Quarterly Ambient Air Quality Monitoring Report for the Durham York Energy Centre – January to March 2018

FINAL REPORT

May 10, 2018

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Sign-off Sheet

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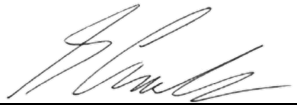
Reviewed by 
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Executive Summary

The Regional Municipalities of Durham and York constructed the Durham York Energy Centre (DYEC) which is an Energy-from-Waste (EFW) Facility intended to provide a long-term, sustainable solution to manage the remaining municipal solid waste after waste diversion from the Regions. The facility commenced commercial operation on February 1, 2016.

The Ambient Air Quality Monitoring Plan – Durham York Residual Waste Study (Stantec, 2012), was developed based on the Regional Council's mandate to provide ambient air quality monitoring in the area of the DYEC for a three-year period. An ambient air quality monitoring and reporting program was also a requirement laid out in the Provincial Minister's Notice of Approval to Proceed with the Undertaking, detailed in Condition 11 of the Notice of Approval (MOECC, 2010). The air monitoring plan was also developed to satisfy the conditions of the Environmental Compliance Approval and the environmental mitigation and commitments set out in the Environmental Assessment (Jacques Whitford, 2009).
The predominantly downwind station is located along Rundle Road, south of Baseline Road. The predominantly upwind station is sited at the Courtice Water Pollution Control Plant (WPCP). Since May 2013, measurements of the following air contaminants have been made at the two stations:

- Continuously monitored
  - Sulphur Dioxide (SO_2)
  - Nitrogen Oxides (NO_X)
  - Particulate Matter smaller than 2.5 microns ($PM_{2.5}$)
- Non-continuously monitored
  - Metals in Total Suspended Particulate (TSP) matter
  - Polycyclic Aromatic Hydrocarbons (PAHs)
  - Dioxins and Furans

Operation of the non-continuous monitors was temporarily discontinued from June 28, 2014 (after completion of the background air quality data collection period) onwards through the rest of construction and commissioning, as per Section 1.2 of the Ambient Monitoring Plan (Stantec, 2012). The EFW facility became fully operational on February 1, 2016 and monitoring of non-continuous air quality parameters resumed.

A third Fence Line Station, which measures non-continuous parameters (metals and total particulate matter), was installed prior to full operation of the DYEC. As per Section 1.2 of the Ambient Monitoring Plan (Stantec, 2012), the Fence Line Station, which collects non-continuous parameters began operation on February 1, 2016 upon start of commercial operations. The Fence Line Station was scheduled to run for a one-year period, but this period has been extended at the request of the Regional Municipality of Durham.

Meteorological data is also measured at the Courtice WPCP and Rundle Road Stations. The predominantly downwind Rundle Road Station measures horizontal wind speed, wind direction, atmospheric temperature, relative humidity, and rainfall. The predominantly upwind Courtice WPCP Station measures atmospheric temperature, relative humidity, rainfall, and barometric pressure. Wind speed and wind direction data at the predominantly upwind location are measured and provided by the Courtice Water Pollution Control Plant.

This quarterly report provides a summary of the ambient air quality data collected at the three stations for the period from January to March 2018 (Calendar Quarter 1). Data recovery rates for all measured air quality parameters for this quarter were acceptable except for TSP/metals at the Rundle Road Station. Additional details on instrumentation issues are presented in Section 3.2 of this report.

Site personnel noted ongoing Highway 418 construction on the north and south sides of Highway 401 between Courtice and Crago Roads during Quarter 1, 2018.

The following observations and conclusions were made from a review of the measured ambient air quality monitoring data:

1. Measured concentrations of NO_2, SO_2, and $PM_{2.5}$ were below the applicable air quality evaluation criteria or human health risk assessment (HHRA) health-based criteria presented in **Table 2-2** of this report.

2. Since the Canadian Ambient Air Quality Standard (CAAQS) for $PM_{2.5}$ is based on a 98th percentile level over 3 years, whereas the $PM_{2.5}$ measurement period at both stations for this quarterly report was 3 months, there is insufficient data collected to determine with any certainty if exceedances of the CAAQS would occur. Therefore, no comparison of the measured $PM_{2.5}$ data during this quarter to the CAAQS was conducted for this report, as it would not be scientifically accurate or representative.

3. The maximum measured concentrations of TSP and all metals with MOECC air quality Standards, were below their applicable Standards (as presented in **Table 2-3** in this report).

4. The maximum measured concentrations of PAHs with MOECC air quality Standards were well below their applicable criteria shown in **Table 2-4**, with the exception of two (2) 24-hour benzo(a)pyrene (B(a)P) concentration measured on January 2 and February 7, 2018 at the Courtice WPCP Station, and three (3) B(a)P measurements on January 2 and 26, and February 7, 2018 at the Rundle Road Station. Measured concentrations of B(a)P exceeded the applicable Ontario Ambient Air Quality Criteria (AAQC) by between 8.4% and 152%. The current Ontario 24-hour B(a)P AAQC was introduced in 2011 and levels above this AAQC are commonly measured throughout Ontario. The measurements were however, well below the MOECC Schedule 6 Upper Risk Threshold, the MOECC O. Reg. 419/05 24-hour average guideline, and the HHRA health-based criterion.

5. The maximum measured toxic equivalent dioxin and furan concentration was below the applicable Standard presented in **Table 2-4.**

In summary, the measured concentrations of the air contaminants monitored were below their applicable MOECC Standards during the January to March 2018 monitoring period with the exception of benzo(a)pyrene. Furthermore, all measured levels of the monitored contaminants were below their applicable HHRA health-based criteria.

Abbreviations

AAQC	Ambient Air Quality Criteria
ACB List	Air Contaminants Benchmarks List: Standards, Guidelines, and Screening Levels for Assessing Point of Impingement Concentrations of Air Contaminants
CAAQS	Canadian Ambient Air Quality Standards
CAC	Criteria Air Contaminants
CDD	Chlorinated Dibenzo-p-dioxins
CDF	Chlorinated Dibenzo-p-furans
D/Fs	Dioxins and Furans
DYEC	Durham York Energy Centre
EFW	Energy from Waste
MOECC	Ontario Ministry of the Environment and Climate Change
SO_2	Sulphur Dioxide
NO_X	Nitrogen Oxides
PAH	Polycyclic Aromatic Hydrocarbons
Particulate	A particle of a solid or liquid that is suspended in air
PCB	Polychlorinated biphenyl
PCDD/PCDF	Polychlorinated dibenzo-p-dioxins and dibenzofurans
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter smaller than 2.5 microns
TEQ	Toxic Equivalent Quotient
TEQs	Toxic Equivalents
TSP	Total Suspended Particulate
WPCP	Water Pollution Control Plant
Elements	
Cd	Cadmium
Hg	Mercury
Pb	Lead
Al	Aluminum
As	Arsenic
Be	Beryllium
Cr	Chromium
Cu	Copper

Mn	Manganese
Ni	Nickel
Ag	Silver
Ti	Titanium
Tl	Thallium
Sn	Tin
V	Vanadium
Zn	Zinc
Zr	Zirconium
Miscellaneous	
°C	Temperature in degrees Celsius
N/A	Not Available
%	Percent
µg	microgram
ppm	Parts per million
ppb	Parts per billion
ppbv	Parts per billion by volume
ppt	Parts per trillion
min	Minimum
max	Maximum
mm	Millimetre
m	Metre
nm	nanometre
km/hr	Kilometres per hour
mg/m^3	Milligrams per cubic metre
$µg/m^3$	Microgram per cubic metre
ng/m^3	Nanograms per cubic metre
pg/m^3	Picograms per cubic metre
pg TEQ/m^3	Picograms of toxic exposure equivalents per cubic metre

1.0 INTRODUCTION

The Regional Municipalities of Durham and York constructed the Durham York Energy Centre (DYEC) which is an Energy-from-Waste (EFW) Facility intended to provide a long-term, sustainable solution to manage municipal solid waste remaining after diversion from the Regions. The site location of the DYEC is shown in **Figure 1-1.** The facility commenced commercial operation on February 1, 2016.

An Ambient Air Quality Monitoring Plan – Durham York Residual Waste Study (Ambient Monitoring Plan) was developed and included two monitoring stations referred to as the Courtice Water Pollution Control Plant (WPCP) Station and the Rundle Road Station (as well as a temporary Fence Line Station). The plan developed for these stations was based on the Regional Council's mandate to provide ambient air quality monitoring in the area of the DYEC for a three-year period.

The purposes of the ambient air quality monitoring program are to:

1. Quantify any measurable ground level concentrations resulting from emissions from the DYEC cumulative to local air quality, including validating the predicted concentrations from the dispersion modelling conducted in the Environmental Assessment (Jacques Whitford, 2009);

2. Monitor concentration levels of EFW-related air contaminants in nearby residential areas; and

3. Quantify background ambient levels of air contaminants in the area.

Two monitoring stations (Courtice WPCP and Rundle Road Stations) in the vicinity of the DYEC were set up in April 2013. Since May 2013, the two stations have measured the following air contaminants:

- Continuously monitored criteria air contaminants (CACs)
  - Sulphur Dioxide (SO_2)
  - Nitrogen Oxides (NO_X)
  - Particulate Matter smaller than 2.5 microns ($PM_{2.5}$)
- Non-continuously monitored
  - Metals in Total Suspended Particulate (TSP) matter
  - Polycyclic Aromatic Hydrocarbons (PAHs)
  - Dioxins and Furans

Operation of the non-continuous monitors was temporarily discontinued from June 28, 2014 (after completion of the background air quality data collection period) onwards through the rest of construction and commissioning, as per Section 1.2 of the Ambient Monitoring Plan (Stantec, 2012). The EFW facility became fully operational starting February 1, 2016, and non-continuous monitoring resumed (as specified in the Ambient Monitoring Plan).

A third Fence Line Station, which measures non-continuous parameters (metals and total particulate matter), was installed prior to full operation of the DYEC. As per Section 1.2 of the Ambient Monitoring Plan (Stantec, 2012), the Fence Line Station, which collects non-continuous parameters began operation

on February 1, 2016 upon start of commercial operations. The Fence Line Station was scheduled to run for one-year, but this period has been extended at the request of the Regional Municipality of Durham.

This quarterly report provides a summary of the ambient air quality data collected at the three stations for the period from January to March 2018 (Q1).

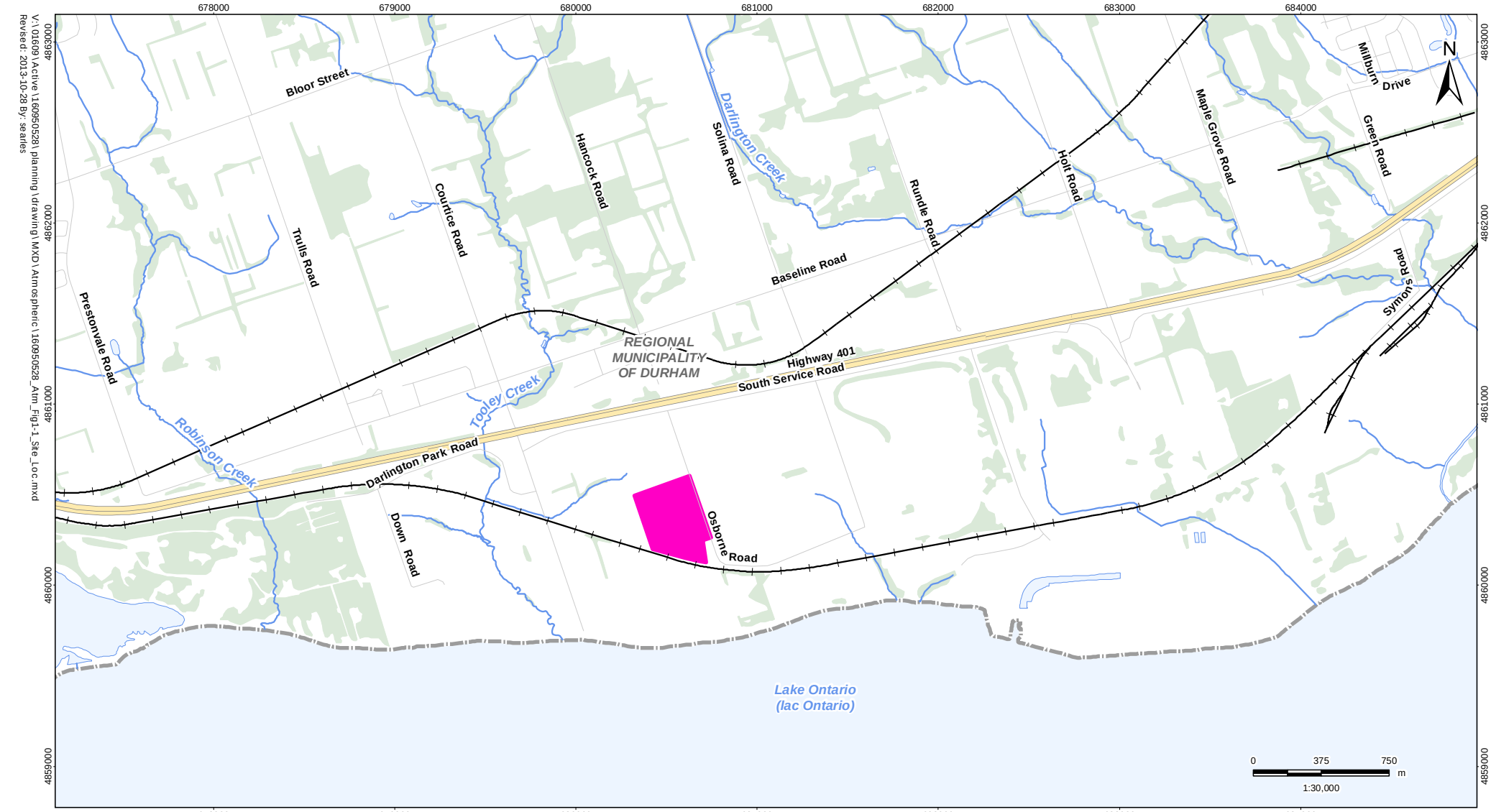
1.1 LOCATIONS OF AMBIENT AIR QUALITY MONITORING STATIONS

The selection of sites for the monitoring stations was accomplished in consultation with the Ontario Ministry of Environment and Climate Change (MOECC) and Regional Municipality of Durham and York representatives based on the results of air quality modelling done in support of the environmental assessment for the project, the locations of nearby sensitive receptors, and general MOECC siting criteria. Two monitoring stations (one predominantly downwind and one predominantly upwind) were chosen for the ambient air quality program. The final locations of the monitoring stations were influenced by the availability of electrical power, accessibility of each location and security. Details of the siting requirements are provided in the Ambient Monitoring Plan.

The Rundle Road Station is sited northeast of the DYEC in the vicinity of residential receptors predominantly downwind of the DYEC, and within the area where maximum annual concentrations are predicted to occur. This predominantly downwind station is located along Rundle Road, south of Baseline Road. Its location is shown in **Figure 1-2** and **Figure 1-3**. The monitoring station measures all the air contaminants listed in Section 1.1 and meteorological data.

The predominately upwind Courtice WPCP Station is located at the Courtice Water Pollution Control Plant (WPCP) to the southwest of the DYEC with the objective of measuring background air quality in a predominantly upwind location. The location is presented in **Figure 1-2** and **Figure 1-4.** This monitoring station measures the air contaminants presented in Section 1.1, as well as meteorological data, with the exception of wind speed and wind direction, which are measured and provided by the Courtice WPCP.

A third Fence Line Station, which measures non-continuous parameters (metals and total particulate matter), was installed prior to full operation of the DYEC. As per Section 1.2 of the Ambient Monitoring Plan (Stantec, 2012), the Fence Line Station, which collects non-continuous parameters began operation after the Facility's commissioning period was completed. The Fence Line Station was scheduled to run for one-year, but this period has been extended. The location is presented in **Figure 1-2** and **Figure 1-5**.



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Stantec

Legend

- Durham York Energy Centre Site
- Railway
- Road
- Highway
- Watercourse
- Waterbody
- Wooded Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

Client/Project

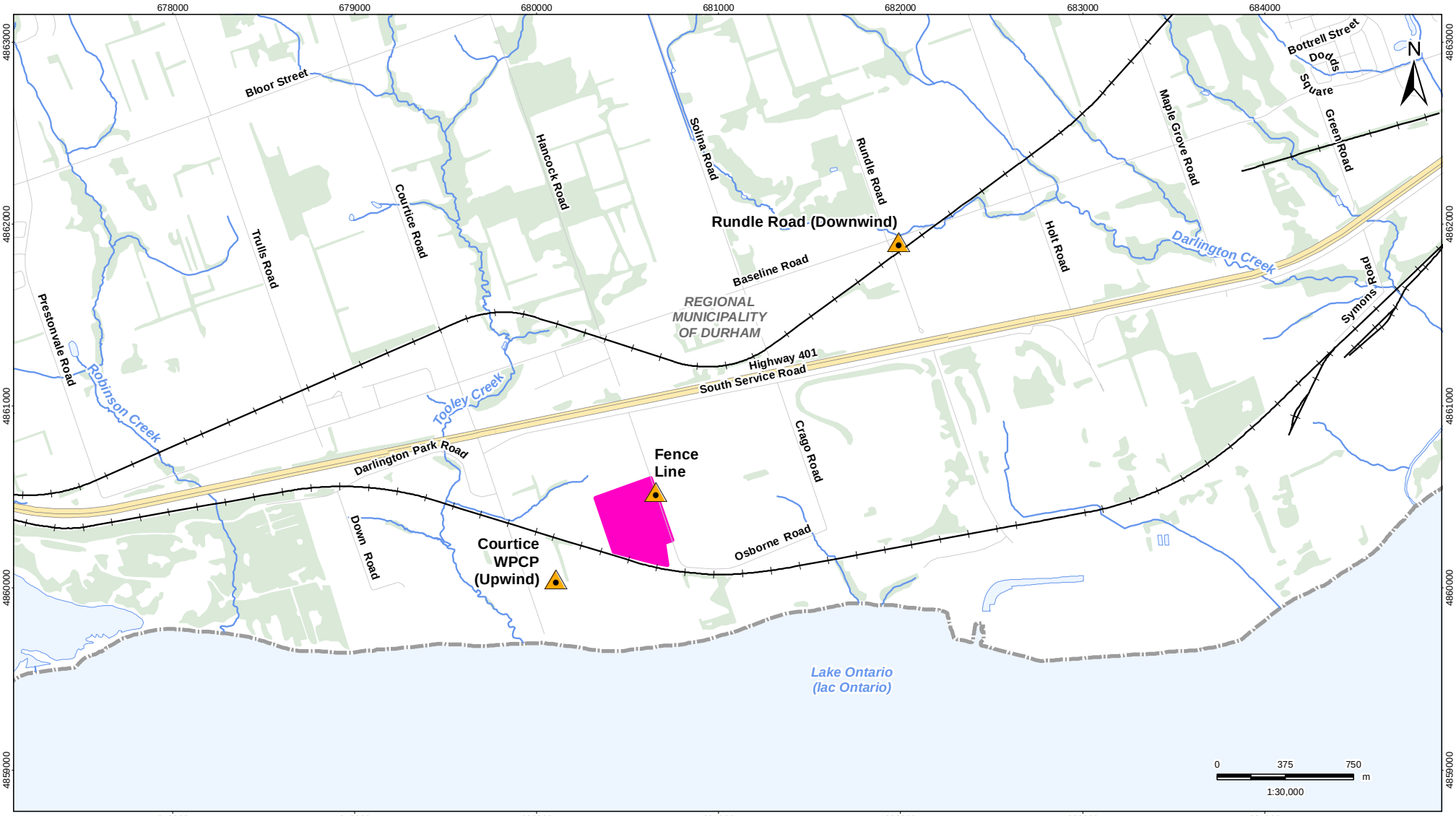
The Region of Durham
Durham York Energy Centre

Figure No.

1-1

Title

Site Location Plan



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Revised: 2016-05-11 By: searles

Stantec

Legend

- Station Location
- Durham York Energy Centre Site
- Railway
- Road
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Notes

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Client/Project

The Region of Durham
Durham York Energy Centre

Figure No.

1-2

Title

Locations of Ambient Monitoring Stations

Figure 1-3: View of the Rundle Road Ambient Air Quality Monitoring Station

Figure 1-4: View of the Courtice WPCP Ambient Air Quality Monitoring Station

Figure 1-5: View of the Fence Line Ambient Air Quality Monitoring Station

2.0 KEY COMPONENTS ASSESSED

2.1 METEOROLOGY

The following meteorological parameters are measured at the Rundle Road and Courtice WPCP Stations.

Table 2-1: Summary of Meteorological Parameters Measured at Each Station

Courtice WPCP (Predominately Upwind) Ambient Air Quality Monitoring Station	Rundle Road (Predominately Downwind) Ambient Air Quality Monitoring Station
Wind Speed and Direction @ 20 m	Wind Speed and Direction @7.9 m
Ambient Temperature @ 2 m	Ambient Temperature @ 2 m
Relative Humidity	Relative Humidity
Rainfall	Rainfall
Barometric Pressure	

2.2 AIR QUALITY CONTAMINANTS OF CONCERN

The ambient air quality monitoring program for the DYEC includes the following contaminants specified in the Ambient Monitoring Plan (Stantec, 2012):

- Continuously monitored criteria air contaminants (CACs)
  - Sulphur Dioxide (SO_2)
  - Nitrogen Oxides (NO_X)
  - Particulate Matter smaller than 2.5 microns ($PM_{2.5}$)
- Non-continuously monitored
  - Metals in Total Suspended Particulate (TSP) matter
  - Polycyclic Aromatic Hydrocarbons (PAHs)
  - Dioxins and Furans

Operation of the non-continuous monitors was temporarily discontinued between June 28, 2014 and January 31, 2016 as per Section 1.2 of the Ambient Monitoring Plan (Stantec, 2012). The EFW facility started full commercial operation on February 1, 2016, and monitoring of non-continuous monitors resumed, as specified in the Ambient Monitoring Plan (Stantec, 2012).

The following are lists of the specific metals, PAHs, and dioxins and furans being measured. Rationales for the choice of contaminants being monitored are provided in the Ambient Monitoring Plan (Stantec, 2012).

Metals:

- Aluminum (Al)
- Antimony (Sb)
- Arsenic (As)
- Barium (Ba)
- Beryllium (Be)
- Bismuth (Bi)
- Boron (B)
- Cadmium (Cd)
- Cobalt (Co)
- Copper (Cu)
- Chromium (Cr) (Total)
- Iron (Fe)
- Lead (Pb)
- Magnesium (Mg)
- Manganese (Mn)
- Mercury (Hg)
- Molybdenum (Mo)
- Nickel (Ni)
- Phosphorus (Ph)
- Selenium (Se)
- Silver (Ag)
- Strontium (Sr)
- Thallium (Tl)
- Tin (Sn)
- Titanium (Ti)
- Uranium (U)
- Vanadium (V)
- Zinc (Zn)
- Zirconium (Zr)

Polycyclic Aromatic Hydrocarbons:

- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)fluorene
- Benzo(a)pyrene
- Benzo(b)fluorene
- Benzo(b)fluoranthene
- Benzo(e)pyrene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Biphenol
- Chrysene
- Dibenz(a,h)anthracene
- Dibenz(a,c)anthracene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene
- Naphthalene
- Perylene
- Phenanthrene
- Pyrene
- Tetralin
- o-Terphenyl
- Total PAHs

Dioxins and Furans:

- 2,3,7,8-Tetra CDD
- 1,2,3,7,8-Penta CDD
- 1,2,3,4,7,8-Hexa CDD
- 1,2,3,6,7,8-Hexa CDD
- 1,2,3,7,8,9-Hexa CDD
- 1,2,3,4,6,7,8-Hepta CDD
- Octa CDD
- Total Tetra CDD
- Total Penta CDD
- Total Hexa CDD
- Total Hepta CDD
- 2,3,7,8-Tetra CDF
- 1,2,3,7,8-Penta CDF
- 2,3,4,7,8-Penta CDF
- 1,2,3,4,7,8-Hexa CDF
- 1,2,3,6,7,8-Hexa CDF
- 2,3,4,6,7,8-Hexa CDF
- 1,2,3,7,8,9-Hexa CDF
- 1,2,3,4,6,7,8-Hepta CDF
- 1,2,3,4,7,8,9-Hepta CDF
- Octa CDF
- Total Tetra CDF
- Total Penta CDF
- Total Hexa CDF
- Total Hepta CDF
- Total toxic equivalency (I-TEQ)

2.3 AIR QUALITY CRITERIA

Several evaluation criteria were used for comparison to the air quality data as specified in the Ambient Air Monitoring Plan (Stantec, 2012). The first set was the Ontario Ambient Air Quality Criteria (AAQC) developed by the MOECC (MOECC, 2012). The second set of criteria was the Standards reported in O. Reg. 419/05 (Schedules 3 and 6) and the MOECC Guidelines and Jurisdictional Screening Levels. In December 2016, O. Reg. 419/05 Standards, Guidelines, and Jurisdictional Screening Levels were consolidated into a new format known as the "Air Contaminants Benchmarks List: Standards, Guidelines, and Screening Levels for Assessing Point of Impingement Concentrations of Air Contaminants" (ACB List) (MOECC, 2018).

Not all chemicals have regulatory limits, or in some instances updated health-based criteria were used in the human health risk assessment (HHRA) conducted in support of the Environmental Assessment (July 31, 2009 - December 10, 2009). These health-based values, which were reported in Table 7-2 (Summary of Inhalation TRVs and Inhalation Benchmarks Selected for CACs) and Table 7-3 (Inhalation TRVs and Inhalation Benchmarks for Selected COPCs) of the HHRA (Stantec, 2009) were used as another set of criteria.

Additionally, federal ambient air quality standards were considered. The previously applicable 24-hour Canada-Wide Standard (CWS) for $PM_{2.5}$ of 30 µg/m^3 (98th percentile averaged over 3 consecutive years) has been superseded by the new Canadian Ambient Air Quality Standard (CAAQS) of 28 µg/m^3 (98th percentile averaged over 3 consecutive years) and the annual objective of 10 µg/m^3 as noted in **Table 2-2**. The proposed CAAQS 24-hour objective for 2020 is 27 µg/m^3.

There is an AAQC for nitrogen dioxide (NO_2) as well as a Schedule 3 Standard for nitrogen oxides (NO_X) which is based on health effects of NO_2, as NO_2 has adverse health effects at much lower concentrations than nitric oxide (NO). At the request of the MOECC (MOECC, 2017), ambient NO_X measurements are not compared with the NO_2 AAQC or Schedule 3 NO_X Standard.

Summaries of the relevant air quality criteria for the contaminants monitored in Q1 2018 are presented in **Table 2-2** to **Table 2-4**.

Table 2-2: Summary of Air Quality Criteria for CACs

Contaminant	CAS	MOECC Criteria			HHRA Health-Based Criteria		
		1-Hour (ppb / µg/m³)	24-Hour (ppb / µg/m³)	Annual (ppb / µg/m³)	1-Hour (ppb / µg/m³)	24-Hour (ppb / µg/m³)	Annual (ppb / µg/m³)
Sulphur Dioxide	7446095	250 /690	100 / 275	20 / 55	250 / 690	100 / 275	11 / 29
Nitrogen Dioxide	10102-44-0	200 /400	100 / 200	-	200 / 400	100 / 200	30 / 60
Contaminant	**CAS**	**Canadian Ambient Air Quality Standards (CAAQS)**			**HHRA Health-Based Criteria**		
		1-Hour (µg/m³)	**24-Hour (µg/m³)**	**Annual (µg/m³)**	**1-Hour (µg/m³)**	**24-Hour (µg/m³)**	**Other time Period (µg/m³)**
$PM_{2.5}$	N/A	-	28 [A]	10 [B]	-	30 [C]	-

A. Canadian Ambient Air Quality Standards (CAAQS) for Respirable Particulate Matter and Ozone, effective by 2015 (CCME, 2012). The Respirable Particulate Matter Objective is referenced to the 98th percentile daily average concentration averaged over 3 consecutive years.

B. Annual Canadian Ambient Air Quality Standard for Respirable Particulate Matter, effective by 2015. The Respirable Particulate Matter Objective is referenced to the 3-year average of the annual average concentrations.

C. HHRA Health-Based criterion for $PM_{2.5}$ was selected referencing CCME (2006).

Table 2-3: Summary of Air Quality Criteria for Metals

Contaminant	CAS	MOECC Criteria			HHRA Health-Based Criteria		
		1-Hour (µg/m³)	24-Hour (µg/m³)	Other time Period (µg/m³)	1-Hour (µg/m³)	24-Hour (µg/m³)	Annual (µg/m³)
Total Particulate	NA	-	120	-	-	120	60
Aluminum	7429-90-5	-	4.8	-	-	-	-
Antimony	7440-36-0	-	25	-	5	25	0.2
Arsenic	7440-38-2	-	0.3	-	0.2	0.3	0.015 [A] 0.0043 [B]
Barium	7440-39-3	-	10	-	5	10	1
Beryllium	7440-41-7	-	0.01	-	0.02	0.01	0.007 [A] 0.0024 [B]
Bismuth	7440-69-9	-					
Boron	7440-42-8	-	120	-	50	-	5
Cadmium	7440-43-9	-	0.025	0.005; annual	0.1	0.025	0.005 [A] 0.0098 [B]
Chromium (Total)	7440-47-3	-	0.5	-	1	-	60
Cobalt	7440-48-4	-	0.1	-	0.2	0.1	0.1
Copper	8440-50-8	-	50	-	-	-	-
Iron	15438-31-0	-	4	-	-	-	-

Table 2-3: Summary of Air Quality Criteria for Metals

Contaminant	CAS	MOECC Criteria			HHRA Health-Based Criteria		
		1-Hour (µg/m^3)	24-Hour (µg/m^3)	Other time Period (µg/m^3)	1-Hour (µg/m^3)	24-Hour (µg/m^3)	Annual (µg/m^3)
Lead	7439-92-1	-	0.5	0.2; 30-day	1.5	0.5	0.5
Magnesium	7439-95-4	-					
Manganese	7439-96-5	-	0.4	-	-	-	-
Mercury	7439-97-6	-	2	-	0.6	2	0.3
Molybdenum	7439-87-7	-	120	-	-	-	-
Nickel	7440-02-0	-	0.2	0.04; annual	6	-	0.05
Phosphorus	7723-14-0	-	-	-	-	-	6.4×10^7
Selenium	7782-49-2	-	10	-	2	10	0.2
Silver	7440-22-4	-	1	-	0.1	1	0.01
Strontium	7440-24-6	-	120	-	-	-	-
Thallium	7440-28-0	-	-	-	1	-	0.1
Tin	7440-31-5	-	10	-	20	10	2
Titanium	7440-32-6	-	120	-	-	-	-
Vanadium	7440-62-2	-	2	-	0.5	1	1
Uranium	7440-61-1	-	1.5	0.03; annual	-	-	-
Zinc	7440-66-6	-	120	-	50	-	5
Zirconium	7440-67-7	-	20	-	-	-	-

A. Annual Average
B. Carcinogenic Annual Average

Table 2-4: Summary of Air Quality Criteria for PAHs and D/Fs

Contaminant	CAS	MOECC Criteria			HHRA Health-Based Criteria			
		1-Hour (ng/m^3)	24-Hour (ng/m^3)	Other time Period (ng/m^3)	1-Hour (ng/m^3)	24-Hour (ng/m^3)	Annual (ng/m^3)	Toxic Equivalency Factor Annual [A, G] (ng/m^3)$^{-1}$
1-Methylnaphthalene	90-12-0	-	12,000	-	-	-	3,000	-
2-Methylnaphthalene	91-57-6	-	10,000	-	-	-	3,000	-
Acenaphthene	83-32-9	-	-	-	1,000	-	-	1
Acenaphthylene	208-96-8	-	3,500	-	1,000	-	-	10
Anthracene	120-12-7	-	200	-	500	-	50	-

Table 2-4: Summary of Air Quality Criteria for PAHs and D/Fs

Contaminant	CAS	MOECC Criteria			HHRA Health-Based Criteria			
		1-Hour (ng/m^3)	24-Hour (ng/m^3)	Other time Period (ng/m^3)	1-Hour (ng/m^3)	24-Hour (ng/m^3)	Annual (ng/m^3)	Toxic Equivalency Factor Annual [A, G] $(ng/m^3)^{-1}$
Benzo(a)anthracene	56-55-3	-	-	-	500	-	-	100
Benzo(b)fluoranthene	205-99-2	-	-	-	500	-	-	100
Benzo(k)fluoranthene	207 -08-9	-	-	-	500	-	-	100
Benzo(a)fluorene	238-84-6	-	-	-	500	-	50	-
Benzo(b)fluorene	243-17-4	-	-	-	500	-	50	-
Benzo (g,h,i) perylene	191-24-2	-	-	-	500	-	-	100
Benzo(a)pyrene	50-32-8	-	0.05 [B] 5 [C] 1.1 [D]	0.01; annual	-	1	87 [A]	-
Benzo(e)pyrene	192-97-2	-	-	-	500	-	-	10
Biphenyl	92-52-4	-	-	-	-	-	224,000	-
Chrysene	218-01-9	-						-
Dibenzo(a,c)anthracene	215-58-7	-	-	-	-	-	-	100
Dibenzo(a,h)anthracene	53-70-3	-	-	-	500	-	-	1,000
Fluoranthene	206-44-0	-	-	-	500	-	-	1
Indeno(1,2,3-cd)pyrene	193-39-5	-	-	-	500	-	-	100
Naphthalene	91-20-3	-	22,500	-	-	22,500	3,000	-
o-Terphenyl	84-15-1	-	-	-	50,000	-	5,000	-
Perylene	198-55-0	-	-	-	500	-	-	1
Phenanthrene	85-01-8	-	-	-	500	-	-	1
Pyrene	129-00-0	-	-	-	500	-	-	1
Tetralin	119-64-2	-						-
Dioxins and Furans Total Toxic Equivalency [E]	NA	-	0.1 (pg TEQ/m^3) [F] 1 (pg TEQ/m^3) [C]	-	-	-	-	-

A. Carcinogenic Annual Average. Units in $(ng/m^3)^{-1.}$

B. Ontario Ambient Air Quality Criteria - The standard for benzo(a)pyrene (B(a)P) is for B(a)P as a surrogate for PAHs.

C. O. Reg. 419/05 Schedule 6 Upper Risk Thresholds.

D. O. Reg. 419/05 24 Hour Guideline.

E. Application of the air standard for dioxins, furans, and dioxin-like PCBs requires the calculation of the total toxicity equivalent (TEQ) concentration contributed by all dioxin-like compounds in the mixture. TEQ is calculated using the methodology as per the O. Reg. 419/05 Summary of Standards and Guidelines, and the corresponding WHO2005 toxic equivalency factors (i-TEFs).

F. O. Reg. 419/05 Schedule 3 Standard phased in after July 1, 2016.

G. Toxic Equivalency Factors (TEFs) are shown as benzo(a)pyrene equivalents.

3.0 INSTRUMENTATION SUMMARY AND FIELD CONDITIONS

3.1 INSTRUMENTATION

The measurement program at the monitoring stations includes both continuous and non-continuous monitors to sample air contaminant concentrations.

Monitoring for respirable particulate matter ($PM_{2.5}$), nitrogen oxides (NO_X) and sulphur dioxide (SO_2) are conducted on a continuous basis. A summary of the continuous monitors and a brief description of their principle of operation are provided in **Table 3-1** below.

Table 3-1: Summary of Continuous Ambient Air Quality Monitors

Contaminant	Monitor	Principle of Operation	Range	Time Interval
$PM_{2.5}$	Thermo Sharp 5030 Synchronized Hybrid Ambient Real-time Particulate Monitor	Light Scattering Photometry / Beta Attenuation - Consists of a carbon14 source, detector and light scattering Nephelometer in a rack-mountable enclosure. The Thermo Sharp utilizes a continuous (non-step wise) hybrid mass measurement and a combination of beta attenuation and light scattering technology. The unit's filter tape is automatically advanced based upon a user defined frequency or particulate loading.	0 -10 mg/m^3	1 minute
NO, NO_2, NO_X	Teledyne API Model 200E Chemiluminescence Analyzer	Chemiluminescence - Uses a chemiluminescence detection principle and microprocessor technology for ambient continuous emissions monitoring (CEM). Measurements are automatically compensated for temperature and pressure changes.	0 – 1000 ppb	1 second
SO_2	Teledyne API Model T100	Pulsed Florescence - SO_2 levels are measured based on the principle that SO_2 has a strong ultraviolet (UV) absorption at a wavelength between 200 and 240 nanometres (nm). The absorption of photons at these wavelengths results in the emission of fluorescence photons at a higher wavelength. The amount of fluorescence measured is directly proportional to the concentration of SO_2.	0 – 1000 ppb	1 second

Two manually operated, High-Volume (Hi-Vol) air samplers are installed at both the Courtice WPCP (predominantly upwind) and Rundle Road (predominantly downwind) Stations to collect metals in total suspended particulate (TSP), polycyclic aromatic hydrocarbons (PAHs), and dioxins and furans. Sampling for these contaminants is conducted following the methodology and analyses described in the Ambient Monitoring Plan (Stantec, 2012), as presented in **Table 3-2**. Monitoring for metals in TSP is also conducted at the Fence Line Station. The samples were submitted to Maxxam Analytics Inc., a Canadian Association for Laboratory Accreditation Inc. (CALA) / Standards Council of Canada (SCC) accredited laboratory, for analysis.

Table 3-2: Summary of Non-Continuous Ambient Air Quality Monitors

Contaminant	Sampler	Filter Media	Lab Analysis	Sampling Schedule
TSP and metals	Tisch Environmental TE-5170 mass-flow High-Volume sampler	Pre-weighed, conditioned Teflon coated glass fibre filters	Weighed for particulate loading and analysed using the Atomic Emission Spectroscopy / Inductively Coupled Plasma (AES/ICP) technique to determine metals content	24-hour sample taken every 6 days
PAHs	Tisch Environmental TE-1000 mass-flow high volume air sampler	Dual chambered sampling module with a Teflon-coated glass fibre filter and a Poly-Urethane Foam (PUF) cartridge	Gas Chromatography / Mass Spectrometry (GC/MS)	24-hour sample taken every 12 days
Dioxins and Furans				24-hour sample taken every 24 days.

Horizontal wind speed, wind direction, atmospheric temperature, relative humidity, and rainfall are measured at the predominantly downwind Rundle Road Station. The meteorological sensors at the Rundle Road Station are mounted on an external 7.9 m aluminum tower. Atmospheric temperature, relative humidity, rainfall, and barometric pressure are measured at the predominantly upwind Courtice WPCP Station. Wind speed and wind direction data at the predominantly upwind location are measured on a 20 m tower and are provided by the Courtice WPCP.

The meteorological equipment is summarized in **Table 3-3**.

Table 3-3: Summary of Meteorological Equipment

Parameter	Equipment
Wind Speed/Wind Direction	Met One Instruments Inc. Model 034B
Temperature/Relative Humidity	Campbell Scientific Model HMP60
Atmospheric Pressure	Campbell Scientific Model CS106
Rainfall	Texas Electronic TE525M

A Campbell Scientific CRX1000 data acquisition system (DAS) is used to collect continuous instrument monitoring data and status codes from the continuous ambient air quality monitors. Continuous station data is maintained in the data loggers, and data is viewed locally using a laptop and the relevant DAS software applications. Remote data transmission is accomplished by the periodic transmission of collected station air quality data via cellular phone.

3.2 INSTRUMENTATION ISSUES

No issues were encountered with the continuous monitors during Q1 2018. However, issues were encountered with the non-continuous monitors at all three stations. An issue was encountered in which TSP/metals Hi-Vol sampler mass flow controllers were incorrectly set for some samples, resulting in volumetric flow rates that were outside their valid range. These samples were therefore considered invalid. The root cause of the issue was determined to be a new field technician who did not follow the sampling protocol despite extensive field training. As a remedial action, this technician was removed from the project. Other issues encountered were a power failure during a sample and a motor failure.

The operational issues encountered during Q1 2018 for the three monitoring stations are presented in **Table 3-4** to **Table 3-6**.

Table 3-4: Summary of Instrument Issues at the Courtice WPCP Station (Predominately Upwind)

Parameter	Issues	Time Frame	Remedial Action
SO_2	None		
NO_X	None		
$PM_{2.5}$	None		
TSP/Metals Hi-Vol	The Hi-Vol mass flow controller was improperly set, resulting in a flow rate outside of the range to be considered valid.	February 13	The cause was determined to be a new technician who did not follow sampling protocols. The technician was removed from the project. The sample was invalidated.
PAH/ D/F Hi-Vol	None		
Other	None		

Table 3-5: Summary of Instrument Issues at the Rundle Road Station (Predominately Downwind)

Parameter	Issues	Time Frame	Remedial Action
SO_2	None		
NO_X	None		
$PM_{2.5}$	None		

Table 3-5: Summary of Instrument Issues at the Rundle Road Station (Predominately Downwind)

Parameter	Issues	Time Frame	Remedial Action
TSP/Metals Hi-Vol	Power failure during sampling.	January 8	Power failed after 21 minutes of sampling. Sample invalidated. Follow-up testing confirmed that unit was fully functional and was returned to service.
	The Hi-Vol mass flow controller was improperly set, resulting in a flow rate outside of the range to be considered valid.	February 25 through March 27	The cause was determined to be a new technician who did not follow sampling protocols. The technician was removed from the project. The samples were invalidated.
PAH/ D/F Hi-Vol	Motor failure	January 14	Sample invalidated. PUFF motor was replaced with spare motor.
Other	None		

Table 3-6: Summary of Instrument Issues at the Fence Line Station

Parameter	Issues	Time Frame	Remedial Action
TSP/Metals Hi-Vol	The Hi-Vol mass flow controller was improperly set, resulting in a flow rate outside of the range to be considered valid.	February 1, 25 and March 3	The cause was determined to be a new technician who did not follow sampling protocols. The technician was removed from the project. The samples were invalidated.

3.3 INSTRUMENTATION RECOVERY RATES

Data recovery rates for each continuous monitor at the three monitoring stations during Quarter 1 (January to March 2018) are presented in **Table 3-7** to **Table 3-9**. All data recovery rates were acceptable for this quarter except for TSP/metals at the Rundle Road Station, which was below the objective of 75%.

Table 3-7: Summary of Data Recovery Rates for the Courtice WPCP Station (Predominately Upwind) – January to March 2018

Parameter	Valid Measurement Hours	Data Recovery Rate (%)[A]
SO_2	2150	99.5%
NO_X	2148	99.4%
$PM_{2.5}$	2136	98.9%
Temperature	2160	100.0%
Rainfall	2160	100.0%
Relative Humidity	2160	100.0%
Pressure	2160	100.0%

Table 3-7: Summary of Data Recovery Rates for the Courtice WPCP Station (Predominately Upwind) – January to March 2018

Parameter	Valid Measurement Hours	Data Recovery Rate (%)[A]
Wind Speed/Direction	2160	100.0%
TSP/Metals	14 [B]	93.3%
PAHs	8 [B]	100%
Dioxins and Furans	4 [B]	100%

A. Includes any instrumentation issues summarized in Table 3-4, quarterly MOECC audit and monthly calibrations.
B. Number of filters/24-hour average samples.

Table 3-8: Summary of Data Recovery Rates for the Rundle Road Station (Predominately Downwind) – January to March 2018

Parameter	Valid Measurement Hours	Data Recovery Rate (%)[A]
SO_2	2151	99.6%
NO_X	2151	99.6%
$PM_{2.5}$	2141	99.1%
Temperature	2159	100.0%
Rainfall	2159	100.0%
Relative Humidity	2159	100.0%
Wind Speed/Direction	2086	96.6%
TSP/Metals	8 [B]	53.3%
PAHs	7 [B]	87.5%
Dioxins and Furans	4 [B]	100%

A. Includes any instrumentation issues summarized in Table 3-5, quarterly MOECC audit, and monthly calibrations.
B. Number of filters/24-hour average samples.

Table 3-9: Summary of Data Recovery Rates for the Fence Line Station – January to March 2018

Parameter	Valid Measurements [B]	Data Recovery Rate (%)[A]
TSP/Metals	12	80%

A. Includes any instrumentation issues summarized in Table 3-6.
B. Number of filters/24-hour average samples.

3.4 CONTINUOUS MONITOR INTERNAL CALIBRATIONS

Summaries of the Courtice WPCP and Rundle Road Station SO_2 and NO_X monitor daily internal zero checks for Q1 2018 are presented in **Appendix A**. Daily internal zero checks are informal checks of an analyzer's response intended as a quick, convenient way to check for possible analyzer malfunction or calibration drift. They are not recommended as a basis for analyzer zero or span adjustments, calibration updates, or adjustment of ambient data (Environment Canada, 1995).

All internal zero calibrations of the SO_2 and NO_X analyzers at the Courtice WPCP and Rundle Road Stations were less than 5 ppb throughout Q1.

3.5 FIELD CONDITION OBSERVATIONS

During Q1 2018 activities in the vicinity of the ambient air monitoring stations were observed that had the potential to be affecting air quality levels during the period. These observations were noted by Stantec personnel during field visits.

Construction of Highway 418, which will connect with Highway 401 between Courtice Road and Crago Road was ongoing during this quarter. Highway 418 will provide a north-south link between Highway 401 and the Phase 2 expansion of Highway 407. The Highway 401/418 interchange will be located almost directly north of the DYEC. Throughout the quarter, excavator/dump truck crews were observed working in a large area immediately north of the DYEC between Megawatt Drive and Highway 401. Major work observed included earthworks and Highway 401 overpass construction for on/off ramps connecting to Highway 418. A photograph of soil berms/ramps and overpass construction activities is provided in **Figure 3-1**.

During Q1, there was one period for Boiler 1 and two periods for Boiler 2 where waste feed to each boiler was halted. The times when these feed stops occurred are summarized in **Table 3-10**.

Table 3-10: Summary of Boiler Operational Status in Q1 2018

Boiler	Date	Time	Status
Boiler 1	January 15	15:31 – 22:46	Feed Stop
	March 11 – March 29	00:01 – 00:01	Scheduled Outage
Boiler 2	February 11 – March 1	12:00 – 00:00	Scheduled Outage
	March 2	16:28 – 17:02	Feed Stop
	March 2	20:03 – 22:35	Feed Stop

Figure 3-1: Looking North from Megawatt Drive of the Highway 401 and Highway 418 Construction (January 29, 2018)

4.0 SUMMARY OF AMBIENT MEASUREMENTS

The following sections provide summaries of the validated data and the validation completed on each parameter.

4.1 METEOROLOGICAL DATA

A summary of the maximum, minimum, arithmetic mean, and standard deviation of the hourly average meteorological parameters measured at the two monitoring stations for the January to March 2018 period is presented in **Table 4-1**.

Table 4-1: Summary of Hourly Meteorological Measurements – January to March 2018

Parameter	Description	Courtice WPCP Station (Predominately Upwind)	Rundle Road Station (Predominately Downwind)	Units
Temperature	Maximum	9.8	9.6	^{0}C
	Minimum	-25.8	-26.3	^{0}C
	Mean (January)	-5.5	-6.1	^{0}C
	Mean (February)	-1.8	-2.3	^{0}C
	Mean (March)	-0.1	-0.4	^{0}C
	Mean (Period)	-2.5	-3.0	^{0}C
	Standard Deviation	6.3	6.4	^{0}C
Rainfall	Maximum	5.2	5.7	mm
	Minimum	0.0	0.0	mm
	Mean (January)	0.04	0.05	mm
	Mean (February)	0.06	0.09	mm
	Mean (March)	0.03	0.03	mm
	Mean (Period)	0.05	0.06	mm
	Standard Deviation	0.25	0.30	mm
Relative Humidity	Maximum	95.4	100.0	%
	Minimum	19.4	21.4	%
	Mean (January)	71.4	76.1	%
	Mean (February)	73.1	78.0	%
	Mean (March)	59.9	64.6	%
	Mean (Period)	67.9	72.7	%
	Standard Deviation	15.2	16.2	%

Table 4-1: Summary of Hourly Meteorological Measurements – January to March 2018

Parameter	Description	Courtice WPCP Station (Predominately Upwind)	Rundle Road Station (Predominately Downwind)	Units
Pressure [A]	Maximum	30.5	-	in Hg
	Minimum	29.2	-	in Hg
	Mean (January)	29.8	-	in Hg
	Mean (February)	29.8	-	in Hg
	Mean (March)	29.7	-	in Hg
	Mean (Period)	29.8	-	in Hg
	Standard Deviation	0.3	-	in Hg
Wind Speed [B]	Maximum	44.7	39.1	km/hr
	Minimum	0.3	0.0	km/hr
	Mean (January)	15.5	14.1	km/hr
	Mean (February)	13.6	11.9	km/hr
	Mean (March)	14.8	12.2	km/hr
	Mean (Period)	14.7	12.8	km/hr
	Standard Deviation	7.6	7.1	km/hr

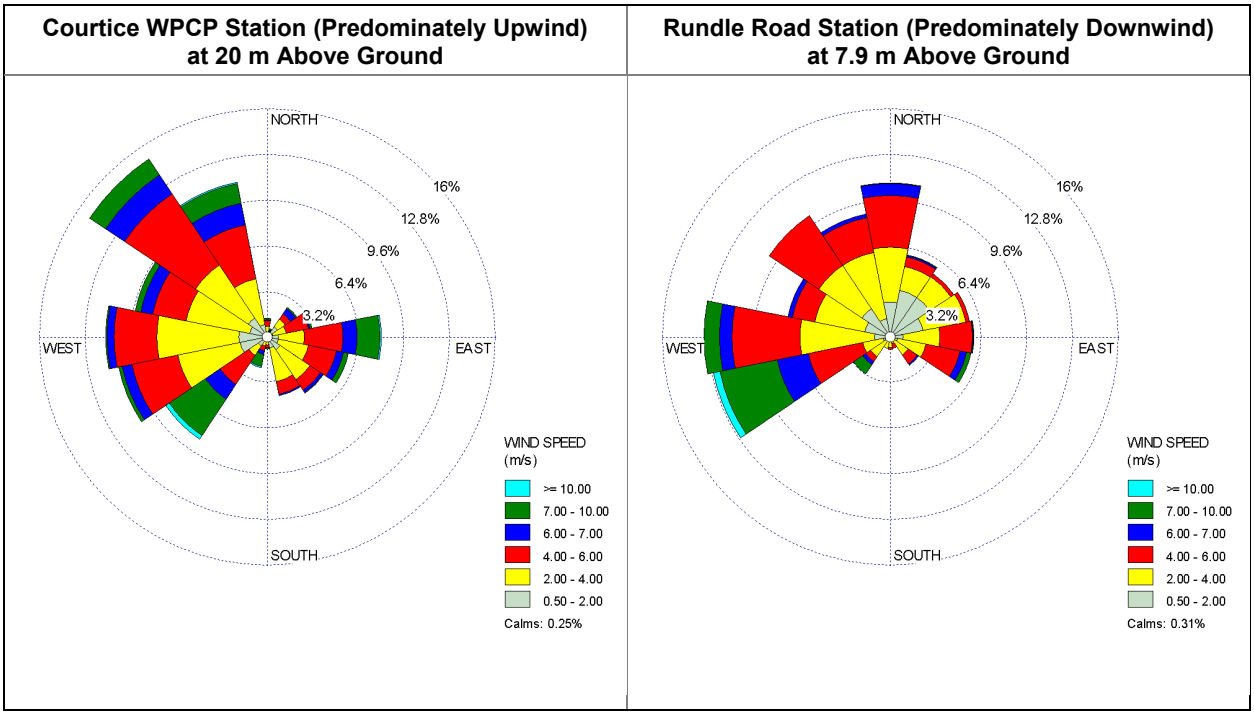
A. Pressure is not measured at the Rundle Road Station.
B. Wind speed at Courtice WPCP Station measured at 20 m and at Rundle Road Station at 7.9 m.

Wind roses showing the directionality and speed at each location are presented in **Figure 4-1**. The length of the radial barbs gives the total percent frequency of winds from the indicated direction, while portions of the barbs of different widths indicate the frequency associated with each wind speed category.

Winds over the three-month period at the Courtice WPCP Station occurred predominantly from southwesterly to northwesterly directions. The highest wind speeds occurred from the southwest.

At the Rundle Road Station, the wind rose over the three-month period shows winds predominantly occurring from west-southwesterly to northerly directions. Higher wind speeds occurred from the west-southwest relative to other directions.

Figure 4-1: Wind Roses for January to March 2018



4.2 CAC AMBIENT AIR QUALITY MEASUREMENTS

A summary of the maximum, minimum, arithmetic mean, and standard deviation of the CAC pollutant concentrations measured at each station are presented in **Table 4-2**. Also presented in this table are the number of exceedances (if any occurred) of the relevant O. Reg. 419/05 Schedule 3 Standards, Ontario Ambient Air Quality Criteria (AAQC) or health-based criteria for each contaminant. All monitored contaminants were below their applicable criteria during the period from January to March 2018.

Nitric oxide (NO) has no regulatory criteria as discussed in Section 4.2.2 below. There are both hourly and daily AAQCs for NO_2 which are based on health effects of NO_2; therefore, the AAQCs were compared to measured NO_2 concentrations in this report. As there is no AAQC for NO_X, no criteria comparisons were made as per MOECC request (MOECC 2017).

A comparison of the maximum measured data to their respective air quality criteria is presented graphically in **Figure 4-2**.

Table 4-2: Summary of Ambient CAC Monitoring Data – January to March 2018

Pollutant	Averaging Period	MOECC Criteria / HHRA Health-Based Criteria		Description	Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		(ppb)	(µg/m^3)		Concentration (ppbv)	Concentration (µg/m^3)	Concentration (ppbv)	Concentration (µg/m^3) [C]
SO_2	1	250	690	Maximum	57.7	169	5.5	16.4
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	1.1	3.3	0.6	1.9
				Mean (February)	0.9	2.7	0.5	1.4
				Mean (March)	1.0	2.9	0.2	0.6
				Mean (Period)	1.0	3.0	0.4	1.3
				Standard Deviation	2.1	6.1	0.4	1.3
				# of Exceedances	0	0	0	0
	24	100	275	Maximum	6.6	18.5	1.6	4.4
				Minimum	0.0	0.1	0.0	0.0
				Mean (January)	1.2	3.3	0.6	1.9
				Mean (February)	1.0	2.8	0.5	1.4
				Mean (March)	1.0	2.8	0.2	0.6
				Mean (Period)	1.0	3.0	0.4	1.3
				Standard Deviation	0.9	2.6	0.3	0.9
				# of Exceedances	0	0	0	0

Table 4-2: Summary of Ambient CAC Monitoring Data – January to March 2018

Pollutant	Averaging Period	MOECC Criteria / HHRA Health-Based Criteria		Description	Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		(ppb)	(µg/m^3)		Concentration (ppbv)	Concentration (µg/m^3)	Concentration (ppbv)	Concentration (µg/m^3) [C]
$PM_{2.5}$	24	N/A	28 [A]	Maximum	-	30.8	-	31.4
				Minimum	-	0.2	-	0.5
				Mean (January)	-	8.4	-	9.0
				Mean (February)	-	7.4	-	7.7
				Mean (March)	-	3.4	-	3.8
				Mean (Period)	-	6.4	-	6.8
				Standard Deviation	-	5.2	-	5.7
				# of Exceedances	-	N/A	-	N/A
NO_2	1	200	400	Maximum	61.4	128.9	33.7	71.5
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	8.8	18.3	8.7	18.2
				Mean (February)	8.2	17.1	7.1	14.8
				Mean (March)	3.4	7.0	2.4	5.0
				Mean (Period)	6.7	14.0	6.1	12.6
				Standard Deviation	7.7	16.1	6.2	12.8
				# of Exceedances	0	0	0	0
	24	100	200	Maximum	23.4	46.9	21.3	42.6
				Minimum	0.1	0.2	0.0	0.0
				Mean (January)	8.8	18.3	8.7	18.2
				Mean (February)	8.2	17.1	7.2	14.9
				Mean (March)	3.4	6.9	2.5	5.1

Table 4-2: Summary of Ambient CAC Monitoring Data – January to March 2018

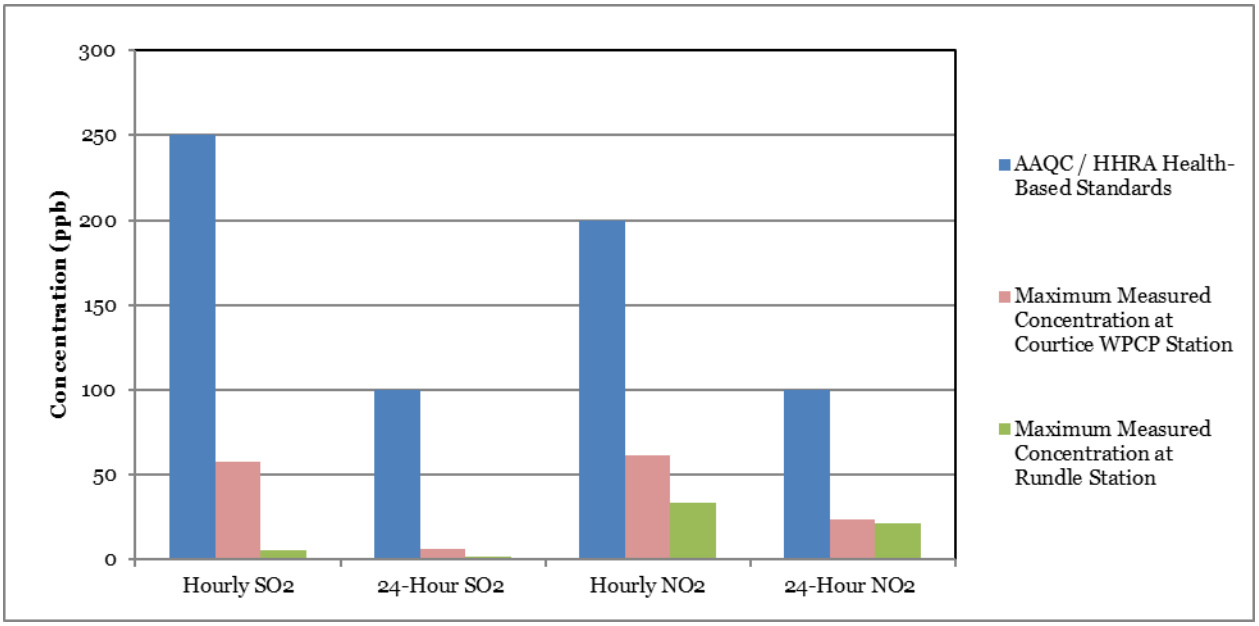
Pollutant	Averaging Period	MOECC Criteria / HHRA Health-Based Criteria		Description	Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		(ppb)	(µg/m^3)		Concentration (ppbv)	Concentration (µg/m^3)	Concentration (ppbv)	Concentration (µg/m^3) [C]
				Mean (Period)	6.7	14.0	6.1	12.7
				Standard Deviation	5.0	10.4	4.6	9.7
				# of Exceedances	0	0	0	0
NO [B]	1	N/A	N/A	Maximum	58.8	79.6	42.4	55.3
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	2.1	2.8	1.9	2.5
				Mean (February)	3.1	4.2	2.3	3.1
				Mean (March)	1.2	1.6	0.8	1.1
				Mean (Period)	2.1	2.8	1.6	2.2
				Standard Deviation	5.2	6.9	3.1	4.1
				# of Exceedances	N/A	N/A	N/A	N/A
	24	N/A	N/A	Maximum	17.0	22.9	12.2	15.9
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	2.1	2.8	1.9	2.5
				Mean (February)	3.1	4.2	2.3	3.1
				Mean (March)	1.2	1.6	0.8	1.1
				Mean (Period)	2.1	2.8	1.6	2.2
				Standard Deviation	2.8	3.8	1.7	2.3
				# of Exceedances	N/A	N/A	N/A	N/A

Table 4-2: Summary of Ambient CAC Monitoring Data – January to March 2018

Pollutant	Averaging Period	MOECC Criteria / HHRA Health-Based Criteria		Description	Courtice WPCP Station (Predominately Upwind)		Rundle Road Station (Predominately Downwind)	
		(ppb)	(µg/m^3)		Concentration (ppbv)	Concentration (µg/m^3)	Concentration (ppbv)	Concentration (µg/m^3) [C]
NO_X	1	N/A	N/A	Maximum	77.0	167.9	61.2	122
				Minimum	0.0	0.0	0.0	0.0
				Mean (January)	10.4	21.7	10.5	22.0
				Mean (February)	11.1	23.1	9.4	19.3
				Mean (March)	4.5	9.2	3.0	6.2
				Mean (Period)	8.6	17.8	7.6	15.7
				Standard Deviation	11.7	24.4	8.2	17.0
				# of Exceedances	N/A	N/A	N/A	N/A
	24	N/A	N/A	Maximum	39.1	78.2	33.3	66.6
				Minimum	0.1	0.3	0.0	0.0
				Mean (January)	10.4	21.7	10.5	22.0
				Mean (February)	11.1	23.2	9.4	19.5
				Mean (March)	4.4	9.0	3.1	6.4
				Mean (Period)	8.6	17.8	7.6	15.8
				Standard Deviation	7.3	15.1	5.9	12.2
				# of Exceedances	N/A	N/A	N/A	N/A

A. Canadian Ambient Air Quality Standard for Respirable Particulate Matter. The Respirable Particulate Matter Objective is referenced to the 98th percentile over 3 consecutive years.
B. NO has no regulatory criteria.
C. The conversions from ppb to µg/m^3 are based on actual temperature and pressure. Therefore, the maximum concentration in ppb may not correspond to the same hour as the maximum concentration in µg/m^3.

