



**WOOD BUFFALO
ENVIRONMENTAL ASSOCIATION**

Unit 3 - 805 Memorial Drive
Fort McMurray, AB T9K 0K4
P: 780.799.4420 E: info@wbea.org
wbea.org

Wood Buffalo Environmental Association

ANNUAL REPORT – VOLUME 1

2022 CONTINUOUS DATA

March 2023

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 2022

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

March 2023



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Total Hydrocarbons (THC)	308
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Unit 3 - 805 Memorial Drive
Fort McMurray, AB T9K 0K4
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wbea.org

March 31, 2023

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

SUBMITTED VIA EMAIL

RE: Annual Ambient Air Quality Monitoring Report 2022 Wood Buffalo Environmental Association

Enclosed is the 2022 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	AMS20 - MacKay River
AMS02 - Mildred Lake	AMS21 - Conklin
AMS03 - Lower Camp (Meteorology)	AMS22 - Janvier
AMS04 - Buffalo Viewpoint	AMS23 - Fort Hills
AMS05 - Mannix	AMS25 - Waskōw ohci Pimâtisiwin
AMS06 - Patricia McInnes	AMS26 - Christina Lake
AMS07 - Athabasca Valley	AMS27 - Jackfish 2/3
AMS08 - Fort Chipewyan	AMS29 - Surmont 2
AMS09 - Barge Landing	AMS30 - Ells River
AMS11 - Lower Camp (Air Quality)	AMS501 - Leismer
AMS13 - Fort McKay South	AMS505 - Sawbones Bay
AMS14 - Anzac	AMS506 - Jackfish 1
AMS17 - Wapasu	AMS507 - Kirby South
AMS18 - Stony Mountain	AMS508 - Kirby North
AMS19 - Firebag	

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):



Industry Operators

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

Government and Non-Government Organizations

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

Indigenous Communities

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



1. Introduction

The WBEA is a multi-stakeholder, consensus-based, not-for-profit association that strives to lead in state-of-the-art environmental monitoring to enable informed decision-making. The WBEA monitors the ambient air quality of the Regional Municipality of Wood Buffalo 24 hours a day and 365 days a year. The WBEA works closely with Alberta Environment and Protected Areas (AEPA) and funding for this work was provided to the WBEA through the Oil Sands Monitoring Program (OSM).



1.1 Air Monitoring Parameters

Table 1 provides a list 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 (NH₃). Sites are categorized 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 ₂	O ₃	PM _{2.5}	TRS	H ₂ S	THC	NMHC	CO	CO ₂	NH ₃
1	COMMUNITY	BERTHA GANTER-FORT MCKAY	X	X	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			X
7	COMMUNITY	ATHABASCA VALLEY	X	X	X	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	X			
11	COMPLIANCE	LOWER CAMP	X					X	X	X			
13	COMPLIANCE/ ATTRIBUTION	FORT MCKAY SOUTH	X	X	X	X	X		X	X			
14	COMPLIANCE/ COMMUNITY	ANZAC	X	X	X	X	X		X	X			
17	COMPLIANCE	WAPASU	X	X	X	X		X	X				
18	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	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				
30	COMPLIANCE	ELLS RIVER	X	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 list of stations and meteorological parameters measured by continuous methods. Parameters measured include ambient temperature (AT), relative humidity (RH), barometric pressure (BP), wind speed (WS), wind direction (WD), vertical wind speed (VWS), global radiation (GR), precipitation (PC), and leaf wetness (LW).

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

WBEA ID	TYPE	STATION NAME	AT	RH	BP	WS	WD	VWS	GR	PC	LW
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
9	ATTRIBUTION	BARGE LANDING	X	X	X	X	X				
11	COMPLIANCE	LOWER CAMP	X	X	X	X	X				
13	COMPLIANCE/ ATTRIBUTION	FORT MCKAY SOUTH	X	X		X	X				
14	COMPLIANCE/ COMMUNITY	ANZAC	X	X		X	X				X
17	COMPLIANCE	WAPASU	X	X		X	X			X	
18	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				
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				
30	COMPLIANCE	ELLS RIVER	X	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 (precip), including major ion analysis, total suspended particulates (TSP), and Dustfall.

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

WBEA ID	TYPE	STATION NAME	VOC	PM _{2.5}	PM _{2.5} ECOC	PM ₁₀	PAH	PRECIP	TSP	DUSTFALL
1	COMMUNITY	BERTHA GANTER - FORT MCKAY	X	X	X	X	X	X		X
6	COMMUNITY	PATRICIA MCINNES	X	X		X	X			X
7	COMMUNITY	ATHABASCA VALLEY	X	X		X	X			X
8	COMPLIANCE / COMMUNITY	FORT CHIPEWYAN	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			X
17	COMPLIANCE	WAPASU			X			X		
18	ENHANCED DEPOSITION / BACKGROUND	STONY MOUNTAIN			X			X		
21	COMMUNITY	CONKLIN	X	X		X	X			X
22	COMMUNITY	JANVIER	X	X		X	X			X
23	COMPLIANCE	FORT HILLS	X			X				
30	COMPLIANCE	ELLS RIVER	X			X			X	

1.2 Air Monitoring Site Locations

The map in Figure 1 shows the locations of all WBEA continuous air quality monitoring. Continuous monitoring sites are in areas of development, primarily along the Athabasca River Valley and cover the region from Conklin to Fort Chipewyan.



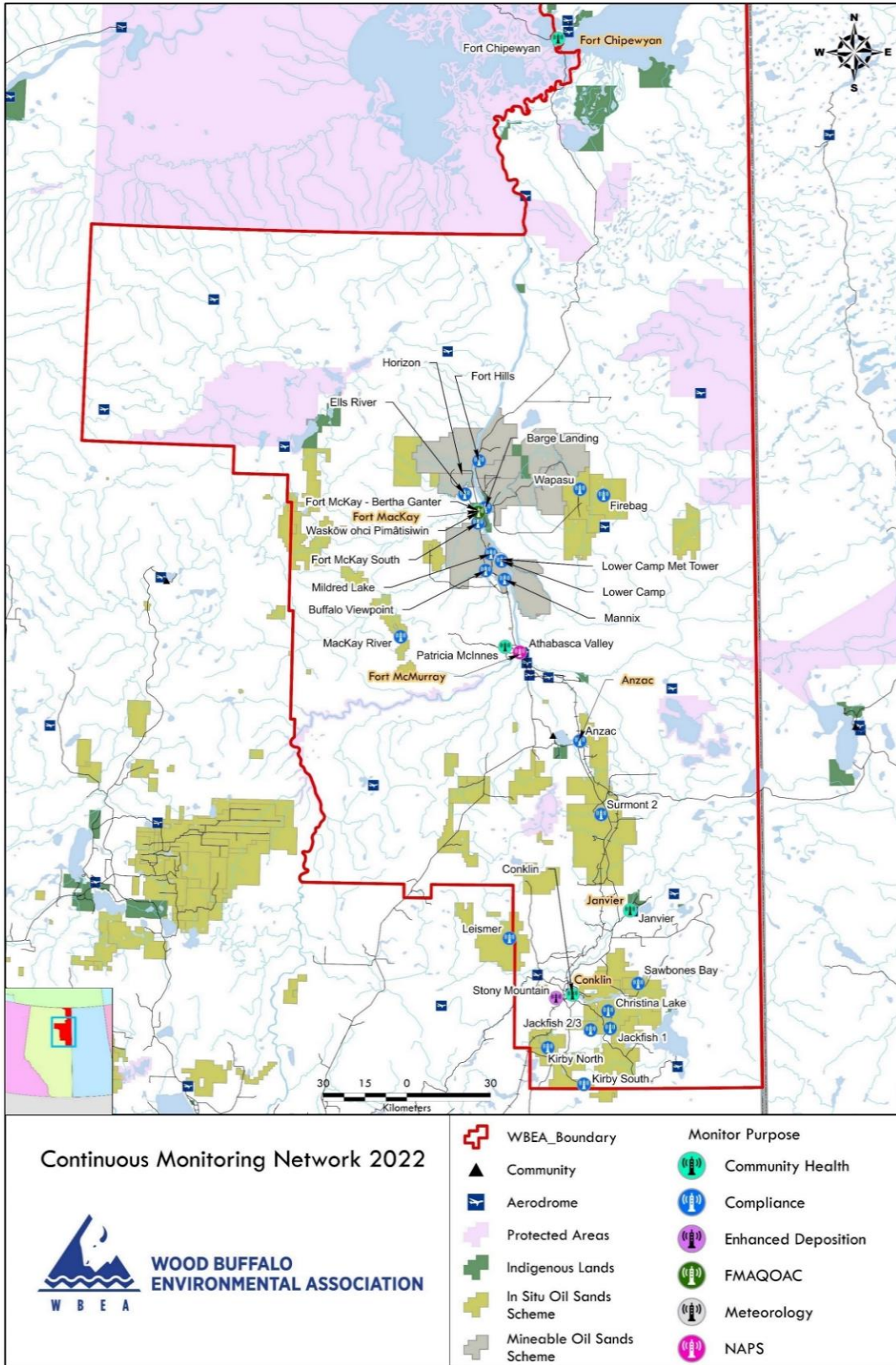


Figure 1: Continuous Air Monitoring Station Locations



2. Summary of Changes to the WBEA Air Monitoring Network

The WBEA completed ambient air quality monitoring at the Leismer air monitoring station, at the Athabasca Oil Leismer facility on April 1, 2022. The monitoring was conducted from October 1, 2021, until April 1, 2022, to fulfill the requirements of EPEA approval number 241311-00, 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 conducts 6-months of monitoring each year at two sites, Kirby North and Kirby South, to meet the requirements of EPEA approval number 237382-01-00. Kirby South completed monitoring on June 28, 2022, and was moved Kirby North on July 1, 2022. This station is equipped with ambient air quality analyzers for SO₂, H₂S, THC, NO, NO₂, NO_x, and meteorological sensors for ambient temperature, relative humidity, and wind speed and direction.

The WBEA completed ambient air quality monitoring at the Sawbones Bay air monitoring station, at the MEG Energy Christina Lake facility on August 1, 2022. The monitoring was conducted from July 1, 2021, until August 1, 2022, to fulfill the requirements of EPEA approval number 216466-01, 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 commenced ambient air quality monitoring at the Jackfish 1 air monitoring station, at the Canadian Natural Resources Limited Jackfish 1 facility on August 1, 2022, to fulfill the requirements of EPEA approval number 224816-01-00, as amended. The current EPEA approval for the Canadian Natural Jackfish 1 facility requires ambient air monitoring at the facility for six months per calendar year. However, due to the late deployment of this Air Monitoring Station (AMS), WBEA was granted permission from the Alberta Energy Regulator to operate the Jackfish 1 AMS from August 1, 2022, to January 31, 2023. 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 following operational modifications are provided as per the Air Monitoring Directive requirements:

Table 4. Parameter changes to the WBEA network – 2022

Station	Station Name	Parameter	Date Effective	Comment
AMS23	Fort Hills	Semi-Continuous PM10 (2)	January 18, 2022	New Parameters
AMS23	Fort Hills	Semi-Continuous VOC	January 18, 2022	New Parameters
AMS08	Fort Chipewyan	Semi-Continuous PM _{2.5} (2)	February 28, 2022	New Parameter
AMS08	Fort Chipewyan	Semi-Continuous PAH	February 28, 2022	New Parameter
AMS08	Fort Chipewyan	Semi-Continuous PM10 (2)	February 28, 2022	New Parameter
AMS08	Fort Chipewyan	Semi-Continuous VOC	April 27, 2022	New Parameter
AMS08	Fort Chipewyan	TRS	April 19, 2022	New Parameter
AMS03	Lower Camp Meteorology Tower	Wind Speed / Wind Direction/ Vertical Wind 163 m	April 29, 2022	New Elevation
AMS30	Ells River	TSP-	September 2, 2022	New Parameter
AMS01	Bertha Ganter – Fort McKay	Dustfall	November 1, 2022	New Parameter
AMS06	Patricia McInnes	Dustfall	November 1, 2022	New Parameter
AMS07	Athabasca Valley	Dustfall	November 1, 2022	New Parameter
AMS14	Anzac	Dustfall	November 1, 2022	New Parameter
AMS21	Conklin	Dustfall	November 1, 2022	New Parameter
AMS22	Janvier	Dustfall	November 1, 2022	New Parameter

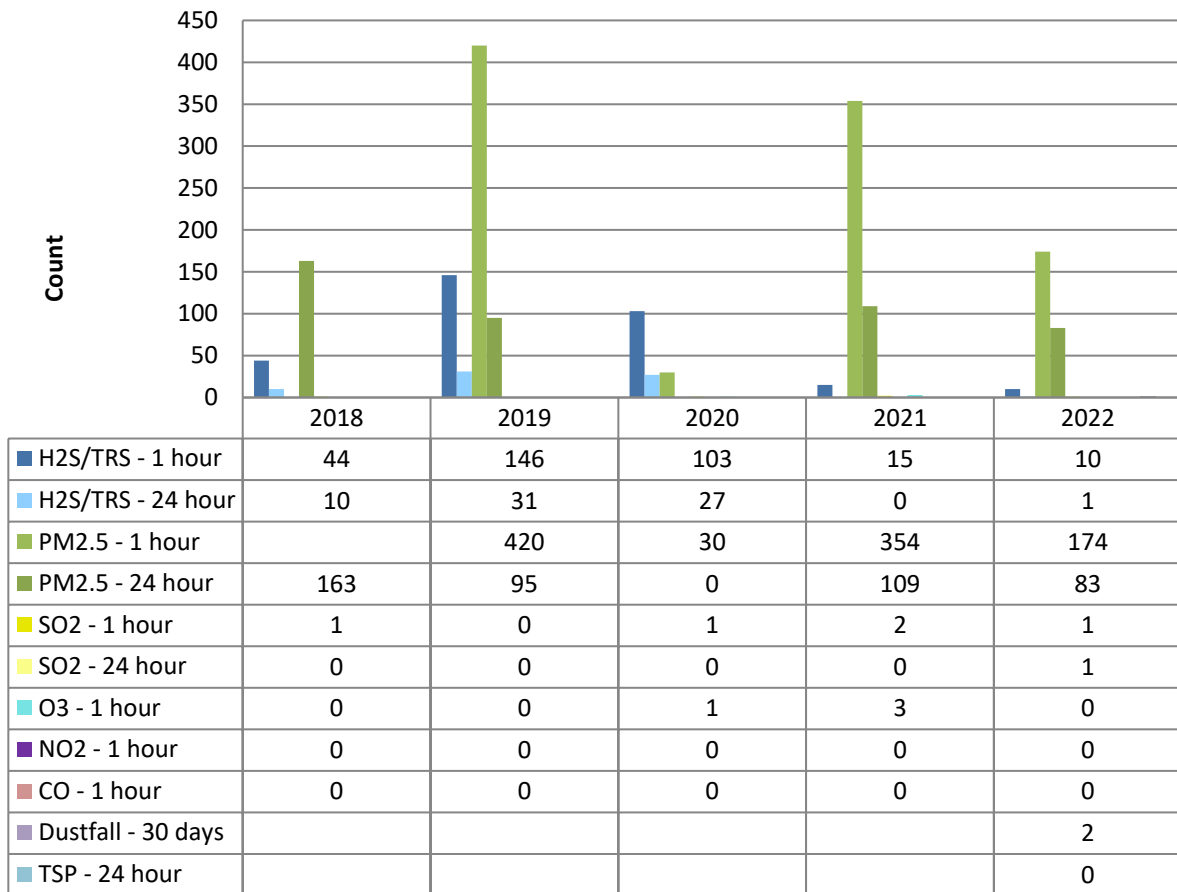
3. Concentrations in Excess of Alberta Ambient Air Quality Objectives and Guidelines

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 AEPA 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.



WBEA Ambient Air Monitoring Network Ground level concentrations in excess of AAAQOs and AAAQGs (2018 - 2022)



**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 (2018-2022)

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

In 2022, 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

There were no external audits of WBEA ambient air monitoring stations conducted for the 2022 reporting period.



6. Monthly Report Revisions

The following revisions were identified during the year and made to associated monthly reports:

Revised Report	Revision	Details
February	Revision of Precipitation data at Stony Mountain	During the annual data review, it was identified that precipitation data for Stony Mountain Air Monitoring Station had inadvertently been flagged incorrectly for April 2021. On April 14, 2021, a WBEA technician had conducted routine calibration of the Precipitation sensor from 10:55 MST to 12:00 MST. This event was not flagged accurately and was rectified on March 24, 2022. Revised data with accurate flagging and summary tables for Precipitation sensor at Stony Mountain was resubmitted to the Electronic Transfer System with the monthly report of February 2022.
May	Revision of O ₃ data at Anzac and NO ₂ data at Janvier	In the annual data review of the 2021 data by the Alberta Environment and Parks, two issues were identified: <ol style="list-style-type: none"> 1. The reported Ozone (O₃) 1-hour average on January 30, 2021, at 02:00 MST was 74.5 ppb. The WBEA confirmed the spike was invalid due to an erroneous 5-min value which was inadvertently flagged incorrectly. 2. On January 12, 2022, at 16:00 MST, the calibration flags of the multi-channel analyzer, NO/NO₂/NO_x, were not applied equally to all individual channels, specifically the NO_x. As result, O₃ data from Anzac and NO/NO₂/NO_x from Janvier of January 2021 was revised and flagged appropriately. On May 4, 2022, the monthly report, and data reports, for each affected station, were re-submitted to the Electronic Transfer System (ETS).
November	Revision of WSWD data Buffalo Viewpoint	During the annual audit of the wind speed and wind direction (WS/WD) sensor, it was found that the sensor at Buffalo Viewpoint Air Monitoring Station (AMS) was not aligned with each set point used to calibrate the instrument. Further investigation of the faulty sensor determined the internal components were not moving in unison, as designed, due to a loose set screw, which led to inaccurate wind direction readings. The misalignment was non-uniform, ranging from 15 to 23 degrees, depending on the conditions, and was undetectable during monthly field visual checks and data validation. <p>A review of wind direction data from Buffalo Viewpoint AMS compared to other air monitoring stations in the Wood Buffalo Environmental Association network showed an approximate and inconsistent, 15-to-23-degree shift in wind direction data at Buffalo Viewpoint AMS. The 2021 audit, conducted on June 3, had concluded the sensor was in excellent working condition, and the data shift appears to occur after re-installation, therefore, it is believed the issue with the set screw occurred shortly after the 2021 audit, upon installation. Due to the non-uniformity of the sensor</p>



		<p>shift since the last annual audit, wind data at Buffalo Viewpoint AMS from June 3, 2021, to October 6, 2022, was revised and flagged appropriately.</p> <p>As a result, the WS/WD sensor at Buffalo Viewpoint AMS operated less than 90% for the month of June 2021 through to the month of October 2022, which is a contravention of Clause DQ 4-C, of Chapter 6 of the Air Monitoring Directive (2016, as amended). The verbal report to Alberta Environment and Parks (AEP) was done on October 28, 2022 (reference number 406184).</p> <p>Buffalo Viewpoint AMS monthly report and data report along with the network summary have been updated from the original version. Updated monthly report and revised data were re-submitted to the Electronic Transfer System (ETS) on November 25, 2022.</p>
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7. 2018-2022 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. 2022 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 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 results are provided for all species analyzed.



If additional information is required, please contact either Emilie Briggs at (780) 747-8219 or the Wood Buffalo Environmental Association at (780) 799-4420.

Yours sincerely,

Wood Buffalo Environmental Association

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

Report prepared and submitted by Asad Hidayat and Karina Fenwick of the WBEA and reviewed by Emilie Briggs 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 WBEA staff is included below.

Asad Hidayat, Data Technician
Wood Buffalo Environmental Association
T: (780) 215-6000 | E: ahidayat@wbea.org

Karina Fenwick, Data Technician
Wood Buffalo Environmental Association
T: (780) 215-7499 | E: kfenwick@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.



Emilie Briggs
Operations Manager

Wood Buffalo Environmental Association
Unit 3 - 805 Memorial Drive
Fort McMurray AB T9K 0K4
www.wbea.org

T: (780) 747-8219 | E: ebriggs@wbea.org
R00_2022_Annual



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
ANNUAL AIR MONITORING SUMMARY

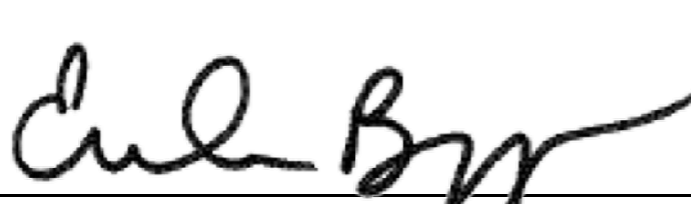
2022
page 1 of 3
Prepared: March 1, 2022 13:00

APPROVAL NUMBERS	REPORT DATE						
	YEAR						
289664-00-00	2022						
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	72.2	0	9.3	0
240008-00-00	SO2(ppb)	2	100	139.2	0	22.9	0
48263-01-00	SO2(ppb)	4	99	56.6	0	8.5	0
224816-00-00	SO2(ppb)	5	100	237.4	1	49.4	1
151469-01-00	SO2(ppb)	6	100	70.8	0	12.7	0
189942-00-00	SO2(ppb)	7	100	27.1	0	8.9	0
206355-00-00	SO2(ppb)	8	100	9.7	0	4.7	0
46586-00-00	SO2(ppb)	9	99	46.6	0	9.7	0
73203-02-00	SO2(ppb)	11	98	103.1	0	21.4	0
216466-01-00	SO2(ppb)	13	100	99.6	0	11.7	0
137467-01-00	SO2(ppb)	14	98	23.2	0	6.7	0
236394-00-00	SO2(ppb)	17	100	61.2	0	9.0	0
254465-00-00	SO2(ppb)	18	95	12.4	0	4.8	0
094-02-00	SO2(ppb)	19	100	44.8	0	8.2	0
80105-01-00	SO2(ppb)	20	100	34.8	0	11.5	0
305529-00-00	SO2(ppb)	21	100	13.1	0	3.7	0
318401-00-00	SO2(ppb)	22	100	20.7	0	3.5	0
026-02-00	SO2(ppb)	23	100	66.3	0	10.9	0
364232-00-00	SO2(ppb)	25	100	80.3	0	8.4	0
228044-00-00	SO2(ppb)	26	99	61.4	0	23.7	0
231302-00-00	SO2(ppb)	27	100	32.2	0	4.1	0
153125-01-00	SO2(ppb)	29	99	20.4	0	3.4	0
	SO2(ppb)	30	99	54.0	0	8.8	0
	SO2(ppb)	501	100	47.1	0	15.2	0
	SO2(ppb)	505	99	37.1	0	11.2	0
	SO2(ppb)	506	100	54.1	0	22.5	0
	SO2(ppb)	507	98	31.5	0	3.7	0
	SO2(ppb)	508	100	17.7	0	6.5	0
	H2S(ppb)	1	98	4.4	0	1.4	0
	H2S(ppb)	2	100	32.7	2	1.7	0
	H2S(ppb)	4	99	6.3	0	1.0	0
	H2S(ppb)	5	99	11.4	2	3.2	1
	H2S(ppb)	11	99	16.1	4	2.7	0
	H2S(ppb)	17	100	2.5	0	1.1	0
	H2S(ppb)	19	100	9.8	0	1.1	0
	H2S(ppb)	20	100	6.0	0	1.3	0
	H2S(ppb)	25	100	4.0	0	1.0	0
	H2S(ppb)	26	100	3.0	0	0.6	0
	H2S(ppb)	27	100	1.6	0	0.4	0
	H2S(ppb)	29	99	1.2	0	0.3	0
	H2S(ppb)	501	100	0.8	0	0.3	0
	H2S(ppb)	505	97	4.4	0	1.2	0
	H2S(ppb)	506	98	13.3	1	1.4	0
	H2S(ppb)	507	98	5.0	0	0.7	0
	H2S(ppb)	508	99	27.0	1	2.1	0
	TRS(ppb)	1	98	4.8	0	1.6	0
	TRS(ppb)	6	100	3.1	0	1.1	0
	TRS(ppb)	7	100	3.4	0	0.9	0
	TRS(ppb)	8	99	1.4	0	0.6	0
	TRS(ppb)	9	99	4.4	0	1.8	0
	TRS(ppb)	13	100	3.8	0	1.3	0
	TRS(ppb)	14	97	3.1	0	0.5	0
	TRS(ppb)	18	96	0.7	0	0.3	0
	TRS(ppb)	21	96	1.5	0	0.6	0
	TRS(ppb)	22	100	0.9	0	0.4	0
	TRS(ppb)	23	99	10.0	0	1.5	0
	TRS(ppb)	30	99	2.0	0	1.1	0
	THC(ppm)	1	99	4.6	-	2.8	-
	THC(ppm)	2	95	6.3	-	2.9	-
	THC(ppm)	4	98	6.2	-	3.1	-
	THC(ppm)	5	99	9.6	-	3.6	-
	THC(ppm)	6	100	3.5	-	2.6	-
	THC(ppm)	7	98	4.0	-	3.2	-
	THC(ppm)	9	98	4.6	-	3.1	-
	THC(ppm)	11	99	4.8	-	2.8	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
ANNUAL AIR MONITORING SUMMARY

APPROVAL NUMBERS	2022						
	REPORT DATE		page 2 of 3				
	YEAR		Prepared: March 1, 2022 13:00				
289664-00-00	2022						
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	THC(ppm)	13	98	5.5	-	3.0	-
48522-01-00	THC(ppm)	14	96	2.9	-	2.3	-
240008-00-00	THC(ppm)	17	100	3.1	-	2.6	-
48263-01-00	THC(ppm)	18	95	2.9	-	2.3	-
224816-00-00	THC(ppm)	19	98	3.3	-	2.4	-
151469-01-00	THC(ppm)	20	100	3.7	-	2.9	-
189942-00-00	THC(ppm)	21	98	3.9	-	2.5	-
206355-00-00	THC(ppm)	22	99	2.6	-	2.3	-
46586-00-00	THC(ppm)	23	100	8.7	-	4.5	-
73203-02-00	THC(ppm)	29	97	2.8	-	2.5	-
216466-01-00	THC(ppm)	30	99	4.9	-	2.9	-
137467-01-00	THC(ppm)	507	99	6.9	-	2.6	-
236394-00-00	THC(ppm)	508	98	5.2	-	2.7	-
254465-00-00	THC(ppm)	508	98	5.2	-	2.7	-
094-02-00	THC(ppm)	508	98	5.2	-	2.7	-
80105-01-00	O3(ppb)	1	99	61.3	0	40.0	-
305529-00-00	O3(ppb)	4	99	49.8	0	43.0	-
318401-00-00	O3(ppb)	6	100	74.3	0	45.1	-
026-02-00	O3(ppb)	7	100	69.1	0	39.7	-
364232-00-00	O3(ppb)	8	100	65.1	0	49.3	-
228044-00-00	O3(ppb)	13	99	52.0	0	38.6	-
231302-00-00	O3(ppb)	14	97	50.1	0	43.0	-
153125-01-00	O3(ppb)	17	100	64.0	0	49.2	-
	O3(ppb)	18	96	51.3	0	47.9	-
	O3(ppb)	21	100	54.3	0	43.5	-
	O3(ppb)	22	100	58.3	0	47.3	-
	NO2(ppb)	1	99	51.4	0	29.0	-
	NO2(ppb)	4	99	56.3	0	33.0	-
	NO2(ppb)	6	99	46.7	0	27.3	-
	NO2(ppb)	7	100	47.3	0	26.6	-
	NO2(ppb)	8	98	25.9	0	14.3	-
	NO2(ppb)	9	100	54.1	0	37.8	-
	NO2(ppb)	13	98	45.0	0	30.0	-
	NO2(ppb)	14	98	124.8	0	20.2	-
	NO2(ppb)	17	99	32.9	0	15.6	-
	NO2(ppb)	18	96	14.8	0	7.5	-
	NO2(ppb)	19	99	44.7	0	18.0	-
	NO2(ppb)	20	100	35.1	0	19.6	-
	NO2(ppb)	21	100	23.3	0	8.0	-
	NO2(ppb)	22	99	22.5	0	9.1	-
	NO2(ppb)	23	100	85.3	0	47.2	-
	NO2(ppb)	26	98	28.1	0	13.8	-
	NO2(ppb)	27	100	14.0	0	7.0	-
	NO2(ppb)	29	100	25.5	0	9.6	-
	NO2(ppb)	30	99	47.1	0	26.0	-
	NO2(ppb)	501	100	22.1	0	5.2	-
	NO2(ppb)	505	99	32.6	0	10.6	-
	NO2(ppb)	506	100	19.6	0	9.2	-
	NO2(ppb)	507	97	23.7	0	5.3	-
	NO2(ppb)	508	97	15.3	0	7.2	-
	CO(ppm)	1	99	1.0	0	0.5	-
	CO(ppm)	7	100	1.2	0	0.4	-
	CO(ppm)	8	99	1.2	0	0.3	-
	CO(ppm)	18	95	0.7	0	0.4	-
	CO2(ppm)	1	99	555.4	-	463.2	-
	CO2(ppm)	8	99	468.5	-	442.3	-
	CO2(ppm)	18	92	481.1	-	456.4	-
	NH3(ppb)	1	93	0.0	0	0.0	-
	NH3(ppb)	6	91	71.6	0	5.9	-
	PM2.5(ug/m3)	1	100	158.1	4	32.4	2
	PM2.5(ug/m3)	4	98	216.6	13	49.8	13
	PM2.5(ug/m3)	6	99	339.3	16	54.0	5
	PM2.5(ug/m3)	7	99	160.2	16	47.8	5
	PM2.5(ug/m3)	8	99	247.0	17	67.6	2
	PM2.5(ug/m3)	9	95	190.3	6	43.6	11
	PM2.5(ug/m3)	13	99	157.2	3	35.9	4
	PM2.5(ug/m3)	14	97	108.5	8	52.9	5
	PM2.5(ug/m3)	17	100	125.2	4	35.9	3

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
ANNUAL AIR MONITORING SUMMARY

APPROVAL NUMBERS	2022 page 3 of 3 Prepared: March 1, 2022 13:00						
	REPORT DATE						
	YEAR		2022				
289664-00-00 241311-00-00 20809-02-00 149968-01-00 237382-00-00	CONTINUOUS AMBIENT MONITORING						
48522-01-00 240008-00-00				ONE-HOUR AVERAGE		24-HOUR AVERAGE	
	PARAMETER	STN. NO.	% TIME OPERATIONAL	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION	MAXIMUM CONCENTRATION	NO. READINGS > REGULATION
48263-01-00	PM2.5(ug/m3)	18	99	122.2	8	52.6	6
224816-00-00	PM2.5(ug/m3)	21	99	108.8	8	41.4	6
151469-01-00	PM2.5(ug/m3)	22	100	166.7	29	64.1	8
189942-00-00	PM2.5(ug/m3)	23	100	182.6	24	39.2	6
206355-00-00	PM2.5(ug/m3)	29	98	171.4	16	51.8	6
46586-00-00	PM2.5(ug/m3)	30	99	138.5	2	30.7	1
73203-02-00	WS(km/h)	1	98	-	-	-	-
216466-01-00	WS(km/h)	2	99	-	-	-	-
137467-01-00	WS(km/h)	4	24	-	-	-	-
236394-00-00	WS(km/h)	5	96	-	-	-	-
254465-00-00	WS(km/h)	6	100	-	-	-	-
094-02-00	WS(km/h)	7	99	-	-	-	-
80105-01-00	WS(km/h)	8	99	-	-	-	-
305529-00-00	WS20m(km/h)	9	100	-	-	-	-
318401-00-00	WS(km/h)	11	100	-	-	-	-
026-02-00	WS(km/h)	13	98	-	-	-	-
364232-00-00	WS(km/h)	14	97	-	-	-	-
228044-00-00	WS(km/h)	17	100	-	-	-	-
231302-00-00	WS20m(km/h)	18	97	-	-	-	-
153125-01-00	WS(km/h)	19	99	-	-	-	-
	WS(km/h)	20	100	-	-	-	-
	WS(km/h)	21	98	-	-	-	-
	WS20m(km/h)	22	100	-	-	-	-
	WS(km/h)	23	99	-	-	-	-
	WS(km/h)	25	97	-	-	-	-
	WS(km/h)	26	93	-	-	-	-
	WS(km/h)	27	98	-	-	-	-
	WS(km/h)	29	97	-	-	-	-
	WS(km/h)	30	99	-	-	-	-
	WS(km/h)	501	99	-	-	-	-
	WS(km/h)	505	98	-	-	-	-
	WS(km/h)	506	100	-	-	-	-
	WS(km/h)	507	96	-	-	-	-
	WS(km/h)	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 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	0.8	14.2	0	2.7	0	100.0	0.0	0.0	0.0	0.0
February	100	636	1.6	57.7	0	9.3	0	98.7	1.3	0.0	0.0	0.0
March	100	706	1.8	53.1	0	7.5	0	99.3	0.7	0.0	0.0	0.0
April	99	677	1.2	40.9	0	7.0	0	99.3	0.7	0.0	0.0	0.0
May	100	707	1.4	72.2	0	8.5	0	98.9	1.0	0.1	0.0	0.0
June	99	683	0.5	39.2	0	3.9	0	99.7	0.3	0.0	0.0	0.0
July	99	705	0.8	21.1	0	4.3	0	99.9	0.1	0.0	0.0	0.0
August	100	708	0.6	24.0	0	2.6	0	99.9	0.1	0.0	0.0	0.0
September	99	677	0.8	28.9	0	3.7	0	99.9	0.2	0.0	0.0	0.0
October	100	707	0.9	38.5	0	6.2	0	99.6	0.4	0.0	0.0	0.0
November	100	684	0.5	18.4	0	3.0	0	100.0	0.0	0.0	0.0	0.0
December	100	706	0.6	11.2	0	3.9	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8302	1.0	72.2	0	9.3	0	99.6	0.4	0.0	0.0	0.0



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
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	1.1	26.8	0	3.9	0	99.7	0.3	0.0	0.0	0.0
February	100	641	2.2	60.6	0	10.7	0	98.3	1.6	0.2	0.0	0.0
March	100	706	1.2	22.0	0	6.8	0	99.9	0.1	0.0	0.0	0.0
April	100	687	1.5	41.0	0	6.9	0	98.4	1.6	0.0	0.0	0.0
May	100	709	2.9	111.5	0	14.2	0	96.2	3.5	0.1	0.1	0.0
June	100	684	1.6	37.9	0	6.7	0	98.7	1.3	0.0	0.0	0.0
July	99	699	1.8	33.2	0	9.9	0	99.1	0.9	0.0	0.0	0.0
August	99	705	1.1	22.2	0	4.1	0	99.9	0.1	0.0	0.0	0.0
September	100	687	2.9	58.0	0	22.9	0	95.3	4.7	0.0	0.0	0.0
October	100	709	2.1	59.3	0	9.9	0	97.9	2.1	0.0	0.0	0.0
November	100	685	1.1	67.5	0	9.1	0	99.0	0.9	0.2	0.0	0.0
December	100	709	1.8	139.2	0	22.5	0	98.2	1.6	0.1	0.1	0.0
Annual	100	8330	1.8	139.2	0	22.9	0	98.4	1.6	0.1	0.0	0.0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
					Objective		Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	97	693	0.6	26.4	0	2.2	0	99.9	0.1	0.0	0.0	0.0
February	95	601	1.0	34.8	0	5.6	0	99.7	0.3	0.0	0.0	0.0
March	100	710	1.0	28.3	0	8.2	0	99.4	0.6	0.0	0.0	0.0
April	97	663	0.9	29.2	0	3.4	0	99.3	0.8	0.0	0.0	0.0
May	99	705	1.1	56.6	0	8.5	0	98.7	1.3	0.0	0.0	0.0
June	100	684	0.7	24.6	0	4.0	0	99.7	0.3	0.0	0.0	0.0
July	100	710	0.6	22.8	0	2.8	0	99.9	0.1	0.0	0.0	0.0
August	100	709	0.4	17.5	0	2.4	0	100.0	0.0	0.0	0.0	0.0
September	100	686	0.4	20.8	0	1.6	0	99.9	0.2	0.0	0.0	0.0
October	100	710	0.4	16.2	0	2.9	0	100.0	0.0	0.0	0.0	0.0
November	100	686	0.4	11.2	0	1.5	0	100.0	0.0	0.0	0.0	0.0
December	100	710	0.4	13.5	0	2.5	0	100.0	0.0	0.0	0.0	0.0
Annual	99	8267	0.7	56.6	0	8.5	0	100.0	0.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	2.2	40.7	0	9.3	0	98.7	1.3	0.0	0.0	0.0
February	100	640	2.8	61.8	0	9.0	0	98.3	1.6	0.2	0.0	0.0
March	100	708	2.2	68.7	0	22.0	0	97.0	2.7	0.3	0.0	0.0
April	100	680	2.7	51.1	0	11.3	0	96.9	3.1	0.0	0.0	0.0
May	100	707	3.4	237.4	1	49.4	1	96.6	2.1	0.7	0.4	0.1
June	100	686	2.2	54.0	0	11.0	0	97.8	2.2	0.0	0.0	0.0
July	99	703	1.0	35.6	0	5.1	0	99.3	0.7	0.0	0.0	0.0
August	100	707	1.3	46.0	0	7.0	0	99.0	1.0	0.0	0.0	0.0
September	99	682	2.2	69.0	0	33.7	0	95.9	3.5	0.6	0.0	0.0
October	100	709	1.0	53.4	0	7.3	0	99.4	0.6	0.0	0.0	0.0
November	97	661	2.3	33.7	0	13.8	0	97.3	2.7	0.0	0.0	0.0
December	100	707	2.3	40.1	0	11.0	0	98.3	1.7	0.0	0.0	0.0
Annual	100	8299	2.1	237.4	1	49.4	1	97.8	2.0	0.2	0.0	0.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Number of Values Exceeding	Maximum	Number of Values Exceeding	% of Data in Each Concentration Range				
				1-Hour Value	1-Hour Objective	24-Hour Value	24-Hour Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	710	1.8	25.3	0	10.6	0	99.7	0.3	0.0	0.0	0.0
February	100	640	2.3	29.3	0	8.5	0	98.9	1.1	0.0	0.0	0.0
March	100	708	1.3	23.0	0	9.3	0	99.9	0.1	0.0	0.0	0.0
April	100	684	1.0	17.3	0	5.9	0	100.0	0.0	0.0	0.0	0.0
May	100	706	1.0	70.8	0	8.0	0	99.6	0.3	0.1	0.0	0.0
June	100	685	0.8	16.5	0	3.4	0	100.0	0.0	0.0	0.0	0.0
July	100	709	0.5	38.7	0	4.3	0	99.9	0.1	0.0	0.0	0.0
August	100	709	0.4	9.0	0	1.6	0	100.0	0.0	0.0	0.0	0.0
September	100	683	0.4	13.0	0	3.2	0	100.0	0.0	0.0	0.0	0.0
October	100	707	0.7	51.3	0	12.7	0	99.2	0.9	0.0	0.0	0.0
November	100	686	0.8	8.0	0	2.9	0	100.0	0.0	0.0	0.0	0.0
December	100	709	1.3	31.1	0	9.1	0	99.4	0.6	0.0	0.0	0.0
Annual	100	8336	1.0	70.8	0	12.7	0	99.7	0.3	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	12.0	0	3.9	0	100.0	0.0	0.0	0.0	0.0
February	100	641	1.4	23.5	0	7.0	0	99.7	0.3	0.0	0.0	0.0
March	100	708	0.9	21.1	0	6.8	0	99.9	0.1	0.0	0.0	0.0
April	100	685	0.7	10.5	0	3.1	0	100.0	0.0	0.0	0.0	0.0
May	100	709	0.4	18.6	0	1.9	0	100.0	0.0	0.0	0.0	0.0
June	99	684	0.5	14.9	0	1.9	0	100.0	0.0	0.0	0.0	0.0
July	100	710	0.4	12.7	0	2.0	0	100.0	0.0	0.0	0.0	0.0
August	100	709	0.3	5.7	0	0.9	0	100.0	0.0	0.0	0.0	0.0
September	100	683	0.2	6.8	0	1.1	0	100.0	0.0	0.0	0.0	0.0
October	100	709	0.6	27.1	0	8.9	0	99.6	0.4	0.0	0.0	0.0
November	100	685	0.5	6.8	0	1.3	0	100.0	0.0	0.0	0.0	0.0
December	100	709	0.7	14.6	0	3.3	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8341	0.6	27.1	0	8.9	0	99.9	0.1	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	0.5	7.4	0	3.5	0	100.0	0.0	0.0	0.0	0.0
February	99	626	0.4	8.6	0	3.1	0	100.0	0.0	0.0	0.0	0.0
March	100	704	0.2	2.5	0	1.1	0	100.0	0.0	0.0	0.0	0.0
April	100	683	0.1	2.1	0	0.7	0	100.0	0.0	0.0	0.0	0.0
May	100	710	0.1	2.3	0	0.9	0	100.0	0.0	0.0	0.0	0.0
June	100	685	0.0	0.8	0	0.2	0	100.0	0.0	0.0	0.0	0.0
July	100	710	0.1	1.4	0	0.4	0	100.0	0.0	0.0	0.0	0.0
August	100	708	0.1	6.5	0	1.1	0	100.0	0.0	0.0	0.0	0.0
September	98	672	0.2	4.8	0	1.3	0	100.0	0.0	0.0	0.0	0.0
October	100	710	0.3	7.9	0	2.5	0	100.0	0.0	0.0	0.0	0.0
November	100	686	0.3	9.7	0	1.7	0	100.0	0.0	0.0	0.0	0.0
December	100	709	0.6	9.5	0	4.7	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8311	0.2	9.7	0	4.7	0	100.0	0.0	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	0.8	10.4	0	2.3	0	100.0	0.0	0.0	0.0	0.0
February	99	636	1.4	41.2	0	8.0	0	99.1	0.9	0.0	0.0	0.0
March	100	708	1.5	32.2	0	7.5	0	99.3	0.7	0.0	0.0	0.0
April	99	680	0.7	20.6	0	3.5	0	99.9	0.2	0.0	0.0	0.0
May	100	709	1.2	46.6	0	9.7	0	98.2	1.8	0.0	0.0	0.0
June	99	682	0.5	26.9	0	4.0	0	99.9	0.2	0.0	0.0	0.0
July	92	650	0.4	10.5	0	2.4	0	100.0	0.0	0.0	0.0	0.0
August	99	703	0.4	20.5	0	2.0	0	100.0	0.0	0.0	0.0	0.0
September	100	685	0.8	19.8	0	3.0	0	100.0	0.0	0.0	0.0	0.0
October	100	709	0.9	39.2	0	6.4	0	99.7	0.3	0.0	0.0	0.0
November	100	683	0.5	25.1	0	3.3	0	99.7	0.3	0.0	0.0	0.0
December	100	707	0.4	12.5	0	2.1	0	100.0	0.0	0.0	0.0	0.0
Annual	99	8260	0.8	46.6	0	9.7	0	99.6	0.4	0.0	0.0	0.0



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
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	700	1.3	85.7	0	10.9	0	99.1	0.7	0.1	0.0	0.0
February	92	588	1.6	41.2	0	7.3	0	99.2	0.9	0.0	0.0	0.0
March	100	707	1.6	83.7	0	5.2	0	99.0	0.9	0.1	0.0	0.0
April	100	682	1.3	44.4	0	10.4	0	98.5	1.5	0.0	0.0	0.0
May	97	686	2.9	88.5	0	21.4	0	96.4	2.9	0.7	0.0	0.0
June	96	660	1.4	51.0	0	5.9	0	98.8	1.2	0.0	0.0	0.0
July	100	709	1.9	57.4	0	7.2	0	98.7	1.3	0.0	0.0	0.0
August	99	699	2.3	103.1	0	14.7	0	98.3	1.3	0.4	0.0	0.0
September	98	672	2.0	30.8	0	5.9	0	99.0	1.0	0.0	0.0	0.0
October	100	707	2.6	89.5	0	12.5	0	96.8	3.0	0.3	0.0	0.0
November	100	686	1.4	68.1	0	6.2	0	99.3	0.6	0.2	0.0	0.0
December	95	669	0.9	30.4	0	6.5	0	99.7	0.3	0.0	0.0	0.0
Annual	98	8165	1.8	103.1	0	21.4	0	98.5	1.3	0.2	0.0	0.0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	16.9	0	2.8	0	100.0	0.0	0.0	0.0	0.0
February	100	639	1.4	74.9	0	9.1	0	99.2	0.6	0.2	0.0	0.0
March	100	709	1.7	39.5	0	6.1	0	99.3	0.7	0.0	0.0	0.0
April	100	685	1.6	65.8	0	11.7	0	98.7	1.2	0.2	0.0	0.0
May	100	709	2.0	99.6	0	10.5	0	97.7	2.1	0.1	0.0	0.0
June	99	681	0.8	21.8	0	4.2	0	99.9	0.2	0.0	0.0	0.0
July	100	707	1.0	24.1	0	3.8	0	99.7	0.3	0.0	0.0	0.0
August	99	705	0.9	23.1	0	3.6	0	99.9	0.1	0.0	0.0	0.0
September	100	686	1.0	60.7	0	5.4	0	99.7	0.2	0.2	0.0	0.0
October	100	710	1.0	38.6	0	5.6	0	99.2	0.9	0.0	0.0	0.0
November	100	686	0.6	21.0	0	5.3	0	99.9	0.2	0.0	0.0	0.0
December	100	709	0.7	16.8	0	5.8	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8335	1.1	99.6	0	11.7	0	99.4	0.5	0.1	0.0	0.0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	19.2	0	5.2	0	100.0	0.0	0.0	0.0	0.0
February	100	638	1.2	12.7	0	4.6	0	100.0	0.0	0.0	0.0	0.0
March	100	710	0.8	8.2	0	2.2	0	100.0	0.0	0.0	0.0	0.0
April	100	687	0.4	6.1	0	1.3	0	100.0	0.0	0.0	0.0	0.0
May	100	706	0.2	3.4	0	0.5	0	100.0	0.0	0.0	0.0	0.0
June	100	687	0.3	7.1	0	0.9	0	100.0	0.0	0.0	0.0	0.0
July	99	702	0.5	7.0	0	1.8	0	100.0	0.0	0.0	0.0	0.0
August	78	546	0.3	2.4	0	0.6	0	100.0	0.0	0.0	0.0	0.0
September	100	685	0.3	3.7	0	0.7	0	100.0	0.0	0.0	0.0	0.0
October	99	706	0.3	6.8	0	1.4	0	100.0	0.0	0.0	0.0	0.0
November	100	685	0.5	10.0	0	2.4	0	100.0	0.0	0.0	0.0	0.0
December	100	709	1.1	23.2	0	6.7	0	99.6	0.4	0.0	0.0	0.0
Annual	98	8170	0.6	23.2	0	6.7	0	100.0	0.0	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	709	1.3	40.4	0	7.4	0	99.6	0.4	0.0	0.0	0.0
February	100	640	1.2	25.9	0	4.4	0	99.8	0.2	0.0	0.0	0.0
March	100	710	0.9	14.6	0	4.3	0	100.0	0.0	0.0	0.0	0.0
April	100	687	0.2	6.2	0	0.7	0	100.0	0.0	0.0	0.0	0.0
May	100	709	0.3	12.9	0	3.5	0	100.0	0.0	0.0	0.0	0.0
June	100	687	0.4	29.3	0	4.3	0	99.6	0.4	0.0	0.0	0.0
July	100	709	0.7	16.9	0	3.9	0	100.0	0.0	0.0	0.0	0.0
August	100	710	1.0	23.1	0	5.3	0	99.9	0.1	0.0	0.0	0.0
September	100	688	0.7	22.8	0	4.7	0	99.9	0.2	0.0	0.0	0.0
October	100	710	1.1	36.1	0	6.3	0	99.3	0.7	0.0	0.0	0.0
November	100	684	1.1	15.4	0	6.2	0	100.0	0.0	0.0	0.0	0.0
December	100	709	1.1	61.2	0	9.0	0	99.4	0.4	0.1	0.0	0.0
Annual	100	8352	0.8	61.2	0	9.0	0	99.8	0.2	0.0	0.0	0.0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	63	442	0.4	3.8	0	1.1	0	100.0	0.0	0.0	0.0	0.0
February	99	631	0.6	7.4	0	2.6	0	100.0	0.0	0.0	0.0	0.0
March	100	708	0.4	4.1	0	1.2	0	100.0	0.0	0.0	0.0	0.0
April	100	685	0.3	3.9	0	1.0	0	100.0	0.0	0.0	0.0	0.0
May	100	709	0.4	8.2	0	1.4	0	100.0	0.0	0.0	0.0	0.0
June	93	640	0.3	4.0	0	1.0	0	100.0	0.0	0.0	0.0	0.0
July	96	680	0.2	3.2	0	0.8	0	100.0	0.0	0.0	0.0	0.0
August	94	665	0.2	2.4	0	0.5	0	100.0	0.0	0.0	0.0	0.0
September	100	687	0.3	3.0	0	0.8	0	100.0	0.0	0.0	0.0	0.0
October	100	710	0.4	6.7	0	1.2	0	100.0	0.0	0.0	0.0	0.0
November	100	684	0.5	4.2	0	1.6	0	100.0	0.0	0.0	0.0	0.0
December	100	709	0.8	12.4	0	4.8	0	100.0	0.0	0.0	0.0	0.0
Annual	95	7950	0.4	12.4	0	4.8	0	100.0	0.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	1.4	35.5	0	6.5	0	99.7	0.3	0.0	0.0	0.0
February	100	639	1.4	24.1	0	4.1	0	99.7	0.3	0.0	0.0	0.0
March	100	709	0.9	19.3	0	3.8	0	100.0	0.0	0.0	0.0	0.0
April	100	686	0.6	27.8	0	5.1	0	99.6	0.4	0.0	0.0	0.0
May	100	709	0.6	18.8	0	3.9	0	100.0	0.0	0.0	0.0	0.0
June	100	685	0.4	14.3	0	3.2	0	100.0	0.0	0.0	0.0	0.0
July	100	709	0.8	13.6	0	3.2	0	100.0	0.0	0.0	0.0	0.0
August	100	705	0.9	19.7	0	5.0	0	100.0	0.0	0.0	0.0	0.0
September	100	687	0.7	25.8	0	4.9	0	99.9	0.2	0.0	0.0	0.0
October	100	708	0.9	30.2	0	4.5	0	99.6	0.4	0.0	0.0	0.0
November	100	686	1.1	35.5	0	5.6	0	99.9	0.2	0.0	0.0	0.0
December	100	709	1.2	44.8	0	8.2	0	99.2	0.9	0.0	0.0	0.0
Annual	100	8339	0.9	44.8	0	8.2	0	99.8	0.2	0.0	0.0	0.0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
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	1.4	34.3	0	11.5	0	99.3	0.7	0.0	0.0	0.0
February	100	640	1.8	27.7	0	9.6	0	99.2	0.8	0.0	0.0	0.0
March	100	707	1.1	31.8	0	6.6	0	99.7	0.3	0.0	0.0	0.0
April	100	685	1.3	33.8	0	6.6	0	99.4	0.6	0.0	0.0	0.0
May	100	709	0.4	19.8	0	2.9	0	100.0	0.0	0.0	0.0	0.0
June	100	685	0.5	31.6	0	3.8	0	99.9	0.2	0.0	0.0	0.0
July	100	707	0.4	9.3	0	1.3	0	100.0	0.0	0.0	0.0	0.0
August	100	709	0.5	16.4	0	2.4	0	100.0	0.0	0.0	0.0	0.0
September	100	685	0.5	12.3	0	2.1	0	100.0	0.0	0.0	0.0	0.0
October	100	710	0.6	34.8	0	5.5	0	99.7	0.3	0.0	0.0	0.0
November	100	687	0.7	20.6	0	6.4	0	99.9	0.2	0.0	0.0	0.0
December	99	704	1.1	23.0	0	7.3	0	99.9	0.1	0.0	0.0	0.0
Annual	100	8336	0.9	34.8	0	11.5	0	99.8	0.3	0.0	0.0	0.0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	710	0.7	8.5	0	2.2	0	100.0	0.0	0.0	0.0	0.0
February	100	641	0.4	6.4	0	1.2	0	100.0	0.0	0.0	0.0	0.0
March	100	708	0.5	5.3	0	1.5	0	100.0	0.0	0.0	0.0	0.0
April	100	685	0.4	5.5	0	0.9	0	100.0	0.0	0.0	0.0	0.0
May	100	709	0.2	4.5	0	0.9	0	100.0	0.0	0.0	0.0	0.0
June	100	685	0.3	5.8	0	0.9	0	100.0	0.0	0.0	0.0	0.0
July	100	706	0.2	4.1	0	1.1	0	100.0	0.0	0.0	0.0	0.0
August	99	706	0.2	1.9	0	0.5	0	100.0	0.0	0.0	0.0	0.0
September	100	685	0.2	3.2	0	0.6	0	100.0	0.0	0.0	0.0	0.0
October	99	702	0.3	8.2	0	1.1	0	100.0	0.0	0.0	0.0	0.0
November	100	686	0.4	6.8	0	1.1	0	100.0	0.0	0.0	0.0	0.0
December	100	709	0.7	13.1	0	3.7	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8332	0.4	13.1	0	3.7	0	100.0	0.0	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	0.8	20.7	0	3.5	0	99.9	0.1	0.0	0.0	0.0
February	100	639	0.4	4.7	0	1.0	0	100.0	0.0	0.0	0.0	0.0
March	100	707	0.4	4.0	0	1.5	0	100.0	0.0	0.0	0.0	0.0
April	100	684	0.2	3.7	0	1.0	0	100.0	0.0	0.0	0.0	0.0
May	100	707	0.1	3.7	0	0.5	0	100.0	0.0	0.0	0.0	0.0
June	100	685	0.2	3.1	0	0.7	0	100.0	0.0	0.0	0.0	0.0
July	100	705	0.2	3.1	0	0.9	0	100.0	0.0	0.0	0.0	0.0
August	100	707	0.1	2.1	0	0.4	0	100.0	0.0	0.0	0.0	0.0
September	99	683	0.2	2.3	0	0.5	0	100.0	0.0	0.0	0.0	0.0
October	100	709	0.3	5.4	0	0.9	0	100.0	0.0	0.0	0.0	0.0
November	100	685	0.3	9.8	0	1.2	0	100.0	0.0	0.0	0.0	0.0
December	100	707	0.4	8.3	0	1.8	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8326	0.3	20.7	0	3.5	0	100.0	0.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	710	0.9	19.2	0	6.6	0	100.0	0.0	0.0	0.0	0.0
February	100	639	1.5	33.0	0	6.9	0	99.5	0.5	0.0	0.0	0.0
March	100	708	2.1	66.3	0	10.9	0	98.9	1.0	0.1	0.0	0.0
April	100	685	0.5	16.4	0	2.5	0	100.0	0.0	0.0	0.0	0.0
May	100	707	1.2	48.4	0	7.7	0	98.7	1.3	0.0	0.0	0.0
June	99	683	0.3	14.1	0	2.1	0	100.0	0.0	0.0	0.0	0.0
July	100	708	0.4	11.5	0	2.1	0	100.0	0.0	0.0	0.0	0.0
August	100	706	0.4	9.1	0	1.9	0	100.0	0.0	0.0	0.0	0.0
September	100	686	0.8	21.8	0	4.9	0	99.9	0.2	0.0	0.0	0.0
October	100	709	0.9	16.6	0	5.5	0	100.0	0.0	0.0	0.0	0.0
November	100	685	0.5	20.9	0	3.5	0	99.9	0.2	0.0	0.0	0.0
December	100	708	0.6	9.9	0	2.9	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8334	0.8	66.3	0	10.9	0	99.8	0.2	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2022
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	707	0.8	13.4	0	2.7	0	100.0	0.0	0.0	0.0	0.0
February	100	641	1.5	55.8	0	7.8	0	98.9	1.1	0.0	0.0	0.0
March	100	710	1.7	51.3	0	6.9	0	99.3	0.7	0.0	0.0	0.0
April	100	686	1.2	39.9	0	7.7	0	99.3	0.7	0.0	0.0	0.0
May	100	707	1.4	80.3	0	8.4	0	98.9	0.9	0.3	0.0	0.0
June	100	683	0.6	46.0	0	4.4	0	99.7	0.3	0.0	0.0	0.0
July	99	706	0.8	21.8	0	4.2	0	99.9	0.1	0.0	0.0	0.0
August	100	709	0.5	22.7	0	2.3	0	99.9	0.1	0.0	0.0	0.0
September	99	678	0.8	28.2	0	3.2	0	99.9	0.2	0.0	0.0	0.0
October	100	710	0.8	37.6	0	6.1	0	99.6	0.4	0.0	0.0	0.0
November	100	687	0.5	16.9	0	3.1	0	100.0	0.0	0.0	0.0	0.0
December	100	710	0.6	9.5	0	3.8	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8334	0.9	80.3	0	8.4	0	99.6	0.4	0.0	0.0	0.0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	702	1.8	42.0	0	10.6	0	98.9	1.1	0.0	0.0	0.0
February	100	640	2.1	55.0	0	7.1	0	98.0	2.0	0.0	0.0	0.0
March	100	707	2.1	61.4	0	10.4	0	99.3	0.6	0.1	0.0	0.0
April	100	686	1.3	30.1	0	13.7	0	99.4	0.6	0.0	0.0	0.0
May	92	653	0.6	33.8	0	2.4	0	99.9	0.2	0.0	0.0	0.0
June	100	684	1.1	36.9	0	6.6	0	99.6	0.4	0.0	0.0	0.0
July	100	706	1.5	27.8	0	6.0	0	99.4	0.6	0.0	0.0	0.0
August	99	701	1.6	34.0	0	12.4	0	98.6	1.4	0.0	0.0	0.0
September	100	686	2.6	42.9	0	12.0	0	96.8	3.2	0.0	0.0	0.0
October	100	709	2.9	56.8	0	23.7	0	96.2	3.8	0.0	0.0	0.0
November	100	687	1.7	35.6	0	7.6	0	98.8	1.2	0.0	0.0	0.0
December	100	709	1.6	30.6	0	9.6	0	98.7	1.3	0.0	0.0	0.0
Annual	99	8270	1.8	61.4	0	23.7	0	98.8	1.2	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
Sulphur Dioxide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
					Objective		Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	100	708	1.1	32.2	0	4.1	0	99.7	0.3	0.0	0.0	0.0
February	100	640	0.9	13.5	0	2.8	0	100.0	0.0	0.0	0.0	0.0
March	97	689	0.7	8.2	0	2.0	0	100.0	0.0	0.0	0.0	0.0
April	100	684	0.5	7.5	0	1.3	0	100.0	0.0	0.0	0.0	0.0
May	100	710	0.3	5.4	0	1.0	0	100.0	0.0	0.0	0.0	0.0
June	100	684	0.4	5.3	0	1.0	0	100.0	0.0	0.0	0.0	0.0
July	100	709	0.5	18.8	0	1.9	0	100.0	0.0	0.0	0.0	0.0
August	100	708	0.5	6.9	0	2.3	0	100.0	0.0	0.0	0.0	0.0
September	100	688	0.6	11.5	0	2.0	0	100.0	0.0	0.0	0.0	0.0
October	100	709	0.6	8.7	0	1.8	0	100.0	0.0	0.0	0.0	0.0
November	100	687	0.5	12.6	0	1.7	0	100.0	0.0	0.0	0.0	0.0
December	100	707	0.9	8.8	0	3.1	0	100.0	0.0	0.0	0.0	0.0
Annual	100	8323	0.6	32.2	0	4.1	0	100.0	0.0	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
Sulphur Dioxide (ppb) Average**

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range				
					Objective		Objective	0 - 20	21 - 60	61 - 110	111 - 170	171 - 340
January	92	652	1.0	20.4	0	3.4	0	100.0	0.0	0.0	0.0	0.0
February	100	638	0.6	5.8	0	1.3	0	100.0	0.0	0.0	0.0	0.0
March	100	709	0.6	8.5	0	2.8	0	100.0	0.0	0.0	0.0	0.0
April	100	686	0.4	7.0	0	1.8	0	100.0	0.0	0.0	0.0	0.0
May	100	709	0.2	2.9	0	0.6	0	100.0	0.0	0.0	0.0	0.0
June	100	684	0.2	3.3	0	0.6	0	100.0	0.0	0.0	0.0	0.0
July	100	708	0.3	5.0	0	1.2	0	100.0	0.0	0.0	0.0	0.0
August	100	707	0.3	5.0	0	0.9	0	100.0	0.0	0.0	0.0	0.0
September	100	685	0.2	6.4	0	1.0	0	100.0	0.0	0.0	0.0	0.0
October	100	709	0.4	9.0	0	1.5	0	100.0	0.0	0.0	0.0	0.0
November	100	684	0.4	8.0	0	1.3	0	100.0	0.0	0.0	0.0	0.0
December	100	709	0.6	7.8	0	2.5	0	100.0	0.0	0.0	0.0	0.0
Annual	99	8280	0.4	20.4	0	3.4	0	100.0	0.0	0.0	0.0	0.0



**Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
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	0.7	26.6	0	6.5	0	99.9	0.1	0.0	0.0	0.0
February	100	639	1.0	29.1	0	5.4	0	99.2	0.8	0.0	0.0	0.0
March	100	709	1.9	35.3	0	8.8	0	99.0	1.0	0.0	0.0	0.0
April	100	687	1.0	37.8	0	5.1	0	99.3	0.7	0.0	0.0	0.0
May	100	709	1.2	44.6	0	7.7	0	99.0	1.0	0.0	0.0	0.0
June	100	683	0.6	23.2	0	4.2	0	99.7	0.3	0.0	0.0	0.0
July	94	668	0.6	18.5	0	2.8	0	100.0	0.0	0.0	0.0	0.0
August	100	710	0.4	12.1	0	1.8	0	100.0	0.0	0.0	0.0	0.0
September	100	687	0.9	54.0	0	6.6	0	99.3	0.7	0.0	0.0	0.0
October	100	710	0.5	15.5	0	3.6	0	100.0	0.0	0.0	0.0	0.0
November	100	686	0.5	21.2	0	4.9	0	99.9	0.2	0.0	0.0	0.0
December	100	708	0.3	6.7	0	1.6	0	100.0	0.0	0.0	0.0	0.0
Annual	99	8305	0.8	54.0	0	8.8	0	99.6	0.4	0.0	0.0	0.0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	2.0	47.1	0	15.2	0	98.2	1.8	0.0	0.0	0.0
February	100	640	1.9	33.0	0	6.8	0	98.3	1.7	0.0	0.0	0.0
March	100	710	1.5	22.6	0	6.7	0	99.7	0.3	0.0	0.0	0.0
Annual	100	2056	1.8	47.1	0	15.2	0	98.7	1.3	0.0	0.0	0.0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	2.0	37.1	0	7.9	0	97.9	2.1	0.0	0.0	0.0
February	100	641	1.2	32.5	0	6.2	0	99.4	0.6	0.0	0.0	0.0
March	100	707	1.5	35.8	0	11.2	0	98.9	1.1	0.0	0.0	0.0
April	100	685	0.5	16.1	0	3.1	0	100.0	0.0	0.0	0.0	0.0
May	96	677	0.4	6.6	0	3.5	0	100.0	0.0	0.0	0.0	0.0
June	98	673	0.5	11.4	0	2.6	0	100.0	0.0	0.0	0.0	0.0
July	100	710	2.1	30.6	0	11.2	0	97.9	2.1	0.0	0.0	0.0
Annual	99	4802	1.2	37.1	0	11.2	0	99.1	0.9	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
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
August	100	710	1.1	28.5	0	9.0	0	99.4	0.6	0.0	0.0	0.0
September	100	688	1.6	40.7	0	11.7	0	98.4	1.6	0.0	0.0	0.0
October	100	710	2.3	54.1	0	22.5	0	95.9	4.1	0.0	0.0	0.0
November	100	685	0.9	28.7	0	3.7	0	99.7	0.3	0.0	0.0	0.0
December	100	710	0.9	44.8	0	6.7	0	99.6	0.4	0.0	0.0	0.0
Annual	100	3503	1.4	54.1	0	22.5	0	98.6	1.4	0.0	0.0	0.0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
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	689	0.9	15.5	0	2.8	0	100.0	0.0	0.0	0.0	0.0
February	100	639	1.1	31.5	0	3.7	0	99.5	0.5	0.0	0.0	0.0
March	99	702	0.8	24.2	0	3.3	0	99.9	0.1	0.0	0.0	0.0
April	97	663	0.5	15.1	0	2.1	0	100.0	0.0	0.0	0.0	0.0
May	96	678	0.5	13.3	0	2.1	0	100.0	0.0	0.0	0.0	0.0
June	100	632	0.6	17.5	0	3.2	0	100.0	0.0	0.0	0.0	0.0
Annual	98	4003	0.7	31.5	0	3.7	0	99.9	0.1	0.0	0.0	0.0



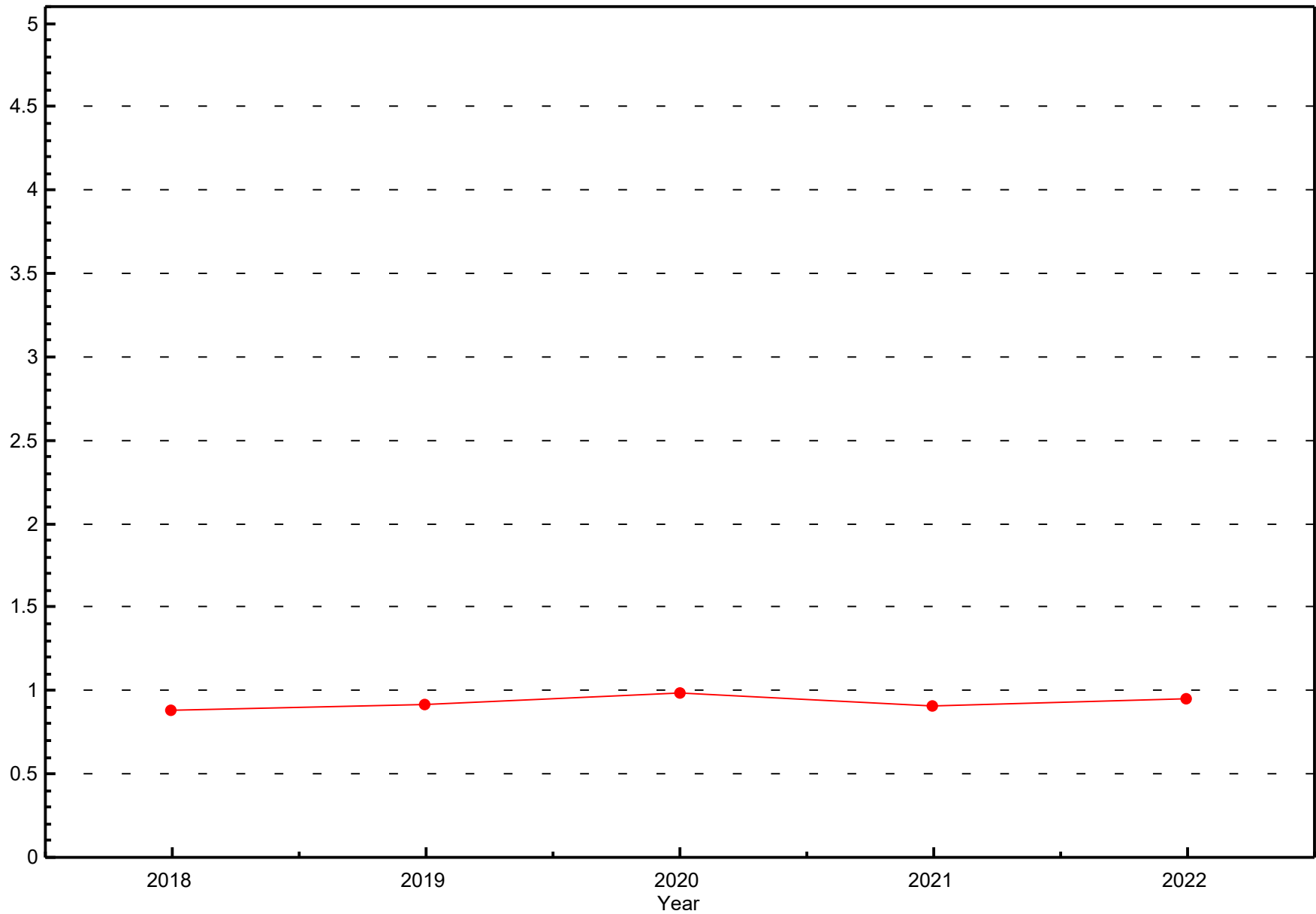
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Sulphur Dioxide (ppb) Average

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
July	100	709	1.1	17.7	0	6.5	0	100.0	0.0	0.0	0.0	0.0
August	100	707	0.6	14.0	0	3.2	0	100.0	0.0	0.0	0.0	0.0
September	99	681	0.7	13.3	0	3.2	0	100.0	0.0	0.0	0.0	0.0
October	100	706	0.8	15.7	0	6.4	0	100.0	0.0	0.0	0.0	0.0
November	100	686	0.6	14.2	0	3.4	0	100.0	0.0	0.0	0.0	0.0
December	100	707	0.7	11.0	0	4.0	0	100.0	0.0	0.0	0.0	0.0
Annual	100	4196	0.7	17.7	0	6.5	0	100.0	0.0	0.0	0.0	0.0



Yearly Averages

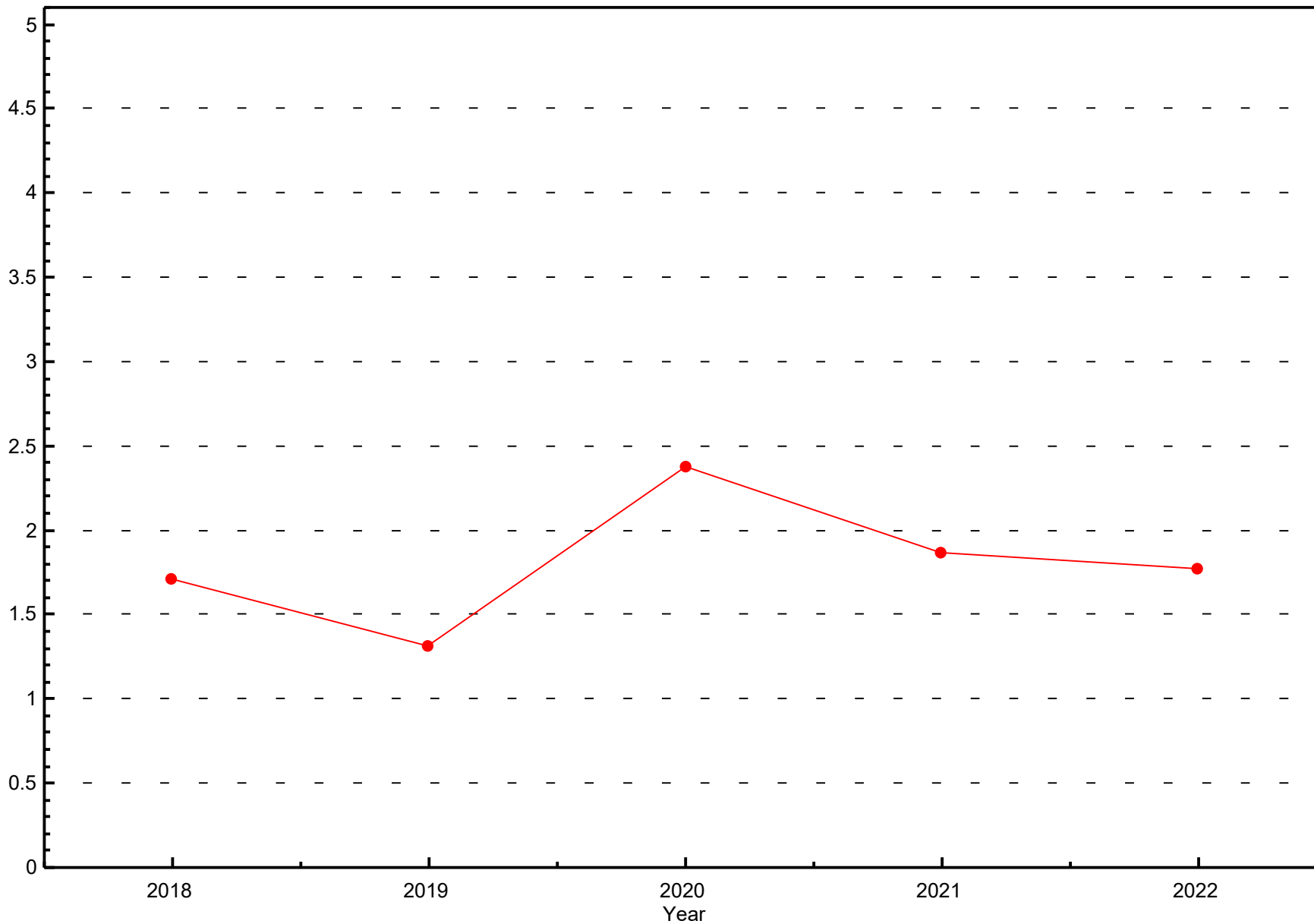
Sulphur Dioxide (SO₂) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

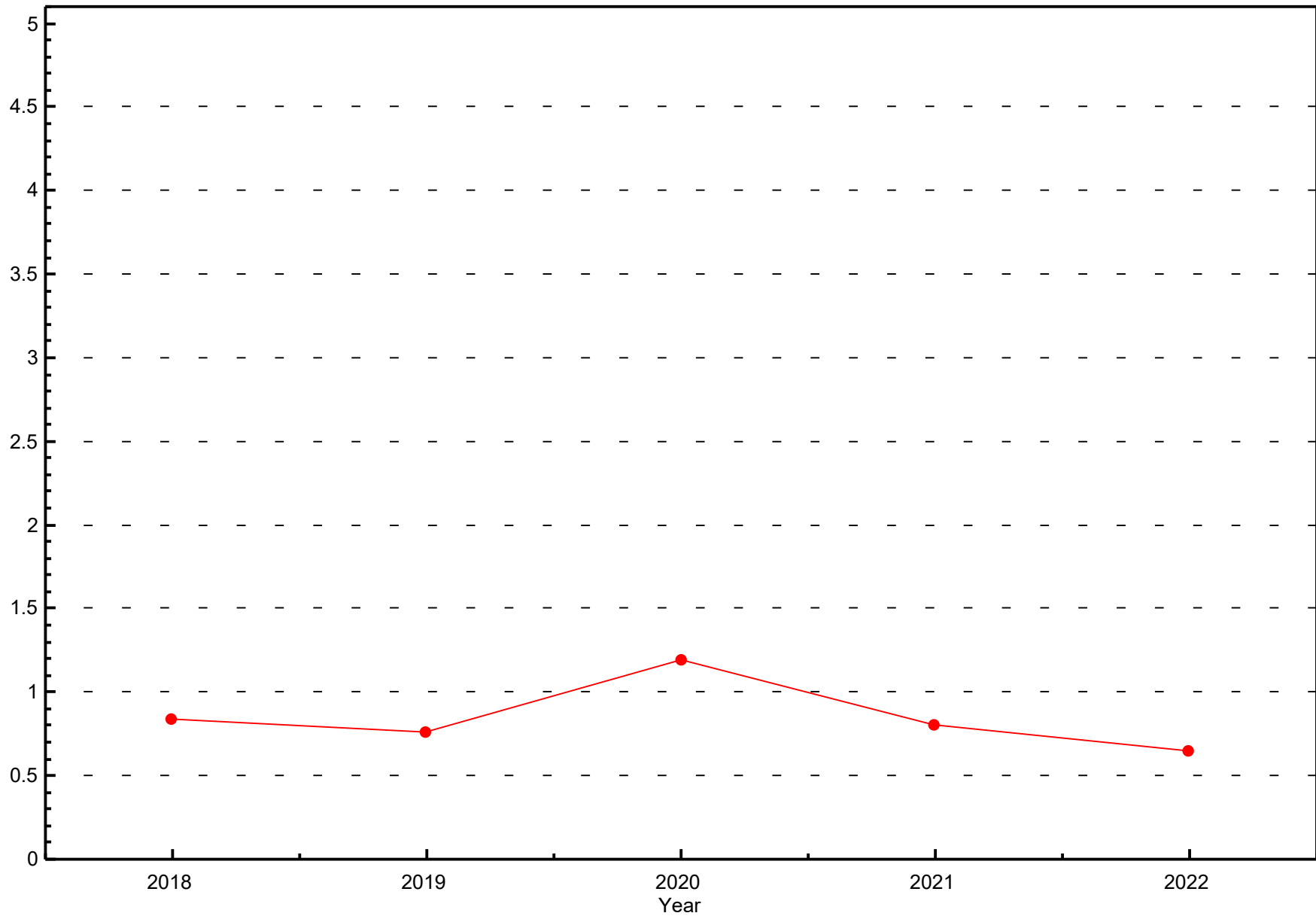
Sulphur Dioxide (SO₂) - ppb
Mildred Lake (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Buffalo Viewpoint (2018 to 2022)

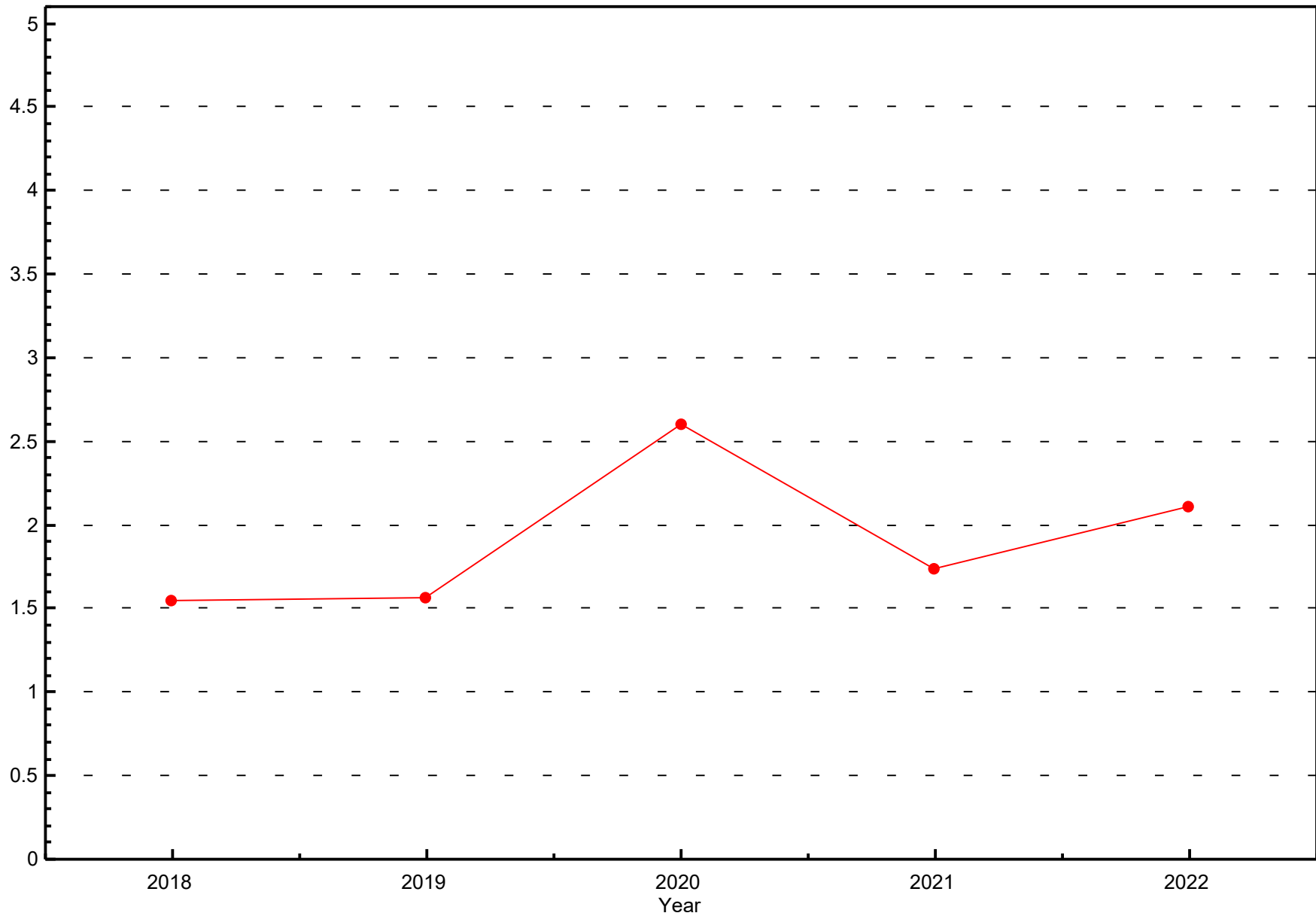




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

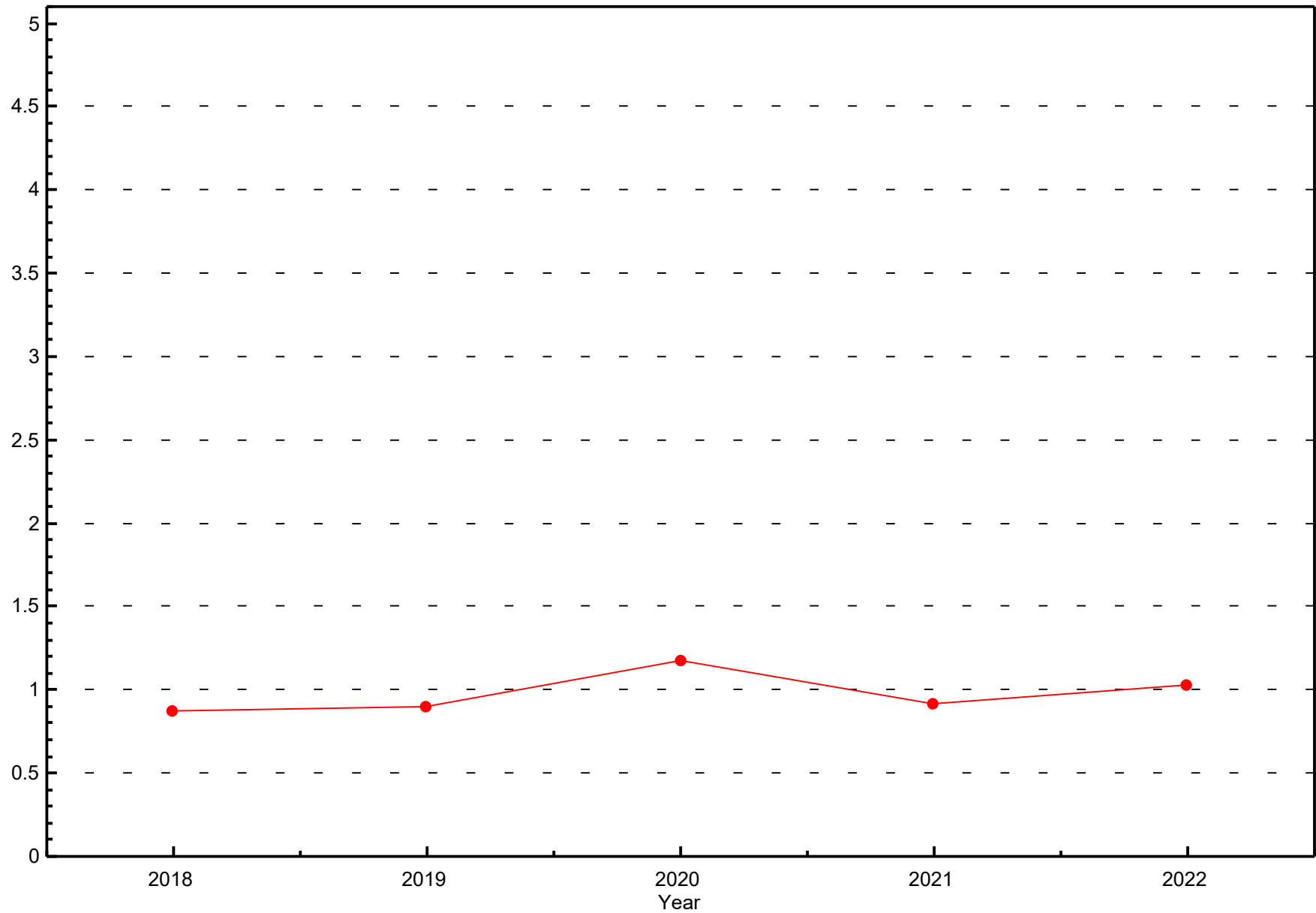
Mannix (2018 to 2022)





Yearly Averages

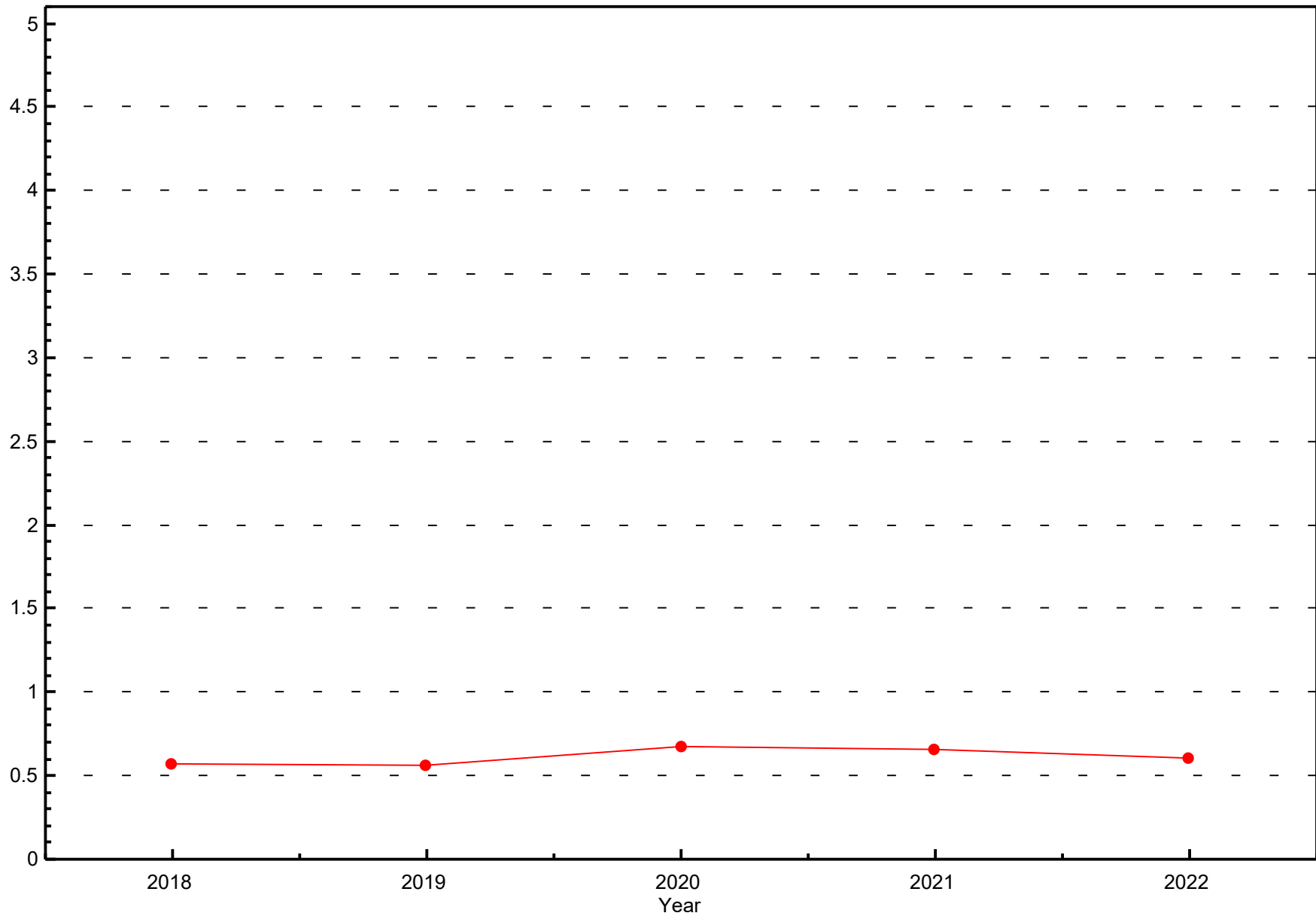
Sulphur Dioxide (SO₂) - ppb
Patricia McInnes (2018 to 2022)





Yearly Averages

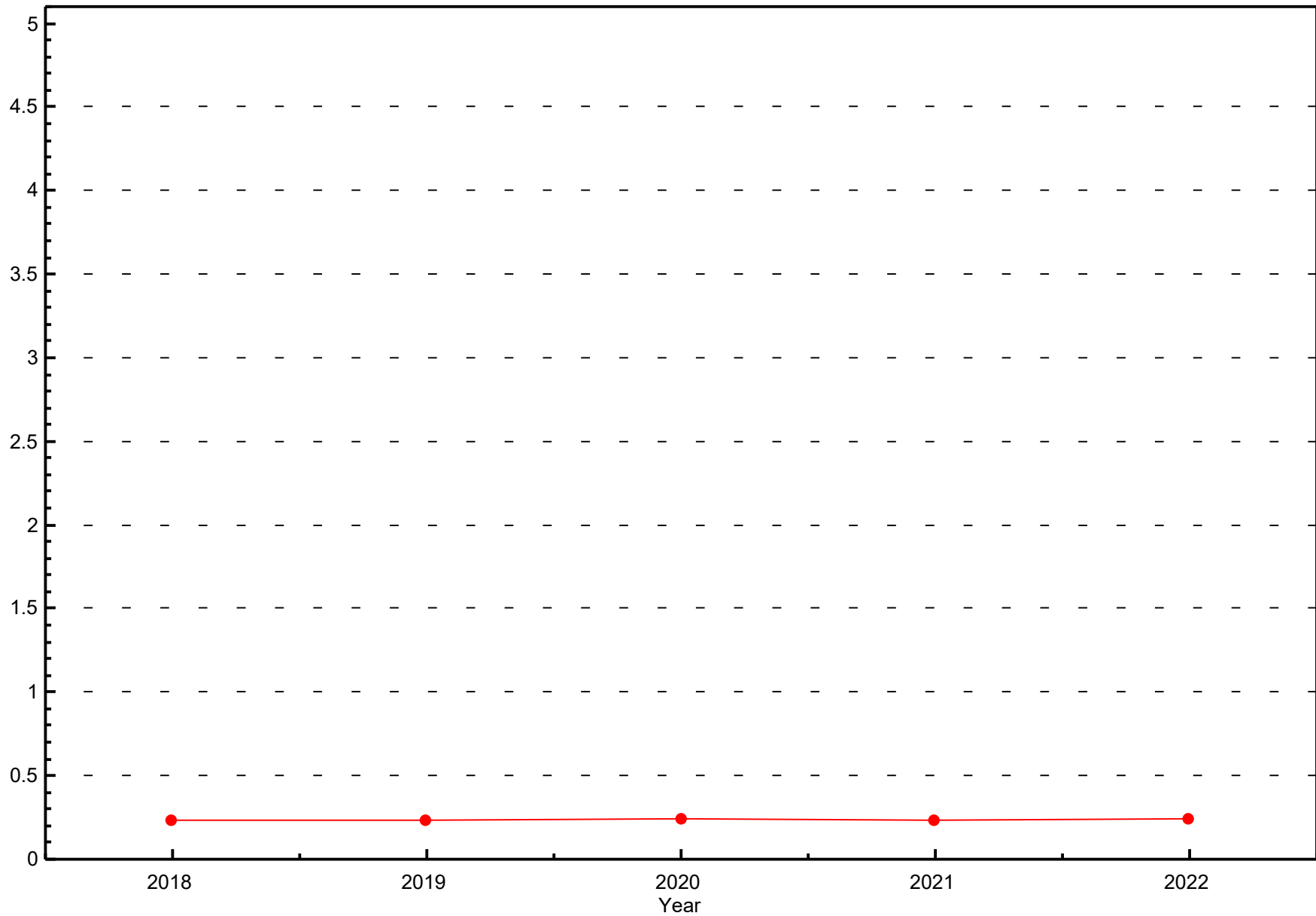
Sulphur Dioxide (SO₂) - ppb
Athabasca Valley (2018 to 2022)





Yearly Averages

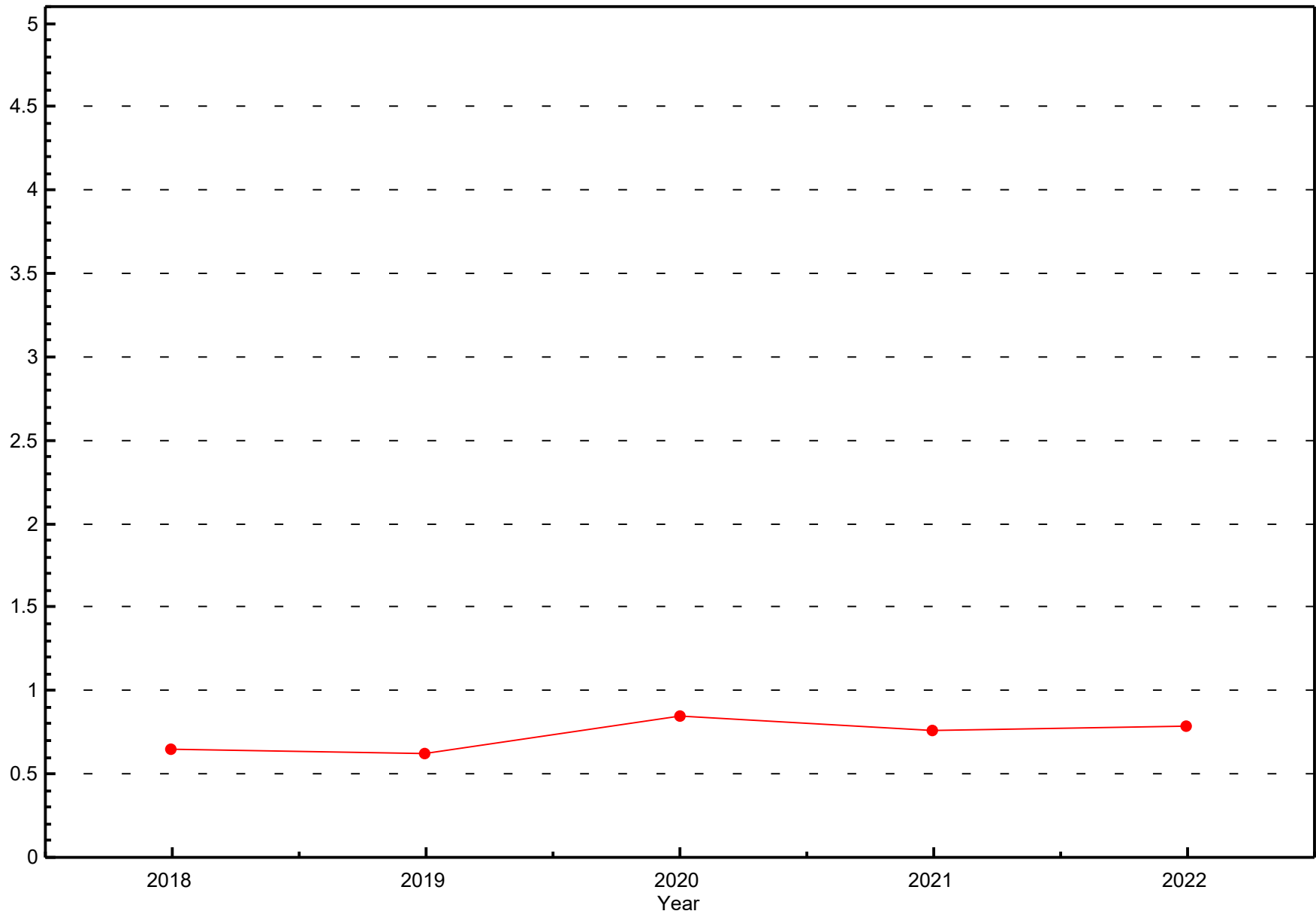
Sulphur Dioxide (SO₂) - ppb
Fort Chipewyan (2018 to 2022)





Yearly Averages

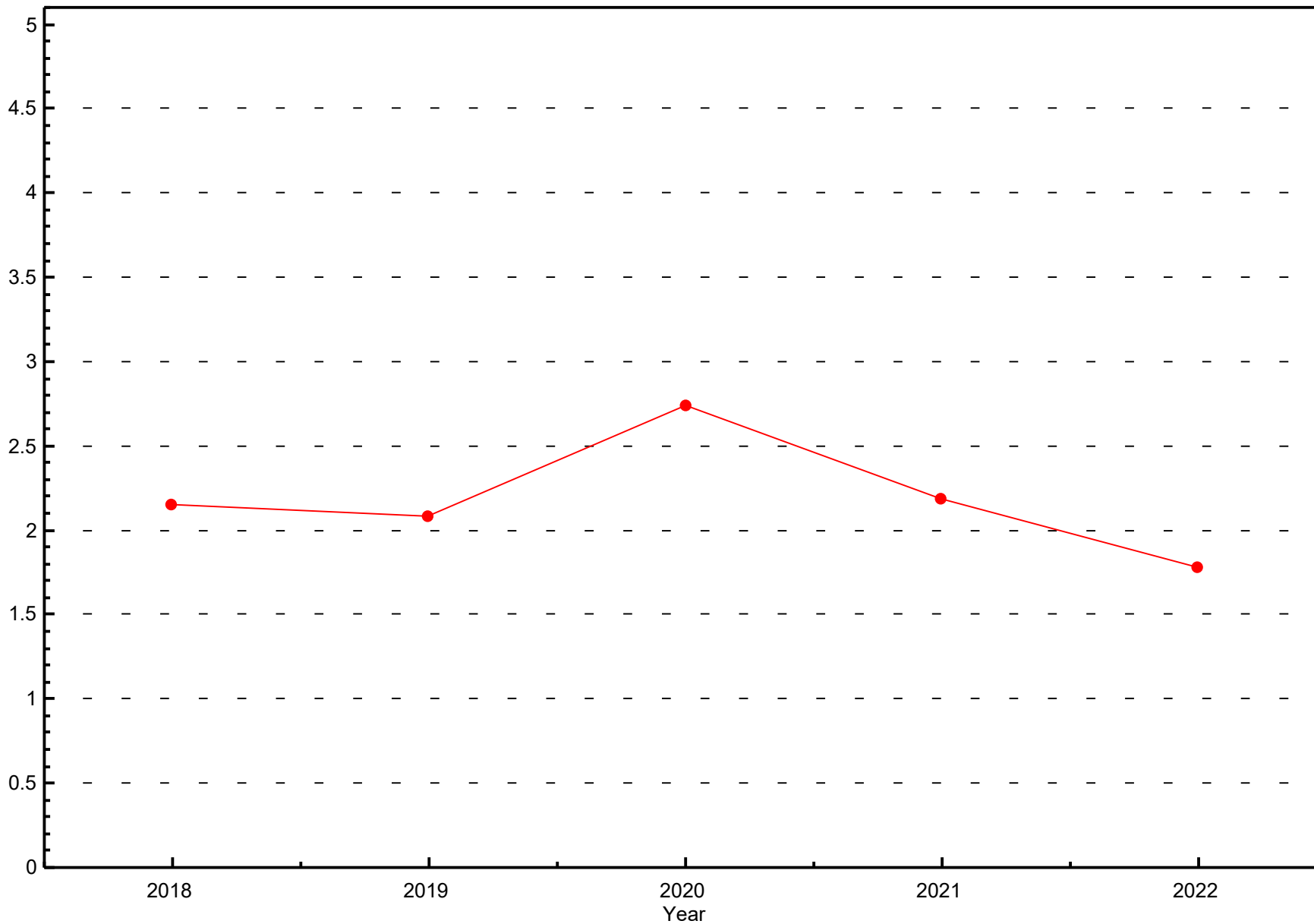
Sulphur Dioxide (SO₂) - ppb
Barge Landing (2018 to 2022)





Yearly Averages

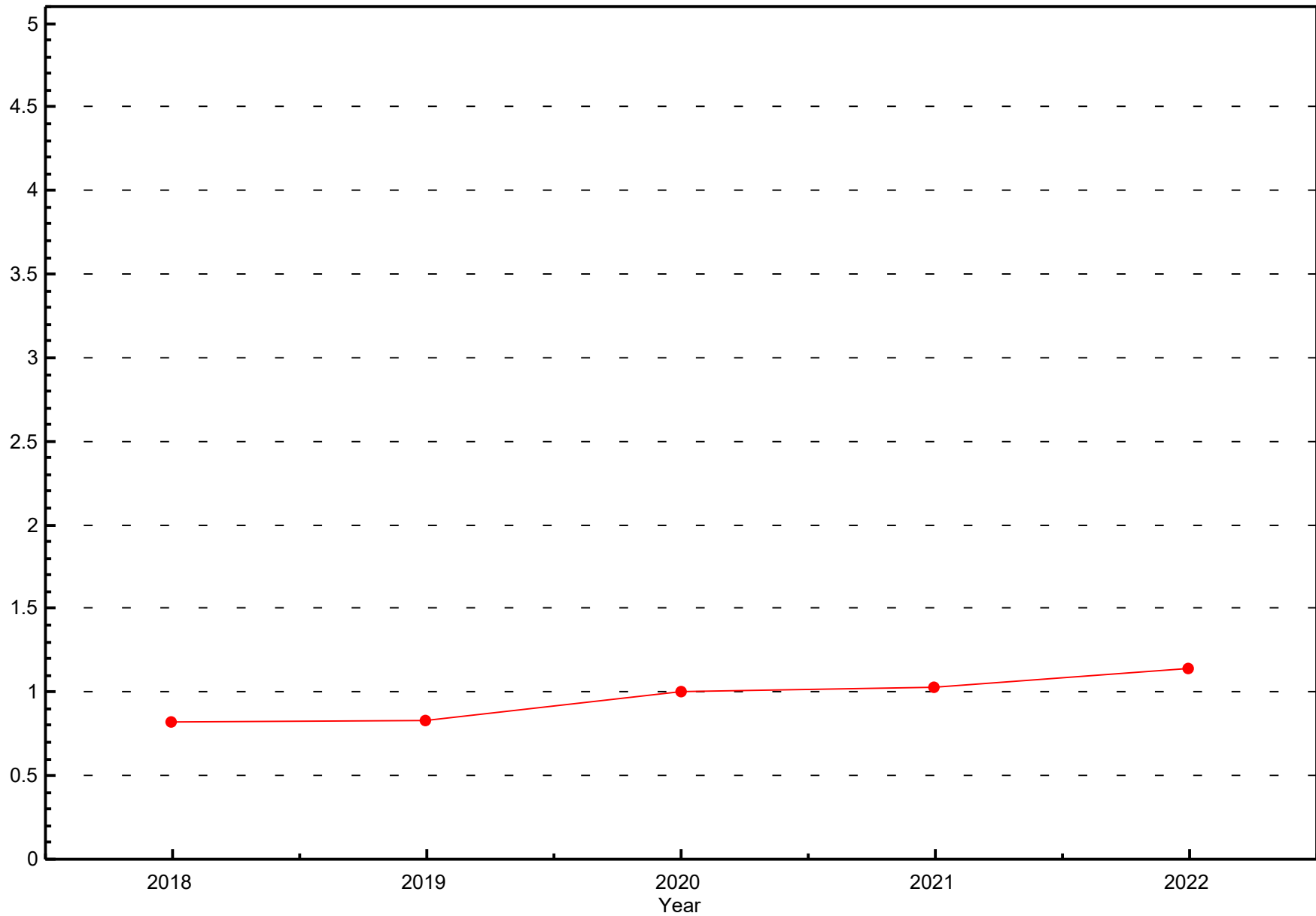
Sulphur Dioxide (SO₂) - ppb
Lower Camp (2018 to 2022)





Yearly Averages

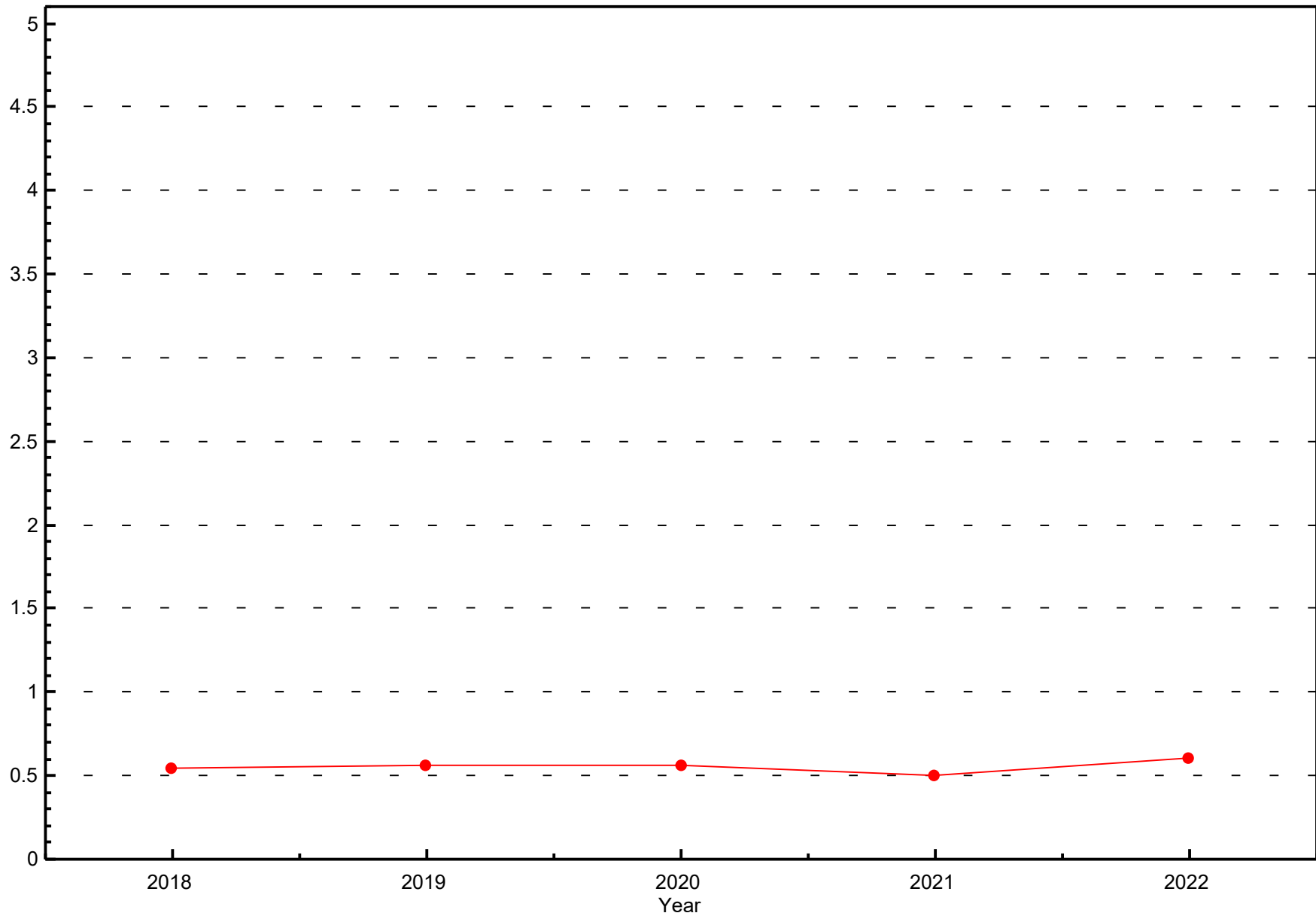
Sulphur Dioxide (SO₂) - ppb
Fort McKay South (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Anzac (2018 to 2022)

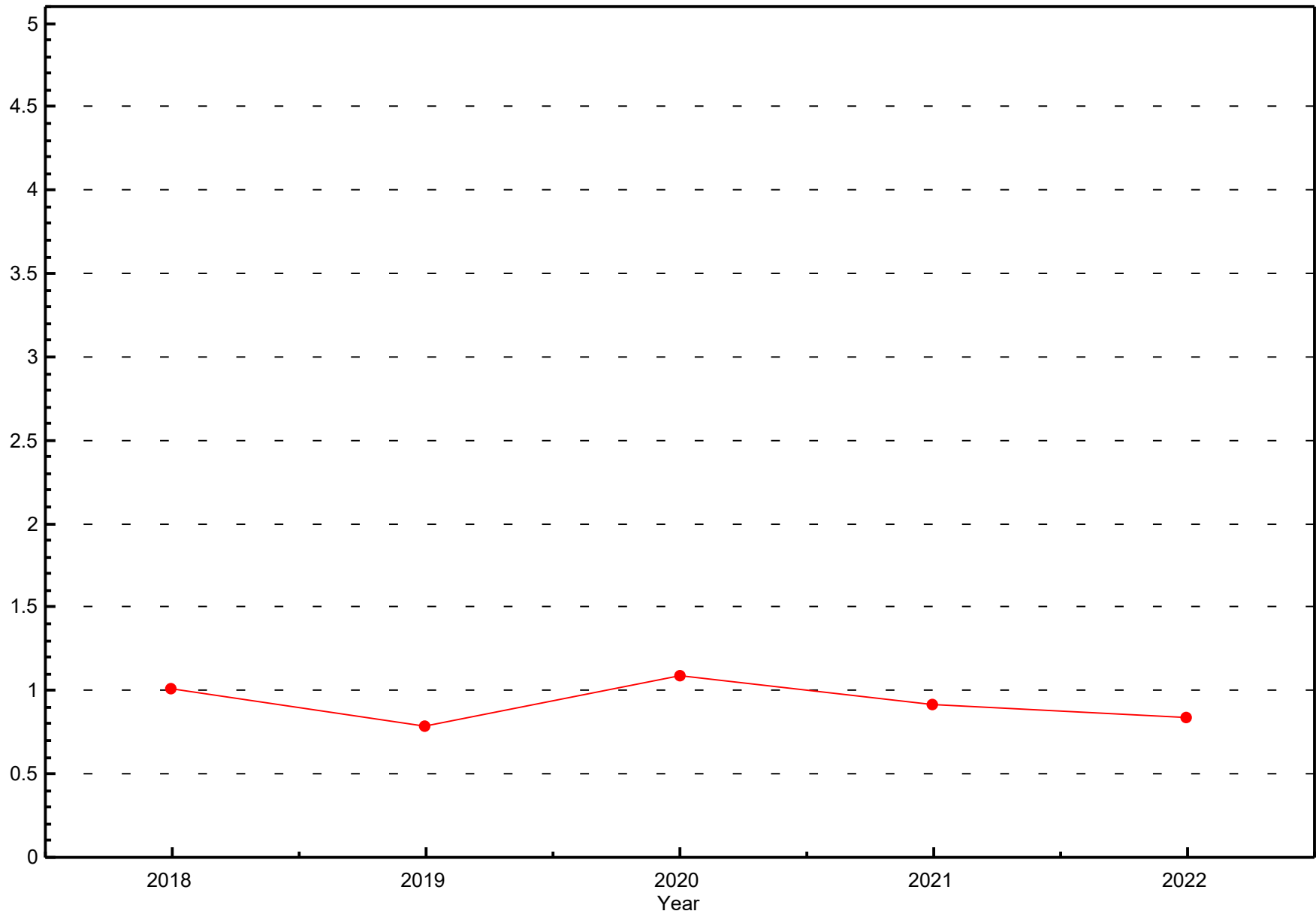




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

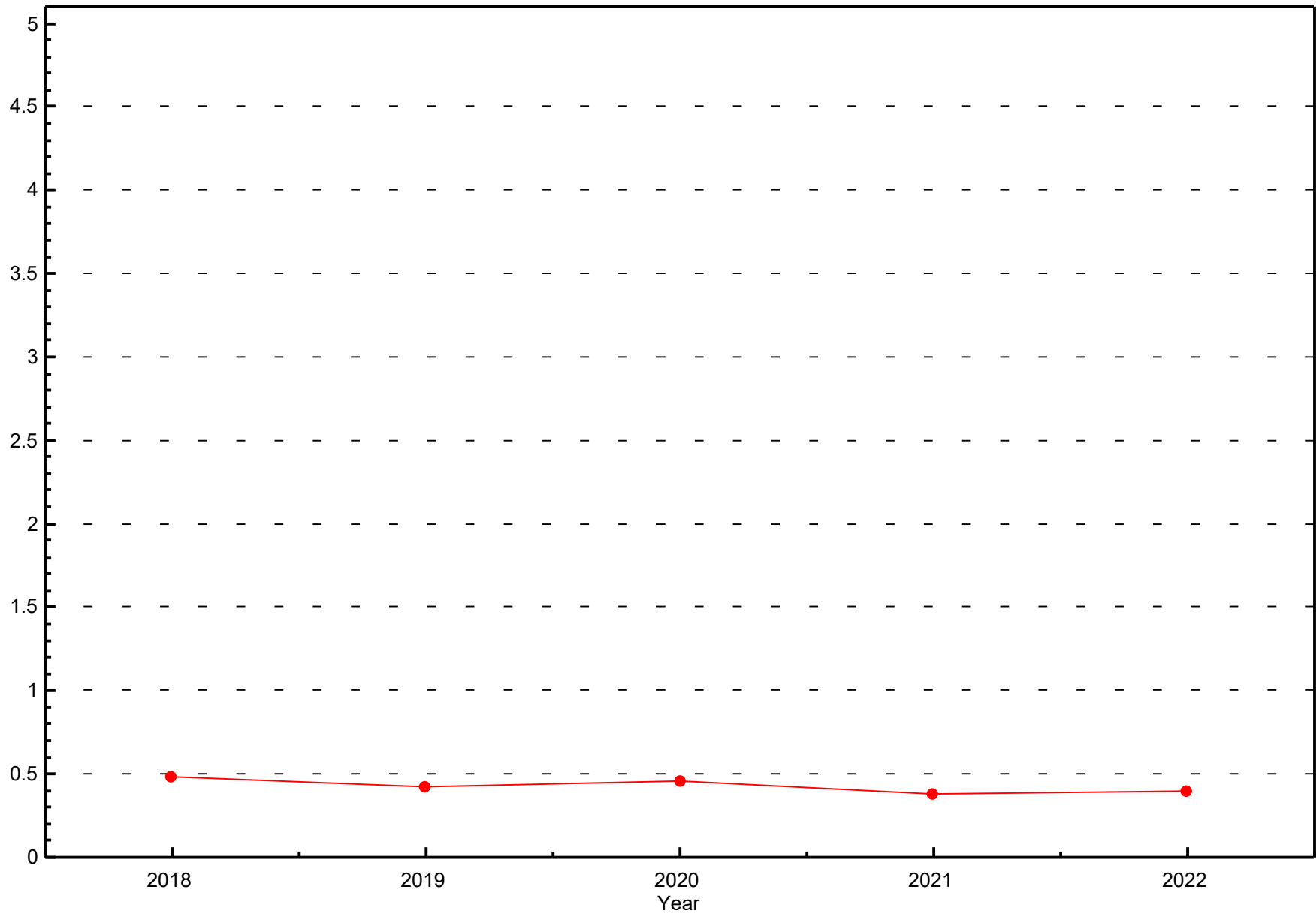
Wapasu (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Stony Mountain (2018 to 2022)

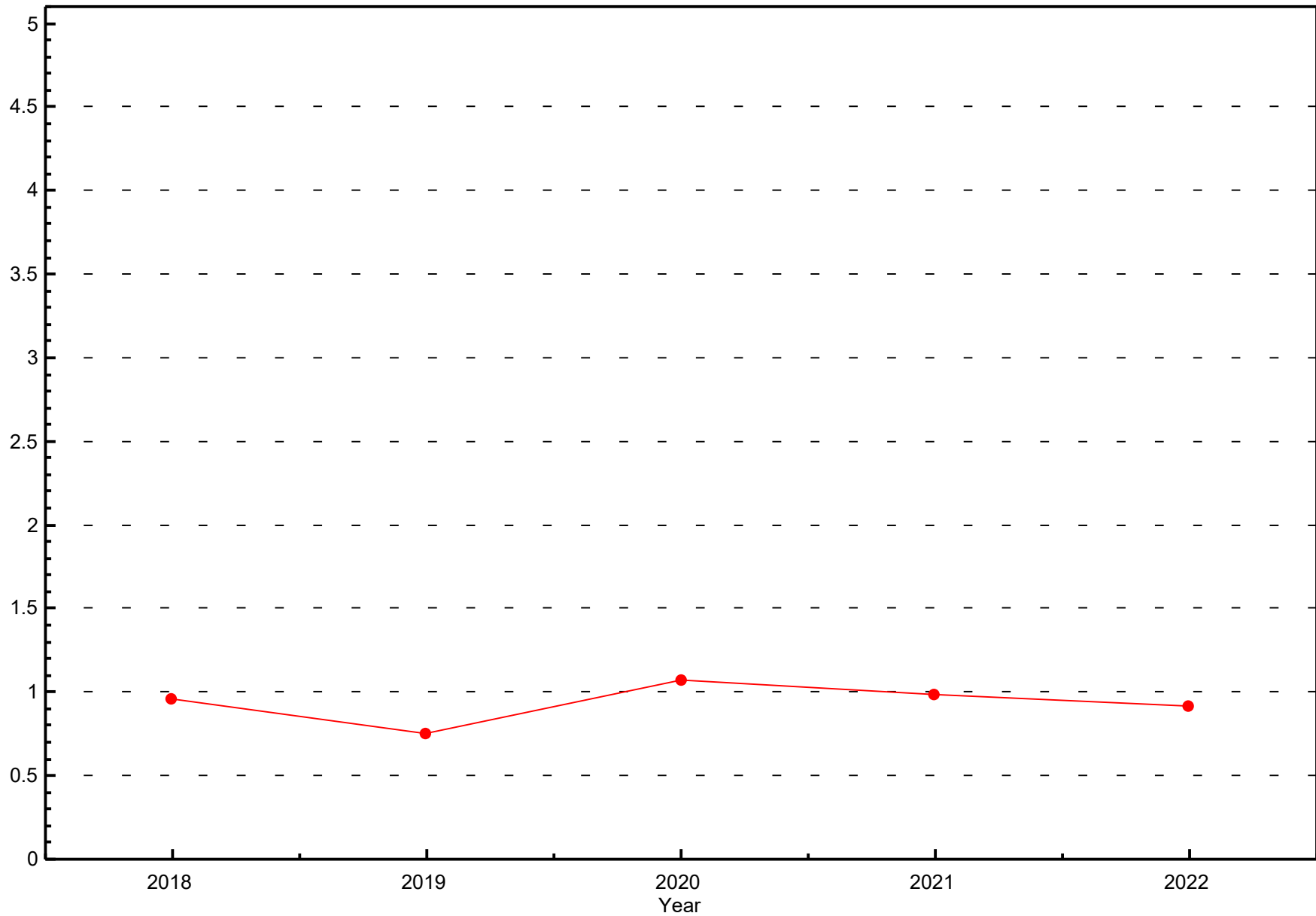




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

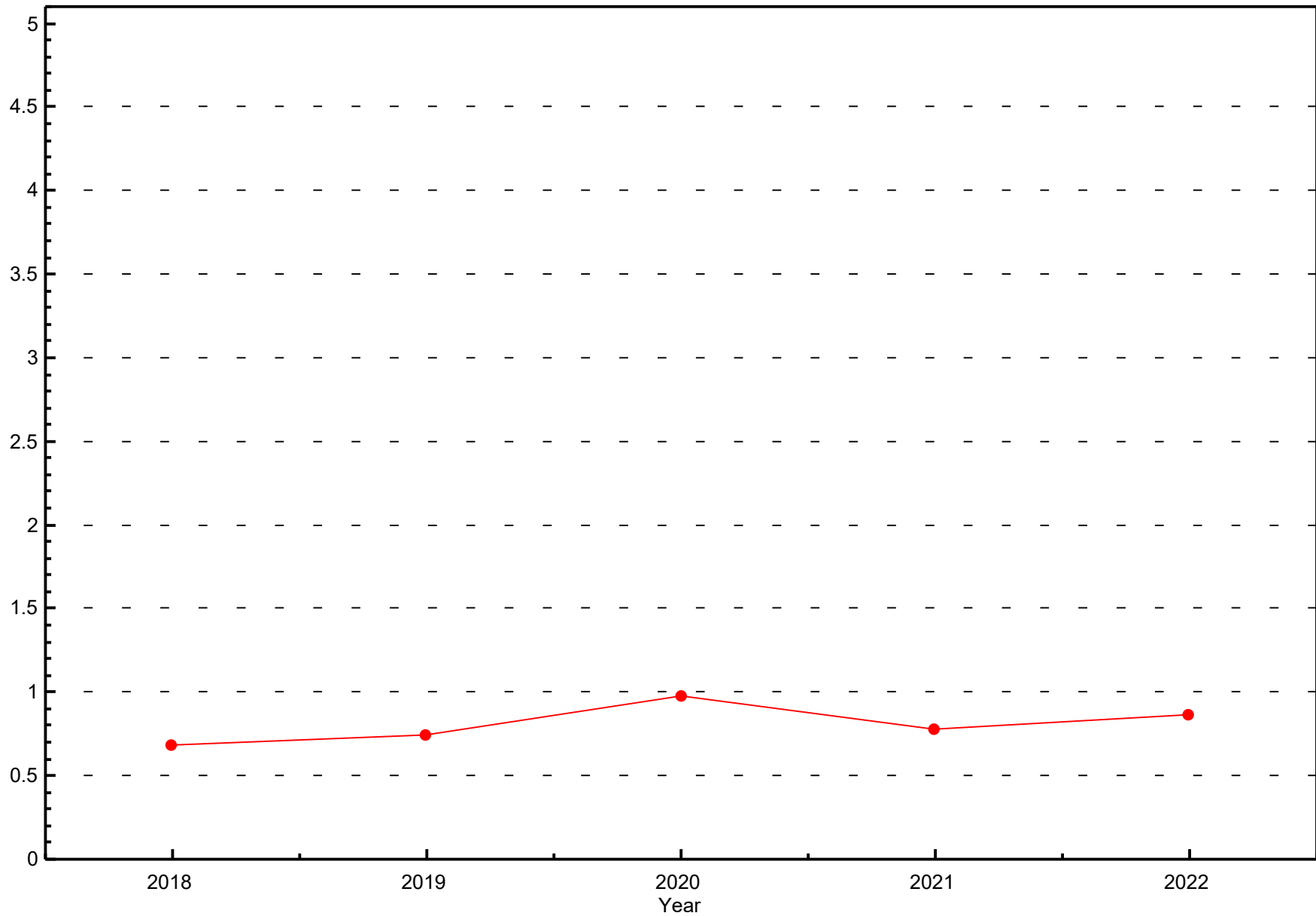
Firebag (2018 to 2022)





Yearly Averages

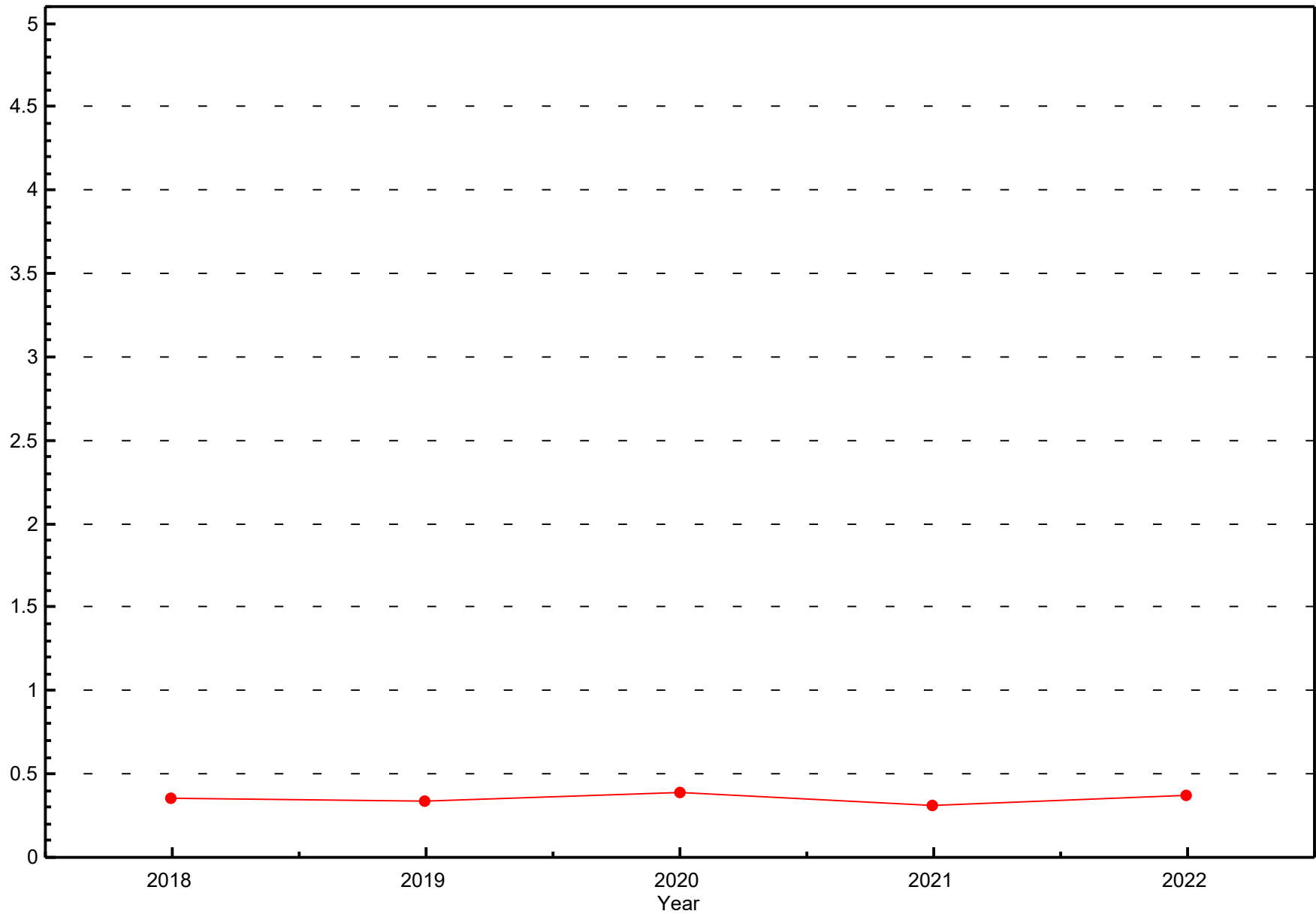
Sulphur Dioxide (SO₂) - ppb
Mackay River (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Conklin (2018 to 2022)

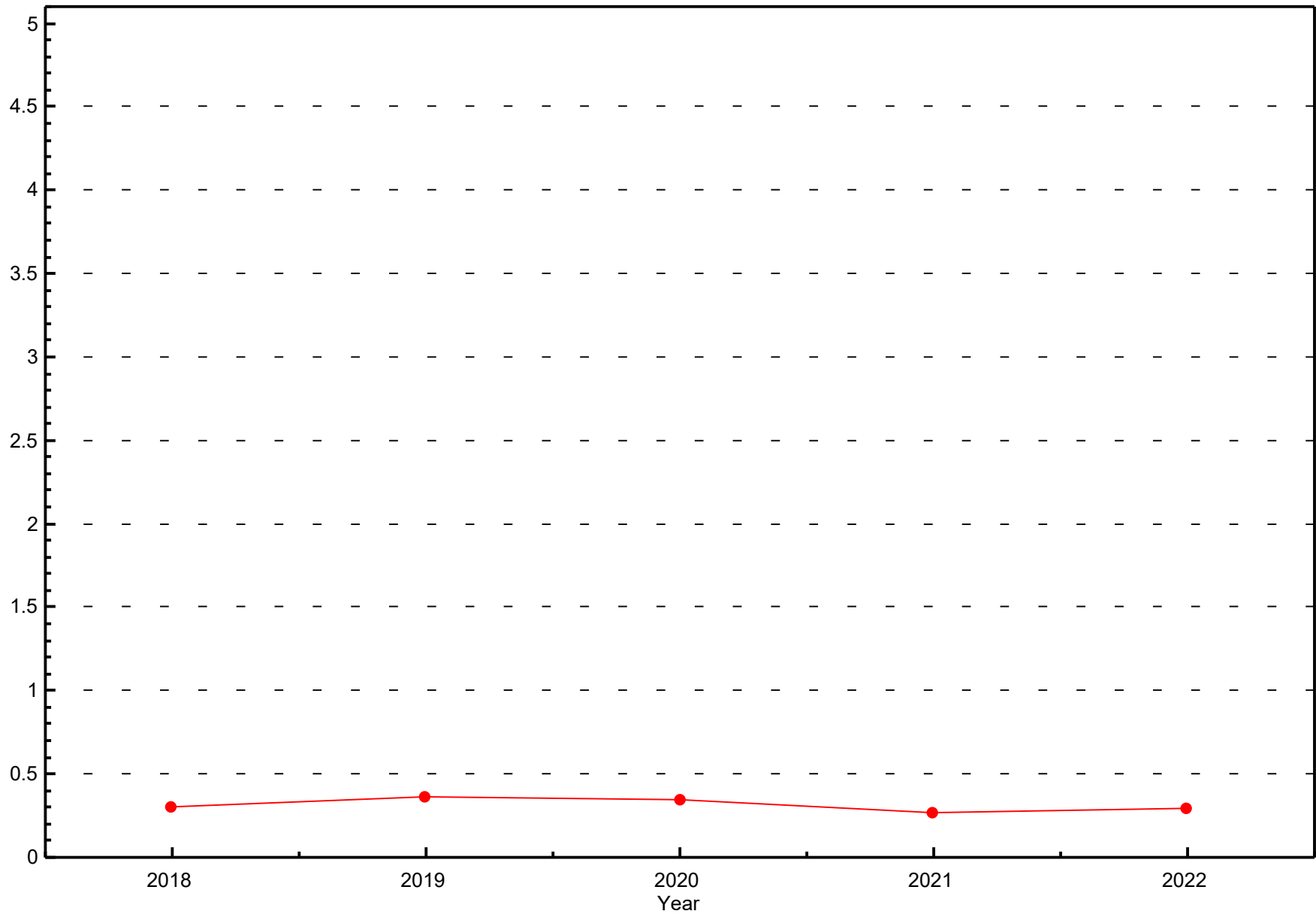




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

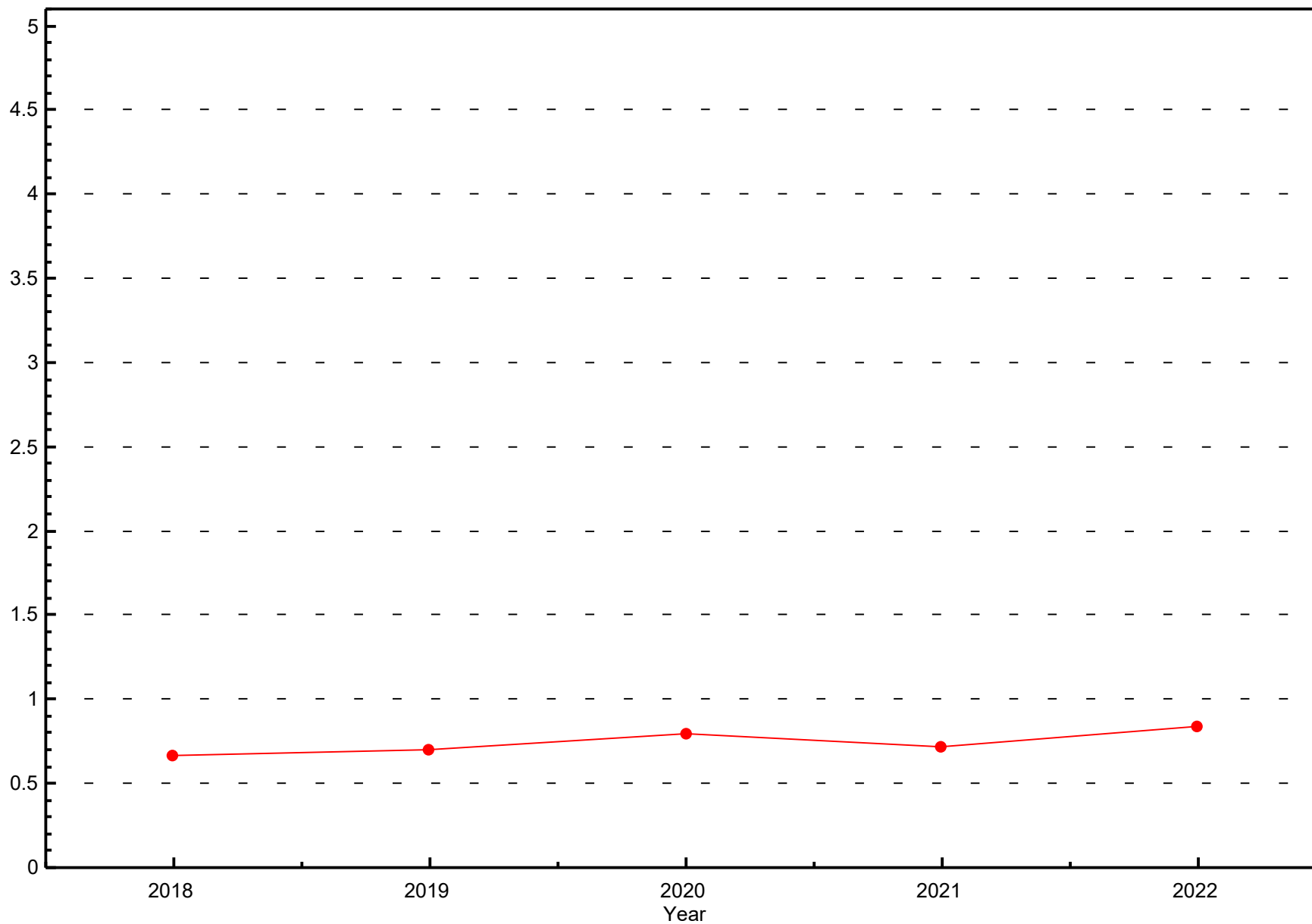
Janvier (2018 to 2022)





Yearly Averages

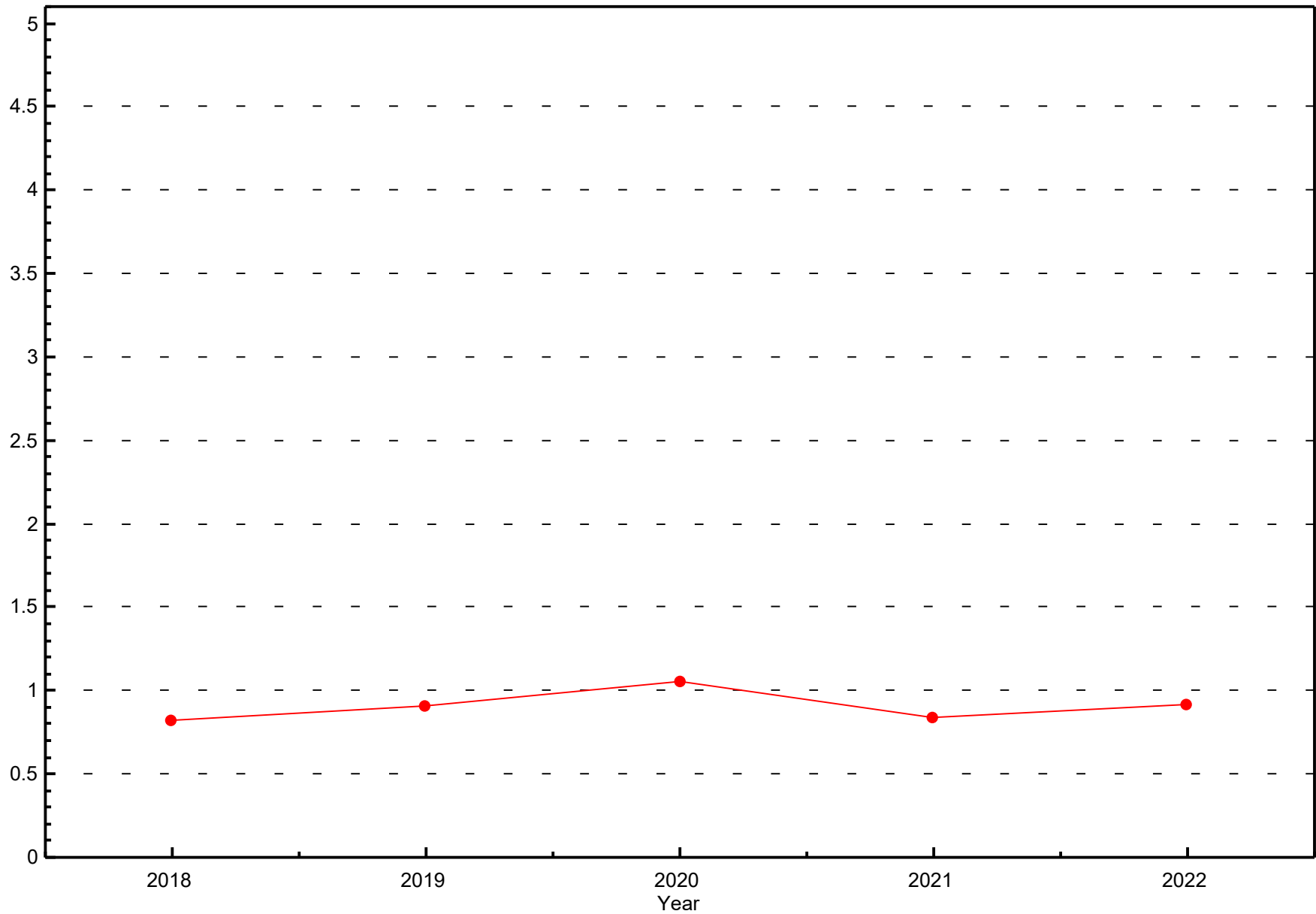
Sulphur Dioxide (SO₂) - ppb
Fort Hills (2018 to 2022)





Yearly Averages

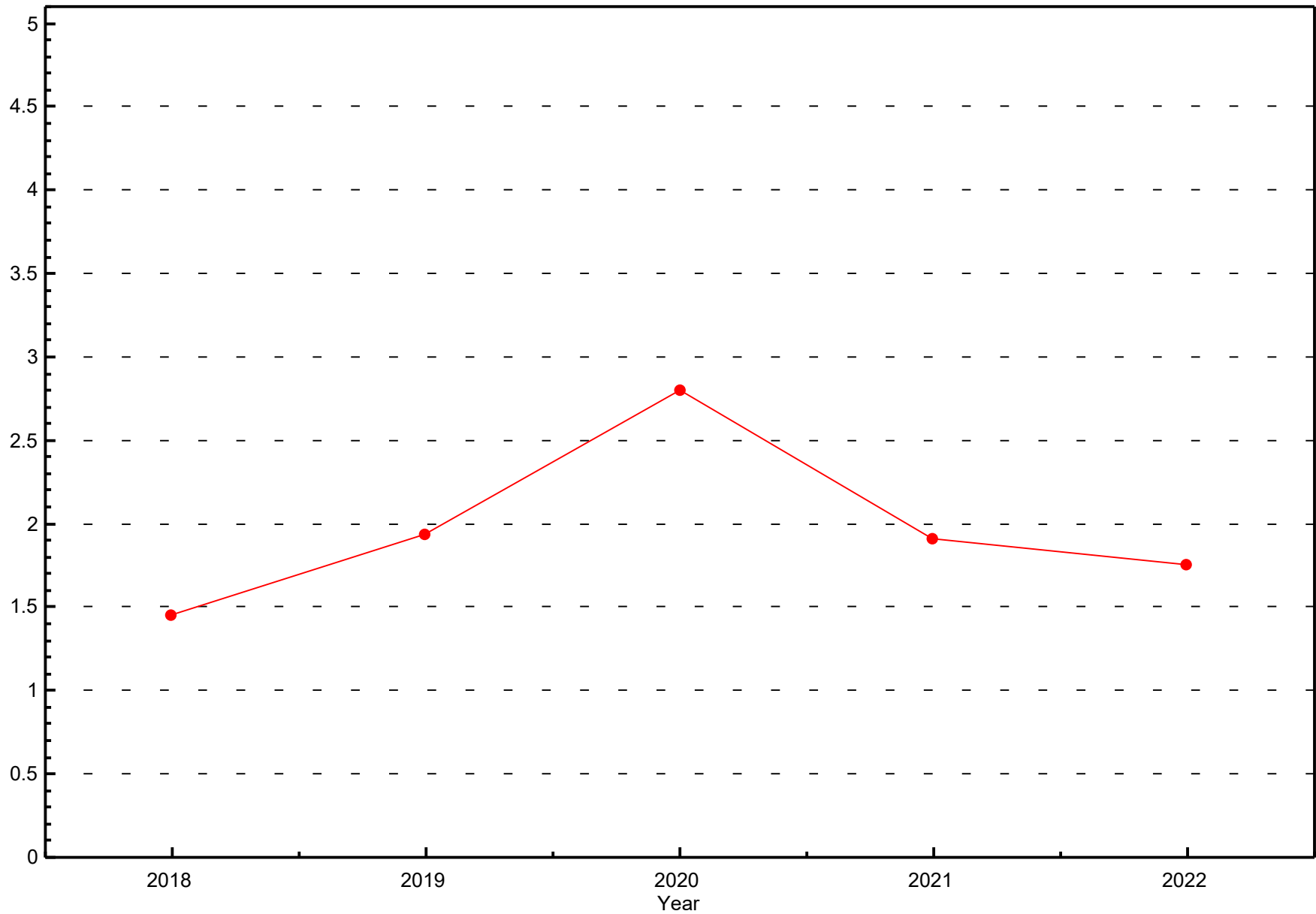
Sulphur Dioxide (SO₂) - ppb
Waskow ohci Pimatisiwin (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Christina Lake (2018 to 2022)

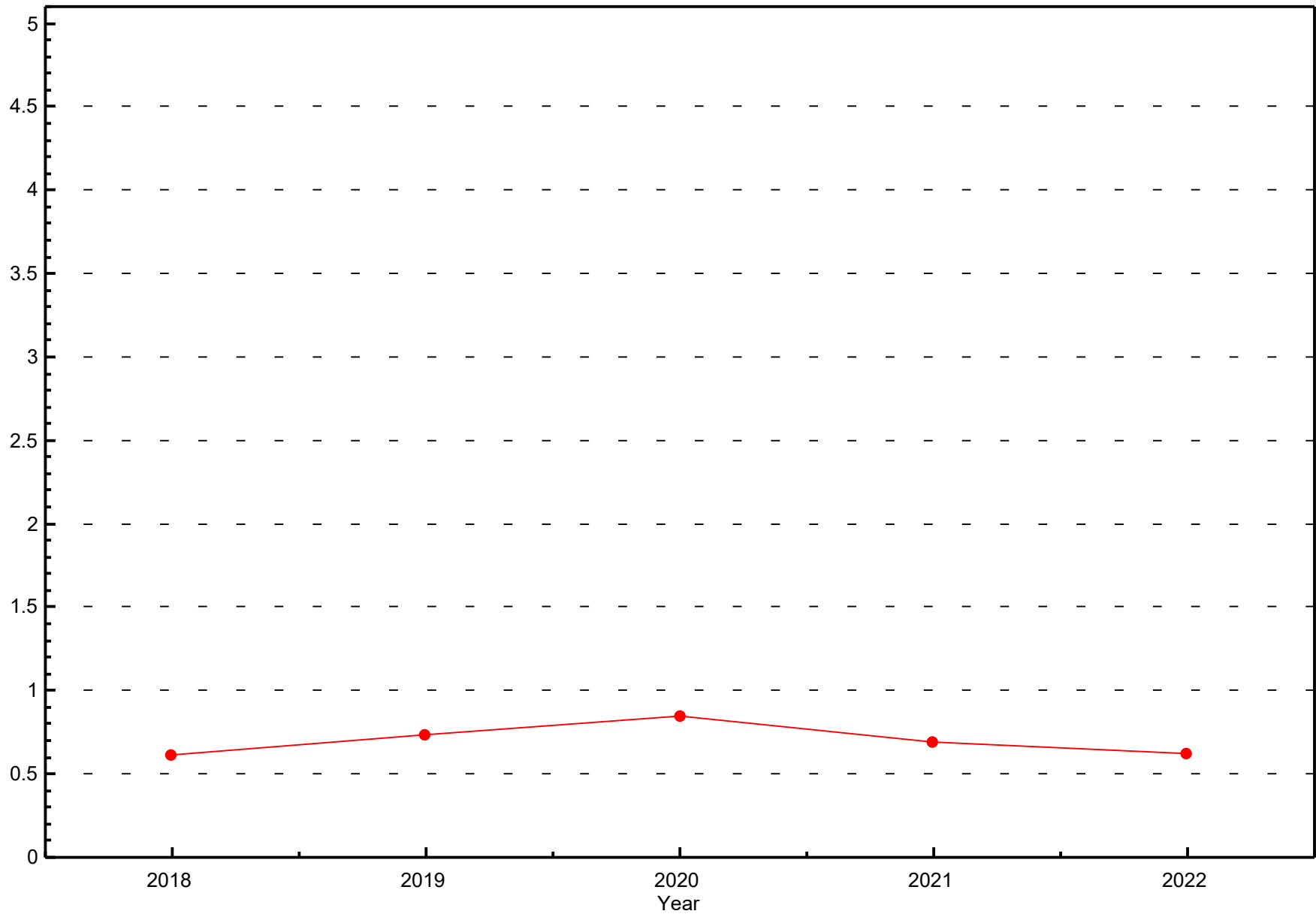




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

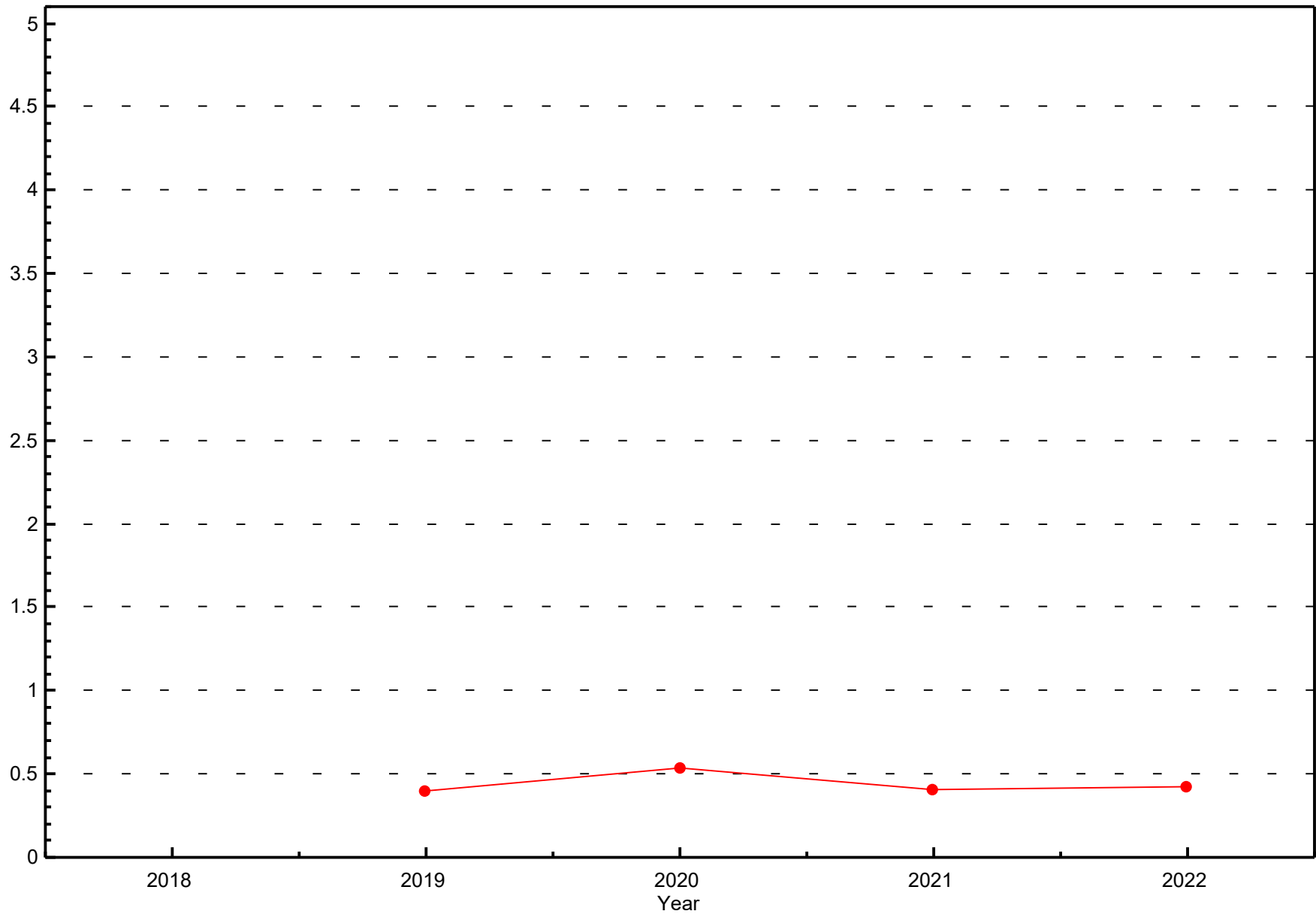
Jackfish 2/3 (2018 to 2022)





Yearly Averages

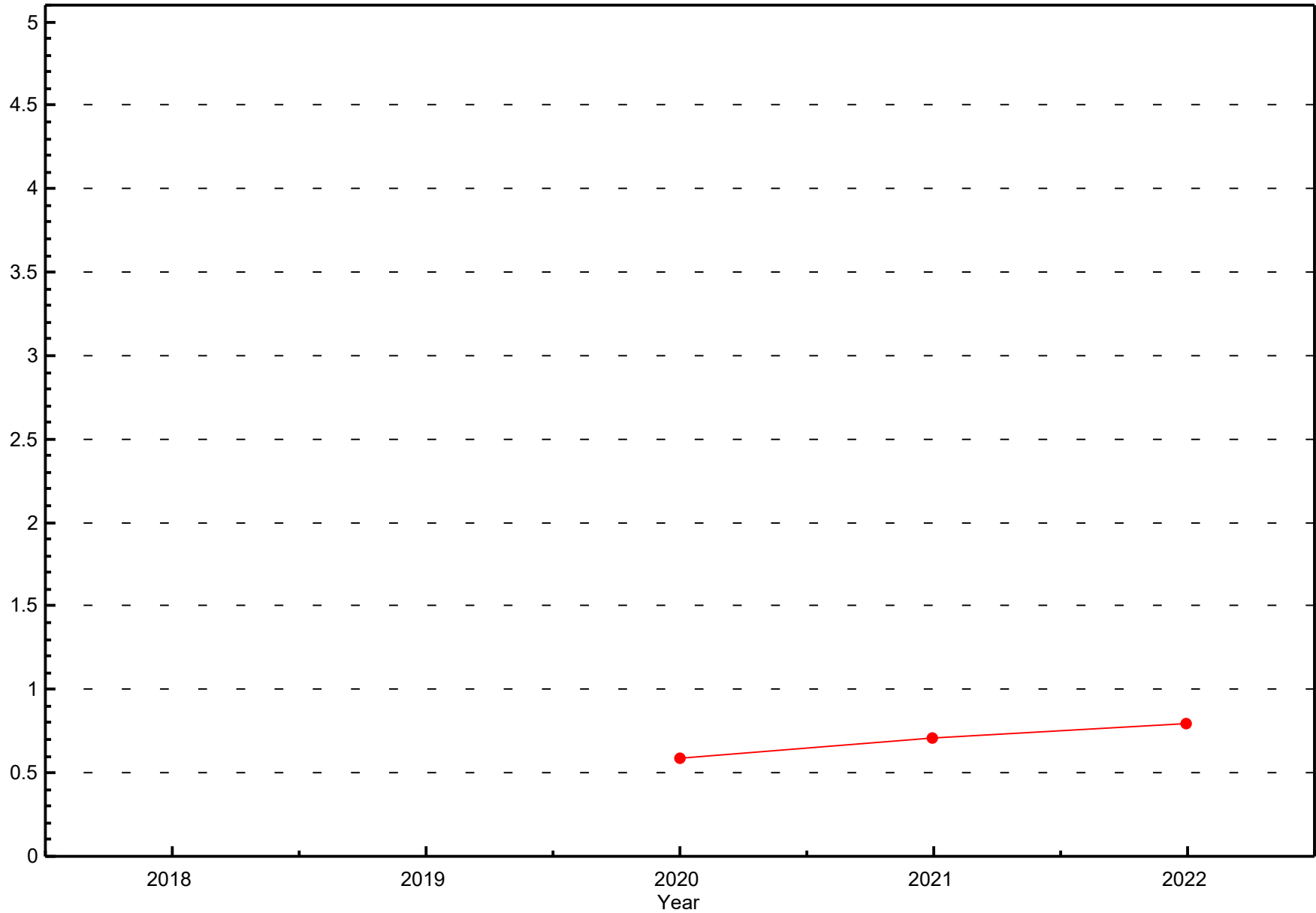
Sulphur Dioxide (SO₂) - ppb
Surmont 2 (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Ells River (2018 to 2022)

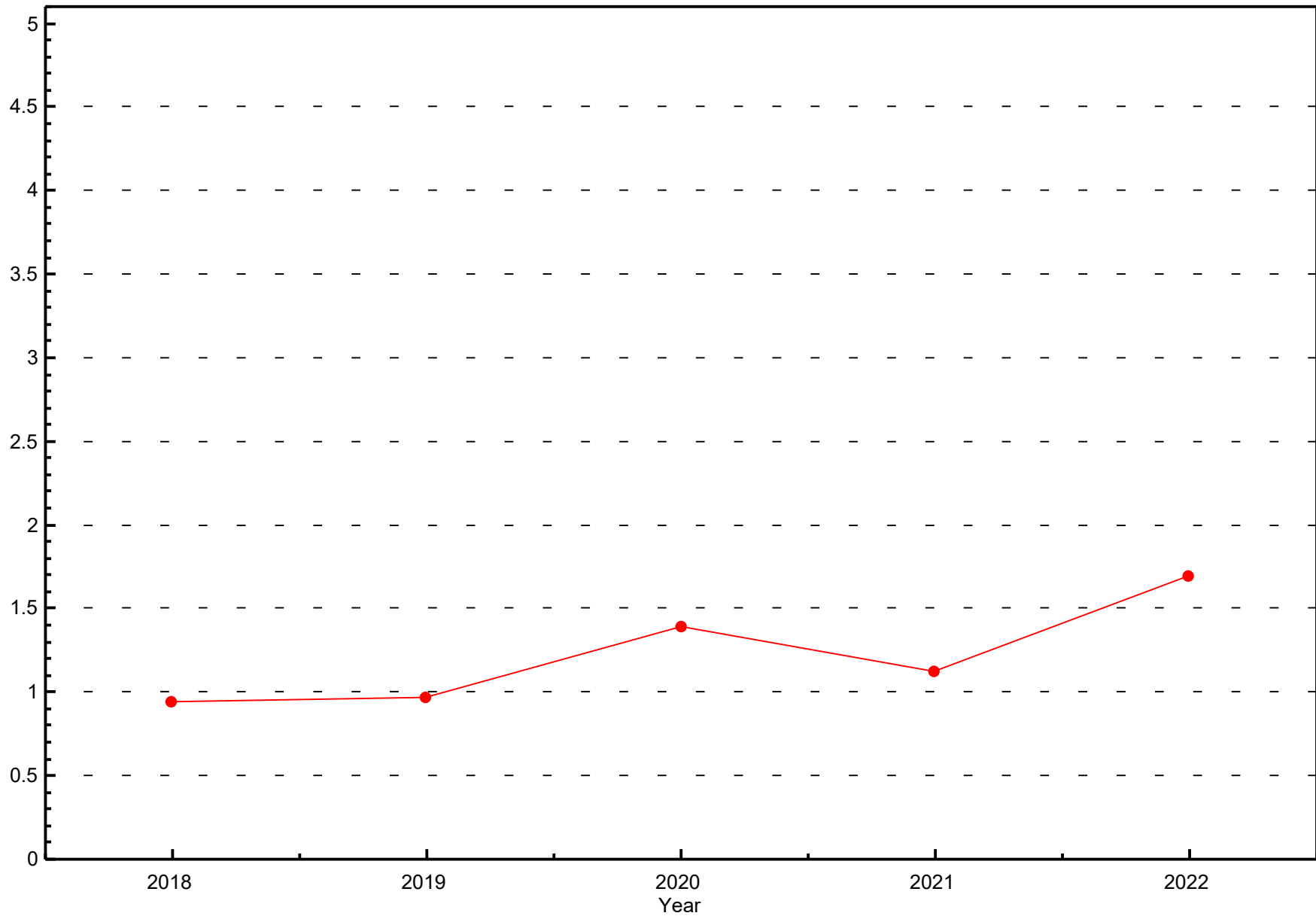




Yearly Averages

Sulphur Dioxide (SO₂) - ppb

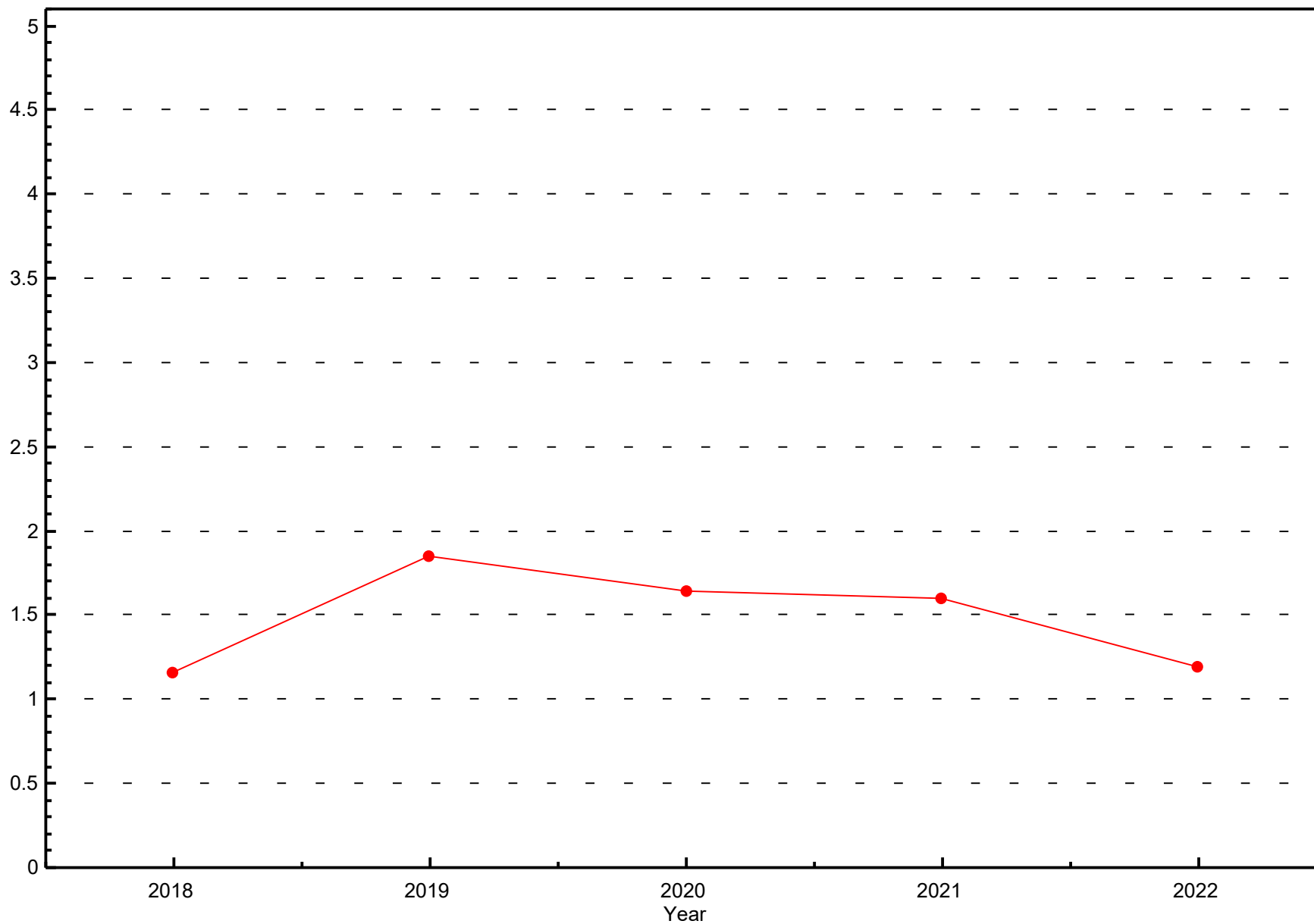
Leismer (2018 to 2022)





Yearly Averages

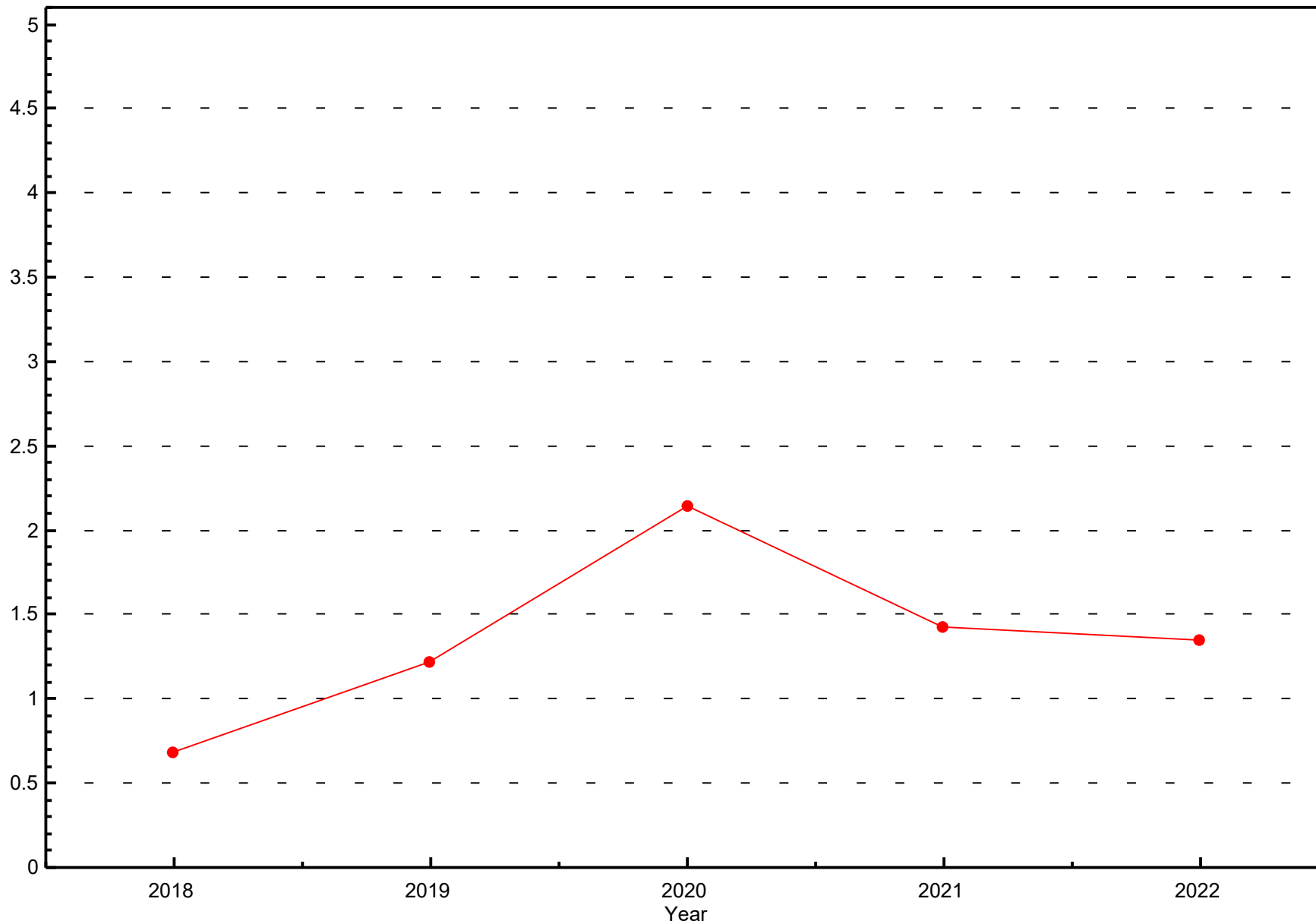
Sulphur Dioxide (SO₂) - ppb
Sawbones Bay (2018 to 2022)





Yearly Averages

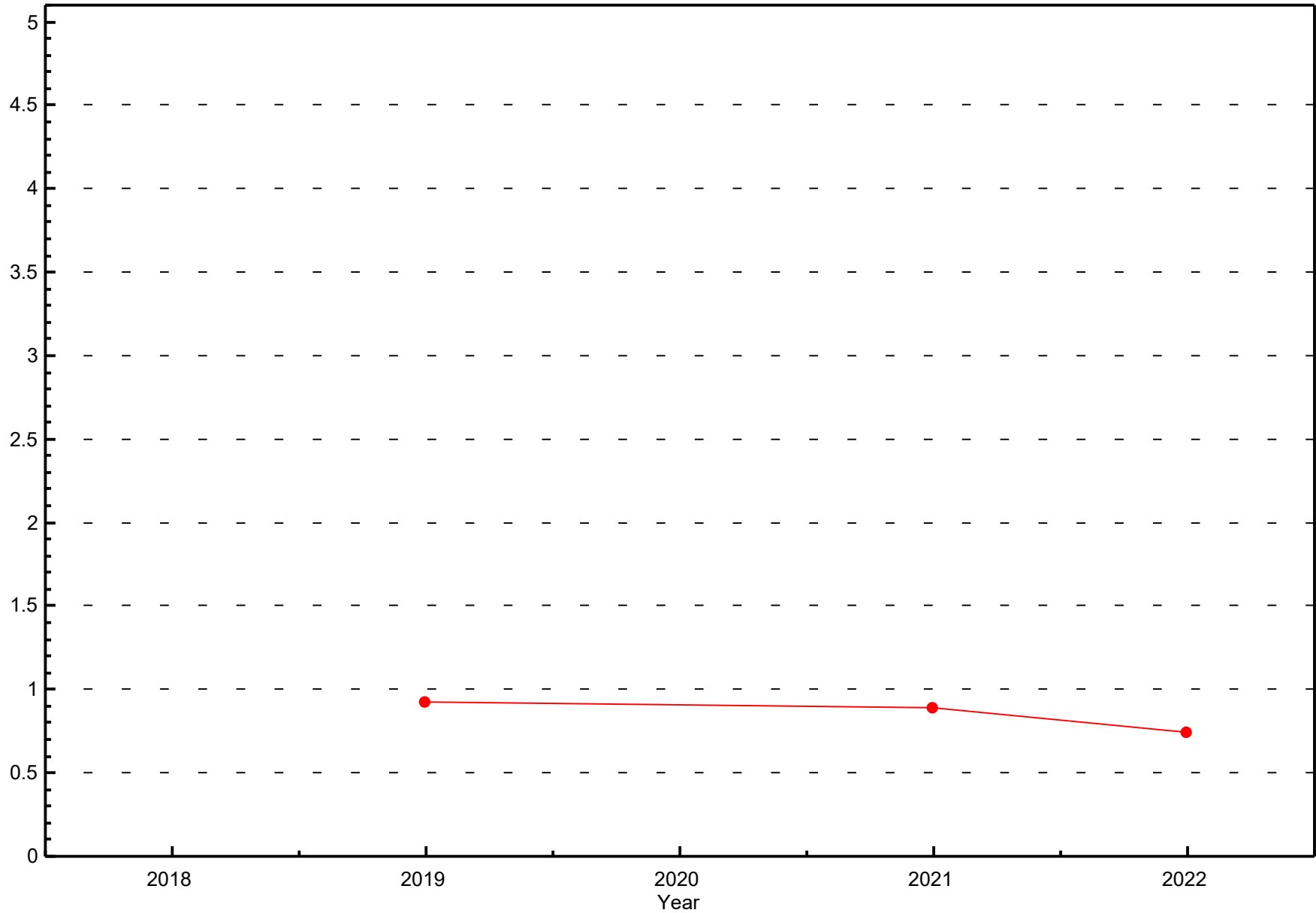
Sulphur Dioxide (SO₂) - ppb
Jackfish 1 (2018 to 2022)





