DEPARTMENT OF MUNICIPAL AFFAIRS AND ENVIRONMENT

2018 AMBIENT AIR MONITORING REPORT

April 2019

Executive Summary

The air quality in communities across the province is generally considered to be good as the ambient air quality standards are rarely exceeded for the pollutants being measured. On occasion, communities in close proximity to an industrial operation may experience episodic decreases in the quality of the air; however, these episodes tend to be brief in nature and are rarely at levels that exceed the air quality standards. Elevated levels of air pollutants can also occur due to long-range transport from mainland Canada and the United States, but these events are also episodic in nature and rarely produce levels that exceed the ambient air quality standards. On the local level, emissions from sources such as vehicular traffic, forest fires and woodstoves also impact the air quality in the province.

This 2018 report is the 10th annual and presents all the monitoring results from both the federal / provincial operated National Air Pollution Surveillance (NAPS) network as well as the stations operated by industrial facilities in the province. Both datasets undergo a rigorous quality assurance procedure to ensure that the highest level of data confidence is achieved.

In 2018 there were no major long range transport events to adversely affect the air quality in the province. The air quality at most monitoring stations indicated no exceedances of the ambient air quality standards. There were however instances where the levels measured at a station operated by an industrial facility approached or exceeded the associated ambient standard.

The report does not provide commentary on the data contained herein except in situations where there has been a technological change in the data collection system, or there has been a change in industrial operating conditions which would lead to a change in emissions (eg. a switch from heavy fuel oil combustion to distillate combustion).

Though an industrial facility may monitor the ambient air for specific pollutants, this report in no way implies or attributes those measurements to emissions from that facility.

The 2018 monitoring results are summarized below.

Sulphur Dioxide - 2018

Operator	Monitoring Location	Maximum 1-hour Concentration	Maximum 3-hour Concentration	Maximum 24-hour Concentration	Annual Concentration
Regulatory Limit (µg/m^3)		**900**	**600**	**300**	**60**
NAPS	St. John's	27.6	23.1	9.1	2.3
	Mt. Pearl	20.6	12.0	6.7	2.4
	Grand Falls-Windsor	7.7	3.7	2.6	1.3
	Corner Brook	30.8	25.0	8.4	1.7
	Burin	2.7	1.5	1.1	0.2
NALCOR	Butterpot Road	51.0	33.5	6.9	1.4
	Green Acres Road	153.4	83.6	22.1	1.4
	Indian Pond Drive	173.5	155.7	68.3	3.3
	Indian Pond Road	193.9	165.2	39.7	2.2
	Lawrence Pond Road	92.6	69.7	31.1	2.0
NARL	Arnold's Cove	90.0	69.1	15.2	2.0
	Come by Chance	252.1	169.4	47.3	3.9
	Sunnyside	333.3	234.3	72.7	4.6
	Property Boundary	2241.0	1770.5	1381.2	103.7
IOCC	Indian Point	169.3	116.7	43.9	1.6
	Hudson Drive	162.9	128.3	23.2	1.3
	Smokey Mountain II	65.1	38.1	7.6	0.9
CBPP	Main Street	73.4	62.8	19.4	2.0

Observations in µg/m^3

$PM_{2.5}$ - 2018

Operator	Monitoring Location	Maximum 24-hour Concentration	Annual Concentration
Regulatory Limit (µg/m^3)		**25**	**8.8**
NAPS	St. John's	15.4	4.4
	Mt. Pearl	13.3	4.9
	Grand Falls-Windsor	14.1	3.7
	Corner Brook	18.6	7.2
	Burin	21.1	5.1
NALCOR	Butterpot Road	10.1	2.9
	Green Acres Road	10.7	3.8
	Indian Pond Drive	10.2	3.2
	Indian Pond Road	11.3	3.2
	Lawrence Pond Road	9.8	2.8
	Holyrood Property Boundary	10.9	3.1
NARL	Arnold's Cove	17.3	8.1
	Come by Chance	15.7	3.7
	Sunnyside	18.1	4.5
	Property Boundary	360.9	21.7
IOCC	Indian Point	13.1	2.6
	Hudson Drive	14.3	2.4
	Smokey Mountain II	13.5	2.7
TACORA RESOURCES	Bond Street	16.3	2.2
	Cabot Drive	15.3	2.2
CBPP	Main Street	25.3	6.3
VALE	Community Centre	15.6	4.1
	Main Road	44.4	6.4
	Access Road	13.4	4.1
	Accommodation Building	43.3	4.4
CFI	Director Road	11.9	4.3
ATLANTIC MINERALS	Property Boundary	11.9	3.8

Observations in ug/m^3

Nitrogen Dioxide - 2018

Operator	Monitoring Location	Maximum 1-hour Concentration	Maximum 24-hour Concentration	Annual Concentration
Regulatory Limit (µg/m^3)		**400**	**200**	**100**
NAPS	St. John's	92.3	48.1	10.0
	Mt. Pearl	128.4	31.4	2.9
	Grand Falls-Windsor	51.0	7.0	1.8
	Corner Brook	53.5	16.3	5.1
	Burin	20.7	3.9	0.7
NALCOR	Butterpot Road	30.4	3.5	0.6
	Green Acres Road	41.4	8.4	0.9
	Indian Pond Drive	44.4	14.6	1.2
	Indian Pond Road	40.4	9.8	1.1
	Lawrence Pond Road	43.8	12.6	1.3
IOCC	Indian Point	78.3	31.1	4.3
	Hudson Drive	86.8	41.2	4.1
	Smokey Mountain II	72.3	37.9	2.8
VALE	Community Centre	16.2	5.5	2.3
	Main Road	24.2	12.6	4.4
	Access Road	42.3	10.9	1.4
	Crusher Building	119.5	62.8	8.6
	Accommodation Building	107.3	68.7	17.0
CFI	Director Road	115.3	7.9	0.8

Observations in ug/m^3

Ozone - 2018

Operator	Monitoring Location	Maximum 1-hour Concentration	Maximum 8-hour Concentration
Regulatory Limit (µg/m^3)		**160**	**87**
NAPS	St. John's	101.0	99.3
	Mt. Pearl	110.3	106.0
	Grand Falls-Windsor	95.6	92.5
	Corner Brook	118.1	114.9
	Burin	107.2	99.9
	Port aux Choix	91.9	83.4
IOCC	Hudson Drive	125.4	112.4

Observations in ug/m^3

Carbon Monoxide - 2018

Operator	Monitoring Location	Maximum 1-hour Concentration	Maximum 8-hour Concentration
Regulatory Limit (mg/m^3)		**35**	**15**
NAPS	St. John's	4.3	2.0
	Mt. Pearl	0.6	0.4
	Grand Falls-Windsor	0.9	0.7
	Corner Brook	0.6	0.3
	Burin	0.4	0.3

Observations in mg/m^3

PM_{10} - 2018

Operator	Monitoring Location	Maximum 24-hour Concentration
Regulatory Limit (µg/m^3)		**50**
NAPS	Burin	41.6

Observations in ug/m^3

Total Particulate Matter - 2018

Operator	Monitoring Location	Maximum 24-hour Concentration	Annual Concentration
Regulatory Limit (µg/m^3)		**120**	**60**
NALCOR	Green Acres Road	28.3	8.4
	Indian Pond Drive	39.0	12.8
	Indian Pond Road	39.2	12.8
	Lawrence Pond Road	31.3	10.4
	Holyrood Property Boundary	99.0	20.5
IOCC	Indian Point	71.6	7.5
	Hudson Drive	168.8	13.6
	Smokey Mountain II	136.0	8.0
TACORA RESOURCES	Bond Street	52.0 *	**
	Cabot Drive	58.5	8.3
CBPP	Main Street [1] (Hi-Vol)	110.6 *	**
	Main Street [1] (BAM)	40.5 *	**
	West Street	115.8 *	**
VALE	Port Site	484.6	8.0
CFI	Director Road	78.8 *	**
ATLANTIC MINERALS	Property Boundary	45.5 *	**

Observations in ug/m^3

* based on limited data

** insufficient data to calculate annual average

[1] Hi-Vol removed mid-year and replaced with BAM

Table of Contents

List of Tables

List of Figures

Disclaimer

Though all data presented in this report has been subjected to quality assurance and quality control procedures, the Department of Municipal Affairs and Environment does not warrant any data contained herein or the use of this data for other purposes. The Department accepts no liability for inaccurate data, or any misrepresentation or misuse of the data contained in this report.

All data presented herein may be subject to future revision.

1.0 Introduction

The ambient air quality in Newfoundland and Labrador is monitored through a joint effort between the Department of Municipal Affairs and Environment, and Environment and Climate Change Canada via the National Air Pollution Surveillance (NAPS) network. In 2018, the Department operated stations at six locations as part of the NAPS network. Additionally the major industrial operations in the province are required to monitor the air quality near their operations for select pollutants. The Department audits the operation of these industrial monitoring networks on a regular basis.

In general the air quality in the province is good as indicated by the levels recorded at the various monitors, and in 2018 there were no extended periods of diminished air quality resulting from the long range transport of pollutants. There were however, sporadic short-lived episodes in 2018 where the measured levels approached or exceeded the associated ambient standard owing to short lived long range transport and / or industrial emissions. Local emissions, such as those from vehicular traffic and woodstoves also impact air quality.

This report provides 2-year tabular summary information and 5-year graphical trends for each air quality monitor in Newfoundland and Labrador which were either operated or audited by the Department in 2018. All monitoring stations, including those operated by industrial operations, are required to meet minimum standards set out in the *National Air Pollution Surveillance (NAPS) Program Quality Assurance/Quality Control (QA/QC) Guidelines*, and those defined in the *Departmental Guidelines for Ambient Air Monitoring* (https://www.mae.gov.nl.ca/env_protection/science/gd_ppd_065.pdf). Additionally all data has gone through a data validation and quality assurance process to account for any anomalous readings or system malfunctions.

In this report, Section 2 provides an overview of the monitoring network in the province, a description of the pollutants being measured and their associated standard. Section 3 provides results from the monitors in the NAPS network; while Section 4 provides results from the monitoring networks operated at industrial facilities.

1.1 Definitions

The following definitions are used throughout this report:

AML	Atlantic Minerals Limited
AQHI	Air Quality Health Index
CBPP	Corner Brook Pulp and Paper
CFI	Canada Fluorspar Inc.
CO	Carbon Monoxide
IOCC	Iron Ore Company of Canada
mg/m^3	Milligrams per cubic metre
NALCOR	NALCOR Energy
NARL	North Atlantic Refining Limited
NAPS	National Air Pollution Surveillance
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
O_3	Ozone
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 microns
PM_{10}	Particulate Matter less than or equal to 10 microns
SO_2	Sulphur Dioxide
TPM	Total Particulate Matter
$\mu g/m^3$	Micrograms per cubic metre
VALE	VALE Newfoundland and Labrador

2.0 Monitoring Network

Five categories of pollutants are measured at the monitoring networks in the province, though not all networks monitor all pollutants. The monitored categories of pollutants are sulphur dioxide (SO_2); oxides of nitrogen (NO_x) (which includes nitric oxide (NO) and nitrogen dioxide (NO_2)); carbon monoxide (CO); particulate matter (PM) (which includes particles less or equal to than 2.5 microns ($PM_{2.5}$), particles less than or equal to 10 microns (PM_{10}) and total particulate matter (TPM)); and ozone (O_3). Volatile organic compounds, (VOCs) are also measured on a one-in-six day cycle at the NAPS station in St. John's, but the data is not included in this report.

2.1 Pollutants

2.1.1 Oxides of Nitrogen (NO_x)

In a combustion process, NO_x is produced through 3 mechanisms, namely thermal NO_x, fuel NO_x and prompt NO_x. Thermal NO_x is the primary source of NO_x and is formed as a high temperature dissociation and subsequent reaction of nitrogen (N_2) and oxygen (O_2). It is produced in the hottest part of the flame and its formation increases exponentially with the flame temperature. The control of thermal NO_x is generally achieved through reducing the flame temperature, reducing the residence time, or by operating under fuel rich conditions. Fuel NO_x is formed by the reaction of nitrogen compounds chemically bound in liquid or solid fuels with oxygen in the combustion air. In the combustion of such fuels, fuel NO_x can account for up to 50% of the total NO_x emissions. Prompt NO_x is formed from the rapid reaction of atmospheric nitrogen with hydrocarbon radicals, and typically under partially fuel-rich conditions. It can be reduced through combustion staging or by operating under highly oxidizing combustion conditions.

NO_2 is the primary component of concern in NO_x emissions. Generally between 5% and 10% of the NO_x emitted from the combustion of fuel is emitted as NO_2. The remainder is emitted as NO, which is subsequently converted to NO_2 in reactions with various oxidants and oxygen as the plume is transported downwind from the source. The rate of NO_2 formation varies with time of day, season, temperature, wind speed, solar radiation and the availability of oxidants to help drive the chemical reactions.

NO_2 is a reddish brown gas with a pungent odour, which upon reaction with other atmospheric compounds, becomes a major contributor to smog, acid rain, inhalable particulates and reduced visibility. At significant levels and exposure, inhalation may result in irritation and burning to the skin and eyes, nose and throat. Prolonged exposure may result in permanent lung damage.

2.1.2 Particulate Matter (PM)

Particulate matter is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets, and can be large and dark enough to be seen with the naked eye or so small that they can only be detected with an electron microscope. Many manmade and natural sources emit particulate matter directly while others emit gaseous pollutants that react in the atmosphere to form particulate matter.

The size of the particulate has important health considerations. Particulate matter less than or equal to 10 microns in diameter (PM_{10}) poses a health concern because it can be inhaled into and accumulate in the respiratory system. Particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$) is believed to pose the greatest health risks as it can lodge deeply into the lungs; a $PM_{2.5}$ particle is approximately $1/30^{th}$ the average width of a human hair. Typically these smaller particles are suspended in the air for long periods of time. Total Particulate Matter (TPM) is the term applied to any particle suspended in the atmosphere, but depending on the monitoring method, is typically limited to particulate matter less than 44 microns. Particulate larger than 10 microns is typically associated with a nuisance issue rather than a health issue.

2.1.3 Carbon Monoxide (CO)

Carbon monoxide is a colourless and odourless gas which reduces the delivery of oxygen to the body's organs. For those with heart disease, exposure to low doses can result in chest pain. For healthier people, exposure to higher levels affects the central nervous system.

Incomplete oxidation of fuel results in the formation of CO. In simplified terms, the generic stoichiometric combustion equation for complete combustion is:

$$HC + O_2 \rightarrow CO_2 + H_2O$$

However if sufficient oxygen (O_2) is not present to complete the combustion of the hydrocarbon fuel (HC), then the oxidation to carbon dioxide (CO_2) and water (H_2O) is not completed and hence CO is emitted.

2.1.4 Sulphur Dioxide (SO_2)

Levels of sulphur dioxide (SO_2) in ambient air are directly related to the concentration of sulphur in fuel and the quantity of fuel being combusted. Upon combustion, approximately 98% of the sulphur in the fuel will oxidize to form SO_2, with the remaining 2% producing sulphur trioxide (SO_3). The emitted SO_2 can also further oxidize to SO_3 and react with water to produce acid rain in the form of sulphuric acid (H_2SO_4).

Short-term exposures to SO_2 have shown adverse respiratory effects including bronchoconstriction and increased asthma symptoms.

2.1.5 Ozone (O_3)

Ground-level ozone is not directly emitted into the air, but rather is formed by chemical reactions between NO_x and volatile organic compounds (VOCs) in the presence of ultraviolet (UV) radiation. Ozone is a primary component of smog.

Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can also worsen bronchitis, emphysema, and asthma as well as reduce lung function and inflame the linings of the lungs, permanently scarring lung tissue under repeated exposure.

2.2 Ambient Air Standards

The maximum concentrations of air pollutants considered to be protective of the environment are defined in the *Air Pollution Control Regulations, 2004*. For the pollutants discussed in the report, the ambient air standards are detailed in Table 2.2.1.

TABLE 2.2.1 - AMBIENT AIR STANDARDS IN NEWFOUNDLAND AND LABRADOR

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)
Carbon Monoxide (CO)	1-hour	35000
	8-hour	15000
Nitrogen Dioxide (NO_2)	1-hour	400
	24-hour	200
	1-year	100
Ozone	1-hour	160
	8-hour	87
Particulate Matter < 2.5 microns ($PM_{2.5}$)	24-hour	25
	1-year	8.8 *
Particulate Matter < 10 microns (PM_{10})	24-hour	50
Particulate Matter Total (TPM)	24-hour	120
	1-year	60
Sulphur Dioxide (SO_2)	1-hour	900
	3-hour	600
	24-hour	300
	1-year	60

* The 3 year average of the annual average concentrations

2.3 Monitoring in Newfoundland and Labrador

Table 2.3.1 provides the listing of monitoring stations in the province that measured pollutants during 2018. Figure 2.0.1 provides a picture of a typical ambient air monitoring station.

TABLE 2.3.1 - POLLUTANT MONITORING IN NEWFOUNDLAND AND LABRADOR

OPERATOR	STATION LOCATION	POLLUTANT						
		SO_2	NO_X / NO_2	O_3	TPM	PM_{10}	$PM_{2.5}$	CO
MUNICIPAL AFFAIRS AND ENVIRONMENT + ENVIRONMENT AND CLIMATE CHANGE CANADA (NAPS)	Water Street, St. John's	✓	✓	✓			✓	✓
	Old Placentia Road, Mount Pearl	✓	✓	✓			✓	✓
	Macpherson Avenue, Corner Brook	✓	✓	✓			✓	✓
	Scott Avenue, Grand Falls-Windsor	✓	✓	✓			✓	✓
	Port aux Choix			✓				
	Burin	✓	✓	✓		✓	✓	✓
NALCOR ENERGY	Butterpot Road	✓	✓				✓	
	Green Acres Road	✓	✓		✓		✓	
	Indian Pond Drive	✓	✓		✓		✓	
	Indian Pond Road	✓	✓		✓		✓	
	Lawrence Pond Road	✓	✓		✓		✓	
	Property Boundary				✓		✓	
NORTH ATLANTIC REFINING LIMITED	Come by Chance	✓					✓	
	First Street, Arnold's Cove	✓					✓	
	Sunnyside	✓					✓	
	Property Boundary	✓					✓	
CORNER BROOK PULP AND PAPER	Main Street	✓			✓		✓	
	West Street				✓			

OPERATOR	STATION LOCATION	POLLUTANT						
		SO_2	NO_X / NO_2	O_3	TPM	PM_{10}	$PM_{2.5}$	CO
IRON ORE COMPANY OF CANADA	Hudson Drive	✓	✓	✓	✓		✓	
	Indian Point	✓	✓		✓		✓	
	Smokey Mountain II	✓	✓		✓		✓	
VALE NEWFOUNDLAND AND LABRADOR LIMITED	Voisey's Bay Camp		✓				✓	
	Voisey's Bay Process Area		✓					
	Voisey's Bay Port				✓			
	Long Harbour Community Centre		✓				✓	
	Long Harbour Main Road		✓				✓	
	Long Harbour Property Boundary		✓				✓	
TACORA RESOURCES	Bond Street				✓		✓	
	Cabot Drive				✓		✓	
CANADA FLUORSPAR INC.	Director Road		✓		✓		✓	
ATLANTIC MINERALS LIMITED	Property Boundary				✓		✓	

FIGURE 2.0.1 - TYPICAL AMBIENT AIR MONITORING STATION

NAPS monitoring station in Mt. Pearl

2.4 Air Quality Health Index (AQHI)

The Air Quality Health Index (AQHI) is a numerical scale designed to help an individual understand what the air quality means to their health. Ranging from 1 to 10+, the higher the number on the scale the greater the health risk associated with air quality. Specifically the AQHI health messages are defined in Table 2.4.1.

The AQHI is calculated on an hourly basis and considers the combined relative health risks of O_3, $PM_{2.5}$ and NO_2. Data for the calculation of AQHI is currently being collected at the NAPS stations and at the Smokey Mountain station operated by the Iron Ore Company of Canada. The hourly AQHI is published to the Environment and Climate Change Canada weather office website.
http://weather.gc.ca/airquality/pages/provincial_summary/nl_e.html

TABLE 2.4.1 - AQHI HEALTH MESSAGES

AQHI READING	HEALTH RISK LEVEL	HEALTH MESSAGES	
		GENERAL POPULATION	AT RISK POPULATION
1-3	LOW	Ideal air quality for outdoor activities.	Enjoy your usual outdoor activities.
4-6	MODERATE	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.
7-10	HIGH	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.
10+	VERY HIGH	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.

2.5 Data Validity and Acceptability

All air monitoring data monitored in both the NAPS network and the industrial monitoring network undergoes a quality assurance and quality control procedure before being published. This procedure ensures that any anomalous readings or questionable data is not incorporated into the published dataset. Elements of this procedure account for:

- Routine calibration and auditing of the analyzers
- Zero correction of the baseline drift and noise
- Analyzer "Status Flag" activation
- Shelter temperature analysis
- Statistical rendering of outliers

Further details on the quality assurance and quality control procedures can be found in the Departmental *Guidelines for Ambient Air Monitoring (GD-PPD-065)* (https://www.mae.gov.nl.ca/env_protection/science/gd_ppd_065.pdf) and in the *National Air Pollution Surveillance (NAPS) Program Quality Assurance/Quality Control (QA/QC) Guidelines*.

3.0 National Air Pollution Surveillance (NAPS) Network

The NAPS network in the province is primarily established to monitor the air quality in urbanized settings and in neighbourhoods away from the influences of industrial operations. In 2018 there were five sites operational with a complete suite monitoring (SO_2, $PM_{2.5}$ NO_x / NO_2, CO and O_3), with the St. John's station additionally measuring VOCs and the Burin station also measuring PM_{10}. The five NAPS stations provide the data necessary to calculate the hourly AQHI. A sixth NAPS station monitors O_3 only.

The five sites with a complete suite monitoring were located in St. John's on Water Street, in Mt. Pearl on Old Placentia Road, in Grand Falls-Windsor on Scott Avenue, in Corner Brook on Macpherson Avenue and in Burin at the Highway Depot. The station which monitored O_3 only was located at the Town Depot in Port aux Choix.

The maps identifying the location of the NAPS stations in the St. John's and Mt. Pearl are presented in Figures 3.0.1 and 3.0.2, while the location of the Grand Falls Windsor station is presented in Figure 3.0.3. The location of the Corner Brook station is presented in Figure 3.0.4 while Figure 3.0.5 presents the location of the Port aux Choix Station. The location of the Burin station is presented in Figure 3.0.6.

FIGURE 3.0.1 - NAPS MONITORING STATION IN ST. JOHN'S

FIGURE 3.0.2 - NAPS MONITORING STATION IN MOUNT PEARL

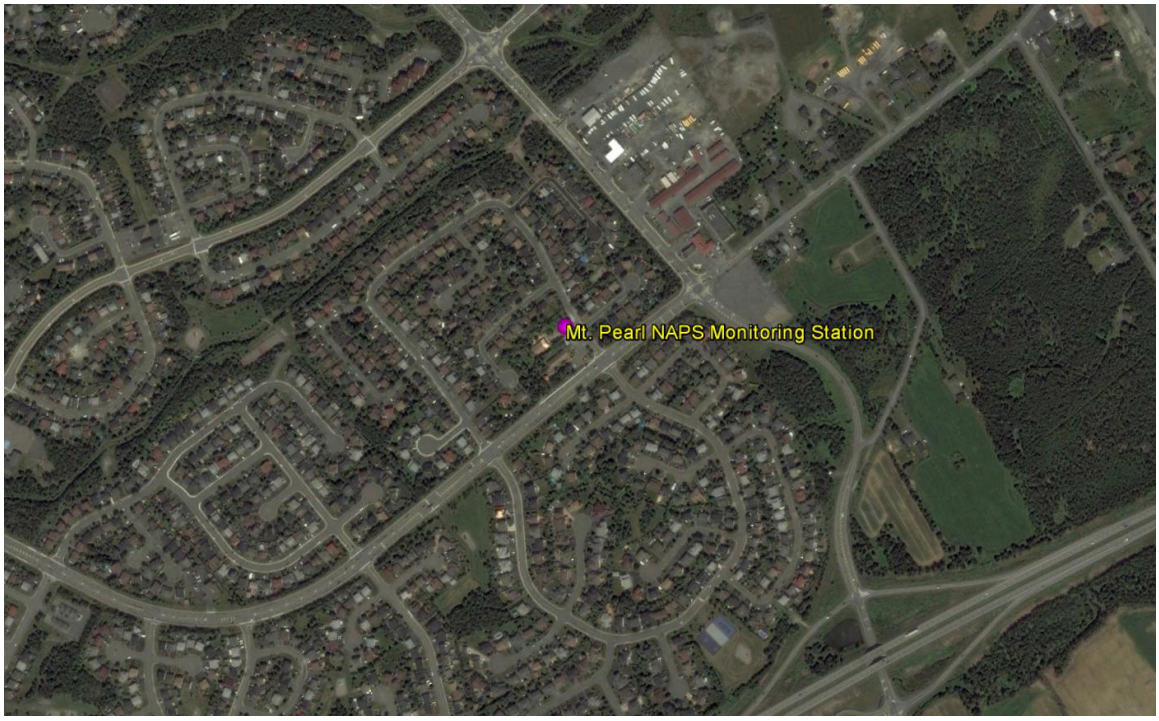


FIGURE 3.0.3 - NAPS MONITORING STATION IN GRAND FALLS-WINDSOR

FIGURE 3.0.4 - NAPS MONITORING STATION IN CORNER BROOK

FIGURE 3.0.5 - NAPS MONITORING STATION IN PORT AUX CHOIX

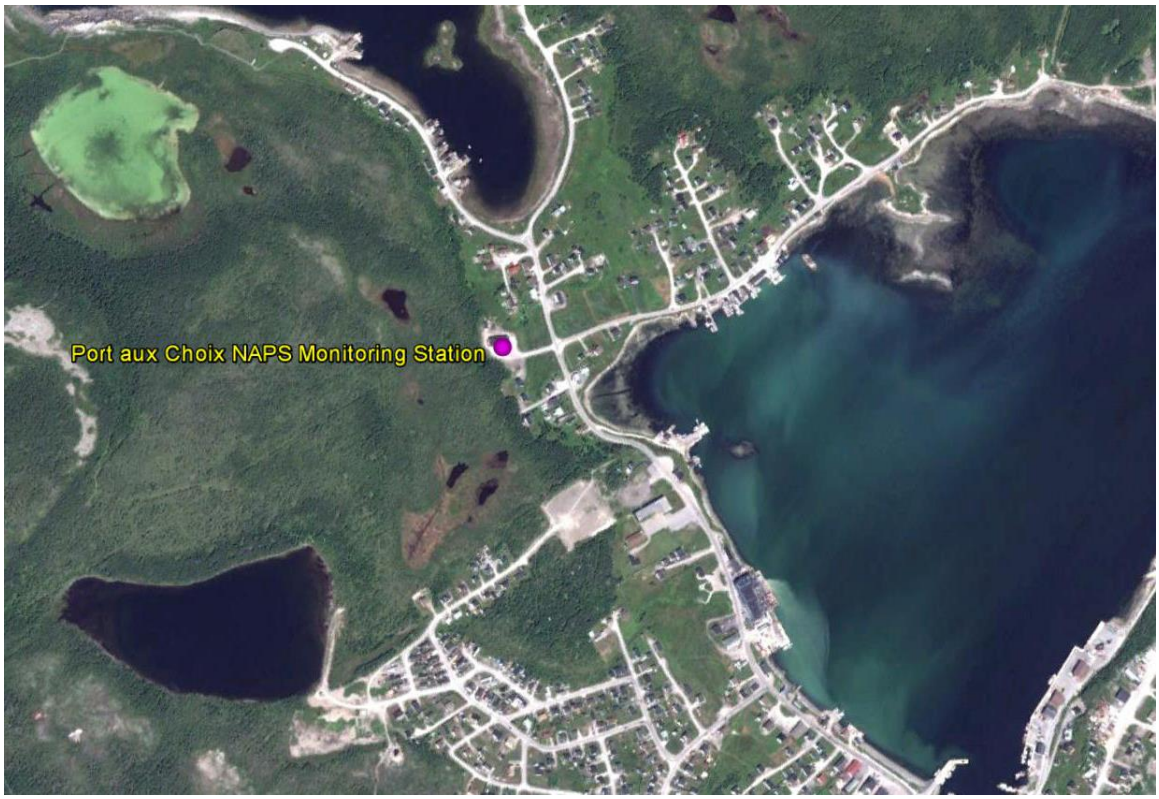
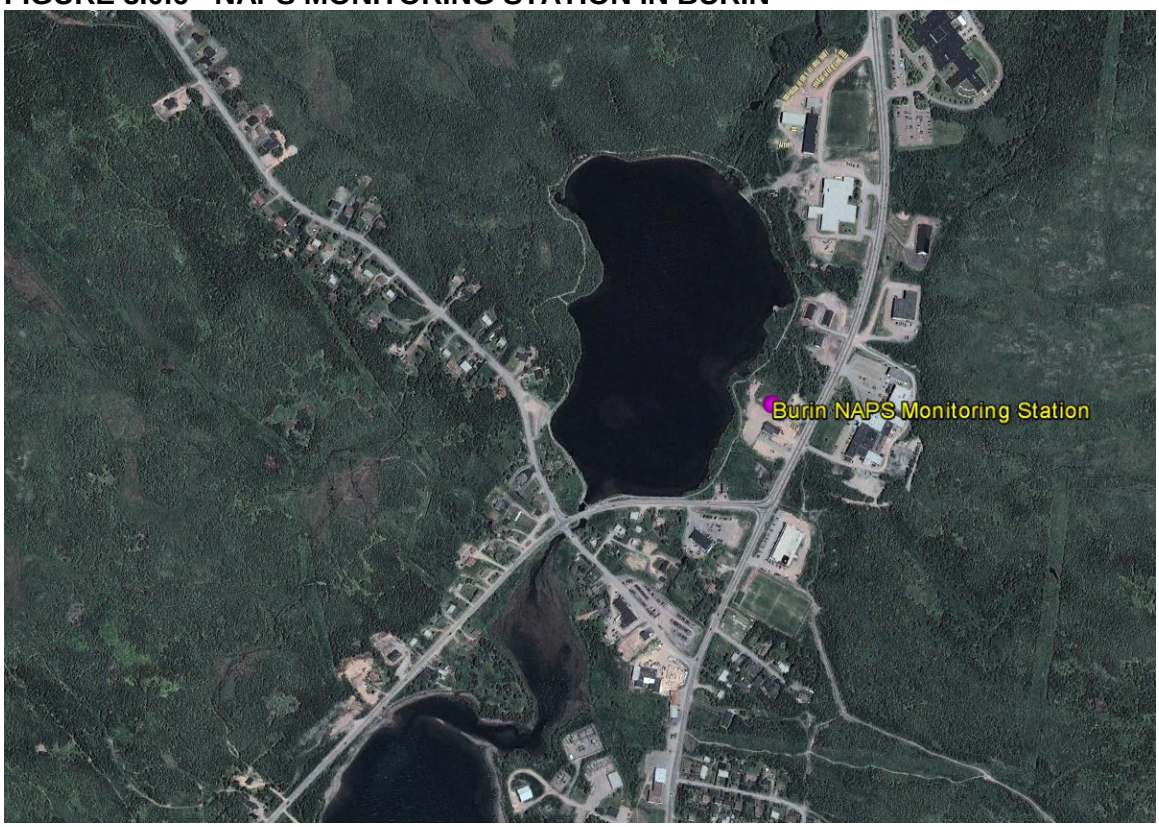


FIGURE 3.0.6 - NAPS MONITORING STATION IN BURIN



3.1 St. John's

The St. John's NAPS monitoring station is located on Water Street near the Convention Centre and monitors the ambient levels of SO_2, NO_x / NO_2, CO, O_3 and $PM_{2.5}$ on a continuous basis. For SO_2, NO_x / NO_2, $PM_{2.5}$ and CO, the ambient air criteria were not exceeded on any occasion in 2018. For O_3, the 8-hour standard was exceeded seven times in 2018, which included three times in January and four times in April.

Tables 3.1.1 through 3.1.5 present the summary information on the level of air contaminants measured at the St. John's NAPS station, while Figures 3.1.1 through 3.1.5 provide a graphical representation of the annual trend of each pollutant. Table 3.1.6 provides a summary of the AQHI while Figure 3.1.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2018.

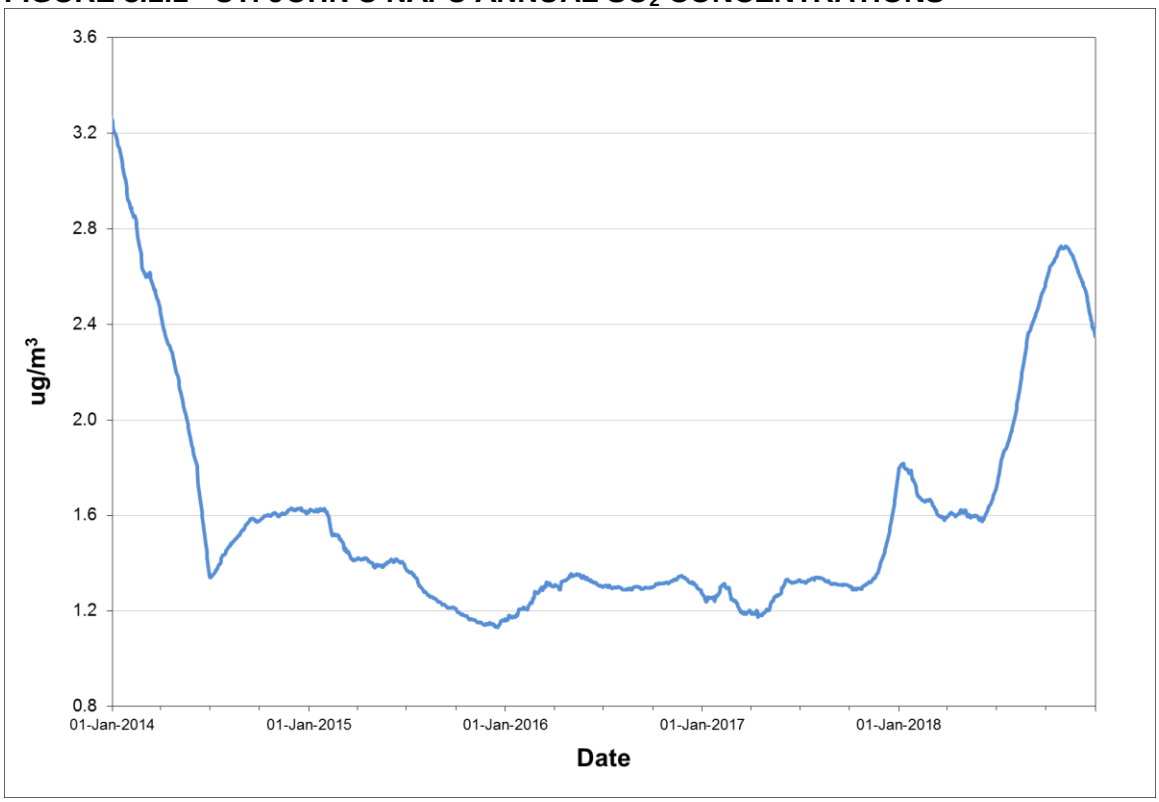
Volatile organic compounds, (VOCs) are also measured on a one-in-six day cycle at the monitoring station however the data is not included in this report.

TABLE 3.1.1 - ST. JOHN'S NAPS SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	744	100.0%	2.0	39.3	21.6	9.2	0	0	0
	February	672	100.0%	2.0	18.1	16.4	7.9	0	0	0
	March	734	98.7%	1.9	13.5	8.8	4.0	0	0	0
	April	720	100.0%	1.7	9.5	7.0	3.9	0	0	0
	May	738	99.2%	2.4	11.0	7.4	6.2	0	0	0
	June	659	91.5%	1.2	13.3	8.6	5.9	0	0	0
	July	742	99.7%	1.1	27.0	14.1	4.0	0	0	0
	August	744	100.0%	0.7	4.5	2.4	1.3	0	0	0
	September	704	97.8%	0.5	5.7	2.6	0.9	0	0	0
	October	700	94.1%	0.8	5.7	3.8	2.2	0	0	0
	November	607	84.3%	2.3	10.9	6.4	4.0	0	0	0
	December	744	100.0%	4.9	15.7	12.0	7.8	0	0	0
Annual		8508	97.1%	1.8	39.3	21.6	9.2	0	0	0
2018	January	742	99.7%	1.3	12.0	7.6	3.9	0	0	0
	February	659	98.1%	1.1	12.4	7.5	2.9	0	0	0
	March	744	100.0%	1.1	19.1	14.0	5.8	0	0	0
	April	720	100.0%	1.9	8.4	7.2	3.7	0	0	0
	May	738	99.2%	2.0	8.1	6.9	3.3	0	0	0
	June	720	100.0%	2.8	22.3	11.7	5.5	0	0	0
	July	706	94.9%	4.2	12.4	10.8	6.9	0	0	0
	August	712	95.7%	5.3	9.3	8.2	6.6	0	0	0
	September	629	87.4%	3.0	9.7	9.1	5.1	0	0	0
	October	678	91.1%	2.6	8.4	6.1	4.7	0	0	0
	November	716	99.4%	1.1	9.1	7.1	5.2	0	0	0
	December	668	89.8%	1.8	27.6	23.1	9.1	0	0	0
Annual		8432	96.3%	2.3	27.6	23.1	9.1	0	0	0

Observations in ug/m^3

FIGURE 3.1.1 - ST. JOHN'S NAPS ANNUAL SO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 3.1.2 - ST. JOHN'S NAPS $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	6.2	11.7	0
	February	28	100.0%	4.7	10.8	0
	March	16	51.6%	7.2	12.2	0
	April	3	10.0%	7.5	7.8	0
	May	31	100.0%	4.7	8.0	0
	June	30	100.0%	5.3	10.2	0
	July	31	100.0%	5.2	11.5	0
	August	31	100.0%	7.7	21.5	0
	September	28	93.3%	6.2	13.2	0
	October	31	100.0%	5.7	17.3	0
	November	30	100.0%	4.8	8.7	0
	December	31	100.0%	4.2	8.0	0
Annual		321	87.9%	5.6	21.5	0
2018	January	31	100.0%	4.3	9.0	0
	February	26	92.9%	3.7	8.6	0
	March	31	100.0%	7.1	12.6	0
	April	24	80.0%	5.4	9.5	0
	May	30	96.8%	2.9	7.4	0
	June	26	86.7%	4.2	9.9	0
	July	29	93.5%	5.4	10.4	0
	August	21	67.7%	6.3	15.4	0
	September	30	100.0%	3.1	6.6	0
	October	31	100.0%	4.8	9.0	0
	November	29	96.7%	3.4	9.8	0
	December	28	90.3%	2.8	7.0	0
Annual		336	92.1%	4.4	15.4	0

Observations in ug/m^3

FIGURE 3.1.2 - ST. JOHN'S NAPS ANNUAL $PM_{2.5}$ CONCENTRATIONS

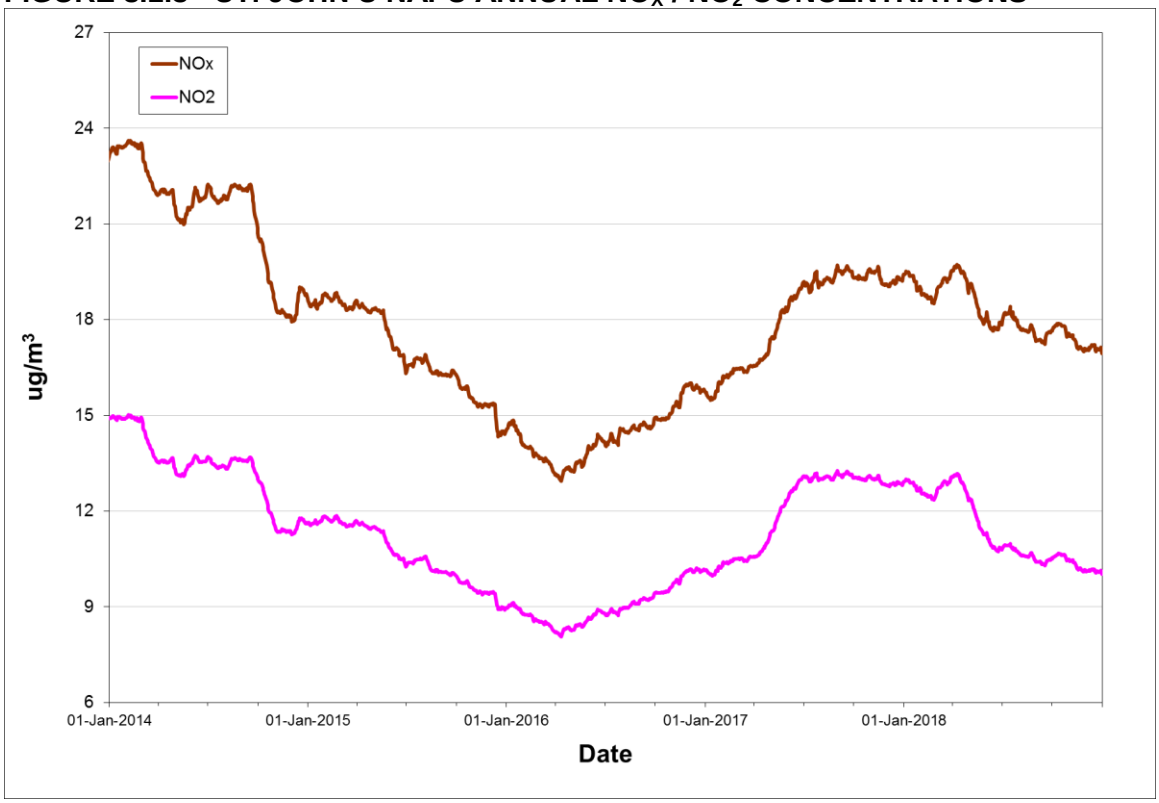
Rolling annual average of daily concentrations

TABLE 3.1.3 - ST. JOHN'S NAPS NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	743	99.9%	19.4	13.1	385.8	88.2	79.6	38.0	0	0
	February	672	100.0%	16.9	11.8	299.9	78.0	50.6	35.6	0	0
	March	743	99.9%	11.0	8.1	90.4	53.1	33.1	25.6	0	0
	April	719	99.9%	25.4	19.5	266.9	72.2	109.5	47.3	0	0
	May	741	99.6%	31.2	23.6	158.6	60.6	51.7	33.4	0	0
	June	719	99.9%	27.3	18.4	147.3	60.7	77.4	45.5	0	0
	July	741	99.6%	20.1	9.5	415.0	64.6	86.9	33.1	0	0
	August	744	100.0%	19.0	11.1	199.4	55.6	50.3	27.1	0	0
	September	703	97.6%	11.5	7.5	124.9	47.3	25.1	17.9	0	0
	October	739	99.3%	16.2	9.5	189.8	63.3	52.8	30.4	0	0
	November	720	100.0%	17.5	11.4	156.1	66.4	49.5	31.8	0	0
	December	744	100.0%	17.3	11.4	251.3	79.1	67.6	36.2	0	0
Annual		8728	99.6%	19.4	12.9	415.0	88.2	109.5	47.3	0	0
2018	January	743	99.9%	14.3	10.3	109.5	67.9	36.3	26.4	0	0
	February	659	98.1%	13.3	9.0	191.9	68.6	34.8	21.2	0	0
	March	744	100.0%	20.9	15.3	142.2	81.6	45.6	33.6	0	0
	April	720	100.0%	16.7	10.3	150.7	82.7	43.8	26.6	0	0
	May	740	99.5%	21.5	11.0	303.9	79.8	115.1	48.1	0	0
	June	720	100.0%	25.1	12.9	259.7	92.3	105.9	45.4	0	0
	July	705	94.8%	19.9	8.2	256.9	59.1	71.7	21.9	0	0
	August	712	95.7%	13.3	7.5	180.6	52.4	45.3	21.0	0	0
	September	720	100.0%	15.5	8.9	291.7	60.7	101.8	32.3	0	0
	October	743	99.9%	15.1	9.3	168.2	49.8	46.7	19.1	0	0
	November	720	100.0%	11.8	7.5	114.0	64.6	42.0	27.9	0	0
	December	744	100.0%	15.5	9.9	251.7	71.8	50.0	27.6	0	0
Annual		8670	99.0%	16.9	10.0	303.9	92.3	115.1	48.1	0	0

Observations in ug/m^3

FIGURE 3.1.3 - ST. JOHN'S NAPS ANNUAL NO_X / NO_2 CONCENTRATIONS



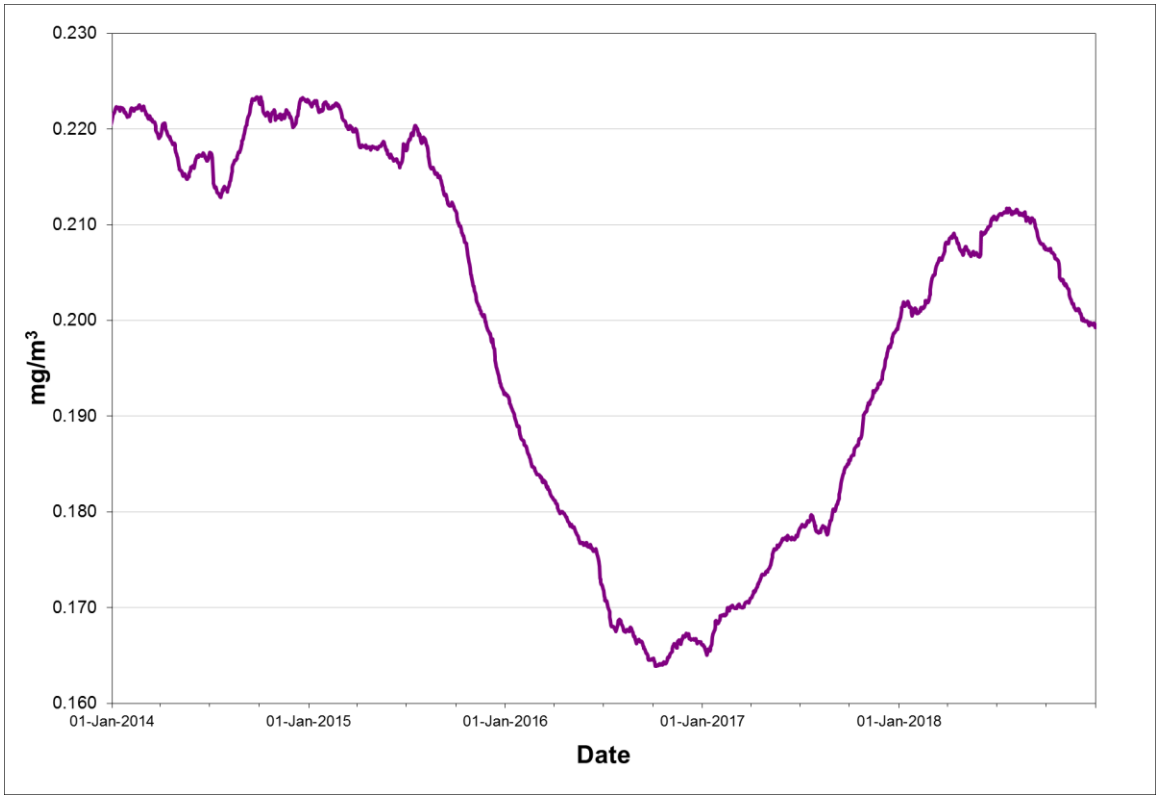
Rolling annual average of hourly concentrations

TABLE 3.1.4 - ST. JOHN'S NAPS CO SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>35)	Regulatory Exceedances 8-Hour (>15)
2017	January	743	99.9%	0.2	1.0	0.5	0	0
	February	672	100.0%	0.2	1.3	0.4	0	0
	March	744	100.0%	0.2	0.5	0.4	0	0
	April	719	99.9%	0.2	0.8	0.5	0	0
	May	738	99.2%	0.2	0.5	0.4	0	0
	June	720	100.0%	0.2	0.6	0.3	0	0
	July	743	99.9%	0.2	0.5	0.3	0	0
	August	744	100.0%	0.2	0.7	0.4	0	0
	September	704	97.8%	0.2	1.0	0.5	0	0
	October	743	99.9%	0.2	0.9	0.7	0	0
	November	720	100.0%	0.2	0.7	0.5	0	0
	December	744	100.0%	0.2	0.9	0.6	0	0
Annual		8734	99.7%	0.2	1.3	0.7	0	0
2018	January	743	99.9%	0.2	0.6	0.4	0	0
	February	659	98.1%	0.2	1.0	0.4	0	0
	March	744	100.0%	0.2	0.8	0.4	0	0
	April	718	99.7%	0.2	1.0	0.5	0	0
	May	740	99.5%	0.2	1.0	0.4	0	0
	June	720	100.0%	0.2	4.3	2.0	0	0
	July	706	94.9%	0.2	1.3	0.6	0	0
	August	712	95.7%	0.2	1.1	0.5	0	0
	September	720	100.0%	0.2	0.4	0.3	0	0
	October	731	98.3%	0.2	0.6	0.3	0	0
	November	720	100.0%	0.2	0.6	0.4	0	0
	December	744	100.0%	0.2	0.9	0.4	0	0
Annual		8657	98.8%	0.2	4.3	2.0	0	0

Observations in mg/m^3

FIGURE 3.1.4 - ST. JOHN'S NAPS ANNUAL CO CONCENTRATIONS



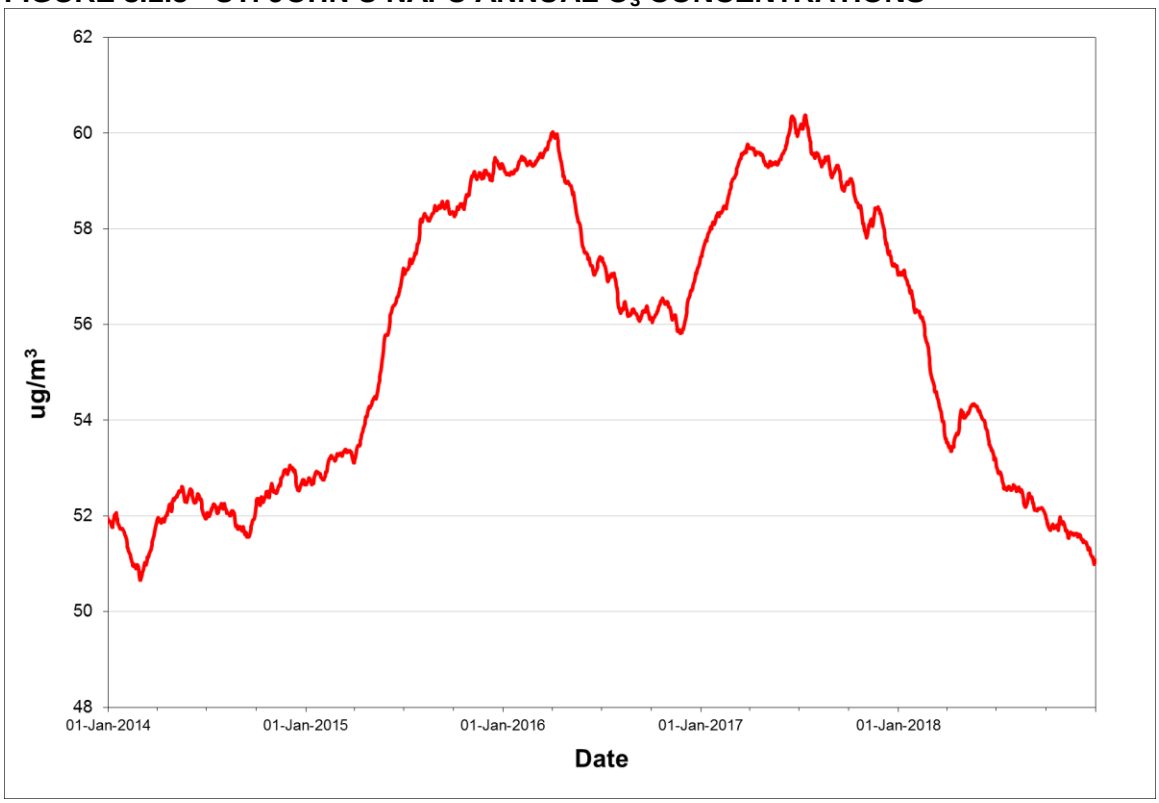
Rolling annual average of hourly concentrations

TABLE 3.1.5 - ST. JOHN'S NAPS O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	742	99.7%	72.3	98.8	92.9	0	8
	February	672	100.0%	75.1	105.2	102.2	0	8
	March	744	100.0%	79.7	102.3	99.2	0	23
	April	251	34.9%	71.8	96.5	94.3	0	2
	May	0	0.0%					
	June	183	25.4%	48.4	88.3	71.2	0	0
	July	742	99.7%	40.8	93.0	77.6	0	0
	August	744	100.0%	40.0	104.7	73.6	0	0
	September	704	97.8%	41.9	78.3	70.1	0	0
	October	742	99.7%	44.2	77.4	74.2	0	0
	November	720	100.0%	55.6	82.6	76.9	0	0
	December	744	100.0%	61.7	88.2	80.9	0	0
Annual		6988	79.8%	57.0	105.2	102.2	0	41
2018	January	716	96.2%	65.8	99.1	96.4	0	3
	February	659	98.1%	63.5	88.6	78.4	0	0
	March	744	100.0%	64.4	88.9	82.1	0	0
	April	719	99.9%	66.3	101.0	99.3	0	4
	May	739	99.3%	54.7	91.9	76.7	0	0
	June	718	99.7%	40.0	82.1	62.6	0	0
	July	704	94.6%	33.0	78.5	64.1	0	0
	August	712	95.7%	38.3	74.5	61.3	0	0
	September	720	100.0%	36.5	63.0	58.0	0	0
	October	743	99.9%	42.0	71.6	68.7	0	0
	November	720	100.0%	52.5	77.7	70.3	0	0
	December	744	100.0%	56.1	79.8	77.1	0	0
Annual		8638	98.6%	51.1	101.0	99.3	0	7

Observations in ug/m^3

FIGURE 3.1.5 - ST. JOHN'S NAPS ANNUAL O_3 CONCENTRATIONS

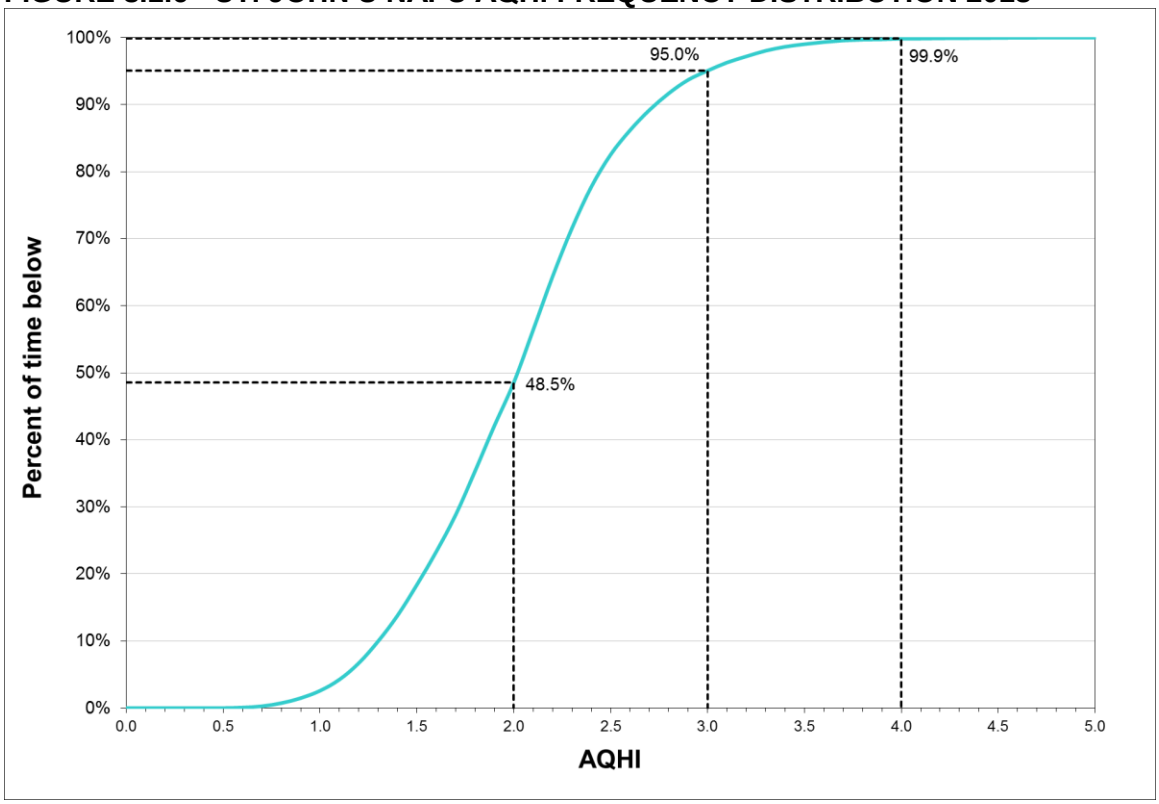


Rolling annual average of hourly concentrations

TABLE 3.1.6 - ST. JOHN'S NAPS AQHI SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 3-Hour
2017	January	737	99.1%	2.8	5.0
	February	669	99.6%	2.7	5.4
	March	393	52.8%	2.8	3.8
	April	0	0.0%		
	May	0	0.0%		
	June	180	25.0%	2.0	3.6
	July	737	99.1%	1.7	3.9
	August	744	100.0%	1.9	3.5
	September	701	97.4%	1.7	3.3
	October	735	98.8%	1.9	3.6
	November	720	100.0%	2.2	3.4
	December	742	99.7%	2.3	4.3
Annual		6358	72.6%	2.2	5.4
2018	January	715	96.1%	2.4	4.0
	February	644	95.8%	2.3	3.7
	March	744	100.0%	2.7	4.6
	April	592	82.2%	2.5	4.2
	May	718	96.5%	2.1	4.6
	June	625	86.8%	1.8	5.1
	July	697	93.7%	1.5	3.5
	August	538	72.3%	1.7	2.9
	September	696	96.7%	1.5	3.0
	October	728	97.8%	1.8	2.7
	November	692	96.1%	1.9	3.8
	December	665	89.4%	2.1	3.7
Annual		8054	91.9%	2.0	5.1

FIGURE 3.1.6 - ST. JOHN'S NAPS AQHI FREQUENCY DISTRIBUTION 2018



e.g. 95.0% of the time the AQHI recorded was below 3.0

3.2 Mt. Pearl

The Mt. Pearl NAPS monitoring station is located on Old Placentia Road near Admiralty House and monitors the ambient levels of SO_2, NO_x / NO_2, CO, O_3 and $PM_{2.5}$ on a continuous basis. For SO_2, NO_x / NO_2, $PM_{2.5}$ and CO, the ambient air criteria were not exceeded on any occasion in 2018. For O_3, the 8-hour ambient standard was exceeded on seven occasions in 2018; twice in March, five times in April.

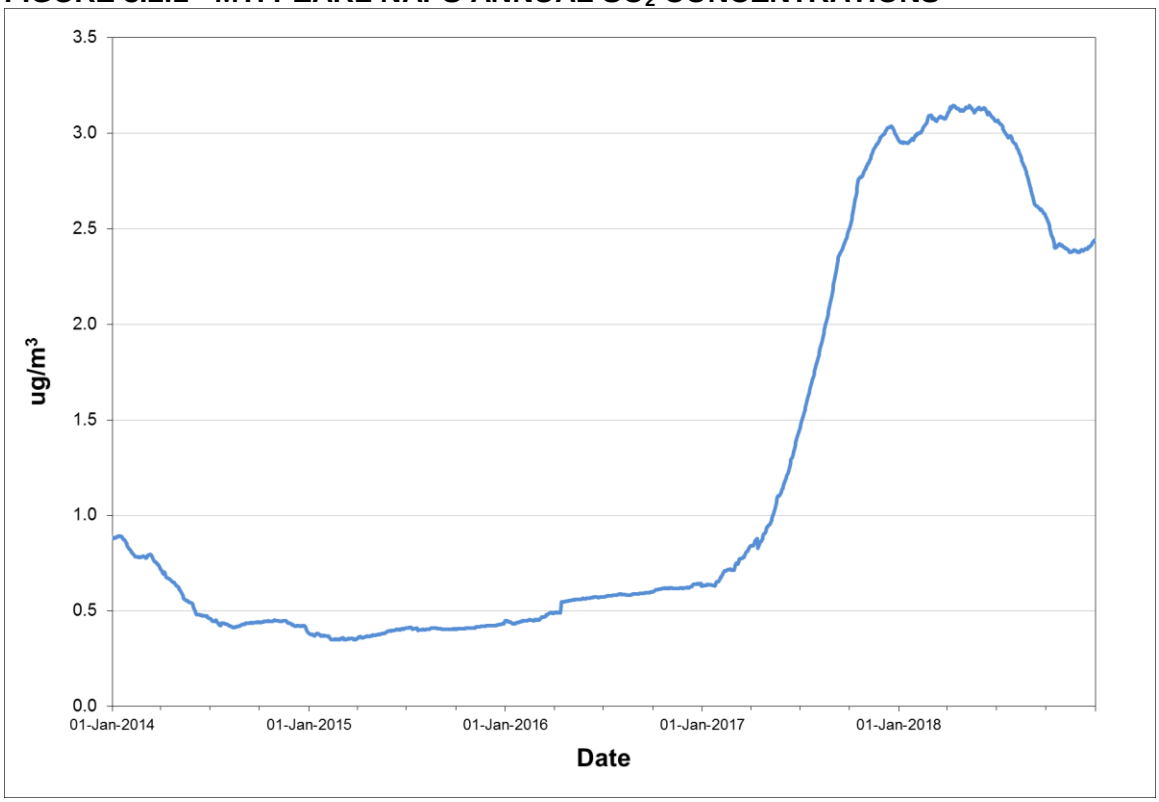
Tables 3.2.1 through 3.2.5 present the summary information on the level of air contaminants measured at the Mt. Pearl NAPS station, while Figures 3.2.1 through 3.2.5 provide a graphical representation of the annual trend of each pollutant. Table 3.2.6 provides a summary of the AQHI while Figure 3.2.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2018.

