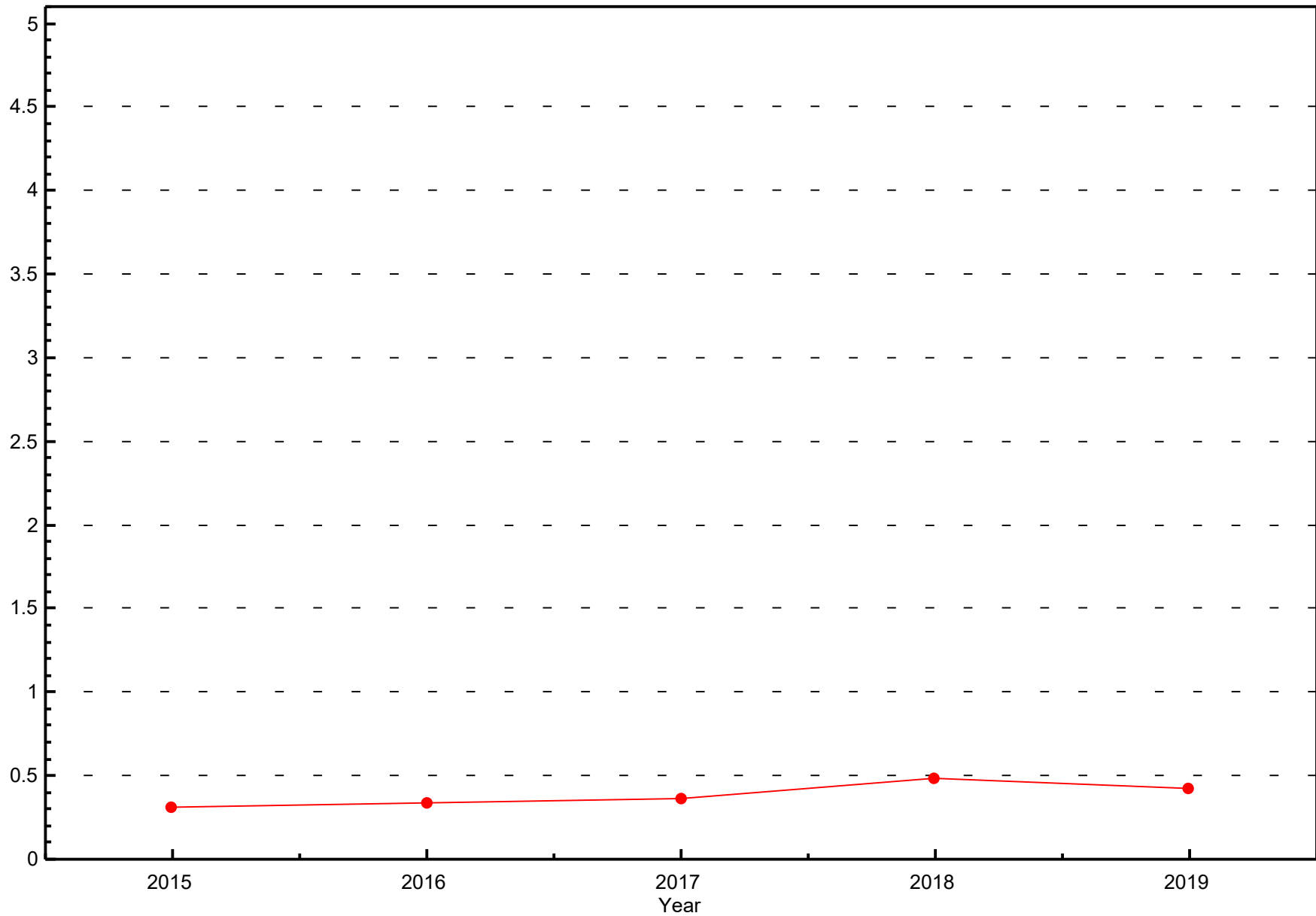
Sulphur Dioxide (SO₂) - ppb
Wapasu (2015 to 2019)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Stony Mountain (2015 to 2019)

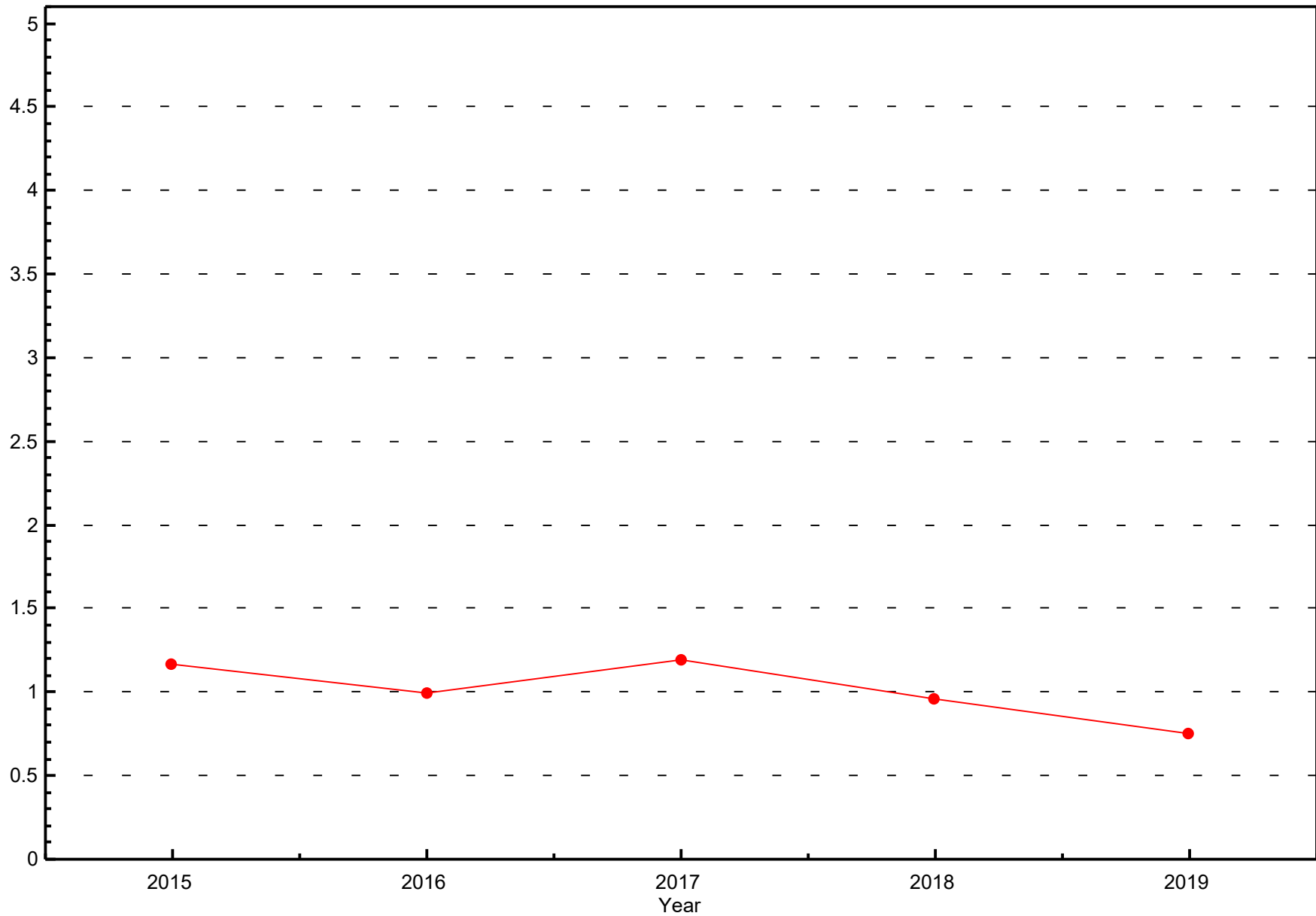




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

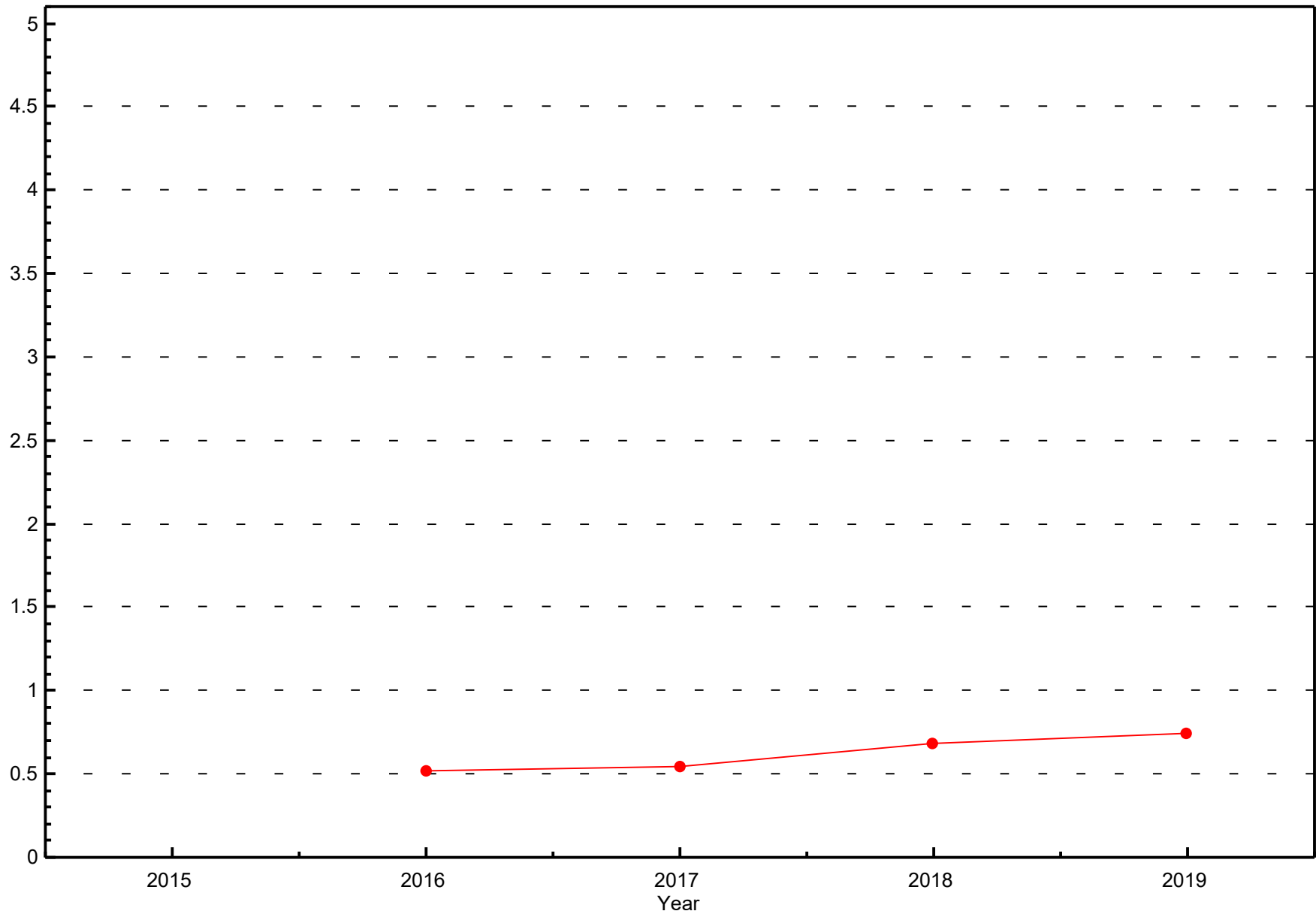
Firebag (2015 to 2019)





Yearly Averages

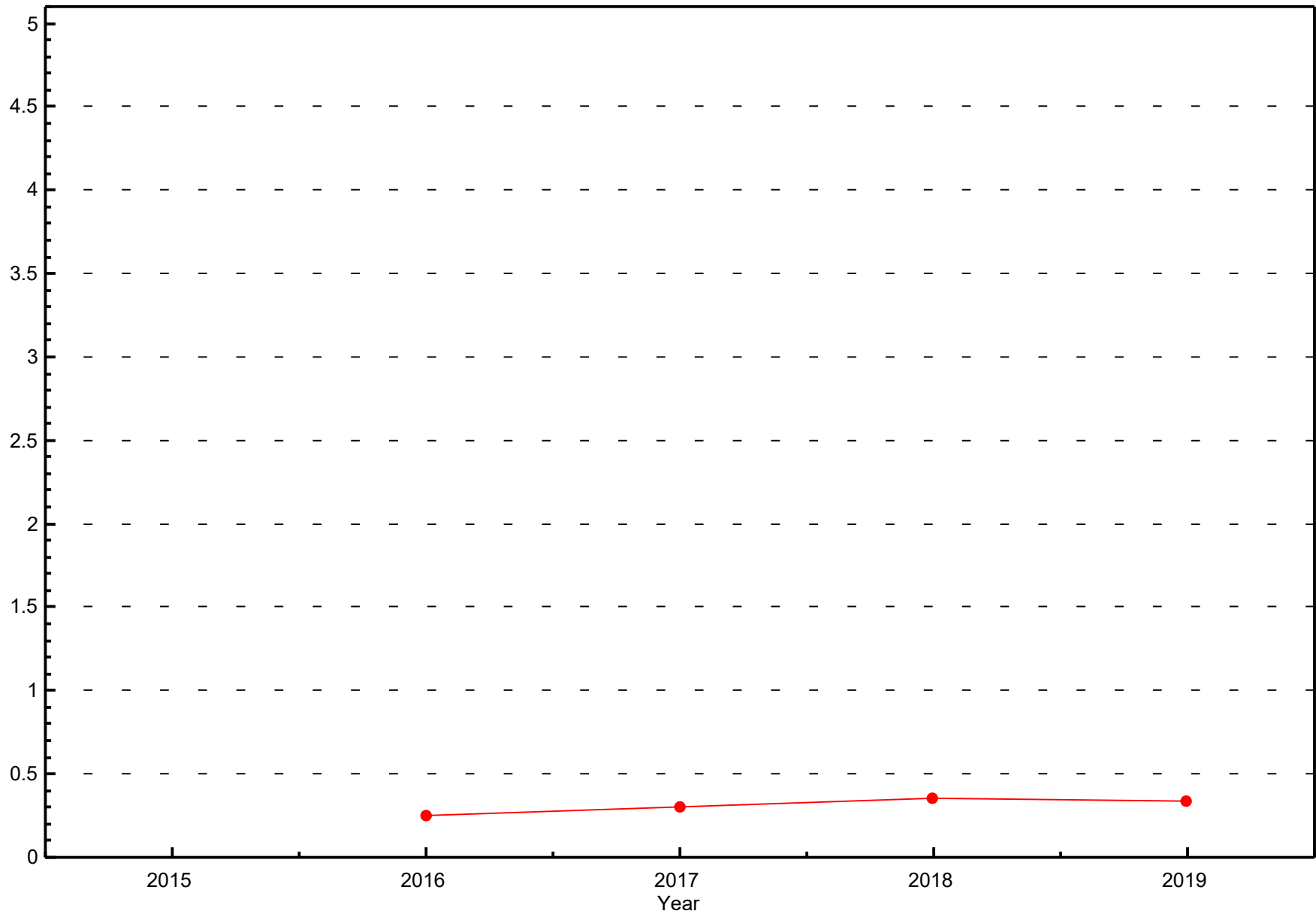
Sulphur Dioxide (SO₂) - ppb
Mackay River (2015 to 2019)





Yearly Averages

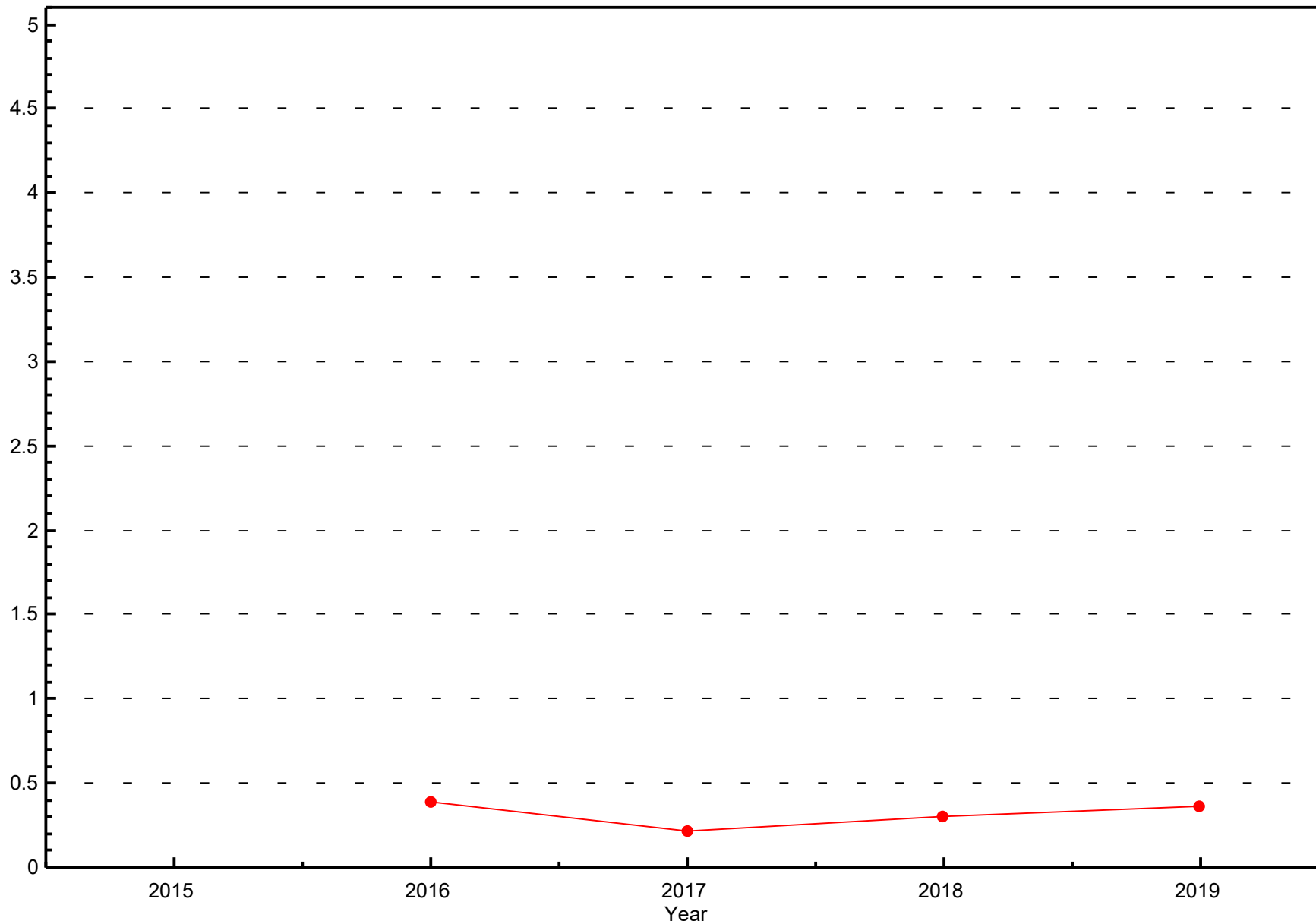
Sulphur Dioxide (SO₂) - ppb
Conklin (2015 to 2019)





Yearly Averages

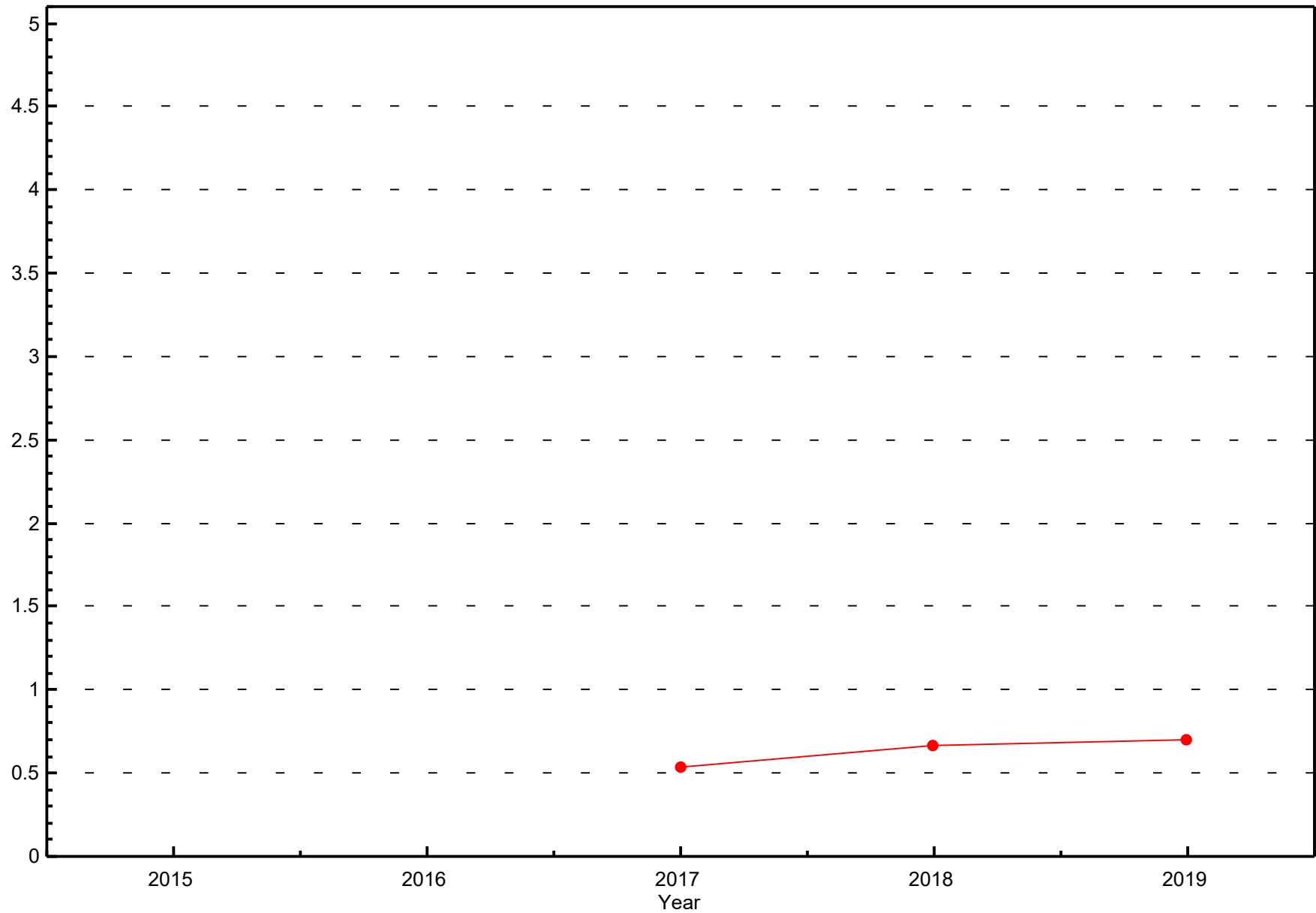
Sulphur Dioxide (SO₂) - ppb
Janvier (2015 to 2019)





Yearly Averages

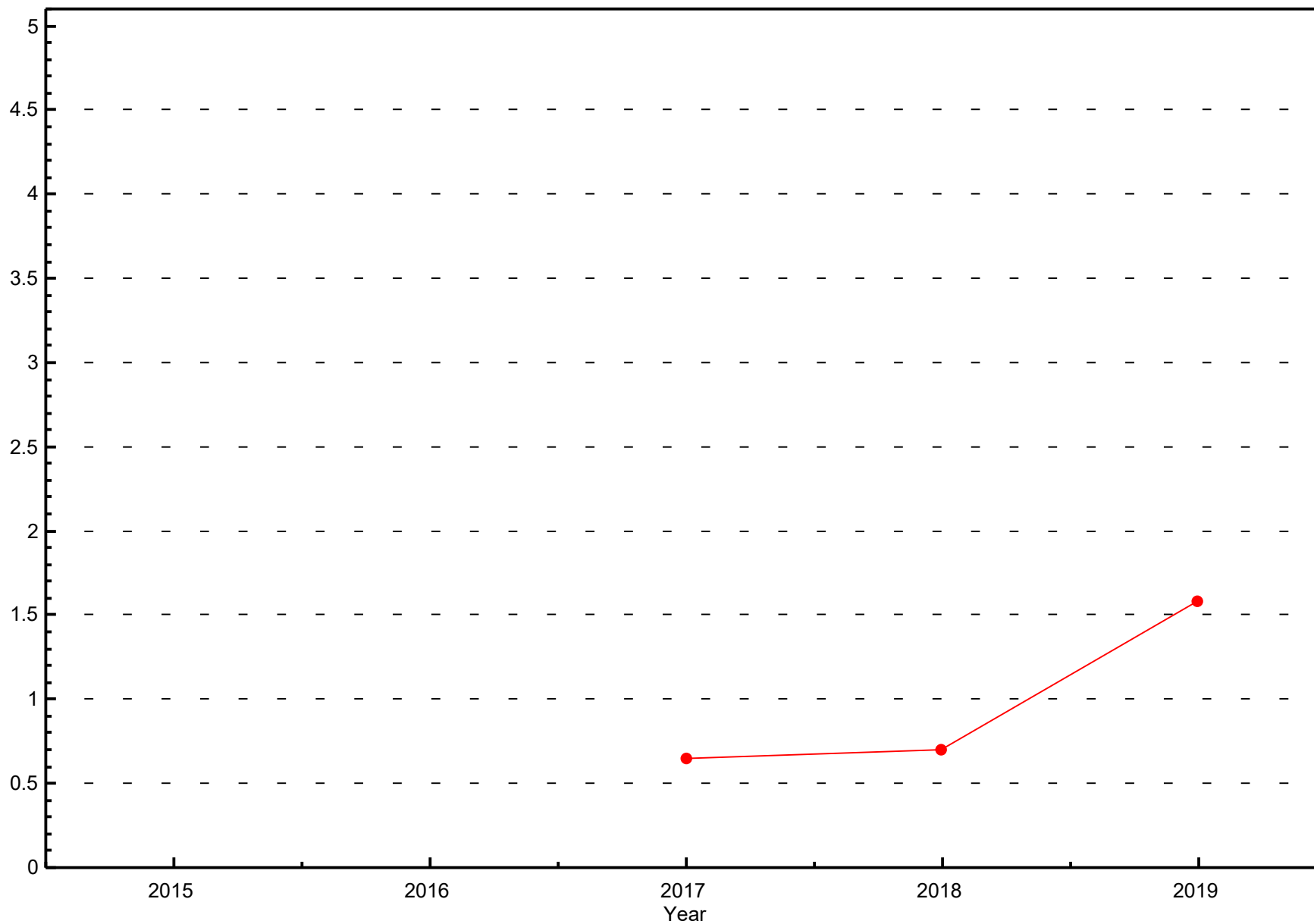
Sulphur Dioxide (SO₂) - ppb
Fort Hills (2015 to 2019)





Yearly Averages

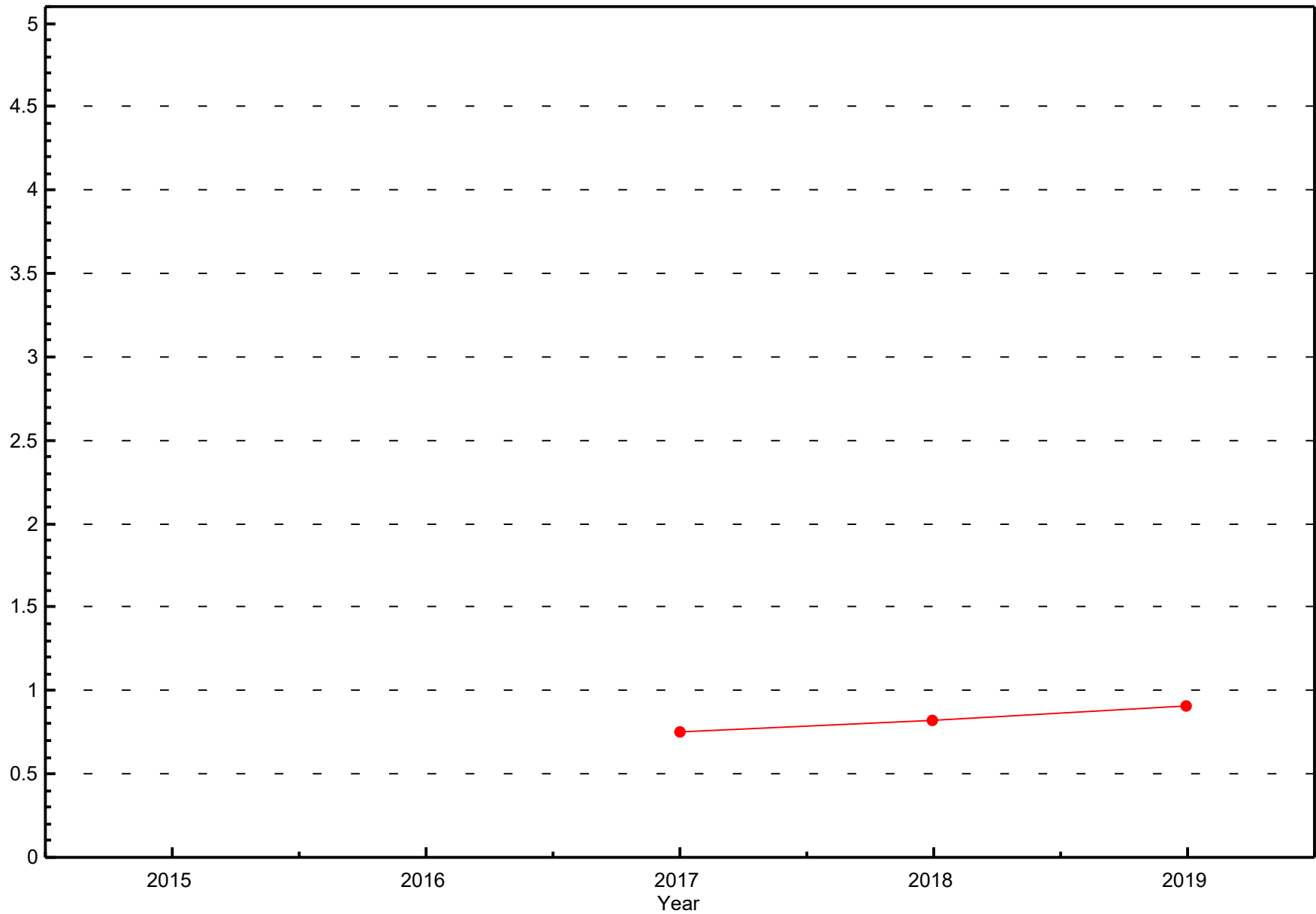
Sulphur Dioxide (SO₂) - ppb
Surmont (2015 to 2019)





Yearly Averages

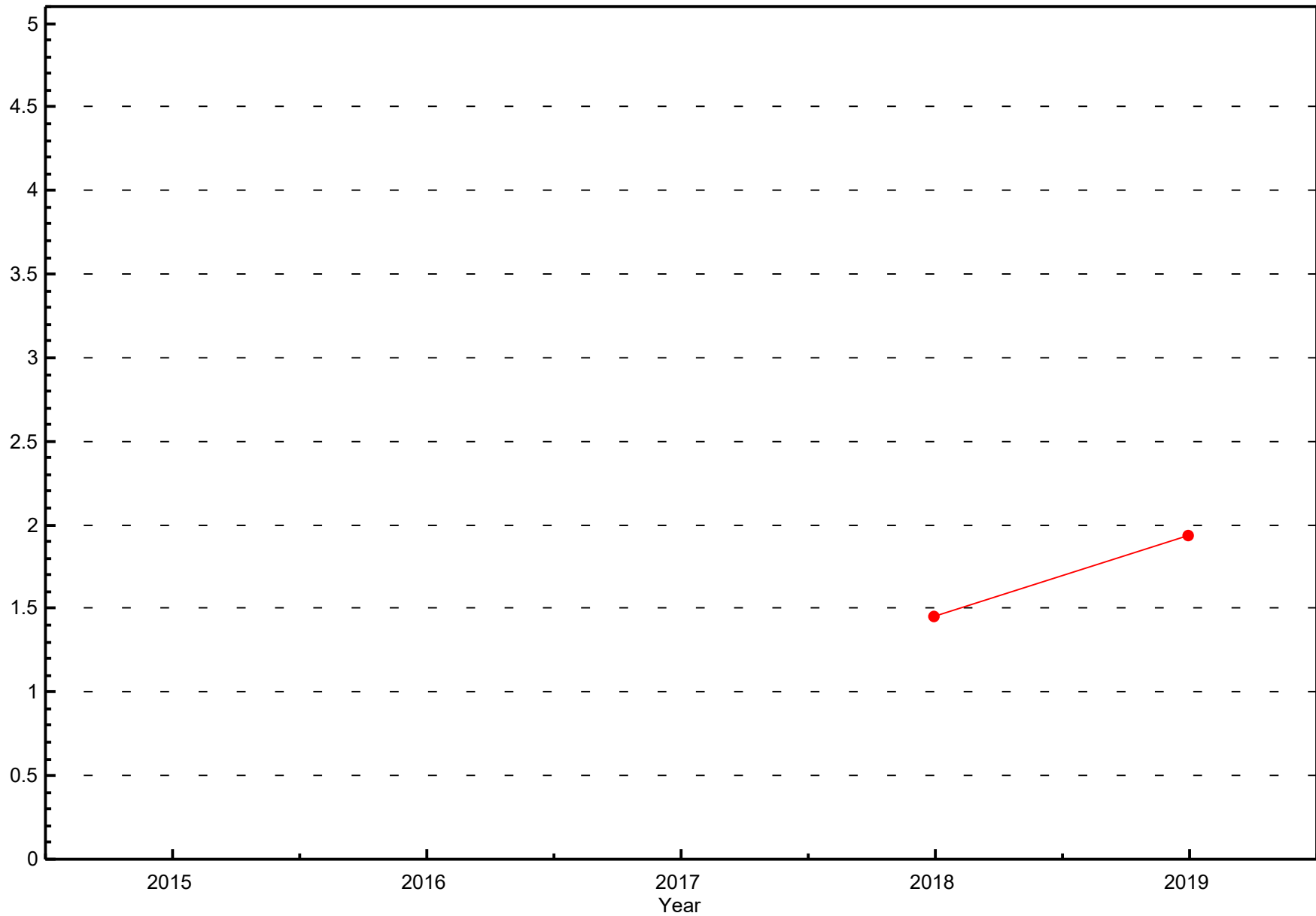
Sulphur Dioxide (SO₂) - ppb
Waskōw ohci Pimâtisiwin (2015 to 2019)





Yearly Averages

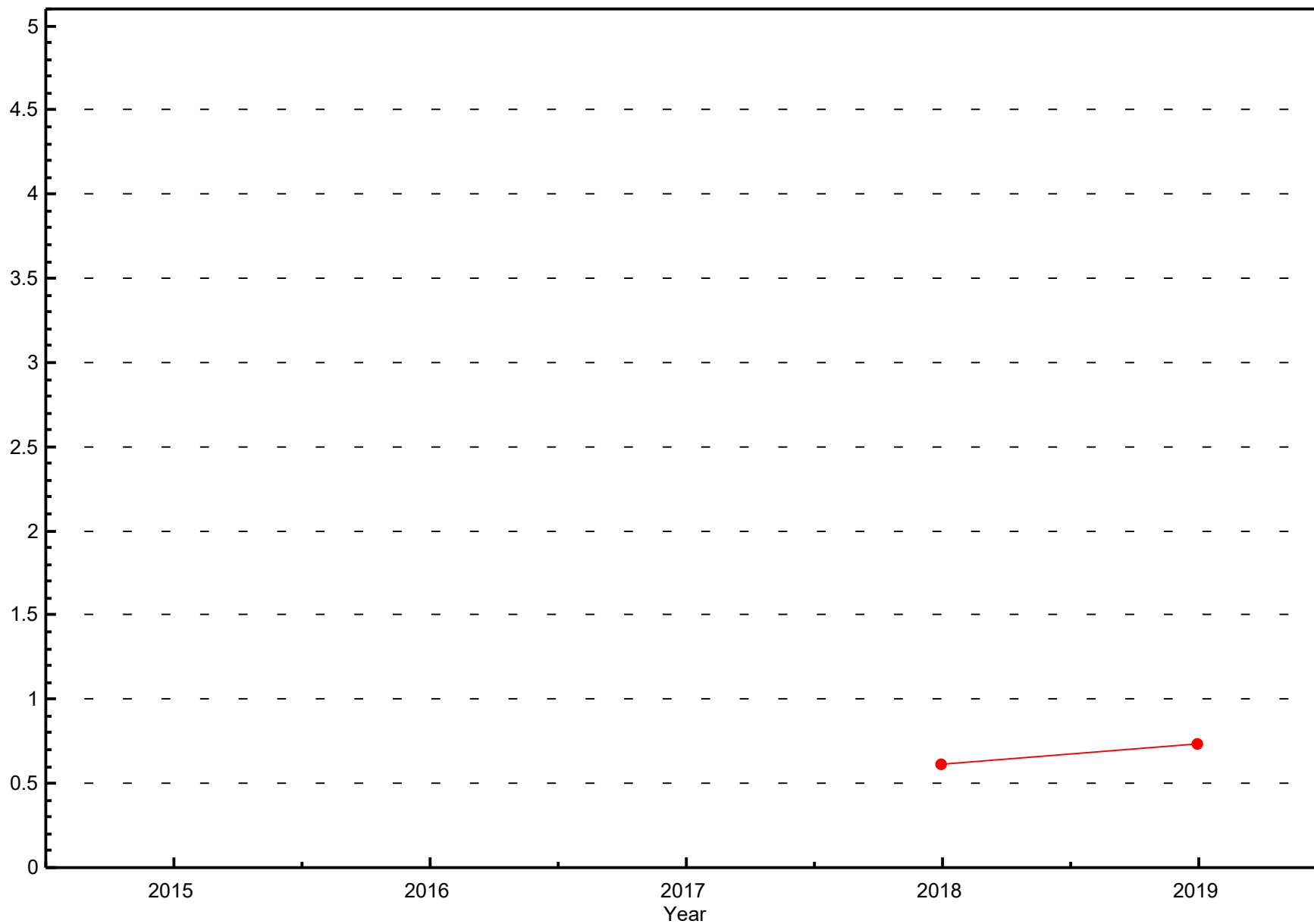
Sulphur Dioxide (SO₂) - ppb
Christina Lake (2015 to 2019)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Jackfish 2/3 (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

HYDROGEN SULPHIDE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4 - 10	11 - 50	> 50
January	99	705	0.7	5.1	0	1.8	0	100	0	0	0
February	100	640	0.5	1.9	0	0.9	0	100	0	0	0
March	100	710	0.5	3.7	0	1.2	0	100	0	0	0
April	100	687	0.2	3.0	0	0.6	0	100	0	0	0
May	99	705	0.4	1.9	0	0.8	0	100	0	0	0
June	98	669	0.5	8.2	0	0.8	0	100	0	0	0
July	100	706	0.9	15.9	8	4.2	1	94	5	1	0
August	100	710	1.0	13.8	7	5.3	2	94	5	1	0
September	99	682	1.1	14.9	4	3.4	2	91	8	1	0
October	100	708	1.0	16.8	3	3.9	1	94	6	0	0
November	100	687	0.4	2.5	0	0.9	0	100	0	0	0
December	100	709	0.6	3.6	0	1.1	0	100	0	0	0
Annual	100	8318	0.7	16.8	22	5.3	6	98	2	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	100	708	0.3	3.6	0	1.0	0	100	0	0	0
February	100	640	0.3	2.6	0	0.8	0	100	0	0	0
March	100	709	0.3	6.0	0	1.1	0	99	1	0	0
April	99	679	0.3	2.9	0	0.7	0	100	0	0	0
May	100	705	0.2	3.3	0	0.6	0	100	0	0	0
June	100	684	0.3	9.0	0	1.1	0	100	0	0	0
July	100	706	0.4	7.4	0	1.1	0	99	1	0	0
August	100	707	0.4	9.0	0	1.2	0	99	1	0	0
September	100	686	0.4	14.7	1	1.7	0	99	1	0	0
October	100	708	0.2	4.0	0	0.5	0	100	0	0	0
November	100	686	0.2	1.1	0	0.5	0	100	0	0	0
December	100	707	0.4	5.1	0	1.4	0	100	0	0	0
Annual	100	8325	0.3	14.7	1	1.7	0	100	0	0	0



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	100	709	0.5	3.5	0	1.3	0	100	0	0	0
February	97	621	0.7	11.6	2	2.1	0	98	1	0	0
March	100	709	0.4	7.1	0	0.8	0	100	0	0	0
April	100	685	0.3	5.2	0	0.7	0	100	0	0	0
May	100	708	0.4	2.8	0	0.9	0	100	0	0	0
June	100	685	1.4	34.5	9	5.4	3	87	12	1	0
July	100	710	1.7	18.3	16	5.6	3	84	14	2	0
August	100	710	2.8	53.2	47	21.3	10	77	17	6	0
September	100	686	1.3	22.4	8	4.1	3	88	11	1	0
October	100	707	1.0	12.9	5	3.5	2	92	8	1	0
November	100	686	0.3	1.5	0	0.7	0	100	0	0	0
December	100	708	0.6	3.2	0	1.6	0	100	0	0	0
Annual	100	8324	0.9	53.2	87	21.3	21	94	5	1	0



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	100	709	0.6	3.9	0	1.2	0	100	0	0	0
February	100	640	0.6	3.7	0	1.6	0	100	0	0	0
March	100	710	0.6	9.2	0	1.2	0	99	1	0	0
April	100	686	0.5	15.3	2	2.0	0	99	1	0	0
May	99	701	0.4	5.9	0	1.0	0	100	0	0	0
June	100	683	0.6	13.6	2	1.5	0	99	1	0	0
July	100	709	1.0	22.6	9	4.4	1	95	4	1	0
August	100	708	1.0	17.6	2	2.6	0	95	5	0	0
September	100	684	1.3	17.8	11	5.1	2	93	6	1	0
October	100	707	1.1	12.1	6	3.6	1	94	5	1	0
November	100	686	0.5	4.3	0	1.1	0	99	1	0	0
December	100	709	0.6	6.0	0	1.5	0	99	1	0	0
Annual	100	8332	0.7	22.6	32	5.1	4	98	2	0	0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	98	695	0.2	1.0	0	0.4	0	100	0	0	0
February	96	613	0.2	1.0	0	0.4	0	100	0	0	0
March	97	682	0.2	1.6	0	0.4	0	100	0	0	0
April	100	684	0.2	0.9	0	0.4	0	100	0	0	0
May	100	710	0.2	1.3	0	0.5	0	100	0	0	0
June	100	684	0.2	5.2	0	0.8	0	100	0	0	0
July	100	710	0.3	1.3	0	0.5	0	100	0	0	0
August	100	709	0.3	1.5	0	0.4	0	100	0	0	0
September	100	686	0.2	1.1	0	0.3	0	100	0	0	0
October	100	707	0.2	1.1	0	0.4	0	100	0	0	0
November	100	687	0.2	1.9	0	0.4	0	100	0	0	0
December	100	708	0.2	1.1	0	0.4	0	100	0	0	0
Annual	99	8275	0.2	5.2	0	0.8	0	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	99	705	0.3	1.9	0	0.6	0	100	0	0	0
February	100	640	0.4	1.8	0	0.6	0	100	0	0	0
March	100	707	0.3	2.1	0	0.5	0	100	0	0	0
April	100	686	0.3	2.0	0	0.6	0	100	0	0	0
May	100	709	0.3	2.8	0	1.1	0	100	0	0	0
June	92	630	0.3	1.5	0	0.6	0	100	0	0	0
July	100	708	0.4	3.1	0	0.7	0	100	0	0	0
August	100	706	0.4	1.5	0	0.7	0	100	0	0	0
September	100	684	0.3	1.4	0	0.5	0	100	0	0	0
October	100	709	0.3	1.9	0	0.5	0	100	0	0	0
November	100	684	0.2	1.2	0	0.4	0	100	0	0	0
December	100	708	0.3	6.1	0	0.8	0	100	0	0	0
Annual	99	8276	0.3	6.1	0	1.1	0	100	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	100	707	0.3	1.7	0	0.6	0	100	0	0	0
February	99	630	0.3	1.4	0	0.7	0	100	0	0	0
March	99	704	0.2	1.1	0	0.4	0	100	0	0	0
April	100	685	0.2	0.9	0	0.3	0	100	0	0	0
May	99	703	0.2	1.6	0	0.5	0	100	0	0	0
June	100	684	0.2	2.4	0	0.5	0	100	0	0	0
July	100	706	0.2	1.4	0	0.5	0	100	0	0	0
August	100	707	0.2	1.7	0	0.4	0	100	0	0	0
September	100	685	0.2	1.4	0	0.4	0	100	0	0	0
October	100	709	0.2	0.7	0	0.3	0	100	0	0	0
November	100	684	0.2	3.2	0	0.3	0	100	0	0	0
December	92	651	0.3	1.8	0	0.8	0	100	0	0	0
Annual	99	8255	0.2	3.2	0	0.8	0	100	0	0	0



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	> 50
January	100	707	0.2	0.9	0	0.4	0	100	0	0	0
February	100	644	0.2	0.7	0	0.5	0	100	0	0	0
March	100	263	0.2	0.9	0	0.4	0	100	0	0	0
Annual	100	1614	0.2	0.9	0	0.5	0	100	0	0	0



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	100	708	0.5	3.0	0	1.3	0	100	0	0	0
February	100	641	0.6	4.8	0	1.4	0	100	0	0	0
March	99	703	0.4	2.4	0	0.8	0	100	0	0	0
April	99	679	0.4	2.6	0	1.1	0	100	0	0	0
May	96	675	0.2	1.6	0	0.6	0	100	0	0	0
June	95	651	0.2	1.5	0	0.4	0	100	0	0	0
July	97	689	0.3	3.5	0	0.8	0	100	0	0	0
August	97	689	0.3	6.2	0	1.4	0	99	1	0	0
September	98	675	0.3	3.5	0	1.5	0	100	0	0	0
October	100	703	0.3	8.3	0	1.3	0	99	1	0	0
November	100	686	0.2	2.9	0	0.6	0	100	0	0	0
December	100	708	0.4	2.2	0	0.9	0	100	0	0	0
Annual	98	8207	0.4	8.3	0	1.5	0	100	0	0	0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	99	703	0.3	1.6	0	0.4	0	100	0	0	0
February	92	586	0.2	1.6	0	0.5	0	100	0	0	0
March	100	709	0.3	3.4	0	1.0	0	100	0	0	0
April	100	685	0.3	1.8	0	0.6	0	100	0	0	0
May	100	710	0.1	1.8	0	0.4	0	100	0	0	0
June	100	687	0.2	4.7	0	0.8	0	100	0	0	0
July	100	710	0.3	4.9	0	1.0	0	100	0	0	0
August	100	709	0.3	1.9	0	0.6	0	100	0	0	0
September	100	686	0.3	7.5	0	1.4	0	100	0	0	0
October	97	684	0.2	1.7	0	0.6	0	100	0	0	0
November	100	684	0.3	1.6	0	0.6	0	100	0	0	0
December	100	710	0.3	1.7	0	0.6	0	100	0	0	0
Annual	99	8263	0.3	7.5	0	1.4	0	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	100	709	0.3	0.6	0	0.4	0	100	0	0	0
February	97	618	0.3	0.8	0	0.6	0	100	0	0	0
March	100	710	0.2	0.6	0	0.4	0	100	0	0	0
April	100	686	0.2	0.8	0	0.5	0	100	0	0	0
May	100	708	0.2	0.5	0	0.4	0	100	0	0	0
June	99	681	0.2	0.5	0	0.3	0	100	0	0	0
July	99	699	0.2	1.1	0	0.5	0	100	0	0	0
August	99	702	0.2	0.9	0	0.3	0	100	0	0	0
September	99	679	0.1	0.7	0	0.3	0	100	0	0	0
October	99	696	0.1	0.8	0	0.2	0	100	0	0	0
November	96	660	0.1	0.5	0	0.3	0	100	0	0	0
December	99	697	0.2	0.9	0	0.4	0	100	0	0	0
Annual	99	8245	0.2	1.1	0	0.6	0	100	0	0	0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
March	94	393	0.2	1.0	0	0.3	0	100	0	0	0
April	95	654	0.2	0.5	0	0.3	0	100	0	0	0
May	99	699	0.2	0.7	0	0.4	0	100	0	0	0
June	100	685	0.2	0.5	0	0.3	0	100	0	0	0
July	100	708	0.2	0.6	0	0.3	0	100	0	0	0
August	100	709	0.2	0.7	0	0.3	0	100	0	0	0
September	100	684	0.2	0.6	0	0.3	0	100	0	0	0
October	100	704	0.2	0.6	0	0.3	0	100	0	0	0
November	100	686	0.1	0.5	0	0.3	0	100	0	0	0
December	99	705	0.2	0.6	0	0.3	0	100	0	0	0
Annual	99	6627	0.2	1.0	0	0.4	0	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
October	96	672	0.2	0.7	0	0.4	0	100	0	0	0
November	100	685	0.1	2.9	0	0.2	0	100	0	0	0
December	100	709	0.1	3.6	0	0.7	0	100	0	0	0
Annual	99	2066	0.1	3.6	0	0.7	0	100	0	0	0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
June	100	383	0.2	0.7	0	0.4	0	100	0	0	0
July	100	709	0.3	0.8	0	0.5	0	100	0	0	0
August	100	708	0.3	2.2	0	0.6	0	100	0	0	0
September	100	684	0.2	0.9	0	0.4	0	100	0	0	0
October	96	681	0.1	0.8	0	0.3	0	100	0	0	0
November	100	686	0.2	1.2	0	0.5	0	100	0	0	0
December	98	696	0.3	1.2	0	0.6	0	100	0	0	0
Annual	99	4547	0.2	2.2	0	0.6	0	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	10-Apr	11 - 50	> 50
January	100	707	0.3	1.0	0	0.6	0	100	0	0	0
February	99	637	0.2	1.4	0	0.3	0	100	0	0	0
March	97	685	0.2	1.4	0	0.4	0	100	0	0	0
April	89	604	0.3	6.3	0	0.7	0	100	0	0	0
May	95	670	0.4	21.7	1	2.2	0	99	0	0	0
June	77	517	0.5	3.3	0	0.9	0	100	0	0	0
July	96	679	0.2	2.6	0	0.5	0	100	0	0	0
August	100	708	0.2	1.3	0	0.5	0	100	0	0	0
Annual	94	5207	0.3	21.7	1	2.2	0	100	0	0	0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
January	98	694	0.3	0.7	0	0.6	0	100	0	0	0
February	100	637	0.3	4.3	0	0.9	0	100	0	0	0
March	100	708	0.2	1.1	0	0.3	0	100	0	0	0
April	100	333	0.3	5.2	0	1.6	0	98	2	0	0
Annual	99	2372	0.3	5.2	0	1.6	0	100	0	0	0



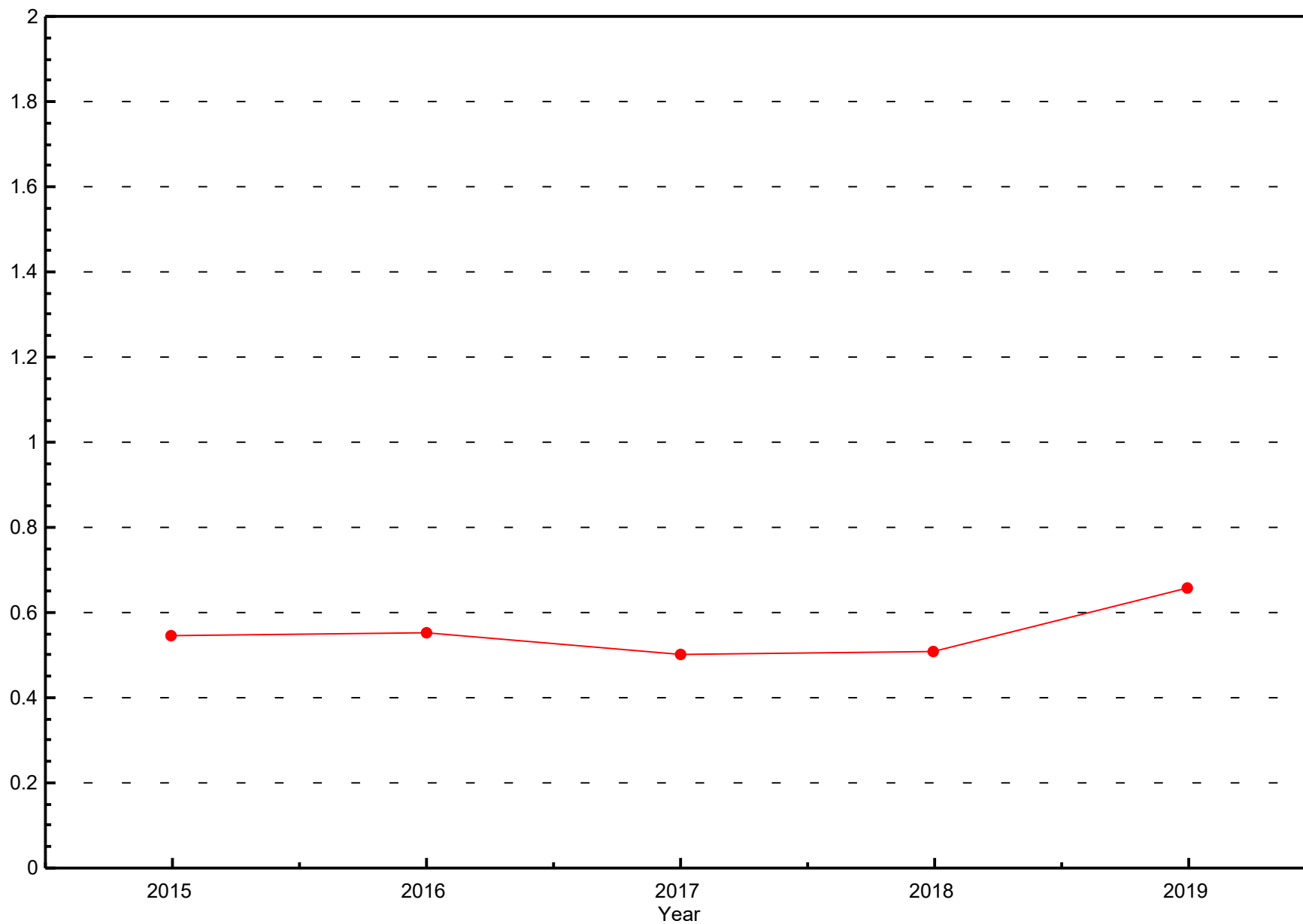
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	> 50
April	100	328	0.2	0.6	0	0.4	0	100	0	0	0
May	100	708	0.2	0.8	0	0.5	0	100	0	0	0
June	100	683	0.2	0.5	0	0.4	0	100	0	0	0
July	99	702	0.2	4.7	0	0.7	0	100	0	0	0
August	100	707	0.2	0.7	0	0.4	0	100	0	0	0
September	99	678	0.2	0.5	0	0.3	0	100	0	0	0
October	100	703	0.1	0.7	0	0.4	0	100	0	0	0
November	97	663	0.2	0.5	0	0.4	0	100	0	0	0
December	34	240	0.2	0.5	0	0.3	0	100	0	0	0
Annual	92	5412	0.2	4.7	0	0.7	0	100	0	0	0



Yearly Averages

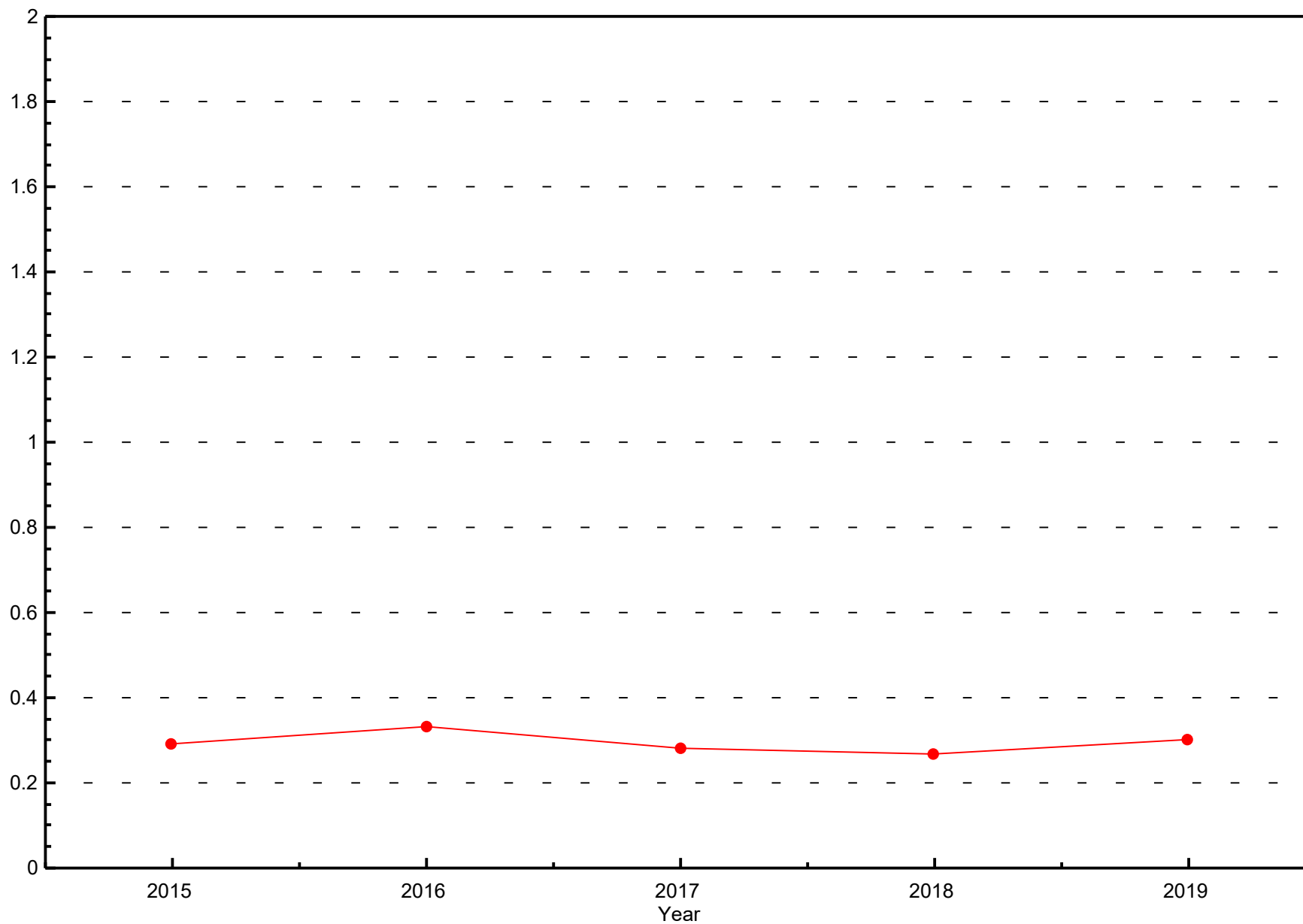
Hydrogen Sulphide (H₂S) - ppb
Mildred Lake (2015 to 2019)





Yearly Averages

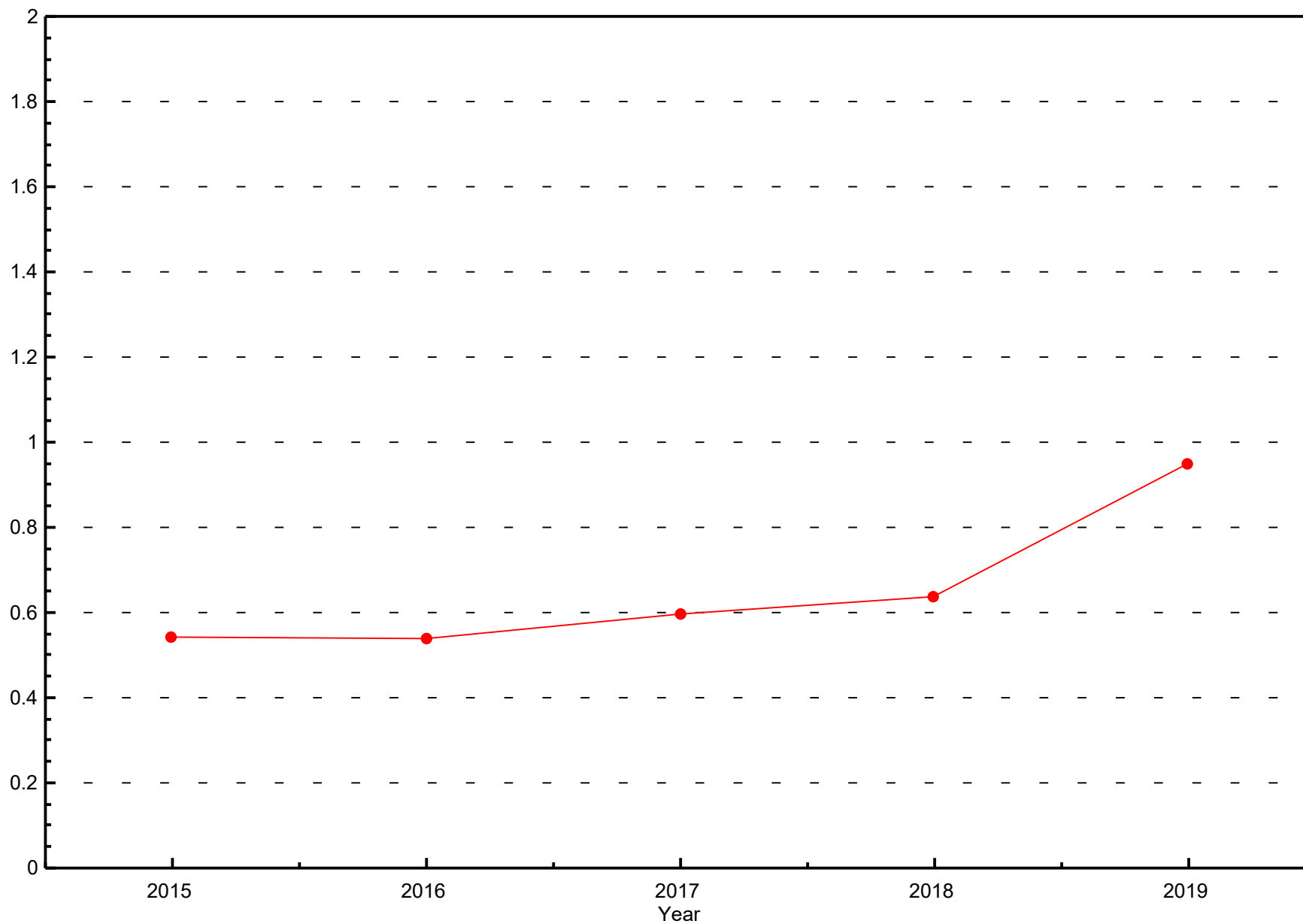
Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

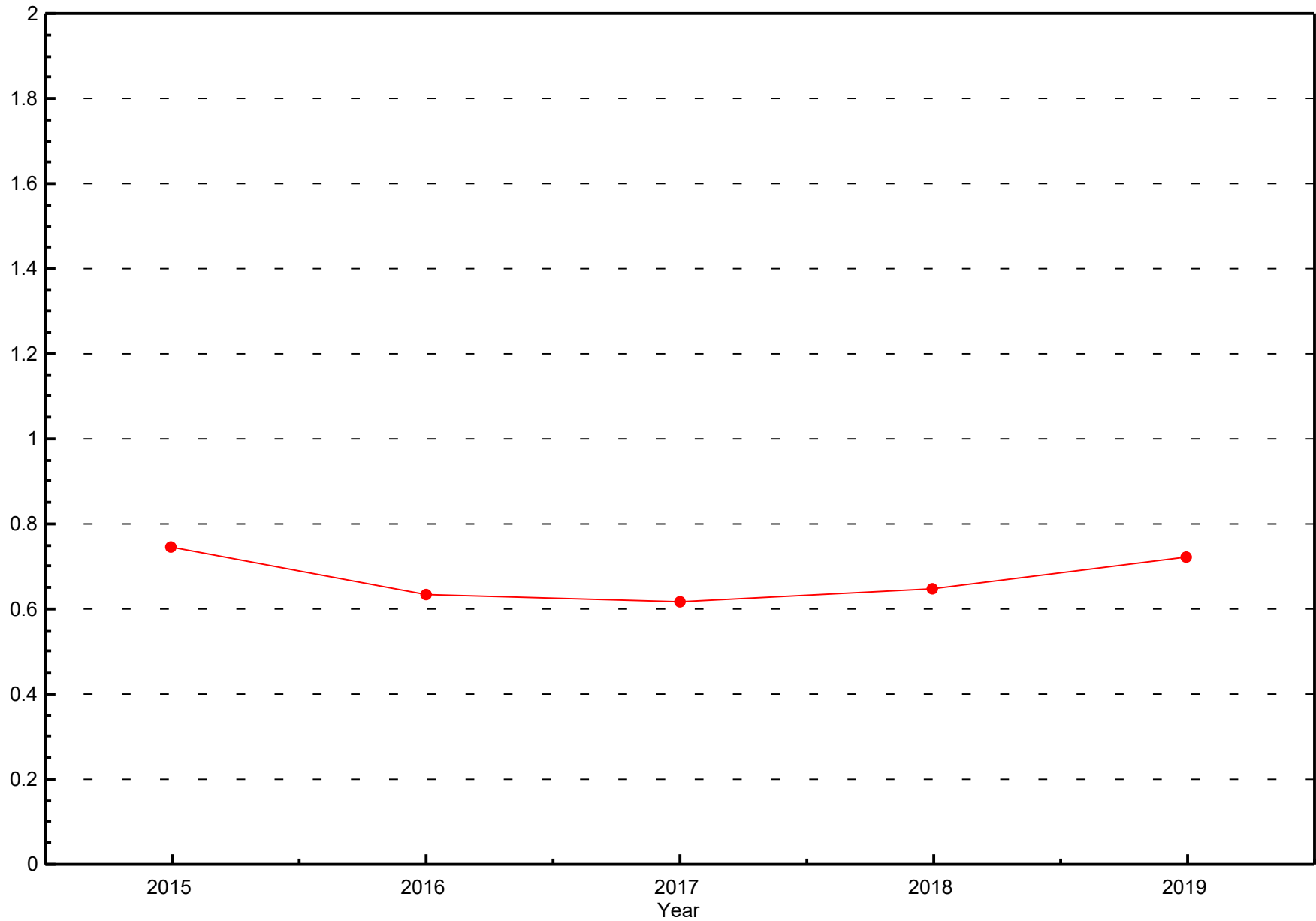
Hydrogen Sulphide (H₂S) - ppb
Mannix (2015 to 2019)





Yearly Averages

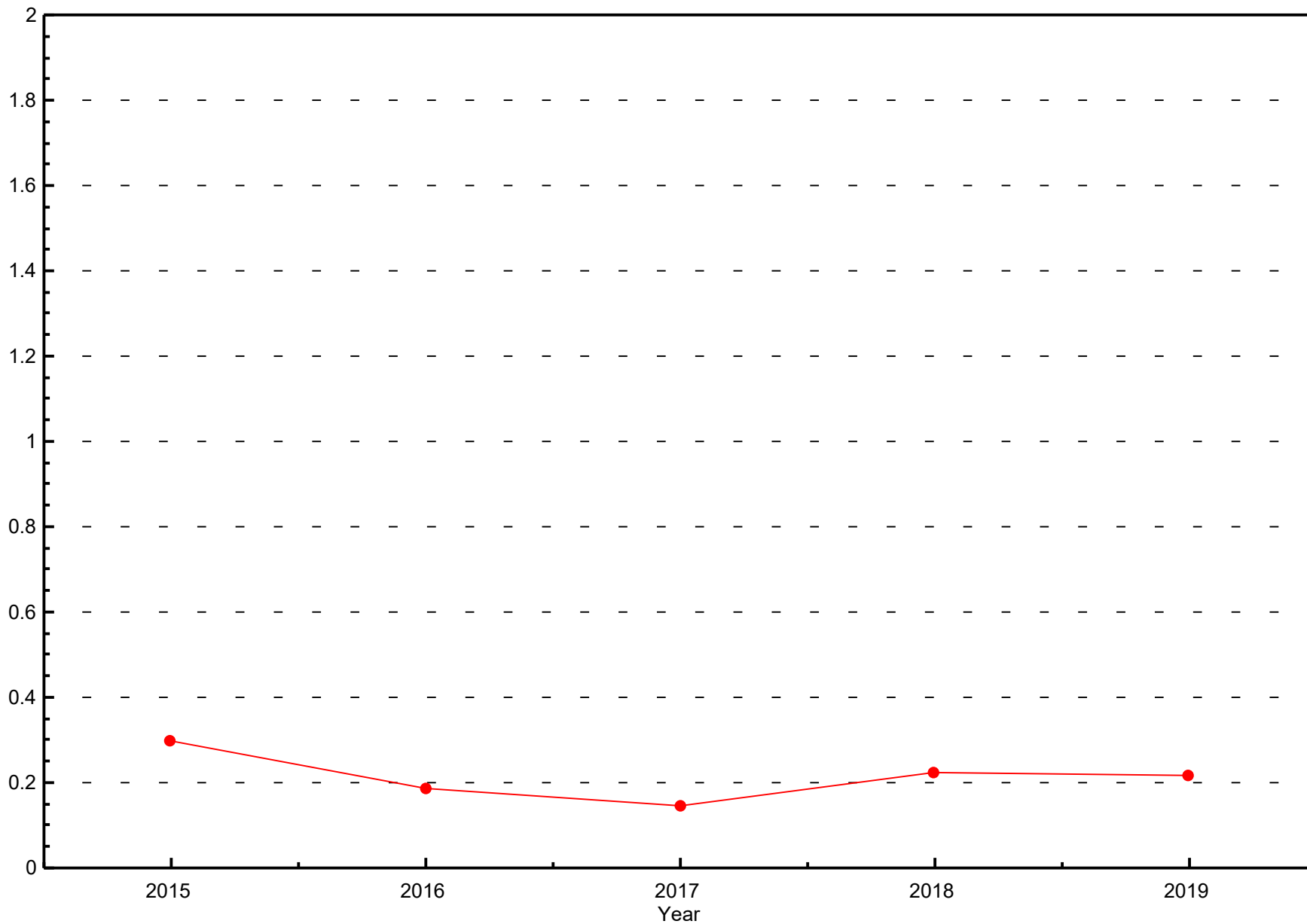
Hydrogen Sulphide (H₂S) - ppb
Lower Camp (2015 to 2019)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Wapasu (2015 to 2019)

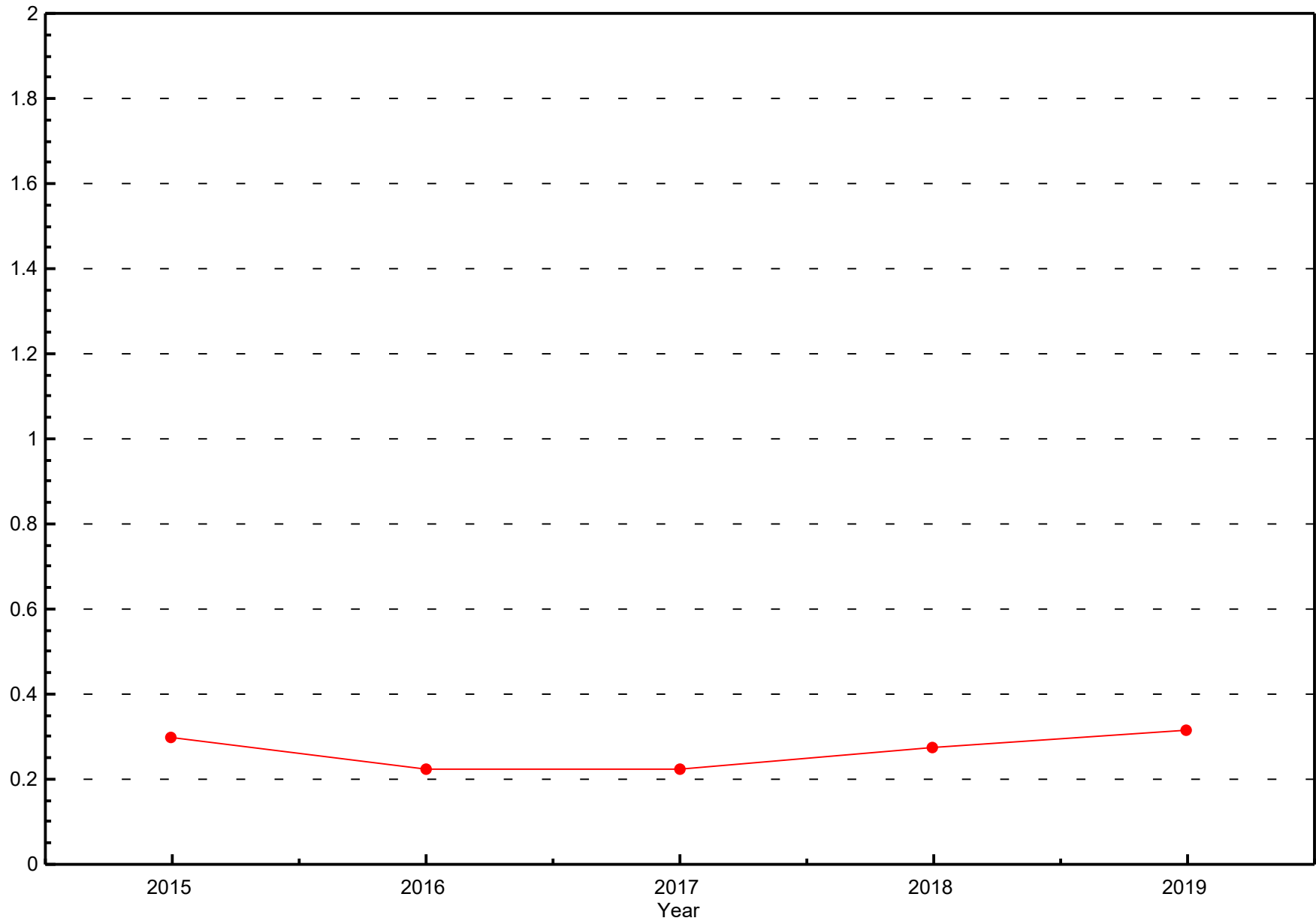




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

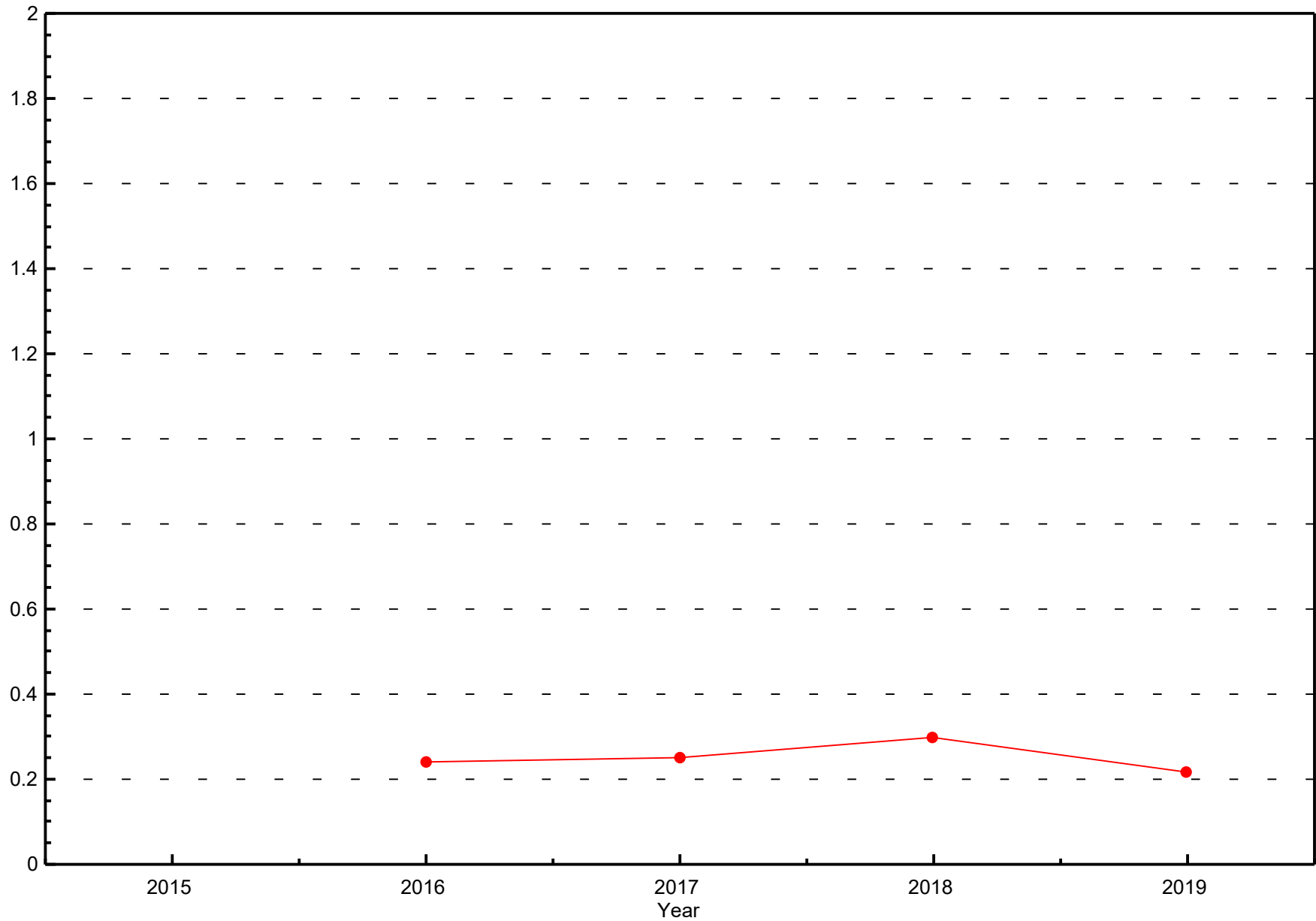
Firebag (2015 to 2019)





Yearly Averages

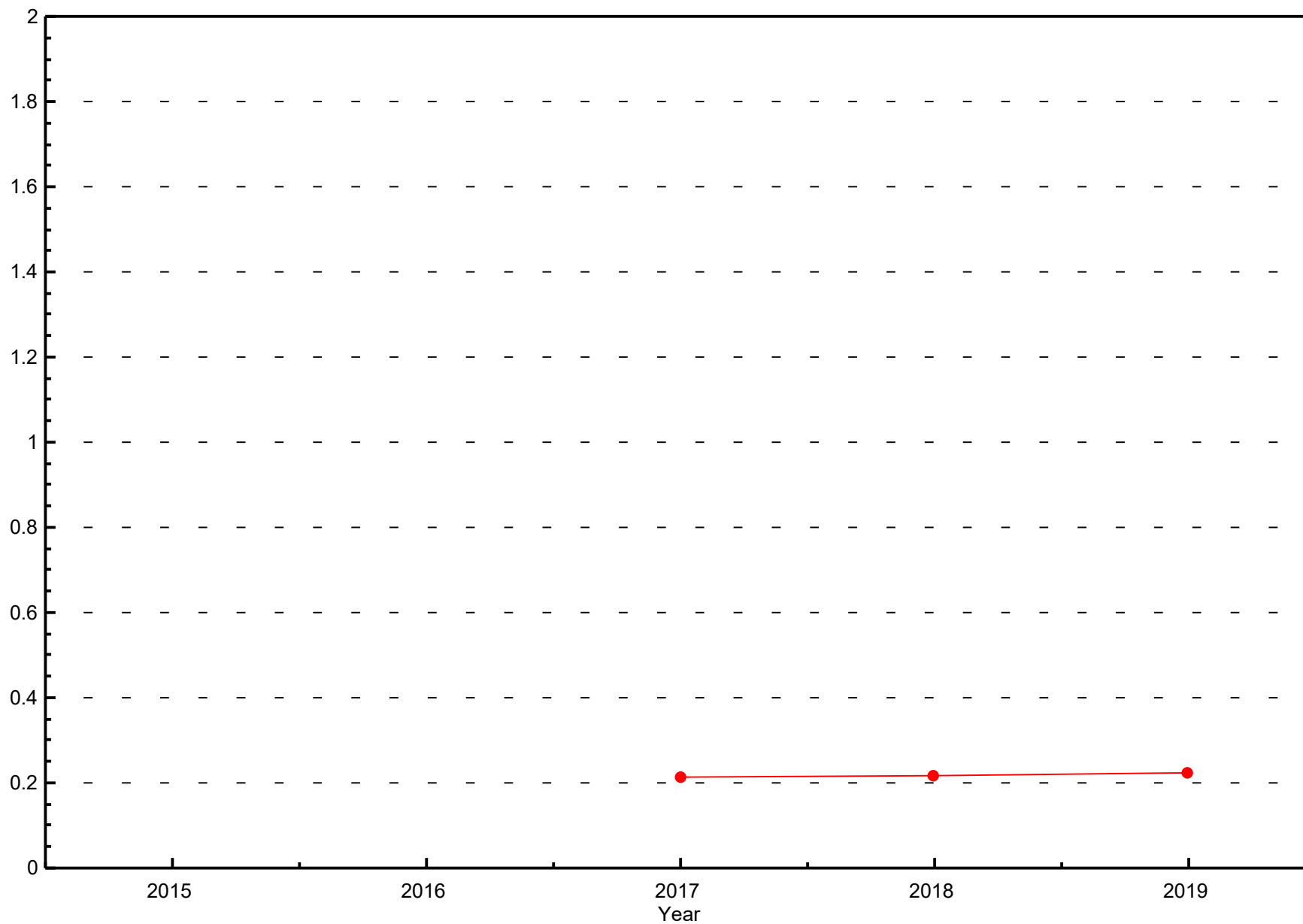
Hydrogen Sulphide (H₂S) - ppb
Mackay River (2015 to 2019)





Yearly Averages

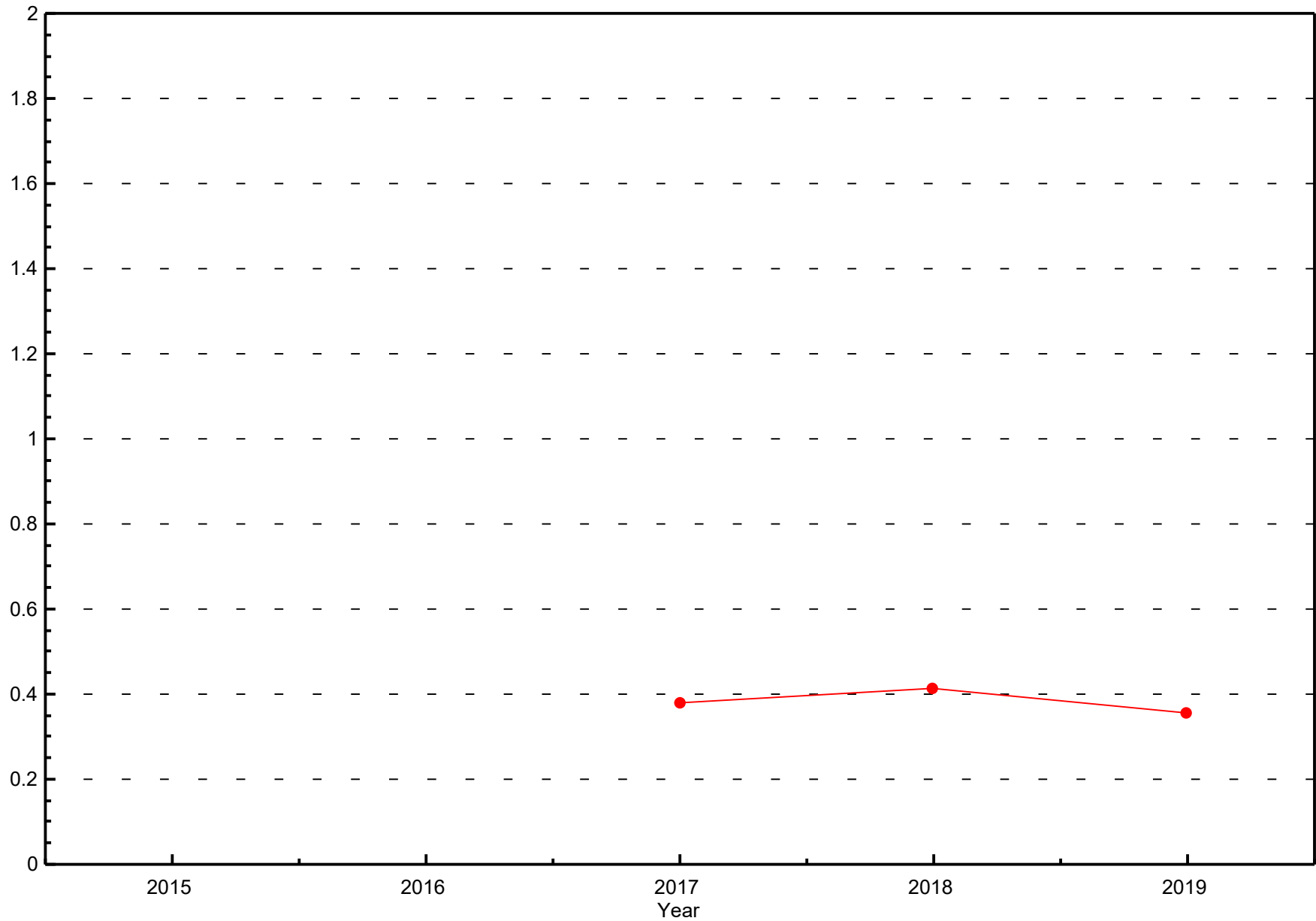
Hydrogen Sulphide (H₂S) - ppb Surmont (2015 to 2019)





Yearly Averages

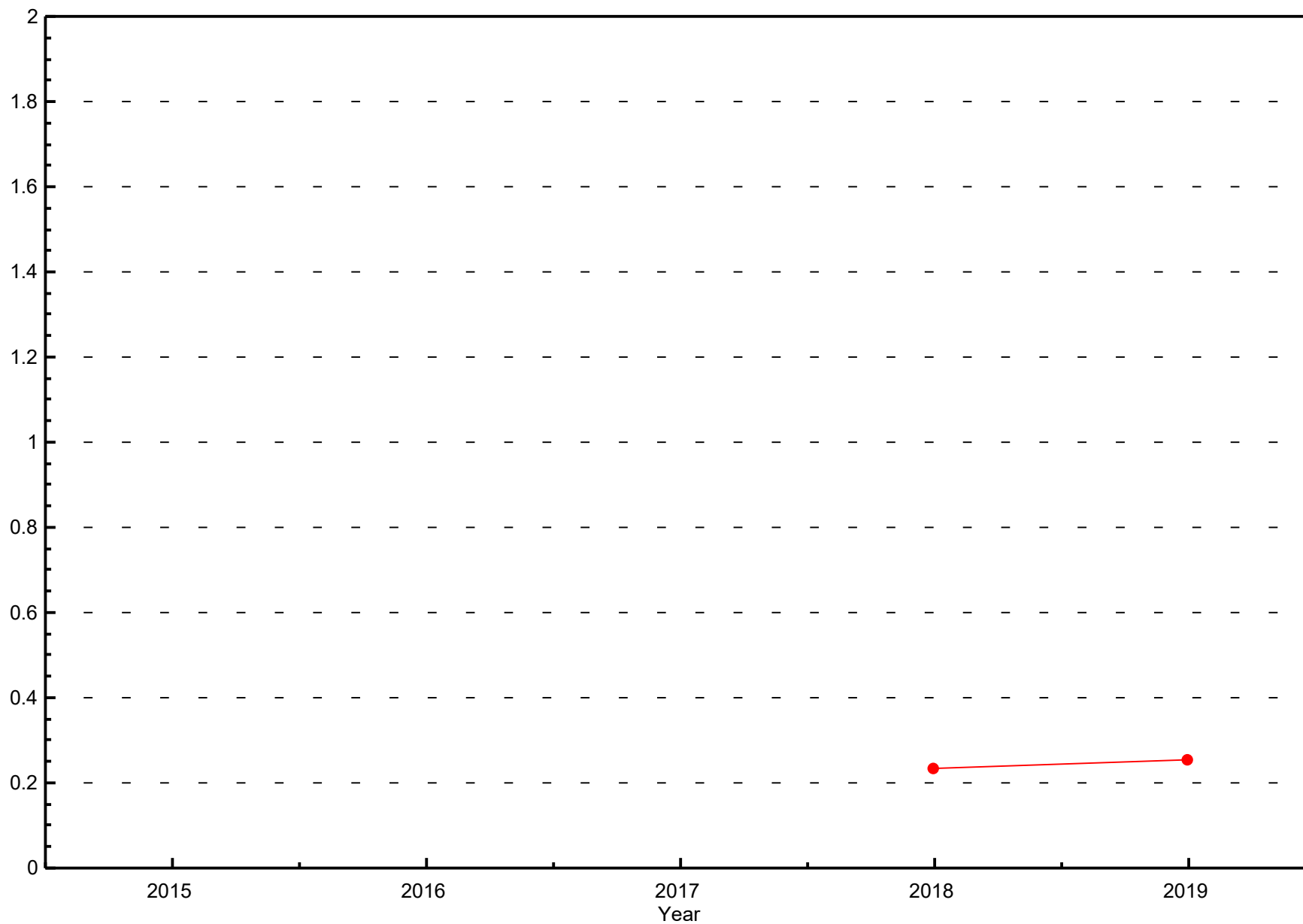
Hydrogen Sulphide (H₂S) - ppb
Waskōw ohci Pimâtisiwin (2015 to 2019)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Christina Lake (2015 to 2019)

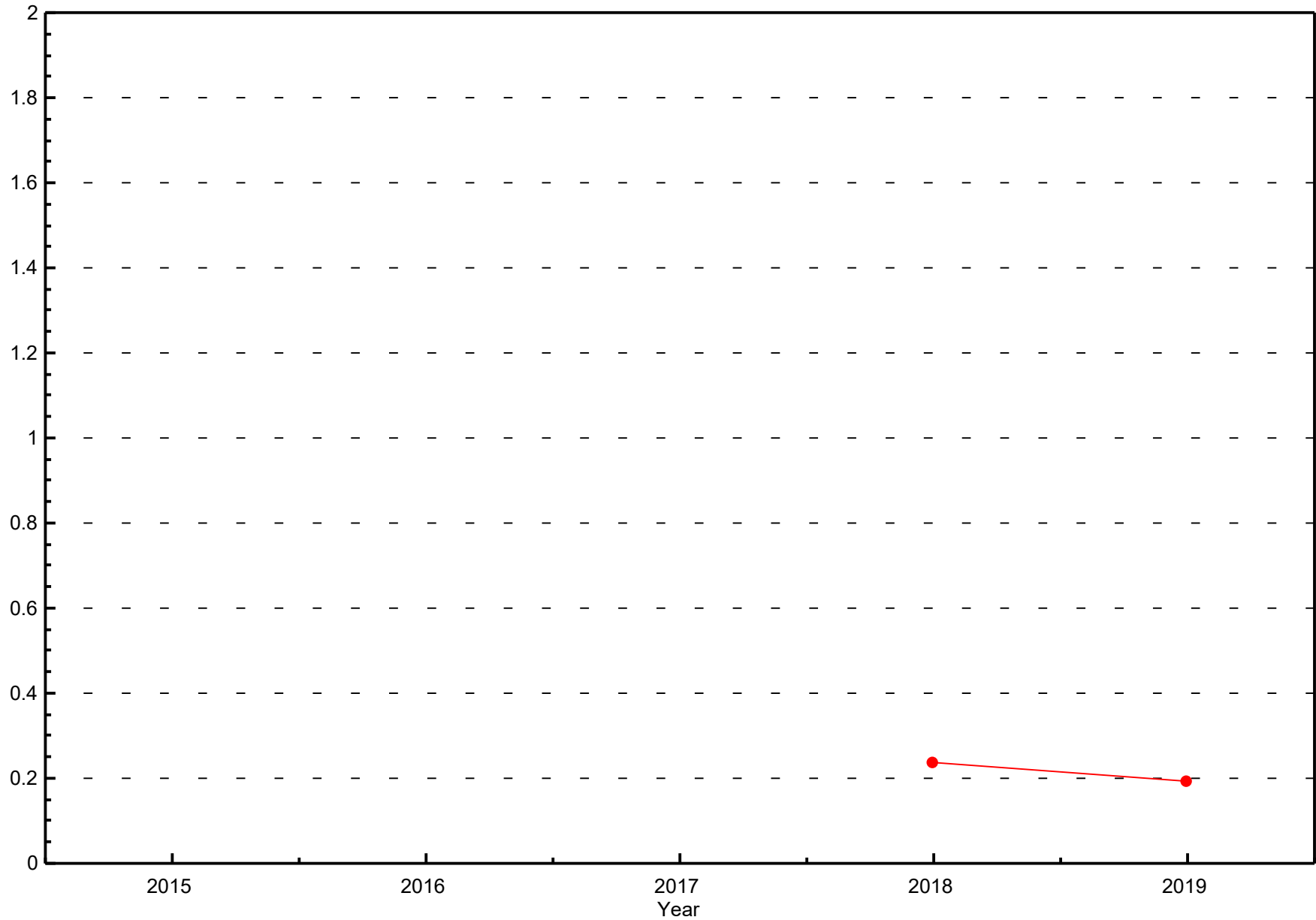




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

Jackfish 2/3 (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

TOTAL REDUCED SULPHUR ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	>50
January	99	702	0.7	3.2	0	1.3	0	100	0	0	0
February	100	639	0.8	3.2	0	1.7	0	100	0	0	0
March	100	707	0.6	2.4	0	1.0	0	100	0	0	0
April	100	685	0.5	2.8	0	0.7	0	100	0	0	0
May	100	710	0.5	1.7	0	0.8	0	100	0	0	0
June	100	683	0.5	1.9	0	0.8	0	100	0	0	0
July	100	710	0.6	5.4	0	1.1	0	99	1	0	0
August	100	708	0.6	6.2	0	1.6	0	99	1	0	0
September	100	687	0.6	3.8	0	1.9	0	99	1	0	0
October	100	708	0.6	8.2	0	1.6	0	98	2	0	0
November	100	683	0.4	2.8	0	0.8	0	100	0	0	0
December	100	709	0.6	2.2	0	0.9	0	100	0	0	0
Annual	100	8331	0.6	8.2	0	1.9	0	100	0	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective				
								0 - 3	4-10	11 - 50	>50
January	100	709	0.5	1.8	0	0.8	0	100	0	0	0
February	100	639	0.5	2.3	0	0.8	0	100	0	0	0
March	100	709	0.4	1.5	0	0.5	0	100	0	0	0
April	100	685	0.4	1.8	0	0.8	0	100	0	0	0
May	100	708	0.4	1.5	0	0.7	0	100	0	0	0
June	100	683	0.5	1.9	0	0.7	0	100	0	0	0
July	100	709	0.5	3.4	0	1.1	0	100	0	0	0
August	100	709	0.4	3.0	0	0.9	0	100	0	0	0
September	100	685	0.4	2.2	0	0.7	0	100	0	0	0
October	100	709	0.3	2.8	0	0.7	0	100	0	0	0
November	100	683	0.4	1.0	0	0.5	0	100	0	0	0
December	99	699	0.5	1.4	0	0.7	0	100	0	0	0
Annual	100	8327	0.4	3.4	0	1.1	0	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	>50
January	93	662	0.3	2.1	0	0.7	0	100	0	0	0
February	90	573	0.3	1.6	0	0.5	0	100	0	0	0
March	100	708	0.2	1.0	0	0.3	0	100	0	0	0
April	100	685	0.2	1.0	0	0.4	0	100	0	0	0
May	100	710	0.2	0.9	0	0.5	0	100	0	0	0
June	65	442	0.2	1.1	0	0.3	0	100	0	0	0
July	54	378	0.3	2.2	0	0.5	0	100	0	0	0
August	99	703	0.4	3.4	0	0.9	0	100	0	0	0
September	100	687	0.3	3.1	0	0.7	0	100	0	0	0
October	100	705	0.3	1.7	0	0.6	0	100	0	0	0
November	100	683	0.3	9.6	0	0.8	0	100	0	0	0
December	100	706	0.4	2.0	0	0.8	0	100	0	0	0
Annual	92	7642	0.3	9.6	0	0.9	0	100	0	0	0



**Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	>50
January	100	706	0.5	4.5	0	1.5	0	100	0	0	0
February	100	639	0.6	2.8	0	1.1	0	100	0	0	0
March	100	708	0.4	2.5	0	0.8	0	100	0	0	0
April	100	686	0.3	4.5	0	0.6	0	100	0	0	0
May	100	708	0.3	1.6	0	0.6	0	100	0	0	0
June	100	684	0.3	1.7	0	0.5	0	100	0	0	0
July	98	698	0.4	4.9	0	0.9	0	99	1	0	0
August	100	709	0.4	2.8	0	0.8	0	100	0	0	0
September	100	686	0.4	3.2	0	1.4	0	100	0	0	0
October	100	707	0.4	4.4	0	1.2	0	100	0	0	0
November	100	685	0.3	3.5	0	0.7	0	100	0	0	0
December	100	709	0.5	2.4	0	1.1	0	100	0	0	0
Annual	100	8325	0.4	4.9	0	1.5	0	100	0	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	>50
January	100	709	0.4	3.6	0	0.9	0	100	0	0	0
February	100	637	0.5	3.4	0	1.6	0	100	0	0	0
March	100	707	0.3	3.4	0	0.8	0	100	0	0	0
April	100	686	0.2	1.8	0	0.4	0	100	0	0	0
May	97	687	0.2	1.0	0	0.5	0	100	0	0	0
June	94	635	0.2	1.6	0	0.5	0	100	0	0	0
July	96	680	0.4	3.8	0	0.6	0	100	0	0	0
August	100	709	0.4	8.3	0	2.5	0	99	1	0	0
September	100	686	0.4	4.3	0	1.3	0	100	0	0	0
October	100	707	0.3	4.5	0	1.2	0	99	1	0	0
November	100	686	0.3	3.9	0	0.7	0	100	0	0	0
December	100	709	0.5	1.8	0	0.8	0	100	0	0	0
Annual	99	8238	0.3	8.3	0	2.5	0	100	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	>50
January	99	703	0.1	1.9	0	0.2	0	100	0	0	0
February	100	639	0.2	3.5	0	0.3	0	100	0	0	0
March	100	709	0.1	0.3	0	0.2	0	100	0	0	0
April	100	683	0.0	0.7	0	0.1	0	100	0	0	0
May	100	709	0.0	0.4	0	0.2	0	100	0	0	0
June	100	686	0.1	0.4	0	0.1	0	100	0	0	0
July	100	708	0.1	0.6	0	0.2	0	100	0	0	0
August	99	704	0.1	3.5	0	0.3	0	100	0	0	0
September	100	686	0.1	0.9	0	0.1	0	100	0	0	0
October	99	701	0.1	0.8	0	0.2	0	100	0	0	0
November	100	686	0.1	1.0	0	0.2	0	100	0	0	0
December	100	709	0.2	2.1	0	0.5	0	100	0	0	0
Annual	100	8323	0.1	3.5	0	0.5	0	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	>50
January	100	710	0.3	1.6	0	0.7	0	100	0	0	0
February	100	639	0.3	2.7	0	0.8	0	100	0	0	0
March	100	707	0.2	1.3	0	0.5	0	100	0	0	0
April	2	10	0.1	0.3	0	--	0	100	0	0	0
May	24	171	0.2	0.7	0	0.4	0	100	0	0	0
June	100	683	0.2	1.0	0	0.3	0	100	0	0	0
July	99	706	0.2	2.3	0	0.8	0	100	0	0	0
August	100	709	0.2	3.1	0	0.7	0	100	0	0	0
September	100	685	0.1	1.1	0	0.4	0	100	0	0	0
October	100	708	0.1	1.8	0	0.3	0	100	0	0	0
November	100	684	0.1	1.0	0	0.3	0	100	0	0	0
December	100	709	0.3	3.2	0	0.6	0	100	0	0	0
Annual	85	7121	0.2	3.2	0	0.8	0	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
								0 - 3	4-10	11 - 50	>50
January	100	707	0.3	0.5	0	0.4	0	100	0	0	0
February	100	638	0.4	0.6	0	0.5	0	100	0	0	0
March	100	707	0.3	0.5	0	0.4	0	100	0	0	0
April	100	686	0.3	0.7	0	0.4	0	100	0	0	0
May	100	709	0.3	0.8	0	0.5	0	100	0	0	0
June	100	686	0.3	0.6	0	0.4	0	100	0	0	0
July	100	706	0.3	0.9	0	0.4	0	100	0	0	0
August	77	546	0.3	0.6	0	0.3	0	100	0	0	0
September	100	683	0.1	0.2	0	0.1	0	100	0	0	0
October	98	690	0.1	0.2	0	0.1	0	100	0	0	0
November	100	686	0.1	0.2	0	0.1	0	100	0	0	0
December	100	707	0.1	0.3	0	0.1	0	100	0	0	0
Annual	98	8151	0.2	0.9	0	0.5	0	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	>50
January	100	707	0.4	1.1	0	0.5	0	100	0	0	0
February	100	640	0.4	0.5	0	0.4	0	100	0	0	0
March	100	709	0.4	0.6	0	0.4	0	100	0	0	0
April	100	686	0.3	0.7	0	0.5	0	100	0	0	0
May	100	708	0.4	0.8	0	0.5	0	100	0	0	0
June	100	686	0.4	0.5	0	0.4	0	100	0	0	0
July	100	707	0.3	0.9	0	0.4	0	100	0	0	0
August	100	709	0.3	0.7	0	0.4	0	100	0	0	0
September	100	686	0.3	0.5	0	0.3	0	100	0	0	0
October	100	707	0.3	0.4	0	0.3	0	100	0	0	0
November	100	686	0.3	0.4	0	0.4	0	100	0	0	0
December	100	710	0.4	0.7	0	0.4	0	100	0	0	0
Annual	100	8341	0.3	1.1	0	0.5	0	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	>50
January	84	590	0.1	0.4	0	0.2	0	100	0	0	0
February	94	599	0.1	0.3	0	0.2	0	100	0	0	0
March	100	708	0.1	0.3	0	0.1	0	100	0	0	0
April	100	684	0.1	1.5	0	0.3	0	100	0	0	0
May	99	702	0.1	0.6	0	0.3	0	100	0	0	0
June	96	653	0.1	0.5	0	0.2	0	100	0	0	0
July	98	696	0.1	0.4	0	0.2	0	100	0	0	0
August	99	700	0.1	0.6	0	0.2	0	100	0	0	0
September	99	681	0.1	0.2	0	0.1	0	100	0	0	0
October	100	707	0.1	0.4	0	0.2	0	100	0	0	0
November	100	686	0.3	0.5	0	0.4	0	100	0	0	0
December	100	706	0.2	0.4	0	0.3	0	100	0	0	0
Annual	97	8112	0.1	1.5	0	0.4	0	100	0	0	0



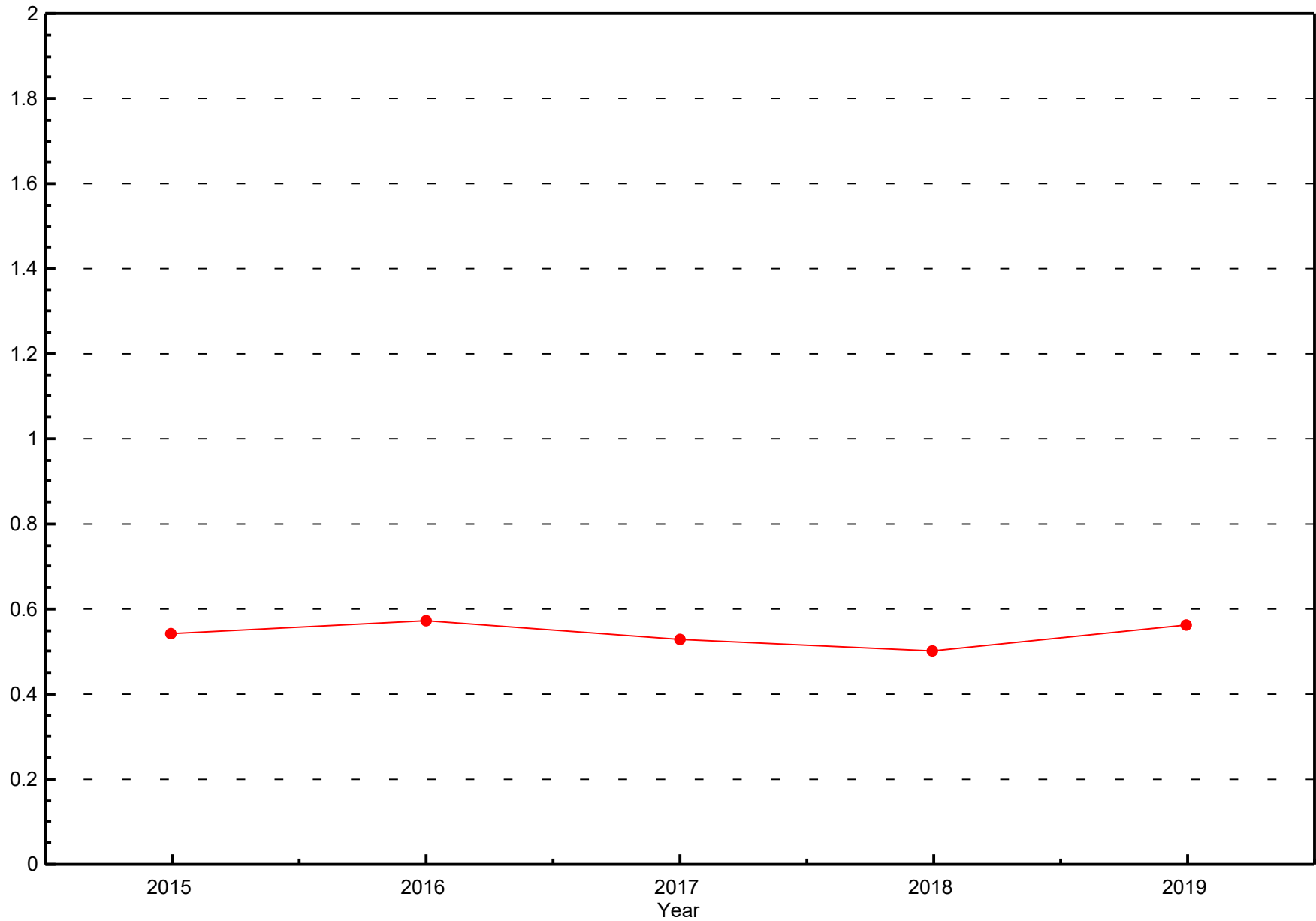
Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding	Maximum 24-Hour Value	Number of Values Exceeding	% of Data in Each Concentration Range			
					1-Hour Objective		24-Hour Objective	0 - 3	4-10	11 - 50	>50
January	100	709	0.6	6.2	0	1.3	0	99	1	0	0
February	100	640	0.6	2.9	0	1.3	0	100	0	0	0
March	98	695	0.4	14.6	2	2.2	0	99	1	0	0
April	100	686	0.3	3.2	0	0.5	0	100	0	0	0
May	100	708	0.3	6.0	0	0.8	0	100	0	0	0
June	100	682	0.3	15.3	1	1.2	0	100	0	0	0
July	83	589	0.3	7.7	0	1.1	0	99	1	0	0
August	99	703	0.4	9.0	0	1.3	0	99	1	0	0
September	100	687	0.3	2.8	0	0.8	0	100	0	0	0
October	100	709	0.3	2.4	0	0.7	0	100	0	0	0
November	100	686	0.2	1.3	0	0.4	0	100	0	0	0
December	100	707	0.6	4.7	0	1.5	0	99	1	0	0
Annual	98	8201	0.4	15.3	3	2.2	0	100	0	0	0



Yearly Averages

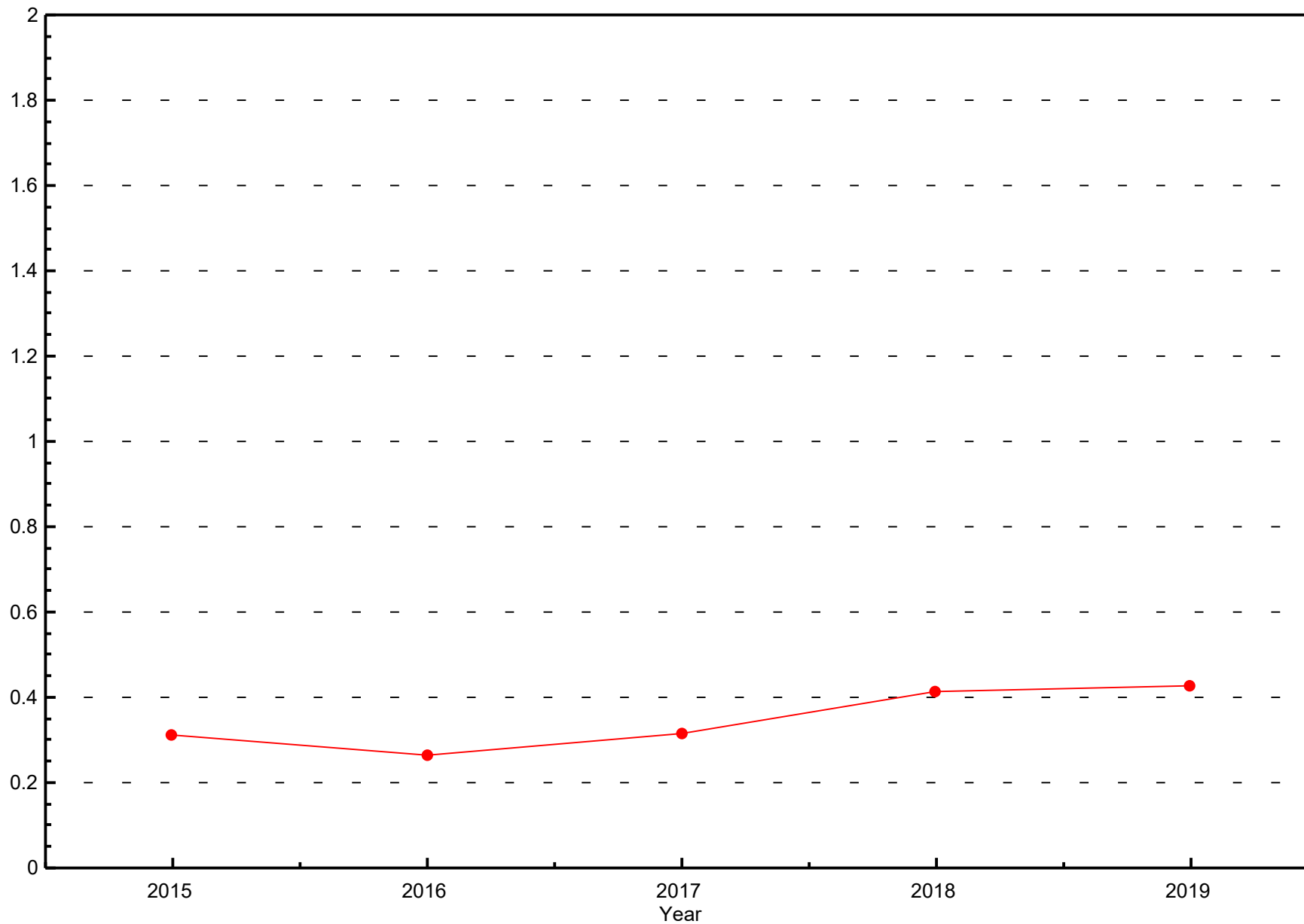
Total Reduced Sulphur (TRS) - ppb
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

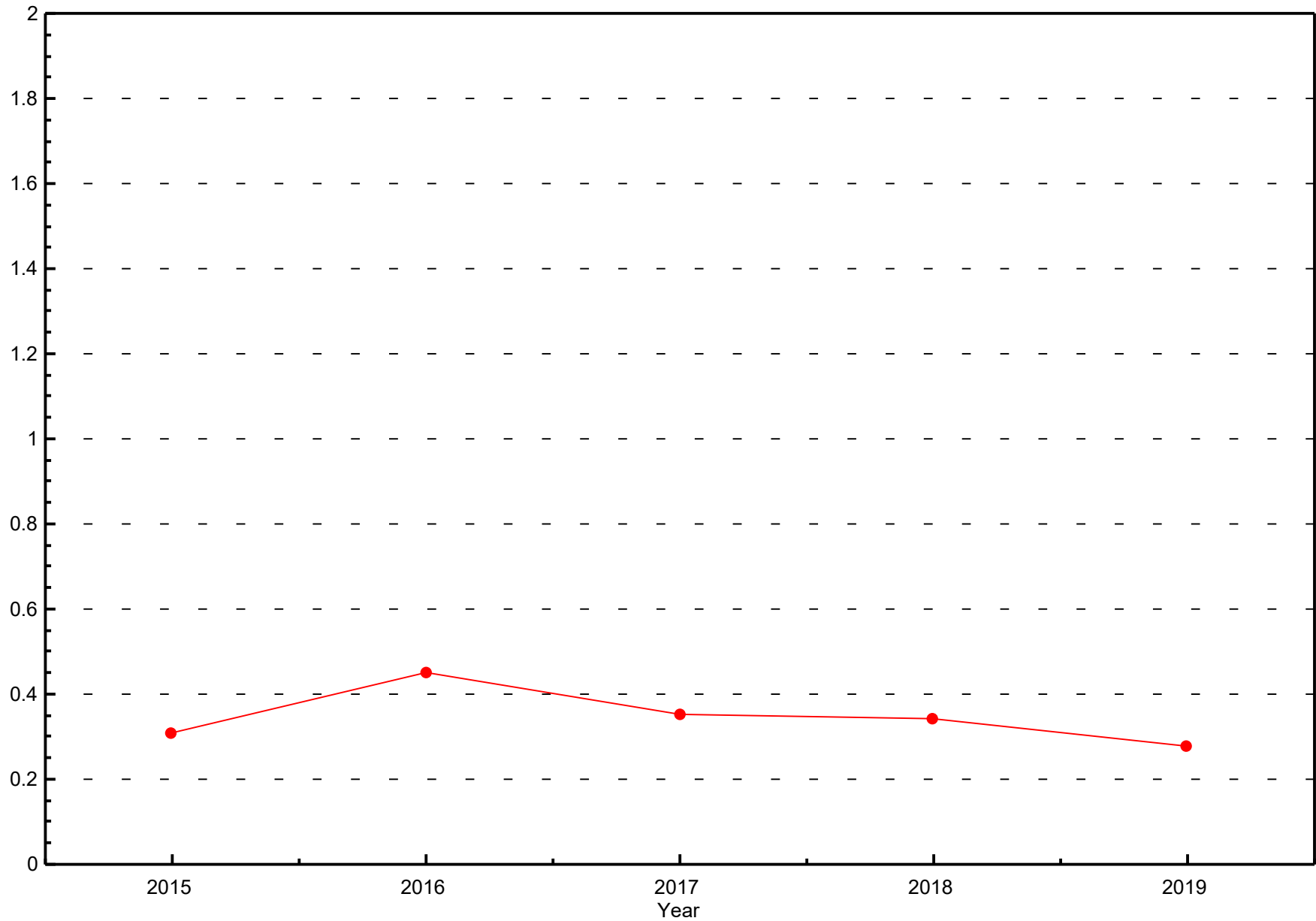
Total Reduced Sulphur (TRS) - ppb
Patricia McInnes (2015 to 2019)





Yearly Averages

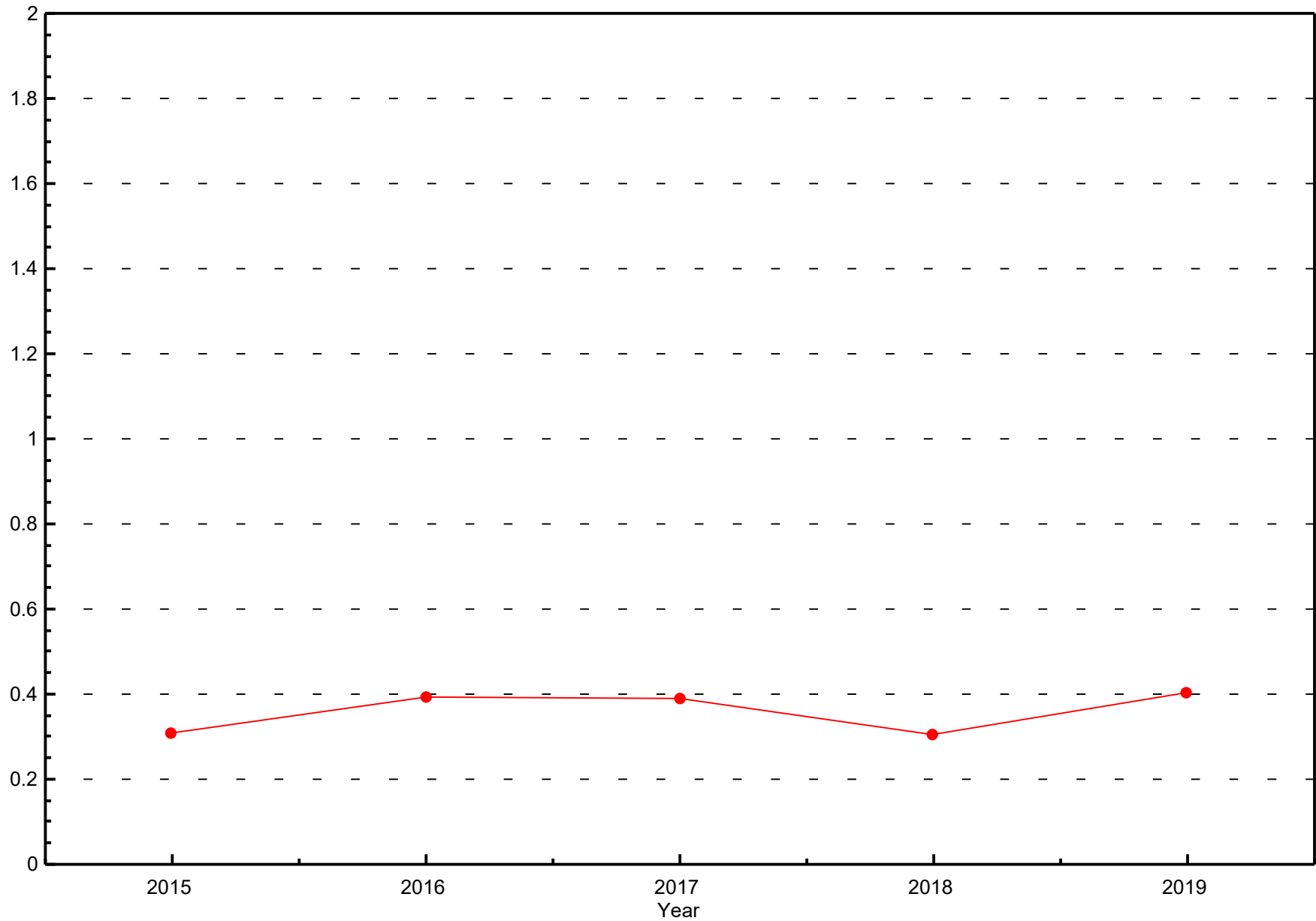
Total Reduced Sulphur (TRS) - ppb
Athabasca Valley (2015 to 2019)





Yearly Averages

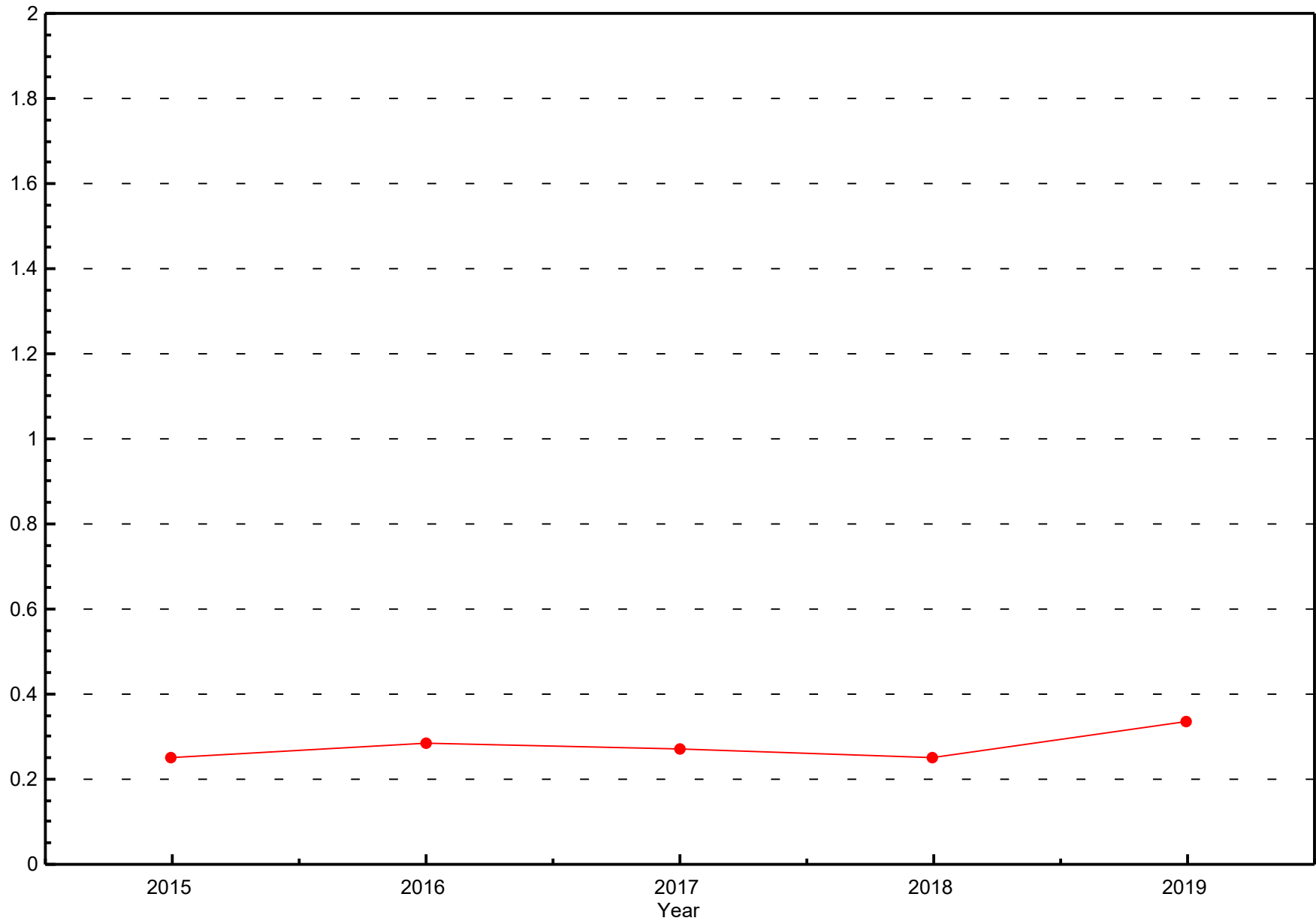
Total Reduced Sulphur (TRS) - ppb
Barge Landing (2015 to 2019)





Yearly Averages

Total Reduced Sulphur (TRS) - ppb
Fort McKay South (2015 to 2019)

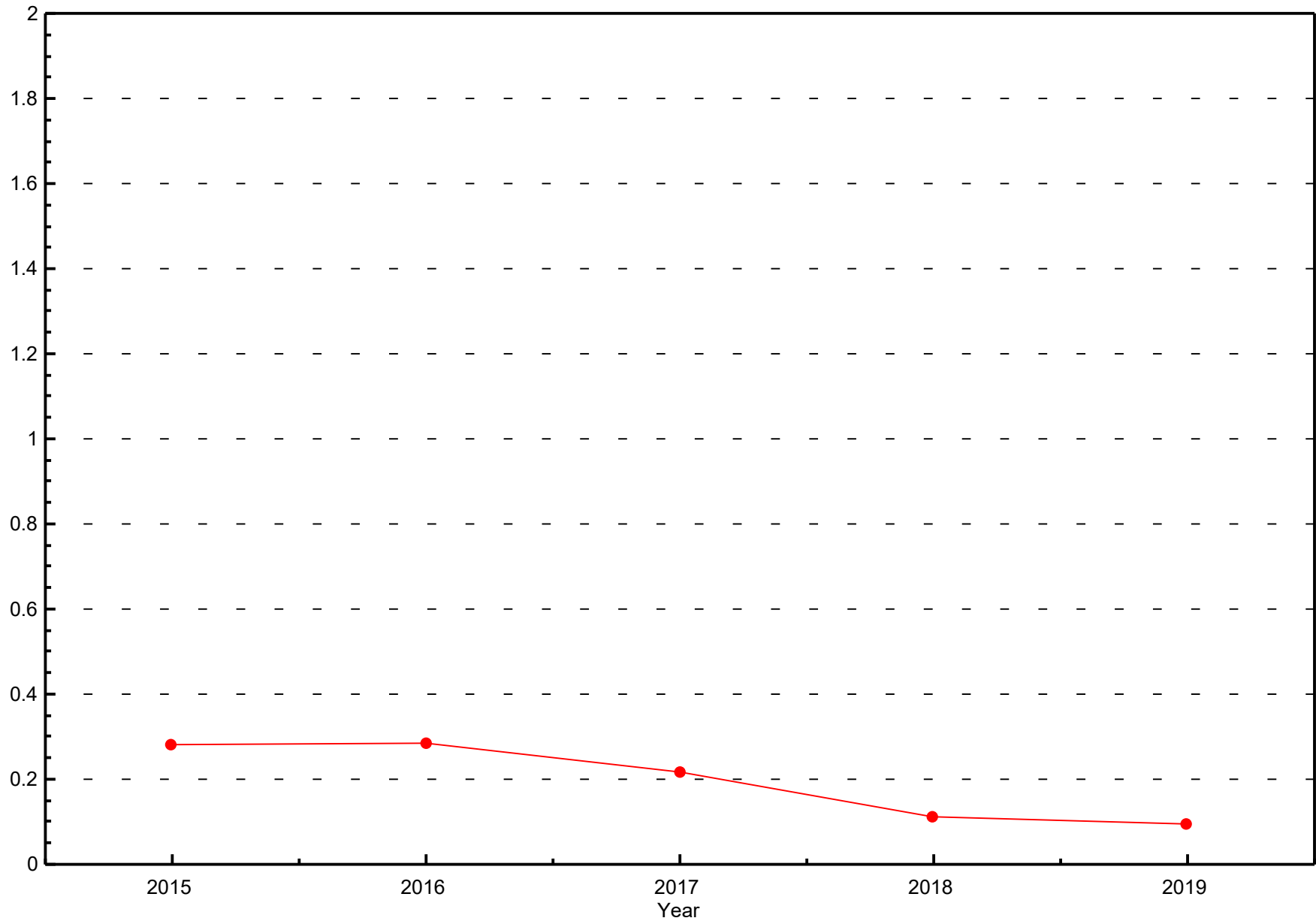




Yearly Averages

Total Reduced Sulphur (TRS) - ppb

Anzac (2015 to 2019)