Yearly Averages

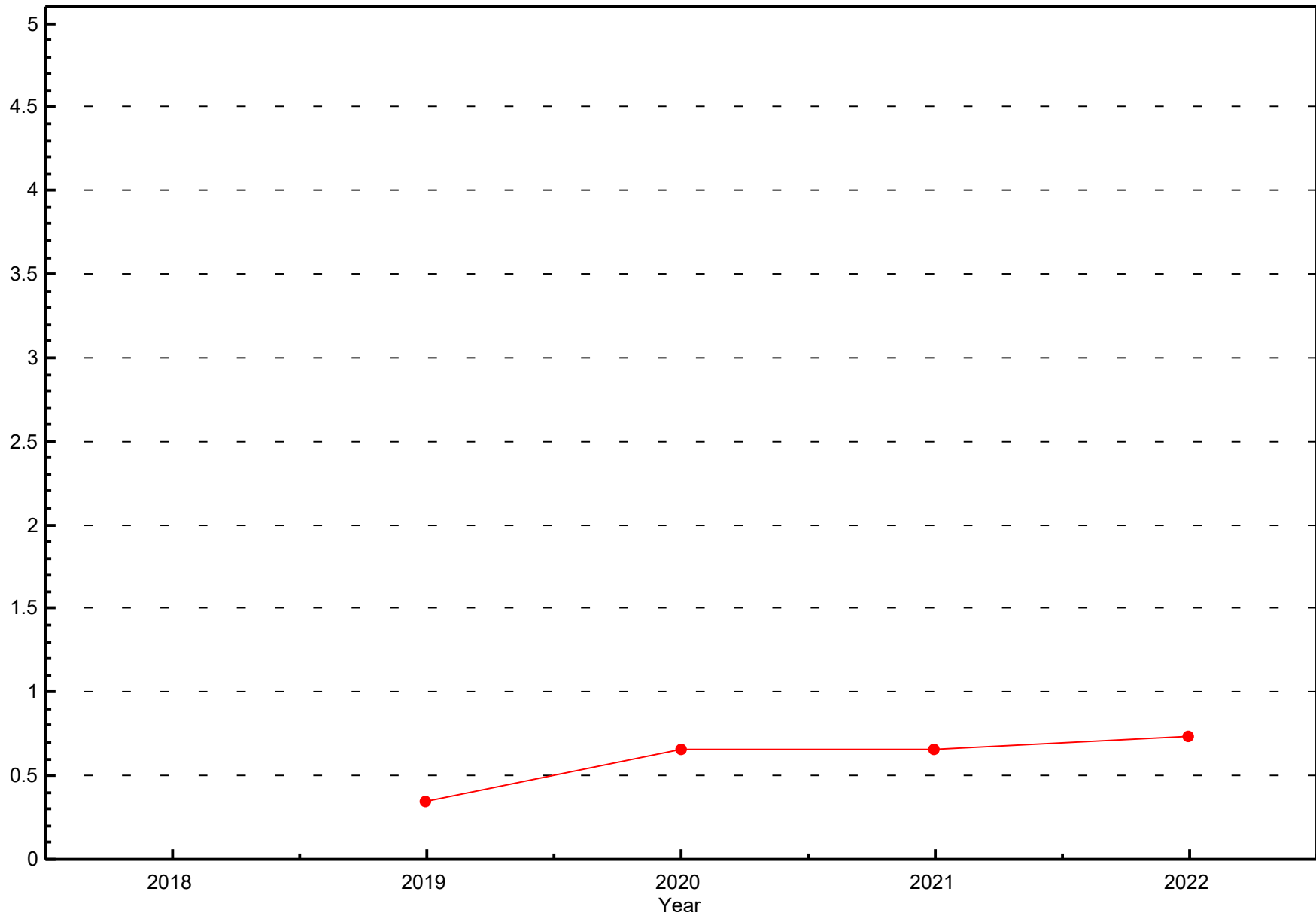
Sulphur Dioxide (SO₂) - ppb
Kirby South (2018 to 2022)





Yearly Averages

Sulphur Dioxide (SO₂) - ppb
Kirby North (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

HYDROGEN SULPHIDE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	704	0.4	3.2	0	0.7	0	100.0	0.0	0.0	0.0
February	82	514	0.4	2.6	0	0.9	0	100.0	0.0	0.0	0.0
March	100	706	0.4	4.4	0	1.4	0	99.7	0.3	0.0	0.0
April	100	684	0.1	2.0	0	0.4	0	100.0	0.0	0.0	0.0
May	100	704	0.1	1.2	0	0.3	0	100.0	0.0	0.0	0.0
June	99	680	0.1	1.4	0	0.3	0	100.0	0.0	0.0	0.0
July	99	702	0.2	2.6	0	0.5	0	100.0	0.0	0.0	0.0
August	100	705	0.2	1.8	0	0.5	0	100.0	0.0	0.0	0.0
September	99	673	0.3	2.3	0	0.7	0	100.0	0.0	0.0	0.0
October	100	704	0.2	2.0	0	0.5	0	100.0	0.0	0.0	0.0
November	100	681	0.2	1.6	0	0.6	0	100.0	0.0	0.0	0.0
December	99	700	0.3	3.1	0	1.0	0	100.0	0.0	0.0	0.0
Annual	98	8157	0.2	4.4	0	1.4	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	709	0.3	3.4	0	0.9	0	100.0	0.0	0.0	0.0
February	100	640	0.5	5.1	0	1.1	0	99.8	0.2	0.0	0.0
March	99	705	0.4	4.5	0	1.1	0	99.6	0.4	0.0	0.0
April	100	686	0.2	7.8	0	0.6	0	99.9	0.2	0.0	0.0
May	100	709	0.3	2.0	0	0.6	0	100.0	0.0	0.0	0.0
June	100	685	0.3	2.6	0	1.0	0	100.0	0.0	0.0	0.0
July	99	697	0.4	8.7	0	1.2	0	99.1	0.9	0.0	0.0
August	100	708	0.3	3.8	0	0.6	0	99.7	0.3	0.0	0.0
September	98	677	0.6	10.2	1	1.6	0	98.5	1.5	0.0	0.0
October	100	708	0.4	32.7	1	1.7	0	99.4	0.4	0.1	0.0
November	100	684	0.2	3.7	0	0.6	0	99.9	0.2	0.0	0.0
December	100	708	0.3	4.7	0	1.4	0	99.6	0.4	0.0	0.0
Annual	100	8316	0.4	32.7	2	1.7	0	99.6	0.4	0.0	0.0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	99	696	0.2	2.8	0	0.8	0	100.0	0.0	0.0	0.0
February	100	639	0.3	2.9	0	0.7	0	100.0	0.0	0.0	0.0
March	100	705	0.2	5.7	0	1.0	0	99.9	0.1	0.0	0.0
April	95	651	0.2	6.3	0	0.7	0	99.7	0.3	0.0	0.0
May	99	702	0.2	3.5	0	0.4	0	99.9	0.1	0.0	0.0
June	100	684	0.2	2.9	0	0.5	0	100.0	0.0	0.0	0.0
July	100	708	0.2	2.5	0	0.6	0	100.0	0.0	0.0	0.0
August	98	695	0.3	2.5	0	0.7	0	100.0	0.0	0.0	0.0
September	100	685	0.2	1.7	0	0.5	0	100.0	0.0	0.0	0.0
October	100	708	0.1	3.0	0	0.5	0	100.0	0.0	0.0	0.0
November	100	685	0.1	1.2	0	0.4	0	100.0	0.0	0.0	0.0
December	100	706	0.2	2.4	0	0.7	0	100.0	0.0	0.0	0.0
Annual	99	8264	0.2	6.3	0	1.0	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	707	0.4	2.6	0	1.3	0	100.0	0.0	0.0	0.0
February	100	637	0.5	2.3	0	1.0	0	100.0	0.0	0.0	0.0
March	100	707	0.3	2.2	0	1.0	0	100.0	0.0	0.0	0.0
April	100	684	0.3	3.9	0	1.0	0	99.9	0.2	0.0	0.0
May	100	708	0.2	4.4	0	0.9	0	99.9	0.1	0.0	0.0
June	100	683	0.4	4.0	0	1.5	0	99.7	0.3	0.0	0.0
July	99	704	0.3	6.9	0	0.9	0	99.4	0.6	0.0	0.0
August	97	683	0.5	11.4	2	2.3	0	97.8	1.9	0.3	0.0
September	99	681	0.5	6.1	0	3.2	1	98.2	1.8	0.0	0.0
October	100	709	0.4	9.5	0	2.2	0	98.6	1.4	0.0	0.0
November	96	657	0.3	2.4	0	0.9	0	100.0	0.0	0.0	0.0
December	100	706	0.4	4.7	0	1.5	0	99.6	0.4	0.0	0.0
Annual	99	8266	0.4	11.4	2	3.2	1	99.4	0.5	0.0	0.0



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	99	699	0.4	5.8	0	1.0	0	99.9	0.1	0.0	0.0
February	100	636	0.5	3.9	0	1.3	0	99.8	0.2	0.0	0.0
March	100	708	0.8	8.3	0	2.7	0	95.8	4.2	0.0	0.0
April	100	684	0.3	6.7	0	1.5	0	98.8	1.2	0.0	0.0
May	100	704	0.3	16.1	2	0.5	0	99.2	0.6	0.3	0.0
June	100	683	0.5	12.1	1	1.3	0	98.5	1.3	0.2	0.0
July	100	706	0.5	6.9	0	1.4	0	98.4	1.6	0.0	0.0
August	99	699	0.7	9.9	0	1.9	0	98.4	1.6	0.0	0.0
September	100	685	0.7	6.1	0	1.7	0	98.4	1.6	0.0	0.0
October	97	682	0.6	5.2	0	1.8	0	98.8	1.2	0.0	0.0
November	100	684	0.4	11.3	1	1.4	0	99.3	0.6	0.2	0.0
December	99	700	0.3	4.4	0	0.9	0	99.7	0.3	0.0	0.0
Annual	99	8270	0.5	16.1	4	2.7	0	98.8	1.2	0.1	0.0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	708	0.2	2.3	0	1.1	0	100.0	0.0	0.0	0.0
February	100	639	0.1	1.4	0	0.5	0	100.0	0.0	0.0	0.0
March	100	709	0.1	2.5	0	0.5	0	100.0	0.0	0.0	0.0
April	100	685	0.1	1.4	0	0.3	0	100.0	0.0	0.0	0.0
May	100	708	0.1	0.7	0	0.2	0	100.0	0.0	0.0	0.0
June	100	684	0.1	1.2	0	0.3	0	100.0	0.0	0.0	0.0
July	100	708	0.1	1.0	0	0.2	0	100.0	0.0	0.0	0.0
August	100	708	0.2	1.6	0	0.4	0	100.0	0.0	0.0	0.0
September	100	685	0.1	1.6	0	0.2	0	100.0	0.0	0.0	0.0
October	100	709	0.1	1.8	0	0.5	0	100.0	0.0	0.0	0.0
November	100	683	0.1	1.5	0	0.5	0	100.0	0.0	0.0	0.0
December	100	708	0.1	1.2	0	0.3	0	100.0	0.0	0.0	0.0
Annual	100	8334	0.1	2.5	0	1.1	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	0.3	6.1	0	1.1	0	99.3	0.7	0.0	0.0
February	100	640	0.2	2.1	0	0.4	0	100.0	0.0	0.0	0.0
March	100	708	0.1	2.1	0	0.3	0	100.0	0.0	0.0	0.0
April	100	683	0.1	0.9	0	0.2	0	100.0	0.0	0.0	0.0
May	100	708	0.1	9.8	0	1.1	0	99.4	0.6	0.0	0.0
June	100	685	0.2	4.9	0	0.7	0	99.6	0.4	0.0	0.0
July	100	708	0.2	2.0	0	0.4	0	100.0	0.0	0.0	0.0
August	99	701	0.2	3.5	0	0.6	0	99.7	0.3	0.0	0.0
September	100	686	0.1	2.2	0	0.5	0	100.0	0.0	0.0	0.0
October	100	707	0.1	2.6	0	0.4	0	100.0	0.0	0.0	0.0
November	100	683	0.1	3.0	0	0.4	0	100.0	0.0	0.0	0.0
December	100	707	0.1	1.6	0	0.4	0	100.0	0.0	0.0	0.0
Annual	100	8323	0.2	9.8	0	1.1	0	99.8	0.2	0.0	0.0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values		Maximum 24-Hour Value	Number of Values Exceeding 24-Hour Objective	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective	Exceeding 24-Hour Objective			0 - 3	4 - 10	11 - 50	> 50
January	100	706	0.4	2.3	0	0	1.1	0	100.0	0.0	0.0	0.0
February	100	640	0.3	3.2	0	0	0.6	0	100.0	0.0	0.0	0.0
March	100	706	0.3	3.1	0	0	0.7	0	100.0	0.0	0.0	0.0
April	100	684	0.4	6.0	0	0	1.3	0	99.4	0.6	0.0	0.0
May	100	707	0.3	3.0	0	0	0.5	0	100.0	0.0	0.0	0.0
June	100	684	0.3	2.9	0	0	0.5	0	100.0	0.0	0.0	0.0
July	100	708	0.4	5.6	0	0	0.8	0	99.6	0.4	0.0	0.0
August	100	707	0.4	2.7	0	0	0.8	0	100.0	0.0	0.0	0.0
September	100	684	0.3	2.7	0	0	0.6	0	100.0	0.0	0.0	0.0
October	100	708	0.3	2.9	0	0	0.5	0	100.0	0.0	0.0	0.0
November	100	685	0.3	2.8	0	0	0.5	0	100.0	0.0	0.0	0.0
December	97	683	0.3	4.4	0	0	1.2	0	99.9	0.2	0.0	0.0
Annual	100	8302	0.3	6.0	0	0	1.3	0	99.9	0.1	0.0	0.0



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	705	0.4	3.0	0	0.6	0	100.0	0.0	0.0	0.0
February	100	638	0.4	1.8	0	0.7	0	100.0	0.0	0.0	0.0
March	100	708	0.4	4.0	0	1.0	0	99.9	0.1	0.0	0.0
April	100	684	0.2	1.7	0	0.4	0	100.0	0.0	0.0	0.0
May	100	708	0.2	1.2	0	0.4	0	100.0	0.0	0.0	0.0
June	99	680	0.2	1.6	0	0.4	0	100.0	0.0	0.0	0.0
July	99	704	0.2	2.4	0	0.5	0	100.0	0.0	0.0	0.0
August	100	706	0.2	2.0	0	0.5	0	100.0	0.0	0.0	0.0
September	99	677	0.3	2.1	0	0.7	0	100.0	0.0	0.0	0.0
October	100	709	0.2	1.8	0	0.5	0	100.0	0.0	0.0	0.0
November	100	685	0.2	1.5	0	0.6	0	100.0	0.0	0.0	0.0
December	100	707	0.3	2.8	0	1.0	0	100.0	0.0	0.0	0.0
Annual	100	8311	0.3	4.0	0	1.0	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	706	0.2	1.3	0	0.5	0	100.0	0.0	0.0	0.0
February	100	639	0.2	1.5	0	0.5	0	100.0	0.0	0.0	0.0
March	100	706	0.2	1.2	0	0.6	0	100.0	0.0	0.0	0.0
April	100	682	0.2	2.3	0	0.4	0	100.0	0.0	0.0	0.0
May	100	708	0.1	1.6	0	0.3	0	100.0	0.0	0.0	0.0
June	100	684	0.3	2.4	0	0.6	0	100.0	0.0	0.0	0.0
July	100	706	0.2	1.4	0	0.4	0	100.0	0.0	0.0	0.0
August	100	703	0.3	1.7	0	0.6	0	100.0	0.0	0.0	0.0
September	100	684	0.2	2.8	0	0.5	0	100.0	0.0	0.0	0.0
October	100	708	0.2	3.0	0	0.4	0	100.0	0.0	0.0	0.0
November	100	685	0.2	1.0	0	0.4	0	100.0	0.0	0.0	0.0
December	100	709	0.2	1.1	0	0.5	0	100.0	0.0	0.0	0.0
Annual	100	8320	0.2	3.0	0	0.6	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	707	0.2	0.6	0	0.3	0	100.0	0.0	0.0	0.0
February	100	636	0.1	0.5	0	0.3	0	100.0	0.0	0.0	0.0
March	100	707	0.1	0.9	0	0.4	0	100.0	0.0	0.0	0.0
April	99	677	0.1	0.7	0	0.3	0	100.0	0.0	0.0	0.0
May	100	708	0.2	1.0	0	0.3	0	100.0	0.0	0.0	0.0
June	100	684	0.2	1.6	0	0.3	0	100.0	0.0	0.0	0.0
July	100	708	0.2	1.1	0	0.4	0	100.0	0.0	0.0	0.0
August	100	705	0.2	0.9	0	0.3	0	100.0	0.0	0.0	0.0
September	100	685	0.2	1.2	0	0.4	0	100.0	0.0	0.0	0.0
October	99	705	0.2	0.7	0	0.4	0	100.0	0.0	0.0	0.0
November	99	680	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
December	100	707	0.2	0.9	0	0.3	0	100.0	0.0	0.0	0.0
Annual	100	8309	0.2	1.6	0	0.4	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Number of Values		Number of Values		% of Data in Each Concentration Range			
				Maximum 1-Hour Value	Exceeding 1-Hour Objective	Maximum 24-Hour Value	Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	99	703	0.1	0.8	0	0.3	0	100.0	0.0	0.0	0.0
February	96	610	0.1	0.5	0	0.3	0	100.0	0.0	0.0	0.0
March	98	694	0.1	0.7	0	0.2	0	100.0	0.0	0.0	0.0
April	100	681	0.1	0.5	0	0.2	0	100.0	0.0	0.0	0.0
May	100	708	0.1	0.5	0	0.3	0	100.0	0.0	0.0	0.0
June	99	678	0.1	0.9	0	0.2	0	100.0	0.0	0.0	0.0
July	100	707	0.1	1.2	0	0.2	0	100.0	0.0	0.0	0.0
August	100	707	0.1	1.2	0	0.3	0	100.0	0.0	0.0	0.0
September	100	682	0.1	1.0	0	0.3	0	100.0	0.0	0.0	0.0
October	100	708	0.1	0.7	0	0.3	0	100.0	0.0	0.0	0.0
November	100	684	0.1	0.5	0	0.3	0	100.0	0.0	0.0	0.0
December	100	707	0.1	0.7	0	0.3	0	100.0	0.0	0.0	0.0
Annual	99	8269	0.1	1.2	0	0.3	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	99	704	0.1	0.7	0	0.3	0	100.0	0.0	0.0	0.0
February	100	640	0.1	0.8	0	0.3	0	100.0	0.0	0.0	0.0
March	100	708	0.0	0.5	0	0.2	0	100.0	0.0	0.0	0.0
Annual	30	2500	0.1	0.8	0	0.3	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	94	659	0.2	4.4	0	1.2	0	99.5	0.5	0.0	0.0
February	100	638	0.1	1.0	0	0.4	0	100.0	0.0	0.0	0.0
March	99	698	0.2	2.4	0	0.6	0	100.0	0.0	0.0	0.0
April	100	684	0.1	1.5	0	0.4	0	100.0	0.0	0.0	0.0
May	93	651	0.1	1.1	0	0.3	0	100.0	0.0	0.0	0.0
June	98	669	0.2	1.4	0	0.5	0	100.0	0.0	0.0	0.0
July	97	685	0.3	4.0	0	0.8	0	99.9	0.2	0.0	0.0
Annual	97	4684	0.2	4.4	0	1.2	0	99.9	0.1	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
August	96	677	0.2	1.0	0	0.4	0	100.0	0.0	0.0	0.0
September	100	686	0.3	2.7	0	0.9	0	100.0	0.0	0.0	0.0
October	100	709	0.2	13.3	1	1.4	0	99.6	0.3	0.1	0.0
November	99	681	0.1	0.5	0	0.2	0	100.0	0.0	0.0	0.0
December	97	679	0.1	0.8	0	0.4	0	100.0	0.0	0.0	0.0
Annual	98	3432	0.2	13.3	1	1.4	0	99.9	0.1	0.0	0.0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	705	0.3	1.3	0	0.6	0	100.0	0.0	0.0	0.0
February	98	625	0.3	1.2	0	0.7	0	100.0	0.0	0.0	0.0
March	95	668	0.2	1.1	0	0.6	0	100.0	0.0	0.0	0.0
April	100	684	0.2	1.3	0	0.5	0	100.0	0.0	0.0	0.0
May	96	678	0.3	5.0	0	0.4	0	99.9	0.2	0.0	0.0
June	100	630	0.3	3.7	0	0.5	0	99.8	0.2	0.0	0.0
Annual	98	3990	0.3	5.0	0	0.7	0	99.9	0.1	0.0	0.0



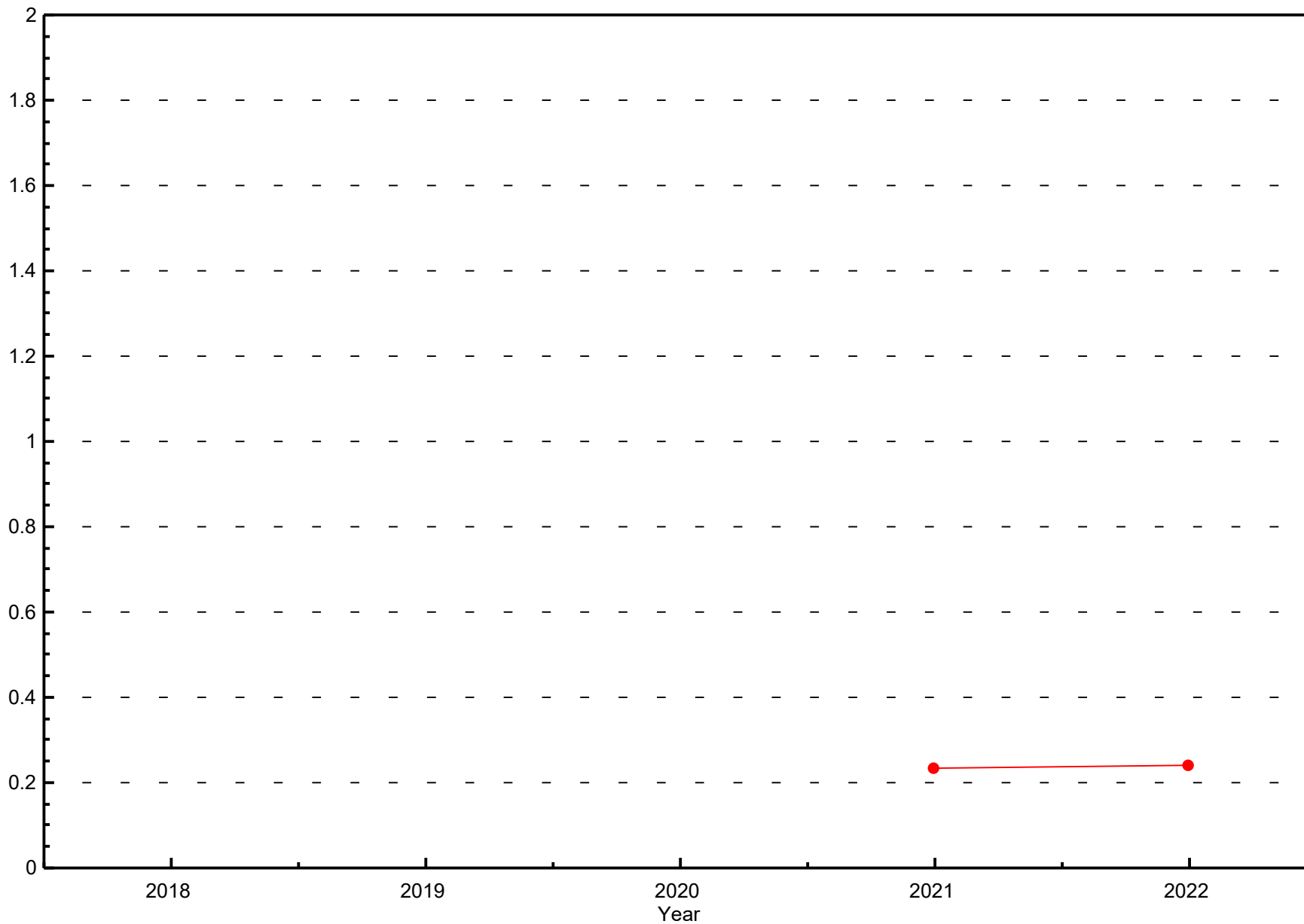
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Hydrogen Sulphide (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
July	100	706	0.3	27.0	1	2.1	0	99.2	0.7	0.1	0.0
August	100	704	0.3	4.9	0	0.6	0	99.9	0.1	0.0	0.0
September	97	664	0.3	0.7	0	0.5	0	100.0	0.0	0.0	0.0
October	100	707	0.1	0.4	0	0.1	0	100.0	0.0	0.0	0.0
November	97	661	0.1	5.0	0	0.3	0	99.9	0.2	0.0	0.0
December	100	706	0.1	0.3	0	0.2	0	100.0	0.0	0.0	0.0
Annual	99	4148	0.2	27.0	1	2.1	0	99.8	0.2	0.0	0.0



Yearly Averages

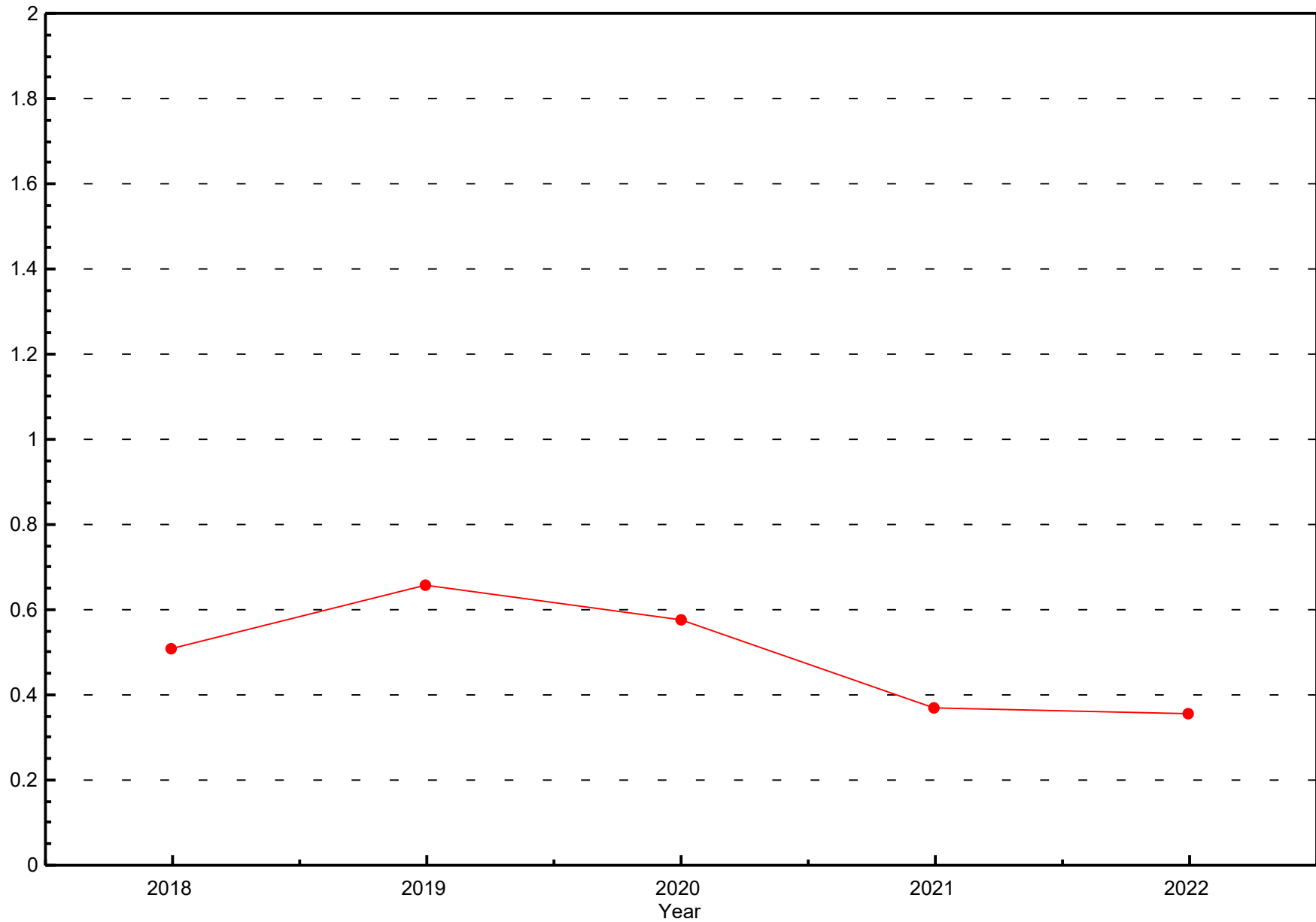
Hydrogen Sulphide (H₂S) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

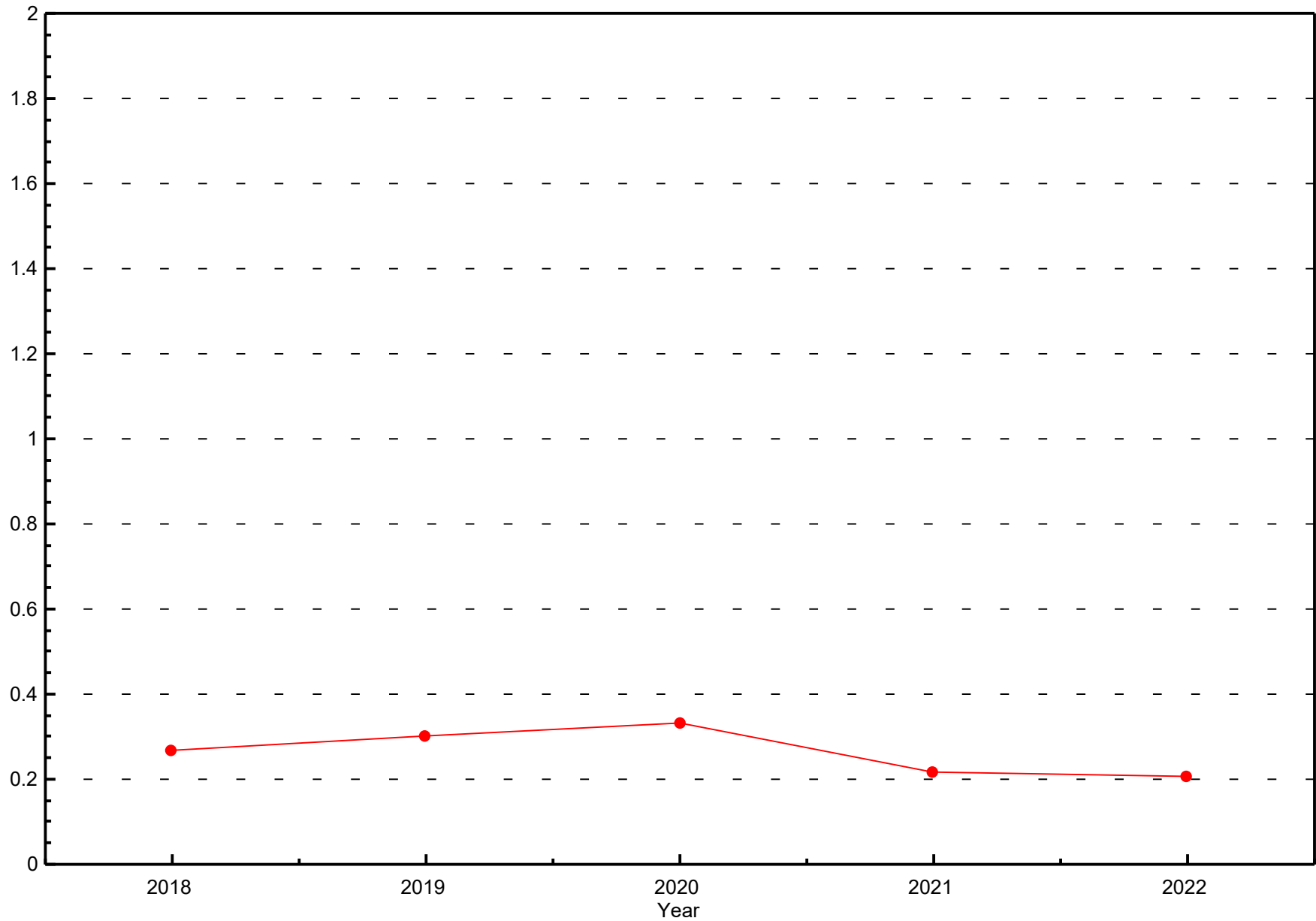
Hydrogen Sulphide (H₂S) - ppb
Mildred Lake (2018 to 2022)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Buffalo Viewpoint (2018 to 2022)

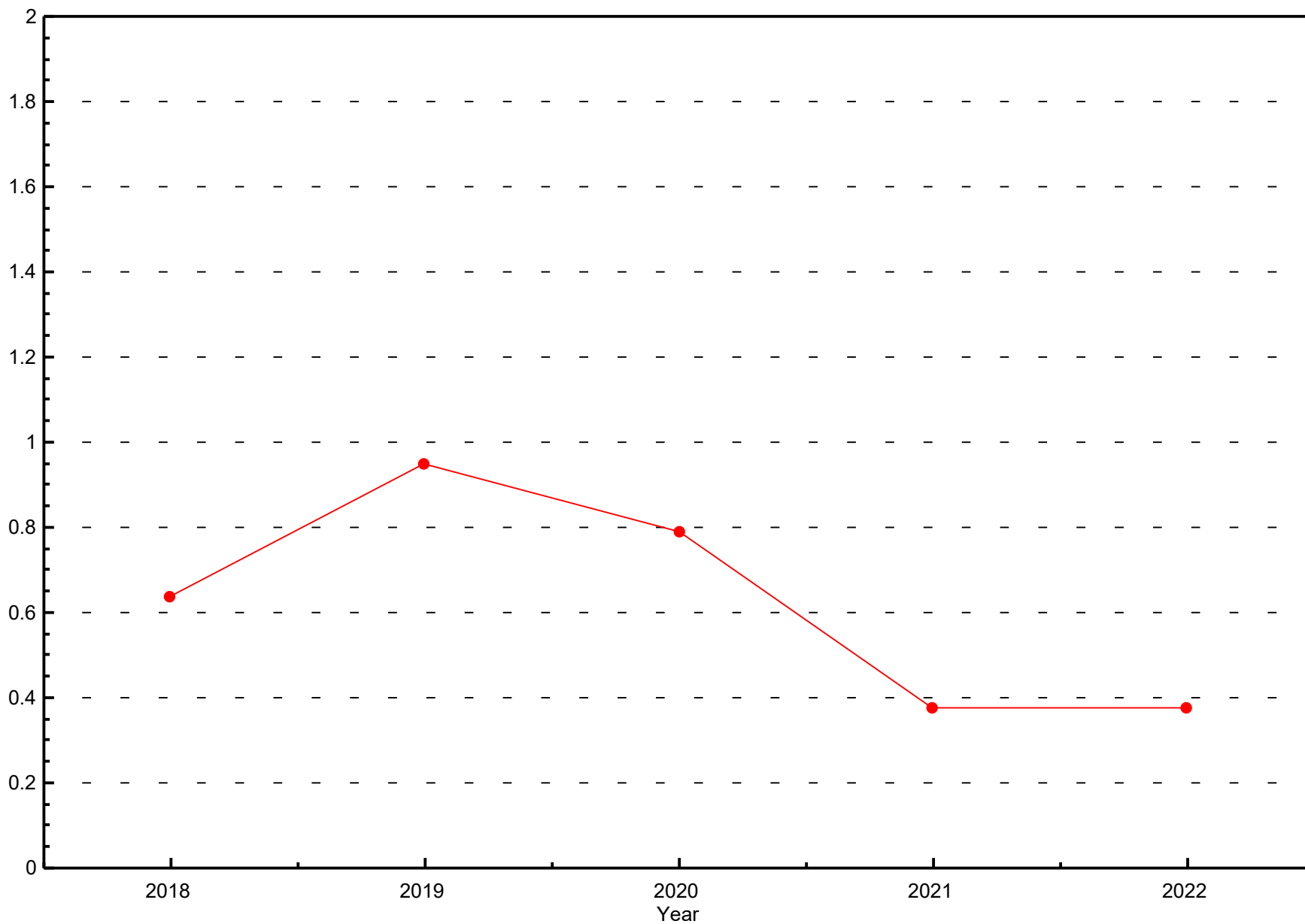




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

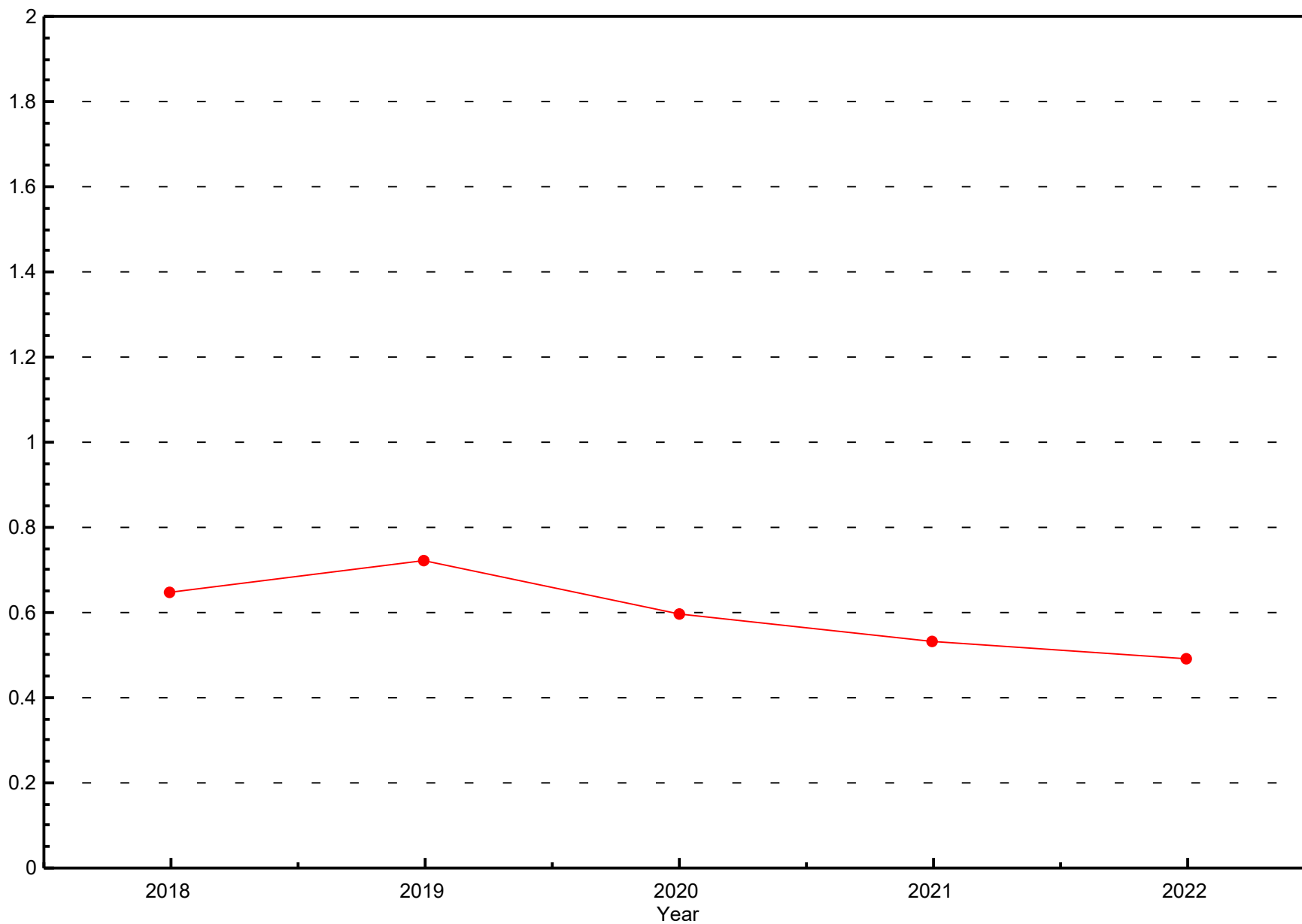
Mannix (2018 to 2022)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Lower Camp (2018 to 2022)

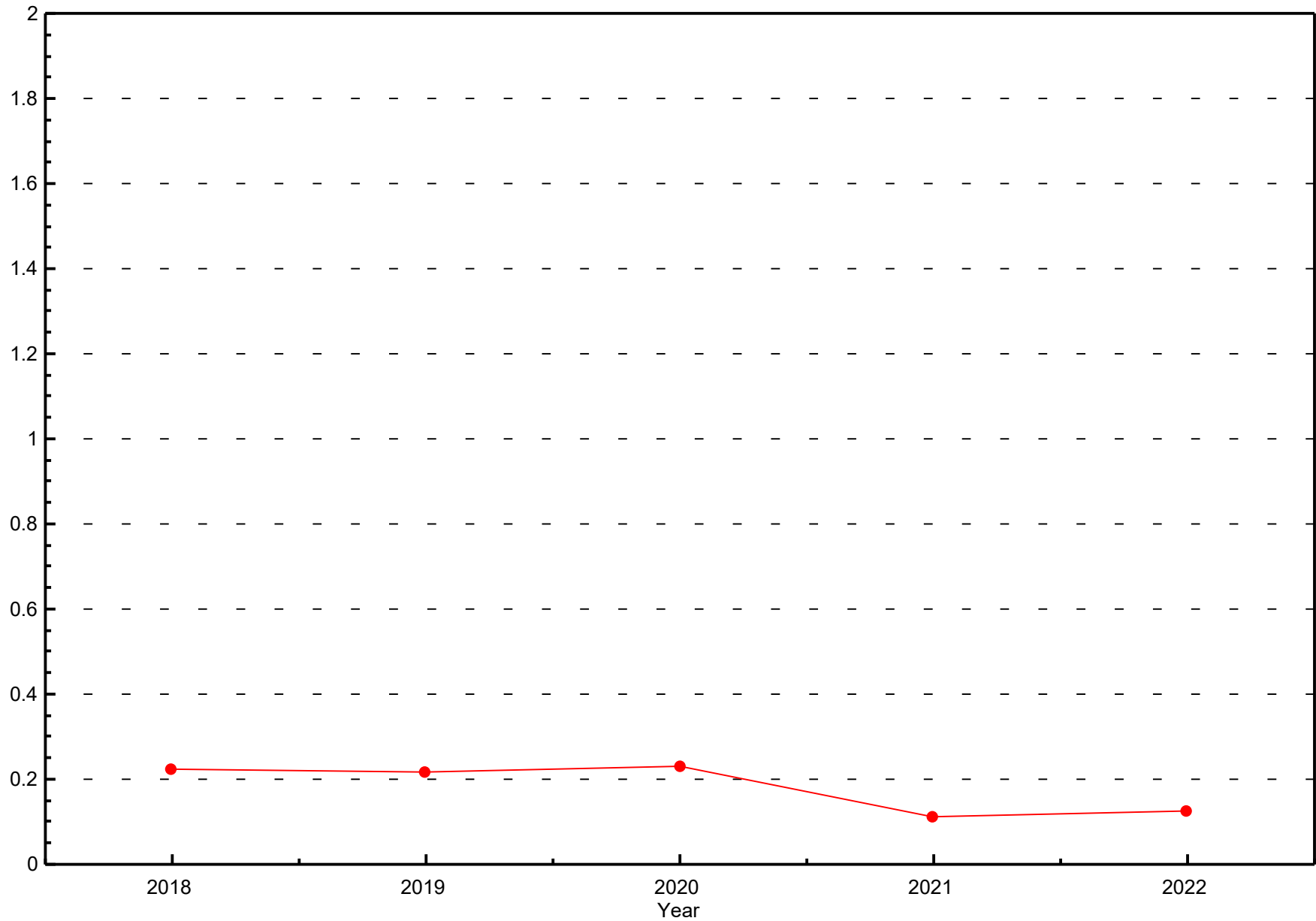




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

Wapasu (2018 to 2022)

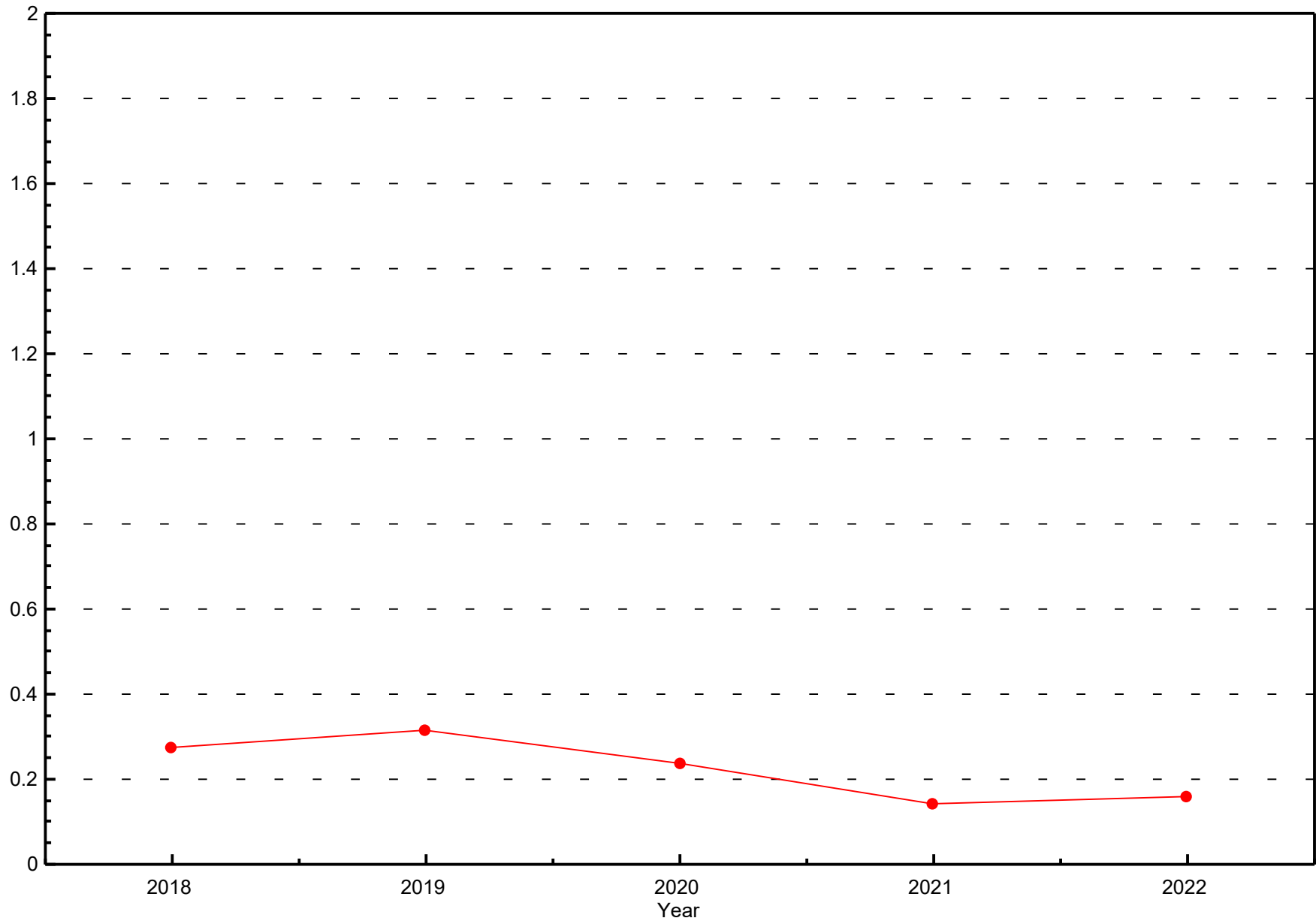




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

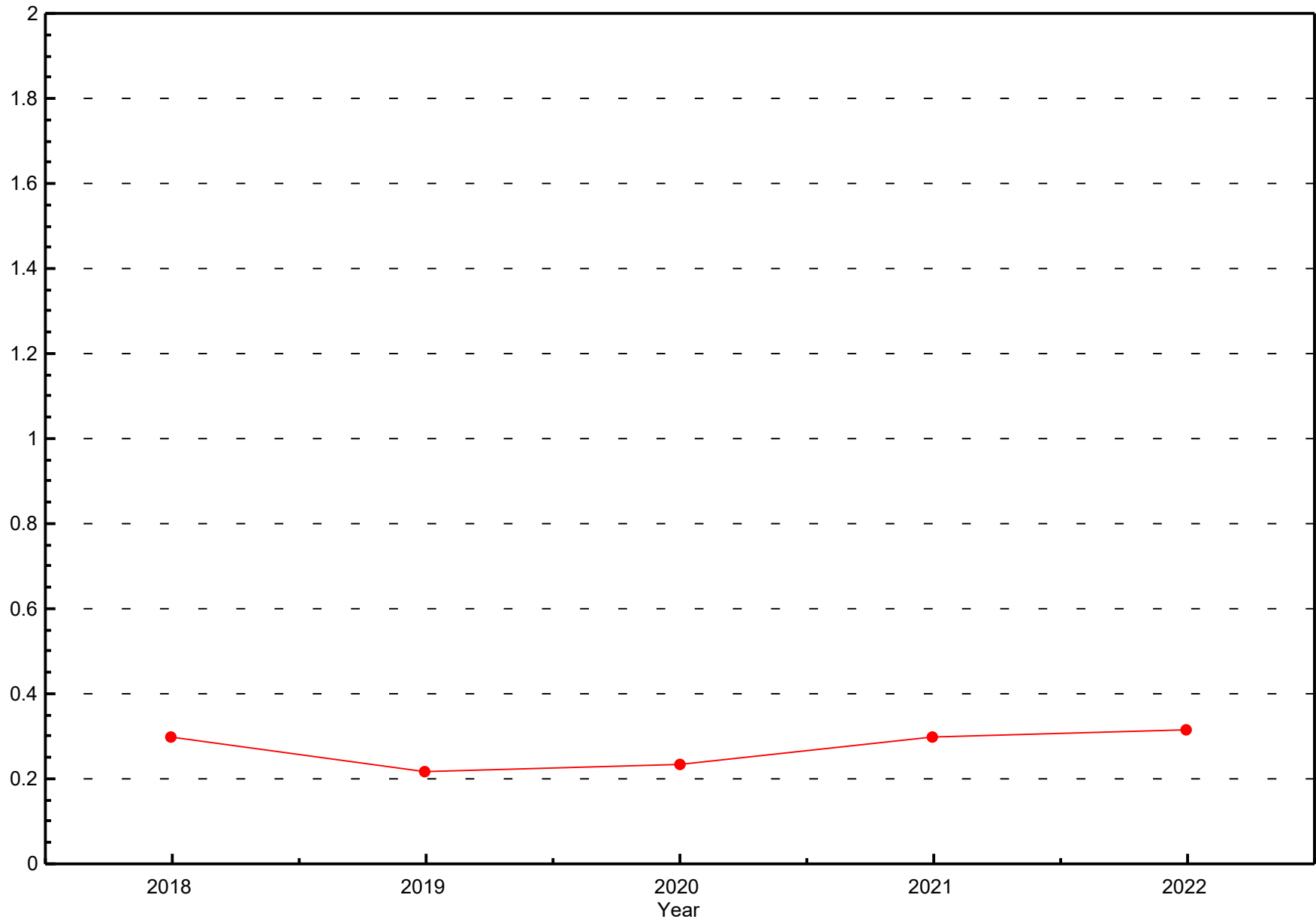
Firebag (2018 to 2022)





Yearly Averages

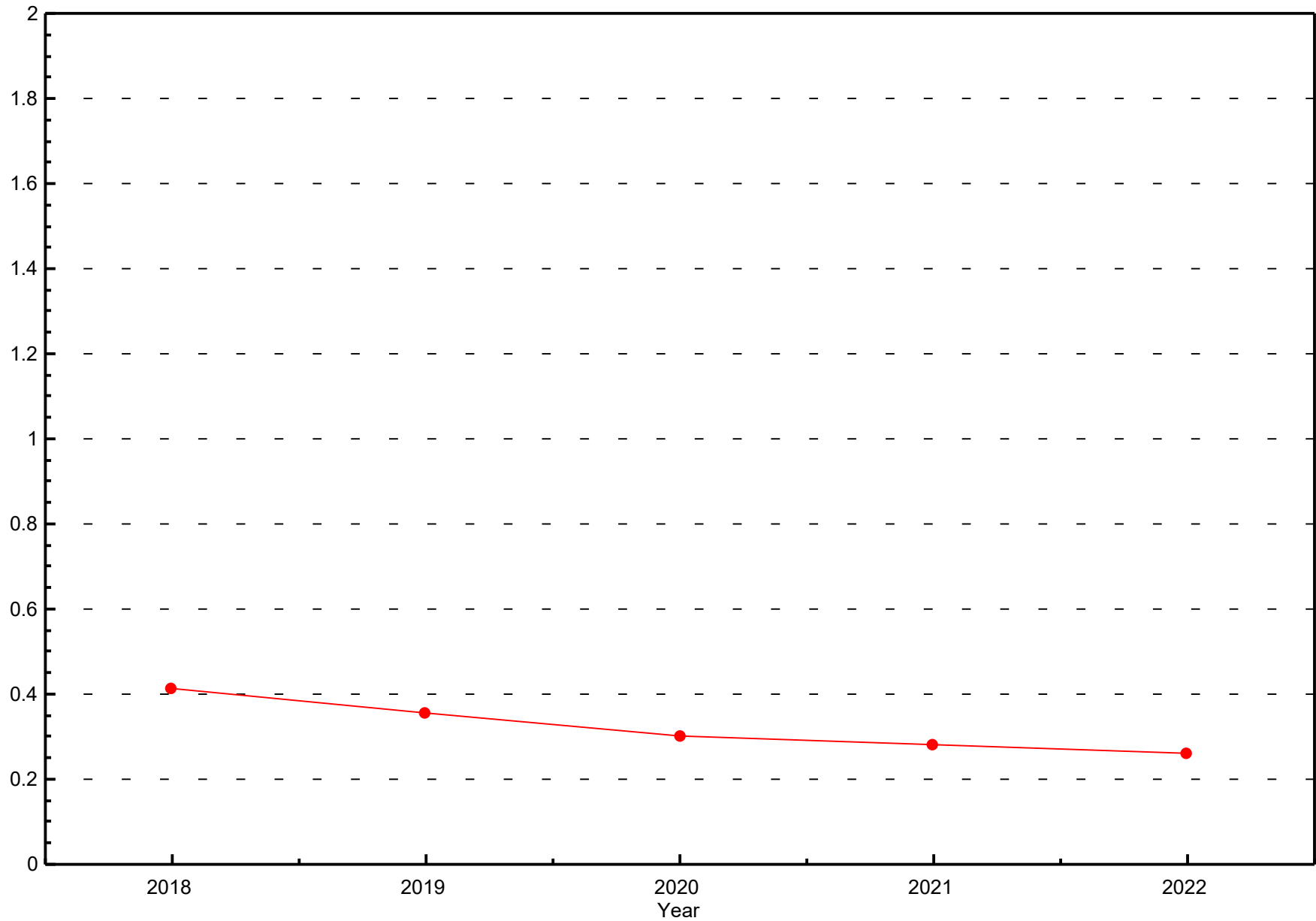
Hydrogen Sulphide (H₂S) - ppb
Mackay River (2018 to 2022)





Yearly Averages

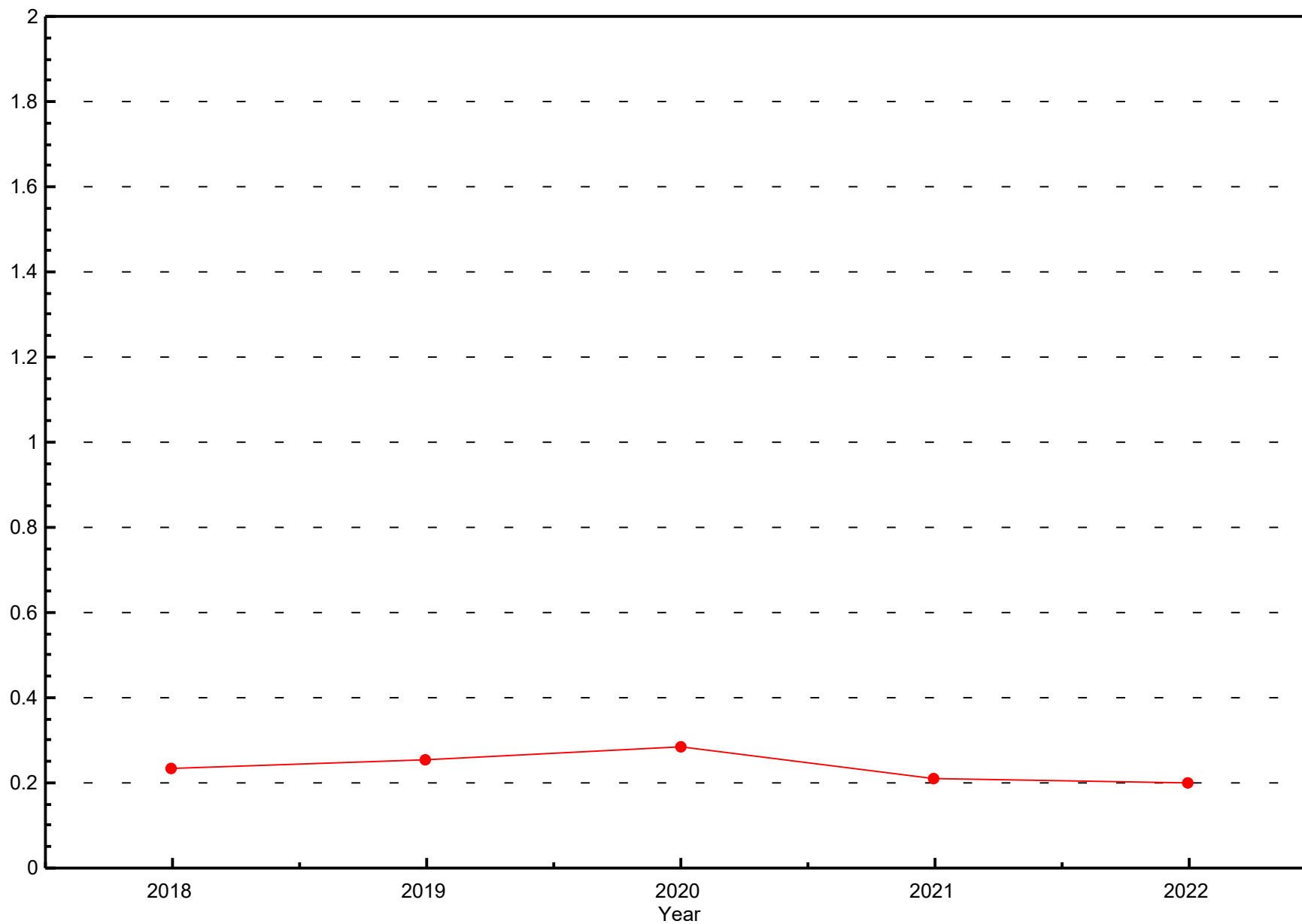
Hydrogen Sulphide (H₂S) - ppb
Waskow ohci Pimatisiwin (2018 to 2022)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Christina Lake (2018 to 2022)

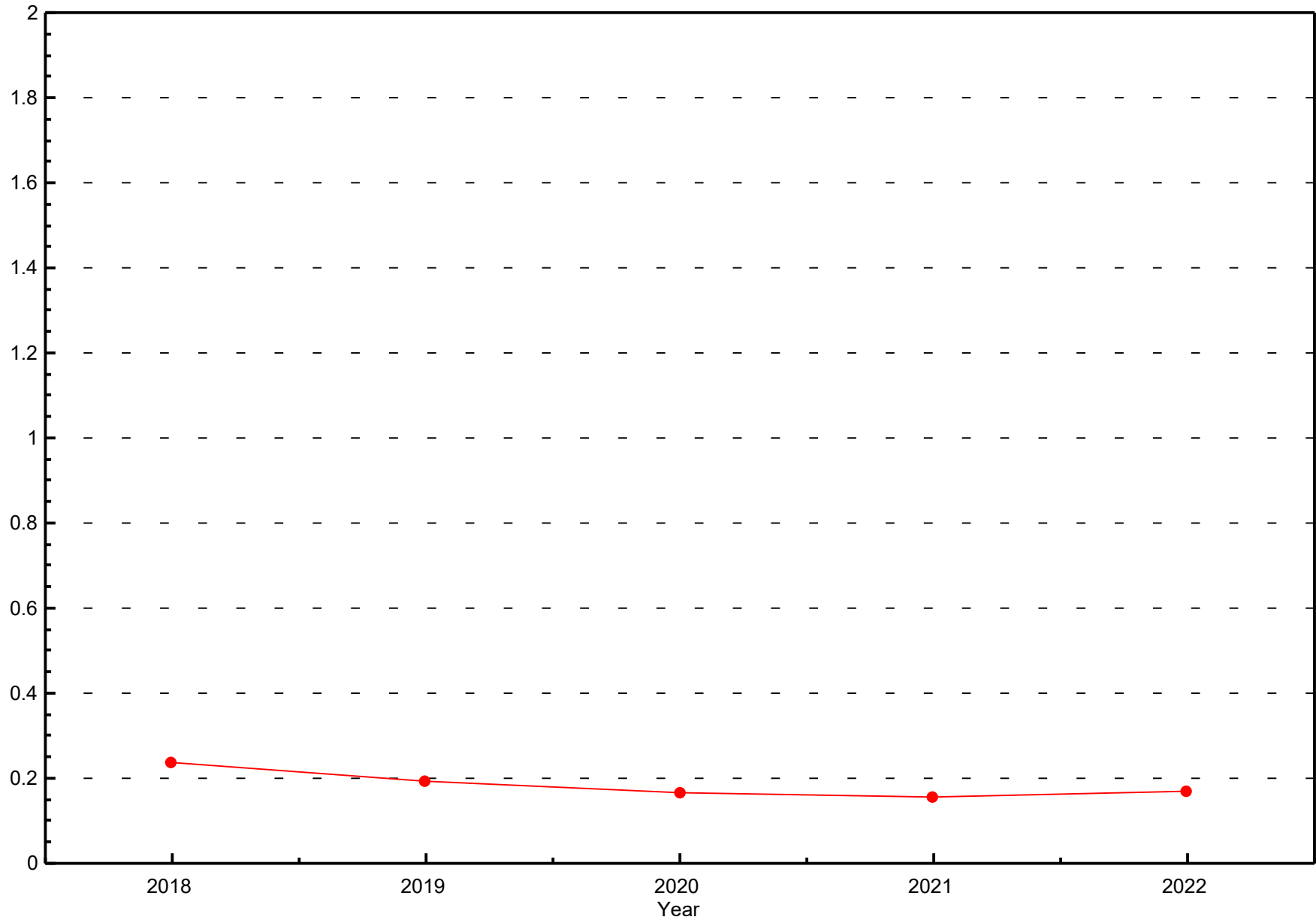




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

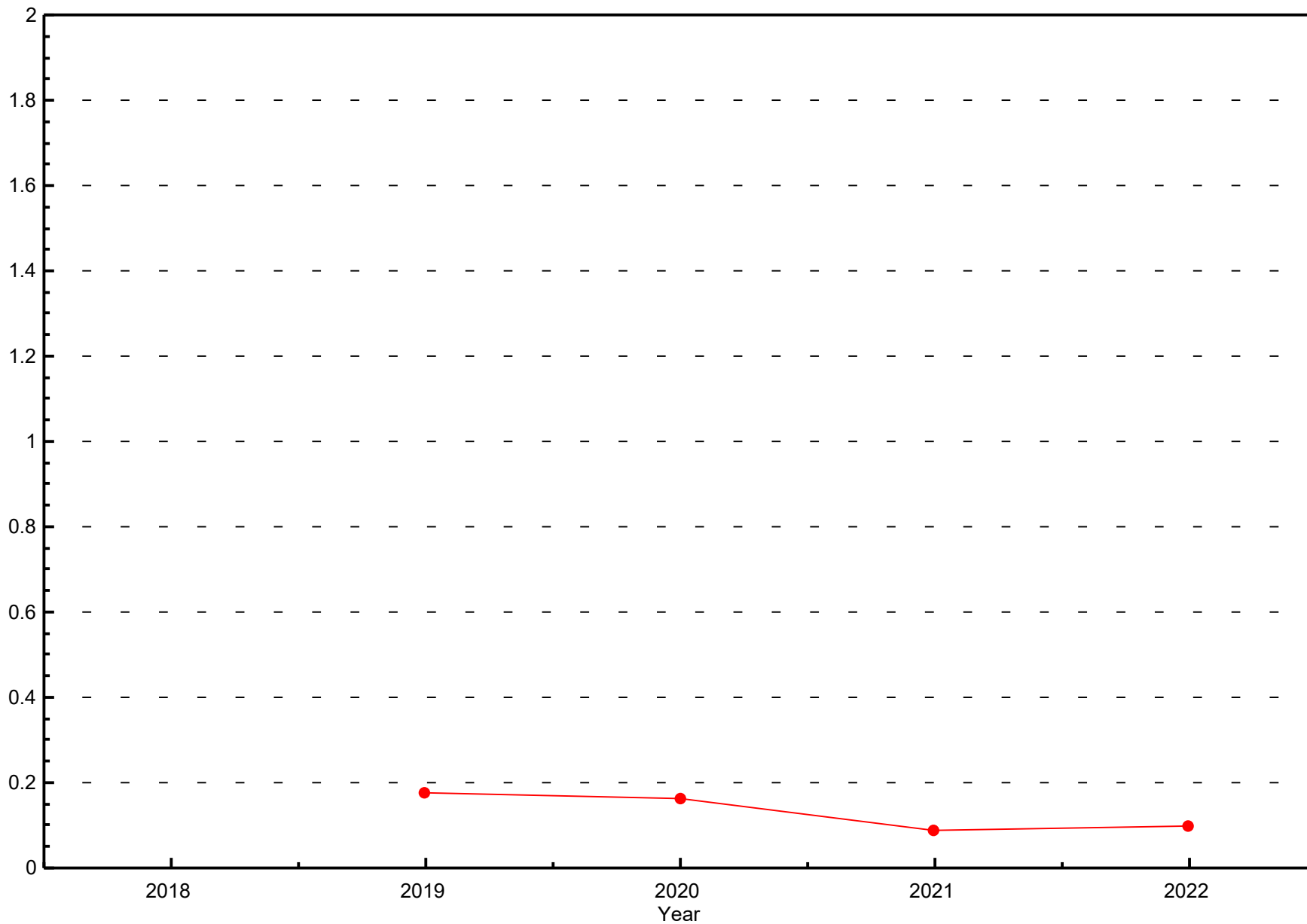
Jackfish 2/3 (2018 to 2022)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Surmont 2 (2018 to 2022)

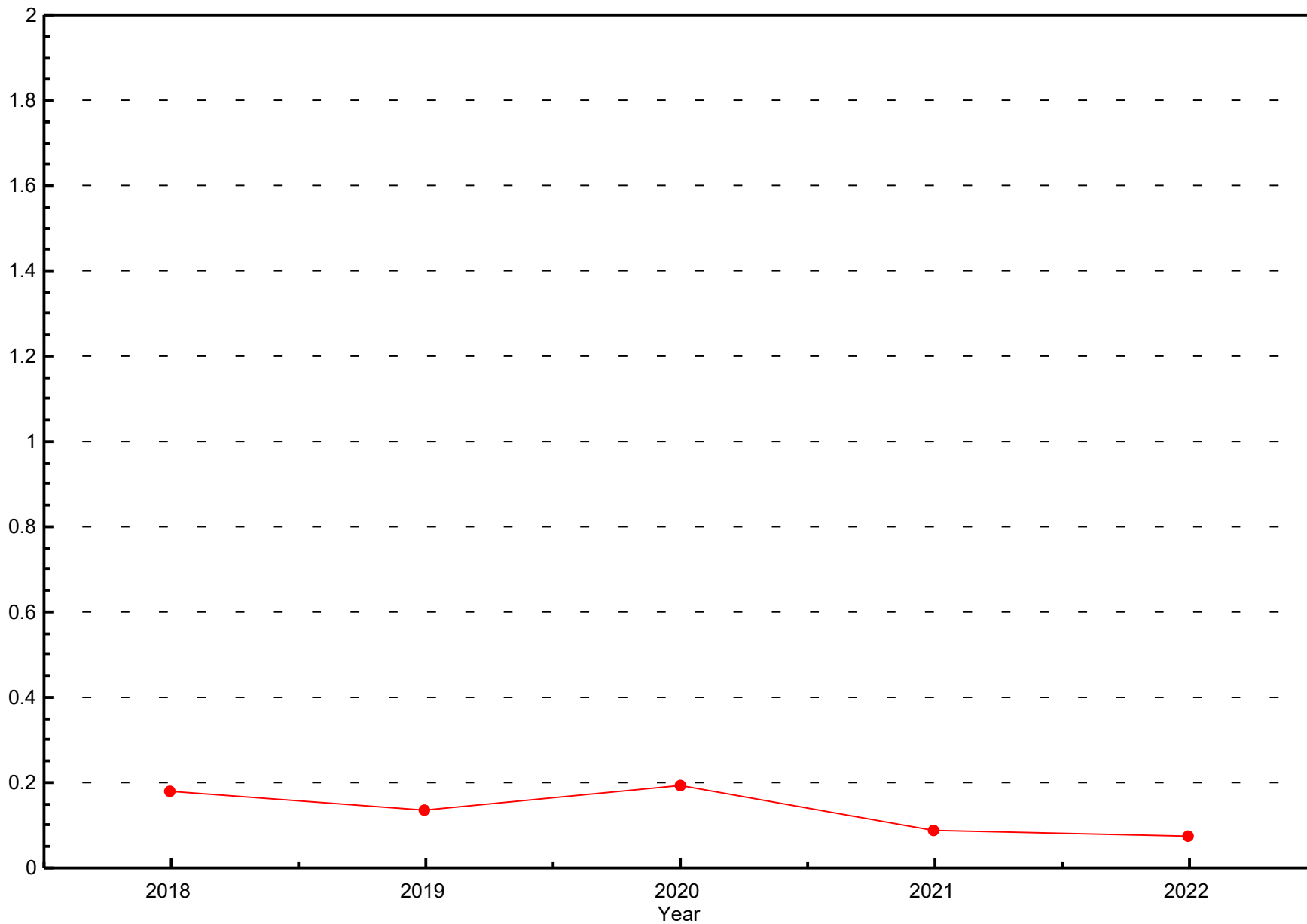




Yearly Averages

Hydrogen Sulphide (H₂S) - ppb

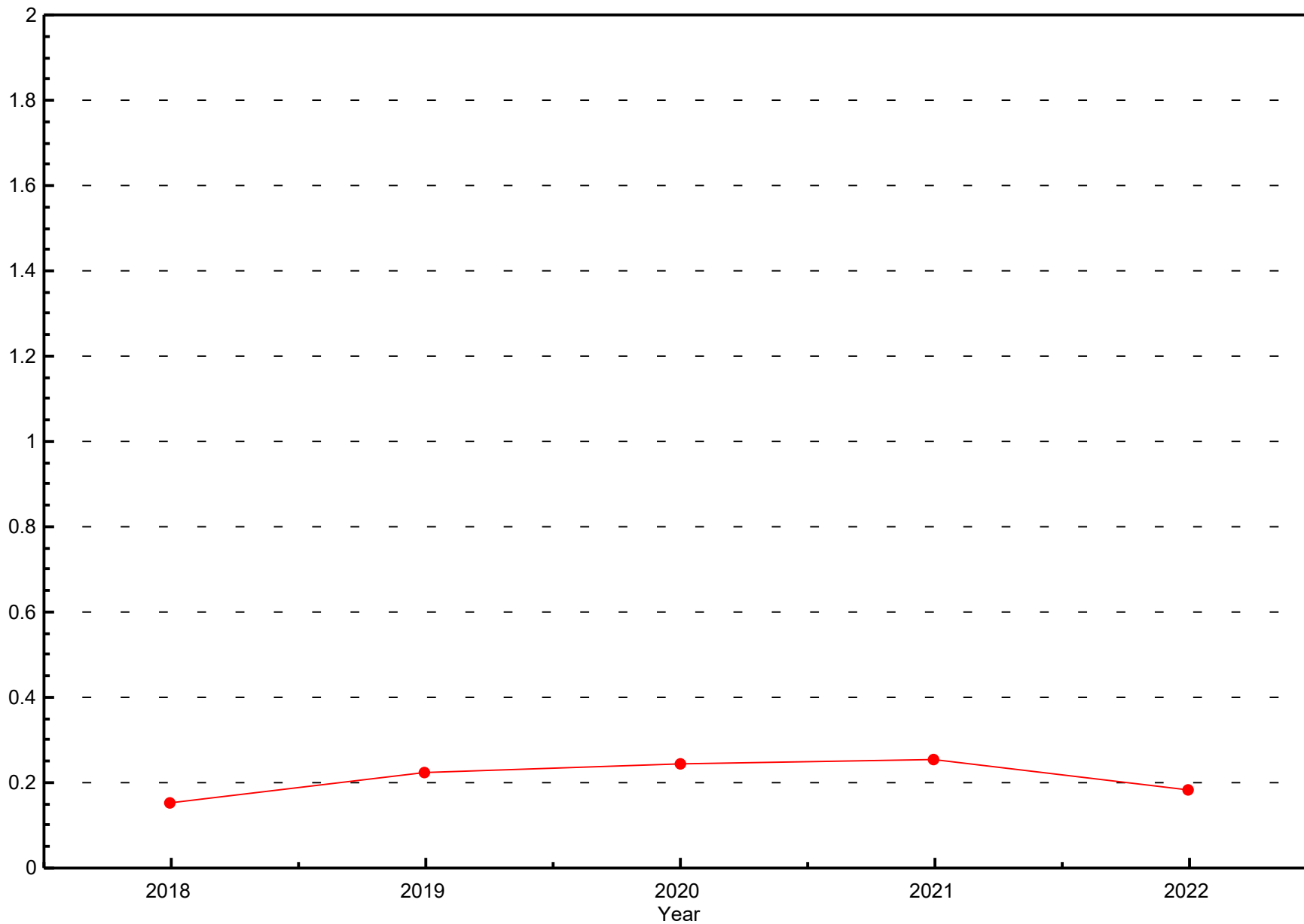
Leismer (2018 to 2022)





Yearly Averages

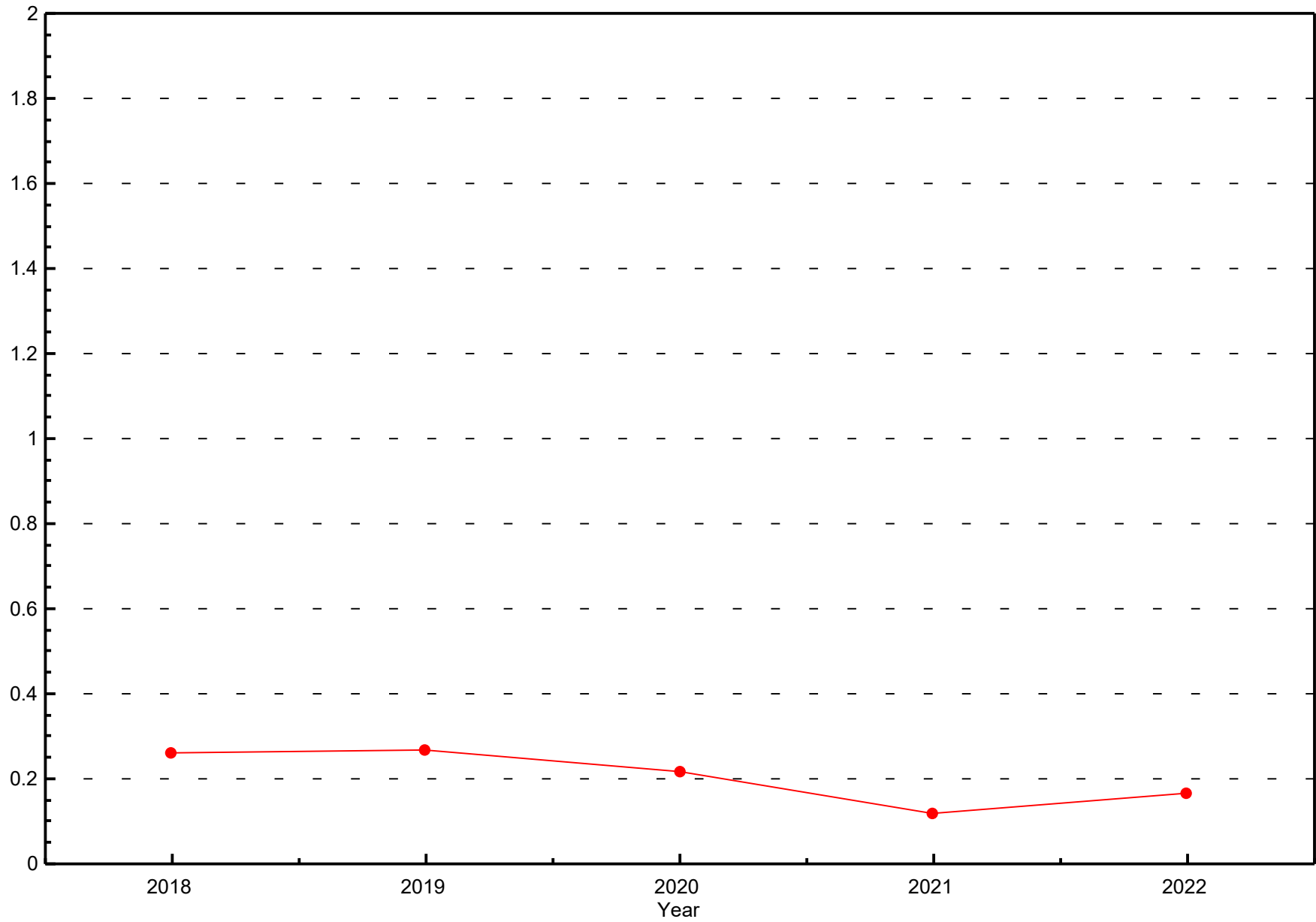
Hydrogen Sulphide (H₂S) - ppb
Sawbones Bay (2018 to 2022)





Yearly Averages

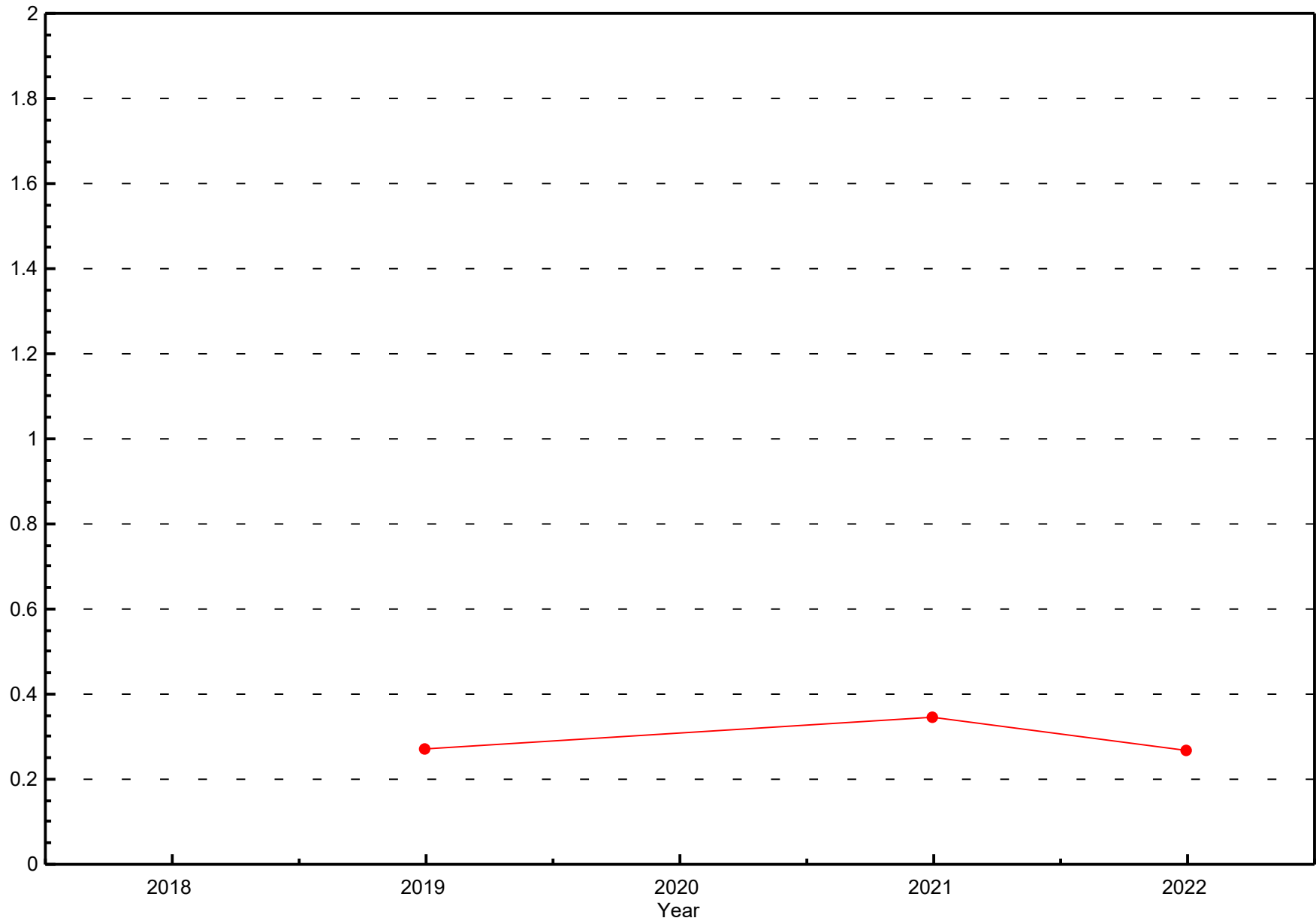
Hydrogen Sulphide (H₂S) - ppb
Jackfish 1 (2018 to 2022)





Yearly Averages

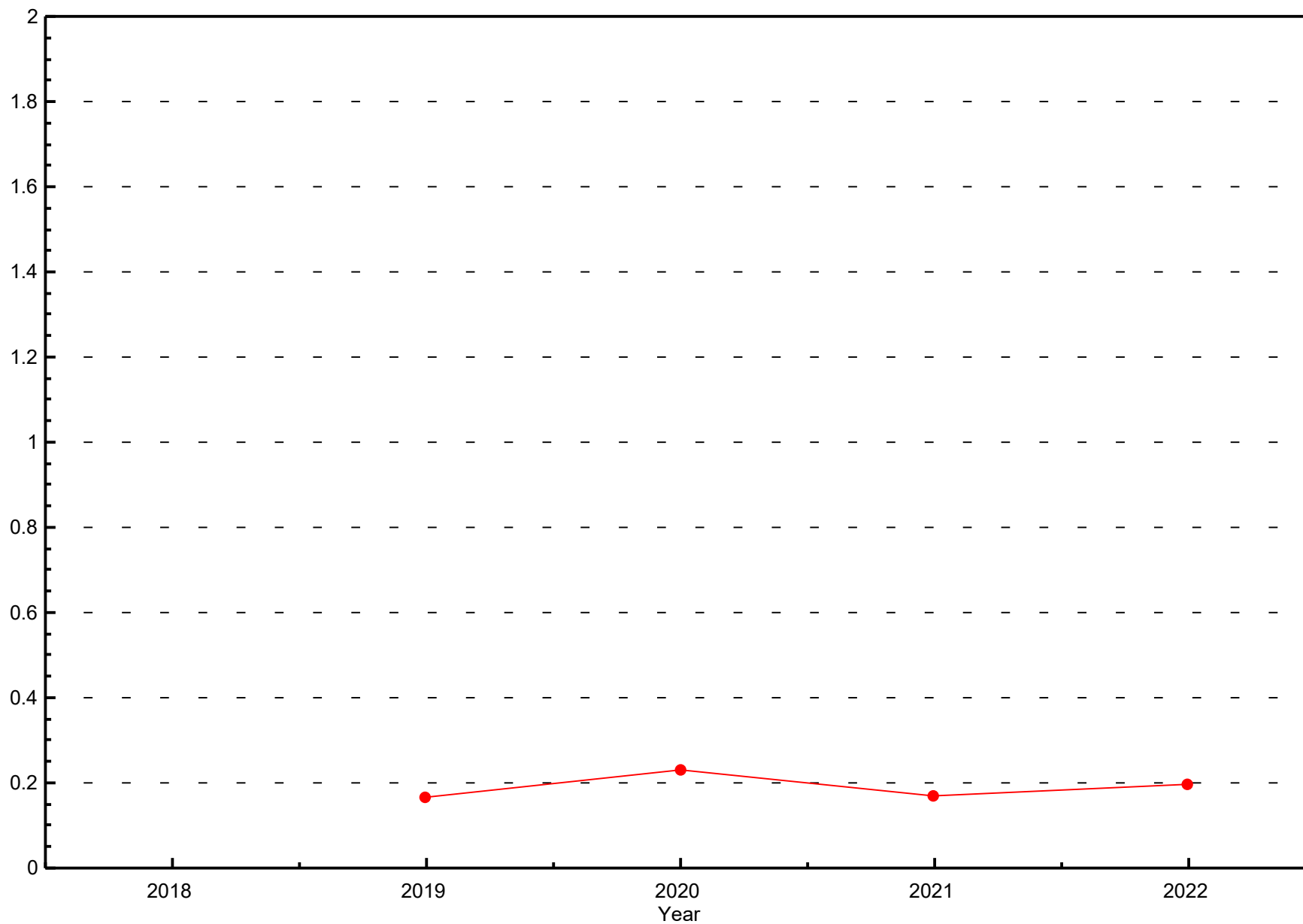
Hydrogen Sulphide (H₂S) - ppb
Kirby South (2018 to 2022)





Yearly Averages

Hydrogen Sulphide (H₂S) - ppb
Kirby North (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

TOTAL REDUCED SULPHUR ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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			
					Objective		Objective	0 - 3	4 - 10	11 - 50	> 50
January	83	579	0.6	3.2	0	0.9	0	100.0	0.0	0.0	0.0
February	100	632	0.6	2.1	0	1.0	0	100.0	0.0	0.0	0.0
March	100	706	0.7	4.8	0	1.6	0	99.6	0.4	0.0	0.0
April	100	684	0.5	2.4	0	0.7	0	100.0	0.0	0.0	0.0
May	100	704	0.4	1.5	0	0.6	0	100.0	0.0	0.0	0.0
June	99	680	0.4	1.9	0	0.6	0	100.0	0.0	0.0	0.0
July	99	701	0.5	3.1	0	0.8	0	100.0	0.0	0.0	0.0
August	100	705	0.5	2.0	0	0.8	0	100.0	0.0	0.0	0.0
September	99	673	0.5	2.5	0	1.0	0	100.0	0.0	0.0	0.0
October	100	704	0.5	2.2	0	0.8	0	100.0	0.0	0.0	0.0
November	100	681	0.5	1.9	0	1.0	0	100.0	0.0	0.0	0.0
December	99	695	0.6	3.2	0	1.3	0	100.0	0.0	0.0	0.0
Annual	98	8144	0.5	4.8	0	1.6	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	3.1	0	1.1	0	100.0	0.0	0.0	0.0
February	100	638	0.3	1.5	0	0.8	0	100.0	0.0	0.0	0.0
March	100	705	0.3	1.7	0	0.7	0	100.0	0.0	0.0	0.0
April	100	683	0.2	0.8	0	0.4	0	100.0	0.0	0.0	0.0
May	100	704	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
June	100	682	0.2	1.1	0	0.4	0	100.0	0.0	0.0	0.0
July	100	708	0.2	1.1	0	0.3	0	100.0	0.0	0.0	0.0
August	100	705	0.3	1.2	0	0.8	0	100.0	0.0	0.0	0.0
September	100	683	0.2	1.0	0	0.5	0	100.0	0.0	0.0	0.0
October	100	703	0.2	1.4	0	0.4	0	100.0	0.0	0.0	0.0
November	100	685	0.2	0.6	0	0.3	0	100.0	0.0	0.0	0.0
December	100	705	0.3	2.5	0	0.8	0	100.0	0.0	0.0	0.0
Annual	100	8308	0.2	3.1	0	1.1	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	705	0.3	3.4	0	0.9	0	100.0	0.0	0.0	0.0
February	100	629	0.3	1.4	0	0.9	0	100.0	0.0	0.0	0.0
March	100	707	0.2	2.4	0	0.9	0	100.0	0.0	0.0	0.0
April	100	683	0.2	0.8	0	0.3	0	100.0	0.0	0.0	0.0
May	100	708	0.1	0.5	0	0.2	0	100.0	0.0	0.0	0.0
June	100	683	0.2	1.0	0	0.3	0	100.0	0.0	0.0	0.0
July	100	706	0.2	1.4	0	0.5	0	100.0	0.0	0.0	0.0
August	100	706	0.3	2.5	0	0.8	0	100.0	0.0	0.0	0.0
September	100	685	0.2	1.6	0	0.5	0	100.0	0.0	0.0	0.0
October	100	708	0.2	1.0	0	0.4	0	100.0	0.0	0.0	0.0
November	100	684	0.2	1.6	0	0.5	0	100.0	0.0	0.0	0.0
December	100	706	0.2	1.5	0	0.8	0	100.0	0.0	0.0	0.0
Annual	100	8310	0.2	3.4	0	0.9	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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
May	100	707	0.1	0.5	0	0.2	0	100.0	0.0	0.0	0.0
June	100	683	0.1	0.5	0	0.2	0	100.0	0.0	0.0	0.0
July	100	708	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
August	100	706	0.3	1.1	0	0.6	0	100.0	0.0	0.0	0.0
September	98	670	0.3	1.4	0	0.5	0	100.0	0.0	0.0	0.0
October	100	709	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
November	95	652	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
December	100	706	0.2	0.6	0	0.4	0	100.0	0.0	0.0	0.0
Annual	99	5541	0.2	1.4	0	0.6	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	96	677	0.7	2.3	0	1.1	0	100.0	0.0	0.0	0.0
February	99	635	0.8	2.4	0	1.2	0	100.0	0.0	0.0	0.0
March	99	699	0.9	4.4	0	1.8	0	99.1	0.9	0.0	0.0
April	99	677	0.4	2.2	0	0.9	0	100.0	0.0	0.0	0.0
May	100	709	0.3	1.5	0	0.5	0	100.0	0.0	0.0	0.0
June	99	681	0.4	1.6	0	0.5	0	100.0	0.0	0.0	0.0
July	99	697	0.4	2.4	0	0.7	0	100.0	0.0	0.0	0.0
August	99	702	0.4	2.2	0	0.8	0	100.0	0.0	0.0	0.0
September	100	683	0.5	2.7	0	0.9	0	100.0	0.0	0.0	0.0
October	100	707	0.4	1.9	0	0.9	0	100.0	0.0	0.0	0.0
November	100	683	0.4	2.1	0	0.8	0	100.0	0.0	0.0	0.0
December	100	706	0.5	2.7	0	1.1	0	100.0	0.0	0.0	0.0
Annual	99	8256	0.5	4.4	0	1.8	0	99.9	0.1	0.0	0.0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	708	0.6	2.1	0	0.9	0	100.0	0.0	0.0	0.0
February	100	637	0.6	2.6	0	1.0	0	100.0	0.0	0.0	0.0
March	100	708	0.7	2.5	0	1.3	0	100.0	0.0	0.0	0.0
April	100	684	0.5	1.8	0	0.8	0	100.0	0.0	0.0	0.0
May	100	708	0.5	2.2	0	0.7	0	100.0	0.0	0.0	0.0
June	99	681	0.5	1.6	0	0.6	0	100.0	0.0	0.0	0.0
July	100	706	0.5	3.8	0	0.8	0	99.9	0.1	0.0	0.0
August	98	692	0.5	2.0	0	0.7	0	100.0	0.0	0.0	0.0
September	100	685	0.5	2.4	0	0.8	0	100.0	0.0	0.0	0.0
October	100	709	0.5	3.4	0	0.8	0	100.0	0.0	0.0	0.0
November	100	684	0.5	2.0	0	0.9	0	100.0	0.0	0.0	0.0
December	100	708	0.6	2.5	0	1.3	0	100.0	0.0	0.0	0.0
Annual	100	8310	0.5	3.8	0	1.3	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
Total Reduced Sulphur (ppb) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values	Maximum 24-Hour Value	Number of Values	% of Data in Each Concentration Range			
					Exceeding 1-Hour Objective		Exceeding 24-Hour Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	706	0.2	3.1	0	0.5	0	100.0	0.0	0.0	0.0
February	100	637	0.2	1.2	0	0.3	0	100.0	0.0	0.0	0.0
March	100	709	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
April	96	656	0.1	0.4	0	0.2	0	100.0	0.0	0.0	0.0
May	100	706	0.0	0.6	0	0.1	0	100.0	0.0	0.0	0.0
June	100	685	0.0	2.0	0	0.1	0	100.0	0.0	0.0	0.0
July	99	699	0.0	0.7	0	0.1	0	100.0	0.0	0.0	0.0
August	77	546	0.1	0.4	0	0.2	0	100.0	0.0	0.0	0.0
September	100	682	0.1	1.9	0	0.2	0	100.0	0.0	0.0	0.0
October	99	705	0.1	1.0	0	0.2	0	100.0	0.0	0.0	0.0
November	100	685	0.2	1.2	0	0.3	0	100.0	0.0	0.0	0.0
December	100	706	0.2	0.8	0	0.4	0	100.0	0.0	0.0	0.0
Annual	97	8122	0.1	3.1	0	0.5	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	63	447	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0
February	100	639	0.2	0.4	0	0.3	0	100.0	0.0	0.0	0.0
March	100	708	0.2	0.5	0	0.3	0	100.0	0.0	0.0	0.0
April	100	685	0.2	0.5	0	0.3	0	100.0	0.0	0.0	0.0
May	100	707	0.2	0.6	0	0.3	0	100.0	0.0	0.0	0.0
June	93	637	0.2	0.3	0	0.2	0	100.0	0.0	0.0	0.0
July	100	708	0.2	0.4	0	0.2	0	100.0	0.0	0.0	0.0
August	94	663	0.2	0.5	0	0.3	0	100.0	0.0	0.0	0.0
September	100	686	0.2	0.4	0	0.3	0	100.0	0.0	0.0	0.0
October	100	709	0.1	0.4	0	0.2	0	100.0	0.0	0.0	0.0
November	100	683	0.1	0.4	0	0.3	0	100.0	0.0	0.0	0.0
December	100	707	0.2	0.4	0	0.3	0	100.0	0.0	0.0	0.0
Annual	96	7979	0.2	0.7	0	0.3	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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			
					Objective		Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	707	0.4	0.8	0	0.5	0	100.0	0.0	0.0	0.0
February	100	638	0.4	0.6	0	0.5	0	100.0	0.0	0.0	0.0
March	58	412	0.4	0.7	0	0.5	0	100.0	0.0	0.0	0.0
April	100	685	0.4	0.5	0	0.5	0	100.0	0.0	0.0	0.0
May	100	708	0.4	0.6	0	0.5	0	100.0	0.0	0.0	0.0
June	100	683	0.4	0.8	0	0.4	0	100.0	0.0	0.0	0.0
July	100	706	0.4	1.3	0	0.5	0	100.0	0.0	0.0	0.0
August	99	703	0.4	1.5	0	0.5	0	100.0	0.0	0.0	0.0
September	100	683	0.3	0.7	0	0.5	0	100.0	0.0	0.0	0.0
October	100	709	0.3	0.5	0	0.4	0	100.0	0.0	0.0	0.0
November	100	685	0.3	0.6	0	0.4	0	100.0	0.0	0.0	0.0
December	100	704	0.4	0.7	0	0.6	0	100.0	0.0	0.0	0.0
Annual	96	8023	0.4	1.5	0	0.6	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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			
					Objective		Objective	0 - 3	4 - 10	11 - 50	> 50
January	100	707	0.2	0.9	0	0.4	0	100.0	0.0	0.0	0.0
February	100	639	0.2	0.4	0	0.3	0	100.0	0.0	0.0	0.0
March	100	706	0.2	0.5	0	0.2	0	100.0	0.0	0.0	0.0
April	100	686	0.1	0.3	0	0.2	0	100.0	0.0	0.0	0.0
May	100	705	0.1	0.5	0	0.3	0	100.0	0.0	0.0	0.0
June	100	683	0.1	0.4	0	0.2	0	100.0	0.0	0.0	0.0
July	99	701	0.1	0.4	0	0.2	0	100.0	0.0	0.0	0.0
August	99	702	0.1	0.5	0	0.2	0	100.0	0.0	0.0	0.0
September	100	685	0.1	0.3	0	0.2	0	100.0	0.0	0.0	0.0
October	100	708	0.1	0.4	0	0.2	0	100.0	0.0	0.0	0.0
November	100	684	0.2	0.3	0	0.2	0	100.0	0.0	0.0	0.0
December	100	706	0.2	0.5	0	0.3	0	100.0	0.0	0.0	0.0
Annual	100	8312	0.2	0.9	0	0.4	0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	704	0.5	2.1	0	1.1	0	100.0	0.0	0.0	0.0
February	100	638	0.5	2.0	0	0.8	0	100.0	0.0	0.0	0.0
March	100	708	0.6	10.0	0	1.5	0	99.7	0.3	0.0	0.0
April	100	684	0.3	3.0	0	0.6	0	100.0	0.0	0.0	0.0
May	90	634	0.3	1.4	0	0.5	0	100.0	0.0	0.0	0.0
June	99	682	0.2	1.0	0	0.4	0	100.0	0.0	0.0	0.0
July	100	708	0.3	1.9	0	0.5	0	100.0	0.0	0.0	0.0
August	99	704	0.3	1.5	0	0.6	0	100.0	0.0	0.0	0.0
September	100	687	0.4	2.7	0	0.9	0	100.0	0.0	0.0	0.0
October	100	707	0.3	5.8	0	0.7	0	99.9	0.1	0.0	0.0
November	100	685	0.3	3.4	0	0.9	0	100.0	0.0	0.0	0.0
December	100	706	0.4	5.5	0	0.8	0	99.7	0.3	0.0	0.0
Annual	99	8247	0.4	10.0	0	1.5	0	99.9	0.1	0.0	0.0



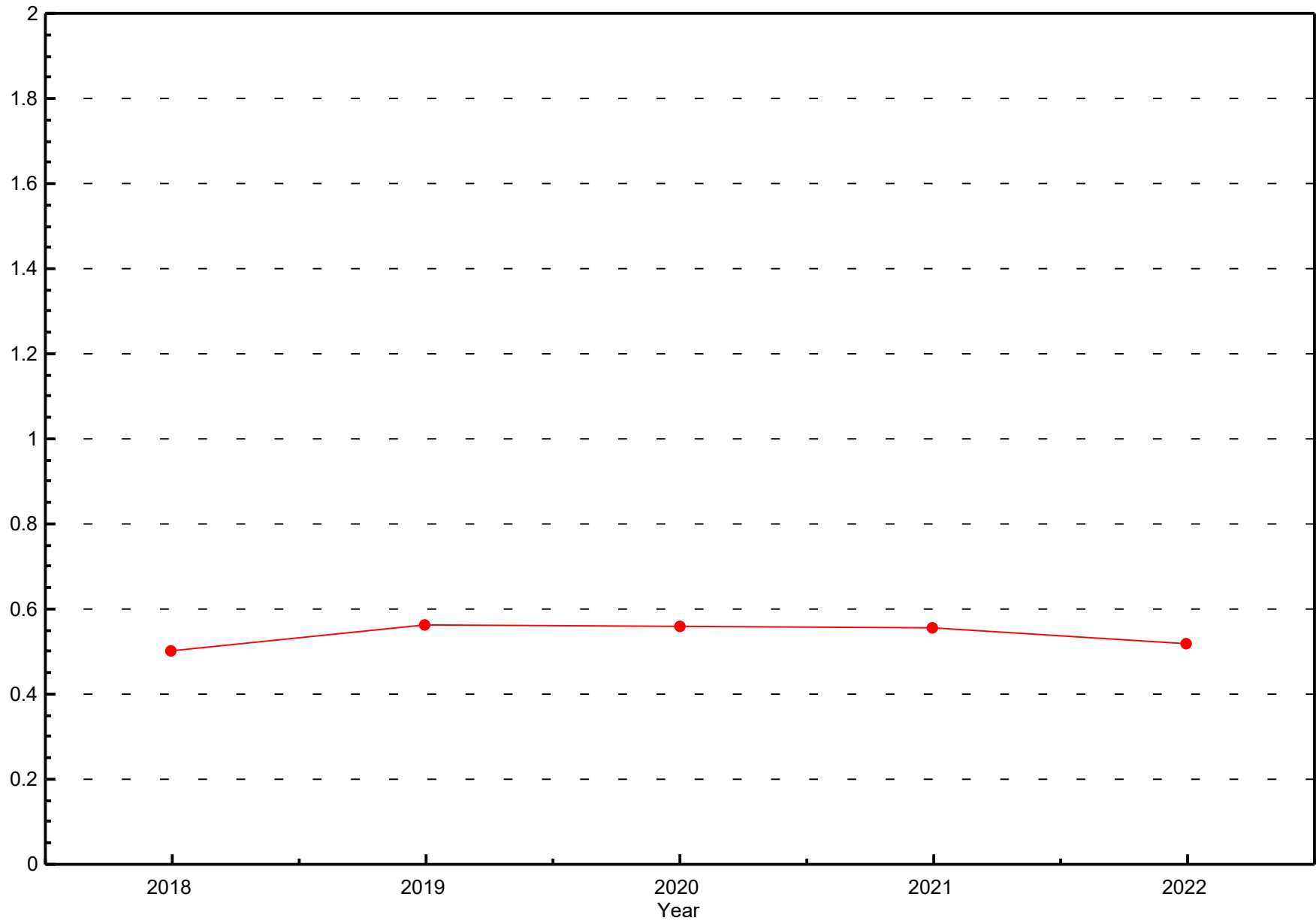
Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Total Reduced Sulphur (ppb) Average

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	2.0	0	0.9	0	100.0	0.0	0.0	0.0
February	99	636	0.6	1.7	0	0.9	0	100.0	0.0	0.0	0.0
March	100	709	0.6	2.0	0	1.1	0	100.0	0.0	0.0	0.0
April	100	686	0.5	1.6	0	0.7	0	100.0	0.0	0.0	0.0
May	100	707	0.5	1.5	0	0.7	0	100.0	0.0	0.0	0.0
June	100	683	0.5	1.0	0	0.7	0	100.0	0.0	0.0	0.0
July	94	668	0.5	1.4	0	0.7	0	100.0	0.0	0.0	0.0
August	100	707	0.5	1.1	0	0.8	0	100.0	0.0	0.0	0.0
September	100	687	0.4	1.6	0	0.7	0	100.0	0.0	0.0	0.0
October	100	709	0.4	1.5	0	0.7	0	100.0	0.0	0.0	0.0
November	100	685	0.5	1.6	0	0.7	0	100.0	0.0	0.0	0.0
December	100	709	0.5	1.4	0	0.7	0	100.0	0.0	0.0	0.0
Annual	99	8295	0.5	2.0	0	1.1	0	100.0	0.0	0.0	0.0



Yearly Averages

Total Reduced Sulphur (TRS) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)

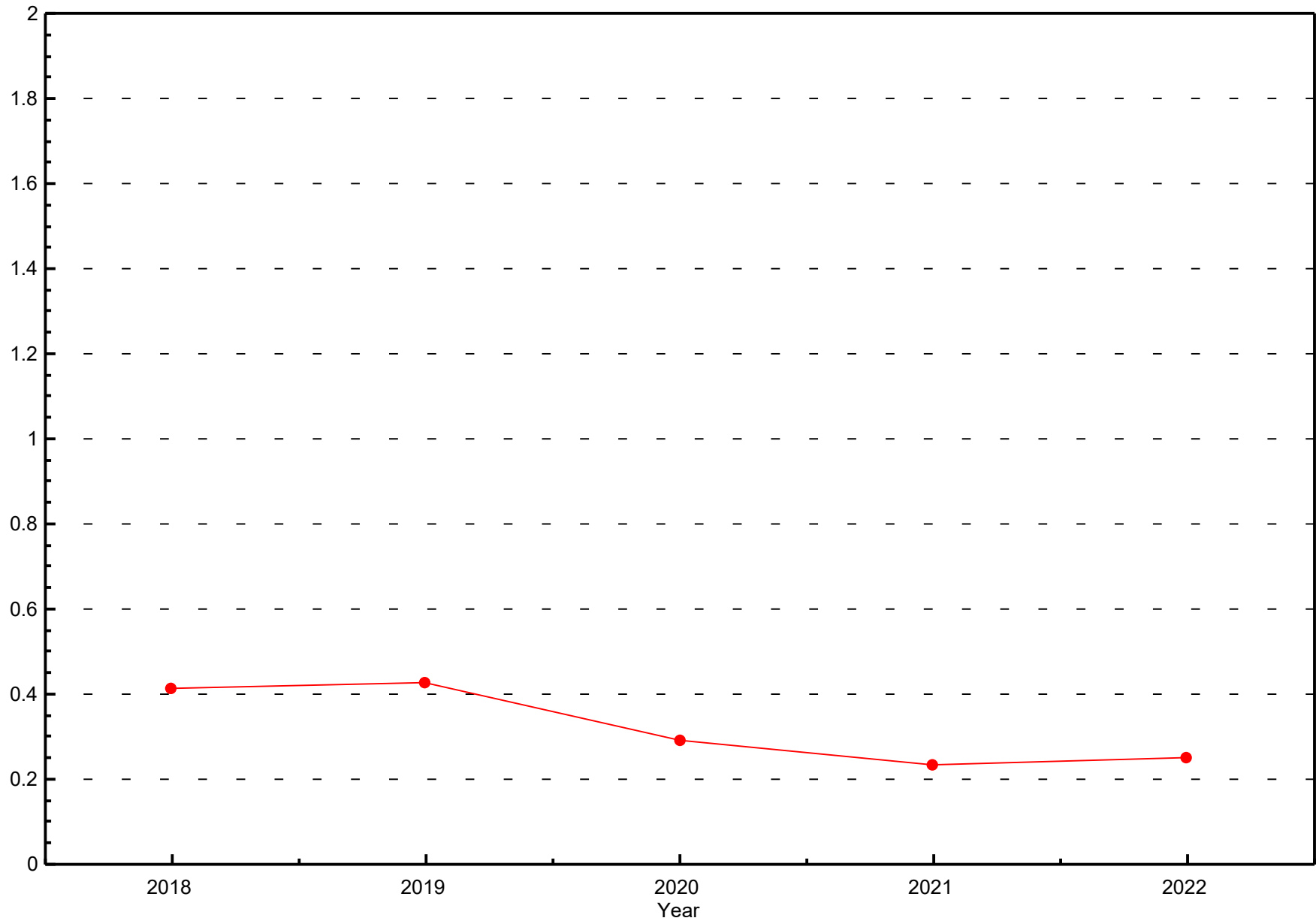




Yearly Averages

Total Reduced Sulphur (TRS) - ppb

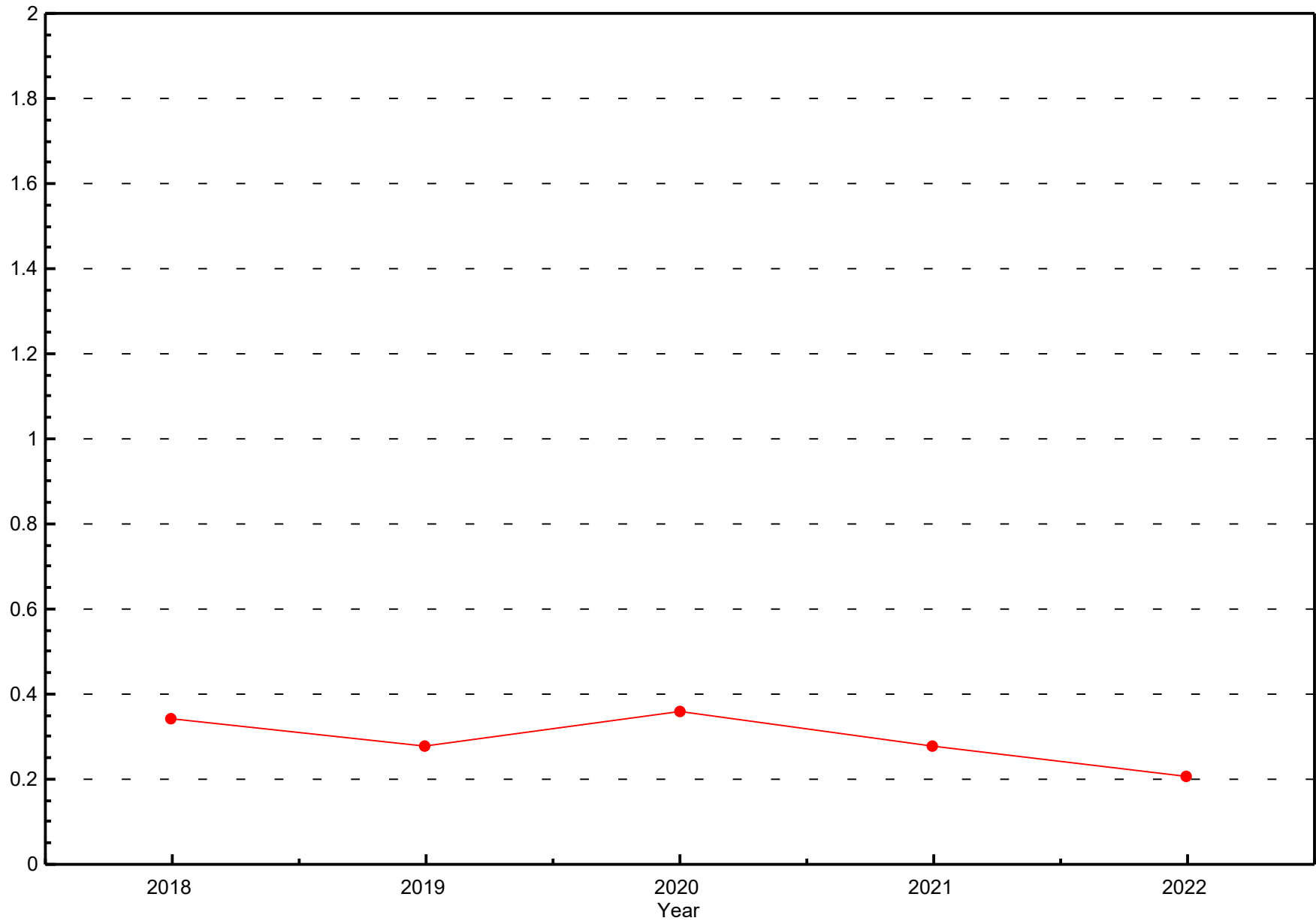
Patricia McInnes (2018 to 2022)





Yearly Averages

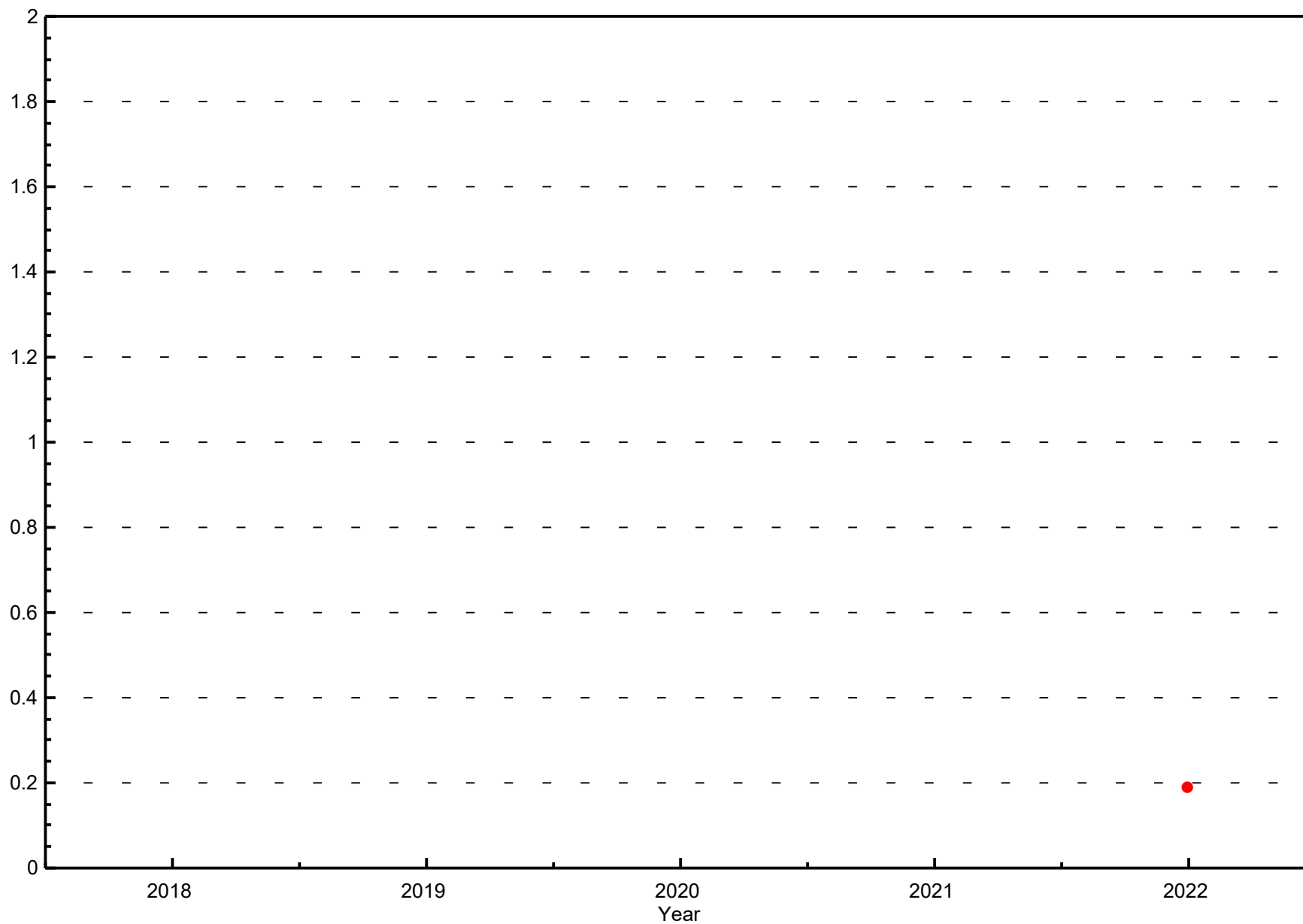
Total Reduced Sulphur (TRS) - ppb
Athabasca Valley (2018 to 2022)





Yearly Averages

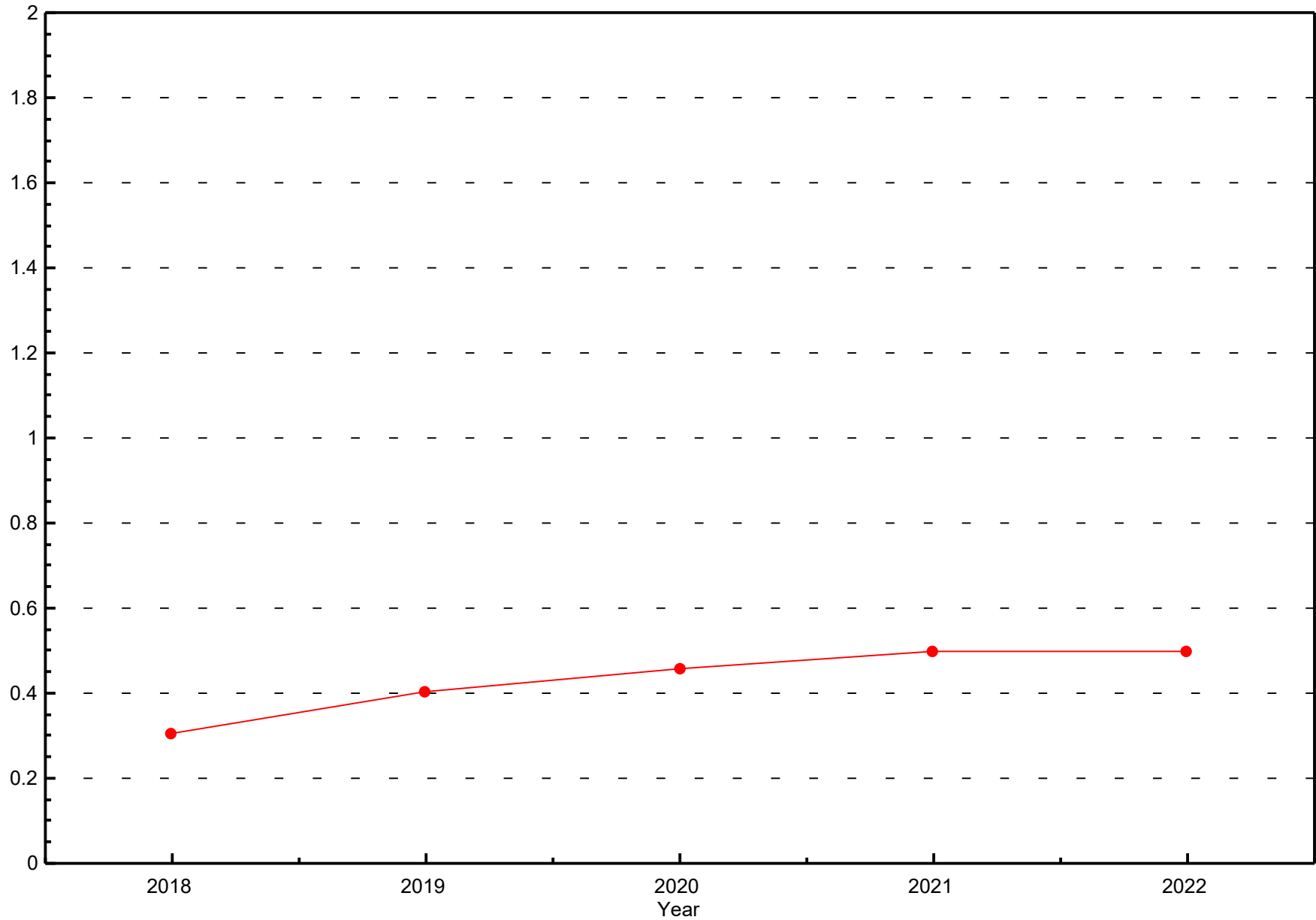
Total Reduced Sulphur (TRS) - ppb
Fort Chipewyan (2018 to 2022)





Yearly Averages

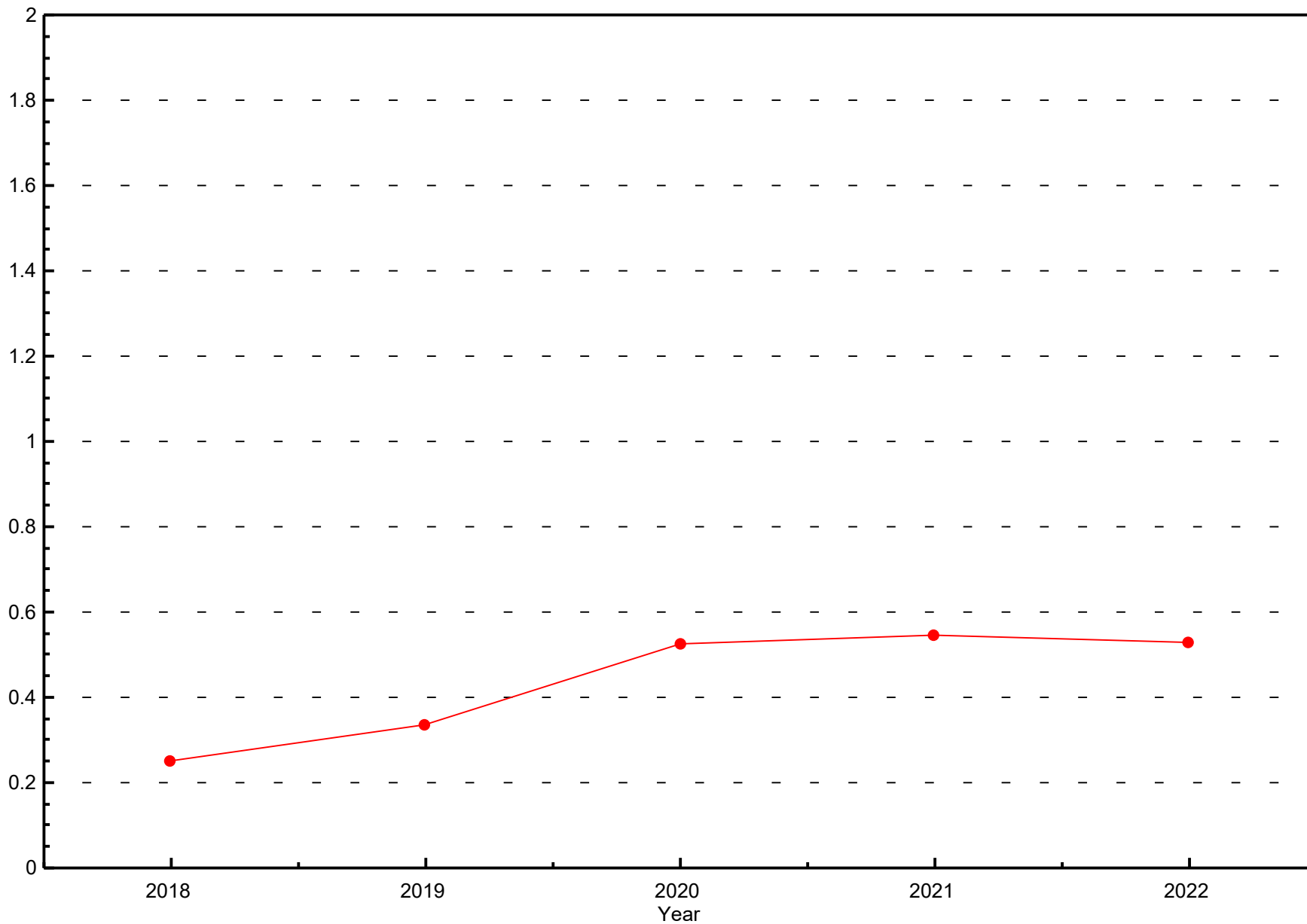
Total Reduced Sulphur (TRS) - ppb Barge Landing (2018 to 2022)





Yearly Averages

Total Reduced Sulphur (TRS) - ppb
Fort McKay South (2018 to 2022)

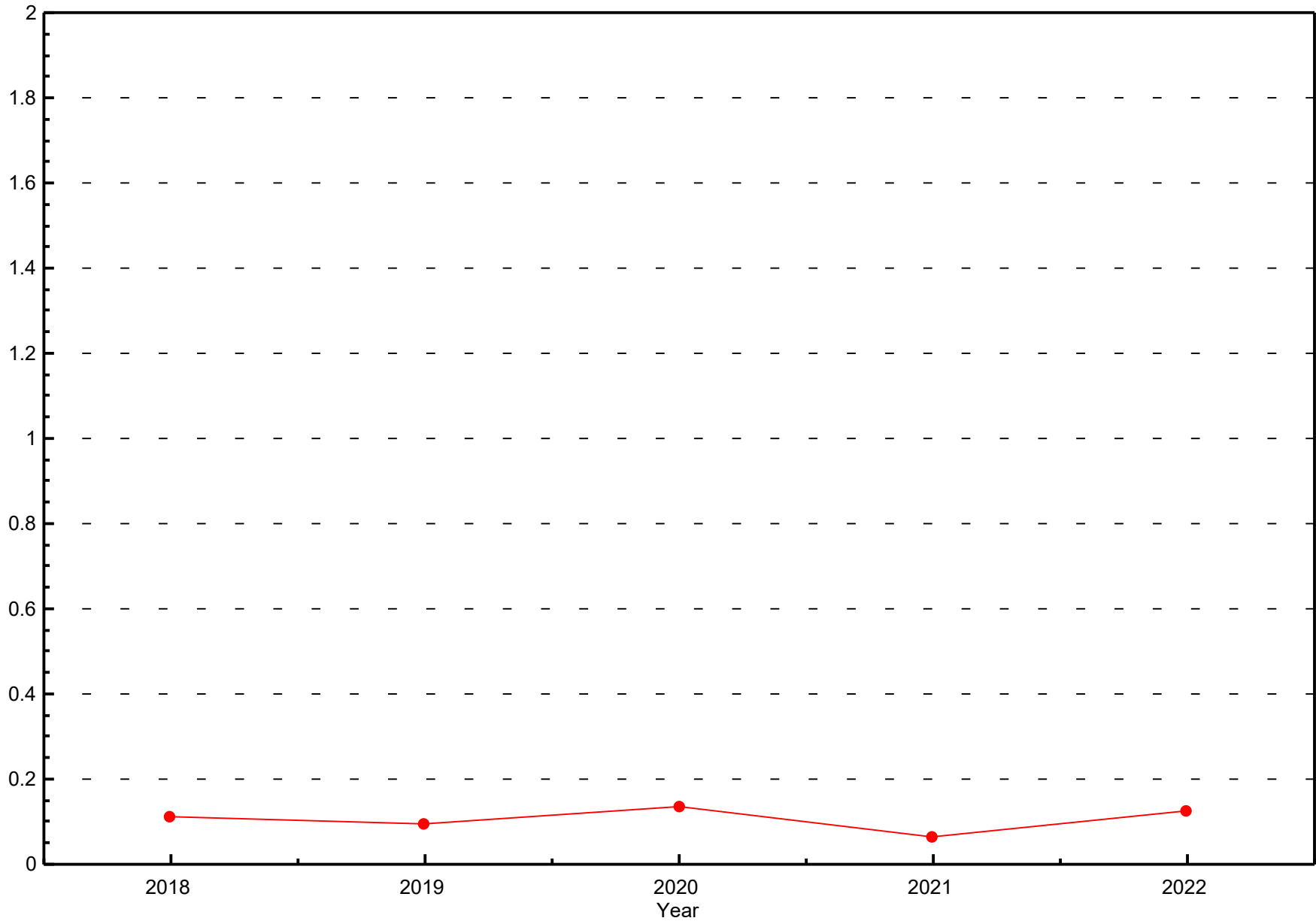




Yearly Averages

Total Reduced Sulphur (TRS) - ppb

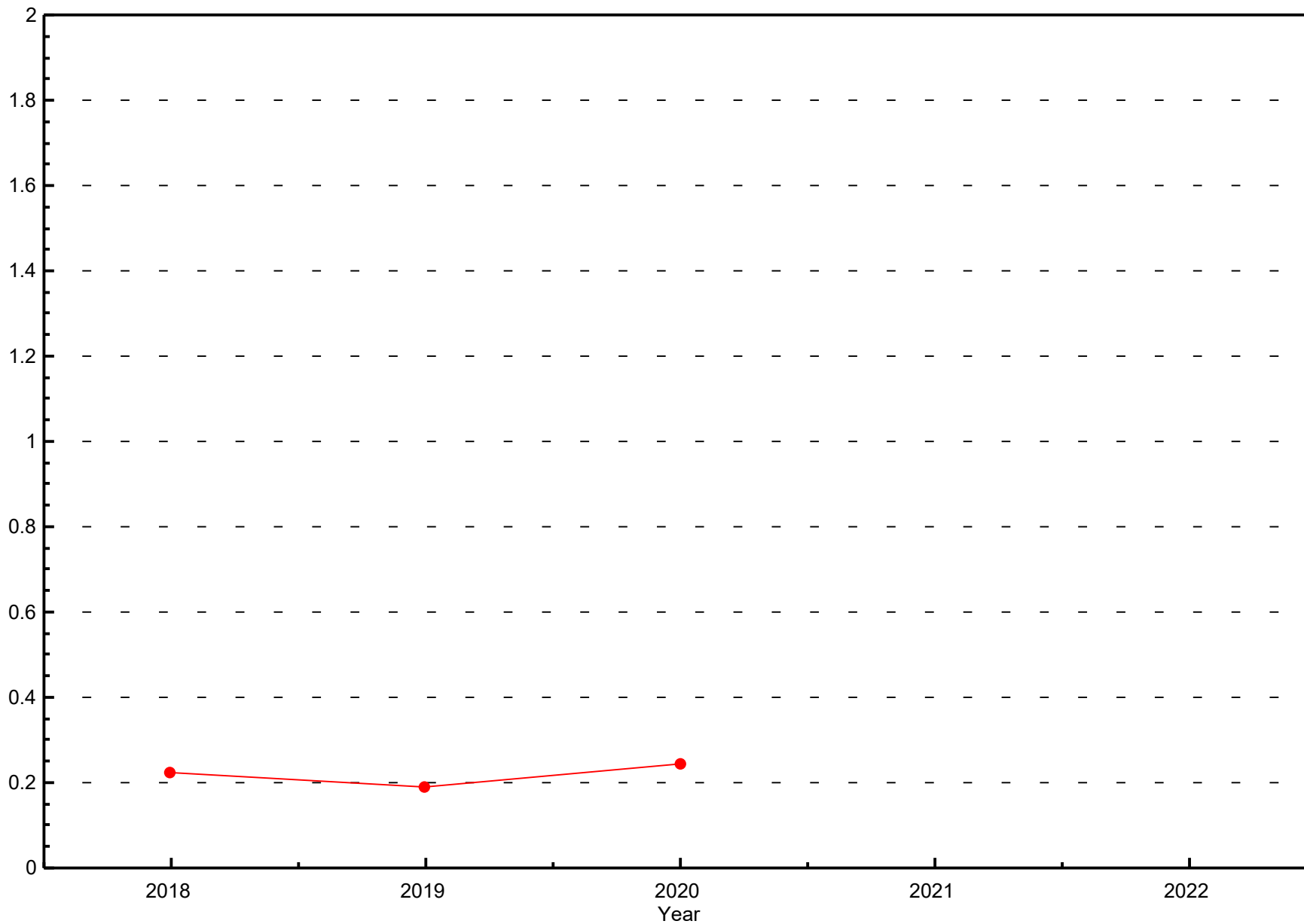
Anzac (2018 to 2022)





Yearly Averages

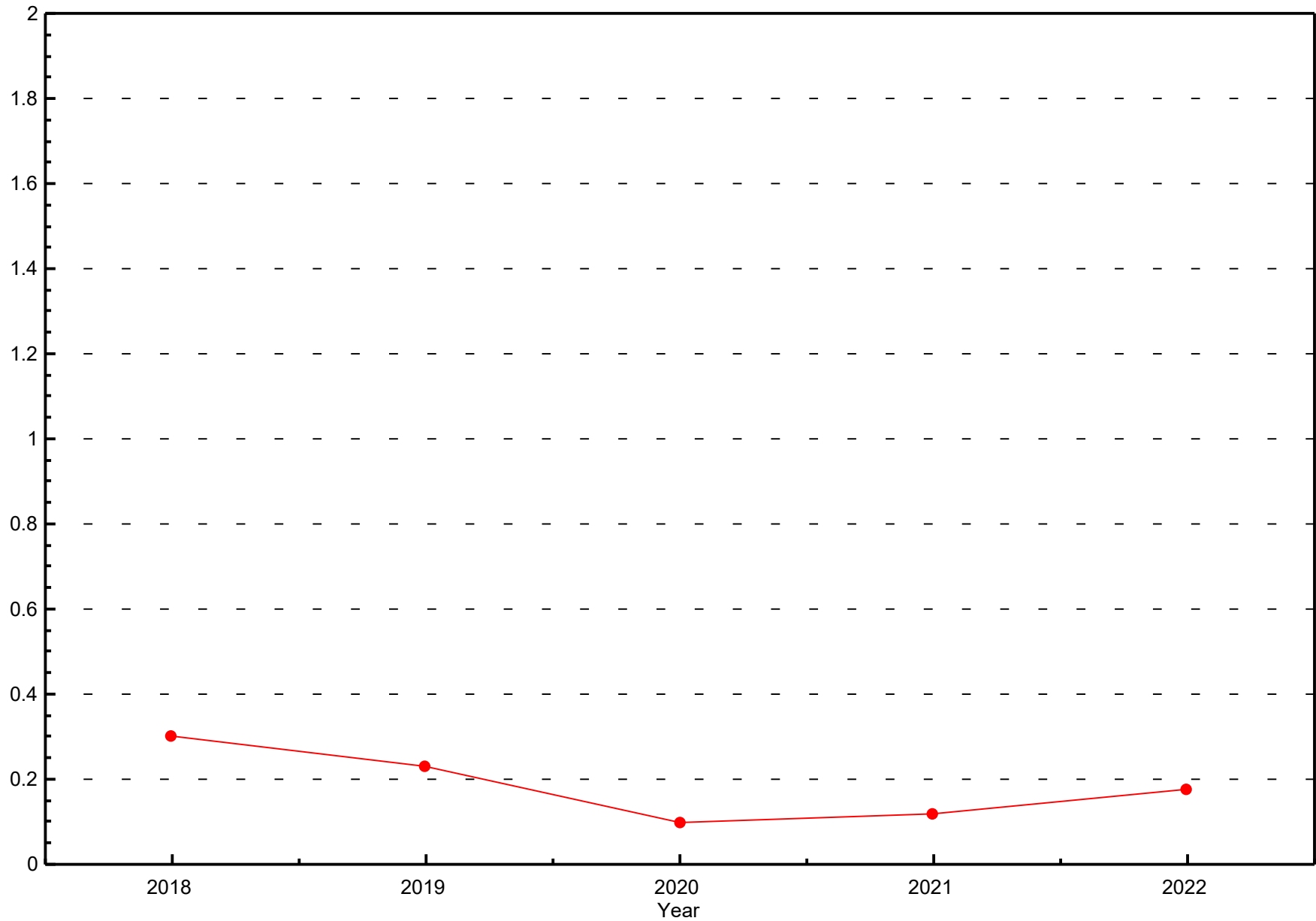
Total Reduced Sulphur (TRS) - ppb
Horizon (2018 to 2022)





Yearly Averages

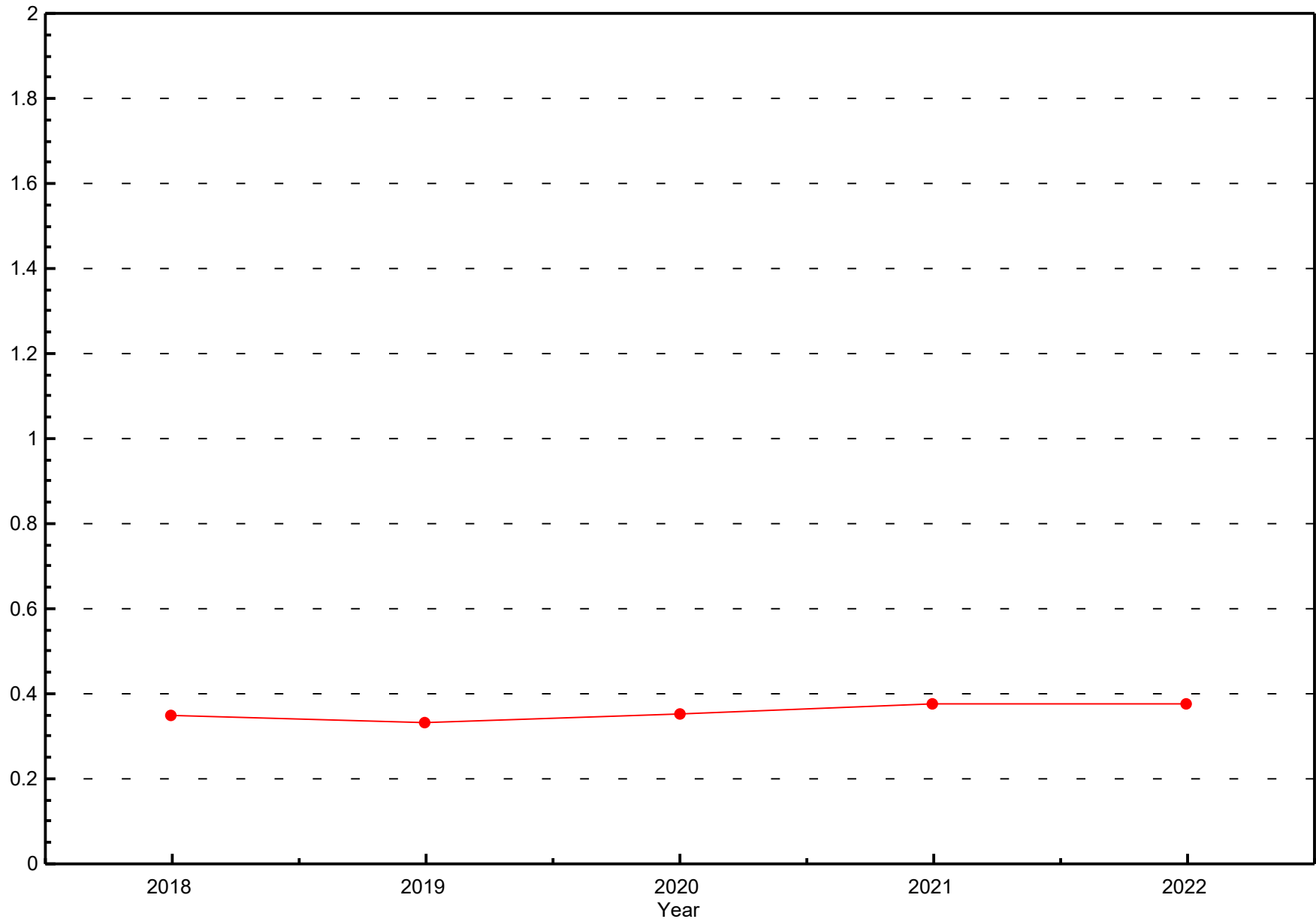
Total Reduced Sulphur (TRS) - ppb
Stony Mountain (2018 to 2022)





Yearly Averages

Total Reduced Sulphur (TRS) - ppb
Conklin (2018 to 2022)

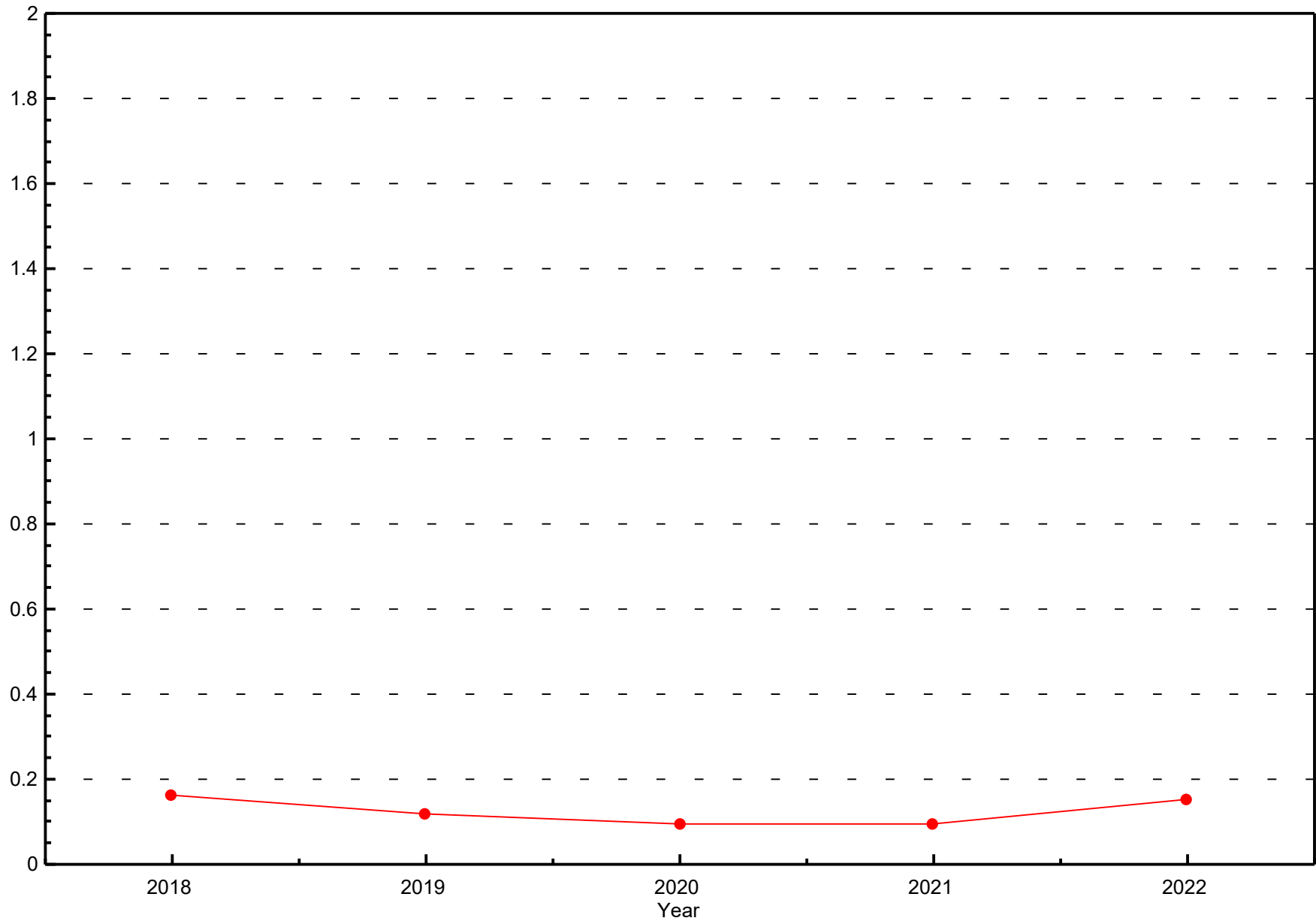




Yearly Averages

Total Reduced Sulphur (TRS) - ppb

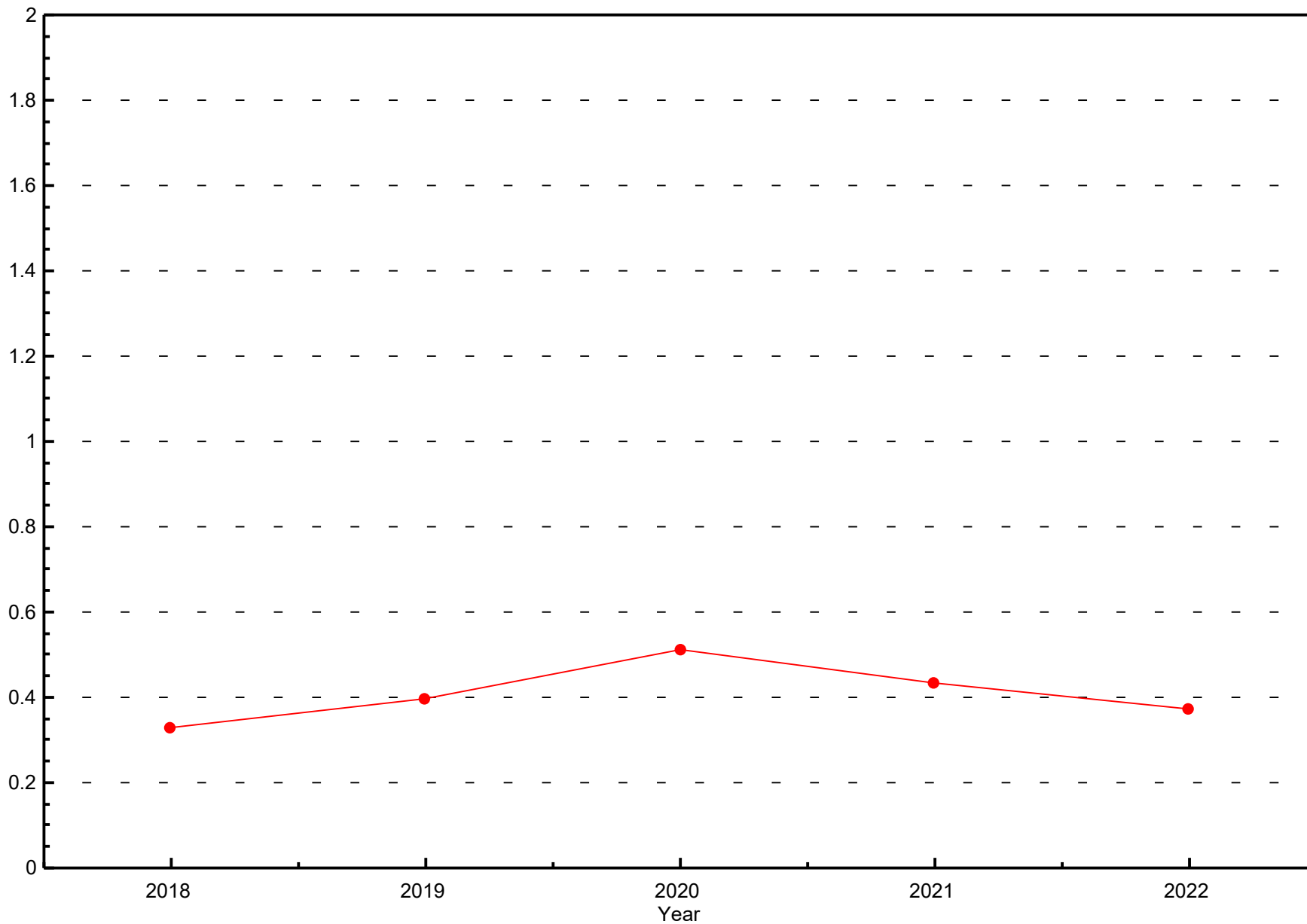
Janvier (2018 to 2022)





Yearly Averages

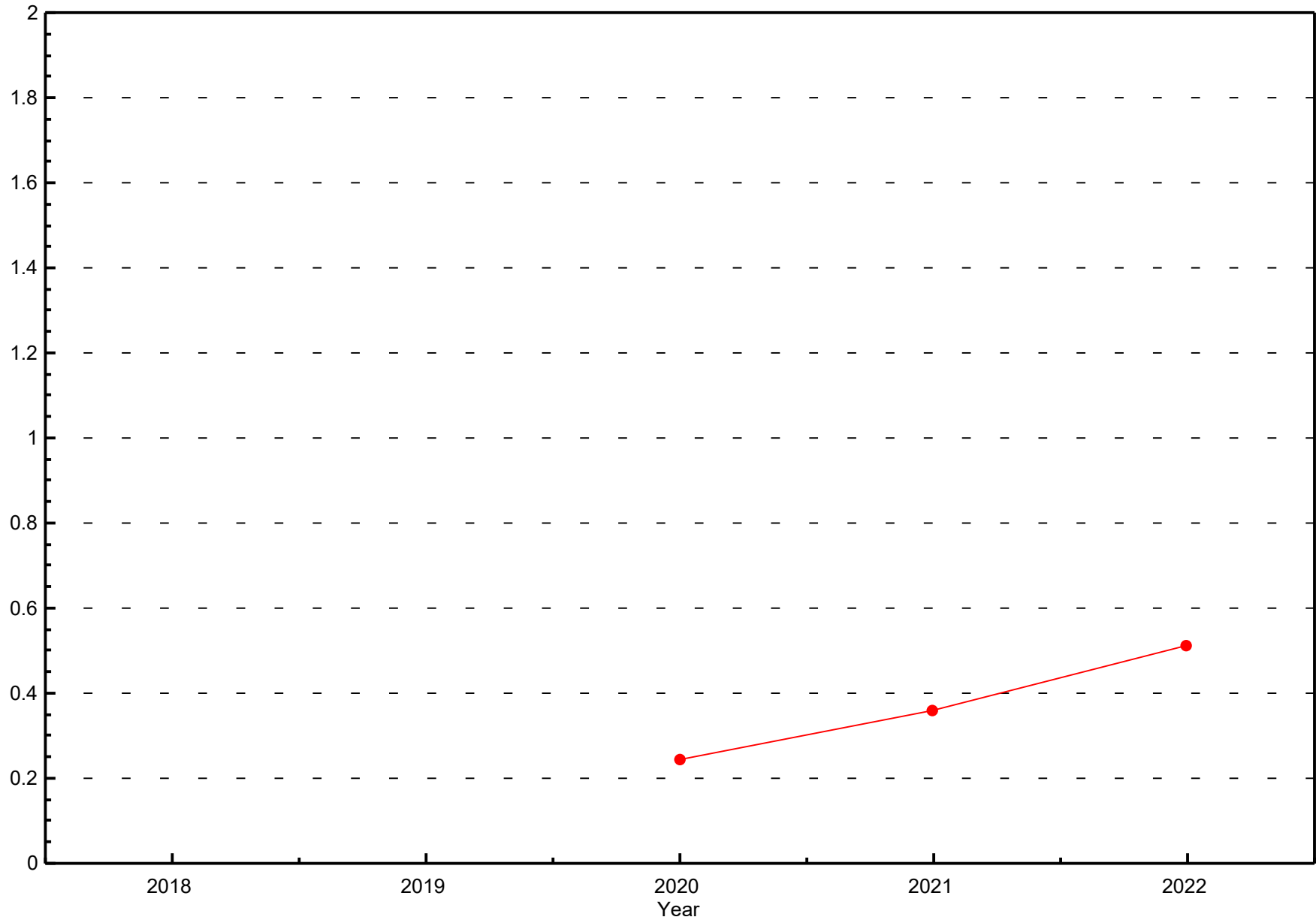
Total Reduced Sulphur (TRS) - ppb
Fort Hills (2018 to 2022)





Yearly Averages

Total Reduced Sulphur (TRS) - ppb
Ells River (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NITROGEN DIOXIDE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	15.1	39.7	0	25.0	100	0.0	0.0	0.0
February	100	637	15.4	41.6	0	24.3	100	0.2	0.0	0.0
March	97	683	11.9	51.4	0	29.0	98	2.5	0.0	0.0
April	100	684	6.7	31.1	0	14.0	100	0.0	0.0	0.0
May	100	697	4.3	31.8	0	10.7	100	0.0	0.0	0.0
June	99	680	4.0	31.8	0	9.0	100	0.0	0.0	0.0
July	100	704	2.8	22.1	0	6.8	100	0.0	0.0	0.0
August	100	707	3.6	36.5	0	7.7	100	0.0	0.0	0.0
September	99	676	4.3	24.6	0	9.6	100	0.0	0.0	0.0
October	100	707	5.9	28.6	0	13.9	100	0.0	0.0	0.0
November	100	684	8.2	27.9	0	16.0	100	0.0	0.0	0.0
December	99	703	12.4	33.8	0	26.8	100	0.0	0.0	0.0
Annual	99	8268	7.8	51.4	0	29.0	100	0.2	0.0	0.0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	10.3	37.6	0	24.4	100	0.0	0.0	0.0
February	100	638	10.7	43.0	0	23.7	100	0.2	0.0	0.0
March	100	707	7.8	56.3	0	33.0	98	2.1	0.0	0.0
April	97	662	5.3	41.7	0	12.1	100	0.2	0.0	0.0
May	99	702	3.6	33.0	0	7.8	100	0.0	0.0	0.0
June	97	659	3.0	26.8	0	8.7	100	0.0	0.0	0.0
July	100	707	1.9	25.7	0	5.1	100	0.0	0.0	0.0
August	98	686	1.9	20.4	0	6.1	100	0.0	0.0	0.0
September	100	685	1.8	20.5	0	6.1	100	0.0	0.0	0.0
October	100	707	2.2	26.0	0	11.5	100	0.0	0.0	0.0
November	98	661	4.6	28.9	0	13.0	100	0.0	0.0	0.0
December	100	708	7.4	37.5	0	19.7	100	0.0	0.0	0.0
Annual	99	8230	5.0	56.3	0	33.0	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	10.9	46.7	0	24.8	100	0.1	0.0	0.0
February	100	638	10.7	45.3	0	22.5	100	0.3	0.0	0.0
March	100	707	7.4	41.8	0	27.3	100	0.1	0.0	0.0
April	95	643	3.9	31.2	0	7.8	100	0.0	0.0	0.0
May	100	704	2.4	30.1	0	6.6	100	0.0	0.0	0.0
June	100	683	2.7	18.1	0	5.1	100	0.0	0.0	0.0
July	100	707	1.6	18.1	0	3.8	100	0.0	0.0	0.0
August	100	707	2.1	14.7	0	4.9	100	0.0	0.0	0.0
September	100	683	2.4	17.3	0	5.2	100	0.0	0.0	0.0
October	100	706	3.6	23.8	0	9.8	100	0.0	0.0	0.0
November	100	684	6.6	40.0	0	18.1	100	0.0	0.0	0.0
December	100	708	8.9	35.9	0	25.0	100	0.0	0.0	0.0
Annual	99	8277	5.3	46.7	0	27.3	100	0.1	0.0	0.0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	11.8	32.2	0	24.9	100	0.0	0.0	0.0
February	100	637	12.4	41.4	0	23.0	100	0.2	0.0	0.0
March	100	707	10.4	47.3	0	26.6	99	1.3	0.0	0.0
April	100	686	4.8	28.5	0	8.5	100	0.0	0.0	0.0
May	100	706	3.1	17.8	0	6.2	100	0.0	0.0	0.0
June	99	679	3.5	20.6	0	5.8	100	0.0	0.0	0.0
July	100	708	2.6	11.4	0	4.1	100	0.0	0.0	0.0
August	100	705	3.8	19.8	0	7.2	100	0.0	0.0	0.0
September	99	674	4.6	22.1	0	8.7	100	0.0	0.0	0.0
October	100	708	5.9	27.7	0	12.1	100	0.0	0.0	0.0
November	100	684	9.1	34.9	0	20.5	100	0.0	0.0	0.0
December	100	708	10.4	34.5	0	23.2	100	0.0	0.0	0.0
Annual	100	8309	6.8	47.3	0	26.6	100	0.1	0.0	0.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	94	663	2.1	24.3	0	8.1	100	0.0	0.0	0.0
February	90	573	1.4	16.9	0	5.0	100	0.0	0.0	0.0
March	99	702	1.0	16.8	0	4.6	100	0.0	0.0	0.0
April	100	681	0.8	12.8	0	3.4	100	0.0	0.0	0.0
May	100	703	0.4	3.7	0	1.5	100	0.0	0.0	0.0
June	100	684	0.5	7.0	0	1.2	100	0.0	0.0	0.0
July	100	709	0.5	9.8	0	2.1	100	0.0	0.0	0.0
August	100	705	0.5	11.1	0	2.7	100	0.0	0.0	0.0
September	98	667	1.0	14.0	0	4.7	100	0.0	0.0	0.0
October	100	707	1.4	14.5	0	4.6	100	0.0	0.0	0.0
November	100	685	1.9	20.2	0	7.8	100	0.0	0.0	0.0
December	100	705	2.5	25.9	0	14.3	100	0.0	0.0	0.0
Annual	98	8184	1.2	25.9	0	14.3	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	702	17.8	50.6	0	33.0	98	2.1	0.0	0.0
February	99	634	18.9	50.4	0	32.5	96	4.1	0.0	0.0
March	100	707	15.5	54.1	0	37.8	97	3.4	0.0	0.0
April	99	678	8.4	39.6	0	17.5	100	0.0	0.0	0.0
May	100	708	5.4	33.8	0	11.3	100	0.0	0.0	0.0
June	100	681	5.7	33.9	0	13.1	100	0.0	0.0	0.0
July	100	705	4.4	23.9	0	7.8	100	0.0	0.0	0.0
August	99	696	5.3	26.0	0	9.5	100	0.0	0.0	0.0
September	100	683	6.6	25.3	0	11.5	100	0.0	0.0	0.0
October	100	707	7.7	33.8	0	15.1	100	0.0	0.0	0.0
November	100	683	10.5	32.0	0	21.6	100	0.0	0.0	0.0
December	100	707	13.6	47.1	0	25.4	100	0.3	0.0	0.0
Annual	100	8291	9.9	54.1	0	37.8	99	0.8	0.0	0.0



**Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	14.6	38.7	0	23.1	100	0.0	0.0	0.0
February	99	635	14.8	41.9	0	25.9	100	0.2	0.0	0.0
March	100	708	11.8	45.0	0	30.0	99	1.3	0.0	0.0
April	100	684	6.3	31.3	0	14.1	100	0.0	0.0	0.0
May	100	708	3.7	29.8	0	7.9	100	0.0	0.0	0.0
June	100	681	3.9	21.6	0	8.9	100	0.0	0.0	0.0
July	93	658	3.5	26.8	0	7.0	100	0.0	0.0	0.0
August	87	617	4.0	34.6	0	10.9	100	0.0	0.0	0.0
September	100	685	4.2	23.5	0	9.4	100	0.0	0.0	0.0
October	100	708	5.1	29.6	0	10.6	100	0.0	0.0	0.0
November	99	681	8.0	31.2	0	17.5	100	0.0	0.0	0.0
December	100	709	12.4	38.5	0	27.4	100	0.0	0.0	0.0
Annual	98	8182	7.7	45.0	0	30.0	100	0.1	0.0	0.0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	4.9	26.6	0	10.5	100	0.0	0.0	0.0
February	100	636	4.8	124.8	0	20.2	100	0.2	0.3	0.0
March	100	708	3.0	33.7	0	12.4	100	0.0	0.0	0.0
April	100	685	1.8	11.2	0	3.7	100	0.0	0.0	0.0
May	100	704	1.0	11.6	0	2.1	100	0.0	0.0	0.0
June	100	684	1.1	7.2	0	2.2	100	0.0	0.0	0.0
July	99	699	0.9	7.6	0	1.8	100	0.0	0.0	0.0
August	78	547	1.1	9.4	0	2.5	100	0.0	0.0	0.0
September	100	685	1.2	8.6	0	2.5	100	0.0	0.0	0.0
October	99	703	1.7	17.1	0	3.7	100	0.0	0.0	0.0
November	100	684	2.7	27.1	0	7.1	100	0.0	0.0	0.0
December	100	709	4.2	28.4	0	15.2	100	0.0	0.0	0.0
Annual	98	8150	2.4	124.8	0	20.2	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	703	4.7	29.9	0	15.6	100	0.0	0.0	0.0
February	100	637	4.3	32.6	0	12.8	100	0.0	0.0	0.0
March	100	709	3.3	32.9	0	11.7	100	0.0	0.0	0.0
April	100	684	1.3	26.0	0	4.8	100	0.0	0.0	0.0
May	99	701	1.0	18.3	0	3.6	100	0.0	0.0	0.0
June	100	684	0.9	15.1	0	3.1	100	0.0	0.0	0.0
July	100	707	1.2	16.1	0	3.6	100	0.0	0.0	0.0
August	97	687	1.8	14.6	0	5.1	100	0.0	0.0	0.0
September	100	685	2.1	14.6	0	5.4	100	0.0	0.0	0.0
October	100	709	2.6	24.2	0	6.1	100	0.0	0.0	0.0
November	98	670	3.6	22.8	0	10.7	100	0.0	0.0	0.0
December	100	708	3.1	25.6	0	9.0	100	0.0	0.0	0.0
Annual	99	8284	2.5	32.9	0	15.6	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	63	442	2.0	11.8	0	5.3	100	0.0	0.0	0.0
February	100	639	1.5	11.2	0	3.1	100	0.0	0.0	0.0
March	100	708	1.2	8.1	0	3.8	100	0.0	0.0	0.0
April	100	684	0.8	3.8	0	1.5	100	0.0	0.0	0.0
May	100	708	0.6	4.9	0	1.2	100	0.0	0.0	0.0
June	93	637	0.6	3.7	0	1.1	100	0.0	0.0	0.0
July	100	707	0.4	3.0	0	0.7	100	0.0	0.0	0.0
August	94	665	0.5	2.7	0	1.0	100	0.0	0.0	0.0
September	100	685	0.7	4.5	0	1.7	100	0.0	0.0	0.0
October	100	708	0.9	4.5	0	2.4	100	0.0	0.0	0.0
November	100	683	1.8	11.6	0	7.5	100	0.0	0.0	0.0
December	100	707	2.5	14.8	0	6.5	100	0.0	0.0	0.0
Annual	96	7973	1.1	14.8	0	7.5	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	95	676	5.5	40.8	0	18.0	100	0.2	0.0	0.0
February	100	639	6.1	44.7	0	15.0	99	0.6	0.0	0.0
March	99	702	4.5	37.3	0	14.5	100	0.0	0.0	0.0
April	100	683	1.9	20.4	0	7.9	100	0.0	0.0	0.0
May	100	708	1.5	15.3	0	3.5	100	0.0	0.0	0.0
June	100	684	1.7	23.3	0	4.8	100	0.0	0.0	0.0
July	100	708	1.8	18.9	0	3.7	100	0.0	0.0	0.0
August	99	702	2.0	13.8	0	5.5	100	0.0	0.0	0.0
September	100	685	2.3	24.7	0	6.3	100	0.0	0.0	0.0
October	100	708	2.5	19.2	0	6.5	100	0.0	0.0	0.0
November	100	685	3.7	27.6	0	10.9	100	0.0	0.0	0.0
December	100	707	3.3	28.1	0	7.3	100	0.0	0.0	0.0
Annual	99	8287	3.0	44.7	0	18.0	100	0.1	0.0	0.0



**Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
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	8.4	34.2	0	19.0	100	0.0	0.0	0.0
February	100	639	4.5	35.1	0	18.5	100	0.0	0.0	0.0
March	100	704	2.6	30.9	0	13.3	100	0.0	0.0	0.0
April	100	684	2.4	28.7	0	6.3	100	0.0	0.0	0.0
May	100	707	1.1	16.2	0	5.2	100	0.0	0.0	0.0
June	100	682	1.1	14.2	0	3.8	100	0.0	0.0	0.0
July	100	708	0.8	16.1	0	3.3	100	0.0	0.0	0.0
August	100	707	1.1	13.5	0	4.9	100	0.0	0.0	0.0
September	100	686	1.1	15.6	0	6.0	100	0.0	0.0	0.0
October	100	709	1.4	16.4	0	8.3	100	0.0	0.0	0.0
November	100	685	2.6	27.0	0	15.9	100	0.0	0.0	0.0
December	100	708	5.1	31.0	0	19.6	100	0.0	0.0	0.0
Annual	100	8326	2.7	35.1	0	19.6	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	3.1	23.3	0	5.5	100	0.0	0.0	0.0
February	100	639	2.4	17.4	0	4.9	100	0.0	0.0	0.0
March	100	708	1.9	14.8	0	6.2	100	0.0	0.0	0.0
April	100	684	1.2	18.8	0	2.6	100	0.0	0.0	0.0
May	100	708	0.8	9.6	0	1.5	100	0.0	0.0	0.0
June	100	685	0.9	7.4	0	1.5	100	0.0	0.0	0.0
July	100	706	0.7	5.8	0	1.4	100	0.0	0.0	0.0
August	98	687	0.8	7.3	0	1.6	100	0.0	0.0	0.0
September	98	677	1.0	7.2	0	1.9	100	0.0	0.0	0.0
October	100	709	1.5	11.6	0	3.2	100	0.0	0.0	0.0
November	100	683	2.4	11.5	0	7.0	100	0.0	0.0	0.0
December	100	708	3.3	17.0	0	8.0	100	0.0	0.0	0.0
Annual	100	8302	1.7	23.3	0	8.0	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	3.1	18.2	0	6.6	100	0.0	0.0	0.0
February	100	639	2.3	11.4	0	4.5	100	0.0	0.0	0.0
March	100	706	1.8	14.3	0	4.8	100	0.0	0.0	0.0
April	100	683	1.0	4.9	0	1.8	100	0.0	0.0	0.0
May	100	708	0.6	7.9	0	1.6	100	0.0	0.0	0.0
June	100	683	0.7	6.0	0	1.6	100	0.0	0.0	0.0
July	99	702	0.6	3.1	0	1.1	100	0.0	0.0	0.0
August	97	685	0.7	3.0	0	1.2	100	0.0	0.0	0.0
September	95	651	0.5	5.7	0	1.4	100	0.0	0.0	0.0
October	100	707	1.3	15.5	0	4.0	100	0.0	0.0	0.0
November	100	684	2.1	9.8	0	6.3	100	0.0	0.0	0.0
December	100	707	2.7	22.5	0	9.1	100	0.0	0.0	0.0
Annual	99	8263	1.4	22.5	0	9.1	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	16.5	54.7	0	40.3	96	3.5	0.0	0.0
February	100	638	18.1	52.7	0	29.5	99	1.1	0.0	0.0
March	100	706	16.0	85.3	0	47.2	93	7.1	0.1	0.0
April	100	682	9.0	47.9	0	20.3	99	1.3	0.0	0.0
May	100	706	8.8	39.7	0	15.5	100	0.0	0.0	0.0
June	100	683	6.3	39.9	0	15.5	100	0.0	0.0	0.0
July	100	707	4.7	36.0	0	10.9	100	0.0	0.0	0.0
August	99	703	4.5	32.8	0	11.0	100	0.0	0.0	0.0
September	100	686	5.7	34.8	0	12.0	100	0.0	0.0	0.0
October	100	707	9.1	44.1	0	20.1	100	0.3	0.0	0.0
November	100	685	9.2	42.0	0	25.8	100	0.2	0.0	0.0
December	100	707	12.9	35.1	0	23.3	100	0.0	0.0	0.0
Annual	100	8318	10.0	85.3	0	47.2	99	1.1	0.0	0.0



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	703	5.1	27.2	0	8.9	100	0.0	0.0	0.0
February	100	637	4.6	27.0	0	8.2	100	0.0	0.0	0.0
March	89	626	3.5	25.9	0	6.4	100	0.0	0.0	0.0
April	99	678	2.3	14.0	0	7.4	100	0.0	0.0	0.0
May	100	707	1.7	15.7	0	3.3	100	0.0	0.0	0.0
June	100	681	1.7	21.4	0	4.1	100	0.0	0.0	0.0
July	100	705	1.6	16.1	0	3.2	100	0.0	0.0	0.0
August	99	701	1.7	11.9	0	5.3	100	0.0	0.0	0.0
September	93	632	2.3	14.2	0	4.1	100	0.0	0.0	0.0
October	100	708	2.9	19.2	0	9.8	100	0.0	0.0	0.0
November	100	685	3.5	18.5	0	7.1	100	0.0	0.0	0.0
December	100	706	4.5	28.1	0	13.8	100	0.0	0.0	0.0
Annual	98	8169	2.9	28.1	0	13.8	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
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	703	2.6	14.0	0	5.1	100	0.0	0.0	0.0
February	100	637	1.9	10.7	0	3.6	100	0.0	0.0	0.0
March	100	708	1.3	12.2	0	3.3	100	0.0	0.0	0.0
April	100	683	0.9	4.5	0	1.6	100	0.0	0.0	0.0
May	100	708	0.6	5.5	0	1.2	100	0.0	0.0	0.0
June	100	683	0.4	11.4	0	2.0	100	0.0	0.0	0.0
July	100	707	0.3	7.5	0	0.9	100	0.0	0.0	0.0
August	100	707	0.5	4.9	0	1.6	100	0.0	0.0	0.0
September	100	686	0.7	13.1	0	1.7	100	0.0	0.0	0.0
October	100	709	0.9	6.7	0	2.3	100	0.0	0.0	0.0
November	100	685	1.8	11.8	0	5.9	100	0.0	0.0	0.0
December	100	706	2.6	13.8	0	7.0	100	0.0	0.0	0.0
Annual	100	8322	1.2	14.0	0	7.0	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
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	699	3.9	25.0	0	8.6	100	0.0	0.0	0.0
February	100	638	3.0	25.5	0	8.5	100	0.0	0.0	0.0
March	100	705	2.2	20.0	0	8.2	100	0.0	0.0	0.0
April	100	682	1.3	10.0	0	2.6	100	0.0	0.0	0.0
May	98	694	0.6	6.8	0	1.7	100	0.0	0.0	0.0
June	100	684	0.8	19.1	0	3.4	100	0.0	0.0	0.0
July	100	707	0.7	4.1	0	1.4	100	0.0	0.0	0.0
August	100	708	0.9	6.1	0	2.6	100	0.0	0.0	0.0
September	100	682	0.8	10.1	0	2.3	100	0.0	0.0	0.0
October	100	706	1.2	8.5	0	2.9	100	0.0	0.0	0.0
November	100	682	2.0	7.5	0	4.9	100	0.0	0.0	0.0
December	100	707	2.9	23.1	0	9.6	100	0.0	0.0	0.0
Annual	100	8294	1.7	25.5	0	9.6	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
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	11.9	39.7	0	26.0	100	0.0	0.0	0.0
February	99	634	11.5	38.8	0	24.8	100	0.0	0.0	0.0
March	100	708	8.9	47.1	0	22.9	99	1.4	0.0	0.0
April	100	685	4.6	37.3	0	14.1	100	0.0	0.0	0.0
May	97	686	3.6	34.3	0	9.5	100	0.0	0.0	0.0
June	100	683	3.2	27.1	0	11.9	100	0.0	0.0	0.0
July	91	645	2.1	20.1	0	5.7	100	0.0	0.0	0.0
August	100	707	2.3	22.3	0	5.4	100	0.0	0.0	0.0
September	100	687	3.4	32.3	0	8.2	100	0.0	0.0	0.0
October	100	709	4.7	26.2	0	15.3	100	0.0	0.0	0.0
November	100	685	6.2	32.5	0	14.0	100	0.0	0.0	0.0
December	100	708	9.2	31.4	0	19.6	100	0.0	0.0	0.0
Annual	99	8245	6.0	47.1	0	26.0	100	0.1	0.0	0.0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	702	2.6	22.1	0	5.2	100	0.0	0.0	0.0
February	100	639	2.1	16.5	0	4.2	100	0.0	0.0	0.0
March	100	707	1.3	12.4	0	3.3	100	0.0	0.0	0.0
Annual	100	2048	2.0	22.1	0	5.2	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	4.6	29.3	0	10.2	100	0.0	0.0	0.0
February	100	639	4.6	32.6	0	10.6	100	0.0	0.0	0.0
March	100	705	3.7	31.7	0	10.0	100	0.0	0.0	0.0
April	100	683	1.7	14.8	0	8.1	100	0.0	0.0	0.0
May	96	676	1.3	16.8	0	6.0	100	0.0	0.0	0.0
June	98	671	0.9	13.0	0	3.4	100	0.0	0.0	0.0
July	100	708	2.2	20.5	0	7.7	100	0.0	0.0	0.0
Annual	99	4790	2.7	32.6	0	10.6	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
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
August	100	708	1.5	15.9	0	5.1	100	0.0	0.0	0.0
September	100	686	1.9	14.2	0	5.1	100	0.0	0.0	0.0
October	100	709	2.1	19.6	0	9.2	100	0.0	0.0	0.0
November	100	685	2.6	14.2	0	5.2	100	0.0	0.0	0.0
December	100	708	3.0	17.6	0	8.8	100	0.0	0.0	0.0
Annual	100	3496	2.2	19.6	0	9.2	100	0.0	0.0	0.0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
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	11.2	0	5.3	100	0.0	0.0	0.0
February	96	615	1.9	11.0	0	3.7	100	0.0	0.0	0.0
March	96	679	1.2	13.0	0	2.9	100	0.0	0.0	0.0
April	97	662	0.7	16.3	0	1.9	100	0.0	0.0	0.0
May	95	675	0.5	23.7	0	2.4	100	0.0	0.0	0.0
June	100	630	0.4	12.8	0	2.1	100	0.0	0.0	0.0
Annual	98	3968	1.1	23.7	0	5.3	100	0.0	0.0	0.0