TABLE 3.2.1 - MT. PEARL NAPS SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	179	24.1%	2.2	10.4	6.2	4.3	0	0	0
	February	668	99.4%	1.3	9.8	4.9	2.8	0	0	0
	March	726	97.6%	2.4	13.5	8.6	5.4	0	0	0
	April	719	99.9%	2.3	14.8	10.6	4.9	0	0	0
	May	744	100.0%	2.8	13.0	11.7	5.5	0	0	0
	June	720	100.0%	3.6	15.4	7.9	5.2	0	0	0
	July	730	98.1%	4.0	7.8	7.4	5.1	0	0	0
	August	744	100.0%	4.7	7.3	7.2	6.4	0	0	0
	September	720	100.0%	3.7	7.8	7.6	6.9	0	0	0
	October	740	99.5%	3.9	12.4	9.6	7.4	0	0	0
	November	720	100.0%	2.3	9.3	6.4	3.4	0	0	0
	December	744	100.0%	1.5	11.3	8.1	3.2	0	0	0
Annual		8154	93.1%	3.0	15.4	11.7	7.4	0	0	0
2018	January	734	98.7%	3.1	14.0	10.9	5.2	0	0	0
	February	660	98.2%	2.7	10.6	9.2	5.7	0	0	0
	March	742	99.7%	2.4	10.7	8.3	5.1	0	0	0
	April	685	95.1%	2.6	17.3	11.6	6.7	0	0	0
	May	728	97.8%	2.9	13.1	12.0	6.6	0	0	0
	June	578	80.3%	2.8	9.3	8.1	4.1	0	0	0
	July	742	99.7%	2.9	9.3	8.5	5.5	0	0	0
	August	742	99.7%	2.0	8.2	6.1	3.7	0	0	0
	September	720	100.0%	1.8	17.0	12.0	4.5	0	0	0
	October	744	100.0%	2.1	12.1	8.2	3.8	0	0	0
	November	720	100.0%	1.9	20.6	11.6	4.0	0	0	0
	December	744	100.0%	2.2	12.8	9.1	4.0	0	0	0
Annual		8539	97.5%	2.4	20.6	12.0	6.7	0	0	0

Observations in ug/m^3

FIGURE 3.2.1 - MT. PEARL NAPS ANNUAL SO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 3.2.2 - MT. PEARL NAPS $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	6.7	21.0	0
	February	27	96.4%	5.3	8.4	0
	March	31	100.0%	5.6	15.3	0
	April	28	93.3%	5.1	12.6	0
	May	31	100.0%	3.8	7.0	0
	June	25	83.3%	2.7	4.9	0
	July	31	100.0%	3.2	6.6	0
	August	31	100.0%	3.9	12.7	0
	September	30	100.0%	3.5	9.5	0
	October	31	100.0%	3.6	10.6	0
	November	30	100.0%	5.0	9.2	0
	December	31	100.0%	5.5	11.0	0
Annual		357	97.8%	4.5	21.0	0
2018	January	31	100.0%	6.1	12.4	0
	February	27	96.4%	6.2	12.9	0
	March	31	100.0%	5.0	8.2	0
	April	30	100.0%	3.9	9.2	0
	May	31	100.0%	3.5	5.9	0
	June	27	90.0%	3.4	5.3	0
	July	27	87.1%	3.1	7.3	0
	August	31	100.0%	4.2	13.3	0
	September	29	96.7%	4.0	8.8	0
	October	31	100.0%	6.2	10.2	0
	November	30	100.0%	6.7	10.1	0
	December	31	100.0%	6.5	9.8	0
Annual		356	97.5%	4.9	13.3	0

Observations in ug/m^3

FIGURE 3.2.2 - MT. PEARL NAPS ANNUAL $PM_{2.5}$ CONCENTRATIONS

Rolling annual average of daily concentrations

TABLE 3.2.3 - MT. PEARL NAPS NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	743	99.9%	6.7	5.1	101.4	61.4	23.3	18.2	0	0
	February	672	100.0%	5.4	3.5	42.6	37.9	12.7	10.1	0	0
	March	736	98.9%	4.2	2.6	64.1	40.2	14.4	10.4	0	0
	April	719	99.9%	4.2	2.9	31.4	29.3	8.0	6.5	0	0
	May	744	100.0%	4.1	2.4	27.0	25.3	8.2	6.5	0	0
	June	720	100.0%	3.6	2.1	40.6	37.6	10.4	7.1	0	0
	July	730	98.1%	3.6	1.9	24.7	16.5	7.6	5.0	0	0
	August	744	100.0%	3.6	1.8	39.6	15.9	10.1	5.9	0	0
	September	720	100.0%	3.8	1.9	19.6	14.2	6.7	4.3	0	0
	October	742	99.7%	6.1	4.1	77.0	39.6	25.2	16.3	0	0
	November	720	100.0%	5.2	3.2	45.6	36.8	12.3	10.1	0	0
	December	744	100.0%	5.9	3.7	53.7	39.2	11.9	8.7	0	0
Annual		8734	99.7%	4.7	2.9	101.4	61.4	25.2	18.2	0	0
2018	January	738	99.2%	4.3	2.5	32.9	30.3	9.2	7.6	0	0
	February	660	98.2%	2.6	1.5	32.7	18.4	6.6	4.3	0	0
	March	744	100.0%	2.7	1.5	17.2	12.2	5.4	3.6	0	0
	April	684	95.0%	4.4	2.4	37.6	24.5	7.1	5.0	0	0
	May	732	98.4%	5.4	2.2	17.7	11.4	9.8	5.0	0	0
	June	586	81.4%	4.6	2.3	20.5	13.3	8.1	4.4	0	0
	July	719	96.6%	4.5	2.0	27.2	17.7	7.8	3.9	0	0
	August	742	99.7%	4.6	2.0	12.6	8.9	7.8	5.4	0	0
	September	719	99.9%	5.7	2.4	128.3	36.1	23.2	6.5	0	0
	October	738	99.2%	10.2	4.1	218.2	66.4	42.3	11.8	0	0
	November	716	99.4%	9.6	4.8	189.0	128.4	41.3	31.4	0	0
	December	744	100.0%	9.9	7.0	119.8	86.6	29.5	22.0	0	0
Annual		8522	97.3%	5.8	2.9	218.2	128.4	42.3	31.4	0	0

Observations in ug/m^3

FIGURE 3.2.3 - MT. PEARL NAPS ANNUAL NO_X / NO_2 CONCENTRATIONS

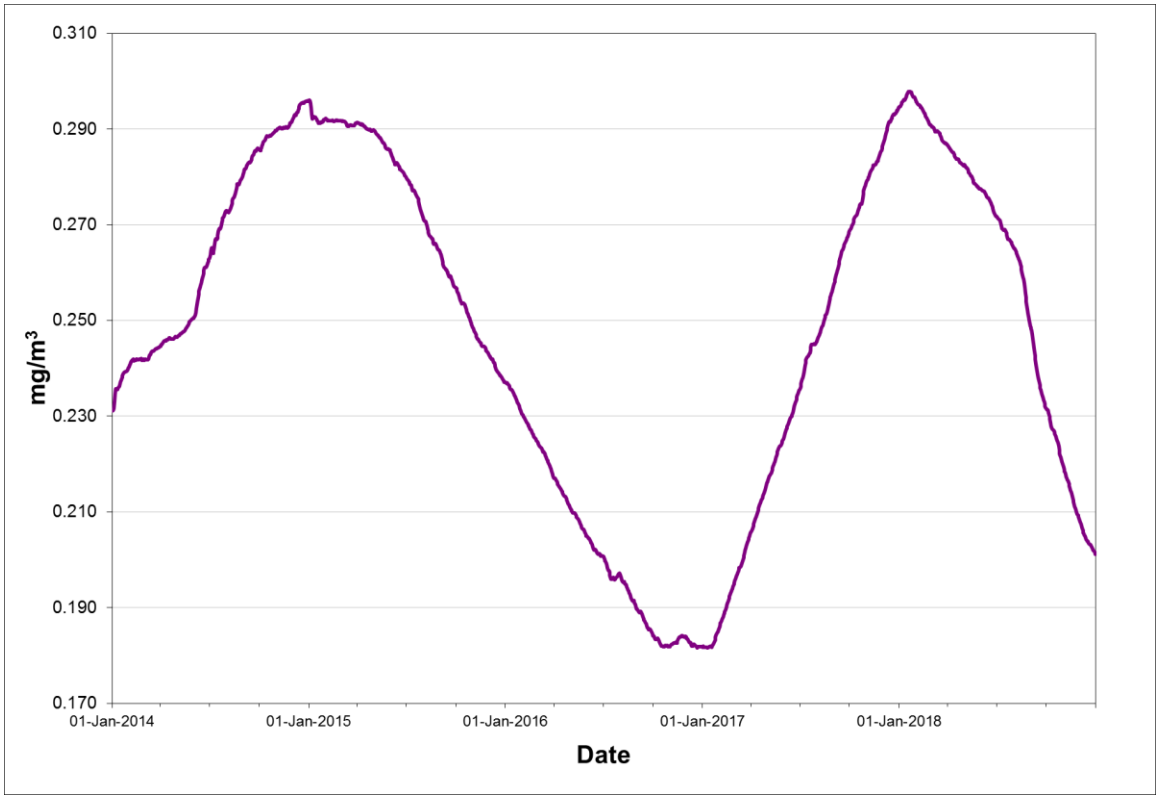
Rolling annual average of hourly concentrations

TABLE 3.2.4 - MT. PEARL NAPS CO SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>35)	Regulatory Exceedances 8-Hour (>15)
2017	January	743	99.9%	0.2	1.6	0.4	0	0
	February	672	100.0%	0.3	0.5	0.4	0	0
	March	734	98.7%	0.3	0.7	0.4	0	0
	April	719	99.9%	0.3	0.4	0.4	0	0
	May	744	100.0%	0.3	0.4	0.4	0	0
	June	720	100.0%	0.3	0.4	0.4	0	0
	July	731	98.3%	0.3	0.5	0.5	0	0
	August	744	100.0%	0.4	0.7	0.5	0	0
	September	720	100.0%	0.3	0.5	0.4	0	0
	October	742	99.7%	0.3	0.8	0.6	0	0
	November	720	100.0%	0.3	0.7	0.5	0	0
	December	717	96.4%	0.2	0.8	0.5	0	0
Annual		8706	99.4%	0.3	1.6	0.6	0	0
2018	January	738	99.2%	0.2	0.6	0.3	0	0
	February	655	97.5%	0.2	0.5	0.3	0	0
	March	744	100.0%	0.2	0.5	0.4	0	0
	April	687	95.4%	0.2	0.4	0.3	0	0
	May	732	98.4%	0.2	0.4	0.3	0	0
	June	586	81.4%	0.2	0.4	0.3	0	0
	July	393	52.8%	0.3	0.4	0.4	0	0
	August	396	53.2%	0.2	0.3	0.3	0	0
	September	719	99.9%	0.1	0.5	0.3	0	0
	October	741	99.6%	0.2	0.5	0.3	0	0
	November	720	100.0%	0.2	0.5	0.3	0	0
	December	744	100.0%	0.2	0.6	0.3	0	0
Annual		7855	89.7%	0.2	0.6	0.4	0	0

Observations in mg/m^3

FIGURE 3.2.4 - MT. PEARL NAPS ANNUAL CO CONCENTRATIONS



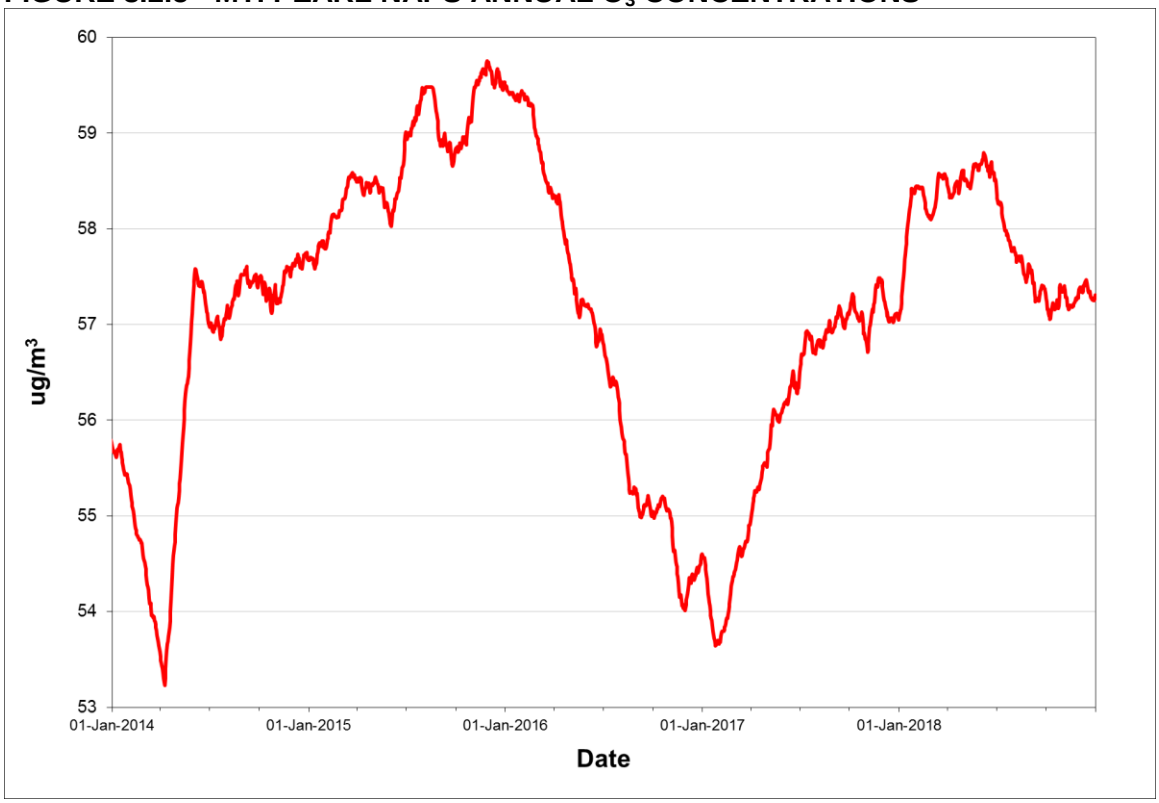
Rolling annual average of hourly concentrations

TABLE 3.2.5 - MT. PEARL NAPS O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	743	99.9%	52.0	83.5	80.8	0	0
	February	672	100.0%	73.9	89.9	85.9	0	0
	March	736	98.9%	72.7	94.0	92.6	0	3
	April	719	99.9%	71.8	96.0	94.5	0	8
	May	744	100.0%	62.5	94.0	88.4	0	1
	June	720	100.0%	53.0	102.0	90.2	0	2
	July	730	98.1%	44.6	91.0	75.5	0	0
	August	744	100.0%	44.2	93.4	73.8	0	0
	September	720	100.0%	45.3	82.1	77.4	0	0
	October	744	100.0%	47.4	78.2	74.5	0	0
	November	720	100.0%	56.7	77.1	72.7	0	0
	December	744	100.0%	62.1	81.5	78.5	0	0
Annual		8736	99.7%	57.0	102.0	94.5	0	14
2018	January	739	99.3%	68.5	81.9	79.4	0	0
	February	660	98.2%	69.9	89.0	80.7	0	0
	March	744	100.0%	76.6	90.0	87.8	0	2
	April	687	95.4%	74.4	110.3	106.0	0	5
	May	732	98.4%	63.3	94.2	82.9	0	0
	June	586	81.4%	48.1	85.1	69.4	0	0
	July	743	99.9%	37.1	76.5	60.9	0	0
	August	742	99.7%	42.3	78.4	62.6	0	0
	September	720	100.0%	42.0	68.2	59.7	0	0
	October	744	100.0%	47.5	74.8	71.1	0	0
	November	720	100.0%	56.4	81.4	74.0	0	0
	December	744	100.0%	62.1	78.7	77.4	0	0
Annual		8561	97.7%	57.3	110.3	106.0	0	7

Observations in ug/m^3

FIGURE 3.2.5 - MT. PEARL NAPS ANNUAL O_3 CONCENTRATIONS

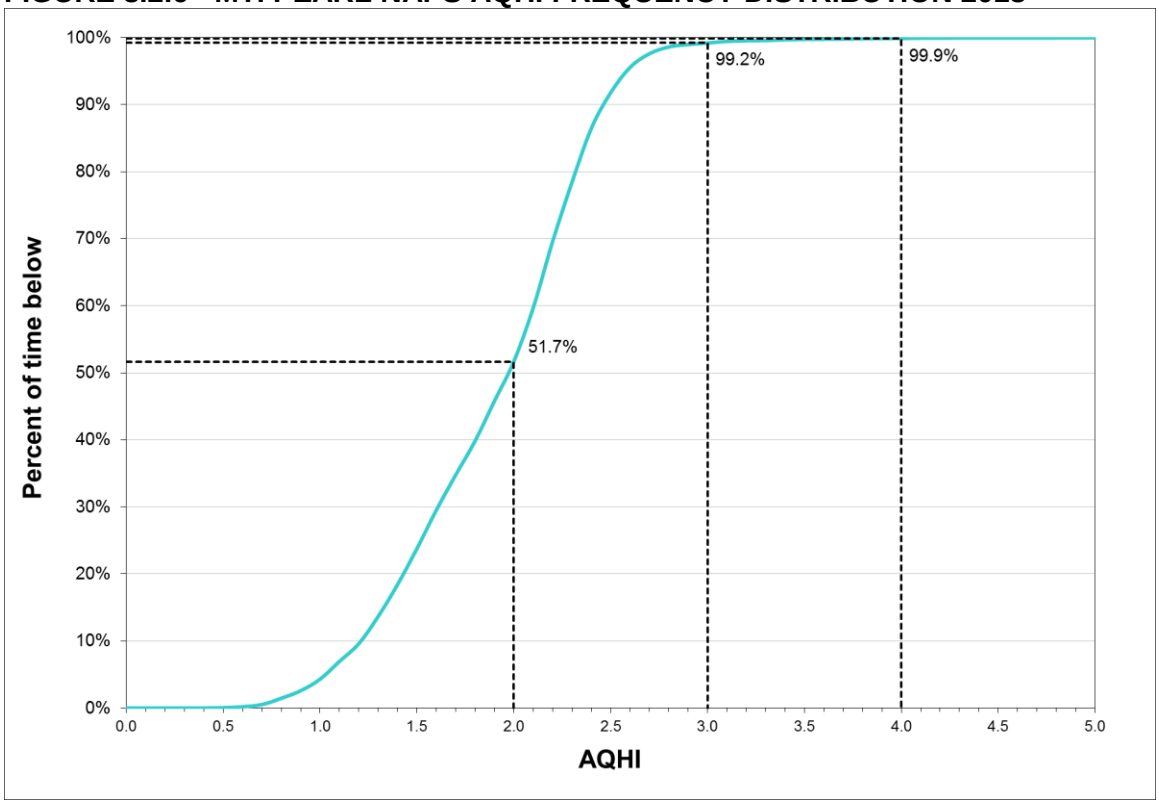


Rolling annual average of hourly concentrations

TABLE 3.2.6 - MT. PEARL NAPS AQHI SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 3-Hour
2017	January	739	99.3%	1.9	4.4
	February	662	98.5%	2.4	2.9
	March	734	98.7%	2.3	4.9
	April	706	98.1%	2.3	3.6
	May	744	100.0%	1.9	2.9
	June	617	85.7%	1.7	3.1
	July	727	97.7%	1.4	2.7
	August	737	99.1%	1.4	3.1
	September	712	98.9%	1.5	2.3
	October	740	99.5%	1.6	2.5
	November	713	99.0%	1.9	3.1
	December	737	99.1%	2.1	2.9
Annual		8568	97.8%	1.9	4.9
2018	January	737	99.1%	2.2	3.0
	February	661	98.4%	2.2	2.7
	March	744	100.0%	2.3	3.0
	April	680	94.4%	2.3	3.5
	May	721	96.9%	1.9	2.7
	June	533	74.0%	1.5	2.5
	July	626	84.1%	1.2	2.9
	August	734	98.7%	1.4	2.7
	September	709	98.5%	1.4	2.4
	October	734	98.7%	1.7	4.1
	November	717	99.6%	2.0	6.3
	December	742	99.7%	2.3	4.3
Annual		8338	95.2%	1.9	6.3

FIGURE 3.2.6 - MT. PEARL NAPS AQHI FREQUENCY DISTRIBUTION 2018



e.g. 99.2% of the time the AQHI recorded was below 3.0

3.3 Grand Falls-Windsor

The Grand Falls-Windsor NAPS monitoring station is located on Scott Avenue and monitors the ambient levels of SO_2, NO_x / NO_2, CO, O_3 and $PM_{2.5}$ on a continuous basis. For O_3, the 8-hour ambient standard was exceeded on six occasions in 2018, specifically once in March, four times in April and once in December. For all other pollutants, the ambient air criteria were not exceeded on any occasion in 2018.

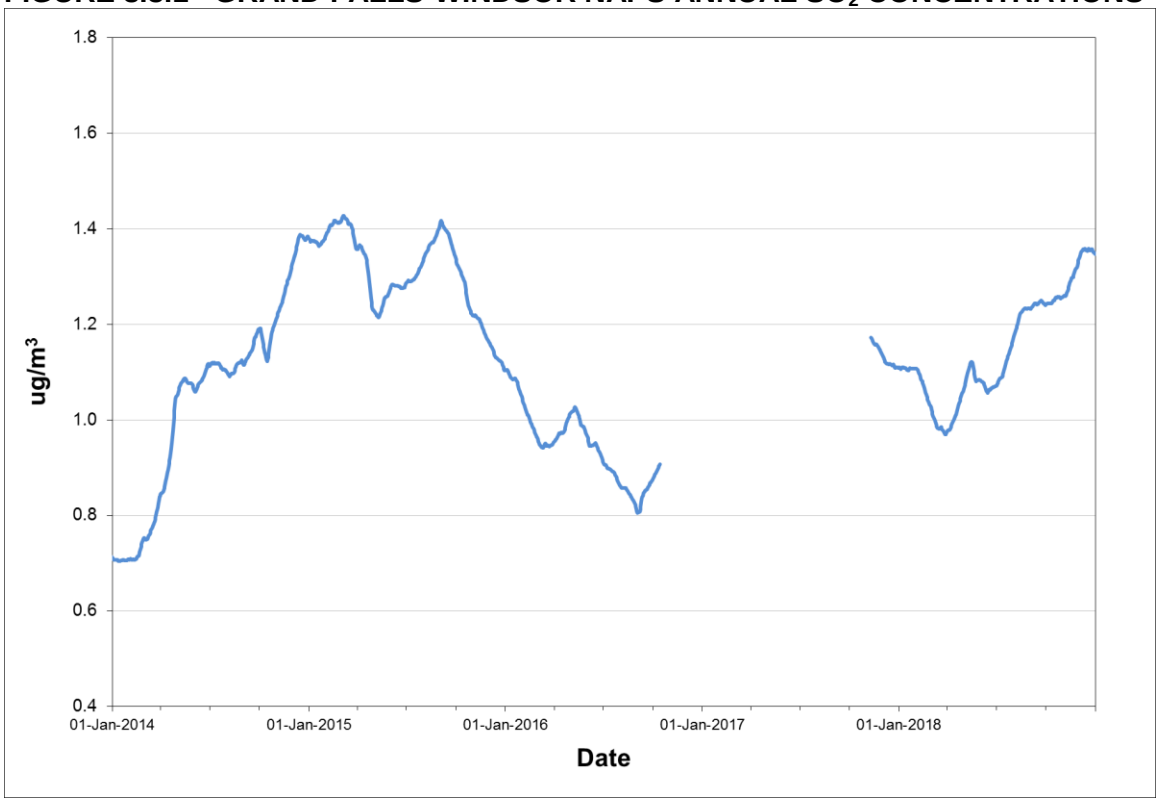
Tables 3.3.1 through 3.3.5 present the summary information on the level of air contaminants measured at the Grand Falls-Windsor NAPS station, while Figures 3.3.1 through 3.3.5 provides a graphical representation of the annual trend of each pollutant. Table 3.3.6 provides a summary of the AQHI while Figure 3.3.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2018.

TABLE 3.3.1 - GRAND FALLS-WINDSOR NAPS SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	0	0.0%							
	February	630	93.8%	1.9	2.9	2.8	2.7	0	0	0
	March	739	99.3%	2.0	4.1	3.4	2.8	0	0	0
	April	696	96.7%	0.8	3.3	2.3	1.6	0	0	0
	May	743	99.9%	1.2	3.5	2.9	2.8	0	0	0
	June	714	99.2%	1.2	5.1	4.2	2.0	0	0	0
	July	740	99.5%	0.9	2.8	2.1	1.7	0	0	0
	August	738	99.2%	0.8	4.2	1.7	1.2	0	0	0
	September	720	100.0%	0.7	2.3	2.0	1.4	0	0	0
	October	620	83.3%	1.1	2.9	2.0	1.5	0	0	0
	November	715	99.3%	0.8	3.2	2.0	1.6	0	0	0
	December	743	99.9%	0.8	3.9	2.7	1.6	0	0	0
Annual		7798	89.0%	1.1	5.1	4.2	2.8	0	0	0
2018	January	518	69.6%	1.1	2.6	2.2	1.7	0	0	0
	February	538	80.1%	0.9	4.3	2.3	1.4	0	0	0
	March	740	99.5%	1.4	2.9	2.5	2.3	0	0	0
	April	719	99.9%	1.8	7.7	3.7	2.6	0	0	0
	May	716	99.4%	1.4	3.2	2.9	2.6	0	0	0
	June	713	95.8%	1.0	3.3	2.3	1.7	0	0	0
	July	718	96.5%	1.9	3.2	3.0	2.5	0	0	0
	August	491	66.0%	1.7	3.4	3.0	2.5	0	0	0
	September	669	92.9%	0.8	1.5	1.4	1.2	0	0	0
	October	478	64.2%	1.4	3.0	2.2	1.8	0	0	0
	November	696	96.7%	1.6	3.2	3.0	2.3	0	0	0
	December	744	100.0%	1.0	5.2	2.8	1.9	0	0	0
Annual		7740	88.4%	1.3	7.7	3.7	2.6	0	0	0

Observations in ug/m^3

FIGURE 3.3.1 - GRAND FALLS-WINDSOR NAPS ANNUAL SO_2 CONCENTRATIONS



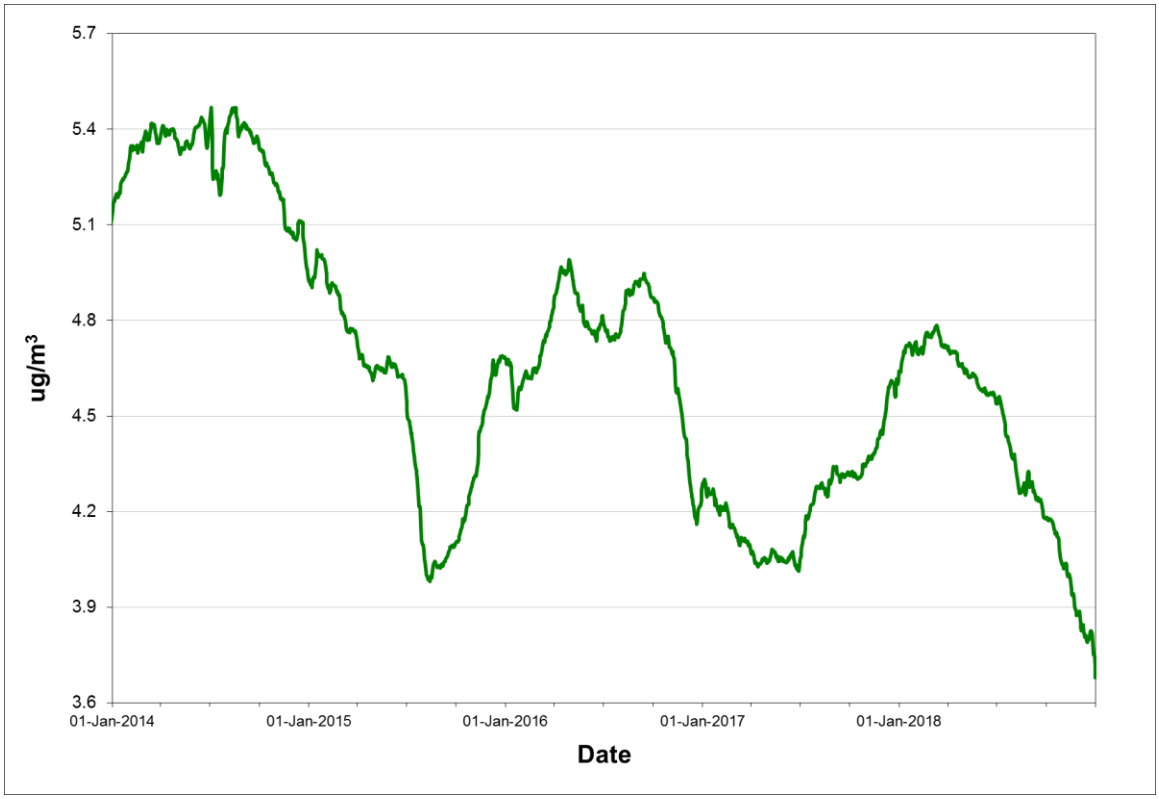
Rolling annual average of hourly concentrations

TABLE 3.3.2 - GRAND FALLS-WINDSOR NAPS $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	3.9	8.3	0
	February	28	100.0%	4.0	10.5	0
	March	31	100.0%	4.6	9.9	0
	April	26	86.7%	4.3	7.7	0
	May	23	74.2%	3.4	6.1	0
	June	30	100.0%	3.4	7.6	0
	July	31	100.0%	5.6	8.9	0
	August	31	100.0%	6.4	14.5	0
	September	30	100.0%	4.1	9.3	0
	October	31	100.0%	4.4	12.7	0
	November	25	83.3%	5.0	9.9	0
	December	31	100.0%	6.3	16.1	0
Annual		348	95.3%	4.6	16.1	0
2018	January	20	64.5%	5.0	8.5	0
	February	28	100.0%	4.2	6.3	0
	March	23	74.2%	4.1	8.7	0
	April	30	100.0%	3.6	6.0	0
	May	30	100.0%	2.9	4.6	0
	June	31	100.0%	2.9	6.2	0
	July	26	83.9%	3.5	10.4	0
	August	31	100.0%	5.5	14.1	0
	September	27	90.0%	2.9	9.7	0
	October	20	64.5%	2.1	5.2	0
	November	28	93.3%	3.1	7.6	0
	December	31	100.0%	4.2	9.5	0
Annual		325	89.0%	3.7	14.1	0

Observations in ug/m^3

FIGURE 3.3.2 - GRAND FALLS-WINDSOR NAPS ANNUAL $PM_{2.5}$ CONCENTRATIONS



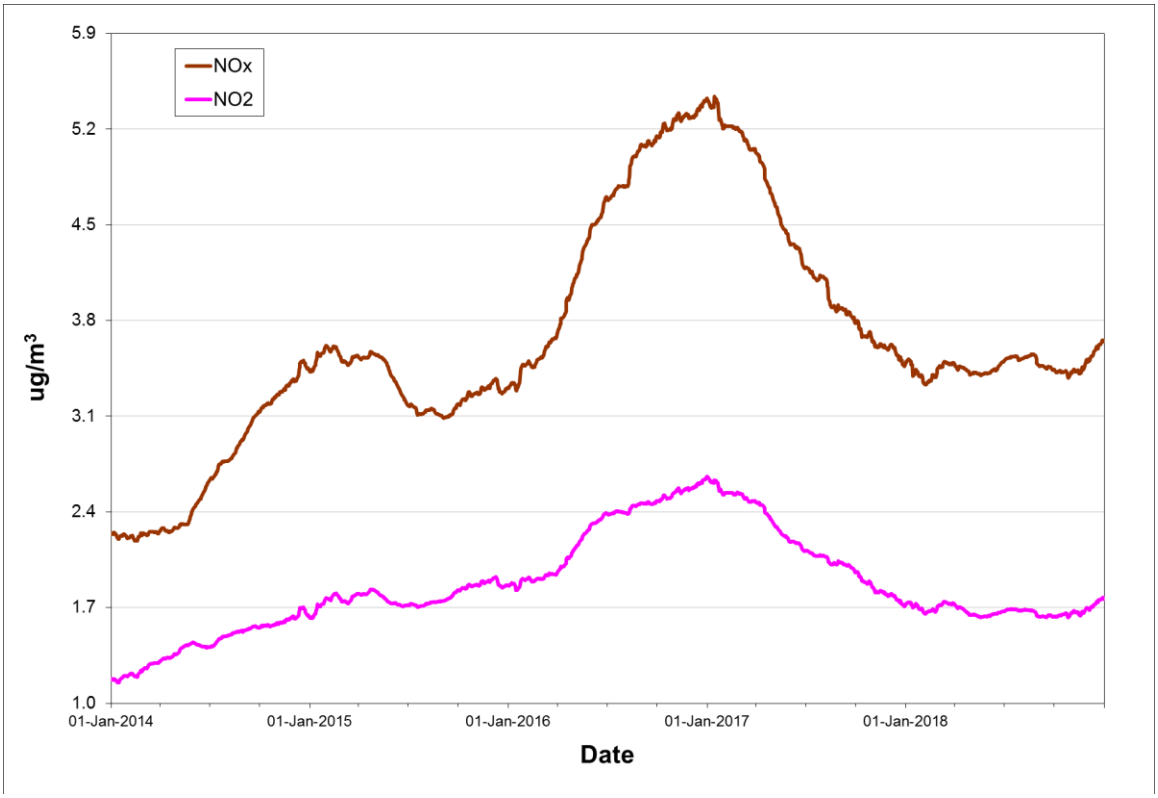
Rolling annual average of daily concentrations

TABLE 3.3.3 - GRAND FALLS-WINDSOR NAPS NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	741	99.6%	4.3	2.3	245.4	73.7	31.0	9.2	0	0
	February	265	39.4%	4.4	2.6	139.1	39.1	13.2	7.3	0	0
	March	740	99.5%	3.8	1.9	163.5	64.2	9.3	4.2	0	0
	April	717	99.6%	3.3	1.9	117.0	21.6	7.9	4.1	0	0
	May	742	99.7%	2.6	1.3	57.1	31.2	4.8	2.8	0	0
	June	718	99.7%	2.5	1.1	102.8	20.2	7.0	2.3	0	0
	July	744	100.0%	2.7	1.2	98.4	17.2	8.6	2.9	0	0
	August	739	99.3%	3.4	1.8	124.8	25.9	14.2	5.6	0	0
	September	720	100.0%	3.6	1.3	54.1	15.5	6.4	2.8	0	0
	October	742	99.7%	4.1	1.6	100.0	35.8	10.7	6.4	0	0
	November	717	99.6%	3.9	2.0	78.1	30.0	9.7	5.1	0	0
	December	744	100.0%	3.8	2.1	125.2	46.9	11.7	5.6	0	0
Annual		8329	95.1%	3.5	1.7	245.4	73.7	31.0	9.2	0	0
2018	January	744	100.0%	3.3	1.9	47.7	19.1	9.4	5.5	0	0
	February	658	97.9%	4.4	2.2	137.1	51.0	9.4	5.3	0	0
	March	744	100.0%	4.3	2.2	70.7	20.8	8.9	4.5	0	0
	April	715	99.3%	2.4	0.9	126.8	40.8	7.5	2.6	0	0
	May	715	99.3%	2.6	1.2	47.9	12.9	5.3	2.8	0	0
	June	711	95.6%	3.6	1.6	87.9	27.8	7.7	3.3	0	0
	July	727	97.7%	2.9	1.3	37.4	9.2	5.2	2.1	0	0
	August	470	63.2%	2.7	1.1	34.1	10.5	3.9	1.8	0	0
	September	668	92.8%	3.0	1.3	66.8	7.6	5.6	2.9	0	0
	October	154	20.7%	5.1	2.6	31.0	10.6	8.4	4.2	0	0
	November	697	96.8%	5.0	2.5	77.4	33.3	12.1	6.6	0	0
	December	743	99.9%	5.2	2.8	184.5	35.8	12.9	7.0	0	0
Annual		7746	88.4%	3.6	1.8	184.5	51.0	12.9	7.0	0	0

Observations in ug/m^3

FIGURE 3.3.3 - GRAND FALLS-WINDSOR NAPS ANNUAL NO_X / NO_2 CONCENTRATIONS



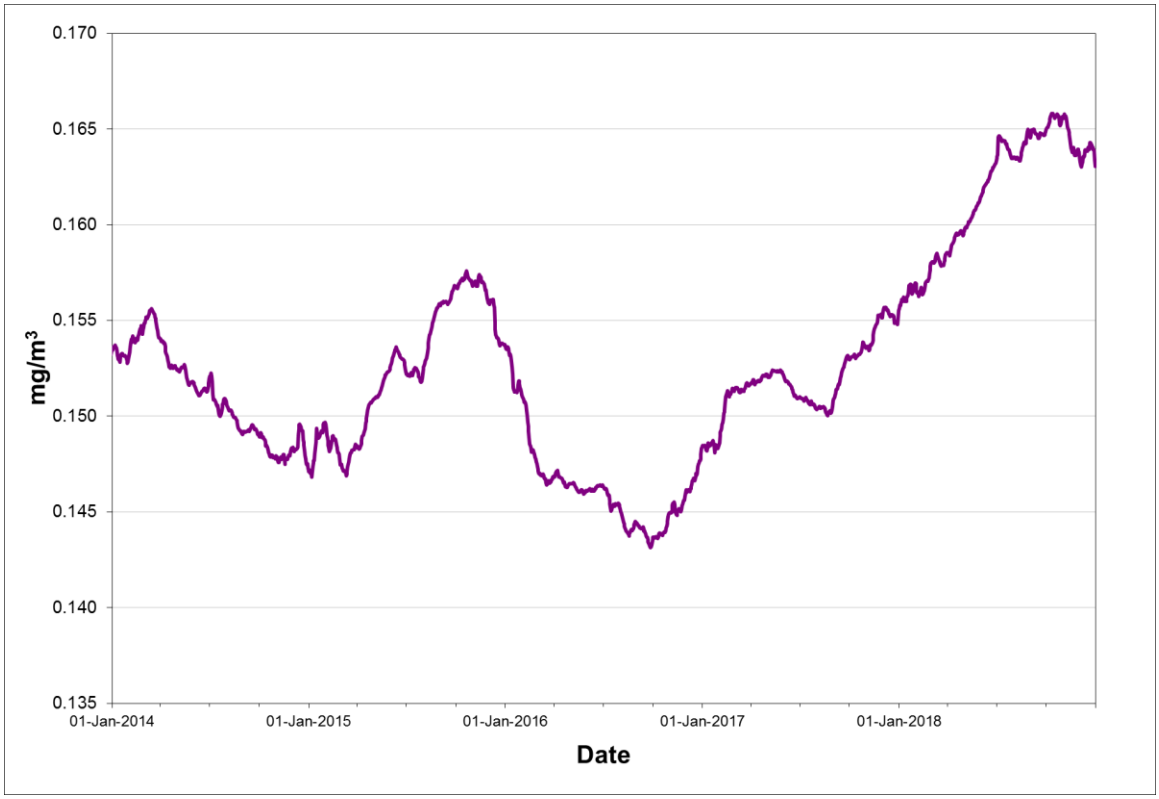
Rolling annual average of hourly concentrations

TABLE 3.3.4 - GRAND FALLS-WINDSOR NAPS CO SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>35)	Regulatory Exceedances 8-Hour (>15)
2017	January	744	100.0%	0.2	0.6	0.4	0	0
	February	669	99.6%	0.2	0.9	0.4	0	0
	March	744	100.0%	0.2	0.5	0.3	0	0
	April	694	96.4%	0.2	0.5	0.3	0	0
	May	741	99.6%	0.1	0.4	0.2	0	0
	June	718	99.7%	0.1	0.3	0.1	0	0
	July	744	100.0%	0.1	0.3	0.2	0	0
	August	737	99.1%	0.1	0.4	0.3	0	0
	September	719	99.9%	0.1	0.3	0.2	0	0
	October	738	99.2%	0.1	0.8	0.5	0	0
	November	718	99.7%	0.2	0.7	0.4	0	0
	December	520	69.9%	0.2	0.9	0.5	0	0
Annual		8486	96.9%	0.2	0.9	0.5	0	0
2018	January	744	100.0%	0.2	0.5	0.3	0	0
	February	670	99.7%	0.2	0.6	0.3	0	0
	March	742	99.7%	0.2	0.5	0.3	0	0
	April	719	99.9%	0.2	0.4	0.2	0	0
	May	717	99.6%	0.2	0.3	0.2	0	0
	June	710	95.4%	0.1	0.3	0.2	0	0
	July	725	97.4%	0.1	0.9	0.7	0	0
	August	491	66.0%	0.1	0.3	0.2	0	0
	September	671	93.2%	0.1	0.3	0.2	0	0
	October	489	65.7%	0.1	0.4	0.3	0	0
	November	698	96.9%	0.2	0.4	0.3	0	0
	December	743	99.9%	0.2	0.7	0.5	0	0
Annual		8119	92.7%	0.2	0.9	0.7	0	0

Observations in mg/m^3

FIGURE 3.3.4 - GRAND FALLS-WINDSOR NAPS ANNUAL CO CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 3.3.5 - GRAND FALLS-WINDSOR NAPS O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	744	100.0%	70.7	86.6	84.1	0	0
	February	672	100.0%	76.2	93.5	89.8	0	4
	March	743	99.9%	77.1	98.9	93.4	0	14
	April	720	100.0%	75.0	95.2	91.3	0	13
	May	744	100.0%	61.6	98.7	95.6	0	1
	June	720	100.0%	49.1	95.9	87.7	0	1
	July	744	100.0%	44.2	89.7	72.3	0	0
	August	740	99.5%	41.2	80.5	64.9	0	0
	September	720	100.0%	38.9	81.5	74.4	0	0
	October	742	99.7%	44.0	81.3	72.3	0	0
	November	719	99.9%	54.0	79.3	77.3	0	0
	December	744	100.0%	62.2	83.5	81.2	0	0
Annual		8752	99.9%	57.7	98.9	95.6	0	33
2018	January	740	99.5%	69.2	85.2	84.2	0	0
	February	672	100.0%	70.5	88.8	81.3	0	0
	March	744	100.0%	75.9	90.1	87.0	0	1
	April	717	99.6%	69.7	95.6	92.5	0	4
	May	644	89.4%	54.1	78.5	75.6	0	0
	June	713	95.8%	43.2	89.7	77.0	0	0
	July	608	81.7%	32.1	70.8	59.2	0	0
	August	489	65.7%	42.3	90.5	77.8	0	0
	September	669	92.9%	46.8	78.2	75.2	0	0
	October	491	66.0%	54.2	84.5	81.8	0	0
	November	697	96.8%	61.6	95.3	80.3	0	0
	December	744	100.0%	70.1	89.2	87.5	0	1
Annual		7928	90.5%	58.5	95.6	92.5	0	6

Observations in ug/m^3

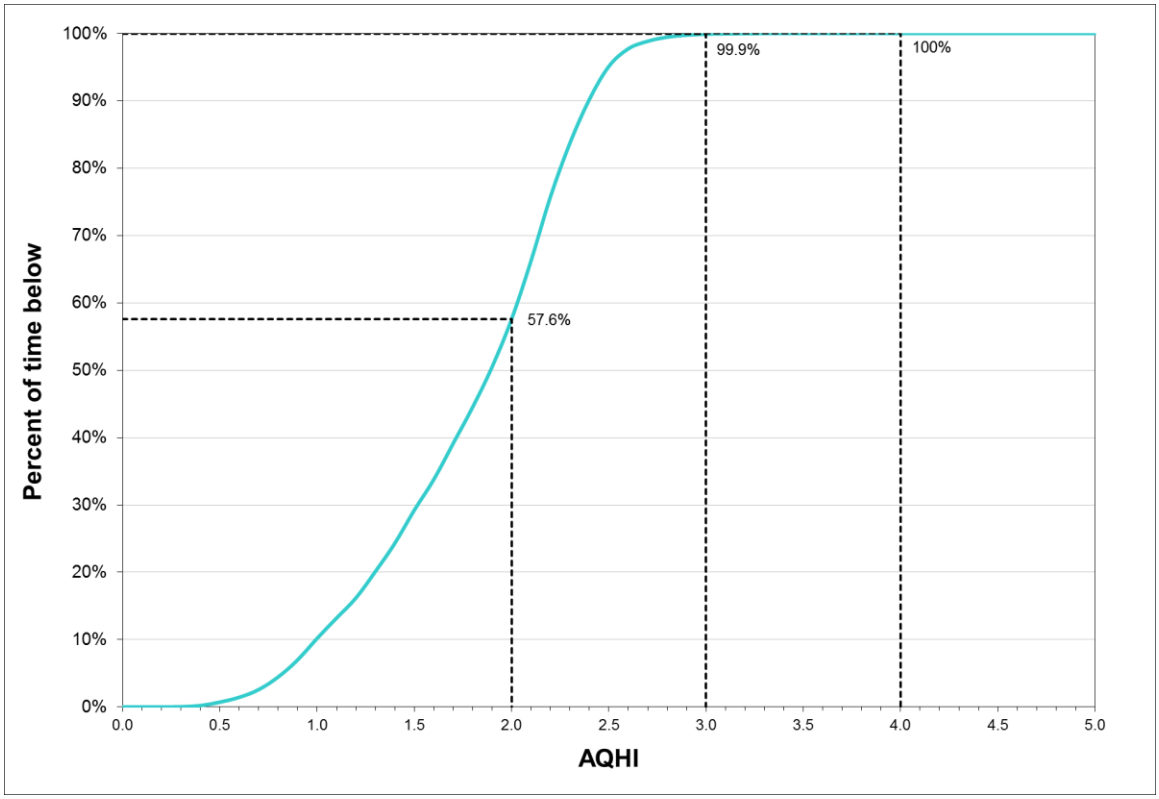
FIGURE 3.3.5 - GRAND FALLS-WINDSOR NAPS ANNUAL O_3 CONCENTRATIONS

Rolling annual average of hourly concentrations

TABLE 3.3.6 - GRAND FALLS-WINDSOR NAPS AQHI SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 3-Hour
2017	January	741	99.6%	2.2	3.8
	February	265	39.4%	2.4	4.5
	March	738	99.2%	2.4	3.4
	April	642	89.2%	2.3	4.1
	May	576	77.4%	1.9	3.1
	June	718	99.7%	1.5	3.0
	July	744	100.0%	1.5	2.8
	August	733	98.5%	1.5	2.8
	September	720	100.0%	1.3	2.8
	October	737	99.1%	1.4	2.8
	November	618	85.8%	1.7	3.1
	December	744	100.0%	2.0	4.1
Annual		7976	91.1%	1.8	4.5
2018	January	476	64.0%	2.2	3.0
	February	658	97.9%	2.2	2.8
	March	570	76.6%	2.3	3.2
	April	713	99.0%	2.1	2.9
	May	640	88.9%	1.6	2.3
	June	710	95.4%	1.3	2.5
	July	602	80.9%	1.1	2.5
	August	468	62.9%	1.4	3.0
	September	656	91.1%	1.4	2.3
	October	150	20.2%	1.6	2.4
	November	695	96.5%	1.9	2.9
	December	744	100.0%	2.2	3.1
Annual		7082	80.8%	1.8	3.2

FIGURE 3.3.6 - GRAND FALLS-WINDSOR NAPS AQHI FREQUENCY DISTRIBUTION 2018



e.g. 99.9% of the time the AQHI recorded was below 3.0

3.4 Corner Brook

The Corner Brook NAPS monitoring station is located on MacPherson Avenue near Confederation Drive and monitors the ambient levels of SO_2, NO_x / NO_2, CO, O_3 and $PM_{2.5}$ on a continuous basis. For SO_2, NO_x / NO_2, CO and $PM_{2.5}$, the ambient air criteria were not exceeded on any occasion in 2018. The 8-hour O_3 standard was exceeded on forty-six occasions in 2018 from February to May, specifically once in February, twenty three times in March, twenty one times in April and once in May.

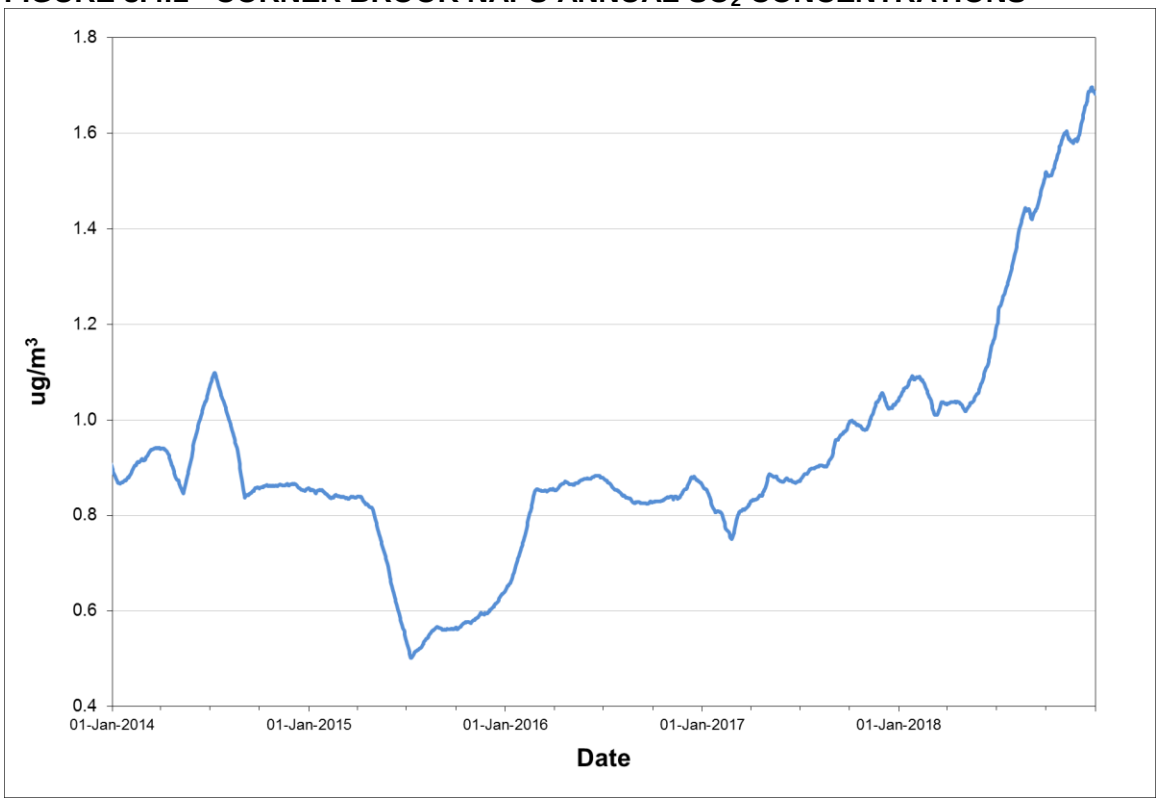
Tables 3.4.1 through 3.4.5 present the summary information on the level of air contaminants measured at the Corner Brook NAPS station, while Figures 3.4.1 through 3.4.5 provide a graphical representation of the annual trend of each pollutant. Table 3.4.6 provides a summary of the AQHI while Figure 3.4.6 provides a graphical representation of the percentage of time the AQHI values were below a given level in 2018.

TABLE 3.4.1 - CORNER BROOK NAPS SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	705	94.8%	1.1	2.8	2.5	2.4	0	0	0
	February	618	92.0%	1.6	3.0	2.7	2.3	0	0	0
	March	737	99.1%	1.3	4.5	3.2	2.6	0	0	0
	April	715	99.3%	1.1	2.5	2.3	2.1	0	0	0
	May	728	97.8%	0.6	9.6	4.0	1.8	0	0	0
	June	633	87.9%	0.6	3.4	2.6	1.0	0	0	0
	July	733	98.5%	0.8	3.8	2.4	1.3	0	0	0
	August	738	99.2%	0.8	5.2	3.3	1.9	0	0	0
	September	715	99.3%	1.2	3.5	2.9	2.4	0	0	0
	October	736	98.9%	0.8	2.3	1.8	1.4	0	0	0
	November	709	98.5%	1.8	3.0	2.8	2.3	0	0	0
	December	741	99.6%	0.9	2.6	2.3	1.8	0	0	0
Annual		8508	97.1%	1.0	9.6	4.0	2.6	0	0	0
2018	January	734	98.7%	1.6	3.2	3.1	2.6	0	0	0
	February	669	99.6%	1.0	3.1	3.0	2.3	0	0	0
	March	706	94.9%	1.1	2.8	2.4	2.3	0	0	0
	April	0	0.0%							
	May	150	20.2%	1.1	3.9	3.4	2.0	0	0	0
	June	702	97.5%	2.0	7.0	6.3	3.8	0	0	0
	July	743	99.9%	2.1	30.8	25.0	8.4	0	0	0
	August	664	89.2%	2.0	3.6	3.2	2.9	0	0	0
	September	717	99.6%	2.0	3.8	3.3	3.2	0	0	0
	October	735	98.8%	1.5	3.3	3.1	2.6	0	0	0
	November	715	99.3%	1.8	3.6	3.4	3.1	0	0	0
	December	636	85.5%	1.8	4.5	4.3	3.8	0	0	0
Annual		7171	81.9%	1.7	30.8	25.0	8.4	0	0	0

Observations in ug/m^3

FIGURE 3.4.1 - CORNER BROOK NAPS ANNUAL SO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 3.4.2 - CORNER BROOK NAPS $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	8.5	24.4	0
	February	28	100.0%	8.9	13.5	0
	March	31	100.0%	8.9	16.9	0
	April	30	100.0%	9.1	16.1	0
	May	28	90.3%	9.3	14.1	0
	June	25	83.3%	6.2	11.5	0
	July	31	100.0%	5.3	10.2	0
	August	31	100.0%	5.3	16.5	0
	September	30	100.0%	4.5	9.9	0
	October	31	100.0%	5.2	7.7	0
	November	26	86.7%	7.1	17.0	0
	December	31	100.0%	6.9	11.1	0
Annual		353	96.7%	7.1	24.4	0
2018	January	31	100.0%	7.6	11.1	0
	February	28	100.0%	8.9	12.2	0
	March	31	100.0%	7.1	14.5	0
	April	30	100.0%	8.3	10.5	0
	May	31	100.0%	8.6	13.0	0
	June	29	96.7%	9.0	15.1	0
	July	31	100.0%	8.3	18.6	0
	August	30	96.8%	7.4	15.1	0
	September	30	100.0%	5.2	8.9	0
	October	26	83.9%	4.3	7.0	0
	November	26	86.7%	5.4	10.0	0
	December	31	100.0%	5.9	9.8	0
Annual		354	97.0%	7.2	18.6	0

Observations in ug/m^3

FIGURE 3.4.2 - CORNER BROOK NAPS ANNUAL $PM_{2.5}$ CONCENTRATIONS

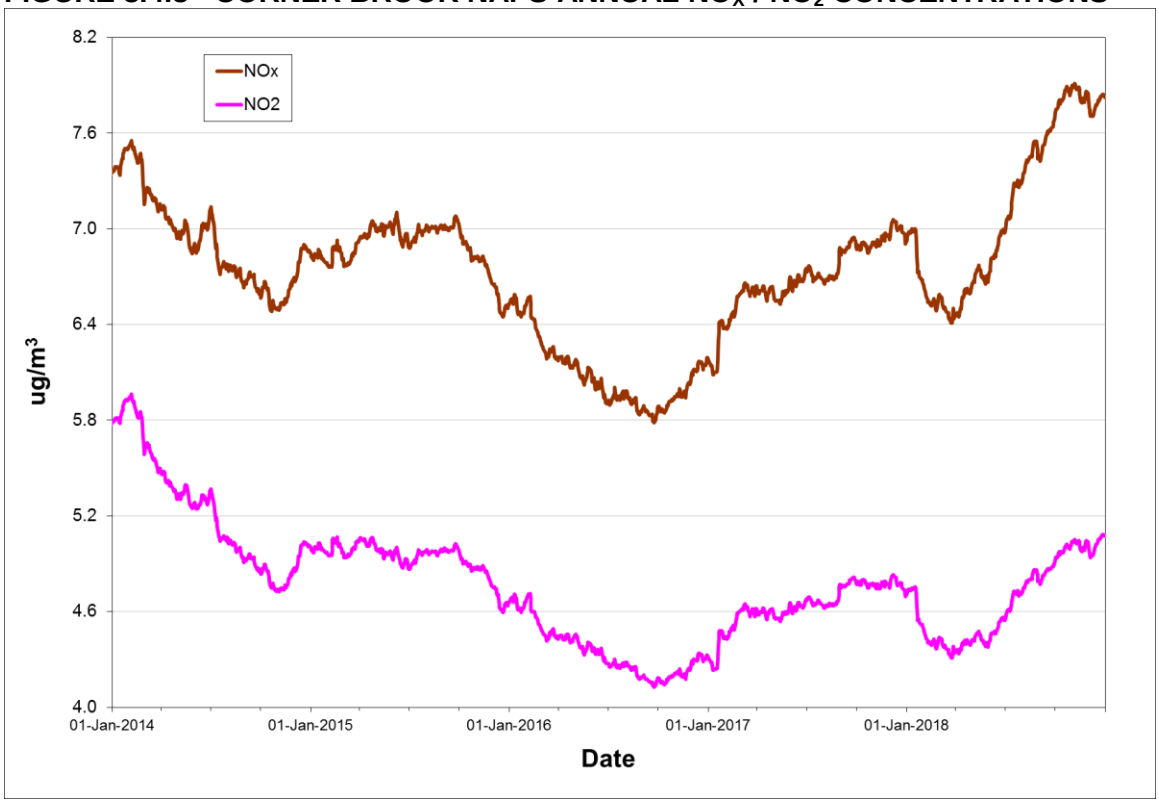
Rolling annual average of daily concentrations

TABLE 3.4.3 - CORNER BROOK NAPS NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	713	95.8%	9.1	6.8	102.6	62.3	50.5	37.2	0	0
	February	672	100.0%	8.8	6.7	71.2	40.6	18.5	13.1	0	0
	March	739	99.3%	7.1	5.0	86.6	51.5	22.5	17.2	0	0
	April	717	99.6%	6.2	4.5	55.4	38.5	17.9	13.5	0	0
	May	733	98.5%	7.1	5.0	68.8	53.2	24.7	15.4	0	0
	June	712	98.9%	6.2	4.0	57.2	30.9	17.6	10.9	0	0
	July	733	98.5%	5.9	3.5	80.4	36.1	15.4	9.5	0	0
	August	743	99.9%	6.6	4.1	72.9	52.6	31.2	21.1	0	0
	September	719	99.9%	5.5	3.4	71.4	42.1	17.8	10.9	0	0
	October	738	99.2%	6.1	3.9	80.7	33.5	17.4	11.8	0	0
	November	709	98.5%	7.3	4.8	54.5	35.7	22.7	16.4	0	0
	December	742	99.7%	7.3	4.9	52.6	34.4	25.2	18.4	0	0
Annual		8670	99.0%	6.9	4.7	102.6	62.3	50.5	37.2	0	0
2018	January	740	99.5%	6.0	4.3	94.4	53.5	14.2	9.5	0	0
	February	672	100.0%	7.5	5.6	68.9	42.8	14.5	11.1	0	0
	March	735	98.8%	6.0	4.2	58.2	43.3	20.2	14.8	0	0
	April	713	99.0%	8.3	5.2	108.8	39.5	27.0	16.3	0	0
	May	744	100.0%	7.8	4.8	74.3	34.2	19.6	12.5	0	0
	June	709	98.5%	9.7	5.8	64.6	32.1	23.4	13.7	0	0
	July	744	100.0%	9.6	5.5	53.7	36.5	25.0	13.9	0	0
	August	633	85.1%	8.6	5.0	94.0	39.2	18.1	10.6	0	0
	September	720	100.0%	8.5	4.8	52.6	24.1	14.7	7.8	0	0
	October	739	99.3%	8.3	5.4	52.9	40.3	17.0	10.4	0	0
	November	717	99.6%	6.8	4.8	63.0	50.2	18.1	13.9	0	0
	December	639	85.9%	6.9	5.4	51.5	39.8	14.3	11.7	0	0
Annual		8505	97.1%	7.8	5.1	108.8	53.5	27.0	16.3	0	0