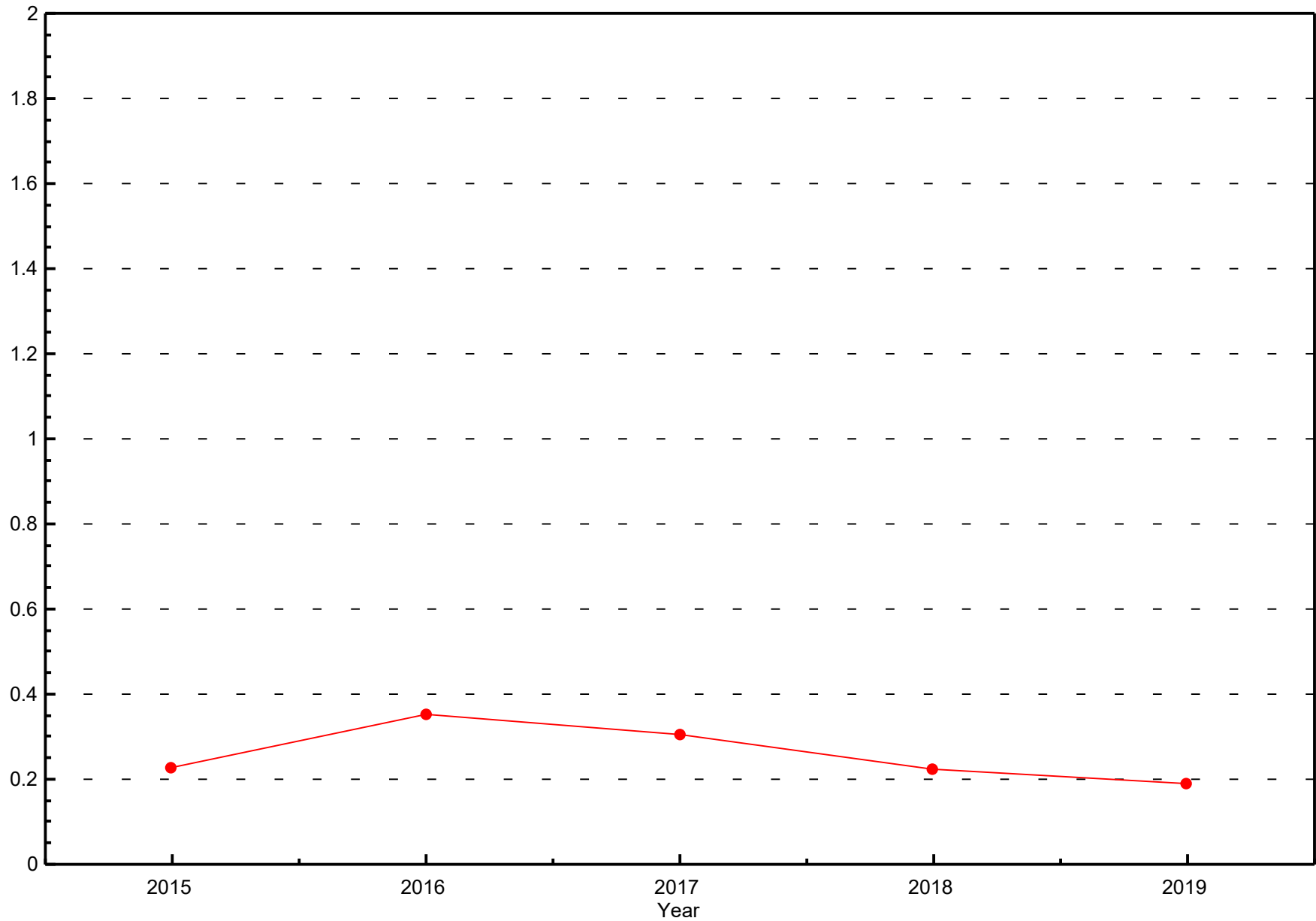




Yearly Averages

Total Reduced Sulphur (TRS) - ppb

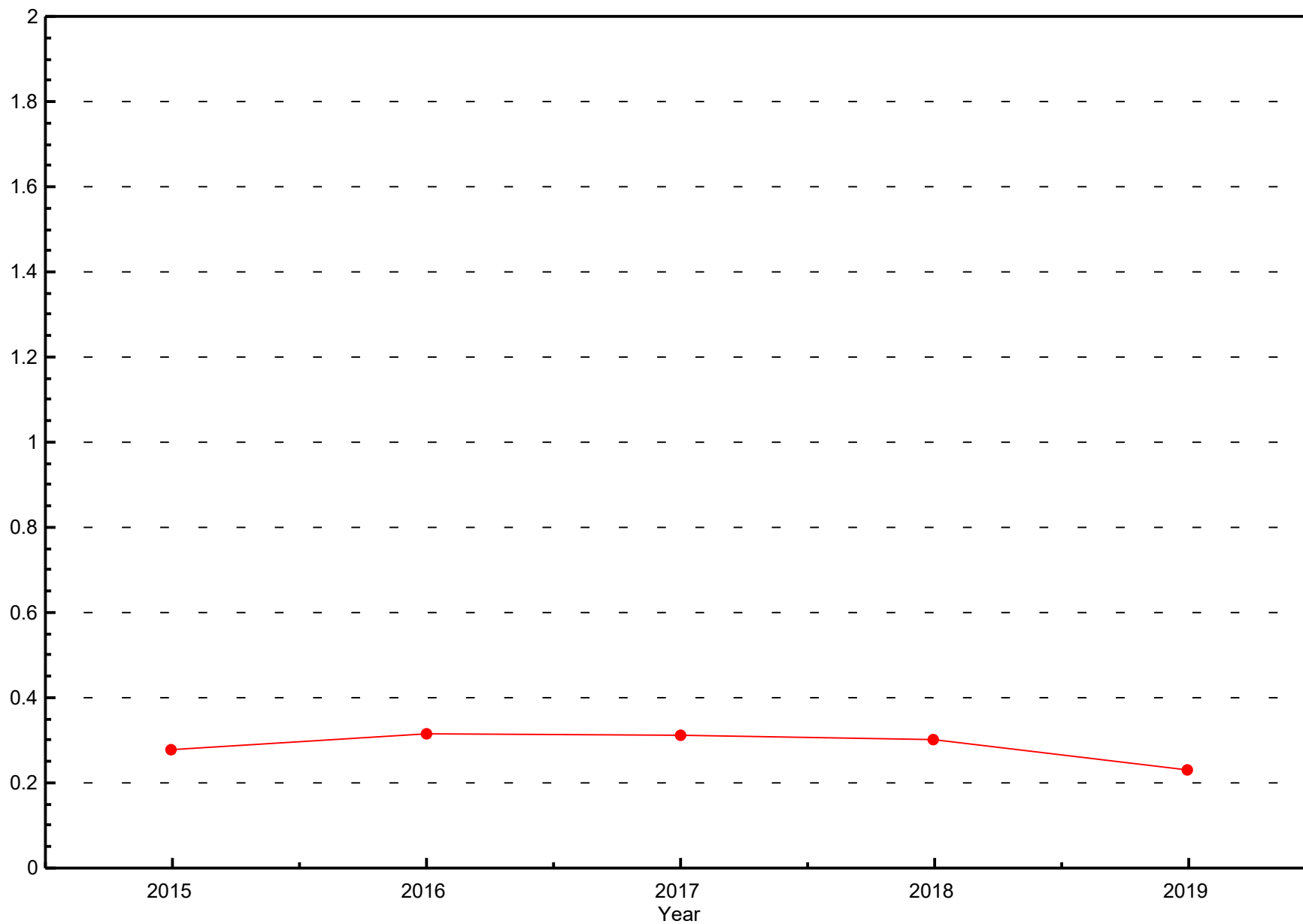
Horizon (2015 to 2019)





Yearly Averages

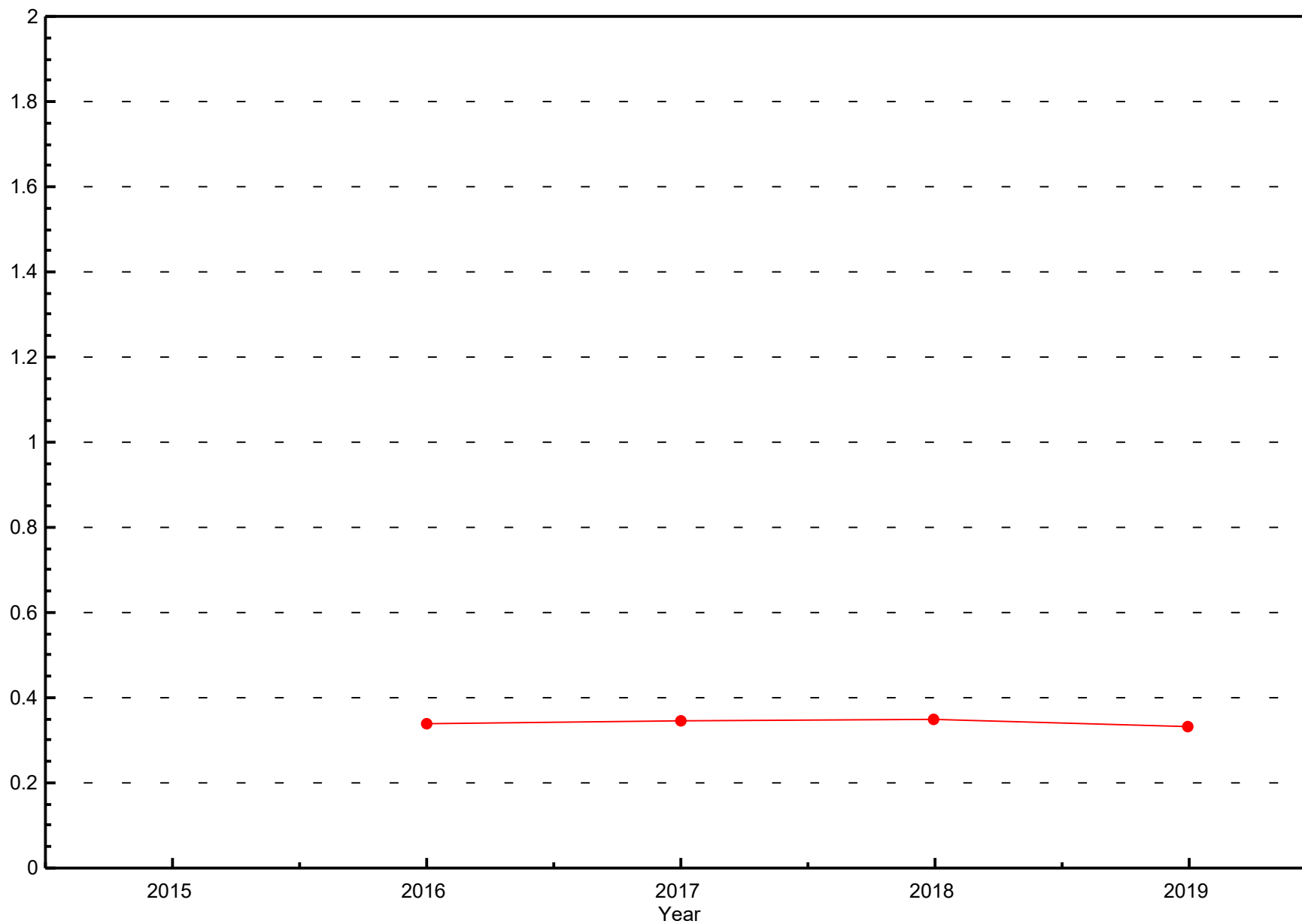
Total Reduced Sulphur (TRS) - ppb
Stony Mountain (2015 to 2019)





Yearly Averages

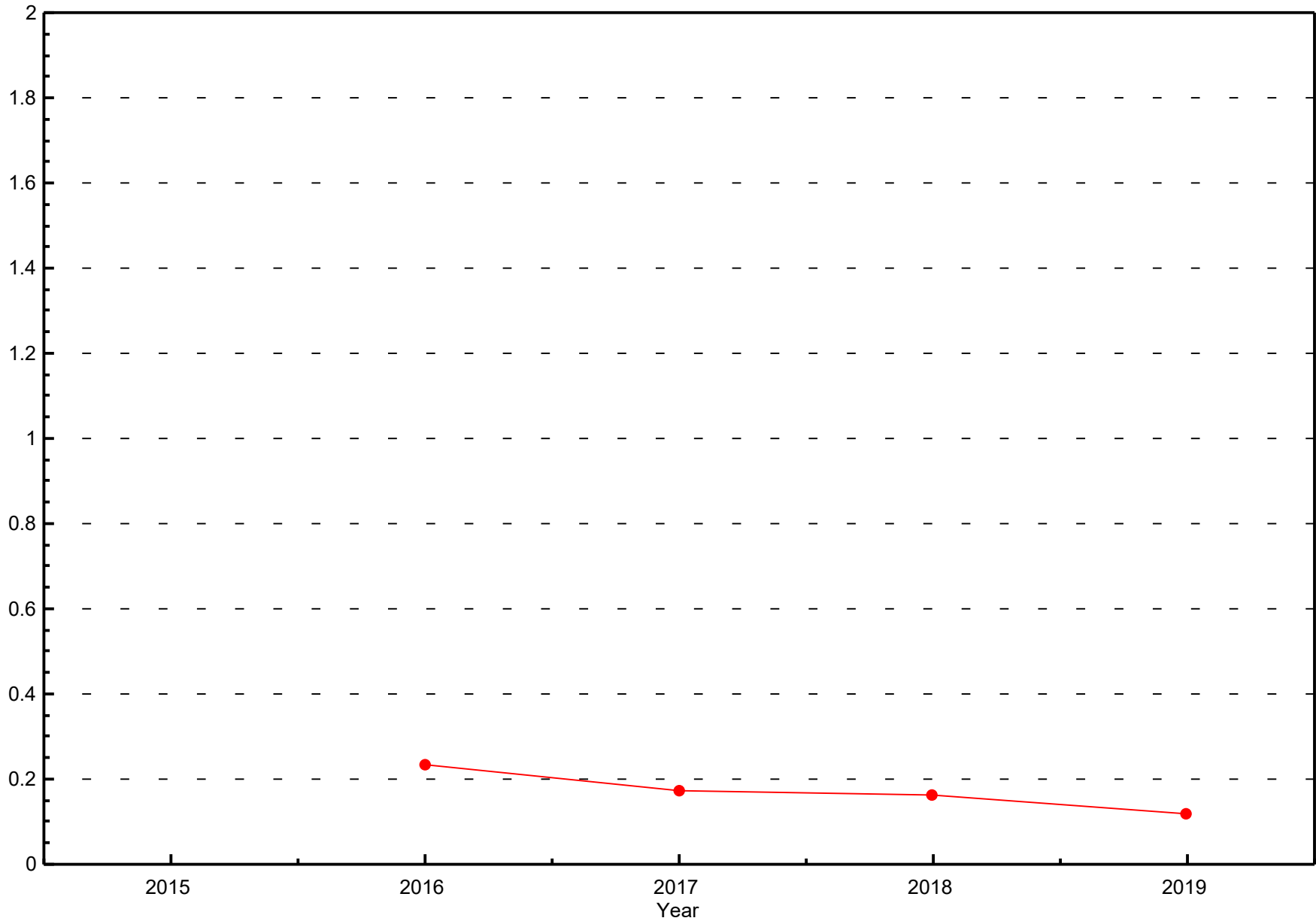
Total Reduced Sulphur (TRS) - ppb
Conklin (2015 to 2019)





Yearly Averages

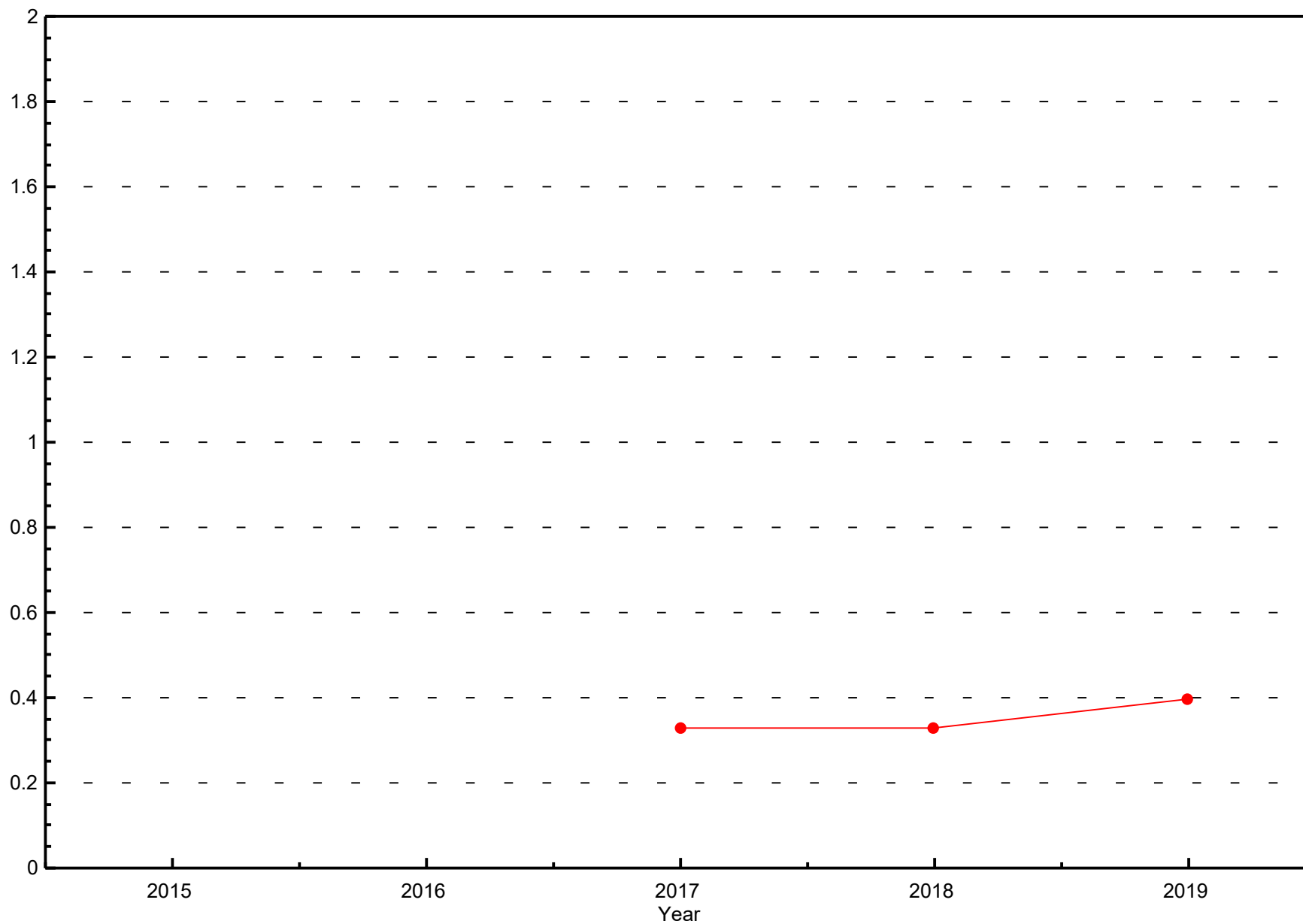
Total Reduced Sulphur (TRS) - ppb
Janvier (2015 to 2019)





Yearly Averages

Total Reduced Sulphur (TRS) - ppb
Fort Hills (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NITROGEN DIOXIDE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	706	16.6	54.1	0	28.3	99	1	0	0
February	100	639	16.2	44.0	0	29.8	98	2	0	0
March	100	706	10.6	49.4	0	26.4	99	1	0	0
April	100	684	5.4	35.2	0	10.6	100	0	0	0
May	100	708	5.5	35.4	0	10.6	100	0	0	0
June	100	680	3.4	29.3	0	7.1	100	0	0	0
July	100	708	4.2	36.1	0	8.8	100	0	0	0
August	100	708	3.2	20.8	0	9.1	100	0	0	0
September	100	683	4.6	29.1	0	8.2	100	0	0	0
October	100	707	5.1	29.7	0	13.3	100	0	0	0
November	100	681	8.8	33.9	0	16.8	100	0	0	0
December	100	708	16.2	42.9	0	25.9	100	0	0	0
Annual	100	8318	8.3	54.1	0	29.8	100	0	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	11.2	41.0	0	24.2	100	0	0	0
February	100	639	11.4	46.3	0	25.9	99	1	0	0
March	100	707	5.7	40.6	0	12.7	100	0	0	0
April	99	680	2.7	33.4	0	7.7	100	0	0	0
May	96	676	3.4	35.0	0	10.0	100	0	0	0
June	100	681	2.5	22.5	0	6.2	100	0	0	0
July	99	703	2.8	23.2	0	9.9	100	0	0	0
August	100	705	3.1	33.8	0	6.2	100	0	0	0
September	100	684	2.5	17.6	0	6.8	100	0	0	0
October	100	707	2.8	23.2	0	6.3	100	0	0	0
November	100	683	4.5	27.2	0	13.5	100	0	0	0
December	100	708	9.1	41.1	0	31.0	100	0	0	0
Annual	99	8280	5.1	46.3	0	31.0	100	0	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	10.3	37.6	0	20.3	100	0	0	0
February	100	638	10.8	39.1	0	19.4	100	0	0	0
March	100	707	6.2	44.8	0	14.6	100	0	0	0
April	100	684	3.7	24.2	0	9.4	100	0	0	0
May	97	686	3.7	28.0	0	8.7	100	0	0	0
June	100	681	2.5	18.1	0	6.0	100	0	0	0
July	100	707	2.8	25.4	0	7.4	100	0	0	0
August	100	707	2.1	15.9	0	5.3	100	0	0	0
September	100	684	2.5	18.1	0	5.2	100	0	0	0
October	100	708	3.8	35.1	0	7.9	100	0	0	0
November	99	677	5.7	30.8	0	11.1	100	0	0	0
December	100	706	10.8	35.8	0	19.0	100	0	0	0
Annual	100	8292	5.4	44.8	0	20.3	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	708	12.6	37.9	0	20.1	100	0	0	0
February	100	639	13.9	48.3	0	23.4	98	2	0	0
March	96	681	10.3	51.1	0	19.0	99	1	0	0
April	100	684	4.9	29.2	0	8.6	100	0	0	0
May	100	707	4.8	20.9	0	10.7	100	0	0	0
June	100	681	3.7	18.3	0	6.9	100	0	0	0
July	100	707	4.0	22.4	0	7.7	100	0	0	0
August	100	706	3.8	16.4	0	7.2	100	0	0	0
September	100	685	5.0	22.4	0	8.2	100	0	0	0
October	100	706	6.8	30.4	0	11.6	100	0	0	0
November	99	680	9.1	32.9	0	17.8	100	0	0	0
December	100	707	13.2	43.2	0	28.9	100	0	0	0
Annual	100	8291	7.6	51.1	0	28.9	100	0	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	1.8	13.9	0	4.8	100	0	0	0
February	99	631	2.7	22.4	0	8.2	100	0	0	0
March	99	704	2.1	15.3	0	6.6	100	0	0	0
April	100	682	1.5	8.7	0	3.3	100	0	0	0
May	100	706	1.1	8.3	0	2.1	100	0	0	0
June	100	685	1.0	6.8	0	1.9	100	0	0	0
July	100	706	1.5	9.5	0	3.0	100	0	0	0
August	98	696	1.1	6.9	0	2.5	100	0	0	0
September	100	684	1.7	10.0	0	5.8	100	0	0	0
October	99	703	2.4	11.4	0	5.1	100	0	0	0
November	100	685	3.3	15.1	0	8.2	100	0	0	0
December	100	707	4.3	17.3	0	11.4	100	0	0	0
Annual	100	8296	2.0	22.4	0	11.4	100	0	0	0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	99	704	19.5	73.0	0	41.9	95	5	0	0
February	100	639	20.2	54.2	0	35.5	94	6	0	0
March	100	708	13.8	46.0	0	26.9	97	3	0	0
April	100	685	6.5	35.1	0	11.7	100	0	0	0
May	100	705	7.1	38.9	0	13.1	100	0	0	0
June	98	668	4.5	24.4	0	8.5	100	0	0	0
July	99	703	5.3	32.9	0	10.1	100	0	0	0
August	100	708	4.2	20.8	0	8.7	100	0	0	0
September	100	685	5.9	26.2	0	11.1	100	0	0	0
October	100	708	6.9	29.5	0	14.9	100	0	0	0
November	100	685	10.3	37.7	0	22.8	100	0	0	0
December	97	690	19.2	61.1	0	40.6	96	4	0	0
Annual	100	8288	10.2	73.0	0	41.9	99	1	0	0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	708	14.3	45.0	0	25.9	100	0	0	0
February	100	639	14.6	53.4	0	25.6	99	1	0	0
March	100	709	9.8	45.7	0	23.5	99	1	0	0
April	98	669	4.6	34.9	0	9.1	100	0	0	0
May	98	690	5.2	45.6	0	11.4	100	0	0	0
June	92	630	3.1	24.2	0	6.3	100	0	0	0
July	100	708	4.3	32.9	0	8.9	100	0	0	0
August	100	706	2.6	22.7	0	6.3	100	0	0	0
September	100	683	3.7	23.6	0	11.0	100	0	0	0
October	100	705	4.3	26.5	0	10.1	100	0	0	0
November	100	685	7.6	29.9	0	17.6	100	0	0	0
December	100	708	13.5	32.5	0	22.6	100	0	0	0
Annual	99	8240	7.3	53.4	0	25.9	100	0	0	0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	91	646	3.8	24.5	0	10.4	100	0	0	0
February	99	635	5.0	23.1	0	13.2	100	0	0	0
March	93	660	2.5	20.5	0	6.2	100	0	0	0
April	100	682	1.2	10.8	0	2.7	100	0	0	0
May	100	708	1.4	10.0	0	6.7	100	0	0	0
June	100	685	1.0	11.9	0	3.4	100	0	0	0
July	100	708	1.2	13.8	0	3.4	100	0	0	0
August	99	702	1.1	8.3	0	2.7	100	0	0	0
September	100	684	0.8	11.4	0	1.7	100	0	0	0
October	99	699	1.6	14.9	0	3.7	100	0	0	0
November	100	684	2.7	17.8	0	5.6	100	0	0	0
December	100	708	4.8	34.5	0	12.8	100	0	0	0
Annual	99	8201	2.2	34.5	0	13.2	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	709	15.7	104.0	0	42.3	96	4	0	0
February	100	639	14.1	57.3	0	27.0	98	3	0	0
March	100	708	10.5	62.7	0	21.0	97	3	0	0
April	100	685	8.2	50.5	0	18.6	99	1	0	0
May	99	702	8.1	45.0	0	16.5	100	0	0	0
June	100	680	6.5	34.8	0	13.4	100	0	0	0
July	99	704	5.7	38.6	0	18.5	100	0	0	0
August	100	707	7.2	34.6	0	15.5	100	0	0	0
September	100	683	6.3	29.2	0	16.1	100	0	0	0
October	100	708	8.0	34.9	0	14.1	100	0	0	0
November	100	684	8.0	34.4	0	14.5	100	0	0	0
December	100	708	12.7	61.7	0	27.0	99	1	0	0
Annual	100	8317	9.2	104.0	0	42.3	99	1	0	0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	3.6	30.3	0	10.9	100	0	0	0
February	100	639	4.2	31.3	0	11.1	100	0	0	0
March	100	707	3.6	28.0	0	9.7	100	0	0	0
April	100	685	1.6	24.5	0	5.2	100	0	0	0
May	100	708	1.6	16.5	0	5.0	100	0	0	0
June	100	682	1.2	14.8	0	3.3	100	0	0	0
July	100	708	1.4	14.3	0	4.8	100	0	0	0
August	100	708	1.7	17.3	0	4.2	100	0	0	0
September	100	685	2.0	16.6	0	5.5	100	0	0	0
October	100	705	3.0	23.2	0	6.8	100	0	0	0
November	100	685	3.7	34.4	0	13.1	100	0	0	0
December	54	378	5.0	22.8	0	9.5	100	0	0	0
Annual	96	7997	2.6	34.4	0	13.1	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	2.2	10.4	0	5.4	100	0	0	0
February	100	637	2.9	9.5	0	6.6	100	0	0	0
March	100	708	1.4	7.1	0	3.3	100	0	0	0
April	100	685	0.9	5.1	0	1.7	100	0	0	0
May	100	708	0.9	6.2	0	2.0	100	0	0	0
June	100	685	0.7	3.6	0	1.7	100	0	0	0
July	100	706	0.6	5.9	0	1.7	100	0	0	0
August	99	701	0.5	3.5	0	1.0	100	0	0	0
September	99	681	0.6	5.6	0	1.1	100	0	0	0
October	99	696	0.9	4.9	0	2.3	100	0	0	0
November	100	685	1.5	8.0	0	4.0	100	0	0	0
December	100	707	2.6	13.2	0	6.0	100	0	0	0
Annual	100	8306	1.3	13.2	0	6.6	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	6.0	44.5	0	23.6	99	1	0	0
February	100	639	7.7	58.9	0	21.6	98	2	0	0
March	100	708	4.8	64.8	0	18.1	99	1	0	0
April	100	686	2.0	17.8	0	4.3	100	0	0	0
May	100	707	1.6	15.1	0	4.6	100	0	0	0
June	92	628	1.5	18.6	0	3.8	100	0	0	0
July	100	707	1.8	18.2	0	4.5	100	0	0	0
August	100	707	2.0	13.3	0	4.4	100	0	0	0
September	100	684	2.4	19.3	0	5.7	100	0	0	0
October	100	708	3.1	27.2	0	8.0	100	0	0	0
November	100	685	3.3	36.0	0	8.7	100	0	0	0
December	100	706	5.8	38.9	0	11.5	100	0	0	0
Annual	99	8272	3.5	64.8	0	23.6	100	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	708	5.3	37.1	0	21.9	100	0	0	0
February	99	633	5.3	37.9	0	16.6	100	0	0	0
March	100	705	2.7	22.4	0	8.1	100	0	0	0
April	100	686	1.4	18.6	0	5.3	100	0	0	0
May	99	700	1.8	14.9	0	6.0	100	0	0	0
June	100	684	1.1	9.8	0	3.5	100	0	0	0
July	100	708	0.9	16.3	0	6.0	100	0	0	0
August	100	708	0.7	18.1	0	3.8	100	0	0	0
September	100	685	1.0	14.1	0	5.6	100	0	0	0
October	100	708	1.1	22.0	0	6.1	100	0	0	0
November	100	685	1.7	15.1	0	6.1	100	0	0	0
December	100	708	5.4	31.7	0	21.8	100	0	0	0
Annual	100	8318	2.3	37.9	0	21.9	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	3.3	20.0	0	12.4	100	0	0	0
February	100	639	4.3	19.6	0	7.5	100	0	0	0
March	100	708	2.3	13.9	0	4.0	100	0	0	0
April	100	685	1.4	18.1	0	2.7	100	0	0	0
May	100	708	1.4	11.9	0	2.6	100	0	0	0
June	100	685	1.3	11.1	0	2.6	100	0	0	0
July	100	706	1.0	8.2	0	2.4	100	0	0	0
August	100	708	0.9	7.1	0	1.5	100	0	0	0
September	100	683	1.0	7.9	0	1.9	100	0	0	0
October	100	704	1.6	16.3	0	3.3	100	0	0	0
November	100	685	2.2	14.4	0	4.6	100	0	0	0
December	100	707	3.4	19.9	0	9.9	100	0	0	0
Annual	100	8325	2.0	20.0	0	12.4	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	708	2.6	17.7	0	7.0	100	0	0	0
February	99	634	2.6	12.1	0	5.9	100	0	0	0
March	99	702	1.0	14.5	0	2.6	100	0	0	0
April	100	682	0.5	8.7	0	1.4	100	0	0	0
May	99	701	1.0	6.5	0	2.6	100	0	0	0
June	100	683	1.3	14.6	0	3.3	100	0	0	0
July	99	699	0.9	6.7	0	1.6	100	0	0	0
August	99	703	0.5	4.8	0	1.2	100	0	0	0
September	100	684	0.7	6.4	0	1.4	100	0	0	0
October	100	703	1.3	7.8	0	3.0	100	0	0	0
November	100	685	1.7	11.6	0	3.4	100	0	0	0
December	100	708	2.8	12.2	0	6.0	100	0	0	0
Annual	100	8292	1.4	17.7	0	7.0	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	709	19.9	67.2	0	37.4	92	8	0	0
February	100	636	17.8	61.8	0	34.3	93	7	0	0
March	100	708	13.3	62.0	0	29.0	96	4	0	0
April	100	685	7.8	46.1	0	17.0	99	1	0	0
May	100	708	7.6	44.2	0	20.2	100	0	0	0
June	100	682	3.7	35.9	0	9.0	100	0	0	0
July	100	705	3.9	34.6	0	9.9	100	0	0	0
August	100	708	4.8	34.2	0	11.8	100	0	0	0
September	100	684	5.4	32.2	0	10.0	100	0	0	0
October	100	708	7.1	38.8	0	17.6	100	0	0	0
November	100	686	8.6	38.7	0	22.9	100	0	0	0
December	100	707	17.0	90.8	0	39.2	98	2	0	0
Annual	100	8326	9.7	90.8	0	39.2	98	2	0	0



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	4.4	27.5	0	11.6	100	0	0	0
February	100	644	5.0	28.5	0	13.7	100	0	0	0
March	100	261	4.2	20.3	0	8.7	100	0	0	0
Annual	100	1612	4.6	28.5	0	13.7	100	0	0	0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	706	4.7	27.2	0	13.0	100	0	0	0
February	99	631	6.2	27.3	0	11.1	100	0	0	0
March	100	708	4.2	32.7	0	10.5	100	0	0	0
April	100	685	2.8	19.8	0	8.1	100	0	0	0
May	100	709	2.5	13.6	0	5.4	100	0	0	0
June	100	683	2.3	14.9	0	5.6	100	0	0	0
July	100	709	1.8	19.6	0	4.9	100	0	0	0
August	100	708	2.1	16.8	0	5.3	100	0	0	0
September	100	685	1.8	14.2	0	4.2	100	0	0	0
October	100	705	2.7	14.6	0	6.2	100	0	0	0
November	100	686	3.0	14.0	0	5.8	100	0	0	0
December	100	709	3.9	17.7	0	10.6	100	0	0	0
Annual	100	8324	3.1	32.7	0	13.0	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	707	2.3	28.7	0	10.6	100	0	0	0
February	100	639	2.8	25.7	0	5.7	100	0	0	0
March	100	707	1.4	10.0	0	2.8	100	0	0	0
April	100	686	0.7	9.1	0	2.2	100	0	0	0
May	100	708	0.6	6.1	0	1.7	100	0	0	0
June	100	684	0.5	10.2	0	1.0	100	0	0	0
July	100	706	0.4	6.9	0	1.3	100	0	0	0
August	100	707	0.4	5.5	0	1.0	100	0	0	0
September	99	682	0.3	3.7	0	1.0	100	0	0	0
October	99	700	0.8	5.1	0	2.9	100	0	0	0
November	100	685	1.7	8.2	0	4.1	100	0	0	0
December	100	708	2.7	21.2	0	7.5	100	0	0	0
Annual	100	8319	1.2	28.7	0	10.6	100	0	0	0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
March	93	394	1.9	22.3	0	6.5	100	0	0	0
April	95	653	1.0	6.4	0	2.3	100	0	0	0
May	99	698	1.1	7.5	0	3.3	100	0	0	0
June	93	638	0.8	8.0	0	2.0	100	0	0	0
July	100	707	0.8	6.2	0	1.5	100	0	0	0
August	100	707	0.7	6.4	0	1.7	100	0	0	0
September	100	685	0.6	4.2	0	1.5	100	0	0	0
October	100	701	1.1	11.6	0	2.6	100	0	0	0
November	100	685	1.9	12.9	0	4.8	100	0	0	0
December	99	704	3.1	22.1	0	7.0	100	0	0	0
Annual	98	6572	1.3	22.3	0	7.0	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
October	99	700	1.4	13.0	0	4.1	100	0	0	0
November	100	683	2.2	38.6	0	4.5	100	0	0	0
December	100	708	3.0	15.6	0	5.7	100	0	0	0
Annual	100	2091	2.2	38.6	0	5.7	100	0	0	0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
June	100	379	1.0	9.0	0	2.1	100	0	0	0
July	100	708	1.4	11.0	0	5.4	100	0	0	0
August	100	708	1.3	10.7	0	3.4	100	0	0	0
September	100	682	1.5	15.6	0	5.5	100	0	0	0
October	100	704	2.4	16.4	0	5.7	100	0	0	0
November	100	684	3.2	20.5	0	8.8	100	0	0	0
December	100	707	5.1	22.9	0	12.5	100	0	0	0
Annual	100	4572	2.4	22.9	0	12.5	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	709	2.8	12.8	0	5.9	100	0	0	0
February	100	640	3.7	18.4	0	6.0	100	0	0	0
March	100	709	2.5	17.4	0	7.1	100	0	0	0
April	92	628	2.0	21.9	0	6.8	100	0	0	0
May	100	708	1.5	17.1	0	6.6	100	0	0	0
June	100	685	1.4	11.8	0	4.7	100	0	0	0
July	89	633	1.3	12.7	0	5.5	100	0	0	0
August	100	708	1.5	12.9	0	3.9	100	0	0	0
Annual	98	5420	2.1	21.9	0	7.1	100	0	0	0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
January	100	705	2.6	23.5	0	5.8	100	0	0	0
February	100	639	4.8	39.3	0	14.7	100	0	0	0
March	99	704	3.6	29.4	0	13.1	100	0	0	0
April	100	330	3.2	101.3	0	25.4	98	2	1	0
Annual	100	2378	3.6	101.3	0	25.4	100	0	0	0



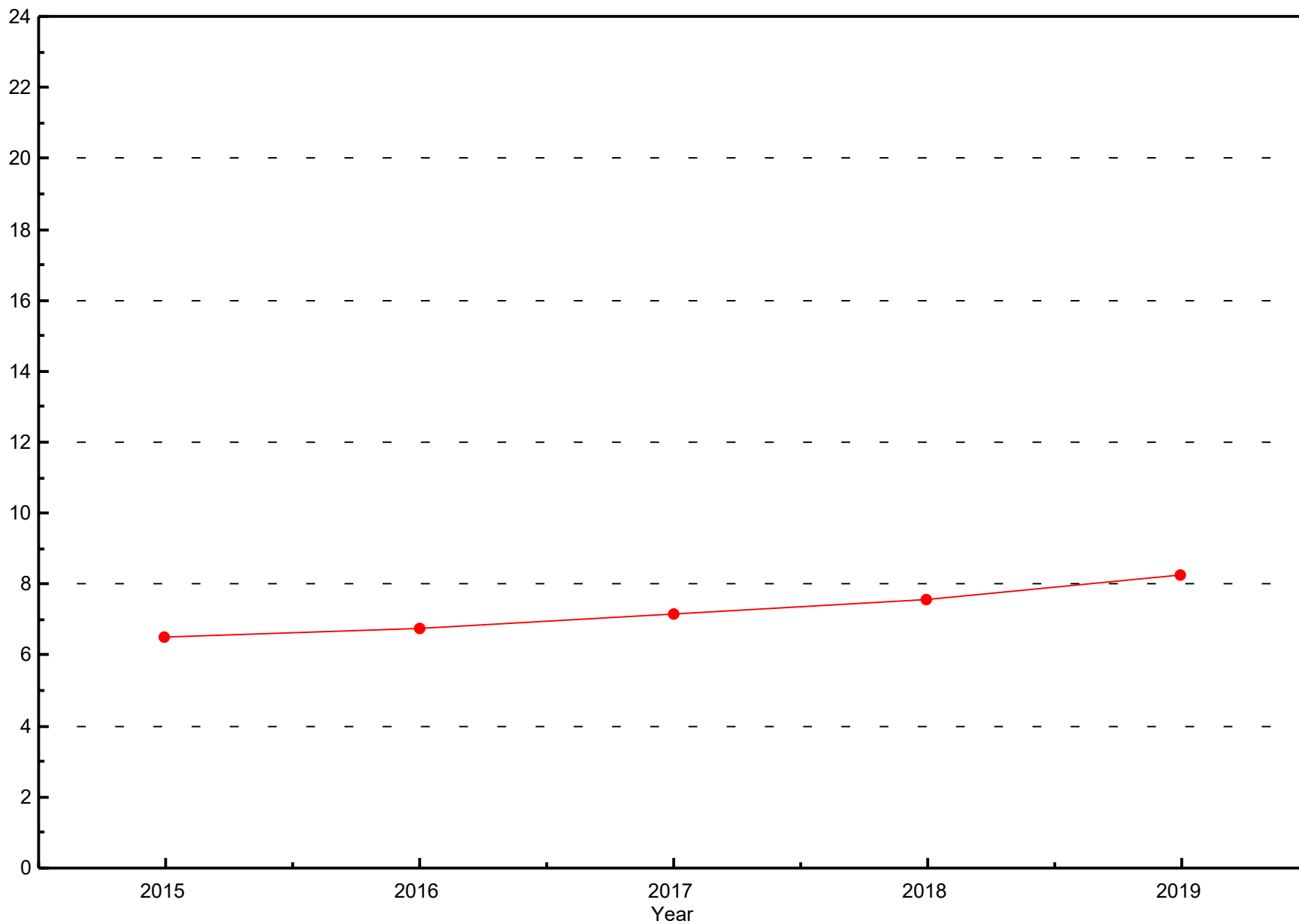
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Nitrogen Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range			
							0 - 40	41 - 80	81 - 159	>159
April	100	329	1.3	4.2	0	2.4	100	0	0	0
May	100	708	1.3	6.9	0	2.8	100	0	0	0
June	100	681	1.5	5.2	0	2.3	100	0	0	0
July	100	708	1.2	58.1	0	4.6	100	0	0	0
August	100	706	1.0	9.1	0	2.1	100	0	0	0
September	100	683	1.1	7.9	0	2.0	100	0	0	0
October	100	704	1.3	5.3	0	3.2	100	0	0	0
November	34	230	1.8	10.2	0	4.0	100	0	0	0
December	62	439	3.1	23.0	0	7.2	100	0	0	0
Annual	88	5188	1.4	58.1	0	7.2	100	0	0	0



Yearly Averages

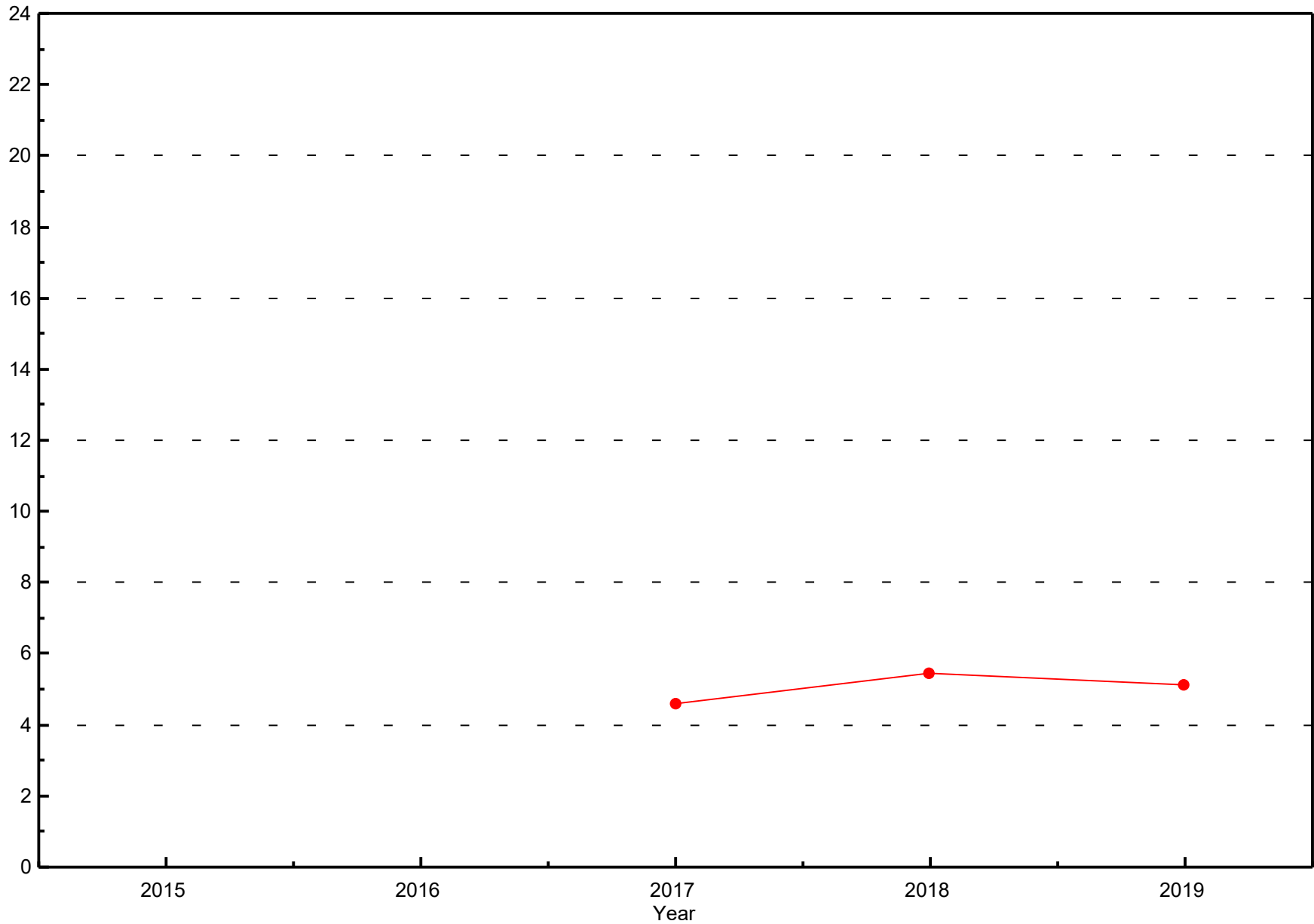
Nitrogen Dioxide (NO₂) - ppb
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

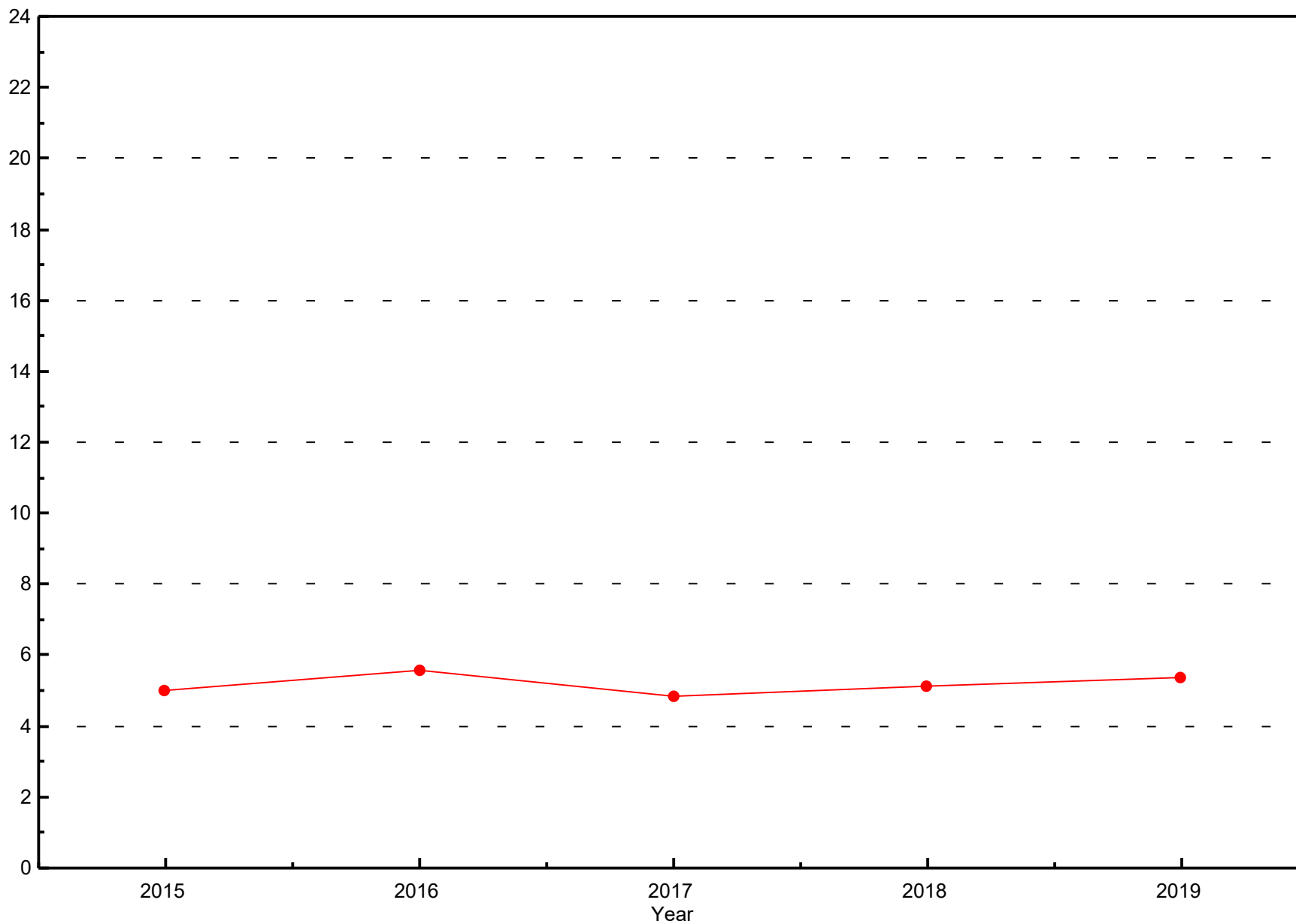
Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

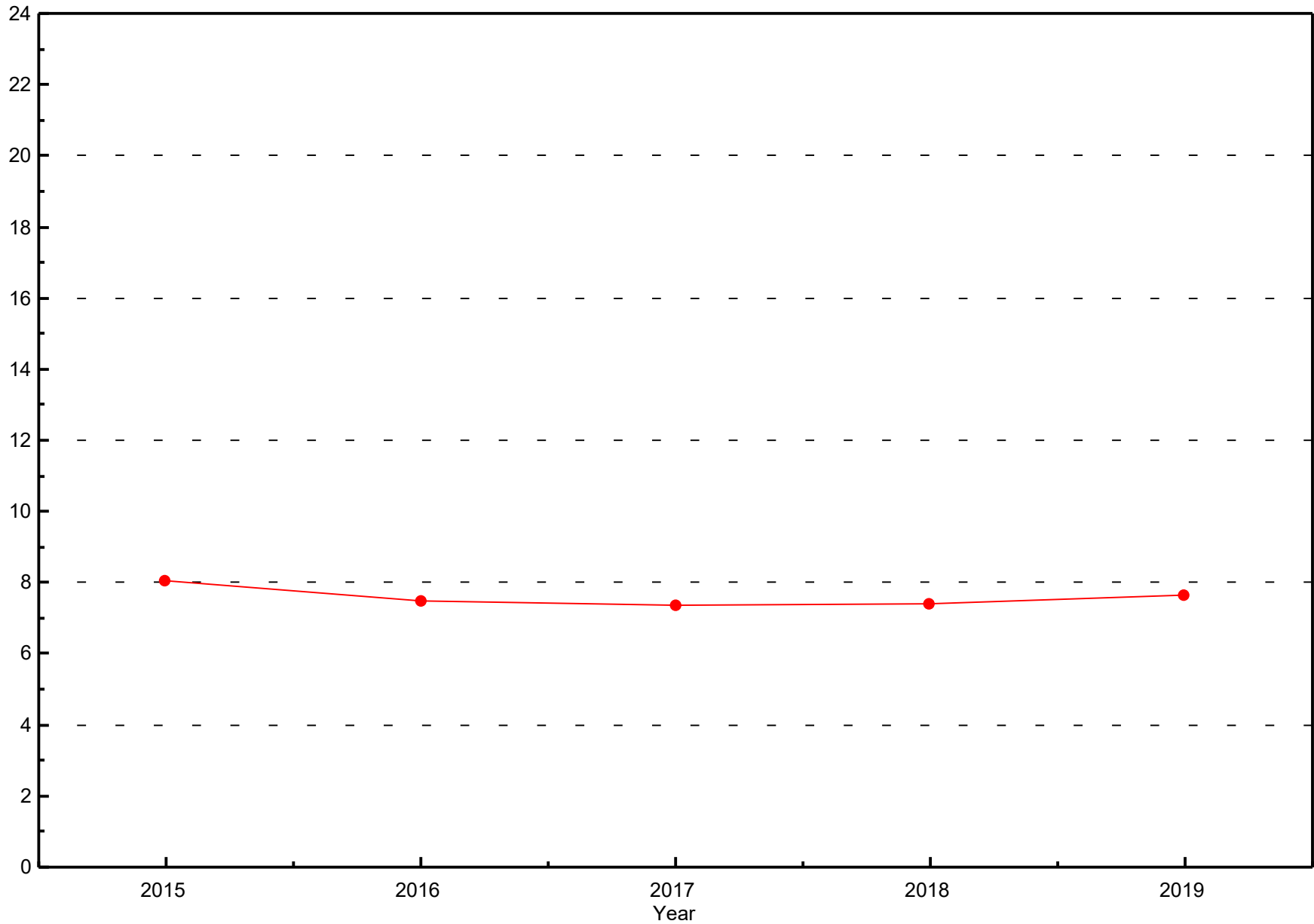
Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes (2015 to 2019)





Yearly Averages

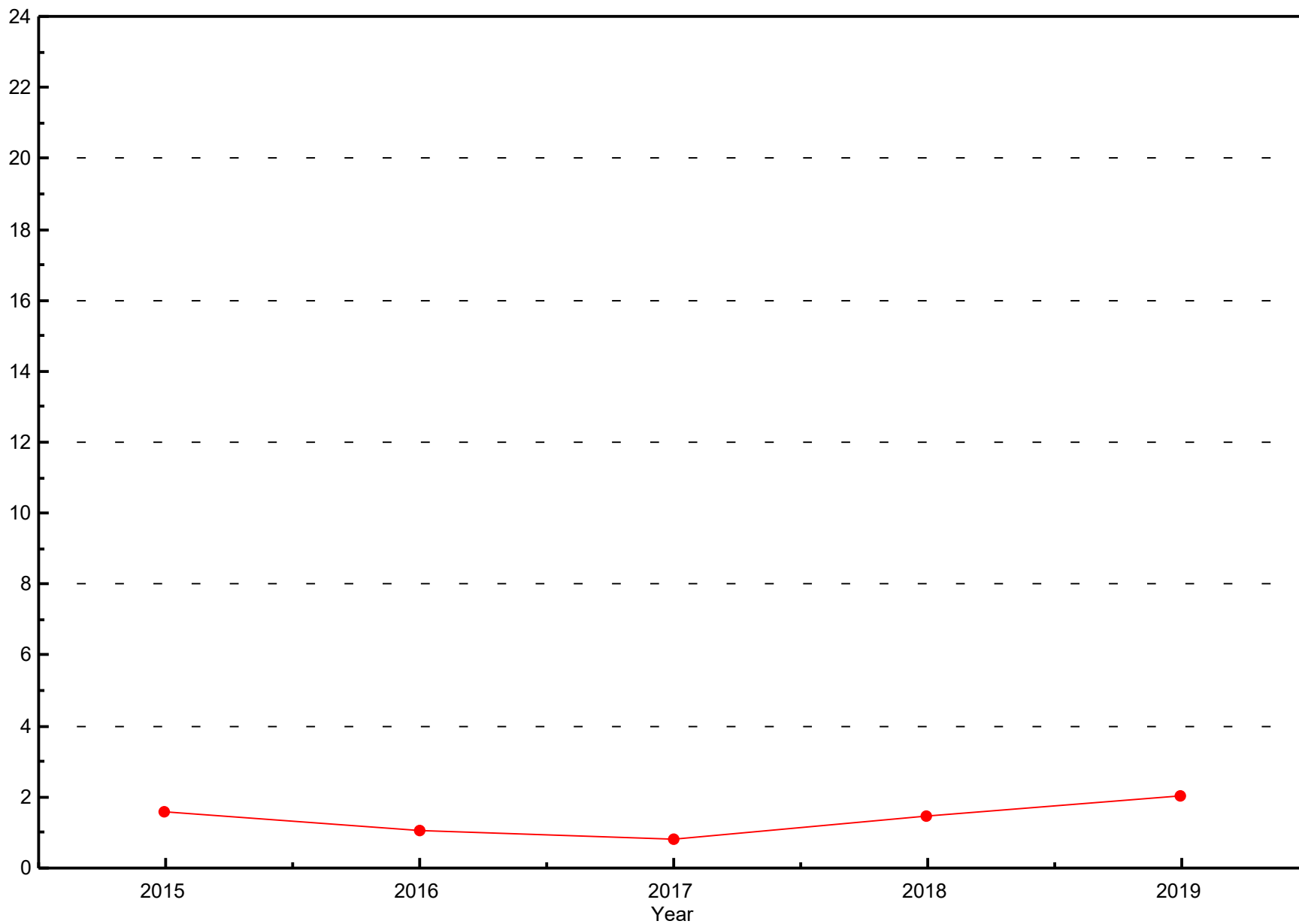
Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley (2015 to 2019)





Yearly Averages

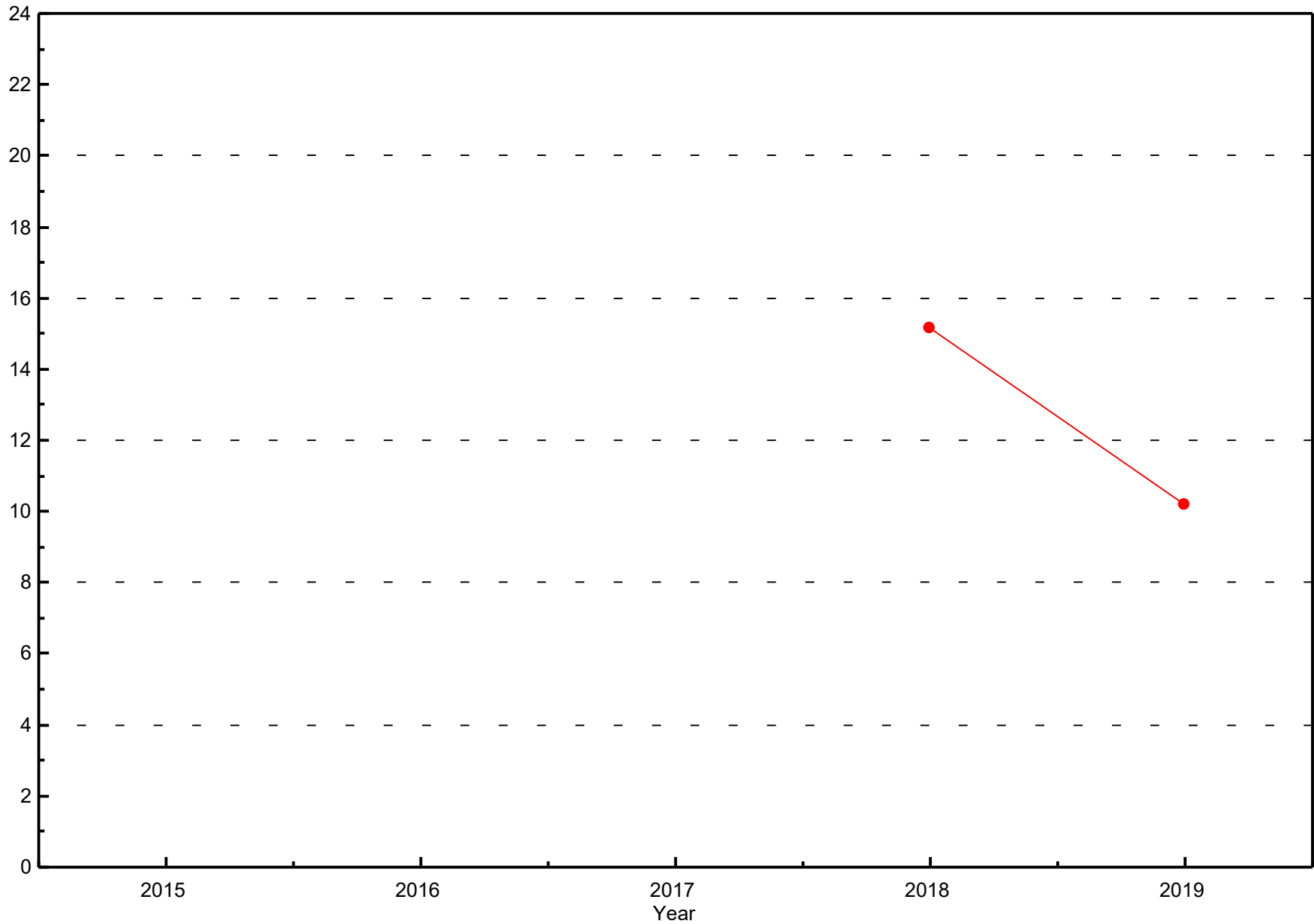
Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan (2015 to 2019)





Yearly Averages

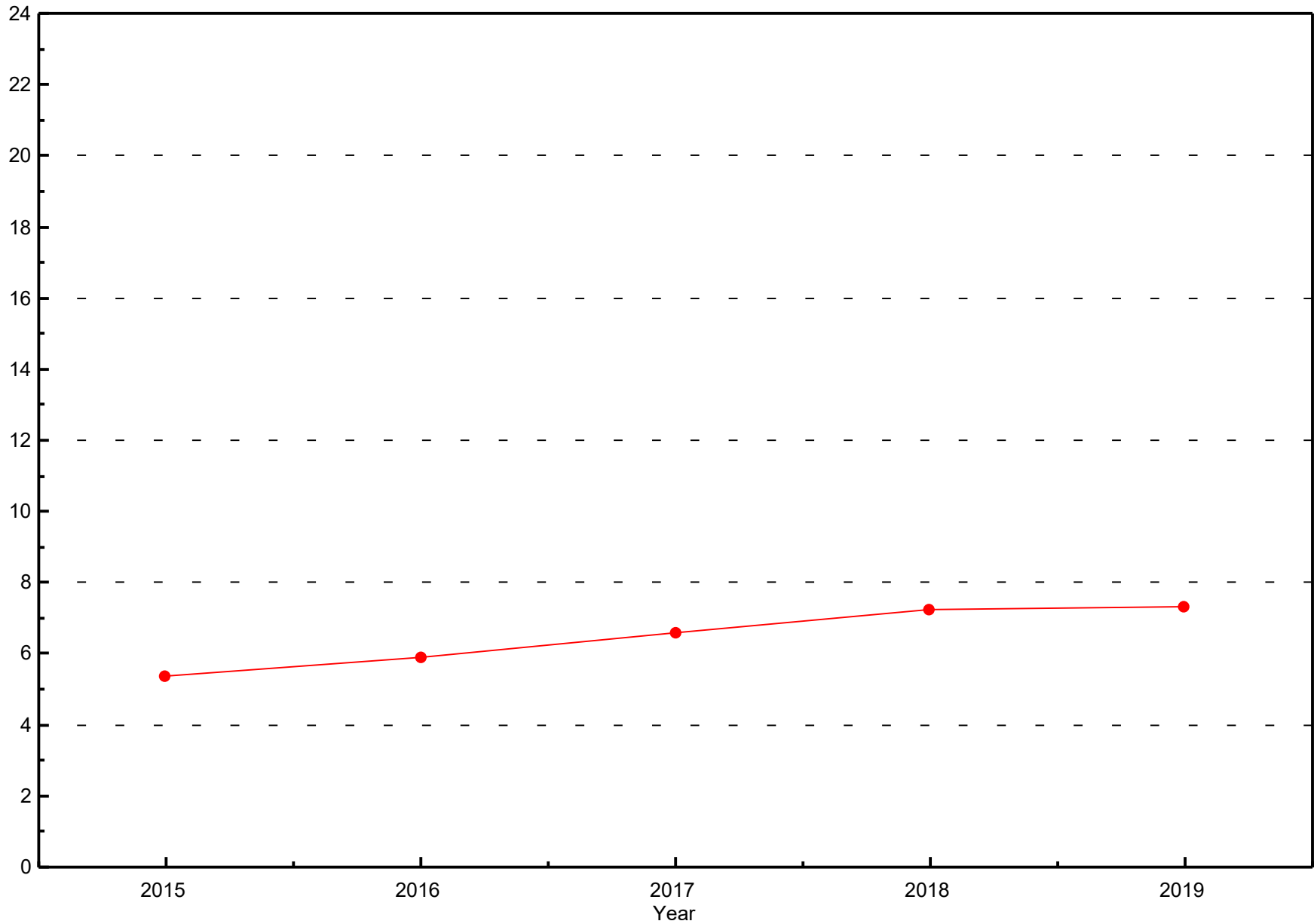
Nitrogen Dioxide (NO₂) - ppb
Barge Landing (2015 to 2019)





Yearly Averages

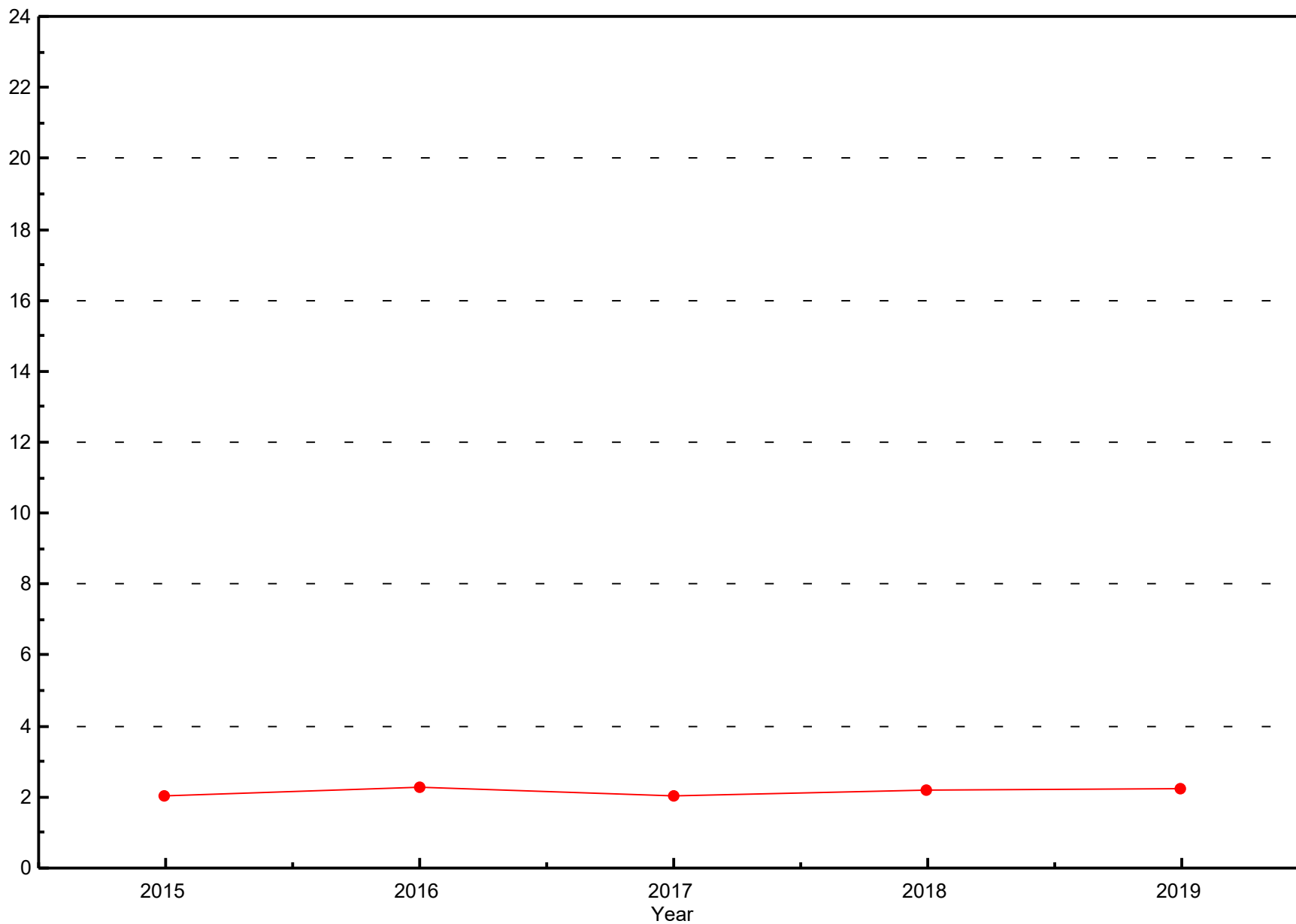
Nitrogen Dioxide (NO₂) - ppb
Fort McKay South (2015 to 2019)





Yearly Averages

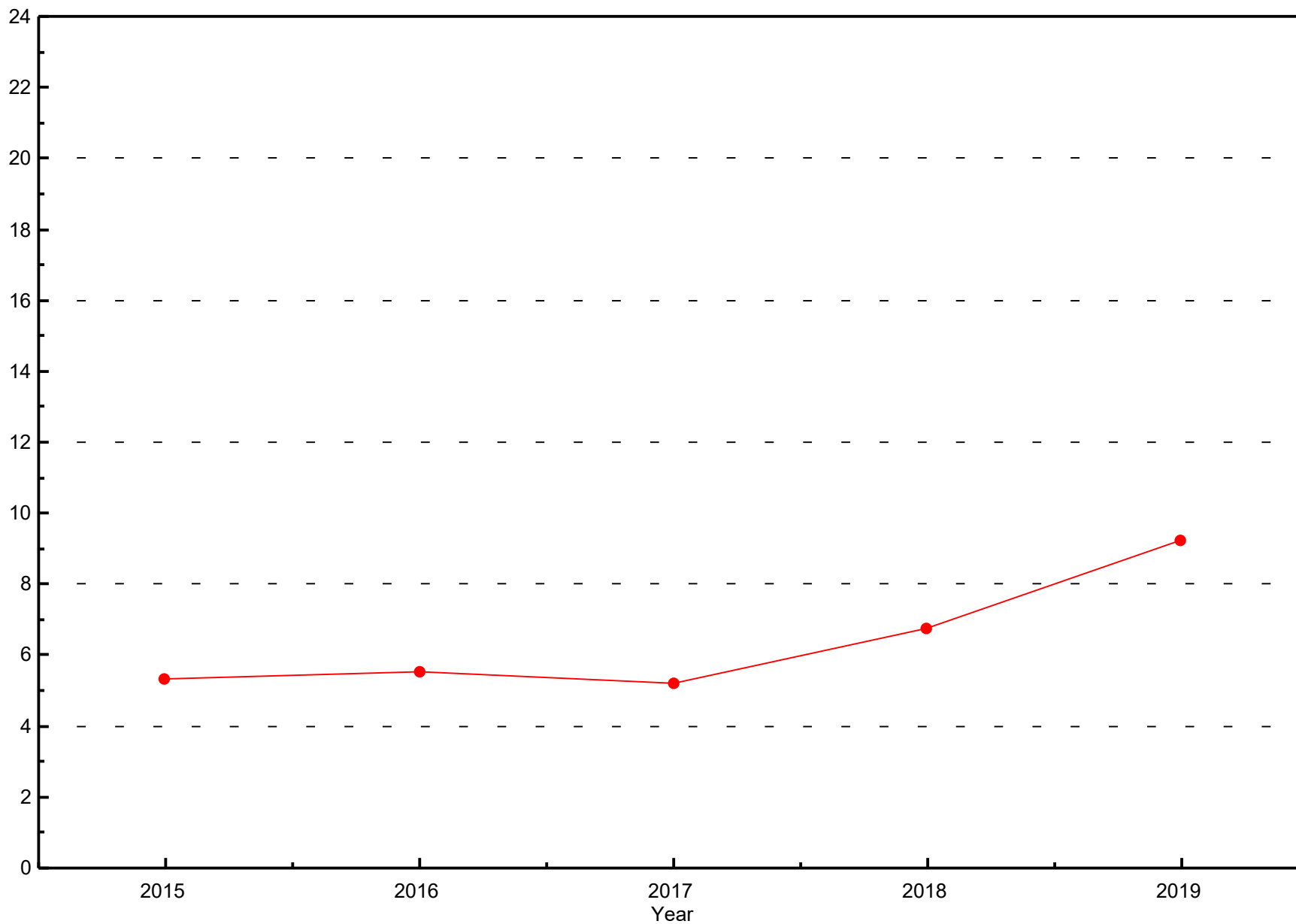
Nitrogen Dioxide (NO₂) - ppb
Anzac (2015 to 2019)





Yearly Averages

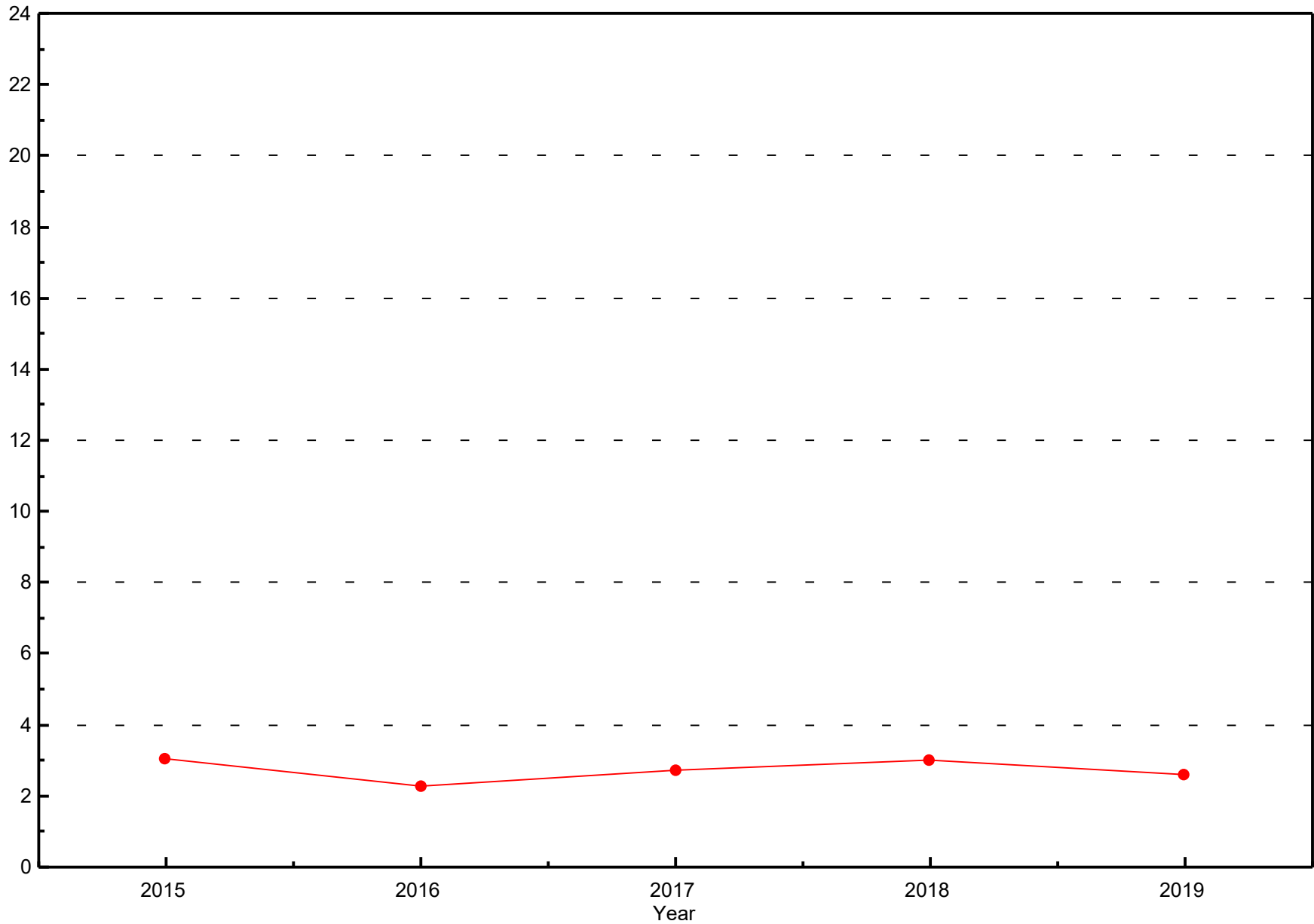
Nitrogen Dioxide (NO₂) - ppb
Horizon (2015 to 2019)





Yearly Averages

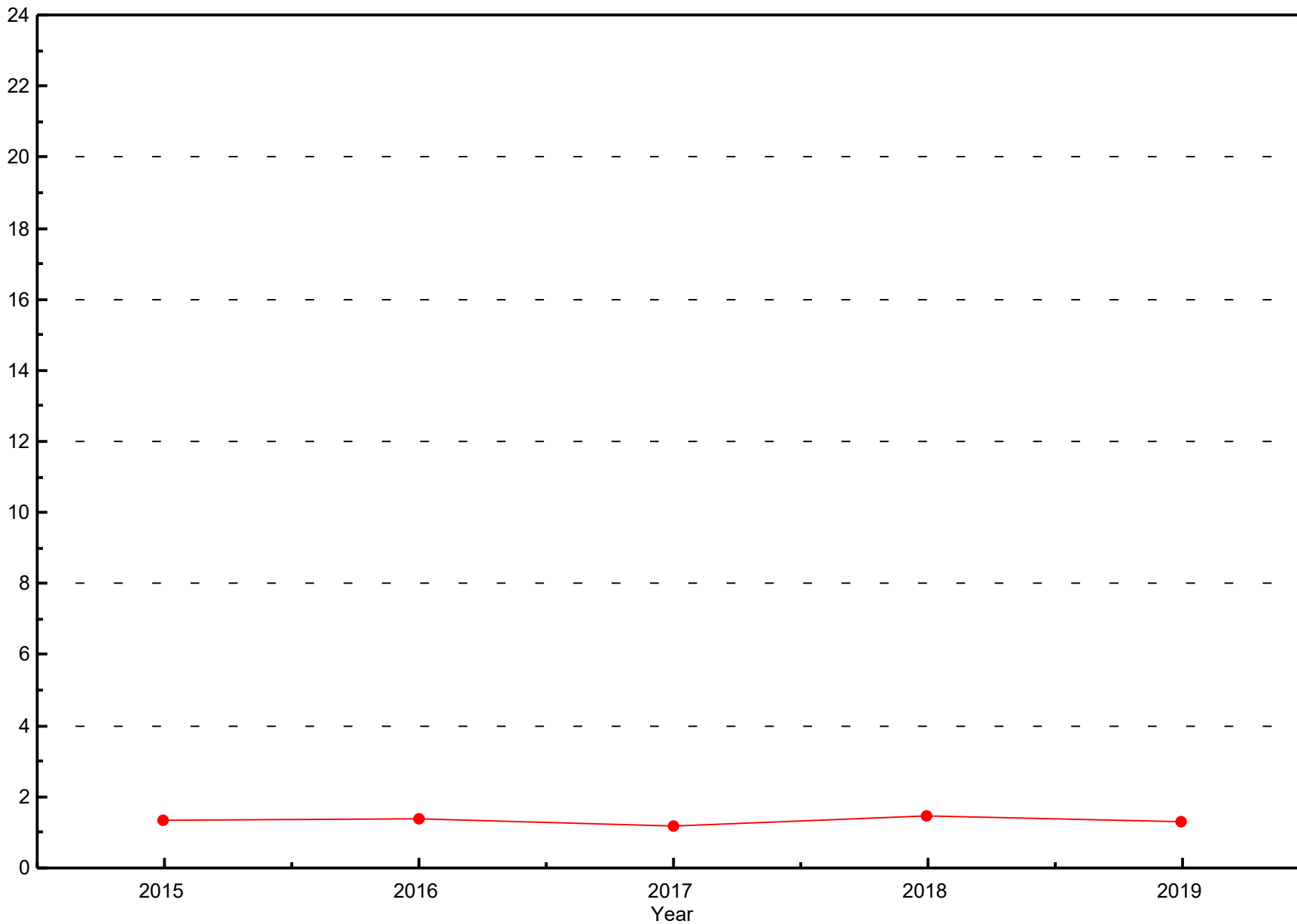
Nitrogen Dioxide (NO₂) - ppb
Wapasu (2015 to 2019)





Yearly Averages

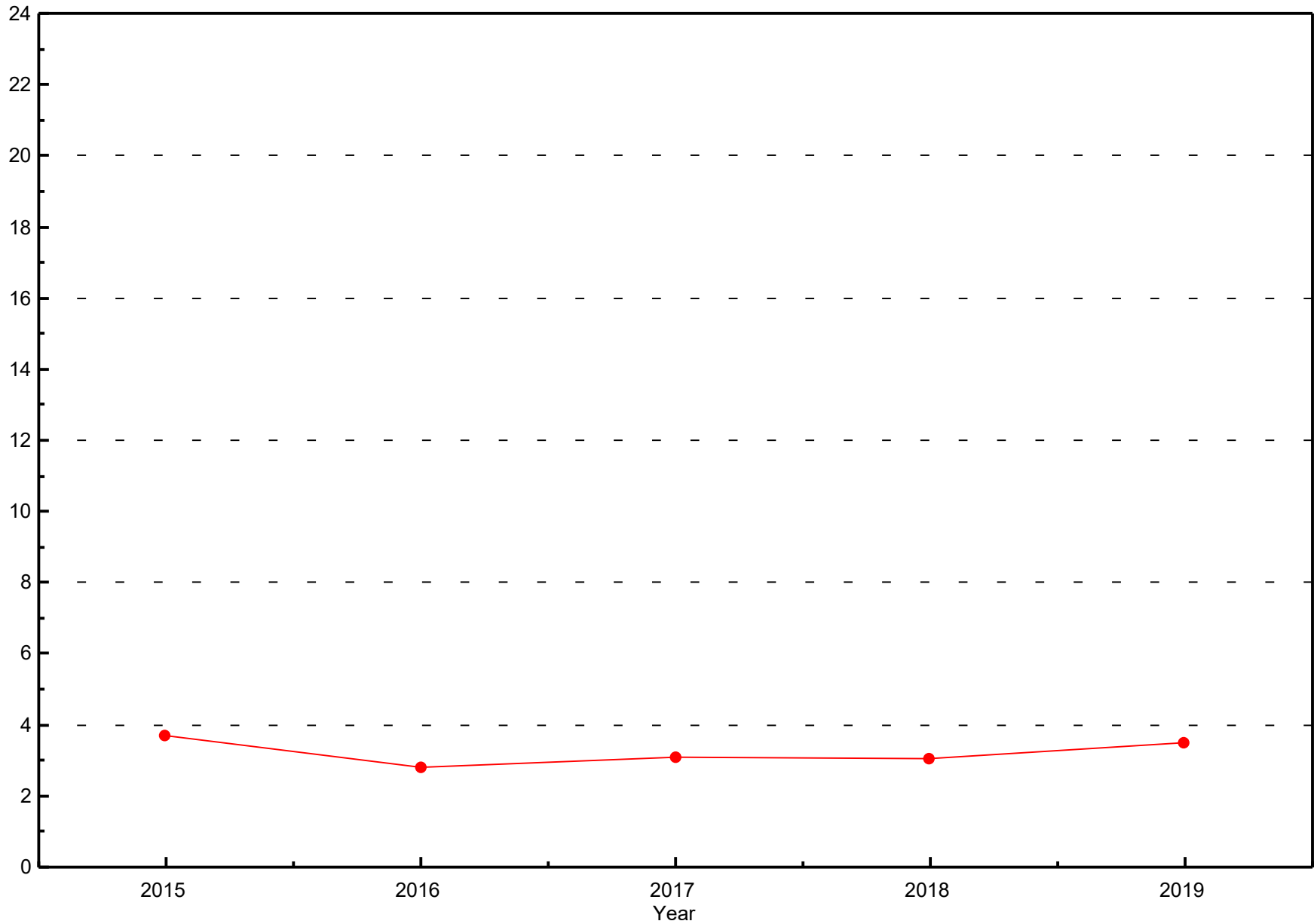
Nitrogen Dioxide (NO₂) - ppb
Stony Mountain (2015 to 2019)





Yearly Averages

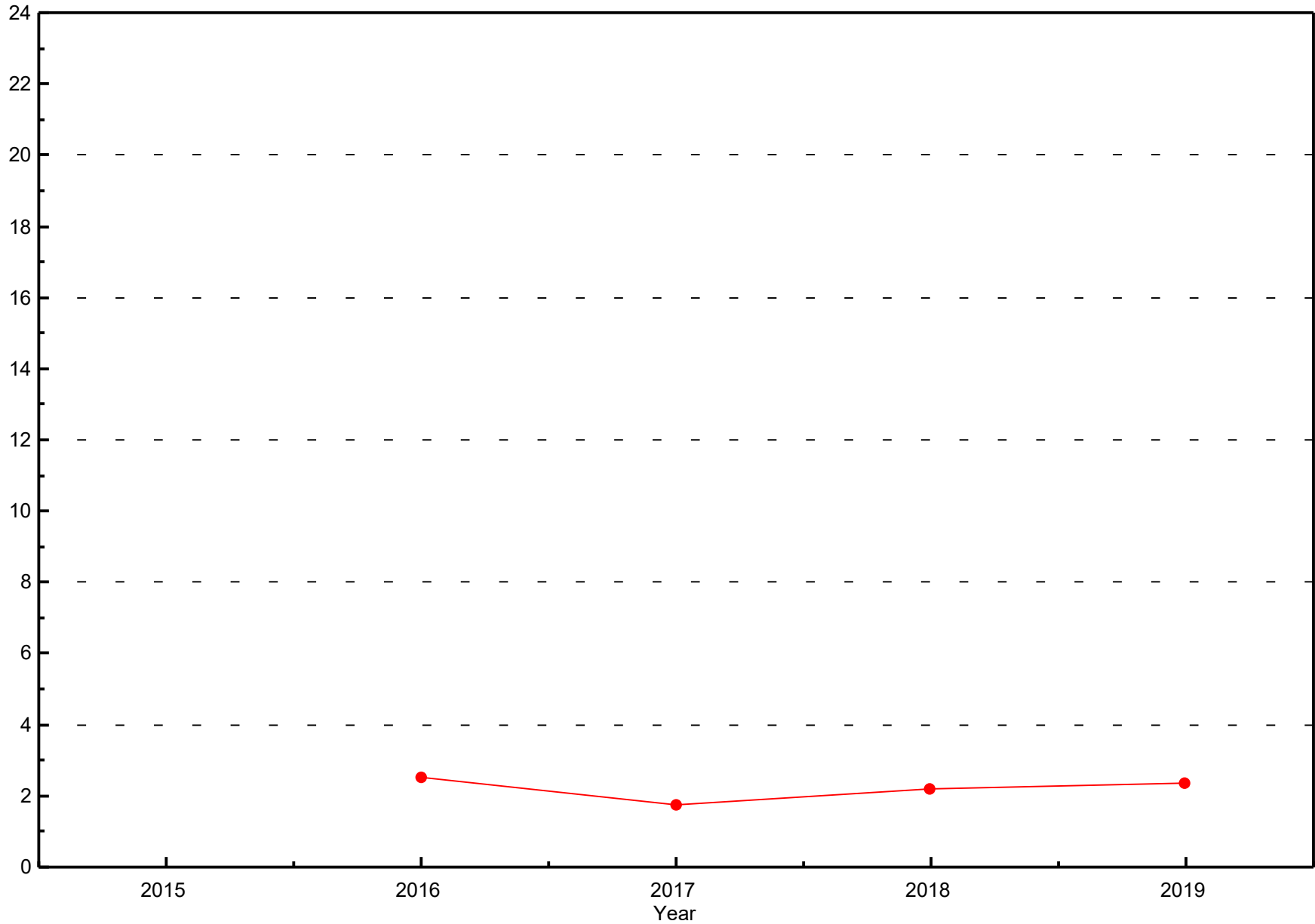
Nitrogen Dioxide (NO₂) - ppb
Firebag (2015 to 2019)





Yearly Averages

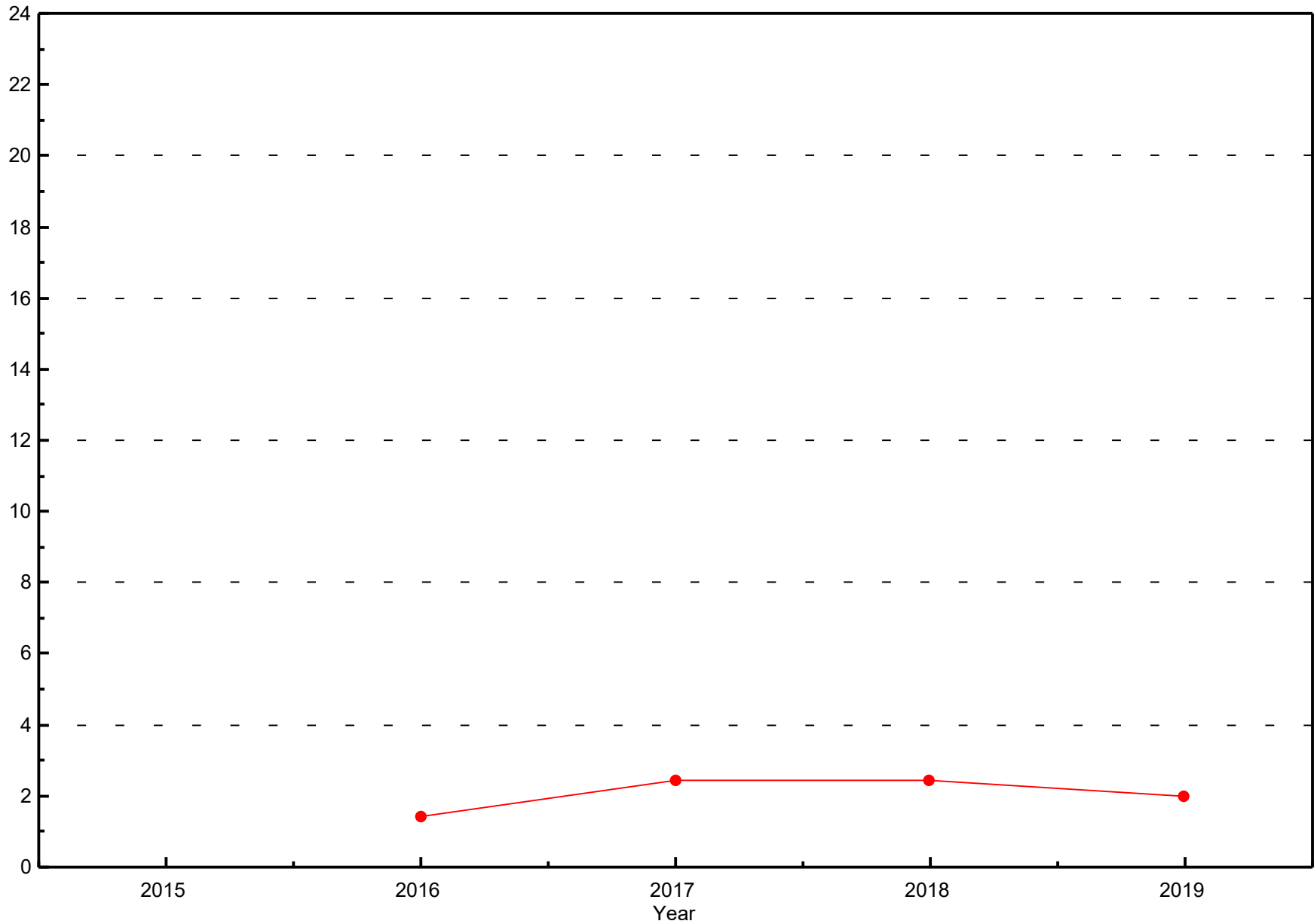
Nitrogen Dioxide (NO₂) - ppb
Mackay River (2015 to 2019)





Yearly Averages

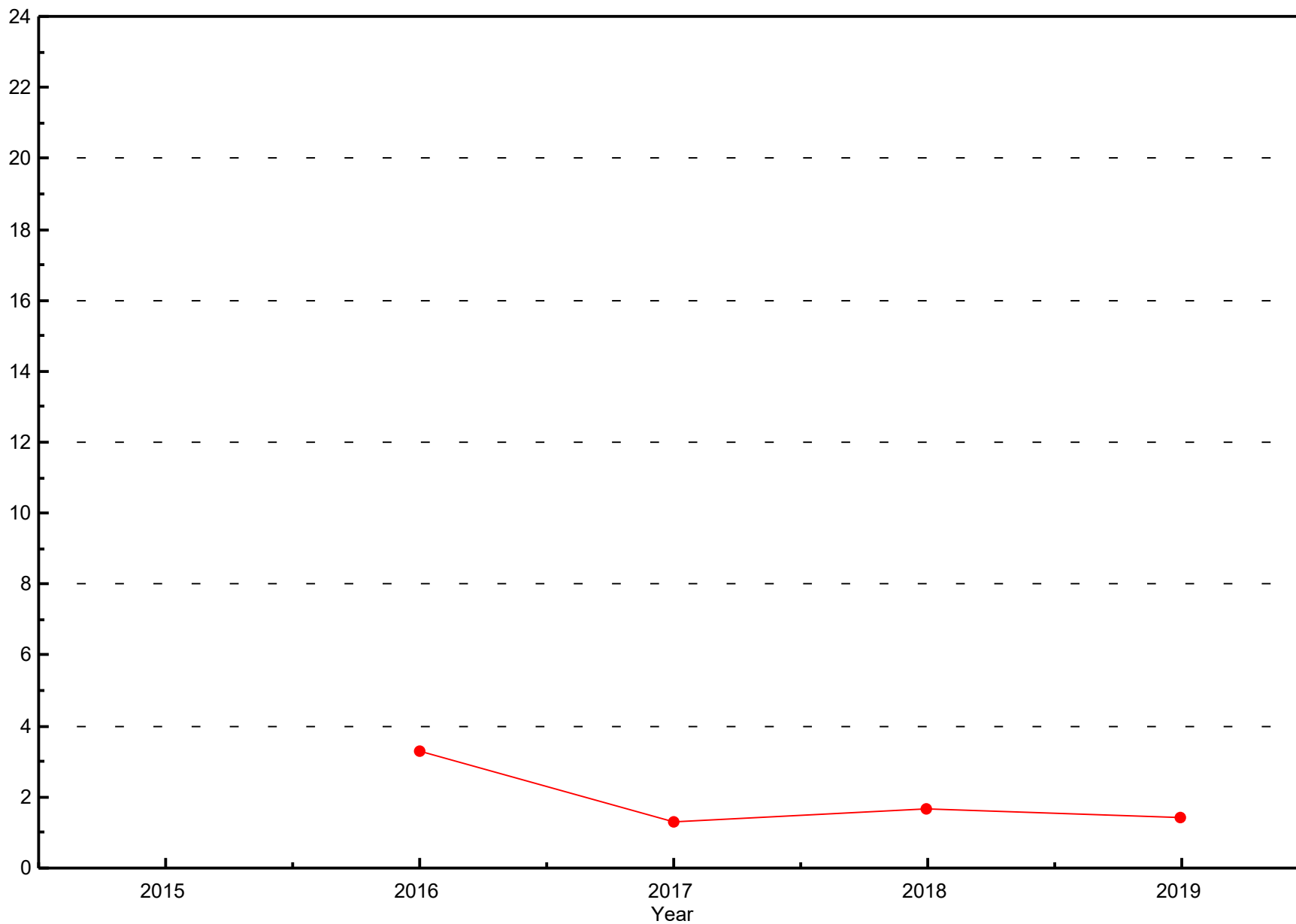
Nitrogen Dioxide (NO₂) - ppb
Conklin (2015 to 2019)





Yearly Averages

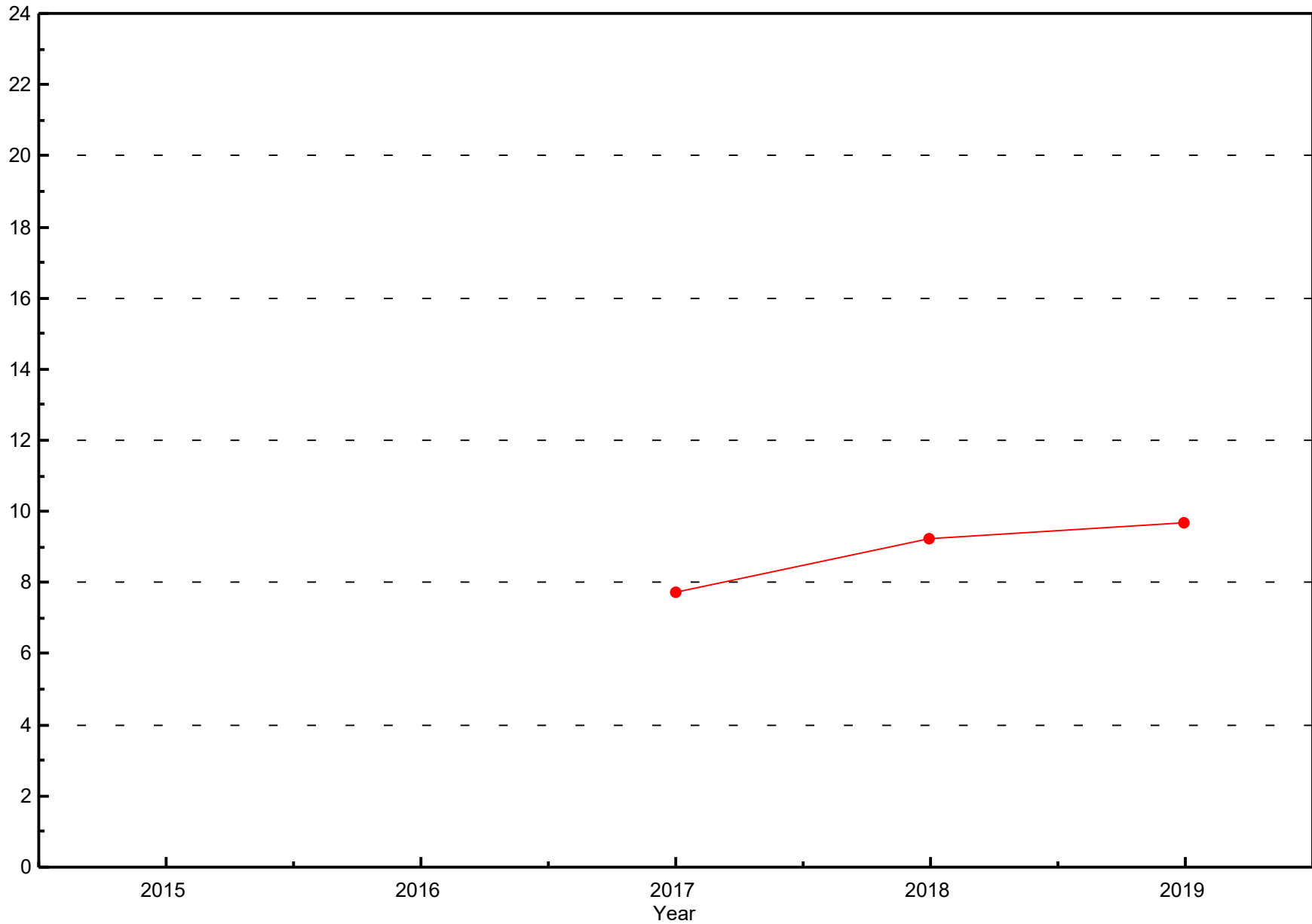
Nitrogen Dioxide (NO₂) - ppb
Janvier (2015 to 2019)





Yearly Averages

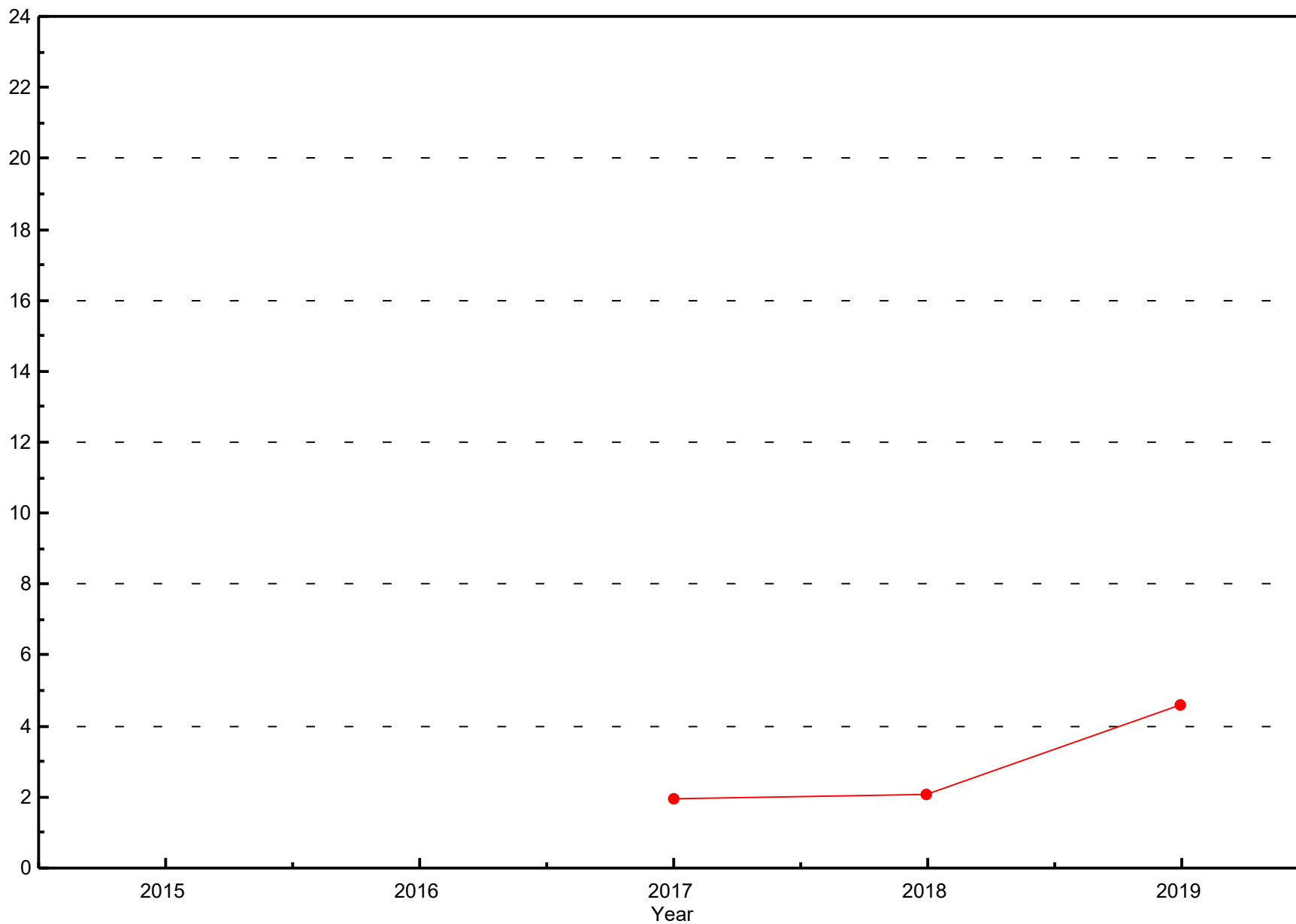
Nitrogen Dioxide (NO₂) - ppb
Fort Hills (2015 to 2019)





Yearly Averages

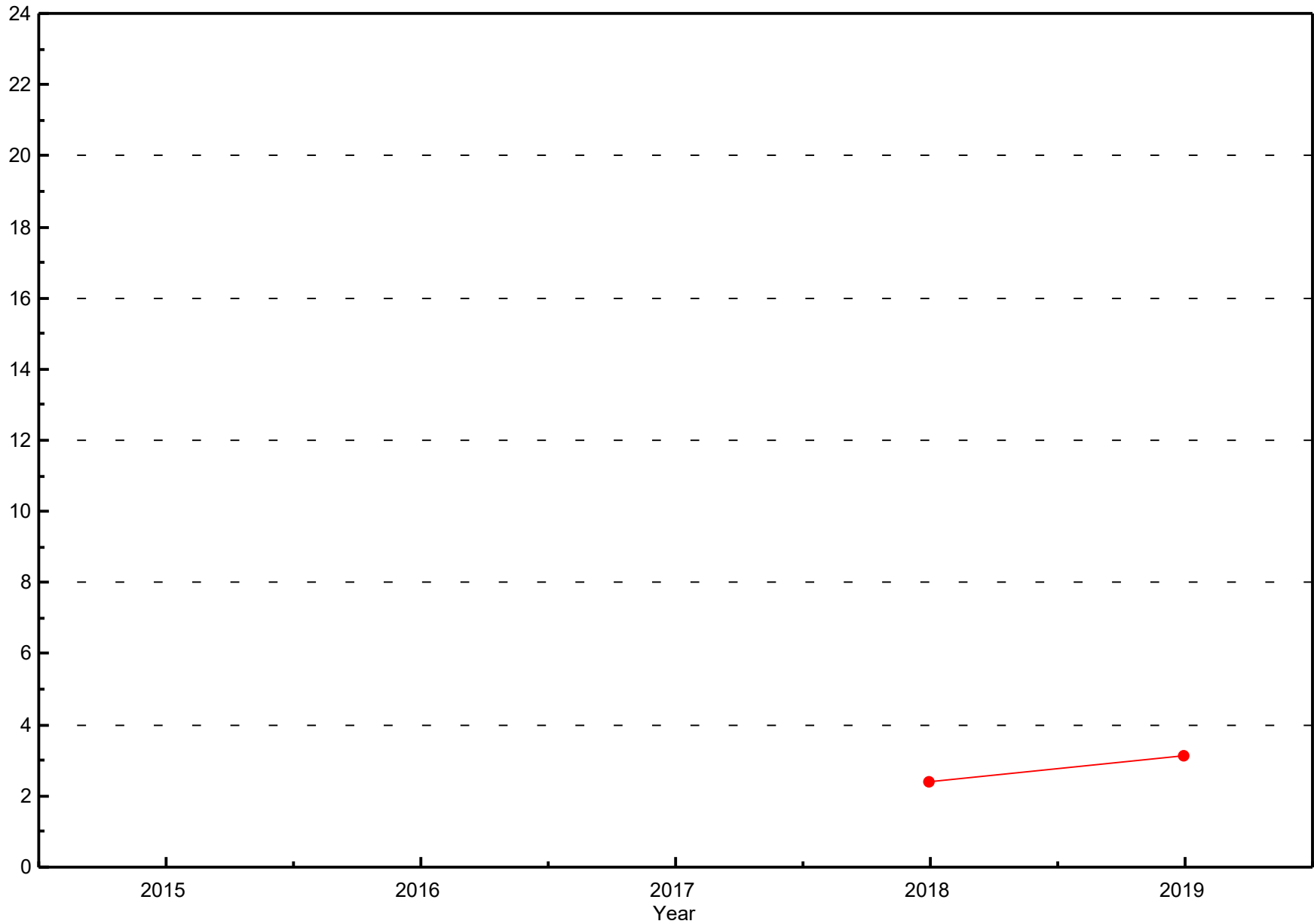
Nitrogen Dioxide (NO₂) - ppb
Surmont (2015 to 2019)





Yearly Averages

Nitrogen Dioxide (NO₂) - ppb
Christina Lake (2015 to 2019)

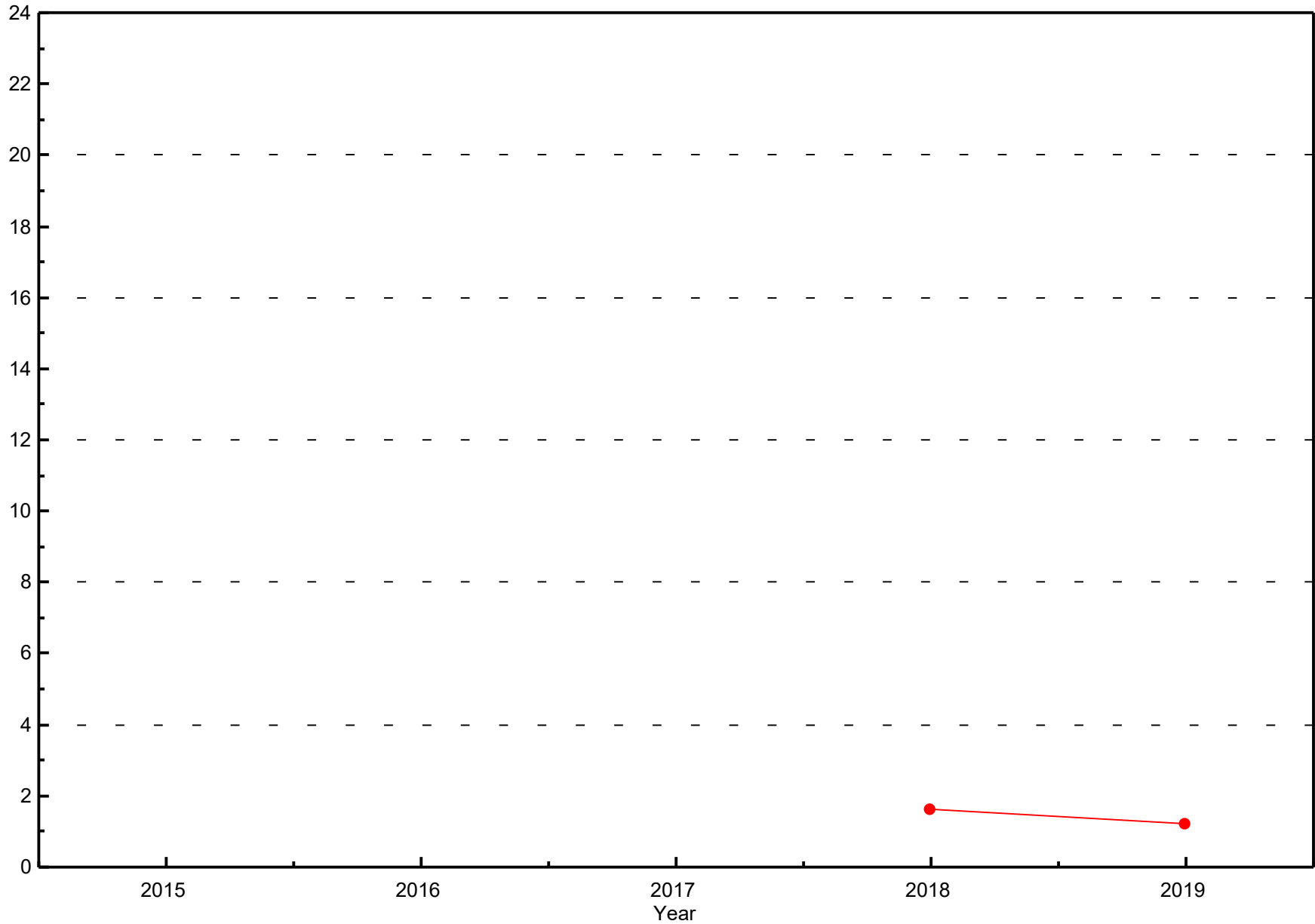




Yearly Averages

Nitrogen Dioxide (NO₂) - ppb

Jackfish 2/3 (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

OXIDES OF NITROGEN ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
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
January	100	706	25.1	197.7	73.1	82	14	3	1
February	100	639	24.7	161.7	67.2	83	12	4	0
March	100	706	13.5	141.0	59.6	95	3	1	0
April	100	684	7.1	70.5	16.6	99	1	0	0
May	100	708	7.1	54.7	12.9	99	1	0	0
June	100	680	4.5	64.4	11.7	100	0	0	0
July	100	708	6.0	71.4	13.4	99	1	0	0
August	100	708	4.7	69.9	14.3	100	0	0	0
September	100	683	7.4	155.6	15.5	99	1	0	0
October	100	707	9.0	117.4	39.1	97	2	1	0
November	100	681	11.2	74.1	24.3	97	3	0	0
December	100	708	25.2	141.3	53.9	83	15	2	0
Annual	100	8318	12.1	197.7	73.1	94	5	1	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
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
January	100	707	15.9	120.1	45.8	89	8	2	0
February	100	639	15.0	143.1	39.0	94	5	1	0
March	100	707	6.9	132.2	20.1	99	1	0	0
April	99	680	3.6	77.5	10.3	100	0	0	0
May	96	676	4.8	147.4	25.3	99	0	0	0
June	100	681	4.2	74.0	13.6	99	1	0	0
July	99	703	4.5	77.2	17.5	99	1	0	0
August	100	705	4.6	54.1	9.8	99	1	0	0
September	100	684	4.0	49.7	11.5	100	0	0	0
October	100	707	4.4	84.3	12.7	99	1	0	0
November	100	683	5.8	82.4	19.6	99	1	0	0
December	100	708	13.8	125.9	67.1	91	7	2	0
Annual	99	8280	7.3	147.4	67.1	97	2	1	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
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
January	100	707	13.7	84.8	33.5	95	4	0	0
February	100	638	15.2	104.6	30.0	92	7	0	0
March	100	707	7.6	67.3	19.6	99	1	0	0
April	100	684	4.6	42.7	12.9	100	0	0	0
May	97	686	4.7	42.9	11.0	100	0	0	0
June	100	681	3.3	24.4	7.6	100	0	0	0
July	100	707	3.6	39.9	9.6	100	0	0	0
August	100	707	2.9	27.7	8.3	100	0	0	0
September	100	684	3.5	30.8	7.0	100	0	0	0
October	100	708	5.3	75.4	11.7	99	1	0	0
November	99	677	7.8	68.9	19.7	99	1	0	0
December	100	706	15.5	84.7	33.1	94	6	0	0
Annual	100	8292	7.3	104.6	33.5	98	2	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
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
January	100	708	17.6	94.9	37.2	93	7	1	0
February	100	639	21.0	125.4	46.5	88	9	3	0
March	96	681	13.1	74.1	23.5	97	3	0	0
April	100	684	5.9	37.5	10.1	100	0	0	0
May	100	707	5.8	32.3	13.7	100	0	0	0
June	100	681	4.7	25.1	9.0	100	0	0	0
July	100	707	5.4	41.5	10.0	100	0	0	0
August	100	706	5.6	30.8	10.2	100	0	0	0
September	100	685	7.3	37.0	11.7	100	0	0	0
October	100	706	9.7	43.8	17.3	100	0	0	0
November	99	680	12.4	85.1	27.5	98	2	0	0
December	100	707	20.8	151.7	72.6	89	9	1	0
Annual	100	8291	10.7	151.7	72.6	97	3	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
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
January	100	707	2.1	14.3	5.3	100	0	0	0
February	99	631	3.3	28.8	9.4	100	0	0	0
March	99	704	2.6	18.1	7.6	100	0	0	0
April	100	682	1.8	10.9	4.2	100	0	0	0
May	100	706	1.3	8.8	2.5	100	0	0	0
June	100	685	1.2	7.2	2.2	100	0	0	0
July	100	706	1.8	12.4	3.9	100	0	0	0
August	98	696	1.5	9.9	3.2	100	0	0	0
September	100	684	2.4	15.5	7.9	100	0	0	0
October	99	703	3.5	12.3	6.4	100	0	0	0
November	100	685	4.1	18.4	9.0	100	0	0	0
December	100	707	4.9	18.8	13.5	100	0	0	0
Annual	100	8296	2.5	28.8	13.5	100	0	0	0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
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
January	99	704	35.2	277.4	130.9	70	20	8	2
February	100	639	34.4	208.4	90.7	71	20	8	1
March	100	708	18.7	153.2	52.1	89	9	2	0
April	100	685	8.2	62.5	15.2	99	1	0	0
May	100	705	9.1	63.2	18.9	98	2	0	0
June	98	668	5.8	62.6	16.4	99	1	0	0
July	99	703	7.3	77.0	15.6	99	1	0	0
August	100	708	6.2	52.6	13.0	100	0	0	0
September	100	685	9.9	121.9	22.0	98	2	0	0
October	100	708	12.1	140.7	39.2	94	5	1	0
November	100	685	13.9	136.5	43.9	96	4	0	0
December	97	690	37.9	289.5	163.6	73	15	7	4
Annual	100	8288	16.5	289.5	163.6	91	7	2	1



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
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
January	100	708	23.1	182.3	68.1	84	12	4	0
February	100	639	29.2	273.9	90.1	82	9	7	2
March	100	709	14.8	258.1	86.6	95	3	2	1
April	98	669	6.4	99.6	15.9	99	1	0	0
May	98	690	7.1	75.7	17.9	98	2	0	0
June	92	630	4.2	43.8	9.7	100	0	0	0
July	100	708	7.0	86.5	19.3	97	2	0	0
August	100	706	4.5	50.5	11.8	99	1	0	0
September	100	683	7.2	81.0	20.8	98	1	0	0
October	100	705	8.1	75.6	23.2	96	4	0	0
November	100	685	10.6	108.3	32.8	96	3	1	0
December	100	708	23.6	128.4	51.1	84	13	3	0
Annual	99	8240	12.1	273.9	90.1	94	4	1	0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
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
January	91	646	4.5	62.4	16.7	99	1	0	0
February	99	635	6.0	103.5	17.2	100	0	0	0
March	93	660	2.9	61.6	7.3	100	0	0	0
April	100	682	1.5	17.9	3.2	100	0	0	0
May	100	708	1.8	74.9	8.1	100	0	0	0
June	100	685	1.3	13.0	4.2	100	0	0	0
July	100	708	1.6	44.9	5.7	100	0	0	0
August	99	702	1.4	13.9	3.3	100	0	0	0
September	100	684	1.3	32.7	4.1	100	0	0	0
October	99	699	1.9	31.1	4.3	100	0	0	0
November	100	684	3.1	26.8	6.6	100	0	0	0
December	100	708	5.5	71.4	15.0	99	1	0	0
Annual	99	8201	2.7	103.5	17.2	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
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
January	100	709	28.9	525.4	154.8	80	12	5	3
February	100	639	21.9	250.0	63.7	88	8	4	0
March	100	708	16.5	416.9	80.9	93	5	2	1
April	100	685	11.5	158.9	27.6	95	3	1	0
May	99	702	12.5	204.7	26.4	92	6	2	0
June	100	680	9.8	151.3	21.3	97	3	0	0
July	99	704	9.8	117.5	38.0	94	5	1	0
August	100	707	15.3	120.3	31.9	90	9	1	0
September	100	683	14.6	198.6	47.0	90	7	2	0
October	100	708	19.3	380.1	76.4	86	10	3	1
November	100	684	11.9	110.1	24.8	94	6	1	0
December	100	708	22.4	270.6	73.5	87	8	4	1
Annual	100	8317	16.2	525.4	154.8	91	7	2	1



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
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
January	100	707	4.2	38.0	13.1	100	0	0	0
February	100	639	4.9	36.5	13.4	100	0	0	0
March	100	707	4.2	28.3	10.5	100	0	0	0
April	100	685	2.1	24.7	6.5	100	0	0	0
May	100	708	2.0	25.9	6.0	100	0	0	0
June	100	682	1.7	17.6	3.9	100	0	0	0
July	100	708	1.9	21.4	6.6	100	0	0	0
August	100	708	2.5	40.5	7.3	100	0	0	0
September	100	685	2.8	42.6	7.0	100	0	0	0
October	100	705	3.7	36.4	9.3	100	0	0	0
November	100	685	4.4	54.6	17.6	99	1	0	0
December	54	378	5.5	36.7	12.4	100	0	0	0
Annual	96	7997	3.2	54.6	17.6	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
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
January	100	707	2.4	10.5	5.7	100	0	0	0
February	100	637	3.1	14.1	7.4	100	0	0	0
March	100	708	1.6	8.5	3.5	100	0	0	0
April	100	685	1.0	6.4	1.9	100	0	0	0
May	100	708	1.1	6.9	2.3	100	0	0	0
June	100	685	1.0	3.9	2.0	100	0	0	0
July	100	706	0.9	6.5	2.2	100	0	0	0
August	99	701	0.7	3.7	1.2	100	0	0	0
September	99	681	0.8	9.2	1.4	100	0	0	0
October	99	696	1.1	5.0	2.5	100	0	0	0
November	100	685	1.6	8.2	4.3	100	0	0	0
December	100	707	2.7	14.3	6.7	100	0	0	0
Annual	100	8306	1.5	14.3	7.4	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
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
January	100	707	8.1	77.9	35.1	97	3	0	0
February	100	639	10.8	112.8	35.7	94	5	1	0
March	100	708	6.4	295.0	37.4	98	1	1	0
April	100	686	2.3	28.4	5.6	100	0	0	0
May	100	707	1.9	17.0	5.1	100	0	0	0
June	92	628	1.7	26.9	4.1	100	0	0	0
July	100	707	2.2	25.1	4.9	100	0	0	0
August	100	707	2.4	21.8	5.4	100	0	0	0
September	100	684	3.2	70.0	11.8	100	0	0	0
October	100	708	4.6	97.9	22.0	99	1	0	0
November	100	685	4.0	57.0	9.3	100	0	0	0
December	100	706	7.0	60.7	13.7	99	1	0	0
Annual	99	8272	4.5	295.0	37.4	99	1	0	0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
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
January	100	708	6.1	72.7	25.7	99	1	0	0
February	99	633	5.8	54.9	19.6	99	1	0	0
March	100	705	2.8	23.1	9.1	100	0	0	0
April	100	686	1.5	27.1	6.3	100	0	0	0
May	99	700	2.1	21.4	6.9	100	0	0	0
June	100	684	1.4	12.4	4.0	100	0	0	0
July	100	708	1.1	19.7	6.7	100	0	0	0
August	100	708	0.9	26.4	5.0	100	0	0	0
September	100	685	1.3	24.8	7.4	100	0	0	0
October	100	708	1.2	36.4	7.6	100	0	0	0
November	100	685	1.9	27.1	6.6	100	0	0	0
December	100	708	6.4	60.6	29.8	99	1	0	0
Annual	100	8318	2.7	72.7	29.8	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
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
January	100	707	3.7	26.0	14.2	100	0	0	0
February	100	639	4.9	26.3	9.0	100	0	0	0
March	100	708	2.6	19.2	5.2	100	0	0	0
April	100	685	1.7	37.7	3.7	100	0	0	0
May	100	708	1.7	24.6	3.1	100	0	0	0
June	100	685	1.6	24.6	3.8	100	0	0	0
July	100	706	1.4	26.2	3.5	100	0	0	0
August	100	708	1.4	21.9	5.2	100	0	0	0
September	100	683	1.5	17.5	3.7	100	0	0	0
October	100	704	2.0	32.4	4.9	100	0	0	0
November	100	685	2.5	42.5	7.7	100	0	0	0
December	100	707	3.9	33.5	12.4	100	0	0	0
Annual	100	8325	2.4	42.5	14.2	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
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
January	100	708	3.5	19.8	8.3	100	0	0	0
February	99	634	3.8	25.0	7.9	100	0	0	0
March	99	702	1.9	38.2	4.3	100	0	0	0
April	100	682	1.1	9.5	2.1	100	0	0	0
May	99	701	1.3	9.2	3.0	100	0	0	0
June	100	683	1.8	32.7	5.7	100	0	0	0
July	99	699	1.2	11.6	3.0	100	0	0	0
August	99	703	0.9	12.1	2.5	100	0	0	0
September	100	684	1.0	9.2	2.0	100	0	0	0
October	100	703	1.6	18.4	3.5	100	0	0	0
November	100	685	1.9	14.3	4.5	100	0	0	0
December	100	708	3.3	31.1	7.8	100	0	0	0
Annual	100	8292	1.9	38.2	8.3	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
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
January	100	709	44.3	372.1	133.1	62	20	13	5
February	100	636	37.2	357.1	110.3	70	17	10	3
March	100	708	21.4	367.6	78.2	86	9	4	1
April	100	685	11.6	139.6	31.5	94	5	1	0
May	100	708	11.0	161.2	38.9	93	6	1	0
June	100	682	5.7	133.1	18.6	98	2	1	0
July	100	705	5.5	99.8	15.3	98	2	0	0
August	100	708	9.1	136.8	30.5	94	4	1	0
September	100	684	10.3	131.8	25.3	94	5	1	0
October	100	708	14.8	188.7	48.9	89	7	3	0
November	100	686	12.0	157.3	40.1	95	4	1	0
December	100	707	33.6	438.7	129.2	78	14	6	2
Annual	100	8326	18.0	438.7	133.1	88	8	4	1