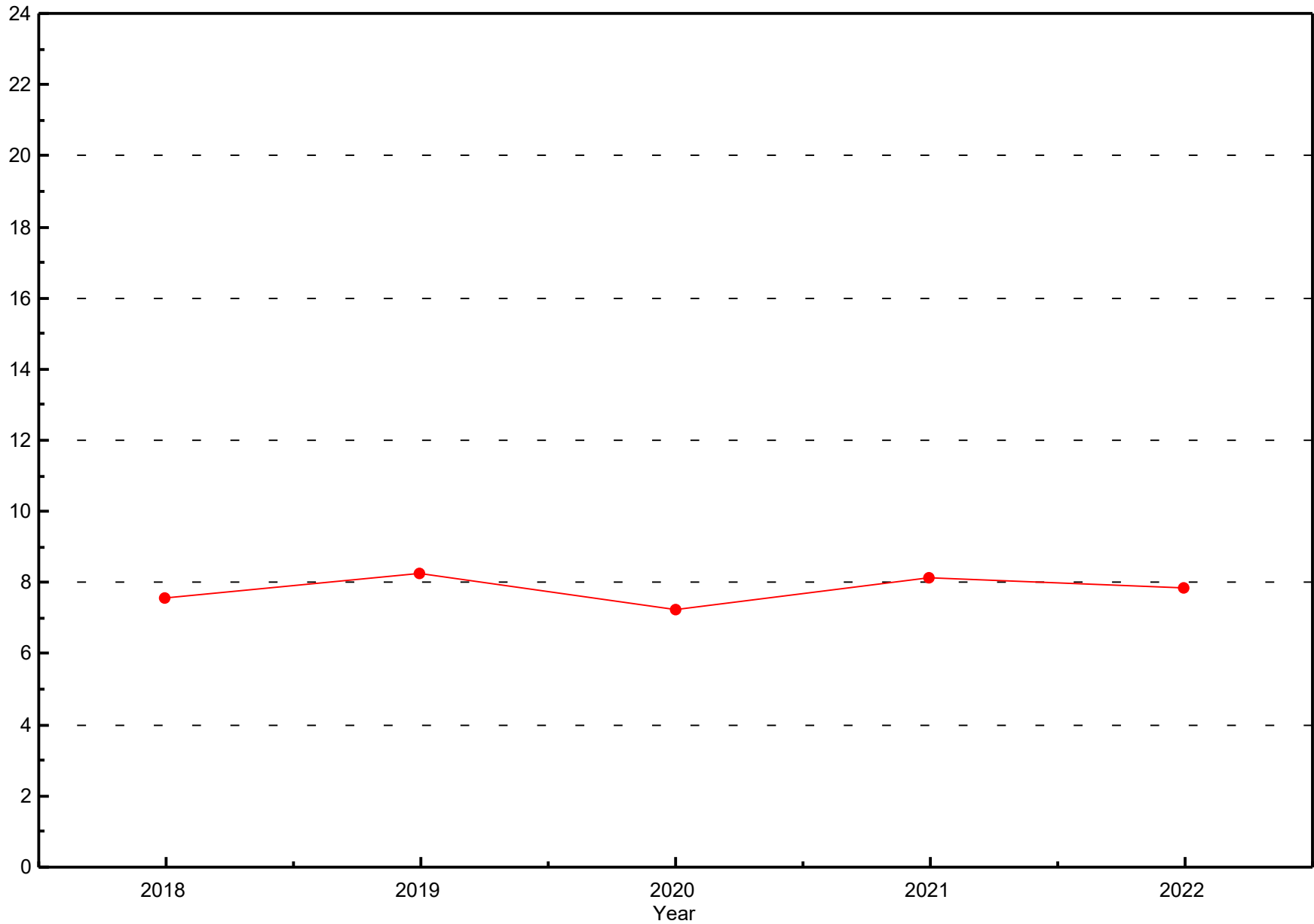
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Nitrogen Dioxide (ppb) Average

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
July	99	703	0.4	10.4	0	1.2	100	0.0	0.0	0.0
August	94	656	1.0	8.5	0	2.1	100	0.0	0.0	0.0
September	92	629	1.2	10.6	0	2.5	100	0.0	0.0	0.0
October	100	706	1.8	15.3	0	4.6	100	0.0	0.0	0.0
November	100	683	2.2	12.4	0	6.5	100	0.0	0.0	0.0
December	100	704	2.6	14.1	0	7.2	100	0.0	0.0	0.0
Annual	97	4081	1.5	15.3	0	7.2	100	0.0	0.0	0.0



Yearly Averages

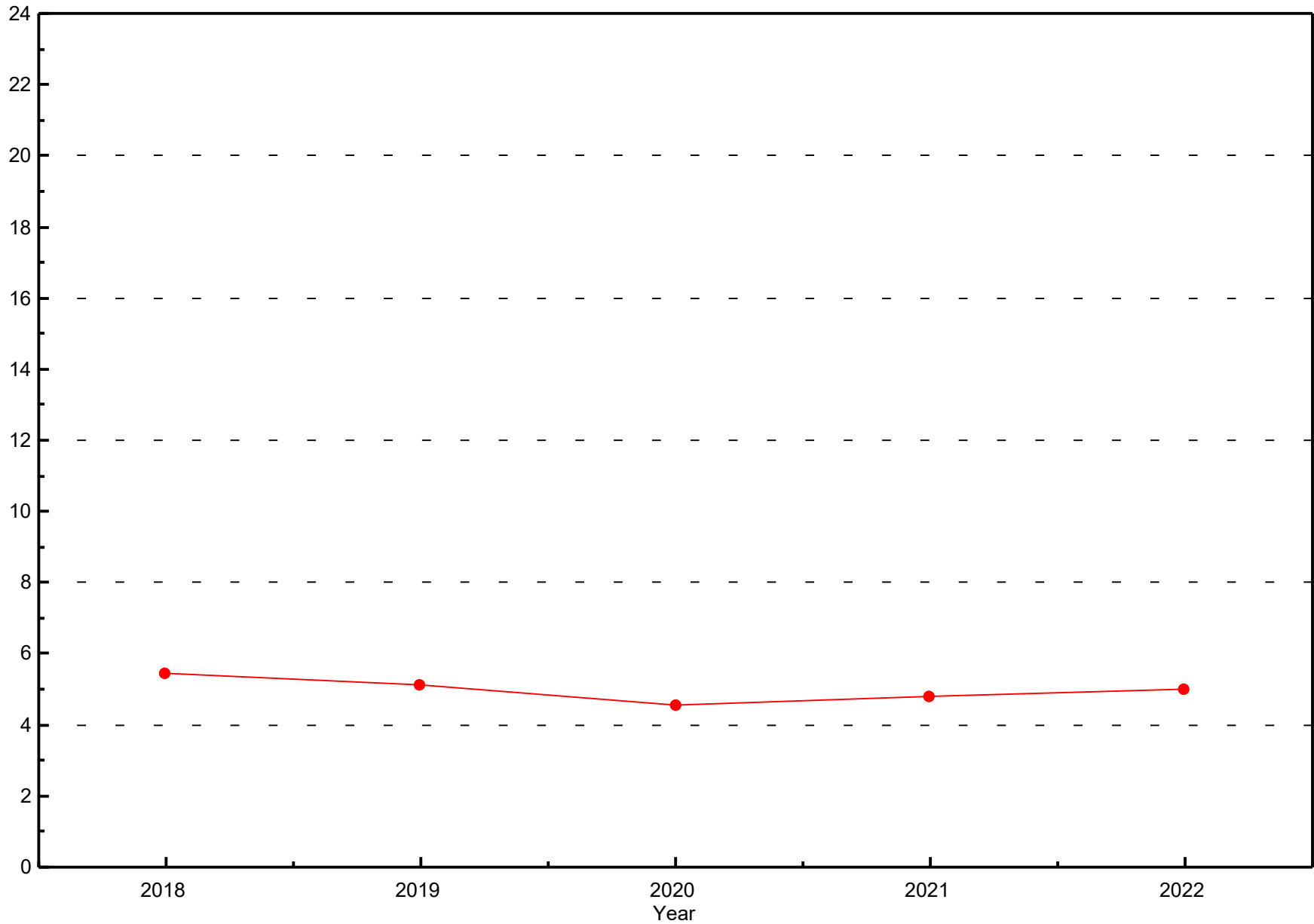
Nitrogen Dioxide (NO₂) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

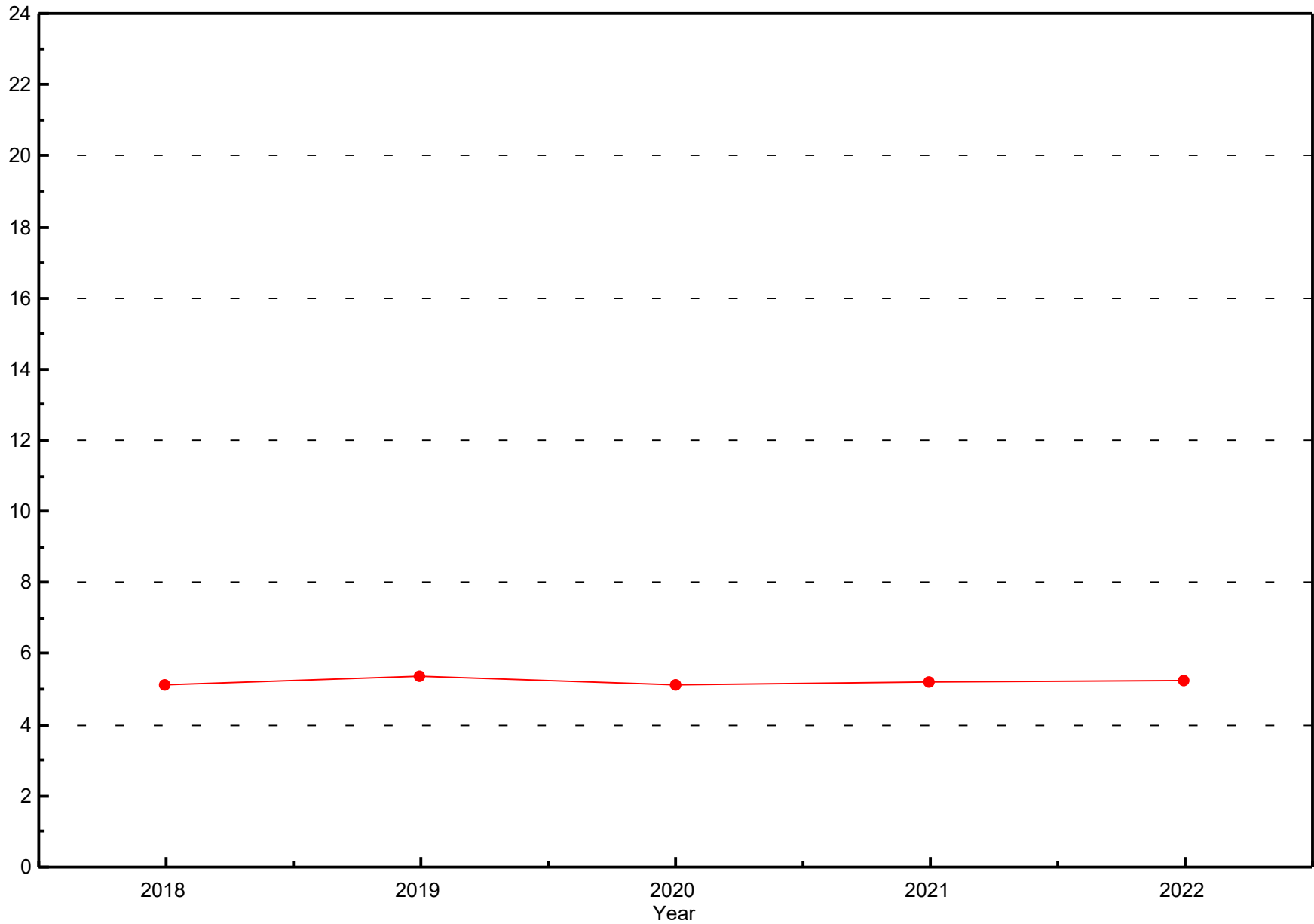
Nitrogen Dioxide (NO₂) - ppb
Buffalo Viewpoint (2018 to 2022)





Yearly Averages

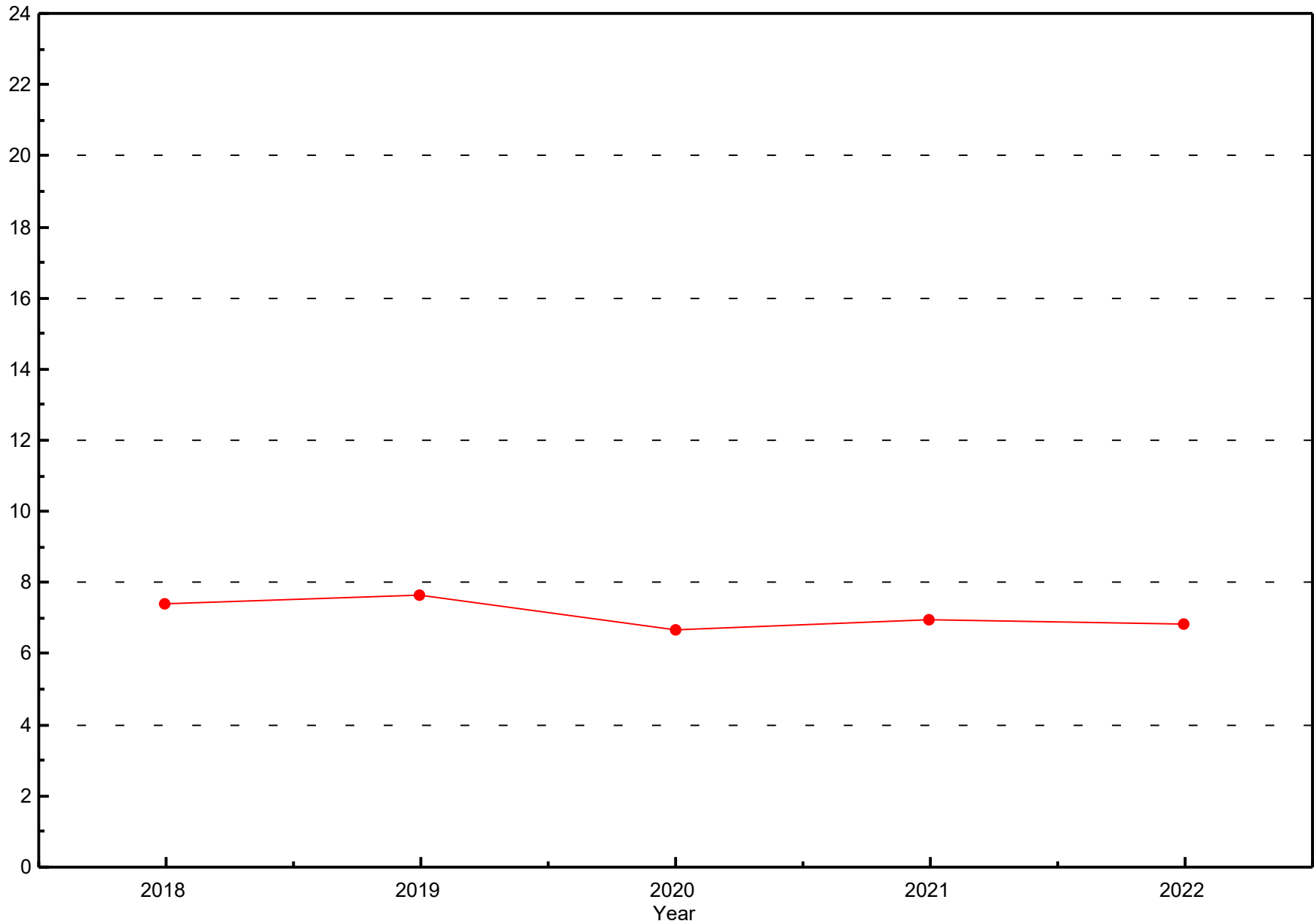
Nitrogen Dioxide (NO₂) - ppb
Patricia McInnes (2018 to 2022)





Yearly Averages

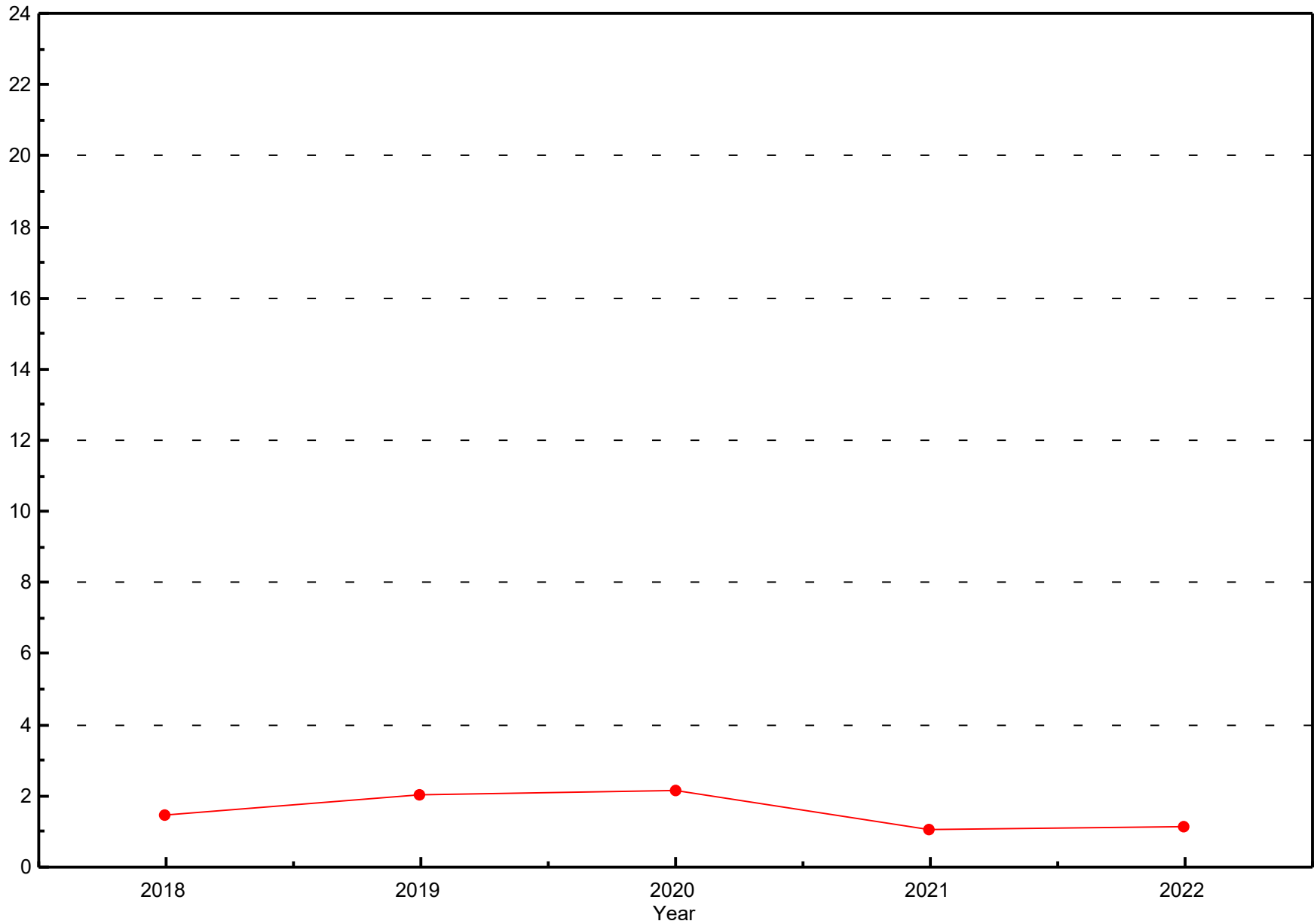
Nitrogen Dioxide (NO₂) - ppb
Athabasca Valley (2018 to 2022)





Yearly Averages

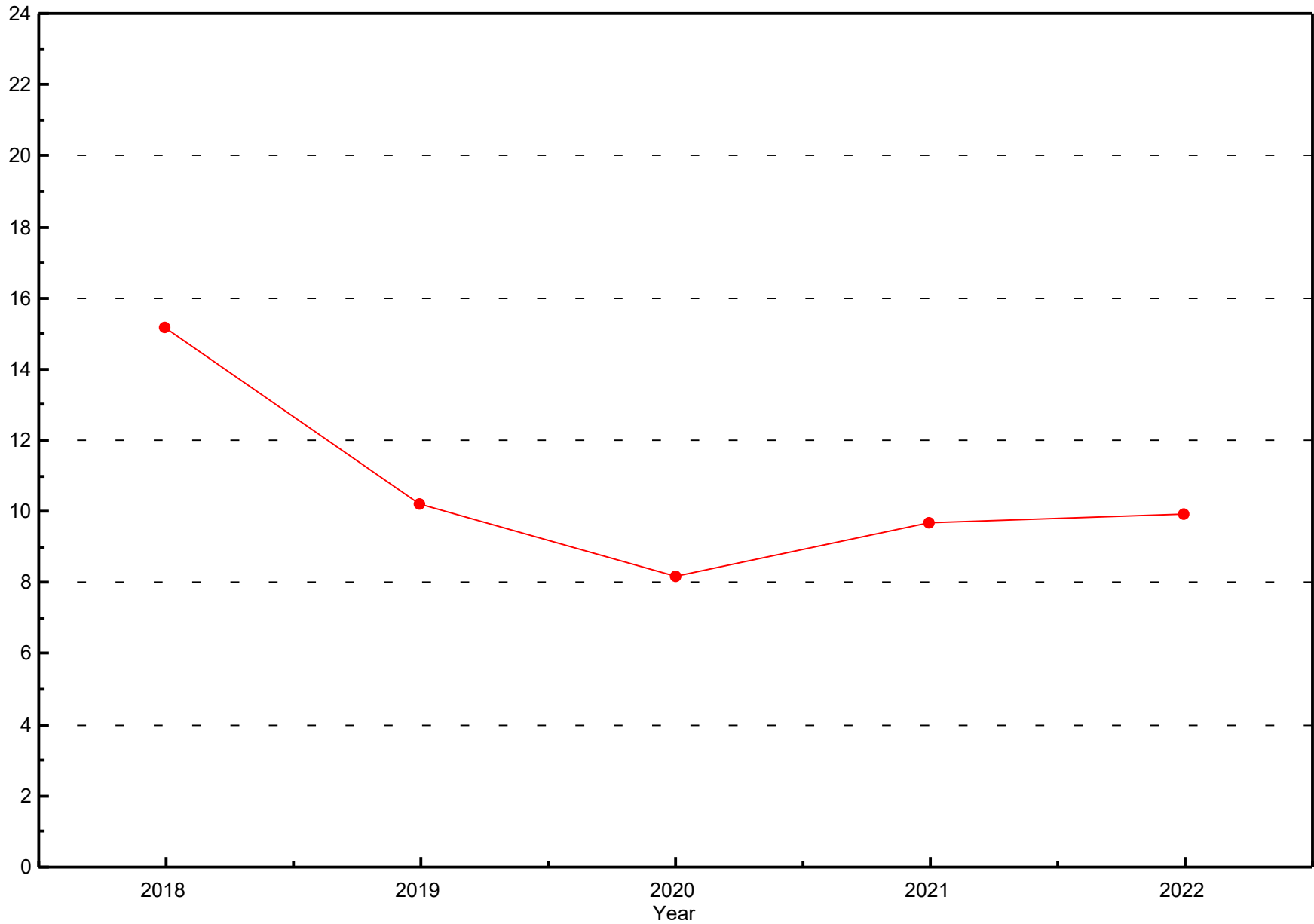
Nitrogen Dioxide (NO₂) - ppb
Fort Chipewyan (2018 to 2022)





Yearly Averages

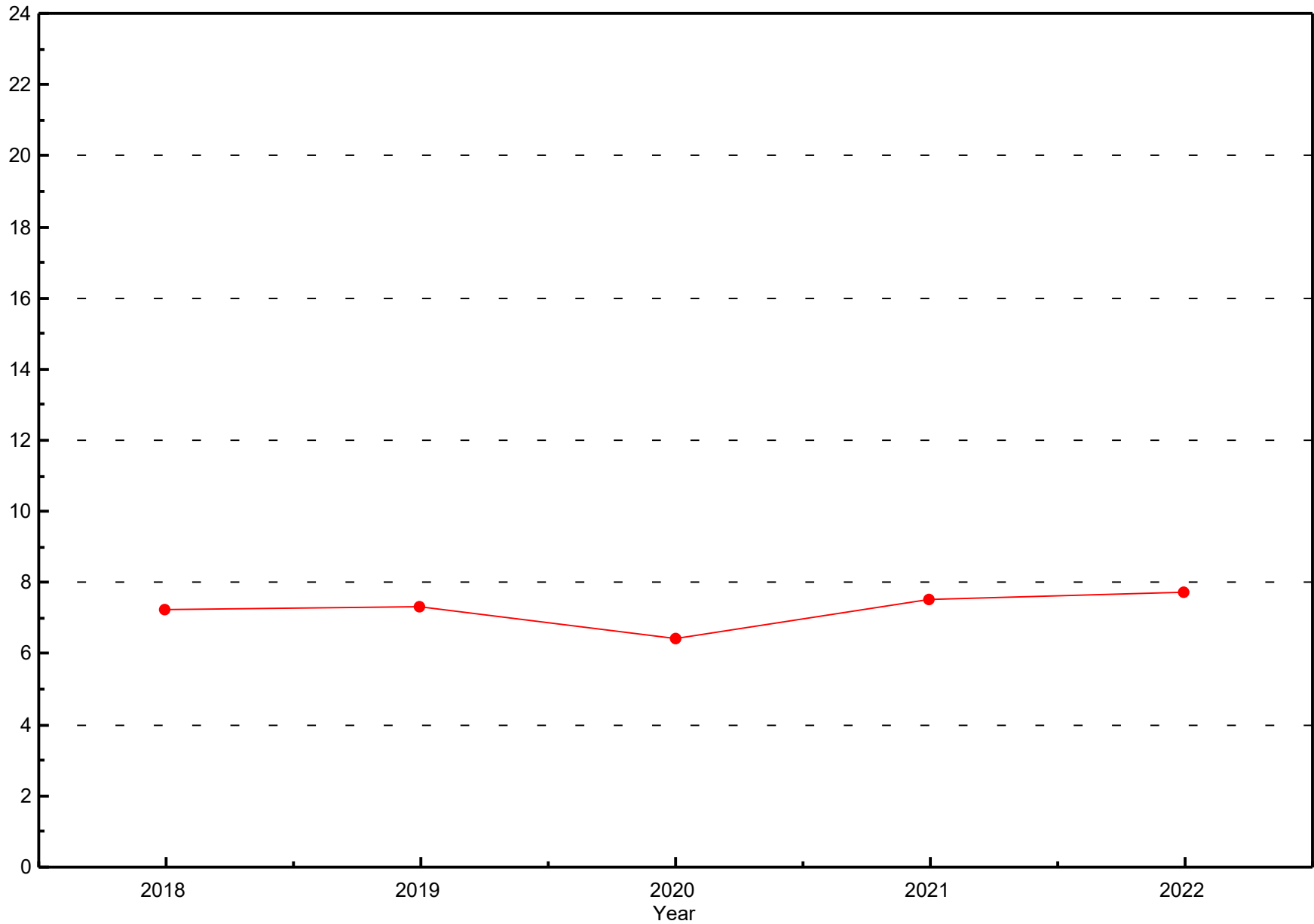
Nitrogen Dioxide (NO₂) - ppb
Barge Landing (2018 to 2022)





Yearly Averages

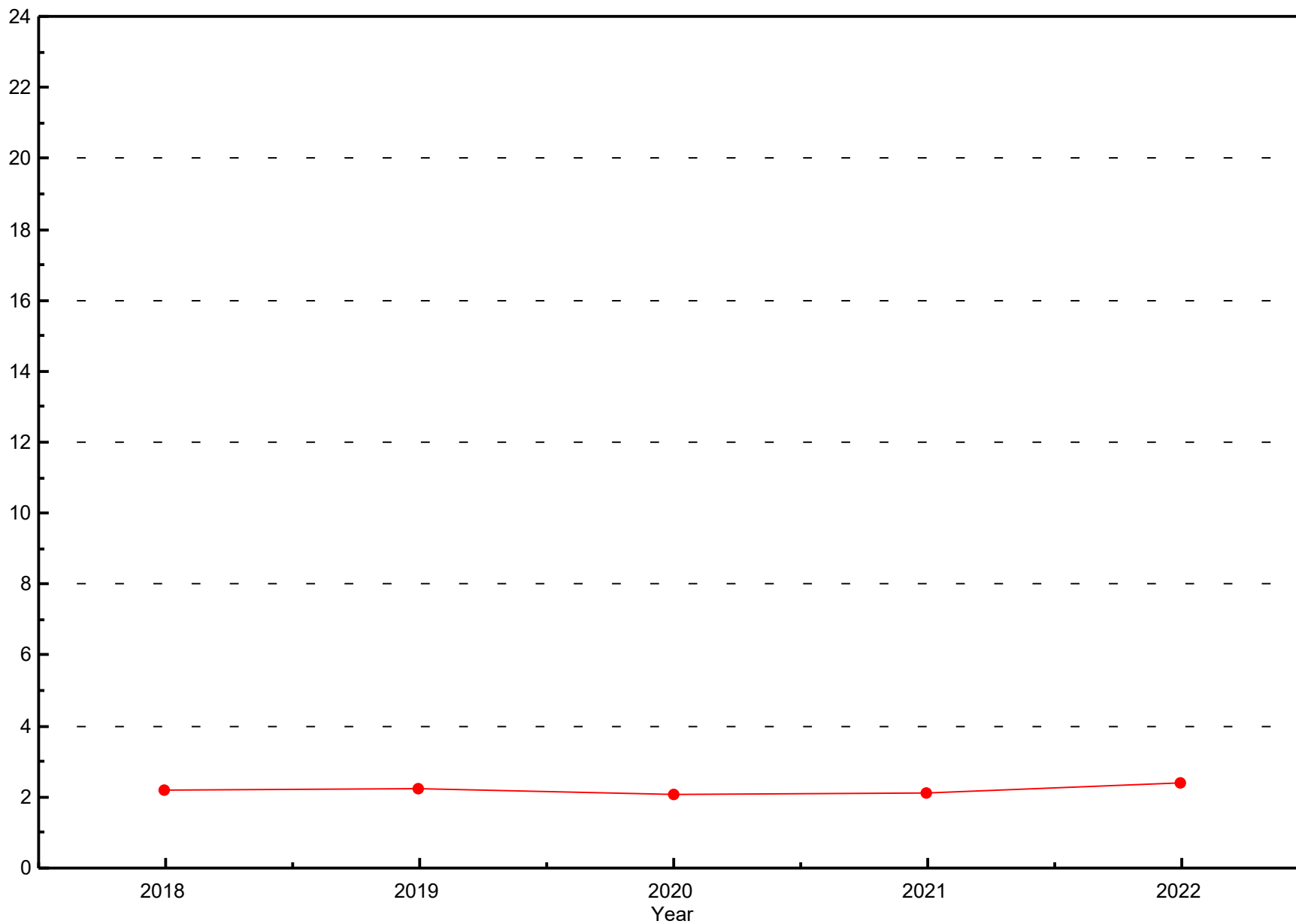
Nitrogen Dioxide (NO₂) - ppb
Fort McKay South (2018 to 2022)





Yearly Averages

Nitrogen Dioxide (NO₂) - ppb
Anzac (2018 to 2022)

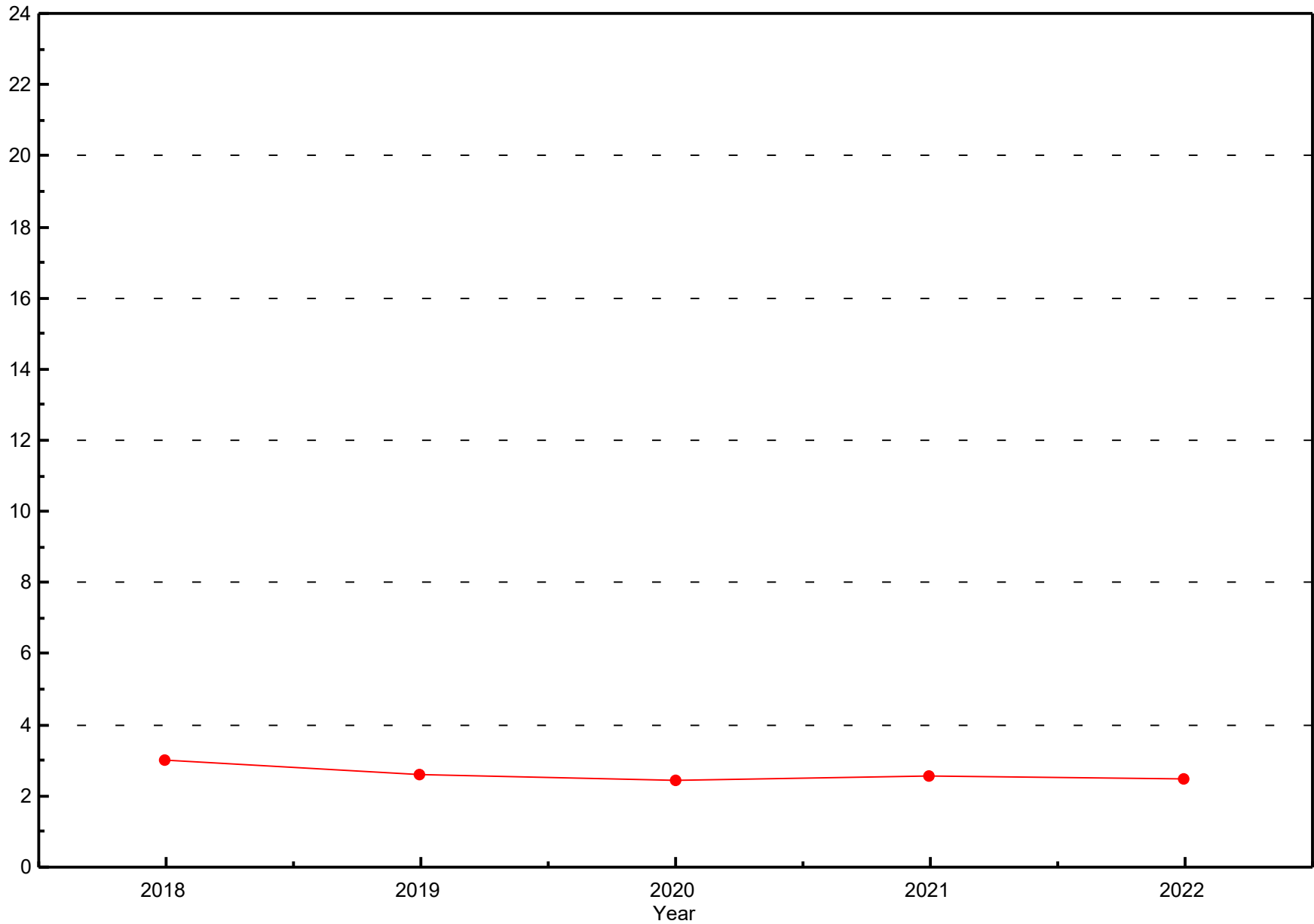




Yearly Averages

Nitrogen Dioxide (NO₂) - ppb

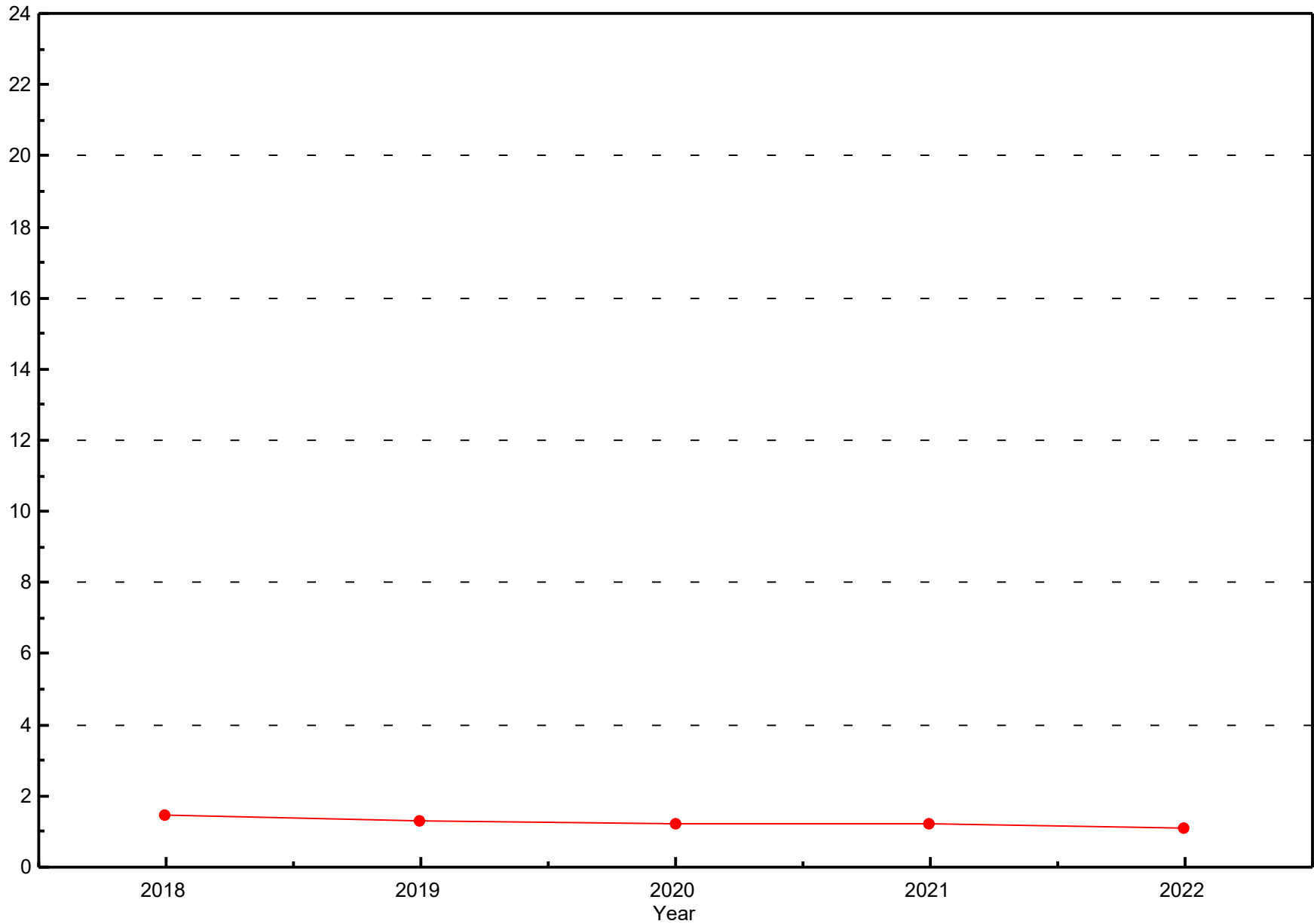
Wapasu (2018 to 2022)





Yearly Averages

Nitrogen Dioxide (NO₂) - ppb
Stony Mountain (2018 to 2022)

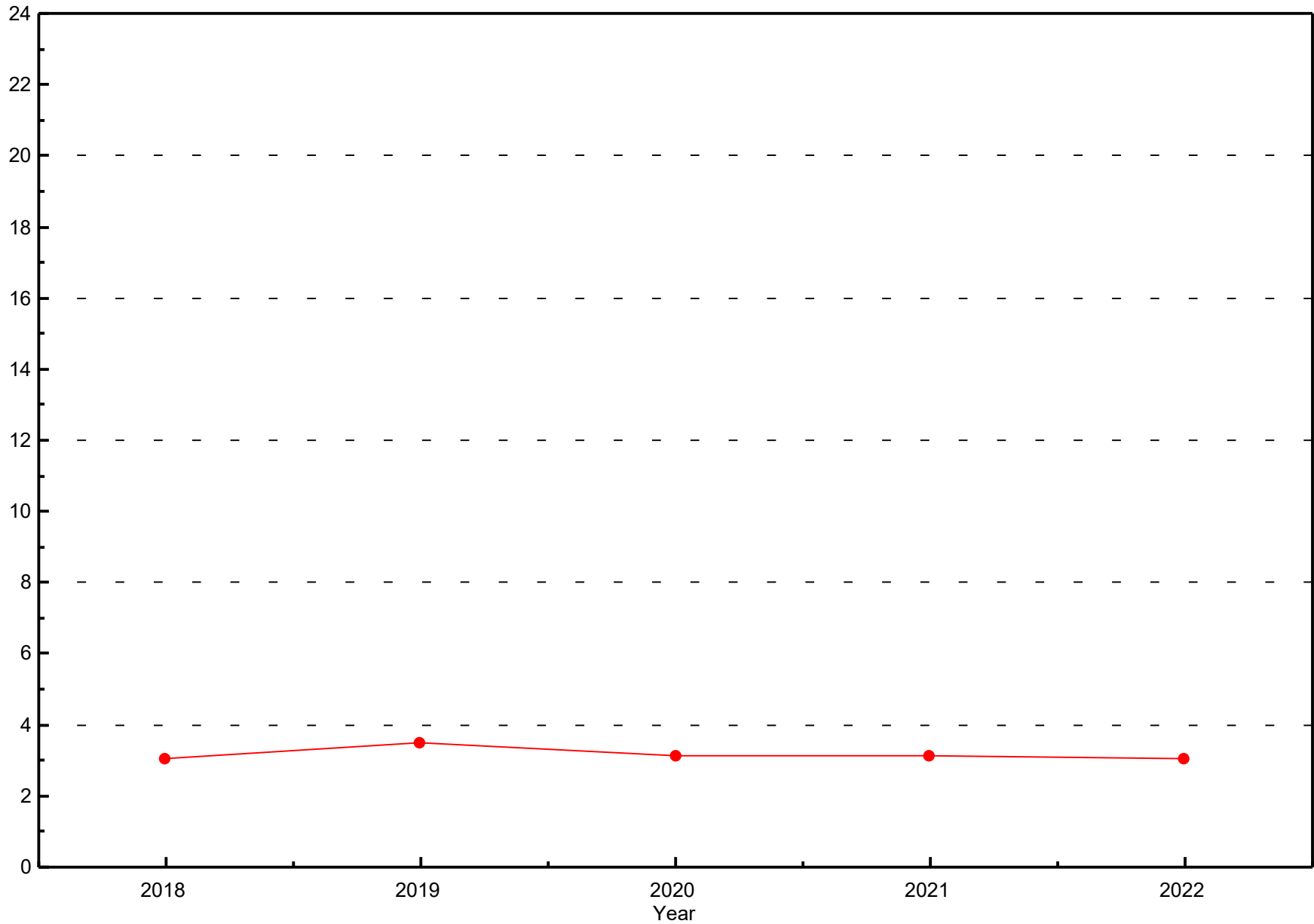




Yearly Averages

Nitrogen Dioxide (NO₂) - ppb

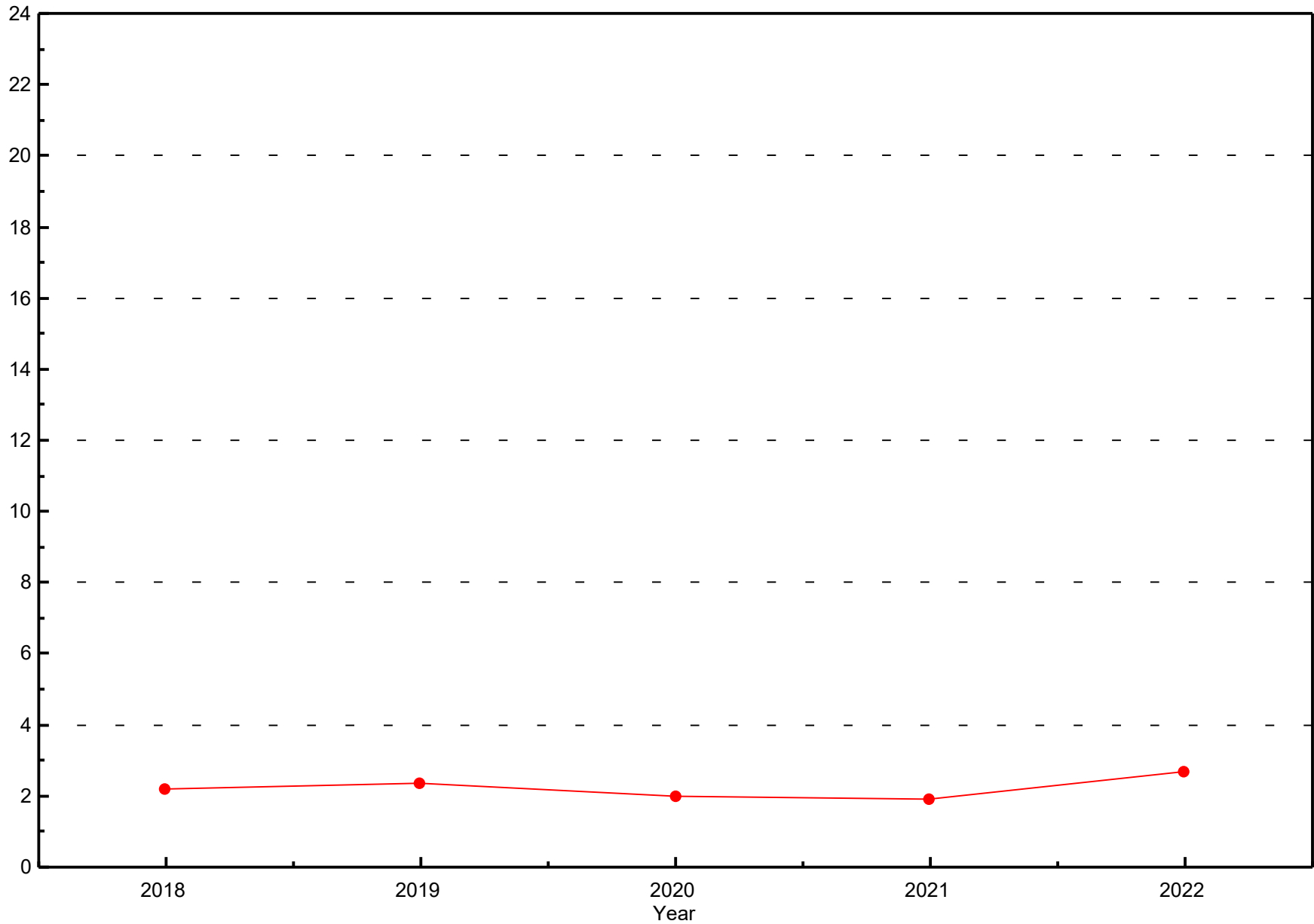
Firebag (2018 to 2022)





Yearly Averages

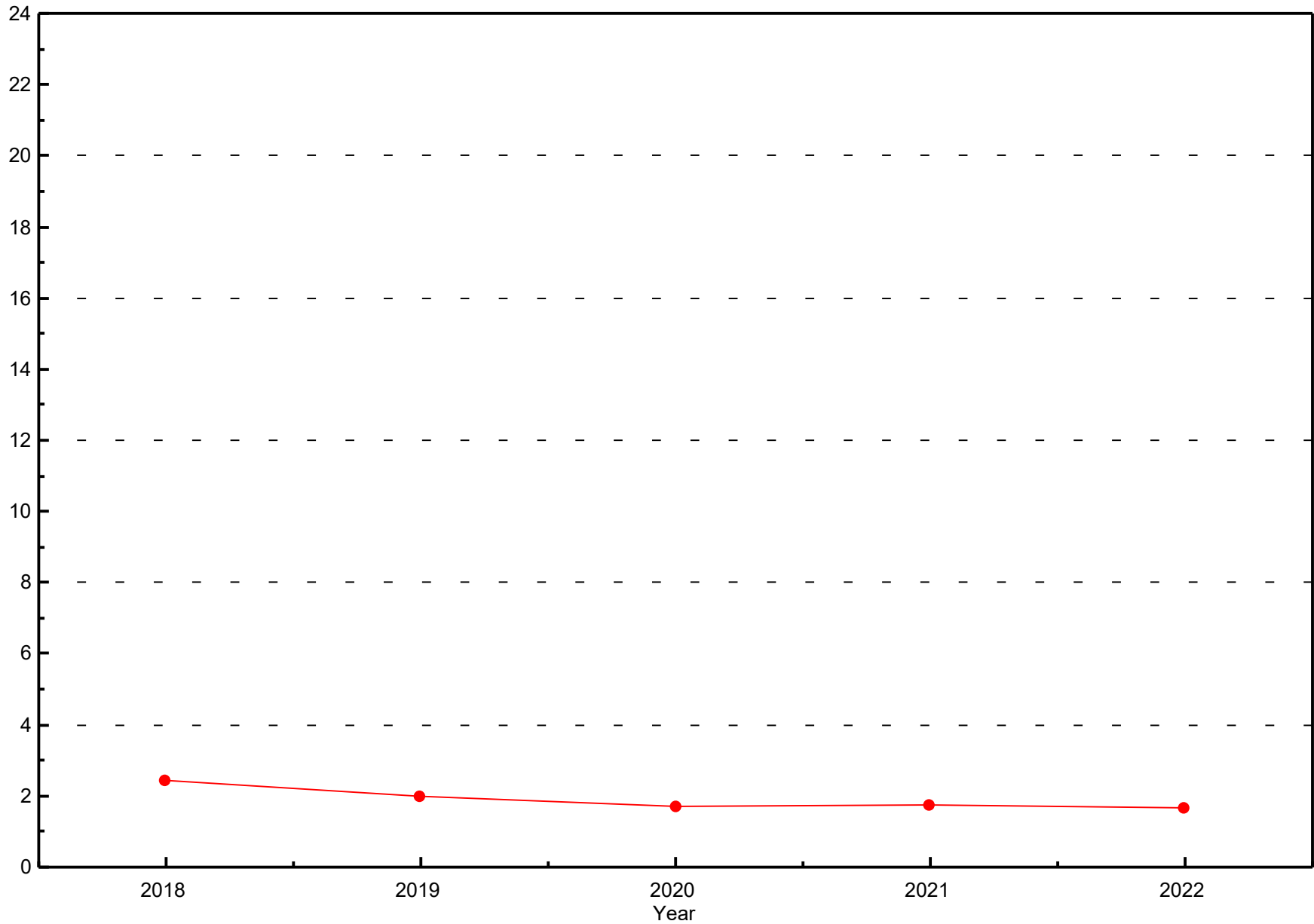
Nitrogen Dioxide (NO₂) - ppb
Mackay River (2018 to 2022)





Yearly Averages

Nitrogen Dioxide (NO₂) - ppb
Conklin (2018 to 2022)

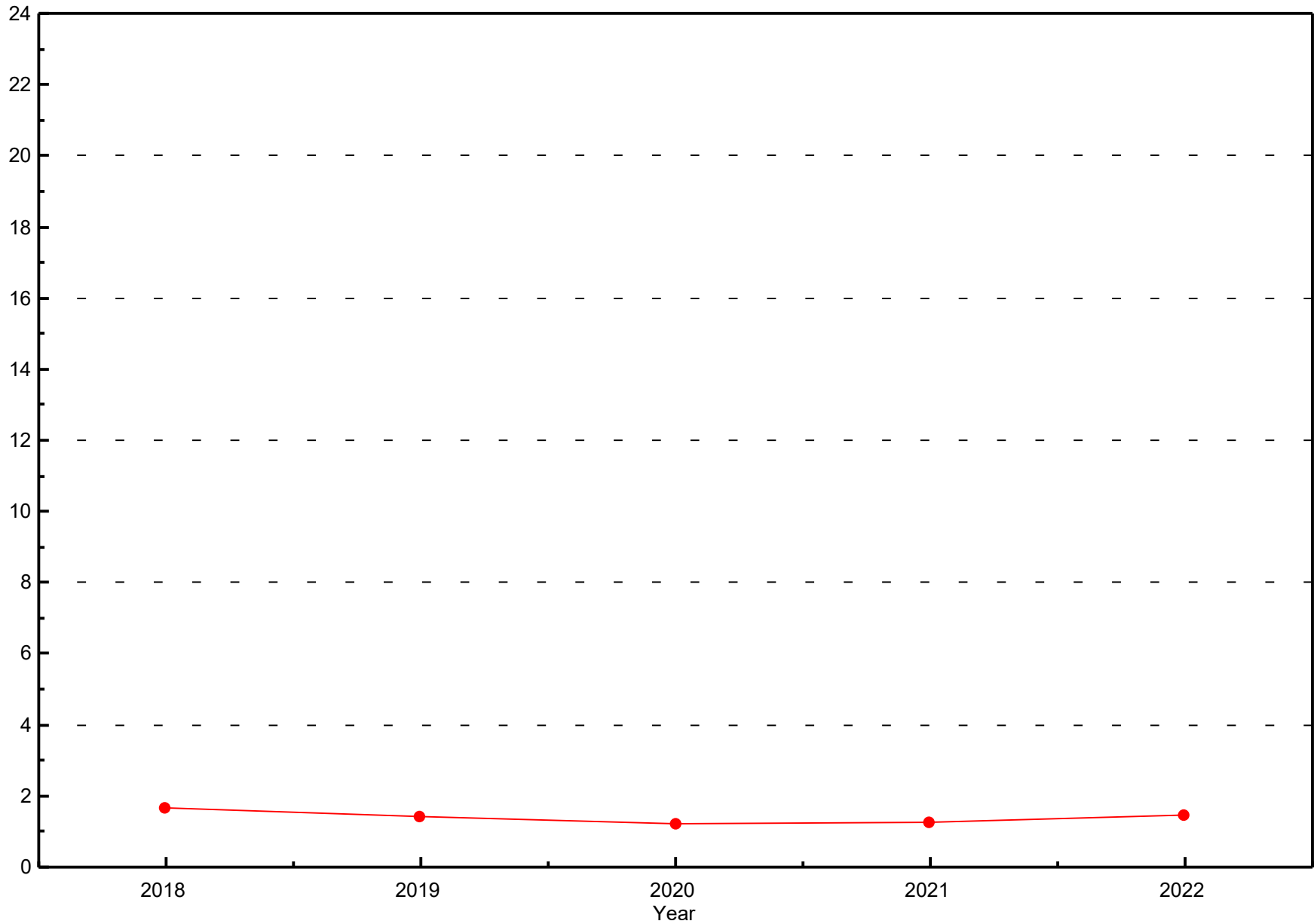




Yearly Averages

Nitrogen Dioxide (NO₂) - ppb

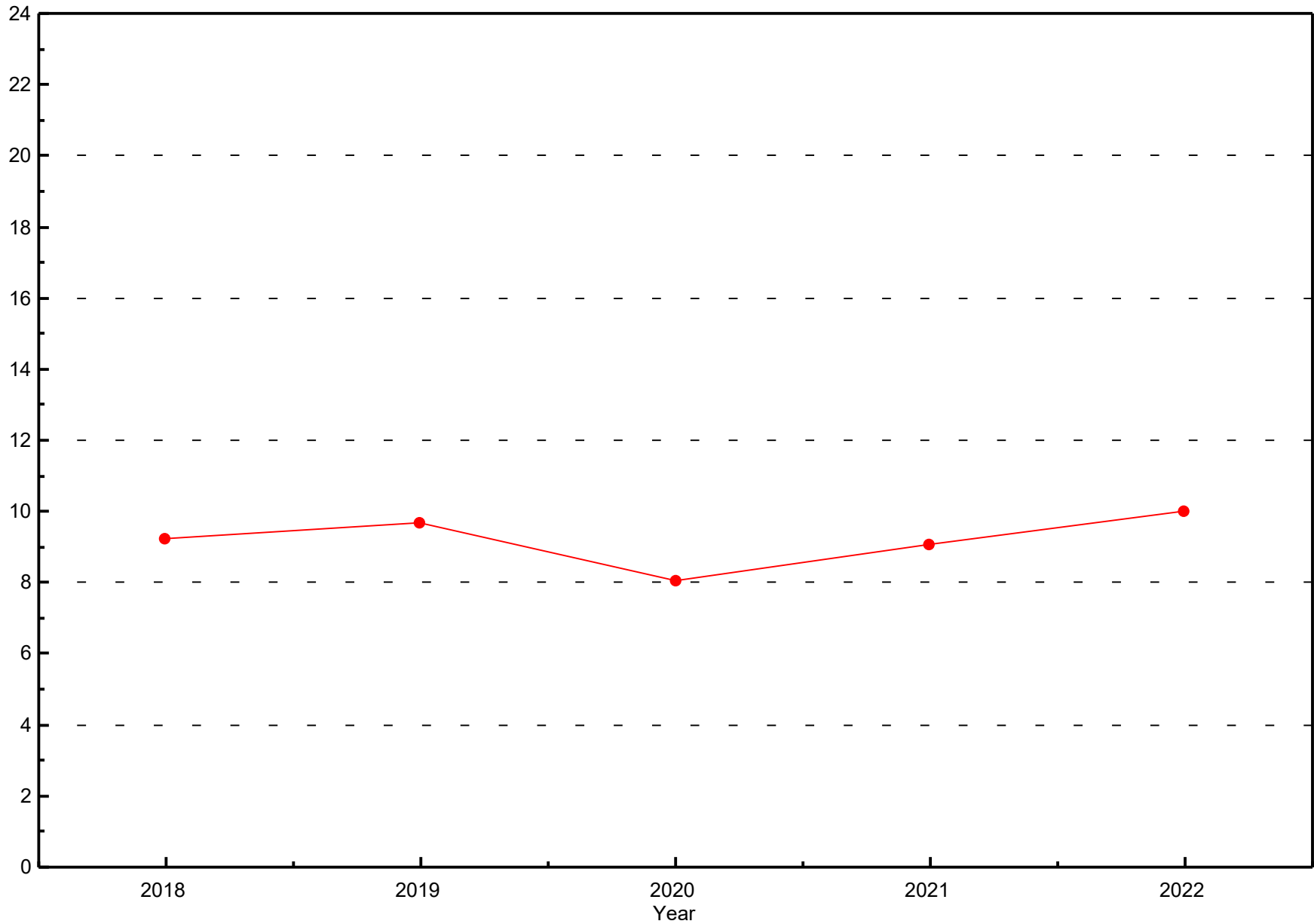
Janvier (2018 to 2022)





Yearly Averages

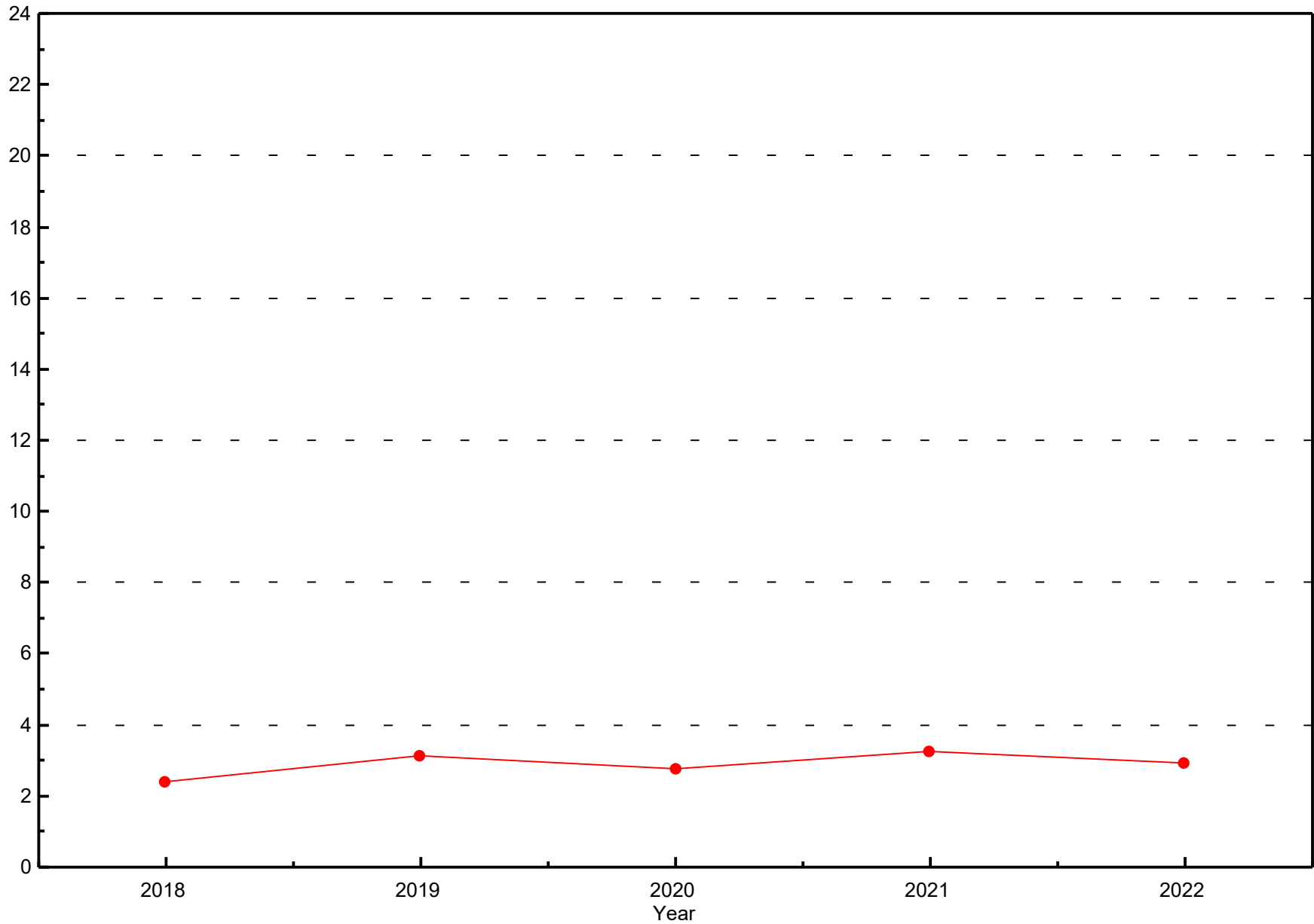
Nitrogen Dioxide (NO₂) - ppb
Fort Hills (2018 to 2022)





Yearly Averages

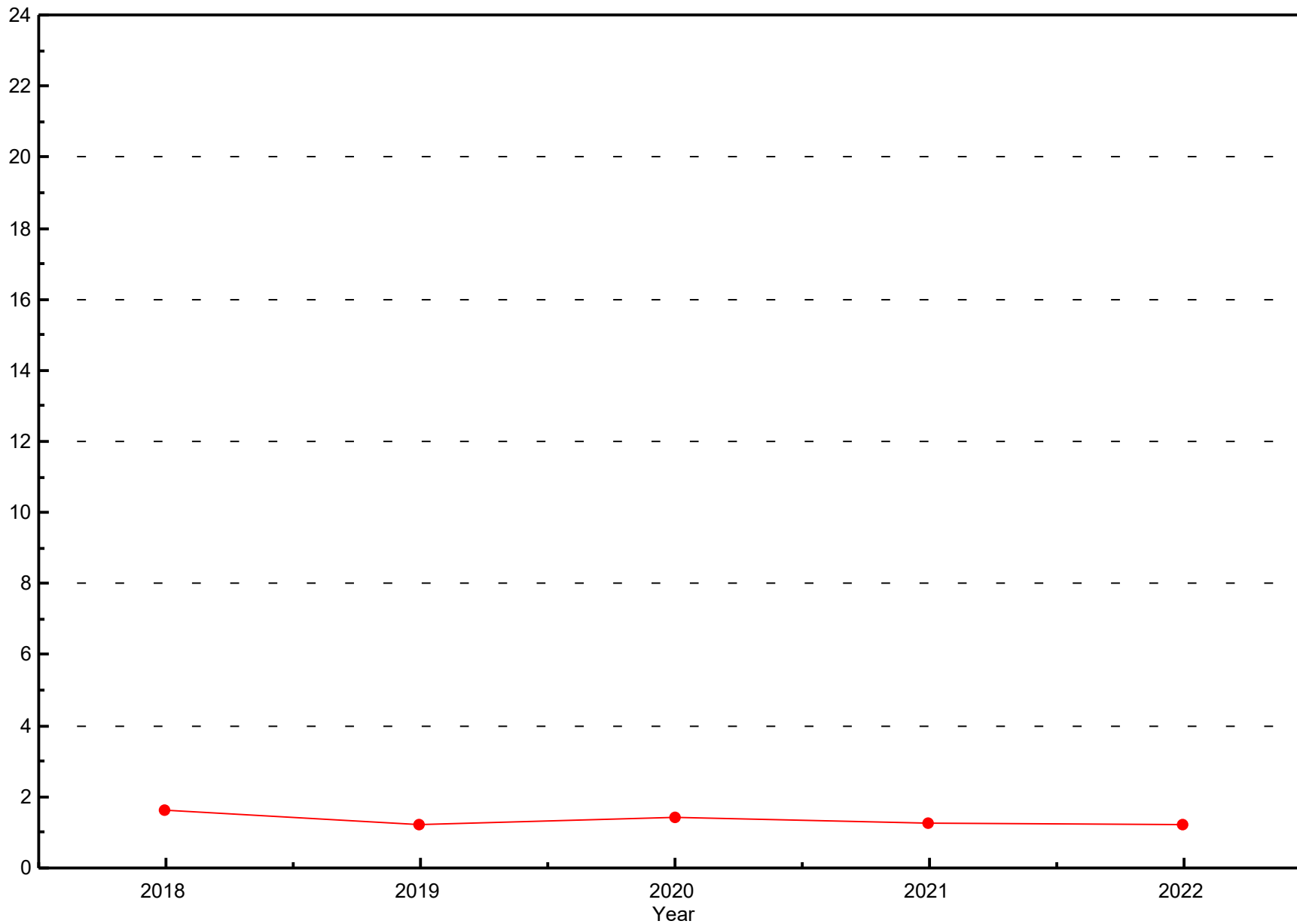
Nitrogen Dioxide (NO₂) - ppb
Christina Lake (2018 to 2022)





Yearly Averages

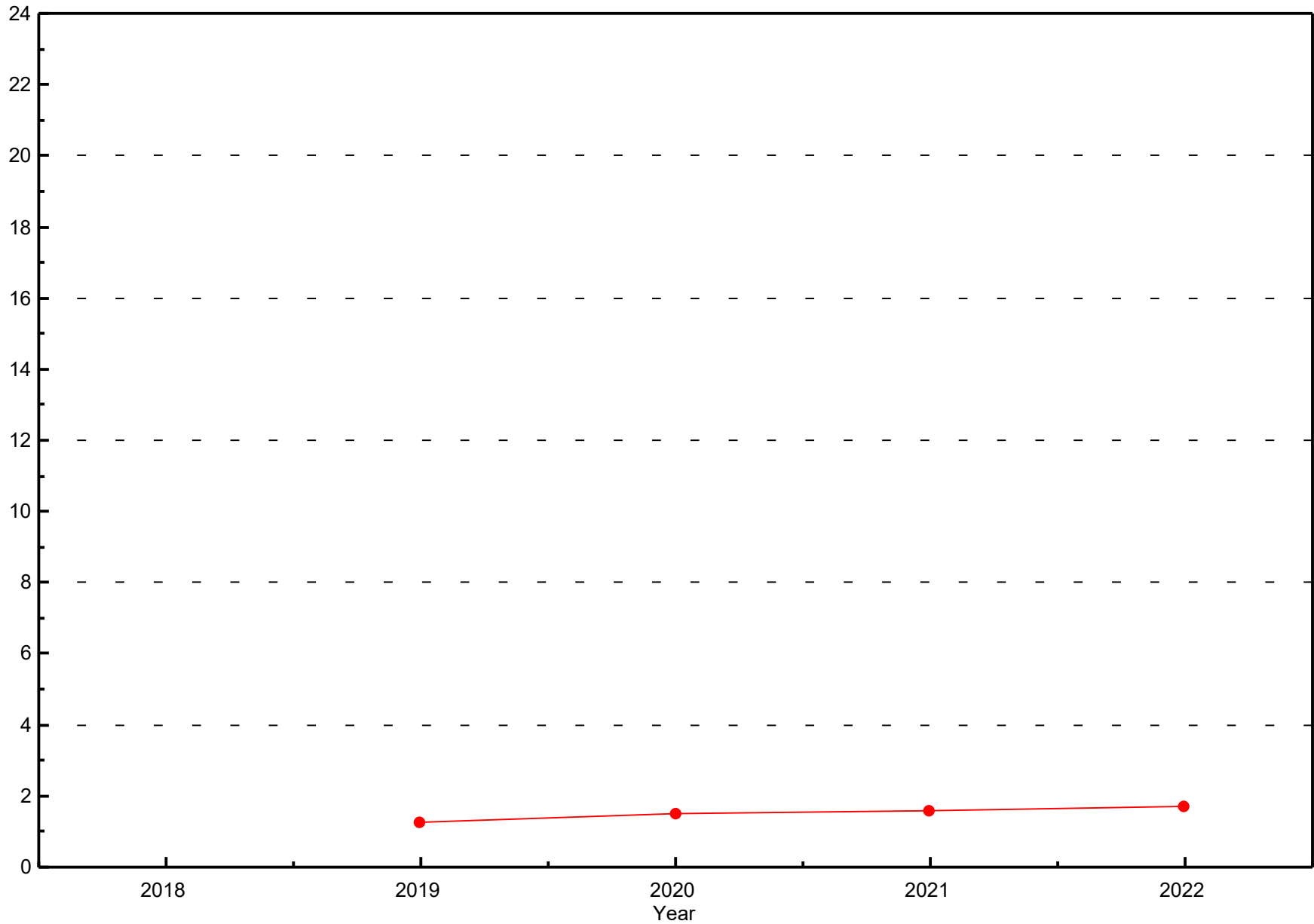
Nitrogen Dioxide (NO₂) - ppb
Jackfish 2/3 (2018 to 2022)





Yearly Averages

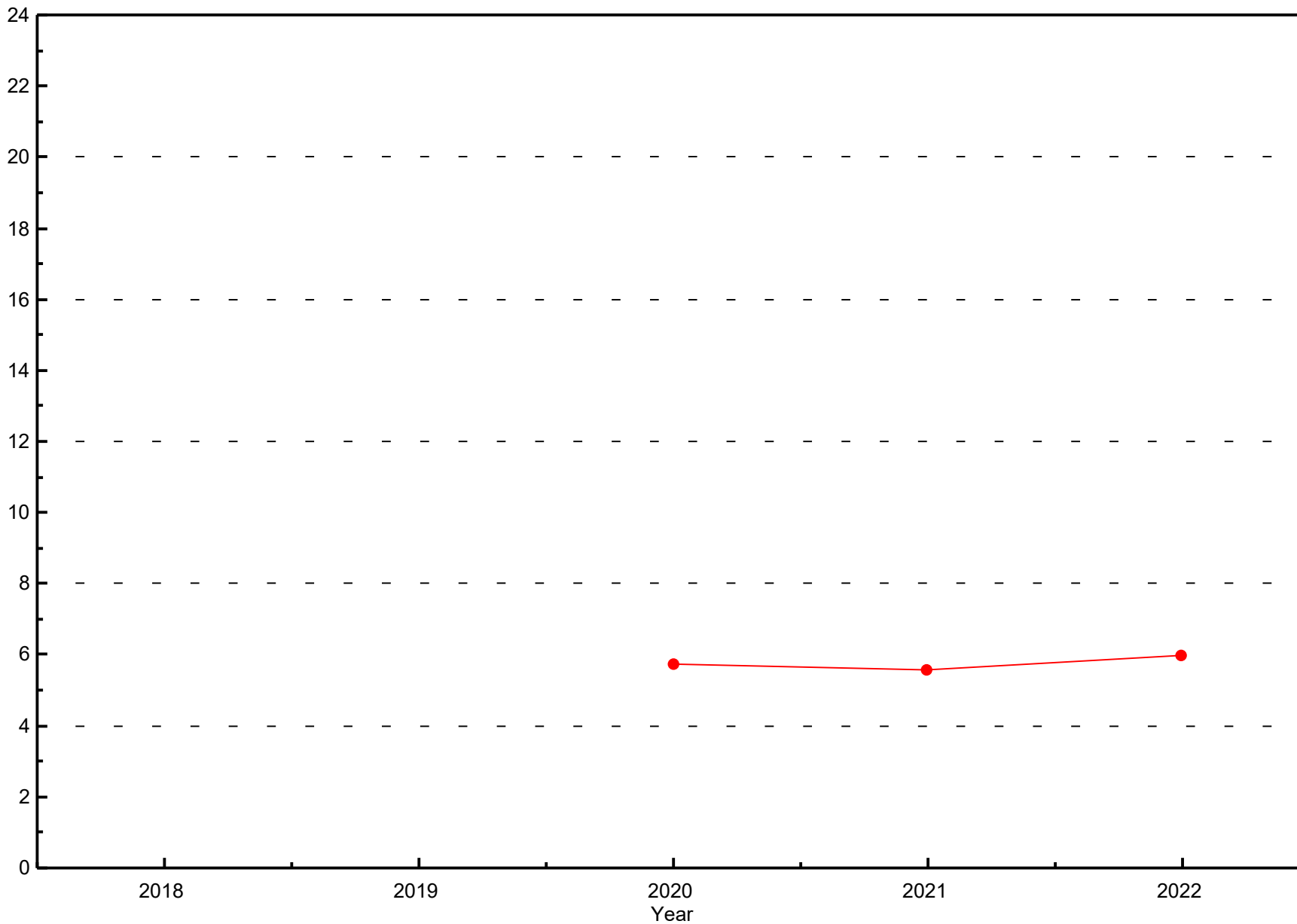
Nitrogen Dioxide (NO₂) - ppb
Surmont 2 (2018 to 2022)





Yearly Averages

Nitrogen Dioxide (NO₂) - ppb
Ells River (2018 to 2022)

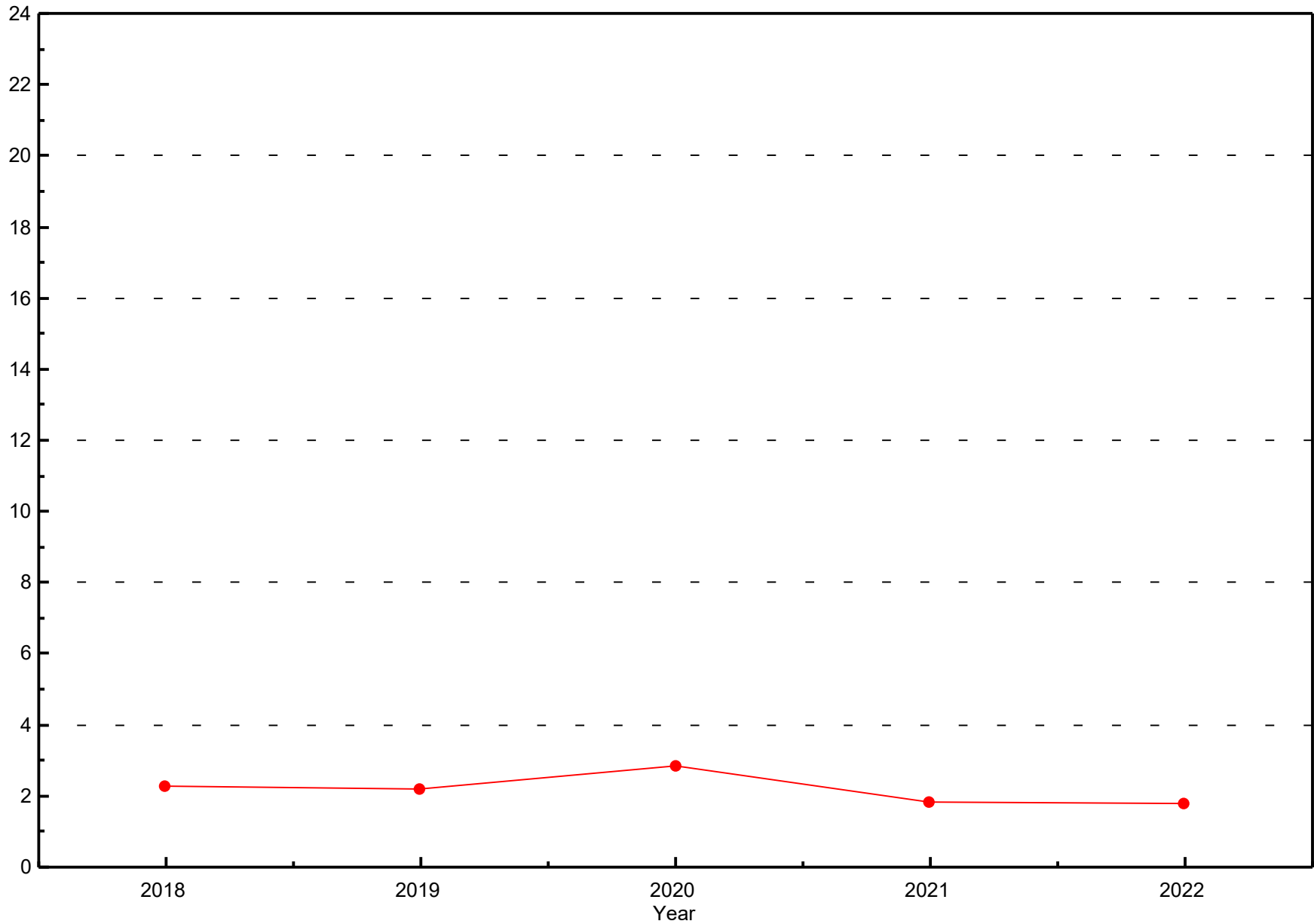




Yearly Averages

Nitrogen Dioxide (NO₂) - ppb

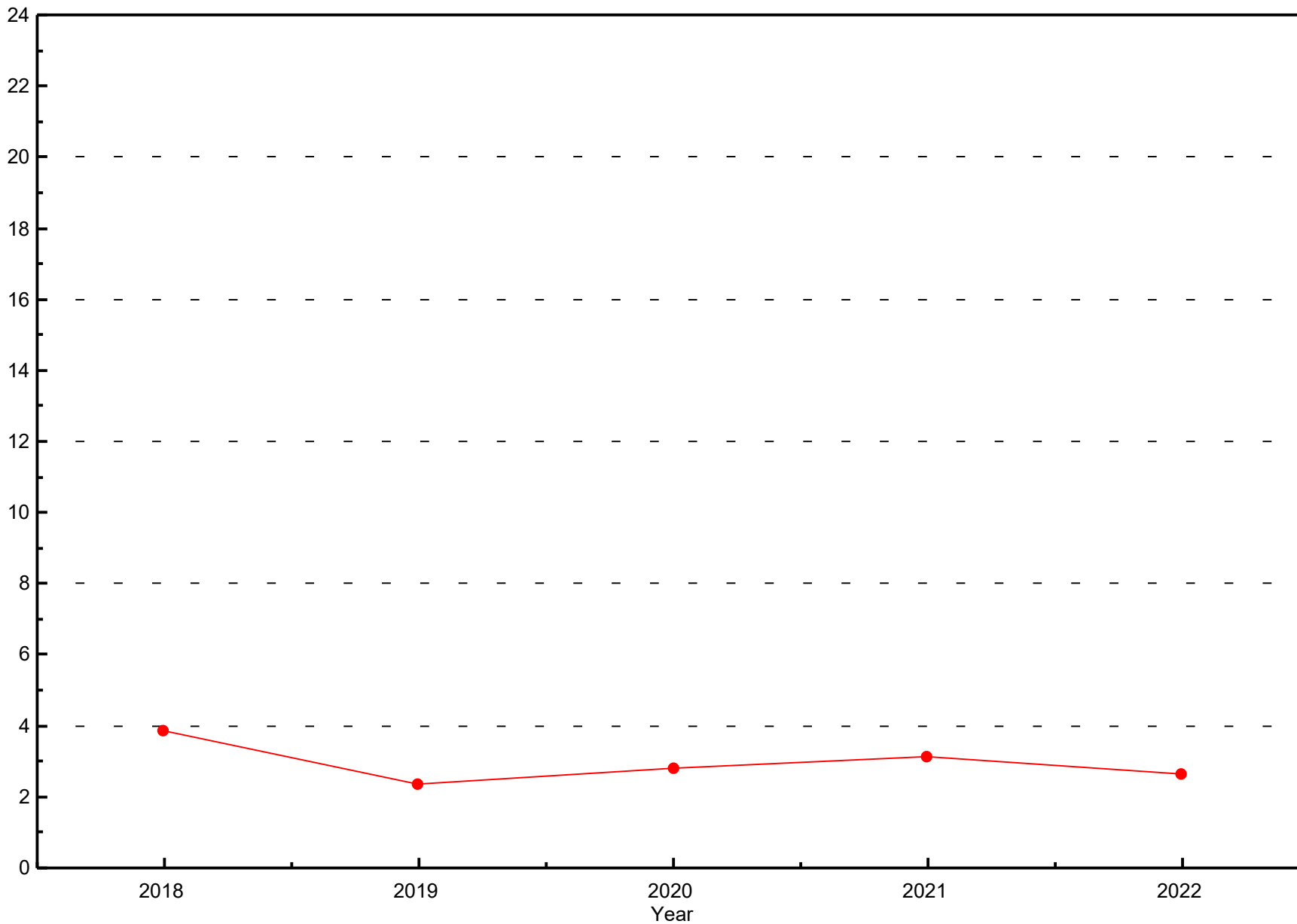
Leismer (2018 to 2022)





Yearly Averages

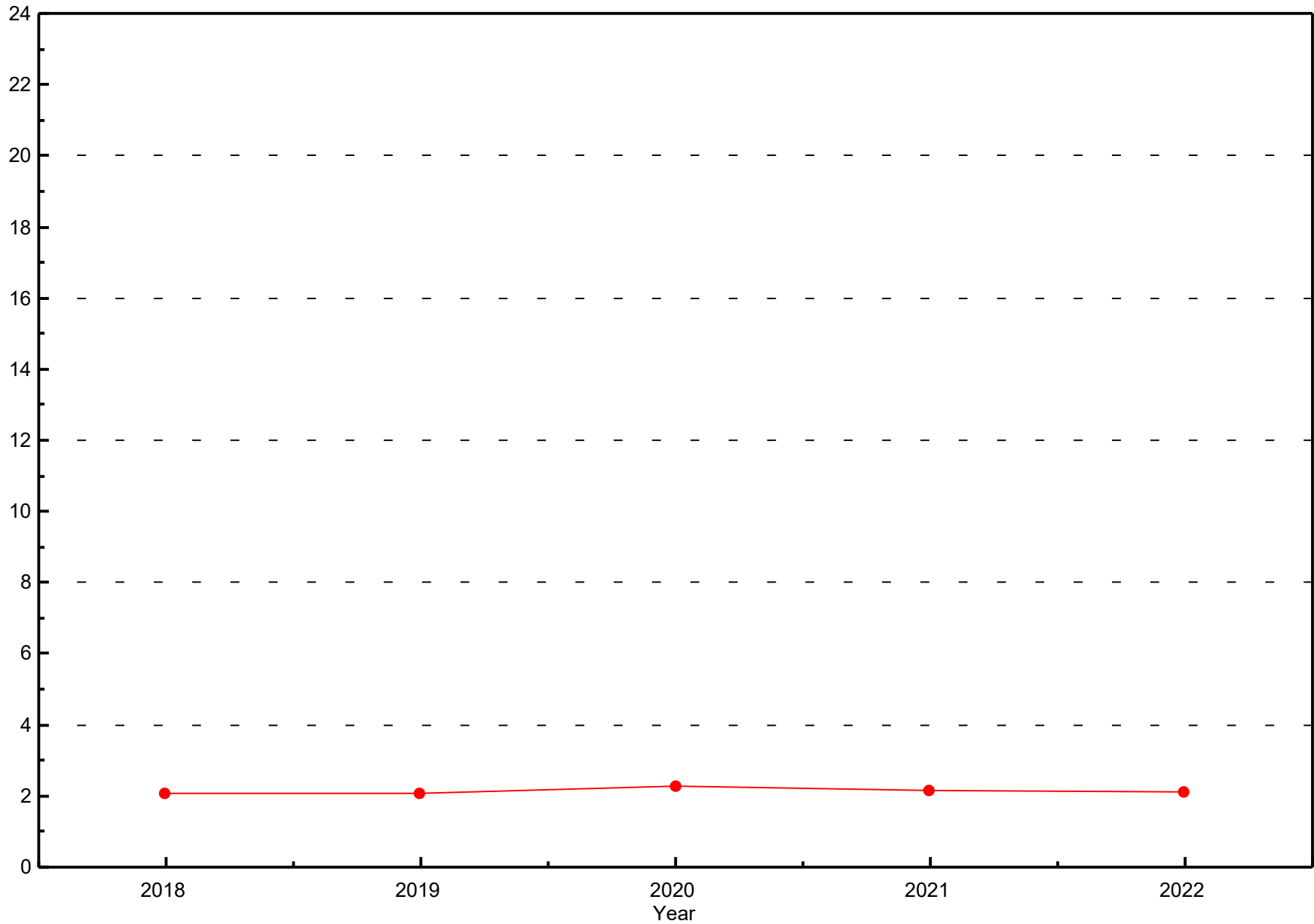
Nitrogen Dioxide (NO₂) - ppb
Sawbones Bay (2018 to 2022)





Yearly Averages

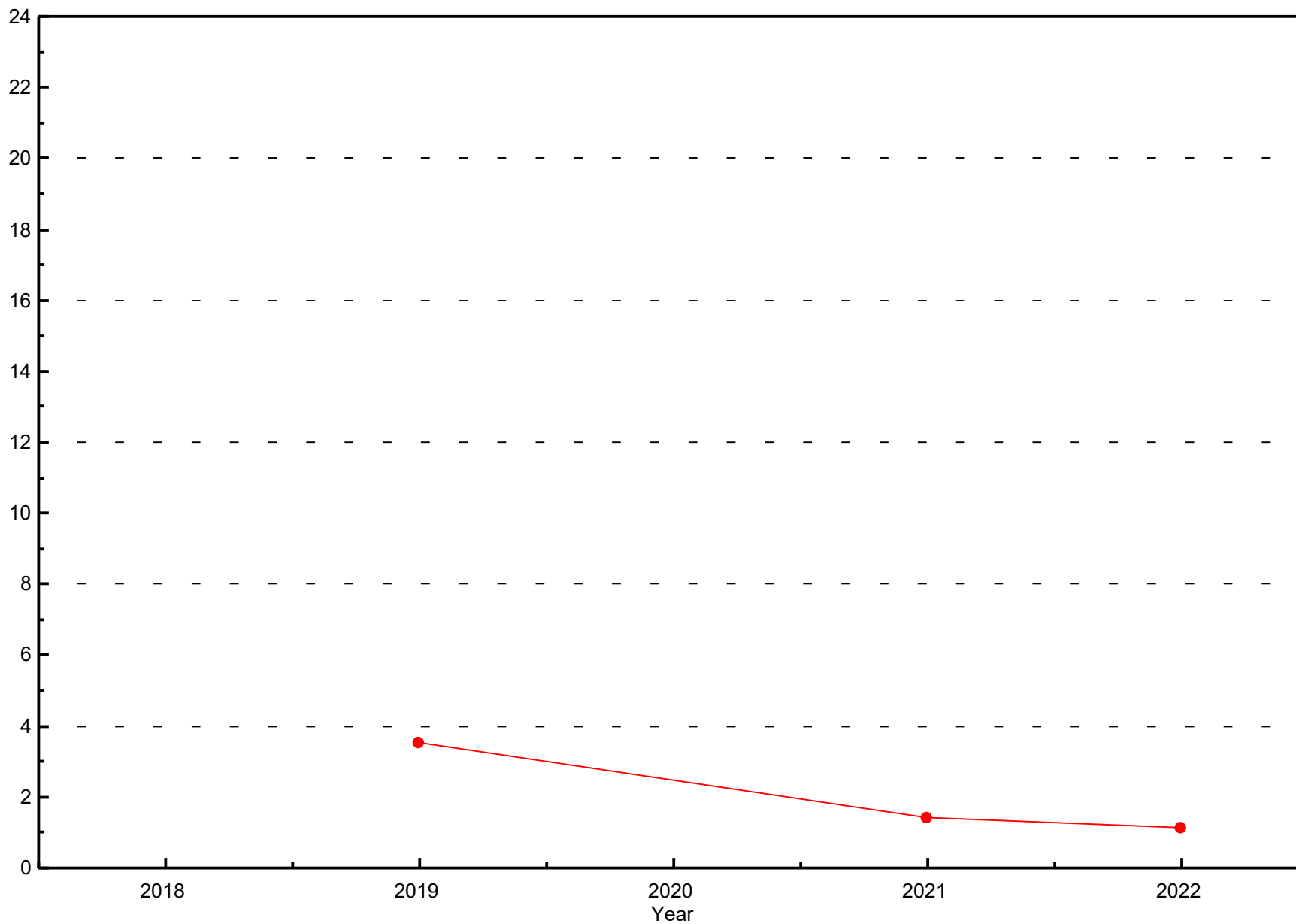
Nitrogen Dioxide (NO₂) - ppb
Jackfish 1 (2018 to 2022)





Yearly Averages

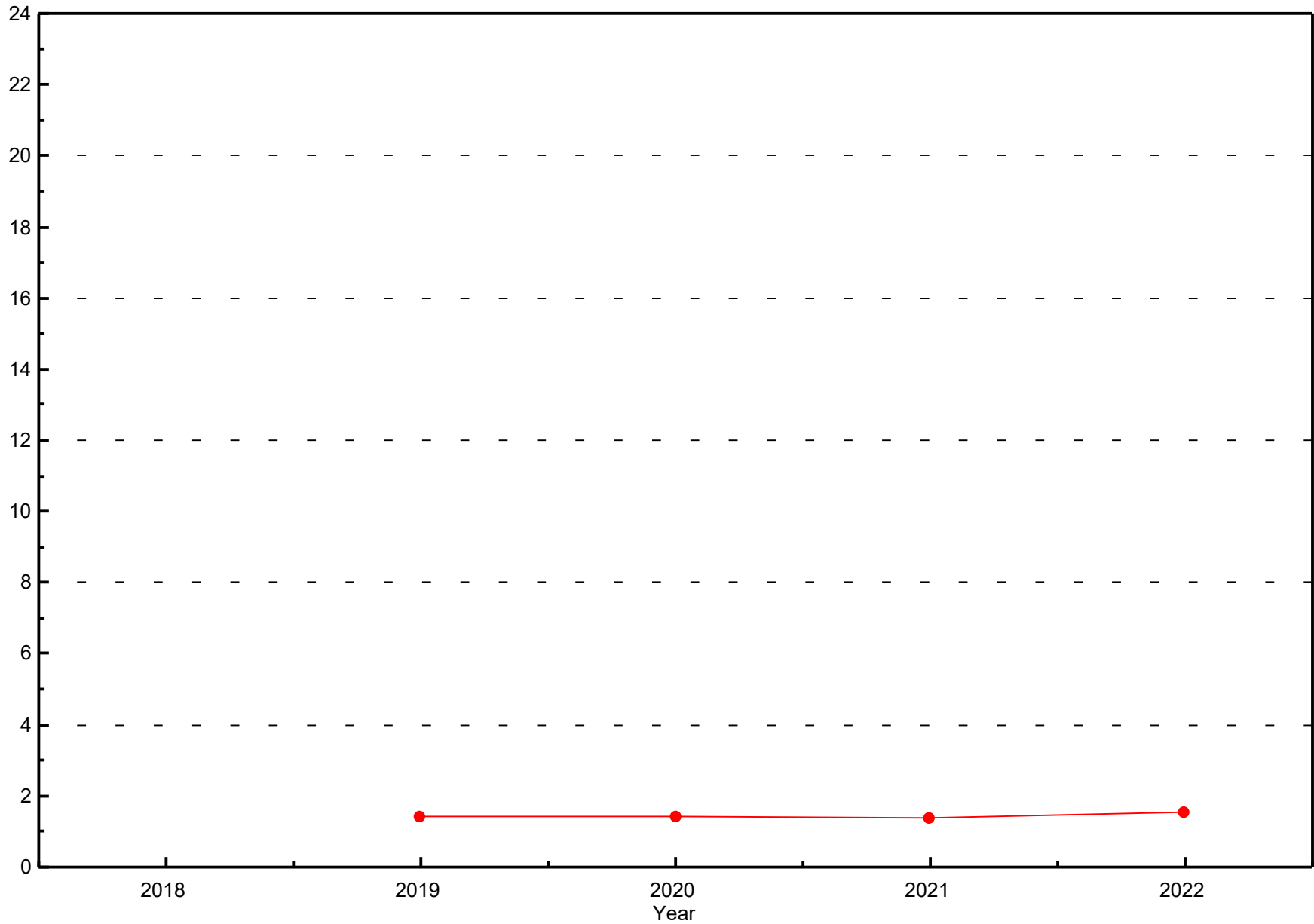
Nitrogen Dioxide (NO₂) - ppb
Kirby South (2018 to 2022)





Yearly Averages

Nitrogen Dioxide (NO₂) - ppb
Kirby North (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

OXIDES OF NITROGEN ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	20.1	166.5	42.1	90.5	8.2	1.1	0.1
February	100	637	21.1	95.7	42.6	88.7	11.0	0.3	0.0
March	97	683	17.6	143.3	71.4	92.1	4.4	3.5	0.0
April	100	684	8.4	64.0	17.0	99.0	1.0	0.0	0.0
May	100	697	5.8	53.9	16.4	99.1	0.9	0.0	0.0
June	99	680	5.1	76.7	10.2	99.6	0.4	0.0	0.0
July	100	704	3.7	32.6	10.5	100.0	0.0	0.0	0.0
August	100	707	5.2	107.9	13.1	98.9	1.0	0.1	0.0
September	99	676	6.4	69.7	18.7	99.0	1.0	0.0	0.0
October	100	707	7.9	74.4	22.7	99.0	1.0	0.0	0.0
November	100	684	10.8	95.9	22.8	98.4	1.5	0.2	0.0
December	99	703	16.9	118.9	53.2	92.6	6.4	1.0	0.0
Annual	99	8268	10.7	166.5	71.4	96.4	3.0	0.5	0.0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	15.2	193.8	76.2	91.4	6.2	2.1	0.3
February	100	638	14.5	126.5	37.9	92.6	6.4	0.9	0.0
March	100	707	11.1	254.9	68.0	93.8	4.7	1.3	0.3
April	97	662	6.7	45.5	17.2	99.6	0.5	0.0	0.0
May	99	702	4.1	55.2	8.7	99.6	0.4	0.0	0.0
June	97	659	4.4	47.3	13.4	99.7	0.3	0.0	0.0
July	100	707	2.6	44.5	7.5	99.6	0.4	0.0	0.0
August	98	686	2.9	106.8	16.1	99.4	0.4	0.2	0.0
September	100	685	2.4	29.8	8.6	100.0	0.0	0.0	0.0
October	100	707	3.2	74.9	18.9	99.6	0.4	0.0	0.0
November	98	661	5.4	61.6	15.1	99.9	0.2	0.0	0.0
December	100	708	9.7	129.9	34.0	95.6	4.0	0.4	0.0
Annual	99	8230	6.8	254.9	76.2	98.4	1.5	0.1	0.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	15.6	132.7	54.6	90.8	8.8	0.4	0.0
February	100	638	15.4	75.6	38.8	91.1	8.9	0.0	0.0
March	100	707	9.8	88.8	45.0	96.6	3.1	0.3	0.0
April	95	643	5.0	70.7	11.1	99.7	0.3	0.0	0.0
May	100	704	3.2	42.4	8.7	99.9	0.1	0.0	0.0
June	100	683	3.5	24.8	6.2	100.0	0.0	0.0	0.0
July	100	707	2.0	28.7	4.8	100.0	0.0	0.0	0.0
August	100	707	2.7	23.8	6.7	100.0	0.0	0.0	0.0
September	100	683	3.1	23.8	6.2	100.0	0.0	0.0	0.0
October	100	706	4.7	42.4	12.7	99.9	0.1	0.0	0.0
November	100	684	8.9	94.3	32.4	98.0	1.9	0.2	0.0
December	100	708	12.7	119.6	50.9	94.9	4.2	0.9	0.0
Annual	99	8277	7.2	132.7	54.6	97.6	2.3	0.2	0.0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	17.0	84.1	64.3	92.5	7.2	0.3	0.0
February	100	637	17.5	86.5	43.8	93.6	6.1	0.3	0.0
March	100	707	14.0	106.8	49.4	94.9	4.2	0.9	0.0
April	100	686	5.9	32.9	12.1	100.0	0.0	0.0	0.0
May	100	706	3.9	26.8	7.9	100.0	0.0	0.0	0.0
June	99	679	4.1	21.0	6.6	100.0	0.0	0.0	0.0
July	100	708	3.2	17.4	5.3	100.0	0.0	0.0	0.0
August	100	705	5.3	34.9	9.3	100.0	0.0	0.0	0.0
September	99	674	6.6	42.3	13.3	99.9	0.2	0.0	0.0
October	100	708	8.0	41.2	16.7	99.9	0.1	0.0	0.0
November	100	684	13.3	89.3	31.7	96.1	3.8	0.2	0.0
December	100	708	14.6	105.7	43.5	95.8	3.7	0.6	0.0
Annual	100	8309	9.4	106.8	64.3	97.7	2.1	0.2	0.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	94	663	2.3	27.8	8.9	100.0	0.0	0.0	0.0
February	90	573	1.6	17.0	5.5	100.0	0.0	0.0	0.0
March	99	702	1.2	21.5	6.1	100.0	0.0	0.0	0.0
April	100	681	0.9	12.9	4.4	100.0	0.0	0.0	0.0
May	100	703	0.5	4.9	2.1	100.0	0.0	0.0	0.0
June	100	684	0.6	7.1	1.6	100.0	0.0	0.0	0.0
July	100	709	0.6	12.4	2.6	100.0	0.0	0.0	0.0
August	100	705	0.7	17.0	3.4	100.0	0.0	0.0	0.0
September	98	667	1.4	23.4	5.5	100.0	0.0	0.0	0.0
October	100	707	1.5	15.9	5.2	100.0	0.0	0.0	0.0
November	100	685	2.2	31.6	9.1	100.0	0.0	0.0	0.0
December	100	705	2.8	37.4	18.4	100.0	0.0	0.0	0.0
Annual	98	8184	1.3	37.4	18.4	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	702	27.3	191.3	70.3	81.5	13.4	4.8	0.3
February	99	634	31.1	235.7	74.4	74.1	19.6	5.4	1.0
March	100	707	26.6	212.1	115.4	79.8	12.9	6.8	0.6
April	99	678	10.6	65.6	22.1	96.9	3.1	0.0	0.0
May	100	708	7.2	62.3	19.7	98.0	2.0	0.0	0.0
June	100	681	7.4	57.9	17.6	98.8	1.2	0.0	0.0
July	100	705	5.9	52.6	12.3	99.6	0.4	0.0	0.0
August	99	696	7.8	58.0	13.4	98.7	1.3	0.0	0.0
September	100	683	9.9	72.2	20.3	97.7	2.3	0.0	0.0
October	100	707	12.4	92.8	30.7	94.5	5.0	0.6	0.0
November	100	683	15.2	108.5	36.1	92.7	6.7	0.6	0.0
December	100	707	20.0	176.4	62.6	89.4	8.6	1.7	0.3
Annual	100	8291	15.0	235.7	115.4	92.0	6.3	1.6	0.2



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	21.3	130.9	43.6	88.3	8.5	3.3	0.0
February	99	635	22.9	140.4	51.5	84.4	12.3	3.3	0.0
March	100	708	19.4	124.6	77.8	88.0	8.3	3.7	0.0
April	100	684	7.8	56.5	15.8	99.6	0.4	0.0	0.0
May	100	708	5.3	92.7	25.2	99.2	0.6	0.3	0.0
June	100	681	5.3	67.1	14.0	99.3	0.7	0.0	0.0
July	93	658	5.6	63.8	12.1	98.5	1.5	0.0	0.0
August	87	617	6.5	56.9	15.3	99.2	0.8	0.0	0.0
September	100	685	7.1	66.9	20.5	98.7	1.3	0.0	0.0
October	100	708	7.7	71.5	19.1	98.3	1.7	0.0	0.0
November	99	681	10.9	75.9	25.1	97.5	2.5	0.0	0.0
December	100	709	20.0	255.2	75.4	92.0	5.1	1.8	1.1
Annual	98	8182	11.7	255.2	77.8	95.4	3.5	1.0	0.1



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	5.8	66.1	13.7	99.2	0.9	0.0	0.0
February	100	636	6.4	338.9	38.9	99.2	0.3	0.2	0.3
March	100	708	3.7	35.2	13.8	100.0	0.0	0.0	0.0
April	100	685	2.2	18.7	5.1	100.0	0.0	0.0	0.0
May	100	704	1.2	17.4	2.5	100.0	0.0	0.0	0.0
June	100	684	1.4	10.6	2.6	100.0	0.0	0.0	0.0
July	99	699	1.2	11.0	2.3	100.0	0.0	0.0	0.0
August	78	547	1.4	22.0	3.4	100.0	0.0	0.0	0.0
September	100	685	1.5	24.1	3.0	100.0	0.0	0.0	0.0
October	99	703	2.0	37.8	4.4	100.0	0.0	0.0	0.0
November	100	684	3.2	47.5	9.1	99.9	0.2	0.0	0.0
December	100	709	5.0	51.7	17.4	99.6	0.4	0.0	0.0
Annual	98	8150	2.9	338.9	38.9	99.8	0.1	0.0	0.0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	703	5.7	71.9	33.0	98.6	1.4	0.0	0.0
February	100	637	5.2	52.8	18.3	99.7	0.3	0.0	0.0
March	100	709	3.9	58.9	14.5	99.7	0.3	0.0	0.0
April	100	684	1.6	27.7	5.6	100.0	0.0	0.0	0.0
May	99	701	1.3	19.4	4.6	100.0	0.0	0.0	0.0
June	100	684	1.1	25.3	3.6	100.0	0.0	0.0	0.0
July	100	707	1.5	25.2	4.7	100.0	0.0	0.0	0.0
August	97	687	2.1	23.3	5.5	100.0	0.0	0.0	0.0
September	100	685	2.5	21.3	6.1	100.0	0.0	0.0	0.0
October	100	709	2.8	26.5	7.6	100.0	0.0	0.0	0.0
November	98	670	4.0	24.0	12.0	100.0	0.0	0.0	0.0
December	100	708	3.4	44.7	9.9	99.9	0.1	0.0	0.0
Annual	99	8284	2.9	71.9	33.0	99.8	0.2	0.0	0.0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	63	442	2.1	11.8	5.6	100.0	0.0	0.0	0.0
February	100	639	1.6	40.5	3.3	100.0	0.0	0.0	0.0
March	100	708	1.3	9.6	4.3	100.0	0.0	0.0	0.0
April	100	684	0.9	3.8	2.0	100.0	0.0	0.0	0.0
May	100	708	0.7	5.8	1.5	100.0	0.0	0.0	0.0
June	93	637	0.7	3.8	1.2	100.0	0.0	0.0	0.0
July	100	707	0.5	3.1	0.9	100.0	0.0	0.0	0.0
August	94	665	0.7	3.6	1.2	100.0	0.0	0.0	0.0
September	100	685	0.9	4.6	2.0	100.0	0.0	0.0	0.0
October	100	708	1.0	5.5	2.7	100.0	0.0	0.0	0.0
November	100	683	1.9	12.0	8.2	100.0	0.0	0.0	0.0
December	100	707	2.6	14.8	6.8	100.0	0.0	0.0	0.0
Annual	96	7973	1.2	40.5	8.2	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	95	676	7.2	79.4	24.7	97.9	2.1	0.0	0.0
February	100	639	8.5	108.8	19.3	96.9	2.4	0.8	0.0
March	99	702	5.6	60.7	20.4	99.0	1.0	0.0	0.0
April	100	683	2.2	22.7	8.8	100.0	0.0	0.0	0.0
May	100	708	1.8	16.0	3.8	100.0	0.0	0.0	0.0
June	100	684	1.9	30.3	5.2	100.0	0.0	0.0	0.0
July	100	708	2.1	20.0	4.4	100.0	0.0	0.0	0.0
August	99	702	2.2	15.2	5.9	100.0	0.0	0.0	0.0
September	100	685	2.7	36.1	6.8	100.0	0.0	0.0	0.0
October	100	708	2.9	25.9	6.9	100.0	0.0	0.0	0.0
November	100	685	4.4	43.4	12.2	99.9	0.2	0.0	0.0
December	100	707	4.0	46.7	8.5	99.9	0.1	0.0	0.0
Annual	99	8287	3.8	108.8	24.7	99.5	0.4	0.1	0.0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
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	10.2	79.3	36.1	97.6	2.4	0.0	0.0
February	100	639	5.3	50.8	21.2	99.2	0.8	0.0	0.0
March	100	704	3.0	34.1	15.1	100.0	0.0	0.0	0.0
April	100	684	2.8	32.2	7.3	100.0	0.0	0.0	0.0
May	100	707	1.3	31.9	7.8	100.0	0.0	0.0	0.0
June	100	682	1.3	24.3	5.1	100.0	0.0	0.0	0.0
July	100	708	0.9	17.6	4.1	100.0	0.0	0.0	0.0
August	100	707	1.3	21.2	7.8	100.0	0.0	0.0	0.0
September	100	686	1.2	18.3	7.5	100.0	0.0	0.0	0.0
October	100	709	1.6	30.9	9.2	100.0	0.0	0.0	0.0
November	100	685	2.8	45.3	17.3	99.9	0.2	0.0	0.0
December	100	708	6.0	76.4	36.2	98.5	1.6	0.0	0.0
Annual	100	8326	3.1	79.3	36.2	99.6	0.4	0.0	0.0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	37.1	6.7	100.0	0.0	0.0	0.0
February	100	639	2.8	19.6	5.4	100.0	0.0	0.0	0.0
March	100	708	2.2	22.1	7.5	100.0	0.0	0.0	0.0
April	100	684	1.4	23.9	2.9	100.0	0.0	0.0	0.0
May	100	708	1.0	20.7	2.2	100.0	0.0	0.0	0.0
June	100	685	1.1	18.4	2.4	100.0	0.0	0.0	0.0
July	100	706	0.9	19.0	1.9	100.0	0.0	0.0	0.0
August	98	687	1.1	13.5	1.9	100.0	0.0	0.0	0.0
September	98	677	1.5	18.5	3.2	100.0	0.0	0.0	0.0
October	100	709	1.8	42.4	4.3	99.9	0.1	0.0	0.0
November	100	683	2.7	16.5	8.7	100.0	0.0	0.0	0.0
December	100	708	3.7	17.2	9.0	100.0	0.0	0.0	0.0
Annual	100	8302	2.0	42.4	9.0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	21.3	7.7	100.0	0.0	0.0	0.0
February	100	639	2.7	12.9	6.1	100.0	0.0	0.0	0.0
March	100	706	2.1	16.0	5.9	100.0	0.0	0.0	0.0
April	100	683	1.2	5.3	2.1	100.0	0.0	0.0	0.0
May	100	708	0.8	9.3	1.9	100.0	0.0	0.0	0.0
June	100	683	0.9	6.7	1.9	100.0	0.0	0.0	0.0
July	99	702	0.8	6.3	1.5	100.0	0.0	0.0	0.0
August	97	685	0.9	6.7	1.6	100.0	0.0	0.0	0.0
September	95	651	1.0	10.7	2.0	100.0	0.0	0.0	0.0
October	100	707	1.9	41.1	6.3	99.9	0.1	0.0	0.0
November	100	684	2.3	14.1	7.1	100.0	0.0	0.0	0.0
December	100	707	3.0	26.5	10.4	100.0	0.0	0.0	0.0
Annual	99	8263	1.8	41.1	10.4	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	28.3	262.2	121.0	81.2	11.7	5.9	1.1
February	100	638	32.2	246.0	65.5	71.9	20.9	6.6	0.6
March	100	706	31.6	438.0	182.1	78.3	10.8	8.1	2.8
April	100	682	13.2	162.8	33.1	92.2	6.3	1.3	0.2
May	100	706	14.2	138.4	31.0	91.1	7.1	1.8	0.0
June	100	683	9.0	84.5	24.4	96.2	3.5	0.3	0.0
July	100	707	7.4	128.3	22.8	96.2	3.0	0.9	0.0
August	99	703	6.9	114.5	26.5	97.7	1.7	0.6	0.0
September	100	686	9.3	145.3	33.4	95.3	4.1	0.6	0.0
October	100	707	15.5	191.8	49.8	91.5	5.8	2.4	0.3
November	100	685	15.2	224.3	57.4	90.8	6.6	2.3	0.3
December	100	707	18.3	134.5	40.2	89.8	9.1	1.1	0.0
Annual	100	8318	16.7	438.0	182.1	89.4	7.5	2.7	0.5



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	703	6.9	55.7	13.0	99.9	0.1	0.0	0.0
February	100	637	6.7	71.7	12.6	99.2	0.8	0.0	0.0
March	89	626	4.9	36.1	8.9	100.0	0.0	0.0	0.0
April	99	678	3.2	26.5	12.7	100.0	0.0	0.0	0.0
May	100	707	2.5	37.0	4.9	100.0	0.0	0.0	0.0
June	100	681	2.4	31.8	6.2	100.0	0.0	0.0	0.0
July	100	705	2.5	18.7	6.0	100.0	0.0	0.0	0.0
August	99	701	2.7	27.1	10.0	100.0	0.0	0.0	0.0
September	93	632	3.6	28.2	9.3	100.0	0.0	0.0	0.0
October	100	708	4.2	37.7	18.3	100.0	0.0	0.0	0.0
November	100	685	4.5	36.3	8.5	100.0	0.0	0.0	0.0
December	100	706	6.1	74.6	24.3	98.6	1.4	0.0	0.0
Annual	98	8169	4.2	74.6	24.3	99.8	0.2	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
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	703	2.9	17.8	5.5	100.0	0.0	0.0	0.0
February	100	637	2.2	14.0	4.5	100.0	0.0	0.0	0.0
March	100	708	1.5	13.4	3.7	100.0	0.0	0.0	0.0
April	100	683	1.1	6.8	2.0	100.0	0.0	0.0	0.0
May	100	708	0.8	6.8	1.5	100.0	0.0	0.0	0.0
June	100	683	0.6	12.0	2.3	100.0	0.0	0.0	0.0
July	100	707	0.5	12.5	1.4	100.0	0.0	0.0	0.0
August	100	707	0.7	6.5	2.2	100.0	0.0	0.0	0.0
September	100	686	0.9	27.6	3.1	100.0	0.0	0.0	0.0
October	100	709	1.1	8.4	2.7	100.0	0.0	0.0	0.0
November	100	685	2.0	11.9	7.0	100.0	0.0	0.0	0.0
December	100	706	2.9	14.1	7.4	100.0	0.0	0.0	0.0
Annual	100	8322	1.4	27.6	7.4	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
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	699	4.1	31.1	9.9	100.0	0.0	0.0	0.0
February	100	638	3.4	30.4	9.7	100.0	0.0	0.0	0.0
March	100	705	2.5	29.9	10.2	100.0	0.0	0.0	0.0
April	100	682	1.5	13.4	3.2	100.0	0.0	0.0	0.0
May	98	694	0.7	6.8	1.9	100.0	0.0	0.0	0.0
June	100	684	0.9	20.1	3.6	100.0	0.0	0.0	0.0
July	100	707	0.9	5.2	1.6	100.0	0.0	0.0	0.0
August	100	708	1.1	6.8	3.0	100.0	0.0	0.0	0.0
September	100	682	1.0	10.8	2.6	100.0	0.0	0.0	0.0
October	100	706	1.4	9.2	3.5	100.0	0.0	0.0	0.0
November	100	682	2.2	7.9	5.5	100.0	0.0	0.0	0.0
December	100	707	3.1	37.0	11.2	100.0	0.0	0.0	0.0
Annual	100	8294	1.9	37.0	11.2	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
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	17.8	135.7	66.7	88.1	9.2	2.7	0.0
February	99	634	16.3	127.0	38.0	89.8	9.0	1.3	0.0
March	100	708	13.2	158.4	53.3	92.8	4.9	2.3	0.0
April	100	685	5.9	76.2	17.6	99.0	1.0	0.0	0.0
May	97	686	4.5	55.0	12.2	99.6	0.4	0.0	0.0
June	100	683	4.0	38.3	16.1	100.0	0.0	0.0	0.0
July	91	645	2.7	46.1	9.6	99.8	0.2	0.0	0.0
August	100	707	3.0	41.1	8.5	99.9	0.1	0.0	0.0
September	100	687	5.2	81.1	16.1	98.0	1.9	0.2	0.0
October	100	709	6.8	63.2	29.3	98.6	1.4	0.0	0.0
November	100	685	8.8	90.2	27.2	96.9	2.8	0.3	0.0
December	100	708	12.1	82.6	29.0	95.3	4.5	0.1	0.0
Annual	99	8245	8.4	158.4	66.7	96.5	3.0	0.6	0.0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	702	3.6	73.9	9.3	99.9	0.1	0.0	0.0
February	100	639	3.0	46.8	5.3	99.8	0.2	0.0	0.0
March	100	707	1.9	21.8	5.6	100.0	0.0	0.0	0.0
Annual	100	2048	2.8	73.9	9.3	99.9	0.1	0.0	0.0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	5.5	49.5	12.2	99.9	0.1	0.0	0.0
February	100	639	5.6	57.4	15.7	99.2	0.8	0.0	0.0
March	100	705	4.6	41.5	12.9	99.9	0.1	0.0	0.0
April	100	683	2.8	53.1	21.7	99.7	0.3	0.0	0.0
May	96	676	2.0	18.7	9.7	100.0	0.0	0.0	0.0
June	98	671	1.7	24.9	5.6	100.0	0.0	0.0	0.0
July	100	708	3.4	50.2	13.4	99.9	0.1	0.0	0.0
Annual	99	4790	3.7	57.4	21.7	99.8	0.2	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
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
August	100	708	2.1	29.0	11.4	100.0	0.0	0.0	0.0
September	100	686	2.8	31.7	9.8	100.0	0.0	0.0	0.0
October	100	709	2.9	35.6	15.4	100.0	0.0	0.0	0.0
November	100	685	3.0	22.8	6.4	100.0	0.0	0.0	0.0
December	100	708	3.5	30.7	9.7	100.0	0.0	0.0	0.0
Annual	100	3496	2.9	35.6	15.4	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
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	15.7	5.6	100.0	0.0	0.0	0.0
February	96	615	2.2	15.9	4.0	100.0	0.0	0.0	0.0
March	96	679	1.4	18.0	3.3	100.0	0.0	0.0	0.0
April	97	662	1.0	62.3	4.4	99.9	0.2	0.0	0.0
May	95	675	0.9	65.8	6.7	99.7	0.3	0.0	0.0
June	100	630	0.7	30.8	4.5	100.0	0.0	0.0	0.0
Annual	98	3968	1.5	65.8	6.7	99.9	0.1	0.0	0.0



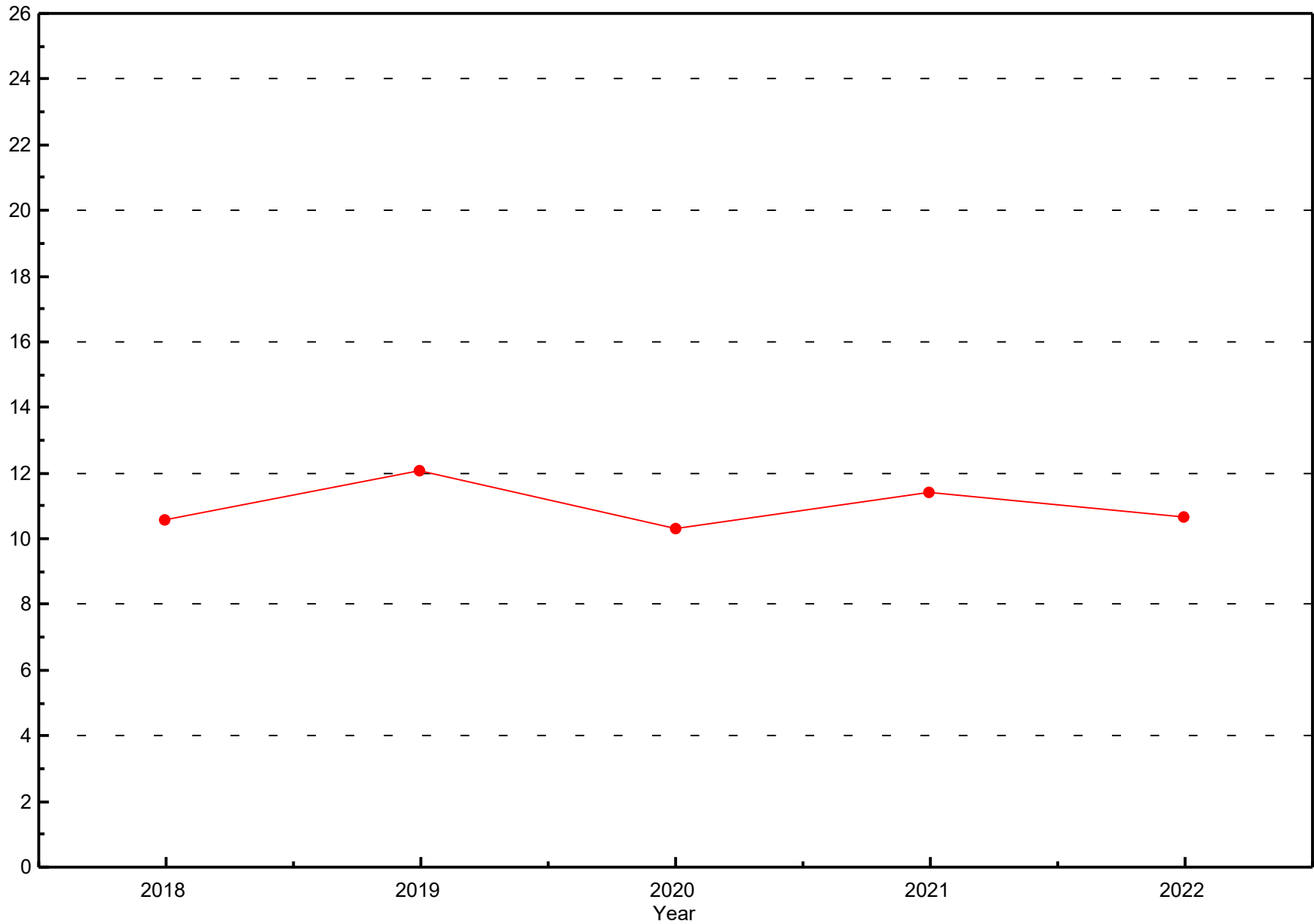
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Oxides of Nitrogen (ppb) Average

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
July	99	703	0.8	12.2	3.4	100.0	0.0	0.0	0.0
August	94	656	1.3	10.8	2.5	100.0	0.0	0.0	0.0
September	92	629	1.5	11.9	3.4	100.0	0.0	0.0	0.0
October	100	706	2.1	37.2	6.8	100.0	0.0	0.0	0.0
November	100	683	2.5	14.9	7.4	100.0	0.0	0.0	0.0
December	100	704	2.9	14.1	7.5	100.0	0.0	0.0	0.0
Annual	97	4081	1.8	37.2	7.5	100.0	0.0	0.0	0.0



Yearly Averages

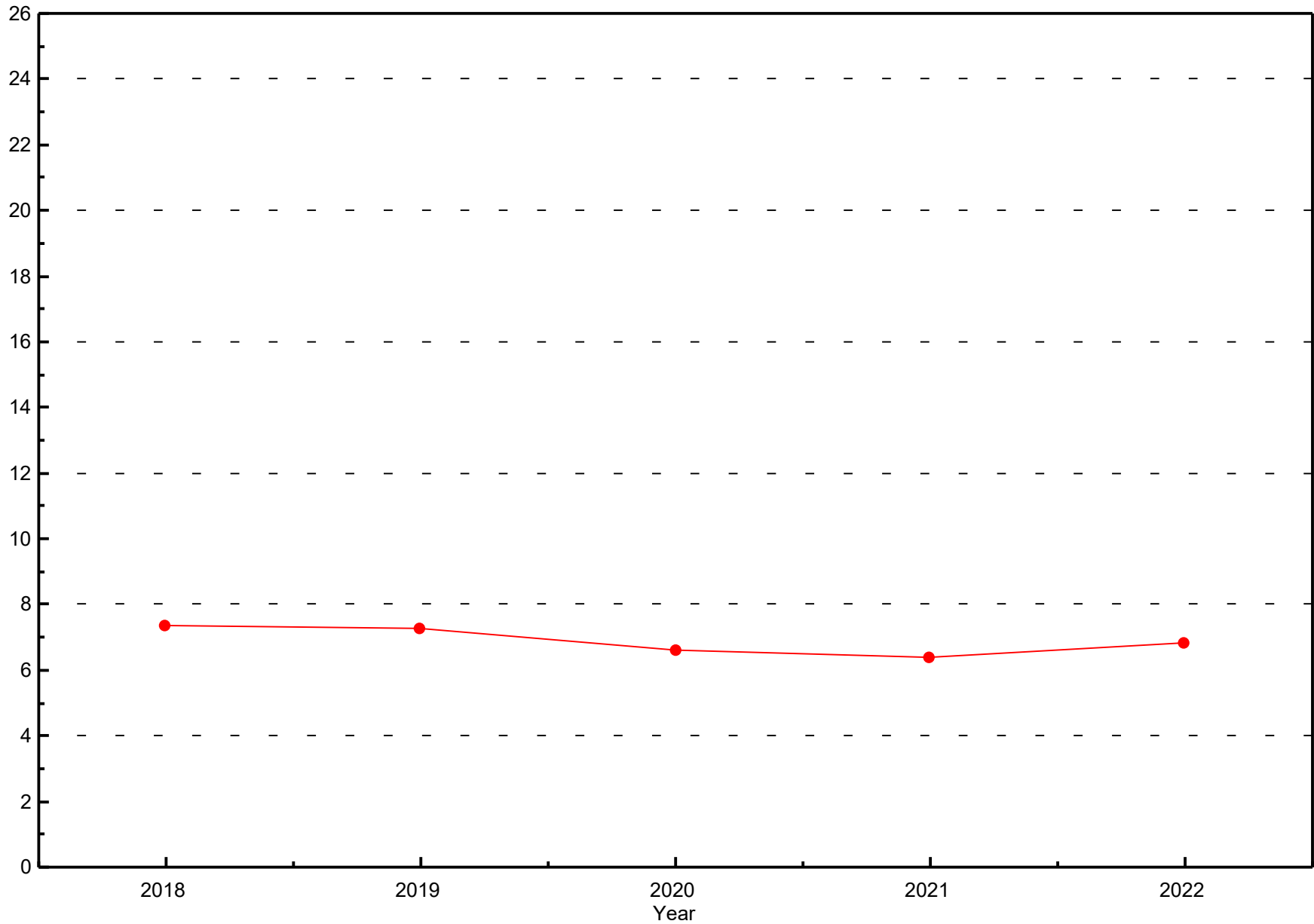
Nitrogen Oxides (NO_x) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

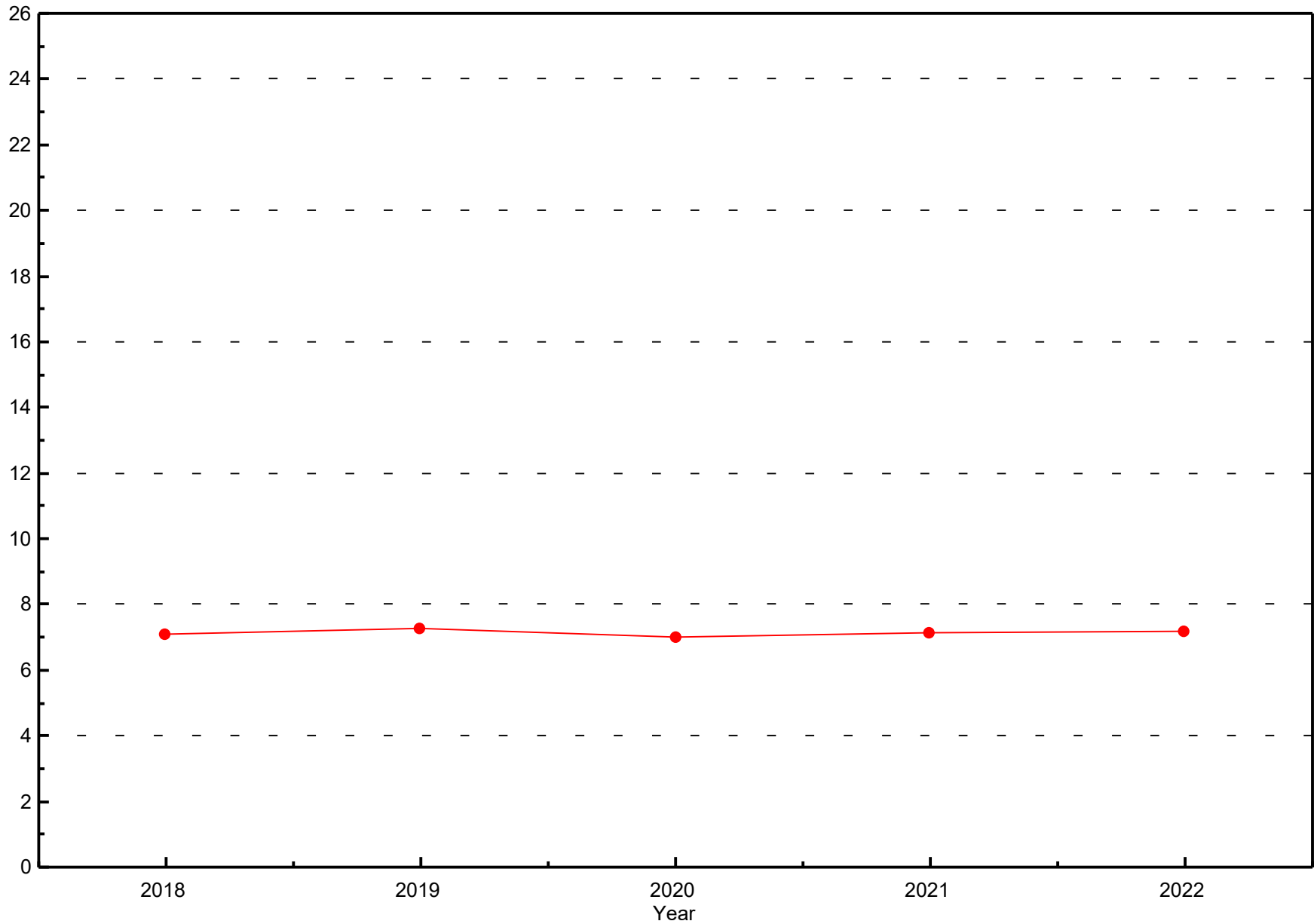
Nitrogen Oxides (NO_x) - ppb
Buffalo Viewpoint (2018 to 2022)





Yearly Averages

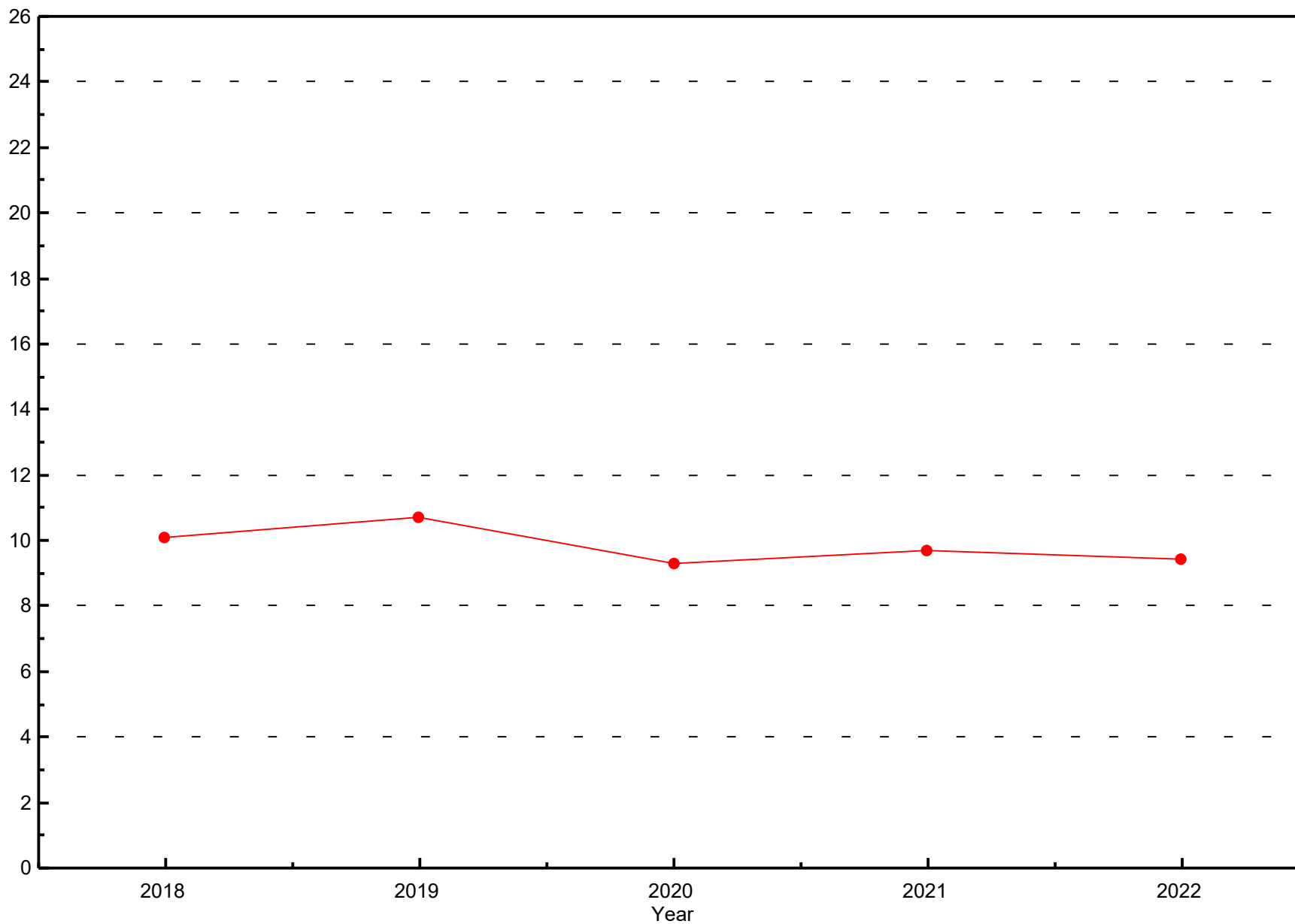
Nitrogen Oxides (NO_x) - ppb
Patricia McInnes (2018 to 2022)





Yearly Averages

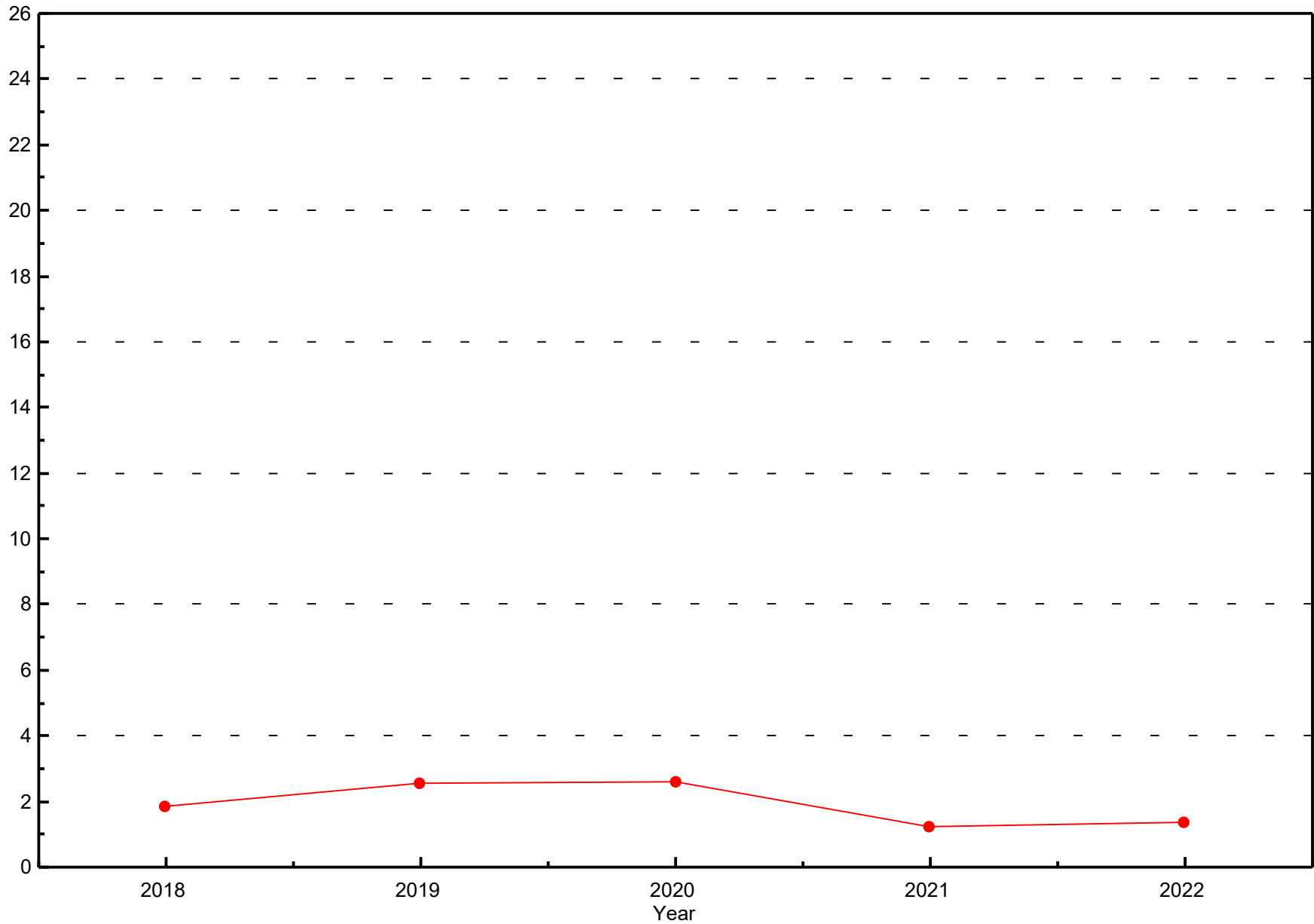
Nitrogen Oxides (NO_x) - ppb
Athabasca Valley (2018 to 2022)





Yearly Averages

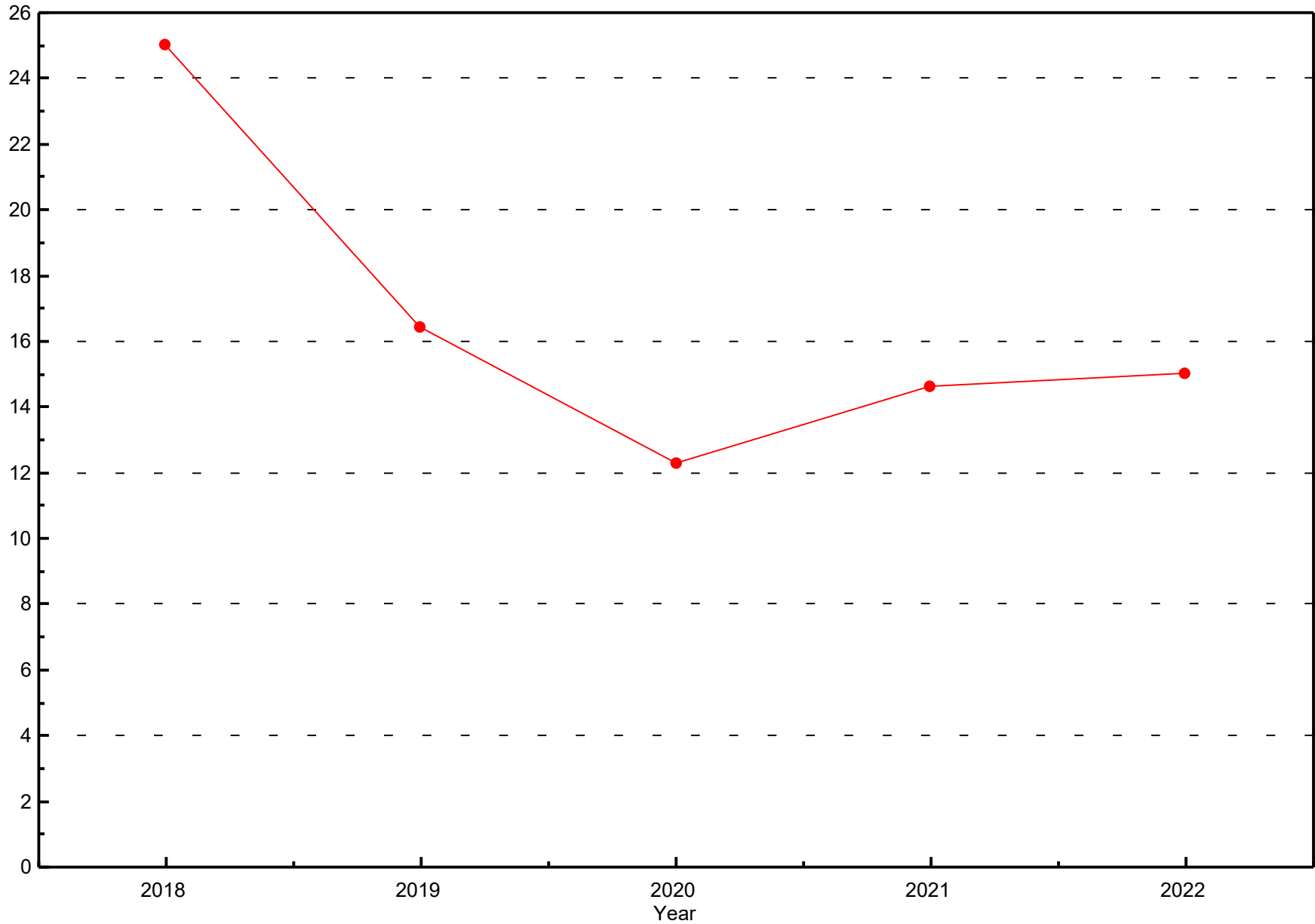
Nitrogen Oxides (NO_x) - ppb
Fort Chipewyan (2018 to 2022)





Yearly Averages

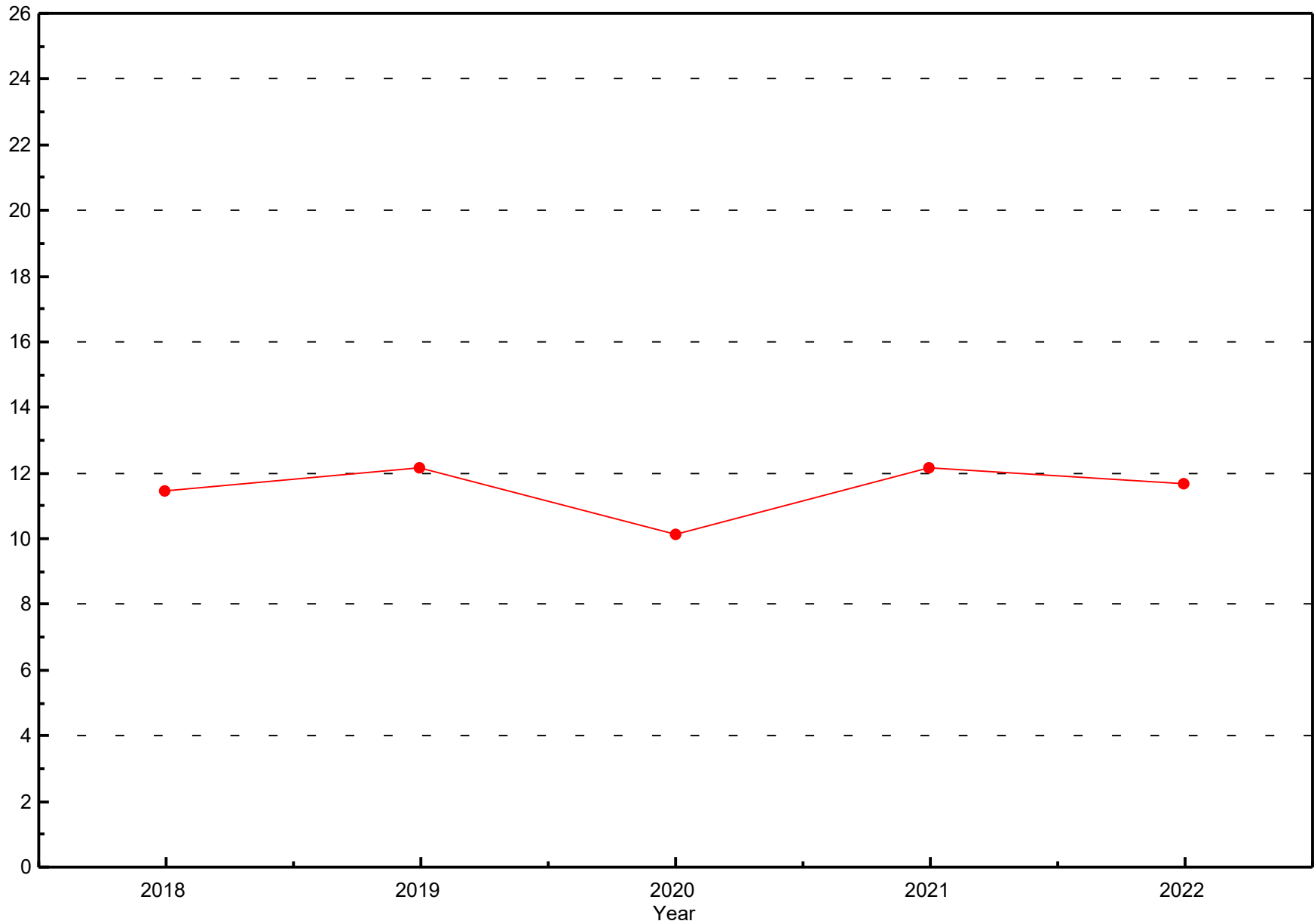
Nitrogen Oxides (NO_x) - ppb
Barge Landing (2018 to 2022)





Yearly Averages

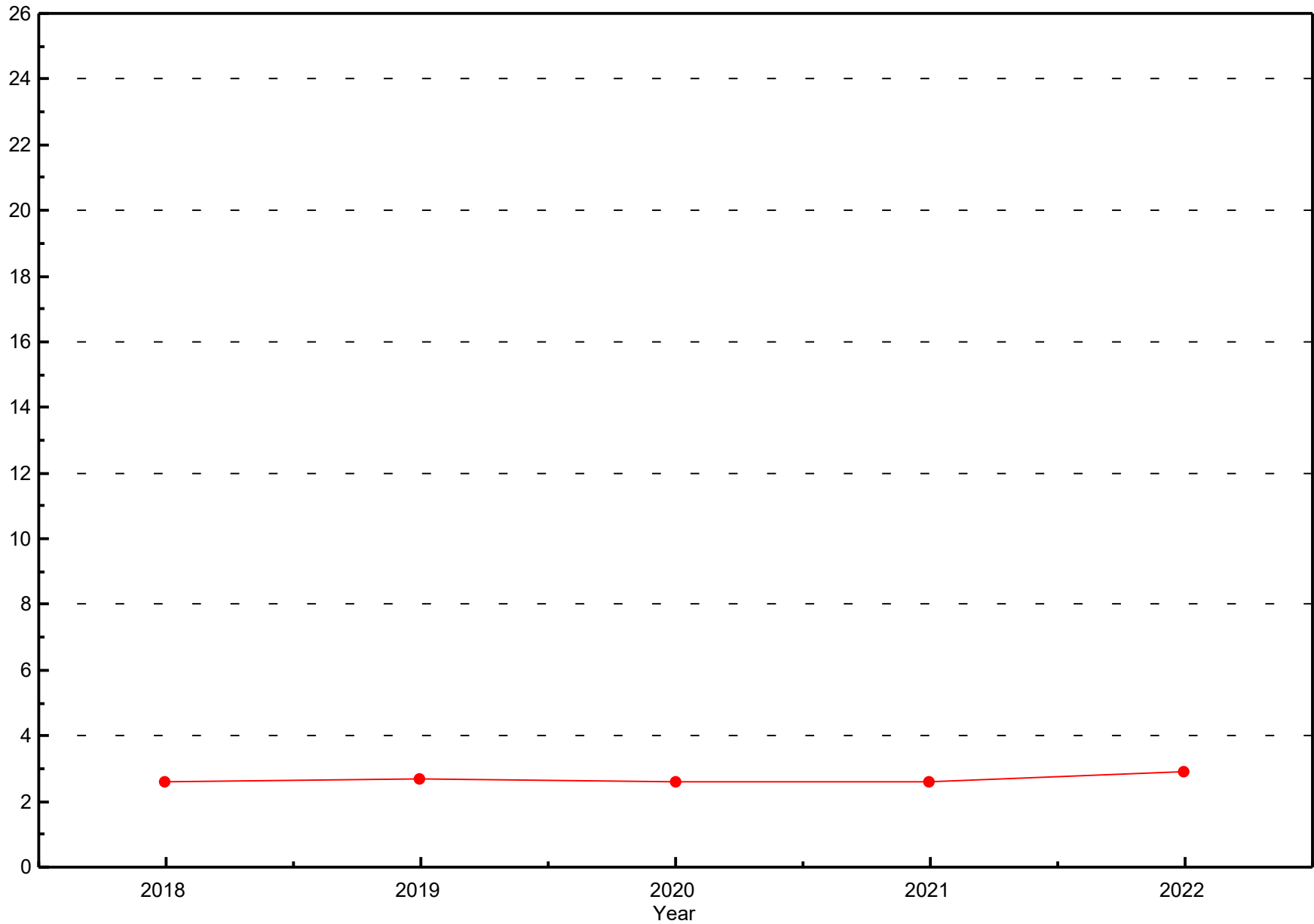
Nitrogen Oxides (NO_x) - ppb
Fort McKay South (2018 to 2022)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Anzac (2018 to 2022)

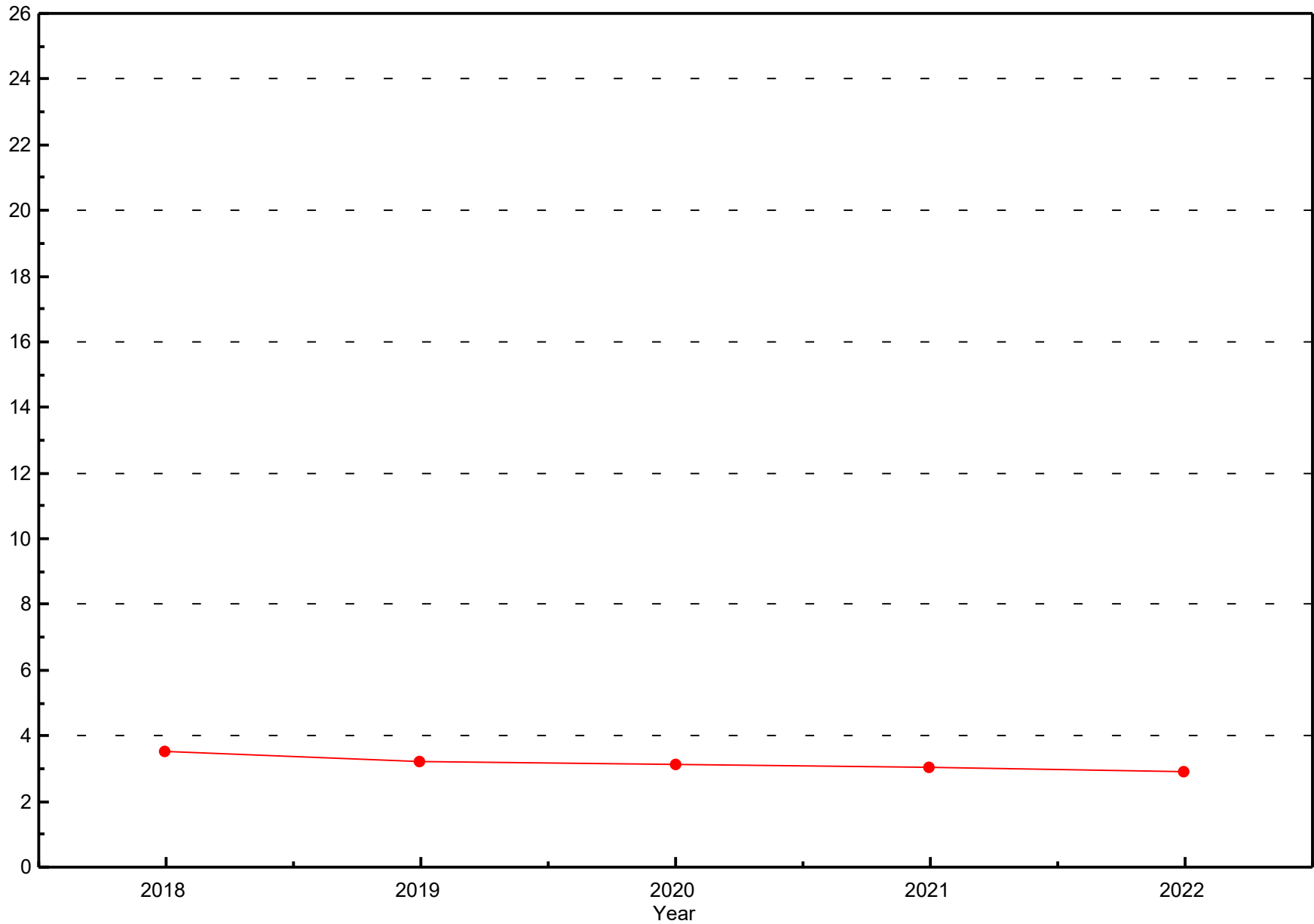




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

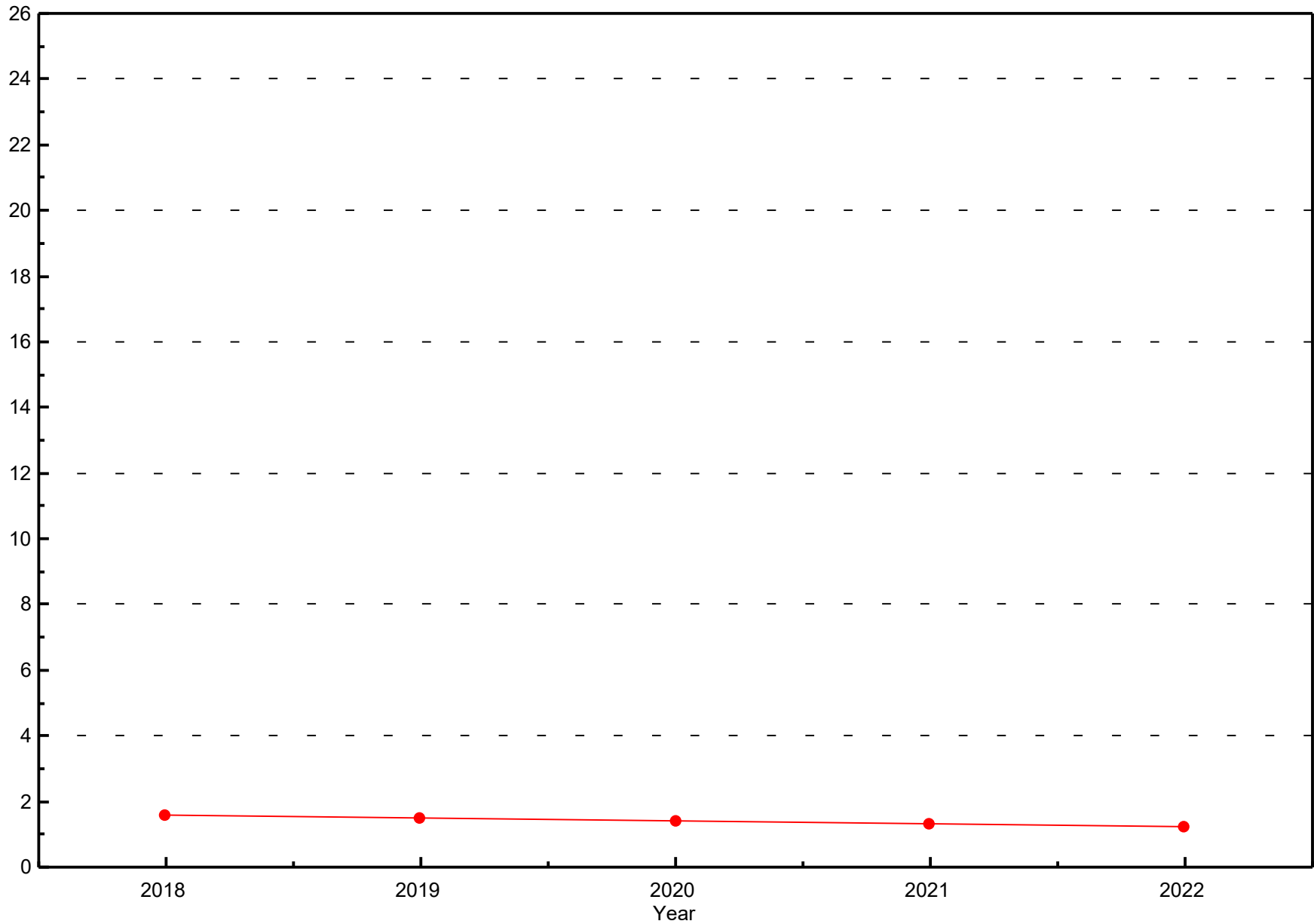
Wapasu (2018 to 2022)





Yearly Averages

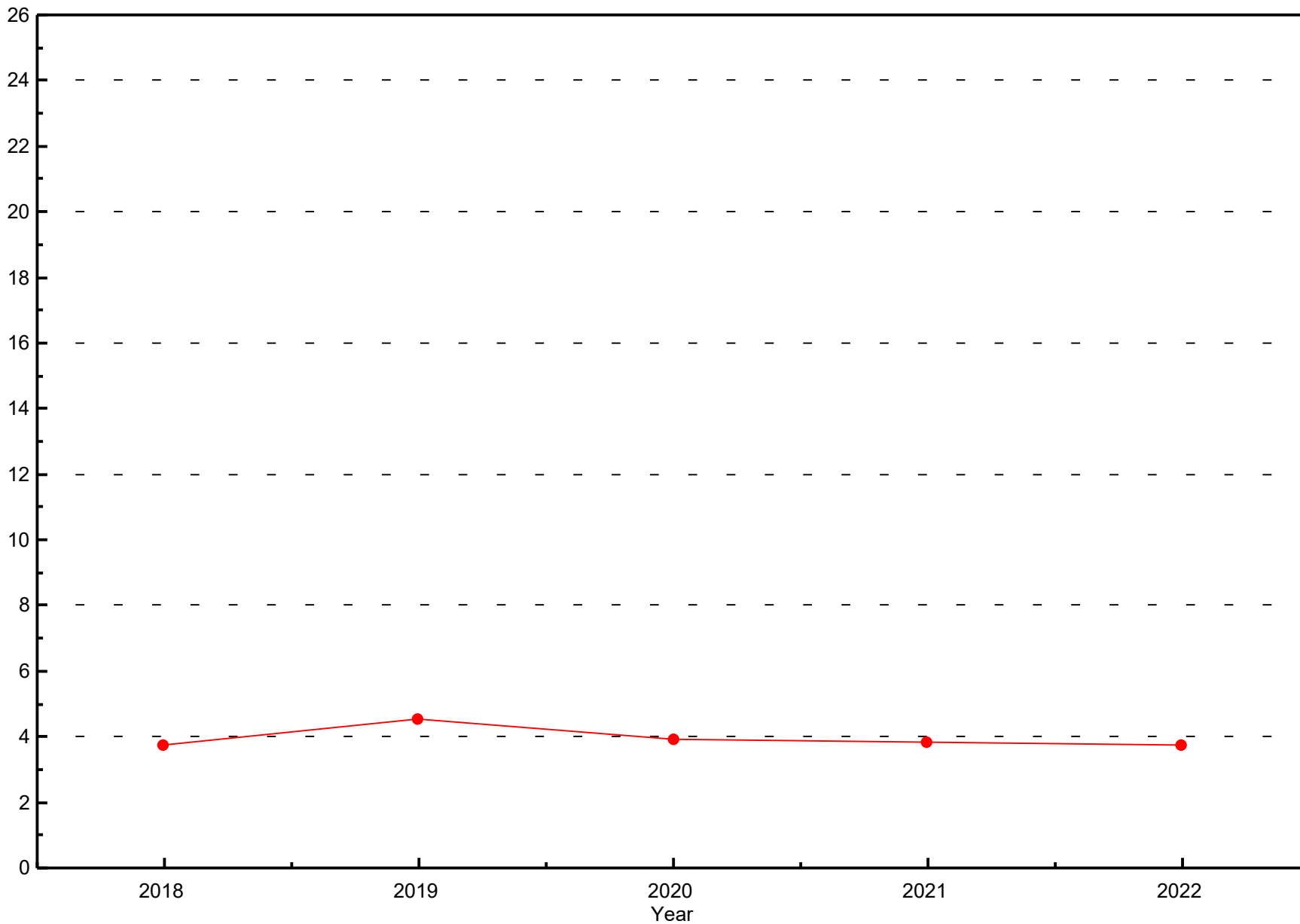
Nitrogen Oxides (NO_x) - ppb
Stony Mountain (2018 to 2022)





Yearly Averages

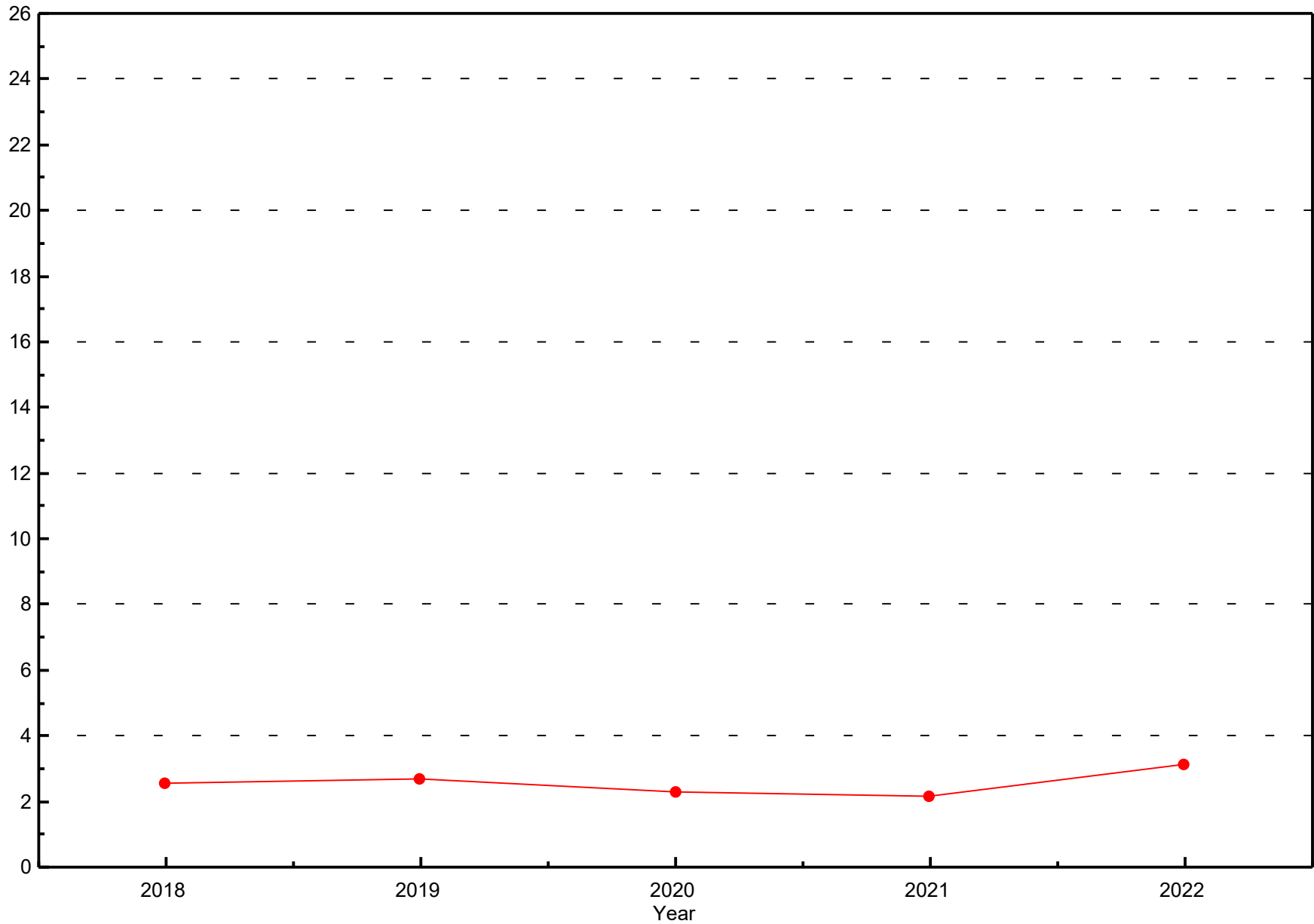
Nitrogen Oxides (NO_x) - ppb
Firebag (2018 to 2022)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Mackay River (2018 to 2022)

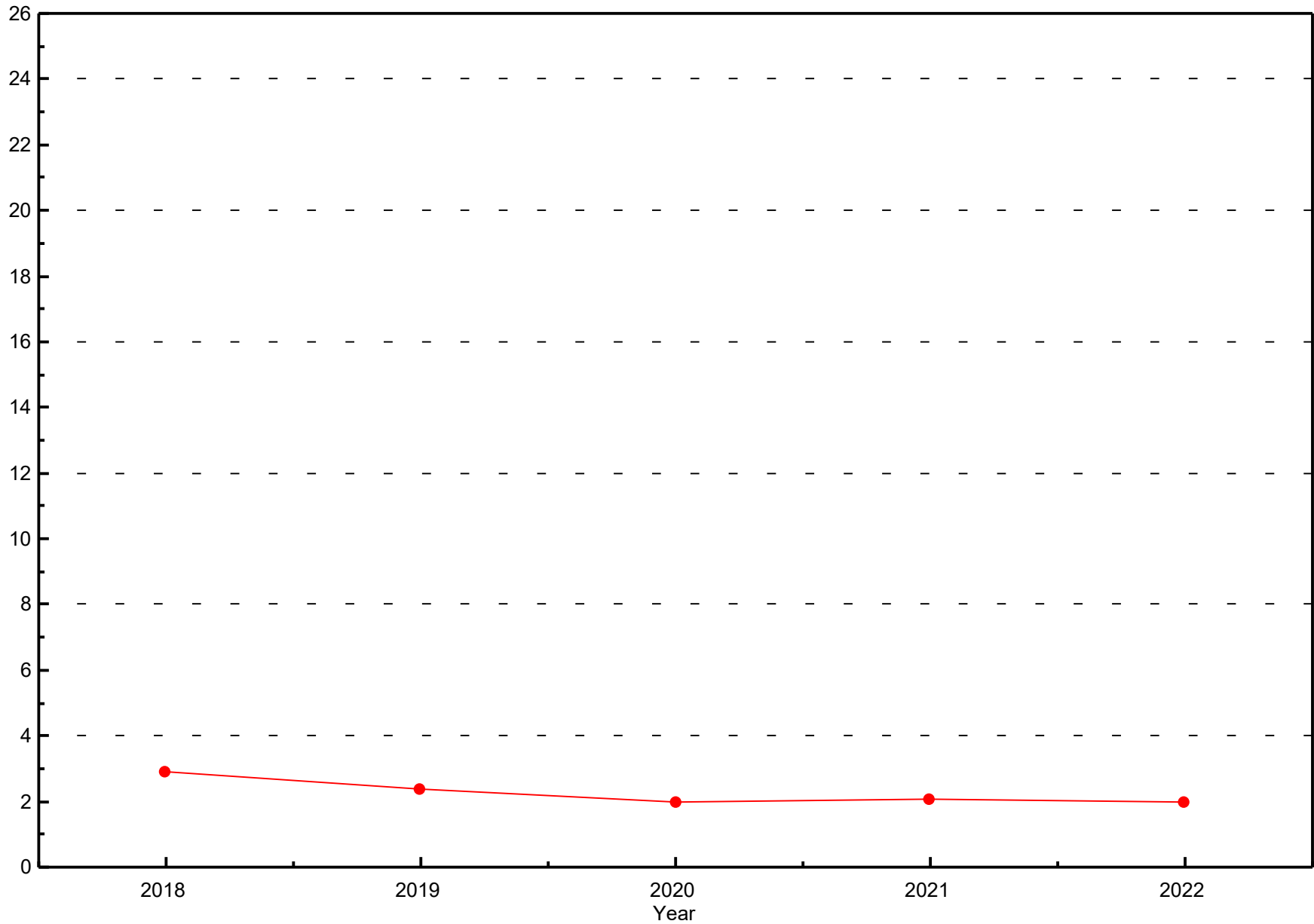




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

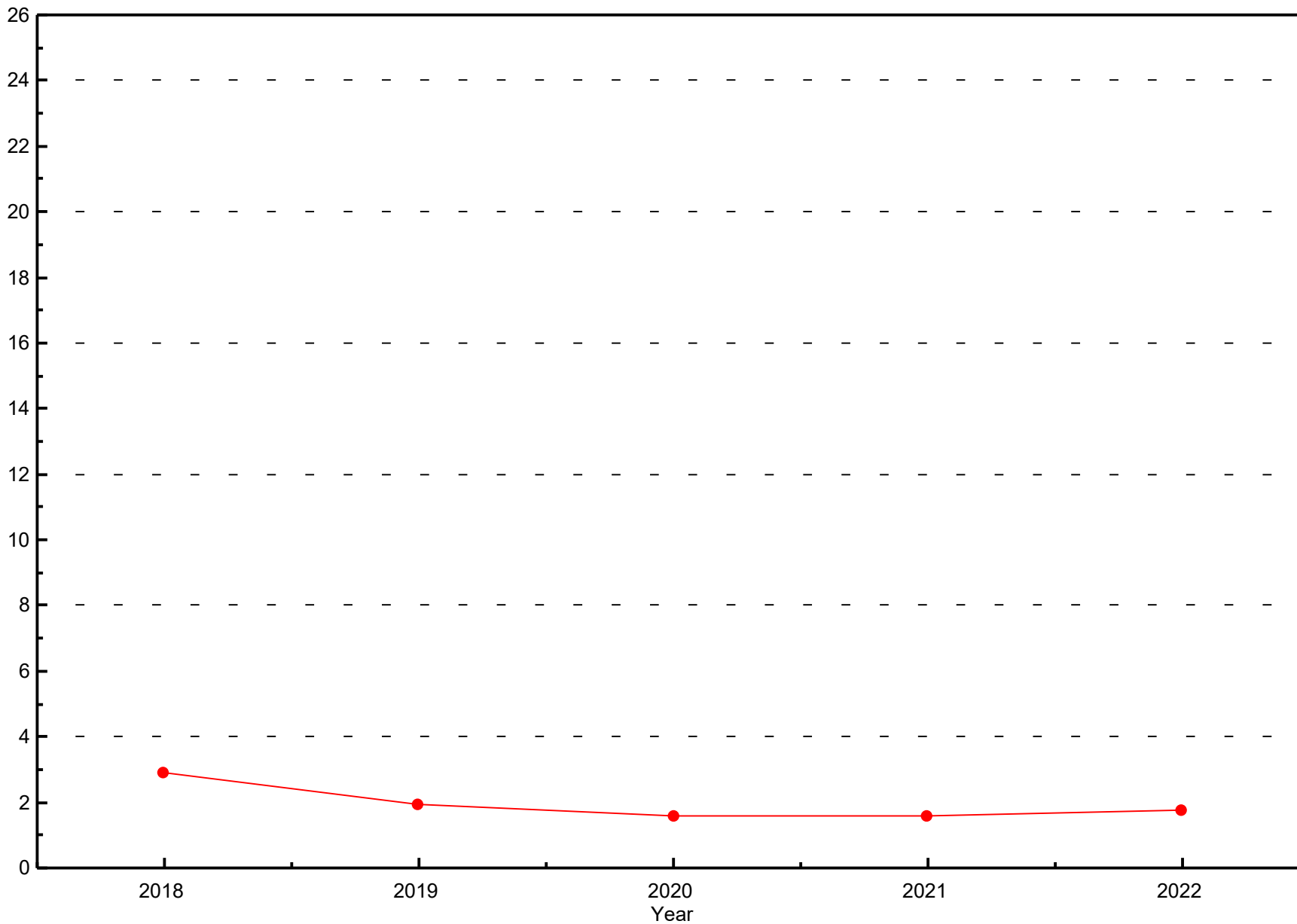
Conklin (2018 to 2022)





Yearly Averages

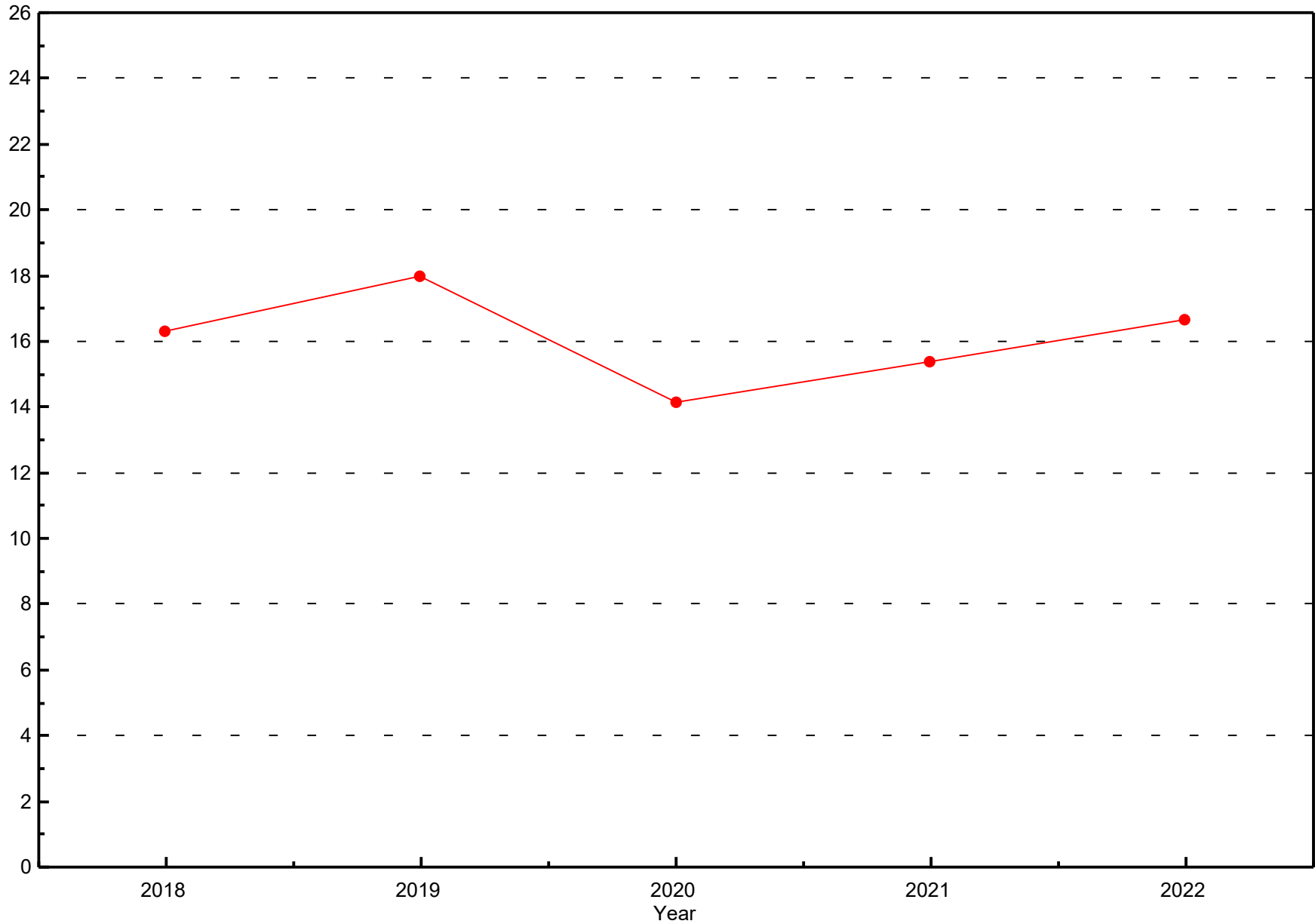
Nitrogen Oxides (NO_x) - ppb
Janvier (2018 to 2022)