Observations in ug/m^3

FIGURE 3.4.3 - CORNER BROOK NAPS ANNUAL NO_X / NO_2 CONCENTRATIONS



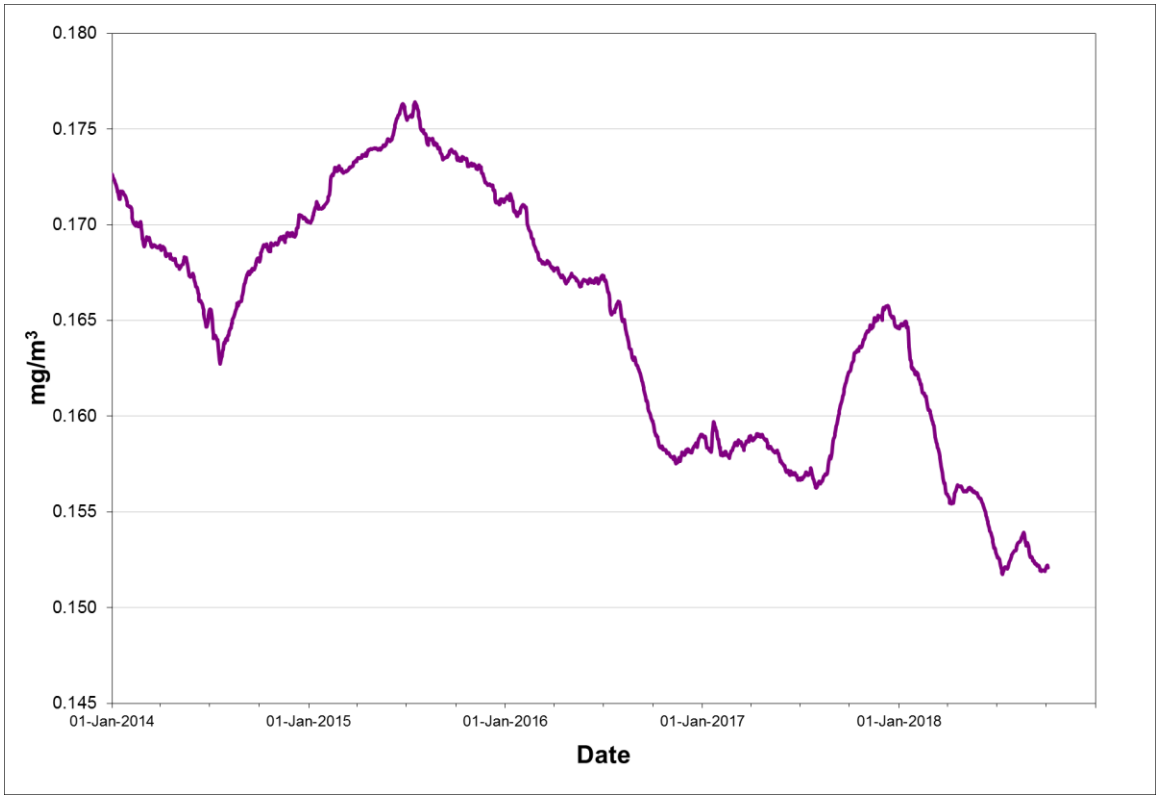
Rolling annual average of hourly concentrations

TABLE 3.4.4 - CORNER BROOK NAPS CO SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>35)	Regulatory Exceedances 8-Hour (>15)
2017	January	710	95.4%	0.2	0.9	0.6	0	0
	February	669	99.6%	0.2	0.5	0.3	0	0
	March	737	99.1%	0.2	0.7	0.3	0	0
	April	714	99.2%	0.2	0.5	0.3	0	0
	May	731	98.3%	0.2	0.3	0.2	0	0
	June	715	99.3%	0.1	0.3	0.2	0	0
	July	733	98.5%	0.1	0.2	0.2	0	0
	August	742	99.7%	0.2	0.4	0.3	0	0
	September	718	99.7%	0.2	0.3	0.2	0	0
	October	740	99.5%	0.2	1.2	0.2	0	0
	November	710	98.6%	0.2	0.5	0.3	0	0
	December	740	99.5%	0.2	0.5	0.3	0	0
Annual		8659	98.8%	0.2	1.2	0.6	0	0
2018	January	738	99.2%	0.2	0.6	0.3	0	0
	February	663	98.7%	0.2	0.6	0.3	0	0
	March	729	98.0%	0.1	0.5	0.2	0	0
	April	606	84.2%	0.2	0.4	0.3	0	0
	May	702	94.4%	0.1	0.3	0.2	0	0
	June	705	97.9%	0.1	0.2	0.2	0	0
	July	331	44.5%	0.1	0.2	0.2	0	0
	August	0	0.0%					
	September	0	0.0%					
	October	0	0.0%					
	November	200	27.8%	0.1	0.4	0.3	0	0
	December	636	85.5%	0.2	0.4	0.3	0	0
Annual		5310	60.6%	0.1	0.6	0.3	0	0

Observations in mg/m^3

FIGURE 3.4.4 - CORNER BROOK NAPS ANNUAL CO CONCENTRATIONS



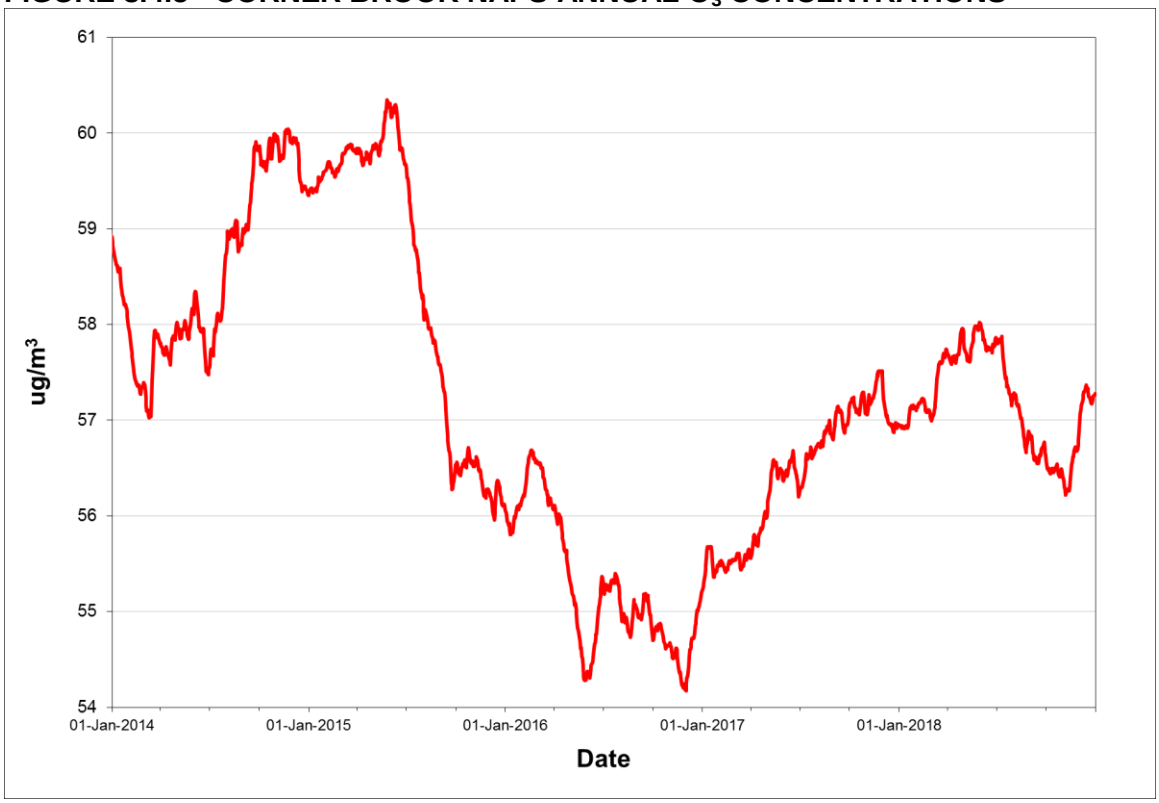
Rolling annual average of hourly concentrations

TABLE 3.4.5 - CORNER BROOK NAPS O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	713	95.8%	67.7	87.5	86.5	0	0
	February	672	100.0%	73.4	98.0	89.8	0	2
	March	741	99.6%	73.1	91.5	89.3	0	1
	April	716	99.4%	74.5	103.7	92.1	0	7
	May	730	98.1%	59.1	99.6	89.8	0	1
	June	717	99.6%	48.9	99.5	91.3	0	1
	July	733	98.5%	44.9	83.8	73.4	0	0
	August	743	99.9%	41.0	83.9	74.3	0	0
	September	717	99.6%	41.6	95.1	80.9	0	0
	October	740	99.5%	47.1	80.8	72.4	0	0
	November	709	98.5%	53.3	74.9	71.7	0	0
	December	743	99.9%	60.5	78.1	74.7	0	0
Annual		8674	99.0%	57.0	103.7	92.1	0	12
2018	January	742	99.7%	69.2	82.5	81.3	0	0
	February	672	100.0%	72.4	91.6	89.3	0	1
	March	735	98.8%	81.0	100.4	97.8	0	23
	April	717	99.6%	77.1	118.1	114.9	0	21
	May	744	100.0%	60.2	92.0	87.6	0	1
	June	705	97.9%	46.6	96.7	79.0	0	0
	July	744	100.0%	37.7	81.5	77.7	0	0
	August	733	98.5%	36.4	74.3	68.7	0	0
	September	720	100.0%	39.1	69.0	63.5	0	0
	October	741	99.6%	44.5	77.1	72.8	0	0
	November	720	100.0%	57.8	80.7	78.6	0	0
	December	639	85.9%	67.7	83.9	82.9	0	0
Annual		8612	98.3%	57.3	118.1	114.9	0	46

Observations in ug/m^3

FIGURE 3.4.5 - CORNER BROOK NAPS ANNUAL O_3 CONCENTRATIONS

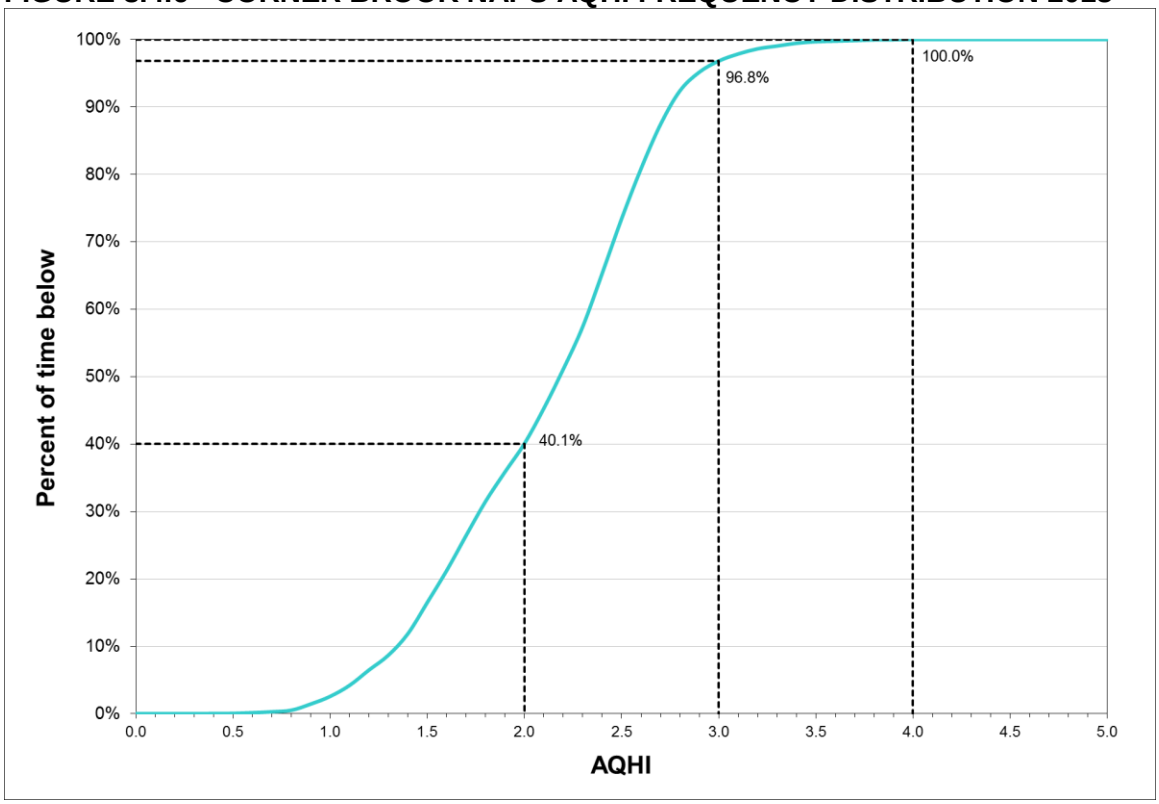


Rolling annual average of hourly concentrations

TABLE 3.4.6 - CORNER BROOK NAPS AQHI SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 3-Hour
2017	January	710	95.4%	2.5	5.7
	February	670	99.7%	2.7	3.8
	March	734	98.7%	2.6	4.4
	April	712	98.9%	2.6	4.5
	May	672	90.3%	2.3	3.9
	June	600	83.3%	1.8	3.2
	July	733	98.5%	1.6	3.3
	August	742	99.7%	1.5	3.9
	September	710	98.6%	1.5	3.8
	October	736	98.9%	1.7	2.7
	November	633	87.9%	1.9	3.0
	December	742	99.7%	2.1	3.1
Annual		8394	95.8%	2.1	5.7
2018	January	738	99.2%	2.4	3.1
	February	672	100.0%	2.6	3.5
	March	735	98.8%	2.7	4.0
	April	710	98.6%	2.7	3.8
	May	744	100.0%	2.2	3.3
	June	704	97.8%	1.9	3.4
	July	738	99.2%	1.6	3.8
	August	633	85.1%	1.6	3.0
	September	717	99.6%	1.5	2.2
	October	646	86.8%	1.6	2.5
	November	628	87.2%	2.0	3.4
	December	639	85.9%	2.3	3.1
Annual		8304	94.8%	2.1	4.0

FIGURE 3.4.6 - CORNER BROOK NAPS AQHI FREQUENCY DISTRIBUTION 2018



e.g. 96.8% of the time the AQHI recorded was below 3.0

3.5 Burin

The Burin NAPS monitoring station is located near the Highway Depot in Burin and monitors the ambient levels of SO_2, $PM_{2.5}$, NO_x / NO_2, CO, O_3 and PM_{10} on a continuous basis. The ambient air criteria for SO_2, NO_x / NO_2, CO, PM_{10} and $PM_{2.5}$ were not exceeded on any occasion in 2018. For 8-hour ozone, the ambient air criteria were exceeded on sixteen occasions in 2018, specifically three times in March and thirteen times in April. Tables 3.5.1 through 3.5.6 provide summary information on the level of each air contaminant measured at the Burin site while Figures 3.5.1 through 3.5.6 provide a graphical representation of the annual trend for each pollutant.

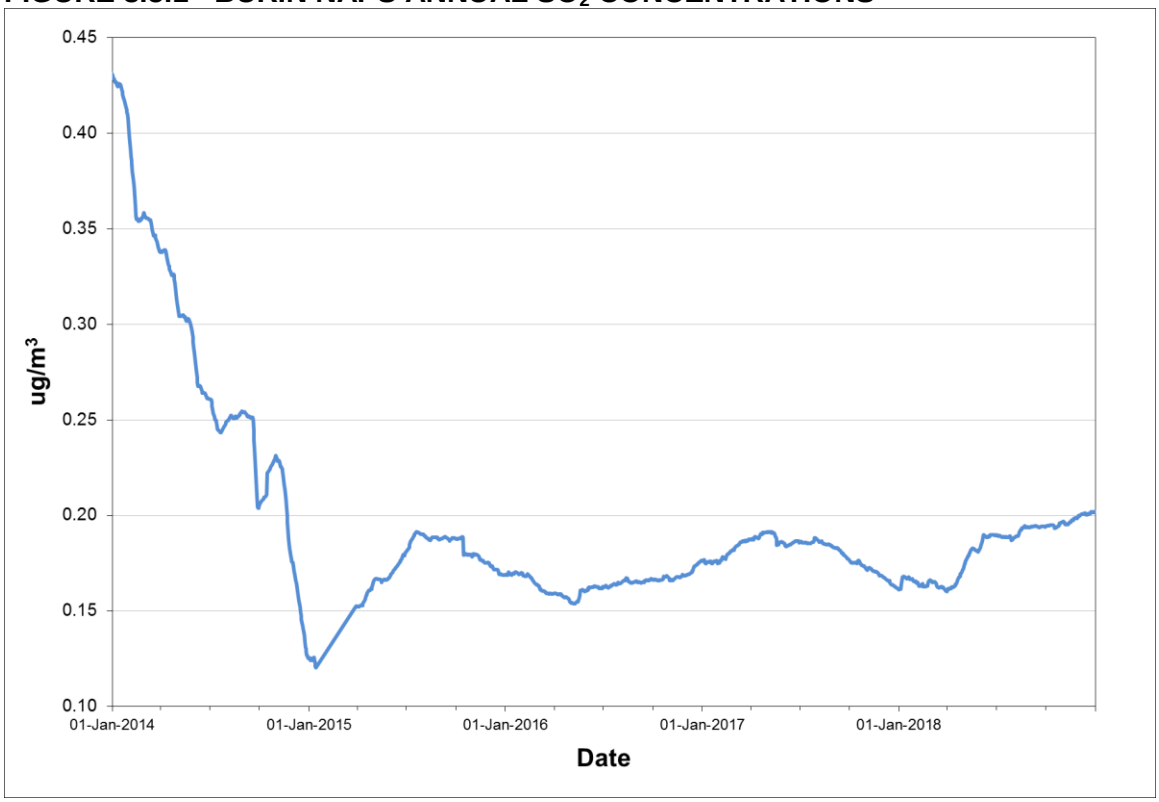
Table 3.5.7 provides a summary of the AQHI, while Figure 3.5.7 provides a graphical representation of the AQHI frequency based on all data collected in Burin in 2018.

TABLE 3.5.1 - BURIN NAPS SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	744	100.0%	0.2	0.9	0.6	0.3	0	0	0
	February	672	100.0%	0.2	2.0	1.2	0.5	0	0	0
	March	729	98.0%	0.2	1.2	1.0	0.5	0	0	0
	April	718	99.7%	0.2	0.9	0.8	0.5	0	0	0
	May	740	99.5%	0.2	0.9	0.6	0.3	0	0	0
	June	167	23.2%	0.1	0.6	0.4	0.3	0	0	0
	July	105	14.1%	0.3	1.4	1.4	0.6	0	0	0
	August	736	98.9%	0.1	1.0	0.6	0.3	0	0	0
	September	720	100.0%	0.1	0.9	0.4	0.2	0	0	0
	October	741	99.6%	0.1	1.1	1.0	0.4	0	0	0
	November	719	99.9%	0.1	0.8	0.7	0.3	0	0	0
	December	737	99.1%	0.1	0.8	0.6	0.3	0	0	0
Annual		7528	85.9%	0.2	2.0	1.4	0.6	0	0	0
2018	January	736	98.9%	0.2	1.3	1.3	1.1	0	0	0
	February	584	86.9%	0.2	1.8	1.3	0.4	0	0	0
	March	743	99.9%	0.2	0.7	0.5	0.3	0	0	0
	April	720	100.0%	0.3	0.9	0.7	0.6	0	0	0
	May	744	100.0%	0.3	1.2	1.1	0.6	0	0	0
	June	533	74.0%	0.3	1.1	1.0	0.7	0	0	0
	July	742	99.7%	0.2	0.9	0.7	0.3	0	0	0
	August	726	97.6%	0.2	2.7	1.5	0.6	0	0	0
	September	720	100.0%	0.1	0.8	0.4	0.2	0	0	0
	October	743	99.9%	0.1	1.2	1.0	0.4	0	0	0
	November	718	99.7%	0.2	1.1	1.0	0.5	0	0	0
	December	743	99.9%	0.2	1.1	0.6	0.4	0	0	0
Annual		8452	96.5%	0.2	2.7	1.5	1.1	0	0	0

Observations in ug/m^3

FIGURE 3.5.1 - BURIN NAPS ANNUAL SO_2 CONCENTRATIONS



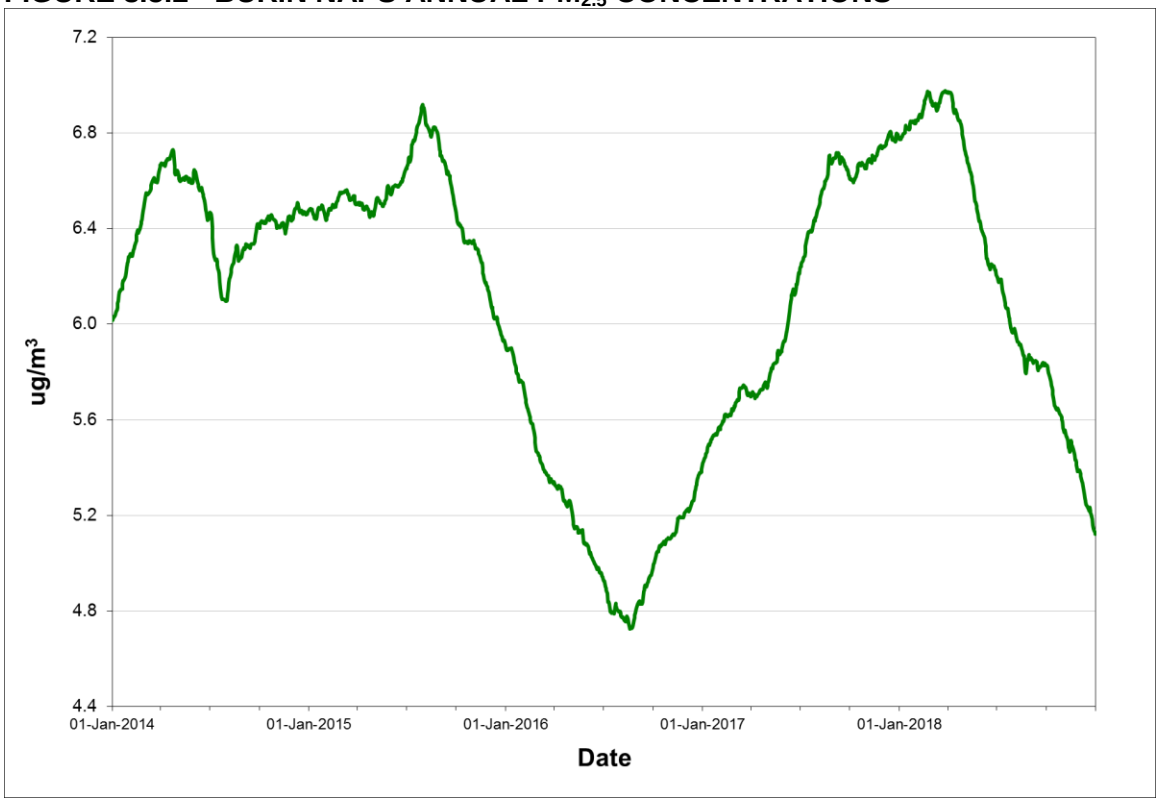
Rolling annual average of hourly concentrations

TABLE 3.5.2 - BURIN NAPS $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	8.0	12.9	0
	February	28	100.0%	7.5	13.0	0
	March	13	41.9%	8.5	14.2	0
	April	30	100.0%	6.8	10.1	0
	May	31	100.0%	7.0	11.8	0
	June	30	100.0%	6.7	12.0	0
	July	31	100.0%	6.0	10.3	0
	August	31	100.0%	6.4	17.2	0
	September	30	100.0%	3.6	12.2	0
	October	31	100.0%	6.5	12.6	0
	November	30	100.0%	7.3	14.3	0
	December	31	100.0%	8.1	14.1	0
Annual		347	95.1%	6.8	17.2	0
2018	January	31	100.0%	8.7	14.8	0
	February	28	100.0%	8.7	12.3	0
	March	29	93.5%	8.0	12.4	0
	April	23	76.7%	3.6	9.3	0
	May	31	100.0%	3.0	9.3	0
	June	21	70.0%	3.2	8.4	0
	July	31	100.0%	3.3	9.4	0
	August	27	87.1%	5.0	12.4	0
	September	30	100.0%	3.4	7.0	0
	October	30	96.8%	3.9	7.9	0
	November	30	100.0%	5.0	21.1	0
	December	13	41.9%	5.1	11.8	0
Annual		324	88.8%	5.1	21.1	0

Observations in ug/m^3

FIGURE 3.5.2 - BURIN NAPS ANNUAL $PM_{2.5}$ CONCENTRATIONS



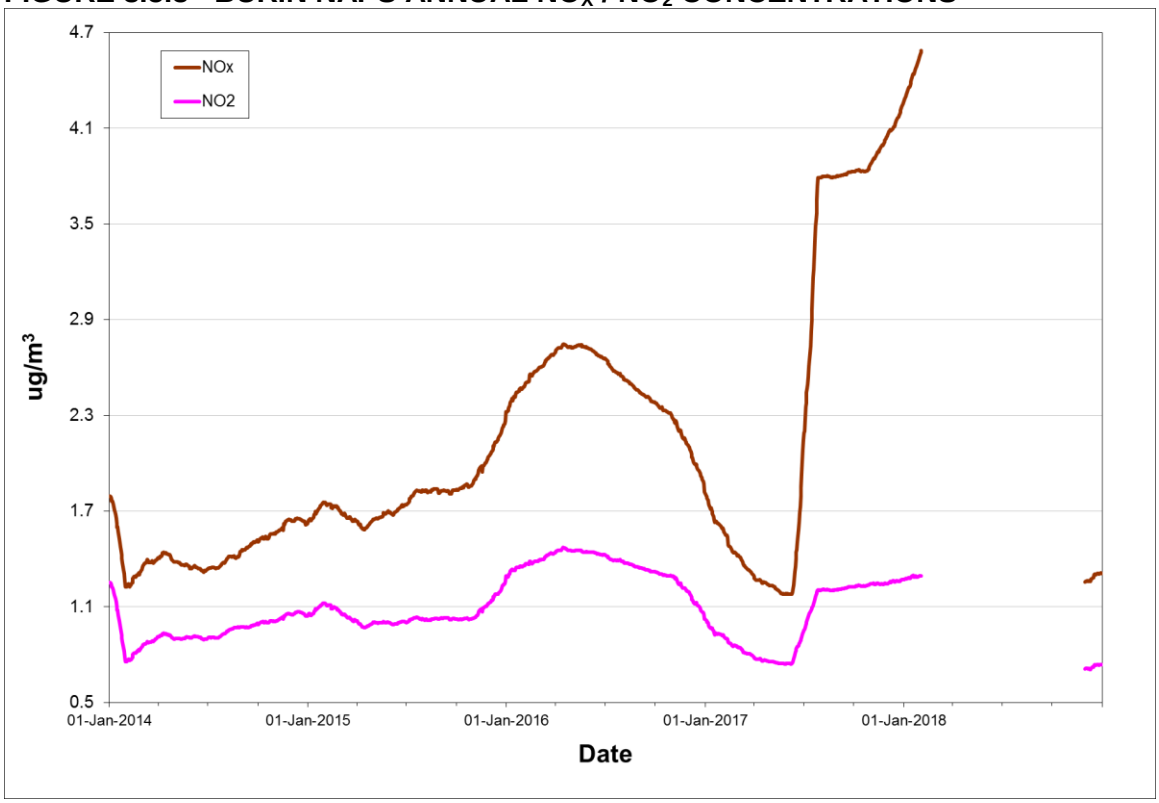
Rolling annual average of hourly concentrations

TABLE 3.5.3 - BURIN NAPS NO_X / NO_2 SUMMARY 2017 &2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	740	99.5%	1.5	1.1	36.4	22.4	6.1	4.6	0	0
	February	672	100.0%	1.2	0.8	11.7	9.7	3.0	2.2	0	0
	March	744	100.0%	1.1	0.8	19.0	12.7	3.2	1.8	0	0
	April	718	99.7%	1.0	0.6	46.3	16.3	4.0	1.9	0	0
	May	744	100.0%	1.0	0.6	26.1	8.7	3.4	1.7	0	0
	June	719	99.9%	12.8	3.1	55.0	12.1	31.0	6.7	0	0
	July	743	99.9%	20.1	3.5	65.5	10.3	39.3	6.5	0	0
	August	743	99.9%	1.0	0.6	33.9	12.1	2.9	1.4	0	0
	September	720	100.0%	1.2	0.6	19.4	11.2	2.6	1.3	0	0
	October	619	83.2%	1.4	0.9	30.8	11.8	3.4	2.1	0	0
	November	26	3.6%	4.9	1.5	27.3	6.0	0.0	0.0	0	0
	December	175	23.5%	2.1	1.5	30.5	10.8	3.0	2.0	0	0
Annual		7363	84.1%	4.3	1.3	65.5	22.4	39.3	6.7	0	0
2018	January	0	0.0%								
	February	0	0.0%								
	March	729	98.0%	1.2	0.8	14.0	12.4	3.2	2.7	0	0
	April	720	100.0%	1.2	0.8	22.6	10.9	3.1	2.6	0	0
	May	744	100.0%	1.2	0.7	21.1	5.5	2.1	1.2	0	0
	June	535	74.3%	1.2	0.7	22.6	7.1	2.2	1.2	0	0
	July	743	99.9%	1.3	0.7	32.9	9.7	7.3	2.6	0	0
	August	744	100.0%	1.3	0.6	11.4	3.9	3.5	1.5	0	0
	September	720	100.0%	0.6	0.3	7.7	3.9	1.1	0.7	0	0
	October	744	100.0%	1.5	0.6	43.8	7.6	6.0	1.7	0	0
	November	719	99.9%	1.7	0.9	25.4	13.1	4.8	2.9	0	0
	December	744	100.0%	2.0	1.1	34.3	20.7	5.9	3.9	0	0
Annual		7142	81.5%	1.3	0.7	43.8	20.7	7.3	3.9	0	0

Observations in ug/m^3

FIGURE 3.5.3 - BURIN NAPS ANNUAL NO_X / NO_2 CONCENTRATIONS



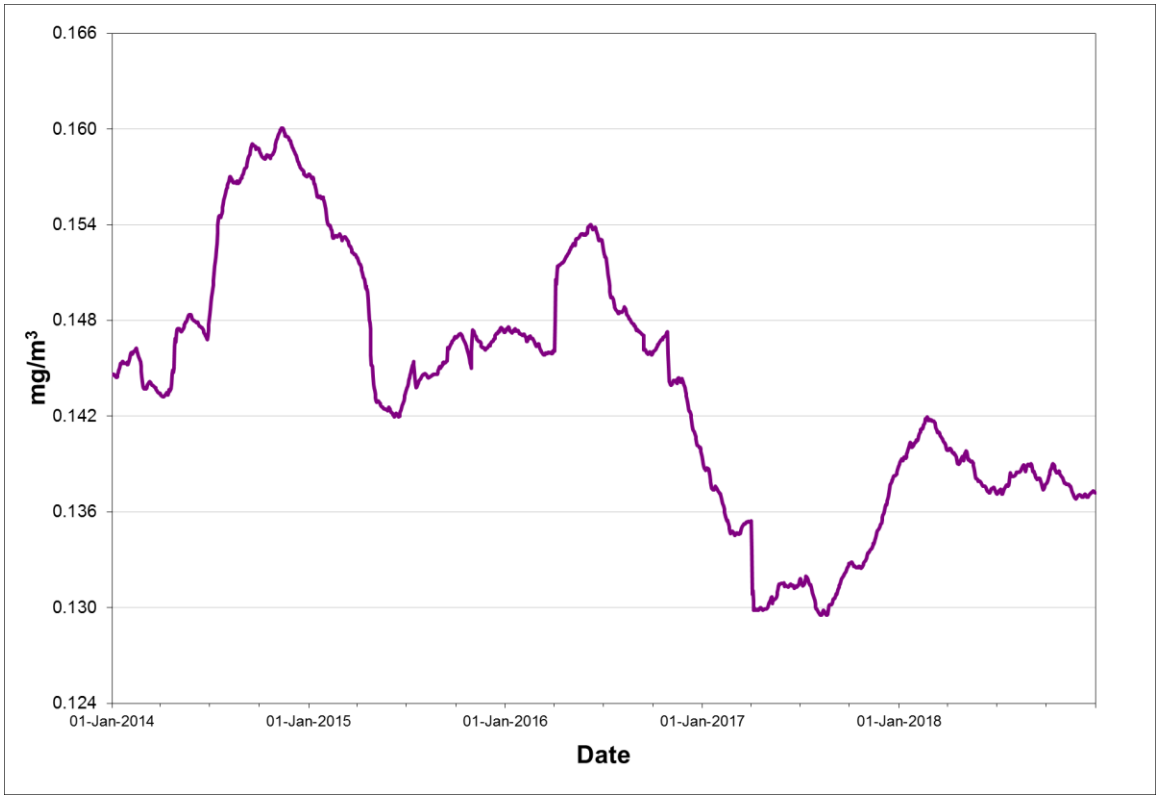
Rolling annual average of hourly concentrations

TABLE 3.5.4 - BURIN NAPS CO SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>35)	Regulatory Exceedances 8-Hour (>15)
2017	January	743	99.9%	0.1	0.4	0.2	0	0
	February	671	99.9%	0.1	0.3	0.2	0	0
	March	740	99.5%	0.2	0.3	0.2	0	0
	April	718	99.7%	0.2	0.3	0.2	0	0
	May	669	89.9%	0.2	0.4	0.3	0	0
	June	720	100.0%	0.1	0.3	0.2	0	0
	July	742	99.7%	0.1	0.2	0.2	0	0
	August	691	92.9%	0.1	0.3	0.2	0	0
	September	720	100.0%	0.1	0.2	0.2	0	0
	October	664	89.2%	0.1	0.2	0.2	0	0
	November	716	99.4%	0.1	0.2	0.2	0	0
	December	741	99.6%	0.1	0.3	0.2	0	0
Annual		8535	97.4%	0.1	0.4	0.3	0	0
2018	January	730	98.1%	0.1	0.2	0.2	0	0
	February	671	99.9%	0.2	0.3	0.2	0	0
	March	744	100.0%	0.2	0.3	0.3	0	0
	April	718	99.7%	0.1	0.2	0.2	0	0
	May	688	92.5%	0.1	0.3	0.3	0	0
	June	535	74.3%	0.1	0.2	0.1	0	0
	July	742	99.7%	0.1	0.4	0.3	0	0
	August	422	56.7%	0.2	0.3	0.3	0	0
	September	720	100.0%	0.1	0.2	0.2	0	0
	October	743	99.9%	0.1	0.3	0.2	0	0
	November	716	99.4%	0.1	0.2	0.2	0	0
	December	744	100.0%	0.1	0.3	0.2	0	0
Annual		8173	93.3%	0.1	0.4	0.3	0	0

Observations in ug/m^3

FIGURE 3.5.4 - BURIN NAPS ANNUAL CO CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 3.5.5 - BURIN NAPS O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	741	99.6%	67.8	86.8	84.1	0	0
	February	672	100.0%	72.4	90.8	84.8	0	0
	March	744	100.0%	70.7	92.3	85.9	0	0
	April	719	99.9%	69.3	89.7	89.0	0	2
	May	742	99.7%	62.9	90.5	85.3	0	0
	June	720	100.0%	46.3	95.7	85.1	0	0
	July	743	99.9%	36.9	70.5	61.0	0	0
	August	743	99.9%	41.3	86.0	76.9	0	0
	September	720	100.0%	41.0	80.6	73.7	0	0
	October	665	89.4%	46.8	76.6	70.4	0	0
	November	710	98.6%	53.9	80.8	72.8	0	0
	December	738	99.2%	62.0	92.2	76.3	0	0
Annual		8657	98.8%	55.9	95.7	89.0	0	2
2018	January	737	99.1%	53.1	74.7	73.2	0	0
	February	672	100.0%	54.7	78.2	69.9	0	0
	March	744	100.0%	76.1	92.2	90.7	0	3
	April	719	99.9%	75.0	107.2	99.9	0	13
	May	743	99.9%	63.0	83.3	78.0	0	0
	June	474	65.8%	51.4	97.7	77.9	0	0
	July	469	63.0%	36.4	67.1	57.2	0	0
	August	729	98.0%	38.7	77.9	61.1	0	0
	September	720	100.0%	39.4	68.3	62.7	0	0
	October	743	99.9%	48.2	76.7	74.1	0	0
	November	470	65.3%	56.4	79.9	73.6	0	0
	December	744	100.0%	66.2	87.4	81.9	0	0
Annual		7964	90.9%	55.6	107.2	99.9	0	16

Observations in ug/m^3

FIGURE 3.5.5 - BURIN NAPS ANNUAL O_3 CONCENTRATIONS

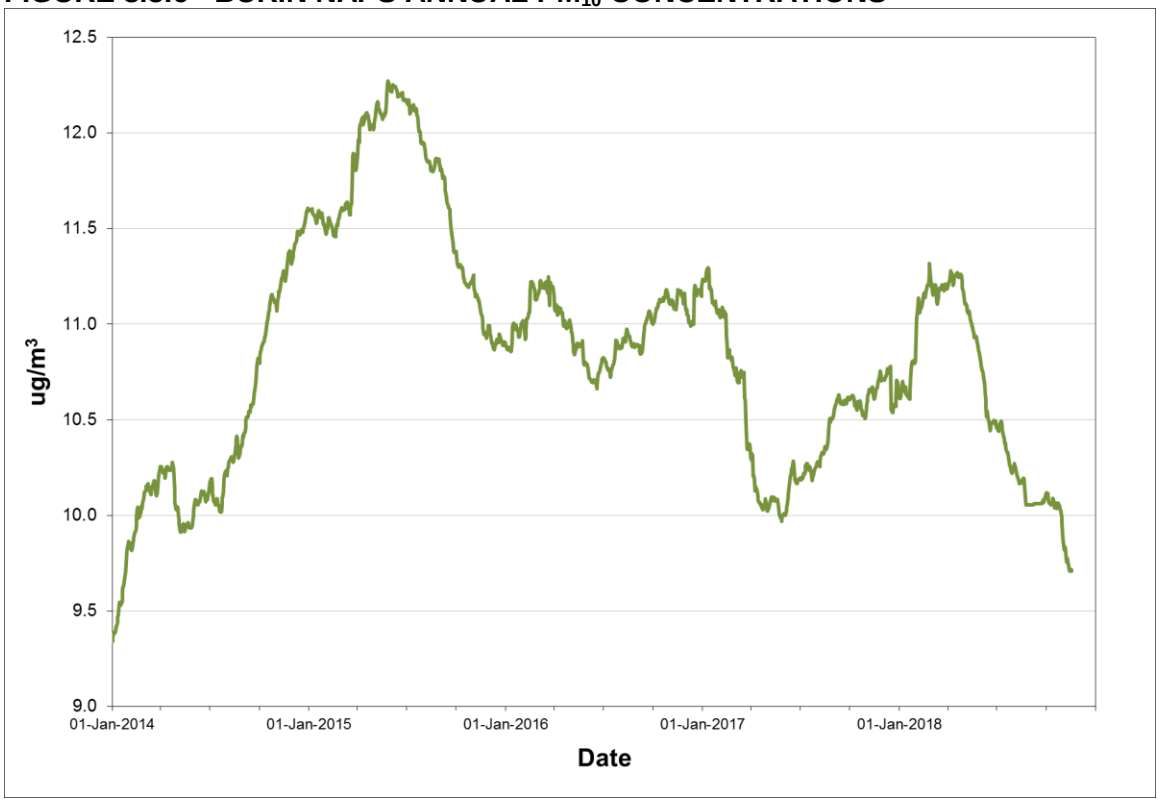
Rolling annual average of hourly concentrations

TABLE 3.5.6 - BURIN NAPS PM_{10} SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>50 µg/m^3)
2017	January	31	100.0%	11.2	20.7	0
	February	28	100.0%	12.0	28.5	0
	March	12	38.7%	12.8	26.2	0
	April	30	100.0%	9.6	18.0	0
	May	31	100.0%	9.1	16.1	0
	June	28	93.3%	10.3	19.0	0
	July	31	100.0%	9.4	16.1	0
	August	24	77.4%	12.3	25.1	0
	September	10	33.3%	8.2	14.5	0
	October	31	100.0%	10.4	18.7	0
	November	30	100.0%	11.2	18.6	0
	December	31	100.0%	11.2	34.5	0
Annual		317	86.8%	10.6	34.5	0
2018	January	31	100.0%	13.2	25.9	0
	February	26	92.9%	17.3	41.6	0
	March	31	100.0%	11.4	20.0	0
	April	30	100.0%	9.3	23.6	0
	May	31	100.0%	5.2	11.3	0
	June	21	70.0%	4.6	20.7	0
	July	31	100.0%	7.0	15.9	0
	August	8	25.8%	9.2	18.2	0
	September	0	0.0%			
	October	6	19.4%	2.3	4.0	0
	November	18	60.0%	6.8	16.8	0
	December	31	100.0%	7.3	20.8	0
Annual		264	72.3%	9.1	41.6	0

Observations in ug/m^3

FIGURE 3.5.6 - BURIN NAPS ANNUAL PM_{10} CONCENTRATIONS

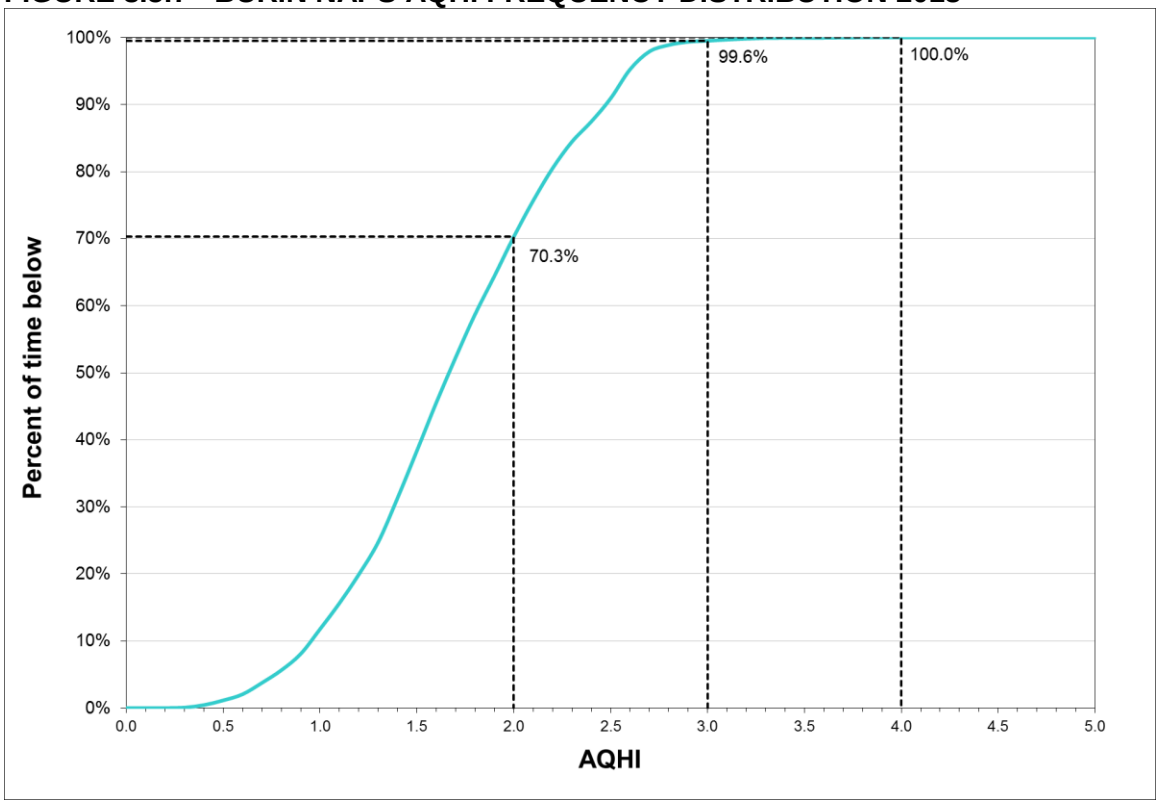


Rolling annual average of hourly concentrations

TABLE 3.5.7 - BURIN NAPS AQHI SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 3-Hour
2017	January	740	99.5%	2.2	3.1
	February	669	99.6%	2.3	3.6
	March	321	43.1%	2.4	3.0
	April	720	100.0%	2.2	3.0
	May	742	99.7%	2.0	2.9
	June	720	100.0%	1.7	3.8
	July	742	99.7%	1.4	2.4
	August	733	98.5%	1.4	3.1
	September	718	99.7%	1.3	2.5
	October	617	82.9%	1.6	2.7
	November	26	3.6%	1.1	2.3
	December	172	23.1%	2.0	2.8
Annual		6920	79.0%	1.8	3.8
2018	January	0			
	February	0			
	March	675	90.7%	2.5	3.2
	April	553	76.8%	2.2	3.2
	May	723	97.2%	1.8	3.7
	June	473	65.7%	1.5	2.6
	July	456	61.3%	1.1	1.9
	August	677	91.0%	1.3	2.3
	September	718	99.7%	1.2	2.0
	October	734	98.7%	1.5	2.5
	November	464	64.4%	1.8	3.8
	December	411	55.2%	2.0	2.9
Annual		5884	67.2%	1.7	3.8

FIGURE 3.5.7 - BURIN NAPS AQHI FREQUENCY DISTRIBUTION 2018



e.g. 99.6% of the time the AQHI recorded was below 3.0

3.6 Port aux Choix

The Port aux Choix NAPS monitoring station is located at the Town Depot and monitors the ambient levels of O_3 on a continuous basis. There were no recorded O_3 exceedances at this station in 2018.

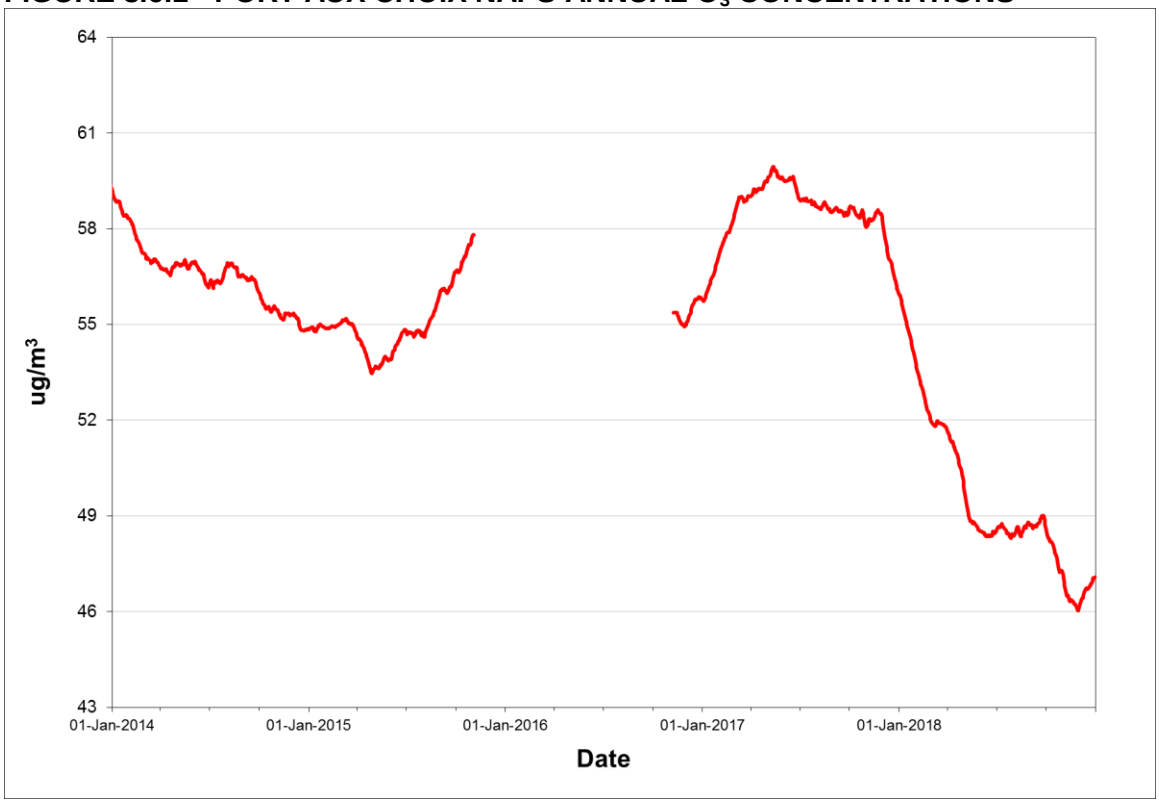
Table 3.6.1 presents the summary information on the level of O_3 measured at the Port aux Choix NAPS station while Figure 3.6.1 presents a graphical representation of the annual trend of O_3.

TABLE 3.6.1 - PORT AUX CHOIX NAPS O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	744	100.0%	71.1	85.9	83.9	0	0
	February	672	100.0%	75.6	89.0	87.4	0	1
	March	615	82.7%	75.5	92.0	88.4	0	6
	April	718	99.7%	76.4	92.8	90.9	0	9
	May	742	99.7%	62.8	100.9	92.8	0	4
	June	717	99.6%	46.4	96.4	88.8	0	1
	July	744	100.0%	39.0	87.9	74.4	0	0
	August	616	82.8%	36.6	63.5	58.8	0	0
	September	719	99.9%	41.9	75.4	71.3	0	0
	October	742	99.7%	48.2	76.2	72.9	0	0
	November	660	91.7%	56.9	73.4	71.8	0	0
	December	612	82.3%	40.5	84.4	58.7	0	0
Annual		8301	94.8%	56.0	100.9	92.8	0	21
2018	January	722	97.0%	46.9	57.6	55.4	0	0
	February	672	100.0%	53.4	73.3	67.9	0	0
	March	587	78.9%	71.6	83.5	82.2	0	0
	April	684	95.0%	58.4	91.9	83.4	0	0
	May	214	28.8%	38.6	73.7	64.8	0	0
	June	251	34.9%	43.0	76.1	62.8	0	0
	July	684	91.9%	36.7	78.8	76.5	0	0
	August	469	63.0%	37.4	64.2	58.7	0	0
	September	712	98.9%	41.1	59.4	54.4	0	0
	October	744	100.0%	35.1	57.2	49.7	0	0
	November	715	99.3%	44.4	60.1	58.7	0	0
	December	739	99.3%	51.6	66.2	65.6	0	0
Annual		7193	82.1%	47.1	91.9	83.4	0	0

Observations in ug/m^3

FIGURE 3.6.1 - PORT AUX CHOIX NAPS ANNUAL O_3 CONCENTRATIONS



Rolling annual average of hourly concentrations

4.0 Industrial Monitoring Network

Industrial operations in the province are responsible for the monitoring of air quality near their facility. The Department audits the operation of the industrial monitoring stations on a regular basis to ensure that the monitors are functioning according to instrument specifications and to the standard operating procedures. If the audits indicate a monitor is not operating within the specifications, corrective actions are required by the industry and data may be invalidated.

On the island of Newfoundland, there were six monitoring networks operated by industry in 2018 and another three in Labrador. Figures 4.0.1 and 4.0.2 present the locations of these monitoring networks.

The subsequent sections of this report detail the summary statistics and the longer term trend of pollutants measured at each station within a given network.

FIGURE 4.0.1 - INDUSTRIAL MONITORING NETWORK IN NEWFOUNDLAND

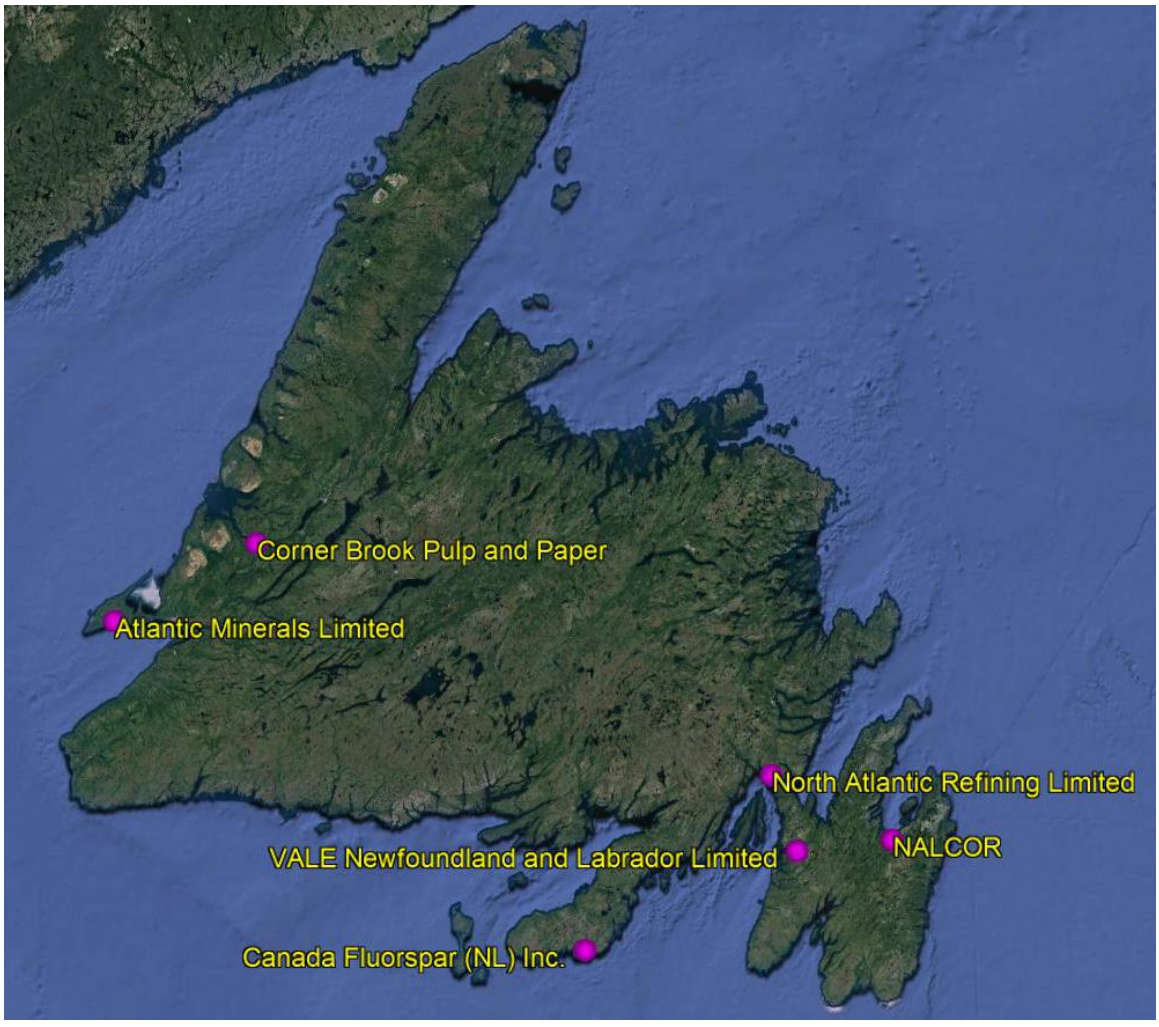
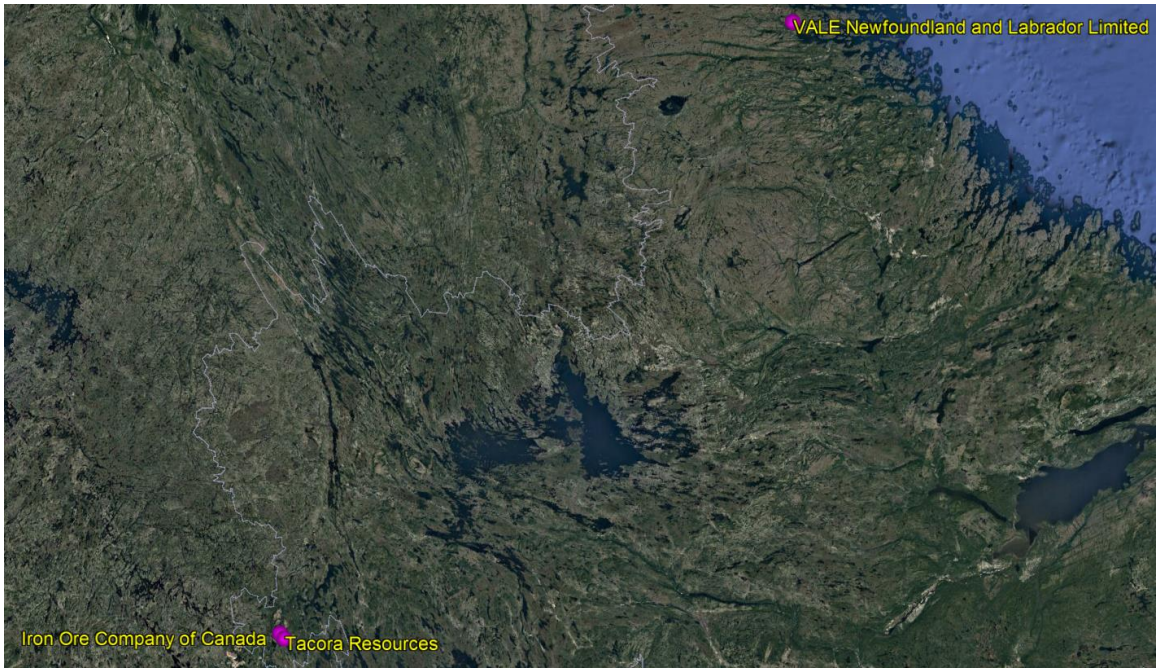


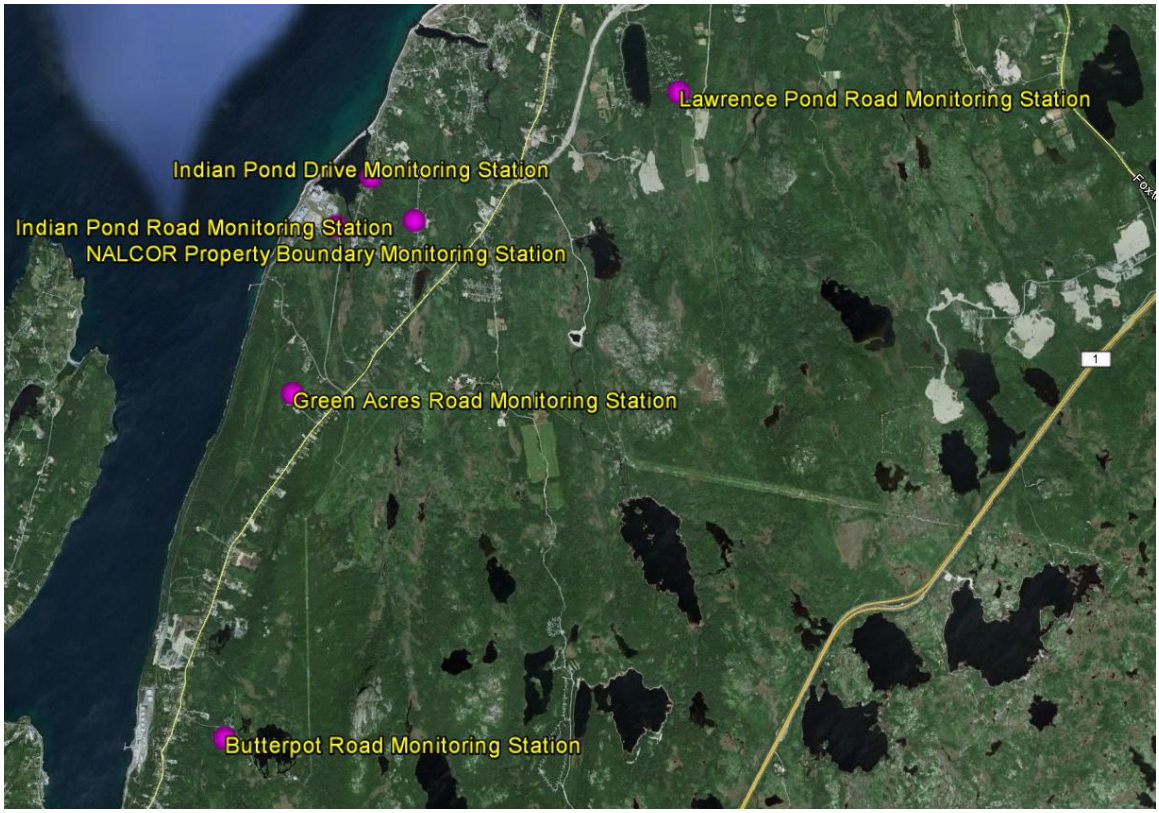
FIGURE 4.0.2 - INDUSTRIAL MONITORING NETWORK IN LABRADOR



4.1 NALCOR

In 2018, NALCOR operated monitoring stations at 6 locations in the Holyrood area. These stations are installed to monitor the air quality near the Holyrood Thermal Generating Station and are located at Butterpot Road, Green Acres Road, Indian Pond Drive, Indian Pond Road, Lawrence Pond, and the NALCOR property boundary. Figure 4.1.1 indicates the location of these stations.