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
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
January	100	707	7.1	58.1	25.5	99	1	0	0
February	100	644	7.8	52.0	20.0	100	0	0	0
March	100	261	7.0	35.9	17.1	100	0	0	0
Annual	100	1612	7.3	58.1	25.5	99	1	0	0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
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
January	100	706	6.3	46.5	18.6	100	0	0	0
February	99	631	8.0	60.8	15.2	99	1	0	0
March	100	708	5.6	56.4	15.4	99	1	0	0
April	100	685	3.8	36.2	12.0	100	0	0	0
May	100	709	3.5	31.9	9.3	100	0	0	0
June	100	683	3.4	30.2	13.9	100	0	0	0
July	100	709	2.9	58.2	10.9	100	0	0	0
August	100	708	3.7	40.4	14.2	100	0	0	0
September	100	685	3.1	32.7	8.0	100	0	0	0
October	100	705	3.9	27.9	11.9	100	0	0	0
November	100	686	3.9	28.7	11.3	100	0	0	0
December	100	709	4.6	28.0	14.0	100	0	0	0
Annual	100	8324	4.4	60.8	18.6	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
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
January	100	707	2.9	42.8	13.6	100	0	0	0
February	100	639	3.5	26.9	6.8	100	0	0	0
March	100	707	2.0	10.9	3.6	100	0	0	0
April	100	686	1.3	9.9	2.7	100	0	0	0
May	100	708	1.2	8.1	2.4	100	0	0	0
June	100	684	1.1	15.9	1.8	100	0	0	0
July	100	706	0.9	13.8	2.2	100	0	0	0
August	100	707	0.8	7.1	1.5	100	0	0	0
September	99	682	0.8	8.0	1.7	100	0	0	0
October	99	700	1.4	6.8	3.7	100	0	0	0
November	100	685	2.2	8.8	5.1	100	0	0	0
December	100	708	3.3	23.9	9.0	100	0	0	0
Annual	100	8319	1.8	42.8	13.6	100	0	0	0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
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
March	93	394	2.6	48.0	9.4	100	0	0	0
April	95	653	1.3	12.3	3.4	100	0	0	0
May	99	698	1.3	8.5	3.9	100	0	0	0
June	93	638	1.1	8.2	2.4	100	0	0	0
July	100	707	0.9	8.3	1.9	100	0	0	0
August	100	707	0.9	7.6	1.9	100	0	0	0
September	100	685	0.7	4.3	1.7	100	0	0	0
October	100	701	1.2	11.8	2.8	100	0	0	0
November	100	685	2.1	27.8	5.0	100	0	0	0
December	99	704	3.3	22.2	7.1	100	0	0	0
Annual	98	6572	1.5	48.0	9.4	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
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
October	99	700	2.2	24.9	8.3	100	0	0	0
November	100	683	3.1	105.2	10.4	100	0	0	0
December	100	708	3.8	37.1	7.8	100	0	0	0
Annual	100	2091	3.0	105.2	10.4	100	0	0	0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
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
June	100	379	1.3	15.9	2.4	100	0	0	0
July	100	708	2.0	17.7	9.4	100	0	0	0
August	100	708	2.0	22.1	6.1	100	0	0	0
September	100	682	2.1	23.7	8.9	100	0	0	0
October	100	704	3.2	25.5	9.5	100	0	0	0
November	100	684	4.0	32.8	12.1	100	0	0	0
December	100	707	6.3	41.7	16.7	100	0	0	0
Annual	100	4572	3.1	41.7	16.7	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
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
January	100	709	3.8	23.1	8.9	100	0	0	0
February	100	640	5.2	28.4	9.2	100	0	0	0
March	100	709	4.1	29.2	11.3	100	0	0	0
April	92	628	3.3	31.4	9.3	100	0	0	0
May	100	708	2.9	32.8	13.3	100	0	0	0
June	100	685	2.5	34.0	10.2	100	0	0	0
July	89	633	1.7	30.1	11.6	100	0	0	0
August	100	708	2.1	22.3	8.2	100	0	0	0
Annual	98	5420	3.2	34.0	13.3	100	0	0	0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2019
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
January	100	705	3.0	27.9	6.5	100	0	0	0
February	100	639	6.9	75.1	32.8	97	3	0	0
March	99	704	5.2	85.1	32.4	99	1	0	0
April	100	330	13.6	544.5	168.2	97	1	0	3
Annual	100	2378	6.2	544.5	168.2	99	1	0	0



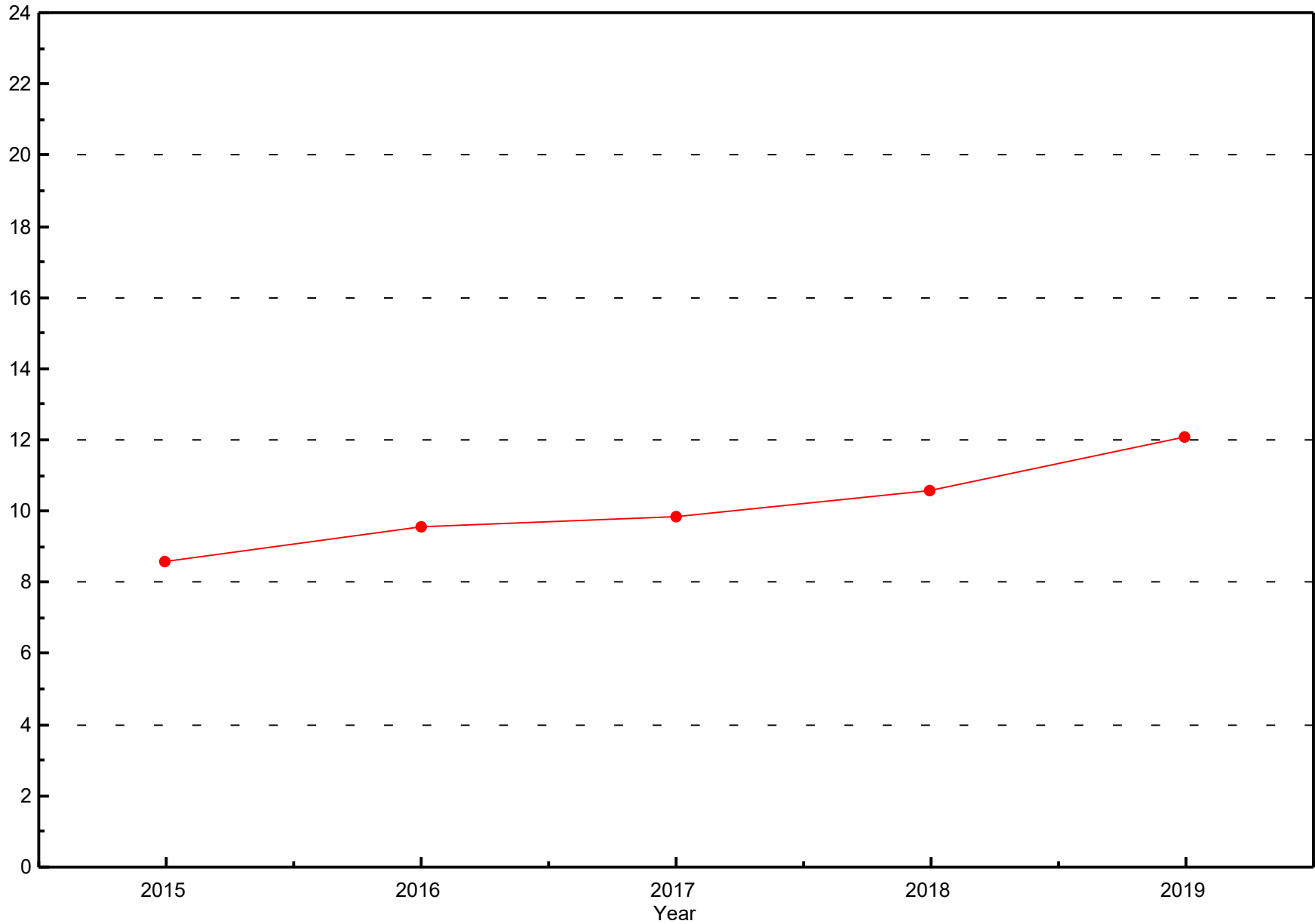
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Oxides of Nitrogen (ppb) Average

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
April	100	329	1.6	5.8	3.1	100	0	0	0
May	100	708	1.5	7.8	3.1	100	0	0	0
June	100	681	1.8	13.3	3.3	100	0	0	0
July	100	708	3.4	543.0	60.7	99	0	0	1
August	100	706	1.6	34.6	5.1	100	0	0	0
September	100	683	1.3	13.3	2.7	100	0	0	0
October	100	704	1.5	7.9	3.8	100	0	0	0
November	34	230	2.1	27.5	4.3	100	0	0	0
December	62	439	3.8	79.0	13.5	100	0	0	0
Annual	88	5188	2.0	543.0	60.7	100	0	0	0



Yearly Averages

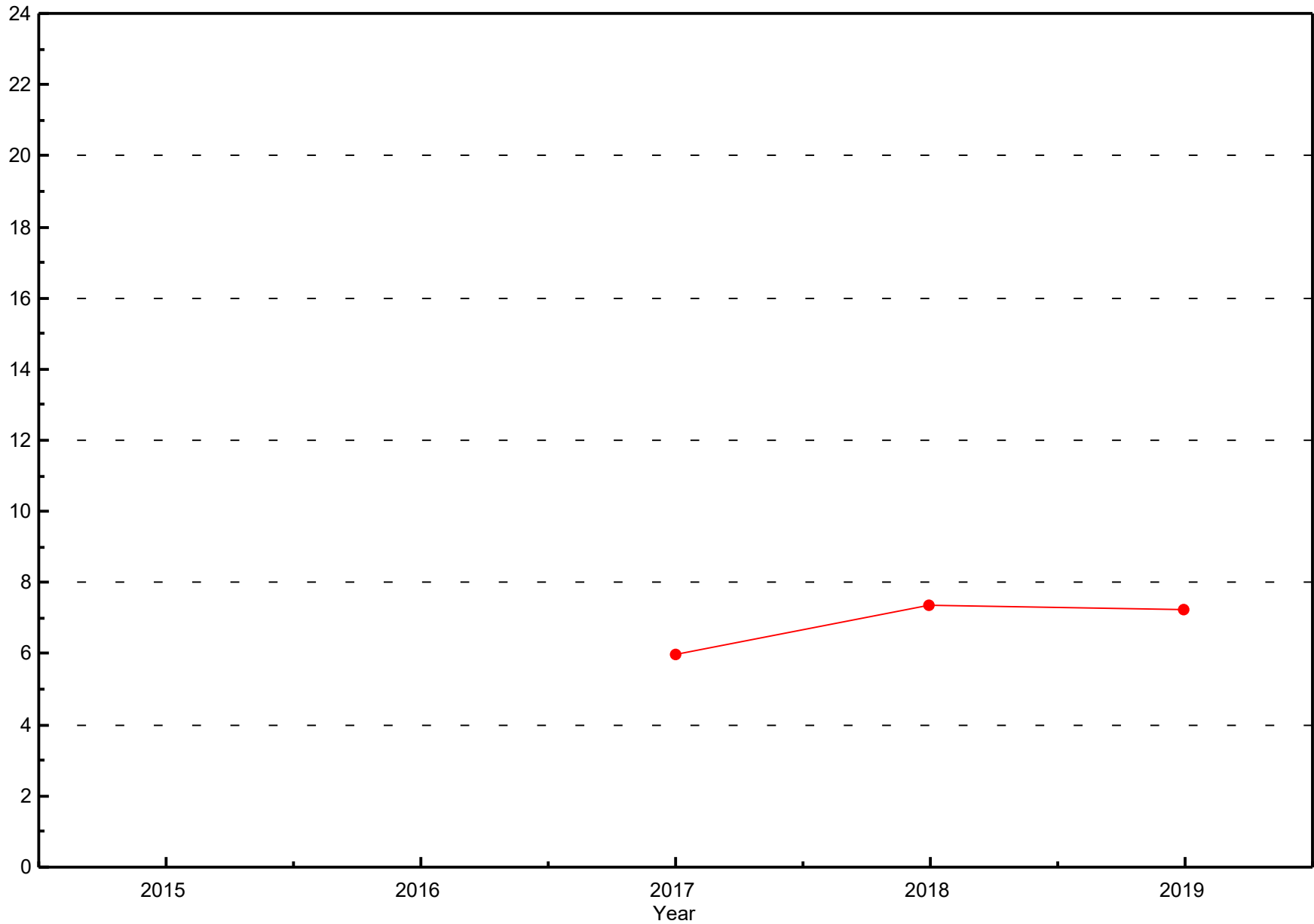
Nitrogen Oxides (NO_x) - ppb
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

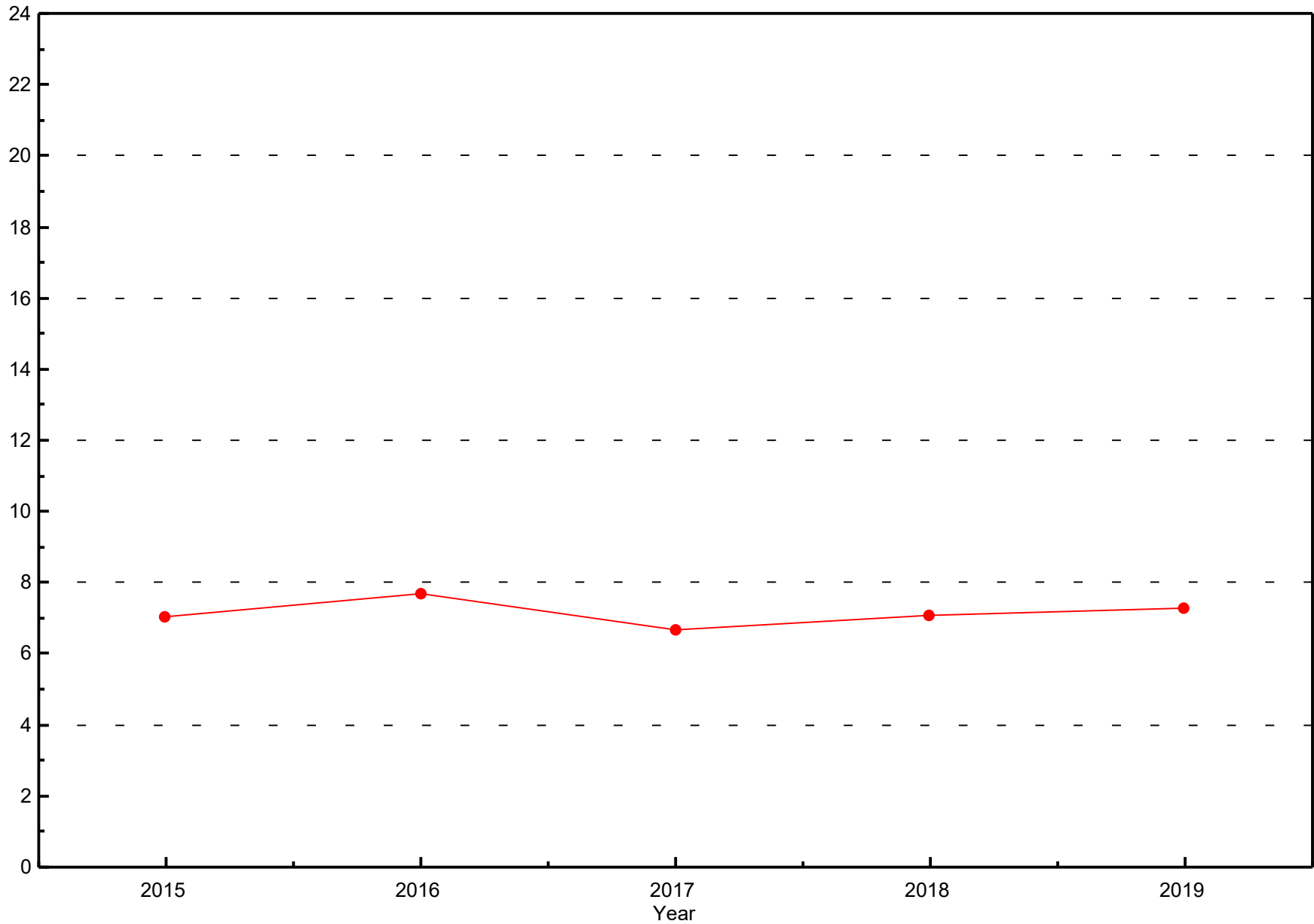
Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

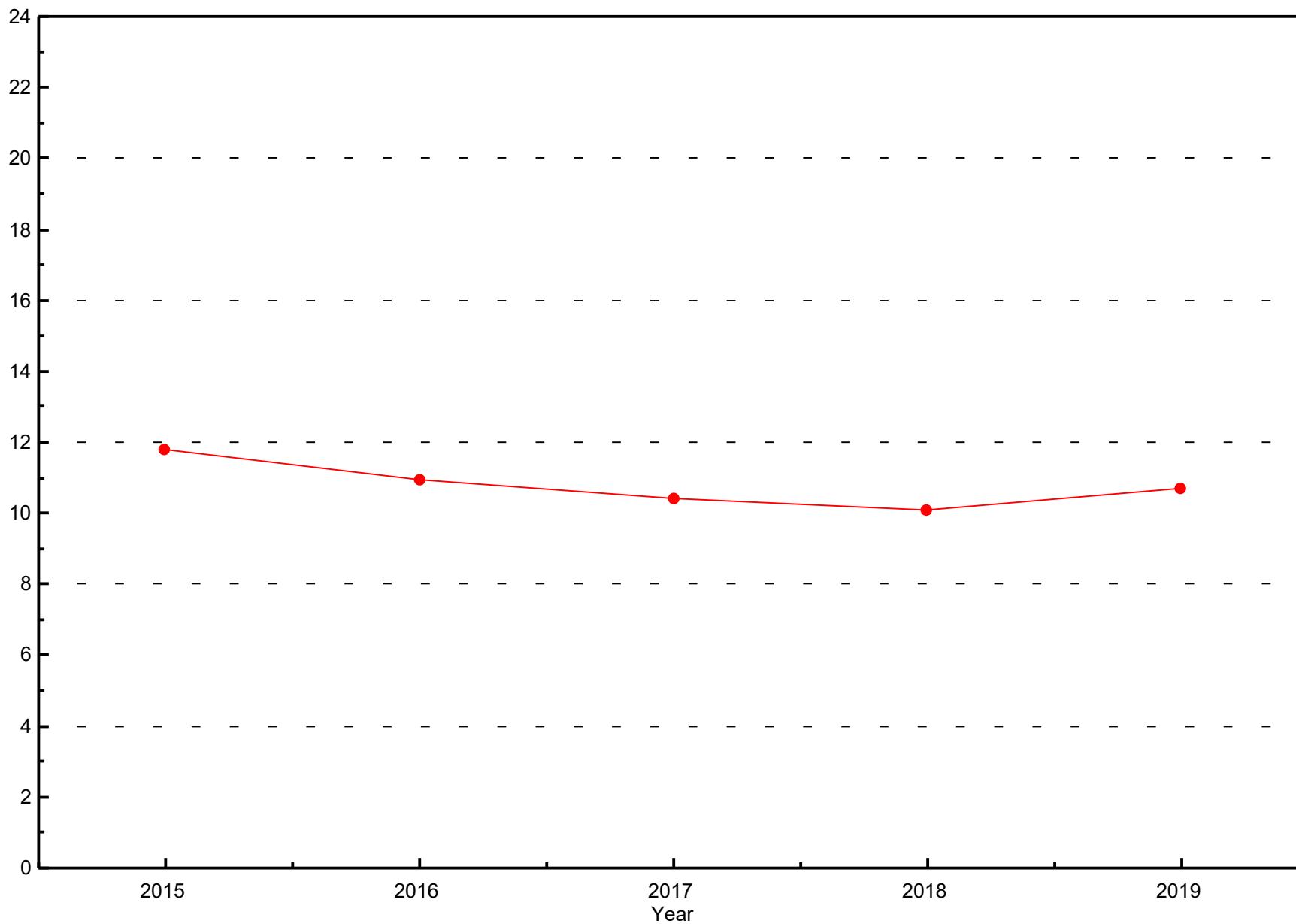
Nitrogen Oxides (NO_x) - ppb
Patricia McInnes (2015 to 2019)





Yearly Averages

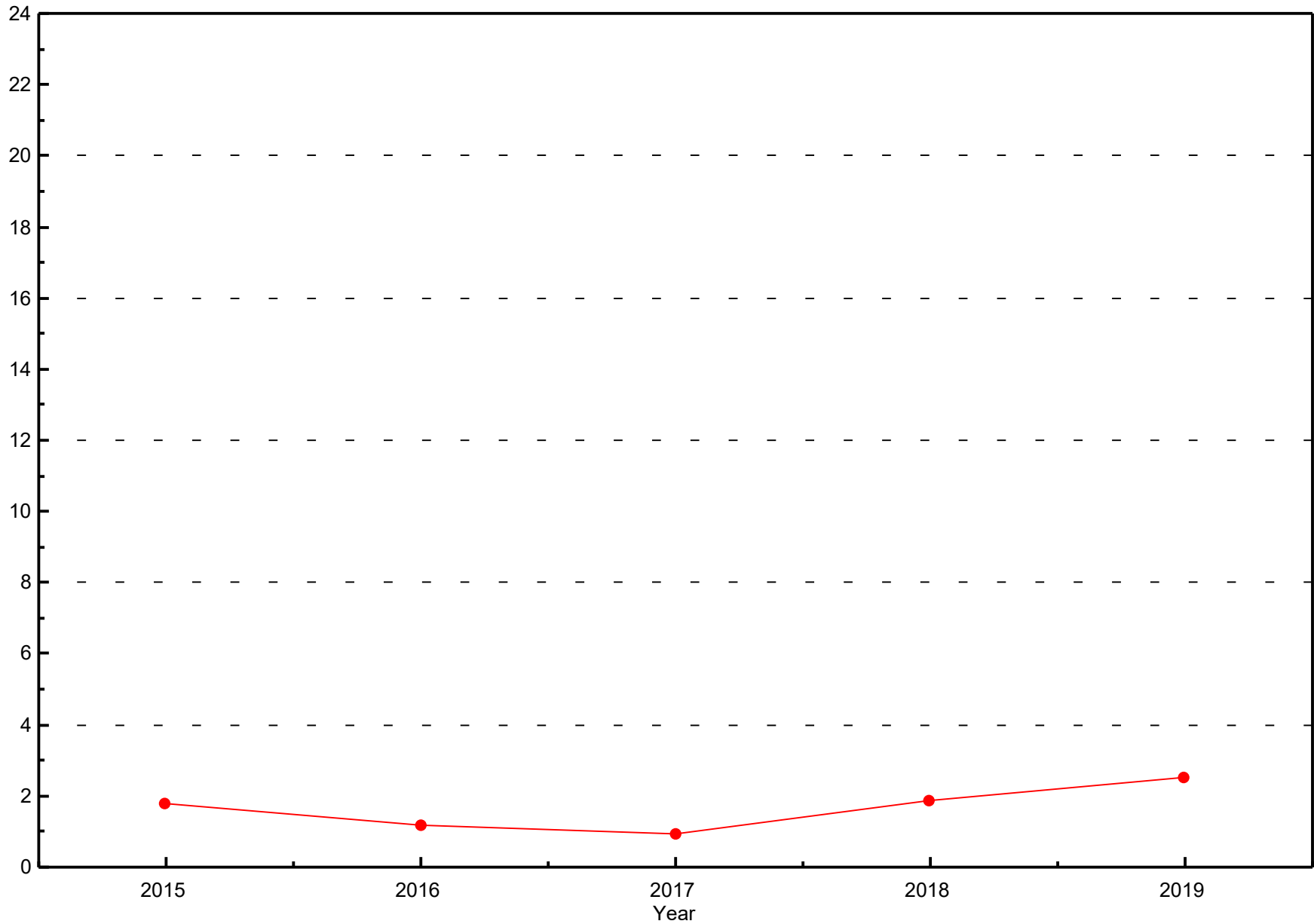
Nitrogen Oxides (NO_x) - ppb
Athabasca Valley (2015 to 2019)





Yearly Averages

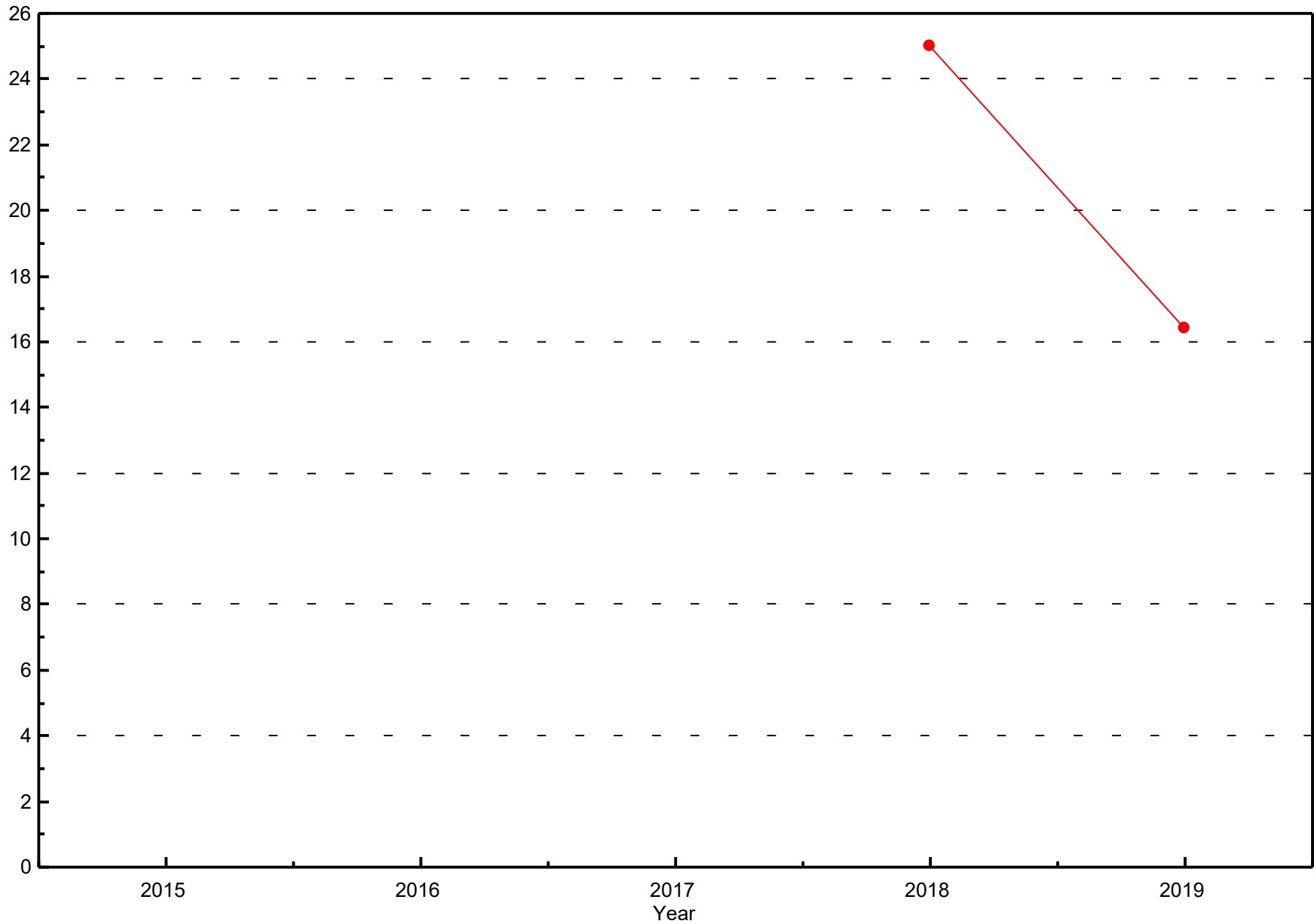
Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan (2015 to 2019)





Yearly Averages

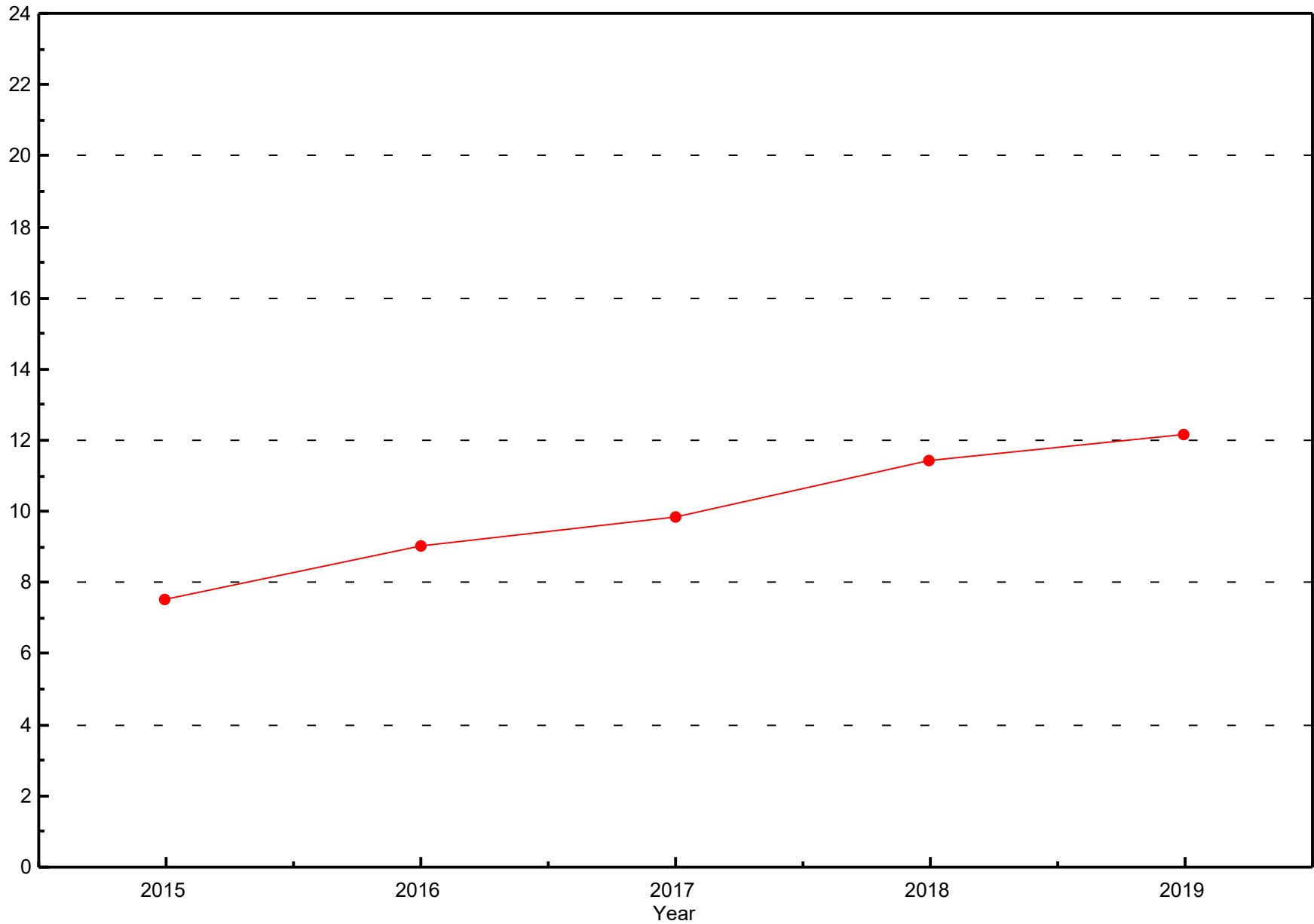
Nitrogen Oxides (NO_x) - ppb
Barge Landing (2015 to 2019)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Fort McKay South (2015 to 2019)

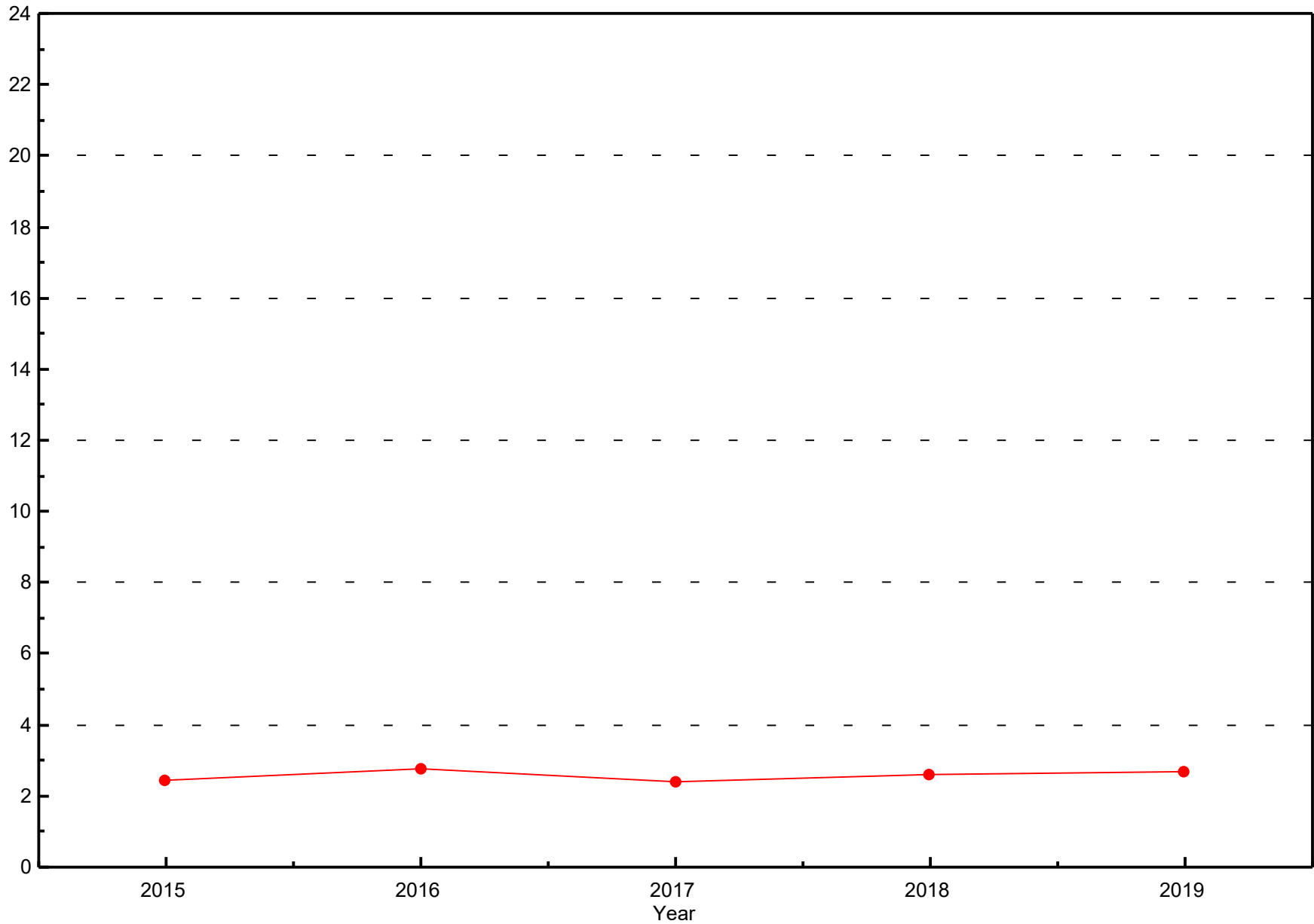




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

Anzac (2015 to 2019)

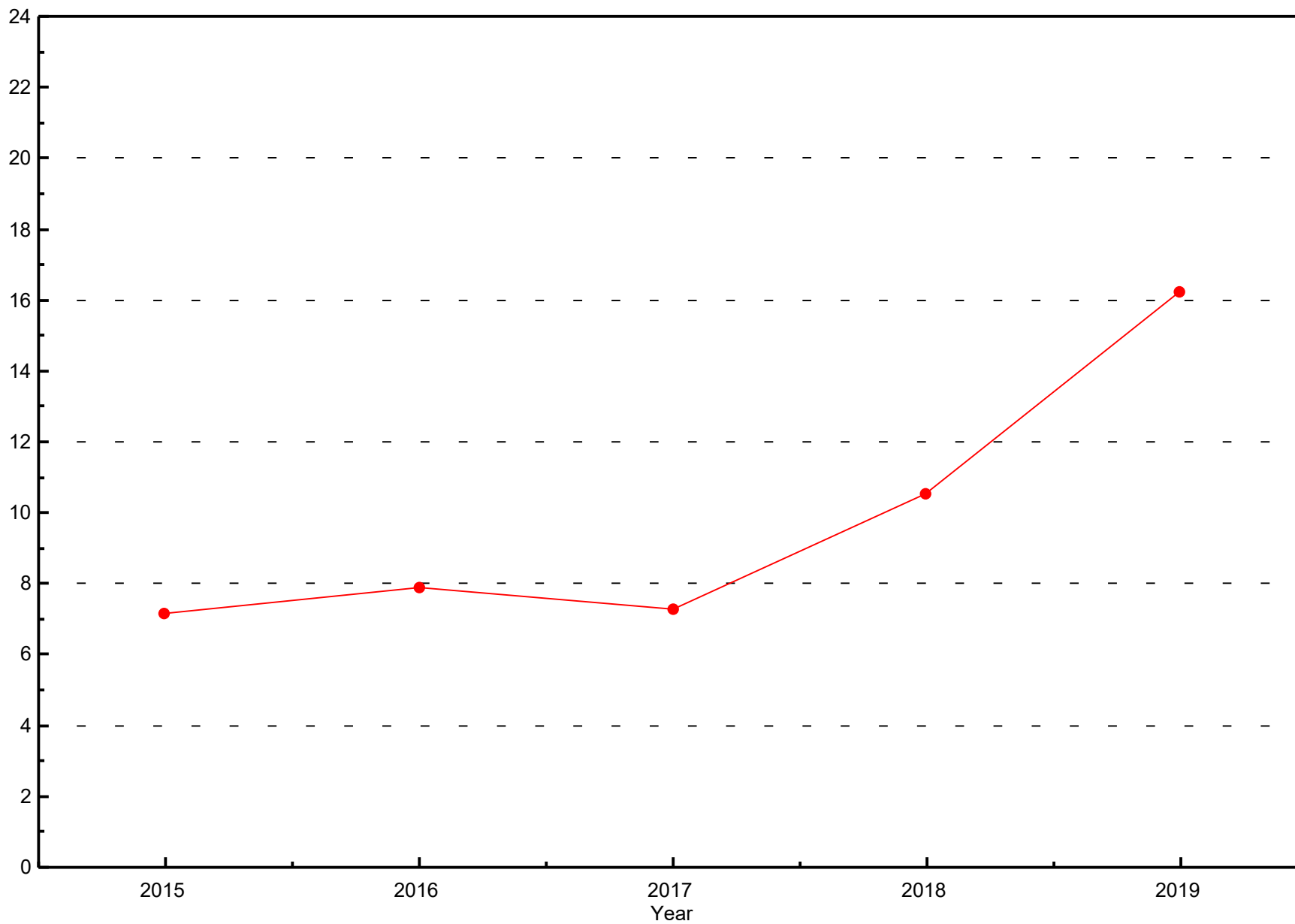




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

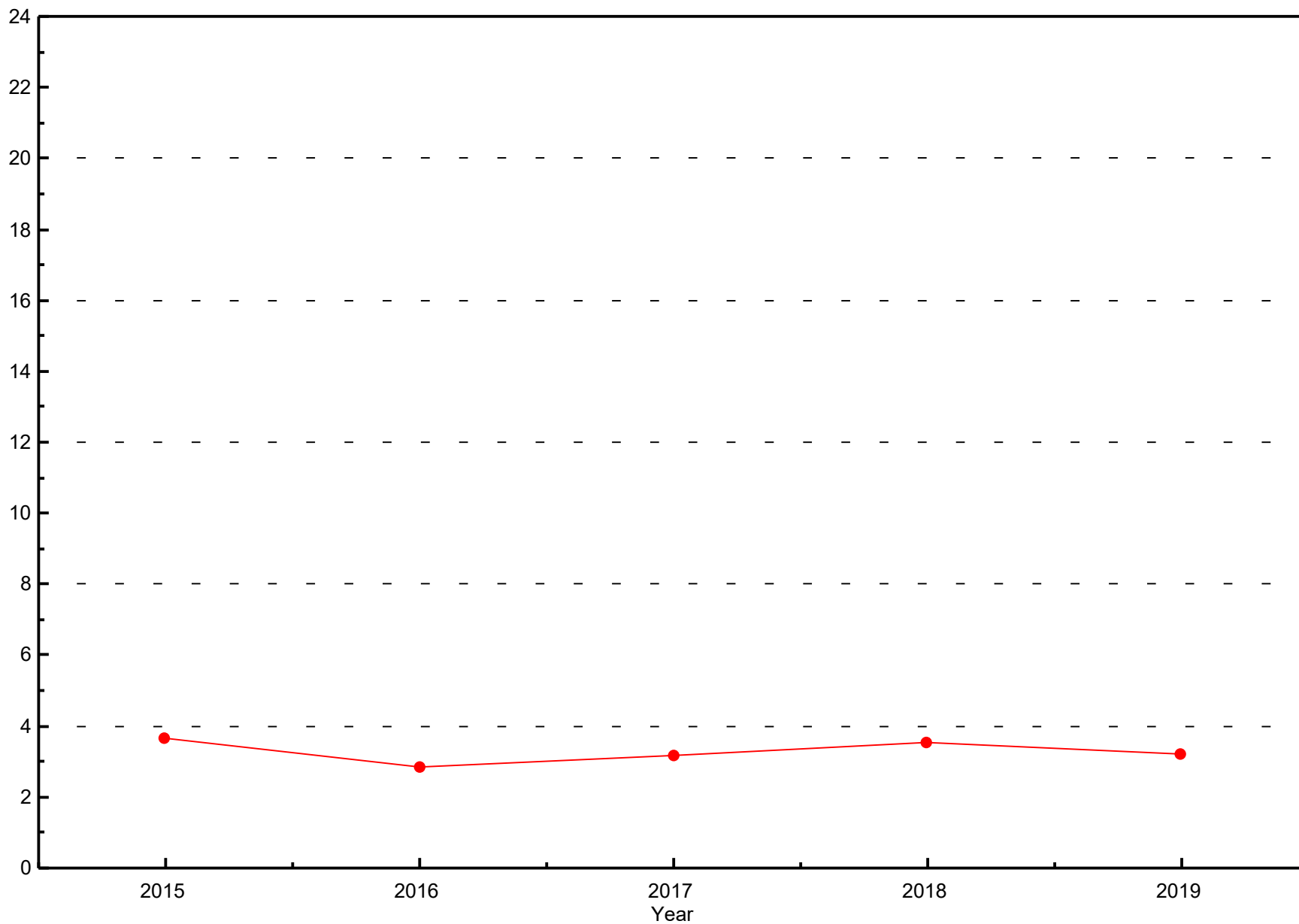
Horizon (2015 to 2019)





Yearly Averages

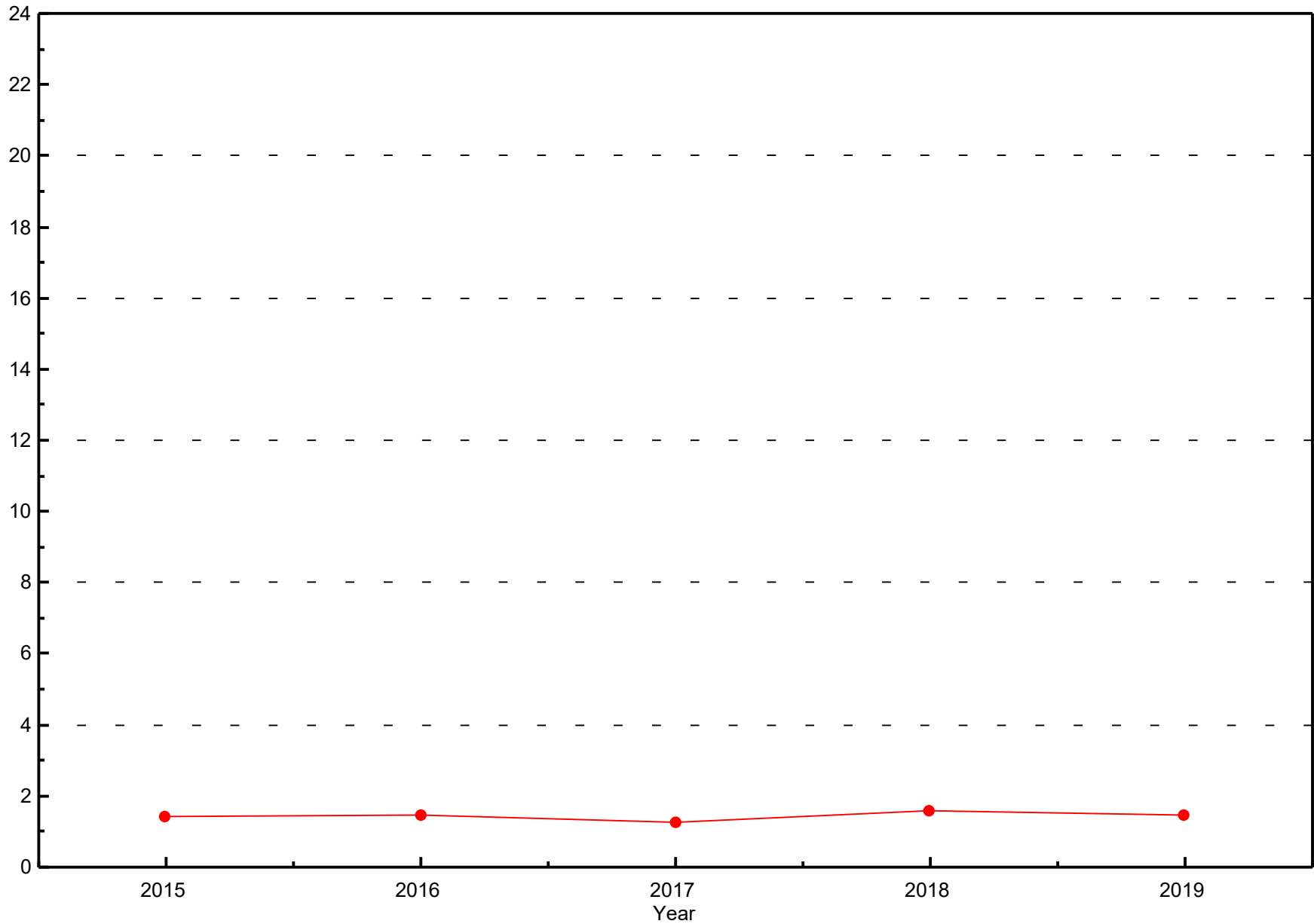
Nitrogen Oxides (NO_x) - ppb
Wapasu (2015 to 2019)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Stony Mountain (2015 to 2019)

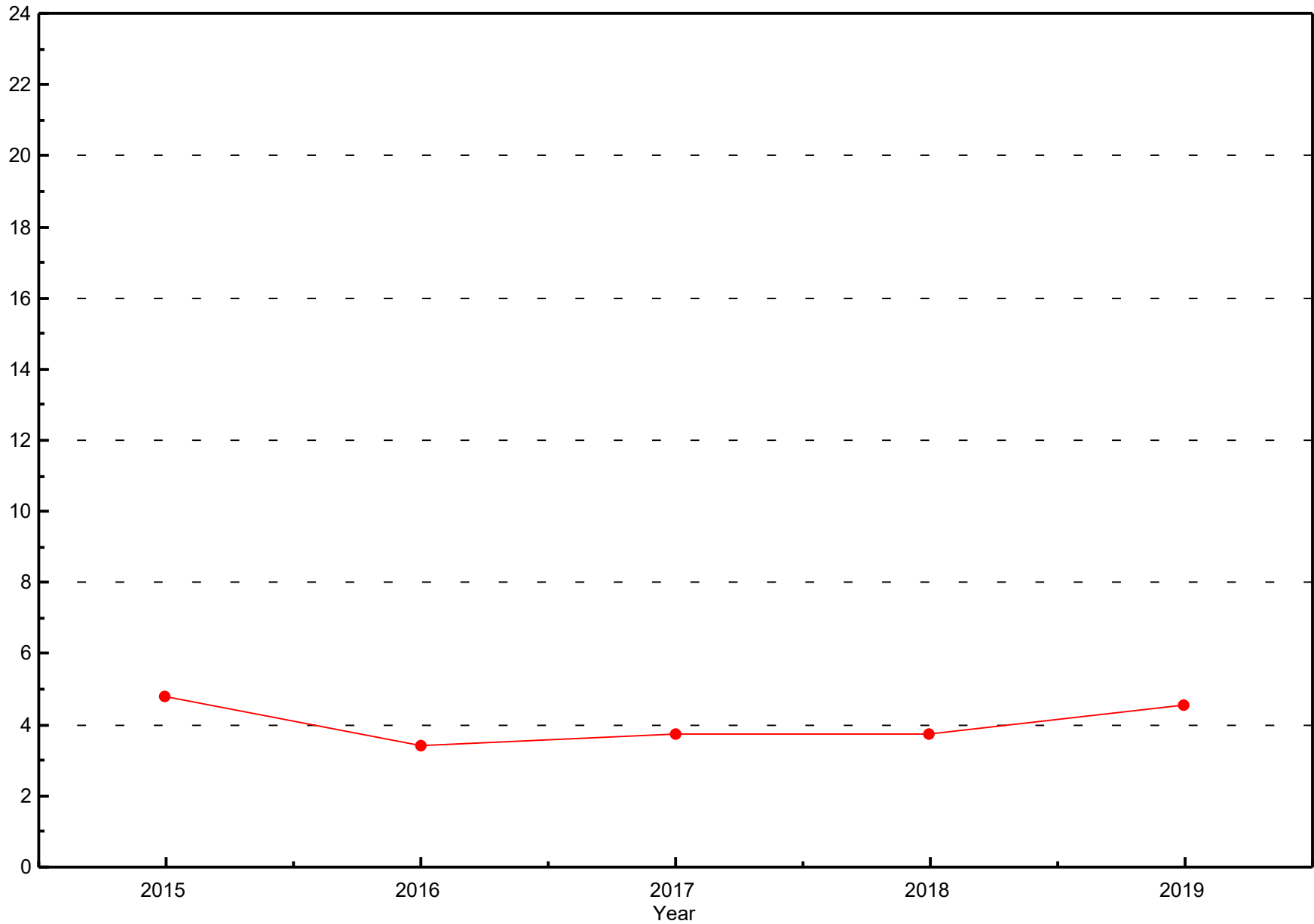




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

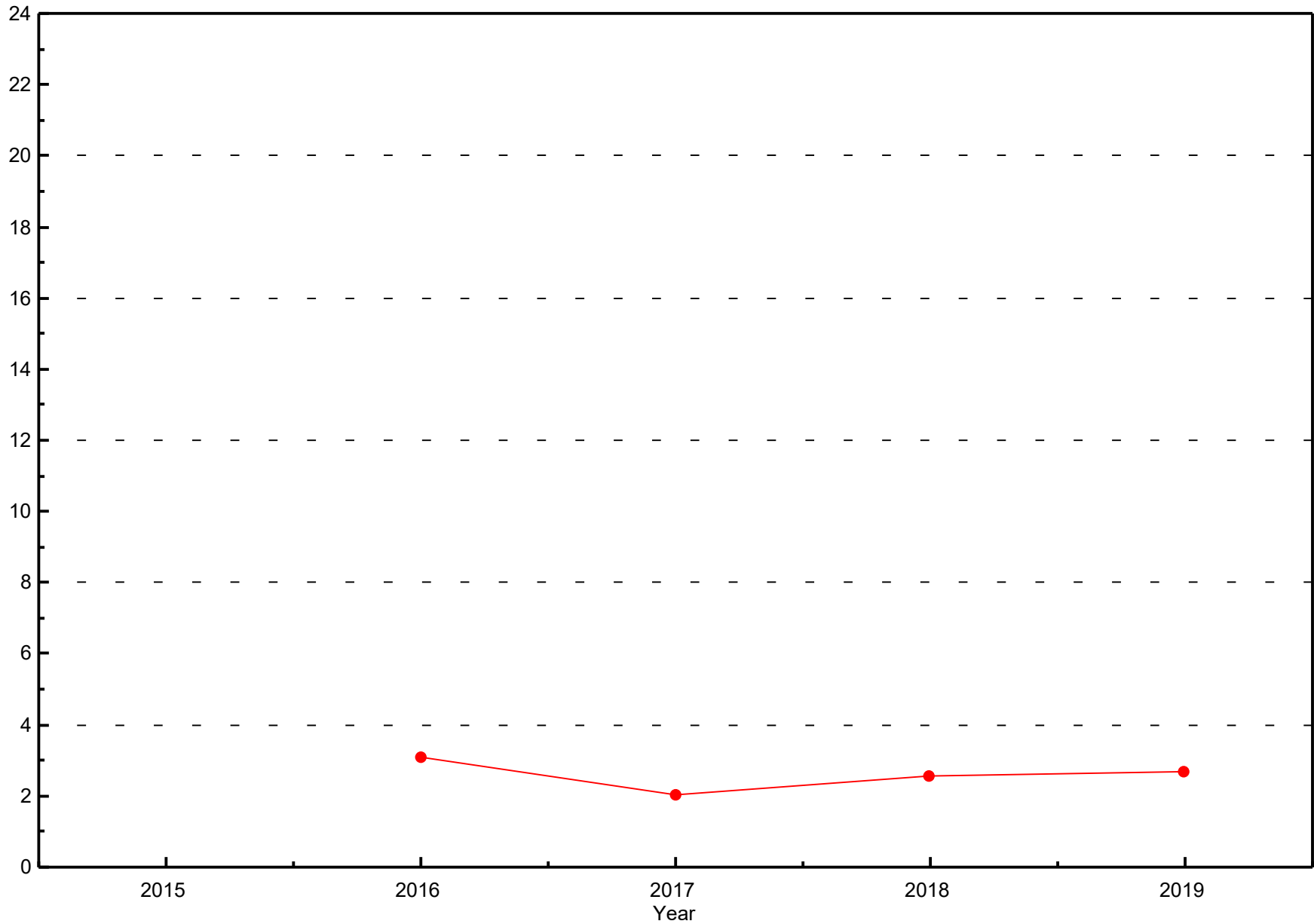
Firebag (2015 to 2019)





Yearly Averages

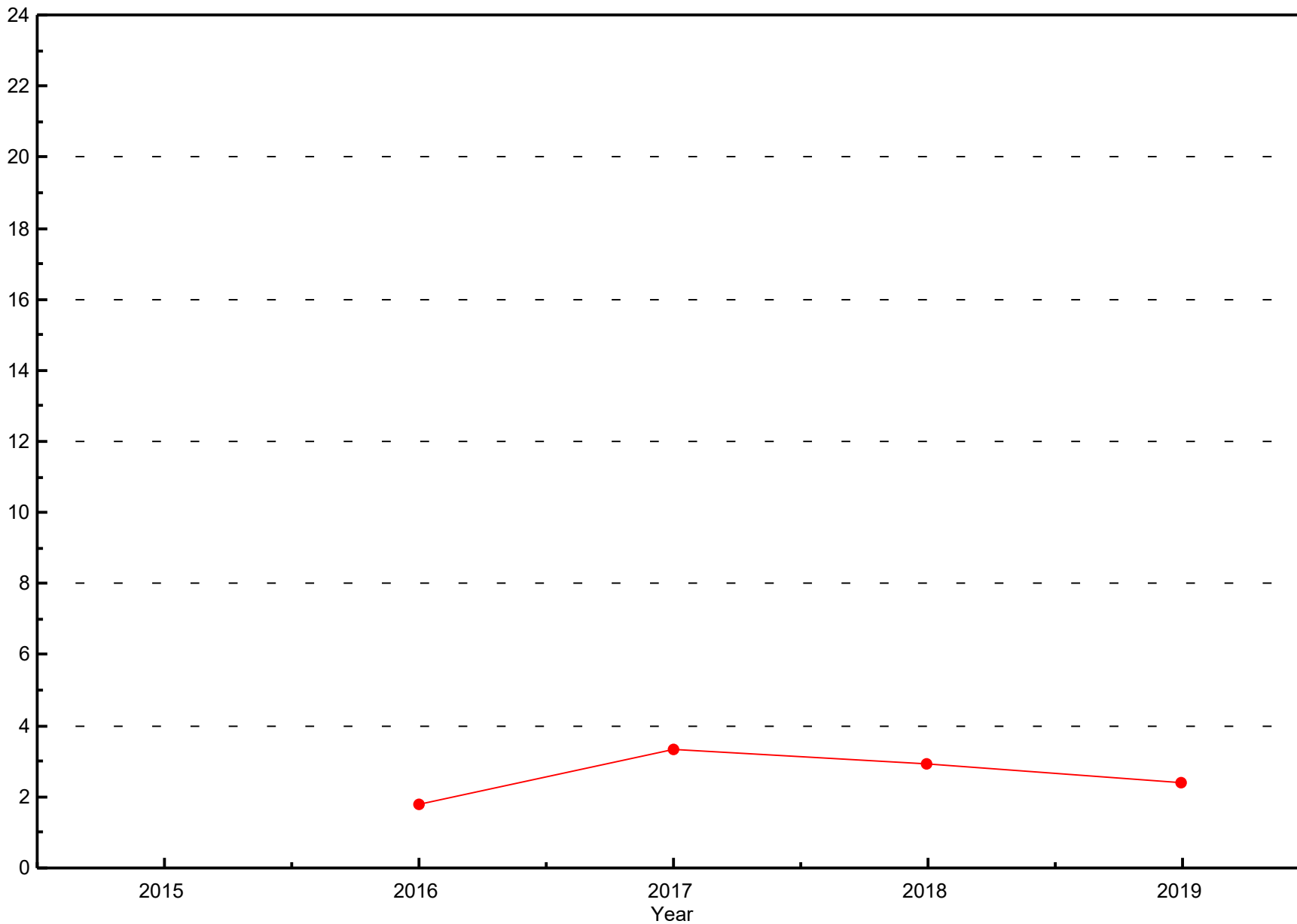
Nitrogen Oxides (NO_x) - ppb
Mackay River (2015 to 2019)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Conklin (2015 to 2019)

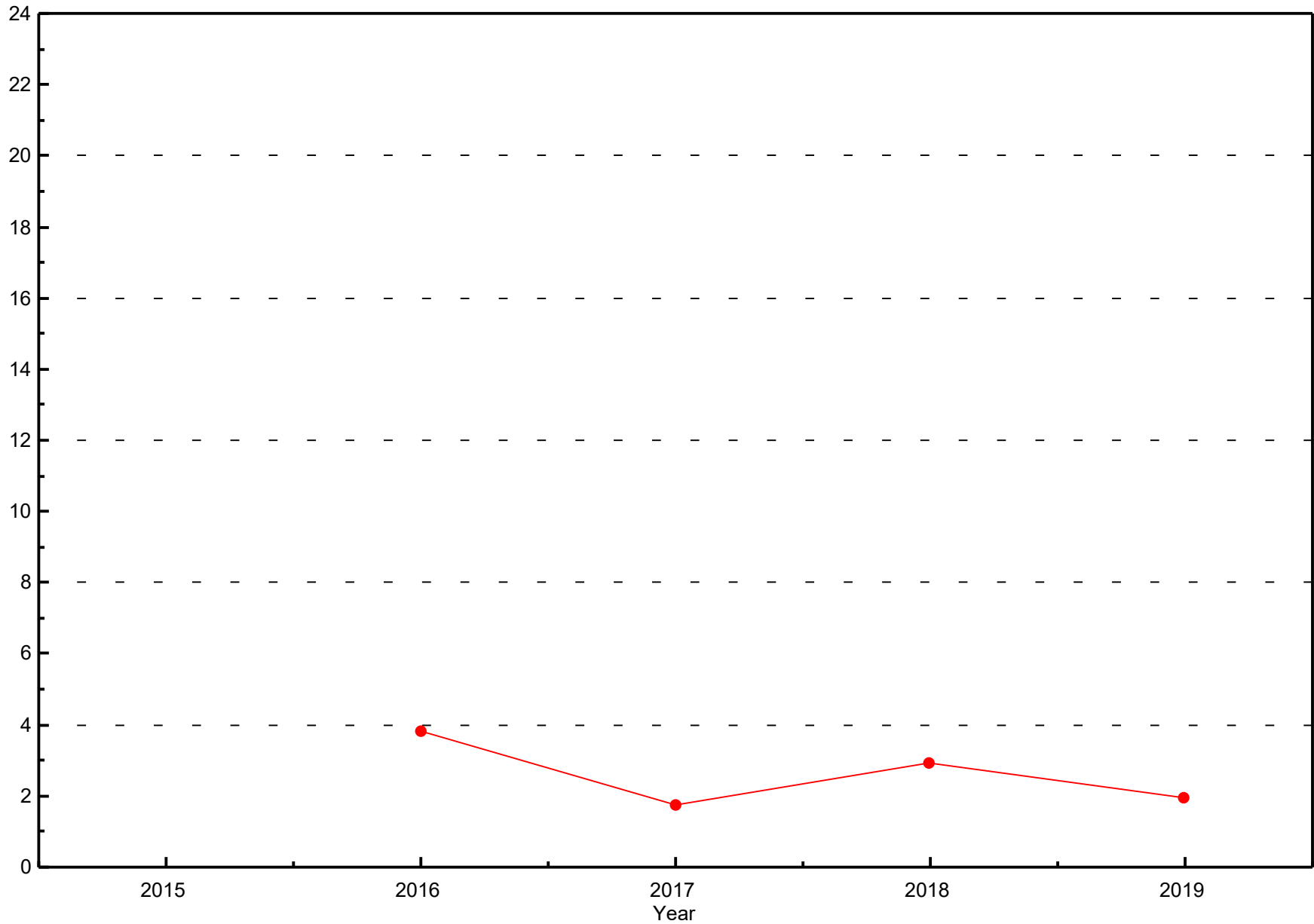




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

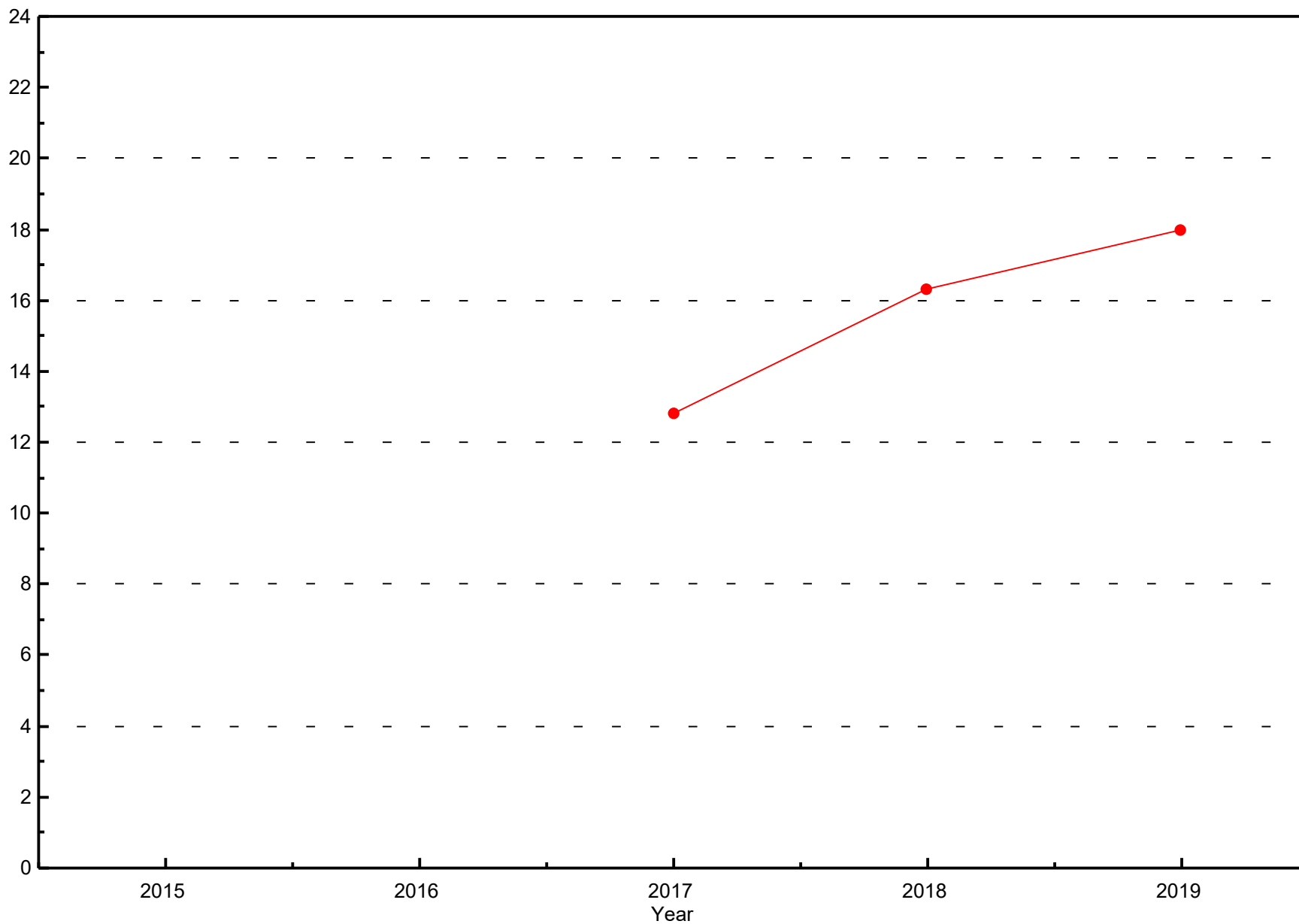
Janvier (2015 to 2019)





Yearly Averages

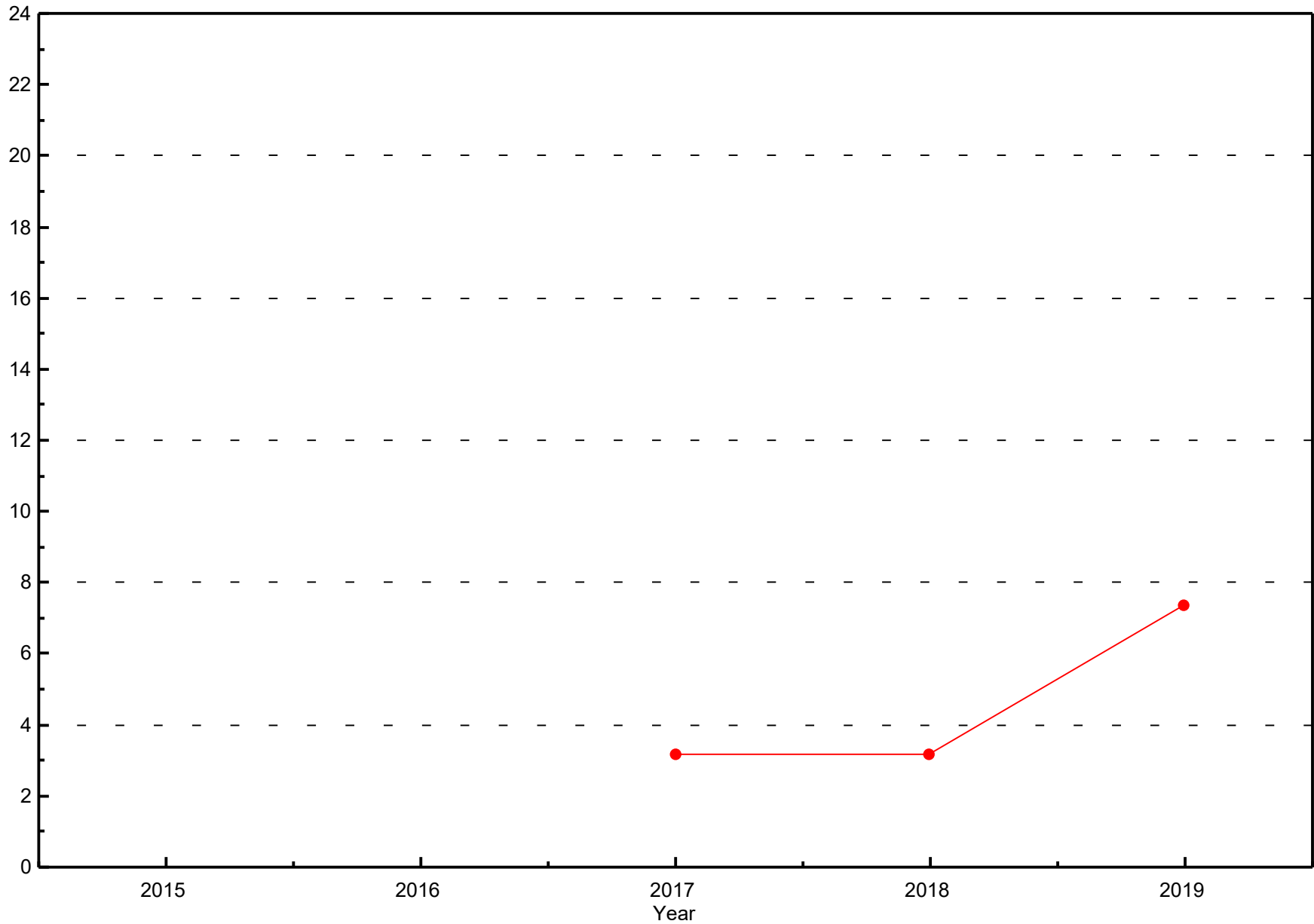
Nitrogen Oxides (NO_x) - ppb
Fort Hills (2015 to 2019)





Yearly Averages

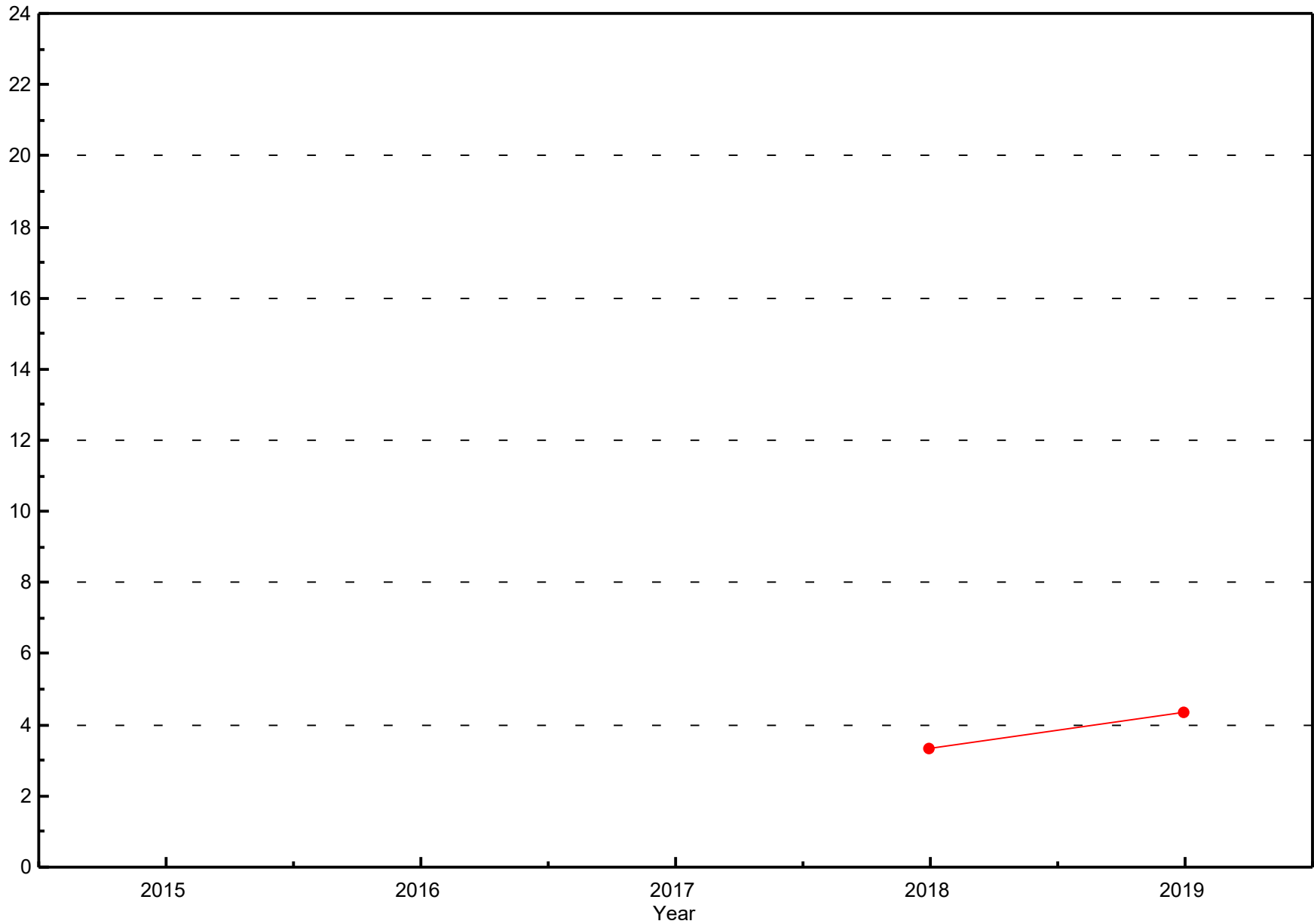
Nitrogen Oxides (NO_x) - ppb
Surmont (2015 to 2019)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Christina Lake (2015 to 2019)

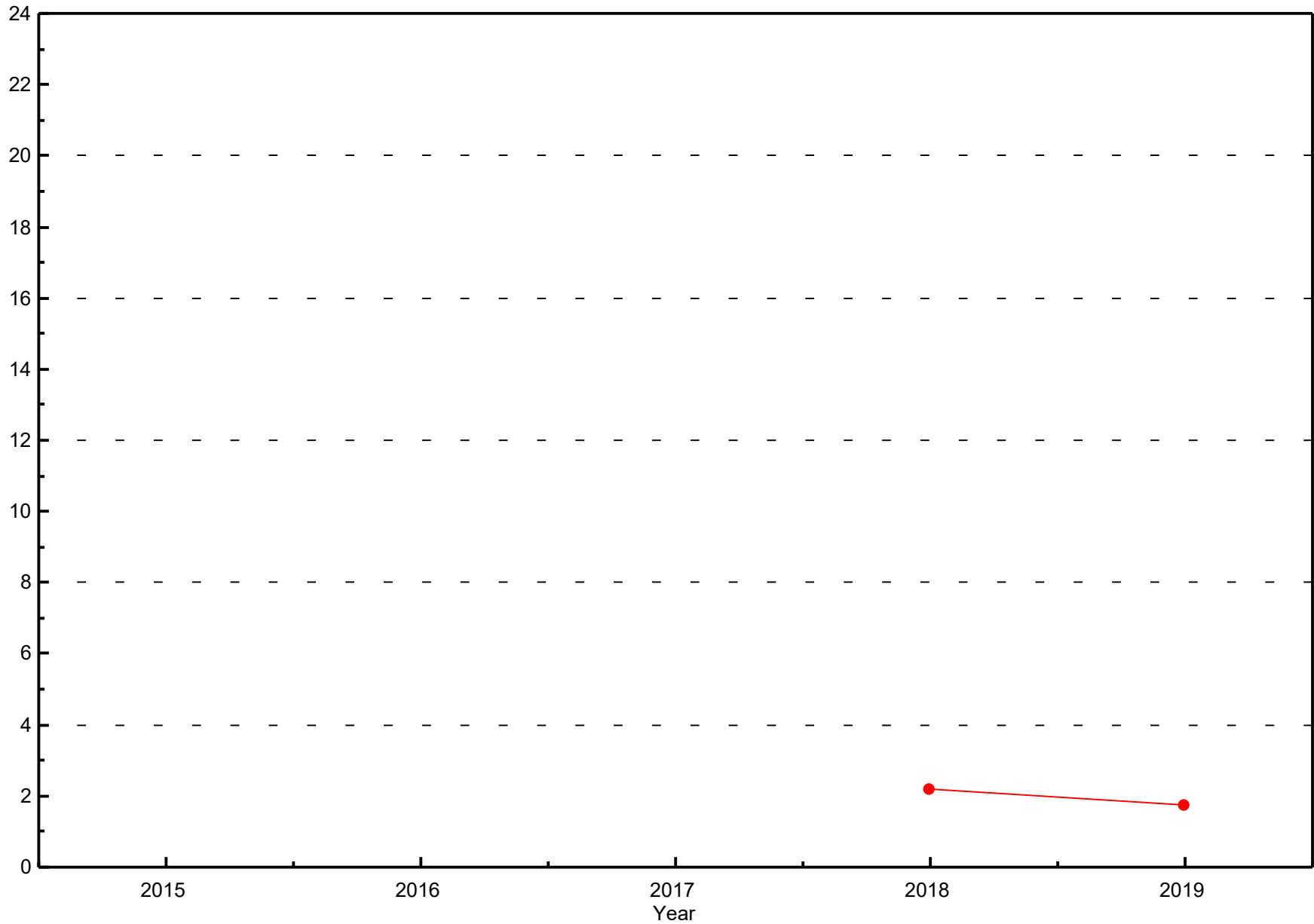




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

Jackfish 2/3 (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

NITROGEN OXIDE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
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
January	100	706	8.6	150.3	47.6	94	5	1	0
February	100	639	8.5	120.2	39.4	95	4	2	0
March	100	706	2.9	97.6	33.2	98	1	0	0
April	100	684	1.7	56.5	8.7	100	0	0	0
May	100	708	1.6	36.1	4.6	100	0	0	0
June	100	680	1.1	42.6	4.6	100	0	0	0
July	100	708	1.7	52.2	5.1	100	0	0	0
August	100	708	1.5	58.7	6.2	100	0	0	0
September	100	683	2.8	126.5	9.5	99	0	0	0
October	100	707	3.9	93.8	25.7	98	1	1	0
November	100	681	2.4	57.5	8.4	100	0	0	0
December	100	708	9.1	107.6	28.0	95	4	0	0
Annual	100	8318	3.8	150.3	47.6	98	1	0	0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
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
January	100	707	4.7	90.8	24.7	97	2	0	0
February	100	639	3.6	96.8	16.4	99	1	0	0
March	100	707	1.2	93.4	9.0	100	0	0	0
April	99	680	0.8	44.1	3.5	100	0	0	0
May	96	676	1.3	112.4	15.4	100	0	0	0
June	100	681	1.6	55.9	7.4	100	0	0	0
July	99	703	1.7	59.8	9.4	100	0	0	0
August	100	705	1.5	40.9	4.3	100	0	0	0
September	100	684	1.4	35.1	5.5	100	0	0	0
October	100	707	1.6	68.5	6.9	99	1	0	0
November	100	683	1.3	61.2	10.5	99	1	0	0
December	100	708	4.7	85.1	36.1	97	3	0	0
Annual	99	8280	2.1	112.4	36.1	99	1	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
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
January	100	707	3.5	51.2	15.0	99	1	0	0
February	100	638	4.4	66.1	11.8	99	1	0	0
March	100	707	1.4	27.8	5.0	100	0	0	0
April	100	684	1.0	21.7	3.5	100	0	0	0
May	97	686	0.9	16.6	2.7	100	0	0	0
June	100	681	0.8	11.4	1.9	100	0	0	0
July	100	707	0.8	19.6	3.1	100	0	0	0
August	100	707	0.8	15.3	3.0	100	0	0	0
September	100	684	1.1	17.8	2.8	100	0	0	0
October	100	708	1.4	47.7	4.8	100	0	0	0
November	99	677	2.0	47.8	8.6	100	0	0	0
December	100	706	4.7	52.1	14.5	99	1	0	0
Annual	100	8292	1.9	66.1	15.0	100	0	0	0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
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
January	100	708	5.1	66.8	20.1	98	2	0	0
February	100	639	7.1	82.5	24.4	97	3	0	0
March	96	681	2.8	33.3	7.2	100	0	0	0
April	100	684	1.0	13.8	2.0	100	0	0	0
May	100	707	1.0	15.7	3.0	100	0	0	0
June	100	681	1.0	9.5	2.1	100	0	0	0
July	100	707	1.4	19.1	2.7	100	0	0	0
August	100	706	1.8	16.9	5.0	100	0	0	0
September	100	685	2.4	24.5	5.2	100	0	0	0
October	100	706	2.9	25.6	7.6	100	0	0	0
November	99	680	3.3	52.2	11.8	100	0	0	0
December	100	707	7.6	108.5	43.7	98	2	0	0
Annual	100	8291	3.1	108.5	43.7	99	1	0	0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
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
January	100	707	0.2	2.9	0.5	100	0	0	0
February	99	631	0.6	14.7	2.5	100	0	0	0
March	99	704	0.4	5.7	1.2	100	0	0	0
April	100	682	0.4	3.4	0.9	100	0	0	0
May	100	706	0.2	1.7	0.5	100	0	0	0
June	100	685	0.2	3.5	0.5	100	0	0	0
July	100	706	0.4	6.0	1.2	100	0	0	0
August	98	696	0.4	4.7	1.1	100	0	0	0
September	100	684	0.8	8.2	2.2	100	0	0	0
October	99	703	1.1	4.7	2.9	100	0	0	0
November	100	685	0.8	5.2	2.6	100	0	0	0
December	100	707	0.6	6.4	2.1	100	0	0	0
Annual	100	8296	0.5	14.7	2.9	100	0	0	0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
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
January	99	704	15.7	204.4	89.0	88	7	5	0
February	100	639	14.2	156.2	55.6	90	6	4	0
March	100	708	4.8	117.3	25.8	97	2	1	0
April	100	685	1.6	28.8	5.1	100	0	0	0
May	100	705	2.0	34.2	5.8	100	0	0	0
June	98	668	1.3	38.7	7.8	100	0	0	0
July	99	703	2.0	58.3	6.1	100	0	0	0
August	100	708	2.0	42.9	5.5	100	0	0	0
September	100	685	4.1	99.8	14.4	99	1	0	0
October	100	708	5.2	114.2	24.3	97	2	1	0
November	100	685	3.6	104.2	22.3	99	1	0	0
December	98	691	18.7	232.4	123.0	87	6	4	2
Annual	100	8289	6.2	232.4	123.0	97	2	1	0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
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
January	100	708	8.8	137.3	42.2	94	5	2	0
February	100	639	14.6	220.5	64.5	88	7	5	0
March	100	709	5.1	213.2	63.1	97	2	1	1
April	98	669	1.8	85.8	9.8	99	0	0	0
May	98	690	1.9	51.2	6.5	100	0	0	0
June	92	630	1.0	27.3	3.4	100	0	0	0
July	100	708	2.7	71.8	12.1	99	1	0	0
August	100	706	1.9	44.3	7.5	100	0	0	0
September	100	683	3.5	73.8	16.3	99	1	0	0
October	100	705	3.8	61.1	18.3	99	1	0	0
November	100	685	3.0	90.8	20.9	99	1	0	0
December	100	708	10.1	104.3	33.3	93	6	1	0
Annual	99	8240	4.8	220.5	64.5	97	2	1	0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
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
January	91	646	0.7	37.9	6.2	100	0	0	0
February	99	635	1.0	84.8	5.1	100	0	0	0
March	93	660	0.4	51.2	4.4	100	0	0	0
April	100	682	0.3	7.1	1.0	100	0	0	0
May	100	708	0.4	70.5	3.3	100	0	0	0
June	100	685	0.3	3.8	0.8	100	0	0	0
July	100	708	0.4	31.3	2.3	100	0	0	0
August	99	702	0.4	8.2	1.1	100	0	0	0
September	100	684	0.5	21.3	2.7	100	0	0	0
October	99	699	0.3	16.2	1.6	100	0	0	0
November	100	684	0.4	11.9	1.4	100	0	0	0
December	100	708	0.7	36.9	4.9	100	0	0	0
Annual	99	8201	0.5	84.8	6.2	100	0	0	0



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
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
January	100	709	13.2	421.4	112.5	91	5	3	1
February	100	639	7.8	192.7	38.6	96	2	2	0
March	100	708	6.0	354.9	59.9	97	1	0	1
April	100	685	3.4	126.0	14.4	99	0	1	0
May	99	702	4.4	171.6	15.3	97	2	1	0
June	100	680	3.3	116.5	7.9	99	1	0	0
July	99	704	4.0	104.6	24.3	98	2	0	0
August	100	707	8.1	94.0	21.0	96	3	1	0
September	100	683	8.3	173.3	38.6	95	3	1	0
October	100	708	11.3	352.4	66.1	93	4	2	1
November	100	684	3.8	93.7	15.1	99	1	0	0
December	100	708	9.7	220.5	46.6	93	4	2	1
Annual	100	8317	7.0	421.4	112.5	96	2	1	0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
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
January	100	707	0.6	17.4	2.2	100	0	0	0
February	100	639	0.7	8.1	2.3	100	0	0	0
March	100	707	0.6	6.6	1.3	100	0	0	0
April	100	685	0.5	7.3	1.6	100	0	0	0
May	100	708	0.4	11.0	1.4	100	0	0	0
June	100	682	0.5	7.0	1.3	100	0	0	0
July	100	708	0.5	7.1	1.8	100	0	0	0
August	100	708	0.7	29.9	3.4	100	0	0	0
September	100	685	0.8	31.0	3.7	100	0	0	0
October	100	705	0.7	14.4	2.4	100	0	0	0
November	100	685	0.7	23.1	4.5	100	0	0	0
December	54	378	0.5	17.1	3.1	100	0	0	0
Annual	96	7997	0.6	31.0	4.5	100	0	0	0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
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
January	100	707	0.1	3.0	0.5	100	0	0	0
February	100	637	0.3	4.6	0.8	100	0	0	0
March	100	708	0.1	2.6	0.6	100	0	0	0
April	100	685	0.1	1.3	0.2	100	0	0	0
May	100	708	0.1	1.1	0.2	100	0	0	0
June	100	685	0.2	1.3	0.4	100	0	0	0
July	100	706	0.3	2.5	0.5	100	0	0	0
August	99	701	0.2	1.5	0.4	100	0	0	0
September	99	681	0.2	3.6	0.3	100	0	0	0
October	99	696	0.1	1.4	0.3	100	0	0	0
November	100	685	0.1	1.5	0.4	100	0	0	0
December	100	707	0.2	6.8	0.9	100	0	0	0
Annual	100	8306	0.2	6.8	0.9	100	0	0	0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
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
January	100	707	2.0	37.9	11.5	100	0	0	0
February	100	639	3.1	53.9	14.1	99	1	0	0
March	100	708	1.6	230.2	19.3	99	0	0	0
April	100	686	0.4	14.7	1.7	100	0	0	0
May	100	707	0.3	4.1	0.9	100	0	0	0
June	92	628	0.3	12.0	1.1	100	0	0	0
July	100	707	0.4	13.3	1.5	100	0	0	0
August	100	707	0.4	11.2	1.1	100	0	0	0
September	100	684	0.9	55.6	6.4	100	0	0	0
October	100	708	1.4	78.5	15.0	99	1	0	0
November	100	685	0.7	31.1	4.1	100	0	0	0
December	100	706	1.2	21.8	4.1	100	0	0	0
Annual	99	8272	1.1	230.2	19.3	100	0	0	0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
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
January	100	708	0.9	35.6	5.4	100	0	0	0
February	99	633	0.6	17.0	3.1	100	0	0	0
March	100	705	0.2	4.1	1.0	100	0	0	0
April	100	686	0.2	8.5	1.1	100	0	0	0
May	99	700	0.2	6.5	1.0	100	0	0	0
June	100	684	0.2	3.8	0.6	100	0	0	0
July	100	708	0.2	3.4	0.7	100	0	0	0
August	100	708	0.3	10.9	1.6	100	0	0	0
September	100	685	0.3	14.7	1.9	100	0	0	0
October	100	708	0.2	14.4	1.6	100	0	0	0
November	100	685	0.1	16.3	1.7	100	0	0	0
December	100	708	1.0	34.3	8.6	100	0	0	0
Annual	100	8318	0.4	35.6	8.6	100	0	0	0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
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
January	100	707	0.4	8.1	1.9	100	0	0	0
February	100	639	0.6	10.8	1.6	100	0	0	0
March	100	708	0.3	9.4	1.2	100	0	0	0
April	100	685	0.3	19.6	1.0	100	0	0	0
May	100	708	0.3	22.7	1.1	100	0	0	0
June	100	685	0.3	17.6	1.2	100	0	0	0
July	100	706	0.3	21.1	1.4	100	0	0	0
August	100	708	0.5	20.7	3.7	100	0	0	0
September	100	683	0.5	11.4	1.8	100	0	0	0
October	100	704	0.4	16.1	1.6	100	0	0	0
November	100	685	0.3	28.1	3.4	100	0	0	0
December	100	707	0.5	24.0	2.5	100	0	0	0
Annual	100	8325	0.4	28.1	3.7	100	0	0	0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
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
January	100	708	0.9	6.8	2.2	100	0	0	0
February	99	634	1.2	13.8	2.4	100	0	0	0
March	99	702	0.8	23.7	1.7	100	0	0	0
April	100	682	0.6	2.2	0.8	100	0	0	0
May	99	701	0.3	4.4	0.8	100	0	0	0
June	100	683	0.5	18.1	2.4	100	0	0	0
July	99	699	0.3	6.2	1.4	100	0	0	0
August	99	703	0.4	7.7	1.3	100	0	0	0
September	100	684	0.3	6.6	0.6	100	0	0	0
October	100	703	0.3	10.6	0.9	100	0	0	0
November	100	685	0.3	5.5	1.1	100	0	0	0
December	100	708	0.5	21.4	2.2	100	0	0	0
Annual	100	8292	0.5	23.7	2.4	100	0	0	0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
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
January	100	709	24.5	304.9	95.7	79	13	6	2
February	100	636	19.4	295.3	76.0	86	8	5	1
March	100	708	8.1	311.9	49.3	95	3	2	1
April	100	685	3.8	97.1	16.0	98	1	0	0
May	100	708	3.4	124.4	18.7	99	1	0	0
June	100	682	2.0	103.9	9.5	99	1	0	0
July	100	705	1.7	75.7	7.7	100	0	0	0
August	100	708	4.3	112.8	19.2	97	3	0	0
September	100	684	4.9	106.3	15.2	97	3	0	0
October	100	708	7.8	169.6	31.3	94	4	2	0
November	100	686	3.5	122.4	17.2	99	1	0	0
December	100	707	16.6	347.9	90.1	89	7	3	2
Annual	100	8326	8.3	347.9	95.7	94	4	2	0



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
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
January	100	707	2.7	46.3	14.4	100	0	0	0
February	100	644	2.8	24.9	6.3	100	0	0	0
March	100	261	2.8	22.2	8.4	100	0	0	0
Annual	100	1612	2.8	46.3	14.4	100	0	0	0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
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
January	100	706	1.6	20.5	5.5	100	0	0	0
February	99	631	1.8	35.5	4.6	100	0	0	0
March	100	708	1.4	23.7	4.9	100	0	0	0
April	100	685	1.0	18.4	3.9	100	0	0	0
May	100	709	1.0	18.3	4.0	100	0	0	0
June	100	683	1.2	20.5	8.2	100	0	0	0
July	100	709	1.1	43.0	6.0	100	0	0	0
August	100	708	1.6	24.9	9.0	100	0	0	0
September	100	685	1.3	23.4	3.8	100	0	0	0
October	100	705	1.2	18.3	6.1	100	0	0	0
November	100	686	0.9	15.6	5.5	100	0	0	0
December	100	709	0.7	11.7	3.5	100	0	0	0
Annual	100	8324	1.2	43.0	9.0	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
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
January	100	707	0.6	14.1	3.0	100	0	0	0
February	100	639	0.7	5.6	1.5	100	0	0	0
March	100	707	0.6	2.2	0.9	100	0	0	0
April	100	686	0.6	3.4	1.0	100	0	0	0
May	100	708	0.6	2.7	0.9	100	0	0	0
June	100	684	0.6	5.7	1.0	100	0	0	0
July	100	706	0.5	6.9	0.9	100	0	0	0
August	100	707	0.5	3.3	0.8	100	0	0	0
September	99	682	0.5	4.3	1.2	100	0	0	0
October	99	700	0.6	3.5	1.2	100	0	0	0
November	100	685	0.5	3.0	1.0	100	0	0	0
December	100	708	0.5	9.4	1.5	100	0	0	0
Annual	100	8319	0.6	14.1	3.0	100	0	0	0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
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
March	93	394	0.6	28.5	2.9	100	0	0	0
April	95	653	0.2	6.4	1.4	100	0	0	0
May	99	698	0.2	4.8	0.6	100	0	0	0
June	93	638	0.3	1.9	0.6	100	0	0	0
July	100	707	0.2	3.1	0.6	100	0	0	0
August	100	707	0.2	1.9	0.3	100	0	0	0
September	100	685	0.1	2.4	0.2	100	0	0	0
October	100	701	0.1	2.3	0.3	100	0	0	0
November	100	685	0.2	17.5	1.4	100	0	0	0
December	99	704	0.2	3.6	0.7	100	0	0	0
Annual	98	6572	0.2	28.5	2.9	100	0	0	0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
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
October	99	700	0.8	16.5	4.6	100	0	0	0
November	100	683	0.9	66.6	5.9	100	0	0	0
December	100	708	0.8	22.2	2.5	100	0	0	0
Annual	100	2091	0.8	66.6	5.9	100	0	0	0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
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
June	100	379	0.2	6.9	0.6	100	0	0	0
July	100	708	0.6	11.1	4.0	100	0	0	0
August	100	708	0.6	11.5	2.7	100	0	0	0
September	100	682	0.6	12.6	3.4	100	0	0	0
October	100	704	0.9	11.3	3.8	100	0	0	0
November	100	684	0.8	14.4	3.2	100	0	0	0
December	100	707	1.2	22.1	4.2	100	0	0	0
Annual	100	4572	0.7	22.1	4.2	100	0	0	0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
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
January	100	709	1.0	11.7	3.7	100	0	0	0
February	100	640	1.5	15.1	3.3	100	0	0	0
March	100	709	1.6	13.1	4.3	100	0	0	0
April	92	628	1.3	10.2	3.2	100	0	0	0
May	100	708	1.5	19.9	6.7	100	0	0	0
June	100	685	1.1	22.2	5.5	100	0	0	0
July	89	633	0.5	20.0	6.1	100	0	0	0
August	100	708	0.7	13.4	4.3	100	0	0	0
Annual	98	5420	1.1	22.2	6.7	100	0	0	0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2019
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
January	100	705	0.4	7.2	1.7	100	0	0	0
February	100	639	2.1	43.5	18.1	99	1	0	0
March	99	704	1.7	56.2	19.2	100	0	0	0
April	100	330	10.4	471.0	142.8	97	0	0	3
Annual	100	2378	2.6	471.0	142.8	99	0	0	0



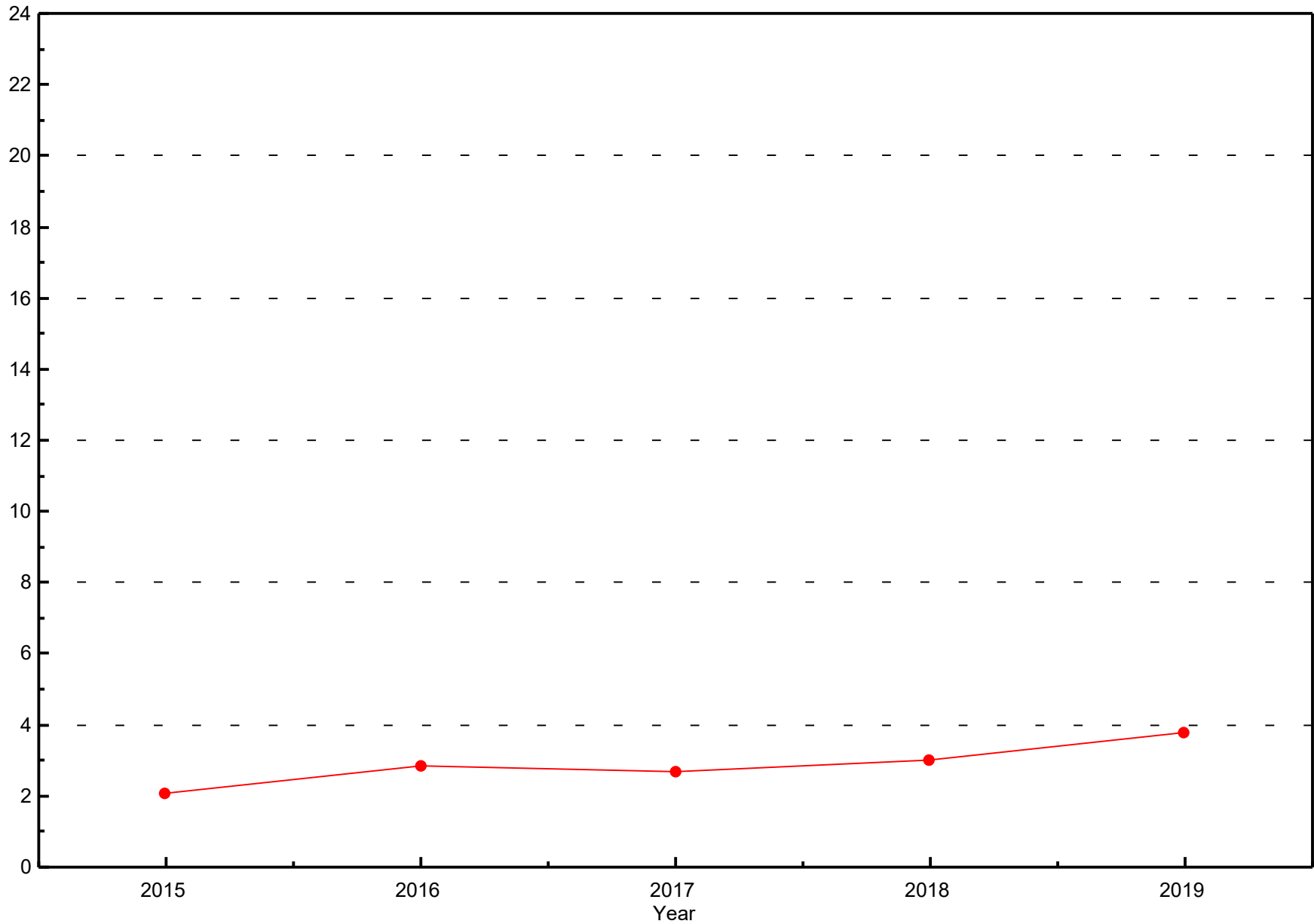
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Nitrogen Oxide (ppb) Average

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
April	100	329	0.4	2.1	0.8	100	0	0	0
May	100	708	0.2	2.6	0.6	100	0	0	0
June	100	681	0.4	8.1	1.0	100	0	0	0
July	100	708	2.2	484.9	56.1	99	0	0	1
August	100	706	0.6	29.9	3.0	100	0	0	0
September	100	683	0.3	7.8	1.0	100	0	0	0
October	100	704	0.2	4.0	1.1	100	0	0	0
November	34	230	0.3	17.3	0.9	100	0	0	0
December	62	439	0.7	64.8	9.0	100	0	0	0
Annual	88	5188	0.6	484.9	56.1	100	0	0	0



Yearly Averages

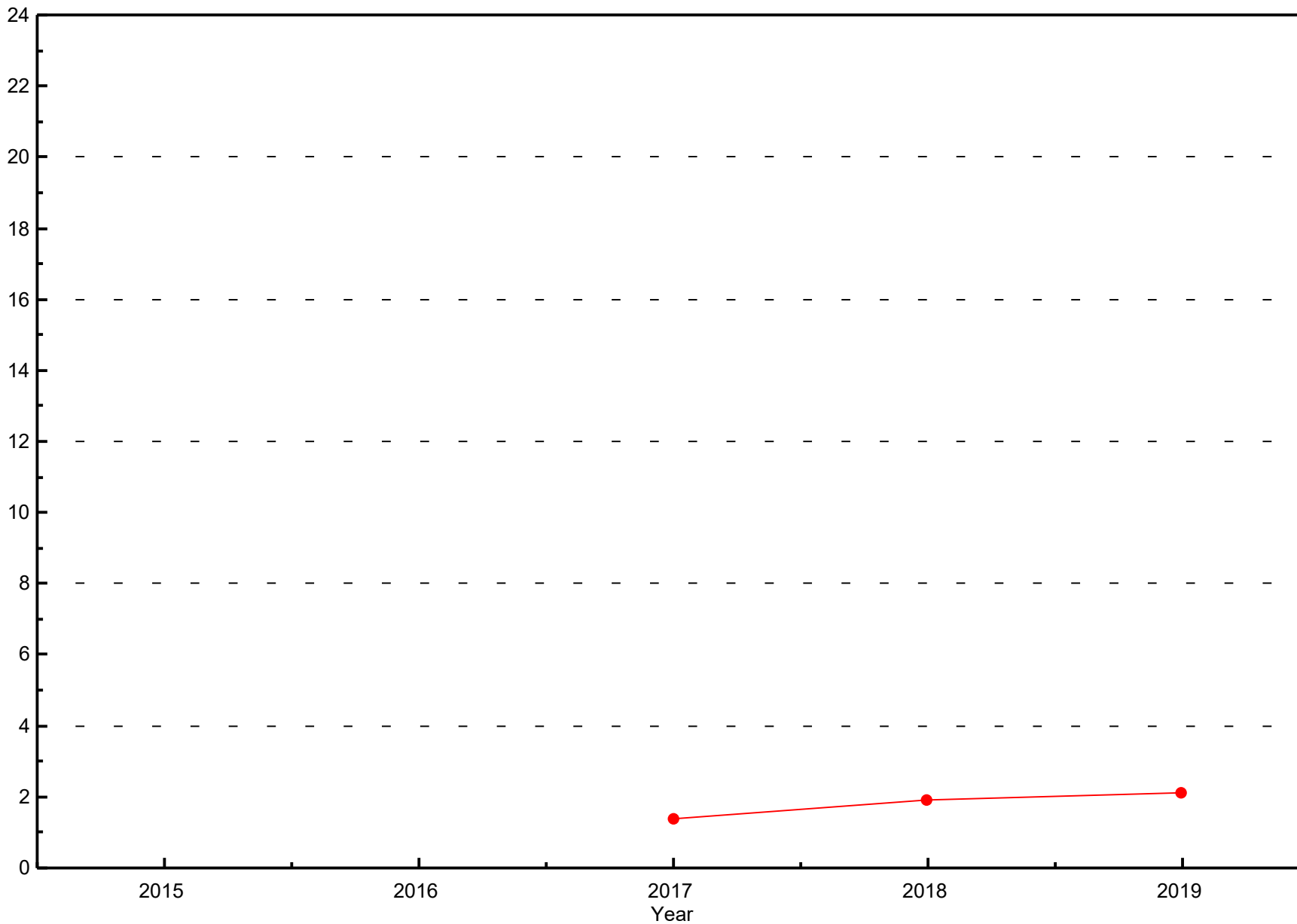
Nitric Oxide (NO) - ppb
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

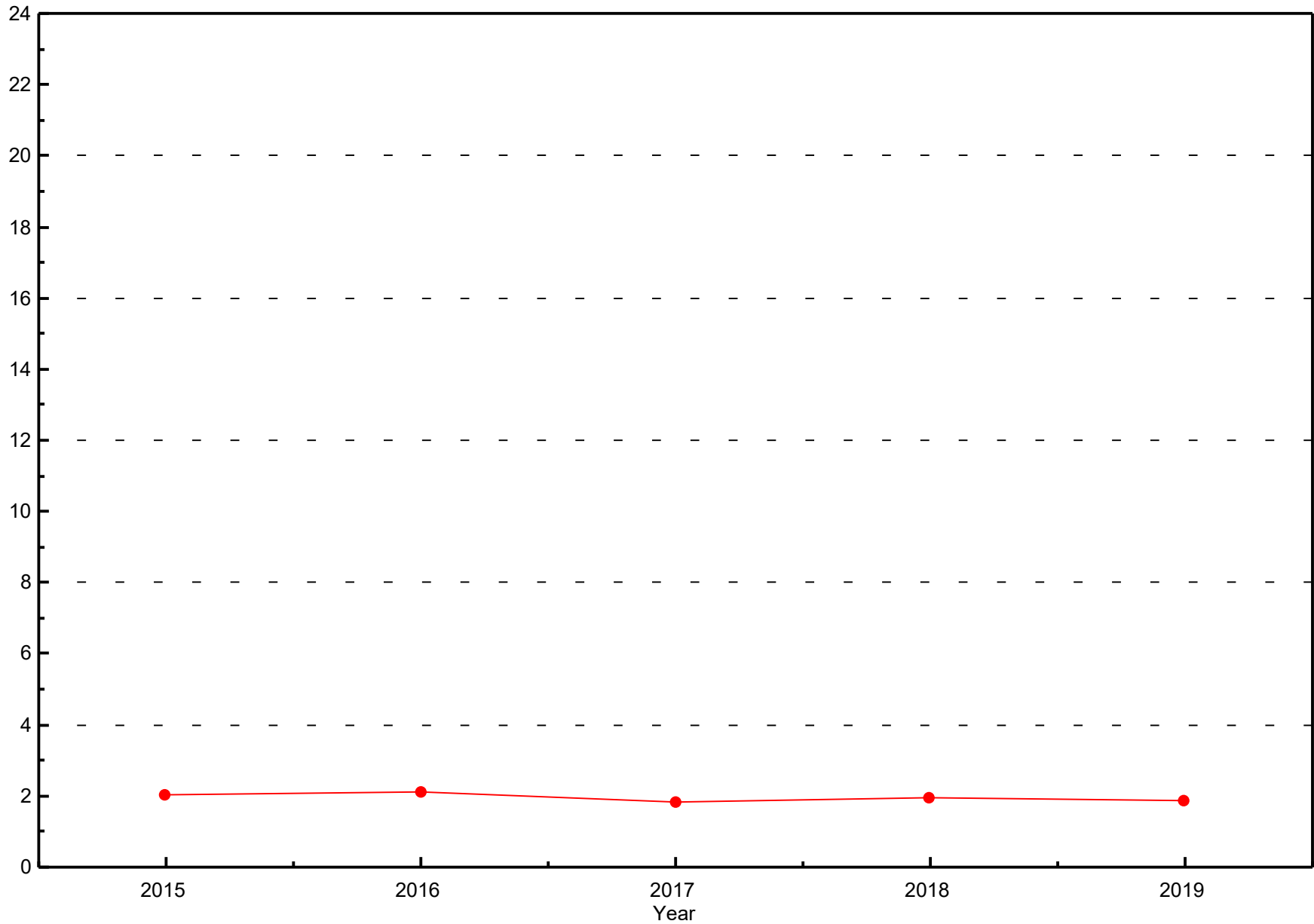
Nitric Oxide (NO) - ppb
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

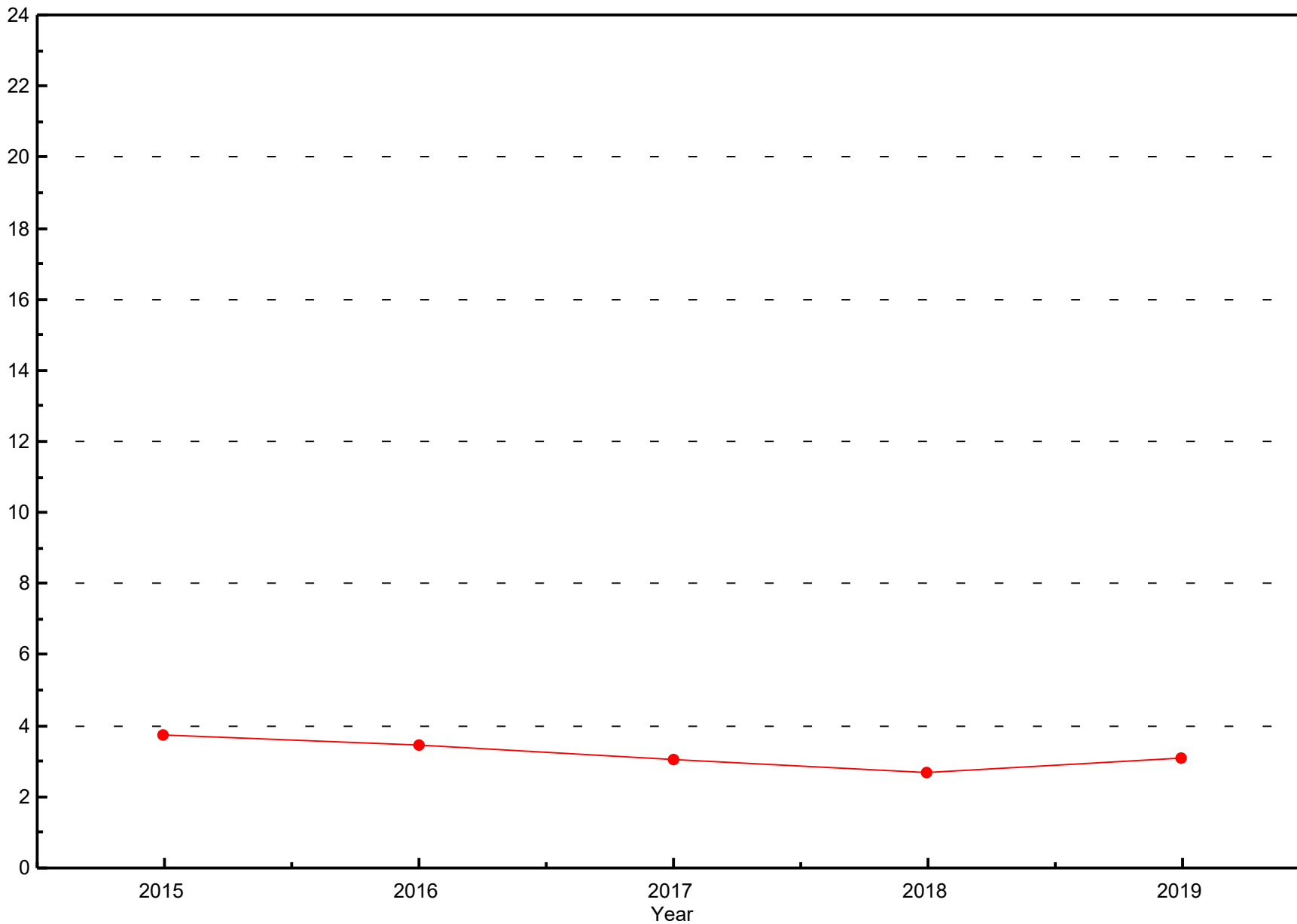
Nitric Oxide (NO) - ppb
Patricia McInnes (2015 to 2019)





Yearly Averages

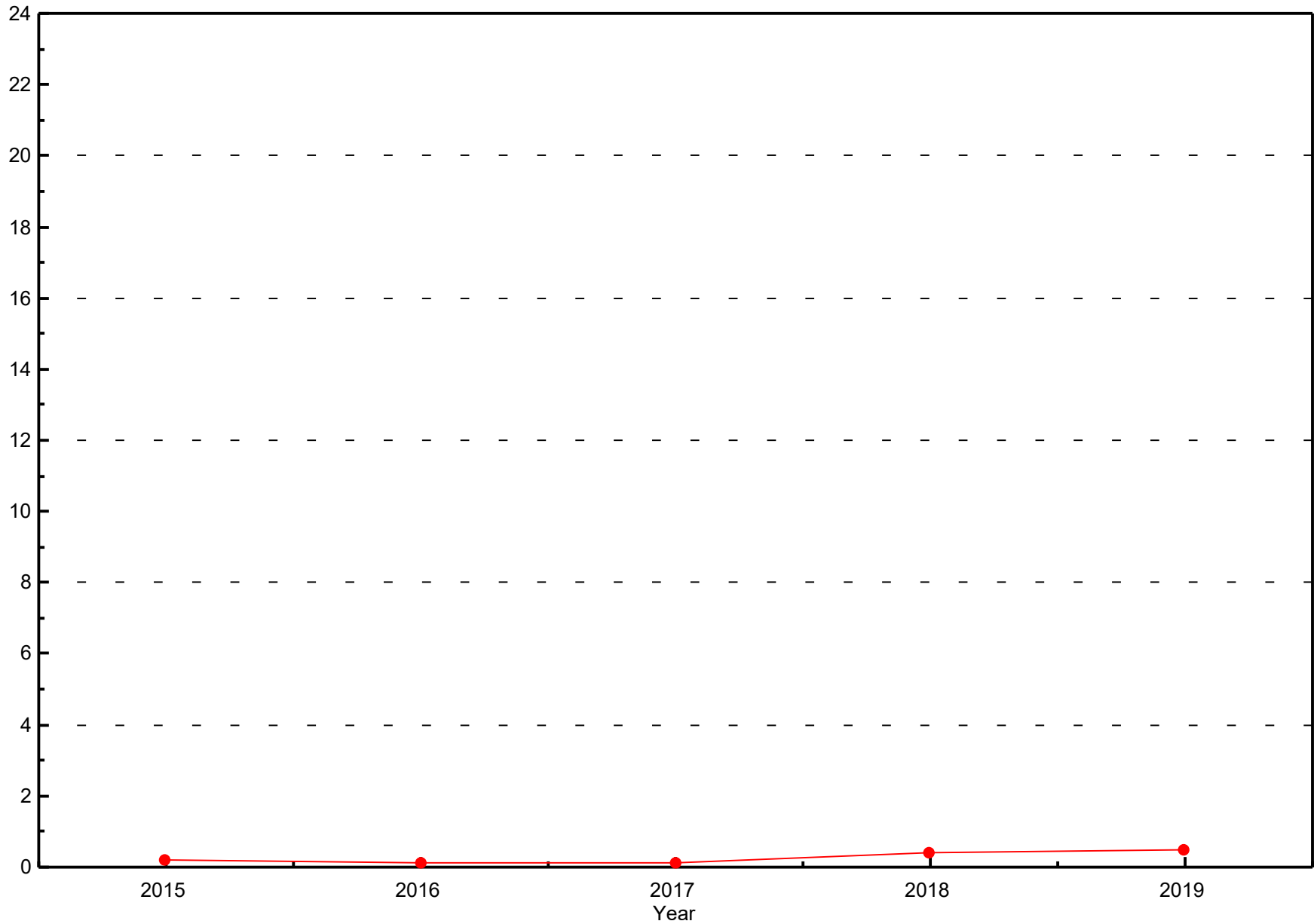
Nitric Oxide (NO) - ppb
Athabasca Valley (2015 to 2019)





Yearly Averages

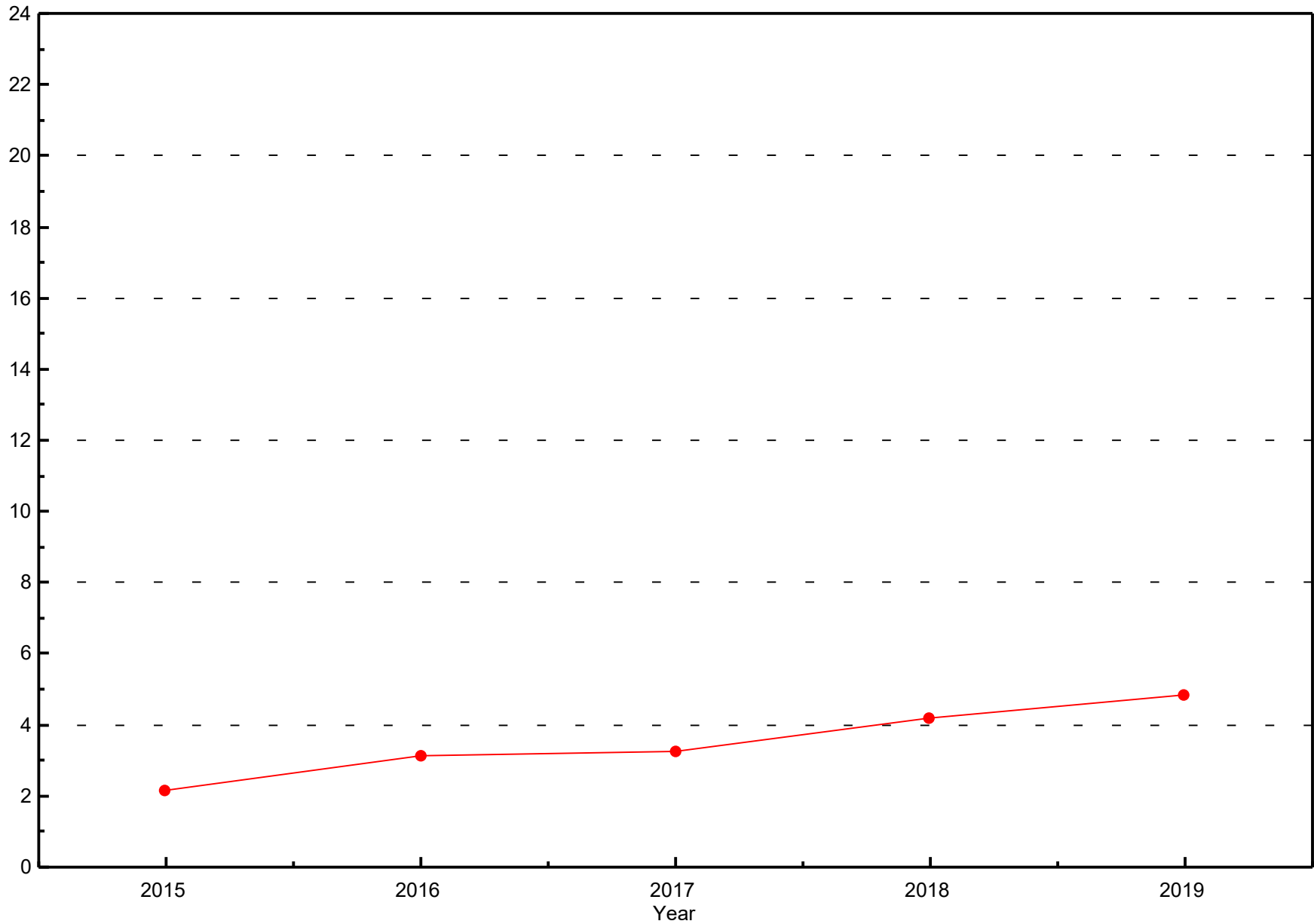
Nitric Oxide (NO) - ppb
Fort Chipewyan (2015 to 2019)





Yearly Averages

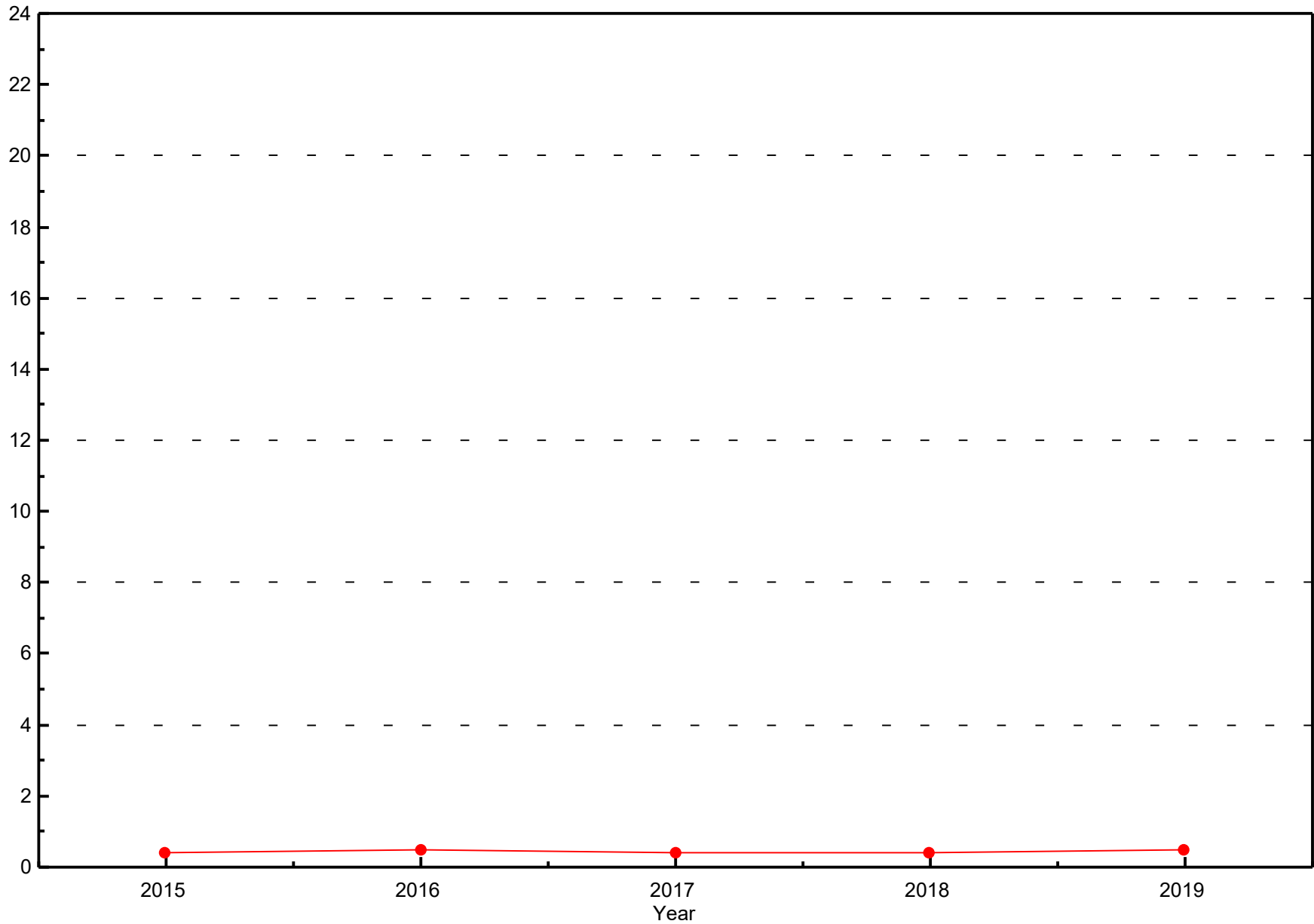
Nitric Oxide (NO) - ppb
Fort McKay South (2015 to 2019)





Yearly Averages

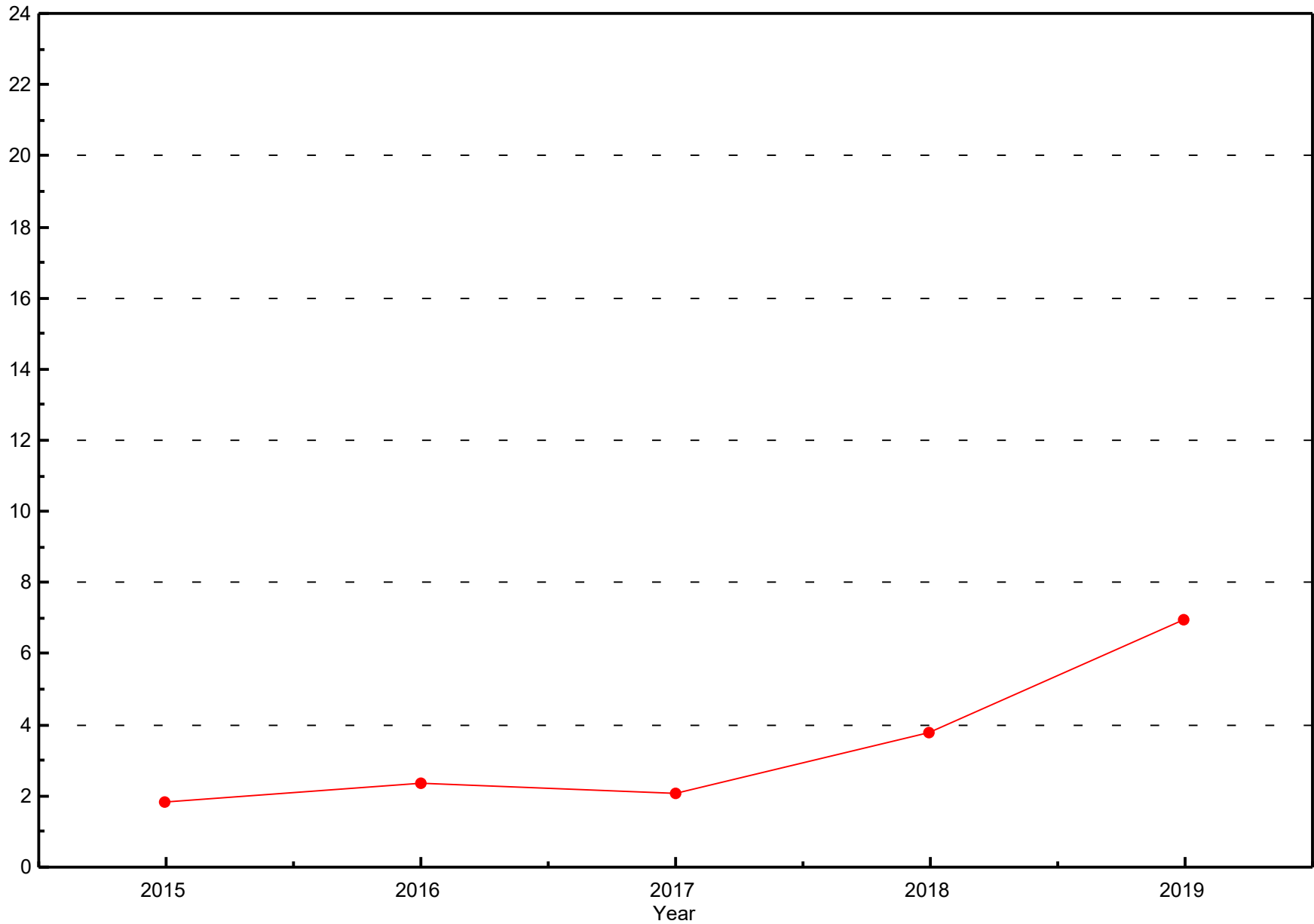
Nitric Oxide (NO) - ppb
Anzac (2015 to 2019)





