REPORT

DURHAM YORK ENERGY CENTRE

COURTICE, ONTARIO

2021 Q3 AMBIENT AIR QUALITY MONITORING REPORT
RWDI #1803743
November 10, 2021

SUBMITTED TO:

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1 INTRODUCTION

RWDI AIR Inc. (RWDI) was retained by Durham Region and York Region (the Regions) to conduct discrete and continuous air quality ambient monitoring at the Durham York Energy Centre (DYEC) monitoring stations. The facility address is 1835 Energy Drive, Clarington, Ontario. The DYEC is a facility that manages post diversion municipal solid waste from Durham Region and York Region to create energy from waste combustion. Commercial operation of the DYEC commenced on February 1, 2016. The site location is shown below in Figure 1.

Condition 11 of the Environmental Assessment Notice of Approval and Condition 7(4) of the Environmental Compliance Approval (ECA) requires ambient air monitoring to be undertaken by the DYEC. An Ambient Air Monitoring and Reporting Plan was prepared and approved by the Ministry of Environment, Conservation and Parks (MECP) to satisfy these conditions. Two (2) monitoring stations were established to monitor ambient air quality around the DYEC and quantify the background ambient air quality levels and DYEC contributed emissions to ambient air quality levels.

This monitoring plan was developed based on the Regional Council mandate to provide ambient monitoring in the area of the DYEC. The purposes of the ambient monitoring program are to:

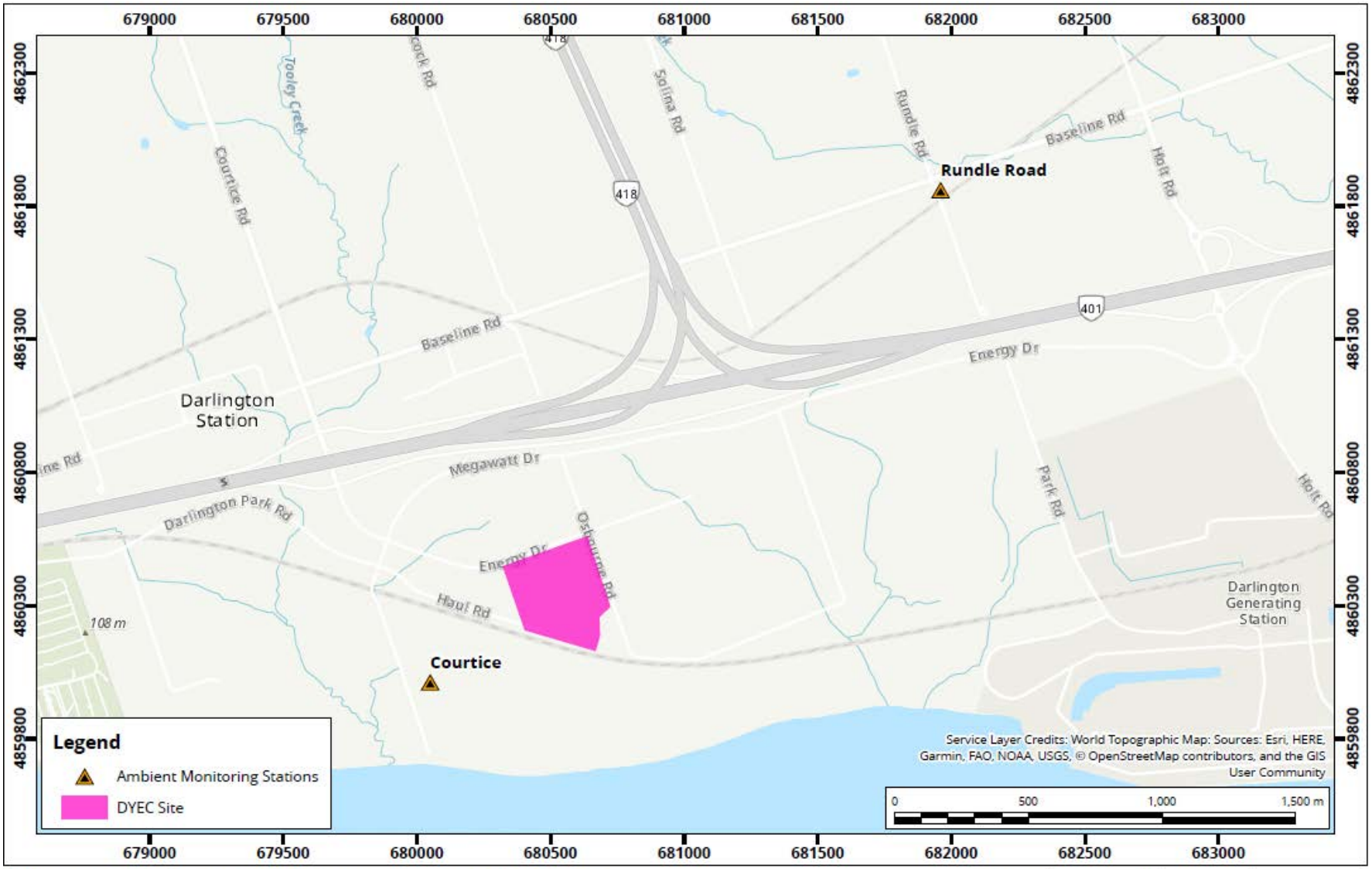
- Quantify any measurable ground level concentrations resulting from emissions from the DYEC cumulative to local air quality, including validating the predicted concentrations from the dispersion modelling conducted in the Environmental Assessment (2009a);
- Monitor concentration levels of EFW-related air contaminants in nearby residential areas; and,
- Quantify background ambient levels of air contaminants in the area.

The facility has two (2) monitoring stations which collect continuous and discrete ambient measurements, known as the Courtice Station and Rundle Road Station. The station locations are shown in Figure 1. The Courtice and Rundle Road Stations were operational in May of 2013 and have been operated on behalf of the Region of Durham by Stantec Consulting Ltd. since that time up until July 31, 2018. RWDI has overseen the operation of the stations on behalf of the Region of Durham since August 1, 2018.

The Courtice and Rundle Road Stations continuously monitor the following air quality parameters: Particulate Matter less than 2.5 microns ($PM_{2.5}$), Nitrogen Oxides (NO_X) and Sulfur Dioxide (SO_2). In addition, both discretely monitor the following air quality parameters: Total Suspended Particulate (TSP), Metals, Dioxins and Furans (D&F) and Polycyclic Aromatic Hydrocarbons (PAHs).

Continuous meteorological data is collected at the Courtice and Rundle Road Stations. The Rundle Road Station collects the following meteorological parameters: wind speed, wind direction, ambient temperature, precipitation and relative humidity. The Courtice Station collects the following meteorological parameters: wind speed, wind direction, ambient temperature, ambient pressure, precipitation and relative humidity. The meteorological towers at both stations are approximately 10 meters tall.

Throughout this monitoring period there were twelve (12) exceedance events of the rolling 10-minute SO_2 AAQC and four (4) exceedance events of the rolling 1-hour SO_2 AAQC at the Courtice station. Data recovery rates were acceptable and valid for all measured Q3 parameters except for Dioxins and Furans.



DYEC Site and Ambient Monitoring Station Locations

True North

Drawn by: DJH | Figure: 1

Approx. Scale: 1:20,000

Date Revised: Apr 17, 2020

Map Projection: NAD 1983 UTM Zone 17N

DYEC - Region of Durham, Ontario

Project #: 1803743

1.1 Sampling Locations

The Station sites were selected in consultation with a working group that included representatives from the MECP, the Region of Durham, York Region, and the Energy from Waste Advisory Committee (EFWAC), as required by Condition 11.3 of the Environmental Assessment Notice of Approval. The Courtice Station is predominantly upwind of the DYEC and is located on the Courtice WPCP property just southwest of the DYEC. The Rundle Road Station is predominantly downwind of the DYEC and is located just southeast of the intersection of Baseline Road and Rundle Road just northeast of the DYEC. Pictures of the two (2) Stations are presented as Figure 2 and 3.

Figure 2. Rundle Road Station

Figure 3. Courtice Station

2 SAMPLING METHODOLOGY

The Rundle Road and Courtice Stations are both equipped with the following continuous monitors: Thermo Scientific Model 5030 SHARP (Synchronized Hybrid Ambient Real-time Particulate) monitor ($PM_{2.5}$ analyzer), Teledyne Nitrogen Oxides Analyzer Model T200 (NO_X analyzer), and a Teledyne Sulfur Dioxide Analyzer Model T100 (SO_2 analyzer). Both Stations also have the following periodic monitors: High Volume (Hi-Vol) Air Sampler outfitted with a TSP inlet head as approved by the United States Environmental Protection Agency (U.S. EPA), and a Hi-Vol Air Sampler outfitted with a polyurethane foam plug and circular quartz filter for measuring PAH's and D&F's as approved by U.S. EPA.

2.1 Nitrogen Oxide Analyzers

The Teledyne T200 Nitrogen Oxide (NO_X) analyzers use chemiluminescence detection, coupled with microprocessor technology to provide sensitivity and stability for ambient air quality applications. The instrument determines real-time concentration of nitric oxide (NO), total nitrogen oxides (NO_X) (the sum of NO and NO_2), and nitrogen dioxide (NO_2). The amount of NO is measured by detecting the chemiluminescence reaction that occurs in the reaction cell when NO molecules are exposed to ozone (O_3). The NO and O_3 molecules collide in the reaction cell and enter a higher energy state. When these excited molecules return to a stable energy state, they emit a photon of light which is proportional to the amount of NO in the sample stream of gas entering the analyzer. To determine the total NO_X ($NO+NO_2$) measurement, sample gas is periodically bypassed through a heated molybdenum converter cartridge that converts any NO_2 molecules in the sample stream into NO (any existing NO molecules in the stream remain as is). The instrument will switch the sample stream through the converter periodically and then through the reaction cell where the same chemiluminescence reaction occurs with ozone. The resultant response produced is now the sum of NO and converted NO_2 producing a NO_X measurement. The resultant NO_2 determination is the NO_X measurement subtracted from the NO measurement.

The NO_X analyzers were zero and span checked daily using the internal zero and span (IZS) system and calibrated once a month using either EPA protocol span gases and a dilution system or an ESA permeation tube calibrator. Automatic IZS checks were performed on a daily basis commencing at approximately 01:45 and ending at 02:15. The checks consisted of a 10-minute zero check, a 10-minute span check and a 10-minute purge. These checks provide a way to monitor daily performance of the analyzer using an external charcoal and purafil zeroing cartridge for the zero, and an internal permeation oven with a permeation tube for the span. These IZS checks are not for calibration purposes but are merely a diagnostic tool to identify instrument drift.

The instrument collects data using its own data acquisition system (DAS) on a 5-minute interval. Data is collected from the instrument directly to an EnviDAS logger at 1-min, 5-min and 60-min intervals. The logger can be accessed remotely, and all instrument parameters can be examined as well as the measurement data. This allows the tracking of instrument performance. Data was also collected at 1-minute intervals by an external datalogger using analog output connections as a back-up. The measurement data was averaged using Envista processing software over a 1-hour and 24-hour period to compare to the applicable ambient air quality criteria.

2.2 Sulphur Dioxide Analyzers

The Teledyne T100 Sulphur Dioxide (SO_2) Analyzer is a microprocessor-controlled analyzer that determines the concentration of SO_2 in a sample gas drawn through the instrument. In the sample chamber, sample gas is excited by ultraviolet light causing the SO_2 to absorb energy from the light and move to an active state (SO_2*). These active SO_2* molecules must decay into a stable state back to SO_2, and when this happens a photon of light is released which is recognized by the instrument as fluorescence. The instrument measures the amount of florescence to determine the amount of SO_2 present in the sample gas.

The SO_2 analyzers were zero and span checked daily using the IZS system and calibrated once a month using either EPA protocol span gases and a dilution system or an ESA permeation tube calibrator. Automatic IZS checks were performed on a daily basis commencing at approximately 1:45 and ending at 02:15. The checks consisted of a 10-minute zero check, a 10-minute span check and a 10-minute purge. These checks provide a way to monitor daily performance of the analyzer using an external charcoal and purafil zeroing cartridge for the zero, and an internal permeation oven with a permeation tube for the span. These IZS checks are not for calibration purposes but are merely a diagnostic tool to identify instrument drift.

The instrument collects data using its own data acquisition system (DAS) on a 5-minute interval. Data is collected from the instrument directly to an EnviDAS logger at 1-min, 5-min and 60-min intervals. The logger can be accessed remotely, and all instrument parameters can be examined as well as the measurement data. This allows the tracking of instrument performance. Data was also collected at 1-minute intervals by an external datalogger using analog output connections as a back-up. The measurement data was averaged using Envista processing software over a 1-hour and 24-hour period to compare to the applicable ambient air quality criteria.

2.3 SHARP 5030 $PM_{2.5}$ Analyzers

The SHARP 5030 is a hybrid nephelometric/radiometric particulate mass monitor capable of providing precise, real-time measurements with a superior detection limit. The SHARP incorporates a high sensitivity light scattering photometer whose output signal is continuously referenced to the time-averaged measurement of an integral beta attenuating mass sensor. The SHARP also incorporates a dynamic inlet heating system designed to maintain the relative humidity of the air passing through the filter tape constant.

The SHARP is calibrated once a month to ensure accuracy and validity of its data. The $PM_{2.5}$ inlet head and sharp cut cyclone is cleaned monthly as well to ensure proper performance. The monthly calibration process consists of the following: zeroing the nephelometer if necessary, calibration of ambient temperature, calibration of barometric pressure, and calibration of the flow.

The instrument collects data using its own data acquisition system (DAS) on a 5-minute interval. Data is collected from the instrument directly to an EnviDAS logger at 1-min, 5-min and 60-min intervals. The logger can be accessed remotely, and all instrument parameters can be examined as well as the measurement data. This allows the tracking of instrument performance. Data was also collected at 1-minute intervals by an external datalogger using analog output connections as a back-up. The measurement data was averaged using Envista processing software over a 1-hour and 24-hour period to compare to the applicable ambient air quality criteria.

2.4 TSP High Volume Air Samplers

The Tisch TE-5170 Total Suspended Particulate (TSP) high volume (Hi-Vol) air samplers were outfitted with a TSP gabled inlet capable of collecting particulate of all aerodynamic diameters. Each Hi-Vol is equipped with a mass flow controller, which ensures a flow rate of 40 cubic feet per minute (CFM), a chart recorder for measuring cfm flow throughout the run time, an elapsed timer and a wheel timer for starting and stopping each sample. In the latter part of 2019, the pin-based wheel timer was modified with an automated relay system controlled by a data logger to toggle the sampler on and off, and the chart recorder system was replaced by a digital pressure transducer to record the blower output pressure. Teflon coated glass fibre filters are outfitted at the top of the hi-vol samplers where air is drawn through the filter, thereby collecting TSP. Each Hi-Vol is calibrated quarterly (every three months) to ensure accuracy and validity of the volume of air drawn through the sampler.

The Teflon coated glass fibre filter media was pre and post weighed by ALS Laboratories in Burlington, Ontario. The filters are then analyzed for total particulate weight, metals analysis and mercury.

2.5 Polyurethane Foam Samplers

The D&F, and PAH samples were collected using Tisch TE-1000 samplers, which are listed as reference devices for U.S. EPA Methods TO-9 and TO-13. The samplers use a collection filter that is ‘backed-up’ by a polyurethane foam (PUF) plug. The airborne compounds present in the particulate phase are collected on the Teflon coated glass fibre filter and any compounds present in the vapour phase are absorbed in the PUF plug. Each PUF sampler is equipped with a mass flow controller, which can sustain 8 CFM of flow over the sampling period, an elapsed timer and a wheel timer for starting and stopping each sample. In the latter part of 2019, the pin-based wheel timer was modified with an automated relay system controlled by a data logger to toggle the sampler on and off, and the chart recorder system was replaced by a digital pressure transducer to record the blower output pressure. Each PUF sampler is calibrated quarterly (every three months) to ensure accuracy and validity of the volume of air drawn through the sampler.

The filter and PUF media/glassware is proofed and analyzed by ALS Laboratories in Burlington, Ontario. The filters and PUF/XAD plugs are then analyzed for PAH’s and D&F’s.

2.6 Meteorological Towers

Meteorological data was collected from the Rundle Road and Courtice Stations. This is done so that a vector could be associated with the applicable contaminant concentrations. The Rundle Road and Courtice Stations are outfitted with a Campbell Scientific HMP60 Temperature / Relative Humidity probe, and a Texas Instruments TE525M rain gauge. Meteorological data was collected at 1-minute intervals and was averaged using Envista processing software over a 1-hour period.

3 AIR QUALITY CRITERIA AND STANDARDS

The monitored contaminant concentrations were compared to air quality criteria and standards set by the MECP and by Environment Canada. The MECP developed Ambient Air Quality Criteria (AAQCs) which are the maximum desirable concentrations in the outdoor air, based on effects to the environment and health (MECP, 2012). Not all contaminants have an applicable regulatory limit; therefore, other criteria were used for comparison. These included human health risk assessment (HHRA) criteria.

Environment Canada has established a Canadian Ambient Air Quality Standard (CAAQS) which are health-based air quality objectives for the outdoor air (Environment Canada, 2013). The current CAAQS' for $PM_{2.5}$ are 27 µg/m^3 for the 3-year average of annual 98th percentile 24-hour concentration, and 8.8 µg/m^3 for the 3-year average of annual average concentrations (in effect as of 2020). The CAAQS' are listed in **Table 1**. No direct comparison to the 2020 CAAQS' is appropriate for this report, as the standards are only applicable to 3-year averaged data which is provided in the annual reports.

Table 1. $PM_{2.5}$, SO_2 and NO_2 CAAQS' by Implementation Year

Parameter	Averaging Time	Year Applied		Statistical Form
		2020	2025	
Fine Particulate Matter ($PM_{2.5}$)	24-hour	27 µg/m³		The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations
	Annual	8.8 µg/m³		The 3-year average of the annual average of all 1-hour concentrations
Sulphur Dioxide (SO_2)	1-hour	70 ppb	65 ppb	The 3-year average of the annual 99th percentile of the SO_2 daily maximum 1-hour average concentrations
	Annual	5 ppb	4 ppb	The average over a single calendar year of all 1-hour average SO_2 concentrations
Nitrogen Dioxide (NO_2)	1-hour	60 ppb	42 ppb	The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations
	Annual	17 ppb	12 ppb	The average over a single calendar year of all 1-hour average concentrations

(CCME,2019)

All applicable criteria and standards are shown in the 'Summary of Ambient Measurements' section of this report.

4 MECP AUDITS

On September 24, 2021, both stations were audited by Colman Wong of the Ontario MECP. All instruments passed their respective audit criteria. While on site, the alignment of the wind direction sensors came into question (magnetic north vs. true north). It has since been confirmed that the instruments were aligned to true north upon installation.

5 SUMMARY OF AMBIENT MEASUREMENTS

Ambient air quality monitoring results for all contaminants sampled at the Courtice and Rundle Road Stations are discussed herein. Summary statistics from July to September 2021 are presented in a summary format below and in a more detailed matrix format in **Appendix A** for continuous measurements and **Appendix B** for discrete measurements.

5.1 Meteorological Station Results

5.1.1 Courtice Station Results

The Courtice Station collected the following meteorological parameters: relative humidity, ambient temperature, ambient pressure and precipitation. The Courtice Station maintained a minimum 96% of data collection for all of the parameters measured during Q3. A new wind monitor was installed at the Courtice station on June 30th, 2021 and was used to collect wind data at the station beginning in Q3. The new meteorological tower at the station is at a height of approximately 10 meters tall. Hourly statistics from the meteorological station are presented in **Table 2**. A wind rose showing trends in wind speed and wind direction during Q3 is provided in **Figure 4**.

Figure 4. Wind Roses of Hourly Wind Speed and Wind Direction – July to September 2021

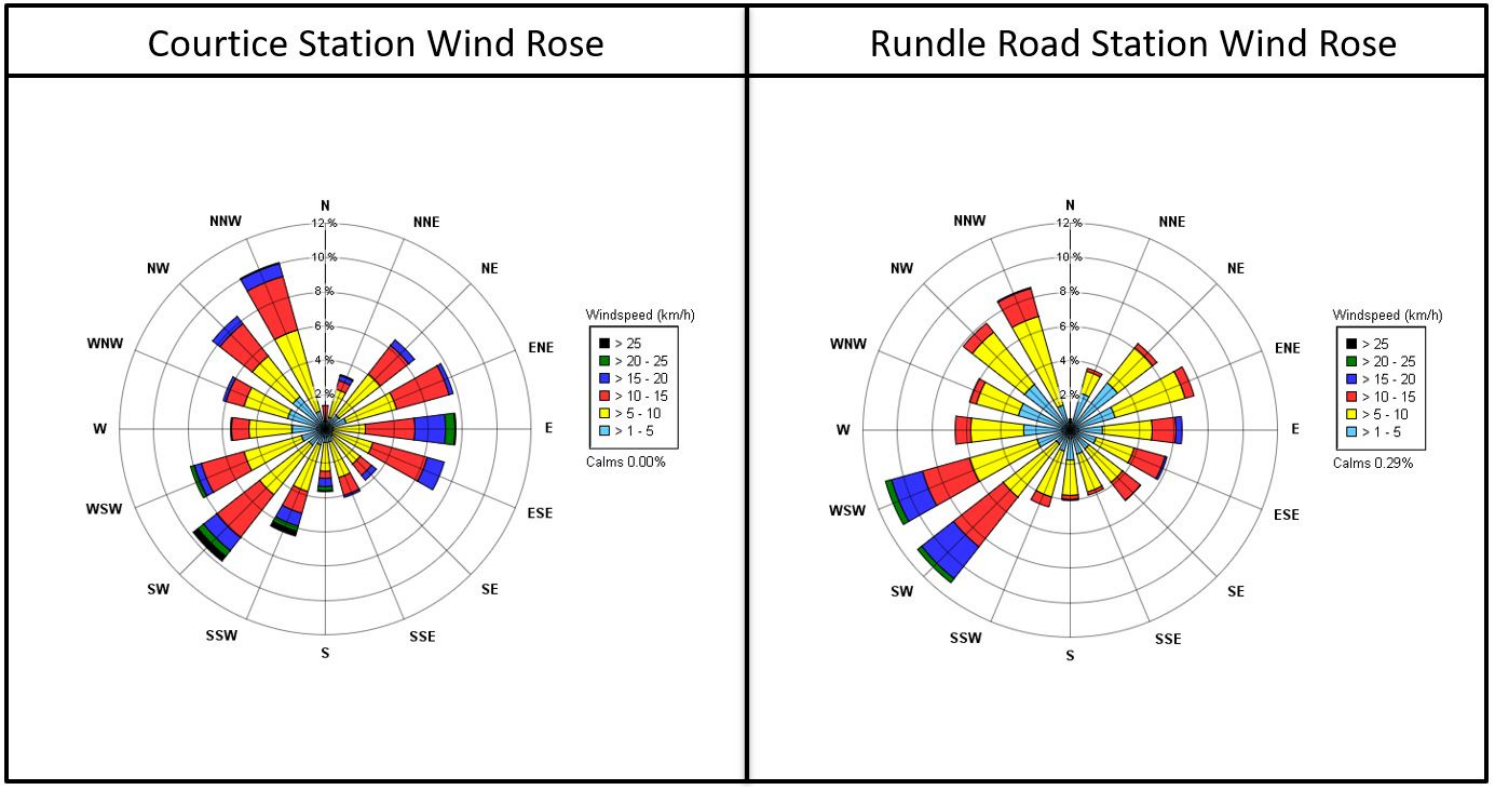


Table 2. Hourly Statistics from the Courtice Meteorological Station

Courtice Station MET Statistics	Maximum 1 hr Mean					Minimum 1 hr Mean					Monthly Mean					Total	% valid hours					
Parameter	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	Rain	WS	WD	Temp	RH	Pres	Rain
Units	(km/hr)	(°C)	(%)	"Hg	mm	(km/hr)	(°C)	(%)	"Hg	mm	(km/hr)	(°C)	(%)	"Hg	mm	mm	(%)					
July	24.2	30.6	99.2	29.9	18.1	0.6	11.7	35.0	29.4	0.0	9.0	20.1	79.3	29.7	0.2	138.0	100.0	96.1	100.0	100.0	100.0	100.0
August	22.6	29.8	100.0	30.0	9.0	0.1	12.9	37.7	29.5	0.0	8.5	22.5	79	29.7	0.1	53.5	100.0	95.8	100.0	100.0	100.0	100.0
September	32.8	25.6	99.5	30.0	13.1	0.3	8.5	34.0	29.3	0.0	10.3	17.4	74	29.7	0.3	209.7	100.0	97.1	100.0	100.0	100.0	100.0
Q3 Arithmetic Mean											9.3	20.0	78	29.7	0.2	401.2	100.0	96.3	100.0	100.0	100.0	100.0

5.1.2 Rundle Road Station Results

The Rundle Road Station collected the following meteorological parameters: wind speed, wind direction, relative humidity, ambient temperature and precipitation. The meteorological tower at the station is at a height of approximately 10 meters tall. The Rundle Road Station maintained a minimum 95% data collection for all of the meteorological parameters measured during Q3. Hourly statistics from the meteorological station is presented in **Table 3**. A wind rose showing trends in wind speed and wind direction during Q3 is provided in **Figure 4**.

Table 3. Hourly Statistics from the Rundle Road Meteorological Station

Rundle Road Station MET Statistics	Maximum 1 hr Mean				Minimum 1 hr Mean				Monthly Mean				Total	% Valid Hours				
Parameter	WS	Temp	RH	Rain	WS	Temp	RH	Rain	WS	Temp	RH	Rain	Rain	WS	WD	Temp	RH	Rain
Units	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	mm	(%)				
July	21.0	30.5	100.0	33.8	0.3	11.5	35.4	0.0	6.8	19.8	79.7	0.3	193.5	99.6	96.8	99.6	99.6	99.9
August	24.3	30.3	100.0	7.9	0.0	11.2	37.8	0.0	6.9	22.3	78.6	0.1	77.4	99.7	95.3	100.0	100.0	100.0
September	23.6	25.1	100.0	14.8	0.0	6.6	36.7	0.0	7.7	16.9	76.6	0.3	237.8	100.0	95.0	100.0	100.0	99.9
Q3 Arithmetic Mean									7.1	19.7	78.3	0.2	508.7	99.8	95.7	99.9	99.9	99.9

5.2 NO_X, SO_2 and $PM_{2.5}$ Summary Table Results

Table 4 provides a summary of Maximum 1-hour Rolling Means, Maximum 24-hour Rolling Means, Monthly Means, Quarterly Means and Percent valid data for the Courtice Station. **Table 5** provides a summary of Maximum 1-hour Means, Maximum 24-hour Means, Monthly Means, Quarterly Means and Percent valid data for the Rundle Road Station. **Table 6** provides a summary of exceedance statistics for both Courtice and Rundle Road Stations. At the Courtice Station, there were twelve (12) exceedance events of the rolling 10-minute SO_2 AAQC and four (4) exceedance events of the 1-hour SO_2 AAQC in Q3.