Yearly Averages

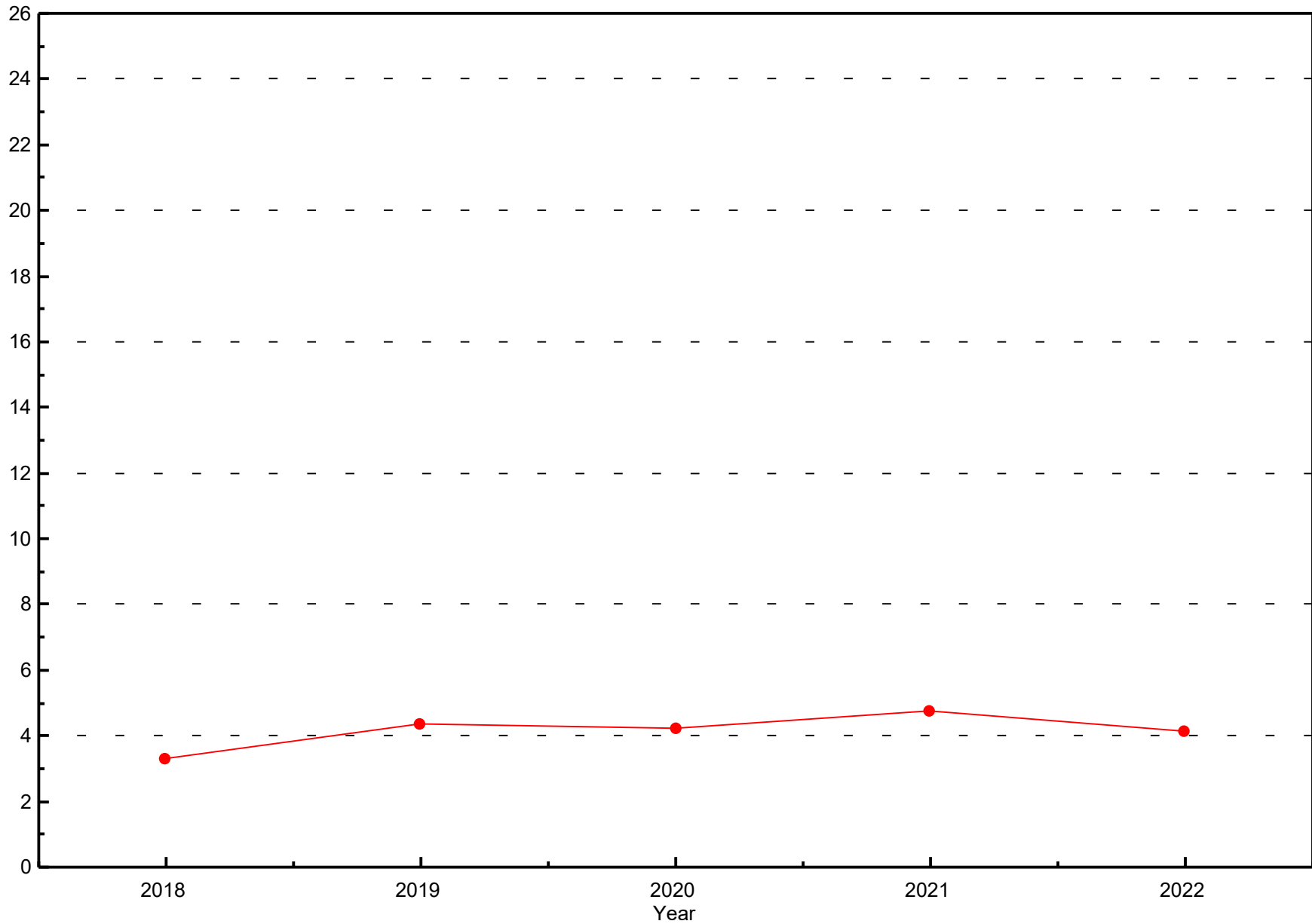
Nitrogen Oxides (NO_x) - ppb
Fort Hills (2018 to 2022)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Christina Lake (2018 to 2022)

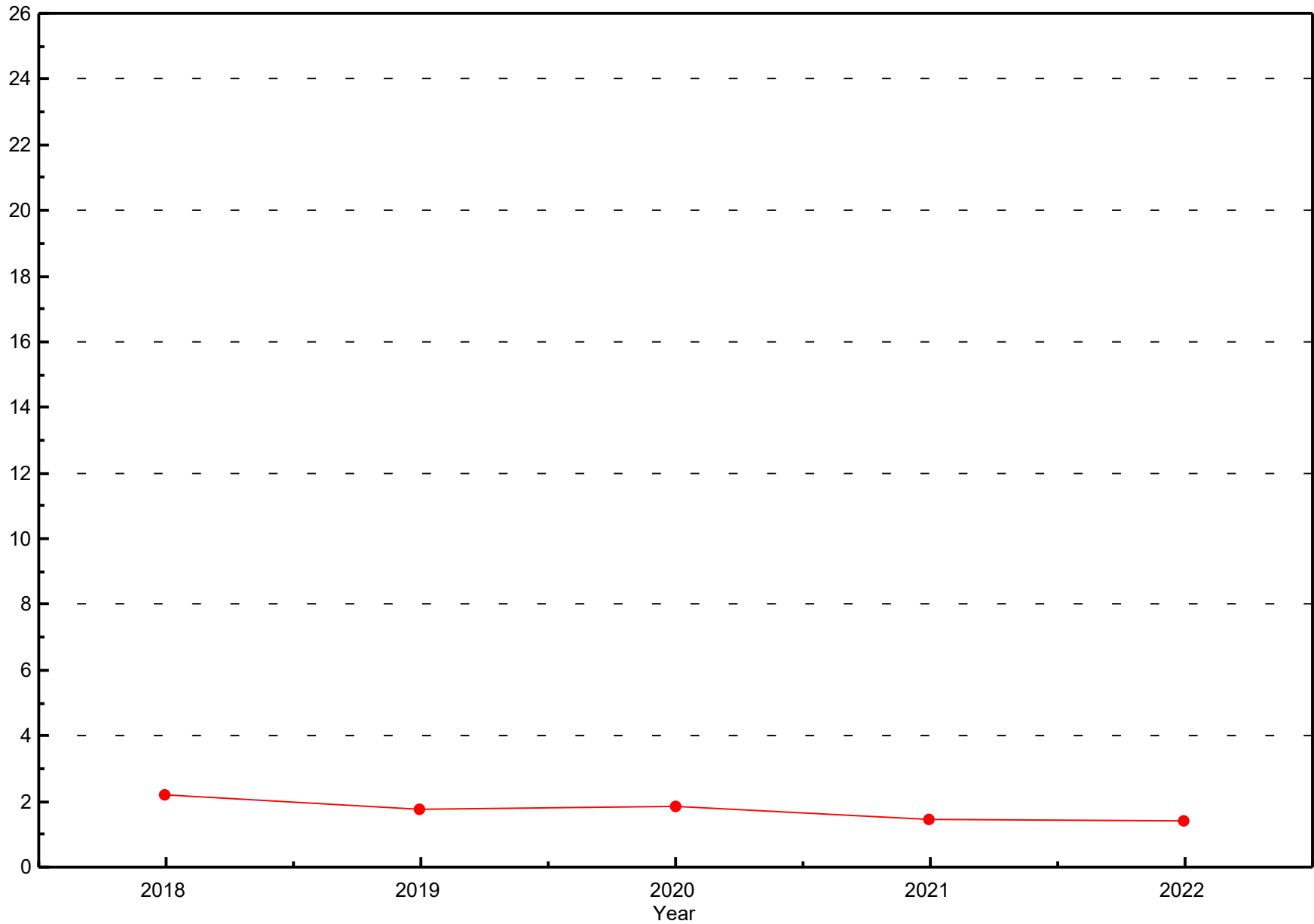




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

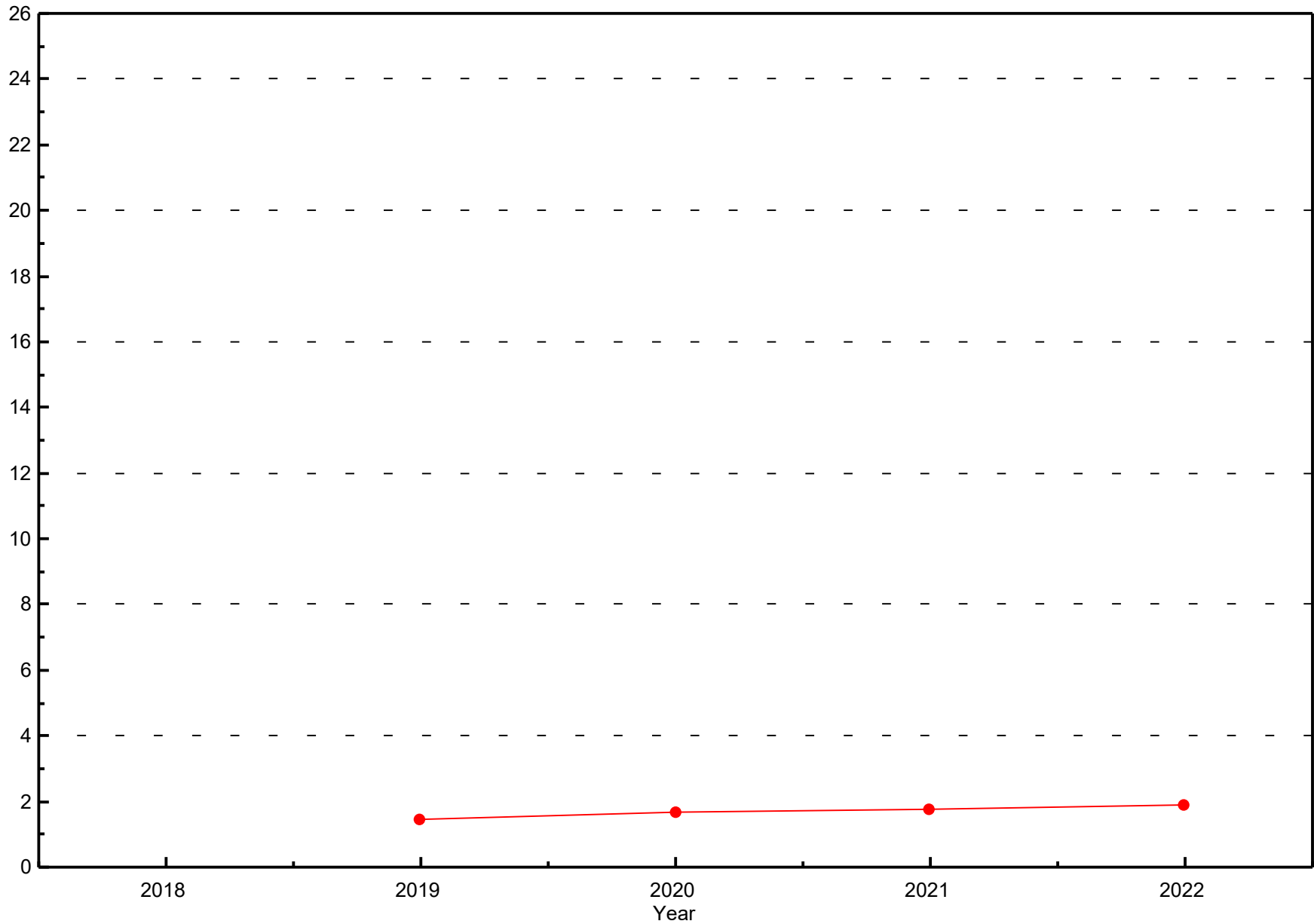
Jackfish 2/3 (2018 to 2022)





Yearly Averages

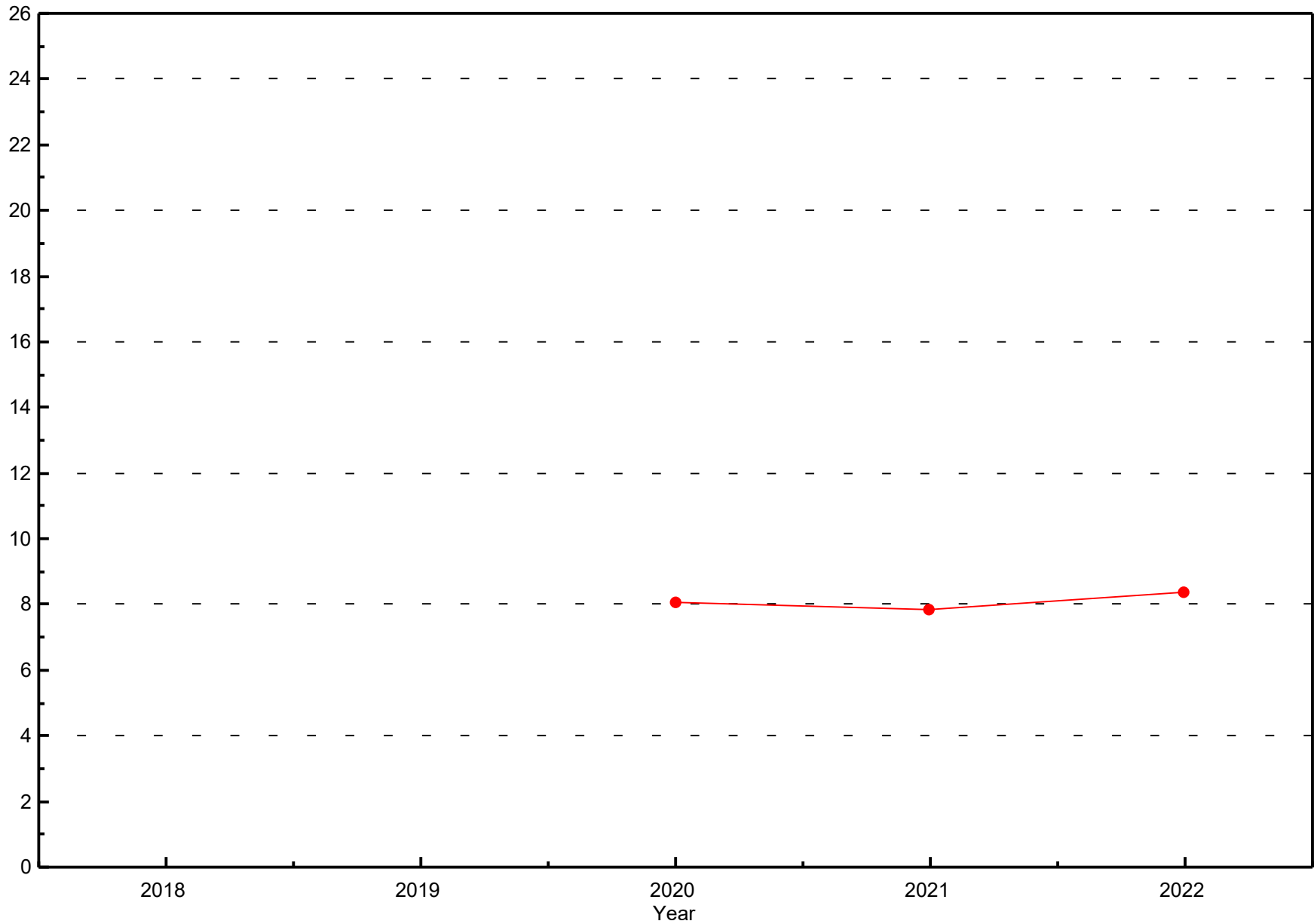
Nitrogen Oxides (NO_x) - ppb
Surmont 2 (2018 to 2022)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Ells River (2018 to 2022)

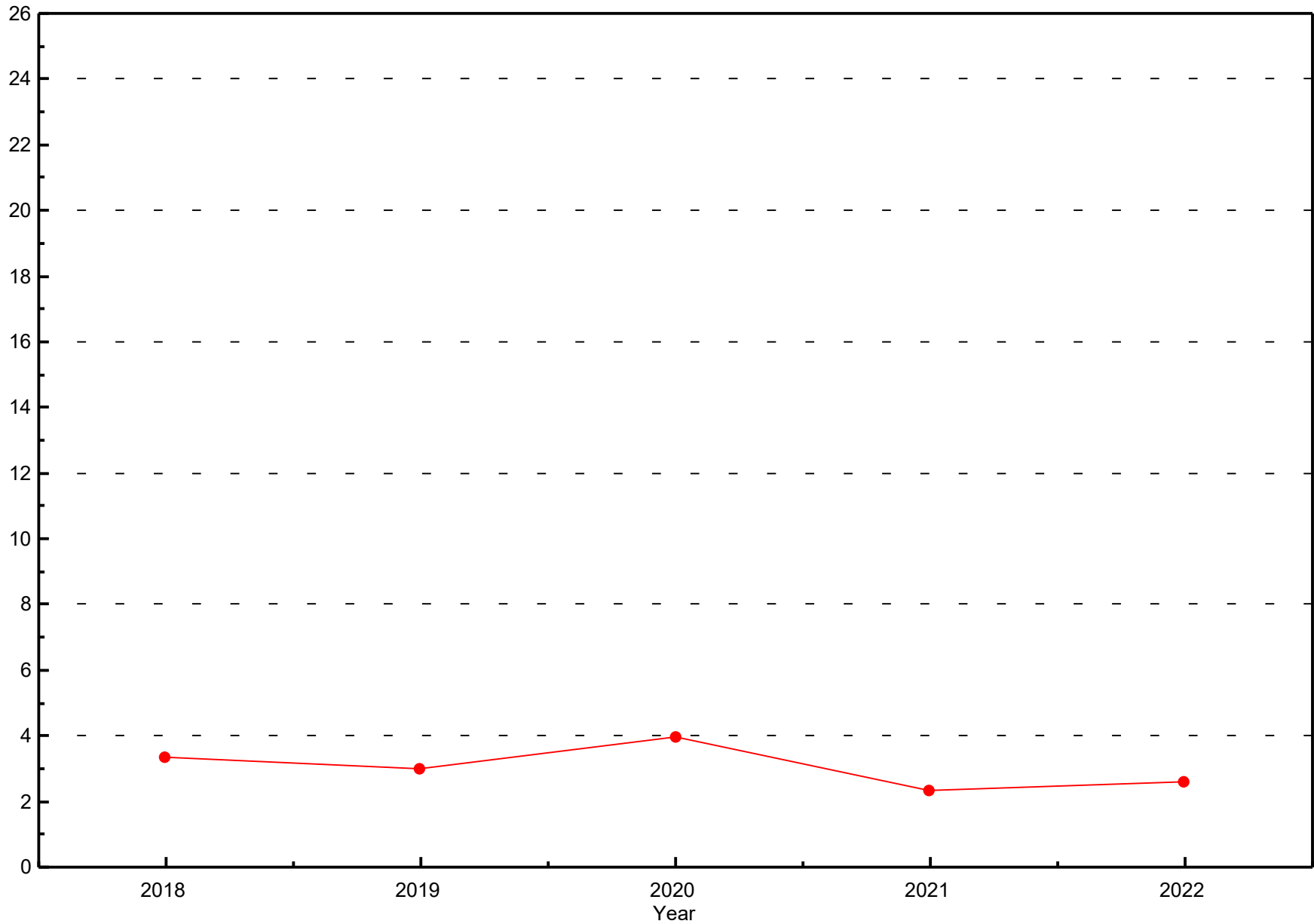




Yearly Averages

Nitrogen Oxides (NO_x) - ppb

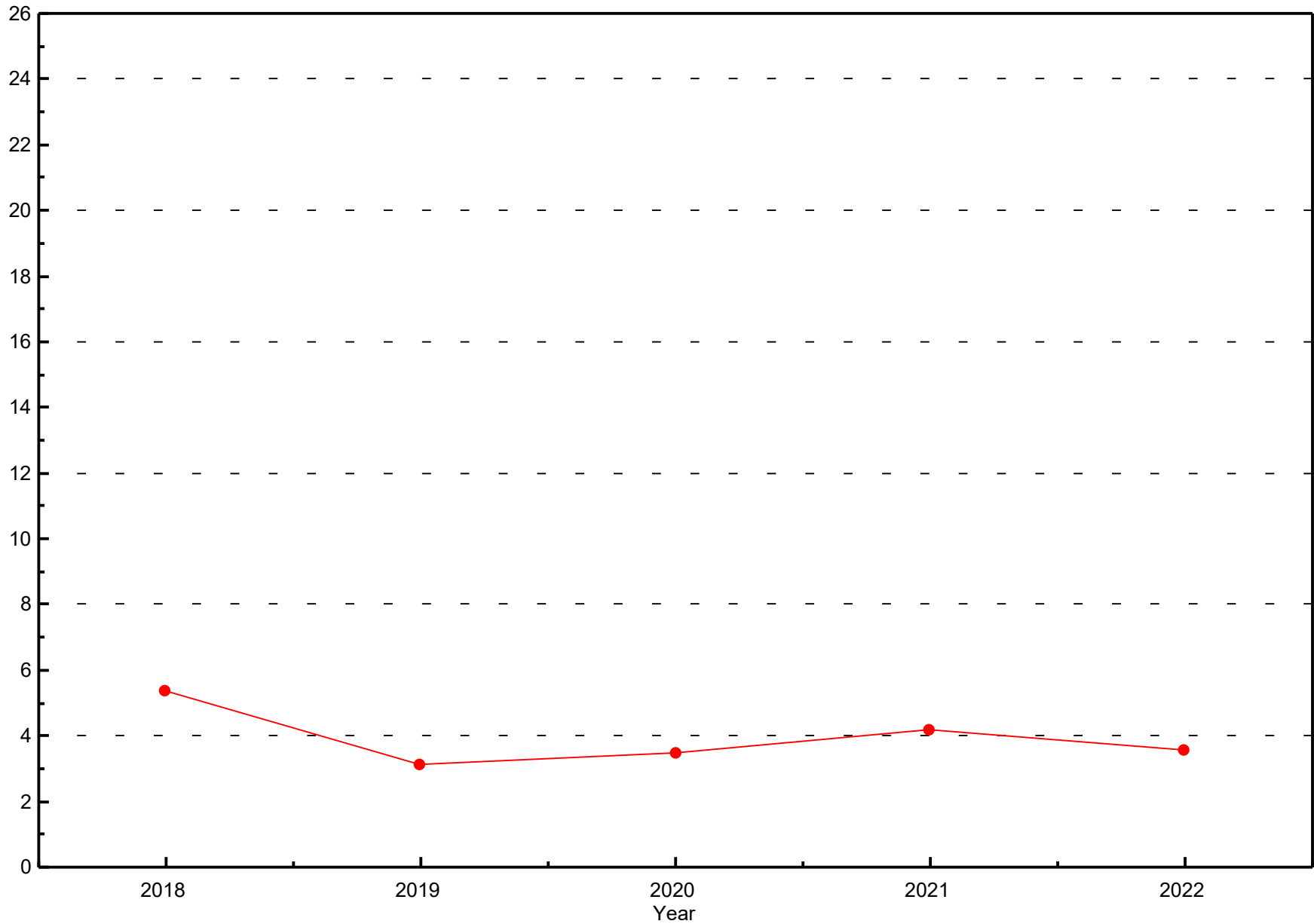
Leismer (2018 to 2022)





Yearly Averages

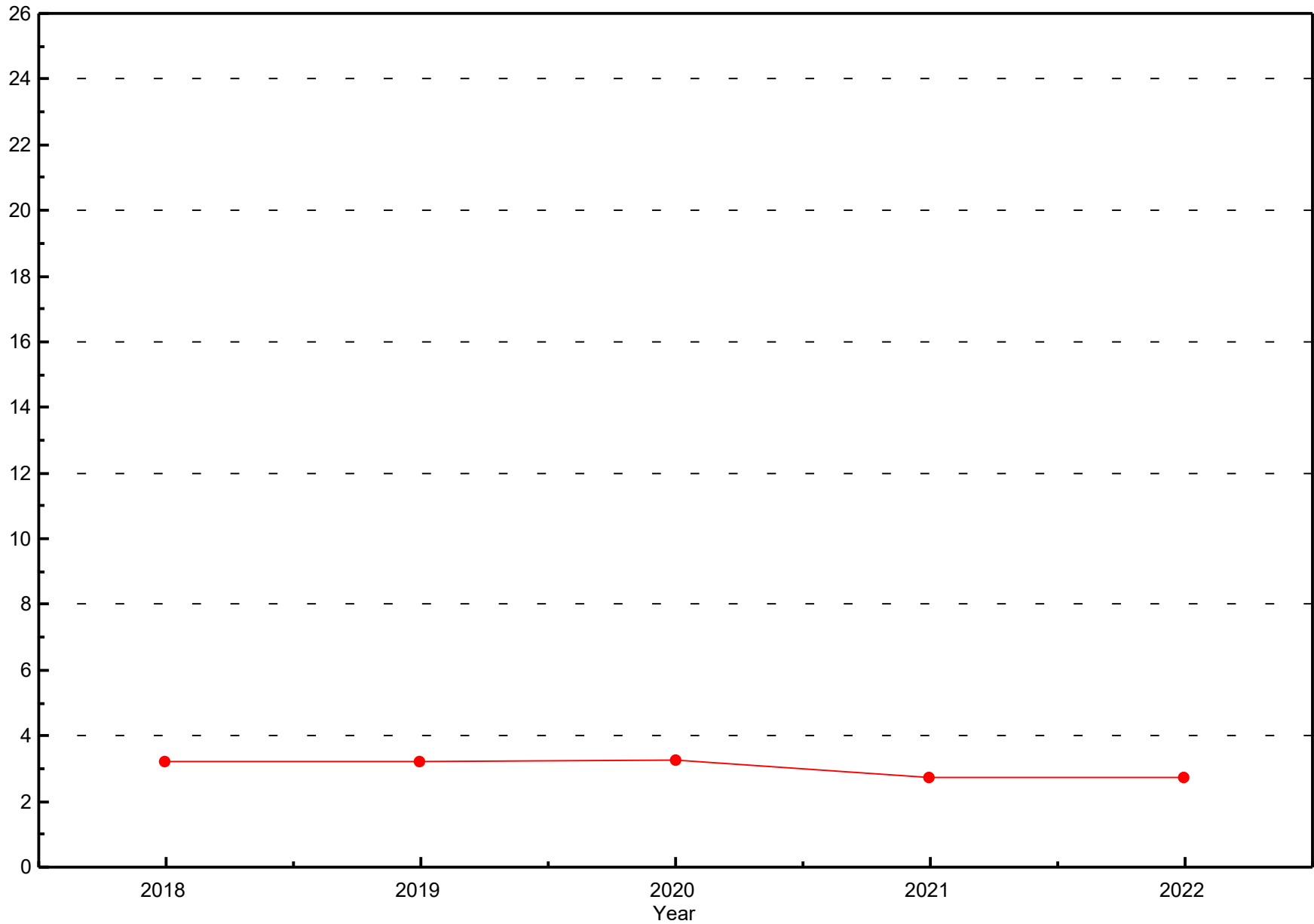
Nitrogen Oxides (NO_x) - ppb
Sawbones Bay (2018 to 2022)





Yearly Averages

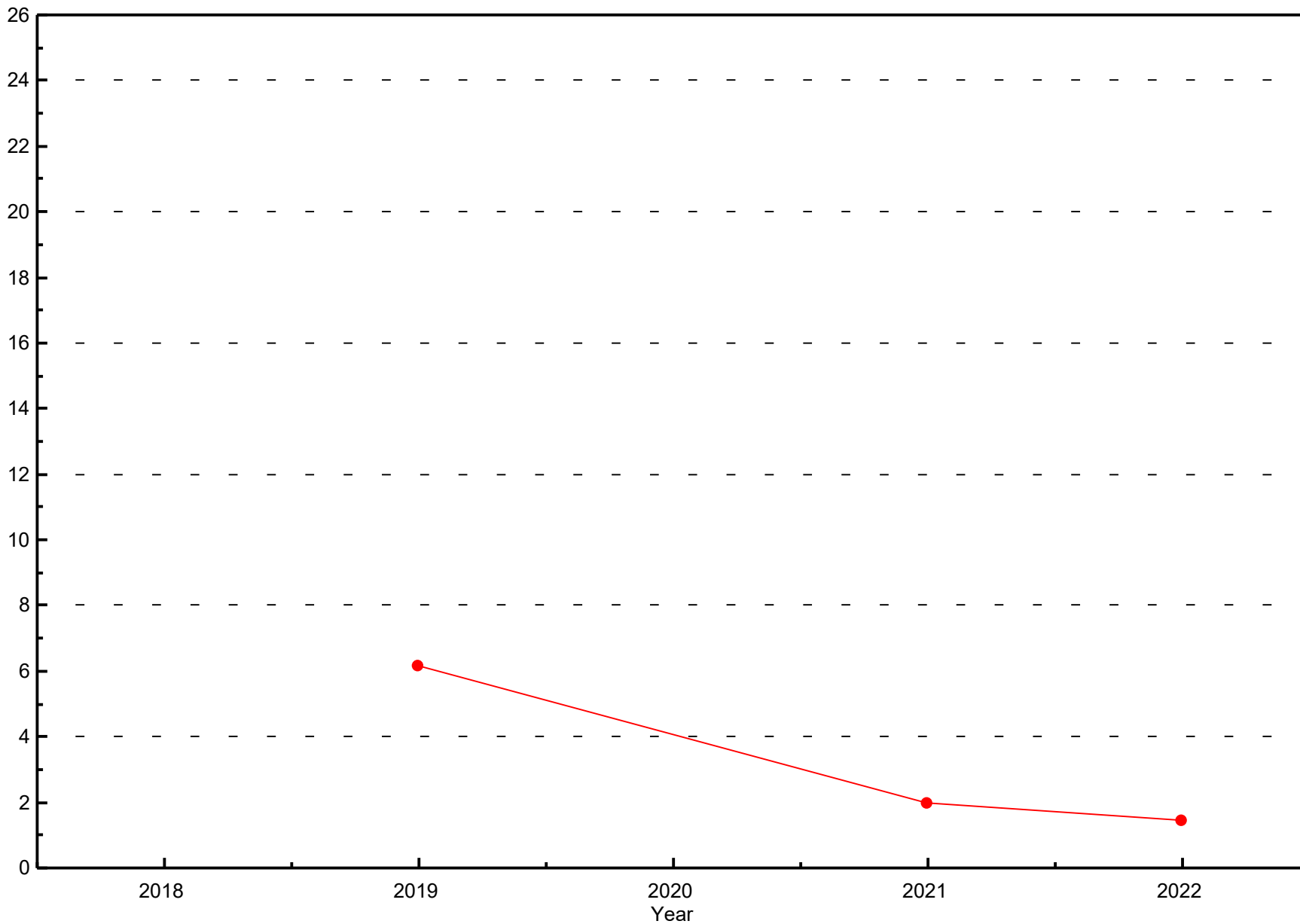
Nitrogen Oxides (NO_x) - ppb
Jackfish 1 (2018 to 2022)





Yearly Averages

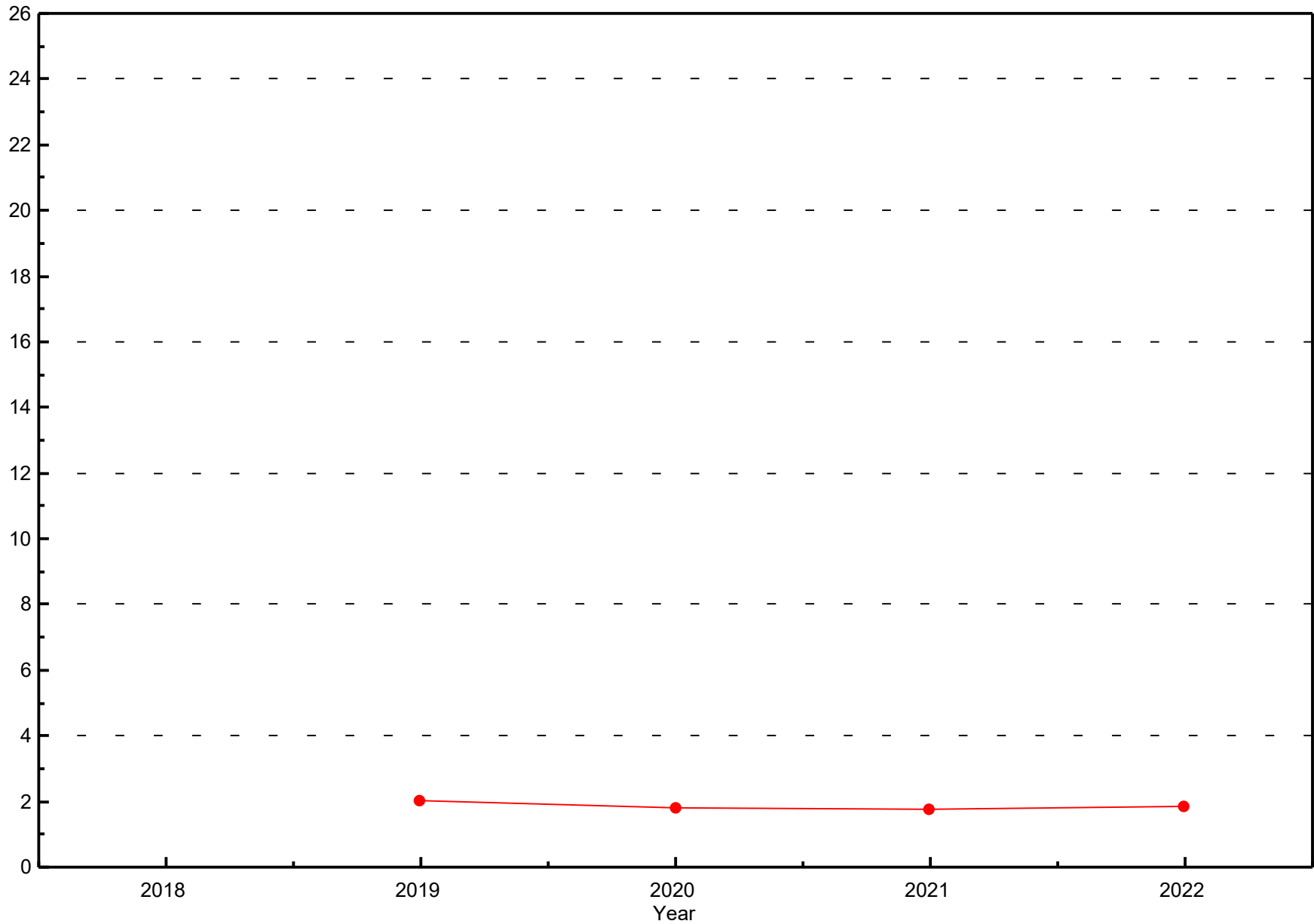
Nitrogen Oxides (NO_x) - ppb
Kirby South (2018 to 2022)





Yearly Averages

Nitrogen Oxides (NO_x) - ppb
Kirby North (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

NITRIC OXIDE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	5.1	126.8	23.0	98.4	1.1	0.4	0.0
February	100	637	5.8	64.8	18.3	98.4	1.6	0.0	0.0
March	97	683	5.8	105.7	42.4	95.6	3.5	0.9	0.0
April	100	684	1.7	33.8	5.3	100.0	0.0	0.0	0.0
May	100	697	1.5	34.8	6.8	100.0	0.0	0.0	0.0
June	99	680	1.1	50.1	4.6	99.7	0.3	0.0	0.0
July	100	704	0.8	18.0	3.7	100.0	0.0	0.0	0.0
August	100	707	1.6	97.1	9.1	99.7	0.1	0.1	0.0
September	99	676	2.1	55.3	9.4	99.4	0.6	0.0	0.0
October	100	707	2.0	53.7	10.6	99.7	0.3	0.0	0.0
November	100	684	2.5	71.2	9.9	99.7	0.3	0.0	0.0
December	99	703	4.5	90.2	30.2	98.0	1.4	0.6	0.0
Annual	99	8268	2.8	126.8	42.4	99.1	0.8	0.2	0.0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	4.9	156.2	51.8	96.5	2.3	1.3	0.0
February	100	638	3.8	83.5	15.1	98.8	1.1	0.2	0.0
March	100	707	3.4	198.6	35.0	98.4	0.7	0.7	0.1
April	97	662	1.4	15.0	6.1	100.0	0.0	0.0	0.0
May	99	702	0.5	31.1	2.4	100.0	0.0	0.0	0.0
June	97	659	1.5	26.0	4.8	100.0	0.0	0.0	0.0
July	100	707	0.7	24.7	3.5	100.0	0.0	0.0	0.0
August	98	686	1.0	90.6	10.3	99.7	0.2	0.2	0.0
September	100	685	0.5	13.1	2.6	100.0	0.0	0.0	0.0
October	100	707	1.0	50.2	7.4	99.9	0.1	0.0	0.0
November	98	661	0.7	32.7	2.9	100.0	0.0	0.0	0.0
December	100	708	2.4	92.4	15.1	99.2	0.7	0.1	0.0
Annual	99	8230	1.8	198.6	51.8	99.7	0.2	0.1	0.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	86.0	29.8	98.4	1.3	0.3	0.0
February	100	638	4.7	49.5	16.9	99.5	0.5	0.0	0.0
March	100	707	2.4	49.3	17.6	99.9	0.1	0.0	0.0
April	95	643	1.1	39.5	4.3	100.0	0.0	0.0	0.0
May	100	704	0.8	12.3	2.1	100.0	0.0	0.0	0.0
June	100	683	0.7	17.1	1.6	100.0	0.0	0.0	0.0
July	100	707	0.4	10.6	1.0	100.0	0.0	0.0	0.0
August	100	707	0.6	12.8	2.3	100.0	0.0	0.0	0.0
September	100	683	0.7	12.4	1.8	100.0	0.0	0.0	0.0
October	100	706	1.1	24.5	3.4	100.0	0.0	0.0	0.0
November	100	684	2.4	54.3	14.3	99.7	0.3	0.0	0.0
December	100	708	3.8	90.9	25.8	98.6	1.1	0.3	0.0
Annual	99	8277	1.9	90.9	29.8	99.7	0.3	0.1	0.0



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	5.2	55.8	39.5	96.6	3.4	0.0	0.0
February	100	637	5.1	55.0	20.8	99.4	0.6	0.0	0.0
March	100	707	3.6	68.9	22.8	99.2	0.9	0.0	0.0
April	100	686	1.2	14.4	3.6	100.0	0.0	0.0	0.0
May	100	706	0.7	11.0	1.8	100.0	0.0	0.0	0.0
June	99	679	0.7	16.4	1.9	100.0	0.0	0.0	0.0
July	100	708	0.6	7.4	1.3	100.0	0.0	0.0	0.0
August	100	705	1.6	17.3	3.2	100.0	0.0	0.0	0.0
September	99	674	1.9	26.3	4.7	100.0	0.0	0.0	0.0
October	100	708	2.1	26.1	6.3	100.0	0.0	0.0	0.0
November	100	684	4.2	54.4	15.4	99.6	0.4	0.0	0.0
December	100	708	4.2	71.2	20.3	98.9	1.1	0.0	0.0
Annual	100	8309	2.6	71.2	39.5	99.5	0.5	0.0	0.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	94	663	0.2	3.9	1.0	100.0	0.0	0.0	0.0
February	90	573	0.1	5.0	0.5	100.0	0.0	0.0	0.0
March	99	702	0.2	6.1	1.5	100.0	0.0	0.0	0.0
April	100	681	0.1	4.8	1.1	100.0	0.0	0.0	0.0
May	100	703	0.1	2.3	0.5	100.0	0.0	0.0	0.0
June	100	684	0.1	3.1	0.4	100.0	0.0	0.0	0.0
July	100	709	0.1	3.3	0.5	100.0	0.0	0.0	0.0
August	100	705	0.1	5.9	0.7	100.0	0.0	0.0	0.0
September	98	667	0.4	9.4	1.8	100.0	0.0	0.0	0.0
October	100	707	0.2	6.3	0.9	100.0	0.0	0.0	0.0
November	100	685	0.3	13.6	2.3	100.0	0.0	0.0	0.0
December	100	705	0.3	12.8	4.1	100.0	0.0	0.0	0.0
Annual	98	8184	0.2	13.6	4.1	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	702	9.5	146.3	37.4	94.2	4.1	1.7	0.0
February	99	634	12.3	195.2	46.1	92.1	5.5	2.2	0.2
March	100	707	11.1	165.9	77.6	91.5	5.7	2.7	0.1
April	99	678	2.2	34.2	9.2	100.0	0.0	0.0	0.0
May	100	708	1.8	37.1	8.4	100.0	0.0	0.0	0.0
June	100	681	1.7	24.0	4.5	100.0	0.0	0.0	0.0
July	100	705	1.5	34.2	4.6	100.0	0.0	0.0	0.0
August	99	696	2.4	42.5	6.2	99.9	0.1	0.0	0.0
September	100	683	3.3	49.8	8.8	99.4	0.6	0.0	0.0
October	100	707	4.7	73.3	17.0	97.7	2.3	0.0	0.0
November	100	683	4.7	79.3	16.4	97.7	2.3	0.0	0.0
December	100	707	6.4	137.4	38.1	96.8	2.6	0.7	0.0
Annual	100	8291	5.1	195.2	77.6	97.5	1.9	0.6	0.0



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	6.6	93.2	21.8	96.2	3.5	0.3	0.0
February	99	635	8.1	98.5	25.6	95.3	4.4	0.3	0.0
March	100	708	7.6	94.5	47.7	94.1	5.4	0.6	0.0
April	100	684	1.5	30.4	4.2	100.0	0.0	0.0	0.0
May	100	708	1.6	81.7	17.8	99.3	0.6	0.1	0.0
June	100	681	1.5	49.4	7.9	99.6	0.4	0.0	0.0
July	93	658	2.0	57.2	7.4	99.7	0.3	0.0	0.0
August	87	617	2.5	49.1	7.2	99.5	0.5	0.0	0.0
September	100	685	2.9	51.7	11.1	99.3	0.7	0.0	0.0
October	100	708	2.6	64.3	8.9	99.6	0.4	0.0	0.0
November	99	681	2.9	63.1	11.1	99.0	1.0	0.0	0.0
December	100	709	7.6	216.7	55.9	96.2	1.1	2.0	0.7
Annual	98	8182	4.0	216.7	55.9	98.2	1.5	0.3	0.1



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	0.8	39.5	4.4	100.0	0.0	0.0	0.0
February	100	636	1.6	214.1	18.7	99.5	0.2	0.2	0.2
March	100	708	0.6	13.9	3.0	100.0	0.0	0.0	0.0
April	100	685	0.4	9.9	1.8	100.0	0.0	0.0	0.0
May	100	704	0.2	6.9	0.7	100.0	0.0	0.0	0.0
June	100	684	0.2	3.4	0.5	100.0	0.0	0.0	0.0
July	99	699	0.2	7.6	0.7	100.0	0.0	0.0	0.0
August	78	547	0.4	16.7	1.5	100.0	0.0	0.0	0.0
September	100	685	0.3	18.2	1.4	100.0	0.0	0.0	0.0
October	99	703	0.4	20.7	1.1	100.0	0.0	0.0	0.0
November	100	684	0.5	20.4	2.1	100.0	0.0	0.0	0.0
December	100	709	0.9	26.3	4.9	100.0	0.0	0.0	0.0
Annual	98	8150	0.5	214.1	18.7	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	703	1.0	47.2	17.3	99.6	0.4	0.0	0.0
February	100	637	0.9	23.8	5.5	100.0	0.0	0.0	0.0
March	100	709	0.5	26.0	2.8	100.0	0.0	0.0	0.0
April	100	684	0.3	6.9	0.8	100.0	0.0	0.0	0.0
May	99	701	0.3	8.7	1.1	100.0	0.0	0.0	0.0
June	100	684	0.2	11.3	1.2	100.0	0.0	0.0	0.0
July	100	707	0.3	10.4	1.1	100.0	0.0	0.0	0.0
August	97	687	0.4	8.9	1.6	100.0	0.0	0.0	0.0
September	100	685	0.4	12.8	1.7	100.0	0.0	0.0	0.0
October	100	709	0.3	7.5	1.7	100.0	0.0	0.0	0.0
November	98	670	0.4	19.4	1.6	100.0	0.0	0.0	0.0
December	100	708	0.4	22.4	1.5	100.0	0.0	0.0	0.0
Annual	99	8284	0.4	47.2	17.3	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	63	442	0.1	2.9	0.3	100.0	0.0	0.0	0.0
February	100	639	0.2	29.3	1.3	100.0	0.0	0.0	0.0
March	100	708	0.1	1.9	0.5	100.0	0.0	0.0	0.0
April	100	684	0.1	1.3	0.4	100.0	0.0	0.0	0.0
May	100	708	0.1	2.0	0.3	100.0	0.0	0.0	0.0
June	93	637	0.1	0.6	0.2	100.0	0.0	0.0	0.0
July	100	707	0.1	0.6	0.2	100.0	0.0	0.0	0.0
August	94	665	0.2	1.3	0.3	100.0	0.0	0.0	0.0
September	100	685	0.2	1.3	0.4	100.0	0.0	0.0	0.0
October	100	708	0.1	1.4	0.4	100.0	0.0	0.0	0.0
November	100	683	0.1	3.1	0.8	100.0	0.0	0.0	0.0
December	100	707	0.1	2.5	0.4	100.0	0.0	0.0	0.0
Annual	96	7973	0.1	29.3	1.3	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	95	676	1.7	40.7	6.8	99.9	0.2	0.0	0.0
February	100	639	2.4	64.1	9.4	99.1	0.9	0.0	0.0
March	99	702	1.1	23.4	5.9	100.0	0.0	0.0	0.0
April	100	683	0.3	5.7	1.3	100.0	0.0	0.0	0.0
May	100	708	0.3	4.3	0.9	100.0	0.0	0.0	0.0
June	100	684	0.3	14.7	1.0	100.0	0.0	0.0	0.0
July	100	708	0.3	6.8	0.8	100.0	0.0	0.0	0.0
August	99	702	0.3	5.3	1.1	100.0	0.0	0.0	0.0
September	100	685	0.4	23.4	1.3	100.0	0.0	0.0	0.0
October	100	708	0.3	7.7	1.0	100.0	0.0	0.0	0.0
November	100	685	0.7	16.3	2.2	100.0	0.0	0.0	0.0
December	100	707	0.7	20.6	1.9	100.0	0.0	0.0	0.0
Annual	99	8287	0.7	64.1	9.4	99.9	0.1	0.0	0.0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
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	1.8	45.1	17.1	99.9	0.1	0.0	0.0
February	100	639	0.7	28.3	6.6	100.0	0.0	0.0	0.0
March	100	704	0.4	13.3	2.3	100.0	0.0	0.0	0.0
April	100	684	0.4	13.4	1.2	100.0	0.0	0.0	0.0
May	100	707	0.2	15.7	2.6	100.0	0.0	0.0	0.0
June	100	682	0.2	10.4	1.3	100.0	0.0	0.0	0.0
July	100	708	0.1	6.2	0.9	100.0	0.0	0.0	0.0
August	100	707	0.2	10.5	2.9	100.0	0.0	0.0	0.0
September	100	686	0.1	5.3	1.5	100.0	0.0	0.0	0.0
October	100	709	0.2	14.5	3.4	100.0	0.0	0.0	0.0
November	100	685	0.2	19.0	1.5	100.0	0.0	0.0	0.0
December	100	708	0.9	48.3	16.6	99.7	0.3	0.0	0.0
Annual	100	8326	0.5	48.3	17.1	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	0.4	19.7	1.7	100.0	0.0	0.0	0.0
February	100	639	0.4	8.5	1.3	100.0	0.0	0.0	0.0
March	100	708	0.3	11.0	1.6	100.0	0.0	0.0	0.0
April	100	684	0.2	8.2	0.6	100.0	0.0	0.0	0.0
May	100	708	0.2	11.1	1.1	100.0	0.0	0.0	0.0
June	100	685	0.2	12.5	1.2	100.0	0.0	0.0	0.0
July	100	706	0.2	13.2	0.9	100.0	0.0	0.0	0.0
August	98	687	0.3	11.8	0.7	100.0	0.0	0.0	0.0
September	98	677	0.4	17.2	1.8	100.0	0.0	0.0	0.0
October	100	709	0.3	30.8	1.5	100.0	0.0	0.0	0.0
November	100	683	0.3	8.9	1.8	100.0	0.0	0.0	0.0
December	100	708	0.4	7.5	1.2	100.0	0.0	0.0	0.0
Annual	100	8302	0.3	30.8	1.8	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	0.4	11.1	1.5	100.0	0.0	0.0	0.0
February	100	639	0.4	10.7	1.7	100.0	0.0	0.0	0.0
March	100	706	0.3	6.5	1.5	100.0	0.0	0.0	0.0
April	100	683	0.2	3.3	0.4	100.0	0.0	0.0	0.0
May	100	708	0.1	2.7	0.3	100.0	0.0	0.0	0.0
June	100	683	0.2	1.9	0.3	100.0	0.0	0.0	0.0
July	99	702	0.2	4.0	0.5	100.0	0.0	0.0	0.0
August	97	685	0.2	4.3	0.8	100.0	0.0	0.0	0.0
September	95	651	0.5	6.0	1.0	100.0	0.0	0.0	0.0
October	100	707	0.6	30.0	2.7	100.0	0.0	0.0	0.0
November	100	684	0.3	4.7	1.2	100.0	0.0	0.0	0.0
December	100	707	0.3	4.8	1.3	100.0	0.0	0.0	0.0
Annual	99	8263	0.3	30.0	2.7	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	11.7	208.5	80.8	92.1	3.5	4.0	0.4
February	100	638	14.1	195.7	38.5	90.4	6.3	3.0	0.3
March	100	706	15.6	352.7	134.9	88.4	6.1	4.7	0.9
April	100	682	4.2	117.5	17.2	98.1	1.5	0.4	0.0
May	100	706	5.4	105.5	17.8	97.2	2.4	0.4	0.0
June	100	683	2.7	67.4	8.8	99.6	0.4	0.0	0.0
July	100	707	2.7	108.4	12.0	98.3	1.4	0.3	0.0
August	99	703	2.5	95.6	15.5	98.6	1.1	0.3	0.0
September	100	686	3.7	123.5	21.3	98.3	1.5	0.3	0.0
October	100	707	6.5	167.3	29.8	94.9	3.8	1.1	0.1
November	100	685	6.0	184.0	31.5	96.2	2.6	1.0	0.2
December	100	707	5.4	100.3	19.8	98.0	1.7	0.3	0.0
Annual	100	8318	6.7	352.7	134.9	95.8	2.7	1.3	0.2



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	703	1.9	28.5	4.1	100.0	0.0	0.0	0.0
February	100	637	2.1	44.7	5.6	99.8	0.2	0.0	0.0
March	89	626	1.4	23.6	3.6	100.0	0.0	0.0	0.0
April	99	678	0.9	13.2	5.3	100.0	0.0	0.0	0.0
May	100	707	0.8	23.8	2.8	100.0	0.0	0.0	0.0
June	100	681	0.6	10.4	2.1	100.0	0.0	0.0	0.0
July	100	705	0.8	12.1	3.1	100.0	0.0	0.0	0.0
August	99	701	1.0	15.8	5.1	100.0	0.0	0.0	0.0
September	93	632	1.3	16.4	5.5	100.0	0.0	0.0	0.0
October	100	708	1.3	28.7	8.4	100.0	0.0	0.0	0.0
November	100	685	1.0	17.8	2.9	100.0	0.0	0.0	0.0
December	100	706	1.6	51.6	10.5	99.7	0.3	0.0	0.0
Annual	98	8169	1.2	51.6	10.5	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
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	703	0.3	3.8	0.7	100.0	0.0	0.0	0.0
February	100	637	0.3	5.5	0.9	100.0	0.0	0.0	0.0
March	100	708	0.2	2.8	0.6	100.0	0.0	0.0	0.0
April	100	683	0.2	2.3	0.6	100.0	0.0	0.0	0.0
May	100	708	0.2	2.3	0.6	100.0	0.0	0.0	0.0
June	100	683	0.2	2.8	0.5	100.0	0.0	0.0	0.0
July	100	707	0.2	5.4	0.5	100.0	0.0	0.0	0.0
August	100	707	0.2	2.8	0.6	100.0	0.0	0.0	0.0
September	100	686	0.2	19.5	1.4	100.0	0.0	0.0	0.0
October	100	709	0.2	2.6	0.5	100.0	0.0	0.0	0.0
November	100	685	0.2	5.3	1.1	100.0	0.0	0.0	0.0
December	100	706	0.2	3.1	0.8	100.0	0.0	0.0	0.0
Annual	100	8322	0.2	19.5	1.4	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Surrmont 2 (AMS29)
Annual Summary for the Year 2022
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	699	0.3	7.1	1.3	100.0	0.0	0.0	0.0
February	100	638	0.3	6.0	1.2	100.0	0.0	0.0	0.0
March	100	705	0.3	11.2	2.0	100.0	0.0	0.0	0.0
April	100	682	0.2	3.4	0.8	100.0	0.0	0.0	0.0
May	98	694	0.1	2.0	0.2	100.0	0.0	0.0	0.0
June	100	684	0.1	4.2	0.4	100.0	0.0	0.0	0.0
July	100	707	0.2	1.5	0.3	100.0	0.0	0.0	0.0
August	100	708	0.2	1.8	0.4	100.0	0.0	0.0	0.0
September	100	682	0.2	2.7	0.4	100.0	0.0	0.0	0.0
October	100	706	0.2	1.8	0.5	100.0	0.0	0.0	0.0
November	100	682	0.2	2.7	0.6	100.0	0.0	0.0	0.0
December	100	707	0.2	13.9	1.6	100.0	0.0	0.0	0.0
Annual	100	8294	0.2	13.9	2.0	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
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	5.8	97.5	40.8	96.9	1.8	1.3	0.0
February	99	634	4.8	92.3	18.3	98.4	1.4	0.2	0.0
March	100	708	4.3	121.6	30.4	97.3	2.3	0.4	0.0
April	100	685	1.3	38.9	4.2	100.0	0.0	0.0	0.0
May	97	686	0.9	37.3	3.8	100.0	0.0	0.0	0.0
June	100	683	0.8	19.7	4.2	100.0	0.0	0.0	0.0
July	91	645	0.6	26.5	3.9	100.0	0.0	0.0	0.0
August	100	707	0.7	27.4	3.4	100.0	0.0	0.0	0.0
September	100	687	1.8	50.3	8.0	99.6	0.4	0.0	0.0
October	100	709	2.0	42.5	14.0	99.9	0.1	0.0	0.0
November	100	685	2.6	65.2	13.4	99.1	0.9	0.0	0.0
December	100	708	2.9	51.5	13.0	99.3	0.7	0.0	0.0
Annual	99	8245	2.4	121.6	40.8	99.2	0.7	0.2	0.0



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	702	1.0	51.8	4.2	99.9	0.1	0.0	0.0
February	100	639	0.9	36.7	2.7	100.0	0.0	0.0	0.0
March	100	707	0.6	9.4	2.3	100.0	0.0	0.0	0.0
Annual	100	2048	0.8	51.8	4.2	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	1.0	20.2	3.5	100.0	0.0	0.0	0.0
February	100	639	1.0	24.8	5.1	100.0	0.0	0.0	0.0
March	100	705	0.9	20.2	3.2	100.0	0.0	0.0	0.0
April	100	683	1.0	39.9	13.6	100.0	0.0	0.0	0.0
May	96	676	0.7	8.7	4.8	100.0	0.0	0.0	0.0
June	98	671	0.7	13.6	2.4	100.0	0.0	0.0	0.0
July	100	708	1.3	37.5	5.7	100.0	0.0	0.0	0.0
Annual	99	4790	0.9	39.9	13.6	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
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
August	100	708	0.6	19.6	6.2	100.0	0.0	0.0	0.0
September	100	686	0.9	17.5	4.7	100.0	0.0	0.0	0.0
October	100	709	0.7	16.5	6.3	100.0	0.0	0.0	0.0
November	100	685	0.5	8.6	1.2	100.0	0.0	0.0	0.0
December	100	708	0.5	13.1	2.2	100.0	0.0	0.0	0.0
Annual	100	3496	0.6	19.6	6.3	100.0	0.0	0.0	0.0



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
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	10.6	0.9	100.0	0.0	0.0	0.0
February	96	615	0.3	6.7	0.9	100.0	0.0	0.0	0.0
March	96	679	0.2	6.3	0.6	100.0	0.0	0.0	0.0
April	97	662	0.3	46.0	2.5	99.9	0.2	0.0	0.0
May	95	675	0.4	42.1	4.4	99.9	0.2	0.0	0.0
June	100	630	0.3	19.4	2.3	100.0	0.0	0.0	0.0
Annual	98	3968	0.3	46.0	4.4	100.0	0.1	0.0	0.0



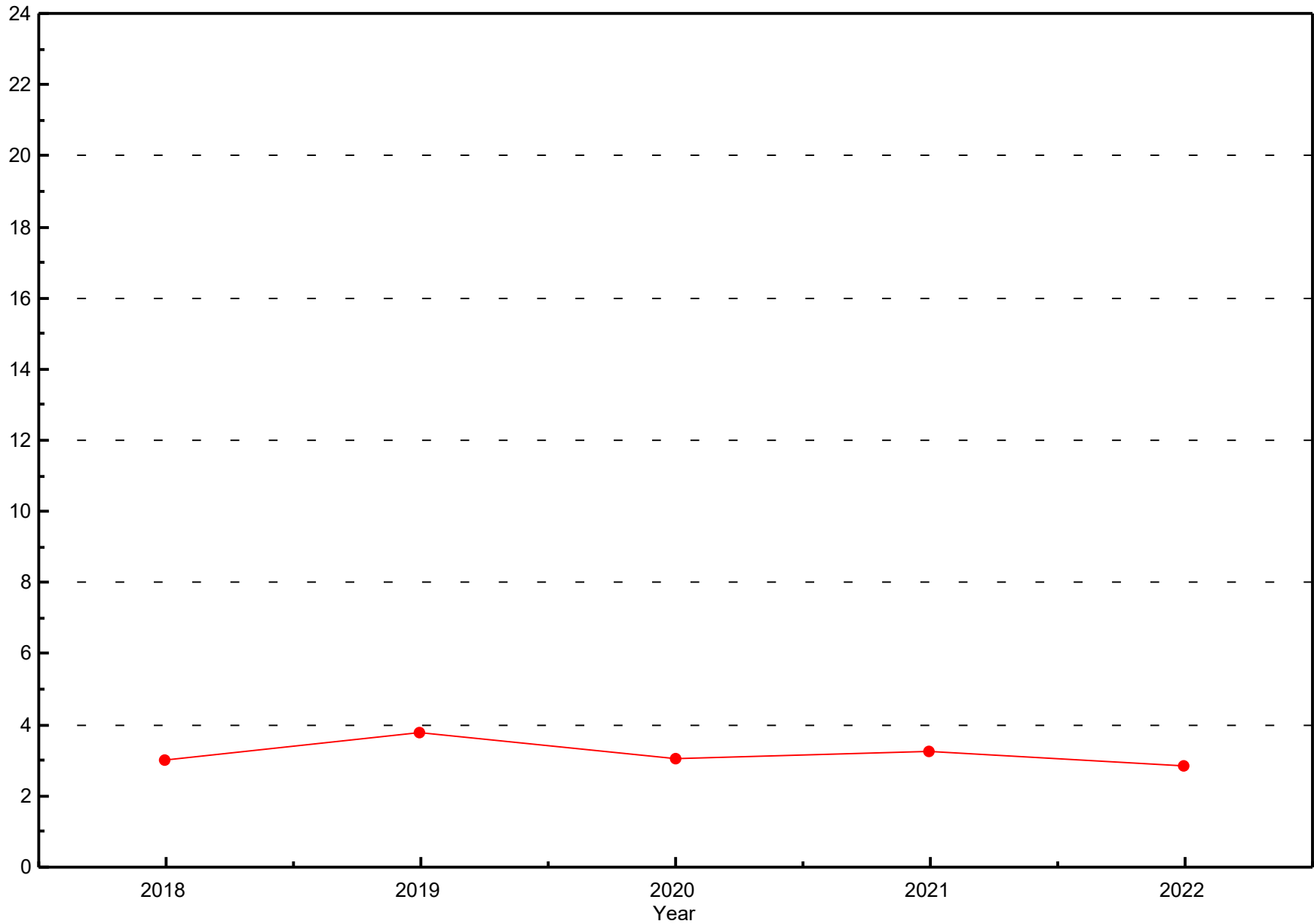
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Nitrogen Oxide (ppb) Average

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
July	99	703	0.3	6.4	2.2	100.0	0.0	0.0	0.0
August	94	656	0.3	4.8	1.1	100.0	0.0	0.0	0.0
September	92	629	0.3	3.4	0.9	100.0	0.0	0.0	0.0
October	100	706	0.4	21.9	2.3	100.0	0.0	0.0	0.0
November	100	683	0.2	4.7	0.9	100.0	0.0	0.0	0.0
December	100	704	0.2	5.3	0.9	100.0	0.0	0.0	0.0
Annual	97	4081	0.3	21.9	2.3	100.0	0.0	0.0	0.0



Yearly Averages

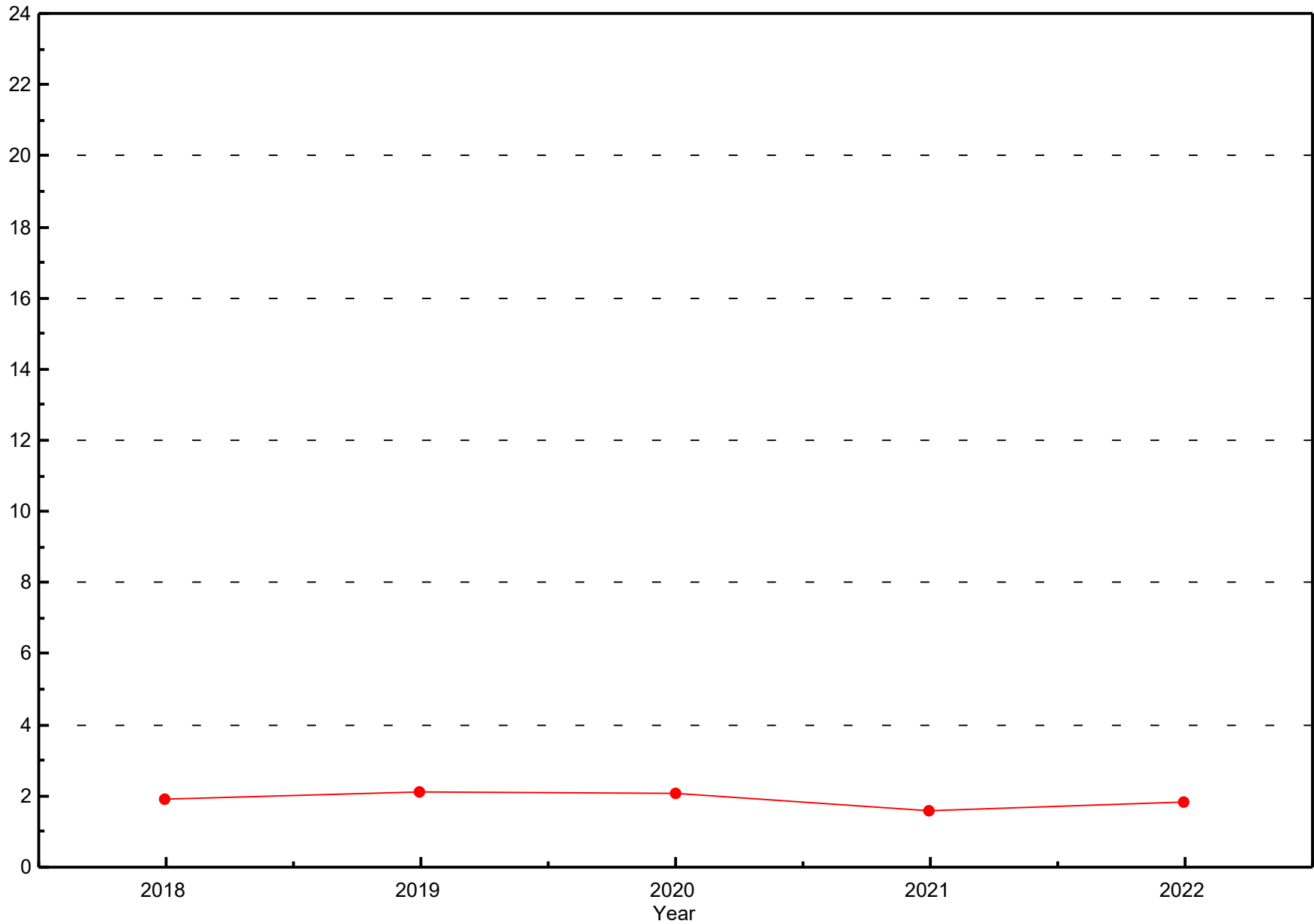
Nitric Oxide (NO) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

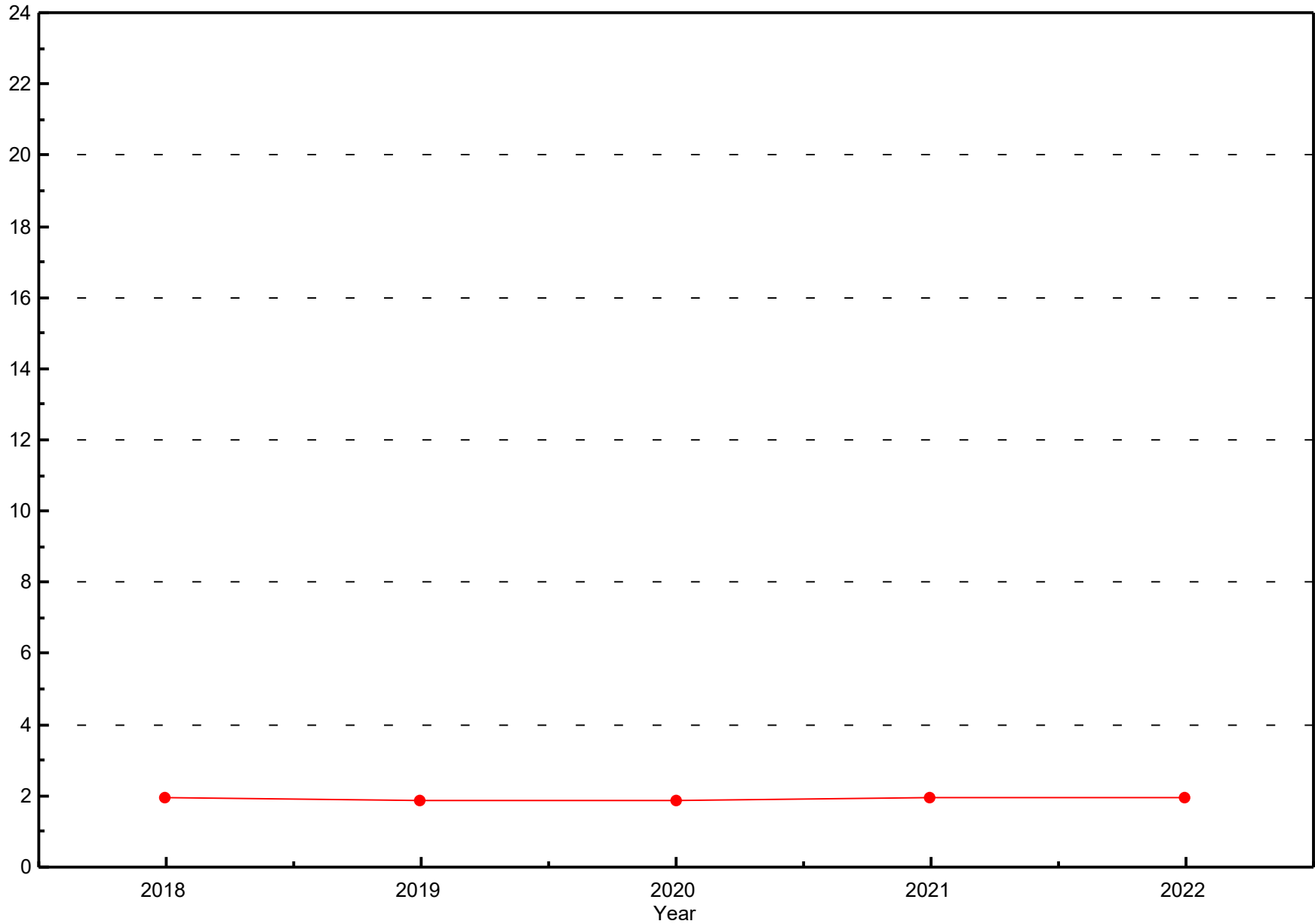
Nitric Oxide (NO) - ppb
Buffalo Viewpoint (2018 to 2022)





Yearly Averages

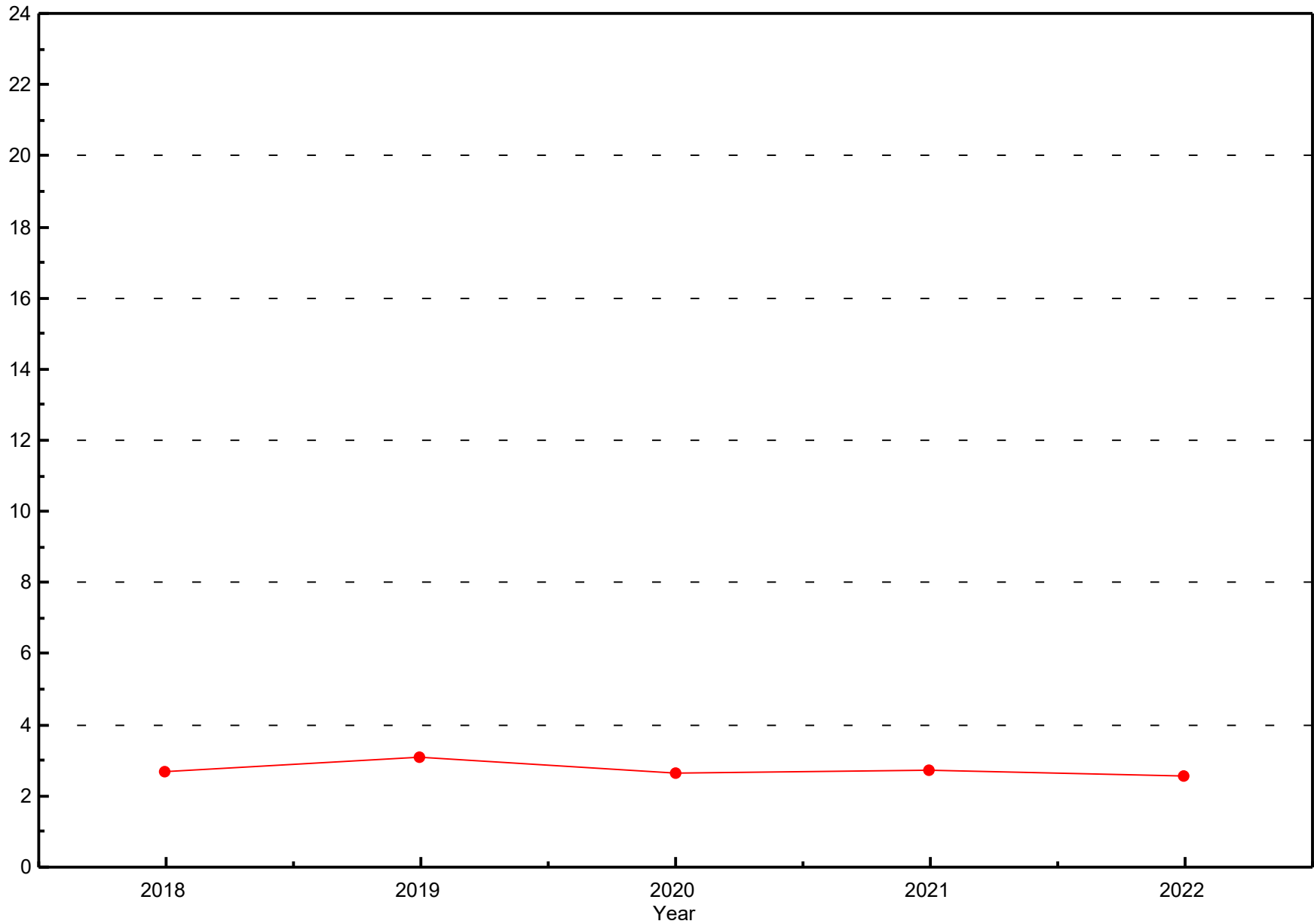
Nitric Oxide (NO) - ppb
Patricia McInnes (2018 to 2022)





Yearly Averages

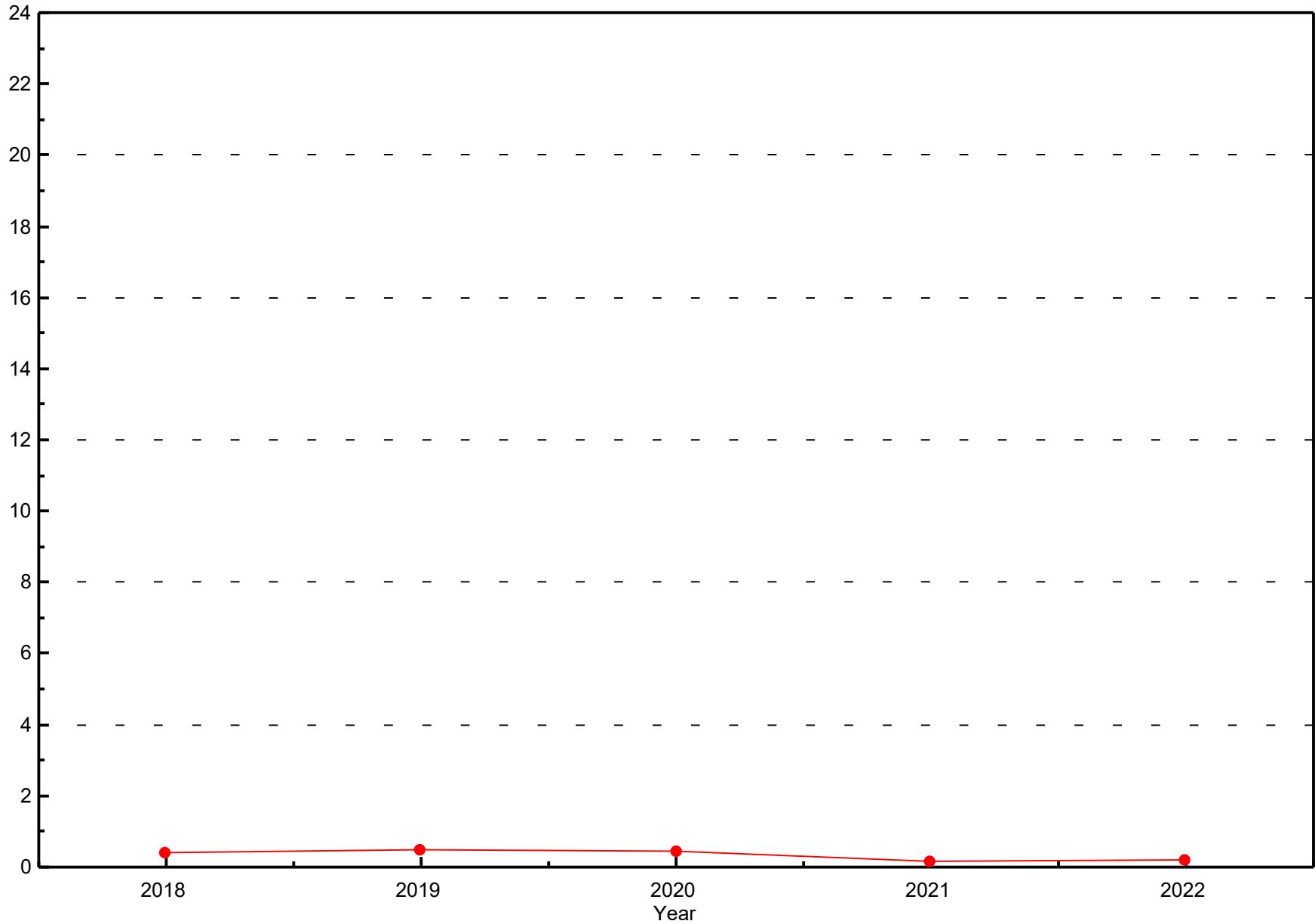
Nitric Oxide (NO) - ppb
Athabasca Valley (2018 to 2022)





Yearly Averages

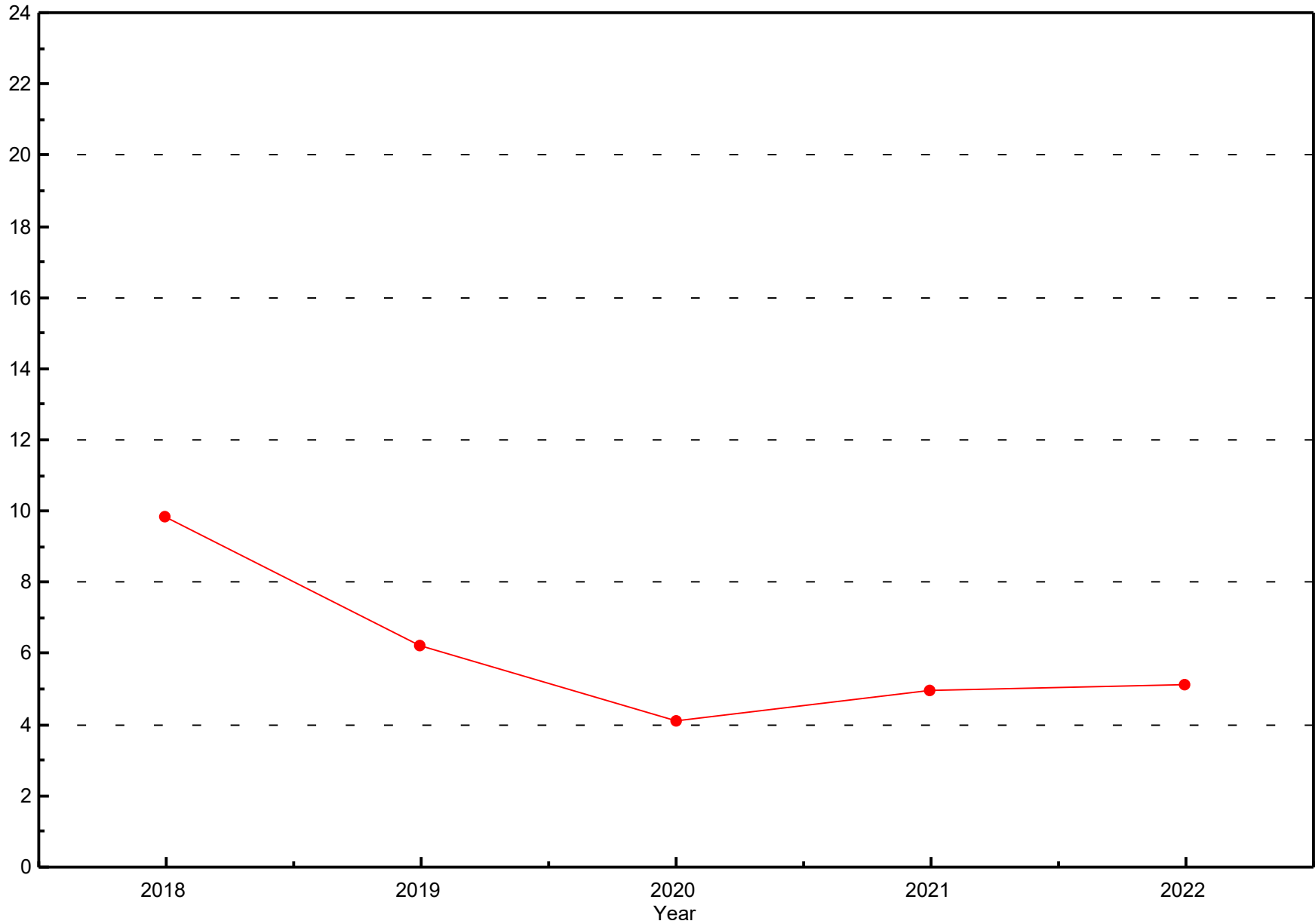
Nitric Oxide (NO) - ppb
Fort Chipewyan (2018 to 2022)





Yearly Averages

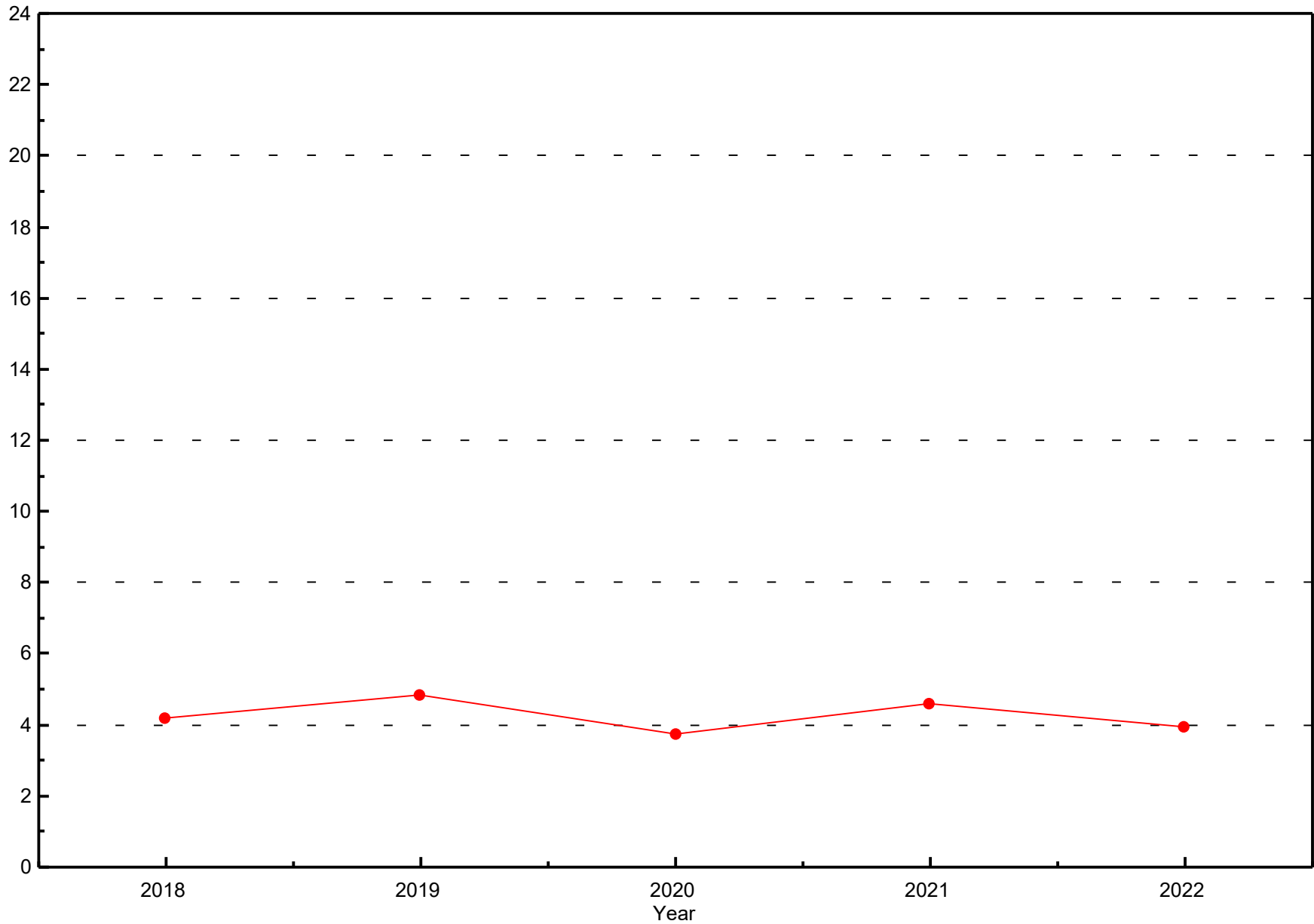
Nitric Oxide (NO) - ppb
Barge Landing (2018 to 2022)





Yearly Averages

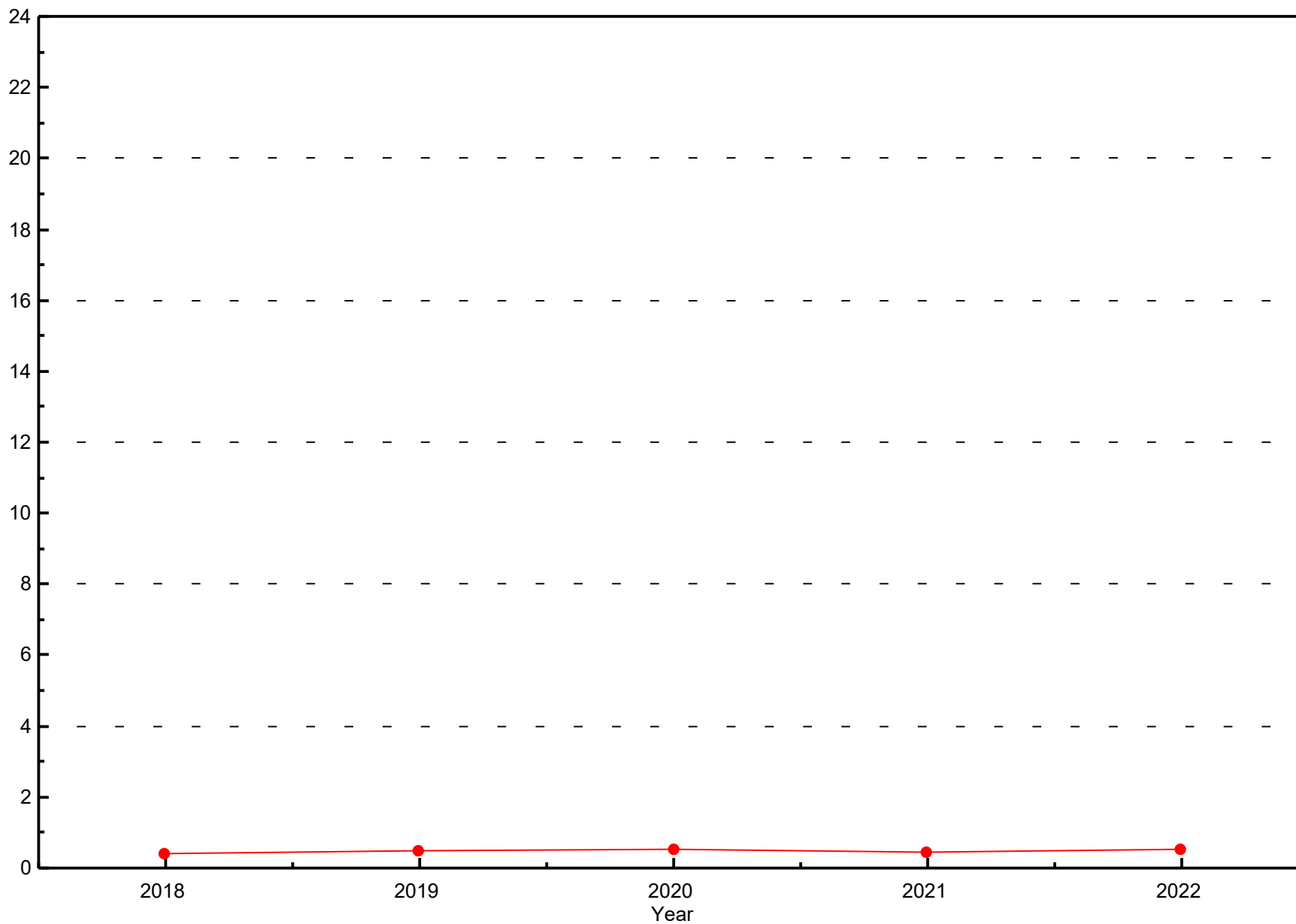
Nitric Oxide (NO) - ppb
Fort McKay South (2018 to 2022)





Yearly Averages

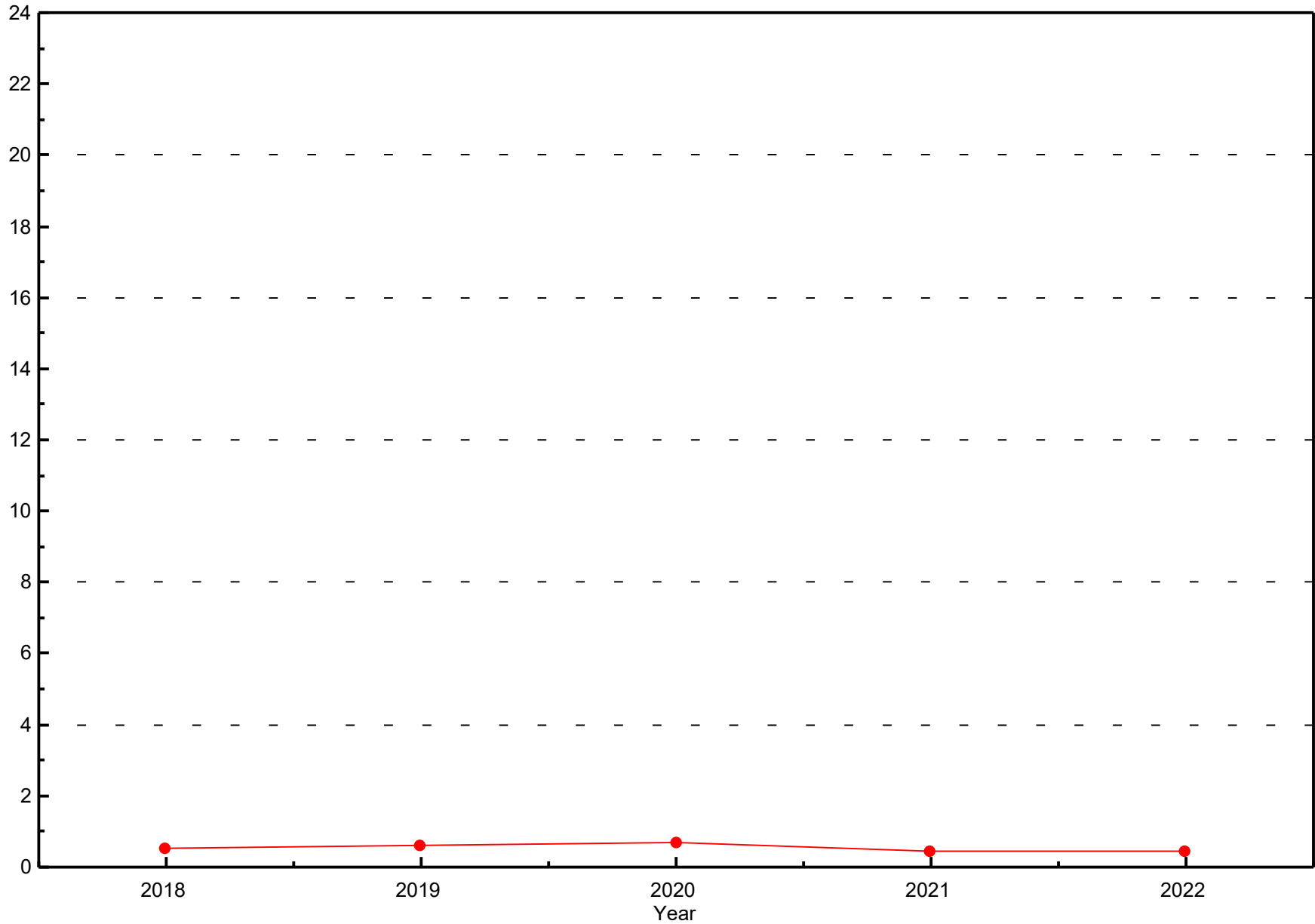
Nitric Oxide (NO) - ppb
Anzac (2018 to 2022)





Yearly Averages

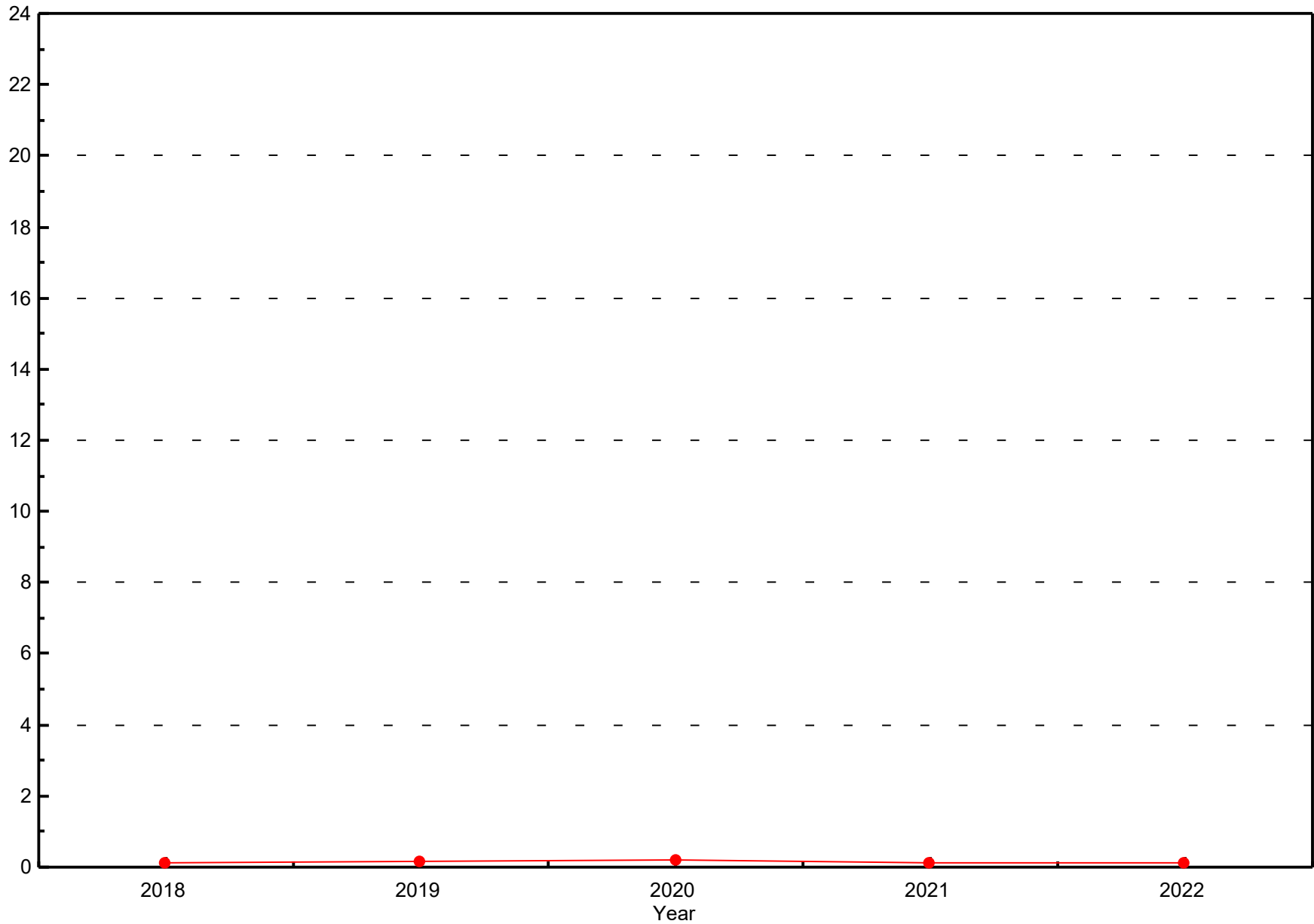
Nitric Oxide (NO) - ppb
Wapasu (2018 to 2022)





Yearly Averages

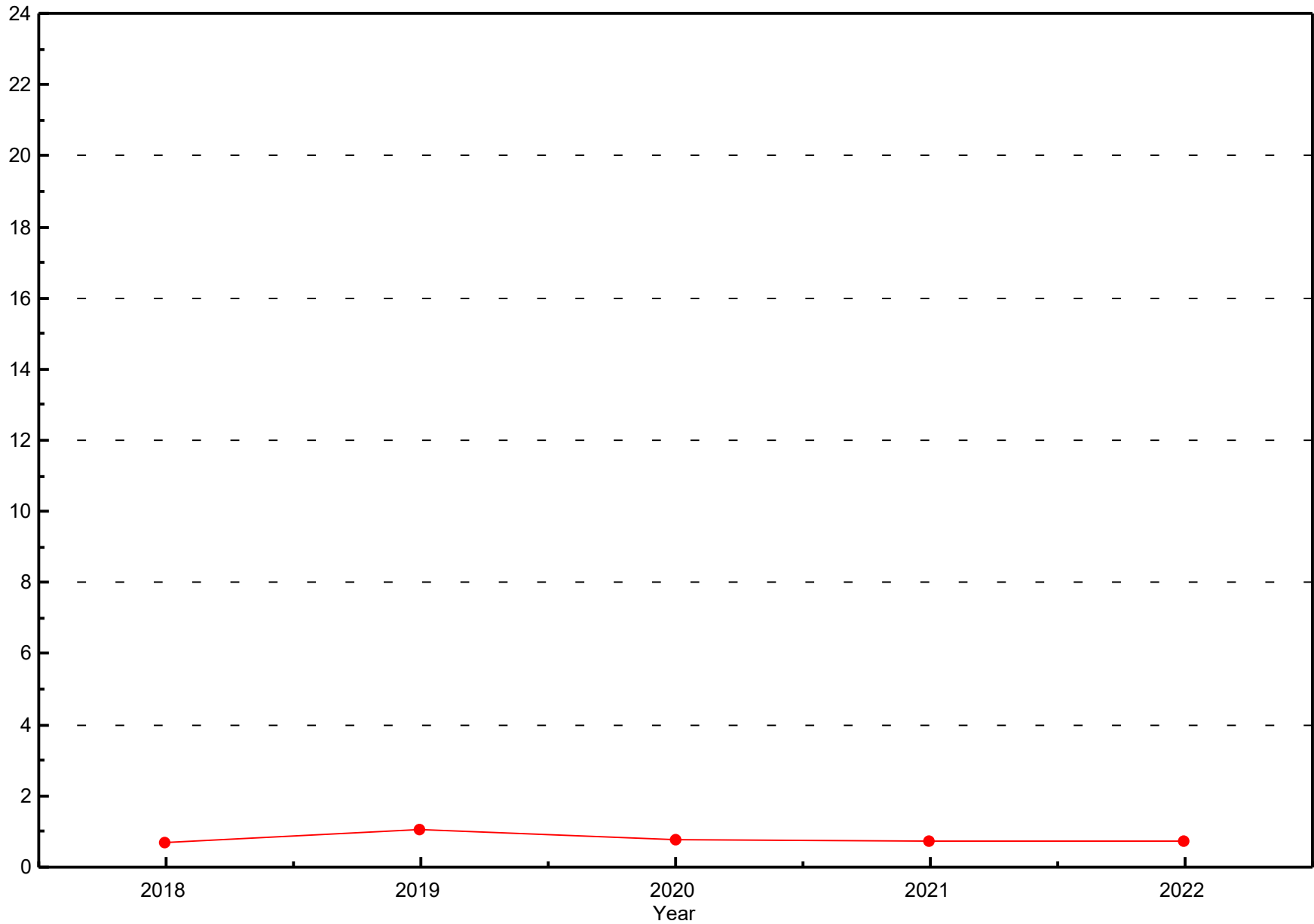
Nitric Oxide (NO) - ppb
Stony Mountain (2018 to 2022)





Yearly Averages

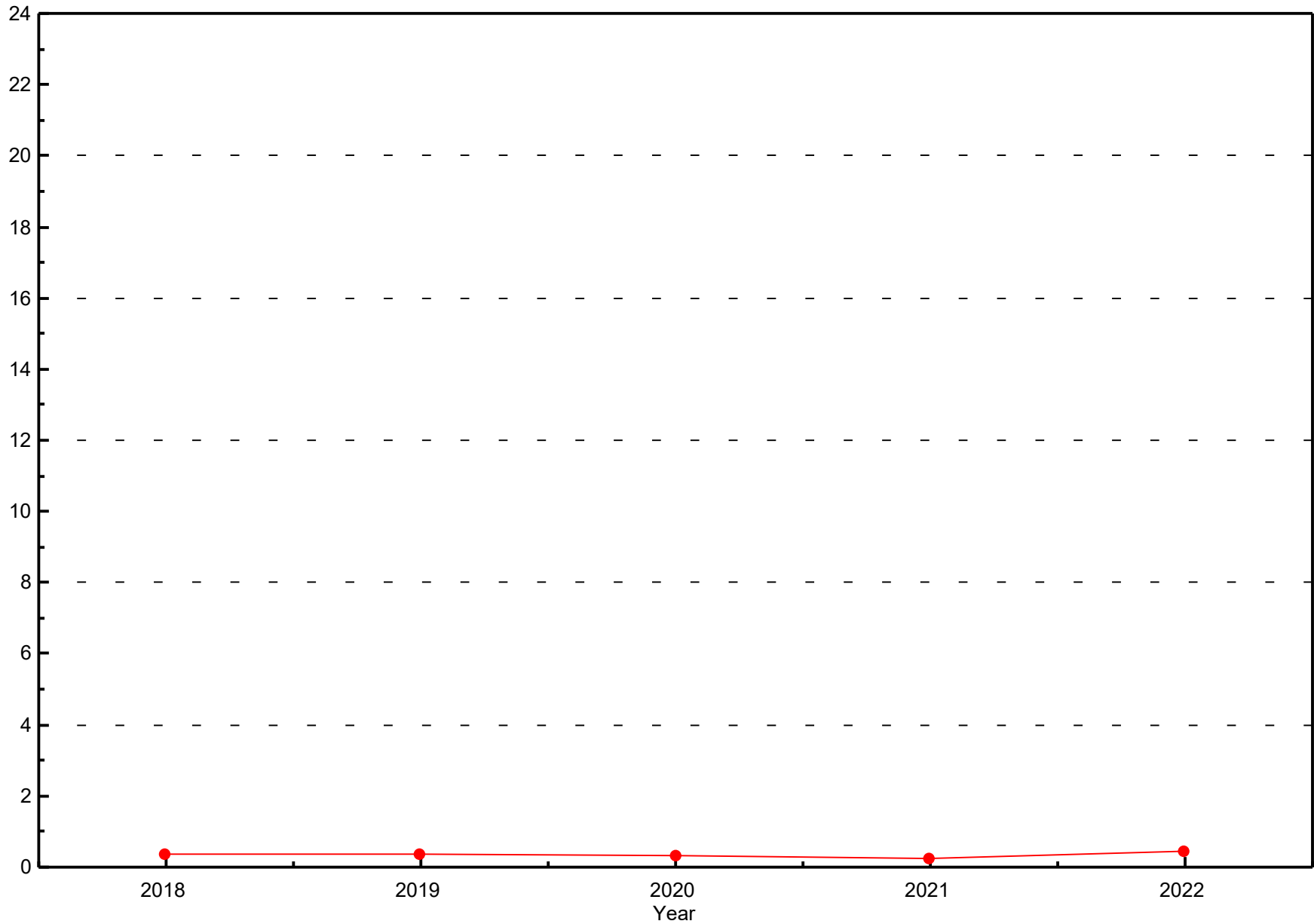
Nitric Oxide (NO) - ppb
Firebag (2018 to 2022)





Yearly Averages

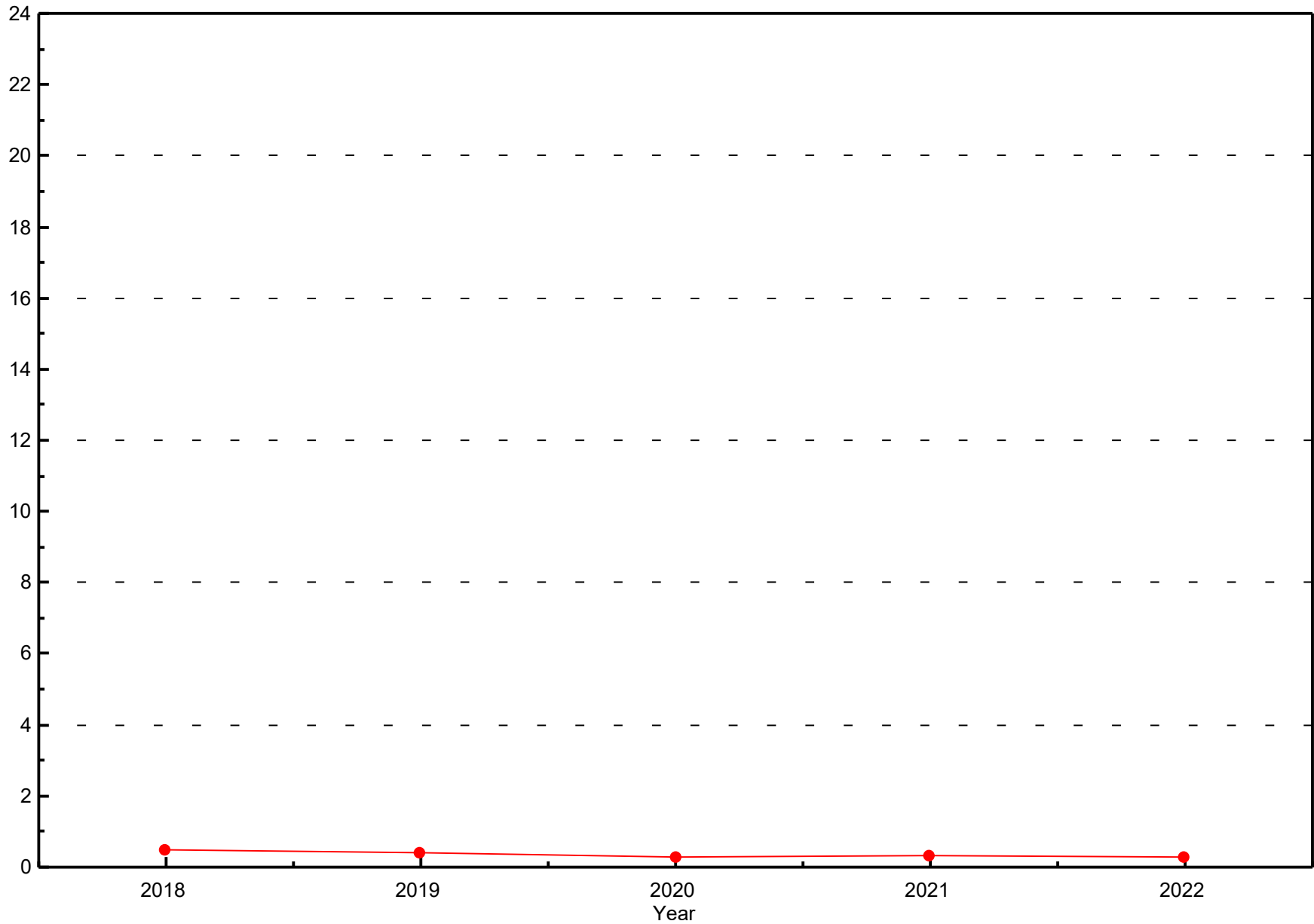
Nitric Oxide (NO) - ppb
Mackay River (2018 to 2022)





Yearly Averages

Nitric Oxide (NO) - ppb
Conklin (2018 to 2022)

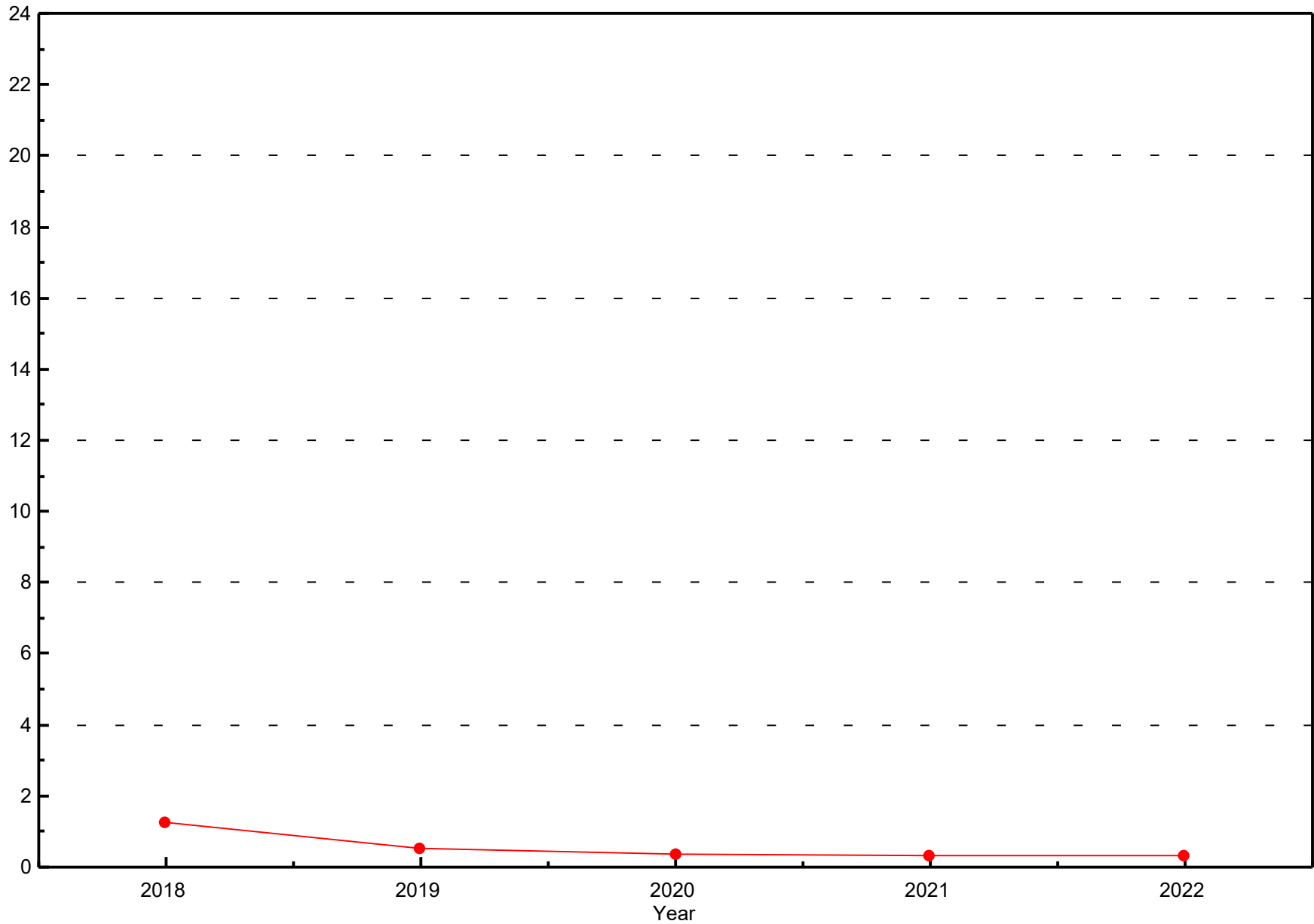




Yearly Averages

Nitric Oxide (NO) - ppb

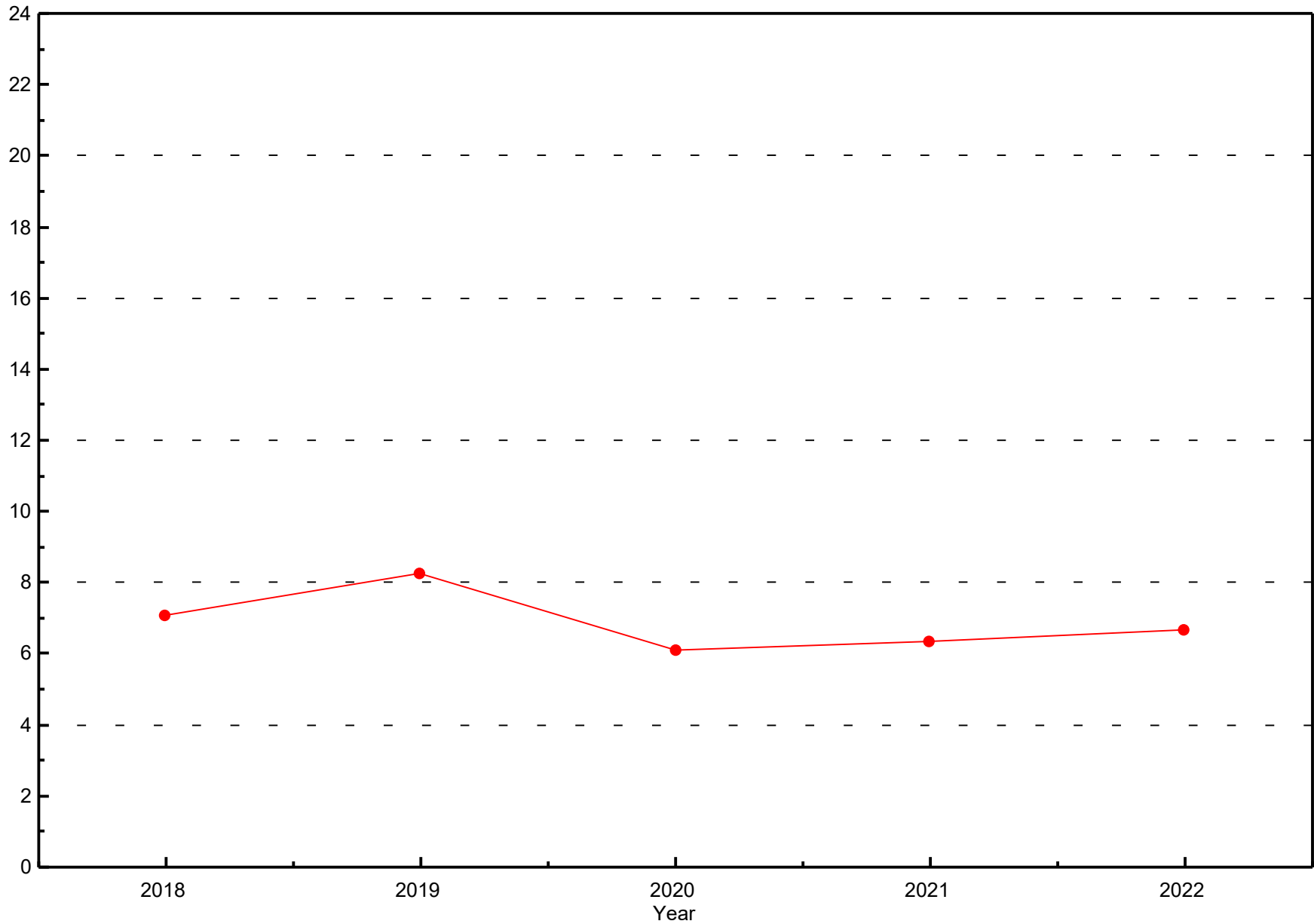
Janvier (2018 to 2022)





Yearly Averages

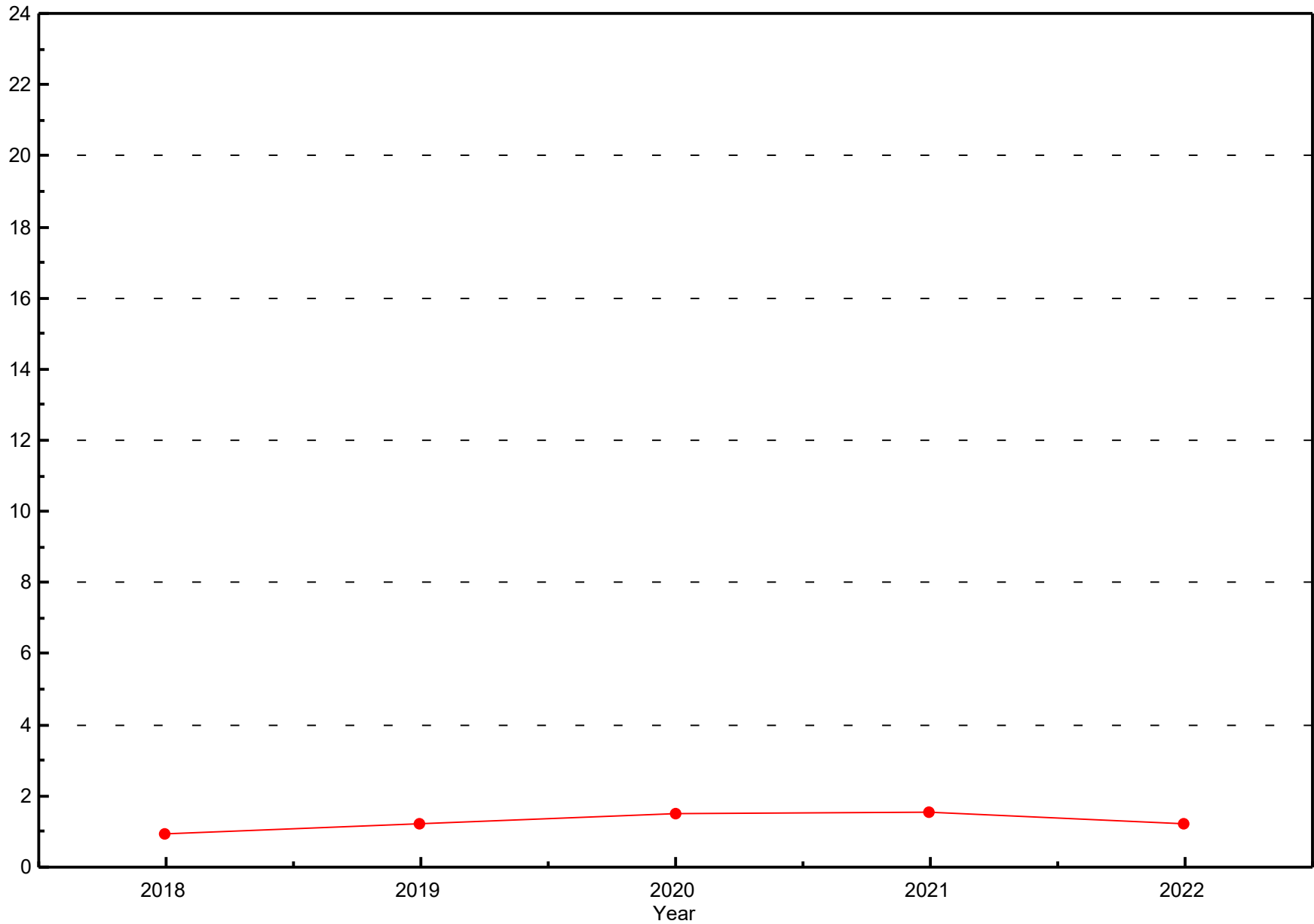
Nitric Oxide (NO) - ppb
Fort Hills (2018 to 2022)





Yearly Averages

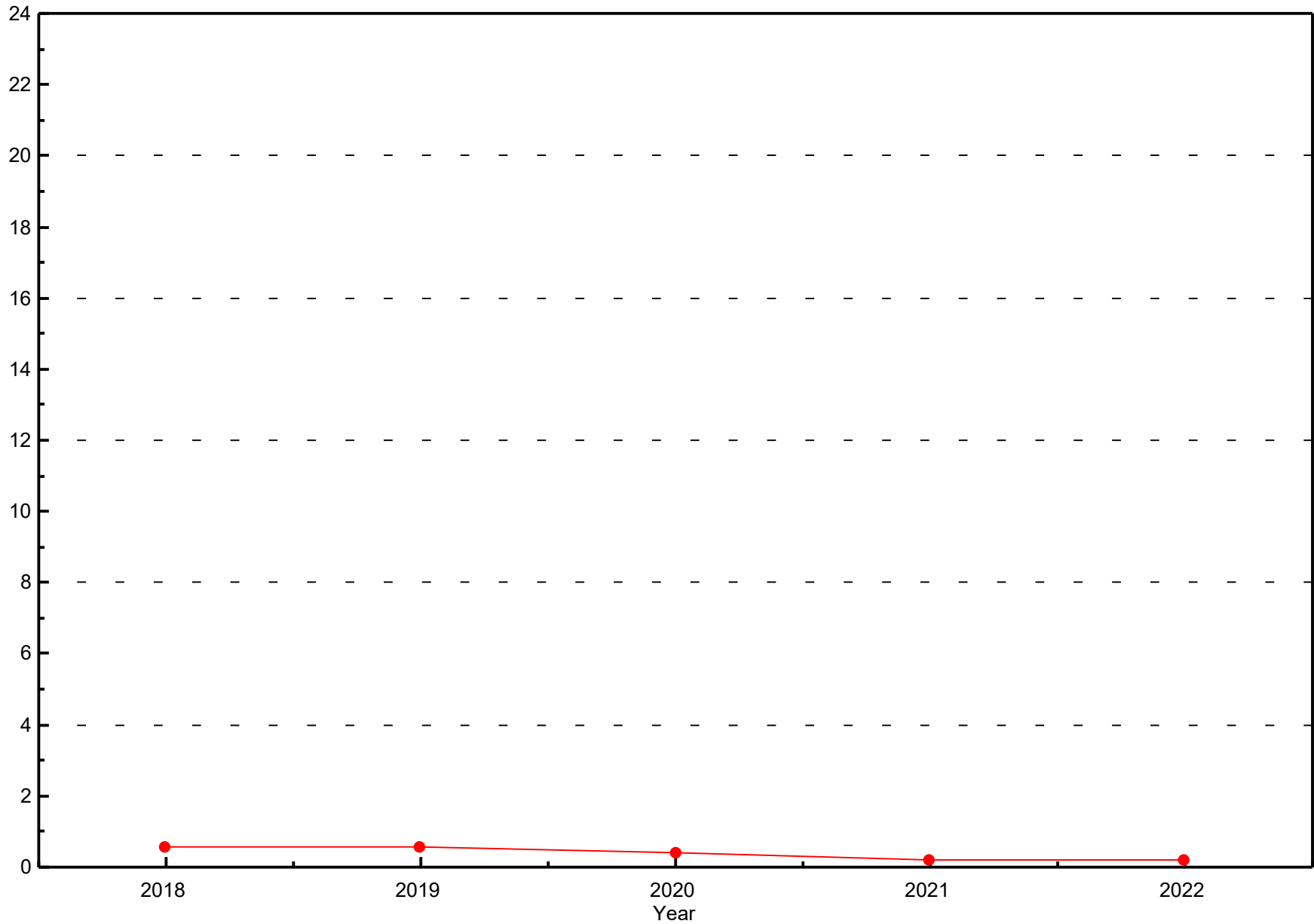
Nitric Oxide (NO) - ppb
Christina Lake (2018 to 2022)





Yearly Averages

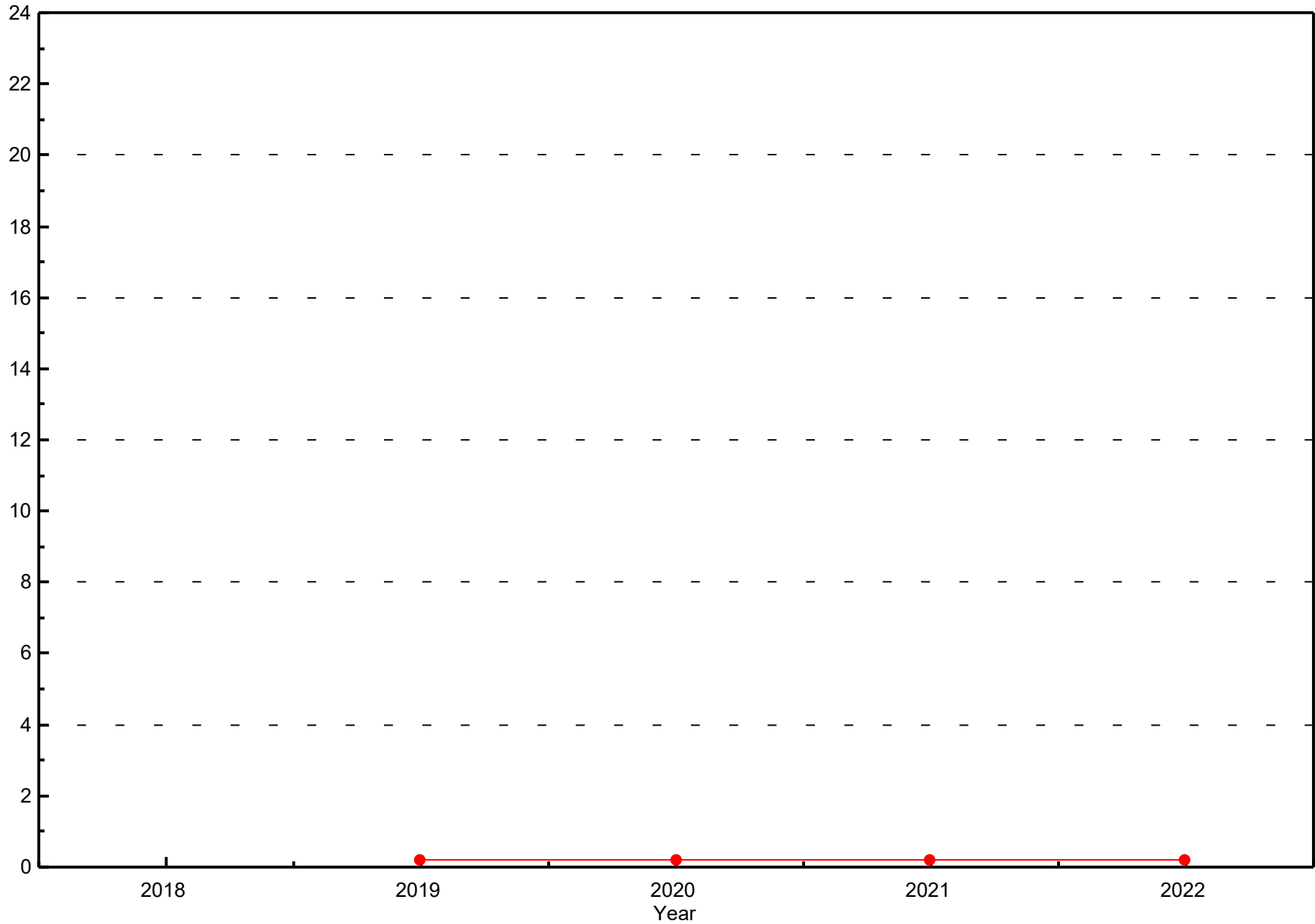
Nitric Oxide (NO) - ppb
Jackfish 2/3 (2018 to 2022)





Yearly Averages

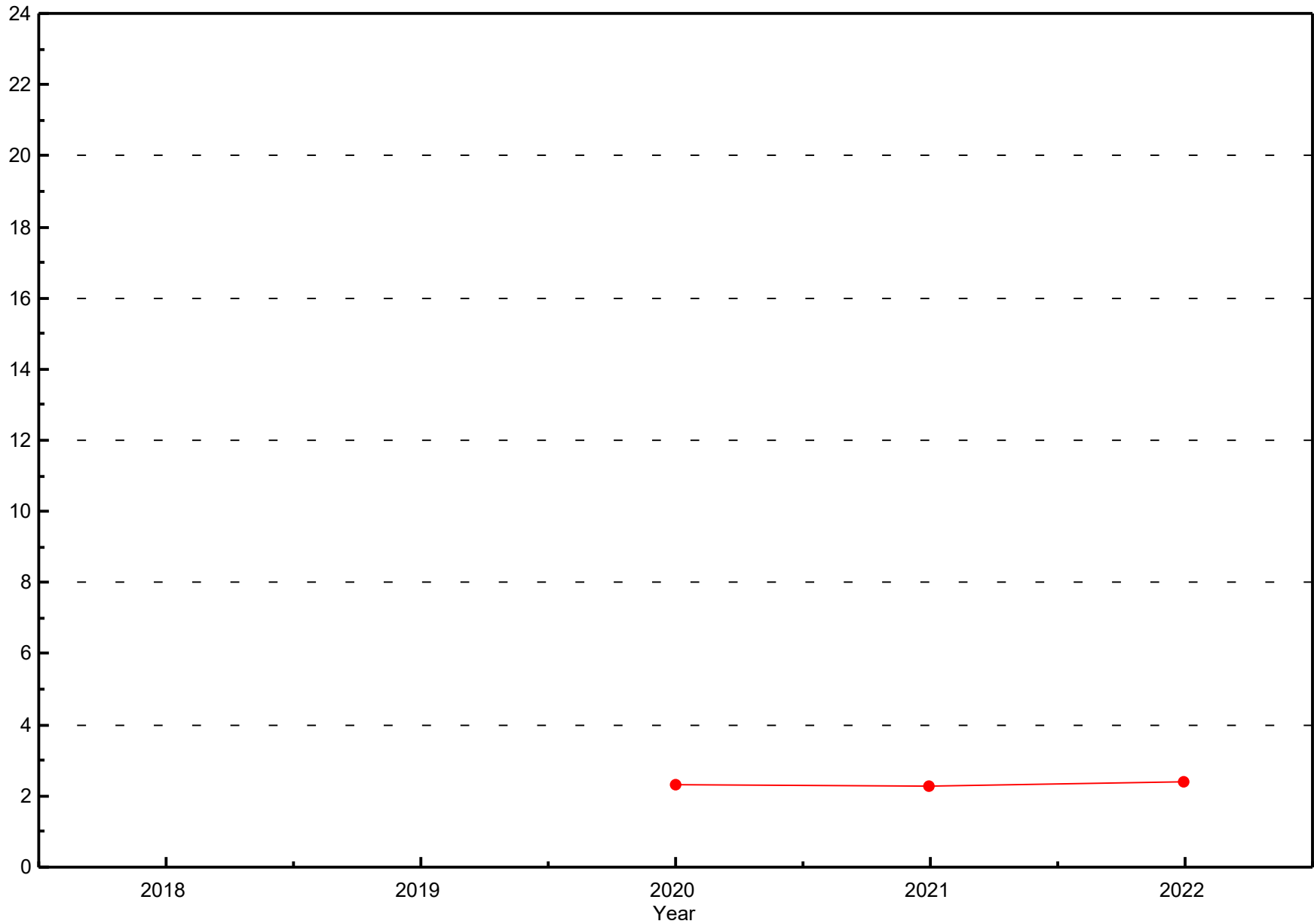
Nitric Oxide (NO) - ppb
Surmont 2 (2018 to 2022)





Yearly Averages

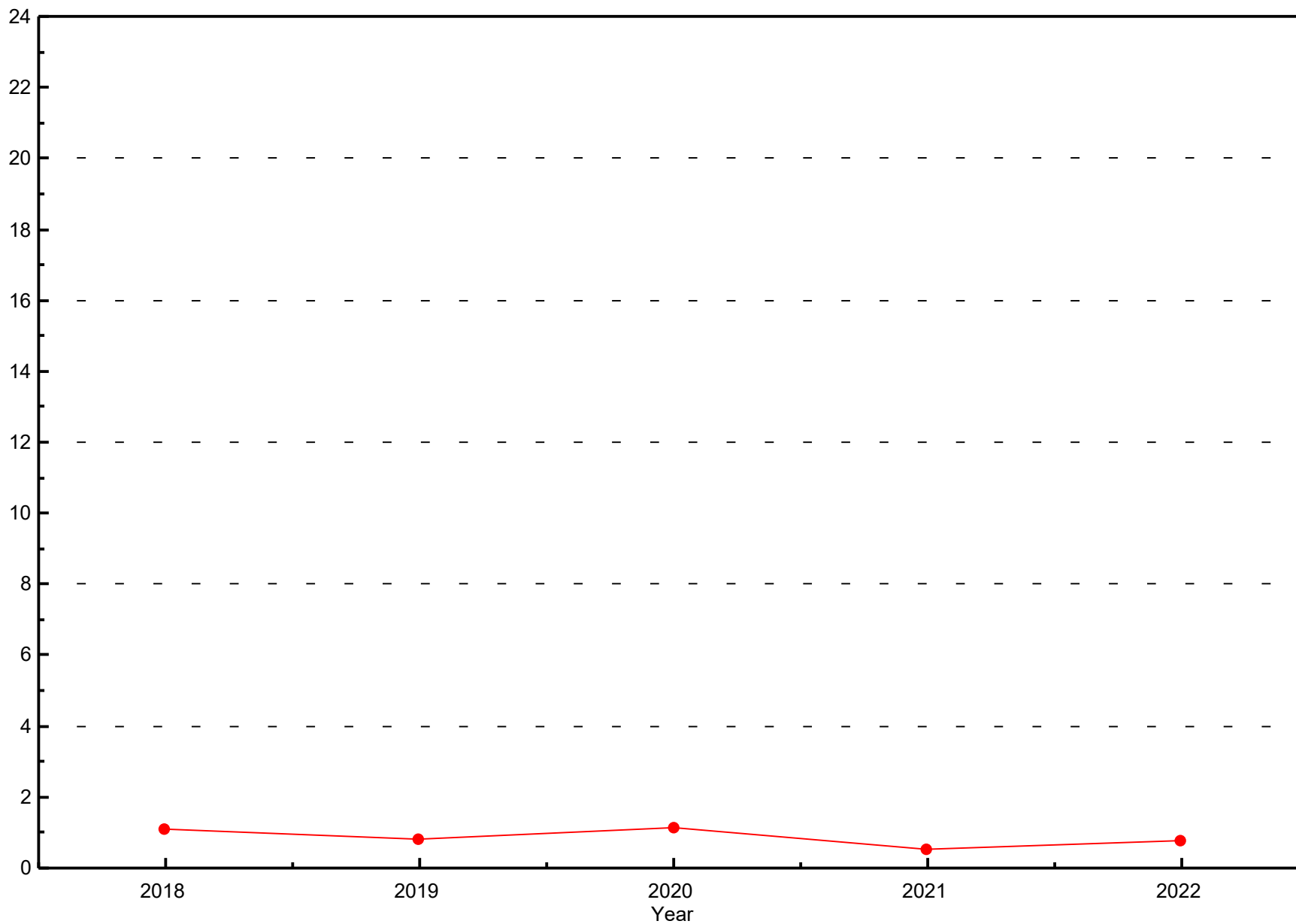
Nitric Oxide (NO) - ppb
Ells River (2018 to 2022)





Yearly Averages

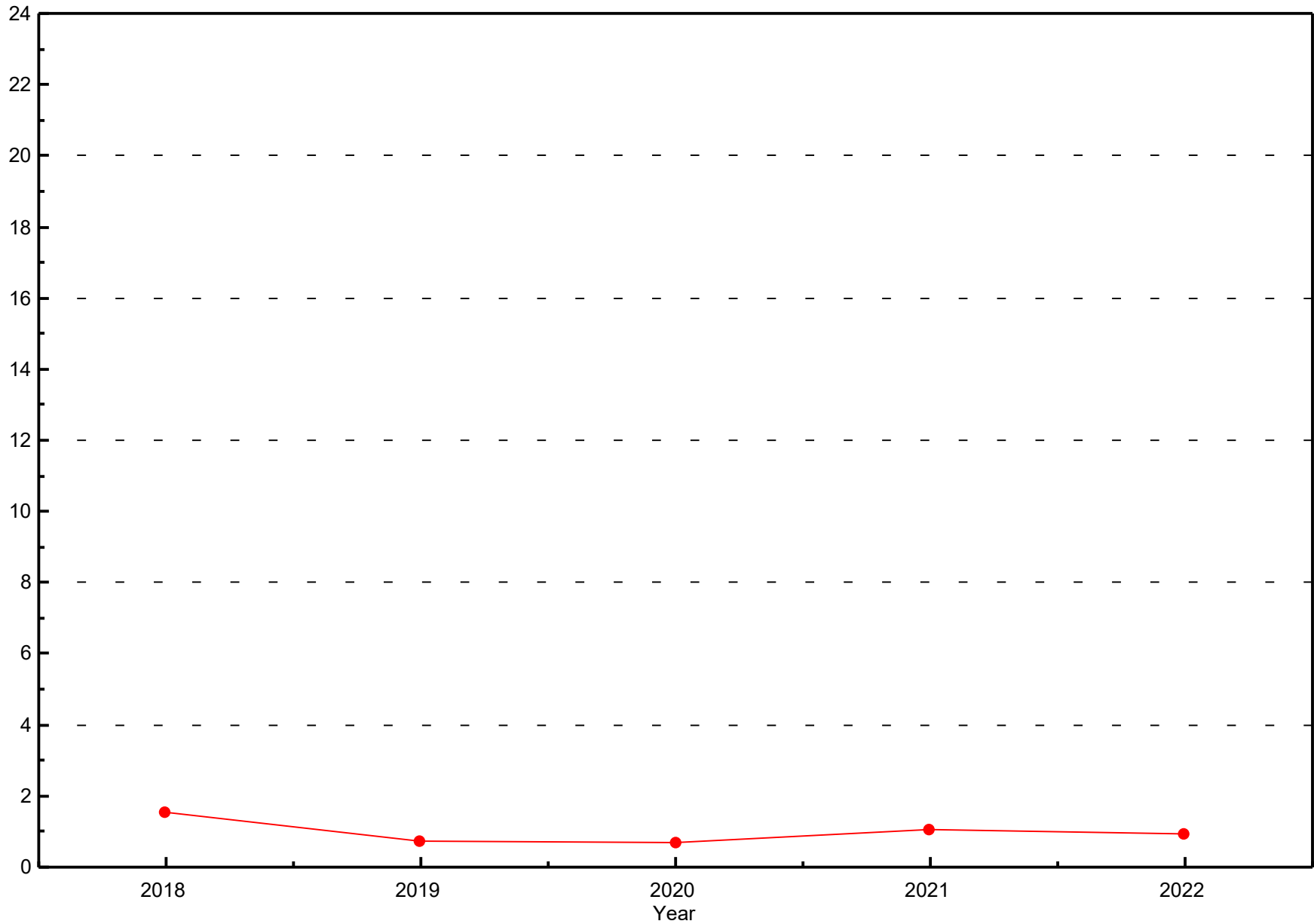
Nitric Oxide (NO) - ppb
Leismer (2018 to 2022)





Yearly Averages

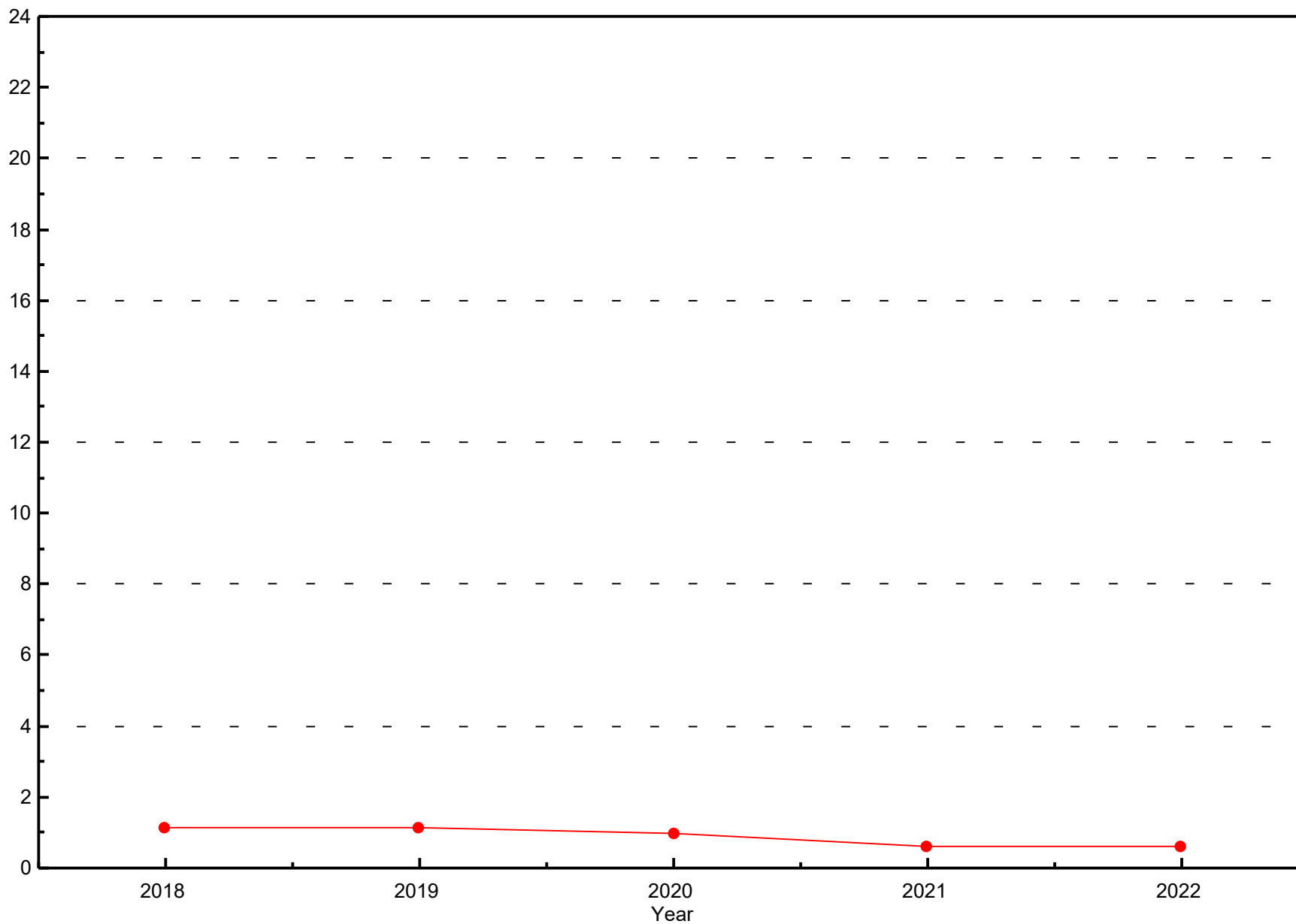
Nitric Oxide (NO) - ppb
Sawbones Bay (2018 to 2022)





Yearly Averages

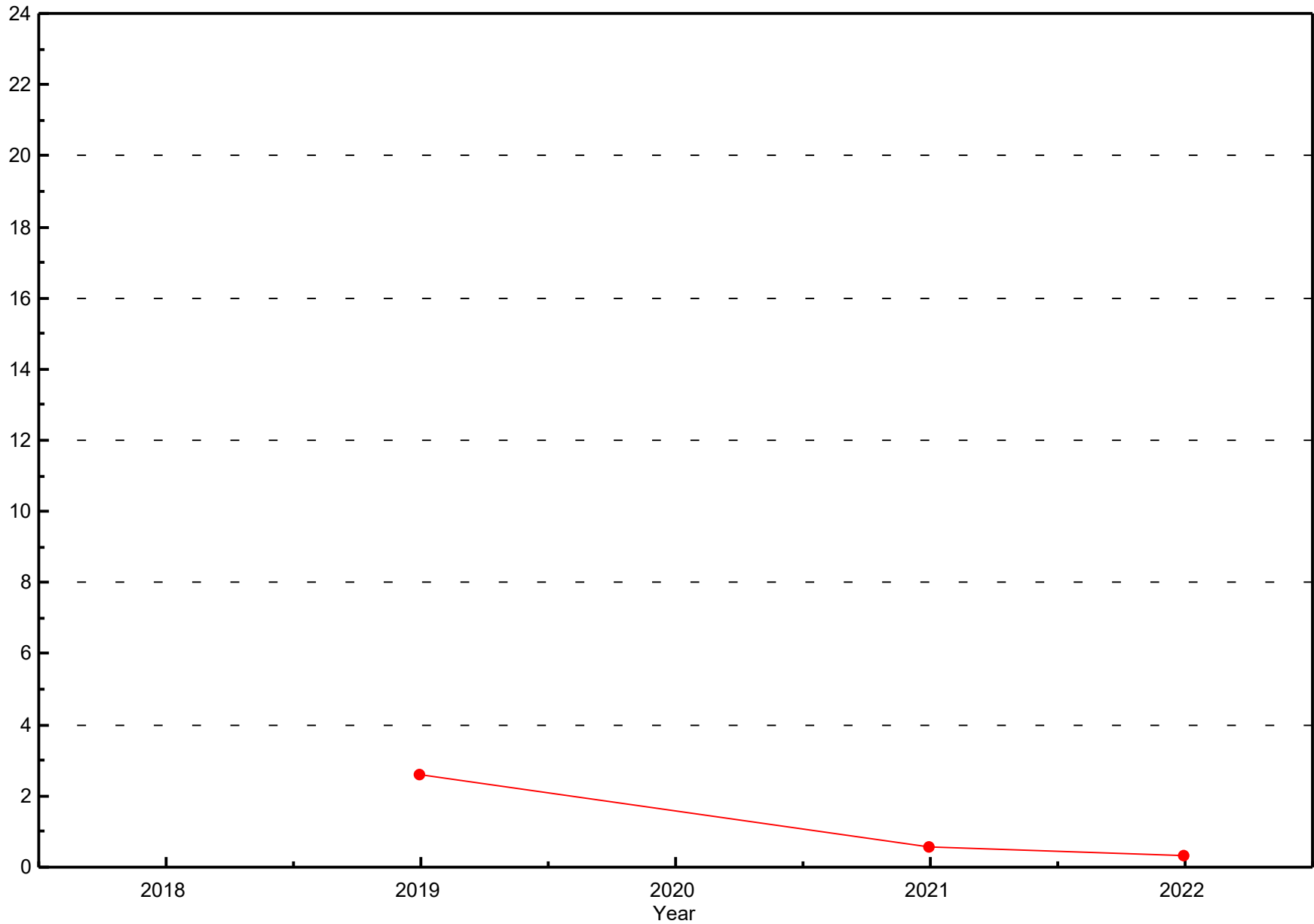
Nitric Oxide (NO) - ppb
Jackfish 1 (2018 to 2022)





Yearly Averages

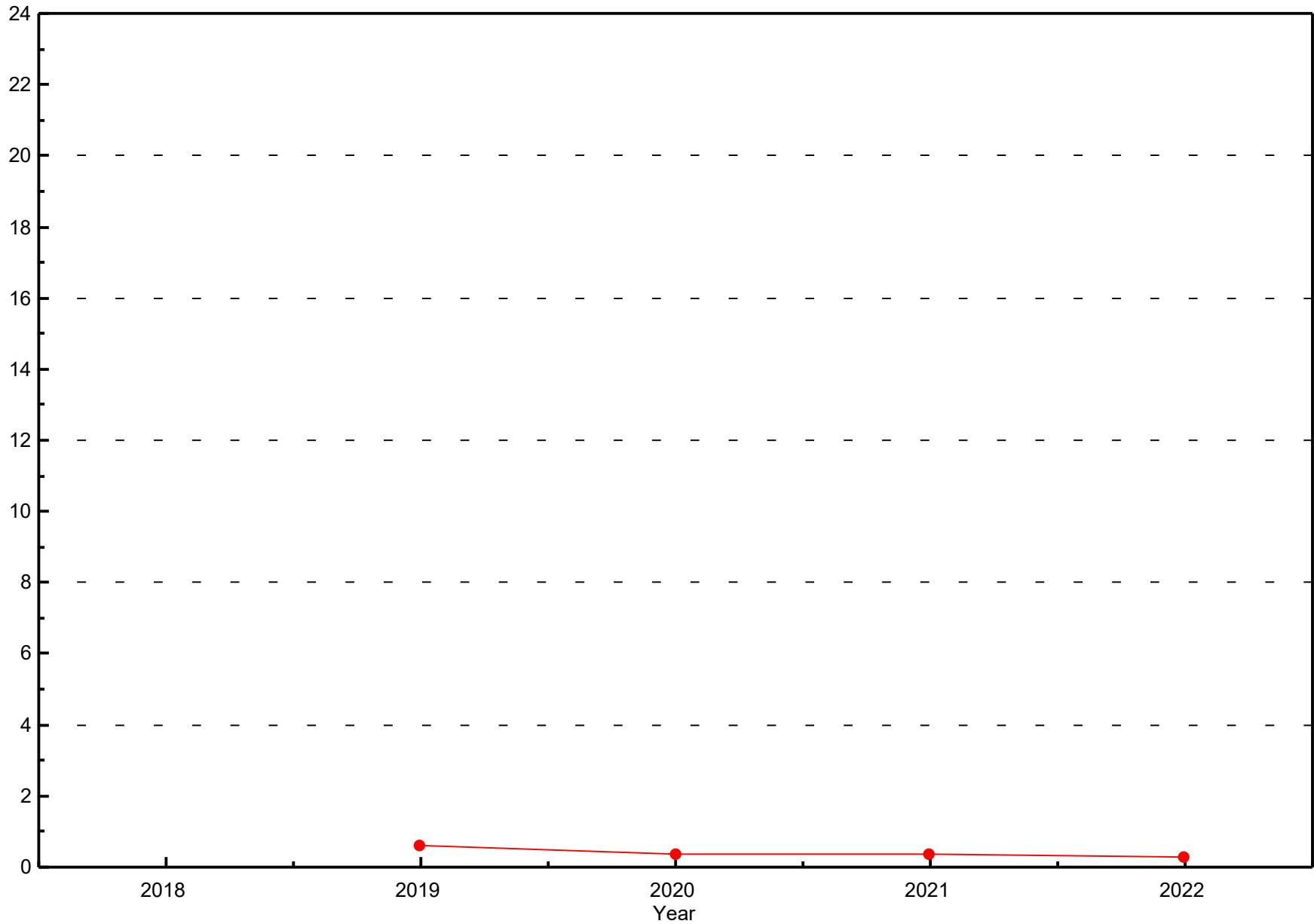
Nitric Oxide (NO) - ppb
Kirby South (2018 to 2022)





Yearly Averages

Nitric Oxide (NO) - ppb
Kirby North (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

OZONE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	14.2	39.8	0	32.3
February	100	638	16.8	39.7	0	30.9
March	100	707	23.1	49.0	0	38.7
April	100	684	28.7	47.3	0	39.7
May	100	707	25.2	48.9	0	40.0
June	100	683	25.0	49.1	0	35.0
July	96	679	20.6	47.9	0	28.6
August	99	701	18.7	61.3	0	31.5
September	99	677	17.0	57.6	0	28.7
October	100	708	17.0	44.5	0	31.6
November	100	685	18.3	35.3	0	30.8
December	99	705	14.7	37.9	0	34.0
Annual	99	8283	19.9	61.3	0	40.0



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	20.2	38.3	0	33.3
February	100	641	22.2	42.2	0	37.2
March	94	665	28.2	49.8	0	43.0
April	91	623	29.5	45.8	0	37.4
May	99	703	26.0	45.9	0	39.8
June	100	685	24.0	44.0	0	30.7
July	100	710	21.5	39.2	0	30.1
August	100	708	19.9	49.4	0	34.2
September	100	687	19.4	37.1	0	29.0
October	100	709	20.3	39.3	0	32.4
November	100	686	20.0	31.0	0	28.0
December	100	708	18.5	32.2	0	28.8
Annual	99	8235	22.4	49.8	0	43.0



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	98	686	21.4	42.4	0	36.1
February	100	639	23.8	45.2	0	40.4
March	100	704	30.6	49.6	0	45.1
April	100	686	33.5	51.5	0	43.0
May	100	707	29.3	48.7	0	39.1
June	100	686	28.9	51.7	0	38.0
July	100	708	25.6	51.4	0	34.8
August	100	708	23.0	74.3	0	37.2
September	100	685	22.5	50.0	0	33.0
October	99	702	23.4	45.7	0	37.4
November	100	687	23.0	38.1	0	33.6
December	100	709	21.1	41.2	0	37.9
Annual	100	8307	25.5	74.3	0	45.1



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	18.1	41.1	0	34.3
February	100	640	19.5	42.5	0	30.6
March	100	709	26.3	53.2	0	39.7
April	100	686	30.5	47.8	0	38.5
May	100	709	27.0	48.0	0	36.9
June	100	684	25.4	49.3	0	32.8
July	100	710	22.4	47.7	0	29.7
August	100	707	18.4	69.1	0	29.5
September	99	682	17.3	47.9	0	27.5
October	100	709	19.2	45.5	0	34.6
November	100	686	18.2	49.1	0	29.4
December	100	710	17.5	38.2	0	34.0
Annual	100	8340	21.7	69.1	0	39.7



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	28.3	36.9	0	34.2
February	99	635	29.3	42.7	0	37.8
March	99	704	34.0	46.2	0	41.4
April	99	681	37.7	60.5	0	49.3
May	100	709	32.2	52.4	0	47.6
June	100	686	33.2	54.1	0	48.7
July	100	710	27.1	48.9	0	39.8
August	100	708	25.5	65.1	0	37.3
September	98	672	23.2	50.0	0	30.6
October	100	709	25.2	45.6	0	33.4
November	100	686	27.4	36.6	0	34.7
December	100	708	28.4	41.1	0	39.9
Annual	100	8318	29.3	65.1	0	49.3



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	14.2	41.2	0	32.7
February	100	639	16.3	40.1	0	32.7
March	100	710	21.5	50.2	0	38.0
April	100	686	28.2	48.2	0	38.6
May	100	709	23.4	48.1	0	36.6
June	100	683	23.3	50.5	0	30.7
July	100	707	19.2	46.4	0	24.3
August	87	613	16.1	48.3	0	28.0
September	100	685	14.8	52.0	0	26.7
October	100	707	14.8	43.7	0	31.5
November	100	685	16.5	35.1	0	28.6
December	100	709	13.7	39.2	0	34.9
Annual	99	8242	18.5	52.0	0	38.6



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	23.8	39.6	0	35.1
February	100	638	27.4	43.9	0	39.2
March	100	709	33.7	50.1	0	43.0
April	100	686	33.5	49.8	0	43.0
May	100	709	29.2	47.1	0	41.3
June	85	577	28.3	48.8	0	38.7
July	99	698	23.1	50.0	0	37.0
August	81	572	19.9	45.3	0	32.8
September	100	685	20.1	44.5	0	30.0
October	99	707	22.9	43.7	0	34.3
November	100	686	23.5	35.8	0	32.6
December	99	703	22.9	36.4	0	33.1
Annual	97	8079	25.7	50.1	0	43.0



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	27.3	40.0	0	34.7
February	100	641	30.0	44.3	0	42.6
March	100	710	35.1	52.4	0	48.8
April	100	685	37.8	53.0	0	49.2
May	100	710	31.3	53.4	0	42.1
June	100	686	32.0	61.8	0	44.6
July	100	709	26.8	51.0	0	36.0
August	100	709	25.8	62.9	0	43.1
September	100	687	24.6	64.0	0	41.7
October	100	710	24.9	47.0	0	35.7
November	100	684	26.1	38.0	0	33.7
December	100	710	28.0	40.7	0	37.8
Annual	100	8351	29.1	64.0	0	49.2



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	63	445	30.3	40.5	0	37.6
February	100	640	33.3	44.0	0	41.2
March	100	709	38.9	50.3	0	47.9
April	100	686	37.9	50.4	0	46.8
May	100	709	31.2	51.3	0	46.8
June	93	639	29.8	50.5	0	41.6
July	100	706	23.6	48.0	0	39.0
August	93	657	23.5	45.5	0	36.2
September	100	687	24.6	47.9	0	34.5
October	100	709	27.8	45.0	0	37.4
November	100	684	28.0	38.6	0	36.3
December	100	709	26.7	39.3	0	37.0
Annual	96	7980	29.6	51.3	0	47.9



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	27.0	40.6	0	37.8
February	100	641	29.8	44.9	0	40.7
March	100	709	35.9	51.7	0	43.2
April	100	686	34.8	51.3	0	43.5
May	100	710	28.3	54.0	0	38.4
June	100	685	26.8	54.3	0	35.0
July	100	707	22.6	53.0	0	39.4
August	99	706	20.3	48.2	0	30.9
September	99	683	20.0	51.6	0	32.0
October	100	709	23.3	45.2	0	37.0
November	100	685	25.7	38.7	0	32.7
December	100	710	24.7	40.8	0	38.0
Annual	100	8341	26.6	54.3	0	43.5



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
Ozone (ppb) Average

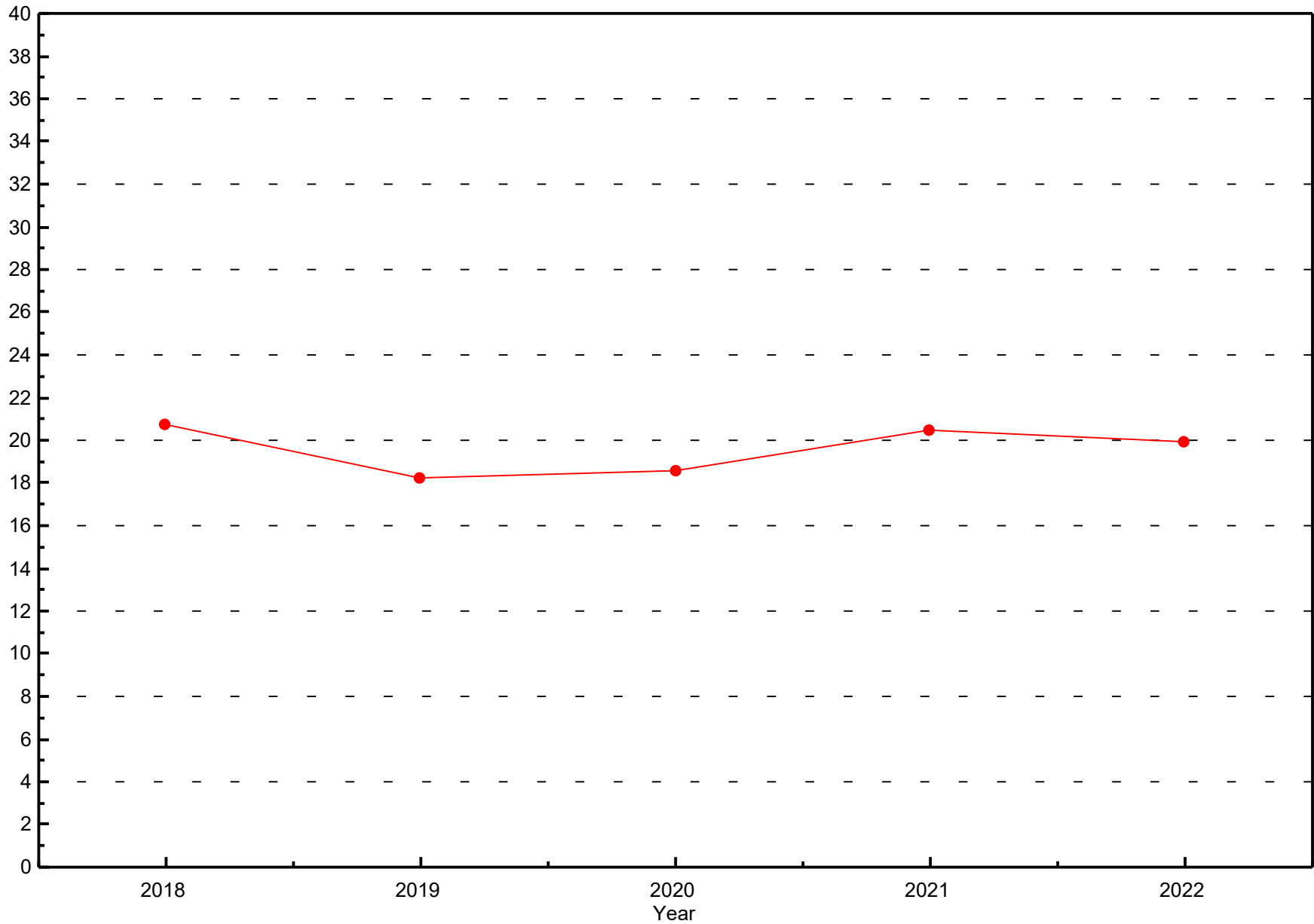
Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Number of Values Exceeding 1-Hour Objective	Maximum 24-Hour Value
January	100	709	27.2	42.4	0	38.9
February	100	639	32.4	48.1	0	43.4
March	100	708	38.7	55.0	0	47.3
April	100	685	38.7	54.7	0	46.7
May	100	706	31.8	56.8	0	44.7
June	99	679	29.8	53.1	0	39.9
July	100	706	23.6	58.3	0	39.2
August	100	709	20.4	50.4	0	29.4
September	100	686	20.7	45.2	0	31.4
October	100	711	27.0	49.8	0	39.6
November	99	678	28.4	42.3	0	36.3
December	100	709	26.8	42.7	0	40.0
Annual	100	8325	28.7	58.3	0	47.3



Yearly Averages

Ozone (O₃) - ppb

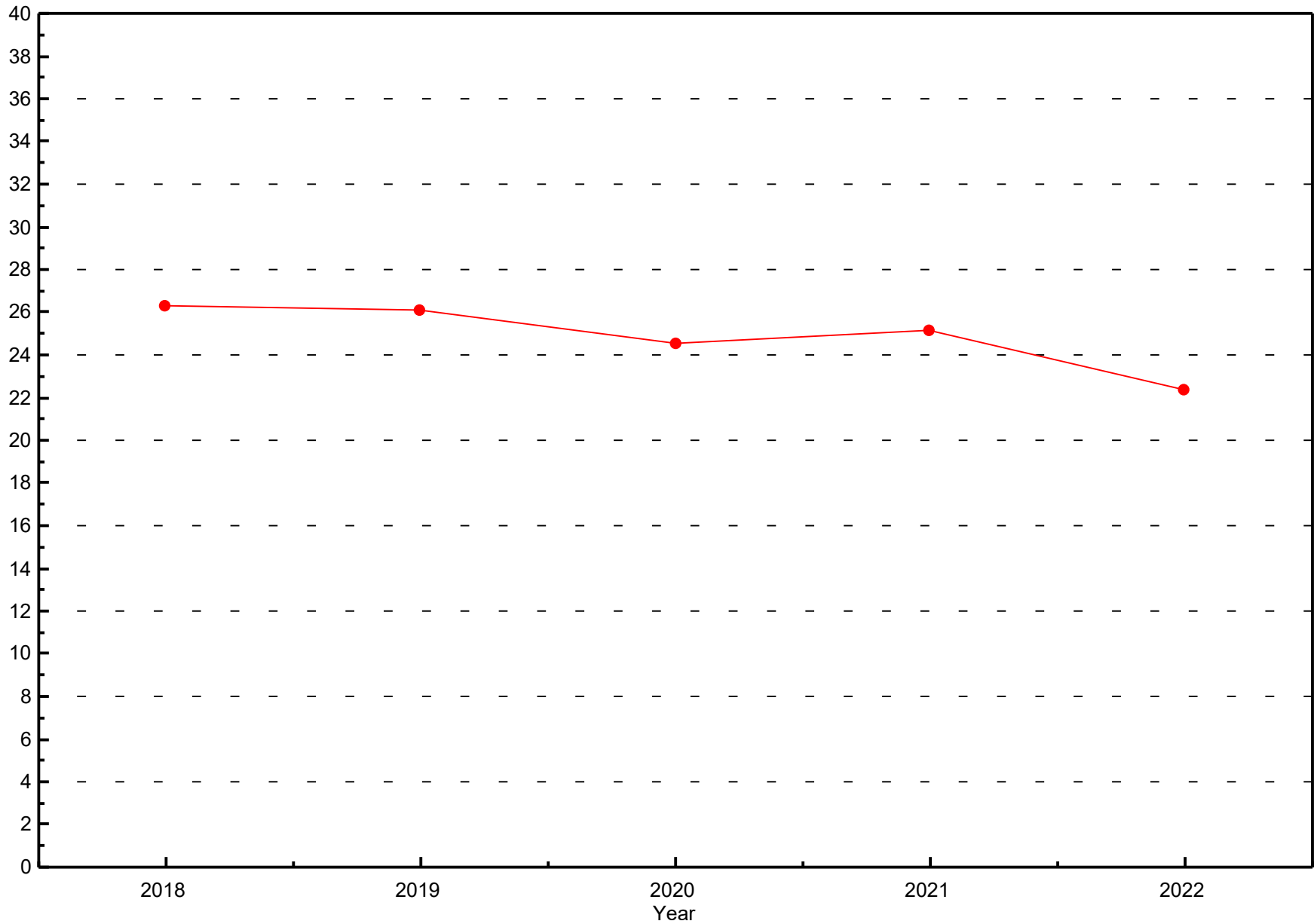
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

Ozone (O₃) - ppb
Buffalo Viewpoint (2018 to 2022)

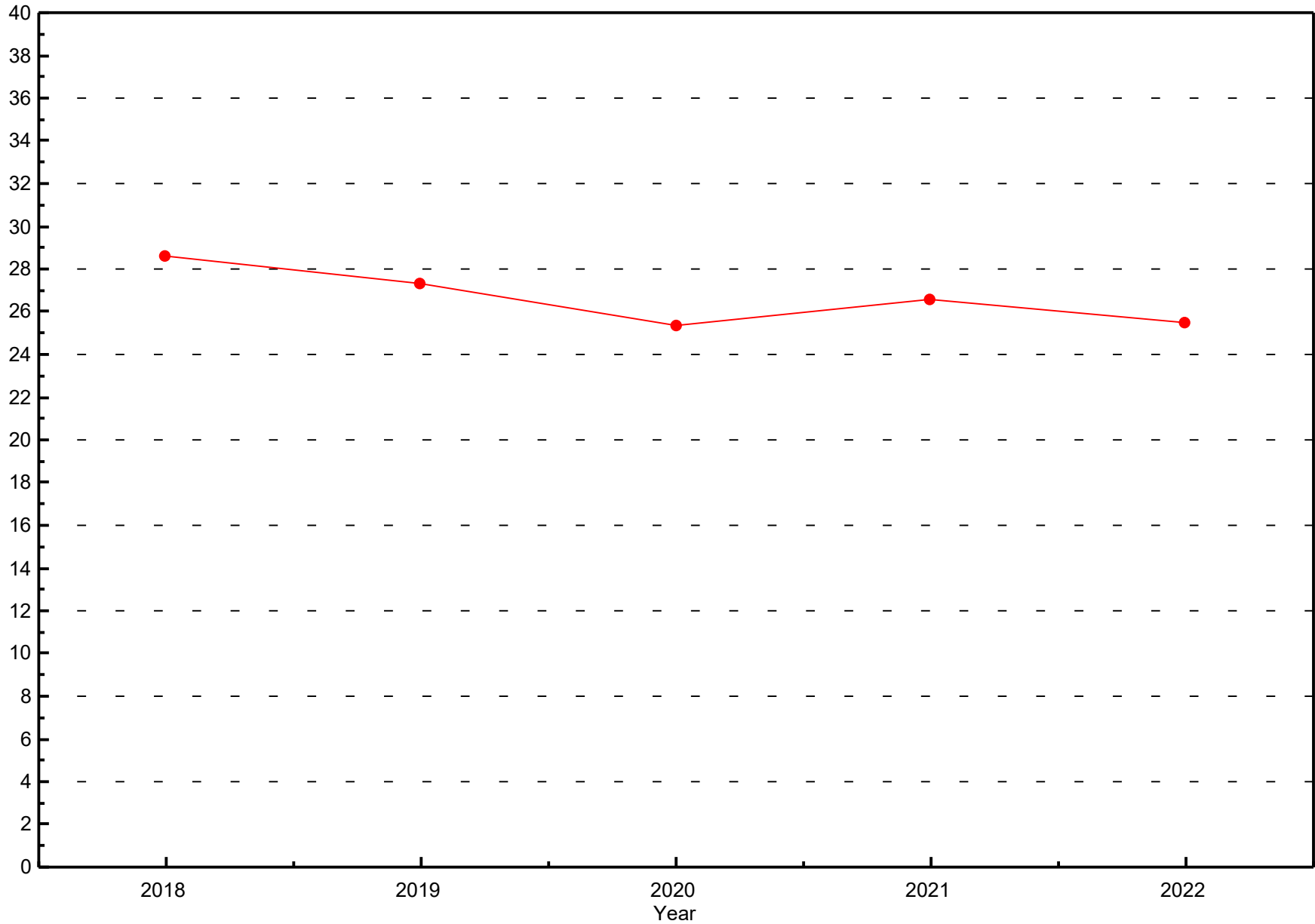




Yearly Averages

Ozone (O₃) - ppb

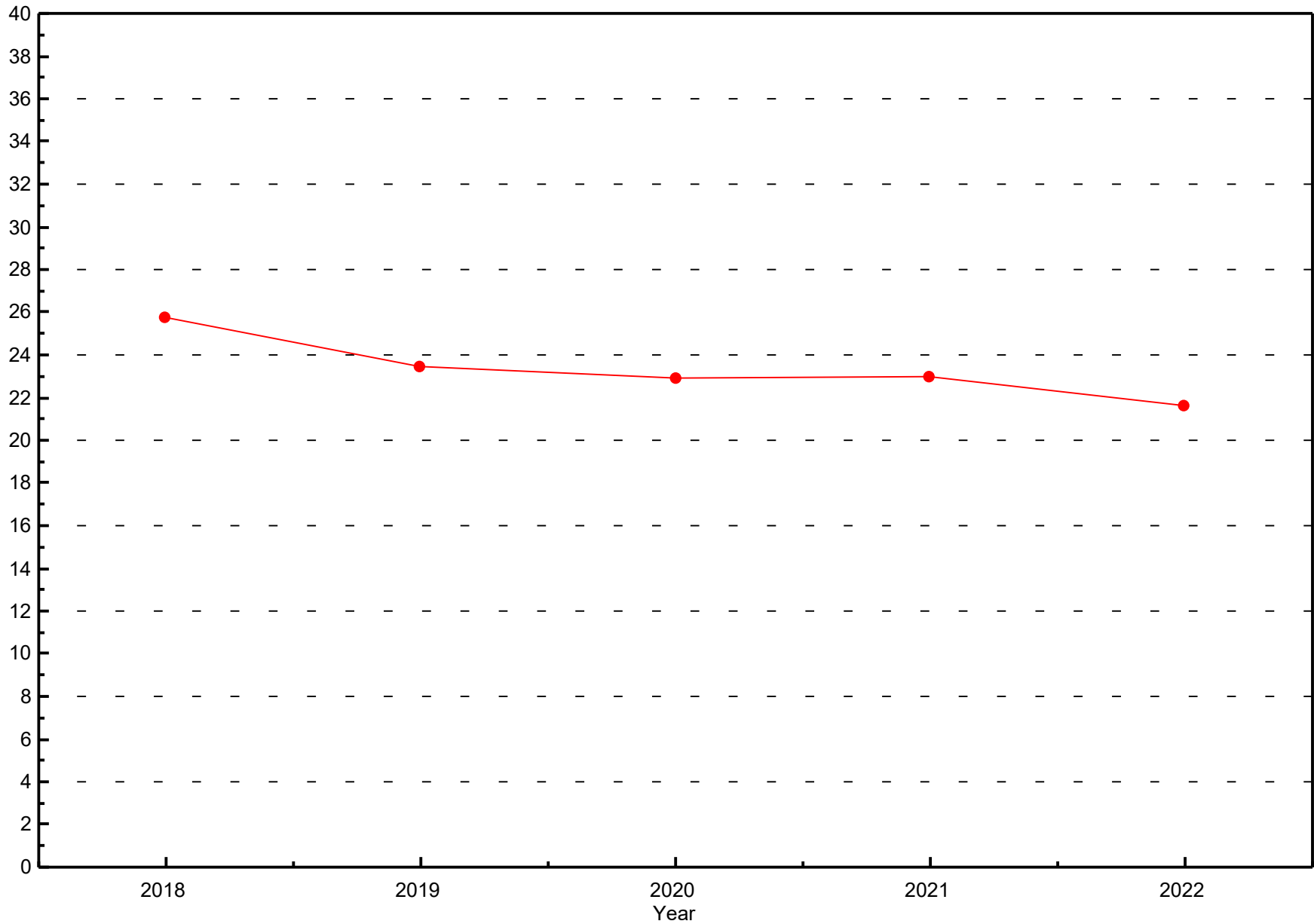
Patricia McInnes (2018 to 2022)