Figure 4-2: Comparison of NO_2 and SO_2 Ambient Air Quality Monitoring Data to Applicable Criteria



Detailed discussion for each measured contaminant is presented in the following sections.

4.2.1 Sulphur Dioxide (SO_2)

Data summaries are presented in **Appendix B** for sulphur dioxide for each station and month as well as time history plots of the hourly and 24-hour average SO_2 concentrations. For the hourly and 24-hour averages, the Ontario AAQCs of 250 ppb and 100 ppb (690 µg/m^3 and 275 µg/m^3) are shown with blue lines in the respective plot. As shown in these figures, measured ambient SO_2 concentrations at both stations were well below the Ontario AAQCs.

The maximum hourly and 24-hour average SO_2 concentrations measured at the Courtice WPCP Station during January to March 2018 were 57.7 and 6.6 ppb (167 and 18.5 µg/m^3) respectively, which are 23.1% and 6.6% of the applicable 1-hour and 24-hour Ontario AAQCs. The maximum hourly and 24-hour average SO_2 concentrations measured at the Rundle Road Station during this quarter were 5.5 and 1.6 ppb (16.4 and 4.4 µg/m^3) respectively, which are 2.2% and 1.6% of the applicable 1-hour and 24-hour Ontario AAQCs.

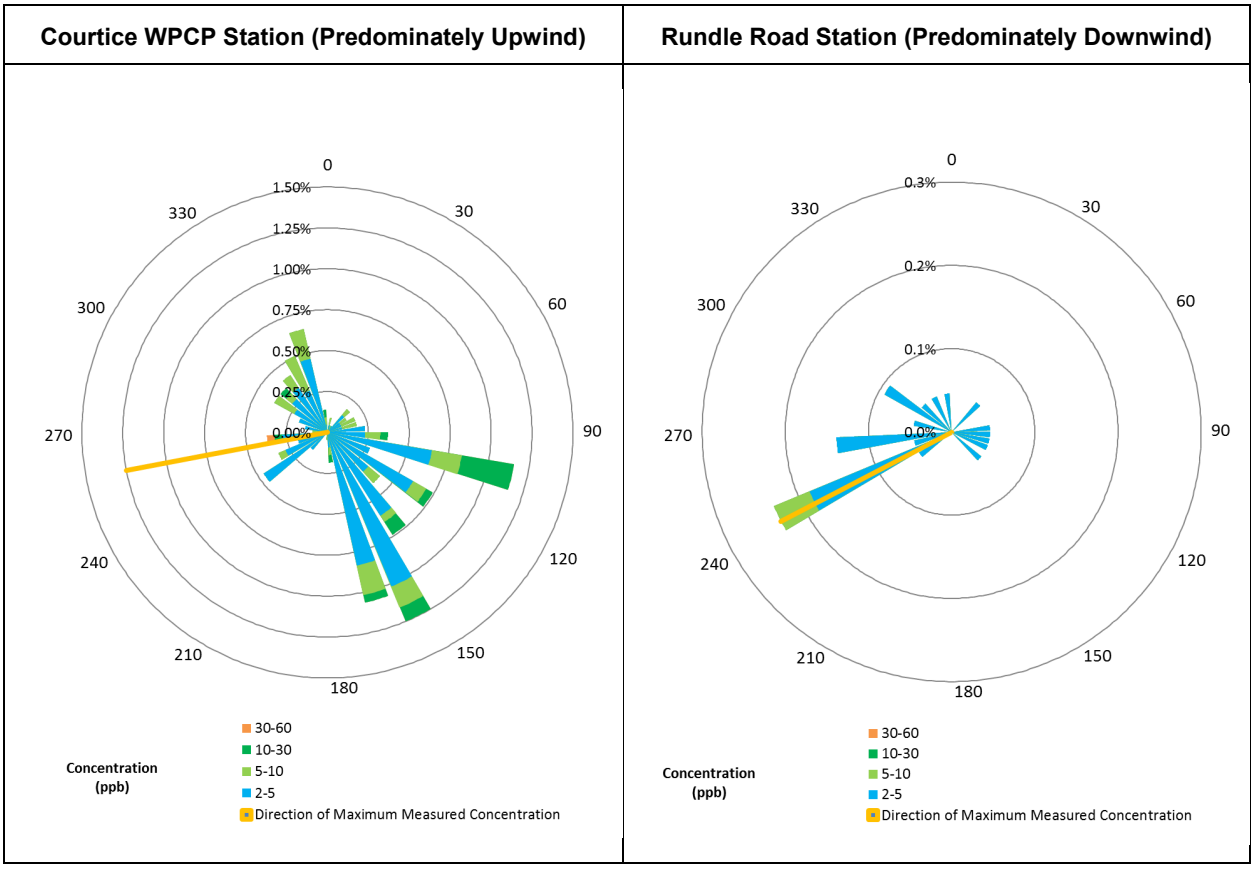
Pollution roses of hourly average SO_2 concentrations measured at the Courtice WPCP Station and Rundle Road Station are presented in **Figure 4-3**. The pollution rose plots present measured hourly average contaminant concentrations versus measured wind direction (over 10° wind sectors). Concentrations less than 2 ppb, which account for 88% of the measurements at the Courtice WPCP and 98% at the Rundle Road Station, have been removed from the plot to allow the distribution of maximum levels to be more clearly shown in the figure. For the Courtice WPCP Station, higher hourly

concentrations were measured when winds were blowing from east-southeasterly to south-southeasterly directions. For the Rundle Road Station, higher hourly concentrations occurred for southwesterly winds.

The maximum hourly average SO_2 concentration measured at the Courtice WPCP occurred on February 6, 2018 at 12:00. During this time, winds were blowing from the west-southwest for which local roads and agricultural fields are upwind. The maximum hourly average SO_2 concentration measured at the Rundle Road Station occurred on February 5, 2018 at 4:00. During this time, winds were blowing from the southwest for which a CP railroad, Highway 401, the Courtice WPCP and the DYEC were upwind.

The maximum 24-hour average SO_2 concentration at the Courtice WPCP station occurred on January 22, 2018. The wind direction during the 24-hour measurement was blowing from the west for which local roads and agricultural fields are upwind. The maximum 24-hour average SO_2 concentration at the Rundle Road Station occurred on January 20, 2018. The wind direction during the 24-hour measurement at the Rundle Road Station was from the southwest for which a CP railroad, Highway 401, DYEC, and the Courtice WPCP were generally upwind of the station.

Figure 4-3: Pollution Roses of Measured Hourly Average SO_2 Concentrations – January to March 2018



4.2.2 Nitrogen Dioxide (NO_2)

Nitrogen oxides (NO_X) are almost entirely made up of nitric oxide (NO) and nitrogen dioxide (NO_2). Together, they are often referred to as NO_X. Most NO_2 in the atmosphere is formed by the oxidation of NO, which is emitted directly by combustion processes, particularly those at high temperature and pressure. Exposure to both NO and NO_2 can result in adverse health effects to an exposed population. NO_2 is the regulated form of NO_X. Similar to other jurisdictions (e.g., Alberta Environment, World Health Organization), the O. Reg. 419/05 Schedule 3 Standards for NO_X are based on health effects of NO_2, as health effects are seen at much lower concentrations of NO_2 than NO. In this report, because NO_2 is the regulated form of NO_X, the AAQC were compared to measured NO_2 concentrations.

Data summaries are presented in **Appendix C** for nitrogen dioxide for each station and month as well as time history plots of the hourly and 24-hour average NO_2 concentrations. For the hourly and 24-hour averages, the Ontario AAQCs of 200 ppb and 100 ppb (400 µg/m^3 and 200 µg/m^3) are shown with blue lines on the respective plots. As shown in these figures, measured ambient NO_2 concentrations at both stations were well below the Ontario AAQCs.

The maximum hourly and 24-hour average NO_2 concentrations measured at the Courtice WPCP Station during this quarter were 61.4 and 23.4 ppb (129 and 46.9 µg/m^3) respectively, which are 30.7% and 23.4% of the applicable 1-hour and 24-hour Ontario AAQCs. At the Rundle Road Station, the maximum measured hourly and 24-hour average concentrations were 33.7 and 21.3 ppb (71.5 and 42.6 µg/m^3), which are 16.8% and 21.3% of the applicable 1-hour and 24-hour Ontario AAQCs.

Pollution roses of measured hourly average NO_2 concentrations are presented in **Figure 4-4**. To more clearly show the distribution of maximum levels in the figures, concentrations less than 10 ppb, which account for 79% of the measurements at the Courtice WPCP Station and 78% at the Rundle Road Station, have been removed from the plots. The measured hourly average concentrations at the Courtice WPCP Station were higher for winds from west-northwesterly and southeasterly directions. For the Rundle Road Station, higher measured hourly average concentrations occurred for winds blowing from the west-southwest and from the east.

The maximum measured hourly average NO_2 concentration at the Courtice WPCP occurred on February 6, 2018 at 12:00. During this hour, the wind at the Courtice WPCP Station was blowing from the west-southwest, for which local roads and agricultural fields were upwind. The measured hourly average NO_2 concentration at the MOECC Oshawa Station in the same hour was 9 ppb which is lower than that at the Courtice WPCP Station, suggesting the elevated hourly average concentration was due to local emissions sources.

The maximum measured hourly average NO_2 concentration at the Rundle Road Station occurred on February 6, 2018 at 7:00, at which time winds were blowing from the east. Local roads and a CP railroad were upwind of the Rundle Road Station for this direction. At the same time, the measured NO_2 concentration at the MOECC Oshawa Station was 15 ppb, which is lower than that at the Rundle Road Station, suggesting the elevated hourly average concentration was due to local emissions sources.

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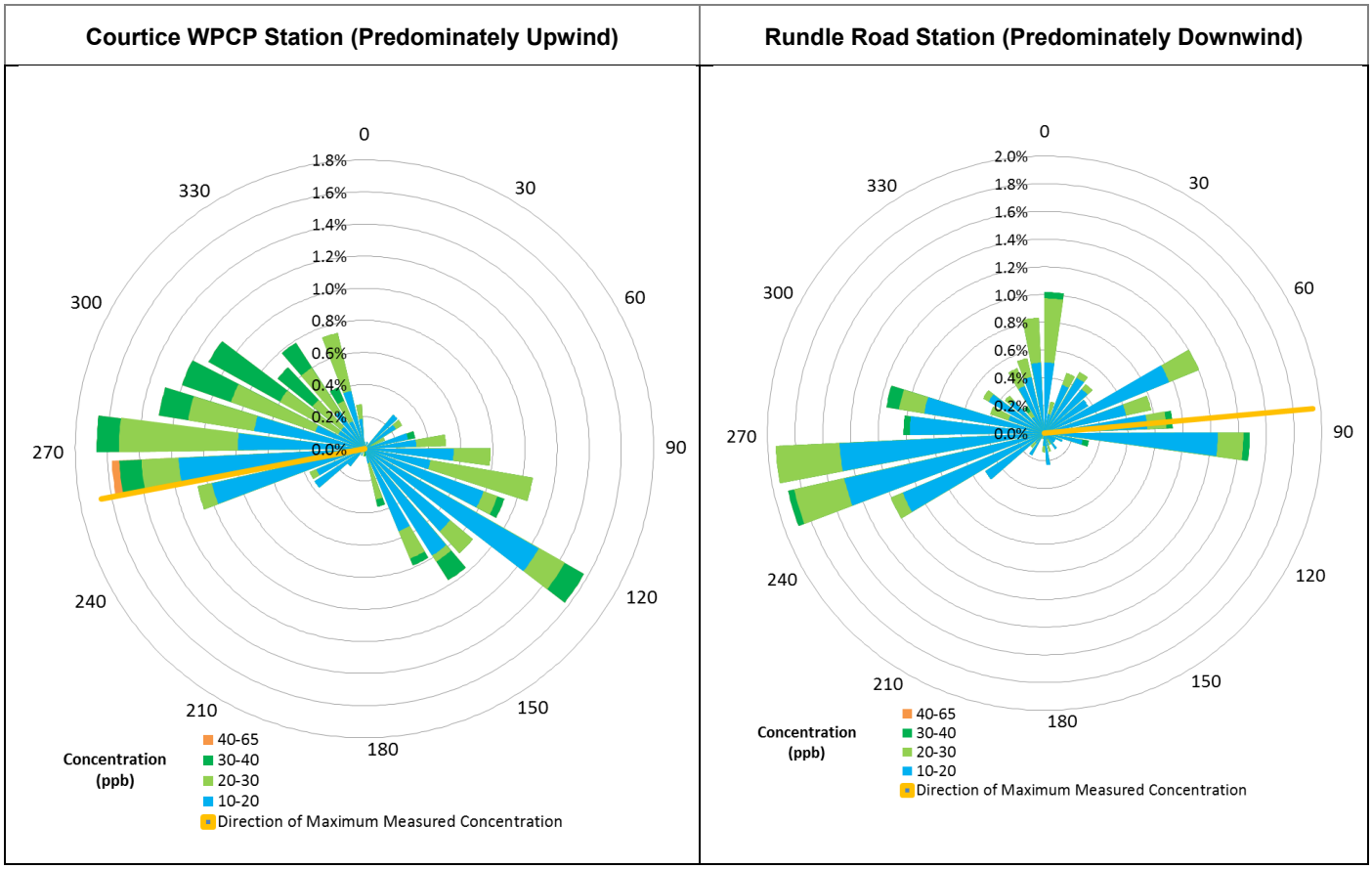
The maximum measured 24-hour average NO_2 concentration at the Courtice WPCP Station occurred on January 10, 2018. The wind direction during this measurement was from the north-northwest for which a CN railroad and Highway 401 were upwind. The measured 24-hour NO_2 concentration at the MOECC Oshawa Station for the same day was 13 ppb which is lower than the Courtice WPCP station, suggesting the elevated 24-hour concentrations were due to local emission sources.

The maximum measured 24-hour average NO_2 concentration at the Rundle Road Station occurred on January 12, 2018. Winds were from the southwest for which a CP railroad, Highway 401, DYEC, and Highway 418 construction activities are upwind. The measured 24-hour NO_2 concentration at the MOECC Oshawa Station for the same day was 20 ppb which is similar to the Rundle Road Station, suggesting the elevated 24-hour concentrations were due to regional emission sources.

The maximum measured hourly and 24-hour average NO_2 concentrations of 44 ppb and 23 ppb respectively at the MOECC Oshawa Station during this quarter were comparable to the maximum levels measured at the Courtice WPCP and Rundle Road Stations.

Figure 4-4: Pollution Roses of Measured Hourly Average NO_2 Concentrations – January to March 2018



4.2.3 Nitrogen Oxides (NO_X)

Data summaries are presented in **Appendix D** for nitrogen oxides for each station and month as well as time history plots of the hourly and 24-hour average NO_X concentrations.

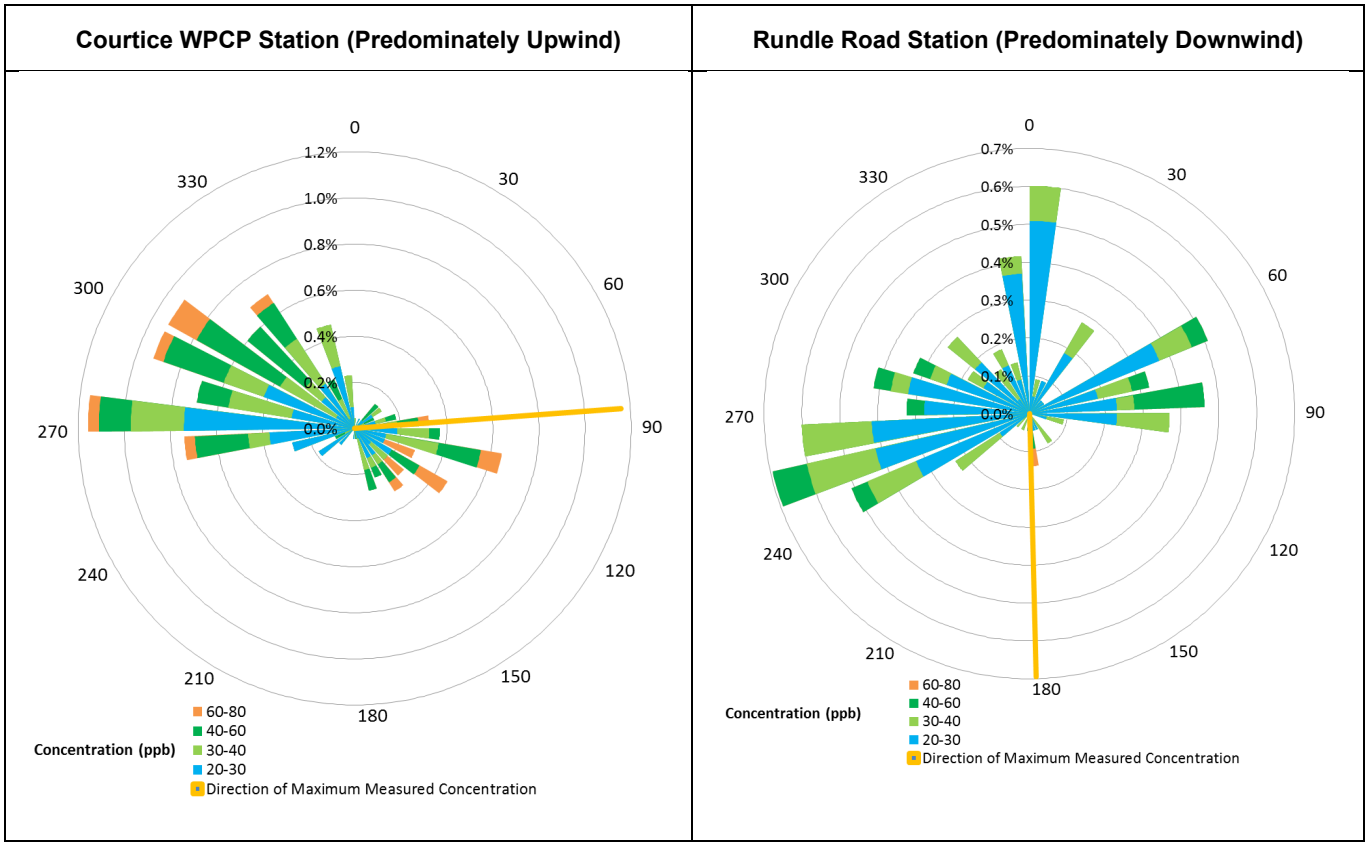
As shown in **Table 4-2**, the maximum hourly average NO_X concentration measured at the Courtice WPCP Station was 77.0 ppb (160 µg/m^3) and the maximum 24-hour average NO_X concentration measured was 39.1 ppb (78.2 µg/m^3). At the Rundle Road Station, the maximum hourly and 24-hour average concentrations measured during this quarter were 61.2 and 33.3 ppb (122 and 66.6 µg/m^3).

Pollution roses of measured hourly average NO_X concentrations for the Courtice WPCP Station and the Rundle Road Station are presented in **Figure 4-5**. Concentrations less than 20 ppb, which account for 88% and 91% of the measurements at the Courtice WPCP and Rundle Road Stations, respectively, have been removed from the plots to allow the distribution of maximum levels to be more clearly shown in the figures. Higher measured hourly average NO_X concentrations at the Courtice WPCP Station occurred for winds blowing from westerly, northwesterly, and southeasterly directions. At the Rundle Road Station, higher measured hourly average concentrations generally occurred for west-southwesterly and east-northeasterly wind directions.

The maximum measured hourly average NO_X concentration at the Courtice WPCP occurred on February 27, 2018 at 7:00. Winds were blowing from the east during this time, for which a CP railroad, agricultural fields and St. Mary's Cement were upwind. The maximum measured hourly average NO_X concentration at the Rundle Road Station occurred on February 20, 2018 at 14:00. Winds at the Rundle Road Station were from the south for which a CN railroad and Highway 401 were upwind.

The maximum measured 24-hour average NO_X concentrations at the Courtice WPCP and Rundle Road Stations were observed on January 10 and January 12, 2018, respectively. Winds at the Courtice WPCP were from the north-northwest, to which a CN railroad and Highway 401 were upwind. Winds at the Rundle Road Station were from the southwest on January 12, to which a CN Railroad, Highway 401, Highway 418 construction, and the DYEC were upwind.

Figure 4-5: Pollution Roses of Measured Hourly Average NO_X Concentrations – January to March 2018



4.2.4 Particulate Matter Smaller than 2.5 Microns ($PM_{2.5}$)

Data summaries and time history plots of measured 24-hour average concentrations are presented in **Appendix E** for $PM_{2.5}$ for the Courtice WPCP and Rundle Road Stations. The maximum measured 24-hour average $PM_{2.5}$ concentrations at the Courtice WPCP and the Rundle Road Stations were 30.8 µg/m^3 and 31.4 µg/m^3 during this quarter. It should be noted that since an exceedance of the criteria for $PM_{2.5}$ requires the average of the 98th percentile levels in each of three consecutive calendar years to be greater than 28 µg/m^3 (CAAQS) or 30 µg/m^3 (HHRA criteria) whereas the $PM_{2.5}$ measurement period at both stations in the report was three months, there is insufficient data in a quarter to determine with any certainty if exceedances of the CAAQS/HHRA criteria would occur. Discussion of $PM_{2.5}$ measurements with respect to the CAAQS/HHRA criteria will be provided in the 2018 annual report, at which time sufficient data will have been collected to make comparisons.

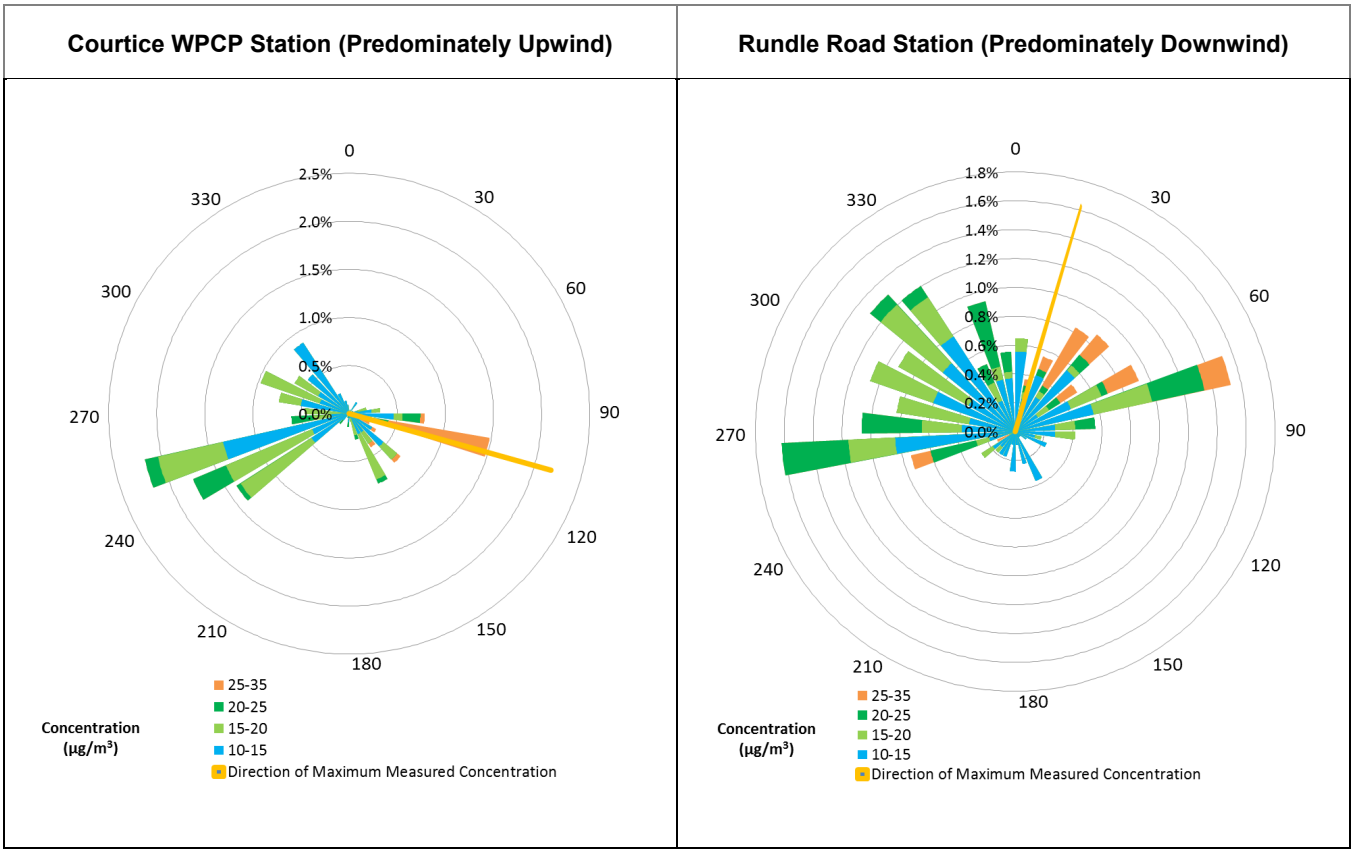
Pollution roses showing the measured 24-hour average ambient $PM_{2.5}$ concentrations versus direction are shown in **Figure 4-6** for both monitoring stations. Concentrations less than 10 µg/m^3, which account for 82% of the measurements at the Courtice WPCP Station and 78% at the Rundle Road Station, have been removed from the plot to allow the distribution of maximum levels to be more clearly shown in the

figure. Higher measured 24-hour average concentrations occurred for east-southeasterly winds at the Courtice WPCP Station, and westerly and northeasterly winds at the Rundle Road Station.

The maximum measured 24-hour average $PM_{2.5}$ concentrations at the Courtice WPCP occurred on January 21. Winds were blowing from the east-southeast, for which the Courtice WPCP and local roads are upwind. The 24-hour average $PM_{2.5}$ concentration at MOECC's Oshawa Station for January 21 was 14.3 µg/m^3 which was lower than the measurement at the Courtice WPCP Station and suggests the elevated concentration was due to local emission sources.

At the Rundle Road Station, the maximum measured 24-hour average $PM_{2.5}$ concentrations occurred on January 22. Winds were blowing from the north-northeast, for which local roads and agricultural activities were upwind. The 24-hour average $PM_{2.5}$ concentration at MOECC's Oshawa Station for January 22 was 30.3 µg/m^3 which was similar to the measurement at the Rundle Road Station, and suggests the elevated concentrations were due to regional emission sources. This day was the maximum measured 24-hour average $PM_{2.5}$ concentration at MOECC's Oshawa Station for Q1.

Figure 4-6: Pollution Roses of Measured 24-Hour Average $PM_{2.5}$ Concentrations – January to March 2018



4.3 AMBIENT TSP / METALS CONCENTRATIONS

A summary of the maximum and minimum ambient TSP and metals concentrations (for a daily averaging period) are presented in **Table 4-3**. A detailed summary of the concentrations measured for each sample is presented in **Appendix G**.

The maximum measured concentrations of TSP and all metals with MOECC air quality criteria were well below their applicable 24-hour criteria (shown in **Table 4-3** below) at all three stations.

Table 4-3: Summary of Measured Ambient TSP/Metals Concentrations

Contaminant	Units	MOECC Criteria	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)			Fence Line		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
Particulate	µg/m^3	120	120	28.4	8.48	0	74.8	18.9	0	70.0	14.4	0
Total Mercury (Hg)	µg/m^3	2	2	7.98E-06 [A]	6.58E-06 [A]	0	2.05E-05	6.29E-06 [A]	0	4.32E-05	6.26E-06 [A]	0
Aluminum (Al)	µg/m^3	4.8	-	1.03E-01	1.99E-02 [A]	0	3.55E-01	1.94E-02 [A]	0	2.68E-01	1.62E-02 [A]	0
Antimony (Sb)	µg/m^3	25	25	7.14E-03	3.29E-03 [A]	0	4.39E-03 [A]	3.14E-03 [A]	0	4.14E-03 [A]	3.13E-03 [A]	0
Arsenic (As)	µg/m^3	0.3	0.3	4.29E-03	1.97E-03 [A]	0	2.63E-03 [A]	1.89E-03 [A]	0	2.48E-03 [A]	1.88E-03 [A]	0
Barium (Ba)	µg/m^3	10	10	6.41E-03	3.04E-03	0	1.08E-02	3.42E-03	0	1.06E-02	3.17E-03	0
Beryllium (Be)	µg/m^3	0.01	0.01	7.14E-04	3.29E-04 [A]	0	4.39E-04 [A]	3.14E-04 [A]	0	4.14E-04 [A]	3.13E-04 [A]	0
Bismuth (Bi)	µg/m^3	-	-	4.29E-03	1.97E-03 [A]	-	2.63E-03 [A]	1.89E-03 [A]	-	2.48E-03 [A]	1.88E-03 [A]	-
Boron (B)	µg/m^3	120	-	4.29E-03	1.97E-03 [A]	0	4.97E-03	1.89E-03 [A]	0	2.48E-03 [A]	1.88E-03 [A]	0
Cadmium (Cd)	µg/m^3	0.025	0.025	1.43E-03	6.58E-04 [A]	0	8.77E-04 [A]	6.29E-04 [A]	0	8.27E-04 [A]	6.26E-04 [A]	0
Chromium (Cr)	µg/m^3	0.5	-	5.16E-03	1.64E-03 [A]	0	2.19E-03 [A]	1.57E-03 [A]	0	7.21E-03	1.59E-03 [A]	0
Cobalt (Co)	µg/m^3	0.1	0.1	1.43E-03	6.58E-04 [A]	0	8.77E-04 [A]	6.29E-04 [A]	0	8.27E-04 [A]	6.26E-04 [A]	0
Copper (Cu)	µg/m^3	50	-	1.81E-02	1.64E-03 [A]	0	3.73E-02	5.47E-03	0	1.43E-02	4.92E-03	0
Iron (Fe)	µg/m^3	4	-	3.03E-01	9.29E-02	0	7.22E-01	1.12E-01	0	7.76E-01	9.07E-02	0
Lead (Pb)	µg/m^3	0.5	0.5	5.52E-03	9.86E-04 [A]	0	5.41E-03	1.02E-03 [A]	0	7.53E-03	9.53E-04 [A]	0
Magnesium (Mg)	µg/m^3	-	-	1.48E-01	1.77E-02 [A]	-	5.54E-01	4.43E-02	-	5.90E-01	1.62E-02 [A]	-
Manganese (Mn)	µg/m^3	0.4	-	8.21E-03	3.52E-03	0	2.52E-02	3.26E-03	0	3.91E-02	3.30E-03	0
Molybdenum (Mo)	µg/m^3	120	-	2.14E-03	9.86E-04 [A]	0	1.32E-03 [A]	9.43E-04 [A]	0	1.24E-03 [A]	9.40E-04 [A]	0
Nickel (Ni)	µg/m^3	0.2	-	2.14E-03	9.86E-04 [A]	0	2.87E-03	9.43E-04 [A]	0	1.24E-03 [A]	9.40E-04 [A]	0
Phosphorus (P)	µg/m^3	-	-	1.79E-02	8.22E-03 [A]	-	4.49E-02	8.54E-03 [A]	-	2.88E-02	7.95E-03 [A]	-
Selenium (Se)	µg/m^3	10	10	7.14E-03	3.29E-03 [A]	0	4.39E-03 [A]	3.14E-03 [A]	0	4.14E-03 [A]	3.13E-03 [A]	0
Silver (Ag)	µg/m^3	1	1	3.57E-03	1.64E-03 [A]	0	2.19E-03 [A]	1.57E-03 [A]	0	2.07E-03 [A]	1.57E-03 [A]	0
Strontium (Sr)	µg/m^3	120	-	4.07E-03	1.20E-03	0	1.14E-02	1.55E-03	0	2.93E-02	1.42E-03	0
Thallium (Tl)	µg/m^3	-	-	7.14E-03	3.29E-03 [A]	-	4.39E-03 [A]	3.14E-03 [A]	-	4.14E-03 [A]	3.13E-03 [A]	-
Tin (Sn)	µg/m^3	10	10	7.14E-03	3.29E-03 [A]	0	4.39E-03 [A]	3.14E-03 [A]	0	4.14E-03 [A]	3.13E-03 [A]	0
Titanium (Ti)	µg/m^3	120	-	7.14E-03	3.29E-03 [A]	0	2.84E-02	3.42E-03 [A]	0	1.32E-02	3.18E-03 [A]	0
Vanadium (V)	µg/m^3	2	1	3.57E-03	1.64E-03 [A]	0	2.19E-03 [A]	1.57E-03 [A]	0	2.07E-03 [A]	1.57E-03 [A]	0
Zinc (Zn)	µg/m^3	120	-	9.57E-02	1.98E-02	0	5.45E-02	1.42E-02	0	1.55E-01	1.50E-02	0
Zirconium (Zr)	µg/m^3	20	-	3.57E-03	1.64E-03 [A]	0	2.19E-03 [A]	1.57E-03 [A]	0	2.07E-03 [A]	1.57E-03 [A]	0
Total Uranium (U)	µg/m^3	1.5	-	1.64E-03 [A]	1.48E-04 [A]	0	1.97E-04 [A]	1.41E-04 [A]	0	1.86E-04 [A]	1.41E-04 [A]	0

A. Measured concentration was less than the laboratory method detection limit.

4.4 AMBIENT PAH CONCENTRATIONS

A summary of the maximum and minimum ambient PAH concentrations (for a daily averaging period) are presented in **Table 4-4**. In this summary, both individual PAHs as well as a total PAH concentration are reported. A detailed summary of the concentrations measured for each sample is presented in **Appendix H**.

The maximum measured concentrations of the PAHs with MOECC AAQCs were below their applicable 24-hour criteria, with the exception of two (2) benzo(a)pyrene (B(a)P) measurements collected at the Courtice WPCP station on January 2 and February 7, and three (3) B(a)P measurements collected at the Rundle Road Station on January 2, January 26, and February 7, 2018.

The current Ontario 24-hour B(a)P AAQC was introduced in 2011 and levels above this recently enacted AAQC are commonly measured throughout Ontario. B(a)P measurement data available from the National Air Pollutant Surveillance (NAPS) network for Ontario in 2013 (for Simcoe, Toronto, and Hamilton), all had maximum levels above the AAQC (varying between 136% - 6,220% of the criteria). Available NAPS data for Ontario in 2012 (for Windsor, Toronto, and Hamilton) showed maximum B(a)P levels at these stations that varied between 716% - 2,920% of the Ontario AAQCs. In 2011, NAPS data available for seven Ontario stations (Windsor, Toronto, Etobicoke, Hamilton, Simcoe, Pt. Petrie, and Burnt Island) showed exceedances at six of the seven stations, with only the remote Burnt Island Ontario station reporting a maximum level below the MOECC AAQC. In 2010, all of these stations, including the Burnt Island station, measured B(a)P levels above the AAQC.

B(a)P is a byproduct of a wide variety of natural and man-made combustion processes (including motor vehicles, natural gas, wood, refuse, oil, forest fires, etc.) and is widely present in the environment (including being present in soil and water).

The B(a)P samples collected at the Courtice WPCP Station exceeded the Ontario AAQC by between 8.4% and 59%. The B(a)P samples collected at the Rundle Road Station exceeded the Ontario AAQC by between 24% and 152%. The B(a)P samples were however, well below the MOECC Schedule 6 Upper Risk Threshold, the MOECC O. Reg. 419/05 24-hour average guideline, and the HHRA health-based criterion. Summaries of the wind direction and potential source contributions for these measurements are presented in **Table 4-5**.

Based on the air quality assessments completed during the Environmental Assessment Study and the Environmental Compliance Approval application for the DYEC, the facility will not be a significant contributor of B(a)P. Therefore, ambient B(a)P levels are not expected to be substantially impacted by the operation of the DYEC.

Table 4-4: Summary of Measured Ambient PAH Concentrations

Contaminant	Units	MOECC Criteria	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
Benzo(a)pyrene	ng/m^3	0.05 [A] 5 [B] 1.1 [C]	1	7.93E-02	1.11E-03	2 0 0	1.26E-01	1.15E-02	3 0 0
1-Methylnaphthalene	ng/m^3	12,000	-	4.53E+00	1.20E+00	0	5.37E+00	7.94E-01	0
2-Methylnaphthalene	ng/m^3	10,000	-	7.14E+00	1.97E+00	0	8.66E+00	1.19E+00	0
Acenaphthene	ng/m^3	-	-	2.02E+00	5.42E-01	-	1.79E+00	9.93E-02 [F]	-
Acenaphthylene	ng/m^3	3,500	-	3.77E-01	1.11E-01 [F]	0	5.16E-01	9.93E-02 [F]	0
Anthracene	ng/m^3	200	-	1.19E-01 [F]	7.26E-02 [F]	0	1.46E-01 [F]	9.93E-02 [F]	0
Benzo(a)anthracene	ng/m^3	-	-	1.19E-01 [F]	7.26E-02 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-
Benzo(a)fluorene	ng/m^3	-	-	2.38E-01 [A F]	1.45E-01 [F]	-	2.91E-01 [F]	1.99E-01 [F]	-
Benzo(b)fluoranthene	ng/m^3	-	-	2.90E-01	7.41E-02 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-
Benzo(b)fluorene	ng/m^3	-	-	2.38E-01 [F]	1.45E-01 [F]	-	2.91E-01 [F]	1.99E-01 [F]	-
Benzo(e)pyrene	ng/m^3	-	-	2.38E-01 [F]	1.45E-01 [F]	-	2.91E-01 [F]	1.99E-01 [F]	-
Benzo(g,h,i)perylene	ng/m^3	-	-	1.19E-01 [F]	7.26E-02 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-
Benzo(k)fluoranthene	ng/m^3	-	-	1.19E-01 [F]	7.26E-02 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-
Biphenyl	ng/m^3	-	-	2.41E+00	8.10E-01	-	3.02E+00	6.36E-01	-
Chrysene	ng/m^3	-	-	3.02E-01	1.11E-01 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-
Dibenz(a,h)anthracene [D]	ng/m^3	-	-	1.19E-01 [F]	7.26E-02 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-
Dibenzo(a,c) anthracene + Picene [D]	ng/m^3	-	-	2.38E-01 [F]	1.45E-01 [F]	-	2.91E-01 [F]	9.44E-02 [F]	-
Fluoranthene	ng/m^3	-	-	9.17E-01	1.17E-01 [F]	-	1.15E+00	9.93E-02 [F]	-
Indeno (1,2,3-cd)pyrene	ng/m^3	-	-	1.19E-01 [F]	7.26E-02 [F]	-	1.46E-01 [F]	9.93E-02 [F]	-

Table 4-4: Summary of Measured Ambient PAH Concentrations

Contaminant	Units	MOECC Criteria	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
Naphthalene	ng/m^3	22,500	22,500	3.17E+01	7.07E+00	0	3.57E+01	5.16E+00	0
o-Terphenyl	ng/m^3	-	-	2.38E-01 [F]	1.45E-01 [F]	-	2.91E-01 [F]	1.99E-01 [F]	-
Perylene	ng/m^3	-	-	2.38E-01 [F]	1.45E-01 [F]	-	2.91E-01 [F]	1.99E-01 [F]	-
Phenanthrene	ng/m^3	-	-	2.64E+00	9.25E-01	-	3.93E+00	8.26E-01	-
Pyrene	ng/m^3	-	-	6.10E-01	1.15E-01 [F]	-	6.45E-01	9.93E-02 [F]	-
Tetralin	ng/m^3	-	-	1.84E+00	9.83E-01	-	2.29E+00	5.96E-01	-
Total PAH [E]	ng/m^3	-	-	5.43E+01	1.64E+01	-	6.35E+01	1.16E+01	-

A. Ontario Ambient Air Quality Criteria. The standard for benzo(a)pyrene (B(a)P) is for B(a)P as a surrogate for PAHs.

B. O. Reg. 419/05 Schedule 6 Upper Risk Thresholds.

C. O. Reg. 419/05 24 Hour Guideline.

D. Based on laboratory analyses, dibenzo(a,c)anthracene co-elutes with dibenz(a,h)anthracene. Picene elutes after dibenz(a,h)anthracene.

E. The reported total PAH is the sum of all analyzed PAH species.

F. Measured concentration was less than the laboratory method detection limit.

Table 4-5: Source Contribution Analysis – Quarter 1 2018 B(a)P Exceedances

Date	Station	% above the MOECC B(a)P Criterion	Wind Direction (blowing from)	Potential Source Contributions
2-Jan-18	Courtice WPCP	8.4%	West	Local roads and agricultural areas are located upwind of the Courtice WPCP Station. Potential sources could be vehicle exhaust emissions.
	Rundle Road	24%	West	Land use in this direction is a mix of agricultural and commercial. Highway 418 construction activities were observed upwind of the Rundle Road Station during this quarter. Potential sources could be a nearby business with a poorly controlled combustion source operating, construction vehicle exhaust, or Highway 418 construction activities.
26-Jan-18	Rundle Road	152%	East	Highway 401and a CN railroad are located upwind of the Rundle Road Station. Potential sources could be vehicle, locomotive, or combustion exhaust emissions.
7-Feb-18	Courtice WPCP	59%	South-southeast	Local roads are located upwind of the Courtice WPCP Station. Potential sources could be vehicle exhaust emissions.
	Rundle Road	37%	North	Land use in this direction is mainly agricultural with some residences. Potential sources could be agricultural activities, a residence with a poorly controlled combustion source operating, or vehicle exhaust.

4.5 AMBIENT DIOXINS AND FURANS CONCENTRATIONS

A summary of the maximum and minimum ambient dioxins and furans concentrations (for a daily averaging period) are presented in **Table 4-6**. In this summary, both individual dioxins and furans concentrations (pg/m^3) as well as the total toxic equivalency concentration (TEQ) are reported. A detailed summary of the concentrations measured for each sample is presented in **Appendix I**.

The maximum measured toxic equivalent dioxins and furans concentrations at both stations were below the applicable 24-hour AAQC of 0.1 pg TEQ/m^3 (as shown in **Table 4-6**).

Table 4-6: Summary of Measured Ambient Dioxins and Furans Concentrations

Contaminant	Units	MOECC Standards	HHRA Health Based Criteria	Courtice WPCP (Predominately Upwind)			Rundle Road (Predominately Downwind)		
				Maximum	Minimum	No. of Exceedances	Maximum	Minimum	No. of Exceedances
2,3,7,8-Tetra CDD *	pg/m^3			6.04E-03 [A]	4.85E-03 [A]		6.34E-03 [A]	4.90E-03 [A]	
1,2,3,7,8-Penta CDD	pg/m^3			6.89E-03 [A]	4.98E-03 [A]		1.56E-02	5.85E-03 [A]	
1,2,3,4,7,8-Hexa CDD	pg/m^3			7.31E-03 [A]	5.13E-03 [A]		1.96E-02	6.26E-03 [A]	
1,2,3,6,7,8-Hexa CDD	pg/m^3			2.55E-02	5.13E-03 [A]		1.32E-02 [A]	6.42E-03 [A]	
1,2,3,7,8,9-Hexa CDD	pg/m^3			2.43E-02	4.83E-03 [A]		5.64E-02	6.93E-03 [A]	
1,2,3,4,6,7,8-Hepta CDD	pg/m^3			2.56E-01	6.55E-02		4.01E-01	6.16E-02	
Octa CDD	pg/m^3			4.58E-01	1.90E-01		6.16E-01	1.90E-01	
Total Tetra CDD	pg/m^3			6.42E-03 [A]	5.08E-03 [A]		6.65E-03 [A]	4.90E-03 [A]	
Total Penta CDD	pg/m^3			1.16E-02	4.98E-03 [A]		1.84E-02	5.85E-03 [A]	
Total Hexa CDD	pg/m^3			1.74E-01	1.41E-02 [A]		3.06E-01	1.47E-02 [A]	
Total Hepta CDD	pg/m^3			4.86E-01	8.21E-02		7.48E-01	6.16E-02	
2,3,7,8-Tetra CDF **	pg/m^3			7.85E-03 [A]	4.69E-03 [A]		2.76E-02	5.48E-03 [A]	
1,2,3,7,8-Penta CDF	pg/m^3	-	-	5.76E-03 [A]	4.69E-03 [A]	N/A	6.23E-03 [A]	4.90E-03 [A]	N/A
2,3,4,7,8-Penta CDF	pg/m^3			5.62E-03 [A]	4.69E-03 [A]		6.04E-03 [A]	5.06E-03 [A]	
1,2,3,4,7,8-Hexa CDF	pg/m^3			5.90E-03 [A]	4.69E-03 [A]		6.19E-03 [A]	5.28E-03 [A]	
1,2,3,6,7,8-Hexa CDF	pg/m^3			5.76E-03 [A]	4.15E-03 [A]		6.05E-03 [A]	4.60E-03 [A]	
2,3,4,6,7,8-Hexa CDF	pg/m^3			6.47E-03 [A]	4.77E-03 [A]		6.78E-03 [A]	5.21E-03 [A]	
1,2,3,7,8,9-Hexa CDF	pg/m^3			7.17E-03 [A]	5.16E-03 [A]		7.52E-03 [A]	6.06E-03 [A]	
1,2,3,4,6,7,8-Hepta CDF	pg/m^3			2.58E-02	4.54E-03 [A]		3.77E-02	4.89E-03 [A]	
1,2,3,4,7,8,9-Hepta CDF	pg/m^3			7.87E-03 [A]	5.13E-03 [A]		8.26E-03 [A]	5.67E-03 [A]	
Octa CDF	pg/m^3			2.83E-02	5.16E-03 [A]		3.83E-02	5.67E-03 [A]	
Total Tetra CDF	pg/m^3			1.09E-02	4.69E-03 [A]		1.15E-01	5.48E-03 [A]	
Total Penta CDF	pg/m^3			1.88E-02	4.69E-03 [A]		2.45E-02	5.87E-03 [A]	
Total Hexa CDF	pg/m^3			1.38E-02	4.85E-03 [A]		1.93E-02	5.48E-03 [A]	
Total Hepta CDF	pg/m^3			5.08E-02	4.85E-03 [A]		8.46E-02	5.28E-03 [A]	
TOTAL TOXIC EQUIVALENCY [B]	pg TEQ/m^3	0.1 1 [C]	-	2.36E-02	1.69E-02	0	4.07E-02	1.92E-02	0

A. Measured concentration was less than the laboratory method detection limit.
B. Total Toxicity Equivalent (TEQ) concentration contributed by all dioxins, furans and dioxin-like PCBs calculated as per O. Reg. 419/05 methodology using corresponding WHO_{2005} toxic equivalency factors (TEFs) and a value of half the minimum detection limit (MDL) substituted for concentrations less than the MDL.
C. O. Reg. 419/05 Schedule 6 Upper Risk Thresholds.
* CDD - Chloro Dibenzo-p-Dioxin, ** CDF - Chloro Dibenzo-p-Furan.

5.0 CONCLUSIONS

This quarterly report provides a summary of the ambient air quality data collected at the three monitoring stations located predominantly upwind and downwind in the vicinity of the DYEC for the period from January to March 2018. Data recovery rates for all measured air quality parameters for this quarter were acceptable except for TSP/metals at the Rundle Road Station. Additional details on instrumentation issues are presented in Section 3.2 of this report.

The following observations and conclusions were made from a review of the measured ambient air quality monitoring data:

1. Measured concentrations of NO_2, SO_2 and $PM_{2.5}$ were below the applicable evaluation criteria or human health risk assessment (HHRA) health-based criteria presented in **Table 2-2** of this report.

2. Since the Canadian Ambient Air Quality Standard (CAAQS) for $PM_{2.5}$ is based on a 98^{th} percentile level over 3 years, whereas the $PM_{2.5}$ measurement period at both stations for this quarterly report was 3 months, there is insufficient data collected to determine with any certainty if exceedances of the CAAQS would occur. Therefore, no comparison of the measured $PM_{2.5}$ data during this quarter to the CAAQS was conducted for this report, as it would not be scientifically accurate or representative.

3. The maximum measured concentrations of TSP and all metals with MOECC air quality Standards, were below their applicable Standards (as presented in **Table 2-3** in this report). As described in Section 3.2 and **Table 3-5**, the TSP/Metals data recovery rate was below the objective of 75% at Rundle Road. The root cause was determined to be a new field technician who did not follow the sampling protocol despite extensive field training. This field technician has been removed from the project as a remedial action.

4. The maximum measured concentrations of PAHs with MOECC air quality Standards were well below their applicable criteria shown in **Table 2-4**, with the exception of two (2) 24-hour benzo(a)pyrene (B(a)P) concentration measured on January 2, and February 7 at the Courtice WPCP Station, and three (3) B(a)P concentrations measured on January 2, January 26, and February 7at the Rundle Road Station. Measured concentrations of B(a)P exceeded the applicable Ontario Ambient Air Quality Criteria (AAQC) by between 8.4% and 152%. The current Ontario 24-hour B(a)P AAQC was introduced in 2011 and levels above this AAQC are commonly measured throughout Ontario. The measurements were however, well below the MOECC Schedule 6 Upper Risk Threshold, the MOECC O. Reg. 419/05 24-hour average guideline, and the HHRA health-based criterion.

5. The maximum measured toxic equivalent dioxin and furan concentration was below the applicable Standard presented in **Table 2-4.**

Conclusions
May 10, 2018

In summary, the measured concentrations of the air contaminants monitored were below their applicable MOECC Standards during the January to March 2018 monitoring period, with the exception of benzo(a)pyrene. Furthermore, all measured levels of the monitored contaminants were below their applicable HHRA health-based criteria.

6.0 REFERENCES

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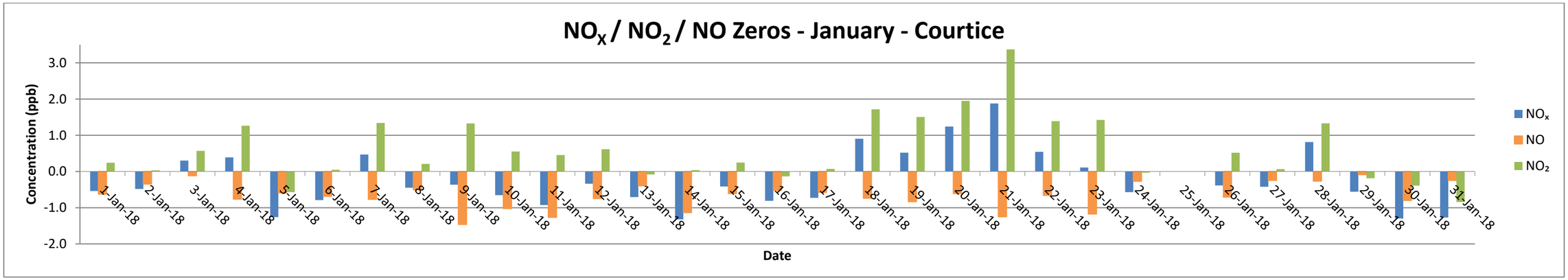
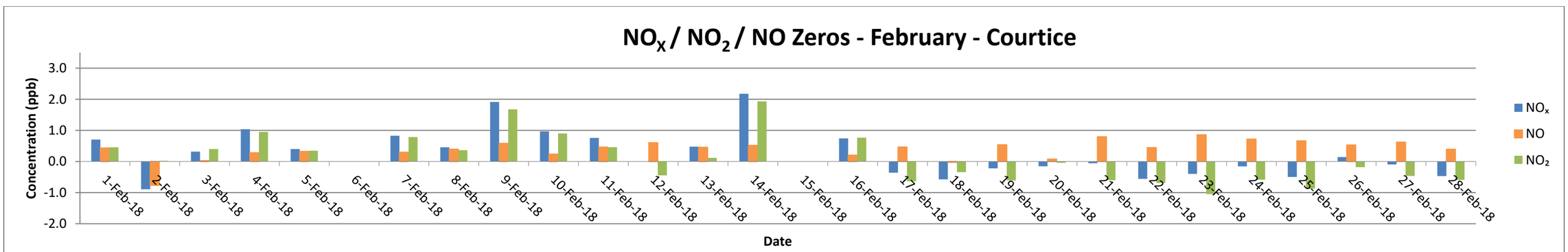
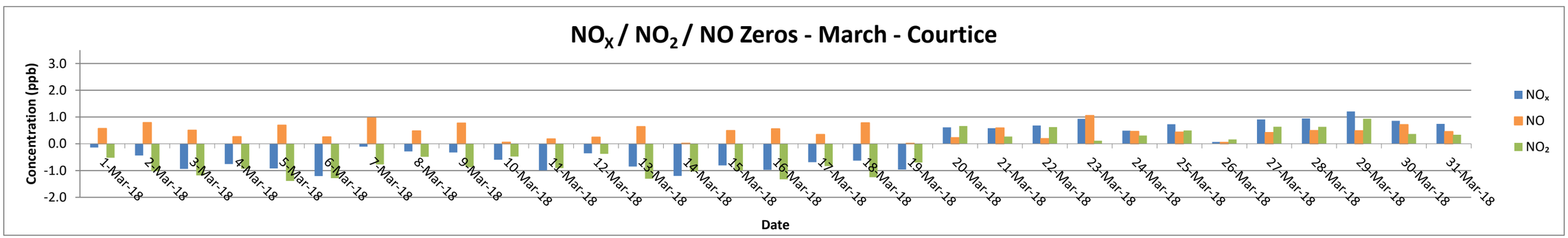
APPENDIX A: SO_2 AND NO_X INSTRUMENT DAILY INTERNAL ZERO CALIBRATION SUMMARIES

Figure A-1: Daily NO_X / NO_2 / NO Internal Zero Calibrations – Courtice WPCP Station

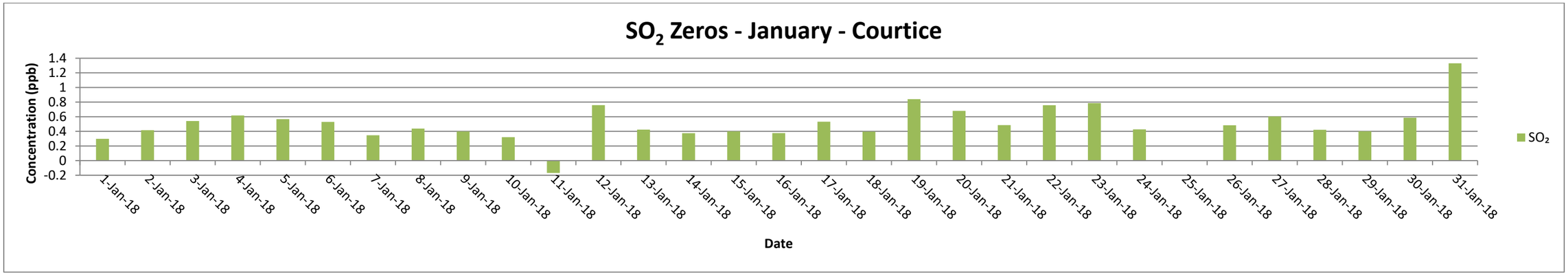


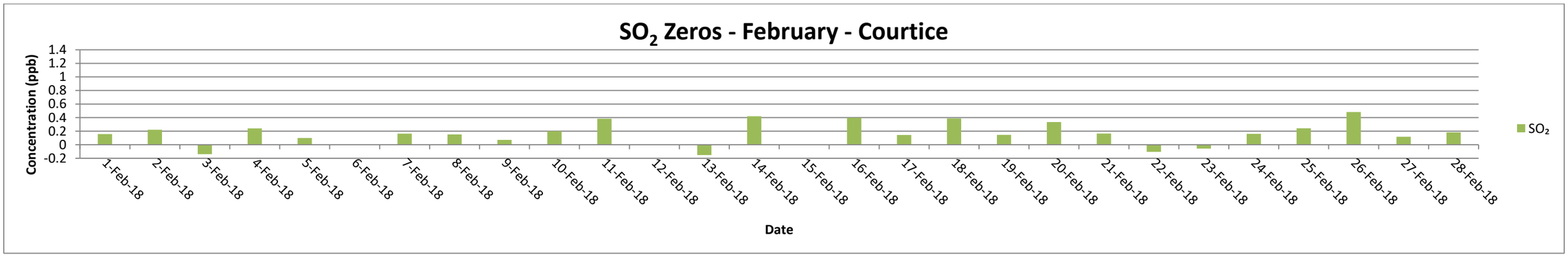


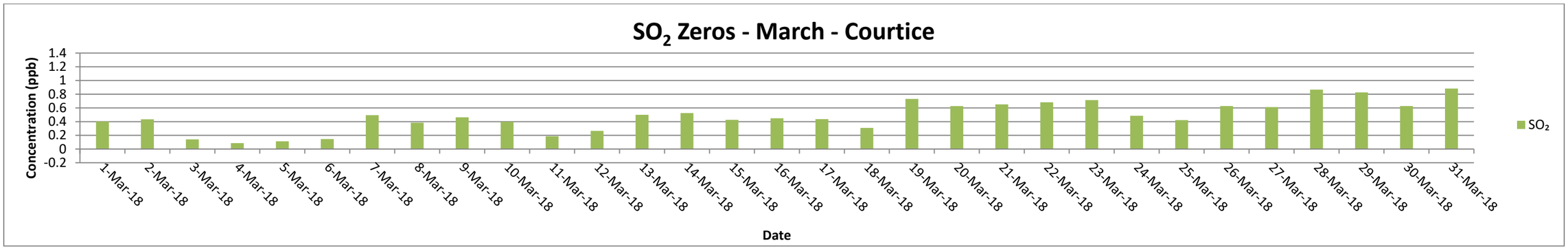


Note:
From January 1 to February 14, 2018, auto-calibrations occurred every 25 hours. After February 14, 2018, auto-calibrations occurred every 24 hours over midnight.