Yearly Averages

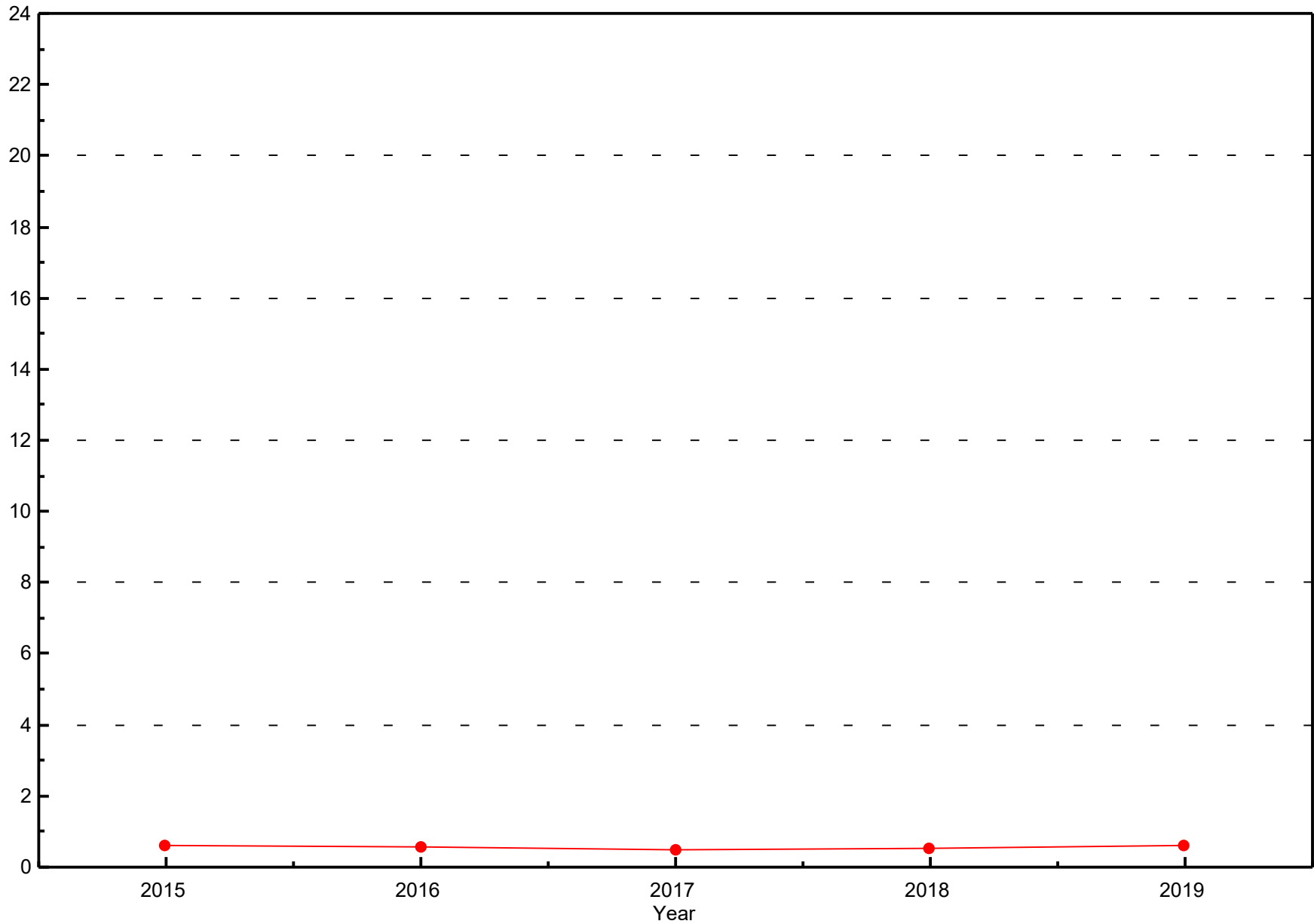
Nitric Oxide (NO) - ppb
Horizon (2015 to 2019)





Yearly Averages

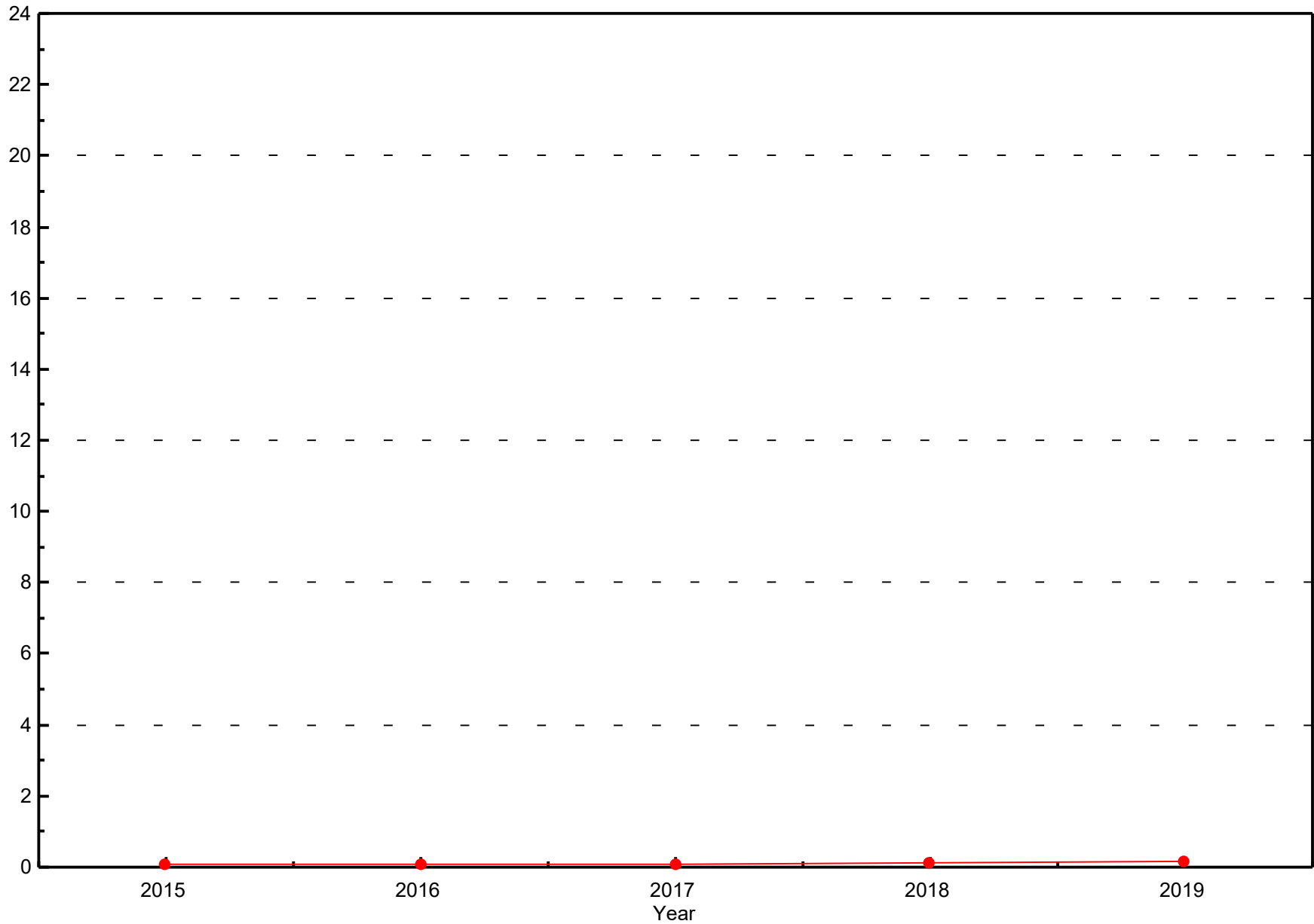
Nitric Oxide (NO) - ppb
Wapasu (2015 to 2019)





Yearly Averages

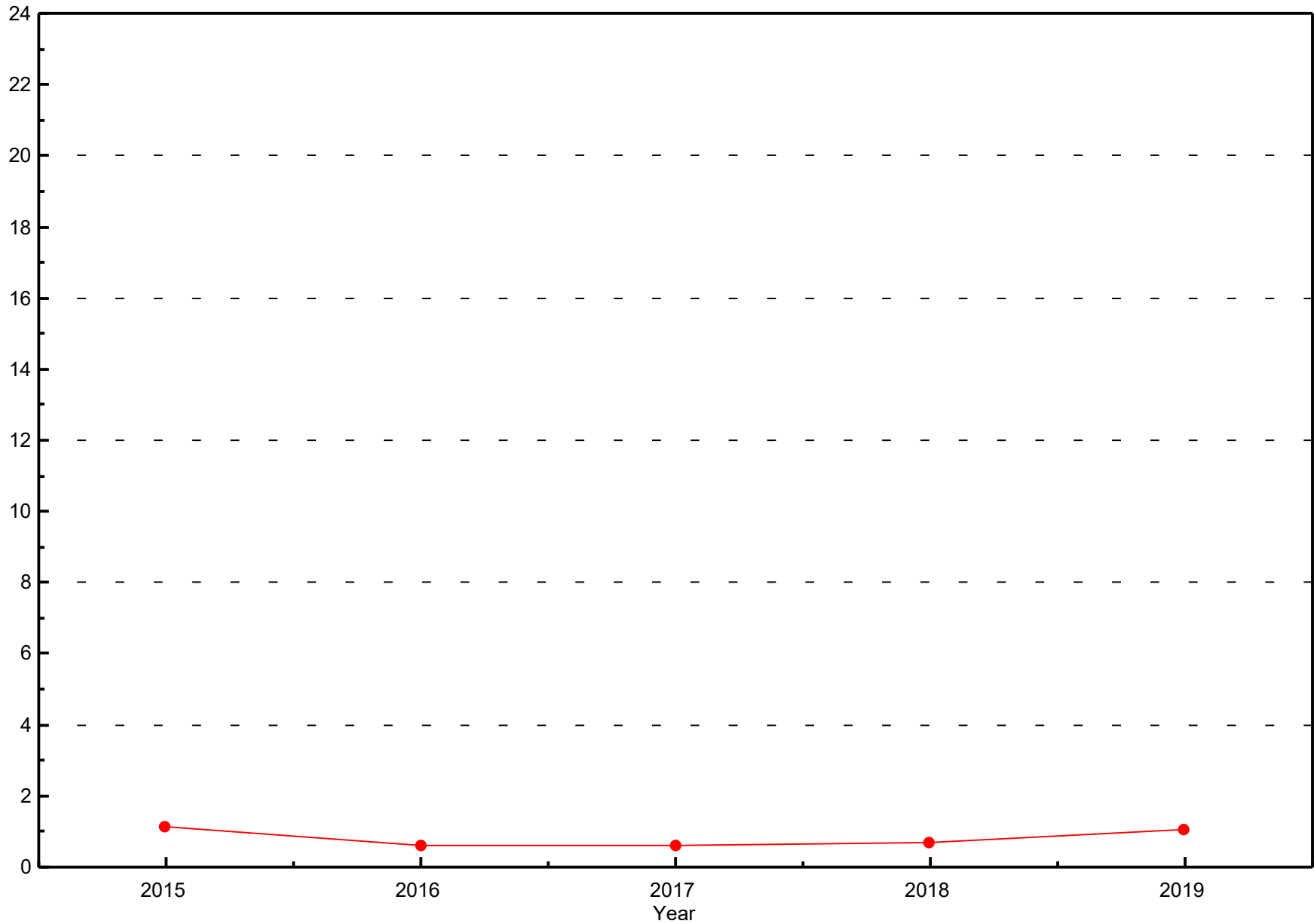
Nitric Oxide (NO) - ppb
Stony Mountain (2015 to 2019)





Yearly Averages

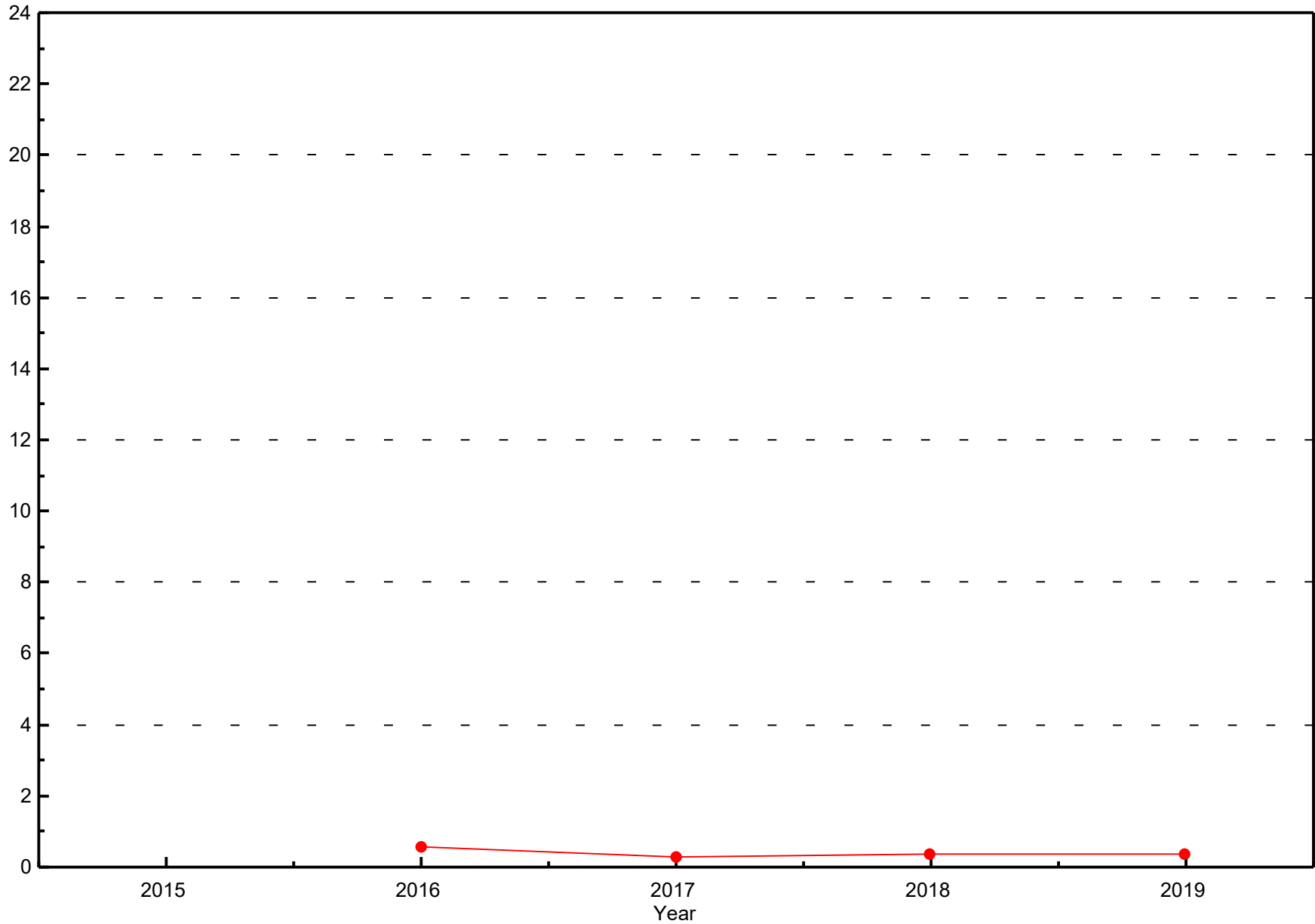
Nitric Oxide (NO) - ppb
Firebag (2015 to 2019)





Yearly Averages

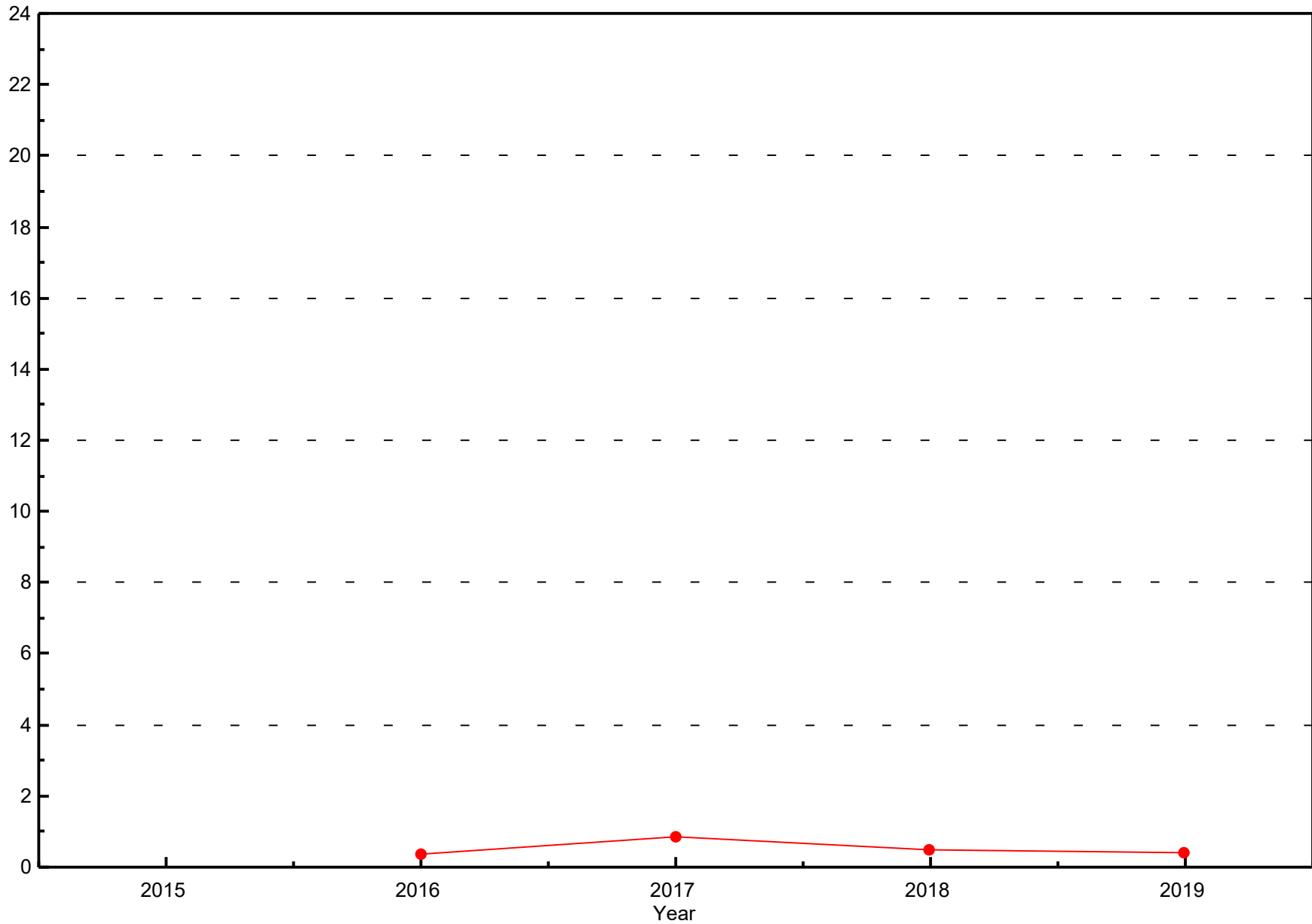
Nitric Oxide (NO) - ppb
Mackay River (2015 to 2019)





Yearly Averages

Nitric Oxide (NO) - ppb
Conklin (2015 to 2019)

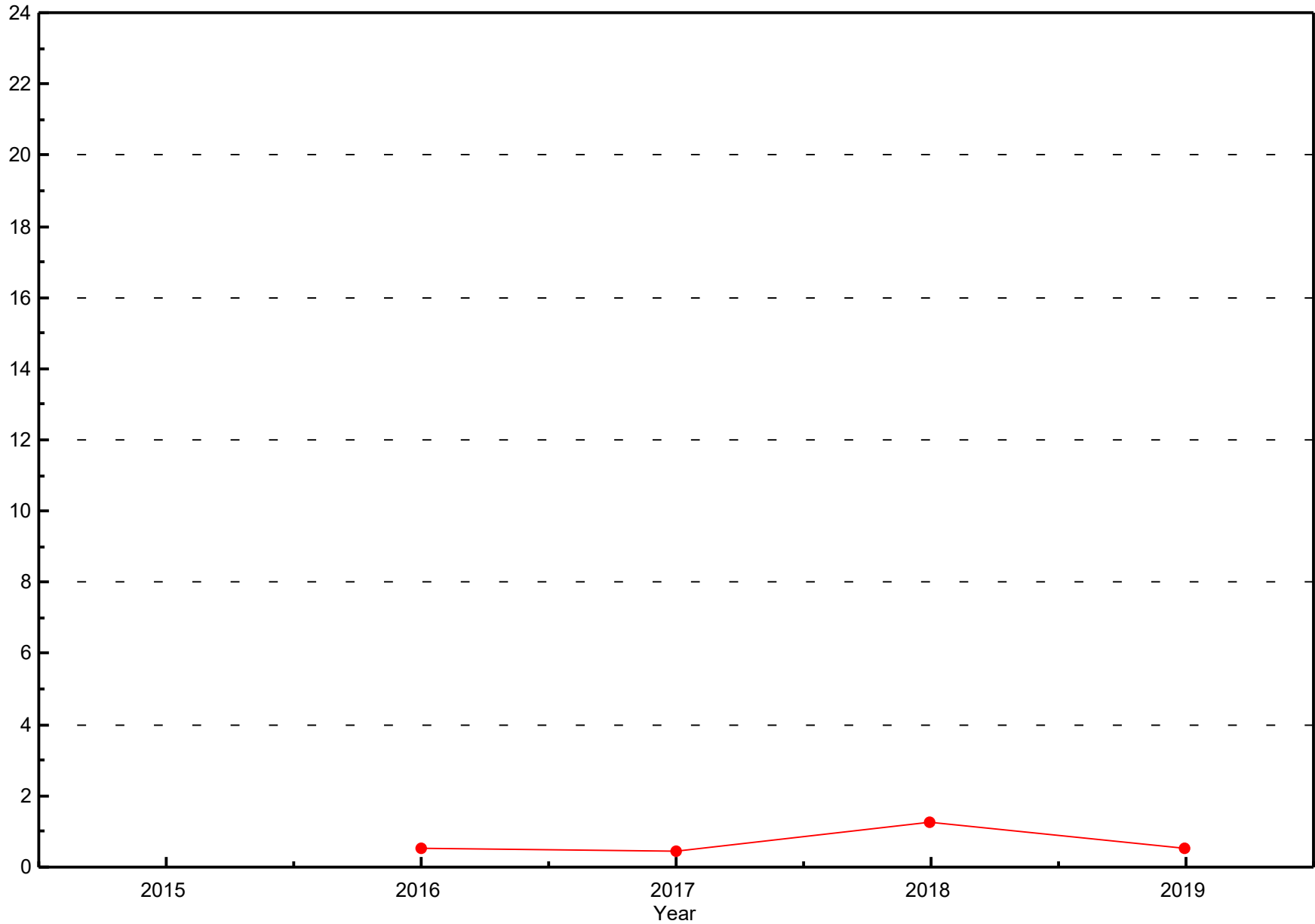




Yearly Averages

Nitric Oxide (NO) - ppb

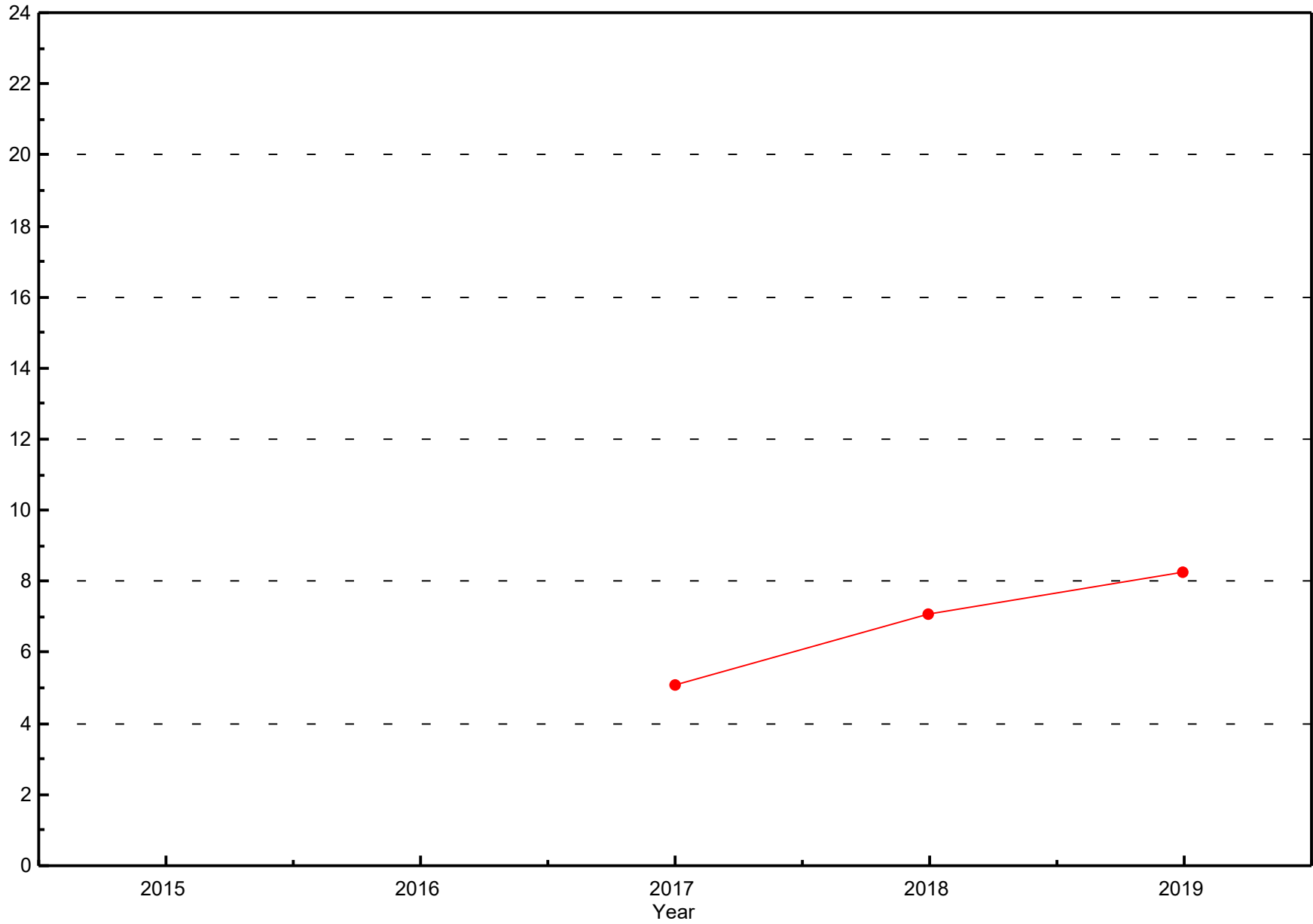
Janvier (2015 to 2019)





Yearly Averages

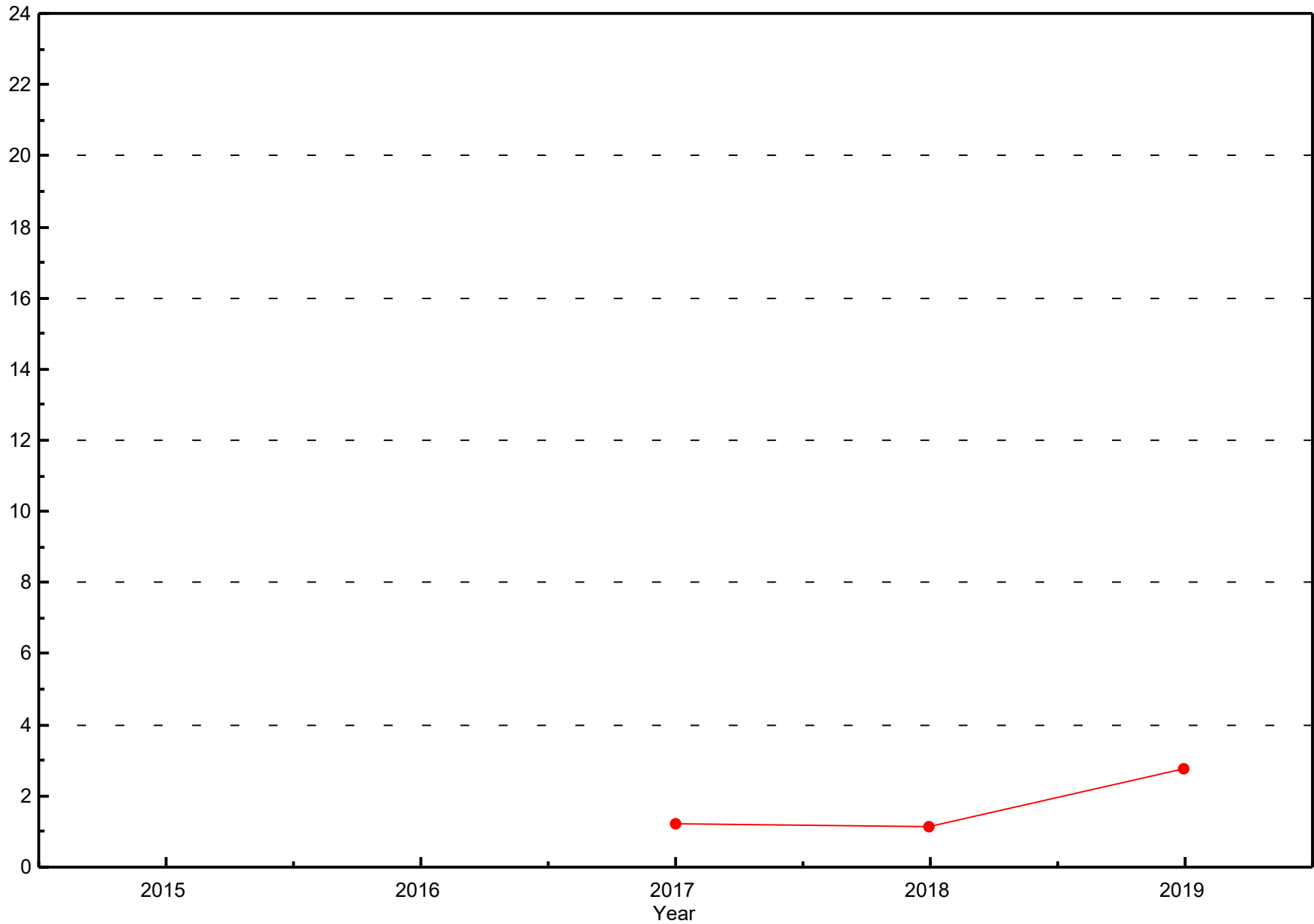
Nitric Oxide (NO) - ppb
Fort Hills (2015 to 2019)





Yearly Averages

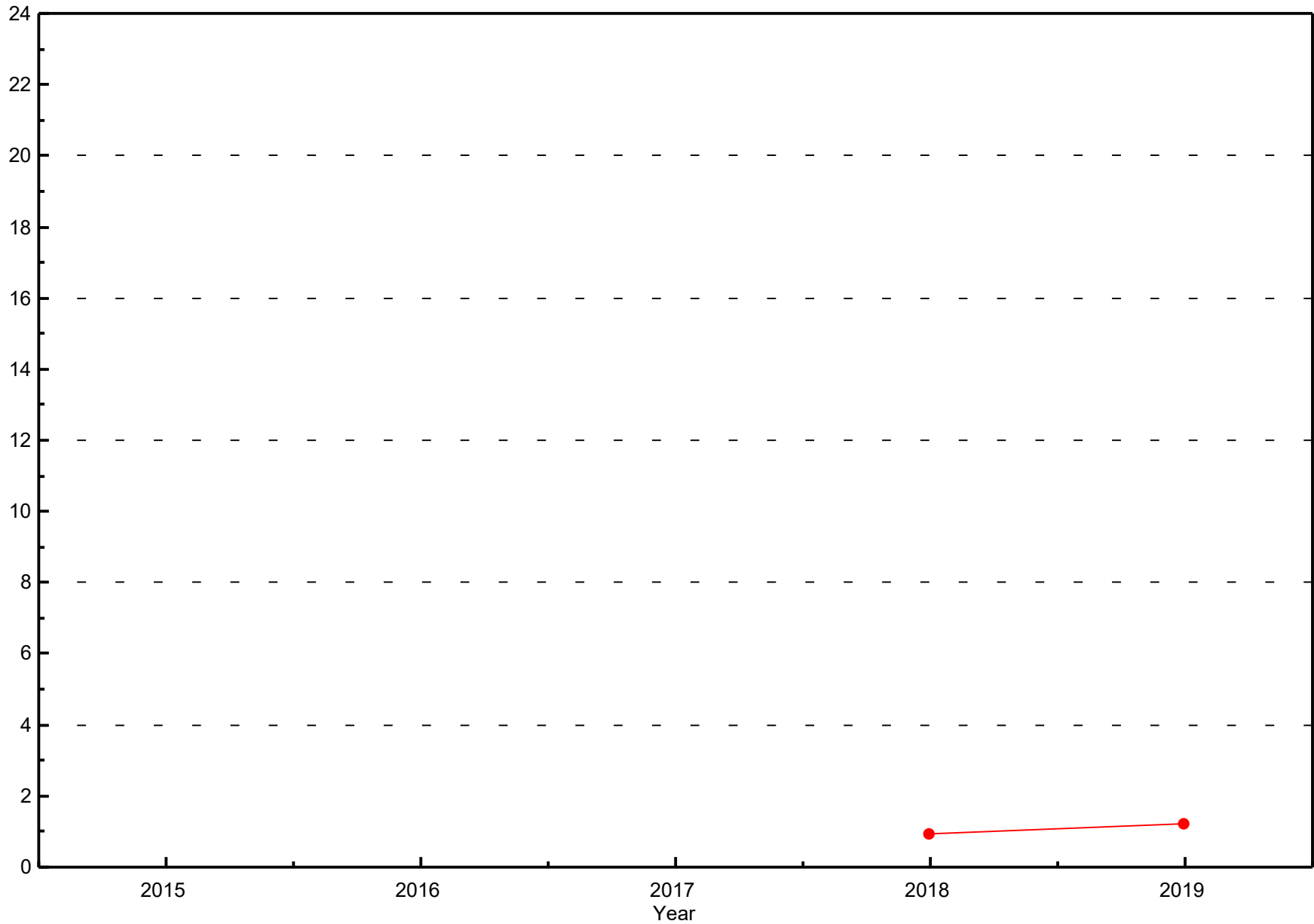
Nitric Oxide (NO) - ppb
Surmont (2015 to 2019)





Yearly Averages

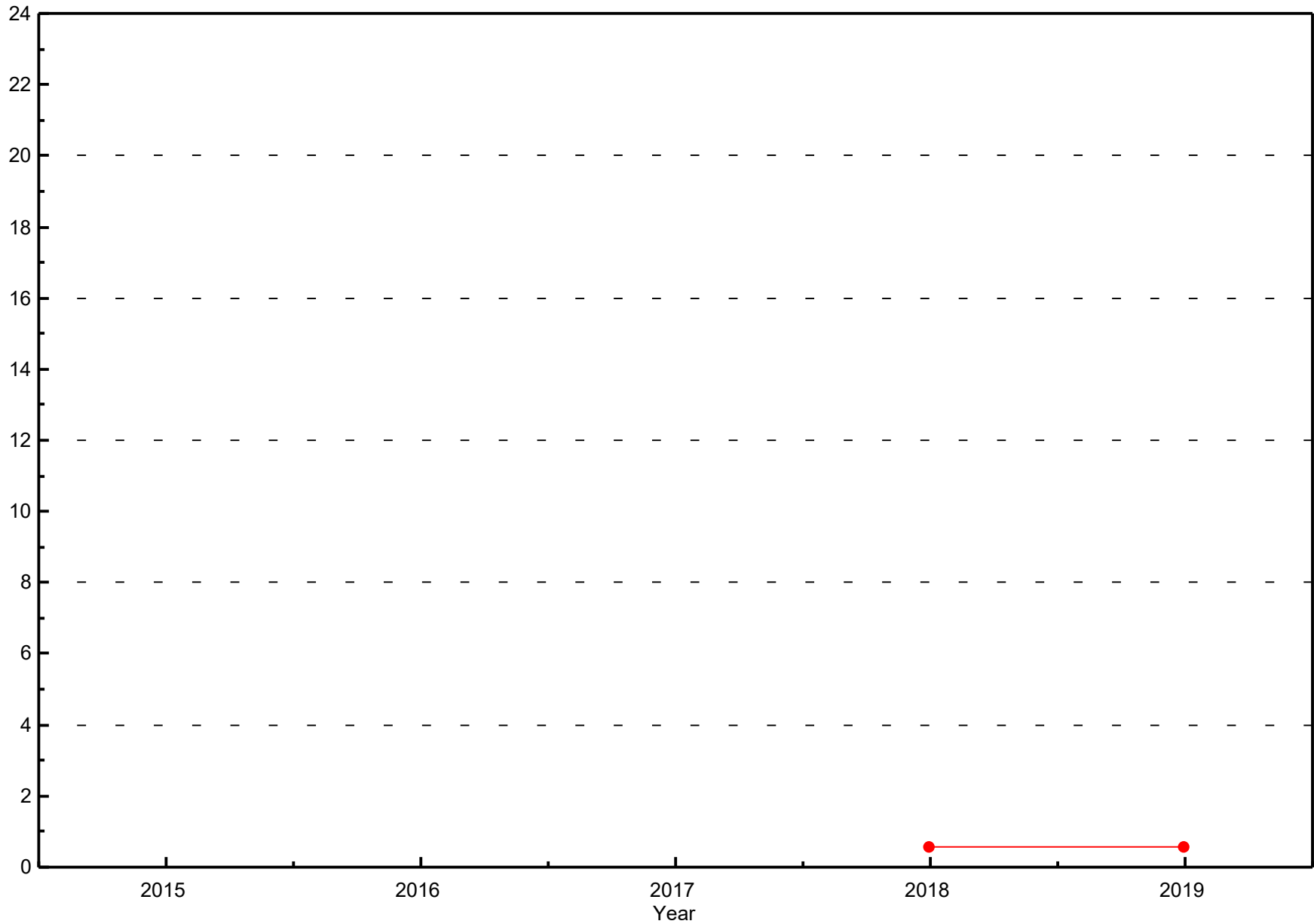
Nitric Oxide (NO) - ppb
Christina Lake (2015 to 2019)





Yearly Averages

Nitric Oxide (NO) - ppb
Jackfish 2/3 (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

OZONE ANNUAL 2019

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

October 15, 2021
Revision 01



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	708	14.8	34.8	0	26.9
February	100	641	17.7	36.9	0	30.7
March	100	708	26.3	45.6	0	36.6
April	100	686	25.7	52.2	0	38.8
May	100	710	25.9	54.6	0	34.1
June	100	684	20.8	48.5	0	31.1
July	100	710	18.9	61.4	0	31.6
August	100	709	14.5	39.2	0	22.4
September	100	687	13.5	34.8	0	25.2
October	100	709	15.6	37.4	0	32.7
November	100	684	16.7	34.0	0	29.4
December	100	709	8.9	30.6	0	22.9
Annual	100	8345	18.3	61.4	0	38.8



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	709	23.2	40.2	0	36.5
February	100	640	25.0	43.8	0	40.7
March	100	709	38.2	62.7	0	51.5
April	99	683	35.8	66.2	0	51.5
May	100	710	35.4	64.1	0	45.0
June	100	686	26.6	59.2	0	42.5
July	100	705	24.7	69.4	0	40.6
August	100	708	19.8	46.6	0	29.2
September	100	687	19.7	40.5	0	30.3
October	100	709	22.2	40.8	0	32.7
November	100	687	23.9	41.0	0	38.2
December	95	674	18.6	38.5	0	34.2
Annual	99	8307	26.1	69.4	0	51.5



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	708	26.2	44.7	0	36.8
February	100	641	27.1	46.0	0	40.9
March	100	708	39.2	57.8	0	48.7
April	100	685	37.7	65.3	0	50.2
May	100	709	37.9	71.8	0	47.8
June	100	683	28.3	55.6	0	40.1
July	100	708	26.9	61.4	0	41.8
August	100	709	22.1	45.6	0	29.6
September	100	685	21.2	40.4	0	30.1
October	100	709	21.1	41.5	0	33.3
November	100	683	22.1	40.0	0	36.3
December	99	705	17.8	38.3	0	33.4
Annual	100	8333	27.3	71.8	0	50.2



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	711	19.8	37.1	0	32.2
February	100	640	21.1	41.2	0	34.2
March	100	708	30.3	54.8	0	39.0
April	100	686	32.9	63.2	0	45.4
May	100	711	34.6	75.9	0	46.3
June	100	683	27.7	56.2	0	39.4
July	100	709	24.9	62.2	0	34.1
August	100	709	19.9	44.4	0	28.4
September	100	687	18.2	39.3	0	29.1
October	100	708	19.2	41.6	0	35.1
November	100	684	19.8	39.3	0	33.0
December	100	709	13.3	37.0	0	27.5
Annual	100	8345	23.5	75.9	0	46.3



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	710	33.9	41.3	0	39.2
February	99	635	33.5	43.3	0	41.8
March	99	706	41.6	56.9	0	49.3
April	100	685	36.9	56.7	0	47.4
May	97	687	37.2	61.4	0	47.6
June	100	687	29.0	62.7	0	43.9
July	100	709	28.5	59.6	0	46.9
August	98	697	22.1	41.2	0	28.1
September	100	686	19.9	37.7	0	27.4
October	99	705	22.3	38.9	0	35.1
November	100	687	28.0	38.5	0	35.7
December	100	710	25.3	40.9	0	37.7
Annual	99	8304	29.8	62.7	0	49.3



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	710	15.6	40.6	0	30.2
February	100	641	18.9	42.5	0	35.4
March	100	709	28.0	53.8	0	37.4
April	99	683	29.2	62.7	0	45.8
May	98	693	29.2	69.0	0	38.1
June	100	681	21.9	54.3	0	33.3
July	97	685	21.1	71.7	0	36.9
August	100	710	16.6	48.8	0	23.4
September	100	683	15.2	38.9	0	28.2
October	100	709	17.0	39.4	0	35.1
November	100	687	18.2	37.6	0	30.8
December	100	710	9.9	36.2	0	22.7
Annual	99	8301	20.0	71.7	0	45.8



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	99	698	27.1	41.3	0	34.7
February	100	635	29.8	42.4	0	38.9
March	100	710	41.1	65.8	0	52.5
April	100	684	37.0	60.3	0	49.1
May	100	710	36.4	63.7	0	48.8
June	100	686	27.6	51.7	0	40.6
July	100	709	23.4	50.1	0	34.6
August	100	706	19.9	39.6	0	26.7
September	100	683	20.3	37.5	0	27.6
October	100	704	21.8	41.7	0	32.4
November	100	687	23.7	37.2	0	35.4
December	100	709	21.4	36.4	0	32.3
Annual	100	8321	27.4	65.8	0	52.5



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	710	30.0	41.4	0	39.7
February	100	641	31.6	44.9	0	40.0
March	100	710	39.3	58.0	0	50.5
April	100	684	36.0	63.5	0	52.1
May	100	710	36.2	72.4	0	48.5
June	100	683	27.5	57.1	0	44.0
July	99	704	26.3	67.7	0	42.7
August	100	710	19.1	51.1	0	29.0
September	100	685	19.9	39.8	0	31.5
October	97	689	21.4	39.8	0	34.7
November	100	687	25.3	38.6	0	34.3
December	100	711	24.4	38.9	0	36.8
Annual	100	8324	28.1	72.4	0	52.1



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	710	31.3	44.0	0	41.3
February	100	640	34.3	44.2	0	41.2
March	100	706	44.9	68.4	0	56.3
April	100	686	42.3	61.1	0	52.5
May	100	710	42.5	65.0	0	58.9
June	96	661	30.8	60.1	0	41.9
July	100	706	28.6	49.9	0	41.3
August	96	683	24.3	41.3	0	31.7
September	100	683	22.3	37.0	0	30.6
October	100	705	24.8	44.1	0	35.6
November	100	687	27.5	42.1	0	38.2
December	100	710	27.5	40.3	0	37.1
Annual	99	8287	31.8	68.4	0	58.9



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Ozone (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	708	28.9	44.8	0	38.4
February	100	640	29.6	46.6	0	43.2
March	100	710	40.5	67.8	0	53.1
April	100	685	37.3	60.2	0	49.2
May	100	709	36.7	67.4	0	52.6
June	100	687	26.5	63.3	0	39.4
July	99	705	24.1	51.4	0	33.6
August	100	708	20.9	50.0	0	27.9
September	100	683	20.5	40.5	0	32.6
October	100	707	24.0	45.8	0	36.3
November	100	687	27.6	43.5	0	39.9
December	100	710	26.2	41.4	0	37.6
Annual	100	8339	28.6	67.8	0	53.1



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Ozone (ppb) Average

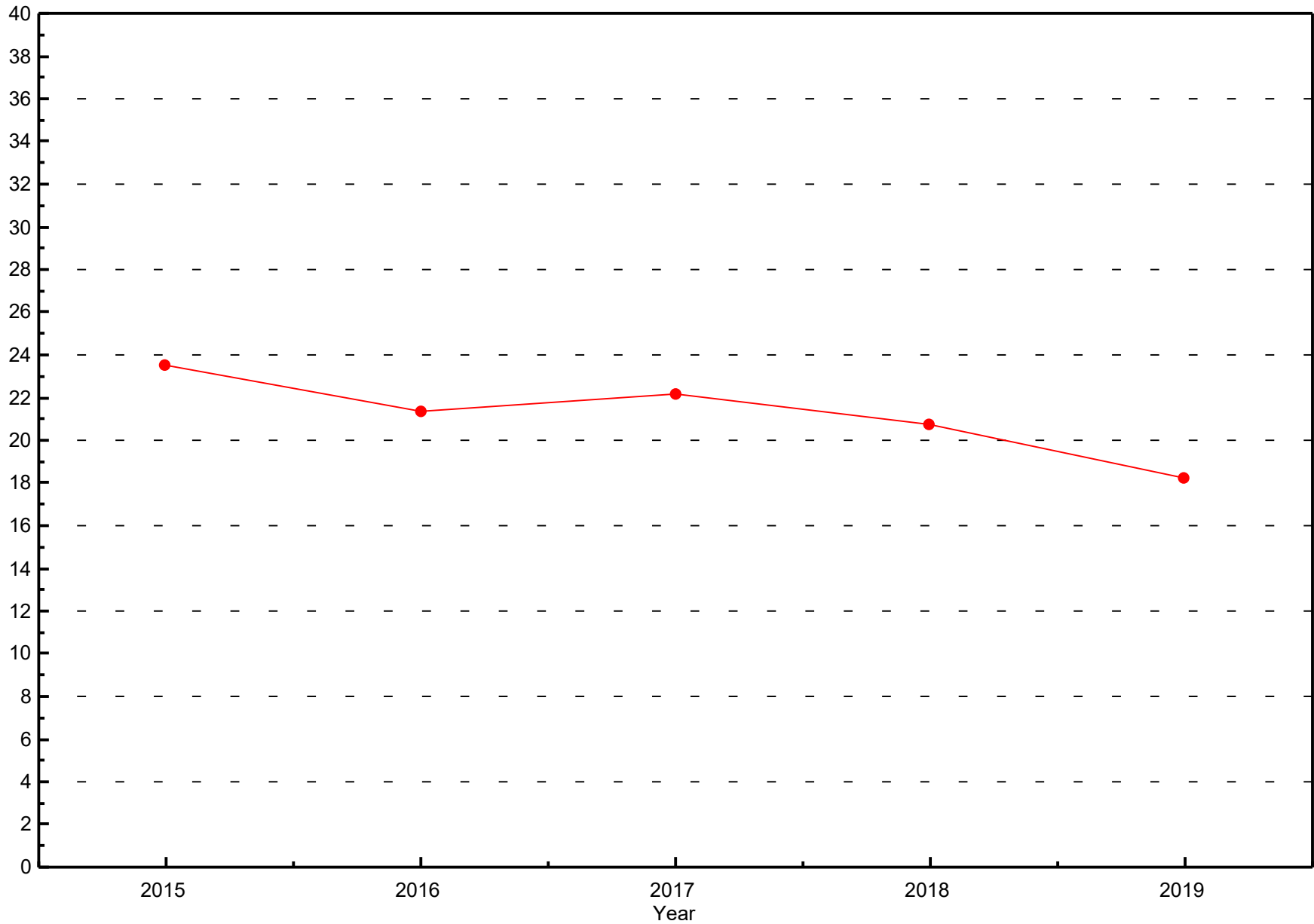
Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	709	36.5	49.9	0	45.0
February	100	637	38.3	52.2	0	49.3
March	100	708	50.2	73.0	0	59.3
April	100	683	46.2	66.5	0	55.0
May	99	701	46.8	71.1	0	58.6
June	100	686	36.9	65.0	0	50.6
July	99	701	36.0	62.0	0	46.8
August	99	704	33.1	59.1	0	38.7
September	99	681	32.6	52.9	0	44.8
October	100	706	36.5	56.1	0	46.3
November	100	686	37.2	53.3	0	48.8
December	100	709	35.0	49.6	0	47.4
Annual	100	8311	38.8	73.0	0	59.3



Yearly Averages

Ozone (O₃) - ppb

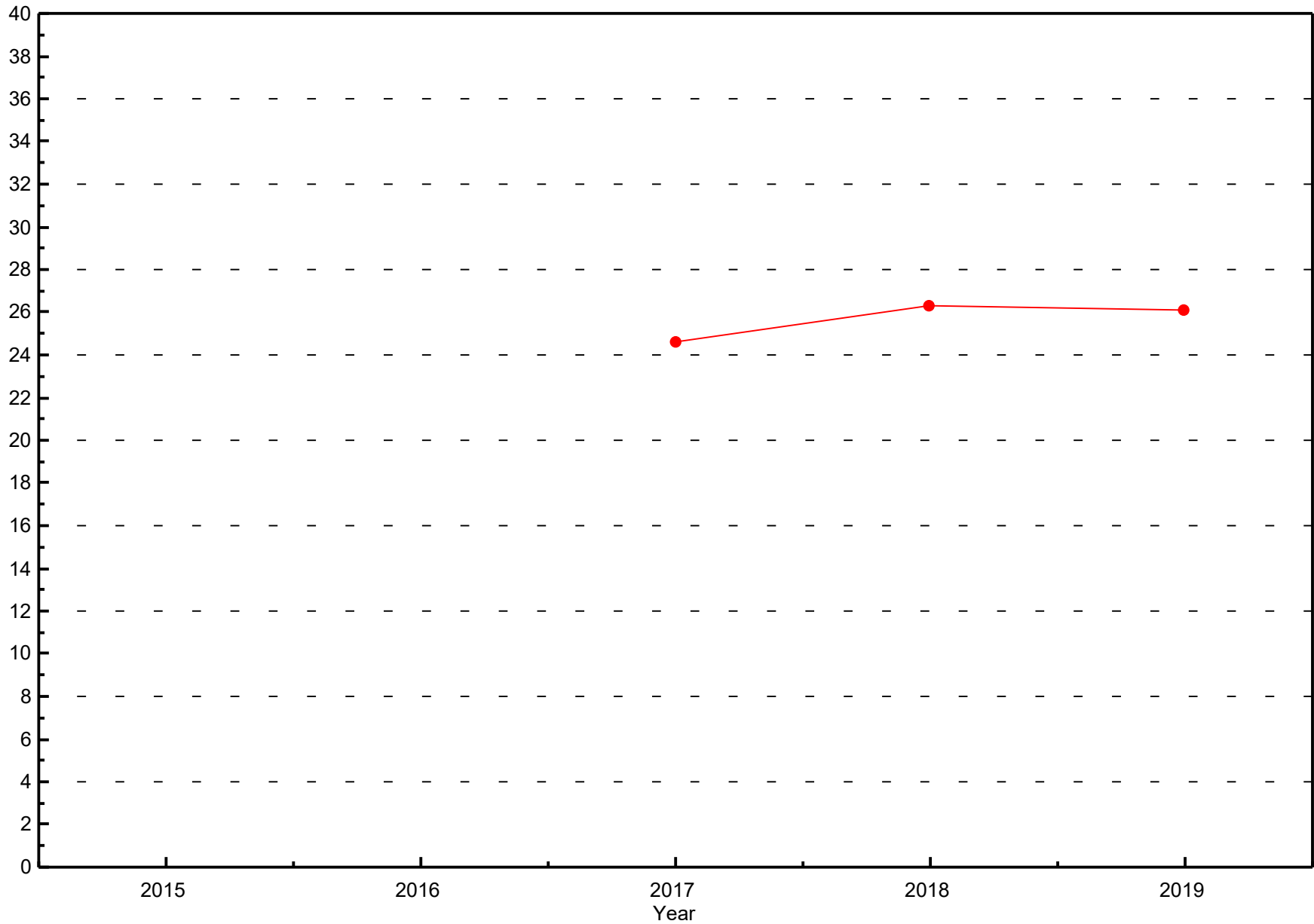
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

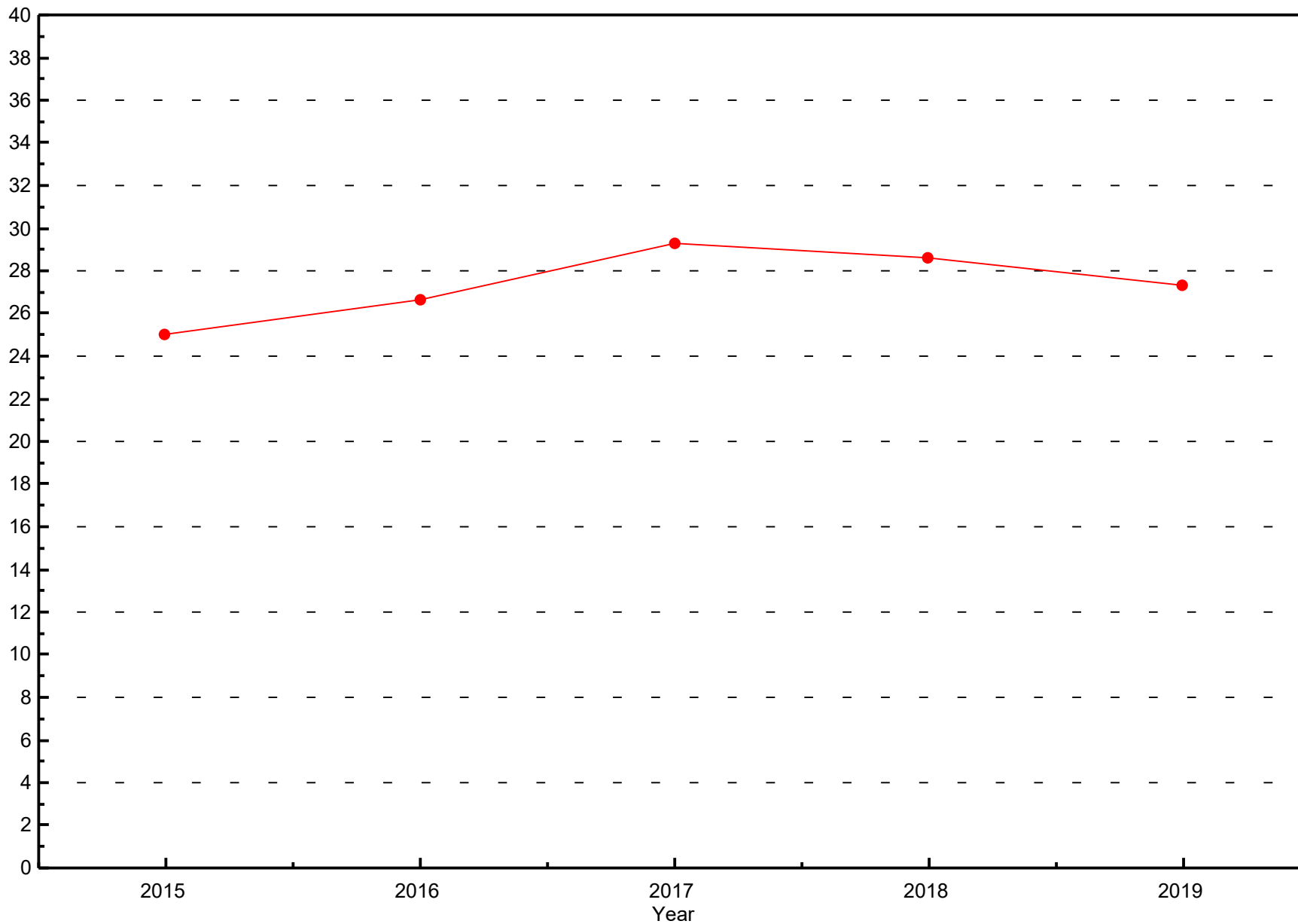
Ozone (O₃) - ppb
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

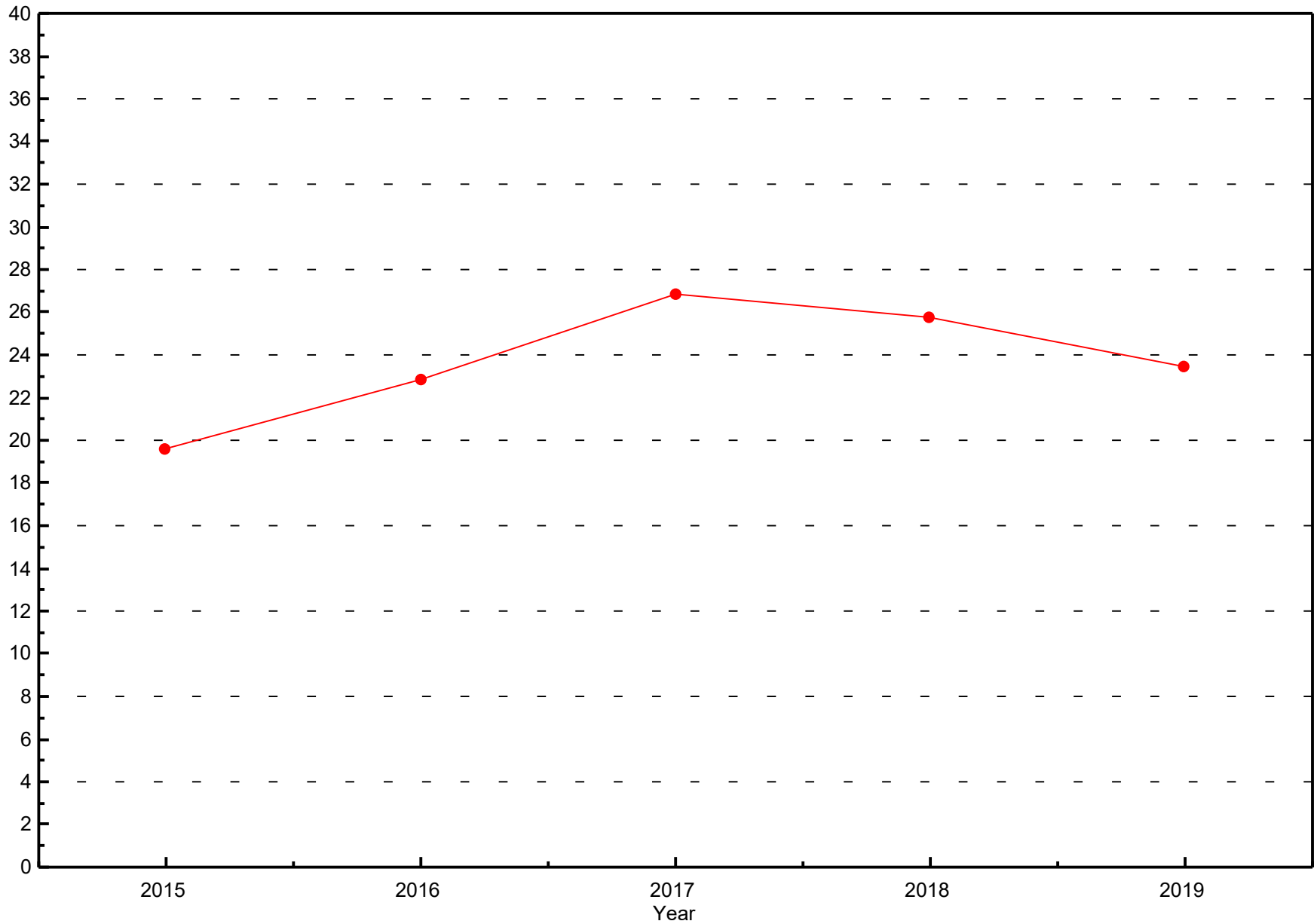
Ozone (O₃) - ppb
Patricia McInnes (2015 to 2019)





Yearly Averages

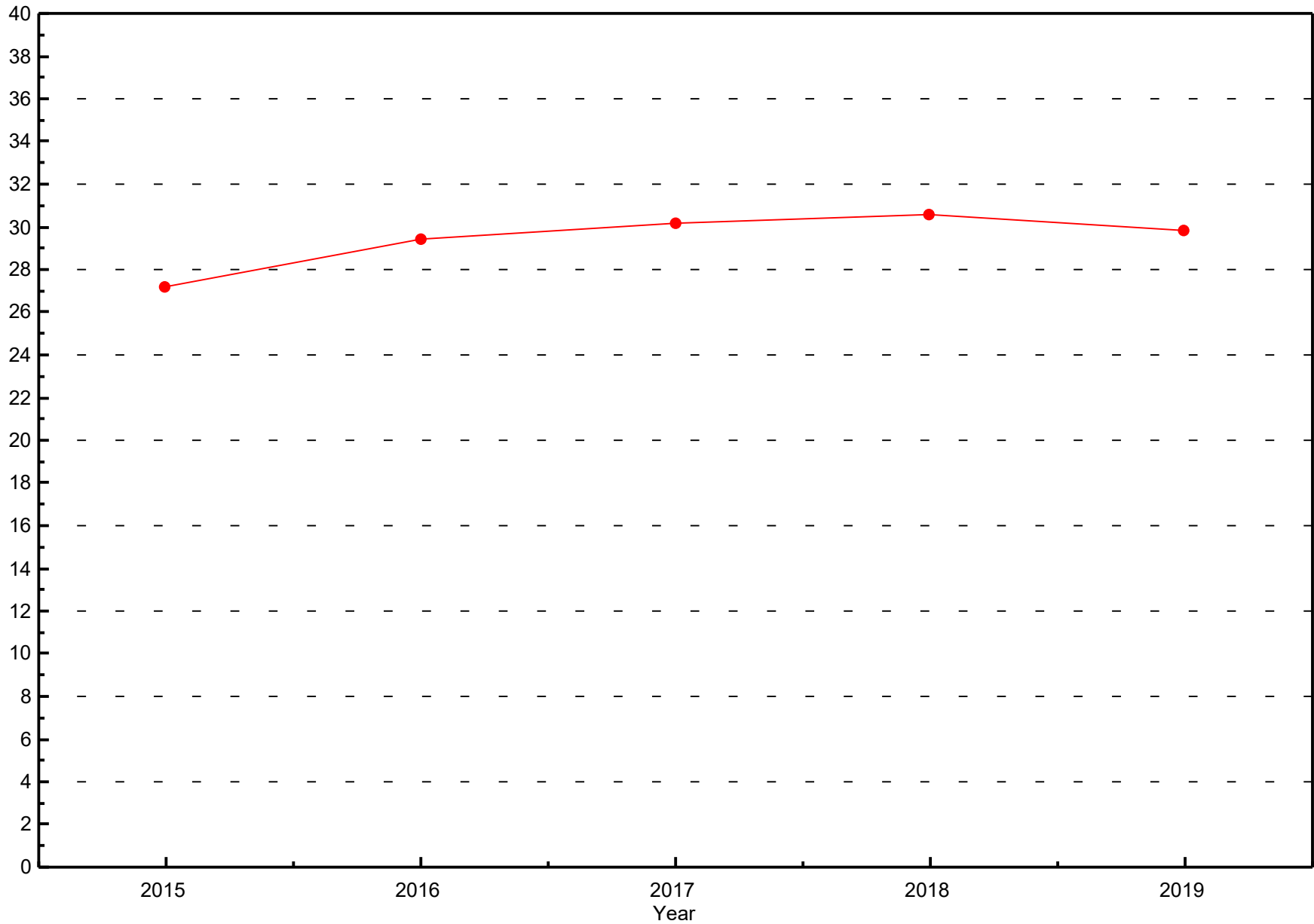
Ozone (O₃) - ppb
Athabasca Valley (2015 to 2019)





Yearly Averages

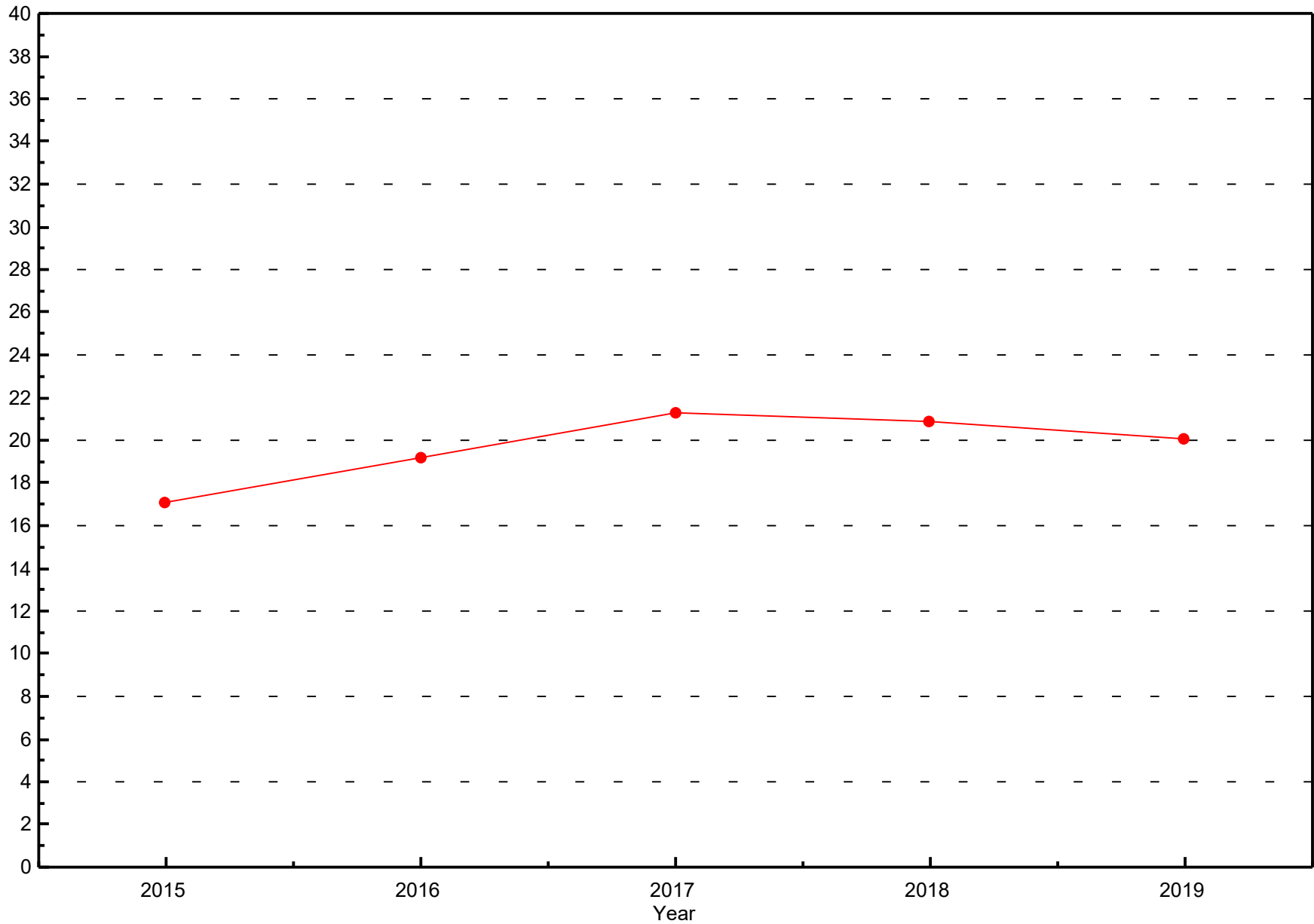
Ozone (O₃) - ppb
Fort Chipewyan (2015 to 2019)





Yearly Averages

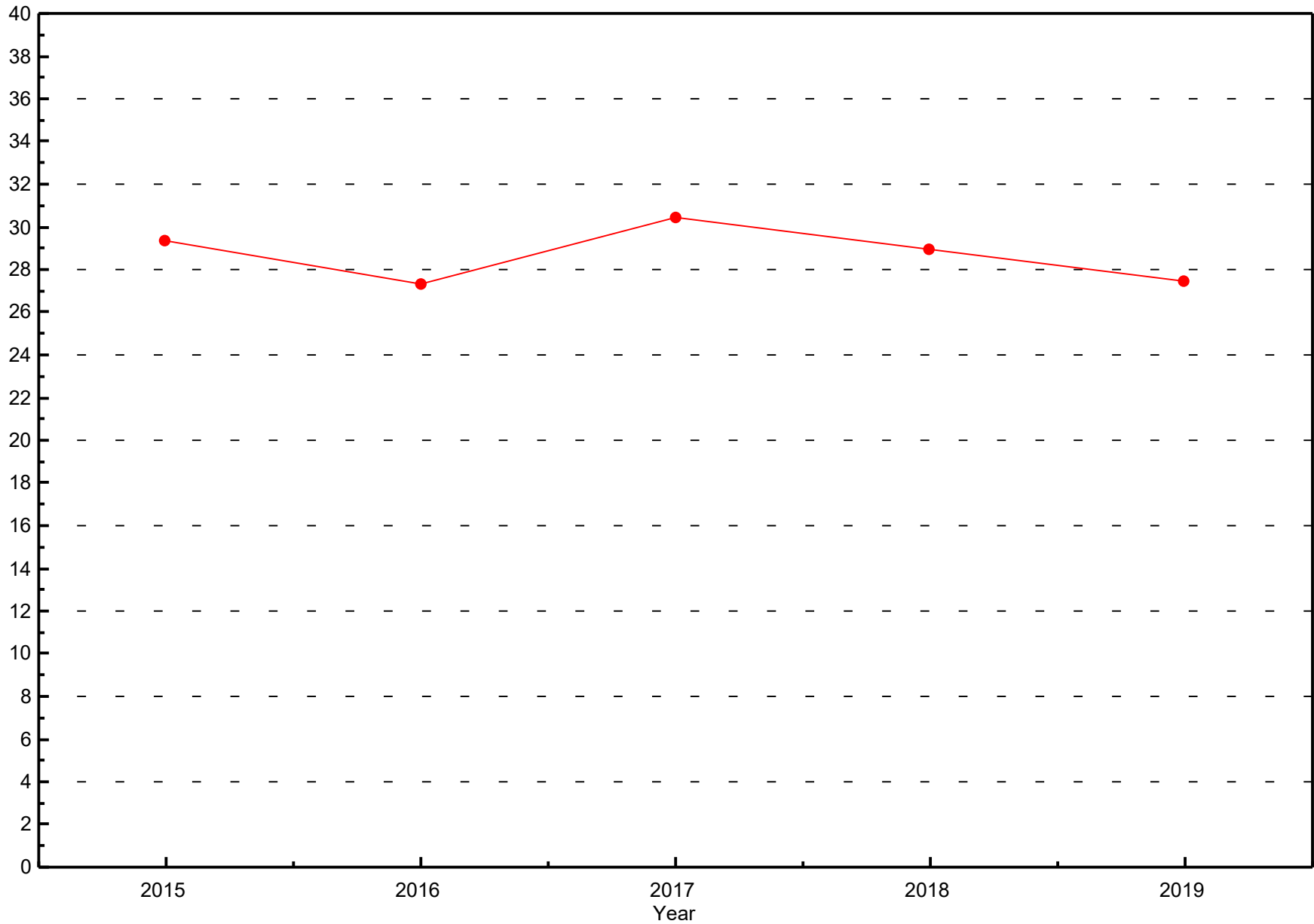
Ozone (O₃) - ppb
Fort McKay South (2015 to 2019)





Yearly Averages

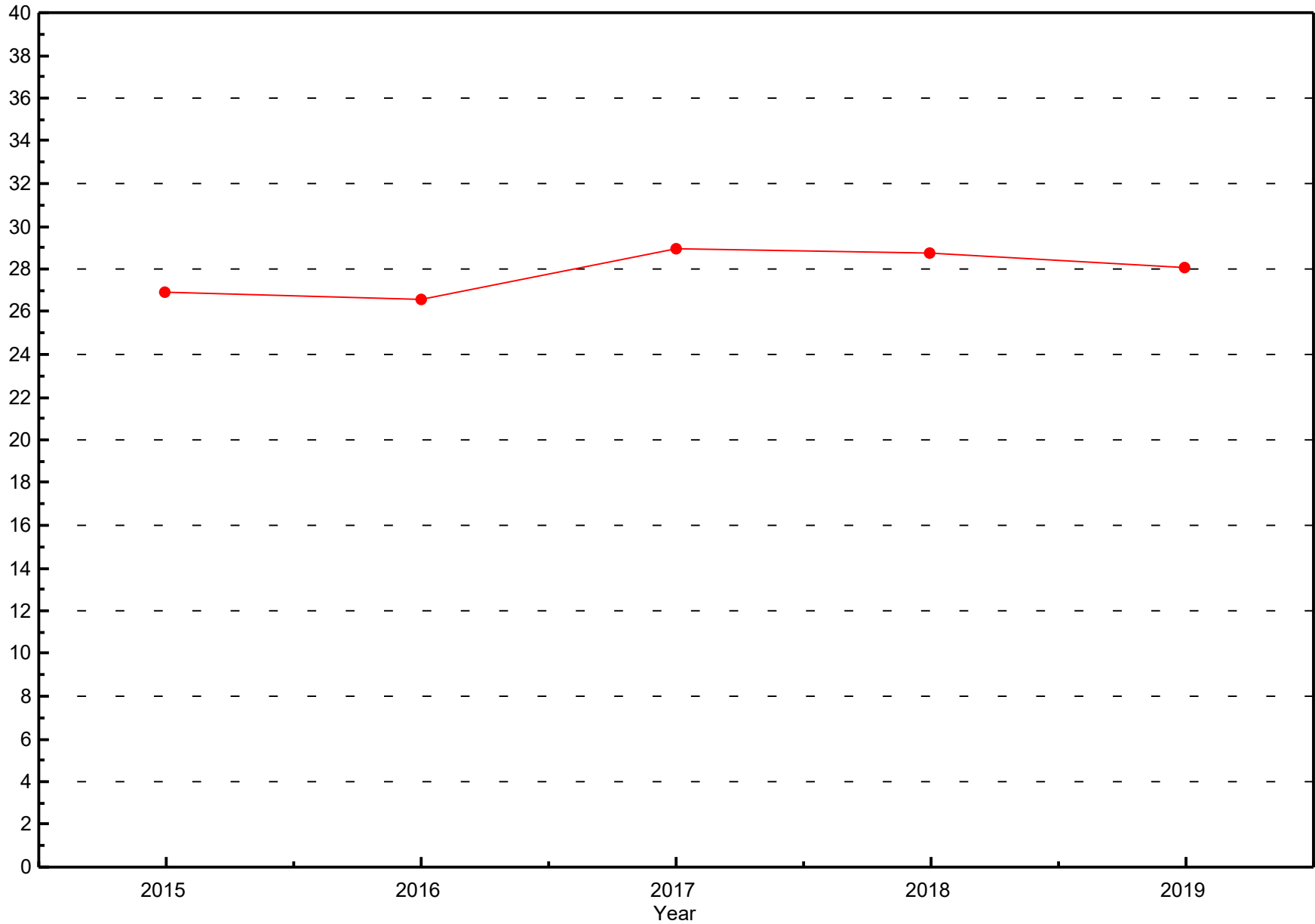
Ozone (O₃) - ppb
Anzac (2015 to 2019)





Yearly Averages

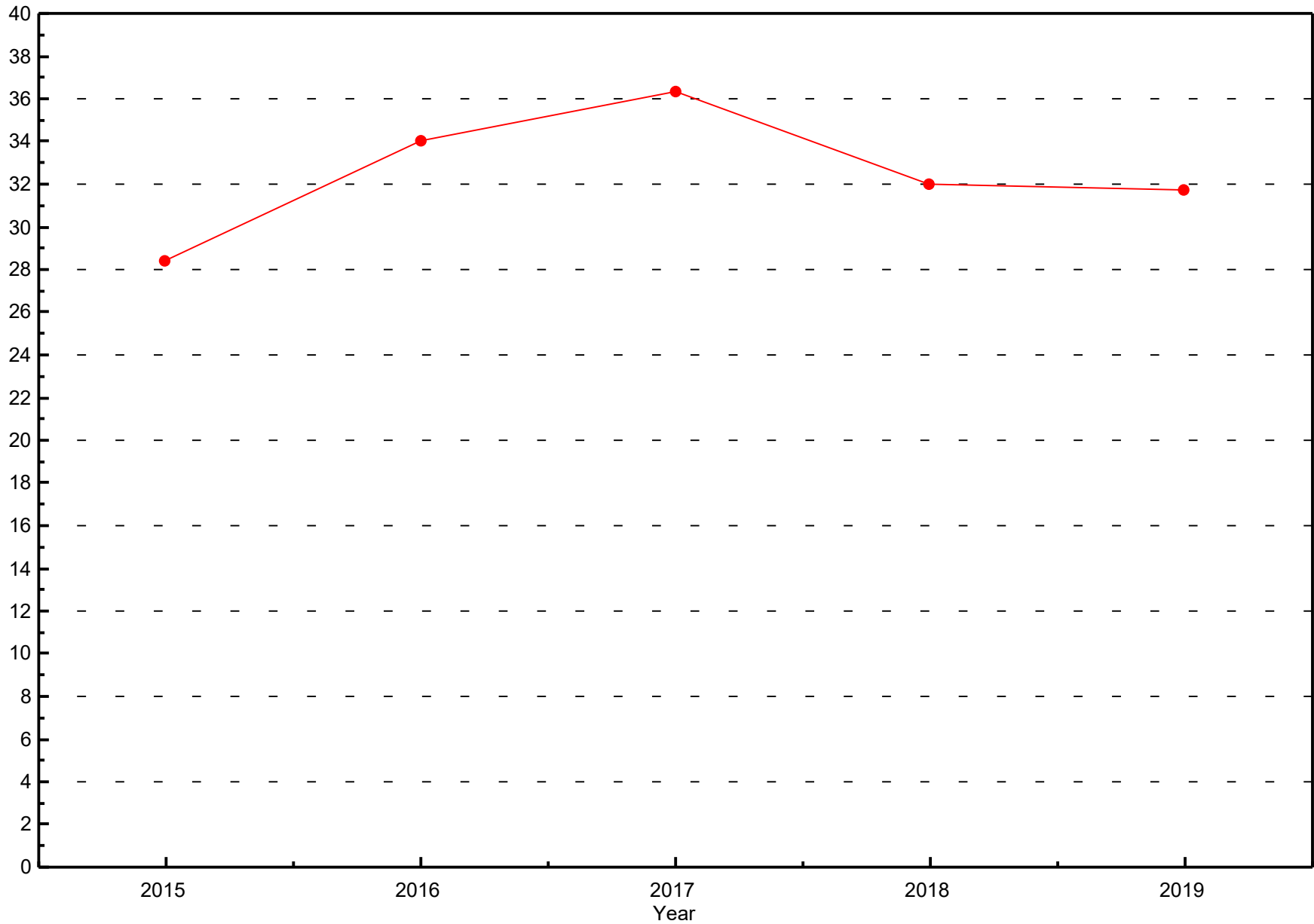
Ozone (O₃) - ppb
Wapasu (2015 to 2019)





Yearly Averages

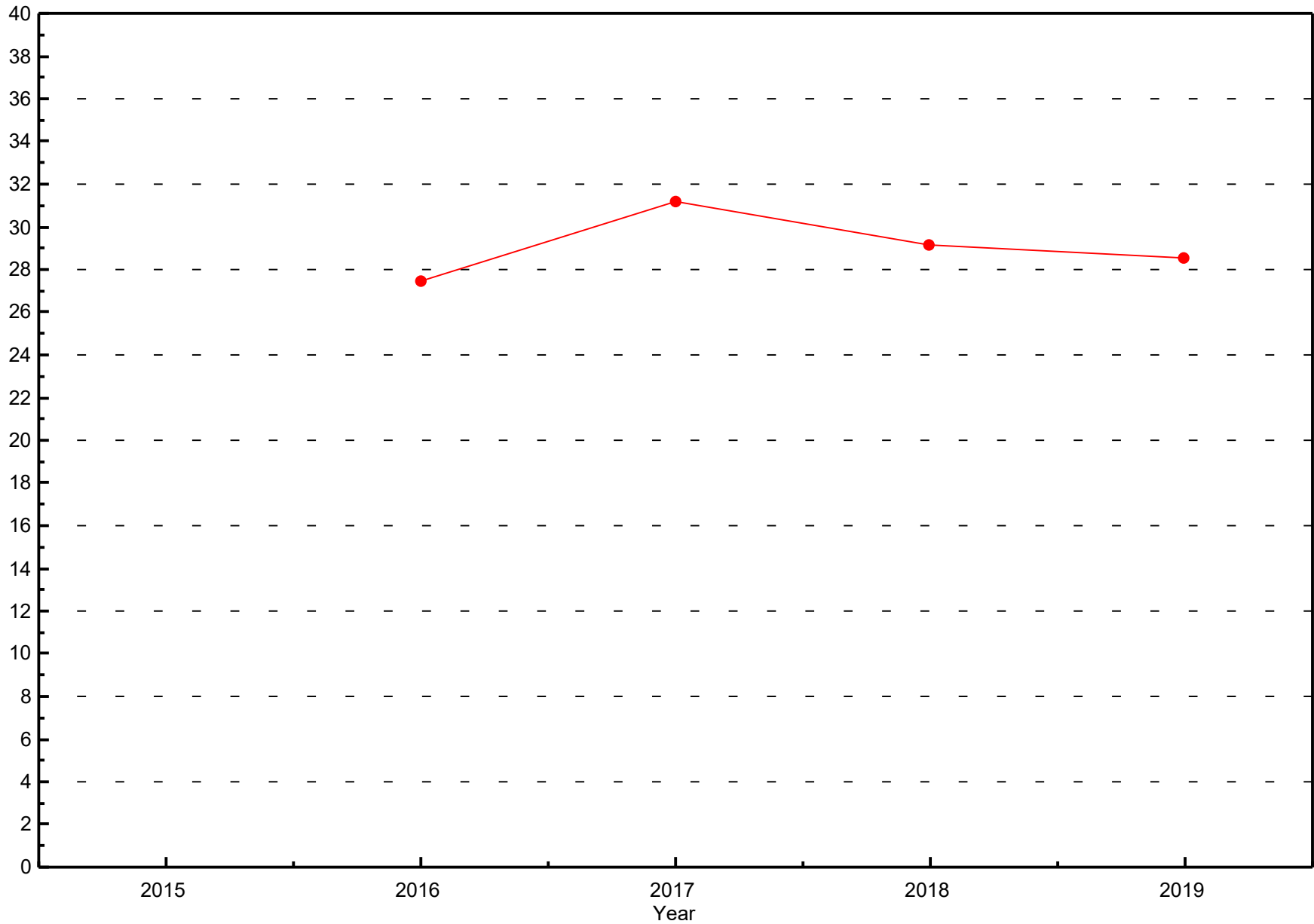
Ozone (O₃) - ppb
Stony Mountain (2015 to 2019)





Yearly Averages

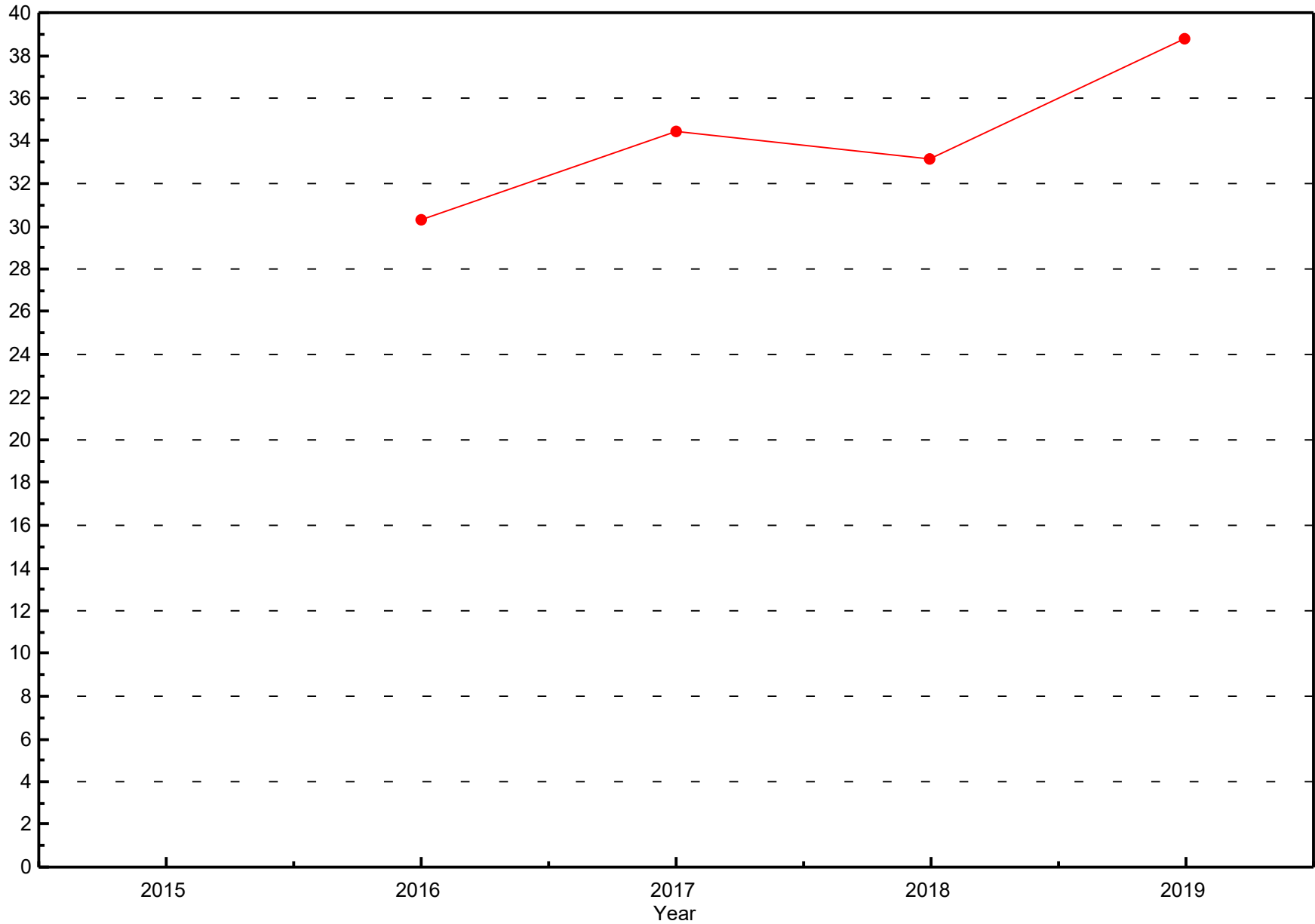
Ozone (O₃) - ppb
Conklin (2015 to 2019)





Yearly Averages

Ozone (O₃) - ppb
Janvier (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

TOTAL HYDROCARBON ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	99	701.0	2.3	5.9	3.0
February	100	639.0	2.3	4.0	2.9
March	96	682.0	2.2	3.6	2.9
April	99	683.0	2.1	3.5	2.3
May	96	674.0	2.1	3.0	2.2
June	88	600.0	2.0	3.0	2.3
July	96	680.0	2.1	3.0	2.3
August	97	688.0	2.1	3.2	2.4
September	100	684.0	2.1	4.4	2.4
October	100	708.0	2.1	3.4	2.4
November	99	680.0	2.1	3.1	2.4
December	100	710.0	2.3	4.2	2.6
Annual	98	8129.0	2.1	5.9	3.0



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99	705.0	2.5	4.3	3.2
February	100	640.0	2.6	5.6	3.4
March	100	710.0	2.6	7.0	3.1
April	100	686.0	2.3	4.7	2.7
May	97	689.0	2.4	4.3	2.8
June	100	684.0	2.3	8.6	3.1
July	100	707.0	2.3	4.1	2.6
August	100	709.0	2.4	4.0	2.7
September	99	676.0	2.3	4.1	2.7
October	100	708.0	2.5	4.9	2.9
November	100	680.0	2.4	15.4	3.8
December	99	704.0	2.5	17.0	4.5
Annual	100	8298.0	2.4	17.0	4.5



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	702.0	2.3	4.2	2.9
February	100	638.0	2.0	3.4	2.3
March	100	707.0	2.0	3.3	2.2
April	99	679.0	1.9	3.3	2.1
May	99	704.0	2.0	5.2	2.2
June	100	685.0	2.0	2.8	2.1
July	100	705.0	2.0	3.1	2.1
August	95	668.0	2.0	3.3	2.1
September	100	686.0	2.0	3.4	2.3
October	100	707.0	2.0	3.6	2.2
November	100	683.0	2.1	4.0	2.4
December	100	708.0	2.2	6.1	2.8
Annual	99	8272.0	2.0	6.1	2.9



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	710.0	2.3	5.1	2.8
February	96	615.0	2.3	6.1	3.4
March	100	710.0	2.3	7.0	2.7
April	98	670.0	2.1	3.3	2.3
May	99	704.0	2.0	3.1	2.2
June	100	681.0	2.0	4.4	2.6
July	100	709.0	2.0	3.3	2.2
August	100	709.0	2.0	3.2	2.3
September	100	687.0	2.0	3.5	2.2
October	100	707.0	2.0	3.0	2.2
November	100	686.0	2.0	5.5	2.5
December	100	710.0	2.2	6.8	2.7
Annual	99	8298.0	2.1	7.0	3.4



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	707.0	2.1	3.1	2.4
February	100	638.0	2.1	2.7	2.2
March	99	699.0	2.0	2.7	2.0
April	86	581.0	2.0	2.2	2.0
May	100	708.0	2.0	2.8	2.1
June	100	681.0	2.0	2.7	2.1
July	100	710.0	2.0	2.9	2.2
August	100	708.0	2.0	2.8	2.2
September	100	686.0	2.0	2.6	2.1
October	90	633.0	2.0	2.7	2.1
November	99	681.0	2.0	3.2	2.1
December	100	706.0	2.1	2.7	2.3
Annual	98	8138.0	2.0	3.2	2.4



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	710.0	2.0	3.2	2.4
February	100	639.0	2.1	3.1	2.3
March	97	686.0	2.0	2.6	2.1
April	98	668.0	2.0	2.6	2.1
May	100	706.0	2.0	2.7	2.1
June	97	659.0	2.0	2.6	2.1
July	100	707.0	2.0	3.0	2.2
August	100	709.0	2.0	2.7	2.2
September	100	685.0	2.1	2.8	2.1
October	100	706.0	2.0	2.8	2.3
November	100	681.0	2.1	2.9	2.4
December	100	708.0	2.2	4.8	2.7
Annual	99	8264.0	2.0	4.8	2.7



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	706.0	2.4	6.2	3.1
February	100	639.0	2.4	4.1	2.9
March	100	708.0	2.3	4.1	2.8
April	100	684.0	2.2	3.5	2.3
May	97	686.0	2.2	3.1	2.3
June	99	675.0	2.0	3.6	2.3
July	100	708.0	2.1	3.4	2.4
August	100	708.0	2.1	3.1	2.4
September	100	685.0	2.1	4.2	2.4
October	100	708.0	2.1	4.3	2.7
November	100	685.0	2.2	3.5	2.4
December	100	708.0	2.4	5.6	3.4
Annual	100	8300.0	2.2	6.2	3.4



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	88	624.0	2.4	4.0	2.9
February	100	641.0	2.4	4.1	2.9
March	100	704.0	2.3	4.3	2.7
April	100	686.0	2.1	3.6	2.4
May	98	698.0	2.1	3.0	2.2
June	100	684.0	2.1	4.0	2.3
July	100	709.0	2.1	3.6	2.3
August	100	708.0	2.2	3.1	2.3
September	99	680.0	2.2	5.7	2.5
October	100	707.0	2.1	3.3	2.3
November	98	665.0	2.1	3.5	2.6
December	89	625.0	2.3	3.8	2.9
Annual	98	8131.0	2.2	5.7	2.9



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	708.0	2.4	5.0	3.0
February	100	639.0	2.5	5.3	3.3
March	98	693.0	2.3	4.5	3.0
April	100	685.0	2.2	4.2	2.5
May	97	688.0	2.2	3.9	2.4
June	100	682.0	2.1	3.1	2.3
July	100	708.0	2.2	3.2	2.6
August	100	706.0	2.2	3.0	2.4
September	100	683.0	2.2	3.7	2.6
October	100	708.0	2.2	3.3	2.4
November	100	683.0	2.2	3.6	2.6
December	100	708.0	2.4	4.3	2.9
Annual	100	8291.0	2.3	5.3	3.3



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	91	645.0	2.0	2.9	2.3
February	100	637.0	2.0	2.4	2.2
March	99	704.0	2.0	2.3	2.1
April	100	681.0	2.0	2.2	2.0
May	100	708.0	2.0	2.3	2.1
June	100	683.0	1.9	2.3	2.0
July	98	693.0	2.0	2.6	2.1
August	99	698.0	2.0	2.4	2.1
September	95	652.0	2.0	2.4	2.1
October	99	701.0	2.0	2.4	2.1
November	100	684.0	2.0	2.4	2.1
December	100	708.0	2.0	2.7	2.1
Annual	98	8194.0	2.0	2.9	2.3



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	708.0	2.8	18.0	5.7
February	100	639.0	2.9	13.7	5.1
March	93	660.0	2.6	11.6	3.8
April	100	685.0	2.5	7.3	3.0
May	100	708.0	2.5	8.5	3.1
June	100	682.0	2.5	5.9	3.0
July	96	679.0	2.5	8.2	3.8
August	100	707.0	2.7	9.7	3.6
September	99	679.0	2.6	7.5	4.0
October	100	708.0	2.6	11.4	4.2
November	85	579.0	2.6	9.7	3.3
December	95	676.0	2.8	22.0	4.1
Annual	97	8110.0	2.6	22.0	5.7



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	708.0	2.1	2.6	2.3
February	100	639.0	2.1	2.5	2.3
March	100	708.0	2.1	2.5	2.2
April	100	685.0	2.1	2.6	2.2
May	100	710.0	2.1	3.3	2.3
June	100	682.0	2.1	3.4	2.2
July	100	708.0	2.1	2.5	2.2
August	100	708.0	2.1	2.9	2.2
September	100	685.0	2.1	2.8	2.2
October	100	705.0	2.1	2.8	2.2
November	100	685.0	2.2	3.0	2.4
December	100	708.0	2.2	2.8	2.4
Annual	100	8331.0	2.1	3.4	2.4



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	66	459.0	1.8	2.1	1.9
February	76	488.0	2.0	2.4	2.3
March	100	708.0	2.0	2.2	2.1
April	94	645.0	1.9	2.5	2.1
May	97	685.0	1.9	2.1	2.0
June	100	683.0	2.0	2.1	2.0
July	97	686.0	2.0	2.6	2.1
August	96	682.0	2.0	2.1	2.0
September	99	681.0	2.0	2.3	2.1
October	99	695.0	2.0	2.1	2.1
November	100	685.0	2.0	2.2	2.1
December	100	706.0	2.1	2.3	2.1
Annual	94	7803.0	2.0	2.6	2.3



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	97	686.0	2.1	2.5	2.3
February	100	639.0	2.2	2.8	2.3
March	100	708.0	2.1	2.6	2.2
April	100	686.0	2.1	3.2	2.1
May	100	707.0	2.1	2.6	2.2
June	92	630.0	2.1	3.9	2.2
July	100	707.0	2.0	2.5	2.2
August	100	707.0	2.0	2.9	2.2
September	100	684.0	2.1	2.7	2.2
October	100	708.0	2.1	2.7	2.3
November	100	685.0	2.2	2.7	2.2
December	97	688.0	2.2	5.5	2.3
Annual	99	8235.0	2.1	5.5	2.3



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	708.0	2.3	3.3	2.6
February	99	633.0	2.3	3.1	2.5
March	100	707.0	2.2	2.6	2.4
April	100	686.0	2.2	2.7	2.3
May	99	699.0	2.2	3.3	2.4
June	100	684.0	2.2	2.6	2.3
July	100	708.0	2.1	2.6	2.3
August	100	709.0	2.1	2.9	2.4
September	100	685.0	2.2	2.7	2.3
October	100	708.0	2.2	2.7	2.3
November	100	685.0	2.2	2.8	2.3
December	100	708.0	2.3	2.9	2.5
Annual	100	8320.0	2.2	3.3	2.6



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	707.0	2.0	2.9	2.2
February	100	641.0	2.1	2.5	2.3
March	100	706.0	2.0	2.3	2.2
April	100	685.0	2.0	2.2	2.0
May	100	707.0	2.0	2.6	2.1
June	100	685.0	2.0	2.4	2.0
July	99	705.0	2.0	3.2	2.4
August	100	708.0	2.1	4.1	2.3
September	99	681.0	2.1	3.1	2.3
October	100	705.0	2.0	2.5	2.1
November	100	685.0	2.0	2.3	2.1
December	100	707.0	2.1	2.5	2.2
Annual	100	8322.0	2.0	4.1	2.4



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	706.0	2.0	2.3	2.1
February	100	635.0	2.0	2.3	2.2
March	100	707.0	2.0	2.1	2.1
April	100	682.0	1.9	2.1	2.0
May	99	701.0	1.9	2.5	2.0
June	100	683.0	1.9	2.2	2.0
July	99	697.0	2.0	2.4	2.1
August	99	704.0	2.0	2.2	2.1
September	100	684.0	2.0	2.4	2.1
October	100	703.0	2.0	2.2	2.0
November	100	685.0	2.0	2.1	2.0
December	100	708.0	2.0	2.2	2.1
Annual	100	8295.0	2.0	2.5	2.2



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	709.0	2.4	9.8	3.1
February	100	639.0	2.4	8.5	3.4
March	100	708.0	2.4	8.4	3.3
April	100	685.0	2.3	5.6	2.8
May	100	708.0	2.3	5.4	2.8
June	100	683.0	2.1	6.9	2.6
July	100	706.0	2.1	4.0	2.4
August	100	708.0	2.3	8.8	2.9
September	100	684.0	2.3	5.2	2.8
October	100	708.0	2.3	7.3	3.0
November	100	685.0	2.3	6.0	2.8
December	100	708.0	2.6	8.8	4.4
Annual	100	8331.0	2.3	9.8	4.4



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	707.0	2.2	2.8	2.4
February	100	644.0	2.3	3.1	2.5
March	100	261.0	2.1	2.6	2.3
Annual	100	1612.0	2.2	3.1	2.5



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
March	73	306.0	2.1	2.5	2.2
April	92	631.0	2.1	2.4	2.2
May	95	673.0	2.0	3.0	2.1
June	90	613.0	2.0	2.4	2.1
July	100	707.0	2.1	2.7	2.3
August	91	647.0	2.1	2.6	2.2
September	98	668.0	2.1	2.7	2.2
October	97	680.0	2.1	2.5	2.2
November	100	684.0	2.2	2.6	2.4
December	99	703.0	2.2	2.6	2.3
Annual	94	6312.0	2.1	3.0	2.4



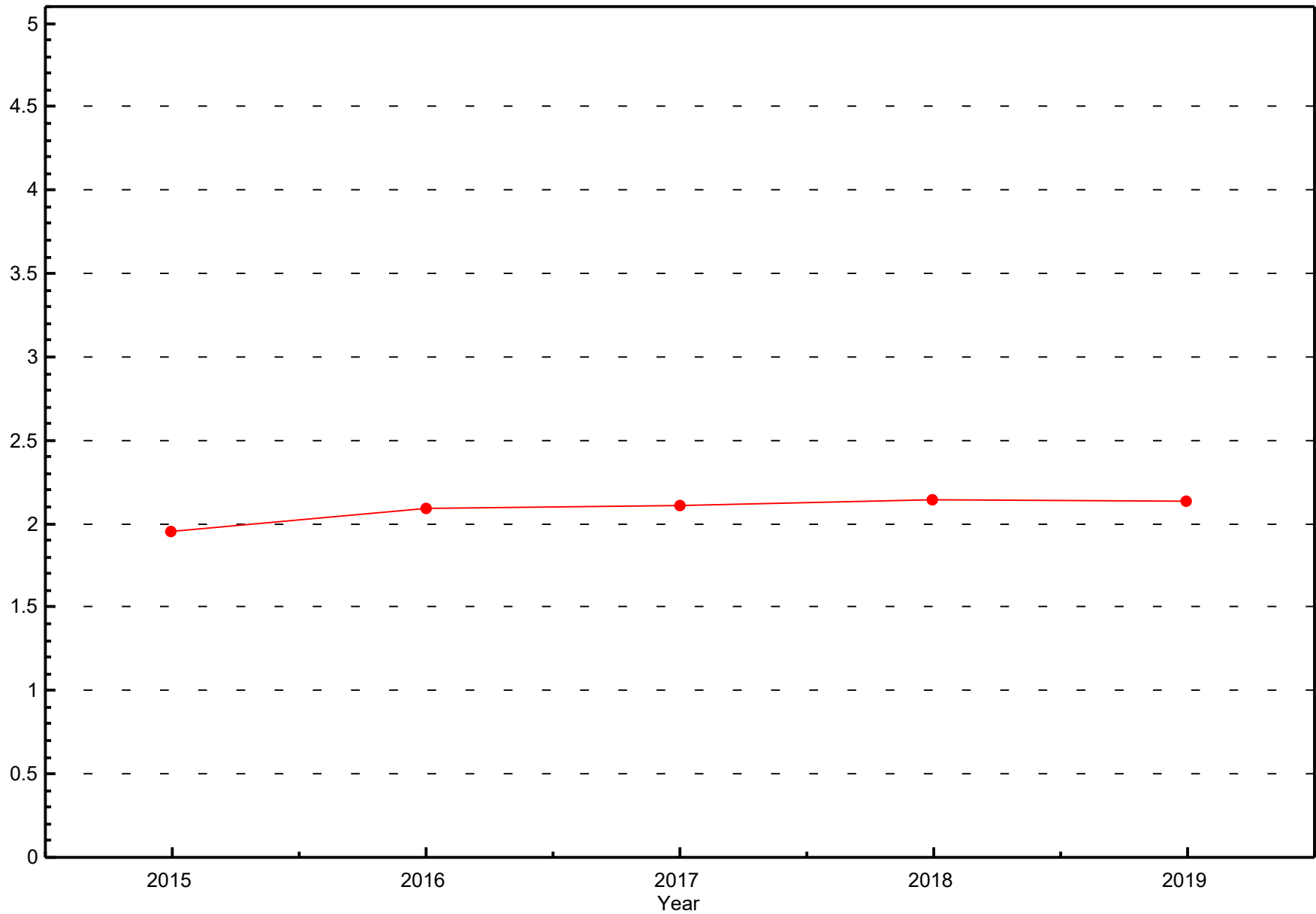
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
April	99	327.0	2.2	5.2	2.3
May	100	708.0	2.2	4.9	2.4
June	100	682.0	2.2	4.6	2.4
July	100	708.0	2.2	4.8	2.4
August	96	680.0	2.3	2.9	2.4
September	100	686.0	2.3	3.2	2.4
October	100	706.0	2.3	3.3	2.4
November	100	687.0	2.3	3.4	2.4
December	100	709.0	2.4	44.0	4.2
Annual	99	5893.0	2.3	44.0	4.2



Yearly Averages

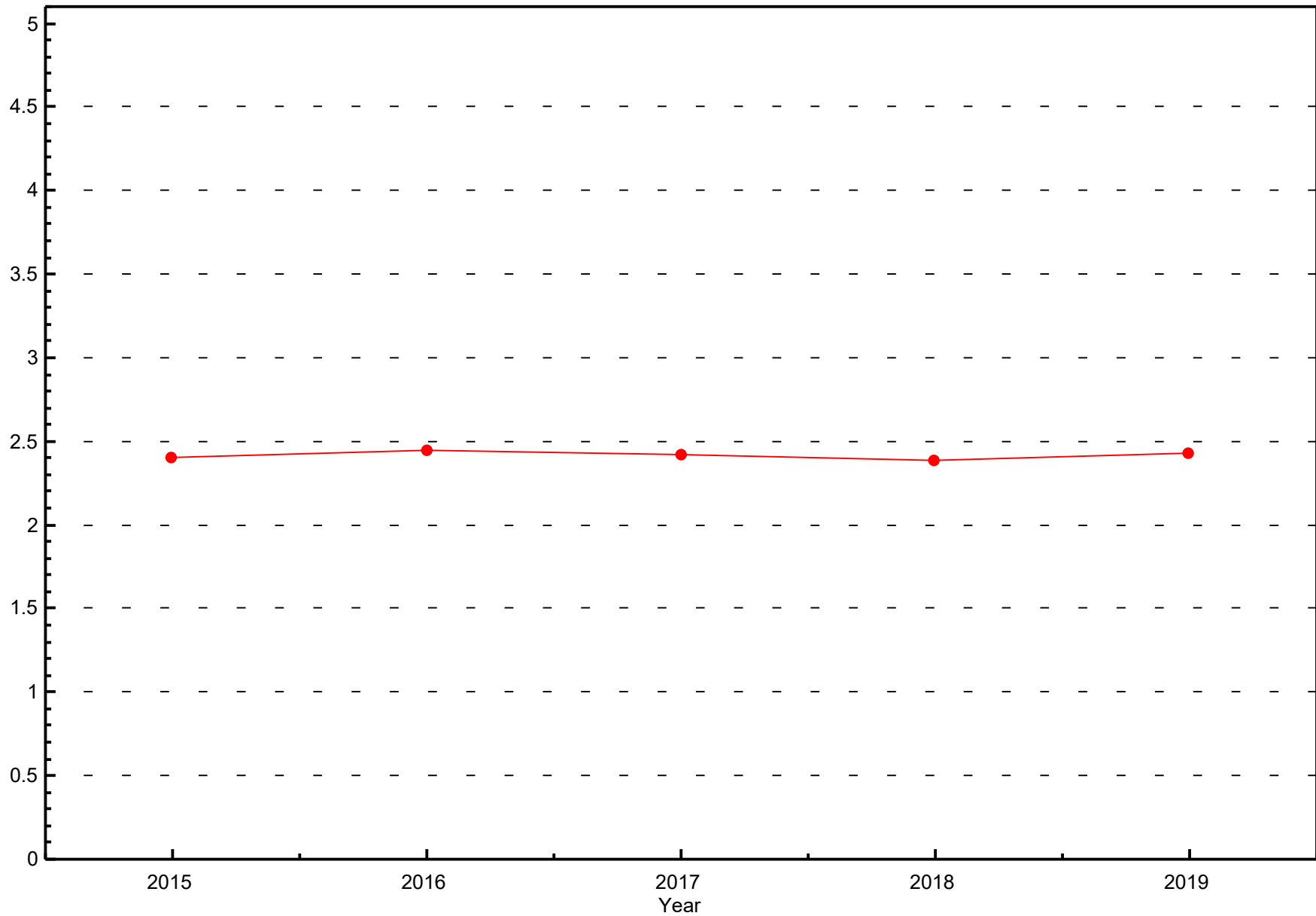
Total Hydrocarbons (THC) - ppm
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

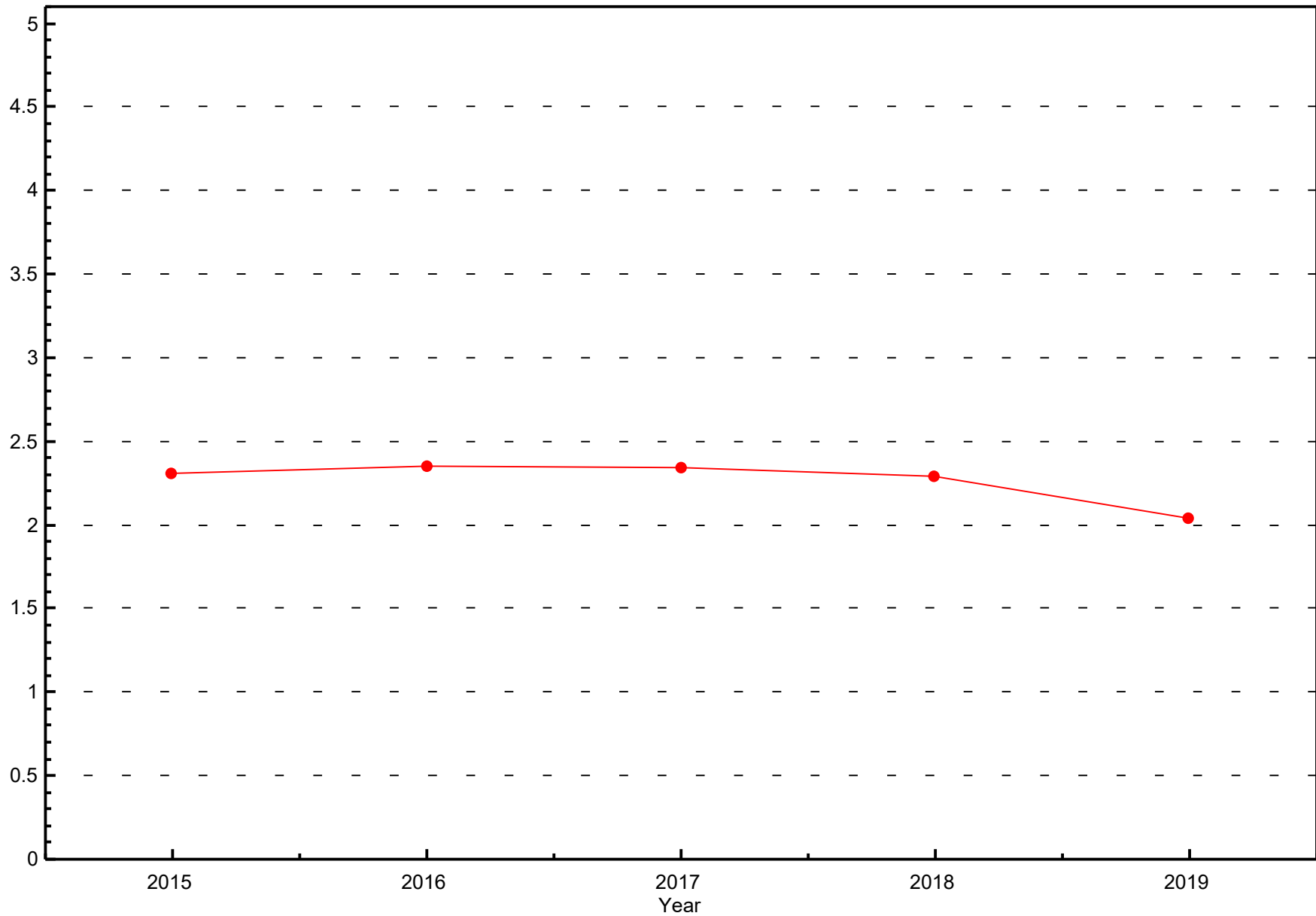
Total Hydrocarbons (THC) - ppm
Mildred Lake (2015 to 2019)





Yearly Averages

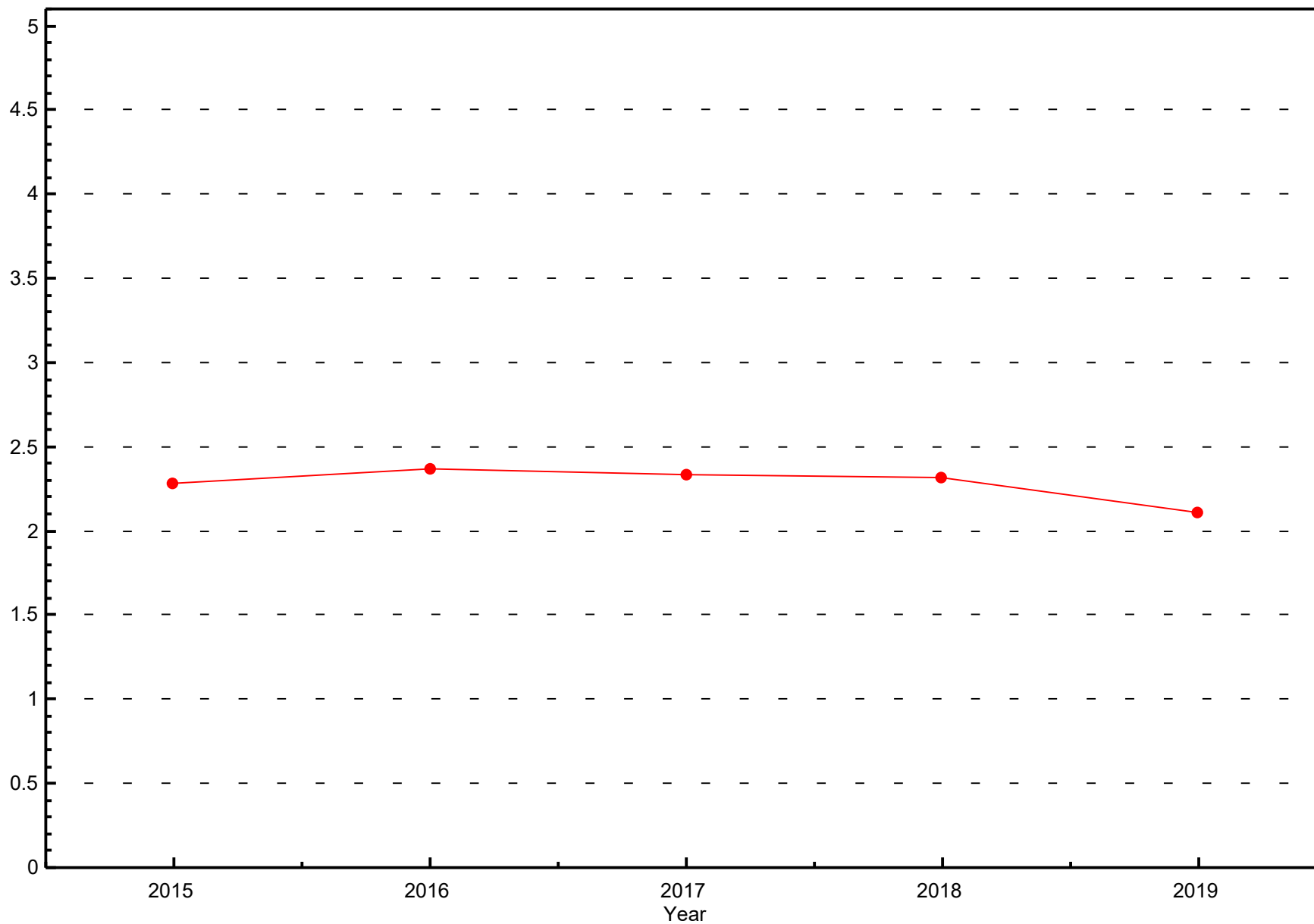
Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint (2015 to 2019)





Yearly Averages

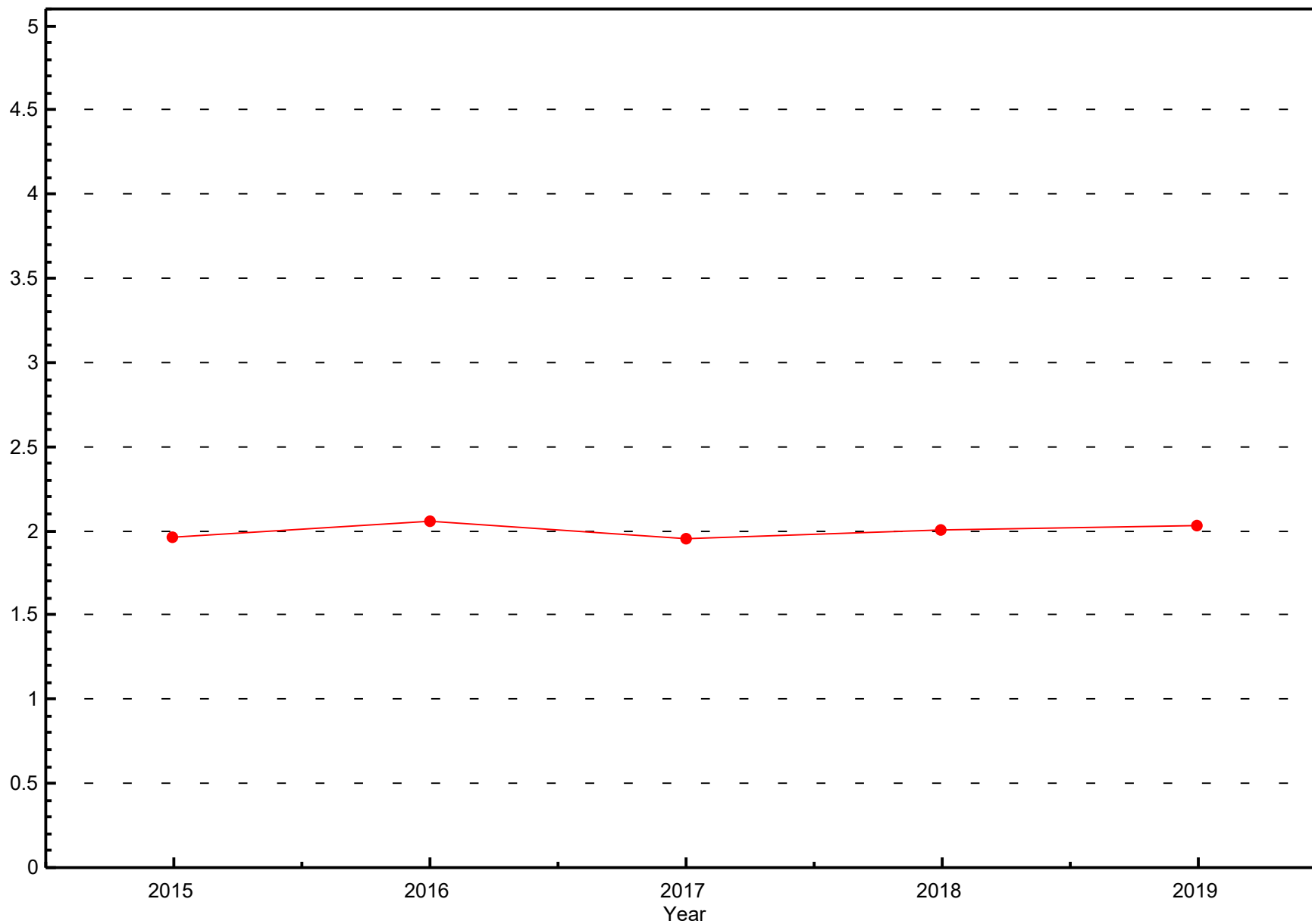
Total Hydrocarbons (THC) - ppm
Mannix (2015 to 2019)





Yearly Averages

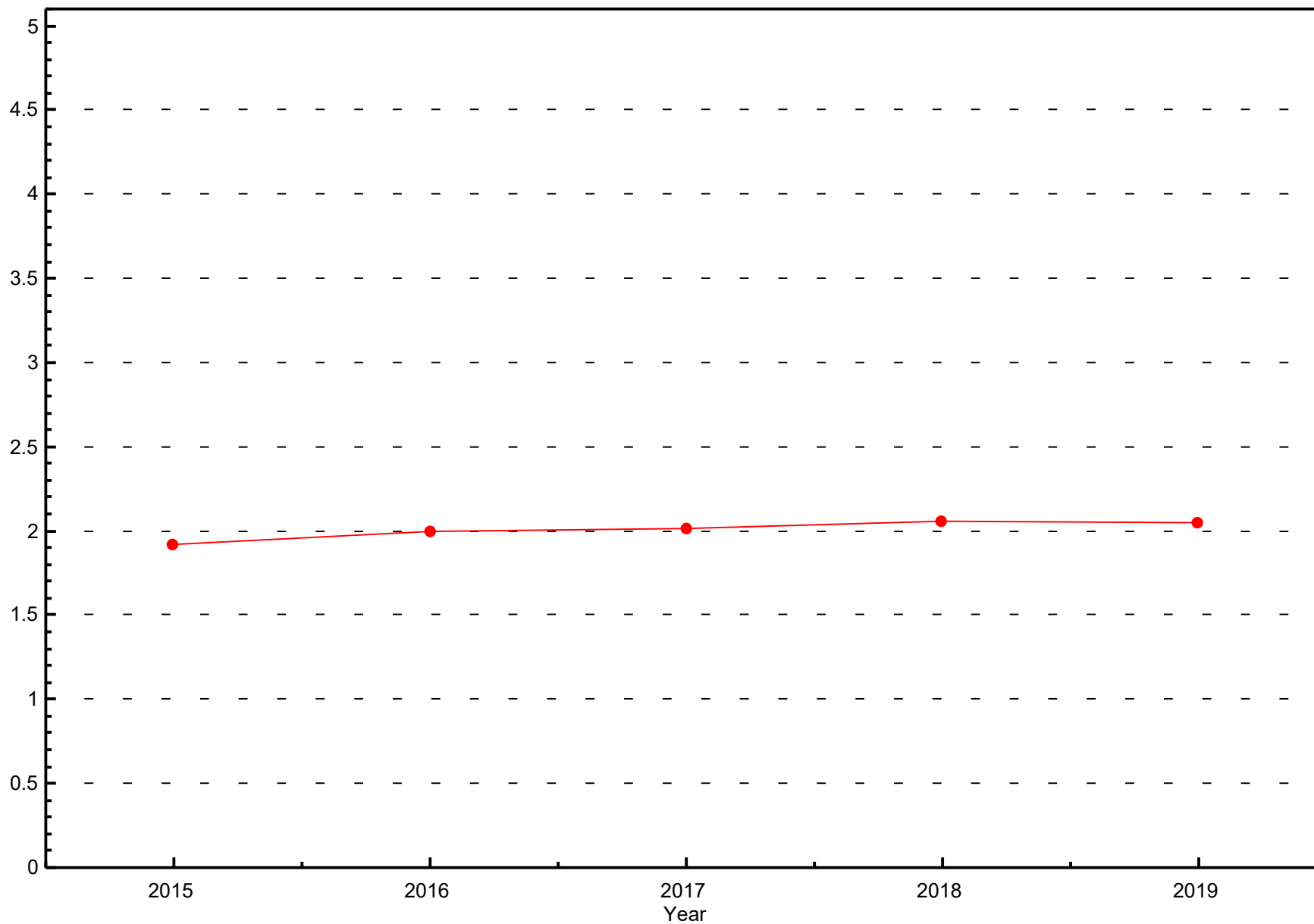
Total Hydrocarbons (THC) - ppm
Patricia McInnes (2015 to 2019)





Yearly Averages

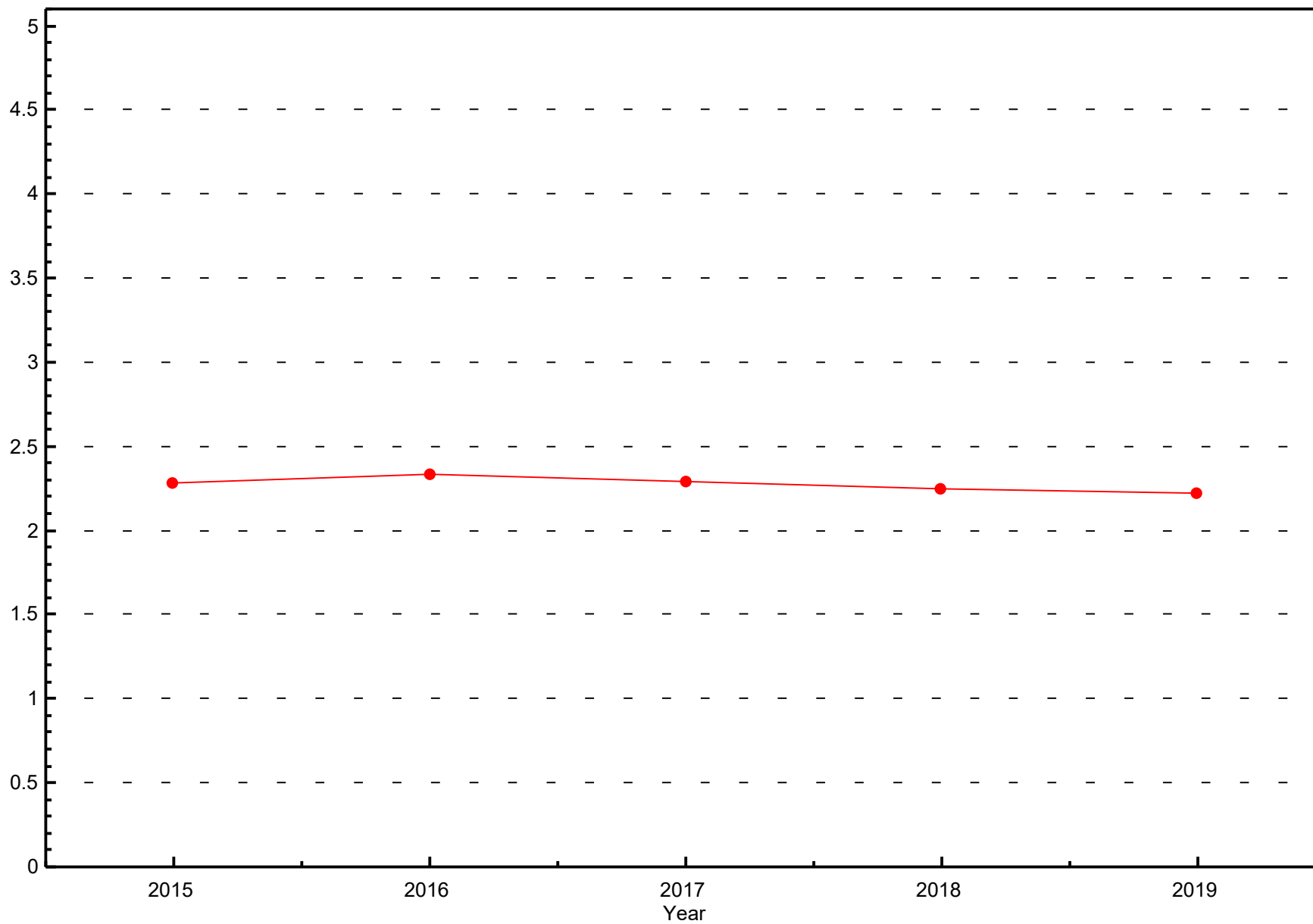
Total Hydrocarbons (THC) - ppm
Athabasca Valley (2015 to 2019)