Yearly Averages

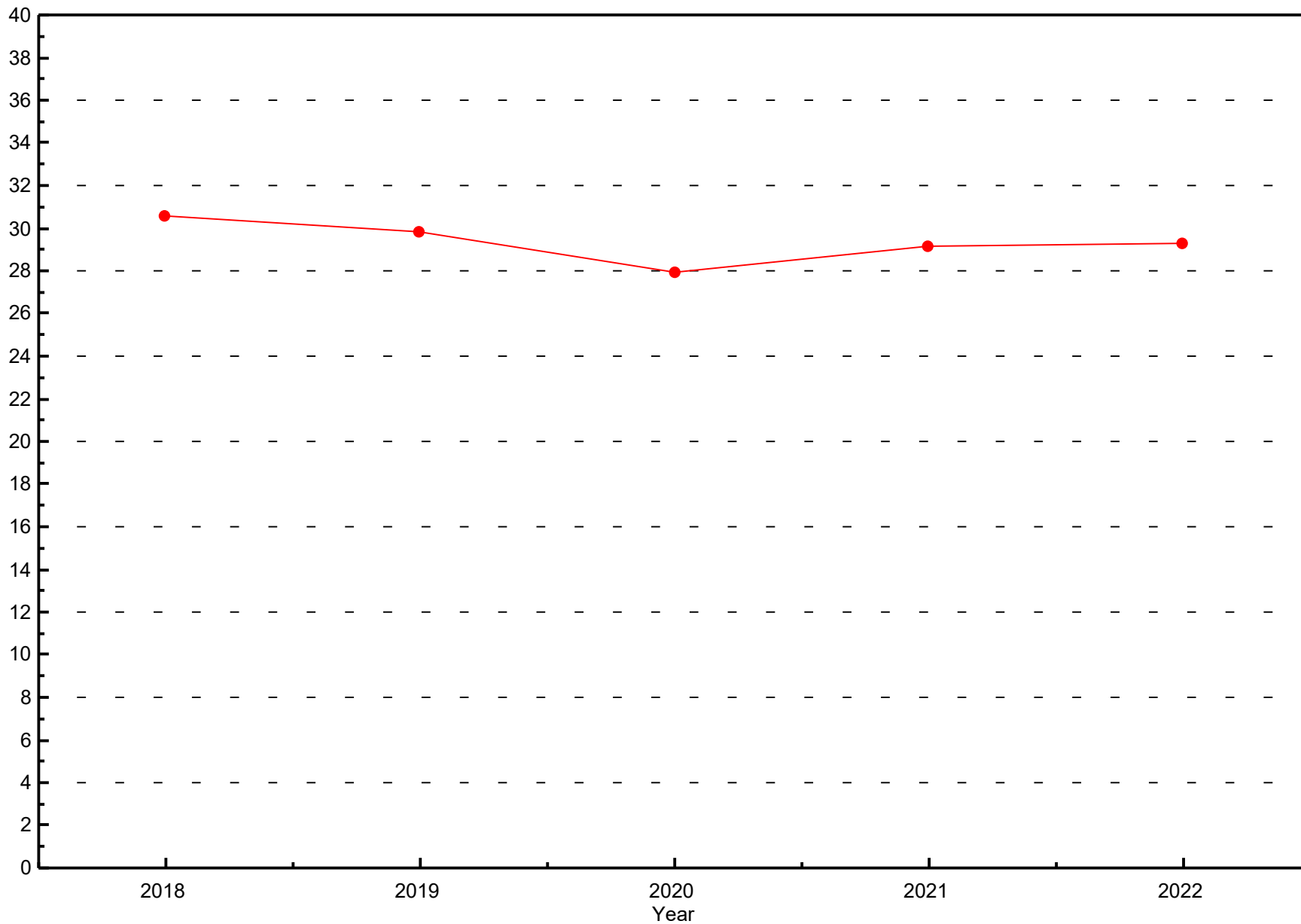
Ozone (O₃) - ppb
Athabasca Valley (2018 to 2022)





Yearly Averages

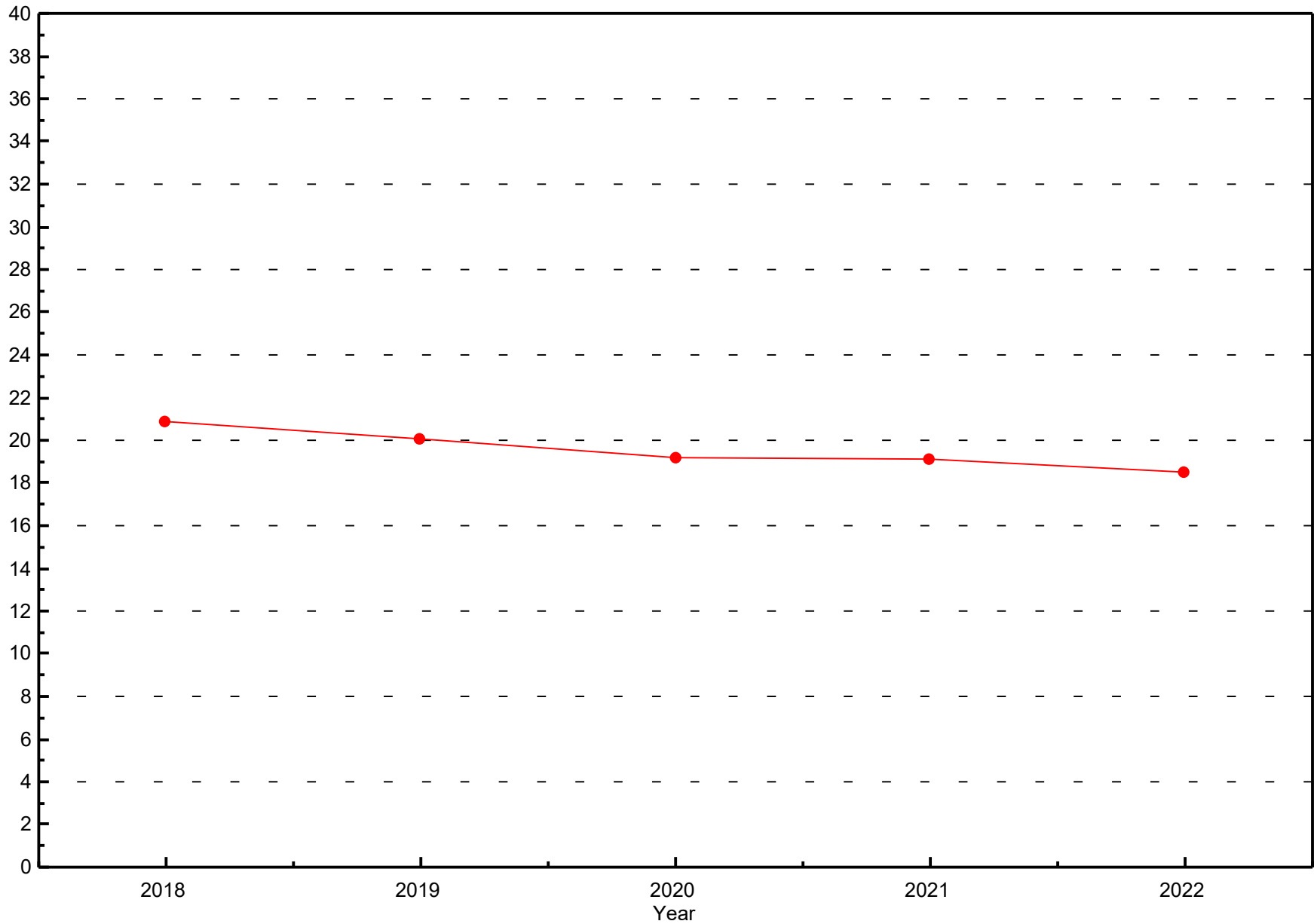
Ozone (O₃) - ppb
Fort Chipewyan (2018 to 2022)





Yearly Averages

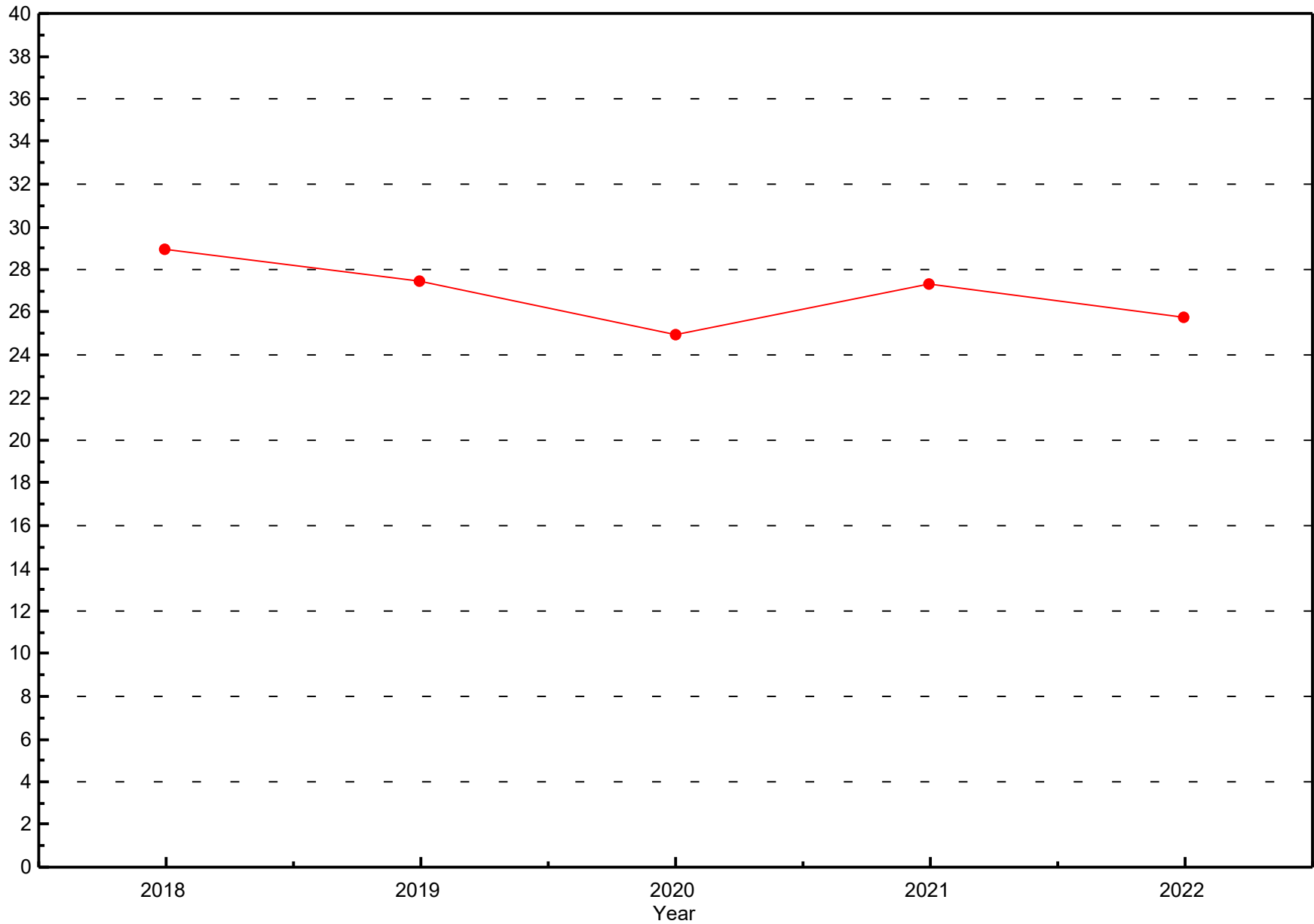
Ozone (O₃) - ppb
Fort McKay South (2018 to 2022)





Yearly Averages

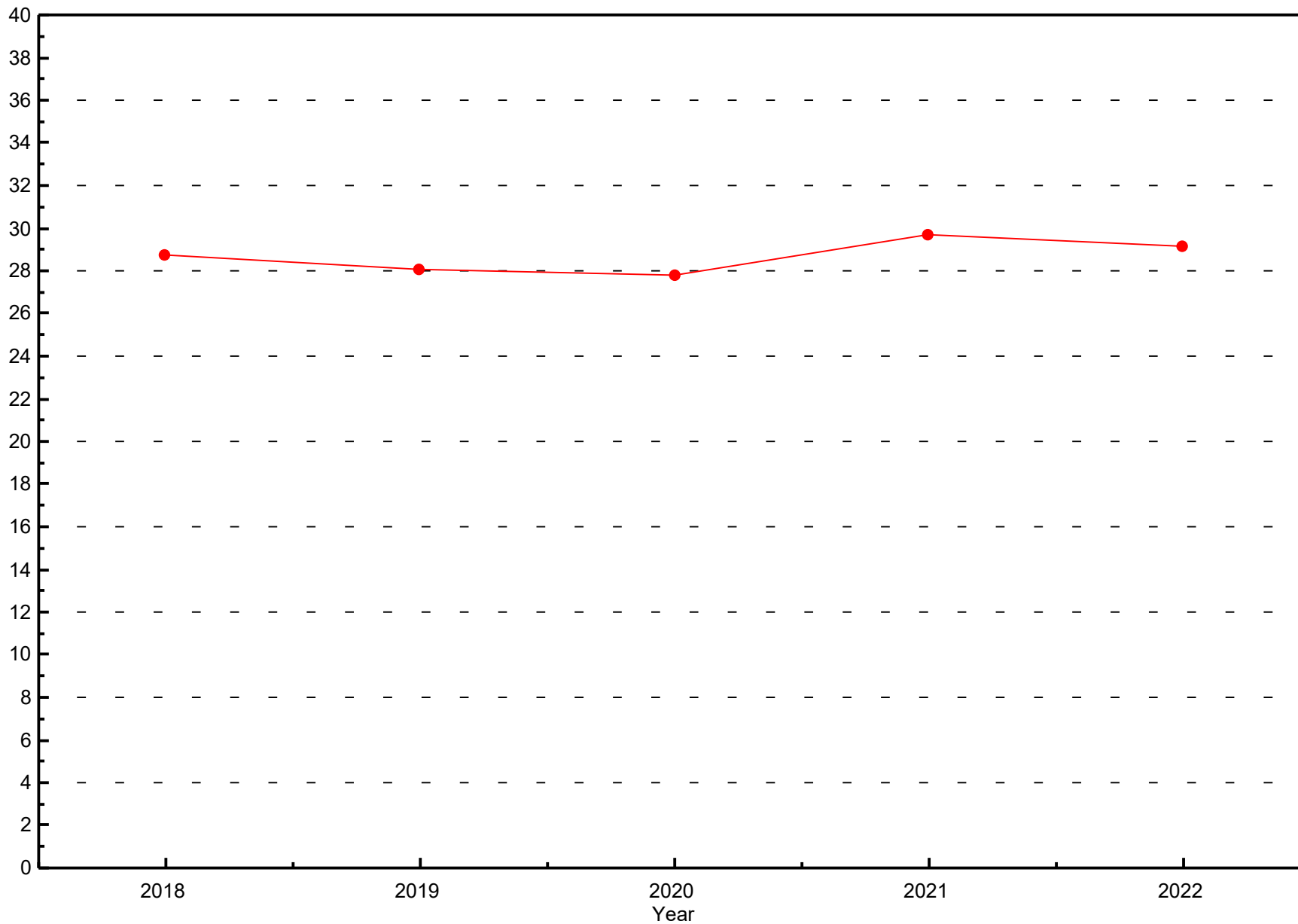
Ozone (O₃) - ppb
Anzac (2018 to 2022)





Yearly Averages

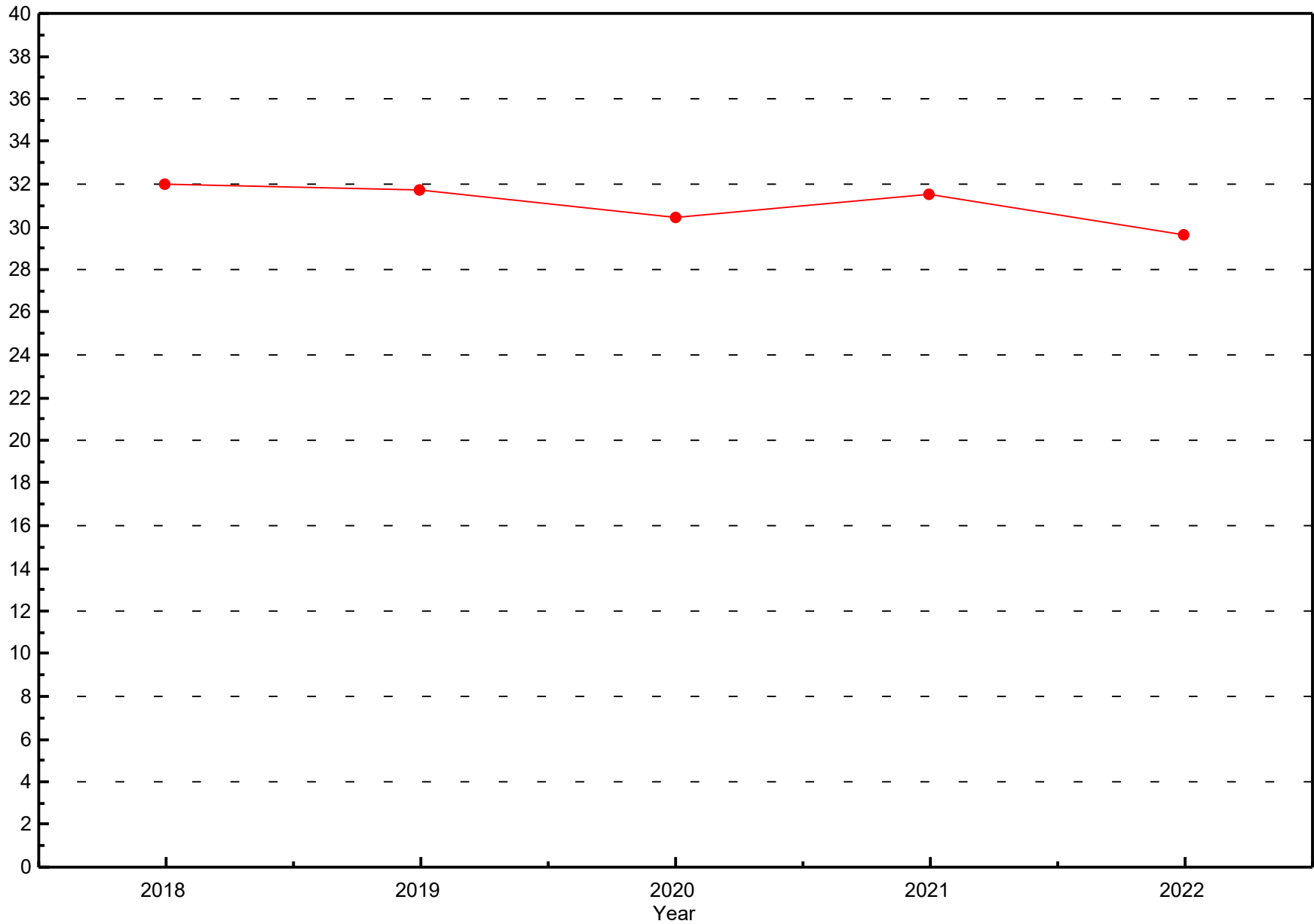
Ozone (O₃) - ppb
Wapasu (2018 to 2022)





Yearly Averages

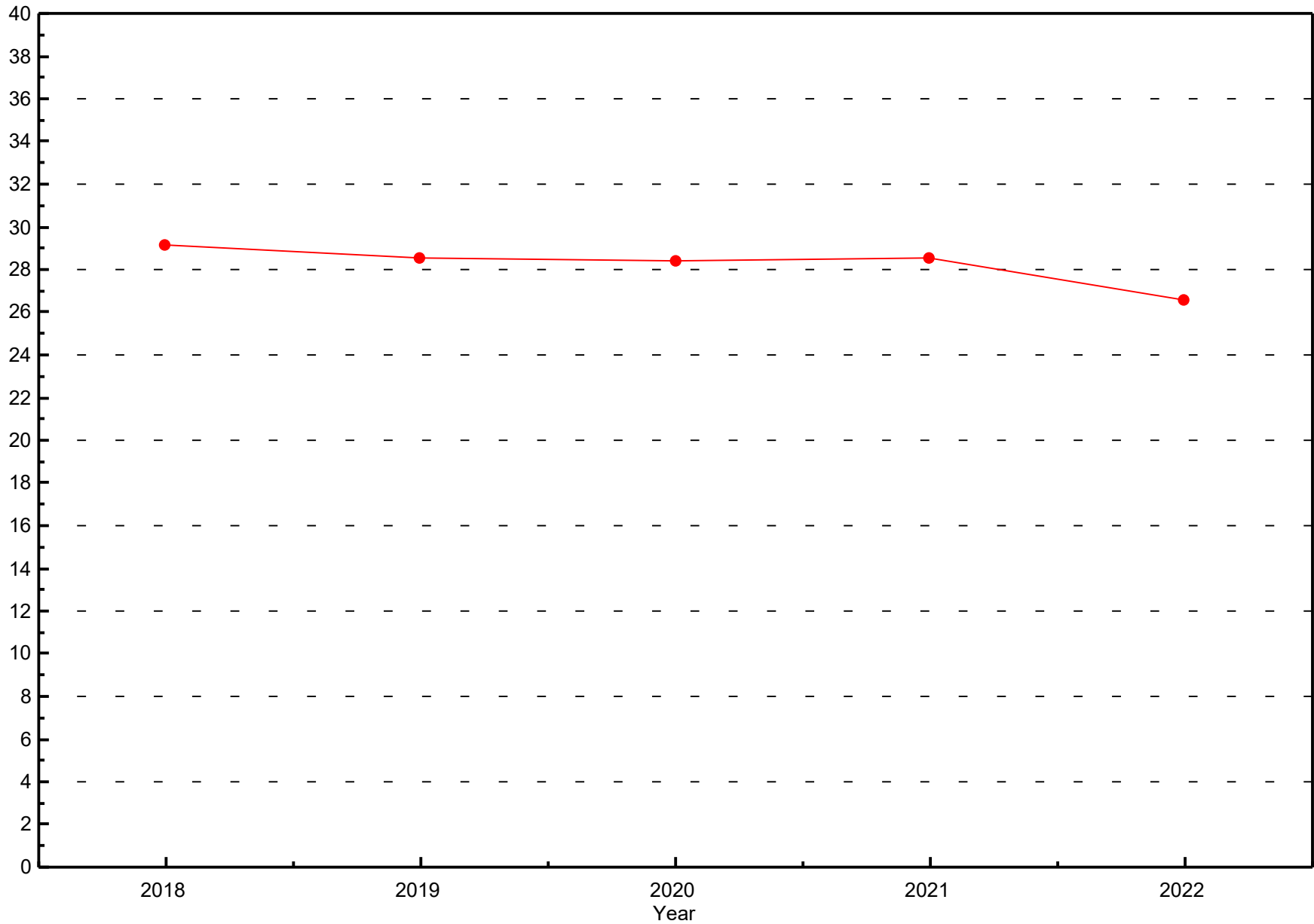
Ozone (O₃) - ppb
Stony Mountain (2018 to 2022)





Yearly Averages

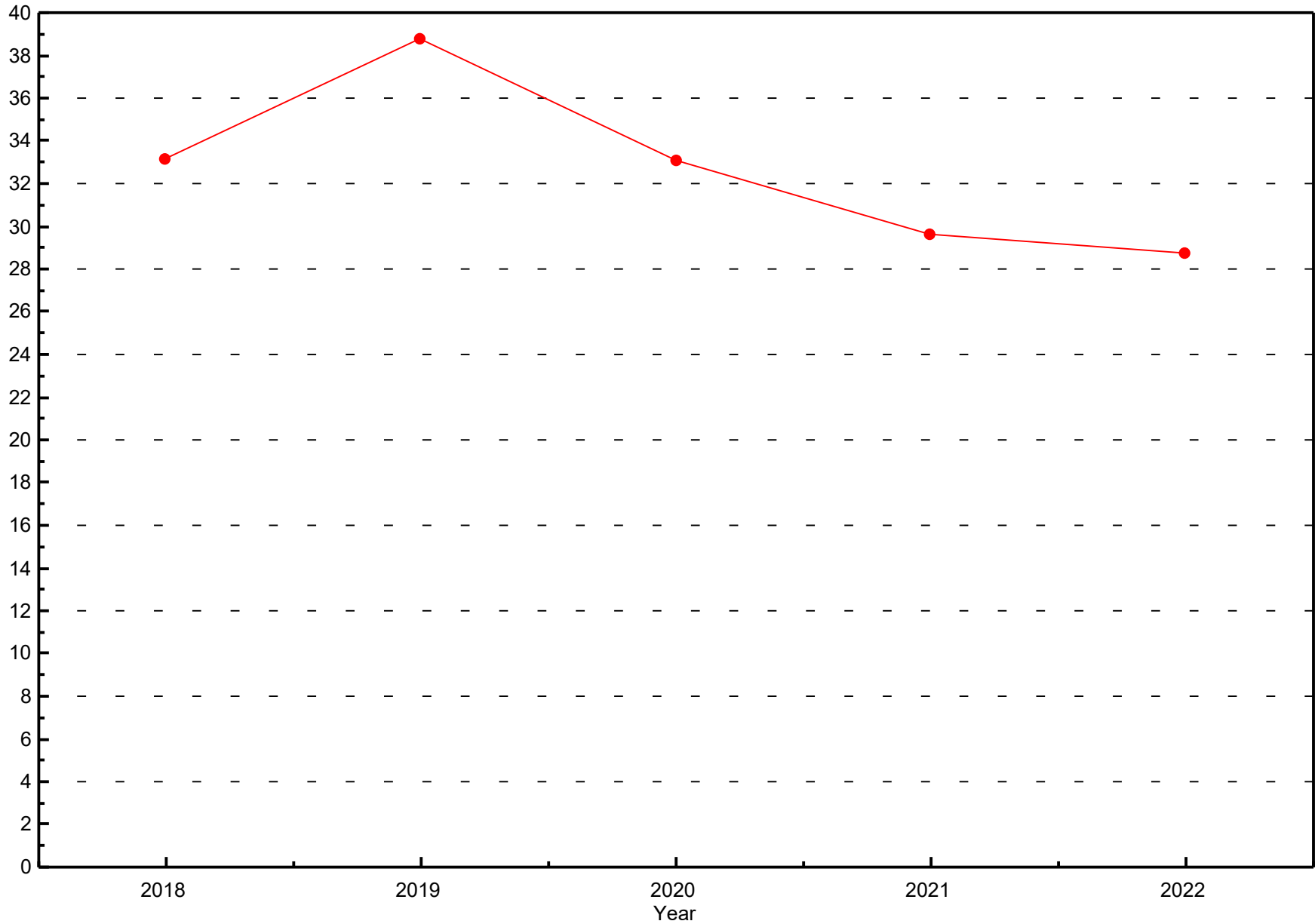
Ozone (O₃) - ppb
Conklin (2018 to 2022)





Yearly Averages

Ozone (O₃) - ppb
Janvier (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

TOTAL HYDROCARBONS ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	98.0	689.0	2.3	4.5	2.7
February	99.7	631.0	2.3	3.6	2.6
March	96.8	680.0	2.3	4.6	2.8
April	99.2	679.0	2.1	2.9	2.3
May	95.2	673.0	2.1	3.1	2.2
June	99.0	680.0	2.1	3.0	2.3
July	99.3	704.0	2.1	3.9	2.2
August	99.7	706.0	2.2	4.1	2.4
September	98.6	677.0	2.2	3.6	2.5
October	99.6	705.0	2.2	3.1	2.4
November	99.9	684.0	2.2	3.5	2.5
December	99.6	706.0	2.2	3.6	2.8
Annual	98.7	8214.0	2.2	4.6	2.8



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100.0	709.0	2.3	4.8	2.9
February	99.7	639.0	2.3	6.1	2.5
March	99.3	704.0	2.3	6.3	2.8
April	100.0	687.0	2.0	4.2	2.3
May	99.7	707.0	2.0	3.2	2.1
June	99.7	684.0	2.1	4.4	2.4
July	96.8	685.0	2.1	4.4	2.4
August	97.0	687.0	2.2	5.8	2.5
September	90.6	620.0	2.2	4.5	2.4
October	98.3	697.0	2.2	5.3	2.9
November	56.4	380.0	2.2	4.1	2.6
December	100.0	709.0	2.2	4.3	2.8
Annual	94.8	7908.0	2.2	6.3	2.9



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100.0	710.0	2.2	5.0	3.1
February	100.0	640.0	2.2	3.8	2.4
March	100.0	710.0	2.1	6.2	3.0
April	92.4	623.0	2.1	2.8	2.2
May	96.8	684.0	2.1	3.1	2.2
June	91.5	615.0	2.0	3.0	2.3
July	99.9	709.0	2.0	2.5	2.1
August	99.9	709.0	2.0	3.7	2.2
September	100.0	686.0	2.0	2.6	2.1
October	99.7	708.0	2.0	2.8	2.1
November	100.0	686.0	2.0	3.9	2.2
December	100.0	707.0	2.1	3.4	2.4
Annual	98.4	8187.0	2.1	6.2	3.1



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100.0	709.0	2.3	6.8	3.5
February	95.5	611.0	2.2	4.8	2.8
March	100.0	708.0	2.3	9.6	3.6
April	99.7	680.0	2.2	4.8	2.7
May	99.9	707.0	2.1	4.4	2.4
June	99.9	686.0	2.1	4.7	2.4
July	99.3	703.0	2.1	3.7	2.3
August	99.7	707.0	2.1	3.6	2.4
September	97.4	669.0	2.1	3.9	2.4
October	99.6	707.0	2.1	3.3	2.4
November	96.8	662.0	2.2	5.5	2.7
December	97.9	694.0	2.2	5.7	3.1
Annual	98.8	8243.0	2.2	9.6	3.6



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100.0	710.0	2.1	2.9	2.6
February	100.0	640.0	2.1	2.5	2.3
March	99.7	706.0	2.1	3.1	2.4
April	99.7	684.0	2.0	2.4	2.1
May	99.7	706.0	2.0	2.4	2.1
June	99.9	685.0	2.0	2.4	2.1
July	100.0	709.0	2.0	2.6	2.1
August	100.0	709.0	2.0	3.1	2.2
September	99.9	683.0	2.0	2.9	2.2
October	99.5	705.0	2.0	2.5	2.1
November	100.0	686.0	2.0	3.5	2.2
December	100.0	709.0	2.1	3.4	2.6
Annual	99.9	8332.0	2.0	3.5	2.6



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99.7	704.0	2.2	3.6	3.2
February	99.9	640.0	2.2	3.1	2.7
March	99.7	708.0	2.2	4.0	2.8
April	99.9	686.0	2.0	2.5	2.1
May	100.0	709.0	2.0	2.6	2.1
June	99.4	684.0	2.1	2.5	2.1
July	95.4	666.0	2.0	2.5	2.1
August	85.8	609.0	2.1	2.8	2.3
September	99.7	685.0	2.1	3.2	2.3
October	100.0	710.0	2.1	2.8	2.2
November	100.0	685.0	2.1	2.7	2.2
December	100.0	709.0	2.1	2.9	2.6
Annual	98.3	8195.0	2.1	4.0	3.2



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99.9	708.0	2.3	3.7	2.7
February	95.1	605.0	2.3	3.8	2.6
March	100.0	708.0	2.3	4.6	3.1
April	99.0	677.0	2.1	3.5	2.3
May	92.3	651.0	2.0	3.3	2.2
June	99.3	681.0	2.0	2.9	2.2
July	99.2	703.0	2.0	2.7	2.1
August	99.1	702.0	2.1	3.1	2.2
September	99.4	682.0	2.1	3.2	2.4
October	100.0	709.0	2.1	3.0	2.3
November	99.7	683.0	2.1	3.3	2.4
December	96.5	685.0	2.1	2.9	2.4
Annual	98.3	8194.0	2.1	4.6	3.1



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	98.8	700.0	2.3	3.9	2.8
February	99.6	637.0	2.3	4.0	2.8
March	100.0	707.0	2.3	4.4	2.8
April	100.0	682.0	2.1	3.5	2.3
May	99.2	702.0	2.1	3.5	2.3
June	100.0	686.0	2.2	4.0	2.4
July	100.0	709.0	2.2	3.2	2.4
August	98.8	699.0	2.3	4.8	2.5
September	99.7	683.0	2.3	4.0	2.6
October	99.9	707.0	2.2	4.4	2.6
November	94.4	647.0	2.1	4.0	2.5
December	99.9	707.0	2.2	3.5	2.4
Annual	99.2	8266.0	2.2	4.8	2.8



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100.0	709.0	2.3	4.0	2.7
February	99.9	640.0	2.3	3.2	2.6
March	100.0	709.0	2.4	4.0	2.9
April	96.3	661.0	2.1	2.7	2.2
May	100.0	709.0	2.1	3.6	2.5
June	93.3	637.0	2.1	3.3	2.3
July	92.9	657.0	2.0	2.6	2.1
August	100.0	709.0	2.1	3.1	2.3
September	100.0	686.0	2.2	3.2	2.4
October	100.0	710.0	2.2	3.4	2.4
November	99.6	684.0	2.1	3.0	2.4
December	100.0	709.0	2.2	5.5	3.0
Annual	98.5	8220.0	2.2	5.5	3.0



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100.0	708.0	2.1	2.8	2.3
February	99.1	635.0	2.0	2.3	2.1
March	100.0	710.0	2.1	2.4	2.1
April	100.0	687.0	2.0	2.2	2.1
May	99.5	704.0	2.0	2.3	2.1
June	100.0	687.0	2.0	2.2	2.0
July	98.7	701.0	2.0	2.2	2.1
August	75.0	526.0	2.0	2.6	2.2
September	99.9	684.0	2.1	2.3	2.2
October	99.3	705.0	2.0	2.3	2.1
November	79.4	540.0	2.1	2.3	2.2
December	100.0	709.0	2.1	2.9	2.3
Annual	95.9	7996.0	2.0	2.9	2.3



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100.0	709.0	2.3	2.9	2.6
February	100.0	640.0	2.3	2.8	2.4
March	100.0	710.0	2.3	2.7	2.4
April	100.0	687.0	2.3	2.6	2.3
May	99.9	709.0	2.2	2.6	2.3
June	99.9	687.0	2.2	2.9	2.4
July	100.0	709.0	2.2	3.1	2.3
August	100.0	710.0	2.2	2.9	2.3
September	100.0	688.0	2.3	3.1	2.5
October	100.0	710.0	2.3	3.0	2.4
November	99.7	684.0	2.3	2.7	2.5
December	100.0	709.0	2.3	2.8	2.5
Annual	100.0	8352.0	2.3	3.1	2.6



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	62.6	442.0	2.0	2.1	2.1
February	96.6	618.0	2.1	2.2	2.1
March	100.0	708.0	2.0	2.3	2.1
April	99.2	678.0	2.1	2.9	2.2
May	100.0	709.0	2.1	2.2	2.1
June	93.1	639.0	2.0	2.2	2.0
July	100.0	709.0	2.0	2.2	2.1
August	93.3	660.0	2.0	2.2	2.1
September	100.0	687.0	2.1	2.3	2.1
October	100.0	710.0	2.1	2.2	2.1
November	99.7	684.0	2.1	2.3	2.2
December	100.0	709.0	2.1	2.4	2.3
Annual	95.3	7953.0	2.0	2.9	2.3



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	95.3	674.0	2.3	2.8	2.4
February	96.0	615.0	2.3	2.7	2.4
March	100.0	709.0	2.3	2.6	2.3
April	97.1	666.0	2.2	2.7	2.3
May	97.7	693.0	2.2	3.3	2.4
June	99.7	685.0	2.2	3.0	2.4
July	100.0	708.0	2.2	2.8	2.4
August	99.5	704.0	2.3	2.8	2.4
September	100.0	687.0	2.3	3.1	2.4
October	99.7	708.0	2.3	2.9	2.4
November	93.9	638.0	2.2	2.7	2.4
December	99.6	706.0	2.3	2.6	2.4
Annual	98.2	8193.0	2.3	3.3	2.4



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	99.9	708.0	2.4	3.4	2.9
February	100.0	640.0	2.3	3.0	2.6
March	99.7	707.0	2.3	3.0	2.5
April	99.9	685.0	2.3	2.9	2.4
May	100.0	709.0	2.2	2.7	2.3
June	99.7	685.0	2.2	2.8	2.3
July	100.0	707.0	2.2	2.8	2.4
August	100.0	709.0	2.3	3.7	2.6
September	99.7	685.0	2.3	2.8	2.4
October	100.0	710.0	2.3	2.9	2.5
November	100.0	687.0	2.4	3.2	2.6
December	99.2	704.0	2.4	3.6	2.9
Annual	99.8	8336.0	2.3	3.7	2.9



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100.0	710.0	2.1	2.5	2.2
February	98.8	633.0	2.1	2.3	2.2
March	90.3	626.0	2.1	2.5	2.2
April	99.9	685.0	2.1	2.6	2.1
May	99.7	708.0	2.1	2.4	2.1
June	97.4	662.0	2.1	2.7	2.2
July	98.0	693.0	2.2	3.5	2.4
August	99.5	706.0	2.2	3.9	2.5
September	99.4	684.0	2.2	3.4	2.5
October	93.0	659.0	2.1	2.7	2.2
November	98.6	676.0	2.0	2.4	2.2
December	99.3	704.0	2.1	2.4	2.3
Annual	97.8	8146.0	2.1	3.9	2.5



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	99.5	706.0	2.0	2.2	2.1
February	98.4	629.0	2.0	2.6	2.1
March	99.3	704.0	2.0	2.2	2.1
April	98.9	677.0	1.9	2.2	2.0
May	99.5	705.0	2.0	2.3	2.0
June	99.7	685.0	2.0	2.1	2.0
July	99.6	705.0	2.0	2.3	2.0
August	99.3	703.0	2.0	2.4	2.1
September	94.3	647.0	2.0	2.3	2.1
October	99.1	703.0	2.0	2.2	2.1
November	99.6	682.0	2.0	2.2	2.2
December	99.9	707.0	2.1	2.4	2.3
Annual	98.9	8253.0	2.0	2.6	2.3



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100.0	710.0	2.4	4.5	3.4
February	99.9	639.0	2.4	5.2	3.2
March	99.6	706.0	2.4	8.7	4.5
April	99.9	685.0	2.2	5.4	2.6
May	99.7	707.0	2.2	5.1	2.5
June	99.4	683.0	2.1	4.0	2.4
July	99.9	708.0	2.1	6.1	2.4
August	99.6	706.0	2.2	3.8	2.6
September	100.0	686.0	2.3	5.7	2.9
October	99.6	707.0	2.3	7.9	3.2
November	99.9	685.0	2.3	5.3	3.1
December	99.5	705.0	2.2	5.3	2.6
Annual	99.7	8327.0	2.3	8.7	4.5



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	99.1	700.0	2.3	2.8	2.5
February	75.5	479.0	2.4	2.5	2.4
March	86.8	614.0	2.3	2.8	2.5
April	100.0	686.0	2.3	2.4	2.3
May	95.8	679.0	2.3	2.4	2.3
June	99.9	684.0	2.2	2.7	2.4
July	100.0	708.0	2.2	2.5	2.3
August	100.0	707.0	2.3	2.7	2.4
September	100.0	685.0	2.3	2.5	2.3
October	100.0	709.0	2.3	2.5	2.4
November	99.7	684.0	2.3	2.7	2.5
December	100.0	709.0	2.3	2.8	2.5
Annual	96.5	8044.0	2.3	2.8	2.5



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100.0	709.0	2.3	4.1	2.9
February	99.7	639.0	2.2	4.4	2.6
March	100.0	709.0	2.2	4.3	2.8
April	97.9	673.0	2.1	4.2	2.3
May	100.0	709.0	2.0	3.1	2.3
June	98.1	673.0	2.0	2.8	2.2
July	94.0	666.0	2.0	3.2	2.2
August	100.0	710.0	2.1	3.4	2.4
September	100.0	687.0	2.1	4.5	2.6
October	99.7	708.0	2.1	3.3	2.5
November	100.0	686.0	2.1	4.9	2.6
December	97.6	690.0	2.1	3.1	2.5
Annual	98.9	8259.0	2.1	4.9	2.9



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100.0	707.0	2.4	5.3	2.5
February	98.8	631.0	2.4	3.0	2.6
March	98.9	699.0	2.3	2.9	2.5
April	99.9	683.0	2.2	3.1	2.3
May	96.0	680.0	2.3	6.9	2.5
June	100.0	632.0	2.2	3.3	2.5
Annual	98.9	4032.0	2.3	6.9	2.6



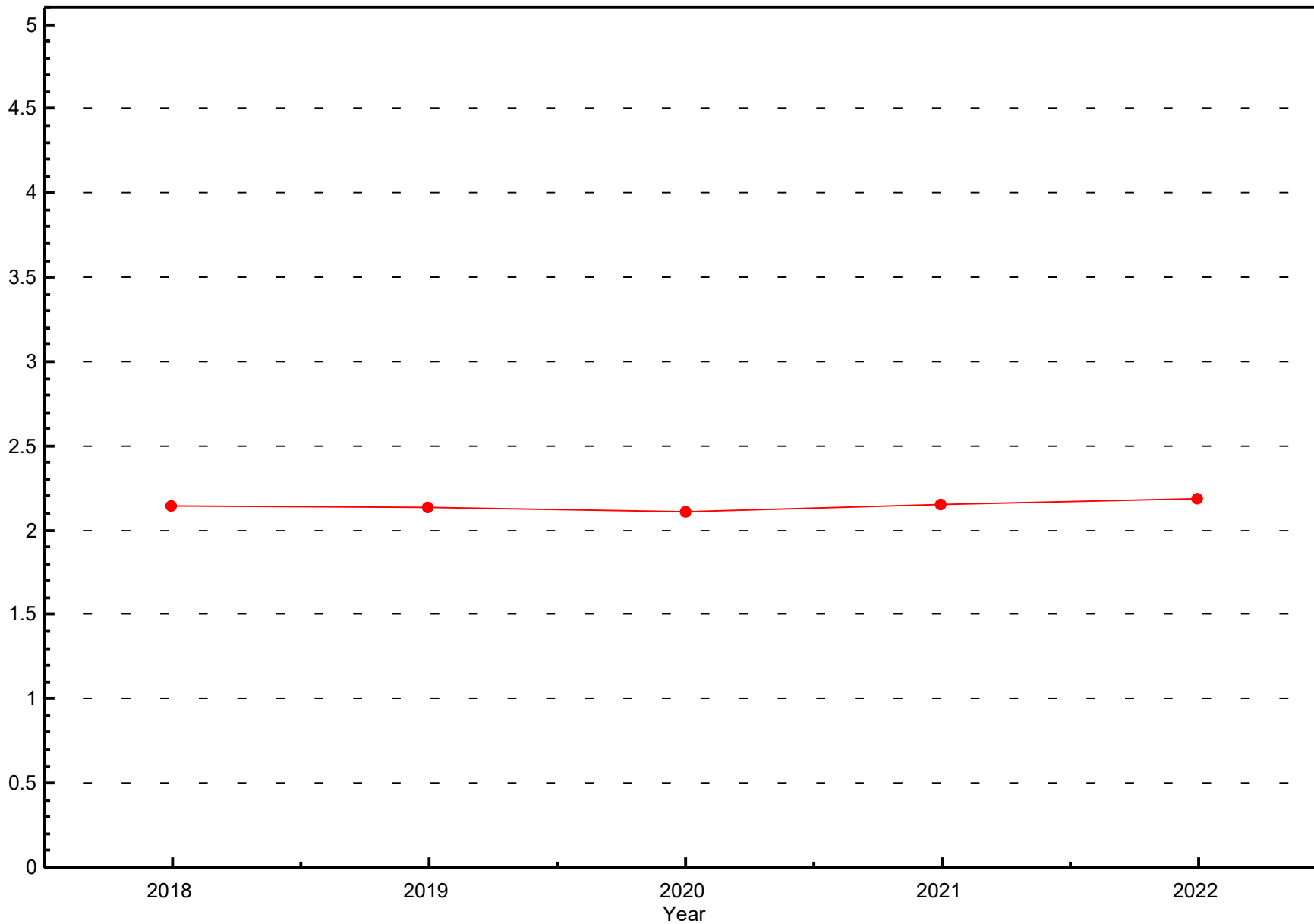
Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Total Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
July	99.9	708.0	2.2	2.9	2.3
August	99.9	707.0	2.2	2.7	2.4
September	99.4	681.0	2.3	2.7	2.5
October	91.9	650.0	2.2	5.2	2.5
November	97.2	666.0	2.1	2.8	2.4
December	99.7	706.0	2.4	2.9	2.7
Annual	98.0	4118.0	2.2	5.2	2.7



Yearly Averages

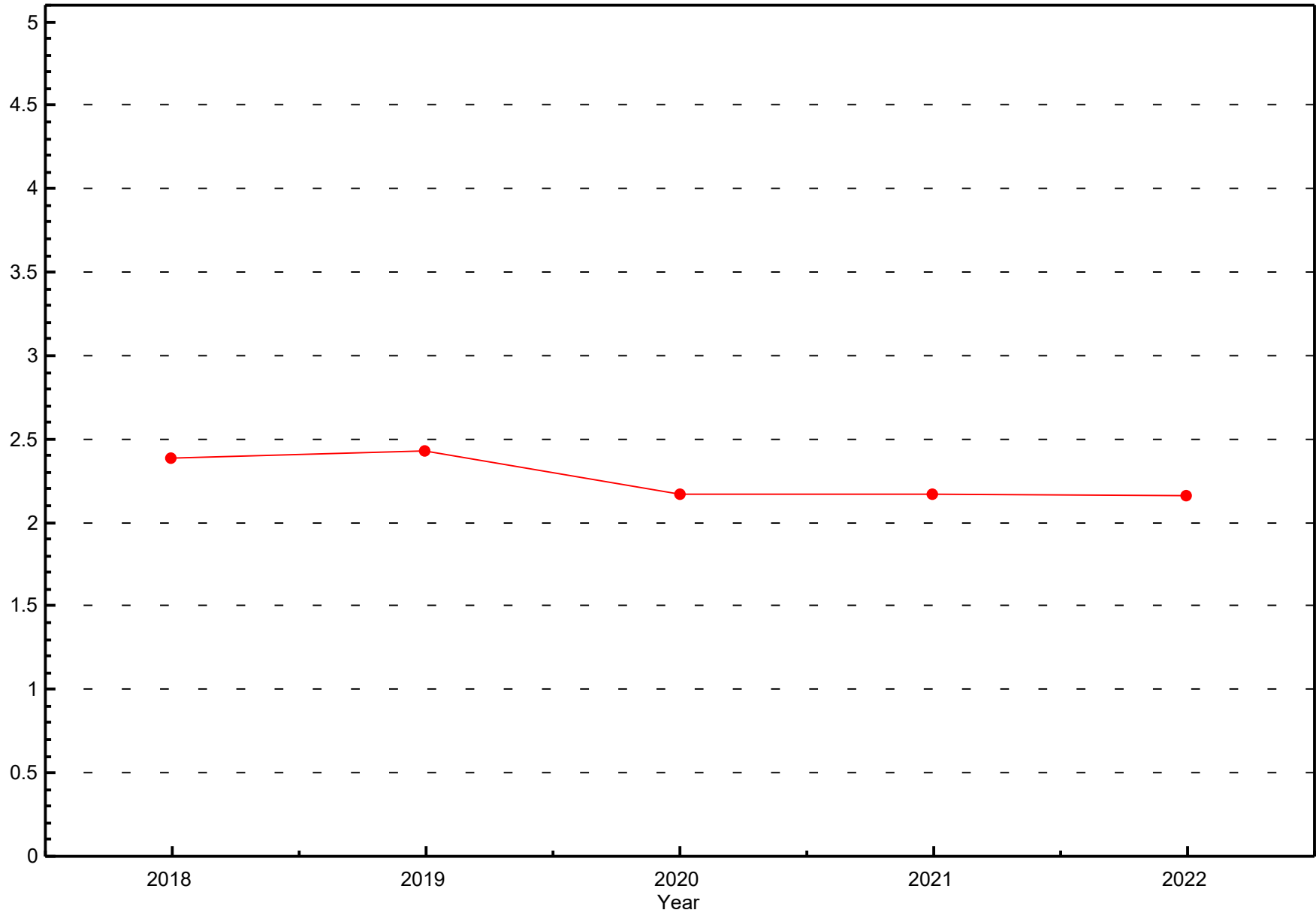
Total Hydrocarbons (THC) - ppm Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

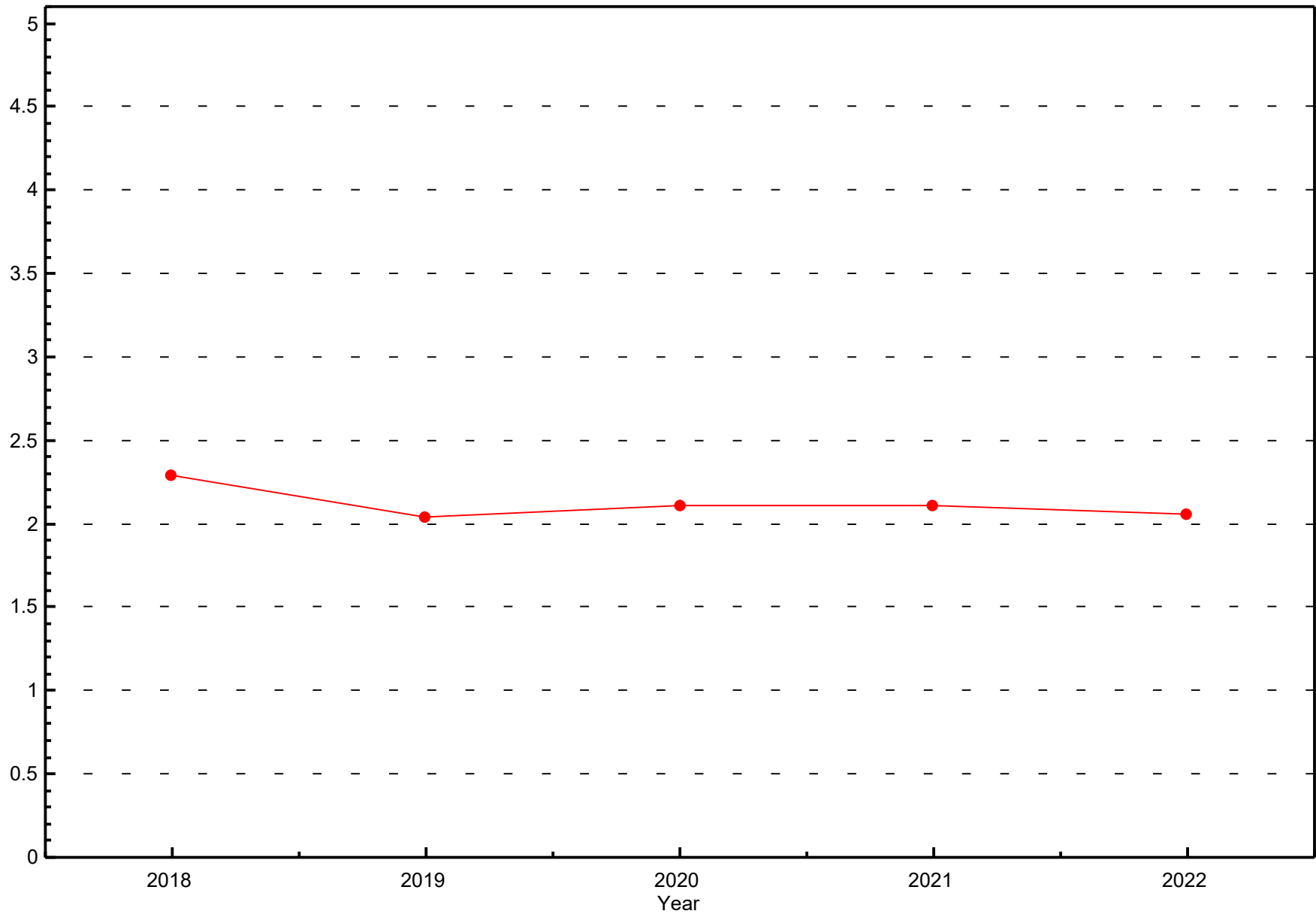
Total Hydrocarbons (THC) - ppm Mildred Lake (2018 to 2022)





Yearly Averages

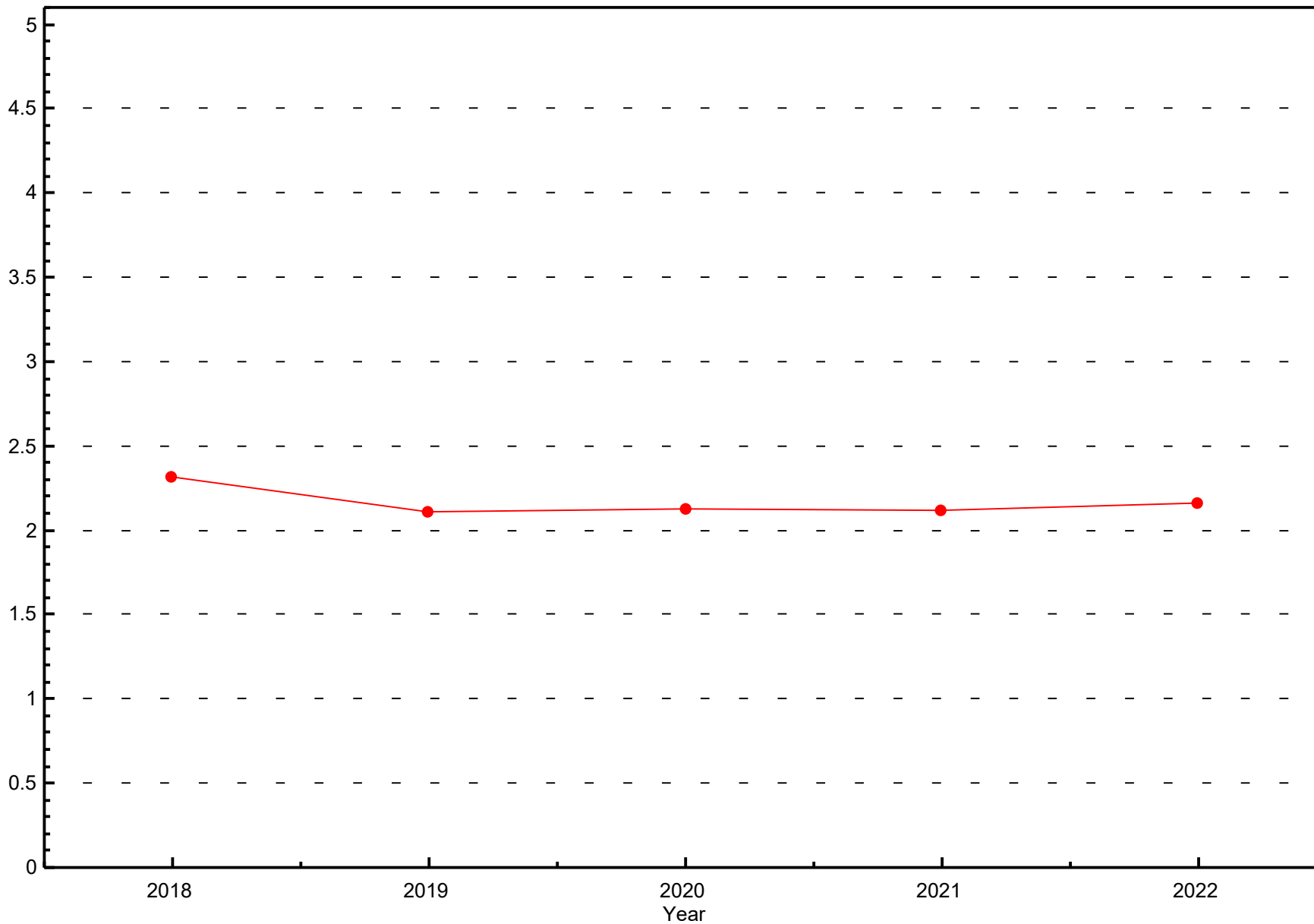
Total Hydrocarbons (THC) - ppm
Buffalo Viewpoint (2018 to 2022)





Yearly Averages

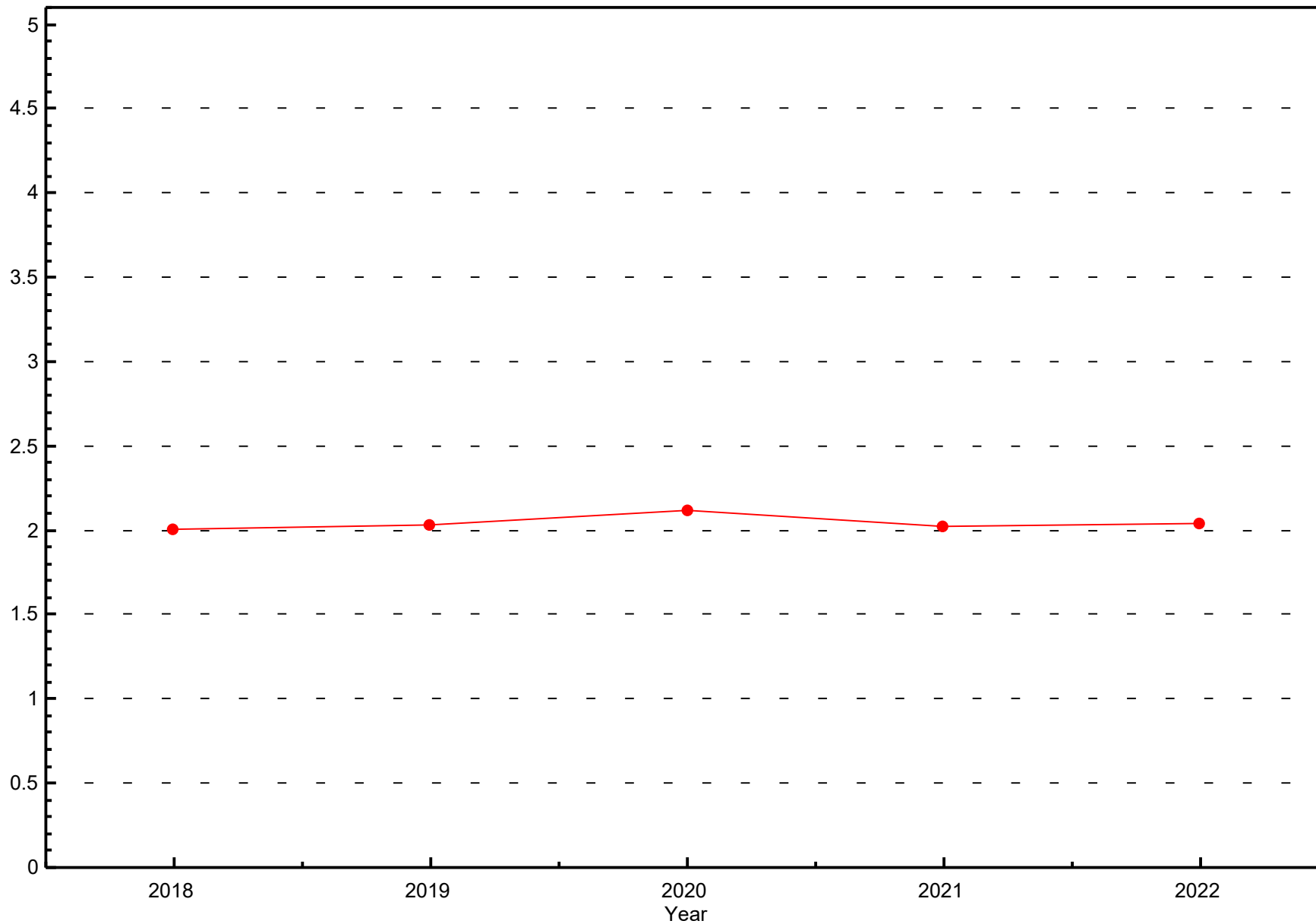
Total Hydrocarbons (THC) - ppm Mannix (2018 to 2022)





Yearly Averages

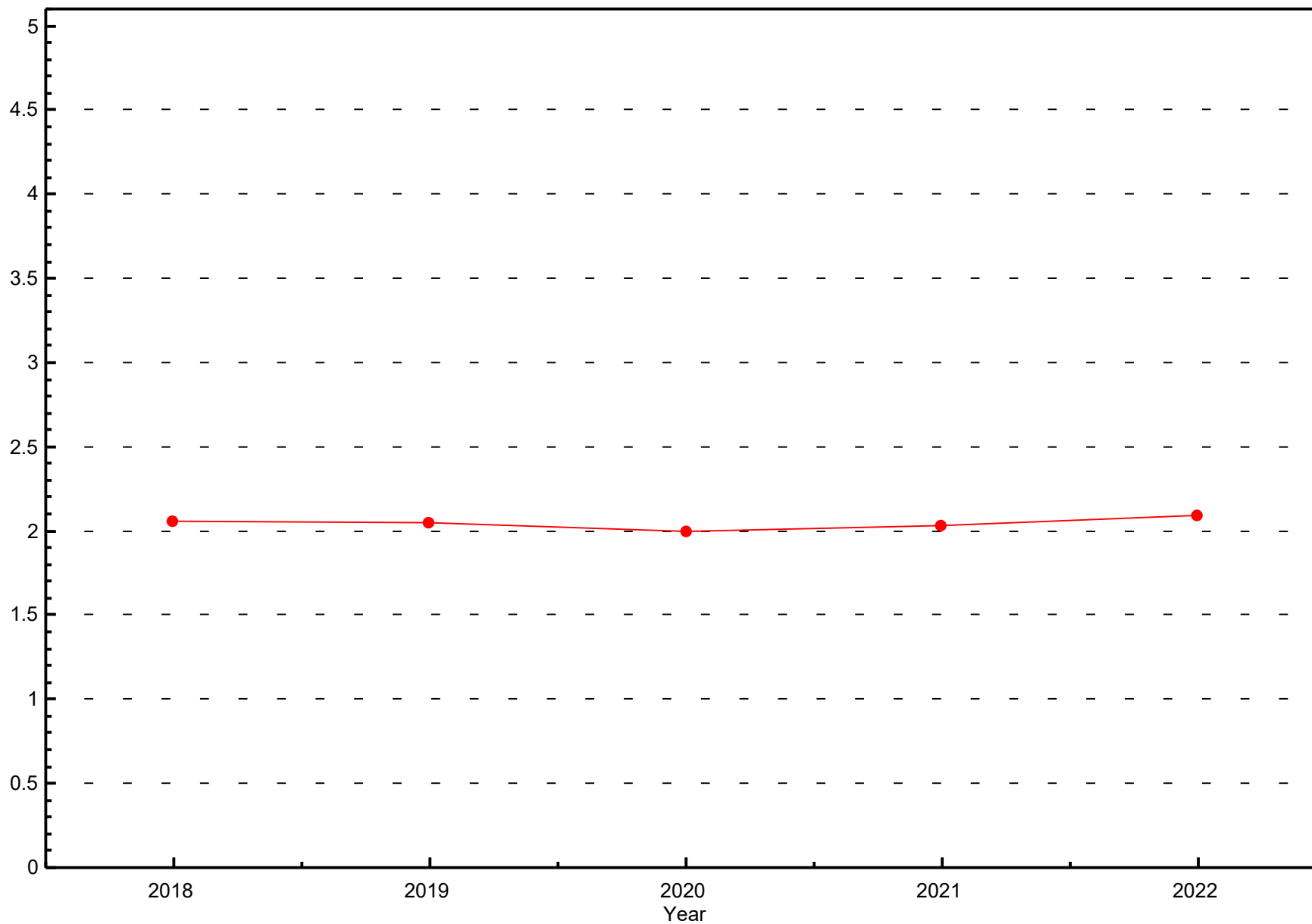
Total Hydrocarbons (THC) - ppm
Patricia McInnes (2018 to 2022)





Yearly Averages

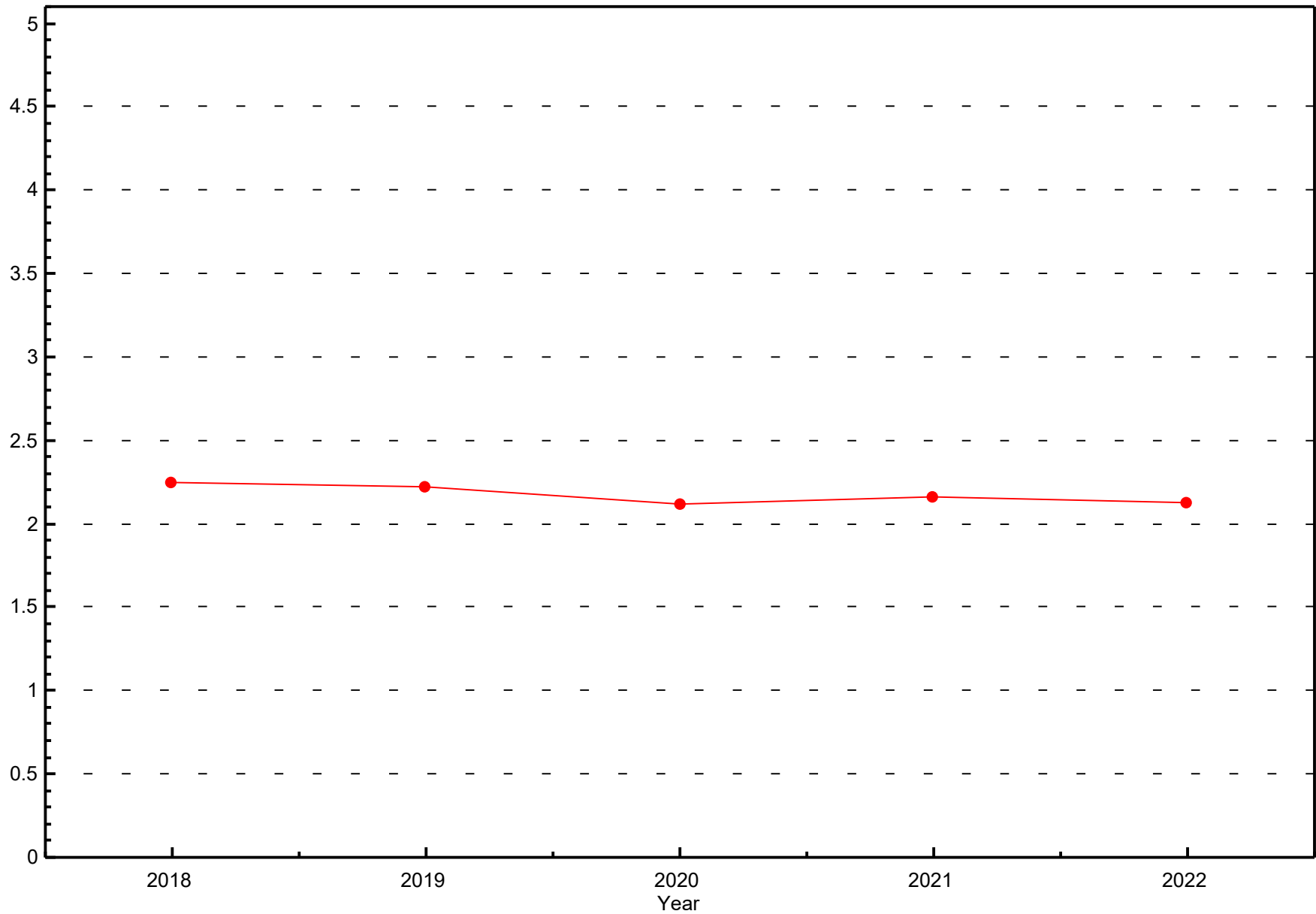
Total Hydrocarbons (THC) - ppm
Athabasca Valley (2018 to 2022)





Yearly Averages

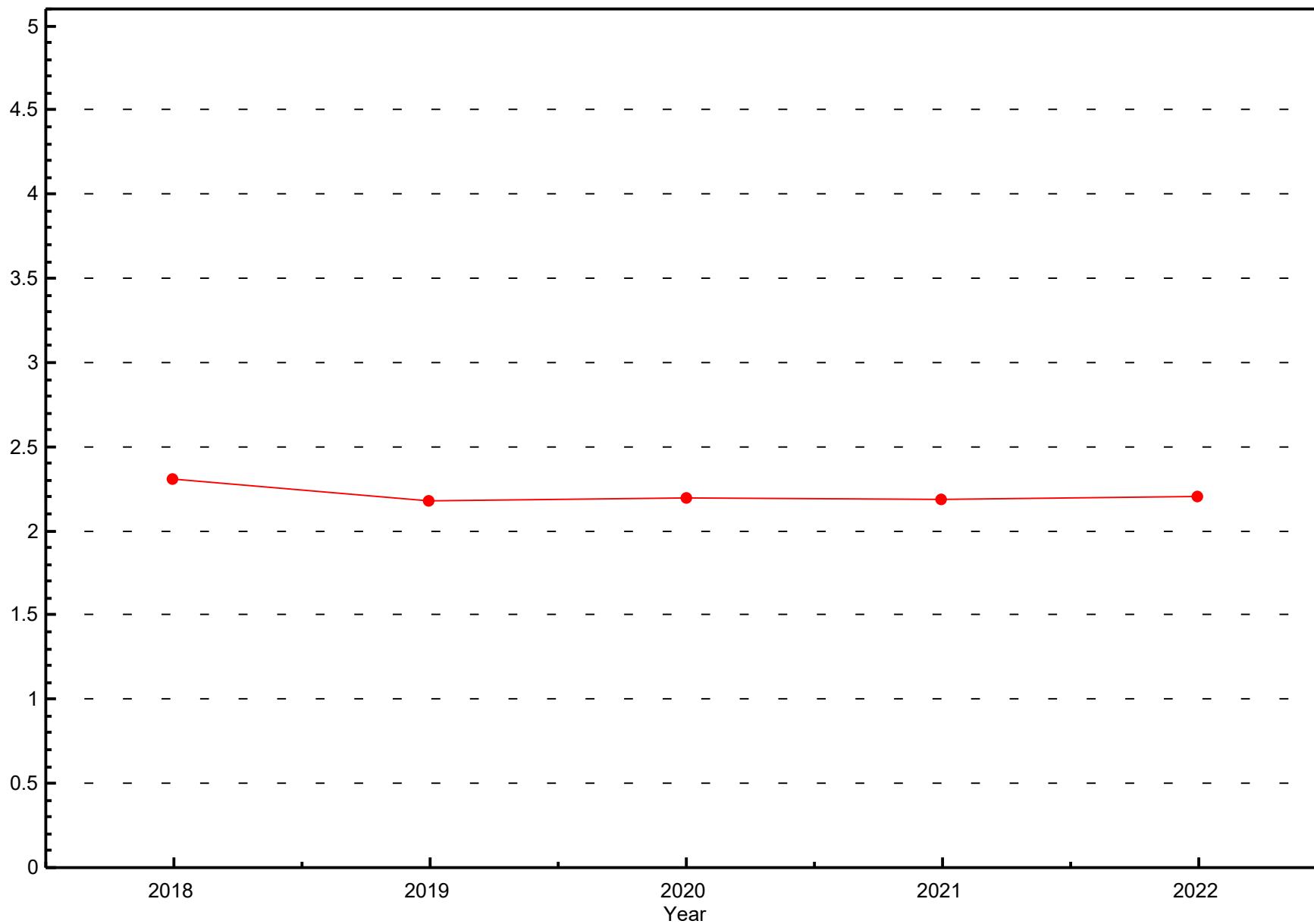
Total Hydrocarbons (THC) - ppm Barge Landing (2018 to 2022)





Yearly Averages

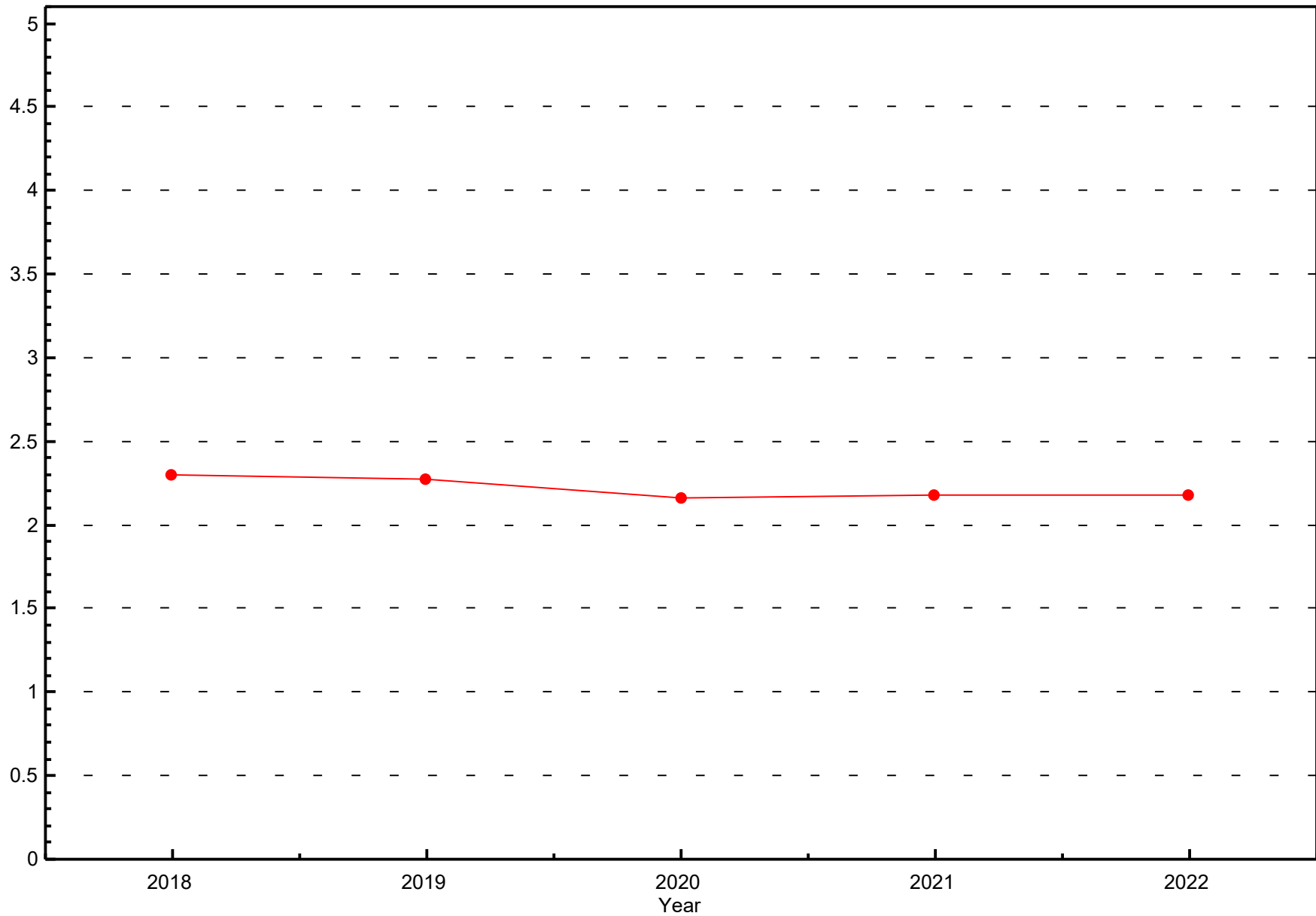
Total Hydrocarbons (THC) - ppm Lower Camp (2018 to 2022)





Yearly Averages

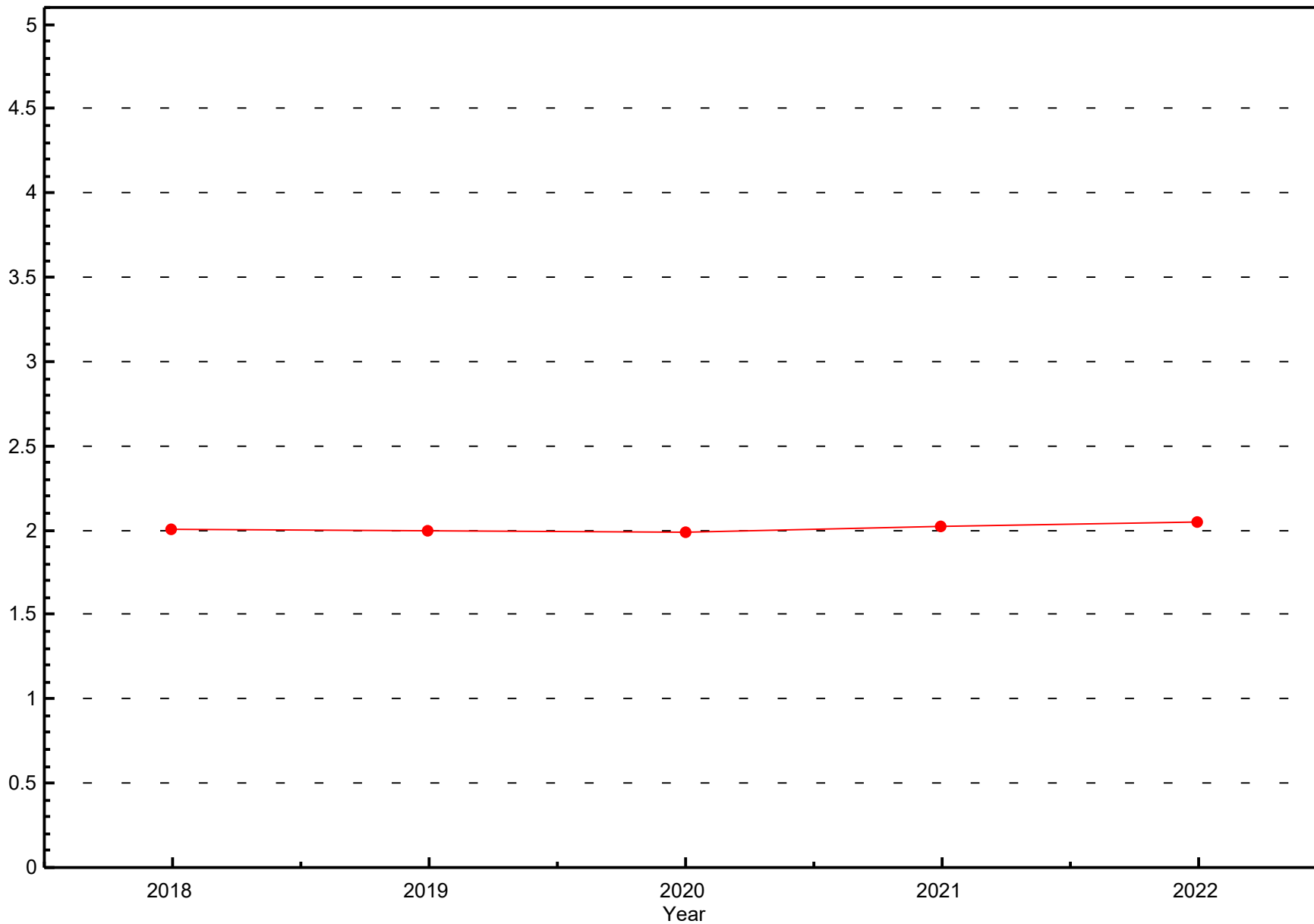
Total Hydrocarbons (THC) - ppm
Fort McKay South (2018 to 2022)





Yearly Averages

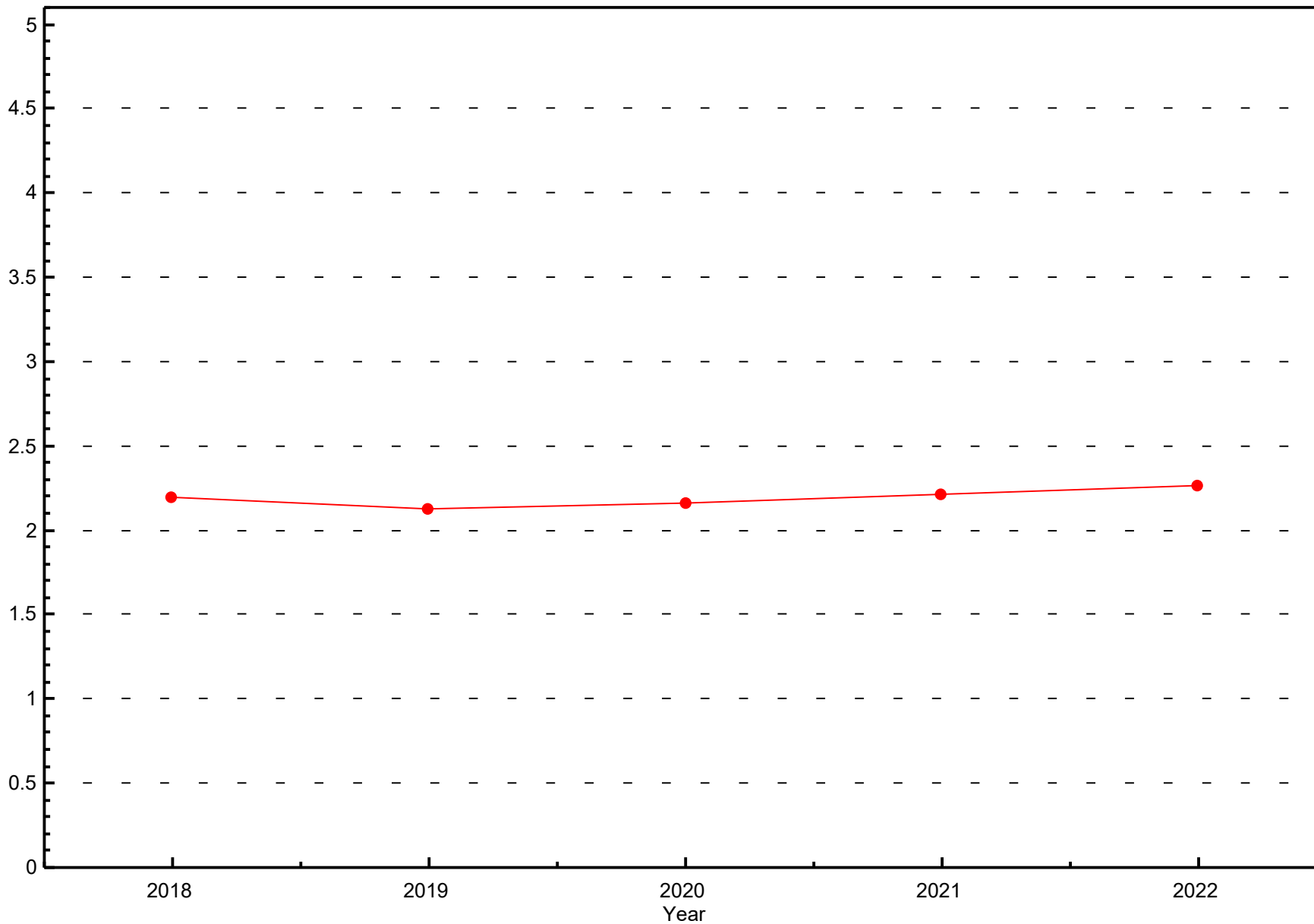
Total Hydrocarbons (THC) - ppm Anzac (2018 to 2022)





Yearly Averages

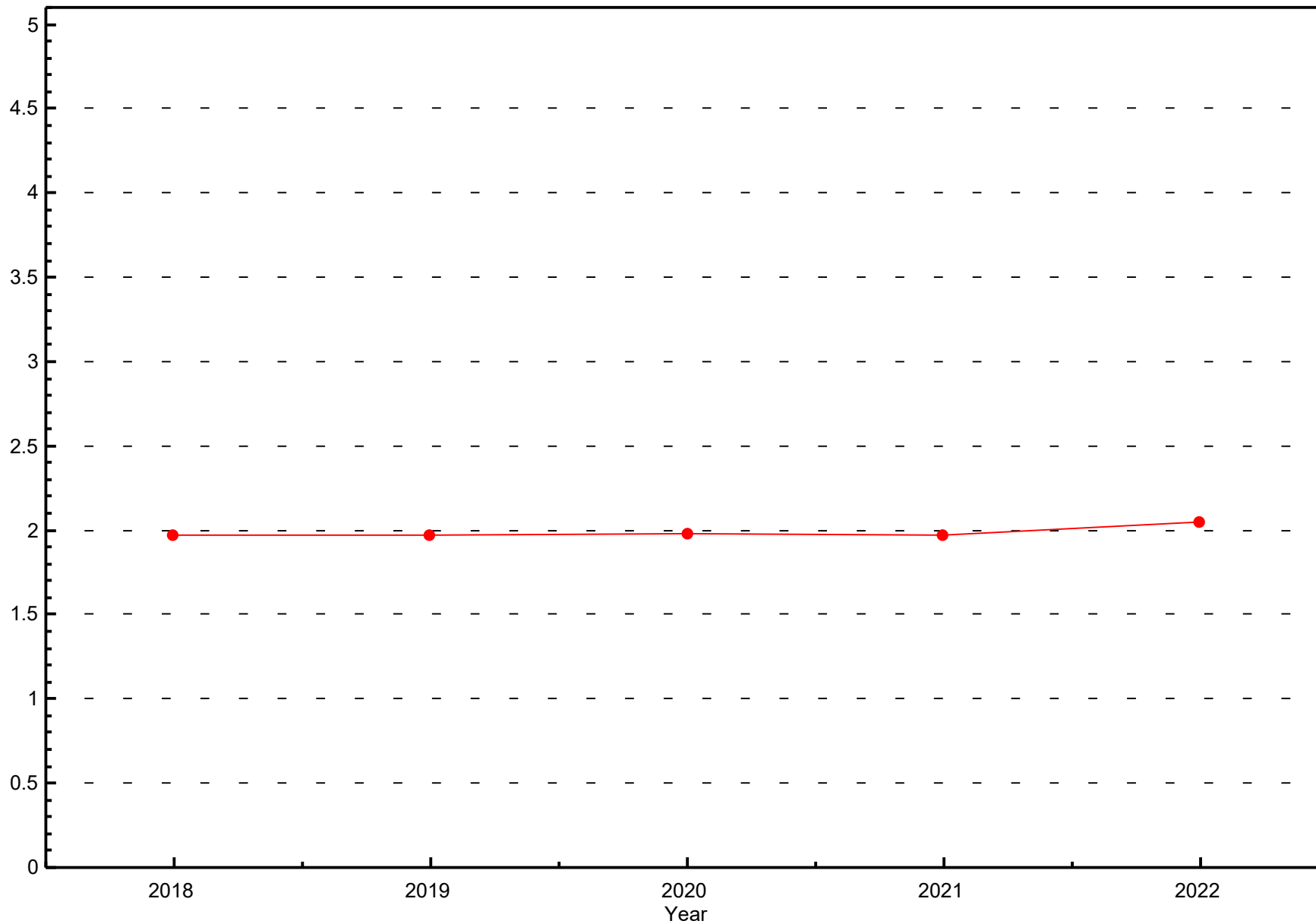
Total Hydrocarbons (THC) - ppm Wapasu (2018 to 2022)





Yearly Averages

Total Hydrocarbons (THC) - ppm Stony Mountain (2018 to 2022)

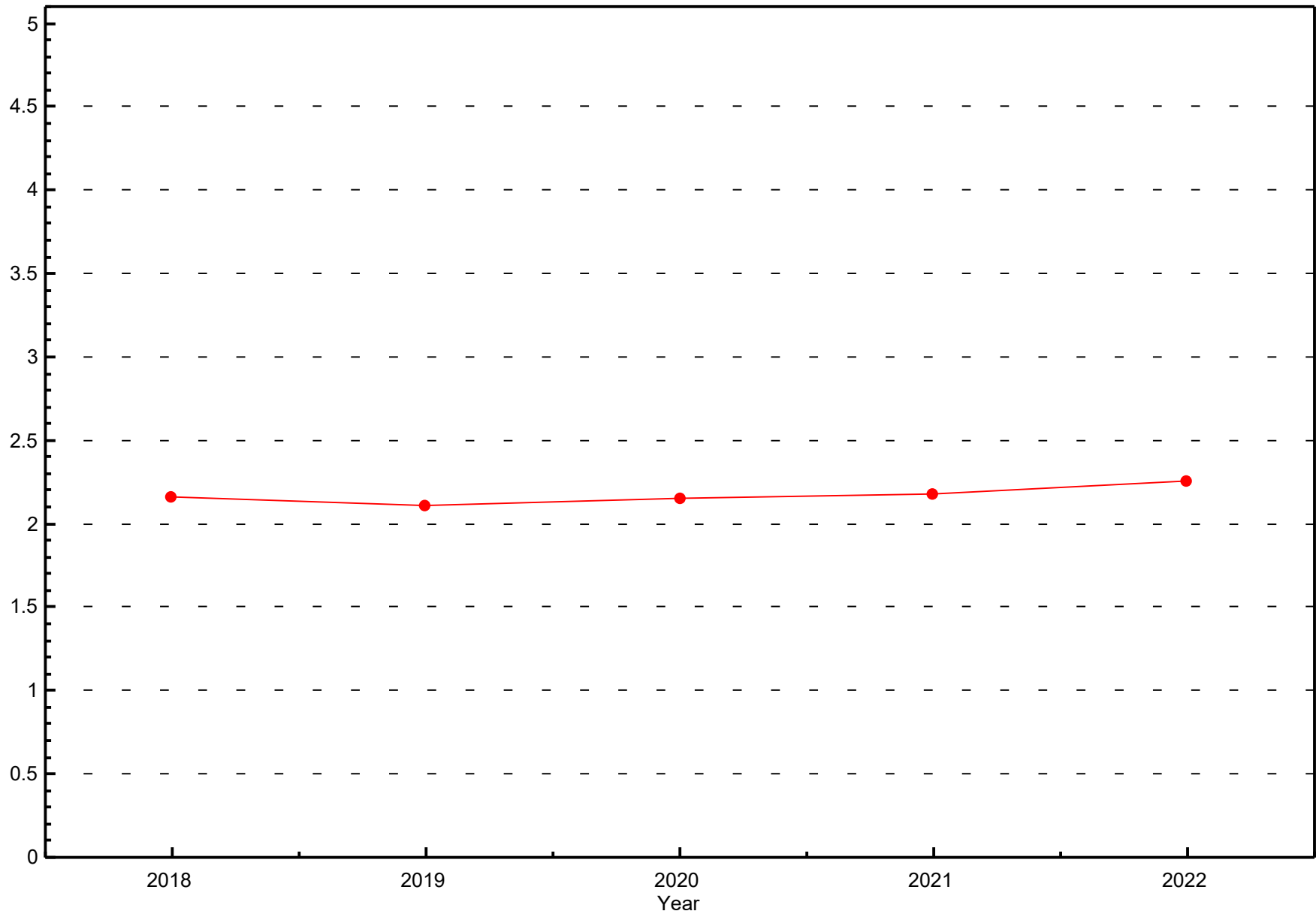




Yearly Averages

Total Hydrocarbons (THC) - ppm

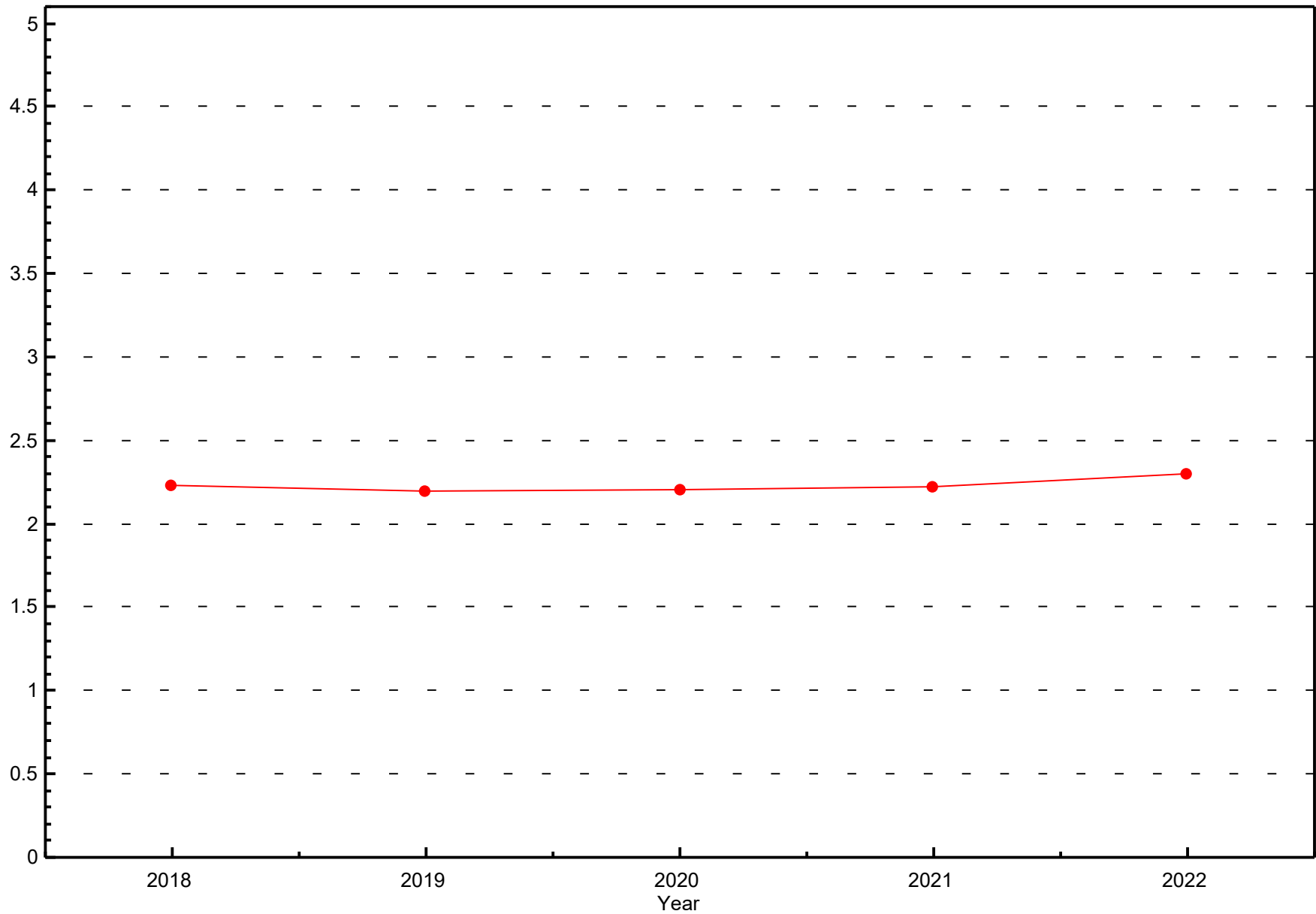
Firebag (2018 to 2022)





Yearly Averages

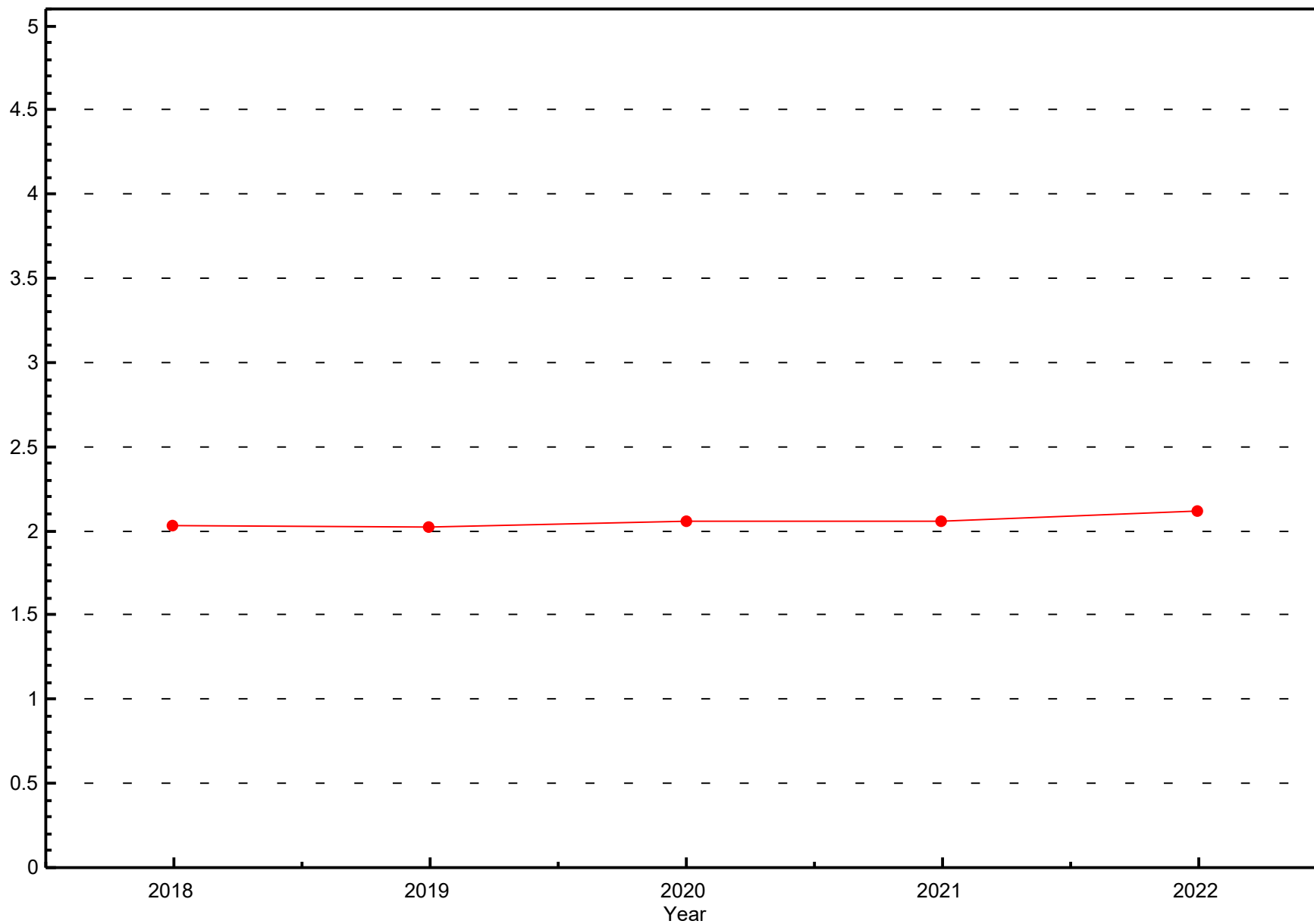
Total Hydrocarbons (THC) - ppm Mackay River (2018 to 2022)





Yearly Averages

Total Hydrocarbons (THC) - ppm
Conklin (2018 to 2022)

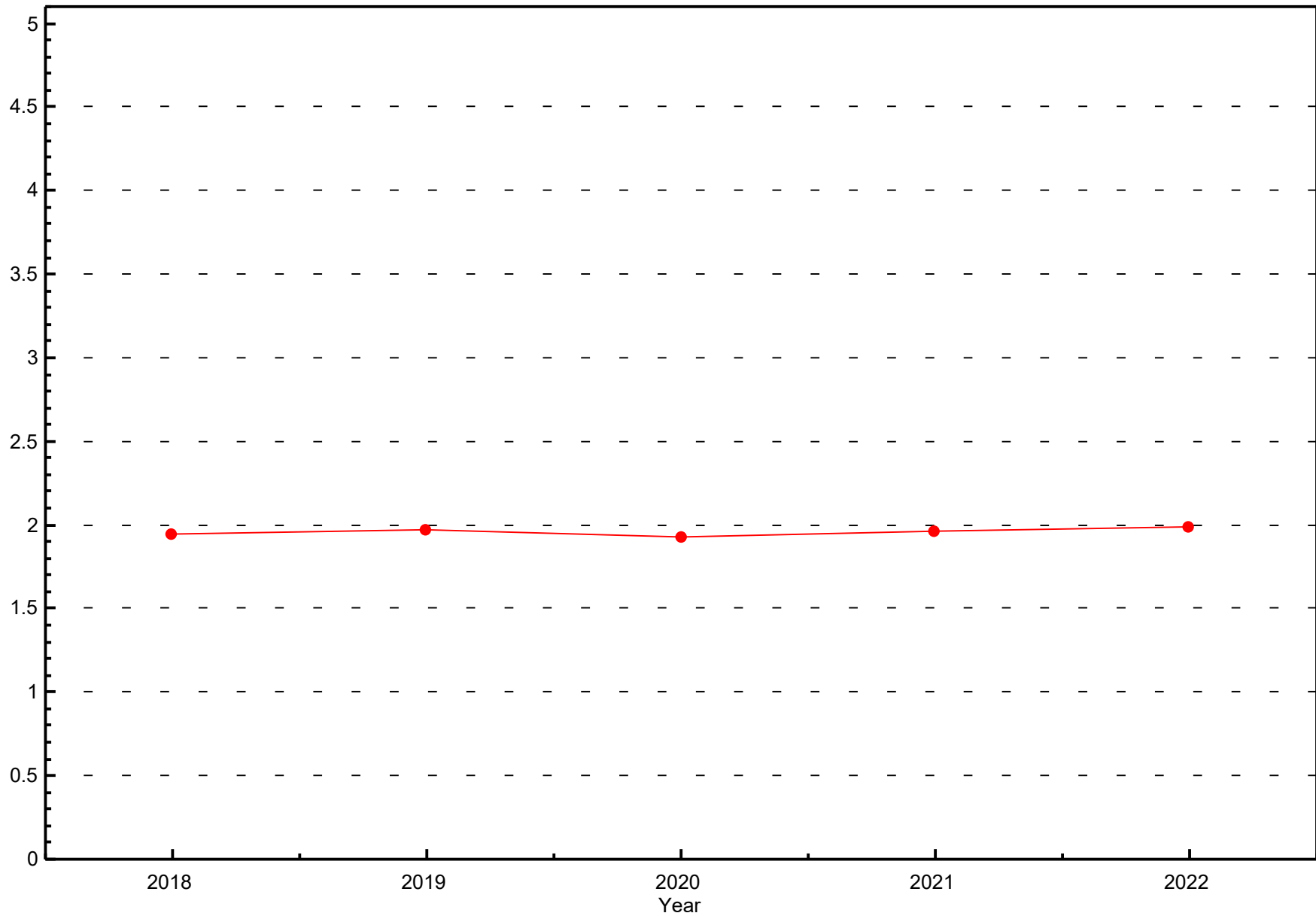




Yearly Averages

Total Hydrocarbons (THC) - ppm

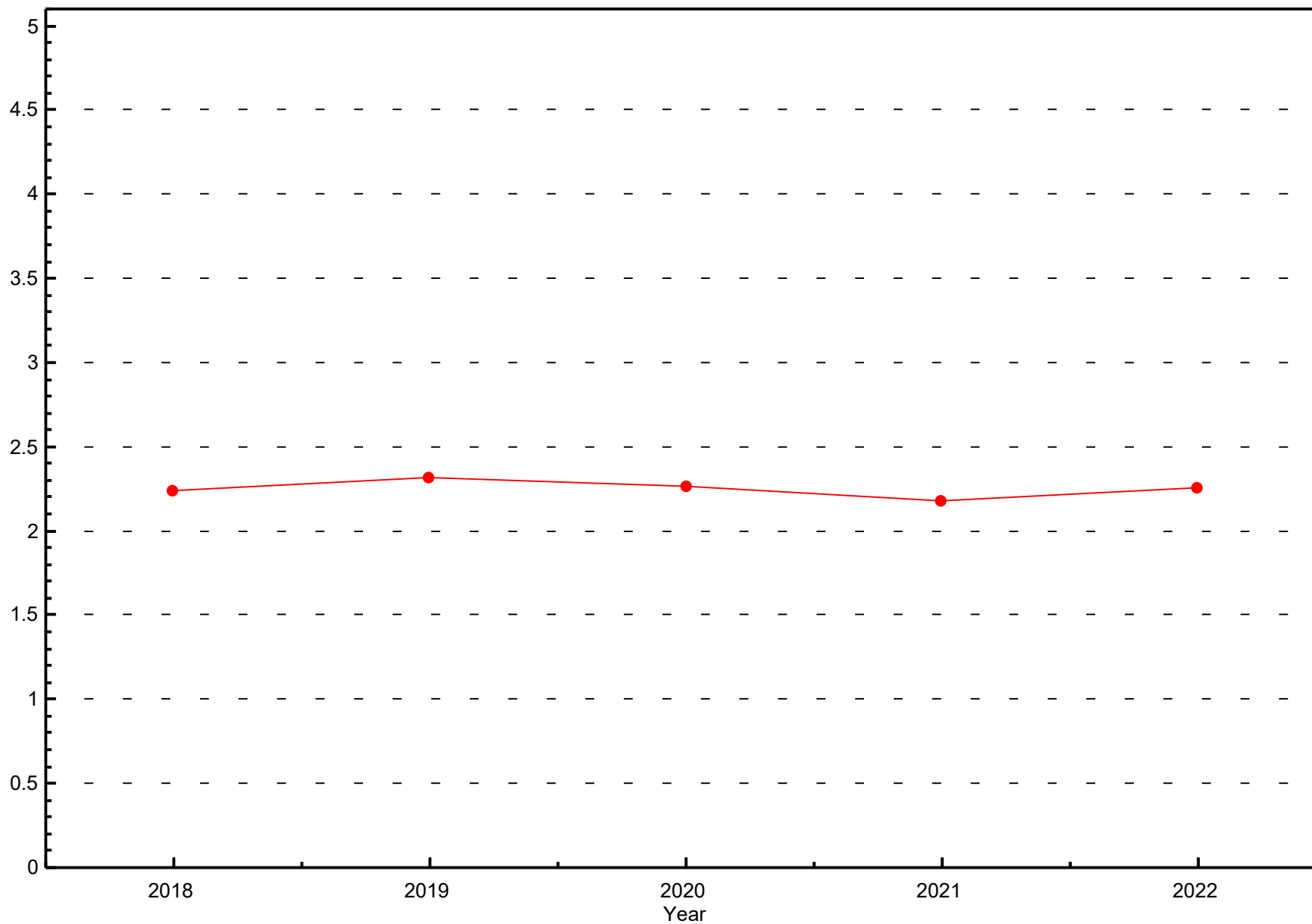
Janvier (2018 to 2022)





Yearly Averages

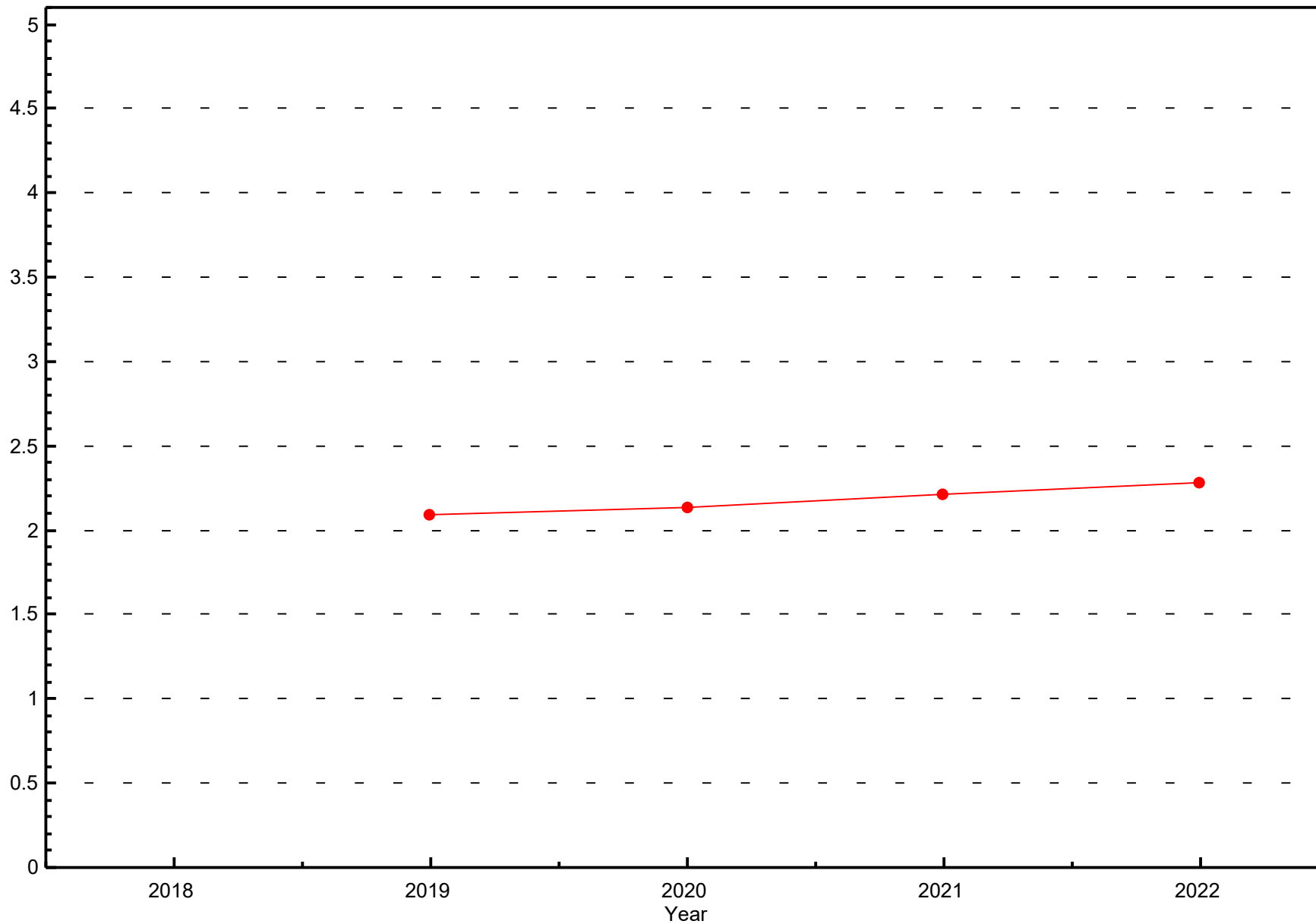
Total Hydrocarbons (THC) - ppm
Fort Hills (2018 to 2022)





Yearly Averages

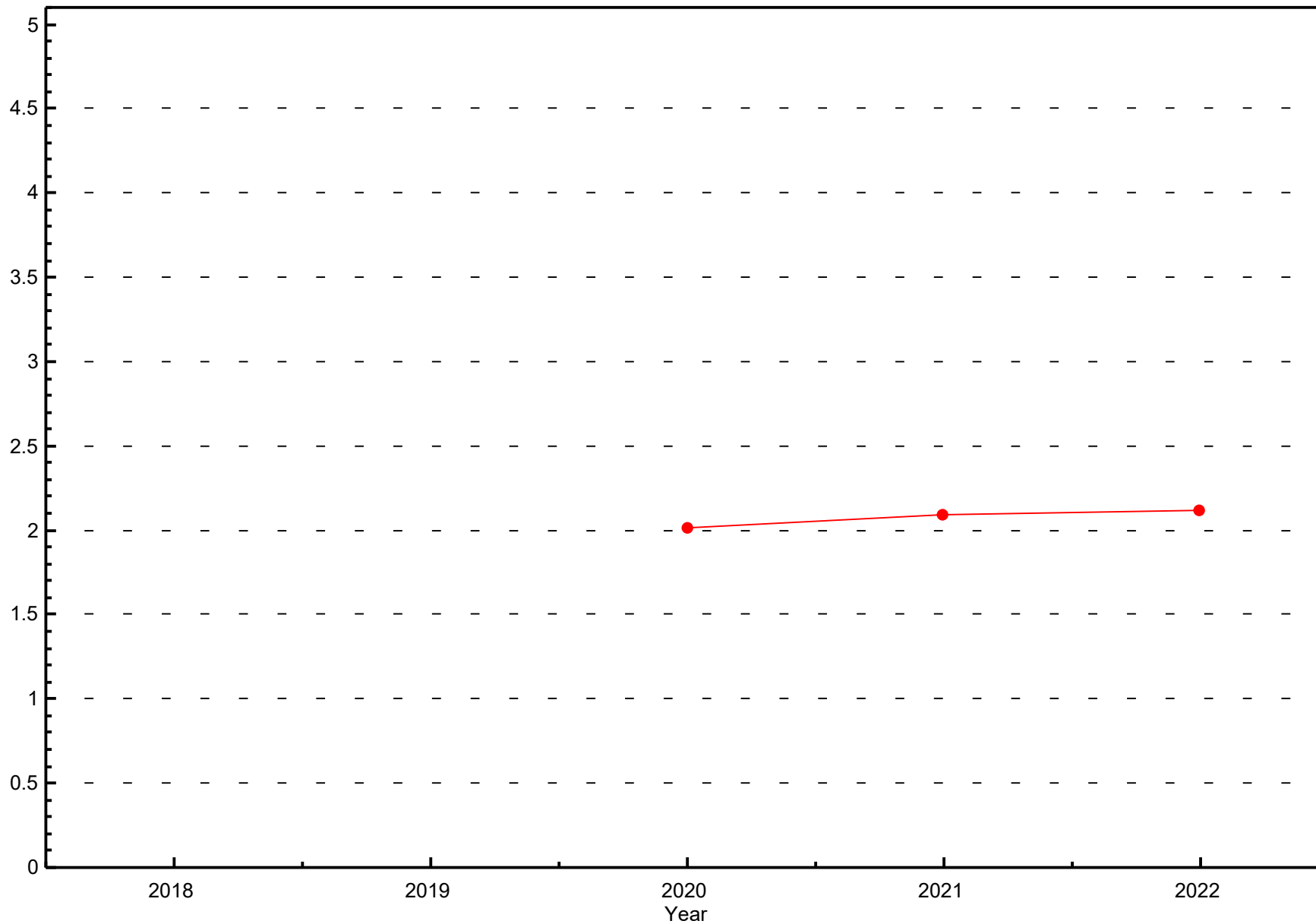
Total Hydrocarbons (THC) - ppm Surmont 2 (2018 to 2022)





Yearly Averages

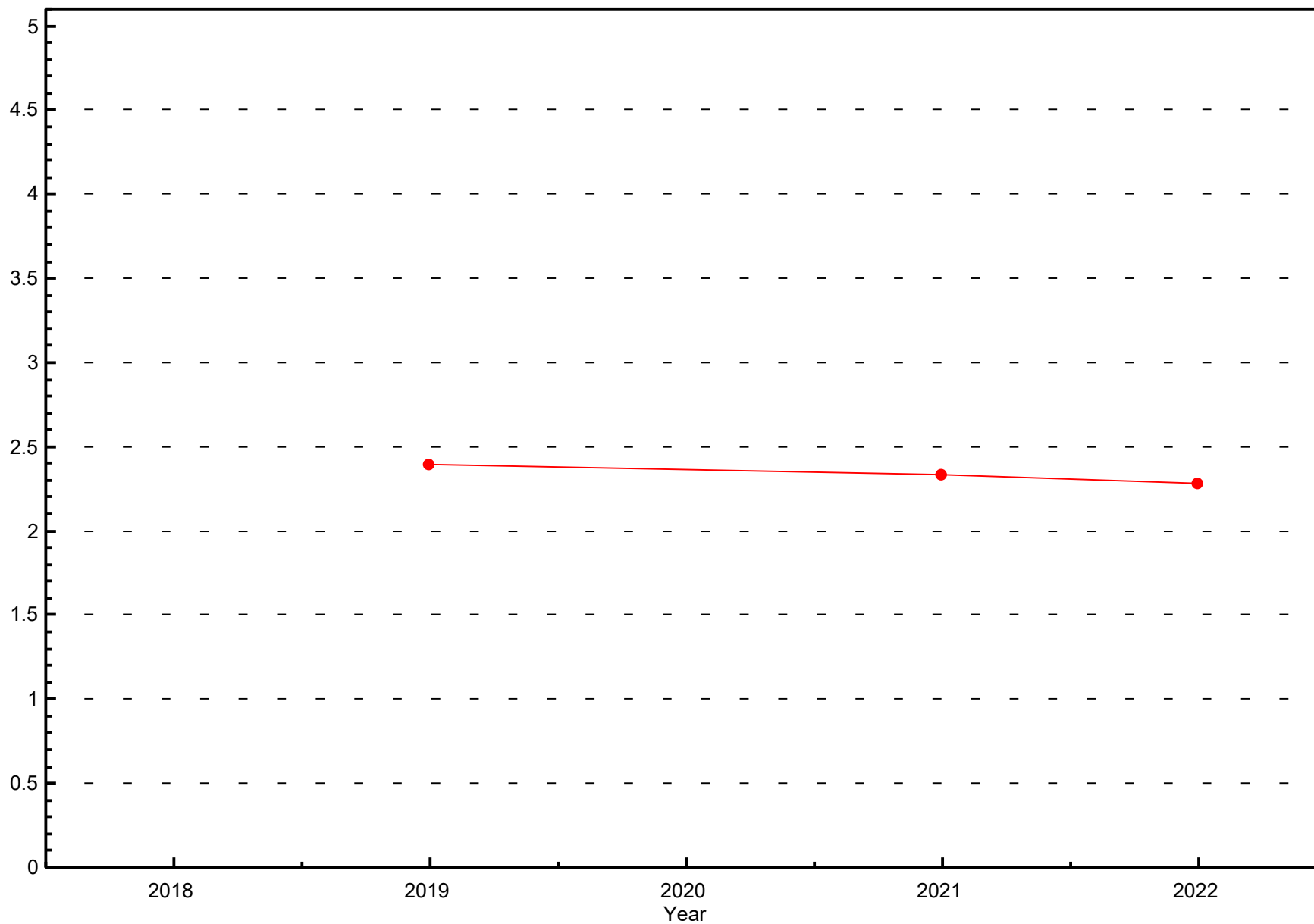
Total Hydrocarbons (THC) - ppm Ells River (2018 to 2022)





Yearly Averages

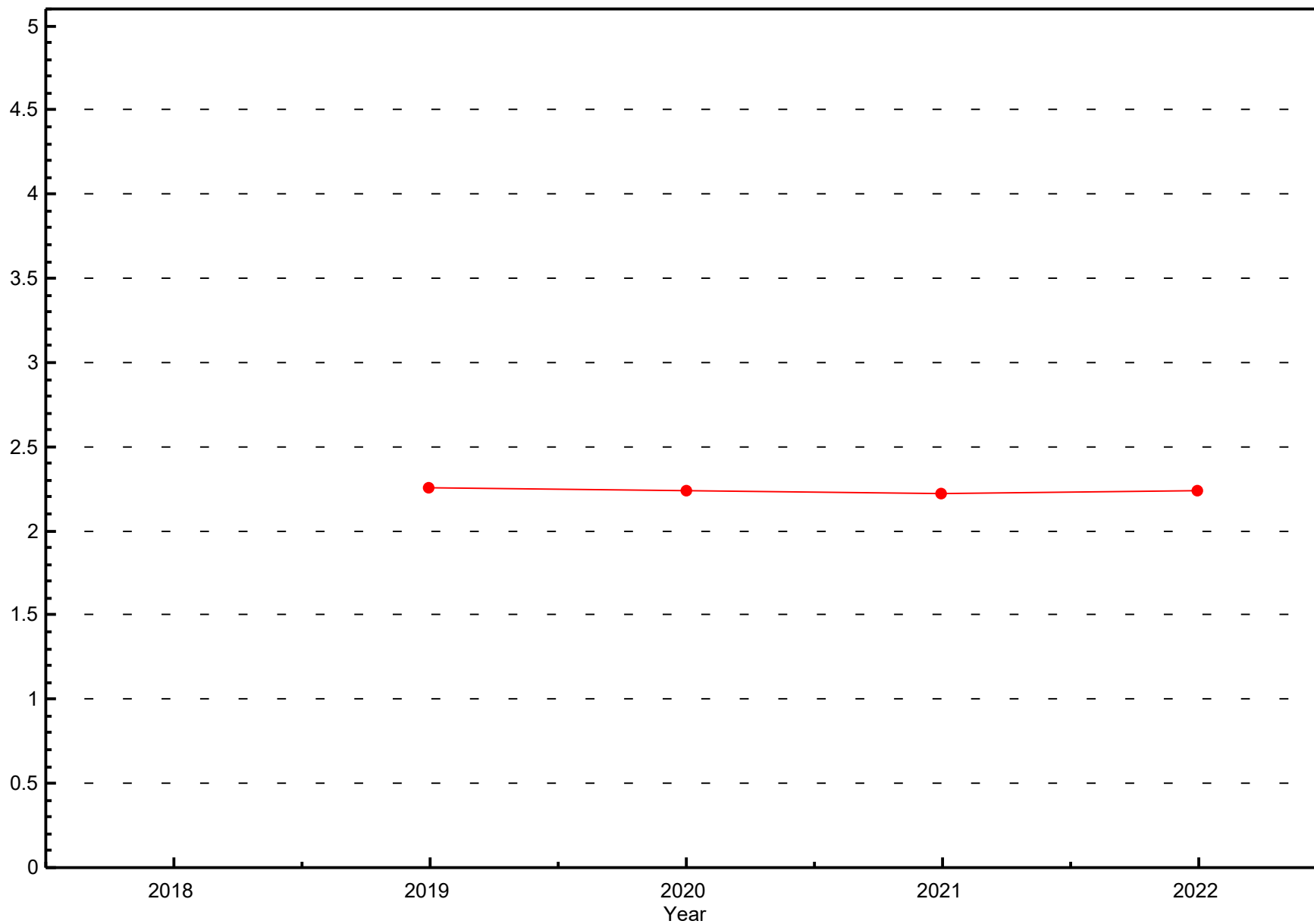
Total Hydrocarbons (THC) - ppm
Kirby South (2018 to 2022)





Yearly Averages

Total Hydrocarbons (THC) - ppm
Kirby North (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

NON-METHANE HYDROCARBONS ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	98	689	0.0691	0.8055	0.2244
February	100	631	0.1135	0.4119	0.1974
March	97	680	0.0927	0.5524	0.2322
April	99	679	0.0269	0.3253	0.0990
May	95	673	0.0233	0.8447	0.0714
June	99	680	0.0334	0.4493	0.1281
July	99	704	0.0249	1.2795	0.0867
August	100	706	0.0439	0.6674	0.1594
September	99	677	0.0436	0.4603	0.1614
October	100	705	0.0351	0.4681	0.1574
November	100	684	0.0229	0.2598	0.1043
December	100	706	0.0322	0.3274	0.1229
Annual	99	8214	0.0463	1.2795	0.2322



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	709	0.0211	0.9712	0.1764
February	100	639	0.0200	0.8776	0.1721
March	99	704	0.0475	1.1537	0.2670
April	100	687	0.0237	1.0693	0.2591
May	100	707	0.0218	0.8268	0.1200
June	100	684	0.0632	1.0625	0.2146
July	97	685	0.0647	1.3459	0.3185
August	97	687	0.0966	1.4271	0.4153
September	91	620	0.0710	0.8345	0.1826
October	98	697	0.0389	2.3558	0.1273
November	56	380	0.0303	0.4630	0.1016
December	100	709	0.0234	0.2820	0.0897
Annual	95	7908	0.0438	2.3558	0.4153



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	710	0.0062	0.1967	0.0833
February	100	640	0.0044	0.3058	0.0300
March	100	710	0.0098	0.3212	0.0854
April	92	623	0.0046	0.5596	0.0281
May	97	684	0.0029	0.1739	0.0150
June	92	615	0.0055	0.2610	0.0349
July	100	709	0.0029	0.5068	0.0290
August	100	709	0.0044	0.2378	0.0306
September	100	686	0.0031	0.1902	0.0287
October	100	708	0.0013	0.2153	0.0281
November	100	686	0.0005	0.1180	0.0057
December	100	707	0.0006	0.1408	0.0120
Annual	98	8187	0.0038	0.5596	0.0854



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	709	0.0409	0.7753	0.2889
February	96	611	0.0348	0.3378	0.1704
March	100	708	0.0510	0.8378	0.2191
April	100	680	0.0659	1.2107	0.2382
May	100	707	0.0712	2.2756	0.2610
June	100	686	0.0874	0.9770	0.2243
July	99	703	0.0641	0.6846	0.1462
August	100	707	0.0645	1.0871	0.2578
September	97	669	0.0458	1.1552	0.1856
October	100	707	0.0312	0.9445	0.2178
November	97	662	0.0184	0.9616	0.1532
December	98	694	0.0302	2.7346	0.2768
Annual	99	8243	0.0507	2.7346	0.2889



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	710	0.0028	0.2279	0.0434
February	100	640	0.0015	0.1019	0.0096
March	100	706	0.0035	0.2861	0.0528
April	100	684	0.0016	0.1533	0.0338
May	100	706	0.0006	0.0688	0.0042
June	100	685	0.0002	0.0385	0.0018
July	100	709	0.0003	0.0415	0.0035
August	100	709	0.0011	0.0833	0.0089
September	100	683	0.0021	0.1927	0.0347
October	99	705	0.0012	0.1712	0.0173
November	100	686	0.0009	0.3179	0.0141
December	100	709	0.0031	0.1875	0.0483
Annual	100	8332	0.0016	0.3179	0.0528



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	704	0.0389	0.5647	0.4270
February	100	640	0.0290	0.6066	0.2714
March	100	708	0.0372	0.7313	0.3364
April	100	686	0.0142	0.2764	0.0662
May	100	709	0.0114	0.3700	0.0675
June	99	684	0.0269	0.3004	0.0735
July	95	666	0.0279	0.3898	0.0768
August	86	609	0.0366	0.2691	0.0998
September	100	685	0.0136	1.1535	0.1084
October	100	710	0.0070	0.3830	0.0312
November	100	685	0.0092	0.4107	0.0628
December	100	709	0.0135	0.6120	0.0661
Annual	98	8195	0.0219	1.1535	0.4270



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	708	0.0436	0.4503	0.1532
February	95	605	0.0416	0.4602	0.1584
March	100	708	0.0724	1.4548	0.3187
April	99	677	0.0353	1.4495	0.1491
May	92	651	0.0213	0.6486	0.1071
June	99	681	0.0239	0.4078	0.1132
July	99	703	0.0145	0.3710	0.0426
August	99	702	0.0227	0.4218	0.0808
September	99	682	0.0186	0.4658	0.1126
October	100	709	0.0071	0.3148	0.0743
November	100	683	0.0033	0.2806	0.0223
December	97	685	0.0053	0.2588	0.0424
Annual	98	8194	0.0257	1.4548	0.3187



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	99	700	0.0297	0.6907	0.0819
February	100	637	0.0410	1.1452	0.2062
March	100	707	0.0359	0.2894	0.1076
April	100	682	0.0191	0.2848	0.0851
May	99	702	0.0180	0.1859	0.0505
June	100	686	0.0390	0.1882	0.0771
July	100	709	0.0495	0.1998	0.0873
August	99	699	0.0327	0.2008	0.0792
September	100	683	0.0190	0.2978	0.0999
October	100	707	0.0088	0.1587	0.0603
November	94	647	0.0049	0.1813	0.0450
December	100	707	0.0044	0.1777	0.0287
Annual	99	8266	0.0252	1.1452	0.2062



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	709	0.0431	0.5457	0.1530
February	100	640	0.0336	0.2816	0.1223
March	100	709	0.0756	1.1949	0.3232
April	96	661	0.0297	0.3653	0.1104
May	100	709	0.0378	0.6175	0.1538
June	93	637	0.0721	0.4533	0.1714
July	93	657	0.0007	0.1104	0.0071
August	100	709	0.0015	0.2236	0.0225
September	100	686	0.0010	0.1363	0.0131
October	100	710	0.0007	0.1400	0.0200
November	100	684	0.0004	0.1444	0.0072
December	100	709	0.0006	0.0792	0.0071
Annual	98	8220	0.0245	1.1949	0.3232



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	708	0.0004	0.1842	0.0080
February	99	635	0.0012	0.2138	0.0093
March	100	710	0.0002	0.0569	0.0025
April	100	687	0.0000	0.0124	0.0005
May	99	704	0.0000	0.0203	0.0009
June	100	687	0.0001	0.0280	0.0012
July	99	701	0.0005	0.1173	0.0085
August	75	526	0.0003	0.0337	0.0027
September	100	684	0.0007	0.0857	0.0086
October	99	705	0.0009	0.1742	0.0099
November	79	540	0.0007	0.0768	0.0051
December	100	709	0.0046	0.4235	0.0434
Annual	96	7996	0.0008	0.4235	0.0434



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	63	442	0.0000	0.0046	0.0002
February	97	618	0.0001	0.0235	0.0013
March	100	708	0.0001	0.0113	0.0005
April	99	678	0.0001	0.0334	0.0015
May	100	709	0.0002	0.0342	0.0024
June	93	639	0.0000	0.0097	0.0004
July	100	709	0.0005	0.1508	0.0102
August	93	660	0.0007	0.1330	0.0080
September	100	687	0.0013	0.2110	0.0255
October	100	710	0.0001	0.0162	0.0010
November	100	684	0.0001	0.0291	0.0015
December	100	709	0.0002	0.0394	0.0020
Annual	95	7953	0.0003	0.2110	0.0255



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	710	0.0009	0.2549	0.0131
February	99	633	0.0001	0.0083	0.0011
March	90	626	0.0029	0.1348	0.0164
April	100	685	0.0072	0.0513	0.0113
May	100	708	0.0066	0.1027	0.0176
June	97	662	0.0292	0.2241	0.0914
July	98	693	0.0604	0.2344	0.1341
August	99	706	0.0822	0.2728	0.1390
September	99	684	0.0287	0.3403	0.1320
October	93	659	0.0069	0.1144	0.0297
November	99	676	0.0024	0.0715	0.0281
December	99	704	0.0069	0.1024	0.0721
Annual	98	8146	0.0199	0.3403	0.1390



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99	706	0.0001	0.0140	0.0006
February	98	629	0.0010	0.4457	0.0194
March	99	704	0.0005	0.1393	0.0081
April	99	677	0.0000	0.0032	0.0001
May	99	705	0.0000	0.0213	0.0009
June	100	685	0.0002	0.0717	0.0031
July	100	705	0.0003	0.1209	0.0073
August	99	703	0.0013	0.1070	0.0077
September	94	647	0.0019	0.2681	0.0304
October	99	703	0.0001	0.0105	0.0005
November	100	682	0.0001	0.0379	0.0016
December	100	707	0.0003	0.0333	0.0016
Annual	99	8253	0.0005	0.4457	0.0304



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	710	0.0800	0.5449	0.2812
February	100	639	0.0878	0.4849	0.2026
March	100	706	0.1275	1.4828	0.5115
April	100	685	0.0926	2.5782	0.3626
May	100	707	0.1147	1.3380	0.3046
June	99	683	0.0960	1.2916	0.3202
July	100	708	0.0947	1.3167	0.2529
August	100	706	0.0950	0.8210	0.3162
September	100	686	0.1081	0.9495	0.3924
October	100	707	0.1084	1.6170	0.4767
November	100	685	0.0681	0.7000	0.2954
December	99	705	0.0470	0.4151	0.1493
Annual	100	8327	0.0934	2.5782	0.5115



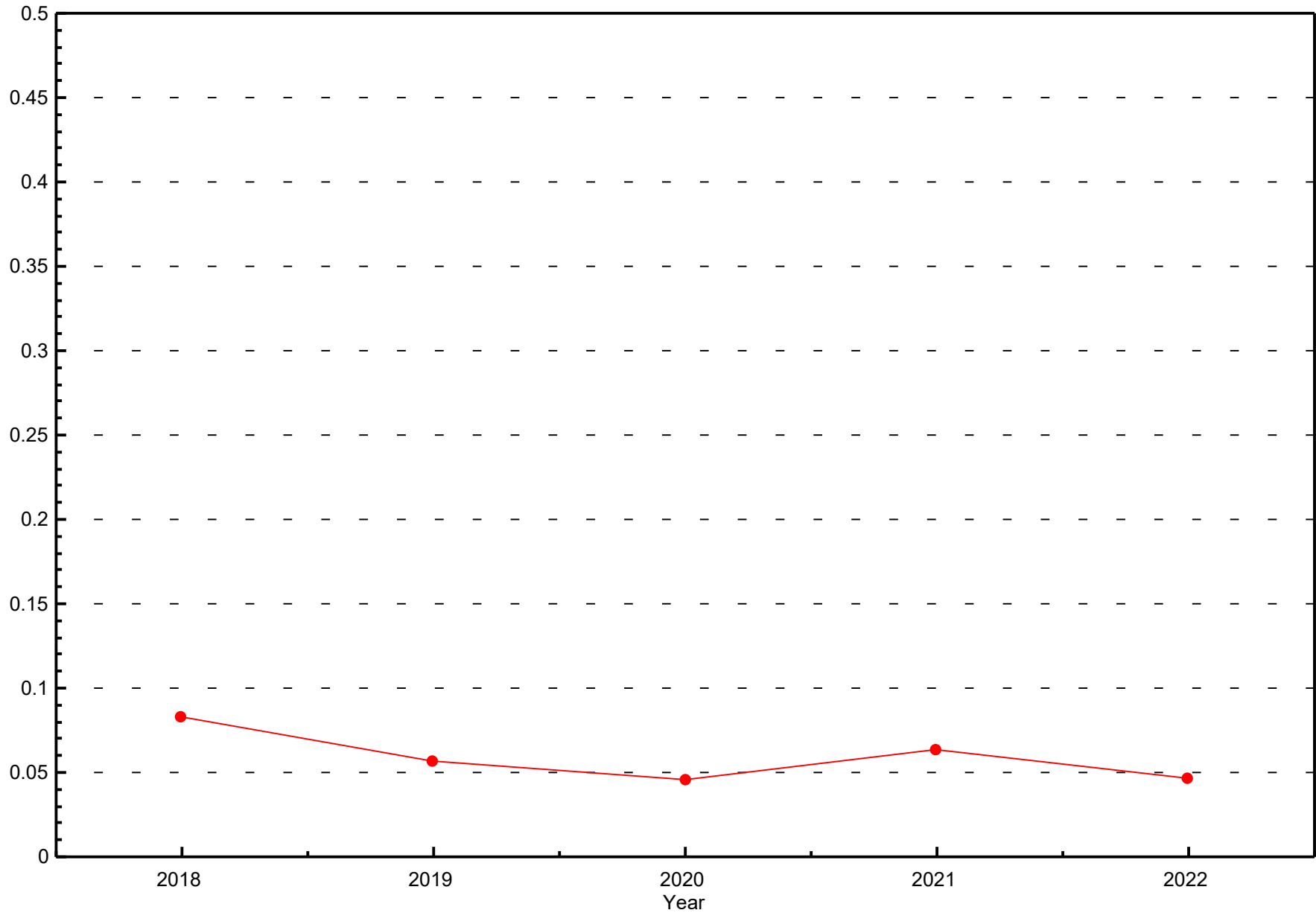
Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Non Methane Hydrocarbons (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	709	0.0403	0.4039	0.1482
February	100	639	0.0375	0.3804	0.1624
March	100	709	0.0602	0.6594	0.1829
April	98	673	0.0251	0.3681	0.0961
May	100	709	0.0309	0.4861	0.1645
June	98	673	0.0416	0.6669	0.1229
July	94	666	0.0384	0.6231	0.1121
August	100	710	0.0488	0.6973	0.2157
September	100	687	0.0539	0.8332	0.2314
October	100	708	0.0381	0.4760	0.1386
November	100	686	0.0324	0.4842	0.1372
December	98	690	0.0284	0.3349	0.1092
Annual	99	8259	0.0397	0.8332	0.2314



Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay - Bertha Ganter (2018 to 2022)

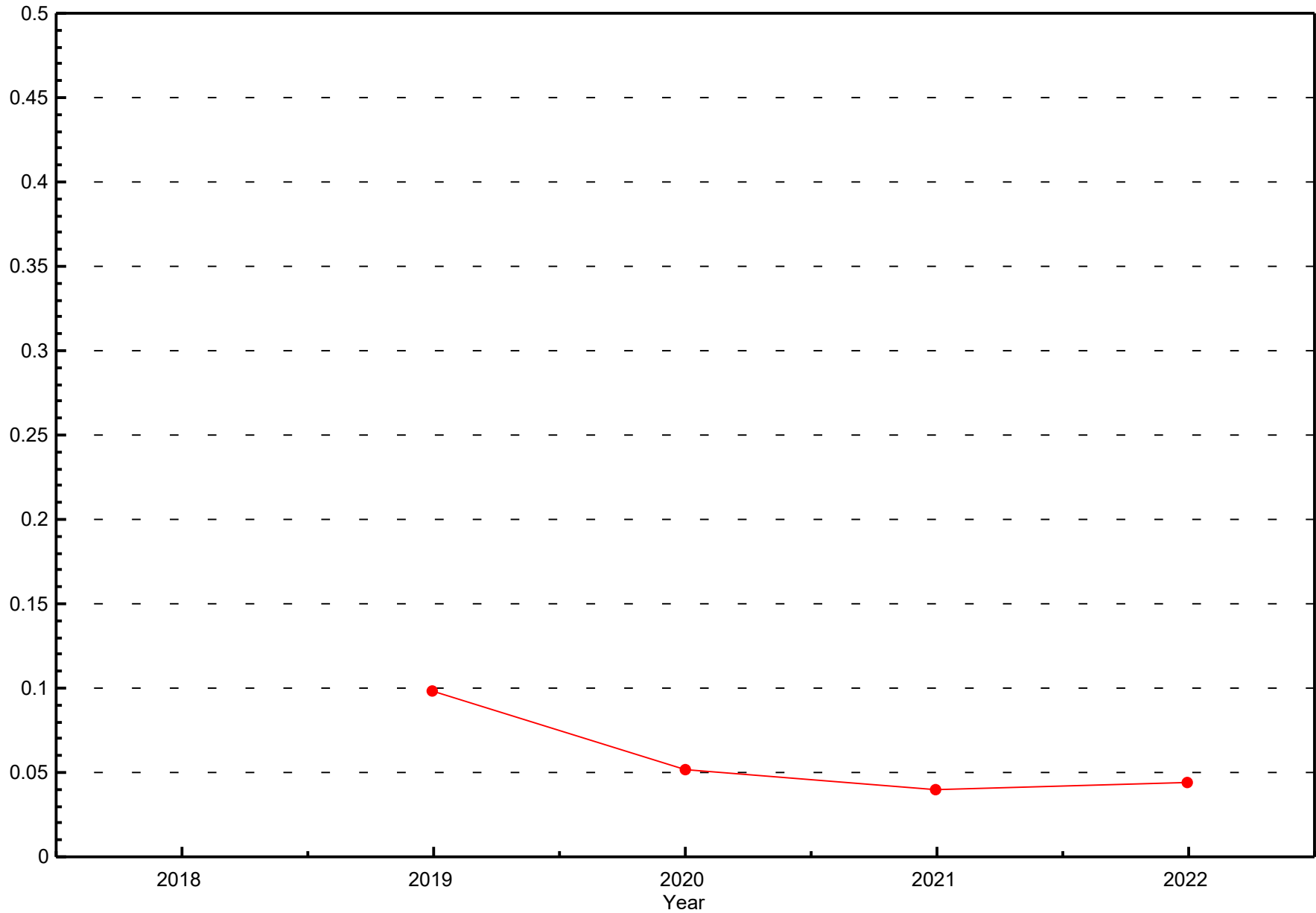




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Mildred Lake (2018 to 2022)

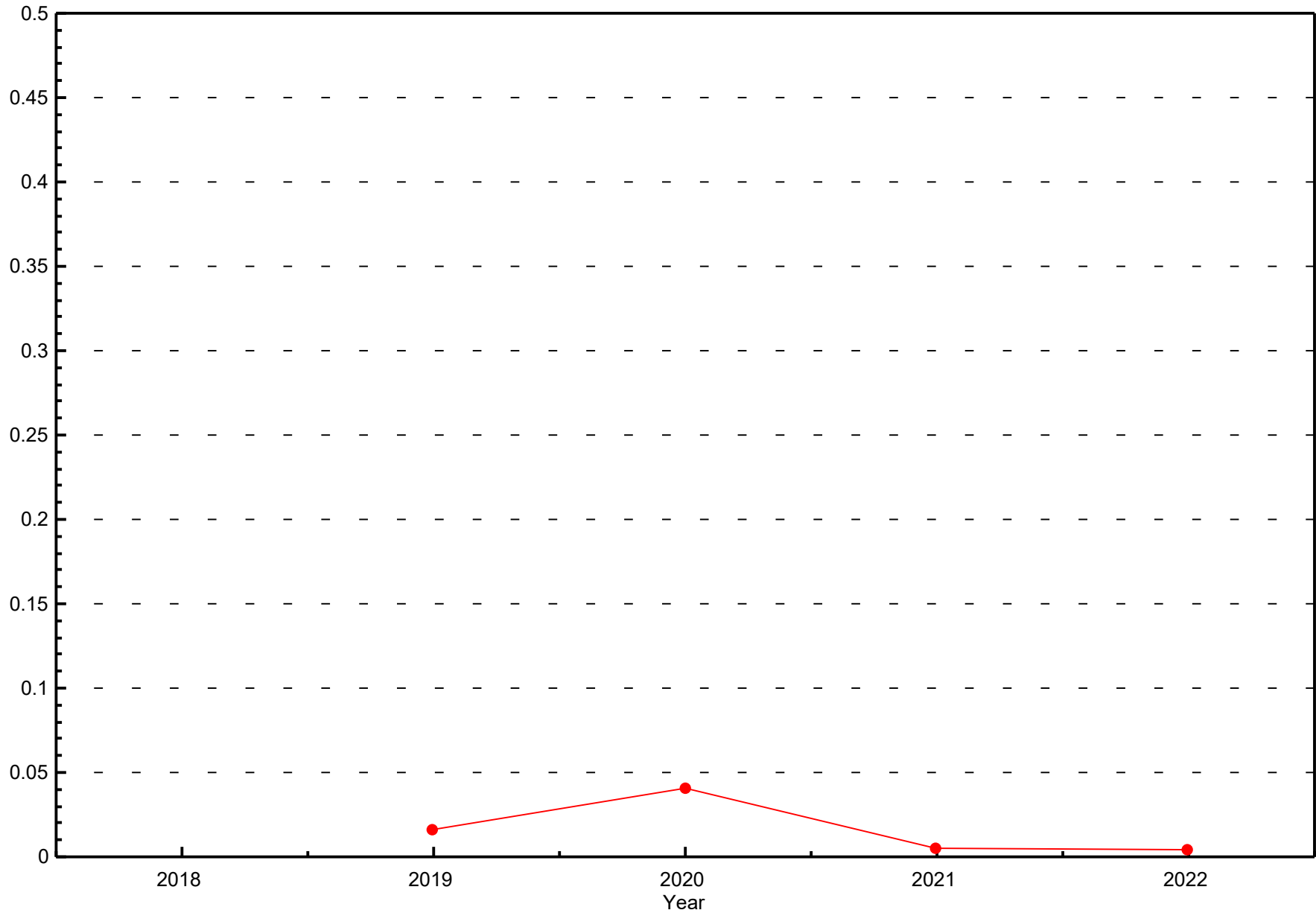




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Buffalo Viewpoint (2018 to 2022)

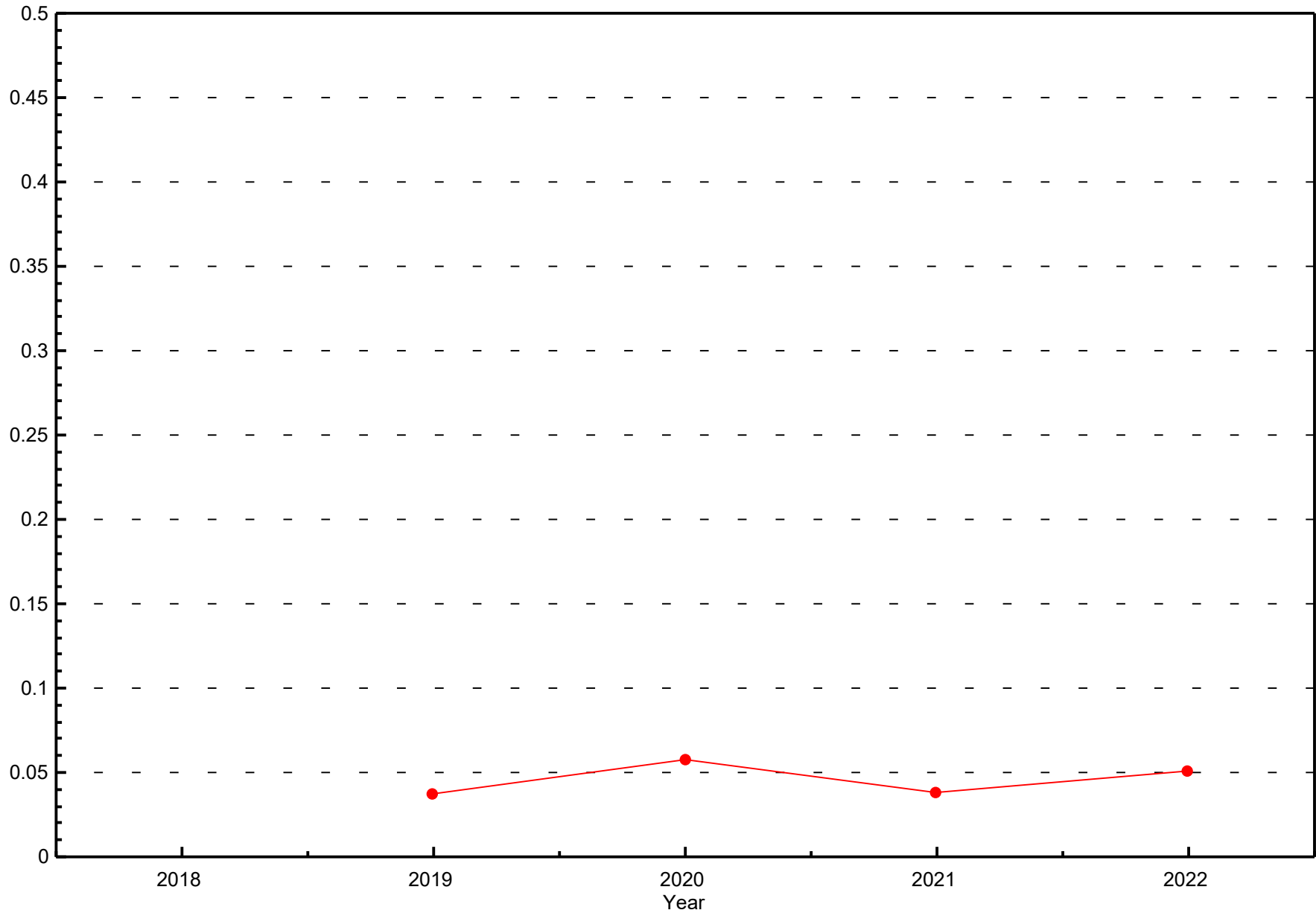




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Mannix (2018 to 2022)

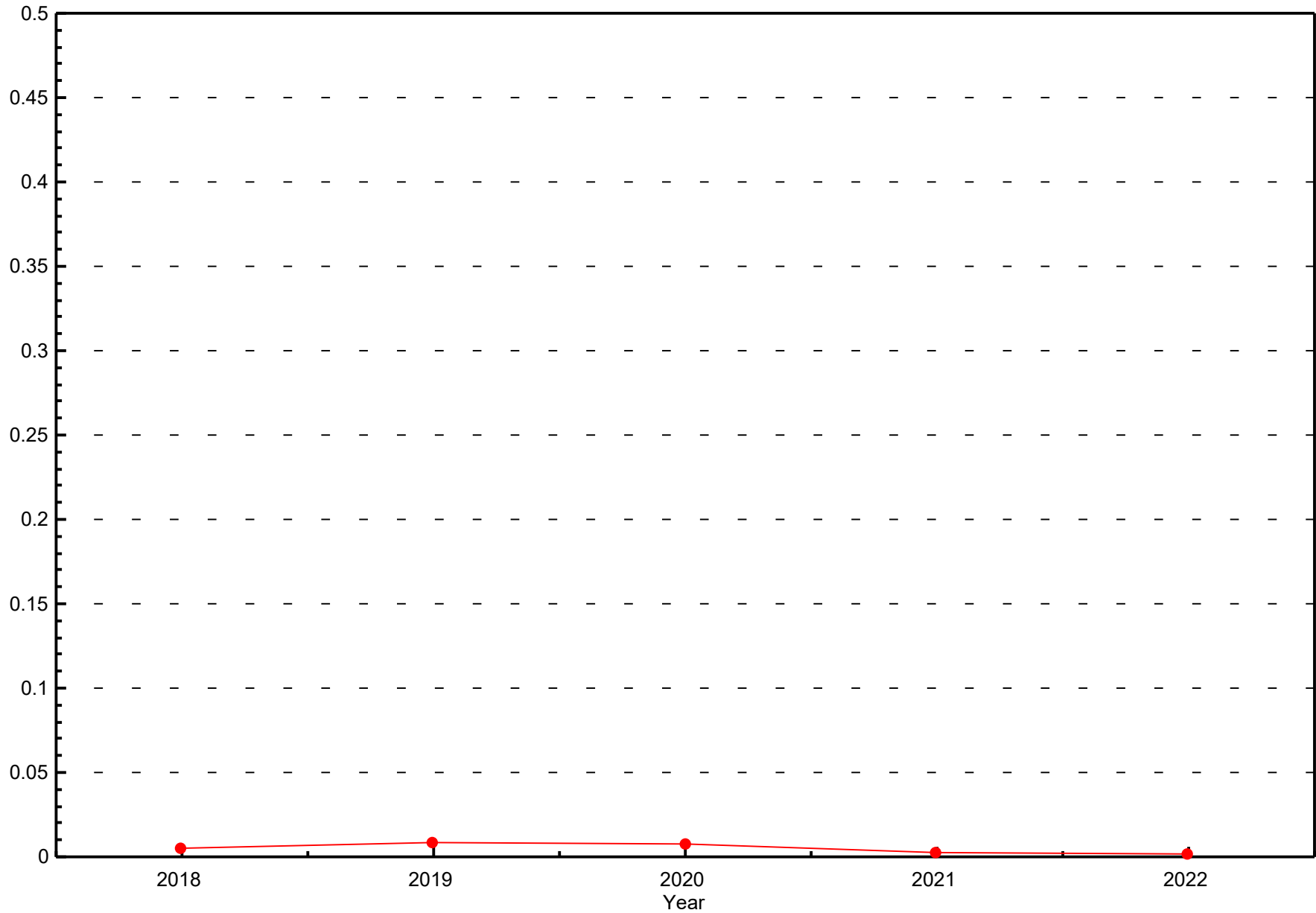




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

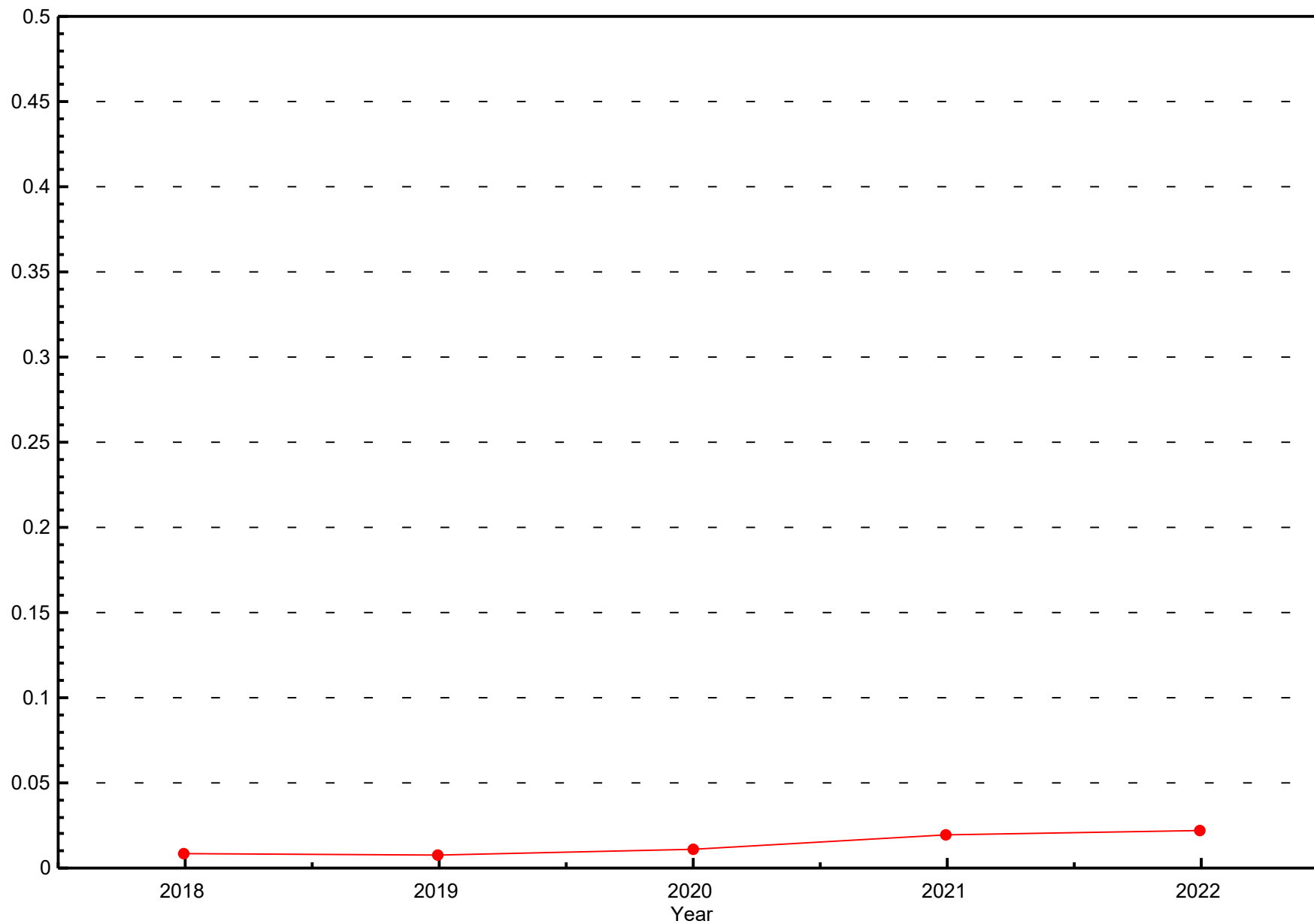
Patricia McInnes (2018 to 2022)





Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm Athabasca Valley (2018 to 2022)

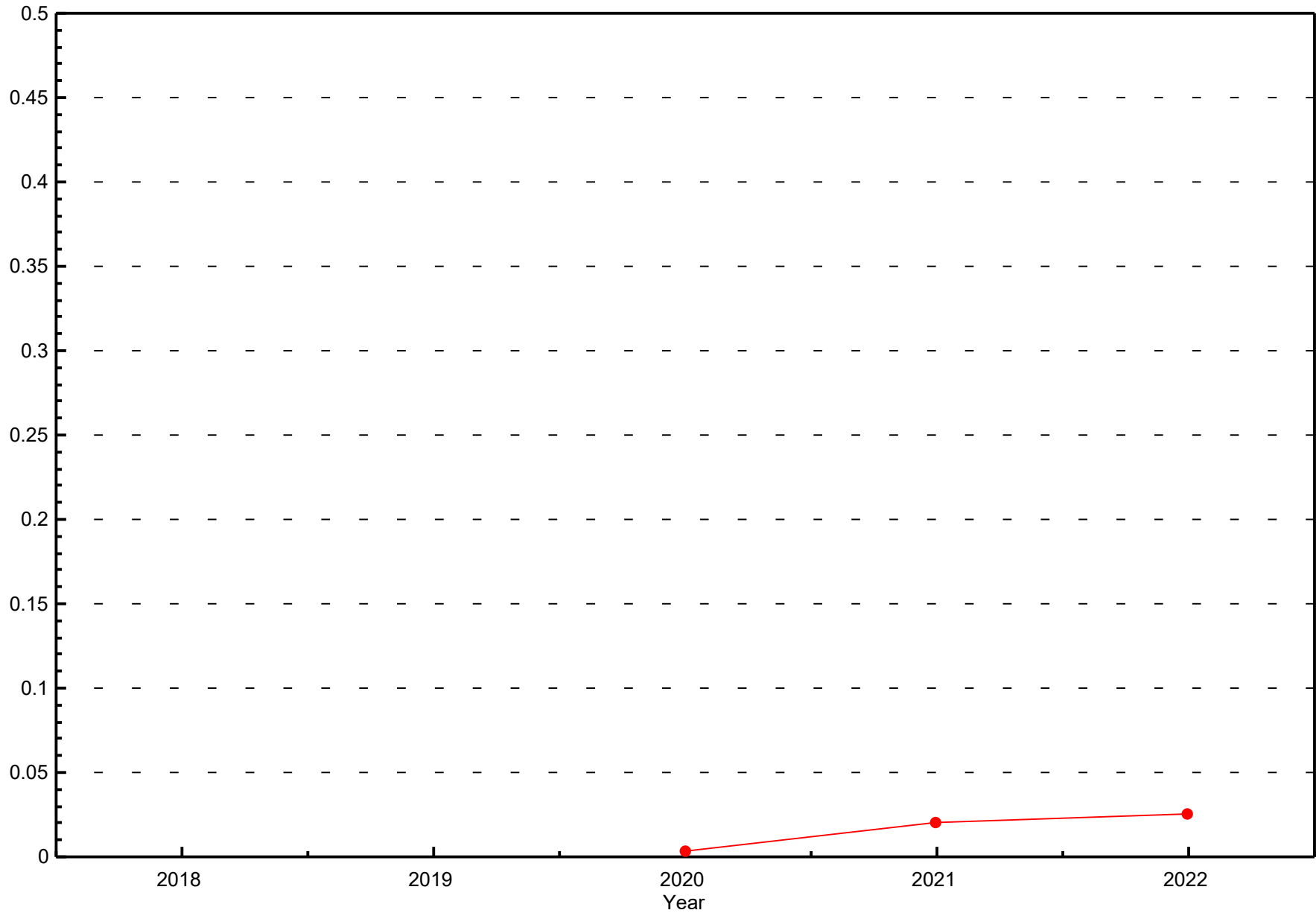




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing (2018 to 2022)

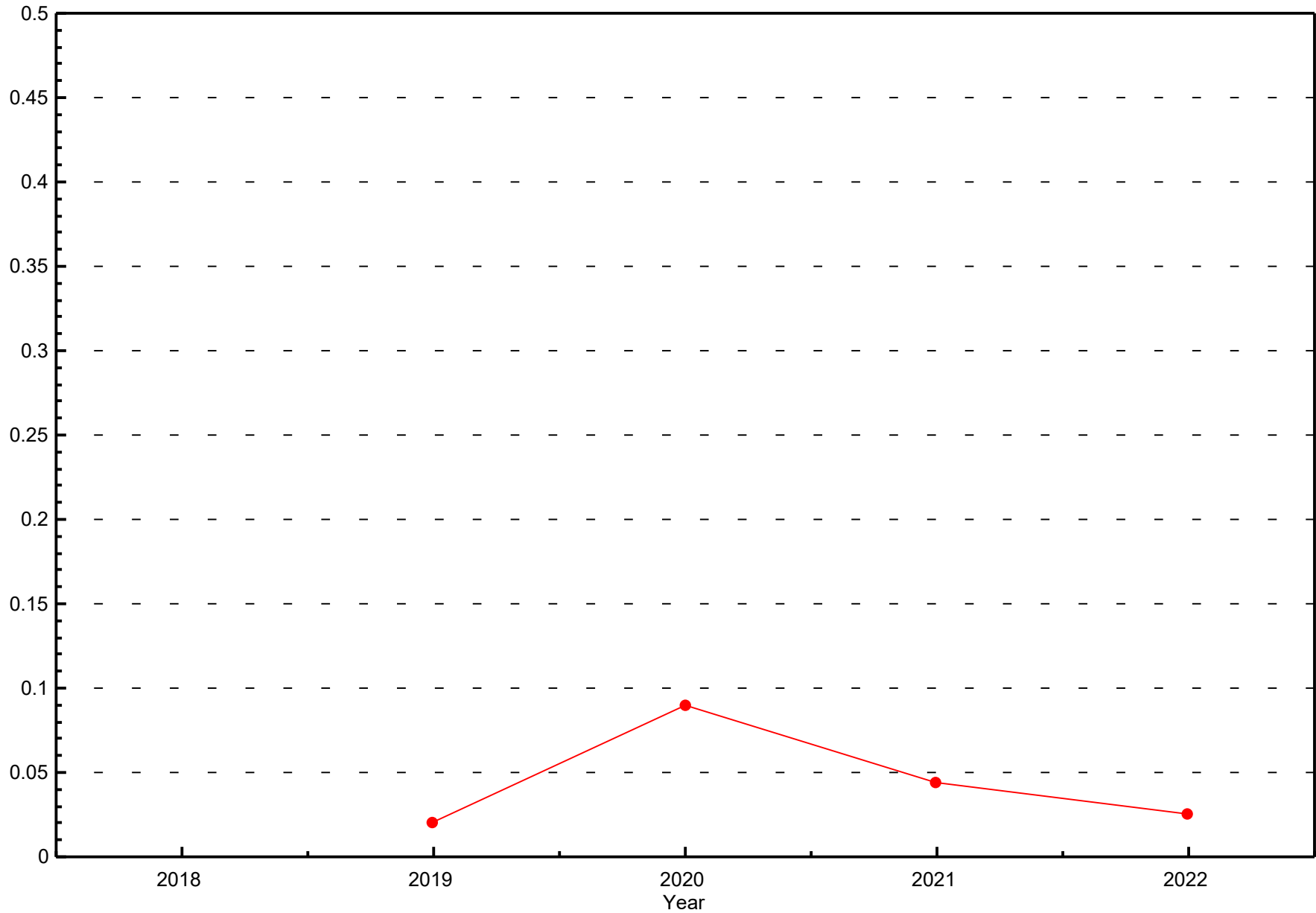




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp (2018 to 2022)

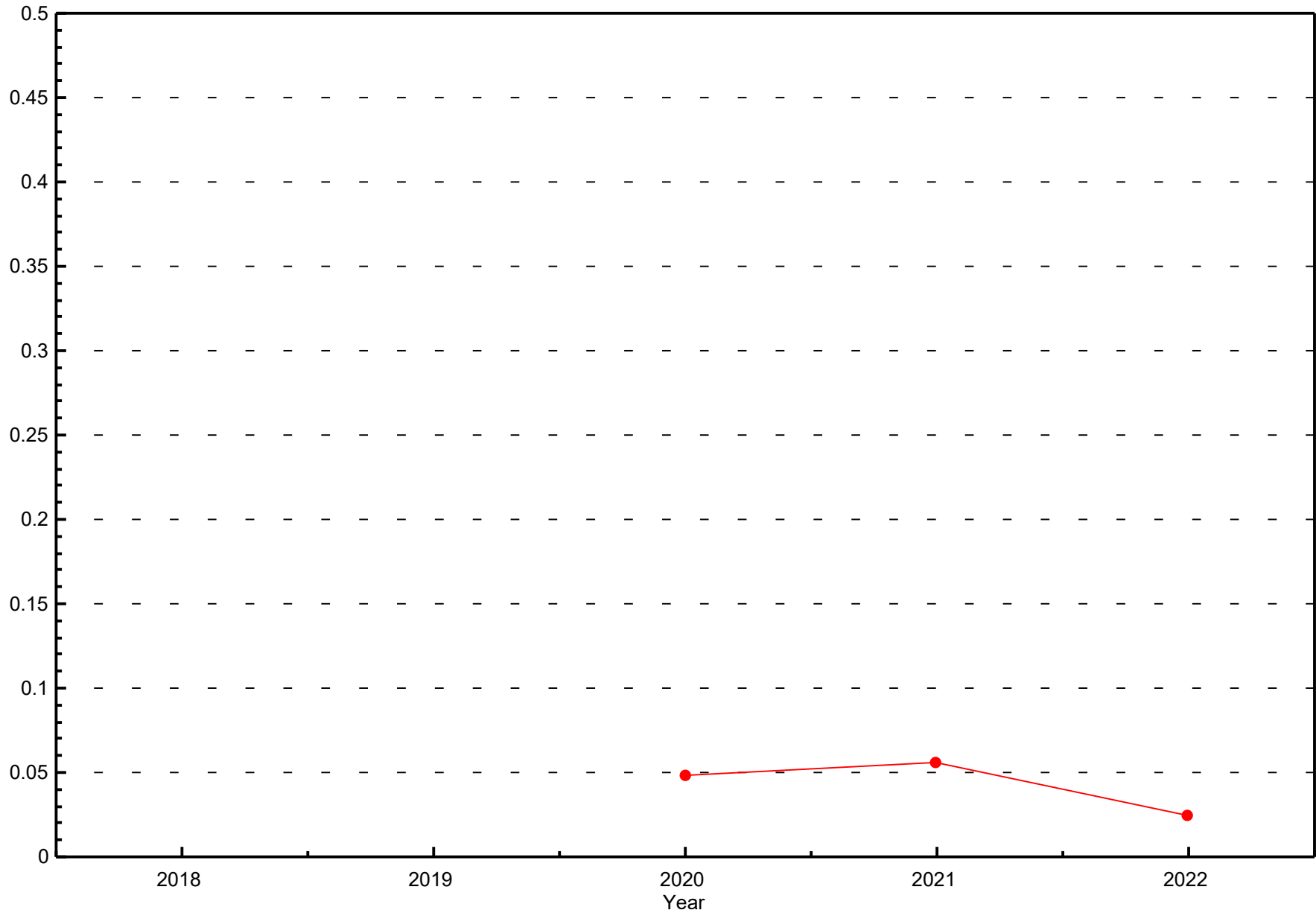




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South (2018 to 2022)

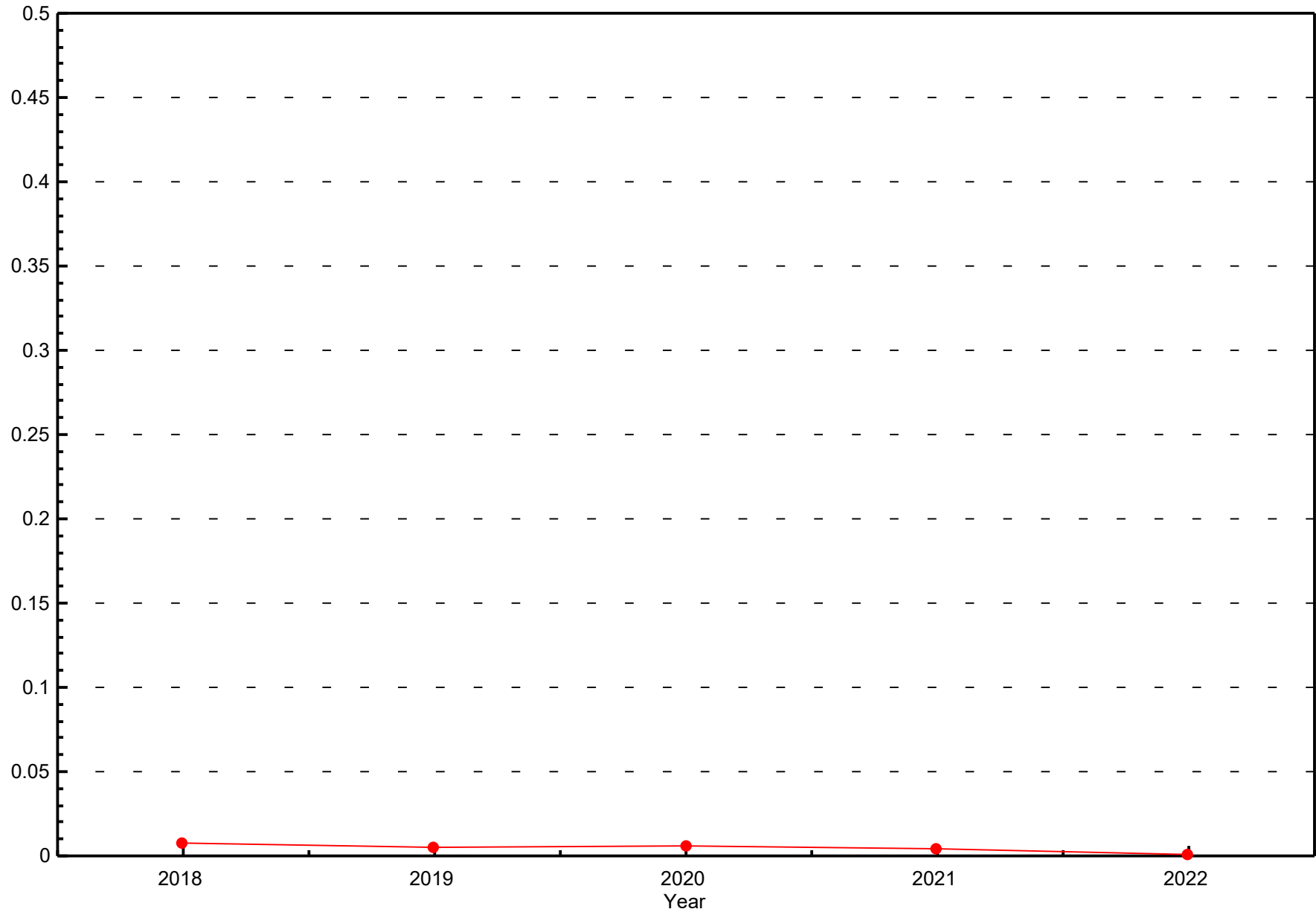




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Anzac (2018 to 2022)