Figure A-2: Daily SO_2 Internal Zero Calibrations – Courtice WPCP Station



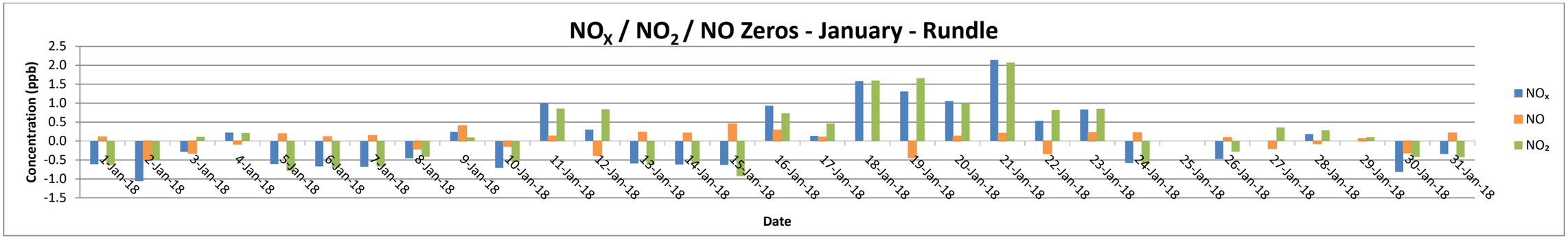


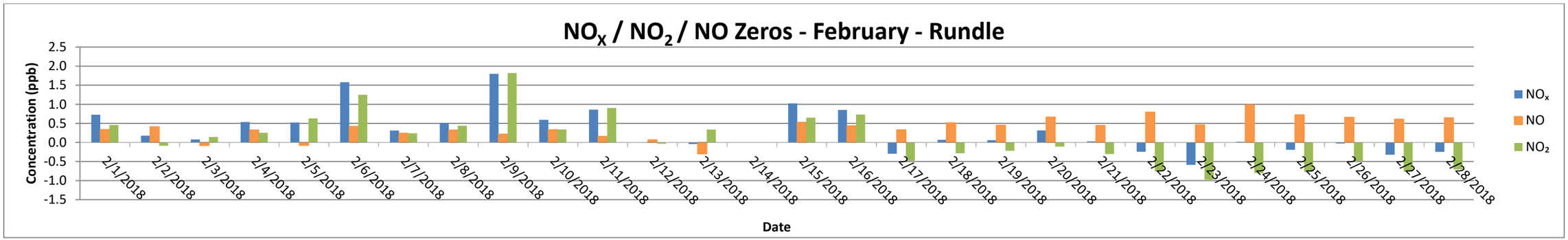


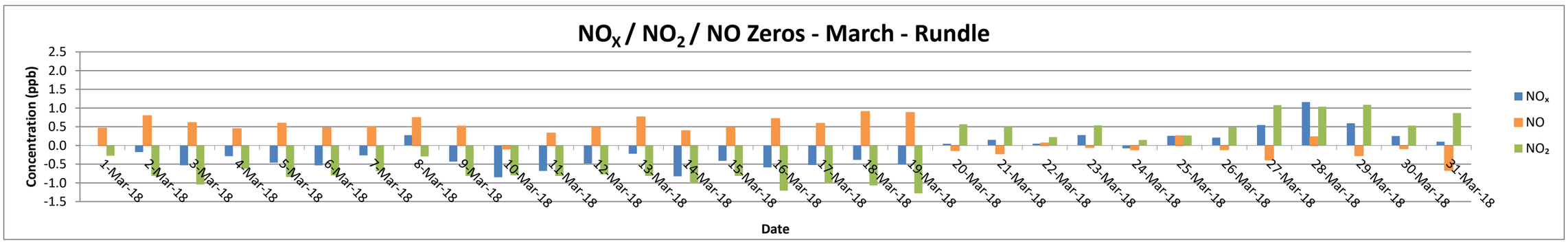
Note:

From January 1 to February 14, 2018, auto-calibrations occurred every 25 hours. After February 14, 2018, auto-calibrations occurred every 24 hours over midnight.

Figure A-3: Daily NO_X / NO_2 / NO Internal Zero Calibrations – Rundle Road Station

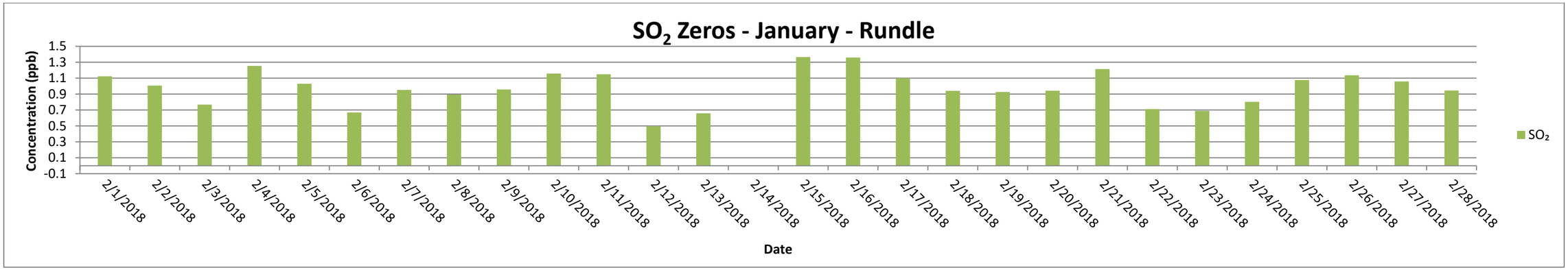


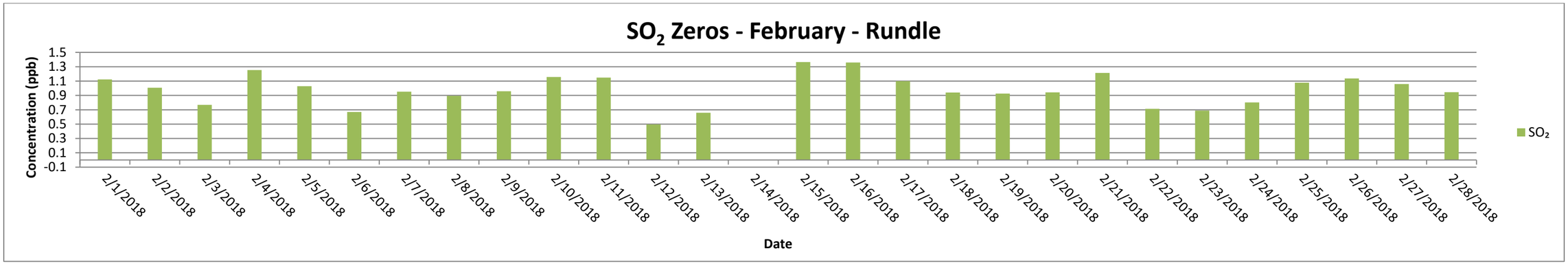


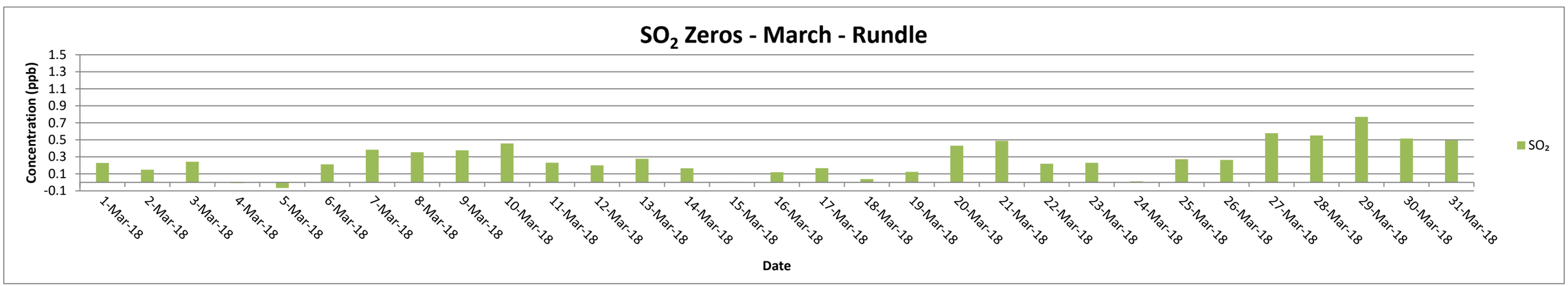


Note:
From January 1 to February 14, 2018, auto-calibrations occurred every 25 hours. After February 14, 2018, auto-calibrations occurred every 24 hours over midnight.

Figure A-4: Daily SO_2 Internal Zero Calibrations – Rundle Road Station





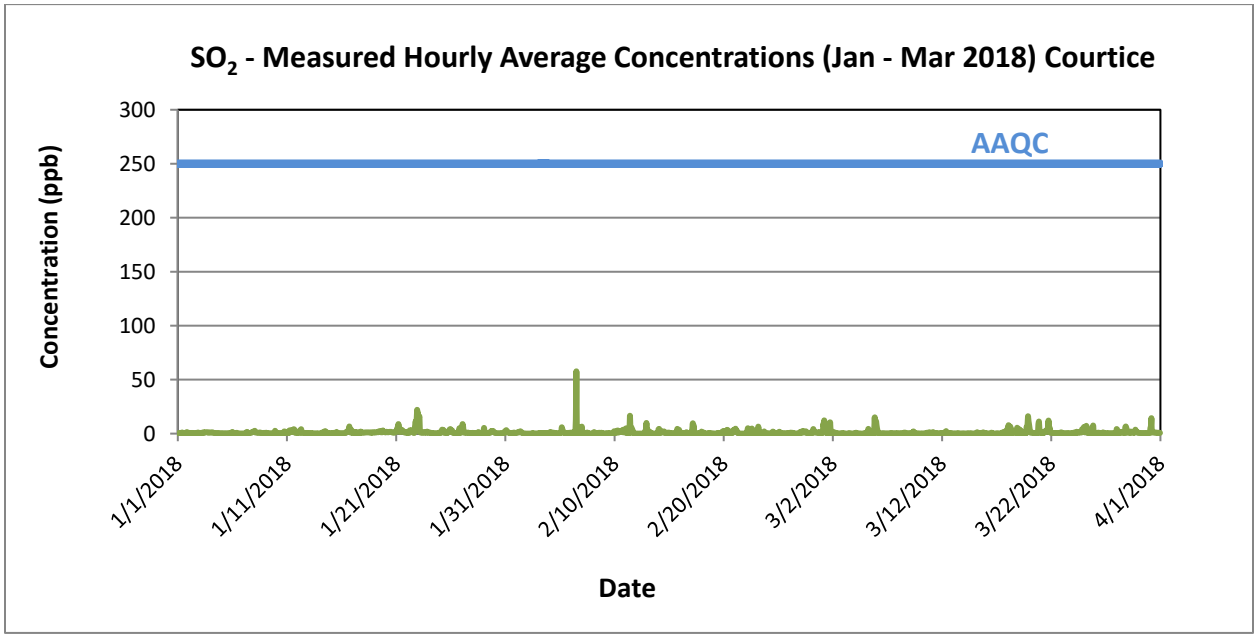


Note:

From January 1 to February 14, 2018, auto-calibrations occurred every 25 hours. After February 14, 2018, auto-calibrations occurred every 24 hours over midnight.

APPENDIX B:
SO_2 DATA SUMMARIES AND TIME HISTORY PLOTS

Figure B-1: Time History Plots of Measured Hourly Average and 24-Hour Average SO_2 Concentrations – Courtice WPCP Station



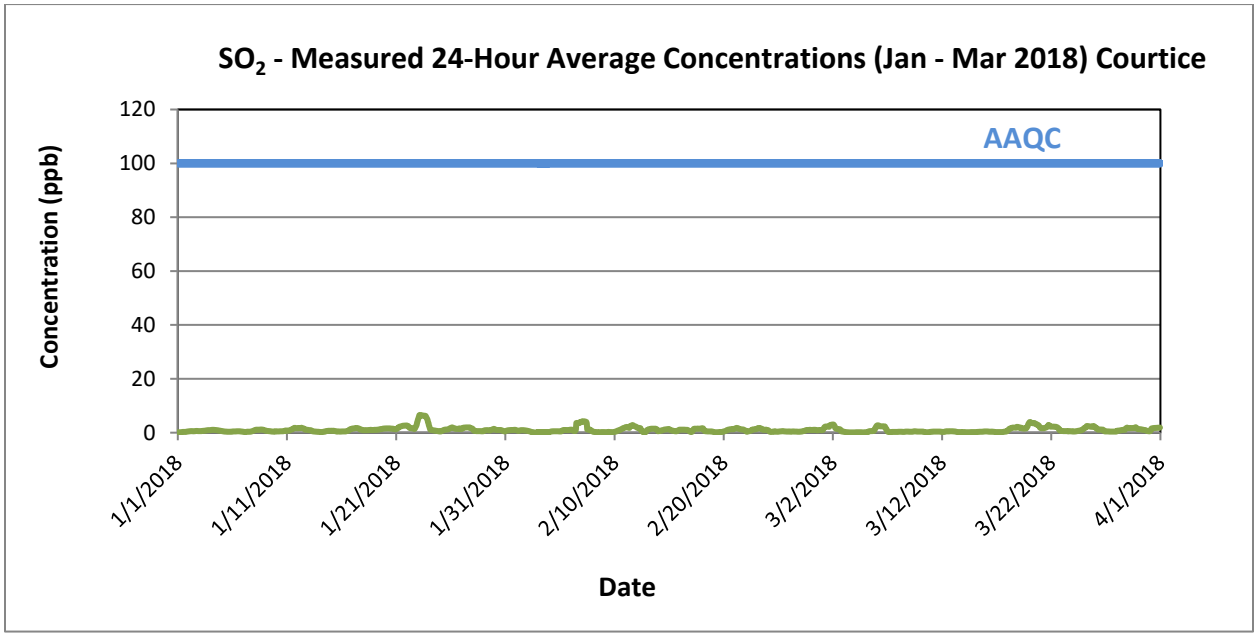
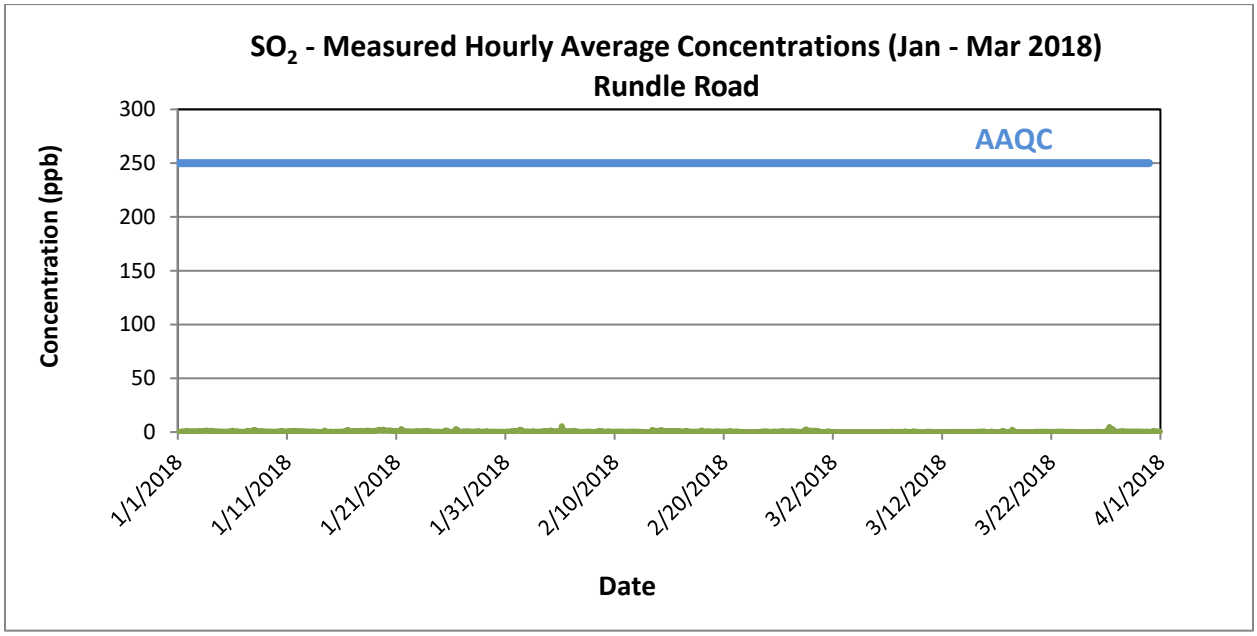
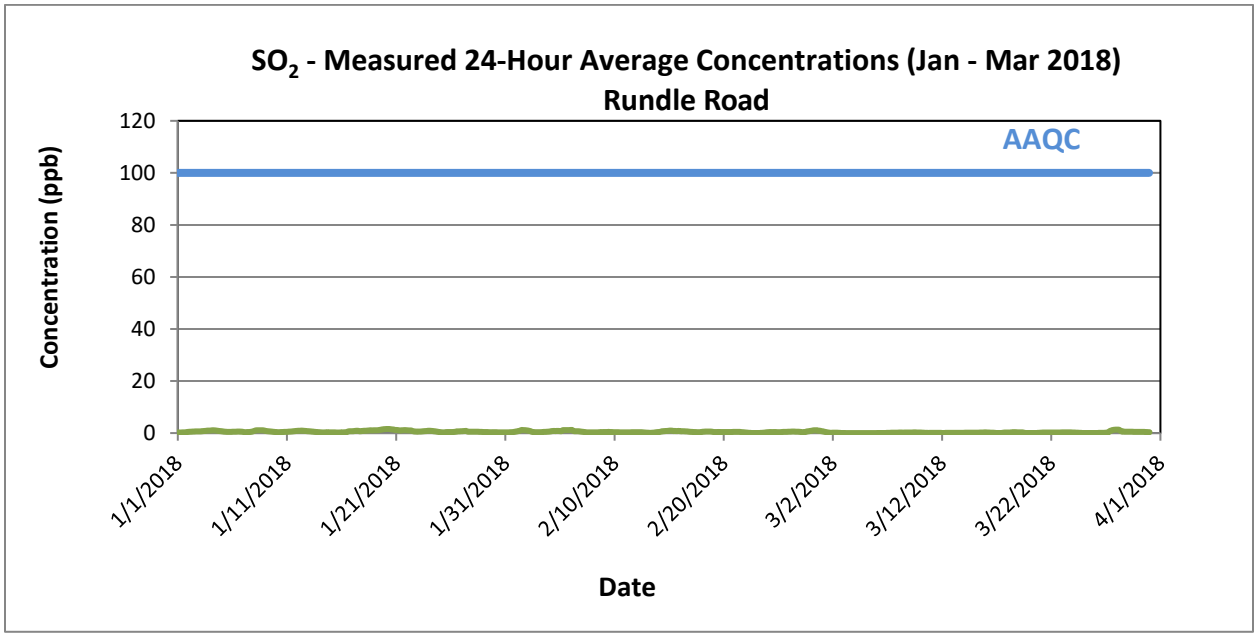


Figure B-2: Time History Plots of Measured Hourly Average and 24-Hour Average SO_2 Concentrations – Rundle Road Station





SO_2 - COURTICE
January 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>250	Days>100
1	0.1	0.2	0.2	0.0	0.0	0.1	0.1	0.6	0.7	1.0	0.9	0.5	0.3	0.2	0.2	0.1	0.2	0.2	0.7	1.2	1.4	1.1	0.6	0.5	24	1.4	0.0	0.5	0	0
2	0.6	0.4	0.7	0.4	0.6	0.4	0.6	0.4	0.3	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	1.0	0.9	0.7	0.6	24	1.0	0.3	0.6	0	0
3	0.6	0.6	0.6	0.6	0.7	0.9	0.7	0.8	0.9	1.1	0.8	0.9	1.1	1.2	1.3	1.3	1.3	1.3	1.1	1.2	0.9	0.9	0.9	0.9	24	1.3	0.6	0.9	0	0
4	1.0	1.1	1.2	1.2	1.2	1.0	0.7	0.7	0.5	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.3	0.4	0.4	0.3	0.3	24	1.2	0.3	0.7	0	0
5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.4	0.5	0.6	0.6	0.5	0.4	0.3	0.9	24	0.9	0.2	0.4	0	0
6	1.5	1.0	0.4	0.2	0.3	0.4	0.3	0.4	0.6	0.7	0.7	0.6	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	1.5	0.1	0.4	0	0
7	0.1	0.1	0.2	0.1	0.1	0.2	0.5	1.1	1.6	0.7	0.3	0.8	0.6	0.3	0.5	0.5	0.7	0.7	1.0	1.2	1.5	1.6	1.6	2.1	24	2.1	0.1	0.8	0	0
8	2.4	2.7	1.2	1.1	1.0	0.9	0.9	0.7	0.7	0.6	0.7	1.0	1.0	1.0	0.9	0.7	0.6	0.6	0.5	0.6	0.6	0.5	0.7	0.4	24	2.7	0.4	0.9	0	0
9	0.4	0.4	0.8	0.6	0.4	0.3	0.4	0.3	0.4	0.4	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.5	0.2	0.2	0.4	2.7	1.8	24	2.7	0.2	0.5	0	0
10	0.6	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	2.1	1.7	1.7	1.2	1.0	1.1	24	2.1	0.3	0.7	0	0
11	0.9	1.0	0.6	0.6	0.7	2.9	1.2	1.4	2.9	2.2	1.6	1.5	3.3	2.1	3.0	4.1	3.8	1.1	0.7	0.7	0.6	0.6	1.0	1.1	24	4.1	0.6	1.6	0	0
12	1.9	0.7	0.7	0.7	0.7	1.7	3.3	4.1	2.0	0.8	0.7	0.6	0.8	0.6	0.6	0.5	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.5	24	4.1	0.4	1.0	0	0
13	0.5	0.6	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.1	0.2	0.1	24	0.6	0.1	0.3	0	0
14	0.1	0.1	0.1	0.1	0.1	1.0	1.0	0.9	0.6	1.0	1.2	1.9	2.3	1.1	0.4	1.2	0.8	0.4	0.4	0.8	0.4	0.4	0.4	0.3	24	2.3	0.1	0.7	0	0
15	0.2	0.1	0.3	0.3	0.4	0.2	0.7	0.4	0.2	0.2	0.2	0.2	1.1	1.6	0.9	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	24	1.6	0.1	0.4	0	0
16	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.6	0.7	1.1	1.1	2.2	2.0	2.1	2.2	2.2	6.5	2.5	1.4	1.0	2.3	3.2	1.6	24	6.5	0.3	1.5	0	0
17	0.6	0.6	0.6	1.3	1.5	1.4	1.1	0.9	1.2	1.0	0.8	1.1	0.7	0.6	0.4	0.5	0.8	0.7	1.8	1.2	0.9	0.9	1.1	1.0	24	1.8	0.4	0.9	0	0
18	0.8	0.8	1.0	1.0	1.0	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	0.9	0.8	0.7	1.0	0.9	1.1	1.0	1.3	1.2	24	1.3	0.7	1.0	0	0
19	1.1	1.0	1.1	1.3	1.3	1.3	1.3	1.5	1.5	1.3	2.0	2.3	2.3	2.1	1.8	1.3	1.1	1.3	1.5	3.0	1.6	1.7	1.4	1.4	24	3.0	1.0	1.6	0	0
20	1.2	1.1	1.4	1.7	1.5	1.3	1.3	1.3	1.4	1.6	1.5	1.7	1.6	1.6	1.5	1.5	1.1	0.9	0.9	0.9	0.9	1.0	1.4	1.4	24	1.7	0.9	1.3	0	0
21	1.5	1.8	4.1	5.3	3.0	8.8	3.3	4.6	2.4	1.4	2.2	3.9	2.7	2.8	2.9	2.2	1.9	1.5	1.1	1.0	0.8	1.5	1.3	1.4	24	8.8	0.8	2.6	0	0
22	1.0	1.1	0.8	1.0	0.6	0.6	3.1	1.6	1.8	1.5	3.1	2.5	2.2	1.5	0.6	0.6	0.6	4.6	8.3	11.5	7.1	12.7	22.1	8.5	24	22.1	0.6	4.1	0	0
23	18.9	12.2	14.7	16.0	1.8	1.2	1.0	0.9	1.3	1.0	1.0	1.2	1.3	1.0	1.0	0.9	1.2	1.1	0.9	1.0	1.8	1.6	1.0	0.8	24	18.9	0.8	3.5	0	0
24	0.7	0.9	0.7	0.8	0.9	0.6	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.8	0.3	24	0.9	0.3	0.5	0	0
25	0.9	0.7	0.9	1.5	2.3	3.7	1.2	3.6	2.2	2.3	0.7	1.2	1.1	1.1	0.9	0.5	0.4	0.8	1.2	1.3	2.1	3.4	2.2	4.2	24	4.2	0.4	1.7	0	0
26	3.3	1.9	3.1	2.8	1.2	0.7	0.6	0.5	0.4	0.4	0.6	0.5	0.7	0.9	0.7	0.7	0.6	0.4	0.7	5.1	2.8	0.8	0.7	4.1	24	5.1	0.4	1.4	0	0
27	1.5	4.6	8.8	6.5	1.2	1.1	0.9	0.8	0.8	0.7	0.7	0.7	0.8	1.0	0.8	0.8	0.5	0.6	0.7	0.5	0.6	0.5	0.5	0.4	24	8.8	0.4	1.5	0	0
28	0.6	0.4	0.4	0.8	0.6	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.7	1.4	0.7	0.4	0.5	0.5	0.4	0.3	0.3	0.2	0.3	0.4	24	1.4	0.2	0.5	0	0
29	2.2	5.4	3.0	1.2	0.5	0.9	0.4	0.5	0.4	0.4	0.3	0.3	0.6	0.5	0.5	1.1	2.1	1.7	2.3	2.3	1.8	2.3	2.2	1.3	24	5.4	0.3	1.4	0	0
30	0.8	0.6	0.5	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.5	0.4	0.4	0.4	0.4	0.3	0.5	2.2	24	2.2	0.3	0.5	0	0
31	2.1	1.1	3.3	2.5	1.8	1.1	1.0	0.8	0.7	0.6	0.6	0.6	C	C	0.4	0.4	0.3	0.4	0.8	1.0	0.6	0.4	0.4	0.6	22	3.3	0.3	1.0	0	0
Count	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	742					
Maximum	18.9	12.2	14.7	16.0	3.0	8.8	3.3	4.6	2.9	2.3	3.1	3.9	3.3	2.8	3.0	4.1	3.8	6.5	8.3	11.5	7.1	12.7	22.1	8.5	24					
Minimum	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	22					
Average	1.6	1.4	1.7	1.6	0.9	1.2	0.9	1.0	0.9	0.8	0.8	1.0	1.1	1.0	0.8	0.8	0.8	1.0	1.1	1.4	1.1	1.3	1.7	1.4						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.3	0.4	0.4	0.6	0.7	0.9	1.1	1.4	2.2	3.1	8.8	22.1

Maximum Hourly	22.1
Maximum Daily	4.1
Monthly Average	1.1

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

SO_2 - February 2018 (ppb) COURTICE

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>250	Days>100
1	0.6	0.9	1.0	1.1	0.9	1.3	1.3	1.3	1.8	2.2	1.8	1.4	0.8	0.7	0.3	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	24	2.2	0.0	0.7	0	0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.4	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	24	0.6	0.0	0.1	0	0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.3	0.4	0.5	0.6	0.3	0.3	0.1	0.1	0.3	0.3	0.3	0.3	0.4	0.4	24	0.6	0.0	0.2	0	0
4	0.0	0.5	1.1	1.6	1.3	0.6	0.4	0.5	0.8	0.6	0.7	0.8	0.2	0.1	0.3	0.5	0.3	0.3	0.4	0.2	0.1	0.1	0.1	0.1	24	1.6	0.0	0.5	0	0
5	0.1	0.1	1.2	1.3	5.8	3.6	3.3	2.2	1.3	1.1	0.6	0.6	0.1	0.0	0.0	0.1	0.1	0.4	0.7	0.6	0.6	0.8	0.7	0.9	24	5.8	0.0	1.1	0	0
6	0.6	0.8	0.7	0.5	0.4	1.1	1.0	1.6	1.6	1.4	0.7	13.1	57.7	0.3	0.2	0.0	0.0	0.0	0.0	3.8	5.9	0.7	0.5	1.6	24	57.7	0.0	3.9	0	0
7	6.5	1.9	1.1	1.0	0.0	0.6	0.4	0.0	0.6	0.4	0.6	0.8	0.9	0.7	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	24	6.5	0.0	0.7	0	0
8	0.2	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.4	0.9	0.5	0.0	0.0	0.0	0.8	0.4	0.1	0.3	0.3	24	1.5	0.0	0.2	0	0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.4	0.5	0.5	0.2	0.0	0.1	0.3	0.0	0.0	0.1	0.3	0.3	0.2	0.5	2.1	24	2.1	0.0	0.3	0	0
10	0.6	1.1	0.8	0.6	1.2	2.5	2.6	3.0	1.0	1.8	1.3	1.7	2.0	2.3	2.4	2.0	1.5	2.4	3.4	3.4	1.2	1.4	1.5	1.6	24	3.4	0.6	1.8	0	0
11	3.3	4.8	2.4	0.4	0.1	0.0	0.1	1.9	0.4	1.1	16.6	3.4	1.6	5.6	4.6	3.7	2.9	0.3	0.2	0.1	0.1	0.1	0.0	0.0	24	16.6	0.0	2.2	0	0
12	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.7	3.8	9.9	3.2	24	9.9	0.0	0.9	0	0
13	3.8	2.5	0.4	2.3	1.5	1.1	0.5	1.2	0.7	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.6	24	3.8	0.0	0.7	0	0
14	0.7	4.2	4.4	1.4	0.8	2.6	0.9	0.8	1.6	1.7	1.8	1.5	1.5	2.0	0.7	0.6	0.6	0.4	0.5	0.8	0.4	0.4	0.7	1.1	24	4.4	0.4	1.3	0	0
15	0.8	0.7	0.5	0.3	0.4	0.2	0.2	0.2	0.4	0.4	0.4	0.5	0.7	0.6	C	C	0.4	0.6	4.4	2.2	2.5	3.0	3.5	1.8	22	4.4	0.2	1.1	0	0
16	0.8	0.1	0.3	0.7	0.3	0.3	0.2	0.2	0.3	0.1	0.3	0.2	0.2	0.4	1.2	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	24	1.2	0.0	0.3	0	0
17	0.0	1.4	0.1	4.8	9.5	5.0	7.7	2.0	0.9	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.8	1.8	24	9.5	0.0	1.6	0	0
18	1.1	1.0	0.8	0.8	1.0	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.4	0.5	0.1	0.1	0.3	0.3	0.4	0.2	0.1	24	1.1	0.0	0.4	0	0
19	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.6	0.3	0.1	0.2	0.1	0.4	0.3	0.5	1.3	0.7	1.8	2.5	24	2.5	0.0	0.4	0	0
20	0.3	1.0	1.7	1.4	0.5	2.1	2.9	2.5	3.5	0.7	0.6	1.0	2.1	0.9	0.9	0.8	0.4	0.2	0.2	0.3	1.0	3.2	1.8	1.9	24	3.5	0.2	1.3	0	0
21	3.7	2.2	4.6	2.1	2.6	2.7	1.6	0.4	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	4.6	0.0	0.9	0	0
22	0.0	0.0	0.0	0.3	2.7	5.0	3.9	0.8	0.2	0.0	2.2	3.1	0.6	0.8	4.7	2.7	2.5	0.0	0.0	0.0	0.0	0.0	0.2	3.0	24	5.0	0.0	1.4	0	0
23	0.1	2.6	0.9	2.4	6.5	3.7	2.4	0.3	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.4	2.1	0.2	0.2	0.3	0.5	0.5	0.2	24	6.5	0.0	1.0	0	0
24	0.3	0.3	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.7	1.8	1.4	0.4	0.2	0.8	0.1	0.6	0.4	0.2	0.1	0.1	0.1	24	1.8	0.0	0.3	0	0
25	0.0	1.2	1.8	0.3	0.2	1.0	0.7	0.6	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.5	24	1.8	0.0	0.4	0	0
26	0.2	0.3	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.4	0.3	0.1	0.0	0.2	0.1	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.7	24	0.8	0.0	0.4	0	0
27	1.5	0.5	0.7	0.7	1.7	2.4	1.3	2.0	1.2	1.4	1.3	2.0	1.9	2.1	0.7	0.4	0.5	0.4	0.4	0.3	0.4	0.5	0.8	0.4	24	2.4	0.3	1.1	0	0
28	0.3	0.0	0.7	1.1	1.6	4.2	1.9	1.5	0.9	0.9	1.0	1.0	0.8	0.7	0.7	0.8	0.8	0.7	1.5	0.5	0.4	0.3	0.1	0.2	24	4.2	0.0	0.9	0	0
29																														
30																														
31																														
Count	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	28	28	28	28	28	28	28	670					
Maximum	6.5	4.8	4.6	4.8	9.5	5.0	7.7	3.0	3.5	2.2	16.6	13.1	57.7	5.6	4.7	3.7	2.9	2.4	4.4	3.8	5.9	3.8	9.9	3.2	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22					
Average	0.9	1.0	0.9	1.0	1.4	1.5	1.2	0.9	0.7	0.6	1.2	1.2	2.7	0.8	0.8	0.6	0.5	0.3	0.5	0.6	0.7	0.6	0.9	0.9						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.0	0.1	0.1	0.2	0.4	0.6	0.8	1.3	2.2	3.4	6.5	57.7

Maximum Hourly	57.7
Maximum Daily	3.9
Monthly Average	0.9

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

SO_2 - March (ppb) COURTICE 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>250	Days>100
1	0.2	1.1	1.5	9.3	6.8	12.2	8.0	3.1	1.1	2.4	0.6	0.4	0.5	0.5	0.3	0.3	1.2	6.8	10.4	1.4	0.7	0.6	0.7	1.9	24	12.2	0.2	3.0	0	0
2	1.4	0.4	0.4	0.7	0.9	1.1	0.7	0.2	0.2	0.2	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.2	0.2	24	1.4	0.1	0.4	0	0
3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.4	24	0.4	0.0	0.1	0	0
4	0.2	0.4	0.4	0.8	0.0	0.0	0.2	0.1	0.0	0.0	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	24	0.8	0.0	0.1	0	0
5	0.3	0.3	1.2	0.5	0.6	0.4	4.3	2.9	0.5	1.4	0.0	0.3	0.0	0.2	0.1	0.7	0.5	0.1	0.0	4.4	15.1	5.1	1.1	11.6	24	15.1	0.0	2.1	0	0
6	7.6	4.7	2.7	0.7	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	24	7.6	0.2	0.8	0	0
7	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.6	0.7	0.6	0.5	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.5	24	0.7	0.2	0.3	0	0
8	0.4	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.9	0.8	0.9	0.8	0.5	0.3	0.2	0.2	0.2	0.2	0.2	24	0.9	0.2	0.4	0	0
9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.1	0.6	2.0	1.0	0.4	0.9	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	24	2.0	0.1	0.4	0	0
10	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.2	0.8	0.1	0.1	0.0	0.1	1.2	1.0	0.7	0.7	24	1.2	0.0	0.3	0	0
11	0.6	0.4	0.2	0.3	1.5	0.1	0.1	0.1	0.0	0.4	0.3	0.2	0.3	0.4	0.4	0.2	0.2	0.1	0.3	0.4	0.5	0.2	0.2	0.1	24	1.5	0.0	0.3	0	0
12	0.3	0.5	0.3	0.4	0.6	0.9	1.0	1.1	1.0	2.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.6	0.1	0.2	0.1	0.1	24	2.3	0.1	0.5	0	0
13	0.2	0.1	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.3	0.4	0.5	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	24	0.5	0.1	0.2	0	0
14	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	24	0.4	0.1	0.2	0	0
15	0.2	0.1	0.2	0.2	0.2	1.3	0.3	0.5	0.4	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.4	1.1	0.5	0.7	0.8	0.5	0.4	24	1.3	0.1	0.5	0	0
16	0.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.7	0.6	0.8	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	24	0.8	0.0	0.2	0	0
17	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.9	0.7	0.7	1.1	1.2	0.8	0.6	0.6	0.5	0.4	3.4	2.4	24	3.4	0.1	0.6	0	0
18	2.8	2.8	7.8	2.2	2.1	0.2	6.5	2.3	0.1	0.4	2.8	1.2	1.2	1.2	1.0	0.7	0.7	0.6	0.5	0.5	2.8	5.5	2.4	3.1	24	7.8	0.1	2.1	0	0
19	0.8	0.6	4.0	1.1	2.6	2.8	2.3	0.9	0.3	0.3	0.1	0.1	C	C	C	C	0.4	0.4	6.0	5.2	8.4	16.1	11.3	8.6	20	16.1	0.1	3.6	0	0
20	5.2	3.2	1.0	0.8	0.8	0.6	0.7	0.7	0.6	0.6	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.8	2.4	8.7	11.2	4.0	0.9	24	11.2	0.4	2.0	0	0
21	0.5	0.6	0.6	0.8	0.8	0.6	0.8	1.3	0.7	1.9	1.7	2.0	2.5	2.0	2.9	3.7	3.4	3.1	12.0	1.6	2.5	5.2	1.0	1.1	24	12.0	0.5	2.2	0	0
22	0.6	1.0	0.9	0.6	0.4	0.4	0.5	0.6	0.6	A	A	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.8	1.1	1.2	1.0	22	1.2	0.4	0.6	0	0
23	0.6	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.4	24	0.6	0.3	0.4	0	0
24	0.5	0.8	0.9	0.6	0.8	0.5	0.5	1.3	1.7	1.0	1.3	1.0	0.9	1.1	1.2	1.5	1.3	1.3	1.1	1.9	4.1	2.6	2.6	4.7	24	4.7	0.5	1.5	0	0
25	6.2	2.5	1.2	1.3	4.5	7.2	6.2	1.4	0.7	0.5	0.4	0.4	0.4	0.3	0.3	0.6	0.5	0.4	1.7	5.2	7.5	2.9	0.8	0.5	24	7.5	0.3	2.2	0	0
26	0.0	0.3	0.6	0.6	0.6	0.5	0.6	0.8	0.9	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.5	1.1	0.5	0.3	0.3	0.3	0.3	24	1.1	0.0	0.5	0	0
27	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.5	24	0.5	0.3	0.4	0	0
28	4.2	3.8	0.6	0.6	0.6	0.6	1.6	1.0	0.9	1.6	1.6	1.2	0.8	0.6	0.6	0.6	0.6	0.4	0.6	6.0	6.6	5.3	3.4	1.4	24	6.6	0.4	1.9	0	0
29	0.9	0.8	0.8	0.8	0.9	1.8	0.8	1.9	1.1	1.5	1.4	1.4	0.8	0.7	1.6	1.0	2.4	3.6	1.7	1.6	1.7	0.8	0.8	0.8	24	3.6	0.7	1.3	0	0
30	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.5	0.4	0.3	0.4	0.3	0.5	24	0.7	0.3	0.5	0	0
31	0.5	0.5	5.0	6.6	14.3	1.5	1.3	2.1	1.1	1.0	0.9	1.0	1.0	0.9	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.7	24	14.3	0.5	1.9	0	0
Count	31	31	31	31	31	31	31	31	31	30	30	31	30	30	30	30	31	31	31	31	31	31	31	31	738					
Maximum	7.6	4.7	7.8	9.3	14.3	12.2	8.0	3.1	1.7	2.4	2.8	2.0	2.5	2.0	2.9	3.7	3.4	6.8	12.0	6.0	15.1	16.1	11.3	11.6	24					
Minimum	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	20					
Average	1.2	0.9	1.1	1.0	1.4	1.1	1.3	0.8	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.8	1.4	1.2	2.1	2.0	1.2	1.4						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.1	0.2	0.2	0.4	0.4	0.6	0.7	1.0	2.3	4.5	10.9	16.1

Maximum Hourly	16.1
Maximum Daily	3.6
Monthly Average	1.0

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

SO_2 - Rundle Road
January 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>250	Days>100
1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.7	0.6	0.5	0.3	0.4	0.4	0.3	0.4	0.7	1.0	1.2	1.0	0.6	0.5	24	1.2	0.2	0.4	0	0
2	0.6	0.5	0.6	0.5	0.4	0.3	0.4	0.5	0.5	0.9	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.6	0.7	0.8	0.9	0.9	0.7	0.7	24	0.9	0.3	0.7	0	0
3	0.6	0.7	0.7	0.7	0.7	0.8	0.7	0.9	1.0	1.2	1.0	1.1	1.2	1.2	1.3	1.4	1.2	1.3	1.2	1.0	0.9	0.9	0.9	0.8	24	1.4	0.6	1.0	0	0
4	0.8	1.0	1.1	1.2	1.2	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.6	0.5	0.6	0.5	0.4	0.5	24	1.2	0.4	0.7	0	0
5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.9	24	0.9	0.3	0.5	0	0
6	1.3	1.0	0.5	0.3	0.3	0.4	0.5	0.5	0.7	0.7	0.8	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	24	1.3	0.1	0.5	0	0
7	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.8	1.2	1.0	0.7	0.9	0.9	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.8	24	1.8	0.1	0.8	0	0
8	1.7	2.1	1.2	1.0	1.0	1.0	0.9	0.7	0.7	0.6	0.8	1.0	0.9	0.9	0.9	0.9	0.8	0.9	0.7	0.7	0.7	0.6	0.7	0.6	24	2.1	0.6	0.9	0	0
9	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	24	0.6	0.2	0.4	0	0
10	0.3	0.4	0.2	0.4	0.5	0.4	0.4	0.4	0.5	0.5	0.7	0.5	1.0	0.5	0.5	0.5	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.4	24	1.0	0.2	0.5	0	0
11	0.4	0.6	0.5	0.7	0.8	0.8	0.7	0.7	0.6	0.9	1.1	1.1	1.1	1.0	1.0	1.0	0.9	1.2	1.2	0.7	0.9	0.9	0.9	0.7	24	1.2	0.4	0.9	0	0
12	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.9	1.1	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.4	24	1.1	0.4	0.7	0	0
13	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0.2	0.2	0.3	0.2	0.1	0.2	0.2	24	0.5	0.1	0.3	0	0
14	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.5	1.5	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	24	1.5	0.1	0.3	0	0
15	0.2	0.1	0.3	0.2	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	24	0.4	0.1	0.2	0	0
16	0.4	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.4	0.4	1.1	1.9	1.8	1.9	1.9	1.4	0.7	0.4	0.6	0.5	0.4	0.4	0.4	24	1.9	0.3	0.7	0	0
17	0.5	0.5	0.4	0.9	1.1	1.0	0.9	0.7	0.8	0.8	0.8	1.0	0.8	0.8	0.6	0.5	0.8	0.9	1.4	1.1	0.9	0.9	0.9	1.0	24	1.4	0.4	0.8	0	0
18	0.9	0.9	0.9	0.9	1.0	1.0	1.2	1.3	1.3	1.3	1.2	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.9	0.9	1.0	1.0	1.1	1.1	24	1.3	0.8	1.1	0	0
19	1.0	0.9	1.0	1.2	1.2	1.2	1.3	1.5	1.4	1.4	1.8	2.3	2.2	2.0	2.0	1.5	1.2	1.2	1.3	2.4	1.6	1.7	1.4	1.5	24	2.4	0.9	1.5	0	0
20	1.3	1.3	1.3	1.4	1.3	1.2	1.2	1.2	1.2	1.3	1.4	1.6	1.4	1.5	1.4	1.4	1.1	0.9	0.8	0.7	0.7	0.8	1.0	1.0	24	1.6	0.7	1.2	0	0
21	1.0	1.2	1.1	0.9	0.7	0.5	0.5	0.7	0.5	0.7	1.3	2.8	2.1	1.9	1.8	1.6	1.3	1.1	0.9	0.8	0.7	0.7	0.7	0.7	24	2.8	0.5	1.1	0	0
22	0.7	0.6	0.6	0.6	0.4	0.6	0.5	0.4	0.4	0.4	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.7	0.4	0.6	24	0.7	0.4	0.6	0	0
23	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.9	0.9	0.9	1.1	1.1	0.9	0.9	0.8	1.0	1.0	0.8	0.7	1.2	1.2	0.9	0.7	24	1.2	0.7	0.9	0	0
24	0.7	0.7	0.7	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	24	0.7	0.2	0.4	0	0
25	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.4	1.4	0.9	0.9	0.6	1.5	0.5	0.3	0.3	0.3	0.4	0.2	0.2	0.2	24	1.5	0.1	0.4	0	0
26	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.7	2.7	2.9	2.0	2.0	0.8	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	24	2.9	0.1	0.7	0	0
27	0.4	0.4	0.5	0.4	0.4	0.6	0.7	0.6	0.7	0.7	0.6	0.6	0.7	0.8	0.7	0.7	0.5	0.5	0.6	0.5	0.4	0.5	0.4	0.4	24	0.8	0.4	0.5	0	0
28	0.4	0.4	0.4	0.6	0.4	0.5	0.3	0.4	0.4	0.4	0.5	0.6	0.6	1.0	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.3	24	1.0	0.2	0.4	0	0
29	0.4	0.2	0.2	0.3	0.2	0.2	0.9	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	24	0.9	0.2	0.3	0	0
30	0.2	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.3	0.4	0.4	0.2	0.2	0.2	24	0.4	0.2	0.3	0	0
31	0.2	0.2	0.2	0.5	0.2	0.3	0.4	0.6	0.4	0.4	0.5	0.4	0.6	C	C	0.7	0.6	0.7	0.9	1.1	1.0	0.8	0.8	0.9	22	1.1	0.2	0.6	0	0
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	742					
Maximum	1.7	2.1	1.3	1.4	1.3	1.2	1.3	1.5	1.4	1.4	1.8	2.8	2.9	2.0	2.0	1.9	1.4	1.3	1.4	2.4	1.6	1.7	1.5	1.8	24					
Minimum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	22					
Average	0.6	0.6	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.7	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.2	0.3	0.4	0.4	0.5	0.7	0.8	0.9	1.2	1.4	2.0	2.9

Maximum Hourly	2.9
Maximum Daily	1.5
Monthly Average	0.6

Notes C - Calibration / Span Cycle; NA - No Data Available; T - Test; A- MOE Audit; M - Equipment Malfunction / Down; R - Rate of Change

SO_2 - Rundle Road
February 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>250	Days>100
1	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.2	1.7	2.2	2.1	1.9	1.2	1.2	0.8	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.3	24	2.2	0.3	1.0	0	0
2	0.4	0.4	0.4	0.3	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.5	0.3	0.6	0.7	0.5	0.4	0.4	0.2	0.2	0.2	0.4	0.5	0.4	24	0.7	0.2	0.3	0	0
3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.5	0.8	0.7	0.7	0.8	0.9	0.6	0.7	0.5	0.5	0.6	0.7	0.6	0.4	0.6	0.7	24	0.9	0.3	0.5	0	0
4	0.8	0.9	1.2	1.6	1.4	0.9	0.7	0.7	0.9	0.9	0.9	0.9	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.4	0.4	24	1.6	0.4	0.8	0	0
5	0.4	0.4	0.8	1.0	5.5	3.1	3.0	1.9	1.7	1.1	1.0	0.8	0.7	0.6	0.5	0.5	0.6	0.7	0.7	0.6	0.6	0.7	0.8	0.9	24	5.5	0.4	1.2	0	0
6	0.7	0.8	0.8	0.6	0.5	0.6	0.7	0.9	1.0	1.2	0.9	0.8	0.7	0.8	0.5	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.1	24	1.2	0.1	0.5	0	0
7	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	24	0.5	0.1	0.3	0	0
8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	1.0	0.7	0.2	0.2	0.3	0.7	0.7	0.5	0.6	0.4	24	1.0	0.2	0.4	0	0
9	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.5	0.7	0.6	0.5	0.4	0.5	0.4	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	24	0.7	0.2	0.3	0	0
10	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.3	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	24	0.6	0.2	0.3	0	0
11	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.4	0.2	24	0.5	0.2	0.4	0	0
12	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	24	0.3	0.0	0.2	0	0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	2.0	0.7	0.2	0.2	0.5	0.8	0.5	1.4	0.4	0.5	0.7	0.4	0.5	24	2.0	0.0	0.4	0	0
14	0.3	0.2	0.2	0.2	0.5	1.7	0.9	0.9	1.3	1.4	1.5	C	C	C	1.2	1.0	0.9	0.8	0.7	1.0	0.8	0.7	0.9	1.0	21	1.7	0.2	0.9	0	0
15	0.9	0.8	0.5	0.5	0.6	0.9	0.4	0.6	0.7	0.6	0.7	1.0	0.9	0.9	1.0	1.0	0.8	0.9	0.8	1.0	0.9	0.7	0.7	0.6	24	1.0	0.4	0.8	0	0
16	0.6	0.3	0.5	0.6	0.5	0.4	0.5	0.4	0.6	0.5	0.5	0.6	0.5	0.5	1.1	0.9	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	24	1.1	0.2	0.5	0	0
17	0.6	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.6	0.6	0.8	1.4	24	1.4	0.1	0.4	0	0
18	1.4	0.8	0.7	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.6	0.7	0.3	0.3	0.5	0.4	0.5	0.5	0.4	24	1.4	0.3	0.5	0	0
19	0.3	0.3	0.3	0.3	0.3	0.5	0.6	0.3	0.3	0.4	0.7	0.5	0.4	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.0	0.3	0.4	0.3	24	0.7	0.0	0.4	0	0
20	0.3	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.4	0.0	0.3	0.6	0.6	0.8	1.0	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	24	1.0	0.0	0.5	0	0
21	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	24	0.5	0.0	0.2	0	0
22	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.1	0.0	0.0	0	0
23	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.3	0.2	0.2	0.4	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.7	0.8	0.6	0.5	24	0.8	0.0	0.3	0	0
24	0.5	0.4	0.3	0.3	0.4	0.4	0.2	0.1	0.2	0.1	0.1	0.2	0.4	0.5	0.4	0.5	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.3	24	0.6	0.1	0.3	0	0
25	0.5	0.4	0.4	0.5	0.6	0.5	0.5	0.4	0.5	0.9	0.6	0.5	0.6	0.6	0.5	0.6	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.6	24	0.9	0.4	0.5	0	0
26	0.4	0.4	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	24	0.8	0.2	0.5	0	0
27	0.2	0.0	0.1	0.3	0.2	0.2	0.2	0.4	0.6	1.1	1.2	1.9	1.8	2.6	1.5	0.9	0.9	0.7	0.6	0.6	0.8	1.5	1.5	0.6	24	2.6	0.0	0.8	0	0
28	0.6	0.4	0.9	1.0	1.3	1.0	0.8	0.7	0.8	1.1	1.3	1.2	1.0	0.8	0.9	1.1	1.1	0.6	0.4	0.3	0.1	0.1	0.0	0.0	24	1.3	0.0	0.7	0	0
29																														
30																														
31																														
Count	28	28	28	28	28	28	28	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28	28	669					
Maximum	1.4	1.0	1.2	1.6	5.5	3.1	3.0	1.9	1.7	2.2	2.1	2.0	1.8	2.6	1.5	1.1	1.1	0.9	1.4	1.0	0.9	1.5	1.5	1.4	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21					
Average	0.4	0.4	0.4	0.4	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.9	1.2	1.9	5.5

Maximum Hourly	5.5
Maximum Daily	1.2
Monthly Average	0.5

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

SO_2 - Rundle Road March 2018 (ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>250	Days>100
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.1	0.1	0.1	0.7	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	24	0.7	0.0	0.1	0	0
2	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.2	0.0	0.0	0	0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0	0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0	0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0	0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	24	0.2	0.0	0.1	0	0
7	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.4	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	24	0.4	0.1	0.2	0	0
8	0.2	0.3	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.5	0.6	0.4	0.5	0.4	0.3	0.2	0.1	0.2	0.2	0.2	24	0.6	0.1	0.2	0	0
9	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.8	0.6	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	24	0.8	0.0	0.2	0	0
10	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.4	0.4	0.2	0.2	24	0.4	0.0	0.1	0	0
11	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	24	0.2	0.0	0.1	0	0
12	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	24	0.2	0.0	0.1	0	0
13	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.0	24	0.3	0.0	0.1	0	0
14	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	0.3	0.1	0.1	0	0
15	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.4	0.4	0.4	0.2	0.3	0.3	0.3	0.2	0.0	0.7	0.2	0.3	0.4	0.2	0.1	24	0.7	0.0	0.3	0	0
16	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.5	0.0	0.1	0	0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.9	0.5	0.6	1.0	0.9	0.5	0.2	0.2	0.2	0.0	0.0	0.0	24	1.0	0.0	0.2	0	0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	0.8	0.8	1.0	1.0	0.6	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	24	2.2	0.0	0.3	0	0
19	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.1	0.0	0.0	0	0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	21	0.3	0.0	0.1	0	0
21	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	24	0.3	0.2	0.2	0	0
22	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	A	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.4	23	0.5	0.1	0.2	0	0
23	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	24	0.3	0.1	0.2	0	0
24	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.2	0.0	0.0	0	0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	24	0.2	0.0	0.0	0	0
26	0.0	0.1	0.1	0.3	0.0	0.0	0.2	0.2	0.4	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.2	0.1	0.1	0.5	24	0.5	0.0	0.1	0	0
27	0.6	0.3	0.2	0.3	0.2	1.7	1.6	3.7	4.7	4.1	2.4	0.9	0.4	1.1	0.9	2.8	1.5	1.2	0.6	0.4	0.5	0.3	0.4	0.3	24	4.7	0.2	1.3	0	0
28	0.5	0.4	0.5	0.4	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.6	1.1	0.7	0.6	0.7	0.7	0.6	0.6	0.3	0.3	0.3	0.3	0.4	24	1.1	0.3	0.5	0	0
29	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	24	0.5	0.4	0.5	0	0
30	0.5	0.5	0.5	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	24	0.5	0.2	0.3	0	0
31	0.0	0.2	0.2	0.2	0.2	0.3	0.4	0.7	0.5	0.5	0.6	1.0	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.4	24	1.0	0.0	0.5	0	0
Count	31	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	740					
Maximum	0.6	0.5	0.5	0.4	0.4	1.7	1.6	3.7	4.7	4.1	2.4	1.0	1.1	1.1	1.0	2.8	1.5	1.2	0.7	0.5	0.5	0.5	0.5	0.5	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21					
Average	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.1						

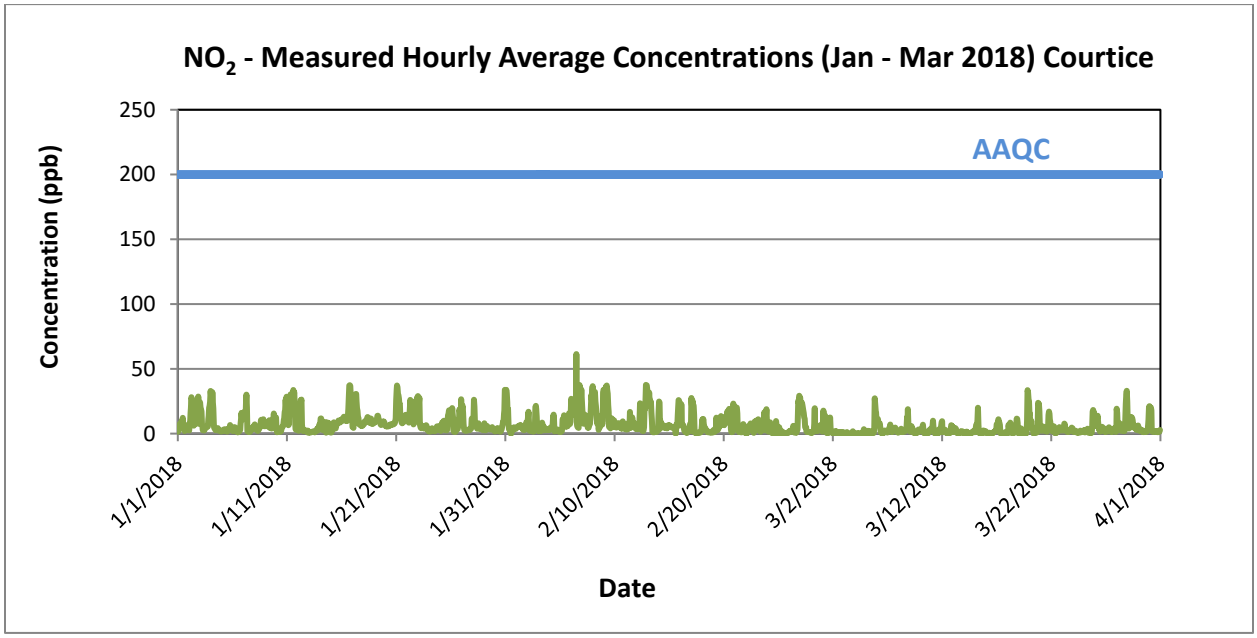
Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.5	0.6	1.6	4.7

Maximum Hourly	4.7
Maximum Daily	1.3
Monthly Average	0.2

Notes C - Calibration / Span Cycle; NA - No Data Available; T - Test; A- MOE Audit; M - Equipment Malfunction / Down; R - Rate of Change

APPENDIX C:
NO_2 DATA SUMMARIES AND TIME HISTORY PLOTS

Figure C-1: Time History Plots of Measured Hourly Average and 24-Hour Average NO_2 Concentrations – Courtice (WPCP) Station