Table 4. Summary of Courtice Station Continuous Data Statistics

Courtice Monitoring Station Data Statistics	Maximum Rolling 10 min Mean	Maximum Rolling 1 hr Mean					Maximum 24 hr Rolling Mean					Monthly Mean					% Valid Hours				
Compound	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2
Units	ppb	(µg/m³)	ppb				(µg/m³)	ppb				(µg/m³)	ppb				(%)				
AAQC/CAAQS	67				200	40	27[A]			100											
July	54.6	67.1	38.8	37.2	25.3	20.5	43.3	10.8	2.1	8.9	5.5	8.9	3.6	0.6	3.3	1.4	99.7	99.5	99.5	99.5	99.6
August	66.7	38.3	46.0	33.8	27.8	38.8	14.5	11.9	4.8	8.8	5.1	8.2	5.3	1.0	4.3	1.1	99.7	99.5	99.5	99.5	99.6
September	152.4	17.9	36.6	23.0	28.0	71.7	7.0	11.1	3.3	8.6	10.4	3.1	4.6	1.1	3.6	2.5	99.7	99.3	99.3	99.3	99.4
Q3 Arithmetic Mean												6.8	4.5	0.9	3.7	1.7	99.7	99.4	99.4	99.4	99.5

[A] The 24-hour $PM_{2.5}$ CAAQS applies to the 98th percentile over 3 consecutive years.

Table 5. Summary of Rundle Road Station Continuous Data Statistics

Rundle Road Monitoring Station Data Statistics	Maximum Rolling 10 min Mean	Maximum Rolling 1 hr Mean					Maximum 24 hr Rolling Mean					Monthly Mean					% Valid Hours				
Compound	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2
Units	ppb	(µg/m³)	ppb				(µg/m³)	ppb				(µg/m³)	ppb				(%)				
AAQC/CAAQS	67				200	40	27[A]			100											
July	16.8	60.1	35.3	14.8	20.6	10.6	39.6	8.0	2.2	6.5	0.9	7.4	2.9	0.7	2.3	0.1	99.7	99.7	99.7	99.7	96.5
August	1.9	18.7	27.1	16.9	14.0	1.7	14.2	7.5	2.1	5.8	0.7	7.1	3.1	0.6	2.7	0.5	99.9	99.7	99.7	99.7	99.7
September	7.5	17.1	5.2	66.5	41.0	5.2	5.6	10.4	3.5	7.2	0.7	2.9	2.9	0.8	2.4	0.1	99.7	99.3	99.3	99.3	99.6
Q3 Arithmetic Mean												5.8	3.0	0.7	2.4	0.2	99.8	99.6	99.6	99.6	98.6

[A] The 24-hour $PM_{2.5}$ CAAQS applies to the 98th percentile over 3 consecutive years.

Table 6. Summary of Exceedance Statistics

Event Statistics	Rolling Mean > 10 min AAQC for Courtice	Rolling Mean > 10 min AAQC for Rundle Road	Mean > 1 hr AAQC for Courtice Monitoring Station			Mean > 1 hr AAQC for Rundle Road Monitoring Station			Rolling Mean > 24 hr AAQC for Courtice Monitoring Station			Rolling Mean > 24 hr AAQC for Rundle Road Monitoring Station		
Compound	SO_2	SO_2	$PM_{2.5}$	NO_2	SO_2	$PM_{2.5}$	NO_2	SO_2	$PM_{2.5}$	NO_2	SO_2	$PM_{2.5}$	NO_2	SO_2
Units	No.	No.	No.			No.			No.			No.		
July	0	0		0	0		0	0	N/A	0		N/A	0	
August	0	0		0	0		0	0	N/A	0		N/A	0	
September	12	0		0	4		0	0	N/A	0		N/A	0	
Q3 Total	12	0		0	4		0	0	N/A	0		N/A	0	

5.3 Oxides of Nitrogen Results

5.3.1 Courtice Station Results

Data recovery levels were high for oxides of nitrogen (99.4% valid data). Monitoring results were compared to the AAQC for NO_2 only, as it is the only parameter that has AAQC values for 1-hour and 24-hour averaging periods (there are no AAQC's for NO or NO_X). There were no exceedances above the AAQC values for the entirety of the sampling period for rolling 1-hour and 24-hour averaged data. The highest NO_2 value seen among the 1-hour rolling averages was 28.0 ppb, which is 14.0% of the AAQC. The highest NO_2 value seen among the rolling 24-hour averages was 8.9 ppb, which is 8.9% of the AAQC. The measurements are summarized in **Table 4** above. A pollution rose is presented in **Figure 5** for the Courtice Station during Q3 composed of hourly average NO_2 concentrations. A pollution rose indicates the percentage of time that the wind originates from a given direction coupled with the pollutant measurement for that time in either ppb or micrograms per meter cubed. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation.

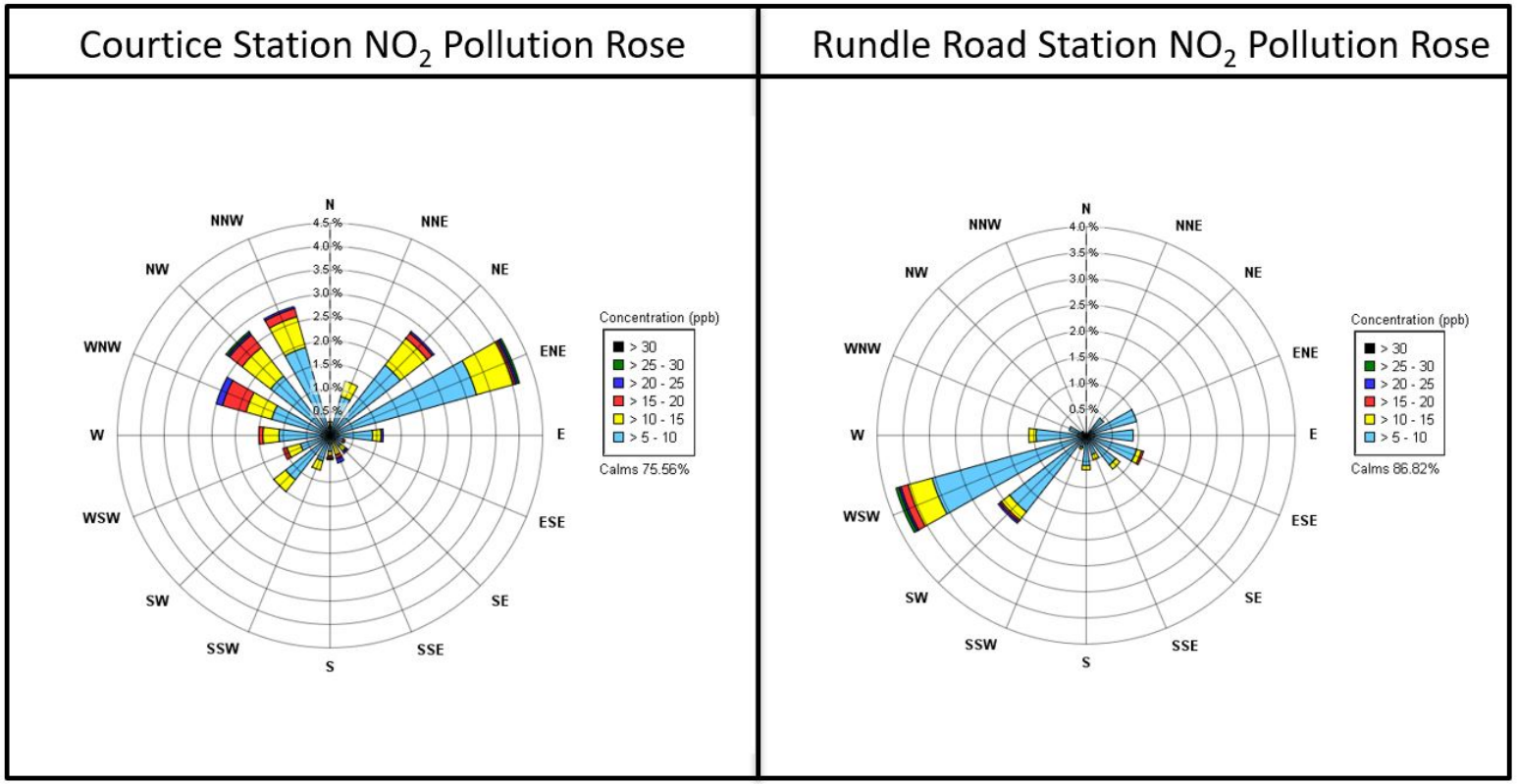
The Courtice Station pollution rose in **Figure 5** shows the majority of the NO_2 impacts were largely from the north from the northeast to east-northeast and west to north-northwest directions. The Station is downwind of the DYEC when winds are from the northeast and east-northeast directions, which happened frequently during the monitoring period, therefore it is likely that the DYEC partially contributed to the observed concentrations. There are additional impacts from the west to north-northwest which indicates reception from the surrounding industry along the lakeshore.

5.3.2 Rundle Road Station Results

Data recovery levels were high for oxides of nitrogen (99.6% valid data). There were no exceedances above the AAQC values for the entirety of the sampling period for rolling 1-hour and 24-hour averaged data. The highest NO_2 value seen among the 1-hour rolling averages was 41.0 ppb, which is 20.5% of the AAQC. The highest NO_2 value seen among the rolling 24-hour averages was 7.2 ppb, which is 7.2% of the AAQC. The measurements are summarized in **Table 5** above. A pollution rose is presented in **Figure 5** for the Rundle Road Station during Q3 composed of hourly average NO_2 concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation.

The Rundle Road Station pollution rose in **Figure 5** shows that the majority of elevated NO_2 events at the Rundle Road Station occurred when winds were from the southwest to west-southwest, which is downwind of the DYEC but also partially in line with high traffic areas and urban background. It is likely that the DYEC was a partial contributor to NO_2 levels observed at the station.

Figure 5. Pollution Roses of Hourly Average NO_2 Concentrations – July to September 2021



5.4 Sulphur Dioxide Results

5.4.1 Courtice Station Results

Data recovery levels were high for sulphur dioxide (99.5% valid data). Monitoring results were compared to the AAQC for 10-minute and 1-hour rolling average periods. In 2021, there have been more frequent SO_2 concentrations elevated above the AAQC's than in previous years due to the new limits imposed at the start of 2020. The highest SO_2 value seen among the 10-min rolling averages was 152.4 ppb, which is 227.5% of the AAQC. The highest SO_2 value seen among the 1-hour rolling averages was 71.7 ppb, which is 179.3% of the AAQC. There were twelve (12) exceedance events of the rolling 10-minute AAQC and four (4) exceedance events of the rolling 1-hour AAQC. A table outlining the interpretation of the exceedance period can be found in **Appendix E.**

The SO_2 statistical results are summarized in **Table 4** above. A pollution rose is presented in **Figure 6** for the Courtice Station during Q3 composed of hourly average SO_2 concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation. A pollution rose is presented in **Figure 7** for the Courtice Station during Q3 composed of 5-minute average SO_2 concentrations with levels below 67 ppb omitted to illustrate directionality of exceedance concentrations.

The Courtice Station pollution rose in **Figure 6** shows that the majority of elevated SO_2 events at Courtice occurred from the north-northeast to east directions. The events were possibly a result of emissions from industrial sources along the lakeshore with contributions from the DYEC in the east-northeast to east directions. The Courtice Station pollution rose in **Figure 7** shows that <0.01% of the 5-min SO_2 events are elevated >67 ppb occurred from the north-northwest to north-northeast directions. It is possible that the DYEC contributed to SO_2 concentrations >67 ppb from the east but the majority of the exceedance concentrations were measured coming from the north.

Durham Region staff have provided a Technical Memorandum summarizing the DYEC SO_2 continuous emissions monitoring system (CEMS) data during the exceedance events recorded at the Courtice and Rundle Road Ambient Monitoring Stations for Q3, which is included in **Appendix F**. The Memorandum indicates that based on the in-stack concentration levels measured by the CEMS, that there were no unusual levels in SO_2 emissions during the ambient Station exceedance events and that the facility's impact on ambient air quality would be expected to be quite low.

5.4.2 Rundle Road Station Results

Data recovery levels were high for sulphur dioxide (98.6% valid data). Monitoring results were compared to the AAQC for 10-minute and 1-hour rolling average periods. The highest SO_2 value seen among the 10-min rolling averages was 16.8 ppb, which is 25.1% of the AAQC. The highest SO_2 value seen among the 1-hour rolling averages was 10.6 ppb, which is 26.5% of the AAQC.

The SO_2 statistical results are summarized in **Table 5** above. A pollution rose is presented in **Figure 6** for the Rundle Road Station during Q3 composed of hourly average SO_2 concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 ppb were omitted from the graphic wind rose representation. A pollution rose is presented in **Figure 7** for the Rundle Road Station during Q3 composed of 5-minute average SO_2 concentrations with levels below 67 ppb omitted to illustrate directionality of exceedance concentrations.

The Rundle Road Station pollution rose in **Figure 6** shows that the majority of elevated SO_2 events at the Rundle Road Station occurred when winds were from the southeast. The pollution rose indicates that the DYEC was a not major contributor to SO_2 levels at the station and that the levels may be related to other industrial activity nearby. The Rundle Road Station pollution rose in **Figure 7** shows that no 5-min SO_2 events elevated >67 ppb occurred in Q3 of 2021.

Figure 6. Pollution Roses of Hourly Average SO_2 Concentrations – July to September 2021

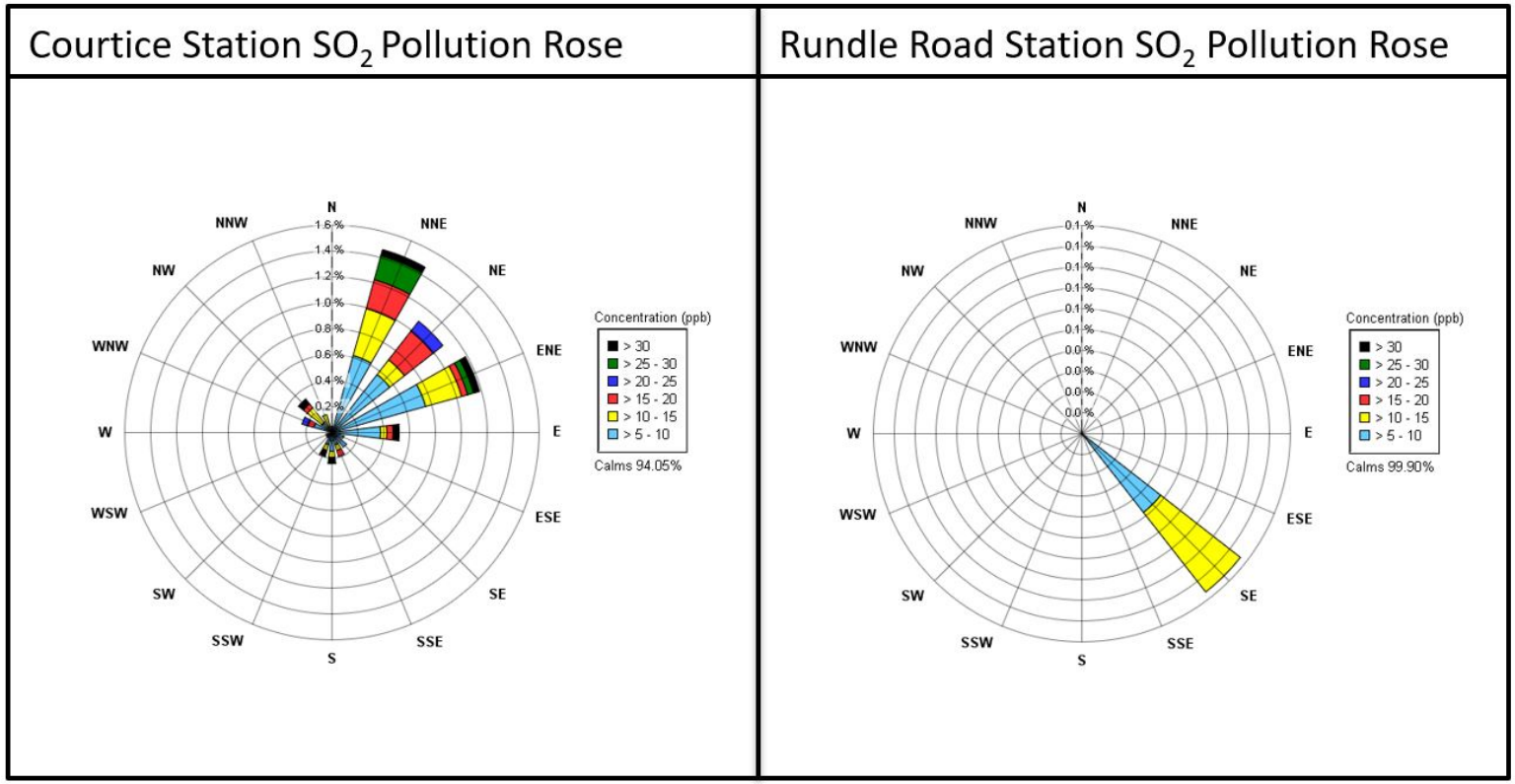
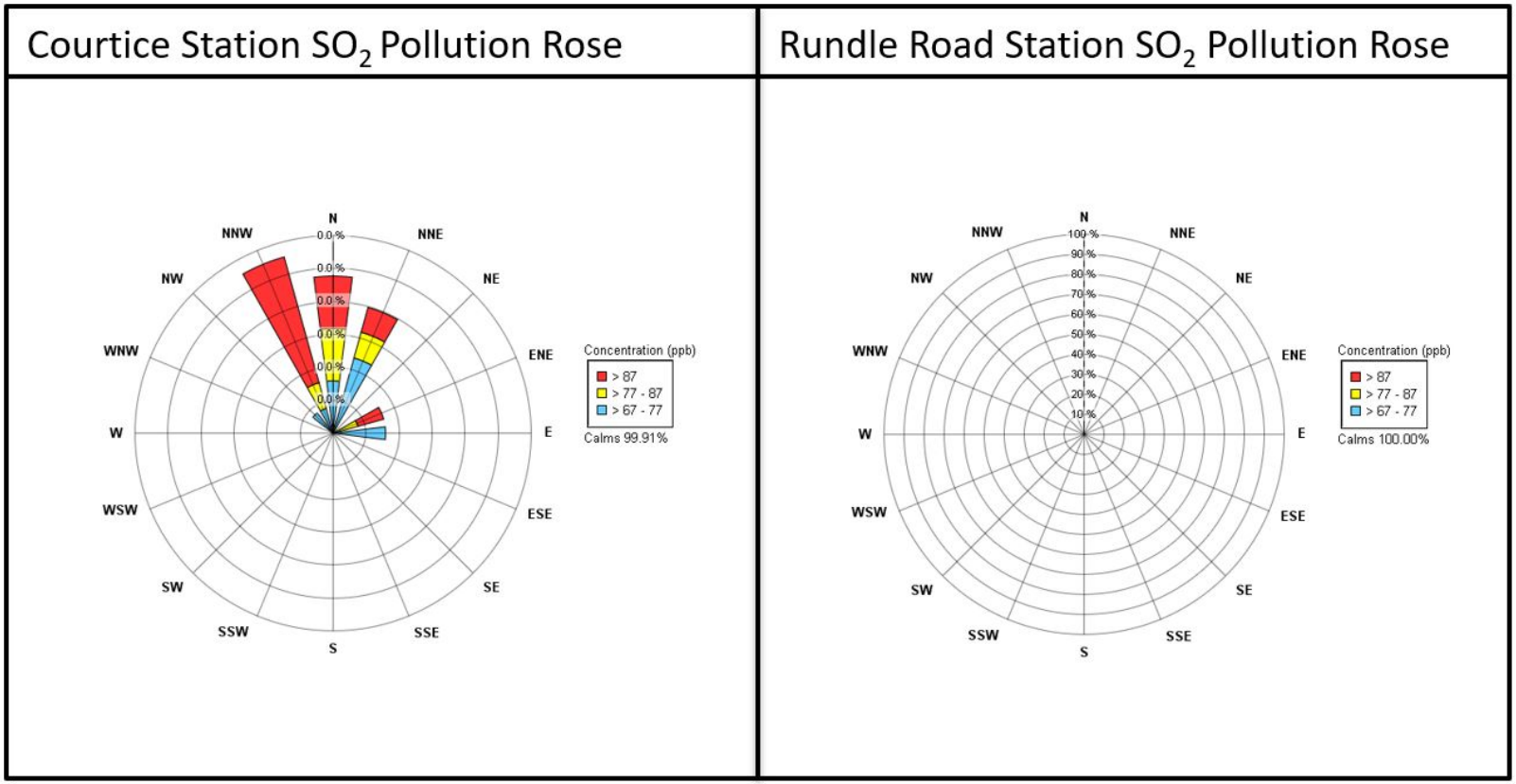


Figure 7. Pollution Roses of 5-minute Average SO_2 Concentrations >67 ppb – July to September 2021



5.5 Fine Particulate Matter (PM2.5) Results

5.5.1 Courtice Station Results

Data recovery levels were high for particulate matter less than 2.5 microns (99.7% valid data). There is no 1-hour AAQC or standard for $PM_{2.5}$, but there is a 24-hour CAAQS of 27 µg/m^3 for the 3-year average of the annual 98th percentile 24-hour concentrations, and 8.8 µg/m^3 for the 3-year average of the annual average concentrations (in effect as of 2020). Note that since the reported data is only quarterly and the CAAQS is applicable to the 3-year average, the CAAQS' for $PM_{2.5}$ was not applicable to the data. The highest $PM_{2.5}$ value seen among the 1-hour rolling averages was 67.1 µg/m^3 and the highest value seen among the 24-hour rolling averages was 43.3 µg/m^3. The results are summarized in **Table 4** above. A pollution rose is presented in **Figure 8** for the Courtice Station during Q3 composed of hourly average $PM_{2.5}$ concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 µg/m^3 were omitted from the graphic wind rose representation.

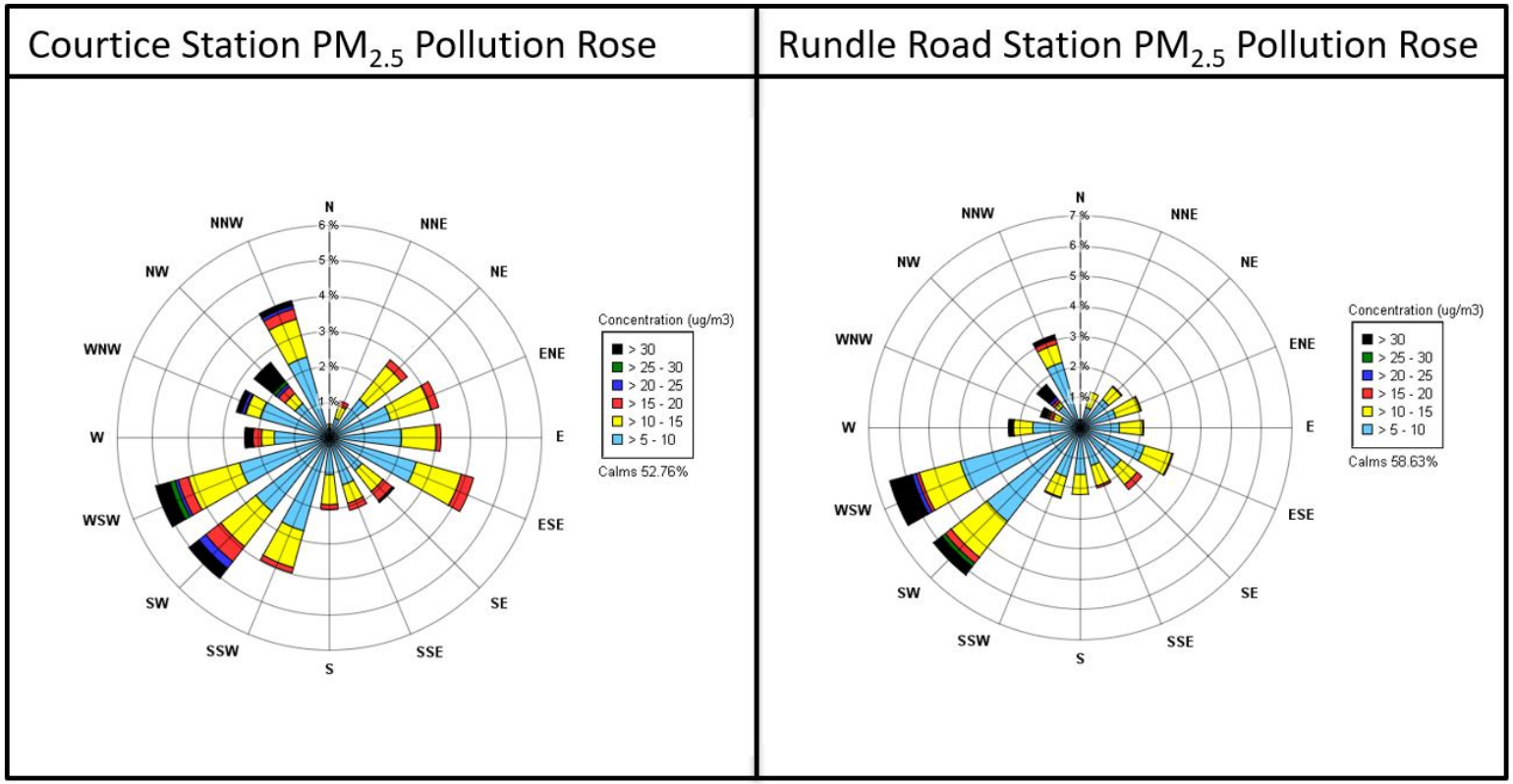
The Courtice Station pollution rose in **Figure 8** shows that the majority of elevated $PM_{2.5}$ events at Courtice were largely from the southwest to north-northwest. Elevated $PM_{2.5}$ measurements were likely related to urban background, roadway emissions and other nearby industrial sources.

5.5.2 Rundle Road Station Results

Data recovery levels were high for particulate matter less than 2.5 microns (99.8% valid data). The highest $PM_{2.5}$ value seen among the 1-hour rolling averages was 60.1 µg/m^3 and the highest value seen among the 24-hour rolling averages was 39.6 µg/m^3. The results are summarized in **Table 5** above. A pollution rose is presented in **Figure 8** for the Rundle Road Station during Q3 composed of hourly average $PM_{2.5}$ concentrations. In order to show where possible major sources of pollutants are coming from, levels below 5 µg/m^3 were omitted from the graphic wind rose representation.