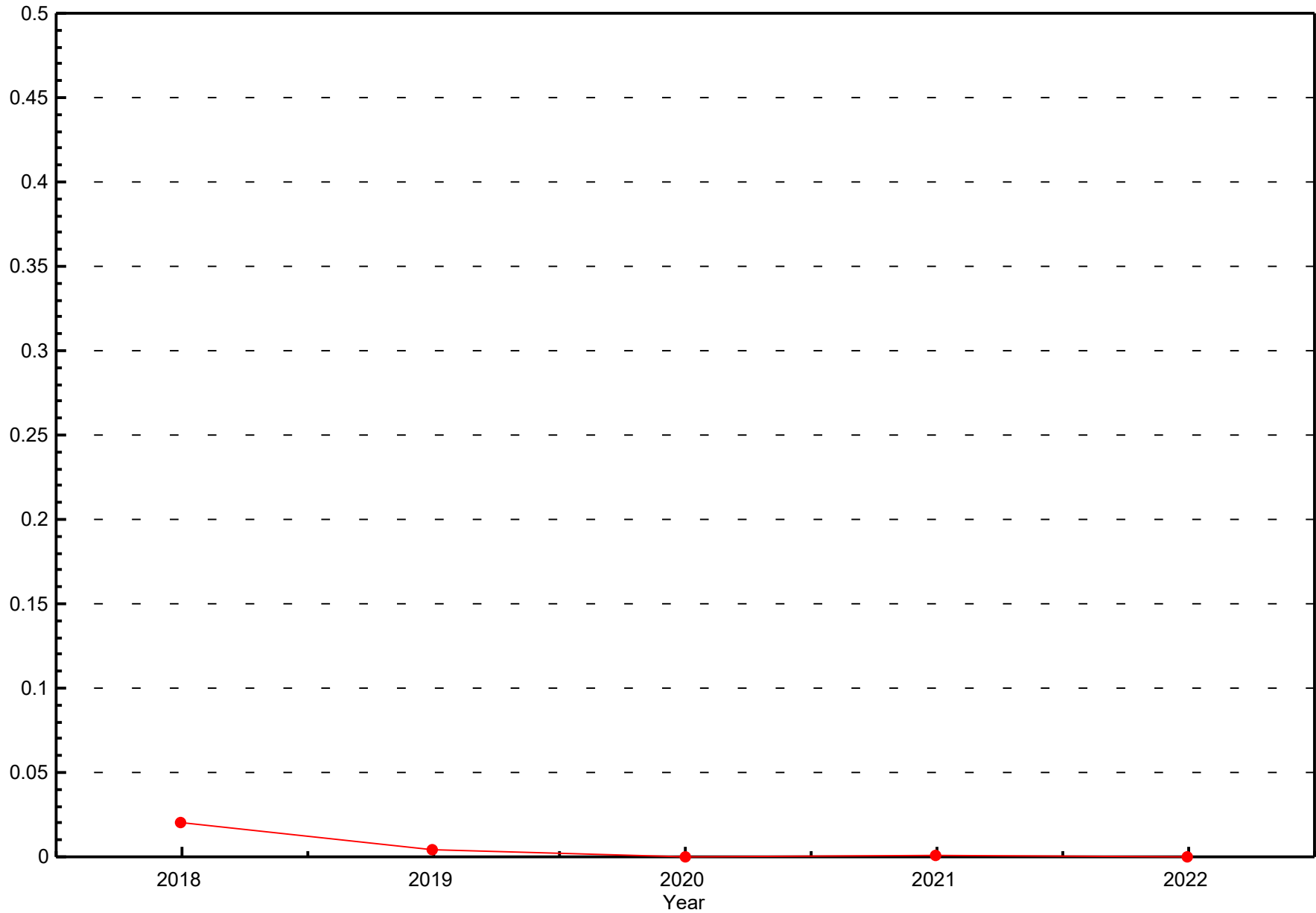




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain (2018 to 2022)

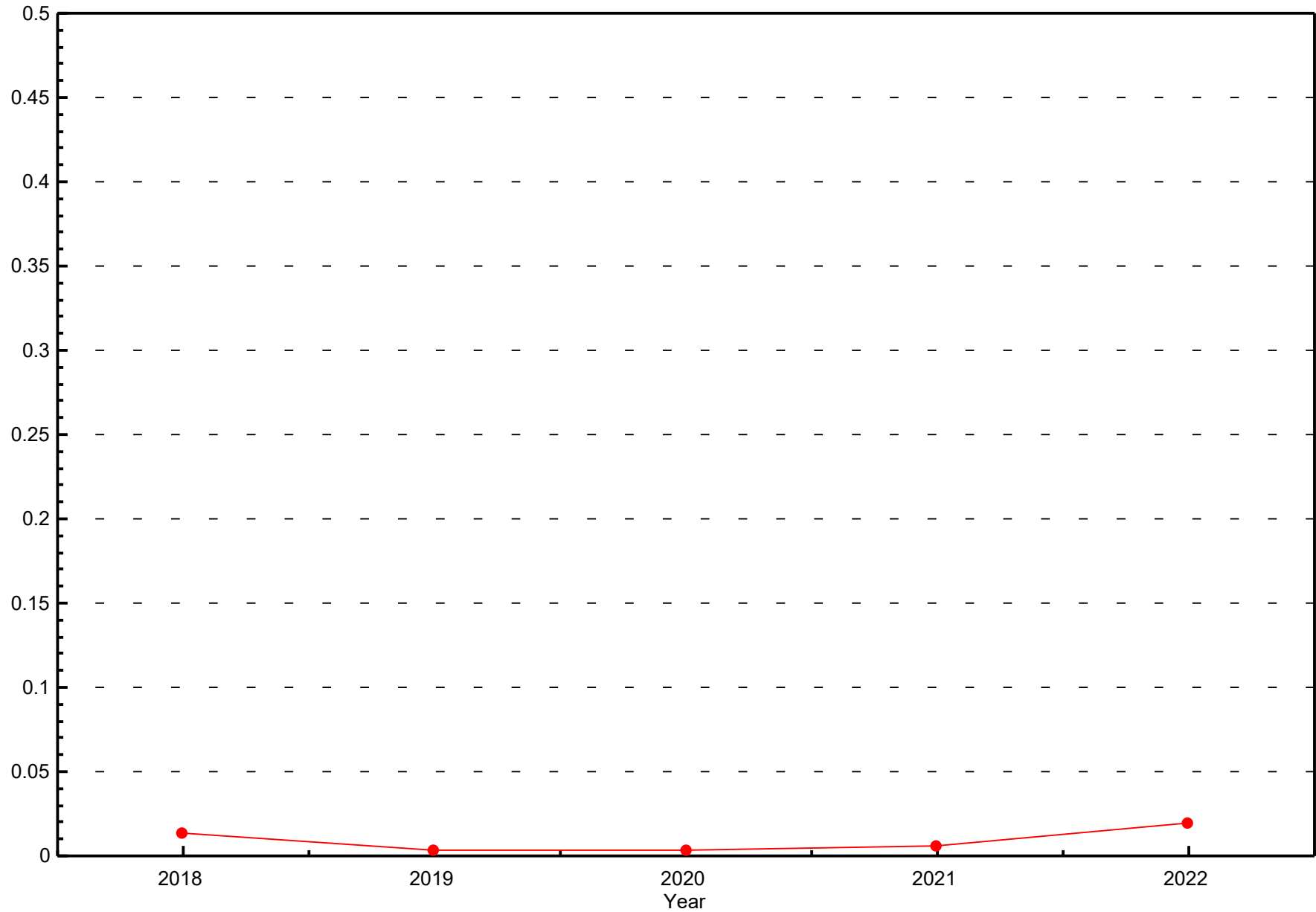




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Conklin (2018 to 2022)

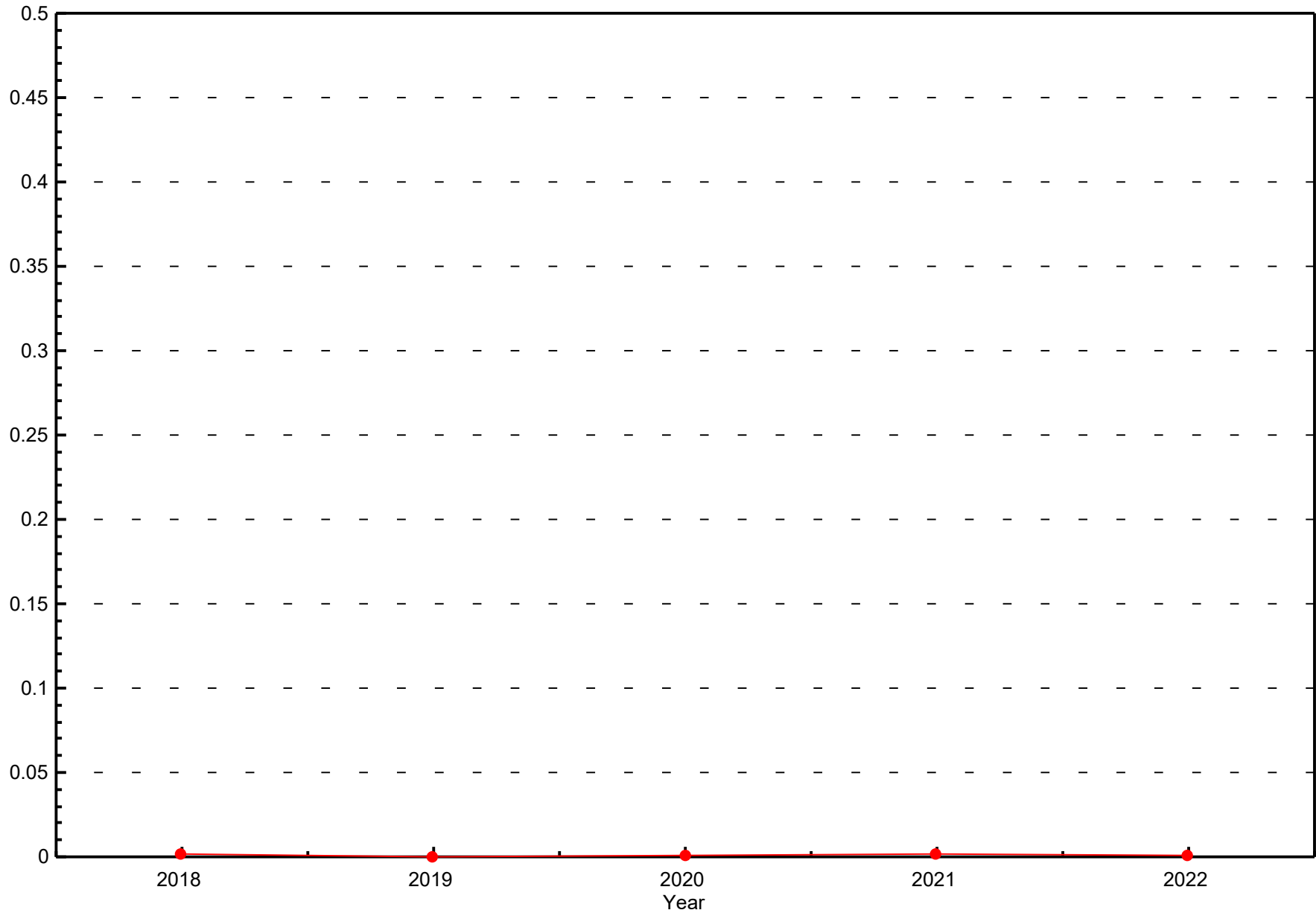




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Janvier (2018 to 2022)

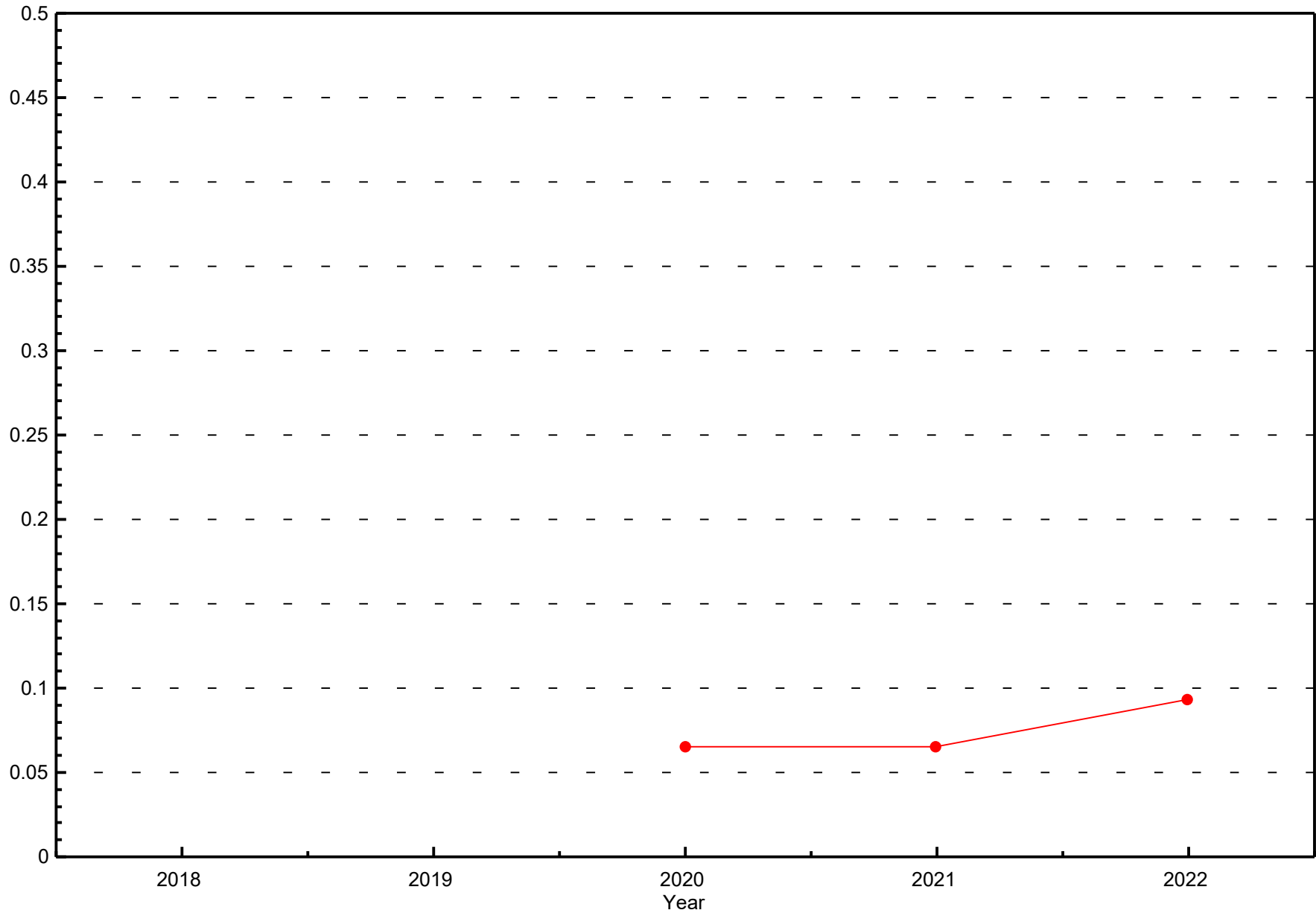




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills (2018 to 2022)

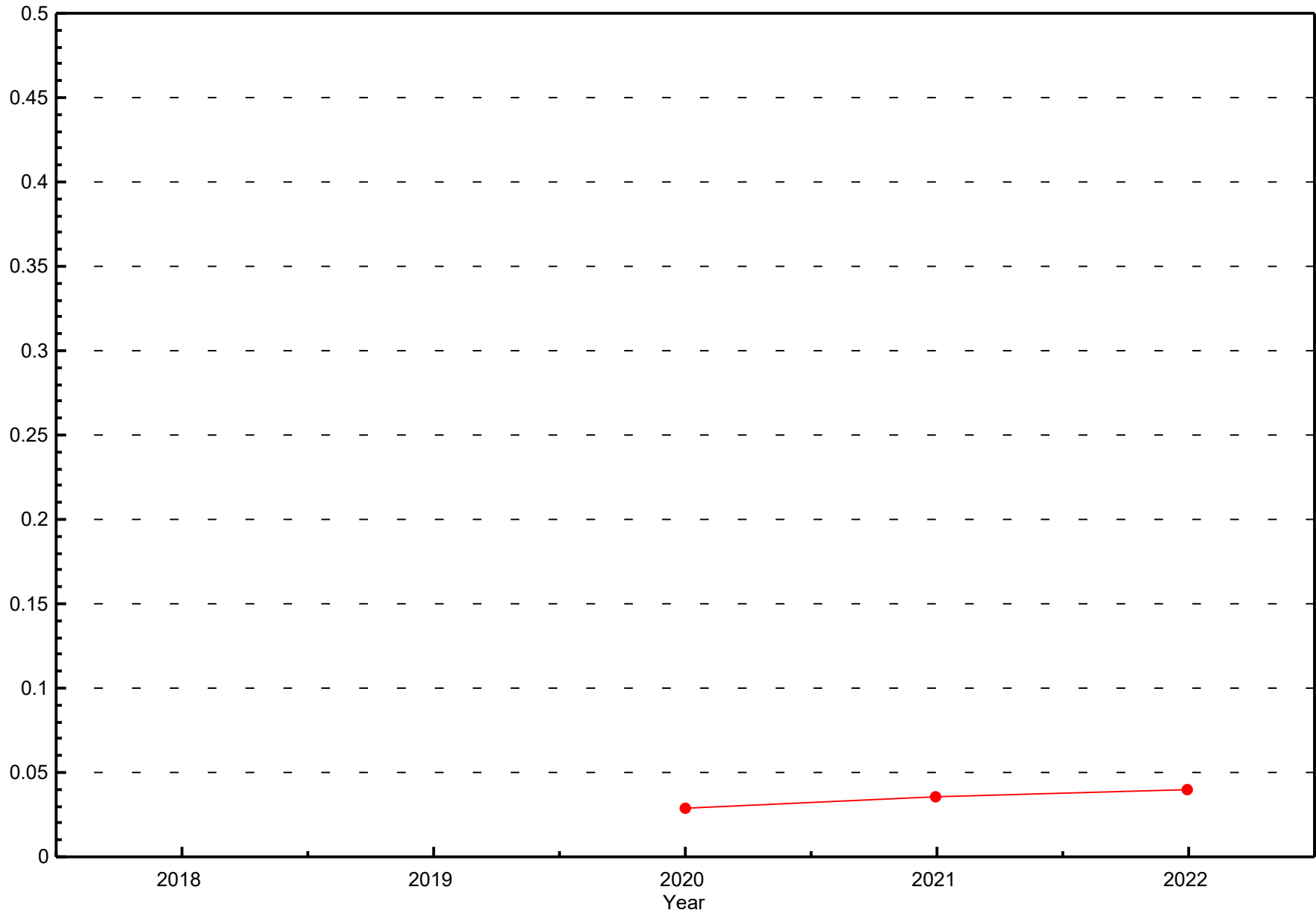




Yearly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Ells River (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

METHANE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	98	689	2.2298	4.0718	2.5337
February	100	631	2.1917	3.1962	2.4159
March	97	680	2.2069	4.1880	2.5674
April	99	679	2.1093	2.6568	2.2166
May	95	673	2.0548	2.5337	2.1319
June	99	680	2.0699	2.7755	2.1676
July	99	704	2.0496	2.6074	2.1447
August	100	706	2.1067	3.6474	2.2543
September	99	677	2.1507	3.1166	2.3594
October	100	705	2.1423	2.9230	2.3165
November	100	684	2.1406	3.2764	2.4203
December	100	706	2.2079	3.3653	2.6466
Annual	99	8214	2.1381	4.1880	2.6466



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	709	2.2445	4.7683	2.8155
February	100	639	2.2543	5.7736	2.5436
March	99	704	2.2208	5.2214	2.6014
April	100	687	2.0124	3.3445	2.1168
May	100	707	1.9435	3.0331	2.0599
June	100	684	2.0220	3.4190	2.2044
July	97	685	2.0715	3.4341	2.1521
August	97	687	2.1005	4.3369	2.2852
September	91	620	2.1442	3.8834	2.3611
October	98	697	2.1608	4.3457	2.8044
November	56	380	2.1575	4.0241	2.5398
December	100	709	2.1460	4.1198	2.7607
Annual	95	7908	2.1211	5.7736	2.8155



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	710	2.1859	4.8657	3.0107
February	100	640	2.1522	3.7075	2.4199
March	100	710	2.1360	5.8886	2.9074
April	92	623	2.0631	2.7087	2.1663
May	97	684	2.0519	2.9552	2.1942
June	92	615	1.9944	2.7580	2.2431
July	100	709	1.9657	2.4046	2.0283
August	100	709	2.0192	3.4843	2.2071
September	100	686	2.0110	2.5728	2.1303
October	100	708	1.9942	2.6198	2.1093
November	100	686	2.0000	3.8718	2.2349
December	100	707	2.0696	3.3052	2.3690
Annual	98	8187	2.0537	5.8886	3.0107



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	709	2.2239	6.4031	3.2553
February	96	611	2.1686	4.4658	2.5938
March	100	708	2.1993	9.3771	3.4007
April	100	680	2.1187	3.9287	2.4723
May	100	707	2.0540	2.8488	2.1948
June	100	686	2.0522	3.7489	2.1898
July	99	703	1.9887	3.1151	2.1544
August	100	707	2.0376	2.7532	2.1483
September	97	669	2.0963	3.0453	2.2221
October	100	707	2.0776	2.8833	2.2244
November	97	662	2.1491	5.1808	2.6577
December	98	694	2.1839	4.5579	2.9787
Annual	99	8243	2.1118	9.3771	3.4007



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	710	2.0883	2.8780	2.5559
February	100	640	2.0575	2.5188	2.3090
March	100	706	2.0499	2.9350	2.3322
April	100	684	2.0295	2.3942	2.0831
May	100	706	2.0029	2.3894	2.0560
June	100	685	2.0038	2.3632	2.0610
July	100	709	1.9974	2.5556	2.0813
August	100	709	2.0472	3.0963	2.1762
September	100	683	2.0311	2.8591	2.1845
October	99	705	2.0022	2.2843	2.0816
November	100	686	2.0208	3.2270	2.1773
December	100	709	2.0904	3.3171	2.5979
Annual	100	8332	2.0351	3.3171	2.5979



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	704	2.1343	3.0781	2.8071
February	100	640	2.1461	2.6129	2.4265
March	100	708	2.1137	3.3250	2.4875
April	100	686	2.0328	2.2495	2.0980
May	100	709	2.0084	2.3464	2.0526
June	99	684	2.0271	2.3878	2.0769
July	95	666	1.9983	2.2568	2.0738
August	86	609	2.0656	2.6945	2.2269
September	100	685	2.0560	2.5476	2.1826
October	100	710	2.0642	2.7497	2.1771
November	100	685	2.0961	2.6762	2.2235
December	100	709	2.1234	2.8893	2.5212
Annual	98	8195	2.0722	3.3250	2.8071



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	708	2.2721	3.4115	2.5828
February	95	605	2.2345	3.4228	2.4885
March	100	708	2.2092	3.9695	2.8732
April	99	677	2.0634	2.7141	2.2371
May	92	651	2.0023	2.6725	2.1536
June	99	681	1.9906	2.6745	2.0734
July	99	703	1.9922	2.5999	2.0884
August	99	702	2.0698	2.8088	2.1800
September	99	682	2.0868	2.9809	2.3029
October	100	709	2.0814	2.8868	2.2503
November	100	683	2.0914	3.1198	2.4141
December	97	685	2.0972	2.7623	2.3867
Annual	98	8194	2.0989	3.9695	2.8732



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99	700	2.2282	3.7672	2.7081
February	100	637	2.2234	3.8847	2.6639
March	100	707	2.2185	4.2397	2.6694
April	100	682	2.1196	3.4418	2.2730
May	99	702	2.0797	3.3437	2.2098
June	100	686	2.1272	3.7924	2.3563
July	100	709	2.1466	3.0166	2.2919
August	99	699	2.2519	4.5784	2.4790
September	100	683	2.2407	3.8015	2.4631
October	100	707	2.1799	4.2770	2.5323
November	94	647	2.1420	3.8897	2.4333
December	100	707	2.1755	3.4292	2.4009
Annual	99	8266	2.1777	4.5784	2.7081



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	709	2.2506	3.7457	2.5633
February	100	640	2.2342	2.9189	2.4817
March	100	709	2.2781	3.5889	2.7252
April	96	661	2.0920	2.4527	2.1721
May	100	709	2.0535	3.2808	2.3073
June	93	637	2.0426	2.9223	2.1503
July	93	657	2.0448	2.6113	2.1366
August	100	709	2.1347	3.1238	2.2791
September	100	686	2.1650	3.1668	2.4022
October	100	710	2.1534	3.3898	2.4126
November	100	684	2.1427	2.9917	2.3973
December	100	709	2.2455	5.4730	2.9796
Annual	98	8220	2.1544	5.4730	2.9796



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	708	2.0822	2.7773	2.2924
February	99	635	2.0328	2.2606	2.1441
March	100	710	2.0568	2.3517	2.1342
April	100	687	2.0078	2.1672	2.0563
May	99	704	2.0034	2.2578	2.0523
June	100	687	2.0021	2.2365	2.0462
July	99	701	2.0066	2.2009	2.0652
August	75	526	2.0409	2.5891	2.2279
September	100	684	2.0582	2.3316	2.1555
October	99	705	2.0428	2.2115	2.1277
November	79	540	2.0611	2.3369	2.2079
December	100	709	2.1404	2.7176	2.3185
Annual	96	7996	2.0447	2.7773	2.3185



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	63	442	2.0032	2.1289	2.0809
February	97	618	2.0667	2.1823	2.1229
March	100	708	1.9651	2.2735	2.0936
April	99	678	2.0914	2.8513	2.1661
May	100	709	2.0530	2.1752	2.0929
June	93	639	2.0165	2.2259	2.0381
July	100	709	2.0243	2.1761	2.0627
August	93	660	2.0347	2.1887	2.1359
September	100	687	2.0635	2.2284	2.1222
October	100	710	2.0621	2.1800	2.1298
November	100	684	2.0803	2.3267	2.2431
December	100	709	2.1032	2.3681	2.3095
Annual	95	7953	2.0483	2.8513	2.3095



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	710	2.1224	2.3699	2.2165
February	99	633	2.1145	2.2568	2.1589
March	90	626	2.1295	2.4588	2.2345
April	100	685	2.0704	2.5810	2.1194
May	100	708	2.0471	2.3747	2.1115
June	97	662	2.0543	2.5793	2.1445
July	98	693	2.1243	3.2713	2.2481
August	99	706	2.1527	3.7019	2.3592
September	99	684	2.1496	3.2429	2.4102
October	93	659	2.0711	2.6489	2.1825
November	99	676	2.0437	2.2898	2.2175
December	99	704	2.0767	2.3393	2.2746
Annual	98	8146	2.0963	3.7019	2.4102



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	99	706	1.9941	2.1883	2.0848
February	98	629	1.9935	2.2245	2.0772
March	99	704	1.9809	2.1813	2.0731
April	99	677	1.9290	2.2425	2.0043
May	99	705	1.9530	2.2753	1.9912
June	100	685	1.9581	2.0844	1.9789
July	100	705	1.9730	2.2583	2.0263
August	99	703	1.9837	2.4037	2.1129
September	94	647	1.9973	2.3076	2.0634
October	99	703	2.0072	2.1819	2.0719
November	100	682	2.0227	2.2268	2.1686
December	100	707	2.0916	2.3948	2.3345
Annual	99	8253	1.9905	2.4037	2.3345



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	710	2.2809	4.0846	3.1324
February	100	639	2.2889	4.8579	2.9727
March	100	706	2.2773	7.7495	3.9870
April	100	685	2.0711	4.6565	2.3577
May	100	707	2.0898	4.2298	2.2841
June	99	683	2.0251	3.1472	2.1784
July	100	708	2.0408	4.8243	2.2061
August	100	706	2.0872	3.1994	2.3180
September	100	686	2.2168	4.7626	2.4886
October	100	707	2.2201	6.3178	2.8187
November	100	685	2.2205	4.7352	2.7898
December	99	705	2.1754	5.0336	2.4984
Annual	100	8327	2.1656	7.7495	3.9870



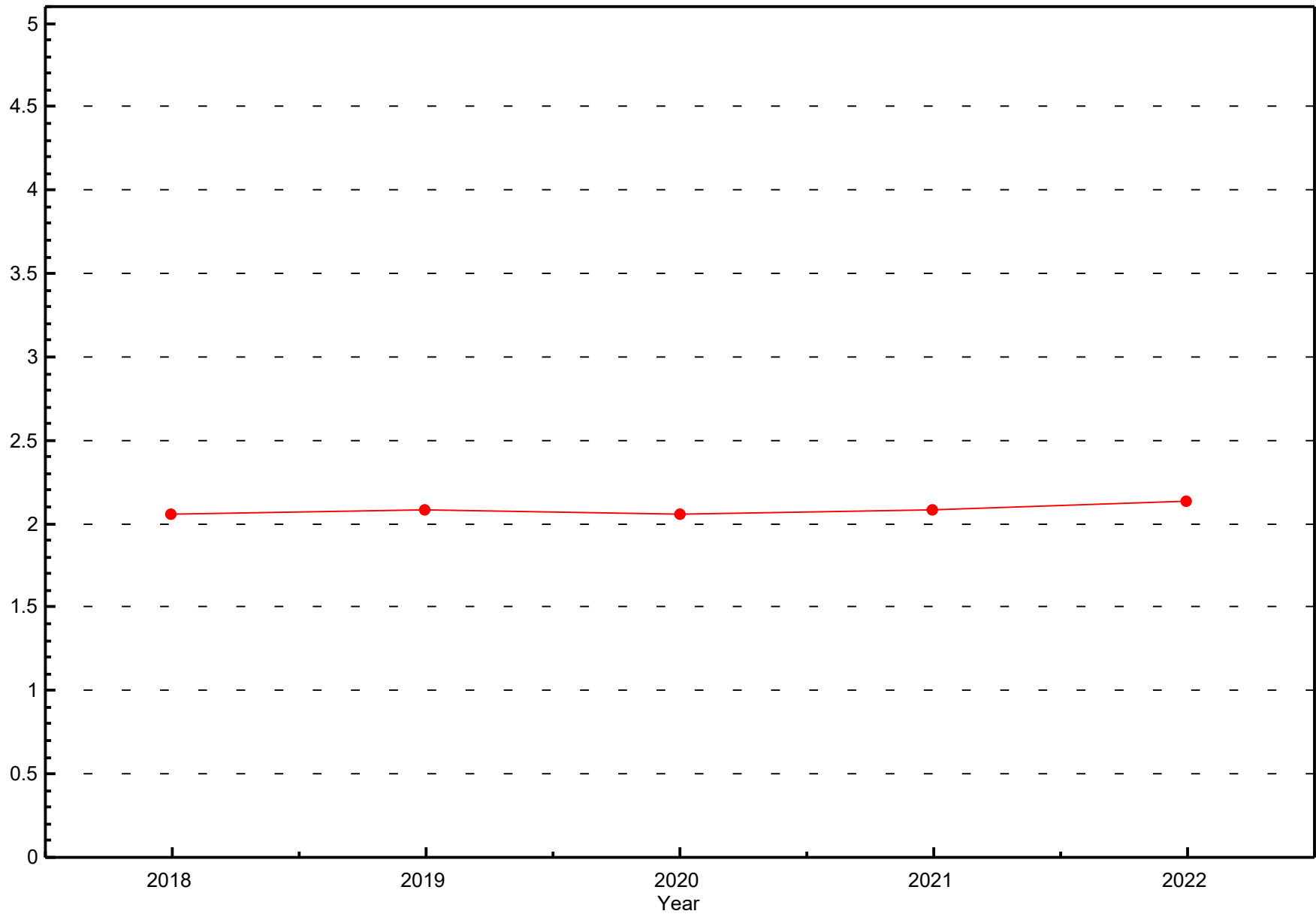
Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Methane (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	709	2.2316	3.7327	2.7291
February	100	639	2.1863	4.1138	2.5134
March	100	709	2.1342	3.8559	2.6222
April	98	673	2.0304	3.8441	2.2679
May	100	709	1.9977	2.9478	2.1226
June	98	673	1.9933	2.3821	2.0818
July	94	666	1.9902	2.8998	2.1249
August	100	710	2.0337	2.7476	2.1474
September	100	687	2.0791	3.9648	2.3944
October	100	708	2.0780	2.8415	2.4160
November	100	686	2.0929	4.4279	2.4910
December	98	690	2.0647	2.9271	2.3901
Annual	99	8259	2.0760	4.4279	2.7291



Yearly Averages

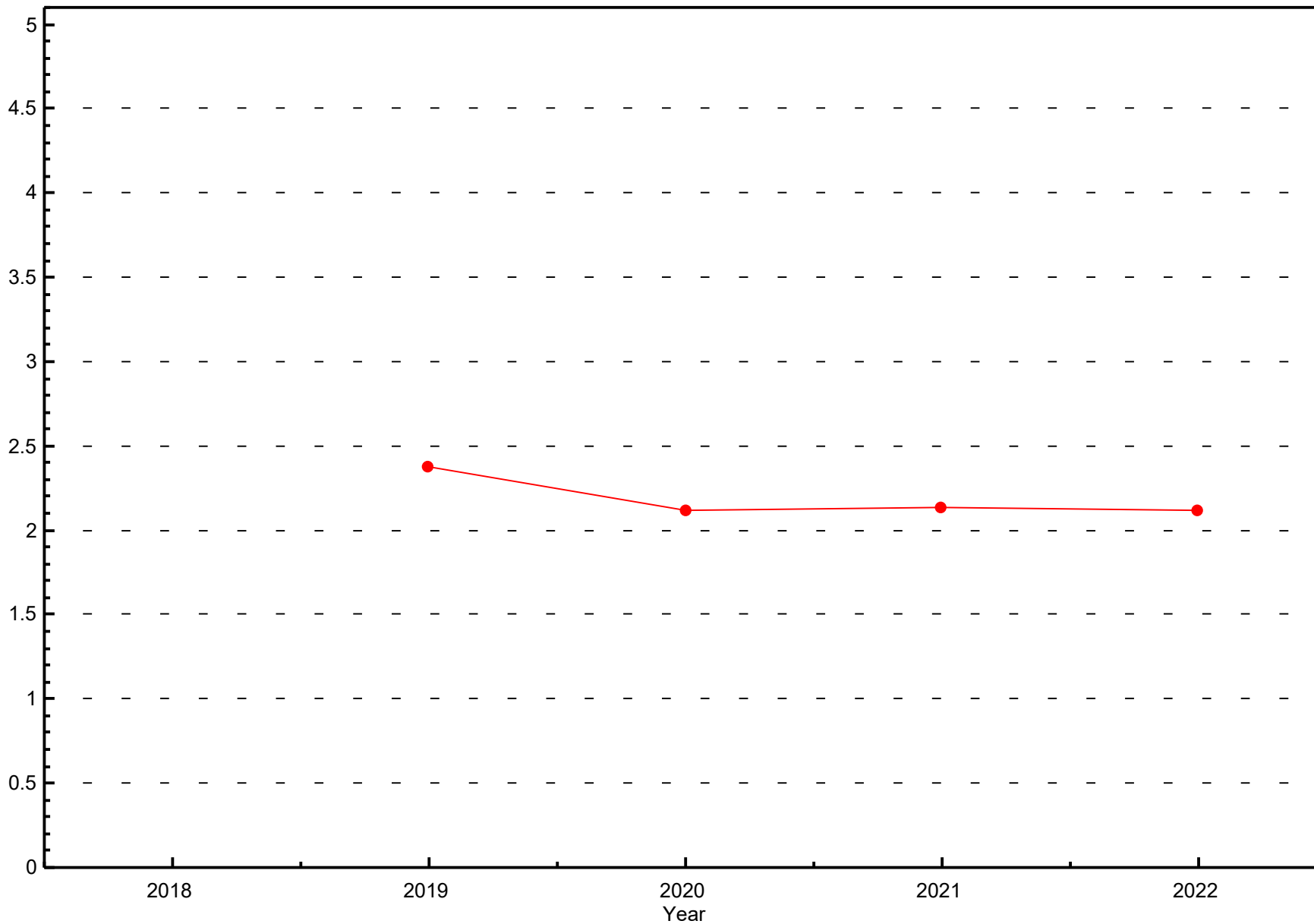
Methane (CH₄) - ppm
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

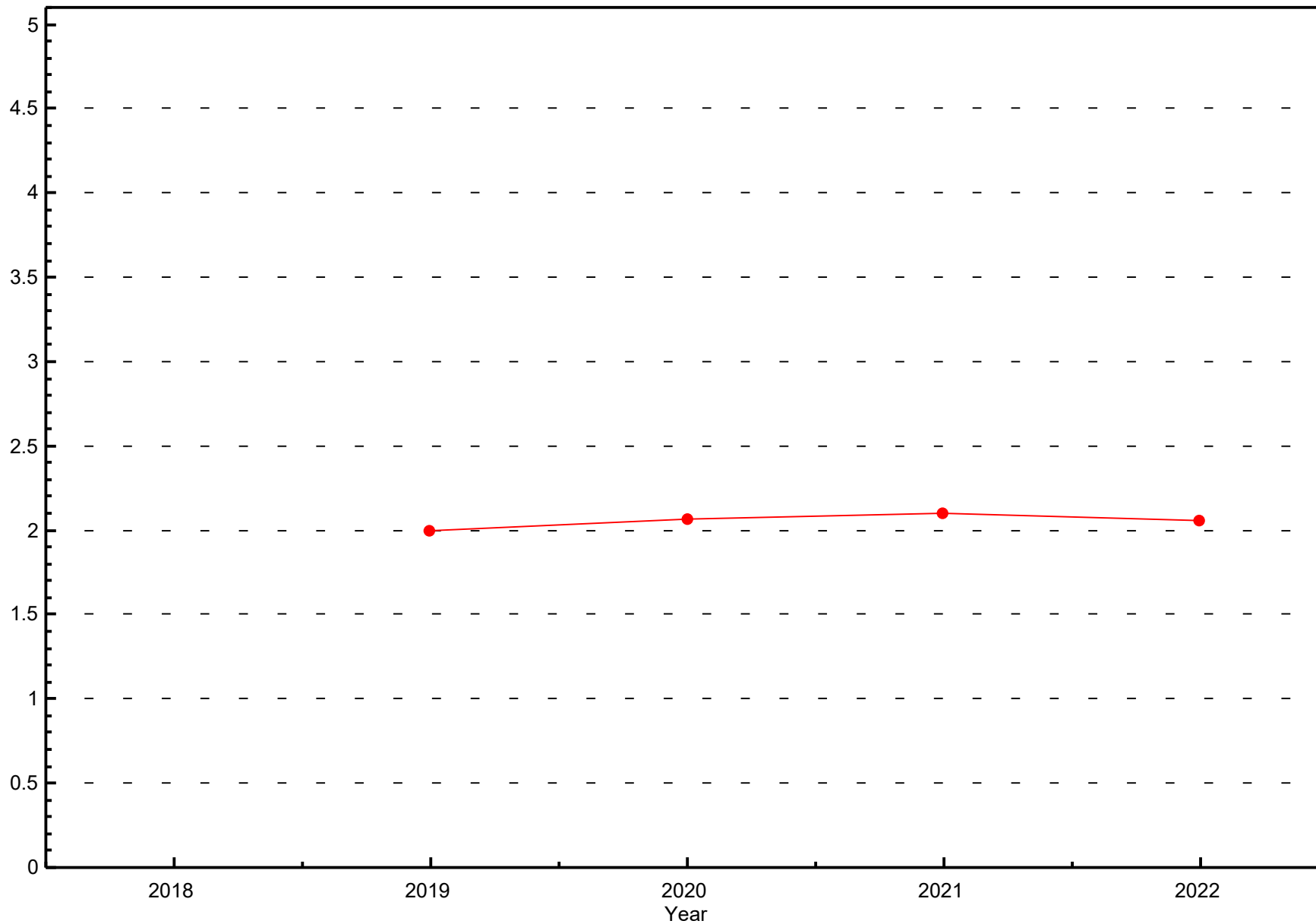
Methane (CH₄) - ppm
Mildred Lake (2018 to 2022)





Yearly Averages

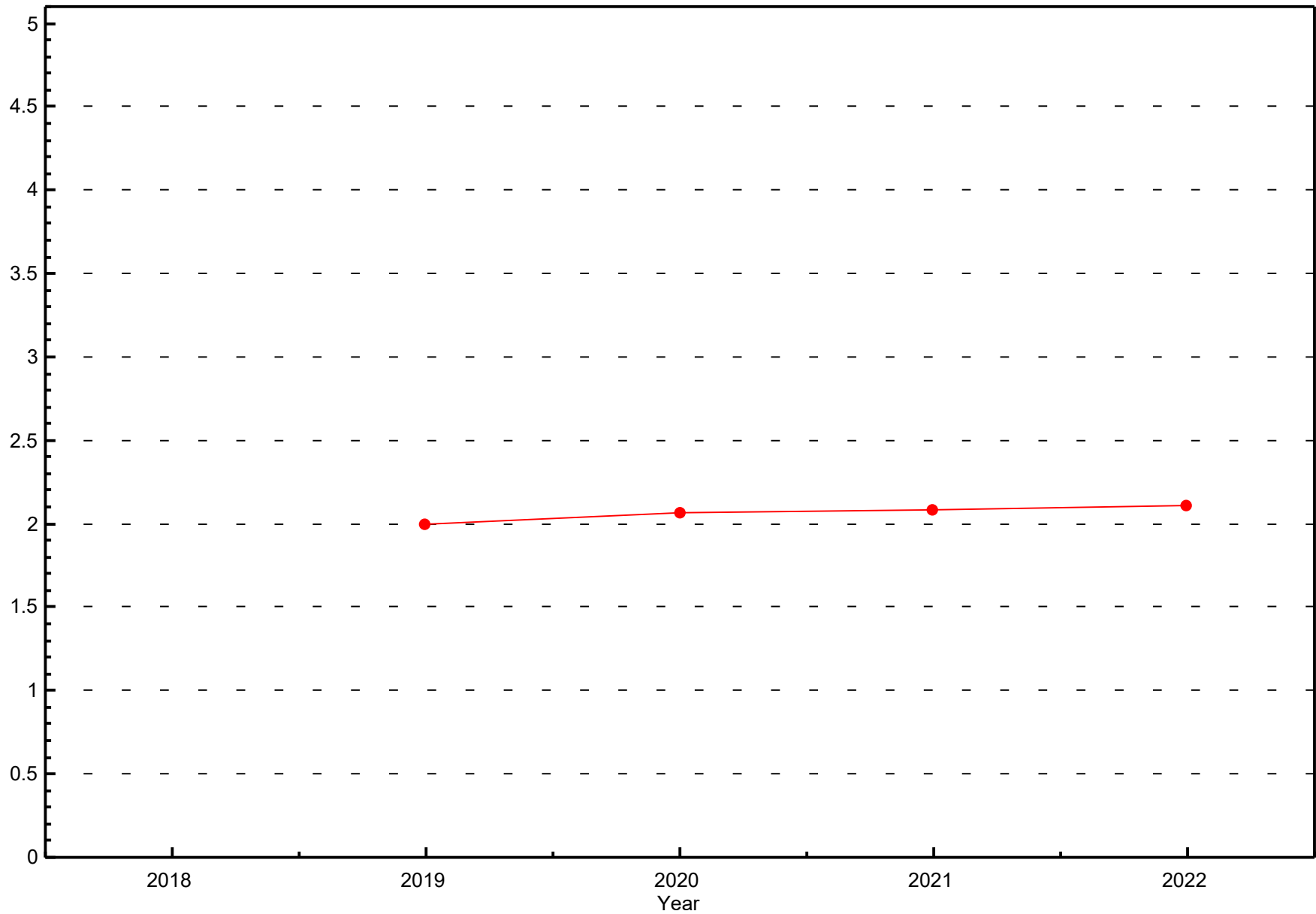
Methane (CH₄) - ppm
Buffalo Viewpoint (2018 to 2022)





Yearly Averages

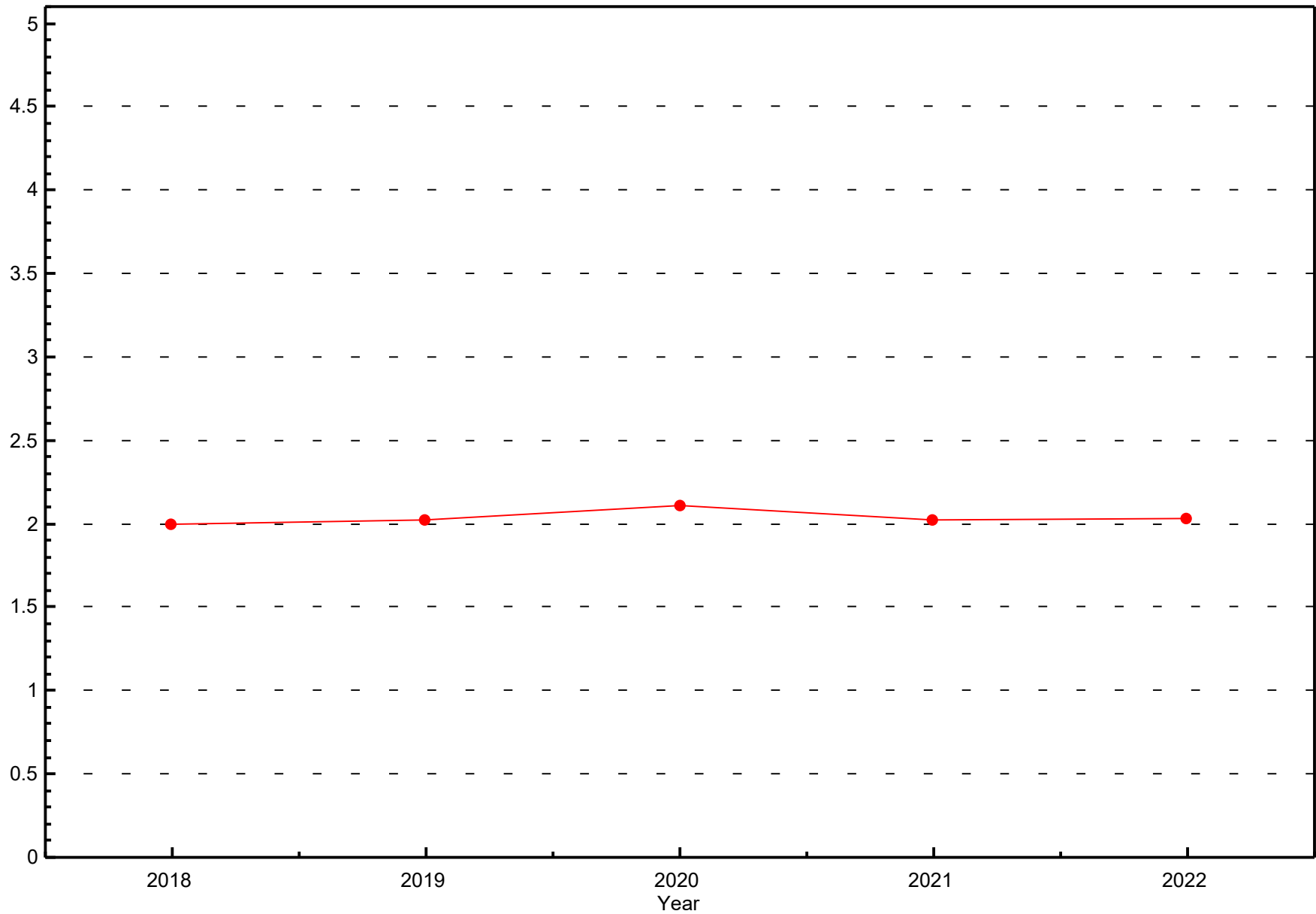
Methane (CH₄) - ppm
Mannix (2018 to 2022)





Yearly Averages

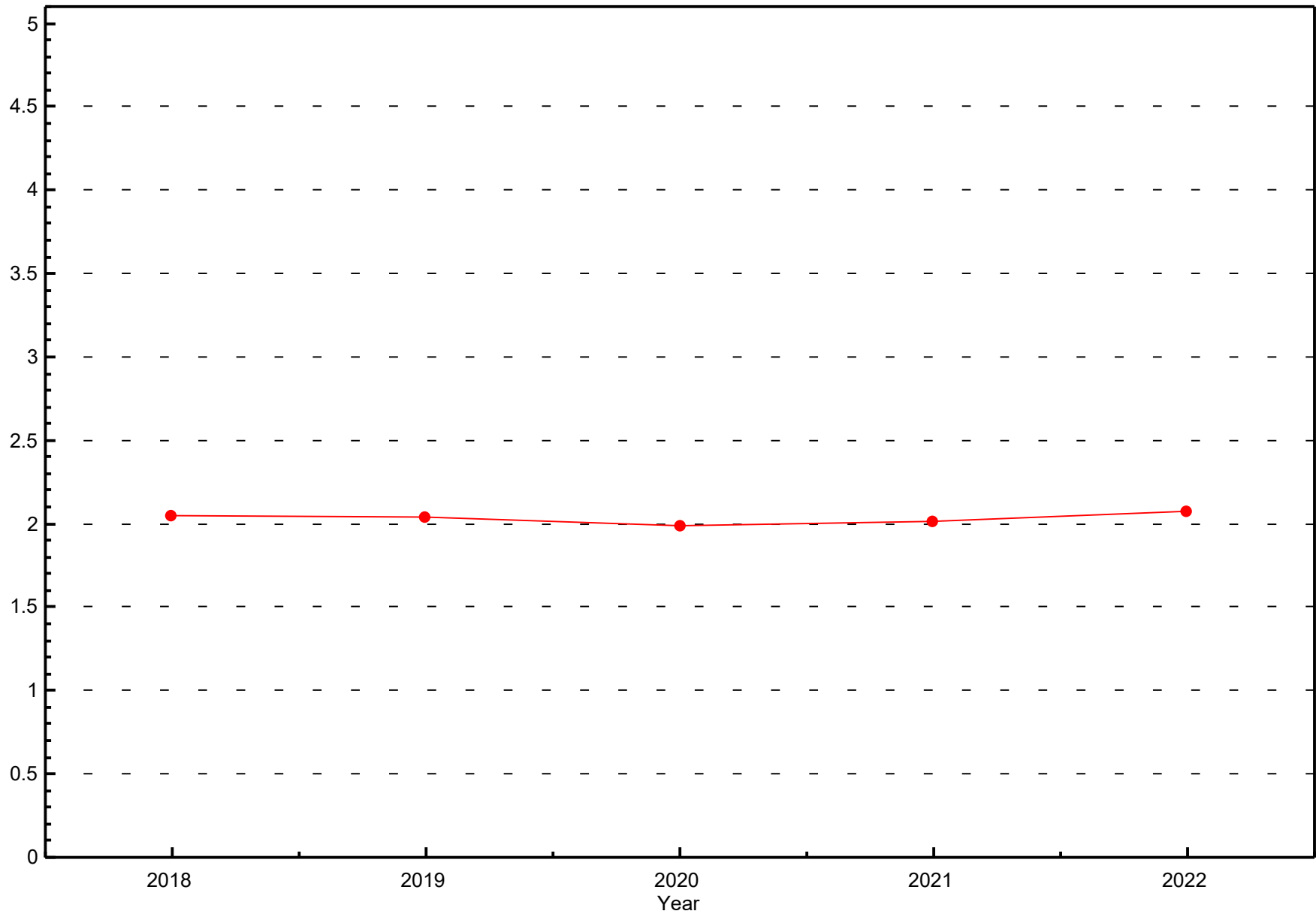
Methane (CH₄) - ppm
Patricia McInnes (2018 to 2022)





Yearly Averages

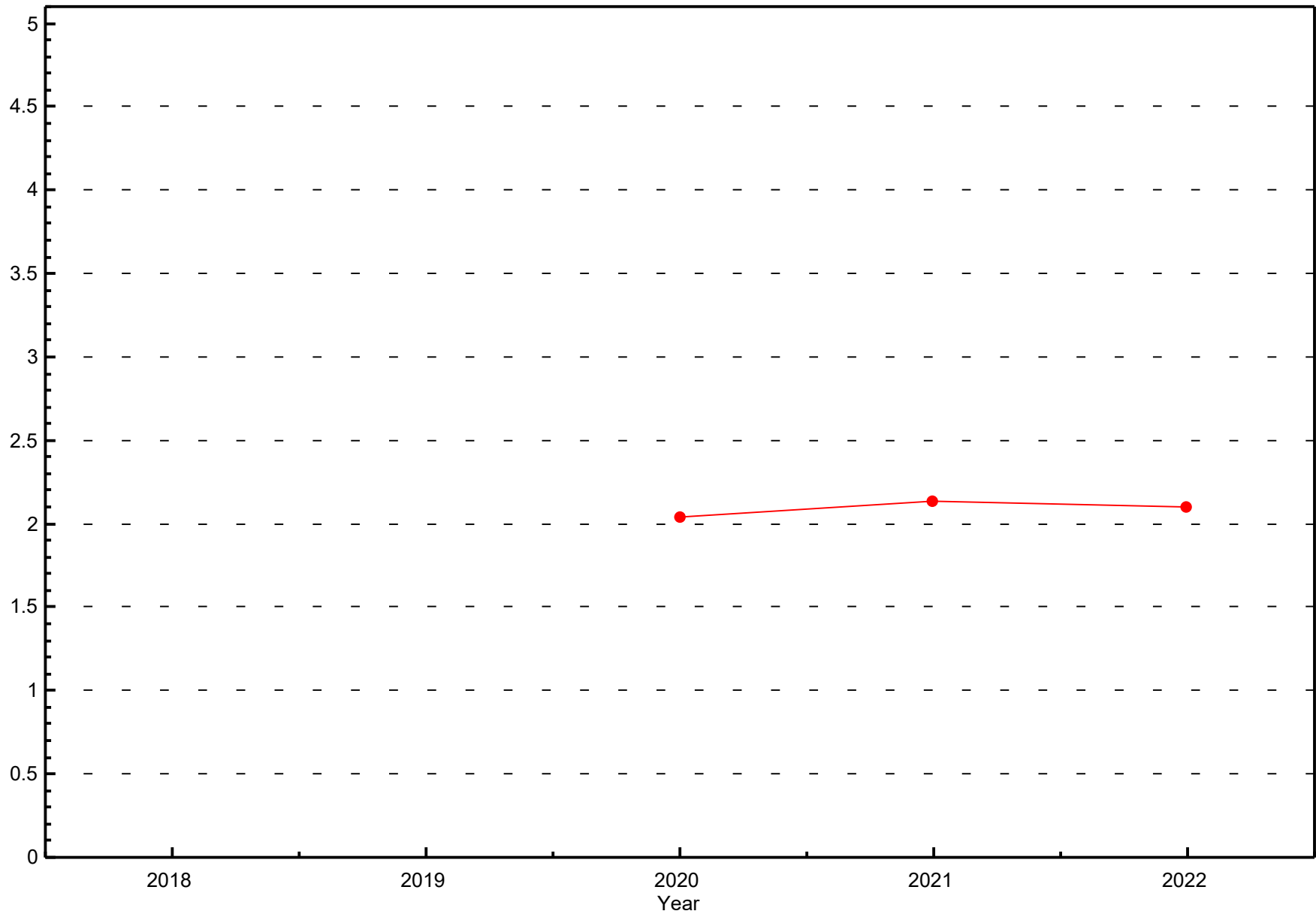
Methane (CH₄) - ppm
Athabasca Valley (2018 to 2022)





Yearly Averages

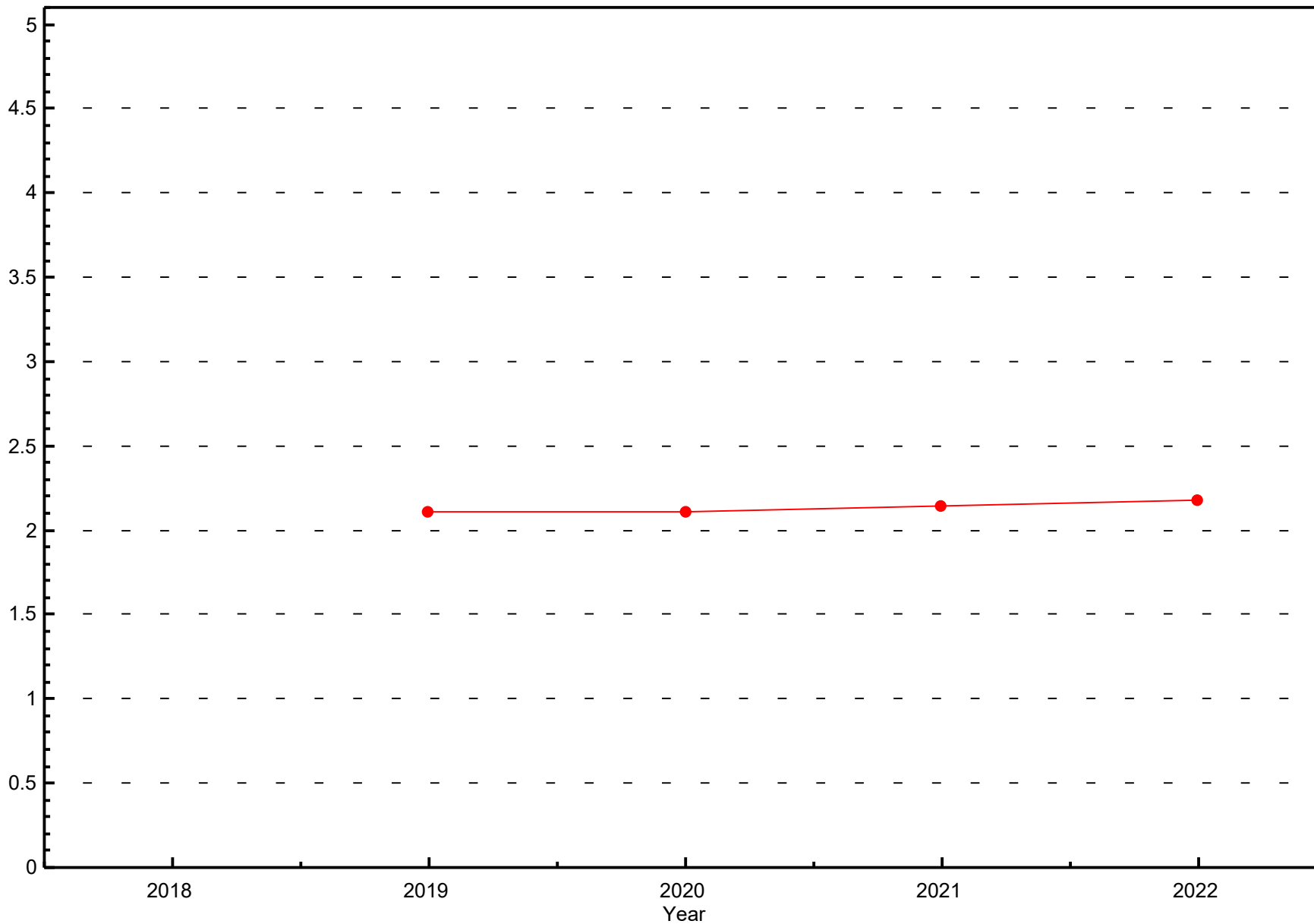
Methane (CH₄) - ppm
Barge Landing (2018 to 2022)





Yearly Averages

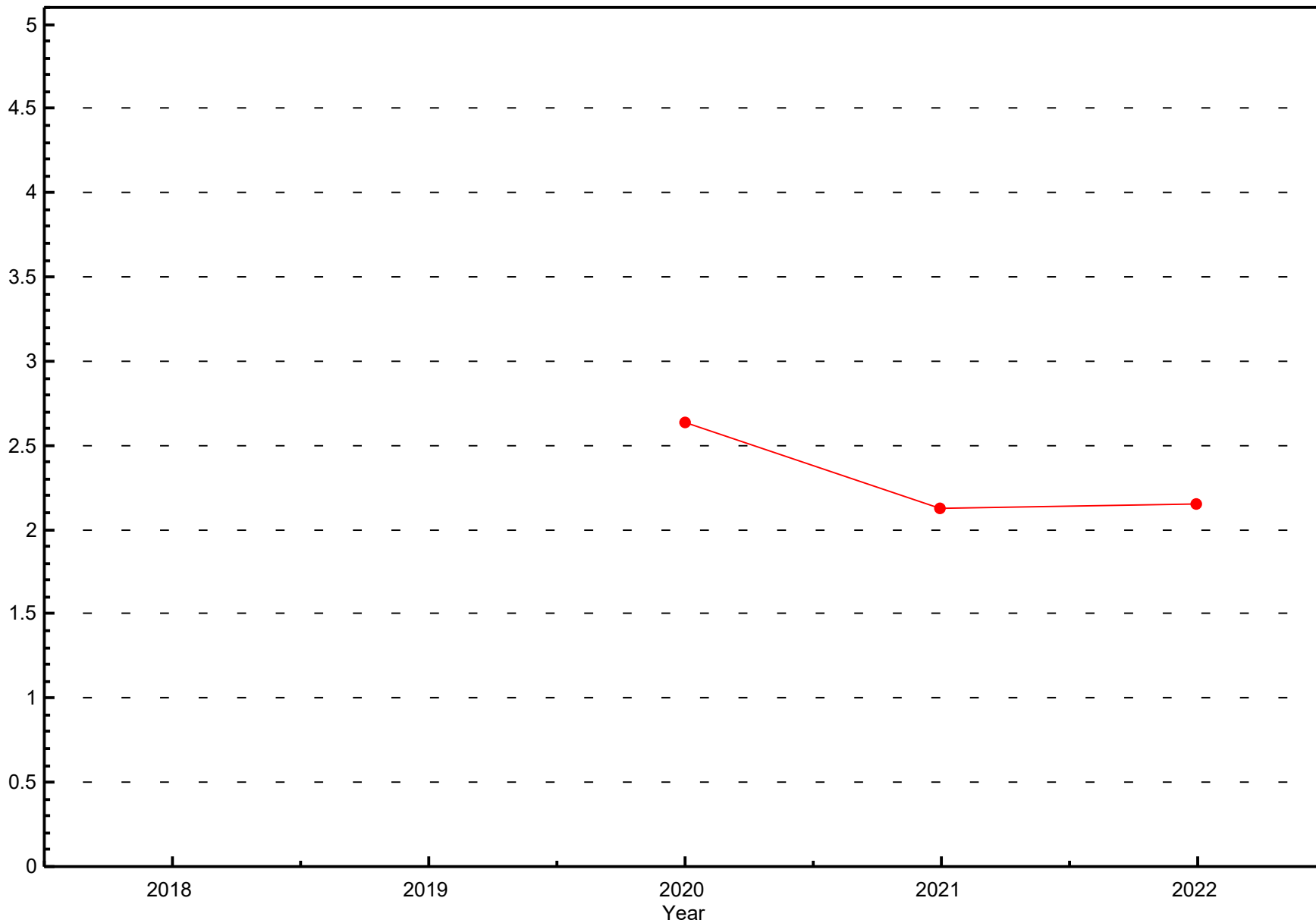
Methane (CH₄) - ppm
Lower Camp (2018 to 2022)





Yearly Averages

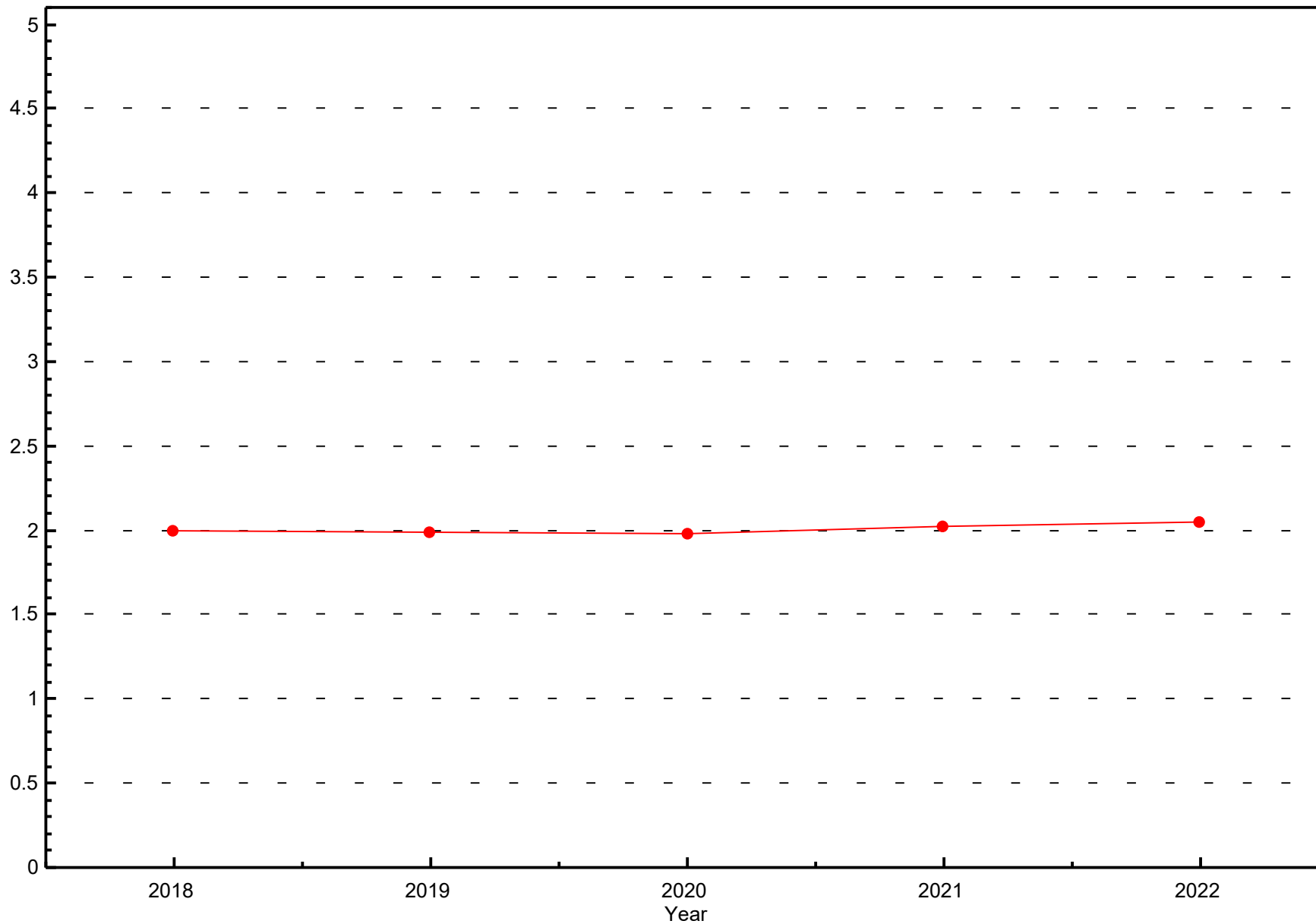
Methane (CH₄) - ppm
Fort McKay South (2018 to 2022)





Yearly Averages

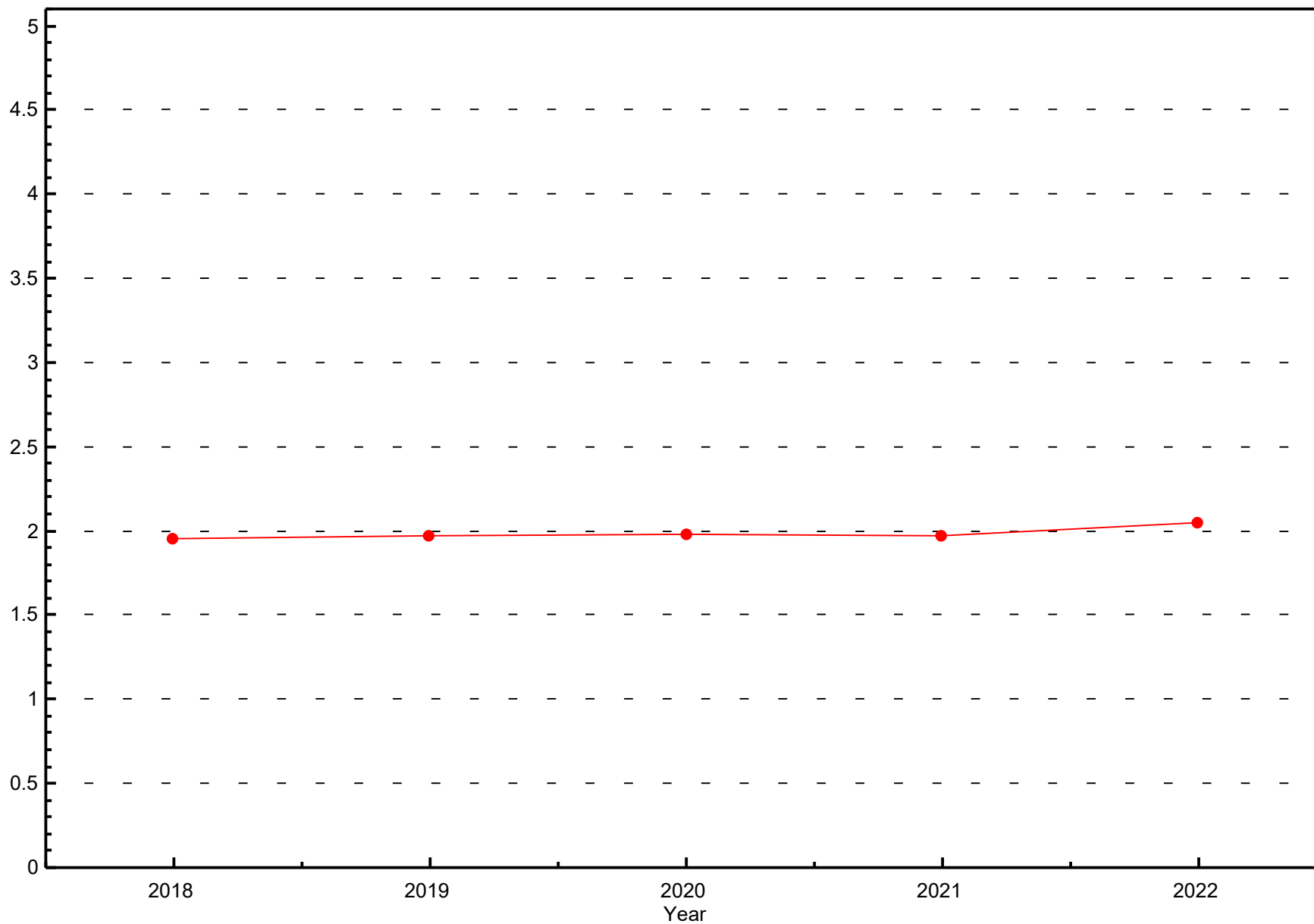
Methane (CH₄) - ppm
Anzac (2018 to 2022)





Yearly Averages

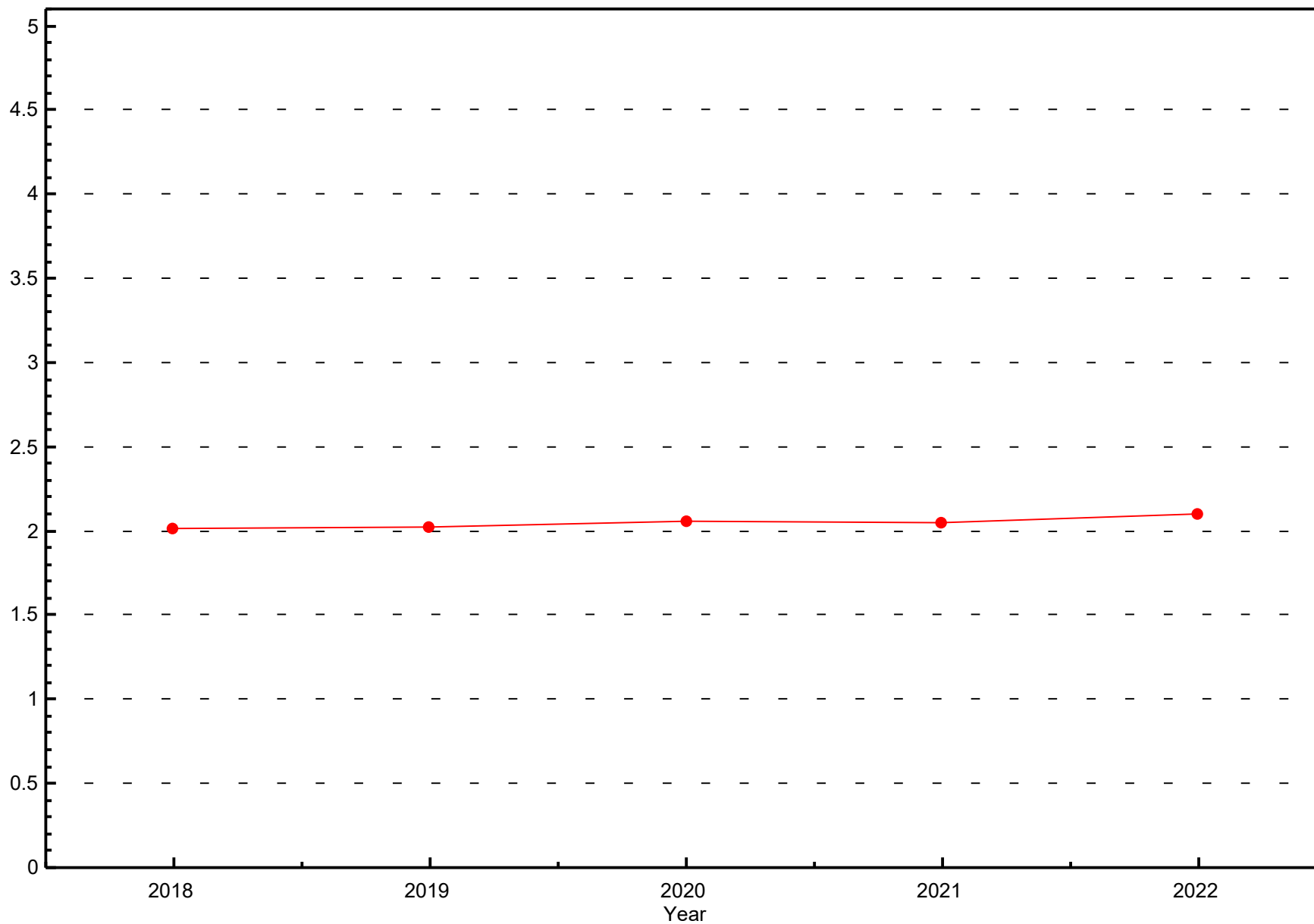
Methane (CH₄) - ppm
Stony Mountain (2018 to 2022)





Yearly Averages

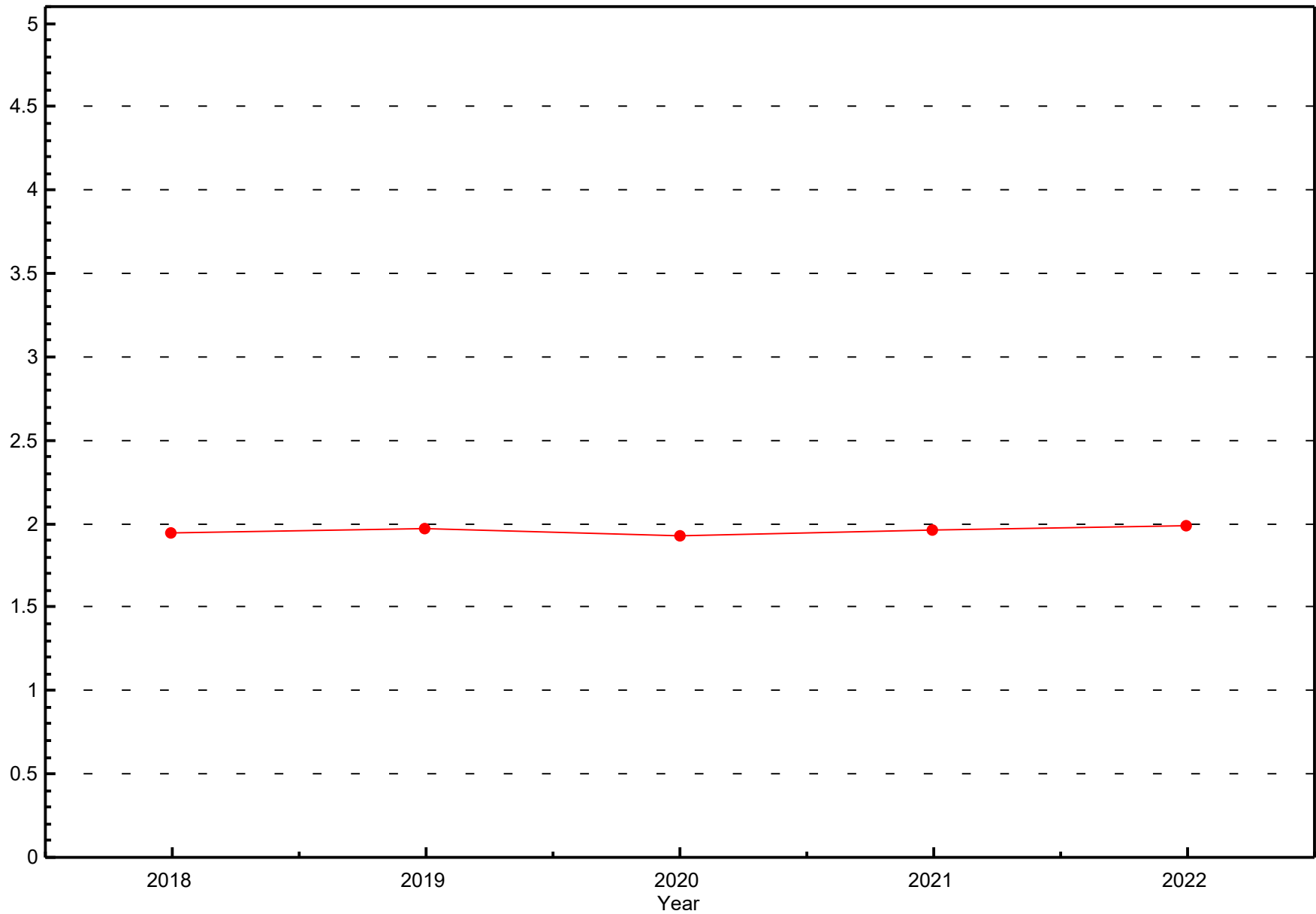
Methane (CH₄) - ppm
Conklin (2018 to 2022)





Yearly Averages

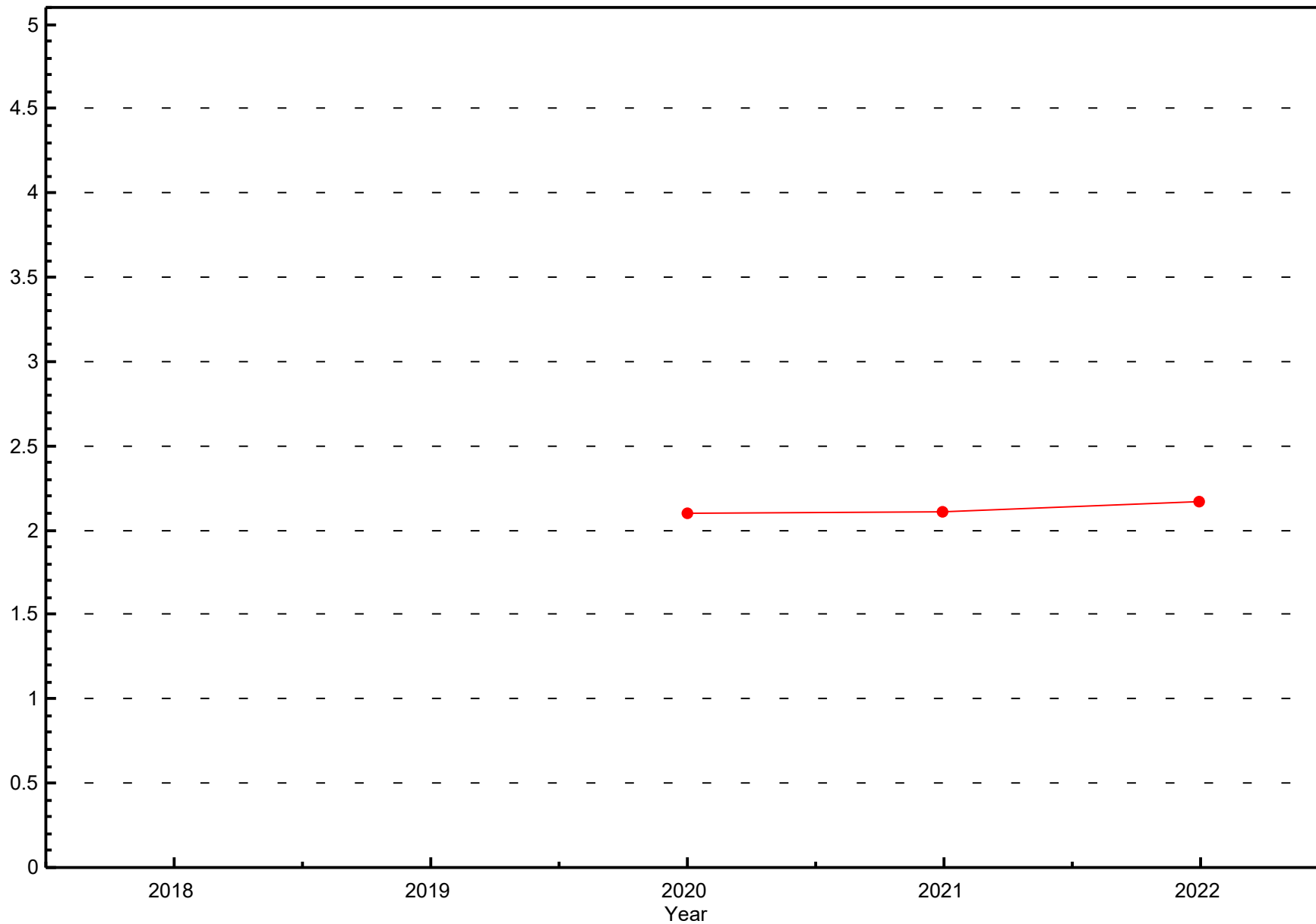
Methane (CH₄) - ppm
Janvier (2018 to 2022)





Yearly Averages

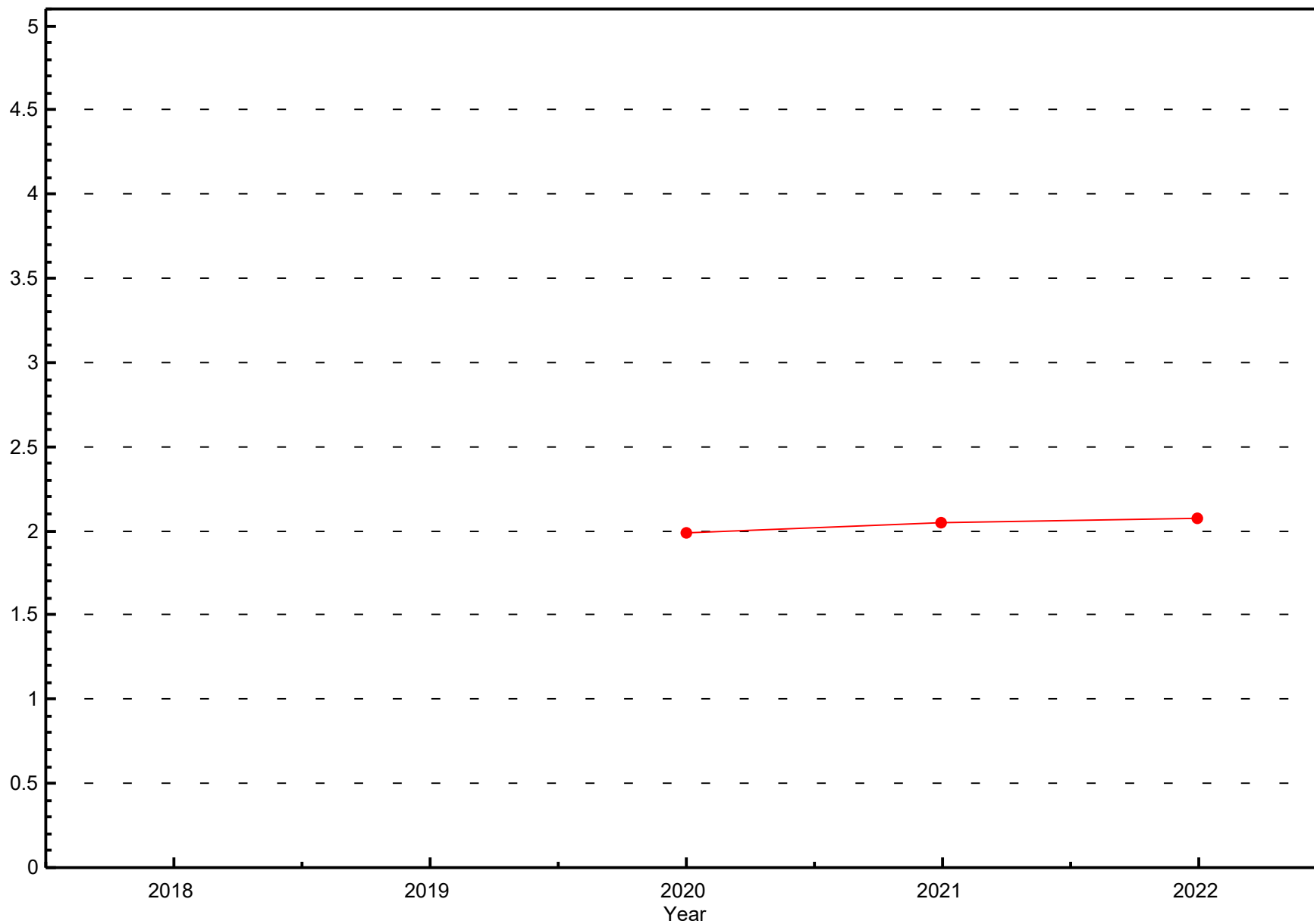
Methane (CH₄) - ppm
Fort Hills (2018 to 2022)





Yearly Averages

Methane (CH₄) - ppm
Ells River (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	100	707	0.2	0.4	0.2
February	100	637	0.2	0.7	0.2
March	100	707	0.2	0.4	0.3
April	98	670	0.2	0.4	0.3
May	98	693	0.3	0.4	0.3
June	99	681	0.3	0.5	0.4
July	99	701	0.3	0.6	0.4
August	100	708	0.3	0.6	0.5
September	99	679	0.3	0.5	0.4
October	100	708	0.2	1.0	0.3
November	100	684	0.2	0.4	0.3
December	100	706	0.2	0.4	0.3
Annual	99	8281	0.2	1.0	0.5



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	709	0.2	0.4	0.2
February	100	640	0.2	0.4	0.3
March	100	708	0.2	0.6	0.2
April	100	685	0.2	0.9	0.2
May	99	706	0.1	0.6	0.2
June	100	685	0.1	0.5	0.2
July	100	710	0.1	0.6	0.2
August	100	709	0.2	0.6	0.3
September	99	682	0.2	0.4	0.2
October	100	710	0.2	1.0	0.3
November	100	686	0.2	1.2	0.4
December	100	709	0.2	0.9	0.2
Annual	100	8339	0.2	1.2	0.4



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	710	0.1	0.3	0.2
February	99	635	0.2	0.4	0.2
March	100	705	0.1	0.2	0.2
April	100	684	0.0	0.2	0.1
May	100	708	0.1	0.1	0.1
June	99	679	0.0	1.2	0.2
July	100	709	0.0	0.6	0.1
August	100	707	0.0	0.8	0.3
September	98	669	0.0	0.3	0.1
October	100	708	0.0	1.1	0.1
November	96	661	0.0	0.3	0.1
December	99	699	0.0	0.3	0.1
Annual	99	8274	0.1	1.2	0.3



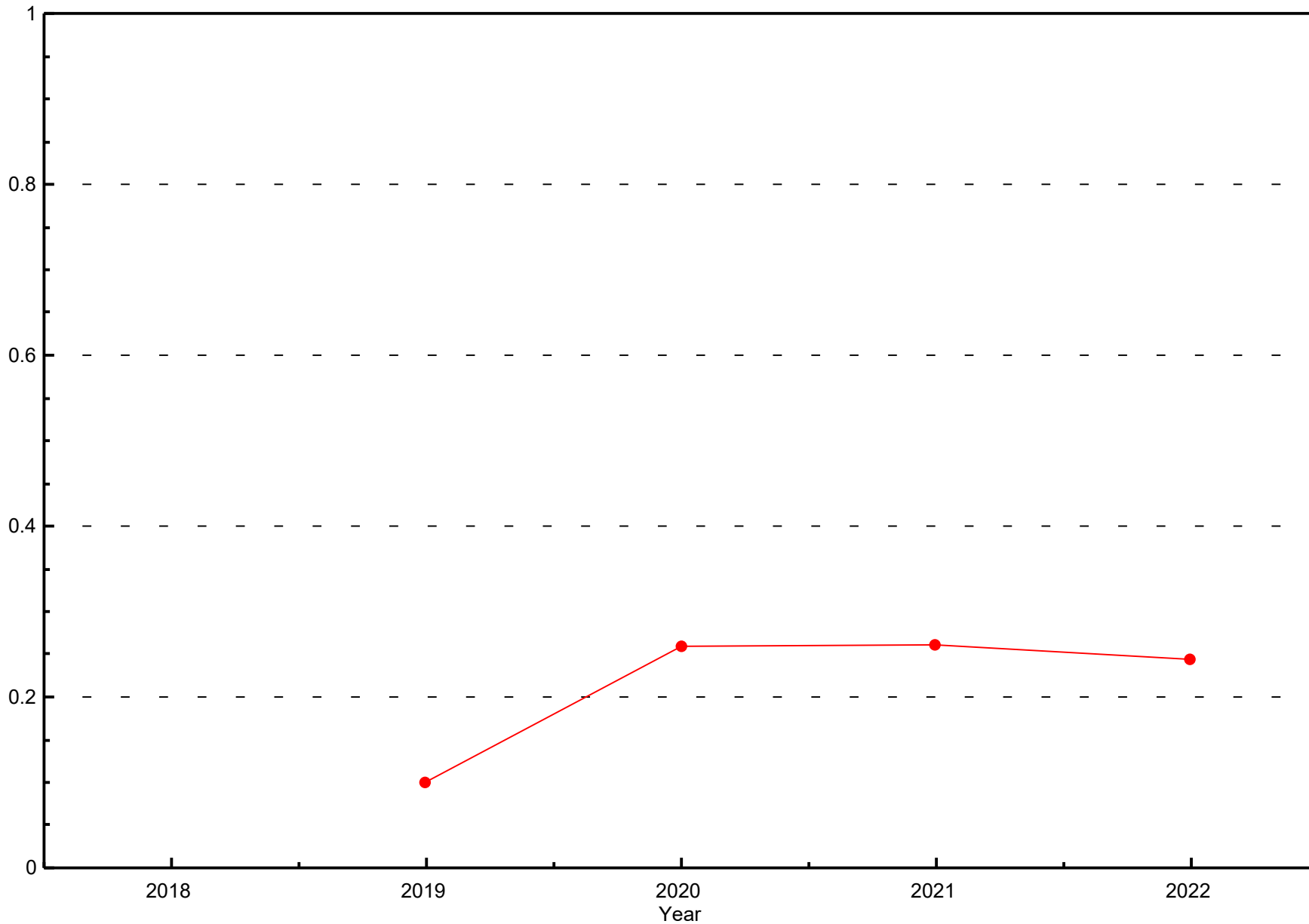
Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Carbon Monoxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	63	443	0.2	0.2	0.2
February	100	640	0.2	0.2	0.2
March	90	635	0.2	0.3	0.3
April	100	687	0.2	0.3	0.3
May	100	709	0.1	0.2	0.2
June	93	640	0.1	0.2	0.2
July	100	709	0.2	0.7	0.3
August	94	666	0.2	0.6	0.4
September	100	687	0.2	0.4	0.3
October	100	710	0.1	0.5	0.2
November	100	684	0.1	0.2	0.2
December	100	709	0.1	0.4	0.2
Annual	95	7919	0.2	0.7	0.4



Yearly Averages

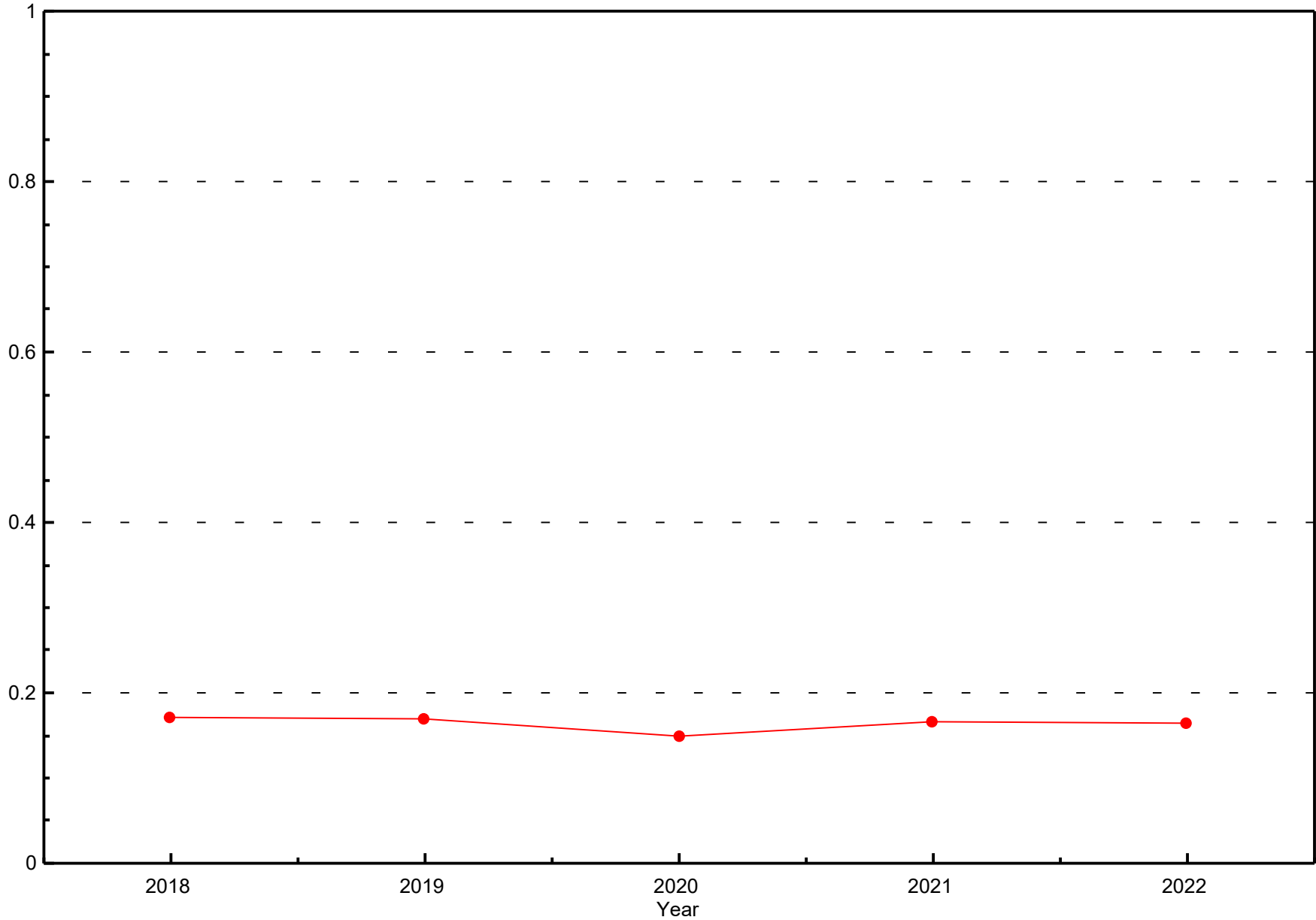
Carbon Monoxide (CO) - ppm
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

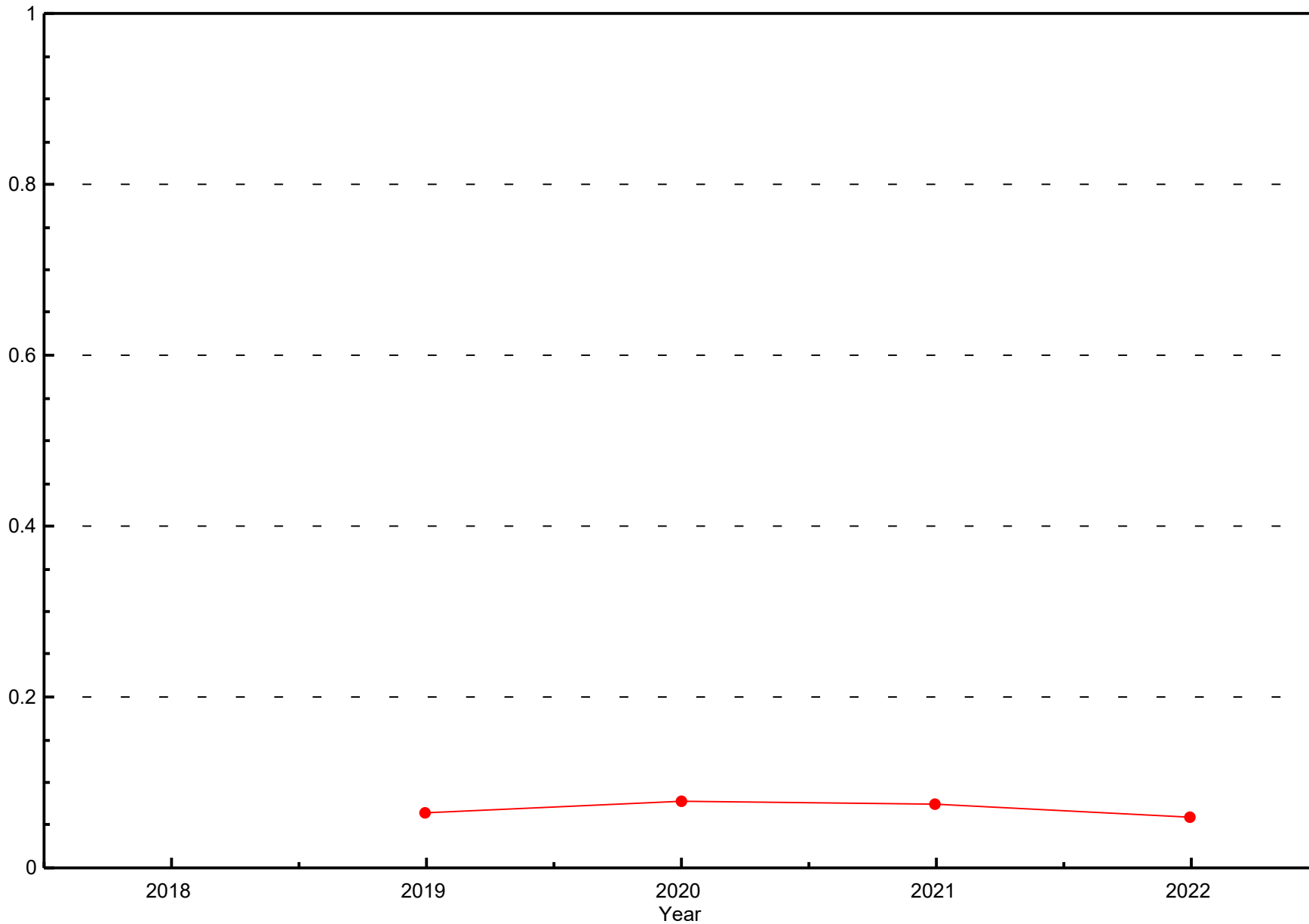
Carbon Monoxide (CO) - ppm
Athabasca Valley (2018 to 2022)





Yearly Averages

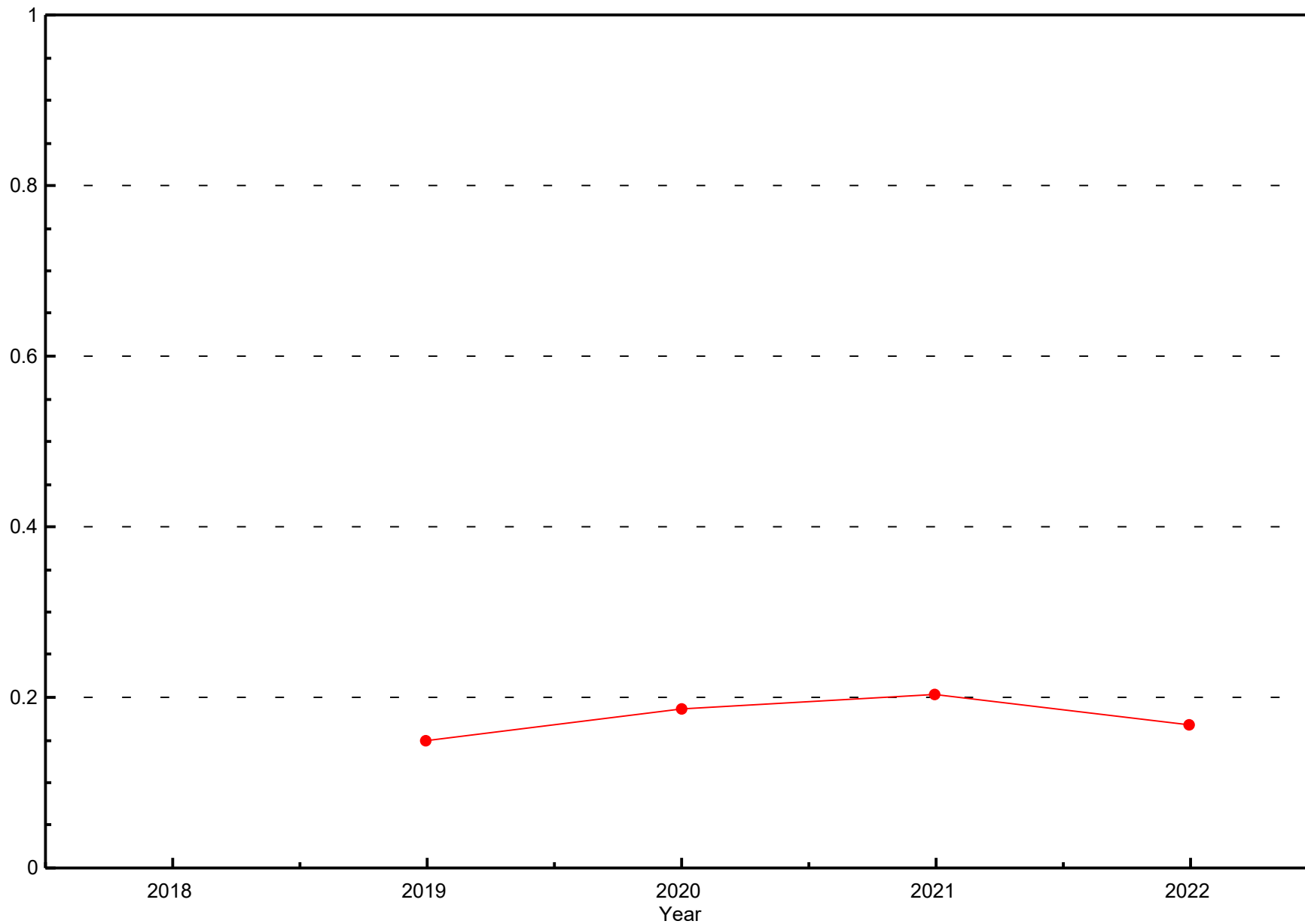
Carbon Monoxide (CO) - ppm
Fort Chipewyan (2018 to 2022)





Yearly Averages

Carbon Monoxide (CO) - ppm
Stony Mountain (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

CARBON DIOXIDE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Carbon Dioxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	700	433.1	456.9	444.1
February	100	637	435.7	478.2	448.4
March	100	707	434.5	466.3	451.5
April	100	683	429.6	466.6	440.1
May	100	707	431.9	469.6	439.7
June	95	644	428.3	484.3	438.8
July	98	688	427.1	539.3	457.9
August	100	708	430.4	536.4	450.0
September	98	676	431.2	555.4	463.2
October	100	707	430.1	482.7	450.4
November	100	684	426.4	457.0	441.1
December	100	706	432.2	461.2	452.5
Annual	99	8247	430.9	555.4	463.2



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
Carbon Dioxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	707	429.6	444.6	438.5
February	99	633	428.6	440.3	435.2
March	100	702	424.5	436.8	431.7
April	100	682	419.7	438.8	434.8
May	100	707	431.1	453.8	442.3
June	100	686	422.2	437.3	425.7
July	100	710	419.8	443.8	426.8
August	100	706	415.3	446.4	426.5
September	97	666	419.3	468.5	438.8
October	100	710	424.4	450.6	434.4
November	96	656	427.5	449.2	441.3
December	100	709	430.3	445.6	441.6
Annual	99	8274	424.3	468.5	442.3



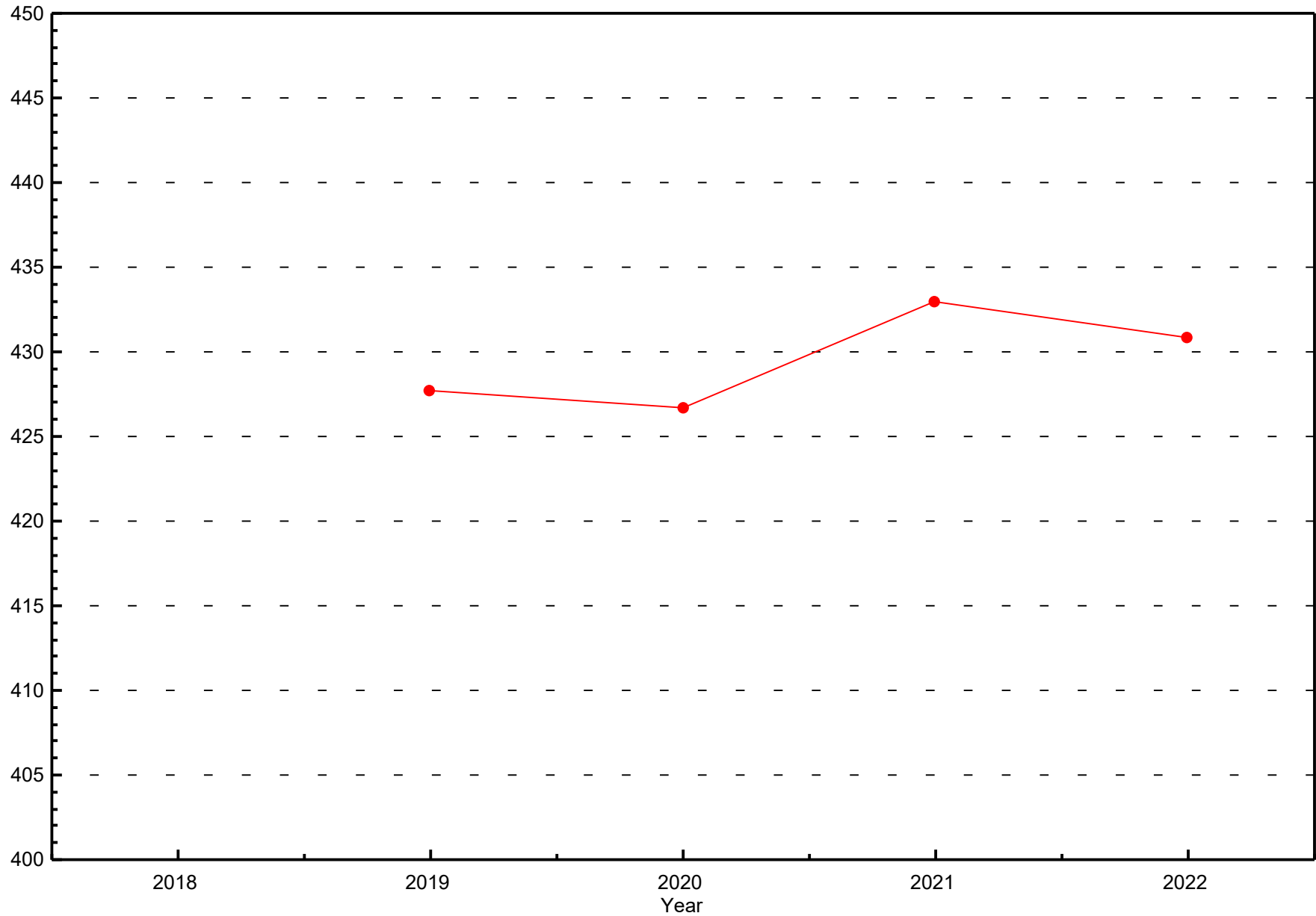
Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Carbon Dioxide (ppm) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	63	443	439.6	453.0	444.4
February	100	640	439.3	448.7	443.6
March	100	709	439.9	457.9	447.8
April	100	686	439.9	447.8	444.2
May	100	708	438.0	456.3	441.8
June	93	639	432.4	468.0	439.3
July	99	702	423.9	468.9	434.3
August	51	361	427.1	469.2	450.7
September	99	676	432.5	481.1	447.6
October	100	710	436.6	463.8	449.8
November	100	683	440.3	462.5	451.2
December	100	709	442.7	478.3	456.4
Annual	92	7666	436.3	481.1	456.4



Yearly Averages

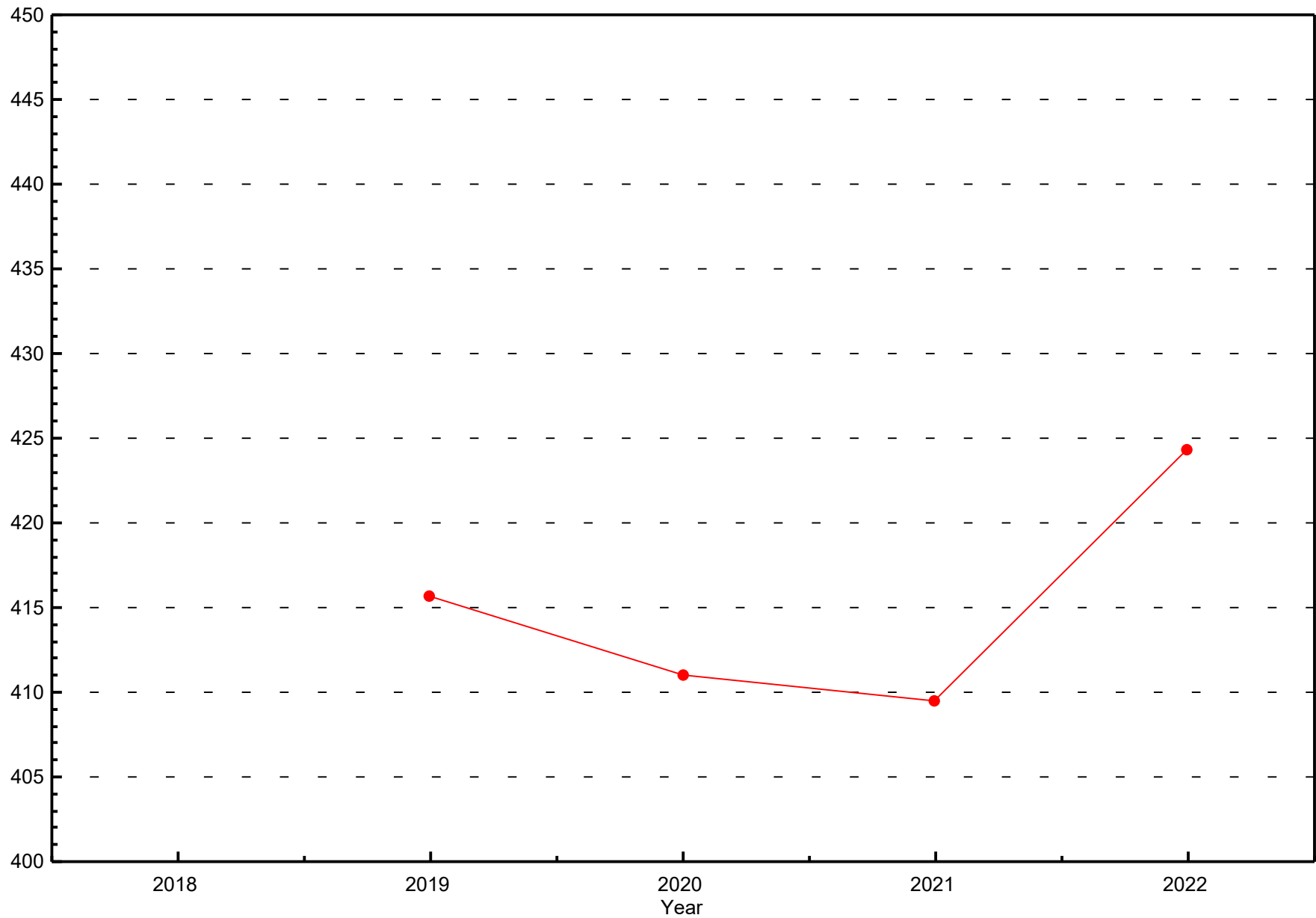
Carbon Dioxide (CO₂) - ppm
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

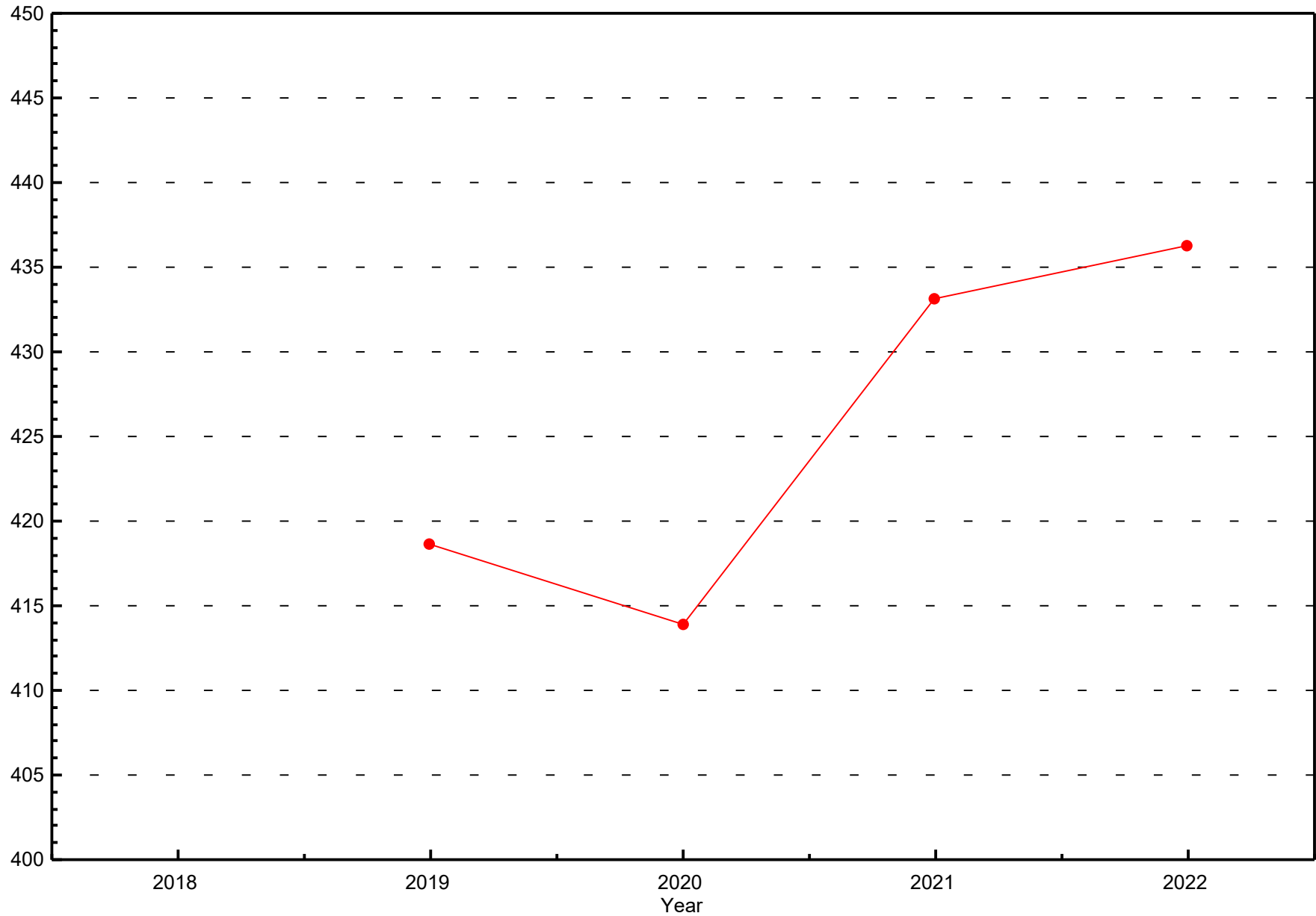
Carbon Dioxide (CO₂) - ppm
Fort Chipewyan (2018 to 2022)





Yearly Averages

Carbon Dioxide (CO₂) - ppm
Stony Mountain (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

AMMONIA ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	0.0	0.0
February	96	605	0.0	0.0	0	0.0	100.0	0.0	0.0
March	96	670	0.0	0.0	0	0.0	100.0	0.0	0.0
April	96	649	0.0	0.0	0	0.0	100.0	0.0	0.0
May	94	661	0.0	0.0	0	0.0	100.0	0.0	0.0
June	92	616	0.0	0.0	0	0.0	100.0	0.0	0.0
July	91	632	0.0	0.0	0	0.0	100.0	0.0	0.0
August	91	638	0.0	0.0	0	0.0	100.0	0.0	0.0
September	90	610	0.0	0.0	0	0.0	100.0	0.0	0.0
October	91	641	0.0	0.0	0	0.0	100.0	0.0	0.0
November	96	648	0.0	0.0	0	0.0	100.0	0.0	0.0
December	94	660	0.0	0.0	0	0.0	100.0	0.0	0.0
Annual	93	7704	0.0	0.0	0	0.0	100.0	0.0	0.0



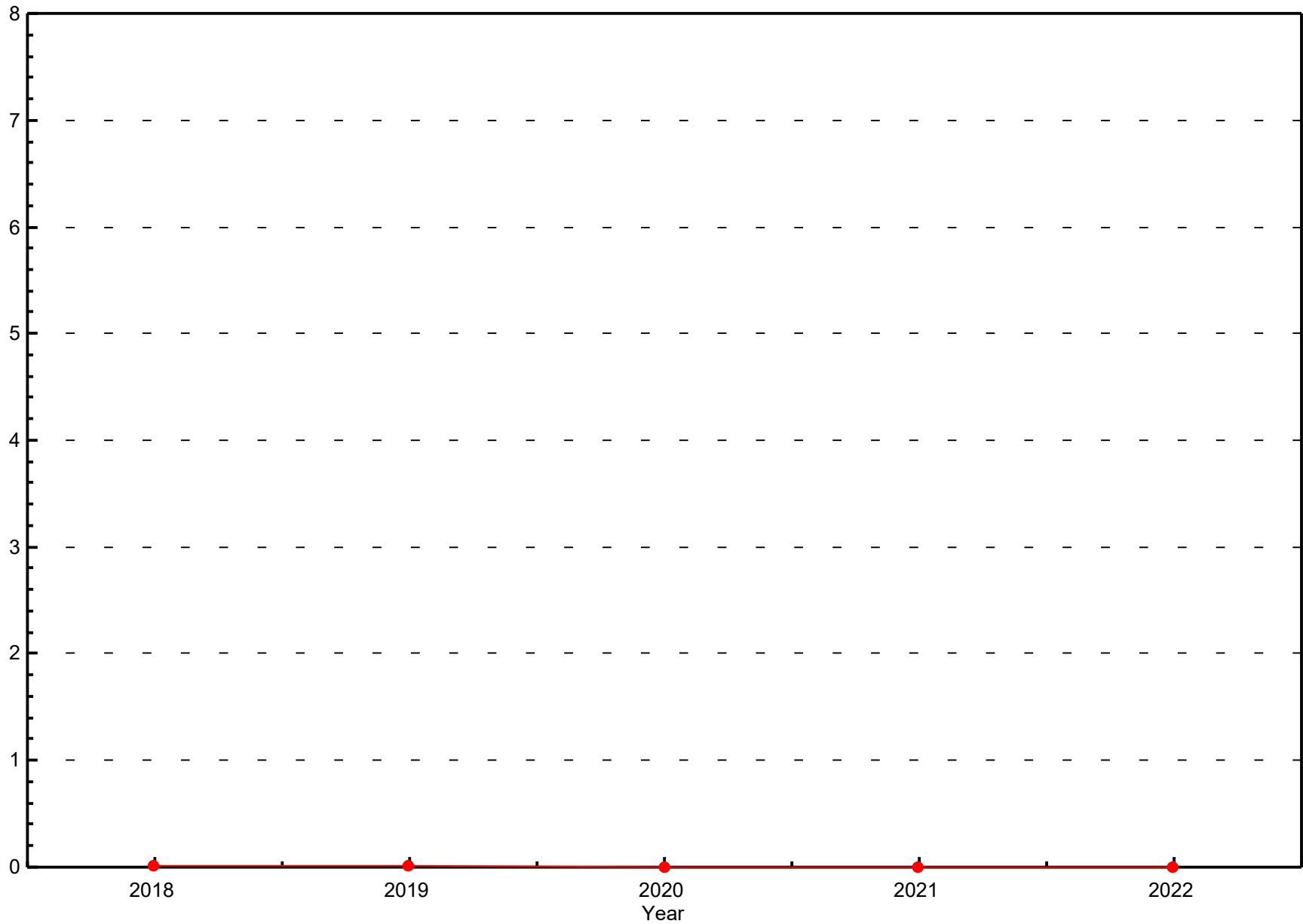
Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
Ammonia (ppb) Average

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	94	648	0.0	0.0	0	0.0	100.0	0.0	0.0
February	89	559	0.0	0.0	0	0.0	100.0	0.0	0.0
March	95	666	0.0	0.0	0	0.0	100.0	0.0	0.0
April	94	638	0.0	0.0	0	0.0	100.0	0.0	0.0
May	91	629	0.0	0.0	0	0.0	100.0	0.0	0.0
June	90	605	0.0	0.0	0	0.0	100.0	0.0	0.0
July	87	606	0.2	13.2	0	2.5	100.0	0.0	0.0
August	88	612	0.0	0.0	0	0.0	100.0	0.0	0.0
September	85	571	0.0	13.5	0	0.0	100.0	0.0	0.0
October	90	632	1.0	71.6	0	5.9	100.0	0.0	0.0
November	92	626	0.0	0.0	0	0.0	100.0	0.0	0.0
December	95	664	0.0	0.0	0	0.0	100.0	0.0	0.0
Annual	91	7456	0.1	71.6	0	5.9	100.0	0.0	0.0



Yearly Averages

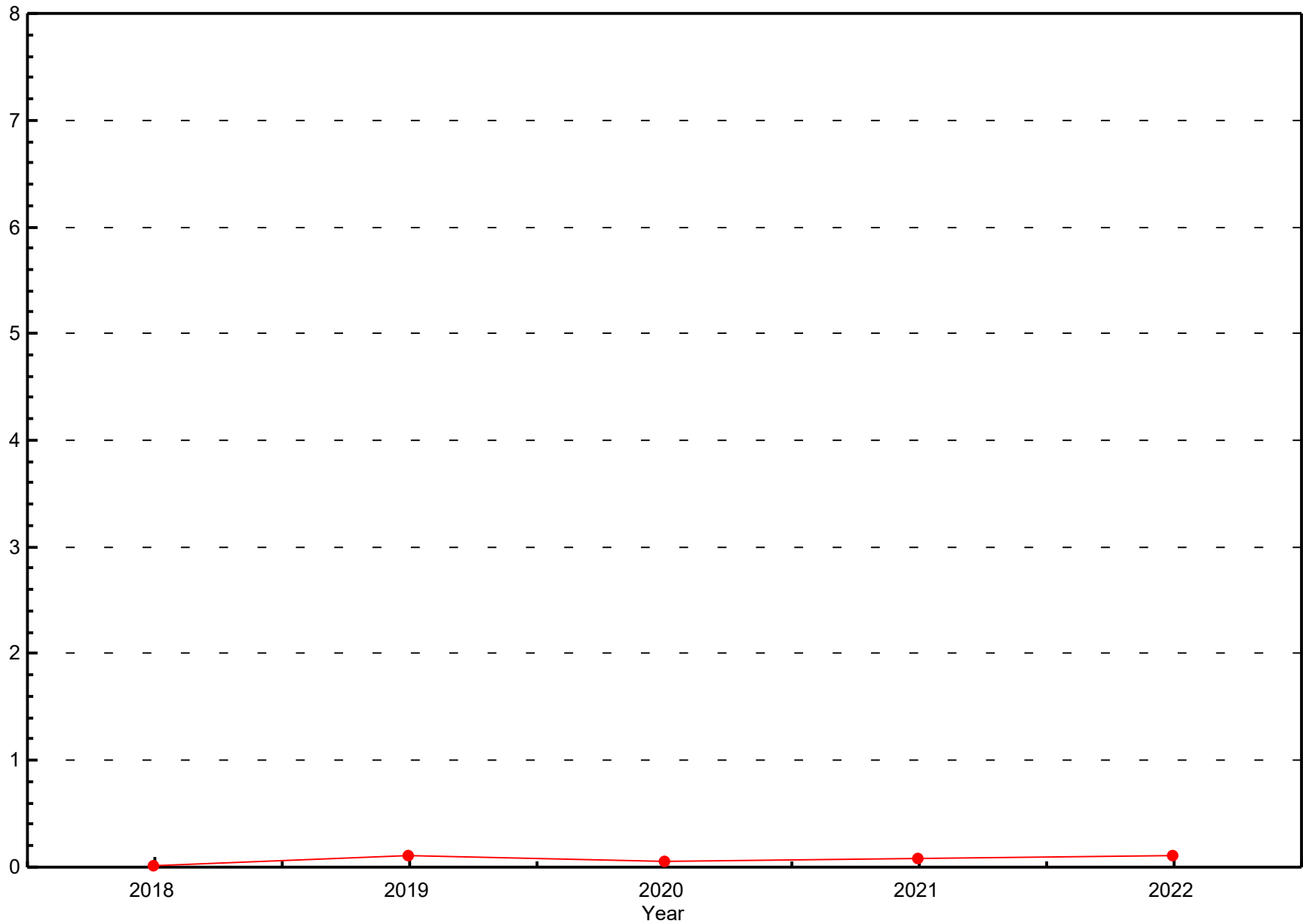
Ammonia (NH₃) - ppb
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

Ammonia (NH₃) - ppb
Patricia McInnes (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

PARTICULATE MATTER 2.5 ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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				
					1		2	0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	742	6.6	93.0	2	17.8	0	54.0	34.6	8.4	2.4	0.5
February	97	646	6.7	33.7	0	13.6	0	44.1	42.7	11.6	1.4	0.2
March	100	741	7.0	34.6	0	12.8	0	47.2	35.0	15.7	1.9	0.3
April	100	719	6.3	34.9	0	12.6	0	47.2	42.6	10.0	0.1	0.1
May	100	742	5.7	27.4	0	12.3	0	57.6	33.6	8.2	0.7	0.0
June	100	714	8.7	35.3	0	14.2	0	27.3	45.4	24.7	2.4	0.3
July	99	739	7.8	62.8	0	17.8	0	42.4	37.9	14.1	4.6	1.1
August	100	741	11.3	66.1	0	28.5	0	34.7	27.8	22.9	10.3	4.3
September	99	710	9.4	68.1	0	32.4	1	34.5	35.9	22.8	3.9	2.8
October	100	741	11.4	158.1	2	30.3	1	35.2	26.6	22.1	10.5	5.5
November	100	719	6.9	36.2	0	21.3	0	50.2	31.0	13.8	4.6	0.4
December	100	739	6.5	56.4	0	17.4	0	60.9	24.0	12.0	2.6	0.5
Annual	100	8693	7.9	158.1	4	32.4	2	44.9	34.7	15.5	3.7	1.3



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	6.1	31.0	0	20.0	0	56.7	33.5	8.2	1.5	0.1
February	97	648	6.1	26.3	0	10.1	0	53.4	37.5	8.8	0.3	0.0
March	98	726	5.6	26.7	0	15.1	0	66.9	23.6	7.9	1.7	0.0
April	97	698	6.2	32.6	0	10.6	0	52.2	36.1	11.0	0.6	0.1
May	99	735	6.0	35.0	0	13.2	0	53.7	35.7	9.4	1.1	0.1
June	97	695	10.8	48.3	0	23.3	0	18.0	43.9	29.9	6.0	2.2
July	95	708	10.5	129.1	3	29.8	1	22.7	49.0	19.6	4.7	4.0
August	98	727	13.1	89.7	1	44.1	4	29.6	34.1	18.0	8.1	10.2
September	100	719	11.5	93.7	1	30.2	1	25.5	35.7	26.3	8.6	3.9
October	100	744	16.5	216.6	3	40.8	6	32.0	17.6	23.4	11.3	15.7
November	100	720	8.2	51.0	0	24.1	0	51.3	23.3	16.9	7.2	1.3
December	100	742	8.3	195.5	5	49.8	1	54.0	27.9	13.1	2.6	2.4
Annual	98	8605	9.1	216.6	13	49.8	13	48.0	22.6	16.1	6.8	6.5



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)

Annual Summary for the Year 2022

Particulate Matter 2.5 (ug/m³) 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 - 5	6 - 10	11 - 20	21 - 30	>30
January	98	730	7.0	31.9	0	23.9	0	49.5	36.0	10.0	4.3	0.3
February	100	671	5.8	28.1	0	9.9	0	56.0	35.0	8.4	0.6	0.0
March	96	715	4.8	26.5	0	13.6	0	75.0	18.7	5.9	0.4	0.0
April	96	691	4.9	18.2	0	9.5	0	67.7	29.2	3.0	0.0	0.0
May	99	733	4.4	19.9	0	6.5	0	78.4	20.5	1.1	0.0	0.0
June	99	714	8.8	28.9	0	15.6	0	21.3	50.8	25.4	2.5	0.0
July	100	743	9.1	109.3	3	27.7	0	40.2	36.2	17.2	3.1	3.2
August	100	743	10.7	80.4	1	42.9	3	45.4	26.7	12.8	7.7	7.5
September	100	716	7.6	50.7	0	25.5	0	52.2	28.2	14.3	2.9	2.4
October	100	741	12.5	339.3	12	54.0	2	44.1	25.0	15.9	8.4	6.6
November	100	719	5.8	25.7	0	15.9	0	62.2	24.6	12.0	1.3	0.0
December	100	743	6.2	33.3	0	14.1	0	56.3	31.1	10.9	1.6	0.1
Annual	99	8659	7.3	339.3	16	54.0	5	53.9	30.2	11.5	2.8	1.7



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
Particulate Matter 2.5 (ug/m³) 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 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	742	6.3	38.9	0	25.0	0	60.0	29.8	7.6	2.0	0.7
February	100	671	5.9	46.9	0	12.5	0	58.4	33.1	7.6	0.6	0.3
March	100	740	7.1	155.1	2	23.8	0	61.2	25.5	9.6	1.4	2.3
April	100	719	6.3	105.7	3	15.0	0	63.3	30.3	4.0	0.7	1.7
May	100	743	5.5	79.6	0	10.3	0	68.8	24.1	5.8	0.7	0.7
June	96	687	8.1	25.7	0	13.2	0	27.2	49.6	22.6	0.6	0.0
July	98	727	8.6	117.6	5	30.7	1	39.5	43.5	11.6	2.5	3.0
August	100	743	11.3	73.1	0	47.8	3	41.6	31.5	10.9	9.3	6.7
September	100	714	8.1	54.6	0	23.5	0	48.5	28.9	17.5	2.8	2.4
October	100	743	10.6	160.2	2	30.6	1	42.5	26.1	17.0	7.3	7.1
November	100	719	7.6	69.4	0	18.8	0	52.3	25.5	17.5	2.6	2.1
December	100	742	7.8	145.2	4	19.9	0	51.5	33.8	10.0	2.3	2.4
Annual	99	8690	7.8	160.2	16	47.8	5	51.3	31.6	11.8	2.8	2.5



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	18.9	0	8.6	0	74.3	22.9	2.8	0.0	0.0
February	99	666	4.2	116.9	1	8.3	0	82.4	16.8	0.6	0.0	0.2
March	97	719	3.4	11.5	0	5.0	0	93.7	6.1	0.1	0.0	0.0
April	100	716	3.1	11.5	0	6.6	0	96.1	3.5	0.4	0.0	0.0
May	100	741	2.5	6.8	0	4.3	0	99.3	0.7	0.0	0.0	0.0
June	100	719	6.8	247.0	9	67.6	1	79.1	13.9	4.2	1.0	1.8
July	100	740	6.1	110.8	2	22.2	0	70.5	16.2	9.7	2.0	1.5
August	99	739	8.8	85.3	3	32.8	1	52.8	24.8	14.3	4.6	3.5
September	98	704	7.2	65.6	0	26.2	0	55.0	24.9	14.5	3.4	2.3
October	100	742	7.3	219.0	2	26.9	0	62.4	14.2	17.5	4.9	1.1
November	100	718	4.6	22.7	0	14.9	0	69.8	20.9	8.5	0.8	0.0
December	100	742	4.1	15.7	0	10.7	0	78.4	18.1	3.5	0.0	0.0
Annual	99	8689	5.2	247.0	17	67.6	2	76.2	15.1	6.4	1.4	0.9



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	720	7.5	52.2	0	19.3	0	46.8	31.9	18.9	1.9	0.4
February	99	668	6.3	23.4	0	11.2	0	46.7	43.0	10.0	0.3	0.0
March	46	341	9.5	71.9	0	21.0	0	34.9	34.3	24.1	4.7	2.1
April	99	714	7.6	62.7	0	19.1	0	42.9	38.1	14.7	3.5	0.8
May	100	743	5.4	25.9	0	10.2	0	62.1	30.4	6.7	0.8	0.0
June	100	717	8.1	33.6	0	12.3	0	31.7	46.9	19.4	2.0	0.1
July	100	741	9.3	72.5	0	21.5	0	31.0	41.3	21.3	4.3	2.0
August	99	738	15.5	89.8	3	43.6	5	21.3	30.4	22.1	12.6	13.7
September	100	719	11.0	69.9	0	37.5	1	28.1	33.1	28.7	6.1	4.0
October	100	742	14.6	190.3	3	36.0	4	27.2	21.0	28.2	11.3	12.3
November	100	716	8.8	79.3	0	29.8	1	48.2	24.7	16.9	7.1	3.1
December	100	742	5.7	27.0	0	12.6	0	63.8	24.5	10.7	1.1	0.0
Annual	95	8301	9.1	190.3	6	43.6	11	40.6	33.2	18.3	4.7	3.3



Wood Buffalo Environmental Association - Fort McKay South (AMS13)

Annual Summary for the Year 2022

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	6.4	38.1	0	19.6	0	57.9	30.0	9.7	2.0	0.4
February	100	668	6.1	42.1	0	11.4	0	53.9	36.4	9.3	0.3	0.2
March	100	742	7.0	30.2	0	13.2	0	48.4	33.4	16.6	1.6	0.0
April	100	719	7.5	27.6	0	16.3	0	36.7	43.0	19.1	1.3	0.0
May	94	696	5.7	39.8	0	12.4	0	58.9	33.6	6.8	0.3	0.4
June	100	715	8.0	33.5	0	13.0	0	27.7	53.6	17.2	1.4	0.1
July	100	740	9.0	57.9	0	21.5	0	33.9	42.2	16.9	5.0	2.0
August	97	717	13.3	134.3	1	35.9	3	26.6	32.1	20.2	11.6	9.5
September	100	717	9.5	62.9	0	33.5	1	36.3	33.3	23.6	3.6	3.2
October	100	743	10.6	157.2	2	28.0	0	38.6	25.0	22.2	10.8	3.4
November	100	719	6.0	28.6	0	19.1	0	59.0	26.2	12.9	2.0	0.0
December	100	743	6.0	59.8	0	17.6	0	64.1	22.6	11.7	0.9	0.7
Annual	99	8662	7.9	157.2	3	35.9	4	44.6	34.5	15.7	3.5	1.7



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	4.9	36.2	0	15.3	0	71.7	23.1	4.7	0.3	0.3
February	97	651	4.3	41.7	0	9.5	0	84.3	13.1	1.7	0.6	0.3
March	98	730	3.3	14.2	0	7.7	0	89.5	8.8	1.8	0.0	0.0
April	99	713	3.3	12.1	0	5.4	0	92.7	7.0	0.3	0.0	0.0
May	100	743	3.1	23.9	0	7.3	0	95.8	3.2	0.8	0.1	0.0
June	94	674	5.8	23.4	0	12.4	0	58.9	32.1	8.8	0.3	0.0
July	97	719	7.4	90.6	2	20.0	0	47.4	38.3	10.7	1.7	2.0
August	78	581	11.9	108.5	5	52.9	4	49.6	21.7	10.7	10.3	7.8
September	100	718	7.5	73.7	0	28.1	0	57.4	22.4	13.5	3.9	2.8
October	99	739	8.4	108.2	1	29.2	1	49.7	27.1	13.7	6.5	3.1
November	100	719	4.5	49.5	0	15.3	0	73.6	18.4	7.5	0.4	0.1
December	100	743	4.9	23.1	0	11.7	0	67.8	24.6	6.6	0.9	0.0
Annual	97	8472	5.7	108.5	8	52.9	5	70.4	19.9	6.6	1.9	1.3



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	4.4	35.1	0	11.5	0	76.0	21.4	2.4	0.0	0.1
February	100	671	4.3	52.1	0	14.0	0	86.4	11.2	1.5	0.2	0.8
March	100	743	3.5	14.0	0	6.2	0	88.0	11.3	0.7	0.0	0.0
April	100	719	3.3	19.3	0	5.2	0	94.7	5.2	0.1	0.0	0.0
May	100	743	3.0	10.3	0	5.9	0	95.4	4.6	0.0	0.0	0.0
June	100	717	5.8	24.3	0	11.4	0	60.1	32.1	7.4	0.4	0.0
July	100	743	8.0	81.3	2	18.8	0	47.9	33.0	13.3	3.5	2.3
August	100	742	11.0	55.0	0	35.9	2	33.3	37.1	14.7	8.2	6.7
September	100	719	7.9	66.0	0	33.9	1	50.1	31.3	12.2	2.8	3.6
October	100	742	8.4	125.2	2	27.2	0	50.7	23.1	18.6	3.5	4.2
November	100	718	4.4	24.2	0	14.0	0	71.3	21.7	6.4	0.6	0.0
December	100	742	4.2	19.1	0	10.3	0	79.3	15.4	5.4	0.0	0.0
Annual	100	8742	5.7	125.2	4	35.9	3	69.3	20.7	7.0	1.6	1.5



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Particulate Matter 2.5 (ug/m³) 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 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	743	4.0	12.0	0	7.5	0	80.1	19.0	0.9	0.0	0.0
February	100	671	3.3	14.0	0	6.8	0	92.9	6.4	0.8	0.0	0.0
March	100	742	2.7	18.4	0	11.6	0	95.3	2.3	2.4	0.0	0.0
April	97	700	2.9	7.4	0	5.1	0	98.0	2.0	0.0	0.0	0.0
May	100	743	3.0	6.8	0	4.5	0	98.4	1.6	0.0	0.0	0.0
June	93	669	6.0	23.2	0	12.0	0	56.8	32.9	10.0	0.3	0.0
July	100	742	8.6	122.2	1	30.7	1	36.7	46.2	11.5	2.2	3.5
August	94	698	11.8	90.8	6	52.6	4	47.9	23.8	12.0	5.3	11.0
September	100	719	8.0	69.5	0	33.9	1	55.1	23.2	14.3	3.1	4.3
October	100	743	7.8	80.4	1	28.8	0	51.3	26.8	13.2	6.7	2.0
November	100	717	4.8	23.1	0	18.1	0	73.8	16.5	8.5	1.3	0.0
December	100	743	5.6	58.5	0	16.4	0	64.2	24.2	9.4	1.2	0.9
Annual	99	8630	5.7	122.2	8	52.6	6	70.9	18.6	7.0	1.7	1.8



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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				
					Objective		Objective	0 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	744	4.5	16.9	0	8.0	0	73.1	23.5	3.4	0.0	0.0
February	98	660	4.0	22.2	0	6.8	0	83.9	13.6	2.1	0.3	0.0
March	98	729	4.0	79.7	0	16.5	0	85.9	9.3	3.8	0.7	0.3
April	98	702	3.8	36.1	0	6.9	0	85.3	12.1	2.4	0.0	0.1
May	100	744	3.7	29.6	0	7.7	0	86.7	11.3	1.6	0.4	0.0
June	99	713	7.6	70.8	0	13.8	0	44.9	37.7	14.5	1.8	1.1
July	100	741	9.4	93.5	1	29.0	0	32.8	41.7	19.3	2.3	3.9
August	99	739	11.9	73.8	0	41.4	4	40.7	27.5	13.5	7.9	10.4
September	100	713	11.0	97.1	3	31.5	1	43.6	22.3	19.8	6.7	7.6
October	100	743	10.6	108.8	3	29.2	1	37.7	29.5	19.8	7.7	5.4
November	100	719	5.3	25.4	0	16.6	0	66.9	21.1	10.0	2.0	0.0
December	100	738	6.6	83.8	1	18.3	0	57.3	26.2	13.8	1.6	1.1
Annual	99	8685	6.9	108.8	8	41.4	6	60.9	23.3	10.5	2.7	2.6



**Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	6.1	23.7	0	10.2	0	49.3	41.5	9.2	0.1	0.0
February	100	670	5.0	22.6	0	9.6	0	72.1	23.9	3.7	0.3	0.0
March	100	743	4.8	55.7	0	12.9	0	78.7	17.6	2.8	0.0	0.8
April	100	718	4.9	45.1	0	12.9	0	73.8	22.3	3.3	0.3	0.3
May	100	743	4.7	107.5	1	9.9	0	70.0	27.9	1.8	0.1	0.3
June	100	717	9.2	39.7	0	20.5	0	24.4	46.7	25.1	3.4	0.4
July	100	741	11.3	75.9	0	37.7	1	21.6	40.5	28.7	4.9	4.3
August	100	743	16.1	166.7	25	64.1	5	21.8	37.7	21.0	6.3	13.2
September	100	719	10.9	110.6	2	36.9	1	36.9	31.7	19.5	5.3	6.7
October	100	740	8.4	105.9	1	31.5	1	46.9	27.0	18.5	4.9	2.7
November	100	719	4.5	28.3	0	17.4	0	74.6	16.7	7.9	0.8	0.0
December	100	742	5.7	40.0	0	21.3	0	62.5	27.1	7.8	1.6	0.9
Annual	100	8738	7.7	166.7	29	64.1	8	52.6	30.1	12.5	2.3	2.5



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
Particulate Matter 2.5 (ug/m³) 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 - 5	6 - 10	11 - 20	21 - 30	>30
January	100	743	7.0	58.7	0	17.6	0	49.1	33.7	15.8	0.9	0.5
February	100	672	6.3	30.8	0	10.6	0	54.2	32.9	12.7	0.2	0.2
March	100	742	7.0	42.4	0	19.8	0	52.6	28.8	14.4	3.9	0.3
April	100	719	7.3	52.0	0	18.1	0	46.6	34.5	15.6	2.4	1.0
May	100	743	6.9	103.5	2	18.4	0	54.8	33.7	8.3	1.6	1.6
June	100	715	10.1	121.3	3	24.6	0	25.0	46.3	22.7	3.1	2.9
July	100	743	10.7	152.8	2	21.7	0	34.9	31.1	22.8	7.4	3.9
August	100	741	13.5	182.6	7	39.2	3	29.0	28.3	23.8	11.3	7.6
September	100	719	10.8	159.5	1	36.4	1	35.5	28.1	27.4	4.0	5.0
October	100	741	12.0	148.0	7	33.9	2	37.9	22.0	25.2	7.7	7.2
November	100	719	7.7	93.0	2	24.7	0	53.4	28.9	11.3	4.0	2.4
December	100	741	6.1	46.1	0	13.8	0	62.6	25.1	10.7	1.2	0.4
Annual	100	8738	8.8	182.6	24	39.2	6	44.4	31.2	17.6	4.0	2.8



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
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	4.0	18.0	0	6.8	0	79.9	19.0	1.1	0.0	0.0
February	100	671	3.2	13.1	0	6.0	0	93.4	6.4	0.2	0.0	0.0
March	100	743	4.2	171.4	2	21.2	0	86.9	8.9	2.3	0.8	1.1
April	100	719	3.7	31.7	0	8.7	0	87.1	11.7	1.0	0.1	0.1
May	100	741	3.9	66.6	0	9.5	0	86.2	10.7	2.6	0.3	0.3
June	100	717	8.3	53.3	0	20.5	0	42.5	35.7	16.3	3.5	2.0
July	100	743	8.3	58.7	0	23.8	0	37.7	40.7	17.6	3.2	0.8
August	98	726	12.5	150.3	12	51.8	4	36.5	30.3	18.5	8.1	6.6
September	97	695	10.2	119.1	2	40.6	1	45.0	24.2	20.4	4.2	6.2
October	82	610	8.2	70.3	0	30.1	1	51.6	23.3	17.4	4.3	3.4
November	100	718	3.9	38.3	0	13.3	0	79.8	14.2	5.9	0.0	0.1
December	100	741	4.1	19.9	0	11.1	0	76.3	18.6	5.1	0.0	0.0
Annual	98	8566	6.2	171.4	16	51.8	6	67.7	20.0	8.8	1.9	1.7



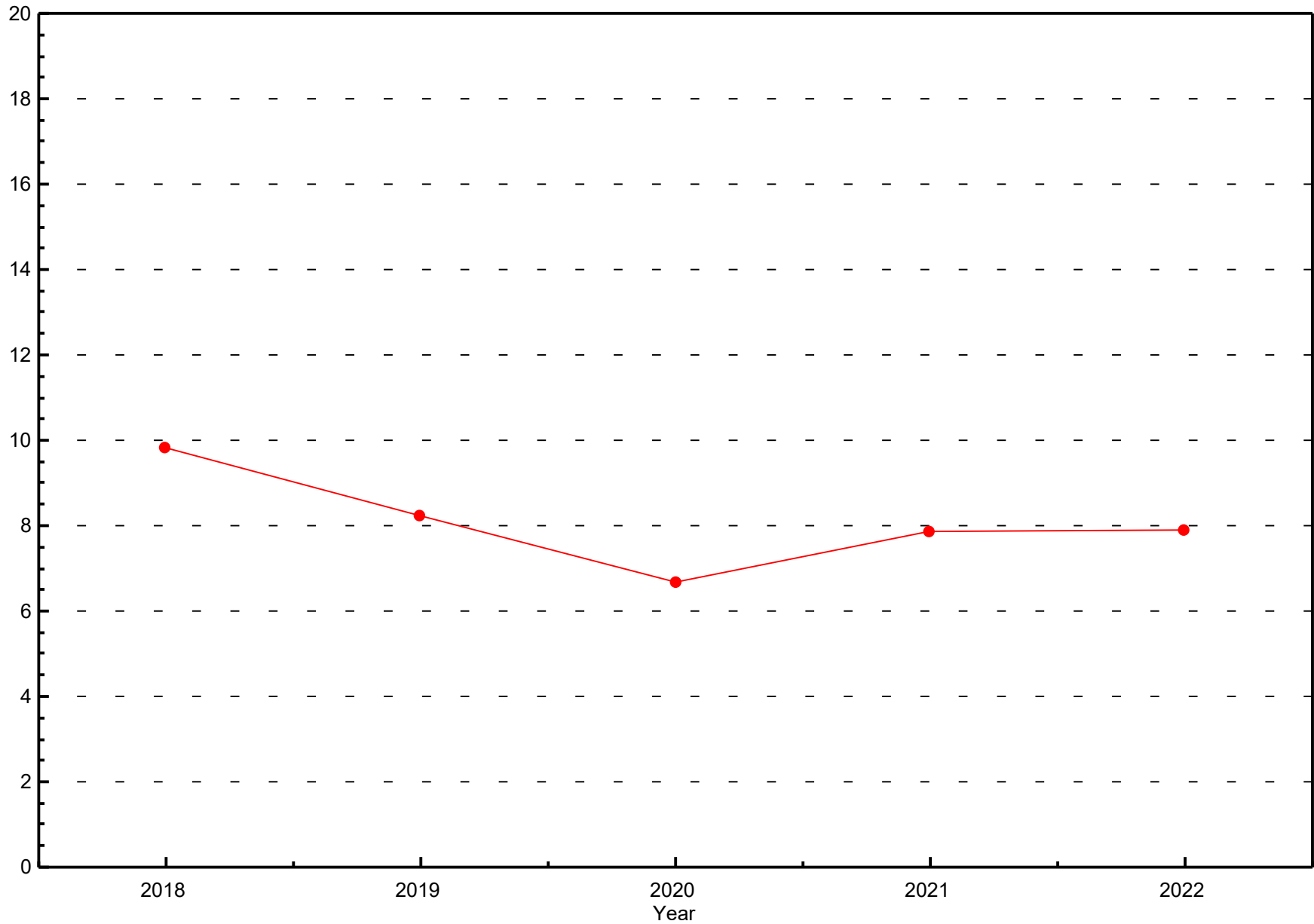
Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Particulate Matter 2.5 (ug/m³) Average

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	5.8	28.8	0	15.6	0	63.3	26.0	9.4	1.4	0.0
February	100	669	4.8	18.8	0	8.5	0	72.8	22.7	4.5	0.0	0.0
March	94	699	4.8	37.5	0	10.5	0	74.0	17.2	8.2	0.4	0.3
April	100	719	4.8	23.1	0	7.8	0	69.8	27.8	2.2	0.1	0.0
May	100	743	5.1	20.6	0	10.1	0	62.7	33.5	3.6	0.1	0.0
June	99	711	7.2	42.8	0	12.7	0	37.3	48.4	13.5	0.7	0.1
July	94	699	6.7	37.8	0	16.6	0	53.5	31.2	12.9	2.3	0.1
August	100	742	9.7	51.7	0	23.4	0	44.3	23.5	22.2	7.8	2.2
September	100	717	7.5	61.2	0	30.7	1	52.3	27.9	15.5	1.5	2.8
October	100	742	9.0	138.5	2	24.1	0	43.7	25.1	23.1	6.1	2.2
November	100	719	5.0	31.6	0	17.1	0	69.8	18.6	9.9	1.5	0.1
December	100	742	4.9	20.7	0	12.1	0	73.7	17.5	8.6	0.1	0.0
Annual	99	8645	6.3	138.5	2	30.7	1	59.5	26.7	11.2	1.9	0.7



Yearly Averages

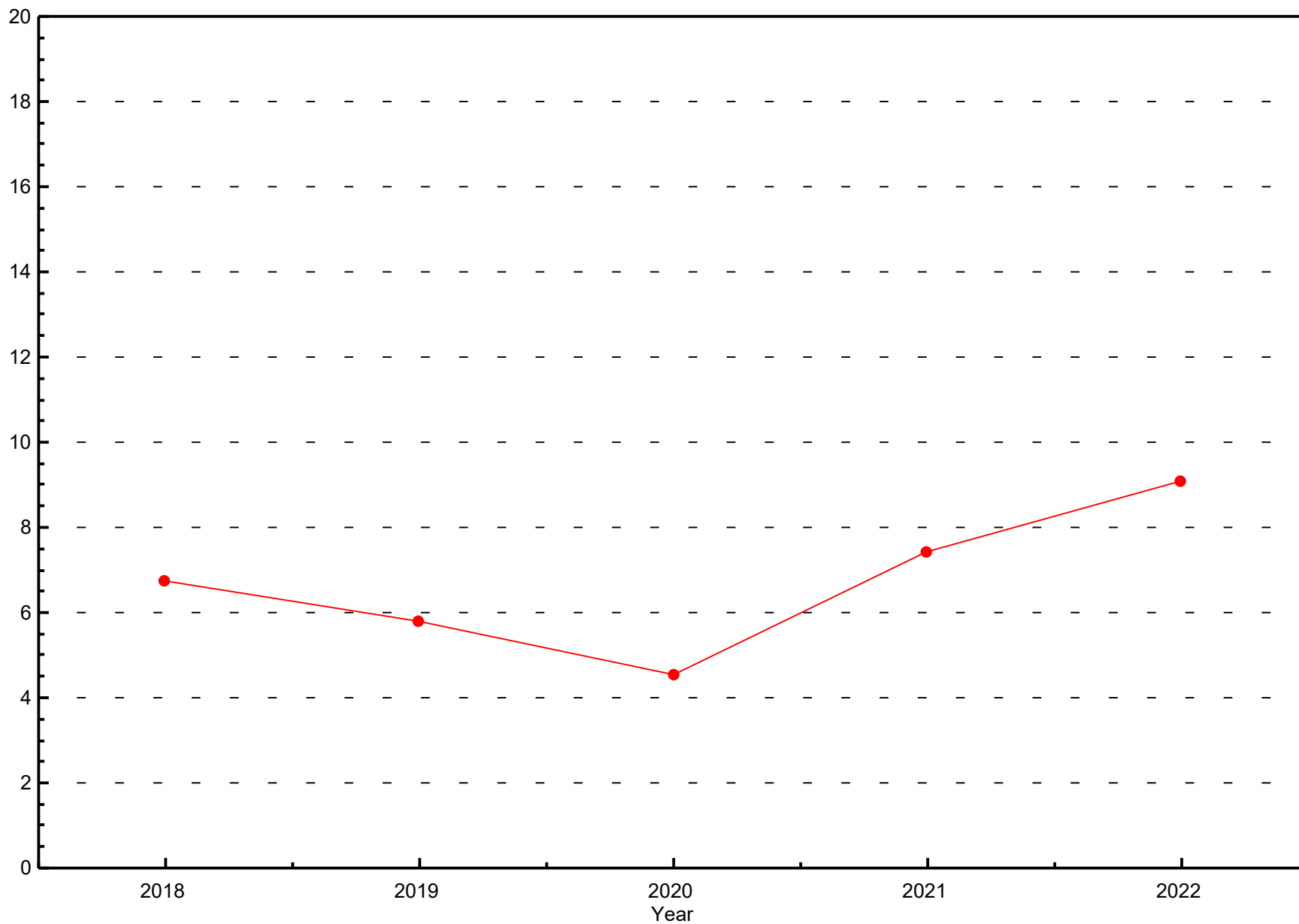
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay - Bertha Ganter (2018 to 2022)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Buffalo Viewpoint (2018 to 2022)

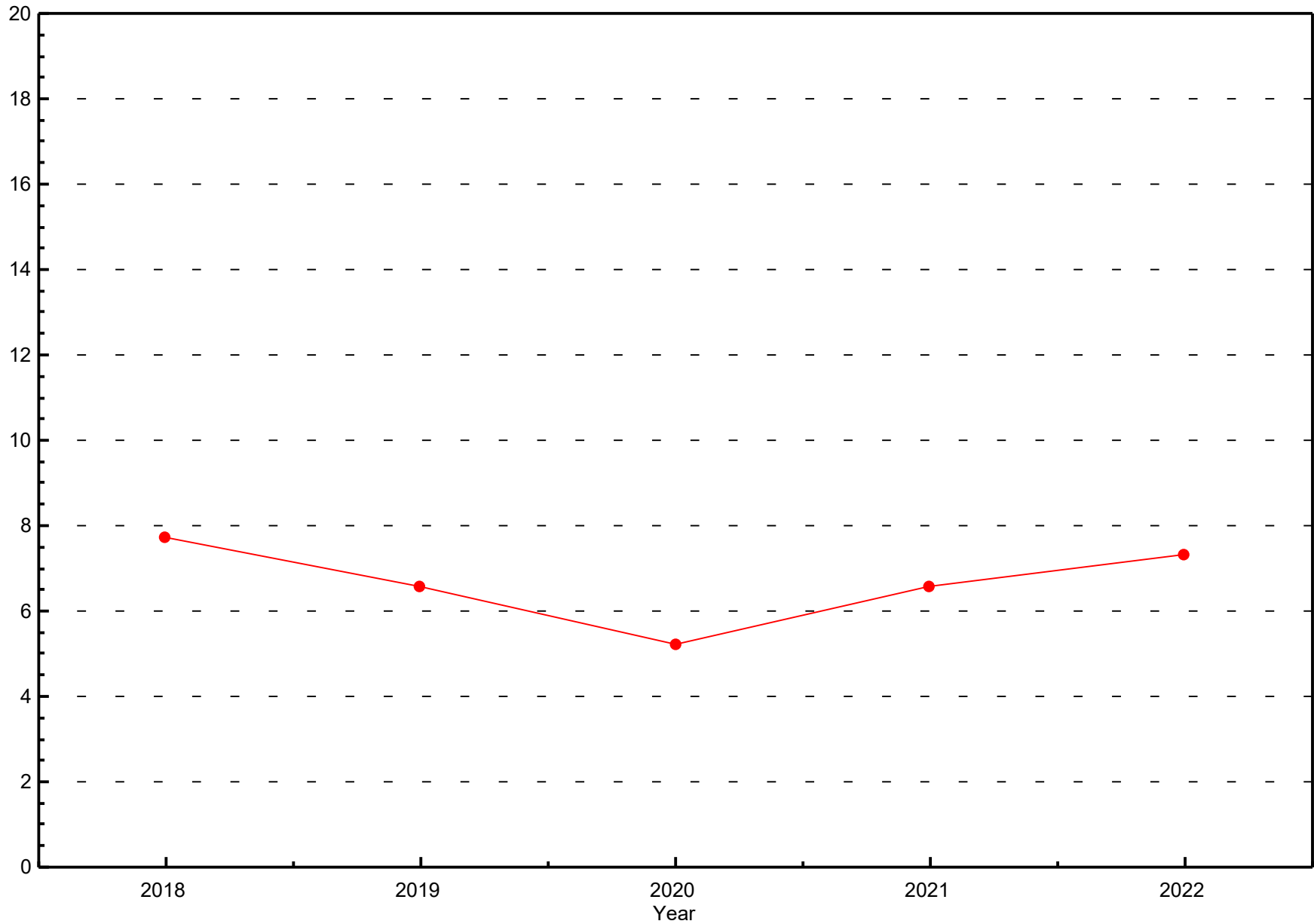




Yearly Averages

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

Patricia McInnes (2018 to 2022)

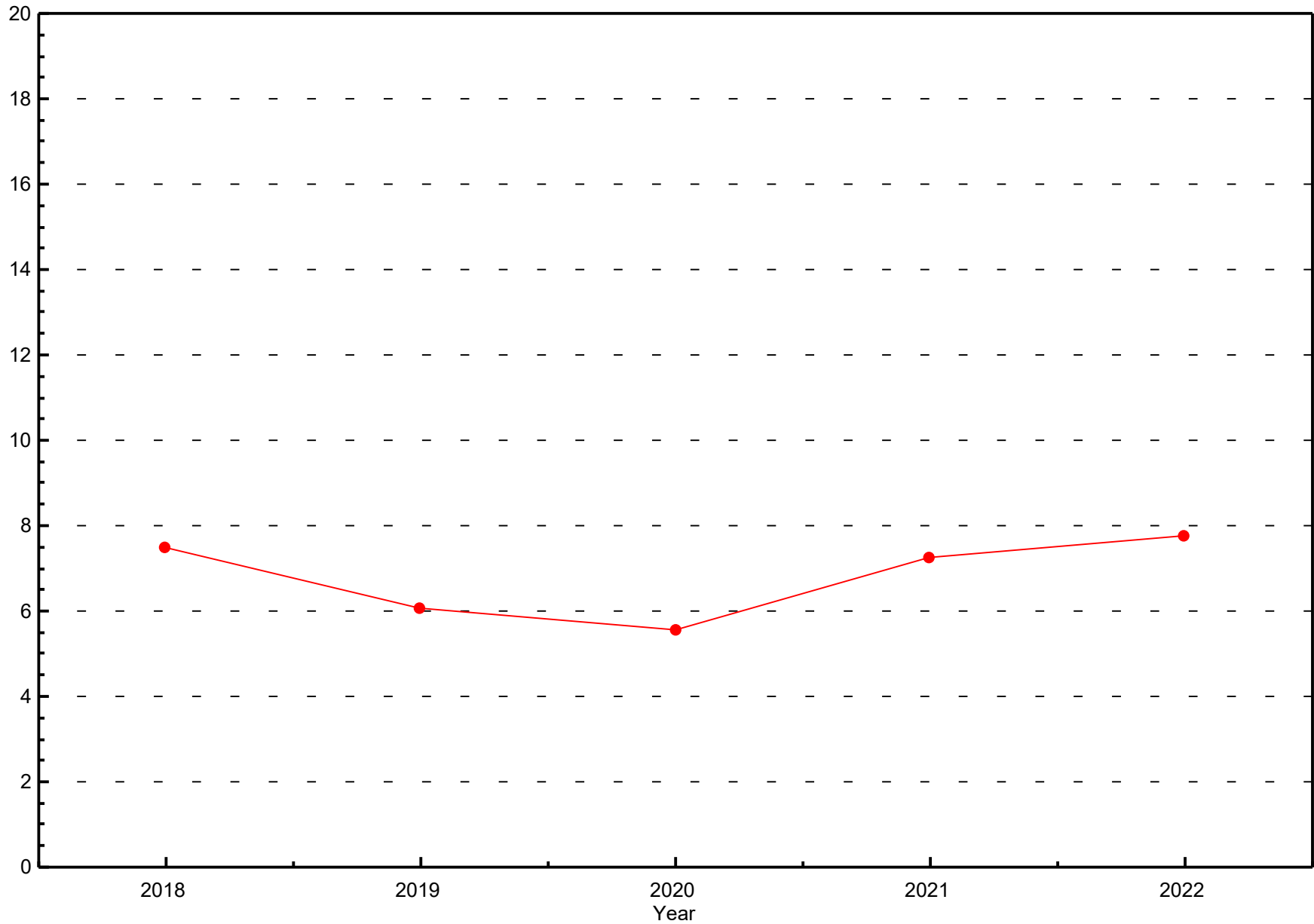




Yearly Averages

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

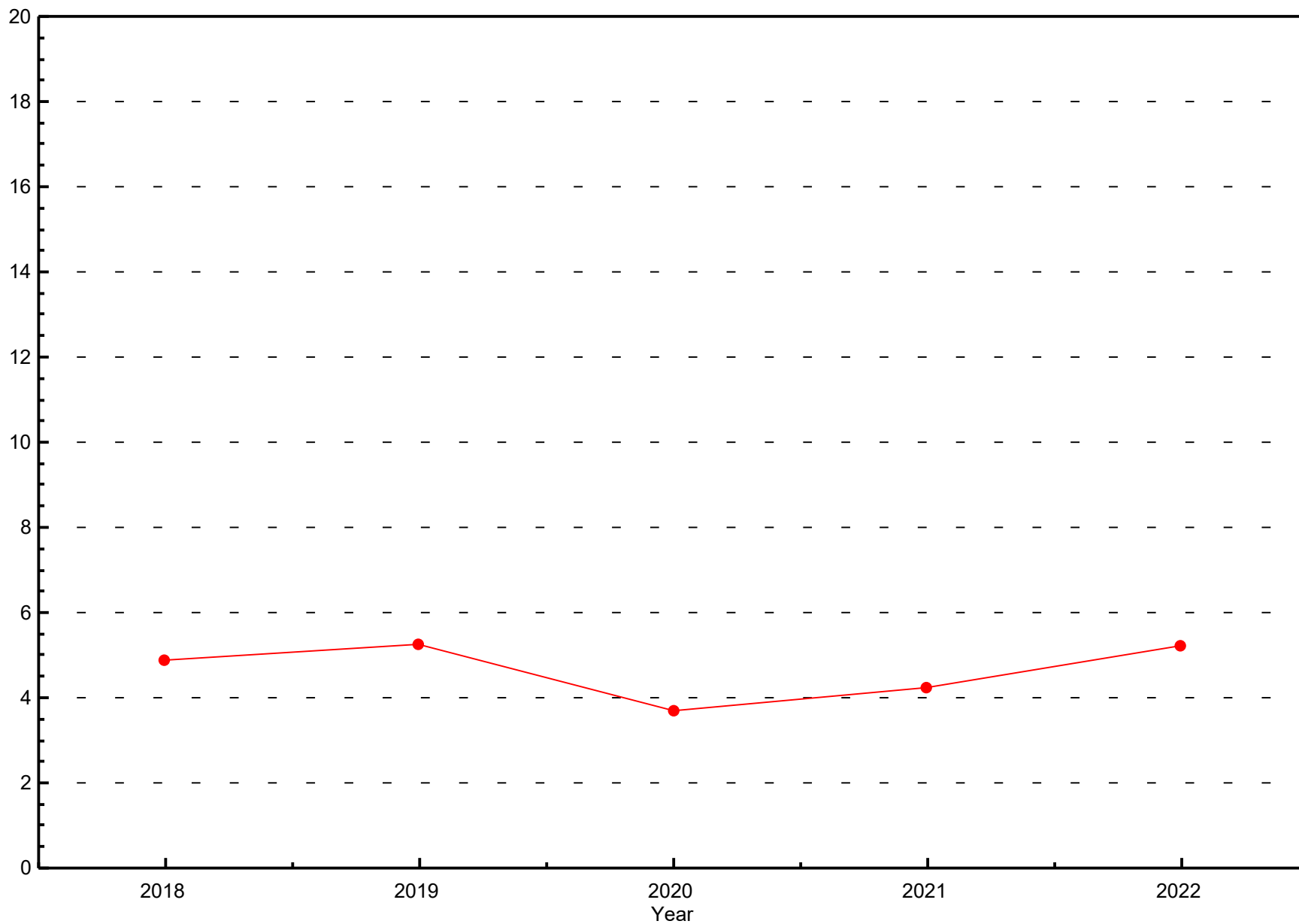
Athabasca Valley (2018 to 2022)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Chipewyan (2018 to 2022)