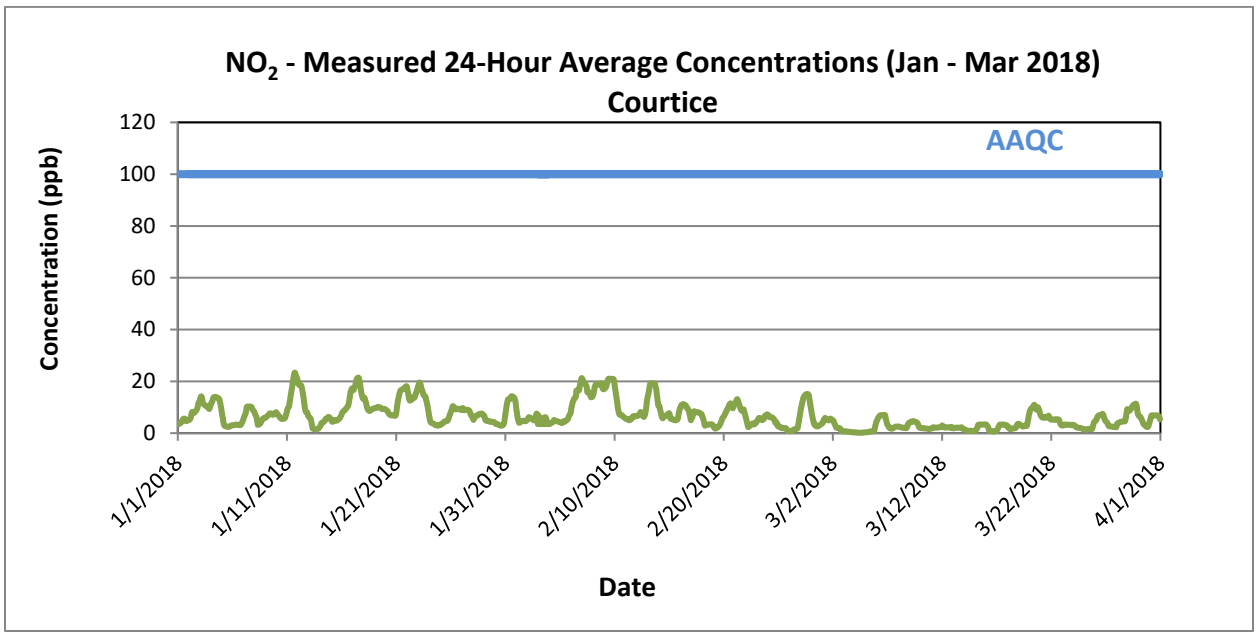
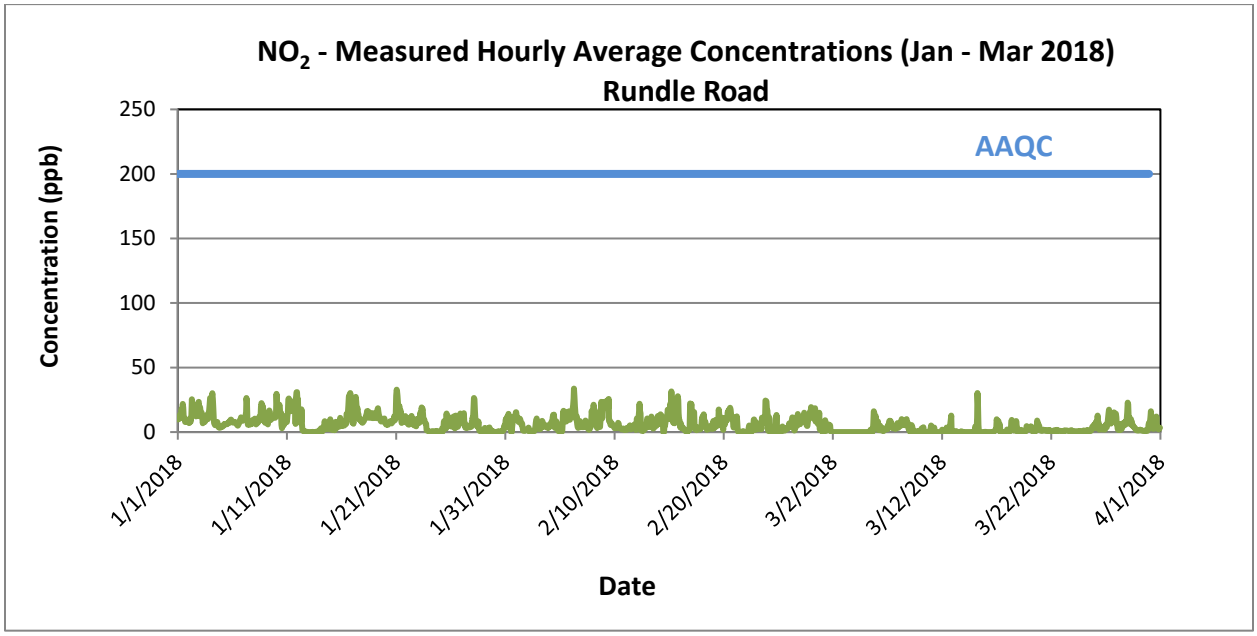
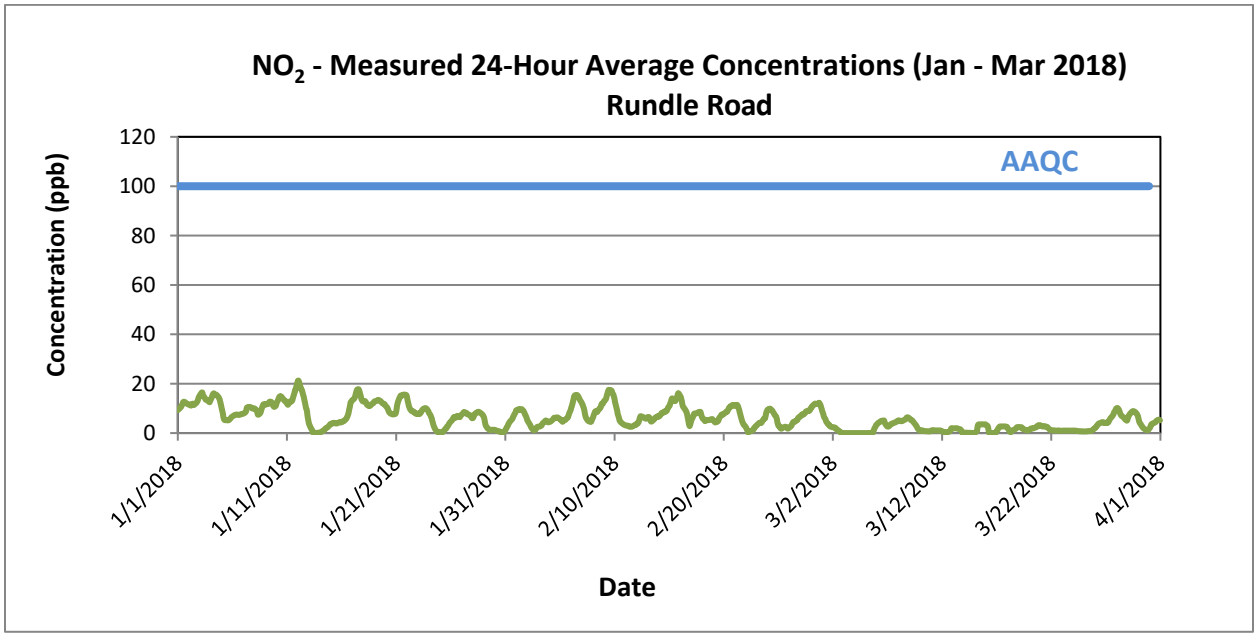


Figure C-2: Time History Plots of Measured Hourly Average and 24-Hour Average NO_2 Concentrations – Rundle Road Station





NO_2 - January (ppb) COURTICE 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	1.4	1.7	3.9	4.1	7.3	6.7	4.5	7.5	9.3	9.1	8.2	12.1	7.1	3.7	2.9	2.0	2.8	2.8	3.0	3.2	3.8	3.0	3.1	6.9	24	12.1	1.4	5.0	0	0
2	3.3	2.4	7.3	8.1	16.1	19.6	28.1	26.2	12.6	7.1	6.7	6.1	7.5	7.8	8.1	7.3	8.7	8.8	10.0	11.3	20.6	28.6	15.6	7.5	24	28.6	2.4	11.9	0	0
3	12.3	24.2	20.1	18.8	17.1	7.4	5.6	2.6	3.0	3.4	2.4	3.3	3.6	4.5	5.3	5.3	5.1	5.5	5.6	11.3	13.5	19.9	21.6	24.6	24	24.6	2.4	10.3	0	0
4	32.9	29.2	27.8	21.6	31.9	24.3	19.5	7.8	4.6	3.9	3.3	2.7	3.0	3.1	2.5	2.8	4.3	3.4	2.6	2.5	2.3	2.1	1.7	1.9	24	32.9	1.7	10.1	0	0
5	2.3	1.9	1.8	2.2	2.6	3.0	3.3	3.2	2.9	3.1	2.1	1.8	1.5	1.6	1.9	2.8	4.1	3.8	4.3	6.6	5.8	4.7	2.9	2.6	24	6.6	1.5	3.0	0	0
6	2.6	2.1	1.9	2.8	3.3	5.0	4.8	4.3	3.3	1.6	1.6	1.5	1.0	1.5	2.1	1.7	2.1	3.0	7.0	10.9	16.0	12.6	11.1	13.0	24	16.0	1.0	4.9	0	0
7	11.1	15.9	16.8	12.0	12.3	14.3	26.8	30.1	20.1	1.7	1.7	1.8	1.6	1.3	1.3	1.7	2.4	2.5	3.2	3.9	4.1	4.8	4.8	5.8	24	30.1	1.3	8.4	0	0
8	6.1	7.2	4.2	3.8	3.3	2.8	2.6	2.3	2.1	2.4	3.2	4.5	4.5	4.9	8.1	10.4	10.7	10.5	10.2	9.1	11.1	6.0	6.2	5.6	24	11.1	2.1	5.9	0	0
9	6.3	8.9	7.3	8.9	8.1	6.3	5.6	5.5	7.8	10.4	6.2	4.2	4.6	4.9	3.9	7.1	7.8	8.6	10.7	15.5	13.2	9.9	6.0	11.1	24	15.5	3.9	7.9	0	0
10	12.4	3.1	1.0	1.6	2.1	1.5	1.5	1.4	1.4	1.4	1.5	1.8	3.3	5.1	5.5	5.5	7.4	10.8	11.5	16.6	18.3	26.1	20.5	28.5	24	28.5	1.0	7.9	0	0
11	23.2	24.2	11.8	6.6	6.8	21.7	24.7	27.9	30.3	28.4	28.0	30.5	29.7	30.5	33.7	30.5	31.9	20.0	8.0	3.4	2.9	4.1	22.5	11.5	24	33.7	2.9	20.5	0	0
12	10.2	4.6	2.2	3.0	7.8	16.2	25.7	25.1	26.3	6.8	3.6	3.5	2.0	2.4	2.1	2.2	2.1	2.1	2.4	1.7	1.9	1.0	2.2	0.9	24	26.3	0.9	6.6	0	0
13	0.8	1.5	0.8	0.9	0.9	1.0	1.1	1.3	1.4	1.6	1.1	1.4	1.1	1.0	1.7	2.1	2.6	2.6	3.2	4.1	2.4	4.5	5.2	6.8	24	6.8	0.8	2.1	0	0
14	6.7	7.6	11.7	11.7	10.0	3.6	2.9	2.7	4.2	5.3	6.6	7.2	8.8	7.1	0.7	5.2	8.6	7.2	5.2	8.3	2.1	1.5	1.3	1.3	24	11.7	0.7	5.7	0	0
15	0.9	0.8	0.9	4.9	7.7	8.0	8.3	8.8	6.0	4.1	5.6	4.0	6.6	6.3	7.5	8.2	8.3	10.1	9.6	9.3	8.5	9.0	10.6	9.3	24	10.6	0.8	6.8	0	0
16	11.0	10.1	11.3	10.2	10.9	13.1	11.6	11.4	11.1	10.0	10.5	9.7	12.6	10.0	13.2	19.1	28.3	37.1	37.3	36.8	31.3	20.5	21.2	17.6	24	37.3	9.7	17.3	0	0
17	5.0	4.9	4.4	17.0	23.8	22.6	26.0	30.6	30.6	25.0	19.4	17.7	13.0	12.0	7.9	7.1	7.0	7.8	6.7	6.0	6.9	5.9	6.1	6.6	24	30.6	4.4	13.3	0	0
18	6.8	7.3	8.3	9.6	9.4	8.8	9.4	10.2	11.7	12.8	11.6	12.2	10.5	8.7	8.2	10.9	11.6	11.6	9.3	7.5	7.4	8.0	9.0	8.9	24	12.8	6.8	9.6	0	0
19	8.4	8.6	9.3	9.2	9.7	10.8	11.7	13.7	13.8	11.9	10.6	9.9	9.2	8.0	7.0	6.6	7.2	8.1	7.8	9.3	7.6	9.4	8.6	7.3	24	13.8	6.6	9.3	0	0
20	6.3	5.8	5.7	6.0	5.5	5.5	5.5	5.6	6.1	6.5	6.1	7.0	7.3	7.0	6.7	7.0	7.1	7.2	7.1	7.9	8.1	8.0	9.4	11.8	24	11.8	5.5	6.9	0	0
21	25.7	33.6	37.1	35.8	30.7	29.6	27.1	22.7	22.6	15.5	13.6	12.1	8.5	8.0	8.9	11.6	8.8	11.5	10.4	9.9	12.0	14.6	12.9	12.3	24	37.1	8.0	18.1	0	0
22	11.3	11.3	10.0	13.9	8.4	13.5	18.4	26.0	21.0	17.1	22.5	14.3	20.2	13.3	7.1	8.1	8.6	18.7	25.1	22.2	25.0	24.8	28.1	24.4	24	28.1	7.1	17.2	0	0
23	28.9	22.7	23.6	27.6	7.2	6.0	4.7	4.1	6.3	4.9	5.4	4.7	5.5	3.9	5.2	5.7	5.9	5.8	6.6	6.0	3.2	3.1	2.3	1.8	24	28.9	1.8	8.4	0	0
24	2.3	1.8	1.8	1.5	1.8	2.2	2.3	4.1	3.8	3.5	2.8	2.5	2.3	1.8	2.1	2.7	3.8	5.3	5.6	4.9	5.2	3.3	2.7	5.7	24	5.7	1.5	3.2	0	0
25	2.5	4.4	4.1	2.2	3.0	8.7	5.7	5.6	4.9	10.0	8.4	5.7	2.9	3.1	2.5	2.5	2.6	9.2	14.2	15.3	18.0	14.9	14.1	16.7	24	18.0	2.2	7.5	0	0
26	17.4	15.9	12.4	19.8	16.2	12.7	2.0	1.4	1.4	1.4	1.7	1.7	3.0	4.8	4.2	3.4	4.7	10.9	7.2	18.8	16.6	11.6	9.7	26.5	24	26.5	1.4	9.4	0	0
27	12.5	19.5	21.6	16.1	7.3	4.9	2.5	2.4	2.5	2.5	2.4	2.5	2.5	3.0	2.6	3.2	2.7	3.2	3.4	3.0	3.5	4.0	11.6	11.7	24	21.6	2.4	6.3	0	0
28	7.1	6.6	10.6	26.2	20.7	9.0	6.3	5.7	6.0	5.0	3.7	4.4	5.8	8.0	5.1	3.9	3.6	4.1	5.2	4.4	3.6	3.5	2.8	4.0	24	26.2	2.8	6.9	0	0
29	5.7	6.9	8.0	5.4	2.5	4.0	3.1	5.3	5.9	5.2	4.9	3.6	3.4	3.3	3.2	3.9	3.4	3.8	4.4	5.1	4.1	2.9	3.1	2.5	24	8.0	2.5	4.3	0	0
30	2.5	1.7	1.8	2.1	1.9	2.2	4.1	4.3	3.6	2.6	2.2	1.9	1.8	1.5	2.0	2.8	3.3	5.3	7.0	9.3	8.8	15.2	17.9	33.7	24	33.7	1.5	5.8	0	0
31	33.5	31.4	33.8	31.3	24.5	16.1	19.0	7.0	3.4	2.7	2.5	2.5	C	C	1.9	2.3	3.0	3.4	3.7	4.9	4.4	3.7	3.9	3.6	22	33.8	1.9	11.0	0	0
Count	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	742					
Maximum	33.5	33.6	37.1	35.8	31.9	29.6	28.1	30.6	30.6	28.4	28.0	30.5	29.7	30.5	33.7	30.5	31.9	37.1	37.3	36.8	31.3	28.6	28.1	33.7	24					
Minimum	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.3	1.4	1.4	1.1	1.4	1.0	1.0	0.7	1.7	2.1	2.1	2.4	1.7	1.9	1.0	1.3	0.9	22					
Average	10.3	10.6	10.4	11.1	10.3	10.0	10.5	10.2	9.4	7.3	6.8	6.4	6.5	6.1	5.7	6.3	7.1	8.2	8.3	9.3	9.4	9.4	9.6	10.7						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.9	2.7	3.6	4.9	6.1	7.8	9.7	12.4	21.5	27.5	33.7	37.3

Maximum Hourly	37.3
Maximum Daily	20.5
Monthly Average	8.8

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

NO_2 - COURTICE
February 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	4.1	4.6	5.0	5.4	5.0	5.9	5.9	5.5	6.4	6.8	6.2	4.9	4.6	5.5	5.5	3.1	2.7	2.8	2.8	3.4	3.5	4.0	8.8	6.7	24	8.8	2.7	5.0	0	0
2	7.5	9.2	12.8	16.8	8.2	2.3	4.1	5.1	3.2	3.2	1.9	2.0	2.2	1.5	2.0	1.8	2.5	5.4	20.3	21.5	19.1	13.5	3.6	2.4	24	21.5	1.5	7.2	0	0
3	2.5	2.5	2.2	2.4	2.0	1.9	2.5	3.0	4.0	8.5	6.4	3.9	4.1	5.1	4.4	3.2	3.8	3.7	3.4	3.6	2.9	3.0	3.0	2.9	24	8.5	1.9	3.5	0	0
4	2.5	3.3	3.0	4.7	4.4	4.6	4.6	5.3	6.8	13.5	14.6	11.9	1.9	1.9	2.1	2.3	2.0	2.2	2.4	3.2	2.0	1.8	1.4	1.4	24	14.6	1.4	4.3	0	0
5	1.3	1.4	1.7	1.5	1.8	4.6	10.9	10.3	11.2	14.2	12.6	9.6	7.3	5.4	5.8	5.6	5.8	5.8	10.6	13.2	15.6	9.8	7.4	9.2	24	15.6	1.3	7.6	0	0
6	20.0	26.9	21.0	21.6	22.1	15.6	19.4	19.2	19.8	18.8	14.1	20.0	61.4	8.8	6.0	5.0	4.6	4.4	14.9	37.6	34.7	28.7	25.9	34.1	24	61.4	4.4	21.0	0	0
7	26.5	19.2	12.7	8.9	7.6	14.8	14.5	14.5	13.9	11.7	11.2	9.1	11.4	4.7	5.3	4.6	5.6	7.1	7.5	12.6	21.0	29.8	26.3	33.7	24	33.7	4.6	13.9	0	0
8	36.6	28.6	28.5	31.9	31.5	32.2	25.0	21.5	17.1	11.0	7.8	13.2	10.4	2.9	4.0	8.7	5.0	8.0	13.9	13.7	8.8	7.0	9.7	31.5	24	36.6	2.9	17.0	0	0
9	33.8	33.0	33.9	34.2	34.7	36.2	36.0	37.1	33.5	30.8	21.8	16.8	5.2	5.5	5.1	4.0	7.5	11.0	11.9	10.4	9.1	9.4	8.3	10.2	24	37.1	4.0	20.0	0	0
10	5.1	5.5	7.2	4.9	4.7	5.9	5.4	7.0	7.9	8.1	6.3	5.8	5.2	4.6	4.5	3.9	4.3	3.9	9.4	7.0	5.7	5.9	5.3	4.1	24	9.4	3.9	5.7	0	0
11	3.3	3.4	4.9	4.3	3.1	3.4	3.9	8.3	4.1	4.9	16.8	4.9	4.5	9.6	9.4	12.5	9.9	7.3	7.3	8.2	7.7	5.8	5.4	3.5	24	16.8	3.1	6.5	0	0
12	5.1	6.8	4.9	3.4	6.0	5.3	4.6	11.0	23.5	13.7	7.9	3.1	3.3	2.3	2.1	1.9	2.6	4.8	19.5	19.0	24.9	37.6	37.4	37.3	24	37.6	1.9	12.0	0	0
13	34.1	28.5	24.4	24.5	31.7	27.4	26.4	21.2	24.5	16.5	10.7	1.6	1.2	1.1	0.9	1.0	3.5	2.2	1.2	1.4	1.7	1.6	1.7	2.8	24	34.1	0.9	12.2	0	0
14	4.6	16.6	24.7	23.9	3.7	9.8	6.5	7.4	6.5	5.9	6.6	6.5	6.2	6.1	4.6	4.3	4.1	4.3	4.4	5.0	4.1	4.8	6.6	6.4	24	24.7	3.7	7.6	0	0
15	5.6	6.3	5.7	5.1	5.5	4.9	4.8	4.7	5.2	4.8	4.3	4.0	4.6	4.4	C	C	7.0	5.1	6.0	14.6	21.5	25.9	25.4	23.2	22	25.9	4.0	9.0	0	0
16	21.2	9.9	8.5	22.7	8.9	7.0	5.6	6.5	5.4	2.7	2.9	1.5	1.1	1.3	0.8	0.4	0.7	2.0	3.0	3.0	3.6	4.9	7.5	6.9	24	22.7	0.4	5.8	0	0
17	1.9	27.4	21.9	22.2	25.0	21.8	21.6	14.6	0.9	0.7	0.9	0.5	0.4	0.4	0.4	0.7	0.8	0.7	0.5	0.7	0.8	0.9	1.1	2.9	24	27.4	0.4	7.1	0	0
18	5.7	10.9	7.4	11.3	7.9	3.7	4.4	4.8	3.9	2.9	2.2	1.8	1.8	1.1	1.0	1.1	1.4	1.1	1.0	0.7	0.8	0.7	0.9	0.9	24	11.3	0.7	3.3	0	0
19	0.8	2.7	2.5	1.5	1.3	1.6	3.3	5.8	12.3	5.0	2.6	2.9	3.4	7.3	7.6	5.3	8.3	11.3	13.6	11.5	11.6	12.5	7.8	6.7	24	13.6	0.8	6.2	0	0
20	7.0	6.5	11.5	12.2	8.0	11.5	13.9	13.9	17.3	14.7	13.2	9.2	19.1	13.5	11.4	9.7	3.4	1.2	1.2	1.2	4.2	23.2	19.4	17.0	24	23.2	1.2	11.0	0	0
21	15.8	14.2	17.8	19.4	20.0	20.1	15.7	2.4	2.2	1.5	1.4	2.1	1.4	1.2	1.1	0.9	1.7	3.9	4.5	7.4	6.7	3.7	2.2	1.2	24	20.1	0.9	7.0	0	0
22	1.7	0.0	0.7	0.1	0.8	3.1	4.3	5.5	5.5	3.5	6.9	7.8	3.8	2.8	6.3	3.3	5.8	1.0	0.6	3.5	9.3	6.7	7.6	9.9	24	9.9	0.0	4.2	0	0
23	3.0	7.0	6.4	7.8	11.1	9.6	6.5	4.4	1.8	1.4	1.8	2.9	2.4	6.8	3.5	5.4	9.7	16.4	13.1	2.6	6.8	13.6	18.9	9.4	24	18.9	1.4	7.2	0	0
24	4.6	4.0	1.6	2.2	2.6	5.7	8.7	2.7	1.6	1.2	0.9	0.3	0.0	0.0	0.0	0.0	0.2	0.0	6.3	9.8	6.6	4.5	2.0	0.4	24	9.8	0.0	2.7	0	0
25	1.0	2.1	4.9	0.8	0.1	1.8	0.9	0.9	1.7	1.6	0.1	0.0	0.5	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.3	0.5	0.7	1.3	24	4.9	0.0	0.8	0	0
26	1.7	1.4	2.0	1.5	2.1	2.2	2.2	2.8	4.3	6.0	4.0	0.8	0.8	0.9	0.7	1.0	0.9	2.1	3.2	11.6	25.4	23.6	29.3	28.3	24	29.3	0.7	6.6	0	0
27	27.8	23.0	23.6	22.8	23.8	22.0	19.6	18.0	15.8	12.6	11.4	4.9	4.9	4.8	1.7	1.2	1.4	1.5	1.2	1.1	1.0	1.2	1.3	1.0	24	27.8	1.0	10.3	0	0
28	0.5	0.3	0.8	1.1	1.4	1.6	1.5	8.0	19.6	4.1	2.1	2.4	2.6	3.1	2.3	2.1	2.6	3.2	4.9	4.1	6.6	3.1	3.4	3.7	24	19.6	0.3	3.5	0	0
29																														
30																														
31																														
Count	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	28	28	28	28	28	28	28	670					
Maximum	36.6	33.0	33.9	34.2	34.7	36.2	36.0	37.1	33.5	30.8	21.8	20.0	61.4	13.5	11.4	12.5	9.9	16.4	20.3	37.6	34.7	37.6	37.4	37.3	24					
Minimum	0.5	0.0	0.7	0.1	0.1	1.6	0.9	0.9	0.9	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.5	0.7	0.4	22					
Average	10.2	10.9	10.8	11.4	10.2	10.2	10.1	9.7	10.0	8.2	7.1	5.5	6.3	4.0	3.7	3.5	3.8	4.4	6.7	8.3	9.5	10.3	9.9	10.7						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.0	1.8	2.8	4.0	5.0	6.4	8.6	13.2	21.6	27.4	36.3	61.4

Maximum Hourly	61.4
Maximum Daily	21.0
Monthly Average	8.2

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

NO_2 - March (ppb) COURTICE 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	6.8	1.5	5.8	17.7	9.4	3.9	13.3	14.0	7.1	2.6	0.8	0.4	0.7	0.9	0.7	0.6	5.4	9.0	12.4	3.9	2.3	1.6	1.4	0.6	24	17.7	0.4	5.1	0	0
2	0.5	0.0	0.5	0.0	0.0	0.3	2.0	1.1	1.5	1.4	0.5	0.3	0.1	0.0	0.5	1.0	0.9	1.0	0.9	0.9	0.7	0.4	1.2	0.6	24	2.0	0.0	0.7	0	0
3	0.7	0.5	0.0	0.0	0.0	0.7	0.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	1.8	0.0	0.0	0.0	24	1.8	0.0	0.3	0	0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.8	1.3	3.4	0.6	0.9	0.0	24	3.4	0.0	0.3	0	0
5	0.0	0.0	0.0	0.0	0.0	2.1	1.2	1.6	0.3	0.6	0.4	1.9	0.0	0.0	0.8	0.2	0.4	0.6	0.5	4.2	27.3	22.5	17.4	16.4	24	27.3	0.0	4.1	0	0
6	10.3	9.3	9.1	11.2	7.2	6.7	6.2	8.0	5.2	1.1	1.1	0.2	0.3	0.0	0.0	0.9	1.1	1.4	2.4	1.1	1.4	1.2	1.5	1.0	24	11.2	0.0	3.7	0	0
7	0.9	2.4	1.8	1.8	4.5	3.0	7.0	3.4	1.9	1.4	1.9	1.3	3.0	2.2	4.1	2.4	2.8	4.6	3.6	2.4	2.2	1.4	0.9	1.2	24	7.0	0.9	2.6	0	0
8	0.8	1.2	1.3	1.6	1.6	1.2	3.8	2.1	1.8	1.1	1.9	2.8	1.7	1.6	1.7	1.9	2.5	3.6	5.2	12.5	10.6	18.9	7.6	2.7	24	18.9	0.8	3.8	0	0
9	6.0	3.7	1.5	3.4	4.2	5.8	3.9	4.0	2.3	1.2	0.7	0.4	0.2	0.7	0.2	0.3	0.8	1.2	1.5	1.0	3.1	1.9	1.6	2.2	24	6.0	0.2	2.2	0	0
10	2.1	2.0	2.4	3.8	3.4	4.3	6.9	2.8	0.8	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.3	2.5	1.7	2.5	3.4	2.7	24	6.9	0.0	1.7	0	0
11	2.0	4.2	3.9	5.5	9.9	4.7	4.0	3.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.7	3.6	2.5	2.3	1.6	6.0	8.8	24	9.9	0.0	2.7	0	0
12	9.6	1.7	1.1	2.2	1.9	1.5	2.9	2.9	1.4	0.9	1.2	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.3	1.9	6.5	5.9	2.9	5.7	24	9.6	0.0	2.2	0	0
13	3.2	1.9	1.2	1.8	4.0	4.3	4.0	3.0	1.2	0.4	0.2	0.1	0.0	0.0	0.5	0.6	1.5	1.1	1.8	1.9	1.5	1.4	0.7	1.4	24	4.3	0.0	1.6	0	0
14	0.6	1.2	0.5	0.7	0.6	0.8	1.5	1.0	1.0	0.6	0.8	0.2	0.0	0.4	0.6	0.4	0.8	0.3	1.0	1.2	1.5	2.1	1.6	2.4	24	2.4	0.0	0.9	0	0
15	1.1	1.5	4.1	6.7	6.7	7.6	10.4	20.0	6.8	0.8	0.7	0.1	0.0	0.1	0.1	1.0	1.3	0.9	0.8	2.4	0.8	2.1	2.0	2.0	24	20.0	0.0	3.3	0	0
16	1.8	0.7	0.3	0.4	0.4	0.5	0.6	0.2	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.3	1.2	1.3	1.7	1.5	1.8	2.5	1.9	24	2.5	0.0	0.8	0	0
17	7.2	7.1	6.6	9.4	11.1	9.4	8.4	6.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1	1.1	0.2	0.0	0.0	1.5	24	11.1	0.0	2.9	0	0
18	0.0	0.5	6.8	5.4	2.1	4.3	8.5	6.8	2.4	0.6	1.4	0.5	0.4	0.3	0.6	1.0	1.0	1.8	2.5	5.7	11.6	11.5	8.1	0.5	24	11.6	0.0	3.5	0	0
19	2.5	1.2	0.3	0.7	2.1	2.6	4.0	3.0	0.1	0.3	0.0	0.0	C	C	C	C	0.3	0.2	0.4	10.1	33.6	31.9	26.7	24.9	20	33.6	0.0	7.2	0	0
20	14.8	15.5	6.6	6.7	9.9	4.5	4.7	3.3	2.7	C	C	0.8	0.8	1.0	0.7	0.7	0.9	1.0	4.4	23.8	22.8	22.9	17.1	4.9	22	23.8	0.7	7.8	0	0
21	4.0	2.9	2.9	2.2	3.7	5.1	5.5	5.2	2.7	3.1	2.2	1.9	2.3	1.8	2.1	1.5	3.4	3.8	14.4	16.9	15.3	11.1	9.0	3.6	24	16.9	1.5	5.3	0	0
22	2.8	3.8	1.8	2.8	3.4	5.2	5.6	3.8	2.3	A	A	1.3	2.0	1.5	1.9	1.8	2.1	3.0	5.0	3.6	2.6	3.9	3.6	2.8	22	5.6	1.3	3.0	0	0
23	2.4	2.4	2.4	4.5	5.6	7.7	7.1	4.0	2.4	2.3	2.0	1.4	1.7	1.5	1.3	2.1	2.2	2.3	2.9	3.0	3.6	4.7	4.3	4.0	24	7.7	1.3	3.2	0	0
24	2.5	1.4	1.2	1.7	1.4	1.6	2.1	1.2	0.8	1.0	0.8	1.2	0.8	0.8	0.6	1.3	2.3	1.7	1.1	1.4	1.9	1.5	1.5	1.3	24	2.5	0.6	1.4	0	0
25	2.7	1.9	0.9	2.8	1.2	1.2	2.1	2.5	3.8	2.0	0.7	0.6	0.5	0.6	0.5	0.8	0.6	0.7	5.7	17.0	18.3	14.3	16.4	7.4	24	18.3	0.5	4.4	0	0
26	6.0	6.3	5.8	5.9	12.4	11.8	13.7	8.9	5.3	3.3	3.7	1.6	1.7	1.7	2.0	2.7	5.3	2.2	2.1	3.7	1.8	1.6	2.0	3.8	24	13.7	1.6	4.8	0	0
27	1.3	1.4	1.5	1.6	2.0	2.9	4.2	4.9	4.1	3.1	2.5	1.7	1.4	1.7	1.5	1.9	2.2	2.2	4.0	2.0	1.7	1.4	1.3	1.7	24	4.9	1.3	2.3	0	0
28	19.3	16.1	6.9	3.4	3.8	3.9	7.8	7.9	4.7	4.7	2.2	2.3	2.7	2.7	2.8	2.5	1.9	2.0	3.8	11.2	23.0	29.8	33.1	24.9	24	33.1	1.9	9.3	0	0
29	9.7	8.8	6.3	3.9	4.7	10.9	12.9	12.5	9.7	12.6	12.0	10.2	6.4	4.9	6.0	6.6	4.1	4.8	5.0	2.9	2.9	3.7	3.5	6.2	24	12.9	2.9	7.1	0	0
30	3.3	2.6	2.1	2.5	3.2	2.3	3.0	2.1	1.6	2.4	1.3	1.2	1.2	1.4	1.7	1.4	1.7	1.4	2.3	2.2	3.2	7.2	10.9	20.4	24	20.4	1.2	3.4	0	0
31	21.2	16.4	19.0	20.1	17.9	3.6	1.6	1.8	1.7	2.0	1.7	1.5	1.8	1.9	1.8	1.5	1.9	1.5	1.1	1.5	1.2	1.3	1.8	2.8	24	21.2	1.1	5.4	0	0
Count	31	31	31	31	31	31	31	31	31	29	29	31	30	30	30	30	31	31	31	31	31	31	31	31	736					
Maximum	21.2	16.4	19.0	20.1	17.9	11.8	13.7	20.0	9.7	12.6	12.0	10.2	6.4	4.9	6.0	6.6	5.4	9.0	14.4	23.8	33.6	31.9	33.1	24.9	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9	0.2	0.0	0.0	0.0	20					
Average	4.7	3.9	3.4	4.2	4.5	4.0	5.2	4.6	2.5	1.7	1.4	1.1	1.0	0.9	1.1	1.2	1.6	1.8	3.0	4.8	6.8	6.9	6.2	5.2						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.0	0.5	0.9	1.4	1.8	2.3	3.1	4.7	8.8	13.8	24.5	33.6

Maximum Hourly	33.6
Maximum Daily	9.3
Monthly Average	3.5

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

NO_2 - January (ppb) Rundle Road 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	9.8	9.8	10.2	10.2	11.5	13.7	11.0	12.0	17.8	16.5	17.2	21.8	18.8	11.2	11.1	10.0	7.8	8.8	8.7	8.8	8.4	8.1	7.7	8.6	24	21.8	7.7	11.6	0	0
2	8.6	7.0	10.4	9.7	7.9	9.9	13.0	25.4	20.3	16.7	15.5	14.6	15.8	16.8	15.4	12.5	12.2	13.2	14.4	15.6	19.6	22.8	23.5	15.1	24	25.4	7.0	14.8	0	0
3	12.3	19.3	16.4	15.6	15.3	14.2	10.3	6.8	9.0	11.7	7.8	7.8	8.6	8.9	10.4	12.9	10.4	10.1	10.0	14.4	14.9	16.6	21.2	26.4	24	26.4	6.8	13.0	0	0
4	25.5	24.8	24.0	27.3	30.1	25.6	18.2	9.6	6.9	6.1	5.3	6.4	7.6	6.7	7.1	7.8	5.9	4.1	3.6	3.6	3.5	3.4	3.5	4.2	24	30.1	3.4	11.3	0	0
5	4.6	4.6	4.1	4.5	5.2	5.5	6.2	5.9	6.2	6.2	5.9	6.1	6.1	6.4	7.2	6.8	7.7	7.1	7.7	8.4	9.6	9.6	8.2	7.9	24	9.6	4.1	6.6	0	0
6	7.8	7.4	7.6	7.9	7.8	7.9	7.8	7.5	7.1	6.2	5.7	5.6	5.0	5.6	6.5	7.1	8.4	9.4	9.4	11.4	10.9	9.4	8.9	8.8	24	11.4	5.0	7.8	0	0
7	9.5	9.5	9.6	10.9	11.1	13.0	15.6	26.4	23.6	9.8	5.7	6.3	7.8	5.8	5.6	5.9	8.4	7.2	6.1	6.7	7.5	9.4	8.0	8.9	24	26.4	5.6	9.9	0	0
8	8.6	10.4	7.8	6.4	6.0	6.7	9.3	7.7	7.2	9.1	8.7	11.8	10.4	10.2	14.2	19.8	22.4	21.4	19.2	19.8	15.8	8.6	9.4	8.3	24	22.4	6.0	11.6	0	0
9	7.2	8.4	11.7	9.1	8.4	7.8	5.9	9.9	13.6	16.8	15.6	12.1	9.3	10.0	10.2	11.1	12.2	11.5	11.5	12.0	13.1	11.8	11.1	11.6	24	16.8	5.9	10.9	0	0
10	14.7	29.7	21.8	17.2	17.2	17.6	18.1	21.4	20.3	14.5	14.5	14.8	5.6	3.0	4.6	4.9	7.2	5.7	5.8	7.6	7.1	12.4	10.3	9.1	24	29.7	3.0	12.7	0	0
11	7.8	12.8	14.9	25.6	26.0	24.8	23.3	23.9	16.8	16.2	19.1	18.7	17.1	16.4	20.0	20.3	22.7	24.6	23.3	6.3	26.6	30.8	30.9	23.5	24	30.9	6.3	20.5	0	0
12	25.4	13.6	10.7	8.4	8.6	9.7	6.9	8.0	17.7	6.1	1.5	1.3	0.7	0.5	0.5	0.5	0.4	0.5	0.3	0.2	0.0	0.1	0.0	0.0	24	25.4	0.0	5.1	0	0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.4	0.2	0.1	0.0	0.6	1.0	24	1.0	0.0	0.1	0	0
14	1.6	2.1	2.5	3.0	2.5	0.8	0.4	2.2	3.9	4.2	3.6	8.5	3.0	4.3	2.7	3.4	2.9	2.5	2.7	4.8	4.5	7.8	4.6	9.9	24	9.9	0.4	3.7	0	0
15	2.1	2.0	2.3	6.4	5.3	1.8	3.2	3.7	2.4	1.5	2.5	8.0	2.7	3.5	3.9	7.5	4.3	4.6	4.5	4.3	5.0	11.0	5.6	5.0	24	11.0	1.5	4.3	0	0
16	5.0	5.3	4.9	6.4	7.8	6.3	5.0	6.5	7.8	7.2	6.3	14.1	14.0	12.1	14.5	20.2	27.2	28.7	24.3	30.2	24.7	14.7	12.6	12.6	24	30.2	4.9	13.3	0	0
17	7.0	8.7	6.4	11.3	13.5	14.9	20.7	27.3	23.7	20.1	16.9	18.5	14.9	13.8	10.9	9.7	10.4	9.7	9.1	8.1	9.3	7.6	7.2	7.6	24	27.3	6.4	12.8	0	0
18	8.1	8.6	9.9	10.7	10.8	10.8	12.8	13.5	16.2	15.9	14.1	16.0	13.8	11.0	12.0	13.5	14.8	14.6	13.9	11.1	11.1	10.8	11.7	14.6	24	16.2	8.1	12.5	0	0
19	12.8	12.2	11.7	11.1	10.8	14.1	14.9	17.4	18.4	15.4	13.2	12.3	11.2	9.7	8.7	8.2	8.9	9.7	9.8	9.7	8.4	9.9	10.5	7.8	24	18.4	7.8	11.5	0	0
20	6.8	6.5	5.8	5.8	6.1	5.7	5.7	6.3	7.4	7.4	7.5	8.4	7.7	8.2	6.7	7.4	7.7	8.7	9.6	10.7	12.2	9.1	10.0	12.5	24	12.5	5.7	7.9	0	0
21	28.0	32.8	31.9	28.1	22.7	18.7	18.4	20.2	13.9	14.4	16.6	10.1	7.0	7.7	9.9	10.2	11.1	8.4	10.3	7.9	12.4	9.9	8.6	7.7	24	32.8	7.0	15.3	0	0
22	7.1	6.6	10.7	10.3	5.7	6.8	6.5	10.3	9.0	7.3	12.5	7.6	7.3	8.3	6.2	5.2	5.5	8.0	8.6	5.4	4.5	10.0	7.4	10.0	24	12.5	4.5	7.8	0	0
23	10.0	7.7	7.0	7.1	9.6	14.7	9.6	14.6	19.1	16.9	18.1	13.3	9.0	9.0	9.5	7.5	6.9	6.6	6.4	1.5	1.2	1.0	0.8	0.6	24	19.1	0.6	8.7	0	0
24	0.4	0.4	0.2	0.1	0.2	0.2	0.1	0.3	0.7	0.4	0.2	0.4	0.2	0.3	0.4	0.6	0.5	0.8	0.8	0.6	0.4	0.2	0.2	0.1	24	0.8	0.1	0.4	0	0
25	0.0	0.0	0.0	0.0	0.0	2.8	0.5	0.9	2.8	8.1	8.7	7.0	2.7	3.0	3.0	14.4	5.1	5.3	6.2	6.4	11.5	6.9	5.4	5.3	24	14.4	0.0	4.4	0	0
26	4.7	4.9	4.2	5.5	7.0	9.6	12.0	6.1	4.4	2.8	3.7	12.8	8.3	6.6	7.5	4.1	4.3	5.4	6.0	7.9	9.4	14.4	13.6	10.5	24	14.4	2.8	7.3	0	0
27	8.6	8.5	8.5	11.4	13.7	14.6	5.4	6.8	3.5	3.3	3.5	3.8	3.5	4.3	4.4	3.6	3.6	3.8	4.0	3.8	4.0	4.1	7.5	5.2	24	14.6	3.3	6.0	0	0
28	11.3	9.5	17.8	26.4	25.5	16.4	9.5	8.5	8.7	7.3	4.4	4.0	5.9	8.2	2.6	1.1	0.8	0.8	0.6	0.5	0.5	0.3	0.5	0.4	24	26.4	0.3	7.1	0	0
29	0.6	0.4	1.9	3.2	0.8	0.6	1.4	2.6	2.3	1.2	1.1	2.7	0.7	3.5	0.9	1.3	1.5	1.3	1.1	0.7	0.7	0.5	0.3	0.2	24	3.5	0.2	1.3	0	0
30	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5	0.3	0.3	0.2	0.3	0.2	0.1	0.5	0.5	0.4	1.1	1.4	1.2	4.6	4.8	4.2	24	4.8	0.0	0.9	0	0
31	6.3	9.9	7.2	11.4	7.5	3.6	10.3	14.1	7.4	7.0	7.2	4.5	5.5	C	C	4.5	7.6	11.9	8.7	9.4	11.7	10.4	11.9	15.4	22	15.4	3.6	8.8	0	0
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	742					
Maximum	28.0	32.8	31.9	28.1	30.1	25.6	23.3	27.3	23.7	20.1	19.1	21.8	18.8	16.8	20.0	20.3	27.2	28.7	24.3	30.2	26.6	30.8	30.9	26.4	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	22					
Average	8.5	9.1	9.1	10.0	9.8	9.6	9.1	10.5	10.3	8.9	8.5	9.0	7.4	7.2	7.2	7.8	8.0	8.2	8.0	7.7	8.7	8.9	8.6	8.5						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.5	2.9	5.1	6.7	7.8	9.1	10.5	13.5	17.4	22.8	28.4	32.8

Maximum Hourly	32.8
Maximum Daily	20.5
Monthly Average	8.7

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

NO_2 - Rundle Road
February 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	15.3	12.1	9.6	10.9	9.7	7.8	9.5	8.1	10.4	9.6	7.3	5.8	5.5	6.7	3.4	1.1	1.2	1.0	0.8	1.2	1.2	1.2	1.5	1.7	24	15.3	0.8	5.9	0	0
2	1.7	2.4	2.7	3.4	2.5	0.2	0.6	0.7	0.6	0.3	0.1	0.3	0.3	0.6	0.7	0.8	0.7	2.1	4.2	7.7	8.1	10.6	6.1	3.4	24	10.6	0.1	2.5	0	0
3	3.8	2.7	2.9	2.9	3.6	2.4	3.1	4.1	5.8	8.7	7.9	5.1	4.2	5.2	5.2	5.5	4.5	4.3	4.8	4.2	3.3	3.3	3.7	3.4	24	8.7	2.4	4.4	0	0
4	5.6	4.0	4.3	5.2	5.3	7.7	7.1	6.5	11.5	13.3	12.3	13.6	6.4	3.2	3.7	4.1	8.3	7.0	6.1	2.4	0.9	0.7	0.6	0.5	24	13.6	0.5	5.8	0	0
5	0.5	0.5	0.3	0.3	0.3	1.1	6.1	15.4	16.5	13.5	14.8	11.5	9.9	9.1	8.2	9.6	9.2	11.5	15.7	13.9	16.0	12.9	9.6	13.2	24	16.5	0.3	9.2	0	0
6	13.8	13.5	14.0	16.3	17.9	21.0	25.9	33.7	27.5	19.9	14.8	12.2	9.3	12.0	6.5	4.1	3.2	4.4	3.9	5.2	8.6	4.6	3.7	5.8	24	33.7	3.2	12.6	0	0
7	3.9	4.7	4.6	3.7	6.9	4.9	4.1	5.5	9.0	7.1	6.0	5.2	3.5	3.2	2.9	2.0	2.2	2.0	3.0	3.3	6.1	11.0	16.4	13.0	24	16.4	2.0	5.6	0	0
8	14.9	15.0	21.2	15.0	15.6	16.8	12.4	5.1	5.6	5.4	3.1	14.1	14.7	6.9	8.0	8.4	4.0	7.7	10.5	23.5	16.5	10.7	16.4	23.0	24	23.5	3.1	12.3	0	0
9	21.8	23.3	23.1	22.4	21.1	23.0	23.4	24.3	22.7	22.1	18.4	25.7	8.6	8.4	8.8	5.8	5.3	6.0	6.9	5.9	5.2	5.0	4.4	3.9	24	25.7	3.9	14.4	0	0
10	3.0	3.3	3.2	3.1	3.3	3.6	3.1	3.9	7.2	6.7	4.1	3.2	2.9	2.8	2.7	2.4	2.0	2.1	2.7	2.7	2.7	2.0	2.3	1.7	24	7.2	1.7	3.2	0	0
11	1.8	1.8	1.9	3.1	3.3	2.1	2.1	2.6	2.7	3.4	5.2	2.8	2.1	3.3	3.0	3.5	4.8	4.8	5.2	5.6	5.9	4.8	2.7	1.6	24	5.9	1.6	3.3	0	0
12	3.7	10.6	8.5	2.2	3.8	11.3	16.1	22.0	16.3	14.5	5.0	1.1	1.1	1.0	1.3	1.1	1.1	1.5	3.0	3.4	2.8	3.3	5.8	7.3	24	22.0	1.0	6.2	0	0
13	10.5	9.4	5.3	3.9	6.0	6.6	4.6	5.7	7.9	12.1	8.9	5.1	4.0	2.8	8.3	3.3	8.5	6.9	9.0	4.6	5.8	7.5	5.8	12.4	24	12.4	2.8	6.9	0	0
14	8.5	6.3	6.7	9.1	11.3	13.8	10.4	12.6	12.4	9.2	10.5	C	C	C	6.3	5.0	7.4	10.2	9.9	11.6	12.1	17.4	16.6	15.0	21	17.4	5.0	10.6	0	0
15	14.7	10.1	17.5	22.3	20.0	31.5	22.0	12.9	8.6	7.4	7.2	9.2	6.8	9.0	10.4	13.8	14.9	23.8	25.0	27.7	24.4	14.6	9.7	9.2	24	31.5	6.8	15.5	0	0
16	4.4	3.4	6.5	4.5	4.4	3.0	2.8	3.0	2.8	2.0	1.6	1.5	0.9	0.3	0.3	0.0	0.0	0.5	1.1	1.8	1.3	3.5	22.2	21.6	24	22.2	0.0	3.9	0	0
17	19.2	21.8	16.3	12.9	12.8	14.1	15.5	15.5	3.0	2.1	2.1	2.6	1.8	1.5	3.8	2.7	2.4	2.4	2.7	2.2	2.1	2.8	2.8	4.5	24	21.8	1.5	7.1	0	0
18	9.3	11.8	7.0	8.4	13.7	9.2	6.6	8.3	7.6	4.8	4.2	1.7	2.7	4.1	2.2	2.8	3.4	3.9	3.3	2.7	4.8	5.3	4.3	3.3	24	13.7	1.7	5.7	0	0
19	2.5	8.6	4.1	5.4	3.2	3.7	9.5	8.3	7.8	7.0	6.4	5.0	8.0	17.5	15.1	9.1	9.7	8.4	11.4	11.1	6.8	5.8	3.9	1.7	24	17.5	1.7	7.5	0	0
20	9.0	10.7	9.4	5.9	9.3	9.6	9.1	9.0	12.0	15.5	14.2	17.1	16.4	17.5	18.9	17.5	15.1	10.2	11.9	10.1	11.3	4.5	3.5	4.4	24	18.9	3.5	11.3	0	0
21	7.1	5.5	9.9	11.6	10.5	12.2	6.7	0.6	0.4	0.5	0.4	0.3	0.1	0.0	0.0	0.1	0.1	0.2	0.6	0.8	0.5	0.0	0.0	0.0	24	12.2	0.0	2.8	0	0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.2	5.1	2.6	1.4	4.4	1.8	0.4	1.9	1.7	1.2	4.9	9.7	9.8	7.7	2.4	1.8	7.6	24	9.8	0.0	2.8	0	0
23	5.8	4.4	3.5	2.3	5.6	6.3	3.4	4.3	2.6	4.2	5.3	2.3	11.1	7.5	6.7	9.4	9.7	8.3	8.9	12.9	24.4	24.1	23.8	17.5	24	24.4	2.3	8.9	0	0
24	16.8	8.9	0.9	2.5	11.5	9.7	4.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.3	3.1	4.6	6.5	13.3	4.4	3.0	0.1	24	16.8	0.0	3.8	0	0
25	1.2	0.0	2.2	0.8	0.5	0.2	0.5	0.4	1.9	4.3	3.7	1.5	2.7	2.2	1.2	1.5	1.8	2.2	2.6	2.3	3.2	3.2	4.2	3.9	24	4.3	0.0	2.0	0	0
26	6.7	3.7	4.3	4.3	5.3	5.9	9.4	11.4	10.7	10.8	7.1	1.2	1.2	3.5	5.3	4.8	4.6	4.7	6.6	14.0	11.5	8.5	6.1	6.8	24	14.0	1.2	6.6	0	0
27	6.2	10.2	9.8	11.9	8.1	9.0	8.3	8.6	12.0	15.0	11.9	9.3	8.9	9.4	5.8	4.9	4.7	7.9	10.3	11.4	10.6	11.8	15.9	12.8	24	15.9	4.7	9.8	0	0
28	19.3	13.2	16.1	14.0	15.5	14.9	10.3	13.7	16.1	18.5	8.1	8.8	8.8	8.0	9.9	6.5	7.2	8.4	15.1	2.2	1.8	1.6	1.2	1.1	24	19.3	1.1	10.0	0	0
29																														
30																														
31																														
Count	28	28	28	28	28	28	28	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28	28	669					
Maximum	21.8	23.3	23.1	22.4	21.1	31.5	25.9	33.7	27.5	22.1	18.4	25.7	16.4	17.5	18.9	17.5	15.1	23.8	25.0	27.7	24.4	24.1	23.8	23.0	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.8	0.5	0.0	0.0	0.0	21					
Average	8.3	7.9	7.7	7.4	8.2	9.0	8.5	8.9	8.8	8.6	6.9	6.3	5.3	5.4	5.4	4.7	4.9	5.7	7.1	7.5	7.8	6.7	7.1	7.2						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.9	2.2	3.2	4.2	5.4	7.2	9.2	11.5	15.5	19.6	24.6	33.7

Maximum Hourly	33.7
Maximum Daily	15.5
Monthly Average	7.2

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

NO_2 - March (ppb) Rundle Road 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	1.0	0.3	0.3	1.2	0.9	1.7	2.4	9.2	5.5	0.9	3.5	2.7	1.8	4.7	2.5	5.8	2.0	5.2	5.2	0.7	0.4	0.1	0.0	0.1	24	9.2	0.0	2.4	0	0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0	0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0	0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	0.0	0.0	0.0	0	0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.3	1.9	0.0	0.0	1.0	0.2	0.7	6.9	16.1	14.7	8.7	6.6	12.4	7.1	24	16.1	0.0	3.2	0	0
6	5.2	3.0	3.7	8.2	3.7	1.5	2.8	2.7	4.9	1.4	2.7	1.8	3.0	1.1	1.0	2.7	0.9	1.4	1.7	2.1	2.3	2.7	2.3	3.8	24	8.2	0.9	2.8	0	0
7	2.2	3.8	5.9	5.9	8.5	8.8	5.9	8.5	6.5	5.5	3.9	3.0	3.1	3.6	3.5	4.4	4.2	2.4	2.5	3.6	5.7	6.3	6.9	5.5	24	8.8	2.2	5.0	0	0
8	3.3	5.7	5.2	6.3	5.6	4.8	5.2	10.0	7.3	5.5	5.6	6.8	6.3	6.1	5.3	5.8	7.3	9.3	10.1	6.7	5.8	7.0	2.9	2.3	24	10.1	2.3	6.1	0	0
9	2.3	0.4	0.1	0.8	1.9	5.4	4.7	3.2	1.0	1.2	0.0	0.3	0.4	0.0	0.0	0.1	0.6	0.4	0.4	0.1	0.6	0.5	0.4	0.9	24	5.4	0.0	1.1	0	0
10	1.2	0.4	0.6	2.9	1.2	1.1	2.9	3.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	1.6	3.2	24	3.7	0.0	0.9	0	0
11	5.0	1.6	2.7	1.8	0.9	1.5	3.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	5.0	0.0	0.8	0	0
12	1.8	0.8	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.0	3.5	1.8	0.9	0.6	1.2	1.0	1.9	3.7	6.2	9.2	12.7	2.2	0.0	0.0	24	12.7	0.0	2.0	0	0
13	0.0	0.0	0.0	0.0	0.2	0.3	0.7	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.6	0.5	0.3	0.0	0.0	0.0	24	0.8	0.0	0.2	0	0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.1	24	0.3	0.0	0.0	0	0
15	1.0	4.2	3.3	2.6	3.1	11.4	30.2	22.2	5.5	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	24	30.2	0.0	3.5	0	0
16	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	1.1	1.5	2.2	1.7	24	2.2	0.0	0.3	0	0
17	9.9	8.0	6.0	8.5	8.6	4.6	6.2	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	24	9.9	0.0	2.5	0	0
18	0.0	0.0	0.0	0.0	0.9	1.0	1.6	1.4	6.5	9.4	3.4	1.5	1.5	1.5	1.2	1.1	3.0	1.6	3.2	8.6	5.0	3.3	1.4	0.0	24	9.4	0.0	2.4	0	0
19	0.5	0.1	0.0	0.2	0.1	1.1	1.8	1.5	0.3	0.0	0.0	0.7	0.2	0.1	0.2	0.4	0.7	1.2	4.6	3.8	4.0	2.6	2.6	2.7	24	4.6	0.0	1.2	0	0
20	3.1	3.6	4.2	2.2	4.3	1.4	1.1	0.6	1.9	0.0	C	C	C	1.9	1.6	1.5	2.0	8.9	7.2	5.0	6.1	4.9	4.5	1.6	21	8.9	0.0	3.2	0	0
21	1.3	1.2	1.2	0.9	1.2	1.3	1.6	1.8	1.6	1.3	1.6	1.2	0.9	1.1	1.1	1.0	0.8	0.8	1.6	1.6	1.4	1.1	1.2	0.8	24	1.8	0.8	1.2	0	0
22	0.4	0.5	0.5	0.6	0.6	0.8	1.3	1.5	1.3	1.2	0.9	A	0.8	1.7	1.3	0.9	1.0	1.0	1.0	1.0	0.9	0.8	0.9	0.7	23	1.7	0.4	0.9	0	0
23	0.6	0.7	0.8	1.0	0.9	1.0	1.3	1.3	1.3	1.2	1.2	1.1	1.0	0.9	0.9	1.0	0.9	0.8	0.8	1.2	1.4	1.1	1.1	0.9	24	1.4	0.6	1.0	0	0
24	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.7	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.9	1.1	1.1	24	1.1	0.5	0.7	0	0
25	1.2	0.5	0.5	0.5	0.4	1.1	1.2	1.1	1.5	0.8	1.1	1.0	0.8	0.9	0.8	1.3	1.3	2.3	4.0	4.0	3.7	5.1	5.6	3.7	24	5.6	0.4	1.9	0	0
26	3.1	7.0	3.2	8.2	5.0	4.0	12.8	5.7	7.4	2.6	1.9	2.4	2.8	3.0	3.4	3.0	2.1	2.1	2.4	2.1	4.2	2.4	2.0	5.0	24	12.8	1.9	4.1	0	0
27	5.7	4.1	3.7	6.8	8.1	10.6	14.2	17.4	15.3	11.7	9.7	6.6	6.8	8.9	7.7	10.6	9.8	10.7	15.2	10.3	9.5	11.8	14.3	11.6	24	17.4	3.7	10.0	0	0
28	6.1	6.8	2.7	1.8	1.9	1.8	1.8	6.2	2.5	1.8	2.0	2.6	3.7	6.6	4.8	5.0	5.1	7.2	6.2	8.2	5.9	8.2	10.1	15.1	24	15.1	1.8	5.2	0	0
29	22.8	21.4	13.9	6.7	11.1	6.5	8.3	10.1	6.9	8.3	5.0	5.7	4.7	4.2	4.1	3.4	2.9	2.9	1.9	1.5	1.4	1.4	1.2	1.1	24	22.8	1.1	6.6	0	0
30	1.2	1.2	1.7	1.8	1.8	1.6	1.3	1.2	1.1	0.9	0.8	0.9	0.9	1.0	1.1	1.3	1.1	0.9	0.9	0.9	1.3	2.2	5.6	7.2	24	7.2	0.8	1.7	0	0
31	7.1	7.8	11.4	16.1	9.8	6.4	3.5	3.0	2.5	2.7	2.8	4.0	3.0	3.0	3.3	12.0	4.4	3.0	4.0	3.1	2.1	2.3	3.1	3.3	24	16.1	2.1	5.2	0	0
Count	31	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	740					
Maximum	22.8	21.4	13.9	16.1	11.1	11.4	30.2	22.2	15.3	11.7	9.7	6.8	6.8	8.9	7.7	12.0	9.8	10.7	16.1	14.7	12.7	11.8	14.3	15.1	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21					
Average	2.8	2.7	2.3	2.8	2.6	2.6	3.8	4.0	2.6	1.8	1.7	1.6	1.4	1.7	1.5	2.0	1.7	2.4	3.1	2.9	2.8	2.4	2.7	2.6						