The Rundle Road pollution rose in **Figure 8** shows that the majority of elevated $PM_{2.5}$ events at the Rundle Road Station occurred when winds were from the southwest to northwest, which places the station partially downwind of the DYEC during the sample period. Other contributions from the west and northwest are in line with high traffic areas and urban background.

Figure 8. Pollution Roses of Hourly Average $PM_{2.5}$ Concentrations – July to September 2021



5.6 TSP and Metals Hi-Vol Results

All of the TSP Hi-Vols operated on a discrete schedule every 6 days according to the NAPS schedule during Q3 with the sample days being: July 3, 9, 15, 21, 27, August 2, 8, 14, 20, 26 and September 1, 7, 13, 19 and 25, 2021.

5.6.1 Courtice Station Results

Data recovery levels were high for the TSP sampler at the Courtice Station (100% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for TSP, mercury or metals during Q3. **Table 7** is a summary of the statistics for this station.

Table 7. Summary of TSP Sampler Courtice Station

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	No. > Criteria	Geometric Mean	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
Particulate (TSP)	µg/m^3	*120*	*120*	0	20.92	22.15	13.43	40.78	35.76	40.78	20.35	15	100
Total Mercury (Hg)	µg/m^3	*2*	*2*	0	6.95E-06	9.42E-06	2.92E-06	2.83E-05	2.83E-05	2.24E-05	1.78E-05	15	100
Aluminum (Al)	µg/m^3	*4.8*	-	0	9.61E-02	1.12E-01	2.75E-02	2.25E-01	2.19E-01	2.25E-01	1.42E-01	15	100
Antimony (Sb)	µg/m^3	*25*	*25*	0	7.31E-04	7.97E-04	3.26E-04	1.39E-03	1.14E-03	1.39E-03	1.22E-03	15	100
Arsenic (As)	µg/m^3	*0.3*	*0.3*	0	9.06E-04	9.06E-04	8.75E-04	9.25E-04	9.15E-04	9.25E-04	9.09E-04	15	100
Barium (Ba)	µg/m^3	*10*	*10*	0	7.40E-03	8.34E-03	3.72E-03	1.98E-02	1.12E-02	1.98E-02	1.36E-02	15	100
Beryllium (Be)	µg/m^3	*0.01*	*0.01*	0	1.51E-05	1.51E-05	1.46E-05	1.54E-05	1.52E-05	1.54E-05	1.52E-05	15	100
Bismuth (Bi)	µg/m^3	-	-	-	5.43E-04	5.43E-04	5.25E-04	5.55E-04	5.49E-04	5.55E-04	5.45E-04	15	100
Boron (B)	µg/m^3	*120*	-	0	4.93E-03	5.32E-03	4.38E-03	1.64E-02	4.57E-03	4.63E-03	1.64E-02	15	100
Cadmium (Cd)	µg/m^3	*0.025*	*0.025*	0	1.03E-04	1.19E-04	4.43E-05	2.47E-04	2.38E-04	2.47E-04	1.92E-04	15	100
Chromium (Cr)	µg/m^3	*0.5*	-	0	1.32E-03	1.47E-03	9.92E-04	3.13E-03	3.13E-03	2.77E-03	1.03E-03	15	100
Cobalt (Co)	µg/m^3	*0.1*	*0.1*	0	1.01E-04	1.26E-04	3.31E-05	4.20E-04	1.44E-04	4.20E-04	1.71E-04	15	100
Copper (Cu)	µg/m^3	*50*	-	0	2.18E-02	2.34E-02	7.98E-03	3.82E-02	3.82E-02	3.27E-02	2.11E-02	15	100
Iron (Fe)	µg/m^3	*4*	-	0	3.03E-01	3.43E-01	1.49E-01	7.22E-01	5.04E-01	7.22E-01	3.37E-01	15	100
Lead (Pb)	µg/m^3	*0.5*	*0.5*	0	1.71E-03	1.94E-03	8.13E-04	3.54E-03	3.54E-03	3.23E-03	3.41E-03	15	100
Magnesium (Mg)	µg/m^3	-	-	-	1.59E-01	1.70E-01	8.65E-02	2.68E-01	2.33E-01	2.68E-01	2.13E-01	15	100
Manganese (Mn)	µg/m^3	*0.4*	-	0	7.32E-03	8.42E-03	3.23E-03	1.85E-02	1.43E-02	1.85E-02	9.18E-03	15	100
Molybdenum (Mo)	µg/m^3	*120*	-	0	1.20E-03	1.29E-03	3.78E-04	1.82E-03	1.82E-03	1.69E-03	1.18E-03	15	100
Nickel (Ni)	µg/m^3	*0.2*	-	0	8.50E-04	9.55E-04	4.51E-04	2.30E-03	1.41E-03	2.30E-03	8.48E-04	15	100
Phosphorus (P)	µg/m^3	-	-	-	2.26E-01	2.26E-01	2.19E-01	2.31E-01	2.29E-01	2.31E-01	2.27E-01	15	100
Selenium (Se)	µg/m^3	*10*	*10*	0	5.21E-04	6.00E-04	3.79E-04	1.40E-03	1.16E-03	1.40E-03	7.88E-04	15	100
Silver (Ag)	µg/m^3	*1*	*1*	0	3.44E-05	5.86E-05	2.63E-05	4.71E-04	2.74E-05	4.71E-04	2.73E-05	15	100
Strontium (Sr)	µg/m^3	*120*	-	0	4.43E-03	4.88E-03	2.00E-03	8.25E-03	6.02E-03	8.25E-03	8.18E-03	15	100
Thallium (Tl)	µg/m^3	-	-	-	2.72E-05	2.72E-05	2.63E-05	2.78E-05	2.74E-05	2.78E-05	2.73E-05	15	100
Tin (Sn)	µg/m^3	*10*	*10*	0	7.48E-04	8.18E-04	4.17E-04	1.41E-03	9.45E-04	1.41E-03	1.30E-03	15	100
Titanium (Ti)	µg/m^3	*120*	-	0	5.20E-03	6.29E-03	3.21E-03	1.48E-02	1.20E-02	1.48E-02	6.64E-03	15	100
Uranium (Ur)	µg/m^3	*1.5*	-	0	9.55E-06	1.08E-05	1.81E-06	2.15E-05	1.43E-05	2.15E-05	1.60E-05	15	100
Vanadium (V)	µg/m^3	*2*	*1*	0	1.51E-03	1.51E-03	1.46E-03	1.54E-03	1.52E-03	1.54E-03	1.52E-03	15	100
Zinc (Zn)	µg/m^3	*120*	-	0	3.18E-02	3.46E-02	1.47E-02	5.63E-02	5.63E-02	4.10E-02	5.35E-02	15	100
Zirconium (Zr)	µg/m^3	*20*	-	0	6.04E-04	6.04E-04	5.83E-04	6.17E-04	6.10E-04	6.17E-04	6.06E-04	15	100

Note: All non-detectable results were reported as 1/2 of the detection limit

5.6.2 Rundle Road Station Results

Data recovery levels were high for the TSP sampler at the Rundle Road Station (93% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for TSP, mercury or metals during Q3. **Table 8** is a summary of the Station statistics.

Table 8. Summary of TSP Sampler Rundle Road Station

Contaminant	Units	MECP Criteria	HHRA Health Based Criteria	No. > Criteria	Geometric Mean	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
Particulate (TSP)	µg/m³	*120*	*120*	0	21.1	22.7	11.6	38.7	32.2	38.7	26.5	14	93
Total Mercury (Hg)	µg/m³	*2*	*2*	0	7.59E-06	1.12E-05	2.91E-06	4.15E-05	4.15E-05	8.54E-06	7.58E-06	14	93
Aluminum (Al)	µg/m³	*4.8*	-	0	9.64E-02	1.15E-01	2.36E-02	2.12E-01	1.74E-01	2.12E-01	1.62E-01	14	93
Antimony (Sb)	µg/m³	*25*	*25*	0	5.19E-04	6.09E-04	2.02E-04	1.23E-03	8.16E-04	9.80E-04	1.23E-03	14	93
Arsenic (As)	µg/m³	*0.3*	*0.3*	0	9.44E-04	9.67E-04	8.72E-04	1.92E-03	9.07E-04	1.92E-03	8.92E-04	14	93
Barium (Ba)	µg/m³	*10*	*10*	0	6.21E-03	6.75E-03	3.67E-03	1.34E-02	8.90E-03	1.34E-02	9.85E-03	14	93
Beryllium (Be)	µg/m³	*0.01*	*0.01*	0	1.49E-05	1.49E-05	1.45E-05	1.55E-05	1.51E-05	1.55E-05	1.49E-05	14	93
Bismuth (Bi)	µg/m³	-	-	-	5.38E-04	5.38E-04	5.23E-04	5.57E-04	5.44E-04	5.57E-04	5.35E-04	14	93
Boron (B)	µg/m³	*120*	-	0	4.97E-03	5.50E-03	4.36E-03	1.87E-02	4.53E-03	4.64E-03	1.87E-02	14	93
Cadmium (Cd)	µg/m³	*0.025*	*0.025*	0	8.24E-05	9.81E-05	2.97E-05	2.57E-04	1.66E-04	1.47E-04	2.57E-04	14	93
Chromium (Cr)	µg/m³	*0.5*	-	0	1.37E-03	1.50E-03	9.88E-04	2.48E-03	2.48E-03	2.45E-03	2.38E-03	14	93
Cobalt (Co)	µg/m³	*0.1*	*0.1*	0	8.38E-05	9.30E-05	3.67E-05	1.96E-04	1.15E-04	1.96E-04	1.08E-04	14	93
Copper (Cu)	µg/m³	*50*	-	0	2.47E-02	3.94E-02	7.74E-03	2.55E-01	2.77E-02	2.55E-01	3.88E-02	14	93
Iron (Fe)	µg/m³	*4*	-	0	2.53E-01	3.02E-01	9.33E-02	6.56E-01	4.14E-01	6.56E-01	4.04E-01	14	93
Lead (Pb)	µg/m³	*0.5*	*0.5*	0	1.83E-03	2.05E-03	9.94E-04	4.41E-03	4.41E-03	3.67E-03	3.10E-03	14	93
Magnesium (Mg)	µg/m³	-	-	-	1.65E-01	1.80E-01	7.85E-02	3.01E-01	2.45E-01	3.01E-01	2.33E-01	14	93
Manganese (Mn)	µg/m³	*0.4*	-	0	6.75E-03	7.87E-03	2.59E-03	1.76E-02	1.21E-02	1.76E-02	9.38E-03	14	93
Molybdenum (Mo)	µg/m³	*120*	-	0	1.34E-03	2.97E-03	3.34E-04	2.65E-02	1.73E-03	2.65E-02	1.40E-03	14	93
Nickel (Ni)	µg/m³	*0.2*	-	0	6.74E-04	7.36E-04	3.84E-04	1.65E-03	9.92E-04	1.65E-03	1.01E-03	14	93
Phosphorus (P)	µg/m³	-	-	-	2.24E-01	2.24E-01	2.18E-01	2.32E-01	2.27E-01	2.32E-01	2.23E-01	14	93
Selenium (Se)	µg/m³	*10*	*10*	0	4.63E-04	5.29E-04	3.78E-04	1.61E-03	1.15E-03	1.61E-03	3.86E-04	14	93
Silver (Ag)	µg/m³	*1*	*1*	0	3.68E-05	6.92E-05	2.62E-05	5.29E-04	2.72E-05	5.29E-04	2.68E-05	14	93
Strontium (Sr)	µg/m³	*120*	-	0	5.05E-03	5.95E-03	9.15E-04	1.18E-02	6.09E-03	8.29E-03	1.18E-02	14	93
Thallium (Tl)	µg/m³	-	-	-	2.69E-05	2.69E-05	2.62E-05	2.78E-05	2.72E-05	2.78E-05	2.68E-05	14	93
Tin (Sn)	µg/m³	*10*	*10*	0	6.34E-04	7.15E-04	1.78E-04	1.14E-03	1.08E-03	1.14E-03	1.09E-03	14	93
Titanium (Ti)	µg/m³	*120*	-	0	5.21E-03	6.14E-03	3.20E-03	1.30E-02	1.02E-02	1.30E-02	8.32E-03	14	93
Uranium (Ur)	µg/m³	*1.5*	-	0	1.06E-05	1.21E-05	1.83E-06	2.00E-05	2.00E-05	1.89E-05	1.71E-05	14	93
Vanadium (V)	µg/m³	*2*	*1*	0	1.49E-03	1.49E-03	1.45E-03	1.55E-03	1.51E-03	1.55E-03	1.49E-03	14	93
Zinc (Zn)	µg/m³	*120*	-	0	3.75E-02	4.29E-02	1.37E-02	1.12E-01	1.12E-01	5.34E-02	6.30E-02	14	93
Zirconium (Zr)	µg/m³	*20*	-	0	5.98E-04	5.98E-04	5.81E-04	6.18E-04	6.05E-04	6.18E-04	5.95E-04	14	93

Note: All non-detectable results were reported as 1/2 of the detection limit

5.7 PAH Results

All of the PUF Hi-Vols operated on a discrete schedule every 12 days for PAH's according to the NAPS schedule during Q3 with the sample days being: July 9, 21, August 2, 14, 26 and September 7 and 19, 2021.

5.7.1 Courtice Station Results

Data recovery levels were high for the PAH results at the Courtice Station (86% valid data). There were no other exceedances of any of the AAQC's or HHRA Criteria. **Table 9** outlines the statistics summary for this station.

Table 9. Statistics Summary of PAH Results for Courtice Station

Contaminant	Units	MECP Criteria (µg/m³)	No. > Criteria	Arithmetic Mean	Minimum Q3 Concentration	Maximum Q3 Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m³	12000	0	1.31E+01	6.20E+00	2.08E+01	1.33E+01	2.08E+01	1.11E+01	6	86
2-Methylnaphthalene	ng/m³	10000	0	2.50E+01	1.07E+01	4.20E+01	2.90E+01	4.20E+01	2.01E+01	6	86
Acenaphthene	ng/m³	-	-	9.69E+00	5.61E+00	1.50E+01	1.50E+01	1.44E+01	1.00E+01	6	86
Acenaphthylene	ng/m³	3500	0	4.57E-01	1.46E-01	1.29E+00	5.83E-01	1.29E+00	3.24E-01	6	86
Anthracene	ng/m³	200	0	8.87E-01	6.13E-01	1.25E+00	1.25E+00	1.04E+00	9.88E-01	6	86
Benzo(a)Anthracene	ng/m³	-	-	1.44E-02	4.13E-03	2.18E-02	1.29E-02	2.18E-02	1.47E-02	6	86
Benzo(a)fluorene	ng/m³	-	-	5.69E-02	3.74E-02	8.04E-02	4.58E-02	8.04E-02	5.98E-02	6	86
Benzo(a)Pyrene (Historically High)	ng/m³	0.05	1	4.27E-02	3.41E-04	1.99E-01	1.99E-01	2.59E-02	2.27E-02	6	86
Benzo(b)Fluoranthene	ng/m³	-	-	2.67E-02	1.28E-02	3.65E-02	2.69E-02	3.65E-02	2.57E-02	6	86
Benzo(b)fluorene	ng/m³	-	-	3.45E-02	2.83E-02	5.56E-02	3.49E-02	5.56E-02	3.15E-02	6	86
Benzo(e)Pyrene	ng/m³	-	-	1.25E-02	3.41E-04	3.60E-02	4.03E-03	3.60E-02	2.05E-02	6	86
Benzo(g,h,i)Perylene	ng/m³	-	-	1.63E-02	3.23E-04	3.08E-02	8.56E-03	3.08E-02	2.25E-02	6	86
Benzo(k)Fluoranthene	ng/m³	-	-	1.95E-02	7.29E-03	3.67E-02	1.28E-02	3.67E-02	1.87E-02	6	86
Biphenyl	ng/m³	-	-	7.97E+00	3.41E+00	1.97E+01	7.74E+00	1.97E+01	5.27E+00	6	86
Chrysene	ng/m³	-	-	4.81E-02	2.69E-02	6.46E-02	3.63E-02	6.46E-02	5.51E-02	6	86
Dibenzo(a,h)Anthracene	ng/m³	-	-	5.04E-03	3.17E-04	1.66E-02	1.11E-02	1.66E-02	1.59E-03	6	86
Fluoranthene	ng/m³	-	-	1.79E+00	9.53E-01	2.25E+00	2.25E+00	2.16E+00	2.25E+00	6	86
Fluorene	ng/m³	-	-	6.49E+00	4.42E+00	9.42E+00	9.42E+00	9.42E+00	5.59E+00	6	86
Indeno(1,2,3-cd)Pyrene	ng/m³	-	-	1.46E-02	3.23E-04	3.28E-02	1.09E-02	3.28E-02	2.10E-02	6	86
Naphthalene	ng/m³	22500	0	4.97E+01	1.66E+01	6.83E+01	6.83E+01	6.62E+01	3.59E+01	6	86
o-Terphenyl	ng/m³	-	-	1.39E-02	9.00E-03	1.96E-02	1.31E-02	1.96E-02	1.46E-02	6	86
Perylene	ng/m³	-	-	8.09E-04	3.22E-04	2.31E-03	3.60E-04	3.41E-04	2.31E-03	6	86
Phenanthrene	ng/m³	-	-	1.20E+01	6.91E+00	1.63E+01	1.63E+01	1.40E+01	1.16E+01	6	86
Pyrene	ng/m³	-	-	8.07E-01	4.71E-01	1.05E+00	9.58E-01	9.25E-01	1.05E+00	6	86
Tetralin	ng/m³	-	-	3.03E+01	1.25E+00	8.00E+01	8.00E+01	2.64E+01	1.53E+00	6	86
Total PAH	ng/m³	-	-	1.59E+02	6.50E+01	2.33E+02	2.33E+02	2.05E+02	1.02E+02	6	86

Note: All non-detectable results were reported as 1/2 of the detection limit

5.7.2 Rundle Road Station Results

Data recovery levels were high for the PAH results at the Rundle Road Station (86% valid data). **Table 10** outlines the statistics summary for this station.

Table 10. Statistics Summary of PAH Results for Rundle Road Station

Contaminant	Units	MECP Criteria (µg/m³)	No. > Criteria	Arithmetic Mean	Minimum Q3 Concentration	Maximum Q3 Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m³	*12000*	0	6.71E+00	1.12E+00	1.44E+01	2.93E+00	1.12E+01	1.44E+01	6	86
2-Methylnaphthalene	ng/m³	*10000*	0	1.17E+01	1.72E+00	2.53E+01	4.97E+00	2.10E+01	2.53E+01	6	86
Acenaphthene	ng/m³	-	-	5.78E+00	2.80E-01	1.50E+01	2.06E+00	1.14E+01	1.50E+01	6	86
Acenaphthylene	ng/m³	*3500*	0	2.33E-01	3.50E-02	3.86E-01	2.38E-01	2.52E-01	3.86E-01	6	86
Anthracene	ng/m³	*200*	0	6.26E-01	2.78E-01	9.97E-01	5.45E-01	9.97E-01	8.39E-01	6	86
Benzo(a)Anthracene	ng/m³	-	-	1.33E-02	2.10E-03	2.71E-02	7.43E-03	2.71E-02	2.49E-02	6	86
Benzo(a)fluorene	ng/m³	-	-	4.84E-02	1.63E-02	1.10E-01	4.48E-02	1.10E-01	5.89E-02	6	86
Benzo(a)Pyrene (Historically High)	ng/m³	*0.05*	2	7.74E-02	3.28E-04	3.27E-01	3.27E-01	1.08E-01	2.30E-02	6	86
Benzo(b)Fluoranthene	ng/m³	-	-	2.90E-02	1.06E-02	3.93E-02	3.82E-02	3.93E-02	3.55E-02	6	86
Benzo(b)fluorene	ng/m³	-	-	3.13E-02	7.25E-03	8.62E-02	2.68E-02	8.62E-02	4.08E-02	6	86
Benzo(e)Pyrene	ng/m³	-	-	1.09E-02	3.28E-04	2.81E-02	3.66E-03	2.07E-02	2.81E-02	6	86
Benzo(g,h,i)Perylene	ng/m³	-	-	1.54E-02	3.24E-04	2.66E-02	7.19E-03	2.66E-02	2.16E-02	6	86
Benzo(k)Fluoranthene	ng/m³	-	-	2.90E-02	9.83E-03	7.12E-02	7.12E-02	3.13E-02	3.15E-02	6	86
Biphenyl	ng/m³	-	-	3.13E+00	1.29E+00	5.38E+00	1.44E+00	5.38E+00	5.22E+00	6	86
Chrysene	ng/m³	-	-	3.53E-02	2.00E-02	6.67E-02	3.61E-02	2.84E-02	6.67E-02	6	86
Dibenzo(a,h)Anthracene	ng/m³	-	-	4.07E-03	3.09E-04	1.83E-02	3.47E-04	1.83E-02	4.08E-03	6	86
Fluoranthene	ng/m³	-	-	1.38E+00	1.94E-01	3.31E+00	1.08E+00	3.31E+00	1.69E+00	6	86
Fluorene	ng/m³	-	-	3.98E+00	4.24E-01	9.28E+00	1.56E+00	9.28E+00	8.67E+00	6	86
Indeno(1,2,3-cd)Pyrene	ng/m³	-	-	1.26E-02	3.24E-04	2.37E-02	6.94E-03	2.17E-02	2.37E-02	6	86
Naphthalene	ng/m³	*22500*	0	3.11E+01	9.26E+00	6.74E+01	3.36E+01	2.56E+01	6.74E+01	6	86
o-Terphenyl	ng/m³	-	-	9.70E-03	3.09E-04	1.60E-02	1.14E-02	1.60E-02	1.20E-02	6	86
Perylene	ng/m³	-	-	8.50E-04	3.09E-04	2.06E-03	1.75E-03	3.28E-04	2.06E-03	6	86
Phenanthrene	ng/m³	-	-	7.26E+00	9.81E-01	1.62E+01	3.89E+00	1.62E+01	1.37E+01	6	86
Pyrene	ng/m³	-	-	6.24E-01	9.74E-02	1.42E+00	5.31E-01	1.42E+00	7.79E-01	6	86
Tetralin	ng/m³	-	-	2.97E+01	1.22E+00	9.45E+01	9.45E+01	1.57E+01	2.70E+00	6	86
Total PAH	ng/m³	-	-	1.03E+02	3.53E+01	1.56E+02	1.32E+02	1.22E+02	1.56E+02	6	86

Note: All non-detectable results were reported as 1/2 of the detection limit

5.8 Dioxin and Furan Results

All of the PUF Hi-Vols operated on a discrete schedule every 24 days for D&F's according to the NAPS schedule during Q3 with the sample days being: July 21, August 14 and September 7, 2021.

5.8.1 Courtice Station Results

Data recovery levels were low for the D&F results at the Courtice Station (67% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for any of the D&F's during Q3. **Table 11** is a summary of the statistics for this station.

Table 11. Courtice Station Q3 Monitoring Results for Dioxins and Furans

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	No. > Criteria	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
2,3,7,8-TCDD	pg/m^3	-	-	-	2.91E-03	1.00E-03	4.83E-03	1.00E-03		4.83E-03	2	67
1,2,3,7,8-PeCDD	pg/m^3	-	-	-	1.68E-03	1.03E-03	2.34E-03	1.03E-03		2.34E-03	2	67
1,2,3,4,7,8-HxCDD	pg/m^3	-	-	-	1.97E-04	1.13E-04	2.80E-04	1.13E-04		2.80E-04	2	67
1,2,3,6,7,8-HxCDD	pg/m^3	-	-	-	1.82E-04	9.84E-05	2.65E-04	9.84E-05		2.65E-04	2	67
1,2,3,7,8,9-HxCDD	pg/m^3	-	-	-	1.78E-04	1.06E-04	2.49E-04	1.06E-04		2.49E-04	2	67
1,2,3,4,6,7,8-HpCDD	pg/m^3	-	-	-	1.84E-04	1.57E-04	2.10E-04	1.57E-04		2.10E-04	2	67
OCDD	pg/m^3	-	-	-	2.87E-05	2.38E-05	3.36E-05	2.38E-05		3.36E-05	2	67
2,3,7,8-TCDF	pg/m^3	-	-	-	2.41E-04	1.08E-04	3.74E-04	1.08E-04		3.74E-04	2	67
1,2,3,7,8-PeCDF	pg/m^3	-	-	-	3.77E-05	1.94E-05	5.61E-05	1.94E-05		5.61E-05	2	67
2,3,4,7,8-PeCDF	pg/m^3	-	-	-	3.72E-04	1.84E-04	5.61E-04	1.84E-04	N/A[2]	5.61E-04	2	67
1,2,3,4,7,8-HxCDF	pg/m^3	-	-	-	3.41E-04	1.00E-04	5.83E-04	1.00E-04		5.83E-04	2	67
1,2,3,6,7,8-HxCDF	pg/m^3	-	-	-	1.33E-04	9.52E-05	1.71E-04	9.52E-05		1.71E-04	2	67
2,3,4,6,7,8-HxCDF	pg/m^3	-	-	-	1.38E-04	1.05E-04	1.71E-04	1.05E-04		1.71E-04	2	67
1,2,3,7,8,9-HxCDF	pg/m^3	-	-	-	1.65E-04	1.44E-04	1.87E-04	1.44E-04		1.87E-04	2	67
1,2,3,4,6,7,8-HpCDF	pg/m^3	-	-	-	4.63E-05	1.77E-05	7.48E-05	1.77E-05		7.48E-05	2	67
1,2,3,4,7,8,9-HpCDF	pg/m^3	-	-	-	3.09E-05	2.90E-05	3.27E-05	2.90E-05		3.27E-05	2	67
OCDF	pg/m^3	-	-	-	2.16E-06	1.79E-06	2.52E-06	1.79E-06		2.52E-06	2	67
Total Toxic Equivalency	pg TEQ/m^3	*0.1* *1*[1]	-	0	6.88E-03	3.33E-03	1.04E-02	3.33E-03		1.04E-02	2	67

Notes: All non-detectable results were reported as 1/2 of the detection limit
[1] O. Reg. 419/05 Schedule Upper Risk Thresholds
[2] No sample results available for August

5.8.2 Rundle Road Station Results

Data recovery levels were low for the D&F results at the Rundle Road Station (67% valid data). There were no exceedances of any of the AAQC's or HHRA Criteria for any of the D&F's during Q3. **Table 12** is a summary of the statistics for this station.