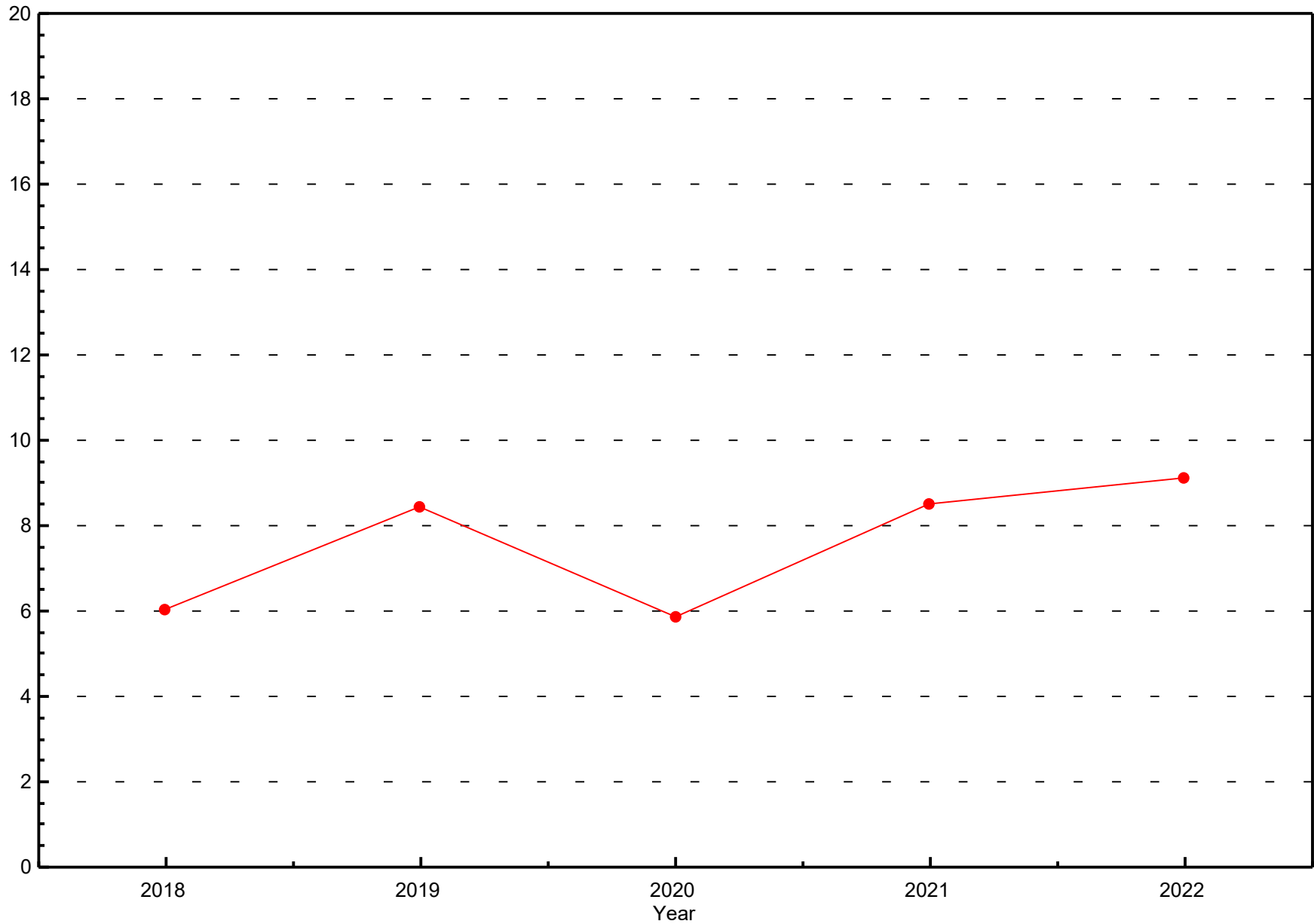




Yearly Averages

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

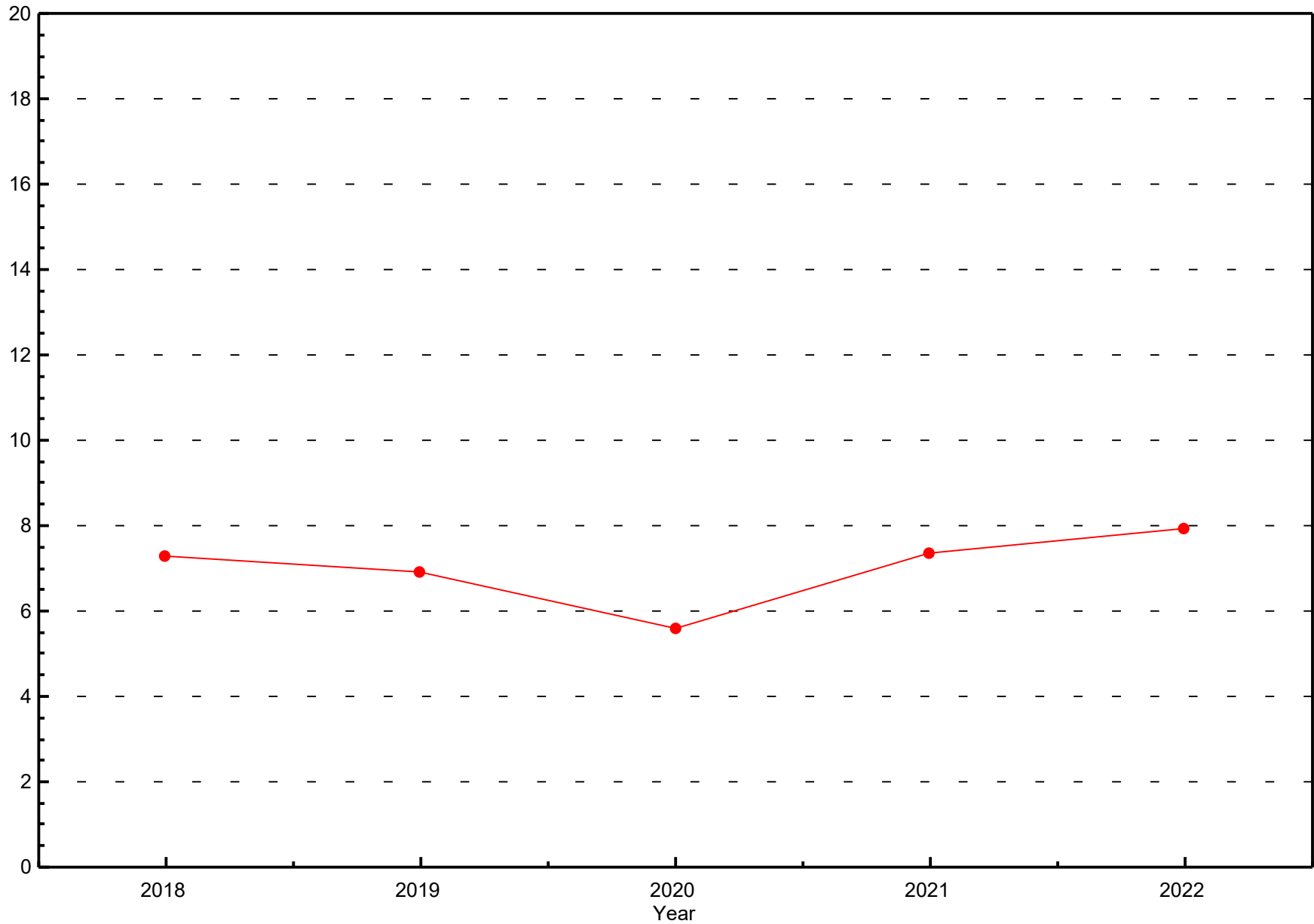
Barge Landing (2018 to 2022)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort McKay South (2018 to 2022)

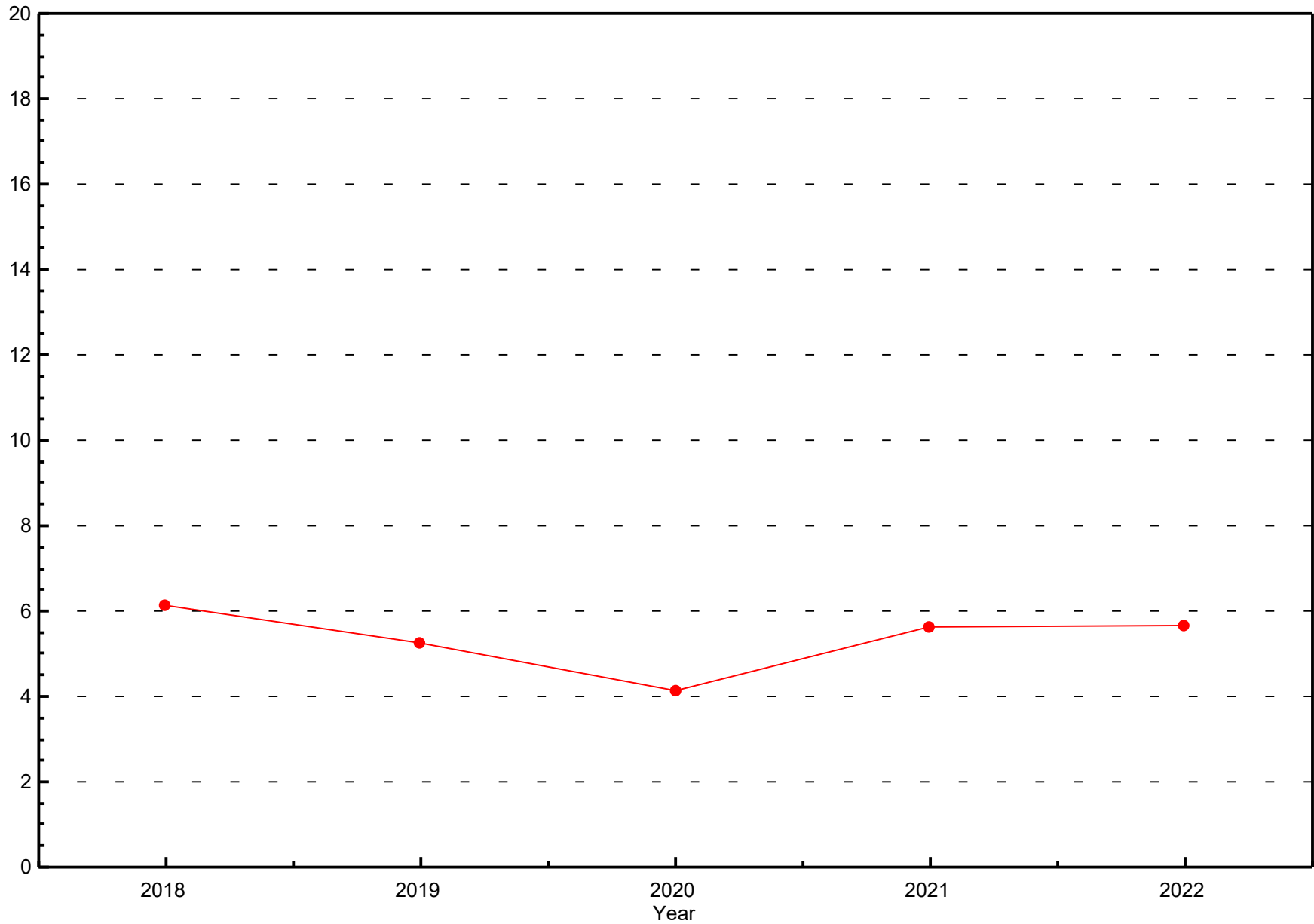




Yearly Averages

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

Anzac (2018 to 2022)

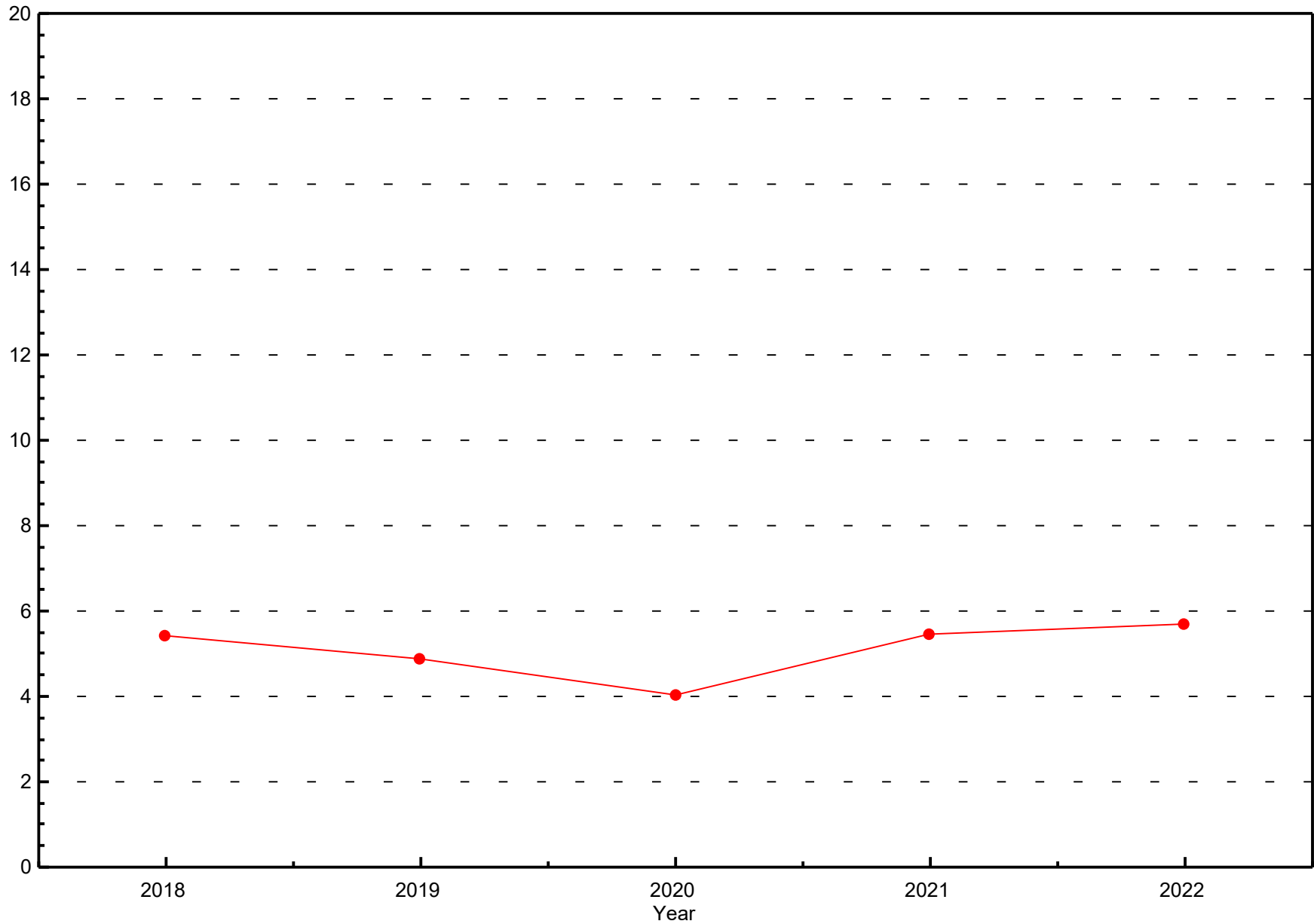




Yearly Averages

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

Wapasu (2018 to 2022)

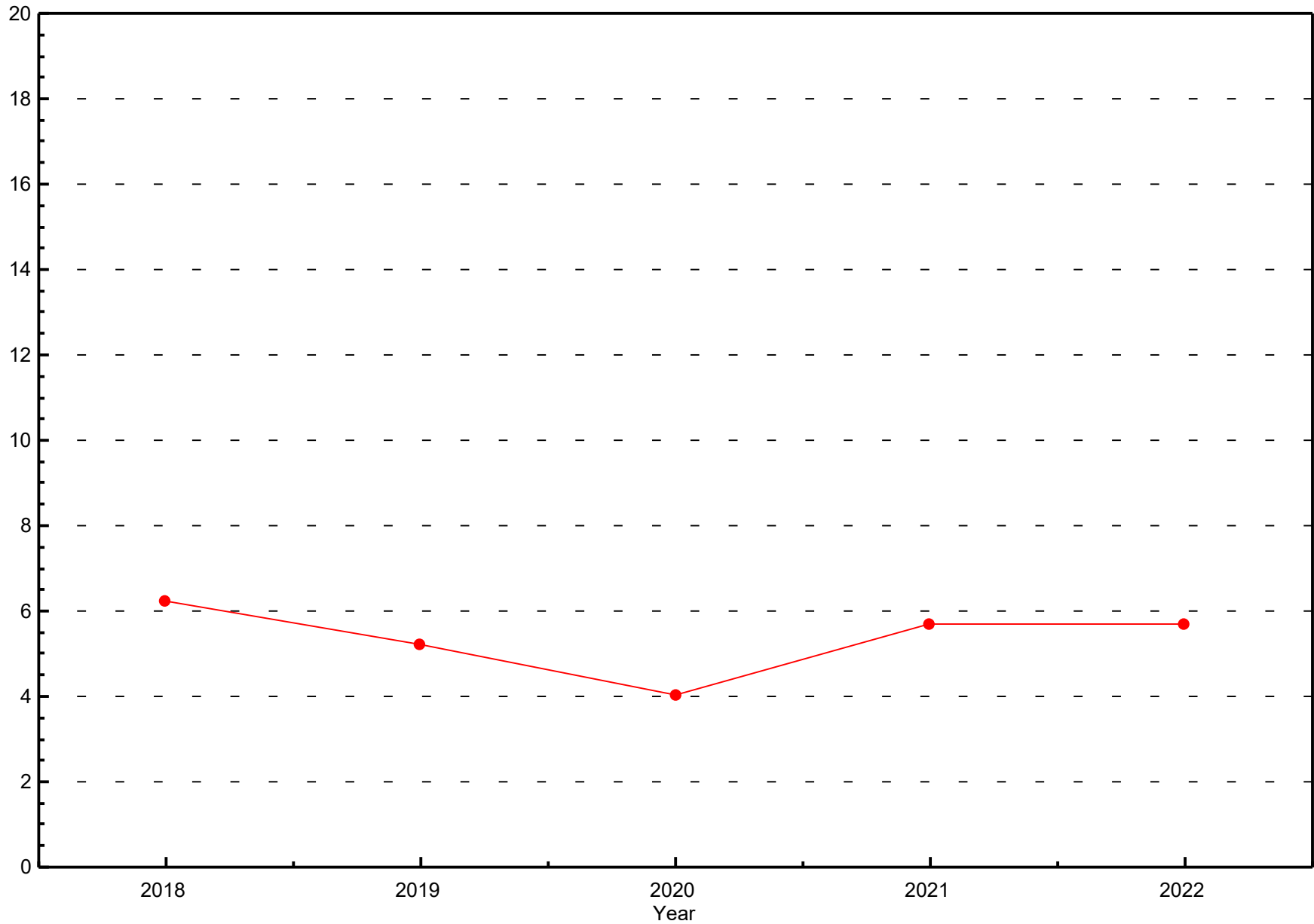




Yearly Averages

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

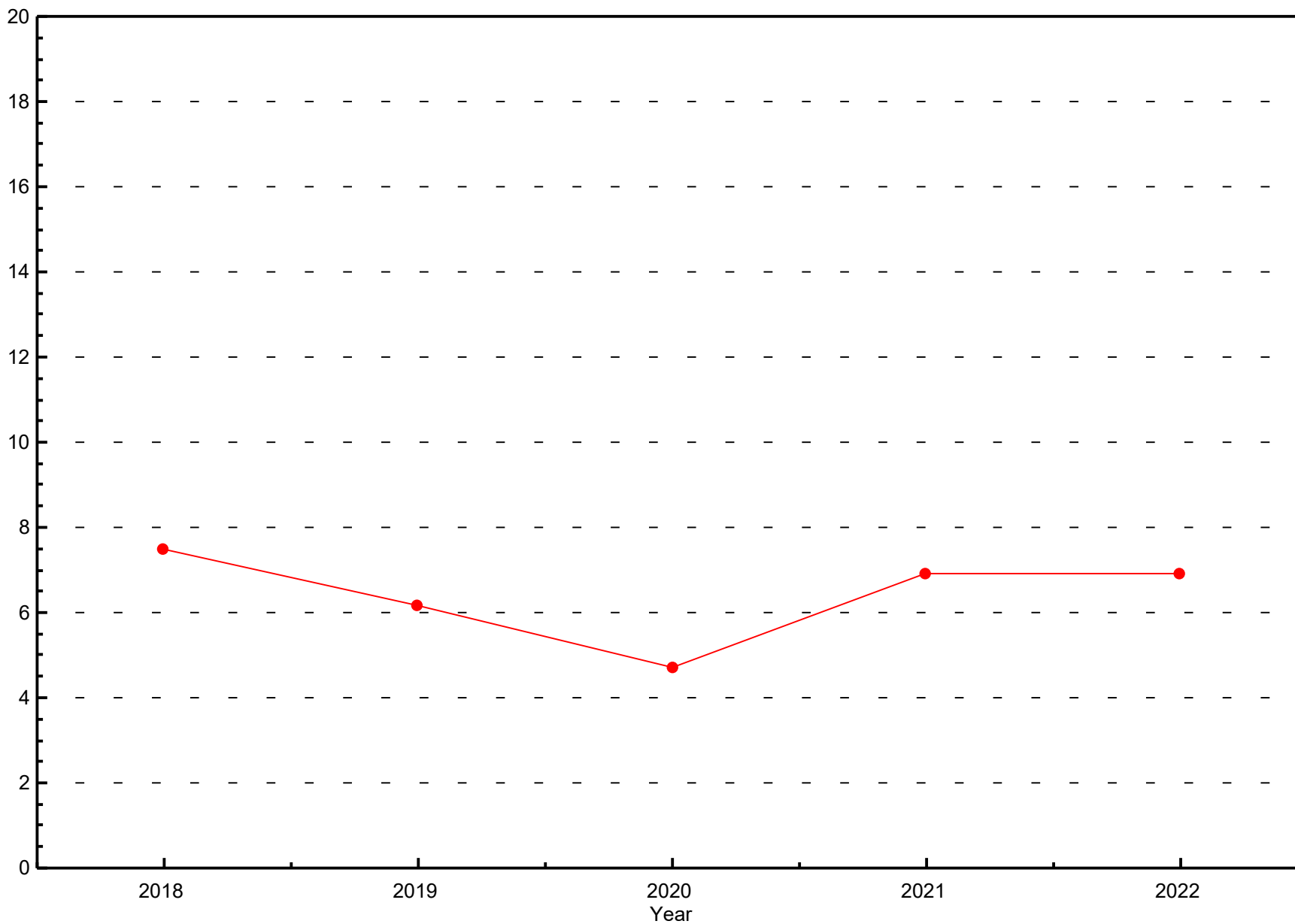
Stony Mountain (2018 to 2022)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Conklin (2018 to 2022)

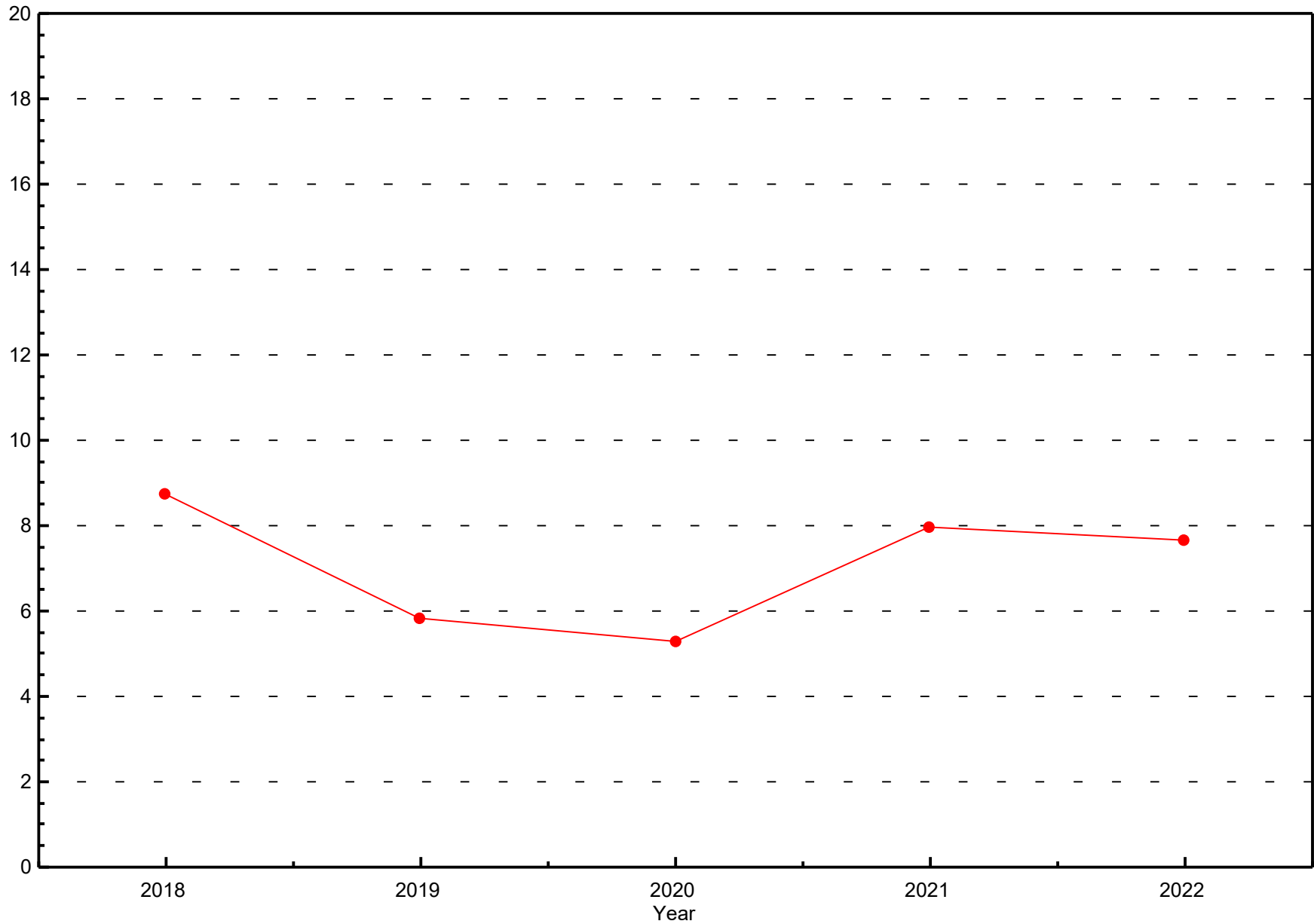




Yearly Averages

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

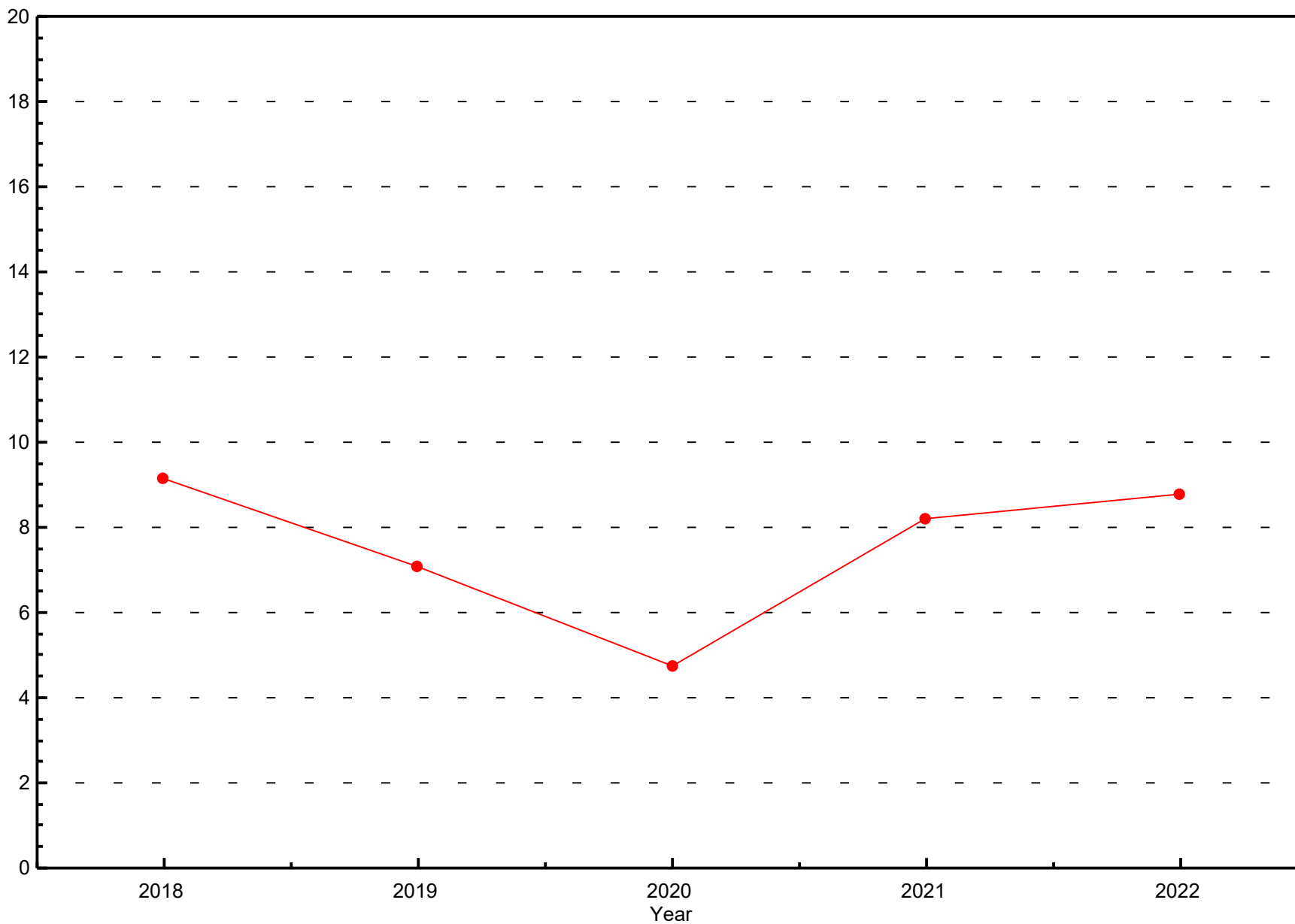
Janvier (2018 to 2022)





Yearly Averages

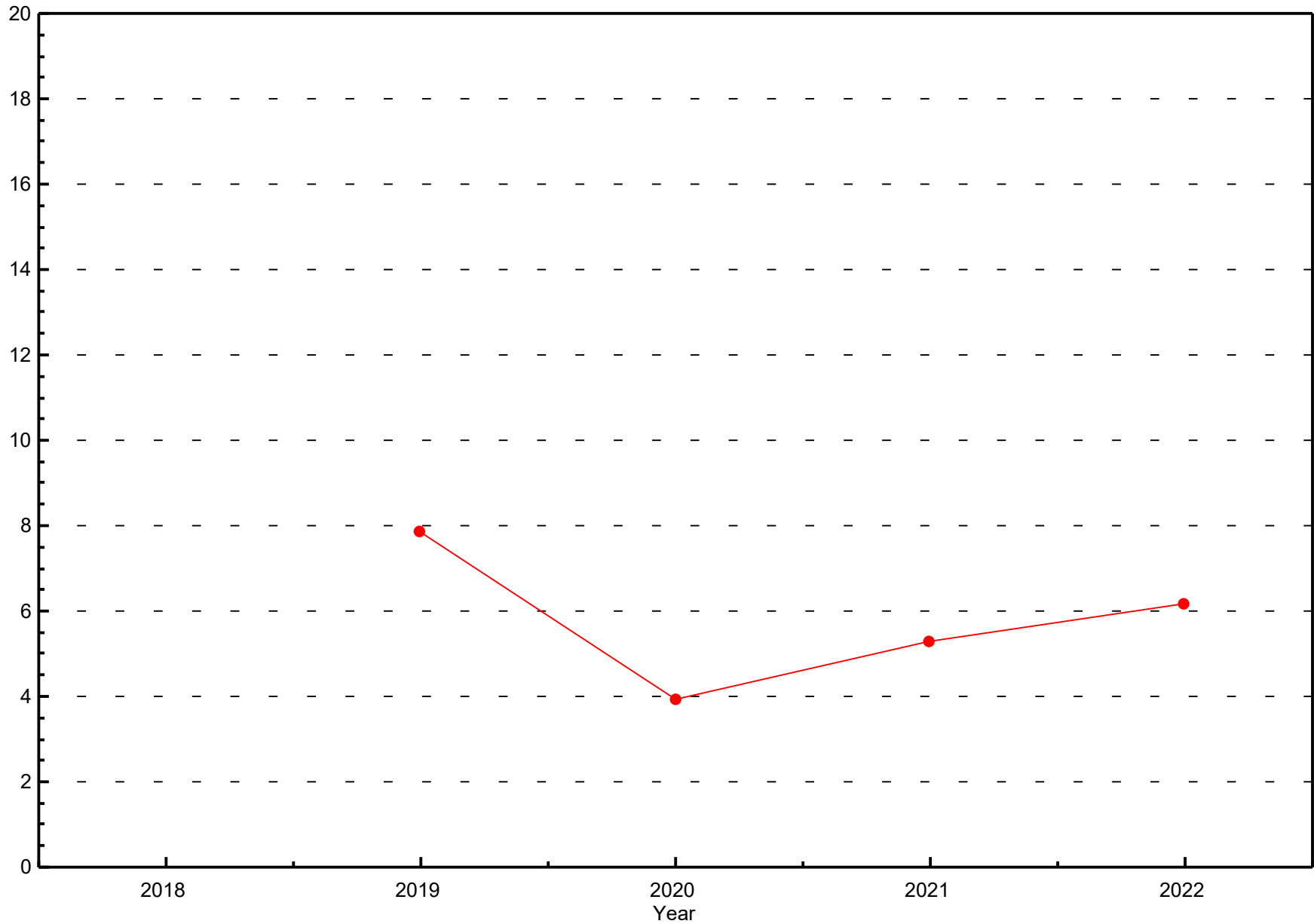
Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Fort Hills (2018 to 2022)





Yearly Averages

Particulate Matter 2.5 (PM_{2.5}) - $\mu\text{g}/\text{m}^3$
Surmont 2 (2018 to 2022)

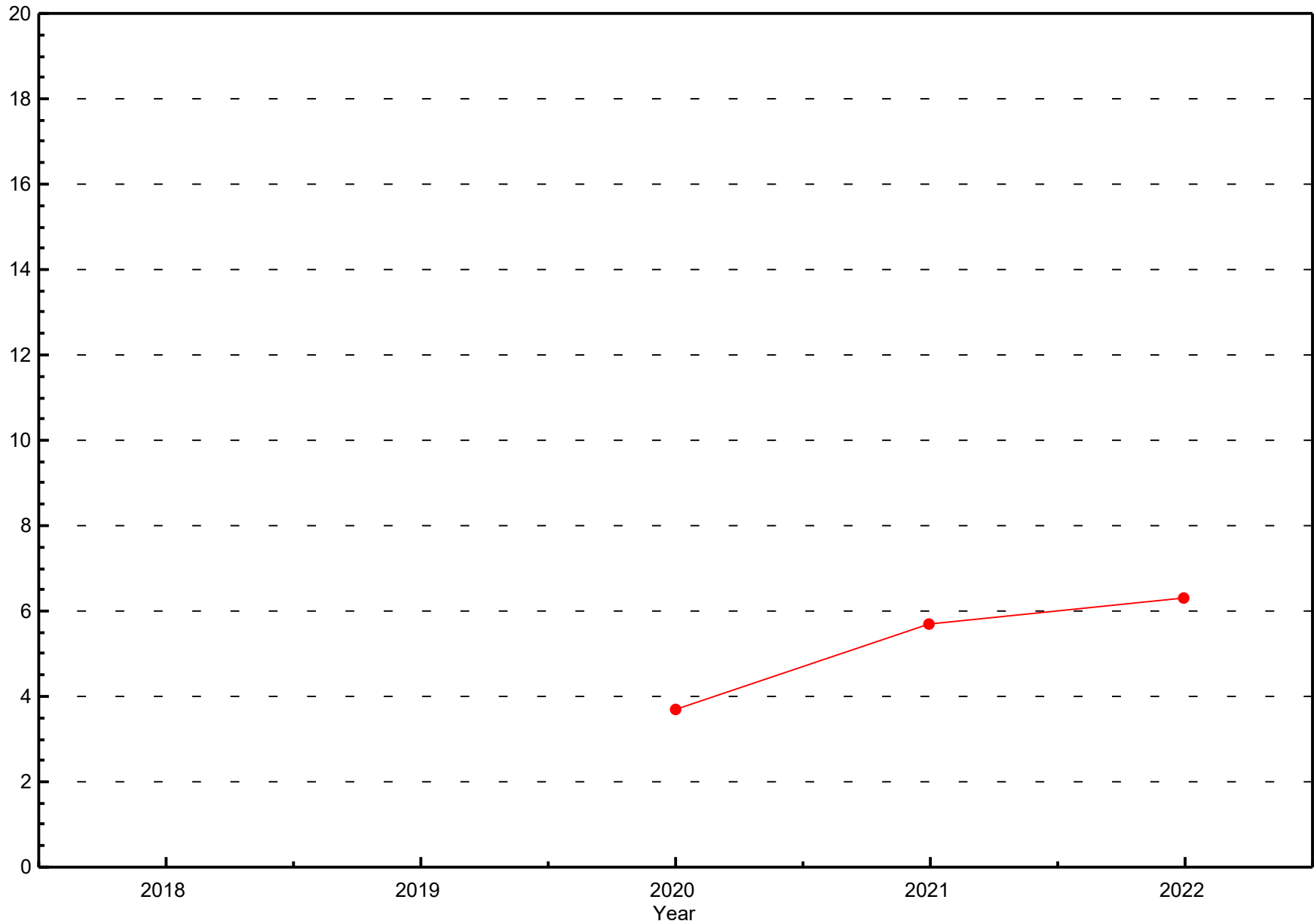




Yearly Averages

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

Ells River (2018 to 2022)





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

AMBIENT TEMPERATURE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2022
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	-35.2	2.1	-32.0	-3.1	-19.4
February	96	648	-38.6	7.8	-32.2	0.8	-18.7
March	100	744	-29.3	15.1	-20.0	4.8	-6.7
April	100	720	-15.5	15.1	-10.9	9.5	0.9
May	100	744	-1.7	22.9	0.8	14.6	8.9
June	100	720	3.1	26.9	13.9	19.9	16.7
July	100	744	6.8	35.1	15.0	24.0	19.0
August	100	744	4.9	33.3	13.1	24.8	19.0
September	100	719	-1.0	30.3	8.5	20.4	13.4
October	100	744	-5.5	21.9	-0.4	13.5	6.1
November	100	720	-25.1	7.2	-23.6	3.0	-7.9
December	100	744	-39.5	-1.4	-34.8	-9.2	-20.0
Annual	100	8735	-39.5	35.1	-34.8	24.8	1.1



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2022
Ambient Temperature 10 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-34.2	2.4	-32.0	-2.8	-19.1
February	87	583	-37.5	8.1	-31.2	3.1	-19.1
March	100	744	-28.5	14.8	-19.6	5.1	-6.4
April	99	712	-15.1	14.5	-11.0	9.3	0.8
May	98	728	-1.9	21.9	0.6	14.7	9.0
June	99	710	3.9	26.1	14.2	19.9	16.9
July	95	705	7.5	34.5	15.2	24.4	19.3
August	97	718	6.1	32.5	13.6	25.2	19.5
September	94	674	2.5	30.0	9.3	20.9	14.3
October	91	679	-4.1	21.8	0.5	14.3	7.1
November	99	714	-24.8	7.7	-23.7	3.5	-7.7
December	100	744	-38.0	-1.0	-34.3	-9.0	-19.8
Annual	97	8455	-38.0	34.5	-34.3	25.2	1.3



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
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	-35.4	2.5	-32.6	-3.1	-18.9
February	100	672	-36.1	8.2	-29.7	1.5	-18.0
March	100	744	-27.9	16.1	-19.9	6.3	-6.3
April	100	720	-16.4	14.0	-11.3	8.6	0.8
May	100	744	-1.9	22.8	0.2	15.1	8.8
June	100	720	2.3	26.6	13.9	20.0	16.9
July	100	744	7.0	34.0	14.6	24.8	19.2
August	100	744	5.8	32.1	13.1	25.4	19.4
September	100	719	2.8	30.7	9.2	21.3	14.2
October	100	744	-3.5	21.6	0.2	15.1	6.9
November	100	719	-25.0	9.3	-24.0	3.4	-7.4
December	100	744	-35.4	-1.8	-32.3	-9.4	-19.4
Annual	100	8758	-36.1	34.0	-32.6	25.4	1.4



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
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
May	100	744	-1.2	22.5	0.8	15.7	9.3
June	100	720	4.2	26.3	14.0	20.2	17.2
July	100	744	8.6	34.5	15.4	25.2	19.5
August	97	721	7.7	32.2	13.8	25.8	19.8
September	98	706	3.7	30.5	9.7	21.9	14.7
October	98	729	-2.3	21.9	0.8	15.0	7.3
November	99	712	-24.6	8.8	-23.4	4.0	-7.0
December	100	744	-35.6	-0.7	-33.0	-8.6	-19.0
Annual	99	5820	-35.6	34.5	-33.0	25.8	7.7



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
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	99	738	-34.5	2.5	-32.3	-2.5	-18.7
February	100	158	-36.9	6.8	-30.7	-11.1	-20.3
March	NaN	0	NaN	NaN	NaN	NaN	NaN
April	100	34	-0.5	7.4	2.5	2.5	2.9
May	100	744	-1.4	22.0	0.6	15.7	9.2
June	100	720	4.7	25.6	14.2	20.3	17.2
July	100	744	9.5	34.3	15.3	25.1	19.5
August	97	721	7.6	32.1	13.9	25.8	19.8
September	98	706	3.9	31.0	9.6	22.0	14.7
October	99	733	-2.1	21.9	0.5	15.5	7.4
November	99	712	-24.6	9.4	-23.7	3.9	-7.1
December	100	744	-34.8	-0.9	-32.6	-8.9	-19.2
Annual	99	6754	-36.9	34.3	-32.6	25.8	4.1



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
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	99	738	-35.2	2.7	-32.9	-2.8	-18.6
February	100	158	-32.1	7.2	-28.1	-9.0	-19.2
March	NaN	0	NaN	NaN	NaN	NaN	NaN
April	100	34	-0.9	6.9	2.1	2.1	2.4
May	100	744	-2.0	21.5	0.0	15.6	8.9
June	100	720	7.4	25.0	14.3	20.3	17.0
July	100	744	10.5	33.7	15.0	25.0	19.4
August	97	721	7.4	31.5	14.0	26.0	19.7
September	98	706	4.2	31.2	9.2	22.6	14.8
October	99	736	-1.5	21.3	0.0	15.8	7.5
November	99	712	-24.9	10.3	-24.1	4.6	-7.1
December	100	744	-34.1	-1.3	-31.6	-9.3	-19.1
Annual	99	6757	-35.2	33.7	-32.9	26.0	4.1



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
Ambient Temperature 163 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
May	100	744	-2.6	20.8	-0.6	15.5	8.5
June	100	720	8.4	24.4	13.8	20.1	16.7
July	100	744	10.7	33.0	14.5	24.9	19.1
August	97	721	9.7	30.9	14.1	26.0	19.6
September	98	706	4.9	31.0	8.7	23.5	14.7
October	99	736	-1.7	20.9	-0.6	15.8	7.5
November	99	712	-25.0	10.5	-24.4	5.1	-7.2
December	100	744	-33.0	-1.8	-31.6	-7.2	-19.1
Annual	99	5827	-33.0	33.0	-31.6	26.0	7.5



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	-36.5	2.3	-32.7	-2.9	-18.9
February	100	672	-37.6	8.4	-30.1	2.0	-18.0
March	100	744	-29.8	14.9	-19.6	6.3	-6.2
April	100	720	-15.8	14.7	-11.0	8.4	0.8
May	100	744	-1.8	22.4	0.3	15.0	8.9
June	100	720	6.0	26.5	14.0	19.9	16.8
July	100	744	7.8	34.0	14.7	24.9	19.1
August	100	744	7.3	32.4	13.2	25.0	19.2
September	100	720	1.5	30.9	9.2	21.1	13.9
October	100	744	-4.5	21.9	-0.5	15.4	6.8
November	100	720	-25.9	11.0	-24.0	3.6	-7.5
December	100	744	-37.1	-2.0	-33.4	-9.5	-19.5
Annual	100	8760	-37.6	34.0	-33.4	25.0	1.4



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	-35.5	2.2	-32.6	-2.9	-18.6
February	100	672	-34.1	7.8	-28.9	1.3	-17.7
March	100	744	-25.6	14.9	-19.0	6.5	-5.9
April	100	720	-16.2	14.9	-11.0	8.7	1.3
May	100	744	-1.9	22.8	0.7	15.2	9.3
June	100	719	4.4	26.6	14.4	19.7	16.8
July	100	741	7.3	34.7	14.8	24.0	18.9
August	87	649	7.6	32.5	13.6	24.6	19.0
September	100	720	1.8	29.4	9.1	20.7	13.5
October	100	741	-3.9	22.6	0.0	14.1	6.5
November	100	720	-24.4	8.8	-23.5	3.1	-7.8
December	100	744	-35.0	-2.3	-33.3	-9.2	-19.3
Annual	99	8658	-35.5	34.7	-33.3	24.6	1.2



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Ambient Temperature 20 m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.0	2.6	-32.9	-2.8	-18.6
February	100	672	-33.0	8.4	-27.7	2.6	-17.4
March	100	744	-25.4	15.4	-19.2	6.8	-5.8
April	100	720	-16.7	13.3	-11.7	8.4	0.9
May	100	744	-2.3	21.7	0.1	15.4	9.0
June	100	719	7.4	25.3	14.4	20.1	16.9
July	100	741	9.3	33.6	15.1	24.4	19.2
August	90	673	9.2	31.5	14.2	25.1	19.7
September	100	720	3.3	30.8	9.3	22.0	14.4
October	100	741	-2.4	21.6	0.0	15.6	7.2
November	100	720	-24.3	10.5	-23.8	3.7	-7.4
December	100	744	-34.8	-1.8	-32.2	-9.5	-19.2
Annual	99	8682	-35.0	33.6	-32.9	25.1	1.5



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	-35.3	2.9	-33.2	-2.7	-18.6
February	100	672	-32.5	8.4	-27.3	2.9	-17.2
March	100	744	-25.0	15.0	-19.3	6.9	-5.8
April	100	720	-17.0	13.0	-12.0	8.2	0.6
May	100	744	-2.5	21.3	-0.2	15.5	8.8
June	100	719	8.1	24.7	14.2	20.1	16.8
July	100	741	10.0	33.1	14.9	24.4	19.1
August	90	673	9.0	31.2	14.2	25.3	19.7
September	100	720	3.4	30.6	9.2	22.8	14.5
October	100	741	-1.9	21.3	-0.2	15.7	7.3
November	100	720	-24.4	10.7	-24.0	4.2	-7.3
December	100	744	-35.0	-1.9	-31.6	-9.6	-19.2
Annual	99	8682	-35.3	33.1	-33.2	25.3	1.5



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	-35.6	2.9	-33.5	-2.8	-18.5
February	100	672	-31.3	8.1	-27.0	2.8	-17.1
March	100	744	-22.6	15.1	-19.6	6.9	-5.8
April	100	720	-17.4	12.6	-12.3	7.9	0.4
May	100	744	-2.9	20.9	-0.6	15.4	8.5
June	100	719	7.9	24.3	13.8	20.0	16.6
July	100	741	10.5	32.6	14.5	24.3	18.9
August	90	673	9.5	30.9	14.1	25.4	19.6
September	100	720	3.9	30.6	8.9	23.2	14.5
October	100	741	-2.1	20.9	-0.6	15.9	7.4
November	100	720	-24.7	10.8	-24.3	4.6	-7.3
December	100	744	-34.6	-2.0	-31.5	-8.2	-19.1
Annual	99	8682	-35.6	32.6	-33.5	25.4	1.4



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	-35.7	2.9	-33.6	-2.7	-18.4
February	100	672	-30.1	8.1	-26.8	2.8	-17.1
March	100	744	-22.4	14.9	-19.7	6.9	-5.8
April	100	720	-17.5	12.6	-12.4	7.9	0.3
May	100	744	-3.0	20.9	-0.6	15.5	8.5
June	100	719	8.0	24.2	13.8	20.0	16.7
July	100	741	10.6	32.6	14.5	24.4	19.0
August	90	673	9.6	30.8	14.2	25.5	19.7
September	100	720	4.6	30.6	8.9	23.4	14.6
October	100	741	-2.3	20.8	-0.7	16.1	7.4
November	100	720	-24.8	10.8	-24.4	4.7	-7.3
December	100	744	-34.2	-2.1	-31.5	-7.7	-19.1
Annual	99	8682	-35.7	32.6	-33.6	25.5	1.5



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	3.5	-32.3	-1.5	-18.3
February	100	672	-38.3	8.7	-30.7	3.0	-17.8
March	100	744	-30.5	17.4	-20.2	7.6	-6.0
April	100	720	-16.4	14.3	-11.4	8.5	1.0
May	100	744	-1.8	22.2	0.3	14.3	8.9
June	100	720	2.8	26.3	13.8	19.8	16.5
July	100	744	5.2	33.6	14.0	24.1	18.8
August	100	744	6.9	32.2	12.7	25.1	18.9
September	100	720	0.9	31.8	9.0	20.3	13.7
October	100	743	-6.4	21.6	-0.6	15.0	6.7
November	100	720	-25.5	9.2	-23.3	3.4	-7.7
December	100	744	-35.4	-2.3	-32.5	-8.8	-19.1
Annual	100	8759	-38.3	33.6	-32.5	25.1	1.4



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	3.8	-33.7	-1.4	-18.4
February	100	672	-37.3	9.3	-31.7	-0.7	-18.2
March	100	744	-29.3	15.3	-19.0	6.8	-5.9
April	100	720	-15.4	15.1	-10.6	9.5	1.8
May	100	744	-0.4	22.9	1.6	15.1	9.8
June	100	720	3.8	26.6	13.9	20.1	17.2
July	100	744	7.9	34.8	15.2	24.9	19.6
August	100	744	7.9	33.4	13.5	25.2	19.6
September	100	720	0.7	31.5	10.3	20.7	14.3
October	100	744	-3.9	22.1	0.7	14.7	7.3
November	100	720	-24.4	9.6	-22.5	3.9	-7.4
December	100	744	-36.7	-1.2	-33.5	-8.1	-19.0
Annual	100	8760	-37.5	34.8	-33.7	25.2	1.8



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.7	-3.1	-33.2	-9.2	-22.0
February	99	668	-35.4	3.2	-31.3	-3.8	-22.2
March	100	744	-33.6	5.4	-27.9	0.0	-11.6
April	100	720	-19.9	7.2	-14.8	4.2	-4.1
May	100	744	-4.3	17.2	-2.4	12.0	5.9
June	100	720	7.0	24.8	9.9	20.9	16.1
July	100	744	11.5	29.0	14.7	23.8	18.9
August	100	744	9.6	30.1	15.1	24.3	18.8
September	100	720	4.8	22.8	8.8	19.9	13.4
October	100	744	-3.8	20.4	-2.3	14.5	5.2
November	100	720	-30.1	3.9	-26.7	-0.8	-8.9
December	100	744	-34.6	-2.4	-32.7	-10.8	-20.9
Annual	100	8756	-35.7	30.1	-33.2	24.3	-0.8



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	-34.5	1.6	-32.1	-3.7	-19.3
February	100	672	-38.2	8.0	-31.6	0.9	-18.3
March	100	744	-29.3	16.2	-19.8	5.3	-6.4
April	100	720	-16.0	16.7	-10.7	9.8	1.1
May	100	744	-1.9	23.7	0.5	15.0	9.0
June	100	720	1.8	28.8	14.0	20.1	16.9
July	100	744	6.5	35.6	15.7	24.0	19.2
August	100	744	4.8	33.8	13.2	25.3	19.2
September	100	720	0.9	31.5	8.8	20.9	13.6
October	100	744	-5.2	22.2	-0.7	14.1	6.3
November	100	720	-25.2	7.2	-23.6	3.2	-7.8
December	100	743	-38.6	-1.4	-34.6	-9.3	-19.9
Annual	100	8759	-38.6	35.6	-34.6	25.3	1.3



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	99	738	-36.0	2.4	-32.5	-2.5	-19.2
February	100	670	-39.7	7.3	-33.0	1.1	-18.7
March	100	744	-30.3	15.8	-21.3	6.1	-6.3
April	100	720	-15.9	14.3	-11.0	8.7	0.9
May	100	744	-1.0	23.1	1.1	15.6	9.4
June	100	720	3.2	26.7	13.6	20.1	17.1
July	100	744	7.8	35.1	15.3	25.4	19.4
August	99	736	8.0	32.7	13.8	25.5	19.7
September	100	720	3.8	30.2	9.8	21.3	14.4
October	100	744	-3.1	22.6	1.0	14.2	7.1
November	100	720	-24.8	8.2	-23.4	4.0	-7.3
December	100	744	-37.6	-1.0	-34.4	-8.8	-19.3
Annual	100	8744	-39.7	35.1	-34.4	25.5	1.5



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	-37.9	2.0	-32.9	-3.0	-19.7
February	100	672	-39.6	8.0	-33.4	0.6	-19.4
March	100	744	-31.3	16.0	-20.8	4.7	-7.1
April	100	720	-17.4	15.4	-11.3	9.5	0.6
May	100	744	-3.0	23.9	0.4	14.0	8.4
June	100	720	-0.4	27.0	12.9	19.3	16.1
July	100	744	4.7	35.0	14.4	24.5	18.6
August	100	744	3.3	33.3	12.6	24.4	18.6
September	100	720	-2.5	30.6	8.1	19.5	12.8
October	100	744	-7.0	22.0	-0.6	12.7	5.5
November	100	720	-26.9	7.7	-23.8	3.3	-8.4
December	100	744	-40.1	-1.5	-35.8	-9.2	-20.5
Annual	100	8760	-40.1	35.0	-35.8	24.5	0.6



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.6	4.1	-33.2	0.1	-17.7
February	100	672	-36.9	7.9	-29.6	3.8	-17.1
March	100	744	-29.8	15.8	-21.1	8.9	-6.0
April	100	720	-19.0	13.3	-12.7	7.5	0.1
May	100	744	-2.6	21.4	-0.5	13.9	8.0
June	100	720	1.6	24.6	12.3	19.0	15.5
July	100	744	5.1	33.0	12.8	24.1	17.8
August	85	630	4.7	31.2	11.3	24.8	18.2
September	100	720	0.6	30.9	8.0	21.1	13.2
October	100	744	-6.6	21.4	-1.9	14.9	6.6
November	100	720	-29.1	11.4	-25.6	5.4	-7.8
December	100	744	-36.3	-1.0	-31.4	-9.3	-19.1
Annual	99	8646	-37.6	33.0	-33.2	24.8	0.9



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	-37.2	0.6	-34.3	-4.5	-19.5
February	100	672	-39.2	5.5	-30.1	-0.5	-18.7
March	100	744	-33.0	16.0	-23.9	6.4	-7.1
April	100	720	-20.0	13.7	-14.1	7.3	-0.8
May	100	744	-3.7	20.9	-1.7	14.4	7.3
June	100	719	-2.6	24.6	11.0	18.9	15.2
July	100	744	2.4	32.2	13.5	23.0	17.4
August	100	744	1.0	30.7	13.1	24.4	17.9
September	100	720	-1.2	32.0	7.0	23.4	12.7
October	100	744	-8.3	19.9	-1.8	13.0	5.3
November	100	720	-26.4	6.5	-24.9	2.2	-9.1
December	100	744	-37.7	-3.5	-33.9	-9.5	-19.7
Annual	100	8759	-39.2	32.2	-34.3	24.4	0.2



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Ambient Temperature 2m (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-36.1	4.0	-31.1	0.2	-15.4
February	100	672	-32.7	7.5	-27.7	2.4	-14.6
March	100	744	-24.7	16.1	-18.8	8.6	-4.8
April	100	720	-18.9	13.4	-12.9	7.8	0.3
May	100	744	-2.9	21.5	-0.3	13.9	8.0
June	93	671	3.7	23.9	11.4	17.1	15.0
July	100	744	7.1	30.5	10.3	23.8	17.5
August	94	703	8.0	30.8	11.4	22.9	18.5
September	100	720	3.3	30.9	7.9	21.2	12.9
October	100	744	-3.9	22.2	-1.2	14.9	6.7
November	100	719	-28.1	8.3	-26.1	2.7	-8.0
December	100	744	-33.6	-1.3	-31.4	-7.8	-18.3
Annual	99	8669	-36.1	30.9	-31.4	23.8	1.4



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	0.3	-35.0	-4.8	-19.8
February	100	672	-35.2	4.2	-30.1	-1.2	-18.9
March	100	744	-28.6	14.8	-23.8	5.9	-7.7
April	100	720	-19.9	11.5	-14.9	5.8	-1.7
May	100	744	-3.9	19.4	-2.2	13.7	6.6
June	100	719	3.5	23.2	11.6	18.3	14.8
July	100	744	6.8	31.2	12.9	22.5	17.1
August	100	744	5.8	29.7	12.6	24.3	17.7
September	100	720	2.0	31.2	7.6	22.9	12.6
October	100	744	-5.6	19.3	-2.4	12.9	5.1
November	100	720	-26.2	5.9	-25.2	1.9	-9.4
December	100	744	-35.1	-4.1	-32.4	-8.9	-20.1
Annual	100	8759	-37.7	31.2	-35.0	24.3	-0.2



Wood Buffalo Environmental Association - MacKay River (AMS20)
Annual Summary for the Year 2022
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	-37.0	1.5	-32.5	-1.3	-18.1
February	100	672	-37.8	8.1	-30.2	3.0	-17.3
March	100	744	-30.0	17.1	-20.0	7.9	-6.0
April	100	720	-19.1	15.2	-12.1	7.7	0.0
May	100	744	-3.4	20.6	-1.2	13.6	7.6
June	100	719	-1.6	25.8	11.7	17.7	15.1
July	100	744	2.7	32.9	12.0	23.1	17.4
August	100	744	2.3	31.7	11.4	24.2	17.8
September	100	720	-1.2	32.4	7.1	20.0	12.4
October	100	744	-4.8	21.0	-1.6	13.8	5.8
November	100	720	-26.8	9.5	-24.7	3.7	-8.4
December	100	744	-37.8	-4.0	-33.4	-8.2	-19.8
Annual	100	8759	-37.8	32.9	-33.4	24.2	0.6



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-37.8	4.1	-33.0	0.6	-15.8
February	100	672	-40.2	7.4	-30.5	2.4	-16.0
March	100	744	-30.7	16.1	-19.6	8.8	-5.4
April	100	720	-19.3	13.9	-12.7	7.2	0.3
May	100	744	-6.0	21.2	0.4	12.6	7.7
June	100	720	-2.2	24.3	10.4	17.2	14.3
July	100	744	1.7	31.1	11.0	23.2	17.2
August	100	744	3.3	30.2	11.5	22.0	17.4
September	100	720	-1.2	32.1	7.9	19.2	11.8
October	100	744	-6.4	22.6	-0.4	12.5	5.9
November	100	720	-32.3	8.7	-27.2	2.4	-8.2
December	100	744	-39.7	-3.3	-33.6	-7.2	-18.8
Annual	100	8760	-40.2	32.1	-33.6	23.2	1.0



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	3.3	-31.3	-0.3	-16.3
February	100	672	-36.8	8.9	-29.7	2.8	-15.8
March	100	744	-27.5	17.5	-18.9	9.7	-5.0
April	100	720	-17.0	14.5	-11.2	8.2	1.3
May	100	744	-3.1	22.2	0.9	13.8	8.6
June	100	719	1.5	25.1	12.5	17.6	15.4
July	100	744	5.9	32.0	12.7	23.4	17.8
August	100	744	7.5	31.7	11.3	22.5	17.9
September	100	720	2.0	32.1	8.3	19.2	12.5
October	100	744	-4.8	23.3	-1.0	13.6	6.7
November	100	720	-29.0	9.1	-25.8	3.5	-7.5
December	100	744	-37.9	-2.2	-32.6	-8.6	-18.5
Annual	100	8759	-37.9	32.1	-32.6	23.4	1.5



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	-37.3	2.2	-32.3	-4.2	-19.7
February	100	672	-38.1	6.8	-32.0	-0.1	-18.9
March	100	744	-28.4	10.7	-20.0	3.3	-7.0
April	100	719	-15.9	14.8	-11.3	9.0	0.3
May	100	744	-1.9	21.0	0.3	14.8	8.7
June	100	717	4.6	25.8	14.3	20.1	17.0
July	100	744	9.1	33.3	15.5	23.9	19.2
August	100	743	6.8	31.4	14.5	25.0	19.3
September	100	720	3.7	29.5	9.5	21.0	14.0
October	100	743	-2.9	20.6	0.0	14.4	6.5
November	100	720	-25.2	6.5	-24.0	2.6	-7.8
December	100	743	-35.7	-0.2	-33.1	-9.1	-19.7
Annual	100	8753	-38.1	33.3	-33.1	25.0	1.1



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2022
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	2.3	-32.2	-2.9	-19.5
February	100	672	-38.7	8.0	-32.5	0.5	-18.9
March	100	744	-29.4	15.9	-19.9	4.7	-6.7
April	100	720	-15.3	16.2	-10.7	9.7	0.9
May	100	744	-1.8	23.4	0.7	14.6	8.9
June	90	650	1.8	27.1	13.6	19.6	16.6
July	100	742	6.6	34.3	15.2	23.8	18.8
August	100	744	4.9	32.6	13.0	24.2	18.7
September	100	720	-0.7	29.8	8.4	20.1	13.1
October	100	744	-5.9	21.9	-0.4	13.3	5.9
November	100	720	-25.0	7.1	-23.6	3.2	-8.2
December	100	744	-39.8	-1.3	-35.3	-9.1	-20.2
Annual	99	8688	-39.8	34.3	-35.3	24.2	0.8



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	-36.2	4.8	-30.8	1.0	-15.0
February	100	672	-38.4	7.5	-27.7	3.7	-14.7
March	100	744	-29.3	16.0	-18.7	9.1	-4.8
April	100	720	-16.5	13.5	-11.6	7.3	0.8
May	100	744	-4.1	20.6	0.4	13.4	8.1
June	100	720	0.9	23.4	12.5	17.7	15.1
July	100	744	3.3	30.9	11.6	24.2	17.8
August	100	744	5.8	30.2	12.3	22.8	18.4
September	100	720	0.9	31.7	8.4	22.0	13.1
October	100	744	-5.9	22.4	-0.4	14.6	7.0
November	100	720	-29.4	8.2	-25.4	3.7	-7.4
December	100	744	-35.2	-2.5	-30.2	-7.4	-17.8
Annual	100	8760	-38.4	31.7	-30.8	24.2	1.8



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
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	-35.7	2.4	-31.1	-0.3	-15.3
February	100	672	-32.9	6.1	-27.8	2.1	-14.9
March	100	744	-24.2	16.1	-18.9	8.4	-5.0
April	100	719	-18.3	12.2	-12.5	7.0	0.1
May	100	744	-2.8	20.0	-0.3	13.3	7.7
June	100	719	2.8	24.1	11.6	16.8	14.6
July	100	743	6.4	30.1	10.3	23.5	17.2
August	100	743	7.5	29.1	11.8	22.5	17.9
September	100	720	3.3	31.4	7.7	21.8	12.7
October	100	744	-3.3	21.6	-1.2	13.5	6.4
November	100	720	-28.2	7.2	-25.7	2.5	-8.2
December	100	742	-35.1	-3.6	-31.3	-8.0	-18.3
Annual	100	8753	-35.7	31.4	-31.3	23.5	1.3



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
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	-37.9	2.8	-32.6	0.4	-17.1
February	100	672	-36.8	7.2	-29.6	3.0	-16.6
March	100	744	-31.1	16.2	-20.5	9.0	-5.9
April	100	720	-18.8	13.7	-12.2	6.7	0.1
May	100	744	-4.3	21.6	-0.1	13.3	7.6
June	100	720	-1.2	24.7	11.2	17.9	14.8
July	100	744	3.8	31.9	12.2	23.8	17.4
August	100	744	5.3	31.2	10.9	23.6	17.8
September	100	720	-0.1	29.8	7.8	20.3	12.5
October	100	744	-6.7	21.3	-2.3	14.0	6.3
November	100	719	-31.9	8.9	-26.6	3.3	-8.1
December	100	744	-36.1	-1.1	-32.2	-9.5	-19.1
Annual	100	8759	-37.9	31.9	-32.6	23.8	0.9



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	-35.8	2.2	-32.2	-3.0	-19.5
February	100	672	-39.2	7.4	-32.7	0.5	-18.9
March	100	744	-30.0	13.8	-20.4	4.0	-6.9
April	100	720	-14.9	14.8	-11.0	9.0	0.4
May	100	744	-1.8	21.7	0.5	14.2	8.5
June	100	720	3.1	26.3	13.7	19.6	16.5
July	98	732	5.8	34.3	15.0	24.0	19.0
August	100	744	4.2	32.5	13.5	24.7	19.0
September	100	720	-0.2	29.9	8.7	20.4	13.4
October	100	744	-6.1	21.3	-0.3	13.4	6.1
November	100	720	-25.3	7.1	-24.0	3.1	-7.9
December	100	744	-40.1	-0.8	-35.4	-9.3	-20.3
Annual	100	8748	-40.1	34.3	-35.4	24.7	0.9



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	2.7	-32.1	0.0	-15.8
February	100	672	-33.3	7.1	-28.1	2.1	-15.3
March	100	744	-26.2	16.4	-19.3	8.1	-5.4
Annual	100	2160	-36.7	16.4	-32.1	8.1	-12.2



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	-35.4	2.8	-31.3	0.1	-15.8
February	100	672	-36.3	7.1	-28.2	2.8	-15.5
March	100	744	-27.3	16.3	-19.6	8.5	-5.3
April	100	720	-18.9	12.6	-12.9	6.9	0.3
May	100	744	-2.9	20.8	0.1	12.9	7.8
June	100	718	2.5	23.7	11.4	17.4	14.9
July	100	744	3.9	32.0	11.7	24.3	17.8
Annual	100	5086	-36.3	32.0	-31.3	24.3	0.6



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
August	100	744	5.0	30.3	12.0	22.5	18.0
September	100	720	2.3	31.4	7.8	21.5	12.7
October	100	744	-5.3	21.8	-0.8	13.7	6.4
November	100	720	-28.2	7.3	-25.5	2.5	-8.1
December	100	744	-35.1	-4.1	-30.9	-7.9	-18.1
Annual	100	3672	-35.1	31.8	-30.9	24.1	2.2



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
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	-35.4	1.1	-31.7	-1.2	-15.4
February	100	672	-34.4	5.5	-28.2	1.6	-14.9
March	100	743	-27.0	15.3	-19.1	7.7	-5.4
April	100	719	-17.8	12.1	-12.7	6.8	-0.1
May	99	736	-3.0	20.3	-0.3	13.8	7.5
June	100	661	4.1	23.0	11.8	16.7	14.4
Annual	100	4275	-35.4	23.0	-31.7	16.7	-2.3



Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
Ambient Temperature (°C) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
July	100	744	4.8	29.9	10.4	23.4	17.2
August	100	743	5.6	29.6	12.0	22.6	17.9
September	100	718	2.1	31.0	7.5	22.1	12.7
October	100	744	-3.3	21.2	-1.1	12.9	6.2
November	100	720	-27.4	6.3	-25.2	1.3	-8.6
December	100	743	-35.9	-4.3	-31.1	-7.7	-18.4
Annual	100	4412	-35.9	31.0	-31.1	23.4	4.5



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

RELATIVE HUMIDITY ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Bertha Ganter - Fort McKay (AMS01)
Annual Summary for the Year 2022
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	95	65	89	76
February	96	648	50	93	64	78	71
March	100	744	27	96	51	91	66
April	100	720	22	98	39	75	58
May	100	744	12	99	32	87	61
June	100	720	16	99	33	92	59
July	100	744	23	99	48	78	62
August	100	744	23	99	49	89	67
September	100	719	24	99	50	94	68
October	100	744	20	99	40	97	68
November	100	720	43	97	60	89	74
December	100	744	45	89	56	87	75
Annual	100	8735	12	99	32	97	67



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
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	96	69	90	79
February	100	672	54	94	67	82	74
March	100	744	30	99	52	95	67
April	100	720	23	100	40	89	61
May	99	738	14	100	33	90	61
June	99	714	18	100	30	93	58
July	98	731	24	100	47	81	61
August	98	727	26	100	49	87	65
September	99	714	25	100	50	98	66
October	99	737	20	100	39	100	66
November	100	719	45	100	58	88	76
December	100	744	49	93	61	89	78
Annual	99	8704	14	100	30	100	68



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
Relative Humidity 20 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
May	100	744	13	99	34	88	60
June	100	720	18	99	29	89	58
July	100	744	22	100	44	78	60
August	97	721	26	99	49	85	66
September	98	706	24	99	50	94	66
October	98	728	19	99	38	96	66
November	97	701	43	99	59	89	73
December	100	744	44	92	56	87	75
Annual	99	5808	13	100	29	96	66



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
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	99	738	55	94	67	89	77
February	100	158	55	85	69	76	72
March	NaN	0	NaN	NaN	NaN	NaN	NaN
April	100	34	61	97	87	87	81
May	100	744	13	100	29	88	59
June	100	720	17	100	28	89	56
July	100	744	22	100	43	76	58
August	97	721	25	100	47	85	64
September	98	706	23	100	49	93	64
October	99	736	19	100	36	97	64
November	99	712	43	98	57	88	74
December	100	744	45	93	57	88	77
Annual	99	6757	13	100	28	97	66



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
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	99	738	57	95	67	89	78
February	100	158	56	90	70	77	72
March	NaN	0	NaN	NaN	NaN	NaN	NaN
April	100	34	61	94	85	85	79
May	100	744	12	98	26	86	57
June	100	720	15	97	26	87	52
July	100	744	21	95	41	74	55
August	97	721	23	96	43	84	60
September	98	706	22	96	44	90	59
October	99	736	18	96	34	94	60
November	99	712	38	95	50	84	71
December	100	744	43	89	55	87	74
Annual	99	6757	12	98	26	94	63



Wood Buffalo Environmental Association - Lower Camp Meterological Tower (AMS03)
Annual Summary for the Year 2022
Relative Humidity 163 m (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
May	100	744	13	100	22	89	58
June	100	720	16	100	25	90	53
July	100	744	23	99	43	76	56
August	97	721	24	99	44	88	60
September	98	706	24	99	44	93	59
October	99	736	19	99	35	95	61
November	99	712	41	97	47	87	72
December	100	744	45	92	57	89	75
Annual	99	5827	13	100	22	95	62



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	95	70	89	79
February	100	672	49	94	67	83	74
March	100	744	28	97	49	94	66
April	100	720	21	99	42	89	61
May	100	744	13	99	29	89	61
June	100	720	20	98	31	92	58
July	100	744	23	98	46	79	60
August	100	744	25	98	48	87	66
September	100	720	25	97	49	95	66
October	100	744	21	99	40	97	65
November	100	720	42	97	55	87	75
December	100	744	51	92	62	89	78
Annual	100	8760	13	99	29	97	67



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	56	96	67	89	76
February	100	672	50	93	64	80	72
March	100	744	32	97	48	90	64
April	100	720	23	100	40	86	59
May	99	739	12	100	28	87	58
June	98	704	21	100	32	90	59
July	94	700	28	100	49	79	61
August	79	591	29	100	52	84	66
September	100	720	27	98	55	96	68
October	100	741	20	99	39	93	66
November	100	720	48	97	60	88	76
December	100	744	54	91	63	88	77
Annual	97	8539	12	100	28	96	67



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	57	95	68	89	77
February	100	672	49	93	65	82	72
March	100	744	30	97	46	91	63
April	100	720	21	98	38	86	59
May	100	744	12	99	24	86	57
June	100	719	18	99	26	88	54
July	100	741	22	95	44	75	57
August	90	673	24	97	47	84	60
September	100	720	23	97	47	92	62
October	99	733	19	100	36	93	62
November	100	720	43	100	54	88	74
December	100	744	50	95	60	91	77
Annual	99	8674	12	100	24	93	65



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	67	89	77
February	100	672	48	94	66	82	73
March	99	738	29	100	47	91	63
April	99	714	21	100	39	87	59
May	98	728	13	100	22	84	57
June	96	688	17	99	26	81	52
July	96	714	22	98	43	72	55
August	87	648	24	97	45	83	58
September	95	685	23	99	46	83	59
October	98	732	19	98	36	92	60
November	100	720	40	97	52	87	74
December	100	744	49	92	60	91	77
Annual	97	8527	13	100	22	92	64



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	58	96	67	89	78
February	100	672	47	95	67	84	73
March	100	744	28	99	47	93	63
April	100	720	20	99	38	87	59
May	100	744	13	99	21	87	58
June	100	719	16	99	25	90	53
July	100	741	22	95	43	76	55
August	90	673	24	96	43	84	58
September	100	720	23	99	44	92	59
October	100	741	19	97	36	92	60
November	100	720	39	98	49	88	74
December	100	744	50	93	60	91	78
Annual	99	8682	13	99	21	93	64



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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	58	95	65	88	77
February	100	672	46	93	66	83	73
March	100	744	28	97	47	92	62
April	100	720	20	98	38	86	59
May	100	744	13	98	21	87	57
June	100	719	16	98	25	89	52
July	100	741	22	94	42	76	55
August	90	673	24	96	43	84	58
September	100	720	24	97	43	91	58
October	100	741	19	98	36	92	60
November	100	720	38	98	48	89	74
December	100	744	50	94	60	92	79
Annual	99	8682	13	98	21	92	64



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
Annual Summary for the Year 2022
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	49	94	67	89	77
February	100	672	47	95	67	80	73
March	100	744	30	95	49	86	65
April	100	720	21	97	40	85	61
May	100	744	17	98	31	87	59
June	100	720	16	98	29	88	57
July	100	744	27	97	46	79	59
August	100	744	28	98	51	87	65
September	100	720	27	98	50	93	65
October	100	743	18	98	38	91	64
November	100	720	40	96	58	86	75
December	100	744	46	92	59	88	77
Annual	100	8759	16	98	29	93	66



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	91	62	87	72
February	100	672	44	90	63	77	69
March	100	744	31	94	43	84	63
April	100	720	20	95	37	82	58
May	100	744	16	97	33	85	57
June	100	720	18	98	30	84	59
July	100	744	24	97	48	79	61
August	100	744	26	98	53	86	67
September	100	720	27	97	52	90	67
October	100	744	20	96	40	88	62
November	100	720	48	93	64	84	73
December	100	744	44	88	56	82	71
Annual	100	8760	16	98	30	90	65



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	64	94	69	87	77
February	99	668	54	97	69	81	74
March	100	744	43	94	60	85	72
April	100	720	36	97	49	88	68
May	97	722	17	100	37	98	68
June	100	717	26	100	40	94	59
July	100	744	31	100	50	80	63
August	100	744	25	99	52	85	67
September	100	720	32	100	56	97	69
October	100	743	27	100	52	94	72
November	100	720	51	99	67	93	81
December	100	744	66	92	72	88	78
Annual	100	8730	17	100	37	98	71



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	50	95	67	90	76
February	100	672	45	93	63	78	71
March	100	744	26	95	49	91	65
April	100	720	22	99	38	75	58
May	100	742	12	100	30	88	61
June	97	699	15	100	31	91	58
July	94	700	23	100	49	79	59
August	97	723	23	100	51	88	65
September	96	690	24	100	49	95	67
October	97	723	19	100	41	96	66
November	100	720	40	98	59	89	74
December	100	743	46	88	57	86	75
Annual	98	8620	12	100	30	96	66



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	99	738	55	95	68	88	77
February	100	670	52	92	64	80	73
March	100	744	29	97	55	91	68
April	100	720	22	99	43	91	63
May	100	744	12	99	38	89	62
June	100	720	21	98	40	90	62
July	100	744	23	99	46	79	64
August	99	736	24	99	52	86	68
September	100	720	24	99	49	93	69
October	100	744	21	99	45	95	68
November	100	720	49	97	63	89	76
December	100	744	47	90	58	87	76
Annual	100	8744	12	99	38	95	69



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	55	95	69	91	78
February	100	672	51	93	67	80	73
March	100	744	26	96	53	92	68
April	100	720	22	98	40	78	60
May	100	744	13	99	35	88	63
June	100	720	18	98	38	92	61
July	100	744	23	99	49	80	63
August	100	744	25	100	52	90	69
September	100	720	25	100	51	97	71
October	100	744	21	100	45	99	71
November	100	720	45	99	62	89	77
December	100	744	47	92	59	88	77
Annual	100	8760	13	100	35	99	69



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	100	71	95	81
February	100	672	42	98	66	83	76
March	100	744	28	100	49	90	66
April	99	711	23	100	41	91	63
May	100	744	18	100	35	94	62
June	100	717	22	100	33	90	60
July	99	739	27	100	45	90	64
August	84	624	29	100	51	95	67
September	96	694	28	100	50	94	68
October	99	739	19	100	42	94	64
November	100	720	39	99	55	91	77
December	100	744	51	95	68	91	80
Annual	98	8592	18	100	33	95	69



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	63	99	71	94	81
February	100	672	51	98	67	89	76
March	100	744	28	99	47	94	67
April	100	720	21	100	40	93	63
May	100	744	14	100	38	92	64
June	100	719	15	100	25	93	59
July	100	744	26	100	47	81	63
August	100	744	25	100	48	95	66
September	100	720	26	100	48	98	68
October	100	744	21	100	45	97	70
November	100	720	48	98	65	92	82
December	100	744	69	95	71	91	81
Annual	100	8759	14	100	25	98	70



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
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	44	97	70	92	80
February	100	672	42	97	64	84	74
March	100	744	27	98	43	82	63
April	100	720	22	99	36	95	60
May	100	744	15	99	24	97	62
June	93	671	22	100	35	97	62
July	100	744	31	100	47	96	66
August	94	703	31	100	52	97	68
September	100	720	28	99	52	96	69
October	100	744	21	100	39	98	62
November	100	719	34	97	50	90	76
December	100	744	51	94	69	91	79
Annual	99	8669	15	100	24	98	68



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	66	98	70	93	81
February	100	672	56	99	69	91	77
March	100	744	28	99	53	93	68
April	100	720	23	99	42	91	64
May	100	743	15	100	33	93	66
June	100	719	17	100	27	92	58
July	98	731	28	100	46	79	61
August	98	732	27	100	49	96	64
September	97	698	24	100	47	95	65
October	100	741	21	100	46	96	70
November	100	720	49	99	61	94	82
December	100	744	66	92	72	90	80
Annual	99	8708	15	100	27	96	70



Wood Buffalo Environmental Association - MacKay River (AMS20)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	58	94	67	90	78
February	100	672	47	96	65	81	73
March	100	744	29	97	50	89	65
April	100	720	20	98	45	93	62
May	100	744	16	98	33	90	63
June	100	719	20	99	32	96	61
July	100	744	25	99	48	86	64
August	100	744	28	99	52	92	68
September	100	720	19	100	51	97	69
October	100	744	21	100	45	98	68
November	100	720	42	98	56	91	77
December	100	744	50	94	67	92	80
Annual	100	8759	16	100	32	98	69



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	44	98	68	91	79
February	100	672	38	96	62	83	74
March	100	744	28	98	48	82	66
April	100	720	21	99	46	93	62
May	100	744	15	99	40	95	66
June	100	720	20	99	44	94	66
July	100	744	27	99	50	94	67
August	100	744	29	99	54	96	72
September	100	720	28	99	55	95	73
October	100	744	20	99	39	96	66
November	100	720	35	96	59	88	76
December	100	744	46	93	65	90	80
Annual	100	8760	15	99	39	96	70



Wood Buffalo Environmental Association - Janvier (AMS22)
Annual Summary for the Year 2022
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	95	63	90	75
February	100	672	32	92	57	82	70
March	100	744	25	96	44	79	61
April	100	720	17	96	38	84	57
May	100	744	13	96	28	90	61
June	100	719	20	97	40	94	63
July	100	744	27	98	52	93	68
August	100	744	31	98	64	97	74
September	100	720	30	98	58	95	76
October	100	744	15	98	35	93	63
November	100	720	31	95	53	86	73
December	100	744	45	89	60	87	75
Annual	100	8759	13	98	28	97	68



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	50	95	65	90	77
February	100	672	47	93	62	81	73
March	100	744	32	97	50	91	68
April	100	719	20	99	39	78	59
May	100	744	13	100	31	86	61
June	100	717	14	99	30	91	57
July	100	744	22	100	46	77	59
August	100	743	23	98	51	86	64
September	100	720	23	99	51	89	65
October	100	743	18	100	35	95	67
November	100	720	42	98	60	92	75
December	100	743	47	92	56	89	77
Annual	100	8753	13	100	30	95	67



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2022
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	97	68	91	78
February	100	672	51	95	66	80	73
March	100	744	27	98	54	92	68
April	99	710	23	99	39	77	58
May	97	718	13	100	34	91	61
June	82	591	18	99	36	77	56
July	88	656	24	98	48	76	58
August	100	744	23	99	51	89	68
September	100	720	23	99	50	96	70
October	100	744	20	100	41	97	70
November	100	720	42	98	60	91	76
December	100	744	44	91	56	88	76
Annual	97	8507	13	100	34	97	68



Wood Buffalo Environmental Association - Christina Lake (AMS26)
Annual Summary for the Year 2022
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	97	69	92	79
February	100	672	37	93	62	83	74
March	100	744	29	97	45	81	64
April	100	720	22	97	38	92	60
May	100	744	16	99	34	94	63
June	100	720	23	99	36	94	62
July	100	744	29	99	44	93	64
August	100	744	28	98	52	94	67
September	100	720	26	97	51	92	68
October	100	744	21	99	38	93	62
November	100	720	35	96	51	89	75
December	100	744	50	93	64	90	79
Annual	100	8760	16	99	34	94	68



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
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	56	98	70	93	81
February	100	672	43	97	63	88	76
March	100	744	29	98	45	84	64
April	100	719	20	98	34	94	61
May	100	744	13	99	29	97	64
June	100	719	22	100	31	99	62
July	100	743	32	100	48	97	67
August	100	743	30	100	55	97	69
September	100	720	28	100	53	96	69
October	100	744	21	100	39	97	64
November	100	720	36	97	53	91	78
December	100	742	55	93	69	91	80
Annual	100	8753	13	100	29	99	69



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
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	96	70	94	80
February	100	672	42	95	64	83	75
March	100	744	26	99	47	83	66
April	100	720	21	99	43	86	63
May	100	744	16	100	37	95	64
June	100	720	20	100	37	95	64
July	100	744	28	99	47	89	66
August	100	744	27	99	53	98	71
September	100	720	26	100	54	98	73
October	100	744	17	100	37	93	65
November	100	719	31	97	47	90	76
December	97	720	49	93	65	89	78
Annual	100	8735	16	100	37	98	70



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
January	100	744	48	95	62	89	74
February	100	672	46	93	62	79	69
March	100	744	28	95	51	91	65
April	100	720	23	97	40	77	58
May	100	744	13	98	27	87	61
June	100	720	17	99	33	93	58
July	98	732	23	98	46	80	60
August	100	744	23	98	48	88	65
September	100	720	23	97	49	94	66
October	100	744	19	98	37	96	67
November	100	720	35	96	54	88	72
December	100	744	45	90	55	87	73
Annual	100	8748	13	99	27	96	66



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	98	71	94	82
February	100	672	42	97	68	87	77
March	100	744	29	98	48	88	67
Annual	100	2160	29	98	48	94	75



Wood Buffalo Environmental Association - Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	94	81
February	100	672	39	96	62	84	76
March	100	744	26	99	46	81	65
April	100	720	21	98	36	90	61
May	100	744	15	99	32	95	64
June	100	718	21	99	30	96	61
July	100	744	27	99	42	93	63
Annual	100	5086	15	99	30	96	67



Wood Buffalo Environmental Association - Jackfish 1 (AMS506)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
August	100	744	30	99	55	95	70
September	100	720	29	98	56	93	71
October	100	744	20	98	42	95	64
November	100	720	43	95	56	91	78
December	100	744	48	94	68	91	80
Annual	100	3672	20	99	42	95	73



Wood Buffalo Environmental Association - Kirby South (AMS507)
Annual Summary for the Year 2022
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	69	93	81
February	100	672	48	97	66	88	76
March	100	743	28	97	45	84	65
April	100	719	20	98	34	95	61
May	99	736	17	98	30	96	64
June	100	661	20	100	32	98	63
Annual	100	4275	17	100	30	98	68



Wood Buffalo Environmental Association - ? (AMS508)
Annual Summary for the Year 2022
Relative Humidity (%) Average

Month	Operational Time (%)	Number of Data	1-hr Min	1-hr Max	24-hr Min	24-hr Max	Average
July	100	744	31	100	47	95	66
August	100	743	29	100	55	96	69
September	99	715	29	100	52	98	69
October	99	737	24	100	40	96	64
November	100	720	38	97	55	91	79
December	100	743	56	93	69	92	80
Annual	100	4402	24	100	40	98	71



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

BAROMETRIC PRESSURE ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
Barometric Pressure (inHg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	29.1	29.8	29.7
February	100	672	29.2	29.8	29.7
March	100	744	29.1	29.6	29.5
April	100	720	29.1	29.7	29.6
May	100	744	28.9	29.3	29.3
June	100	718	29.0	29.4	29.3
July	100	743	29.0	29.2	29.2
August	100	744	28.9	29.3	29.2
September	100	719	29.0	29.3	29.3
October	100	744	28.9	29.6	29.5
November	100	720	29.1	30.0	29.8
December	100	744	29.2	30.1	30.0
Annual	100	8756	29.0	30.1	30.0



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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	29.7	29.6
February	100	672	29.1	29.7	29.6
March	100	744	29.0	29.5	29.4
April	100	720	29.0	29.6	29.5
May	100	744	28.8	29.3	29.2
June	100	720	28.9	29.2	29.2
July	100	744	28.9	29.1	29.1
August	100	744	28.9	29.2	29.1
September	100	720	28.9	29.2	29.2
October	100	744	28.8	29.5	29.5
November	100	720	29.0	29.9	29.7
December	100	742	29.1	30.0	29.9
Annual	100	8758	28.9	30.0	29.9



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
Barometric Pressure (inHg) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	99	738	29.3	29.9	29.9
February	100	670	29.3	29.9	29.8
March	100	744	29.2	29.7	29.7
April	100	720	29.2	29.8	29.7
May	100	744	29.0	29.5	29.4
June	100	720	29.1	29.4	29.4
July	100	744	29.0	29.3	29.3
August	99	737	29.0	29.3	29.3
September	100	720	29.0	29.4	29.4
October	100	744	29.0	29.7	29.6
November	100	720	29.2	30.1	29.9
December	100	744	29.3	30.2	30.2
Annual	100	8745	29.1	30.2	30.2



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SOLAR RADIATION ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	11.4	264.5	50.5
February	100	672	62.3	485.6	119.9
March	100	744	121.9	651.6	197.6
April	100	720	189.1	767.3	271.8
May	100	744	223.3	938.0	360.4
June	100	720	265.3	942.7	375.9
July	100	744	272.1	905.9	346.2
August	100	744	212.7	843.9	293.5
September	100	720	147.9	700.5	229.3
October	100	744	75.0	510.5	140.5
November	100	720	32.7	332.4	66.2
December	100	744	17.2	270.3	42.5
Annual	100	8760	136.2	942.7	375.9



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	24.5	277.2	52.8
February	100	672	72.4	494.2	128.5
March	100	744	139.8	643.7	208.3
April	100	720	217.2	792.9	291.7
May	100	744	241.8	896.0	375.6
June	100	720	289.4	920.0	376.5
July	100	744	286.7	883.4	372.7
August	100	744	225.8	873.1	312.8
September	100	720	141.8	689.5	207.3
October	100	744	64.0	484.5	133.6
November	100	720	30.1	367.3	74.1
December	100	744	16.7	225.2	39.2
Annual	100	8760	146.2	920.0	376.5



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	16.2	337.1	57.0
February	100	672	67.2	558.3	136.4
March	100	744	119.5	710.5	211.3
April	100	720	191.9	851.3	284.5
May	100	744	205.6	961.2	347.4
June	93	671	243.8	983.1	357.4
July	100	744	242.9	921.9	336.9
August	94	703	217.5	874.5	284.3
September	100	720	138.7	765.2	217.2
October	100	744	85.2	599.2	137.7
November	100	719	34.8	506.1	78.8
December	100	744	14.9	256.9	39.7
Annual	99	8669	130.8	983.1	357.4



Wood Buffalo Environmental Association - Ells River (AMS30)
Annual Summary for the Year 2022
Solar Radiation (W/m²) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	
				1-Hour Value	24-Hour Value
January	100	744	17.7	281.0	54.9
February	100	672	60.2	479.1	114.1
March	100	744	115.0	618.1	176.3
April	100	720	178.8	763.0	256.6
May	100	744	210.4	888.5	348.8
June	100	720	250.3	914.4	354.6
July	98	732	263.7	904.8	326.1
August	100	744	207.2	847.3	278.7
September	100	720	138.9	672.4	215.9
October	100	744	70.1	507.4	130.3
November	100	720	31.4	307.8	63.5
December	100	744	17.2	208.6	36.9
Annual	100	8748	130.3	914.4	354.6



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY MONITORING PROGRAM ANNUAL REPORT

PRECIPITATION ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	11.5	0.8	2.5
February	100	672	19.9	1.3	4.1
March	100	743	18.6	1.3	3.1
April	100	718	11.2	0.9	4.7
May	100	744	35.8	3.8	9.6
June	100	717	31.0	4.4	10.4
July	100	742	64.4	16.5	16.7
August	100	743	66.3	7.8	15.1
September	83	601	14.7	2.6	7.4
October	100	742	8.7	2.4	3.3
November	98	703	21.8	2.3	7.6
December	100	744	15.0	0.6	3.8
Annual	98	8613	318.9	16.5	16.7



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	36.3	2.2	5.4
February	97	653	25.3	1.3	6.6
March	100	744	22.2	1.5	4.1
April	100	720	28.4	3.5	13.8
May	100	744	40.7	2.4	9.1
June	100	719	52.0	6.1	13.2
July	100	744	73.5	15.8	16.1
August	100	742	68.3	6.9	22.7
September	100	720	14.6	1.5	7.0
October	100	743	18.3	4.0	7.8
November	100	720	28.9	2.0	10.1
December	100	744	14.5	0.8	2.7
Annual	100	8737	423.1	15.8	22.7



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	743	33.9	0.9	5.8
February	100	672	34.0	1.9	7.4
March	100	744	12.7	1.1	3.3
April	100	717	30.1	2.0	18.5
May	100	744	62.4	5.2	15.6
June	86	619	76.4	7.7	24.0
July	100	744	43.8	6.1	11.1
August	90	667	84.1	17.0	21.7
September	100	720	18.9	2.4	5.4
October	100	742	5.2	1.3	2.7
November	98	703	18.5	1.5	6.2
December	100	744	39.1	2.5	8.9
Annual	98	8559	459.0	17.0	24.0



Wood Buffalo Environmental Association - Mackay River (AMS20)
Annual Summary for the Year 2022
Precipitation Collector (mm) Average

Month	Operational Time (%)	Number of Data	Total Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	34	250	10.4	0.9	3.7
February	100	672	25.9	1.9	4.6
March	100	744	15.6	1.9	3.7
April	100	719	28.7	1.7	13.9
May	100	744	29.2	2.7	9.6
June	100	720	69.2	12.3	23.4
July	100	744	84.0	9.6	14.6
August	100	742	78.3	14.2	29.5
September	100	720	24.7	5.7	10.9
October	100	744	9.1	3.2	5.0
November	100	720	12.6	1.0	3.3
December	100	744	19.9	0.9	6.1
Annual	94	8263	407.5	14.2	29.5



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

SURFACE WETNESS ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	0.5	31.0	3.5
February	97	652	1.1	14.1	10.2
March	94	700	0.5	24.1	2.9
April	96	692	0.4	26.7	4.4
May	100	742	4.7	72.8	28.0
June	100	720	3.5	53.3	19.6
July	100	744	3.8	64.0	13.4
August	100	744	5.1	65.4	18.8
September	100	720	6.5	71.3	21.4
October	100	742	4.1	80.9	22.4
November	99	714	1.0	51.6	6.8
December	100	744	0.0	0.0	0.0
Annual	99	8658	2.6	80.9	28.0



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
Annual Summary for the Year 2022
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	1.6	1.0
February	100	672	0.3	41.6	3.9
March	100	742	0.1	2.5	0.8
April	100	720	0.3	17.9	4.4
May	100	744	2.7	47.8	16.6
June	100	720	0.7	24.2	4.6
July	100	744	0.8	31.7	4.6
August	100	744	0.9	35.5	7.9
September	100	720	1.0	35.3	7.9
October	100	744	1.1	71.4	11.8
November	100	720	0.5	29.6	5.9
December	100	744	1.6	8.6	7.6
Annual	100	8758	0.9	71.4	16.6



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum	Maximum
				1-Hour Value	24-Hour Value
January	100	744	0.1	10.6	1.3
February	100	672	0.1	13.9	1.3
March	100	744	0.1	15.9	2.3
April	100	720	0.3	16.5	2.5
May	100	744	1.2	28.5	9.3
June	100	720	0.7	16.1	3.0
July	100	744	0.7	21.5	3.2
August	83	618	1.8	57.7	16.7
September	100	720	6.5	67.9	44.7
October	100	744	1.6	68.6	21.2
November	82	592	0.5	30.1	4.0
December	100	744	0.2	1.3	0.9
Annual	97	8506	1.1	68.6	44.7



Wood Buffalo Environmental Association - Stony Mountain (AMS18)
Annual Summary for the Year 2022
Surface Wetness (% of range) Average

Month	Operational Time (%)	Number of Data	Mean Value	Maximum 1-Hour Value	Maximum 24-Hour Value
January	99	736	4.3	75.1	13.0
February	99	666	1.8	60.5	9.0
March	95	704	0.7	16.3	3.7
April	94	679	1.3	50.8	14.7
May	97	725	6.1	71.3	28.6
June	93	671	12.5	97.4	47.0
July	100	742	9.1	96.8	33.8
August	94	703	6.5	84.7	42.8
September	100	720	5.8	74.7	32.9
October	100	744	3.9	81.0	26.3
November	100	719	2.1	4.8	3.6
December	100	744	3.0	4.5	4.4
Annual	98	8553	4.8	97.4	47.0



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

VERTICAL WIND SPEED ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Vertical Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.07	0.00	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.00	0.02	0.15	0.00	0.02	0.00	0.03	0.00	0.38
-0.8 - -1.4	1.76	0.09	0.03	0.02	0.02	0.07	1.02	1.06	0.20	0.12	0.53	3.21	1.42	0.80	0.55	0.75	0.00	11.65
-0.6 - -0.7	1.37	0.17	0.09	0.00	0.02	0.73	2.49	0.53	0.14	0.15	0.55	1.59	0.70	0.51	0.43	1.02	0.00	10.48
-0.4 - -0.5	1.61	0.46	0.14	0.07	0.05	1.55	4.78	1.20	0.38	0.38	0.73	1.11	0.61	0.56	0.92	1.71	0.00	16.26
0 - -0.3	5.82	1.62	0.72	0.68	0.94	3.28	8.97	2.82	1.23	1.14	1.67	1.62	0.92	1.59	4.32	8.71	0.00	46.06
0 - 0.3	2.08	0.91	0.32	0.24	0.43	1.38	3.64	1.23	0.77	0.44	0.32	0.22	0.15	0.22	0.61	1.96	0.00	14.94
0.4 - 0.5	0.00	0.03	0.00	0.02	0.00	0.00	0.05	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.24
0.6 - 0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.8 - 1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	12.70	3.28	1.30	1.02	1.45	7.02	20.97	6.98	2.73	2.24	3.83	7.91	3.81	3.71	6.85	14.21	100.00	

Total Number of Valid Hours 5856
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Vertical Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
-0.8 - -1.4	0.79	0.10	0.10	0.03	0.00	0.07	0.10	0.06	0.00	0.00	0.00	0.06	0.16	0.18	0.25	0.33	2.24	
-0.6 - -0.7	1.04	0.21	0.09	0.07	0.00	0.09	0.53	0.09	0.06	0.00	0.06	0.13	0.16	0.24	0.40	0.58	3.75	
-0.4 - -0.5	1.88	0.39	0.06	0.01	0.03	0.50	1.81	0.55	0.04	0.04	0.06	0.42	0.39	0.58	0.82	1.66	9.24	
0 - -0.3	7.98	1.97	0.77	0.46	0.71	3.37	5.88	2.34	0.74	0.43	0.52	3.25	1.53	1.23	2.34	7.72	41.25	
0 - 0.3	3.31	1.42	0.43	0.61	0.71	3.13	6.99	3.71	1.60	1.39	2.26	3.29	1.13	0.96	1.05	2.95	34.96	
0.4 - 0.5	0.06	0.07	0.00	0.01	0.06	0.28	2.08	0.82	0.19	0.24	0.68	0.43	0.06	0.03	0.04	0.03	5.09	
0.6 - 0.7	0.01	0.00	0.00	0.00	0.01	0.09	0.95	0.34	0.12	0.13	0.18	0.12	0.10	0.04	0.01	0.00	2.12	
0.8 - 1.4	0.00	0.00	0.00	0.00	0.00	0.03	0.64	0.22	0.10	0.06	0.07	0.13	0.03	0.00	0.00	0.01	1.31	
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	
> 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	15.08	4.17	1.45	1.20	1.53	7.57	18.98	8.13	2.86	2.30	3.84	7.83	3.56	3.26	4.94	13.28	100.00	

Total Number of Valid Hours 6739
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Vertical Wind Speed 100 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.00	0.16	0.04	0.16	0.12	0.00	0.00	0.56
-0.8 - -1.4	0.24	0.00	0.01	0.00	0.00	0.00	0.09	0.25	0.16	0.01	0.09	1.23	0.42	1.17	0.71	0.28	0.00	4.68
-0.6 - -0.7	0.52	0.04	0.04	0.01	0.00	0.00	0.13	0.31	0.10	0.01	0.19	0.70	0.30	0.34	0.33	0.52	0.00	3.57
-0.4 - -0.5	0.83	0.28	0.06	0.01	0.03	0.04	0.25	0.31	0.34	0.22	0.16	1.29	0.42	0.36	0.64	1.05	0.00	6.31
0 - -0.3	4.60	0.85	0.33	0.19	0.13	0.39	1.75	1.81	0.82	0.56	1.49	2.82	1.35	0.98	1.46	4.11	0.00	23.65
0 - 0.3	6.37	2.12	1.11	0.52	0.76	1.86	3.57	3.79	2.24	1.37	2.02	2.20	0.85	0.53	0.82	2.44	0.00	32.56
0.4 - 0.5	1.46	0.49	0.22	0.13	0.33	1.34	1.74	1.93	0.51	0.43	0.30	0.34	0.19	0.13	0.03	0.19	0.00	9.76
0.6 - 0.7	1.43	0.18	0.04	0.13	0.04	0.89	1.38	1.37	0.40	0.34	0.27	0.27	0.09	0.10	0.01	0.10	0.00	7.06
0.8 - 1.4	0.80	0.37	0.07	0.01	0.06	0.94	2.70	2.63	0.42	0.34	0.24	0.55	0.06	0.09	0.01	0.09	0.00	9.39
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.10	1.02	0.73	0.13	0.06	0.06	0.25	0.06	0.03	0.00	0.01	0.00	2.47
> 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	0.00
Totals	16.25	4.34	1.90	1.02	1.35	5.56	12.69	13.16	5.12	3.36	4.81	9.82	3.77	3.91	4.13	8.81	0.00	100.00

Total Number of Valid Hours 6732
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Vertical Wind Speed 163 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.09	0.03	0.00	0.00	0.11	0.03	0.00	0.00	0.00	0.31
-0.8 - -1.4	0.00	0.03	0.00	0.00	0.03	0.06	0.17	0.11	0.17	0.03	0.09	0.06	0.49	0.29	0.09	0.43	0.00	2.03
-0.6 - -0.7	0.03	0.03	0.00	0.00	0.03	0.11	0.14	0.03	0.14	0.03	0.29	0.11	0.14	0.14	0.29	0.37	0.00	1.89
-0.4 - -0.5	0.14	0.06	0.03	0.00	0.06	0.23	0.11	0.14	0.26	0.11	0.57	0.26	0.23	0.46	0.43	0.86	0.00	3.95
0 - -0.3	0.46	0.17	0.49	0.29	0.31	1.17	0.63	0.43	0.49	0.83	1.40	0.94	1.06	0.83	1.92	2.86	0.00	14.28
0 - 0.3	2.38	2.38	0.97	0.52	0.97	1.75	1.69	1.40	1.03	1.40	2.55	2.15	0.80	0.77	1.63	4.81	0.00	27.19
0.4 - 0.5	2.15	1.66	0.14	0.52	1.06	1.14	0.83	0.77	0.72	0.86	1.43	0.80	0.29	0.29	0.26	2.03	0.00	14.94
0.6 - 0.7	1.20	1.17	0.34	0.14	0.89	1.14	0.74	0.46	0.23	0.43	1.29	0.09	0.20	0.23	0.09	0.69	0.00	9.33
0.8 - 1.4	1.77	1.37	0.09	0.17	1.92	3.41	1.77	1.43	1.06	0.80	1.00	1.75	0.63	0.20	0.31	0.43	0.00	18.12
1.5 - 10	0.37	0.29	0.03	0.03	0.26	2.32	1.29	0.77	0.23	0.17	0.29	1.12	0.57	0.03	0.17	0.03	0.00	7.96
> 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	0.00
Totals	8.50	7.16	2.09	1.66	5.52	11.36	7.38	5.58	4.41	4.69	8.90	7.27	4.52	3.26	5.18	12.51	0.00	100.00

Total Number of Valid Hours 3494
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
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		
< -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	0.00
-1.5 - -10	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	0.00	0.01	0.02
-0.8 - -1.4	0.85	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.36	0.40	0.05	0.13	0.30	0.77	3.14	
-0.6 - -0.7	0.60	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.25	0.65	0.81	0.26	0.53	0.38	1.02	4.76	
-0.4 - -0.5	1.97	0.65	0.01	0.00	0.00	0.00	0.00	0.05	0.44	0.96	1.34	2.05	1.38	1.07	0.93	1.97	12.81	
0 - -0.3	7.22	4.35	0.34	0.17	0.08	0.13	1.02	3.62	2.40	1.00	1.48	2.89	3.83	2.15	2.36	4.53	37.58	
0 - 0.3	0.60	2.18	1.29	0.79	0.64	0.66	7.89	8.67	1.06	0.63	0.50	0.49	0.31	0.21	0.14	0.26	26.33	
0.4 - 0.5	0.01	0.08	0.19	0.36	0.38	0.43	2.51	2.37	0.24	0.04	0.00	0.00	0.00	0.00	0.00	0.02	6.63	
0.6 - 0.7	0.00	0.00	0.09	0.14	0.42	0.68	1.81	1.65	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.85	
0.8 - 1.4	0.00	0.00	0.04	0.05	0.18	1.04	0.98	1.49	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	3.80	
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.00	0.08	
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Totals	11.28	7.69	1.97	1.51	1.70	2.94	14.23	17.85	4.21	2.98	4.34	6.65	5.84	4.12	4.12	8.59	100.00	

Total Number of Valid Hours 8431
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Vertical Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.14	0.07	0.09	0.01	0.08	0.29	0.86	
-0.8 - -1.4	1.90	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.12	0.23	1.03	0.36	0.59	0.84	2.53	7.96	
-0.6 - -0.7	2.29	0.61	0.01	0.00	0.00	0.00	0.01	0.02	0.03	0.07	0.56	1.28	0.74	0.74	0.74	1.42	8.53	
-0.4 - -0.5	3.24	1.38	0.05	0.00	0.01	0.00	0.06	0.12	0.07	0.50	1.44	1.94	1.84	1.03	0.89	1.51	14.08	
0 - -0.3	3.71	3.72	0.92	0.29	0.28	0.10	0.89	1.13	1.54	1.94	1.75	2.20	2.41	1.35	1.53	1.86	25.63	
0 - 0.3	0.48	1.25	0.91	0.74	0.61	0.56	4.53	4.30	2.04	0.53	0.19	0.30	0.21	0.15	0.17	0.34	17.31	
0.4 - 0.5	0.13	0.12	0.24	0.27	0.28	0.37	3.59	3.26	0.65	0.08	0.05	0.02	0.02	0.01	0.01	0.03	9.13	
0.6 - 0.7	0.03	0.01	0.02	0.20	0.20	0.48	2.83	3.46	0.17	0.03	0.01	0.00	0.01	0.00	0.00	0.00	7.46	
0.8 - 1.4	0.00	0.02	0.03	0.08	0.29	1.51	2.59	3.52	0.09	0.00	0.01	0.00	0.00	0.00	0.01	0.00	8.16	
1.5 - 10	0.00	0.00	0.00	0.00	0.00	0.63	0.14	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Totals	11.91	7.40	2.18	1.58	1.67	3.64	14.63	15.92	4.69	3.32	4.37	6.85	5.70	3.89	4.28	7.97	100.00	

Total Number of Valid Hours 8618
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Vertical Wind Speed 75 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
-0.8 - -1.4	0.37	0.21	0.00	0.00	0.02	0.00	1.04	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.18	1.83
-0.6 - -0.7	0.59	0.28	0.00	0.00	0.02	0.00	1.39	0.01	0.00	0.01	0.01	0.05	0.00	0.00	0.00	0.00	0.39	2.76
-0.4 - -0.5	0.87	0.67	0.02	0.05	0.12	0.04	1.97	0.05	0.01	0.16	0.07	0.12	0.00	0.02	0.07	0.67	4.91	
0 - -0.3	4.08	3.84	0.81	0.34	0.45	0.33	4.82	0.62	0.29	1.17	1.77	1.77	0.38	0.20	0.65	2.29	23.81	
0 - 0.3	4.09	3.31	1.26	1.04	0.55	0.87	3.51	4.41	2.40	2.02	2.13	3.69	2.99	1.73	1.79	2.33	38.14	
0.4 - 0.5	0.91	0.54	0.26	0.29	0.19	0.41	0.58	2.84	1.84	0.27	0.26	0.98	1.08	1.07	0.52	0.33	12.37	
0.6 - 0.7	0.35	0.21	0.11	0.08	0.13	0.37	0.41	2.22	1.12	0.13	0.14	0.35	0.60	0.75	0.31	0.13	7.41	
0.8 - 1.4	0.49	0.08	0.09	0.06	0.11	1.20	0.53	2.33	0.85	0.12	0.07	0.34	0.41	0.70	0.16	0.19	7.74	
1.5 - 10	0.06	0.01	0.00	0.00	0.01	0.47	0.15	0.19	0.01	0.00	0.00	0.00	0.02	0.02	0.01	0.00	0.97	
> 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Totals	11.87	9.17	2.56	1.86	1.60	3.69	14.40	12.67	6.53	3.88	4.47	7.30	5.49	4.50	3.51	6.51	100.00	

Total Number of Valid Hours 8485
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Vertical Wind Speed 90 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW		
< -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	0.00
-1.5 - -10	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.07	0.16	0.21	0.04	0.07	0.00	0.02	0.02	0.62
-0.8 - -1.4	0.44	0.11	0.00	0.00	0.01	0.15	1.05	0.02	0.08	0.26	0.42	1.04	0.19	0.19	0.05	0.26	0.26	4.26
-0.6 - -0.7	0.44	0.15	0.01	0.02	0.00	0.11	0.78	0.02	0.11	0.31	0.21	0.37	0.26	0.06	0.15	0.48	0.48	3.48
-0.4 - -0.5	0.65	0.41	0.01	0.04	0.05	0.13	1.00	0.25	0.33	0.41	0.41	0.53	0.31	0.20	0.40	0.86	0.86	5.98
0 - -0.3	3.37	2.51	0.44	0.32	0.37	0.73	2.52	1.20	1.73	1.83	2.23	3.16	1.83	1.46	1.28	2.76	2.76	27.72
0 - 0.3	3.66	3.56	1.33	0.91	0.81	1.31	3.88	4.24	2.85	0.97	0.73	1.78	2.31	2.24	1.50	1.76	1.76	33.82
0.4 - 0.5	1.32	0.92	0.28	0.35	0.20	0.60	1.41	1.55	0.88	0.13	0.07	0.28	0.20	0.41	0.24	0.34	0.34	9.20
0.6 - 0.7	0.88	0.51	0.16	0.15	0.16	0.42	0.80	1.40	0.55	0.06	0.08	0.12	0.11	0.14	0.06	0.31	0.31	5.93
0.8 - 1.4	1.00	0.59	0.15	0.08	0.15	1.46	1.38	2.06	0.26	0.05	0.04	0.18	0.09	0.11	0.02	0.16	0.16	7.79
1.5 - 10	0.33	0.01	0.00	0.01	0.04	0.49	0.12	0.08	0.05	0.04	0.00	0.00	0.01	0.00	0.02	0.00	0.00	1.20
> 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	0.00
Totals	12.12	8.76	2.39	1.88	1.79	5.41	12.95	10.84	6.84	4.11	4.36	7.66	5.34	4.88	3.72	6.95	6.95	100.00

Total Number of Valid Hours 8489
 Total Number of Hours 8760



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

WIND SPEED AND DIRECTION ANNUAL 2022

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

March 2023



Wood Buffalo Environmental Association - Fort McKay - Bertha Ganter (AMS01)
Annual Summary for the Year 2022
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	2.19	1.85	1.35	1.18	0.93	0.98	2.28	3.74	5.37	3.42	2.33	2.47	3.29	3.11	2.38	2.36	39.22
6 - 11	6.31	2.72	0.50	0.30	0.29	0.92	3.04	6.93	5.53	1.62	1.54	2.10	1.55	1.70	1.53	4.28	40.85
12 - 19	5.13	1.04	0.01	0.00	0.00	0.28	1.18	2.69	0.98	0.26	0.13	0.14	0.16	0.83	0.77	2.98	16.57
20 - 28	1.29	0.02	0.00	0.00	0.00	0.00	0.07	0.16	0.01	0.01	0.00	0.00	0.00	0.26	0.49	0.71	3.03
29 - 38	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.20	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	0.01	0.01
Totals	14.95	5.64	1.86	1.48	1.22	2.18	6.57	13.52	11.89	5.31	3.99	4.70	5.01	5.90	5.24	10.55	100.00

Total Number of Valid Hours 8589
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mildred Lake (AMS02)
Annual Summary for the Year 2022
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	2.10	1.38	1.35	1.06	1.06	1.48	1.73	2.20	3.02	1.96	1.37	0.91	0.61	0.58	0.87	1.85	23.54
6 - 11	7.97	2.53	0.68	0.52	1.28	2.19	5.34	6.82	4.03	2.49	2.25	1.64	1.44	1.53	1.27	4.72	46.71
12 - 19	6.30	1.07	0.15	0.06	0.32	1.43	3.35	1.75	0.62	0.50	1.75	1.41	1.58	1.20	1.04	2.72	25.26
20 - 28	1.51	0.06	0.00	0.00	0.00	0.05	0.31	0.06	0.00	0.05	0.08	0.09	0.28	0.42	0.44	0.78	4.12
29 - 38	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.14	0.14	0.33
> 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	0.03	0.00	0.03
Totals	17.93	5.04	2.18	1.64	2.67	5.15	10.73	10.84	7.67	5.00	5.46	4.06	3.91	3.73	3.78	10.21	100.00

Total Number of Valid Hours 8666
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.77	1.78	0.92	0.80	1.23	2.87	3.96	1.40	0.91	1.02	0.97	0.99	0.87	1.47	3.60	6.42	31.98
6 - 11	4.34	0.97	0.32	0.20	0.22	3.02	10.30	2.17	0.53	0.56	1.14	1.84	0.96	0.80	2.12	5.19	34.70
12 - 19	4.70	0.46	0.05	0.02	0.00	1.11	6.27	2.24	0.85	0.36	1.33	3.84	1.64	1.08	0.79	2.20	26.93
20 - 28	0.91	0.07	0.00	0.00	0.00	0.02	0.44	1.09	0.43	0.22	0.31	1.06	0.34	0.34	0.34	0.39	5.96
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.02	0.07	0.07	0.17	0.00	0.02	0.00	0.00	0.43
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	12.70	3.28	1.30	1.02	1.45	7.02	20.97	6.98	2.73	2.24	3.83	7.91	3.81	3.71	6.85	14.21	100.00

Total Number of Valid Hours 5856
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	2.09	0.95	0.71	0.79	0.86	1.39	1.83	1.42	0.79	0.82	0.70	0.55	0.76	0.76	1.48	3.31	19.20
6 - 11	3.95	1.34	0.46	0.34	0.59	2.63	6.96	1.77	0.80	0.68	1.02	1.44	0.80	0.55	1.31	5.55	30.18
12 - 19	4.48	1.44	0.21	0.06	0.07	2.61	7.35	2.86	0.73	0.43	1.39	2.48	0.95	0.70	1.29	2.98	30.03
20 - 28	3.67	0.40	0.07	0.01	0.00	0.91	2.51	1.78	0.45	0.30	0.61	2.82	0.77	0.93	0.61	1.16	16.99
29 - 38	0.86	0.04	0.00	0.00	0.00	0.03	0.33	0.30	0.10	0.07	0.12	0.46	0.28	0.31	0.25	0.21	3.37
> 38	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.09	0.00	0.01	0.00	0.07	0.22
Totals	15.08	4.17	1.45	1.20	1.53	7.57	18.98	8.13	2.86	2.30	3.84	7.83	3.56	3.26	4.94	13.28	100.00

Total Number of Valid Hours 6739
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Wind Speed 100 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.79	0.53	0.49	0.40	0.58	0.89	0.92	0.65	0.85	0.58	0.53	0.36	0.46	0.59	0.62	0.83	10.09
6 - 11	2.61	1.31	0.82	0.48	0.59	1.68	2.93	3.12	1.66	1.35	1.47	1.31	0.80	0.58	1.05	2.45	24.21
12 - 19	5.88	1.54	0.39	0.09	0.18	1.77	4.31	5.35	1.35	0.76	1.29	2.58	0.88	0.74	0.98	3.42	31.51
20 - 28	4.40	0.83	0.21	0.06	0.00	1.14	3.10	3.34	0.71	0.42	1.08	3.06	0.83	1.00	0.85	1.29	22.33
29 - 38	2.18	0.07	0.00	0.00	0.00	0.07	1.26	0.61	0.46	0.19	0.34	2.14	0.58	0.85	0.49	0.59	9.85
> 38	0.39	0.04	0.00	0.00	0.00	0.00	0.16	0.09	0.09	0.06	0.09	0.37	0.22	0.15	0.13	0.22	2.02
Totals	16.25	4.34	1.90	1.02	1.35	5.56	12.69	13.16	5.12	3.36	4.81	9.82	3.77	3.91	4.13	8.81	100.00

Total Number of Valid Hours 6732
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp Met Tower (AMS03)
Annual Summary for the Year 2022
Wind Speed 163 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.29	0.34	0.37	0.43	0.31	0.69	0.52	0.31	0.37	0.57	0.17	0.40	0.17	0.31	0.31	0.31	5.90
6 - 11	1.03	1.09	0.89	0.92	1.14	1.72	1.63	1.14	1.35	1.09	1.00	1.00	1.03	0.94	1.06	1.23	18.26
12 - 19	2.40	2.40	0.63	0.26	2.03	2.43	2.35	1.92	1.14	1.55	3.01	1.69	0.86	0.94	1.49	3.21	28.31
20 - 28	2.58	2.89	0.17	0.06	1.66	3.72	1.95	1.46	1.14	1.06	2.60	1.60	0.94	0.52	1.35	3.95	27.65
29 - 38	1.69	0.40	0.03	0.00	0.37	2.40	0.92	0.74	0.34	0.34	1.92	1.75	1.00	0.46	0.66	2.69	15.71
> 38	0.52	0.03	0.00	0.00	0.00	0.40	0.03	0.00	0.06	0.09	0.20	0.83	0.52	0.09	0.31	1.12	4.18
Totals	8.50	7.16	2.09	1.66	5.52	11.36	7.38	5.58	4.41	4.69	8.90	7.27	4.52	3.26	5.18	12.51	100.00

Total Number of Valid Hours 3494
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Buffalo Viewpoint (AMS04)
Annual Summary for the Year 2022
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	0.82	0.92	1.21	0.82	0.68	0.87	2.90	4.84	1.84	0.68	0.87	0.58	0.44	0.15	0.29	0.58	18.47
6 - 11	5.17	3.43	0.87	0.44	0.19	1.40	6.09	17.36	3.34	0.97	1.84	2.27	1.55	1.31	0.92	1.26	48.40
12 - 19	6.24	2.76	0.15	0.00	0.00	0.10	0.15	0.97	0.53	0.92	1.35	3.38	1.98	0.82	1.55	0.87	21.76
20 - 28	3.34	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.19	1.98	0.97	0.58	1.06	1.55	10.44
29 - 38	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.19	0.05	0.10	0.24	0.92
> 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	15.76	7.69	2.22	1.26	0.87	2.37	9.14	23.16	5.71	2.76	4.26	8.37	5.13	2.90	3.92	4.50	100.00

Total Number of Valid Hours 2068
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Wind Speed 20 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.81	0.56	0.40	0.57	0.52	0.60	1.07	1.30	1.02	0.79	0.96	0.84	1.01	1.07	0.88	0.90	13.31
6 - 11	3.53	2.85	1.14	0.68	0.76	1.10	5.22	9.45	2.32	1.39	1.93	2.00	1.84	1.21	1.71	3.07	40.21
12 - 19	4.44	3.48	0.36	0.26	0.40	1.22	6.42	6.69	0.85	0.69	1.01	2.49	1.85	1.03	0.95	2.73	34.86
20 - 28	2.34	0.78	0.07	0.00	0.01	0.01	1.48	0.40	0.01	0.09	0.40	1.20	0.88	0.68	0.37	1.71	10.44
29 - 38	0.17	0.02	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.04	0.12	0.23	0.13	0.19	0.18	1.13
> 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	0.02	0.00	0.06
Totals	11.28	7.69	1.97	1.51	1.70	2.94	14.23	17.85	4.21	2.98	4.34	6.65	5.84	4.12	4.12	8.59	100.00

Total Number of Valid Hours 8431
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Wind Speed 45 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.34	0.35	0.34	0.43	0.42	0.44	0.58	0.68	0.49	0.39	0.41	0.42	0.50	0.57	0.44	0.52	7.31
6 - 11	2.02	1.73	0.97	0.72	0.68	1.04	3.11	3.23	1.42	1.26	1.17	1.16	1.25	0.78	1.25	1.93	23.73
12 - 19	4.04	3.10	0.65	0.41	0.52	1.94	6.61	7.28	1.73	0.91	1.42	2.54	1.86	0.99	1.21	2.26	37.44
20 - 28	3.75	1.98	0.21	0.02	0.05	0.22	4.15	4.58	1.02	0.65	1.01	2.09	1.55	0.85	0.68	2.09	24.91
29 - 38	1.55	0.23	0.01	0.00	0.00	0.00	0.17	0.15	0.03	0.06	0.31	0.57	0.44	0.56	0.43	1.04	5.57
> 38	0.21	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.07	0.09	0.15	0.27	0.13	1.03
Totals	11.91	7.40	2.18	1.58	1.67	3.64	14.63	15.92	4.69	3.32	4.37	6.85	5.70	3.89	4.28	7.97	100.00

Total Number of Valid Hours 8618
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Wind Speed 75 m (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.31	0.29	0.34	0.46	0.33	0.55	0.74	0.46	0.34	0.34	0.37	0.33	0.31	0.42	0.49	0.31	6.40
6 - 11	1.65	1.41	0.79	0.81	0.86	1.72	2.91	2.39	1.36	1.08	0.92	0.94	0.93	0.67	0.81	1.38	20.65
12 - 19	3.44	2.91	0.99	0.52	0.40	1.41	6.48	3.87	2.12	1.21	1.40	2.06	1.63	1.00	0.73	1.85	32.03
20 - 28	3.48	3.37	0.34	0.07	0.01	0.00	3.75	4.61	2.22	0.87	1.08	2.70	1.81	1.25	0.71	1.65	27.92
29 - 38	2.32	1.12	0.09	0.00	0.00	0.00	0.52	1.30	0.48	0.32	0.58	1.12	0.64	0.84	0.42	1.04	10.78
> 38	0.67	0.06	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.05	0.12	0.14	0.18	0.32	0.34	0.28	2.22
Totals	11.87	9.17	2.56	1.86	1.60	3.69	14.40	12.67	6.53	3.88	4.47	7.30	5.49	4.50	3.51	6.51	100.00

Total Number of Valid Hours 8485
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Mannix (AMS05)
Annual Summary for the Year 2022
Wind Speed 90 m (km/h) Average

Wind Speed (km/h) Concentration	Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	0.26	0.26	0.25	0.39	0.39	0.40	0.54	0.49	0.41	0.33	0.26	0.28	0.27	0.40	0.28	0.42	5.64
6 - 11	1.35	1.41	0.60	0.81	0.68	1.34	2.29	1.83	1.25	1.12	0.98	0.87	0.91	0.64	0.71	1.23	18.01
12 - 19	3.45	2.52	1.06	0.54	0.58	3.00	4.74	3.32	2.06	1.28	1.48	1.80	1.53	1.04	0.86	1.92	31.19
20 - 28	3.58	3.31	0.35	0.13	0.14	0.66	4.39	3.70	2.26	0.90	0.97	2.70	1.51	1.46	0.75	1.63	28.44
29 - 38	2.69	1.18	0.13	0.01	0.00	0.00	0.97	1.43	0.86	0.42	0.58	1.77	0.88	1.01	0.52	1.30	13.74
> 38	0.79	0.08	0.00	0.00	0.00	0.00	0.02	0.07	0.00	0.06	0.09	0.24	0.24	0.33	0.60	0.46	2.98
Totals	12.12	8.76	2.39	1.88	1.79	5.41	12.95	10.84	6.84	4.11	4.36	7.66	5.34	4.88	3.72	6.95	100

Total Number of Valid Hours 8489
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Patricia McInnes (AMS06)
 Annual Summary for the Year 2022
 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	0.69	0.75	0.51	0.53	0.98	1.37	1.58	1.92	2.37	1.52	1.32	0.95	0.86	0.87	0.97	0.98	18.17
6 - 11	3.87	1.69	0.83	0.79	1.86	4.32	4.89	2.95	3.11	3.63	3.52	1.80	1.35	1.80	1.77	4.91	43.09
12 - 19	4.76	0.99	0.26	0.41	1.16	5.16	1.35	0.32	0.61	1.01	2.69	2.74	1.54	1.04	1.22	4.22	29.48
20 - 28	1.94	0.09	0.00	0.01	0.15	0.33	0.10	0.02	0.03	0.10	0.58	0.98	0.65	0.79	0.75	1.56	8.11
29 - 38	0.18	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.07	0.15	0.14	0.21	0.33	1.13
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Totals	11.44	3.53	1.61	1.74	4.15	11.18	7.95	5.22	6.12	6.26	8.14	6.54	4.55	4.63	4.94	12.00	100.00

Total Number of Valid Hours 8744
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Athabasca Valley (AMS07)
Annual Summary for the Year 2022
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	1.53	0.90	0.86	1.24	2.00	2.86	4.16	3.46	2.48	1.78	1.64	1.47	1.13	1.36	1.54	2.11	30.52
6 - 11	2.87	0.78	0.45	0.57	1.22	2.44	12.05	3.53	0.72	1.45	2.45	1.14	0.63	0.46	1.46	5.60	37.82
12 - 19	1.80	0.17	0.05	0.29	0.54	1.62	4.29	0.32	0.33	0.33	1.71	2.11	0.98	0.64	0.99	7.29	23.47
20 - 28	0.56	0.00	0.00	0.07	0.03	0.06	0.23	0.00	0.00	0.02	0.23	0.54	0.90	0.64	0.68	2.90	6.86
29 - 38	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.17	0.26	0.37	0.30	1.20
> 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	0.05	0.02	0.06	0.01	0.14
Totals	6.79	1.85	1.36	2.17	3.79	6.98	20.73	7.31	3.54	3.59	6.03	5.33	3.85	3.39	5.09	18.20	100.00

Total Number of Valid Hours 8702
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Chipewyan (AMS08)
 Annual Summary for the Year 2022
 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	0.79	0.52	0.39	0.63	0.60	0.52	0.24	0.36	0.28	0.46	0.52	0.44	0.45	0.65	0.77	0.95	8.55
6 - 11	2.44	1.06	1.32	2.04	4.01	1.58	0.91	0.78	0.94	1.29	1.72	1.91	2.86	3.04	3.94	3.78	33.61
12 - 19	0.96	0.71	1.45	3.89	6.53	2.09	1.35	1.35	1.11	1.24	1.11	1.58	3.72	2.53	3.64	3.24	36.51
20 - 28	0.05	0.08	1.11	4.81	4.17	0.98	0.77	0.64	0.77	0.30	0.06	0.20	1.01	0.71	1.23	0.88	17.76
29 - 38	0.00	0.00	0.21	1.55	0.79	0.02	0.06	0.02	0.23	0.07	0.00	0.05	0.07	0.00	0.08	0.22	3.36
> 38	0.00	0.00	0.00	0.08	0.11	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Totals	4.25	2.36	4.48	13.01	16.21	5.19	3.33	3.16	3.34	3.35	3.41	4.17	8.10	6.93	9.65	9.07	100.00

Total Number of Valid Hours 8712
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Barge Landing (AMS09)
Annual Summary for the Year 2022
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 - 5	1.28	0.92	0.81	0.74	0.71	0.73	1.02	0.93	1.40	1.45	1.59	1.45	1.09	1.01	1.11	1.54	17.78
6 - 11	4.02	3.00	2.31	1.36	1.10	1.67	2.45	6.01	6.82	3.48	3.32	2.15	1.50	1.00	1.57	4.34	46.08
12 - 19	3.56	5.56	1.95	0.30	0.07	0.40	1.49	3.22	3.87	1.17	1.33	2.33	1.05	0.66	0.51	1.21	28.68
20 - 28	1.30	2.05	0.26	0.01	0.00	0.00	0.24	0.39	0.16	0.08	0.22	0.51	0.26	0.31	0.38	0.56	6.74
29 - 38	0.14	0.17	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.02	0.01	0.06	0.09	0.17	0.71
> 38	0.00	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	0.01
Totals	10.30	11.71	5.33	2.41	1.88	2.80	5.22	10.56	12.24	6.18	6.45	6.48	3.91	3.03	3.66	7.83	100.00

Total Number of Valid Hours 8739
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Lower Camp (AMS11)
Annual Summary for the Year 2022
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	1.68	1.23	1.22	1.30	1.39	2.69	3.95	1.85	0.86	0.56	0.65	0.56	1.11	3.47	5.18	3.03	30.72
6 - 11	4.66	1.81	0.67	0.34	0.37	1.04	10.55	4.52	0.98	0.40	0.72	1.23	1.45	1.17	2.80	4.94	37.65
12 - 19	4.84	1.83	0.29	0.09	0.05	1.02	6.51	1.35	0.07	0.11	0.18	1.22	2.93	1.08	1.14	1.52	24.22
20 - 28	1.42	0.55	0.05	0.03	0.00	0.21	1.85	0.01	0.00	0.00	0.03	0.30	0.79	0.30	0.69	0.25	6.49
29 - 38	0.16	0.01	0.00	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.01	0.08	0.09	0.17	0.08	0.92
> 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	12.77	5.43	2.22	1.77	1.80	4.96	23.17	7.74	1.91	1.08	1.60	3.32	6.36	6.11	9.98	9.82	100.00

Total Number of Valid Hours 8711
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort McKay South (AMS13)
Annual Summary for the Year 2022
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	2.58	1.63	1.10	0.69	0.69	0.99	1.20	2.34	4.90	4.47	4.03	4.49	2.87	2.25	2.75	3.22	40.19
6 - 11	5.96	4.75	0.78	0.12	0.08	0.32	2.07	4.75	4.55	2.47	2.19	2.98	2.00	1.16	0.97	2.21	37.35
12 - 19	5.46	3.88	0.07	0.00	0.00	0.00	0.44	2.90	1.82	0.56	0.84	0.81	0.21	0.29	0.56	1.34	19.20
20 - 28	1.39	0.70	0.00	0.00	0.00	0.00	0.00	0.46	0.11	0.05	0.02	0.01	0.00	0.01	0.07	0.27	3.09
29 - 38	0.09	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.16
> 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	15.50	10.99	1.95	0.81	0.77	1.31	3.72	10.45	11.38	7.54	7.09	8.29	5.08	3.71	4.35	7.06	100.00

Total Number of Valid Hours 8551
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Anzac (AMS14)
Annual Summary for the Year 2022
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	0.40	0.42	0.53	0.73	0.51	1.18	1.36	1.15	0.82	0.92	0.94	0.75	0.82	0.82	0.59	0.64	12.60
6 - 11	1.90	1.14	1.36	1.25	1.74	4.68	6.39	3.76	2.16	2.04	1.84	2.23	3.99	5.46	2.83	2.75	45.49
12 - 19	0.90	0.22	0.40	0.51	0.81	2.98	4.30	1.91	0.75	0.95	0.99	2.30	4.70	4.67	3.00	2.77	32.17
20 - 28	0.60	0.01	0.06	0.06	0.07	0.22	0.33	0.21	0.06	0.18	0.26	0.91	1.50	1.08	1.24	1.72	8.51
29 - 38	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.08	0.12	0.09	0.11	0.26	0.41	1.23
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Totals	3.90	1.80	2.34	2.55	3.13	9.06	12.37	7.05	3.79	4.12	4.11	6.30	11.11	12.14	7.92	8.30	100.00

Total Number of Valid Hours 8487
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Wapasu (AMS17)
Annual Summary for the Year 2022
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	1.82	2.57	2.08	1.32	1.40	1.71	3.25	2.67	1.87	1.09	0.71	0.69	0.50	0.64	0.85	1.11	24.29
6 - 11	5.32	3.61	1.48	0.88	0.83	1.88	5.80	8.49	6.56	3.33	3.10	1.57	0.92	0.94	1.02	3.12	48.86
12 - 19	3.40	0.24	0.14	0.21	0.11	1.16	3.68	3.63	1.79	1.23	2.70	1.18	0.28	0.28	0.52	3.85	24.38
20 - 28	0.28	0.00	0.00	0.00	0.00	0.00	0.32	0.20	0.01	0.08	0.17	0.08	0.01	0.01	0.08	1.11	2.35
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	0.13	0.13
> 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	10.82	6.42	3.69	2.41	2.34	4.75	13.05	14.98	10.23	5.72	6.68	3.52	1.71	1.87	2.47	9.33	100.00

Total Number of Valid Hours 8717
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Conklin Lookout (AMS18)
 Annual Summary for the Year 2022
 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 - 5	0.91	0.80	0.75	0.56	0.73	0.57	0.53	0.34	0.50	0.56	0.55	0.43	0.61	0.43	0.75	0.94	9.97
6 - 11	2.34	2.51	3.36	2.73	2.32	2.20	1.99	2.20	2.24	2.81	2.64	2.09	3.77	4.58	3.22	2.48	43.51
12 - 19	1.47	0.69	0.59	0.68	0.98	0.82	0.86	1.34	2.78	5.49	4.61	3.47	4.84	3.57	3.04	3.07	38.28
20 - 28	0.22	0.11	0.02	0.07	0.02	0.01	0.21	0.23	0.50	1.18	0.50	0.28	0.79	0.73	1.79	1.04	7.72
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.07	0.00	0.00	0.01	0.06	0.29	0.06	0.52
> 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	4.95	4.10	4.72	4.04	4.06	3.61	3.60	4.11	6.04	10.11	8.30	6.27	10.02	9.38	9.10	7.59	100.00

Total Number of Valid Hours 8532
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Firebag (AMS19)
Annual Summary for the Year 2022
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	0.66	0.78	0.83	0.56	0.51	0.47	0.78	1.05	0.98	0.80	0.68	0.58	0.53	0.43	0.34	0.54	10.52
6 - 11	2.48	3.44	2.26	1.17	0.78	1.61	2.50	3.08	2.58	3.51	3.33	1.84	1.18	1.26	1.33	2.07	34.41
12 - 19	3.85	2.27	0.59	0.51	0.67	1.91	3.76	3.37	3.29	4.31	3.68	3.25	1.01	0.95	1.09	2.93	37.43
20 - 28	2.12	0.34	0.05	0.10	0.07	0.31	0.74	2.28	1.99	1.38	1.26	1.00	0.32	0.28	0.69	2.41	15.33
29 - 38	0.31	0.02	0.00	0.00	0.00	0.00	0.05	0.13	0.21	0.09	0.14	0.03	0.03	0.02	0.21	0.81	2.06
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.22	0.25
Totals	9.42	6.84	3.73	2.34	2.03	4.31	7.82	9.91	9.05	10.10	9.10	6.70	3.08	2.94	3.67	8.98	100.00

Total Number of Valid Hours 8641
 Total Number of Hours 8760



Wood Buffalo Environmental Association -MacKay River (AMS20)
Annual Summary for the Year 2022
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	1.40	2.44	2.10	1.51	1.93	2.88	4.38	4.46	2.88	2.42	2.43	3.10	2.49	1.54	1.14	1.40	38.51
6 - 11	2.16	5.91	3.25	0.78	1.55	4.45	3.05	1.66	6.29	3.70	2.89	4.37	3.12	2.47	1.71	1.64	49.00
12 - 19	0.67	1.81	0.20	0.02	0.22	1.18	0.29	0.13	1.08	0.49	0.46	0.69	0.40	1.10	1.73	1.23	11.69
20 - 28	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.02	0.33	0.36	0.78
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	4.26	10.17	5.54	2.32	3.70	8.52	7.72	6.27	10.25	6.63	5.78	8.16	6.01	5.13	4.92	4.62	100.00

Total Number of Valid Hours 8714
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Conklin (AMS21)
Annual Summary for the Year 2022
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	3.37	1.92	1.64	1.29	1.28	1.35	3.25	5.74	6.45	3.81	1.81	1.38	1.07	1.72	3.38	5.32	44.76
6 - 11	2.33	2.43	1.52	1.15	0.72	1.37	2.51	1.63	2.45	3.83	3.65	3.10	2.00	3.34	3.09	3.54	38.66
12 - 19	2.00	0.72	0.07	0.02	0.06	0.33	0.49	0.45	0.80	1.60	1.61	1.64	1.16	0.69	0.85	2.83	15.32
20 - 28	0.27	0.00	0.00	0.00	0.00	0.00	0.03	0.10	0.00	0.02	0.03	0.03	0.07	0.00	0.01	0.66	1.24
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	0.00	0.01
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	7.98	5.06	3.23	2.46	2.06	3.04	6.28	7.92	9.70	9.27	7.11	6.16	4.30	5.75	7.33	12.36	100.00

Total Number of Valid Hours 8610
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Janvier (AMS22)
 Annual Summary for the Year 2022
 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 - 5	2.82	4.85	1.93	1.30	1.15	1.43	1.39	1.51	2.37	3.49	2.41	1.36	0.81	0.61	0.70	0.97	29.10
6 - 11	3.22	7.06	2.77	1.98	1.63	1.49	0.80	1.35	2.32	9.90	6.94	2.33	1.58	1.57	1.42	1.10	47.47
12 - 19	3.19	1.97	0.89	0.56	0.48	0.28	0.22	0.19	0.79	3.11	3.44	1.74	1.47	1.25	1.26	0.57	21.42
20 - 28	0.13	0.11	0.05	0.00	0.00	0.00	0.03	0.03	0.00	0.01	0.15	0.13	0.28	0.48	0.41	0.13	1.94
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.01	0.00	0.07
> 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	9.36	14.00	5.64	3.84	3.26	3.20	2.44	3.10	5.48	16.50	12.93	5.57	4.17	3.92	3.81	2.77	100.00

Total Number of Valid Hours 8721
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Fort Hills (AMS23)
Annual Summary for the Year 2022
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	1.53	0.77	0.45	0.49	0.61	0.72	1.26	1.76	2.17	1.55	1.01	0.83	0.86	1.03	1.48	1.63	18.17
6 - 11	4.90	3.38	1.46	0.62	0.67	1.24	3.59	6.46	5.07	3.22	1.83	0.75	0.84	0.87	0.99	1.82	37.68
12 - 19	5.84	6.07	1.10	0.18	0.06	0.28	1.71	3.10	4.17	3.47	2.31	0.90	0.63	0.47	0.59	1.07	31.95
20 - 28	2.72	2.83	0.30	0.00	0.00	0.00	0.26	0.66	0.39	0.37	0.78	0.47	0.29	0.36	0.43	0.64	10.49
29 - 38	0.56	0.44	0.01	0.00	0.00	0.00	0.01	0.11	0.01	0.00	0.03	0.06	0.00	0.05	0.08	0.29	1.65
> 38	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.06
Totals	15.57	13.49	3.32	1.30	1.33	2.24	6.84	12.09	11.81	8.61	5.96	3.00	2.62	2.78	3.57	5.46	100.00

Total Number of Valid Hours 8702
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Waskow ohci Pimatisiwin (AMS25)
Annual Summary for the Year 2022
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	3.48	2.87	2.33	1.77	1.79	2.43	5.50	10.35	4.41	2.99	2.26	3.42	4.31	3.37	3.41	3.73	58.41
6 - 11	6.23	4.17	0.64	0.09	0.08	0.55	4.12	4.65	0.94	1.07	1.98	1.64	1.02	1.18	1.34	4.57	34.29
12 - 19	2.50	0.61	0.00	0.00	0.00	0.00	0.14	0.21	0.02	0.11	0.07	0.07	0.08	0.35	1.12	1.42	6.70
20 - 28	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.26	0.21	0.59
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	12.32	7.65	2.98	1.86	1.87	2.98	9.76	15.21	5.37	4.16	4.31	5.13	5.41	4.92	6.14	9.93	100.00

Total Number of Valid Hours 8534
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Christina Lake (AMS26)
 Annual Summary for the Year 2022
 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	0.26	0.75	1.21	1.11	1.60	1.37	1.64	2.38	2.83	2.50	0.87	0.43	0.25	0.14	0.22	0.17	17.72
6 - 11	1.19	3.69	2.65	2.40	1.86	1.98	1.81	2.13	4.25	4.49	4.26	3.74	1.15	0.89	0.81	0.42	37.73
12 - 19	1.97	2.84	1.66	1.12	0.89	0.97	1.01	1.29	2.73	2.41	4.14	4.08	2.44	1.90	2.50	1.05	33.00
20 - 28	1.13	0.49	0.01	0.16	0.23	0.16	0.22	0.20	0.14	0.20	0.65	0.65	0.89	0.74	2.45	1.69	10.01
29 - 38	0.01	0.00	0.01	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.06	0.00	0.07	0.17	0.84	0.28	1.50
> 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	0.01	0.02	0.00	0.04
Totals	4.57	7.78	5.54	4.80	4.58	4.48	4.70	6.01	9.95	9.60	9.99	8.90	4.79	3.84	6.85	3.61	100.00

Total Number of Valid Hours 8121
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Jackfish 2/3 (AMS27)
Annual Summary for the Year 2022
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	1.20	2.31	3.37	2.00	1.50	1.56	1.55	2.12	3.84	2.96	2.38	2.80	2.39	1.33	1.84	1.79	34.93
6 - 11	1.97	2.33	3.44	2.96	1.50	1.42	1.01	1.60	3.05	6.77	7.23	6.52	4.25	2.98	2.81	3.13	52.97
12 - 19	0.24	0.30	0.30	0.14	0.34	0.09	0.09	0.09	0.12	0.69	1.64	4.38	1.49	0.69	0.78	0.50	11.89
20 - 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.14	0.06	0.00	0.00	0.00	0.21
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	3.41	4.94	7.10	5.10	3.34	3.07	2.66	3.81	7.01	10.41	11.26	13.84	8.19	5.00	5.43	5.43	100.00

Total Number of Valid Hours 8586
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Surmont 2 (AMS29)
Annual Summary for the Year 2022
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	2.42	1.94	1.44	2.05	2.34	3.56	3.97	2.99	2.09	1.88	4.20	7.33	7.18	4.86	3.23	3.16	54.62
6 - 11	3.26	0.94	0.41	0.84	2.22	4.39	2.48	1.90	0.60	0.32	0.42	2.52	4.61	4.64	3.49	5.02	38.05
12 - 19	0.68	0.00	0.01	0.01	0.49	0.36	0.02	0.00	0.00	0.00	0.00	0.40	1.07	1.41	1.15	1.65	7.26
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	0.01	0.05	0.00	0.00	0.06
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	6.36	2.87	1.87	2.91	5.05	8.31	6.47	4.89	2.69	2.19	4.62	10.26	12.87	10.95	7.86	9.83	100.00

Total Number of Valid Hours 8522
Total Number of Hours 8760



Wood Buffalo Environmental Association - Ells River (AMS30)
 Annual Summary for the Year 2022
 Wind Speed (km/h) Average

Wind Speed (km/h)	Wind Direction																Totals
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
0 - 5	1.56	1.59	1.03	0.78	0.59	0.66	1.01	1.13	1.92	2.41	1.97	2.10	2.29	2.25	1.76	1.54	24.58
6 - 11	2.64	4.42	2.05	1.08	0.67	0.83	1.32	3.22	6.17	5.90	4.22	3.47	2.00	1.77	1.01	0.75	41.51
12 - 19	1.64	6.99	2.74	0.26	0.18	0.15	0.57	2.00	2.33	1.18	1.69	2.06	0.66	0.51	0.90	0.83	24.68
20 - 28	0.82	3.28	1.14	0.01	0.00	0.00	0.05	0.43	0.21	0.06	0.08	0.07	0.03	0.15	0.54	0.68	7.53
29 - 38	0.22	0.93	0.07	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.31	1.65
> 38	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05
Totals	6.91	17.21	7.02	2.14	1.44	1.63	2.95	6.83	10.63	9.55	7.95	7.70	4.98	4.68	4.27	4.11	100.00

Total Number of Valid Hours 8702
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Leismer (AMS501)
Annual Summary for the Year 2022
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	1.27	0.88	0.77	1.00	1.38	1.38	2.31	2.15	1.96	2.42	1.61	0.69	1.73	1.96	1.19	0.77	23.48
6 - 11	3.34	1.65	0.96	1.11	4.69	5.73	3.77	2.46	1.46	5.07	1.15	0.58	1.88	3.57	1.15	2.92	41.51
12 - 19	3.07	0.23	0.04	0.00	0.96	0.35	0.77	1.58	0.81	1.58	0.35	0.08	1.38	4.27	3.00	3.07	21.52
20 - 28	1.38	0.00	0.00	0.00	0.04	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.12	1.84	3.19	2.65	9.34
29 - 38	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.84	1.46	3.92
> 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	0.15	0.08	0.23
Totals	9.19	2.77	1.77	2.11	7.07	7.46	6.84	6.30	4.23	9.07	3.11	1.35	5.11	12.14	10.53	10.95	100.00

Total Number of Valid Hours 2602
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Sawbones Bay (AMS505)
Annual Summary for the Year 2022
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	0.85	1.80	1.93	2.12	1.71	1.62	1.15	1.93	1.41	0.89	0.74	0.50	0.97	0.80	0.84	0.98	20.25
6 - 11	3.55	3.34	1.67	1.24	2.94	3.59	2.97	4.24	3.85	2.01	0.82	0.87	1.58	3.18	2.02	2.64	40.50
12 - 19	2.82	0.97	0.04	0.17	1.00	1.36	1.56	2.30	2.15	2.12	2.81	2.56	3.18	2.40	1.50	3.14	30.08
20 - 28	0.65	0.17	0.04	0.00	0.02	0.11	0.28	0.15	0.11	0.24	0.69	0.91	0.95	0.97	1.24	1.67	8.19
29 - 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.22	0.17	0.33	0.24	0.98
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	7.88	6.28	3.68	3.53	5.67	6.67	5.96	8.62	7.52	5.26	5.07	4.85	6.89	7.51	5.94	8.68	100.00

Total Number of Valid Hours 5383
 Total Number of Hours 8760



Wood Buffalo Environmental Association -Jackfish 1(AMS506)
Annual Summary for the Year 2022
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	2.21	2.21	1.67	1.43	0.78	0.80	1.76	3.69	13.49	11.78	7.08	3.22	3.22	4.80	4.14	2.23	64.50
6 - 11	2.54	1.20	1.06	0.42	0.21	0.59	1.10	2.07	5.15	3.10	2.16	0.75	0.66	1.60	4.54	3.55	30.70
12 - 19	0.31	0.07	0.00	0.00	0.02	0.00	0.00	0.00	0.05	0.07	0.05	0.00	0.00	0.00	0.71	3.10	4.37
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	0.07	0.35	0.42
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	5.05	3.48	2.73	1.86	1.01	1.39	2.87	5.76	18.69	14.95	9.29	3.97	3.88	6.39	9.45	9.24	100.00

Total Number of Valid Hours 4254
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Kirby South (AMS507)
 Annual Summary for the Year 2022
 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	0.85	0.56	0.78	0.68	1.07	1.02	0.63	0.34	0.44	0.39	0.61	0.51	0.51	0.58	0.53	0.48	9.96
6 - 11	2.96	2.25	2.50	3.64	3.20	2.40	2.57	1.55	2.11	2.23	3.59	3.93	1.55	3.78	2.62	1.77	42.63
12 - 19	2.04	2.25	2.79	1.72	1.14	0.99	1.62	1.91	1.99	2.69	4.02	3.25	2.71	3.95	2.28	1.28	36.65
20 - 28	1.48	1.09	0.58	0.17	0.07	0.02	0.10	0.24	0.46	0.19	0.29	0.22	1.11	1.28	1.02	1.72	10.06
29 - 38	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.10	0.41	0.70
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	7.37	6.16	6.64	6.20	5.48	4.44	4.92	4.05	4.99	5.50	8.51	7.90	5.89	9.74	6.54	5.67	100.00

Total Number of Valid Hours 4126
 Total Number of Hours 8760



Wood Buffalo Environmental Association - Kirby North (AMS508)
Annual Summary for the Year 2022
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	0.70	1.04	1.00	0.68	0.73	0.50	0.57	0.88	1.59	2.13	0.93	0.75	0.43	0.34	0.45	0.79	13.51
6 - 11	1.11	2.18	2.83	1.36	1.45	0.91	1.75	4.33	9.75	7.87	4.01	1.90	1.22	2.38	2.02	1.81	46.89
12 - 19	1.59	1.68	2.31	0.86	0.27	0.36	0.34	1.25	3.42	3.67	4.47	4.76	0.98	3.06	1.86	2.47	33.36
20 - 28	0.57	0.36	0.14	0.02	0.05	0.00	0.00	0.00	0.00	0.09	0.29	1.45	0.59	1.09	0.66	0.45	5.76
29 - 38	0.02	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.09	0.02	0.11	0.07	0.48
> 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals	3.99	5.33	6.28	2.93	2.49	1.77	2.65	6.46	14.76	13.76	9.75	8.91	3.31	6.89	5.10	5.60	100.00

Total Number of Valid Hours 4410
 Total Number of Hours 8760



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

WIND ROSES ANNUAL 2022

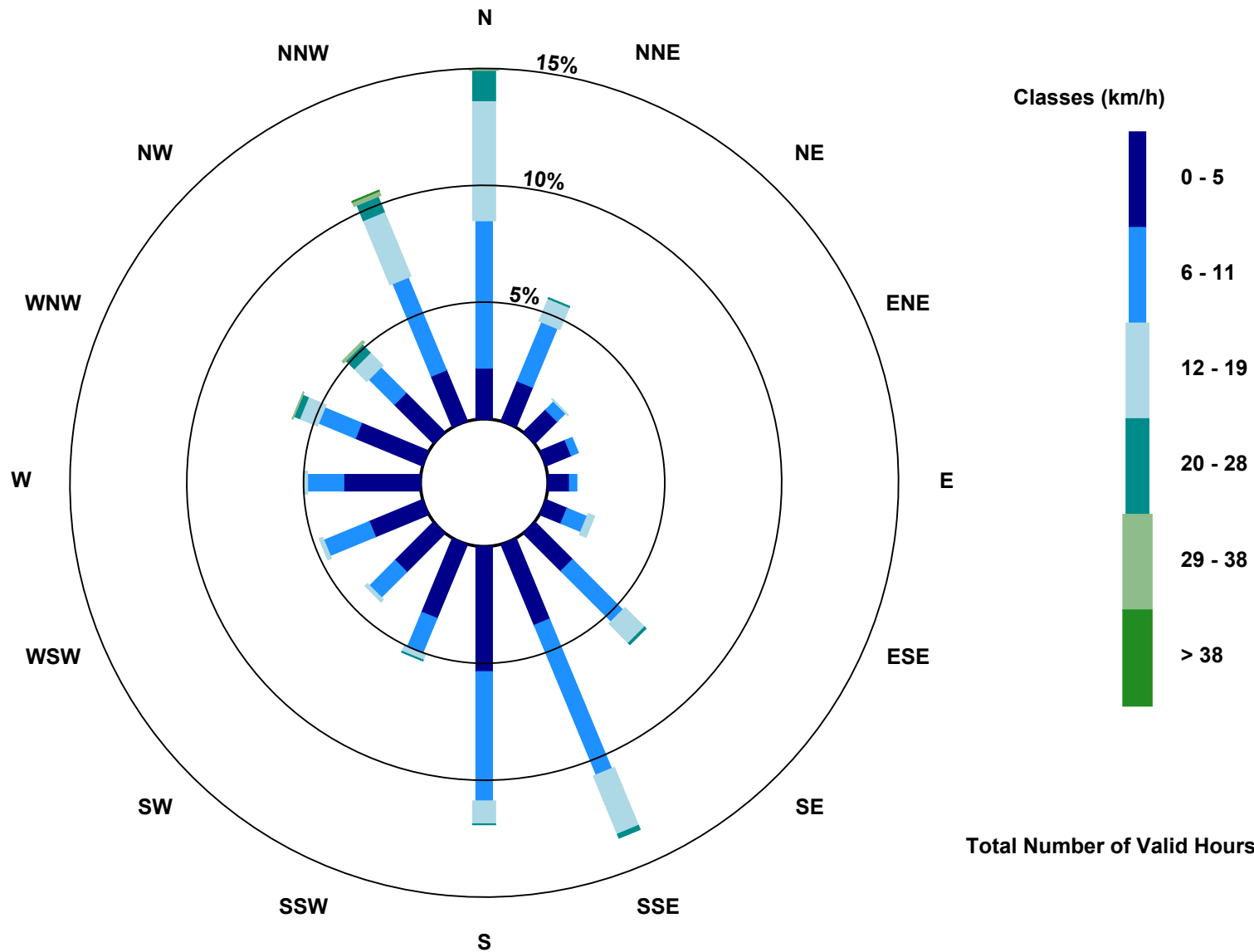
Operations, Data Collection,
QA/QC, Data Validation and Reporting by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

March 2023



Wood Buffalo Environmental Association
Wind Rose 2022

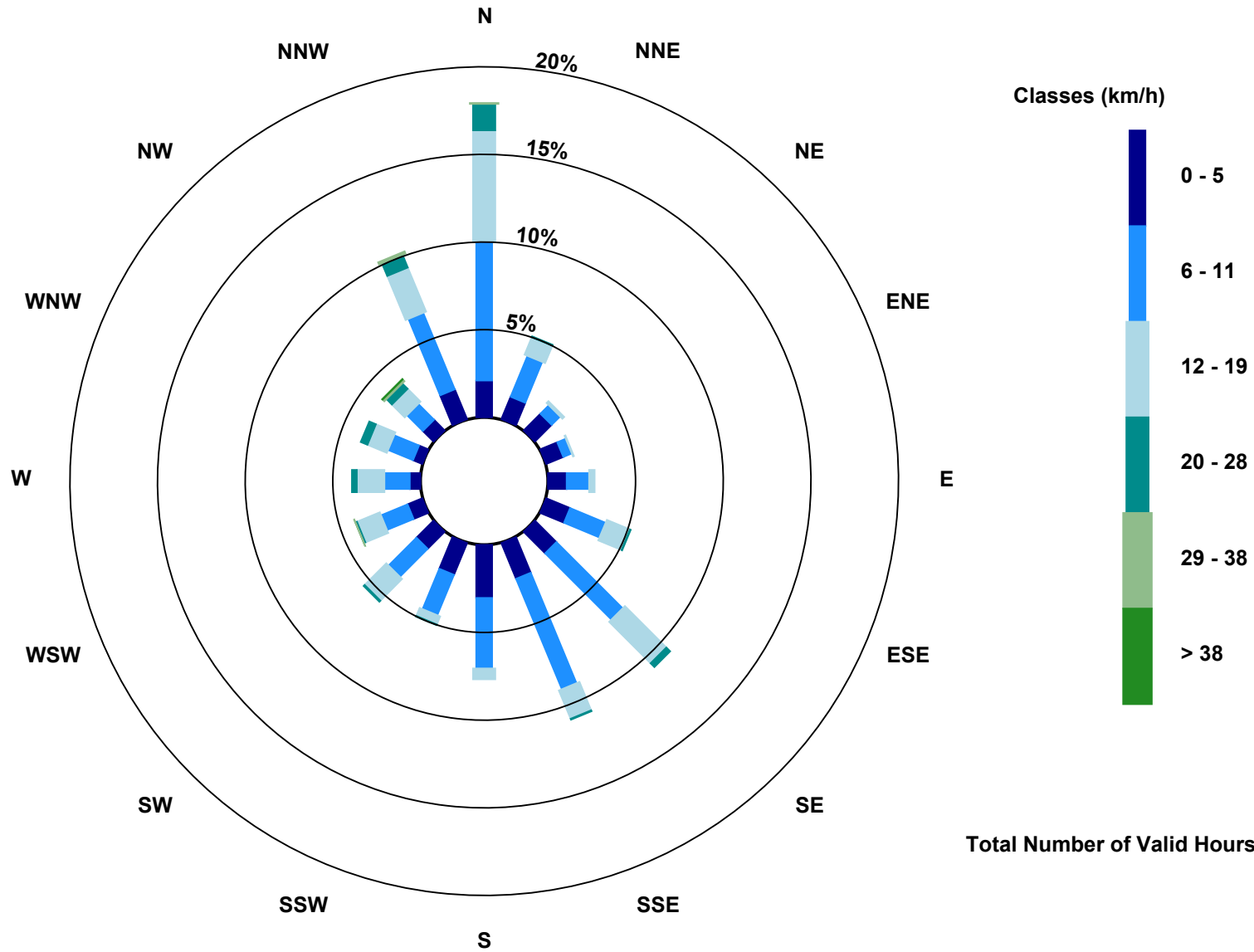
Wind Speed (WS) - km/h
Fort McKay - Bertha Ganter





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Mildred Lake

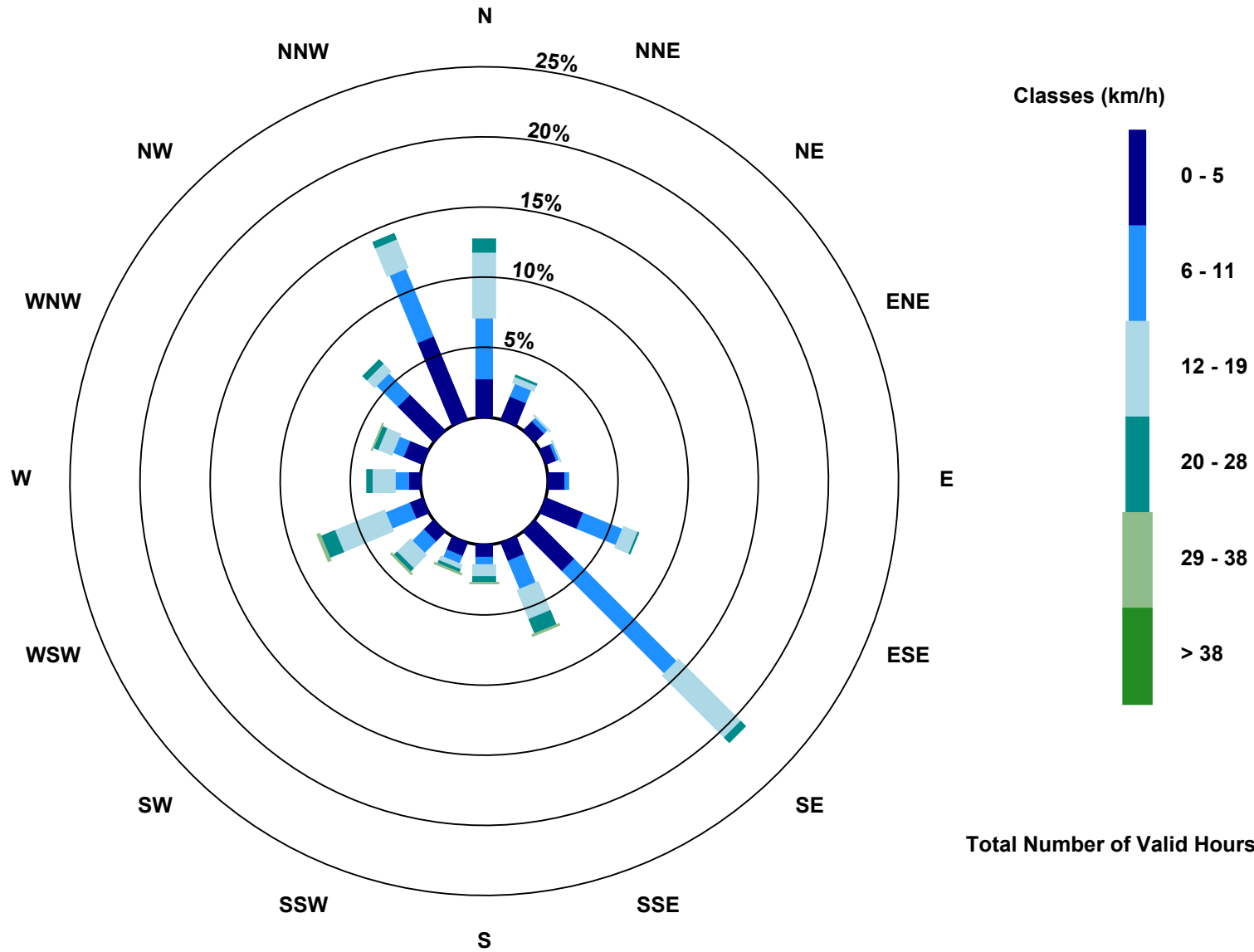


Total Number of Valid Hours: 8666



Wood Buffalo Environmental Association
Wind Rose 2022

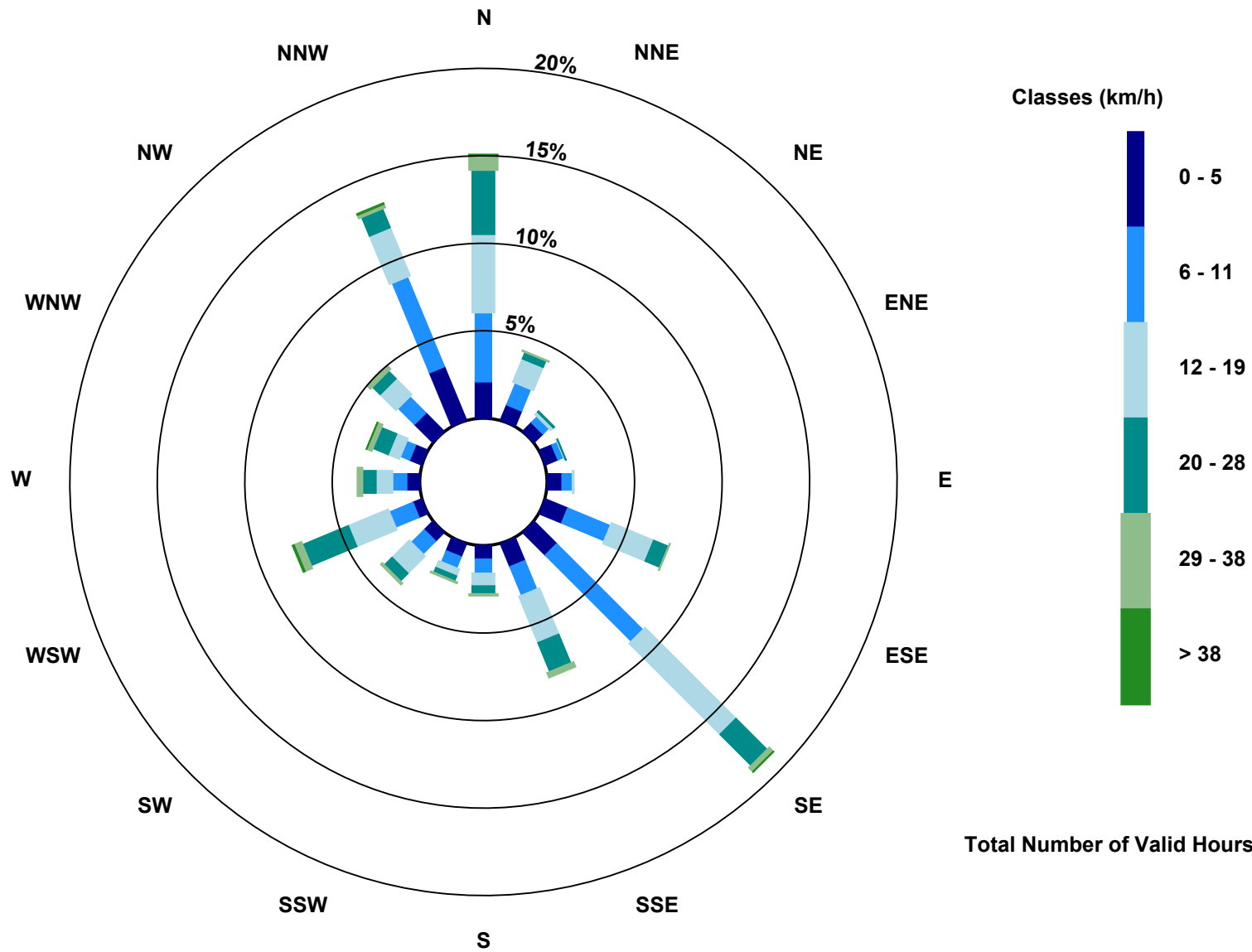
Wind Speed 20 m (WS20m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association
Wind Rose 2022

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

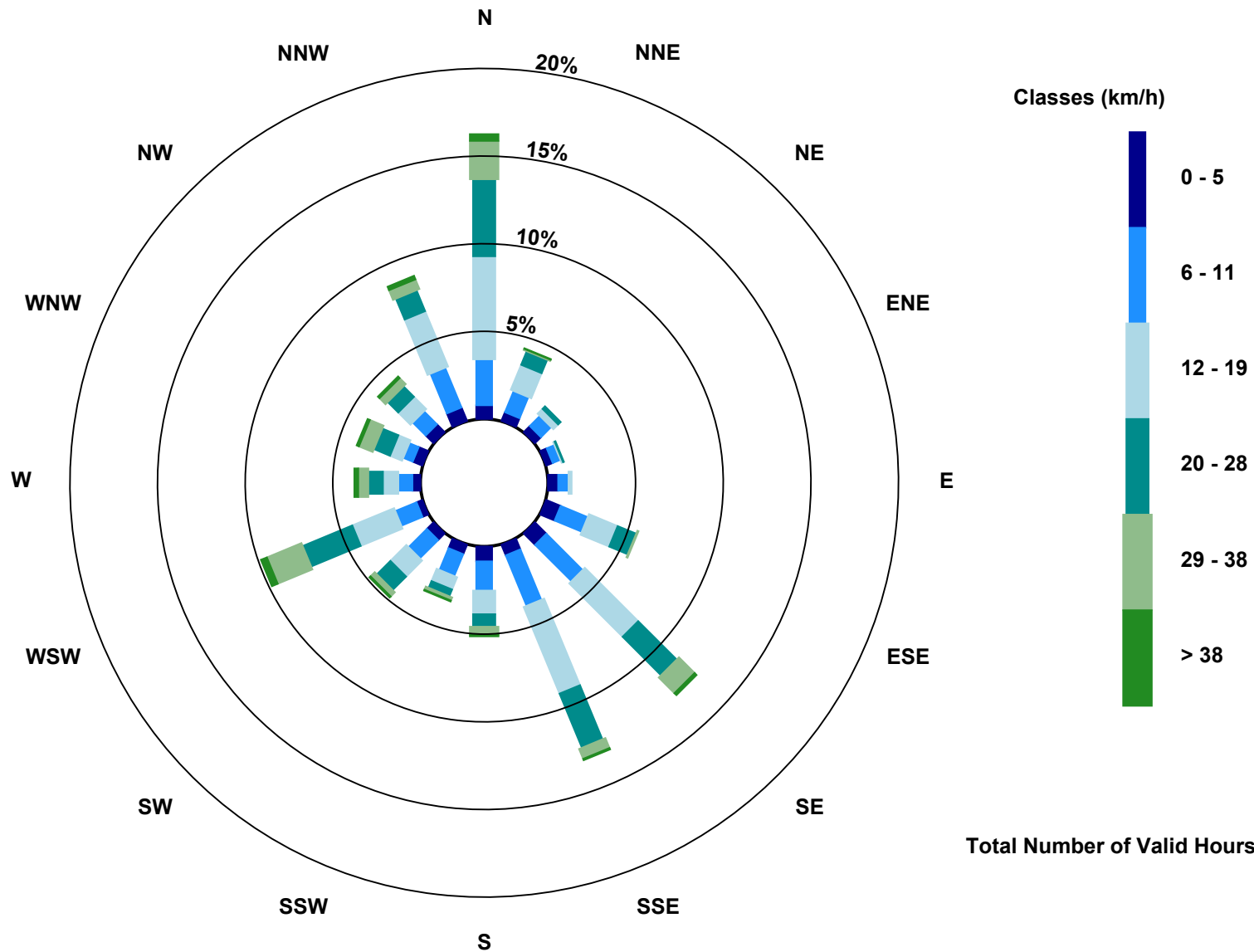


Total Number of Valid Hours: 6739



Wood Buffalo Environmental Association
Wind Rose 2022

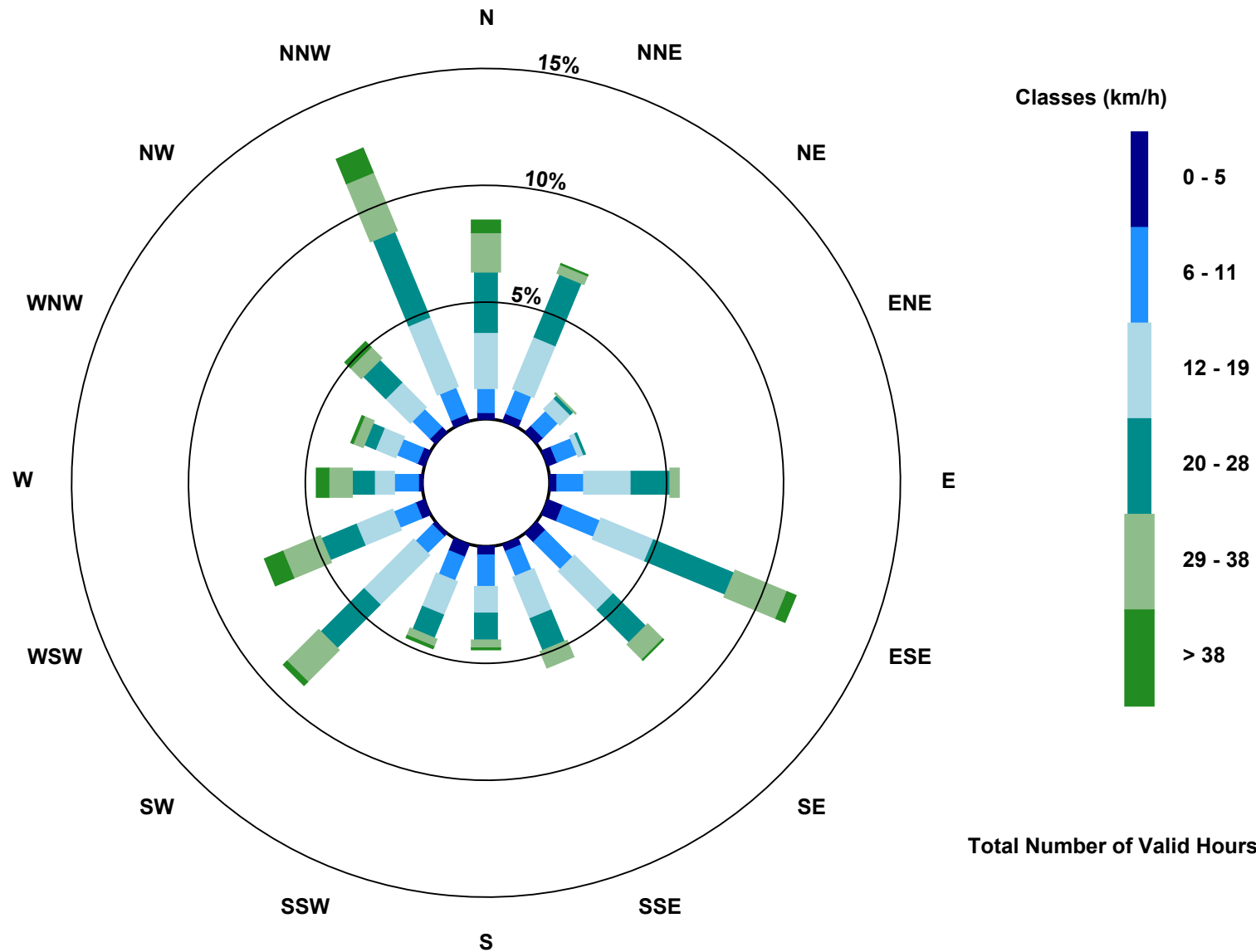
Wind Speed 100 m (WS100m) - km/h
Lower Camp Met Tower