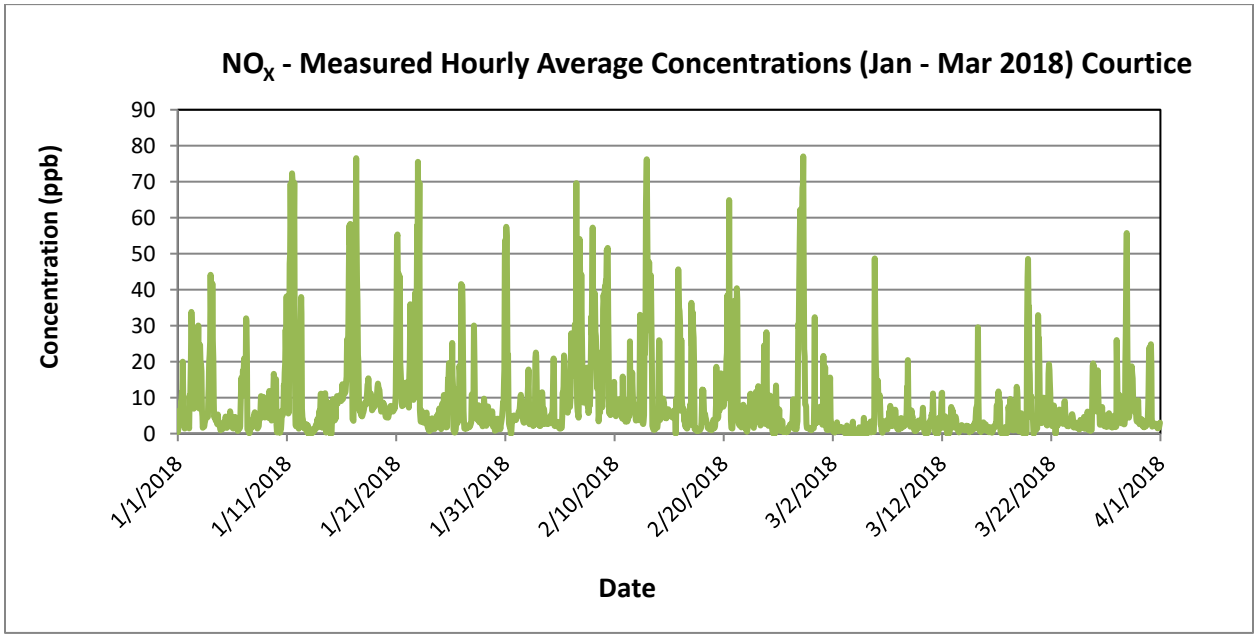
Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.0	0.0	0.1	0.7	1.1	1.6	2.7	4.2	6.8	9.4	15.2	30.2

Maximum Hourly	30.2
Maximum Daily	10.0
Monthly Average	2.4

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

APPENDIX D:
NO_X DATA SUMMARIES AND TIME HISTORY PLOTS

Figure D-1: Time History Plots of Measured Hourly Average and 24-Hour Average NO_X Concentrations – Courtice (WPCP) Station



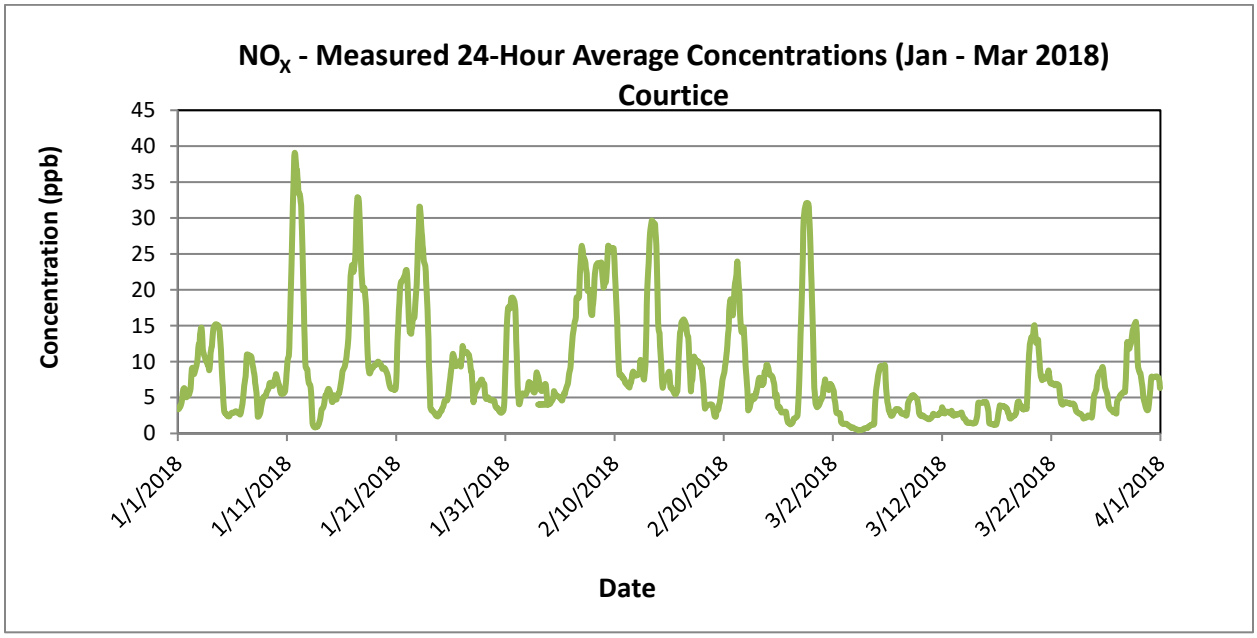
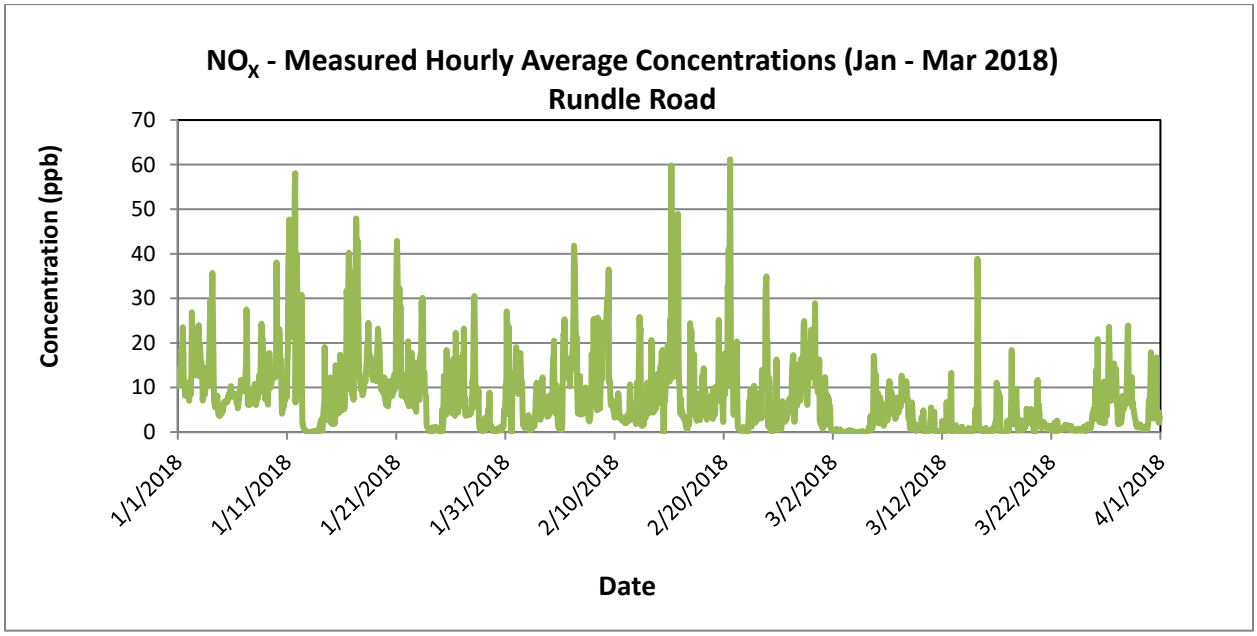
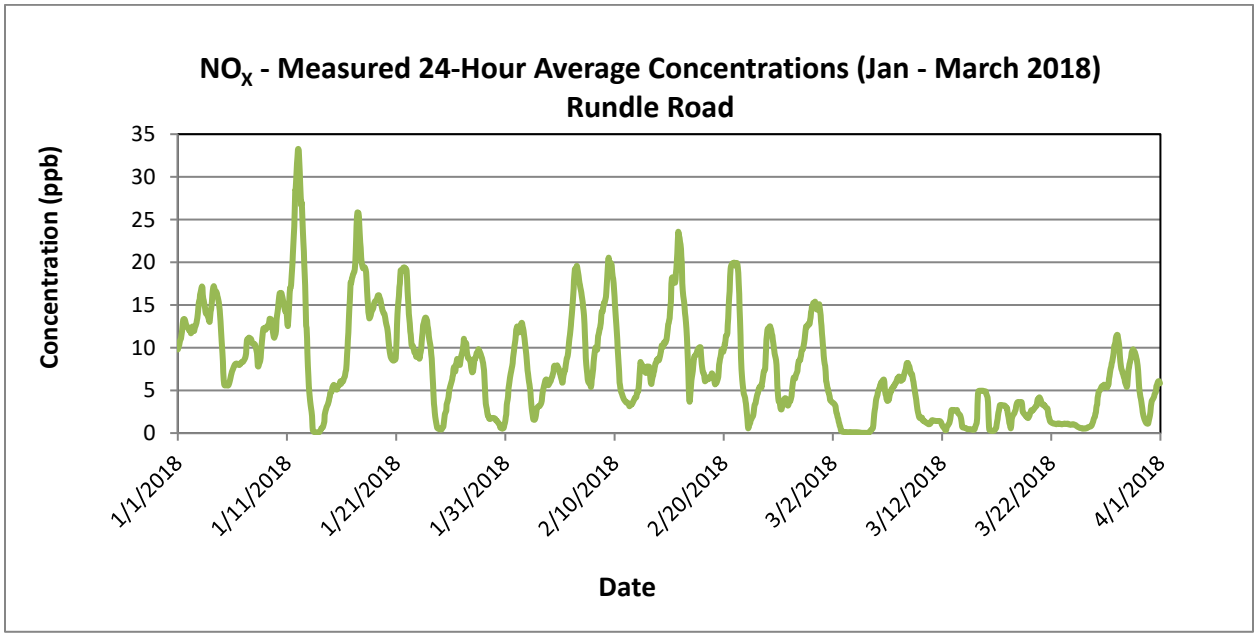


Figure D-2: Time History Plots of Measured Hourly Average and 24-Hour Average NO_X Concentrations – Rundle Road Station





NOx COURTICE
January 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	0.4	1.2	3.7	3.4	6.5	5.8	3.7	8.9	9.6	11.6	10.7	20.0	10.6	4.2	2.7	1.4	2.1	2.2	2.8	2.3	3.4	2.7	2.3	5.9	24	20.0	0.4	5.3	0	0
2	2.4	1.5	10.6	7.3	15.9	20.7	33.8	29.7	13.1	7.6	7.8	6.9	8.9	9.2	8.9	7.5	8.1	8.0	9.0	10.4	20.0	30.0	14.9	7.0	24	33.8	1.5	12.5	0	0
3	11.4	24.7	19.8	19.4	17.3	6.5	4.8	1.6	2.3	2.5	1.9	2.9	3.6	4.0	4.9	4.5	4.5	4.5	4.6	10.4	13.0	19.8	21.9	25.5	24	25.5	1.6	9.9	0	0
4	44.1	32.7	29.7	21.8	41.7	25.8	20.9	8.5	4.6	4.5	5.2	3.7	4.2	3.8	2.9	2.6	5.3	3.5	2.4	2.3	2.2	1.8	0.9	1.3	24	44.1	0.9	11.5	0	0
5	2.2	1.7	1.4	1.3	2.1	3.2	3.0	3.2	2.5	4.7	2.7	2.2	1.6	1.8	1.9	3.0	4.2	3.3	3.9	6.2	5.2	3.9	2.1	1.9	24	6.2	1.3	2.9	0	0
6	1.8	1.5	1.4	2.4	3.1	4.0	4.7	3.9	2.9	1.5	1.6	1.8	0.7	1.5	2.3	1.3	1.4	2.0	6.4	11.6	15.5	11.9	10.7	17.5	24	17.5	0.7	4.7	0	0
7	11.7	18.0	20.9	12.2	15.0	13.9	32.1	31.3	21.5	1.2	1.1	1.2	0.5	0.1	0.2	0.8	1.7	1.5	2.1	3.1	3.0	3.9	3.7	4.9	24	32.1	0.1	8.6	0	0
8	5.2	5.9	3.2	3.1	2.1	1.9	2.0	1.4	1.6	1.8	2.1	4.3	3.9	4.2	8.1	10.4	10.0	9.7	9.4	8.3	10.2	5.1	5.1	4.5	24	10.4	1.4	5.1	0	0
9	5.4	8.0	6.5	8.5	7.0	5.4	4.5	4.4	7.1	11.9	6.5	4.5	4.5	4.5	3.6	7.7	7.6	8.6	11.7	16.6	15.1	11.0	5.5	12.2	24	16.6	3.6	7.9	0	0
10	15.1	2.4	0.4	1.0	1.3	0.4	0.5	0.3	0.4	0.3	1.0	1.2	3.4	6.4	5.8	5.2	7.0	13.5	11.5	17.0	19.5	28.8	22.0	38.1	24	38.1	0.3	8.4	0	0
11	25.5	27.9	11.8	5.6	6.0	27.5	47.2	50.0	69.5	55.8	60.3	72.3	70.4	60.3	62.4	54.6	69.8	24.3	6.8	2.4	2.0	3.3	26.2	11.9	24	72.3	2.0	35.6	0	0
12	9.9	3.5	1.4	1.7	7.0	17.4	31.3	38.0	33.5	6.9	4.5	3.9	2.4	2.0	1.5	2.1	1.3	1.4	2.7	0.8	1.6	0.3	2.3	0.1	24	38.0	0.1	7.4	0	0
13	0.3	1.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	1.3	0.4	0.8	0.7	1.0	1.8	2.2	2.5	1.7	2.5	4.1	1.7	4.0	4.2	6.3	24	6.3	0.0	1.5	0	0
14	5.8	6.6	11.1	11.1	9.2	2.4	1.6	1.9	3.6	6.8	9.3	9.5	11.2	7.7	0.3	5.3	8.8	7.8	4.1	8.6	1.1	0.7	0.2	0.3	24	11.2	0.2	5.6	0	0
15	0.0	0.0	0.0	4.6	8.6	9.6	8.8	8.9	5.3	3.7	6.6	4.2	8.0	7.9	10.4	9.7	8.5	9.9	9.8	9.0	9.1	9.3	10.9	9.1	24	10.9	0.0	7.2	0	0
16	10.7	10.2	13.7	9.6	11.0	13.2	12.0	12.5	11.3	12.0	14.3	15.9	26.2	18.1	22.5	29.9	45.0	57.8	52.5	58.3	40.0	23.4	23.2	18.9	24	58.3	9.6	23.4	0	0
17	4.0	3.9	3.6	17.2	24.8	23.8	29.4	55.0	76.5	56.0	42.6	36.9	21.8	19.8	9.4	7.3	6.3	7.4	5.8	5.1	6.1	4.8	5.0	5.6	24	76.5	3.6	19.9	0	0
18	5.9	6.5	7.5	8.6	8.4	8.0	8.4	9.5	11.3	13.7	13.8	15.4	12.7	9.1	8.3	10.8	11.2	10.7	9.5	6.5	6.7	7.0	8.3	8.2	24	15.4	5.9	9.4	0	0
19	7.4	7.6	8.6	8.3	8.7	10.0	10.8	13.0	13.9	13.0	12.3	12.2	11.1	8.7	7.3	6.1	6.4	7.1	7.0	8.7	6.6	8.3	7.7	6.4	24	13.9	6.1	9.0	0	0
20	5.4	4.7	4.5	5.1	4.8	4.6	4.4	4.6	5.3	5.9	6.0	7.5	7.7	7.3	6.6	7.0	6.3	6.1	6.4	6.8	7.7	6.9	8.5	11.1	24	11.1	4.4	6.3	0	0
21	25.3	40.7	54.7	55.4	39.4	37.3	44.3	26.7	43.6	20.1	17.2	14.1	8.6	7.6	8.5	11.6	7.9	11.0	10.3	10.1	14.0	14.2	12.4	11.4	24	55.4	7.6	22.8	0	0
22	10.7	10.7	8.8	14.4	7.2	16.2	20.8	36.0	29.9	19.6	33.5	17.6	29.5	19.4	9.4	10.0	10.4	24.1	39.2	33.7	36.0	35.4	57.9	42.3	24	57.9	7.2	23.9	0	0
23	75.5	37.6	47.3	69.7	6.6	5.1	3.4	3.3	6.4	4.2	4.8	3.9	5.6	3.0	4.7	4.7	5.1	5.0	5.5	5.9	2.4	2.0	1.5	1.2	24	75.5	1.2	13.1	0	0
24	1.4	0.8	0.9	0.9	1.1	1.3	1.4	4.2	3.6	3.7	2.5	2.9	2.2	1.3	2.1	2.1	3.2	4.9	5.0	4.2	5.5	3.1	1.8	7.0	24	7.0	0.8	2.8	0	0
25	2.5	4.6	3.4	1.2	1.9	8.2	4.7	6.9	6.1	10.7	9.6	7.4	2.8	2.5	1.7	1.9	1.9	9.3	15.3	15.4	19.6	14.5	14.3	18.0	24	19.6	1.2	7.7	0	0
26	19.1	17.2	12.1	25.2	16.2	13.4	1.1	0.6	0.3	0.3	0.9	1.1	3.0	5.6	4.3	2.9	4.2	12.5	7.0	18.8	17.6	12.7	9.3	41.5	24	41.5	0.3	10.3	0	0
27	17.0	41.2	35.8	19.7	6.3	3.9	1.4	1.5	1.4	1.7	1.4	1.7	1.7	2.2	2.0	2.0	1.7	1.8	2.5	2.3	2.7	3.2	10.9	10.8	24	41.2	1.4	7.4	0	0
28	6.2	5.7	9.7	30.1	20.8	8.3	5.5	4.4	5.5	4.9	3.9	5.0	6.4	7.9	5.1	3.1	3.6	3.6	6.9	5.8	3.1	2.7	2.0	3.2	24	30.1	2.0	6.8	0	0
29	4.8	9.7	8.2	5.1	2.8	4.9	2.2	5.7	6.0	5.2	7.5	4.2	3.7	4.3	2.9	4.2	2.9	3.7	5.0	6.2	4.3	1.9	2.7	2.3	24	9.7	1.9	4.6	0	0
30	2.2	0.8	1.4	1.8	1.0	2.6	4.1	4.2	3.4	3.1	2.9	3.0	2.2	1.2	2.5	3.3	3.9	4.8	6.5	8.7	8.2	14.7	17.8	50.2	24	50.2	0.8	6.4	0	0
31	53.8	40.6	57.5	55.0	31.4	18.2	21.9	7.1	2.7	2.1	1.7	2.0	C	C	2.4	4.8	3.4	3.5	3.7	5.1	4.6	3.8	3.9	3.8	22	57.5	1.7	15.1	0	0
Count	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	742					
Maximum	75.5	41.2	57.5	69.7	41.7	37.3	47.2	55.0	76.5	56.0	60.3	72.3	70.4	60.3	62.4	54.6	69.8	57.8	52.5	58.3	40.0	35.4	57.9	50.2	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.8	0.5	0.1	0.2	0.8	1.3	1.4	2.1	0.8	1.1	0.3	0.2	0.1	22					
Average	12.7	12.2	12.9	13.9	10.8	10.4	12.1	12.5	13.1	9.6	9.6	9.4	9.3	7.9	7.0	7.4	8.6	8.9	9.0	10.1	9.9	9.5	10.3	12.5						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.4	2.2	3.4	4.5	5.9	7.7	9.9	13.9	25.5	40.6	61.5	76.5

Maximum Hourly	76.5
Maximum Daily	35.6
Monthly Average	10.4

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

NOx COURTICE
February 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	3.9	4.4	4.9	5.2	5.0	6.0	5.9	6.2	7.6	9.9	10.8	7.8	6.4	7.3	6.2	3.6	3.1	3.0	3.3	3.5	3.6	4.3	9.0	6.7	24	10.8	3.0	5.7	0	0
2	7.9	9.9	13.4	17.8	8.5	2.6	4.8	7.1	5.3	5.7	3.2	3.3	3.7	2.1	3.1	2.3	2.8	5.6	21.1	22.5	21.6	14.3	3.4	2.8	24	22.5	2.1	8.1	0	0
3	2.6	2.4	2.4	2.3	2.1	2.1	2.5	3.1	4.5	11.5	8.8	5.3	5.5	6.9	5.2	3.4	4.0	3.8	3.5	3.4	3.0	3.1	2.7	2.9	24	11.5	2.1	4.0	0	0
4	2.6	3.1	2.9	5.0	4.4	4.7	4.8	5.8	7.2	15.9	20.9	16.8	2.2	2.1	2.4	2.6	2.2	2.1	2.2	3.3	2.0	1.9	1.6	1.4	24	20.9	1.4	5.0	0	0
5	1.4	1.4	1.9	1.8	1.6	5.0	11.3	11.0	13.2	21.7	20.3	15.7	10.4	7.5	8.2	7.2	6.6	5.8	10.9	13.7	15.9	10.1	7.4	9.3	24	21.7	1.4	9.1	0	0
6	20.3	27.9	21.6	22.2	22.9	16.1	20.1	20.4	24.2	30.4	23.5	26.3	69.6	14.5	8.5	6.2	5.4	4.4	16.1	54.1	49.8	38.2	30.2	44.2	24	69.6	4.4	25.7	0	0
7	30.0	20.6	14.1	9.3	8.6	16.5	16.6	15.9	15.9	15.0	14.8	15.3	18.3	7.6	8.2	5.7	7.2	8.0	7.9	13.3	22.3	32.5	27.5	44.5	24	44.5	5.7	16.5	0	0
8	57.2	32.8	31.6	37.3	39.2	39.0	28.3	27.1	23.0	15.6	12.5	22.7	16.1	3.4	5.2	11.0	5.9	8.6	14.3	13.8	9.3	7.3	9.7	34.6	24	57.2	3.4	21.1	0	0
9	38.6	36.7	39.1	41.0	40.7	42.6	41.0	51.1	50.2	51.6	33.4	21.5	5.8	6.2	5.9	5.1	8.7	11.7	13.2	11.1	9.6	9.9	9.5	14.4	24	51.6	5.1	24.9	0	0
10	5.4	5.8	9.2	4.8	4.9	6.9	5.7	7.5	8.4	9.6	7.7	7.7	7.7	5.4	5.2	5.1	6.4	4.2	15.9	8.8	5.8	8.4	9.0	5.1	24	15.9	4.2	7.1	0	0
11	3.3	3.7	7.4	4.3	3.4	3.7	4.5	9.5	4.7	6.4	25.6	6.4	6.5	14.1	13.1	17.0	12.1	8.3	7.9	8.3	7.8	5.8	5.4	3.6	24	25.6	3.3	8.0	0	0
12	5.2	7.0	5.1	3.7	6.0	5.4	4.8	12.3	33.0	21.7	10.5	4.4	4.9	3.5	2.8	2.7	3.3	5.1	23.7	22.2	30.0	63.7	71.8	76.2	24	76.2	2.7	17.9	0	0
13	58.5	40.1	33.8	28.9	47.7	33.2	31.7	28.6	44.0	31.7	19.8	2.2	1.8	1.3	1.3	1.0	3.9	2.4	1.2	2.2	1.8	1.9	1.7	2.9	24	58.5	1.0	17.6	0	0
14	4.9	17.6	26.0	25.5	3.8	10.0	6.5	7.7	7.6	7.8	9.3	9.8	9.0	8.5	5.4	4.8	4.3	4.5	4.2	4.9	4.8	4.7	6.8	6.6	24	26.0	3.8	8.5	0	0
15	5.9	6.2	5.6	5.2	5.6	5.3	5.0	4.5	5.7	6.2	5.8	5.8	6.6	5.7	C	C	9.7	6.0	6.3	27.2	45.6	40.6	34.9	34.1	22	45.6	4.5	12.9	0	0
16	31.1	11.6	8.9	26.0	9.7	7.7	6.1	7.0	6.7	3.5	4.5	2.5	1.9	2.8	1.6	1.4	1.4	2.9	3.6	3.4	3.9	5.3	8.1	7.4	24	31.1	1.4	7.0	0	0
17	2.5	36.3	24.4	24.4	33.7	28.9	26.7	19.1	1.2	1.5	1.6	1.4	1.1	0.7	0.9	1.1	1.0	1.1	0.8	1.0	1.0	1.3	1.5	3.1	24	36.3	0.7	9.0	0	0
18	6.1	12.3	8.3	12.1	8.6	4.6	4.9	5.5	4.6	4.1	3.3	2.9	2.7	1.6	1.5	1.6	2.0	1.2	1.3	1.1	1.1	0.9	1.1	1.2	24	12.3	0.9	3.9	0	0
19	1.3	3.9	2.9	1.6	1.6	2.1	4.4	8.2	18.6	7.6	4.4	4.1	4.6	10.1	9.4	6.5	10.4	14.1	16.8	13.6	12.9	14.1	9.8	7.4	24	18.6	1.3	7.9	0	0
20	7.7	8.9	13.4	14.4	9.8	15.1	20.4	22.5	38.4	27.6	24.0	15.9	64.9	29.4	22.7	14.4	3.9	1.5	1.6	1.4	5.0	33.8	30.6	31.5	24	64.9	1.4	19.1	0	0
21	36.9	24.1	21.0	23.8	22.5	40.4	37.1	4.1	3.9	2.7	2.4	3.0	2.3	2.4	1.9	1.7	2.1	4.9	5.1	8.0	7.8	4.3	2.8	1.6	24	40.4	1.6	11.1	0	0
22	2.4	1.2	1.9	0.5	1.1	3.6	5.4	6.7	7.4	4.3	11.0	11.1	6.4	4.6	9.2	5.0	9.2	1.9	1.6	4.4	10.2	7.2	9.0	11.6	24	11.6	0.5	5.7	0	0
23	3.5	9.7	7.8	9.0	13.2	11.7	10.2	6.9	2.9	2.3	3.0	4.7	3.3	9.5	5.2	7.7	13.0	24.5	16.6	2.7	7.3	14.8	28.2	10.1	24	28.2	2.3	9.5	0	0
24	4.7	5.0	2.1	2.8	3.1	6.2	10.6	3.8	2.5	2.2	1.8	0.9	0.3	0.0	0.4	0.0	0.7	0.1	9.9	13.4	7.7	6.7	3.1	1.4	24	13.4	0.0	3.7	0	0
25	1.8	3.2	6.7	1.4	0.7	2.5	1.4	1.3	3.6	3.3	0.6	0.5	1.1	0.4	0.5	0.6	0.5	0.5	0.4	0.6	0.6	0.6	1.0	1.8	24	6.7	0.4	1.5	0	0
26	1.8	2.1	2.6	2.1	2.5	2.5	2.4	3.3	5.8	9.5	6.0	1.3	1.3	1.5	1.4	1.6	1.2	2.6	3.5	12.3	30.5	29.3	42.5	53.3	24	53.3	1.2	9.3	0	0
27	62.2	44.3	45.9	50.8	56.8	68.2	69.1	77.0	47.6	23.5	21.5	8.1	8.0	7.5	2.7	1.5	1.8	1.7	1.5	1.4	1.3	1.4	1.5	1.3	24	77.0	1.3	25.3	0	0
28	0.9	1.3	1.1	1.4	1.7	1.6	1.5	9.9	32.3	5.5	2.8	3.5	3.7	4.2	3.1	3.2	3.3	3.7	5.1	4.7	7.5	3.5	4.2	4.2	24	32.3	0.9	4.7	0	0
29																														
30																														
31																														
Count	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	28	28	28	28	28	28	28	670					
Maximum	62.2	44.3	45.9	50.8	56.8	68.2	69.1	77.0	50.2	51.6	33.4	26.3	69.6	29.4	22.7	17.0	13.0	24.5	23.7	54.1	49.8	63.7	71.8	76.2	24					
Minimum	0.9	1.2	1.1	0.5	0.7	1.6	1.4	1.3	1.2	1.5	0.6	0.5	0.3	0.0	0.4	0.0	0.5	0.1	0.4	0.6	0.6	0.6	1.0	1.2	22					
Average	14.7	13.7	13.1	13.7	13.2	14.1	14.1	14.0	15.4	12.8	11.2	8.2	9.9	6.1	5.2	4.6	4.9	5.1	7.8	10.0	11.8	13.2	13.4	15.2						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.4	2.4	3.4	4.7	5.8	7.7	10.0	16.2	30.1	40.3	64.1	77.0

Maximum Hourly	77.0
Maximum Daily	25.7
Monthly Average	11.1

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

NOx COURTICE
March 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	7.6	2.5	6.2	21.6	10.8	4.4	14.5	18.5	10.4	4.2	1.4	1.0	1.2	1.6	1.4	1.1	7.1	10.3	15.6	4.3	2.7	2.8	2.0	1.2	24	21.6	1.0	6.4	0	0
2	1.1	0.6	1.3	0.4	0.3	0.5	2.4	2.0	2.1	3.1	1.8	1.3	1.0	0.6	1.2	1.9	1.6	1.9	1.4	1.1	1.0	0.7	1.7	1.0	24	3.1	0.3	1.3	0	0
3	1.3	1.4	0.3	0.0	0.7	1.1	1.3	2.3	0.3	0.8	0.5	0.6	0.2	0.0	0.0	0.0	0.5	0.0	0.8	1.5	3.3	0.2	0.0	0.1	24	3.3	0.0	0.7	0	0
4	0.1	0.1	0.2	0.0	0.2	0.0	1.1	0.5	0.0	0.0	1.7	0.8	0.0	0.3	0.2	0.0	1.0	1.0	1.3	1.7	4.4	1.2	1.7	0.4	24	4.4	0.0	0.7	0	0
5	0.0	0.5	0.2	0.0	0.2	2.5	1.5	2.7	1.3	1.6	1.2	3.4	0.4	0.5	1.5	0.9	0.7	0.7	0.5	5.3	48.7	30.8	20.3	17.6	24	48.7	0.0	6.0	0	0
6	12.3	10.6	11.5	14.7	8.2	8.0	7.0	10.7	7.2	2.4	2.3	0.7	0.7	0.2	0.5	1.7	1.9	2.2	3.5	1.4	2.4	1.8	1.9	1.3	24	14.7	0.2	4.8	0	0
7	1.2	4.0	2.5	2.4	6.2	3.5	7.7	3.9	2.4	2.2	2.9	2.2	3.9	3.0	5.0	3.2	3.4	6.7	4.9	3.1	2.8	1.6	1.3	1.4	24	7.7	1.2	3.4	0	0
8	1.1	1.8	1.8	2.0	1.7	1.4	4.3	2.4	2.3	1.7	2.8	3.9	2.7	2.1	2.3	2.7	3.1	4.3	5.8	13.0	11.4	20.4	8.5	3.3	24	20.4	1.1	4.5	0	0
9	6.4	5.0	1.9	4.1	4.1	6.4	4.4	4.9	3.1	1.9	1.6	1.1	0.7	1.5	0.8	0.8	1.7	1.7	1.5	1.4	3.6	2.1	1.8	2.4	24	6.4	0.7	2.7	0	0
10	2.2	2.7	2.6	4.0	3.7	4.8	7.2	3.8	1.7	0.6	0.3	0.0	0.0	0.4	0.4	0.0	0.2	0.8	0.6	3.1	2.0	2.9	3.8	3.2	24	7.2	0.0	2.1	0	0
11	2.3	5.3	4.4	6.2	11.2	5.2	4.5	4.1	0.6	0.4	0.3	0.0	0.4	0.3	0.0	0.0	1.9	1.0	4.5	2.9	2.8	1.9	7.1	11.2	24	11.2	0.0	3.3	0	0
12	11.4	2.3	1.6	3.3	2.4	2.1	4.3	4.8	2.1	1.8	2.3	0.0	0.0	0.2	0.0	0.0	0.2	0.8	1.6	2.2	7.4	6.7	3.4	6.6	24	11.4	0.0	2.8	0	0
13	4.3	2.5	1.7	2.3	4.6	4.8	4.6	3.8	1.9	1.8	1.1	0.9	0.7	0.3	1.1	1.4	1.9	1.3	2.1	2.4	1.9	2.1	1.1	1.8	24	4.8	0.3	2.2	0	0
14	1.5	1.8	0.9	1.2	1.1	1.2	2.2	1.7	1.4	1.5	2.0	0.7	0.4	1.3	1.2	0.7	1.7	0.8	1.4	1.5	1.9	2.1	1.8	2.9	24	2.9	0.4	1.5	0	0
15	1.4	1.8	4.7	7.1	7.4	8.2	11.2	29.5	10.0	1.3	1.6	0.6	0.6	0.6	0.5	1.4	2.1	1.4	1.3	3.2	1.1	2.3	2.5	2.6	24	29.5	0.5	4.3	0	0
16	2.6	1.1	0.8	0.8	0.7	0.9	1.2	0.4	1.8	0.8	0.5	0.5	0.4	0.4	0.3	0.8	0.8	2.0	2.0	1.8	1.7	1.9	2.9	2.2	24	2.9	0.3	1.2	0	0
17	7.8	7.7	7.0	10.1	11.7	10.2	9.3	8.9	1.2	0.4	0.4	0.0	0.2	0.0	0.1	0.0	1.6	0.6	0.5	1.9	0.5	0.4	0.0	1.8	24	11.7	0.0	3.4	0	0
18	0.5	1.0	7.5	6.1	2.5	4.7	9.6	7.9	3.4	1.6	2.4	1.1	1.1	0.9	1.2	1.9	1.6	2.6	2.9	6.7	13.0	12.2	9.2	0.9	24	13.0	0.5	4.3	0	0
19	3.9	1.7	0.6	1.0	3.1	3.0	5.7	4.2	0.8	1.3	0.0	0.0	C	C	C	C	0.3	0.1	0.2	29.7	43.4	48.5	35.4	35.3	20	48.5	0.0	10.9	0	0
20	18.7	16.5	6.8	6.9	10.4	4.6	5.0	4.4	3.7	C	C	1.6	1.5	1.4	1.1	1.1	1.3	1.4	5.4	32.9	25.8	26.5	19.0	5.8	22	32.9	1.1	9.2	0	0
21	5.1	3.8	3.4	2.9	5.5	6.3	8.1	10.0	3.9	5.2	3.4	3.3	3.7	2.6	3.7	2.3	5.7	5.2	16.6	19.3	17.6	14.6	11.0	4.3	24	19.3	2.3	7.0	0	0
22	4.1	5.4	2.1	3.4	4.4	6.6	7.8	5.4	3.5	A	A	2.3	3.5	2.1	2.8	2.5	3.2	4.3	6.7	4.0	3.2	5.6	4.9	3.6	22	7.8	2.1	4.1	0	0
23	3.4	2.8	2.7	5.2	6.4	8.8	9.1	5.5	3.5	3.6	3.0	2.1	2.5	2.2	2.0	3.2	3.4	3.2	3.7	3.9	4.0	5.3	5.4	4.8	24	9.1	2.0	4.2	0	0
24	3.6	1.8	1.7	2.5	1.9	2.1	3.0	1.8	1.7	1.9	1.5	2.1	1.3	1.3	1.1	2.3	3.8	2.6	1.6	1.8	2.6	2.4	1.7	1.7	24	3.8	1.1	2.1	0	0
25	4.7	2.8	1.3	4.1	2.2	1.6	3.0	3.3	6.1	3.2	1.0	1.2	0.9	1.1	0.7	1.2	1.2	1.0	8.4	18.8	19.5	15.5	18.8	9.6	24	19.5	0.7	5.5	0	0
26	7.0	6.7	6.2	7.4	15.1	13.6	17.6	12.8	8.0	5.8	6.8	2.5	2.5	2.5	2.8	3.9	7.4	3.0	2.6	4.5	2.5	2.0	2.9	5.1	24	17.6	2.0	6.3	0	0
27	2.0	2.1	1.9	1.9	2.5	3.5	4.9	5.7	4.7	3.9	2.9	2.0	1.8	2.3	1.7	2.2	2.6	2.5	5.0	2.6	2.0	1.8	1.9	2.0	24	5.7	1.7	2.8	0	0
28	26.0	17.4	7.9	3.9	4.3	4.6	10.7	9.3	5.9	7.3	2.9	3.4	3.8	4.1	3.5	3.4	2.6	2.6	4.2	18.7	28.3	45.3	55.7	29.8	24	55.7	2.6	12.7	0	0
29	11.2	9.7	6.7	4.4	5.5	12.2	15.0	14.5	11.8	18.7	16.7	15.3	9.0	7.4	8.5	9.3	6.1	6.1	7.1	4.2	3.3	5.2	4.0	9.3	24	18.7	3.3	9.2	0	0
30	5.1	3.3	2.6	3.0	4.0	2.8	4.1	2.7	2.3	3.7	2.0	2.0	1.8	1.9	2.4	2.0	2.1	2.2	2.9	2.8	3.6	7.6	11.6	21.6	24	21.6	1.8	4.2	0	0
31	23.9	17.4	21.7	24.8	18.8	4.5	2.0	2.5	2.5	2.9	2.7	2.5	2.6	2.8	2.3	1.9	2.3	1.9	1.5	1.8	1.5	1.7	2.4	3.0	24	24.8	1.5	6.3	0	0
Count	31	31	31	31	31	31	31	31	31	29	29	31	30	30	30	30	31	31	31	31	31	31	31	31	736					
Maximum	26.0	17.4	21.7	24.8	18.8	13.6	17.6	29.5	11.8	18.7	16.7	15.3	9.0	7.4	8.5	9.3	7.4	10.3	16.6	32.9	48.7	48.5	55.7	35.3	24					
Minimum	0.0	0.1	0.2	0.0	0.2	0.0	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	1.1	0.5	0.2	0.0	0.1	20					
Average	5.9	4.6	4.0	5.1	5.2	4.6	6.3	6.3	3.6	3.0	2.4	1.9	1.6	1.5	1.7	1.8	2.4	2.5	3.8	6.6	8.7	8.9	7.9	6.4						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.5	1.1	1.6	1.9	2.4	3.0	4.1	5.8	10.4	17.4	32.2	55.7

Maximum Hourly	55.7
Maximum Daily	12.7
Monthly Average	4.5

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

NOx Rundle Road
January 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	10.3	10.6	10.6	10.8	12.1	14.3	11.5	12.5	18.7	17.2	18.2	23.5	20.1	11.9	11.6	10.3	8.1	9.2	9.0	9.0	8.7	8.6	7.9	8.7	24	23.5	7.9	12.2	0	0
2	8.7	7.0	11.2	10.0	8.3	10.2	13.4	26.9	21.2	17.7	16.5	15.5	17.0	18.4	16.6	13.3	12.7	13.6	14.8	16.3	20.1	23.4	24.0	15.5	24	26.9	7.0	15.5	0	0
3	12.5	19.7	16.7	16.1	15.7	14.6	10.6	7.1	9.6	12.6	8.2	8.4	9.2	9.6	11.2	14.4	11.0	10.5	10.6	14.7	15.1	17.0	21.9	29.4	24	29.4	7.1	13.6	0	0
4	27.5	25.9	24.8	29.1	35.7	27.8	19.0	10.0	7.1	6.2	5.5	6.7	7.8	7.0	7.4	8.2	6.2	4.2	3.8	3.6	3.8	3.7	3.8	4.5	24	35.7	3.6	12.0	0	0
5	4.8	4.9	4.4	4.8	5.8	6.1	6.8	6.7	6.9	6.8	6.5	6.9	6.7	7.0	7.8	7.3	8.4	7.9	8.4	9.2	10.2	10.3	8.7	8.6	24	10.3	4.4	7.2	0	0
6	8.4	7.9	8.3	8.5	8.6	8.5	8.6	8.1	7.7	6.8	6.3	6.2	5.4	6.0	7.0	7.5	8.9	9.9	9.9	11.7	11.4	9.7	9.4	9.1	24	11.7	5.4	8.3	0	0
7	10.1	10.0	10.3	11.2	11.5	13.6	16.5	27.5	24.5	10.4	6.1	6.9	8.9	6.2	6.1	6.4	8.8	7.6	6.3	7.0	7.8	9.7	8.0	9.1	24	27.5	6.1	10.4	0	0
8	8.8	10.8	8.2	6.7	6.0	6.9	9.9	8.0	7.5	9.4	9.3	12.7	11.1	10.8	15.1	21.2	24.3	23.0	20.3	20.8	16.3	9.0	9.7	8.4	24	24.3	6.0	12.3	0	0
9	7.3	8.5	12.1	9.5	8.7	8.1	6.2	10.3	13.9	17.8	16.4	12.8	9.9	10.5	11.0	12.1	13.4	12.5	12.6	13.2	14.2	12.9	12.2	12.5	24	17.8	6.2	11.6	0	0
10	16.4	38.1	24.2	18.6	18.8	18.9	19.4	23.1	21.7	15.7	16.1	16.3	9.0	4.1	5.4	5.0	7.6	5.7	5.9	7.7	7.3	12.9	10.2	9.2	24	38.1	4.1	14.0	0	0
11	7.9	15.6	18.6	39.0	40.0	47.7	40.8	38.8	21.3	23.9	38.1	36.8	29.9	26.4	32.1	31.8	32.9	55.0	58.1	6.6	30.3	40.0	36.9	26.7	24	58.1	6.6	32.3	0	0
12	30.2	16.7	14.5	9.6	11.1	10.0	8.8	12.8	30.8	9.8	1.8	1.8	0.9	0.8	0.7	0.5	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0	24	30.8	0.0	6.7	0	0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.3	0.1	0.2	0.3	0.3	0.1	0.0	0.0	0.6	0.9	24	0.9	0.0	0.1	0	0
14	1.4	1.9	2.4	2.8	2.4	0.7	0.3	2.1	4.2	5.8	5.4	19.1	6.3	5.9	4.4	5.4	3.2	2.6	2.8	4.8	4.5	8.2	4.7	12.3	24	19.1	0.3	4.7	0	0
15	2.3	2.0	3.9	9.3	9.7	1.8	3.2	4.0	2.9	1.9	4.9	15.0	3.7	4.6	5.1	13.0	5.0	4.5	4.4	4.3	4.9	17.4	5.9	5.0	24	17.4	1.8	5.8	0	0
16	4.9	5.3	4.9	8.9	12.7	7.8	5.2	6.8	8.9	9.8	9.4	31.7	30.4	24.4	26.0	33.8	40.2	35.6	26.1	36.0	26.0	15.0	12.7	13.6	24	40.2	4.9	18.2	0	0
17	8.2	11.9	7.3	12.1	13.6	15.5	21.6	38.6	47.9	43.3	37.4	43.0	28.2	25.1	15.8	13.3	13.0	11.1	10.5	9.4	11.1	8.9	8.2	8.5	24	47.9	7.3	19.3	0	0
18	9.2	9.9	10.9	11.2	11.3	11.4	14.3	15.0	18.8	20.4	20.1	24.5	20.2	15.1	17.2	17.1	16.9	15.8	15.7	12.7	13.3	11.6	12.5	15.3	24	24.5	9.2	15.0	0	0
19	14.2	13.5	12.9	12.0	11.4	14.8	16.6	19.7	23.2	21.1	20.0	19.4	16.6	13.0	11.2	9.5	9.8	10.3	10.3	10.0	8.6	10.0	12.2	8.9	24	23.2	8.6	13.7	0	0
20	6.9	6.8	6.0	6.1	6.5	6.0	5.8	6.8	8.7	8.7	9.7	11.5	10.0	10.9	8.0	8.5	8.2	8.8	9.9	10.9	12.9	9.5	10.2	12.9	24	12.9	5.8	8.8	0	0
21	30.8	39.8	42.9	36.5	27.1	21.6	19.9	32.4	18.6	27.6	28.2	12.5	8.1	8.7	13.0	11.0	11.5	8.6	10.4	7.8	12.4	10.2	8.8	7.8	24	42.9	7.8	19.0	0	0
22	7.1	6.6	20.4	15.5	5.8	8.4	6.4	10.3	9.1	9.6	17.8	7.9	9.2	8.7	6.5	5.6	5.5	8.2	8.6	5.4	4.6	15.6	7.8	11.2	24	20.4	4.6	9.2	0	0
23	12.2	9.5	7.8	7.2	9.9	17.1	11.9	18.3	29.2	24.9	30.1	27.4	12.9	12.6	13.3	9.9	8.6	8.2	7.7	1.7	1.1	0.9	0.8	0.7	24	30.1	0.7	11.8	0	0
24	0.4	0.2	0.2	0.0	0.2	0.1	0.0	0.3	1.1	0.6	0.3	0.8	0.4	0.7	0.7	1.2	0.6	0.9	0.8	0.4	0.3	0.2	0.3	0.2	24	1.2	0.0	0.5	0	0
25	0.0	0.0	0.0	0.2	0.0	5.0	0.4	1.0	3.2	12.6	11.5	12.1	4.1	4.0	3.9	18.4	5.3	5.6	6.1	6.5	14.0	7.0	5.5	5.6	24	18.4	0.0	5.5	0	0
26	4.7	4.9	4.3	5.6	7.2	9.8	16.5	6.5	5.3	3.6	6.2	22.3	15.4	10.4	11.9	4.9	4.4	5.3	6.1	7.7	10.5	16.7	14.5	11.2	24	22.3	3.6	9.0	0	0
27	9.3	9.9	9.7	17.6	16.2	23.2	5.5	7.8	3.8	3.6	4.1	4.6	4.2	5.0	5.1	3.8	3.8	4.0	4.2	4.0	4.2	4.3	7.5	5.3	24	23.2	3.6	7.1	0	0
28	11.6	9.9	19.1	29.8	30.5	21.0	9.8	9.0	10.2	9.8	6.2	5.6	7.5	9.4	2.7	0.9	0.8	0.8	0.6	0.4	0.4	0.3	0.5	0.3	24	30.5	0.3	8.2	0	0
29	0.7	0.3	1.9	3.1	1.0	0.6	1.6	3.3	2.8	1.4	1.4	5.3	0.9	8.9	1.2	1.6	1.6	1.3	1.3	0.6	0.8	0.4	0.2	0.1	24	8.9	0.1	1.8	0	0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.5	0.8	0.5	0.6	1.0	1.0	0.9	0.4	1.2	1.0	0.5	1.3	1.4	1.3	4.9	5.2	4.4	24	5.2	0.0	1.2	0	0
31	6.8	10.6	7.4	27.1	8.9	4.0	10.8	23.8	9.9	10.3	11.2	6.1	8.9	C	C	6.7	9.1	12.9	10.5	10.7	13.3	12.8	13.9	18.0	22	27.1	4.0	11.5	0	0
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	742					
Maximum	30.8	39.8	42.9	39.0	40.0	47.7	40.8	38.8	47.9	43.3	38.1	43.0	30.4	26.4	32.1	33.8	40.2	55.0	58.1	36.0	30.3	40.0	36.9	29.4	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.3	0.1	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0	22					
Average	9.1	10.3	10.5	12.2	11.5	11.5	10.4	12.8	12.9	11.9	12.0	13.7	10.5	9.6	9.3	9.8	9.4	9.8	9.6	8.2	9.3	10.0	9.2	9.2						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.6	3.7	5.6	7.3	8.8	10.1	12.2	15.6	23.0	29.9	40.6	58.1

Maximum Hourly	58.1
Maximum Daily	32.3
Monthly Average	10.5

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

NOx Rundle Road
February 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	19.1	14.9	11.9	16.0	12.7	8.5	12.0	10.3	17.1	17.7	14.6	11.4	10.2	11.1	4.1	1.6	1.7	1.4	0.9	1.3	1.4	1.4	1.5	1.8	24	19.1	0.9	8.5	0	0
2	2.1	2.8	2.9	3.8	2.7	0.5	1.0	0.9	1.3	0.9	0.5	1.1	1.1	1.3	1.4	1.7	1.3	2.8	4.9	8.3	8.6	11.0	6.4	3.6	24	11.0	0.5	3.0	0	0
3	4.2	3.1	3.4	3.4	4.2	2.7	3.4	4.7	7.2	11.7	12.3	8.1	6.4	7.7	6.8	7.6	5.4	4.9	5.8	6.2	3.5	3.6	4.9	3.6	24	12.3	2.7	5.6	0	0
4	8.2	4.3	6.3	5.5	5.7	8.1	7.5	6.9	13.1	16.7	17.2	20.5	9.7	4.3	4.7	5.2	10.5	7.5	6.7	2.7	1.2	0.9	0.8	0.7	24	20.5	0.7	7.3	0	0
5	0.8	0.6	0.5	0.5	0.7	1.5	8.0	19.1	22.1	21.3	25.3	20.6	15.1	15.3	13.3	14.8	12.2	13.4	16.4	14.3	16.5	13.3	10.3	13.7	24	25.3	0.5	12.1	0	0
6	14.1	13.9	14.1	16.8	18.6	21.7	29.3	41.8	39.5	36.9	26.0	21.0	17.0	21.3	10.2	5.6	4.1	5.1	4.4	5.6	12.6	4.9	3.9	6.3	24	41.8	3.9	16.5	0	0
7	4.1	4.9	4.9	4.0	9.1	7.1	4.4	6.1	10.0	8.3	7.5	7.3	5.1	5.4	4.5	2.7	3.0	2.4	3.3	3.7	6.3	11.4	17.6	14.7	24	17.6	2.4	6.6	0	0
8	15.6	15.5	25.4	17.2	16.5	17.5	13.3	5.9	7.2	7.6	4.9	25.7	25.5	9.8	11.0	11.3	5.3	9.2	11.6	24.6	17.6	11.9	17.1	24.1	24	25.7	4.9	14.6	0	0
9	22.5	23.8	23.6	23.2	22.3	23.9	24.8	27.4	29.2	30.4	26.6	36.5	11.2	11.0	11.5	7.1	6.0	6.6	7.4	6.2	5.6	5.3	4.7	4.4	24	36.5	4.4	16.7	0	0
10	3.2	3.8	3.4	3.4	3.4	3.7	3.3	4.2	8.7	8.3	5.2	4.1	3.8	3.4	3.5	2.9	2.7	2.5	3.1	2.9	3.1	2.4	2.9	2.0	24	8.7	2.0	3.7	0	0
11	2.0	2.2	2.1	3.5	3.7	2.3	2.4	2.9	3.1	6.5	10.7	3.5	2.8	5.4	3.7	4.1	5.6	5.5	5.7	5.9	6.3	5.1	3.0	1.8	24	10.7	1.8	4.1	0	0
12	3.8	11.1	8.8	2.5	4.1	11.9	17.7	25.8	21.8	23.4	7.5	1.5	1.7	1.4	1.9	1.7	1.6	1.8	3.6	3.8	3.1	3.7	6.4	9.4	24	25.8	1.4	7.5	0	0
13	11.1	9.8	5.5	4.2	6.7	7.5	5.4	6.8	11.0	20.6	17.2	8.6	6.0	4.3	11.2	4.6	11.5	7.6	9.6	5.2	6.4	9.1	6.3	13.2	24	20.6	4.2	8.7	0	0
14	8.9	6.6	7.0	9.9	11.9	14.8	11.9	16.0	18.0	14.8	18.4	C	C	C	10.2	6.9	9.4	12.7	10.8	14.7	13.0	19.6	18.6	16.3	21	19.6	6.6	12.9	0	0
15	15.9	11.4	20.6	25.3	23.5	59.8	25.3	18.1	13.4	12.3	14.1	21.5	12.7	16.3	19.4	24.0	21.7	34.6	33.9	49.0	38.7	15.4	11.1	10.3	24	59.8	10.3	22.8	0	0
16	4.7	4.1	7.5	5.3	4.9	3.5	3.4	3.9	3.7	2.9	2.7	3.2	1.9	1.2	1.2	0.7	0.6	1.0	1.7	2.4	1.7	4.1	24.4	22.9	24	24.4	0.6	4.7	0	0
17	20.2	22.7	17.1	13.7	14.2	15.2	17.0	17.4	4.0	6.5	3.6	6.1	3.2	2.5	8.6	3.5	3.0	3.0	3.2	2.9	2.7	3.6	3.6	5.3	24	22.7	2.5	8.5	0	0
18	9.9	12.7	7.5	9.2	14.3	9.9	7.4	9.2	9.3	6.8	6.2	2.8	3.9	7.8	3.4	4.2	4.3	4.7	3.9	3.4	5.3	8.3	8.0	4.0	24	14.3	2.8	6.9	0	0
19	2.9	9.8	4.8	8.2	3.8	4.2	10.1	9.4	10.2	10.0	10.4	7.0	10.0	25.2	19.6	12.0	13.6	9.2	12.2	14.7	7.5	6.5	4.5	2.3	24	25.2	2.3	9.5	0	0
20	10.1	11.6	17.6	8.4	14.1	17.7	10.1	11.1	15.9	32.7	29.0	41.1	34.3	43.1	61.2	33.4	19.8	13.2	15.0	12.2	13.2	5.1	3.9	5.5	24	61.2	3.9	20.0	0	0
21	7.8	7.8	14.9	13.6	14.0	20.3	7.4	1.3	0.8	0.9	1.0	0.9	0.6	0.3	0.2	0.7	0.5	0.7	1.1	1.1	1.1	0.4	0.3	0.3	24	20.3	0.2	4.1	0	0
22	0.0	0.0	0.0	0.0	0.0	0.3	1.0	3.9	7.0	4.5	2.2	9.5	3.0	1.2	4.2	2.7	2.0	5.7	10.4	10.4	10.1	2.8	2.1	8.6	24	10.4	0.0	3.8	0	0
23	6.4	5.1	5.4	2.8	6.1	6.9	4.0	6.9	3.2	5.5	9.0	3.0	13.9	9.1	11.3	11.5	11.3	9.9	10.4	14.0	29.9	33.6	34.9	20.5	24	34.9	2.8	11.5	0	0
24	20.7	9.9	1.2	3.1	12.2	10.5	4.6	0.5	0.6	0.2	0.2	0.1	0.5	0.5	0.9	1.3	3.2	3.8	5.2	7.2	16.3	5.1	5.7	0.6	24	20.7	0.1	4.7	0	0
25	4.2	0.6	5.8	1.4	1.0	0.7	0.8	0.8	5.3	6.9	5.9	2.7	5.4	5.2	2.3	2.6	2.5	2.8	3.2	3.0	3.9	4.1	6.8	4.6	24	6.9	0.6	3.4	0	0
26	7.4	4.7	5.0	5.0	6.4	6.6	12.0	15.1	16.4	17.3	11.1	2.3	2.4	5.5	8.7	7.2	6.2	5.9	7.2	15.2	12.3	11.1	7.0	7.8	24	17.3	2.3	8.6	0	0
27	7.1	11.1	10.6	16.5	9.5	10.5	12.3	18.1	24.2	24.9	21.5	15.7	14.6	14.9	8.4	6.7	6.1	9.4	11.9	12.8	12.2	13.1	17.8	14.7	24	24.9	6.1	13.5	0	0
28	22.9	15.5	19.8	15.7	16.7	15.7	12.2	18.3	23.8	28.9	10.3	11.7	12.0	10.4	13.8	8.8	8.9	9.9	16.3	2.6	2.2	1.9	1.6	1.6	24	28.9	1.6	12.6	0	0
29																														
30																														
31																														
Count	28	28	28	28	28	28	28	28	28	28	28	27	27	27	28	28	28	28	28	28	28	28	28	28	669					
Maximum	22.9	23.8	25.4	25.3	23.5	59.8	29.3	41.8	39.5	36.9	29.0	41.1	34.3	43.1	61.2	33.4	21.7	34.6	33.9	49.0	38.7	33.6	34.9	24.1	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.5	0.6	0.2	0.2	0.1	0.5	0.3	0.2	0.7	0.5	0.7	0.9	1.1	1.1	0.4	0.3	0.3	21					
Average	9.3	8.7	9.2	8.7	9.4	11.2	9.7	11.2	12.4	13.8	11.5	11.0	8.7	9.1	9.3	7.0	6.6	7.0	8.2	9.2	9.4	7.8	8.4	8.0						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.4	2.9	3.9	5.3	6.9	9.2	11.5	14.8	20.5	25.1	39.0	61.2