FIGURE 4.1.1 - NALCOR AMBIENT MONITORING STATIONS



4.1.1 Butterpot Road

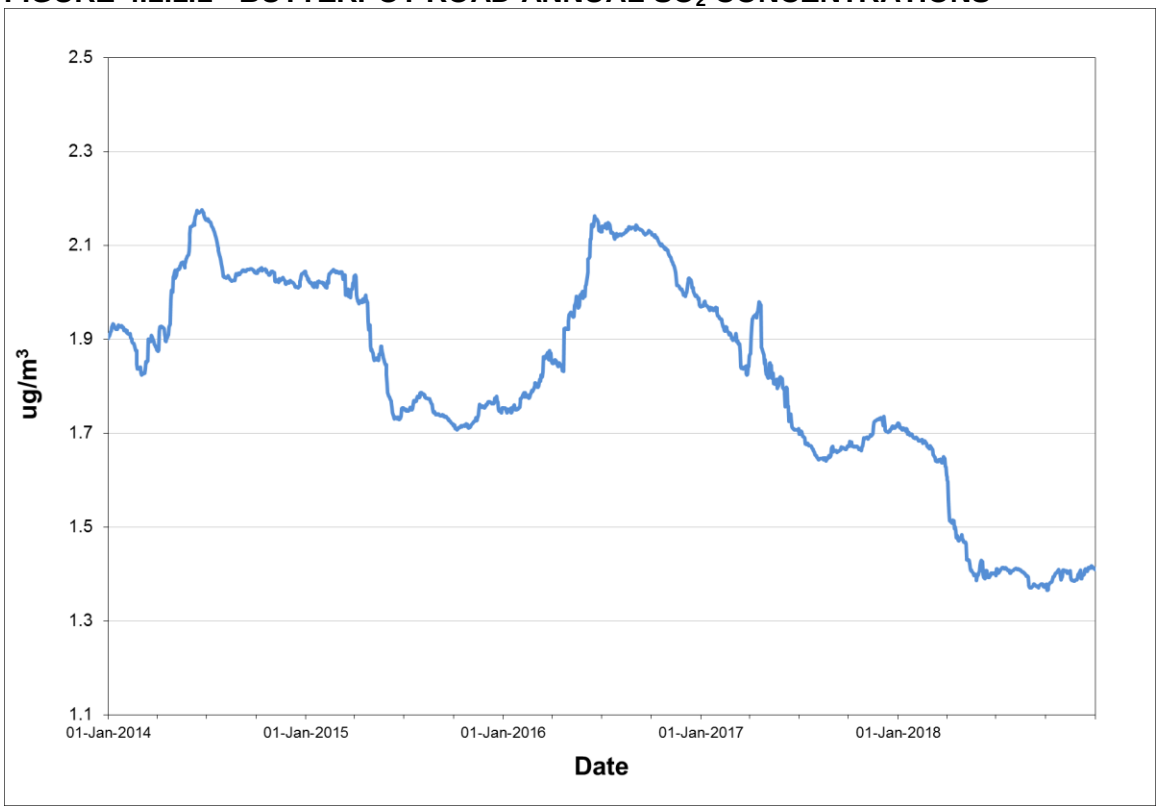
The Butterpot Road station monitors the ambient levels of SO_2, NO_x / NO_2 and $PM_{2.5}$ on a continuous basis. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.1.1.1 through 4.1.1.3 provide summary information on the level of air contaminants measured at Butterpot Road, while Figures 4.1.1.1 through 4.1.1.3 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.1.1.1 - BUTTERPOT ROAD SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	710	95.4%	1.8	24.9	17.5	5.1	0	0	0
	February	544	81.0%	1.5	45.6	12.9	4.1	0	0	0
	March	701	94.2%	2.4	48.8	45.8	8.6	0	0	0
	April	690	95.8%	3.1	71.2	50.5	14.6	0	0	0
	May	685	92.1%	2.6	76.5	33.5	12.5	0	0	0
	June	663	92.1%	1.9	56.1	32.1	14.5	0	0	0
	July	713	95.8%	1.0	26.2	17.8	3.8	0	0	0
	August	689	92.6%	1.2	33.7	27.8	6.6	0	0	0
	September	686	95.3%	1.0	16.4	14.1	2.7	0	0	0
	October	713	95.8%	1.3	65.0	24.4	5.2	0	0	0
	November	686	95.3%	1.4	31.1	20.1	7.7	0	0	0
	December	711	95.6%	1.5	40.4	29.6	8.0	0	0	0
Annual		8191	93.5%	1.7	76.5	50.5	14.6	0	0	0
2018	January	713	95.8%	1.5	20.1	10.8	3.4	0	0	0
	February	619	92.1%	1.2	9.1	6.5	2.4	0	0	0
	March	710	95.4%	1.7	51.0	33.5	6.9	0	0	0
	April	689	95.7%	1.4	28.6	16.6	3.3	0	0	0
	May	689	92.6%	1.7	17.3	8.2	3.5	0	0	0
	June	688	95.6%	1.8	42.7	17.1	6.0	0	0	0
	July	712	95.7%	1.0	34.8	20.9	5.6	0	0	0
	August	688	92.5%	0.8	2.8	2.2	1.2	0	0	0
	September	686	95.3%	0.9	7.3	4.8	1.4	0	0	0
	October	712	95.7%	1.6	11.8	8.1	3.3	0	0	0
	November	686	95.3%	1.5	18.1	12.0	5.3	0	0	0
	December	705	94.8%	1.6	31.2	17.5	4.3	0	0	0
Annual		8297	94.7%	1.4	51.0	33.5	6.9	0	0	0

Observations in ug/m^3

FIGURE 4.1.1.1 - BUTTERPOT ROAD ANNUAL SO_2 CONCENTRATIONS



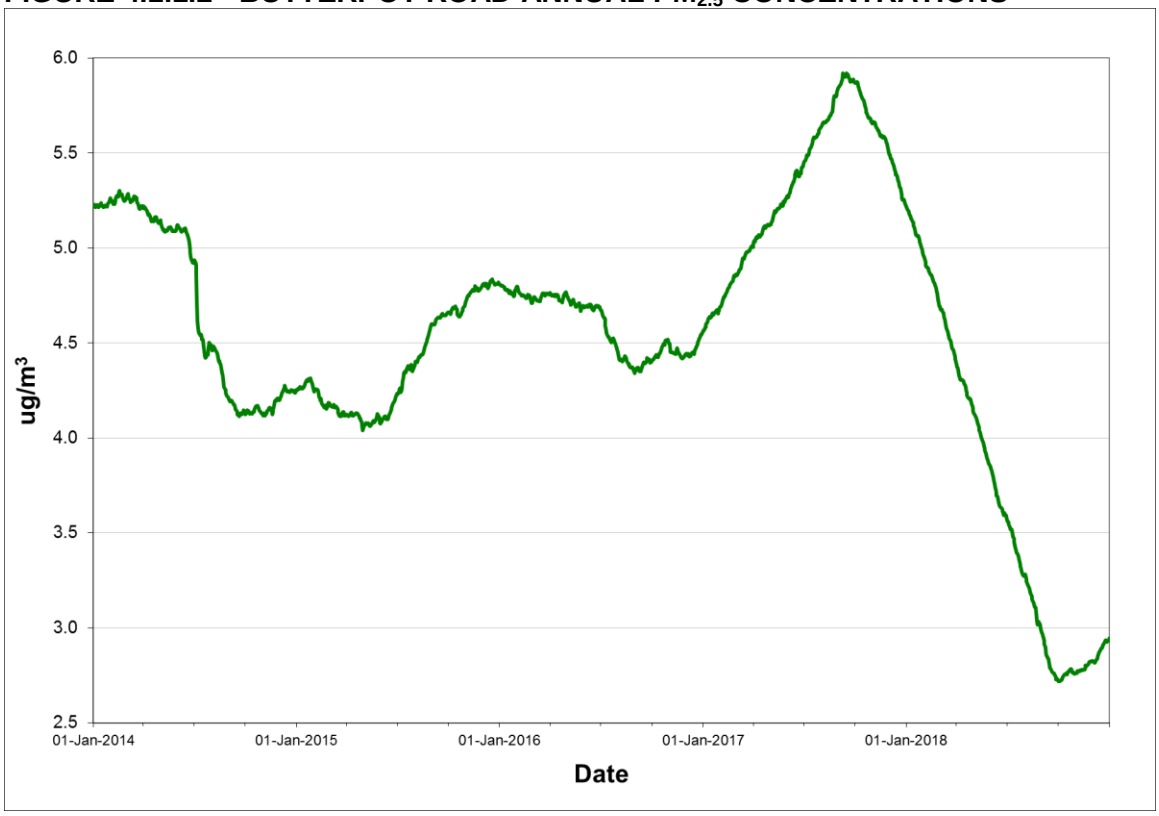
Rolling annual average of hourly concentrations

TABLE 4.1.1.2 - BUTTERPOT ROAD $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	6.9	9.7	0
	February	28	100.0%	6.7	9.2	0
	March	30	96.8%	7.0	10.8	0
	April	28	93.3%	6.6	10.7	0
	May	31	100.0%	6.0	8.5	0
	June	26	86.7%	5.6	8.5	0
	July	31	100.0%	4.8	7.9	0
	August	31	100.0%	5.7	14.9	0
	September	30	100.0%	4.8	13.4	0
	October	27	87.1%	2.5	5.8	0
	November	30	100.0%	3.1	5.3	0
	December	30	96.8%	2.9	7.7	0
Annual		353	96.7%	5.2	14.9	0
2018	January	31	100.0%	3.9	8.2	0
	February	28	100.0%	3.5	6.8	0
	March	31	100.0%	3.4	6.7	0
	April	30	100.0%	3.5	8.1	0
	May	31	100.0%	2.5	4.7	0
	June	30	100.0%	2.0	10.1	0
	July	30	96.8%	1.3	3.5	0
	August	29	93.5%	2.3	8.5	0
	September	26	86.7%	1.5	3.1	0
	October	31	100.0%	2.9	4.8	0
	November	30	100.0%	3.9	7.0	0
	December	31	100.0%	4.3	6.8	0
Annual		358	98.1%	2.9	10.1	0

Observations in ug/m^3

FIGURE 4.1.1.2 - BUTTERPOT ROAD ANNUAL $PM_{2.5}$ CONCENTRATIONS



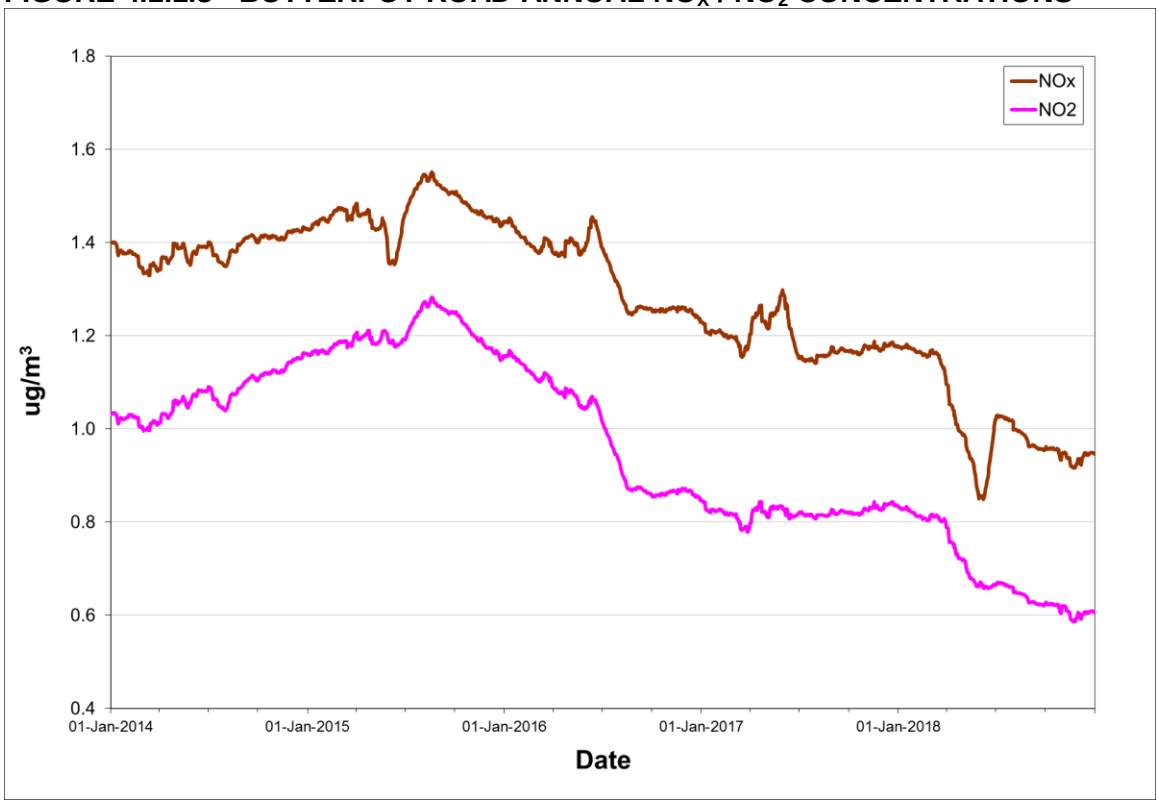
Rolling annual average of daily concentrations

TABLE 4.1.1.3 - BUTTERPOT ROAD NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour	24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	712	95.7%	0.9	0.7	12.0	10.7	2.4	2.2	0	0
	February	640	95.2%	0.8	0.6	33.7	31.2	2.3	2.1	0	0
	March	602	80.9%	1.6	0.9	42.1	38.3	5.9	4.5	0	0
	April	690	95.8%	1.9	1.4	39.5	31.7	7.9	6.7	0	0
	May	671	90.2%	2.5	1.2	36.0	22.3	6.8	5.0	0	0
	June	665	92.4%	1.1	0.9	23.4	12.3	5.7	3.7	0	0
	July	713	95.8%	0.8	0.5	11.7	8.6	2.2	1.6	0	0
	August	709	95.3%	1.2	0.7	68.0	35.7	6.9	3.6	0	0
	September	688	95.6%	0.7	0.5	9.6	6.5	1.7	1.2	0	0
	October	713	95.8%	1.0	0.8	43.8	30.9	3.3	2.5	0	0
	November	687	95.4%	1.0	0.9	18.8	17.9	5.0	4.8	0	0
	December	711	95.6%	0.9	0.8	21.1	17.6	4.9	4.2	0	0
Annual		8201	93.6%	1.2	0.8	68.0	38.3	7.9	6.7	0	0
2018	January	713	95.8%	0.8	0.5	13.8	11.4	2.8	2.2	0	0
	February	641	95.4%	0.6	0.5	14.3	9.3	1.6	1.2	0	0
	March	709	95.3%	0.8	0.7	15.5	12.4	2.8	2.5	0	0
	April	689	95.7%	0.6	0.6	11.3	8.1	1.8	1.5	0	0
	May	686	92.2%	0.8	0.5	31.6	16.1	2.6	1.9	0	0
	June	686	95.3%	3.1	0.9	13.7	9.8	4.9	1.8	0	0
	July	713	95.8%	0.7	0.5	12.8	6.1	3.3	2.0	0	0
	August	689	92.6%	0.5	0.3	2.8	2.0	0.8	0.6	0	0
	September	687	95.4%	0.6	0.4	9.6	5.7	1.3	1.0	0	0
	October	713	95.8%	0.8	0.7	16.1	15.5	3.8	3.5	0	0
	November	685	95.1%	1.0	0.9	33.7	28.8	3.6	3.2	0	0
	December	711	95.6%	1.1	0.8	49.5	30.4	4.0	2.5	0	0
Annual		8322	95.0%	0.9	0.6	49.5	30.4	4.9	3.5	0	0

Observations in ug/m^3

FIGURE 4.1.1.3 - BUTTERPOT ROAD ANNUAL NO_X / NO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

4.1.2 Green Acres Road

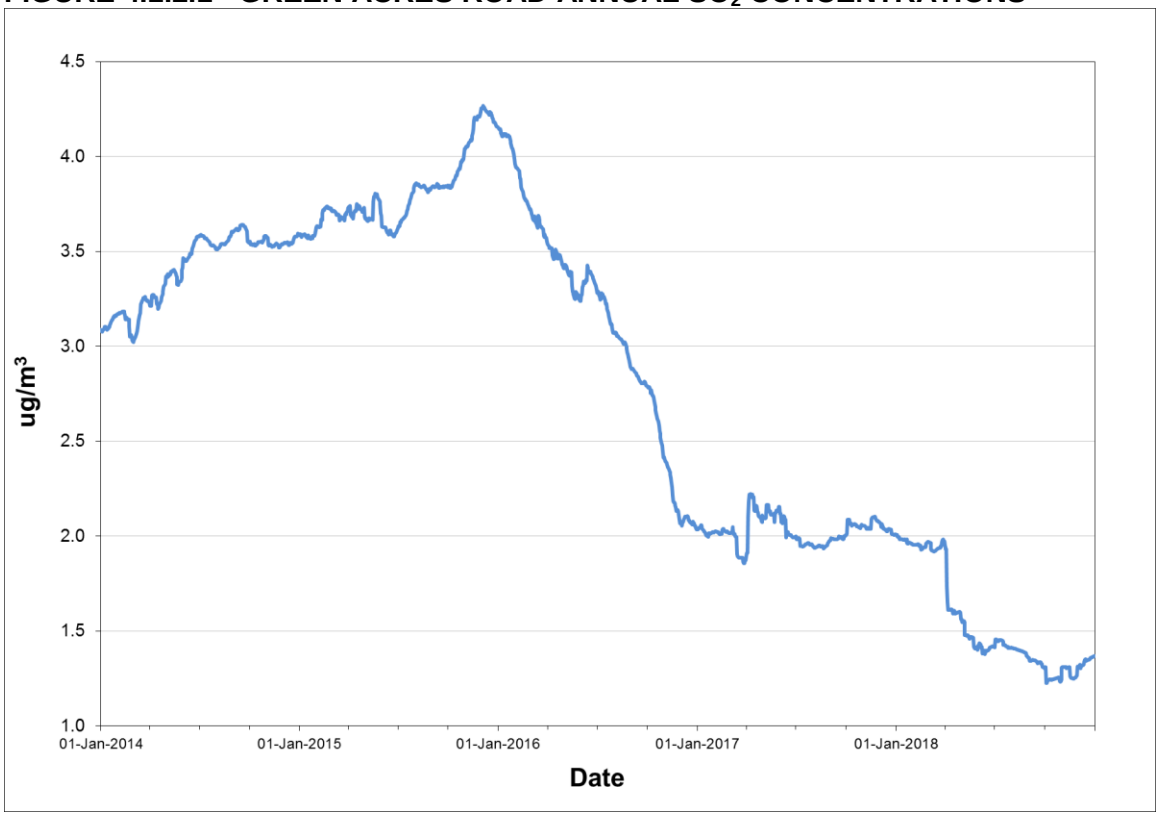
The Green Acres Road station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$ on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.1.2.1 through 4.1.2.4 provide summary information on the level of air contaminants measured at Green Acres Road, while Figures 4.1.2.1 through 4.1.2.4 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.1.2.1 - GREEN ACRES ROAD SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	713	95.8%	1.7	98.8	20.1	7.7	0	0	0
	February	643	95.7%	1.3	134.8	32.2	9.1	0	0	0
	March	709	95.3%	1.6	122.5	65.0	12.1	0	0	0
	April	690	95.8%	5.7	214.6	197.3	70.2	0	0	0
	May	713	95.8%	3.1	147.9	93.4	25.8	0	0	0
	June	653	90.7%	2.0	100.7	52.0	12.5	0	0	0
	July	710	95.4%	1.1	92.9	34.7	6.5	0	0	0
	August	692	93.0%	1.3	78.2	36.4	6.3	0	0	0
	September	683	94.9%	1.5	91.3	31.1	6.4	0	0	0
	October	712	95.7%	1.9	85.1	66.6	29.2	0	0	0
	November	683	94.9%	1.7	45.7	37.4	18.6	0	0	0
	December	682	91.7%	1.0	59.8	26.4	7.5	0	0	0
Annual		8283	94.6%	2.0	214.6	197.3	70.2	0	0	0
2018	January	628	84.4%	1.0	23.6	11.4	3.7	0	0	0
	February	644	95.8%	1.5	31.6	21.5	4.1	0	0	0
	March	706	94.9%	1.4	75.8	42.8	8.6	0	0	0
	April	689	95.7%	1.1	93.4	48.4	8.8	0	0	0
	May	673	90.5%	1.5	44.9	36.7	8.0	0	0	0
	June	636	88.3%	1.9	50.5	30.4	6.5	0	0	0
	July	645	86.7%	1.0	153.4	83.0	14.9	0	0	0
	August	693	93.1%	0.7	2.9	2.0	1.1	0	0	0
	September	683	94.9%	0.8	14.2	10.4	2.5	0	0	0
	October	712	95.7%	1.3	48.7	22.8	4.9	0	0	0
	November	642	89.2%	2.6	102.1	83.6	22.1	0	0	0
	December	448	60.2%	1.9	65.8	41.2	6.8	0	0	0
Annual		7799	89.0%	1.4	153.4	83.6	22.1	0	0	0

Observations in ug/m^3

FIGURE 4.1.2.1 - GREEN ACRES ROAD ANNUAL SO_2 CONCENTRATIONS



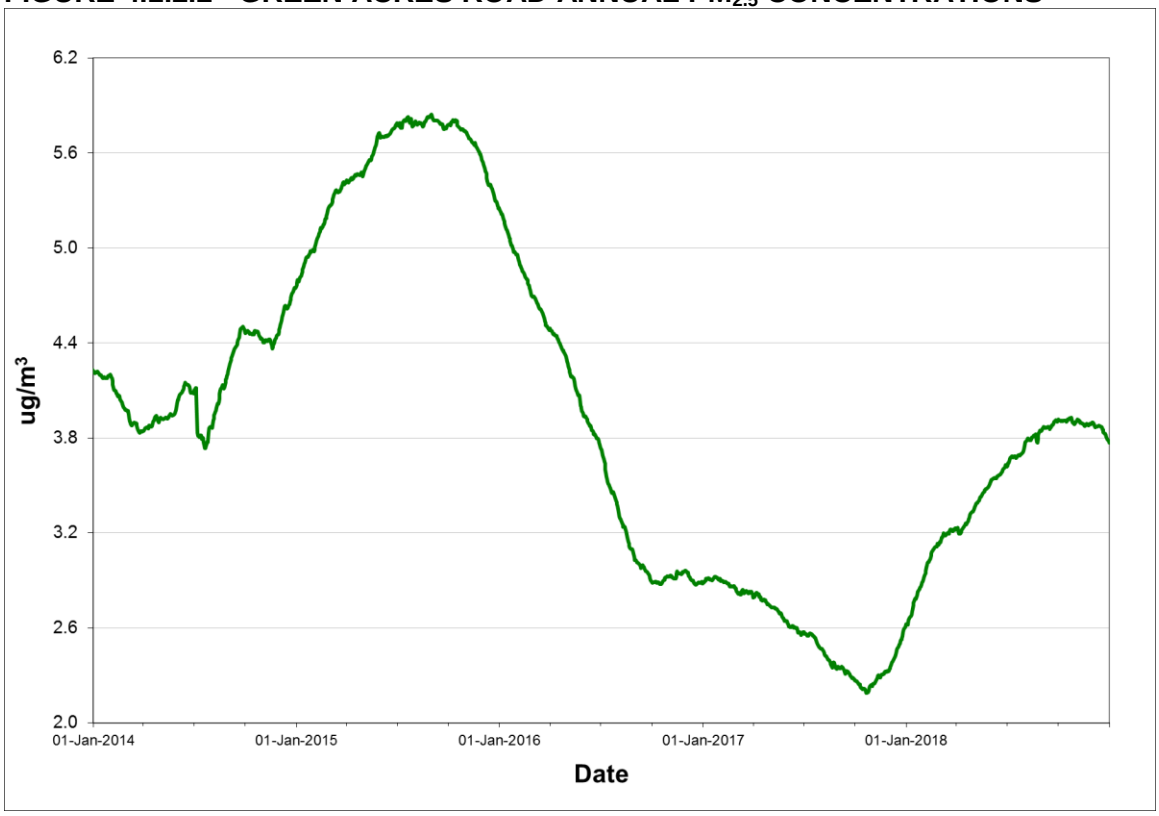
Rolling annual average of hourly concentrations

TABLE 4.1.2.2 - GREEN ACRES ROAD $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	2.6	6.5	0
	February	28	100.0%	2.2	4.8	0
	March	31	100.0%	2.8	7.9	0
	April	30	100.0%	2.9	11.5	0
	May	31	100.0%	1.7	3.7	0
	June	29	96.7%	2.2	5.3	0
	July	30	96.8%	1.6	4.0	0
	August	29	93.5%	2.2	10.1	0
	September	28	93.3%	1.7	6.8	0
	October	27	87.1%	2.9	7.5	0
	November	29	96.7%	3.8	6.5	0
	December	29	93.5%	5.0	9.5	0
Annual		352	96.4%	2.6	11.5	0
2018	January	26	83.9%	6.3	10.7	0
	February	28	100.0%	4.9	7.5	0
	March	31	100.0%	4.0	6.7	0
	April	30	100.0%	4.1	7.8	0
	May	29	93.5%	3.7	6.1	0
	June	28	93.3%	3.4	9.5	0
	July	27	87.1%	2.7	7.5	0
	August	30	96.8%	3.5	9.5	0
	September	26	86.7%	2.4	4.9	0
	October	31	100.0%	2.9	4.7	0
	November	27	90.0%	3.9	7.8	0
	December	19	61.3%	3.4	5.8	0
Annual		332	91.0%	3.8	10.7	0

Observations in ug/m^3

FIGURE 4.1.2.2 - GREEN ACRES ROAD ANNUAL $PM_{2.5}$ CONCENTRATIONS



Rolling annual average of daily concentrations

TABLE 4.1.2.3 - GREEN ACRES ROAD NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour	24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	714	96.0%	1.9	1.2	58.1	34.6	4.3	2.7	0	0
	February	643	95.7%	1.4	1.0	80.6	50.2	5.2	3.3	0	0
	March	710	95.4%	1.6	1.1	76.4	51.7	7.4	5.4	0	0
	April	690	95.8%	3.3	2.2	105.7	63.0	33.2	21.4	0	0
	May	714	96.0%	2.2	1.4	63.9	23.2	10.6	5.5	0	0
	June	618	85.8%	1.4	1.0	30.8	17.0	4.3	2.7	0	0
	July	605	81.3%	3.4	0.6	33.2	16.3	5.9	1.6	0	0
	August	692	93.0%	1.2	0.8	34.4	14.8	5.2	3.1	0	0
	September	684	95.0%	1.1	0.7	38.2	17.1	3.1	1.7	0	0
	October	713	95.8%	1.5	1.1	32.6	20.7	12.3	7.9	0	0
	November	683	94.9%	1.7	1.2	28.4	25.1	9.0	6.8	0	0
	December	682	91.7%	1.5	1.1	50.7	25.1	5.1	3.8	0	0
Annual		8148	93.0%	1.9	1.1	105.7	63.0	33.2	21.4	0	0
2018	January	635	85.3%	1.3	0.8	36.2	15.3	2.8	2.2	0	0
	February	644	95.8%	1.2	0.8	21.8	16.7	2.6	1.9	0	0
	March	707	95.0%	1.4	1.0	46.4	38.4	7.1	6.0	0	0
	April	689	95.7%	1.0	0.7	32.9	21.8	3.9	2.8	0	0
	May	673	90.5%	1.7	1.1	51.6	40.9	8.3	6.4	0	0
	June	624	86.7%	1.8	0.9	27.3	17.2	3.4	2.0	0	0
	July	647	87.0%	0.9	0.7	50.8	17.7	6.0	3.0	0	0
	August	709	95.3%	0.8	0.5	4.6	2.7	1.1	0.8	0	0
	September	684	95.0%	0.9	0.6	14.8	11.9	1.9	1.6	0	0
	October	713	95.8%	1.1	0.8	44.2	30.9	6.0	4.5	0	0
	November	643	89.3%	1.8	1.4	58.8	41.4	11.9	8.4	0	0
	December	430	57.8%	1.6	1.1	43.0	29.1	4.9	3.5	0	0
Annual		7798	89.0%	1.3	0.9	58.8	41.4	11.9	8.4	0	0

Observations in ug/m^3

FIGURE 4.1.2.3 - GREEN ACRES ROAD ANNUAL NO_X / NO_2 CONCENTRATIONS

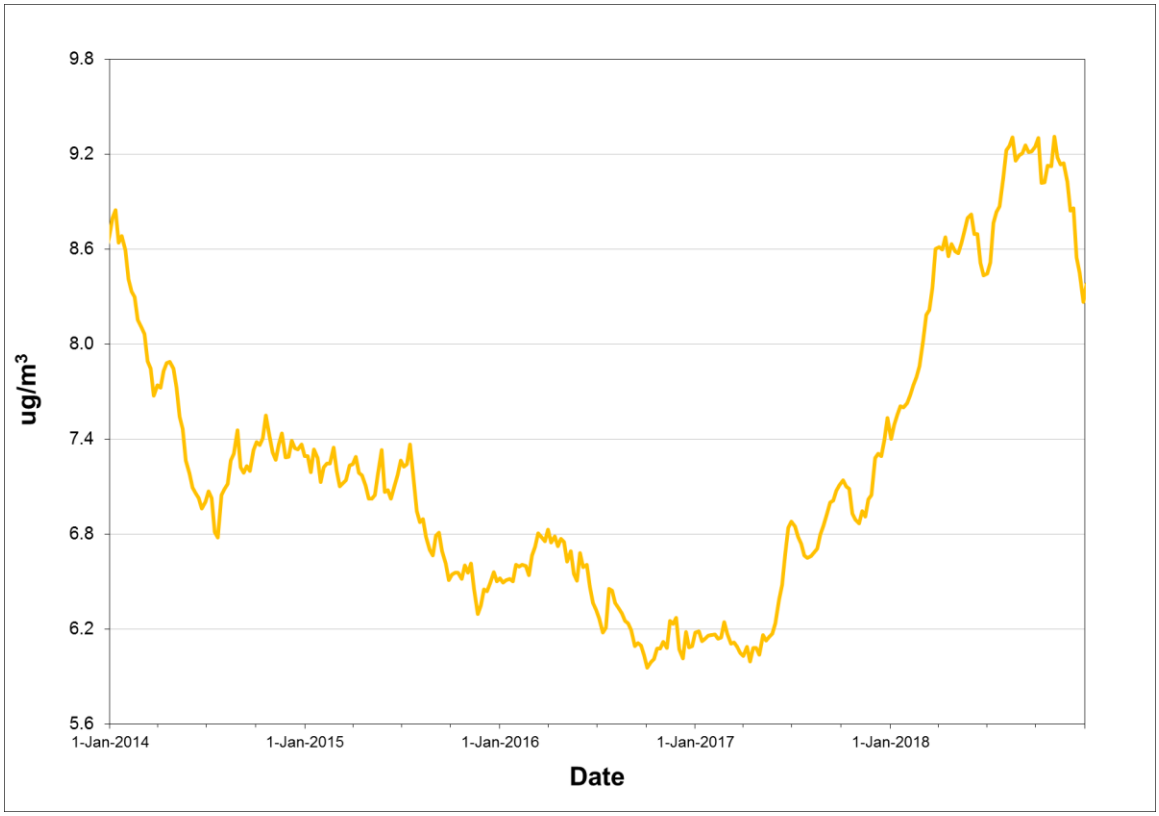
Rolling annual average of hourly concentrations

TABLE 4.1.2.4 - GREEN ACRES ROAD TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	6	100.0%	6.6	11.1	0
	February	3	75.0%	6.9	8.7	0
	March	5	100.0%	5.3	9.9	0
	April	5	100.0%	8.8	16.8	0
	May	6	100.0%	6.5	8.8	0
	June	5	100.0%	15.9	23.3	0
	July	5	100.0%	4.3	7.7	0
	August	5	100.0%	8.5	17.6	0
	September	5	100.0%	5.8	7.5	0
	October	5	100.0%	6.6	9.8	0
	November	5	100.0%	9.0	14.1	0
	December	5	100.0%	12.4	21.5	0
Annual		60	98.4%	7.5	23.3	0
2018	January	5	100.0%	7.5	14.4	0
	February	4	80.0%	11.1	14.9	0
	March	5	100.0%	15.5	28.3	0
	April	5	100.0%	9.1	14.7	0
	May	4	80.0%	7.4	10.9	0
	June	5	100.0%	10.2	18.4	0
	July	5	83.3%	9.4	10.8	0
	August	3	60.0%	11.0	14.6	0
	September	5	100.0%	6.2	8.0	0
	October	5	100.0%	5.7	12.4	0
	November	5	100.0%	8.0	13.3	0
	December	5	100.0%	4.6	6.5	0
Annual		56	91.8%	8.4	28.3	0

Observations in ug/m^3

FIGURE 4.1.2.4 - GREEN ACRES ROAD ANNUAL TPM CONCENTRATIONS



Rolling annual average of daily concentrations

4.1.3 Indian Pond Drive

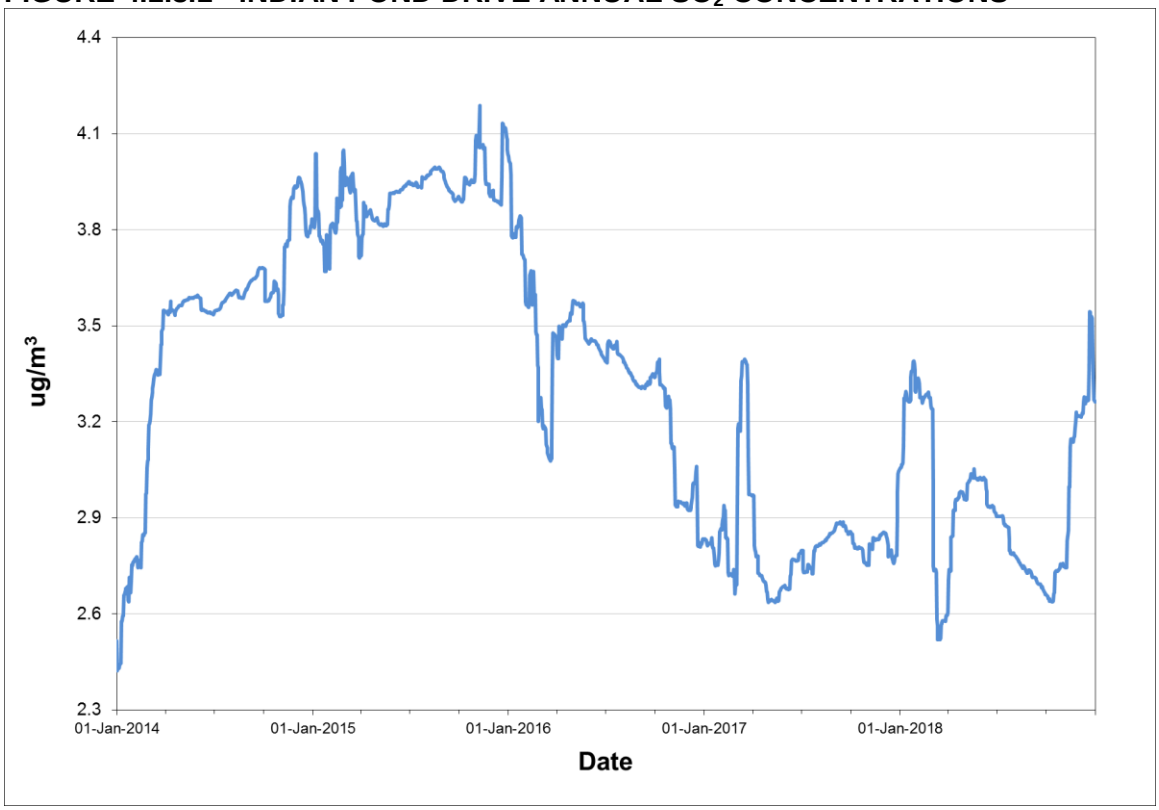
The Indian Pond Drive station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$ on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. The ambient air criteria for any pollutant were not exceeded on any occasion in 2018. Tables 4.1.3.1 through 4.1.3.4 provide summary information on the level of air contaminants measured at Indian Pond Drive, while Figures 4.1.3.1 through 4.1.3.4 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.1.3.1 - INDIAN POND DRIVE SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	713	95.8%	3.1	77.7	52.1	23.5	0	0	0
	February	641	95.4%	3.5	148.1	97.6	15.9	0	0	0
	March	712	95.7%	9.3	203.7	183.2	87.4	0	0	0
	April	630	87.5%	1.0	6.9	3.6	1.9	0	0	0
	May	684	91.9%	1.5	41.9	27.7	10.0	0	0	0
	June	649	90.1%	2.5	74.5	58.2	15.8	0	0	0
	July	674	90.6%	2.2	70.7	48.4	14.2	0	0	0
	August	681	91.5%	1.5	3.1	2.5	2.1	0	0	0
	September	628	87.2%	1.5	25.2	10.5	3.4	0	0	0
	October	711	95.6%	1.3	24.4	13.0	3.7	0	0	0
	November	685	95.1%	3.3	113.0	103.3	25.2	0	0	0
	December	697	93.7%	5.5	131.9	109.3	42.4	0	0	0
Annual		8105	92.5%	3.1	203.7	183.2	87.4	0	0	0
2018	January	683	91.8%	6.1	146.9	129.7	55.1	0	0	0
	February	570	84.8%	2.6	68.6	40.8	15.0	0	0	0
	March	702	94.4%	2.1	51.1	37.2	15.4	0	0	0
	April	686	95.3%	5.3	105.2	82.1	37.3	0	0	0
	May	709	95.3%	2.2	75.3	45.7	18.1	0	0	0
	June	688	95.6%	1.1	36.5	15.0	4.4	0	0	0
	July	713	95.8%	1.0	4.2	2.6	1.7	0	0	0
	August	626	84.1%	0.7	4.1	3.6	1.7	0	0	0
	September	687	95.4%	0.7	33.7	11.7	2.3	0	0	0
	October	668	89.8%	2.3	60.4	52.5	26.6	0	0	0
	November	686	95.3%	8.7	173.5	155.7	54.7	0	0	0
	December	710	95.4%	6.0	147.5	110.1	68.3	0	0	0
Annual		8128	92.8%	3.3	173.5	155.7	68.3	0	0	0

Observations in ug/m^3

FIGURE 4.1.3.1 - INDIAN POND DRIVE ANNUAL SO_2 CONCENTRATIONS



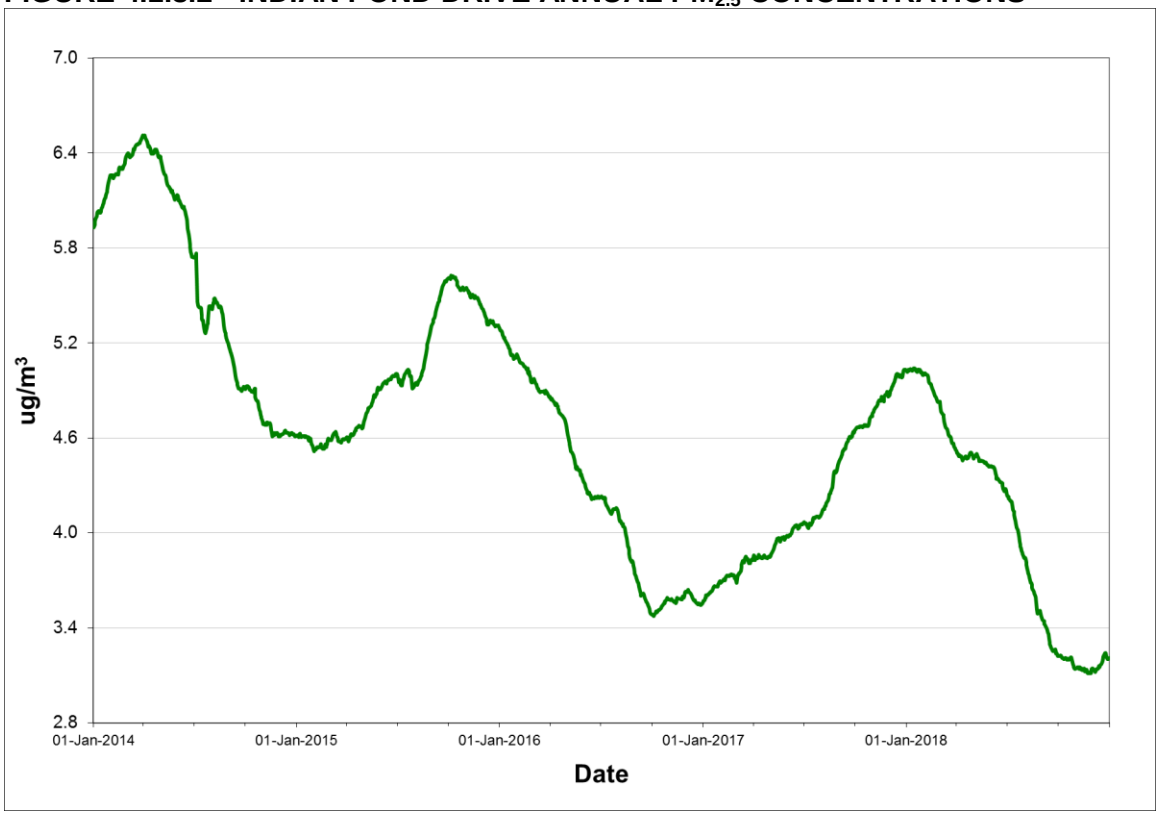
Rolling annual average of hourly concentrations

TABLE 4.1.3.2 - INDIAN POND DRIVE $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	3.9	7.2	0
	February	28	100.0%	4.2	11.5	0
	March	31	100.0%	4.9	16.3	0
	April	27	90.0%	4.1	8.0	0
	May	30	96.8%	4.3	7.7	0
	June	28	93.3%	5.1	10.0	0
	July	28	90.3%	6.7	12.4	0
	August	29	93.5%	7.4	16.3	0
	September	26	86.7%	6.1	13.5	0
	October	27	87.1%	4.9	10.7	0
	November	30	100.0%	4.9	11.8	0
	December	30	96.8%	3.9	11.2	0
Annual		345	94.5%	5.0	16.3	0
2018	January	29	93.5%	3.5	8.1	0
	February	25	89.3%	1.8	5.4	0
	March	30	96.8%	1.5	3.3	0
	April	25	83.3%	3.6	8.0	0
	May	31	100.0%	3.6	6.8	0
	June	30	100.0%	3.0	9.1	0
	July	31	100.0%	2.1	5.2	0
	August	28	90.3%	3.0	10.2	0
	September	26	86.7%	2.8	5.3	0
	October	28	90.3%	3.9	7.9	0
	November	30	100.0%	4.9	9.5	0
	December	31	100.0%	4.7	9.0	0
Annual		344	94.2%	3.2	10.2	0

Observations in ug/m^3

FIGURE 4.1.3.2 - INDIAN POND DRIVE ANNUAL $PM_{2.5}$ CONCENTRATIONS



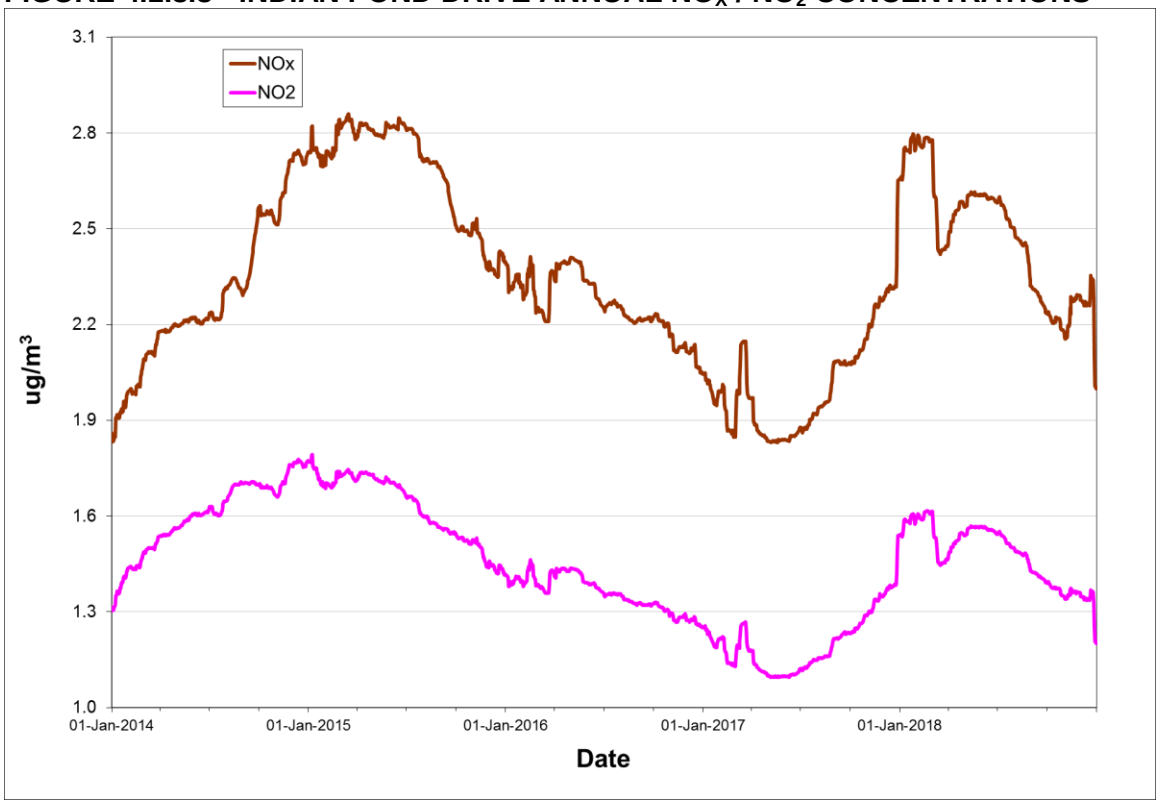
Rolling annual average of daily concentrations

TABLE 4.1.3.3 - INDIAN POND DRIVE NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour	24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	713	95.8%	2.1	1.5	58.8	28.1	9.3	6.9	0	0
	February	640	95.2%	1.9	1.2	109.7	41.6	10.4	4.4	0	0
	March	711	95.6%	4.9	2.6	79.8	43.3	29.4	13.7	0	0
	April	630	87.5%	0.8	0.6	5.5	4.8	1.3	1.0	0	0
	May	703	94.5%	1.0	0.7	16.7	10.1	4.1	1.8	0	0
	June	651	90.4%	1.4	1.0	19.6	11.3	4.6	2.5	0	0
	July	675	90.7%	1.9	1.2	43.7	15.1	6.7	3.4	0	0
	August	679	91.3%	3.1	1.5	120.7	25.7	14.3	5.0	0	0
	September	621	86.3%	2.9	1.1	31.1	17.8	5.8	2.4	0	0
	October	713	95.8%	2.2	1.4	43.0	18.9	5.4	3.4	0	0
	November	687	95.4%	3.1	1.9	69.7	18.6	9.3	5.7	0	0
	December	698	93.8%	6.1	3.4	121.1	48.3	65.7	27.6	0	0
Annual		8121	92.7%	2.7	1.5	121.1	48.3	65.7	27.6	0	0
2018	January	684	91.9%	3.5	2.1	52.3	24.3	19.4	9.3	0	0
	February	586	87.2%	1.9	1.4	46.9	32.7	11.0	6.8	0	0
	March	702	94.4%	1.2	1.0	15.1	12.2	5.1	3.0	0	0
	April	687	95.4%	2.4	1.5	42.7	22.2	11.9	5.9	0	0
	May	710	95.4%	1.4	1.1	50.0	39.6	11.8	7.2	0	0
	June	688	95.6%	1.1	0.7	21.1	8.1	2.9	1.7	0	0
	July	713	95.8%	1.1	0.7	70.3	25.1	4.7	2.0	0	0
	August	623	83.7%	0.7	0.6	4.9	3.5	1.2	0.9	0	0
	September	688	95.6%	1.9	0.7	12.4	7.1	2.8	1.3	0	0
	October	668	89.8%	1.5	0.9	23.3	10.5	10.4	4.4	0	0
	November	685	95.1%	4.4	2.1	82.3	44.4	33.8	14.6	0	0
	December	711	95.6%	2.7	1.5	51.7	20.2	25.2	9.9	0	0
Annual		8145	93.0%	2.0	1.2	82.3	44.4	33.8	14.6	0	0

Observations in ug/m^3

FIGURE 4.1.3.3 - INDIAN POND DRIVE ANNUAL NO_X / NO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 4.1.3.4 - INDIAN POND DRIVE TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	6	100.0%	8.1	14.1	0
	February	4	100.0%	8.5	12.5	0
	March	5	100.0%	7.1	8.7	0
	April	5	100.0%	12.7	21.7	0
	May	6	100.0%	7.7	14.1	0
	June	5	100.0%	20.4	26.9	0
	July	5	100.0%	9.0	28.9	0
	August	5	100.0%	22.3	53.0	0
	September	5	100.0%	9.2	20.0	0
	October	5	100.0%	17.5	62.2	0
	November	5	100.0%	16.0	21.8	0
	December	5	100.0%	12.2	25.6	0
Annual		61	100.0%	11.6	62.2	0
2018	January	5	100.0%	9.6	32.1	0
	February	4	80.0%	14.0	18.0	0
	March	5	100.0%	14.5	16.7	0
	April	5	100.0%	9.3	13.1	0
	May	5	100.0%	8.2	15.2	0
	June	5	100.0%	17.6	39.0	0
	July	6	100.0%	10.9	13.1	0
	August	5	100.0%	10.0	15.0	0
	September	5	100.0%	8.4	18.2	0
	October	5	100.0%	5.5	17.4	0
	November	5	100.0%	11.5	21.1	0
	December	5	100.0%	7.5	11.1	0
Annual		60	98.4%	12.8	39.0	0

Observations in ug/m^3

FIGURE 4.1.3.4 - INDIAN POND DRIVE ANNUAL TPM CONCENTRATIONS

Rolling annual average of daily concentrations

4.1.4 Indian Pond Road

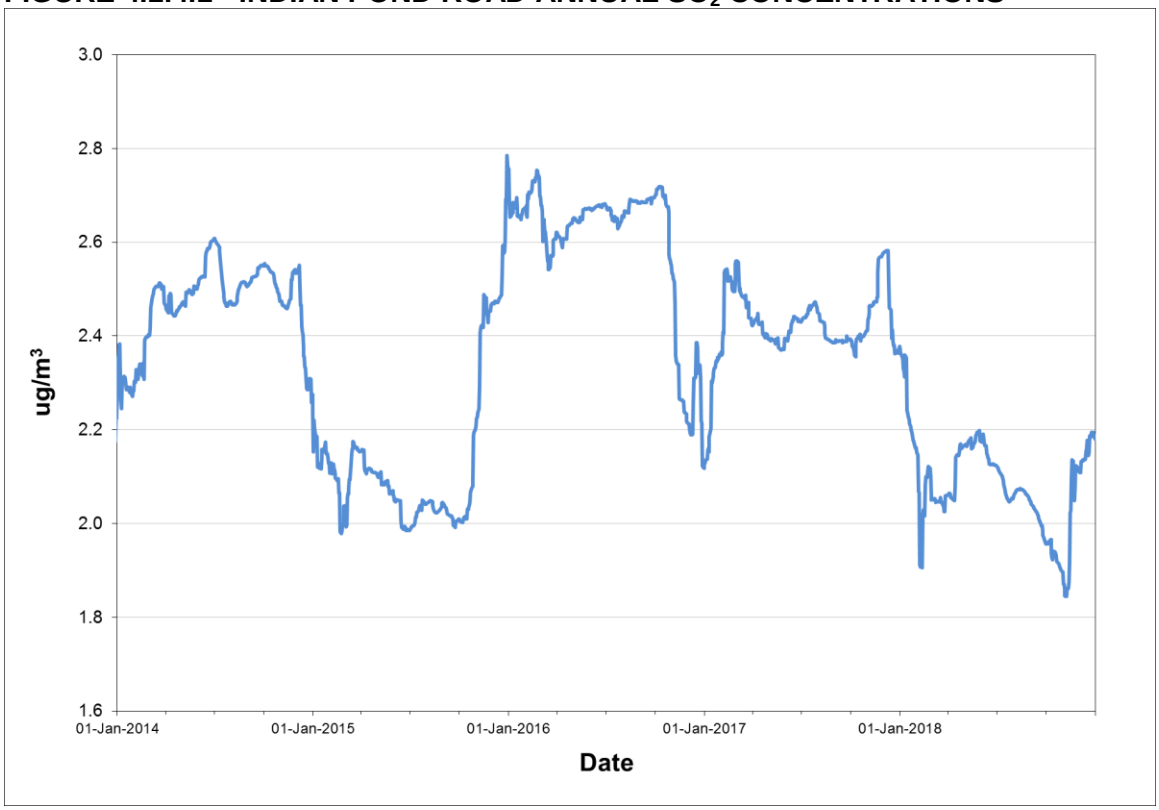
The Indian Pond Road station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$ on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.1.4.1 through 4.1.4.4 provide summary information on the level of air contaminants measured at Indian Pond Road, while Figures 4.1.4.1 through 4.1.4.4 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.1.4.1 - INDIAN POND ROAD SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	709	95.3%	5.3	115.7	62.9	41.8	0	0	0
	February	643	95.7%	5.5	139.3	108.4	55.6	0	0	0
	March	708	95.2%	1.4	35.4	23.6	5.8	0	0	0
	April	662	91.9%	1.6	25.4	15.1	5.1	0	0	0
	May	709	95.3%	1.6	98.8	33.7	9.2	0	0	0
	June	684	95.0%	1.8	67.2	40.7	8.1	0	0	0
	July	683	91.8%	2.0	77.3	27.2	5.5	0	0	0
	August	710	95.4%	1.0	3.1	2.8	1.6	0	0	0
	September	686	95.3%	1.8	35.6	18.4	5.5	0	0	0
	October	705	94.8%	1.9	51.6	30.7	11.2	0	0	0
	November	689	95.7%	2.9	102.3	66.5	20.2	0	0	0
	December	708	95.2%	2.0	34.5	16.8	7.9	0	0	0
Annual		8296	94.7%	2.4	139.3	108.4	55.6	0	0	0
2018	January	680	91.4%	2.7	98.8	61.3	30.7	0	0	0
	February	642	95.5%	4.2	96.8	67.2	37.4	0	0	0
	March	711	95.6%	1.5	72.6	43.8	12.6	0	0	0
	April	685	95.1%	2.9	111.4	105.0	24.4	0	0	0
	May	711	95.6%	1.8	62.6	23.8	5.1	0	0	0
	June	685	95.1%	1.1	45.6	31.2	6.8	0	0	0
	July	685	92.1%	1.2	4.9	4.6	3.0	0	0	0
	August	712	95.7%	1.0	2.9	2.8	2.2	0	0	0
	September	685	95.1%	0.6	27.5	11.5	2.1	0	0	0
	October	707	95.0%	1.2	36.6	19.3	5.3	0	0	0
	November	690	95.8%	5.5	193.9	165.2	39.7	0	0	0
	December	710	95.4%	2.7	97.6	71.0	14.4	0	0	0
Annual		8303	94.8%	2.2	193.9	165.2	39.7	0	0	0

Observations in ug/m^3

FIGURE 4.1.4.1 - INDIAN POND ROAD ANNUAL SO_2 CONCENTRATIONS



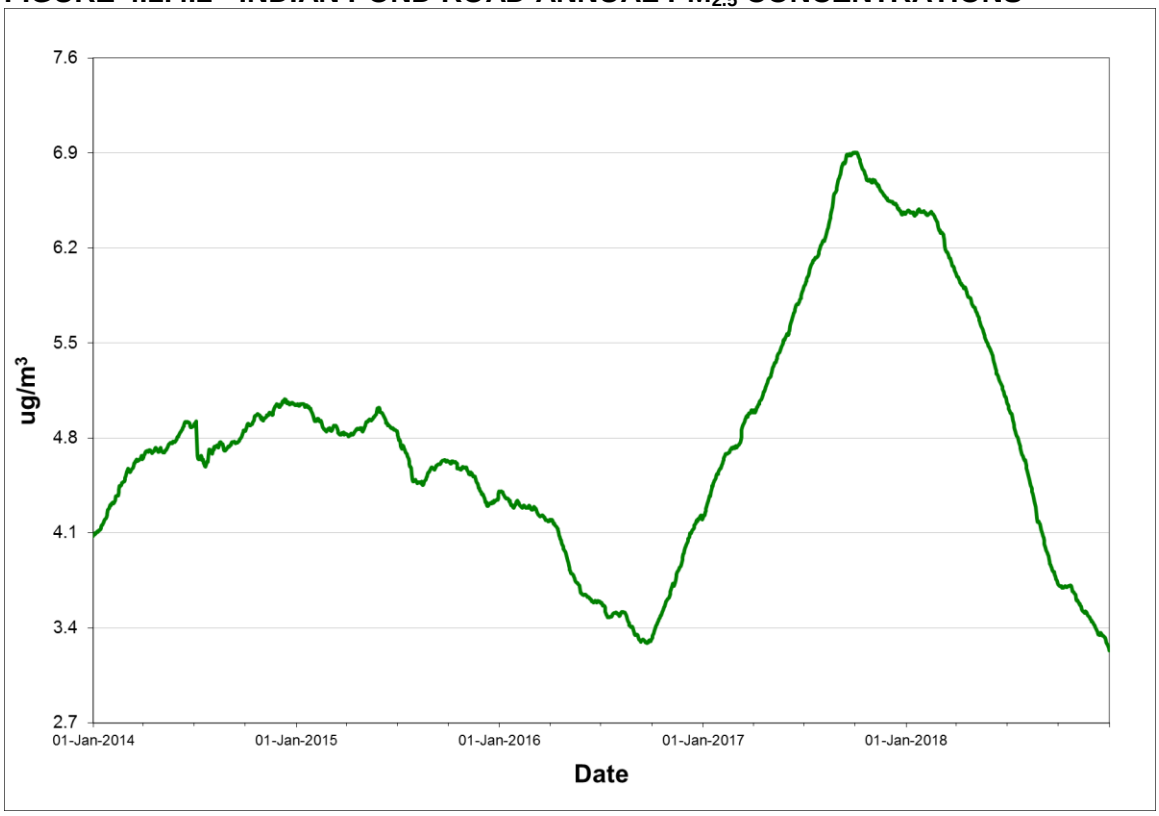
Rolling annual average of hourly concentrations

TABLE 4.1.4.2 - INDIAN POND ROAD $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	7.5	10.8	0
	February	28	100.0%	6.7	10.5	0
	March	31	100.0%	6.9	23.0	0
	April	28	93.3%	6.2	9.5	0
	May	31	100.0%	6.3	9.8	0
	June	30	100.0%	7.0	12.9	0
	July	31	100.0%	6.4	9.8	0
	August	31	100.0%	8.3	17.0	0
	September	30	100.0%	6.7	13.3	0
	October	27	87.1%	3.7	10.0	0
	November	30	100.0%	5.6	13.7	0
	December	31	100.0%	5.9	10.3	0
Annual		359	98.4%	6.5	23.0	0
2018	January	30	96.8%	7.6	10.7	0
	February	28	100.0%	5.0	11.3	0
	March	31	100.0%	3.2	6.0	0
	April	30	100.0%	3.3	9.4	0
	May	31	100.0%	2.5	5.0	0
	June	30	100.0%	2.4	7.7	0
	July	30	96.8%	1.4	3.8	0
	August	30	96.8%	2.2	8.1	0
	September	26	86.7%	1.7	4.0	0
	October	31	100.0%	2.8	4.8	0
	November	30	100.0%	3.1	5.3	0
	December	29	93.5%	3.4	9.0	0
Annual		356	97.5%	3.2	11.3	0

Observations in ug/m^3

FIGURE 4.1.4.2 - INDIAN POND ROAD ANNUAL $PM_{2.5}$ CONCENTRATIONS



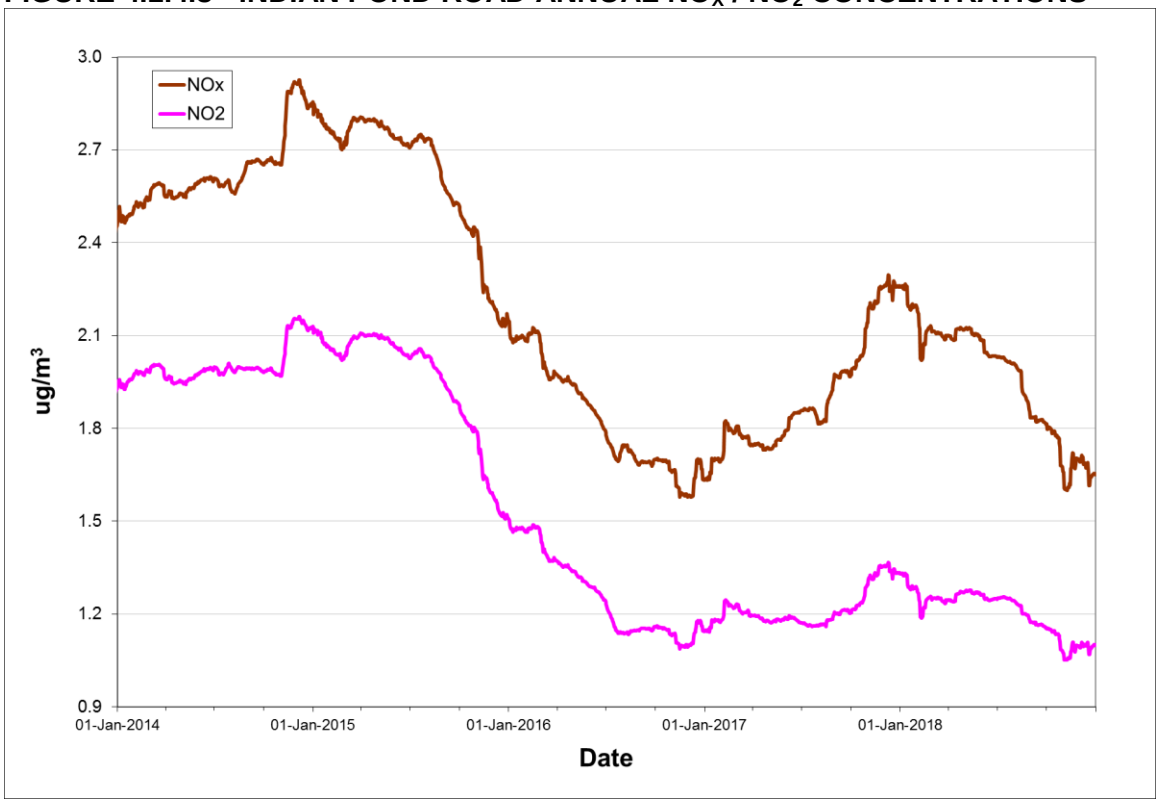
Rolling annual average of daily concentrations

TABLE 4.1.4.3 - INDIAN POND ROAD NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums				Exceedances	
						1-Hour		24-Hour		1-Hour	24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	710	95.4%	2.6	1.8	51.9	25.7	22.3	12.9	0	0
	February	644	95.8%	3.5	2.2	91.4	38.7	35.3	18.0	0	0
	March	705	94.8%	1.2	0.9	21.6	12.1	3.1	2.0	0	0
	April	663	92.1%	1.3	0.8	20.9	8.4	3.3	1.5	0	0
	May	713	95.8%	1.7	1.0	80.0	43.6	6.4	3.8	0	0
	June	685	95.1%	1.7	0.9	183.0	53.0	11.9	4.3	0	0
	July	671	90.2%	1.3	0.6	21.3	10.1	3.0	1.5	0	0
	August	711	95.6%	3.2	1.4	62.8	32.4	17.9	7.3	0	0
	September	688	95.6%	1.4	0.9	37.3	16.5	6.2	3.1	0	0
	October	710	95.4%	3.2	1.9	139.8	60.1	22.4	9.6	0	0
	November	689	95.7%	3.0	2.0	136.9	38.7	18.4	8.6	0	0
	December	709	95.3%	2.9	1.7	192.7	92.4	18.1	9.1	0	0
Annual		8298	94.7%	2.3	1.3	192.7	92.4	35.3	18.0	0	0
2018	January	701	94.2%	1.8	1.2	38.8	20.5	13.1	7.5	0	0
	February	644	95.8%	2.6	1.7	38.6	20.8	15.9	9.8	0	0
	March	711	95.6%	1.0	0.8	25.1	17.7	4.7	3.7	0	0
	April	686	95.3%	1.6	1.1	40.6	22.8	9.4	5.8	0	0
	May	713	95.8%	1.3	0.9	22.2	13.2	3.0	2.2	0	0
	June	688	95.6%	1.0	0.8	10.9	7.0	2.3	1.6	0	0
	July	686	92.2%	1.1	0.6	20.1	8.1	3.2	1.5	0	0
	August	707	95.0%	1.2	0.5	4.2	2.6	1.7	0.9	0	0
	September	688	95.6%	1.1	0.7	19.1	7.3	3.2	1.4	0	0
	October	707	95.0%	1.4	1.0	20.1	14.0	4.7	2.5	0	0
	November	690	95.8%	3.5	2.2	101.6	40.4	20.6	9.1	0	0
	December	711	95.6%	2.3	1.7	50.9	26.8	9.2	6.2	0	0
Annual		8332	95.1%	1.7	1.1	101.6	40.4	20.6	9.8	0	0