Yearly Averages

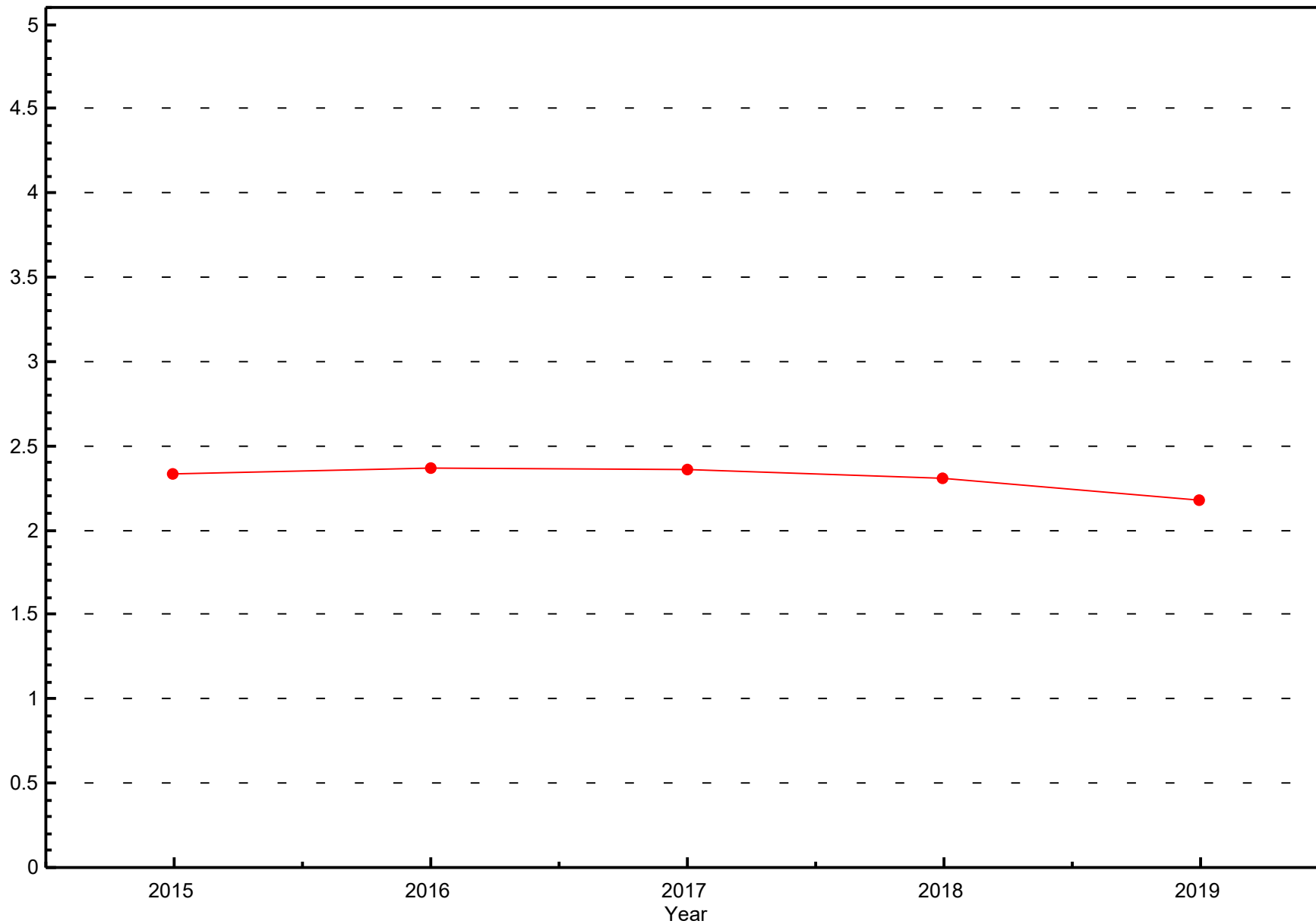
Total Hydrocarbons (THC) - ppm
Barge Landing (2015 to 2019)





Yearly Averages

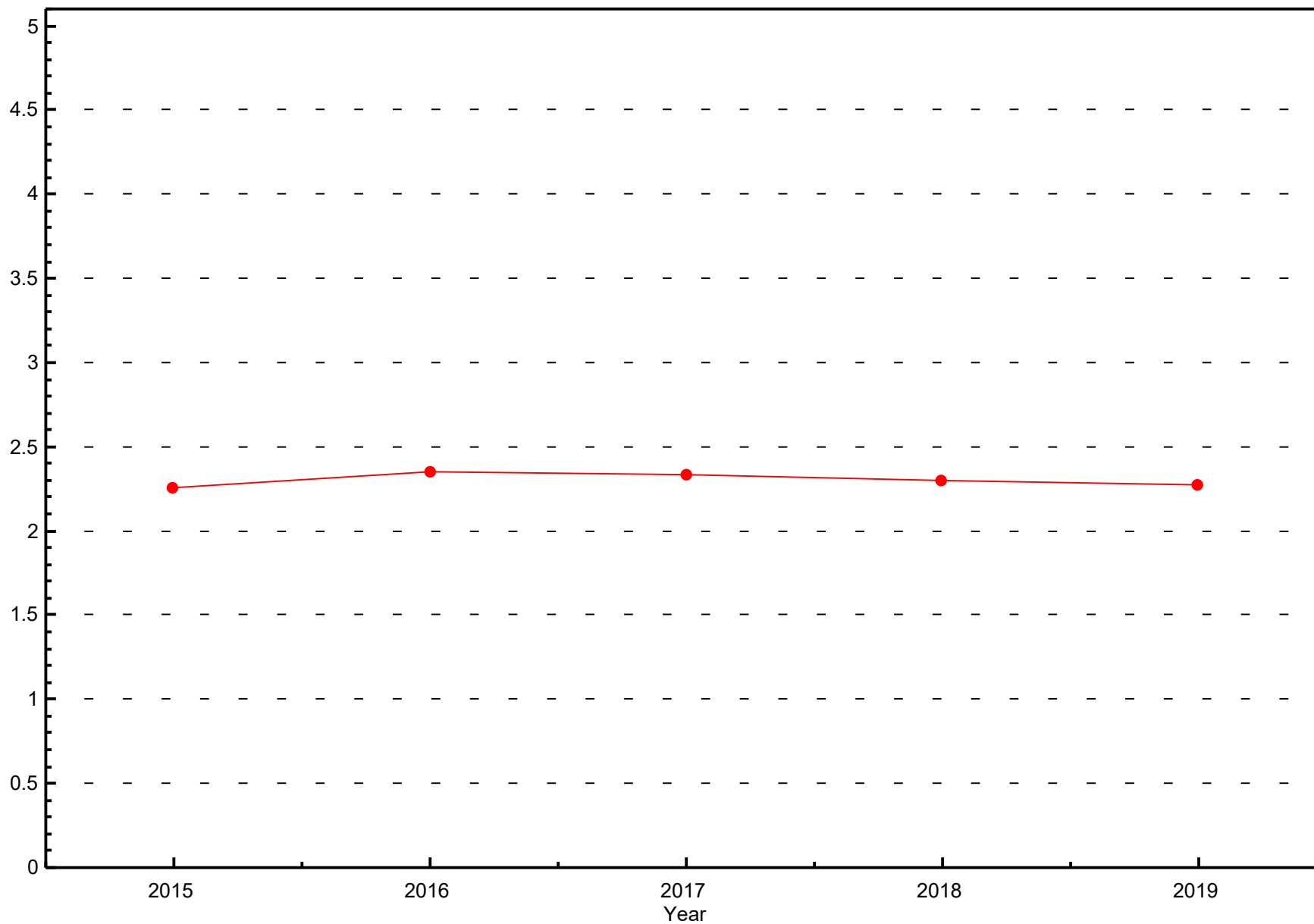
Total Hydrocarbons (THC) - ppm
Lower Camp (2015 to 2019)





Yearly Averages

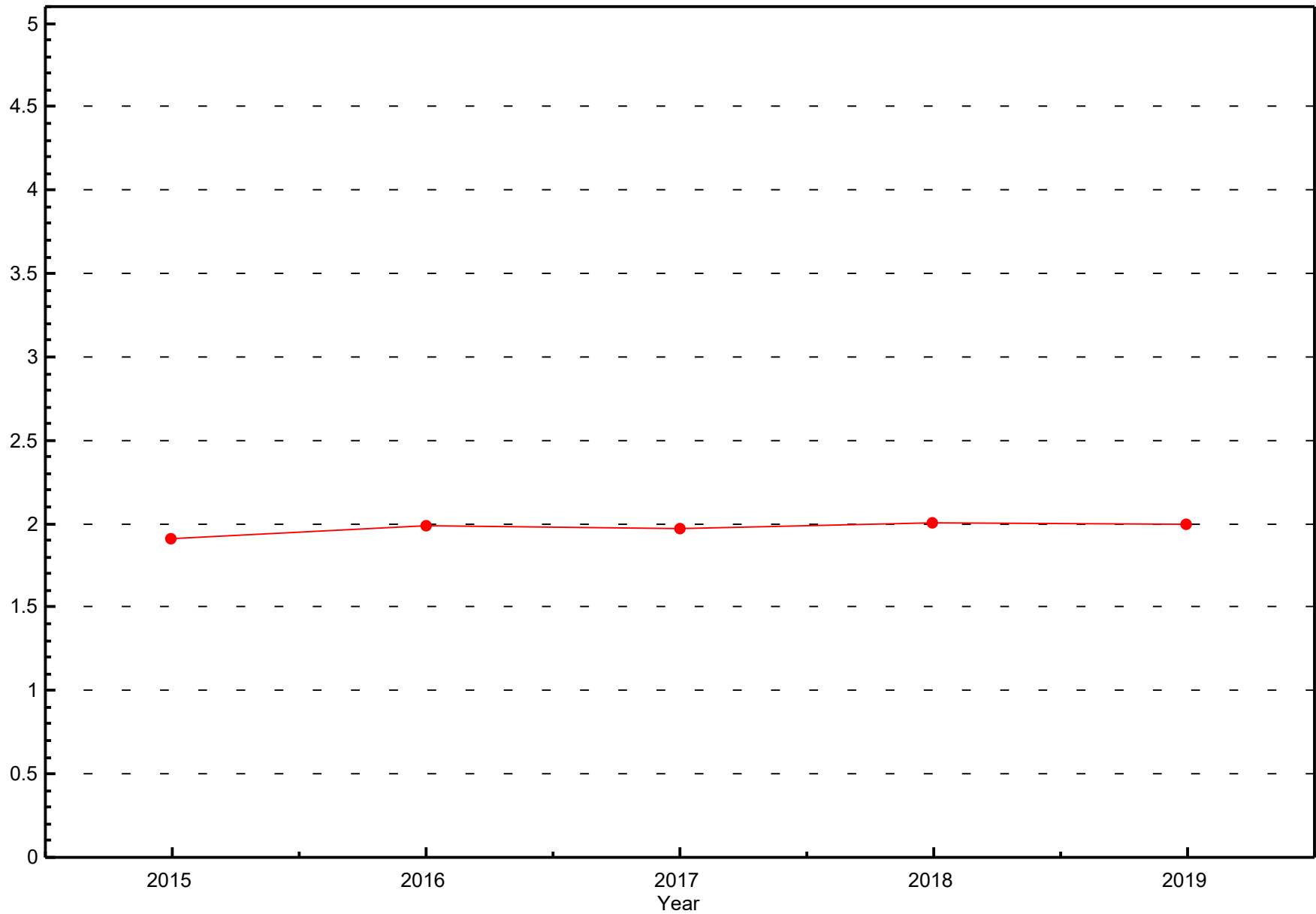
Total Hydrocarbons (THC) - ppm
Fort McKay South (2015 to 2019)





Yearly Averages

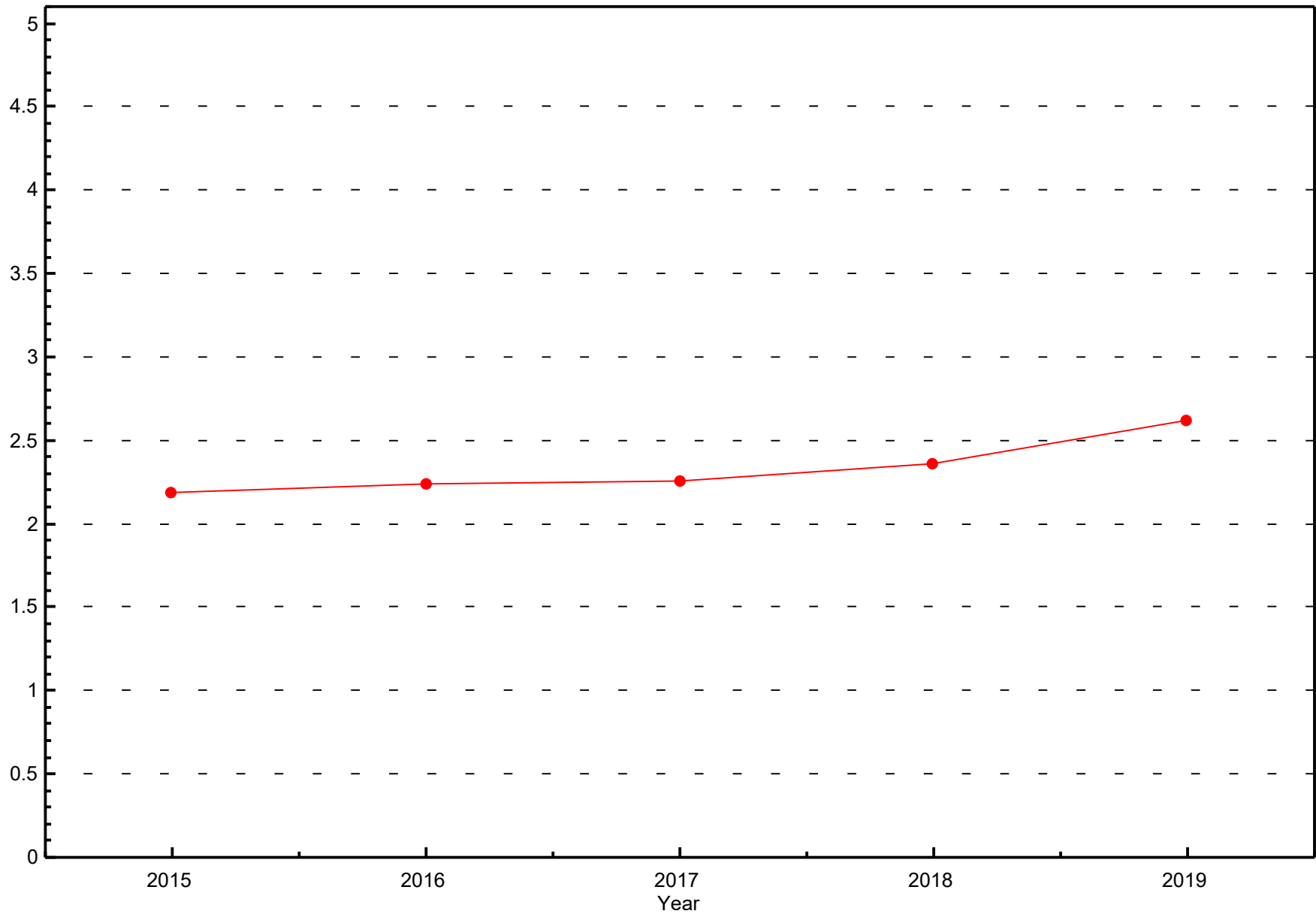
Total Hydrocarbons (THC) - ppm
Anzac (2015 to 2019)





Yearly Averages

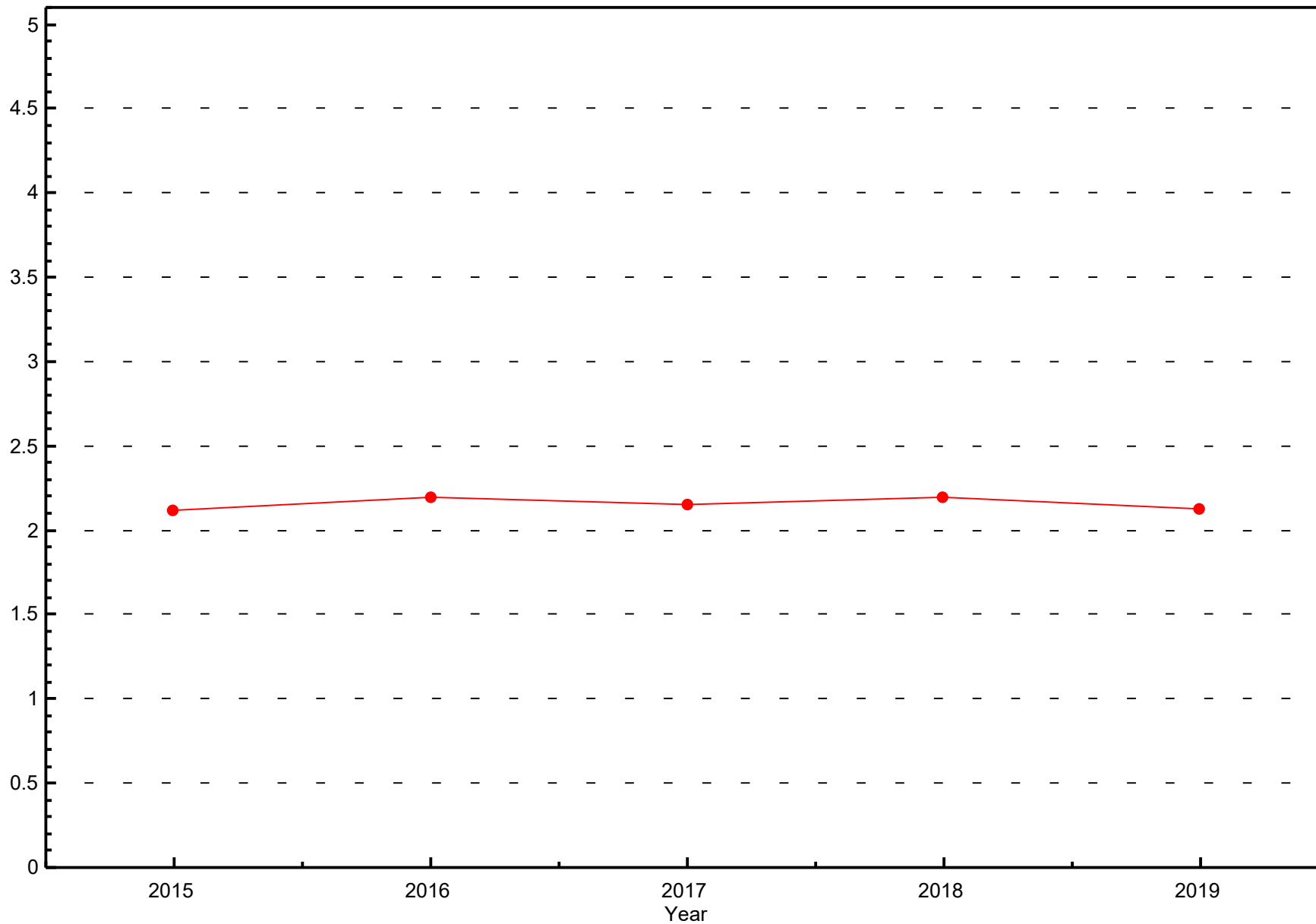
Total Hydrocarbons (THC) - ppm
Horizon (2015 to 2019)





Yearly Averages

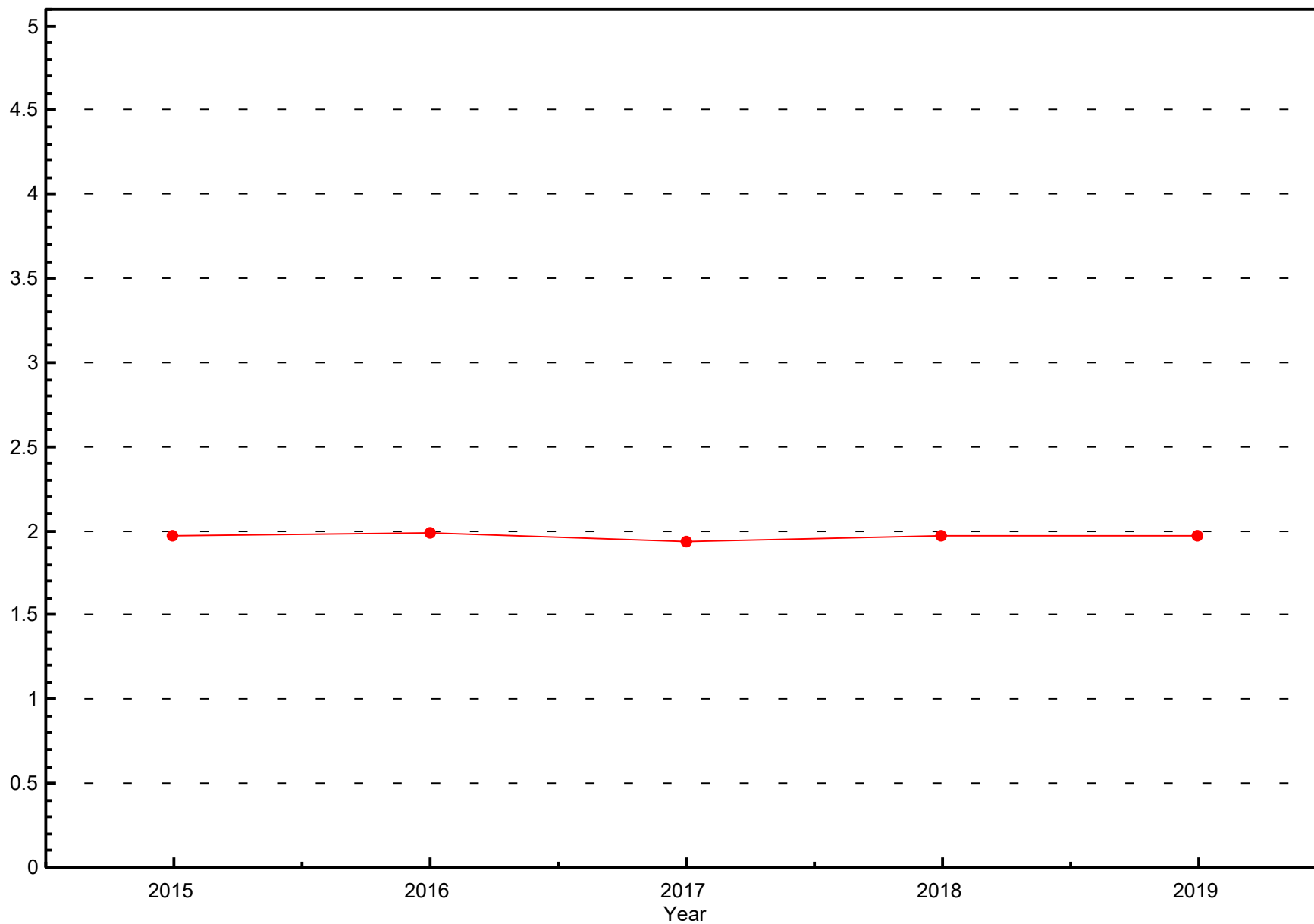
Total Hydrocarbons (THC) - ppm Wapasu (2015 to 2019)





Yearly Averages

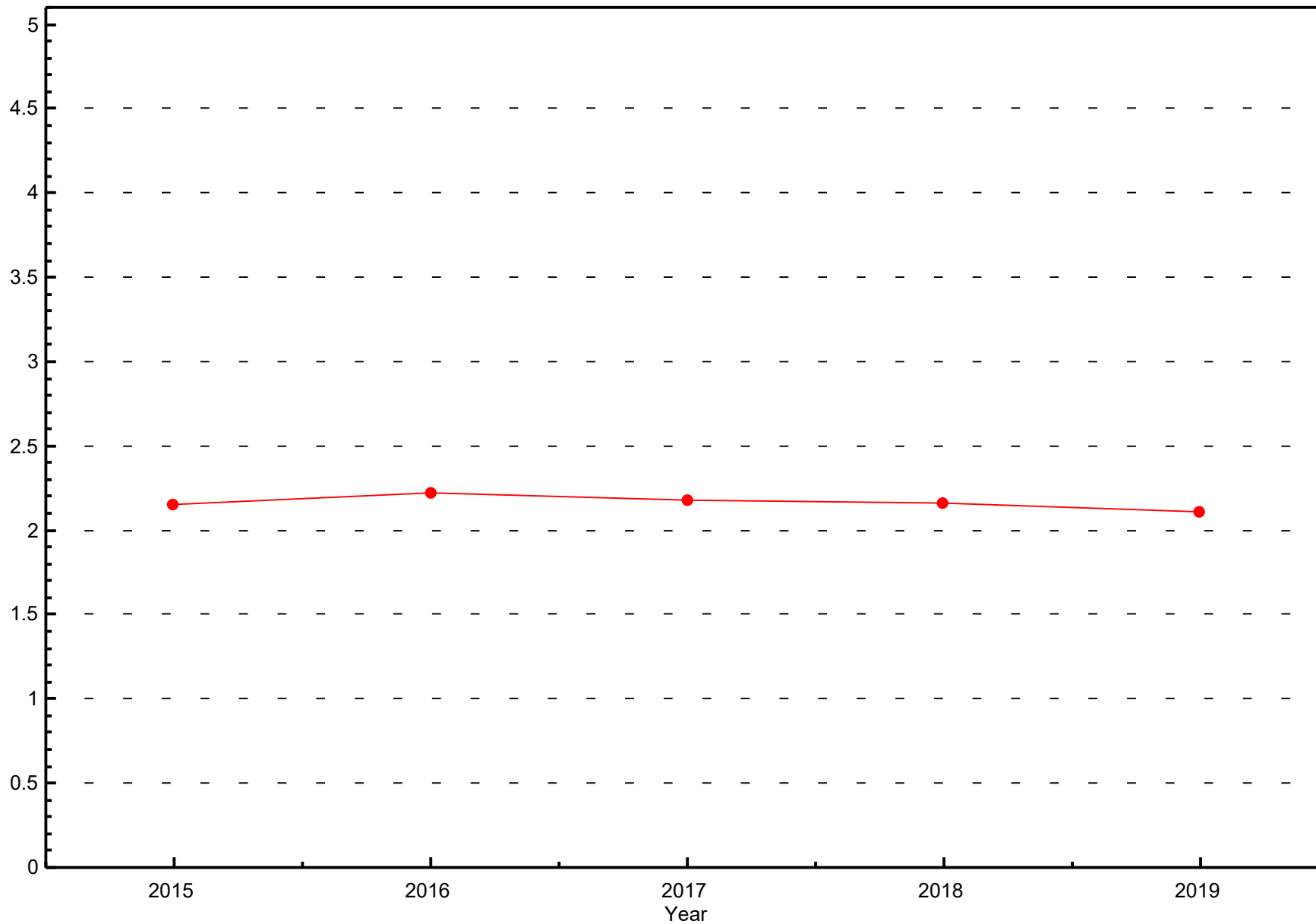
Total Hydrocarbons (THC) - ppm
Stony Mountain (2015 to 2019)





Yearly Averages

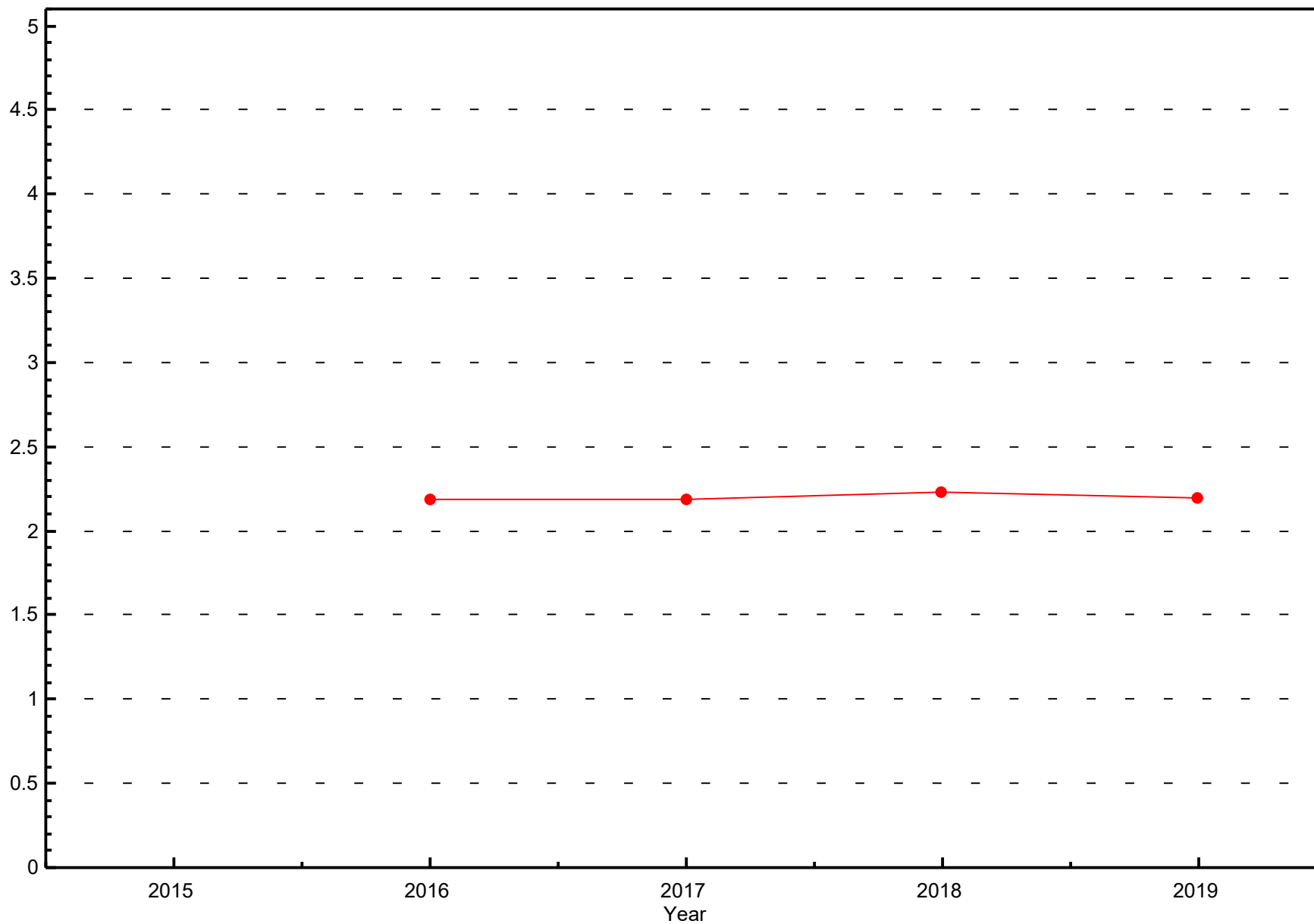
Total Hydrocarbons (THC) - ppm
Firebag (2015 to 2019)





Yearly Averages

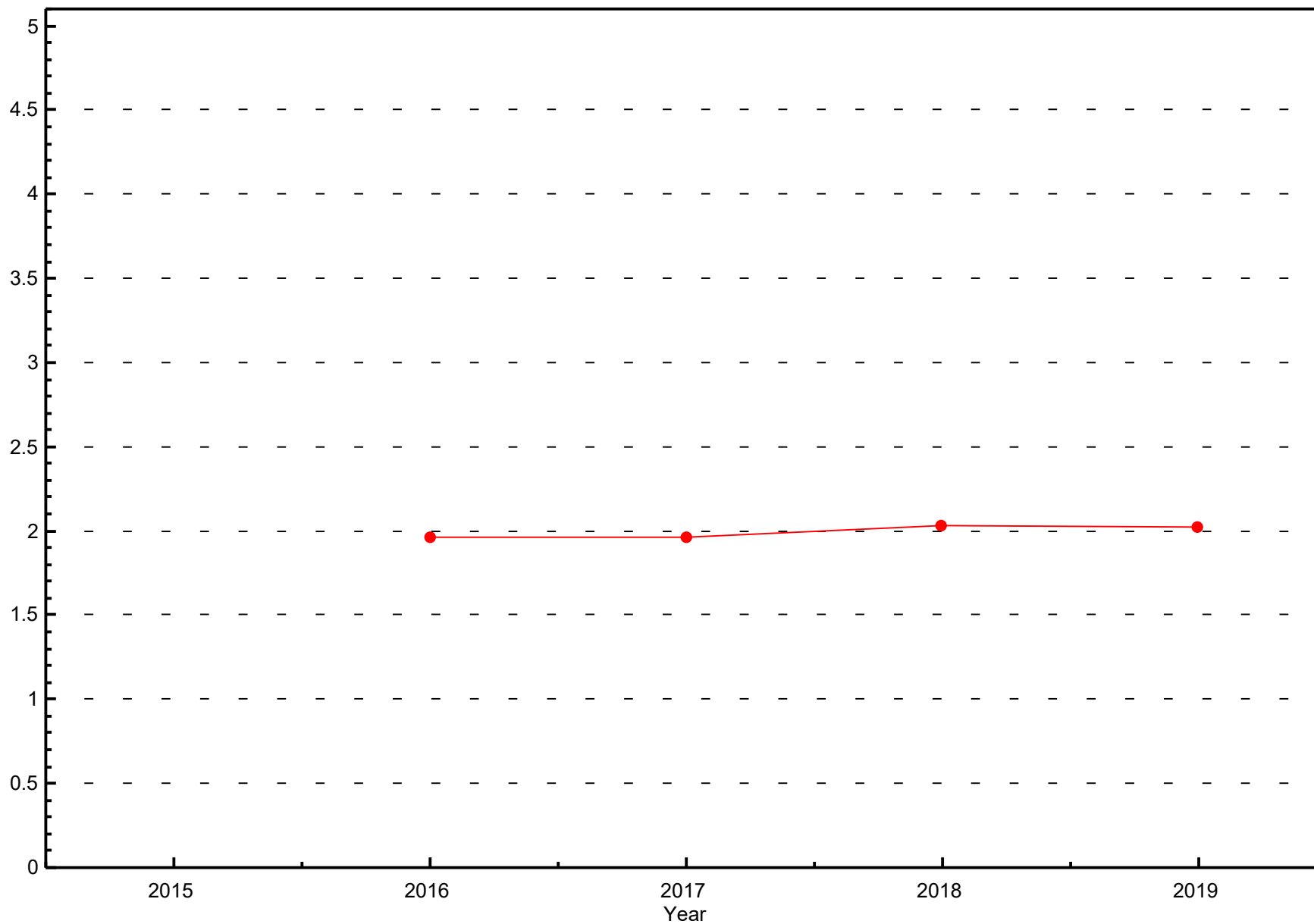
Total Hydrocarbons (THC) - ppm Mackay River (2015 to 2019)





Yearly Averages

Total Hydrocarbons (THC) - ppm
Conklin (2015 to 2019)

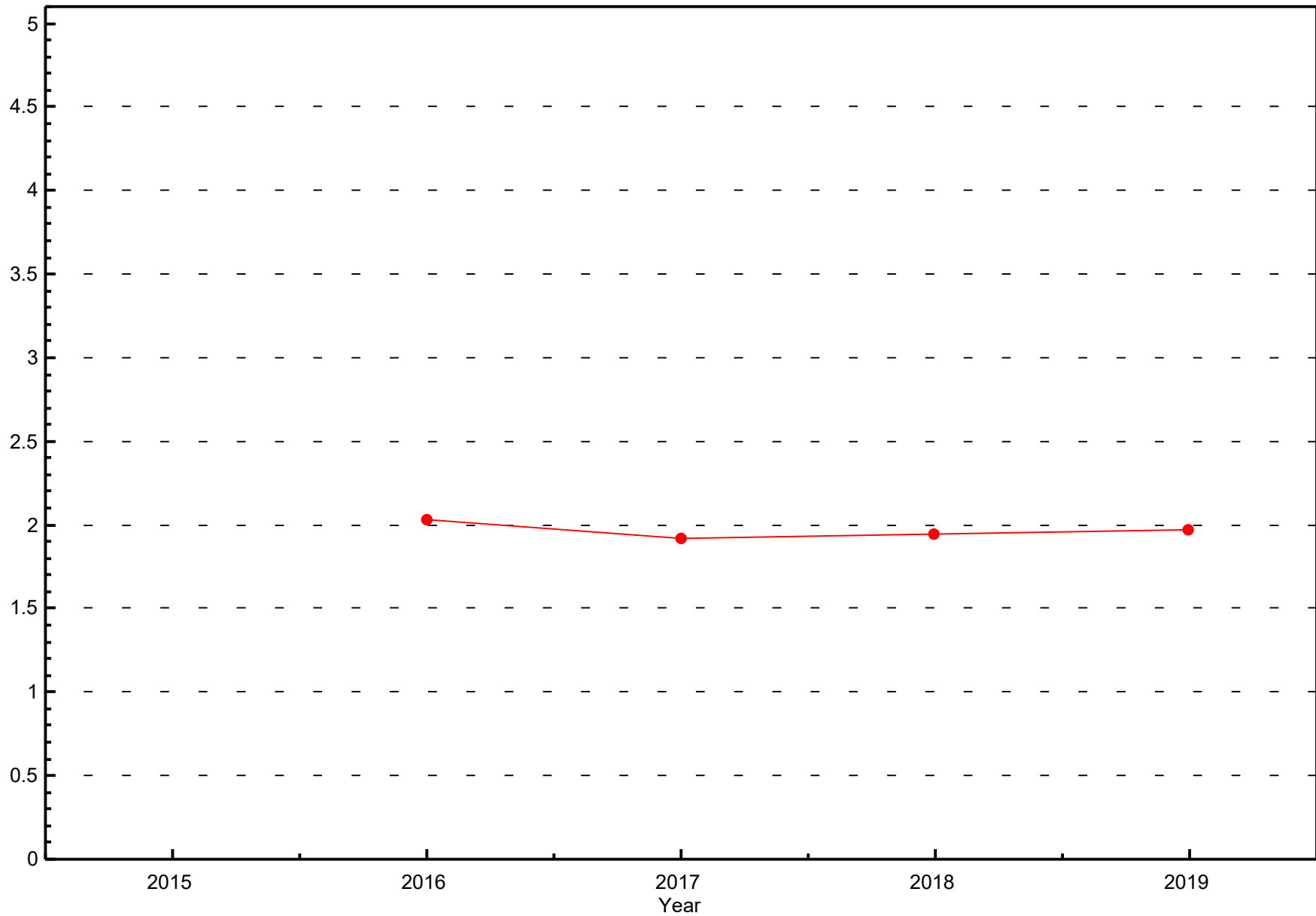




Yearly Averages

Total Hydrocarbons (THC) - ppm

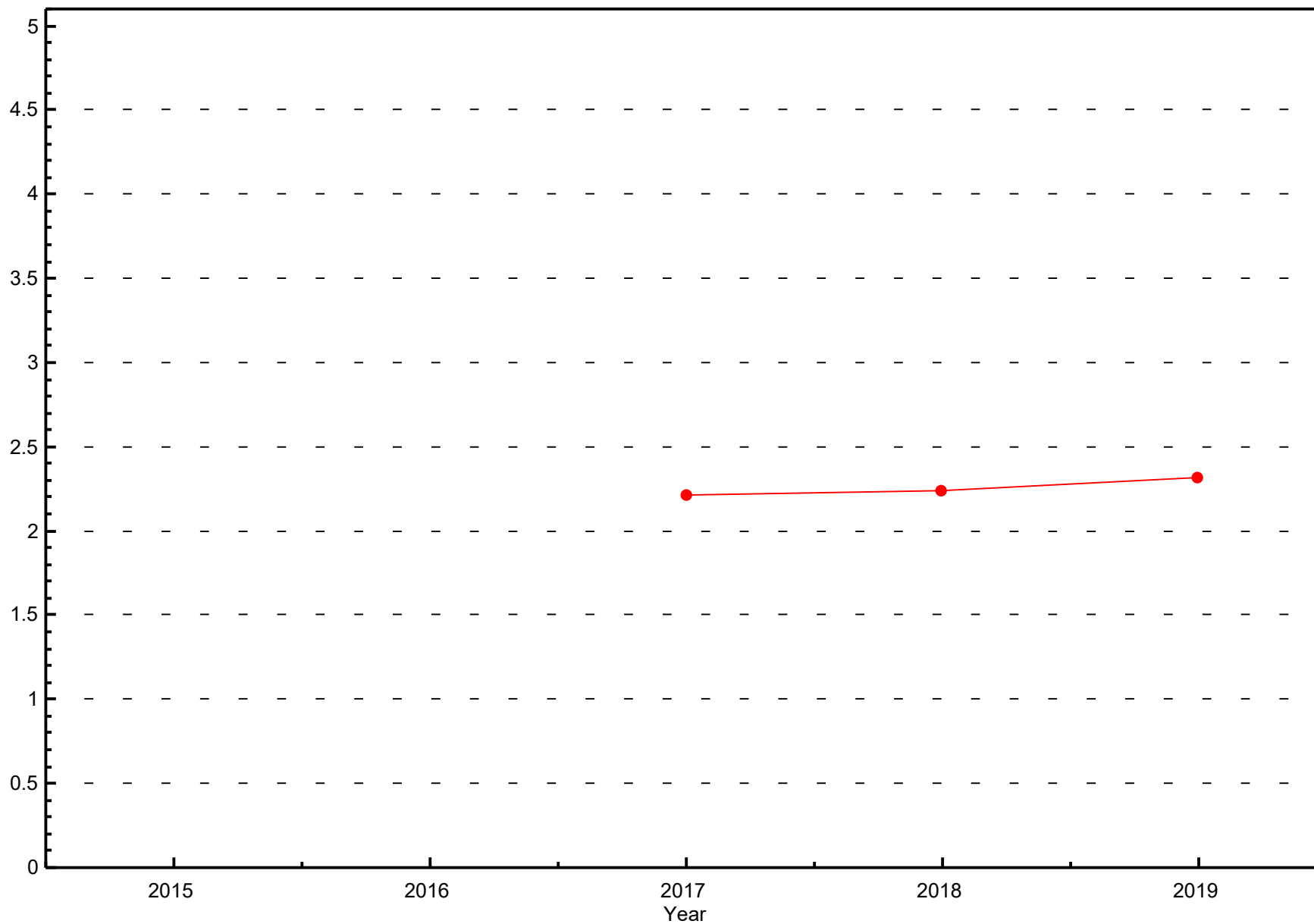
Janvier (2015 to 2019)





Yearly Averages

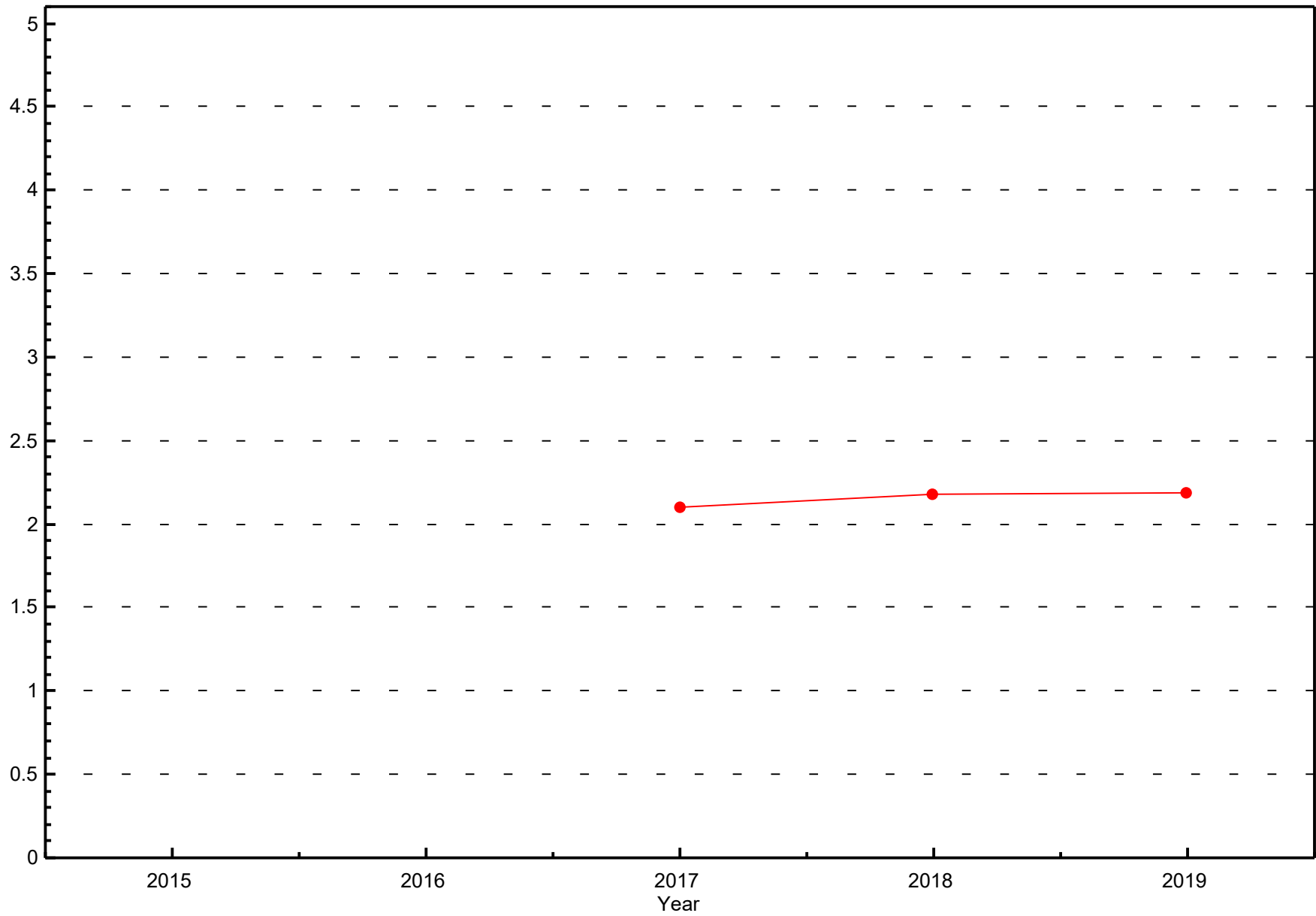
Total Hydrocarbons (THC) - ppm Fort Hills (2015 to 2019)





Yearly Averages

Total Hydrocarbons (THC) - ppm
Surmont (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NON-METHANE HYDROCARBON ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	99	701	0.0922	3.5900	0.3921
February	100	639	0.0827	0.7365	0.2779
March	96	682	0.0945	1.0524	0.2608
April	99	683	0.0374	0.5820	0.1597
May	96	674	0.0281	0.4726	0.1672
June	88	600	0.0448	0.6393	0.1937
July	96	680	0.0761	0.4974	0.1784
August	97	688	0.0466	0.4236	0.1549
September	100	684	0.0406	0.7367	0.1657
October	100	708	0.0200	0.3548	0.0931
November	99	680	0.0311	0.5007	0.1212
December	100	710	0.0900	0.4645	0.1717
Annual	98	8129	0.0571	3.5900	0.3921



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
November	100	99	0.0320	0.3246	0.0657
December	100	708	0.1066	2.6923	0.4716
Annual	100	818	0.4323	25.0000	0.4716



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	171	0.0053	0.3042	0.0183
February	100	638	0.0038	0.2856	0.0752
March	100	707	0.0012	0.2138	0.0196
April	99	679	0.0005	0.0669	0.0036
May	99	704	0.0038	0.4994	0.0380
June	100	685	0.0024	0.1948	0.0184
July	100	705	0.0038	0.2010	0.0296
August	95	668	0.0198	0.5168	0.1199
September	100	686	0.0506	0.9853	0.2481
October	100	707	0.0187	0.4788	0.0792
November	100	683	0.0233	0.5940	0.1457
December	100	708	0.0475	0.7883	0.2200
Annual	99	7741	0.0158	0.9853	0.2481



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
April	100	286	0.0427	0.4453	0.0991
May	99	704	0.0897	0.4659	0.2194
June	100	681	0.0462	2.0773	0.3672
July	100	709	0.0341	0.5501	0.1373
August	100	709	0.0369	0.3793	0.1157
September	100	687	0.0277	1.0315	0.0988
October	100	707	0.0150	0.5407	0.0601
November	100	686	0.0153	0.5777	0.0824
December	100	710	0.0317	0.5858	0.1340
Annual	100	5989	0.4959	25.0000	25.0000



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	707	0.0252	0.9248	0.2486
February	100	638	0.0224	0.2185	0.0686
March	99	699	0.0084	0.2480	0.0336
April	86	581	0.0006	0.0693	0.0065
May	100	708	0.0046	0.3567	0.0398
June	100	681	0.0074	0.2598	0.0481
July	100	710	0.0180	0.4353	0.1123
August	100	708	0.0083	0.3383	0.0705
September	100	686	0.0032	0.4390	0.0478
October	90	633	0.0030	0.2385	0.0240
November	99	681	0.0010	0.1232	0.0105
December	100	706	0.0021	0.1110	0.0212
Annual	98	8138	0.0088	0.9248	0.2486



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	710	0.0128	0.4273	0.1330
February	100	639	0.0050	0.3772	0.0593
March	97	686	0.0065	0.2918	0.0536
April	98	668	0.0007	0.1345	0.0083
May	100	706	0.0060	0.2433	0.0633
June	97	659	0.0084	0.3054	0.0683
July	100	707	0.0150	0.4565	0.1256
August	100	709	0.0076	0.3092	0.0530
September	100	685	0.0040	0.2498	0.0289
October	100	706	0.0097	0.4793	0.0783
November	100	681	0.0037	0.3110	0.0148
December	100	708	0.0146	0.6336	0.1494
Annual	99	8264	0.0079	0.6336	0.1494



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
March	100	218	0.0025	0.1233	0.0166
April	100	686	0.0022	0.2905	0.0224
May	98	698	0.0017	0.2340	0.0130
June	100	684	0.0076	0.5293	0.0556
July	100	709	0.0120	0.5872	0.0491
August	100	708	0.0082	0.6753	0.0429
September	99	680	0.0107	0.9988	0.0909
October	100	707	0.0053	0.3843	0.0219
November	98	665	0.0302	0.7372	0.1944
December	89	625	0.1178	1.0122	0.3497
Annual	98	6380	0.0200	1.0122	0.3497



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	91	645	0.0066	0.2362	0.0940
February	100	637	0.0021	0.0938	0.0234
March	99	704	0.0022	0.0970	0.0216
April	100	681	0.0010	0.0896	0.0100
May	100	708	0.0126	0.2887	0.1256
June	100	683	0.0070	0.1816	0.0267
July	98	693	0.0075	0.2790	0.0464
August	99	698	0.0021	0.0892	0.0096
September	95	652	0.0039	0.1695	0.0140
October	99	701	0.0049	0.1462	0.0217
November	100	684	0.0065	0.4449	0.0537
December	100	708	0.0090	0.2005	0.0355
Annual	98	8194	0.0055	0.4449	0.1256



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	66	459	0.0000	0.0067	0.0004
February	76	488	0.0140	0.1468	0.0841
March	100	708	0.0061	0.0878	0.0498
April	94	645	0.0171	0.1349	0.0474
May	97	685	0.0125	0.0985	0.0508
June	100	683	0.0006	0.0938	0.0045
July	97	686	0.0024	0.1909	0.0344
August	96	682	0.0005	0.0441	0.0027
September	99	681	0.0014	0.2733	0.0310
October	99	694	0.0001	0.0097	0.0012
November	100	685	0.0001	0.0083	0.0010
December	100	706	0.0006	0.1313	0.0030
Annual	94	7802	0.0044	0.2733	0.0841



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	707	0.0043	0.4353	0.0846
February	100	641	0.0060	0.1318	0.0343
March	100	706	0.0012	0.1101	0.0114
April	100	685	0.0002	0.0368	0.0016
May	100	706	0.0029	0.2983	0.0509
June	100	685	0.0021	0.0957	0.0147
July	99	705	0.0116	0.7587	0.0965
August	100	708	0.0043	0.1613	0.0269
September	99	681	0.0019	0.1350	0.0137
October	100	705	0.0009	0.0532	0.0044
November	100	685	0.0008	0.1361	0.0208
December	100	707	0.0028	0.3513	0.0326
Annual	100	8321	0.0033	0.7587	0.0965



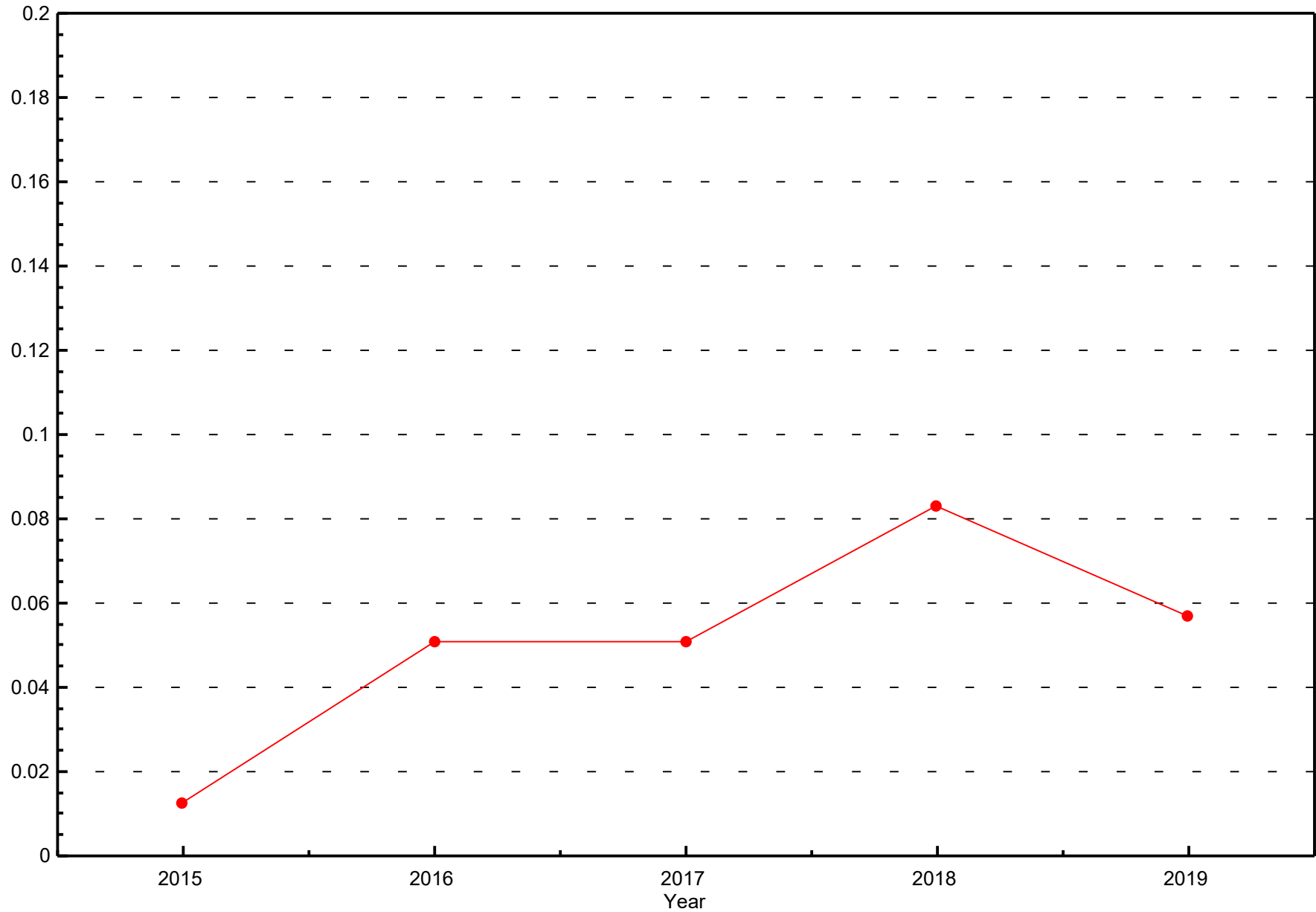
Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	706	0.0004	0.0368	0.0021
February	100	635	0.0006	0.1015	0.0009
March	100	707	0.0000	0.0035	0.0002
April	100	682	0.0000	0.0019	0.0001
May	99	701	0.0002	0.1139	0.0051
June	100	683	0.0002	0.0730	0.0038
July	99	697	0.0007	0.1678	0.0138
August	99	704	0.0002	0.0458	0.0020
September	100	684	0.0001	0.0392	0.0026
October	100	703	0.0000	0.0022	0.0001
November	100	685	0.0000	0.0159	0.0009
December	100	708	0.0001	0.0241	0.0012
Annual	100	8295	0.0002	0.1678	0.0138



Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm
Bertha Ganter - Fort McKay (2015 to 2019)

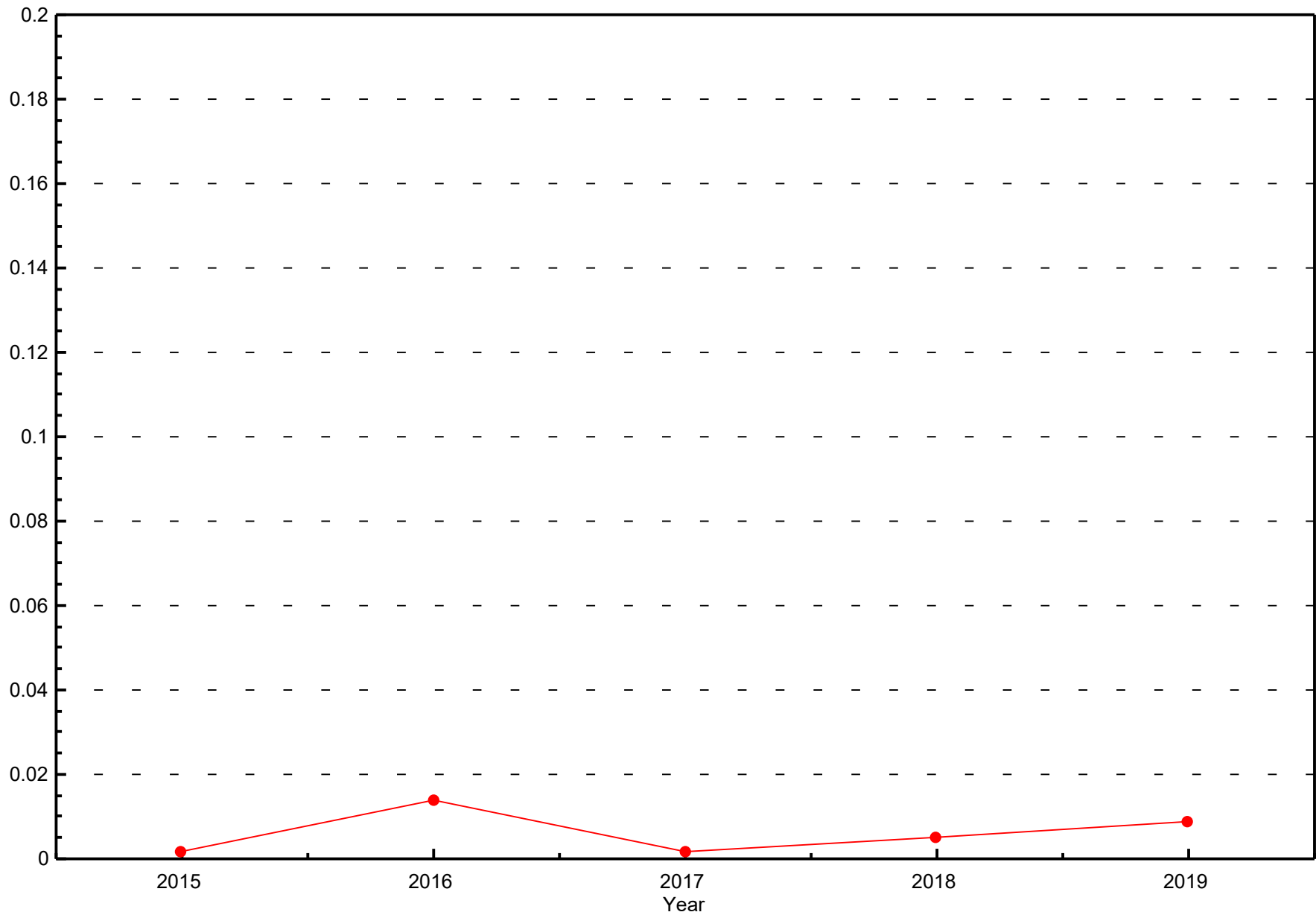




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

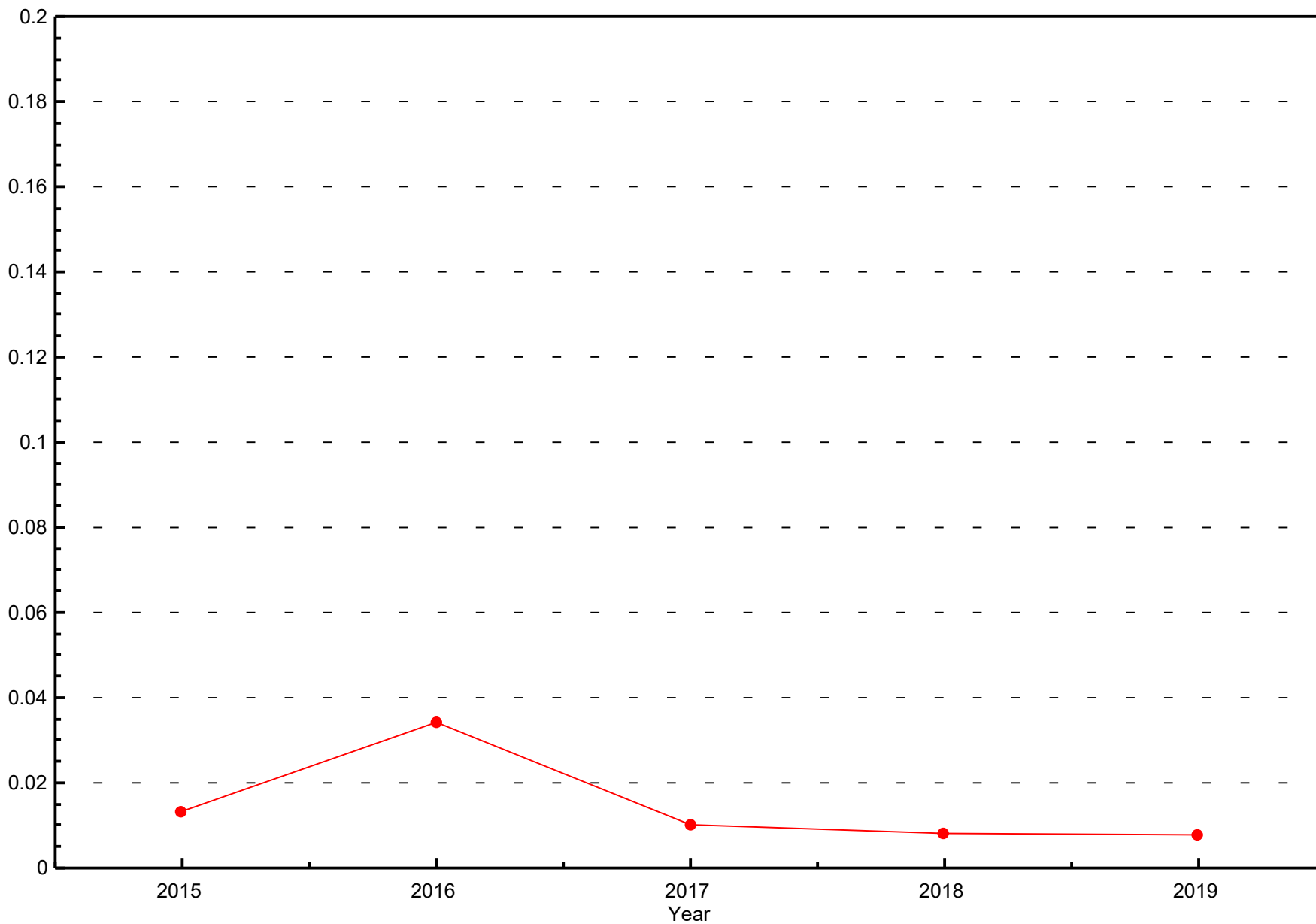
Patricia McInnes (2015 to 2019)





Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm Athabasca Valley (2015 to 2019)

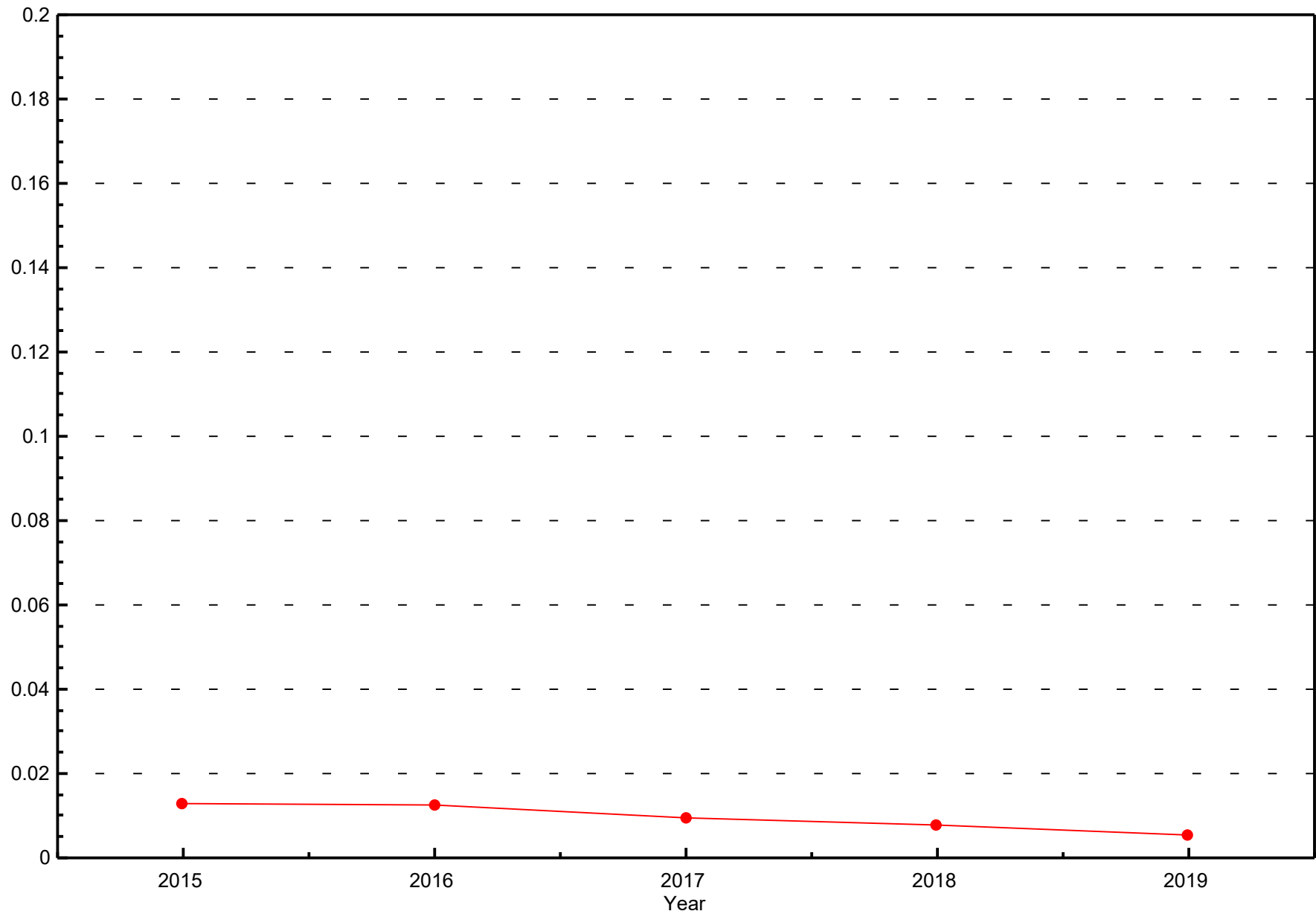




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Anzac (2015 to 2019)

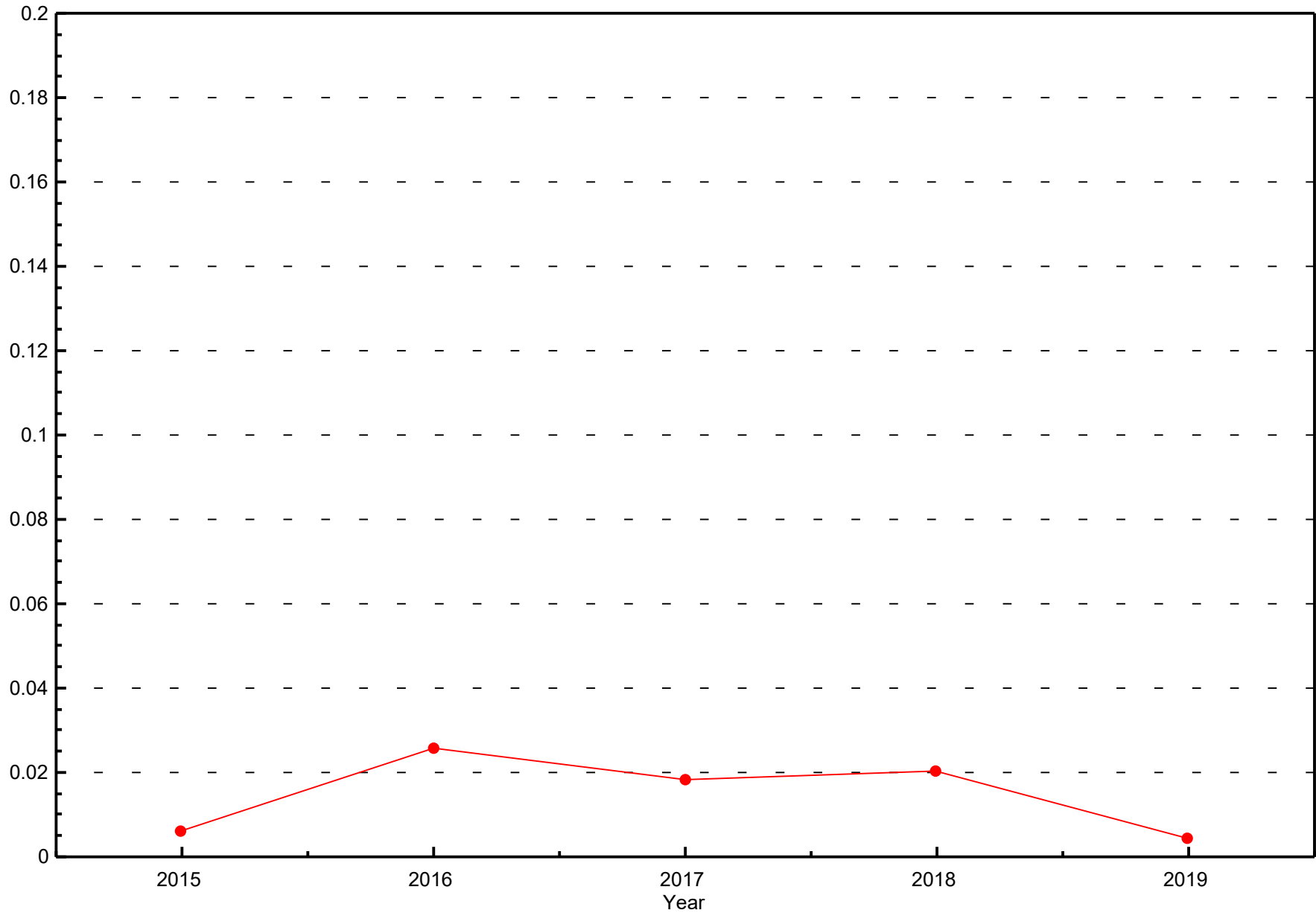




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain (2015 to 2019)

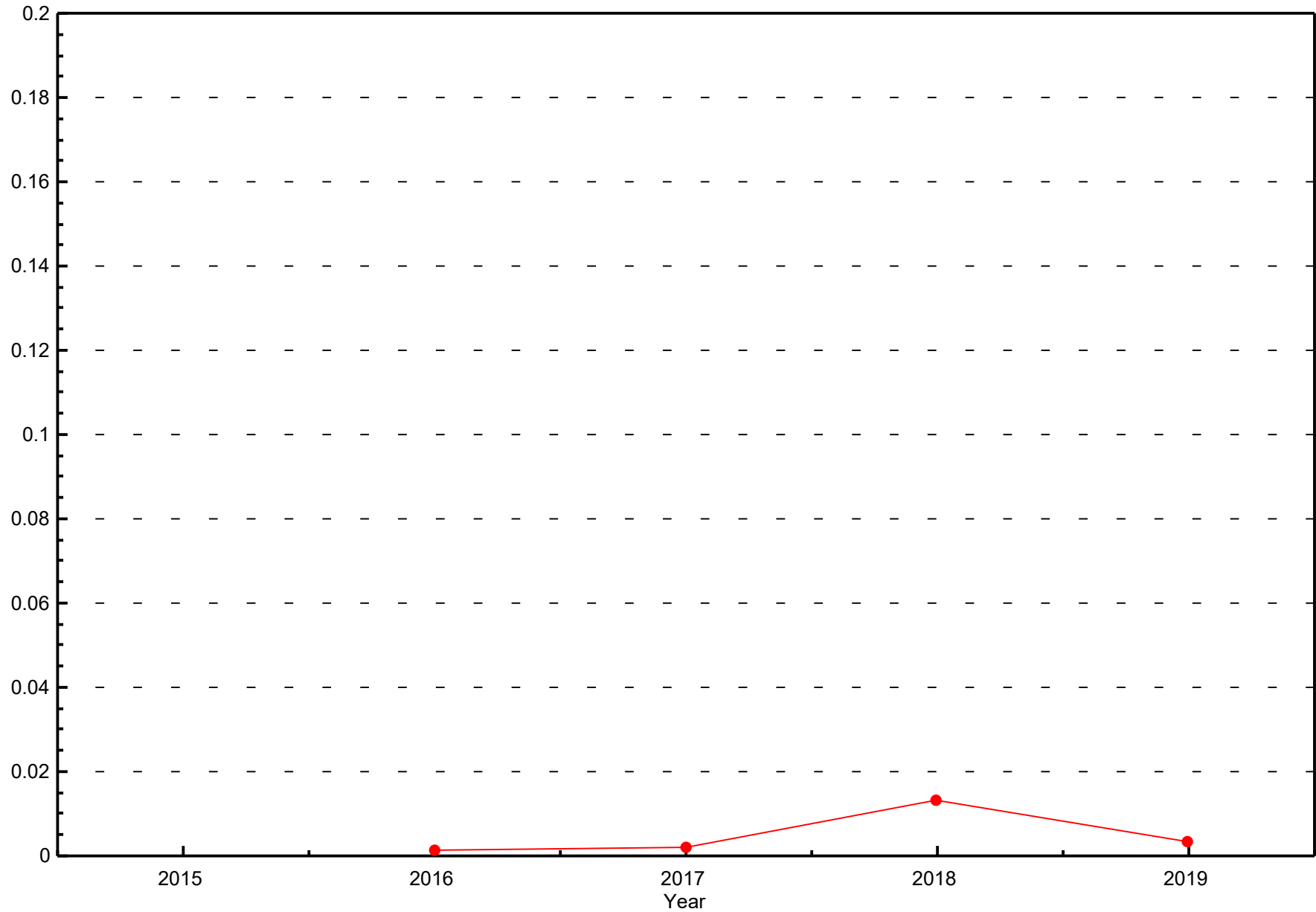




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Conklin (2015 to 2019)

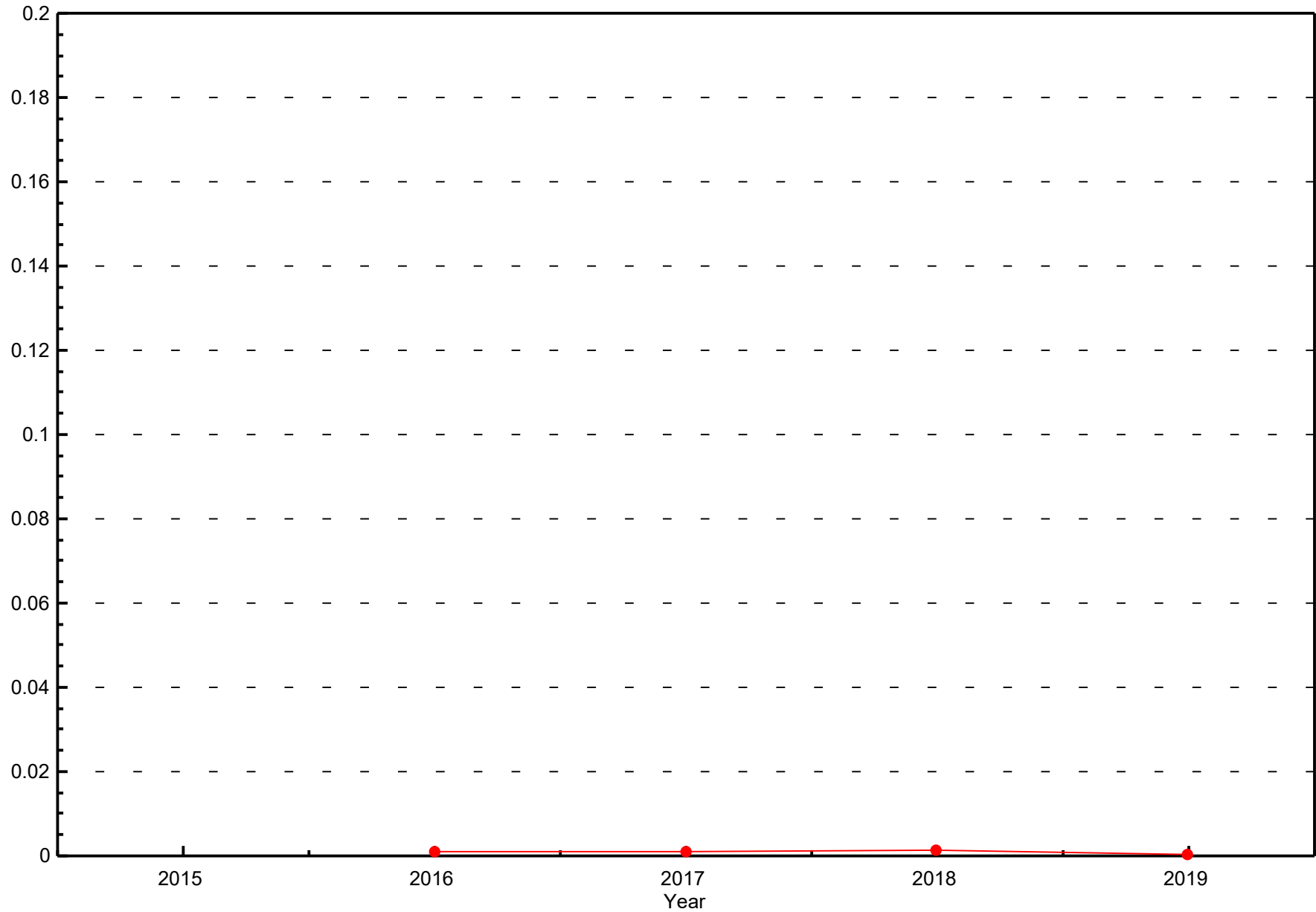




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Janvier (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

METHANE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99	701	2.2092	4.4037	2.8015
February	100	639	2.1919	3.6455	2.6710
March	96	682	2.0850	3.2479	2.5991
April	99	683	2.0260	3.0703	2.1880
May	96	674	2.0417	2.6176	2.1752
June	88	600	1.9928	2.5259	2.1275
July	96	680	2.0139	2.6173	2.1345
August	97	688	2.0702	2.8670	2.2632
September	100	684	2.0552	3.6151	2.2481
October	100	708	2.0544	3.1764	2.3440
November	99	680	2.0351	2.8449	2.2766
December	100	710	2.1995	3.7878	2.4739
Annual	98	8129	2.0822	4.4037	2.8015



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
November	100	99	2.0211	2.7973	2.1099
December	100	708	2.4254	14.2964	4.0121
Annual	100	818	2.6800	25.0000	4.0121



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	171	2.0936	3.7379	2.2700
February	100	638	2.0127	3.2693	2.2399
March	100	707	1.9998	3.2889	2.1613
April	99	679	1.9462	3.2417	2.0786
May	99	704	1.9471	4.7303	2.1883
June	100	685	1.9523	2.8465	2.1056
July	100	705	1.9757	2.8738	2.1084
August	95	668	1.9886	2.8293	2.0608
September	100	686	1.9779	2.6391	2.0944
October	100	707	1.9787	3.1228	2.0898
November	100	683	2.0357	3.9289	2.3080
December	100	708	2.1533	5.2663	2.5546
Annual	99	7741	1.9994	5.2663	2.5546



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
April	100	286	1.9366	2.5137	2.0387
May	99	704	2.0018	2.7716	2.1079
June	100	681	1.9821	3.2124	2.1938
July	100	709	1.9607	2.7260	2.0841
August	100	709	1.9998	2.8428	2.1980
September	100	687	1.9897	3.1763	2.1141
October	100	707	1.9699	2.7150	2.1462
November	100	686	1.9863	5.0830	2.4611
December	100	710	2.1202	6.1957	2.5851
Annual	100	5905	2.0997	25.0000	25.0000



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	707	2.0270	2.6499	2.3007
February	100	638	2.0316	2.5407	2.1859
March	99	699	1.9584	2.4938	2.0376
April	86	581	1.9764	2.2345	2.0314
May	100	708	1.9945	2.4142	2.0459
June	100	681	1.9877	2.4408	2.0941
July	100	710	2.0313	2.5606	2.1362
August	100	708	2.0220	2.6155	2.1694
September	100	686	2.0015	2.5658	2.0997
October	90	633	2.0192	2.5897	2.1245
November	99	681	2.0488	3.1441	2.1450
December	100	706	2.1172	2.7350	2.2970
Annual	98	8138	2.0186	3.1441	2.3007



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	710	2.0353	2.8253	2.2998
February	100	639	2.0692	2.7101	2.2142
March	97	686	1.9718	2.5189	2.0734
April	98	668	2.0236	2.6294	2.0856
May	100	706	1.9827	2.6720	2.0663
June	97	659	1.9932	2.4441	2.0713
July	100	707	2.0197	2.5200	2.0888
August	100	709	2.0385	2.6090	2.1231
September	100	685	2.0495	2.7519	2.1337
October	100	706	2.0104	2.5941	2.2272
November	100	681	2.0671	2.9094	2.3394
December	100	708	2.1862	4.3503	2.5486
Annual	99	8264	2.0374	4.3503	2.5486



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
March	100	218	2.0834	2.4963	2.1826
April	100	686	2.0911	3.4381	2.3530
May	98	698	2.0681	2.8097	2.2170
June	100	684	2.0664	3.4250	2.2843
July	100	709	2.0999	3.1011	2.2110
August	100	708	2.1425	3.0585	2.3146
September	99	680	2.1573	4.7094	2.3968
October	100	707	2.1093	3.2689	2.2957
November	98	665	2.0830	3.3217	2.3561
December	89	625	2.2071	3.3463	2.6136
Annual	98	6380	2.1119	4.7094	2.6136



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	91	645	2.0257	2.6434	2.2009
February	100	637	2.0296	2.3041	2.1765
March	99	704	1.9858	2.1932	2.0773
April	100	681	1.9622	2.1247	2.0296
May	100	708	1.9439	2.0458	1.9939
June	100	683	1.9400	2.1194	1.9810
July	98	693	1.9772	2.5142	2.0442
August	99	698	2.0010	2.3913	2.0831
September	95	652	2.0061	2.3784	2.0812
October	99	701	1.9871	2.2965	2.0353
November	100	684	1.9728	2.2408	2.0557
December	100	708	2.0359	2.5688	2.1116
Annual	98	8194	1.9885	2.6434	2.2009



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
NMHC (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	66	459	0.0000	0.0067	0.0004
February	76	488	0.0140	0.1468	0.0841
March	100	708	0.0061	0.0878	0.0498
April	94	645	0.0171	0.1349	0.0474
May	97	685	0.0125	0.0985	0.0508
June	100	683	0.0006	0.0938	0.0045
July	97	686	0.0024	0.1909	0.0344
August	96	682	0.0005	0.0441	0.0027
September	99	681	0.0014	0.2733	0.0310
October	99	694	0.0001	0.0097	0.0012
November	100	685	0.0001	0.0083	0.0010
December	100	706	0.0006	0.1313	0.0030
Annual	94	7802	0.0044	0.2733	0.0841



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	707	2.0209	2.5263	2.1669
February	100	641	2.0795	2.3663	2.3068
March	100	706	2.0055	2.3463	2.1742
April	100	685	1.9729	2.2478	2.0310
May	100	706	1.9696	2.2763	2.0133
June	100	685	1.9773	2.3953	2.0261
July	99	705	2.0296	3.1381	2.3331
August	100	708	2.0586	3.9773	2.2777
September	99	681	2.0527	3.1386	2.2523
October	100	705	1.9905	2.4688	2.1180
November	100	685	2.0043	2.1718	2.1220
December	100	707	2.0674	2.3170	2.1639
Annual	100	8321	2.0188	3.9773	2.3331



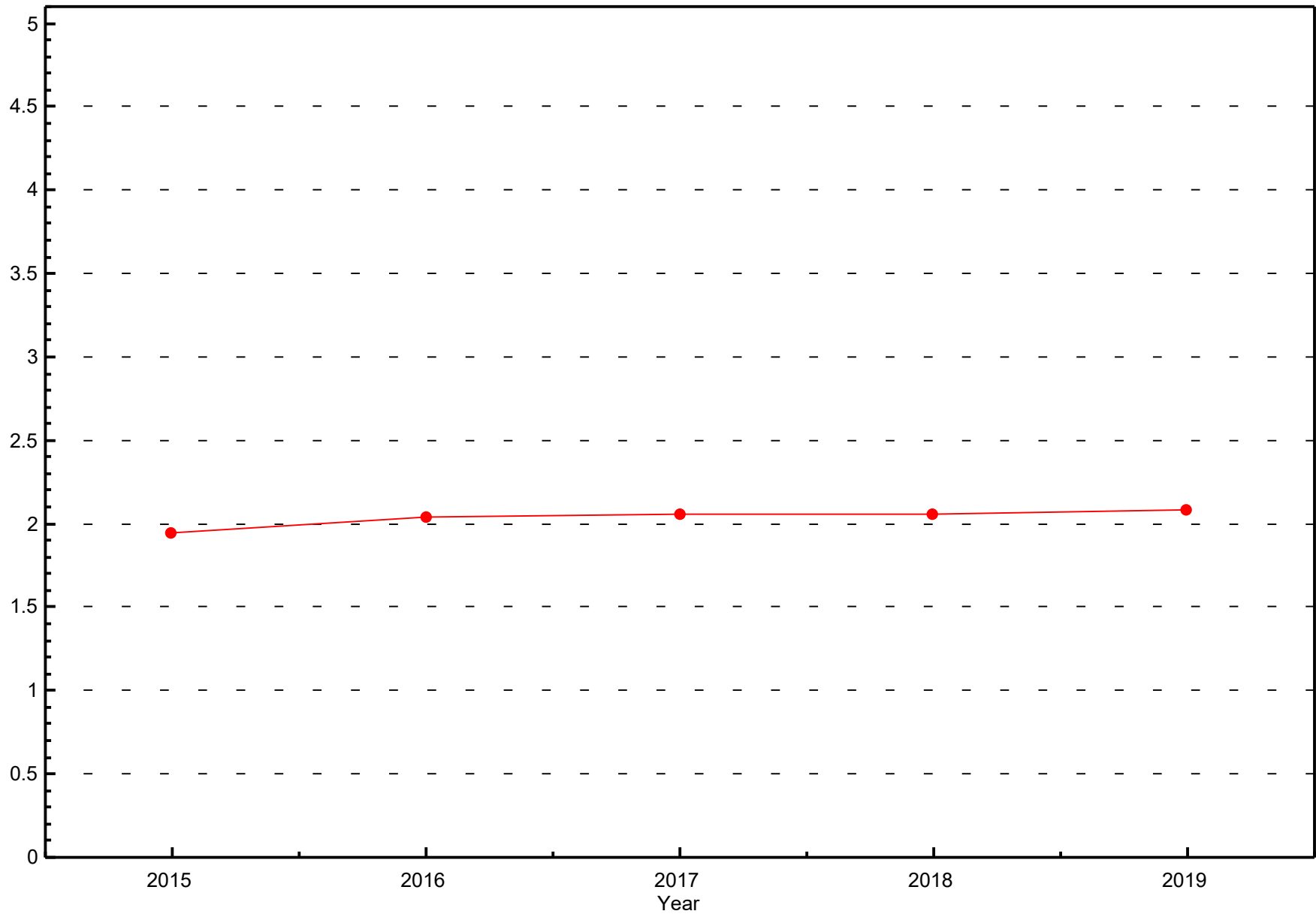
Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	706	2.0028	2.2711	2.1415
February	100	635	2.0191	2.2948	2.2143
March	100	707	1.9585	2.0898	2.0522
April	100	682	1.9443	2.1345	1.9981
May	99	701	1.9423	2.5425	1.9799
June	100	683	1.9243	2.1884	1.9972
July	99	697	1.9705	2.4318	2.0651
August	99	704	1.9829	2.2480	2.0560
September	100	684	1.9976	2.3674	2.1383
October	100	703	1.9698	2.2010	2.0457
November	100	685	1.9617	2.1266	2.0348
December	100	708	1.9933	2.2191	2.0877
Annual	100	8295	1.9720	2.5425	2.2143



Yearly Averages

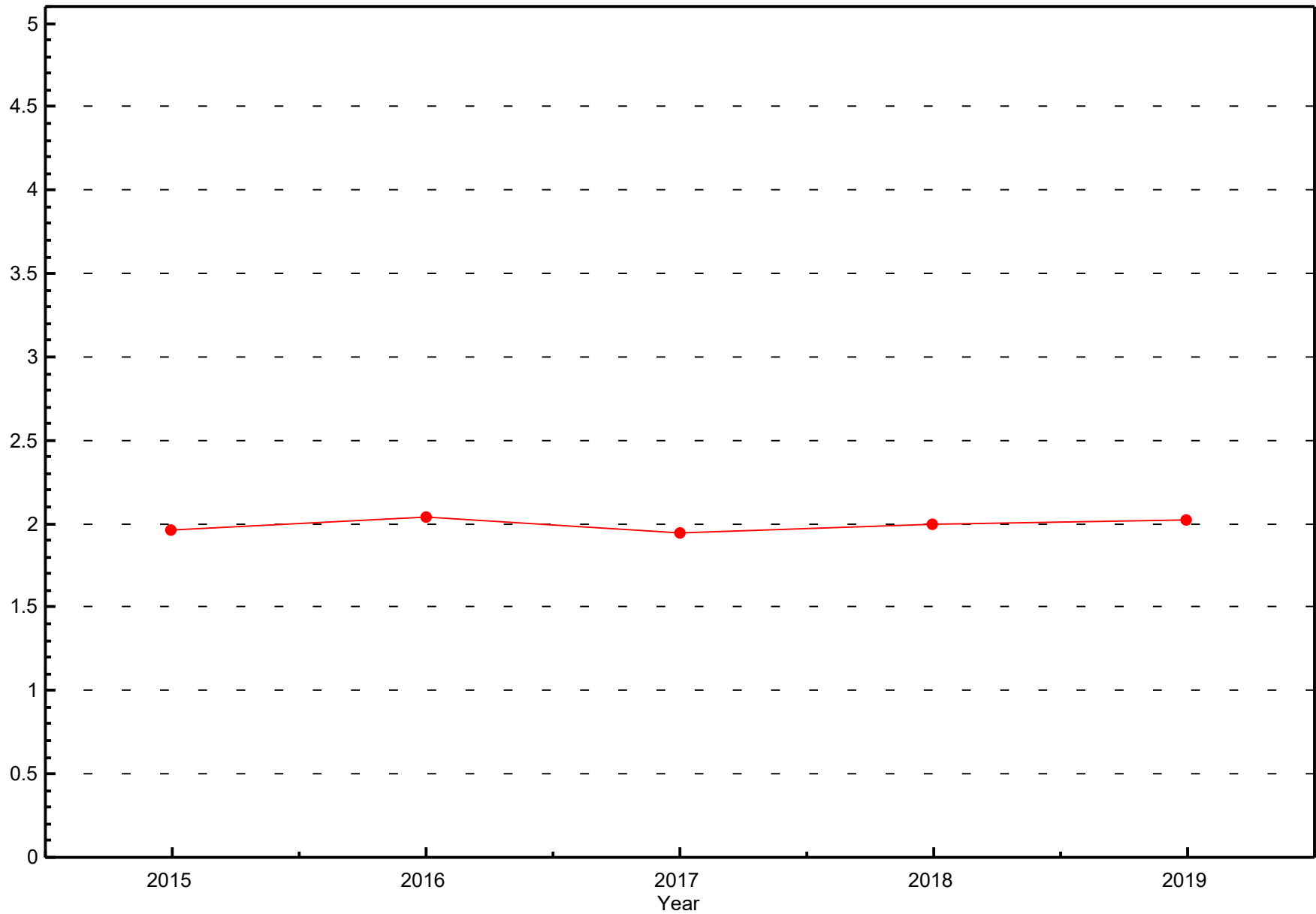
Methane (CH₄) - ppm
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

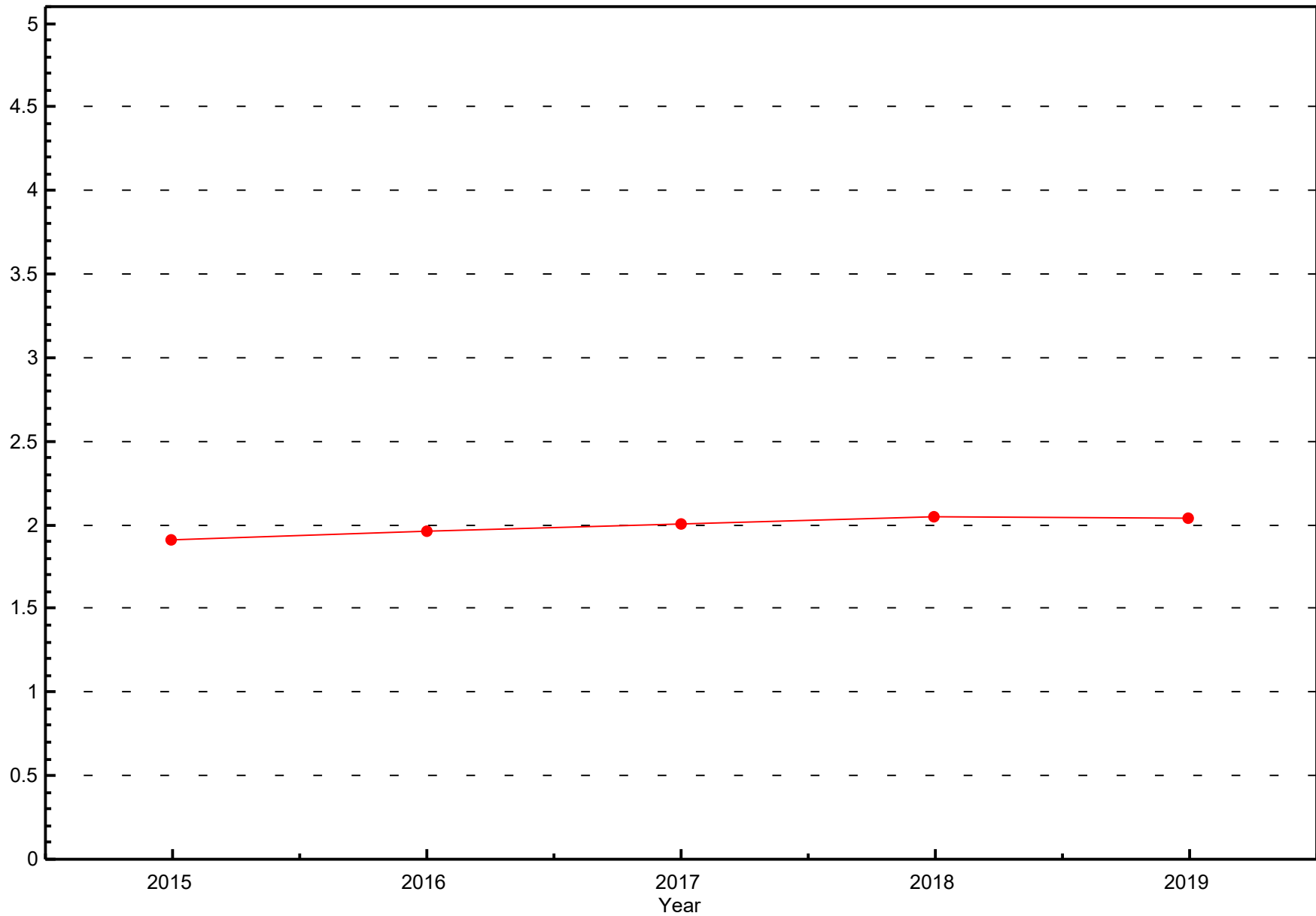
Methane (CH₄) - ppm
Patricia McInnes (2015 to 2019)





Yearly Averages

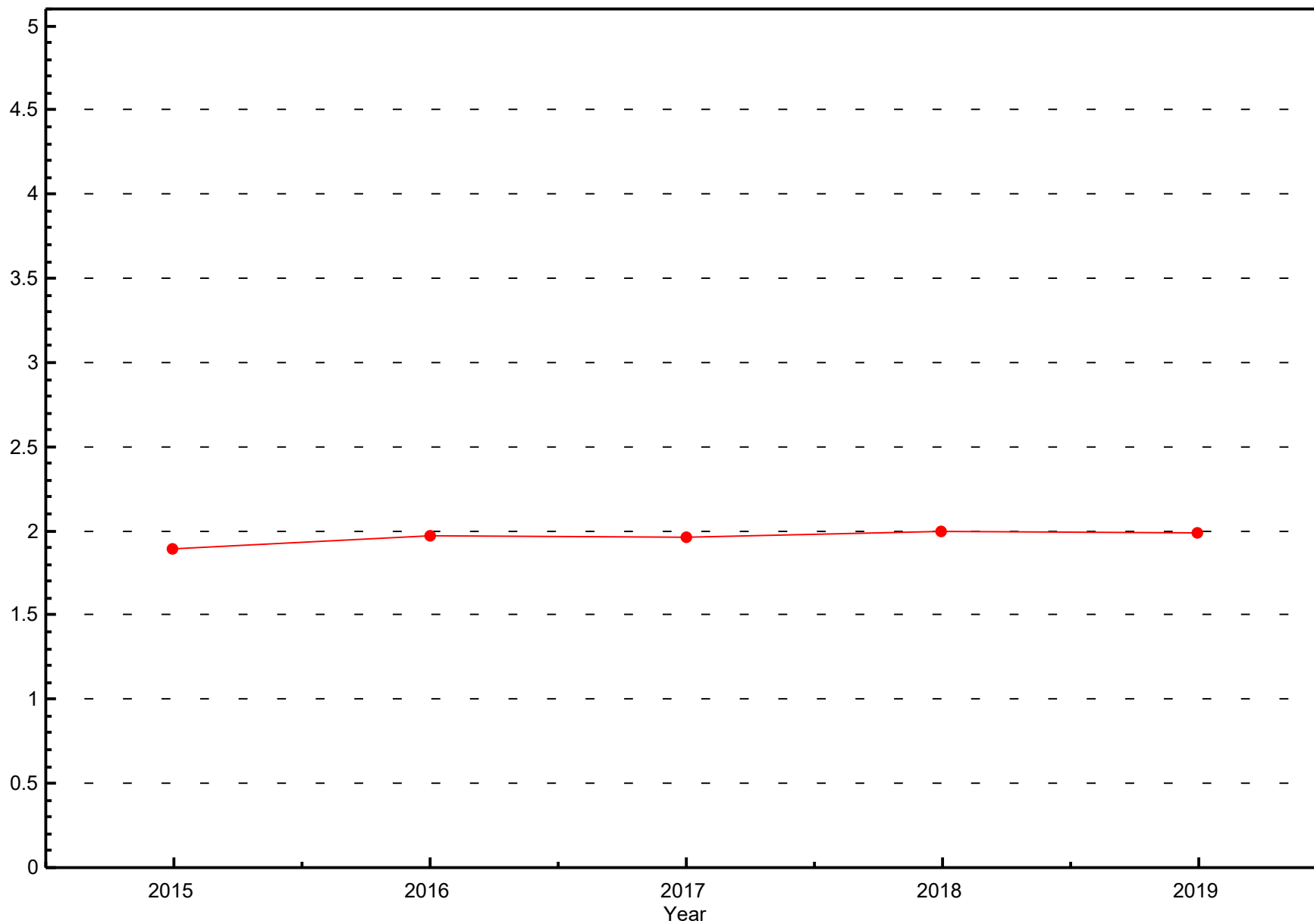
Methane (CH₄) - ppm
Athabasca Valley (2015 to 2019)





Yearly Averages

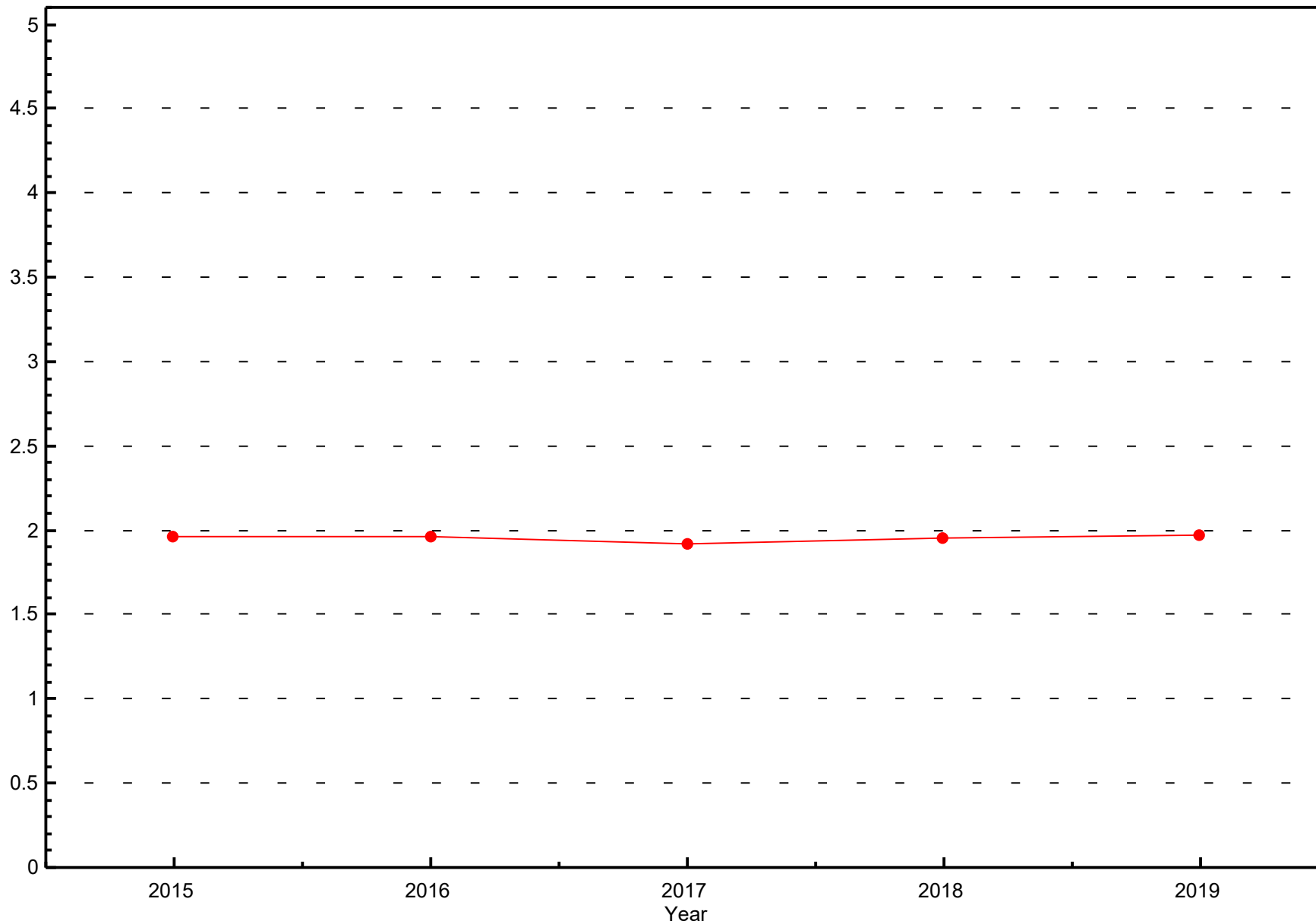
Methane (CH₄) - ppm
Anzac (2015 to 2019)





Yearly Averages

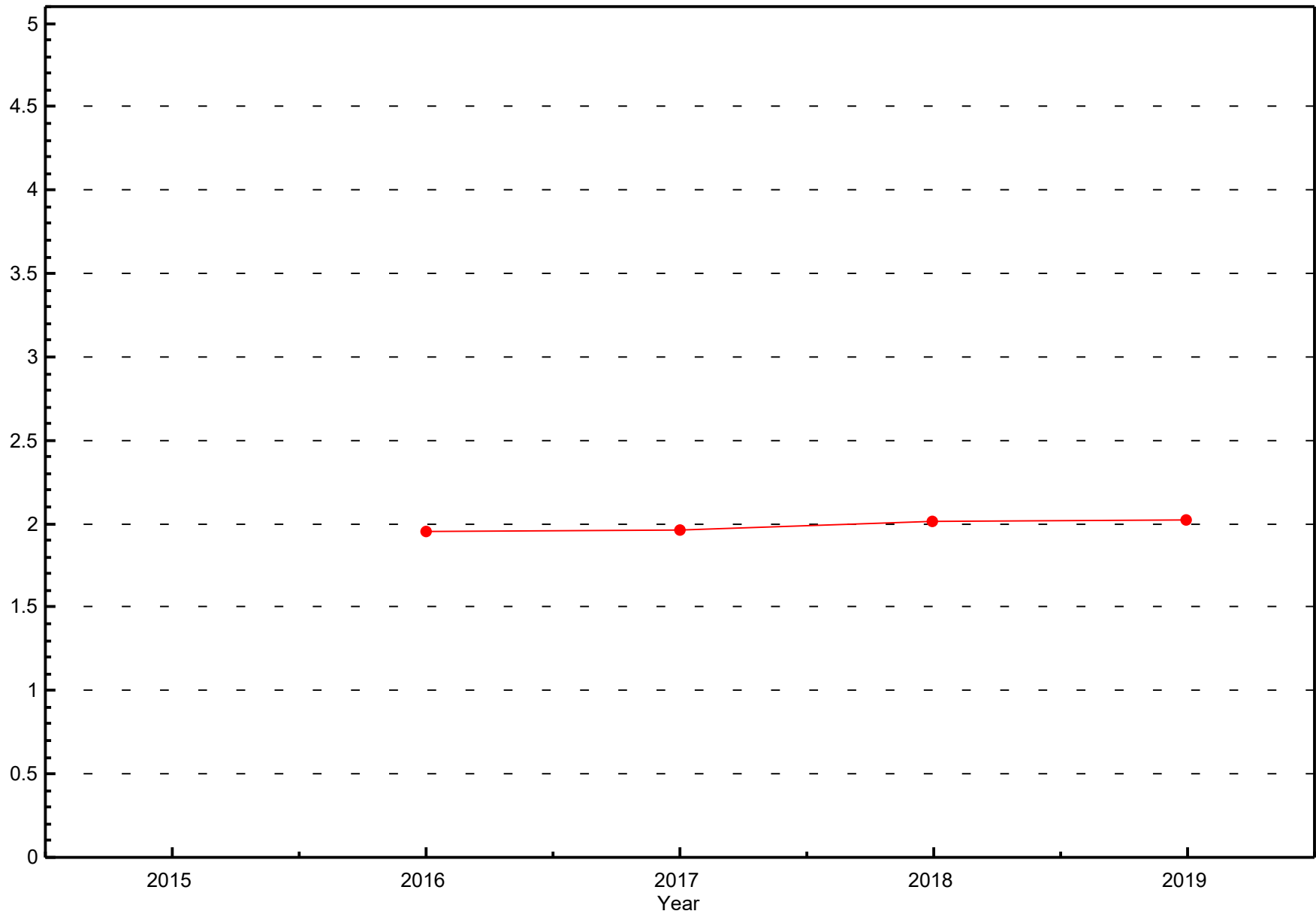
Methane (CH₄) - ppm
Stony Mountain (2015 to 2019)





Yearly Averages

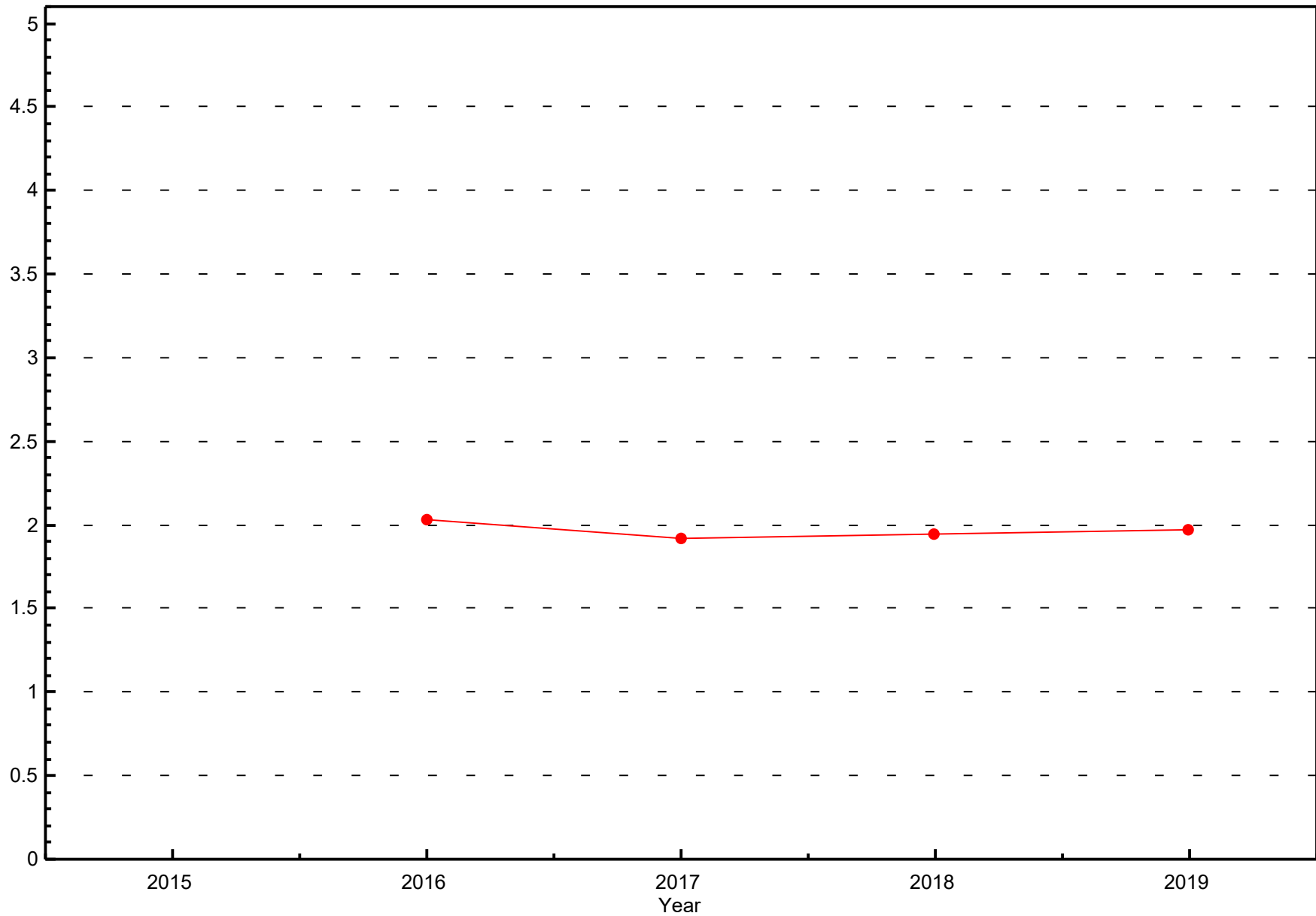
Methane (CH₄) - ppm
Conklin (2015 to 2019)





Yearly Averages

Methane (CH₄) - ppm
Janvier (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

CARBON MONOXIDE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
April	100	686	0.1	0.2	0.1
May	100	710	0.1	0.6	0.3
June	100	684	0.1	0.4	0.2
July	96	678	0.1	0.5	0.1
August	100	709	0.1	0.1	0.1
September	86	586	0.1	0.2	0.1
October	61	419	0.1	0.3	0.2
November	100	684	0.2	0.4	0.3
December	100	710	0.2	0.4	0.3
Annual	94	5866	0.1	0.6	0.3



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2018
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	707	0.2	0.6	0.3
February	99	636	0.2	0.6	0.3
March	100	708	0.2	0.6	0.3
April	98	678	0.2	0.4	0.2
May	97	686	0.1	0.4	0.2
June	96	661	0.1	0.3	0.2
July	100	709	0.1	0.4	0.2
August	100	711	0.2	1.7	0.8
September	100	685	0.1	0.4	0.2
October	100	709	0.2	0.5	0.2
November	100	688	0.2	0.4	0.2
December	100	710	0.2	0.6	0.4
Annual	99	8288	0.2	1.7	0.8



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
March	99	153	0.1	0.1	0.1
April	100	687	0.1	0.1	0.1
May	100	709	0.1	0.4	0.1
June	100	688	0.0	0.4	0.1
July	100	710	0.1	1.8	0.3
August	98	694	0.1	0.1	0.1
September	100	686	0.1	0.1	0.1
October	94	666	0.0	0.1	0.1
November	100	687	0.1	0.2	0.1
December	100	710	0.1	0.3	0.2
Annual	99	6390	0.1	1.8	0.3



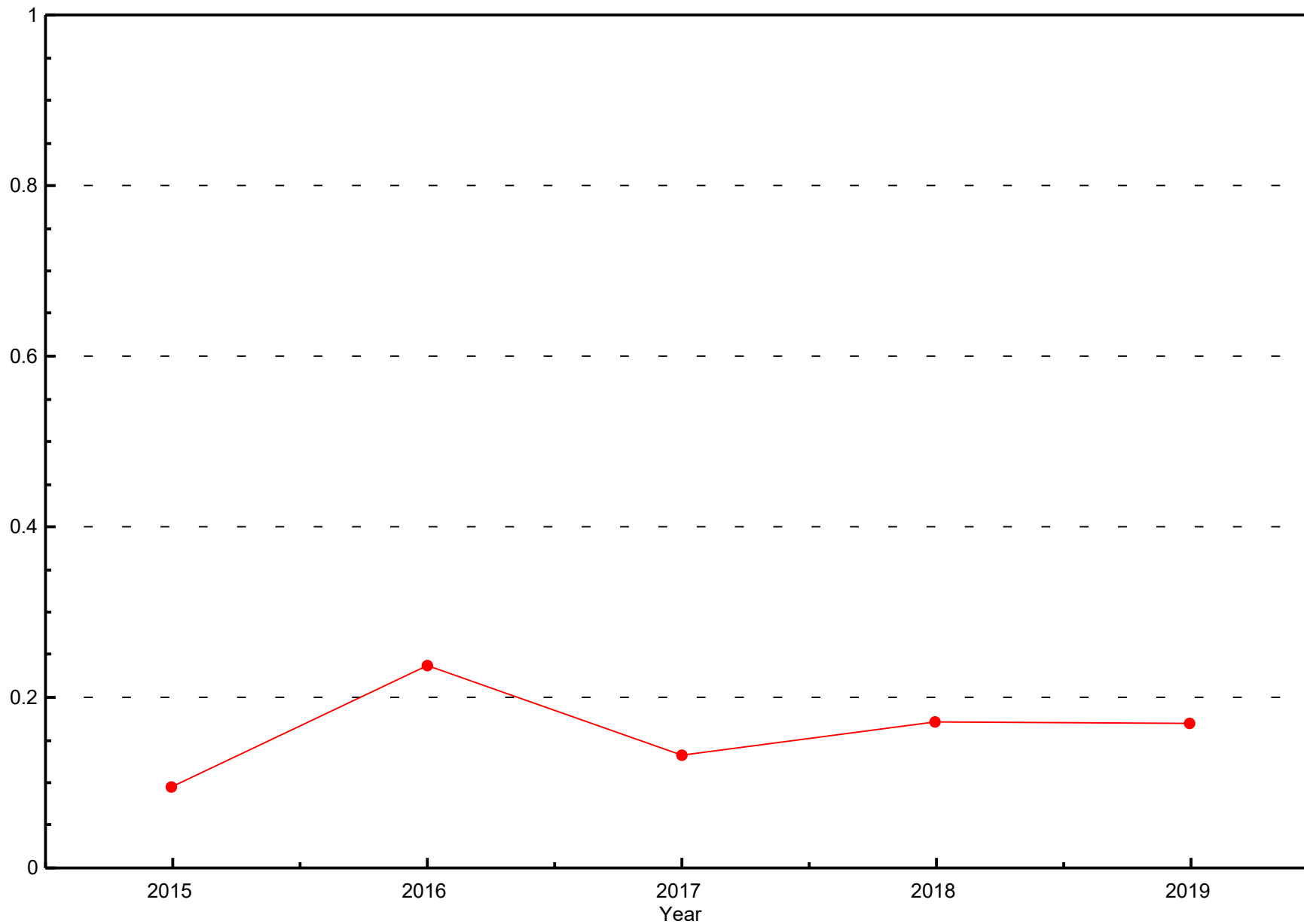
Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
October	99	705	0.2	0.2	0.2
November	100	687	0.2	0.2	0.2
December	100	710	0.1	0.2	0.2
Annual	100	2102	0.1	0.2	0.2



Yearly Averages

Carbon Monoxide (CO) - ppm
Athabasca Valley (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

CARBON DIOXIDE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Carbon Dioxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
April	100	687	431.8	462.6	441.5
May	100	710	428.8	483.6	436.5
June	100	687	423.6	498.2	439.9
July	100	710	422.8	523.3	441.6
August	100	708	423.2	566.7	451.6
September	100	686	432.0	524.0	452.0
October	100	709	426.9	474.0	445.5
November	100	685	425.7	450.8	444.8
December	100	710	434.8	461.3	448.2
Annual	100	6292	427.7	566.7	452.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Carbon Dioxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
March	99	152	423.7	437.8	428.4
April	100	686	423.3	434.4	429.2
May	99	706	417.3	429.9	422.2
June	100	686	411.2	431.9	417.8
July	100	709	405.8	437.1	412.8
August	98	697	404.4	450.7	417.1
September	73	501	394.8	438.7	424.2
October	99	706	419.5	443.0	433.1
November	97	662	426.2	457.8	436.2
December	97	688	432.2	447.2	443.9
Annual	96	6193	415.7	457.8	443.9



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Carbon Dioxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
October	99	705	419.1	433.1	428.3
November	100	686	416.2	433.2	423.1
December	100	710	420.4	439.6	427.1
Annual	100	2101	418.6	439.6	428.3



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

AMMONIA ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Ammonia (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range		
							0 - 1000	1001 - 2000	> 2000
January	96	674	0.0	0.0	0	0.0	100	0	0
February	96	609	0.0	0.0	0	0.0	100	0	0
March	96	671	0.0	0.0	0	0.0	100	0	0
April	96	650	0.0	0.0	0	0.0	100	0	0
May	95	665	0.0	0.0	0	0.0	100	0	0
June	95	630	0.0	12.2	0	0.0	100	0	0
July	96	673	0.1	12.2	0	1.6	100	0	0
August	96	671	0.0	0.0	0	0.0	100	0	0
September	93	630	0.0	0.0	0	0.0	100	0	0
October	94	663	0.0	0.0	0	0.0	100	0	0
November	95	643	0.0	0.0	0	0.0	100	0	0
December	96	671	0.0	0.0	0	0.0	100	0	0
Annual	95	7850	0.0	12.2	0	1.6	100	0	0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Ammonia (ppb) Average

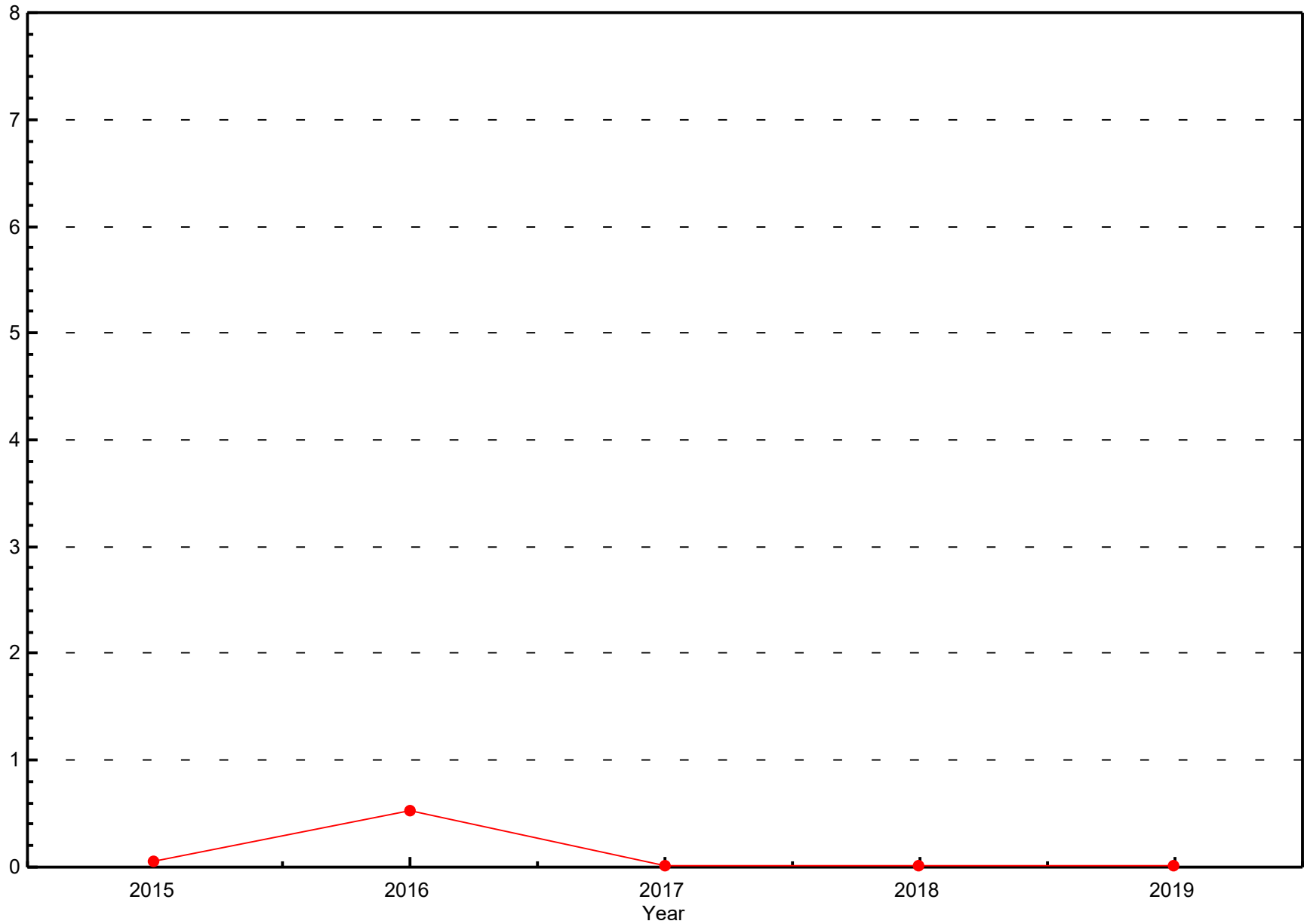
Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	% of Data in Each Concentration Range		
							0 - 1000	1001 - 2000	> 2000
January	92	637	0.0	0.0	0	0.0	100	0	0
February	94	591	0.0	14.8	0	0.7	100	0	0
March	92	640	0.0	0.0	0	0.0	100	0	0
April	91	613	0.0	0.0	0	0.0	100	0	0
May	91	636	1.0	54.3	0	12.5	100	0	0
June	90	592	0.1	18.5	0	2.2	100	0	0
July	87	604	0.0	10.6	0	1.1	100	0	0
August	87	600	0.1	14.7	0	3.0	100	0	0
September	89	595	0.0	0.0	0	0.0	100	0	0
October	89	621	0.1	11.6	0	1.8	100	0	0
November	89	596	0.0	0.0	0	0.0	100	0	0
December	91	631	0.0	0.0	0	0.0	100	0	0
Annual	90	7356	0.1	54.3	0	12.5	100	0	0