Maximum Hourly	61.2
Maximum Daily	22.8
Monthly Average	9.4

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

NOx Rundle Road
March 2018
(ppb)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average	Hrs>200	Days>100
1	1.5	0.9	0.8	1.8	1.4	2.2	3.1	12.3	8.1	1.7	8.5	4.1	2.8	8.1	3.6	7.5	2.6	6.1	5.7	1.1	0.7	0.6	0.5	0.5	24	12.3	0.5	3.6	0	0
2	0.2	0.3	0.0	0.0	0.2	0.0	0.1	0.4	0.7	0.0	0.1	0.0	0.0	0.2	0.2	0.2	0.6	0.1	0.0	0.0	0.0	0.2	0.0	0.0	24	0.7	0.0	0.1	0	0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.2	0.3	0.2	0.2	0.2	0.4	0.2	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	24	0.4	0.0	0.1	0	0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	24	0.2	0.0	0.0	0	0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	0.5	0.9	1.3	3.6	0.6	0.5	2.0	1.0	1.4	8.6	17.1	15.5	10.0	7.2	13.0	8.1	24	17.1	0.0	3.9	0	0
6	5.9	4.0	4.4	8.8	4.2	1.9	4.1	3.7	7.7	2.3	6.7	2.8	4.1	1.8	1.7	5.4	1.4	1.9	2.0	2.6	2.6	3.9	2.8	6.6	24	8.8	1.4	3.9	0	0
7	2.7	4.4	9.6	6.3	11.4	10.7	6.5	9.4	7.8	8.9	8.4	4.2	4.0	4.4	4.2	5.0	7.6	2.9	3.1	4.1	7.3	7.0	7.8	6.5	24	11.4	2.7	6.4	0	0
8	4.3	7.6	6.7	7.5	6.2	5.7	6.5	12.7	9.9	7.9	7.9	9.9	9.6	9.4	8.7	8.7	9.9	11.4	11.2	7.2	6.5	7.5	3.4	2.9	24	12.7	2.9	7.9	0	0
9	2.8	1.2	0.6	1.4	2.5	6.0	6.6	4.3	1.7	2.4	0.8	1.1	1.2	0.6	0.3	0.8	1.6	1.0	1.0	0.5	1.0	1.1	0.8	1.2	24	6.6	0.3	1.8	0	0
10	1.7	1.0	1.0	3.3	1.8	1.5	3.3	4.9	1.3	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.6	0.9	1.5	2.3	3.7	24	4.9	0.0	1.2	0	0
11	5.5	2.2	3.1	2.0	1.4	1.9	3.6	4.6	0.6	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	24	5.5	0.0	1.1	0	0
12	2.5	1.3	0.0	0.0	0.2	0.7	0.9	1.2	0.8	0.2	6.7	3.2	2.3	1.5	2.3	1.7	2.4	4.6	6.8	9.8	13.3	2.6	0.1	0.3	24	13.3	0.0	2.7	0	0
13	0.6	0.3	0.1	0.3	0.7	0.9	1.5	1.5	0.8	0.5	0.8	1.0	0.2	0.4	0.8	0.7	0.6	0.4	1.0	0.8	1.2	0.1	0.2	0.1	24	1.5	0.1	0.7	0	0
14	0.0	0.1	0.0	0.1	0.1	0.1	0.6	0.6	0.4	0.6	0.7	0.9	0.6	0.2	0.5	0.4	0.2	0.5	0.5	0.5	0.7	0.3	0.5	0.7	24	0.9	0.0	0.4	0	0
15	1.8	5.1	4.3	3.3	3.8	13.8	38.9	30.7	8.3	1.1	0.9	1.0	0.6	0.5	0.4	0.6	0.3	0.0	0.4	0.5	0.1	0.0	0.5	0.7	24	38.9	0.0	4.9	0	0
16	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.2	0.0	0.3	0.6	0.2	0.4	0.4	0.5	0.3	1.4	1.6	1.8	2.7	2.3	24	2.7	0.0	0.6	0	0
17	11.1	8.7	6.5	9.1	9.2	5.0	8.3	7.6	0.6	0.1	0.2	0.0	0.0	0.1	0.0	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	2.5	24	11.1	0.0	2.9	0	0
18	0.5	0.6	0.3	0.3	1.3	1.6	2.3	1.8	8.5	18.4	5.5	2.6	2.7	2.5	2.0	1.7	5.4	2.1	3.6	9.7	5.6	3.7	1.7	0.3	24	18.4	0.3	3.5	0	0
19	1.2	0.7	0.5	0.7	0.6	2.0	2.7	2.6	1.2	0.5	0.9	1.9	1.0	0.9	0.9	1.1	1.4	1.7	5.2	4.7	4.7	3.1	3.5	3.2	24	5.2	0.5	1.9	0	0
20	4.0	4.3	5.0	2.7	5.1	2.0	2.1	1.6	4.7	0.9	C	C	C	2.7	2.0	1.8	2.2	10.9	11.7	5.0	6.4	4.8	4.8	1.6	21	11.7	0.9	4.1	0	0
21	1.4	1.2	1.0	0.8	1.3	1.3	1.6	2.3	2.0	1.6	1.8	1.5	1.1	1.3	1.2	1.1	1.0	0.6	1.5	1.4	1.2	0.9	1.2	0.6	24	2.3	0.6	1.3	0	0
22	0.5	0.4	0.4	0.6	0.4	0.6	1.5	2.1	1.8	1.5	1.2	A	1.1	2.6	1.6	1.0	1.0	1.0	1.0	0.9	0.6	0.7	0.6	0.5	23	2.6	0.4	1.0	0	0
23	0.6	0.8	0.7	1.1	0.7	1.0	1.6	1.4	1.5	1.5	1.4	1.6	1.4	1.0	1.1	0.9	0.8	0.4	0.5	1.0	1.3	0.9	0.9	0.8	24	1.6	0.4	1.0	0	0
24	0.6	0.4	0.7	0.4	0.4	0.5	0.5	0.3	0.5	0.5	0.5	0.8	0.7	0.5	0.3	0.4	0.5	0.4	0.5	0.4	0.4	0.7	0.9	0.8	24	0.9	0.3	0.5	0	0
25	1.3	0.5	0.5	0.3	0.2	1.0	1.1	1.1	1.7	0.9	1.3	1.1	0.9	1.0	0.6	1.3	1.4	2.2	3.9	4.1	3.9	5.0	5.4	3.6	24	5.4	0.2	1.8	0	0
26	3.2	9.6	3.0	14.0	5.8	3.9	20.8	7.3	11.2	3.1	2.2	2.9	3.2	3.6	4.1	3.5	2.4	2.0	2.3	2.1	11.3	2.2	2.1	6.2	24	20.8	2.0	5.5	0	0
27	6.0	4.3	3.6	11.7	9.9	10.9	18.0	23.6	18.2	13.2	11.1	7.0	7.4	13.0	8.2	11.6	10.3	11.1	15.4	10.8	9.8	12.0	14.3	11.5	24	23.6	3.6	11.4	0	0
28	6.4	7.4	2.9	1.8	1.9	1.9	2.2	7.2	2.5	2.0	2.2	3.2	4.4	8.1	5.2	6.2	5.2	8.1	6.1	8.1	6.2	8.3	10.1	15.5	24	15.5	1.8	5.6	0	0
29	23.5	23.9	14.5	7.4	11.6	6.6	9.2	11.3	9.7	12.3	5.6	6.7	5.7	5.2	4.5	3.9	3.0	2.8	1.8	1.3	1.3	1.5	1.0	1.2	24	23.9	1.0	7.3	0	0
30	1.3	1.3	1.5	1.8	1.7	1.4	1.1	1.1	1.0	0.7	0.8	0.8	0.9	0.7	1.3	1.2	1.0	0.7	0.6	0.6	1.2	2.0	5.5	7.2	24	7.2	0.6	1.6	0	0
31	7.3	7.8	11.4	17.9	9.9	7.4	3.6	3.3	3.0	3.3	3.9	6.1	3.9	3.3	3.6	16.8	4.5	3.0	4.9	4.0	2.1	2.1	3.0	3.4	24	17.9	2.1	5.8	0	0
Count	31	31	31	31	31	31	31	31	31	31	30	29	30	31	31	31	31	31	31	31	31	31	31	31	740					
Maximum	23.5	23.9	14.5	17.9	11.6	13.8	38.9	30.7	18.2	18.4	11.1	9.9	9.6	13.0	8.7	16.8	10.3	11.4	17.1	15.5	13.3	12.0	14.3	15.5	24					
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21					
Average	3.2	3.2	2.7	3.4	3.0	3.0	4.9	5.2	3.8	2.8	2.7	2.4	2.0	2.4	2.0	2.8	2.2	2.8	3.5	3.2	3.3	2.7	2.9	3.0						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.0	0.3	0.6	0.9	1.3	2.0	3.2	5.3	8.4	11.2	18.1	38.9

Maximum Hourly	38.9
Maximum Daily	11.4
Monthly Average	3.1

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

APPENDIX E:
$PM_{2.5}$ DATA SUMMARIES AND TIME HISTORY PLOTS

Figure E-1: Time History Plot of Measured 24-Hour Average $PM_{2.5}$ Concentrations – Courtice WPCP Station

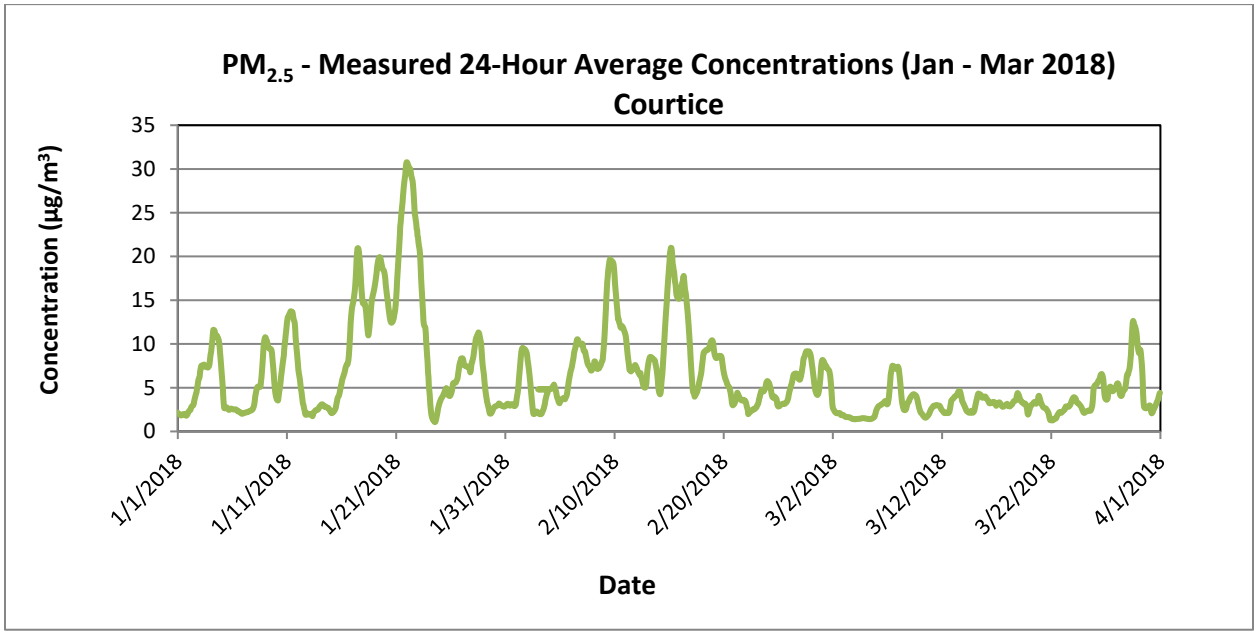
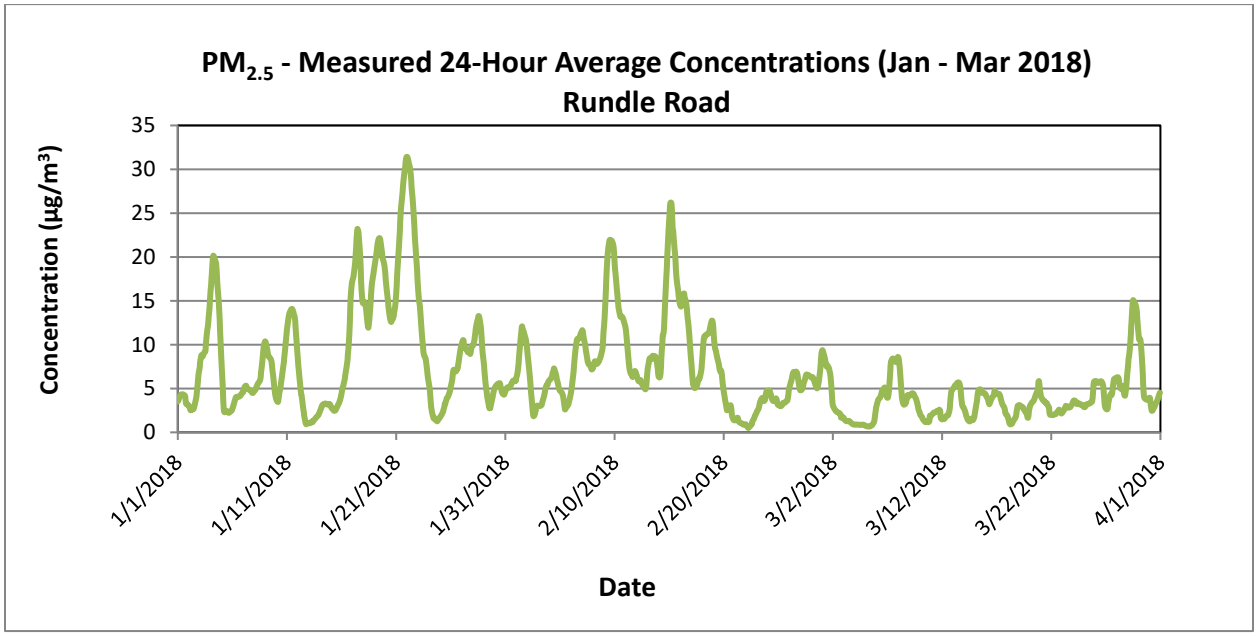


Figure E-2: Time History Plot of Measured 24-Hour Average $PM_{2.5}$ Concentrations – Rundle Road Station



$PM_{2.5}$ - January ($\mu g/m^3$)	COURTICE 2018																												
Hour																													
Day	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average		
1	2.0	1.8	2.2	2.4	2.5	2.2	1.6	2.0	1.8	2.0	2.0	1.7	0.8	0.7	0.7	0.2	1.0	1.8	2.5	2.7	3.8	4.2	4.4	5.5	24	5.5	0.2	2.2		
2	4.0	3.6	3.4	3.0	4.7	5.6	5.2	3.8	2.6	2.6	4.1	5.6	6.6	7.0	5.8	5.6	5.6	6.0	8.5	10.3	12.8	12.8	10.3	7.0	24	12.8	2.6	6.1		
3	9.6	13.8	11.4	10.2	8.3	5.3	3.8	3.0	3.2	3.4	C	4.1	4.2	5.0	5.4	5.6	5.6	6.0	6.7	11.9	13.2	15.8	17.0	19.4	23	19.4	3.0	8.3		
4	20.3	18.9	20.1	20.4	22.3	21.5	14.3	2.9	2.3	2.0	2.6	2.6	3.3	3.7	3.7	3.5	3.0	2.6	2.6	2.6	2.4	2.2	2.4	2.4	24	22.3	2.0	7.7		
5	2.6	2.6	2.7	2.5	2.6	2.2	1.8	2.2	3.0	2.9	3.2	3.5	2.9	1.9	1.7	1.8	1.9	2.7	3.0	3.3	3.8	3.3	2.1	1.9	24	3.8	1.7	2.6		
6	2.0	2.0	2.2	2.3	2.4	2.2	2.3	2.5	2.3	2.0	1.9	1.9	1.8	1.7	1.5	1.3	1.2	1.3	1.8	2.4	2.9	2.2	2.6	3.1	24	3.1	1.2	2.1		
7	2.4	1.7	2.4	3.0	2.8	2.6	3.0	2.8	2.6	1.8	2.2	2.6	2.8	2.6	1.8	1.9	1.9	1.7	2.3	3.3	3.5	4.6	5.6	7.0	24	7.0	1.7	2.9		
8	8.4	10.5	11.8	10.6	9.9	8.9	8.2	5.4	3.8	2.0	1.9	2.5	2.1	2.5	6.1	12.0	14.0	19.2	19.6	23.2	25.2	19.3	14.0	13.9	24	25.2	1.9	10.6		
9	12.3	9.4	7.3	8.0	8.1	2.1	1.3	1.3	1.4	1.5	1.4	1.5	1.8	2.1	2.4	3.0	3.2	3.6	4.6	6.1	6.3	4.8	4.2	4.4	24	12.3	1.3	4.3		
10	5.5	4.4	3.4	6.9	7.2	6.5	12.1	11.2	8.4	11.2	13.2	12.1	11.9	12.7	13.4	13.2	12.9	12.3	20.8	19.4	17.2	17.8	16.2	17.5	24	20.8	3.4	12.0		
11	15.9	13.5	10.8	8.0	8.8	11.2	13.7	13.0	12.7	11.3	10.3	10.6	C	6.9	5.2	6.1	10.7	6.8	4.2	0.3	1.6	3.1	3.4	2.7	23	15.9	0.3	8.3		
12	1.5	1.4	0.7	0.9	1.2	1.2	1.5	3.4	9.3	0.3	0.2	0.2	0.2	0.2	0.4	1.5	2.6	3.8	3.9	3.3	2.9	2.4	2.0	1.8	24	9.3	0.2	2.0		
13	1.2	1.1	1.1	1.1	1.3	2.0	2.4	2.6	3.1	4.2	4.0	2.5	2.2	2.0	2.2	2.4	2.9	4.0	4.1	3.8	3.6	4.0	4.5	4.2	24	4.5	1.1	2.8		
14	3.0	2.4	2.9	2.6	2.5	2.3	2.0	2.0	1.8	2.0	2.2	2.4	2.7	1.6	0.7	1.5	2.8	3.7	3.2	3.8	2.0	1.8	1.7	1.7	24	3.8	0.7	2.3		
15	1.2	1.0	1.0	3.3	3.4	2.6	4.0	2.6	3.8	3.8	5.2	5.4	7.5	8.8	6.9	9.5	6.3	5.3	5.9	6.7	7.8	8.2	8.4	8.3	24	9.5	1.0	5.3		
16	7.0	6.6	6.8	7.0	7.1	7.2	7.5	8.1	8.3	9.7	8.8	8.9	9.2	8.7	12.1	15.1	19.1	24.4	29.1	31.4	28.5	25.5	23.3	20.7	24	31.4	6.6	14.2		
17	12.8	12.4	11.8	15.2	17.2	17.7	22.6	28.4	31.9	33.0	29.4	22.6	10.0	7.1	3.8	4.3	5.1	7.2	6.2	6.8	9.7	9.6	13.0	13.4	24	33.0	3.8	14.6		
18	13.7	13.1	12.8	11.7	11.9	11.2	11.8	12.8	14.9	16.8	17.8	18.6	18.3	17.5	18.0	20.0	20.0	20.2	20.1	16.5	15.4	16.4	17.6	18.3	24	20.2	11.2	16.1		
19	19.8	20.9	21.2	20.9	21.4	22.2	22.1	22.7	22.6	23.2	22.1	20.5	18.9	15.7	13.7	12.8	13.2	14.2	14.1	14.6	13.9	14.4	12.8	10.8	24	23.2	10.8	17.9		
20	9.2	8.6	8.7	9.7	10.8	12.1	12.5	12.6	12.7	13.1	13.1	13.3	13.9	13.7	13.3	13.9	14.5	17.4	18.5	20.0	21.2	19.8	21.5	24.6	24	24.6	8.6	14.5		
21	27.9	28.9	29.7	31.3	32.3	32.6	34.2	34.5	35.8	36.4	C	29.9	27.1	26.2	25.0	27.6	28.7	31.8	30.1	29.5	30.1	34.7	32.7	30.8	23	36.4	25.0	30.8		
22	27.6	25.8	25.7	28.9	25.9	26.9	35.7	37.2	28.1	25.9	27.1	24.0	22.3	14.5	7.6	5.4	4.6	16.5	22.8	19.4	21.6	18.2	30.2	14.8	24	37.2	4.6	22.4		
23	23.6	12.4	15.8	22.3	14.9	13.4	7.1	4.6	4.4	4.3	3.1	2.0	2.0	2.9	3.0	3.5	2.0	1.7	2.1	0.3	0.5	0.6	0.5	0.5	24	23.6	0.3	6.1		
24	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8	1.2	1.1	1.1	1.0	0.9	0.9	3.3	6.6	7.2	8.8	8.5	7.8	6.5	6.3	5.7	5.4	24	8.8	0.5	3.2		
25	4.5	3.7	3.5	3.0	2.6	2.8	3.0	2.8	3.0	4.7	4.0	5.1	4.0	4.3	C	2.8	2.7	3.1	4.8	6.2	6.4	5.3	5.3	6.5	23	6.5	2.6	4.1		
26	7.3	7.4	7.8	8.8	9.7	10.7	4.6	2.9	4.0	4.2	4.7	4.7	6.6	7.9	7.8	7.9	9.0	12.7	13.7	16.1	12.1	9.6	9.3	10.6	24	16.1	2.9	8.3		
27	7.4	7.6	7.8	5.7	3.9	2.9	1.9	2.5	3.2	3.8	4.1	4.7	5.6	6.6	7.3	8.8	9.5	9.4	7.6	9.9	17.8	21.7	18.9	11.8	24	21.7	1.9	7.9		
28	11.6	13.0	14.5	15.6	14.2	11.9	10.6	10.0	8.0	6.9	7.6	7.4	8.2	9.4	5.9	3.8	2.9	2.5	1.8	1.5	1.4	1.3	1.4	1.4	24	15.6	1.3	7.2		
29	1.9	2.5	2.4	2.0	1.9	1.8	1.6	1.9	1.8	1.8	1.9	C	2.4	2.8	2.6	3.2	2.9	3.9	4.1	4.1	4.1	3.8	4.0	3.6	23	4.1	1.6	2.7		
30	3.5	3.4	2.9	2.6	2.3	2.4	2.5	3.0	3.1	3.6	3.1	2.3	1.8	1.5	1.5	1.8	1.8	3.3	3.7	3.7	3.2	3.8	4.0	5.1	24	5.1	1.5	2.9		
31	4.3	3.4	4.3	5.3	3.4	2.7	2.5	1.9	1.4	1.5	2.4	2.8	C	C	2.2	1.9	1.7	1.8	1.7	2.4	2.9	4.1	5.9	7.0	22	7.0	1.4	3.1		
Count	31	31	31	31	31	31	31	31	31	31	29	30	29	30	30	31	31	31	31	31	31	31	31	31	737					
Maximum	27.9	28.9	29.7	31.3	32.3	32.6	35.7	37.2	35.8	36.4	29.4	29.9	27.1	26.2	25.0	27.6	28.7	31.8	30.1	31.4	30.1	34.7	32.7	30.8	24					
Minimum	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8	1.2	0.3	0.2	0.2	0.2	0.2	0.4	0.2	1.0	1.3	1.7	0.3	0.5	0.6	0.5	0.5	22					
Average	8.9	8.3	8.4	8.9	8.6	8.3	8.3	8.0	8.0	7.8	7.1	7.6	7.0	6.6	6.2	6.7	7.1	8.4	9.1	9.5	9.8	9.7	9.8	9.2						

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.7	2.2	2.7	3.5	4.6	7.0	9.9	13.7	20.4	26.0	32.9	37.2

Maximum Hourly	37.2
Maximum Daily	30.8
Monthly Average	8.2

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

$PM_{2.5}$ - February ($\mu g/m^3$) COURTICE 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	10.5	12.3	11.7	12.1	13.1	14.3	15.6	15.4	15.3	16.2	16.5	15.5	15.2	12.1	4.2	0.9	0.9	1.0	0.9	1.6	1.8	1.8	2.6	2.7	24	16.5	0.9	8.9
2	2.7	2.8	2.6	2.6	2.4	2.3	2.5	2.7	2.7	2.5	2.2	2.0	1.6	1.3	0.9	0.8	1.1	1.6	2.9	3.3	3.4	2.7	1.7	1.4	24	3.4	0.8	2.2
3	1.2	1.4	1.4	1.6	2.1	2.1	2.6	3.2	4.0	5.9	5.1	4.7	5.1	5.8	6.4	7.1	7.8	7.6	8.2	8.0	7.1	7.1	5.8	4.3	24	8.2	1.2	4.8
4	1.2	1.8	1.7	1.9	2.0	2.6	3.7	5.8	6.5	6.6	7.7	6.7	1.6	1.2	1.8	2.4	1.7	1.7	2.3	5.0	3.2	2.7	2.6	3.0	24	7.7	1.2	3.2
5	3.8	4.3	3.6	3.7	4.0	4.0	4.3	4.7	6.8	8.6	6.2	4.7	3.9	4.0	4.7	6.2	8.8	10.6	12.9	11.4	11.9	10.0	9.2	10.5	24	12.9	3.6	6.8
6	8.7	7.2	8.3	10.3	12.3	10.9	12.3	13.3	13.6	12.7	11.4	11.7	10.7	10.3	7.6	6.3	6.0	6.2	8.0	10.7	10.2	10.1	9.1	10.4	24	13.6	6.0	9.9
7	9.9	8.4	5.4	4.0	3.8	8.3	11.2	13.8	8.4	6.4	6.3	5.3	4.3	4.8	5.6	4.2	4.3	5.2	5.6	5.9	6.7	9.6	10.4	11.1	24	13.8	3.8	7.0
8	13.9	12.2	10.6	8.6	9.4	8.3	7.1	5.6	5.5	4.1	3.2	5.6	5.7	4.3	5.7	8.4	5.8	6.7	8.8	10.2	10.6	11.1	15.4	22.1	24	22.1	3.2	8.7
9	27.7	29.9	31.6	33.9	34.7	34.4	30.2	30.3	29.4	C	20.4	14.8	12.7	13.0	10.2	5.7	3.4	8.7	8.0	8.8	8.8	9.5	9.6	9.9	23	34.7	3.4	18.5
10	10.4	13.6	16.3	18.9	20.0	18.7	18.3	17.9	17.4	13.8	12.1	11.0	8.6	8.1	6.9	7.6	6.8	6.3	7.0	6.0	6.3	5.8	5.9	6.0	24	20.0	5.8	11.2
11	6.1	6.6	6.8	5.9	5.7	6.0	6.9	9.1	5.7	5.9	13.8	6.6	6.8	9.9	8.9	9.7	7.0	6.1	8.2	10.4	9.7	8.6	5.7	2.8	24	13.8	2.8	7.5
12	3.1	3.8	2.3	2.4	3.4	3.7	4.4	6.4	7.9	8.4	5.7	3.1	3.4	3.5	3.0	3.1	3.4	4.4	7.9	9.7	10.4	12.6	14.5	17.5	24	17.5	2.3	6.2
13	18.5	14.9	11.1	10.2	9.0	7.4	7.9	7.1	7.4	8.0	4.4	1.9	1.8	2.4	2.2	1.7	2.2	1.9	2.0	3.2	3.7	3.7	4.1	4.9	24	18.5	1.7	5.9
14	3.9	3.0	4.2	5.6	6.9	10.2	17.5	23.4	21.0	20.1	23.0	24.1	22.8	21.9	23.3	24.7	24.0	21.6	21.6	21.9	22.7	23.5	22.7	21.4	24	24.7	3.0	18.1
15	21.5	20.8	23.0	11.9	15.0	9.7	8.5	2.0	8.0	13.8	12.3	C	8.3	10.1	C	C	9.3	16.7	18.5	19.6	22.5	22.8	22.7	22.8	21	23.0	2.0	15.2
16	25.5	26.1	25.4	25.2	21.7	15.3	11.6	11.3	11.8	2.7	3.5	3.7	2.8	2.0	1.8	1.1	1.3	1.5	1.7	1.8	2.2	2.5	4.0	3.2	24	26.1	1.1	8.7
17	2.2	5.1	5.6	6.3	7.7	9.6	10.4	8.3	4.3	5.2	5.7	5.5	5.1	4.9	5.2	6.3	7.1	7.5	7.5	7.2	8.2	8.8	9.6	11.7	24	11.7	2.2	6.9
18	13.0	15.1	16.9	18.5	14.8	11.4	10.5	9.2	6.9	6.4	6.4	4.8	5.5	5.2	6.6	8.4	9.7	11.5	11.6	11.3	12.2	11.2	11.4	11.2	24	18.5	4.8	10.4
19	9.7	8.2	8.0	7.4	7.2	6.9	7.0	7.1	7.7	6.6	5.7	5.6	5.9	6.7	8.5	9.3	7.9	9.2	15.1	8.9	5.7	2.8	2.0	1.6	24	15.1	1.6	7.1
20	1.7	1.7	3.3	3.0	3.5	3.8	3.6	3.0	3.8	4.9	3.9	3.1	4.2	3.2	2.6	3.3	2.2	1.3	2.5	2.7	3.7	4.7	2.4	2.8	24	4.9	1.3	3.1
21	4.6	4.9	8.4	7.9	5.3	8.9	12.0	0.3	0.9	1.3	1.6	1.1	1.1	1.3	1.5	1.5	1.7	2.3	2.7	3.8	3.2	2.8	2.8	2.5	24	12.0	0.3	3.5
22	2.4	2.1	1.8	1.9	2.0	2.7	2.4	2.6	2.0	C	2.8	2.3	2.3	2.3	2.4	2.3	3.8	2.6	2.7	3.1	4.4	4.1	4.0	4.0	23	4.4	1.8	2.7
23	3.1	4.7	4.4	4.1	5.0	8.6	9.0	5.6	7.3	8.5	8.4	5.8	3.5	2.3	1.9	1.3	1.4	7.9	2.9	4.9	7.9	12.0	10.3	6.1	24	12.0	1.3	5.7
24	4.3	3.9	2.4	2.6	3.7	3.6	3.1	1.8	1.7	1.8	1.8	1.5	1.9	2.4	2.5	1.9	2.5	1.9	4.0	5.3	5.9	3.9	3.0	2.8	24	5.9	1.5	2.9
25	2.5	3.8	4.6	3.2	3.3	5.2	4.2	3.0	2.2	2.0	2.4	1.8	1.8	1.7	2.5	3.4	2.9	3.5	5.4	7.2	8.4	8.3	7.9	8.5	24	8.5	1.7	4.1
26	9.3	9.1	8.8	8.2	8.7	8.2	8.4	8.8	9.0	8.5	6.5	2.1	1.7	2.8	3.3	3.3	2.7	2.2	2.2	3.0	4.6	5.6	6.6	8.1	24	9.3	1.7	5.9
27	10.7	13.0	13.4	15.2	16.5	17.1	16.6	19.0	16.1	10.8	9.7	6.9	6.7	5.7	4.1	2.6	2.4	2.2	3.0	3.4	3.4	3.4	3.7	3.6	24	19.0	2.2	8.7
28	3.4	3.5	5.2	7.0	5.7	6.1	6.0	5.7	9.0	4.0	3.5	3.2	3.2	3.5	3.3	3.2	5.3	8.2	11.0	14.2	16.5	18.6	20.1	16.6	24	20.1	3.2	7.7
29																												
30																												
31																												
Count	28	28	28	28	28	28	28	28	28	26	28	27	28	28	27	27	28	28	28	28	28	28	28	28	667			
Maximum	27.7	29.9	31.6	33.9	34.7	34.4	30.2	30.3	29.4	20.1	23.0	24.1	22.8	21.9	23.3	24.7	24.0	21.6	21.6	21.9	22.7	23.5	22.7	22.8	24			
Minimum	1.2	1.4	1.4	1.6	2.0	2.1	2.4	0.3	0.9	1.3	1.6	1.1	1.1	1.2	0.9	0.8	0.9	1.0	0.9	1.6	1.8	1.8	1.7	1.4	21			
Average	8.4	8.7	8.9	8.7	8.9	8.9	9.2	8.8	8.7	7.5	7.6	6.1	5.7	5.6	5.1	5.1	5.1	6.0	7.0	7.6	8.0	8.2	8.2	8.3				

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.9	2.7	3.4	4.4	5.8	7.2	8.8	10.9	15.5	21.6	29.6	34.7

Maximum Hourly	34.7
Maximum Daily	18.5
Monthly Average	7.6

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

$PM_{2.5}$ - March ($\mu g/m^3$) COURTICE 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	11.1	6.3	4.4	4.7	4.6	2.8	2.7	3.3	2.0	C	1.1	1.2	1.4	1.7	1.8	1.7	2.5	3.7	4.8	1.9	1.4	1.6	1.7	2.1	23	11.1	1.1	3.1
2	2.7	2.9	2.7	2.4	2.0	1.8	1.7	1.5	1.7	1.7	1.5	1.5	1.5	1.5	1.8	1.8	1.7	1.8	1.9	1.9	1.8	1.7	1.8	1.8	24	2.9	1.5	1.9
3	1.7	1.6	1.4	1.4	1.4	1.6	1.7	1.7	1.6	1.5	1.4	1.5	1.3	1.1	1.0	1.0	1.0	0.9	1.2	1.4	1.5	1.7	1.6	1.7	24	1.7	0.9	1.4
4	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.7	1.5	1.7	1.5	1.3	1.3	1.4	1.5	1.3	1.1	1.2	1.5	1.5	1.4	1.1	1.4	24	1.8	1.1	1.5
5	1.3	1.3	1.3	1.3	1.3	1.5	1.6	1.6	1.5	1.5	1.6	1.9	1.7	1.6	2.1	2.0	1.9	2.1	2.2	2.2	4.7	5.9	5.8	5.6	24	5.9	1.3	2.3
6	4.8	4.5	3.4	4.2	3.1	2.3	2.0	2.2	2.2	2.2	2.4	2.3	C	2.6	3.3	2.7	3.4	3.5	3.4	3.3	3.7	3.2	2.6	3.9	23	4.8	2.0	3.1
7	5.0	7.0	10.7	12.6	15.7	16.5	19.0	15.5	10.8	8.7	9.2	6.8	6.5	2.3	2.4	2.3	2.3	1.8	1.6	1.6	2.9	6.4	5.4	4.4	24	19.0	1.6	7.4
8	1.9	1.9	1.9	1.8	1.5	1.9	2.0	2.4	1.8	1.7	2.1	2.7	2.3	2.0	2.0	2.2	3.2	4.9	6.1	8.2	7.8	7.7	6.2	5.6	24	8.2	1.5	3.4
9	6.6	5.7	3.6	3.4	3.7	3.7	3.5	3.8	2.8	2.5	2.2	1.8	1.7	1.5	0.6	0.6	0.7	1.0	1.2	1.6	1.9	1.9	2.1	1.9	24	6.6	0.6	2.5
10	2.0	2.4	2.2	2.3	2.1	2.0	2.0	1.8	1.3	1.0	1.0	1.4	1.5	1.9	2.0	2.1	1.9	2.0	2.7	3.6	4.2	5.5	5.7	4.6	24	5.7	1.0	2.5
11	4.2	4.0	4.0	3.9	4.3	3.2	2.9	1.9	1.4	1.5	1.8	1.8	1.7	1.6	1.4	1.7	1.9	1.9	2.2	2.6	2.4	2.4	2.4	2.3	24	4.3	1.4	2.5
12	2.9	2.6	2.5	2.2	2.4	2.1	2.6	2.5	2.1	1.6	1.9	1.1	1.2	1.3	1.6	2.7	4.7	7.9	9.8	10.2	10.4	5.2	3.3	3.9	24	10.4	1.1	3.7
13	4.1	3.7	3.9	3.9	4.0	3.6	3.0	3.0	3.2	3.4	3.8	4.4	C	2.3	2.1	2.3	2.4	3.0	3.9	4.4	3.5	2.3	1.6	1.2	23	4.4	1.2	3.2
14	1.1	1.3	1.2	0.9	1.0	0.9	1.1	1.3	2.3	3.3	3.3	2.5	2.0	2.0	2.8	5.5	4.2	2.4	1.8	2.0	3.4	4.1	3.6	4.6	24	5.5	0.9	2.4
15	5.9	7.5	7.3	7.1	6.6	5.7	5.8	6.0	4.4	2.8	2.6	1.9	1.2	1.2	1.5	1.9	1.6	1.6	2.5	3.3	3.8	4.3	4.5	4.6	24	7.5	1.2	4.0
16	4.3	5.2	5.8	5.1	5.1	3.8	3.3	3.2	2.4	C	2.0	2.1	2.1	1.9	1.7	2.1	2.2	2.7	2.1	2.1	2.0	2.0	2.2	2.1	23	5.8	1.7	2.9
17	6.9	7.7	5.2	6.5	6.5	5.1	3.8	1.8	0.6	0.5	0.4	0.4	0.5	0.7	1.6	2.3	3.0	3.4	3.2	3.7	3.2	2.7	2.8	3.6	24	7.7	0.4	3.2
18	4.7	4.5	6.1	5.4	5.1	4.6	4.9	3.1	1.9	1.2	2.1	2.6	3.2	3.2	3.0	3.1	3.1	3.5	3.6	5.3	12.8	8.5	6.5	2.0	24	12.8	1.2	4.3
19	2.3	2.0	1.7	1.0	1.4	2.1	2.5	2.3	1.3	0.7	0.5	0.5	C	C	C	C	0.8	0.7	0.7	1.1	2.4	5.6	9.4	7.0	20	9.4	0.5	2.3
20	5.6	5.5	4.1	3.6	3.6	3.6	3.1	2.9	2.3	2.2	1.9	1.6	1.6	2.2	2.5	2.2	2.5	2.9	4.4	7.3	9.1	7.0	6.0	1.7	24	9.1	1.6	3.7
21	1.2	1.1	1.1	0.9	0.8	0.7	1.1	1.4	1.6	1.7	1.6	0.9	0.7	0.9	0.6	0.6	0.3	0.4	1.1	1.6	2.2	3.9	2.6	1.5	24	3.9	0.3	1.3
22	1.2	1.1	1.0	0.9	1.1	2.0	3.3	2.4	1.7	A	A	2.4	3.6	3.8	3.1	2.6	1.8	2.1	2.3	2.3	1.9	2.1	2.3	2.7	22	3.8	0.9	2.2
23	2.4	2.0	2.0	2.2	2.5	3.3	3.9	6.3	5.0	3.3	2.4	2.4	C	3.5	3.4	3.3	3.5	3.5	3.9	5.3	5.7	5.7	5.5	5.3	23	6.3	2.0	3.7
24	4.4	3.3	2.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.9	2.1	2.0	2.0	2.0	1.7	1.8	1.7	2.0	2.4	2.7	2.5	2.5	2.5	24	4.4	1.7	2.2
25	3.0	3.6	3.3	3.0	2.6	2.3	2.3	2.5	2.3	2.3	1.8	1.6	2.0	1.9	2.3	2.9	4.5	6.0	7.5	12.9	21.5	16.6	9.9	5.6	24	21.5	1.6	5.2
26	5.4	4.1	3.7	3.8	4.4	4.1	5.0	5.5	4.4	3.0	4.2	5.7	7.6	5.8	3.3	3.2	2.3	2.4	1.9	1.8	1.8	2.0	2.1	3.3	24	7.6	1.8	3.8
27	3.0	3.3	3.5	5.1	7.5	13.3	14.4	10.9	8.3	6.2	4.2	3.0	2.4	2.6	2.5	2.7	3.2	3.6	4.3	3.7	3.6	3.2	1.9	4.9	24	14.4	1.9	5.1
28	9.9	6.4	4.0	4.5	3.9	4.3	4.2	4.9	5.1	4.2	C	4.7	6.4	6.1	6.1	4.5	3.5	5.1	5.7	7.5	11.7	12.5	13.5	10.8	23	13.5	3.5	6.5
29	8.8	8.9	9.3	8.2	8.3	13.8	18.5	17.1	22.8	29.5	34.2	24.5	12.4	2.8	1.5	1.0	0.5	0.5	0.5	0.3	0.2	0.6	1.0	1.6	24	34.2	0.2	9.4
30	1.3	4.3	14.6	11.4	9.5	5.5	2.4	3.1	2.0	1.1	0.8	0.5	0.5	0.4	0.5	0.5	0.7	0.6	0.7	1.0	1.3	1.7	2.4	2.6	24	14.6	0.4	2.9
31	3.6	4.0	7.0	4.7	4.4	3.4	3.6	4.8	6.7	3.9	2.9	2.8	3.1	3.4	3.6	3.8	4.0	2.9	3.1	5.0	6.5	6.7	7.2	4.6	24	7.2	2.8	4.4
Count	31	31	31	31	31	31	31	31	31	28	29	31	27	30	30	30	31	31	31	31	31	31	31	31	732			
Maximum	11.1	8.9	14.6	12.6	15.7	16.5	19.0	17.1	22.8	29.5	34.2	24.5	12.4	6.1	6.1	5.5	4.7	7.9	9.8	12.9	21.5	16.6	13.5	10.8	24			
Minimum	1.1	1.1	1.0	0.9	0.8	0.7	1.1	1.3	0.6	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.3	0.4	0.5	0.3	0.2	0.6	1.0	1.2	20			
Average	4.0	3.9	4.1	3.9	4.0	4.0	4.2	4.0	3.6	3.4	3.4	3.0	2.7	2.2	2.2	2.3	2.3	2.6	3.0	3.7	4.6	4.5	4.1	3.6				

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.2	1.6	1.8	2.1	2.4	3.1	3.6	4.6	6.5	9.3	17.0	34.2

Maximum Hourly	34.2
Maximum Daily	9.4
Monthly Average	3.5

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down

$PM_{2.5}$ - January ($\mu g/m^3$) Rundle Road 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	5.5	4.3	7.1	6.7	7.0	5.2	4.9	5.3	3.0	2.0	2.0	2.0	1.2	1.0	0.9	0.5	0.9	1.4	1.2	1.4	2.0	2.3	3.1	4.0	24	7.1	0.5	3.1
2	3.5	3.0	2.9	2.9	3.5	6.2	9.3	3.8	2.0	1.5	2.8	3.8	5.1	6.2	6.7	6.4	6.8	8.6	11.9	13.5	15.9	18.2	15.3	10.2	24	18.2	1.5	7.1
3	11.1	15.6	12.0	9.7	8.6	6.6	4.8	4.5	5.3	5.9	5.5	5.2	5.6	C	25.9	21.0	19.6	18.7	19.2	27.1	27.4	30.9	30.6	32.9	23	32.9	4.5	15.4
4	30.0	27.3	26.8	28.6	29.0	24.7	12.0	2.8	2.1	1.9	2.1	1.8	2.2	3.1	3.2	3.3	2.7	2.3	2.5	2.6	2.5	2.1	2.3	2.3	24	30.0	1.8	9.2
5	2.0	1.8	1.9	2.0	2.0	2.1	2.0	2.1	2.6	2.7	2.4	2.9	2.9	2.1	1.5	1.5	1.9	2.8	3.8	3.7	3.6	3.2	3.3	4.0	24	4.0	1.5	2.5
6	5.3	6.0	6.2	6.6	6.1	5.9	6.0	6.8	5.3	3.4	2.8	2.7	2.4	2.5	1.8	1.8	2.7	4.7	4.4	5.6	5.9	5.6	4.0	4.5	24	6.8	1.8	4.5
7	7.0	10.8	12.3	10.0	7.2	5.9	7.7	4.0	2.9	1.4	1.5	1.6	1.7	1.7	1.4	1.6	1.8	1.9	2.7	4.1	4.6	5.3	6.1	7.5	24	12.3	1.4	4.7
8	8.9	10.8	13.0	12.0	11.0	10.3	10.1	7.2	5.0	3.2	3.1	4.0	3.9	4.7	7.9	13.9	12.5	13.2	14.6	19.0	18.6	15.6	11.9	12.2	24	19.0	3.1	10.3
9	11.2	8.7	6.6	5.8	7.9	2.7	1.5	1.8	1.9	2.5	2.3	2.0	2.1	2.2	2.1	2.3	2.7	3.5	3.9	5.5	6.0	4.4	3.9	4.9	24	11.2	1.5	4.1
10	5.5	4.9	3.3	5.2	6.0	6.4	11.0	12.7	7.8	8.1	9.9	10.3	11.7	10.8	12.3	12.4	12.7	12.1	15.8	17.2	19.1	18.4	18.8	18.2	24	19.1	3.3	11.3
11	16.4	14.6	13.1	14.7	14.4	12.9	13.0	12.2	C	11.1	10.8	10.9	9.8	8.6	8.7	7.0	7.9	8.4	5.2	1.7	0.9	0.9	0.8	0.7	23	16.4	0.7	8.9
12	0.7	1.4	1.4	0.7	0.6	0.5	0.2	0.6	4.2	0.5	0.2	0.2	0.2	0.2	0.2	0.4	1.0	2.0	2.3	2.0	2.0	1.6	1.3	1.2	24	4.2	0.2	1.1
13	1.0	1.0	0.9	0.9	1.0	1.5	1.9	2.3	2.2	1.9	1.9	1.9	1.8	1.8	1.8	2.0	2.5	3.2	3.4	3.4	3.5	3.3	3.7	4.0	24	4.0	0.9	2.2
14	4.2	4.4	4.5	4.0	4.5	4.4	4.4	3.5	2.5	2.1	2.2	3.7	1.6	2.1	1.9	1.1	1.7	2.3	3.2	3.9	4.1	4.1	3.3	2.0	24	4.5	1.1	3.1
15	1.3	1.5	1.4	3.3	3.2	2.0	2.9	2.2	2.1	2.2	2.7	4.9	5.4	4.0	3.8	4.7	4.3	4.8	5.5	6.6	7.4	8.4	8.1	8.2	24	8.4	1.3	4.2
16	8.1	7.8	7.5	7.8	7.8	7.9	8.0	8.7	9.9	10.8	10.5	12.7	15.2	13.6	19.6	18.2	21.7	27.1	36.4	49.5	33.3	25.5	24.5	19.0	24	49.5	7.5	17.1
17	13.2	12.7	12.1	15.4	17.9	17.9	22.0	29.6	29.6	31.2	27.9	23.5	11.9	8.3	4.2	4.6	4.7	6.9	6.2	6.6	9.8	10.0	13.1	13.8	24	31.2	4.2	14.7
18	14.1	13.6	13.5	13.5	13.8	13.1	13.8	15.0	16.8	18.1	19.4	21.3	21.7	20.2	20.3	22.4	23.4	24.4	24.4	20.5	18.1	19.3	20.0	21.7	24	24.4	13.1	18.4
19	21.6	22.0	22.3	22.1	22.1	23.5	23.6	24.4	24.4	24.1	23.0	22.5	21.1	16.9	11.1	13.2	13.3	14.1	14.3	14.6	14.3	14.5	13.2	11.1	24	24.4	11.1	18.6
20	9.0	7.9	8.0	9.1	10.5	11.8	12.4	12.3	13.0	14.0	14.6	15.0	15.7	15.5	14.5	15.1	15.0	16.7	18.7	20.8	22.4	21.3	22.3	25.0	24	25.0	7.9	15.0
21	28.0	29.0	30.4	32.8	31.1	31.7	32.7	34.5	35.7	39.2	38.3	31.6	28.9	28.6	27.9	28.9	30.1	29.3	30.0	29.5	32.6	33.0	30.8	29.6	24	39.2	27.9	31.4
22	28.1	26.4	25.9	26.6	26.9	27.2	26.9	25.6	24.8	23.2	19.3	16.5	15.5	10.4	9.0	6.3	6.8	8.1	9.7	11.2	12.3	13.6	11.2	7.6	24	28.1	6.3	17.5
23	7.3	7.6	10.4	17.3	18.3	15.5	8.5	5.5	6.6	5.5	5.2	3.4	2.7	3.9	4.1	5.0	3.8	3.1	3.6	0.5	0.7	0.8	0.4	0.5	24	18.3	0.4	5.8
24	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.8	6.1	2.1	2.1	2.3	2.4	2.4	2.1	2.1	2.2	2.4	2.4	2.4	24	6.1	0.6	1.6
25	2.4	2.8	2.4	2.5	2.5	3.3	3.8	3.0	4.9	5.3	5.4	9.1	7.0	7.3	4.9	7.7	3.9	3.8	4.3	5.6	6.1	4.9	6.2	7.8	24	9.1	2.4	4.9
26	10.5	8.2	8.2	9.7	10.6	16.1	9.9	4.1	4.3	3.9	4.3	7.0	8.4	9.1	9.4	8.4	9.5	12.2	13.8	15.1	14.2	13.9	13.9	11.8	24	16.1	3.9	9.9
27	13.7	13.1	13.4	12.4	10.2	3.6	2.4	2.7	3.1	3.6	4.0	4.5	5.5	6.5	7.3	9.4	10.8	11.6	10.1	12.6	20.0	23.7	20.2	12.8	24	23.7	2.4	9.9
28	13.3	14.2	16.4	18.4	16.4	13.8	12.8	11.9	10.7	10.3	9.7	9.9	10.5	11.8	7.0	4.7	3.3	2.4	1.9	1.4	1.6	1.4	1.4	1.8	24	18.4	1.4	8.6
29	2.0	2.6	2.9	2.7	2.1	1.9	2.0	2.3	2.4	2.6	2.5	2.6	2.5	7.0	9.9	C	9.8	8.2	7.6	7.7	6.9	7.4	7.3	7.2	23	9.9	1.9	4.8
30	6.4	5.5	4.7	4.3	3.9	3.4	3.7	3.2	3.2	3.3	3.1	2.7	2.3	2.4	2.1	2.7	3.1	4.2	5.8	5.2	6.5	9.1	5.8	14.4	24	14.4	2.1	4.6
31	7.3	8.9	8.5	6.8	4.9	4.1	3.1	3.1	2.5	3.3	4.6	5.4	4.8	C	C	4.0	4.3	7.0	5.0	5.7	6.7	8.1	10.0	11.3	22	11.3	2.5	5.9
Count	31	31	31	31	31	31	31	31	30	31	31	31	31	29	30	30	31	31	31	31	31	31	31	31	739			
Maximum	30.0	29.0	30.4	32.8	31.1	31.7	32.7	34.5	35.7	39.2	38.3	31.6	28.9	28.6	27.9	28.9	30.1	29.3	36.4	49.5	33.3	33.0	30.8	32.9	24			
Minimum	0.6	0.7	0.7	0.6	0.6	0.5	0.2	0.6	0.6	0.5	0.2	0.2	0.2	0.2	0.2	0.4	0.9	1.4	1.2	0.5	0.7	0.8	0.4	0.5	22			
Average	9.6	9.6	9.7	10.2	10.1	9.4	9.0	8.3	8.1	8.0	7.9	8.0	7.7	7.4	7.8	7.8	8.0	8.8	9.5	10.5	10.7	10.8	10.3	10.1				

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.7	2.3	3.2	4.4	6.0	8.1	11.2	14.4	22.1	27.9	33.0	49.5

Maximum Hourly	49.5
Maximum Daily	31.4
Monthly Average	9.0

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

$PM_{2.5}$ - Rundle Road
February 2018
(µg/m³)

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	13.3	13.3	13.5	13.5	14.4	15.3	16.7	17.0	17.0	16.8	17.1	17.1	16.9	14.1	4.9	1.3	1.2	1.2	1.1	1.5	2.7	2.9	2.1	2.2	24	17.1	1.1	9.9
2	1.7	1.7	1.5	1.5	1.6	1.4	1.6	2.0	2.2	2.6	2.1	2.3	2.1	1.9	1.8	1.8	3.0	5.2	7.0	7.0	9.2	7.0	2.7	2.1	24	9.2	1.4	3.0
3	1.8	1.1	1.2	1.2	1.6	1.8	2.2	3.2	4.2	6.9	7.6	6.7	6.3	7.1	7.3	9.2	9.9	9.5	10.0	10.3	8.7	9.1	7.3	5.3	24	10.3	1.1	5.8
4	3.5	2.7	2.4	2.6	2.8	4.1	5.2	7.1	11.3	10.3	11.8	11.1	3.8	2.6	3.2	4.1	4.7	3.5	3.8	5.8	2.9	2.3	2.1	2.0	24	11.8	2.0	4.8
5	1.7	1.4	1.2	1.2	1.4	1.6	2.2	3.0	2.3	1.6	1.9	2.2	4.7	5.2	5.4	6.5	5.9	4.8	6.5	7.8	8.4	8.3	7.6	8.9	24	8.9	1.2	4.2
6	7.7	7.8	9.2	12.1	13.0	13.1	13.4	16.5	17.3	16.8	14.3	14.2	13.2	13.5	8.7	7.3	5.6	6.8	6.8	8.4	9.6	15.8	10.8	9.1	24	17.3	5.6	11.3
7	13.0	11.7	6.6	4.7	4.4	5.5	7.6	9.4	10.0	8.2	7.4	5.9	4.9	5.4	5.0	4.6	4.3	4.8	6.1	6.7	8.6	8.8	9.1	10.8	24	13.0	4.3	7.2
8	13.4	15.3	12.7	8.4	9.1	8.0	6.6	5.9	8.2	8.9	5.8	7.6	8.6	5.4	7.0	9.1	6.7	7.6	9.5	13.0	14.1	13.6	19.4	27.4	24	27.4	5.4	10.5
9	37.8	29.8	31.5	34.6	35.9	38.4	33.2	33.7	30.8	28.0	18.4	18.6	13.6	13.6	8.9	7.0	5.6	8.5	9.8	10.0	10.0	10.7	11.2	11.1	24	38.4	5.6	20.4
10	12.2	15.7	17.8	20.2	21.3	21.4	21.2	21.7	16.9	14.4	12.3	11.2	8.8	8.6	7.6	7.9	6.9	6.7	7.4	7.0	6.7	5.8	6.7	6.8	24	21.7	5.8	12.2
11	6.6	7.0	8.5	5.7	5.7	6.1	6.2	6.0	5.7	6.1	6.8	5.9	5.9	7.1	4.9	4.8	5.4	10.1	8.4	11.1	11.0	9.8	5.3	2.6	24	11.1	2.6	6.8
12	2.8	3.3	2.9	2.0	2.3	3.8	5.0	6.7	7.6	8.0	4.4	2.4	2.7	3.0	3.7	4.4	3.5	4.8	7.0	9.3	10.3	12.8	16.1	14.7	24	16.1	2.0	6.0
13	20.8	16.7	10.2	9.3	9.7	8.3	6.5	6.1	6.8	6.8	4.4	10.0	4.3	2.4	2.5	3.2	4.6	4.4	7.6	4.9	6.2	6.7	5.4	6.1	24	20.8	2.4	7.3
14	7.5	8.6	8.1	8.7	11.9	16.2	24.2	31.3	28.4	24.7	28.1	C	C	C	29.5	30.3	31.4	29.2	28.3	26.9	28.3	30.5	29.3	27.2	21	31.4	7.5	23.3
15	26.9	24.4	25.8	16.7	12.6	14.9	9.5	2.5	7.9	C	12.6	7.8	7.0	8.4	9.5	10.9	12.9	15.5	18.7	18.0	19.1	20.5	19.8	19.7	23	26.9	2.5	14.9
16	20.7	20.4	24.0	22.6	21.6	17.0	12.2	12.0	13.3	C	3.7	4.0	3.1	2.3	1.8	1.0	1.0	1.6	8.9	4.3	4.3	2.7	3.7	4.7	23	24.0	1.0	9.2
17	5.4	6.0	5.5	6.0	7.8	9.4	11.5	12.5	4.9	4.9	5.1	5.2	4.8	4.8	5.4	7.1	6.8	6.1	6.6	7.0	8.1	9.6	10.4	12.0	24	12.5	4.8	7.2
18	18.1	22.0	24.8	24.5	23.1	16.5	12.0	11.9	8.3	6.7	6.4	4.6	6.0	5.2	6.4	8.5	9.6	11.8	12.2	12.1	14.8	14.2	14.3	11.6	24	24.8	4.6	12.7
19	10.9	9.3	8.7	7.9	8.0	7.9	8.1	8.6	1.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	5.3	8.6	16.4	7.8	5.4	3.5	1.8	1.2	24	16.4	0.2	5.1
20	1.0	0.7	1.3	1.1	1.3	1.0	0.6	0.4	6.1	4.2	2.7	0.8	0.6	0.7	0.9	0.7	1.4	1.2	1.5	1.7	1.6	0.7	0.2	0.3	24	6.1	0.2	1.4
21	0.6	0.9	2.8	3.0	1.0	1.3	4.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.6	0.8	0.6	1.0	0.9	0.7	0.8	24	4.8	0.2	0.9
22	0.7	0.5	0.4	0.4	0.7	0.8	0.7	1.0	1.3	1.9	1.7	1.5	1.7	1.1	1.5	7.7	3.2	2.6	2.6	3.3	4.8	4.0	3.4	3.5	24	7.7	0.4	2.1
23	3.1	3.1	3.2	2.5	2.5	5.0	6.0	6.8	5.8	5.0	5.2	4.4	3.2	2.2	1.5	1.4	1.2	2.3	4.8	4.9	13.6	10.8	10.1	4.8	24	13.6	1.2	4.7
24	4.0	2.8	1.9	2.3	4.5	4.2	3.1	1.3	1.1	0.9	0.9	0.9	1.2	1.2	1.5	1.2	1.3	3.1	6.9	9.3	11.5	5.4	3.5	2.1	24	11.5	0.9	3.2
25	2.8	1.7	2.3	2.4	2.7	3.6	3.3	2.5	2.2	3.7	3.2	2.4	1.6	1.2	1.4	1.9	2.6	4.6	7.6	10.7	12.1	12.5	12.2	12.1	24	12.5	1.2	4.7
26	9.9	6.9	7.0	6.9	7.4	7.4	8.2	9.2	8.6	6.3	4.7	1.6	1.2	1.8	2.2	2.3	1.9	1.8	2.4	4.1	3.8	4.1	4.4	5.1	24	9.9	1.2	5.0
27	5.8	6.7	6.8	8.4	8.4	10.0	10.9	15.0	15.5	10.5	7.8	6.3	6.6	6.3	3.6	2.0	1.3	1.1	2.4	2.8	3.0	3.2	4.1	3.9	24	15.5	1.1	6.3
28	5.0	4.8	7.1	10.1	7.2	7.6	8.3	9.0	11.6	8.1	3.6	3.3	3.5	3.7	5.0	5.3	7.4	8.7	12.9	12.2	14.9	18.6	20.0	17.2	24	20.0	3.3	9.0
29																												
30																												
31																												
Count	28	28	28	28	28	28	28	28	28	26	28	27	27	27	28	28	28	28	28	28	28	28	28	28	667			
Maximum	37.8	29.8	31.5	34.6	35.9	38.4	33.2	33.7	30.8	28.0	28.1	18.6	16.9	14.1	29.5	30.3	31.4	29.2	28.3	26.9	28.3	30.5	29.3	27.4	24			
Minimum	0.6	0.5	0.4	0.4	0.7	0.8	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.6	0.8	0.6	1.0	0.7	0.2	0.3	21			
Average	9.2	8.8	8.9	8.6	8.7	9.0	9.0	9.4	9.2	8.2	7.2	5.9	5.1	4.8	5.1	5.4	5.5	6.3	8.0	8.2	9.1	9.1	8.7	8.4				

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	1.2	2.1	3.2	4.8	6.1	7.4	8.9	11.9	16.8	22.4	31.4	38.4