Observations in ug/m^3

FIGURE 4.1.4.3 - INDIAN POND ROAD ANNUAL NO_X / NO_2 CONCENTRATIONS



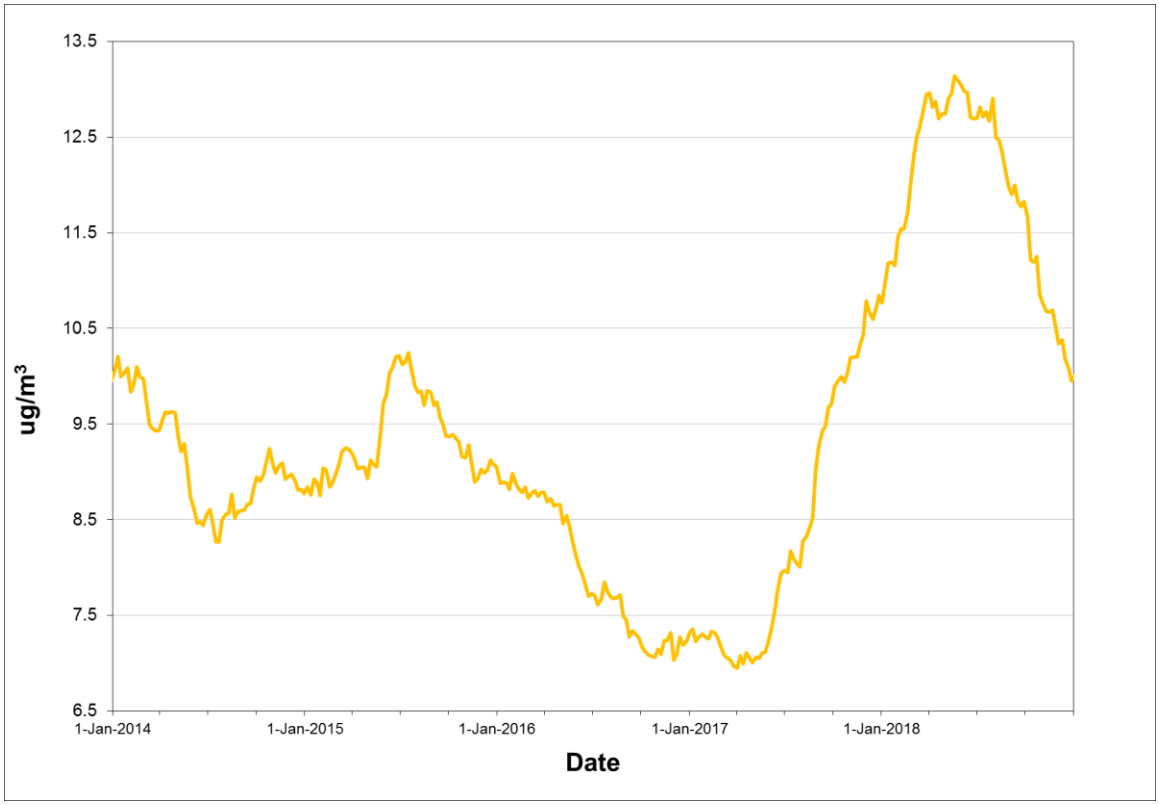
Rolling annual average of hourly concentrations

TABLE 4.1.4.4 - INDIAN POND ROAD TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	6	100.0%	7.7	12.2	0
	February	4	100.0%	8.0	14.9	0
	March	5	100.0%	5.8	9.6	0
	April	5	100.0%	11.3	20.3	0
	May	6	100.0%	8.2	11.7	0
	June	5	100.0%	18.8	27.5	0
	July	5	100.0%	8.3	16.6	0
	August	5	100.0%	21.9	49.5	0
	September	5	100.0%	9.8	21.5	0
	October	5	100.0%	14.2	27.1	0
	November	5	100.0%	14.6	26.1	0
	December	5	100.0%	12.0	21.3	0
Annual		61	100.0%	10.8	49.5	0
2018	January	4	80.0%	10.7	20.7	0
	February	5	100.0%	19.6	39.2	0
	March	5	100.0%	14.3	18.3	0
	April	5	100.0%	9.4	12.4	0
	May	5	100.0%	10.5	22.1	0
	June	5	100.0%	13.7	25.4	0
	July	6	100.0%	9.9	12.3	0
	August	5	100.0%	8.9	12.2	0
	September	5	100.0%	8.4	14.7	0
	October	5	100.0%	5.1	12.2	0
	November	5	100.0%	10.1	14.9	0
	December	5	100.0%	6.2	9.2	0
Annual		60	98.4%	12.8	39.2	0

Observations in ug/m^3

FIGURE 4.1.4.4 - INDIAN POND ROAD ANNUAL TPM CONCENTRATIONS



Rolling annual average of daily concentrations

4.1.5 Lawrence Pond Road

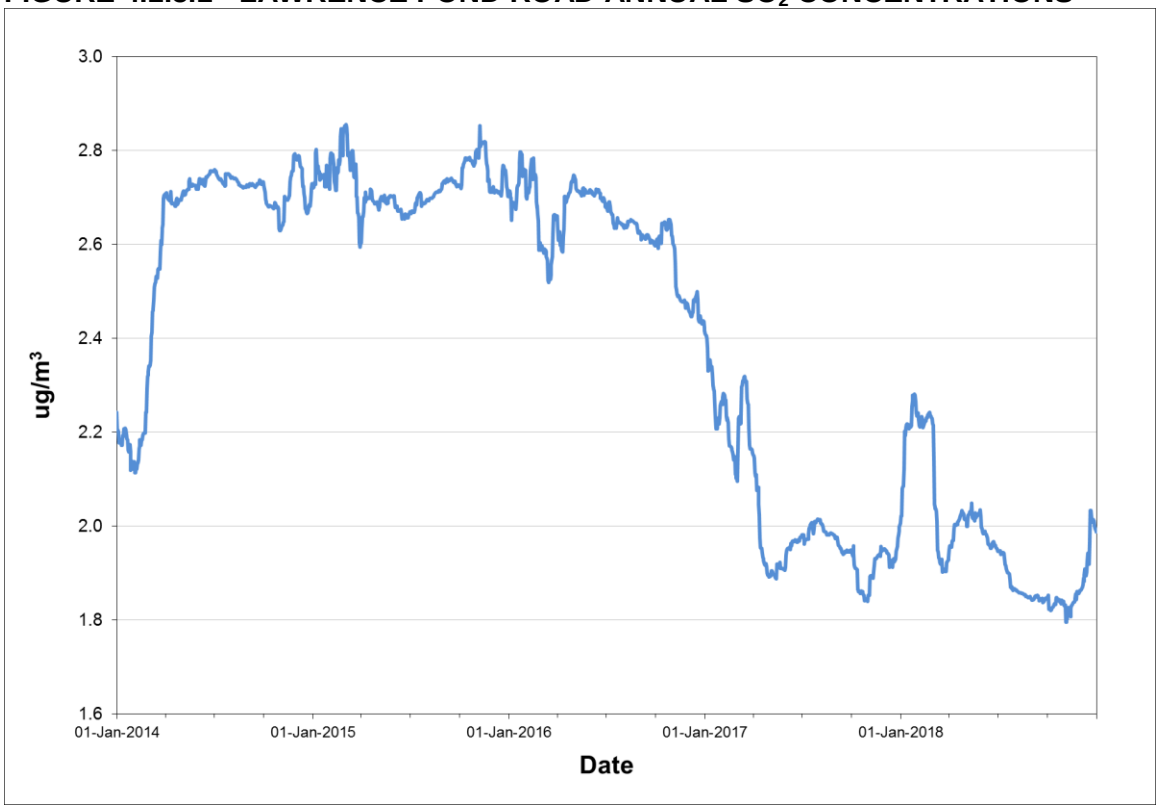
The Lawrence Pond Road station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$ on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For all pollutants, the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.1.5.1 through 4.1.5.4 provide summary information on the level of air contaminants measured at Lawrence Pond Road, while Figures 4.1.5.1 through 4.1.5.4 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.1.5.1 - LAWRENCE POND ROAD SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	713	95.8%	2.5	53.2	30.8	11.2	0	0	0
	February	643	95.7%	2.1	64.1	56.0	10.8	0	0	0
	March	706	94.9%	4.8	87.9	66.7	34.3	0	0	0
	April	690	95.8%	1.1	31.7	21.9	4.7	0	0	0
	May	713	95.8%	1.9	81.7	58.0	11.5	0	0	0
	June	685	95.1%	1.7	30.2	20.7	6.2	0	0	0
	July	713	95.8%	1.6	35.4	18.3	6.6	0	0	0
	August	713	95.8%	1.0	6.9	3.4	1.7	0	0	0
	September	664	92.2%	1.0	21.2	15.7	4.7	0	0	0
	October	713	95.8%	1.4	50.2	35.3	11.5	0	0	0
	November	690	95.8%	2.4	81.4	58.3	15.7	0	0	0
	December	706	94.9%	2.6	50.4	29.9	8.9	0	0	0
Annual		8349	95.3%	2.0	87.9	66.7	34.3	0	0	0
2018	January	713	95.8%	5.1	83.2	65.2	31.1	0	0	0
	February	639	95.1%	2.1	39.6	26.2	8.0	0	0	0
	March	707	95.0%	1.3	60.6	24.0	7.6	0	0	0
	April	690	95.8%	2.1	37.0	21.7	12.8	0	0	0
	May	713	95.8%	1.7	29.9	22.4	8.3	0	0	0
	June	684	95.0%	1.1	19.6	11.8	4.4	0	0	0
	July	713	95.8%	0.7	1.7	1.4	1.3	0	0	0
	August	713	95.8%	0.8	2.4	1.6	1.2	0	0	0
	September	663	92.1%	0.9	9.6	4.3	1.8	0	0	0
	October	713	95.8%	1.3	18.6	15.3	5.5	0	0	0
	November	690	95.8%	2.6	50.8	28.8	8.6	0	0	0
	December	706	94.9%	4.1	92.6	69.7	26.1	0	0	0
Annual		8344	95.3%	2.0	92.6	69.7	31.1	0	0	0

Observations in ug/m^3

FIGURE 4.1.5.1 - LAWRENCE POND ROAD ANNUAL SO_2 CONCENTRATIONS



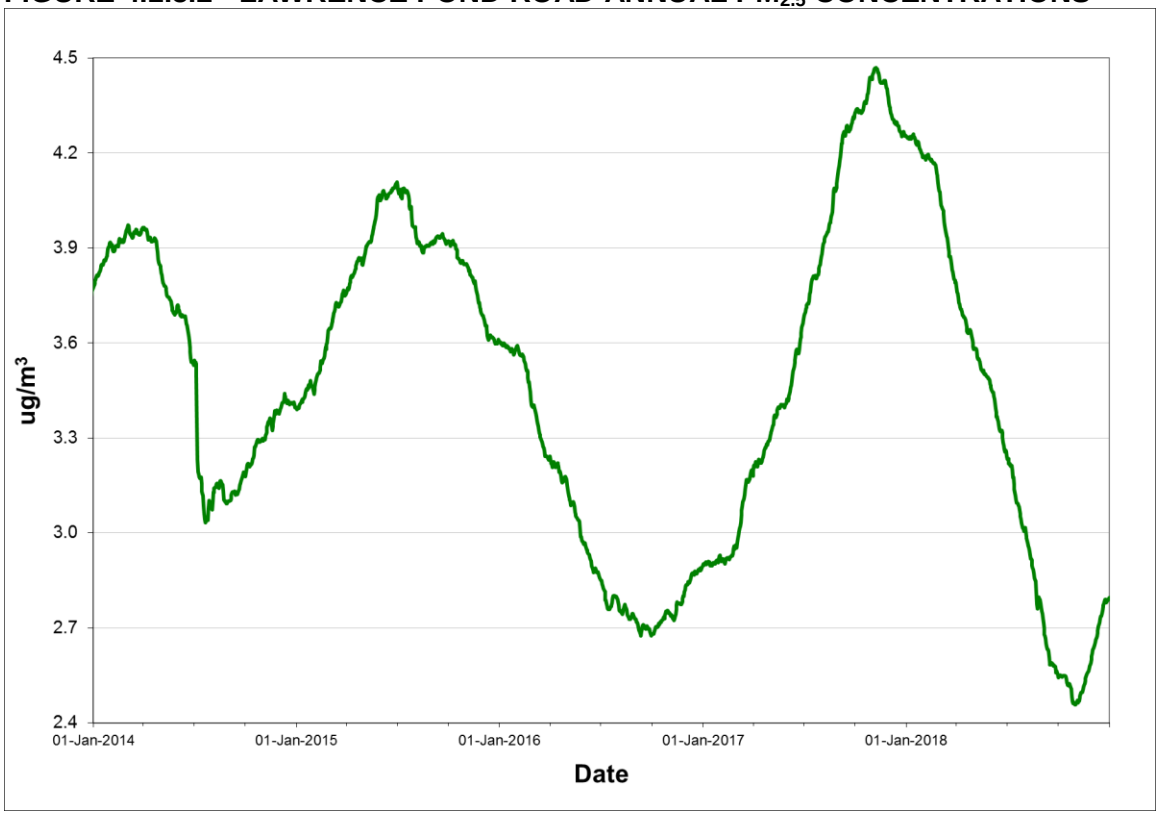
Rolling annual average of hourly concentrations

TABLE 4.1.5.2 - LAWRENCE POND ROAD $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	4.5	7.6	0
	February	28	100.0%	3.8	7.0	0
	March	31	100.0%	5.6	10.5	0
	April	30	100.0%	4.9	9.0	0
	May	31	100.0%	3.7	9.4	0
	June	30	100.0%	4.7	8.3	0
	July	30	96.8%	4.4	9.3	0
	August	31	100.0%	5.3	13.6	0
	September	30	100.0%	4.7	9.2	0
	October	27	87.1%	4.7	10.6	0
	November	30	100.0%	2.4	5.8	0
	December	30	96.8%	2.5	7.8	0
Annual		359	98.4%	4.3	13.6	0
2018	January	31	100.0%	3.7	9.0	0
	February	28	100.0%	2.6	7.6	0
	March	28	90.3%	1.9	5.2	0
	April	26	86.7%	2.5	7.9	0
	May	31	100.0%	2.2	4.4	0
	June	30	100.0%	2.0	6.9	0
	July	29	93.5%	1.6	4.5	0
	August	31	100.0%	2.5	9.8	0
	September	25	83.3%	2.1	4.5	0
	October	31	100.0%	3.3	5.6	0
	November	30	100.0%	4.2	7.1	0
	December	31	100.0%	4.6	6.9	0
Annual		351	96.2%	2.8	9.8	0

Observations in ug/m^3

FIGURE 4.1.5.2 - LAWRENCE POND ROAD ANNUAL $PM_{2.5}$ CONCENTRATIONS



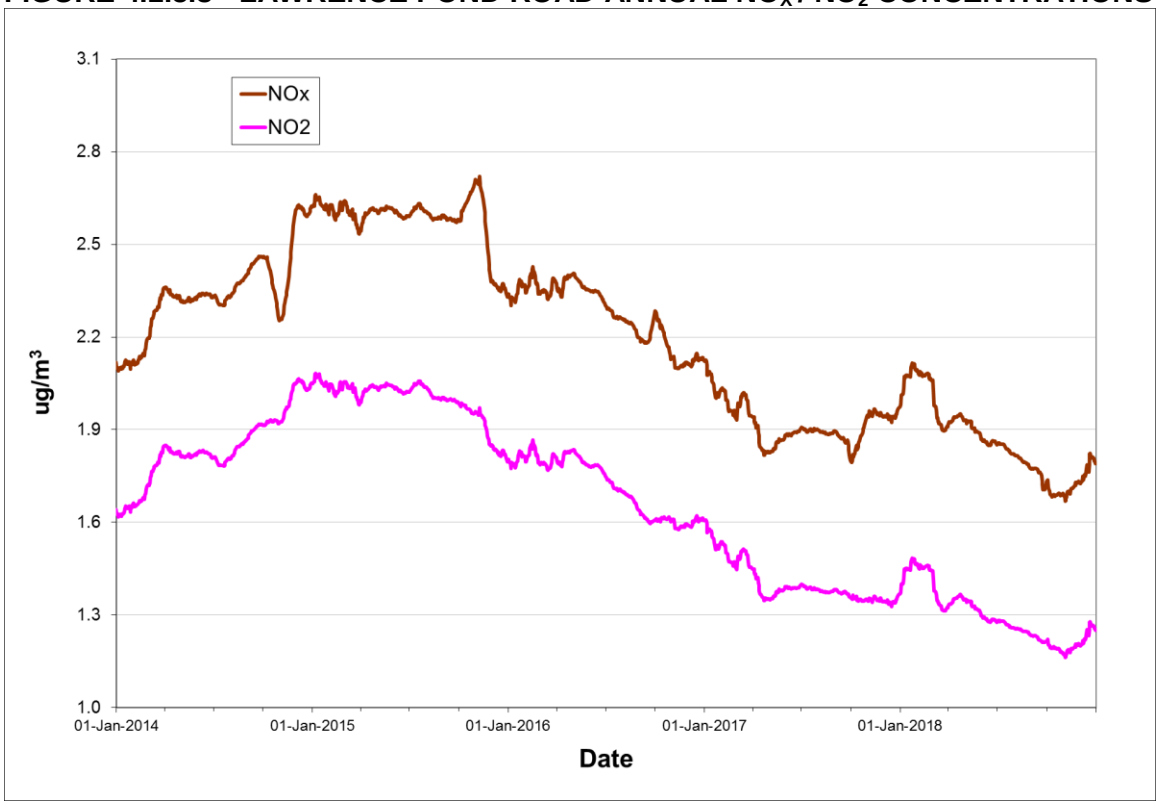
Rolling annual average of daily concentrations

TABLE 4.1.5.3 - LAWRENCE POND ROAD NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average NO_x	Average NO_2	Maximums 1-Hour NO_x	Maximums 1-Hour NO_2	Maximums 24-Hour NO_x	Maximums 24-Hour NO_2	Exceedances 1-Hour (>400)	Exceedances 24-Hour (>200)
2017	January	713	95.8%	2.0	1.7	28.7	25.1	6.5	5.9	0	0
	February	644	95.8%	1.9	1.5	34.7	27.8	6.0	5.0	0	0
	March	709	95.3%	2.8	2.2	44.9	38.0	16.7	12.8	0	0
	April	690	95.8%	1.4	1.1	42.7	25.4	5.1	3.7	0	0
	May	713	95.8%	1.9	1.5	41.3	22.0	7.4	5.0	0	0
	June	685	95.1%	1.5	1.1	16.6	13.4	3.6	2.9	0	0
	July	713	95.8%	1.3	0.9	15.2	8.2	2.6	1.8	0	0
	August	713	95.8%	1.3	0.9	23.8	8.6	3.0	2.3	0	0
	September	648	90.0%	1.9	0.9	22.6	10.9	6.7	2.1	0	0
	October	713	95.8%	3.5	1.4	31.4	18.9	10.1	6.6	0	0
	November	670	93.1%	1.8	1.5	38.6	28.0	8.4	5.1	0	0
	December	681	91.5%	2.3	1.9	30.0	27.6	8.5	7.4	0	0
Annual		8292	94.7%	2.0	1.4	44.9	38.0	16.7	12.8	0	0
2018	January	713	95.8%	3.4	2.8	51.0	43.8	14.8	12.6	0	0
	February	640	95.2%	1.5	1.3	23.2	21.9	6.0	5.2	0	0
	March	706	94.9%	1.1	0.8	21.8	17.2	3.6	2.8	0	0
	April	690	95.8%	1.6	1.3	20.0	18.8	6.5	5.6	0	0
	May	713	95.8%	1.2	0.9	12.9	9.4	4.3	3.1	0	0
	June	686	95.3%	1.3	0.9	23.1	15.9	4.6	3.1	0	0
	July	713	95.8%	0.9	0.7	7.9	7.5	2.2	1.9	0	0
	August	712	95.7%	0.7	0.6	3.9	3.7	1.1	0.9	0	0
	September	660	91.7%	1.3	0.6	7.8	7.2	5.2	1.3	0	0
	October	713	95.8%	3.1	0.9	15.9	13.1	5.4	2.4	0	0
	November	690	95.8%	2.3	1.8	30.1	27.4	6.6	4.9	0	0
	December	708	95.2%	3.0	2.4	48.0	36.0	13.1	9.8	0	0
Annual		8344	95.3%	1.8	1.3	51.0	43.8	14.8	12.6	0	0

Observations in ug/m^3

FIGURE 4.1.5.3 - LAWRENCE POND ROAD ANNUAL NO_X / NO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 4.1.5.4 - LAWRENCE POND ROAD TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	6	100.0%	6.7	8.5	0
	February	3	75.0%	6.9	11.4	0
	March	5	100.0%	7.4	18.4	0
	April	5	100.0%	9.7	19.0	0
	May	6	100.0%	10.5	23.9	0
	June	5	100.0%	22.3	47.5	0
	July	5	100.0%	6.5	16.2	0
	August	5	100.0%	12.1	21.3	0
	September	5	100.0%	7.1	10.2	0
	October	5	100.0%	7.3	11.9	0
	November	5	100.0%	8.6	14.2	0
	December	5	100.0%	10.8	20.6	0
Annual		60	98.4%	9.1	47.5	0
2018	January	5	100.0%	9.7	21.0	0
	February	5	100.0%	14.8	31.3	0
	March	5	100.0%	11.1	12.0	0
	April	5	100.0%	9.9	14.3	0
	May	5	100.0%	8.9	22.6	0
	June	5	100.0%	10.7	23.4	0
	July	6	100.0%	11.0	15.7	0
	August	5	100.0%	10.1	14.4	0
	September	5	100.0%	6.7	9.2	0
	October	5	100.0%	4.7	12.5	0
	November	5	100.0%	8.9	14.7	0
	December	5	100.0%	7.7	16.3	0
Annual		61	100.0%	10.4	31.3	0

Observations in ug/m^3

FIGURE 4.1.5.4 - LAWRENCE POND ROAD ANNUAL TPM CONCENTRATIONS

Rolling annual average of daily concentrations

4.1.6 NALCOR Property Boundary

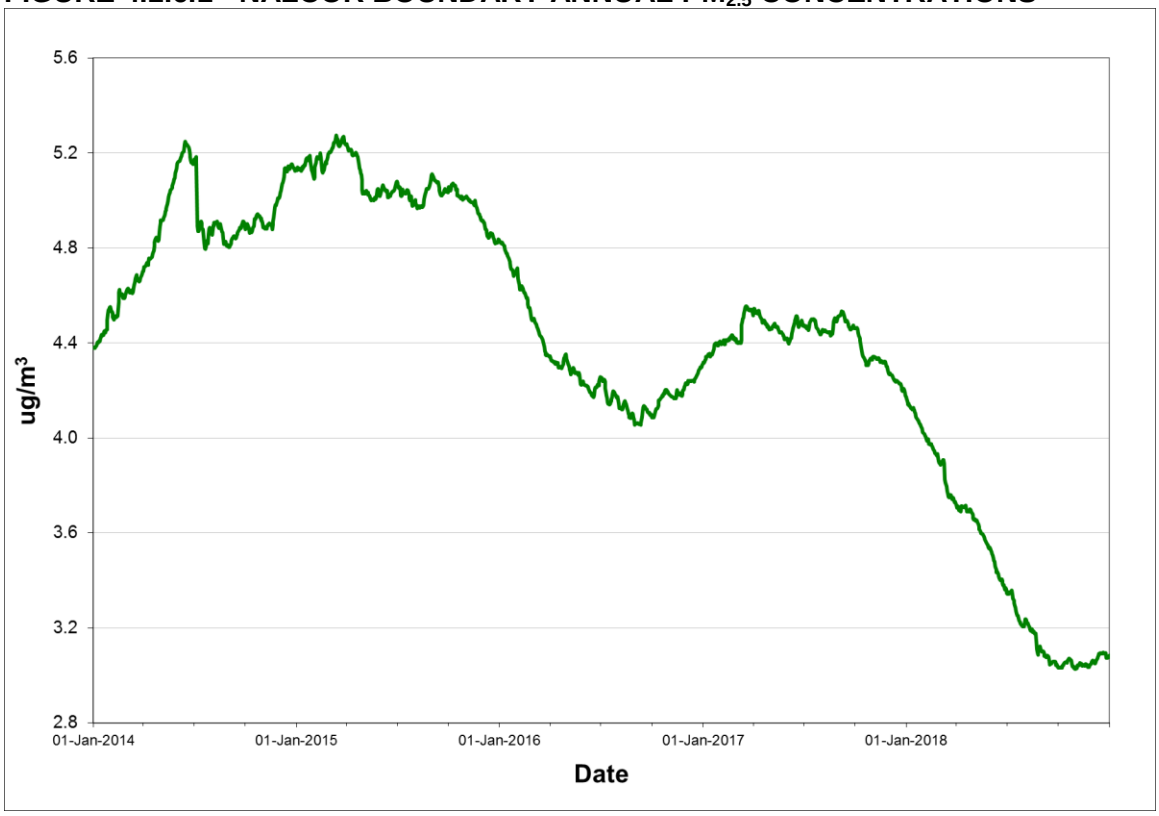
The NALCOR Property Boundary station monitors the ambient levels of $PM_{2.5}$ on a continuous basis and TPM on a 1 day in 6 day cycle consistent with the NAPS defined schedule. For both pollutants, the ambient air criteria were not exceeded on any occasion in 2018. The 24-hour TPM standard was not exceeded at any time. Tables 4.1.6.1 through 4.1.6.2 provide summary information on the level of air contaminants measured at NALCOR Property Boundary, while Figures 4.1.6.1 through 4.1.6.2 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.1.6.1 - NALCOR BOUNDARY $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	5.2	10.1	0
	February	28	100.0%	5.1	11.4	0
	March	31	100.0%	5.4	25.4	1
	April	30	100.0%	4.1	7.8	0
	May	31	100.0%	3.9	6.4	0
	June	29	96.7%	4.4	8.0	0
	July	31	100.0%	3.7	7.8	0
	August	30	96.8%	4.3	13.2	0
	September	30	100.0%	3.4	9.1	0
	October	27	87.1%	3.3	7.7	0
	November	30	100.0%	3.6	6.3	0
	December	28	90.3%	3.5	10.7	0
Annual		356	97.5%	4.2	25.4	1
2018	January	31	100.0%	3.4	8.0	0
	February	28	100.0%	3.6	6.2	0
	March	31	100.0%	3.4	7.0	0
	April	30	100.0%	3.5	10.9	0
	May	31	100.0%	2.3	6.3	0
	June	30	100.0%	2.1	7.6	0
	July	31	100.0%	2.1	4.9	0
	August	31	100.0%	3.1	9.2	0
	September	22	73.3%	2.5	4.5	0
	October	31	100.0%	3.2	5.3	0
	November	30	100.0%	4.0	6.9	0
	December	31	100.0%	3.8	6.7	0
Annual		357	97.8%	3.1	10.9	0

Observations in ug/m^3

FIGURE 4.1.6.1 - NALCOR BOUNDARY ANNUAL $PM_{2.5}$ CONCENTRATIONS



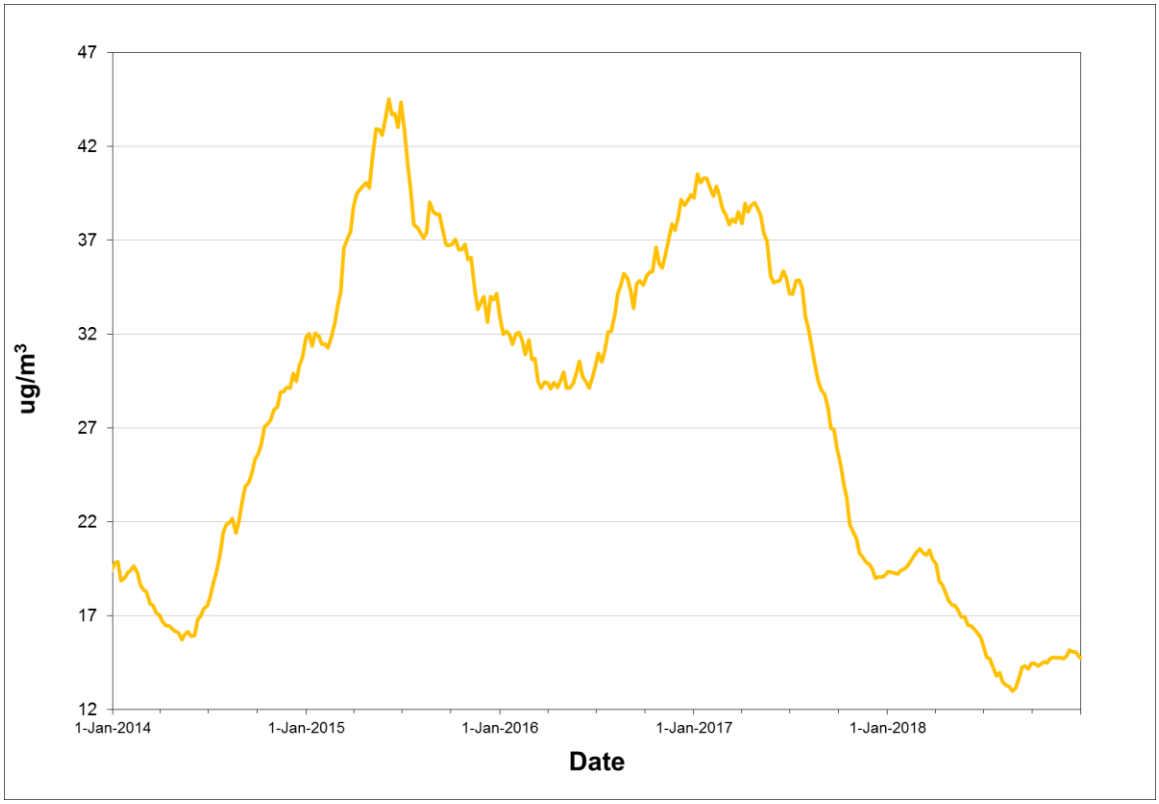
Rolling annual average of daily concentrations

TABLE 4.1.6.2 - NALCOR BOUNDARY TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	5	83.3%	10.4	20.0	0
	February	4	100.0%	15.2	19.6	0
	March	5	100.0%	20.4	75.0	0
	April	5	100.0%	42.2	82.6	0
	May	6	100.0%	21.8	69.4	0
	June	5	100.0%	36.5	79.5	0
	July	5	100.0%	41.5	106.7	0
	August	5	100.0%	30.9	81.0	0
	September	5	100.0%	10.0	23.8	0
	October	5	100.0%	10.2	15.4	0
	November	5	100.0%	11.6	17.8	0
	December	4	80.0%	12.8	26.9	0
Annual		59	96.7%	19.2	106.7	0
2018	January	5	100.0%	12.2	18.3	0
	February	5	100.0%	28.6	46.1	0
	March	5	100.0%	16.3	23.5	0
	April	5	100.0%	10.6	19.2	0
	May	5	100.0%	9.2	13.6	0
	June	3	60.0%	16.9	20.8	0
	July	6	100.0%	13.5	21.3	0
	August	5	100.0%	14.8	26.7	0
	September	5	100.0%	31.0	99.0	0
	October	3	60.0%	8.3	18.0	0
	November	3	60.0%	13.2	20.1	0
	December	2	40.0%	13.5	16.8	0
Annual		52	85.2%	20.5	99.0	0

Observations in ug/m^3

FIGURE 4.1.6.2 - NALCOR BOUNDARY ANNUAL TPM CONCENTRATIONS

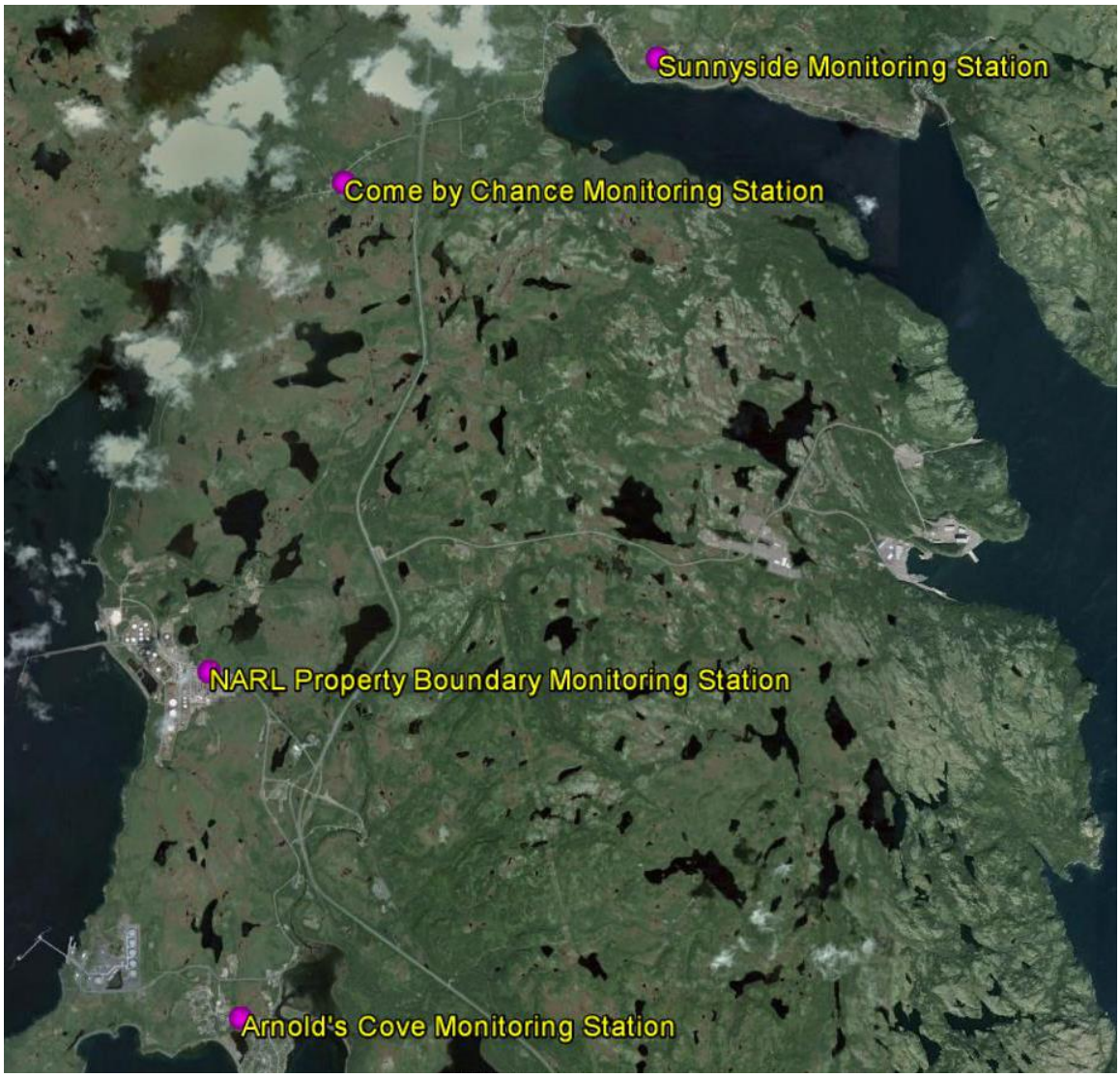


Rolling annual average of daily concentrations

4.2 North Atlantic Refining Limited

North Atlantic Refining Limited (NARL) operated monitoring stations at four locations in 2018. These stations are installed to monitor the air quality near North Atlantic's refinery in Come-by-Chance and are located at Arnold's Cove, Come-by-Chance, Sunnyside and the NARL property boundary. The locations of these monitoring stations are identified in Figure 4.2.1.

FIGURE 4.2.1 - NARL AMBIENT MONITORING STATIONS



4.2.1 Arnold's Cove

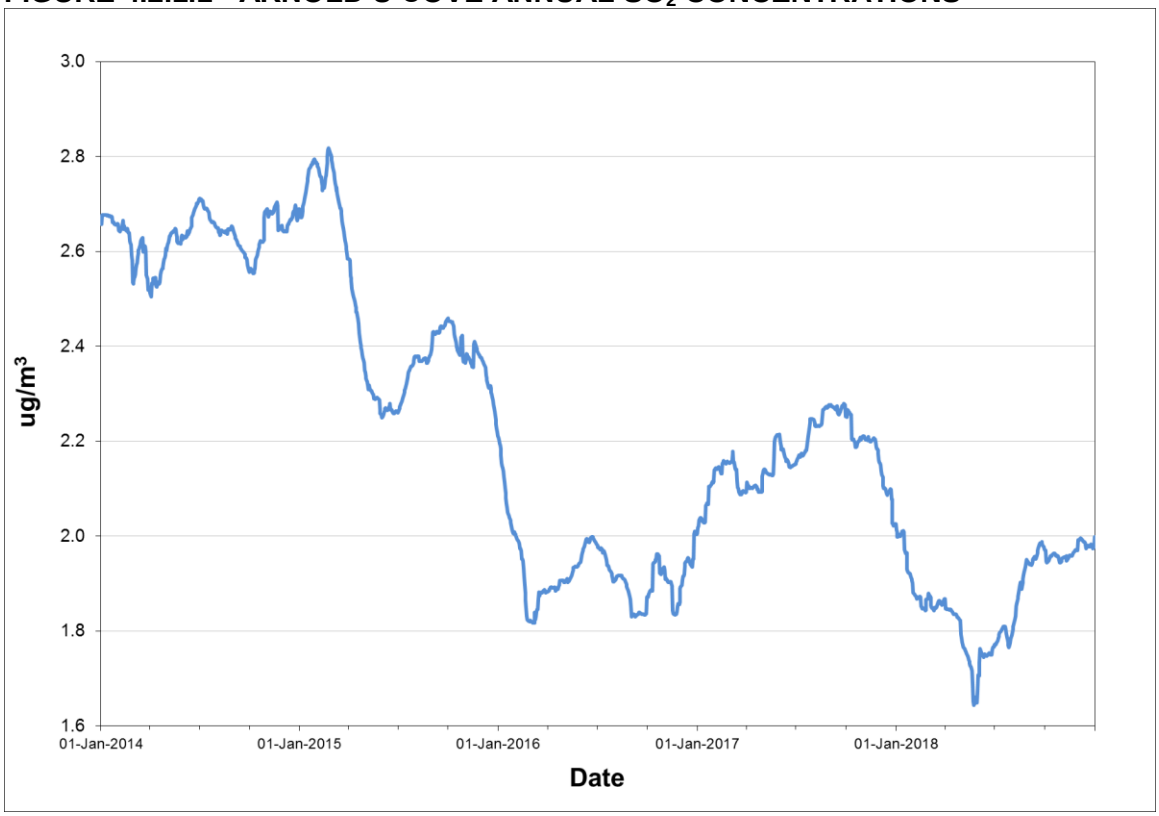
The Arnold's Cove station monitors the ambient levels of SO_2 and $PM_{2.5}$ on a continuous basis and is located near Tricentia Academy School. For both pollutants, the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.2.1.1 through 4.2.1.2 provide summary information on the level of air contaminants measured at Arnold's Cove, while Figures 4.2.1.1 through 4.2.1.2 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.2.1.1 - ARNOLD'S COVE SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	740	99.5%	2.8	104.2	53.2	14.9	0	0	0
	February	670	99.7%	1.8	75.7	50.2	8.1	0	0	0
	March	668	89.8%	1.5	44.7	27.9	6.7	0	0	0
	April	716	99.4%	1.9	82.4	42.3	12.2	0	0	0
	May	739	99.3%	3.7	43.7	27.9	16.5	0	0	0
	June	707	98.2%	2.2	19.4	10.5	4.0	0	0	0
	July	737	99.1%	2.3	38.5	7.0	4.6	0	0	0
	August	735	98.8%	1.3	44.6	16.6	6.5	0	0	0
	September	712	98.9%	1.8	46.3	16.6	3.9	0	0	0
	October	720	96.8%	2.2	55.4	30.0	9.7	0	0	0
	November	713	99.0%	1.2	31.6	14.1	6.4	0	0	0
	December	730	98.1%	1.4	28.0	10.1	3.1	0	0	0
Annual		8587	98.0%	2.0	104.2	53.2	16.5	0	0	0
2018	January	740	99.5%	1.4	7.2	3.8	2.4	0	0	0
	February	667	99.3%	1.4	29.8	16.2	9.1	0	0	0
	March	734	98.7%	1.5	34.0	19.0	4.9	0	0	0
	April	717	99.6%	1.0	27.0	11.0	2.5	0	0	0
	May	740	99.5%	2.7	90.0	52.3	15.2	0	0	0
	June	714	99.2%	3.0	82.4	69.1	12.3	0	0	0
	July	739	99.3%	2.5	32.9	12.5	4.0	0	0	0
	August	742	99.7%	3.2	53.2	38.8	8.8	0	0	0
	September	664	92.2%	2.1	19.8	10.1	4.3	0	0	0
	October	719	96.6%	1.9	30.5	11.3	3.6	0	0	0
	November	713	99.0%	1.5	44.6	16.1	6.1	0	0	0
	December	738	99.2%	1.7	43.5	31.1	8.5	0	0	0
Annual		8627	98.5%	2.0	90.0	69.1	15.2	0	0	0

Observations in ug/m^3

FIGURE 4.2.1.1 - ARNOLD'S COVE ANNUAL SO_2 CONCENTRATIONS



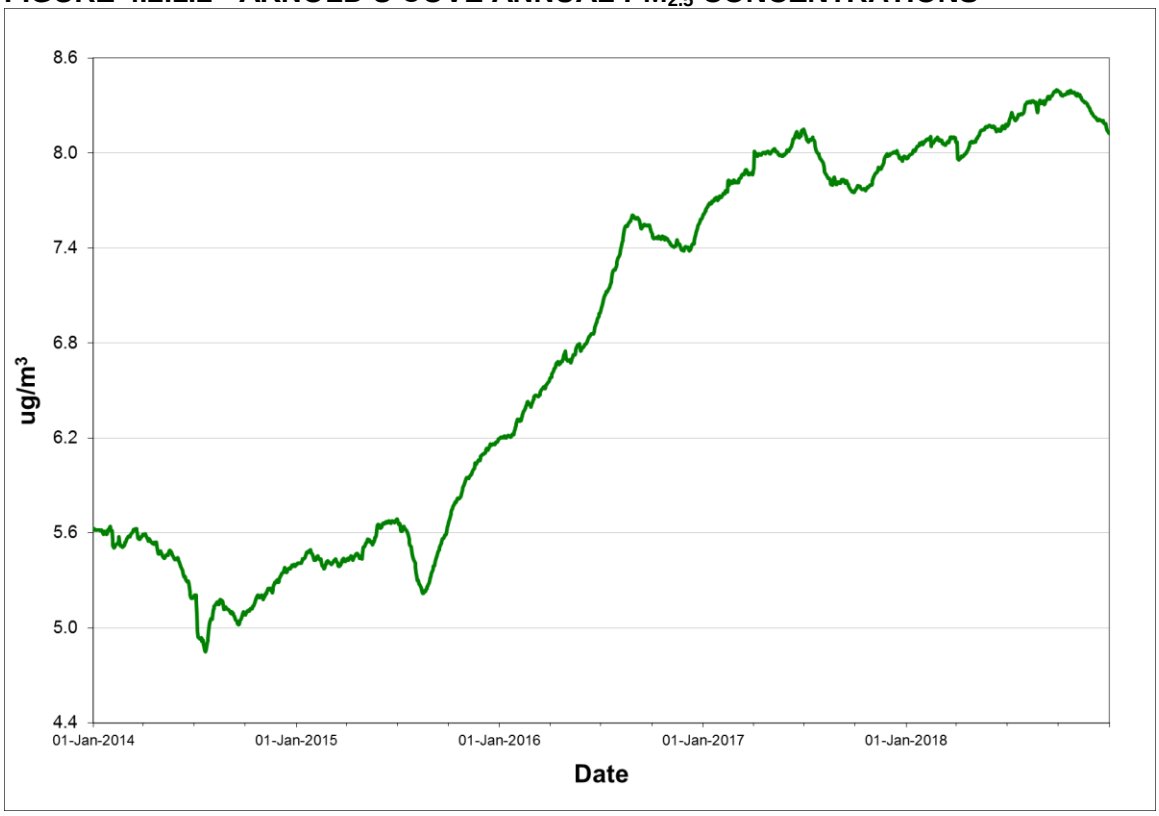
Rolling annual average of hourly concentrations

TABLE 4.2.1.2 - ARNOLD'S COVE $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	8.7	12.3	0
	February	28	100.0%	9.5	33.3	1
	March	26	83.9%	9.0	17.8	0
	April	30	100.0%	9.5	44.8	1
	May	31	100.0%	7.0	10.1	0
	June	30	100.0%	7.6	12.5	0
	July	31	100.0%	6.5	11.3	0
	August	31	100.0%	7.3	17.2	0
	September	30	100.0%	6.0	12.1	0
	October	31	100.0%	7.4	12.1	0
	November	30	100.0%	8.8	14.0	0
	December	31	100.0%	8.6	14.5	0
Annual		360	98.6%	8.0	44.8	2
2018	January	31	100.0%	9.7	13.3	0
	February	24	85.7%	10.1	13.3	0
	March	31	100.0%	8.7	10.7	0
	April	30	100.0%	9.4	17.3	0
	May	29	93.5%	8.2	11.5	0
	June	30	100.0%	7.6	16.2	0
	July	31	100.0%	7.6	12.4	0
	August	31	100.0%	8.0	15.1	0
	September	30	100.0%	6.9	9.6	0
	October	31	100.0%	7.1	11.8	0
	November	30	100.0%	7.3	13.6	0
	December	31	100.0%	7.2	10.0	0
Annual		359	98.4%	8.1	17.3	0

Observations in ug/m^3

FIGURE 4.2.1.2 - ARNOLD'S COVE ANNUAL $PM_{2.5}$ CONCENTRATIONS



Rolling annual average of daily concentrations

4.2.2 Come by Chance

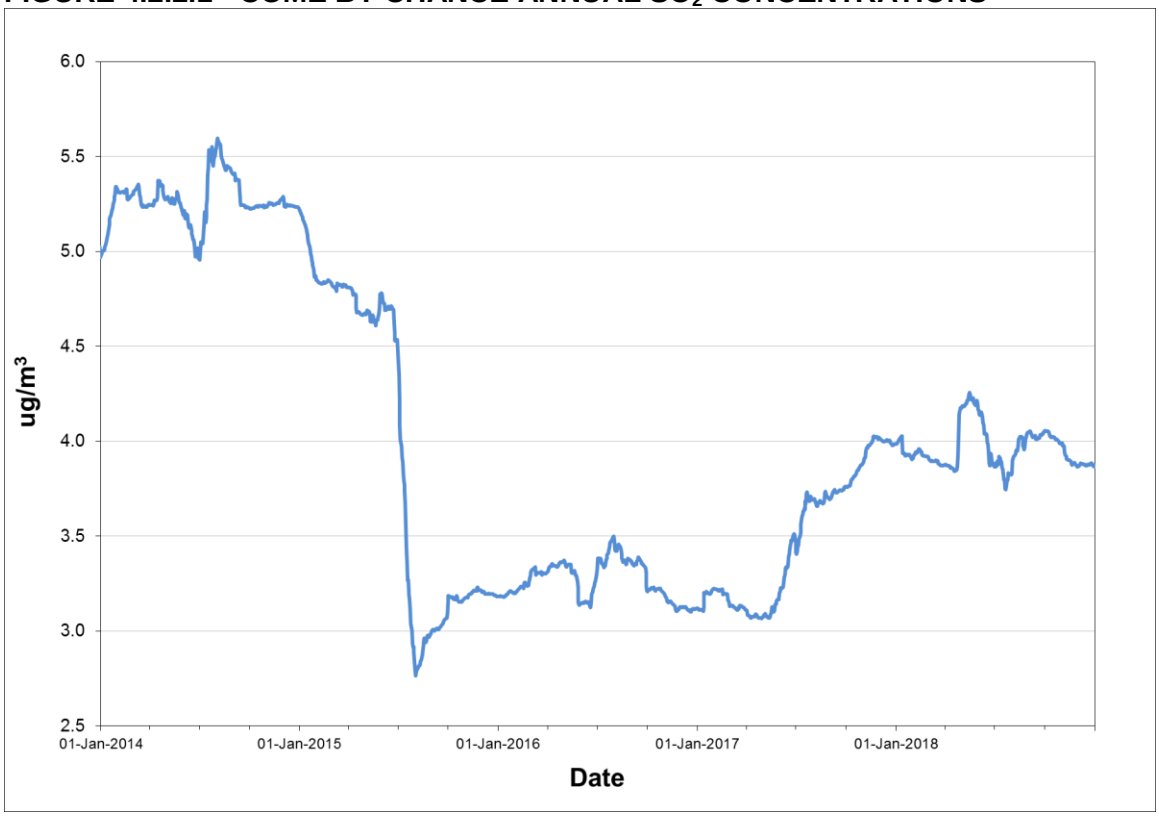
The Come by Chance station, located near the town office, monitors the ambient levels of SO_2 and $PM_{2.5}$ on a continuous basis. For both pollutants, the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.2.2.1 through 4.2.2.2 provide summary information on the level of air contaminants measured at Come by Chance, while Figures 4.2.2.1 through 4.2.2.2 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.2.2.1 - COME BY CHANCE SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	738	99.2%	4.1	154.5	96.5	28.3	0	0	0
	February	669	99.6%	3.2	27.0	14.5	7.1	0	0	0
	March	736	98.9%	3.2	97.5	53.0	9.5	0	0	0
	April	715	99.3%	2.9	20.7	14.3	6.0	0	0	0
	May	740	99.5%	4.1	100.2	42.9	16.9	0	0	0
	June	712	98.9%	7.9	84.6	74.2	28.6	0	0	0
	July	739	99.3%	6.9	94.2	69.9	21.5	0	0	0
	August	738	99.2%	3.4	62.8	45.9	14.8	0	0	0
	September	715	99.3%	2.8	72.3	43.9	8.6	0	0	0
	October	738	99.2%	3.2	38.5	18.8	7.2	0	0	0
	November	717	99.6%	3.9	69.3	41.6	14.9	0	0	0
	December	731	98.3%	2.2	37.5	14.7	4.4	0	0	0
Annual		8688	99.2%	4.0	154.5	96.5	28.6	0	0	0
2018	January	740	99.5%	3.2	12.5	7.7	4.7	0	0	0
	February	663	98.7%	3.3	59.1	27.0	9.5	0	0	0
	March	734	98.7%	2.6	29.1	4.5	3.8	0	0	0
	April	714	99.2%	6.6	252.1	169.4	47.3	0	0	0
	May	741	99.6%	4.0	63.2	44.6	14.1	0	0	0
	June	712	98.9%	4.3	109.8	98.6	28.1	0	0	0
	July	739	99.3%	6.4	59.3	47.0	18.9	0	0	0
	August	740	99.5%	6.0	100.2	72.6	27.1	0	0	0
	September	712	98.9%	2.9	28.4	18.4	7.1	0	0	0
	October	737	99.1%	2.4	17.6	8.8	4.0	0	0	0
	November	707	98.2%	2.4	15.1	6.6	3.3	0	0	0
	December	739	99.3%	2.3	34.9	13.8	4.7	0	0	0
Annual		8678	99.1%	3.9	252.1	169.4	47.3	0	0	0

Observations in ug/m^3

FIGURE 4.2.2.1 - COME BY CHANCE ANNUAL SO_2 CONCENTRATIONS



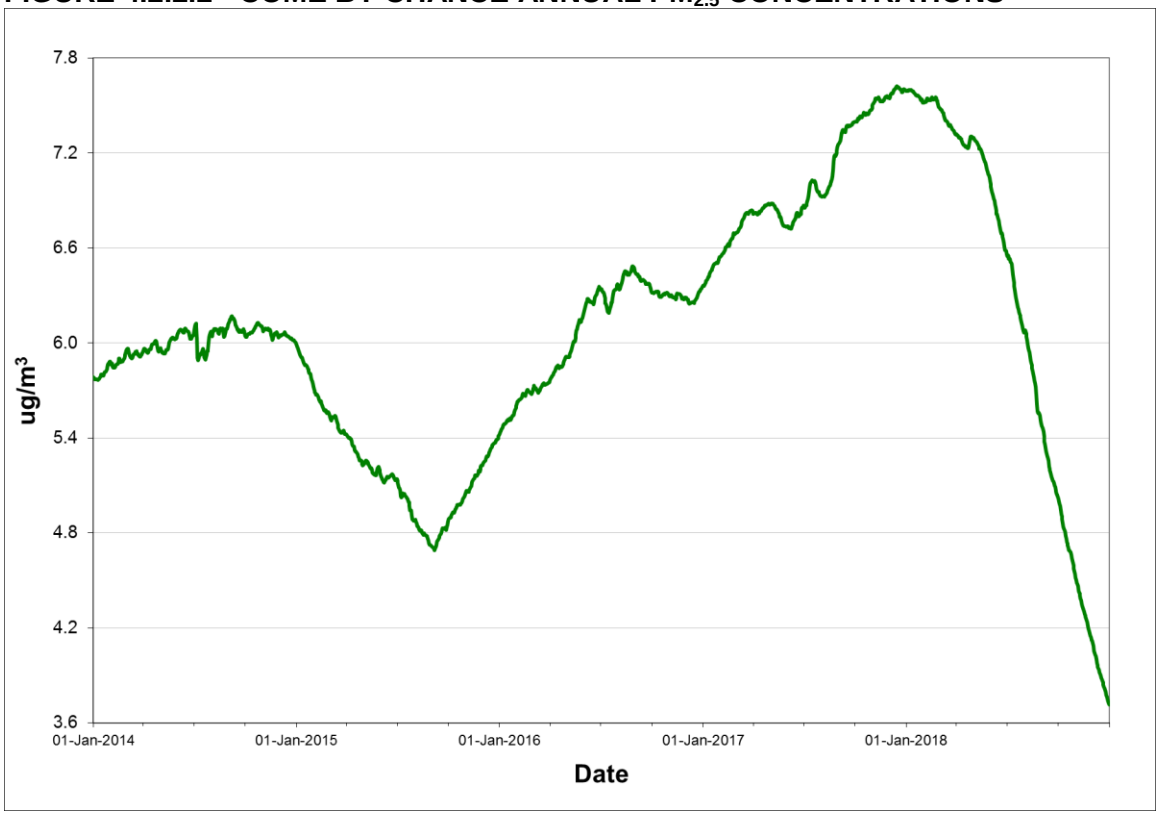
Rolling annual average of hourly concentrations

TABLE 4.2.2.2 - COME BY CHANCE $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	7.3	11.1	0
	February	28	100.0%	7.2	11.3	0
	March	31	100.0%	6.3	8.8	0
	April	30	100.0%	6.3	9.3	0
	May	31	100.0%	6.4	9.2	0
	June	30	100.0%	8.7	15.0	0
	July	31	100.0%	9.4	16.0	0
	August	31	100.0%	11.0	25.8	1
	September	30	100.0%	7.5	15.5	0
	October	31	100.0%	7.3	12.7	0
	November	30	100.0%	6.9	11.2	0
	December	31	100.0%	6.7	12.5	0
Annual		365	100.0%	7.6	25.8	1
2018	January	31	100.0%	6.5	10.6	0
	February	24	85.7%	6.7	14.4	0
	March	30	96.8%	4.2	6.4	0
	April	30	100.0%	6.1	15.7	0
	May	30	96.8%	3.1	5.6	0
	June	30	100.0%	3.2	10.6	0
	July	29	93.5%	3.6	9.7	0
	August	31	100.0%	4.3	11.5	0
	September	30	100.0%	2.0	4.7	0
	October	31	100.0%	1.6	4.5	0
	November	29	96.7%	1.8	4.9	0
	December	31	100.0%	2.0	3.7	0
Annual		356	97.5%	3.7	15.7	0

Observations in ug/m^3

FIGURE 4.2.2.2 - COME BY CHANCE ANNUAL $PM_{2.5}$ CONCENTRATIONS



Rolling annual average of daily concentrations

4.2.3 Sunnyside

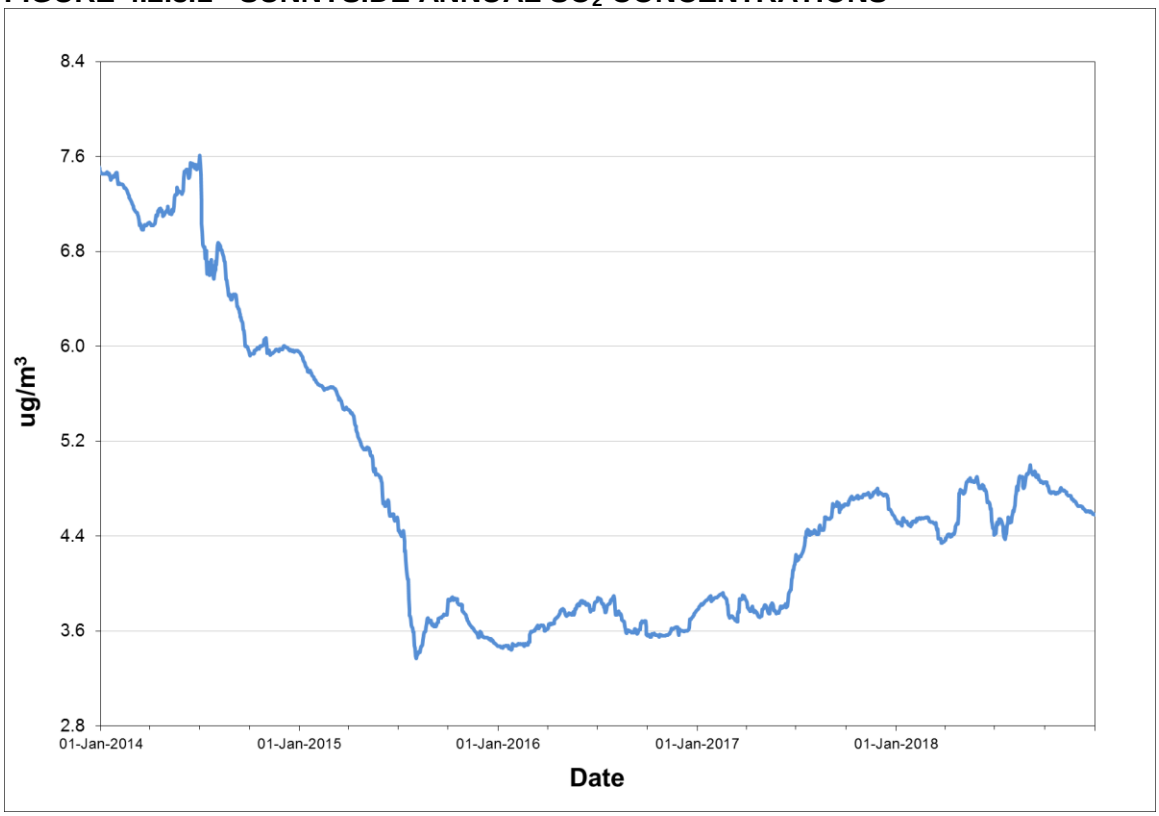
The Sunnyside station monitors the ambient levels of SO_2 and $PM_{2.5}$ on a continuous basis. For both pollutants, the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.2.3.1 through 4.2.3.3 provide summary information on the level of air contaminants measured at Sunnyside, while Figures 4.2.3.1 through 4.2.3.3 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.2.3.1 - SUNNYSIDE SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	0	0.0%							
	February	277	41.2%	1.6	19.2	14.0	3.8	0	0	0
	March	686	92.2%	4.6	387.1	216.3	36.3	0	0	0
	April	685	95.1%	3.1	51.6	40.0	18.4	0	0	0
	May	708	95.2%	4.4	78.9	72.9	17.2	0	0	0
	June	684	95.0%	9.5	103.6	72.3	36.0	0	0	0
	July	708	95.2%	6.8	78.5	57.3	22.2	0	0	0
	August	711	95.6%	4.8	76.7	55.6	22.4	0	0	0
	September	685	95.1%	5.1	81.3	60.5	20.5	0	0	0
	October	709	95.3%	3.4	65.6	31.6	11.6	0	0	0
	November	653	90.7%	3.0	50.6	28.2	6.1	0	0	0
	December	686	92.2%	1.9	31.7	19.1	6.0	0	0	0
Annual		7192	82.1%	4.5	387.1	216.3	36.3	0	0	0
2018	January	704	94.6%	4.4	77.7	55.4	19.4	0	0	0
	February	620	92.3%	3.7	81.4	39.7	7.9	0	0	0
	March	705	94.8%	2.3	43.9	34.2	10.8	0	0	0
	April	441	61.3%	9.8	333.3	234.3	72.7	0	0	0
	May	630	84.7%	5.2	70.3	52.3	14.7	0	0	0
	June	703	97.6%	4.5	80.7	48.0	16.4	0	0	0
	July	740	99.5%	7.9	109.6	89.5	33.1	0	0	0
	August	740	99.5%	9.1	135.7	71.7	31.6	0	0	0
	September	711	98.8%	4.3	94.7	52.5	14.0	0	0	0
	October	739	99.3%	2.8	57.2	18.5	9.4	0	0	0
	November	715	99.3%	1.6	31.4	11.3	2.8	0	0	0
	December	738	99.2%	1.2	22.1	12.2	3.5	0	0	0
Annual		8186	93.4%	4.6	333.3	234.3	72.7	0	0	0

Observations in ug/m^3

FIGURE 4.2.3.1 - SUNNYSIDE ANNUAL SO_2 CONCENTRATIONS



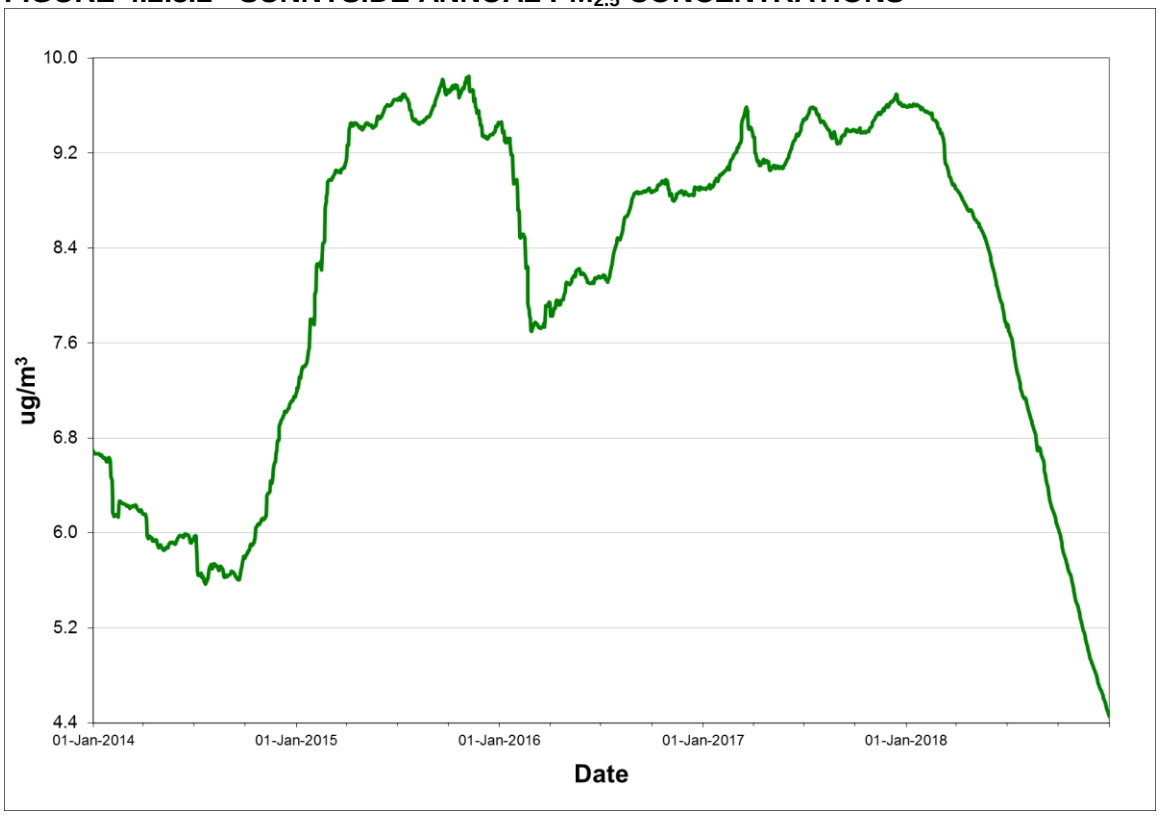
Rolling annual average of hourly concentrations

TABLE 4.2.3.2 - SUNNYSIDE $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	30	96.8%	8.8	13.6	0
	February	12	42.9%	11.4	26.0	1
	March	31	100.0%	11.4	45.7	1
	April	30	100.0%	7.7	10.3	0
	May	31	100.0%	8.0	11.6	0
	June	30	100.0%	10.7	17.9	0
	July	30	96.8%	11.0	15.5	0
	August	31	100.0%	10.2	20.2	0
	September	28	93.3%	10.0	19.4	0
	October	31	100.0%	9.1	13.9	0
	November	28	93.3%	9.7	13.1	0
	December	30	96.8%	8.1	12.0	0
Annual		342	93.7%	9.6	45.7	2
2018	January	31	100.0%	8.6	13.3	0
	February	28	100.0%	8.3	12.2	0
	March	26	83.9%	4.9	13.8	0
	April	30	100.0%	5.2	12.8	0
	May	31	100.0%	4.1	6.5	0
	June	30	100.0%	3.6	10.7	0
	July	31	100.0%	4.0	18.1	0
	August	31	100.0%	4.7	12.0	0
	September	30	100.0%	2.5	6.2	0
	October	31	100.0%	2.4	4.7	0
	November	30	100.0%	2.7	6.5	0
	December	31	100.0%	2.8	4.6	0
Annual		360	98.6%	4.5	18.1	0

Observations in ug/m^3

FIGURE 4.2.3.2 - SUNNYSIDE ANNUAL $PM_{2.5}$ CONCENTRATIONS



Rolling annual average of daily concentrations

4.2.4 NARL Property Boundary

The NARL Property Boundary station monitors the ambient levels of SO_2 and $PM_{2.5}$. Given its proximity to the process area of NARL, this station routinely records ambient levels of SO_2 and $PM_{2.5}$ in excess of the standards. In 2018, the 1-hour SO_2 standard was exceeded on one hundred and twenty four occasions, the 3-hour standard exceeded ninety seven times and the 24-hour standard exceeded thirty one times.