Yearly Averages

Ammonia (NH₃) - ppb

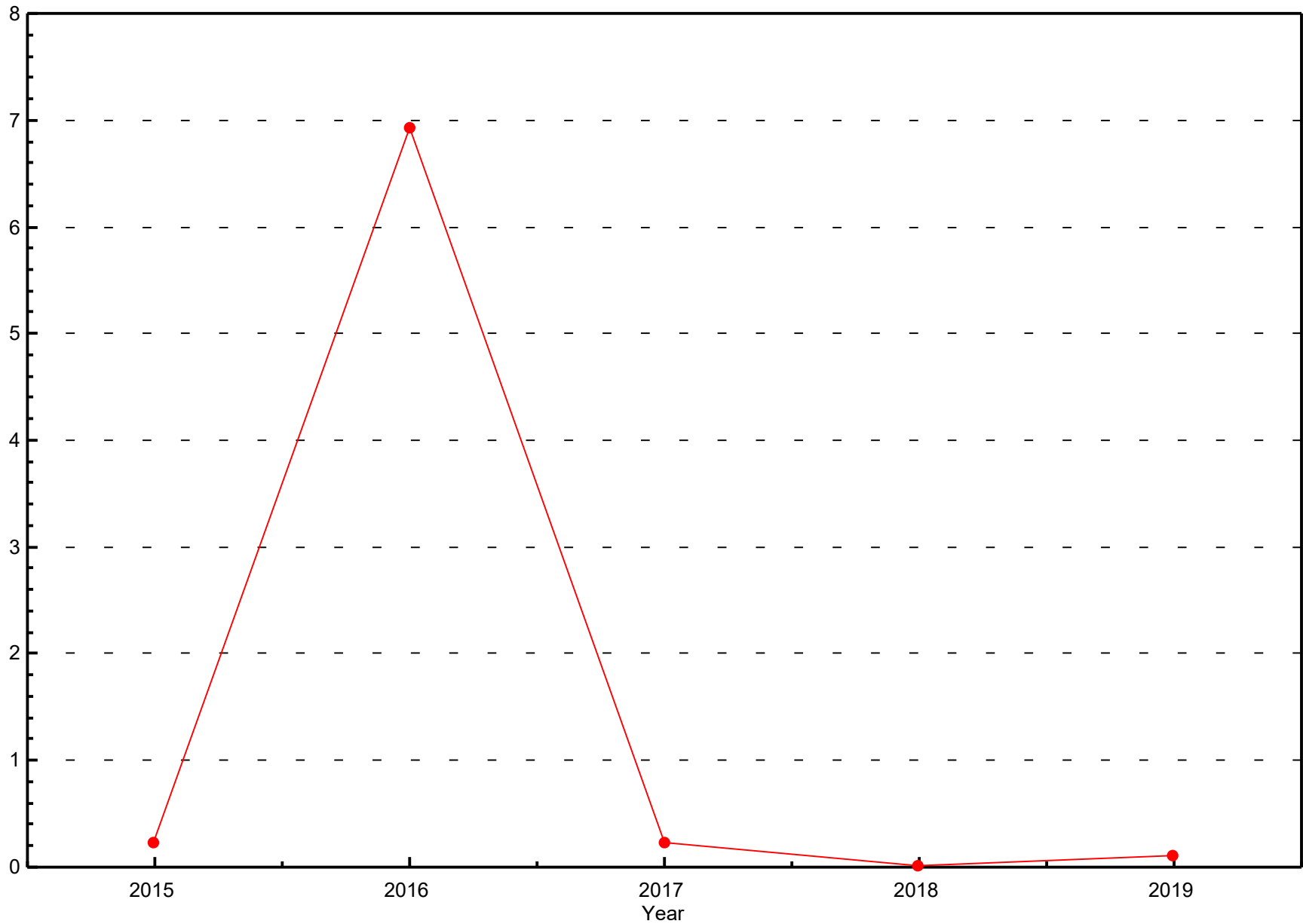
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

Ammonia (NH₃) - ppb
Patricia McInnes (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER <2.5µM ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	739	6.0	37.3	0	12.2	0	59	29	11	1	0
February	100	671	6.8	40.6	0	14.9	0	45	41	12	1	0
March	100	741	6.6	26.8	0	13.5	0	49	33	17	1	0
April	100	718	5.1	19.8	0	8.9	0	65	29	6	0	0
May	100	743	16.0	211.9	34	78.1	6	38	31	14	4	12
June	100	719	13.5	121.1	4	41.2	2	22	30	32	9	7
July	100	742	11.9	112.1	4	33.5	2	22	33	35	3	6
August	100	744	5.9	26.3	0	10.9	0	52	38	9	0	0
September	100	719	5.7	59.4	0	9.6	0	54	40	5	0	0
October	100	742	4.8	43.2	0	9.6	0	61	32	6	0	0
November	100	718	6.9	44.2	0	12.7	0	46	37	14	2	0
December	100	743	9.3	68.9	0	16.2	0	26	39	32	2	0
Annual	100	8739	8.2	211.9	42	78.1	10	45	35	16	2	2



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)

Annual Summary for the Year 2019

Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	92	685	4.8	71.7	0	12.7	0	75	15	8	1	1
February	100	666	4.4	27.0	0	10.9	0	74	20	5	1	0
March	94	698	4.1	35.4	0	8.3	0	76	16	7	0	0
April	97	695	4.0	29.0	0	11.4	0	79	18	3	1	0
May	97	720	13.3	353.2	25	96.1	4	52	21	14	3	9
June	100	716	9.0	90.0	1	39.9	1	43	34	16	4	4
July	99	737	8.2	108.7	4	31.1	1	52	26	15	4	3
August	100	742	4.7	39.8	0	10.3	0	71	21	7	1	0
September	96	691	3.6	35.7	0	9.3	0	85	12	3	0	0
October	98	728	3.4	37.9	0	6.5	0	84	12	3	1	0
November	97	698	3.5	18.4	0	7.3	0	81	15	4	0	0
December	99	732	6.1	44.3	0	13.4	0	54	30	15	1	0
Annual	97	8508	5.8	353.2	30	96.1	6	69	20	8	1	2



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	99	733	4.7	40.1	0	13.2	0	72	20	6	1	0
February	99	667	5.2	50.5	0	12.0	0	69	21	8	2	0
March	99	732	4.7	46.8	0	12.9	0	74	16	8	2	0
April	94	678	4.1	54.7	0	7.5	0	77	19	3	0	0
May	100	743	15.1	382.7	32	101.9	3	58	20	10	3	9
June	99	707	9.5	114.8	3	40.0	1	42	31	19	3	4
July	98	727	9.5	84.6	1	30.1	1	33	41	16	8	2
August	100	744	5.4	24.8	0	11.0	0	59	35	6	0	0
September	100	719	4.2	26.8	0	8.7	0	79	18	3	0	0
October	100	743	3.7	23.9	0	8.0	0	80	17	3	0	0
November	100	718	4.7	25.5	0	12.1	0	69	25	6	0	0
December	100	742	7.7	35.0	0	13.4	0	39	37	21	1	0
Annual	99	8653	6.6	382.7	36	101.9	5	63	25	9	2	1



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	97	724	5.1	47.9	0	15.0	0	67	26	6	1	1
February	95	635	6.2	139.9	1	14.8	0	58	33	7	1	1
March	95	704	5.8	38.8	0	10.7	0	63	23	12	1	0
April	98	703	4.4	26.8	0	7.0	0	76	22	1	0	0
May	99	732	12.8	309.5	23	96.4	3	63	19	8	3	8
June	97	692	7.7	98.2	1	23.6	0	56	25	12	3	4
July	99	734	7.4	52.9	0	24.4	0	50	33	11	4	2
August	99	732	4.6	16.0	0	9.0	0	68	27	5	0	0
September	98	707	3.8	17.8	0	6.3	0	84	14	1	0	0
October	100	740	3.9	16.2	0	7.0	0	81	17	2	0	0
November	98	706	4.7	22.3	0	11.1	0	75	19	6	0	0
December	97	722	6.0	24.6	0	11.3	0	48	44	8	0	0
Annual	98	8531	6.1	309.5	25	96.4	3	66	25	7	1	1



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	744	5.8	135.0	6	20.6	0	82	8	3	2	4
February	100	668	5.0	41.7	0	10.8	0	74	18	6	1	0
March	100	742	3.6	85.6	1	10.6	0	84	14	1	0	0
April	100	718	3.2	8.5	0	5.3	0	94	6	0	0	0
May	100	743	4.6	110.5	4	23.7	0	89	6	2	2	2
June	93	671	8.5	79.1	0	29.5	1	54	21	17	3	5
July	92	684	15.1	305.5	17	69.4	5	43	22	15	6	14
August	98	729	4.1	15.1	0	9.6	0	77	20	2	0	0
September	100	719	2.9	9.2	0	5.4	0	92	8	0	0	0
October	99	739	2.3	8.0	0	6.1	0	93	7	0	0	0
November	100	719	3.5	23.3	0	7.0	0	78	21	2	0	0
December	100	741	5.1	17.5	0	14.0	0	63	31	6	0	0
Annual	99	8617	5.2	305.5	28	69.4	6	77	15	4	1	2



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	743	5.1	27.8	0	12.8	0	69	22	9	1	0
February	100	672	6.3	52.1	0	13.2	0	52	39	8	0	1
March	100	744	7.4	54.7	0	15.3	0	46	34	17	3	1
April	100	720	5.4	25.2	0	8.4	0	63	30	7	0	0
May	100	741	19.1	254.6	38	92.6	6	34	30	17	5	14
June	100	719	14.3	152.2	6	59.5	2	23	31	29	10	8
July	100	744	11.3	106.9	3	32.4	2	28	33	27	5	6
August	100	743	6.5	66.0	0	12.3	0	49	37	12	1	0
September	100	720	5.9	44.6	0	9.3	0	53	37	9	0	0
October	100	743	5.6	43.5	0	14.6	0	57	32	9	1	1
November	100	720	5.8	28.7	0	13.6	0	58	31	10	1	0
December	100	743	8.2	37.9	0	20.3	0	37	39	20	3	1
Annual	100	8752	8.4	254.6	47	92.6	10	47	33	15	2	3



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	743	5.1	29.2	0	11.4	0	69	22	8	1	0
February	100	671	6.7	21.4	0	12.2	0	45	42	13	0	0
March	100	744	5.6	24.5	0	10.5	0	61	27	12	0	0
April	100	720	4.3	18.6	0	7.7	0	75	22	3	0	0
May	98	722	13.2	198.1	26	73.7	5	52	26	10	3	9
June	100	718	11.1	123.3	3	48.4	1	34	34	21	5	6
July	100	744	10.3	100.6	3	31.0	2	31	37	24	4	5
August	100	744	5.8	22.2	0	10.5	0	53	37	9	0	0
September	100	720	5.2	19.3	0	10.8	0	60	35	5	0	0
October	100	741	4.2	24.9	0	8.4	0	71	24	5	0	0
November	100	720	5.2	25.2	0	10.4	0	64	30	6	1	0
December	100	743	6.4	21.0	0	12.4	0	48	38	14	0	0
Annual	100	8730	6.9	198.1	32	73.7	8	55	31	11	1	2



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	97	724	3.2	25.2	0	8.5	0	87	10	3	1	0
February	100	670	4.6	105.6	1	13.9	0	82	10	4	3	2
March	96	711	3.4	79.0	0	7.9	0	86	9	5	0	0
April	93	665	2.6	26.2	0	8.0	0	89	9	2	0	0
May	98	726	10.6	261.1	21	67.5	3	68	16	4	4	8
June	100	715	8.5	140.5	3	39.8	1	59	21	10	3	7
July	97	719	7.2	93.5	2	22.2	0	52	29	14	4	1
August	100	739	4.8	22.7	0	12.6	0	68	25	6	0	0
September	100	716	3.6	32.0	0	6.7	0	82	14	4	0	0
October	100	738	3.6	44.5	0	6.5	0	85	11	3	1	0
November	97	697	4.7	67.7	0	9.2	0	68	24	7	0	0
December	100	742	6.1	35.9	0	13.0	0	56	29	14	0	0
Annual	98	8562	5.3	261.1	27	67.5	4	73	17	6	1	2



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	742	4.8	29.4	0	12.9	0	73	17	8	1	0
February	100	671	5.1	28.5	0	11.9	0	69	25	5	1	0
March	100	742	6.9	65.0	0	13.4	0	57	27	12	2	2
April	100	718	5.3	34.8	0	10.0	0	66	27	6	1	0
May	100	740	14.4	223.1	14	67.3	6	44	27	13	5	11
June	100	719	10.1	67.3	0	32.9	1	35	36	17	8	4
July	100	742	11.3	105.4	2	34.2	3	28	39	21	6	6
August	100	741	7.7	36.6	0	19.1	0	42	37	19	2	1
September	100	718	5.0	21.4	0	8.5	0	68	28	3	0	0
October	100	743	5.3	93.7	1	17.9	0	66	27	6	1	1
November	100	717	6.0	48.2	0	12.5	0	60	24	14	2	0
December	100	740	6.8	35.5	0	14.1	0	42	43	13	1	0
Annual	100	8733	7.4	223.1	17	67.3	10	54	30	11	2	2



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	99	737	3.5	17.8	0	10.5	0	85	12	4	0	0
February	100	671	4.7	28.9	0	11.1	0	74	18	6	1	0
March	99	731	4.4	31.7	0	8.0	0	77	18	5	0	0
April	94	671	3.3	14.3	0	6.7	0	86	13	1	0	0
May	98	727	9.4	210.8	18	40.4	3	73	15	3	2	8
June	93	664	8.0	78.2	0	41.0	1	55	27	10	4	4
July	99	737	7.7	40.6	0	20.8	0	46	32	16	5	1
August	98	725	3.7	44.8	0	11.6	0	77	17	5	1	1
September	97	694	1.8	34.7	0	5.0	0	97	2	1	0	0
October	98	728	2.7	30.3	0	6.6	0	89	9	1	1	0
November	100	720	4.0	20.5	0	9.1	0	78	19	3	0	0
December	100	743	5.2	16.7	0	12.4	0	62	30	8	0	0
Annual	98	8548	4.9	210.8	18	41.0	4	75	18	5	1	1



Wood Buffalo Environmental Association - Stony Mountain (AMS18)

Annual Summary for the Year 2019

Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	743	3.1	18.7	0	8.9	0	85	13	3	0	0
February	97	649	4.3	16.2	0	11.3	0	75	20	4	0	0
March	95	706	3.0	27.2	0	11.4	0	88	7	4	1	0
April	100	717	3.3	19.9	0	6.0	0	93	6	1	0	0
May	100	742	8.8	145.1	9	54.7	2	69	16	6	3	6
June	100	719	9.6	94.7	2	41.4	1	35	43	13	4	5
July	100	740	7.0	33.3	0	16.6	0	44	42	14	1	0
August	99	733	5.1	19.8	0	10.7	0	67	29	4	0	0
September	100	720	3.8	10.0	0	5.8	0	88	12	0	0	0
October	100	742	3.6	12.9	0	6.9	0	82	18	1	0	0
November	100	720	4.6	49.2	0	11.9	0	73	21	5	1	0
December	100	742	6.1	21.0	0	12.4	0	53	37	10	0	0
Annual	99	8673	5.2	145.1	11	54.7	3	71	22	5	1	1



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	99	737	4.6	86.0	1	10.6	0	72	17	10	1	1
February	94	627	5.6	62.6	0	13.2	0	66	20	13	1	0
March	100	742	5.1	87.0	2	12.1	0	76	14	7	2	2
April	97	693	4.8	337.7	1	18.0	0	82	12	3	1	1
May	100	743	11.4	136.6	17	55.6	3	58	19	9	5	10
June	100	719	8.7	86.3	1	34.0	1	45	30	15	5	3
July	99	735	7.9	62.1	0	19.0	0	43	33	19	3	2
August	100	743	5.4	92.1	1	9.5	0	61	30	8	1	0
September	99	715	4.9	85.6	1	9.6	0	77	16	5	1	1
October	94	701	4.6	56.4	0	12.7	0	75	17	6	1	1
November	94	679	4.6	28.5	0	11.4	0	70	21	9	1	0
December	100	743	6.1	66.6	0	17.1	0	55	29	15	1	0
Annual	98	8577	6.2	337.7	24	55.6	4	65	21	10	2	2



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	743	4.5	28.2	0	9.7	0	71	24	4	1	0
February	100	670	4.6	31.3	0	18.1	0	80	13	6	1	0
March	100	743	4.2	67.8	0	11.5	0	83	13	4	0	0
April	100	716	4.1	59.7	0	12.9	0	90	6	3	0	1
May	99	739	11.0	163.1	21	66.9	4	67	15	7	2	9
June	100	719	10.8	72.8	0	51.1	2	35	38	16	5	6
July	99	738	7.5	39.0	0	17.4	0	39	45	13	3	1
August	100	739	5.1	16.6	0	8.6	0	60	37	2	0	0
September	100	718	3.8	9.4	0	6.6	0	84	16	0	0	0
October	100	743	3.7	52.1	0	8.9	0	78	20	1	0	0
November	100	720	4.2	13.3	0	8.3	0	72	25	3	0	0
December	100	742	6.5	33.7	0	15.6	0	50	35	15	0	0
Annual	100	8730	5.8	163.1	21	66.9	6	67	24	6	1	2



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	740	6.5	58.3	0	18.4	0	55	28	14	3	1
February	100	670	8.4	50.9	0	15.6	0	42	29	24	4	1
March	97	718	9.3	270.8	5	36.7	1	55	23	15	1	6
April	94	672	4.0	31.7	0	7.8	0	74	20	6	0	0
May	99	737	10.6	144.7	8	42.3	4	57	19	12	3	10
June	97	691	8.4	77.1	0	30.3	1	50	28	14	5	3
July	99	735	9.0	83.3	1	27.9	0	44	26	21	5	4
August	95	706	5.5	31.5	0	13.7	0	60	24	15	1	0
September	91	654	4.7	24.8	0	11.2	0	70	20	9	1	0
October	97	723	4.9	103.1	4	20.3	0	70	23	5	0	1
November	96	689	6.1	142.4	1	13.4	0	62	26	8	3	1
December	100	739	7.1	64.3	0	16.0	0	48	32	18	1	1
Annual	97	8474	7.1	270.8	19	42.3	6	57	25	13	2	2



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	742	5.5	22.9	0	12.7	0	61	30	8	1	0
February	100	669	7.2	41.5	0	23.1	0	36	51	9	3	1
March	100	274	3.4	8.7	0	4.6	0	90	10	0	0	0
Annual	100	1685	5.8	41.5	0	23.1	0	56	35	7	1	0



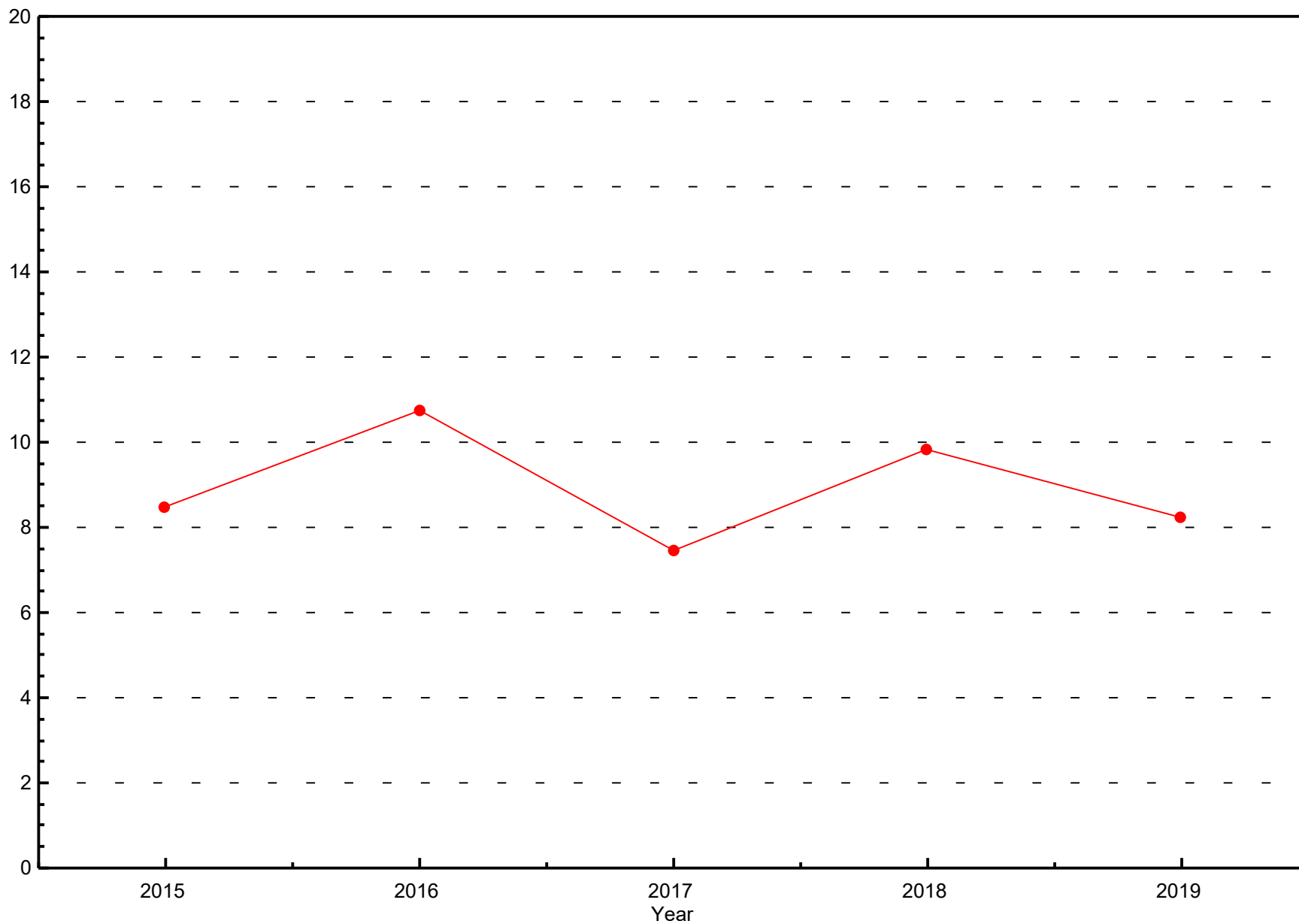
Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Particulate Matter 2.5 (ug/m³) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
								0 - 5	6 - 10	11 - 20	21 - 30	>30
March	94	411	6.4	106.9	1	17.9	0	60	27	10	1	2
April	95	686	3.6	26.3	0	5.2	0	92	7	1	0	0
May	99	734	13.9	189.0	30	90.9	4	62	14	9	2	12
June	100	718	16.6	266.4	12	57.8	5	17	36	28	7	12
July	100	743	9.7	61.9	0	29.9	1	25	45	23	5	2
August	100	743	6.4	25.0	0	12.4	0	46	45	9	1	0
September	100	718	5.3	29.4	0	8.6	0	60	37	2	1	0
October	100	741	4.3	46.7	0	11.3	0	78	18	3	1	0
November	100	719	4.9	28.3	0	10.2	0	67	26	7	0	0
December	99	739	6.7	30.0	0	17.1	0	53	30	15	1	0
Annual	99	6952	7.9	266.4	43	90.9	10	55	29	11	2	3



Yearly Averages

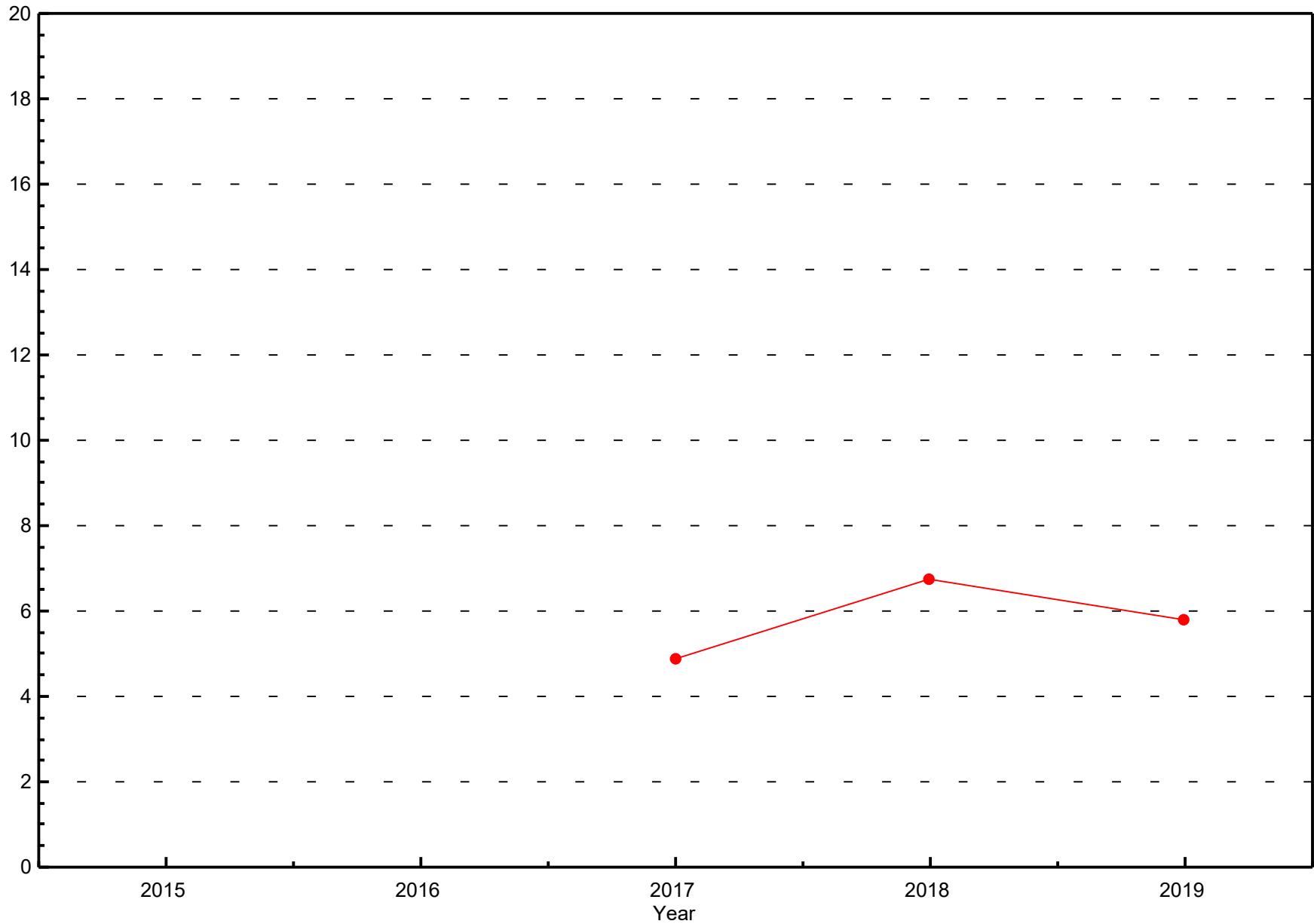
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Bertha Ganter - Fort McKay (2015 to 2019)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Buffalo Viewpoint (2015 to 2019)

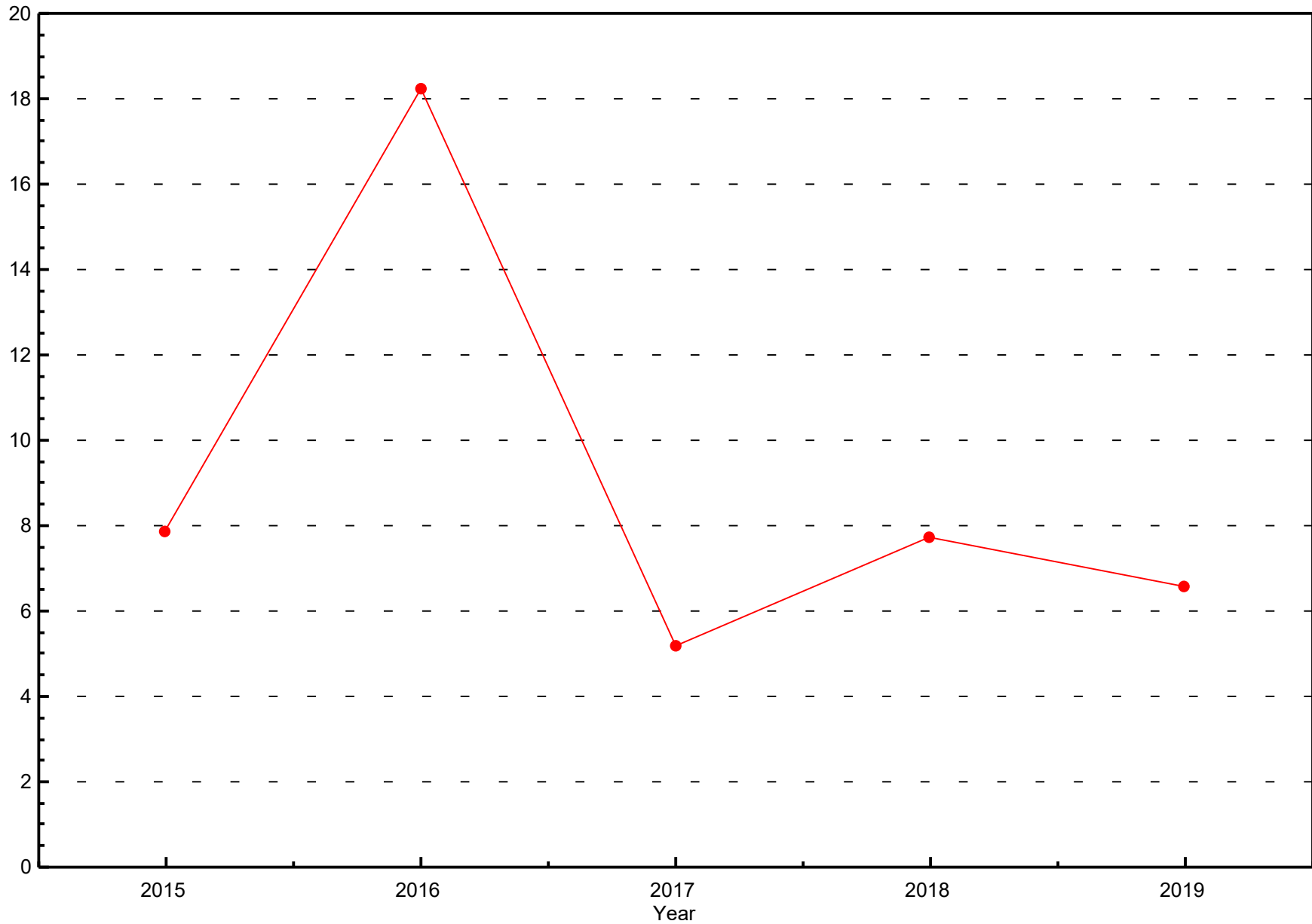




Yearly Averages

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

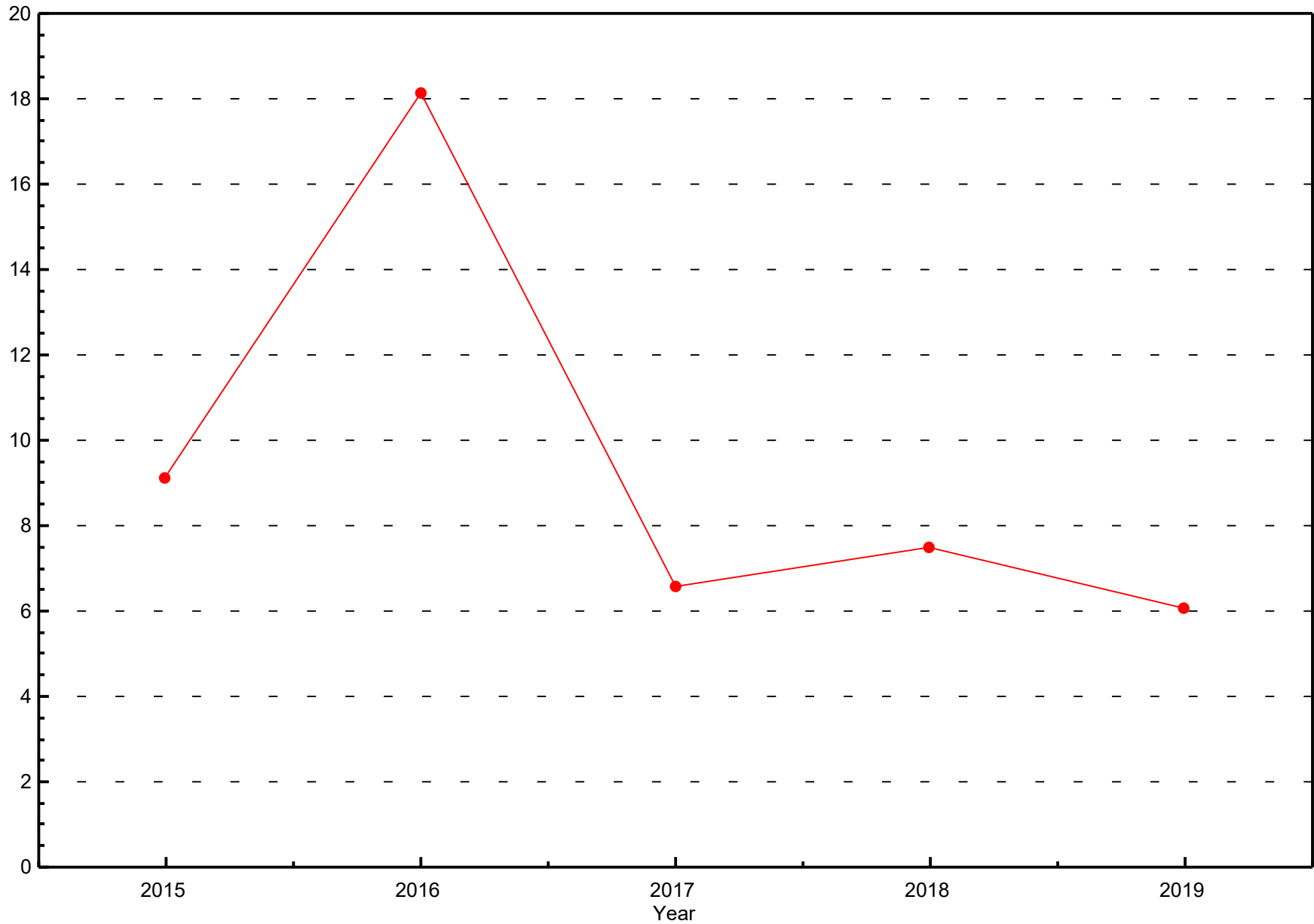
Patricia McInnes (2015 to 2019)





Yearly Averages

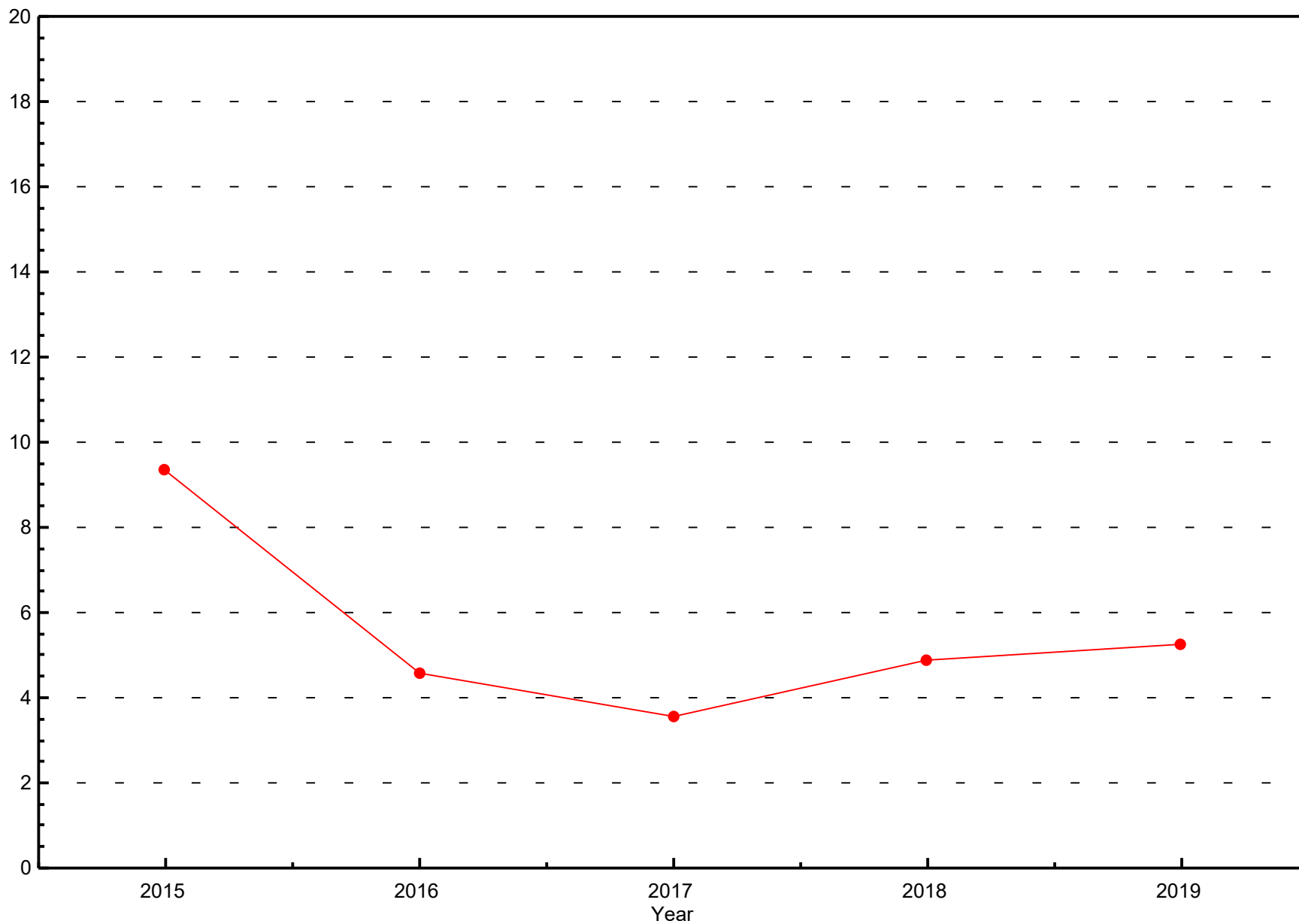
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Athabasca Valley (2015 to 2019)





Yearly Averages

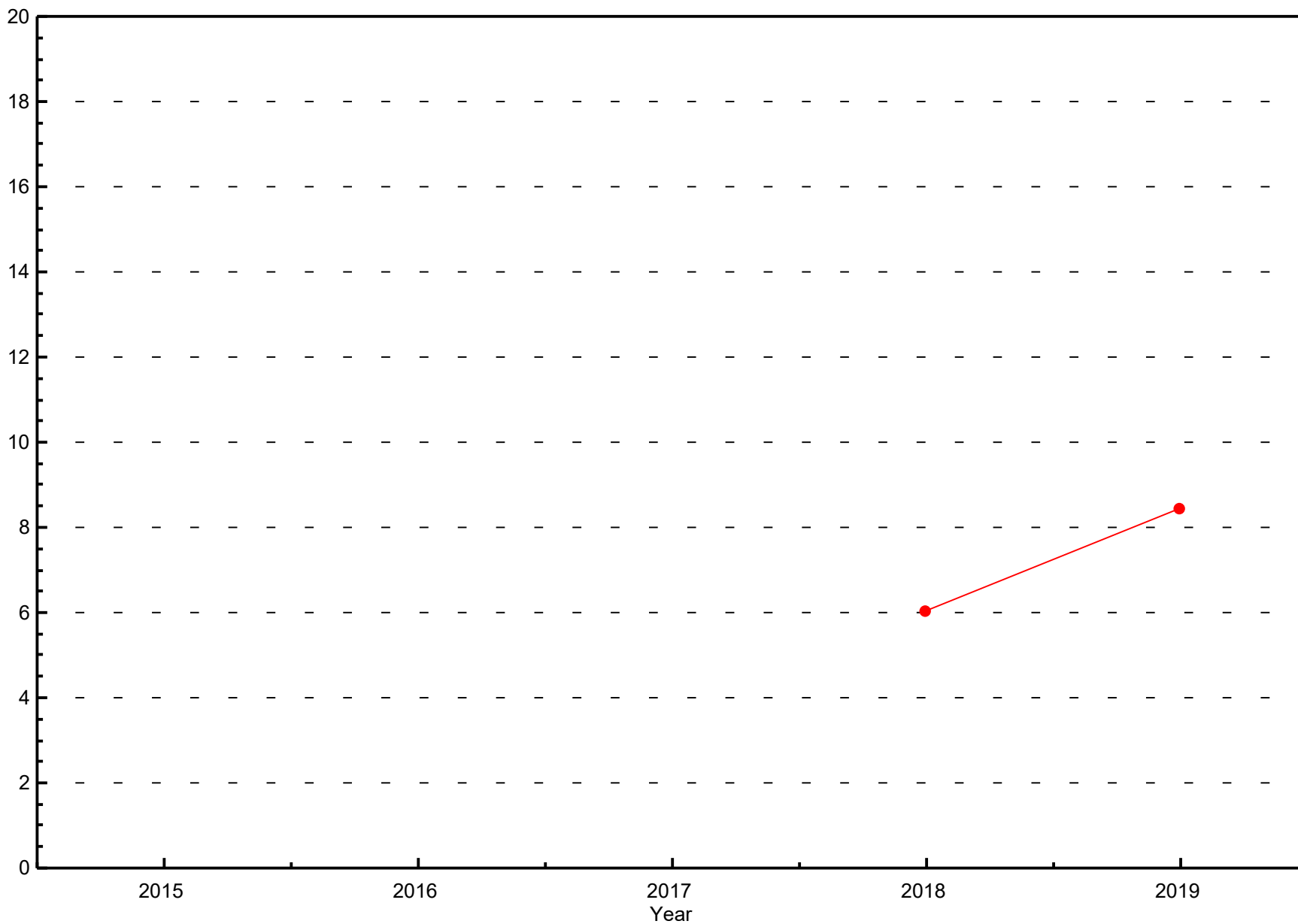
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Chipewyan (2015 to 2019)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Barge Landing (2015 to 2019)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South (2015 to 2019)





Yearly Averages

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

Anzac (2015 to 2019)

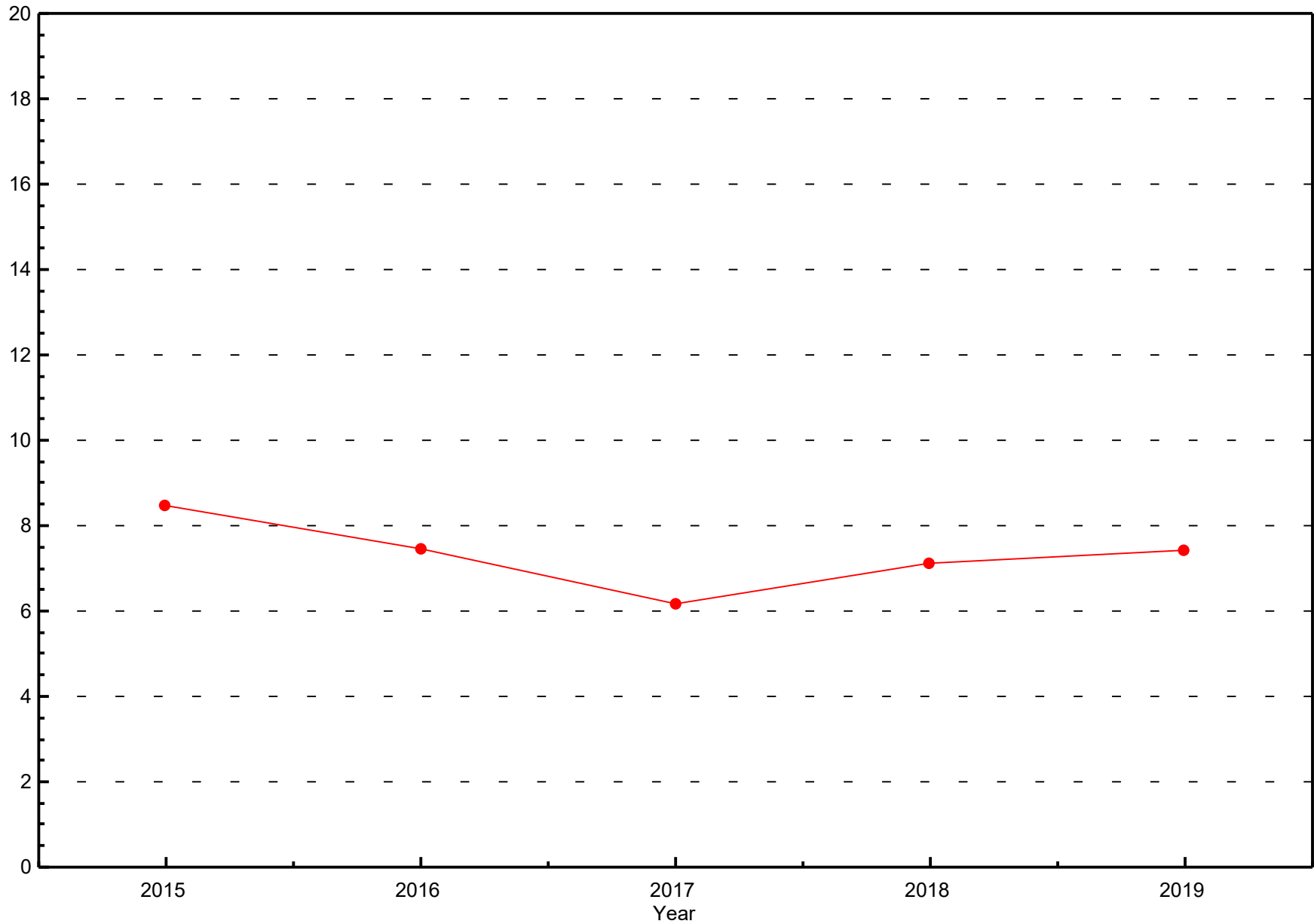




Yearly Averages

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

Horizon (2015 to 2019)

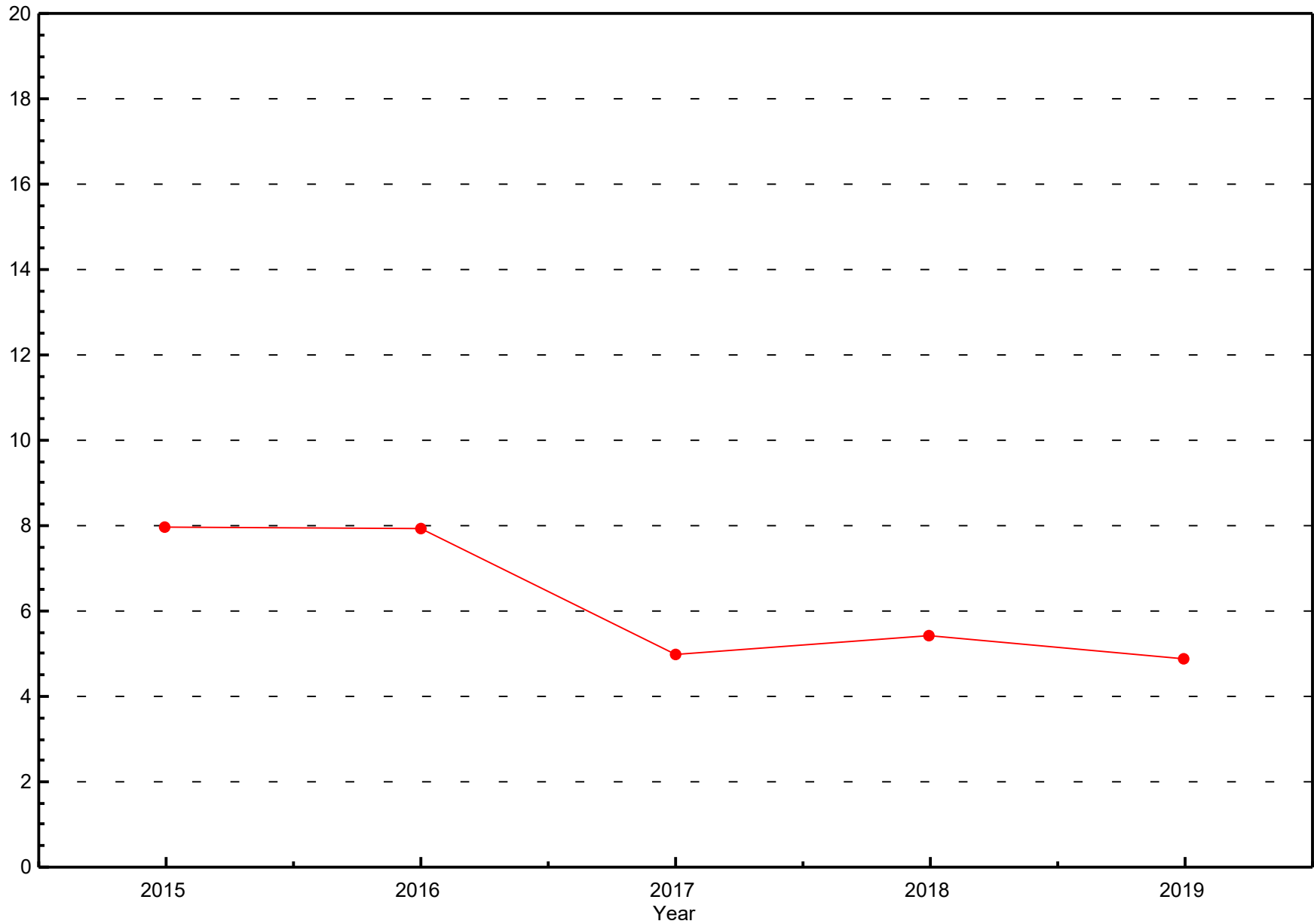




Yearly Averages

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

Wapasu (2015 to 2019)

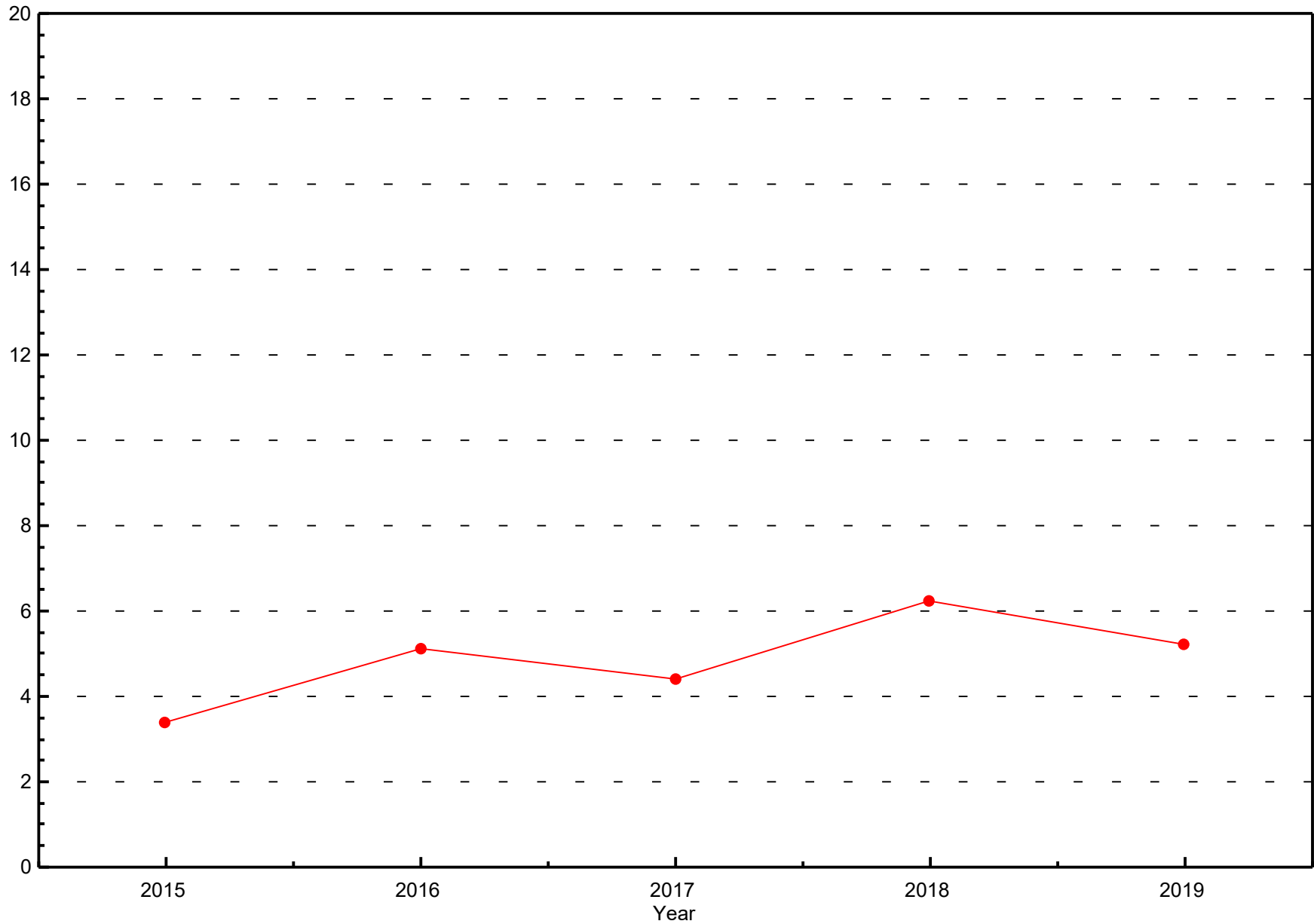




Yearly Averages

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

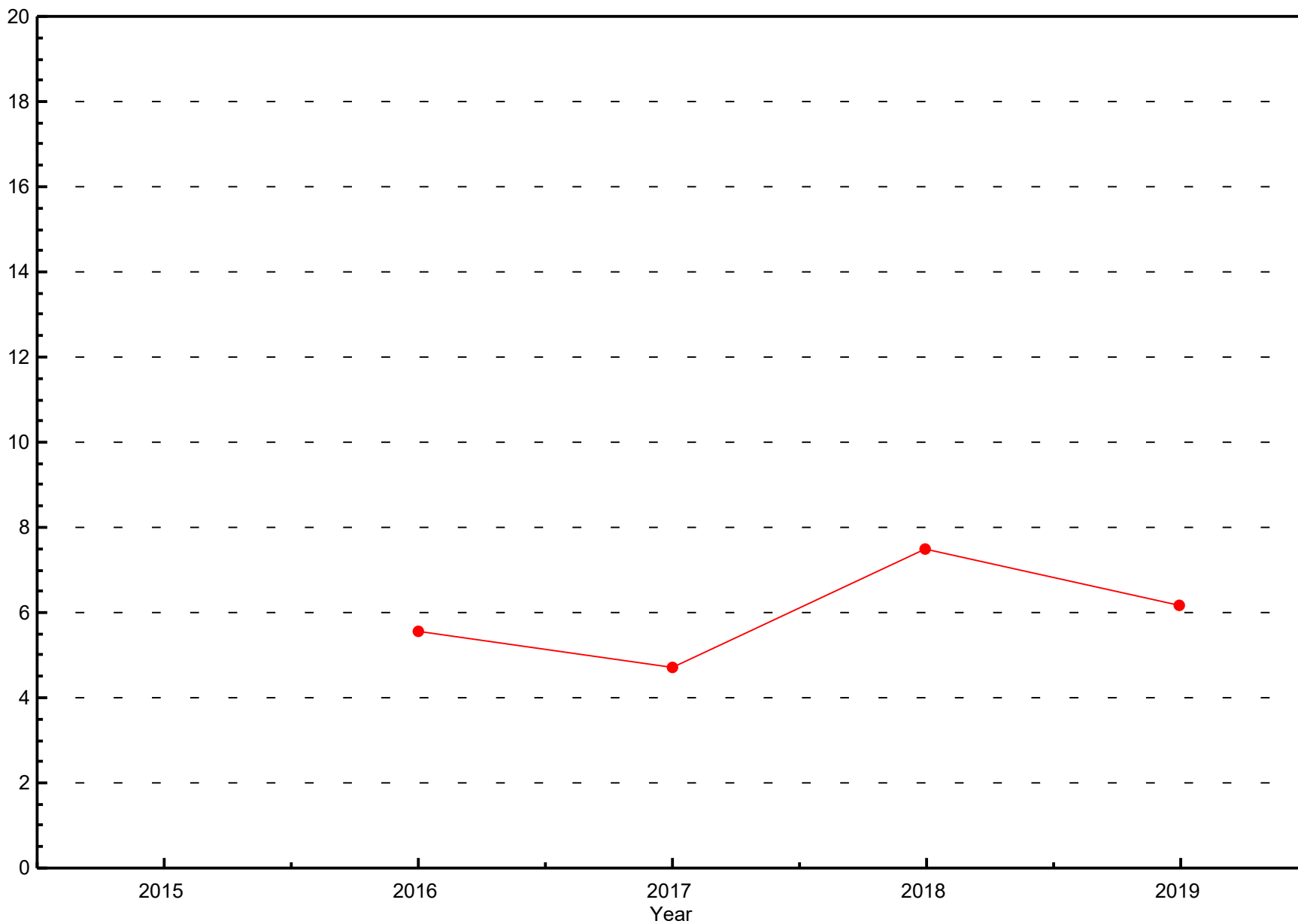
Stony Mountain (2015 to 2019)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Conklin (2015 to 2019)

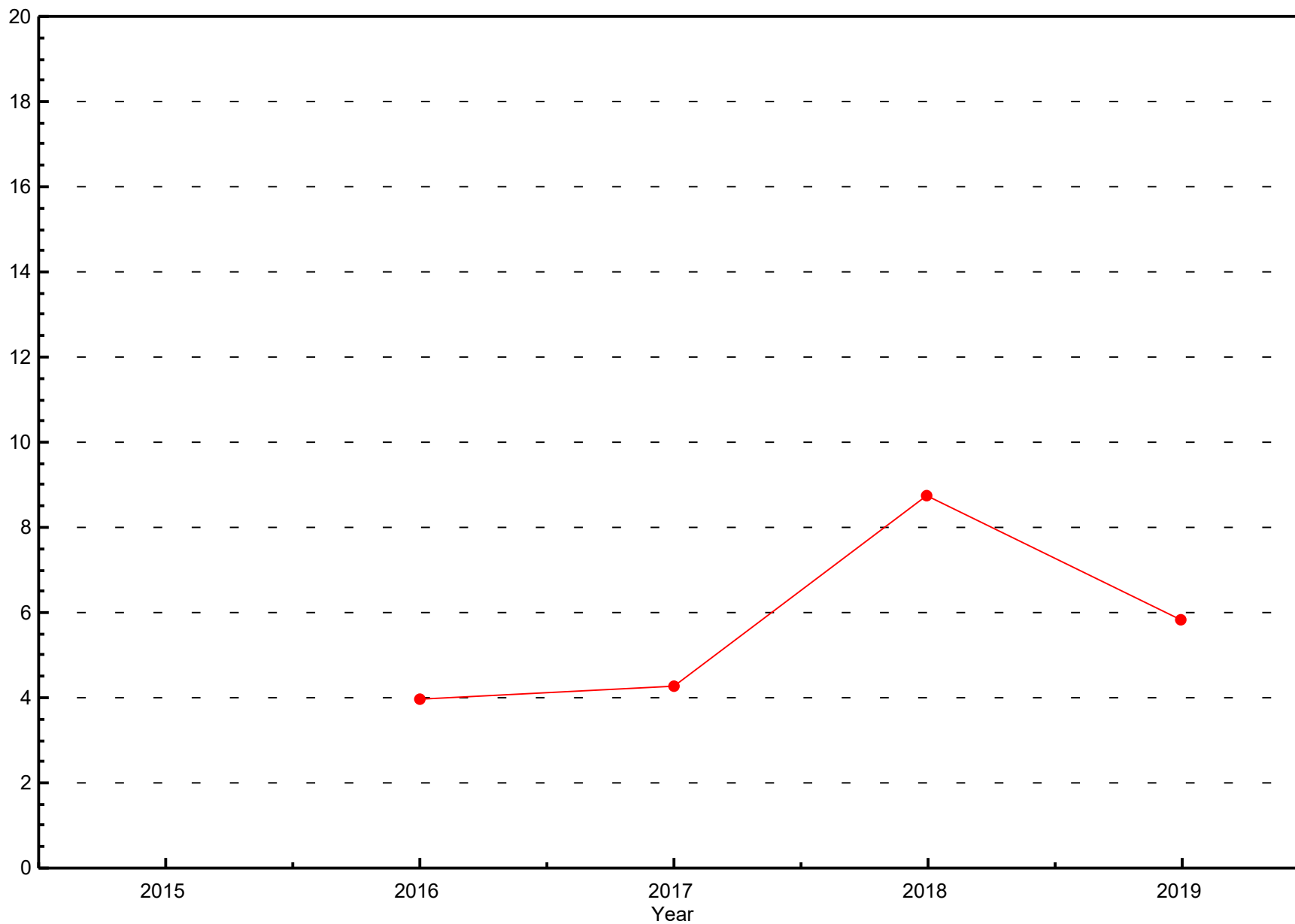




Yearly Averages

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

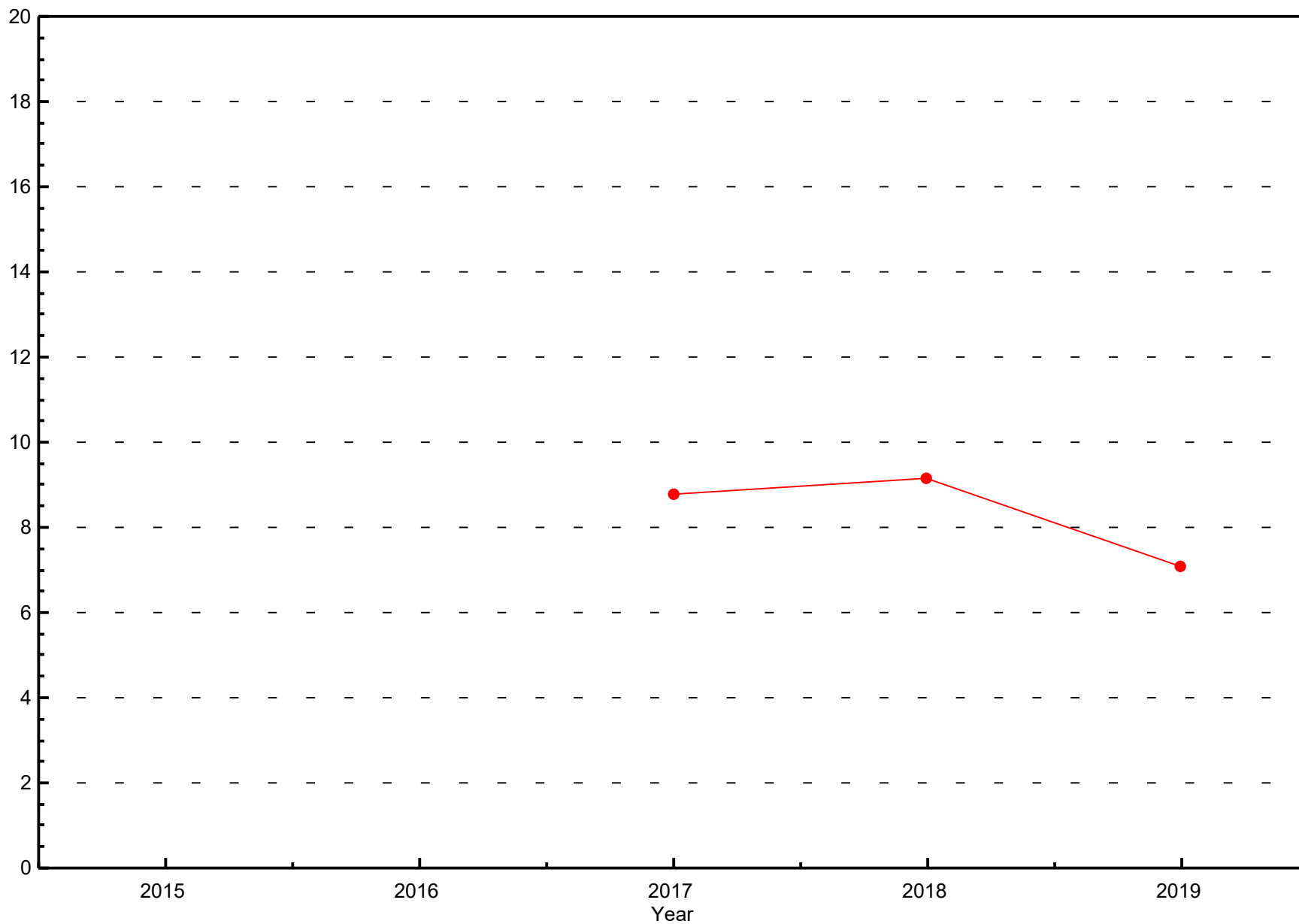
Janvier (2015 to 2019)





Yearly Averages

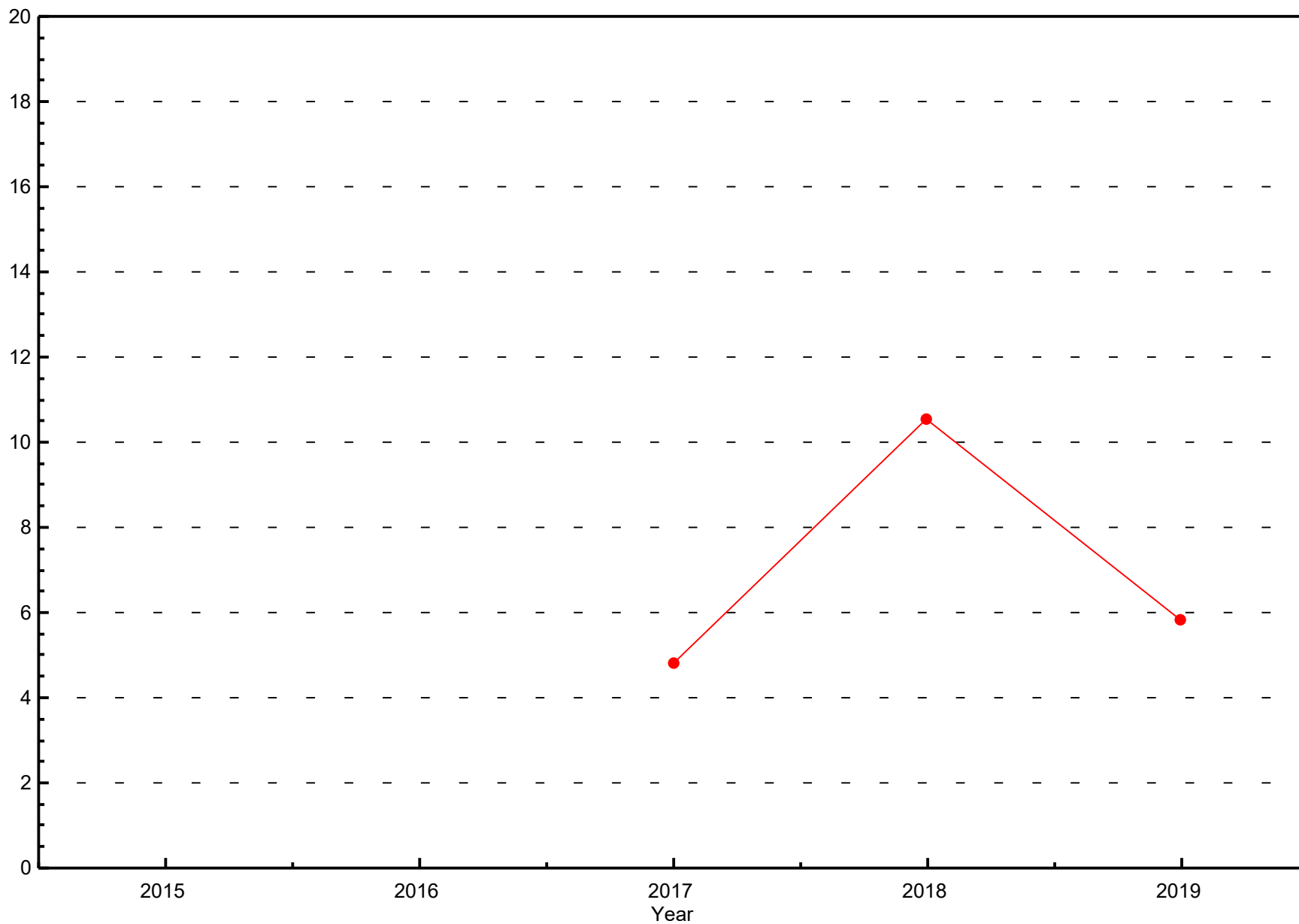
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Hills (2015 to 2019)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Surmont (2015 to 2019)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

AMBIENT TEMPERATURE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Ambient Temperature 2 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-38.5	0.6	-33.3	-4.3	-17.2
February	100	672	-38.1	4.1	-32.0	-0.7	-15.8
March	100	744	-29.8	11.6	-20.7	2.7	-7.5
April	100	720	-25.0	24.1	-15.4	12.7	0.4
May	89	662	-2.3	33.3	7.7	24.3	15.1
June	100	720	0.5	36.3	7.1	27.9	16.5
July	100	744	7.4	31.4	12.7	23.2	18.2
August	100	744	1.0	30.4	7.4	23.5	16.2
September	100	720	-8.1	17.9	-0.7	10.5	4.4
October	100	744	-12.8	18.7	-5.1	8.9	0.8
November	100	720	-21.5	1.8	-16.1	-1.8	-8.3
December	100	744	-32.0	2.3	-25.4	-0.3	-12.4
Annual	99	8678	-38.5	36.3	-33.3	27.9	0.8



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Ambient Temperature 10m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	97	720	-36.2	3.9	-31.6	-1.2	-17.1
February	94	635	-37.8	-2.5	-32.2	-6.9	-21.4
March	100	742	-30.8	19.9	-25.8	12.3	-2.0
April	100	720	-13.9	20.1	-9.5	11.9	3.5
May	100	744	-11.0	32.4	-3.3	24.4	10.6
June	100	720	3.9	29.2	7.6	22.1	15.4
July	100	744	6.0	31.5	10.4	24.5	17.2
August	100	744	5.2	26.4	10.5	19.2	14.5
September	100	720	-4.7	22.5	2.2	15.9	10.7
October	100	743	-15.2	15.8	-9.2	9.0	2.0
November	100	720	-18.5	8.2	-15.0	5.2	-6.5
December	100	744	-35.3	2.7	-32.0	-0.9	-15.0
Annual	99	8696	-37.8	32.4	-32.2	24.5	1.3



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-33.7	5.1	-29.6	-0.8	-16.8
February	100	672	-36.6	-3.4	-32.0	-7.3	-21.4
March	100	744	-29.8	18.5	-26.1	10.4	-2.2
April	100	720	-13.0	20.3	-9.5	12.1	3.4
May	100	744	-9.6	32.5	-2.8	24.5	10.7
June	100	720	4.5	29.6	7.5	22.9	15.4
July	100	744	6.3	31.9	10.3	25.2	17.4
August	100	744	5.2	26.1	10.2	19.4	14.7
September	100	720	-1.7	23.2	2.6	16.4	11.0
October	100	743	-14.7	15.7	-8.6	9.2	2.3
November	100	720	-18.5	7.5	-15.3	5.0	-6.5
December	100	741	-32.0	1.9	-28.9	-0.9	-13.9
Annual	100	8756	-36.6	32.5	-32.0	25.2	1.3



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2019
Ambient Temperature 20 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-34.8	4.8	-31.3	-0.9	-16.9
February	100	672	-37.8	-2.6	-32.3	-6.7	-21.6
March	100	744	-31.2	18.5	-25.8	10.1	-2.1
April	100	720	-12.6	19.9	-8.6	12.4	3.8
May	100	744	-7.9	32.7	-2.2	24.8	11.2
June	93	668	5.0	29.4	7.9	23.1	15.7
July	90	672	7.3	32.3	12.2	25.3	18.5
August	98	732	6.2	26.6	11.0	19.7	15.1
September	95	681	-2.8	22.8	3.2	17.2	11.7
October	94	703	-13.3	15.8	-8.2	10.2	2.6
November	94	680	-17.0	7.4	-14.7	5.8	-5.9
December	99	740	-34.6	2.4	-32.0	-0.3	-14.3
Annual	97	8500	-37.8	32.7	-32.3	25.3	1.4



Wood Buffalo Environmental Association - Lower Camp Meteorological Tower (AMS03)
Annual Summary for the Year 2019
Ambient Temperature 45 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-33.7	4.9	-30.3	-0.7	-16.7
February	100	672	-37.6	-2.7	-32.1	-6.8	-21.4
March	100	744	-29.7	18.3	-25.7	10.5	-1.9
April	100	720	-12.4	19.8	-8.8	12.3	3.8
May	100	744	-7.9	32.2	-2.3	24.7	11.1
June	93	668	5.1	29.2	7.8	23.0	15.7
July	90	672	8.0	31.8	12.1	25.3	18.5
August	98	732	6.1	26.6	11.0	19.8	15.2
September	96	688	-2.7	22.7	3.1	17.3	11.8
October	94	703	-13.1	15.8	-8.1	10.2	2.6
November	95	684	-16.7	7.4	-14.7	5.9	-5.9
December	97	720	-34.4	2.4	-31.6	-0.3	-14.0
Annual	97	8491	-37.6	32.2	-32.1	25.3	1.5



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2019
Ambient Temperature 100 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-31.8	4.9	-27.8	0.2	-16.3
February	100	672	-35.2	-3.3	-31.4	-7.3	-20.9
March	100	744	-29.8	18.4	-25.9	11.3	-1.6
April	100	720	-12.2	19.2	-9.4	12.0	3.5
May	100	744	-8.3	31.5	-3.0	24.8	10.7
June	93	668	4.7	28.7	7.0	22.6	15.3
July	90	672	7.7	30.9	11.8	25.1	18.2
August	98	732	7.0	26.3	10.4	19.6	14.9
September	97	697	-3.0	22.0	2.6	17.2	11.4
October	95	710	-13.1	15.2	-8.4	10.1	2.3
November	97	700	-17.0	7.6	-15.0	6.0	-6.1
December	100	744	-31.2	2.0	-28.6	-0.5	-13.5
Annual	98	8547	-35.2	31.5	-31.4	25.1	1.4



Wood Buffalo Environmental Association - Lower Camp Meteorological Tower (AMS03)
Annual Summary for the Year 2019
Ambient Temperature 167 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-30.1	5.2	-26.4	1.1	-16.1
February	100	672	-34.2	-3.7	-31.3	-7.7	-20.5
March	100	744	-30.0	18.2	-26.2	12.0	-1.6
April	100	720	-12.5	18.5	-9.7	11.8	3.3
May	100	744	-8.2	31.3	-3.5	24.6	10.5
June	93	668	4.1	28.1	6.5	22.3	15.1
Annual	99	4292	-34.2	31.3	-31.3	24.6	-1.5



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	743	-36.5	5.0	-30.5	-1.0	-16.8
February	100	672	-38.7	-3.7	-32.8	-7.4	-21.8
March	100	744	-30.0	18.4	-26.1	11.2	-2.3
April	100	720	-12.6	20.1	-9.3	11.8	3.3
May	100	744	-8.3	33.1	-2.9	24.0	10.7
June	100	720	3.9	29.3	7.6	22.0	15.3
July	100	744	7.0	31.5	10.2	24.8	17.2
August	100	744	5.0	26.2	10.4	19.4	14.5
September	100	720	-4.3	22.1	1.6	16.5	10.7
October	97	722	-13.4	16.0	-8.9	9.3	2.1
November	100	720	-19.5	7.6	-15.4	5.5	-6.5
December	100	744	-33.3	1.8	-29.2	-0.5	-13.9
Annual	100	8737	-38.7	33.1	-32.8	24.8	1.2



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.9	4.9	-29.4	-1.3	-16.6
February	100	672	-37.4	-3.8	-32.4	-7.5	-21.5
March	100	744	-28.6	18.2	-25.6	10.7	-2.3
April	100	720	-11.5	21.0	-8.9	12.0	3.7
May	100	744	-7.4	33.4	-2.4	23.7	11.0
June	100	720	4.3	29.1	7.5	22.2	15.3
July	100	744	6.7	31.9	10.4	24.9	17.2
August	100	744	5.2	25.6	10.6	19.5	14.4
September	100	720	-4.9	22.2	1.2	15.5	10.7
October	100	744	-14.0	15.3	-9.4	8.7	1.9
November	100	720	-19.5	7.0	-16.0	4.6	-6.6
December	100	744	-32.1	1.6	-28.8	-0.8	-14.0
Annual	100	8760	-37.4	33.4	-32.4	24.9	1.2



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Ambient Temperature 20 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.1	5.3	-27.8	-0.4	-16.5
February	100	672	-36.7	-4.0	-31.4	-7.6	-21.2
March	100	744	-29.4	18.3	-26.2	12.0	-1.9
April	100	720	-11.8	19.3	-9.2	11.7	3.4
May	100	744	-7.6	31.9	-3.0	24.2	10.8
June	100	720	4.0	28.7	7.0	22.5	15.3
July	100	744	7.0	31.2	10.0	25.1	17.4
August	100	744	6.3	26.1	10.4	19.7	14.7
September	100	720	-3.6	22.2	1.8	16.7	11.1
October	100	744	-12.9	15.1	-8.8	9.4	2.1
November	100	720	-18.5	7.4	-15.7	5.7	-6.5
December	100	744	-31.1	1.7	-28.5	-0.6	-13.7
Annual	100	8760	-36.7	31.9	-31.4	25.1	1.4



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Ambient Temperature 45 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-31.0	5.3	-26.7	0.2	-16.3
February	100	672	-36.2	-4.1	-31.2	-7.7	-20.9
March	100	744	-29.6	18.3	-26.3	12.3	-1.8
April	100	720	-12.0	18.8	-9.5	11.7	3.3
May	100	744	-7.8	31.5	-3.3	24.4	10.6
June	100	720	3.7	28.4	6.7	22.3	15.1
July	100	744	6.9	30.7	9.7	25.0	17.3
August	100	744	6.3	25.8	10.1	19.5	14.6
September	100	720	-3.3	21.7	1.8	16.9	11.2
October	100	744	-12.7	14.8	-8.6	9.5	2.1
November	100	720	-18.2	7.4	-15.6	5.9	-6.5
December	100	744	-30.7	1.6	-28.2	-0.6	-13.4
Annual	100	8760	-36.2	31.5	-31.2	25.0	1.4



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Ambient Temperature 75 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-30.2	5.2	-26.1	0.8	-16.1
February	100	672	-34.8	-4.3	-31.3	-7.9	-20.5
March	100	744	-29.9	18.1	-26.5	12.4	-1.7
April	100	720	-12.2	18.5	-9.7	11.8	3.2
May	100	744	-8.0	31.2	-3.5	24.5	10.5
June	100	720	3.4	28.2	6.4	22.2	15.0
July	100	744	6.7	30.5	9.4	25.0	17.2
August	100	744	6.5	25.7	9.9	19.5	14.6
September	100	720	-2.7	21.5	2.0	16.8	11.2
October	100	744	-12.5	14.6	-8.8	9.5	2.1
November	100	720	-18.0	7.3	-15.7	5.8	-6.5
December	100	744	-30.3	1.4	-27.8	-0.7	-13.2
Annual	100	8760	-34.8	31.2	-31.3	25.0	1.4



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Ambient Temperature 90 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-29.9	5.1	-25.9	1.0	-16.0
February	100	672	-33.9	-4.3	-31.3	-8.0	-20.4
March	100	744	-29.9	18.0	-26.5	12.4	-1.7
April	100	720	-12.3	18.3	-9.8	11.8	3.2
May	100	744	-8.1	31.0	-3.6	24.5	10.5
June	100	720	3.3	28.1	6.3	22.2	15.0
July	100	744	6.6	30.3	9.3	25.0	17.2
August	100	744	6.5	25.5	9.7	19.4	14.6
September	100	720	-2.3	21.3	2.0	16.8	11.1
October	100	744	-12.4	14.5	-8.9	9.4	2.0
November	100	720	-18.1	7.2	-15.8	5.8	-6.6
December	100	744	-30.2	1.4	-27.7	-0.7	-13.2
Annual	100	8760	-33.9	31.0	-31.3	25.0	1.4



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.0	6.0	-29.9	-0.8	-16.7
February	100	672	-39.5	-3.9	-33.6	-7.5	-22.1
March	100	744	-30.9	17.6	-26.4	11.1	-2.4
April	100	720	-11.0	19.8	-8.7	11.5	3.3
May	100	744	-8.0	32.1	-2.8	23.5	10.4
June	100	720	3.1	29.2	7.2	21.7	15.2
July	100	744	4.8	32.1	10.0	24.9	17.1
August	100	744	3.1	27.1	9.8	19.2	14.2
September	100	717	-7.8	22.1	0.6	15.7	10.6
October	100	744	-14.1	15.8	-9.1	8.9	1.8
November	100	720	-19.4	8.1	-16.0	5.2	-6.6
December	100	743	-31.6	2.4	-28.3	-0.4	-13.6
Annual	100	8756	-39.5	32.1	-33.6	24.9	1.1



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.3	6.4	-31.7	-2.5	-17.4
February	100	672	-39.8	-3.3	-34.4	-7.3	-22.5
March	100	744	-30.8	17.8	-25.9	9.2	-2.9
April	100	720	-10.6	20.5	-7.8	12.0	3.8
May	100	744	-7.4	32.4	-2.0	23.3	11.3
June	100	720	4.7	30.0	8.3	22.8	15.8
July	100	744	8.0	31.8	11.2	24.9	17.7
August	100	744	4.8	27.3	11.3	19.9	15.0
September	100	720	-4.9	23.3	1.6	16.2	11.2
October	100	743	-12.8	16.6	-8.1	9.7	2.5
November	100	720	-19.8	8.1	-15.3	5.4	-6.2
December	100	744	-32.7	2.9	-29.6	-0.6	-14.9
Annual	100	8759	-39.8	32.4	-34.4	24.9	1.3



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.0	1.3	-32.5	-4.5	-20.7
February	100	671	-37.8	-6.1	-35.2	-9.9	-24.0
March	100	742	-33.0	16.1	-27.8	9.2	-4.9
April	100	719	-15.8	14.0	-12.4	8.7	0.3
May	100	744	-9.3	23.6	-4.3	17.0	7.2
June	100	720	1.2	27.9	6.5	21.7	14.3
July	100	744	5.1	30.2	8.2	24.6	17.3
August	100	744	6.1	24.3	10.3	19.8	14.5
September	100	720	-1.2	20.5	1.5	14.9	10.2
October	100	744	-11.0	14.3	-8.5	8.5	1.2
November	100	720	-19.4	5.3	-17.3	2.6	-8.1
December	100	744	-34.3	-1.1	-31.3	-7.8	-17.7
Annual	100	8756	-37.8	30.2	-35.2	24.6	-0.7



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.4	3.3	-31.8	-1.9	-17.5
February	100	672	-37.6	-2.8	-32.5	-7.5	-21.7
March	100	744	-31.0	20.0	-26.4	11.8	-2.3
April	100	720	-14.1	21.4	-9.7	12.1	3.4
May	100	744	-11.6	33.9	-3.1	24.6	10.7
June	100	720	3.2	30.7	7.7	22.9	15.5
July	100	744	5.6	33.1	10.5	25.1	17.4
August	100	744	4.4	26.9	10.5	19.4	14.4
September	100	720	-5.4	22.9	1.7	15.7	10.6
October	100	744	-16.5	16.0	-9.6	8.7	1.8
November	100	720	-19.9	8.2	-15.4	4.4	-6.7
December	100	744	-36.0	2.0	-32.6	-1.5	-15.3
Annual	100	8760	-37.6	33.9	-32.6	25.1	1.0



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.9	4.8	-33.1	-1.5	-17.4
February	100	672	-37.9	-2.7	-32.9	-6.9	-22.2
March	100	744	-32.4	19.6	-26.5	8.5	-3.0
April	100	720	-12.7	21.7	-8.8	12.4	3.6
May	100	744	-8.1	32.6	-1.8	23.9	11.1
June	100	720	5.4	29.8	8.2	22.9	15.7
July	100	744	7.3	32.0	11.1	24.8	17.6
August	100	744	6.1	26.8	10.8	19.5	14.9
September	100	720	-2.7	23.5	3.0	16.9	11.3
October	100	744	-14.4	16.6	-8.5	9.6	2.7
November	100	720	-18.0	7.2	-15.0	5.3	-6.1
December	100	744	-35.3	2.1	-32.2	-0.4	-14.7
Annual	100	8760	-37.9	32.6	-33.1	24.8	1.3



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-38.7	4.0	-33.6	-2.7	-17.9
February	100	672	-41.0	-2.5	-35.1	-7.1	-22.9
March	100	744	-33.2	20.4	-26.9	10.2	-3.2
April	100	720	-16.2	21.1	-10.0	11.8	3.0
May	100	744	-14.7	33.2	-4.3	23.2	9.8
June	100	719	1.7	30.1	7.8	21.3	15.0
July	100	744	3.1	32.4	10.3	24.0	16.8
August	100	744	1.6	27.2	9.2	19.2	13.9
September	100	720	-7.6	23.1	0.8	15.6	9.8
October	100	744	-17.0	16.4	-10.6	8.5	1.3
November	100	720	-22.8	8.0	-17.0	4.4	-7.1
December	100	744	-36.8	2.5	-34.1	-1.7	-16.1
Annual	100	8759	-41.0	33.2	-35.1	24.0	0.3



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.0	5.6	-28.6	0.9	-15.6
February	100	672	-39.1	-5.3	-33.1	-8.7	-21.9
March	100	744	-30.5	16.9	-27.4	10.2	-2.9
April	100	720	-12.8	19.2	-8.3	11.3	2.8
May	100	744	-8.7	30.8	-3.4	23.6	9.9
June	100	720	1.3	28.5	6.0	20.9	14.3
July	100	744	4.4	30.5	9.2	23.0	16.2
August	100	744	3.7	27.1	8.6	19.4	13.8
September	100	720	-6.9	21.3	-0.5	16.5	9.9
October	100	744	-13.5	15.0	-9.7	9.1	1.3
November	100	720	-20.3	7.2	-16.8	5.6	-6.7
December	100	744	-30.8	3.7	-27.0	-0.4	-12.5
Annual	100	8760	-39.1	30.8	-33.1	23.6	0.9



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-38.1	3.2	-31.9	-2.7	-17.5
February	100	672	-39.1	-2.9	-32.9	-7.2	-22.0
March	100	744	-30.9	20.0	-26.6	11.7	-2.5
April	100	720	-16.0	20.8	-10.3	11.4	3.2
May	100	744	-12.9	33.1	-3.7	23.8	10.4
June	100	720	1.2	30.5	7.8	22.3	15.5
July	100	744	4.3	33.1	10.5	24.5	17.2
August	100	744	4.1	27.1	10.3	19.4	14.3
September	100	720	-8.0	23.4	0.9	15.1	10.2
October	100	744	-17.9	16.3	-10.6	8.0	1.2
November	100	720	-19.9	8.8	-14.9	3.9	-7.2
December	100	744	-36.5	2.4	-32.6	-1.8	-15.7
Annual	100	8760	-39.1	33.1	-32.9	24.5	0.7



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.5	2.4	-30.8	-1.4	-17.1
February	100	672	-39.6	-6.1	-33.8	-10.0	-22.0
March	100	744	-32.9	17.0	-28.7	8.6	-3.6
April	100	720	-19.1	18.6	-11.4	11.9	1.8
May	100	744	-12.6	30.5	-4.9	23.0	8.9
June	100	720	-0.7	28.7	5.4	22.3	13.7
July	100	744	0.2	30.9	8.4	24.3	15.7
August	100	744	1.2	24.7	8.1	19.0	12.8
September	100	720	-5.4	20.5	0.5	14.3	9.4
October	100	744	-15.4	14.2	-10.4	7.6	0.5
November	100	720	-23.8	6.7	-17.8	3.5	-8.1
December	100	744	-36.5	-0.5	-30.5	-3.1	-14.5
Annual	100	8760	-39.6	30.9	-33.8	24.3	-0.1



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-28.8	6.6	-25.6	0.5	-13.6
February	100	672	-34.8	-5.0	-31.3	-8.0	-20.8
March	100	744	-30.3	19.9	-26.2	12.6	-2.4
April	100	720	-10.1	16.8	-7.2	10.6	3.1
May	100	744	-9.4	29.5	-3.4	23.3	9.9
June	100	720	1.2	26.4	4.1	20.0	13.3
July	100	744	4.7	30.7	9.0	22.8	15.6
August	100	743	3.5	28.5	7.6	19.2	13.3
September	100	720	-3.5	21.6	-0.4	16.0	9.7
October	100	743	-13.1	13.1	-10.3	8.7	0.7
November	100	720	-21.4	7.3	-18.0	4.7	-6.3
December	100	744	-27.7	3.1	-25.2	-0.7	-11.6
Annual	100	8758	-34.8	30.7	-31.3	23.3	1.1



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-34.6	1.9	-28.0	-1.9	-17.4
February	100	672	-37.3	-6.9	-33.8	-11.0	-22.2
March	100	744	-33.6	15.1	-29.6	8.5	-4.1
April	100	720	-17.3	16.7	-11.7	10.5	1.1
May	100	744	-12.2	28.8	-5.8	22.4	8.3
June	100	720	1.6	26.8	4.3	20.8	13.1
July	100	744	4.4	29.5	7.5	23.9	15.6
August	100	744	3.9	23.7	7.2	18.4	12.6
September	100	720	-3.4	19.4	-0.1	14.0	9.1
October	100	744	-12.6	12.2	-11.1	6.6	0.0
November	100	720	-21.5	5.3	-18.4	2.5	-8.7
December	100	744	-32.3	-1.4	-27.6	-3.5	-14.6
Annual	100	8760	-37.3	29.5	-33.8	23.9	-0.5



Wood Buffalo Environmental Association - MacKay River (AMS20)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.3	4.5	-31.1	-0.5	-15.8
February	100	672	-39.2	-4.7	-32.2	-7.4	-22.0
March	100	744	-34.1	19.3	-26.7	9.7	-2.9
April	100	720	-14.0	18.6	-10.0	10.8	2.3
May	100	744	-8.0	32.1	-3.5	23.2	9.2
June	100	720	-0.4	28.9	5.7	20.7	14.1
July	100	744	1.4	31.0	9.0	23.9	15.7
August	100	744	0.1	26.6	8.3	18.6	13.1
September	100	720	-6.9	21.5	-0.5	14.6	9.2
October	100	744	-18.9	14.6	-10.4	7.9	0.8
November	100	720	-20.7	6.9	-17.1	4.2	-7.1
December	100	744	-34.8	1.4	-29.2	-1.7	-13.6
Annual	100	8760	-39.2	32.1	-32.2	23.9	0.4



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.8	7.0	-31.5	0.1	-14.4
February	100	672	-41.7	-4.7	-33.3	-7.2	-23.0
March	100	744	-34.8	18.4	-27.0	8.1	-3.6
April	100	720	-13.4	17.7	-6.7	9.7	2.7
May	100	744	-7.9	30.3	-2.7	22.2	9.1
June	100	720	1.6	27.4	4.9	19.2	13.2
July	100	744	4.3	30.5	9.8	21.5	15.5
August	100	744	0.3	28.9	7.9	18.6	13.3
September	100	720	-8.4	22.6	-2.1	15.0	9.2
October	100	744	-15.0	13.5	-10.3	9.2	0.7
November	100	720	-25.8	7.7	-18.9	4.9	-6.1
December	100	744	-33.5	3.3	-28.6	-1.2	-12.2
Annual	100	8760	-41.7	30.5	-33.3	22.2	0.5



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-33.7	6.6	-29.3	-0.3	-14.8
February	100	672	-37.6	-4.3	-30.9	-7.3	-21.3
March	100	744	-30.8	21.0	-25.7	10.6	-2.2
April	100	720	-8.4	18.5	-6.0	10.8	3.5
May	100	744	-8.0	31.1	-2.2	22.6	10.2
June	100	720	2.8	28.2	6.1	20.2	14.1
July	100	744	6.2	30.2	10.1	22.2	16.2
August	100	744	3.8	29.4	9.2	20.0	13.9
September	100	720	-6.9	22.9	-0.5	15.6	9.8
October	100	744	-13.5	14.4	-9.0	9.6	1.6
November	100	720	-21.2	8.3	-17.3	4.8	-6.0
December	100	744	-33.3	3.7	-28.9	-0.4	-12.0
Annual	100	8760	-37.6	31.1	-30.9	22.6	1.2



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.4	3.2	-31.4	-2.3	-17.4
February	100	672	-38.0	-2.9	-32.5	-7.5	-21.9
March	100	744	-30.7	19.8	-26.3	10.9	-2.6
April	100	720	-13.3	18.7	-9.8	11.2	3.1
May	100	744	-8.7	32.6	-2.8	24.0	10.5
June	100	720	4.4	29.6	7.4	22.5	15.6
July	100	744	6.7	31.9	10.5	24.4	17.3
August	100	744	6.7	26.0	10.8	19.3	14.6
September	100	720	-3.0	21.6	2.4	15.2	10.8
October	100	744	-14.7	15.1	-9.2	8.2	1.7
November	100	720	-19.0	8.5	-14.7	4.2	-7.0
December	100	744	-34.7	2.4	-31.0	-1.8	-15.6
Annual	100	8760	-38.0	32.6	-32.5	24.4	0.9



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-29.4	4.8	-24.5	0.5	-14.5
February	100	672	-32.3	-5.4	-30.7	-8.8	-20.5
March	100	274	-28.9	6.8	-26.5	2.9	-11.7
Annual	100	1690	-32.3	6.8	-30.7	2.9	-16.4



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.7	3.6	-32.8	-2.4	-17.6
February	100	672	-39.8	-2.6	-33.5	-7.1	-22.3
March	100	744	-31.8	20.1	-26.2	10.7	-2.7
April	100	720	-15.0	21.1	-9.6	11.8	3.3
May	100	742	-11.0	32.6	-3.3	23.7	10.4
June	100	720	2.7	30.2	7.8	21.6	15.3
July	100	743	5.3	32.5	10.5	24.0	17.0
August	100	744	4.1	26.3	10.3	19.2	14.2
September	100	720	-6.3	22.6	1.4	15.3	10.2
October	100	744	-17.0	16.1	-9.9	8.6	1.6
November	100	720	-20.8	8.0	-15.7	4.4	-6.8
December	100	744	-35.8	2.4	-32.8	-1.4	-15.7
Annual	100	8757	-39.8	32.6	-33.5	24.0	0.7



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.9	6.6	-30.1	1.1	-13.5
February	100	672	-39.9	-4.1	-31.4	-7.2	-21.6
March	100	744	-29.2	19.7	-25.1	10.2	-2.3
April	100	720	-10.1	17.1	-6.4	10.6	3.3
May	100	744	-8.4	30.0	-2.7	23.5	9.9
June	100	720	3.0	27.4	5.5	19.8	13.9
July	100	744	5.5	29.8	10.0	22.5	16.2
August	100	744	2.8	28.7	9.1	19.4	14.0
September	100	720	-6.7	22.2	-0.9	16.3	10.1
October	100	744	-11.7	13.5	-9.1	9.4	1.4
November	100	720	-19.3	8.0	-16.9	5.4	-5.5
December	100	744	-31.8	3.8	-26.7	-0.7	-11.2
Annual	100	8760	-39.9	30.0	-31.4	23.5	1.4



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-29.9	4.7	-26.4	0.0	-13.6
February	100	672	-34.2	-5.5	-31.5	-8.3	-21.2
March	100	744	-30.6	18.4	-26.1	10.3	-2.9
April	100	720	-10.0	16.2	-6.9	9.6	2.7
May	100	743	-9.1	29.4	-3.5	22.8	9.5
June	100	720	1.4	25.7	4.0	19.1	13.1
July	100	744	4.6	29.7	9.1	22.7	15.5
August	100	744	3.3	28.0	7.6	19.4	13.2
September	100	720	-4.8	21.2	-0.7	15.1	9.5
October	100	744	-13.3	12.8	-10.5	8.2	0.4
November	100	720	-21.2	6.6	-18.3	4.2	-6.4
December	100	744	-28.3	2.2	-25.5	-2.0	-11.7
Annual	100	8759	-34.2	29.7	-31.5	22.8	0.8



Wood Buffalo Environmental Association - Christina Lake (AMS500)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.7	5.3	-28.5	-0.5	-13.5
February	100	672	-32.0	2.8	-25.9	-1.7	-14.6
March	100	744	-27.4	10.8	-18.5	2.2	-6.5
April	100	720	-24.9	26.1	-15.0	17.6	0.6
May	99	689	-2.0	29.6	6.3	21.6	14.3
Annual	100	3569	-36.7	29.6	-28.5	21.6	-4.0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
March	94	412	-8.0	20.1	-1.5	9.8	2.8
April	100	720	-13.1	18.2	-8.3	10.1	2.5
May	100	744	-12.1	30.3	-3.7	23.1	9.2
June	100	720	1.5	27.4	5.8	19.5	13.7
July	100	744	4.3	30.7	9.2	22.2	15.7
August	100	744	1.7	27.8	8.3	19.0	13.3
September	100	720	-8.0	21.4	-1.6	15.0	9.2
October	100	744	-14.6	14.0	-10.2	8.7	1.0
November	100	720	-20.7	6.9	-17.4	4.7	-6.8
December	100	744	-33.6	2.7	-28.5	-0.4	-12.6
Annual	99	7012	-33.6	30.7	-28.5	23.1	4.9



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
October	100	744	-13.3	12.6	-10.0	7.8	0.4
November	100	719	-21.5	6.6	-18.2	3.9	-6.7
December	100	744	-31.6	2.0	-26.6	-1.3	-12.0
Annual	100	2207	-31.6	12.6	-26.6	7.8	-6.1



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
June	96	383	5.8	27.7	12.4	19.7	15.0
July	92	682	5.3	29.6	9.4	22.6	16.1
August	10	76	2.6	22.2	12.2	15.1	13.2
September	38	274	-6.3	21.9	-0.9	15.6	6.5
October	100	744	-13.0	13.6	-10.1	9.1	1.1
November	100	720	-22.1	7.5	-18.0	4.7	-6.0
December	100	744	-32.8	2.6	-27.4	-0.9	-11.6
Annual	77	3623	-32.8	29.6	-27.4	22.6	2.0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-32.8	4.0	-26.6	-0.3	-13.6
February	100	672	-35.3	-4.8	-31.0	-8.0	-21.2
March	100	744	-29.6	18.4	-25.9	10.9	-2.7
April	100	720	-10.0	17.1	-6.5	10.3	3.1
May	100	744	-8.9	29.9	-2.8	23.2	9.8
June	100	720	1.2	26.1	4.6	19.0	13.3
July	100	744	4.9	29.7	9.5	23.0	15.8
August	100	744	2.9	28.1	8.0	19.4	13.4
Annual	100	5832	-35.3	29.9	-31.0	23.2	2.5



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-30.2	4.3	-25.6	-0.7	-13.5
February	100	672	-34.7	-5.6	-31.0	-8.9	-21.5
March	100	744	-30.4	17.5	-26.1	9.6	-3.2
April	100	348	-10.3	13.5	-6.3	5.5	1.4
Annual	100	2508	-34.7	17.5	-31.0	9.6	-10.5



Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
April	100	343	-8.8	16.1	-6.4	9.8	3.8
May	100	744	-9.2	28.9	-3.2	21.7	9.6
June	100	720	1.2	25.3	4.1	19.4	13.0
July	100	744	4.7	30.1	9.3	23.6	15.6
August	100	744	3.0	27.6	7.7	19.5	13.2
September	100	720	-4.5	21.3	-0.6	15.3	9.6
October	100	744	-13.1	12.7	-10.3	7.7	0.4
November	100	720	-21.1	6.9	-18.7	3.7	-6.6
December	100	744	-28.1	2.4	-24.6	-2.6	-12.0
Annual	100	6223	-28.1	30.1	-24.6	23.6	5.3



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

RELATIVE HUMIDITY ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	53	96	66	90	77
February	100	672	36	90	58	79	67
March	100	744	27	91	39	83	65
April	100	720	17	97	34	90	55
May	89	662	14	95	32	73	47
June	100	720	18	99	39	94	68
July	100	744	24	99	50	90	68
August	100	744	25	99	47	97	67
September	100	720	21	98	53	93	69
October	100	744	27	98	44	96	70
November	100	720	61	97	69	90	80
December	100	744	59	94	68	90	81
Annual	99	8678	14	99	32	97	68



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	57	98	71	91	81
February	100	672	41	93	61	82	71
March	100	744	31	94	42	87	67
April	100	720	20	98	35	88	55
May	100	744	18	94	32	67	46
June	100	720	20	100	36	94	68
July	100	742	25	100	49	92	68
August	99	736	27	100	48	97	66
September	100	720	21	100	53	92	69
October	100	744	26	100	46	99	70
November	100	720	63	98	72	91	82
December	100	744	59	95	64	91	82
Annual	100	8750	18	100	32	99	69



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2019
Relative Humidity 20 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	58	97	69	88	78
February	100	672	34	92	58	79	68
March	100	744	25	93	38	84	64
April	100	720	17	96	33	86	53
May	100	744	16	94	32	65	46
June	100	720	18	100	37	90	66
July	100	744	25	99	47	91	67
August	100	744	26	100	46	98	66
September	100	720	19	100	54	91	69
October	99	734	28	99	46	96	69
November	100	720	58	96	69	89	80
December	100	744	54	96	61	92	81
Annual	100	8750	16	100	32	98	67



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2019
Relative Humidity 45 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	58	97	69	87	78
February	100	672	34	91	57	79	68
March	100	744	26	93	37	85	63
April	100	720	17	96	33	86	52
May	100	744	16	92	32	64	45
June	100	720	18	99	36	88	66
July	100	744	24	99	46	91	66
August	100	744	25	99	46	98	65
September	100	720	19	100	54	90	68
October	99	734	28	99	45	96	68
November	100	720	58	95	68	89	80
December	100	744	52	95	60	91	81
Annual	100	8750	16	100	32	98	67



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2019
Relative Humidity 100 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	49	98	68	89	78
February	100	672	35	91	56	79	67
March	100	744	24	93	37	86	62
April	100	720	17	96	30	89	50
May	100	744	14	87	29	65	43
June	100	720	18	100	34	88	64
July	100	744	24	100	44	91	64
August	100	744	25	100	43	97	63
September	100	720	19	100	49	89	66
October	99	734	25	100	44	98	66
November	100	720	58	95	69	91	81
December	100	744	50	96	59	92	80
Annual	100	8750	14	100	29	98	65



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2019
Relative Humidity 167 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
Jan	100	744	78	97	0	87	31
Feb	100	672	71	89	0	81	28
Mar	100	744	55	90	0	73	11
Apr	100	720	56	98	0	90	12
May	100	744	46	97	0	75	9
Jun	93	668	60	99	0	93	15
Annual	99	4292	61	99	0	93	106



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	54	96	68	90	80
February	100	672	39	95	57	83	69
March	100	744	28	94	42	86	66
April	100	720	18	98	36	90	54
May	100	744	19	97	32	67	47
June	99	712	20	99	35	92	68
July	100	741	27	99	49	92	69
August	100	744	28	99	49	97	68
September	100	720	21	99	55	92	70
October	100	744	25	99	44	98	70
November	100	720	60	98	73	92	83
December	100	744	53	95	60	91	82
Annual	100	8749	18	99	32	98	69



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Relative Humidity 2 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	55	95	71	88	79
February	100	672	41	93	61	78	69
March	100	744	30	92	44	84	65
April	100	720	17	96	33	89	53
May	100	744	17	95	31	67	45
June	100	720	20	98	38	94	68
July	99	734	27	98	51	92	69
August	100	744	29	98	50	96	68
September	91	654	22	98	53	91	70
October	63	466	24	98	44	95	69
November	100	720	65	97	74	91	82
December	100	744	55	94	63	90	82
Annual	96	8406	17	98	31	96	68



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Relative Humidity 20 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	77	572	48	94	68	88	79
February	91	610	37	94	58	79	67
March	99	738	26	92	40	86	63
April	100	720	18	96	32	89	51
May	100	744	17	90	30	63	42
June	100	720	18	98	34	88	64
July	99	734	24	98	43	89	64
August	100	744	26	99	44	94	63
September	99	714	19	98	46	88	65
October	100	743	23	99	43	96	65
November	100	720	60	96	70	90	81
December	100	744	51	95	58	90	80
Annual	97	8503	17	99	30	96	65



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Relative Humidity 45 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	43	95	64	89	78
February	100	672	36	95	57	79	68
March	100	744	25	93	38	86	63
April	100	720	18	97	31	91	51
May	100	744	16	88	29	61	42
June	100	720	18	98	33	88	64
July	99	734	24	99	42	89	64
August	100	744	26	99	44	94	62
September	99	714	19	99	44	88	65
October	100	743	24	99	43	97	65
November	100	720	60	97	71	91	82
December	100	744	50	95	58	91	79
Annual	100	8743	16	99	29	97	65



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Relative Humidity 75 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	42	95	62	90	78
February	100	672	36	95	57	80	68
March	100	744	24	93	38	87	62
April	100	720	18	96	30	91	50
May	100	744	16	87	28	61	42
June	100	720	18	98	32	88	63
July	99	734	24	98	42	88	63
August	100	744	26	99	43	94	62
September	99	714	20	97	43	89	64
October	100	743	23	99	43	98	64
November	100	720	59	98	71	92	83
December	100	744	48	96	57	94	78
Annual	100	8743	16	99	28	98	65



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Relative Humidity 90 m(%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	40	95	61	90	78
February	100	672	36	95	57	80	68
March	100	744	24	94	38	88	62
April	100	720	18	96	29	92	50
May	100	744	15	87	28	61	42
June	100	720	18	98	32	89	63
July	99	734	24	99	42	88	63
August	100	744	26	99	43	95	62
September	99	714	20	97	43	89	64
October	100	743	23	100	43	100	65
November	100	720	60	100	73	94	85
December	100	744	48	98	58	96	80
Annual	100	8743	15	100	28	100	65



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	52	96	70	87	78
February	100	672	34	96	60	80	68
March	100	744	27	98	38	86	65
April	100	720	19	98	33	92	54
May	99	739	18	94	33	59	45
June	100	720	22	100	36	89	66
July	100	744	28	100	47	90	67
August	100	744	27	100	48	94	66
September	100	720	20	100	51	93	70
October	100	744	24	100	45	98	69
November	100	720	55	98	74	91	82
December	100	744	49	95	61	89	80
Annual	100	8755	18	100	33	98	67



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	52	93	68	86	76
February	100	672	33	92	61	78	68
March	100	744	27	93	39	85	65
April	98	709	18	95	34	88	54
May	100	744	17	88	35	61	46
June	100	720	22	97	37	85	65
July	100	744	29	96	49	87	66
August	100	744	28	97	48	91	65
September	100	720	19	99	52	89	69
October	100	744	23	97	43	92	69
November	100	720	54	96	71	88	79
December	100	744	54	95	63	88	80
Annual	100	8749	17	99	34	92	67



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	743	53	93	66	91	79
February	100	672	54	91	67	85	74
March	100	744	30	91	45	84	69
April	100	720	28	97	45	90	63
May	100	744	20	99	38	86	59
June	100	720	24	97	45	93	70
July	100	744	23	98	47	88	68
August	100	744	32	98	56	85	67
September	100	720	30	98	51	90	67
October	100	744	30	99	51	98	71
November	100	720	54	96	76	90	82
December	100	744	68	95	74	91	84
Annual	100	8759	20	99	38	98	71



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	59	97	71	92	80
February	100	672	39	91	61	81	70
March	100	744	28	94	40	85	66
April	100	720	17	98	34	91	55
May	100	744	16	95	33	75	46
June	100	720	17	99	38	96	69
July	100	744	24	99	49	93	68
August	100	744	25	99	47	98	67
September	100	720	23	99	54	93	70
October	100	744	28	99	45	98	71
November	100	720	62	98	71	92	82
December	100	744	60	96	68	93	84
Annual	100	8760	16	99	33	98	69



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	59	95	69	87	78
February	100	672	38	91	61	79	69
March	99	740	28	92	41	84	67
April	100	720	18	96	39	85	57
May	100	744	17	95	34	71	49
June	100	720	19	98	43	89	69
July	100	744	28	99	49	90	69
August	100	744	27	98	48	96	68
September	100	720	20	99	55	90	71
October	100	744	27	98	46	95	71
November	100	720	57	95	69	88	80
December	100	744	53	95	62	90	81
Annual	100	8756	17	99	34	96	69



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	61	96	69	92	79
February	100	672	37	91	60	81	69
March	100	744	23	93	37	84	68
April	100	720	18	97	36	90	57
May	100	744	15	97	34	72	49
June	100	720	18	98	38	93	69
July	100	744	24	98	50	90	69
August	100	744	26	98	47	97	68
September	100	720	20	98	57	93	72
October	100	744	27	98	45	97	72
November	100	720	62	97	72	90	82
December	100	744	58	96	67	91	83
Annual	100	8760	15	98	34	97	70



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	42	95	67	91	80
February	100	672	41	97	57	81	71
March	100	744	26	95	42	89	66
April	97	699	19	96	33	88	54
May	100	744	19	93	32	68	47
June	100	720	22	99	37	93	68
July	100	744	29	99	49	96	70
August	100	744	29	100	46	95	68
September	100	720	24	100	52	98	74
October	100	744	22	100	44	100	70
November	100	720	57	99	72	95	86
December	100	744	37	97	60	95	80
Annual	100	8739	19	100	32	100	69



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	57	97	69	92	79
February	100	672	36	92	61	80	68
March	100	744	33	95	43	88	67
April	100	720	17	99	35	95	56
May	100	744	13	97	33	79	47
June	100	720	14	100	38	96	69
July	100	744	22	100	47	91	67
August	100	744	24	100	44	97	68
September	100	720	22	100	53	96	69
October	100	744	27	97	47	94	69
November	100	720	53	95	66	88	79
December	100	742	64	93	73	90	80
Annual	100	8758	13	100	33	97	68



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	54	99	66	94	82
February	100	672	47	92	65	84	75
March	100	744	27	96	44	87	66
April	100	720	22	100	36	93	57
May	100	744	19	95	32	80	48
June	100	720	19	100	37	97	69
July	100	744	25	100	50	98	69
August	100	744	22	99	47	99	69
September	100	720	22	98	43	97	70
October	100	744	30	97	44	97	69
November	100	720	66	96	75	92	84
December	100	744	57	94	69	92	80
Annual	100	8760	19	100	32	99	70



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	45	98	65	95	82
February	100	672	42	99	63	87	72
March	100	744	26	100	46	92	69
April	100	720	15	100	32	96	52
May	100	743	17	97	30	77	45
June	100	720	23	100	37	97	70
July	100	744	30	100	48	97	73
August	100	744	32	99	51	98	73
September	100	720	23	99	50	98	76
October	100	744	18	99	37	98	66
November	100	720	51	98	67	94	85
December	100	744	53	94	65	93	78
Annual	100	8759	15	100	30	98	70



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	51	99	65	94	83
February	100	672	48	92	67	85	78
March	100	744	28	96	46	89	68
April	100	720	24	100	38	96	59
May	100	744	19	98	31	81	48
June	100	720	21	100	36	97	69
July	100	744	27	100	46	98	69
August	100	744	24	100	48	99	68
September	100	720	23	99	47	98	72
October	100	744	32	98	45	97	72
November	100	720	73	98	80	94	88
December	100	744	62	96	74	94	83
Annual	100	8760	19	100	31	99	71



Wood Buffalo Environmental Association - MacKay River (AMS20)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	60	97	73	93	82
February	100	672	35	96	62	84	73
March	100	744	25	97	42	91	67
April	100	720	19	99	35	94	55
May	100	744	18	93	32	63	47
June	100	720	21	100	37	96	70
July	100	744	25	100	49	96	69
August	100	744	27	100	52	98	70
September	100	720	22	100	54	99	74
October	100	744	24	98	47	97	69
November	100	720	62	96	74	92	84
December	100	744	58	93	66	91	80
Annual	100	8760	18	100	32	99	70



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	40	95	66	93	79
February	100	672	41	97	60	84	70
March	100	744	26	97	45	88	70
April	100	720	16	96	33	88	55
May	100	744	18	97	36	78	51
June	100	720	22	99	41	94	71
July	100	743	28	99	53	95	73
August	100	744	31	99	56	97	74
September	100	720	24	99	58	97	78
October	100	744	18	99	43	97	70
November	100	720	56	98	71	95	84
December	100	744	58	97	69	96	81
Annual	100	8759	16	99	33	97	71



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	40	96	65	91	78
February	100	672	37	97	58	83	68
March	100	744	26	97	40	89	66
April	100	720	15	96	32	88	51
May	100	744	16	97	32	81	48
June	100	720	24	100	42	95	72
July	100	744	28	100	54	99	75
August	100	744	31	100	59	100	75
September	100	720	22	98	55	96	76
October	100	744	16	97	43	96	67
November	98	707	54	94	71	89	80
December	92	682	54	94	66	92	78
Annual	99	8685	15	100	32	100	69



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	54	95	68	90	78
February	100	672	38	90	60	78	69
March	100	744	27	92	38	84	67
April	100	720	19	97	36	90	56
May	100	744	15	92	34	76	46
June	100	720	14	98	41	92	67
July	85	629	21	98	45	87	63
August	100	744	28	98	43	94	66
September	100	720	29	99	52	92	68
October	100	744	26	98	48	96	71
November	100	720	56	98	68	91	81
December	100	744	61	96	74	92	82
Annual	99	8645	14	99	34	96	68



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
Jan	100	744	81	98	0	90	31
Feb	100	672	75	93	0	85	28
Mar	100	274	62	90	0	78	6
Annual	100	8756	15	100	27	99	68



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	56	95	70	91	79
February	100	672	34	91	59	79	68
March	100	744	25	93	38	84	66
April	100	720	17	98	34	91	56
May	100	742	15	95	32	72	47
June	100	720	18	99	40	94	69
July	100	744	23	98	51	89	68
August	100	744	26	99	48	96	68
September	100	720	22	99	54	93	70
October	100	744	27	98	45	96	71
November	100	720	61	97	70	90	81
December	100	744	59	95	70	91	83
Annual	100	8758	15	99	32	96	69



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
June	100	720	21	98	37	92	67
July	100	744	27	99	46	93	70
August	100	744	29	99	51	94	70
September	100	720	27	99	55	96	75
October	100	744	19	98	39	95	66
November	100	720	54	97	66	95	83
December	100	744	49	96	64	95	79
Annual	100	5174	19	99	37	96	73



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
August	100	376	29	99	51	98	74
September	100	720	27	99	51	98	78
October	100	744	19	99	41	98	68
November	100	719	61	98	71	96	87
December	100	744	59	97	69	95	82
Annual	100	3303	19	99	41	98	78



Wood Buffalo Environmental Association - Christina Lake (AMS500)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	41	94	59	92	78
February	100	672	40	97	57	82	69
March	100	744	27	97	43	87	68
April	100	720	17	94	33	88	53
May	99	689	19	94	32	74	46
Annual	100	3569	17	97	32	92	63



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	47	97	64	93	82
February	100	672	43	98	67	85	75
March	100	744	26	98	50	89	70
April	100	720	15	98	35	93	55
May	99	679	19	98	34	69	46
Annual	100	3559	15	98	34	93	66



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	40	92	59	90	78
February	100	672	40	96	58	82	68
March	100	744	23	95	45	86	66
April	100	720	18	95	33	88	52
May	100	744	16	96	33	79	46
June	100	720	20	99	36	93	68
July	100	445	25	98	46	92	65
Annual	100	4789	16	99	33	93	63



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2019
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
August	100	372	34	100	58	100	77
September	100	719	27	100	54	99	78
October	100	744	19	99	42	96	67
November	100	720	60	98	73	95	86
December	100	744	59	97	69	95	81
Annual	100	3299	19	100	42	100	78



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

BAROMETRIC PRESSURE ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Barometric Pressure (inHg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	29.1	29.7	29.6
February	100	672	29.3	30.0	29.8
March	100	744	29.2	29.9	29.8
April	100	720	29.0	29.4	29.4
May	100	743	29.0	29.3	29.3
June	100	720	28.9	29.2	29.2
July	100	744	28.9	29.4	29.3
August	100	744	29.0	29.3	29.2
September	100	720	29.0	29.6	29.5
October	100	743	29.0	29.6	29.5
November	100	720	29.1	29.8	29.7
December	100	744	28.9	29.5	29.4
Annual	100	8758	29.0	30.0	29.8



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Barometric Pressure (inHg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	29.0	29.6	29.5
February	100	672	29.2	29.8	29.7
March	100	744	29.1	29.8	29.7
April	100	720	28.9	29.3	29.3
May	100	744	28.9	29.2	29.2
June	100	720	28.8	29.1	29.1
July	100	744	28.8	29.2	29.2
August	100	744	28.9	29.1	29.1
September	100	720	28.9	29.5	29.4
October	100	744	28.9	29.5	29.4
November	100	720	29.0	29.6	29.6
December	100	744	28.8	29.4	29.3
Annual	100	8760	28.9	29.8	29.7



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SOLAR RADIATION ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	742	20.2	320.2	63.1
February	100	672	74.1	472.7	119.0
March	100	743	133.5	613.0	176.8
April	100	720	167.2	783.8	284.5
May	100	744	247.2	879.8	336.4
June	100	720	225.8	896.4	348.0
July	100	744	226.1	874.4	345.8
August	100	744	155.5	781.8	276.6
September	100	720	128.8	664.8	202.0
October	100	744	60.2	481.3	134.7
November	100	720	27.8	302.8	65.6
December	100	744	19.9	244.8	39.7
Annual	100	8757	124.1	896.4	348.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	742	25.9	367.0	76.0
February	100	672	78.2	493.9	123.6
March	100	742	141.1	622.9	188.8
April	100	720	190.7	829.6	311.1
May	100	744	278.3	943.8	357.9
June	100	720	261.1	938.3	390.5
July	100	744	270.8	898.8	369.7
August	100	744	178.4	803.5	301.0
September	100	720	128.2	675.1	218.9
October	100	744	55.9	479.4	133.4
November	100	720	26.0	308.0	54.4
December	100	744	18.9	226.3	39.0
Annual	100	8756	138.2	943.8	390.5



Wood Buffalo Environmental Association - Horizon (AMS15)
Annual Summary for the Year 2019
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	19.9	306.6	59.0
February	100	672	58.7	473.9	120.8
March	100	744	138.7	579.5	180.9
April	100	720	173.8	814.2	299.0
May	100	744	250.8	860.7	342.4
June	100	720	233.6	896.8	358.9
July	100	744	232.7	893.2	356.0
August	100	744	155.2	759.7	281.5
September	100	720	131.6	661.1	206.0
October	100	744	59.4	473.0	136.9
November	100	720	26.5	290.4	63.3
December	100	744	17.6	238.4	42.0
Annual	100	8760	125.2	896.8	358.9



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	27.0	342.7	62.9
February	100	672	52.9	608.9	148.6
March	100	744	160.0	730.2	209.7
April	100	720	193.1	893.0	294.2
May	100	744	268.3	1001.2	363.2
June	100	720	220.8	982.6	359.6
July	100	744	234.3	1001.6	343.1
August	100	743	183.6	878.9	312.3
September	100	720	133.8	792.1	246.0
October	100	743	68.8	586.7	162.3
November	100	720	31.6	371.6	85.2
December	100	744	20.8	249.9	42.5
Annual	100	8758	133.4	1001.6	363.2



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

PRECIPITATION ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	742	20.7	1.7	3.5
February	100	672	25.8	1.5	4.9
March	100	743	0.3	0.3	0.3
April	100	720	7.9	1.8	2.1
May	100	744	15.3	2.0	11.5
June	100	720	95.2	10.8	18.6
July	100	744	58.2	16.1	26.1
August	100	744	120.1	13.6	32.9
September	100	720	23.2	7.3	12.7
October	100	744	13.5	1.2	2.5
November	100	720	17.4	1.9	5.0
December	100	744	8.6	1.3	3.0
Annual	100	8757	406.3	16.1	32.9



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	0	0	--	--	--
February	0	0	--	--	--
March	15	108	0.0	0.0	0.0
April	100	719	2.5	0.8	1.5
May	100	744	6.9	1.5	4.1
June	100	720	53.3	13.0	17.5
July	100	744	40.4	9.9	24.1
August	100	744	109.0	9.7	38.9
September	100	720	44.2	12.4	23.1
Annual	68	4499	256.3	13.0	38.9



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	84	623	15.7	3.0	11.9
Annual	84	623	15.7	3.0	11.9



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	49.2	1.8	12.5
February	100	672	9.5	0.5	2.8
March	100	744	3.4	1.2	1.5
April	100	720	15.6	1.2	3.8
May	100	744	14.5	1.7	3.7
June	100	720	69.8	16.4	33.4
July	100	744	55.5	4.9	15.2
August	100	744	144.3	9.3	43.9
September	100	720	37.8	6.3	16.4
October	100	744	28.2	2.3	5.9
November	100	720	17.8	1.8	5.3
December	100	744	11.3	1.5	2.5
Annual	100	8760	456.9	16.4	43.9



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	21.8	2.3	6.3
February	100	672	8.1	0.5	3.3
March	100	744	0.8	0.4	0.8
April	100	720	17.6	3.0	9.0
May	100	744	13.7	4.3	7.2
June	100	719	113.2	19.9	37.4
July	100	744	81.3	8.9	18.6
August	100	741	75.0	9.5	19.6
September	100	720	33.2	4.4	10.3
October	100	743	44.3	3.0	13.3
November	100	720	14.8	0.9	4.0
December	100	744	6.6	0.8	2.7
Annual	100	8755	430.3	19.9	37.4



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2019
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	23.2	1.9	5.4
February	100	672	44.1	1.4	4.8
March	100	744	1.0	0.8	0.8
April	100	720	18.9	1.3	4.8
May	100	744	9.5	1.8	7.3
June	100	720	80.8	10.7	15.8
July	100	744	57.1	8.2	17.8
August	100	744	119.3	14.2	31.4
September	100	720	28.2	4.5	13.7
October	100	744	30.3	1.8	9.1
November	100	720	15.5	1.0	4.1
December	100	744	4.1	0.5	2.2
Annual	100	8760	432.0	14.2	31.4



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SURFACE WETNESS ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2019
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	742	1.1	74.4	9.6
February	100	672	0.3	1.8	0.7
March	100	743	0.2	20.4	3.0
April	98	707	2.5	62.0	15.3
May	100	744	1.0	60.1	13.7
June	100	720	5.1	75.2	26.1
July	100	744	6.5	75.3	18.2
August	100	744	13.1	70.0	35.1
September	100	720	9.1	73.2	25.8
October	99	738	4.1	82.7	22.9
November	99	716	1.6	38.9	15.2
December	100	743	1.6	53.7	6.8
Annual	100	8733	3.9	82.7	35.1



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2019
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	1.2	42.1	9.3
February	100	672	0.4	1.4	0.9
March	100	742	0.1	4.1	0.6
April	100	720	1.0	51.5	9.9
May	100	744	0.6	49.0	7.3
June	100	720	1.4	40.8	6.0
July	100	744	1.5	43.1	11.3
August	100	744	3.4	41.6	16.0
September	100	720	3.4	52.7	13.1
October	100	743	2.4	91.8	17.0
November	100	720	0.6	16.2	4.1
December	100	744	1.0	3.0	2.5
Annual	100	8757	1.4	91.8	17.0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	0.3	22.6	2.9
February	100	672	0.0	0.2	0.1
March	100	744	0.0	6.1	0.9
April	100	720	0.5	29.5	4.5
May	100	744	0.2	10.3	2.0
June	100	720	1.5	23.9	6.8
July	100	744	1.1	21.4	3.2
August	100	744	2.0	25.9	9.5
September	100	720	1.3	25.0	6.1
October	100	742	1.2	27.4	9.3
November	100	720	0.6	28.4	6.2
December	100	744	0.4	6.4	1.8
Annual	100	8758	0.8	29.5	9.5



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2019
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	4.8	100.0	25.4
February	100	672	8.1	12.1	12.0
March	100	744	1.4	4.5	2.3
April	100	720	2.4	98.8	17.4
May	100	744	1.4	39.1	5.6
June	100	720	5.8	60.3	16.5
July	100	744	5.2	45.7	12.9
August	100	743	6.7	45.8	19.5
September	100	720	4.8	45.6	16.6
October	99	738	5.9	78.2	25.8
November	100	718	3.8	95.2	21.8
December	100	744	2.7	10.3	4.1
Annual	100	8751	4.4	100.0	25.8



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

VERTICAL WIND SPEED ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
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	4.89	3.48	1.91	1.26	1.37	4.24	19.59	13.57	3.05	3.30	2.63	1.91	1.75	1.46	2.56	5.52	72.47
0.4 - 0.5	0.07	0.07	0.02	0.00	0.07	0.11	6.44	8.23	1.62	0.76	0.04	0.09	0.02	0.02	0.02	0.04	17.64
0.6 - 0.7	0.00	0.00	0.00	0.00	0.00	0.00	1.44	3.77	1.46	0.02	0.00	0.00	0.04	0.00	0.00	0.00	6.73
0.8 - 1.4	0.00	0.00	0.00	0.00	0.02	0.00	0.25	2.18	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.14
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.96	3.54	1.93	1.26	1.46	4.35	27.71	27.78	6.82	4.08	2.67	2.00	1.82	1.48	2.58	5.56	100.00

Total Number of Valid Hours 4457
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
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	10.45	4.33	1.60	1.17	1.09	2.92	9.21	8.84	3.13	2.07	2.69	3.81	2.60	2.18	3.96	9.26	69.31
0.4 - 0.5	0.39	0.24	0.20	0.00	0.20	0.65	6.93	6.48	0.88	0.56	0.48	0.65	0.24	0.15	0.08	0.15	18.29
0.6 - 0.7	0.12	0.05	0.03	0.00	0.00	0.15	3.16	3.67	0.29	0.08	0.14	0.17	0.08	0.05	0.02	0.07	8.09
0.8 - 1.4	0.02	0.02	0.02	0.00	0.03	0.02	2.04	1.80	0.14	0.02	0.02	0.03	0.05	0.00	0.00	0.02	4.21
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.98	4.64	1.85	1.17	1.33	3.74	21.36	20.84	4.44	2.74	3.31	4.66	2.97	2.38	4.06	9.50	99.97

Total Number of Valid Hours 5884
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
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	9.79	3.24	0.90	0.60	0.47	1.16	4.41	2.71	1.43	0.98	0.77	1.22	2.16	1.63	2.92	6.44	40.83
0.4 - 0.5	2.34	1.01	0.39	0.27	0.32	0.71	3.17	2.59	0.93	0.61	0.42	0.84	0.87	0.43	0.39	1.18	16.48
0.6 - 0.7	0.89	0.39	0.19	0.11	0.23	0.53	2.37	2.37	0.71	0.43	0.45	1.06	0.60	0.14	0.08	0.60	11.15
0.8 - 1.4	0.50	0.27	0.19	0.14	0.31	0.98	4.88	6.91	0.90	0.69	0.98	1.61	0.84	0.26	0.24	0.26	19.97
1.5 - 10	0.02	0.00	0.03	0.03	0.05	0.24	4.40	4.11	0.26	0.18	0.48	0.47	0.31	0.11	0.00	0.05	10.73
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	13.53	4.91	1.71	1.16	1.37	3.62	19.23	18.69	4.24	2.90	3.11	5.20	4.77	2.58	3.62	8.52	99.16