Maximum Hourly	38.4
Maximum Daily	23.3
Monthly Average	7.8

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

$PM_{2.5}$ - March (µg/m³) Rundle Road 2018

Day	Hour 0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	Count	Maximum	Minimum	Average
1	12.3	6.9	4.6	5.0	4.8	2.7	2.9	3.8	2.5	1.3	1.6	1.3	C	1.9	1.8	4.1	2.0	3.5	9.4	1.3	0.9	1.1	1.4	2.5	23	12.3	0.9	3.5
2	3.2	3.3	2.9	2.4	2.0	1.8	1.6	1.3	1.4	1.2	0.9	0.8	1.2	1.3	1.5	1.7	1.5	1.4	1.5	1.8	1.6	1.4	1.6	1.5	24	3.3	0.8	1.7
3	1.3	1.1	0.9	0.9	0.9	0.9	1.2	1.3	1.4	1.2	1.3	1.0	0.8	0.6	0.3	0.3	0.2	0.2	0.3	0.5	1.1	1.0	1.4	1.5	24	1.5	0.2	0.9
4	1.0	0.9	1.0	0.9	0.9	1.0	1.1	1.2	1.2	0.8	1.4	1.1	0.7	0.5	0.5	0.4	0.3	0.2	0.3	0.6	0.7	0.5	0.4	0.6	24	1.4	0.2	0.8
5	0.6	0.6	0.5	0.5	0.7	0.7	0.9	1.2	1.7	1.3	1.1	1.3	1.8	1.1	1.6	2.2	1.9	1.9	2.4	4.8	9.2	10.9	9.6	8.2	24	10.9	0.5	2.8
6	5.9	6.3	5.0	5.5	3.6	2.2	2.0	2.4	3.7	C	6.1	5.6	5.7	3.9	3.6	2.8	3.6	3.9	3.4	3.2	3.5	3.2	2.4	3.9	23	6.3	2.0	4.0
7	4.9	6.8	11.4	14.7	19.1	20.8	21.5	19.0	13.6	10.2	9.9	7.0	6.1	2.6	2.2	2.2	2.1	1.8	1.5	1.7	3.9	9.2	7.7	6.6	24	21.5	1.5	8.6
8	2.2	1.9	1.9	3.0	1.5	1.8	2.0	2.8	2.8	2.5	3.5	4.5	3.7	2.9	2.8	3.1	4.0	5.5	7.4	8.6	9.7	9.4	5.4	5.2	24	9.7	1.5	4.1
9	5.4	3.4	2.2	2.3	2.9	3.2	3.5	3.0	2.1	2.1	1.7	1.2	0.9	0.8	0.3	0.3	0.6	1.1	1.5	3.2	1.2	5.1	4.2	1.4	24	5.4	0.3	2.2
10	1.0	0.7	0.7	0.8	0.7	0.6	0.8	1.0	0.7	0.3	0.2	0.3	0.6	0.9	0.9	1.3	0.4	0.2	0.3	4.4	2.3	20.4	3.0	2.1	24	20.4	0.2	1.9
11	2.6	1.8	2.1	2.0	1.9	2.5	1.9	1.4	0.7	0.7	0.9	1.1	1.9	1.5	1.0	1.1	1.5	1.4	1.6	1.5	1.8	1.5	1.0	0.9	24	2.6	0.7	1.5
12	1.6	2.3	2.3	2.2	2.4	2.6	3.6	3.3	2.7	2.3	2.7	1.6	2.1	1.8	3.1	6.3	5.2	10.3	19.9	15.5	12.8	6.4	2.3	2.4	24	19.9	1.6	4.9
13	3.5	3.6	3.9	4.7	4.7	4.7	3.4	3.0	5.3	C	2.9	3.1	2.3	1.1	1.3	1.2	1.1	1.4	3.4	3.3	3.2	2.0	1.5	1.5	23	5.3	1.1	2.9
14	0.7	0.7	0.7	0.4	0.3	0.3	0.3	0.4	0.6	1.0	1.4	1.3	1.0	1.1	1.9	4.6	4.0	2.2	1.2	1.6	3.1	4.3	4.6	5.9	24	5.9	0.3	1.8
15	7.3	8.9	8.9	8.3	7.5	9.0	10.1	9.6	5.4	3.1	2.3	1.6	1.1	0.7	0.8	0.7	0.7	0.8	1.4	2.3	2.6	3.6	4.1	4.2	24	10.1	0.7	4.4
16	4.9	6.0	6.8	6.0	6.1	4.7	3.9	5.4	C	6.0	5.3	5.1	4.5	3.5	2.4	2.3	2.3	2.9	5.3	9.7	3.9	1.6	1.5	2.2	23	9.7	1.5	4.4
17	3.6	5.5	6.3	6.9	6.2	4.7	3.1	2.1	1.0	0.8	0.7	0.3	0.3	0.2	0.3	0.4	0.4	0.6	0.4	0.4	0.4	0.5	0.5	1.3	24	6.9	0.2	2.0
18	0.9	1.2	2.0	1.4	1.9	1.9	1.7	2.2	1.7	1.3	2.5	2.5	2.8	3.0	1.9	2.3	2.6	2.5	2.4	6.3	10.8	7.6	7.3	2.5	24	10.8	0.9	3.1
19	1.7	1.9	1.9	0.7	0.7	0.7	1.0	2.1	0.8	0.6	0.8	0.7	0.4	0.3	0.3	0.3	0.3	0.4	1.1	2.4	3.8	7.5	13.5	17.0	24	17.0	0.3	2.5
20	6.0	9.2	3.5	3.1	3.0	2.7	2.9	2.5	2.0	2.1	C	C	C	3.3	3.0	2.8	2.9	3.1	4.7	7.8	18.0	9.6	6.6	1.7	21	18.0	1.7	4.8
21	1.2	1.0	1.0	1.0	0.8	0.7	1.1	1.6	1.7	1.8	2.1	1.4	0.7	4.4	1.7	1.5	0.3	0.3	2.3	6.2	3.0	5.3	4.7	2.0	24	6.2	0.3	2.0
22	1.0	0.9	0.8	0.8	0.7	1.1	2.0	2.0	2.1	3.1	1.9	A	3.3	5.2	4.0	2.5	2.2	2.1	2.2	2.1	2.2	2.6	2.4	2.6	23	5.2	0.7	2.2
23	2.5	2.4	2.5	2.9	2.7	3.4	4.3	3.3	7.3	2.6	1.6	1.8	2.2	4.2	C	3.0	3.0	2.3	2.6	4.1	4.4	4.0	4.7	6.6	23	7.3	1.6	3.4
24	4.3	4.7	3.9	2.4	2.4	2.4	2.9	2.2	2.3	2.4	2.5	2.5	3.0	2.7	2.3	2.1	2.2	2.9	2.5	2.5	4.2	3.2	3.4	4.0	24	4.7	2.1	2.9
25	3.9	4.0	4.0	3.4	6.7	4.7	3.0	2.2	2.7	3.4	3.2	2.6	3.1	3.4	3.0	3.3	3.1	3.3	5.6	12.7	21.5	19.9	11.6	5.3	24	21.5	2.2	5.8
26	4.9	3.8	3.4	3.5	3.5	3.4	4.3	3.6	2.8	1.8	2.2	4.3	5.1	4.1	2.4	1.9	0.8	0.9	1.3	1.2	1.8	1.9	2.0	2.5	24	5.1	0.8	2.8
27	2.8	2.2	2.4	3.7	6.3	12.4	12.9	10.0	8.8	6.4	5.6	3.8	3.4	5.2	7.4	13.5	12.6	10.2	6.4	2.9	2.3	2.1	2.7	3.4	24	13.5	2.1	6.2
28	3.2	3.3	2.5	3.4	3.5	3.8	4.2	4.7	4.3	4.8	5.1	5.6	7.7	6.4	4.8	4.6	4.3	5.1	5.2	7.5	10.9	15.6	20.1	19.4	24	20.1	2.5	6.7
29	16.4	16.7	16.4	10.6	14.3	17.9	22.4	24.2	24.9	25.5	28.0	25.7	15.1	4.5	2.8	2.5	2.1	1.6	1.4	1.2	1.4	1.4	2.1	2.2	24	28.0	1.2	11.7
30	1.9	4.2	16.1	12.6	12.4	8.6	3.9	4.9	3.7	2.2	1.7	1.1	0.9	1.0	1.4	1.4	1.2	0.8	0.9	1.2	1.7	4.1	2.6	3.3	24	16.1	0.8	3.9
31	3.2	3.2	3.4	3.7	3.4	3.8	4.1	5.8	7.7	4.5	3.4	3.3	3.7	4.4	4.5	4.0	3.9	2.9	3.6	5.2	6.8	6.8	7.6	5.2	24	7.7	2.9	4.5
Count	31	31	31	31	31	31	31	31	30	29	30	29	29	31	30	31	31	31	31	31	31	31	31	31	735			
Maximum	16.4	16.7	16.4	14.7	19.1	20.8	22.4	24.2	24.9	25.5	28.0	25.7	15.1	6.4	7.4	13.5	12.6	10.3	19.9	15.5	21.5	20.4	20.1	19.4	24			
Minimum	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.4	0.6	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.3	0.4	0.4	0.5	0.4	0.6	21			
Average	3.7	3.9	4.1	3.9	4.1	4.2	4.3	4.3	4.0	3.4	3.5	3.2	3.0	2.5	2.2	2.6	2.4	2.5	3.3	4.1	5.0	5.6	4.6	4.2				

Percentiles	10	20	30	40	50	60	70	80	90	95	99	100
Data	0.7	1.1	1.5	2.1	2.5	3.1	3.8	4.9	7.6	12.4	21.2	28.0

Maximum Hourly	28.0
Maximum Daily	11.7
Monthly Average	3.7

Notes C - Calibration / Span Cycle NA - No Data Available T - Test A- MOE Audit M - Equipment Malfunction / Down R - Rate of Change

APPENDIX F:
CONTINUOUS PARAMETER EDIT LOGS

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	N/A		Station Name:	Courtice WPCP Station (Upwind)				
Station address:	Courtice Water Pollution Control Plant		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	SO_2	Instrument make & model:		Teledyne Monitor Labs Sulphur Dioxide Analyzer Model		Serial Number:	565	
Data edit period	Start date:	1-Jan-18	End date:	1-Mar-18		Time Zone : EST		
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	
1	13-Apr-18	BB	Invalidate	31-Jan-18	12:00	31-Jan-18	13:00	Monthly calibration.
2	13-Apr-18	BB	Invalidate	15-Feb-18	14:00	15-Feb-18	15:00	Monthly calibration.
3	13-Apr-18	BB	Invalidate	19-Mar-18	12:00	19-Mar-18	15:00	Monthly calibration.
4	13-Apr-18	BB	Invalidate	22-Mar-18	09:00	22-Mar-18	10:00	MOECC Audit
5	13-Apr-18	BB	Data Review	22-Jan-18	19:00	22-Jan-18	23:00	An elevated SO_2 level of 29.4 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. Slightly elevated NOx levels were also measured, suggesting a local combustion source. Winds were from the east - potential emission sources in this direction include St. Mary's Cement and a CN railroad. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
6	13-Apr-18	BB	Data Review	6-Feb-18	11:00	6-Feb-18	13:00	An elevated SO_2 level of 57.7 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. Eelevated NOx levels were also measured, suggesting a local combustion source. Winds were from the southeast - potential emission sources in this direction include St. Mary's Cement. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
7	13-Apr-18	BB	Data Review	19-Mar-18	18:00	19-Mar-18	23:00	An elevated SO_2 level of 16.1 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. Elevated NOx levels were also measured, suggesting a local combustion source. Winds were from the southeast - potential emission sources in this direction include a CN railroad. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
8	13-Apr-18	BB	Data Review	21-Feb-18	12:00	22-Feb-18	02:00	Instances of repeating zero values in these timeframes were due to negative instrument zero drift less than -5 ppb and rounded to 0 ppb. As per the MOECC Ambient Monitoring Guideline, no drift correction was applied.
9	13-Apr-18	BB	Data Review	12-Feb-18	00:00	12-Feb-18	18:00	
10	13-Apr-18	BB	Data Review	1-Feb-18	22:00	3-Feb-18	07:00	

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range
Test

Project Name	**Durham York Energy Centre Ambient Air Monitoring Program**							
Contact	**Greg Crooks / Connie Lim / Brian Bylhouwer**		**Phone:**	**905-944-7777**	**E-mail:**	**greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com**		
Station number:	**N/A**		**Station Name:**	**Courtice WPCP Station (Upwind)**				
Station address:	**Courtice Water Pollution Control Plant**		**Emitter Address:**	**The Region of Durham, 605 Rossland Rd, Whitby, ON**				
Pollutant or parameter:	**NOx**	**Instrument make & model:**		**API Model 200E Chemiluminescence Analyzer**			**Serial Number:**	**675**
Data edit period	**Start date:**	**1-Jan-18**	**End date:**	**1-Mar-18**		**Time Zone : EST**		
Edit #	**Edit date**	**Editor's Name**	**Edit Action**	**Starting**		**Ending**		**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	
1	13-Apr-18	BB	Invalidate	31-Jan-18	12:00	31-Jan-18	13:00	Monthly calibration.
2	13-Apr-18	BB	Invalidate	15-Feb-18	14:00	15-Feb-18	15:00	Monthly calibration.
3	13-Apr-18	BB	Invalidate	19-Mar-18	12:00	19-Mar-18	15:00	Monthly calibration.
4	13-Apr-18	BB	Invalidate	22-Mar-18	09:00	22-Mar-18	10:00	MOECC Audit
5	13-Apr-18	BB	Invalidate	20-Mar-18	09:00	20-Mar-18	10:00	Monthly calibration.
6	13-Apr-18	BB	Data Review	6-Feb-18	11:00	6-Feb-18	13:00	An elevated NOx level of 61.6 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. For this hour, the measured NO concentration was less than NO_2 which suggests a more distant emission source. Winds were blowing from the southeast - potential sources in that direction include a CN railroad and the Darlington NGS. The data was deemed valid.
7	13-Apr-18	BB	Data Review	27-Feb-18	00:00	27-Feb-18	07:00	An elevated NOx level of 77.0 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. For this hour, the measured NO concentration was higher than NO_2 which suggests a nearby emission source. Winds were blowing from the northeast - potential sources in that direction include the Courtice WPCP, the DYEC, a CN railroad, and Highway 401. The data was deemed valid.
8	13-Apr-18	BB	Data Review	5-Mar-18	20:00	5-Mar-18	22:00	An elevated NOx level of 48.7 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. For this hour, the measured NO concentration was similar to NO_2 which suggests an intermediate distance emission source. Winds were blowing from the east - potential sources in that direction include the Courtice WPCP, a CN railroad, and St. Mary's Cement. The data was deemed valid.
9	13-Apr-18	BB	Data Review	20-Mar-18	18:00	20-Mar-18	23:00	An elevated NOx level of 48.5 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. For this hour, the measured NO concentration was less than NO_2 which suggests a more distant emission source. Winds were blowing from the southeast - potential sources in that direction include a CN railroad and the Darlington NGS. The data was deemed valid.
10	13-Apr-18	BB	Data Review	28-Mar-18	19:00	28-Mar-18	23:00	An elevated NOx level of 55.7 ppb was measured at the Courtice WPCP station without a corresponding trend at the Rundle Road Station. For this hour, the measured NO concentration was less than NO_2 which suggests a more distant emission source. Winds were blowing from the north - potential sources in that direction include the Courtice WPCP, a CN railroad and Highway 401. The data was deemed valid.
11	13-Apr-18	BB	Data Review	3-Mar-18	05:00	4-Mar-18	21:00	Instances of repeating zero values in these timeframes were due to negative instrument zero drift less than -5 ppb and rounded to 0 ppb. As per the MOECC Ambient Monitoring Guideline, no drift correction was applied.
12	13-Apr-18	BB	Data Review	1-Jan-18	00:00	31-Jan-18	11:00	
13	21-Apr-18	BB	Span Correction	1-Jan-18	00:00	31-Jan-18	13:00	Difference between monthly span tests was greater than 10% - span correction varying linearly from 7.6% to 18.5% was applied to the January data for NOx, NO, and NO2 data during this period.
14	21-Apr-18	BB	Span Correction	31-Jan-18	14:00	15-Feb-18	15:00	Difference between monthly span tests was greater than 10% - span correction varying linearly from 18.5% to 4.5% was applied to the data for NOx, NO, and NO2 data during this period.

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range
Test

EDIT LOG TABLE

Project Name	**Durham York Energy Centre Ambient Air Monitoring Program**							
Contact	**Greg Crooks / Connie Lim / Brian Bylhouwer**		**Phone:**	**905-944-7777**	**E-mail:**	**greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com**		
Station number:	**N/A**		**Station Name:**	**Courtice WPCP Station**				
Station address:	**Courtice Water Pollution Control Plant**		**Emitter Address:**	**The Region of Durham, 605 Rossland Rd, Whitby, ON**				
Pollutant or parameter:	**$PM_{2.5}$**	**Instrument make & model:**		**Thermo Sharp 5030 Synchronized Hybrid Ambient Real-time Particulate Monitor**		**Serial Number:**	**E-1569**	
Data edit period	**Start date:**	**1-Jan-18**	**End date:**	**1-Mar-18**		**Time Zone : EST**		
Edit #	**Edit date**	**Editor's Name**	**Edit Action**	**Starting**		**Ending**		**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	
1	13-Apr-18	BB	Invalidate	31-Jan-18	12:00	31-Jan-18	13:00	Monthly calibration.
2	13-Apr-18	BB	Invalidate	15-Feb-18	14:00	15-Feb-18	15:00	Monthly calibration.
3	13-Apr-18	BB	Invalidate	19-Mar-18	12:00	19-Mar-18	15:00	Monthly calibration.
4	13-Apr-18	BB	Invalidate	22-Mar-18	09:00	22-Mar-18	10:00	MOECC Audit
5	13-Apr-18	BB	Invalidate	3-Jan-18	10:00	3-Jan-18	10:00	Zero check
6	13-Apr-18	BB	Invalidate	3-Jan-18	10:00	3-Jan-18	10:00	Zero check
7	13-Apr-18	BB	Invalidate	11-Jan-18	12:00	11-Jan-18	12:00	Zero check
8	13-Apr-18	BB	Invalidate	21-Jan-18	10:00	21-Jan-18	10:00	Zero check
9	13-Apr-18	BB	Invalidate	25-Jan-18	14:00	25-Jan-18	14:00	Zero check
10	13-Apr-18	BB	Invalidate	28-Jan-18	11:00	28-Jan-18	11:00	Zero check
11	13-Apr-18	BB	Invalidate	9-Feb-18	09:00	9-Feb-18	09:00	Zero check
12	13-Apr-18	BB	Invalidate	15-Feb-18	11:00	15-Feb-18	11:00	Zero check
13	13-Apr-18	BB	Invalidate	22-Feb-18	09:00	22-Feb-18	09:00	Zero check
14	13-Apr-18	BB	Invalidate	1-Mar-18	09:00	1-Mar-18	09:00	Zero check
15	13-Apr-18	BB	Invalidate	6-Mar-18	12:00	6-Mar-18	12:00	Zero check
16	13-Apr-18	BB	Invalidate	13-Mar-18	12:00	13-Mar-18	12:00	Zero check
17	13-Apr-18	BB	Zero correction	13-Mar-18	12:00	16-Mar-18	09:00	Zeroed at 0.8 µg/m³
18	13-Apr-18	BB	Invalidate	16-Mar-18	09:00	16-Mar-18	09:00	Zero check
19	13-Apr-18	BB	Invalidate	23-Mar-18	12:00	23-Mar-18	12:00	Zero check
20	13-Apr-18	BB	Invalidate	28-Mar-18	10:00	28-Mar-18	10:00	Zero check
21	13-Apr-18	BB	Data review	22-Jan-17	21:00	22-Jan-17	23:00	Elevated levels of up to 30.2 µg/m³ were measured without a corresponding trend at the Rundle or Oshawa Stations. Winds were from the northwest - potential emission sources in this direction include a CN railroad and Highway 401. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
22	13-Apr-18	BB	Data review	29-Mar-18	08:00	29-Mar-18	11:00	Elevated levels of up to 34.2 µg/m³ were measured. Winds were from the northwest - potential emission sources in this direction include a CN railroad and Highway 401. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
23	13-Apr-18	BB	Data review	23-Jan-18	23:00	24-Jan-18	04:00	Instances of repeating 0.5 µg/m3 measurements. Data was reviewed - measurements were varying but were rounded to 0.5µg/m3.

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range
Test

EDIT LOG TABLE

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	N/A		Station Name:	Courtice WPCP Station				
Station address:	Courtice Water Pollution Control Plant		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	Temperature	Instrument make & model:		Campbell Scientific Model HMP60			Serial Number:	
Data edit period	Start date:	1-Jan-18	End date:	1-Mar-18				Time Zone : EST
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	

EDIT LOG TABLE

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	N/A		Station Name:	Courtice WPCP Station				
Station address:	Courtice Water Pollution Control Plant		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	Rainfall	Instrument make & model:		Texas Electronic TE525M			Serial Number:	
Data edit period	Start date:	1-Jan-18	End date:	1-Mar-18				Time Zone : EST
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range

EDIT LOG TABLE

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	N/A		Station Name:	Courtice WPCP Station				
Station address:	Courtice Water Pollution Control Plant		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	Relative Humidity	Instrument make & model:		Campbell Scientific Model HMP60			Serial Number:	
Data edit period	Start date:	1-Jan-18	End date:	1-Mar-18				Time Zone : EST
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	

EDIT LOG TABLE

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	N/A		Station Name:	Courtice WPCP Station				
Station address:	Courtice Water Pollution Control Plant		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	Atmospheric Pressure	Instrument make & model:		Campbell Scientific Model CS106			Serial Number:	
Data edit period	Start date:	1-Jan-18	End date:	1-Mar-18				Time Zone : EST
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd/mm/yyyy)	Hour (xx:xx)	Date (dd/mm/yyyy)	Hour (xx:xx)	

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range

EDIT LOG TABLE

Project Name	**Durham York Energy Centre Ambient Air Monitoring Program**								
Contact	**Lisa Heatherington**		**Phone:**	**N/A**	**E-mail:**	**Lisa.Hetherington@Durham.ca**			
Station number:	**N/A**		**Station Name:**	**Courtice WPCP Station**					
Station address:	**Courtice Water Pollution Control Plant**		**Emitter Address:**	**The Region of Durham, 605 Rossland Rd, Whitby, ON**					
Pollutant or parameter:	**Wind Speed/Wind direction**	**Instrument make & model:**		**N/A**			**Serial Number:**		
Data edit period	**Start date:**	**1-Jan-18**	**End date:**	**1-Mar-18**		**Time Zone : EST**			
Edit #	**Edit date**	**Editor's Name**	**Edit Action**	**Starting**		**Ending**		**Reason**	
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**		

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	45200		Station Name:	Rundle Road Station				
Station address:	Rundle Road / Baseline Road		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	SO_2	Instrument make & model:		Teledyne Monitor Labs Sulphur Dioxide Analyzer		Serial Number:	565	
Data edit period	Start date:	1-Jan-18	End date:	31-Mar-18			Time Zone : EST	
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd-mm-yy)	Hour (xx:xx)	Date (dd-mm-yy)	Hour (xx:xx)	
1	11-Apr-18	BB	Invalidate	31-Jan-18	13:00	31-Jan-18	14:00	Monthly calibration
2	11-Apr-18	BB	Invalidate	14-Feb-18	11:00	14-Feb-18	13:00	Monthly calibration
3	11-Apr-18	BB	Invalidate	20-Mar-18	10:00	20-Mar-18	12:00	Monthly calibration
4	11-Apr-18	BB	Data Review	7-Jan-18	10:00	7-Jan-18	11:00	Elevated levels of up to 3 ppb were measured without a corresponding trend at the Courtice WPCP. Elevated NOx levels were also measured in the same time period suggesting a local combustion source. Winds were easterly during this time. Potential emission sources in this direction include the CP railroad and St. Mary's Cement. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
5	11-Apr-18	BB	Invalidate	22-Mar-18	11:00	20-Mar-18	11:00	MOECC Quarterly Audit
6	11-Apr-18	BB	Data review	2-Mar-18	05:00	6-Mar-18	10:00	Instances of repeating zero values in these timeframes were due to negative instrument zero drift less than -5 ppb. As per the MOECC Ambient Monitoring Guideline, no drift correction was applied
7	11-Apr-18	BB	Data review	18-Mar-18	19:00	20-Mar-18	09:00	

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range
Test

EDIT LOG TABLE

Project Name	**Durham York Energy Centre Ambient Air Monitoring Program**						
Contact	**Greg Crooks / Connie Lim / Brian Bylhouwer**		**Phone:**	**905-944-7777**	**E-mail:**	**greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com**	
Station number:	**45200**		**Station Name:**	**Rundle Road Station**			
Station address:	**Rundle Road / Baseline Road**		**Emitter Address:**	**The Region of Durham, 605 Rossland Rd, Whitby, ON**			
Pollutant or parameter:	**NOx**	**Instrument make & model:**		**API Model 200E Chemiluminescence Analyzer**		**Serial Number:**	**675**
Data edit period	**Start date:**	**1-Jan-18**	**End date:**	**31-Mar-18**			**Time Zone : EST**

Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd-mm-yy)	Hour (xx:xx)	Date (dd-mm-yy)	Hour (xx:xx)	
1	11-Apr-18	BB	Invalidate	31-Jan-18	13:00	31-Jan-18	14:00	Monthly calibration
2	11-Apr-18	BB	Invalidate	14-Feb-18	11:00	14-Feb-18	13:00	Monthly calibration
3	11-Apr-18	BB	Invalidate	20-Mar-18	10:00	20-Mar-18	12:00	Monthly calibration
4	11-Apr-18	BB	Invalidate	22-Mar-18	11:00	20-Mar-18	11:00	MOECC Quarterly Audit
5	11-Apr-18	BB	Data review	10-Jan-18	01:00	10-Jan-18	11:00	An elevated NOx level of 38 ppb was measured without a corresponding trend at the Courtice station. For this hour, the measured NO concentration was less than NO_2 which suggests a more distant emission source. Winds were blowing from the north - potential emission sources in this direction include local roads. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
6	11-Apr-18	BB	Data review	15-Feb-18	03:00	15-Feb-18	11:00	An elevated NOx level of 60 ppb was measured without a corresponding trend at the Courtice station. For this hour, the measured NO concentration was roughly equal to NO_2 which suggests an intermediate distance emission source. Winds were blowing from the east - potential emission sources in this direction include a CP railroad and local roads. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
7	11-Apr-18	BB	Data review	27-Mar-18	05:00	27-Mar-18	10:00	An elevated NOx level of 24 ppb was measured without a corresponding trend at the Courtice station. For this hour, the measured NO concentration was less than NO_2 which suggests a more distant emission source. Winds were blowing from the southwest - potential emission sources in this direction include a CP railroad and Highway 401. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
8	11-Apr-18	BB	Data review	2-Mar-18	00:00	5-Mar-18	06:00	Instances of repeating zero values in these timeframes were due to negative instrument zero drift less than -5 ppb. As per the MOECC Ambient Monitoring Guideline, no drift correction was applied
				11-Mar-18	11:00	11-Mar-18	23:00	
				13-Mar-18	21:00	16-Mar-18	16:00	

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range
Test

Project Name	Durham York Energy Centre Ambient Air Monitoring Program							
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	45200		Station Name:	Rundle Road Station				
Station address:	Rundle Road / Baseline Road		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	$PM_{2.5}$	Instrument make & model:		Thermo Sharp 5030 Synchronized Hybrid Ambient Real-time		Serial Number:	E-1569	
Data edit period	Start date:	1-Jan-18	End date:	31-Mar-18		Time Zone : EST		
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd-mm-yy)	Hour (xx:xx)	Date (dd-mm-yy)	Hour (xx:xx)	
1	11-Apr-18	BB	Invalidate	31-Jan-18	13:00	31-Jan-18	14:00	Monthly calibration
2	11-Apr-18	BB	Invalidate	14-Feb-18	11:00	14-Feb-18	13:00	Monthly calibration
3	11-Apr-18	BB	Invalidate	20-Mar-18	10:00	20-Mar-18	12:00	Monthly calibration
4	11-Apr-18	BB	Invalidate	22-Mar-18	11:00	20-Mar-18	11:00	MOECC Quarterly Audit
5	11-Apr-18	BB	Invalidate	3-Jan-18	13:00	3-Jan-18	13:00	Zero check
6	11-Apr-18	BB	Invalidate	11-Jan-18	08:00	11-Jan-18	08:00	Zero check
7	11-Apr-18	BB	Invalidate	29-Jan-18	15:00	29-Jan-18	15:00	Zero check
8	11-Apr-18	BB	Invalidate	15-Feb-18	09:00	15-Feb-18	09:00	Zero check
9	11-Apr-18	BB	Invalidate	16-Feb-18	09:00	16-Feb-18	09:00	Zero check
10	11-Apr-18	BB	Invalidate	1-Mar-18	12:00	1-Mar-18	12:00	Zero check
11	11-Apr-18	BB	Invalidate	6-Mar-18	09:00	6-Mar-18	09:00	Zero check
12	11-Apr-18	BB	Invalidate	13-Mar-18	09:00	13-Mar-18	09:00	Zero check
13	11-Apr-18	BB	Invalidate	16-Mar-18	08:00	16-Mar-18	08:00	Zero check
14	11-Apr-18	BB	Invalidate	23-Mar-18	14:00	23-Mar-18	14:00	Zero check
15	11-Apr-18	BB	Data review	16-Jan-18	18:00	16-Jan-18	20:00	Elevated levels of 49 µg/m³ were measured without a corresponding trend at the Courtice or Oshawa Stations. Winds were northerly during this time. Potential emission sources in this direction include local roads and businesses. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.
16	11-Apr-18	BB	Data review	10-Mar-18	21:00	10-Mar-18	21:00	Elevated levels of 20 µg/m³ were measured without a corresponding trend at the Courtice or Oshawa Stations. Winds were northwesterly during this time. Potential emission sources in this direction include local roads and businesses. Minute data was reviewed and measurements were reasonably consistent throughout this time period. Therefore, the data was deemed valid.

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range
Test

EDIT LOG TABLE

Project Name	Durham York Energy Centre Ambient Air Monitoring Program								
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	45200		Station Name:	Rundle Road Station				
Station address:	Rundle Road / Baseline Road		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	Temperature	Instrument make & model:		Campbell Scientific Model HMP60			Serial Number:	
Data edit period	Start date:	1-Jan-18	End date:	31-Mar-18				Time Zone : EST
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd-mm-yy)	Hour (xx:xx)	Date (dd-mm-yy)	Hour (xx:xx)	
1	11-Apr-18	BB	Invalidate	11-Jan-18	12:00	11-Jan-18	12:00	Calibration

EDIT LOG TABLE

Project Name	Durham York Energy Centre Ambient Air Monitoring Program								
Contact	Greg Crooks / Connie Lim / Brian Bylhouwer		Phone:	905-944-7777	E-mail:	greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com		
Station number:	45200		Station Name:	Rundle Road Station				
Station address:	Rundle Road / Baseline Road		Emitter Address:	The Region of Durham, 605 Rossland Rd, Whitby, ON				
Pollutant or parameter:	Rainfall	Instrument make & model:		Texas Electronic TE525M			Serial Number:	
Data edit period	Start date:	1-Jan-18	End date:	31-Mar-18				Time Zone : EST
Edit #	Edit date	Editor's Name	Edit Action	Starting		Ending		Reason
				Date (dd-mm-yy)	Hour (xx:xx)	Date (dd-mm-yy)	Hour (xx:xx)	
1	11-Apr-18	BB	Invalidate	11-Jan-18	12:00	11-Jan-18	12:00	Calibration

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
Invalidating span & zero check data
Invalidating data due to equipment malfunctions and power failures.
Invalidating data when instrumentation off-line
Marking data as out-of-range

EDIT LOG TABLE

Project Name	**Durham York Energy Centre Ambient Air Monitoring Program**							
Contact	**Greg Crooks / Connie Lim / Brian Bylhouwer**		**Phone:**	**905-944-7777**	**E-mail:**	**greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com**		
Station number:	**45200**		**Station Name:**	**Rundle Road Station**				
Station address:	**Rundle Road / Baseline Road**		**Emitter Address:**	**The Region of Durham, 605 Rossland Rd, Whitby, ON**				
Pollutant or parameter:	**Relative Humidity**	**Instrument make & model:**		**Campbell Scientific Model HMP60**			**Serial Number:**	
Data edit period	**Start date:**	**1-Jan-18**	**End date:**	**31-Mar-18**		**Time Zone : EST**		
Edit #	**Edit date**	**Editor's Name**	**Edit Action**	**Starting**		**Ending**		**Reason**
				Date (dd-mm-yy)	**Hour (xx:xx)**	**Date (dd-mm-yy)**	**Hour (xx:xx)**	
1	11-Apr-18	BB	Invalidate	11-Jan-18	12:00	11-Jan-18	12:00	Calibration

EDIT LOG TABLE

Contact	**Greg Crooks / Connie Lim / Brian Bylhouwer**		**Phone:**	**905-944-7777**	**E-mail:**	**greg.crooks@stantec.com, connie.lim@stantec.com, brian.bylhouwer@stantec.com**		
Station number:	**45200**		**Station Name:**	**Rundle Road Station**				
Station address:	**Rundle Road / Baseline Road**		**Emitter Address:**	**The Region of Durham, 605 Rossland Rd, Whitby, ON**				
Pollutant or parameter:	**Wind Speed/Wind Direction**	**Instrument make & model:**		**Met One Instruments Inc. Model 034B**			**Serial Number:**	
Data edit period	**Start date:**	**1-Jan-18**	**End date:**	**31-Mar-18**		**Time Zone : EST**		
Edit #	**Edit date**	**Editor's Name**	**Edit Action**	**Starting**		**Ending**		**Reason**
				Date (dd-mm-yy)	**Hour (xx:xx)**	**Date (dd-mm-yy)**	**Hour (xx:xx)**	
1	11-Apr-18	BB	Invalidate	4-Feb-18	06:00	6-Feb-18	15:00	Anemometer frozen. Data invalidated
1	11-Apr-18	BB	Invalidate	11-Feb-18	18:00	12-Feb-18	09:00	Anemometer frozen. Data invalidated
1	11-Apr-18	BB	Invalidate	11-Jan-18	12:00	11-Jan-18	12:00	Calibration

Examples of Acceptable Edit Actions:
Add offset of
Delete hours
Zero Correction
Slope Correction
Manual data entry for missing, but collected data
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APPENDIX G:
METALS DATA SUMMARY

Metals and Total Particulates	Courtice WPCP Station	Courtice		Courtice		Courtice		Courtice		Courtice		Courtice		Courtice		Courtice[1]		Courtice		Courtice		Courtice		Courtice		Courtice		Courtice	
Location		02/01/2018		08/01/2018		14/01/2018		20/01/2018		26/01/2018		01/02/2018		07/02/2018		13/02/2018		19/02/2018		25/02/2018		03/03/2018		09/03/2018		15/03/2018		21/03/2018		27/03/2018	
Date	dd/mm/yyyy																												
Start Time	hh:mm	0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00	
Sample Duration	Hours	23.81		23.31		23.79		23.8		22.44		23.27		23.31		23.46		21.39		23.36		23.3		23.35		23.27		23.37		23.4	
Technician		AE		AE		AE		AE		AE		AE		AE		AE		AE		AE		AE		AE		AE		AE	
Filter Number		17120637		17121281		17121286		17121289		17121293		17121296		18011975		18011988		18011982		16121543		18020132		18021533		18021536		18022749		18011987	
Analytical Report #		B801290		B808433		B809845		B819771		B821488		B834538		B832196		B838594		B841711		B740572		B851206		B857741		B861032		B866969		B870980	
Total Volumetric Flow	Am^3/sample	1410.59		1399.70		1449.22		1449.73		1326.75		1421.07		1414.90		1585.07		1253.80		1520.72		1516.20		1526.52		1414.58		1472.96		1432.52	
Analytical Results	**Units**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**
Particulate	mg	40.0	5	32.4	5.0	27.6	5.0	40.5	5.0	34	5.0	31.7	5.0	17.9	5.0	27.6	5.0	21.9	5.0	12.9	5.0	16.8	5	16.5	5.0	21.5	5	35.9	5.0	29.7	5.0
Total Mercury (Hg)	µg	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	0.06	0.02
Aluminum (Al)	µg	90	50	52	50	81	50	131	50	136	50	79	50	56	50	53	50	<50	50	72	50	111	50	87	50	123	50	247	50	128	50
Antimony (Sb)	µg	<10	10	10	10	10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Arsenic (As)	µg	<6.0	6.0	6	6.0	6	6.0	16	6.0	<6	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
Barium (Ba)	µg	7.3	1.0	4.4	1.0	4.4	1.0	9.2	1.0	8.5	1.0	6.6	1.0	6.3	1.0	3.6	1.0	5.3	1.0	5.7	1.0	5.7	1.0	7.2	1.0	9.4	1.0	9.4	1.0	5.3	1.0
Beryllium (Be)	µg	<1.0	1.0	1	1.0	1	1.0	<1	1.0	<1	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0
Bismuth (Bi)	µg	<6.0	6.0	6	6.0	6	6.0	<6	6.0	<6	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
Boron (B)	µg	<6.0	6.0	6	6.0	6	6.0	<6	6.0	<6	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
Cadmium (Cd)	µg	<2.0	2.0	2	2.0	2	2.0	<2.0	2.0	<2	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0
Chromium (Cr)	µg	<5.0	5.0	5	5.0	5	5.0	<5.0	5.0	<5	5.0	<5.0	5.0	7.3	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Cobalt (Co)	µg	<2.0	2.0	2	2.0	2	2.0	<2.0	2.0	<2	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0
Copper (Cu)	µg	25.6	5.0	15.7	5.0	19.7	5.0	8.7	5.0	9.6	5.0	13.0	5.0	21.8	5.0	<5.0	5.0	18.5	5.0	<5.0	5.0	13.5	5.0	19.3	5.0	13.0	5.0	11.4	5.0	8.7	5.0
Iron (Fe)	µg	229	50	130	50	231	50	294	50	402	50	282	50	181	50	140	50	266	50	168	50	300	50	229	50	350	50	583	50	331	50
Lead (Pb)	µg	<3.0	3.0	3	3.0	3	3.0	8	3.0	<3	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
Magnesium (Mg)	µg	113	50	67	50	106	50	178	50	196	50	123	50	<50	50	100	50	63	50	154	50	160	50	113	50	114	50	306	50	207	50
Manganese (Mn)	µg	6.5	1.0	7.6	1.0	5.1	1.0	11.9	1.0	9.2	1.0	9.9	1.0	5.1	1.0	3.8	1.0	5.9	1.0	6.7	1.0	9.2	1.0	5.9	1.0	8.9	1.0	17.8	1.0	11.8	1.0
Molybdenum (Mo)	µg	<3.0	3.0	3	3.0	3	3.0	<3	3.0	<3	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
Nickel (Ni)	µg	<3.0	3.0	3	3.0	3	3.0	<3	3.0	<3	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
Phosphorus (P)	µg	<25	25	25	25	25	25	<25	25	<25	25	<25	25	<25	25	<25	25	<25	25	<25	25	<25	25	<25	25	<25	25	25	25	<25	25
Selenium (Se)	µg	<10	10	10	10	10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Silver (Ag)	µg	<5.0	5.0	5	5.0	5	5.0	<5	5.0	<5	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Strontium (Sr)	µg	2.0	1.0	2.1	1.0	3.9	1.0	4.2	1.0	5.4	1.0	2.8	1.0	1.7	1.0	2.6	1.0	2.4	1.0	4.3	1.0	5.1	1.0	3.4	1.0	4.0	1.0	9.4	1.0	4.0	1.0
Thallium (Tl)	µg	<10	10	10	10	10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Tin (Sn)	µg	<10	10	10	10	10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Titanium (Ti)	µg	<10	10	10	10	10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	13	10	<10	10
Vanadium (V)	µg	<5.0	5.0	5	5.0	5	5.0	<5	5.0	<5	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Zinc (Zn)	µg	33.5	5.0	134	5.0	63	5.0	52.2	5.0	27.9	5.0	75.4	5.0	54.2	5.0	15.9	5.0	24.8	5.0	39.4	5.0	40.0	5.0	20.4	5.0	24.5	5.0	22.6	5.0	19.6	5.0
Zirconium (Zr)	µg	<5.0	5.0	5	5.0	5	5.0	<5	5.0	<5	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Total Uranium (U)	µg	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<5.0	5.0	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45

Calculated Concentrations	Quarter 1			Courtice 1	Courtice 2	Courtice 3	Courtice 4	Courtice 5	Courtice 6	Courtice 7	Courtice 8	Courtice1 9	Courtice 10	Courtice 11	Courtice 12	Courtice 13	Courtice 14	Courtice 15
	Units	Maximum	Minimum	1/2/2018	1/8/2018	1/14/2018	1/20/2018	1/26/2018	2/1/2018	2/7/2018	2/13/2018	2/19/2018	2/25/2018	3/3/2018	3/9/2018	3/15/2018	3/21/2018	3/27/2018
Particulate	$\mu g/m^3$	28.36	8.48	28.36	23.15	19.04	27.94	25.63	22.31	12.65		17.47	8.48	11.08	10.81	15.20	24.37	20.73
Total Mercury (Hg)	$\mu g/m^3$	4.19E-05	6.55E-06	7.09E-06	7.14E-06	6.90E-06	6.90E-06	7.54E-06	7.04E-06	7.07E-06		7.98E-06	6.58E-06	6.60E-06	6.55E-06	7.07E-06	6.79E-06	4.19E-05
Aluminum (Al)	$\mu g/m^3$	1.68E-01	1.99E-02	6.38E-02	3.72E-02	5.59E-02	9.04E-02	1.03E-01	5.56E-02	3.96E-02		1.99E-02	4.73E-02	7.32E-02	5.70E-02	8.70E-02	1.68E-01	8.94E-02
Antimony (Sb)	$\mu g/m^3$	7.14E-03	3.28E-03	3.54E-03	7.14E-03	6.90E-03	3.45E-03	3.77E-03	3.52E-03	3.53E-03		3.99E-03	3.29E-03	3.30E-03	3.28E-03	3.53E-03	3.39E-03	3.49E-03
Arsenic (As)	$\mu g/m^3$	4.29E-03	1.97E-03	2.13E-03	4.29E-03	4.14E-03	2.07E-03	2.26E-03	2.11E-03	2.12E-03		2.39E-03	1.97E-03	1.98E-03	1.97E-03	2.12E-03	2.04E-03	2.09E-03
Barium (Ba)	$\mu g/m^3$	6.65E-03	3.04E-03	5.18E-03	3.14E-03	3.04E-03	6.35E-03	6.41E-03	4.64E-03	4.45E-03		4.23E-03	3.75E-03	3.76E-03	4.72E-03	6.65E-03	6.38E-03	3.70E-03
Beryllium (Be)	$\mu g/m^3$	7.14E-04	3.28E-04	3.54E-04	7.14E-04	6.90E-04	3.45E-04	3.77E-04	3.52E-04	3.53E-04		3.99E-04	3.29E-04	3.30E-04	3.28E-04	3.53E-04	3.39E-04	3.49E-04
Bismuth (Bi)	$\mu g/m^3$	4.29E-03	1.97E-03	2.13E-03	4.29E-03	4.14E-03	2.07E-03	2.26E-03	2.11E-03	2.12E-03		2.39E-03	1.97E-03	1.98E-03	1.97E-03	2.12E-03	2.04E-03	2.09E-03
Boron (B)	$\mu g/m^3$	4.29E-03	1.97E-03	2.13E-03	4.29E-03	4.14E-03	2.07E-03	2.26E-03	2.11E-03	2.12E-03		2.39E-03	1.97E-03	1.98E-03	1.97E-03	2.12E-03	2.04E-03	2.09E-03
Cadmium (Cd)	$\mu g/m^3$	1.43E-03	6.55E-04	7.09E-04	1.43E-03	1.38E-03	6.90E-04	7.54E-04	7.04E-04	7.07E-04		7.98E-04	6.58E-04	6.60E-04	6.55E-04	7.07E-04	6.79E-04	6.98E-04
Chromium (Cr)	$\mu g/m^3$	5.16E-03	1.64E-03	1.77E-03	3.57E-03	3.45E-03	1.72E-03	1.88E-03	1.76E-03	5.16E-03		1.99E-03	1.64E-03	1.65E-03	1.64E-03	1.77E-03	1.70E-03	1.75E-03
Cobalt (Co)	$\mu g/m^3$	1.43E-03	6.55E-04	7.09E-04	1.43E-03	1.38E-03	6.90E-04	7.54E-04	7.04E-04	7.07E-04		7.98E-04	6.58E-04	6.60E-04	6.55E-04	7.07E-04	6.79E-04	6.98E-04
Copper (Cu)	$\mu g/m^3$	1.81E-02	1.64E-03	1.81E-02	1.12E-02	1.36E-02	6.00E-03	7.24E-03	9.15E-03	1.54E-02		1.48E-02	1.64E-03	8.90E-03	1.26E-02	9.19E-03	7.74E-03	6.07E-03
Iron (Fe)	$\mu g/m^3$	3.96E-01	9.29E-02	1.62E-01	9.29E-02	1.59E-01	2.03E-01	3.03E-01	1.98E-01	1.28E-01	Sample volumetric flow rate greater than 10% above 1.13 Nm^3/min. Sample invalidated.	2.12E-01	1.10E-01	1.98E-01	1.50E-01	2.47E-01	3.96E-01	2.31E-01
Lead (Pb)	$\mu g/m^3$	5.52E-03	9.83E-04	1.06E-03	2.14E-03	2.07E-03	5.52E-03	1.13E-03	1.06E-03	1.06E-03		1.20E-03	9.86E-04	9.89E-04	9.83E-04	1.06E-03	1.02E-03	1.05E-03
Magnesium (Mg)	$\mu g/m^3$	2.08E-01	1.77E-02	8.01E-02	4.79E-02	7.31E-02	1.23E-01	1.48E-01	8.66E-02	1.77E-02		5.02E-02	1.01E-01	1.06E-01	7.40E-02	8.06E-02	2.08E-01	1.45E-01
Manganese (Mn)	$\mu g/m^3$	1.21E-02	3.52E-03	4.61E-03	5.43E-03	3.52E-03	8.21E-03	6.93E-03	6.97E-03	3.60E-03		4.71E-03	4.41E-03	6.07E-03	3.87E-03	6.29E-03	1.21E-02	8.24E-03
Molybdenum (Mo)	$\mu g/m^3$	2.14E-03	9.83E-04	1.06E-03	2.14E-03	2.07E-03	1.03E-03	1.13E-03	1.06E-03	1.06E-03		1.20E-03	9.86E-04	9.89E-04	9.83E-04	1.06E-03	1.02E-03	1.05E-03
Nickel (Ni)	$\mu g/m^3$	2.14E-03	9.83E-04	1.06E-03	2.14E-03	2.07E-03	1.03E-03	1.13E-03	1.06E-03	1.06E-03		1.20E-03	9.86E-04	9.89E-04	9.83E-04	1.06E-03	1.02E-03	1.05E-03
Phosphorus (P)	$\mu g/m^3$	1.79E-02	8.19E-03	8.86E-03	1.79E-02	1.73E-02	8.62E-03	9.42E-03	8.80E-03	8.83E-03		9.97E-03	8.22E-03	8.24E-03	8.19E-03	8.84E-03	1.70E-02	8.73E-03
Selenium (Se)	$\mu g/m^3$	7.14E-03	3.28E-03	3.54E-03	7.14E-03	6.90E-03	3.45E-03	3.77E-03	3.52E-03	3.53E-03		3.99E-03	3.29E-03	3.30E-03	3.28E-03	3.53E-03	3.39E-03	3.49E-03
Silver (Ag)	$\mu g/m^3$	3.57E-03	1.64E-03	1.77E-03	3.57E-03	3.45E-03	1.72E-03	1.88E-03	1.76E-03	1.77E-03		1.99E-03	1.64E-03	1.65E-03	1.64E-03	1.77E-03	1.70E-03	1.75E-03
Strontium (Sr)	$\mu g/m^3$	6.38E-03	1.20E-03	1.42E-03	1.50E-03	2.69E-03	2.90E-03	4.07E-03	1.97E-03	1.20E-03		1.91E-03	2.83E-03	3.36E-03	2.23E-03	2.83E-03	6.38E-03	2.79E-03
Thallium (Tl)	$\mu g/m^3$	7.14E-03	3.28E-03	3.54E-03	7.14E-03	6.90E-03	3.45E-03	3.77E-03	3.52E-03	3.53E-03		3.99E-03	3.29E-03	3.30E-03	3.28E-03	3.53E-03	3.39E-03	3.49E-03
Tin (Sn)	$\mu g/m^3$	7.14E-03	3.28E-03	3.54E-03	7.14E-03	6.90E-03	3.45E-03	3.77E-03	3.52E-03	3.53E-03		3.99E-03	3.29E-03	3.30E-03	3.28E-03	3.53E-03	3.39E-03	3.49E-03
Titanium (Ti)	$\mu g/m^3$	8.83E-03	3.28E-03	3.54E-03	7.14E-03	6.90E-03	3.45E-03	3.77E-03	3.52E-03	3.53E-03		3.99E-03	3.29E-03	3.30E-03	3.28E-03	3.53E-03	8.83E-03	3.49E-03
Vanadium (V)	$\mu g/m^3$	3.57E-03	1.64E-03	1.77E-03	3.57E-03	3.45E-03	1.72E-03	1.88E-03	1.76E-03	1.77E-03		1.99E-03	1.64E-03	1.65E-03	1.64E-03	1.77E-03	1.70E-03	1.75E-03
Zinc (Zn)	$\mu g/m^3$	9.57E-02	1.34E-02	2.37E-02	9.57E-02	4.35E-02	3.60E-02	2.10E-02	5.31E-02	3.83E-02		1.98E-02	2.59E-02	2.64E-02	1.34E-02	1.73E-02	1.53E-02	1.37E-02
Zirconium (Zr)	$\mu g/m^3$	3.57E-03	1.64E-03	1.77E-03	3.57E-03	3.45E-03	1.72E-03	1.88E-03	1.76E-03	1.77E-03		1.99E-03	1.64E-03	1.65E-03	1.64E-03	1.77E-03	1.70E-03	1.75E-03
Total Uranium (U)	$\mu g/m^3$	1.64E-03	1.47E-04	1.60E-04	1.61E-04	1.55E-04	1.55E-04	1.70E-04	1.58E-04	1.59E-04		1.79E-04	1.64E-03	1.48E-04	1.47E-04	1.59E-04	1.53E-04	1.57E-04

Notes:

[1]Sampler ran for less than 24 hours. However it was considered that sufficient time elapsed to provide a valid sample.

Metals and Total Particulates	Fenceline Station	Fenceline	Fenceline	Fenceline	Fenceline[1]	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline
Location																			
Date	dd/mm/yyyy	02/01/2018		08/01/2018		14/01/2018		20/01/2018		26/01/2018		01/02/2018		07/02/2018		13/02/2018		19/02/2018	
Start Time	hh:mm	0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00	
Sample Duration	Hours	23.9		23.5		24.26		18.59		23.77		23.76		23.84		23.71		23.77	
Technician		AE		AE		AE		AE		AE		AE		AE		AE		AE	
Filter Number		17121278		17121282		17121282		17121290		17121295		17121297		18011977		18011978		18011984	
Analytical Report #		B801290		B808433		B808433		B819771		B821488		B834538		B832196		B838594		B841711	
Total Volumetric Flow	Am^3/sample	1410.14		1422.80		1468.85		1208.52		1442.86		1514.43		1597.27		1452.62		1625.82	
Analytical Results	**Units**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**
Particulate	mg	45.2	5	45	5	54.8	5	55	5	101	5	36.7	5.0	22.3	5.0	53.0	5.0	33.5	5.0
Total Mercury (Hg)	µg	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02
Aluminum (Al)	µg	112	50	51	50	114	50	155	50	387	50	99	50	<50	50	116	50	89	50
Antimony (Sb)	µg	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Arsenic (As)	µg	<6.0	6.0	<6	6.0	<6	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
Barium (Ba)	µg	9.8	1.0	5.6	1.0	5.6	1.0	9.4	1.0	14.7	1.0	7.7	1.0	4.9	1.0	12.1	1.0	6.7	1.0
Beryllium (Be)	µg	<1.0	1.0	<1	1.0	<1	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0
Bismuth (Bi)	µg	<6.0	6.0	<6	6.0	<6	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
Boron (B)	µg	<6.0	6.0	<6	6.0	<6	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
Cadmium (Cd)	µg	<2.0	2.0	<2	2.0	<2	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0
Chromium (Cr)	µg	<5.0	5.0	<5	5.0	<5	5.0	<5.0	5.0	10.4	5.0	5.6	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Cobalt (Co)	µg	<2.0	2.0	<2	2.0	<2	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0
Copper (Cu)	µg	20.2	5.0	7	5.0	8.2	5.0	7.9	5.0	14.7	5.0	8.3	5.0	9.1	5.0	10.8	5.0	16.1	5.0
Iron (Fe)	µg	271	50	129	50	216	50	377	50	1120	50	344	50	146	50	384	50	230	50
Lead (Pb)	µg	<3.0	3.0	<3	3.0	<3	3.0	9.1	3.0	5.2	3.0	3.1	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
Magnesium (Mg)	µg	175	50	74	50	161	50	266	50	851	50	183	50	<50	50	242	50	129	50
Manganese (Mn)	µg	8.9	1.0	6.5	1.0	7.1	1.0	13.8	1.0	56.4	1.0	12.8	1.0	5.1	1.0	9.0	1.0	7.8	1.0
Molybdenum (Mo)	µg	<3.0	3.0	<3	3.0	<3	3.0	<3	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
Nickel (Ni)	µg	<3.0	3.0	<3	3.0	<3	3.0	<3	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
Phosphorus (P)	µg	<25	25	<25	25	<25	25	<25	25	35	25	<25	25	<25	25	<25	25	<25	25
Selenium (Se)	µg	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Silver (Ag)	µg	<5.0	5.0	<5	5.0	<5	5.0	<5	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Strontium (Sr)	µg	3.0	1.0	2.6	1.0	6.3	1.0	8.4	1.0	42.3	1.0	6.0	1.0	2.2	1.0	8.1	1.0	5.2	1.0
Thallium (Tl)	µg	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Tin (Sn)	µg	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Titanium (Ti)	µg	<10	10	<10	10	<10	10	<10	10	19	10	<10	10	<10	10	<10	10	<10	10
Vanadium (V)	µg	<5.0	5.0	<5	5.0	<5	5.0	<5	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Zinc (Zn)	µg	33.8	5.0	221	5.0	27.4	5.0	55.5	5.0	37.7	5.0	50.6	5.0	23.2	5.0	43.9	5.0	47.4	5.0
Zirconium (Zr)	µg	<5.0	5.0	<5	5.0	<5	5.0	<5	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
Total Uranium (U)	µg	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45

Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline	Fenceline
25/02/2018		03/03/2018		09/03/2018		15/03/2018		21/03/2018		27/03/2018	
0:00		0:00		0:00		0:00		0:00		0:00	
23.24		23.68		23.7		23.68		23.69		23.69	
AE		AE		AE		AE		AE		AE	
16121540		18020135		18011986		18020136		18022751		18020138	
B847911		B851206		B857741		B861032		B866969		B870980	
1675.08		1774.68		1418.45		1400.52		1596.42		1390.20	
Value	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**
28.7	5	28.5	5	34.5	5.0	25.9	5	43.4	5	40.8	5
<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	<0.02	0.02	0.06	0.02
153	50	107	50	118	50	161	50	268	50	183	50
<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
8.2	1.0	6.1	1.0	8.6	1.0	14.8	1.0	14.0	1.0	9.7	1.0
<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0
<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0	<6.0	6.0
<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0
17.0	5.0	<5.0	5.0	<5.0	5.0	5.5	5.0	5.3	5.0	<5.0	5.0
<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0
9.7	5.0	16.1	5.0	7.9	5.0	8.1	5.0	15.7	5.0	11.0	5.0
369	50	320	50	422	50	586	50	731	50	577	50
3.7	3.0	3.0	3.0	<3.0	3.0	<3.0	3.0	3.6	3.0	3.5	3.0
322	50	215	50	222	50	226	50	448	50	359	50
15.9	1.0	12.3	1.0	15.9	1.0	21.5	1.0	28.6	1.0	22.6	1.0
12.3	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
42.8	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0	<3.0	3.0
<25	25	<25	25	<25	25	<25	25	30	25	40	25
<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
8.5	1.0	7.7	1.0	13.9	1.0	10.3	1.0				
<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
10	10	<10	10	<10	10	<10	10	16	10	12	10
<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
<5.0	5.0	<5.0	5.0	22.2	5.0	37.2	5.0	40.2	5.0	31.1	5.0
<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0
<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45	<0.45	0.45

Notes:
[1]Sampler ran for less than 24 hours. However it was considered that sufficient time elapsed to provide a valid sample.