For $PM_{2.5}$, the monitor recorded ninety-seven exceedances of the 24-hour ambient standard in 2018. The annual $PM_{2.5}$ standard was also exceeded in 2018.

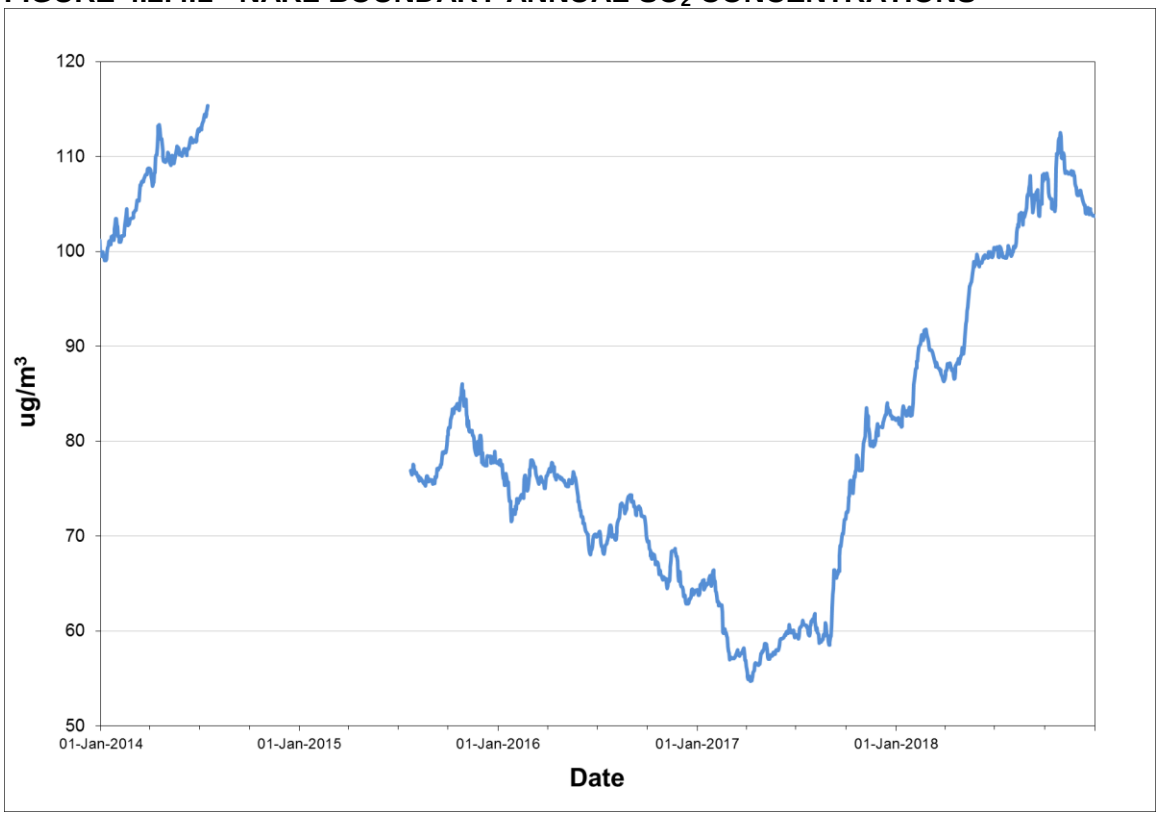
Tables 4.2.4.1 through 4.2.4.2 provide summary information on the level of air contaminants measured at NARL Property Boundary, while Figures 4.2.4.1 and 4.2.4.2 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.2.4.1 - NARL BOUNDARY SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	334	44.9%	92.6	603.8	575.9	325.1	0	0	1
	February	619	92.1%	30.7	478.4	367.1	147.3	0	0	0
	March	247	33.2%	41.7	630.7	509.7	187.4	0	0	0
	April	687	95.4%	71.0	1022.1	707.2	323.9	1	3	1
	May	706	94.9%	47.4	949.4	785.6	224.3	2	2	0
	June	587	81.5%	65.4	835.1	543.7	279.5	0	0	0
	July	711	95.6%	66.8	803.2	541.1	269.0	0	0	0
	August	699	94.0%	87.6	856.9	784.8	556.9	0	6	1
	September	645	89.6%	177.9	1347.8	1163.7	669.8	31	20	5
	October	682	91.7%	134.8	1036.6	946.7	626.9	21	16	5
	November	595	82.6%	107.4	1010.2	956.5	457.2	11	13	1
	December	642	86.3%	43.8	2560.7	920.8	306.4	1	1	1
Annual		7154	81.7%	82.2	2560.7	1163.7	669.8	67	61	15
2018	January	704	94.6%	99.7	906.8	719.9	422.4	1	4	3
	February	638	94.9%	119.9	1195.8	1179.3	627.0	6	7	2
	March	708	95.2%	26.6	633.9	524.1	245.3	0	0	0
	April	688	95.6%	98.8	1191.1	858.9	333.3	4	4	1
	May	710	95.4%	161.3	876.1	744.5	355.6	0	6	5
	June	674	93.6%	83.3	851.5	484.1	283.0	0	0	0
	July	735	98.8%	60.0	912.3	760.7	248.8	1	2	0
	August	740	99.5%	158.5	1256.4	1050.4	502.7	13	14	6
	September	714	99.2%	197.2	1813.9	1721.2	747.8	50	31	8
	October	741	99.6%	159.0	2241.0	1770.5	1381.2	41	23	6
	November	700	97.2%	52.8	2065.0	1009.8	281.8	8	6	0
	December	741	99.6%	26.9	749.4	598.5	195.1	0	0	0
Annual		8493	97.0%	103.7	2241.0	1770.5	1381.2	124	97	31

Observations in ug/m^3

FIGURE 4.2.4.1 - NARL BOUNDARY ANNUAL SO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 4.2.4.2 - NARL BOUNDARY $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	28	90.3%	27.6	115.5	10
	February	26	92.9%	15.9	34.5	6
	March	27	87.1%	24.8	68.6	11
	April	30	100.0%	18.5	47.8	7
	May	27	87.1%	14.1	42.0	5
	June	30	100.0%	20.6	49.8	7
	July	31	100.0%	16.4	43.5	5
	August	29	93.5%	21.5	77.4	10
	September	22	73.3%	43.1	142.0	10
	October	26	83.9%	27.6	99.9	9
	November	23	76.7%	34.1	147.7	10
	December	31	100.0%	17.0	59.5	7
Annual		330	90.4%	22.8	147.7	97
2018	January	17	54.8%	24.1	68.5	7
	February	25	89.3%	26.8	87.8	13
	March	26	83.9%	9.3	35.8	1
	April	29	96.7%	21.3	52.5	13
	May	31	100.0%	29.3	71.5	16
	June	18	60.0%	19.2	48.7	6
	July	28	90.3%	15.0	47.3	4
	August	30	96.8%	23.8	62.1	10
	September	30	100.0%	31.5	122.0	13
	October	31	100.0%	37.0	360.9	10
	November	24	80.0%	11.7	46.0	3
	December	31	100.0%	8.1	34.3	1
Annual		320	87.7%	21.7	360.9	97

Observations in ug/m^3

FIGURE 4.2.4.2 - NARL BOUNDARY ANNUAL $PM_{2.5}$ CONCENTRATIONS

Rolling annual average of hourly concentrations

4.3 Iron Ore Company of Canada

The Iron Ore Company of Canada (IOCC) operated three monitoring stations in Labrador City in 2018, and they are located on Indian Point, Hudson Drive and on Smokey Mountain Road. The locations of these monitoring stations are identified in Figure 4.3.1.

In late 2013, IOCC, in conjunction with the then Environment Canada and the then Department of Environment and Conservation, became the first industrial operation in the province to operate an ozone monitor. The installation of the ozone monitor at the Hudson Drive location designated the station as a NAPS equivalent for the purpose of generating an hourly AQHI reading. The ozone monitor was originally located at the old Smokey Mountain station prior to the monitoring network being revamped, but was moved to the Hudson Drive station.

FIGURE 4.3.1 - IOCC AMBIENT MONITORING STATIONS

4.3.1 Indian Point

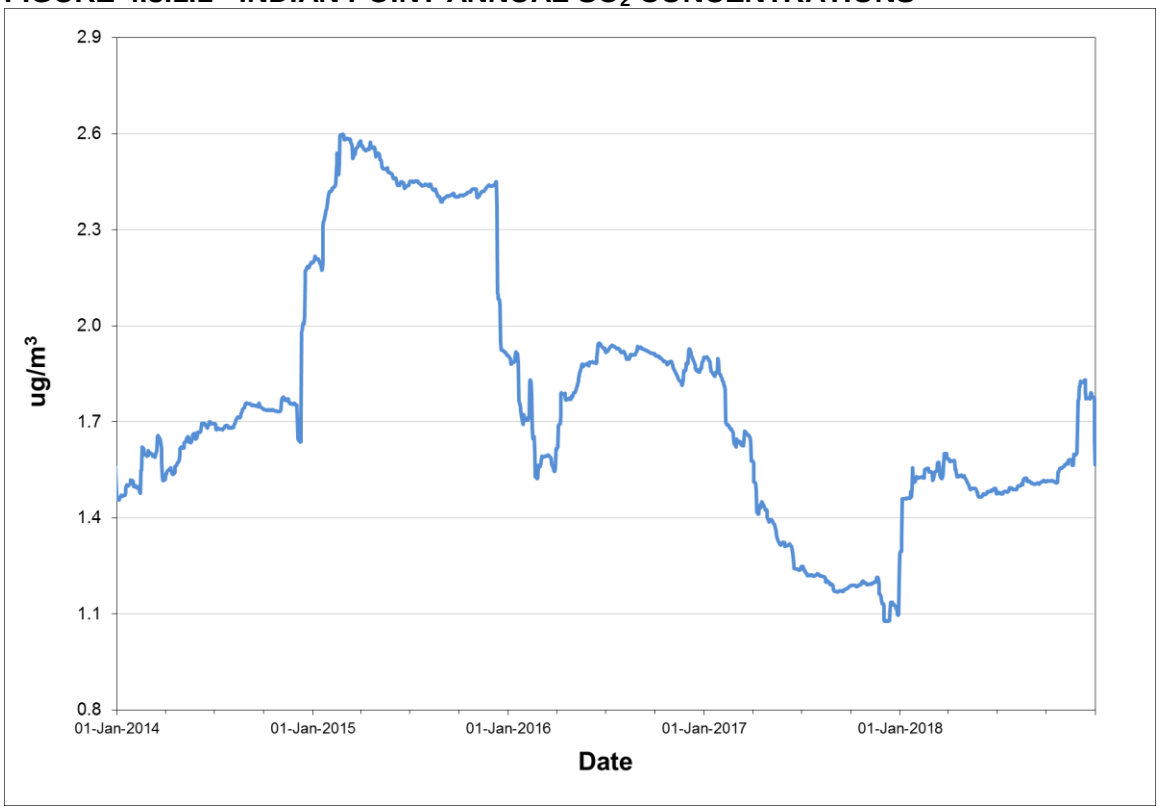
The Indian Point station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$ and TPM on a continuous basis. For all parameters the ambient air criteria were not exceeded on any occasion in 2018. Tables 4.3.1.1 through 4.3.1.4 provide summary information on the level of air contaminants measured at Indian Point while Figures 4.3.1.1 through 4.3.1.4 present the graphical representation of the annual trends.

TABLE 4.3.1.1 - INDIAN POINT SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	744	100.0%	1.4	113.5	82.1	16.9	0	0	0
	February	668	99.4%	1.0	18.9	12.9	4.7	0	0	0
	March	720	96.8%	2.1	71.3	44.9	15.1	0	0	0
	April	720	100.0%	1.5	40.5	30.8	11.1	0	0	0
	May	741	99.6%	1.2	25.3	12.2	3.4	0	0	0
	June	698	96.9%	0.8	18.7	11.2	2.9	0	0	0
	July	744	100.0%	0.6	7.7	5.3	1.3	0	0	0
	August	742	99.7%	0.6	12.4	9.3	3.4	0	0	0
	September	704	97.8%	0.8	8.5	6.0	1.9	0	0	0
	October	742	99.7%	0.7	14.4	9.0	2.8	0	0	0
	November	719	99.9%	0.8	20.7	16.8	4.3	0	0	0
	December	742	99.7%	3.9	143.0	88.1	47.0	0	0	0
Annual		8684	99.1%	1.3	143.0	88.1	47.0	0	0	0
2018	January	744	100.0%	4.2	169.3	116.7	43.9	0	0	0
	February	672	100.0%	1.2	57.0	39.5	10.8	0	0	0
	March	738	99.2%	2.5	64.0	40.0	14.2	0	0	0
	April	720	100.0%	0.8	10.6	6.3	2.5	0	0	0
	May	737	99.1%	0.4	1.5	1.3	0.9	0	0	0
	June	666	92.5%	0.9	14.1	10.1	3.6	0	0	0
	July	734	98.7%	0.7	22.8	16.6	3.7	0	0	0
	August	744	100.0%	0.9	25.1	16.3	4.0	0	0	0
	September	645	89.6%	0.7	9.0	7.0	1.3	0	0	0
	October	708	95.2%	1.2	34.6	27.2	14.3	0	0	0
	November	710	98.6%	3.4	83.3	80.6	31.4	0	0	0
	December	744	100.0%	1.6	99.2	65.4	15.2	0	0	0
Annual		8562	97.7%	1.6	169.3	116.7	43.9	0	0	0

Observations in ug/m^3

FIGURE 4.3.1.1 - INDIAN POINT ANNUAL SO_2 CONCENTRATIONS



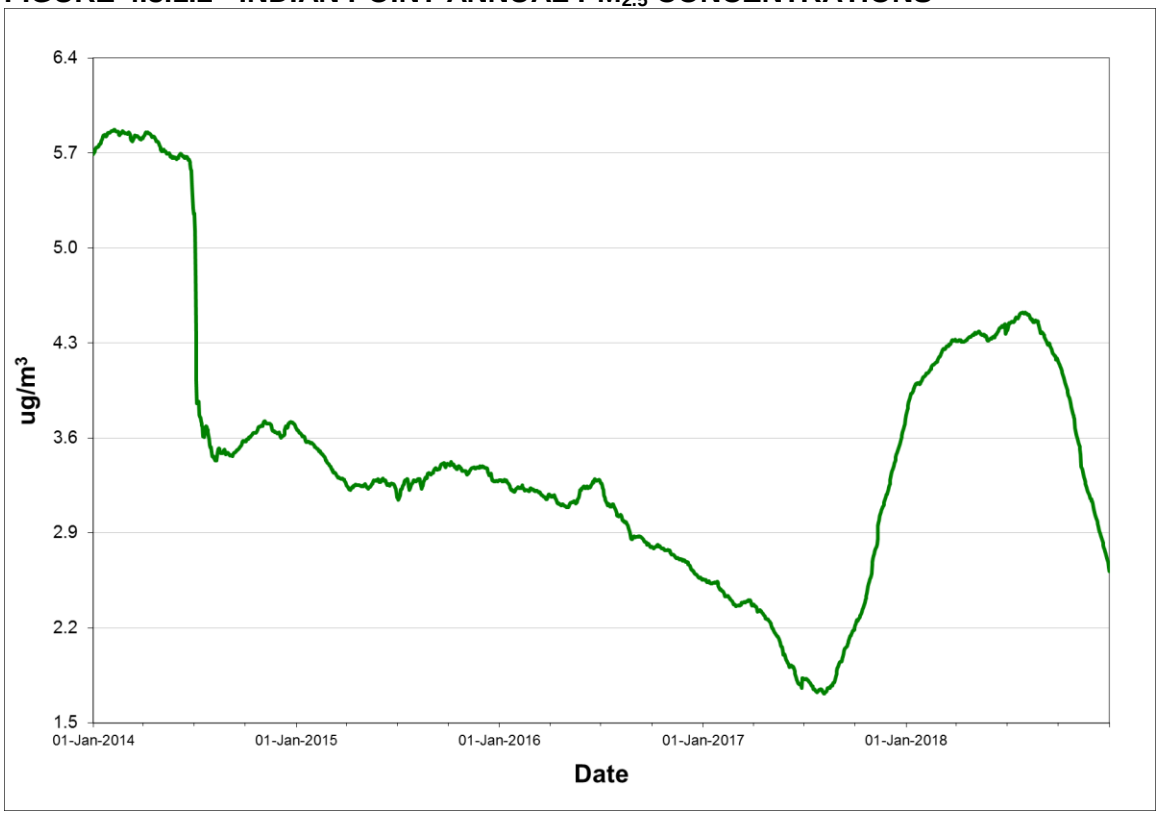
Rolling annual average of hourly concentrations

TABLE 4.3.1.2 - INDIAN POINT $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	1.3	4.2	0
	February	27	96.4%	1.0	2.3	0
	March	31	100.0%	2.0	4.3	0
	April	29	96.7%	1.4	3.7	0
	May	31	100.0%	2.1	7.8	0
	June	26	86.7%	2.2	28.2	1
	July	20	64.5%	1.5	3.3	0
	August	24	77.4%	5.2	11.1	0
	September	30	100.0%	5.9	9.5	0
	October	31	100.0%	6.9	25.9	1
	November	30	100.0%	7.7	32.3	1
	December	31	100.0%	6.9	14.6	0
Annual		341	93.4%	3.8	32.3	3
2018	January	25	80.6%	4.5	9.8	0
	February	28	100.0%	2.8	5.1	0
	March	31	100.0%	3.4	7.0	0
	April	30	100.0%	2.0	3.5	0
	May	30	96.8%	1.7	4.8	0
	June	27	90.0%	3.0	5.5	0
	July	31	100.0%	4.0	13.1	0
	August	29	93.5%	3.4	8.0	0
	September	30	100.0%	3.5	10.0	0
	October	31	100.0%	1.2	4.5	0
	November	27	90.0%	1.2	5.5	0
	December	29	93.5%	0.9	5.7	0
Annual		348	95.3%	2.6	13.1	0

Observations in ug/m^3

FIGURE 4.3.1.2 - INDIAN POINT ANNUAL $PM_{2.5}$ CONCENTRATIONS



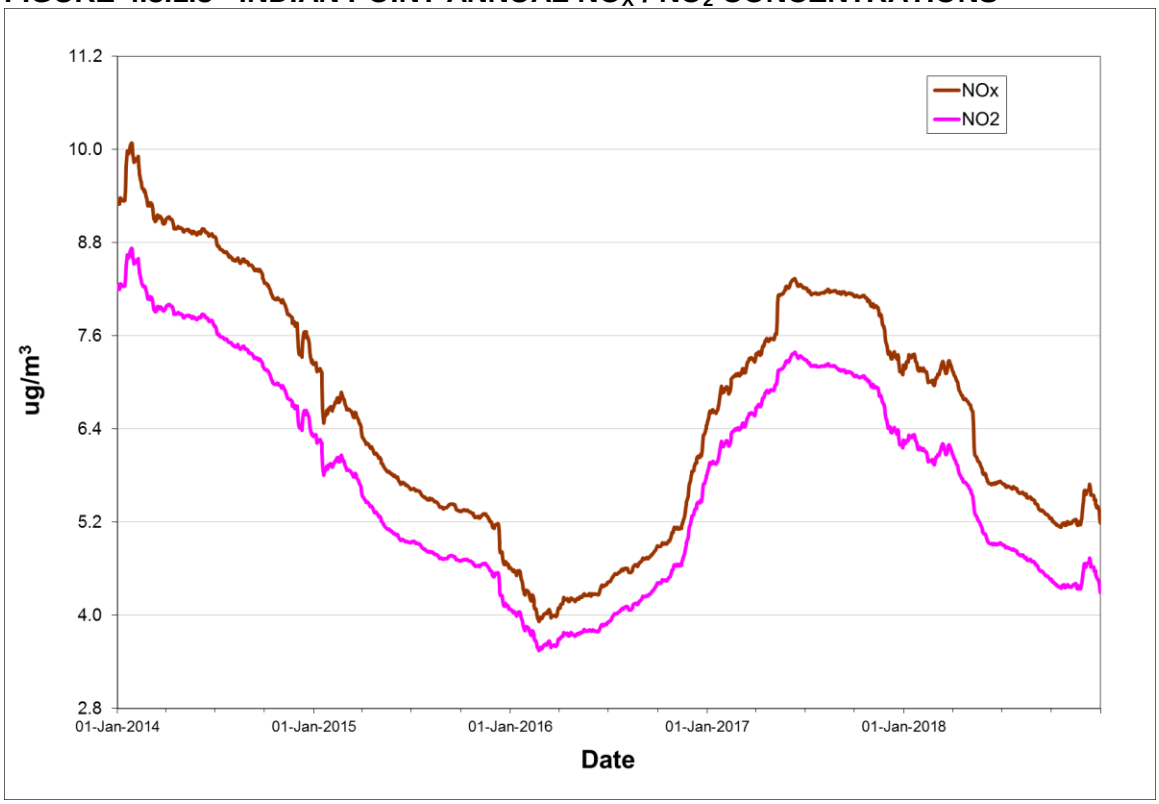
Rolling annual average of hourly concentrations

TABLE 4.3.1.3 - INDIAN POINT NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	744	100.0%	10.1	9.1	156.1	74.3	24.1	20.5	0	0
	February	668	99.4%	9.3	8.5	61.5	40.5	25.5	21.9	0	0
	March	720	96.8%	9.3	8.5	62.9	48.1	21.8	20.9	0	0
	April	720	100.0%	7.7	7.2	48.6	35.8	20.5	19.6	0	0
	May	738	99.2%	12.3	8.4	273.2	72.1	118.1	36.5	0	0
	June	700	97.2%	5.1	4.6	34.8	21.4	12.5	10.4	0	0
	July	744	100.0%	3.7	3.3	31.4	28.0	10.1	8.6	0	0
	August	741	99.6%	4.5	3.8	41.8	27.7	10.9	8.3	0	0
	September	713	99.0%	5.0	4.4	54.6	31.2	14.1	10.2	0	0
	October	742	99.7%	4.6	4.2	45.0	37.7	15.1	14.0	0	0
	November	719	99.9%	4.7	4.3	55.0	35.3	14.7	12.9	0	0
	December	742	99.7%	10.3	8.9	117.0	71.8	42.0	32.4	0	0
Annual		8691	99.2%	7.2	6.3	273.2	74.3	118.1	36.5	0	0
2018	January	744	100.0%	9.7	8.1	140.9	78.3	36.0	29.2	0	0
	February	672	100.0%	7.3	6.5	85.2	56.9	24.6	19.7	0	0
	March	677	91.0%	10.9	9.5	55.5	47.4	21.3	18.4	0	0
	April	636	88.3%	2.4	1.8	15.9	13.0	7.0	5.8	0	0
	May	737	99.1%	1.6	1.2	24.0	17.6	6.2	3.0	0	0
	June	665	92.4%	3.5	2.9	73.8	32.0	9.6	8.5	0	0
	July	735	98.8%	2.3	1.8	25.3	17.1	7.8	6.2	0	0
	August	744	100.0%	3.1	2.5	39.0	23.9	6.6	5.4	0	0
	September	644	89.4%	2.0	1.4	31.4	15.6	5.6	3.9	0	0
	October	709	95.3%	4.1	3.4	46.3	35.5	18.3	13.5	0	0
	November	710	98.6%	7.9	6.6	87.0	53.0	34.4	26.0	0	0
	December	744	100.0%	7.1	5.7	122.9	68.2	49.2	31.1	0	0
Annual		8417	96.1%	5.2	4.3	140.9	78.3	49.2	31.1	0	0

Observations in ug/m^3

FIGURE 4.3.1.3 - INDIAN POINT ANNUAL NO_X / NO_2 CONCENTRATIONS



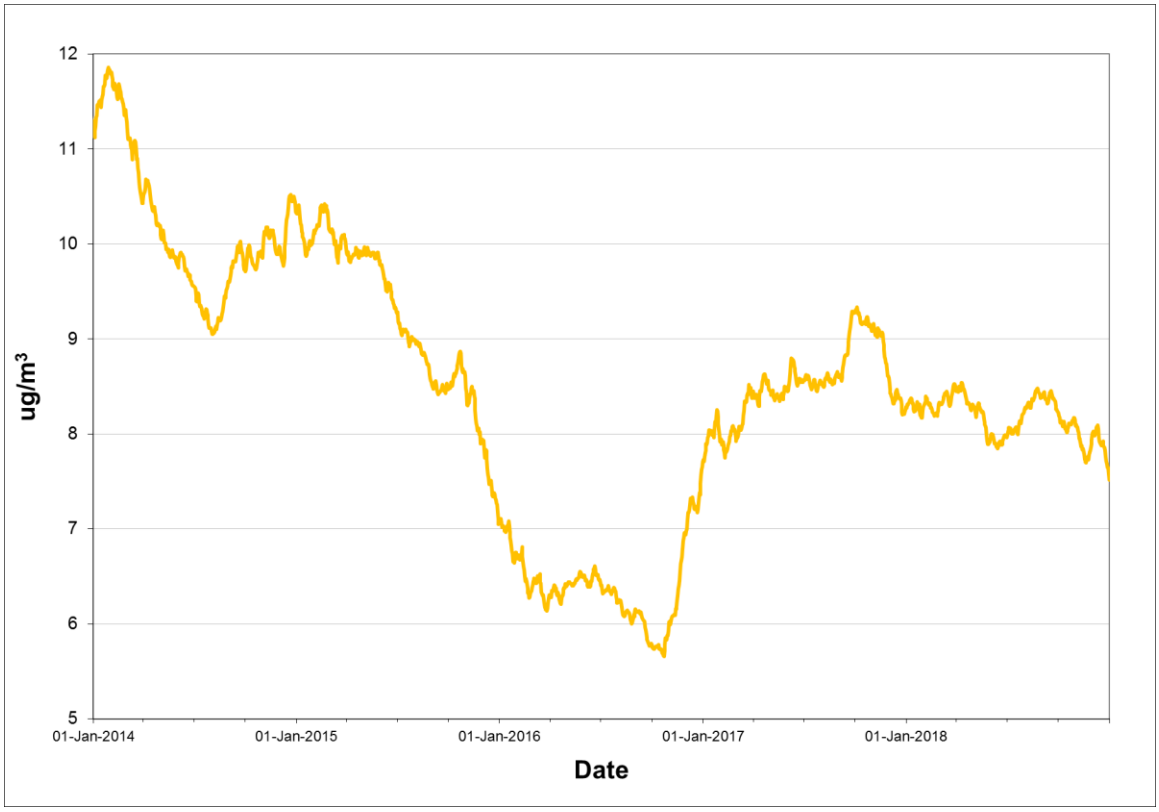
Rolling annual average of hourly concentrations

TABLE 4.3.1.4 - INDIAN POINT TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2017	January	29	93.5%	6.1	44.6	0
	February	28	100.0%	6.1	45.8	0
	March	30	96.8%	10.6	55.2	0
	April	30	100.0%	11.4	51.1	0
	May	31	100.0%	16.9	77.7	0
	June	29	96.7%	13.0	68.4	0
	July	31	100.0%	7.6	66.5	0
	August	26	83.9%	8.5	27.8	0
	September	30	100.0%	8.1	58.6	0
	October	31	100.0%	5.2	27.0	0
	November	27	90.0%	5.5	68.0	0
	December	27	87.1%	6.3	86.2	0
Annual		349	95.6%	8.3	86.2	0
2018	January	29	93.5%	6.1	55.3	0
	February	27	96.4%	6.3	27.6	0
	March	31	100.0%	12.8	60.4	0
	April	30	100.0%	9.3	71.6	0
	May	30	96.8%	10.3	54.3	0
	June	29	96.7%	13.4	43.3	0
	July	31	100.0%	11.1	34.6	0
	August	31	100.0%	10.4	43.5	0
	September	30	100.0%	6.6	31.8	0
	October	29	93.5%	4.5	15.5	0
	November	25	83.3%	3.7	26.2	0
	December	27	87.1%	3.1	33.1	0
Annual		349	95.6%	7.5	71.6	0

Observations in ug/m^3

FIGURE 4.3.1.4 - INDIAN POINT ANNUAL TPM CONCENTRATIONS



Rolling annual average of hourly concentrations

4.3.2 Hudson Drive

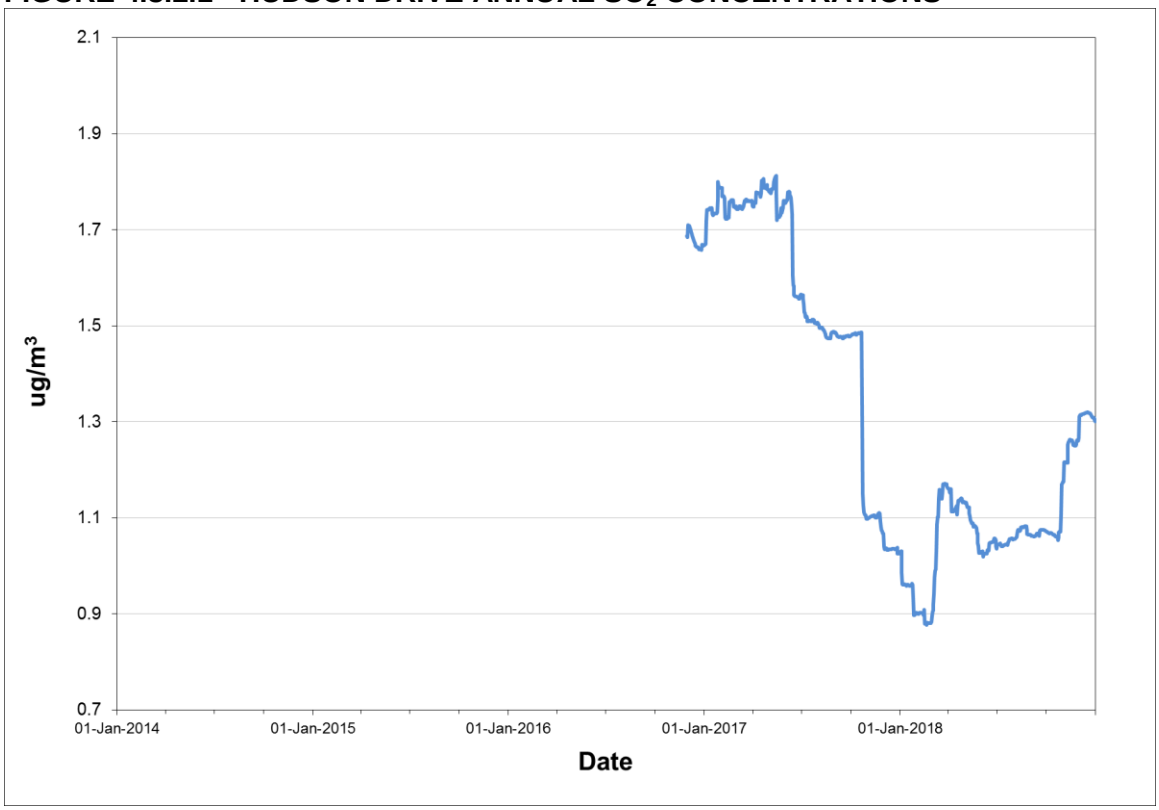
The Hudson Drive station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$, TPM and O_3 on a continuous basis. For SO_2, $PM_{2.5}$ and NO_2 the ambient air criteria were not exceeded on any occasion in 2018. The 24-hour TPM standard was exceeded six times in 2018, specifically three times in March, twice in May and once in October. The 8-hour O_3 standard was exceeded on fifty eight occasions in 2018, specifically thirty five times in April, seven times in May and on sixteen occasions in December. Tables 4.3.2.1 through 4.3.2.5 provide summary information on the level of air contaminants measured at Hudson Drive while Table 4.3.2.6 provides the AQHI levels for 2018. Figures 4.3.2.1 through 4.3.2.5 provide the graphical representation of the annual trends for each pollutant and Figure 4.3.2.6 provides the AQHI frequency distribution for 2018.

TABLE 4.3.2.1 - HUDSON DRIVE SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	741	99.6%	2.1	101.2	85.2	17.6	0	0	0
	February	672	100.0%	1.0	67.1	39.9	12.3	0	0	0
	March	742	99.7%	1.0	24.3	12.9	3.4	0	0	0
	April	691	96.0%	1.6	81.2	49.8	17.4	0	0	0
	May	744	100.0%	1.8	38.8	35.3	8.0	0	0	0
	June	701	97.4%	1.1	39.5	21.4	7.2	0	0	0
	July	742	99.7%	0.5	19.0	10.6	1.7	0	0	0
	August	744	100.0%	0.7	21.7	17.9	3.7	0	0	0
	September	714	99.2%	0.6	31.2	18.4	4.5	0	0	0
	October	740	99.5%	0.6	13.4	6.6	2.4	0	0	0
	November	719	99.9%	0.6	27.6	16.0	2.5	0	0	0
	December	697	93.7%	0.6	6.9	3.9	1.4	0	0	0
Annual		8647	98.7%	1.0	101.2	85.2	17.6	0	0	0
2018	January	704	94.6%	0.6	12.7	10.0	2.3	0	0	0
	February	672	100.0%	0.8	22.6	13.7	5.2	0	0	0
	March	730	98.1%	4.3	162.9	128.3	21.0	0	0	0
	April	720	100.0%	1.3	25.2	13.3	7.1	0	0	0
	May	737	99.1%	0.6	1.9	1.5	0.9	0	0	0
	June	702	97.5%	1.2	38.1	19.6	5.9	0	0	0
	July	700	94.1%	0.7	37.9	19.4	3.4	0	0	0
	August	728	97.8%	0.8	25.2	12.4	2.4	0	0	0
	September	712	98.9%	0.7	12.8	10.1	4.8	0	0	0
	October	733	98.5%	1.8	95.3	66.8	23.2	0	0	0
	November	703	97.6%	1.7	113.0	58.4	15.0	0	0	0
	December	744	100.0%	1.0	115.9	68.1	16.4	0	0	0
Annual		8585	98.0%	1.3	162.9	128.3	23.2	0	0	0

Observations in ug/m^3

FIGURE 4.3.2.1 - HUDSON DRIVE ANNUAL SO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 4.3.2.2 - HUDSON DRIVE $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	5.0	10.3	0
	February	28	100.0%	4.7	8.0	0
	March	30	96.8%	5.6	11.4	0
	April	28	93.3%	4.9	8.0	0
	May	31	100.0%	4.2	8.3	0
	June	29	96.7%	2.6	7.2	0
	July	29	93.5%	2.4	5.9	0
	August	25	80.6%	3.2	7.7	0
	September	30	100.0%	2.8	6.1	0
	October	30	96.8%	3.4	32.7	1
	November	30	100.0%	3.8	6.4	0
	December	31	100.0%	5.8	38.8	1
Annual		352	96.4%	4.1	38.8	2
2018	January	24	77.4%	3.6	8.9	0
	February	28	100.0%	2.4	5.4	0
	March	30	96.8%	1.9	3.9	0
	April	30	100.0%	1.3	3.0	0
	May	30	96.8%	0.8	3.9	0
	June	24	80.0%	1.4	6.9	0
	July	29	93.5%	4.4	14.3	0
	August	29	93.5%	3.9	8.0	0
	September	29	96.7%	2.0	5.6	0
	October	31	100.0%	2.0	5.9	0
	November	29	96.7%	2.6	6.3	0
	December	31	100.0%	2.8	12.6	0
Annual		344	94.2%	2.4	14.3	0

Observations in ug/m^3

FIGURE 4.3.2.2 - HUDSON DRIVE ANNUAL $PM_{2.5}$ CONCENTRATIONS

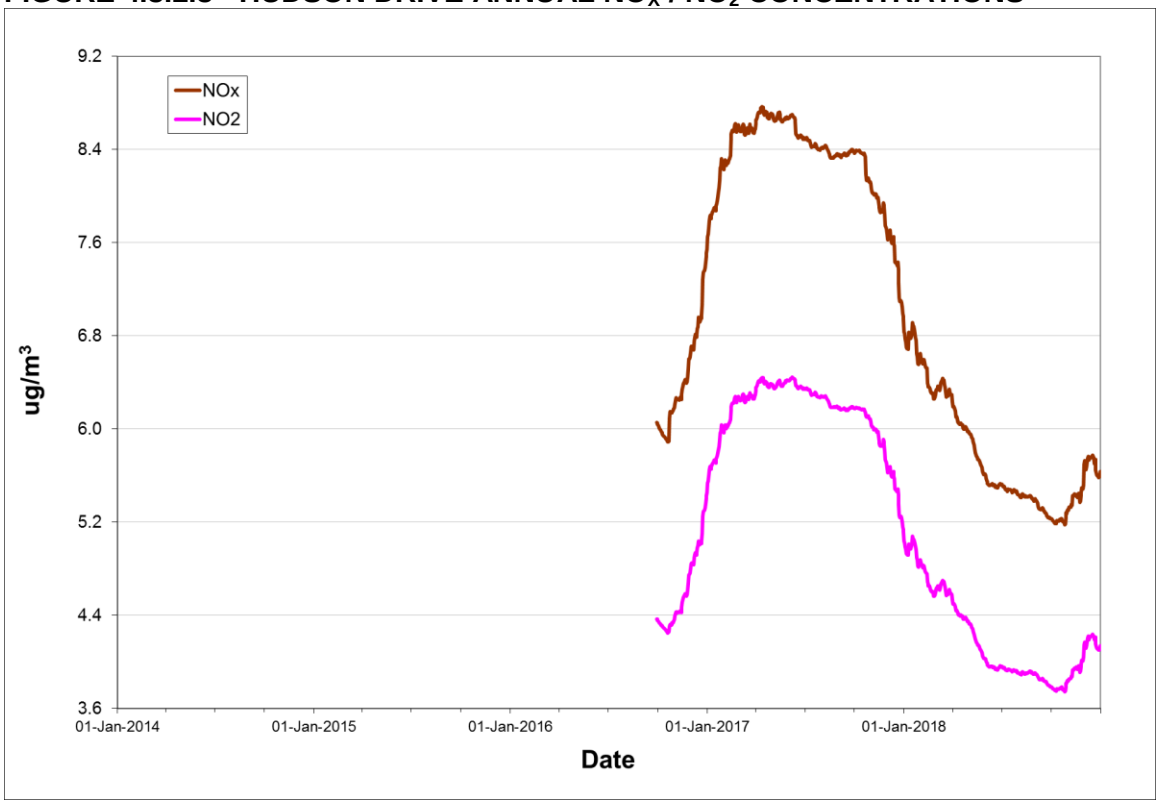
Rolling annual average of hourly concentrations

TABLE 4.3.2.3 - HUDSON DRIVE NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	739	99.3%	13.5	10.1	229.6	99.6	43.0	30.8	0	0
	February	672	100.0%	12.2	9.3	201.6	81.2	53.2	28.0	0	0
	March	742	99.7%	8.7	6.9	92.3	79.2	25.2	20.4	0	0
	April	691	96.0%	6.1	4.6	87.8	48.1	22.1	15.7	0	0
	May	743	99.9%	6.1	4.9	78.7	40.1	14.6	10.2	0	0
	June	699	97.1%	4.3	3.2	47.0	22.7	12.3	7.9	0	0
	July	742	99.7%	4.2	2.7	27.6	23.5	7.8	5.6	0	0
	August	744	100.0%	4.5	2.8	44.6	24.4	10.0	7.8	0	0
	September	712	98.9%	5.0	3.4	93.9	28.4	11.5	8.1	0	0
	October	740	99.5%	4.2	3.1	50.4	46.9	13.3	9.2	0	0
	November	719	99.9%	6.4	4.5	83.5	46.6	24.7	17.9	0	0
	December	744	100.0%	8.2	6.2	180.8	79.1	34.5	22.5	0	0
Annual		8687	99.2%	6.9	5.1	229.6	99.6	53.2	30.8	0	0
2018	January	731	98.3%	10.1	7.3	199.2	86.8	57.5	37.7	0	0
	February	672	100.0%	7.6	5.6	112.3	75.7	32.4	23.2	0	0
	March	726	97.6%	8.1	6.3	111.6	65.9	17.9	14.6	0	0
	April	720	100.0%	3.1	2.3	81.5	38.1	7.7	6.3	0	0
	May	737	99.1%	1.8	1.2	41.3	21.5	6.1	3.3	0	0
	June	701	97.4%	3.1	2.3	50.3	39.1	12.8	10.6	0	0
	July	700	94.1%	3.1	1.9	67.9	28.5	7.2	5.3	0	0
	August	727	97.7%	4.0	2.8	57.2	22.5	6.9	6.1	0	0
	September	712	98.9%	3.0	2.0	39.4	18.3	7.3	5.1	0	0
	October	736	98.9%	5.0	3.7	77.0	52.9	23.6	16.5	0	0
	November	707	98.2%	9.1	6.9	102.6	58.7	36.5	24.5	0	0
	December	744	100.0%	9.6	7.3	147.2	63.5	69.6	41.2	0	0
Annual		8613	98.3%	5.6	4.1	199.2	86.8	69.6	41.2	0	0

Observations in ug/m^3

FIGURE 4.3.2.3 - HUDSON DRIVE ANNUAL NO_X / NO_2 CONCENTRATIONS



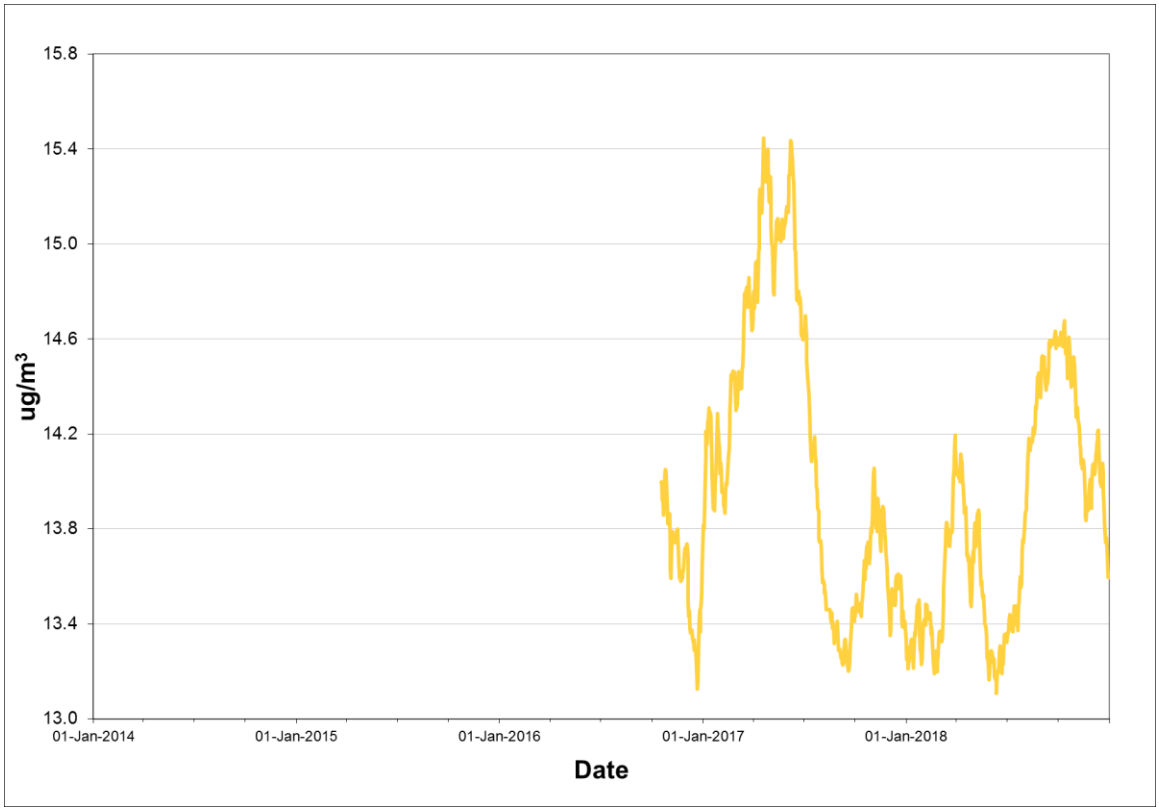
Rolling annual average of hourly concentrations

TABLE 4.3.2.4 - HUDSON DRIVE TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2017	January	31	100.0%	9.3	84.8	0
	February	27	96.4%	12.2	50.6	0
	March	30	96.8%	17.7	86.4	0
	April	28	93.3%	38.9	208.5	5
	May	31	100.0%	37.3	209.0	3
	June	29	96.7%	17.4	65.8	0
	July	26	83.9%	7.6	29.4	0
	August	24	77.4%	7.7	33.2	0
	September	30	100.0%	9.5	25.8	0
	October	31	100.0%	11.7	105.9	0
	November	30	100.0%	9.3	106.4	0
	December	31	100.0%	9.3	68.3	0
Annual		348	95.3%	13.3	209.0	8
2018	January	29	93.5%	9.5	51.7	0
	February	28	100.0%	11.4	70.0	0
	March	30	96.8%	33.8	168.8	3
	April	30	100.0%	26.2	95.3	0
	May	31	100.0%	26.0	146.3	2
	June	29	96.7%	18.2	95.3	0
	July	29	93.5%	12.1	35.6	0
	August	29	93.5%	15.2	34.9	0
	September	30	100.0%	10.7	47.0	0
	October	30	96.8%	10.3	149.1	1
	November	29	96.7%	6.1	25.4	0
	December	29	93.5%	6.6	37.1	0
Annual		353	96.7%	13.6	168.8	6

Observations in ug/m^3

FIGURE 4.3.2.4 - HUDSON DRIVE ANNUAL TPM CONCENTRATIONS



Rolling annual average of hourly concentrations

TABLE 4.3.2.5 - HUDSON DRIVE O_3 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 8-Hour	Regulatory Exceedances 1-Hour (>160)	Regulatory Exceedances 8-Hour (>87)
2017	January	744	100.0%	79.5	109.7	107.6	0	33
	February	672	100.0%	84.9	119.1	113.9	0	35
	March	742	99.7%	90.8	118.5	116.8	0	65
	April	710	98.6%	95.5	122.2	117.0	0	67
	May	723	97.2%	62.9	129.7	118.2	0	20
	June	665	92.4%	45.6	89.3	76.4	0	0
	July	742	99.7%	43.2	93.2	68.6	0	0
	August	744	100.0%	42.6	85.9	76.6	0	0
	September	719	99.9%	43.8	81.2	76.2	0	0
	October	740	99.5%	55.8	90.2	78.4	0	0
	November	719	99.9%	62.6	85.1	83.1	0	0
	December	744	100.0%	66.3	87.9	85.4	0	0
Annual		8664	98.9%	64.4	129.7	118.2	0	220
2018	January	731	98.3%	67.3	83.4	81.3	0	0
	February	670	99.7%	62.8	84.6	82.4	0	0
	March	197	26.5%	63.1	79.1	74.0	0	0
	April	607	84.3%	84.3	125.4	112.4	0	35
	May	737	99.1%	73.0	101.0	94.3	0	7
	June	692	96.1%	58.2	99.3	87.0	0	0
	July	700	94.1%	45.7	83.6	75.2	0	0
	August	728	97.8%	40.9	85.0	74.0	0	0
	September	711	98.8%	42.4	77.1	69.5	0	0
	October	739	99.3%	51.5	71.4	67.7	0	0
	November	707	98.2%	61.3	83.4	80.5	0	0
	December	743	99.9%	71.3	106.5	103.1	0	16
Annual		7962	90.9%	59.7	125.4	112.4	0	58

Observations in ug/m^3

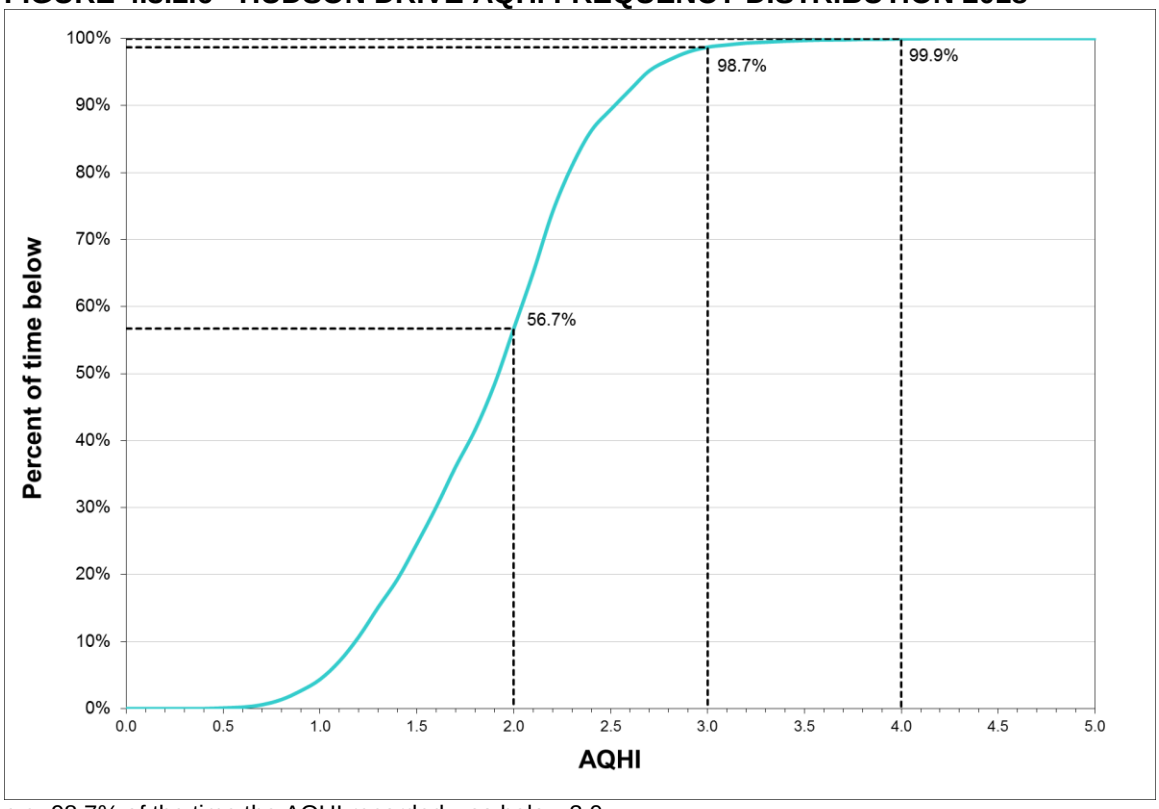
FIGURE 4.3.2.5 - HUDSON DRIVE ANNUAL O_3 CONCENTRATIONS

Rolling annual average of hourly concentrations

TABLE 4.3.2.6 - HUDSON DRIVE AQHI SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 3-Hour
2017	January	739	99.3%	2.8	5.2
	February	670	99.7%	2.9	4.5
	March	728	97.8%	3.0	4.3
	April	691	96.0%	3.0	3.7
	May	724	97.3%	2.1	4.1
	June	650	90.3%	1.5	3.0
	July	701	94.2%	1.4	2.5
	August	624	83.9%	1.4	2.7
	September	711	98.8%	1.4	2.4
	October	718	96.5%	1.8	5.5
	November	716	99.4%	2.0	2.8
	December	744	100.0%	2.3	10.4
Annual		8416	95.8%	2.1	10.4
2018	January	597	80.2%	2.3	4.1
	February	664	89.2%	2.0	3.7
	March	196	26.3%	2.2	3.4
	April	596	80.1%	2.4	3.9
	May	686	92.2%	2.0	3.1
	June	569	76.5%	1.7	3.0
	July	698	93.8%	1.5	3.6
	August	728	97.8%	1.4	2.7
	September	707	95.0%	1.3	2.5
	October	727	97.7%	1.6	3.2
	November	702	94.4%	2.1	3.3
	December	744	100.0%	2.4	4.1
Annual		7614	86.7%	1.9	4.1

FIGURE 4.3.2.6 - HUDSON DRIVE AQHI FREQUENCY DISTRIBUTION 2018



e.g. 98.7% of the time the AQHI recorded was below 3.0

4.3.3 Smokey Mountain II

The Smokey Mountain II station monitors the ambient levels of SO_2, NO_x / NO_2, $PM_{2.5}$ and TPM on a continuous basis. For all pollutants except TPM, the ambient air standards were not exceeded on any occasion in 2018. The TPM ambient air standard was exceeded once in September.

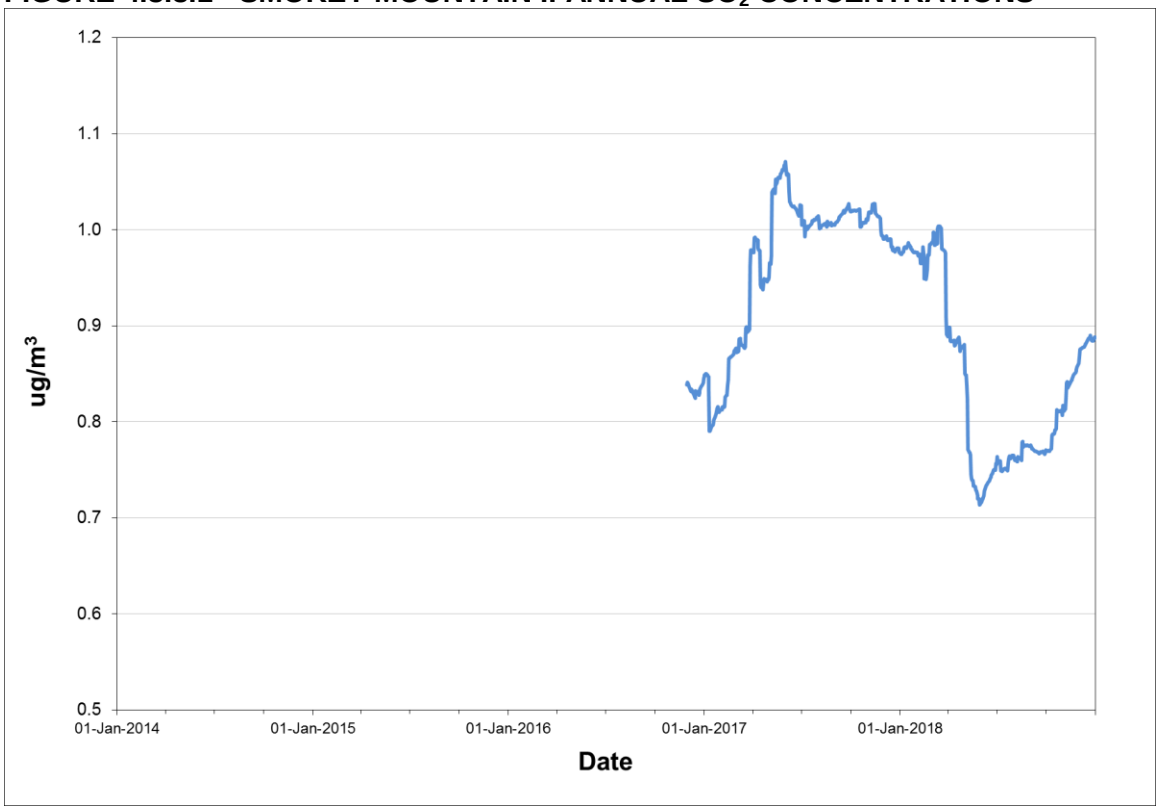
Tables 4.3.3.1 through 4.3.3.4 provide summary information on the level of air contaminants measured at Smokey Mountain II. Figures 4.3.3.1 through 4.3.3.4 provide the graphical representation of the annual trends for each pollutant.