Table 12. Rundle Road Station Q3 Monitoring Results for Dioxins and Furans

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	No. > Criteria	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
2,3,7,8-TCDD	pg/m^3	-	-	-	5.09E-03	1.31E-03	8.86E-03	1.31E-03		8.86E-03	2	67
1,2,3,7,8-PeCDD	pg/m^3	-	-	-	4.18E-03	1.55E-03	6.80E-03	1.55E-03		6.80E-03	2	67
1,2,3,4,7,8-HxCDD	pg/m^3	-	-	-	3.58E-04	1.78E-04	5.38E-04	1.78E-04		5.38E-04	2	67
1,2,3,6,7,8-HxCDD	pg/m^3	-	-	-	3.28E-04	1.49E-04	5.06E-04	1.49E-04		5.06E-04	2	67
1,2,3,7,8,9-HxCDD	pg/m^3	-	-	-	3.25E-04	1.60E-04	4.91E-04	1.60E-04		4.91E-04	2	67
1,2,3,4,6,7,8-HpCDD	pg/m^3	-	-	-	7.24E-05	3.56E-05	1.09E-04	3.56E-05		1.09E-04	2	67
OCDD	pg/m^3	-	-	-	2.18E-05	9.71E-06	3.38E-05	9.71E-06		3.38E-05	2	67
2,3,7,8-TCDF	pg/m^3	-	-	-	3.77E-04	1.21E-04	6.33E-04	1.21E-04		6.33E-04	2	67
1,2,3,7,8-PeCDF	pg/m^3	-	-	-	8.54E-05	3.79E-05	1.33E-04	3.79E-05		1.33E-04	2	67
2,3,4,7,8-PeCDF	pg/m^3	-	-	-	8.20E-04	3.59E-04	1.28E-03	3.59E-04	N/A[2]	1.28E-03	2	67
1,2,3,4,7,8-HxCDF	pg/m^3	-	-	-	3.20E-04	1.18E-04	5.22E-04	1.18E-04		5.22E-04	2	67
1,2,3,6,7,8-HxCDF	pg/m^3	-	-	-	3.18E-04	1.13E-04	5.22E-04	1.13E-04		5.22E-04	2	67
2,3,4,6,7,8-HxCDF	pg/m^3	-	-	-	3.39E-04	1.25E-04	5.54E-04	1.25E-04		5.54E-04	2	67
1,2,3,7,8,9-HxCDF	pg/m^3	-	-	-	3.98E-04	1.78E-04	6.17E-04	1.78E-04		6.17E-04	2	67
1,2,3,4,6,7,8-HpCDF	pg/m^3	-	-	-	4.59E-05	1.42E-05	7.75E-05	1.42E-05		7.75E-05	2	67
1,2,3,4,7,8,9-HpCDF	pg/m^3	-	-	-	4.30E-05	2.27E-05	6.33E-05	2.27E-05		6.33E-05	2	67
OCDF	pg/m^3	-	-	-	3.53E-06	1.84E-06	5.22E-06	1.84E-06		5.22E-06	2	67
Total Toxic Equivalency	pg TEQ/m^3	*0.1* *1*[1]	-	0	1.31E-02	4.49E-03	2.18E-02	4.49E-03		2.18E-02	2	67

Notes: All non-detectable results were reported as 1/2 of the detection limit
[1] O. Reg. 419/05 Schedule Upper Risk Thresholds
[2] No sample results available for August

6 DATA REQUESTS

The following sections outline any instrumentation issues encountered that have caused data loss at any of the monitors at each of the stations.

Appendix C contains monthly IZS zero trends for the NO_X and SO_2 analyzers at the Courtice and Rundle Road Stations.

Edit logs identifying missing data, maintenance times, calibrations and any other missing data have been included in **Appendix D**.

6.1 Continuous Monitoring

On July 31st, 2021 a power failure invalidated an hour of continuous data at the Courtice station from 12:00 to 13:00.

On August 20th, 2021 a power failure invalidated an hour of NOx data at the Courtice station from 14:00 to 15:00.

On August 25th, 2021 a power failure invalidated an hour of NOx and SO_2 data at the Courtice station from 8:00 to 9:00.

On September 24th, 2021 the MECP audited both DYEC ambient monitoring stations resulting in one to two hours of data invalidated for each analyzer at varying times throughout the day.

6.2 Discrete Monitoring

The August 26th, 2021 TSP sample from the Rundle Road station did not run in full due to a power failure.

The September 19th, 2021 samples at both stations for PAH's, Dioxins and Furans were invalidated due to an error during sample preparation at the laboratory. An explanatory letter from the laboratory has been attached in **Appendix G**.

7 CONCLUSIONS

This Q3 report provides a summary of the ambient air quality data collected at the Courtice and Rundle Road Stations. There were twelve (12) exceedance events of the rolling 10-minute SO_2 AAQC and four (4) exceedance events of the 1-hour SO_2 AAQC at the Courtice Station. Data recovery rates were acceptable and valid for all measured Q3 continuous parameters and all discrete parameters except for Dioxins and Furans.

8 REFERENCES

1. Canadian Council of Ministers of the Environment (CCME), 2012. Guidance Document on Achievement Determination Canadian Ambient Air Quality Standards for Fine Particulate Matter and Ozone. PN 1483 978-1-896997-91-9 PDF

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APPENDIX A

Table A1: 2021 Summary Statistics for Q3

Courtice Monitoring Station Data Statistics	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean					Maximum 24 hr Rolling Mean					Monthly Mean					Valid Data				
Compound	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2
Units	ppb	($\mu g/m^3$)	ppb				($\mu g/m^3$)	ppb				($\mu g/m^3$)	ppb				(%)				
AAQC/CAAQS	67				200	40	27[A]			100											
July	54.6	67.1	38.8	37.2	25.3	20.5	43.3	10.8	2.1	8.9	5.5	8.9	3.6	0.6	3.3	1.4	99.7	99.5	99.5	99.5	99.6
August	66.7	38.3	46.0	33.8	27.8	38.8	14.5	11.9	4.8	8.8	5.1	8.2	5.3	1.0	4.3	1.1	99.7	99.5	99.5	99.5	99.6
September	152.4	17.9	36.6	23.0	28.0	71.7	7.0	11.1	3.3	8.6	10.4	3.1	4.6	1.1	3.6	2.5	99.7	99.3	99.3	99.3	99.4
Q3 Arithmetic Mean												6.8	4.5	0.9	3.7	1.7	99.7	99.4	99.4	99.4	99.5

Rundle Monitoring Station Data Statistics	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean					Maximum 24 hr Rolling Mean					Monthly Mean					Valid Data				
Compound	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2	$PM_{2.5}$	NO_x	NO	NO_2	SO_2
Units	ppb	($\mu g/m^3$)	ppb				($\mu g/m^3$)	ppb				($\mu g/m^3$)	ppb				(%)				
AAQC/CAAQS	67				200	40	27[A]			100											
July	16.8	60.1	35.3	14.8	20.6	10.6	39.6	8.0	2.2	6.5	0.9	7.4	2.9	0.7	2.3	0.1	99.7	99.7	99.7	99.7	96.5
August	1.9	18.7	27.1	16.9	14.0	1.7	14.2	7.5	2.1	5.8	0.7	7.1	3.1	0.6	2.7	0.5	99.9	99.7	99.7	99.7	99.7
September	7.5	17.1	5.2	66.5	41.0	5.2	5.6	10.4	3.5	7.2	0.7	2.9	2.9	0.8	2.4	0.1	99.7	99.3	99.3	99.3	99.6
Q3 Arithmetic Mean												5.8	3.0	0.7	2.4	0.2	99.8	99.6	99.6	99.6	98.6

Event Statistics	Rolling Mean > 10 min AAQC for Courtice	Rolling Mean > 10 min AAQC for Rundle	Rolling Mean > 1 hr AAQC for Courtice			Rolling Mean > 1 hr AAQC for Rundle			Rolling Mean > 24 hr AAQC for Courtice Monitoring Station			Rolling Mean > 24 hr AAQC for Rundle Monitoring Station		
Compound	SO_2	SO_2	$PM_{2.5}$	NO_2	SO_2	$PM_{2.5}$	NO_2	SO_2	$PM_{2.5}$	NO_2	SO_2	$PM_{2.5}$	NO_2	SO_2
Units	No.	No.	No.			No.			No.			No.		
July	0	0		0	0		0	0	N/A	0		N/A	0	
August	0	0		0	0		0	0	N/A	0		N/A	0	
September	12	0		0	4		0	0	N/A	0		N/A	0	
Q3 Arithmetic Mean	12	0		0	4		0	0	N/A	0		N/A	0	

Courtice Station MET Statistics	Maximum 1 hr Mean					Minimum 1 hr Mean					Monthly Mean					Total	Valid Data					
Parameter	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	WS	Temp	RH	Pres	Rain	Rain	WS	WD	Temp	RH	Pres	Rain
Units	(km/hr)	(°C)	(%)	"Hg	mm	(km/hr)	(°C)	(%)	"Hg	mm	(km/hr)	(°C)	(%)	"Hg	mm	mm	(%)					
July	24.2	30.6	99.2	29.9	18.1	0.6	11.7	35.0	29.4	0.0	9.0	20.1	79.3	29.7	0.2	138.0	100.0	96.1	100.0	100.0	100.0	100.0
August	22.6	29.8	100.0	30.0	9.0	0.1	12.9	37.7	29.5	0.0	8.5	22.5	79	29.7	0.1	53.5	100.0	95.8	100.0	100.0	100.0	100.0
September	32.8	25.6	99.5	30.0	13.1	0.3	8.5	34.0	29.3	0.0	10.3	17.4	74	29.7	0.3	209.7	100.0	97.1	100.0	100.0	100.0	100.0
Q3 Arithmetic Mean											9.3	20.0	78	29.7	0.2	401.2	100.0	96.3	100.0	100.0	100.0	100.0

Rundle Station MET Statistics	Maximum 1 hr Mean				Minimum 1 hr Mean				Monthly Mean				Total	Valid Data				
Parameter	WS	Temp	RH	Rain	WS	Temp	RH	Rain	WS	Temp	RH	Rain	Rain	WS	WD	Temp	RH	Rain
Units	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	(km/hr)	(°C)	(%)	mm	mm	(%)				
July	21.0	30.5	100.0	33.8	0.3	11.5	35.4	0.0	6.8	19.8	79.7	0.3	193.5	99.6	96.8	99.6	99.6	99.9
August	24.3	30.3	100.0	7.9	0.0	11.2	37.8	0.0	6.9	22.3	78.6	0.1	77.4	99.7	95.3	100.0	100.0	100.0
September	23.6	25.1	100.0	14.8	0.0	6.6	36.7	0.0	7.7	16.9	76.6	0.3	237.8	100.0	95.0	100.0	100.0	99.9
Q3 Arithmetic Mean									7.1	19.7	78.3	0.2	508.7	99.8	95.7	99.9	99.9	99.9

Table A2: 2021 Q3 Station Courtice Monitoring Results for PM2.5

Data Statistics	Rolling Mean > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$
	No.	(ug/m^3)	(ug/m^3)	(ug/m^3)	No.	%
July	N/A	8.9	67.1	43.3	742	99.7
August	N/A	8.2	38.3	14.5	742	99.7
September	N/A	3.1	17.9	7.0	718	99.7

Table A3: 2021 Q3 Station Rundle Monitoring Results for PM2.5

Data Statistics	Rolling Mean > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$
	No.	(ug/m^3)	(ug/m^3)	(ug/m^3)	No.	%
July	N/A	7.4	60.1	39.6	742	99.7
August	N/A	7.1	18.7	14.2	743	99.9
September	N/A	2.9	17.1	5.6	718	99.7

Table A4: 2021 Q3 Station Courtice Monitoring Results for NOx

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
July	N/A	N/A	3.6	38.8	10.8	740	99.5
August	N/A	N/A	5.3	46.0	11.9	740	99.5
September	N/A	N/A	4.6	36.6	11.1	715	99.3

Table A5: 2021 Q3 Station Rundle Monitoring Results for NOx

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
July	N/A	N/A	2.9	35.3	8.0	742	99.7
August	N/A	N/A	3.1	27.1	7.5	742	99.7
September	N/A	N/A	2.9	5.2	10.4	715	99.3

Table A6: 2021 Q3 Station Courtice Monitoring Results for NO

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	NO	NO	NO	NO	NO	NO	NO
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
July	N/A	N/A	0.6	37.2	2.1	740	99.5
August	N/A	N/A	1.0	33.8	4.8	740	99.5
September	N/A	N/A	1.1	23.0	3.3	715	99.3

Table A7: 2021 Q3 Station Rundle Monitoring Results for NO

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	NO	NO	NO	NO	NO	NO	NO
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
July	N/A	N/A	0.7	14.8	2.2	742	99.7
August	N/A	N/A	0.6	16.9	2.1	742	99.7
September	N/A	N/A	0.8	66.5	3.5	715	99.3

Table A8: 2021 Q3 Station Courtice Monitoring Results for NO2

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
July	0	0	3.3	25.3	8.9	740	99.5
August	0	0	4.3	27.8	8.8	740	99.5
September	0	0	3.6	28.0	8.6	715	99.3

Table A9: 2021 Q3 Station Rundle Monitoring Results for NO2

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Arithmetic Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
July	0	0	2.3	20.6	6.5	742	99.7
August	0	0	2.7	14.0	5.8	742	99.7
September	0	0	2.4	41.0	7.2	715	99.3

Table A10: 2021 Q3 Station Courtice Monitoring Results for SO2

Data Statistics	Events > 10 min AAQC	Events > 1 hr AAQC	Arithmetic Mean	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2
	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
July	0	0	1.4	54.6	20.5	5.5	741	99.6
August	0	0	1.1	66.7	38.8	5.1	741	99.6
September	12	4	2.5	152.4	71.7	10.4	716	99.4

Table A11: 2021 Q3 Station Rundle Monitoring Results for SO2

Data Statistics	Events > 10 min AAQC	Events > 1 hr AAQC	Arithmetic Mean	Maximum 10 min Rolling Mean	Maximum 1 hr Rolling Mean	Maximum 24 hr Rolling Mean	Number of Valid Hours	Valid Data
Month	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2
	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
July	0	0	0.1	16.8	10.6	0.9	718	96.5
August	0	0	0.5	1.9	1.7	0.7	742	99.7
September	0	0	0.1	7.5	5.2	0.7	717	99.6

Table A12: 2021 Q3 Courtice Meterological Station Windspeed Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Data
Month	Wind Speed	Wind Speed	Wind Speed	Wind Speed
	(km/hr)	(km/hr)	(km/hr)	(%)
July	24.2	0.6	9.0	100.0
August	22.6	0.1	8.5	100.0
September	32.8	0.3	10.3	100.0

Table A13: 2021 Q3 Rundle Meterological Station Windspeed Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Hours
Month	Wind Speed	Wind Speed	Wind Speed	Wind Speed
	(km/hr)	(km/hr)	(km/hr)	(%)
July	21.0	0.3	6.8	99.6
August	24.3	0.0	6.9	99.7
September	23.6	0.0	7.7	100.0

Table A14: 2021 Q3 Courtice Meterological Station Wind Direction Data Summary

MET Statistics	Valid Data
Month	Wind Direction
	(%)
July	96.1
August	95.8
September	97.1

Table A15: 2021 Q3 Rundle Meterological Station Wind Direction Data Summary

MET Statistics	Valid Data
Month	Wind Direction
	(%)
July	96.8
August	95.3
September	95.0

Table A16: 2021 Q3 Courtice Meterological Station Temperature Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Data
Month	Temperature	Temperature	Temperature	Temperature
	(°C)	(°C)	(°C)	(%)
July	30.6	11.7	20.1	100.0
August	29.8	12.9	22.5	100.0
September	25.6	8.5	17.4	100.0

Table A17: 2021 Q3 Rundle Meterological Station Temperature Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Data
Month	Temperature	Temperature	Temperature	Temperature
	(°C)	(°C)	(°C)	(%)
July	30.5	11.5	19.8	99.6
August	30.3	11.2	22.3	100.0
September	25.1	6.6	16.9	100.0

Table A18: 2021 Q3 Courtice Meterological Station Relative Humidity Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Data
Month	Relative Humidity	Relative Humidity	Relative Humidity	Relative Humidity
	(%)	(%)	(%)	(%)
July	99.2	35.0	79.3	100.0
August	100.0	37.7	79.3	100.0
September	99.5	34.0	74.3	100.0

Table A19: 2021 Q3 Rundle Meterological Station Relative Humidity Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Data
Month	Relative Humidity	Relative Humidity	Relative Humidity	Relative Humidity
	(%)	(%)	(%)	(%)
July	100.0	35.4	79.7	99.6
August	100.0	37.8	78.6	100.0
September	100.0	36.7	76.6	100.0

Table A20: 2021 Q3 Courtice Meterological Station Precipitation Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Total	Valid Data
Month	Precipitation	Precipitation	Precipitation	Precipitation	Precipitation
	(mm)	(mm)	(mm)	(mm)	(mm)
July	18.1	0.0	0.2	138.0	100.0
August	9.0	0.0	0.1	53.5	100.0
September	13.1	0.0	0.3	209.7	100.0

Table A21: 2021 Q3 Rundle Meterological Station Precipitation Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Total	Valid Data
Month	Precipitation	Precipitation	Precipitation	Precipitation	Precipitation
	(mm)	(mm)	(mm)	(mm)	(mm)
July	33.8	0.0	0.3	193.5	99.9
August	7.9	0.0	0.1	77.4	100.0
September	14.8	0.0	0.3	237.8	99.9

Table A22: 2021 Q3 Courtice Meterological Station Pressure Data Summary

MET Statistics	Maximum 1 hr Mean	Minimum 1 hr	Monthly Mean	Valid Data
Month	Pressure	Pressure	Pressure	Pressure
	("Hg)	("Hg)	("Hg)	(%)
July	29.9	29.4	29.7	100.0
August	30.0	29.5	29.7	100.0
September	30.0	29.3	29.7	100.0

APPENDIX B

Table B1: Summary of Sample Flow Rate and Sample Duration for Dioxins & Furans

Sample Date	Courtice			Rundle		
	Filter ID	Sample Duration	Sample Volume	Filter ID	Sample Duration	Sample Volume
	No.	(min)	(m^3)	No.	(min)	(m^3)
July 21, 2021	L2618880-2	1440	278	L2618880-1	1440	288
August 14, 2021	Invalid Sample			Invalid Sample		
September 7, 2021	L2638743-2	1440	321	L2638743-1	1440	316

Table B2: 2021 Courtice Station Q3 Monitoring Results for Dioxins & Furans

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	21 Jul 21	14 Aug-21	7 Sep 21	MECP Criteria (µg/m^3)	No. > Criteria	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
2,3,7,8-TCDD	pg/m^3	-	-	1.00E-03	Invalid Sample	4.83E-03	-	-	2.91E-03	1.00E-03	4.83E-03	1.00E-03	0.00E+00	4.83E-03	2	67
1,2,3,7,8-PeCDD	pg/m^3	-	-	1.03E-03		2.34E-03	-	-	1.68E-03	1.03E-03	2.34E-03	1.03E-03	0.00E+00	2.34E-03	2	67
1,2,3,4,7,8-HxCDD	pg/m^3	-	-	1.13E-04		2.80E-04	-	-	1.97E-04	1.13E-04	2.80E-04	1.13E-04	0.00E+00	2.80E-04	2	67
1,2,3,6,7,8-HxCDD	pg/m^3	-	-	9.84E-05		2.65E-04	-	-	1.82E-04	9.84E-05	2.65E-04	9.84E-05	0.00E+00	2.65E-04	2	67
1,2,3,7,8,9-HxCDD	pg/m^3	-	-	1.06E-04		2.49E-04	-	-	1.78E-04	1.06E-04	2.49E-04	1.06E-04	0.00E+00	2.49E-04	2	67
1,2,3,4,6,7,8-HpCDD	pg/m^3	-	-	1.57E-04		2.10E-04	-	-	1.84E-04	1.57E-04	2.10E-04	1.57E-04	0.00E+00	2.10E-04	2	67
OCDD	pg/m^3	-	-	2.38E-05		3.36E-05	-	-	2.87E-05	2.38E-05	3.36E-05	2.38E-05	0.00E+00	3.36E-05	2	67
2,3,7,8-TCDF	pg/m^3	-	-	1.08E-04		3.74E-04	-	-	2.41E-04	1.08E-04	3.74E-04	1.08E-04	0.00E+00	3.74E-04	2	67
1,2,3,7,8-PeCDF	pg/m^3	-	-	1.94E-05		5.61E-05	-	-	3.77E-05	1.94E-05	5.61E-05	1.94E-05	0.00E+00	5.61E-05	2	67
2,3,4,7,8-PeCDF	pg/m^3	-	-	1.84E-04		5.61E-04	-	-	3.72E-04	1.84E-04	5.61E-04	1.84E-04	0.00E+00	5.61E-04	2	67
1,2,3,4,7,8-HxCDF	pg/m^3	-	-	1.00E-04		5.83E-04	-	-	3.41E-04	1.00E-04	5.83E-04	1.00E-04	0.00E+00	5.83E-04	2	67
1,2,3,6,7,8-HxCDF	pg/m^3	-	-	9.52E-05		1.71E-04	-	-	1.33E-04	9.52E-05	1.71E-04	9.52E-05	0.00E+00	1.71E-04	2	67
2,3,4,6,7,8-HxCDF	pg/m^3	-	-	1.05E-04		1.71E-04	-	-	1.38E-04	1.05E-04	1.71E-04	1.05E-04	0.00E+00	1.71E-04	2	67
1,2,3,7,8,9-HxCDF	pg/m^3	-	-	1.44E-04		1.87E-04	-	-	1.65E-04	1.44E-04	1.87E-04	1.44E-04	0.00E+00	1.87E-04	2	67
1,2,3,4,6,7,8-HpCDF	pg/m^3	-	-	1.77E-05		7.48E-05	-	-	4.63E-05	1.77E-05	7.48E-05	1.77E-05	0.00E+00	7.48E-05	2	67
1,2,3,4,7,8,9-HpCDF	pg/m^3	-	-	2.90E-05		3.27E-05	-	-	3.09E-05	2.90E-05	3.27E-05	2.90E-05	0.00E+00	3.27E-05	2	67
OCDF	pg/m^3	-	-	1.79E-06		2.52E-06	-	-	2.16E-06	1.79E-06	2.52E-06	1.79E-06	0.00E+00	2.52E-06	2	67
Total Toxic Equivalency	pg TEQ/m^3	*0.1* *1* [1]	-	3.33E-03		1.04E-02	0.1	0	6.88E-03	3.33E-03	1.04E-02	3.33E-03	0.00E+00	1.04E-02	2	67

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] O. Reg. 419/05 Schedule Upper Risk Thresholds

Table B3: 2021 Rundle Station Q3 Monitoring Results for Dioxins & Furans

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	21-Jul-21	14-Aug-21	7-Sep-21	MECP Criteria (µg/m^3)	No. > Criteria	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
2,3,7,8-TCDD	pg/m^3	-	-	1.31E-03	Invalid Sample	8.86E-03	-	-	5.09E-03	1.31E-03	8.86E-03	1.31E-03	0.00E+00	8.86E-03	2	67
1,2,3,7,8-PeCDD	pg/m^3	-	-	1.55E-03		6.80E-03	-	-	4.18E-03	1.55E-03	6.80E-03	1.55E-03	0.00E+00	6.80E-03	2	67
1,2,3,4,7,8-HxCDD	pg/m^3	-	-	1.78E-04		5.38E-04	-	-	3.58E-04	1.78E-04	5.38E-04	1.78E-04	0.00E+00	5.38E-04	2	67
1,2,3,6,7,8-HxCDD	pg/m^3	-	-	1.49E-04		5.06E-04	-	-	3.28E-04	1.49E-04	5.06E-04	1.49E-04	0.00E+00	5.06E-04	2	67
1,2,3,7,8,9-HxCDD	pg/m^3	-	-	1.60E-04		4.91E-04	-	-	3.25E-04	1.60E-04	4.91E-04	1.60E-04	0.00E+00	4.91E-04	2	67
1,2,3,4,6,7,8-HpCDD	pg/m^3	-	-	3.56E-05		1.09E-04	-	-	7.24E-05	3.56E-05	1.09E-04	3.56E-05	0.00E+00	1.09E-04	2	67
OCDD	pg/m^3	-	-	9.71E-06		3.38E-05	-	-	2.18E-05	9.71E-06	3.38E-05	9.71E-06	0.00E+00	3.38E-05	2	67
2,3,7,8-TCDF	pg/m^3	-	-	1.21E-04		6.33E-04	-	-	3.77E-04	1.21E-04	6.33E-04	1.21E-04	0.00E+00	6.33E-04	2	67
1,2,3,7,8-PeCDF	pg/m^3	-	-	3.79E-05		1.33E-04	-	-	8.54E-05	3.79E-05	1.33E-04	3.79E-05	0.00E+00	1.33E-04	2	67
2,3,4,7,8-PeCDF	pg/m^3	-	-	3.59E-04		1.28E-03	-	-	8.20E-04	3.59E-04	1.28E-03	3.59E-04	0.00E+00	1.28E-03	2	67
1,2,3,4,7,8-HxCDF	pg/m^3	-	-	1.18E-04		5.22E-04	-	-	3.20E-04	1.18E-04	5.22E-04	1.18E-04	0.00E+00	5.22E-04	2	67
1,2,3,6,7,8-HxCDF	pg/m^3	-	-	1.13E-04		5.22E-04	-	-	3.18E-04	1.13E-04	5.22E-04	1.13E-04	0.00E+00	5.22E-04	2	67
2,3,4,6,7,8-HxCDF	pg/m^3	-	-	1.25E-04		5.54E-04	-	-	3.39E-04	1.25E-04	5.54E-04	1.25E-04	0.00E+00	5.54E-04	2	67
1,2,3,7,8,9-HxCDF	pg/m^3	-	-	1.78E-04		6.17E-04	-	-	3.98E-04	1.78E-04	6.17E-04	1.78E-04	0.00E+00	6.17E-04	2	67
1,2,3,4,6,7,8-HpCDF	pg/m^3	-	-	1.42E-05		7.75E-05	-	-	4.59E-05	1.42E-05	7.75E-05	1.42E-05	0.00E+00	7.75E-05	2	67
1,2,3,4,7,8,9-HpCDF	pg/m^3	-	-	2.27E-05		6.33E-05	-	-	4.30E-05	2.27E-05	6.33E-05	2.27E-05	0.00E+00	6.33E-05	2	67
OCDF	pg/m^3	-	-	1.84E-06		5.22E-06	-	-	3.53E-06	1.84E-06	5.22E-06	1.84E-06	0.00E+00	5.22E-06	2	67
Total Toxic Equivalency	pg TEQ/m^3	*0.1* *1* [1]	-	4.49E-03		2.18E-02	0.1	0	1.31E-02	4.49E-03	2.18E-02	4.49E-03	0.00E+00	2.18E-02	2	67

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] O. Reg. 419/05 Schedule Upper Risk Thresholds