Wood Buffalo Environmental Association
Wind Rose 2022

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

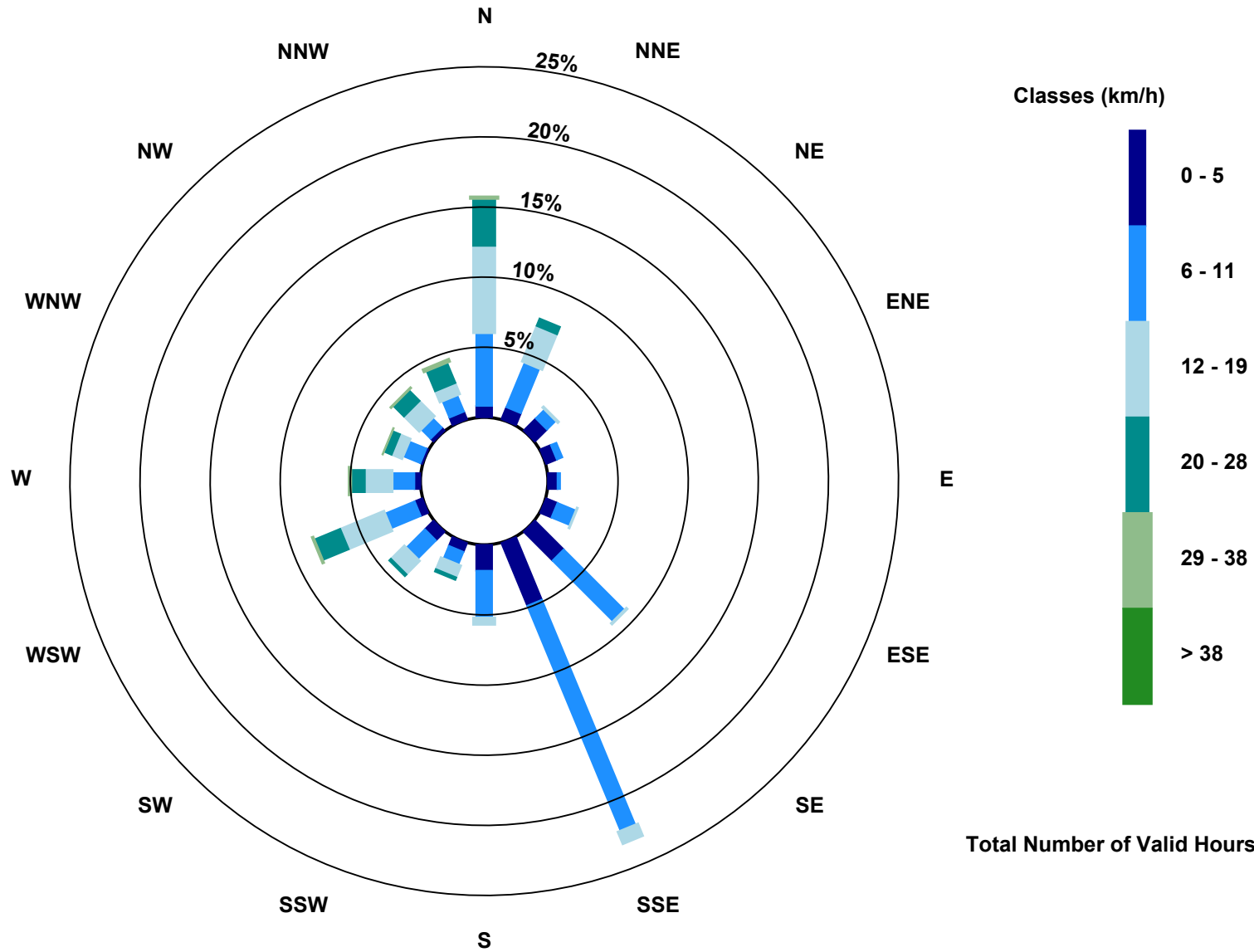


Total Number of Valid Hours: 3494



Wood Buffalo Environmental Association
Wind Rose 2022

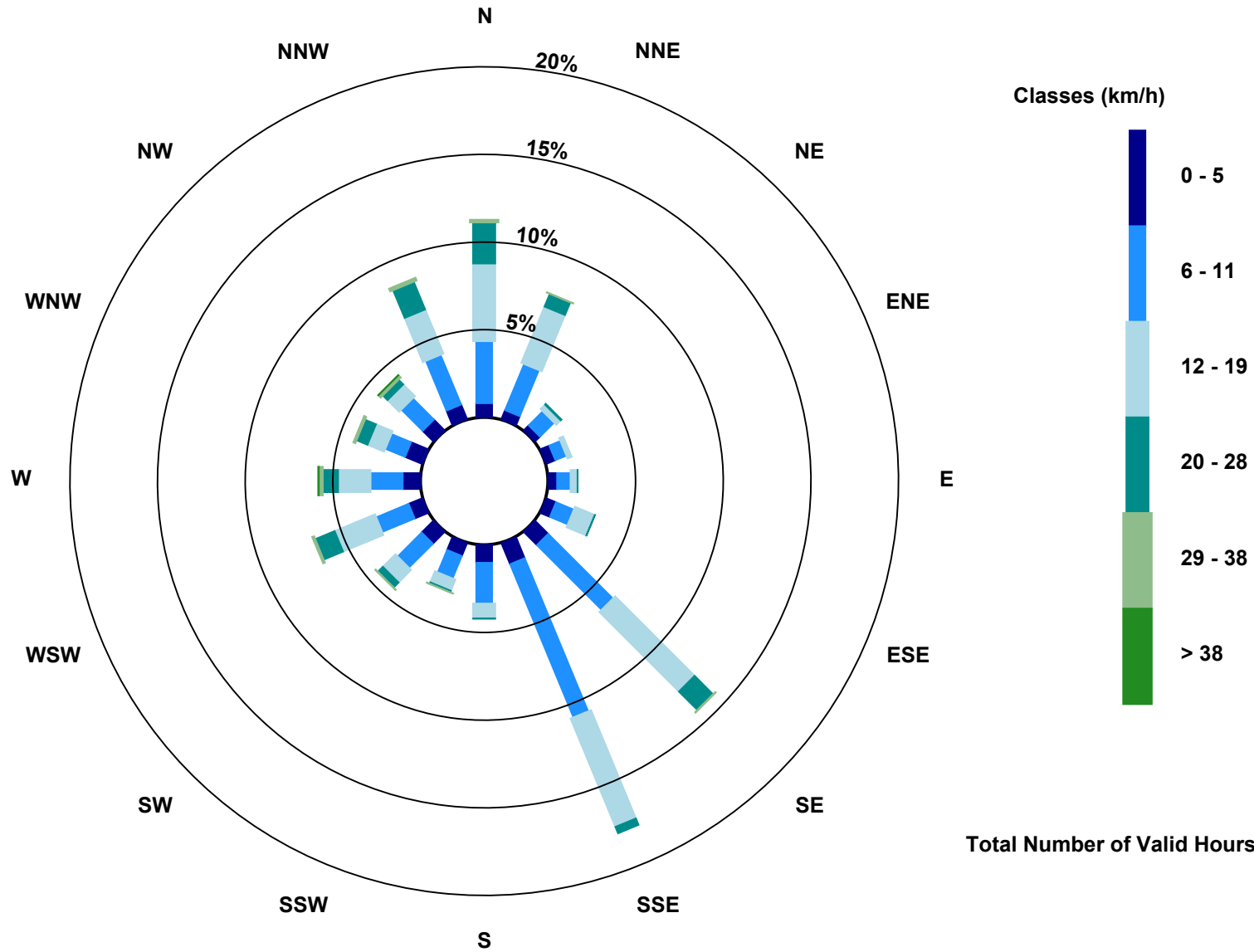
Wind Speed (WS) - km/h
Buffalo Viewpoint





Wood Buffalo Environmental Association
Wind Rose 2022

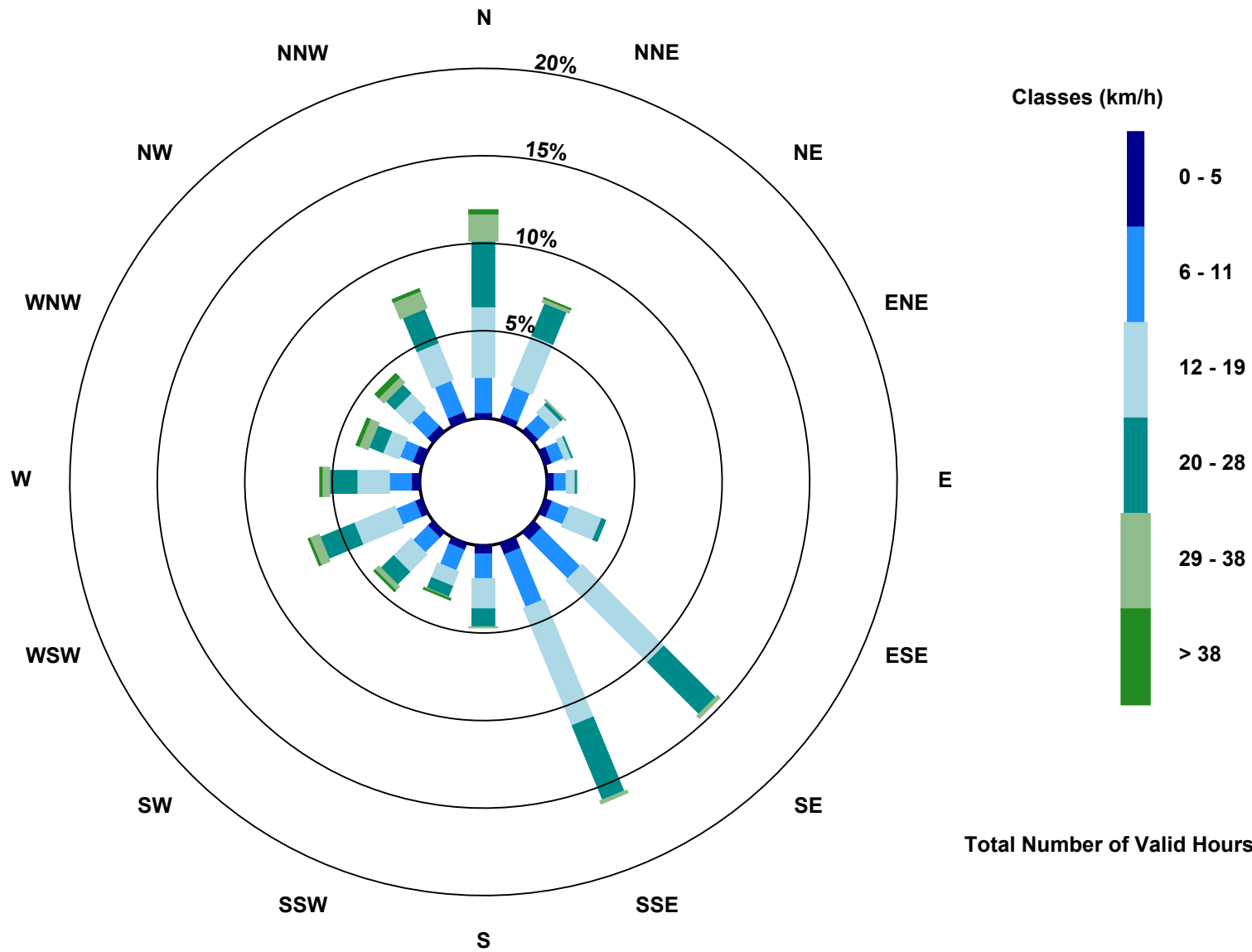
Wind Speed 20 m (WS20m) - km/h
Mannix





Wood Buffalo Environmental Association
Wind Rose 2022

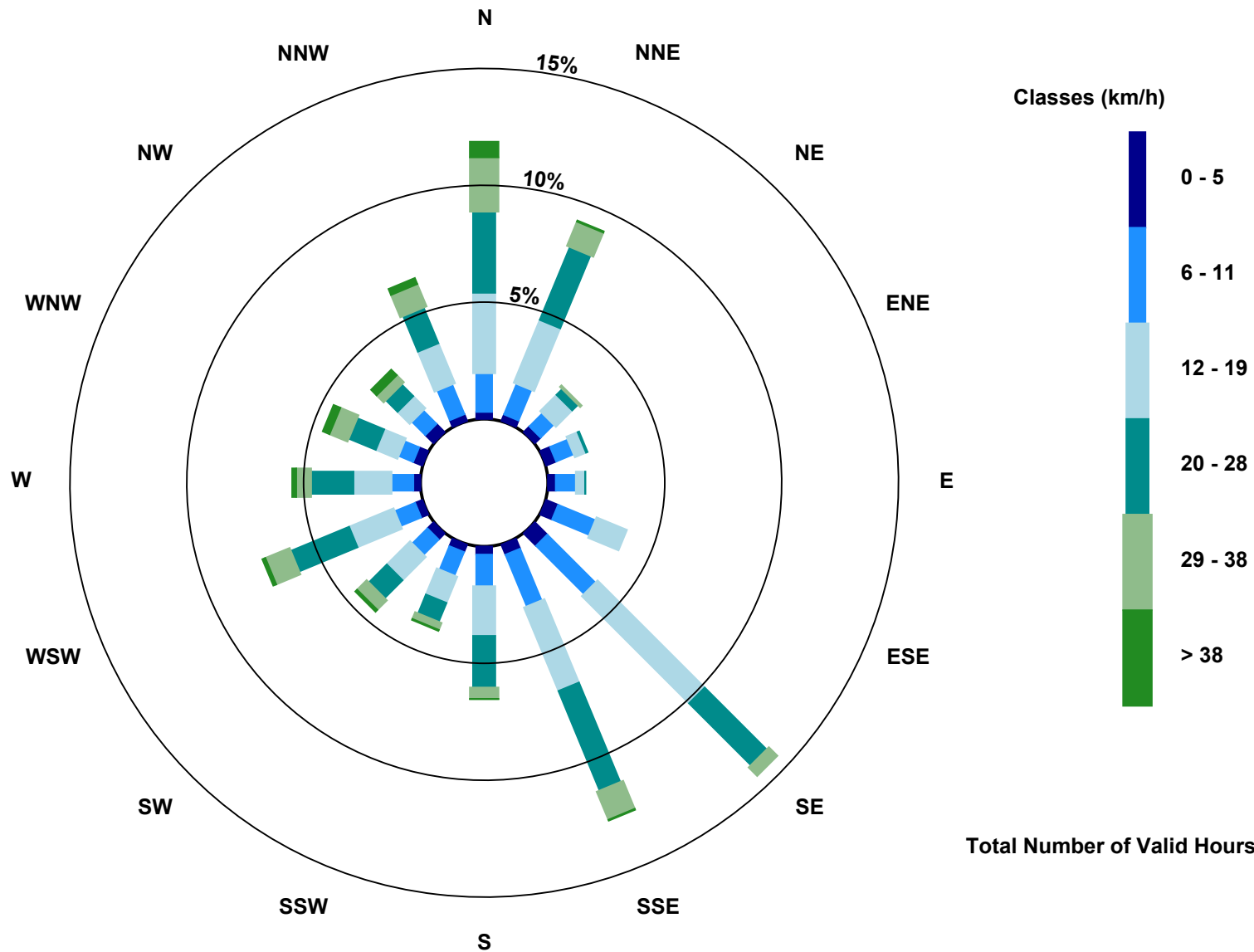
Wind Speed 45 m (WS45m) - km/h
Mannix





Wood Buffalo Environmental Association
Wind Rose 2022

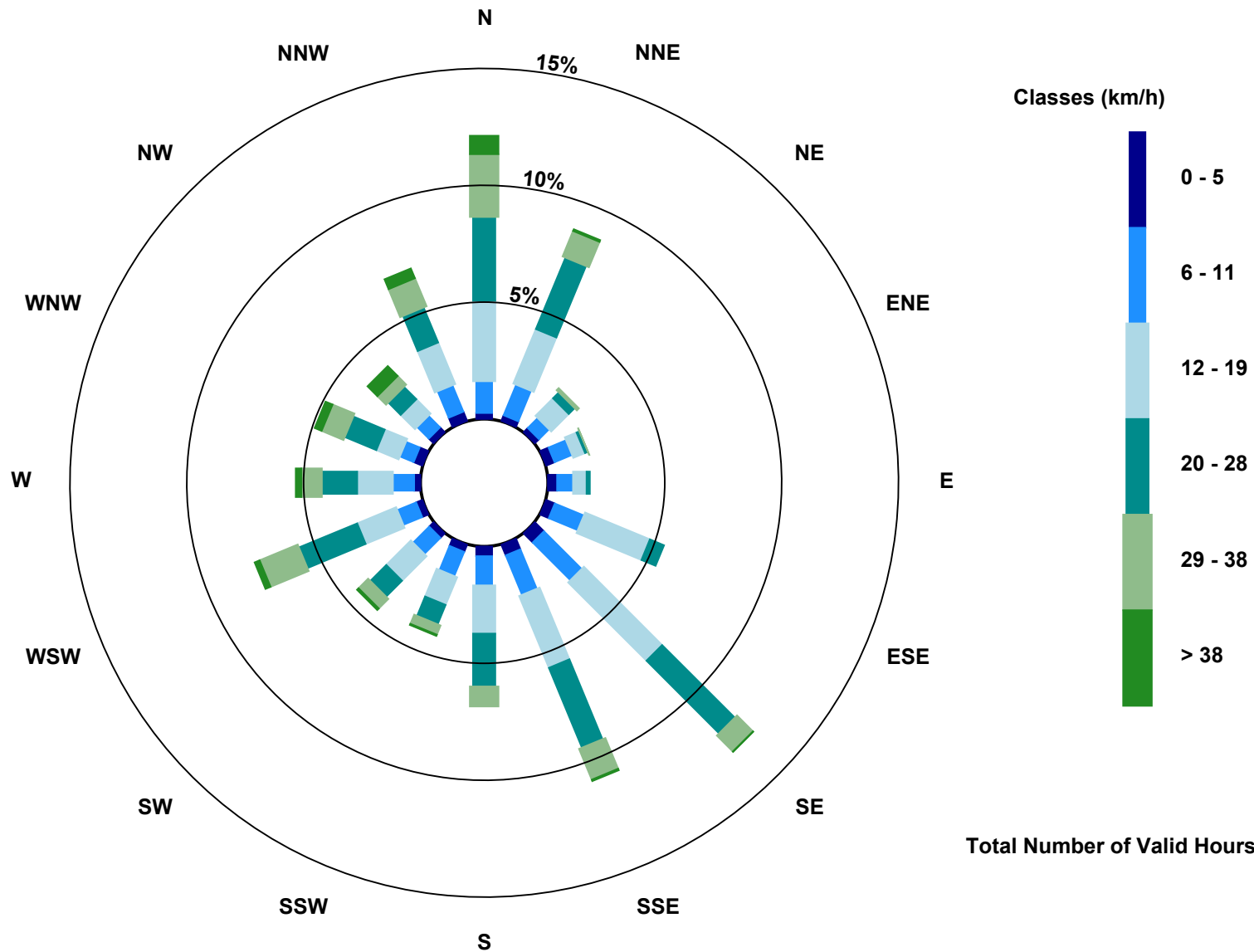
Wind Speed 75 m (WS75m) - km/h
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Wood Buffalo Environmental Association
Wind Rose 2022

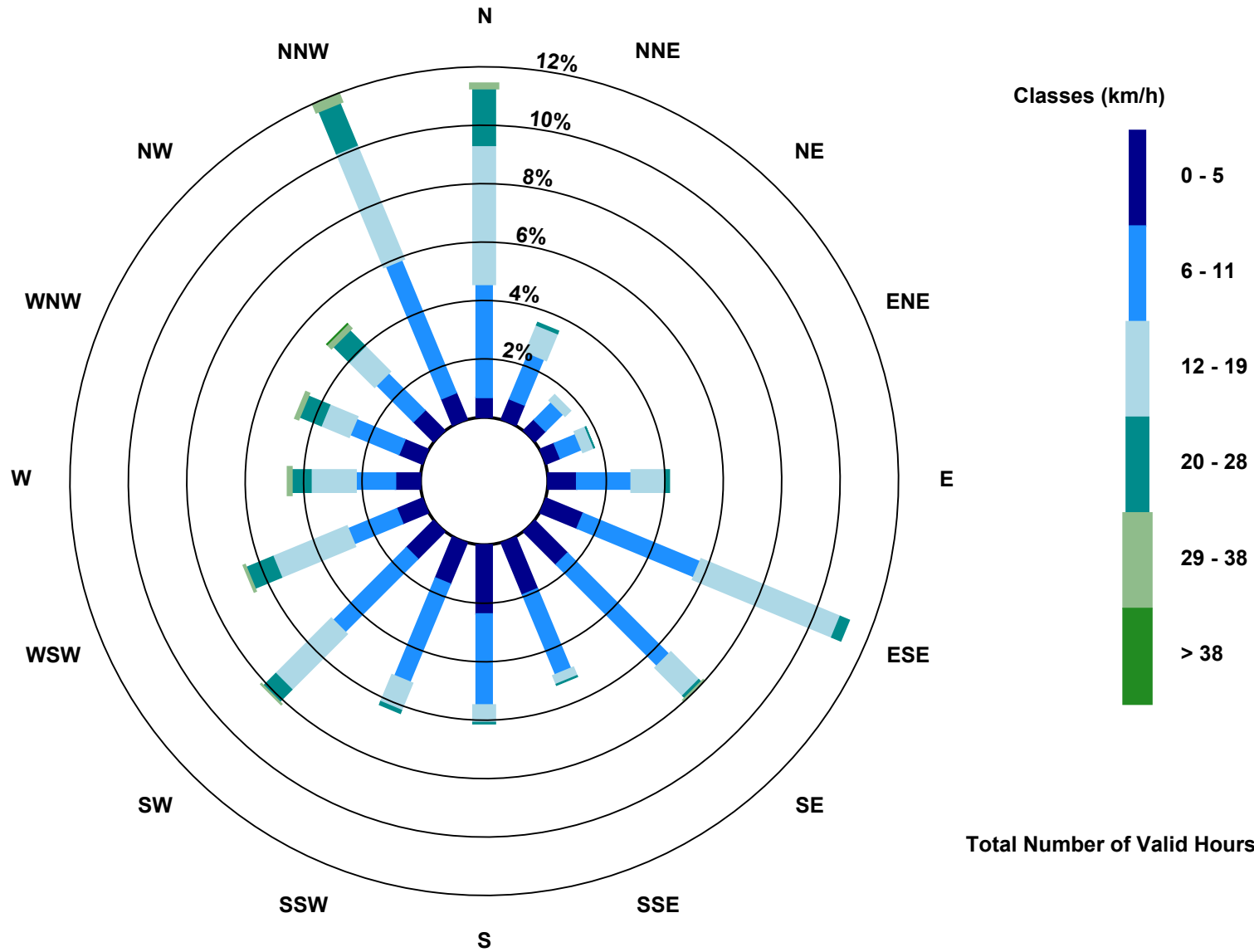
Wind Speed 90 m (WS90m) - km/h
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Wood Buffalo Environmental Association
Wind Rose 2022

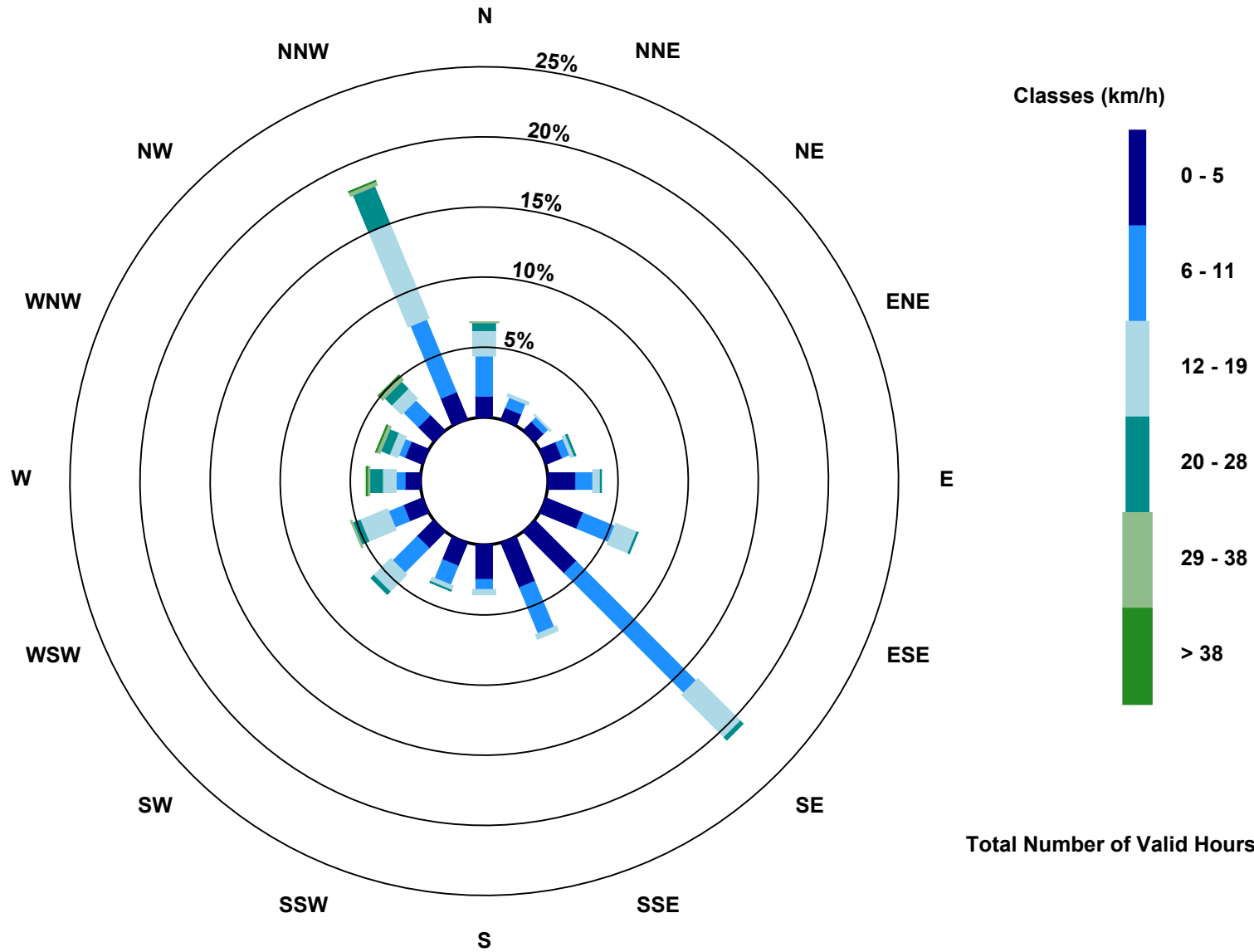
Wind Speed (WS) - km/h
Patricia McInnes





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Athabasca Valley

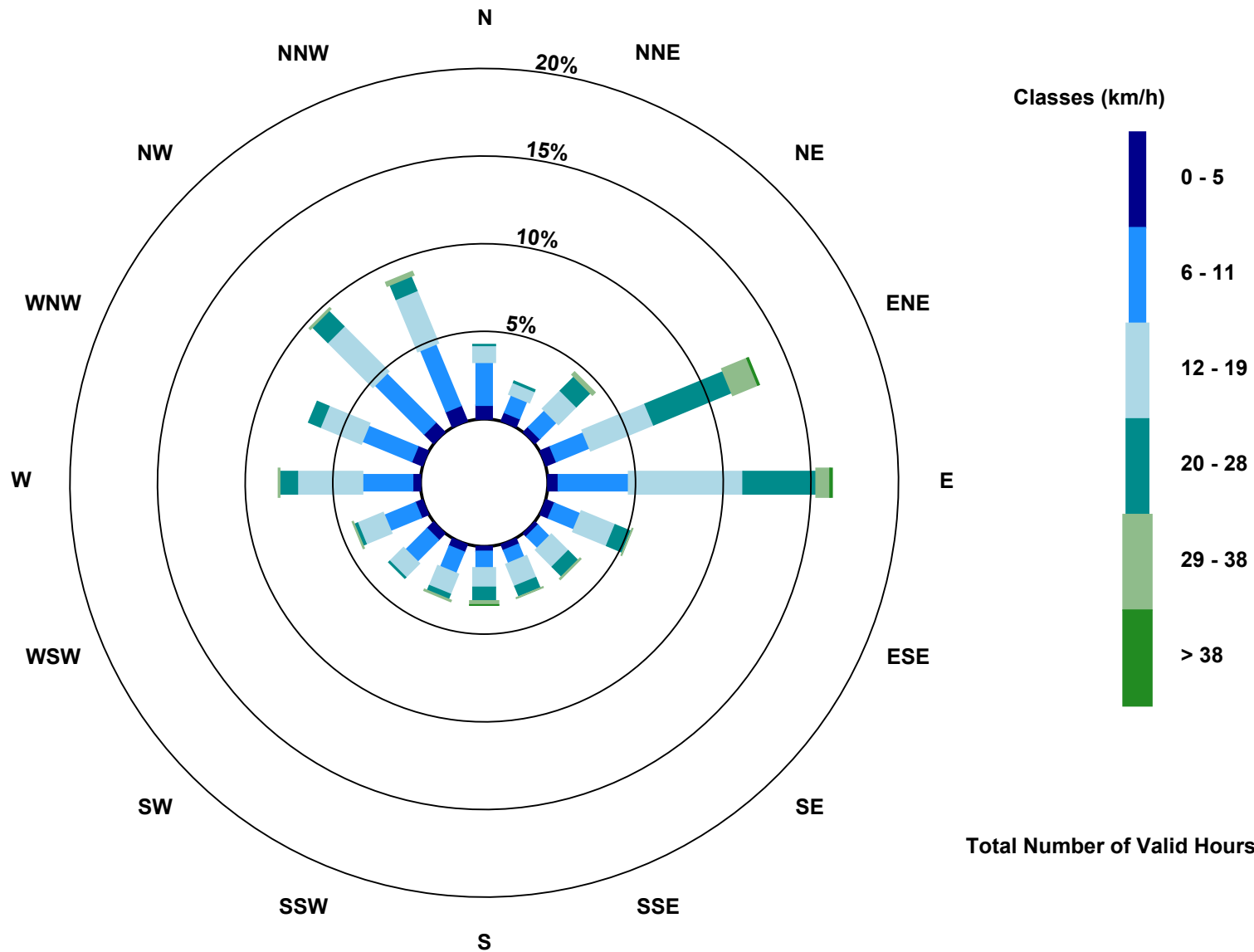


Total Number of Valid Hours: 8702



Wood Buffalo Environmental Association
Wind Rose 2022

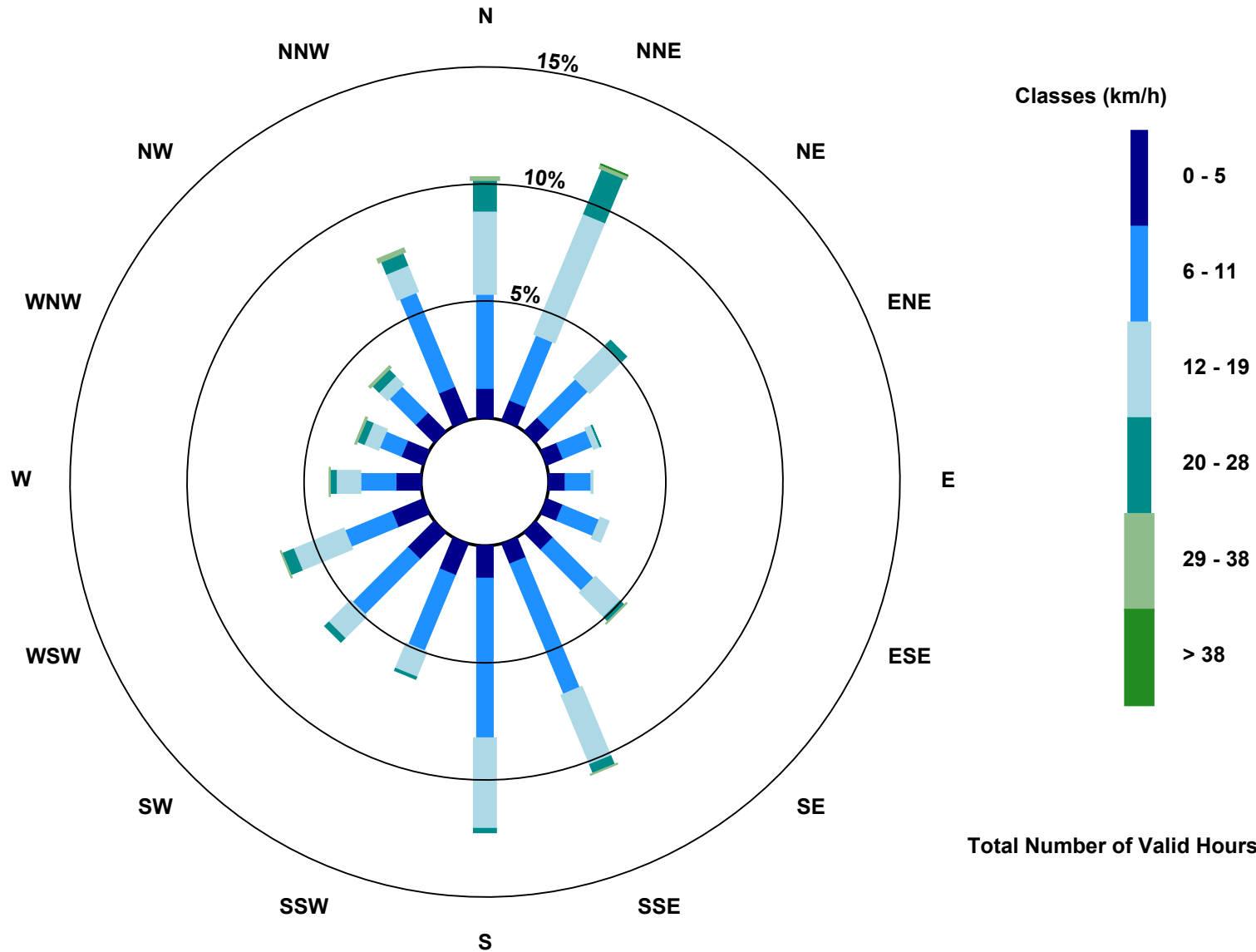
Wind Speed (WS) - km/h
Fort Chipewyan





Wood Buffalo Environmental Association
Wind Rose 2022

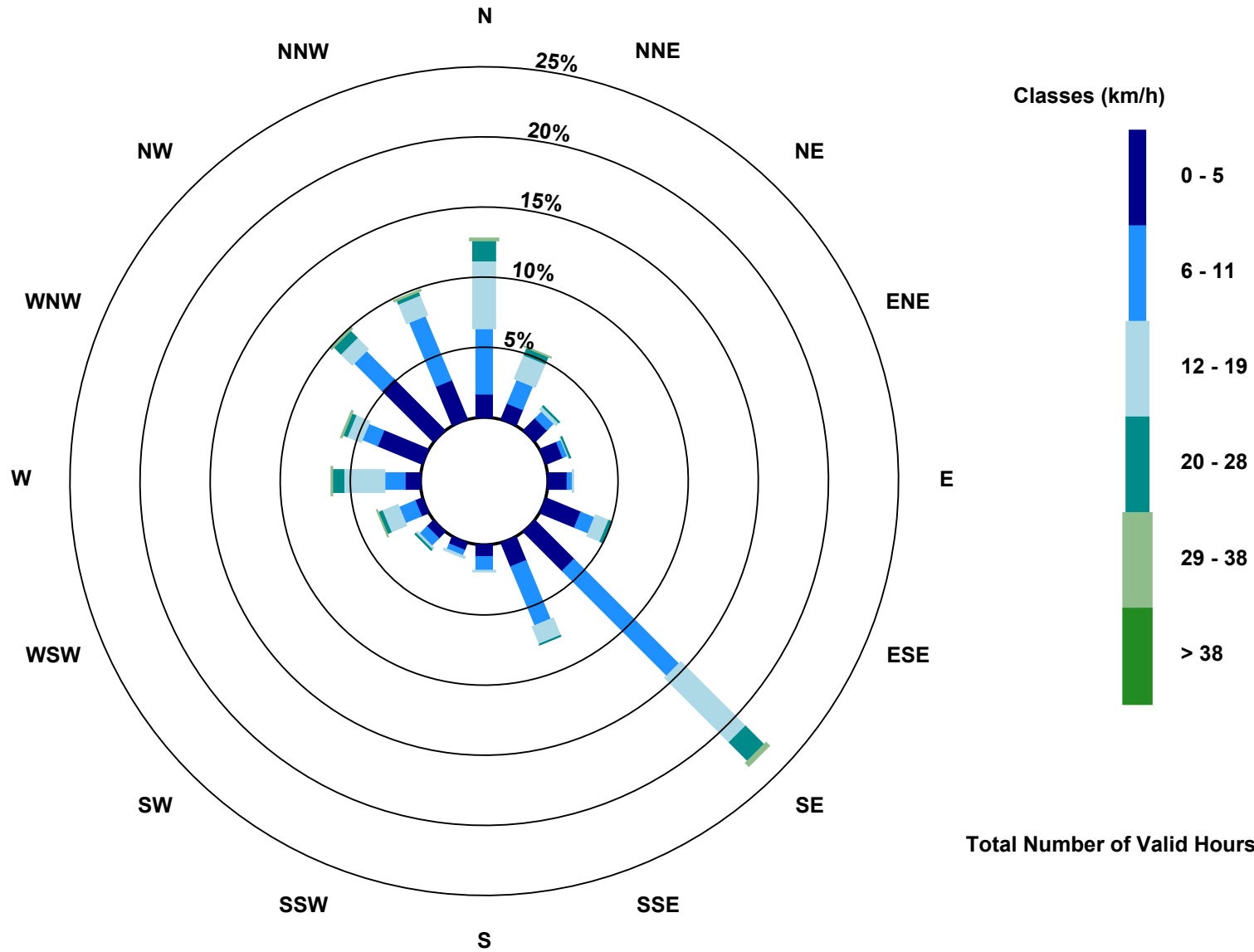
Wind Speed 20 m (WS20m) - km/h
Barge Landing





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Lower Camp

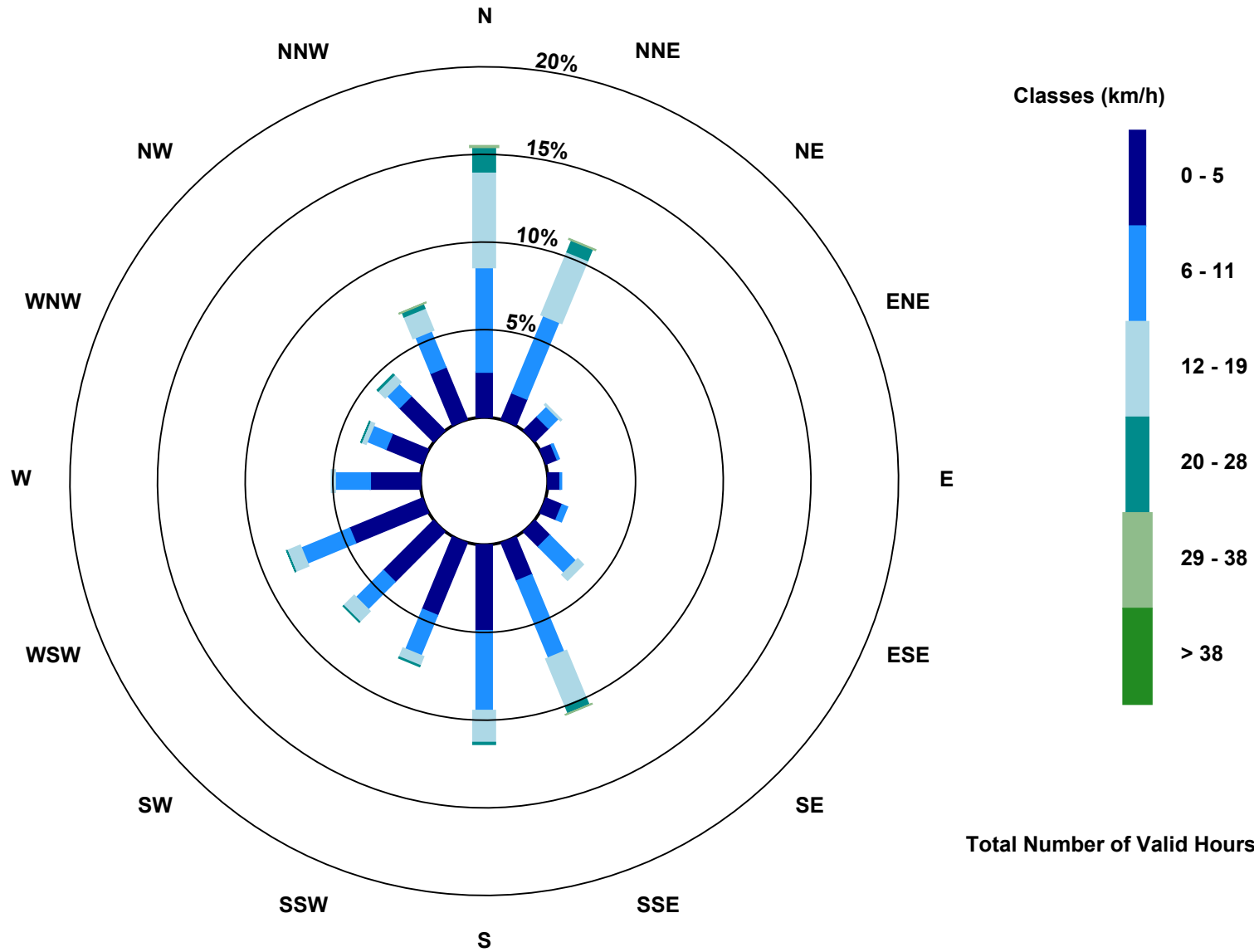


Total Number of Valid Hours: 8711



Wood Buffalo Environmental Association
Wind Rose 2022

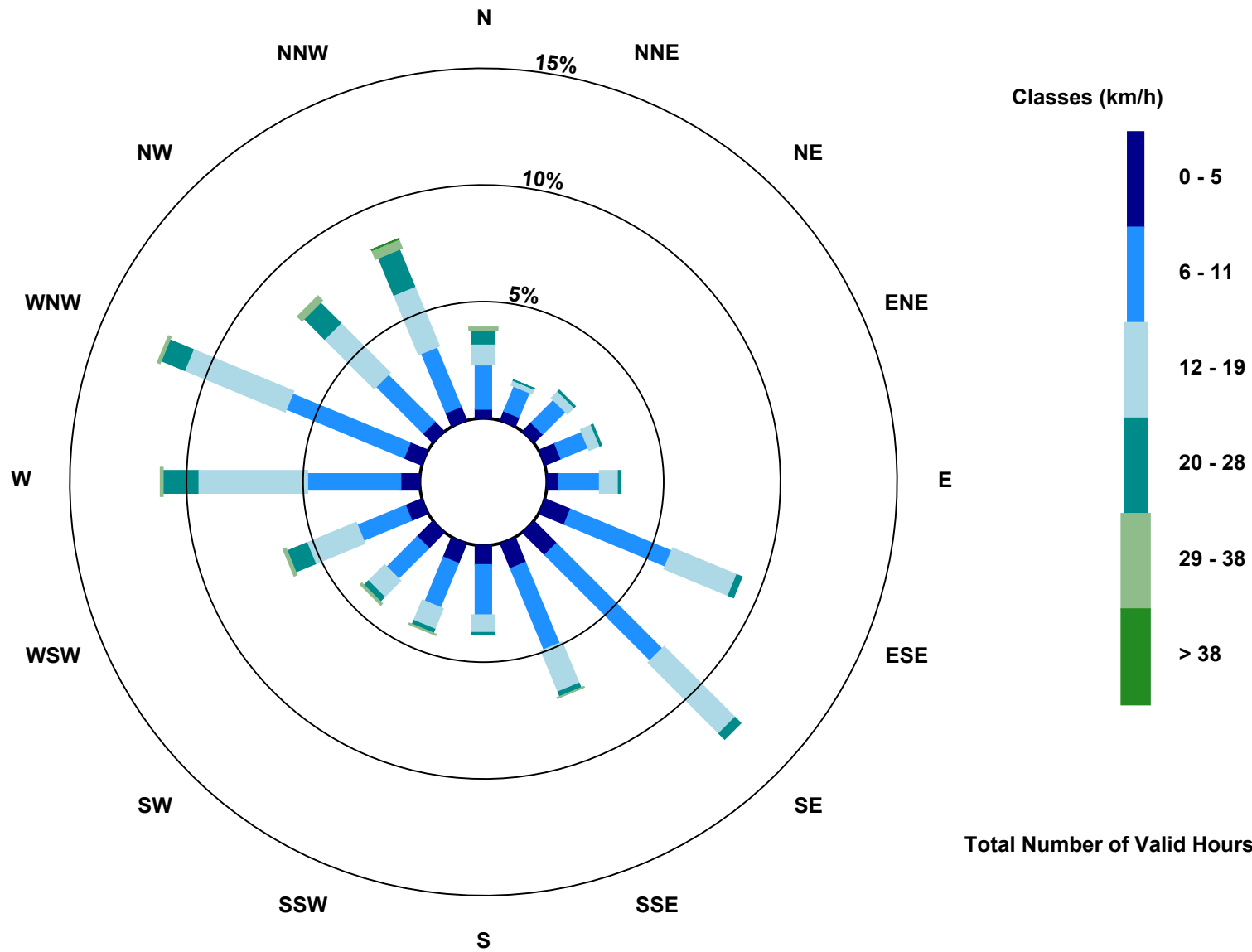
Wind Speed (WS) - km/h
Fort McKay South





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Anzac

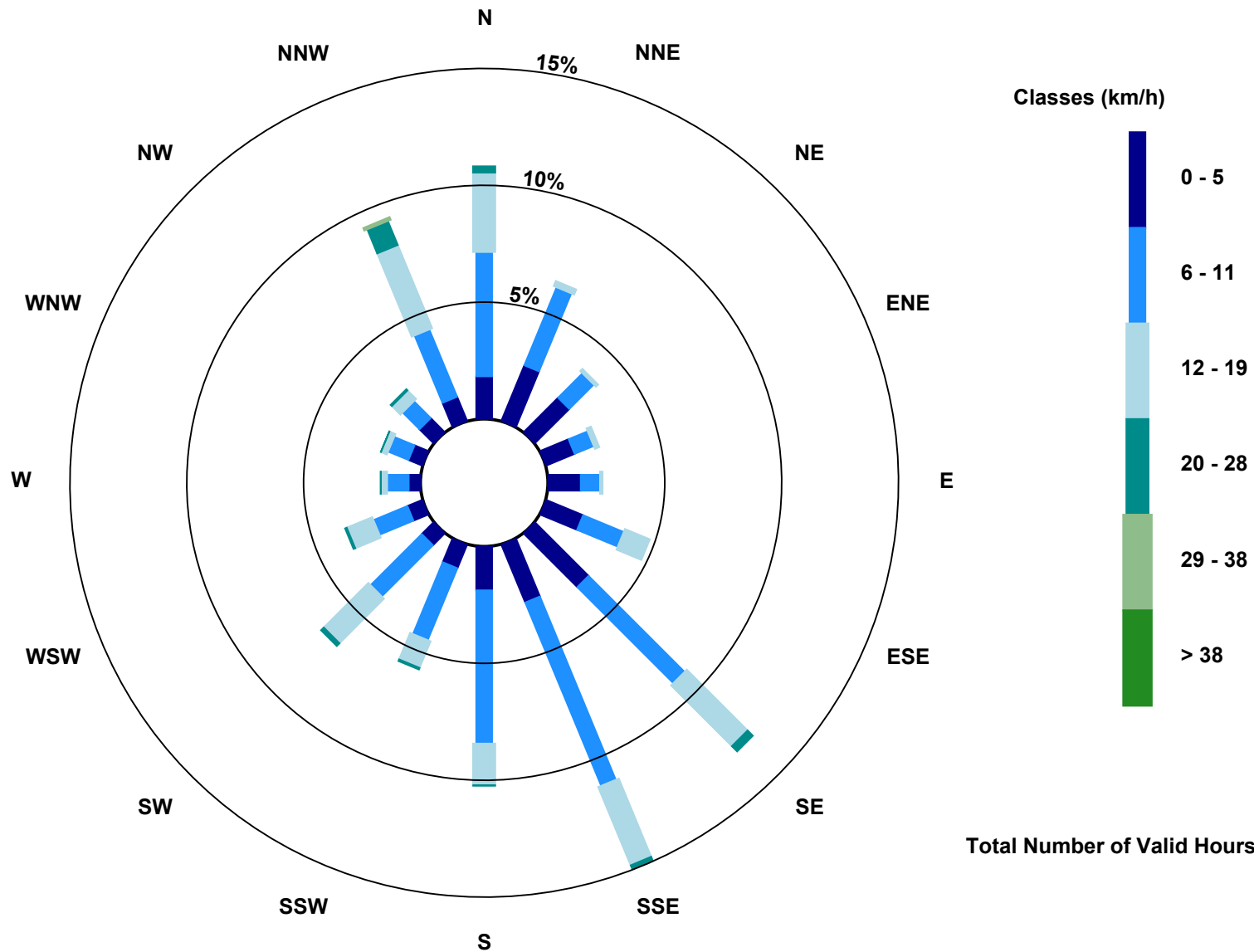


Total Number of Valid Hours: 8487



Wood Buffalo Environmental Association
Wind Rose 2022

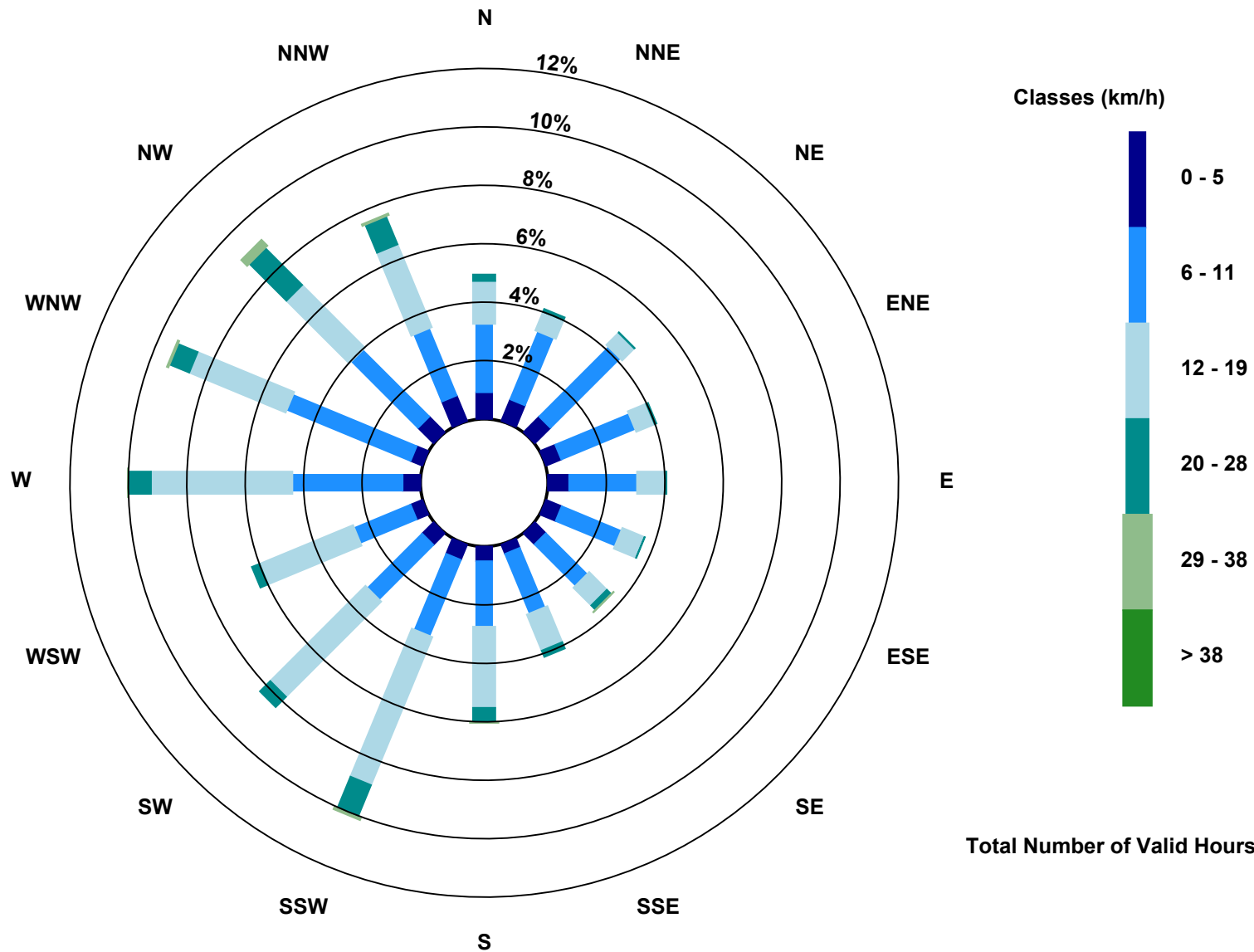
Wind Speed (WS) - km/h
Wapasu





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed 20 m (WS20m) - km/h
Stony Mountain

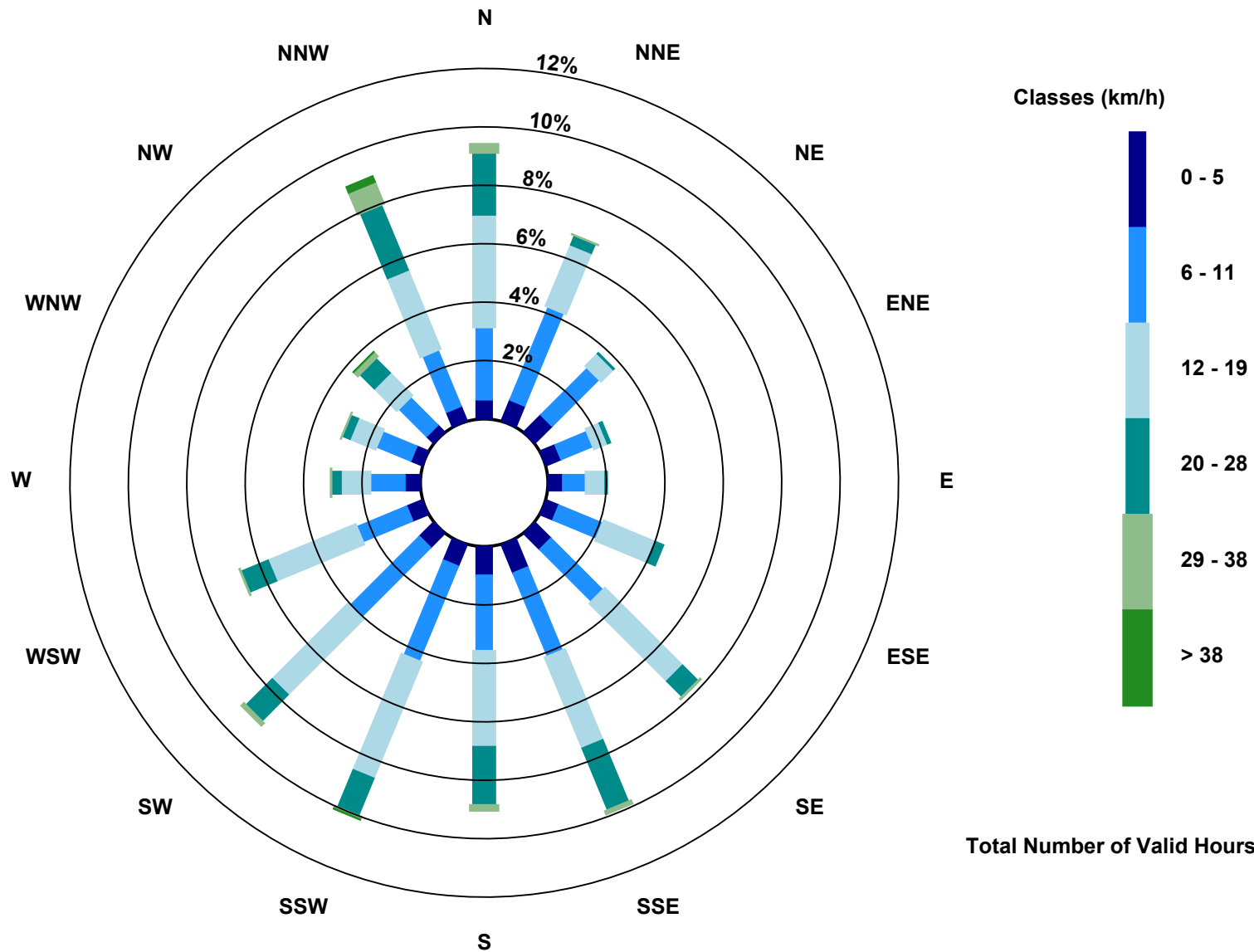


Total Number of Valid Hours: 8532



Wood Buffalo Environmental Association
Wind Rose 2022

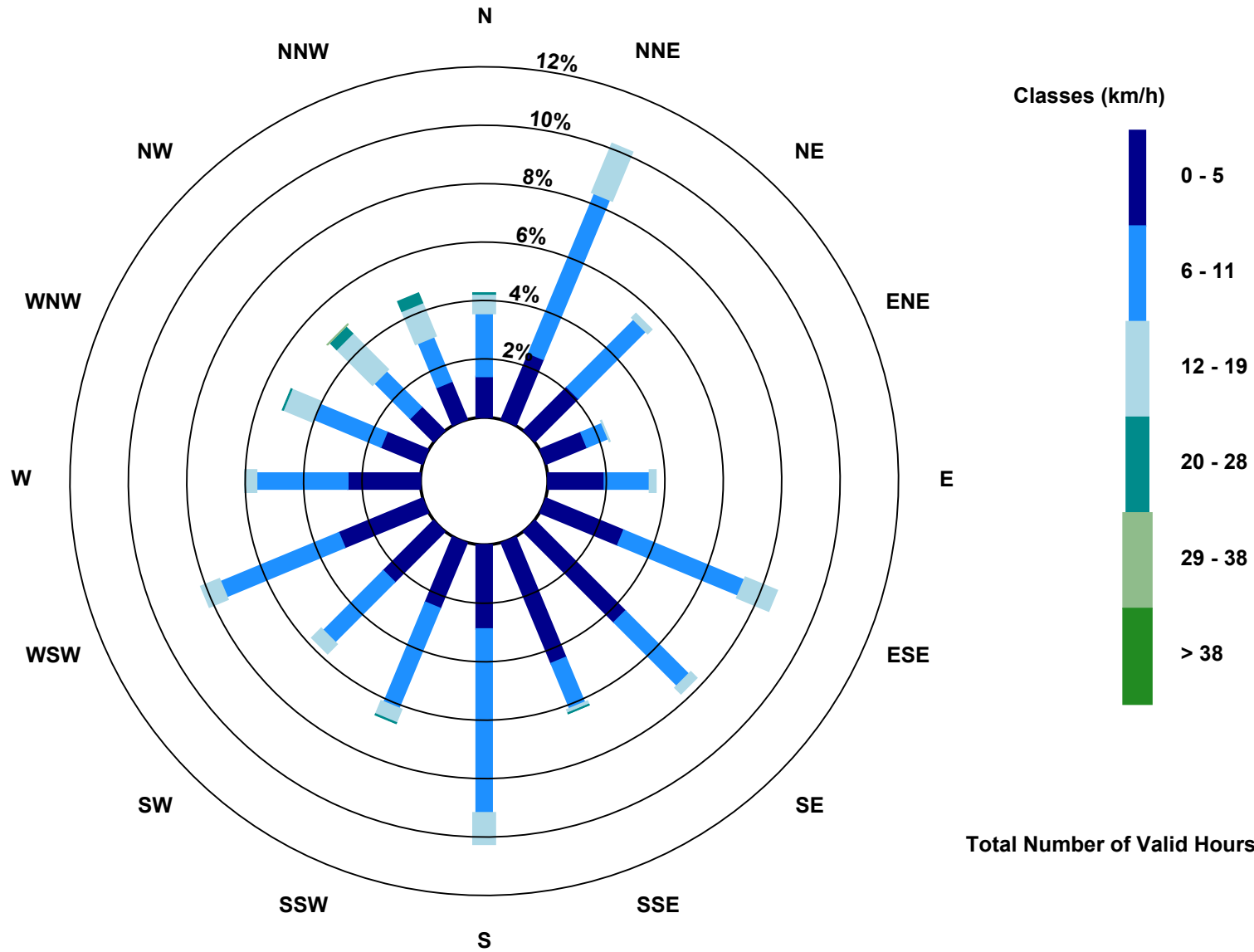
Wind Speed (WS) - km/h
Firebag





Wood Buffalo Environmental Association
Wind Rose 2022

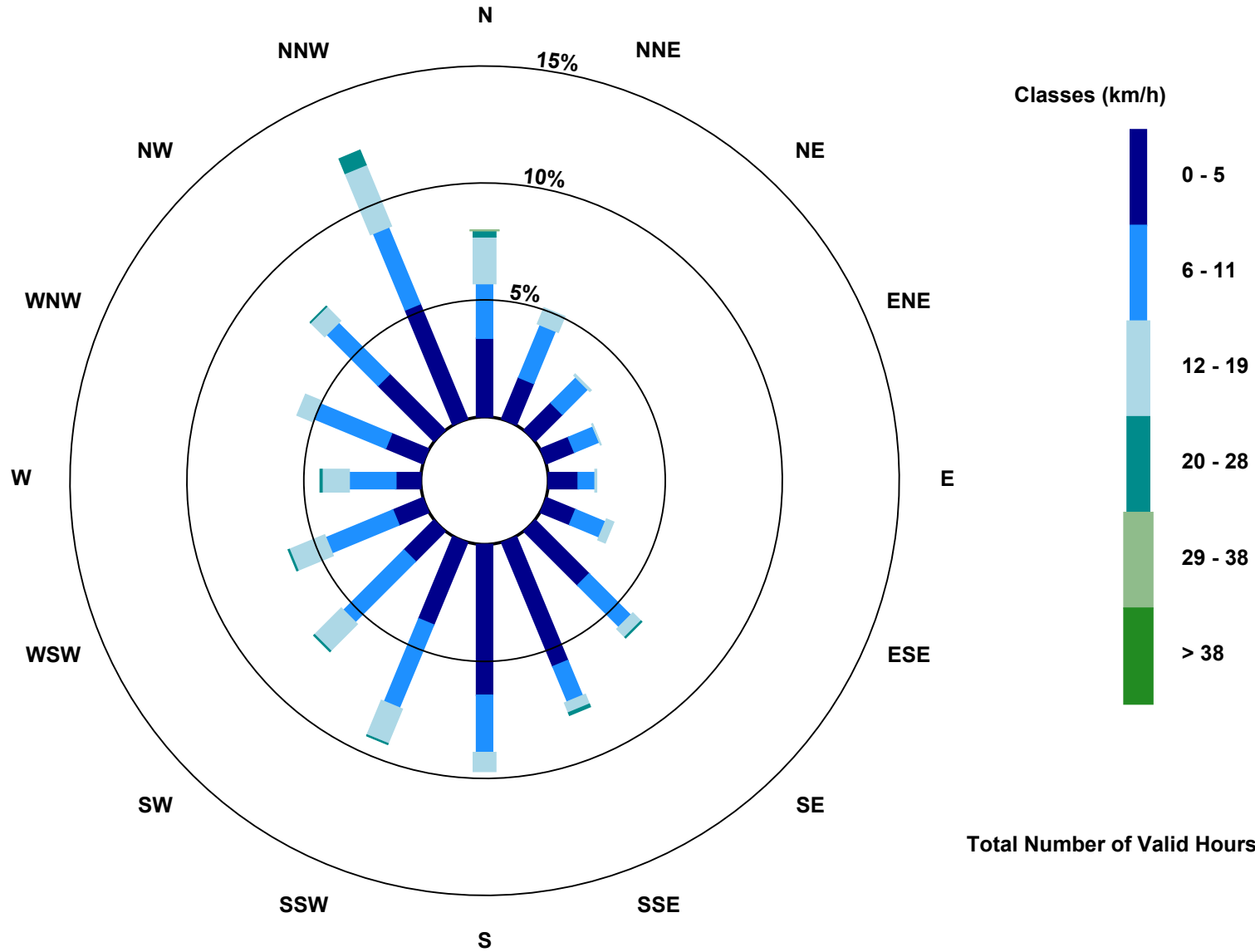
Wind Speed (WS) - km/h
Mackay River





Wood Buffalo Environmental Association
Wind Rose 2022

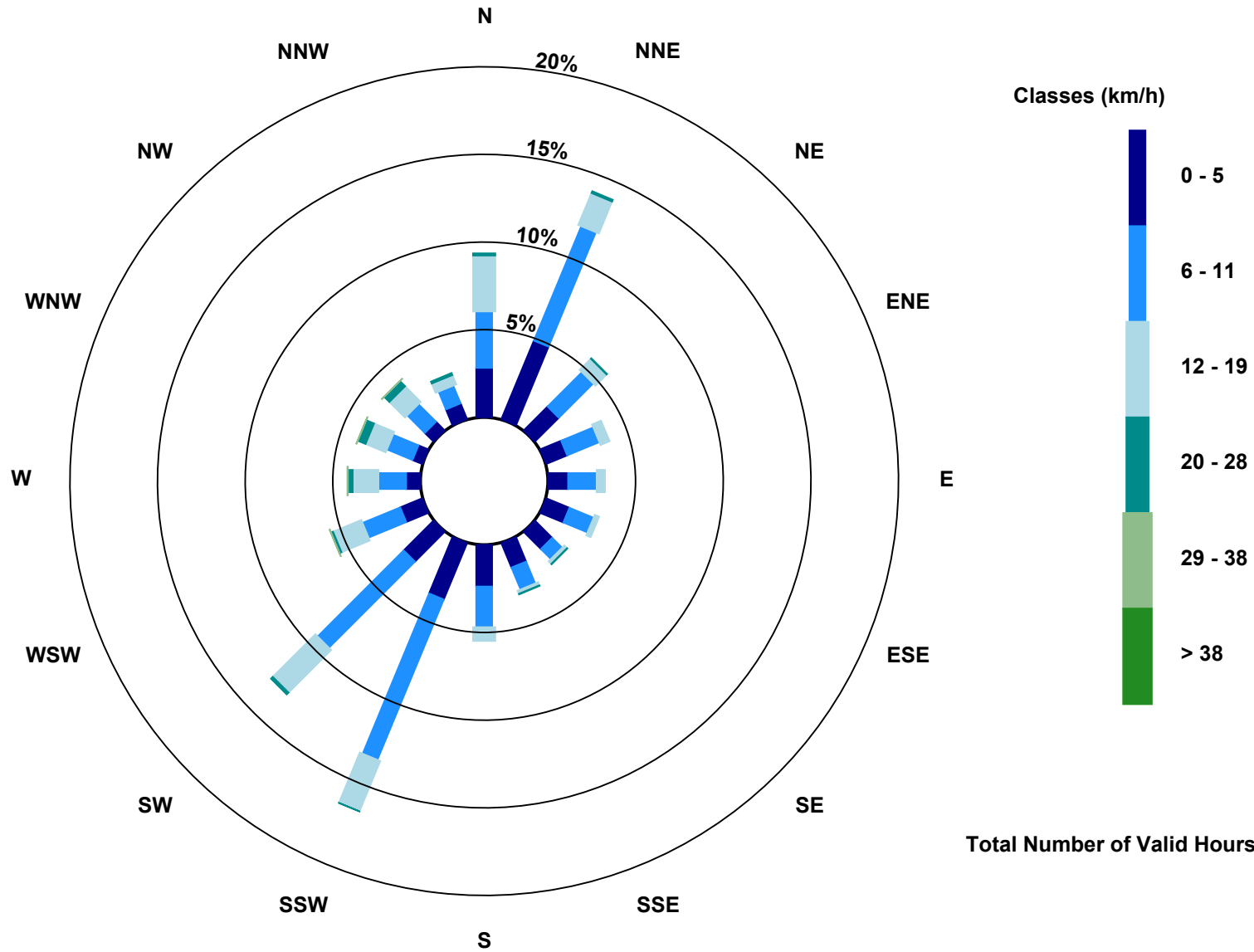
Wind Speed (WS) - km/h
Conklin





Wood Buffalo Environmental Association
Wind Rose 2022

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

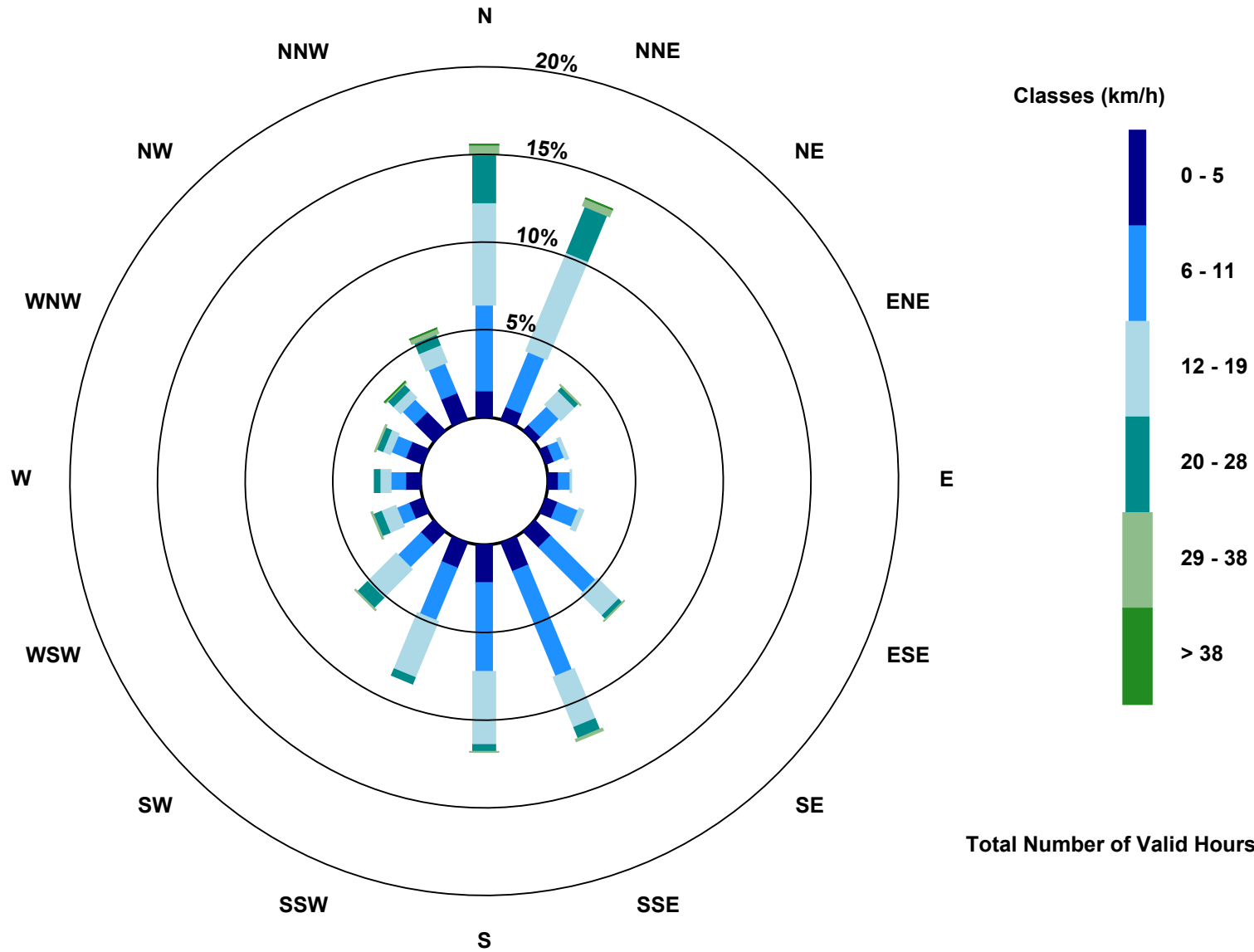


Total Number of Valid Hours: 8721



Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Fort Hills

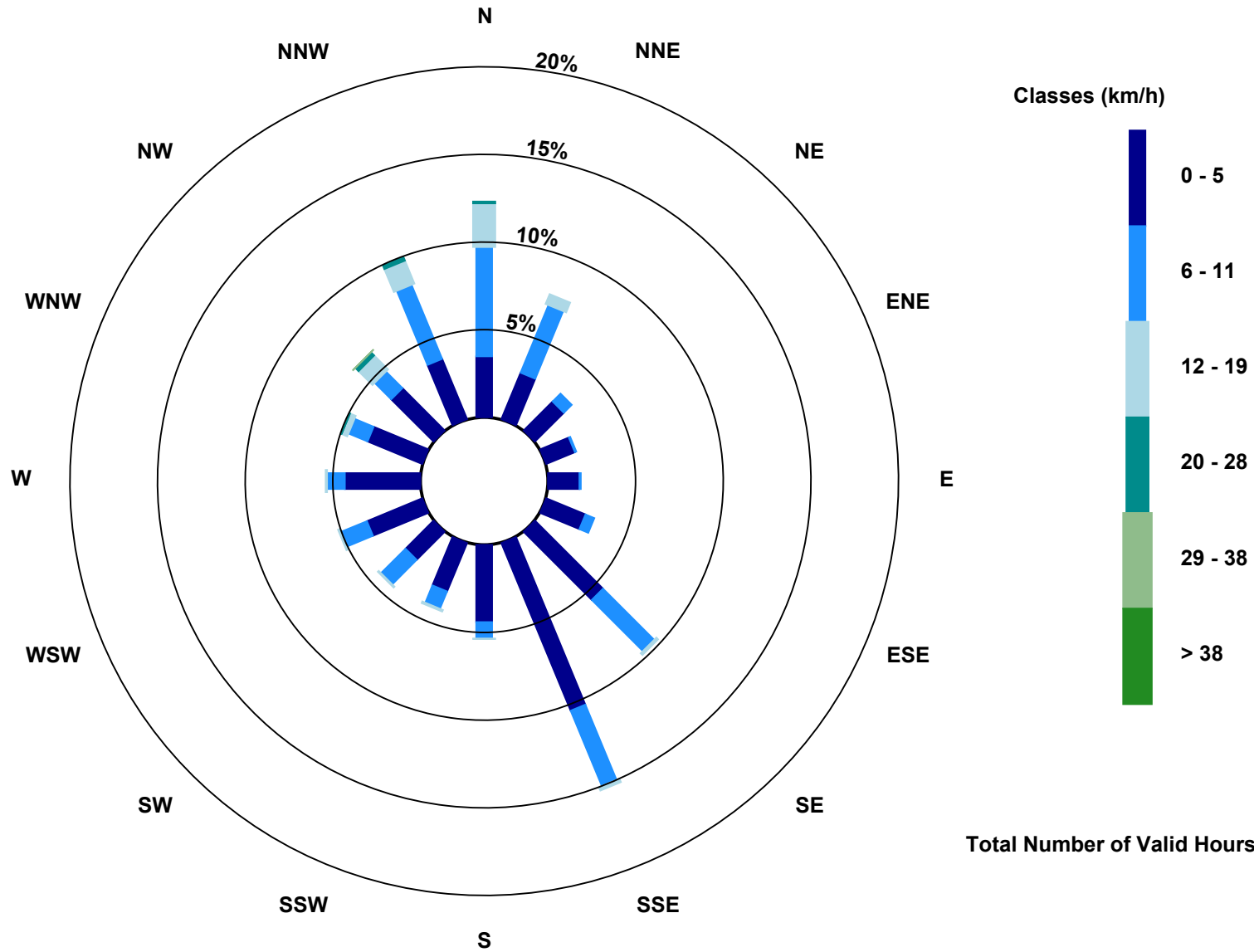


Total Number of Valid Hours: 8702



Wood Buffalo Environmental Association
Wind Rose 2022

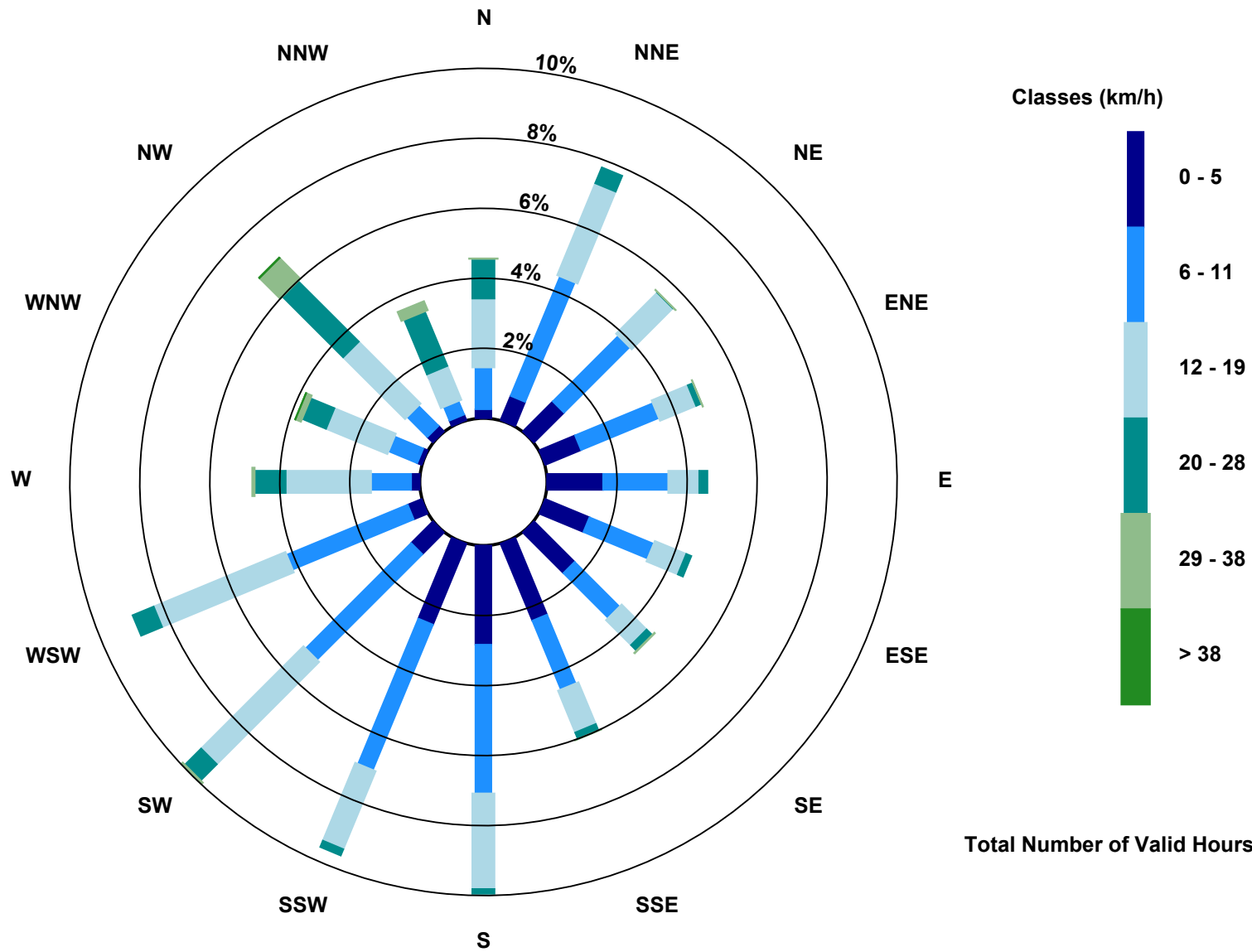
Wind Speed (WS) - km/h
Waskow ohci Pimatisiwin





Wood Buffalo Environmental Association
Wind Rose 2022

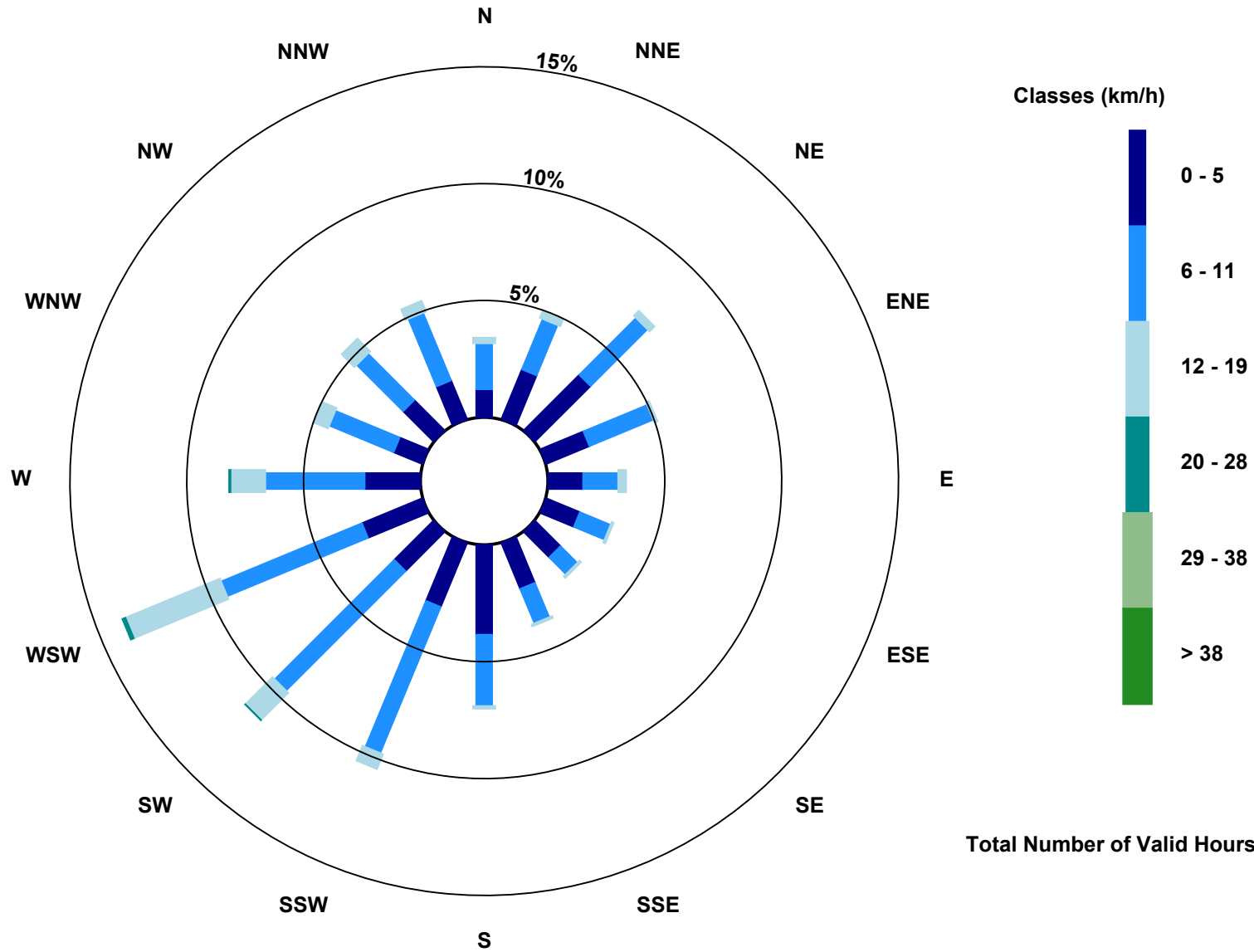
Wind Speed (WS) - km/h
Christina Lake





Wood Buffalo Environmental Association
Wind Rose 2022

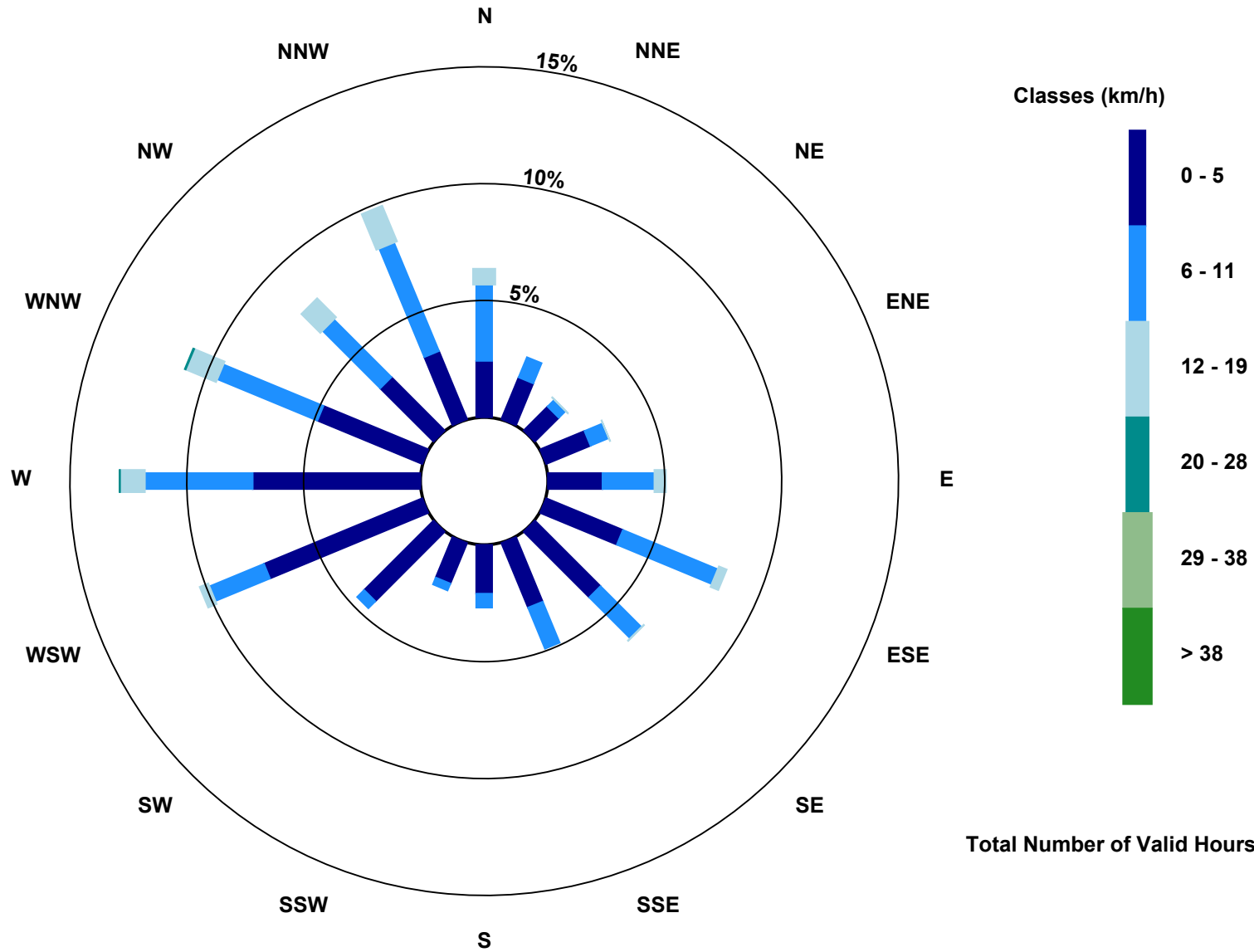
Wind Speed (WS) - km/h
Jackfish 2/3





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Surmont 2

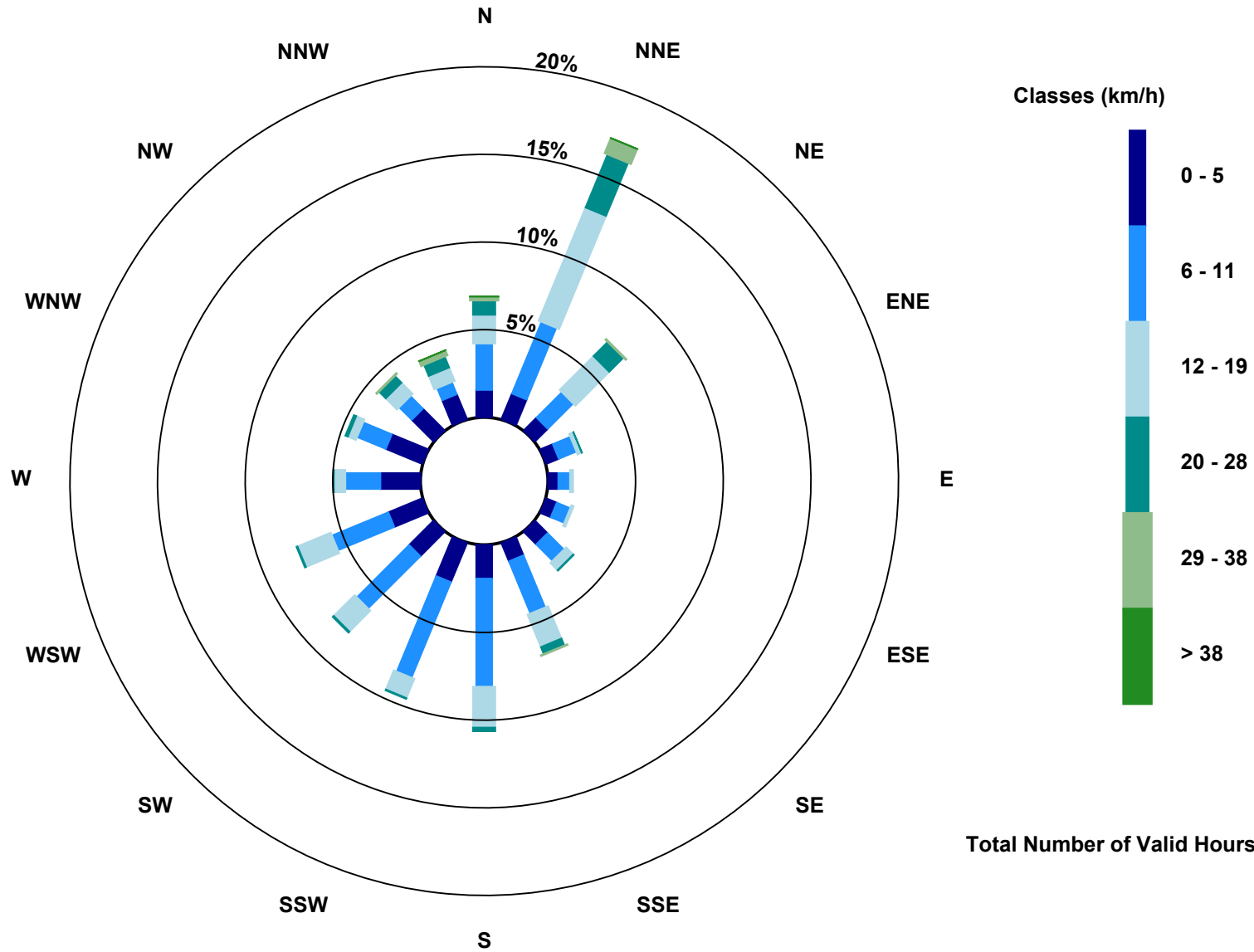


Total Number of Valid Hours: 8522



Wood Buffalo Environmental Association
Wind Rose 2022

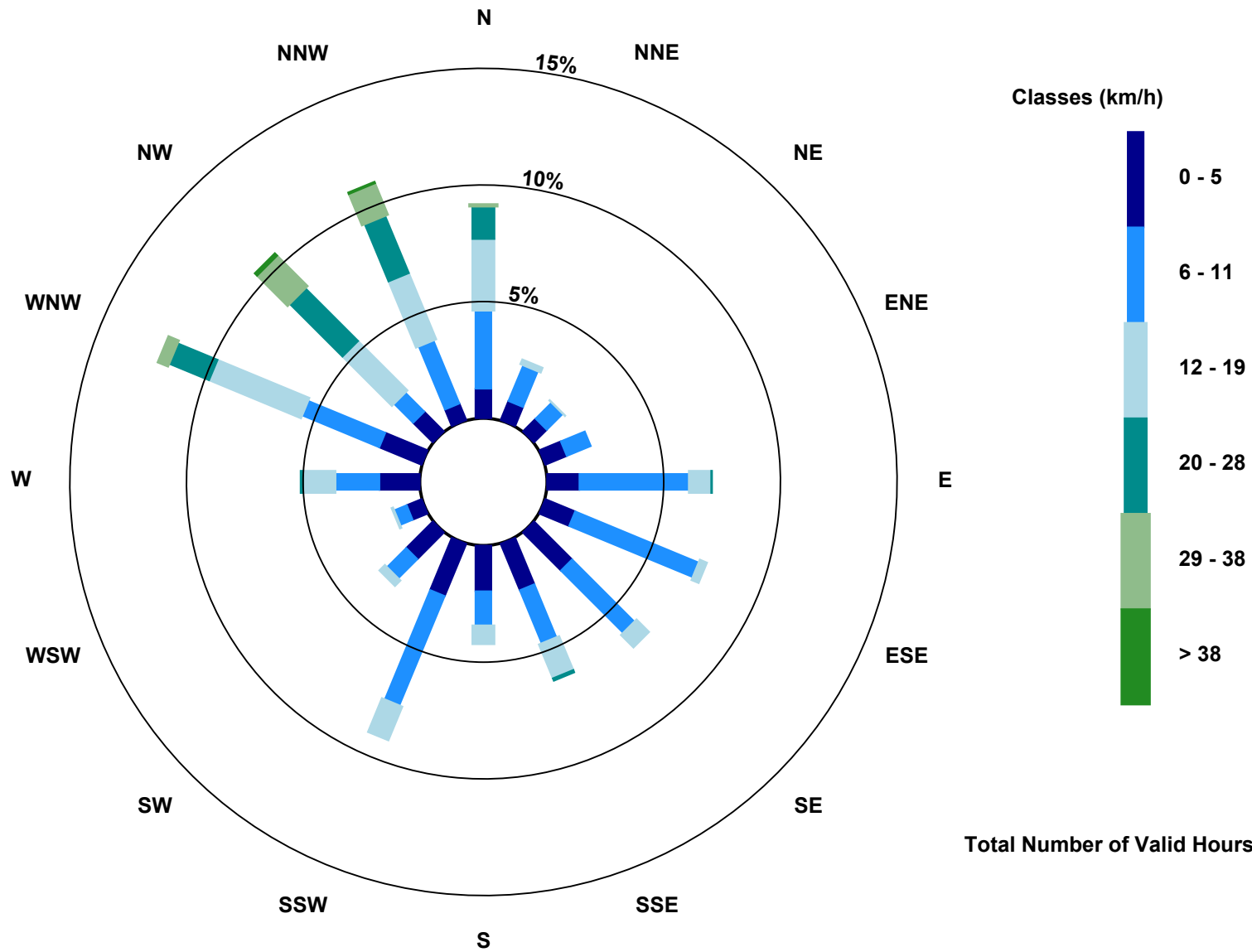
Wind Speed (WS) - km/h
Ells River





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Leismer

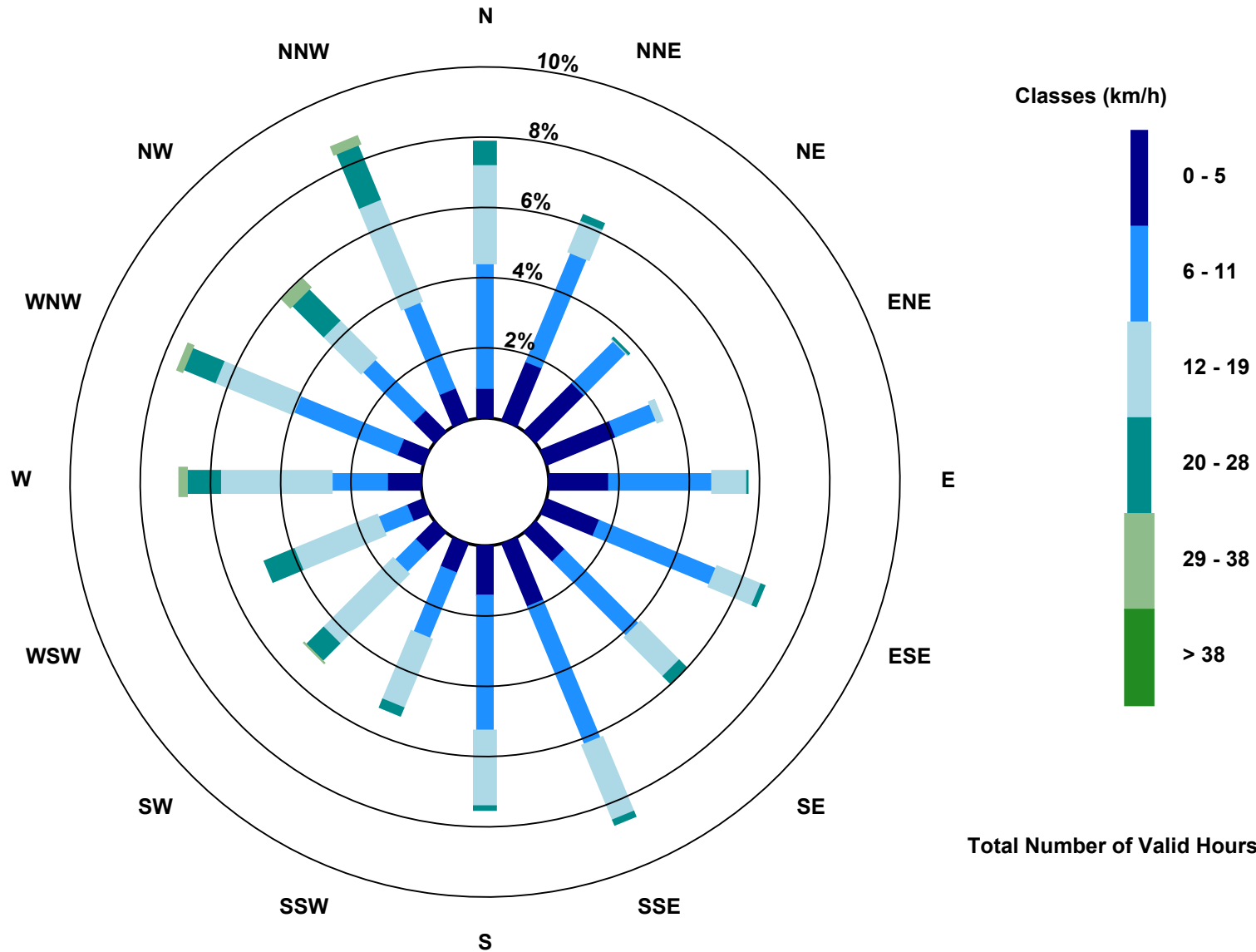


Total Number of Valid Hours: 2602



Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Sawbones Bay

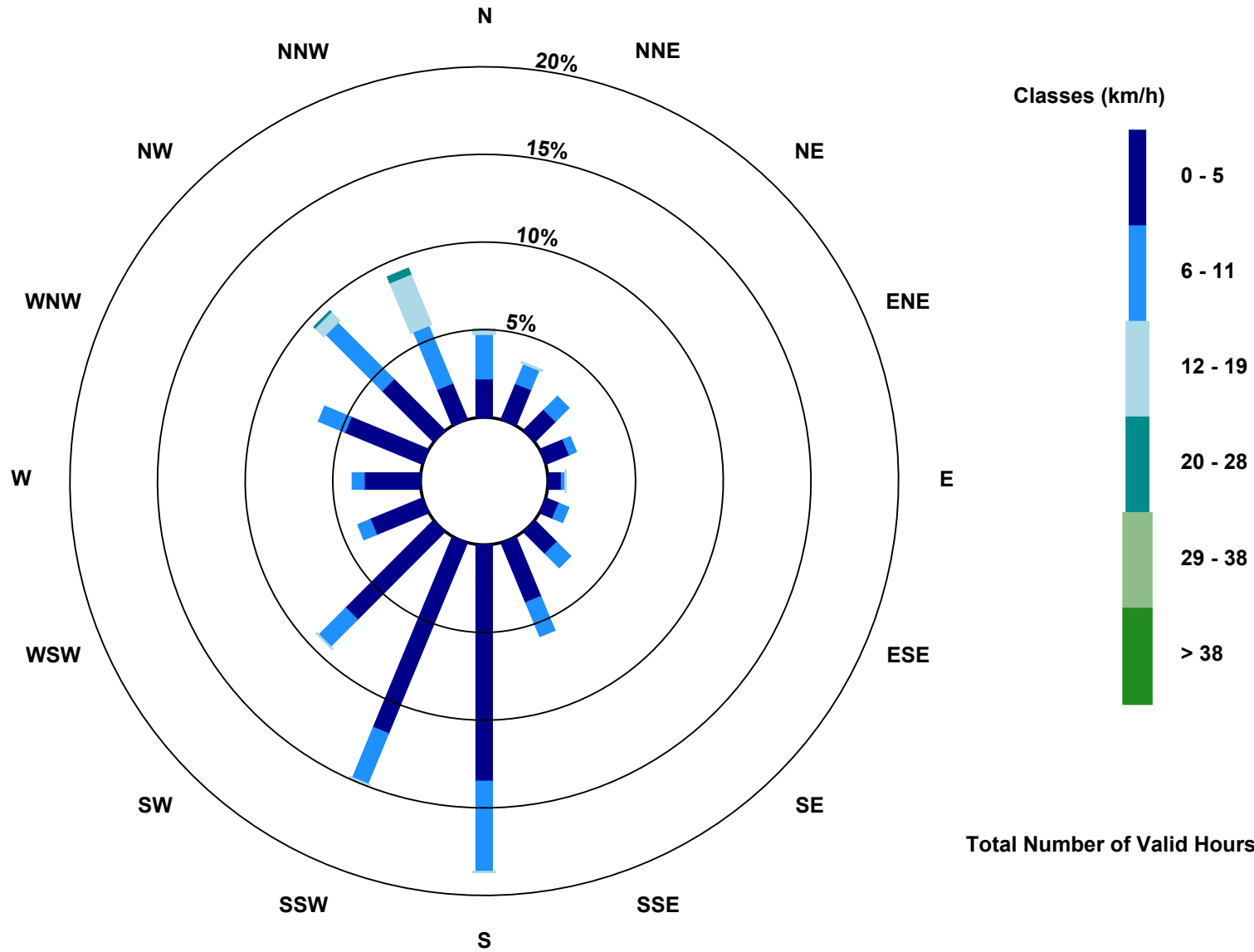


Total Number of Valid Hours: 5383



Wood Buffalo Environmental Association
Wind Rose 2022

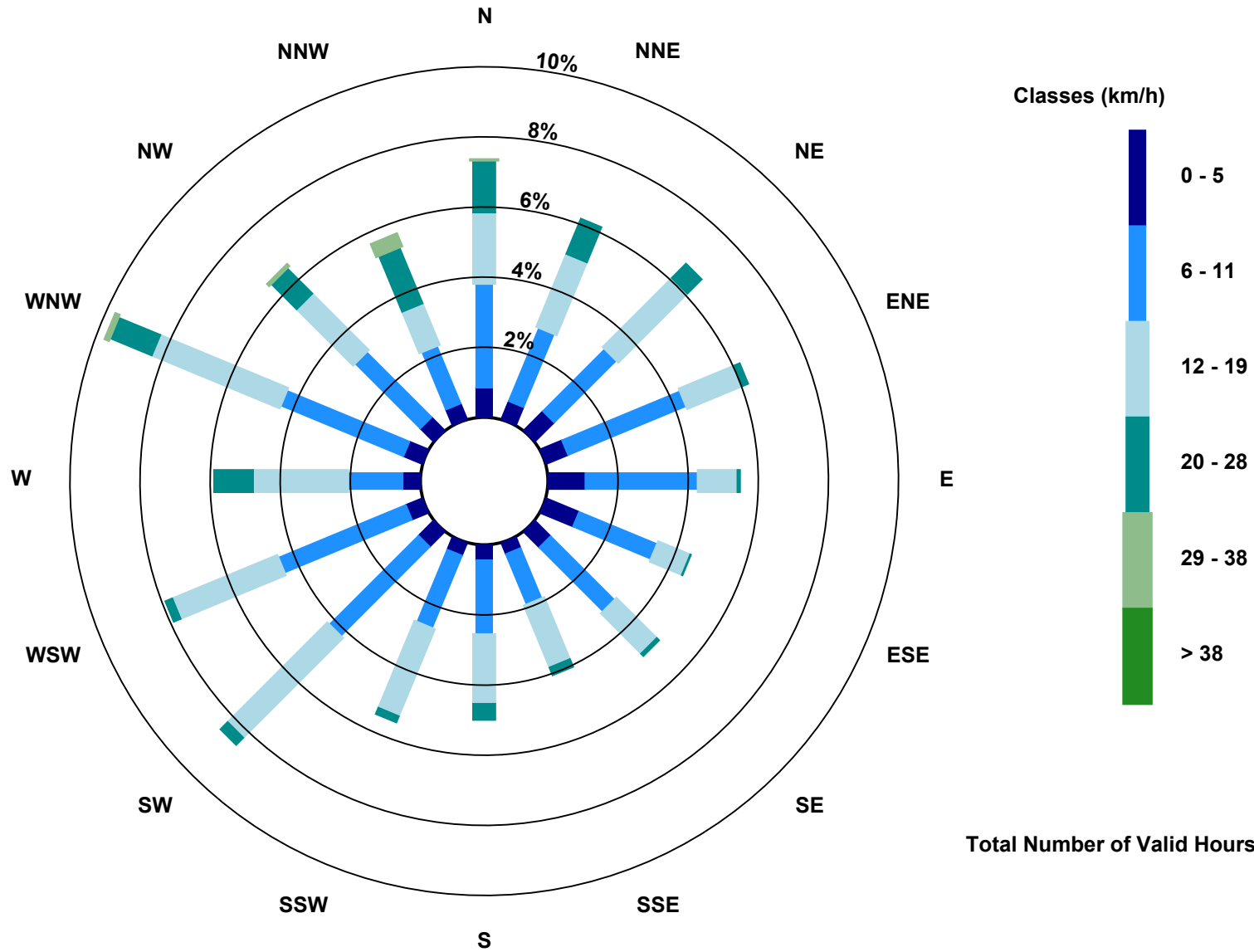
Wind Speed (WS) - km/h
Jackfish 1





Wood Buffalo Environmental Association
Wind Rose 2022

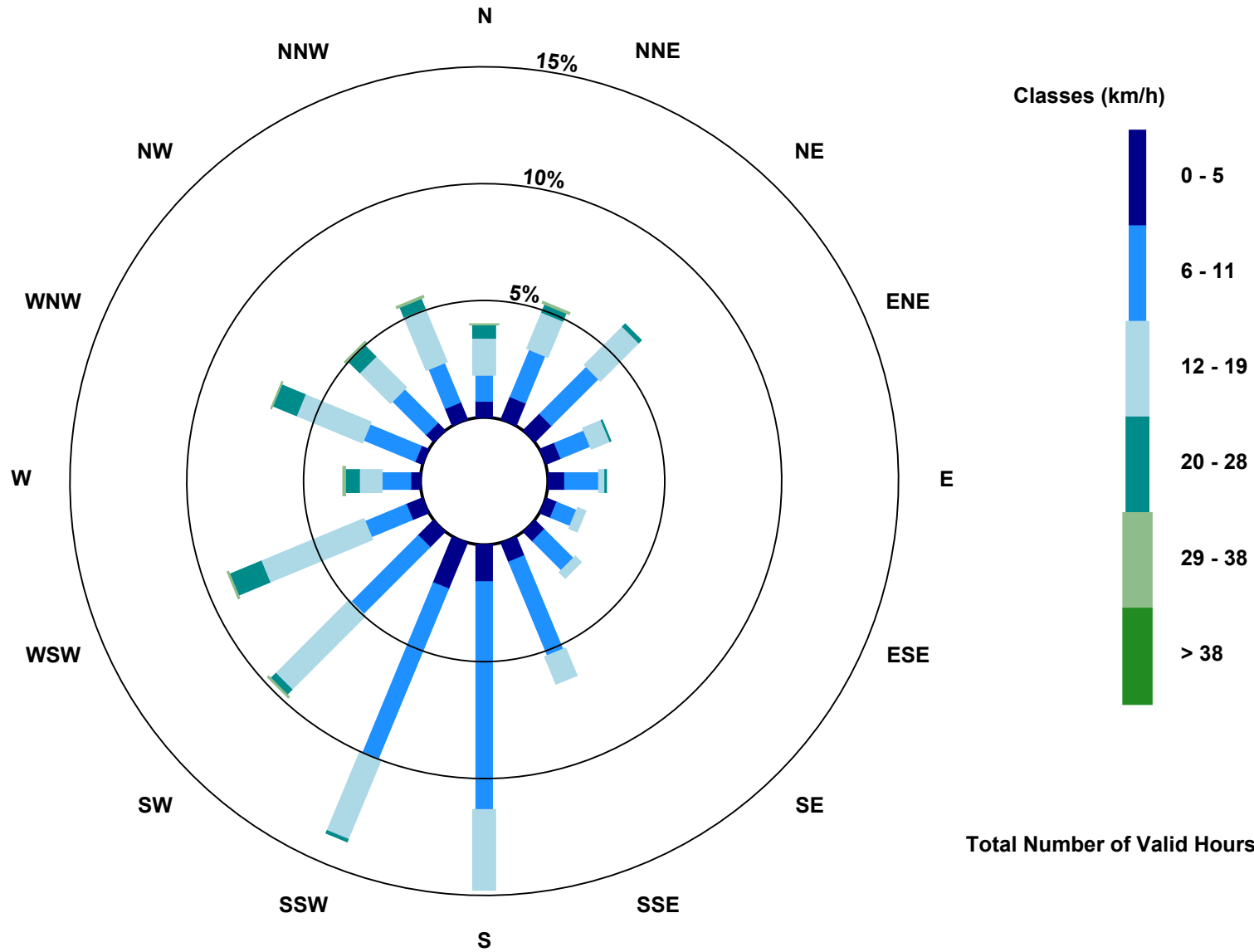
Wind Speed (WS) - km/h
Kirby South





Wood Buffalo Environmental Association
Wind Rose 2022

Wind Speed (WS) - km/h
Kirby North





WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

APPENDIX I: AAAQO EXCEEDANCES 2022

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

March 2023



Wood Buffalo Environmental Association
Air Quality Events List 2022

Type	Site	Parameter	Date/Time	Reference	Period	Reported	Final	status
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM2.5	Jan 12, 2022 18:00	387069	1-hr	93	93.0	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM2.5	Jan 25, 2022 02:00	387362	1-hr	93	92.8	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Feb 15, 2022 08:00	387921	1-hr	117	116.9	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Mar 7, 2022 24:00	388471	1-hr	109	109.0	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Mar 16, 2022 03:00	388674	1-hr	155	155.1	exc
AAAQO	AMS23 Fort Hills	TRS	Mar 23, 2022 03:00	388878	1-hr	10	10.0	nae
AAAQO	AMS09 Barge Landing	PM2.5	Mar 26, 2022 24:00	389012	24-hr	-	-	ret
AAAQO	AMS09 Barge Landing	PM2.5	Mar 27, 2022 24:00	389020	24-hr	-	-	ret
AAAQG	AMS29 Surmont 2	PM2.5	Mar 30, 2022 20:00	389155	1-hr	171	171.4	exc
AAAQG	AMS29 Surmont 2	PM2.5	Mar 30, 2022 21:00	389155	1-hr	116	116.1	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Apr 6, 2022 20:00	389380	1-hr	88	87.9	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Apr 6, 2022 21:00	389380	1-hr	99	98.9	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Apr 20, 2022 21:00	389764	1-hr	106	105.7	exc
AAAQO	AMS11 Lower Camp	H2S	May 11, 2022 01:00	390418	1-hr	10	10.6	exc
AAAQO	AMS11 Lower Camp	H2S	May 11, 2022 02:00	390418	1-hr	16	16.1	exc
AAAQG	AMS22 Janvier	PM2.5	May 12, 2022 19:00	390511	1-hr	107	107.5	exc
AAAQO	AMS05 Mannix	SO2	May 19, 2022 24:00	390778	24-hr	49	49.4	exc
AAAQO	AMS05 Mannix	SO2	May 19, 2022 02:00	390722	1-hr	237	237.4	exc
AAAQG	AMS23 Fort Hills	PM2.5	May 24, 2022 04:00	390852	1-hr	91	90.6	exc
AAAQG	AMS23 Fort Hills	PM2.5	May 25, 2022 03:00	390895	1-hr	104	103.5	exc
AAAQO	AMS19 Firebag	H2S	May 31, 2022 05:00	391128	1-hr	10	9.8	nae
AAAQG	AMS23 Fort Hills	PM2.5	Jun 5, 2022 04:00	391350	1-hr	121	121.3	exc
AAAQG	AMS23 Fort Hills	PM2.5	Jun 5, 2022 05:00	391350	1-hr	94	94.4	exc
AAAQG	AMS23 Fort Hills	PM2.5	Jun 5, 2022 06:00	391350	1-hr	81	81.4	exc
AAAQO	AMS11 Lower Camp	H2S	Jun 7, 2022 05:00	391398	1-hr	12	12.1	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 29, 2022 24:00	400864	1-hr	185	185.4	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 01:00	400865	1-hr	180	180.5	exc
AAAQO	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 24:00	400894	24-hr	68	67.6	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 02:00	400865	1-hr	222	222.2	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 03:00	400865	1-hr	220	219.8	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 04:00	400865	1-hr	247	247.0	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 05:00	400865	1-hr	84	83.9	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 07:00	400865	1-hr	103	103.3	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 08:00	400865	1-hr	233	233.0	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jun 30, 2022 09:00	400865	1-hr	80	80.3	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jul 2, 2022 22:00	400940	1-hr	111	110.8	exc
AAAQG	AMS17 Wapasu	PM2.5	Jul 4, 2022 20:00	400971	1-hr	81	80.5	exc
AAAQG	AMS23 Fort Hills	PM2.5	Jul 7, 2022 01:00	401070	1-hr	153	152.8	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Jul 8, 2022 07:00	401133	1-hr	91	90.8	exc
AAAQO	AMS508 Kirby North	H2S	Jul 12, 2022 12:00	401266	1-hr	27	27.0	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Jul 15, 2022 02:00	401406	1-hr	122	122.2	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Jul 24, 2022 24:00	401806	24-hr	30	29.8	exc
AAAQO	AMS07 Athabasca Valley	PM2.5	Jul 24, 2022 24:00	401807	24-hr	31	30.7	exc
AAAQG	AMS23 Fort Hills	PM2.5	Jul 24, 2022 17:00	401826	1-hr	96	96.0	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Jul 24, 2022 18:00	401806	1-hr	129	129.1	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Jul 24, 2022 18:00	401822	1-hr	81	81.0	exc
AAAQG	AMS17 Wapasu	PM2.5	Jul 24, 2022 18:00	401825	1-hr	81	81	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Jul 24, 2022 19:00	401806	1-hr	123	123	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Jul 24, 2022 19:00	401822	1-hr	109	109.3	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Jul 24, 2022 19:00	401807	1-hr	118	117.6	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Jul 24, 2022 20:00	401806	1-hr	94	94.4	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Jul 24, 2022 20:00	401822	1-hr	98	98.3	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Jul 24, 2022 20:00	401807	1-hr	112	112.5	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Jul 24, 2022 21:00	401807	1-hr	99	99.1	exc
AAAQG	AMS14 Anzac	PM2.5	Jul 24, 2022 21:00	401823	1-hr	91	90.6	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Jul 24, 2022 22:00	401807	1-hr	102	101.6	exc
AAAQG	AMS14 Anzac	PM2.5	Jul 24, 2022 22:00	401823	1-hr	87	87.2	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Jul 24, 2022 23:00	401807	1-hr	88	87.6	exc
AAAQG	AMS21 Conklin	PM2.5	Jul 27, 2022 23:00	401985	1-hr	93	93.5	exc
AAAQO	AMS21 Conklin	PM2.5	Jul 29, 2022 24:00	402100	24-hr	29	29.0	nae
AAAQO	AMS22 Janvier	PM2.5	Jul 29, 2022 24:00	402078	24-hr	38	37.7	exc
AAAQO	AMS18 Stony Mountain	PM2.5	Jul 29, 2022 24:00	402079	24-hr	31	30.7	exc
AAAQO	AMS05 Mannix	H2S	Aug 3, 2022 24:00	402245	1-hr	10	8.7	nae



Wood Buffalo Environmental Association
Air Quality Events List 2022

Type	Site	Parameter	Date/Time	Reference	Period	Reported	Final	status
AAAQO	AMS05 Mannix	H2S	Aug 4, 2022 24:00	402294	24-hr	3	2.3	nae
AAAQO	AMS05 Mannix	H2S	Aug 4, 2022 03:00	402247	1-hr	12	11.4	exc
AAAQO	AMS05 Mannix	H2S	Aug 4, 2022 04:00	402249	1-hr	11	10.6	exc
AAAQG	AMS23 Fort Hills	PM2.5	Aug 17, 2022 22:00	402845	1-hr	87	87.3	exc
AAAQO	AMS14 Anzac	PM2.5	Aug 21, 2022 24:00	402989	24-hr	31	31.2	exc
AAAQO	AMS21 Conklin	PM2.5	Aug 21, 2022 24:00	402990	24-hr	41	41.4	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Aug 21, 2022 24:00	402991	24-hr	29	31.1	exc
AAAQO	AMS09 Barge Landing	PM2.5	Aug 21, 2022 24:00	402992	24-hr	34	33.7	exc
AAAQO	AMS18 Stony Mountain	PM2.5	Aug 21, 2022 24:00	402993	24-hr	46	45.7	exc
AAAQO	AMS22 Janvier	PM2.5	Aug 21, 2022 24:00	402994	24-hr	59	58.6	exc
AAAQO	AMS23 Fort Hills	PM2.5	Aug 21, 2022 24:00	402995	24-hr	39	39.2	exc
AAAQO	AMS29 Surmont 2	PM2.5	Aug 21, 2022 24:00	402996	24-hr	41	40.8	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Aug 21, 2022 09:00	402993	1-hr	86	85.6	exc
AAAQG	AMS14 Anzac	PM2.5	Aug 21, 2022 10:00	402989	1-hr	109	108.5	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Aug 21, 2022 10:00	402993	1-hr	85	85.5	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 21, 2022 10:00	402994	1-hr	93	92.9	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 21, 2022 10:00	402996	1-hr	93	93.1	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 21, 2022 11:00	402994	1-hr	102	101.8	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 21, 2022 11:00	402996	1-hr	150	150.3	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 21, 2022 12:00	402994	1-hr	116	116.3	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 21, 2022 12:00	402996	1-hr	113	113.3	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 21, 2022 13:00	402994	1-hr	167	166.7	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 21, 2022 14:00	402994	1-hr	141	140.7	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 21, 2022 15:00	402994	1-hr	94	94.4	exc
AAAQG	AMS23 Fort Hills	PM2.5	Aug 21, 2022 21:00	402995	1-hr	129.0	129.0	exc
AAAQG	AMS23 Fort Hills	PM2.5	Aug 21, 2022 22:00	402995	1-hr	183	182.6	exc
AAAQG	AMS23 Fort Hills	PM2.5	Aug 22, 2022 01:00	403058	1-hr	115	114.7	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Aug 22, 2022 24:00	403053	24-hr	-	-	ret
AAAQO	AMS09 Barge Landing	PM2.5	Aug 22, 2022 24:00	403054	24-hr	40	39.7	exc
AAAQO	AMS18 Stony Mountain	PM2.5	Aug 22, 2022 24:00	403055	24-hr	53	52.6	exc
AAAQO	AMS21 Conklin	PM2.5	Aug 22, 2022 24:00	403056	24-hr	39	39.2	exc
AAAQO	AMS22 Janvier	PM2.5	Aug 22, 2022 24:00	403057	24-hr	34	33.5	exc
AAAQO	AMS23 Fort Hills	PM2.5	Aug 22, 2022 24:00	403058	24-hr	34	33.8	exc
AAAQO	AMS13 Fort McKay South	PM2.5	Aug 22, 2022 24:00	404959	24-hr	31	31.3	late
AAAQG	AMS23 Fort Hills	PM2.5	Aug 22, 2022 02:00	403058	1-hr	122	122.2	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Aug 22, 2022 07:00	403055	1-hr	85	84.8	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Aug 22, 2022 08:00	403055	1-hr	87	87.3	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Aug 22, 2022 09:00	403055	1-hr	90	90.4	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Aug 22, 2022 10:00	403055	1-hr	91	90.8	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Aug 22, 2022 24:00	403077	1-hr	84	83.7	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Aug 23, 2022 01:00	403116	1-hr	90	89.7	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Aug 23, 2022 24:00	403116	24-hr	44	44.1	exc
AAAQO	AMS06 Patricia McInnes	PM2.5	Aug 23, 2022 24:00	403117	24-hr	43	42.9	exc
AAAQO	AMS07 Athabasca Valley	PM2.5	Aug 23, 2022 24:00	403118	24-hr	48	47.8	exc
AAAQO	AMS09 Barge Landing	PM2.5	Aug 23, 2022 24:00	403119	24-hr	36	35.6	exc
AAAQO	AMS14 Anzac	PM2.5	Aug 23, 2022 24:00	403120	24-hr	53	52.9	exc
AAAQO	AMS21 Conklin	PM2.5	Aug 23, 2022 24:00	403121	24-hr	36	36.2	exc
AAAQO	AMS22 Janvier	PM2.5	Aug 23, 2022 24:00	403122	24-hr	64	64.1	exc
AAAQO	AMS29 Surmont 2	PM2.5	Aug 23, 2022 24:00	403123	24-hr	52	51.8	exc
AAAQO	AMS18 Stony Mountain	PM2.5	Aug 23, 2022 24:00	403124	24-hr	42	42.4	exc
AAAQG	AMS14 Anzac	PM2.5	Aug 23, 2022 16:00	403120	1-hr	91.0	91.4	exc
AAAQG	AMS14 Anzac	PM2.5	Aug 23, 2022 17:00	403120	1-hr	84	83.5	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 23, 2022 18:00	403123	1-hr	101	100.6	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 23, 2022 19:00	403122	1-hr	99	99.5	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 23, 2022 19:00	403123	1-hr	102	102.0	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 23, 2022 20:00	403122	1-hr	101	101.5	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 23, 2022 20:00	403123	1-hr	100	99.6	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 23, 2022 21:00	403122	1-hr	103	102.9	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 23, 2022 21:00	403123	1-hr	96	96.4	exc
AAAQG	AMS14 Anzac	PM2.5	Aug 23, 2022 22:00	403120	1-hr	84	83.7	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 23, 2022 22:00	403122	1-hr	101.0	101.1	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 23, 2022 23:00	403122	1-hr	101	101.2	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 23, 2022 24:00	403122	1-hr	105	104.8	exc



Wood Buffalo Environmental Association
Air Quality Events List 2022

Type	Site	Parameter	Date/Time	Reference	Period	Reported	Final	status
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 01:00	403187	1-hr	108	107.5	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Aug 24, 2022 24:00	403183	24-hr	35	35.4	exc
AAAQO	AMS06 Patricia McInnes	PM2.5	Aug 24, 2022 24:00	403182	24-hr	32	32.0	exc
AAAQO	AMS07 Athabasca Valley	PM2.5	Aug 24, 2022 24:00	403184	24-hr	39	39.0	exc
AAAQO	AMS18 Stony Mountain	PM2.5	Aug 24, 2022 24:00	403185	24-hr	29	29.2	exc
AAAQO	AMS21 Conklin	PM2.5	Aug 24, 2022 24:00	403186	24-hr	31	31.1	exc
AAAQO	AMS22 Janvier	PM2.5	Aug 24, 2022 24:00	403187	24-hr	57	56.6	exc
AAAQO	AMS23 Fort Hills	PM2.5	Aug 24, 2022 24:00	403188	24-hr	30	29.5	exc
AAAQO	AMS29 Surmont 2	PM2.5	Aug 24, 2022 24:00	403189	24-hr	32	32.0	exc
AAAQO	AMS09 Barge Landing	PM2.5	Aug 24, 2022 24:00	403190	24-hr	44	43.6	exc
AAAQO	AMS13 Fort McKay South	PM2.5	Aug 24, 2022 24:00	403191	24-hr	36	35.9	exc
AAAQO	AMS14 Anzac	PM2.5	Aug 24, 2022 24:00	403192	24-hr	34	34.0	exc
AAAQO	AMS17 Wapasu	PM2.5	Aug 24, 2022 24:00	403193	24-hr	32	32.3	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 02:00	403187	1-hr	107	107.4	exc
AAAQG	AMS23 Fort Hills	PM2.5	Aug 24, 2022 02:00	403188	1-hr	109	109.4	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 03:00	403187	1-hr	105	105.1	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 04:00	403187	1-hr	100	100.1	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 05:00	403187	1-hr	98	98.4	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 06:00	403187	1-hr	95	95.1	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 07:00	403187	1-hr	89	89.1	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 24, 2022 08:00	403187	1-hr	84	83.7	exc
AAAQG	AMS09 Barge Landing	PM2.5	Aug 24, 2022 09:00	403190	1-hr	82	82.2	exc
AAAQG	AMS09 Barge Landing	PM2.5	Aug 24, 2022 10:00	403190	1-hr	90	89.8	exc
AAAQG	AMS09 Barge Landing	PM2.5	Aug 24, 2022 11:00	403190	1-hr	82	82.0	exc
AAAQO	AMS09 Barge Landing	PM2.5	Aug 25, 2022 24:00	403268	24-hr	31	30.6	exc
AAAQO	AMS13 Fort McKay South	PM2.5	Aug 25, 2022 24:00	403269	24-hr	34	34.1	exc
AAAQO	AMS11 Lower Camp	H2S	Aug 25, 2022 20:00	403261	1-hr	10	9.9	nae
AAAQO	AMS11 Lower Camp	H2S	Aug 25, 2022 21:00	403261	1-hr	10	9.0	nae
AAAQG	AMS13 Fort McKay South	PM2.5	Aug 25, 2022 21:00	403269	1-hr	134	134.3	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Aug 26, 2022 20:00	403433	1-hr	85	85.3	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Aug 26, 2022 21:00	403433	1-hr	81	81.3	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Aug 27, 2022 24:00	403383	24-hr	37	37.1	exc
AAAQO	AMS06 Patricia McInnes	PM2.5	Aug 27, 2022 24:00	403384	24-hr	35	35.2	exc
AAAQO	AMS07 Athabasca Valley	PM2.5	Aug 27, 2022 24:00	403385	24-hr	34	33.6	exc
AAAQO	AMS08 Fort Chipewyan	PM2.5	Aug 27, 2022 24:00	403386	24-hr	33	32.8	exc
AAAQO	AMS14 Anzac	PM2.5	Aug 27, 2022 24:00	403387	24-hr	36	35.5	exc
AAAQO	AMS17 Wapasu	PM2.5	Aug 27, 2022 24:00	403388	24-hr	36	35.9	exc
AAAQO	AMS22 Janvier	PM2.5	Aug 27, 2022 24:00	403389	24-hr	43	43.3	exc
AAAQO	AMS29 Surmont 2	PM2.5	Aug 27, 2022 24:00	403390	24-hr	42	41.9	exc
AAAQG	AMS14 Anzac	PM2.5	Aug 27, 2022 10:00	403387	1-hr	82	82.3	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 27, 2022 10:00	403390	1-hr	81	81.4	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Aug 27, 2022 11:00	403384	1-hr	80	80.4	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 27, 2022 11:00	403390	1-hr	83	83.4	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 27, 2022 12:00	403390	1-hr	87	87.2	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 27, 2022 13:00	403389	1-hr	100	100.1	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 27, 2022 13:00	403390	1-hr	92	91.8	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 27, 2022 14:00	403389	1-hr	94	94.0	exc
AAAQG	AMS29 Surmont 2	PM2.5	Aug 27, 2022 14:00	403390	1-hr	89	88.7	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 27, 2022 16:00	403389	1-hr	113	112.8	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 27, 2022 17:00	403389	1-hr	103	103.0	exc
AAAQG	AMS22 Janvier	PM2.5	Aug 27, 2022 18:00	403389	1-hr	84	89.1	exc
AAAQO	AMS21 Conklin	NO2	Aug 31, 2022 10:00	403641	1-hr	-	-	ret
AAAQG	AMS23 Fort Hills	PM2.5	Aug 31, 2022 24:00	403644	1-hr	135	134.7	exc
AAAQO	AMS17 Wapasu	PM2.5	Sep 4, 2022 24:00	403883	24-hr	34	33.9	exc
AAAQO	AMS22 Janvier	PM2.5	Sep 4, 2022 24:00	403884	24-hr	37	36.9	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM2.5	Sep 4, 2022 24:00	403885	24-hr	32	32.4	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Sep 4, 2022 24:00	403886	24-hr	30	30.2	exc
AAAQO	AMS09 Barge Landing	PM2.5	Sep 4, 2022 24:00	403887	24-hr	38	37.5	exc
AAAQO	AMS13 Fort McKay South	PM2.5	Sep 4, 2022 24:00	403889	24-hr	33	33.5	exc
AAAQO	AMS18 Stony Mountain	PM2.5	Sep 4, 2022 24:00	403888	24-hr	34	33.9	exc
AAAQO	AMS21 Conklin	PM2.5	Sep 4, 2022 24:00	403890	24-hr	31	31.5	exc
AAAQO	AMS23 Fort Hills	PM2.5	Sep 4, 2022 24:00	403891	24-hr	36	36.4	exc
AAAQO	AMS29 Surmont 2	PM2.5	Sep 4, 2022 24:00	403892	24-hr	41	40.6	exc



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Type	Site	Parameter	Date/Time	Reference	Period	Reported	Final	status
AAAQO	AMS30 Ells River	PM2.5	Sep 4, 2022 24:00	403893	24-hr	31	30.7	exc
AAAQG	AMS29 Surmont 2	PM2.5	Sep 10, 2022 14:00	404229	1-hr	87	86.6	exc
AAAQG	AMS29 Surmont 2	PM2.5	Sep 10, 2022 15:00	404229	1-hr	119	119.1	exc
AAAQG	AMS22 Janvier	PM2.5	Sep 10, 2022 16:00	404228	1-hr	111	110.6	exc
AAAQG	AMS22 Janvier	PM2.5	Sep 10, 2022 17:00	404228	1-hr	88	88.3	exc
AAAQG	AMS21 Conklin	PM2.5	Sep 14, 2022 19:00	404406	1-hr	90	90.1	exc
AAAQG	AMS21 Conklin	PM2.5	Sep 14, 2022 20:00	404406	1-hr	97	97.1	exc
AAAQG	AMS23 Fort Hills	PM2.5	Sep 27, 2022 01:00	404896	1-hr	160	159.5	exc
AAAQO	AMS02 Mildred Lake	H2S	Sep 28, 2022 03:00	404890	1-hr	10	10.2	exc
AAAQG	AMS21 Conklin	PM2.5	Sep 28, 2022 20:00	404950	1-hr	93	93.1	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Sep 28, 2022 21:00	404949	1-hr	94	93.7	exc
AAAQO	AMS05 Mannix	H2S	Sep 29, 2022 24:00	404996	24-hr	3	3.2	exc
AAAQO	AMS506 Jackfish 1	H2S	Oct 2, 2022 20:00	405073	1-hr	13	13.3	exc
AAAQO	AMS05 Mannix	H2S	Oct 3, 2022 02:00	405076	1-hr	10	9.3	nae
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Oct 4, 2022 24:00	405187	24-hr	36	35.9	exc
AAAQO	AMS09 Barge Landing	PM2.5	Oct 4, 2022 24:00	405188	24-hr	33	33.1	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Oct 4, 2022 12:00	405206	1-hr	158	158.0	exc
AAAQG	AMS08 Fort Chipewyan	PM2.5	Oct 4, 2022 13:00	405206	1-hr	219	219.0	exc
AAAQG	AMS09 Barge Landing	PM2.5	Oct 4, 2022 17:00	405188	1-hr	112	111.7	exc
AAAQG	AMS17 Wapasu	PM2.5	Oct 4, 2022 17:00	405209	1-hr	125	125.2	exc
AAAQG	AMS23 Fort Hills	PM2.5	Oct 4, 2022 17:00	405215	1-hr	126	126.3	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM2.5	Oct 4, 2022 18:00	405202	1-hr	158	158.1	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Oct 4, 2022 18:00	405187	1-hr	217	216.6	exc
AAAQG	AMS09 Barge Landing	PM2.5	Oct 4, 2022 18:00	405188	1-hr	190	190.3	exc
AAAQG	AMS13 Fort McKay South	PM2.5	Oct 4, 2022 18:00	405207	1-hr	157	157.2	exc
AAAQG	AMS17 Wapasu	PM2.5	Oct 4, 2022 18:00	405209	1-hr	96	95.6	exc
AAAQG	AMS23 Fort Hills	PM2.5	Oct 4, 2022 18:00	405215	1-hr	148	148.0	exc
AAAQG	AMS30 Ells River	PM2.5	Oct 4, 2022 18:00	405216	1-hr	138	138.5	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	PM2.5	Oct 4, 2022 19:00	405202	1-hr	147	147.2	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Oct 4, 2022 19:00	405187	1-hr	195	195.3	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 4, 2022 19:00	405203	1-hr	156	156.1	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Oct 4, 2022 19:00	405204	1-hr	160	160.2	exc
AAAQG	AMS09 Barge Landing	PM2.5	Oct 4, 2022 19:00	405188	1-hr	167	167.0	exc
AAAQG	AMS13 Fort McKay South	PM2.5	Oct 4, 2022 19:00	405207	1-hr	148	147.5	exc
AAAQG	AMS23 Fort Hills	PM2.5	Oct 4, 2022 19:00	405215	1-hr	130	129.8	exc
AAAQG	AMS30 Ells River	PM2.5	Oct 4, 2022 19:00	405216	1-hr	120	119.8	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 4, 2022 20:00	405203	1-hr	92	92.2	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Oct 4, 2022 20:00	405204	1-hr	93	92.7	exc
AAAQG	AMS14 Anzac	PM2.5	Oct 4, 2022 20:00	405208	1-hr	108	108.2	exc
AAAQG	AMS22 Janvier	PM2.5	Oct 4, 2022 22:00	405213	1-hr	106	105.9	exc
AAAQG	AMS18 Stony Mountain	PM2.5	Oct 4, 2022 23:00	405211	1-hr	80	80.4	exc
AAAQO	AMS05 Mannix	H2S	Oct 5, 2022 03:00	405190	1-hr	10	9.5	nae
AAAQG	AMS23 Fort Hills	PM2.5	Oct 5, 2022 19:00	405251	1-hr	87	86.7	exc
AAAQG	AMS23 Fort Hills	PM2.5	Oct 5, 2022 21:00	405251	1-hr	114	113.7	exc
AAAQO	AMS01 Bertha Ganter - Fort McKay	PM2.5	Oct 8, 2022 24:00	405381	24-hr	30	30.3	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Oct 8, 2022 24:00	405382	24-hr	36	35.6	exc
AAAQO	AMS09 Barge Landing	PM2.5	Oct 8, 2022 24:00	405383	24-hr	36	36.0	exc
AAAQO	AMS21 Conklin	PM2.5	Oct 8, 2022 24:00	405384	24-hr	29	29.0	nae
AAAQO	AMS23 Fort Hills	PM2.5	Oct 8, 2022 24:00	405385	24-hr	33	33.5	exc
AAAQG	AMS21 Conklin	PM2.5	Oct 8, 2022 19:00	405384	1-hr	109	108.8	exc
AAAQG	AMS21 Conklin	PM2.5	Oct 8, 2022 20:00	405384	1-hr	107	107.1	exc
AAAQG	AMS21 Conklin	PM2.5	Oct 8, 2022 21:00	405384	1-hr	84	83.6	exc
AAAQO	AMS02 Mildred Lake	H2S	Oct 9, 2022 02:00	405387	1-hr	33	32.7	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Oct 18, 2022 24:00	405786	24-hr	35	34.8	exc
AAAQO	AMS09 Barge Landing	PM2.5	Oct 18, 2022 24:00	405787	24-hr	36	36.0	exc
AAAQO	AMS23 Fort Hills	PM2.5	Oct 18, 2022 24:00	405788	24-hr	34	33.9	exc
AAAQG	AMS23 Fort Hills	PM2.5	Oct 18, 2022 17:00	405821	1-hr	89	89.4	exc
AAAQG	AMS23 Fort Hills	PM2.5	Oct 18, 2022 18:00	405821	1-hr	87	87.4	exc
AAAQO	AMS29 Surmont 2	PM2.5	Oct 19, 2022 24:00	405861	24-hr	30	30.1	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Oct 19, 2022 24:00	405862	24-hr	41	40.8	exc
AAAQO	AMS07 Athabasca Valley	PM2.5	Oct 19, 2022 24:00	405863	24-hr	31	30.6	exc
AAAQO	AMS09 Barge Landing	PM2.5	Oct 19, 2022 24:00	405864	24-hr	31	30.6	exc
AAAQO	AMS14 Anzac	PM2.5	Oct 19, 2022 24:00	405865	24-hr	29	29.2	exc



Wood Buffalo Environmental Association
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Type	Site	Parameter	Date/Time	Reference	Period	Reported	Final	status
AAAQO	AMS21 Conklin	PM2.5	Oct 19, 2022 24:00	405866	24-hr	29	29.2	exc
AAAQO	AMS22 Janvier	PM2.5	Oct 19, 2022 24:00	405867	24-hr	31	31.5	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Oct 21, 2022 24:00	405969	24-hr	38	38.3	exc
AAAQO	AMS06 Patricia McInnes	PM2.5	Oct 21, 2022 24:00	405970	24-hr	54	54.0	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 21, 2022 19:00	405970	1-hr	204	204.0	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 21, 2022 20:00	405970	1-hr	111	110.7	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 21, 2022 21:00	405970	1-hr	145	144.9	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 21, 2022 24:00	405970	1-hr	140	139.9	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 22, 2022 01:00	405990	1-hr	339	339.3	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Oct 22, 2022 24:00	405989	24-hr	32	31.9	exc
AAAQO	AMS06 Patricia McInnes	PM2.5	Oct 22, 2022 24:00	405990	24-hr	54	53.8	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 22, 2022 02:00	405990	1-hr	245	244.9	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 22, 2022 03:00	405990	1-hr	152	152.3	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 22, 2022 05:00	405990	1-hr	151	150.8	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 22, 2022 06:00	405990	1-hr	103	103.3	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Oct 22, 2022 08:00	405989	1-hr	81	81.5	exc
AAAQG	AMS06 Patricia McInnes	PM2.5	Oct 23, 2022 21:00	406026	1-hr	139	138.6	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	Dustfall	Nov 1, 2022 24:00	408360	30-day	64	64.3	exc
AAAQG	AMS23 Fort Hills	PM2.5	Nov 8, 2022 19:00	406596	1-hr	86	86.3	exc
AAAQO	AMS09 Barge Landing	PM2.5	Nov 11, 2022 24:00	406682	24-hr	30	29.8	exc
AAAQO	AMS11 Lower Camp	H2S	Nov 19, 2022 17:00	406920	1-hr	12	11.3	exc
AAAQG	AMS23 Fort Hills	PM2.5	Nov 19, 2022 17:00	406938	1-hr	93	93.0	exc
AAAQG	AMS01 Bertha Ganter - Fort McKay	Dustfall	Dec 1, 2022 24:00	409197	30-day	97	97.0	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Dec 5, 2022 01:00	407389	1-hr	120	120.1	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Dec 10, 2022 05:00	407623	1-hr	91	91.2	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Dec 14, 2022 01:00	407716	1-hr	145	145.2	exc
AAAQG	AMS07 Athabasca Valley	PM2.5	Dec 14, 2022 13:00	407716	1-hr	103	102.7	exc
AAAQO	AMS04 Buffalo Viewpoint	PM2.5	Dec 23, 2022 24:00	408017	24-hr	49	49.8	exc
AAAQG	AMS21 Conklin	PM2.5	Dec 23, 2022 04:00	407990	1-hr	84	83.8	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Dec 23, 2022 06:00	407989	1-hr	141	140.7	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Dec 23, 2022 08:00	407989	1-hr	195	195.5	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Dec 23, 2022 10:00	408017	1-hr	95	94.8	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Dec 23, 2022 11:00	408017	1-hr	185	184.6	exc
AAAQG	AMS04 Buffalo Viewpoint	PM2.5	Dec 23, 2022 12:00	408017	1-hr	93	92.9	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
2022**

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

March 2023

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
January	20-Jan-22	387235	Stony Mountain	The glass sample manifold assembly was discovered to be broken during a routine calibration visit on January 11, 2022, preventing the analyzers from sampling ambient air.	The glass sample manifold assembly was discovered to be broken during a routine calibration visit on January 11, 2022, preventing the analyzers from sampling ambient air. The manifold assembly was replaced on January 12, 2022. During the data validation process, a review of sample manifold diagnostics indicates that the break occurred on December 25, 2022.	A differently designed manifold was installed which is a lot more robust.
January	20-Jan-22	387239	Mackay River	The precipitation collector recorded inaccurate precipitation values.	The precipitation collector recorded inaccurate precipitation values due to an accumulation of snow and resultant ice build-up inside the collector. The precipitation collector bucket was thawed and emptied on January 21, 2022, with normal operations resuming at 13:50 MST. During the data validation process, a comparison of precipitation collector data with a nearby site was used to determine that the sensor began to read inaccurate readings on December 15, 2021.	The precipitation collector bucket was thawed and emptied on January 21, 2022.
January	28-Jan-22	387494	Christina Lake	The WS/WD at Christina Lake AMS operated less than 90% for January 2022 due to ice fog interfering.	During the month of January, there were frequent precipitation events at near-freezing temperatures, causing the wind sensor to freeze in a stationary position from ice build-up. The WBEA field technicians were deployed on January 19 and 20 to address the frozen sensors.	NA
January	08-Feb-22	387721	Kirby South	The WS/WD at Kirby South AMS operated less than 90% for January 2022 due to ice fog interfering.	During the month of January, there were frequent precipitation events at near-freezing temperatures causing the wind sensor to freeze in a stationary position from ice build up. The WBEA field technicians were deployed on January 20th to address the frozen sensor.	NA
January	09-Feb-22	387771	Mannix	The WS/WD/VWS sensor at the 75-meter and 90-meter elevations at Mannix AMS operated less than 90% for January 2022.	During the month of January, ice fog interference with the sonic sensors resulted in multiple instances of flat-line periods in the sensors' output signal. WS/WD/VWS data collected at the 75-meter and 90-meter sensor elevations during those instances were invalidated, through the WBEA's data validation process, for a total of 79 hours and 100 hours, respectively.	NA
January	24-Feb-22	388195	Bertha Ganter - Fort McKay	The TRS analyzer at Bertha Ganter – Fort McKay air monitoring station (AMS) operated less than 90% of January 2022 due to multiple instances.	There were two issues associated with the operation of the analyzer, resulting in 129 hours of invalid data: 1). On January 17, the SO2 scrubber for the TRS analyzer failed during a calibration. The SO2 scrubber beads were replaced and were left to hydrate until the next day. Multi-point calibration conducted on January 18 verified the performance of the TRS analyzer. Maintenance to replace the SO2 scrubber beads and hydrate resulted in 25 hours of invalid data. 2). The daily QA check on January 23 through 25 and the multi-point as found on January 25 failed to meet the AMD operational criteria due to SO2 scrubber beads. This resulted in the need to invalidate data back to the last good span, on January 22, resulting in 81 hours of downtime. Maintenance to recondition the SO2 scrubber beads was completed on January 25, resulting in a further 23 hours of invalid data. Multi-point calibration conducted on January 26 verified the performance of the TRS analyzer.	Maintenance on January 25 to remove the hydrator and conduct a subsequent calibration January 26 resolved the issue, with normal operations resuming at 14:00.
February	24-Feb-22	388196	Bertha Ganter - Fort McKay	The Temperature sensor at the 10-meter elevation at Bertha Ganter – Fort McKay AMS operated less than 90% for February 2022 due sensor malfunctioning.	The Temperature sensor signal became flatlined on February 7 to 10. The WBEA technician was deployed on February 10 to replace the sensor. Following the sensor replacement, the data logger began to record erroneous temperature values due to communication issues. Changes to the data logger program were made on February 11 which resolved the communication error. Failure to record data and communications disruptions in the sensors output signal interrupted the normal operations of the Temperature sensor at a 10-meter elevation for 89 hours in February 2022.	Sensor was swapped and logger program was updated.
February	16-Mar-22	388679	Jackfish 2/3	The WS/WD at Jackfish 2/3 AMS operated less than 90% for February 2022 due to ice fog interfering.	During the month of February there were frequent precipitation events at near-freezing temperatures, causing the wind sensor to freeze in a stationary position from ice build-up.	The WBEA technician was deployed to site on February 11 to de-ice the WS/WD sensor.
February	16-Mar-22	388681	Sawbones Bay	The WS/WD at Sawbones Bay AMS operated less than 90% for February 2022 due to ice fog interfering.	During the month of February there were frequent precipitation events at near-freezing temperatures, causing the wind sensor to freeze in a stationary position from ice build-up.	The WBEA technician was deployed to site on February 14 to de-ice the WS/WD sensor.

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
February / March	17-Mar-22	388730 / 388890	Surmont 2	The THC analyzer at Surmont 2 AMS operated less than 90% for February and March, 2022, due to unstable operations of the zero-air generator (ZAG) and station temperature fluctuations.	Two issues affected the normal operation of the THC analyzer, resulting in 165 and 93 hours of invalid data in February and March, respectively. Details of the issues and mitigations are as follows: 1.The operation detection principle of the THC analyzer is a Flame Ionization Detector (FID), which is more susceptible to temperature changes of the surrounding environment. Due to extreme weather conditions in February and March, the internal temperature of the air monitoring station fluctuated, and the normal operation of the THC analyzer was affected, resulting in invalid data for 66 and 93 hours, respectively. During March, the WBEA performed maintenance on the station HVAC system to minimize the station temperature fluctuations and to help prevent future reoccurrence. 2.Intermittently, throughout February, the pressure in the zero air generator (ZAG) decreased from optimal operations resulting in elevated instrument responses that were not representative of the ambient THC. Data from these time periods were invalidated, during the monthly data validation process, for a total of 99 hours.	The WBEA reviewed the incident and has scheduled both a replacement of the ZAG system, and training for all ambient air technicians on how to identify zero air generator failure, prior to the end of March.
February	23-Mar-22	388891	Patricia McInnes	The ammonia analyzer at Patricia McInnes air monitoring station (AMS) operated less than 90% of February, 2022, due to slow stabilization time following daily zero span cycle and maintenance to analyzer.	There were two issues associated with the operation of the ammonia (NH3) analyzer, contributing to 77 hours of downtime in February: 1.The NH3 analyzer requires additional time to stabilize to ambient conditions following daily spans at the range required by the AMD, which is expected for this type of analyzer. Data following the daily spans have been reported as invalid for 29 hours in February. 2.On February 9, the multi-point verification check for the NO2 channel nearly failed operational criteria due to a degrading moly converter of the NH3 analyzer. On February 10, the WBEA conducted multi-point as-found verification and subsequent maintenance to replace the moly converter. The maintenance to replace the moly converter of the NH3 analyzer, and the subsequent stabilization period after the maintenance, resulted in an additional 48 hours of invalid data.	The WBEA plans to seek permission for a variance from the AEP Director regarding the frequency of daily zero/span checks or alternate solutions to minimize downtime.
February	25-Mar-22	388972	Bertha Ganter - Fort McKay	The Hydrogen Sulfide analyzer at Bertha Ganter - Fort McKay AMS operated less than 90% of February 2022, due to low moisture and subsequent over-hydration of the SO ₂ scrubber.	On February 6 and 7, the daily span for the H2S analyzer at Bertha Ganter – Fort McKay failed to meet AMD criteria. A remotely triggered span on February 6 revealed a similar response. An on-site investigation on February 7 revealed a depleted hydrator. Maintenance was conducted to fill the hydrator and complete a subsequent analyzer calibration. On February 8 through 10, the daily span for the H2S analyzer failed to meet AMD criteria. An on-site investigation on February 10 revealed over-hydration of the SO2 scrubber affected the normal operations of the H2S analyzer. Depletion of the hydrator was required for the analyzer response to improve; a follow-up multi-point calibration was conducted to ensure analyzer linearity and performance. Data was flagged as invalid from the last known valid response on February 5 until normal operations resumed on February 10, 2022, at 16:40 MST. This incident resulted in 117 hours of invalid data.	The WBEA continues to monitor the performance of the hydration of the SO2 scrubber system and the H2S analyzers.

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
March	04-Apr-22	389256	Barge Landing	The PM2.5 analyzer at Barge Landing AMS operated less than 90% for March 2022, due to excessive buildup of dirt inside the sample inlet stack and the optical chamber.	On March 28 the WBEA initiated an on-site investigation and a review of the PM2.5 data at Barge Landing AMS due to exceedance of the Alberta Ambient Air Quality Objectives; the exceedance event was subsequently invalidated. The on-site investigation identified that the sample inlet stack and optical chamber required maintenance to clean the equipment. Maintenance was followed by routine calibration checks to verify analyzer performance. Data validation confirmed that unstable operations of the PM2.5 analyzer, due to an uncharacterized event, had resulted in elevated ambient readings from March 11 to March 28, for a total of 400 invalid hours.	The sample inlet stack and the optical chamber were cleaned on-site. Maintenance was followed by routine calibration checks to verify analyzer performance.
March	14-Apr-22	389603	Christina Lake	The NO2 analyzer at the Christina Lake air monitoring station (AMS) operated for less than 90% of March 2022, due to multiple issues.	Two issues affected the normal operation of the NO2 analyzer, resulting in 79 hours of invalid data in March 2022. Details of the issues and mitigations are as follows: 1. On March 7, the daily QA check failed to meet the AMD operational criteria. The WBEA determined it was due to a degrading sample pump and conducted maintenance that day to replace the sample pump. After maintenance, the analyzer was left to stabilize overnight and a multi-point calibration was conducted on March 8. Data was invalidated to the last acceptable span, on March 6, resulting in 51 hours of downtime. 2. On March 9, the daily QA check failed to meet the AMD operational criteria. The WBEA determined it was due to a ruptured exhaust sample line and conducted maintenance that day to replace the sample line. The daily QA check was reinitiated to verify the analyzer response and the multi-point verification check was conducted on March 10 to verify the performance of the NO2 analyzer. Data was invalidated back to the last multi-point calibration check, on March 8, resulting in 28 hours of downtime.	The sample pump was replaced on March 7 and sample exhaust line replaced on March 9.
March	14-Apr-22	389604	Conklin	The TRS analyzer at the Conklin air monitoring station (AMS) operated less than 90% of March 2022, due to sample inlet line being disconnected to the manifold.	On March 29, 2022, during a site visit for a routine calibration, the WBEA discovered that the TRS sample inlet line was disconnected, preventing the analyzer from sampling ambient air. The line was reconnected to the manifold upon discovery. During the data validation process, a review of the baseline response and station logs indicated that the TRS sample inlet line had been inadvertently disconnected since March 16, resulting in 309 hours of invalid data for March 2022.	TRS sample line was reconnected back to the manifold on March 29. This incident was discussed at the monthly tech workshop to review and identify this issue to prevent it from reoccurring.
June	22-Jul-22	401746	Anzac	The O3 analyzer at the Anzac air monitoring station (AMS) operated for less than 90% of June 2022, due to a faulty in-situ calibrator.	On June 25, the O ₃ analyzer daily automated span check failed to meet the AMD operational criteria. The WBEA assessed, and adjusted, the analyzer response with the in-situ calibrator. Further investigation determined the analyzer response issue had not been resolved, therefore, an audit calibrator was used to investigate and found the in-situ calibrator had failed. The calibrator photometer pump was faulty causing an incorrect concentration of O ₃ to be produced. The in-situ calibrator was replaced and normal operation of the O ₃ analyzer resumed. Data for this period, June 25 through 30, was invalidated resulting in a total of 110 hours of downtime for June 2022.	The in-situ calibrator was replaced and normal operation of the O3 analyzer resumed.
June	22-Jul-22	401747	Stony Mountain	The precipitation collector at Stony Mountain air monitoring station (AMS) operated for less than 90% of June 2022, due to communication lost with the data logger.	On June 30, during weekly precipitation sample collection, the WBEA field technician identified that the data logger was not communicating with the precipitation collector. The data logger was reset, and communications resumed on June 30 at 10:00 MST. During the monthly data validation process, it was determined that the communications failure of the precipitation collector began on June 26, which coincides with an interruption of data communications due to a lightning storm at the Stony Mountain AMS. A total of 101 hours of precipitation data was invalidated in June.	The data logger was reset to resume communications on June 30.

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
June / July	25-Jul-22	401829	Waskōw ohci Pimātsiwin	The RH sensor at Waskōw ohci Pimātsiwin air monitoring station (AMS) operated less than 90% for June and July 2022, due to out of range readings from the sensor	The WBEA identified that the RH sensor had been periodically out of range throughout the month of June. On June 24 it was replaced, as a preventative maintenance measure, to ensure data quality. During subsequent routine daily system checks, it was determined the replacement sensor was faulty and an additional sensor change-out was required. However, this event coincided with the annual recertification of the RH sensor inventory, therefore, the original sensor was installed temporarily until the recertified sensors were received from the manufacturer. A new sensor was installed with normal operations resuming on July 25, at 07:00 MST. A total of 129 hours of RH data in June and 100 hours in July (as of July 25) was invalidated	The RH sensor was replaced on July 25.
July	22-Aug-22	403011	Patricia McInnes	The NH3 analyzer at Patricia McInnes air monitoring station (AMS) operated for less than 90% of July 2022, additional time to stabilize to ambient conditions following daily spans and routine monthly multipoint calibrations.	The AMD specifies the range at which the daily spans and monthly calibration are conducted on the NH3 analyzer. The NH3 analyzer requires additional time to stabilize to ambient conditions following daily spans and routine monthly multipoint calibrations at the range required by the AMD. This additional stabilization time is necessary, and expected for this type of analyzer, after being exposed to high concentrations of NH3 gas, and may take multiple hours before response returns to normal. In the month of July additional stabilization periods, up to as long as 6 hours, resulted in a total of 95 hours of invalid data.	The WBEA has been working on a long-term solution to resolve the slow recovery time associated with daily spans. Many methods have been implemented but have not resulted in a lasting improvement in the span response time. Alternate solutions will continue to be pursued, such as a request for a variance to the frequency of daily zero/span checks.
August	22-Aug-22	403010	Stony Mountain	The Carbon Dioxide (CO2) analyzer at the Stony Mountain air monitoring station (AMS) operated for less than 90% of August 2022, due to multiple issues.	On August 1, the station logger fuse blew at the Stony Mountain AMS resulting in a disruption to the normal operations of the CO2 analyzer. Post-incident maintenance included assessment and replacement of the analyzer, and subsequent analyzer adjustment, using the in-situ calibrator. The analyzer did not return to normal operation and further troubleshooting determined the cause was a faulty valve control relay board attached to the in-situ calibrator. The in-situ calibrator was fixed and a multi-point calibration verification check was performed. Normal operation of the CO2 analyzer resumed on August 16 at 12:10 MST. Data for the incident period of August 1 through 16 was invalidated resulting in a total of 365 hours of downtime.	The in-situ calibrator was fixed and a multi-point calibration verification check was performed.
August	02-Sep-22	403744	Lower Camp MET Tower	The wind sensor at the Lower Camp Meteorological Tower at the 163-meter elevation operated for less than 90% of August 2022, due to lightning strike.	An electrical surge, during a lightning storm on August 13, caused the wind sensor at the 163-meter elevation to fail. The third-party contractor that is required for the tower climb and sensor replacement has been contacted, however, the date of sensor replacement is dependant on their availability and still being determined. The WBEA submitted a notification to the Director as per AMD, Chapter 9, Clause RC 17-C, that this sensor will be flagged as "Not in Service" until further notice.	The sensor will be replaced via a third party contractor.
August	08-Sep-22	404071	Anzac	Several parameters at the Anzac air monitoring station (AMS) operated for less than 90% of August 2022 due to shelter replacement.	During the week of August 9, the Anzac AMS shelter was replaced as part of planned monitoring network maintenance and upgrades. Replacement of this shelter was required due to its advanced age. Activities associated with replacing the station shelter and returning to normal operations resulted in over 100 hours of invalid data for each analyzer.	N/A
August	19-Sep-22	404482	Athabasca Valley	The Total Hydrocarbon (THC), Non-Methane Hydrocarbon (NMHC), and Methane (CH4) analyzer at the Athabasca Valley air monitoring station (AMS) operated for less than 90% of August 2022 due to a collapsed baseline.	This instrument is a semi-continuous gas chromatograph that requires the CH4 and NMHC peaks to remain within the data capture windows. Beginning on August 7, these peaks shifted outside of the optimal data capture windows, therefore, the captured data was invalidated. Between August 8 and August 11, the WBEA performed multiple maintenance actions to rectify the issue, including column conditioning, analyzer replacement, hydrogen and air pressure stabilization, and hydrogen pressure regulator replacement. Normal operations resumed, after a multipoint calibration, at 16:00 MST on August 11. Data for this incident period was invalidated, during the monthly data validation process, for a total of 105 hours of downtime.	Analyzer was replaced followed by field maintenance.

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
August	26-Sep-22	404831	Fort McKay South	The Nitrogen Dioxide (NO2) and Ozone (O3) analyzer at the Fort McKay South air monitoring station (AMS) operated for less than 90% of August 2022 due to station temperature fluctuations.	The HVAC unit in the AMS failed to maintain a consistent station temperature, starting on August 17. Fluctuating station temperatures affected the normal operation of both the NO2 and O3 analyzers resulting in periodic data loss. A portable air conditioner unit was installed in an effort to stabilize the station temperature and the analyzers were maintained to address the performance issues. Data for the incident period of August 17 through 22 was invalidated resulting in a total of 127 and 131 hours of downtime for NO2 and O3, respectively.	Station temperature issues were resolved.
August	27-Sep-22	404883	Patricia McInnes	The NH3 analyzer at Patricia McInnes air monitoring station (AMS) operated for less than 90% of August 2022, additional time to stabilize to ambient conditions following daily spans and routine monthly multipoint calibrations.	The AMD specifies the range at which the daily spans and monthly calibration are conducted on the NH3 analyzer. The NH3 analyzer requires additional time to stabilize to ambient conditions following daily spans and routine monthly multipoint calibrations at the range required by the AMD. This additional stabilization time is necessary, and expected for this type of analyzer, after being exposed to high concentrations of NH3 gas, and may take multiple hours before response returns to normal. In the month of August additional stabilization periods, up to as long as 6 hours, resulted in a total of 90 hours of invalid data.	The WBEA has been working on a long-term solution to resolve the slow recovery time associated with daily spans. Many methods have been implemented but have not resulted in a lasting improvement in the span response time. Alternate solutions will continue to be pursued, such as a request for a variance to the frequency of daily zero/span checks.
August	28-Sep-22	404933	Mannix MET Tower	Several sensors at the Mannix air monitoring station (AMS) meteorological tower operated for less than 90% of August 2022 due to lost of communications.	The Mannix meteorological tower experienced several data acquisition failures, resulting in periodic data loss, and sensor flatline output signal, of the ambient temperature 2-meter elevation and relative humidity sensors at the 2-meter and 45-meter elevation. The sensor operation returned to normal without intervention. In total, over 95 hours of data was invalidated for each sensor during the monthly data validation process.	N/A
September	14-Sep-22	404346	Christina Lake	The wind speed and wind direction sensor at Christina Lake AMS operated less than 90% of the time in September 2022 due to the cross-arm becoming misaligned.	On September 7, during a routine daily system check, the WBEA identified that the wind direction sensor readings were not aligned with nearby sites. A site visit was conducted on September 8 and the misalignment was confirmed, the sensor orientation was corrected and verified, and normal operations resumed at 12:30 MST. During the monthly data validation process, a comparison of wind direction data with nearby stations was used to determine that the sensor became misaligned on August 31. Data for the incident period of September 1 through 8 was invalidated resulting in a total of 181 hours of downtime.	The sensor orientation was corrected and verified.
September	30-Sep-22	405005	Bertha Ganter - Fort McKay	The precipitation collector at the Bertha Ganter - Fort McKay air monitoring station (AMS) operated for less than 90% of September 2022 due to interruption in the data transfer program.	On September 12, a WBEA Field Technician identified that the data transfer program had stopped writing files to the data logger on September 7. The data logger was reset and data transfer resumed on September 12 at 16:00 MST. Data for the incident period of September 7 through 12 was invalidated resulting in a total of 112 hours of downtime.	The data logger was reset to resume communications on September 12.
September	28-Oct-22	406183	Patricia McInnes	The NH3 analyzer at Patricia McInnes air monitoring station (AMS) operated less than 90% of September 2022 due to longer stabilization period after daily QA check and maintenance to moly converter.	There were two issues associated with the operation of the NH3 analyzer, contributing to 108 hours of downtime in September: 1. The AMD specifies the range at which the daily spans and monthly calibration are conducted on the NH3 analyzer. The NH3 analyzer requires additional time to stabilize to ambient conditions following daily spans and routine monthly multipoint calibrations at the range required by the AMD. This additional stabilization time is necessary, and expected for this type of analyzer, after being exposed to high concentrations of NH3 gas, and may take multiple hours before response returns to normal. In the month of September additional stabilization periods, up to as long as 4 hours, resulted in a total of 73 hours of invalid data. 2. On September 21, during routine calibration, the NH3 analyzer nearly failed operational criteria due to a degrading moly converter. The WBEA conducted subsequent maintenance to replace the moly converter. On September 22, additional maintenance on the NH3 analyzer, and the subsequent stabilization period after the maintenance, resulted in an additional 35 hours of invalid data.	The WBEA has been working on a long-term solution to resolve the slow recovery time associated with daily spans. Many methods have been implemented but have not resulted in a lasting improvement in the span response time. Alternate solutions will continue to be pursued, such as a request for a variance to the frequency of daily zero/span checks.

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
January to October	28-Oct-22	406184	Buffalo Viewpoint	The wind speed and wind direction (WS/WD) sensor at Buffalo Viewpoint AMS operated less than 90% for the month of June 2021 through to the month of October 2022, due to the non-uniformity of the sensor shift since the last annual audit.	On October 6, 2022, during an annual audit, it was found that the wind speed and wind direction (WS/WD) sensor at Buffalo Viewpoint air monitoring station (AMS) had shifted. Further investigation of the faulty sensor determined the internal components were not moving in unison, as designed, due to a loose set screw, which led to inaccurate wind direction readings. Due to the non-uniformity of the sensor shift since the last annual audit, wind data at Buffalo Viewpoint AMS from June 3, 2021, to October 6, 2022, was revised and flagged appropriately.	The wind direction sensor was replaced on October 6 during the annual audit.
October	24-Oct-22	406044	Surmont 2	The PM2.5 analyzer at Surmont 2 air monitoring station (AMS) operated for less than 90% of October 2022 due to a leak detected.	Routine daily system checks identified that the PM2.5 analyzer at the Surmont 2 AMS measured low PM2.5 concentrations compared to the PM2.5 analyzers at nearby stations. On October 6th, a WBEA technician visited the site to conduct an investigation. The investigation found that following chamber cleaning on September 30th, a connection within the analyzer had not been securely restored. The analyzer continued to display a correct flow, but the flow withdrawn at the inlet of the analyzer was inadequate. The connection was restored, the inlet flow was verified, and the operation of the analyzer was restored on October 6th at 14:00 MST.	The connection was reconnected, the inlet flow was verified, and the operation of the analyzer was restored on October 6th at 14:00 MST.
October	28-Oct-22	406185	Mannix	The wind speed and wind direction sensor at Mannix AMS operated less than 90% of October 2022, due to sensor not aligned properly.	On October 12, during a routine daily system check, the WBEA identified that the wind direction sensor readings at the 20-meter elevation, which had been installed on October 5, were not aligned with the sensors at the other elevations on the tower, as well as with sensors located nearby. On October 14, the third-party contractor that was required for the tower climb corrected the sensor orientation, which was then verified by the WBEA. Data for the incident period of October 5 through 14 was invalidated.	October 14, the third-party contractor that was required for the tower climb corrected the sensor orientation, which was then verified by the WBEA.
October	24-Nov-22	406044	Bertha Ganter - Fort McKay	The wind speed and wind direction (WS/WD) sensor at Bertha Ganter-Fort McKay air monitoring station (AMS) operated for less than 90% of October 2022 due to sensor wind direction sensor's unstable operations.	The WBEA identified that the WD sensor signal had been periodically flatlining throughout the month of October. On October 24, the wind direction sensor was replaced, as a preventative maintenance measure, to ensure data quality. During the data validation process, data from these events were invalidated for a total of 92 hours, resulting in an operational time of 87% for the month of October 2022.	The wind direction sensor was replaced on October 24.
November	24-Nov-22	407075	Mildred Lake	The Total Hydrocarbon (THC), Non-Methane Hydrocarbon (NMHC), and Methane (CH4) analyzer at the Mildred Lake air monitoring station (AMS) operated for less than 90% of November 2022 due to unstable baseline operations.	This instrument is a semi-continuous gas chromatograph that requires the CH4 and NMHC peaks to remain within the data capture windows. In early November, these peaks shifted outside of the optimal data capture windows. Between November 5 and 9, field maintenance was conducted to rectify the issue including recalibration, readjustment of the data capture window retention time, and replacement of carrier cylinder gas. Ultimately, the analyzer was replaced on November 11, however, inconsistent response resulted in another analyzer replacement on November 17. Normal operations resumed, after a multipoint calibration on November 17, at 14:25 MST. Data for this incident period was invalidated for a total of 565 hours of downtime.	The THC/NMHC/CH4 analyzer was replaced on November 17.
November	07-Dec-22	407468	Anzac	The Total Hydrocarbon (THC), Non-Methane Hydrocarbon (NMHC), and Methane (CH4) analyzer at the Anzac air monitoring station (AMS) operated for 79.5% of November 2022 due to unstable baseline operations.	In late November, the analyzer baseline shifted outside of the normal range. The WBEA conducted several troubleshooting and maintenance actions to identify and rectify the issue. Ultimately, the analyzer was replaced on November 30 and normal operations resumed at 12:00 MST. Data for the incident period of November 23 through 30 was invalidated for a total of 146 hours of downtime.	The THC/NMHC/CH4 analyzer was replaced on November 30.
November	07-Dec-22	407469	Anzac	The surface leaf wetness sensor at the Anzac air monitoring station (AMS) operated for 82% of November 2022 due to communication issues.	On November 7, a communication issue with the surface leaf wetness sensor was identified through the daily system check. The WBEA conducted several on-site troubleshooting actions to identify the issue and determined that a high voltage signal to the data logger was affecting the leaf wetness sensor. The source of the high voltage input was removed on November 9 and the sensor returned to normal operation at 13:00 MST. Data for the incident period was invalidated for a total of 128 hours of downtime.	The source of the high voltage input was removed on November 9.

Reporting Period	Date Reported	AEP Reference Number	Location	Brief Description	Issue	Remedial Action
December	23-Jan-23	408914	Lower Camp MET Tower	The 163-meter elevation WS/WD/VWS at Lower Camp Met Tower operated less than 90% of December 2022 due to ice fog events.	In December 2022, a flat-line period in the WS/WD/VWS sensors' output signal occurred. Ice fog interfering with the sonic sensors is considered to be the most likely cause and the sensor operation returned to normal once weather conditions changed. Data from the event was invalidated for a total of 175 hours, resulting in a monthly operational time of 76% for December 2022.	NA
December	24-Jan-23	408948	Mannix Met Tower	The 75-meter elevation WS/WD/VWS at Mannix Met Tower operated less than 90% of December 2022 due to ice fog events.	In December 2022, intermittent flat-line periods in the WS/WD/VWS sensors' output signal occurred. Ice fog interfering with the sonic sensors is considered to be the most likely cause and the sensor operation returned to normal once weather conditions changed. Data from these events were invalidated for a total of 98 hours, resulting in a monthly operational time of 87% for December 2022.	NA



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
ANNUAL REPORT

APPENDIX III: 2012-2017 WBEA DATA COMPARED TO LARP TRIGGERS AND LIMITS 2022

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

March 2023



Comparison of WBEA NO₂ 2011 to 2022 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	2022	8	5	5	7	1	10		8	2			2	1	3	3
	2021	8	5	5	7	1	10		8	2			3	1	3	2
	2020	7	5	5	7	2	8		6	2	9		2	1	3	2
	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		11	5	2	5	9	3	1	4	
	2014	8			11	1		12	7	3	7	12	6		4	
	2013	8		6	10	1		13	7	3	7	12				
	2012	7		6	9	1		13	7	3	6	11				
	2011	7		6	11	1		15	6	3	5	12				
NO ₂ hourly 99th Percentile	2022	32	32	30	30	12	40		32	17			17	7	22	23
	2021	33	32	30	30	11	37		30	15			17	8	20	22
	2020	31	31	29	29	12	35		28	18	41		17	7	23	22
	2019	35	33	29	32	12	43		32	16	41		18	7	28	22
	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	14	33	37	19	8	24	
	2014	33		29	48	11		43	31	18	34	40	21		23	
	2013	35		31	38	9		43	33	19	39	40	25			
	2012	34		29	34	11		42	31	15	36	40				
	2011	34		30	39	13		50	32	20	33	41				

LARP Index	Year	Air Monitoring Stations														
		AMS21 Conklin	AMS22 Janvier	AMS23 Fort Hills	AMS24 Surmont	AMS26 Christina Lake	AMS27 Jackfish 2/3	AMS29 Surmont 2	AMS30 Ells River	AMS500 Christina Lake	AMS501 Leismer	AMS502 Surmont	AMS505 Sawbones Bay	AMS506 Jackfish 1	AMS507 Kirby South	AMS508 Kirby North
NO ₂ Annual average	2022	2	1	10		3	1	2	6		2		3	2	1	2
	2021	2	1	9		3	1	2	6		2		3	2	1	1
	2020	2	1	8		3	1	1	6		3		3	2		1
	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	2022	9	8	41		15	7	12	33		9		19	12	7	8
	2021	10	8	39		16	7	11	32		10		18	12	11	7
	2020	10	9	39		13	8	13	30		12		18	13		6
	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															

	NO ₂ Annual average		NO ₂ hourly 99th Percentile
	Limit	24	Level 4 Trigger
	Level 3 Trigger	16	Level 3 Trigger
	Level 2 Trigger	8	Level 2 Trigger
	Data Collection less than 12 months		



Comparison of WBEA SO₂ 2011 to 2022 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	2022	1	2	1	2	1	1	0	1	2		1	1			1	0	1	
	2021	1	2	1	2	1	1	0	1	2		1	0			1	0	1	
	2020	1	2	1	3	1	1	0	1	3		1	1	1		1	0	1	
	2019	1	1	1	2	1	1	0	1	2		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	1	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	
	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	2022	14	28	11	31	13	8	4	13	26		16	7			11	3	11	
	2021	13	27	16	25	11	9	4	11	28		14	6			11	3	12	
	2020	15	33	19	39	15	9	4	14	32		15	6	11		13	4	12	
	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		
	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 Pimatisiwin	AMS 26 Christina Lake	AMS 27 Jackfish 2/3	AMS29 Surmont 2	AMS30 Ells River	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	2022	1	0	0	1		1	2	1	0	1		2		1	1	1	1	
	2021	1	0	0	1		1	2	1	0	1		1		2	1	1	1	
	2020	1	0	0	1		1	3	1	1	1		1		2	2	2	1	
	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		1				
	2015											1	1		1				
	2014											1	1		1				
	2013											0	0		1				
	2012													2					
	2011													3					
SO ₂ hourly 99th Percentile	2022	12	3	3	13		14	23	5	4	14		22		19	25	9	10	
	2021	11	3	2	10		12	24	5	4	12		16		21	17	13	6	
	2020	12	3	3	9		14	35	6	5	9		14		27	26	6	6	
	2019	8	2	2	7	12	9	24	6	5			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	7						
	2014											7	4						
	2013											3	3						
	2012													13					
	2011													26					
													36						

SO₂ Annual average
 Limit 8
 Level 3 Trigger 5
 Level 2 Trigger 3

SO₂ hourly 99th Percentile
 Level 4 Trigger 36
 Level 3 Trigger 24
 Level 2 Trigger 12

Data Collection less than 12 months



End of Report - Volume 1

**ELECTRONIC TRANSFER SYSTEM
AIRDATA
SUBMISSION REPORT**

March 30, 2023
9:56:52 AM
Request # 4534016

Submitted by: EN6138
Submission Date: Mar 30, 2023 9:56:39 AM

File Type
Airshed Monitoring Report

File Name
WBEA-2022.pdf

Total Number of Files: 1

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