TABLE 4.3.3.1 - SMOKEY MOUNTAIN II SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	739	99.3%	0.7	7.0	3.4	1.6	0	0	0
	February	672	100.0%	1.3	36.7	24.8	8.6	0	0	0
	March	744	100.0%	1.9	219.2	123.9	24.7	0	0	0
	April	720	100.0%	0.9	35.4	24.0	5.5	0	0	0
	May	744	100.0%	2.2	103.2	58.4	19.1	0	0	0
	June	698	96.9%	0.6	38.0	26.4	4.3	0	0	0
	July	723	97.2%	0.9	22.2	13.2	4.3	0	0	0
	August	742	99.7%	0.7	16.1	9.4	2.6	0	0	0
	September	677	94.0%	0.7	17.7	8.2	1.4	0	0	0
	October	650	87.4%	0.5	16.6	11.0	2.9	0	0	0
	November	719	99.9%	0.6	26.2	16.0	2.7	0	0	0
	December	743	99.9%	0.6	17.6	7.0	2.0	0	0	0
Annual		8571	97.8%	1.0	219.2	123.9	24.7	0	0	0
2018	January	742	99.7%	0.7	14.0	8.1	1.8	0	0	0
	February	672	100.0%	1.5	62.7	37.9	7.1	0	0	0
	March	731	98.3%	0.8	22.8	16.7	5.9	0	0	0
	April	720	100.0%	0.8	39.9	16.0	3.7	0	0	0
	May	734	98.7%	0.4	2.5	2.4	1.3	0	0	0
	June	701	97.4%	1.1	43.0	38.1	7.0	0	0	0
	July	736	98.9%	1.1	65.1	31.7	6.8	0	0	0
	August	744	100.0%	0.8	43.3	32.7	7.4	0	0	0
	September	694	96.4%	0.6	9.5	3.9	1.2	0	0	0
	October	723	97.2%	1.1	43.7	33.0	7.6	0	0	0
	November	457	63.5%	1.2	27.2	21.5	6.1	0	0	0
	December	733	98.5%	0.9	53.1	11.5	2.8	0	0	0
Annual		8387	95.7%	0.9	65.1	38.1	7.6	0	0	0

Observations in ug/m^3

FIGURE 4.3.3.1 - SMOKEY MOUNTAIN II ANNUAL SO_2 CONCENTRATIONS



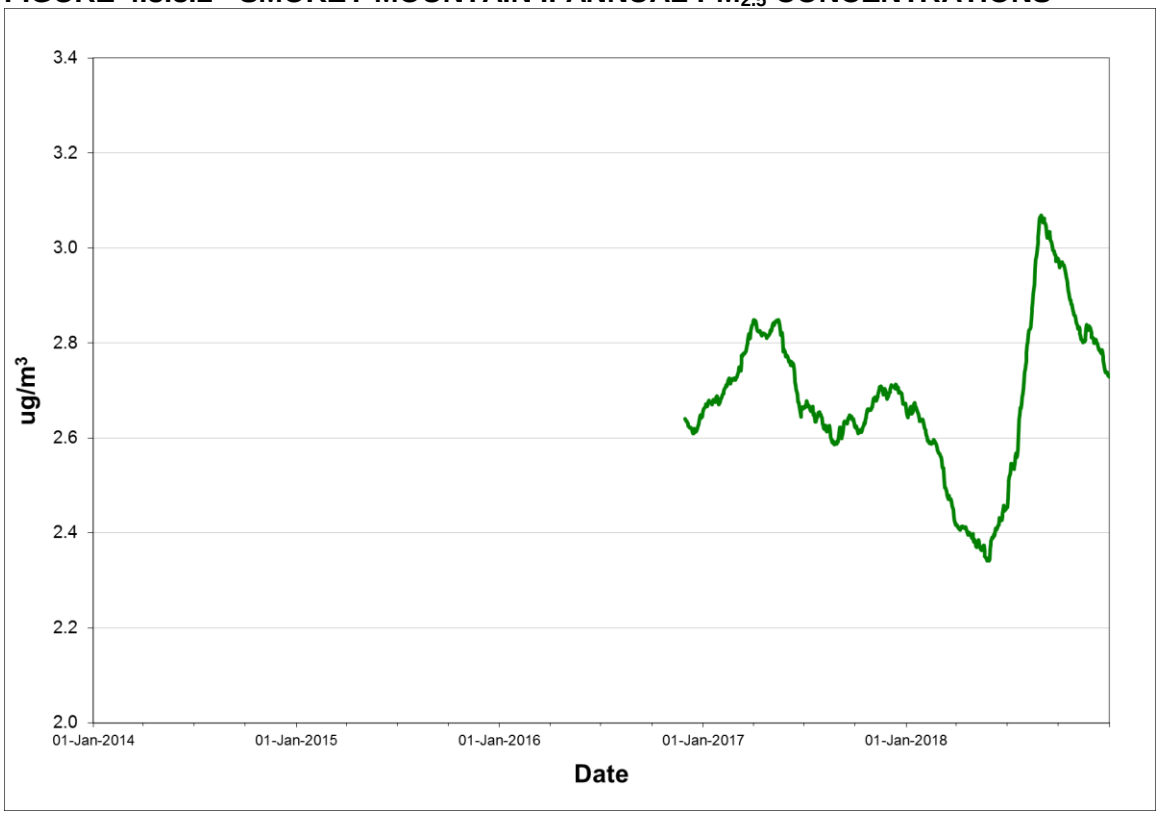
Rolling annual average of hourly concentrations

TABLE 4.3.3.2 - SMOKEY MOUNTAIN II $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	2.9	8.0	0
	February	26	92.9%	3.3	4.6	0
	March	29	93.5%	4.2	8.8	0
	April	27	90.0%	2.7	4.2	0
	May	30	96.8%	2.9	5.3	0
	June	26	86.7%	1.7	8.8	0
	July	29	93.5%	2.4	5.0	0
	August	24	77.4%	2.0	5.1	0
	September	27	90.0%	2.7	6.5	0
	October	25	80.6%	2.0	4.0	0
	November	30	100.0%	2.6	4.2	0
	December	27	87.1%	2.2	3.6	0
Annual		331	90.7%	2.7	8.8	0
2018	January	30	96.8%	2.6	5.3	0
	February	24	85.7%	2.5	3.8	0
	March	30	96.8%	2.4	5.6	0
	April	30	100.0%	2.5	4.2	0
	May	29	93.5%	2.5	9.4	0
	June	27	90.0%	2.8	5.8	0
	July	31	100.0%	5.3	13.5	0
	August	30	96.8%	6.1	12.3	0
	September	21	70.0%	1.1	3.9	0
	October	30	96.8%	0.8	2.9	0
	November	28	93.3%	2.0	7.1	0
	December	23	74.2%	0.9	2.5	0
Annual		333	91.2%	2.7	13.5	0

Observations in ug/m^3

FIGURE 4.3.3.2 - SMOKEY MOUNTAIN II ANNUAL $PM_{2.5}$ CONCENTRATIONS



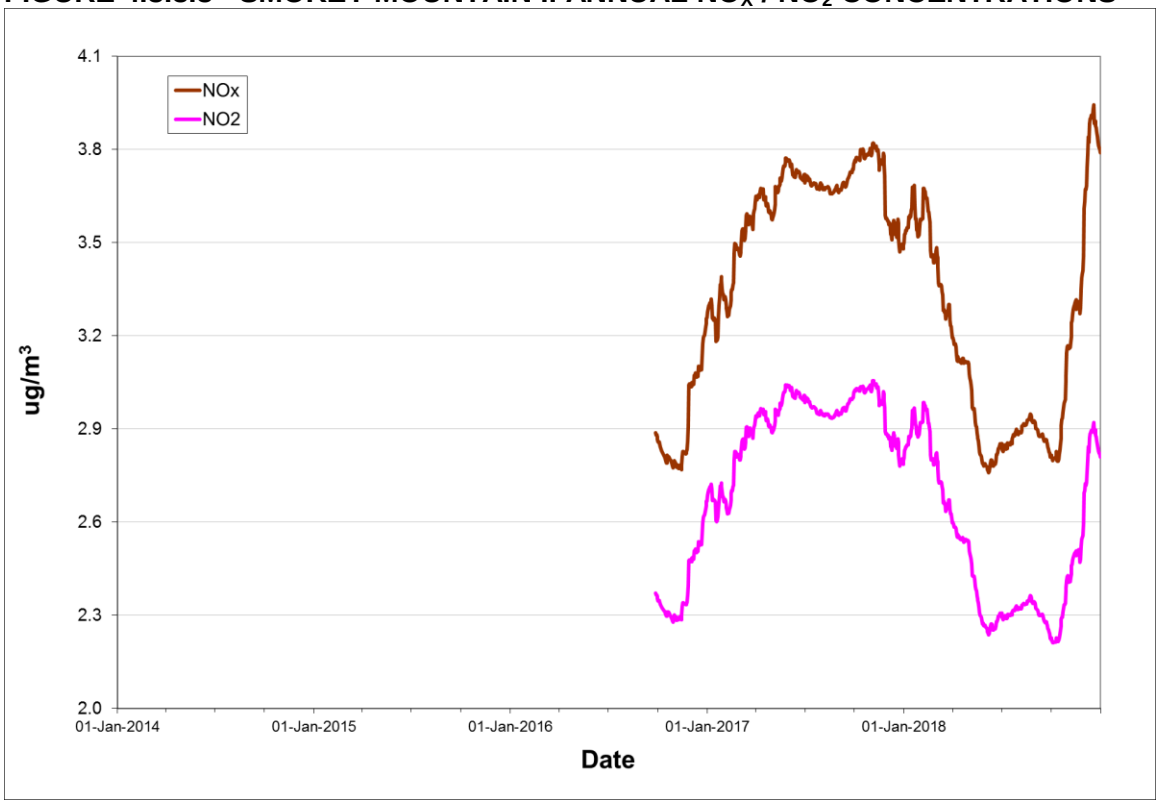
Rolling annual average of hourly concentrations

TABLE 4.3.3.3 - SMOKEY MOUNTAIN II NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	739	99.3%	4.9	3.5	444.7	144.9	25.7	11.1	0	0
	February	672	100.0%	5.0	4.3	95.3	78.5	36.6	30.7	0	0
	March	743	99.9%	5.8	4.5	128.9	56.0	20.0	16.1	0	0
	April	720	100.0%	2.7	2.1	46.8	28.9	12.2	7.7	0	0
	May	744	100.0%	4.4	3.6	91.1	46.5	21.0	13.6	0	0
	June	698	96.9%	1.9	1.7	32.5	24.0	6.5	5.6	0	0
	July	722	97.0%	2.5	1.7	36.3	26.8	7.2	5.4	0	0
	August	742	99.7%	2.0	1.7	34.4	23.9	5.3	4.9	0	0
	September	681	94.6%	3.1	2.5	31.5	30.9	7.9	6.9	0	0
	October	650	87.4%	2.3	1.7	282.1	108.0	14.1	6.6	0	0
	November	719	99.9%	3.0	2.6	77.4	45.1	16.4	15.5	0	0
	December	744	100.0%	4.2	3.4	150.6	68.7	21.9	14.2	0	0
Annual		8574	97.9%	3.5	2.8	444.7	144.9	36.6	30.7	0	0
2018	January	742	99.7%	5.9	5.0	78.2	63.9	25.3	21.6	0	0
	February	672	100.0%	3.4	2.7	126.1	68.0	35.9	23.4	0	0
	March	733	98.5%	2.8	2.2	68.1	55.8	11.6	10.1	0	0
	April	720	100.0%	1.8	1.5	79.2	44.6	6.7	4.5	0	0
	May	735	98.8%	0.6	0.5	8.5	5.2	2.5	1.3	0	0
	June	699	97.1%	2.7	2.2	78.0	26.5	9.4	6.9	0	0
	July	736	98.9%	2.8	1.9	44.2	24.5	6.4	3.9	0	0
	August	744	100.0%	2.5	2.0	59.3	22.7	9.0	7.6	0	0
	September	692	96.1%	1.7	1.0	63.2	15.7	4.4	2.7	0	0
	October	723	97.2%	6.6	4.1	187.4	72.3	41.6	17.2	0	0
	November	456	63.3%	8.3	5.8	75.5	40.2	25.1	18.7	0	0
	December	733	98.5%	8.0	5.9	174.3	71.6	58.0	37.9	0	0
Annual		8385	95.7%	3.8	2.8	187.4	72.3	58.0	37.9	0	0

Observations in ug/m^3

FIGURE 4.3.3.3 - SMOKEY MOUNTAIN II ANNUAL NO_X / NO_2 CONCENTRATIONS



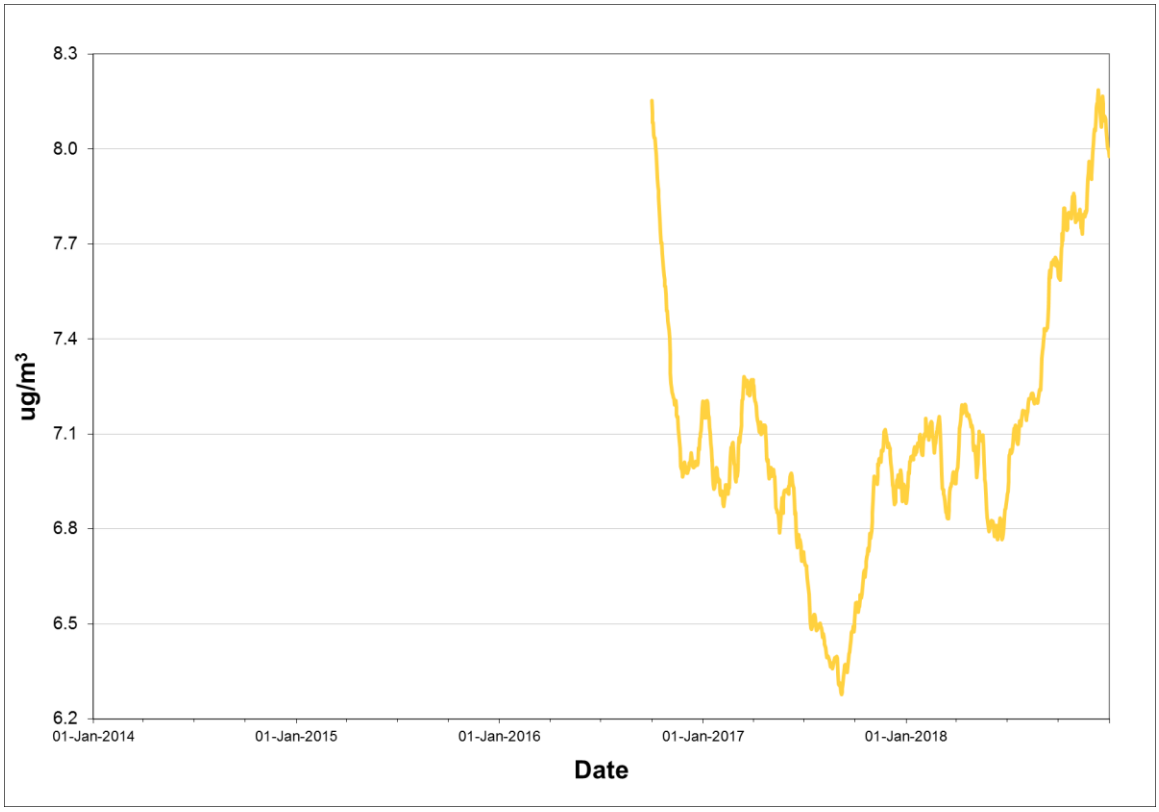
Rolling annual average of hourly concentrations

TABLE 4.3.3.4 - SMOKEY MOUNTAIN II TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2017	January	29	93.5%	5.9	62.7	0
	February	28	100.0%	7.1	63.0	0
	March	31	100.0%	12.6	55.6	0
	April	30	100.0%	6.1	30.2	0
	May	31	100.0%	8.0	37.2	0
	June	29	96.7%	7.0	38.6	0
	July	29	93.5%	7.6	26.0	0
	August	25	80.6%	7.7	27.4	0
	September	28	93.3%	5.1	15.8	0
	October	21	67.7%	5.0	18.5	0
	November	30	100.0%	5.6	51.5	0
	December	31	100.0%	6.5	31.8	0
Annual		342	93.7%	6.9	63.0	0
2018	January	31	100.0%	8.1	46.6	0
	February	28	100.0%	7.9	21.1	0
	March	31	100.0%	9.1	42.4	0
	April	30	100.0%	7.9	62.3	0
	May	31	100.0%	5.1	31.7	0
	June	27	90.0%	8.1	26.3	0
	July	31	100.0%	11.7	74.0	0
	August	25	80.6%	9.6	17.0	0
	September	29	96.7%	9.0	136.0	1
	October	31	100.0%	7.6	42.0	0
	November	29	96.7%	6.6	74.1	0
	December	31	100.0%	7.1	41.4	0
Annual		354	97.0%	8.0	136.0	1

Observations in ug/m^3

FIGURE 4.3.3.4 - SMOKEY MOUNTAIN II ANNUAL TPM CONCENTRATIONS



Rolling annual average of hourly concentrations

4.4 Tacora Resources

In February 2014, Wabush Mines indefinitely idled the processing facility, however ambient air monitoring continued as part of the site remediation. In July 2017, the facility was purchased by Tacora Resources for the purpose of restarting the operation, and though full operation was initially anticipated by late 2018, full production is now slated for July 2019. Though not processing in 2018, Tacora Resources were committed to their environmental responsibilities and continued to operate the ambient air monitoring network.

In 2018 there were two monitoring stations in operation in Wabush, namely on Bond Street near the Provincial Building and on Cabot Drive near the J. R. Smallwood School. These stations were installed to monitor the air quality near the iron ore mine, concentrator / processing facility and the tailings near Wabush. The locations of these monitoring stations are identified in Figure 4.4.1.

FIGURE 4.4.1 - TACORA RESOURCES AMBIENT MONITORING STATIONS

4.4.1 Bond Street

The Bond Street monitoring station is located near the Provincial Building and measured $PM_{2.5}$ and TPM on a continuous basis. Upon agreement with the Province, monitoring for SO_2 was discontinued in April 2017 at the site.

In September 2018, a breach of the ambient monitoring data logging system resulted in data not being logged for an extended period; communication was re-established in November. Both monitors did not record exceedances of the associated ambient air criteria on any occasion in 2018.

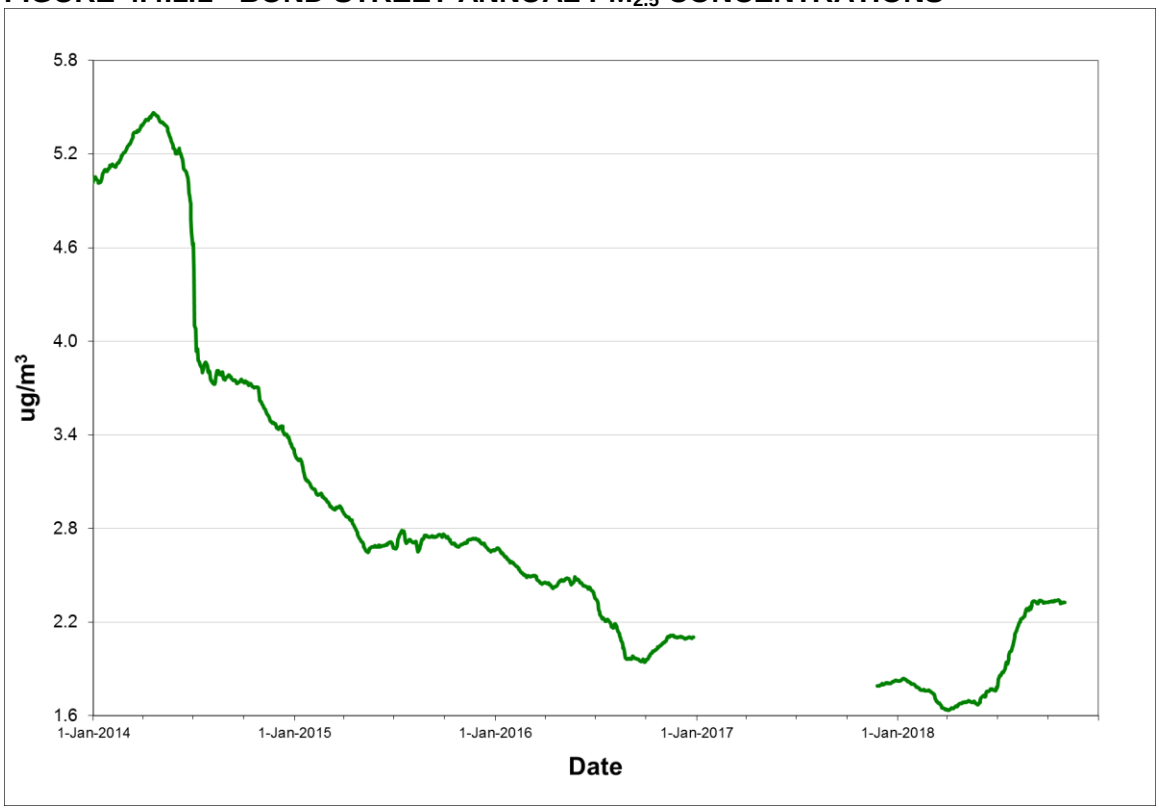
Tables 4.4.1.1 to 4.4.1.2 provide summary information of air contaminants measured at Bond Street, while Figures 4.4.1.1 to 4.4.1.2 provide a graphical representation of the annual trend of $PM_{2.5}$ and TPM respectively.

TABLE 4.4.1.1 - BOND STREET $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	13	41.9%	1.6	2.7	0
	February	17	60.7%	1.3	3.4	0
	March	27	87.1%	2.4	8.4	0
	April	27	90.0%	1.1	2.5	0
	May	31	100.0%	1.3	3.9	0
	June	29	96.7%	1.4	5.3	0
	July	31	100.0%	2.0	5.7	0
	August	31	100.0%	2.3	6.2	0
	September	25	83.3%	1.4	3.0	0
	October	31	100.0%	2.3	5.4	0
	November	29	96.7%	2.4	3.8	0
	December	27	87.1%	2.1	3.6	0
Annual		318	87.1%	1.8	8.4	0
2018	January	30	96.8%	1.5	3.3	0
	February	25	89.3%	0.9	1.9	0
	March	26	83.9%	0.8	2.0	0
	April	28	93.3%	1.7	2.9	0
	May	30	96.8%	1.4	6.7	0
	June	28	93.3%	2.4	10.5	0
	July	31	100.0%	5.4	16.3	0
	August	24	77.4%	5.2	8.8	0
	September	25	83.3%	1.8	7.8	0
	October	0	0.0%			
	November	15	50.0%	1.4	2.8	0
	December	31	100.0%	1.7	5.9	0
Annual		293	80.3%	2.2	16.3	0

Observations in ug/m^3

FIGURE 4.4.1.1 - BOND STREET ANNUAL $PM_{2.5}$ CONCENTRATIONS



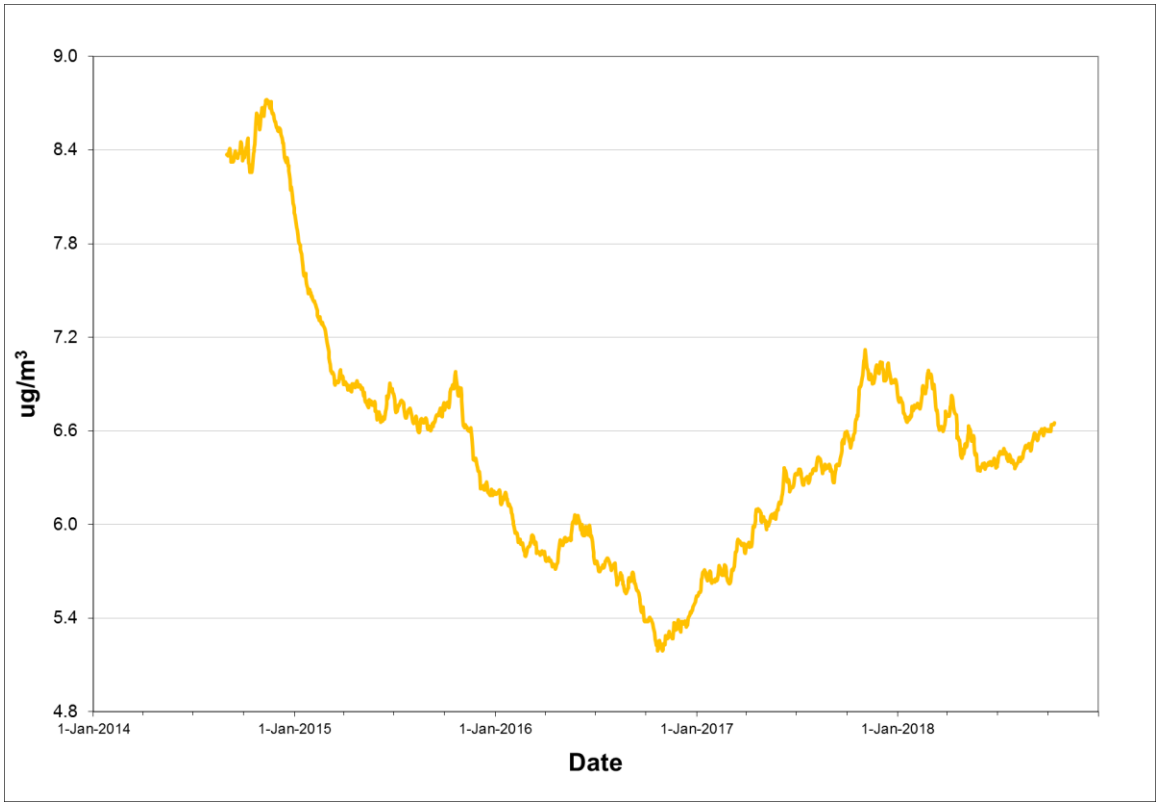
Rolling annual average of daily concentrations

TABLE 4.4.1.2 - BOND STREET TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	13	41.9%	2.9	16.5	0
	February	26	92.9%	3.3	18.8	0
	March	30	96.8%	7.6	44.6	0
	April	28	93.3%	12.0	53.7	0
	May	28	90.3%	16.5	55.0	0
	June	22	73.3%	10.5	40.5	0
	July	25	80.6%	8.8	26.3	0
	August	21	67.7%	8.3	23.4	0
	September	26	86.7%	6.9	20.6	0
	October	17	54.8%	8.6	27.1	0
	November	23	76.7%	3.5	21.4	0
	December	26	83.9%	3.0	17.0	0
Annual		285	78.1%	6.8	55.0	0
2018	January	28	90.3%	4.0	14.2	0
	February	26	92.9%	4.4	10.4	0
	March	19	61.3%	4.6	18.4	0
	April	26	86.7%	8.9	34.9	0
	May	25	80.6%	14.8	52.0	0
	June	22	73.3%	10.9	31.7	0
	July	22	71.0%	9.6	43.3	0
	August	25	80.6%	9.3	15.8	0
	September	19	63.3%	9.1	25.5	0
	October	0	0.0%			
	November	9	30.0%	2.7	5.8	0
	December	18	58.1%	2.2	9.8	0
Annual		239	65.5%		52.0	0

Observations in ug/m^3

FIGURE 4.4.1.2 - BOND STREET ANNUAL TPM CONCENTRATIONS



Rolling annual average of daily concentrations

4.4.2 Cabot Drive

The Cabot Drive monitoring station is located near the J.R. Smallwood School. The station measures $PM_{2.5}$ and TPM on a continuous basis. Neither monitor recorded an exceedance in 2018.

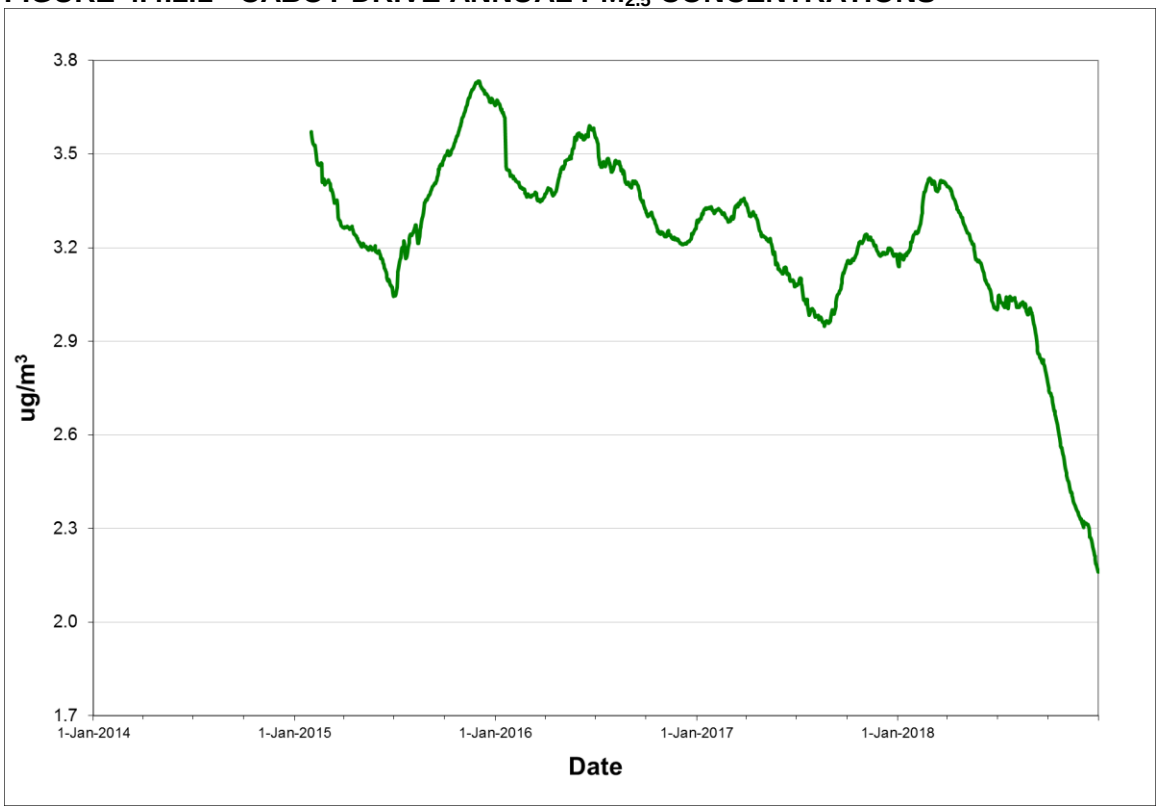
Tables 4.4.2.1 and 4.4.2.2 provide summary information of air contaminants measured at Cabot Drive while figures 4.4.2.1 and 4.4.2.2 present the annual trend of $PM_{2.5}$ and TPM respectively.

TABLE 4.4.2.1 - CABOT DRIVE $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	29	93.5%	2.8	7.0	0
	February	26	92.9%	2.5	4.5	0
	March	27	87.1%	3.7	9.8	0
	April	30	100.0%	2.6	4.6	0
	May	28	90.3%	3.3	6.2	0
	June	27	90.0%	2.9	6.2	0
	July	31	100.0%	3.3	7.5	0
	August	26	83.9%	3.3	7.9	0
	September	29	96.7%	4.3	7.6	0
	October	28	90.3%	3.7	6.3	0
	November	28	93.3%	2.5	4.2	0
	December	31	100.0%	3.0	7.8	0
Annual		340	93.2%	3.2	9.8	0
2018	January	31	100.0%	3.7	15.1	0
	February	28	100.0%	4.8	9.2	0
	March	26	83.9%	3.4	7.4	0
	April	30	100.0%	1.3	2.6	0
	May	26	83.9%	1.6	3.8	0
	June	29	96.7%	1.2	6.4	0
	July	31	100.0%	3.6	15.3	0
	August	29	93.5%	2.7	6.5	0
	September	24	80.0%	1.4	10.3	0
	October	26	83.9%	0.3	2.1	0
	November	27	90.0%	0.3	1.1	0
	December	21	67.7%	0.7	9.2	0
Annual		328	89.9%	2.2	15.3	0

Observations in ug/m^3

FIGURE 4.4.2.1 - CABOT DRIVE ANNUAL $PM_{2.5}$ CONCENTRATIONS



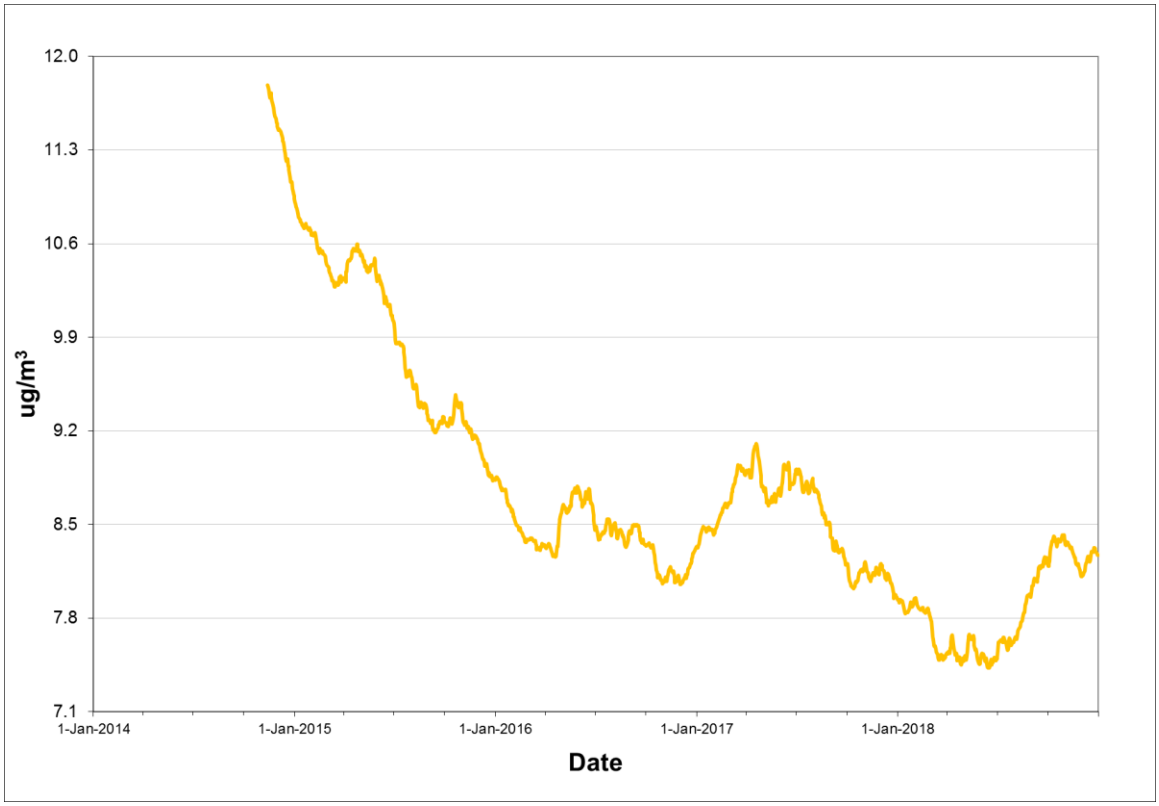
Rolling annual average of daily concentrations

TABLE 4.4.2.2 - CABOT DRIVE TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2017	January	26	83.9%	6.5	13.9	0
	February	10	35.7%	7.9	22.7	0
	March	21	67.7%	11.8	45.4	0
	April	27	90.0%	13.5	71.5	0
	May	31	100.0%	17.0	56.1	0
	June	27	90.0%	11.8	39.0	0
	July	31	100.0%	7.7	21.2	0
	August	31	100.0%	5.8	19.9	0
	September	27	90.0%	5.3	10.9	0
	October	24	77.4%	5.6	16.3	0
	November	24	80.0%	5.8	14.0	0
	December	31	100.0%	5.1	19.3	0
Annual		310	84.9%	7.9	71.5	0
2018	January	23	74.2%	6.4	15.7	0
	February	28	100.0%	6.6	11.6	0
	March	31	100.0%	6.9	19.2	0
	April	30	100.0%	11.9	37.5	0
	May	28	90.3%	18.1	50.2	0
	June	29	96.7%	11.8	28.3	0
	July	31	100.0%	9.4	51.0	0
	August	18	58.1%	10.5	18.0	0
	September	29	96.7%	7.3	29.0	0
	October	28	90.3%	7.5	58.5	0
	November	29	96.7%	4.3	11.5	0
	December	27	87.1%	6.1	14.3	0
Annual		331	90.7%	8.3	58.5	0

Observations in ug/m^3

FIGURE 4.4.2.2 - CABOT DRIVE ANNUAL TPM CONCENTRATIONS



Rolling annual average of daily concentrations

4.5 Corner Brook Pulp and Paper

In 2018, Corner Brook Pulp and Paper (CBPP) operated monitoring stations at two locations in Corner Brook. These stations are installed to monitor the air quality near CBPP's paper mill operation and are located on Main Street and West Street. The locations of these monitoring stations are identified in Figure 4.5.1.

FIGURE 4.5.1 - CBPP AMBIENT MONITORING STATIONS

4.5.1 Main Street

The Main Street monitoring station is located at Hotel Corner Brook. The station monitors ambient levels of SO_2, $PM_{2.5}$ and TPM on a continuous basis. The station, until July 2018 monitored TPM on a 1 day in 6 day cycle, however the manual monitor was replaced with the continuous monitor. For $PM_{2.5}$, the 24-hour ambient air criterion was exceeded twice in January; the SO_2 and TPM criteria were not exceeded during the year.

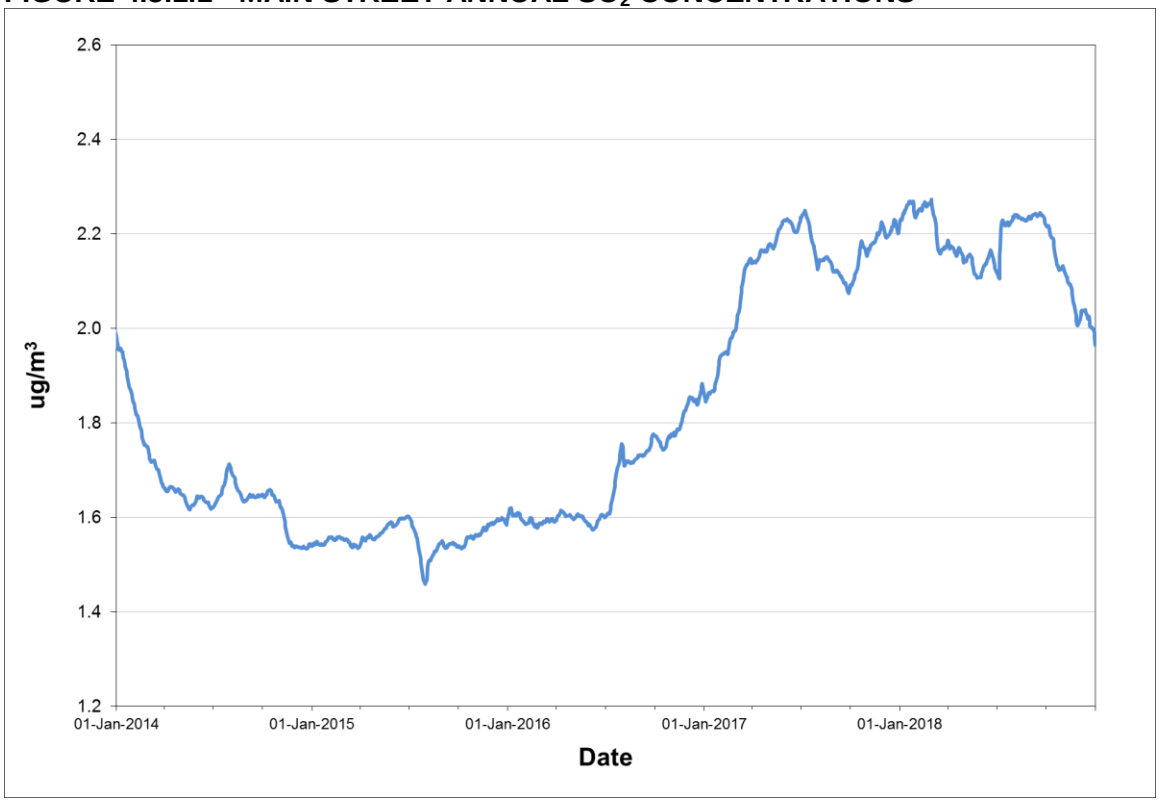
Tables 4.5.1.1 through 4.5.1.4 provide summary information on the level of air contaminants measured at the Main Street Station, while Figures 4.5.1.1 through 4.5.1.3 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.5.1.1 - MAIN STREET SO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average	Maximum 1-Hour	Maximum 3-Hour	Maximum 24-Hour	Regulatory Exceedances 1-Hour (>900)	Regulatory Exceedances 3-Hour (>600)	Regulatory Exceedances 24-Hour (>300)
2017	January	743	99.9%	2.7	7.7	6.3	5.6	0	0	0
	February	671	99.9%	2.2	7.4	6.5	4.9	0	0	0
	March	737	99.1%	3.2	12.8	9.7	6.1	0	0	0
	April	550	76.4%	2.2	4.2	4.1	3.9	0	0	0
	May	742	99.7%	2.0	4.5	4.4	4.0	0	0	0
	June	720	100.0%	1.6	6.3	4.9	2.8	0	0	0
	July	741	99.6%	1.5	7.2	5.0	2.6	0	0	0
	August	744	100.0%	1.6	8.6	6.7	3.0	0	0	0
	September	714	99.2%	1.7	4.2	3.9	3.6	0	0	0
	October	739	99.3%	2.5	7.2	7.0	6.0	0	0	0
	November	720	100.0%	3.1	6.6	6.2	5.3	0	0	0
	December	742	99.7%	2.3	6.9	6.7	6.2	0	0	0
Annual		8563	97.8%	2.2	12.8	9.7	6.2	0	0	0
2018	January	741	99.6%	2.9	11.9	9.3	5.3	0	0	0
	February	672	100.0%	2.7	13.2	7.7	5.2	0	0	0
	March	744	100.0%	2.2	8.4	6.1	4.5	0	0	0
	April	714	99.2%	1.6	7.9	5.9	3.4	0	0	0
	May	744	100.0%	1.7	4.3	3.5	2.8	0	0	0
	June	681	94.6%	1.7	6.2	4.7	3.1	0	0	0
	July	741	99.6%	2.9	73.4	62.8	19.4	0	0	0
	August	701	94.2%	1.5	24.4	19.1	4.1	0	0	0
	September	686	95.3%	1.5	4.2	2.9	2.4	0	0	0
	October	742	99.7%	1.4	10.7	6.4	2.4	0	0	0
	November	720	100.0%	1.7	3.6	3.4	2.8	0	0	0
	December	744	100.0%	1.8	4.1	4.0	3.2	0	0	0
Annual		8630	98.5%	2.0	73.4	62.8	19.4	0	0	0

Observations in ug/m^3

FIGURE 4.5.1.1 - MAIN STREET ANNUAL SO_2 CONCENTRATIONS



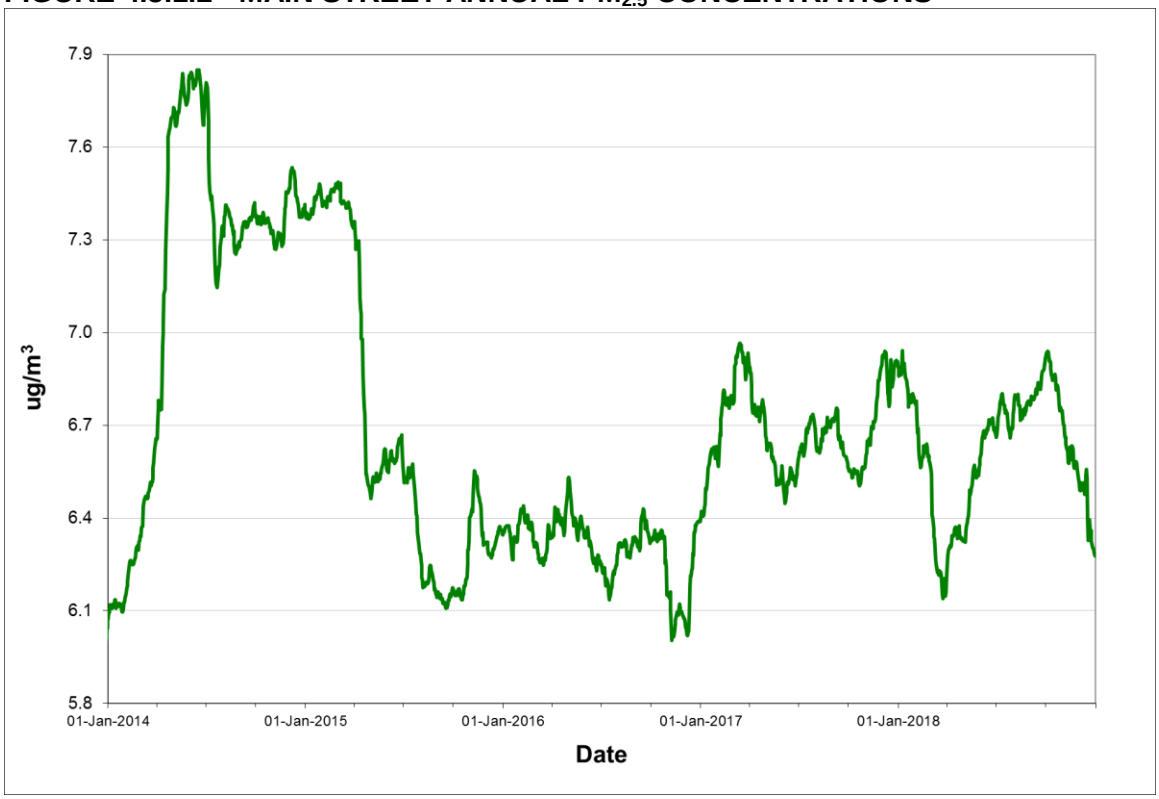
Rolling annual average of hourly concentrations

TABLE 4.5.1.2 - MAIN STREET $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	31	100.0%	8.8	25.5	1
	February	25	89.3%	9.6	26.8	1
	March	28	90.3%	9.1	45.4	1
	April	22	73.3%	6.2	21.6	0
	May	31	100.0%	4.8	10.4	0
	June	24	80.0%	4.9	11.7	0
	July	28	90.3%	6.8	16.1	0
	August	31	100.0%	5.3	17.1	0
	September	27	90.0%	3.3	10.9	0
	October	31	100.0%	5.7	12.0	0
	November	28	93.3%	8.4	21.2	0
	December	30	96.8%	9.6	48.0	1
Annual		336	92.1%	6.9	48.0	4
2018	January	27	87.1%	7.7	25.3	2
	February	28	100.0%	7.0	21.2	0
	March	31	100.0%	4.8	19.4	0
	April	30	100.0%	7.5	16.4	0
	May	31	100.0%	7.6	18.5	0
	June	30	100.0%	6.4	12.0	0
	July	31	100.0%	7.0	21.8	0
	August	14	45.2%	5.7	16.8	0
	September	27	90.0%	5.1	11.2	0
	October	27	87.1%	3.4	7.3	0
	November	30	100.0%	5.8	16.8	0
	December	31	100.0%	6.8	21.1	0
Annual		337	92.3%	6.3	25.3	2

Observations in ug/m^3

FIGURE 4.5.1.2 - MAIN STREET ANNUAL $PM_{2.5}$ CONCENTRATIONS



Rolling annual average of daily concentrations

TABLE 4.5.1.3 - MAIN STREET HI-VOL TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	6	100.0%	18.1	28.8	0
	February	4	100.0%	17.9	25.1	0
	March	5	100.0%	30.9	66.7	0
	April	5	100.0%	49.9	110.7	0
	May	6	100.0%	52.3	72.1	0
	June	4	80.0%	47.0	62.9	0
	July	5	100.0%	45.7	65.8	0
	August	5	100.0%	38.9	54.9	0
	September	5	100.0%	21.2	36.8	0
	October	5	100.0%	22.1	39.2	0
	November	4	80.0%	31.1	38.6	0
	December	4	80.0%	20.6	25.6	0
Annual		58	95.1%	30.8	110.7	0
2018	January	5	100.0%	12.8	21.5	0
	February	5	100.0%	11.1	14.7	0
	March	5	100.0%	45.3	81.6	0
	April	5	100.0%	38.0	110.6	0
	May	4	80.0%	41.7	96.0	0
	June	5	100.0%	43.7	70.7	0
	July	6	100.0%	41.1	49.5	0
	August					
	September					
	October					
	November					
	December					
Annual		35	57.4%	29.2	110.6	0

Observations in ug/m^3

FIGURE 4.5.1.3 - MAIN STREET ANNUAL TPM CONCENTRATIONS

Rolling annual average of daily concentrations

TABLE 4.5.1.4 - MAIN STREET BAM TPM SUMMARY 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2018	January					
	February					
	March					
	April					
	May					
	June					
	July					
	August	21	67.7%	21.9	40.5	0
	September	30	100.0%	14.1	28.0	0
	October	31	100.0%	10.6	17.8	0
	November	30	100.0%	10.9	29.0	0
	December	29	93.5%	7.9	24.5	0
Annual		141	38.6%		40.5	0

4.5.2 West Street

The West Street monitoring station was located at the Western Star building but was removed in conjunction with the installation of the TPM continuous monitor at the Main Street monitoring location. The station monitored ambient levels TPM on a 1 day in 6 day cycle. The ambient air criterion was not exceeded in 2018.

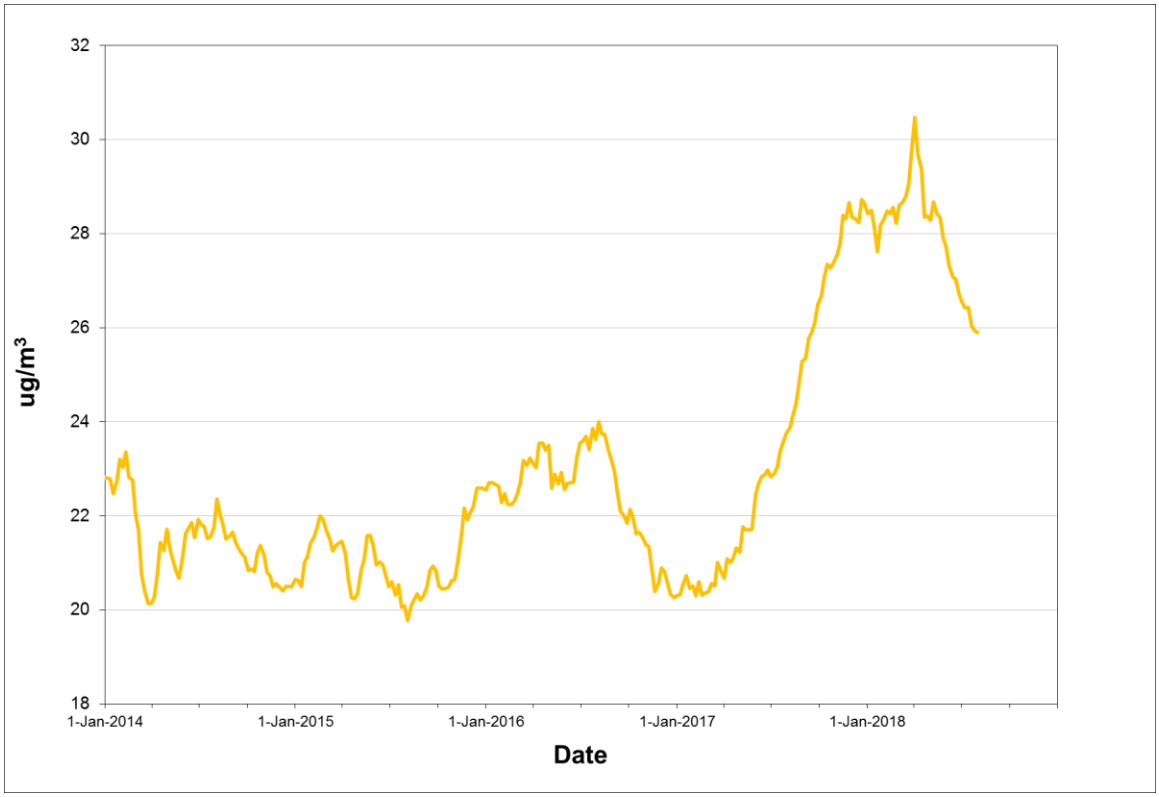
Tables 4.5.2.1 provides summary information on the level of air contaminants measured at the West Street Station, while Figure 4.5.2.1 provides a graphical representation of the annual trend.

TABLE 4.5.2.1 - WEST STREET TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 ug/m^3)
2017	January	6	100.0%	12.3	20.2	0
	February	4	100.0%	11.3	18.9	0
	March	5	100.0%	22.6	47.7	0
	April	5	100.0%	61.4	117.7	0
	May	6	100.0%	61.7	83.3	0
	June	4	80.0%	48.0	63.9	0
	July	5	100.0%	38.2	57.3	0
	August	5	100.0%	37.5	43.5	0
	September	5	100.0%	21.8	38.7	0
	October	5	100.0%	25.9	40.7	0
	November	5	100.0%	33.0	53.1	0
	December	4	80.0%	16.7	22.0	0
Annual		59	96.7%	28.6	117.7	0
2018	January	5	100.0%	11.0	19.6	0
	February	5	100.0%	10.8	16.8	0
	March	5	100.0%	43.0	99.8	0
	April	5	100.0%	34.3	115.8	0
	May	5	100.0%	48.2	113.0	0
	June	3	60.0%	33.1	52.3	0
	July	6	100.0%	27.6	31.9	0
	August					
	September					
	October					
	November					
	December					
Annual		34	55.7%	25.6	115.8	0

Observations in ug/m^3

FIGURE 4.5.2.1 - WEST STREET ANNUAL TPM CONCENTRATIONS



Rolling annual average of daily concentrations

4.6 VALE Newfoundland and Labrador Limited - Voisey's Bay

In 2018, VALE Newfoundland and Labrador Limited operated monitoring stations at three locations at its Voisey's Bay mine site. These stations are installed to monitor the air quality near VALE's mining / processing operation and port activities, and are located at the Accommodation Unit, near the Crusher and at the Port Site near the concentrate storage facility. The locations of these monitoring stations are identified in Figure 4.6.1.

FIGURE 4.6.1 - VALE / VOISEY'S BAY AMBIENT MONITORING STATIONS

4.6.1 Accommodation Unit

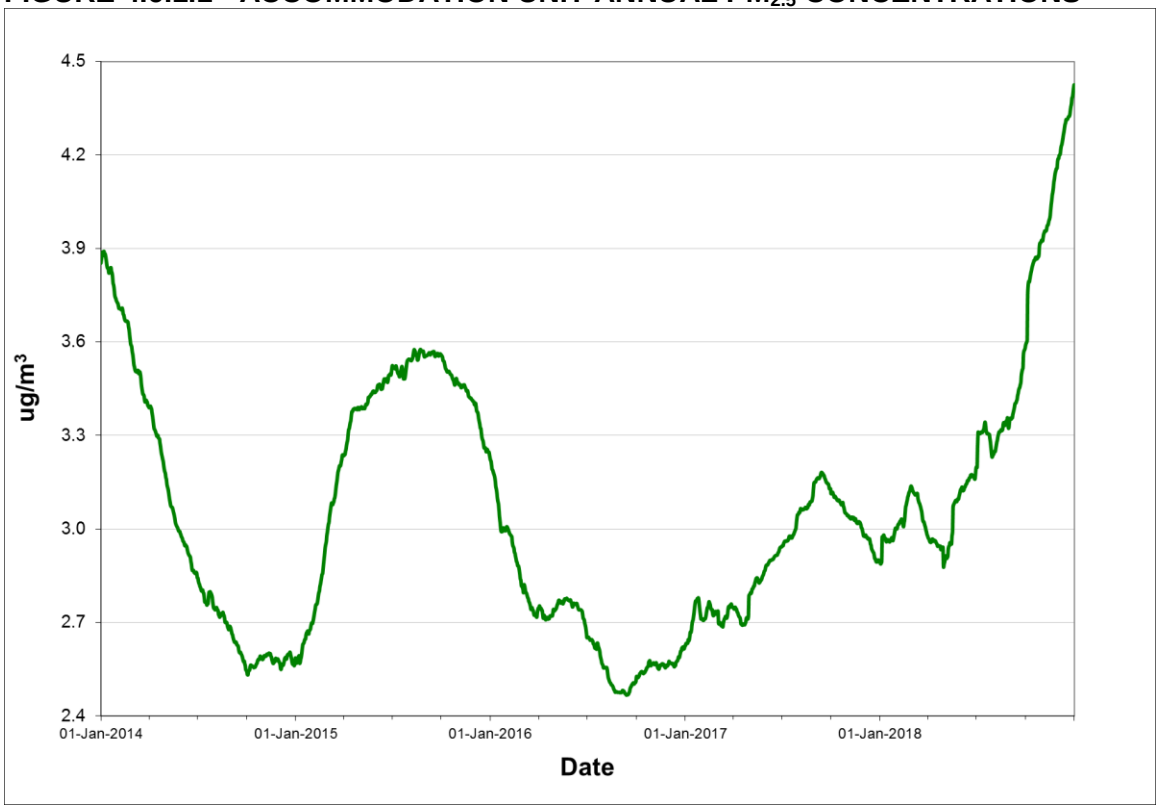
The Accommodation Unit station monitors the ambient levels of $PM_{2.5}$ and NO_x / NO_2 on a continuous basis. For NO_x / NO_2, the ambient air criteria were not exceeded on any occasion in 2018, however the 24-hour $PM_{2.5}$ standard was exceeded on three occasions. Tables 4.6.1.1 through 4.6.1.2 provide summary information on the level of air contaminants measured at the Accommodation Unit, while Figures 4.6.1.1 through 4.6.1.2 provide a graphical representation of the annual trend of each pollutant.

TABLE 4.6.1.1 - ACCOMMODATION UNIT $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 ug/m^3)
2017	January	31	100.0%	4.6	7.7	0
	February	28	100.0%	4.3	7.9	0
	March	31	100.0%	4.8	8.4	0
	April	30	100.0%	4.3	24.2	0
	May	31	100.0%	2.8	6.1	0
	June	30	100.0%	1.7	4.8	0
	July	31	100.0%	2.4	6.4	0
	August	28	90.3%	2.0	8.8	0
	September	30	100.0%	1.4	4.1	0
	October	30	96.8%	1.6	3.5	0
	November	30	100.0%	1.8	3.5	0
	December	26	83.9%	2.8	5.4	0
Annual		356	97.5%	2.9	24.2	0
2018	January	31	100.0%	5.8	31.8	1
	February	26	92.9%	6.3	9.6	0
	March	1	3.2%	3.2	3.2	0
	April	5	16.7%	4.9	5.3	0
	May	31	100.0%	5.1	25.2	1
	June	30	100.0%	2.4	7.0	0
	July	31	100.0%	2.8	20.8	0
	August	22	71.0%	2.9	7.6	0
	September	30	100.0%	3.9	13.3	0
	October	29	93.5%	5.0	43.3	1
	November	30	100.0%	4.3	7.5	0
	December	30	96.8%	5.4	8.4	0
Annual		296	81.1%	4.4	43.3	3

Observations in ug/m^3

FIGURE 4.6.1.1 - ACCOMMODATION UNIT ANNUAL $PM_{2.5}$ CONCENTRATIONS



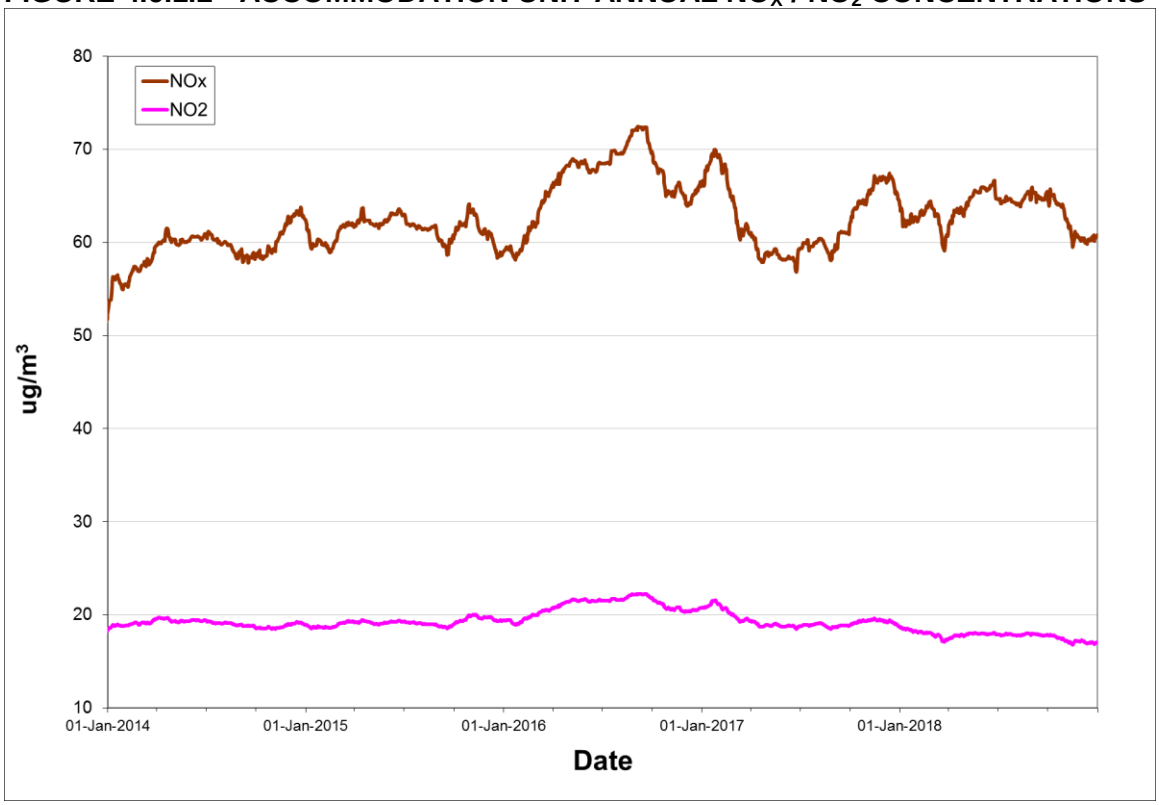
Rolling annual average of daily concentrations

TABLE 4.6.1.2 - ACCOMMODATION UNIT NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	709	95.3%	117.0	33.9	1058.1	96.5	608.1	69.3	0	0
	February	645	96.0%	79.4	28.1	582.4	110.5	233.4	60.1	0	0
	March	670	90.1%	89.2	27.1	1411.8	128.5	345.6	56.6	0	0
	April	249	34.6%	50.6	16.2	658.9	79.0	194.4	37.7	0	0
	May	708	95.2%	25.7	12.7	571.4	80.7	150.4	31.8	0	0
	June	680	94.4%	40.0	9.2	1031.1	75.2	458.5	51.8	0	0
	July	701	94.2%	32.1	9.0	614.8	52.0	167.9	27.6	0	0
	August	710	95.4%	31.6	8.8	848.6	63.1	277.5	37.0	0	0
	September	678	94.2%	67.8	13.2	1028.6	76.2	484.9	50.0	0	0
	October	712	95.7%	65.9	17.7	926.0	71.5	234.4	36.3	0	0
	November	690	95.8%	91.8	22.0	977.4	86.3	343.0	49.4	0	0
	December	715	96.1%	70.2	25.6	994.7	87.5	246.5	53.9	0	0
Annual		7867	89.8%	64.0	18.7	1411.8	128.5	608.1	69.3	0	0
2018	January	744	100.0%	98.0	27.7	772.3	78.1	239.1	49.1	0	0
	February	664	98.8%	96.7	25.5	1071.7	76.6	250.9	46.4	0	0
	March	743	99.9%	53.7	19.0	1041.8	103.4	406.9	68.7	0	0
	April	720	100.0%	89.5	22.8	983.9	107.3	418.1	55.6	0	0
	May	586	78.8%	51.5	14.3	847.6	103.5	192.1	42.3	0	0
	June	692	96.1%	24.7	7.6	656.1	65.1	157.5	26.4	0	0
	July	741	99.6%	29.5	8.6	400.3	59.0	173.3	33.9	0	0
	August	735	98.8%	39.3	10.0	373.1	67.8	133.9	24.5	0	0
	September	717	99.6%	66.8	12.5	877.4	66.1	354.4	38.0	0	0
	October	740	99.5%	50.5	12.2	874.9	52.8	520.8	44.5	0	0
	November	720	100.0%	52.5	20.3	900.8	76.5	278.9	62.1	0	0
	December	738	99.2%	77.2	23.3	815.9	72.2	221.2	42.6	0	0
Annual		8540	97.5%	60.8	17.0	1071.7	107.3	520.8	68.7	0	0

Observations in ug/m^3

FIGURE 4.6.1.2 - ACCOMMODATION UNIT ANNUAL NO_X / NO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

4.6.2 Crusher Site

The Crusher Site station monitors the ambient levels of NO_x / NO_2 on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2018. Table 4.6.2.1 provides summary information on the level of air contaminants measured at the Crusher Site, while Figure 4.6.2.1 provides a graphical representation of the annual trend.