Total Number of Valid Hours 6208
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
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	7.91	2.48	1.07	0.44	0.27	0.94	5.16	4.79	1.27	0.80	0.84	0.80	1.84	1.27	3.95	7.44	41.29
0.4 - 0.5	4.12	1.64	0.13	0.13	0.20	0.30	1.98	2.01	0.77	0.27	0.20	0.50	0.67	0.50	0.50	1.91	15.85
0.6 - 0.7	2.14	0.80	0.30	0.13	0.23	0.34	1.78	1.88	0.37	0.34	0.20	0.47	0.70	0.34	0.20	0.80	11.03
0.8 - 1.4	3.08	1.01	0.17	0.17	0.20	0.87	4.89	3.32	0.57	0.44	0.74	1.61	1.54	0.37	0.30	0.74	20.01
1.5 - 10	0.34	0.13	0.07	0.03	0.03	0.30	3.08	3.32	0.67	0.44	0.54	0.77	0.74	0.27	0.03	0.17	10.92
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	17.59	6.07	1.74	0.90	0.94	2.75	16.89	15.32	3.65	2.28	2.51	4.16	5.50	2.75	4.99	11.06	99.10

Total Number of Valid Hours 2984
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
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	9.68	10.57	2.02	1.06	1.13	0.87	13.70	25.92	0.97	0.26	0.28	0.21	0.33	0.68	0.94	2.26	70.88
0.4 - 0.5	0.33	2.54	1.18	0.47	0.56	0.92	7.51	5.60	0.02	0.00	0.00	0.00	0.02	0.00	0.02	0.07	19.26
0.6 - 0.7	0.07	0.54	0.40	0.35	0.64	0.52	2.52	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	5.74
0.8 - 1.4	0.00	0.12	0.14	0.56	0.82	0.99	1.22	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.93
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.14	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.08	13.77	3.74	2.45	3.15	3.44	24.98	32.30	0.99	0.26	0.28	0.21	0.35	0.68	0.97	2.35	100.00

Total Number of Valid Hours 4248
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
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	4.17	7.72	1.54	0.48	0.71	0.30	1.80	4.75	3.80	1.08	0.53	0.41	0.37	0.51	0.74	0.99	29.91
0.4 - 0.5	0.48	2.30	0.85	0.30	0.51	0.25	2.30	4.91	1.84	0.21	0.07	0.09	0.05	0.12	0.16	0.21	14.65
0.6 - 0.7	0.09	0.69	0.65	0.53	0.35	0.28	3.13	5.85	0.85	0.05	0.05	0.05	0.02	0.07	0.05	0.12	12.81
0.8 - 1.4	0.23	0.37	0.44	0.81	1.20	1.24	14.06	17.12	0.25	0.00	0.02	0.00	0.00	0.00	0.00	0.02	35.76
1.5 - 10	0.00	0.00	0.02	0.02	0.21	0.99	2.63	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	5.71
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.98	11.08	3.50	2.14	2.97	3.06	23.92	34.42	6.75	1.34	0.67	0.55	0.44	0.69	0.94	1.38	98.85

Total Number of Valid Hours 4340
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
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	5.63	4.56	1.35	0.93	0.99	0.70	4.95	14.29	4.25	1.55	2.67	7.00	7.60	2.98	3.50	3.58	66.51
0.4 - 0.5	1.43	0.75	0.25	0.21	0.15	0.33	1.35	5.88	0.43	0.29	0.17	0.68	2.55	2.24	0.95	0.85	18.52
0.6 - 0.7	0.75	0.21	0.12	0.08	0.17	0.17	0.68	1.84	0.19	0.12	0.14	0.29	1.18	1.28	0.62	0.46	8.29
0.8 - 1.4	0.70	0.15	0.04	0.08	0.15	0.64	0.50	0.75	0.12	0.02	0.06	0.21	0.83	0.97	0.25	0.39	5.86
1.5 - 10	0.02	0.00	0.00	0.02	0.02	0.37	0.21	0.06	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.77
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	8.53	5.68	1.76	1.31	1.49	2.20	7.70	22.82	5.03	1.97	3.04	8.18	12.18	7.46	5.32	5.30	99.96

Total Number of Valid Hours 5172
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
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	5.61	5.37	1.44	1.22	0.69	1.21	4.88	7.54	6.74	1.95	2.23	4.53	6.74	4.95	3.95	2.65	61.71
0.4 - 0.5	1.85	1.04	0.16	0.09	0.15	0.24	1.94	4.90	2.67	0.35	0.13	0.46	1.52	2.01	1.17	0.66	19.31
0.6 - 0.7	1.00	0.46	0.07	0.11	0.15	0.18	1.08	3.67	1.35	0.09	0.11	0.22	0.60	0.64	0.47	0.31	10.52
0.8 - 1.4	1.35	0.24	0.04	0.13	0.05	0.68	0.62	2.06	0.53	0.04	0.04	0.22	0.44	0.47	0.29	0.35	7.54
1.5 - 10	0.15	0.00	0.00	0.02	0.02	0.49	0.04	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.82
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	9.96	7.11	1.72	1.57	1.06	2.80	8.55	18.23	11.31	2.43	2.50	5.43	9.30	8.07	5.88	4.00	99.91

Total Number of Valid Hours 5474
 Total Number of Hours 8760



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

WIND SPEED AND DIRECTION ANNUAL 2019

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

March 2020



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
 Annual Summary for the Year 2019
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.27	1.68	1.25	1.10	1.00	0.93	1.48	2.46	5.40	4.63	3.05	2.91	3.85	4.56	2.88	2.48	41.92
6 - 11	5.55	3.00	0.99	0.52	0.39	0.30	1.24	5.28	8.28	1.83	0.87	0.93	2.03	2.60	1.75	2.49	38.04
12 - 19	5.78	1.16	0.00	0.00	0.00	0.01	0.38	3.27	2.05	0.25	0.11	0.08	0.09	0.89	1.67	1.50	17.25
20 - 28	0.72	0.01	0.00	0.00	0.00	0.00	0.01	0.15	0.01	0.00	0.00	0.00	0.00	0.19	0.54	0.96	2.60
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.15	0.19
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	14.31	5.86	2.23	1.62	1.39	1.24	3.11	11.18	15.74	6.71	4.03	3.92	5.97	8.26	6.85	7.57	100.00

Total Number of Valid Hours 8727
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.55	2.03	1.31	1.11	1.26	1.28	1.37	2.11	2.54	3.14	2.19	1.21	0.74	0.76	0.95	1.51	26.05
6 - 11	7.25	4.46	1.49	0.48	0.66	0.96	2.65	7.77	5.38	2.87	2.36	1.69	1.27	2.47	1.84	2.64	46.26
12 - 19	4.70	3.94	0.46	0.00	0.02	0.28	1.15	4.20	1.01	0.53	0.42	0.96	0.65	2.35	1.71	2.09	24.47
20 - 28	0.75	0.23	0.00	0.00	0.00	0.00	0.09	0.38	0.00	0.01	0.00	0.05	0.10	0.27	0.36	0.77	3.01
29 - 38	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.10	0.22
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	15.31	10.67	3.26	1.59	1.94	2.51	5.27	14.50	8.94	6.55	4.97	3.91	2.76	5.85	4.87	7.11	100.00

Total Number of Valid Hours 8673
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
Wind Speed20m (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	5.28	2.14	1.25	0.85	0.98	2.10	4.37	2.84	1.33	1.15	1.21	1.28	1.51	1.95	4.45	8.35	41.03
6 - 11	8.31	2.18	0.31	0.11	0.12	0.61	6.77	6.38	1.17	0.81	0.87	1.94	1.85	1.05	1.92	3.85	38.23
12 - 19	2.19	0.33	0.00	0.00	0.00	0.05	3.86	4.93	1.14	0.38	0.47	1.05	1.73	1.09	1.28	1.05	19.55
20 - 28	0.01	0.00	0.00	0.00	0.00	0.00	0.16	0.46	0.00	0.00	0.04	0.06	0.18	0.08	0.05	0.09	1.13
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	15.80	4.65	1.55	0.95	1.09	2.75	15.16	14.67	3.64	2.34	2.59	4.33	5.26	4.18	7.70	13.34	100.00

Total Number of Valid Hours 8496
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
Wind Speed45m (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	4.41	2.10	1.00	0.66	0.79	0.89	2.44	2.56	1.30	1.12	0.90	0.87	0.97	1.23	2.03	4.61	27.90
6 - 11	6.73	2.69	0.53	0.35	0.22	0.63	4.43	6.39	1.23	0.65	0.65	1.44	1.63	0.83	0.92	3.96	33.27
12 - 19	4.84	3.33	0.29	0.02	0.00	0.08	2.64	7.89	2.32	0.70	0.68	1.53	1.91	1.07	1.66	1.61	30.59
20 - 28	0.92	0.41	0.00	0.00	0.00	0.00	0.99	2.20	0.14	0.07	0.13	0.55	0.93	0.52	0.35	0.53	7.73
29 - 38	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.19	0.01	0.00	0.00	0.02	0.14	0.02	0.01	0.04	0.48
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Totals	16.93	8.54	1.82	1.03	1.01	1.61	10.51	19.26	5.01	2.54	2.36	4.41	5.59	3.68	4.97	10.74	100.00

Total Number of Valid Hours 8517
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
Wind Speed100m (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	1.30	0.87	0.71	0.56	0.62	0.87	1.21	1.05	0.94	0.94	0.70	0.54	0.61	0.79	0.86	1.22	13.80
6 - 11	3.69	1.61	0.75	0.38	0.42	0.62	3.44	3.99	1.86	1.09	1.16	1.63	1.26	0.93	1.11	3.10	27.05
12 - 19	6.50	2.22	0.31	0.24	0.12	0.44	4.24	6.62	1.71	0.88	1.27	1.97	0.94	0.88	1.57	3.37	33.29
20 - 28	3.83	0.96	0.05	0.04	0.01	0.13	2.40	3.07	0.56	0.39	0.69	1.96	1.28	1.31	1.23	1.13	19.03
29 - 38	0.73	0.08	0.00	0.00	0.00	0.00	1.73	0.30	0.02	0.06	0.19	0.70	0.67	0.44	0.41	0.57	5.91
> 38	0.02	0.00	0.00	0.00	0.00	0.00	0.39	0.05	0.00	0.00	0.02	0.11	0.11	0.02	0.04	0.16	0.92
Totals	16.06	5.74	1.83	1.21	1.17	2.06	13.40	15.10	5.10	3.37	4.04	6.92	4.87	4.37	5.23	9.54	100.00

Total Number of Valid Hours 8261
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2019
Wind Speed167m (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	0.70	0.44	0.41	0.36	0.36	0.58	0.41	0.66	0.85	0.61	0.39	0.27	0.36	0.56	0.63	0.44	8.04
6 - 11	2.50	1.46	1.14	0.46	0.36	0.58	1.46	2.72	2.28	1.19	0.68	0.87	0.75	0.58	0.83	1.92	19.80
12 - 19	5.76	5.44	1.19	0.63	0.29	0.68	1.87	5.03	2.72	1.65	1.41	0.97	0.83	1.31	0.85	1.53	32.17
20 - 28	5.81	3.96	0.56	0.19	0.05	0.39	2.31	3.35	1.97	0.87	0.49	2.11	1.26	1.58	0.92	1.29	27.11
29 - 38	1.12	0.44	0.02	0.05	0.02	0.00	2.50	0.68	0.29	0.17	0.39	0.83	1.02	0.87	1.17	0.68	10.25
> 38	0.02	0.00	0.00	0.00	0.00	0.00	0.63	0.12	0.02	0.12	0.12	0.41	0.61	0.17	0.17	0.22	2.62
Totals	15.91	11.73	3.33	1.70	1.09	2.24	9.18	12.56	8.14	4.62	3.47	5.47	4.83	5.08	4.57	6.07	100.00

Total Number of Valid Hours 4116
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.41	1.48	1.09	0.55	0.45	0.82	1.63	3.03	2.69	1.36	1.24	1.19	0.80	1.10	1.23	1.10	21.18
6 - 11	4.19	4.10	1.91	0.65	0.39	0.93	4.38	14.60	4.74	1.81	1.62	1.47	1.92	2.38	1.87	1.56	48.52
12 - 19	4.57	4.70	0.63	0.03	0.02	0.21	1.05	1.58	0.45	0.74	0.69	1.87	2.68	1.25	2.56	1.23	24.26
20 - 28	1.49	1.21	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.01	0.02	0.38	0.77	0.33	0.44	0.84	5.59
29 - 38	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.01	0.02	0.15	0.45
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	11.82	11.50	3.63	1.24	0.86	1.95	7.05	19.32	7.88	3.92	3.57	4.96	6.22	5.08	6.12	4.88	100.00

Total Number of Valid Hours 8707
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Wind Speed20m (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	0.95	0.76	0.74	0.53	0.74	0.60	1.27	1.88	1.31	1.04	0.97	1.14	1.18	0.95	1.04	1.04	16.12
6 - 11	3.64	2.82	0.97	0.56	0.56	0.69	4.87	10.22	2.52	1.32	1.60	2.69	2.62	1.70	1.73	2.98	41.49
12 - 19	4.58	3.06	0.20	0.12	0.32	0.43	5.05	6.65	1.01	0.56	0.92	2.07	2.89	1.67	1.69	2.81	34.02
20 - 28	1.24	0.43	0.00	0.00	0.00	0.00	1.32	0.18	0.06	0.02	0.21	0.61	1.14	0.84	0.61	0.94	7.60
29 - 38	0.03	0.01	0.00	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.01	0.10	0.33	0.06	0.06	0.09	0.77
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.45	7.08	1.90	1.21	1.62	1.71	12.55	18.95	4.90	2.95	3.70	6.62	8.17	5.22	5.12	7.86	100.00

Total Number of Valid Hours 8692
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Wind Speed45m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.55	0.58	0.50	0.59	0.47	0.61	0.74	0.88	0.69	0.46	0.43	0.56	0.61	0.55	0.63	0.61	9.44
6 - 11	1.98	1.78	0.82	0.63	0.39	0.53	2.98	2.98	1.64	1.02	0.91	1.28	1.48	1.26	1.65	1.79	23.13
12 - 19	4.28	3.01	0.37	0.19	0.57	0.71	5.55	8.61	2.02	1.20	1.23	2.20	3.09	1.84	1.53	3.11	39.51
20 - 28	3.82	1.19	0.02	0.00	0.05	0.23	3.00	4.36	1.21	0.47	0.81	1.31	2.07	1.59	1.34	1.99	23.45
29 - 38	0.87	0.11	0.00	0.00	0.00	0.00	0.32	0.13	0.11	0.04	0.07	0.34	0.62	0.39	0.40	0.63	4.02
> 38	0.05	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.05	0.07	0.06	0.07	0.09	0.44
Totals	11.55	6.68	1.71	1.41	1.48	2.08	12.61	16.97	5.66	3.19	3.45	5.73	7.93	5.69	5.63	8.23	100.00

Total Number of Valid Hours 8425
Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Wind Speed75m (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	0.57	0.44	0.46	0.58	0.46	0.55	0.71	0.71	0.49	0.37	0.35	0.46	0.43	0.43	0.39	0.42	7.84
6 - 11	1.80	1.56	1.11	0.68	0.55	0.89	2.12	2.17	1.58	1.12	0.93	0.99	0.99	1.04	1.25	1.41	20.18
12 - 19	3.01	3.54	1.17	0.42	0.42	0.37	3.47	5.22	2.61	1.35	1.35	1.63	2.38	1.93	1.39	1.83	32.09
20 - 28	3.00	4.09	0.45	0.10	0.02	0.00	2.59	5.98	3.28	0.87	1.05	1.41	2.55	1.79	1.14	1.79	30.10
29 - 38	0.80	1.62	0.00	0.01	0.00	0.00	0.24	0.94	0.93	0.19	0.19	0.57	0.92	0.81	0.75	0.81	8.78
> 38	0.11	0.13	0.00	0.00	0.00	0.00	0.02	0.11	0.00	0.00	0.01	0.07	0.15	0.13	0.04	0.24	1.01
Totals	9.29	11.38	3.19	1.79	1.45	1.81	9.15	15.13	8.89	3.90	3.87	5.14	7.42	6.12	4.97	6.49	100.00

Total Number of Valid Hours 8393
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2019
Wind Speed90m (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	0.51	0.36	0.43	0.52	0.34	0.49	0.62	0.62	0.40	0.38	0.36	0.34	0.45	0.40	0.51	0.33	7.04
6 - 11	1.61	1.35	0.95	0.65	0.47	0.83	1.79	1.92	1.54	0.98	0.95	1.01	0.84	0.96	1.33	1.47	18.64
12 - 19	3.28	3.01	0.79	0.44	0.57	1.07	3.65	4.18	2.15	1.23	1.43	1.59	1.98	1.67	1.26	1.99	30.27
20 - 28	3.58	3.27	0.32	0.06	0.12	0.22	3.43	4.71	2.97	0.97	1.26	1.61	2.81	1.80	1.40	2.15	30.68
29 - 38	2.01	0.81	0.01	0.01	0.00	0.00	0.76	1.40	1.21	0.24	0.33	0.86	1.29	1.26	0.76	0.89	11.83
> 38	0.27	0.05	0.00	0.00	0.00	0.00	0.06	0.14	0.00	0.00	0.01	0.13	0.22	0.13	0.18	0.34	1.54
Totals	11.26	8.83	2.50	1.68	1.50	2.60	10.30	12.96	8.28	3.80	4.33	5.54	7.59	6.22	5.42	7.17	100.00

Total Number of Valid Hours 8446
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.91	0.74	0.67	0.65	0.75	1.49	2.05	2.23	2.55	2.36	2.11	1.51	1.32	1.58	1.49	1.21	23.63
6 - 11	3.26	1.96	0.82	0.52	0.96	2.73	5.45	3.79	2.98	3.39	3.31	1.69	1.41	2.24	2.44	3.86	40.81
12 - 19	5.25	1.39	0.10	0.08	0.35	2.81	1.39	0.53	0.69	1.06	2.67	2.39	1.79	1.87	1.92	4.61	28.90
20 - 28	1.35	0.10	0.00	0.00	0.01	0.28	0.20	0.02	0.03	0.08	0.25	0.59	0.74	0.72	0.66	1.18	6.22
29 - 38	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.06	0.09	0.08	0.16	0.44
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.78	4.20	1.59	1.25	2.07	7.30	9.11	6.58	6.26	6.89	8.34	6.19	5.32	6.51	6.59	11.03	100.00

Total Number of Valid Hours 8653
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.89	1.02	1.06	1.62	1.98	2.68	4.01	3.54	2.58	2.98	3.12	2.58	1.61	1.56	1.59	2.23	36.06
6 - 11	2.92	0.64	0.30	0.44	0.77	1.82	11.13	2.95	0.70	1.41	3.31	1.43	0.77	0.57	1.53	5.76	36.45
12 - 19	2.50	0.30	0.03	0.06	0.15	0.65	3.88	0.55	0.29	0.30	1.32	1.58	1.11	1.01	1.53	6.66	21.92
20 - 28	0.23	0.00	0.00	0.00	0.00	0.03	0.14	0.03	0.00	0.00	0.07	0.21	0.77	0.62	0.94	1.74	4.78
29 - 38	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.24	0.14	0.17	0.16	0.73
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
Totals	7.56	1.96	1.39	2.11	2.90	5.20	19.16	7.08	3.57	4.69	7.82	5.82	4.50	3.90	5.80	16.55	100.00

Total Number of Valid Hours 8718
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
 Annual Summary for the Year 2019
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.64	0.42	0.49	0.62	0.77	0.50	0.47	0.44	0.60	0.61	0.45	0.53	0.72	0.91	0.73	0.88	9.79
6 - 11	2.12	1.27	0.94	1.51	4.35	1.65	0.98	0.73	1.30	1.54	1.95	1.82	2.49	3.94	5.74	5.60	37.93
12 - 19	0.88	0.45	1.17	2.07	6.56	1.47	0.78	1.54	1.98	1.20	1.14	1.07	2.83	3.81	5.16	4.49	36.60
20 - 28	0.01	0.03	0.67	2.18	4.10	0.40	0.55	0.57	1.51	0.37	0.16	0.36	0.71	0.21	0.67	0.32	12.82
29 - 38	0.00	0.00	0.28	0.81	0.70	0.41	0.18	0.05	0.14	0.05	0.00	0.01	0.02	0.00	0.00	0.00	2.65
> 38	0.00	0.00	0.01	0.02	0.08	0.02	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Totals	3.66	2.18	3.56	7.22	16.56	4.46	2.99	3.36	5.54	3.76	3.69	3.79	6.78	8.86	12.30	11.29	100.00

Total Number of Valid Hours 8716
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3.85	2.35	2.26	1.90	2.06	2.87	4.09	4.98	3.64	3.28	3.32	3.32	2.41	2.20	3.62	5.72	51.87
6 - 11	5.36	5.21	2.13	0.56	0.12	0.61	2.95	6.50	5.64	2.32	2.04	2.09	0.89	0.90	1.82	2.97	42.10
12 - 19	0.81	0.58	0.02	0.00	0.00	0.06	0.45	0.44	0.17	0.28	0.37	0.73	0.32	0.35	0.46	0.93	5.96
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.07
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.01	8.14	4.41	2.47	2.18	3.54	7.51	11.94	9.45	5.88	5.73	6.14	3.62	3.45	5.90	9.63	100.00

Total Number of Valid Hours 8677
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.03	1.63	1.05	1.53	1.66	3.53	3.37	1.30	0.70	0.55	0.53	1.13	2.20	4.98	4.93	2.97	34.09
6 - 11	3.33	1.05	0.31	0.17	0.48	2.41	10.72	2.80	0.98	0.74	0.78	1.52	1.43	2.09	3.31	4.87	36.99
12 - 19	4.00	1.08	0.09	0.05	0.07	1.60	6.09	0.43	0.07	0.08	0.36	2.32	1.78	1.97	1.55	2.15	23.69
20 - 28	0.58	0.14	0.00	0.00	0.00	1.06	1.01	0.00	0.00	0.00	0.02	0.30	0.56	0.58	0.48	0.33	5.06
29 - 38	0.00	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.02	0.00	0.17
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	9.93	3.90	1.45	1.75	2.21	8.65	21.24	4.52	1.75	1.37	1.69	5.28	5.97	9.65	10.30	10.32	100.00

Total Number of Valid Hours 8690
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.16	1.82	1.00	0.71	0.74	0.74	1.20	2.41	5.29	4.68	4.46	5.92	3.48	2.71	2.89	2.69	42.90
6 - 11	4.90	3.50	0.92	0.18	0.11	0.40	2.17	3.43	4.96	2.29	1.54	2.83	2.36	1.62	2.08	2.58	35.86
12 - 19	6.20	2.00	0.05	0.00	0.00	0.01	0.75	2.90	2.40	0.61	0.48	0.52	0.36	0.38	0.83	1.77	19.25
20 - 28	0.99	0.15	0.00	0.00	0.00	0.00	0.03	0.21	0.08	0.00	0.00	0.00	0.00	0.01	0.01	0.47	1.95
29 - 38	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	14.26	7.46	1.97	0.90	0.85	1.15	4.15	8.95	12.73	7.58	6.48	9.27	6.20	4.73	5.81	7.53	100.00

Total Number of Valid Hours 8697
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.97	0.60	0.56	0.67	0.60	0.90	1.46	1.82	2.40	1.71	1.59	1.37	1.35	1.70	1.47	0.97	20.15
6 - 11	3.13	1.81	1.07	1.04	1.19	1.29	3.26	5.88	5.44	2.61	2.14	1.52	2.07	5.04	5.37	3.62	46.48
12 - 19	3.52	1.10	0.19	0.18	0.13	0.22	1.57	3.14	1.37	0.46	0.85	0.61	1.80	4.98	5.03	4.17	29.32
20 - 28	1.14	0.07	0.00	0.00	0.00	0.00	0.08	0.10	0.06	0.00	0.00	0.07	0.24	0.34	0.65	0.99	3.74
29 - 38	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.07	0.17	0.31
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	8.77	3.58	1.82	1.89	1.92	2.41	6.37	10.99	9.26	4.78	4.59	3.57	5.48	12.06	12.59	9.92	100.00

Total Number of Valid Hours 8347
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Horizon (AMS15)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.35	2.40	2.11	1.62	1.44	1.13	1.31	1.11	1.93	3.22	2.26	1.51	1.06	1.02	1.00	0.93	25.40
6 - 11	0.97	5.86	4.32	2.36	0.79	0.67	0.77	1.65	5.04	11.39	6.13	2.59	1.45	1.14	0.79	0.58	46.50
12 - 19	1.30	4.82	3.28	0.35	0.06	0.03	0.23	0.51	1.12	3.26	2.79	1.46	0.78	1.00	1.60	1.39	23.99
20 - 28	0.29	0.38	0.14	0.00	0.00	0.00	0.00	0.06	0.00	0.09	0.12	0.22	0.16	0.67	0.74	0.92	3.78
29 - 38	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.06	0.12	0.31
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
Totals	3.94	13.46	9.85	4.33	2.29	1.83	2.31	3.32	8.10	17.96	11.29	5.78	3.47	3.93	4.20	3.95	100.00

Total Number of Valid Hours 8684
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.44	1.99	2.06	1.51	1.65	1.92	3.37	3.85	2.47	1.30	1.03	1.04	0.89	0.98	1.26	1.12	27.87
6 - 11	5.98	4.09	2.02	0.74	0.50	1.04	2.77	7.25	8.06	4.56	3.04	2.13	1.18	1.29	1.38	3.58	49.62
12 - 19	4.29	0.48	0.02	0.00	0.08	0.26	1.32	3.61	1.92	1.49	1.84	1.22	0.27	0.33	0.36	3.57	21.06
20 - 28	0.35	0.00	0.00	0.00	0.00	0.00	0.14	0.46	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.42	1.40
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	12.06	6.56	4.11	2.25	2.23	3.22	7.60	15.21	12.45	7.35	5.91	4.41	2.34	2.61	3.01	8.70	100.00

Total Number of Valid Hours 8549
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Conklin Lookout (AMS18)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.45	1.59	1.32	1.37	1.73	1.33	1.79	1.77	1.91	2.06	1.70	1.74	1.86	3.34	3.89	3.18	33.02
6 - 11	2.56	2.80	2.29	1.12	1.21	1.06	1.63	2.74	4.16	6.87	3.83	2.92	5.21	5.71	4.29	2.49	50.89
12 - 19	0.08	0.13	0.24	0.03	0.15	0.22	0.44	0.32	1.91	4.10	1.03	1.49	2.74	1.81	1.03	0.08	15.80
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.21	0.00	0.01	0.01	0.01	0.00	0.00	0.29
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	5.09	4.52	3.85	2.53	3.10	2.61	3.86	4.83	8.02	13.24	6.56	6.17	9.82	10.87	9.21	5.75	100.00

Total Number of Valid Hours 8658
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.83	0.86	0.62	0.48	0.35	0.53	0.84	0.70	0.75	0.84	0.98	0.64	0.71	0.69	0.71	0.99	11.53
6 - 11	3.06	2.07	1.58	1.10	0.98	1.45	1.72	2.51	2.82	3.13	2.98	2.43	2.13	2.17	1.64	2.82	34.57
12 - 19	4.10	1.99	0.79	0.49	0.50	1.27	1.59	3.61	4.45	4.30	2.68	2.00	1.16	1.59	2.69	4.57	37.77
20 - 28	1.33	0.12	0.01	0.01	0.13	0.41	1.13	1.57	1.97	1.86	0.78	0.89	0.41	0.48	0.58	3.01	14.70
29 - 38	0.06	0.00	0.00	0.00	0.00	0.13	0.11	0.11	0.19	0.11	0.02	0.00	0.01	0.14	0.08	0.46	1.40
> 38	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Totals	9.38	5.04	3.00	2.08	1.96	3.81	5.39	8.49	10.18	10.23	7.44	5.96	4.42	5.07	5.70	11.85	100.00

Total Number of Valid Hours 8559
 Total Number of Hours 8760



Wood Buffalo Environmental Association -MacKay River (AMS20)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.35	2.13	2.15	1.22	1.20	1.97	4.43	6.43	3.83	2.64	2.37	2.78	3.11	1.92	1.56	1.74	40.83
6 - 11	1.90	5.09	2.93	0.71	0.57	2.48	2.54	2.29	6.03	5.67	2.32	3.32	3.57	3.73	3.08	2.79	49.02
12 - 19	0.41	1.14	0.37	0.02	0.02	0.44	0.21	0.31	0.49	1.11	0.15	0.17	0.43	1.08	1.71	1.81	9.90
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.03	0.10	0.06	0.24
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.66	8.36	5.45	1.96	1.80	4.90	7.18	9.07	10.35	9.41	4.84	6.27	7.11	6.78	6.46	6.39	100.00

Total Number of Valid Hours 8574
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3.71	1.73	1.07	0.97	0.92	1.48	2.33	4.40	7.49	5.36	1.80	1.44	1.23	2.07	3.15	5.79	44.95
6 - 11	3.34	2.27	1.24	0.50	0.36	1.16	1.51	1.68	2.99	4.64	4.54	3.13	1.98	3.50	4.42	4.06	41.32
12 - 19	1.59	0.34	0.19	0.03	0.00	0.09	0.34	0.63	0.66	1.27	1.56	1.20	0.99	0.76	0.90	2.71	13.25
20 - 28	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.17	0.49
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	8.82	4.34	2.50	1.50	1.28	2.73	4.18	6.78	11.14	11.27	7.90	5.77	4.20	6.34	8.51	12.74	100.00

Total Number of Valid Hours 8597
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3.49	6.09	2.49	2.28	1.73	1.83	3.26	4.19	5.81	6.03	3.01	1.77	1.50	1.39	0.94	1.28	47.07
6 - 11	2.80	7.64	1.82	1.00	0.89	0.62	0.75	1.53	4.14	11.06	4.61	2.29	3.06	2.28	0.95	0.39	45.82
12 - 19	0.36	1.06	0.16	0.02	0.06	0.08	0.05	0.38	0.33	1.65	0.68	0.44	1.36	0.38	0.07	0.01	7.08
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.03
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	6.64	14.78	4.46	3.30	2.67	2.53	4.05	6.10	10.29	18.73	8.31	4.50	5.95	4.05	1.97	1.68	100.00

Total Number of Valid Hours 8692
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.67	0.80	0.85	0.53	0.84	0.79	2.10	2.72	2.48	1.57	1.33	1.00	1.10	1.48	1.95	1.93	23.15
6 - 11	4.22	3.05	1.45	0.48	0.43	1.16	4.08	6.36	4.67	2.87	1.24	1.06	1.07	1.05	1.22	2.17	36.60
12 - 19	5.91	3.88	0.83	0.02	0.02	0.30	1.74	4.91	4.14	2.97	1.29	0.59	0.48	0.88	1.14	1.65	30.76
20 - 28	2.36	1.70	0.02	0.00	0.00	0.06	0.35	0.55	0.59	0.57	0.38	0.17	0.33	0.34	0.50	0.95	8.87
29 - 38	0.15	0.07	0.00	0.00	0.00	0.00	0.06	0.03	0.00	0.00	0.01	0.01	0.06	0.01	0.01	0.19	0.60
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Totals	14.32	9.50	3.15	1.04	1.29	2.31	8.34	14.57	11.89	7.98	4.26	2.84	3.04	3.76	4.83	6.91	100.00

Total Number of Valid Hours 8599
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Surmont (AMS24)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.83	1.07	0.95	0.53	0.36	0.65	1.66	1.25	2.14	1.01	0.77	1.07	0.71	0.24	0.18	0.47	13.89
6 - 11	3.86	3.03	1.48	0.71	0.89	1.19	1.90	4.51	5.46	4.75	3.44	1.90	2.55	1.13	2.08	1.36	40.24
12 - 19	4.51	1.01	0.06	0.18	0.00	0.00	0.36	0.77	2.91	2.55	0.77	1.60	2.49	2.61	6.82	2.85	29.50
20 - 28	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.18	1.42	2.37	1.60	4.39	2.67	15.37
29 - 38	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.36	0.06	0.00	0.95
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.06
Totals	12.23	5.10	2.49	1.42	1.25	1.84	3.92	6.53	10.50	8.37	5.16	5.99	8.37	5.93	13.53	7.36	100.00

Total Number of Valid Hours 1685
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3.15	3.06	2.41	1.97	1.65	1.73	3.11	8.46	7.54	3.55	3.25	3.66	5.43	5.13	3.98	3.78	61.88
6 - 11	5.90	4.28	1.00	0.17	0.01	0.07	2.87	5.53	2.43	0.77	0.84	0.96	1.57	1.69	2.08	2.55	32.71
12 - 19	1.44	0.39	0.00	0.00	0.00	0.00	0.03	0.15	0.06	0.01	0.03	0.05	0.09	0.41	1.06	1.38	5.11
20 - 28	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.24	0.30
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.50	7.74	3.41	2.15	1.66	1.80	6.01	14.14	10.03	4.33	4.12	4.67	7.09	7.24	7.14	7.96	100.00

Total Number of Valid Hours 8615
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.16	0.60	1.08	0.99	1.57	1.52	1.91	2.11	3.09	2.31	0.99	0.39	0.33	0.24	0.15	0.24	17.69
6 - 11	1.28	3.29	1.95	1.37	1.60	1.87	2.20	2.65	5.45	4.73	4.06	2.49	0.92	1.06	0.92	0.64	36.48
12 - 19	2.18	3.22	0.97	0.59	0.39	0.51	1.14	1.64	3.09	2.33	3.32	6.15	2.79	2.49	3.89	1.80	36.47
20 - 28	0.41	0.31	0.10	0.01	0.10	0.09	0.30	0.14	0.21	0.08	0.43	0.75	1.38	1.12	2.01	1.27	8.72
29 - 38	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.02	0.09	0.18	0.23	0.06	0.66
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.04	7.43	4.10	2.96	3.66	3.98	5.56	6.57	11.82	9.45	8.80	9.80	5.52	5.09	7.21	4.01	100.00

Total Number of Valid Hours 8685
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.11	2.96	2.26	1.59	1.25	1.19	1.88	3.00	5.06	4.57	2.52	2.37	2.62	1.81	2.42	2.13	39.75
6 - 11	1.79	2.84	3.02	1.70	1.01	0.73	1.26	1.97	3.82	6.74	7.07	6.37	4.31	3.37	3.49	2.34	51.82
12 - 19	0.05	0.06	0.24	0.13	0.03	0.09	0.05	0.07	0.02	0.55	2.25	2.97	0.87	0.80	0.21	0.06	8.43
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.94	5.85	5.52	3.41	2.29	2.02	3.19	5.04	8.90	11.86	11.84	11.71	7.80	5.98	6.12	4.53	100.00

Total Number of Valid Hours 8728
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.99	1.84	1.82	1.53	2.19	4.11	4.47	3.31	2.86	2.41	4.79	8.14	7.31	4.31	2.83	2.33	56.24
6 - 11	1.89	0.79	0.54	0.43	0.77	3.71	3.88	1.16	0.53	0.20	0.42	2.97	6.89	5.50	3.34	4.93	37.93
12 - 19	0.05	0.00	0.00	0.00	0.02	0.48	0.15	0.20	0.03	0.00	0.03	0.49	1.62	1.22	0.43	1.10	5.83
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.92	2.63	2.36	1.96	2.98	8.30	8.50	4.67	3.41	2.61	5.24	11.60	15.82	11.03	6.60	8.36	100.00

Total Number of Valid Hours 6472
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 - 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.28	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.88
40 - 60	0.09	0.00	0.00	0.00	0.00	0.00	0.14	0.65	0.60	0.46	0.60	0.74	0.74	1.02	0.32	0.09	5.48
60 - 80	1.16	0.79	0.23	0.28	0.19	2.04	0.97	2.23	2.00	3.57	1.48	1.07	3.90	3.57	3.57	4.45	31.51
80 - 100	4.22	1.25	0.51	0.19	1.02	3.71	4.45	4.36	6.54	7.38	2.55	1.76	7.10	6.45	4.78	5.85	62.13
Totals	5.48	2.04	0.74	0.46	1.21	5.75	5.57	7.66	9.42	11.60	4.64	3.57	11.74	11.04	8.68	10.39	100.00

Total Number of Valid Hours 2155
 Total Number of Hours 8760
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Sawbones Bay(AMS505)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.22	1.09	1.11	1.15	1.57	1.68	1.59	2.01	1.68	1.11	0.63	0.71	0.63	0.71	0.67	1.17	18.73
6 - 11	3.08	1.61	0.71	0.57	1.40	2.49	3.65	5.32	6.64	3.39	1.19	1.07	2.22	3.75	3.25	3.21	43.57
12 - 19	1.84	0.27	0.10	0.13	0.36	0.69	0.96	1.78	3.35	3.06	3.90	2.68	3.88	4.02	2.28	2.33	31.64
20 - 28	0.04	0.00	0.00	0.00	0.00	0.17	0.06	0.02	0.06	0.21	0.57	1.07	1.30	0.90	0.54	0.69	5.64
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.21	0.17	0.02	0.00	0.42
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	6.18	2.98	1.93	1.84	3.33	5.03	6.27	9.14	11.74	7.77	6.29	5.55	8.24	9.56	6.77	7.40	100.00

Total Number of Valid Hours 4772
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Jackfish 1(AMS506)
 Annual Summary for the Year 2019
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	3.50	1.96	1.65	1.29	1.44	1.03	1.67	3.37	9.05	7.42	4.93	2.25	2.23	4.00	6.25	3.68	55.72
6 - 11	4.55	2.59	0.74	0.48	0.38	0.67	1.37	2.75	5.29	3.93	1.53	0.22	0.14	0.65	6.22	6.03	37.55
12 - 19	0.58	0.09	0.05	0.00	0.00	0.03	0.50	0.65	0.21	0.05	0.00	0.00	0.00	0.00	1.13	3.21	6.51
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.17	0.22
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	8.64	4.64	2.44	1.77	1.82	1.73	3.54	6.78	14.55	11.41	6.46	2.47	2.37	4.65	13.64	13.09	100.00

Total Number of Valid Hours 5822
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.80	0.57	0.93	0.93	1.02	0.71	0.62	0.44	0.35	0.93	0.62	0.97	0.49	0.35	0.57	1.28	11.58
6 - 11	2.87	1.90	4.07	1.95	1.55	1.28	1.64	2.25	3.05	4.47	4.60	2.21	2.83	3.76	2.12	2.03	42.57
12 - 19	2.48	2.65	1.50	0.62	0.35	0.57	1.06	1.24	2.83	6.85	4.24	3.27	4.51	3.80	2.65	2.17	40.80
20 - 28	0.22	0.00	0.00	0.04	0.00	0.04	0.04	0.04	0.13	1.19	0.35	0.18	0.97	0.84	0.57	0.35	5.00
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.04
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	6.37	5.13	6.50	3.54	2.92	2.61	3.36	3.98	6.37	13.44	9.81	6.63	8.84	8.75	5.92	5.84	100.00

Total Number of Valid Hours 2262
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2019
Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.80	0.80	0.91	1.04	0.60	0.60	0.60	0.55	1.12	1.72	0.93	0.62	0.46	0.42	0.31	0.49	11.97
6 - 11	4.18	2.81	2.50	1.84	1.11	0.91	1.28	2.42	5.76	9.20	5.28	2.54	1.48	1.17	2.76	2.10	47.34
12 - 19	3.95	1.85	2.10	1.51	0.72	0.47	0.50	1.07	2.39	3.17	5.07	3.35	2.34	1.92	2.89	1.24	34.55
20 - 28	1.04	0.39	0.46	0.18	0.05	0.02	0.07	0.26	0.08	0.00	0.21	0.16	0.78	0.93	0.86	0.47	5.95
29 - 38	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.20
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	10.01	5.89	5.97	4.57	2.47	2.00	2.45	4.31	9.35	14.10	11.49	6.67	5.06	4.50	6.83	4.34	100.00

Total Number of Valid Hours 6151
 Total Number of Hours 8760



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

WIND ROSES ANNUAL 2019

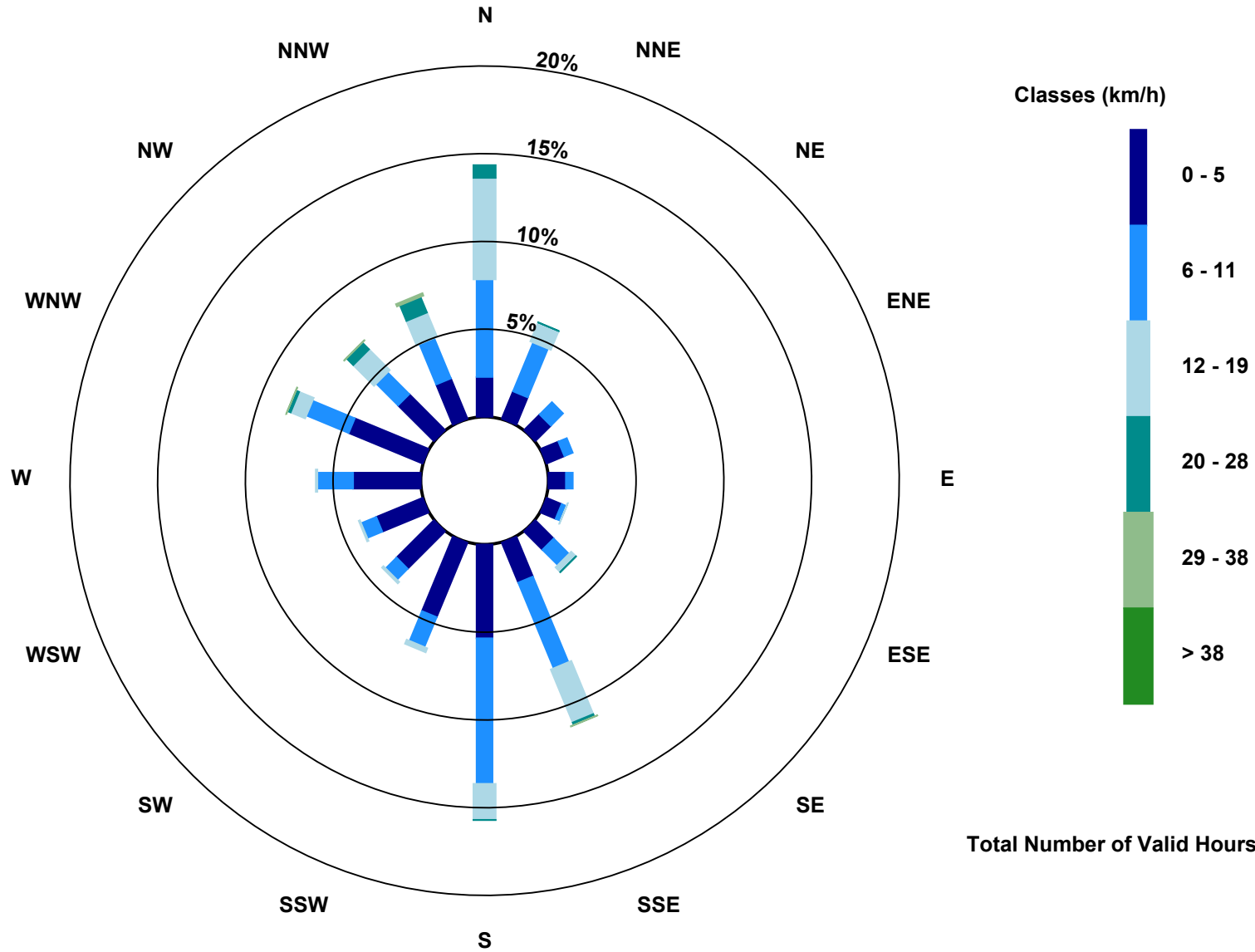
Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

March 2020



Wood Buffalo Environmental Association
Wind Rose 2019

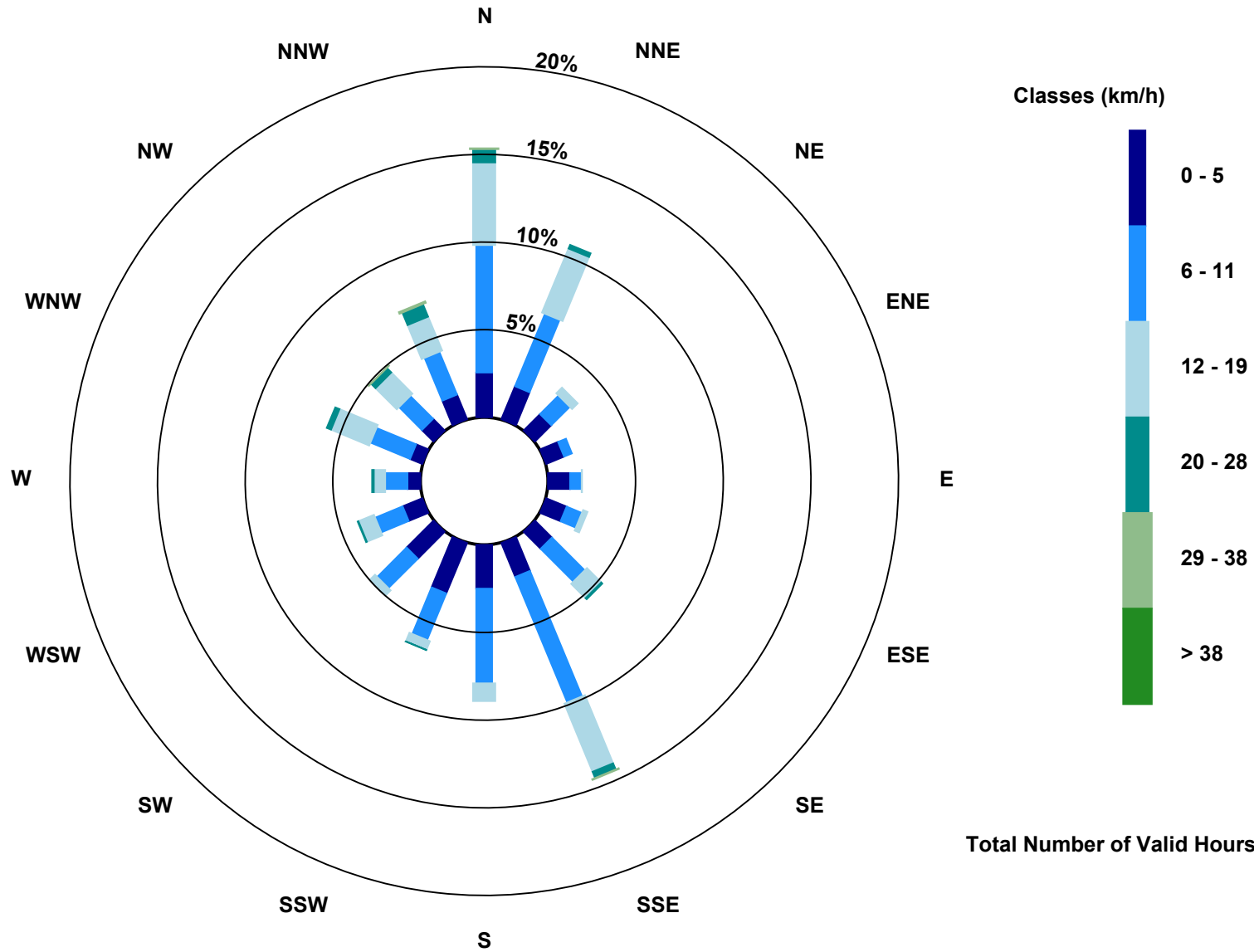
Wind Speed (WS) - km/h
Bertha Ganter - Fort McKay





Wood Buffalo Environmental Association
Wind Rose 2019

Wind Speed (WS) - km/h
Mildred Lake

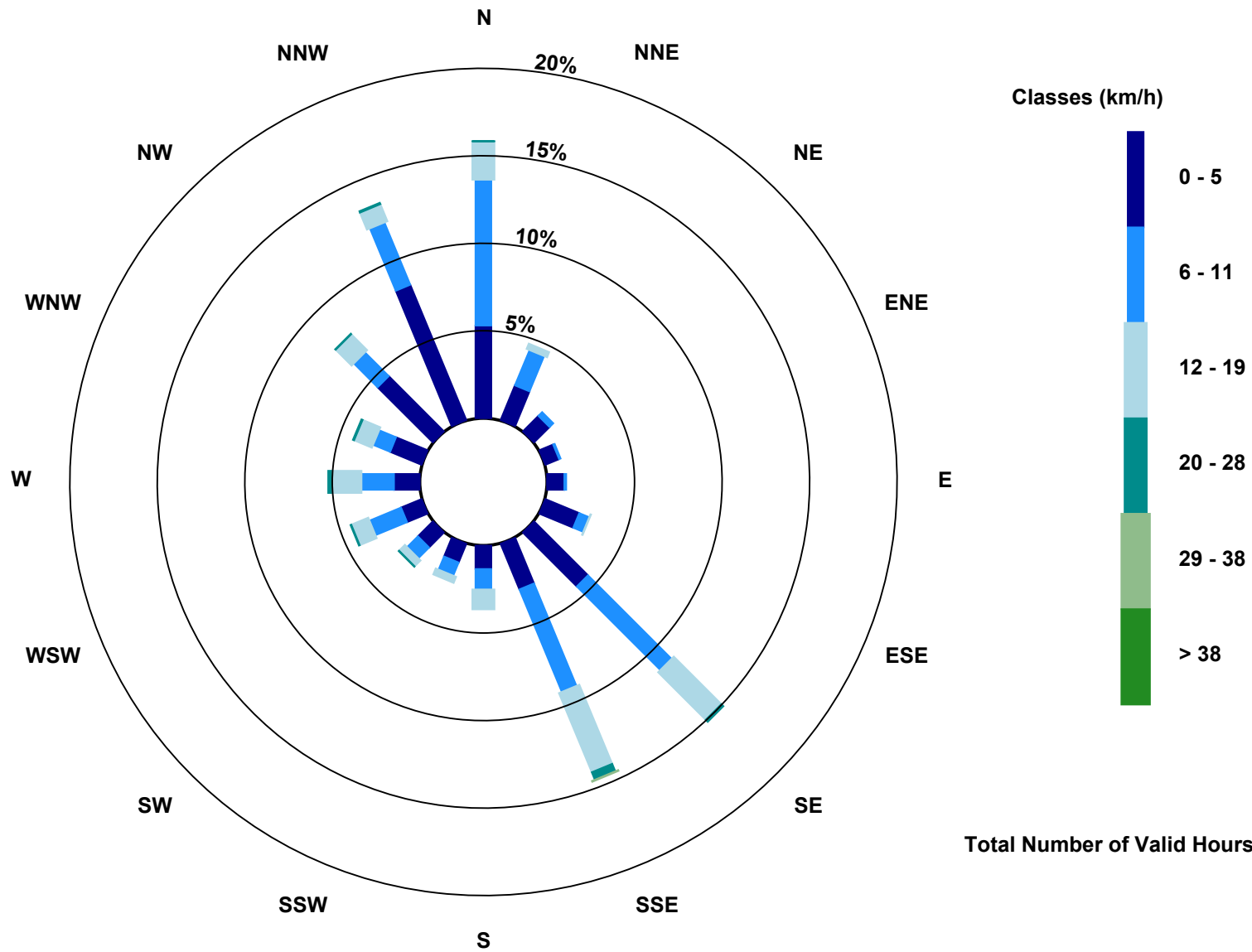


Total Number of Valid Hours: 8649



Wood Buffalo Environmental Association
Wind Rose 2019

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

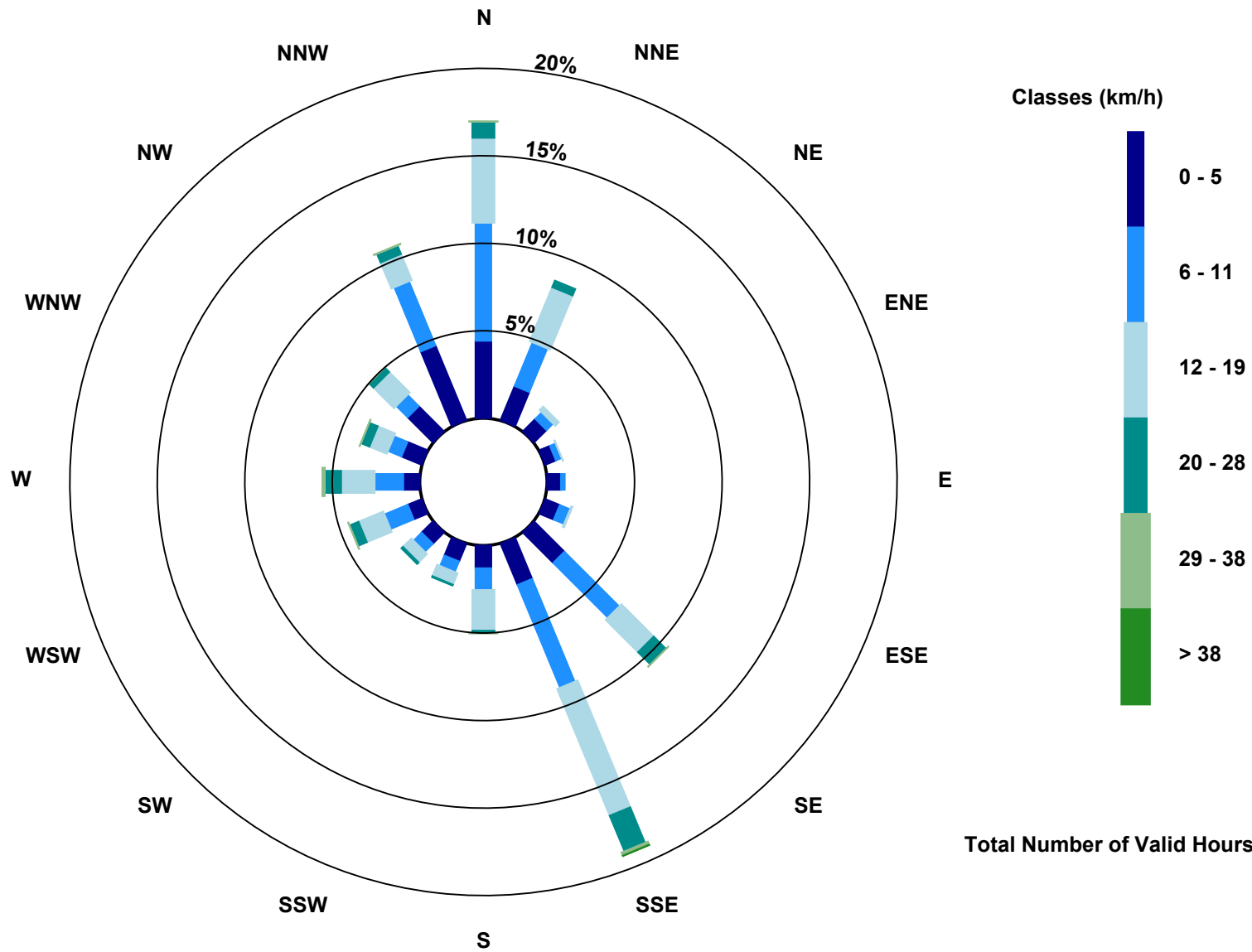


Total Number of Valid Hours: 8472



Wood Buffalo Environmental Association
Wind Rose 2019

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

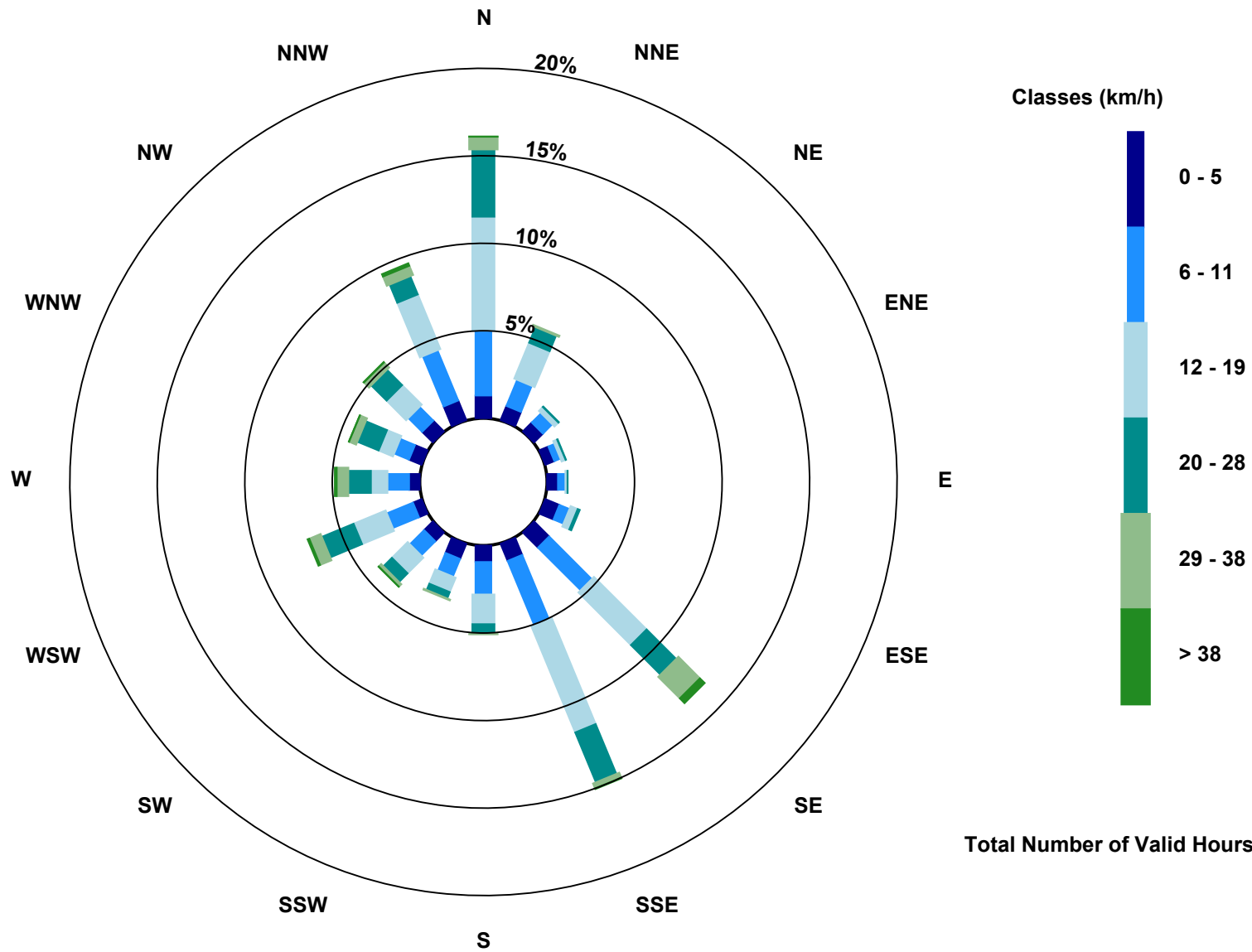


Total Number of Valid Hours: 8493



Wood Buffalo Environmental Association
Wind Rose 2019

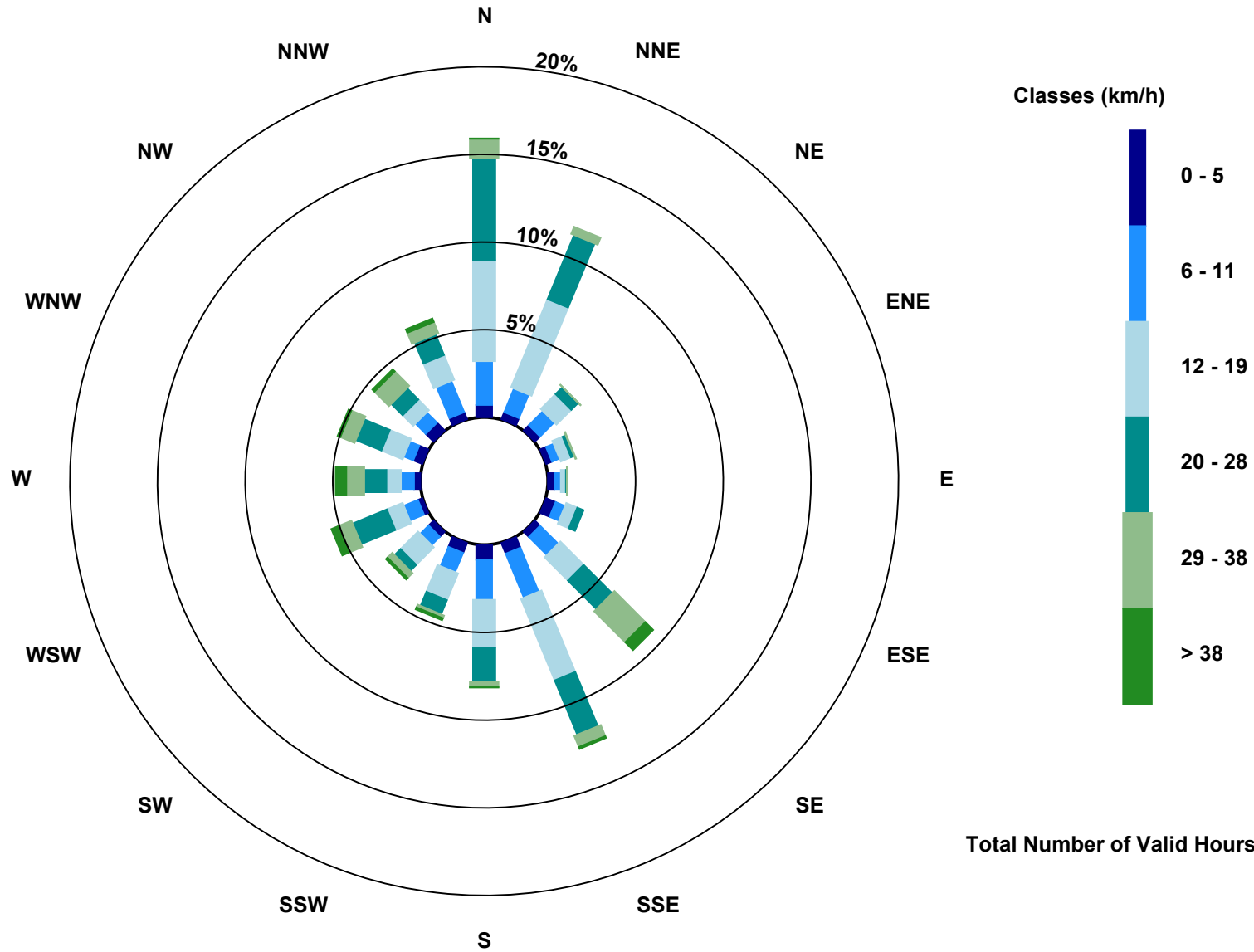
Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association
Wind Rose 2019

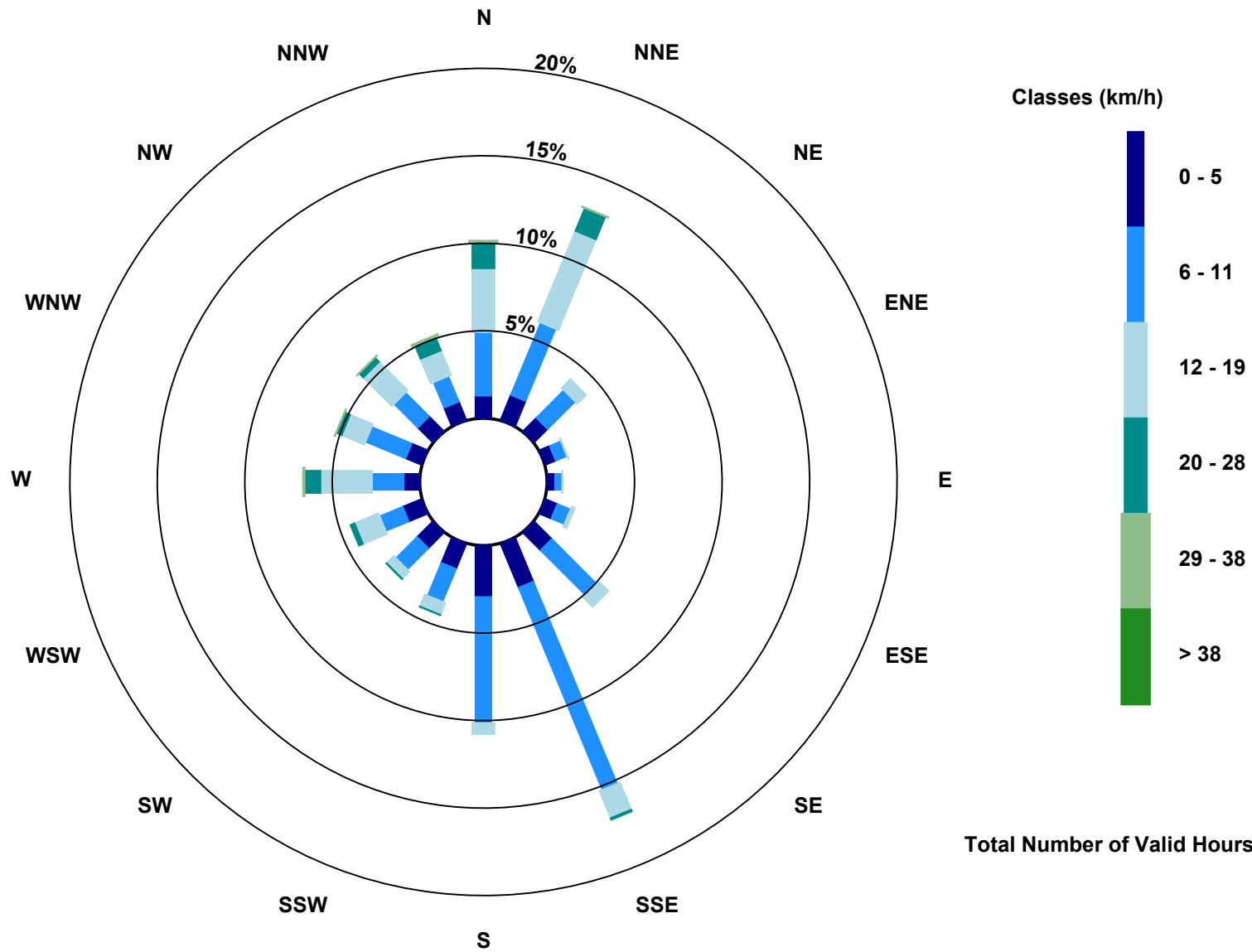
Wind Speed 167 m (WS167m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association
Wind Rose 2019

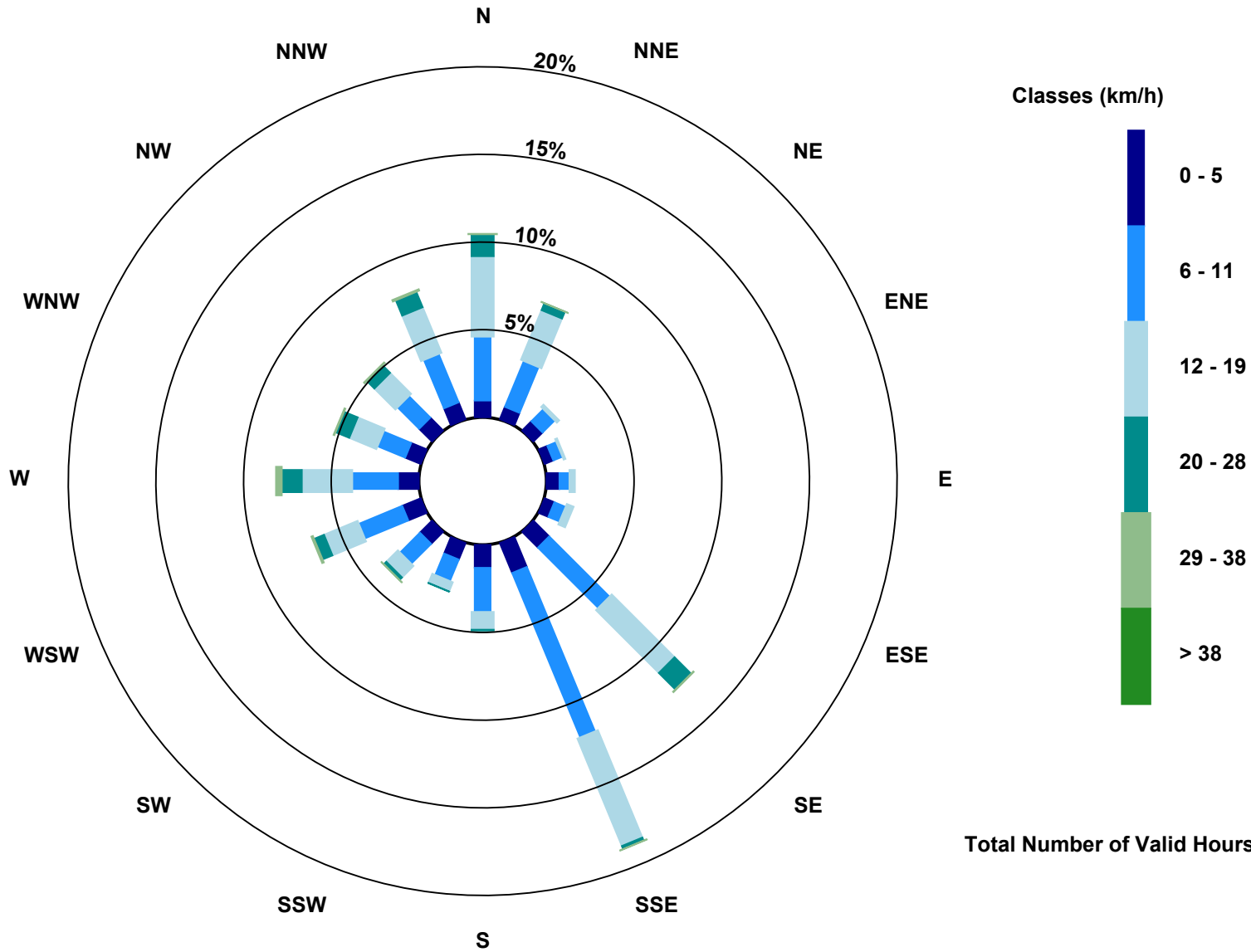
Wind Speed (WS) - km/h
Buffalo Viewpoint