Table B4: Summary of Sample Flow Rate and Sample Duration for PAHs

Sample Date	Courtice			Rundle		
	Filter ID	Sample Duration	Sample Volume	Filter ID	Sample Duration	Sample Volume
	No.	(min)	(m^3)	No.	(min)	(m^3)
July 9, 2021	L2614173-2	1440	278	L2614173-1	1440	288
July 21, 2021	L2618880-2	1440	310	L2618880-1	1440	309
August 2, 2021	L2623293-2	1440	311	L2623293-1	1440	324
August 14, 2021	Invalid Sample			Invalid Sample		
August 26, 2021	L2634209-2	1440	293	L2634209-1	1440	305
September 7, 2021	L2638743-2	1440	321	L2638743-1	1440	316
September 19, 2021	L2642858-2	1440	315	L2642858-1	1440	321

Table B5: 2021 Courtice Station Q3 Monitoring Results for PAHs

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	9-Jul-21	21-Jul-21	2-Aug-21	14-Aug-21	26-Aug-21	7-Sep-21	19-Sep-21	No. > Criteria	Arithmetic Mean	Minimum Q3 Concentration	Maximum Q3 Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m^3	*12000*	-	7.16	13.26	20.84		20.24	6.20	11.14	0	1.31E+01	6.20E+00	2.08E+01	1.33E+01	2.08E+01	1.11E+01	6	86
2-Methylnaphthalene	ng/m^3	*10000*	-	16.08	29.03	32.15		41.98	10.72	20.10	0	2.50E+01	1.07E+01	4.20E+01	2.90E+01	4.20E+01	2.01E+01	6	86
Acenaphthene	ng/m^3	-	-	7.45	15.03	5.63		14.40	5.61	10.00	-	9.69E+00	5.61E+00	1.50E+01	1.50E+01	1.44E+01	1.00E+01	6	86
Acenaphthylene	ng/m^3	*3500*	-	0.58	0.15	1.29		0.25	0.15	0.32	0	4.57E-01	1.46E-01	1.29E+00	5.83E-01	1.29E+00	3.24E-01	6	86
Anthracene	ng/m^3	*200*	-	0.71	1.25	1.04		0.73	0.99	0.61	0	8.87E-01	6.13E-01	1.25E+00	1.25E+00	1.04E+00	9.88E-01	6	86
Benzo(a)Anthracene	ng/m^3	-	-	0.01	0.00	0.02		0.02	0.01	0.01	-	1.44E-02	4.13E-03	2.18E-02	1.29E-02	2.18E-02	1.47E-02	6	86
Benzo(a)fluorene	ng/m^3	-	-	0.04	0.05	0.08		0.08	0.06	0.04	-	5.69E-02	3.74E-02	8.04E-02	4.58E-02	8.04E-02	5.98E-02	6	86
Benzo(a)Pyrene (Historically High)	ng/m^3	*0.05* [1] *5* [2] *1.1* [3]	*1*	0.00	0.20	0.03		0.00	0.01	0.02	1	4.27E-02	3.41E-04	1.99E-01	1.99E-01	2.59E-02	2.27E-02	6	86
Benzo(b)Fluoranthene	ng/m^3	-	-	0.02	0.03	0.03		0.04	0.01	0.03	-	2.67E-02	1.28E-02	3.65E-02	2.69E-02	3.65E-02	2.57E-02	6	86
Benzo(b)fluorene	ng/m^3	-	-	0.03	0.03	0.03		0.06	0.03	0.03	-	3.45E-02	2.83E-02	5.56E-02	3.49E-02	5.56E-02	3.15E-02	6	86
Benzo(e)Pyrene	ng/m^3	-	-	0.00	0.00	0.04		0.00	0.01	0.02	-	1.25E-02	3.41E-04	3.60E-02	4.03E-03	3.60E-02	2.05E-02	6	86
Benzo(g,h,i)Perylene	ng/m^3	-	-	0.01	0.00	0.03	Invalid	0.02	0.01	0.02	-	1.63E-02	3.23E-04	3.08E-02	8.56E-03	3.08E-02	2.25E-02	6	86
Benzo(k)Fluoranthene	ng/m^3	-	-	0.01	0.01	0.04	Sample	0.03	0.01	0.02	-	1.95E-02	7.29E-03	3.67E-02	1.28E-02	3.67E-02	1.87E-02	6	86
Biphenyl	ng/m^3	-	-	3.41	7.74	19.74		8.19	3.49	5.27	-	7.97E+00	3.41E+00	1.97E+01	7.74E+00	1.97E+01	5.27E+00	6	86
Chrysene	ng/m^3	-	-	0.04	0.03	0.06		0.05	0.06	0.05	-	4.81E-02	2.69E-02	6.46E-02	3.63E-02	6.46E-02	5.51E-02	6	86
Dibenzo(a,h)Anthracene	ng/m^3	-	-	0.01	0.00	0.00		0.02	0.00	0.00	-	5.04E-03	3.17E-04	1.66E-02	1.11E-02	1.66E-02	1.59E-03	6	86
Fluoranthene	ng/m^3	-	-	0.95	2.25	1.77		2.16	2.25	1.34	-	1.79E+00	9.53E-01	2.25E+00	2.25E+00	2.16E+00	2.25E+00	6	86
Fluorene	ng/m^3	-	-	4.42	9.42	5.27		9.42	4.83	5.59	-	6.49E+00	4.42E+00	9.42E+00	9.42E+00	9.42E+00	5.59E+00	6	86
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	-	0.01	0.00	0.03		0.01	0.01	0.02	-	1.46E-02	3.23E-04	3.28E-02	1.09E-02	3.28E-02	2.10E-02	6	86
Naphthalene	ng/m^3	*22500*	*22500*	68.35	57.10	54.34		66.21	16.57	35.87	0	4.97E+01	1.66E+01	6.83E+01	6.83E+01	6.62E+01	3.59E+01	6	86
o-Terphenyl	ng/m^3	-	-	0.01	0.01	0.02		0.02	0.01	0.01	-	1.39E-02	9.00E-03	1.96E-02	1.31E-02	1.96E-02	1.46E-02	6	86
Perylene	ng/m^3	-	-	0.00	0.00	0.00		0.00	0.00	0.00	-	8.09E-04	3.22E-04	2.31E-03	3.60E-04	3.41E-04	2.31E-03	6	86
Phenanthrene	ng/m^3	-	-	6.91	16.32	13.95		13.92	11.62	9.49	-	1.20E+01	6.91E+00	1.63E+01	1.63E+01	1.40E+01	1.16E+01	6	86
Pyrene	ng/m^3	-	-	0.47	0.96	0.81		0.92	1.05	0.62	-	8.07E-01	4.71E-01	1.05E+00	9.58E-01	9.25E-01	1.05E+00	6	86
Tetralin	ng/m^3	-	-	69.42	80.00	3.05		26.38	1.25	1.53	-	3.03E+01	1.25E+00	8.00E+01	8.00E+01	2.64E+01	1.53E+00	6	86
Total PAH[4]	ng/m^3	-	-	186.10	232.87	160.30		205.15	64.96	102.17	-	1.59E+02	6.50E+01	2.33E+02	2.33E+02	2.05E+02	1.02E+02	6	86

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] AAQC

[2] O. Reg. 419/05 Schedule Upper Risk Thresholds

[3] O. Reg. 419/05 24 Hour Guideline

[4] Total PAH sums all PAH contaminants

Table B6: 2021 Rundle Station Q3 Monitoring Results for PAHs

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	9-Jul-21	21-Jul-21	2-Aug-21	14-Aug-21	26-Aug-21	7-Sep-21	19-Sep-21	No. > Criteria	Arithmetic Mean	Minimum Q3 Concentration	Maximum Q3 Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
1-Methylnaphthalene	ng/m^3	*12000*	-	2.93	1.12	3.64		11.18	14.40	6.98	0	6.71E+00	1.12E+00	1.44E+01	2.93E+00	1.12E+01	1.44E+01	6	86
2-Methylnaphthalene	ng/m^3	*10000*	-	4.97	1.72	5.03		20.95	25.28	12.06	0	1.17E+01	1.72E+00	2.53E+01	4.97E+00	2.10E+01	2.53E+01	6	86
Acenaphthene	ng/m^3	-	-	2.06	0.28	1.47		11.38	15.00	4.49	-	5.78E+00	2.80E-01	1.50E+01	2.06E+00	1.14E+01	1.50E+01	6	86
Acenaphthylene	ng/m^3	*3500*	-	0.24	0.03	0.25		0.18	0.39	0.30	0	2.33E-01	3.50E-02	3.86E-01	2.38E-01	2.52E-01	3.86E-01	6	86
Anthracene	ng/m^3	*200*	-	0.55	0.43	0.28		1.00	0.84	0.67	0	6.26E-01	2.78E-01	9.97E-01	5.45E-01	9.97E-01	8.39E-01	6	86
Benzo(a)Anthracene	ng/m^3	-	-	0.01	0.00	0.01		0.03	0.01	0.02	-	1.33E-02	2.10E-03	2.71E-02	7.43E-03	2.71E-02	2.49E-02	6	86
Benzo(a)fluorene	ng/m^3	-	-	0.04	0.02	0.03		0.11	0.03	0.06	-	4.84E-02	1.63E-02	1.10E-01	4.48E-02	1.10E-01	5.89E-02	6	86
Benzo(a)Pyrene (Historically High)	ng/m^3	*0.05* [1] *5* [2] *1.1* [3]	*1*	0.00	0.33	0.11		0.00	0.01	0.02	2	7.74E-02	3.28E-04	3.27E-01	3.27E-01	1.08E-01	2.30E-02	6	86
Benzo(b)Fluoranthene	ng/m^3	-	-	0.02	0.04	0.03		0.04	0.01	0.04	-	2.90E-02	1.06E-02	3.93E-02	3.82E-02	3.93E-02	3.55E-02	6	86
Benzo(b)fluorene	ng/m^3	-	-	0.03	0.01	0.01		0.09	0.02	0.04	-	3.13E-02	7.25E-03	8.62E-02	2.68E-02	8.62E-02	4.08E-02	6	86
Benzo(e)Pyrene	ng/m^3	-	-	0.00	0.00	0.02		0.00	0.01	0.03	-	1.09E-02	3.28E-04	2.81E-02	3.66E-03	2.07E-02	2.81E-02	6	86
Benzo(g,h,i)Perylene	ng/m^3	-	-	0.01	0.00	0.02	Invalid	0.03	0.01	0.02	-	1.54E-02	3.24E-04	2.66E-02	7.19E-03	2.66E-02	2.16E-02	6	86
Benzo(k)Fluoranthene	ng/m^3	-	-	0.01	0.07	0.02	Sample	0.03	0.01	0.03	-	2.90E-02	9.83E-03	7.12E-02	7.12E-02	3.13E-02	3.15E-02	6	86
Biphenyl	ng/m^3	-	-	1.44	1.29	2.06		5.38	5.22	3.40	-	3.13E+00	1.29E+00	5.38E+00	1.44E+00	5.38E+00	5.22E+00	6	86
Chrysene	ng/m^3	-	-	0.04	0.02	0.03		0.02	0.04	0.07	-	3.53E-02	2.00E-02	6.67E-02	3.61E-02	2.84E-02	6.67E-02	6	86
Dibenzo(a,h)Anthracene	ng/m^3	-	-	0.00	0.00	0.00		0.02	0.00	0.00	-	4.07E-03	3.09E-04	1.83E-02	3.47E-04	1.83E-02	4.08E-03	6	86
Fluoranthene	ng/m^3	-	-	1.08	0.19	0.53		3.31	1.45	1.69	-	1.38E+00	1.94E-01	3.31E+00	1.08E+00	3.31E+00	1.69E+00	6	86
Fluorene	ng/m^3	-	-	1.56	0.42	1.08		9.28	8.67	2.88	-	3.98E+00	4.24E-01	9.28E+00	1.56E+00	9.28E+00	8.67E+00	6	86
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	-	0.01	0.00	0.02		0.01	0.01	0.02	-	1.26E-02	3.24E-04	2.37E-02	6.94E-03	2.17E-02	2.37E-02	6	86
Naphthalene	ng/m^3	*22500*	*22500*	33.65	30.84	9.26		25.61	67.41	19.91	0	3.11E+01	9.26E+00	6.74E+01	3.36E+01	2.56E+01	6.74E+01	6	86
o-Terphenyl	ng/m^3	-	-	0.01	0.01	0.00		0.02	0.01	0.01	-	9.70E-03	3.09E-04	1.60E-02	1.14E-02	1.60E-02	1.20E-02	6	86
Perylene	ng/m^3	-	-	0.00	0.00	0.00		0.00	0.00	0.00	-	8.50E-04	3.09E-04	2.06E-03	1.75E-03	3.28E-04	2.06E-03	6	86
Phenanthrene	ng/m^3	-	-	3.89	0.98	3.12		16.20	13.70	5.67	-	7.26E+00	9.81E-01	1.62E+01	3.89E+00	1.62E+01	1.37E+01	6	86
Pyrene	ng/m^3	-	-	0.53	0.10	0.26		1.42	0.66	0.78	-	6.24E-01	9.74E-02	1.42E+00	5.31E-01	1.42E+00	7.79E-01	6	86
Tetralin	ng/m^3	-	-	56.25	94.50	7.99		15.70	2.70	1.22	-	2.97E+01	1.22E+00	9.45E+01	9.45E+01	1.57E+01	2.70E+00	6	86
Total PAH[4]	ng/m^3	-	-	109.30	132.41	35.28		121.98	155.88	60.40	-	1.03E+02	3.53E+01	1.56E+02	1.32E+02	1.22E+02	1.56E+02	6	86

NOTE: All non-detectable results were reported as 1/2 of the detection limit

[1] AAQC

[2] O. Reg. 419/05 Schedule Upper Risk Thresholds

[3] O. Reg. 419/05 24 Hour Guideline

[4] Total PAH sums all PAH contaminants

Table B7: Summary of Sample Flow Rate and Sample Duration for TSP

Sample Date	Courtice			Rundle		
	Filter ID	Sample Duration	Sample Volume	Filter ID	Sample Duration	Sample Volume
	No.	(min)	(m^3)	No.	(min)	(m^3)
July 3, 2021	L2614185-3	1440	1714	L2614185-1	1440	1692
July 9, 2021	L2614185-4	1440	1662	L2614185-2	1440	1661
July 15, 2021	L2618889-3	1440	1640	L2618889-1	1440	1654
July 21, 2021	L2618889-4	1440	1655	L2618889-2	1440	1680
July 27, 2021	L2623299-4	1440	1661	L2623299-2	1440	1663
August 2, 2021	L2623299-3	1440	1653	L2623299-1	1440	1639
August 8, 2021	L2629440-3	1440	1645	L2629440-1	1440	1617
August 14, 2021	L2629440-4	1440	1649	L2629440-2	1440	1684
August 20, 2021	L2634219-2	1440	1621	L2634219-1	1440	1633
August 26, 2021	L2638744-3	1440	1624	Invalid Sample		
September 1, 2021	L2638744-4	1440	1666	L2638744-1	1440	1706
September 7, 2021	L2638744-5	1440	1667	L2638744-2	1440	1682
September 13, 2021	L2642863-3	1440	1656	L2642863-1	1440	1685
September 19, 2021	L2642863-4	1440	1685	L2642863-2	1440	1720
September 25, 2021	L2647808-3	1440	1650	L2647808-1	1440	1714

Table B8: 2021 Courtice Station Q3 Monitoring Results for TSP and Metals

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	3-Jul-21	9-Jul-21	15-Jul-21	21-Jul-21	27-Jul-21	2-Aug-21	8-Aug-21	14-Aug-21	20-Aug-21	26-Aug-21	1-Sep-21	7-Sep-21	13-Sep-21	19-Sep-21	25-Sep-21	MECP Criteria ($\mu g/m^3$)	No. > Criteria	Geometric Mean	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
Particulate (TSP)	$\mu g/m^3$	*120*	*120*	17.50	15.34	22.20	19.15	35.76	13.43	31.79	20.50	40.78	28.94	19.15	15.24	20.35	14.78	17.39	*120*	0	20.92	22.15	13.43	40.78	35.76	40.78	20.35	15	100
Total Mercury (Hg)	$\mu g/m^3$	*2*	*2*	2.92E-06	3.01E-06	1.22E-05	8.46E-06	2.83E-05	2.24E-05	7.90E-06	3.03E-06	8.02E-06	7.39E-06	3.00E-06	3.00E-06	3.02E-06	1.78E-05	1.09E-05	*2*	0	6.95E-06	9.42E-06	2.92E-06	2.83E-05	2.83E-05	2.24E-05	1.78E-05	15	100
Aluminum (Al)	$\mu g/m^3$	*4.8*	-	8.17E-02	6.26E-02	1.40E-01	1.20E-01	2.19E-01	5.42E-02	1.42E-01	1.39E-01	2.25E-01	1.48E-01	5.27E-02	2.75E-02	7.55E-02	5.29E-02	1.42E-01	*4.8*	0	9.61E-02	1.12E-01	2.75E-02	2.25E-01	2.19E-01	2.25E-01	1.42E-01	15	100
Antimony (Sb)	$\mu g/m^3$	*25*	*25*	3.91E-04	1.14E-03	6.40E-04	3.26E-04	8.79E-04	8.47E-04	8.45E-04	5.82E-04	1.39E-03	1.06E-03	4.14E-04	5.70E-04	1.06E-03	5.93E-04	1.22E-03	*25*	0	7.31E-04	7.97E-04	3.26E-04	1.39E-03	1.14E-03	1.39E-03	1.22E-03	15	100
Arsenic (As)	$\mu g/m^3$	*0.3*	*0.3*	8.75E-04	9.03E-04	9.15E-04	9.06E-04	9.03E-04	9.07E-04	9.12E-04	9.10E-04	9.25E-04	9.24E-04	9.00E-04	9.00E-04	9.06E-04	8.90E-04	9.09E-04	*0.3*	0	9.06E-04	9.06E-04	8.75E-04	9.25E-04	9.15E-04	9.25E-04	9.09E-04	15	100
Barium (Ba)	$\mu g/m^3$	*10*	*10*	4.70E-03	5.25E-03	5.35E-03	5.41E-03	1.12E-02	6.78E-03	5.20E-03	6.91E-03	1.98E-02	1.13E-02	5.13E-03	7.26E-03	1.36E-02	3.72E-03	1.34E-02	*10*	0	7.40E-03	8.34E-03	3.72E-03	1.98E-02	1.12E-02	1.98E-02	1.36E-02	15	100
Beryllium (Be)	$\mu g/m^3$	*0.01*	*0.01*	1.46E-05	1.50E-05	1.52E-05	1.51E-05	1.51E-05	1.51E-05	1.52E-05	1.52E-05	1.54E-05	1.54E-05	1.50E-05	1.50E-05	1.51E-05	1.48E-05	1.52E-05	*0.01*	0	1.51E-05	1.51E-05	1.46E-05	1.54E-05	1.52E-05	1.54E-05	1.52E-05	15	100
Bismuth (Bi)	$\mu g/m^3$	-	-	5.25E-04	5.42E-04	5.49E-04	5.44E-04	5.42E-04	5.44E-04	5.47E-04	5.46E-04	5.55E-04	5.54E-04	5.40E-04	5.40E-04	5.43E-04	5.34E-04	5.45E-04	-	-	5.43E-04	5.43E-04	5.25E-04	5.55E-04	5.49E-04	5.55E-04	5.45E-04	15	100
Boron (B)	$\mu g/m^3$	*120*	-	4.38E-03	4.51E-03	4.57E-03	4.53E-03	4.52E-03	4.54E-03	4.56E-03	4.55E-03	4.63E-03	4.62E-03	4.50E-03	4.50E-03	4.53E-03	4.45E-03	1.64E-02	*120*	0	4.93E-03	5.32E-03	4.38E-03	1.64E-02	4.57E-03	4.63E-03	1.64E-02	15	100
Cadmium (Cd)	$\mu g/m^3$	*0.025*	*0.025*	1.18E-04	2.38E-04	1.73E-04	5.86E-05	1.22E-04	8.17E-05	2.47E-04	4.43E-05	1.34E-04	1.00E-04	6.24E-05	5.82E-05	5.25E-05	1.03E-04	1.92E-04	*0.025*	0	1.03E-04	1.19E-04	4.43E-05	2.47E-04	2.38E-04	2.47E-04	1.92E-04	15	100
Chromium (Cr)	$\mu g/m^3$	*0.5*	-	9.92E-04	1.02E-03	1.04E-03	1.03E-03	3.13E-03	1.03E-03	1.03E-03	2.18E-03	2.71E-03	2.77E-03	1.02E-03	1.02E-03	1.03E-03	1.01E-03	1.03E-03	*0.5*	0	1.32E-03	1.47E-03	9.92E-04	3.13E-03	3.13E-03	2.77E-03	1.03E-03	15	100
Cobalt (Co)	$\mu g/m^3$	*0.1*	*0.1*	5.43E-05	3.31E-05	1.02E-04	7.43E-05	1.44E-04	4.78E-05	9.12E-05	4.20E-04	2.36E-04	1.63E-04	1.40E-04	7.14E-05	1.71E-04	5.28E-05	8.85E-05	*0.1*	0	1.01E-04	1.26E-04	3.31E-05	4.20E-04	1.44E-04	4.20E-04	1.71E-04	15	100
Copper (Cu)	$\mu g/m^3$	*50*	-	3.49E-02	3.82E-02	2.13E-02	1.71E-02	2.35E-02	3.24E-02	1.78E-02	3.27E-02	2.89E-02	2.19E-02	7.98E-03	2.11E-02	1.70E-02	1.64E-02	1.89E-02	*50*	0	2.18E-02	2.34E-02	7.98E-03	3.82E-02	3.82E-02	3.27E-02	2.11E-02	15	100
Iron (Fe)	$\mu g/m^3$	*4*	-	1.78E-01	1.49E-01	2.68E-01	2.30E-01	5.04E-01	1.82E-01	3.64E-01	7.16E-01	7.22E-01	5.24E-01	2.70E-01	2.47E-01	3.37E-01	1.88E-01	2.72E-01	*4*	0	3.03E-01	3.43E-01	1.49E-01	7.22E-01	5.04E-01	7.22E-01	3.37E-01	15	100
Lead (Pb)	$\mu g/m^3$	*0.5*	*0.5*	1.56E-03	1.61E-03	3.54E-03	1.00E-03	1.75E-03	1.14E-03	3.23E-03	8.13E-04	2.70E-03	3.21E-03	1.07E-03	9.54E-04	1.44E-03	1.60E-03	3.41E-03	*2*	0	1.71E-03	1.94E-03	8.13E-04	3.54E-03	3.54E-03	3.23E-03	3.41E-03	15	100
Magnesium (Mg)	$\mu g/m^3$	-	-	1.34E-01	9.15E-02	1.90E-01	1.36E-01	2.33E-01	8.65E-02	1.90E-01	1.99E-01	2.68E-01	2.66E-01	1.24E-01	1.13E-01	2.13E-01	1.01E-01	2.05E-01	-	-	1.59E-01	1.70E-01	8.65E-02	2.68E-01	2.33E-01	2.68E-01	2.13E-01	15	100
Manganese (Mn)	$\mu g/m^3$	*0.4*	-	4.62E-03	3.23E-03	9.21E-03	6.95E-03	1.43E-02	3.59E-03	8.33E-03	1.19E-02	1.85E-02	1.50E-02	5.86E-03	4.89E-03	9.18E-03	3.55E-03	7.33E-03	*0.4*	0	7.32E-03	8.42E-03	3.23E-03	1.85E-02	1.43E-02	1.85E-02	9.18E-03	15	100
Molybdenum (Mo)	$\mu g/m^3$	*120*	-	1.82E-03	1.77E-03	1.55E-03	8.40E-04	1.63E-03	1.49E-03	1.20E-03	1.69E-03	1.63E-03	1.44E-03	3.78E-04	9.90E-04	9.54E-04	7.18E-04	1.18E-03	*120*	0	1.20E-03	1.29E-03	3.78E-04	1.82E-03	1.82E-03	1.69E-03	1.18E-03	15	100
Nickel (Ni)	$\mu g/m^3$	*0.2*	-	5.25E-04	4.51E-04	1.28E-03	5.80E-04	1.41E-03	5.32E-04	8.02E-04	2.30E-03	1.63E-03	1.22E-03	7.56E-04	6.42E-04	7.85E-04	5.64E-04	8.48E-04	*0.2*	0	8.50E-04	9.55E-04	4.51E-04	2.30E-03	1.41E-03	2.30E-03	8.48E-04	15	100
Phosphorus (P)	$\mu g/m^3$	-	-	2.19E-01	2.26E-01	2.29E-01	2.27E-01	2.26E-01	2.27E-01	2.28E-01	2.27E-01	2.31E-01	2.31E-01	2.25E-01	2.25E-01	2.26E-01	2.23E-01	2.27E-01	-	-	2.26E-01	2.26E-01	2.19E-01	2.31E-01	2.29E-01	2.31E-01	2.27E-01	15	100
Selenium (Se)	$\mu g/m^3$	*10*	*10*	3.79E-04	3.91E-04	1.16E-03	3.93E-04	3.91E-04	3.93E-04	1.40E-03	3.94E-04	4.01E-04	1.35E-03	3.90E-04	3.90E-04	3.93E-04	3.86E-04	7.88E-04	*10*	0	5.21E-04	6.00E-04	3.79E-04	1.40E-03	1.16E-03	1.40E-03	7.88E-04	15	100
Silver (Ag)	$\mu g/m^3$	*1*	*1*	2.63E-05	2.71E-05	2.74E-05	2.72E-05	2.71E-05	2.72E-05	4.71E-04	2.73E-05	5.55E-05	2.77E-05	2.70E-05	2.70E-05	2.72E-05	2.67E-05	2.73E-05	*1*	0	3.44E-05	5.86E-05	2.63E-05	4.71E-04	2.74E-05	4.71E-04	2.73E-05	15	100
Strontium (Sr)	$\mu g/m^3$	*120*	-	3.21E-03	2.41E-03	3.23E-03	2.84E-03	6.02E-03	2.00E-03	5.05E-03	2.55E-03	5.74E-03	8.25E-03	5.34E-03	4.86E-03	7.13E-03	6.35E-03	8.18E-03	*120*	0	4.43E-03	4.88E-03	2.00E-03	8.25E-03	6.02E-03	8.25E-03	8.18E-03	15	100
Thallium (Tl)	$\mu g/m^3$	-	-	2.63E-05	2.71E-05	2.74E-05	2.72E-05	2.71E-05	2.72E-05	2.74E-05	2.73E-05	2.78E-05	2.77E-05	2.70E-05	2.70E-05	2.72E-05	2.67E-05	2.73E-05	-	-	2.72E-05	2.72E-05	2.63E-05	2.78E-05	2.74E-05	2.78E-05	2.73E-05	15	100
Tin (Sn)	$\mu g/m^3$	*10*	*10*	5.31E-04	4.57E-04	8.23E-04	4.17E-04	9.45E-04	5.44E-04	7.54E-04	6.00E-04	1.33E-03	1.41E-03	4.20E-04	9.66E-04	1.21E-03	5.58E-04	1.30E-03	*10*	0	7.48E-04	8.18E-04	4.17E-04	1.41E-03	9.45E-04	1.41E-03	1.30E-03	15	100
Titanium (Ti)	$\mu g/m^3$	*120*	-	3.21E-03	3.31E-03	3.35E-03	3.32E-03	1.20E-02	3.33E-03	7.90E-03	1.46E-02	1.48E-02	8.62E-03	3.30E-03	3.30E-03	6.64E-03	3.26E-03	3.33E-03	*120*	0	5.20E-03	6.29E-03	3.21E-03	1.48E-02	1.20E-02	1.48E-02	6.64E-03	15	100
Uranium (Ur)	$\mu g/m^3$	*1.5*	-	8.23E-06	1.03E-05	1.05E-05	6.77E-06	1.43E-05	1.81E-06	1.39E-05	7.70E-06	2.15E-05	1.58E-05	7.56E-06	6.12E-06	9.00E-06	1.60E-05	1.32E-05	*1.5*	0	9.55E-06	1.08E-05	1.81E-06	2.15E-05	1.43E-05	2.15E-05	1.60E-05	15	100
Vanadium (V)	$\mu g/m^3$	*2*	*1*	1.46E-03	1.50E-03	1.52E-03	1.51E-03	1.51E-03	1.51E-03	1.52E-03	1.52E-03	1.54E-03	1.54E-03	1.50E-03	1.50E-03	1.51E-03	1.48E-03	1.52E-03	*2*	0	1.51E-03	1.51E-03	1.46E-03	1.54E-03	1.52E-03	1.54E-03	1.52E-03	15	100
Zinc (Zn)	$\mu g/m^3$	*120*	-	4.54E-02	5.63E-02	5.63E-02	2.51E-02	3.52E-02	1.89E-02	4.10E-02	1.47E-02	3.81E-02	3.63E-02	2.29E-02	3.32E-02	2.55E-02	1.67E-02	5.35E-02	*120*	0	3.18E-02	3.46E-02	1.47E-02	5.63E-02	5.63E-02	4.10E-02	5.35E-02	15	100
Zirconium (Zr)	$\mu g/m^3$	*20*	-	5.83E-04	6.02E-04	6.10E-04	6.04E-04	6.02E-04	6.05E-04	6.08E-04	6.06E-04	6.17E-04	6.16E-04	6.00E-04	6.00E-04	6.04E-04	5.93E-04	6.06E-04	*20*	0	6.04E-04	6.04E-04	5.83E-04	6.17E-04	6.10E-04	6.17E-04	6.06E-04	15	100