TABLE 4.6.2.1 - CRUSHER SITE NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average NO_x	Average NO_2	Maximums 1-Hour NO_x	Maximums 1-Hour NO_2	Maximums 24-Hour NO_x	Maximums 24-Hour NO_2	Exceedances 1-Hour (>400)	Exceedances 24-Hour (>200)
2017	January	0	0.0%								
	February	0	0.0%								
	March	358	48.1%	5.5	3.4	145.5	61.5	28.3	13.7	0	0
	April	575	79.9%	15.3	7.1	554.1	87.1	134.8	25.0	0	0
	May	647	87.0%	30.3	10.4	849.6	110.5	335.2	57.8	0	0
	June	611	84.9%	21.2	7.5	649.8	75.6	126.4	20.0	0	0
	July	706	94.9%	9.9	6.0	261.1	49.4	36.9	15.5	0	0
	August	713	95.8%	20.0	7.7	706.5	77.7	177.3	26.7	0	0
	September	684	95.0%	10.8	5.4	650.6	71.9	73.0	15.5	0	0
	October	713	95.8%	16.1	8.2	420.0	87.0	126.5	31.9	0	0
	November	671	93.2%	21.6	11.1	735.0	117.0	150.0	43.8	0	0
	December	726	97.6%	29.4	11.1	1031.6	153.4	284.3	55.4	0	0
Annual		6404	73.1%	18.6	8.0	1031.6	153.4	335.2	57.8	0	0
2018	January	744	100.0%	19.6	10.4	864.4	110.2	174.3	43.8	0	0
	February	665	99.0%	11.2	8.7	364.6	77.8	54.0	28.4	0	0
	March	740	99.5%	31.2	11.7	932.7	116.6	272.1	54.8	0	0
	April	719	99.9%	24.8	10.0	837.5	119.5	337.4	62.8	0	0
	May	668	89.8%	20.9	8.9	605.9	69.1	189.5	29.8	0	0
	June	707	98.2%	20.6	8.2	728.5	66.7	232.8	29.8	0	0
	July	737	99.1%	17.2	7.8	237.2	41.1	54.0	20.8	0	0
	August	737	99.1%	14.5	6.7	410.2	44.8	72.0	15.9	0	0
	September	706	98.1%	10.0	4.4	513.7	43.7	94.2	18.5	0	0
	October	728	97.8%	41.8	8.3	1056.2	65.4	357.2	27.4	0	0
	November	676	93.9%	27.4	9.6	975.7	76.6	219.1	34.1	0	0
	December	740	99.5%	10.2	8.0	513.4	94.1	70.0	37.4	0	0
Annual		8567	97.8%	20.8	8.6	1056.2	119.5	357.2	62.8	0	0

Observations in ug/m^3

FIGURE 4.6.2.1 - CRUSHER SITE ANNUAL NO_X / NO_2 CONCENTRATIONS

Rolling annual average of hourly concentrations

4.6.3 Port Site

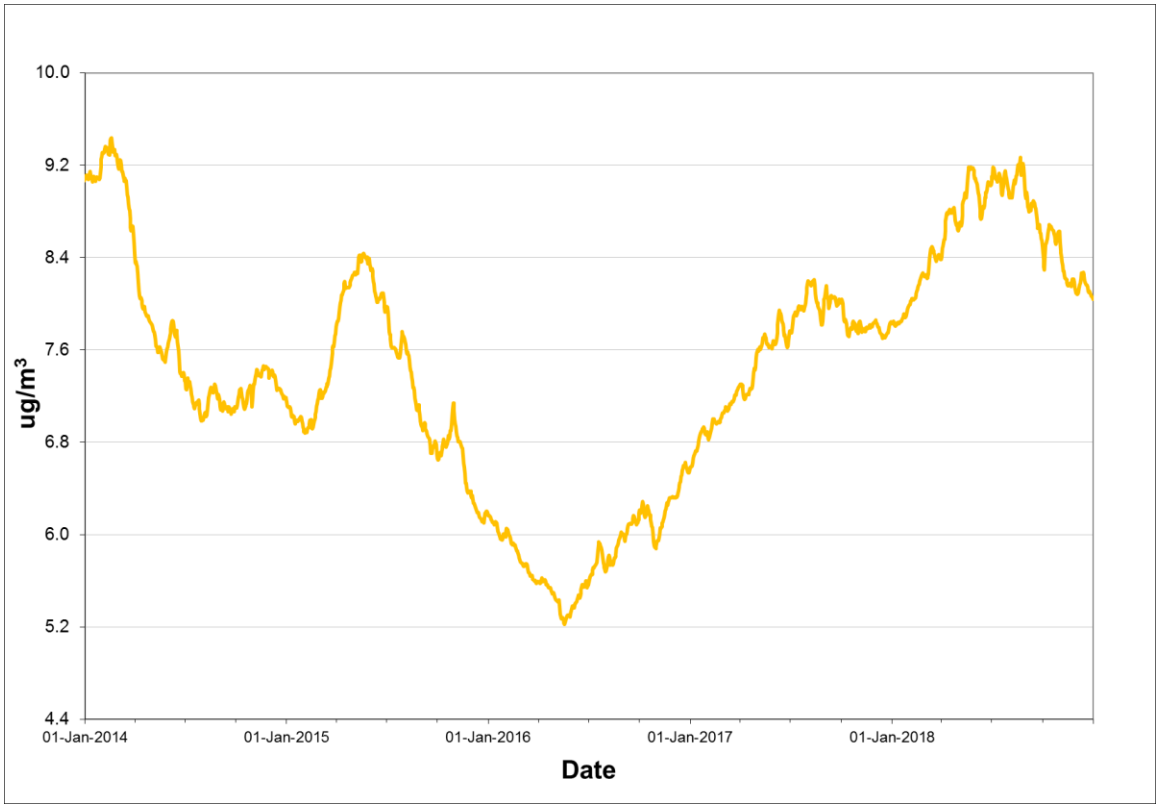
The Port Site station monitors the ambient levels of TPM on a continuous basis. The 24-hour ambient air criterion was exceeded on five occasions in 2018. Table 4.6.3.1 provides summary information on the level of air contaminants measured at the Port Site, while Figure 4.6.3.1 provides a graphical representation of the annual trend.

TABLE 4.6.3.1 - PORT SITE TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120ug/m^3)
2017	January	31	100.0%	6.3	36.0	0
	February	28	100.0%	5.7	19.8	0
	March	31	100.0%	8.5	47.7	0
	April	28	93.3%	8.7	60.9	0
	May	31	100.0%	6.8	63.5	0
	June	30	100.0%	10.8	53.4	0
	July	28	90.3%	11.2	119.2	0
	August	28	90.3%	7.7	98.4	0
	September	30	100.0%	9.5	51.5	0
	October	31	100.0%	6.2	45.7	0
	November	30	100.0%	8.8	270.6	1
	December	25	80.6%	5.9	20.8	0
Annual		351	96.2%	7.8	270.6	1
2018	January	31	100.0%	7.9	18.7	0
	February	25	89.3%	8.5	17.0	0
	March	31	100.0%	10.3	127.8	1
	April	27	90.0%	12.9	112.3	0
	May	31	100.0%	11.8	74.8	0
	June	30	100.0%	10.5	176.2	1
	July	31	100.0%	9.8	78.0	0
	August	26	83.9%	7.0	49.6	0
	September	30	100.0%	5.5	133.0	1
	October	29	93.5%	7.2	484.6	2
	November	30	100.0%	4.2	34.7	0
	December	31	100.0%	5.8	23.8	0
Annual		352	96.4%	8.0	484.6	5

Observations in ug/m^3

FIGURE 4.6.3.1 - PORT SITE ANNUAL TPM CONCENTRATIONS



Rolling annual average of daily concentrations

4.7 VALE Newfoundland and Labrador Limited - Long Harbour

VALE operates a monitoring network in the Long Harbour / Mt. Arlington Heights area to monitor the air quality near the Hydromet Nickel Processing facility. The network monitors levels of NO_x / NO_2 as well as $PM_{2.5}$. In 2018, VALE operated three stations; near the Community Centre in Long Harbour, along the Main Road in Long harbour, and near the Access Road to the Hydromet facility. The location of the stations is shown in Figure 4.7.1.

FIGURE 4.7.1 - VALE / LONG HARBOUR AMBIENT MONITORING STATIONS

4.7.1 Community Centre (AM1)

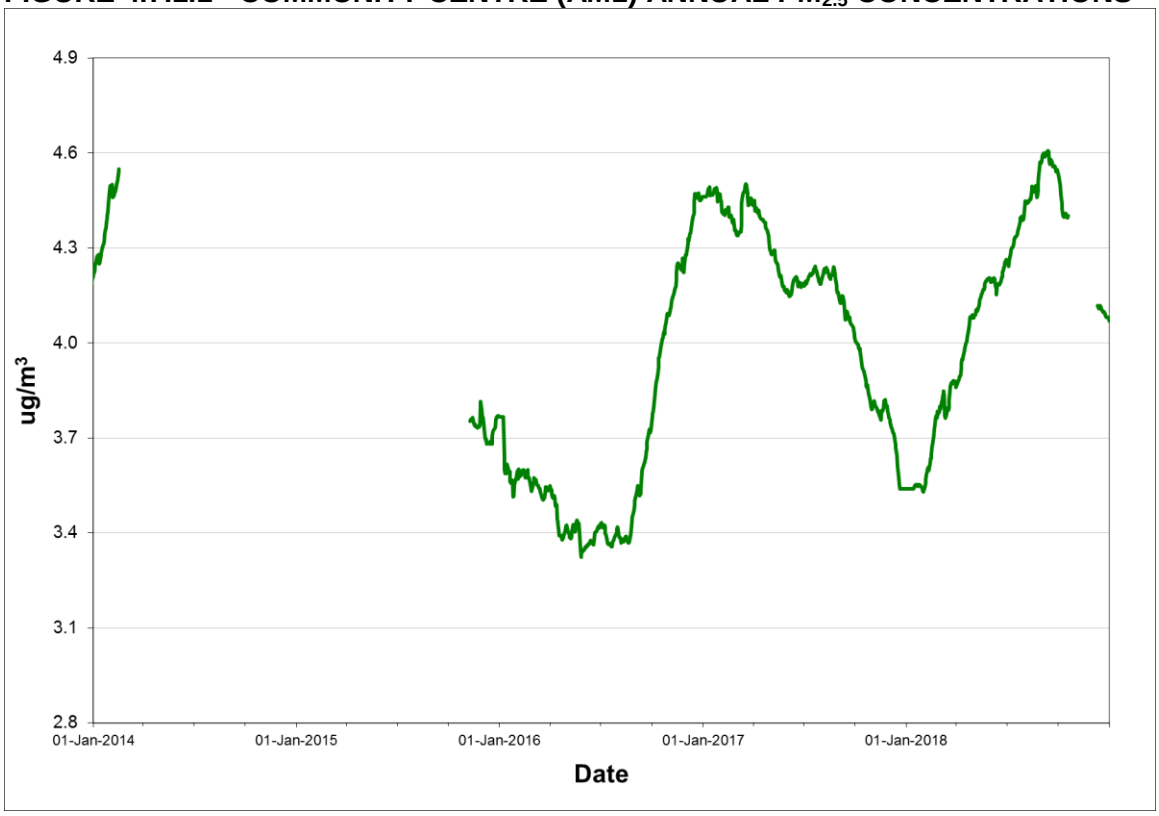
The Community Centre (AM1) station monitors the ambient levels of $PM_{2.5}$ and NO_x / NO_2 on a continuous basis. Neither the 24-hour ambient air criterion for $PM_{2.5}$ nor the ambient air criteria for NO_x / NO_2 was exceeded in 2018. Tables 4.7.1.1 and 4.7.1.2 provide summary information on the level of air contaminants measured at the Community Centre (AM1) site, while Figures 4.7.1.1 and 4.7.1.2 provide a graphical representation of the annual trend of $PM_{2.5}$ and NO_x / NO_2.

TABLE 4.7.1.1 - COMMUNITY CENTRE (AM1) $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	18	58.1%	3.7	6.5	0
	February	28	100.0%	3.3	8.5	0
	March	31	100.0%	4.2	22.3	0
	April	30	100.0%	2.4	5.7	0
	May	31	100.0%	2.5	5.5	0
	June	29	96.7%	2.9	7.5	0
	July	31	100.0%	2.8	5.2	0
	August	31	100.0%	3.1	9.0	0
	September	27	90.0%	3.4	10.7	0
	October	25	80.6%	4.4	8.6	0
	November	30	100.0%	5.9	10.7	0
	December	9	29.0%	5.3	5.9	0
Annual		320	87.7%	3.5	22.3	0
2018	January	0	0.0%			
	February	24	85.7%	6.3	9.4	0
	March	31	100.0%	5.0	8.8	0
	April	21	70.0%	4.8	10.3	0
	May	30	96.8%	3.6	6.7	0
	June	27	90.0%	3.4	8.7	0
	July	31	100.0%	4.2	8.5	0
	August	31	100.0%	4.7	10.6	0
	September	30	100.0%	3.2	6.2	0
	October	16	51.6%	1.7	4.5	0
	November	30	100.0%	4.2	15.6	0
	December	28	90.3%	3.1	6.5	0
Annual		299	81.9%	4.1	15.6	0

Observations in ug/m^3

FIGURE 4.7.1.1 - COMMUNITY CENTRE (AM1) ANNUAL $PM_{2.5}$ CONCENTRATIONS



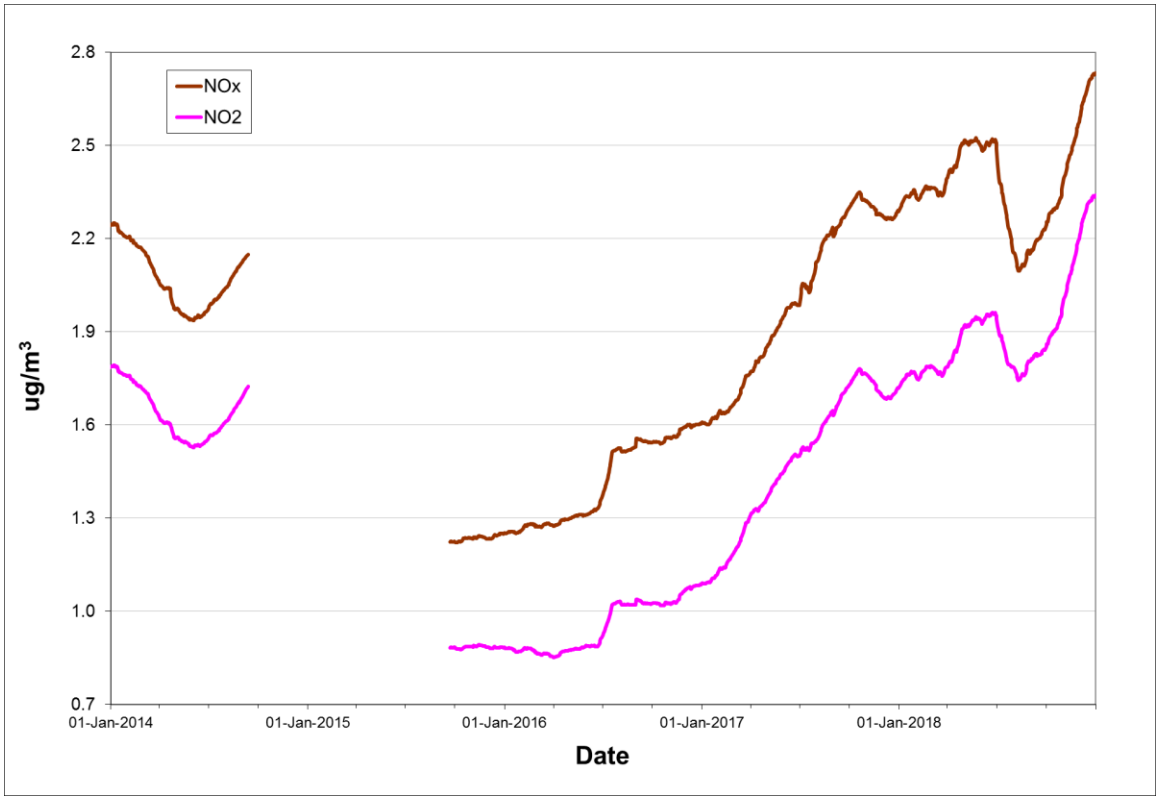
Rolling annual average of daily concentrations

TABLE 4.7.1.2 - COMMUNITY CENTRE (AM1) NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	734	98.7%	1.8	1.3	17.6	10.3	5.1	3.7	0	0
	February	667	99.3%	1.9	1.7	21.1	12.2	3.4	2.7	0	0
	March	743	99.9%	2.4	2.2	18.4	12.1	4.7	3.4	0	0
	April	716	99.4%	2.2	1.6	16.8	14.3	3.9	3.8	0	0
	May	739	99.3%	2.4	1.9	6.1	5.2	3.5	2.8	0	0
	June	701	97.4%	2.4	1.9	24.2	16.7	4.1	3.2	0	0
	July	656	88.2%	4.9	2.8	14.7	9.7	9.4	5.5	0	0
	August	712	95.7%	2.8	2.1	16.9	10.4	4.4	2.9	0	0
	September	484	67.2%	2.3	2.0	27.8	17.4	4.2	3.4	0	0
	October	267	35.9%	0.8	0.6	5.7	5.0	1.4	1.2	0	0
	November	718	99.7%	1.2	0.6	4.9	3.8	1.6	1.1	0	0
	December	463	62.2%	1.3	1.1	17.4	13.1	2.8	2.3	0	0
Annual		7600	86.8%	2.3	1.7	27.8	17.4	9.4	5.5	0	0
2018	January	0	0.0%								
	February	635	94.5%	2.1	2.0	9.9	8.6	3.5	3.2	0	0
	March	741	99.6%	2.7	2.2	11.8	11.2	4.8	4.1	0	0
	April	706	98.1%	3.3	2.8	11.6	11.1	5.5	4.7	0	0
	May	742	99.7%	2.4	2.2	6.6	6.3	4.3	4.2	0	0
	June	713	99.0%	2.4	2.1	9.9	8.8	4.2	3.4	0	0
	July	741	99.6%	1.3	1.1	12.6	11.5	2.6	2.3	0	0
	August	740	99.5%	2.7	2.2	14.9	13.2	5.1	4.4	0	0
	September	717	99.6%	3.1	2.4	18.9	16.2	4.3	4.0	0	0
	October	741	99.6%	3.1	2.8	18.9	10.8	6.6	5.5	0	0
	November	713	99.0%	3.3	2.9	12.4	10.5	5.0	4.4	0	0
	December	744	100.0%	3.5	3.0	10.6	9.0	5.8	5.0	0	0
Annual		7933	90.6%	2.7	2.3	18.9	16.2	6.6	5.5	0	0

Observations in ug/m^3

FIGURE 4.7.1.2 - COMMUNITY CENTRE (AM1) ANNUAL NO_X / NO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

4.7.2 Main Road (AM2)

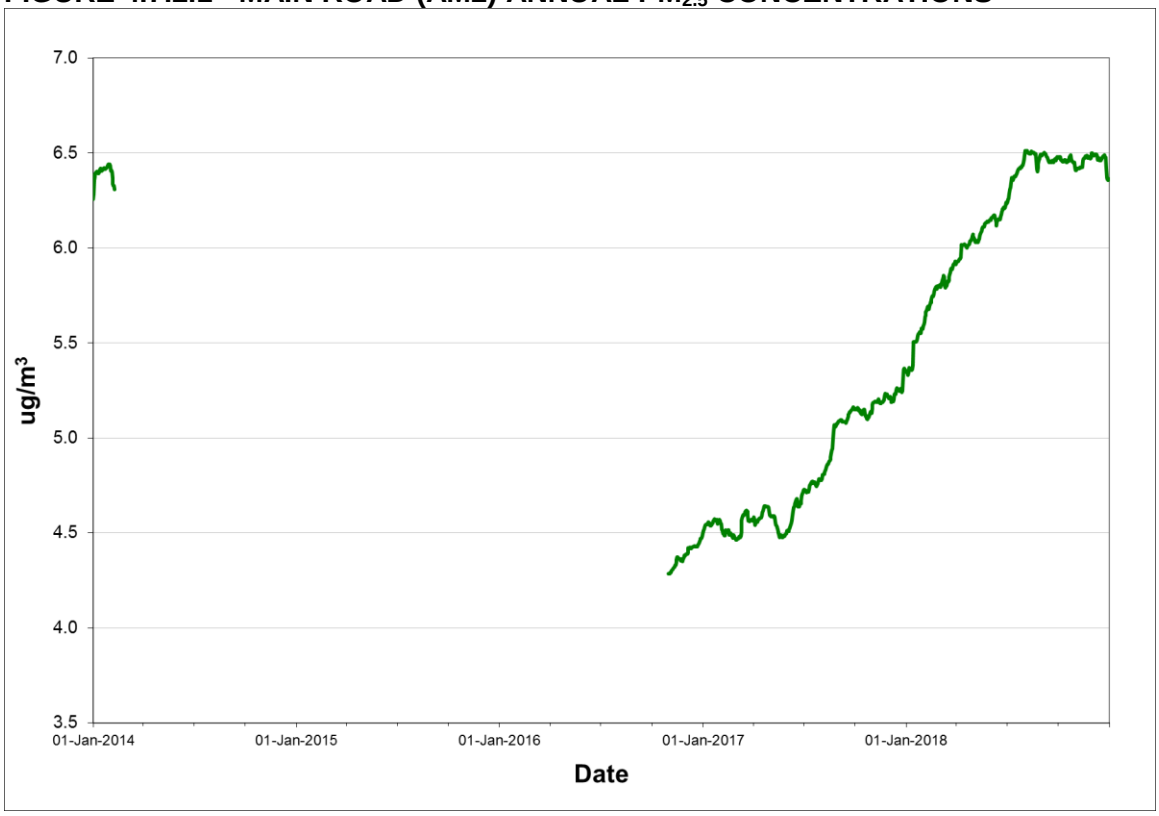
The Main Road (AM2) station monitors the ambient levels of $PM_{2.5}$ and NO_x / NO_2 on a continuous basis. While the NO_x / NO_2 ambient air criteria was not exceeded in 2018, the 24-hour $PM_{2.5}$ criteria was exceeded on one occasion. Tables 4.7.2.1 and 4.7.2.2 provide summary information on the level of air contaminants measured at the Main Road (AM2) site, while Figures 4.7.2.1 and 4.7.2.2 provide a graphical representation of the annual trend for pollutants.

TABLE 4.7.2.1 - MAIN ROAD (AM2) $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	23	74.2%	5.1	7.8	0
	February	28	100.0%	4.1	12.2	0
	March	31	100.0%	5.3	22.8	0
	April	30	100.0%	4.9	9.1	0
	May	31	100.0%	4.2	6.7	0
	June	30	100.0%	5.2	11.3	0
	July	31	100.0%	4.2	7.9	0
	August	25	80.6%	7.8	19.6	0
	September	9	30.0%	3.9	6.5	0
	October	31	100.0%	5.9	13.1	0
	November	26	86.7%	5.8	10.8	0
	December	31	100.0%	7.2	25.0	0
Annual		326	89.3%	5.4	25.0	0
2018	January	27	87.1%	8.0	44.4	1
	February	28	100.0%	6.5	12.3	0
	March	31	100.0%	6.6	10.5	0
	April	26	86.7%	6.7	21.8	0
	May	31	100.0%	5.0	9.5	0
	June	30	100.0%	6.1	13.5	0
	July	26	83.9%	6.6	11.2	0
	August	31	100.0%	7.8	13.7	0
	September	28	93.3%	5.5	8.6	0
	October	31	100.0%	5.4	11.8	0
	November	24	80.0%	6.8	17.5	0
	December	31	100.0%	5.7	9.5	0
Annual		344	94.2%	6.4	44.4	1

Observations in ug/m^3

FIGURE 4.7.2.1 - MAIN ROAD (AM2) ANNUAL $PM_{2.5}$ CONCENTRATIONS



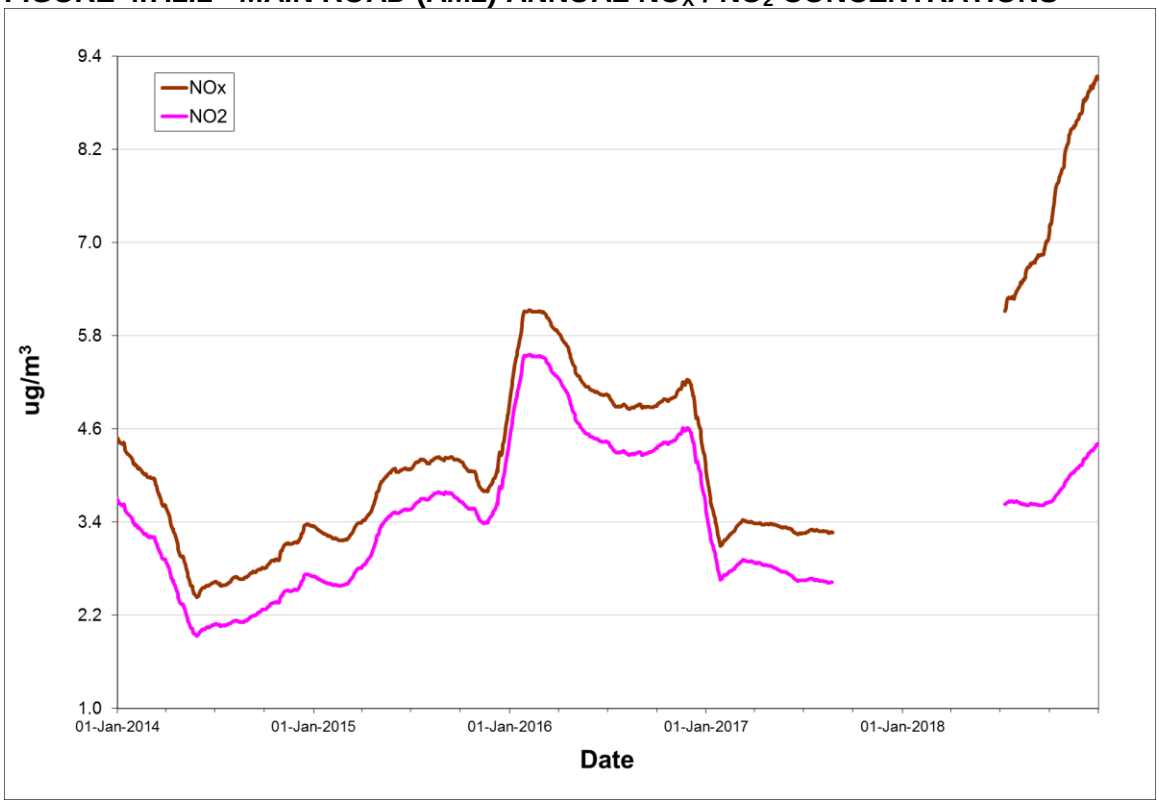
Rolling annual average of daily concentrations

TABLE 4.7.2.2 - MAIN ROAD (AM2) NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average NO_x	Average NO_2	Maximums 1-Hour NO_x	Maximums 1-Hour NO_2	Maximums 24-Hour NO_x	Maximums 24-Hour NO_2	Exceedances 1-Hour (>400)	Exceedances 24-Hour (>200)
2017	January	733	98.5%	4.0	3.7	30.7	20.8	11.3	10.1	0	0
	February	670	99.7%	5.0	3.9	17.2	14.4	8.9	7.6	0	0
	March	742	99.7%	2.2	1.9	11.3	10.2	7.1	6.3	0	0
	April	717	99.6%	2.0	1.3	10.1	8.8	3.8	2.3	0	0
	May	578	77.7%	1.6	1.0	7.0	5.6	3.2	1.9	0	0
	June	455	63.2%	1.7	0.9	16.8	11.4	2.8	1.7	0	0
	July	0	0.0%								
	August	0	0.0%								
	September	0	0.0%								
	October	610	82.0%	1.8	1.2	15.8	11.6	3.2	2.4	0	0
	November	708	98.3%	2.1	1.7	15.6	11.8	3.6	2.7	0	0
	December	742	99.7%	6.8	3.2	38.7	14.2	18.1	7.2	0	0
Annual		5955	68.0%	3.1	2.2	38.7	20.8	18.1	10.1	0	0
2018	January	741	99.6%	3.6	2.9	20.2	12.7	7.8	5.5	0	0
	February	652	97.0%	6.1	4.0	55.1	18.1	20.5	9.2	0	0
	March	731	98.3%	9.3	4.8	71.2	20.2	32.4	12.2	0	0
	April	713	99.0%	9.0	5.3	53.7	24.2	24.1	12.1	0	0
	May	739	99.3%	8.4	4.8	56.1	18.0	17.0	8.4	0	0
	June	713	99.0%	7.1	4.1	65.4	13.6	13.7	6.8	0	0
	July	641	86.2%	8.8	4.3	44.9	14.7	22.7	5.8	0	0
	August	742	99.7%	10.4	3.3	56.4	10.0	20.1	5.4	0	0
	September	548	76.1%	12.3	4.0	60.1	11.4	28.3	7.9	0	0
	October	742	99.7%	15.0	4.6	76.0	16.1	41.0	10.9	0	0
	November	716	99.4%	7.8	4.3	49.1	15.0	29.2	7.4	0	0
	December	735	98.8%	11.8	6.3	67.3	19.4	45.1	12.6	0	0
Annual		8413	96.0%	9.1	4.4	76.0	24.2	45.1	12.6	0	0

Observations in ug/m^3

FIGURE 4.7.2.2 - MAIN ROAD (AM2) ANNUAL NO_X / NO_2 CONCENTRATIONS



Rolling annual average of hourly concentrations

4.7.3 Access Road (AM3)

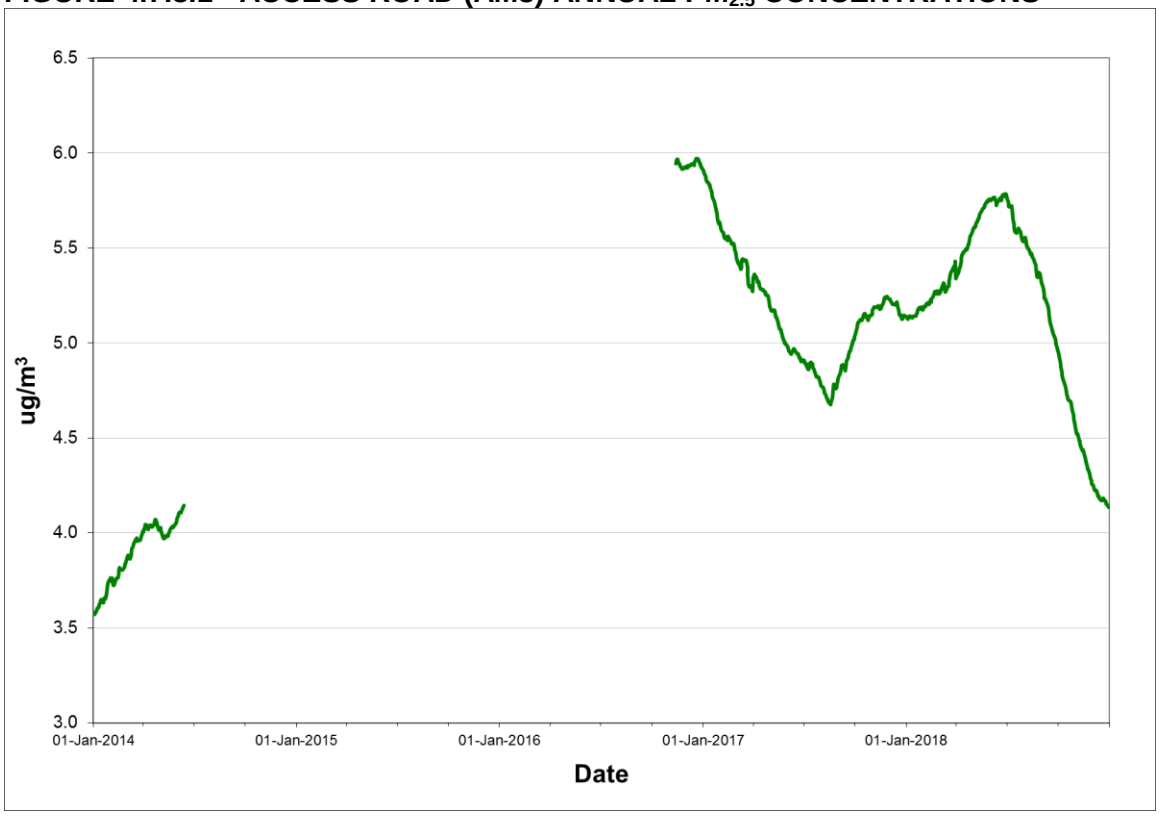
The Access Road (AM3) station is installed near the VALE Inco security gate and monitors the ambient levels of $PM_{2.5}$ and NO_x / NO_2 on a continuous basis. Both the $PM_{2.5}$ and NO_x / NO_2 standards were not exceeded during 2018. Tables 4.7.3.1 and 4.7.3.2 provide summary information on the level of air contaminants measured at the Access Road (AM3) site while Figures 4.7.3.1 and 4.7.3.2 provide a graphical representation of the annual trend in the data.

TABLE 4.7.3.1 - ACCESS ROAD (AM3) $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	23	74.2%	3.7	7.2	0
	February	26	92.9%	3.5	12.7	0
	March	31	100.0%	4.8	37.7	1
	April	30	100.0%	3.2	6.0	0
	May	31	100.0%	3.0	5.2	0
	June	28	93.3%	3.7	9.2	0
	July	31	100.0%	7.2	13.9	0
	August	30	96.8%	6.7	15.0	0
	September	30	100.0%	7.2	15.9	0
	October	31	100.0%	6.7	12.5	0
	November	30	100.0%	6.4	10.0	0
	December	29	93.5%	4.8	10.7	0
Annual		350	95.9%	5.1	37.7	1
2018	January	31	100.0%	4.5	8.3	0
	February	28	100.0%	4.7	8.5	0
	March	31	100.0%	5.7	9.4	0
	April	30	100.0%	6.4	13.4	0
	May	31	100.0%	4.8	9.0	0
	June	30	100.0%	4.0	11.1	0
	July	31	100.0%	4.6	8.9	0
	August	30	96.8%	4.1	9.2	0
	September	30	100.0%	2.8	4.9	0
	October	31	100.0%	2.1	4.4	0
	November	30	100.0%	2.7	8.5	0
	December	31	100.0%	3.2	6.7	0
Annual		364	99.7%	4.1	13.4	0

Observations in ug/m^3

FIGURE 4.7.3.1 - ACCESS ROAD (AM3) ANNUAL $PM_{2.5}$ CONCENTRATIONS



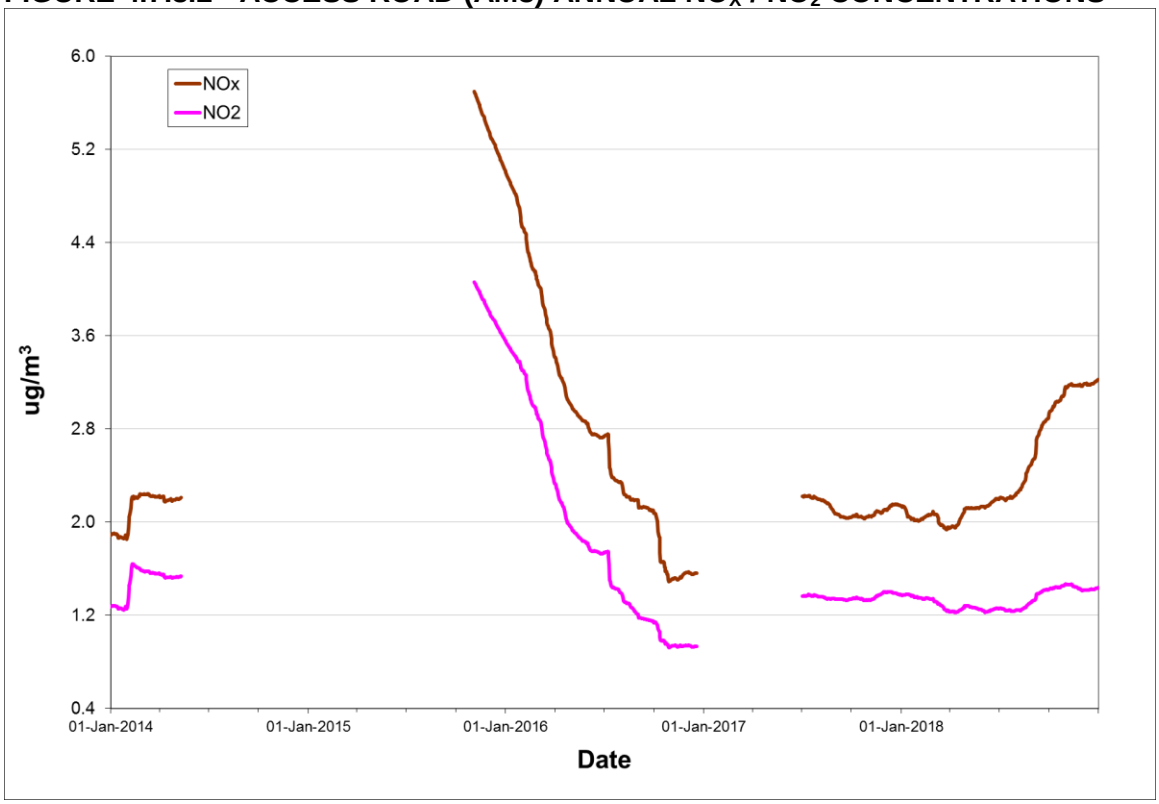
Rolling annual average of daily concentrations

TABLE 4.7.3.2 - ACCESS ROAD (AM3) NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January	599	80.5%	3.2	1.3	38.8	21.3	8.1	4.7	0	0
	February	672	100.0%	1.8	1.5	43.0	23.6	3.6	2.6	0	0
	March	742	99.7%	3.8	2.8	22.9	12.4	13.4	6.6	0	0
	April	717	99.6%	1.9	1.3	16.1	13.3	4.1	2.6	0	0
	May	741	99.6%	1.8	1.4	10.2	6.7	3.1	2.2	0	0
	June	694	96.4%	1.5	1.0	12.7	11.7	4.7	3.8	0	0
	July	742	99.7%	1.9	1.3	34.6	17.6	7.0	4.1	0	0
	August	705	94.8%	1.3	0.8	13.5	7.5	2.6	1.5	0	0
	September	508	70.6%	1.0	0.6	2.4	1.1	1.6	0.8	0	0
	October	591	79.4%	1.7	1.1	39.0	12.9	5.2	2.7	0	0
	November	709	98.5%	3.0	2.0	32.5	14.1	6.4	3.5	0	0
	December	694	93.3%	2.5	1.1	25.9	9.3	7.8	2.8	0	0
Annual		8114	92.6%	2.1	1.4	43.0	23.6	13.4	6.6	0	0
2018	January	719	96.6%	1.6	1.1	19.2	12.4	4.9	3.1	0	0
	February	561	83.5%	2.8	1.4	28.0	18.0	6.3	3.6	0	0
	March	739	99.3%	2.3	1.5	24.4	12.3	8.8	4.7	0	0
	April	711	98.8%	3.8	1.9	26.3	15.6	9.8	6.2	0	0
	May	661	88.8%	1.9	1.0	24.8	6.6	4.0	1.7	0	0
	June	431	59.9%	2.2	1.2	19.8	8.1	3.9	2.0	0	0
	July	713	95.8%	2.3	1.1	15.0	8.3	4.8	1.9	0	0
	August	682	91.7%	4.5	1.7	83.0	23.1	14.2	2.9	0	0
	September	677	94.0%	5.8	1.9	116.1	42.3	34.7	10.9	0	0
	October	720	96.8%	4.9	1.7	144.7	16.7	17.6	4.3	0	0
	November	504	70.0%	3.0	1.4	37.7	12.3	6.0	2.7	0	0
	December	245	32.9%	3.1	1.1	15.2	9.3	4.7	1.7	0	0
Annual		7363	84.1%	3.2	1.4	144.7	42.3	34.7	10.9	0	0

Observations in ug/m^3

FIGURE 4.7.3.2 - ACCESS ROAD (AM3) ANNUAL NO_X / NO_2 CONCENTRATIONS

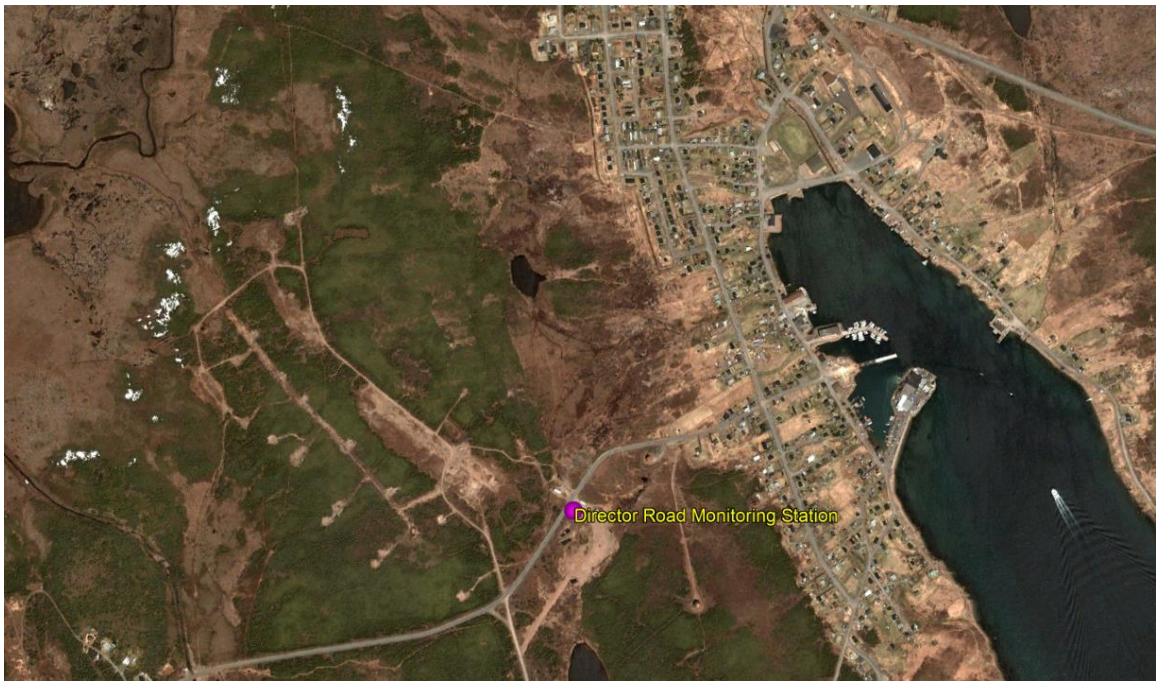


Rolling annual average of hourly concentrations

4.8 Canada Fluorspar (NL) Inc.

In 2018, Canada Fluorspar (NL) Inc. began operation of its fluorspar mine west of St. Lawrence. The company installed continuous $PM_{2.5}$, NO_X / NO_2 and TPM ambient monitors at on Director Road, between the mine site and the town of St. Lawrence. The location of the station is shown in Figure 4.8.1.

FIGURE 4.8.1 - CFI AMBIENT MONITORING STATION



4.8.1 Director Road

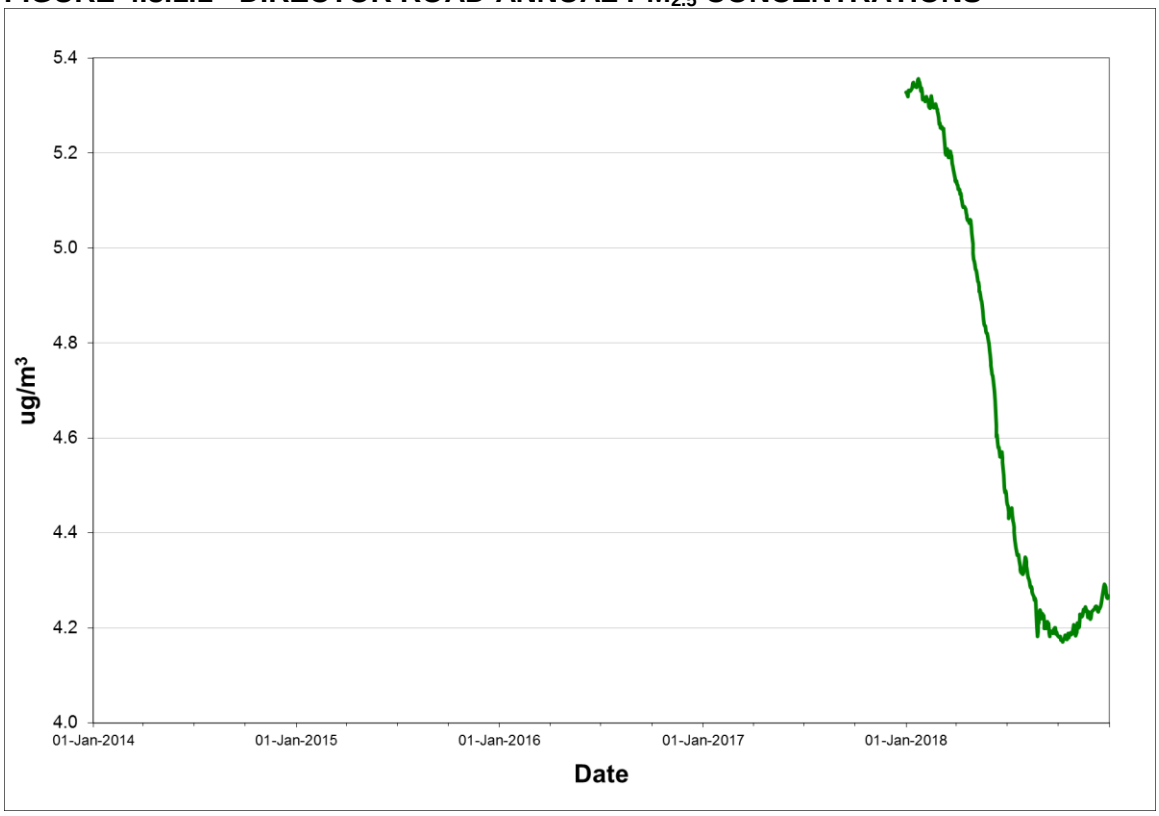
The Director Road station was installed in early 2017 with various monitors being commissioned throughout the year. Table 4.8.1.1 presents the 2018 results for $PM_{2.5}$, Table 4.8.1.2 the results for NO_x / NO_2, and Table 4.8.1.3 the results for TPM while Figures 4.8.1.1 through 4.8.1.3 provide a graphical representation of the annual trend of $PM_{2.5}$, NO_x / NO_2, and TPM respectively. There were no exceedances of the associated ambient standards during the year.

TABLE 4.8.1.1 - DIRECTOR ROAD $PM_{2.5}$ SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2017	January	27	87.1%	5.9	8.9	0
	February	23	82.1%	5.6	9.2	0
	March	31	100.0%	6.0	9.1	0
	April	30	100.0%	6.3	8.6	0
	May	31	100.0%	6.6	10.0	0
	June	30	100.0%	7.0	11.8	0
	July	22	71.0%	5.1	9.3	0
	August	21	67.7%	4.9	12.8	0
	September	30	100.0%	3.2	10.1	0
	October	31	100.0%	4.0	6.8	0
	November	30	100.0%	4.6	7.2	0
	December	31	100.0%	4.8	9.7	0
Annual		337	92.3%	5.3	12.8	0
2018	January	24	77.4%	5.8	11.9	0
	February	28	100.0%	5.1	8.3	0
	March	31	100.0%	4.5	8.3	0
	April	15	50.0%	4.6	9.3	0
	May	31	100.0%	4.1	7.3	0
	June	30	100.0%	3.6	8.9	0
	July	27	87.1%	3.3	10.5	0
	August	31	100.0%	3.5	9.8	0
	September	30	100.0%	2.8	6.1	0
	October	9	29.0%	3.8	6.4	0
	November	30	100.0%	5.1	10.7	0
	December	28	90.3%	5.2	8.8	0
Annual		314	86.0%	4.3	11.9	0

Observations in ug/m^3

FIGURE 4.8.1.1 - DIRECTOR ROAD ANNUAL $PM_{2.5}$ CONCENTRATIONS



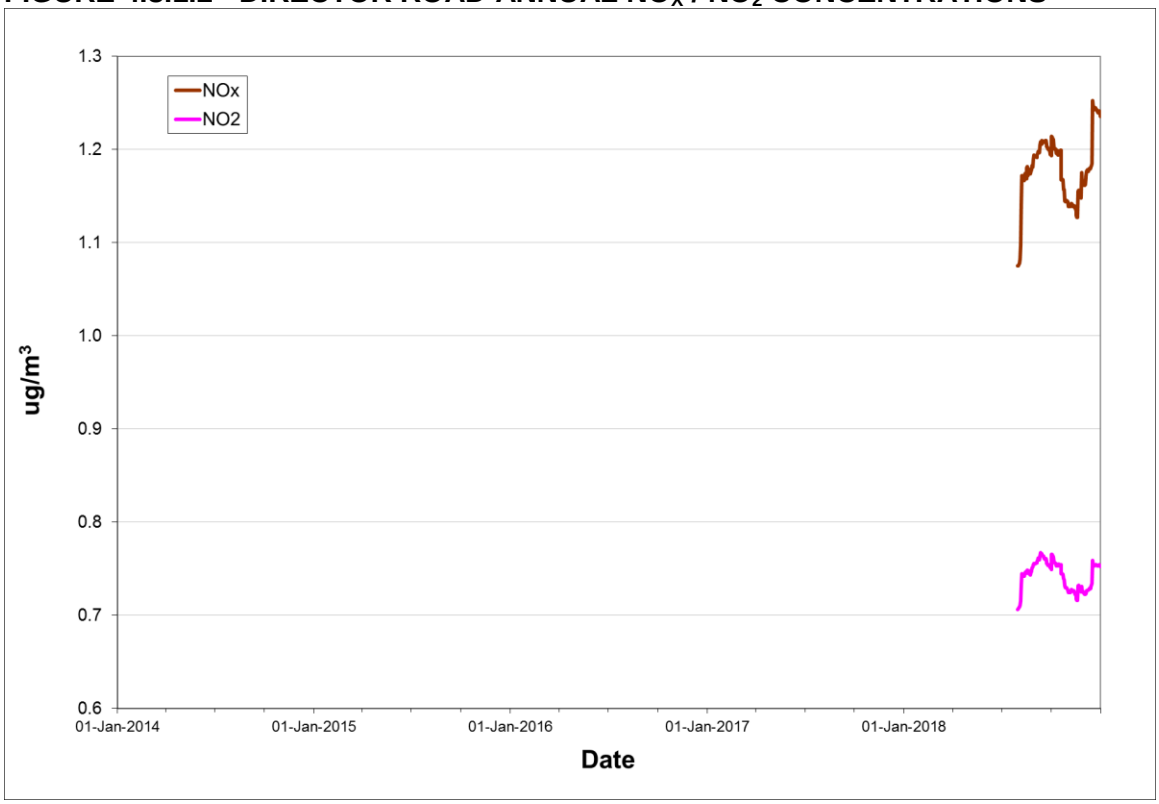
Rolling annual average of hourly concentrations

TABLE 4.8.1.2 - DIRECTOR ROAD NO_X / NO_2 SUMMARY 2017 & 2018

Year	Month	# Valid Hours	% Valid Hours	Average		Maximums 1-Hour		Maximums 24-Hour		Exceedances 1-Hour	Exceedances 24-Hour
				NO_x	NO_2	NO_x	NO_2	NO_x	NO_2	(>400)	(>200)
2017	January										
	February										
	March										
	April										
	May										
	June										
	July										
	August	526	70.7%	1.2	0.7	42.0	15.7	4.0	1.6	0	0
	September	718	99.7%	1.0	0.8	33.1	8.3	2.0	1.8	0	0
	October	743	99.9%	1.7	0.9	89.3	26.0	10.3	3.3	0	0
	November	710	98.6%	1.3	0.9	111.7	58.6	5.4	2.9	0	0
	December	742	99.7%	0.9	0.5	18.7	14.3	2.6	1.9	0	0
Annual		3439	93.7%	1.2	0.7	111.7	58.6	10.3	3.3	0	0
2018	January	733	98.5%	0.9	0.7	19.2	6.7	2.1	1.5	0	0
	February	672	100.0%	1.0	0.7	39.7	13.6	3.9	1.7	0	0
	March	741	99.6%	0.7	0.5	31.7	11.5	2.6	1.4	0	0
	April	523	72.6%	0.7	0.5	22.8	9.0	2.4	1.2	0	0
	May	0	0.0%								
	June	105	14.6%	0.9	0.6	6.1	2.7	1.1	0.7	0	0
	July	744	100.0%	1.5	1.0	34.0	9.2	5.8	2.6	0	0
	August	744	100.0%	2.3	1.2	106.3	38.0	14.2	6.0	0	0
	September	717	99.6%	1.0	0.7	37.9	10.8	3.5	2.0	0	0
	October	744	100.0%	1.2	0.7	145.0	115.3	7.2	5.6	0	0
	November	720	100.0%	1.4	0.8	88.8	21.4	9.3	5.5	0	0
	December	740	99.5%	1.6	0.7	96.0	31.9	20.8	7.9	0	0
Annual		7183	82.0%	1.2	0.8	145.0	115.3	20.8	7.9	0	0

Observations in ug/m^3

FIGURE 4.8.1.2 - DIRECTOR ROAD ANNUAL NO_X / NO_2 CONCENTRATIONS



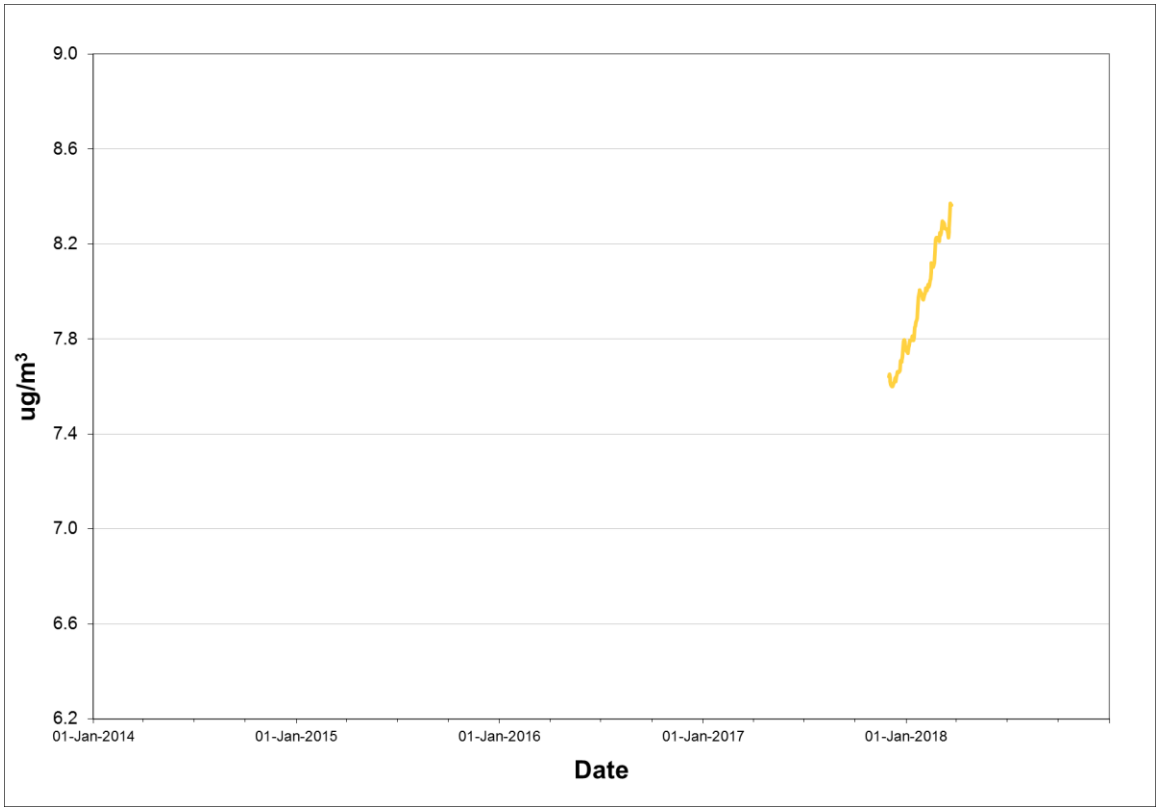
Rolling annual average of hourly concentrations

TABLE 4.8.1.3 - DIRECTOR ROAD TPM SUMMARY 2017 & 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2017	January	31	100.0%	6.6	19.0	0
	February	23	82.1%	5.2	13.4	0
	March	31	100.0%	6.4	16.5	0
	April	30	100.0%	6.9	28.0	0
	May	22	71.0%	10.3	37.6	0
	June	24	80.0%	10.5	28.9	0
	July	31	100.0%	5.4	21.9	0
	August	27	87.1%	7.7	55.0	0
	September	30	100.0%	7.7	22.0	0
	October	31	100.0%	10.4	28.8	0
	November	30	100.0%	10.4	21.1	0
	December	31	100.0%	8.8	22.3	0
Annual		341	93.4%	7.8	55.0	0
2018	January	10	32.3%	11.2	28.6	0
	February	0	0.0%			
	March	0	0.0%			
	April	10	33.3%	9.4	25.1	0
	May	28	90.3%	10.7	23.8	0
	June	30	100.0%	8.2	21.4	0
	July	31	100.0%	5.3	26.0	0
	August	31	100.0%	6.5	22.1	0
	September	30	100.0%	8.8	45.5	0
	October	12	38.7%	9.8	17.7	0
	November	25	83.3%	9.0	18.2	0
	December	28	90.3%	10.9	78.8	0
Annual		235	64.4%		78.8	0

Observations in ug/m^3

FIGURE 4.8.1.3 - DIRECTOR ROAD ANNUAL TPM CONCENTRATIONS



Rolling annual average of hourly concentrations

4.9 Atlantic Minerals Limited

In late 2016 / early 2017, Atlantic Minerals Limited installed continuous $PM_{2.5}$ and TPM ambient monitors to the west of their Port-au-Port mining operation to measure the potential impacts from of their mining operation. The location of the station is shown in Figure 4.9.1. Owing to operational issues, data prior to 2018 was deemed questionable and not presented herein.

FIGURE 4.9.1 - ATLANTIC MINERALS AMBIENT MONITORING STATION

4.9.1 AML Property Boundary

The AML Property Boundary station was installed in late 2016 / early 2017 and measures $PM_{2.5}$ and TPM. Table 4.9.1.1 presents the 2018 results for $PM_{2.5}$, while Table 4.9.1.2 the results for TPM. There were no exceedances of the associated ambient standards during the year. Annual graphics are not included at the time.

TABLE 4.9.1.1 - AML BOUNDARY $PM_{2.5}$ SUMMARY 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>25 µg/m^3)
2018	January	24	77.4%	5.8	11.9	0
	February	28	100.0%	5.1	8.3	0
	March	31	100.0%	4.5	8.3	0
	April	15	50.0%	4.6	9.3	0
	May	31	100.0%	4.1	7.3	0
	June	30	100.0%	3.6	8.9	0
	July	27	87.1%	3.3	10.5	0
	August	31	100.0%	3.5	9.8	0
	September	30	100.0%	2.8	6.1	0
	October	9	29.0%	3.8	6.4	0
	November	21	70.0%	2.2	6.0	0
	December	31	100.0%	2.2	5.7	0
Annual		308	84.4%	3.8	11.9	0

Observations in ug/m^3

TABLE 4.9.1.2 - AML BOUNDARY TPM SUMMARY 2018

Year	Month	# Valid Days	% Valid Days	Average	Maximum 24-Hour	Regulatory Exceedances (>120 µg/m^3)
2018	January	10	32.3%	11.2	28.6	0
	February	0	0.0%			
	March	0	0.0%			
	April	10	33.3%	9.4	25.1	0
	May	28	90.3%	10.7	23.8	0
	June	30	100.0%	8.2	21.4	0
	July	31	100.0%	5.3	26.0	0
	August	31	100.0%	6.5	22.1	0
	September	30	100.0%	8.8	45.5	0
	October	12	38.7%	9.8	17.7	0
	November	20	66.7%	5.3	11.8	0
	December	31	100.0%	3.6	10.1	0
Annual		233	63.8%		45.5	0

Observations in ug/m^3