Wood Buffalo Environmental Association
Wind Rose 2019

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

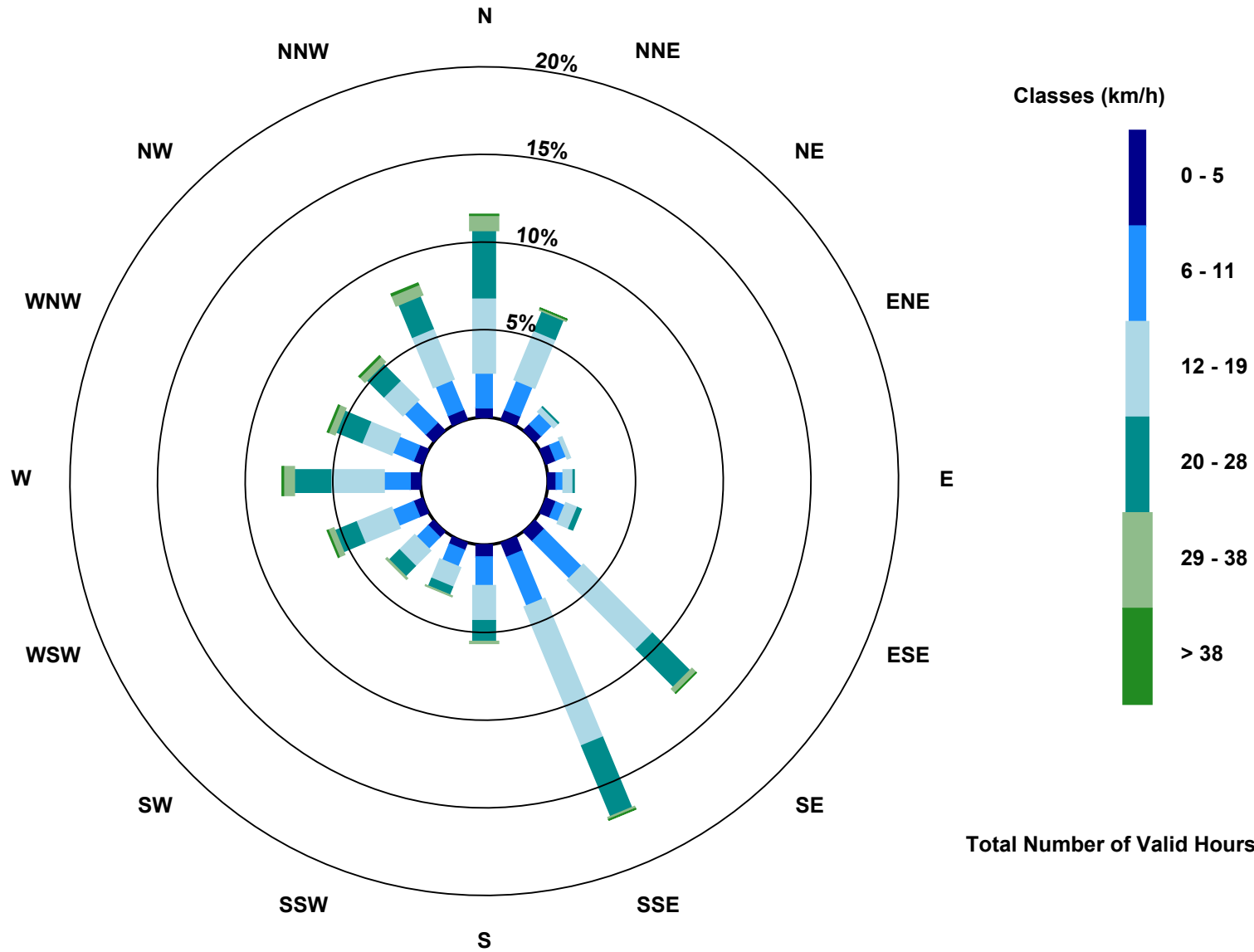


Total Number of Valid Hours: 8668



Wood Buffalo Environmental Association
Wind Rose 2019

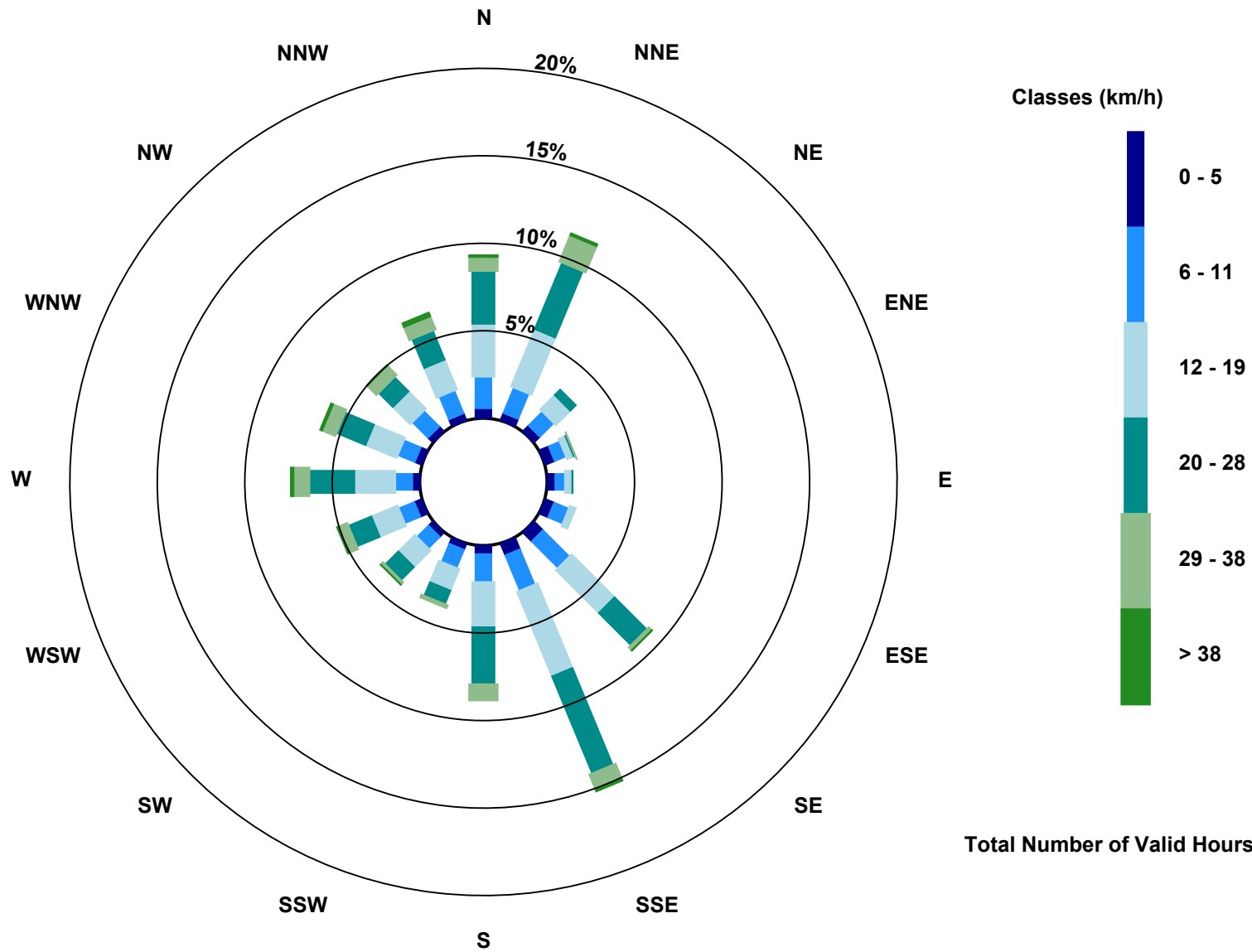
Wind Speed 45 m (WS45m) - km/h
Mannix





Wood Buffalo Environmental Association
Wind Rose 2019

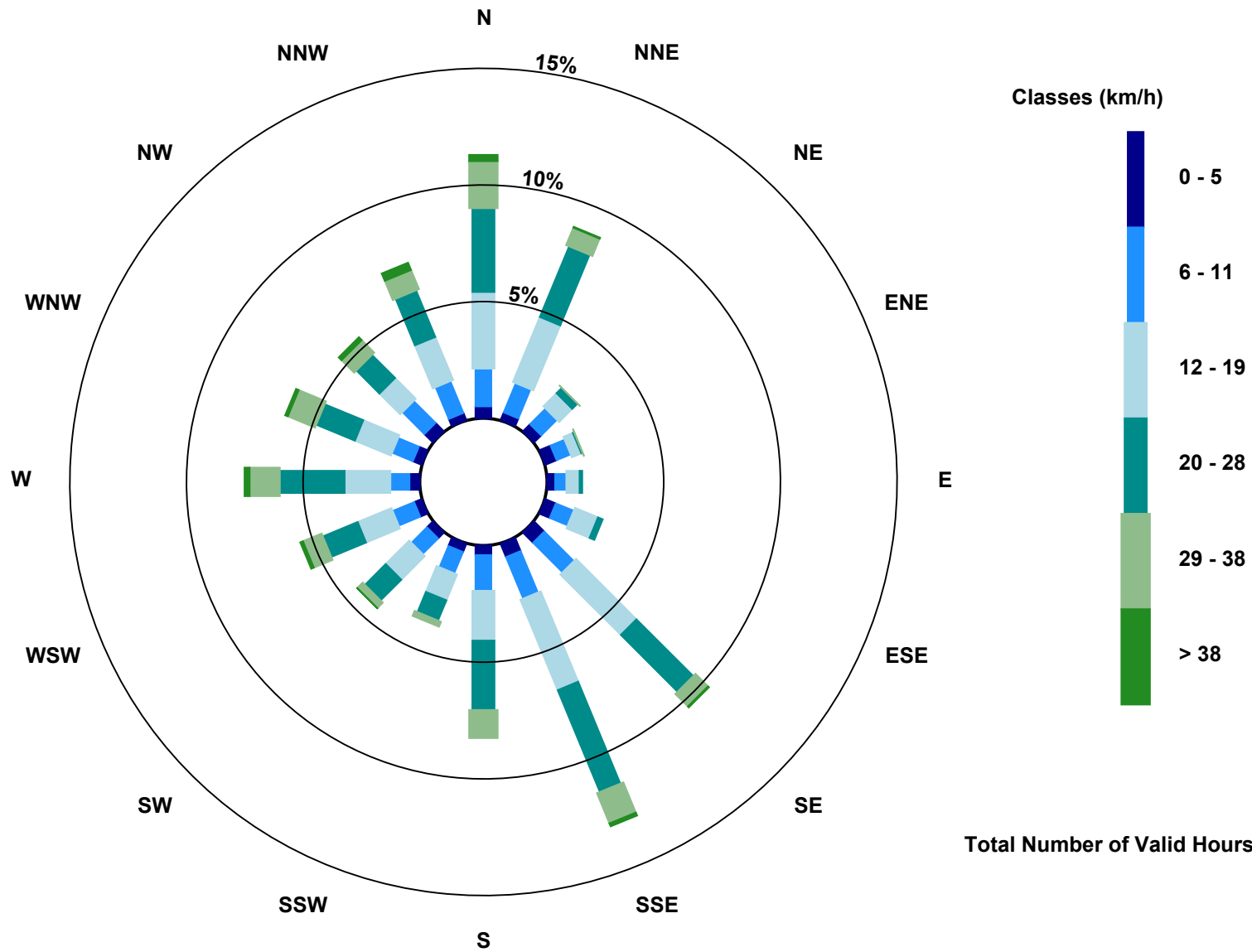
Wind Speed 75 m (WS75m) - km/h
Mannix





Wood Buffalo Environmental Association
Wind Rose 2019

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

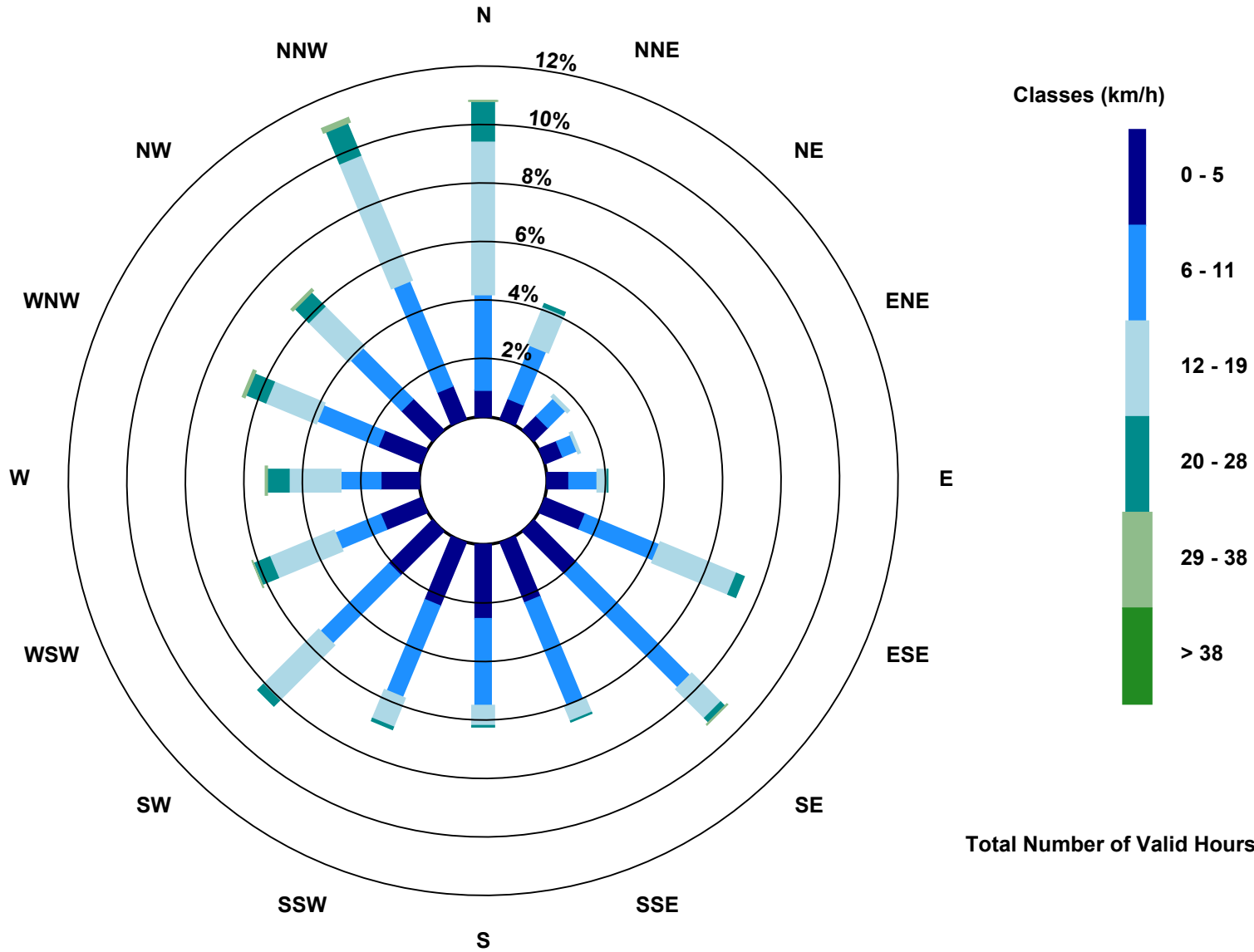


Total Number of Valid Hours: 8422



Wood Buffalo Environmental Association
Wind Rose 2019

Wind Speed (WS) - km/h
Patricia McInnes

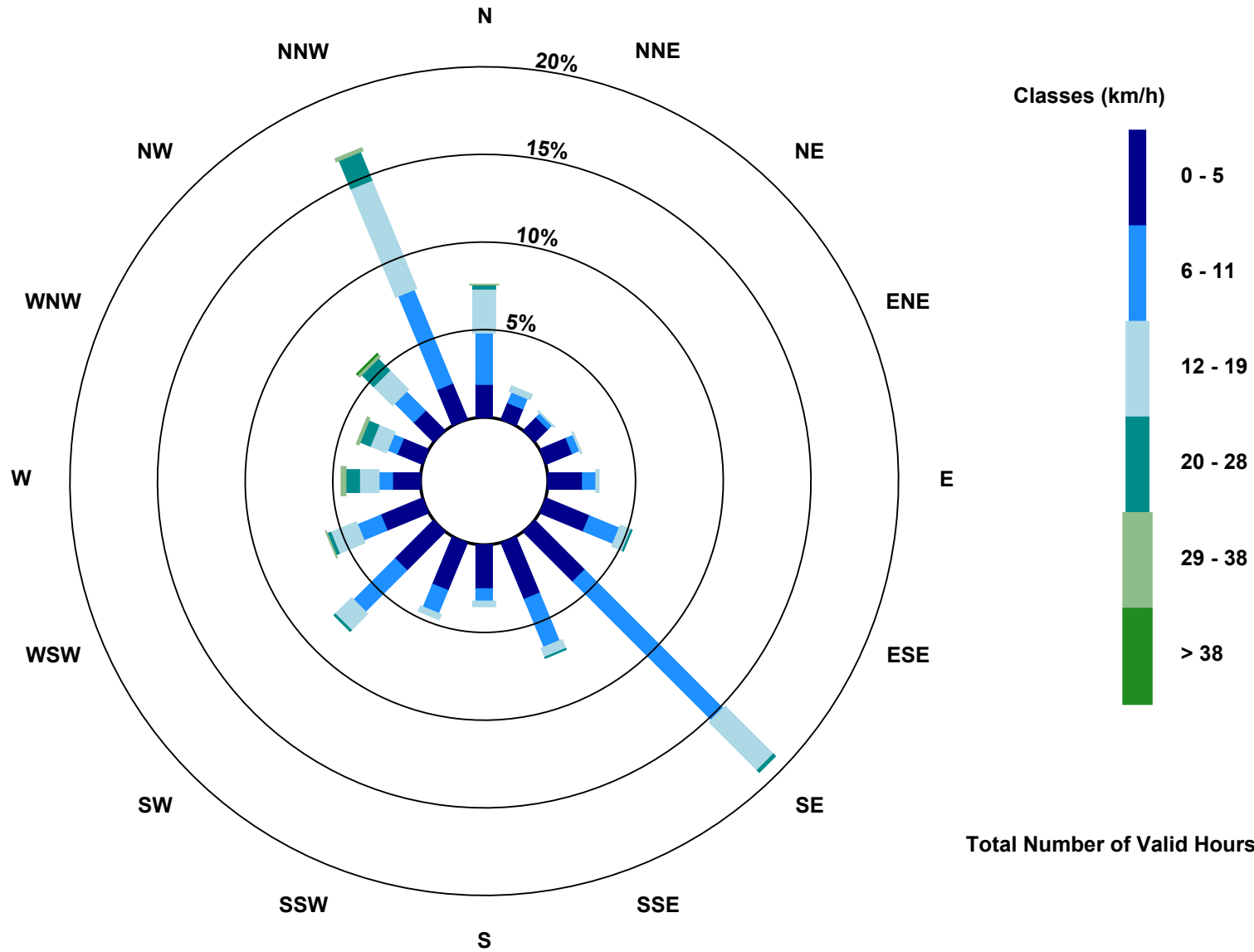


Total Number of Valid Hours: 8629



Wood Buffalo Environmental Association
Wind Rose 2019

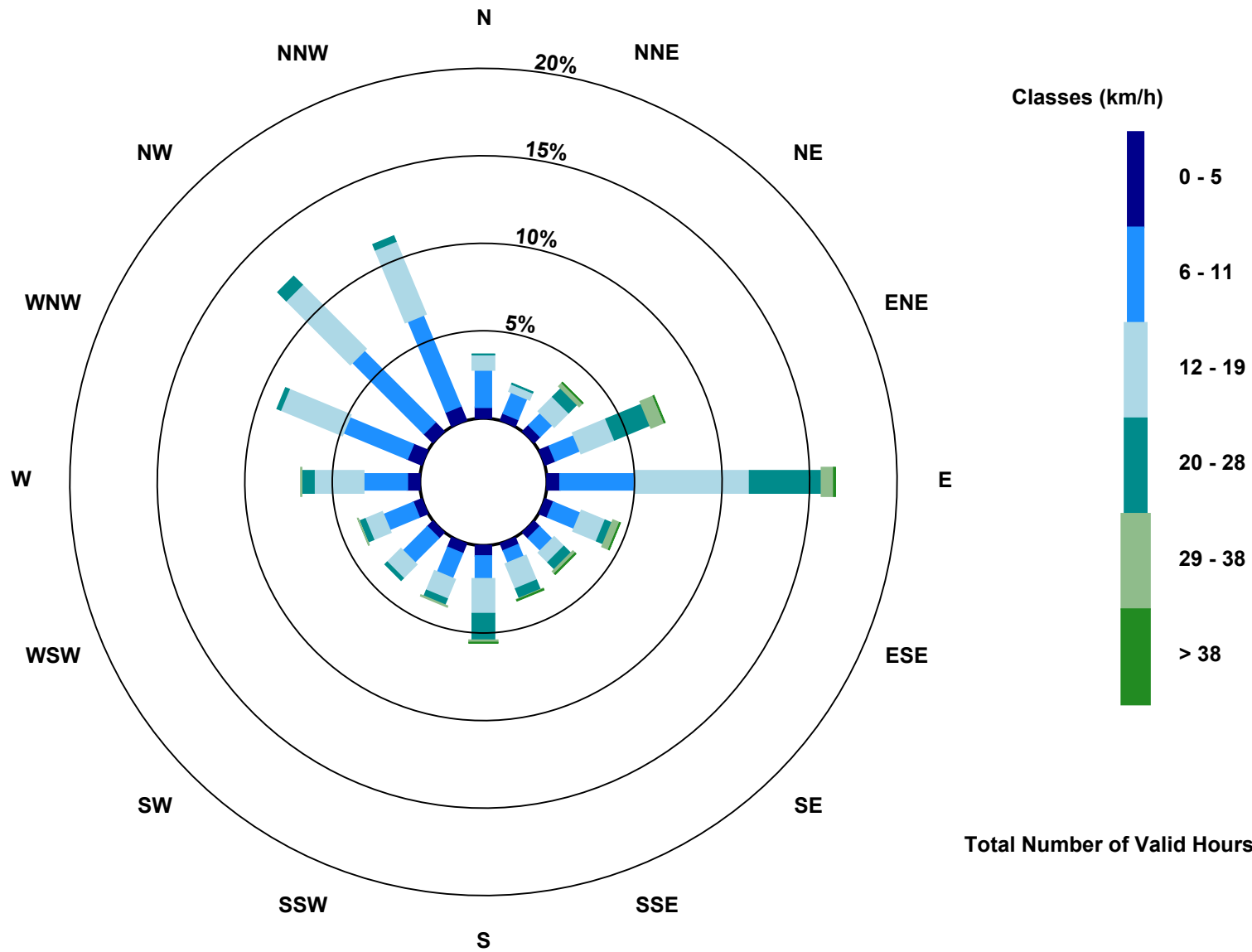
Wind Speed (WS) - km/h
Athabasca Valley





Wood Buffalo Environmental Association
Wind Rose 2019

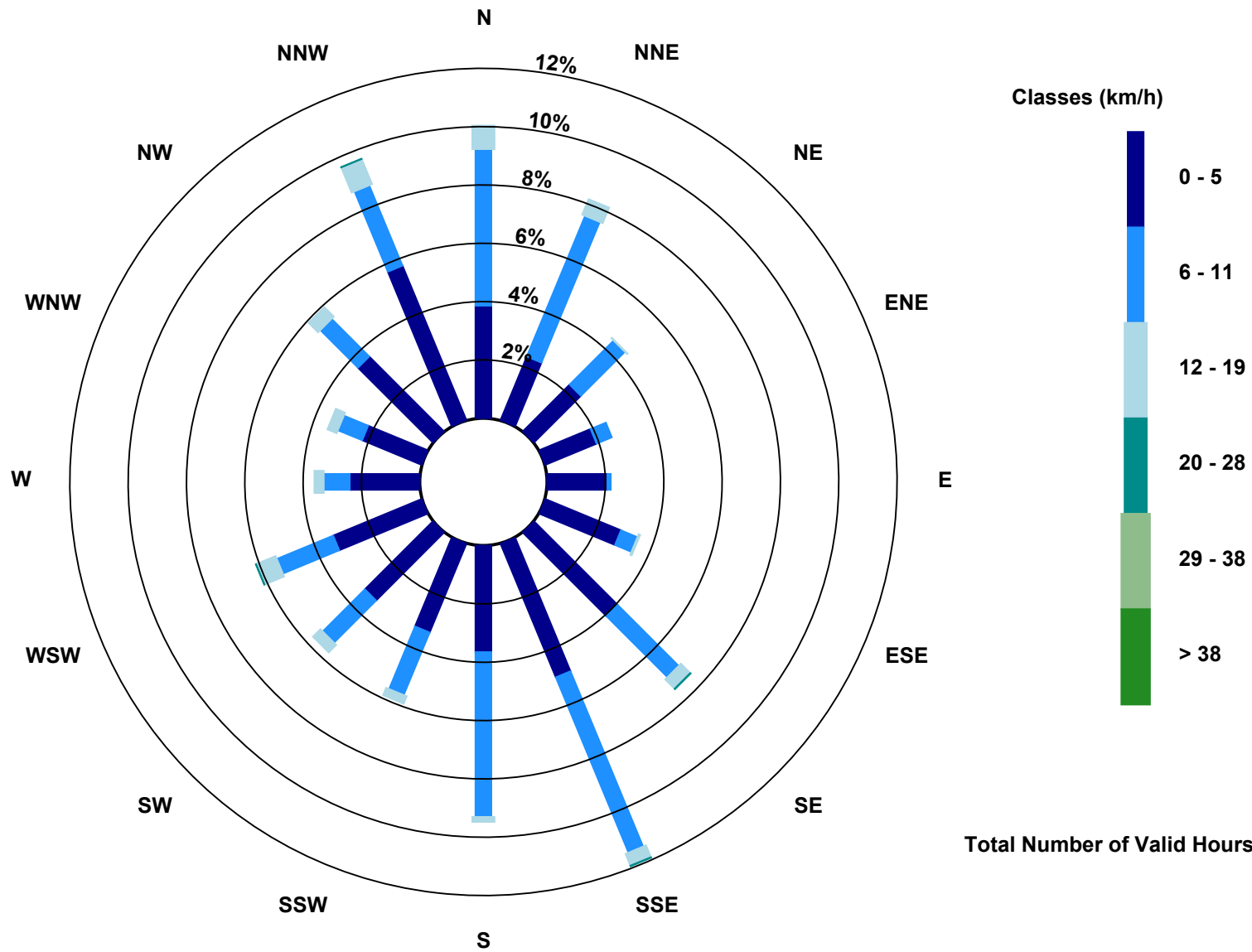
Wind Speed (WS) - km/h
Fort Chipewyan





Wood Buffalo Environmental Association
Wind Rose 2019

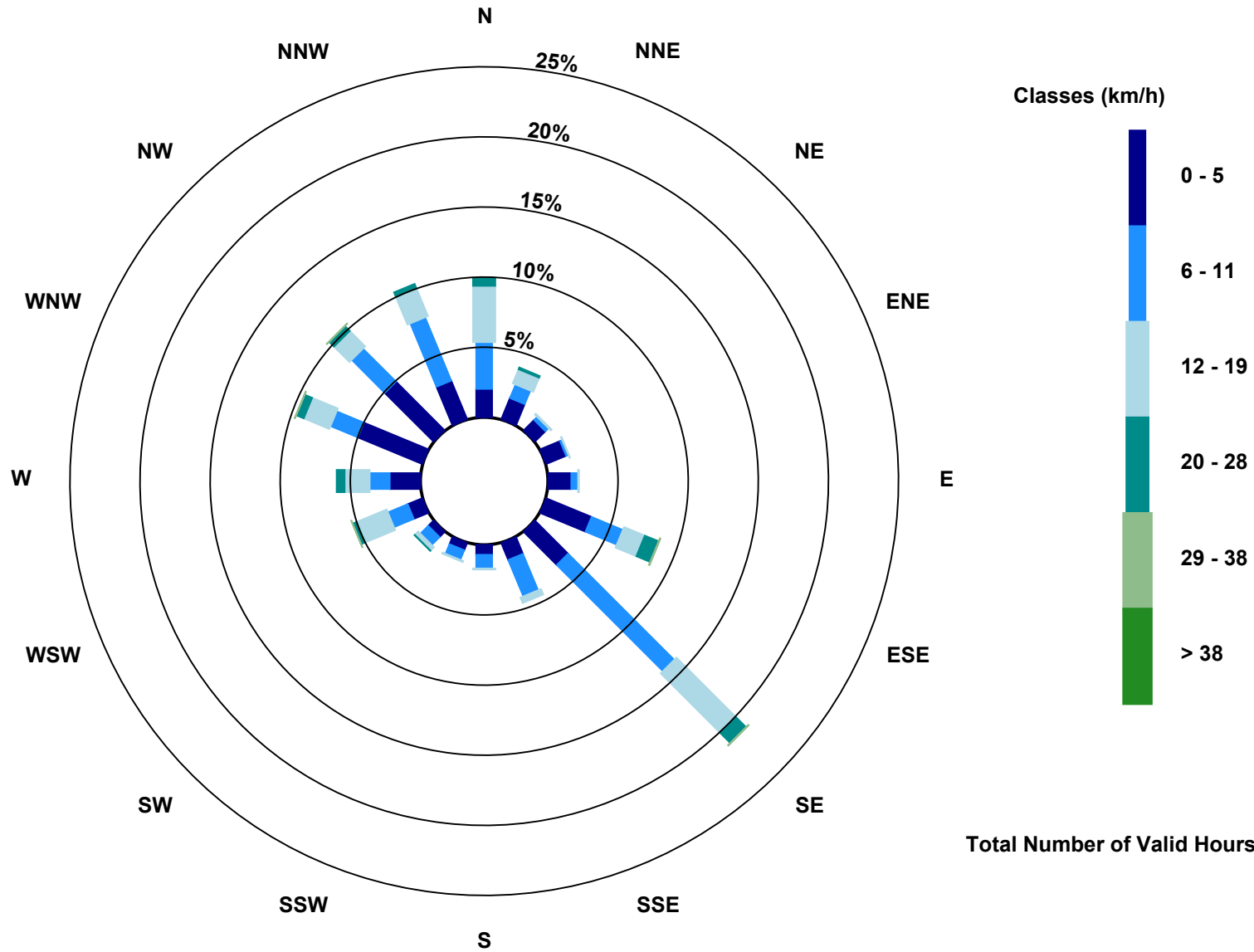
Wind Speed (WS) - km/h
Barge Landing





Wood Buffalo Environmental Association
Wind Rose 2019

Wind Speed (WS) - km/h
Lower Camp

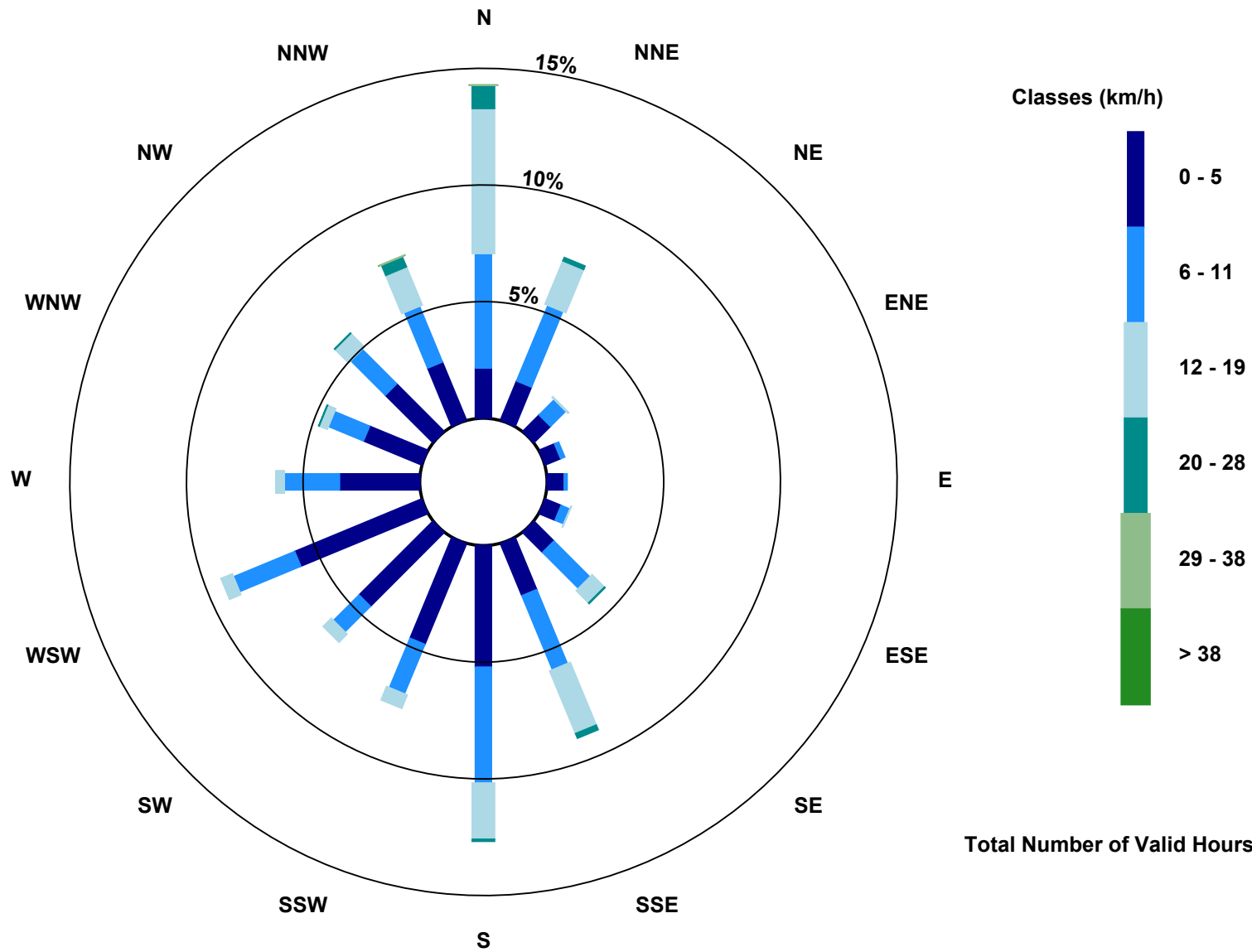


Total Number of Valid Hours: 8666



Wood Buffalo Environmental Association
Wind Rose 2019

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

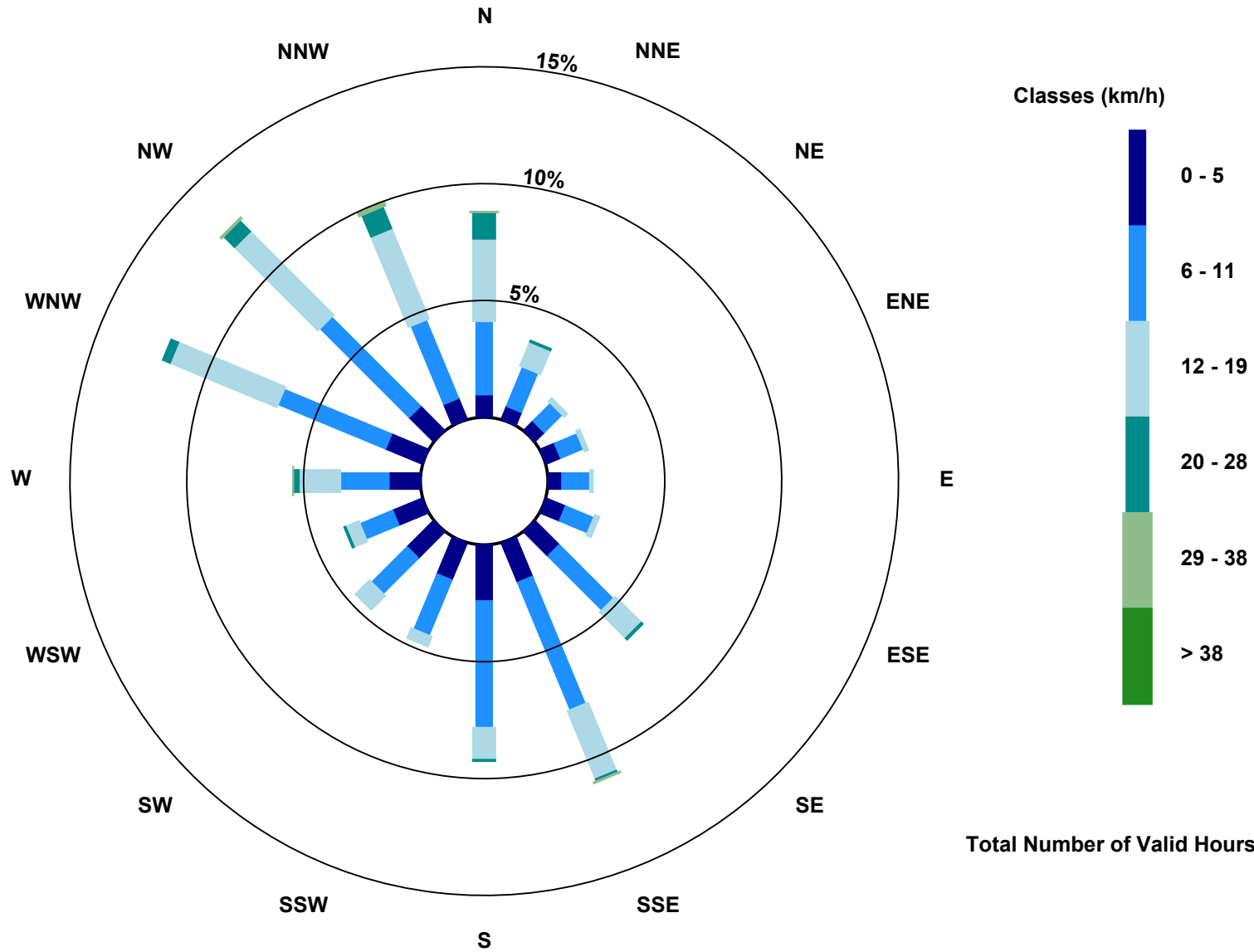


Total Number of Valid Hours: 8673



Wood Buffalo Environmental Association
Wind Rose 2019

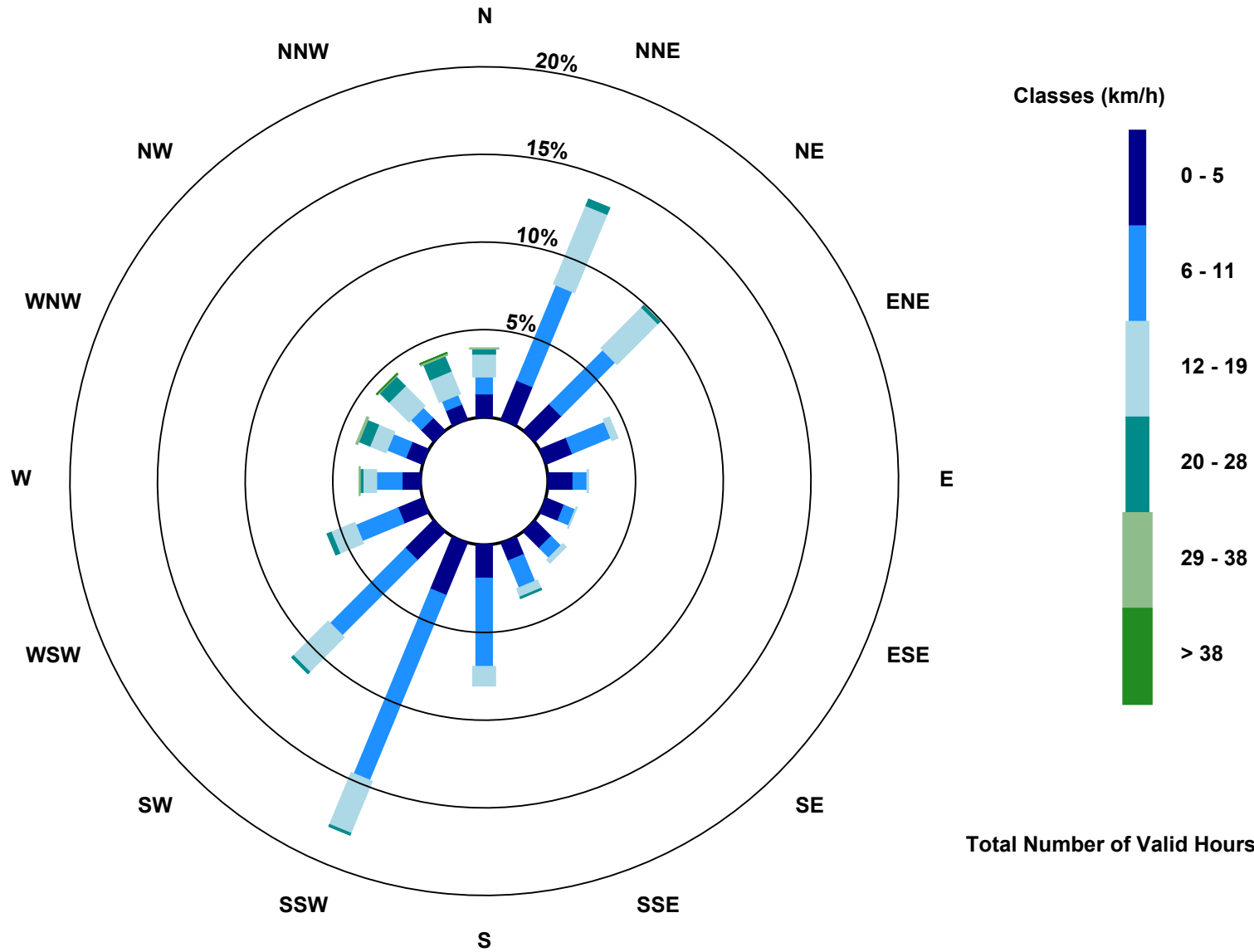
Wind Speed (WS) - km/h
Anzac





Wood Buffalo Environmental Association
Wind Rose 2019

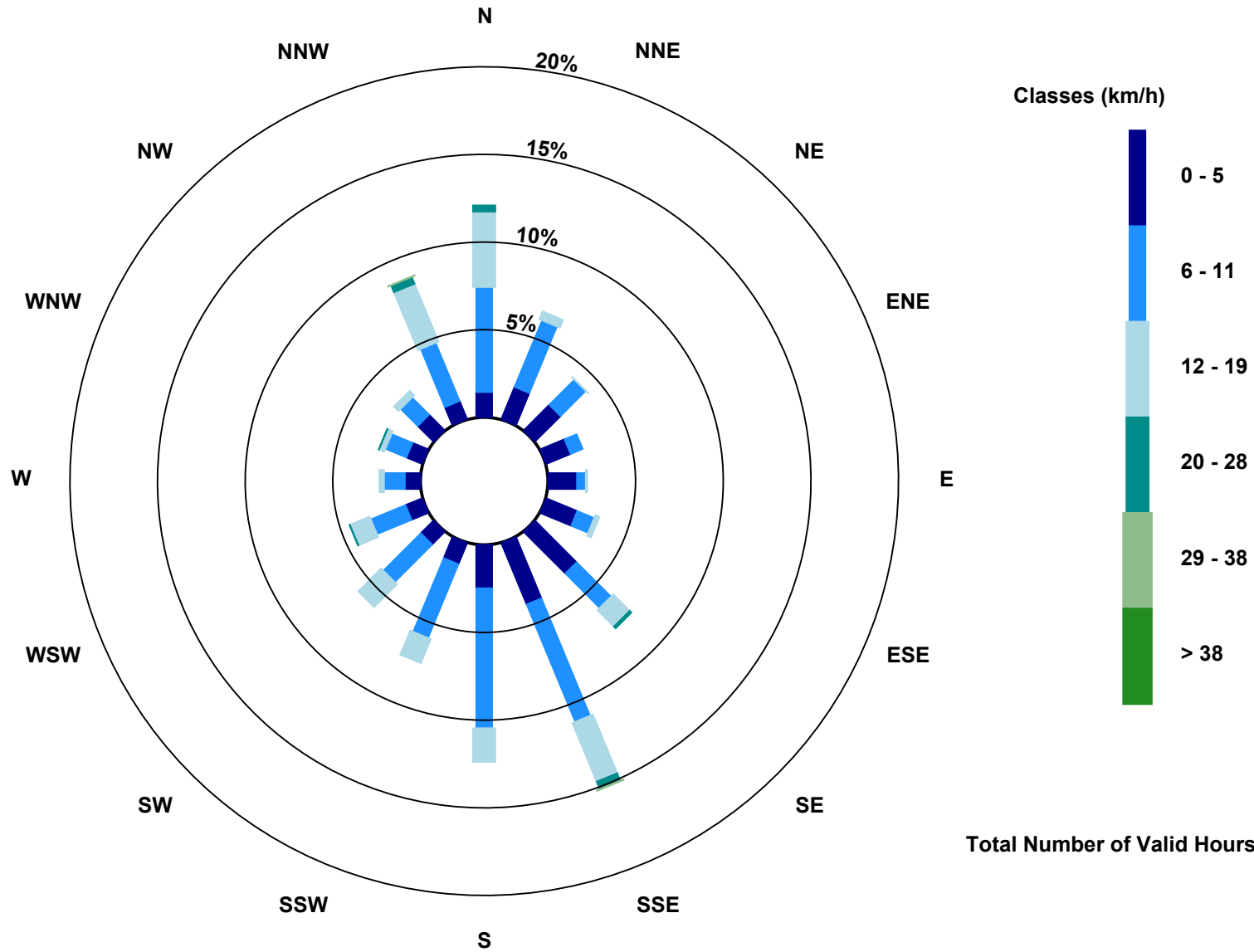
Wind Speed (WS) - km/h
Horizon





Wood Buffalo Environmental Association
Wind Rose 2019

Wind Speed (WS) - km/h
Wapasu

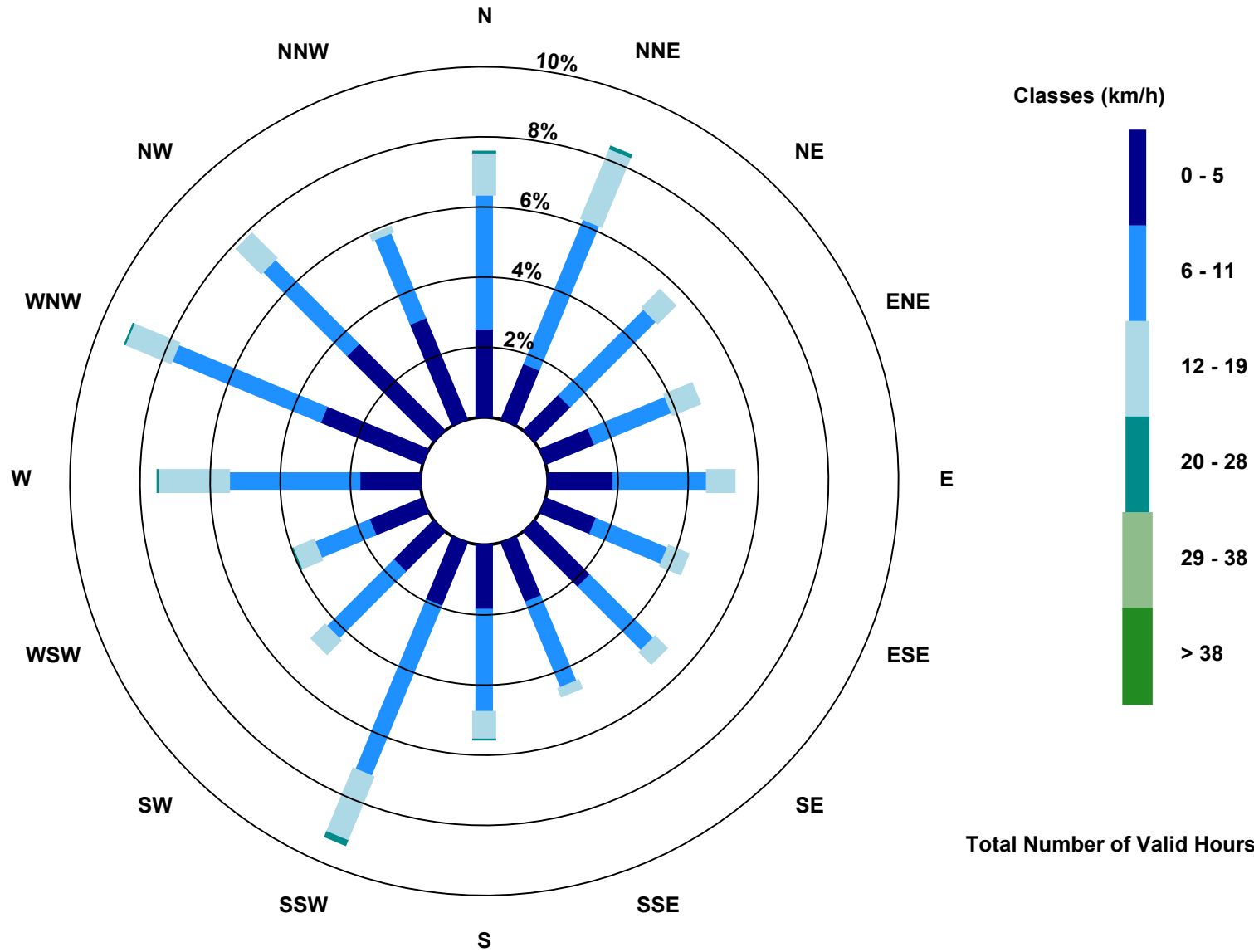


Total Number of Valid Hours: 8526



Wood Buffalo Environmental Association
Wind Rose 2019

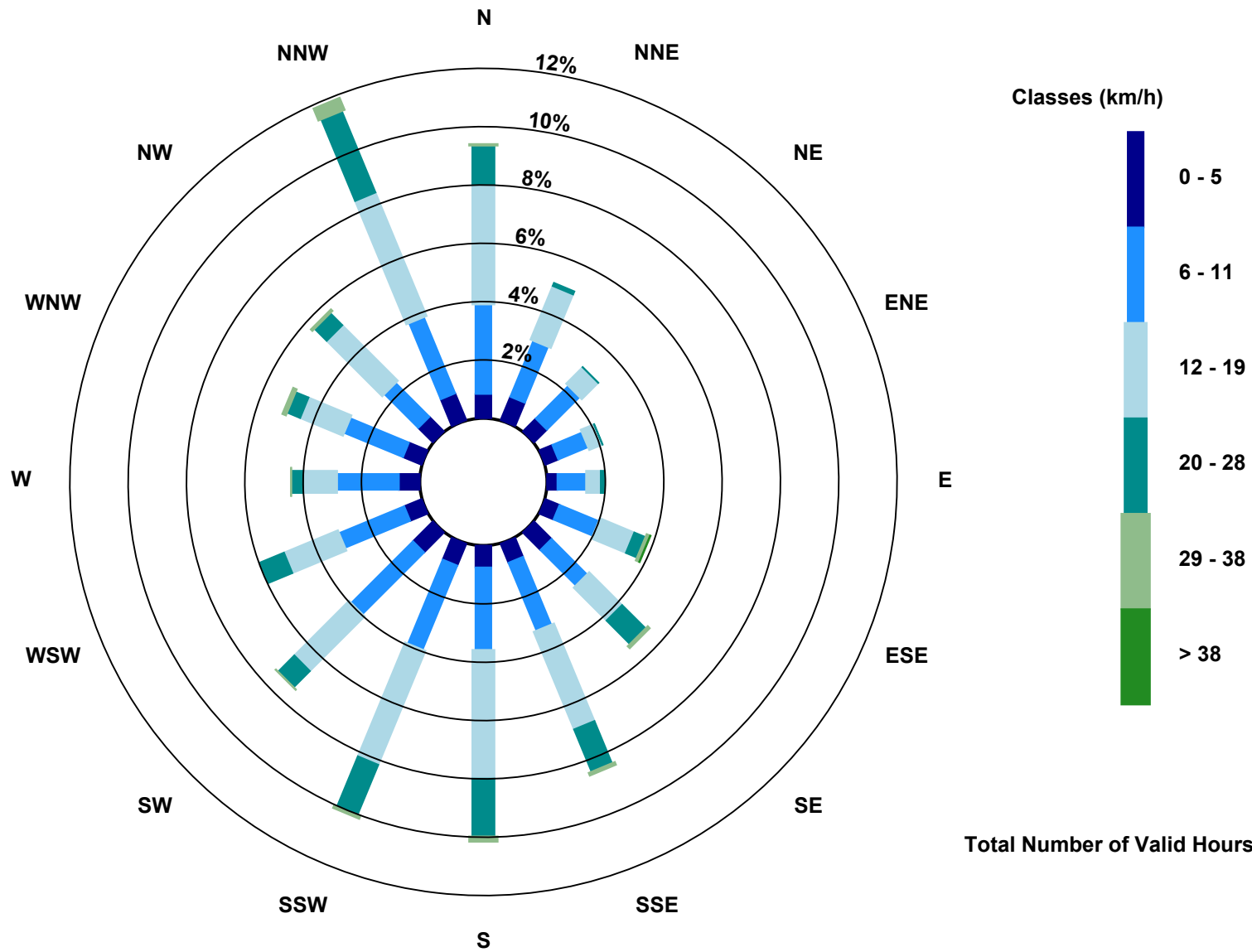
Wind Speed (WS) - km/h
Stony Mountain





Wood Buffalo Environmental Association
Wind Rose 2019

Wind Speed (WS) - km/h
Firebag

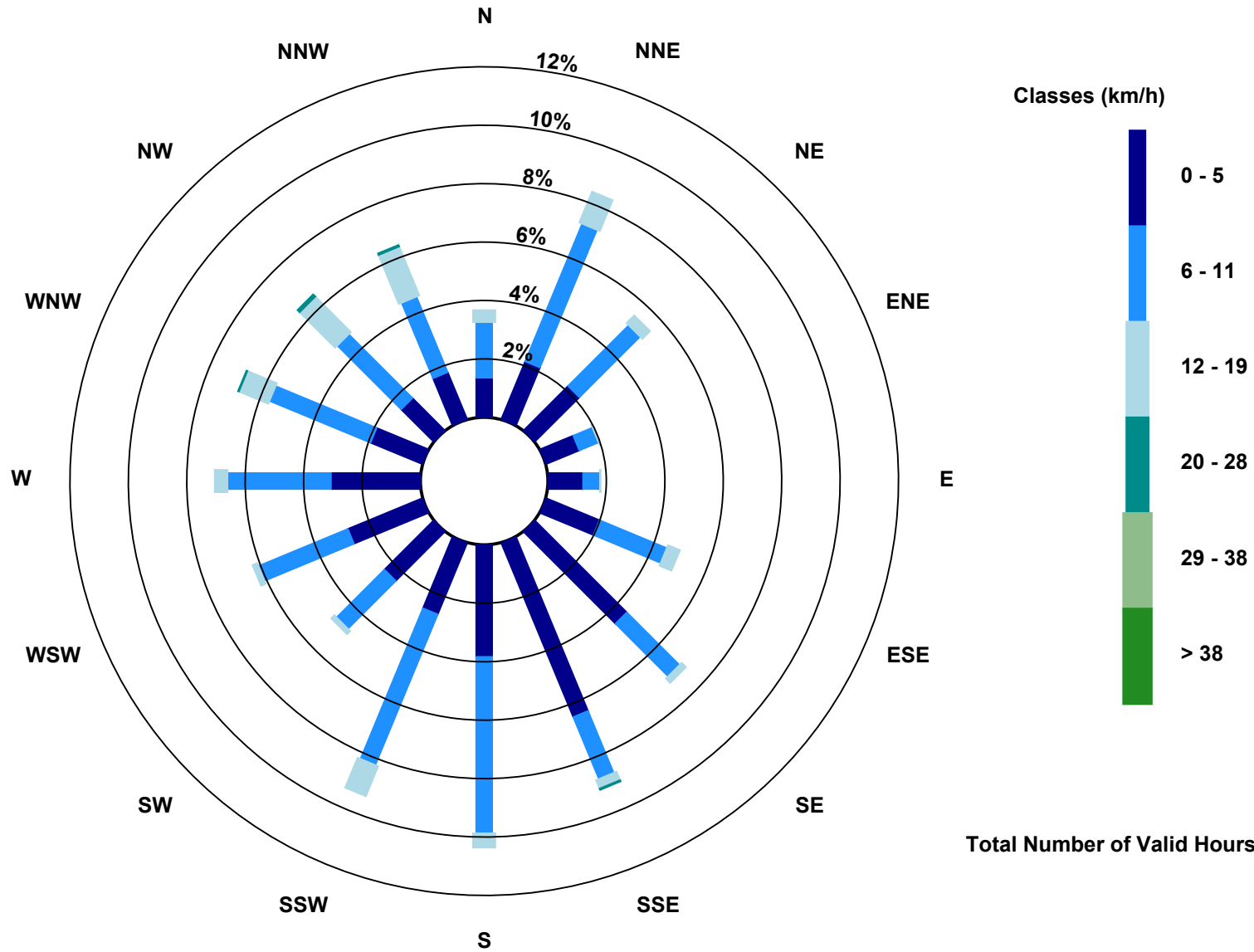


Total Number of Valid Hours: 8535



Wood Buffalo Environmental Association
Wind Rose 2019

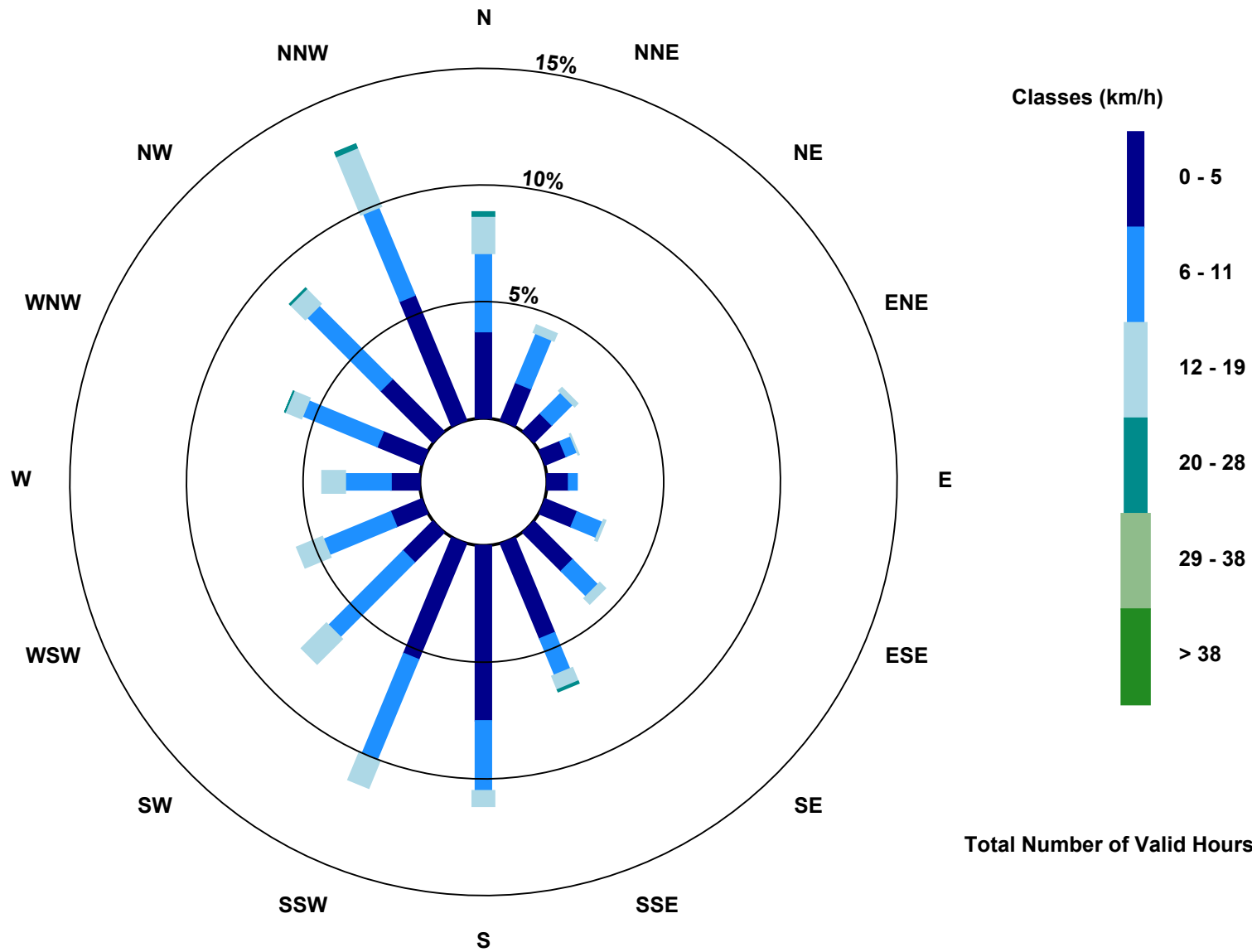
Wind Speed (WS) - km/h
MacKay River





Wood Buffalo Environmental Association
Wind Rose 2019

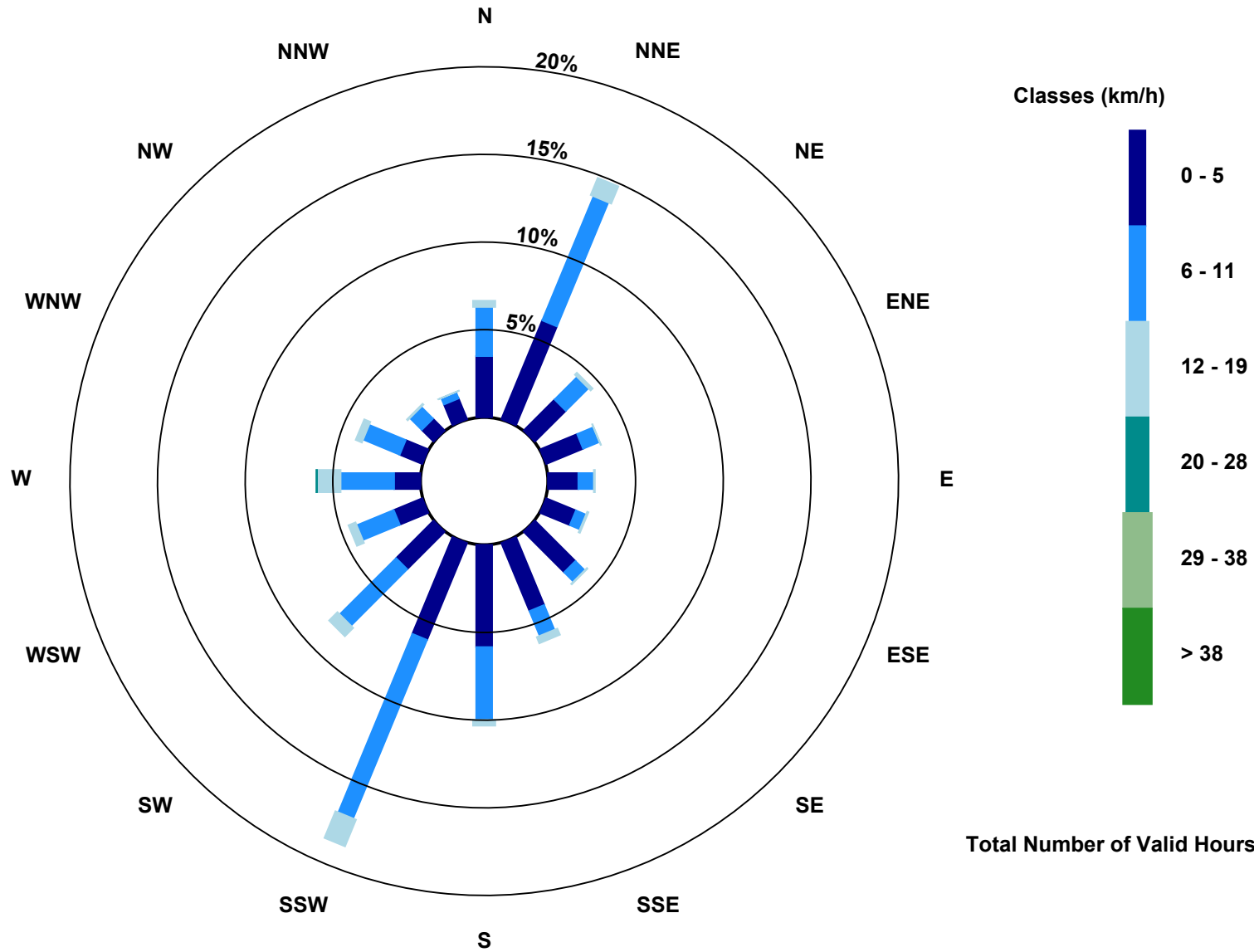
Wind Speed (WS) - km/h
Conklin





Wood Buffalo Environmental Association
Wind Rose 2019

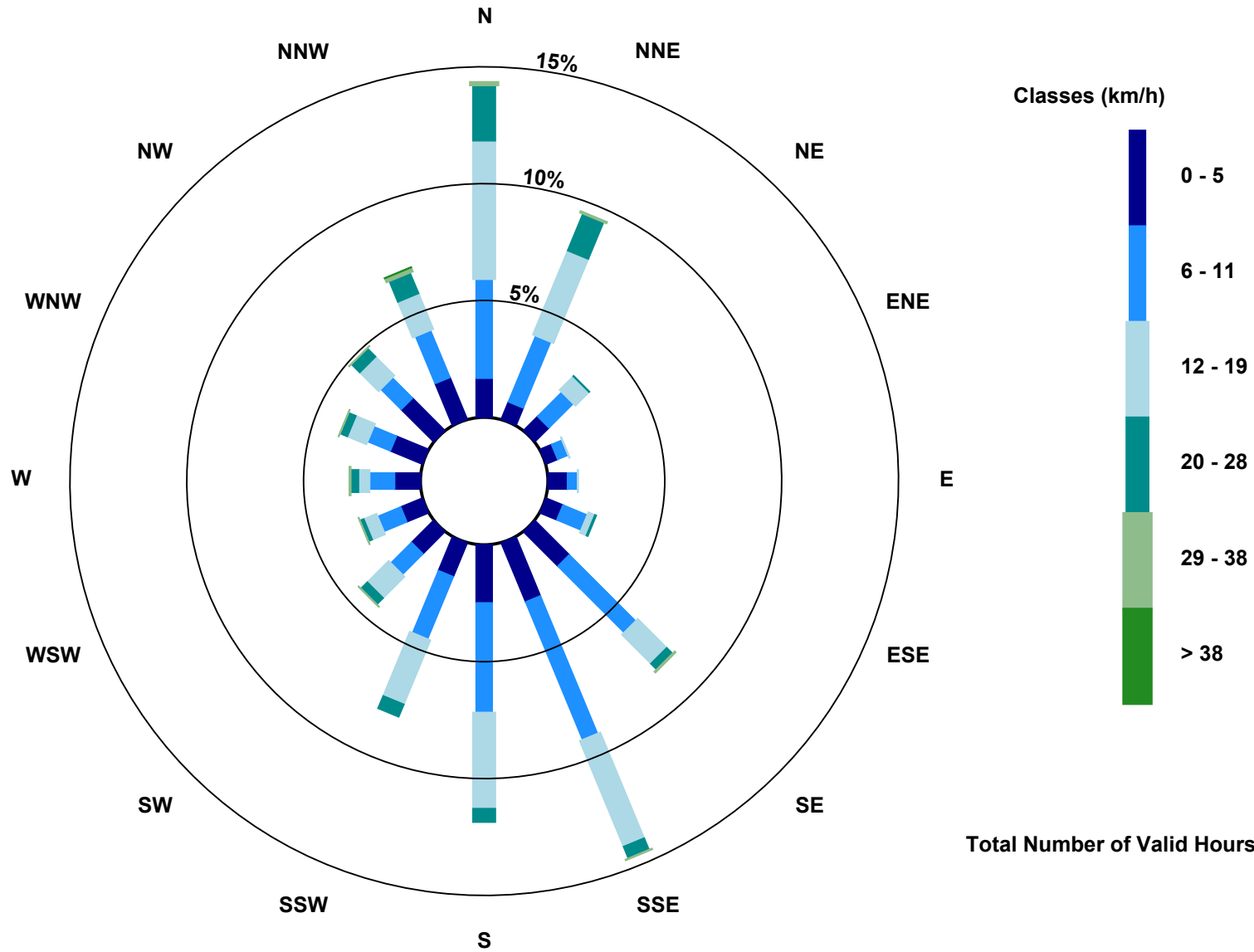
Wind Speed (WS) - km/h
Janvier





Wood Buffalo Environmental Association
Wind Rose 2019

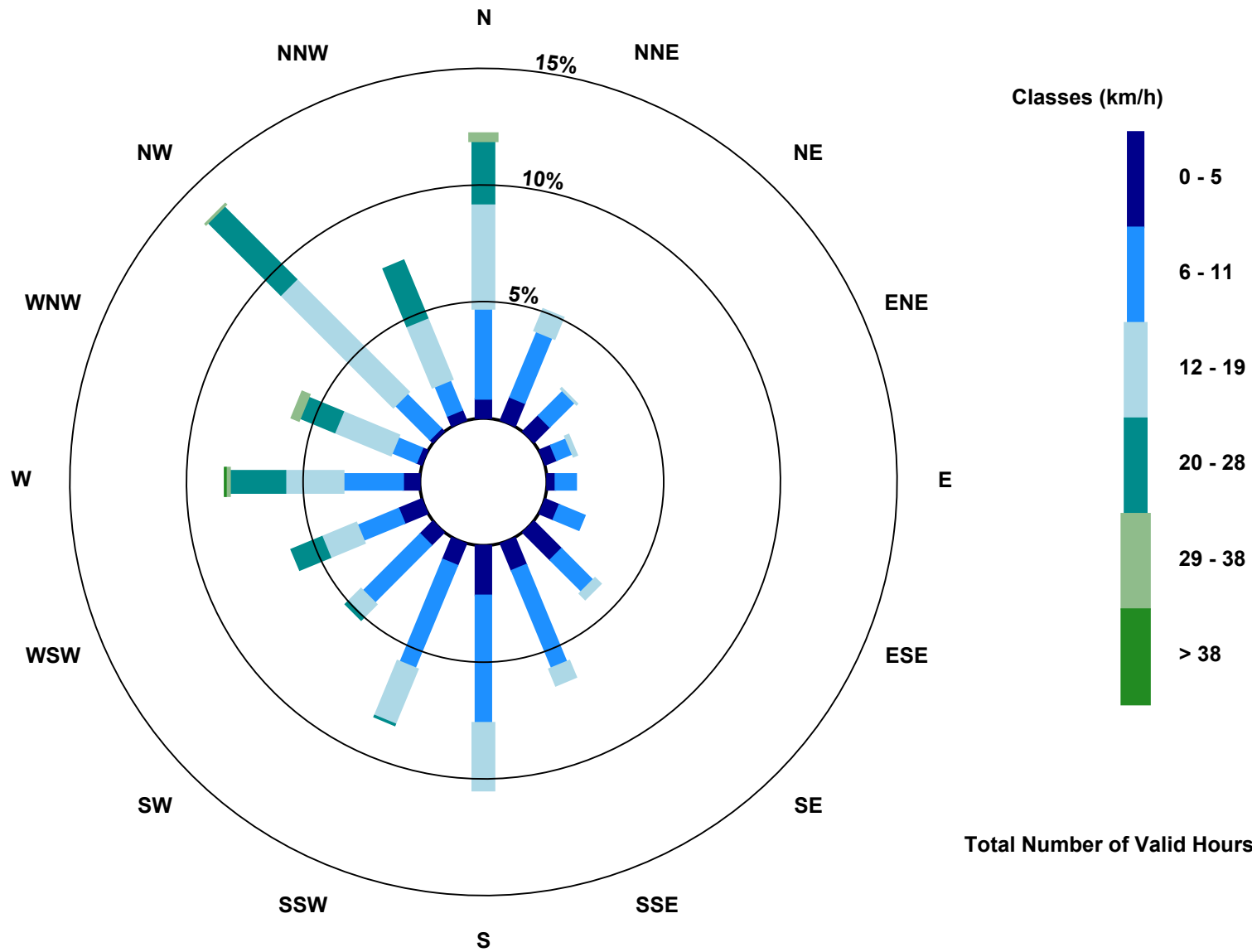
Wind Speed (WS) - km/h
Fort Hills





Wood Buffalo Environmental Association
Wind Rose 2019

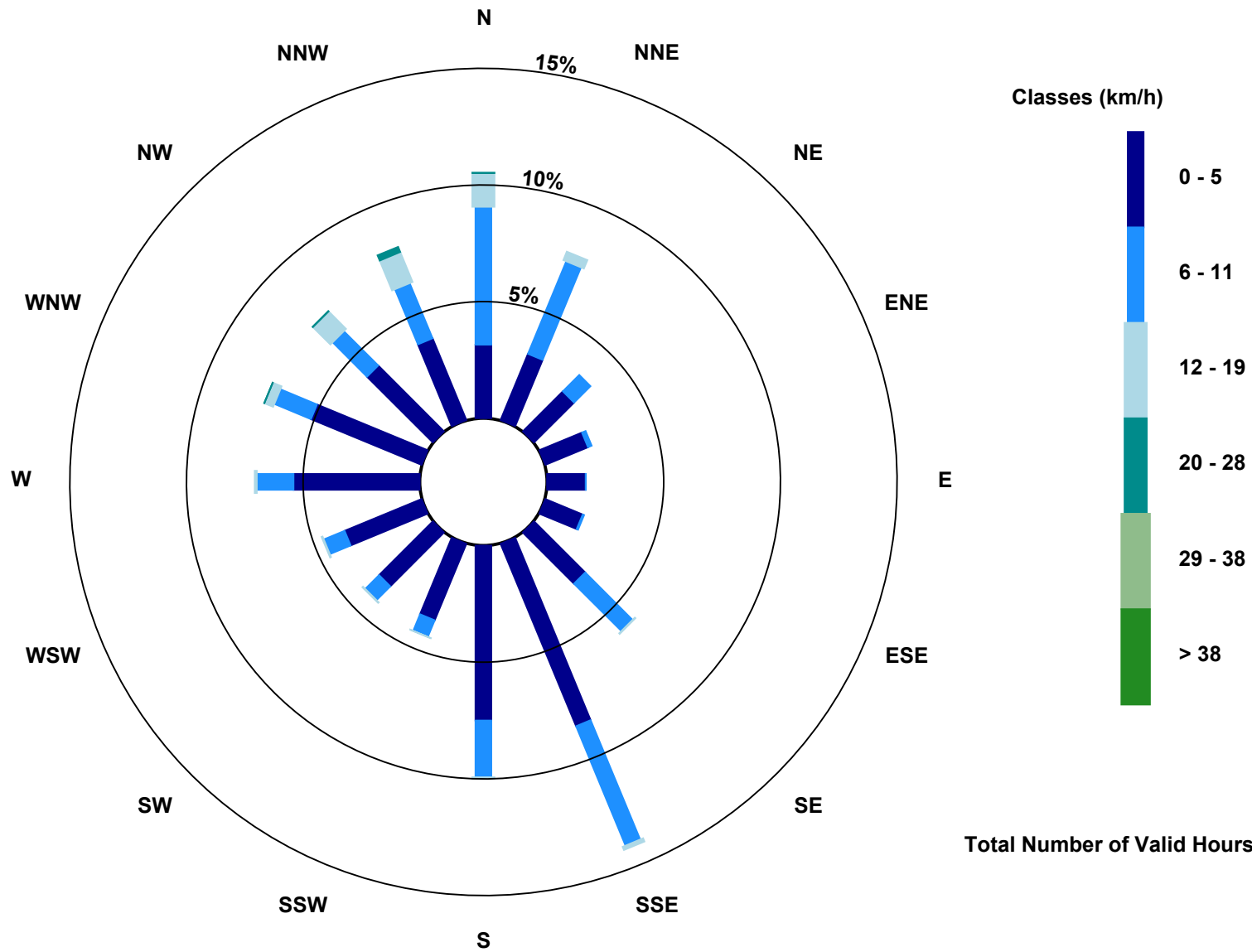
Wind Speed (WS) - km/h
Surmont





Wood Buffalo Environmental Association
Wind Rose 2019

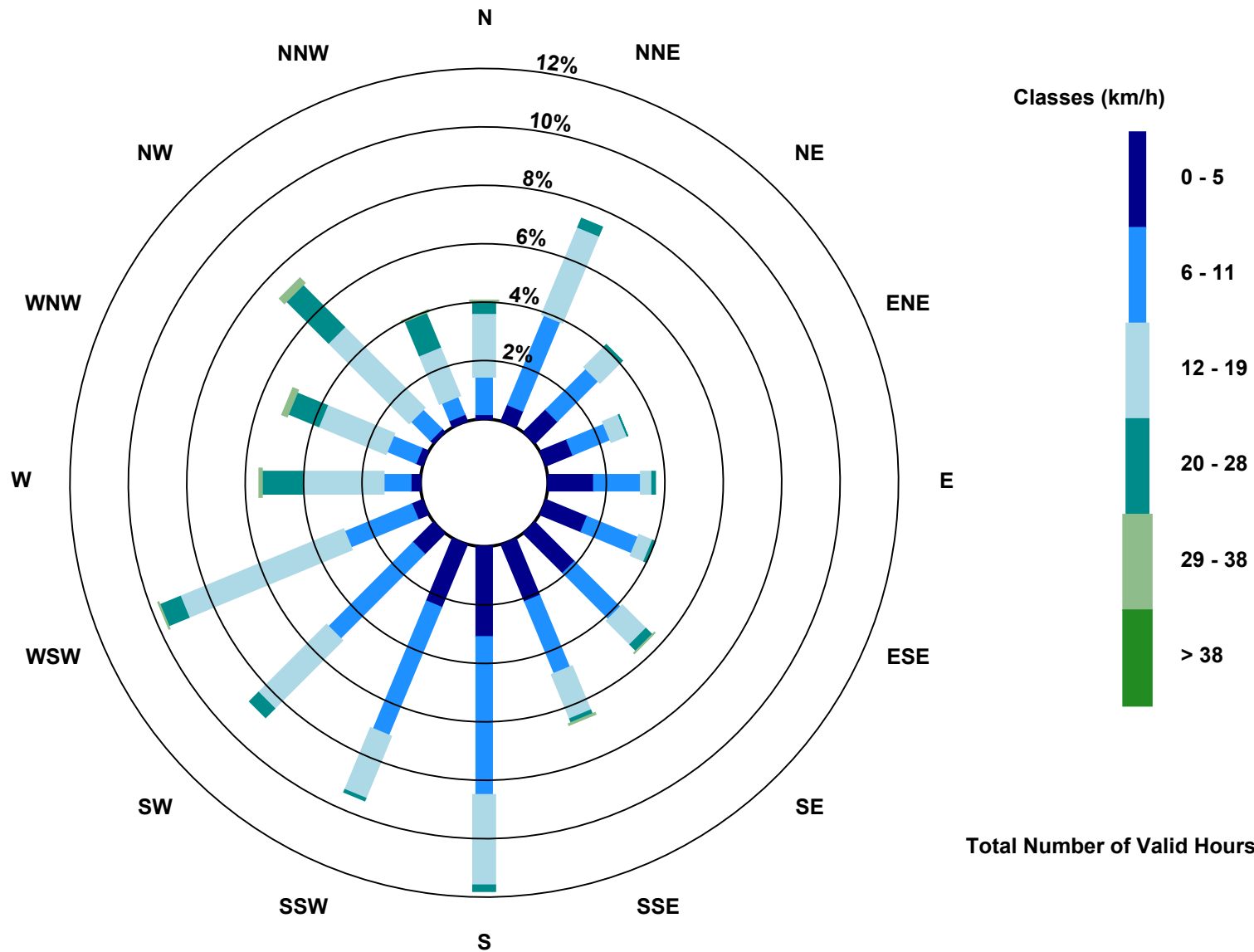
Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin





Wood Buffalo Environmental Association
Wind Rose 2019

Wind Speed (WS) - km/h
Christina Lake

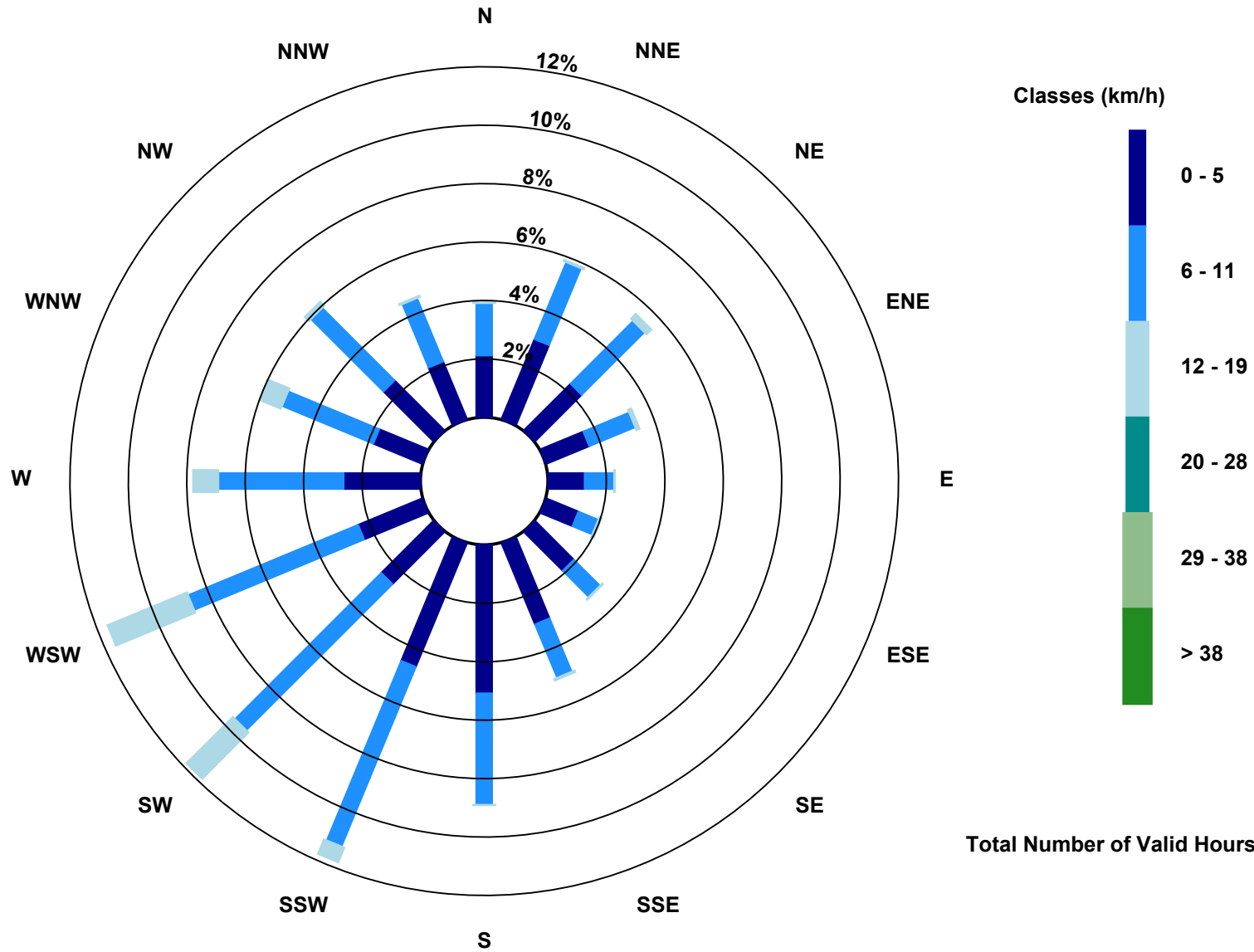


Total Number of Valid Hours: 8661



Wood Buffalo Environmental Association
Wind Rose 2019

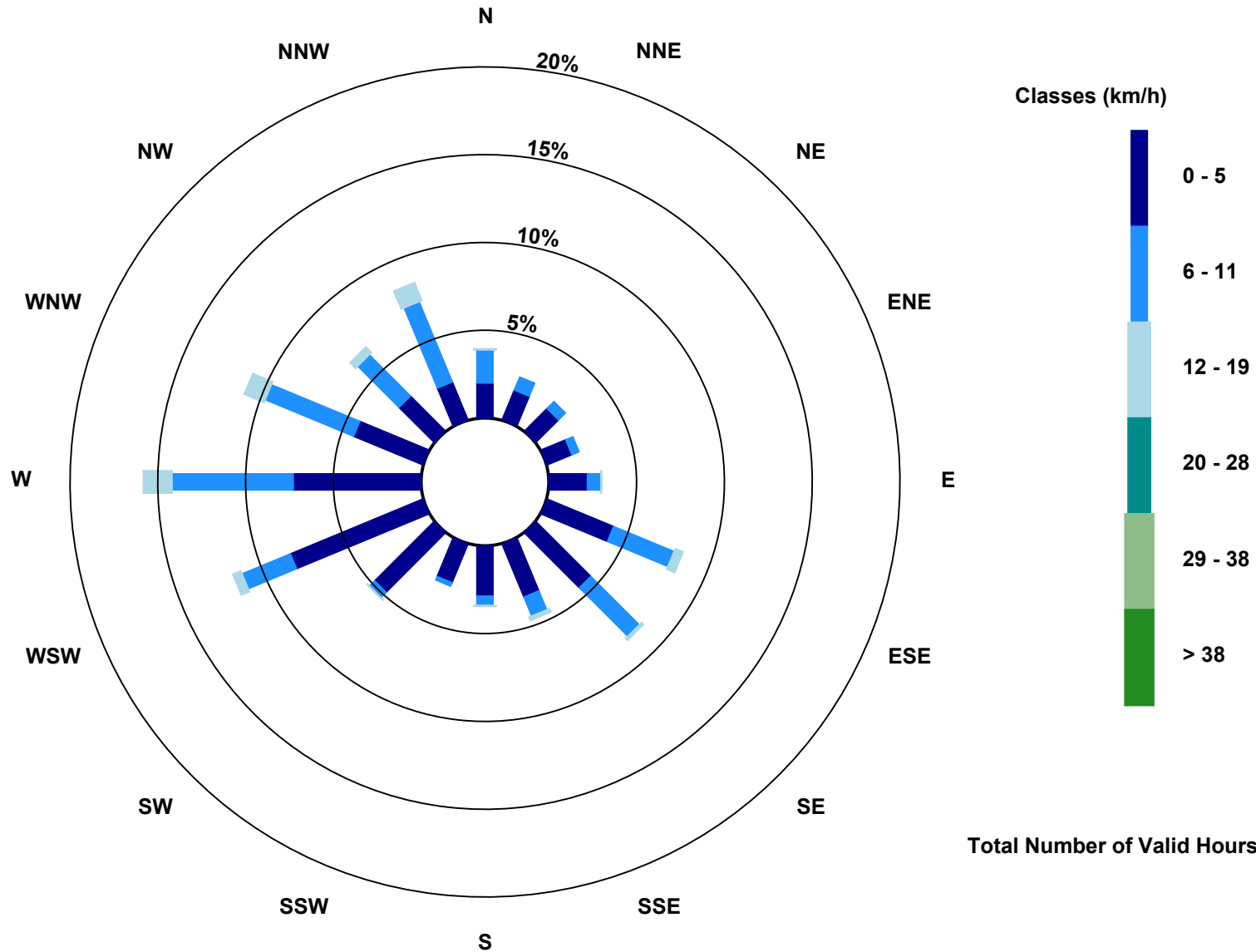
Wind Speed (WS) - km/h
Jackfish 2/3





Wood Buffalo Environmental Association
Wind Rose 2019

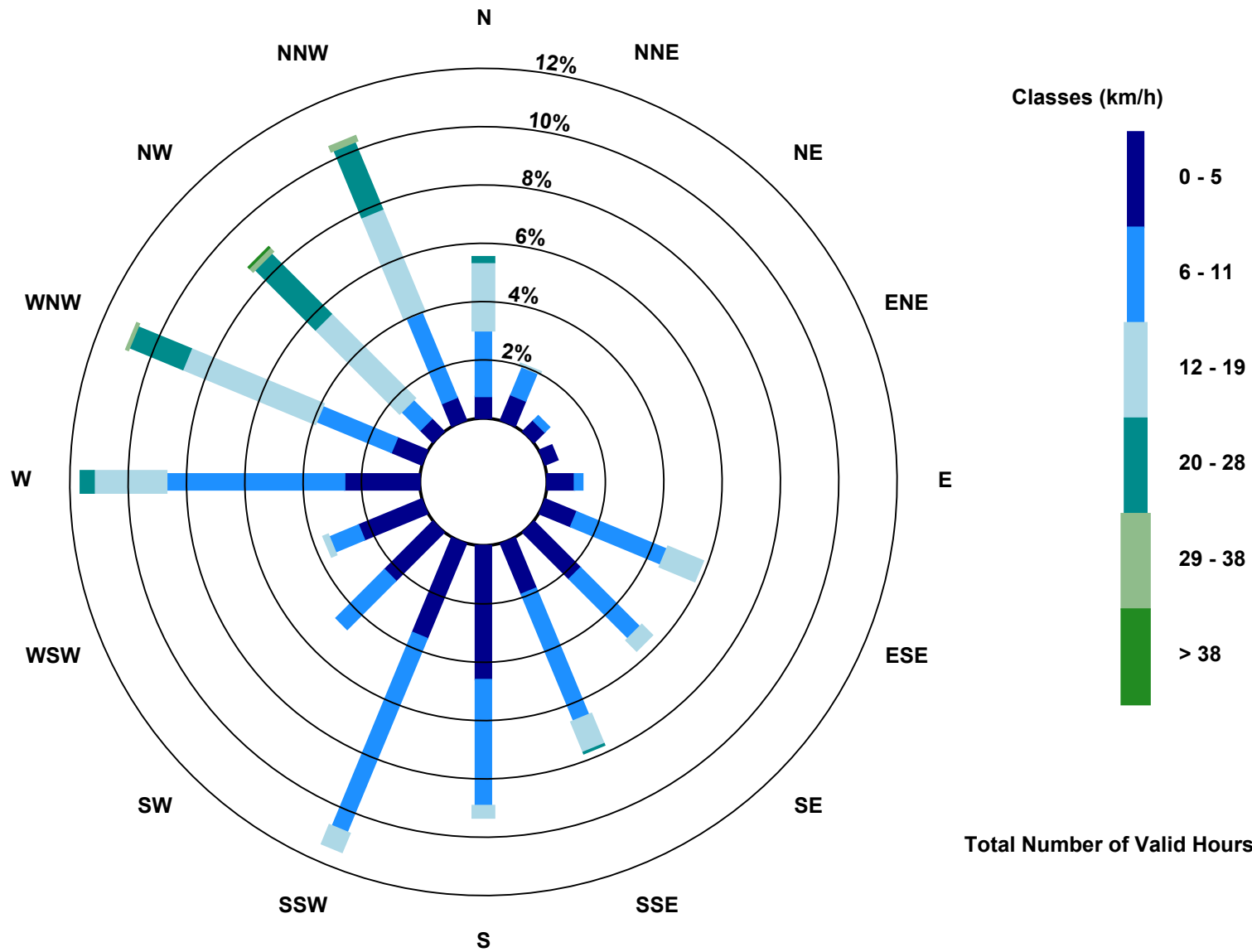
Wind Speed (WS) - km/h
Surmont 2





Wood Buffalo Environmental Association
Wind Rose 2019

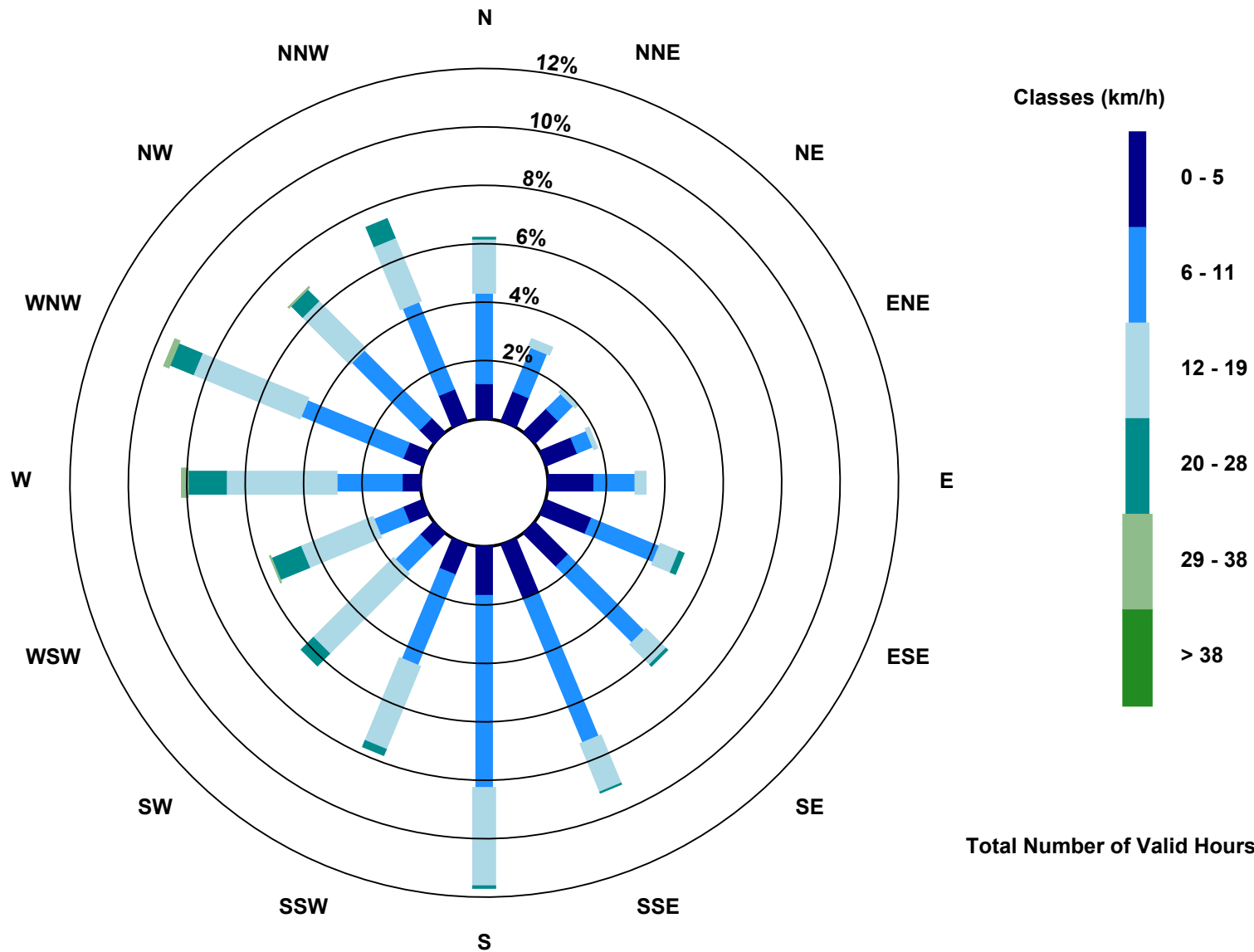
Wind Speed (WS) - km/h
Leismer





Wood Buffalo Environmental Association
Wind Rose 2019

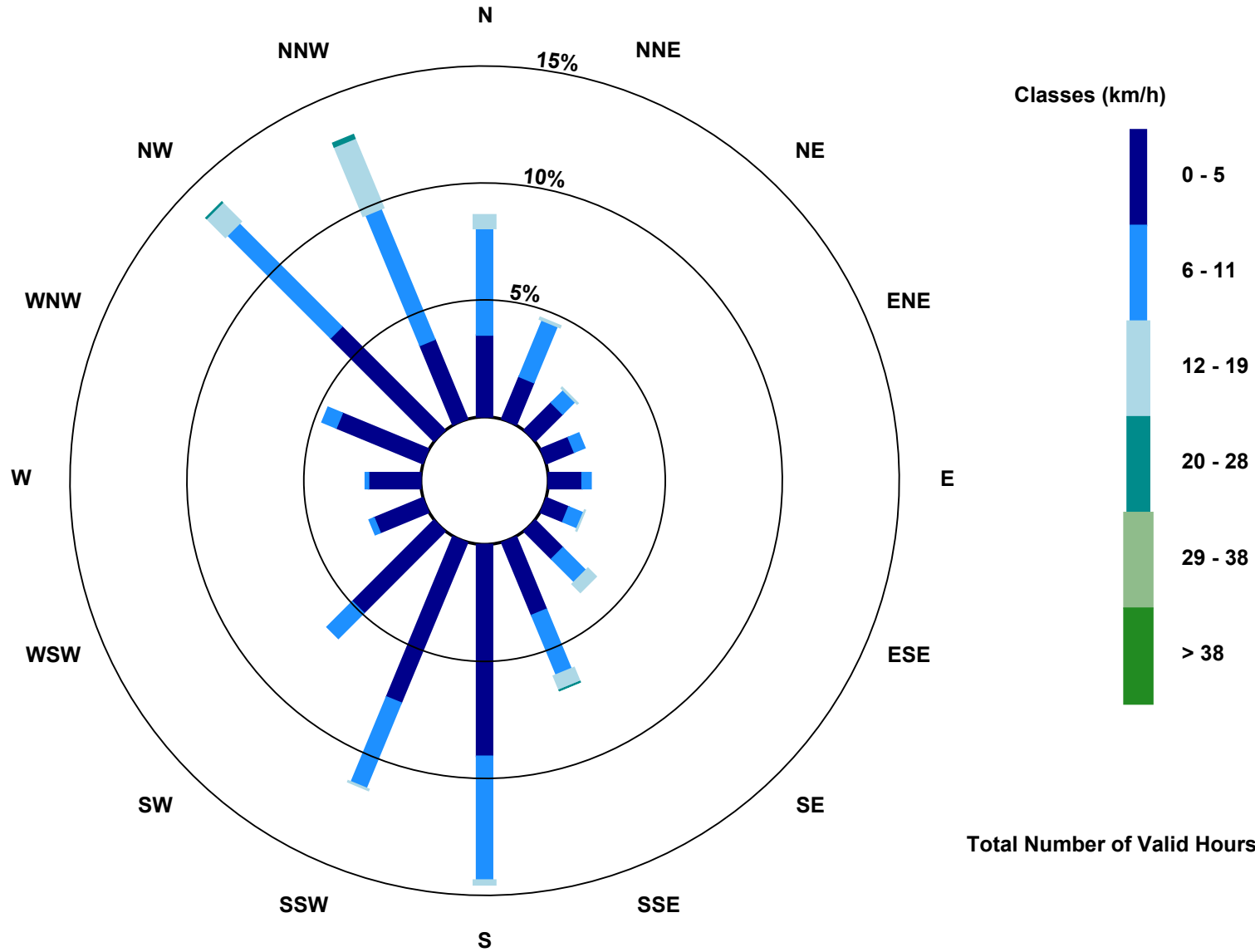
Wind Speed (WS) - km/h
Sawbones Bay





Wood Buffalo Environmental Association
Wind Rose 2019

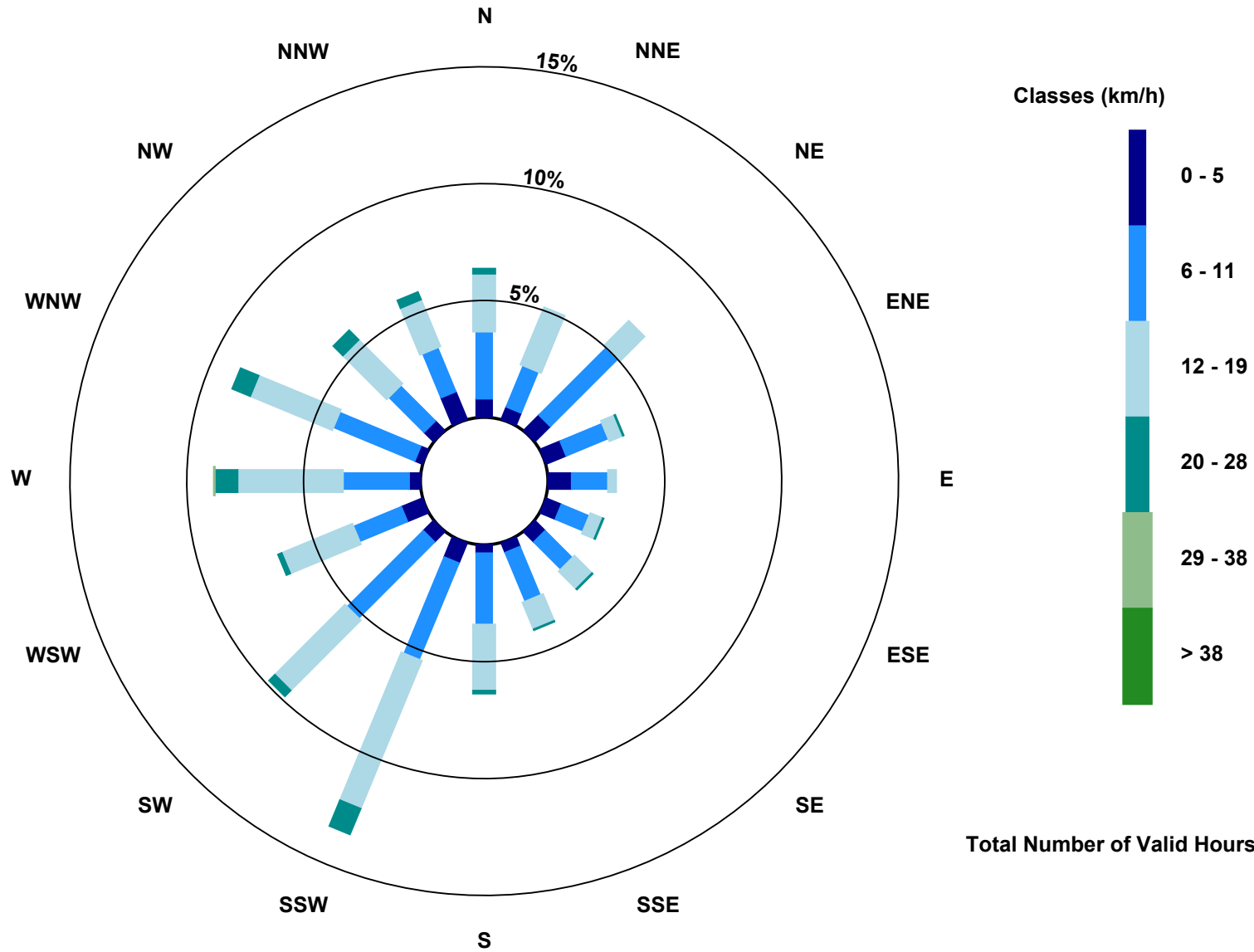
Wind Speed (WS) - km/h
Jackfish 1





Wood Buffalo Environmental Association
Wind Rose 2019

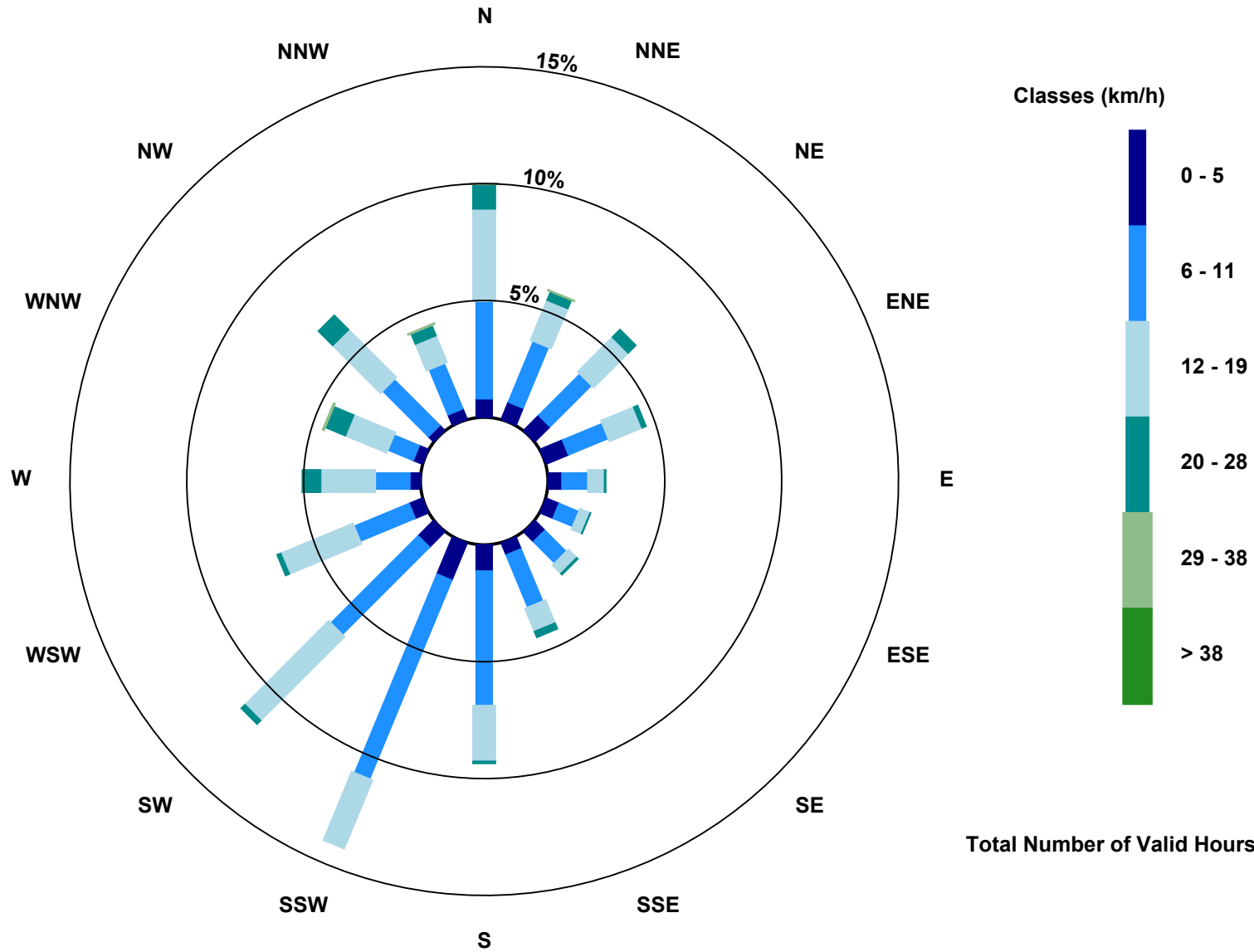
Wind Speed (WS) - km/h
Kirby South





Wood Buffalo Environmental Association
Wind Rose Apr 2019

Wind Speed (WS) - km/h
Kirby North





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
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APPENDIX I: AAAQO EXCEEDANCES 2019

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

March 2020



Type	Site	Parameter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS21 Conklin	PM _{2.5}	Jan 4, 2019 11:00	348172	1-hr	86	86.0	exc
AAAQO	AMS21 Conklin	SO ₂	Jan 8, 2019 13:00	348228	1-hr	500	-	ret
AAAQO	AMS17 Wapasu	SO ₂	Jan 9, 2019 01:00	348253	1-hr	235	-	ret
AAAQO	AMS17 Wapasu	H ₂ S	Jan 9, 2019 02:00	348252	1-hr	25.0	-	ret
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jan 9, 2019 15:00	348273	1-hr	135	135	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jan 12, 2019 14:00	348468	1-hr	93	93.0	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jan 13, 2019 10:00	348469	1-hr	84	84	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jan 16, 2019 09:00	348559	1-hr	95	95	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jan 16, 2019 10:00	348559	1-hr	81	81	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jan 16, 2019 11:00	348559	1-hr	96	96	exc
AAAQO	AMS22 Janvier	O ₃	Feb 1, 2019 23:00	349088	1-hr	125	-	ret
AAAQG	AMS14 Anzac	PM _{2.5}	Feb 14, 2019 19:00	349578	1-hr	106	106.0	exc
AAAQO	AMS05 Mannix	H ₂ S	Feb 15, 2019 23:00	349612	1-hr	10	10	exc
AAAQO	AMS05 Mannix	H ₂ S	Feb 15, 2019 24:00	349612	1-hr	12	12.0	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	Feb 24, 2019 21:00	349869	1-hr	140	140	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Mar 7, 2019 21:00	350286	1-hr	159	159	exc
AAAQO	AMS23 Fort Hills	TRS	Mar 7, 2019 24:00	350280	1-hr	13	13.0	exc
AAAQO	AMS23 Fort Hills	TRS	Mar 8, 2019 01:00	350282	1-hr	15	15.0	exc
AAAQG	AMS21 Conklin	PM _{2.5}	Mar 9, 2019 03:00	350413	1-hr	87	87	exc
AAAQG	AMS21 Conklin	PM _{2.5}	Mar 15, 2019 20:00	350674	1-hr	84	84.0	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Mar 20, 2019 20:00	350876	1-hr	86	86.0	exc
AAAQO	AMS23 Fort Hills	PM _{2.5}	Mar 21, 2019 24:00	350945	24-hr	37	37.0	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Mar 21, 2019 02:00	350877	1-hr	104	104.0	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Mar 21, 2019 03:00	350877	1-hr	271	271.0	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Mar 21, 2019 04:00	350877	1-hr	142	142.0	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Mar 21, 2019 05:00	350877	1-hr	84	84.0	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Mar 22, 2019 20:00	352570	1-hr	107	107.0	late
AAAQO	AMS25 Waskōw ohci Pimātisiwin	H ₂ S	Mar 26, 2019 24:00	351226	24-hr	3	-	ret
AAAQG	AMS21 Conklin	PM _{2.5}	Apr 12, 2019 21:00	352048	1-hr	338	337.8	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Apr 14, 2019 19:00	352027	1-hr	13	12.9	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Apr 14, 2019 20:00	352027	1-hr	15	15.3	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 11, 2019 21:00	353126	1-hr	108	107.7	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 20, 2019 04:00	353457	1-hr	122	122.5	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 20, 2019 05:00	353457	1-hr	127	127.2	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 21, 2019 20:00	353512	1-hr	123	123.0	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 21, 2019 21:00	353512	1-hr	163	163.3	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 21, 2019 24:00	353514	1-hr	85	85.3	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 21, 2019 24:00	353512	1-hr	89	89.1	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 26, 2019 24:00	353707	24-hr	35	34.6	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	May 26, 2019 24:00	353708	24-hr	35	34.5	exc
AAAQO	AMS15 Horizon	PM _{2.5}	May 26, 2019 24:00	353710	24-hr	39	38.5	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	May 26, 2019 24:00	353711	24-hr	52	51.7	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 26, 2019 02:00	353711	1-hr	135	135	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 26, 2019 21:00	353708	1-hr	130	129.8	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 26, 2019 21:00	353745	1-hr	121	121.4	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 26, 2019 21:00	353711	1-hr	122	121.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 26, 2019 21:00	353707	1-hr	97	97.2	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 26, 2019 21:00	353740	1-hr	94	94.1	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 26, 2019 21:00	353743	1-hr	142	142.2	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 26, 2019 22:00	353707	1-hr	167	167.2	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 26, 2019 22:00	353711	1-hr	223	222.9	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 26, 2019 22:00	353745	1-hr	86	85.5	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 26, 2019 22:00	353743	1-hr	96	96.4	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 26, 2019 22:00	353742	1-hr	80	80.6	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 26, 2019 22:00	353710	1-hr	128	127.8	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 26, 2019 22:00	353708	1-hr	198	198.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 26, 2019 23:00	353711	1-hr	192	192.4	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 26, 2019 23:00	353708	1-hr	140	140.1	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 26, 2019 23:00	353707	1-hr	170	170.2	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 26, 2019 23:00	353710	1-hr	199	199.3	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 26, 2019 23:00	353742	1-hr	94	93.6	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 26, 2019 23:00	353741	1-hr	105	105.2	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 26, 2019 24:00	353707	1-hr	166	166.2	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 26, 2019 24:00	353710	1-hr	206	206.1	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 26, 2019 24:00	353741	1-hr	113	113	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 26, 2019 24:00	353711	1-hr	184	183.7	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 26, 2019 24:00	353708	1-hr	134	133.7	exc
AAAQO	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 24:00	353774	24-hr	47	47.4	exc
AAAQO	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 24:00	353784	24-hr	39	38.9	exc
AAAQO	AMS21 Conklin	PM _{2.5}	May 27, 2019 24:00	353782	24-hr	49	48.7	exc
AAAQO	AMS18 Stony Mountain	PM _{2.5}	May 27, 2019 24:00	353781	24-hr	48	47.6	exc
AAAQO	AMS17 Wapasu	PM _{2.5}	May 27, 2019 24:00	353780	24-hr	33	33.2	exc
AAAQO	AMS15 Horizon	PM _{2.5}	May 27, 2019 24:00	353779	24-hr	67	67.3	exc
AAAQO	AMS14 Anzac	PM _{2.5}	May 27, 2019 24:00	353777	24-hr	67	67.2	exc



Type	Site	Paramter	Date/time	Reference	Period	Reported	Final	Status
AAAQO	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 24:00	353778	24-hr	64	63.6	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 24:00	353801	24-hr	85	85.2	exc
AAAQO	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 24:00	353776	24-hr	79	96.4	exc
AAAQO	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 24:00	353775	24-hr	91	91.1	exc
AAAQO	AMS22 Janvier	PM _{2.5}	May 27, 2019 24:00	353783	24-hr	48	48.1	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 01:00	353778	1-hr	147	147.2	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 24:00	353786	24-hr	71	71.3	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 01:00	353801	1-hr	221	220.7	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 01:00	353784	1-hr	145	144.7	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 27, 2019 01:00	353779	1-hr	223	223.1	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	May 27, 2019 24:00	353785	24-hr	44	55.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 01:00	353786	1-hr	191	190.9	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 02:00	353801	1-hr	255	254.6	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 02:00	353784	1-hr	118	118.1	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 27, 2019 02:00	353779	1-hr	213	212.7	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 02:00	353778	1-hr	192	192.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 02:00	353774	1-hr	99	98.9	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 02:00	353786	1-hr	212	211.9	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 03:00	353801	1-hr	232	232.3	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 03:00	353784	1-hr	111	111.5	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 27, 2019 03:00	353780	1-hr	105	104.7	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 27, 2019 03:00	353779	1-hr	205	205.3	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 03:00	353786	1-hr	188	188.2	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 03:00	353774	1-hr	96	95.8	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 03:00	353778	1-hr	172	172.3	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 04:00	353786	1-hr	160	160.1	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 04:00	353774	1-hr	110	109.6	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 04:00	353778	1-hr	150	149.8	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 27, 2019 04:00	353779	1-hr	188	187.9	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 27, 2019 04:00	353780	1-hr	94	94	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 04:00	353784	1-hr	111	111	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 04:00	353801	1-hr	206	206.5	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 05:00	353778	1-hr	131	130.8	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 05:00	353801	1-hr	187	186.7	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 27, 2019 05:00	353779	1-hr	184	183.5	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 27, 2019 05:00	353780	1-hr	81	81.6	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 05:00	353786	1-hr	160	160.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 05:00	353774	1-hr	108	107.6	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 05:00	353775	1-hr	87	87.1	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 05:00	353784	1-hr	104	103.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 06:00	353786	1-hr	151	150.8	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 06:00	353774	1-hr	104	103.6	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 06:00	353778	1-hr	126	126	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 27, 2019 06:00	353777	1-hr	261	261.1	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 27, 2019 06:00	353779	1-hr	172	171.9	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 27, 2019 06:00	353780	1-hr	88	87.8	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	May 27, 2019 06:00	353784	1-hr	93	92.9	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 06:00	353775	1-hr	176	175.8	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 06:00	353801	1-hr	186	186.3	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 07:00	353776	1-hr	227	227.4	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 07:00	353786	1-hr	154	154.4	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 07:00	353778	1-hr	135	135.5	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 27, 2019 07:00	353777	1-hr	203	202.7	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 27, 2019 07:00	353780	1-hr	88	87.9	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 07:00	353774	1-hr	91	91.1	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 07:00	353775	1-hr	199	198.9	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 07:00	353801	1-hr	198	197.7	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 27, 2019 08:00	353778	1-hr	128	127.8	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 27, 2019 08:00	353777	1-hr	138	138.1	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 27, 2019 08:00	353785	1-hr	150	149.7	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 27, 2019 08:00	353774	1-hr	81	80.6	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 08:00	353775	1-hr	329	328.6	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 27, 2019 08:00	353801	1-hr	140	139.9	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 27, 2019 08:00	353786	1-hr	117	116.5	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 08:00	353776	1-hr	308	309.5	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 27, 2019 09:00	353777	1-hr	156	156.2	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 09:00	353775	1-hr	383	382.7	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 27, 2019 09:00	353785	1-hr	125	156.2	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 09:00	353776	1-hr	262	262.2	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 10:00	353776	1-hr	227	226.6	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 10:00	353775	1-hr	236	236.5	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 27, 2019 10:00	353781	1-hr	109	108.9	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 27, 2019 10:00	353777	1-hr	139	138.7	exc



Type	Site	Parameter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 11:00	353775	1-hr	200	200.1	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 11:00	353776	1-hr	200	199.8	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 27, 2019 11:00	353782	1-hr	103	103.1	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 27, 2019 11:00	353781	1-hr	95	95.1	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 27, 2019 11:00	353777	1-hr	125	124.7	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 12:00	353776	1-hr	154	153.7	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 12:00	353775	1-hr	154	153.8	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 27, 2019 12:00	353781	1-hr	145	145.1	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 27, 2019 12:00	353782	1-hr	137	136.6	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 27, 2019 13:00	353775	1-hr	94	93.7	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 27, 2019 13:00	353782	1-hr	95	95.0	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 27, 2019 13:00	353781	1-hr	107	107.1	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 27, 2019 13:00	353776	1-hr	98	98.0	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 27, 2019 14:00	353783	1-hr	110	110.1	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 27, 2019 15:00	353782	1-hr	81	80.6	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 27, 2019 15:00	353783	1-hr	118	118.0	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 27, 2019 16:00	353783	1-hr	95	94.7	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 27, 2019 17:00	353783	1-hr	96	95.6	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 27, 2019 18:00	353783	1-hr	91	91.3	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 27, 2019 19:00	353783	1-hr	85	85.2	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 27, 2019 21:00	353782	1-hr	105	105.4	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 27, 2019 22:00	353782	1-hr	87	87	exc
AAAQO	AMS22 Janvier	PM _{2.5}	May 28, 2019 24:00	353857	24-hr	67	67	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 28, 2019 24:00	353847	24-hr	50	51	exc
AAAQO	AMS17 Wapasu	PM _{2.5}	May 28, 2019 24:00	353855	24-hr	40	40	exc
AAAQO	AMS15 Horizon	PM _{2.5}	May 28, 2019 24:00	353854	24-hr	49	50	exc
AAAQO	AMS14 Anzac	PM _{2.5}	May 28, 2019 24:00	353853	24-hr	67	68	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	May 28, 2019 24:00	353852	24-hr	45	45	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	May 28, 2019 24:00	353851	24-hr	65	65	exc
AAAQO	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 24:00	353850	24-hr	67	67	exc
AAAQO	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 24:00	353849	24-hr	92	92	exc
AAAQO	AMS04 Buffalo Viewpoint	PM _{2.5}	May 28, 2019 24:00	353848	24-hr	47	47	exc
AAAQO	AMS21 Conklin	PM _{2.5}	May 28, 2019 24:00	353856	24-hr	40	40	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 24:00	353859	24-hr	77	77	exc
AAAQO	AMS23 Fort Hills	PM _{2.5}	May 28, 2019 24:00	353858	24-hr	42	42	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 28, 2019 02:00	353857	1-hr	81	81	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 28, 2019 03:00	353857	1-hr	84	84	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 04:00	353859	1-hr	83	83	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 28, 2019 04:00	353853	1-hr	89	89	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 04:00	353849	1-hr	83	83	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 05:00	353849	1-hr	144	144	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 06:00	353849	1-hr	203	203	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 28, 2019 06:00	353851	1-hr	104	104	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 28, 2019 07:00	353847	1-hr	96	96	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 28, 2019 07:00	353855	1-hr	92	92	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 28, 2019 07:00	353852	1-hr	91	91	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 28, 2019 07:00	353851	1-hr	139	139	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 07:00	353849	1-hr	253	253	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 28, 2019 07:00	353848	1-hr	111	111	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 28, 2019 08:00	353848	1-hr	84	84	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 08:00	353849	1-hr	192	192	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 28, 2019 08:00	353851	1-hr	141	141	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 28, 2019 08:00	353852	1-hr	101	101	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 28, 2019 08:00	353855	1-hr	87	87	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 28, 2019 08:00	353847	1-hr	80	81	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 09:00	353849	1-hr	126	126	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 28, 2019 09:00	353851	1-hr	108	108	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 09:00	353859	1-hr	97	97	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 09:00	353850	1-hr	105	105	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 10:00	353850	1-hr	112	112	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 11:00	353850	1-hr	95	95	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 28, 2019 20:00	353853	1-hr	88	88	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 20:00	353859	1-hr	150	150	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 28, 2019 20:00	353856	1-hr	120	120	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 21:00	353859	1-hr	189	189	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 28, 2019 21:00	353857	1-hr	140	140	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 28, 2019 21:00	353856	1-hr	83	83	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 28, 2019 21:00	353853	1-hr	125	125.4	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 21:00	353850	1-hr	139	138.9	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 21:00	353849	1-hr	103	103.3	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 22:00	353849	1-hr	200	200.5	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 22:00	353850	1-hr	243	243.5	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 28, 2019 22:00	353853	1-hr	119	118.9	exc



Type	Site	Parameter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS21 Conklin	PM _{2.5}	May 28, 2019 22:00	353856	1-hr	80	80	nae
AAAQG	AMS22 Janvier	PM _{2.5}	May 28, 2019 22:00	353857	1-hr	163	163.1	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 22:00	353859	1-hr	119	118.7	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 28, 2019 23:00	353853	1-hr	246	246.1	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 23:00	353850	1-hr	250	249.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 28, 2019 23:00	353859	1-hr	92	91.5	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 28, 2019 23:00	353857	1-hr	145	145	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 28, 2019 23:00	353848	1-hr	109	109	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 23:00	353849	1-hr	264	263.6	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 28, 2019 24:00	353852	1-hr	83	82.7	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 28, 2019 24:00	353857	1-hr	100	100.4	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 28, 2019 24:00	353850	1-hr	199	185.8	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 28, 2019 24:00	353849	1-hr	226	225.7	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 28, 2019 24:00	353848	1-hr	134	134	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 28, 2019 24:00	353853	1-hr	227	226.9	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 24:00	353943	24-hr	91	90.9	exc
AAAQO	AMS22 Janvier	PM _{2.5}	May 29, 2019 24:00	353942	24-hr	63	62.9	exc
AAAQO	AMS21 Conklin	PM _{2.5}	May 29, 2019 24:00	353941	24-hr	56	55.6	exc
AAAQO	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 24:00	353937	24-hr	103	101.9	exc
AAAQO	AMS17 Wapasu	PM _{2.5}	May 29, 2019 24:00	353939	24-hr	69	-	ret
AAAQO	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 24:00	353936	24-hr	96	96.1	exc
AAAQO	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 24:00	353944	24-hr	76	75.8	exc
AAAQO	AMS18 Stony Mountain	PM _{2.5}	May 29, 2019 24:00	353940	24-hr	55	54.7	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 24:00	353945	24-hr	93	92.6	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 01:00	353936	1-hr	124	123.9	exc
AAAQO	AMS15 Horizon	PM _{2.5}	May 29, 2019 24:00	353947	24-hr	49	48.5	exc
AAAQO	AMS23 Fort Hills	PM _{2.5}	May 29, 2019 24:00	353948	24-hr	39	38.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 01:00	353935	1-hr	91	90.9	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 01:00	353937	1-hr	177	176.9	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 01:00	353944	1-hr	121	121.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 01:00	353945	1-hr	111	111	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 01:00	353938	1-hr	100	100.5	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 01:00	353939	1-hr	84	83.8	exc
AAAQO	AMS14 Anzac	PM _{2.5}	May 29, 2019 24:00	353946	24-hr	58	57.9	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 24:00	353935	24-hr	78	78.1	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 24:00	353938	24-hr	74	73.7	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 02:00	353945	1-hr	134	133.7	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 02:00	353938	1-hr	121	120.7	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 02:00	353944	1-hr	94	93.6	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 02:00	353937	1-hr	142	142.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 02:00	353936	1-hr	101	101	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 02:00	353935	1-hr	114	113.6	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 02:00	353946	1-hr	119	119	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 02:00	353939	1-hr	107	107.5	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 03:00	353945	1-hr	163	163	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 03:00	353936	1-hr	99	99.4	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 03:00	353939	1-hr	120	119.7	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 03:00	353935	1-hr	140	140.1	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 03:00	353937	1-hr	111	110.7	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 03:00	353938	1-hr	135	134.7	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 04:00	353935	1-hr	126	126.5	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 04:00	353936	1-hr	158	158.4	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 04:00	353937	1-hr	87	86.7	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 04:00	353938	1-hr	135	134.8	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 04:00	353945	1-hr	161	161.4	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 04:00	353939	1-hr	108	108.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 05:00	353935	1-hr	141	140.8	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 05:00	353939	1-hr	124	124.4	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 05:00	353946	1-hr	96	96	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 05:00	353938	1-hr	132	131.9	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 05:00	353937	1-hr	139	139.2	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 05:00	353936	1-hr	270	270.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 05:00	353945	1-hr	164	164.3	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 06:00	353936	1-hr	353	353.2	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 06:00	353937	1-hr	176	176.5	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 06:00	353945	1-hr	152	151.6	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 06:00	353938	1-hr	124	123.5	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 06:00	353946	1-hr	86	85.7	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 06:00	353939	1-hr	149	148.9	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 06:00	353935	1-hr	127	126.9	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 07:00	353936	1-hr	310	310.1	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 07:00	353939	1-hr	183	183.5	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 07:00	353937	1-hr	187	186.6	exc



Type	Site	Paramter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 07:00	353945	1-hr	140	140	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 07:00	353938	1-hr	117	117.1	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 07:00	353946	1-hr	87	86.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 07:00	353943	1-hr	126	126.4	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 07:00	353935	1-hr	119	119.1	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 08:00	353939	1-hr	210	210.8	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 08:00	353946	1-hr	93	93.3	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 08:00	353938	1-hr	82	81.8	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 08:00	353945	1-hr	122	122.1	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 08:00	353944	1-hr	129	129.5	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 08:00	353937	1-hr	250	249.7	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 08:00	353936	1-hr	193	193.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 08:00	353935	1-hr	93	93	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 08:00	353943	1-hr	150	150.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 09:00	353936	1-hr	127	127.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 09:00	353935	1-hr	81	81.5	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 09:00	353937	1-hr	252	252	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 09:00	353944	1-hr	213	213.4	exc
AAAQG	AMS17 Wapasu	PM _{2.5}	May 29, 2019 09:00	353939	1-hr	150	149.9	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 09:00	353946	1-hr	93	92.6	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 29, 2019 09:00	353947	1-hr	83	83.2	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 09:00	353943	1-hr	152	152.3	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 09:00	353945	1-hr	96	96.2	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 10:00	353935	1-hr	97	97.2	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 10:00	353936	1-hr	93	92.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 10:00	353943	1-hr	127	127.1	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 10:00	353937	1-hr	190	190.2	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 10:00	353946	1-hr	86	86.2	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 10:00	353945	1-hr	114	114.3	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 10:00	353944	1-hr	210	210.1	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 29, 2019 10:00	353947	1-hr	114	114.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 29, 2019 11:00	353936	1-hr	86	86.4	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 11:00	353938	1-hr	90	89.6	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 11:00	353945	1-hr	145	144.7	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 11:00	353944	1-hr	190	189.5	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 11:00	353937	1-hr	139	139.3	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 11:00	353935	1-hr	102	102.1	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 29, 2019 12:00	353946	1-hr	84	84.3	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 12:00	353943	1-hr	86	86.2	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 12:00	353938	1-hr	108	107.9	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 12:00	353945	1-hr	121	120.8	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	May 29, 2019 12:00	353944	1-hr	108	108.1	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	May 29, 2019 12:00	353937	1-hr	110	109.8	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 12:00	353935	1-hr	111	111.2	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 13:00	353935	1-hr	81	80.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 13:00	353943	1-hr	88	88.3	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	May 29, 2019 13:00	353938	1-hr	85	84.9	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 14:00	353943	1-hr	98	98.2	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 15:00	353943	1-hr	91	90.5	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 15:00	353945	1-hr	84	83.8	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 29, 2019 16:00	353935	1-hr	82	82.3	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 16:00	353943	1-hr	112	112	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 29, 2019 16:00	353940	1-hr	93	93.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 29, 2019 16:00	353945	1-hr	84	84.4	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 29, 2019 17:00	353940	1-hr	106	105.9	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 17:00	353943	1-hr	117	117.4	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 18:00	353943	1-hr	103	103.3	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 18:00	353942	1-hr	92	92	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 29, 2019 18:00	353940	1-hr	87	86.8	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 29, 2019 19:00	353941	1-hr	90	90.5	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 19:00	353942	1-hr	89	88.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 19:00	353943	1-hr	81	80.6	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 29, 2019 20:00	353941	1-hr	96	95.9	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 20:00	353942	1-hr	92	92	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 20:00	353943	1-hr	94	93.7	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 29, 2019 21:00	353941	1-hr	126	126.1	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 21:00	353942	1-hr	99	98.8	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 21:00	353943	1-hr	130	130.1	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 29, 2019 22:00	353941	1-hr	130	129.9	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 22:00	353942	1-hr	95	95.3	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 22:00	353943	1-hr	109	108.7	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 29, 2019 23:00	353943	1-hr	122	121.9	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 29, 2019 23:00	353941	1-hr	85	84.8	exc



Type	Site	Parameter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 23:00	353942	1-hr	95	94.7	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 29, 2019 24:00	353940	1-hr	135	135.2	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 29, 2019 24:00	353942	1-hr	92	92.5	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 30, 2019 01:00	354024	1-hr	103	102.5	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	May 30, 2019 01:00	354101	1-hr	93	92.8	exc
AAAQG	AMS21 Conklin	PM _{2.5}	May 30, 2019 01:00	354102	1-hr	92	92.3	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	May 30, 2019 24:00	354023	24-hr	30	30.5	exc
AAAQO	AMS15 Horizon	PM _{2.5}	May 30, 2019 24:00	354024	24-hr	31	31.1	exc
AAAQO	AMS22 Janvier	PM _{2.5}	May 30, 2019 24:00	354025	24-hr	30	30.2	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	May 30, 2019 24:00	354026	24-hr	39	38.6	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 30, 2019 24:00	354027	24-hr	38	37.9	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	May 30, 2019 24:00	354028	24-hr	41	40.5	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 30, 2019 03:00	354026	1-hr	86	86.1	exc
AAAQG	AMS14 Anzac	PM _{2.5}	May 30, 2019 03:00	354099	1-hr	99	99.1	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 30, 2019 04:00	354026	1-hr	118	118	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 30, 2019 05:00	354025	1-hr	101	100.9	exc
AAAQG	AMS22 Janvier	PM _{2.5}	May 30, 2019 06:00	354025	1-hr	87	87.1	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 30, 2019 11:00	354027	1-hr	82	82.3	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 30, 2019 11:00	354028	1-hr	106	106.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 30, 2019 12:00	354028	1-hr	93	93.1	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 30, 2019 12:00	354027	1-hr	81	80.9	exc
AAAQO	AMS15 Horizon	PM _{2.5}	May 31, 2019 24:00	354118	24-hr	44	43.5	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	May 31, 2019 24:00	354230	24-hr	59	58.9	exc
AAAQO	AMS04 Buffalo Viewpoint	PM _{2.5}	May 31, 2019 24:00	354117	24-hr	32	32.4	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 31, 2019 24:00	354116	24-hr	50	49.8	exc
AAAQO	AMS23 Fort Hills	PM _{2.5}	May 31, 2019 24:00	354124	24-hr	31	30.8	exc
AAAQO	AMS17 Wapasu	PM _{2.5}	May 31, 2019 24:00	354119	24-hr	33	32.8	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	May 31, 2019 04:00	354243	1-hr	91	91.3	exc
AAAQO	AMS506 Jackfish 1	H ₂ S	May 31, 2019 04:00	354029	1-hr	21	21.7	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	May 31, 2019 05:00	354243	1-hr	101	101.4	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	May 31, 2019 06:00	354243	1-hr	109	108.9	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	May 31, 2019 07:00	354243	1-hr	110	110.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 31, 2019 13:00	354116	1-hr	87	87.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 31, 2019 13:00	354230	1-hr	96	95.8	exc
AAAQG	AMS15 Horizon	PM _{2.5}	May 31, 2019 14:00	354118	1-hr	82	81.6	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 31, 2019 14:00	354116	1-hr	95	94.6	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 31, 2019 14:00	354230	1-hr	124	124.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	May 31, 2019 15:00	354117	1-hr	89	89	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 31, 2019 15:00	354230	1-hr	100	99.9	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 31, 2019 15:00	354116	1-hr	89	89	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	May 31, 2019 16:00	354116	1-hr	88	88.3	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 31, 2019 16:00	354230	1-hr	96	95.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	May 31, 2019 21:00	354245	1-hr	81	81.2	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	May 31, 2019 24:00	354230	1-hr	92	92.3	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jun 1, 2019 01:00	354240	1-hr	96	95.9	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	Jun 1, 2019 24:00	354162	24-hr	31	31.3	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 1, 2019 21:00	354162	1-hr	88	88.4	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	Jun 2, 2019 24:00	354192	24-hr	32	32	exc
AAAQO	AMS22 Janvier	PM _{2.5}	Jun 2, 2019 24:00	354191	24-hr	36	36.2	exc
AAAQO	AMS06 Patricia McInnes	PM _{2.5}	Jun 3, 2019 24:00	354264	24-hr	41	40	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jun 3, 2019 24:00	354274	24-hr	41	41.2	exc
AAAQO	AMS23 Fort Hills	PM _{2.5}	Jun 3, 2019 24:00	354272	24-hr	30	30.3	exc
AAAQO	AMS22 Janvier	PM _{2.5}	Jun 3, 2019 24:00	354271	24-hr	51	51.1	exc
AAAQO	AMS21 Conklin	PM _{2.5}	Jun 3, 2019 24:00	354270	24-hr	34	34	exc
AAAQO	AMS18 Stony Mountain	PM _{2.5}	Jun 3, 2019 24:00	354269	24-hr	41	41.4	exc
AAAQO	AMS15 Horizon	PM _{2.5}	Jun 3, 2019 24:00	354267	24-hr	33	32.9	exc
AAAQO	AMS17 Wapasu	PM _{2.5}	Jun 3, 2019 24:00	354268	24-hr	41	41	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	Jun 3, 2019 24:00	354265	24-hr	48	48.4	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	Jun 3, 2019 24:00	354273	24-hr	58	57.8	exc
AAAQO	AMS04 Buffalo Viewpoint	PM _{2.5}	Jun 3, 2019 24:00	354263	24-hr	40	39.9	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	Jun 3, 2019 24:00	354275	24-hr	59	59.5	exc
AAAQO	AMS14 Anzac	PM _{2.5}	Jun 3, 2019 24:00	354266	24-hr	40	39.8	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	Jun 3, 2019 06:00	354264	1-hr	90	89.8	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	Jun 3, 2019 07:00	354264	1-hr	115	114.8	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	Jun 3, 2019 08:00	354269	1-hr	92	92.3	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	Jun 3, 2019 08:00	354265	1-hr	109	109.3	exc
AAAQG	AMS21 Conklin	PM _{2.5}	Jun 3, 2019 08:00	354270	1-hr	86	86.3	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jun 3, 2019 08:00	354275	1-hr	122	121.5	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	Jun 3, 2019 08:00	354264	1-hr	99	99.4	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	Jun 3, 2019 08:00	354263	1-hr	90	90	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jun 3, 2019 09:00	354275	1-hr	152	152.2	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jun 3, 2019 09:00	354274	1-hr	121	121.1	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	Jun 3, 2019 09:00	354265	1-hr	123	123.3	exc



Type	Site	Parameter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jun 3, 2019 10:00	354275	1-hr	111	111.2	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jun 3, 2019 10:00	354274	1-hr	97	97.1	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	Jun 3, 2019 10:00	354265	1-hr	81	80.6	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jun 3, 2019 11:00	354275	1-hr	96	95.6	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jun 3, 2019 12:00	354275	1-hr	86	85.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 10, 2019 05:00	354563	1-hr	85	84.8	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 10, 2019 06:00	354563	1-hr	84	83.7	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jun 11, 2019 22:00	354613	1-hr	14	13.6	exc
AAAQG	AMS18 Stony Mountain	PM _{2.5}	Jun 12, 2019 24:00	354669	1-hr	94	94.7	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	Jun 13, 2019 24:00	354732	24-hr	40	39.2	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 13, 2019 04:00	354732	1-hr	101	101.2	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 13, 2019 05:00	354732	1-hr	103	102.7	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 13, 2019 06:00	354732	1-hr	145	145.4	exc
AAAQG	AMS14 Anzac	PM _{2.5}	Jun 13, 2019 06:00	354735	1-hr	99	98.8	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 13, 2019 07:00	354732	1-hr	114	113.8	exc
AAAQG	AMS07 Athabasca Valley	PM _{2.5}	Jun 13, 2019 10:00	354734	1-hr	98	98.2	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 18, 2019 21:00	354926	1-hr	228	228	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 18, 2019 22:00	354926	1-hr	116	116.2	exc
AAAQG	AMS14 Anzac	PM _{2.5}	Jun 18, 2019 23:00	354924	1-hr	135	134.8	exc
AAAQG	AMS14 Anzac	PM _{2.5}	Jun 18, 2019 24:00	354924	1-hr	140	140.5	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	Jun 19, 2019 24:00	354985	24-hr	36	36.3	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 19, 2019 03:00	354985	1-hr	111	110.6	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 19, 2019 04:00	354985	1-hr	266	266.4	exc
AAAQG	AMS29 Surmont 2	PM _{2.5}	Jun 19, 2019 05:00	354985	1-hr	204	203.7	exc
AAAQO	AMS08 Fort Chipewyan	PM _{2.5}	Jun 20, 2019 24:00	355039	24-hr	29	29.5	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jun 20, 2019 24:00	355040	24-hr	39	39.2	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	Jun 20, 2019 24:00	355041	24-hr	34	33.7	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jun 20, 2019 07:00	355040	1-hr	98	97.7	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jun 20, 2019 08:00	355040	1-hr	96	96.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 21, 2019 24:00	355094	24-hr	3	3.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 21, 2019 02:00	355042	1-hr	11	10.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 23, 2019 24:00	355138	24-hr	5	4.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 23, 2019 05:00	355124	1-hr	10	10.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 26, 2019 03:00	355260	1-hr	11	10.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 26, 2019 04:00	355260	1-hr	10	10	nae
AAAQO	AMS23 Fort Hills	H ₂ S	Jun 28, 2019 03:00	355382	1-hr	15	15.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 28, 2019 21:00	355435	1-hr	11	10.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 29, 2019 24:00	355441	24-hr	5	5.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 29, 2019 02:00	355441	1-hr	13	13.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 29, 2019 03:00	355441	1-hr	35	34.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 29, 2019 04:00	355441	1-hr	11	10.4	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jun 29, 2019 13:00	355454	1-hr	13	13	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 29, 2019 22:00	355441	1-hr	11	10.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 29, 2019 23:00	355441	1-hr	12	12	exc
AAAQO	AMS05 Mannix	H ₂ S	Jun 30, 2019 24:00	355480	1-hr	10	9.6	nae
AAAQO	AMS05 Mannix	H ₂ S	Jul 8, 2019 24:00	355814	24-hr	3	3.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 12, 2019 16:00	356017	1-hr	18	17.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 14, 2019 24:00	356075	1-hr	13	12.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 15, 2019 01:00	356076	1-hr	18	18.3	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 15, 2019 23:00	356130	1-hr	11	10.5	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 16, 2019 22:00	356180	1-hr	13	13.4	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 16, 2019 23:00	356180	1-hr	13	13	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 16, 2019 24:00	356180	1-hr	10	10.3	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 17, 2019 04:00	356184	1-hr	10	10.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 18, 2019 21:00	356296	1-hr	10	9.6	nae
AAAQO	AMS05 Mannix	H ₂ S	Jul 18, 2019 22:00	356296	1-hr	12	11.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 19, 2019 24:00	356299	24-hr	5	5.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 19, 2019 04:00	356299	1-hr	11	10.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 19, 2019 05:00	356299	1-hr	10	10	nae
AAAQO	AMS05 Mannix	H ₂ S	Jul 19, 2019 07:00	356299	1-hr	12	11.7	exc
AAAQG	AMS14 Anzac	PM _{2.5}	Jul 19, 2019 21:00	356412	1-hr	87	86.5	exc
AAAQG	AMS14 Anzac	PM _{2.5}	Jul 19, 2019 22:00	356412	1-hr	93	93.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 19, 2019 23:00	356299	1-hr	12	12.1	exc
AAAQG	AMS06 Patricia McInnes	PM _{2.5}	Jul 19, 2019 24:00	356411	1-hr	85	84.6	exc
AAAQO	AMS06 Patricia McInnes	PM _{2.5}	Jul 20, 2019 24:00	356371	24-hr	30	30.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 20, 2019 24:00	356345	24-hr	3	2.9	nae
AAAQO	AMS15 Horizon	PM _{2.5}	Jul 20, 2019 24:00	356373	24-hr	34	34.2	exc
AAAQO	AMS08 Fort Chipewyan	PM _{2.5}	Jul 20, 2019 24:00	356372	24-hr	49	49	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 20, 2019 01:00	356345	1-hr	10	10.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 20, 2019 02:00	356345	1-hr	15	14.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 20, 2019 04:00	356345	1-hr	12	12	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 20, 2019 05:00	356372	1-hr	111	111.5	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 20, 2019 06:00	356372	1-hr	135	135.4	exc



Type	Site	Paramter	Date/time	Reference	Period	Reported	Final	Status
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 20, 2019 09:00	356372	1-hr	108	108.2	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 20, 2019 10:00	356372	1-hr	172	171.9	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	Jul 20, 2019 11:00	356413	1-hr	90	89.7	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 20, 2019 11:00	356372	1-hr	132	132	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 20, 2019 22:00	356370	1-hr	10	10.2	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	Jul 21, 2019 24:00	356399	24-hr	31	31	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jul 21, 2019 24:00	356394	24-hr	34	33.5	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	Jul 21, 2019 24:00	356396	24-hr	32	32.1	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 21, 2019 24:00	356393	24-hr	4	4.4	exc
AAAQO	AMS15 Horizon	PM _{2.5}	Jul 21, 2019 24:00	356444	24-hr	30	30.3	exc
AAAQO	AMS08 Fort Chipewyan	PM _{2.5}	Jul 21, 2019 24:00	356395	24-hr	41	40.8	exc
AAAQO	AMS29 Surmont 2	PM _{2.5}	Jul 21, 2019 24:00	356415	24-hr	30	29.9	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 21, 2019 03:00	356395	1-hr	113	112.6	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 21, 2019 04:00	356375	1-hr	14	14.6	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 21, 2019 21:00	356393	1-hr	23	22.6	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 21, 2019 22:00	356393	1-hr	10	10	nae
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 21, 2019 23:00	356393	1-hr	19	18.9	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 21, 2019 24:00	356393	1-hr	22	22.3	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 22, 2019 24:00	356457	24-hr	4	4.2	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 22, 2019 06:00	356416	1-hr	10	10.2	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 22, 2019 07:00	356416	1-hr	10	10.5	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 22, 2019 22:00	356457	1-hr	11	10.8	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 22, 2019 23:00	356457	1-hr	16	15.9	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 22, 2019 24:00	356460	1-hr	182	182.3	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 01:00	356516	1-hr	173	173.4	exc
AAAQO	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 24:00	356516	24-hr	69	69.4	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 02:00	356516	1-hr	111	110.8	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 03:00	356516	1-hr	305	305.5	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 04:00	356516	1-hr	97	97.5	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 13:00	356516	1-hr	95	94.9	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 14:00	356516	1-hr	112	112.5	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 15:00	356516	1-hr	90	89.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 23, 2019 23:00	356515	1-hr	15	15.5	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 23, 2019 24:00	356516	1-hr	90	90.3	exc
AAAQO	AMS09 Barge Landing	PM _{2.5}	Jul 24, 2019 24:00	356582	24-hr	32	32.4	exc
AAAQO	AMS08 Fort Chipewyan	PM _{2.5}	Jul 24, 2019 24:00	356581	24-hr	44	43.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 24, 2019 24:00	356579	24-hr	6	5.6	exc
AAAQO	AMS04 Buffalo Viewpoint	PM _{2.5}	Jul 24, 2019 24:00	356578	24-hr	31	31.1	exc
AAAQO	AMS13 Fort McKay South	PM _{2.5}	Jul 24, 2019 24:00	356583	24-hr	31	30.8	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jul 24, 2019 24:00	356577	24-hr	34	33.5	exc
AAAQO	AMS15 Horizon	PM _{2.5}	Jul 24, 2019 24:00	356584	24-hr	33	34.2	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 24, 2019 01:00	356581	1-hr	85	85.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 24, 2019 06:00	356520	1-hr	17	16.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 24, 2019 07:00	356522	1-hr	14	14.4	exc
AAAQG	AMS15 Horizon	PM _{2.5}	Jul 24, 2019 09:00	356584	1-hr	99	99.4	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Jul 24, 2019 10:00	356590	1-hr	83	83.3	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jul 24, 2019 10:00	356577	1-hr	82	81.8	exc
AAAQG	AMS15 Horizon	PM _{2.5}	Jul 24, 2019 10:00	356584	1-hr	105	105.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 24, 2019 10:00	356522	1-hr	10	10.3	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jul 24, 2019 11:00	356577	1-hr	99	98.8	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jul 24, 2019 11:00	356582	1-hr	96	95.6	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	Jul 24, 2019 11:00	356583	1-hr	88	88.1	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	Jul 24, 2019 12:00	356578	1-hr	109	108.7	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jul 24, 2019 12:00	356582	1-hr	107	106.9	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	Jul 24, 2019 12:00	356583	1-hr	98	97.7	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jul 24, 2019 12:00	356577	1-hr	112	112.1	exc
AAAQG	AMS09 Barge Landing	PM _{2.5}	Jul 24, 2019 13:00	356582	1-hr	99	98.5	exc
AAAQG	AMS13 Fort McKay South	PM _{2.5}	Jul 24, 2019 13:00	356583	1-hr	101	100.6	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM _{2.5}	Jul 24, 2019 13:00	356577	1-hr	91	90.7	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	Jul 24, 2019 14:00	356578	1-hr	89	89	exc
AAAQG	AMS04 Buffalo Viewpoint	PM _{2.5}	Jul 24, 2019 15:00	356578	1-hr	89	88.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 25, 2019 01:00	356585	1-hr	15	14.4	exc
AAAQG	AMS08 Fort Chipewyan	PM _{2.5}	Jul 25, 2019 24:00	356640	1-hr	115	114.5	exc
AAAQO	AMS08 Fort Chipewyan	PM _{2.5}	Jul 26, 2019 24:00	356690	24-hr	32	32	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 28, 2019 21:00	356725	1-hr	12	12.2	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Jul 28, 2019 23:00	356725	1-hr	10	10.1	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Jul 29, 2019 04:00	356731	1-hr	14	14.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Jul 31, 2019 09:00	356879	1-hr	13	13.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 1, 2019 05:00	356923	1-hr	31	30.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 2, 2019 18:00	357044	1-hr	17	17.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 5, 2019 24:00	357098	24-hr	5	5.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 5, 2019 21:00	357098	1-hr	14	13.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 5, 2019 22:00	357098	1-hr	21	20.9	exc



Type	Site	Paramter	Date/time	Reference	Period	Reported	Final	Status
AAAQO	AMS05 Mannix	H ₂ S	Aug 6, 2019 24:00	357102	24-hr	4	4.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 6, 2019 03:00	357102	1-hr	10	10.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 6, 2019 04:00	357102	1-hr	12	12	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 6, 2019 05:00	357102	1-hr	12	11.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 8, 2019 24:00	357280	24-hr	5	5	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 8, 2019 16:00	357276	1-hr	10	10.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 8, 2019 19:00	357280	1-hr	21	20.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 8, 2019 20:00	357280	1-hr	10	9.4	nae
AAAQO	AMS05 Mannix	H ₂ S	Aug 8, 2019 21:00	357280	1-hr	13	12.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 8, 2019 22:00	357280	1-hr	11	11.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 9, 2019 24:00	357335	24-hr	4	4	exc
AAAQG	AMS21 Conklin	PM _{2.5}	Aug 10, 2019 22:00	357396	1-hr	92	92.1	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 11, 2019 24:00	357375	24-hr	3	3.3	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Aug 13, 2019 22:00	357483	1-hr	18	17.6	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Aug 13, 2019 23:00	357483	1-hr	11	11.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 14, 2019 23:00	357527	1-hr	10	10.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 14, 2019 24:00	357527	1-hr	15	14.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 24:00	357591	24-hr	21	21.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 09:00	357591	1-hr	15	15.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 10:00	357591	1-hr	14	13.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 11:00	357591	1-hr	32	31.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 12:00	357605	1-hr	47	47.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 13:00	357591	1-hr	43	42.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 14:00	357591	1-hr	40	39.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 15:00	357591	1-hr	53	53.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 16:00	357591	1-hr	45	45	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 17:00	357591	1-hr	48	47.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 18:00	357591	1-hr	33	32.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 19:00	357591	1-hr	27	26.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 20:00	357591	1-hr	24	23.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 21:00	357591	1-hr	20	19.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 22:00	357591	1-hr	12	11.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 23:00	357591	1-hr	13	13.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 16, 2019 24:00	357591	1-hr	18	18.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 17, 2019 01:00	357631	1-hr	18	17.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 17, 2019 24:00	357631	24-hr	6	5.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 17, 2019 02:00	357631	1-hr	11	10.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 18, 2019 24:00	357654	24-hr	6	5.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 18, 2019 20:00	357654	1-hr	11	10.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 18, 2019 21:00	357654	1-hr	16	15.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 18, 2019 22:00	357654	1-hr	13	13.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 18, 2019 23:00	357654	1-hr	16	16.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 18, 2019 24:00	357654	1-hr	10	9.6	nae
AAAQO	AMS05 Mannix	H ₂ S	Aug 19, 2019 01:00	357656	1-hr	11	11.2	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Aug 22, 2019 08:00	357838	1-hr	10	9.8	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 24:00	357967	24-hr	5	5.3	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 07:00	357904	1-hr	14	13.8	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 08:00	357916	1-hr	13	13.1	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 09:00	357926	1-hr	10	9.9	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 10:00	357904	1-hr	10	9.9	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 21:00	357967	1-hr	10	10.1	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 22:00	357967	1-hr	10	9.8	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 23, 2019 23:00	357967	1-hr	11	10.9	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 24, 2019 24:00	357968	24-hr	3	3	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 24, 2019 02:00	357968	1-hr	11	11.1	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 24, 2019 05:00	357968	1-hr	14	13.7	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Aug 24, 2019 06:00	357968	1-hr	11	11	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 24, 2019 21:00	357984	1-hr	12	11.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 24, 2019 22:00	357984	1-hr	13	13.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 25, 2019 24:00	358001	24-hr	3	2.9	nae
AAAQO	AMS05 Mannix	H ₂ S	Aug 25, 2019 18:00	358001	1-hr	14	13.7	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 01:00	358002	1-hr	10	9.9	nae
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 24:00	358047	24-hr	6	5.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 06:00	358002	1-hr	11	11.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 17:00	358047	1-hr	14	14.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 18:00	348047	1-hr	11	10.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 19:00	358047	1-hr	10	9.9	nae
AAAQO	AMS05 Mannix	H ₂ S	Aug 26, 2019 20:00	358047	1-hr	14	13.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 28, 2019 24:00	358178	24-hr	3	3.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 28, 2019 10:00	358148	1-hr	11	10.5	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 28, 2019 20:00	358178	1-hr	12	11.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 30, 2019 23:00	358289	1-hr	14	14.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 31, 2019 24:00	358291	24-hr	4	3.7	exc



Type	Site	Paramter	Date/time	Reference	Period	Reported	Final	Status
AAAQO	AMS05 Mannix	H ₂ S	Aug 31, 2019 06:00	358291	1-hr	15	14.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Aug 31, 2019 07:00	358291	1-hr	10	9.9	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 1, 2019 24:00	358341	24-hr	3	3	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 1, 2019 08:00	358324	1-hr	11	10.9	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 1, 2019 09:00	358324	1-hr	12	12	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 3, 2019 24:00	358428	24-hr	3	3	nae
AAAQO	AMS05 Mannix	H ₂ S	Sep 3, 2019 08:00	358367	1-hr	13	13	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 3, 2019 09:00	358373	1-hr	12	11.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 3, 2019 23:00	358428	1-hr	12	12.2	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 4, 2019 23:00	358494	1-hr	10	10.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 5, 2019 24:00	358546	24-hr	3	2.8	nae
AAAQO	AMS05 Mannix	H ₂ S	Sep 5, 2019 19:00	358546	1-hr	13	12.8	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 5, 2019 23:00	358546	1-hr	10	10	nae
AAAQO	AMS05 Mannix	H ₂ S	Sep 7, 2019 24:00	358615	24-hr	4	3.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 8, 2019 24:00	358629	24-hr	3	2.8	nae
AAAQO	AMS04 Buffalo Viewpoint	H ₂ S	Sep 9, 2019 20:00	358679	1-hr	14	14.7	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 11, 2019 24:00	358773	24-hr	4	3.4	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 12, 2019 24:00	358825	24-hr	5	5.1	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 12, 2019 19:00	358825	1-hr	12	11.8	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 12, 2019 20:00	358825	1-hr	18	17.8	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 12, 2019 21:00	358825	1-hr	15	14.6	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 12, 2019 22:00	358825	1-hr	14	13.5	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 12, 2019 23:00	358825	1-hr	13	12.8	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 13, 2019 24:00	358866	24-hr	3	2.9	nae
AAAQG	AMS21 Conklin	PM _{2.5}	Sep 13, 2019 19:00	358923	1-hr	86	85.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 15, 2019 24:00	358913	24-hr	4	4.1	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 15, 2019 23:00	358913	1-hr	12	11.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 15, 2019 24:00	358913	1-hr	10	9.8	nae
AAAQO	AMS05 Mannix	H ₂ S	Sep 16, 2019 01:00	358914	1-hr	23	22.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 16, 2019 02:00	358914	1-hr	20	19.3	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 19, 2019 24:00	359131	24-hr	4	3.2	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 19, 2019 24:00	359129	24-hr	4	4.4	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 19, 2019 05:00	359071	1-hr	10	9.8	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 19, 2019 08:00	359074	1-hr	15	14.8	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 19, 2019 09:00	359083	1-hr	15	14.9	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 19, 2019 10:00	359091	1-hr	10	9.9	nae
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 19, 2019 19:00	359129	1-hr	14	13.5	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 19, 2019 20:00	359129	1-hr	16	15.6	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 19, 2019 23:00	359129	1-hr	15	15.3	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 19, 2019 24:00	359129	1-hr	10	9.5	nae
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 21, 2019 19:00	359202	1-hr	14	13.9	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Sep 21, 2019 20:00	359202	1-hr	13	13.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 24, 2019 22:00	359320	1-hr	14	14.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Sep 27, 2019 24:00	359452	24-hr	4	3.9	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Sep 30, 2019 24:00	359512	24-hr	3	2.5	nae
AAAQO	AMS02 Mildred Lake	H ₂ S	Oct 3, 2019 24:00	359663	24-hr	4	3.9	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Oct 3, 2019 19:00	359663	1-hr	17	16.8	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Oct 3, 2019 20:00	359663	1-hr	15	15.2	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 4, 2019 20:00	359726	1-hr	11	10.5	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 6, 2019 18:00	359758	1-hr	12	11.5	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 6, 2019 19:00	359758	1-hr	12	12.1	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 7, 2019 24:00	359759	24-hr	4	3.6	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 7, 2019 24:00	359815	24-hr	3	3.5	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 7, 2019 03:00	359759	1-hr	10	9.5	nae
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 7, 2019 06:00	359759	1-hr	10	9.5	nae
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 7, 2019 08:00	359759	1-hr	12	11.6	exc
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 7, 2019 09:00	359775	1-hr	11	11.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 7, 2019 17:00	359815	1-hr	13	12.9	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 7, 2019 22:00	359815	1-hr	11	11.2	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 7, 2019 23:00	359815	1-hr	12	12.3	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 7, 2019 24:00	359815	1-hr	10	10.4	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 10, 2019 23:00	359945	1-hr	11	11	exc
AAAQO	AMS05 Mannix	H ₂ S	Oct 11, 2019 02:00	359948	1-hr	10	9.8	nae
AAAQO	AMS11 Lower Camp	H ₂ S	Oct 12, 2019 17:00	360012	1-hr	11	11.2	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Oct 13, 2019 01:00	360015	1-hr	10	10	nae
AAAQO	AMS05 Mannix	H ₂ S	Oct 13, 2019 24:00	360020	24-hr	3	3.1	exc
AAAQO	AMS02 Mildred Lake	H ₂ S	Oct 13, 2019 02:00	360015	1-hr	10	10.6	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Oct 30, 2019 18:00	360610	1-hr	85	85.4	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Oct 30, 2019 19:00	360610	1-hr	82	81.9	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Oct 30, 2019 20:00	360610	1-hr	89	88.7	exc
AAAQG	AMS15 Horizon	PM _{2.5}	Oct 30, 2019 20:00	360609	1-hr	94	93.7	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Oct 31, 2019 06:00	360645	1-hr	102	103.1	exc
AAAQG	AMS23 Fort Hills	PM _{2.5}	Nov 1, 2019 22:00	360707	1-hr	141	142.4	exc



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

APPENDIX II: SUMMARY OF MONTHLY OPERATIONAL TIMES BELOW 90 PERCENT AND NON-COMPLIANCES 2019

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

March 2020

Date Reported	AEP Reference Number	Reporting Period	Location	Brief Description	Issue	Remedial Action
5-Feb-19	349212	January	Lower Camp (Air Quality)	Lower Camp THC analyzer operated less than 90% of the reporting period in January 2019 due to a series of issues which cumulatively resulted in significant downtime.	There were five issues associated with the operation of the THC analyzer, resulting in 88 hours of invalid data: Reoccurring instances of hydrogen generator failure throughout January 1-5 interrupted the normal operations of the THC analyzer for 53 hours. Maintenance to reinstate daily QA checks following the repair of the hydrogen generator on January 2 resulted in 1 hour of operational downtime. The data acquisition system failed to record data for 1 hour on January 5. Maintenance to reinstate daily QA checks following FID flame outages on January 23 interrupted the normal operations of the THC analyzer for 3 hours. WBEA is in the process of transitioning from analyzers which measure strictly total hydrocarbons to analyzers which also measure methane and non-methane hydrocarbons. An analyzer of this type was installed at the station on January 24. Upon installation of the analyzer, it failed to meet operational criteria. The analyzer was removed from the station and replaced with the original THC analyzer. This resulted in 30 hours of operational downtime.	n/a
5-Feb-19	349213	January and February	Kirby South	Kirby South WS/WD operated less than 90% of the time due to flat line periods caused by ice buildup.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensors were successfully dislodged on February 6.
20-Feb-19	349726	January	Lower Camp (Meteorology Tower)	Lower Camp 100 and 167 m WS/WD/VWS operated less than 90% of the time due to flat line periods caused by ice buildup.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	n/a
20-Feb-19	3349727	January	Mannix	Mannix 45, 75, and 90 m WS/WD/VWS operated less than 90% of the time due to flat line periods caused by ice buildup.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	n/a
20-Feb-19	349728	January	Fort Chipewyan	Fort Chipewyan precipitation collector operated less than 90% of the time due to freezing of the tipping mechanism	During freezing temperatures, the tipping mechanism on the tipping bucket precipitation collector became iced up, resulting in invalid data. Maintenance to clear built up snow and ice and restore operation will be performed during the next site visit.	Precipitation collector was decommissioned on October 1, 2019
20-Feb-19	349729	January	Anzac	Anzac precipitation collector operated less than 90% of the time due to freezing of the tipping mechanism	During freezing temperatures, the tipping mechanism on the tipping bucket precipitation collector became iced up, resulting in invalid data. Maintenance to clear built up snow and ice and restore operation will be performed during the next site visit.	Precipitation collector was decommissioned on February 1, 2019.
20-Feb-19	349730	January and February	Stony Mountain	Stony Mountain THC operated less than 90% of the reporting period due to a series of issues which cumulatively resulted in significant downtime.	Unstable operation due to analyzer drift throughout January affected the normal operation of the THC analyzer for 43 hours. Performance issues with the zero air generator (support equipment to the analyzer) were identified on January 22 and the zero air generator was replaced that day. Investigation of analyzer chromatograms during the February 7 calibration visit indicated the pump was not operating at peak efficiency and was replaced. Due to the deteriorating pump, data was flagged from the January 23 calibration until the sample pump was changed on February 7, resulting in 354 hours of invalid data. Routine maintenance activities in January and February interrupted the normal operation of the THC analyzer for a total of 5 hours.	n/a
26-Feb-19	349909	January	Janvier	Janvier TRS operated less than 90% of the reporting period due to troubles with the SO2 scrubber.	The SO2 scrubber on the TRS analyzer at Janvier AMS failed the SO2 scrubber check portion of the monthly calibration on January 25. An inline hydrator was added on January 26 to improve the effectiveness of the SO2 scrubber. However, the hydrator affected the response of the analyzer until January 30, when the hydrator was removed, resulting in 104 hours of downtime. The TRS analyzer resumed normal operations on January 30 at 19:00MST	n/a

Date Reported	AEP Reference Number	Reporting Period	Location	Brief Description	Issue	Remedial Action
27-Mar-19	351254	February and March	Fort Chipewyan	Fort Chipewyan precipitation collector operated less than 90% of the time due to freezing of the tipping mechanism.	During freezing temperatures in February and March, the tipping mechanism on the tipping bucket precipitation collector became iced up, resulting in invalid data. A data logger program update on March 13 prevented the data logger from collecting precipitation data and was resolved on March 27, 2019.	n/a
29-Apr-19	352571	March	Surmont 2	Surmont 2 THC operated less than 90% of the reporting period due to sample pump and data acquisition system failures.	Following the installation calibration of the THC analyzer on March 13, 2019, the sample pump failed to stabilize. WBEA technicians returned to the station on March 18 and completed a pump replacement and analyzer recalibration. The data acquisition system failed to record data for 28 hours on March 15 and 16. Following the station installation, the power supply to the data logger had not been correctly installed, causing the battery to become depleted. The depleted battery prevented the data logger from recording data during this time.	n/a
8-May-19	352737	April	Patricia McInnes	Patricia McInnes THC/NMHC/CH4 operated less than 90% of the reporting period due to a series of issues which cumulatively resulted in significant downtime.	There were three issues associated with the operation of the NMHC analyzer, resulting in 92 hours of invalid data: Unstable operation due to negative baseline response throughout the month resulted in 47 hours of invalid data. Troubleshooting and maintenance resulted in replacing the analyzer with a backup unit, which interrupted the normal operations of the analyzer for 46 hours. A flat line in the output signal of the analyzer followed by maintenance to relight the FID flame and reinitiate the daily QA check interrupted the operations of the NMHC analyzer for 9 hours.	n/a
31-May-19	353830	April	Jackfish 1	Jackfish 1 H2S operated less than 90% of the reporting period due to unstable operation caused by fluctuating station temperatures.	The HVAC unit in the air monitoring station failed to maintain a consistent temperature throughout the month. The fluctuating internal station temperature affected the response of the analyzer, resulting in periodic data loss. This issue was discovered during the data validation process.	n/a
31-May-19	353829	April and May	Horizon	Horizon TRS operated less than 90% of the reporting period due to a leak in the analyzer.	Results from the routine monthly calibration on May 23 revealed that the analyzer failed the linearity test. After reviewing the diagnostic data, there was no indication of the linearity issue. The sensitivity of the analyser passed all daily tests. The only indication of the problem was observed during the calibration on May 23. An investigation conducted on May 24 indicated a leak in the TRS converter. The converter was replaced on May 24 and the analyzer was re-calibrated.	n/a
17-Jul-19	356228	July	Lower Camp Meteorological Tower	The Lower Camp Meteorological Tower 167 m wind speed, wind direction, and vertical wind speed sensors operated less than 90% of the reporting period due to analyzer failure.	An electrical surge during a lightning storm caused failure of the wind sensor at the 167-meter level, resulting in the requirement to have a contractor climb the meteorological tower to replace the sensor.	167 meter sensors were removed from service on September 1, 2019
17-Jul-19	356229	June	Bertha Ganter - Fort McKay	The Bertha Ganter - Fort McKay THC analyzer operated less than 90% of the reporting period due to a series of issues which cumulatively resulted in significant downtime.	There were four issues associated with the operation of the THC analyzer, resulting in 85 hours of invalid data: Unstable operation due to negative baseline dips throughout the month resulted in 54 hours of invalid data. Maintenance to investigate the cause of the unstable baseline interrupted the normal operations of the analyzer for 5 hours. Maintenance to condition the GC column and recalibrate the analyzer resulted in 25 hours of downtime. Maintenance to clean the glass manifold resulted in 1 hour of downtime.	n/a
17-Jul-19	356231	June and July	Athabasca Valley	The Athabasca Valley TRS analyzer operated less than 90% of the reporting period due to poor analyzer linearity.	The TRS analyzer was removed due to failure to meet operational criteria during routine monthly calibrations and was replaced with a backup unit on July 12. From June 20 to July 12, TRS data was invalidated due to poor linearity. A calibration was performed on July 12, after which the replacement analyzer met operational performance criteria. The cause of the nonlinearity in the original analyzer will be investigated and repaired at the WBEA Instrument Repair Centre.	Instrument was removed from service and replaced with a backup unit on July 12.

Date Reported	AEP Reference Number	Reporting Period	Location	Brief Description	Issue	Remedial Action
17-Jul-19	356232	June	Jackfish 1	Jackfish 1 H2S operated less than 90% of the reporting period due to unstable operation caused by fluctuating station temperatures.	There were two issues associated with the operation of the H2S analyzer, resulting in 169 hours of invalid data: Unstable operation due to analyzer sensitivity to fluctuating station temperature resulted in 162 hours of invalid data. –Maintenance to replace the analyzer with a backup unit interrupted the normal operations of the H2S analyzer for 7 hours.	Instrument was removed from service and replaced with a backup unit on July 5.
16-Aug-19	357306	July	Patricia McInnes	Patricia McInnes NH3 operated less than 90% of the reporting period due to significant recovery time following daily spans.	The NH3 analyzer required additional time to stabilize to ambient conditions following the automated daily spans and routine monthly multipoint calibrations.	The WBEA is in the process of replacing this analyzer with a new analyzer time, which employs the use of laser absorption spectroscopy rather than the current analyzer, which uses chemiluminescence. This change in technology aims to reduce downtime associated with recovery from daily spans.
16-Aug-19	357305	August	Lower Camp Meteorological Tower	The 167m wind speed, wind direction, and vertical wind speed and ambient temperature and relative humidity sensors operated less than 90% of the reporting period due to an electrical surge during a lightning storm.	An electrical surge during a lightning storm caused failure of the wind sensor at the 167-meter level, resulting in the requirement to have a contractor climb the meteorological tower to replace the sensor.	n/a
29-Aug-19	358038	July	Jackfish 1	Jackfish 1 NO2 operated less than 90% of the reporting period due to sample pump failure.	On July 13, the automated daily zero/span response of the NO2 analyzer did not meet operational criteria. On site investigation on July 15 revealed a failed sample pump. Maintenance was completed to replace the pump and the analyzer was recalibrated. Data was invalidated to the last good response, on July 12. Regular operations resumed on July 15 at 13:00 MST.	Sample pump was replaced on July 15.
29-Aug-19	358039	July	Fort Hills	Fort Hills TRS operated less than 90% of the reporting period due to SO2 scrubber failure.	The SO2 scrubber on the TRS analyzer at Fort Hills AMS was replaced during routine maintenance as part of the monthly calibration on July 18. Daily QA checks in the days following failed to meet the operational performance specifications as identified in the AMD. On site investigation on July 23 revealed the SO2 scrubber installed on July 18 was not performing properly. The scrubber beads were replaced with new ones and the TRS analyzer was re-calibrated. Data was invalidated for 115 hours, with normal operations resuming on July 23 at 14:00MST.	SO2 scrubber was replaced on July 23.
25-Sep-19	359337	August	Patricia McInnes	Patricia McInnes NH3 operated less than 90% of the reporting period due to significant recovery time following daily spans.	The NH3 analyzer required additional time to stabilize to ambient conditions following the automated daily spans and routine monthly multipoint calibrations.	The WBEA is in the process of replacing this analyzer with a new analyzer time, which employs the use of laser absorption spectroscopy rather than the current analyzer, which uses chemiluminescence. This change in technology aims to reduce downtime associated with recovery from daily spans.
25-Sep-19	359338	August	Stony Mountain	Stony Mountain TRS operated less than 90% of the reporting period due to several factors.	There were four issues associated with the operation of the TRS analyzer, resulting in 168 hours of invalid data. Unstable operation due to baseline shifts on August 1, 2, and 3 resulted in 22 hours of downtime. Failure to record data on August 8 interrupted the operations of the TRS analyzer for 1 hour. A station power outage on August 21 resulted in the TRS converter failing to recover interrupting the operation of the TRS analyzer for 49 hours. – A replacement converter was installed on August 23 and did not meet operational criteria. The original converter was brought back to the WBEA Centre for repair and was successfully re-deployed at the station on August 27, resulting in 96 hours of downtime.	n/a
25-Sep-19	359340	September	Fort Chipewyan	Fort Chipewyan CO2 operated less than 90% of the reporting period due to a power outage which caused a flat line in the sensor output signal.	A brief power outage on September 15 caused the output signal of the carbon dioxide analyzer to flat line. A technician was deployed to the station on September 23 to resolve the issue.	n/a

Date Reported	AEP Reference Number	Reporting Period	Location	Brief Description	Issue	Remedial Action
25-Sep-19	359367	August and September	Sawbones Bay	Sawbones Bay ambient temperature and relative humidity sensor experienced communications disruptions.	Communications disruptions in the sensors' output signals were attributed to the failure of a component in the sensor and wiring system, and data from these periods were invalidated. WBEA technicians attempted to rectify the issue, however there was a delay in doing so as the spare sensors had recently been sent to the manufacturer for recertification and were consequently unavailable for deployment.	A replacement sensor was installed on September 19, 2019.
9-Oct-19	359863	September	Patricia McInnes	Patricia McInnes NH3 operated less than 90% of the reporting period due to significant recovery time following daily spans.	The NH3 analyzer required additional time to stabilize to ambient conditions following the automated daily spans and routine monthly multipoint calibrations.	The WBEA is in the process of replacing this analyzer with a new analyzer time, which employs the use of laser absorption spectroscopy rather than the current analyzer, which uses chemiluminescence. This change in technology aims to reduce downtime associated with recovery from daily spans.
9-Oct-19	359864	September	Bertha Ganter - Fort McKay	Bertha Ganter - Fort McKay CO operated less than 90% of the reporting period due to an unstable baseline.	The baseline of the CO analyzer experienced unstable operation throughout the month, resulting in 102 hours of invalid data. Troubleshooting on October 11 revealed that maintenance was required to adjust the supply voltage on the analyzer interface board. This maintenance corrected the analyzer intermittent baseline drift.	Maintenance conducted on October 11 revealed that maintenance was required to adjust the supply voltage on the analyzer interface board. This maintenance was completed on October 11.
9-Oct-19	359865	September and October	Anzac	Anzac WS/WD operated less than 90% of the reporting period in September and October due to a fallen wind direction sensor.	The wind direction sensor was discovered to be upside down on the cross arm during a site visit on October 4. Data review by comparison of wind direction with nearby air monitoring stations determined that the sensor came loose beginning on September 26, 2019.	The sensor was repaired on October 4, with normal operations resuming at 14:00
12-Dec-19	361944	November	Horizon	Horizon THC operated less than 90% of the reporting period in November.	On November 25, the external zero/span valve on the THC analyzer failed to operate during the daily zero/span sequence. Maintenance to replace the valve was completed on November 26, however, the replacement valve was installed incorrectly, resulting in the analyzer drawing in air from the calibrator rather than the ambient environment.	Maintenance to repair the wiring was conducted on December 2.
12-Dec-19	361945	November	Mildred Lake	Mildred Lake WS/WD operated less than 90% of the reporting period in November due to ice build-up on the sensors.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensor was successfully dislodged on November 21.
12-Dec-19	361946	November	Anzac	Anzac WS/WD operated less than 90% of the reporting period in November due to ice build-up on the sensors.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensor was successfully dislodged on November 20.
12-Dec-19	361947	November	Wapasu	Wapasu WS/WD operated less than 90% of the reporting period in November due to ice build-up on the sensors.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensor was successfully dislodged on November 19.
12-Dec-19	361948	November	Fort Hills	Fort Hills WS/WD operated less than 90% of the reporting period in November due to ice build-up on the sensors.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensor was successfully dislodged on November 20.
12-Dec-19	361949	November	Surmont 2	Surmont 2 WS/WD operated less than 90% of the reporting period in November due to ice build-up on the sensors.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensor was replaced on December 18.
29-Jan-20	363231, 363212	November and December	Kirby North	Kirby North NO2 operated less than 90% of the reporting period in November and December due to a failed calibration.	There were two issues affecting the operational time of the NO2 analyzer in November and December 2019. On November 11, the sample pump failed to operate, resulting in 59 hours of invalid data. On November 13, the sample pump was replaced, and the analyzer was calibrated. On December 11, routine calibration of the NO2 analyzer revealed that the analyzer failed the linearity criteria for multipoint calibrations. Troubleshooting revealed the cause was a leak in the analyzer. NO2 data was invalidated from the discovery on December 12 back to the last proof of linearity on November 13. The analyzer was replaced with a backup unit on December 12, after which the replacement analyzer met operational performance criteria. The original analyzer will be investigated and repaired at the WBEA Instrument Repair Centre.	n/a

Date Reported	AEP Reference Number	Reporting Period	Location	Brief Description	Issue	Remedial Action
22-Jan-20	362973	December	Surmont 2	Surmont 2 WS/WD operated less than 90% of the reporting period in December due to ice build-up on the sensors.	Flat-line periods in the sensors' output signals were attributed to ice build-up on the sensors, and data from these periods were invalidated.	The sensor was replaced on December 18.
22-Jan-20	362974	December	Lower Camp	Lower Camp NMHC operated less than 90% of the reporting period in December due to unstable analyzer response.	The NMHC analyzer is a gas chromatograph system. As such the problem with the analyzer was the Methane peak had moved slightly resulting in 85 hours of invalid data.	The window timing of the NMHC analyzer was reset o December 17, and the analyzer was re-calibrated to resolve the issue.
29-Jan-20	363233	December	Kirby North	Kirby North H2S operated less than 90% of the reporting period in December due to a deviation from the AMD in calibration of the instrument.	On December 30, a remote baseline adjustment was completed to address a shift in the baseline response of the H2S analyzer. During data validation, it was identified that remote baseline adjustments are not within AMD criteria and did not demonstrate linearity of the analyzer. H2S data was invalidated from the calibration on January 15 back to the last routine calibration on December 11.	n/a
29-Jan-20	363235	December	Wapasu	Wapasu NO2 operated less than 90% of the reporting period in December due to a failed calibration.	On January 14, routine calibration of the NO2 analyzer revealed that the analyzer failed the converter efficiency criteria for multipoint calibrations. Troubleshooting revealed the converter had failed and required replacement. NO2 data was invalidated from the discovery on January 14 back to the last proof of operation within criteria on December 17. The converter was replaced with a backup unit on January 17, after which the analyzer met operational performance criteria.	n/a



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

APPENDIX III: 2011-2019 WBEA DATA COMPARED TO LARP TRIGGERS AND LIMITS 2019

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

March 2020



Comparison of WBEA NO₂ 2011 to 2019 Data With LARP Triggers and Limits (all data as ppb)

LARP Index	Year	Air Monitoring Stations														
		AMS01 Bertha Ganter	AMS04 Buffalo Viewpoint	AMS06 Patricia McInnes	AMS07 Athabasca Valley	AMS08 Fort Chipewyan	AMS09 Barge Landing	AMS12* Millennium Mine	AMS13 Fort McKay South	AMS14 Anzac	AMS15 Horizon	AMS16 Muskeg River	AMS17 Wapasu	AMS18 Stony Mountain	AMS19 Firebag	AMS20 MacKay River
NO ₂ Annual average	2019	8	5	5	8	2	10		7	2	9		3	1	4	2
	2018	8	5	5	7	1	15		7	2	7	9	3	1	3	2
	2017	7	5	5	7	1			7	2	5	10	3	1	3	2
	2016	7		6	7	1			6	2	6	9	3	1	3	3
	2015	6		5	8	2			5	2	5	9	3	1	4	
	2014	8		6	11	1		11	7	3	7	12	6		4	
	2013	8		6	10	1		12	7	3	7	12				
	2012	7		6	9	1		13	7	3	6	11				
	2011	7		6	11	1		15	6	3	5	12				
	NO ₂ hourly 99th Percentile	2019	35	33	29	32	12	43		32	16	41		18	7	28
2018		33	30	28	30	10	36		32	15	36	39	17	8	20	20
2017		33	27	29	32	9			31	14	31	38	17	6	20	18
2016		28		27	30	11			26	17	30	36	16	8	18	23
2015		30		28	33	13			43	27	33	37	19	8	24	
2014		33		29	48	11			43	31	34	40	21		23	
2013		35		31	38	9			43	33	39	40	25			
2012		34		29	34	11			42	31	36	40				
2011		34		30	39	13			50	32	33	41				

LARP Index	Year	Air Monitoring Stations														
		AMS21 Conklin	AMS22 Janvier	AMS23 Fort Hills	AMS24 Surmont	AMS26 Christina Lake	AMS27 Jackfish 2/3	AMS29 Surmont 2	AMS500 Christina Lake	AMS501 Leismer	AMS502 Surmont	AMS505 Sawbones Bay	AMS506 Jackfish 1	AMS507 Kirby South	AMS508 Kirby North	
NO ₂ Annual average	2019	2	1	10	5	3	1	1		2		2	2	4	1	
	2018	2	2	9	2	2	2		4	2		4	2			
	2017	2	1	8	2				3	3	3	3				
	2016	1							3	2	2					
	2015									2	3					
	2014								5	2	5					
	2013								5	5	5					
	2012										8					
	2011										7					
	NO ₂ hourly 99th Percentile	2019	11	8	44	19	16	7	9		10		15	11	22	6
2018		13	10	42	13	10	7		23	15	17	22	19			
2017		12	8	40	12				17	23	13	17				
2016		8							18	10	18					
2015										9	22					
2014									32	8	22					
2013									17	41	45					
2012											36					
2011																

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

Data Collection less than 12 months

Limit	24
Level 3 Trigger	16
Level 2 Trigger	8

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



Comparison of WBEA SO₂ 2011 to 2019 Data With LARP Triggers and Limits (all data as ppb)

LARP Index	Year	Air Monitoring Stations																	
		AMS01 Bertha Ganter	AMS02 Mildred Lake	AMS04 Buffalo Viewpoint	AMS05 Mannix	AMS06 Patricia McInnes	AMS07 Athabasca Valley	AMS08 Fort Chipewyan	AMS09 Barge Landing	AMS11 Lower Camp	AMS12* Millennium Mine	AMS13 Fort McKay South	AMS14 Anzac	AMS15 Horizon	AMS16 Muskeg River	AMS17 Wapasu	AMS18 Stony Mountain	AMS19 Firebag	
SO ₂ Annual average	2019	1	1	1	2	1	1	0	1	2		1	1	1	1	1	0	1	
	2018	1	2	1	2	1	1	0	1	2		1	1	1	1	1	0	1	
	2017	1	2	1	2	1	1	0		3		1	0	1	1	1	0	0	
	2016	1	2	1	3	1	1	0		3		1	1	1	1	1	0	1	
	2015	1	2	1	2	1	1	0		2	1	1	0	1	1	1	0	1	
	2014	1	2	1	2	1	1	0		1	1	1	1	1	1	1	1	1	
	2013	1	2	1	2	1	1	0		1	1	1	1	1	1	2			
	2012	1	2	1	2	1	1	0		1	1	1	1	1	1				
	2011	2	3	1	2	1	1	0		2	1	1	1	1	1				
	SO ₂ hourly 99th Percentile	2019	11	15	11	23	9	8	3	7	26		10	4	8		9	3	8
		2018	12	22	14	24	10	7	3	7	30		10	6	9	14	11	3	11
2017		16	27	14	34	10	7	3		42		16	5	12	13	13	0	0	
2016		15	29	14	36	12	11	5		43		15	5	12	15	12	2	12	
2015		14	26	9	31	10	9	2		27	14	14	5	10	14	11	2	12	
2014		15	28	10	32	12	9	3		16	19	17	6	15	16	11		13	
2013		16	22	16	31	14	10	4		16	14	17	9	15	20	23			
2012		17	32	13	28	11	8	4		21	15	18	9	16	20				
2011		17	45	22	29	13	10	4		26	16	17	6	13	13				

LARP Index	Year	Air Monitoring Stations																
		AMS20 Mackay River	AMS21 Conklin	AMS22 Janvier	AMS23 Fort Hills	AMS24 Surmont	AMS25 Waskow ohci Pimatsiwin	AMS 26 Christina Lake	AMS 27 Jackfish 2/3	AMS29 Surmont 2	AMS500 Christina Lake	AMS 501 Leismer	AMS 502 Surmont	AMS 505 Sawbones Bay	AMS 506 Jackfish 1	AMS 507 Kirby South	AMS 508 Kirby North	
SO ₂ Annual average	2019	1	0	0	1	2	1	2	1	2		1		2	1	1	0	
	2018	1	0	0	1	1	1	1	1		1	1		1	1			
	2017	0	1	1	0	0	1				1	1		1				
	2016	1	0								1	1						
	2015										1	1						
	2014										1	1						
	2013										0	0						
	2012																	
	2011																	
	SO ₂ hourly 99th Percentile	2019	8	2	2	7	12	9	24	6	12		13		33	12	10	2
		2018	8	3	2	8	6	10	20	5		16	10		16	8	8	8
2017		9	2	2	7	6	9				15	18		21				
2016		8	1								9	6						
2015												7						
2014											7	4						
2013											3	3						
2012																		
2011																		

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

Data Collection less than 12 months

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



End of Report