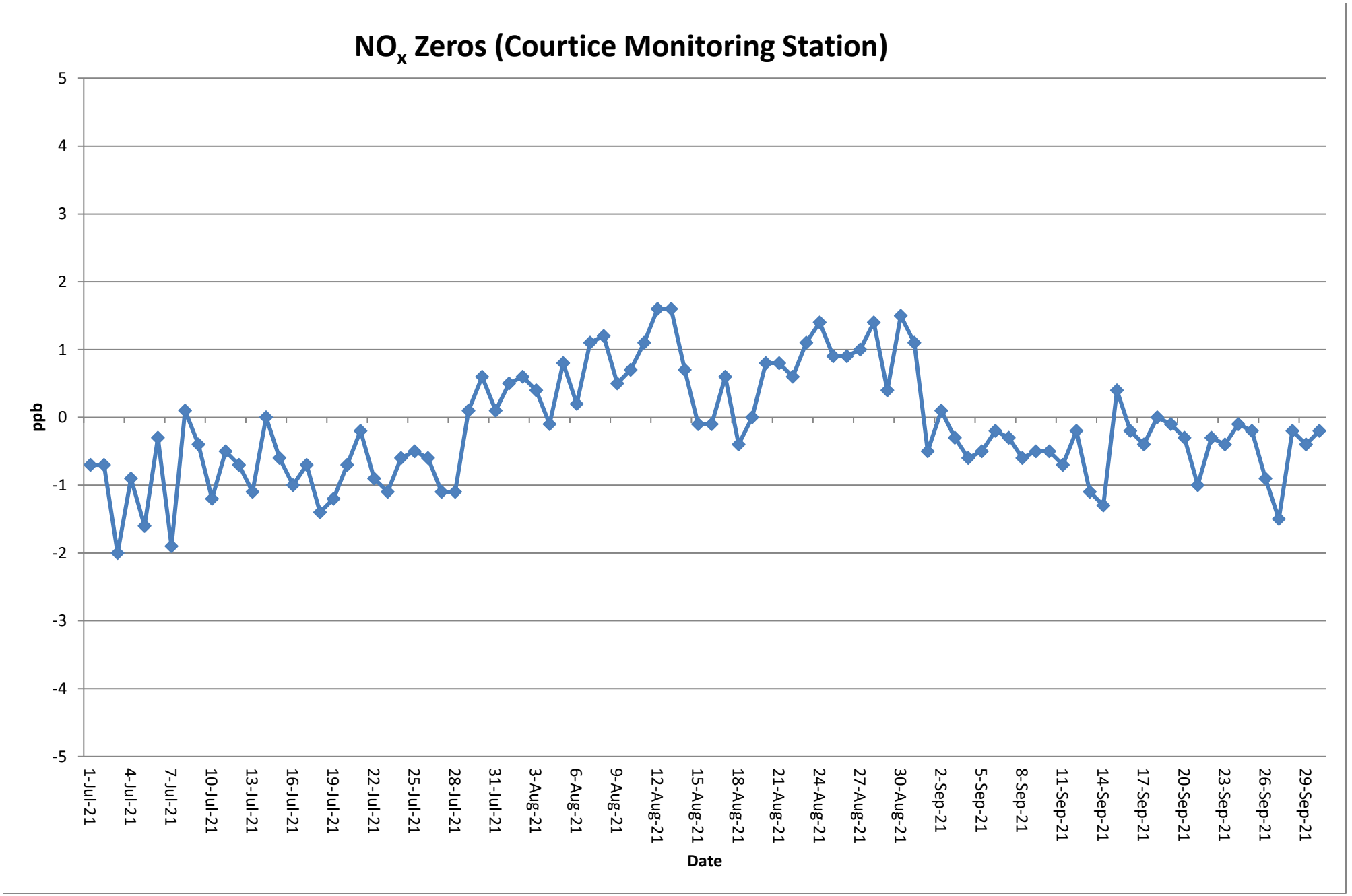
NOTE: All non-detectable results were reported as 1/2 of the detection limit

Table B9: 2021 Rundle Station Q3 Monitoring Results for TSP and Metals

Contaminant	Units	*MECP Criteria*	*HHRA Health Based Criteria*	3-Jul-21	9-Jul-21	15-Jul-21	21-Jul-21	27-Jul-21	2-Aug-21	8-Aug-21	14-Aug-21	20-Aug-21	26-Aug-21	1-Sep-21	7-Sep-21	13-Sep-21	19-Sep-21	25-Sep-21	MECP Criteria (µg/m^3)	No. > Criteria	Geometric Mean	Arithmetic Mean	Q3 Minimum Concentration	Q3 Maximum Concentration	July Maximum Concentration	August Maximum Concentration	September Maximum Concentration	Number of Valid Samples	% Valid data
Particulate (TSP)	µg/m^3	*120*	*120*	21.51	13.49	28.23	16.96	32.17	11.90	37.04	20.61	38.70	Invalid	15.24	26.52	24.57	11.63	18.67	*120*	0	21.1	22.7	11.6	38.7	32.2	38.7	26.5	14	93
Mercury (Hg)	µg/m^3	*2*	*2*	3.13E-05	4.15E-05	1.33E-05	9.52E-06	1.38E-05	8.54E-06	8.04E-06	2.97E-06	7.96E-06		2.93E-06	2.97E-06	2.97E-06	2.91E-06	7.58E-06	*2*	0	7.59E-06	1.12E-05	2.91E-06	4.15E-05	4.15E-05	8.54E-06	7.58E-06	14	93
Aluminum (Al)	µg/m^3	*4.8*	-	1.28E-01	4.96E-02	1.51E-01	8.93E-02	1.74E-01	4.64E-02	2.12E-01	8.79E-02	2.09E-01		4.64E-02	1.62E-01	9.97E-02	2.36E-02	1.25E-01	*4.8*	0	9.64E-02	1.15E-01	2.36E-02	2.12E-01	1.74E-01	2.12E-01	1.62E-01	14	93
Antimony (Sb)	µg/m^3	*25*	*25*	4.31E-04	3.31E-04	8.16E-04	2.02E-04	7.58E-04	9.27E-04	9.65E-04	2.02E-04	9.80E-04		2.81E-04	4.28E-04	6.11E-04	3.55E-04	1.23E-03	*25*	0	5.19E-04	6.09E-04	2.02E-04	1.23E-03	8.16E-04	9.80E-04	1.23E-03	14	93
Arsenic (As)	µg/m^3	*0.3*	*0.3*	8.87E-04	9.03E-04	9.07E-04	8.93E-04	9.02E-04	9.15E-04	1.92E-03	8.91E-04	9.19E-04		8.79E-04	8.92E-04	8.90E-04	8.72E-04	8.75E-04	*0.3*	0	9.44E-04	9.67E-04	8.72E-04	1.92E-03	9.07E-04	1.92E-03	8.92E-04	14	93
Barium (Ba)	µg/m^3	*10*	*10*	6.09E-03	4.74E-03	8.40E-03	3.67E-03	8.90E-03	5.03E-03	7.54E-03	3.69E-03	1.34E-02		3.90E-03	7.07E-03	9.85E-03	3.69E-03	8.52E-03	*10*	0	6.21E-03	6.75E-03	3.67E-03	1.34E-02	8.90E-03	1.34E-02	9.85E-03	14	93
Beryllium (Be)	µg/m^3	*0.01*	*0.01*	1.48E-05	1.51E-05	1.51E-05	1.49E-05	1.50E-05	1.53E-05	1.55E-05	1.48E-05	1.53E-05		1.47E-05	1.49E-05	1.48E-05	1.45E-05	1.46E-05	*0.01*	0	1.49E-05	1.49E-05	1.45E-05	1.55E-05	1.51E-05	1.55E-05	1.49E-05	14	93
Bismuth (Bi)	µg/m^3	-	-	5.32E-04	5.42E-04	5.44E-04	5.36E-04	5.41E-04	5.49E-04	5.57E-04	5.34E-04	5.51E-04		5.28E-04	5.35E-04	5.34E-04	5.23E-04	5.25E-04	-	-	5.38E-04	5.38E-04	5.23E-04	5.57E-04	5.44E-04	5.57E-04	5.35E-04	14	93
Boron (B)	µg/m^3	*120*	-	4.43E-03	4.52E-03	4.53E-03	4.46E-03	4.51E-03	4.58E-03	4.64E-03	4.45E-03	4.59E-03		4.40E-03	4.46E-03	4.45E-03	4.36E-03	1.87E-02	*120*	0	4.97E-03	5.50E-03	4.36E-03	1.87E-02	4.53E-03	4.64E-03	1.87E-02	14	93
Cadmium (Cd)	µg/m^3	*0.025*	*0.025*	7.21E-05	4.33E-05	1.33E-04	9.94E-05	1.66E-04	9.52E-05	1.47E-04	2.97E-05	1.19E-04		4.51E-05	5.29E-05	4.99E-05	6.40E-05	2.57E-04	*0.025*	0	8.24E-05	9.81E-05	2.97E-05	2.57E-04	1.66E-04	1.47E-04	2.57E-04	14	93
Chromium (Cr)	µg/m^3	*0.5*	-	1.00E-03	1.02E-03	2.48E-03	1.01E-03	2.22E-03	1.04E-03	2.41E-03	1.01E-03	2.45E-03		9.96E-04	2.38E-03	1.01E-03	9.88E-04	9.92E-04	*0.5*	0	1.37E-03	1.50E-03	9.88E-04	2.48E-03	2.48E-03	2.45E-03	2.38E-03	14	93
Cobalt (Co)	µg/m^3	*0.1*	*0.1*	8.16E-05	3.67E-05	1.15E-04	6.13E-05	1.04E-04	3.72E-05	1.56E-04	6.47E-05	1.96E-04		9.38E-05	1.08E-04	1.00E-04	5.70E-05	9.04E-05	*0.1*	0	8.38E-05	9.30E-05	3.67E-05	1.96E-04	1.15E-04	1.96E-04	1.08E-04	14	93
Copper (Cu)	µg/m^3	*50*	-	2.77E-02	1.71E-02	1.44E-02	1.07E-02	2.22E-02	2.80E-02	1.27E-02	3.69E-02	2.55E-01		7.74E-03	3.88E-02	2.31E-02	2.67E-02	3.05E-02	*50*	0	2.47E-02	3.94E-02	7.74E-03	2.55E-01	2.77E-02	2.55E-01	3.88E-02	14	93
Iron (Fe)	µg/m^3	*4*	-	2.59E-01	1.08E-01	4.14E-01	1.40E-01	3.98E-01	9.33E-02	6.56E-01	2.14E-01	6.55E-01		1.71E-01	4.04E-01	3.26E-01	1.42E-01	2.47E-01	*4*	0	2.53E-01	3.02E-01	9.33E-02	6.56E-01	4.14E-01	6.56E-01	4.04E-01	14	93
Lead (Pb)	µg/m^3	*0.5*	*0.5*	1.89E-03	1.81E-03	4.41E-03	9.94E-04	2.16E-03	1.24E-03	3.67E-03	1.23E-03	3.01E-03		1.03E-03	1.15E-03	1.57E-03	1.49E-03	3.10E-03	*2*	0	1.83E-03	2.05E-03	9.94E-04	4.41E-03	4.41E-03	3.67E-03	3.10E-03	14	93
Magnesium (Mg)	µg/m^3	-	-	1.76E-01	8.97E-02	2.45E-01	1.43E-01	2.08E-01	8.30E-02	2.60E-01	1.57E-01	3.01E-01		1.12E-01	2.30E-01	2.33E-01	7.85E-02	2.00E-01	-	-	1.65E-01	1.80E-01	7.85E-02	3.01E-01	2.45E-01	3.01E-01	2.33E-01	14	93
Manganese (Mn)	µg/m^3	*0.4*	-	5.85E-03	2.85E-03	1.20E-02	5.73E-03	1.21E-02	2.94E-03	1.22E-02	6.83E-03	1.76E-02		4.72E-03	8.44E-03	9.38E-03	2.59E-03	6.94E-03	*0.4*	0	6.75E-03	7.87E-03	2.59E-03	1.76E-02	1.21E-02	1.76E-02	9.38E-03	14	93
Molybdenum (Mo)	µg/m^3	*120*	-	1.60E-03	9.09E-04	1.35E-03	7.02E-04	1.73E-03	1.46E-03	1.21E-03	1.79E-03	2.65E-02		3.34E-04	1.40E-03	8.07E-04	8.14E-04	1.00E-03	*120*	0	1.34E-03	2.97E-03	3.34E-04	2.65E-02	1.73E-03	2.65E-02	1.40E-03	14	93
Nickel (Ni)	µg/m^3	*0.2*	-	6.50E-04	4.82E-04	9.92E-04	5.12E-04	7.58E-04	4.33E-04	1.09E-03	4.57E-04	1.65E-03		5.10E-04	1.01E-03	6.65E-04	3.84E-04	7.06E-04	*0.2*	0	6.74E-04	7.36E-04	3.84E-04	1.65E-03	9.92E-04	1.65E-03	1.01E-03	14	93
Phosphorus (P)	µg/m^3	-	-	2.22E-01	2.26E-01	2.27E-01	2.23E-01	2.25E-01	2.29E-01	2.32E-01	2.23E-01	2.30E-01		2.20E-01	2.23E-01	2.23E-01	2.18E-01	2.19E-01	-	-	2.24E-01	2.24E-01	2.18E-01	2.32E-01	2.27E-01	2.32E-01	2.23E-01	14	93
Selenium (Se)	µg/m^3	*10*	*10*	3.84E-04	3.91E-04	1.15E-03	3.87E-04	3.91E-04	3.97E-04	1.61E-03	3.86E-04	3.98E-04		3.81E-04	3.86E-04	3.86E-04	3.78E-04	3.79E-04	*10*	0	4.63E-04	5.29E-04	3.78E-04	1.61E-03	1.15E-03	1.61E-03	3.86E-04	14	93
Silver (Ag)	µg/m^3	*1*	*1*	2.66E-05	2.71E-05	2.72E-05	2.68E-05	2.71E-05	2.75E-05	5.29E-04	2.67E-05	1.18E-04		2.64E-05	2.68E-05	2.67E-05	2.62E-05	2.63E-05	*1*	0	3.68E-05	6.92E-05	2.62E-05	5.29E-04	2.72E-05	5.29E-04	2.68E-05	14	93
Strontium (Sr)	µg/m^3	*120*	-	6.09E-03	2.17E-03	5.68E-03	3.51E-03	5.71E-03	9.15E-04	8.29E-03	2.91E-03	7.53E-03		5.98E-03	1.18E-02	8.90E-03	5.06E-03	8.69E-03	*120*	0	5.05E-03	5.95E-03	9.15E-04	1.18E-02	6.09E-03	8.29E-03	1.18E-02	14	93
Thallium (Tl)	µg/m^3	-	-	2.66E-05	2.71E-05	2.72E-05	2.68E-05	2.71E-05	2.75E-05	2.78E-05	2.67E-05	2.76E-05		2.64E-05	2.68E-05	2.67E-05	2.62E-05	2.63E-05	-	-	2.69E-05	2.69E-05	2.62E-05	2.78E-05	2.72E-05	2.78E-05	2.68E-05	14	93
Tin (Sn)	µg/m^3	*10*	*10*	7.74E-04	4.58E-04	1.08E-03	3.87E-04	1.08E-03	4.64E-04	9.46E-04	1.78E-04	1.14E-03		3.69E-04	7.02E-04	8.37E-04	5.12E-04	1.09E-03	*10*	0	6.34E-04	7.15E-04	1.78E-04	1.14E-03	1.08E-03	1.14E-03	1.09E-03	14	93
Titanium (Ti)	µg/m^3	*120*	-	8.27E-03	3.31E-03	7.26E-03	3.27E-03	1.02E-02	3.36E-03	1.30E-02	3.27E-03	1.29E-02		3.22E-03	8.32E-03	3.26E-03	3.20E-03	3.21E-03	*120*	0	5.21E-03	6.14E-03	3.20E-03	1.30E-02	1.02E-02	1.30E-02	8.32E-03	14	93
Uranium (Ur)	µg/m^3	*1.5*	-	1.25E-05	9.33E-06	2.00E-05	7.02E-06	1.27E-05	1.83E-06	1.89E-05	6.95E-06	1.87E-05		6.80E-06	1.71E-05	1.13E-05	1.26E-05	1.39E-05	*1.5*	0	1.06E-05	1.21E-05	1.83E-06	2.00E-05	2.00E-05	1.89E-05	1.71E-05	14	93
Vanadium (V)	µg/m^3	*2*	*1*	1.48E-03	1.51E-03	1.51E-03	1.49E-03	1.50E-03	1.53E-03	1.55E-03	1.48E-03	1.53E-03		1.47E-03	1.49E-03	1.48E-03	1.45E-03	1.46E-03	*2*	0	1.49E-03	1.49E-03	1.45E-03	1.55E-03	1.51E-03	1.55E-03	1.49E-03	14	93
Zinc (Zn)	µg/m^3	*120*	-	5.27E-02	2.17E-02	1.12E-01	2.71E-02	5.23E-02	2.58E-02	5.34E-02	4.84E-02	4.33E-02		1.37E-02	2.87E-02	3.42E-02	2.40E-02	6.30E-02	*120*	0	3.75E-02	4.29E-02	1.37E-02	1.12E-01	1.12E-01	5.34E-02	6.30E-02	14	93
Zirconium (Zr)	µg/m^3	*20*	-	5.91E-04	6.02E-04	6.05E-04	5.95E-04	6.01E-04	6.10E-04	6.18E-04	5.94E-04	6.12E-04		5.86E-04	5.95E-04	5.93E-04	5.81E-04	5.83E-04	*20*	0	5.98E-04	5.98E-04	5.81E-04	6.18E-04	6.05E-04	6.18E-04	5.95E-04	14	93

NOTE: All non-detectable results were reported as 1/2 of the detection limit

APPENDIX C


NOx Zeros (Courtice Monitoring Station)
ppb
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-1
-2
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-4
-5
1-Jul-21
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7-Jul-21
10-Jul-21
13-Jul-21
16-Jul-21
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22-Jul-21
25-Jul-21
28-Jul-21
31-Jul-21
3-Aug-21
6-Aug-21
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15-Aug-21
18-Aug-21
21-Aug-21
24-Aug-21
27-Aug-21
30-Aug-21
2-Sep-21
5-Sep-21
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23-Sep-21
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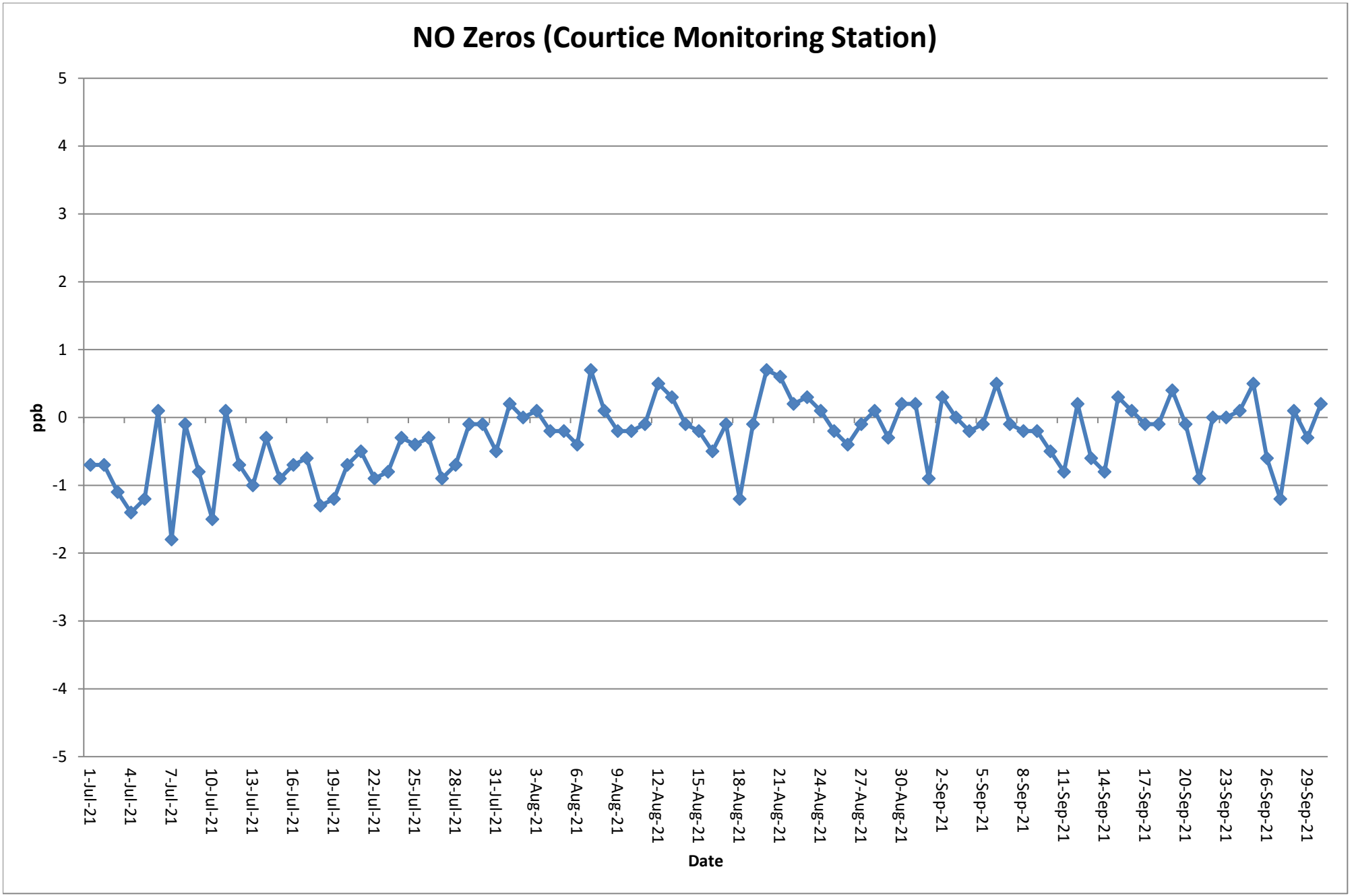
29-Sep-21
Date


NO Zeros (Courtice Monitoring Station)
ppb
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2
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-2
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-4
-5
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22-Jul-21
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3-Aug-21
6-Aug-21
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15-Aug-21
18-Aug-21
21-Aug-21
24-Aug-21
27-Aug-21
30-Aug-21
2-Sep-21
5-Sep-21
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23-Sep-21
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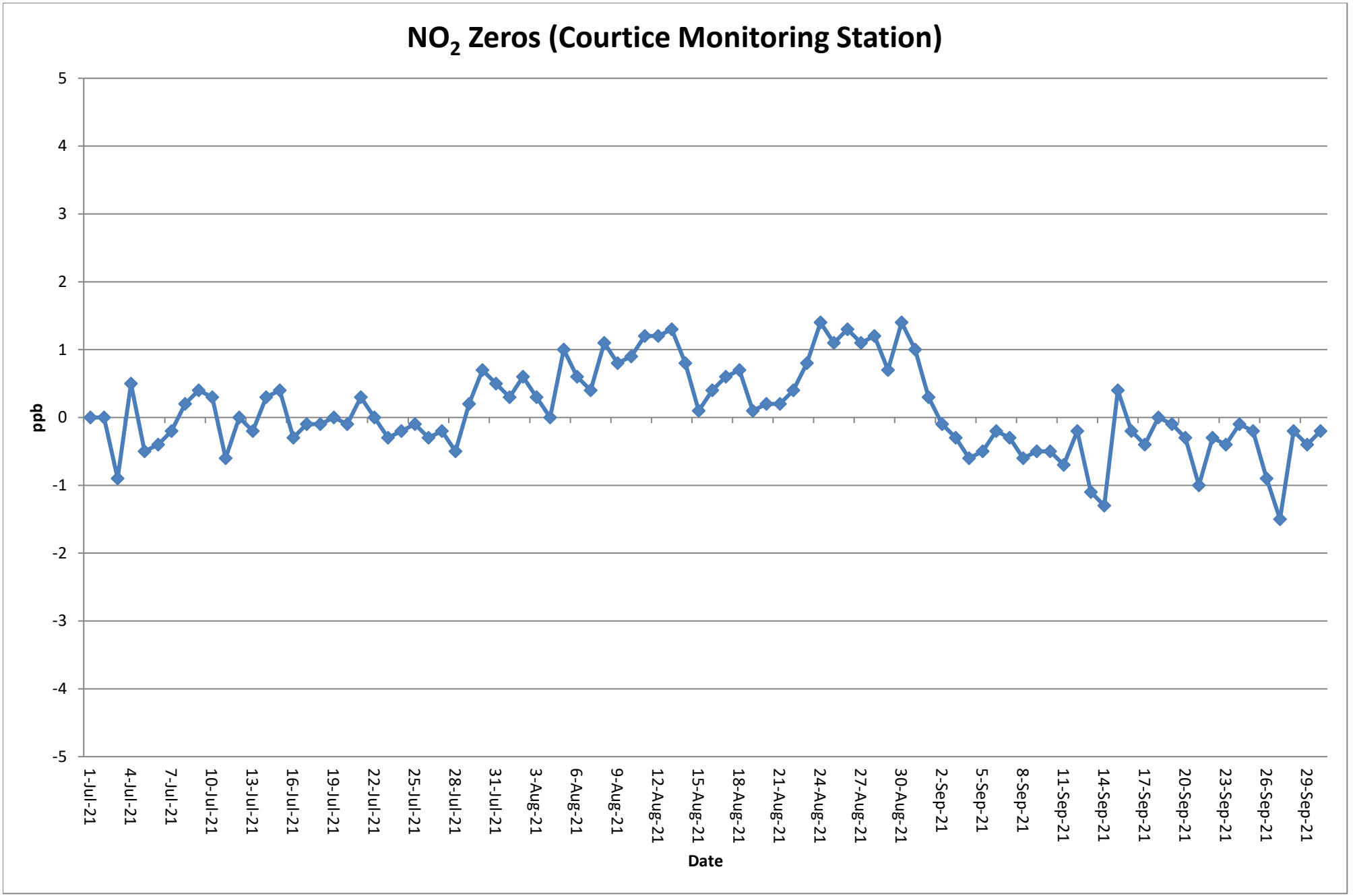
29-Sep-21
Date


NO2 Zeros (Courtice Monitoring Station)
ppb
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-1
-2
-3
-4
-5
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6-Aug-21
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2-Sep-21
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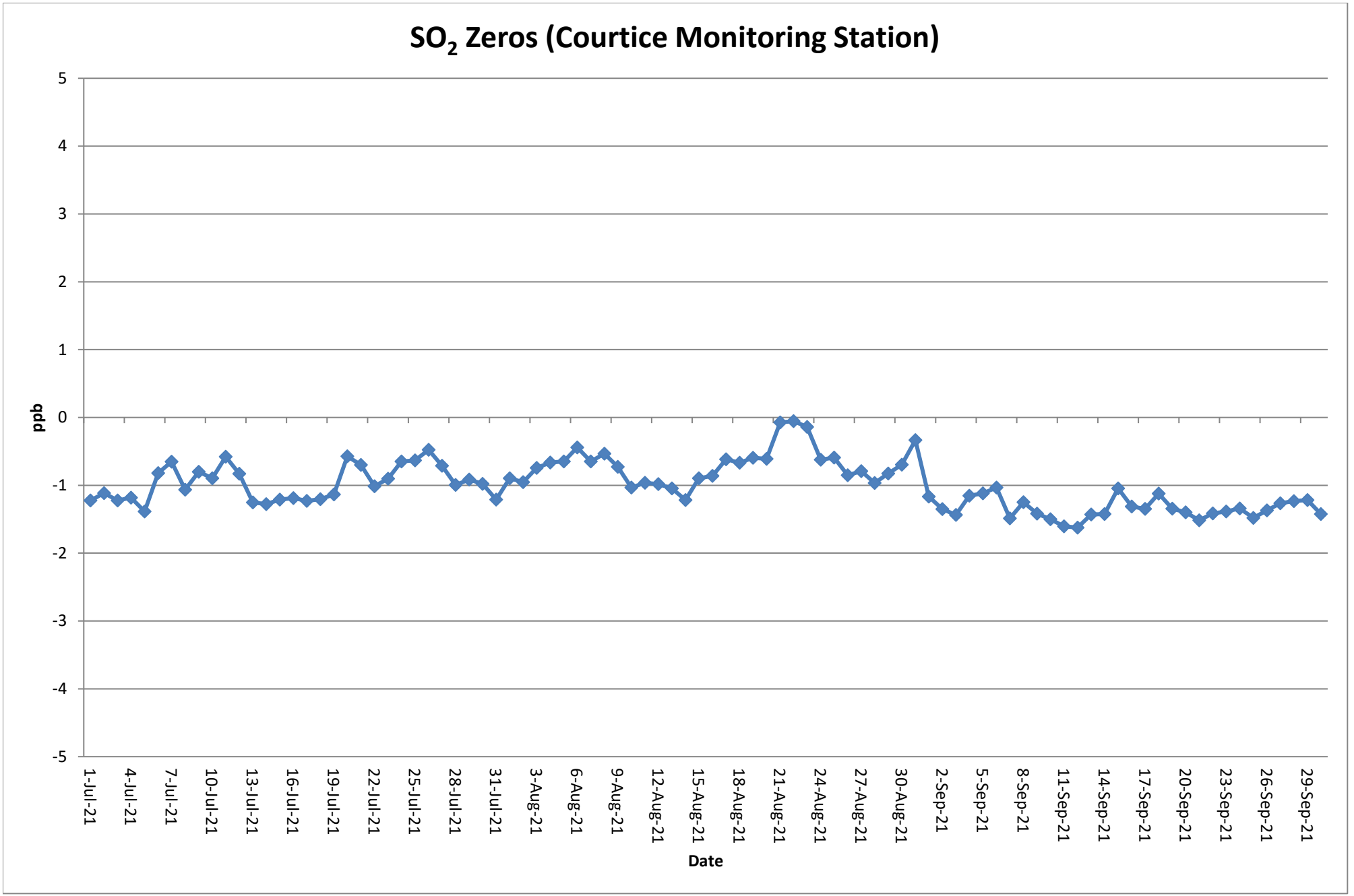
Date


SO2 Zeros (Courtice Monitoring Station)
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2
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0
-1
-2
-3
-4
-5
ppb
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4-Jul-21
7-Jul-21
10-Jul-21
13-Jul-21
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3-Aug-21
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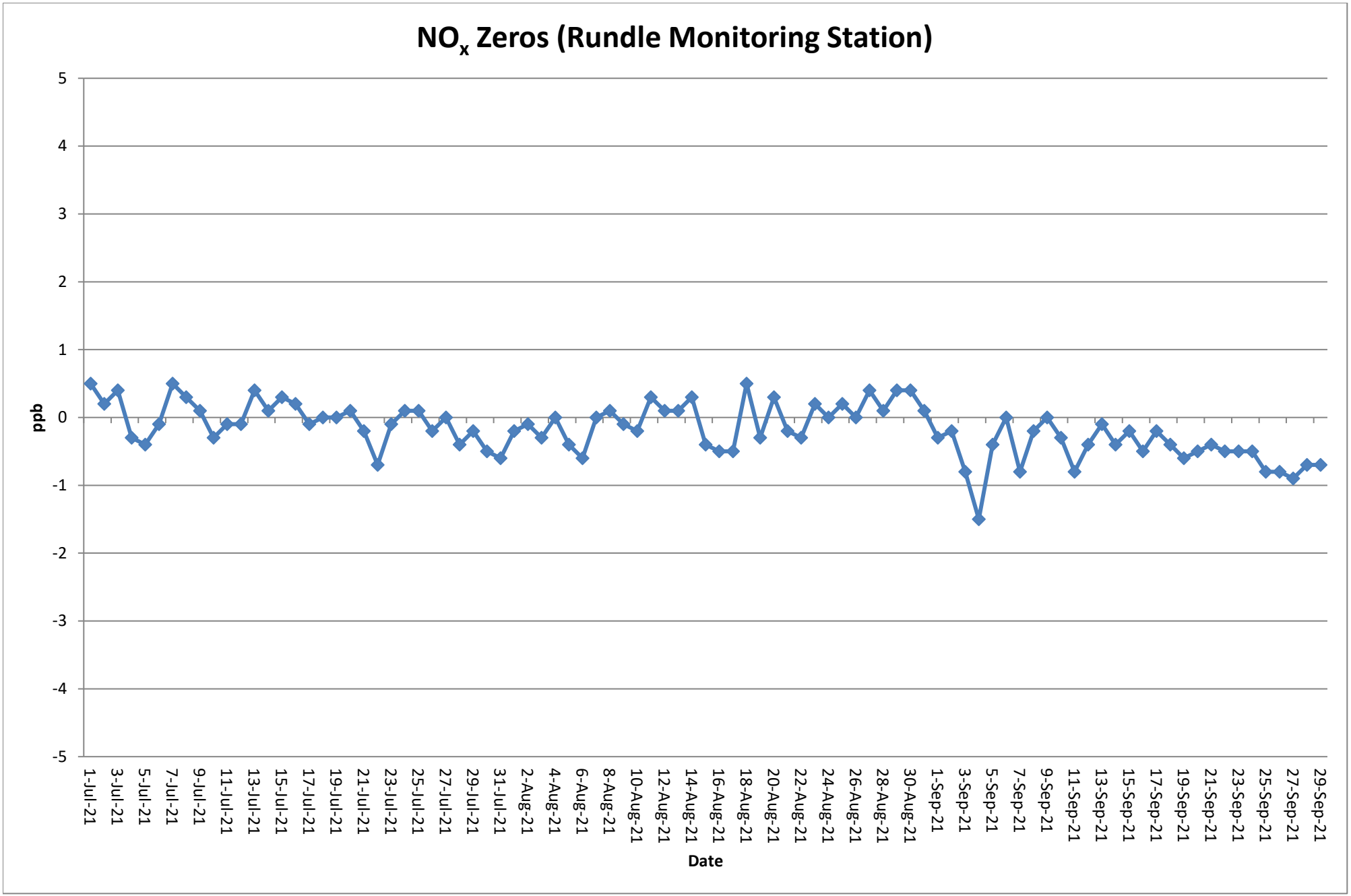
Date


NOx Zeros (Rundle Monitoring Station)
ppb
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-1
-2
-3
-4
-5
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3-Jul-21
5-Jul-21
7-Jul-21
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23-Jul-21
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13-Sep-21
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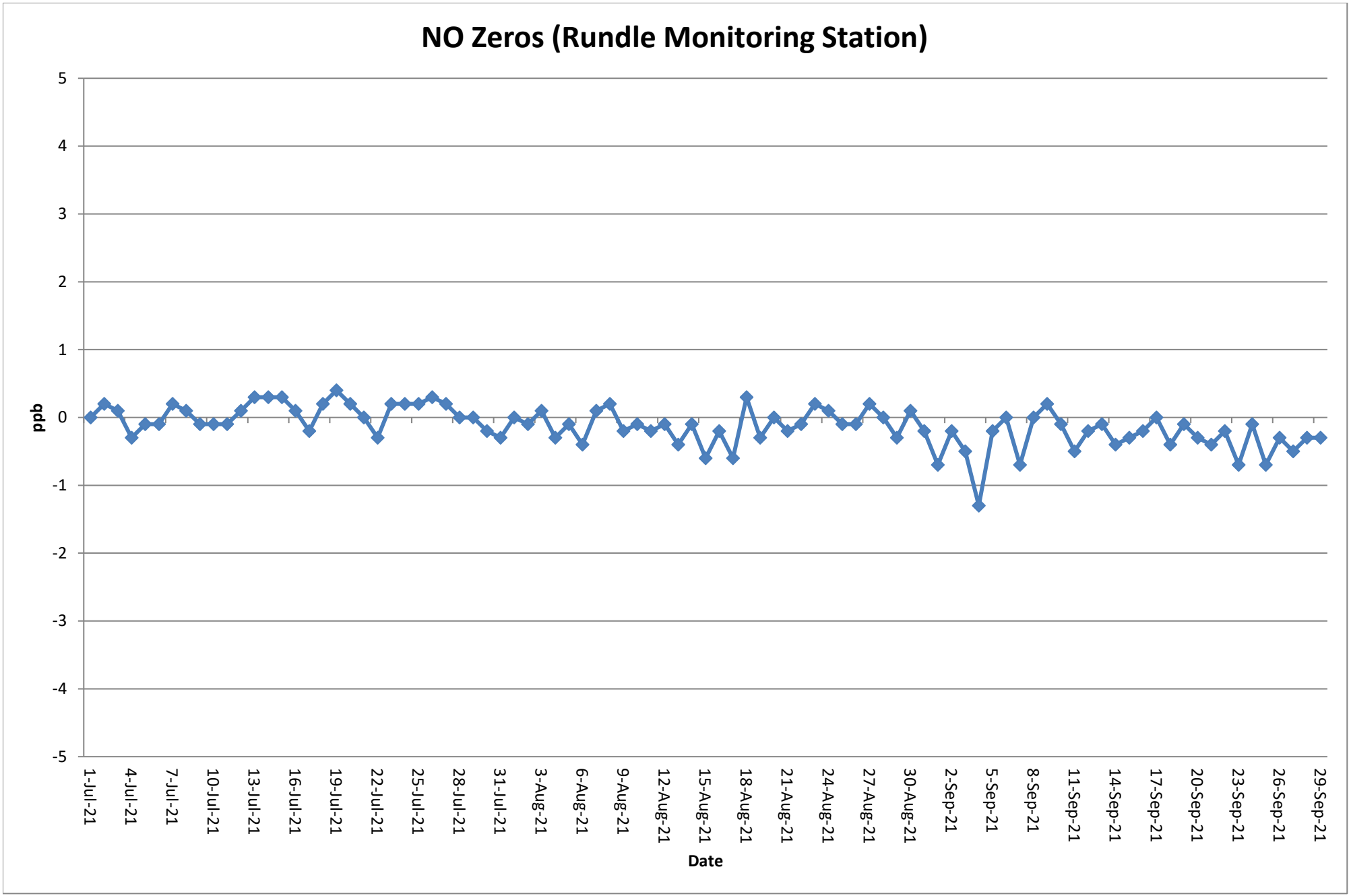
29-Sep-21
Date


NO Zeros (Rundle Monitoring Station)
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-2
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-4
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1-Jul-21
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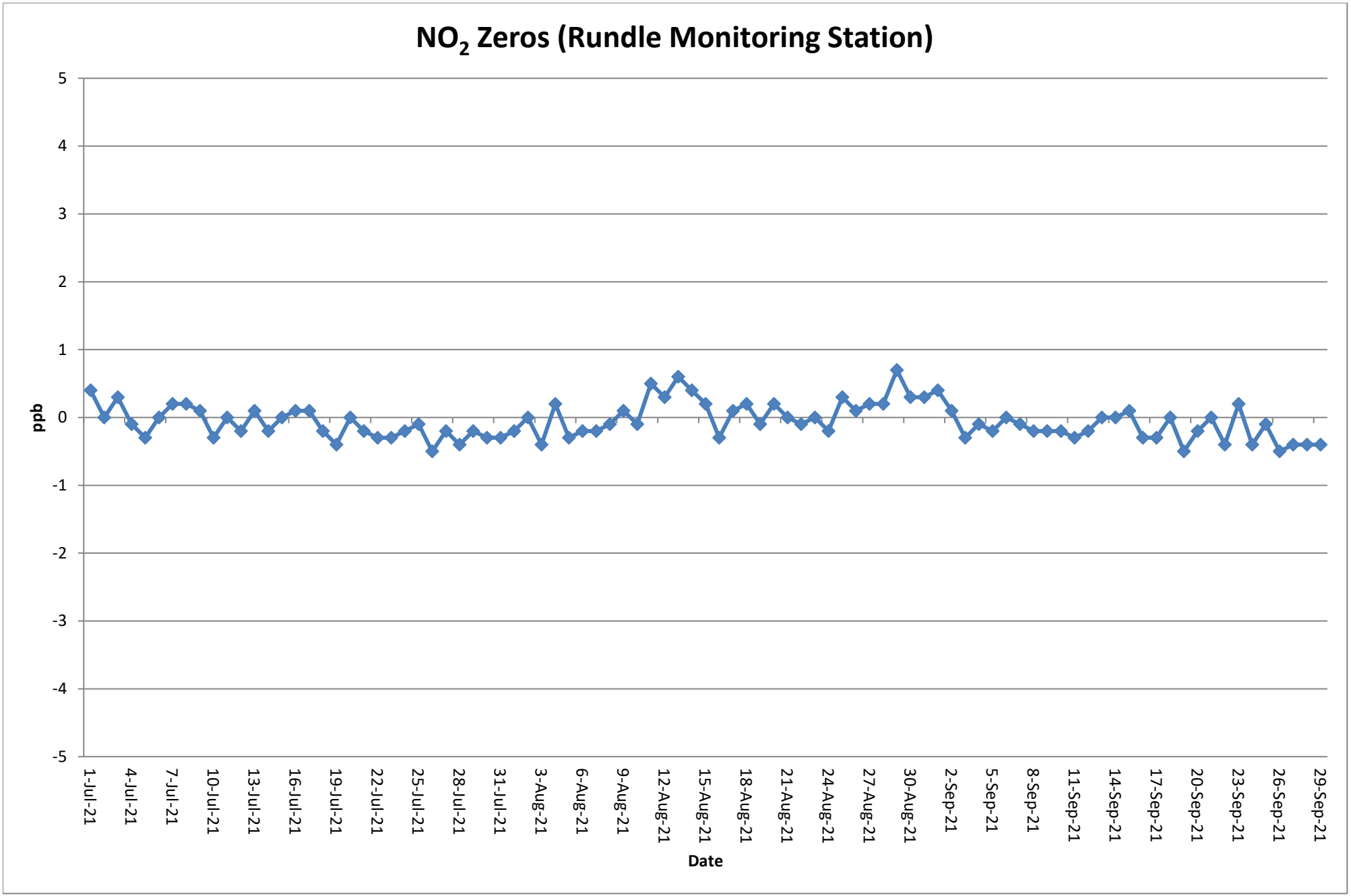
NO2 Zeros (Rundle Monitoring Station)
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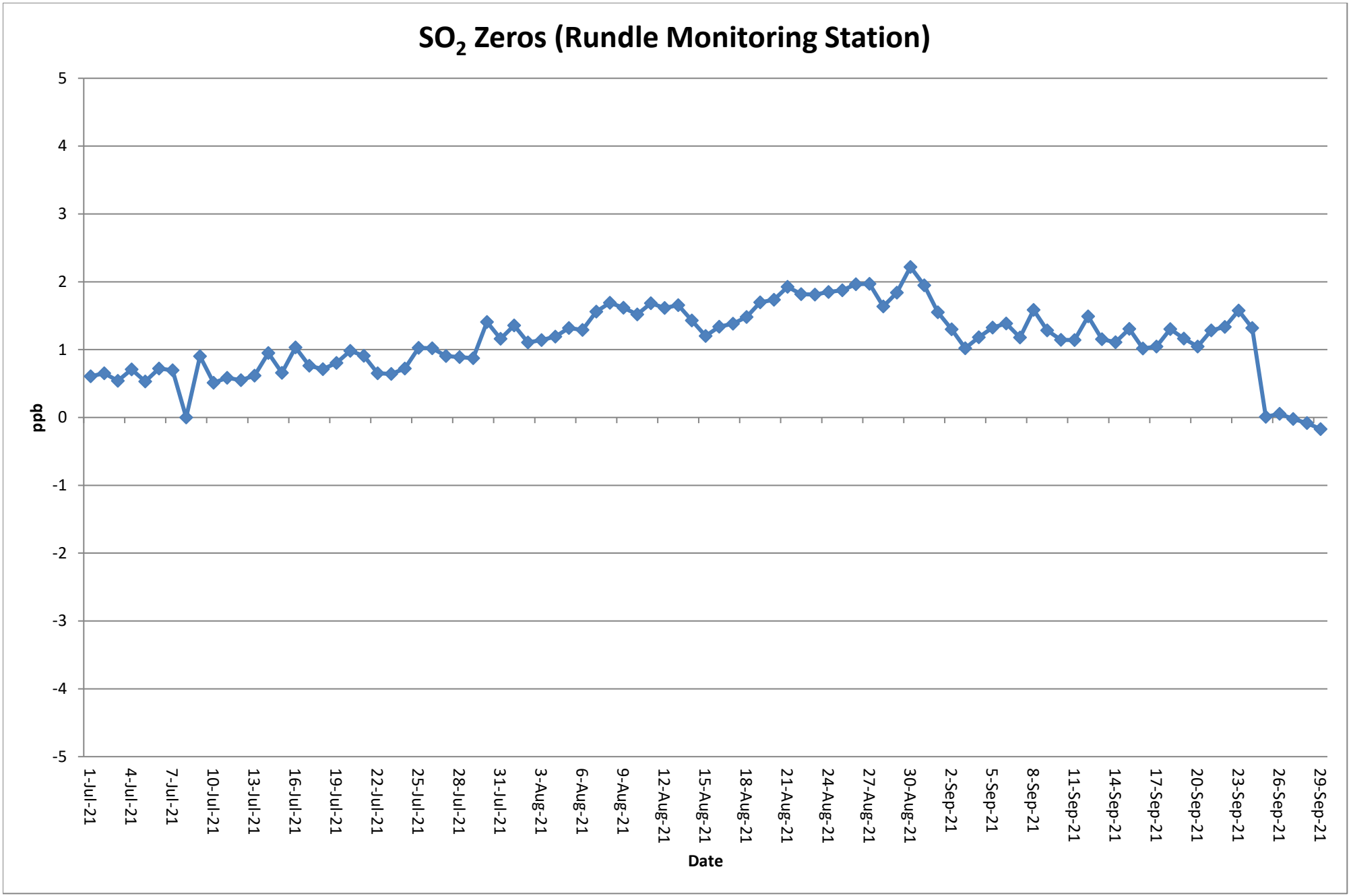
Date


SO2 Zeros (Rundle Monitoring Station)
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8-Sep-21
11-Sep-21
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17-Sep-21
20-Sep-21
23-Sep-21
26-Sep-21
29-Sep-21
Date

APPENDIX D

Table D1: Q3 Edit Log for $PM_{2.5}$ at Courtice Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107			**Email:** Lyndsay.Waller@Durham.ca			
Station Number: 45201				**Station Name:** Courtice Station					
Station Address: 100 Osbourne Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: $PM_{2.5}$			**Instrument Make & Model:** Thermo Scientific Model 5030 SHARP Monitor						**s/n:** E-1563
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021		All testing done in EST			
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	28/07/2021	SRS	Deleted Hours	28/07/2021	15:00	28/07/2021	16:00	1	Monthly Calibration
2	11/08/2021	MPA	Deleted Hours	31/07/2021	12:00	31/07/2021	13:00	1	Power Failure
3	11/08/2021	MPA	Zero correction	01/07/2021	00:00	01/08/2021	00:00	-	Correcting values <0 to 0
4	30/08/2021	SRS	Deleted Hours	30/08/2021	11:00	30/08/2021	13:00	2	Monthly Calibration
5	23/09/2021	SRS	Deleted Hours	23/09/2021	15:00	23/09/2021	16:00	1	Monthly Calibration - Verification Only
6	24/09/2021	SRS	Deleted Hours	24/09/2021	09:00	24/09/2021	10:00	1	MECP Audit
7	12/10/2021	MPA	Zero correction	01/09/2021	00:00	01/10/2021	00:00	-	Correcting values <0 to 0

Table D2: Q3 Edit Log for $PM_{2.5}$ at Rundle Road Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107			**Email:** Lyndsay.Waller@Durham.ca			
Station Number: 45200				**Station Name:** Rundle Road Station					
Station Address: Rundle Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: $PM_{2.5}$			**Instrument Make & Model:** Thermo Scientific Model 5030 SHARP Monitor						**s/n:** E-1569
Data Edit Period	Start Date: July 1, 2021			End Date: September 30, 2021			All testing done in EST		
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	29/07/2021	SRS	Deleted Hours	29/07/2021	14:00	29/07/2021	16:00	2	Monthly Calibration
2	11/08/2021	MPA	Zero correction	01/07/2021	00:00	01/08/2021	00:00	-	Correcting values <0 to 0
3	30/08/2021	SRS	Deleted Hours	30/08/2021	14:00	30/08/2021	15:00	1	Monthly Calibration
4	22/09/2021	SRS	Deleted Hours	22/09/2021	16:00	23/09/2021	17:00	1	Monthly Calibration - Verification Only
5	24/09/2021	SRS	Deleted Hours	24/09/2021	11:00	24/09/2021	12:00	1	MECP Audit
6	12/10/2021	MPA	Zero correction	01/09/2021	00:00	01/10/2021	00:00	-	Correcting values <0 to 0

Table D3: Q3 Edit Log for NO_X at Courtice Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca				
Station Number: 45201				**Station Name:** Courtice Station					
Station Address: 100 Osbourne Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: NOx			**Instrument Make & Model:** Teledyne Nitrogen Oxide Analyzer Model T200						**s/n:** 675
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021			All testing done in EST		
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	28/07/2021	SRS	Deleted Hours	28/07/2021	12:00	28/07/2021	15:00	3	Monthly Calibration
2	11/08/2021	MPA	Deleted Hours	31/07/2021	12:00	31/07/2021	13:00	1	Power Failure
3	11/08/2021	MPA	Zero correction	01/07/2021	00:00	01/08/2021	00:00	-	Correcting values <0 to 0
4	31/08/2021	SRS	Deleted Hours	31/08/2021	14:00	31/08/2021	16:00	2	Monthly Calibration
5	10/09/2021	MPA	Deleted Hours	20/08/2021	14:00	20/08/2021	15:00	1	Power Failure / Stabalization Period
6	10/09/2021	MPA	Deleted Hours	25/08/2021	08:00	25/08/2021	09:00	1	Power Failure / Stabalization Period
7	10/09/2021	MPA	Zero correction	01/08/2021	00:00	01/09/2021	00:00	-	Correcting values <0 to 0
8	23/09/2021	SRS	Deleted Hours	23/09/2021	13:00	23/09/2021	16:00	3	Monthly Calibration & GPT - Verification Only
9	24/09/2021	SRS	Deleted Hours	24/09/2021	09:00	24/09/2021	11:00	2	MECP Audit
10	12/10/2021	MPA	Zero correction	01/09/2021	00:00	01/10/2021	00:00	-	Correcting values <0 to 0

Table D4: Q3 Edit Log for NO_X at Rundle Road Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca				
Station Number: 45200				**Station Name:** Rundle Road Station					
Station Address: Rundle Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: NOx			**Instrument Make & Model:** Teledyne Nitrogen Oxide Analyzer Model T200						**s/n:** 676
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021		All testing done in EST			
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	29/07/2021	SRS	Deleted Hours	29/07/2021	11:00	29/07/2021	13:00	2	Monthly Calibration
2	11/08/2021	MPA	Zero correction	01/07/2021	00:00	01/08/2021	00:00	-	Correcting values <0 to 0
3	31/08/2021	SRS	Deleted Hours	31/08/2021	10:00	31/08/2021	12:00	2	Monthly Calibration
4	10/09/2021	MPA	Zero correction	01/08/2021	00:00	01/09/2021	00:00	-	Correcting values <0 to 0
5	22/09/2021	SRS	Deleted Hours	22/09/2021	11:00	23/09/2021	15:00	4	Monthly Calibration & GPT - Verification Only
6	24/09/2021	SRS	Deleted Hours	24/09/2021	11:00	24/09/2021	12:00	1	MECP Audit
7	12/10/2021	MPA	Zero correction	01/09/2021	00:00	01/10/2021	00:00	-	Correcting values <0 to 0

Table D5: Q3 Edit Log for SO_2 at Courtice Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca				
Station Number: 45201				**Station Name:** Courtice Station					
Station Address: 100 Osbourne Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: SO_2			**Instrument Make & Model:** Teledyne Sulfur Dioxide Analyzer Model T100						**s/n:** 565
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021		All testing done in EST			
Edit #	**Edit Date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	28/07/2021	SRS	Deleted Hours	28/07/2021	14:00	28/07/2021	16:00	2	Monthly Calibration
2	11/08/2021	MPA	Deleted Hours	31/07/2021	12:00	31/07/2021	13:00	1	Power Failure
3	11/08/2021	MPA	Zero correction	01/07/2021	00:00	01/08/2021	00:00	-	Correcting values <0 to 0
4	31/08/2021	SRS	Deleted Hours	31/08/2021	15:00	31/08/2021	17:00	2	Monthly Calibration
5	10/09/2021	MPA	Deleted Hours	25/08/2021	08:00	25/08/2021	09:00	1	Power Failure / Stabalization Period
6	10/09/2021	MPA	Zero correction	01/08/2021	00:00	01/09/2021	00:00	-	Correcting values <0 to 0
7	23/09/2021	SRS	Deleted Hours	23/09/2021	11:00	23/09/2021	13:00	2	Monthly Calibration - Verification Only
8	24/09/2021	SRS	Deleted Hours	24/09/2021	09:00	24/09/2021	11:00	2	MECP Audit
9	12/10/2021	MPA	Zero correction	01/09/2021	00:00	01/10/2021	00:00	-	Correcting values <0 to 0

Table D6: Q3 Edit Log for SO_2 at Rundle Road Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca				
Station Number: 45200				**Station Name:** Rundle Road Station					
Station Address: Rundle Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: SO_2			**Instrument Make & Model:** Teledyne Sulfur Dioxide Analyzer Model T100						**s/n:** 566
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021		All testing done in EST			
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	11/08/2021	MPA	Deleted Hours	07/07/2021	13:00	08/07/2021	10:00	21	Communications Malfunction
2	29/07/2021	SRS	Deleted Hours	29/07/2021	11:00	29/07/2021	16:00	5	Monthly Calibration and Annual Maintenance.
3	11/08/2021	MPA	Zero correction	01/07/2021	00:00	01/08/2021	00:00	-	Correcting values <0 to 0
4	31/08/2021	SRS	Deleted Hours	31/08/2021	12:00	31/08/2021	14:00	2	Monthly Calibration
5	10/09/2021	MPA	Zero correction	01/08/2021	00:00	01/09/2021	00:00	-	Correcting values <0 to 0
6	22/09/2021	SRS	Deleted Hours	22/09/2021	15:00	23/09/2021	17:00	2	Monthly Calibration - Verification Only
7	24/09/2021	SRS	Deleted Hours	24/09/2021	11:00	24/09/2021	12:00	1	MECP Audit
	12/10/2021	MPA	Zero offset adjustment	24/09/2021	12:00	01/10/2021	00:00	-	Correcting zero drift
8	12/10/2021	MPA	Zero correction	01/09/2021	00:00	01/10/2021	00:00	-	Correcting values <0 to 0

Table D7: Q3 Edit Log for Meteorological Parameters at Courtice Road Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca				
Station Number: 45201				**Station Name:** Courtice Station					
Station Address: 100 Osbourne Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: WS, WD, Ambient T, P, RH and Rain			**Instrument Make & Model:** Miscellaneous Meterological Instrumentation					**s/n:** N/A	
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021			All testing done in EST		
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	

Table D8: Q3 Edit Log for Meteorological Parameters at Rundle Road Station

Emitter s Name: Durham York Energy Centre									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404 0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca				
Station Number: 45200				**Station Name:** Rundle Station					
Station Address: Rundle Road				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: WS, WD, Ambient T, P, RH and Rain			**Instrument Make & Model:** Miscellaneous Meterological Instrumentation						**s/n:** N/A
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021			All testing done in EST		
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	

Table D9: Q3 Edit Log for Discrete Sampling at Courtice Station

Emitter's Name: Durham York Energy Center									
Contact	**Name:** Ms. Lyndsay Waller	**Phone:** (905) 404-0888 ext 4107		**Email:** Lyndsay.Waller@Durham.ca					
Station Number: 45201			**Station Name:** Courtice Station						
Station Address: 100 Osbourne Road			**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON						
Pollutants or Parameter: N/A		**Instrument Make & Model:** N/A						**s/n:**	
Data Edit Period	Start Date: July 1, 2021		End Date: September 30, 2021			All testing done in EST			
Edit #	**Edit date (dd/mm/yyyy)**	**Editor's Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	

Table D10: Q3 Edit Log for Discrete Sampling at Rundle Station

Emitter s Name: Durham York Energy Center									
Contact	**Name:** Ms. Lyndsay Waller		**Phone:** (905) 404-0888 ext 4107			**Email:** Lyndsay.Waller@Durham.ca			
Station Number: 45200				**Station Name:** Rundle Station					
Station Address: Rundle Rd				**Emitter Address:** The Region of Durham, 605 Rossland Road, Whitby, ON					
Pollutants or Parameter: N/A			**Instrument Make & Model:** N/A						**s/n:**
Data Edit Period		Start Date: July 1, 2021		End Date: September 30, 2021			All testing done in EST		
Edit #	**Edit date (dd/mm/yyyy)**	**Editor s Name**	**Edit Action**	**Starting**		**Ending**		**Duration**	**Reason**
				Date (dd/mm/yyyy)	**Hour (xx:xx)**	**Date (dd/mm/yyyy)**	**Hour (xx:xx)**	**Deleted Hours**	
1	14/09/2021	DAJH	Deleted Hours	26/08/2021	00:00	26/08/2021	24:00	24	Equipment Malfunction

APPENDIX E

Table E1. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Periods on September 10, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
10/9/2021 21:45	0.083	0.102	
10/9/2021 21:50	0.185	0.134	
10/9/2021 21:55	0.145	0.165	
10/9/2021 22:00	0.131	0.138	
10/9/2021 22:05	0.132	0.132	
10/9/2021 22:10	134.786	67.459	1
10/9/2021 22:15	129.006	**131.896**	
10/9/2021 22:20	16.028	**72.517**	2
10/9/2021 22:25	11.697	13.863	
10/9/2021 22:30	6.866	9.282	
10/9/2021 22:35	3.966	5.416	
10/9/2021 22:40	3.733	3.85	
10/9/2021 22:45	3.727	3.73	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E2. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Period on September 19, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
19/09/2021 00:30	4.696	4.053	
19/09/2021 00:35	5.873	5.285	
19/09/2021 00:40	5.232	5.553	
19/09/2021 00:45	121.092	63.162	
19/09/2021 00:50	70.118	**95.605**	3
19/09/2021 00:55	52.271	61.195	
19/09/2021 01:00	49.063	50.667	
19/09/2021 01:05	41.543	45.303	
19/09/2021 01:10	40.922	41.233	
19/09/2021 01:15	40.208	40.565	
19/09/2021 01:20	34.574	37.391	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E3. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Periods on September 19, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
19/09/2021 08:15	17.01	16.108	
19/09/2021 08:20	23.602	20.306	
19/09/2021 08:25	32.281	27.942	
19/09/2021 08:30	43.909	38.095	
19/09/2021 08:35	52.108	48.009	
19/09/2021 08:40	52.171	52.14	
19/09/2021 08:45	48.365	50.268	
19/09/2021 08:50	40.21	44.288	
19/09/2021 08:55	47.037	43.624	
19/09/2021 09:00	52.092	49.565	
19/09/2021 09:05	65.738	58.915	
19/09/2021 09:10	68.28	67.009	4
19/09/2021 09:15	88.121	**78.201**	
19/09/2021 09:20	81.077	**84.599**	5
19/09/2021 09:25	67.622	74.35	
19/09/2021 09:30	18.047	42.835	
19/09/2021 09:35	14.467	16.257	
19/09/2021 09:40	10.093	12.28	
19/09/2021 09:45	6.679	8.386	
19/09/2021 09:50	4.365	5.522	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E4. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Period on September 24, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
24/09/2021 20:35	1.716	1.921	
24/09/2021 20:40	3.705	2.711	
24/09/2021 20:45	12.689	8.197	
24/09/2021 20:50	110.74	61.715	
24/09/2021 20:55	193.969	**152.355**	6
24/09/2021 21:00	54.438	124.204	
24/09/2021 21:05	15.986	35.212	
24/09/2021 21:10	20.888	18.437	
24/09/2021 21:15	5.575	13.232	
24/09/2021 21:20	3.5	4.538	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E5. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Period on September 26, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
25/09/2021 23:55	4.696	5.74	
26/09/2021 00:00	5.873	32.487	
26/09/2021 00:05	5.232	72.28	7
26/09/2021 00:10	121.092	**89.673**	
26/09/2021 00:15	70.118	26.204	
26/09/2021 00:20	52.271	20.888	
26/09/2021 00:25	49.063	26.958	
26/09/2021 00:30	41.543	5.435	
26/09/2021 00:35	40.922	3.586	
26/09/2021 00:40	40.208	2.895	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E6. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Periods on September 26, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
26/09/2021 20:15	0.686	0.715	
26/09/2021 20:20	0.694	0.69	
26/09/2021 20:25	0.829	0.762	
26/09/2021 20:30	0.804	0.817	
26/09/2021 20:35	64.226	32.515	
26/09/2021 20:40	99.926	82.076	8
26/09/2021 20:45	79.534	**89.73**	
26/09/2021 20:50	143.407	111.471	9
26/09/2021 20:55	131.337	**137.372**	
26/09/2021 21:00	49.622	**90.48**	10
26/09/2021 21:05	120.949	85.286	
26/09/2021 21:10	17.468	**69.209**	11
26/09/2021 21:15	83.401	50.435	
26/09/2021 21:20	49.007	66.204	
26/09/2021 21:25	11.022	30.015	
26/09/2021 21:30	10.961	10.992	
26/09/2021 21:35	9.881	10.421	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E7. SO_2 Courtice Monitoring Station 10-min Running Average Exceedance Period on September 28, 2021

Date & Time	SO_2 5 min Avg.	SO_2 10 min Running Avg.	
EST	ppb	ppb	
28/09/2021 18:00	1.043	1.081	
28/09/2021 18:05	0.979	1.011	
28/09/2021 18:10	25.94	13.46	
28/09/2021 18:15	57.416	41.678	
28/09/2021 18:20	154.536	**105.976**	12
28/09/2021 18:25	31.515	93.026	
28/09/2021 18:30	35.859	33.687	
28/09/2021 18:35	41.386	38.623	
28/09/2021 18:40	6.88	24.133	
28/09/2021 18:45	3.956	5.418	
28/09/2021 18:50	3.001	3.479	

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
	Range of running average values during exceedance period
#	Exceedance number

Table E8. SO_2 Courtice Monitoring Station 1-Hour Running Average Exceedance Period on September 19, 2021

Date & Time	SO_2 5 min Avg.	SO_2 1-hr Running Avg.
EST	ppb	ppb
19/09/2021 00:25	3.41	3.96
19/09/2021 00:30	4.70	4.20
19/09/2021 00:35	5.87	4.58
19/09/2021 00:40	5.23	4.74
19/09/2021 00:45	121.09	13.66
19/09/2021 00:50	70.12	18.94
19/09/2021 00:55	52.27	22.97
19/09/2021 01:00	49.06	26.87
19/09/2021 01:05	41.54	30.16
19/09/2021 01:10	40.92	33.36
19/09/2021 01:15	40.21	36.51
19/09/2021 01:20	34.57	39.08
19/09/2021 01:25	28.12	41.14
19/09/2021 01:30	23.77	42.73
19/09/2021 01:35	23.91	44.24
19/09/2021 01:40	20.16	**45.48**
19/09/2021 01:45	Zero	38.61
19/09/2021 01:50	Zero	35.45
19/09/2021 01:55	Span	33.585
19/09/2021 02:00	Span	
19/09/2021 02:05	Purge	
19/09/2021 02:10	Purge	
19/09/2021 02:15	14.62	
19/09/2021 02:20	12.08	
19/09/2021 02:25	13.74	
19/09/2021 02:30	11.67	
19/09/2021 02:35	12.09	
19/09/2021 02:40	7.96	
19/09/2021 02:45	9.12	
19/09/2021 02:50	6.12	
19/09/2021 02:55	8.36	10.64
19/09/2021 03:00	6.72	10.25
19/09/2021 03:05	7.17	9.97

1

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

Table E9. SO_2 Courtice Monitoring Station 1-Hour Running Average Exceedance Period on September 19, 2021

Date & Time	SO_2 5-min Avg.	SO_2 1-hr Running Avg.
EST	ppb	ppb
19/09/2021 07:45	4.725	17.56
19/09/2021 07:50	4.273	13.99
19/09/2021 07:55	4.692	12.02
19/09/2021 08:00	6.261	10.11
19/09/2021 08:05	9.887	8.96
19/09/2021 08:10	15.21	8.20
19/09/2021 08:15	17.01	8.35
19/09/2021 08:20	23.60	9.27
19/09/2021 08:25	32.28	11.37
19/09/2021 08:30	43.91	14.40
19/09/2021 08:35	52.11	18.25
19/09/2021 08:40	52.17	22.18
19/09/2021 08:45	48.37	25.81
19/09/2021 08:50	40.21	28.81
19/09/2021 08:55	47.04	32.34
19/09/2021 09:00	52.09	36.16
19/09/2021 09:05	65.74	40.81
19/09/2021 09:10	68.28	45.23
19/09/2021 09:15	88.121	51.16
19/09/2021 09:20	81.077	55.95
19/09/2021 09:25	67.622	**58.894**
19/09/2021 09:30	18.047	56.74
19/09/2021 09:35	14.467	53.60
19/09/2021 09:40	10.093	50.10
19/09/2021 09:45	6.679	46.62
19/09/2021 09:50	4.365	43.64
19/09/2021 09:55	3.753	40.03
19/09/2021 10:00	2.891	35.928
19/09/2021 10:05	2.441	30.653
19/09/2021 10:10	2.242	25.15
19/09/2021 10:15	2.311	17.999
19/09/2021 10:20	3.428	11.528
19/09/2021 10:25	2.274	6.083
19/09/2021 10:30	1.944	4.741

2

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
	Range of running average values during exceedance period
#	Exceedance number

Table E10. SO_2 Courtice Monitoring Station 1-Hour Running Average Exceedance Period on September 24, 2021

Date & Time	SO_2 5 min Avg.	SO_2 1 hr Running Avg.
EST	ppb	ppb
24/09/2021 20:25	4.99	5.13
24/09/2021 20:30	2.13	5.27
24/09/2021 20:35	1.72	5.37
24/09/2021 20:40	3.71	5.64
24/09/2021 20:45	12.69	6.65
24/09/2021 20:50	110.74	15.82
24/09/2021 20:55	193.97	31.04
24/09/2021 21:00	54.44	33.92
24/09/2021 21:05	15.99	34.29
24/09/2021 21:10	20.89	35.61
24/09/2021 21:15	5.58	35.81
24/09/2021 21:20	3.50	35.86
24/09/2021 21:25	59.99	40.44
24/09/2021 21:30	27.13	42.53
24/09/2021 21:35	25.79	44.53
24/09/2021 21:40	5.61	44.69
24/09/2021 21:45	58.03	**48.47**
24/09/2021 21:50	13.21	40.34
24/09/2021 21:55	41.70	27.65
24/09/2021 22:00	17.61	24.584
24/09/2021 22:05	53.40	27.70
24/09/2021 22:10	72.97	32.04
24/09/2021 22:15	11.79	32.56
24/09/2021 22:20	14.00	33.44
24/09/2021 22:25	5.73	28.91
24/09/2021 22:30	3.51	26.95
24/09/2021 22:35	2.77	25.03
24/09/2021 22:40	2.94	24.81
24/09/2021 22:45	5.36	20.42

3

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
	Range of running average values during exceedance period
#	Exceedance number

Table E11. SO_2 Courtice Monitoring Station 1-Hour Running Average Exceedance Period on September 26, 2021

Date & Time	SO_2 5 min Avg.	SO_2 1 hr Running Avg.
EST	ppb	ppb
26/09/2021 19:55	0.79	1.14
26/09/2021 20:00	0.83	1.05
26/09/2021 20:05	0.83	0.99
26/09/2021 20:10	0.74	0.95
26/09/2021 20:15	0.69	0.91
26/09/2021 20:20	0.69	0.86
26/09/2021 20:25	0.83	0.83
26/09/2021 20:30	0.80	0.81
26/09/2021 20:35	64.23	6.08
26/09/2021 20:40	99.93	14.33
26/09/2021 20:45	79.53	20.89
26/09/2021 20:50	143.41	32.78
26/09/2021 20:55	131.34	43.65
26/09/2021 21:00	49.62	47.72
26/09/2021 21:05	120.95	57.73
26/09/2021 21:10	17.47	59.12
26/09/2021 21:15	83.40	66.02
26/09/2021 21:20	49.01	70.04
26/09/2021 21:25	11.02	70.89
26/09/2021 21:30	10.96	**71.738**
26/09/2021 21:35	9.88	67.21
26/09/2021 21:40	18.49	60.42
26/09/2021 21:45	29.94	56.29
26/09/2021 21:50	16.56	45.72
26/09/2021 21:55	28.39	37.14
26/09/2021 22:00	27.38	35.29

4

D, T & V	Date, Time & Exceedance Value Reported (Reported exceedance is the first running avg. value highlighted)
Max	Maximum of the Range
Min	Minimum of the Range
Faded Values	These values are not used to calculate the number of reportable exceedances
	Range of 5-minute measurements that contribute to the exceedance value reported
}	Range of running average values during exceedance period
#	Exceedance number

APPENDIX F

Technical Memorandum

Date: November 10, 2021

To: Claire Finoro, Project Manager, RWDI

From: Gioseph Anello, Director, Waste Management Services, Durham Region

Copy: L. McDowell, Director, Environmental Protection and Promotion Region, York Region

Subject: Durham York Energy Centre (DYEC)
2021 Ambient Air Q3 Sulphur Dioxide Emissions

In support of the 2021, Q3 Ambient Air Quality Monitoring Report prepared by RWDI Inc., the following information is provided in relation to the performance of the DYEC during the periods of elevated sulphur dioxide (SO_2) concentrations observed at the facility's Courtice ambient air monitoring station.

The Emission Summary and Dispersion Modelling (ESDM) report submitted as part of the DYEC ECA Application modelled SO_2 concentrations at the maximum point of impingement (POI) for a facility operating at 110% maximum continuous rating (MCR) with in-stack SO_2 concentrations at the permit limit of 35 mg/m^3. Under this conservative assumed facility operating condition, the predicted maximum 1-hour average concentration at the POI was 8.62 µg/m^3, which represents 8.62% of the new ambient air standard of 100 µg/m^3, which was implemented in 2020.

According to the DYEC's continuous emissions monitoring system (CEMS), when ambient SO_2 standards were exceeded, SO_2 1-minute stack concentrations for both boilers recorded at 0 mg/Rm^3 throughout the days on September 10, 19, 24 and 26th. Boiler 2 was offline on September 26 and throughout the rest of September. Boiler 1 went offline at approximately 11PM on September 26 and throughout the rest of September. At these measured in-stack

concentration levels, the facility's contribution to ambient air quality would be expected to be less than 1% of the new standard.

On September 10, 2021 instances where the Courtice station experienced an exceedance occurred between the hours of 10PM and 11PM, when the wind was found to be originating from the NNW direction. The DYEC is situated NE-ENE from the Courtice station. During the time of the exceedance the DYEC was operational and the reported SO_2 CEMS in stack concentrations recorded 0 mg/Rm^3.

On September 19, 2021 instances where the Courtice station experienced an exceedance occurred between the hours of 1AM and 10AM, when the wind was found to be originating from the NNE to ENE directions. The DYEC is situated NE-ENE from the Courtice station. During the time of the exceedance the DYEC was operational and the reported SO_2 CEMS in stack concentrations recorded 0 mg/Rm^3.

On September 24, 2021 instances where the Courtice station experienced an exceedance occurred between 8PM and 9PM, when the wind was found to be originating from the ENE direction. The DYEC is situated NE-ENE from the Courtice station. During the time of the exceedance the DYEC was operational and the reported SO_2 CEMS in stack concentrations recorded 0 mg/Rm^3.

On September 26, 2021 instances where the Courtice station experienced an exceedance occurred between the hours of 8PM and 9PM and at 00:05AM, when the wind was found to be originating from the NNW direction. The DYEC is situated NE-ENE from the Courtice station. The DYEC was operating with one boiler running on this day and the reported SO_2 CEMS in stack concentration recorded 0 mg/Rm^3.

On September 28, 2021 instances where the Courtice station experienced an exceedance occurred between the hours of 6PM and 7PM. During the time of the exceedance, both boilers were offline.

Considering both the wind direction and the SO_2 concentrations measured in the stack, it is unlikely that the DYEC contributed to elevated ambient SO_2 concentrations during these events. It is more likely that ambient concentrations were attributable to other activities.

APPENDIX G

ALS Environmental
1435 Norjohn Court, Unit 1
Burlington, Ontario, Canada L7L 0E6

November 5, 2021

To: Claire Finoro,
P.Eng., B.Sc. (Eng)
Project Manager
RWDI

Re: Loss of samples.

Hello

I regret to inform you that the following samples were irrevocably compromised during the extraction step in the laboratory process.
For this reason, it is not possible to recover or to report analytical data for these samples.

This is an exceedingly rare occurrence.
An investigation is currently underway in order to determine the cause, and then to place additional measures in place to prevent a reoccurrence in the future.

I deeply apologize for this error.
I also wish that we had been able to inform you sooner, but it wasn't possible to discover the error until the samples reached the instrument analysis stage.

Field ID	ALS LAB ID	Sampleing Date	Analysis
RUNDLE-DX/PAH-AUG14	L2629436-1	August 14, 2021	PCDD, PCDF, PAH
COURTICE-DX/PAH-AUG14	L2629436-2	August 14, 2021	PCDD, PCDF, PAH

Alastair Blythe
Client Services Manager
ALS Environmental-Burlington
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Alastair.Blythe@alsglobal.com

APPENDIX H

Meteorological Station Calibration Data Sheet

Client: DYEC
Station ID: Courtice

Date: Sept 21, 2021
Time: 12:30 - 13:00

Installed Equipment

Parameter	Model
Data Logger	CR1000 / Envidas
Modem	Bullet LTE
Wind Velocity & Direction	RM Young 05103
T/RH	Vaisala HMP 60
Barometric Pressure	Vaisala PTB 110
Precipitation	Texas Electronics TR-525M

Windhead Check

Calibrator: RM Young Model 18802 - S/N 4864

Wind Direction (deg from)		Wind Speed (m/s)	
Direction Setpoint	DAS Reading	Speed Setpoint	DAS Reading
0	0.24	3.528 KPH (200rpm)	3.528
45	45.21	8.520 KPH (500rpm)	8.820
90	89.97	14.122 KPH (800rpm)	14.122
135	134.63	19.404 KPH (1100rpm)	19.404
180	179.14	24.696 KPH (1400rpm)	24.696
225	225.12	33.516 KPH (1900rpm)	33.516
270	269.09		
315	314.37		

Criteria Met: ☑ Yes ☐ No

Comments: Done June 30, 2021 - 16:19

Temperature Check

Standard Thermometer: Digisense

Reference Temperature: 21.7 DAS Temperature: 21.9

Criteria Met: ☑ Yes ☐ No

Comments:

Barometric Pressure Check

Standard Barometer: Digisense S/N 200191637

Reference Pressure: 29.85 DAS Pressure: 29.82

Criteria Met: ☑ Yes ☐ No

Comments:

Relative Humidity Check

Standard Humidity Instrument: Digisense S/N 200191637

Reference Humidity: 74% DAS Humidity: 77%

Criteria Met: ☑ Yes ☐ No

Comments:

Precipitation Check

Graduated Cylinder Volume: 250 ml

Instrument Level: ☑ Yes ☐ No

Debris in inlet basin: ☐ Yes ☑ No

Volume of water poured: 100 ml
Number of tips: 20
Multiplier from Program: 0.1

Criteria Met: ☑ Yes ☐ No

Comments: 12:39 - 12:42

Meteorological Station Calibration Data Sheet

Client: DYEC **Date:** Sept 21, 2021
Station ID: Rundle **Time:** 14:40

Installed Equipment

Parameter	Model
Data Logger	CR1000 / Envidas
Modem	Bullet LTE
Wind Velocity & Direction	RM Young 05103
T/RH	Vaisala HMP60
Barometric Pressure	N/A
Precipitation	Texas Electronics TR-525m

Windhead Check

Calibrator: RM Young Model 18802 - S/N 4864

Wind Direction (deg from)		Wind Speed (m/s)	
Direction Setpoint	DAS Reading	Speed Setpoint	DAS Reading
0	0.12	3.528 KPH (200rpm)	3.528
45	45.2	8.520 KPH (500rpm)	8.820
90	91.1	14.122 KPH (800rpm)	14.122
135	134.8	19.404 KPH (1100rpm)	19.404
180	179.4	24.696 KPH (1400rpm)	24.696
225	225.6	33.516 KPH (1900rpm)	33.516
270	268.9		
315	315.8		

Criteria Met: ☑ Yes ☐ No

Comments: Done Aug 30, 2021 - 17:30

Temperature Check

Standard Thermometer: Digisense S/N 200191637

Reference Temperature: 21.8 DAS Temperature: 21.3

Criteria Met: ☑ Yes ☐ No

Comments:

N/A

Barometric Pressure Check

Standard Barometer: _____

Reference Pressure: _____ DAS Pressure: _____

Criteria Met: ☐ Yes ☐ No

Comments: _____

Relative Humidity Check

Standard Humidity Instrument: Digisense S/N 200191637

Reference Humidity: 73% DAS Humidity: 76 %

Criteria Met: ☑ Yes ☐ No

Comments: _____

Precipitation Check

Graduated Cylinder Volume: 250 ml

Instrument Level: ☑ Yes ☐ No

Debris in inlet basin: ☐ Yes ☑ No

Volume of water poured: 100 ml

Number of tips: 21

Multiplier from Program: 0.1

Criteria Met: ☑ Yes ☐ No

Comments: 14:42 - 14:51