Calculated Concentrations	Quarter 1			Fenceline 1	Fenceline 2	Fenceline 3	Fenceline4	Fenceline 5	Fenceline 6	Fenceline 7	Fenceline 8	Fenceline 9	Fenceline 10	Fenceline 11	Fenceline 12	Fenceline 13	Fenceline 14	Fenceline 15
	Units	Maximum	Minimum	1/2/2018	1/8/2018	1/14/2018	1/20/2018	1/26/2018	2/1/2018	2/7/2018	2/13/2018	2/19/2018	2/25/2018	3/3/2018	3/9/2018	3/15/2018	3/21/2018	3/27/2018
Particulate	$µg/m^3$	70.00	13.96	32.05	31.63	37.31	45.51	70.00		13.96	36.49	20.60			24.32	18.49	27.19	29.35
Total Mercury (Hg)	$µg/m^3$	4.32E-05	6.15E-06	7.09E-06	7.03E-06	6.81E-06	8.27E-06	6.93E-06		6.26E-06	6.88E-06	6.15E-06			7.05E-06	7.14E-06	6.26E-06	4.32E-05
Aluminum (Al)	$µg/m^3$	2.68E-01	1.57E-02	7.94E-02	3.58E-02	7.76E-02	1.28E-01	2.68E-01		1.57E-02	7.99E-02	5.47E-02			8.32E-02	1.15E-01	1.68E-01	1.32E-01
Antimony (Sb)	$µg/m^3$	4.14E-03	3.08E-03	3.55E-03	3.51E-03	3.40E-03	4.14E-03	3.47E-03		3.13E-03	3.44E-03	3.08E-03			3.52E-03	3.57E-03	3.13E-03	3.60E-03
Arsenic (As)	$µg/m^3$	2.48E-03	1.85E-03	2.13E-03	2.11E-03	2.04E-03	2.48E-03	2.08E-03		1.88E-03	2.07E-03	1.85E-03			2.11E-03	2.14E-03	1.88E-03	2.16E-03
Barium (Ba)	$µg/m^3$	1.06E-02	3.07E-03	6.95E-03	3.94E-03	3.81E-03	7.78E-03	1.02E-02		3.07E-03	8.33E-03	4.12E-03			6.06E-03	1.06E-02	8.77E-03	6.98E-03
Beryllium (Be)	$µg/m^3$	4.14E-04	3.08E-04	3.55E-04	3.51E-04	3.40E-04	4.14E-04	3.47E-04		3.13E-04	3.44E-04	3.08E-04			3.52E-04	3.57E-04	3.13E-04	3.60E-04
Bismuth (Bi)	$µg/m^3$	2.48E-03	1.85E-03	2.13E-03	2.11E-03	2.04E-03	2.48E-03	2.08E-03		1.88E-03	2.07E-03	1.85E-03			2.11E-03	2.14E-03	1.88E-03	2.16E-03
Boron (B)	$µg/m^3$	2.48E-03	1.85E-03	2.13E-03	2.11E-03	2.04E-03	2.48E-03	2.08E-03		1.88E-03	2.07E-03	1.85E-03			2.11E-03	2.14E-03	1.88E-03	2.16E-03
Cadmium (Cd)	$µg/m^3$	8.27E-04	6.15E-04	7.09E-04	7.03E-04	6.81E-04	8.27E-04	6.93E-04		6.26E-04	6.88E-04	6.15E-04			7.05E-04	7.14E-04	6.26E-04	7.19E-04
Chromium (Cr)	$µg/m^3$	7.21E-03	1.54E-03	1.77E-03	1.76E-03	1.70E-03	2.07E-03	7.21E-03		1.57E-03	1.72E-03	1.54E-03			1.76E-03	3.93E-03	3.32E-03	1.80E-03
Cobalt (Co)	$µg/m^3$	8.27E-04	6.15E-04	7.09E-04	7.03E-04	6.81E-04	8.27E-04	6.93E-04		6.26E-04	6.88E-04	6.15E-04			7.05E-04	7.14E-04	6.26E-04	7.19E-04
Copper (Cu)	$µg/m^3$	1.43E-02	4.92E-03	1.43E-02	4.92E-03	5.58E-03	6.54E-03	1.02E-02		5.70E-03	7.43E-03	9.90E-03			5.57E-03	5.78E-03	9.83E-03	7.91E-03
Iron (Fe)	$µg/m^3$	7.76E-01	9.07E-02	1.92E-01	9.07E-02	1.47E-01	3.12E-01	7.76E-01	Sample volumetric flow rate greater than 10% above 1.13 Nm^3/min. Sample invalidated.	9.14E-02	2.64E-01	1.41E-01	Sample volumetric flow rate greater than 10% above 1.13 Nm^3/min. Sample invalidated.	Sample volumetric flow rate greater than 10% above 1.13 Nm^3/min. Sample invalidated.	2.98E-01	4.18E-01	4.58E-01	4.15E-01
Lead (Pb)	$µg/m^3$	7.53E-03	9.23E-04	1.06E-03	1.05E-03	1.02E-03	7.53E-03	3.60E-03		9.39E-04	1.03E-03	9.23E-04			1.06E-03	1.07E-03	2.26E-03	2.52E-03
Magnesium (Mg)	$µg/m^3$	5.90E-01	1.57E-02	1.24E-01	5.20E-02	1.10E-01	2.20E-01	5.90E-01		1.57E-02	1.67E-01	7.93E-02			1.57E-01	1.61E-01	2.81E-01	2.58E-01
Manganese (Mn)	$µg/m^3$	3.91E-02	3.19E-03	6.31E-03	4.57E-03	4.83E-03	1.14E-02	3.91E-02		3.19E-03	6.20E-03	4.80E-03			1.12E-02	1.54E-02	1.79E-02	1.63E-02
Molybdenum (Mo)	$µg/m^3$	1.24E-03	9.23E-04	1.06E-03	1.05E-03	1.02E-03	1.24E-03	1.04E-03		9.39E-04	1.03E-03	9.23E-04			1.06E-03	1.07E-03	9.40E-04	1.08E-03
Nickel (Ni)	$µg/m^3$	1.24E-03	9.23E-04	1.06E-03	1.05E-03	1.02E-03	1.24E-03	1.04E-03		9.39E-04	1.03E-03	9.23E-04			1.06E-03	1.07E-03	9.40E-04	1.08E-03
Phosphorus (P)	$µg/m^3$	2.88E-02	7.69E-03	8.86E-03	8.79E-03	8.51E-03	1.03E-02	2.43E-02		7.83E-03	8.61E-03	7.69E-03			8.81E-03	8.93E-03	1.88E-02	2.88E-02
Selenium (Se)	$µg/m^3$	4.14E-03	3.08E-03	3.55E-03	3.51E-03	3.40E-03	4.14E-03	3.47E-03		3.13E-03	3.44E-03	3.08E-03			3.52E-03	3.57E-03	3.13E-03	3.60E-03
Silver (Ag)	$µg/m^3$	2.07E-03	1.54E-03	1.77E-03	1.76E-03	1.70E-03	2.07E-03	1.73E-03		1.57E-03	1.72E-03	1.54E-03			1.76E-03	1.79E-03	1.57E-03	1.80E-03
Strontium (Sr)	$µg/m^3$	2.93E-02	1.38E-03	2.13E-03	1.83E-03	4.29E-03	6.95E-03	2.93E-02		1.38E-03	5.58E-03	3.20E-03			5.99E-03	5.50E-03	8.71E-03	7.41E-03
Thallium (Tl)	$µg/m^3$	4.14E-03	3.08E-03	3.55E-03	3.51E-03	3.40E-03	4.14E-03	3.47E-03		3.13E-03	3.44E-03	3.08E-03			3.52E-03	3.57E-03	3.13E-03	3.60E-03
Tin (Sn)	$µg/m^3$	4.14E-03	3.08E-03	3.55E-03	3.51E-03	3.40E-03	4.14E-03	3.47E-03		3.13E-03	3.44E-03	3.08E-03			3.52E-03	3.57E-03	3.13E-03	3.60E-03
Titanium (Ti)	$µg/m^3$	1.32E-02	3.08E-03	3.55E-03	3.51E-03	3.40E-03	4.14E-03	1.32E-02		3.13E-03	3.44E-03	3.08E-03			3.52E-03	3.57E-03	1.00E-02	8.63E-03
Vanadium (V)	$µg/m^3$	2.07E-03	1.54E-03	1.77E-03	1.76E-03	1.70E-03	2.07E-03	1.73E-03		1.57E-03	1.72E-03	1.54E-03			1.76E-03	1.79E-03	1.57E-03	1.80E-03
Zinc (Zn)	$µg/m^3$	1.55E-01	1.45E-02	2.40E-02	1.55E-01	1.87E-02	4.59E-02	2.61E-02		1.45E-02	3.02E-02	2.92E-02			1.57E-02	2.66E-02	2.52E-02	2.24E-02
Zirconium (Zr)	$µg/m^3$	2.07E-03	1.54E-03	1.77E-03	1.76E-03	1.70E-03	2.07E-03	1.73E-03		1.57E-03	1.72E-03	1.54E-03			1.76E-03	1.79E-03	1.57E-03	1.80E-03
Total Uranium (U)	$µg/m^3$	1.86E-04	1.38E-04	1.60E-04	1.58E-04	1.53E-04	1.86E-04	1.56E-04		1.41E-04	1.55E-04	1.38E-04			1.59E-04	1.61E-04	1.41E-04	1.62E-04

Metals and Total Particulates	Rundle Road Station	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle[1]	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle
Location																
Date	dd/mm/yyyy	02/01/2018	08/01/2018	14/01/2018	20/01/2018	26/01/2018	01/02/2018	07/02/2018	13/02/2018	19/02/2018	25/02/2018	03/03/2018	09/03/2018	15/03/2018	21/03/2018	27/03/2018
Start Time	hh:mm	0:00	N/A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Sample Duration	Hours	23.58	N/A	23.58	25.6	23.58	23.58	23.46	24.1	19.44	23.49	23.46	23.48	23.52	23.47	23.51
Technician		AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE
Filter Number		17121276	N/A	17121284	17121291	17121292	16121537	18011976	18011980	18011984	16121538	18020134	18021532	18021535	18022750	18030507
Analytical Report #		B801290	N/A	B809845	B819771	B821488	B834538	B832196	B838594	B841711	B847911	B851206	B857741	B861032	B866969	B870980
Total Volumetric Flow	Am^3/sample	1336.30	N/A	1447.74	1590.73	1385.50	1393.81	1286.91	1463.64	1140.15	1307.86	1125.79	1323.01	1278.85	1283.87	1237.60
Analytical Results	**Units**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**	**Value** / **RDL**
Particulate	mg	100 / 5		27.4 / 5.0	74.4 / 5	48.3 / 5.0	30.1 / 5.0	28.3 / 5.0	33.2 / 5.0	33.5 / 5.0	15.5 / 5.0	24.7 / 5	25.1 / 5	47.8 / 5	37.2 / 5.0	51.4 / 5
Total Mercury (Hg)	µg	<0.02 / 0.02		<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	0.03 / 0.02	<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	<0.02 / 0.02	0.05 / 0.02
Aluminum (Al)	µg	474 / 50		78 / 50	209 / 50	223 / 50	113 / 50	<50 / 50	78 / 50	54 / 50	72 / 50	104 / 50	122 / 50	215 / 50	185 / 50	295 / 50
Antimony (Sb)	µg	<10 / 10		<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10
Arsenic (As)	µg	<6.0 / 6.0		<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0
Barium (Ba)	µg	14.4 / 1.0		6.1 / 1.0	10.3 / 1.0	12.7 / 1.0	9.7 / 1.0	4.4 / 1.0	6.2 / 1.0	6.1 / 1.0	7.0 / 1.0	10.8 / 1.0	6.2 / 1.0	11.3 / 1.0	7.6 / 1.0	10.2 / 1.0
Beryllium (Be)	µg	<1.0 / 1.0		<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0	<1.0 / 1.0
Bismuth (Bi)	µg	<6.0 / 6.0		<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0
Boron (B)	µg	<6.0 / 6.0		<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	6.4 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0	<6.0 / 6.0
Cadmium (Cd)	µg	<2.0 / 2.0		<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0
Chromium (Cr)	µg	<5.0 / 5.0		<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	5.4 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0
Cobalt (Co)	µg	<2.0 / 2.0		<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0	<2.0 / 2.0
Copper (Cu)	µg	49.9 / 5.0		13.4 / 5.0	9.4 / 5.0	14.0 / 5.0	12.1 / 5.0	17.9 / 5.0	8.0 / 5.0	10.9 / 5.0	<5.0 / 5.0	12.0 / 5.0	5.4 / 5.0	75.0 / 5.0	8.0 / 5.0	14.5 / 5.0
Iron (Fe)	µg	965 / 50		357 / 50	537 / 50	733 / 50	336 / 50	144 / 50	255 / 50	282 / 50	260 / 50	227 / 50	287 / 50	511 / 50	433 / 50	806 / 50
Lead (Pb)	µg	3.9 / 3.0	Power trip during sampling. Invalidated	<3.0 / 3.0	8.6 / 3.0	3.8 / 3.0	3.1 / 3.0	<3.0 / 3.0	<3.0 / 3.0	3.9 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0
Magnesium (Mg)	µg	740 / 50		107 / 50	425 / 50	329 / 50	184 / 50	57 / 50	139 / 50	68 / 50	178 / 50	149 / 50	169 / 50	286 / 50	298 / 50	349 / 50
Manganese (Mn)	µg	33.7 / 1.0		6.1 / 1.0	16.5 / 1.0	15.3 / 1.0	12.6 / 1.0	4.2 / 1.0	5.6 / 1.0	5.1 / 1.0	8.6 / 1.0	8.0 / 1.0	8.9 / 1.0	16.8 / 1.0	16.9 / 1.0	14.6 / 1.0
Molybdenum (Mo)	µg	<3.0 / 3.0		<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0
Nickel (Ni)	µg	<3.0 / 3.0		<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	4.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	3.4 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0	<3.0 / 3.0
Phosphorus (P)	µg	60 / 25		<25 / 25	39 / 25	27 / 25	<25 / 25	<25 / 25	<25 / 25	<25 / 25	<25 / 25	<25 / 25	<25 / 25	<25 / 25	29 / 25	38 / 25
Selenium (Se)	µg	<10 / 10		<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10
Silver (Ag)	µg	<5.0 / 5.0		<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0
Strontium (Sr)	µg	15.2 / 1.0		3.6 / 1.0	7.6 / 1.0	10.8 / 1.0	4.9 / 1.0	2.0 / 1.0	5.1 / 1.0	3.0 / 1.0	4.5 / 1.0	5.8 / 1.0	6.4 / 1.0	13.4 / 1.0	10.7 / 1.0	12.8 / 1.0
Thallium (Tl)	µg	<10 / 10		<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10
Tin (Sn)	µg	<10 / 10		<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10
Titanium (Ti)	µg	38 / 10		<10 / 10	16 / 10	14 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	<10 / 10	11 / 10	13 / 10	17 / 10
Vanadium (V)	µg	<5.0 / 5.0		<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0
Zinc (Zn)	µg	72.8 / 5.0		68.3 / 5.0	56.7 / 5.0	31.6 / 5.0	65.5 / 5.0	29.6 / 5.0	20.8 / 5.0	55.3 / 5.0	26.9 / 5.0	28.5 / 5.0	19.3 / 5.0	23.1 / 5.0	14.4 / 5.0	30.6 / 5.0
Zirconium (Zr)	µg	<5.0 / 5.0		<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0	<5.0 / 5.0
Total Uranium (U)	µg	<0.45 / 0.45		<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45	<0.45 / 0.45

Notes:
[1]Sampler ran for less than 24 hours. However it was considered that sufficient time elapsed to provide a valid sample.

Calculated Concentrations	Quarter 1			Rundle	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle1	Rundle	Rundle	Rundle	Rundle	Rundle	Rundle
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Units	Maximum	Minimum	1/2/2018	1/8/2018	1/14/2018	1/20/2018	1/26/2018	2/1/2018	2/7/2018	2/13/2018	2/19/2018	2/25/2018	3/3/2018	3/9/2018	3/15/2018	3/21/2018	3/27/2018
Particulate	$\mu g/m^3$	74.83	18.93	74.83		18.93	46.77	34.86	21.60	21.99	22.68	29.38						
Total Mercury (Hg)	$\mu g/m^3$	2.05E-05	6.29E-06	7.48E-06		6.91E-06	6.29E-06	7.22E-06	7.17E-06	7.77E-06	2.05E-05	8.77E-06						
Aluminum (Al)	$\mu g/m^3$	3.55E-01	1.94E-02	3.55E-01		5.39E-02	1.31E-01	1.61E-01	8.11E-02	1.94E-02	5.33E-02	4.74E-02						
Antimony (Sb)	$\mu g/m^3$	4.39E-03	3.14E-03	3.74E-03		3.45E-03	3.14E-03	3.61E-03	3.59E-03	3.89E-03	3.42E-03	4.39E-03						
Arsenic (As)	$\mu g/m^3$	2.63E-03	1.89E-03	2.25E-03		2.07E-03	1.89E-03	2.17E-03	2.15E-03	2.33E-03	2.05E-03	2.63E-03						
Barium (Ba)	$\mu g/m^3$	1.08E-02	3.42E-03	1.08E-02		4.21E-03	6.48E-03	9.17E-03	6.96E-03	3.42E-03	4.24E-03	5.35E-03						
Beryllium (Be)	$\mu g/m^3$	4.39E-04	3.14E-04	3.74E-04		3.45E-04	3.14E-04	3.61E-04	3.59E-04	3.89E-04	3.42E-04	4.39E-04						
Bismuth (Bi)	$\mu g/m^3$	2.63E-03	1.89E-03	2.25E-03		2.07E-03	1.89E-03	2.17E-03	2.15E-03	2.33E-03	2.05E-03	2.63E-03						
Boron (B)	$\mu g/m^3$	4.97E-03	1.89E-03	2.25E-03		2.07E-03	1.89E-03	2.17E-03	2.15E-03	4.97E-03	2.05E-03	2.63E-03						
Cadmium (Cd)	$\mu g/m^3$	8.77E-04	6.29E-04	7.48E-04		6.91E-04	6.29E-04	7.22E-04	7.17E-04	7.77E-04	6.83E-04	8.77E-04						
Chromium (Cr)	$\mu g/m^3$	2.19E-03	1.57E-03	1.87E-03		1.73E-03	1.57E-03	1.80E-03	1.79E-03	1.94E-03	1.71E-03	2.19E-03						
Cobalt (Co)	$\mu g/m^3$	8.77E-04	6.29E-04	7.48E-04		6.91E-04	6.29E-04	7.22E-04	7.17E-04	7.77E-04	6.83E-04	8.77E-04						
Copper (Cu)	$\mu g/m^3$	3.73E-02	5.47E-03	3.73E-02		9.26E-03	5.91E-03	1.01E-02	8.68E-03	1.39E-02	5.47E-03	9.56E-03						
Iron (Fe)	$\mu g/m^3$	7.22E-01	1.12E-01	7.22E-01		2.47E-01	3.38E-01	5.29E-01	2.41E-01	1.12E-01	1.74E-01	2.47E-01						
Lead (Pb)	$\mu g/m^3$	5.41E-03	1.02E-03	2.92E-03	Power trip during sampling. Invalidated	1.04E-03	5.41E-03	2.74E-03	2.22E-03	1.17E-03	1.02E-03	3.42E-03	Hi-Vol improperly initialized, resulting in inlet flow rates outside the acceptable range. Data Invalidated					
Magnesium (Mg)	$\mu g/m^3$	5.54E-01	4.43E-02	5.54E-01		7.39E-02	2.67E-01	2.37E-01	1.32E-01	4.43E-02	9.50E-02	5.96E-02						
Manganese (Mn)	$\mu g/m^3$	2.52E-02	3.26E-03	2.52E-02		4.21E-03	1.04E-02	1.10E-02	9.04E-03	3.26E-03	3.83E-03	4.47E-03						
Molybdenum (Mo)	$\mu g/m^3$	1.32E-03	9.43E-04	1.12E-03		1.04E-03	9.43E-04	1.08E-03	1.08E-03	1.17E-03	1.02E-03	1.32E-03						
Nickel (Ni)	$\mu g/m^3$	2.87E-03	9.43E-04	1.12E-03		1.04E-03	9.43E-04	1.08E-03	2.87E-03	1.17E-03	1.02E-03	1.32E-03						
Phosphorus (P)	$\mu g/m^3$	4.49E-02	8.54E-03	4.49E-02		8.63E-03	2.45E-02	1.95E-02	8.97E-03	9.71E-03	8.54E-03	1.10E-02						
Selenium (Se)	$\mu g/m^3$	4.39E-03	3.14E-03	3.74E-03		3.45E-03	3.14E-03	3.61E-03	3.59E-03	3.89E-03	3.42E-03	4.39E-03						
Silver (Ag)	$\mu g/m^3$	2.19E-03	1.57E-03	1.87E-03		1.73E-03	1.57E-03	1.80E-03	1.79E-03	1.94E-03	1.71E-03	2.19E-03						
Strontium (Sr)	$\mu g/m^3$	1.14E-02	1.55E-03	1.14E-02		2.49E-03	4.78E-03	7.80E-03	3.52E-03	1.55E-03	3.48E-03	2.63E-03						
Thallium (Tl)	$\mu g/m^3$	4.39E-03	3.14E-03	3.74E-03		3.45E-03	3.14E-03	3.61E-03	3.59E-03	3.89E-03	3.42E-03	4.39E-03						
Tin (Sn)	$\mu g/m^3$	4.39E-03	3.14E-03	3.74E-03		3.45E-03	3.14E-03	3.61E-03	3.59E-03	3.89E-03	3.42E-03	4.39E-03						
Titanium (Ti)	$\mu g/m^3$	2.84E-02	3.42E-03	2.84E-02		3.45E-03	1.01E-02	1.01E-02	3.59E-03	3.89E-03	3.42E-03	4.39E-03						
Vanadium (V)	$\mu g/m^3$	2.19E-03	1.57E-03	1.87E-03		1.73E-03	1.57E-03	1.80E-03	1.79E-03	1.94E-03	1.71E-03	2.19E-03						
Zinc (Zn)	$\mu g/m^3$	5.45E-02	1.42E-02	5.45E-02		4.72E-02	3.56E-02	2.28E-02	4.70E-02	2.30E-02	1.42E-02	4.85E-02						
Zirconium (Zr)	$\mu g/m^3$	2.19E-03	1.57E-03	1.87E-03		1.73E-03	1.57E-03	1.80E-03	1.79E-03	1.94E-03	1.71E-03	2.19E-03						
Total Uranium (U)	$\mu g/m^3$	1.97E-04	1.41E-04	1.68E-04		1.55E-04	1.41E-04	1.62E-04	1.61E-04	1.75E-04	1.54E-04	1.97E-04						

APPENDIX H:
PAHS DATA SUMMARY

Polycyclic Aromatic Hydrocarbons	Courtice WPCP Station															
Location		Courtice		Courtice		Courtice		Courtice		Courtice		Courtice		Courtice		Courtice	
Date	dd/mm/yyyy	2/01/2018		14/01/2018		26/01/2018		7/02/2018		19/02/2018		3/03/2018		15/03/2018		27/03/2018	
Start Time	hh:mm	0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00	
Sample Duration	hours	23.26		24.3		23.08		23.26		23.75		23.5		24.04		24.19	
Technician		TZ		TZ		TZ, AE		AE		AE		AE		AE		AE	
Filter Number		FSB016-01		FTC969-01		FTJ432-01		FTJ600-01		FXQ367-01		FXQ398-01		GCK080-01		GCQ628-01	
Maxaam ID		FVT583		FXK111		FZR724		GBQ748		GDD185		GFF808		GHG805		GJA688	
Maxxam Job #		B801256		B809847		B821688		B832191		B840436		B851243		B862183		B871174	
Total Volumetric Flow	Am^3/sample	337.69		337.59		319.81		344.44		325.98		315.44		321.06		315.02	
Analytical Results	Units	Value	RDL	Value	RDL	Value	RDL	Value	RDL	Value	RDL	Value	RDL	Value	RDL	Value	RDL
Benzo(a)pyrene	µg	0.0183	0.030	0.0147	0.020	0.0143	0.030	0.0273	0.020	0.0068	0.030	0.00351	0.020	0.0055	0.030	0.00330	0.020
1-Methylnaphthalene	µg	1.51	0.15	1.05	0.10	1.07	0.15	1.56	0.10	1.20	0.15	0.38	0.15	0.76	0.15	0.30	0.10
2-Methylnaphthalene	µg	2.38	0.15	1.51	0.10	1.65	0.15	2.46	0.10	1.91	0.15	0.62	0.15	1.31	0.15	0.44	0.10
Acenaphthene	µg	0.183	0.075	0.202	0.050	0.234	0.075	0.188	0.050	0.657	0.075	0.196	0.075	0.207	0.075	<0.050	0.050
Acenaphthylene	µg	<0.075	0.075	0.112	0.050	<0.075	0.075	0.130	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Anthracene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Benzo(a)anthracene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Benzo(a)fluorene	µg	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.15	<0.15	0.15	<0.10	0.10
Benzo(b)fluoranthene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	0.100	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Benzo(b)fluorene	µg	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.15	<0.15	0.15	<0.10	0.10
Benzo(e)pyrene	µg	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.15	<0.15	0.15	<0.10	0.10
Benzo(g,h,i)perylene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Benzo(k)fluoranthene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Biphenyl	µg	0.76	0.15	0.55	0.10	0.66	0.15	0.83	0.10	0.77	0.15	0.26	0.15	0.26	0.15	0.24	0.10
Chrysene	µg	<0.075	0.075	0.094	0.050	<0.075	0.075	0.104	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Dibenz(a,h)anthracene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Dibenzo(a,c) anthracene + Picene [1]	µg	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.15	<0.15	0.15	<0.10	0.10
Fluoranthene	µg	0.255	0.075	0.278	0.050	0.207	0.075	0.316	0.050	0.249	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Indeno(1,2,3-cd)pyrene	µg	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Naphthalene	µg	10.7	0.11	7.89	0.072	7.89	0.11	10.8	0.072	7.79	0.11	2.23	0.11	4.19	0.11	2.18	0.072
o-Terphenyl	µg	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.15	<0.15	0.15	<0.10	0.10
Perylene	µg	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.15	<0.15	0.15	<0.10	0.10
Phenanthrene	µg	0.843	0.075	0.626	0.050	0.621	0.075	0.908	0.050	0.810	0.075	0.306	0.075	0.297	0.075	0.200	0.050
Pyrene	µg	0.171	0.075	0.194	0.050	<0.075	0.075	0.210	0.050	<0.075	0.075	<0.050	0.075	<0.075	0.075	<0.050	0.050
Tetralin	µg	0.52	0.15	0.46	0.10	0.42	0.15	0.61	0.10	0.53	0.15	0.31	0.15	0.59	0.15	0.26	0.10

Calculated Concentrations	Quarter 1			1	2	3	4	5	6	7	8
	Units	Maximum	Minimum	1/2/2018	1/14/2018	1/26/2018	7/02/2018	19/02/2018	3/03/2018	15/03/2018	27/03/2018
Benzo(a)pyrene	ng/m^3	7.93E-02	1.05E-02	5.42E-02	4.35E-02	4.47E-02	7.93E-02	2.09E-02	1.11E-02	1.71E-02	1.05E-02
1-Methylnaphthalene	ng/m^3	4.53E+00	9.52E-01	4.47E+00	3.11E+00	3.35E+00	4.53E+00	3.68E+00	1.20E+00	2.37E+00	9.52E-01
2-Methylnaphthalene	ng/m^3	7.14E+00	1.40E+00	7.05E+00	4.47E+00	5.16E+00	7.14E+00	5.86E+00	1.97E+00	4.08E+00	1.40E+00
Acenaphthene	ng/m^3	2.02E+00	7.94E-02	5.42E-01	5.98E-01	7.32E-01	5.46E-01	2.02E+00	6.21E-01	6.45E-01	7.94E-02
Acenaphthylene	ng/m^3	3.77E-01	7.94E-02	1.11E-01	3.32E-01	1.17E-01	3.77E-01	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Anthracene	ng/m^3	1.19E-01	7.26E-02	1.11E-01	7.41E-02	1.17E-01	7.26E-02	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Benzo(a)anthracene	ng/m^3	1.19E-01	7.26E-02	1.11E-01	7.41E-02	1.17E-01	7.26E-02	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Benzo(a)fluorene	ng/m^3	2.38E-01	1.45E-01	2.22E-01	1.48E-01	2.35E-01	1.45E-01	2.30E-01	2.38E-01	2.34E-01	1.59E-01
Benzo(b)fluoranthene	ng/m^3	2.90E-01	7.41E-02	1.11E-01	7.41E-02	1.17E-01	2.90E-01	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Benzo(b)fluorene	ng/m^3	2.38E-01	1.45E-01	2.22E-01	1.48E-01	2.35E-01	1.45E-01	2.30E-01	2.38E-01	2.34E-01	1.59E-01
Benzo(e)pyrene	ng/m^3	2.38E-01	1.45E-01	2.22E-01	1.48E-01	2.35E-01	1.45E-01	2.30E-01	2.38E-01	2.34E-01	1.59E-01
Benzo(g,h,i)perylene	ng/m^3	1.19E-01	7.26E-02	1.11E-01	7.41E-02	1.17E-01	7.26E-02	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Benzo(k)fluoranthene	ng/m^3	1.19E-01	7.26E-02	1.11E-01	7.41E-02	1.17E-01	7.26E-02	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Biphenyl	ng/m^3	2.41E+00	7.62E-01	2.25E+00	1.63E+00	2.06E+00	2.41E+00	2.36E+00	8.24E-01	8.10E-01	7.62E-01
Chrysene	ng/m^3	3.02E-01	7.94E-02	1.11E-01	2.78E-01	1.17E-01	3.02E-01	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Dibenz(a,h)anthracene	ng/m^3	1.19E-01	7.26E-02	1.11E-01	7.41E-02	1.17E-01	7.26E-02	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Dibenzo(a,c) anthracene + Picene	ng/m^3	2.38E-01	1.45E-01	2.22E-01	1.48E-01	2.35E-01	1.45E-01	2.30E-01	2.38E-01	2.34E-01	1.59E-01
Fluoranthene	ng/m^3	9.17E-01	7.94E-02	7.55E-01	8.23E-01	6.47E-01	9.17E-01	7.64E-01	1.19E-01	1.17E-01	7.94E-02
Indeno(1,2,3-cd)pyrene	ng/m^3	1.19E-01	7.26E-02	1.11E-01	7.41E-02	1.17E-01	7.26E-02	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Naphthalene	ng/m^3	3.17E+01	6.92E+00	3.17E+01	2.34E+01	2.47E+01	3.14E+01	2.39E+01	7.07E+00	1.31E+01	6.92E+00
o-Terphenyl	ng/m^3	2.38E-01	1.45E-01	2.22E-01	1.48E-01	2.35E-01	1.45E-01	2.30E-01	2.38E-01	2.34E-01	1.59E-01
Perylene	ng/m^3	2.38E-01	1.45E-01	2.22E-01	1.48E-01	2.35E-01	1.45E-01	2.30E-01	2.38E-01	2.34E-01	1.59E-01
Phenanthrene	ng/m^3	2.64E+00	6.35E-01	2.50E+00	1.85E+00	1.94E+00	2.64E+00	2.48E+00	9.70E-01	9.25E-01	6.35E-01
Pyrene	ng/m^3	6.10E-01	7.94E-02	5.06E-01	5.75E-01	1.17E-01	6.10E-01	1.15E-01	1.19E-01	1.17E-01	7.94E-02
Tetralin	ng/m^3	1.84E+00	8.25E-01	1.54E+00	1.36E+00	1.31E+00	1.77E+00	1.63E+00	9.83E-01	1.84E+00	8.25E-01
Total PAH	ng/m^3	5.43E+01	1.34E+01	5.37E+01	3.99E+01	4.25E+01	5.43E+01	4.52E+01	1.64E+01	2.64E+01	1.34E+01

Note:
RDL = Reportable Detection Limit

Polycyclic Aromatic Hydrocarbons	Rundle Road Station															
Location		Rundle		Rundle		Rundle		Rundle		Rundle		Rundle		Rundle		Rundle	
Date	dd/mm/yyyy	2/01/2018		14/01/2018		26/01/2018		7/02/2018		19/02/2018		3/03/2018		15/03/2018		27/03/2018	
Start Time	hh:mm	0:00		0:00		0:00		0:00		0:00		0:00		0:00		0:00	
Sample Duration	hours	23.9		0		22.95		21.87		23.81		23.3		23.92		23.77	
Technician		TZ		TZ		AE, TZ		AE		AE		AE		AE		AE	
Filter Number		FSB014-01		-		FTJ431-01		FTJ601-01		FXQ366-01		FXQ397-01		GCK079-01		GCQ630-01	
Maxaam ID		FVT582		-		FZR723		GBQ749		GDD184		GFF809		GHG843		GJA689	
Maxxam Job #		B801256		-		B821688		B832191		B840436		B851243		B862191		B871174	
Total Volumetric Flow	Am^3/sample	338.86		-		325.72		243.56		264.94		251.74		257.42		251.15	
Analytical Results	**Units**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**	**Value**	**RDL**
Benzo(a)pyrene	µg	0.0210	0.030	PUF Elapsed Time Recorder Failure. Data Invalidated.		0.0411	0.030	0.0167	0.020	0.0032	0.030	0.0029	0.020	0.00885	0.030	0.00654	0.020
1-Methylnaphthalene	µg	1.69	0.15			1.75	0.15	1.11	0.10	1.20	0.15	0.20	0.10	0.76	0.15	0.70	0.10
2-Methylnaphthalene	µg	2.63	0.15			2.82	0.15	1.76	0.10	1.85	0.15	0.30	0.10	1.31	0.15	1.20	0.10
Acenaphthene	µg	0.213	0.075			0.582	0.075	0.116	0.050	0.351	0.075	<0.050	0.050	0.207	0.075	0.400	0.050
Acenaphthylene	µg	0.150	0.075			0.168	0.075	0.094	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Anthracene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Benzo(a)anthracene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Benzo(a)fluorene	µg	<0.15	0.15			<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10
Benzo(b)fluoranthene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Benzo(b)fluorene	µg	<0.15	0.15			<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10
Benzo(e)pyrene	µg	<0.15	0.15			<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10
Benzo(g,h,i)perylene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Benzo(k)fluoranthene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Biphenyl	µg	0.85	0.15			0.97	0.15	0.62	0.10	0.80	0.15	0.16	0.10	0.26	0.15	0.40	0.10
Chrysene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Dibenz(a,h)anthracene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Dibenzo(a,c) anthracene + Picene [1]	µg	<0.15	0.15			<0.15	0.15	<0.10	0.10	<0.050	0.050	<0.10	0.10	<0.15	0.15	<0.10	0.10
Fluoranthene	µg	0.282	0.075			0.375	0.075	0.196	0.050	0.189	0.075	<0.050	0.050	<0.075	0.075	0.180	0.050
Indeno(1,2,3-cd)pyrene	µg	<0.075	0.075			<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Naphthalene	µg	12.1	0.11			11.2	0.11	7.67	0.072	8.05	0.11	1.30	0.072	4.19	0.11	2.86	0.072
o-Terphenyl	µg	<0.15	0.15			<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10
Perylene	µg	<0.15	0.15			<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10	<0.15	0.15	<0.10	0.10
Phenanthrene	µg	0.978	0.075			1.28	0.075	0.610	0.050	0.687	0.075	0.208	0.050	0.297	0.075	0.740	0.050
Pyrene	µg	0.183	0.075			0.210	0.075	0.112	0.050	<0.075	0.075	<0.050	0.050	<0.075	0.075	<0.050	0.050
Tetralin	µg	0.68	0.15			0.53	0.15	0.49	0.10	0.60	0.15	0.15	0.10	0.59	0.15	0.30	0.10

Calculated Concentrations	Quarter 1															
				1	2	3		4		5		6		7		8	
	Units	Maximum	Minimum	1/2/2018	1/14/2018	1/26/2018		7/02/2018		19/02/2018		3/03/2018		15/03/2018		27/03/2018	
Benzo(a)pyrene	ng/m^3	1.26E-01	1.15E-02	6.20E-02	PUF Elapsed Time Recorder Failure. Data Invalidated.	1.26E-01		6.86E-02		1.21E-02		1.15E-02		3.44E-02		0.026	
1-Methylnaphthalene	ng/m^3	5.37E+00	7.94E-01	4.99E+00		5.37E+00		4.56E+00		4.53E+00		7.94E-01		2.95E+00		2.79E+00	
2-Methylnaphthalene	ng/m^3	8.66E+00	1.19E+00	7.76E+00		8.66E+00		7.23E+00		6.98E+00		1.19E+00		5.09E+00		4.78E+00	
Acenaphthene	ng/m^3	1.79E+00	9.93E-02	6.29E-01		1.79E+00		4.76E-01		1.32E+00		9.93E-02		8.04E-01		1.59E+00	
Acenaphthylene	ng/m^3	5.16E-01	9.93E-02	4.43E-01		5.16E-01		3.86E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Anthracene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Benzo(a)anthracene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Benzo(a)fluorene	ng/m^3	2.91E-01	1.99E-01	2.21E-01		2.30E-01		2.05E-01		2.83E-01		1.99E-01		2.91E-01		1.99E-01	
Benzo(b)fluoranthene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Benzo(b)fluorene	ng/m^3	2.91E-01	1.99E-01	2.21E-01		2.30E-01		2.05E-01		2.83E-01		1.99E-01		2.91E-01		1.99E-01	
Benzo(e)pyrene	ng/m^3	2.91E-01	1.99E-01	2.21E-01		2.30E-01		2.05E-01		2.83E-01		1.99E-01		2.91E-01		1.99E-01	
Benzo(g,h,i)perylene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Benzo(k)fluoranthene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Biphenyl	ng/m^3	3.02E+00	6.36E-01	2.51E+00		2.98E+00		2.55E+00		3.02E+00		6.36E-01		1.01E+00		1.59E+00	
Chrysene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Dibenz(a,h)anthracene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Dibenzo(a,c) anthracene + Picene	ng/m^3	2.91E-01	9.44E-02	2.21E-01		2.30E-01		2.05E-01		9.44E-02		1.99E-01		2.91E-01		1.99E-01	
Fluoranthene	ng/m^3	1.15E+00	9.93E-02	8.32E-01		1.15E+00		8.05E-01		7.13E-01		9.93E-02		1.46E-01		7.17E-01	
Indeno(1,2,3-cd)pyrene	ng/m^3	1.46E-01	9.93E-02	1.11E-01		1.15E-01		1.03E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Naphthalene	ng/m^3	3.57E+01	5.16E+00	3.57E+01		3.44E+01		3.15E+01		3.04E+01		5.16E+00		1.63E+01		1.14E+01	
o-Terphenyl	ng/m^3	2.91E-01	1.99E-01	2.21E-01		2.30E-01		2.05E-01		2.83E-01		1.99E-01		2.91E-01		1.99E-01	
Perylene	ng/m^3	2.91E-01	1.99E-01	2.21E-01		2.30E-01		2.05E-01		2.83E-01		1.99E-01		2.91E-01		1.99E-01	
Phenanthrene	ng/m^3	3.93E+00	8.26E-01	2.89E+00		3.93E+00		2.50E+00		2.59E+00		8.26E-01		1.15E+00		2.95E+00	
Pyrene	ng/m^3	6.45E-01	9.93E-02	5.40E-01		6.45E-01		4.60E-01		1.42E-01		9.93E-02		1.46E-01		9.95E-02	
Tetralin	ng/m^3	2.29E+00	5.96E-01	2.01E+00		1.63E+00		2.01E+00		2.26E+00		5.96E-01		2.29E+00		1.19E+00	
Total PAH	ng/m^3	6.35E+01	1.16E+01	6.06E+01		6.35E+01		5.46E+01		5.47E+01		1.16E+01		3.30E+01		2.92E+01	

Note:
RDL = Reportable Detection Limit

APPENDIX I:
DIOXINS AND FURANS DATA SUMMARY

Dioxins and Furans	Courtice WPCP Station											
Location		Courtice			Courtice			Courtice			Courtice		
Date	dd/mm/yyyy	2/01/2018			26/01/2018			19/02/2018			15/03/2018		
Start Time	hh:mm	0:00			0:00			0:00			0:00		
Sample Duration	hours	23.26			23.08			23.75			24.04		
Technician		TZ			TZ, AE			AE			AE		
Filter Number		FSB016-01			FTJ432-01			FXQ367-01			GCK080-01		
Maxaam ID		FVT583			FZR724			GDD185			GFF810		
Maxxam Job #		B801256			B821688			B840436			B851243		
Total Volumetric Flow	Am^3/sample	337.69			319.81			325.98			321.06		
Analytical Results	Units	Value	EDL	WHO_{2005} TEF	Value	EDL	WHO_{2005} TEF	Value	EDL	WHO_{2005} TEF	Value	EDL	WHO_{2005} TEF
2,3,7,8-Tetra CDD *	pg	<4.3	4.3	1	<3.3	3.3	1	<3.4	3.4	1	<3.1	3.1	1
1,2,3,7,8-Penta CDD *	pg	<4.9	4.9	1	<3.5	3.5	1	<3.3	3.3	1	<3.6	3.6	1
1,2,3,4,7,8-Hexa CDD *	pg	<5.2	5.2	0.1	<4.1	4.1	0.1	<3.4	3.4	0.1	<3.4	3.4	0.1
1,2,3,6,7,8-Hexa CDD *	pg	<5.2	5.2	0.1	8.3	3.2	0.1	<3.4	3.4	0.1	<3.4	3.4	0.1
1,2,3,7,8,9-Hexa CDD *	pg	<4.7	4.7	0.1	7.9	3.5	0.1	<3.2	3.2	0.1	<5.4 (1)	5.4	0.1
1,2,3,4,6,7,8-Hepta CDD *	pg	29.2	4.9	0.01	83.1	3.6	0.01	21.7	3.2	0.01	27.4	3.4	0.01
Octa CDD *	pg	67.7	8.3	0.0003	149	3.5	0.0003	68.5	3.2	0.0003	66.0	2.9	0.0003
Total Tetra CDD *	pg	<4.3	4.3		<3.3	3.3		<3.4	3.4		<4.1 (1)	4.1	
Total Penta CDD *	pg	<4.9	4.9		<3.5	3.5		<3.3	3.3		3.7	3.6	
Total Hexa CDD *	pg	<10	10		56.6	3.6		5.3	3.3		32.4	3.3	
Total Hepta CDD *	pg	29.2	4.9		158	3.6		46.6	3.2		85.5	3.4	
2,3,7,8-Tetra CDF **	pg	<4.2	4.2	0.1	<5.1 (2)	5.1	0.1	<3.6 (2)	3.6	0.1	<3.0	3.0	0.1
1,2,3,7,8-Penta CDF **	pg	<4.1	4.1	0.03	<3.3	3.3	0.03	<3.6	3.6	0.03	<3.0	3.0	0.03
2,3,4,7,8-Penta CDF **	pg	<4.0	4	0.3	<3.4	3.4	0.3	<3.5	3.5	0.3	<3.0	3.0	0.3
1,2,3,4,7,8-Hexa CDF **	pg	<4.2	4.2	0.1	<3.4	3.4	0.1	<3.3	3.3	0.1	<3.0	3.0	0.1
1,2,3,6,7,8-Hexa CDF **	pg	<4.1	4.1	0.1	<2.7	2.7	0.1	<3.1	3.1	0.1	<2.8	2.8	0.1
2,3,4,6,7,8-Hexa CDF **	pg	<4.6	4.6	0.1	<3.1	3.1	0.1	<3.5	3.5	0.1	<3.2	3.2	0.1
1,2,3,7,8,9-Hexa CDF **	pg	<5.1	5.1	0.1	<3.6	3.6	0.1	<3.7	3.7	0.1	<3.3	3.3	0.1
1,2,3,4,6,7,8-Hepta CDF **	pg	<4.2	4.2	0.01	8.4	3.0	0.01	4.4	3.0	0.01	<2.9	2.9	0.01
1,2,3,4,7,8,9-Hepta CDF **	pg	<5.6	5.6	0.01	<3.8	3.8	0.01	<3.4	3.4	0.01	<3.4	3.4	0.01
Octa CDF **	pg	<6.2	6.2	0.0003	9.2	3.4	0.0003	<5.5 (1)	5.5	0.0003	<3.3	3.3	0.0003
Total Tetra CDF **	pg	<4.2	4.2		<5.1 (2)	5.1		3.6	3.2		<3.0	3.0	
Total Penta CDF **	pg	<4.0	4.0		6.1	3.4		<3.5	3.5		<3.0	3.0	
Total Hexa CDF **	pg	<4.5	4.5		4.5	3.2		<3.4	3.4		<3.1	3.1	
Total Hepta CDF **	pg	<4.8	4.8		16.5	3.4		4.4	3.2		<3.1	3.1	
Toxic Equivalency	pg												

Notes:

* CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan

Calculated Concentrations	Quarter 1			Courtice	Courtice	Courtice	Courtice
				1	2	3	4
	Units	Maximum	Minimum	2/01/2018	26/01/2018	19/02/2018	15/03/2018
2,3,7,8-Tetra CDD *	pg/m^3	6.37E-03	4.83E-03	0.006	0.005	0.005	0.005
1,2,3,7,8-Penta CDD *	pg/m^3	7.26E-03	5.06E-03	0.007	0.005	0.005	0.006
1,2,3,4,7,8-Hexa CDD *	pg/m^3	7.70E-03	5.22E-03	0.008	0.006	0.005	0.005
1,2,3,6,7,8-Hexa CDD *	pg/m^3	2.60E-02	5.22E-03	0.008	0.026	0.005	0.005
1,2,3,7,8,9-Hexa CDD *	pg/m^3	2.47E-02	4.91E-03	0.007	0.025	0.005	0.008
1,2,3,4,6,7,8-Hepta CDD *	pg/m^3	2.60E-01	6.66E-02	0.086	0.260	0.067	0.085
Octa CDD *	pg/m^3	4.66E-01	2.00E-01	0.200	0.466	0.210	0.206
Total Tetra CDD *	pg/m^3	6.39E-03	5.16E-03	0.006	0.005	0.005	0.006
Total Penta CDD *	pg/m^3	1.15E-02	5.06E-03	0.007	0.005	0.005	0.012
Total Hexa CDD *	pg/m^3	1.77E-01	1.48E-02	0.015	0.177	0.016	0.101
Total Hepta CDD *	pg/m^3	4.94E-01	8.65E-02	0.086	0.494	0.143	0.266
2,3,7,8-Tetra CDF **	pg/m^3	7.97E-03	4.67E-03	0.006	0.008	0.006	0.005
1,2,3,7,8-Penta CDF **	pg/m^3	6.07E-03	4.67E-03	0.006	0.005	0.006	0.005
2,3,4,7,8-Penta CDF **	pg/m^3	5.92E-03	4.67E-03	0.006	0.005	0.005	0.005
1,2,3,4,7,8-Hexa CDF **	pg/m^3	6.22E-03	4.67E-03	0.006	0.005	0.005	0.005
1,2,3,6,7,8-Hexa CDF **	pg/m^3	6.07E-03	4.22E-03	0.006	0.004	0.005	0.004
2,3,4,6,7,8-Hexa CDF **	pg/m^3	6.81E-03	4.85E-03	0.007	0.005	0.005	0.005
1,2,3,7,8,9-Hexa CDF **	pg/m^3	7.55E-03	5.14E-03	0.008	0.006	0.006	0.005
1,2,3,4,6,7,8-Hepta CDF **	pg/m^3	2.63E-02	4.52E-03	0.006	0.026	0.013	0.005
1,2,3,4,7,8,9-Hepta CDF **	pg/m^3	8.29E-03	5.22E-03	0.008	0.006	0.005	0.005
Octa CDF **	pg/m^3	2.88E-02	5.14E-03	0.009	0.029	0.008	0.005
Total Tetra CDF **	pg/m^3	1.10E-02	4.67E-03	0.006	0.008	0.011	0.005
Total Penta CDF **	pg/m^3	1.91E-02	4.67E-03	0.006	0.019	0.005	0.005
Total Hexa CDF **	pg/m^3	1.41E-02	4.83E-03	0.007	0.014	0.005	0.005
Total Hepta CDF **	pg/m^3	5.16E-02	4.83E-03	0.007	0.052	0.013	0.005
Toxic Equivalency	pg/m^3						
TOTAL TOXIC EQUIVALENCY	pg TEQ/m^3	2.40E-02	1.71E-02	0.022	0.024	0.017	0.017
Calculated TEQ Concentrations	**Units**			**Courtice**	**Courtice**	**Courtice**	**Courtice**
				1/2/2018	**1/26/2018**	**2/19/2018**	**3/15/2018**
2,3,7,8-Tetra CDD *	pg TEQ/m^3			0.006	0.005	0.005	0.005
1,2,3,7,8-Penta CDD	pg TEQ/m^3			0.007	0.005	0.005	0.006
1,2,3,4,7,8-Hexa CDD	pg TEQ/m^3			0.0008	0.0006	0.0005	0.0005
1,2,3,6,7,8-Hexa CDD	pg TEQ/m^3			0.0008	0.0026	0.0005	0.0005
1,2,3,7,8,9-Hexa CDD	pg TEQ/m^3			0.0007	0.0025	0.0005	0.0008
1,2,3,4,6,7,8-Hepta CDD	pg TEQ/m^3			0.0009	0.0026	0.0007	0.0009
Octa CDD	pg TEQ/m^3			0.00006	0.00014	0.00006	0.00006
Total Tetra CDD	pg TEQ/m^3						
Total Penta CDD	pg TEQ/m^3						
Total Hexa CDD	pg TEQ/m^3						
Total Hepta CDD	pg TEQ/m^3						
2,3,7,8-Tetra CDF **	pg TEQ/m^3			0.0006	0.0008	0.0006	0.0005
1,2,3,7,8-Penta CDF	pg TEQ/m^3			0.0002	0.0002	0.0002	0.0001
2,3,4,7,8-Penta CDF	pg TEQ/m^3			0.002	0.002	0.002	0.001
1,2,3,4,7,8-Hexa CDF	pg TEQ/m^3			0.0006	0.0005	0.0005	0.0005
1,2,3,6,7,8-Hexa CDF	pg TEQ/m^3			0.0006	0.0004	0.0005	0.0004
2,3,4,6,7,8-Hexa CDF	pg TEQ/m^3			0.0007	0.0005	0.0005	0.0005
1,2,3,7,8,9-Hexa CDF	pg TEQ/m^3			0.0008	0.0006	0.0006	0.0005
1,2,3,4,6,7,8-Hepta CDF	pg TEQ/m^3			0.00006	0.00026	0.00013	0.00005
1,2,3,4,7,8,9-Hepta CDF	pg TEQ/m^3			0.00008	0.00006	0.00005	0.00005
Octa CDF	pg TEQ/m^3			0.000003	0.000009	0.000003	0.000002
Total Tetra CDF	pg TEQ/m^3						
Total Penta CDF	pg TEQ/m^3						
Total Hexa CDF	pg TEQ/m^3						
Total Hepta CDF	pg TEQ/m^3						
TOTAL TOXIC EQUIVALENCY	pg TEQ/m^3			0.022	0.024	0.017	0.017

Notes:
EDL = Estimated Detection Limit
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

Dioxins and Furans	Rundle Road Station												
Location		Rundle			Rundle			Rundle			Rundle		
Date	dd/mm/yyyy	2/01/2018			26/01/2018			19/02/2018			15/03/2018		
Start Time	hh:mm	0:00			0:00			0:00			0:00		
Sample Duration	hours	23.9			22.95			23.81			23.92		
Technician		TZ			AE, TZ			AE			AE		
Filter Number		FSB014-01			FTJ431			FXQ366-01			GCK079-01		
Maxaam ID		FVT582			FZR723			GDD184			GHG843		
Maxxam Job #		B801256			B821688			B840436			B862191		
Total Volumetric Flow	Am^3/sample	338.86			325.72			264.94			257.42		
Analytical Results	Units	Value	EDL	WHO_{2005} TEF	Value	EDL	WHO_{2005} TEF	Value	EDL	WHO_{2005} TEF	Value	EDL	WHO_{2005} TEF
2,3,7,8-Tetra CDD *	pg	<4.3	4.3	1	<3.2	3.2	1	<3.0	3.0	1	<3.1	3.1	1
1,2,3,7,8-Penta CDD *	pg	<4.9	4.9	1	5.1	3.1	1	<3.1	3.1	1	<3.4	3.4	1
1,2,3,4,7,8-Hexa CDD *	pg	<5.2	5.2	0.1	6.4	4.0	0.1	<3.4	3.4	0.1	<3.2	3.2	0.1
1,2,3,6,7,8-Hexa CDD *	pg	<5.2	5.2	0.1	<8.6 (1)	8.6	0.1	<3.4	3.4	0.1	3.3	3.2	0.1
1,2,3,7,8,9-Hexa CDD *	pg	<4.7	4.7	0.1	18.4	3.4	0.1	<4.0	4.0	0.1	5.3	3.0	0.1
1,2,3,4,6,7,8-Hepta CDD *	pg	29.2	4.9	0.01	131	3.5	0.01	16.3	3.1	0.01	26.2	3.3	0.01
Octa CDD *	pg	67.7	8.3	0.0003	201	3.5	0.0003	50.2	3.4	0.0003	52.8	3.6	0.0003
Total Tetra CDD *	pg	<4.3	4.3		<3.2	3.2		<3.0	3.0		<3.4 (1)	3.4	
Total Penta CDD *	pg	<4.9	4.9		5.1	3.1		<3.1	3.1		4.7	3.4	
Total Hexa CDD *	pg	<10	10		99.9	3.5		5.1	3.4		36.6	3.1	
Total Hepta CDD *	pg	29.2	4.9		244	3.5		16.3	3.1		77.7	3.3	
2,3,7,8-Tetra CDF **	pg	<4.2	4.2	0.1	9.0	3.4	0.1	<3.2	3.2	0.1	<2.8	2.8	0.1
1,2,3,7,8-Penta CDF **	pg	<4.1	4.1	0.03	<3.2	3.2	0.03	<3.3	3.3	0.03	<3.0	3.0	0.03
2,3,4,7,8-Penta CDF **	pg	<4.0	4.0	0.3	<3.3	3.3	0.3	<3.2	3.2	0.3	<3.0	3.0	0.3
1,2,3,4,7,8-Hexa CDF **	pg	<4.2	4.2	0.1	<3.7	3.7	0.1	<3.1	3.1	0.1	<2.7	2.7	0.1
1,2,3,6,7,8-Hexa CDF **	pg	<4.1	4.1	0.1	<3.0	3.0	0.1	<2.9	2.9	0.1	<2.6	2.6	0.1
2,3,4,6,7,8-Hexa CDF **	pg	<4.6	4.6	0.1	<3.4	3.4	0.1	<3.3	3.3	0.1	<2.9	2.9	0.1
1,2,3,7,8,9-Hexa CDF **	pg	<5.1	5.1	0.1	<4.0	4.0	0.1	<3.5	3.5	0.1	<3.1	3.1	0.1
1,2,3,4,6,7,8-Hepta CDF **	pg	<4.2	4.2	0.01	12.3	3.1	0.01	<3.2	3.2	0.01	<2.5	2.5	0.01
1,2,3,4,7,8,9-Hepta CDF **	pg	<5.6	5.6	0.01	<4.0	4.0	0.01	<3.7	3.7	0.01	<2.9	2.9	0.01
Octa CDF **	pg	<6.2	6.2	0.0003	12.5	3.5	0.0003	<4.3	4.3	0.0003	<2.9	2.9	0.0003
Total Tetra CDF **	pg	<4.2	4.2		37.6	3.4		<3.2	3.2		<2.8	2.8	
Total Penta CDF **	pg	<4.0	4.0		8.0	3.3		<3.2	3.2		<3.0	3.0	
Total Hexa CDF **	pg	<4.5	4.5		6.3	3.4		<3.2	3.2		<2.8	2.8	
Total Hepta CDF **	pg	<4.8	4.8		27.6	3.5		<3.5	3.5		<2.7	2.7	
Toxic Equivalency	pg												

Notes:
* CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan

Calculated Concentrations	Quarter 1			1	2	3	4
	Units	Maximum	Minimum	2/01/2018	26/01/2018	19/02/2018	15/03/2018
2,3,7,8-Tetra CDD *	pg/m^3	6.34E-03	4.91E-03	0.006	0.005	0.006	0.006
1,2,3,7,8-Penta CDD *	pg/m^3	1.57E-02	5.85E-03	0.007	0.016	0.006	0.007
1,2,3,4,7,8-Hexa CDD *	pg/m^3	1.96E-02	6.22E-03	0.008	0.020	0.006	0.006
1,2,3,6,7,8-Hexa CDD *	pg/m^3	1.32E-02	6.42E-03	0.008	0.013	0.006	0.013
1,2,3,7,8,9-Hexa CDD *	pg/m^3	5.65E-02	6.93E-03	0.007	0.056	0.008	0.021
1,2,3,4,6,7,8-Hepta CDD *	pg/m^3	4.02E-01	6.15E-02	0.086	0.402	0.062	0.102
Octa CDD *	pg/m^3	6.17E-01	1.89E-01	0.200	0.617	0.189	0.205
Total Tetra CDD *	pg/m^3	6.60E-03	4.91E-03	0.006	0.005	0.006	0.007
Total Penta CDD *	pg/m^3	1.83E-02	5.85E-03	0.007	0.016	0.006	0.018
Total Hexa CDD *	pg/m^3	3.07E-01	1.48E-02	0.015	0.307	0.019	0.142
Total Hepta CDD *	pg/m^3	7.49E-01	6.15E-02	0.086	0.749	0.062	0.302
2,3,7,8-Tetra CDF **	pg/m^3	2.76E-02	5.44E-03	0.006	0.028	0.006	0.005
1,2,3,7,8-Penta CDF **	pg/m^3	6.23E-03	4.91E-03	0.006	0.005	0.006	0.006
2,3,4,7,8-Penta CDF **	pg/m^3	6.04E-03	5.07E-03	0.006	0.005	0.006	0.006
1,2,3,4,7,8-Hexa CDF **	pg/m^3	6.20E-03	5.24E-03	0.006	0.006	0.006	0.005
1,2,3,6,7,8-Hexa CDF **	pg/m^3	6.05E-03	4.61E-03	0.006	0.005	0.005	0.005
2,3,4,6,7,8-Hexa CDF **	pg/m^3	6.79E-03	5.22E-03	0.007	0.005	0.006	0.006
1,2,3,7,8,9-Hexa CDF **	pg/m^3	7.53E-03	6.02E-03	0.008	0.006	0.007	0.006
1,2,3,4,6,7,8-Hepta CDF **	pg/m^3	3.78E-02	4.86E-03	0.006	0.038	0.006	0.005
1,2,3,4,7,8,9-Hepta CDF **	pg/m^3	8.26E-03	5.63E-03	0.008	0.006	0.007	0.006
Octa CDF **	pg/m^3	3.84E-02	5.63E-03	0.009	0.038	0.008	0.006
Total Tetra CDF **	pg/m^3	1.15E-01	5.44E-03	0.006	0.115	0.006	0.005
Total Penta CDF **	pg/m^3	2.46E-02	5.83E-03	0.006	0.025	0.006	0.006
Total Hexa CDF **	pg/m^3	1.93E-02	5.44E-03	0.007	0.019	0.006	0.005
Total Hepta CDF **	pg/m^3	8.47E-02	5.24E-03	0.007	0.085	0.007	0.005
Toxic Equivalency	pg/m^3						
TOTAL TOXIC EQUIVALENCY	pg TEQ/m^3	4.08E-02	1.94E-02	0.022	0.041	0.019	0.022
Calculated TEQ Concentrations	**Units**			**Rundle 1/2/2018**	**Rundle 1/26/2018**	**Rundle 2/19/2018**	**Rundle 3/15/2018**
2,3,7,8-Tetra CDD *	pg TEQ/m^3			0.006	0.005	0.006	0.006
1,2,3,7,8-Penta CDD	pg TEQ/m^3			0.007	0.016	0.006	0.007
1,2,3,4,7,8-Hexa CDD	pg TEQ/m^3			0.0008	0.0020	0.0006	0.0006
1,2,3,6,7,8-Hexa CDD	pg TEQ/m^3			0.0008	0.0013	0.0006	0.0013
1,2,3,7,8,9-Hexa CDD	pg TEQ/m^3			0.0007	0.0056	0.0008	0.0021
1,2,3,4,6,7,8-Hepta CDD	pg TEQ/m^3			0.0009	0.0040	0.0006	0.0010
Octa CDD	pg TEQ/m^3			0.00006	0.00019	0.00006	0.00006
Total Tetra CDD	pg TEQ/m^3						
Total Penta CDD	pg TEQ/m^3						
Total Hexa CDD	pg TEQ/m^3						
Total Hepta CDD	pg TEQ/m^3						
2,3,7,8-Tetra CDF **	pg TEQ/m^3			0.0006	0.0028	0.0006	0.0005
1,2,3,7,8-Penta CDF	pg TEQ/m^3			0.0002	0.0001	0.0002	0.0002
2,3,4,7,8-Penta CDF	pg TEQ/m^3			0.002	0.002	0.002	0.002
1,2,3,4,7,8-Hexa CDF	pg TEQ/m^3			0.0006	0.0006	0.0006	0.0005
1,2,3,6,7,8-Hexa CDF	pg TEQ/m^3			0.0006	0.0005	0.0005	0.0005
2,3,4,6,7,8-Hexa CDF	pg TEQ/m^3			0.0007	0.0005	0.0006	0.0006
1,2,3,7,8,9-Hexa CDF	pg TEQ/m^3			0.0008	0.0006	0.0007	0.0006
1,2,3,4,6,7,8-Hepta CDF	pg TEQ/m^3			0.00006	0.00038	0.00006	0.00005
1,2,3,4,7,8,9-Hepta CDF	pg TEQ/m^3			0.00008	0.00006	0.00007	0.00006
Octa CDF	pg TEQ/m^3			0.000003	0.000012	0.000002	0.000002
Total Tetra CDF	pg TEQ/m^3						
Total Penta CDF	pg TEQ/m^3						
Total Hexa CDF	pg TEQ/m^3						
Total Hepta CDF	pg TEQ/m^3						
TOTAL TOXIC EQUIVALENCY	pg TEQ/m^3			0.022	0.041	0.019	0.022

Notes:
EDL = Estimated Detection Limit
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds