REPORT

DURHAM YORK ENERGY CENTRE

DURHAM, ONTARIO

2024 ANNUAL AMBIENT AIR QUALITY MONITORING REPORT: CONTINUOUS & PERIODIC MONITORING PROGRAM

RWDI #2505260

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SUBMITTED TO

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TABLE OF CONTENTS

1 INTRODUCTION 1
2 BACKGROUND 2
3 MONITORING LOCATIONS 2
4 SAMPLING PROGRAM 5
4.1 Field Operations 5
4.2 Sample Schedules 5
4.3 Instrumentation 5
4.4 Analytical Methods 6
4.4.1 Synchronized Hybrid Ambient Real-time Particulate (SHARP) Monitor 6
4.4.2 Nitrogen Oxide Analyzer 6
4.4.3 Sulphur Dioxide Analyzer 7
4.4.4 High Volume Air Sampler (Hi-Vol) 8
4.4.5 Polyurethane Foam Samplers 8
4.5 Equipment Replacement / Failures 9
4.5.1 Courtice Monitoring Station 9
4.5.2 Rundle Road Monitoring Station 9
4.6 Final Data Editing 10
4.7 MECP Audits 10
5 AIR QUALITY CRITERIA AND STANDARDS 10
6 SUMMARY OF AMBIENT MEASUREMENTS 11
6.1 Exceedances 18
6.1.1 Courtice Monitoring Station 18
6.1.2 Rundle Road Monitoring Station 24
7 AMBIENT AIR QUALITY TRENDS 24
7.1 Criteria Air Contaminant Comparisons 25
7.1.1 NO_2 Comparison 25
7.1.2 SO_2 Comparison 28
7.1.3 $PM_{2.5}$ Comparison 33
7.2 TSP and Metals Comparisons 35
7.3 PAH Comparisons 38
7.4 Dioxins and Furans Comparisons 41
8 CONCLUSIONS 41
9 REFERENCES 42
10 GENERAL STATEMENT OF LIMITATIONS 42

LIST OF TABLES

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

Table 2: 2024 Summary of Data Recovery by Sampling Site and Sampled Parameter

Table 3: 2024 Summary of Statistics for Continuous Sampling Parameter Levels at Courtice and Rundle Road Stations Compared to AAQC/HHRA's

Table 4: 2021-2024 Summary of Statistics for Continuous Sampling Parameter Levels at Courtice and Rundle Road Stations Compared to CAAQS'

Table 5: 2024 Summary of Statistics for Discrete Sampling of TSP and Metal Parameter Levels at Courtice and Rundle Road Stations

Table 6: 2024 Summary of Statistics for Discrete Sampling of PAH Parameter Levels at Courtice and Rundle Road Stations

Table 7: 2024 Summary of Statistics for Discrete Sampling of D&F Parameter Levels at Courtice and Rundle Road Stations

Table 8: 2024 Courtice Monitoring Station BaP Exceedance Details

Table 9: 2024 Courtice Monitoring Station SO_2 1-Hour Exceedance Details

Table 10: 2024 Courtice Monitoring Station SO_2 10-Minute Exceedance Details

Table 11: 2024 Rundle Road Monitoring Station BaP Exceedance Details

Table 12: 2018-2024 Comparison of Measured NO_X, NO and NO_2 Statistics for Courtice and Rundle Road Monitoring Stations

Table 13: 2018-2024 Comparison of Measured SO_2 Statistics for Courtice and Rundle Road Monitoring Stations

Table 14: 2018-2024 Comparison of Measured $PM_{2.5}$ Statistics for Courtice and Rundle Road Monitoring Stations

Table 15: 2018-2024 Comparison of Measured TSP and Metals Concentrations at the Courtice Station

Table 16: 2018-2024 Comparison of Measured TSP and Metals Concentrations at the Rundle Road Station

Table 17: 2018-2024 Comparison of Measured PAH Concentrations at the Courtice Station

Table 18: 2018-2024 Comparison of Measured PAH Concentrations at the Rundle Road Station

Table 19: 2018-2024 Comparison of Maximum Measured D&F Concentrations at the Courtice and Rundle Road Stations

LIST OF FIGURES

Figure 1: DYEC Site and Ambient Monitoring Station Locations with Yearly Wind Roses

Figure 2: Photo of the Courtice Sampling Station

Figure 3: Photo of the Rundle Sampling Station

Figure 4: Maximum Measured 1-hour Mean NO_2 Concentrations by Year (2024 Running Mean)

Figure 5: Maximum Measured 24-hour Running Mean NO_2 Concentrations by Year

Figure 6: Maximum Measured Annual Mean NO_2 Concentrations by Year

Figure 7: Maximum Measured 1-hour Mean SO_2 Concentrations by Year (2024 Running Mean)

Figure 8: Maximum Measured 24-hour Running Mean SO_2 Concentrations by Year

Figure 9: Maximum Measured Annual Mean SO_2 Concentrations by Year

Figure 10: 3-Year Average of the Annual 99th Percentile of the Daily Maximum 1-hour Mean SO2 Concentrations

Figure 11: 3-Year Averages of Annual $PM_{2.5}$ Arithmetic Means (of 1-Hour Average Concentrations) by 3-Year Grouping

Figure 12: 3-Year Averages of Annual 98th Percentile 24-Hour $PM_{2.5}$ Mean Concentrations by 3-Year Grouping

LIST OF APPENDICES

Appendix A: 2024 NAPS Air Sampling Schedule

Appendix B: Summary of Continuous Data

Appendix C: Summary of Discrete Sampling Results

1 INTRODUCTION

RWDI AIR Inc. (RWDI) was retained by Durham Region and York Region (the Regions) to conduct discrete and continuous ambient air quality 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 1st, 2016. The site location is shown in **Figure 1**.

In 2024, the facility had two monitoring stations which collected 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 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 meteorological tower at the Rundle Road Station, is approximately 10 meters tall. The Courtice Station collects the following meteorological parameters: ambient temperature, ambient pressure, precipitation and relative humidity. For purposes of this report, wind speed and wind direction data presented for the Courtice Station have been obtained from the adjacent Courtice Water Pollution Control Plant (WPCP) meteorological tower, which is approximately 20 meters tall.

All 2024 quarterly reports were issued to the MECP by the Region of Durham. This report presents the annual results from January 1 to December 31, 2024.

Throughout 2024, there were three (3) exceedances of the AAQC for Benzo(a) Pyrene. At the Courtice Station, one (1) exceedance occurred on the following dates: October 21. At the Rundle Road Station, two (2) exceedances occurred on the following dates: September 3 and October 21. There were no exceedances for TSP at either station throughout 2024. Data recovery rates were acceptable and valid for all measured parameters at the Courtice and Rundle Road Monitoring Stations.

In years prior to 2020, the DYEC site had no recorded SO_2 exceedances. At the beginning of the 2020 year, the 1-hour AAQC limit was reduced from 250 ppb to 40 ppb and a 10-minute AAQC limit was introduced at 67 ppb. The ambient air monitoring program at the DYEC had one-hundred and eighty-four (184) rolling 1-hour average SO_2 concentrations above the AAQC and four hundred and thirty-four (434) rolling 10-minute average SO_2 concentrations above the AAQC at the Courtice and Rundle Road Monitoring Stations throughout 2024. There was one (1) CAAQS' 24-hour exceedance and no annual exceedance for SO2 in 2024.

2 BACKGROUND

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. The monitoring plan established the Courtice and Rundle Road monitoring stations to monitor ambient air quality and quantify the background ambient air quality levels and DYEC contributed emissions to ambient air quality levels. The monitoring plan also initially included the Fence Line Station, which commenced on February 6, 2016, and ceased on December 4, 2018. Since no exceedances had been reported for TSP or Metals, a request to remove the station was approved by the Ministry of the Environment, Conservation and Parks (MECP).

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

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

3 MONITORING 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 DYEC Site and Ambient Monitoring Station Locations are presented in **Figure 1**, in addition to an annual windrose for each Station. A windrose is a visual representation of the wind speed and wind direction over a specified time period.

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, northeast of the DYEC. Pictures of the two (2) Stations are presented as **Figure 2** and **3**.

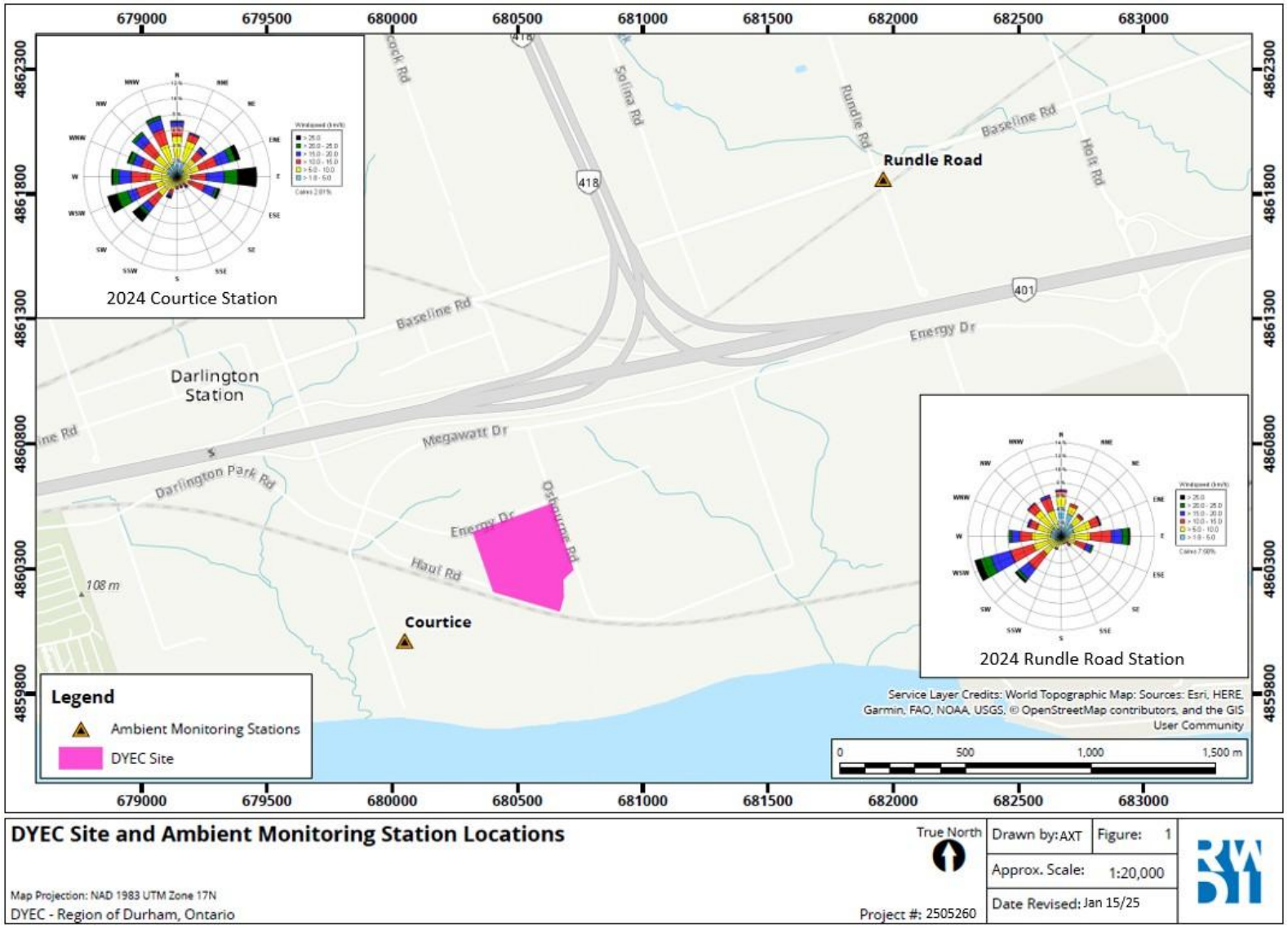


Figure 1: Site and Ambient Monitoring Station Locations

Figure 2: Courtice Station

Figure 3: Rundle Road Station

4 SAMPLING PROGRAM

4.1 Field Operations

RWDI representatives were responsible for completing the following:

- Day-to-day changing of the filters where applicable;
- Field notes and recording observations;
- Monthly calibrations;
- Attending quarterly audits;
- General and preventative maintenance of the units (e.g., flow calibrations, motor replacements etc.);
- Troubleshooting, maintenance and repairs when problems were encountered;
- Routine cleaning (e.g., PUF housing, SHARP $PM_{2.5}$ heads, sample lines etc.);
- Preparation and recovery of PUF media;
- Completion of chain of custody forms for submission to ALS Laboratories in Burlington, ON; and,
- Preparation of the media for shipment to ALS Laboratories using MECP accepted methods.

The samplers were operated according to the Operations Manual for Air Quality Monitoring in Ontario published by the MECP (January 2018) and the Ambient Air Quality Monitoring Plan. RWDI adhered to the manual for any operational changes conducted during the contract period.

4.2 Sample Schedules

All discrete sampling at the Courtice and Rundle Road Stations adhered to the National Air Pollution Surveillance (NAPS) sampling schedule, sampling for 24 hours (midnight to midnight). Sampling was as follows:

- TSP/Metals hi-vol samplers operated on the six-day schedule; and,
- PUF samplers operated on the twelve-day schedule. The samples were analyzed for PAH's every twelve days, and D&F's every twenty-four days.

4.3 Instrumentation

Courtice and Rundle Road Monitoring Stations are both equipped with the following continuous monitors: Teledyne T200 Nitrogen Oxide Analyzer Model (NO_X analyzer), Teledyne T100 Sulfur Dioxide Analyzer and Thermo Scientific Model 5030 SHARP Monitor (SHARP) with a $PM_{2.5}$ inlet head. Courtice and Rundle Road Stations also have the following periodic monitors: High Volume (Hi-Vol) Air Sampler outfitted with a total suspended particulate (TSP) inlet capable of collecting particulate of all aerodynamic diameters and a Tisch TE-1000 sampler used to collect D&F's and PAH's using a polyurethane foam plug.

The Courtice and Rundle Road Stations also collect continuous meteorological parameters. The Courtice Station is equipped with the following continuous monitors: Campbell Scientific Model HMP60 (temperature/relative humidity), Campbell Scientific Model CS106 (atmospheric pressure), Texas Electronic TE525M (precipitation). The Courtice Monitoring Station uses the Courtice WPCP wind speed and direction data. The wind speed and direction data are provided to RWDI by Courtice WPCP staff upon request. The Rundle Road Station is equipped with the following continuous monitors: Campbell Scientific Model HMP60 (temperature/relative humidity), Texas Electronic TE525M (precipitation) and RM Young Model 05103-10 wind head (wind speed and direction).

4.4 Analytical Methods

4.4.1 Synchronized Hybrid Ambient Real-time Particulate (SHARP) Monitor

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 which is attached to an Envistas computer. The computer 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.

4.4.2 Nitrogen Oxide Analyzer

The Teledyne T200 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 EPA protocol span gases and a dilution system. Automatic IZS checks were performed on a daily basis commencing at approximately 1:45 and ending at 02:15 the same day. 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 which is attached to an Envidas computer. The computer 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.

4.4.3 Sulphur Dioxide Analyzer

The Teledyne T100 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 EPA protocol span gases and a dilution system. Automatic IZS checks were performed on a daily basis commencing at approximately 1:45 and ending at 02:15 the same day. 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 which is attached to an Envidas computer. The computer 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.

4.4.4 High Volume Air Sampler (Hi-Vol)

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 datalogger 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 are pre and post weighed by ALS Laboratories in Burlington, Ontario. The filters are then analyzed for total particulate weight, metals analysis and mercury. The specific list of metals analyzed can be found in **Table 5** and the list and rationale is also provided in the Ambient Air Quality Monitoring Plan (Stantec, 2012).

4.4.5 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. The specific list of PAHs and D&F analyzed can be found in **Tables 6** and **7**, the list and rationale for target compounds are also provided in the Ambient Air Quality Monitoring Plan (Stantec, 2012).

4.5 Equipment Replacement / Failures

4.5.1 Courtice Monitoring Station

4.5.1.1 Continuous Samplers

On July 28, 2024 at 08:00 till July 28, 2024 at 17:00, the Courtice station incurred 9 hours of data loss due to a power outage.

On August 2, 2024 at 14:00 till August 2, 2024 at 18:00, the Courtice station incurred 4 hours of data loss due to a power outage.

On September 8, 2024 at 12:00 till September 10, 2024 at 10:00, the Courtice station incurred 46 hours of data loss due to a computer malfunction and power outage.

On October 6, 2024 at 16:00 till October 7, 2024 at 17:00, the Courtice station incurred 25 hours of data loss due to a computer malfunction.

4.5.1.2 Discrete Samplers

The January 13, 2024, Courtice and Rundle TSP samples were invalidated due to equipment malfunctions.

The June 5, 2024 and June 17, 2024 Courtice TSP samples were invalidated due to equipment malfunctions.

The September 9, 2024 Courtice TSP sample was invalidated due to a power outage.

The September 15, 2024 Courtice PAH sample was invalidated due to contamination in the laboratory's analytical process.

The September 27, 2024 Courtice TSP sample was invalidated due to an equipment malfunction.

4.5.2 Rundle Road Monitoring Station

4.5.2.1 Continuous Samplers

On March 21, 2024, the Rundle Road station's MET (WS, WD, Temp, RH and Rain) sensors incurred 3 hours of data loss from 10:00 to 13:00 due to a malfunction with the data logger.

On March 26, 2024, the Rundle Road station's NO_x & SO_2 analyzer incurred 1 hour of data loss from 14:00 to 15:00 due to site shelter maintenance.

On April 2, 2024 at 08:00 till April 5, 2024 at 10:00, the Rundle Road station incurred 74 hours of data loss due to the combination of a power outage & data logger malfunction.

On November 16, 2024 at 11:00 till November 16, 2024 at 14:00, the Rundle station incurred 3 hours of data loss due to a power outage.

4.5.2.2 Discrete Samplers

The January 19, 2024, Rundle D&F sample was invalidated due to sample contamination by the lab.

The April 6, 2024 Rundle TSP sample and the April 12, 2024 Rundle TSP and PAH samples were invalidated due to equipment malfunctions which resulted on the sampler running on the incorrect dates.

The July 5, 11 and 17, 2024 Rundle TSP samples were invalidated due to equipment malfunctions.

The December 8, 2024 Rundle TSP sample was invalidated due to the sample volume being outside sampling criteria.

4.6 Final Data Editing

No edits were made to the 2024 continuous or discrete monitoring dataset after a final review.

4.7 MECP Audits

An MECP audit was conducted on March 26, 2024, where all instruments met their respective audit criteria.

A second MECP audit was conducted on June 18, 2024. All instruments met their respective audit criteria.

A third MECP audit was conducted on August 1, 2024. All instruments met their respective audit criteria.

A fourth MECP audit was conducted on November 4, 2024. All instruments met their respective audit criteria.

5 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. New AAQC's for SO_2 were implemented in 2020, including a 10-minute rolling average AAQC of 67 ppb, a 1-hour rolling average AAQC of 40 ppb and an annual AAQC of 4 ppb. There is no longer a 24-hour rolling average AAQC for SO_2.

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 $\mu g/m^3$ for the 3-year average of annual 98th percentile 24-hour concentration, and 8.8 $\mu g/m^3$ for the 3-year average of annual average concentrations (in effect as of 2020). In 2020, there are new CAAQS' being implemented which are listed in **Table 1**.

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

Parameter	Averaging Time	Year Applied			Statistical Form
		2015	2020	2025	
Fine Particulate Matter ($PM_{2.5}$)	24-hour	28 µg/m³	27 µg/m³	-	The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations
	Annual	10 µg/m³	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 daily maximum 1-hour average concentrations
	Annual	-	5 ppb	4 ppb	The average over a single calendar year of all 1-hour average 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

(https://www.ccme.ca/en/air-quality-report)

All applicable criteria and standards are presented in the following section of this report.

6 SUMMARY OF AMBIENT MEASUREMENTS

Ambient air quality monitoring results of all parameters sampled for the Courtice and Rundle Road Monitoring Stations are discussed herein. Detailed results of all continuous and discrete sampling throughout the year are included in **Appendix B** and **C**, respectively.

Table 2 below presents the number and percentage of valid samples collected at each sampling site for each parameter sampled. Data recovery above 75% is considered acceptable. Data recovery was 88.0% or higher at each station for all continuous and discrete parameters.

Table 2: 2024 Summary of Data Recovery by Sampling Site and Sampled Parameter

Station	Parameter	Total Possible # of Hours or Samples	# of Valid Hours or Samples Collected	Percentage of Valid Samples (%)	Overall Percentage of Valid Samples for the Station (%)
Courtice Monitoring Station	$PM_{2.5}$	8784	8649	98.5	**97.7**
	NO_X	8784	8663	98.6	
	NO	8784	8663	98.6	
	NO_2	8784	8663	98.6	
	SO_2	8784	8665	98.6	
	TSP & Metals	61	56	91.8	
	PAHs	30	29	96.7	
	D&F	15	15	100	
Rundle Road Monitoring Station	$PM_{2.5}$	8784	8663	98.6	**96.5**
	NO_X	8784	8670	98.7	
	NO	8784	8670	98.7	
	NO_2	8784	8670	98.7	
	SO_2	8784	8654	98.5	
	TSP & Metals	61	54	88.5	
	PAHs	30	29	96.7	
	D&F	15	14	93.3	

Table 3 presents a summary of the continuous sampling statistics at each station for 2024 compared to Ontario AAQC, Ontario Regulation 419/05 and HHRA values. **Table 4** presents a summary of the continuous sampling statistics at each station for 2024 compared to applicable CAAQS'. **Table 5** presents a summary of the 2024 TSP/metals discrete sampling statistics at Courtice and Rundle Road Stations. All results were compared to the applicable twenty-four (24) hour criteria/standards. **Table 6** presents a summary of the 2024 PAH discrete sampling statistics at Courtice and Rundle Road Stations. All results were compared to the applicable twenty-four (24) hour criteria/standards. **Table 7** presents a summary of the 2024 D&F discrete sampling statistics at Courtice and Rundle Road Stations. All results were compared to the applicable twenty-four (24) hour criteria/standards.

Table 3: 2024 Summary of Statistics for Continuous Sampling Parameter Levels at Courtice and Rundle Road Stations Compared to AAQC

Station	Parameter	Max 10-min Running Mean	10-min AAQC	Events > 10-min AAQC	Max Running 1-hr Mean	1-hr AAQC	Events > 1-hr AAQC	Max 24-hr Running Mean	24-hr AAQC	Events > 24-hr AAQC	Annual Arith. Mean	Annual AAQC	Events > Annual AAQC
Courtice Monitoring Station	$PM_{2.5}$ (µg/m³)	-	-	-	328.5	-	-	19.8	-	-	5.2	-	-
	NO_X (ppb)	-	-	-	68.7	-	-	26.0	-	-	6.5	-	-
	NO (ppb)	-	-	-	46.0	-	-	12.3	-	-	1.4	-	-
	NO_2 (ppb)	-	-	-	39.1	200	0	17.4	100	0	5.1	-	-
	SO_2 (ppb)	590.1	67	434	187.8	40	184	39.2	-	-	3.7	4	0
Rundle Road Monitoring Station	$PM_{2.5}$ (µg/m³)	-	-	-	49.5	-	-	20.6	-	-	5.0	-	-
	NO_X (ppb)	-	-	-	135.7	-	-	23.7	-	-	5.0	-	-
	NO (ppb)	-	-	-	91.3	-	-	13.2	-	-	1.1	-	-
	NO_2 (ppb)	-	-	-	44.4	200	0	16.9	100	0	4.0	-	-
	SO_2 (ppb)	5.0	67	0	142.8	40	0	1.1	-	-	0.3	4	0

Table 4: 2022-2024 Summary of Statistics for Continuous Sampling Parameter Levels at Courtice and Rundle Road Stations Compared to CAAQS'

Station	Parameter	2022-2024 1-Hour Mean	1-Hour CAAQS	Events > 1-Hour CAAQS	2022-2024 24-Hour Mean	24-Hour CAAQS	Events > 24-Hour CAAQS	2022-2024 Annual Mean	Annual CAAQS	Events > Annual CAAQS
Courtice Monitoring Station	$PM_{2.5}$ (µg/m^3)	-	-	-	19.7 [3]	27	0	6.1 [4]	8.8	0
	Sulphur Dioxide (SO_2)	113.0 [1]	70	1	-	-	-	3.7 [5]	5	0
	Nitrogen Dioxide (NO_2)	33.3 [2]	60	0	-	-	-	5.2 [5]	17	0
Rundle Road Monitoring Station	$PM_{2.5}$ (µg/m^3)	-	-	-	16.0 [3]	27	0	5.8 [4]	8.8	0
	Sulphur Dioxide (SO_2)	23.1 [1]	70	0	-	-	-	0.3 [5]	5	0
	Nitrogen Dioxide (NO_2)	26.1 [2]	60	0	-	-	-	4.0 [5]	17	0

Notes:
[1] The 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentrations
[2] The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations
[3] The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations
[4] The 3-year average of the annual average of the daily 24-hour concentrations
[5] The average over a single calendar year of all 1-hour average concentration

Table 5: 2024 Summary of Statistics for Discrete Sampling of TSP and Metal Parameter Levels at Courtice and Rundle Road Stations

Parameter	Units	AAQC	Courtice Monitoring Station			Rundle Road Monitoring Station		
			Arithmetic Mean	Maximum 24-hour	No. of Elevated Readings	Arithmetic Mean	Maximum 24-hour	No. of Elevated Readings
Particulate (TSP)	µg/m³	120	25.1	63.9	0	28.0	87.1	0
Total Mercury (Hg)	µg/m³	2	7.57E-06	2.55E-05	0	7.25E-06	3.74E-05	0
Aluminum (Al)	µg/m³	-	1.78E-01	5.34E-01	-	2.26E-01	8.15E-01	-
Antimony (Sb)	µg/m³	25	1.01E-03	3.23E-03	0	8.17E-04	4.65E-03	0
Arsenic (As)	µg/m³	0.3	1.02E-03	6.25E-03	0	9.53E-04	2.40E-03	0
Barium (Ba)	µg/m³	10	7.44E-03	1.71E-02	0	7.69E-03	1.82E-02	0
Beryllium (Be)	µg/m³	0.01	1.50E-05	1.56E-05	0	1.62E-05	3.95E-05	0
Bismuth (Bi)	µg/m³	-	5.40E-04	5.62E-04	-	5.68E-04	1.85E-03	-
Boron (B)	µg/m³	120	4.68E-03	1.04E-02	0	4.65E-03	1.09E-02	0
Cadmium (Cd)	µg/m³	0.025	1.22E-04	4.10E-04	0	1.05E-04	6.83E-04	0
Chromium (Cr)	µg/m³	0.5	1.69E-03	3.40E-03	0	1.94E-03	1.12E-02	0
Cobalt (Co)	µg/m³	0.1	1.36E-04	8.39E-04	0	1.66E-04	4.60E-04	0
Copper (Cu)	µg/m³	50	2.03E-02	6.99E-02	0	5.67E-02	1.18E-01	0
Iron (Fe)	µg/m³	4	4.01E-01	9.49E-01	0	4.44E-01	1.17E+00	0
Lead (Pb)	µg/m³	0.5	2.37E-03	8.73E-03	0	2.70E-03	1.56E-02	0
Magnesium (Mg)	µg/m³	-	2.49E-01	8.65E-01	-	3.26E-01	1.72E+00	-
Manganese (Mn)	µg/m³	0.4	1.11E-02	3.45E-02	0	1.22E-02	4.37E-02	0
Molybdenum (Mo)	µg/m³	120	8.98E-04	2.03E-03	0	2.42E-03	5.79E-03	0
Nickel (Ni)	µg/m³	0.2	1.09E-03	6.11E-03	0	1.16E-03	4.61E-03	0
Phosphorus (P)	µg/m³	-	2.43E-01	5.21E-01	-	2.51E-01	5.20E-01	-
Selenium (Se)	µg/m³	10	5.30E-04	2.35E-03	0	6.35E-04	5.42E-03	0
Silver (Ag)	µg/m³	1	3.11E-05	1.05E-04	0	4.27E-05	2.31E-04	0
Strontium (Sr)	µg/m³	120	7.96E-03	2.32E-02	0	8.69E-03	3.26E-02	0
Thallium (Tl)	µg/m³	-	2.70E-05	2.81E-05	-	3.31E-05	1.62E-04	-
Tin (Sn)	µg/m³	10	9.95E-04	2.47E-03	0	1.12E-03	5.20E-03	0
Titanium (Ti)	µg/m³	120	8.30E-03	2.11E-02	0	1.00E-02	3.53E-02	0
Uranium (Ur)	µg/m³	0.3	2.33E-05	1.34E-04	0	2.69E-05	1.29E-04	0
Vanadium (V)	µg/m³	2	1.54E-03	3.46E-03	0	1.60E-03	4.56E-03	0
Zinc (Zn)	µg/m³	120	3.80E-02	1.48E-01	0	4.25E-02	1.97E-01	0
Zirconium (Zr)	µg/m³	-	6.00E-04	6.25E-04	-	6.05E-04	6.48E-04	-

Table 6: 2024 Summary of Statistics for Discrete Sampling of PAH Parameter Levels at Courtice and Rundle Road Stations

Parameter	Units	AAQC	Courtice Monitoring Station			Rundle Road Monitoring Station		
			Arithmetic Mean	Maximum 24-hour	No. of Elevated Readings	Arithmetic Mean	Maximum 24-hour	No. of Elevated Readings
1-Methylnaphthalene	ng/m³	-	2.49E+00	6.37E+00	-	2.61E+00	6.83E+00	-
2-Methylnaphthalene	ng/m³	-	4.69E+00	1.24E+01	-	4.89E+00	1.29E+01	-
Acenaphthene	ng/m³	-	2.45E+00	1.28E+01	-	2.68E+00	7.92E+00	-
Acenaphthylene	ng/m³	-	3.08E-01	8.33E-01	-	3.06E-01	1.15E+00	-
Anthracene	ng/m³	-	1.30E-01	3.15E-01	-	3.34E-01	1.77E+00	-
Benzo(a)Anthracene	ng/m³	-	1.68E-02	8.22E-02	-	2.15E-02	9.90E-02	-
Benzo(a)fluorene	ng/m³	-	4.62E-02	2.35E-01	-	6.97E-02	3.43E-01	-
Benzo(a)Pyrene	ng/m³	0.05 [1]	1.59E-02	1.15E-01	1	2.10E-02	1.25E-01	2
Benzo(b)Fluoranthene	ng/m³	-	4.31E-02	1.82E-01	-	5.56E-02	1.98E-01	-
Benzo(b)fluorene	ng/m³	-	8.23E-03	4.16E-02	-	1.17E-02	7.11E-02	-
Benzo(e)Pyrene	ng/m³	-	2.88E-02	9.80E-02	-	3.45E-02	1.05E-01	-
Benzo(g,h,i)Perylene	ng/m³	-	2.99E-02	9.90E-02	-	3.62E-02	1.16E-01	-
Benzo(k)Fluoranthene	ng/m³	-	4.00E-02	1.27E-01	-	4.69E-02	1.54E-01	-
Biphenyl	ng/m³	-	1.82E+00	4.27E+00	-	2.00E+00	9.24E+00	-
Chrysene	ng/m³	-	8.01E-02	2.17E-01	-	1.08E-01	3.81E-01	-
Dibenzo(a,h)Anthracene	ng/m³	-	4.75E-03	2.25E-02	-	5.68E-03	2.72E-02	-
Fluoranthene	ng/m³	-	7.03E-01	2.02E+00	-	1.46E+00	5.91E+00	-
Fluorene	ng/m³	-	1.85E+00	6.69E+00	-	2.51E+00	8.27E+00	-
Indeno(1,2,3-cd)Pyrene	ng/m³	-	2.60E-02	9.76E-02	-	3.16E-02	1.07E-01	-
Naphthalene	ng/m³	22500	1.01E+01	2.75E+01	0	9.75E+00	3.37E+01	0
o-Terphenyl	ng/m³	-	9.01E-03	5.00E-02	-	9.69E-03	4.95E-02	-
Perylene	ng/m³	-	3.50E-03	1.63E-02	-	3.72E-03	1.61E-02	-
Phenanthrene	ng/m³	-	3.16E+00	9.87E+00	-	5.37E+00	2.04E+01	-
Pyrene	ng/m³	-	3.30E-01	8.57E-01	-	6.79E-01	2.64E+00	-
Tetralin	ng/m³	-	1.01E+00	7.77E+00	-	1.01E+00	6.70E+00	-
Total PAH [2]	ng/m³	-	2.94E+01	6.93E+01	-	3.41E+01	8.37E+01	-

Notes: [1] Ontario Ambient Air Quality Criteria. The Standard for benzo(a)Pyrene (B(a)P) is for B(a)P as a surrogate for PAHs,
[2] The reported total PAH is the sum of all analysed PAH species

Table 7: 2024 Summary of Statistics for Discrete Sampling of D&F Parameter Levels at Courtice and Rundle Road Stations

Parameter	Units	AAQC	Courtice Monitoring Station			Rundle Road Monitoring Station		
			Arithmetic Mean	Maximum 24-hour	Number of Elevated Readings	Arithmetic Mean	Maximum 24-hour	Number of Elevated Readings
2,3,7,8-TCDD	pg/m^3	-	1.09E-03	5.02E-03	-	7.79E-04	1.98E-03	-
1,2,3,7,8-PeCDD	pg/m^3	-	1.08E-03	2.42E-03	-	1.54E-03	3.27E-03	-
1,2,3,4,7,8-HxCDD	pg/m^3	-	1.60E-04	3.36E-04	-	1.49E-04	5.68E-04	-
1,2,3,6,7,8-HxCDD	pg/m^3	-	1.97E-04	4.14E-04	-	2.30E-04	1.30E-03	-
1,2,3,7,8,9-HxCDD	pg/m^3	-	1.60E-04	3.71E-04	-	1.82E-04	4.10E-04	-
1,2,3,4,6,7,8-HpCDD	pg/m^3	-	4.02E-04	9.90E-04	-	3.53E-04	9.01E-04	-
OCDD	pg/m^3	-	4.74E-05	1.25E-04	-	3.65E-05	8.61E-05	-
2,3,7,8-TCDF	pg/m^3	-	1.18E-04	3.46E-04	-	1.04E-04	2.14E-04	-
1,2,3,7,8-PeCDF	pg/m^3	-	4.17E-05	7.73E-05	-	4.62E-05	1.15E-04	-
2,3,4,7,8-PeCDF	pg/m^3	-	3.25E-04	6.75E-04	-	4.31E-04	1.08E-03	-
1,2,3,4,7,8-HxCDF	pg/m^3	-	1.88E-04	5.65E-04	-	1.42E-04	3.57E-04	-
1,2,3,6,7,8-HxCDF	pg/m^3	-	1.35E-04	3.49E-04	-	1.51E-04	3.29E-04	-
2,3,4,6,7,8-HxCDF	pg/m^3	-	1.00E-04	2.48E-04	-	1.36E-04	3.42E-04	-
1,2,3,7,8,9-HxCDF	pg/m^3	-	8.55E-05	2.42E-04	-	9.95E-05	1.89E-04	-
1,2,3,4,6,7,8-HpCDF	pg/m^3	-	6.64E-05	2.06E-04	-	7.31E-05	1.85E-04	-
1,2,3,4,7,8,9-HpCDF	pg/m^3	-	1.07E-05	3.29E-05	-	1.63E-05	4.89E-05	-
OCDF	pg/m^3	-	4.33E-06	1.83E-05	-	2.24E-06	7.43E-06	-
Total Toxic Equivalency	pg/m^3	0.1 [1] 1 [2]	4.21E-03	9.12E-03	0	4.47E-03	8.59E-03	0

Notes: [1] O.Reg. 419/05 Schedule 3 Standard phased in after July 1st, 2016
[2] O.Reg. 419/05 Schedule 6 Upper Risk Thresholds

6.1 Exceedances

6.1.1 Courtice Monitoring Station

The Courtice Monitoring Station observed no exceedances of metals, D&F's, $PM_{2.5}$, TSP or NO_2 over their applicable AAQC or CAAQS during 2024.

The Courtice Monitoring Station exceeded the SO2 1-hr CAAQS 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentrations. The 3-year average was from 2022-2024.

The Courtice Monitoring Station observed one (1) exceedance over the daily AAQC for Benzo(a)pyrene (0.05 ng/m^3) during 2024. The exceedances occurred on October 21, with 24-hour average concentrations of 0.155 ng/m^3 respectively. The exceedance details are provided in **Table 8**. The Courtice Monitoring Station had no other PAH exceedances (with the exception of Benzo(a)pyrene) during 2024.

Table 8: 2024 Courtice Monitoring Station BaP Exceedance Details

Date	Percentage of BaP Criteria	Wind Direction	Potential Source Contributions
October 21, 2024	230%	WSW	The Courtice meteorological data suggests that the Courtice Station was primarily upwind of the DYEC during the sampling period. Given the wind conditions, it is likely that the measured BaP exceedance is attributable to sources other than the Energy Centre operations.

The Courtice Monitoring Station observed one-hundred and eighty-four (184) exceedances over the maximum hourly mean AAQC for SO_2 (40 ppb) during 2024. The exceedance details are provided in **Table 9**. There were also four-hundred and thirty-four (434) exceedances of the rolling 10-minute average AAQC (67 ppb) at the Courtice Station in 2024. The exceedance details are provided in **Table 10**.

Table 9: 2024 Courtice Monitoring Station SO_2 1-Hour Exceedance Details

Date	Number of Exceedances	Maximum Percentage of Criteria
January 6, 2024	1	122%
January 12, 2024	2	173%
January 23, 2024	2	104%
January 29, 2024	3	117%
February 3, 2024	2	153%
February 4, 2024	7	344%
February 5, 2024	1	106%
February 6, 2024	8	145%

Date	Number of Exceedances	Maximum Percentage of Criteria
February 12, 2024	5	305%
February 13, 2024	7	279%
February 14, 2024	3	118%
February 15, 2024	5	257%
February 19, 2024	5	192%
February 20, 2024	1	103%
February 22, 2024	4	135%
February 23, 2024	2	123%
February 25, 2024	2	107%
February 26, 2024	1	104%
March 1, 2024	2	102%
April 22, 2024	1	109%
April 23, 2024	2	113%
April 25, 2024	4	113%
April 26, 2024	2	105%
May 23, 2024	1	118%
May 25, 2024	1	101%
May 29, 2024	1	101%
June 11, 2024	2	195%
June 16, 2024	1	101%
July 20, 2024	1	101%
July 22, 2024	1	103%
July 27, 2024	2	103%
August 1, 2024	3	220%
August 2, 2024	3	137%
August 5, 2024	3	175%
August 6, 2024	8	209%
August 7, 2024	4	209%
August 13, 2024	3	155%
August 14, 2024	2	191%
August 15, 2024	2	276%
August 16, 2024	2	102%
August 24, 2024	4	145%
August 26, 2024	2	115%

Date	Number of Exceedances	Maximum Percentage of Criteria
August 27, 2024	1	105%
August 29, 2024	3	171%
August 31, 2024	2	104%
September 1, 2024	4	219%
September 3, 2024	2	153%
September 5, 2024	1	103%
September 10, 2024	4	250%
September 11, 2024	3	103%
September 13, 2024	1	102%
September 26, 2024	1	108%
September 27, 2024	6	182%
September 30, 2024	2	138%
October 2, 2024	2	126%
October 8, 2024	1	109%
October 10, 2024	2	132%
October 11, 2024	1	215%
October 22, 2024	4	212%
October 23, 2024	2	172%
October 25, 2024	1	104%
October 27, 2024	3	133%
November 2, 2024	2	155%
November 3, 2024	7	195%
November 9, 2024	1	104%
November 12, 2024	2	103%
November 21, 2024	2	302%
November 25, 2024	2	113%
November 28, 2024	3	141%
December 14, 2024	1	101%

Table 10: 2024 Courtice Monitoring Station SO_2 10-Minute Exceedance Details

Date	Number of Exceedances	Maximum Percentage of Criteria
January 6, 2024	1	192%
January 8, 2024	1	123%
January 12, 2024	5	164%
January 23, 2024	2	121%
January 28, 2024	2	103%
January 29, 2024	6	157%
February 3, 2024	6	153%
February 4, 2024	20	312%
February 5, 2024	3	139%
February 6, 2024	18	176%
February 7, 2024	1	106%
February 12, 2024	19	455%
February 13, 2024	18	244%
February 14, 2024	7	228%
February 15, 2024	12	234%
February 17, 2024	1	119%
February 19, 2024	12	217%
February 22, 2024	9	257%
February 23, 2024	6	209%
February 25, 2024	5	204%
February 26, 2024	2	188%
March 1, 2024	1	107%
April 18, 2024	1	101%
April 22, 2024	1	110%
April 23, 2024	2	111%
April 25, 2024	7	221%
April 26, 2024	3	120%
May 13, 2024	1	102%
May 23, 2024	3	209%
May 26, 2024	2	115%
June 1, 2024	1	149%
June 11, 2024	3	439%
June 12, 2024	2	123%

Date	Number of Exceedances	Maximum Percentage of Criteria
June 13, 2024	2	119%
June 16, 2024	1	113%
July 4, 2024	1	104.0%
July 7, 2024	1	174.9%
July 12, 2024	1	129.4%
July 18, 2024	1	106.6%
July 20, 2024	1	149.6%
July 21, 2024	2	123.0%
July 22, 2024	2	209.0%
July 26, 2024	1	172.8%
July 27, 2024	3	133.4%
August 1, 2024	8	511%
August 2, 2024	6	153%
August 5, 2024	6	160%
August 6, 2024	18	159%
August 7, 2024	8	177%
August 13, 2024	7	371%
August 14, 2024	7	231%
August 15, 2024	7	378%
August 16, 2024	2	118%
August 24, 2024	6	168%
August 26, 2024	4	189%
August 27, 2024	4	126%
August 29, 2024	8	258%
August 31, 2024	4	138%
September 1, 2024	9	197%
September 3, 2024	6	194%
September 4, 2024	2	112%
September 10, 2024	10	490%
September 12, 2024	1	129%
September 13, 2024	2	177%
September 26, 2024	2	106%
September 27, 2024	10	196%
September 30, 2024	1	155%

Date	Number of Exceedances	Maximum Percentage of Criteria
October 2, 2024	4	223%
October 4, 2024	3	1685
October 5, 2024	2	180%
October 8, 2024	2	254%
October 9, 2024	1	118%
October 10, 2024	4	472%
October 11, 2024	3	227%
October 21, 2024	1	133%
October 22, 2024	9	414%
October 23, 2024	5	204%
October 25, 2024	2	104%
October 27, 2024	4	150%
November 2, 2024	5	190%
November 3, 2024	19	180%
November 9, 2024	4	202%
November 12, 2024	3	107%
November 21, 2024	4	881%
November 25, 2024	5	183%
November 28, 2024	4	178%
December 2, 2024	2	125%
December 8, 2024	1	106%
December 14, 2024	2	155%
December 29, 2024	1	125%

The elevated 1-hour running average SO_2 events at the Courtice Station typically originated from the northwest to the northeast directions. This indicates that the Station was downwind of the DYEC during some of the exceedance events which indicates that contributions from the DYEC are possible.

Durham Region staff provided RWDI with the DYEC SO_2 continuous emissions monitoring system (CEMS) data during the exceedance events recorded at the Courtice and Rundle Road Stations for each quarter. The data indicated that the in-stack concentration levels measured by the CEMS held no unusual levels in SO_2 emissions during the Station exceedance events and that the facility's contribution to ambient air quality would be expected to be quite low.

6.1.2 Rundle Road Monitoring Station

The Rundle Road Monitoring Station observed no exceedances of metals, D&F's, $PM_{2.5}$, TSP, SO2 or NO_2 over their applicable AAQC or CAAQS during 2024.

The Rundle Road Monitoring Station observed two (2) exceedances over the daily AAQC for Benzo(a)pyrene (0.05 ng/m^3) during 2024. The exceedances occurred on September 3 and October 21, 2024, with 24-hour average concentrations of 0.064 and 0.125 ng/m^3 respectively. The exceedance details are provided in **Table 11**. The Rundle Road Monitoring Station had no other PAH exceedances (with the exception of Benzo(a)pyrene) during 2024.

Table 11: 2024 Rundle Road Monitoring Station BaP Exceedance Details

Date	Percentage of BaP Criteria	Wind Direction	Potential Source Contributions
September 3, 2024	128%	SW, WSW, NW, NNW	The Rundle Road meteorological data suggests that the Rundle Road Station was partially downwind of the DYEC during the sampling period. Given the wind conditions, it is likely that the Energy Centre operations contributed to the measured BaP exceedance with contributions from offsite sources.
October 21, 2024	250%	WSW	The Rundle Road meteorological data suggests that the Rundle Road Station was primarily crosswind of the DYEC during the sampling period. Given the wind conditions, it is likely that the measured BaP exceedance is attributable to sources other than the Energy Centre operations.

7 AMBIENT AIR QUALITY TRENDS

Ambient air quality measurements from the Courtice and Rundle Road Monitoring Stations from 2018 to 2024 are compared in this section of the report. Stantec collected and reported the data from 2013 until the end of Quarter 2 of 2018. RWDI has been responsible for collecting and reporting data from Quarter 3 of 2018 to present. The data for Q1 and Q2 of 2018 was obtained from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).

Beginning in 2020, there was the reduction of the SO_2 1-hour AAQC limit from 250 to 40 ppb. Prior to 2020, the DYEC had never recorded an SO_2 exceedance over any of the applicable AAQC's. Subsequently in 2024, there have been four-hundred and thirty-fourty (434) and zero (0) exceedances of the new 1-hour AAQC at the Courtice and Rundle Road Stations, respectively.

7.1 Criteria Air Contaminant Comparisons

A summary of the criteria air contaminant (CAC) concentration statistics for Courtice and Rundle Road Stations from 2018-2024 are presented in following sections, as well as plotted graphs and observations made from comparing the annual Nitrogen Dioxide (NO_2), Sulfur Dioxide (SO_2) and Particulate Matter less than 2.5 microns ($PM_{2.5}$) data statistics. Annual data statistics including a comparison to statistics from previous years can be found in **Tables 12 – 19**.

7.1.1 NO_2 Comparison

All continuously monitored NO_2 levels were below the applicable hourly, 24-hour and annual average criteria from 2018 to 2024 for both the Courtice and Rundle Road Monitoring Stations. A summary of annual NO_X, NO and NO_2 data for both stations is presented in **Table 16** for 2018-2024. It should be noted that NOX and NO do not have any applicable AAQC's/CAAQS'. As of 2020 there were two new CAAQS' for NO2 which define limits on the annual average concentration and on the 3-year average of the annual 98th percentile of the daily maximum 1-hour means concentrations.

Table 12: 2018-2024 Comparison of Measured NO_X, NO and NO_2 Statistics for Courtice and Rundle Road Monitoring Stations

Contaminant	Statistic	Courtice Station							Rundle Road Station						
		2018 [1]	2019	2020	2021	2022	2023	2024	2018 [1]	2019	2020	2021	2022	2023	2024
NOX (ppb)	Annual Arithmetic Mean	8.0	7.1	5.6	6.2	5.9	6.1	6.5	6.7	5.1	4.6	4.4	5.1	5.3	5.0
	Maximum 1-hour Running Mean	86.8	98.7	95.1	92.5	87.9	176.2	68.7	73.6	275.7	66.3	107.4	85.1	94.8	135.7
	Maximum 24-hour Running Mean	35.6	38.6	38.3	46.3	35.9	31.9	26.0	32.3	27.9	22.1	23.1	26.0	21.9	23.7
NO (ppb)	Annual Arithmetic Mean	2.1	1.5	1.1	1.4	1.3	1.1	1.4	1.9	1	0.8	0.9	1.3	1.2	1.1
	Maximum 1-hour Running Mean	68.5	62.6	57.3	67.7	54.9	175.8	46.0	54.3	218.6	31.7	66.5	62.5	60.4	91.3
	Maximum 24-hour Running Mean	17.2	19.5	15.6	23.0	16.1	15.7	12.3	11.9	14.7	5	8.0	8.8	8.2	13.2
NO2 (ppb)	Annual Arithmetic Mean	6.1	5.8	4.6	5.0	4.7	5.1	5.2	4.9	4.3	3.9	3.7	3.8	4.2	4.0
	Annual CAAQS	N/A	N/A	17	17	17	17	17	N/A	N/A	17	17	17	17	17
	Events > Annual CAAQS	N/A	N/A	0	0	0	0	0	N/A	N/A	0	0	0	0	0
	Maximum 1-hour Running Mean	70.6	41.3	39	37.6	41.7	45.3	39.1	38.3	57.2	35.2	41.0	38.6	40.0	44.4
	1-hour AAQC	200	200	200	200	200	200	200	200	200	200	200	200	200	200
	Events > 1-hour AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	98th Percentile (Daily Maximum 1-hr Mean)	37.4	36.6	35.1	33.2	33.9	35.3	30.8	30.2	26.9	23.5	25.7	26.0	27.0	25.3
	3-Year Average of the Annual 98th Percentile of the Daily Maximum 1-hour Mean Concentrations	N/A	N/A	36.4	35.0	34.1	34.1	33.3	N/A	N/A	26.9	25.4	25.1	26.2	26.1
	1-Hour CAAQS	N/A	N/A	60	60	60	60	60	N/A	N/A	60	60	60	60	60
	Events > 1-Hour CAAQS	N/A	N/A	0	0	0	0	0	N/A	N/A	0	0	0	0	0
	Maximum Running 24-hour Mean	21.0	23.2	25.6	23.3	26.1	21.2	17.4	20.5	19.8	17.2	16.7	18.1	16.5	16.9
	24-hour AAQC	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	Events > 24-hour AAQC	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).

Annual variations in measured NO_2 data for maximum 1-hour, 24-hour and annual means and their applicable AAQC limits are presented in **Figures 4**, **5** and **6** respectively. The following observations were made from the data plots:

- The maximum measured hourly average NO_2 concentrations at the two stations have been comparable from 2020 and on, between the two stations. The Courtice Station has higher maximums than the Rundle Road Station apart from 2019, 2021 and 2024 (as seen in **Figure 4**).
- Two new CAAQS standards for NO_2 were also introduced in 2020 which defined the 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentration limit as 60 ppb and the average over a single calendar year of all 1-hour average concentration limit as 17 ppb.
- The maximum measured 24-hour average NO_2 concentrations at the two stations have remained relatively constant and have generally shown similar levels between both stations year to year (as seen in **Figure 5**).
- Measured annual average NO_2 concentrations at the Courtice Station have been slightly higher than the Rundle Road Station (as seen in **Figure 6**). Measured annual average NO_2 concentrations at both stations were relatively constant for all years presented.
- Measured maximum 1-hour and 24-hour average NO_2 concentrations have not come close to exceeding the applicable AAQC's over the timeseries.

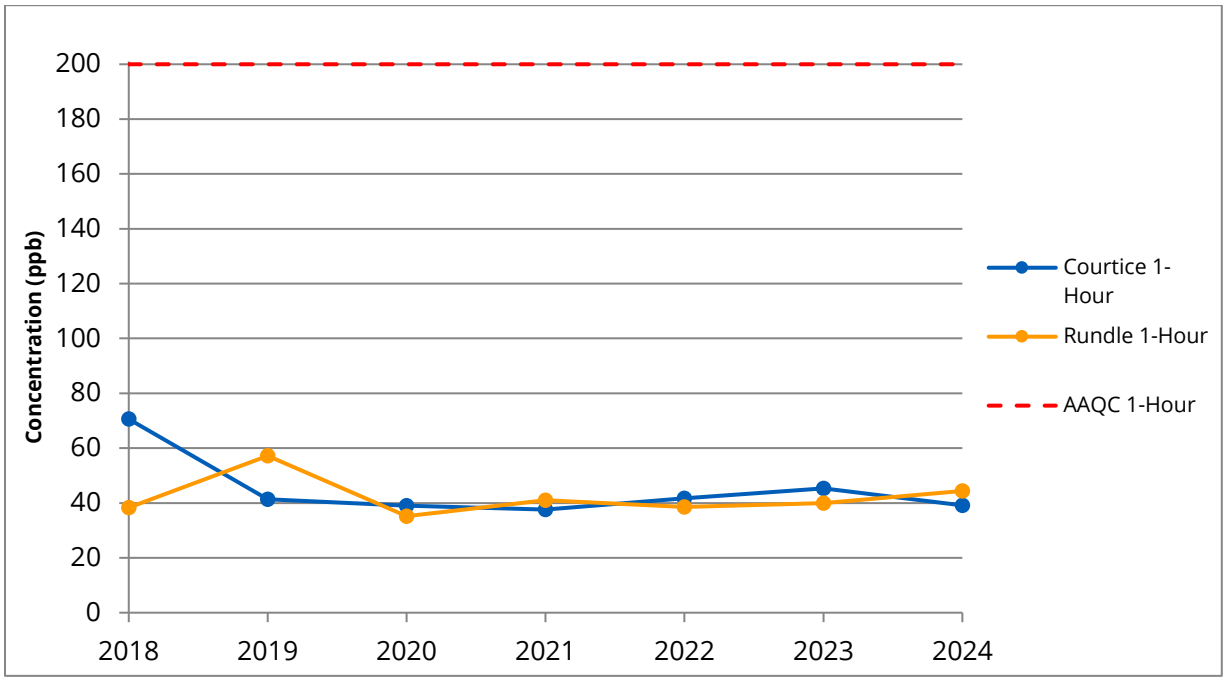


Figure 4: Maximum Measured 1-hour Mean NO_2 Concentrations by Year

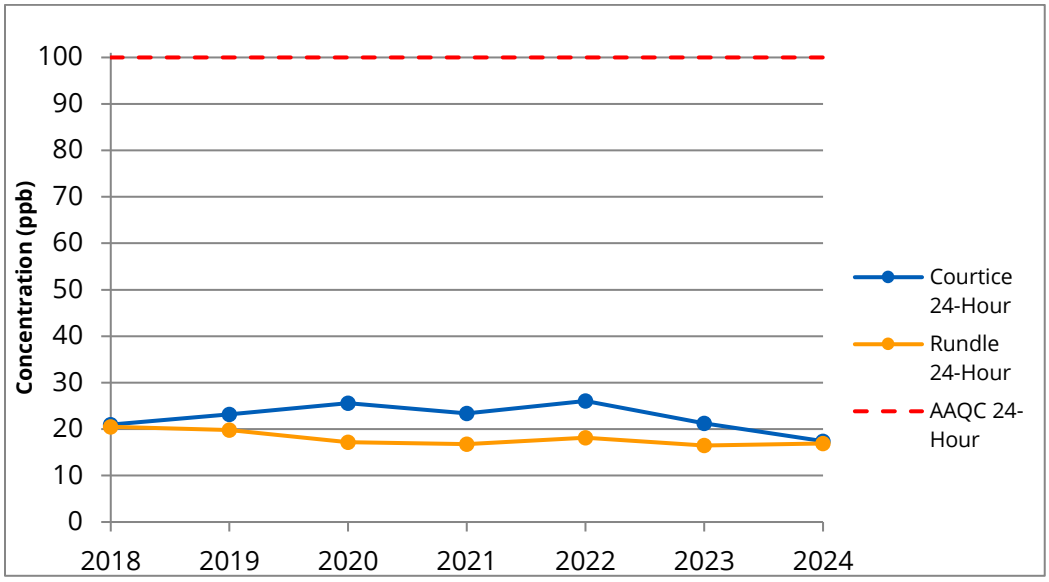
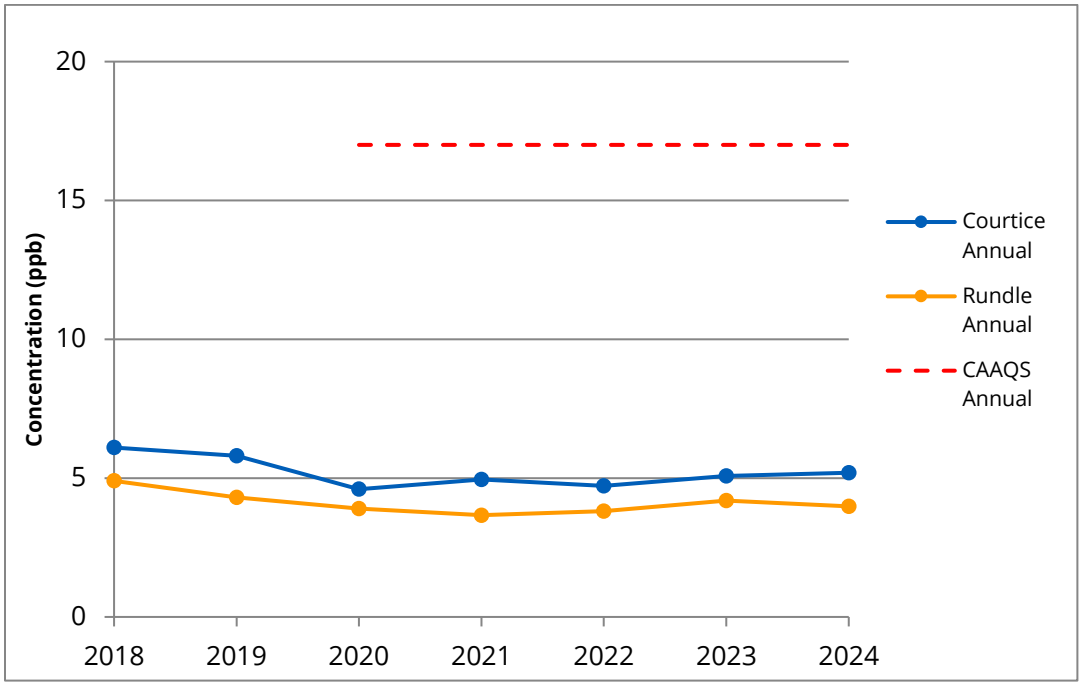


Figure 5: Maximum Measured 24-hour Running Mean NO_2 Concentrations by Year



Notes: Annual NO_2 CAAQS in effect as of 2020

Figure 6: Maximum Measured Annual Mean NO_2 Concentrations by Year

7.1.2 SO_2 Comparison

In 2024, 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 end of 2020. A summary of annual SO_2 data for both stations is presented in **Table 17** for 2018-2024.

Table 13: 2018-2024 Comparison of Measured SO_2 Statistics for Courtice and Rundle Road Monitoring Stations

Contaminant	Statistic	Courtice Station							Rundle Road Station						
		2018 [1]	2019	2020	2021	2022	2023	2024	2018 [1]	2019	2020	2021	2022	2023	2024
SO_2 (ppb)	Annual Arithmetic Mean	2.7	1.9	1.4	1.7	2.3	3.9	3.7	0.7	0.5	0.4	0.4	0.5	0.5	0.3
	Annual AAQC / CAAQS' [2]	20	4[3]	4 / 5	4 / 5	4 / 5	4	4	20	4[3]	4	4	4	4	4
	Events > Annual AAQC / CAAQS' [2]	0	0	0 / 0	0 / 0	0 / 0	0	0	0	0	0	0	0	0	0
	Maximum Running 10-min Mean	N/A	N/A	M	275.9	316.1	467.5	590.1	N/A	N/A	M	96.7	221.0	362.5	5.0
	10-min AAQC	N/A	N/A	M	67	67	67	67	N/A	N/A	M	67	67	67	67
	Events > 10-min AAQC	N/A	N/A	M	85	186	567	434	N/A	N/A	M	7	16	14	0
	Maximum 1-hour Running Mean	96.2	58.2	67.2	134.1	138.1	143.3	187.8	66.0	34.8	59.7	70.5	112.6	142.8	4.8
	1-hour AAQC	250	250	40	40	40	40	40	250	250	40	40	40	40	40
	Events > 1-hour AAQC	0	0	19	38	83	212	184	0	0	5	3	7	5	0
	99th Percentile (Daily Maximum 1-hr Mean)	73.0	50.8	51.6	65.5	104.4	122.0	112.6	33.4	25.7	35.8	16.2	47.6	19.2	2.4
	3-Year Average of the Annual 99th Percentile of the Daily Maximum 1-hour Mean Concentrations	N/A	N/A	58.5	56.0	73.8	97.3	113.0	N/A	N/A	31.6	25.9	33.2	27.7	23.1
	1-Hour CAAQS	N/A	N/A	70	70	70	70	70	N/A	N/A	70	70	70	70	70
	Events > 1-Hour CAAQS	N/A	N/A	0	0	1	1	1	N/A	N/A	0	0	0	0	0
	Maximum Running 24-hour Mean	17.0	18.6	21.4	12.0	23.8	39.0	38.2	8.1	5.6	6.7	7.8	9.9	18.3	1.1

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).
[2] CAAQS' Annual SO_2 Standard came into effect as of 2020.
[3] MECP comments on the 2019 Q4 report called for comparison to the 2020 annual SO_2 AAQC of 4 ppb in the 2019 Annual Report.
N/A – Not available

Annual variations in measured SO_2 data for maximum 1-hour running, 24-hour running and annual means and their applicable AAQC limits are presented in **Figures 7**, **8, 9** and **10** respectively. The following observations were made from the data plots:

- In previous years the measured maximum 1-hour, 24-hour average and annual average SO_2 concentrations did not come close to exceeding their applicable AAQC's.
- In 2020, the maximum 1-hour mean AAQC was changed from 250 to 40 ppb (an 84% reduction). In 2024 there were one-hundred and eighty-four (184) exceedances of the new criteria at the Courtice station and zero (0) exceedances at the Rundle Road station.
- In 2020, a new 10-minute AAQC was introduced (67 ppb). In 2024, there were four-hundred and thirty-four (434) and zero (0) exceedances of the rolling 10-minute running average AAQC at the Courtice and Rundle Road stations respectively.
- The maximum measured hourly average SO_2 concentrations at the two stations have generally shown the Courtice Station consistently having higher maximums than Rundle Road. The Courtice station continues trending the same over the entire timeseries while the Rundle Road station has decreased significantly in 2024 (as seen in **Figure 7**).
- The maximum measured 24-hour average SO_2 concentrations at the two stations have generally shown the Courtice Station consistently having higher maximums than Rundle Road (as seen in **Figure 8**). Measured 24-hour average SO_2 concentrations at both stations were relatively constant for all of the years presented.
- Measured annual average SO_2 concentrations at the Courtice Station have been slightly higher than the Rundle Road Station (as seen in **Figure 9**). Measured annual average SO_2 concentrations at both stations were relatively constant for all of the years presented.
- Two new CAAQS' were introduced for SO_2 in 2020 which defined the 3-year average of the annual 99^{th} percentile of the daily maximum 1-hour average concentration limit as 70 ppb and the average over a single calendar year of all 1-hour average concentration limit as 5 ppb. In 2024, the Courtice Station exceeded the 1-hour CAAQS SO_2 limit (as seen in **Figure 10**).

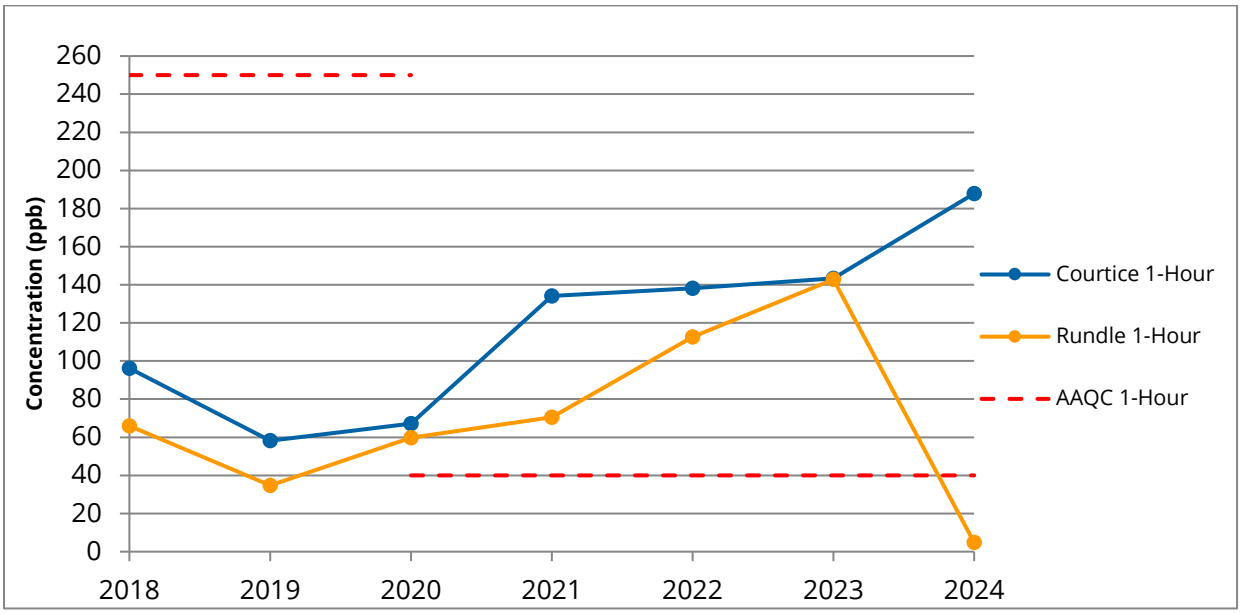
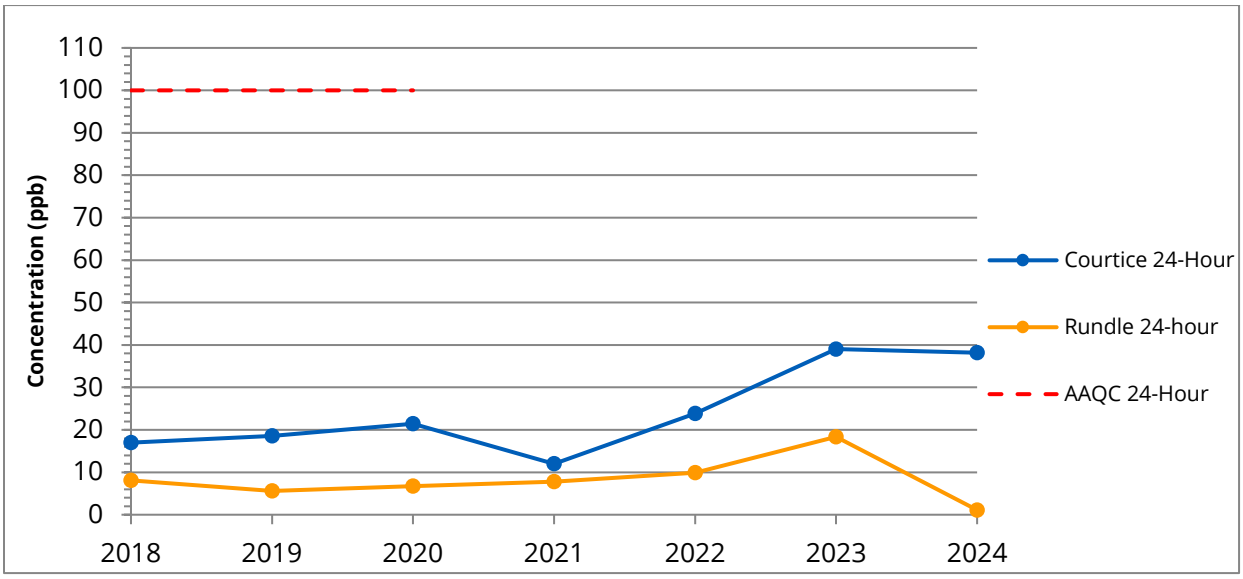


Figure 7: Maximum Measured 1-hour Mean SO_2 Concentrations by Year



Notes: 24-Hour SO_2 AAQC removed as of 2020

Figure 8: Maximum Measured 24-Hour Running Mean SO_2 Concentrations by Year

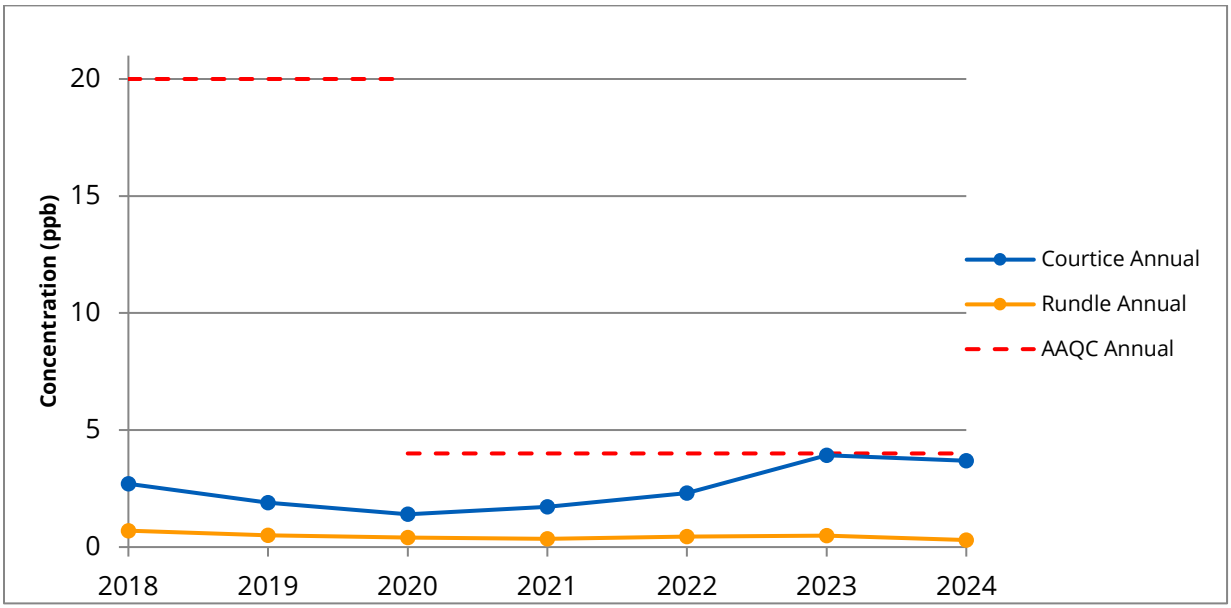


Figure 9: Maximum Measured Annual Mean SO_2 Concentrations by Year

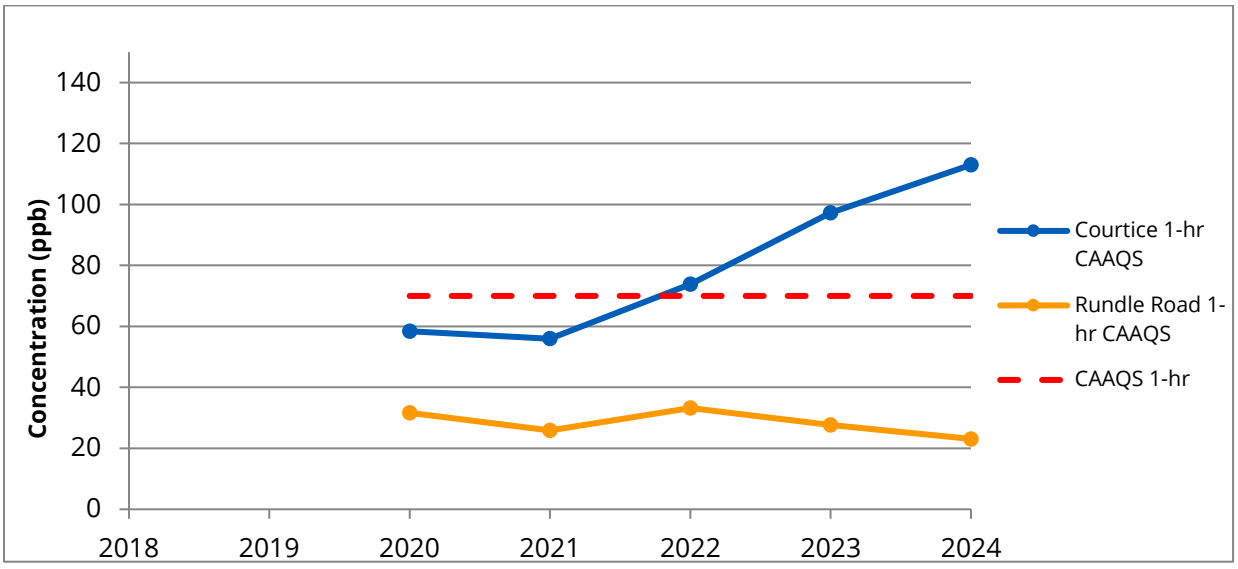


Figure 10: 3-Year Average of the Annual 99th Percentile of the Daily Maximum 1-hour Mean SO_2 Concentrations

7.1.3 $PM_{2.5}$ Comparison

All continuously monitored $PM_{2.5}$ levels were below the applicable CAAQS' from 2018 to 2024 for both the Courtice and Rundle Road Monitoring Stations. A summary of annual $PM_{2.5}$ data for both stations is presented in **Table 14** for 2018-2024. In 2020 CAAQS' were lowered for the 24-hour and annual limits as described in Section 5 Air Quality Criteria and Standards.

Table 14: 2018-2024 Comparison of Measured $PM_{2.5}$ Statistics for Courtice and Rundle Road Monitoring Stations

Contaminant	Statistic	Courtice Station							Rundle Road Station						
		2018[1]	2019	2020	2021	2022	2023	2024	2018[1]	2019	2020	2021	2022	2023	2024
$PM_{2.5}$ (µg/m³)	Annual Arithmetic Mean	6.3	6.4	5.9	6.3	5.6	7.5	5.2	6.1	5.7	5.2	5.9	5.5	7.0	5
	3-Year Average of the Annual Arithmetic Mean of all 1-hour Concentrations	6.5	6.4	6.2	6.2	6.0	6.5	6.1	7.3	6.0	5.7	5.6	5.5	6.1	5.8
	Annual CAAQS	10	10	8.8	8.8	8.8	8.8	8.8	10	10	8.8	8.8	8.8	8.8	8.8
	Events > Annual CAAQS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maximum 1-hour Running Mean	64.8	68.6	45.1	68.3	84.4	120.8	328.5	68.3	49.0	45.2	62.1	56.6	118.2	49.5
	Maximum Running 24-hour Mean	-	-	-	-	24.6	64.7	19.8	31.4	33.6	23.1	39.6	26.6	63.3	20.6
	98th Percentile (24-hour Mean)	18.7	18.5	17	21.3	14.0	30.5	14.7	18.6	17.4	16.1	18.8	14.1	21.2	12.6
	3-Year Average of the Annual 98th Percentile of the Daily 24-hour Mean Concentrations	20.0	19.0	18.1	18.9	17.4	22.0	19.7	23.9	18.8	17.4	17.4	16.4	18.0	16.0
	24-hour CAAQS	28	28	27	27	27	27	27	28	28	27	27	27	27	27
	Events > 24-hour CAAQS	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).

One-hour mean $PM_{2.5}$ concentrations were averaged over 3-year consecutive periods and compared to the annual CAAQS, which is presented visually in **Figure 11**. The annual 98th percentiles of the daily 24-Hour mean $PM_{2.5}$ concentrations were averaged over 3-year consecutive periods and compared to the 24-Hour CAAQS, which is presented visually in **Figure 12**. The following observations were made from the data plots:

- Two CAAQS standards for $PM_{2.5}$ were reduced in 2020. The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations was changed from 28 to 27 ppb and the 3-year average of the annual averages of all 1-hour concentrations was changed from 10 to 8.8 ppb.
- The 3-year averaged annual $PM_{2.5}$ concentrations measured at the Courtice station have surpassed Rundle Road averages from 2017-2024 (as seen in **Figure 11**).
- The 3-Year averages of annual 98th percentile 24-Hour $PM_{2.5}$ mean concentrations measured at the two stations have generally shown a declining trend in overall averages from 2017-2019 to 2020-2022. From 2021-2023 there was a noticeable increase of the Courtice concentration before decreasing from 2022-2024 while the Rundle concentration experienced a slight increase from 2021-2023 before declining in 2022-2024 (as seen in **Figure 12**).
- The measured 3-year averaged annual $PM_{2.5}$ concentrations measured at both the Courtice, and Rundle Road Stations were fairly close to the CAAQS limits with the highest concentration being 74% (Courtice 2021-2023) of the CAAQS. The measured 3-year averaged annual $PM_{2.5}$ concentrations have maintained fairly consistent with previous years as seen in **Figure 11.**
- The measured 3-year averaged 98th percentile 24-hour average values measured at both the Courtice, and Rundle Road Stations were fairly close to the CAAQS limits with the highest being 85% (Rundle 2018-2020) of the CAAQS but have since declined to as low as 59% (Rundle) of the CAAQS in the 2022-2024 grouping as seen in **Figure 11** and **Figure 12**, respectively

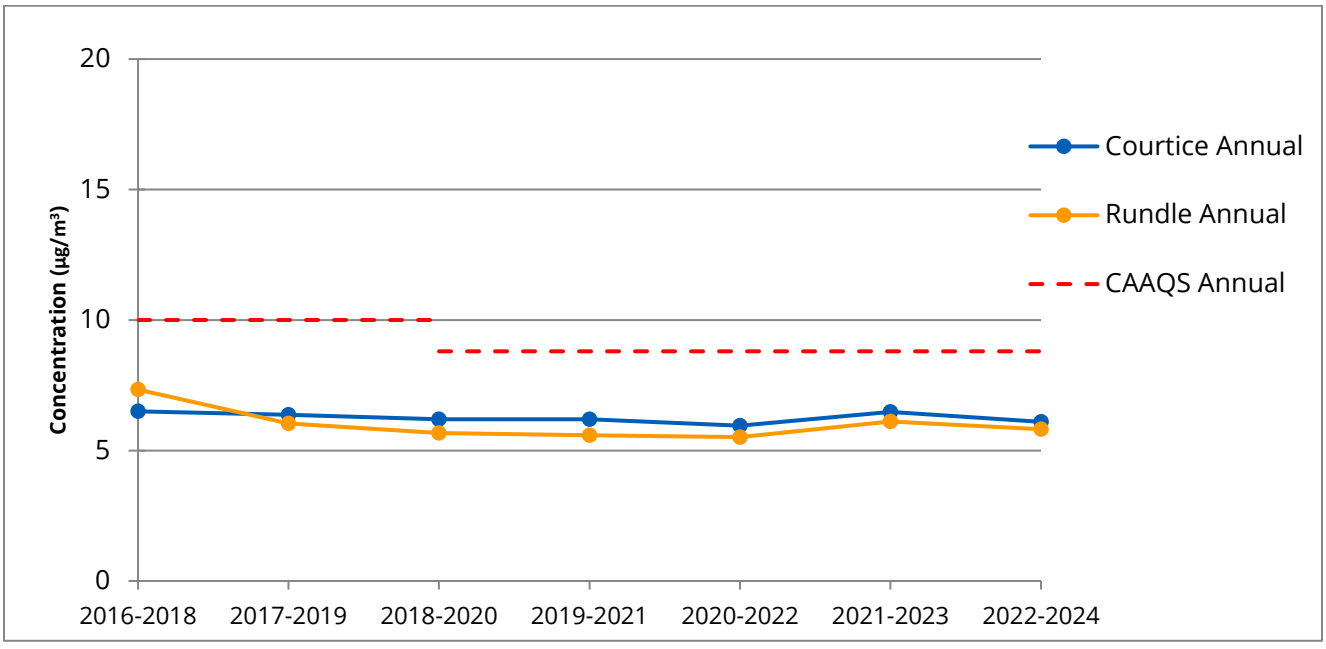


Figure 11: 3-Year Averages of Annual $PM_{2.5}$ Arithmetic Means (of 1-Hour Average Concentrations) by 3-Year Grouping

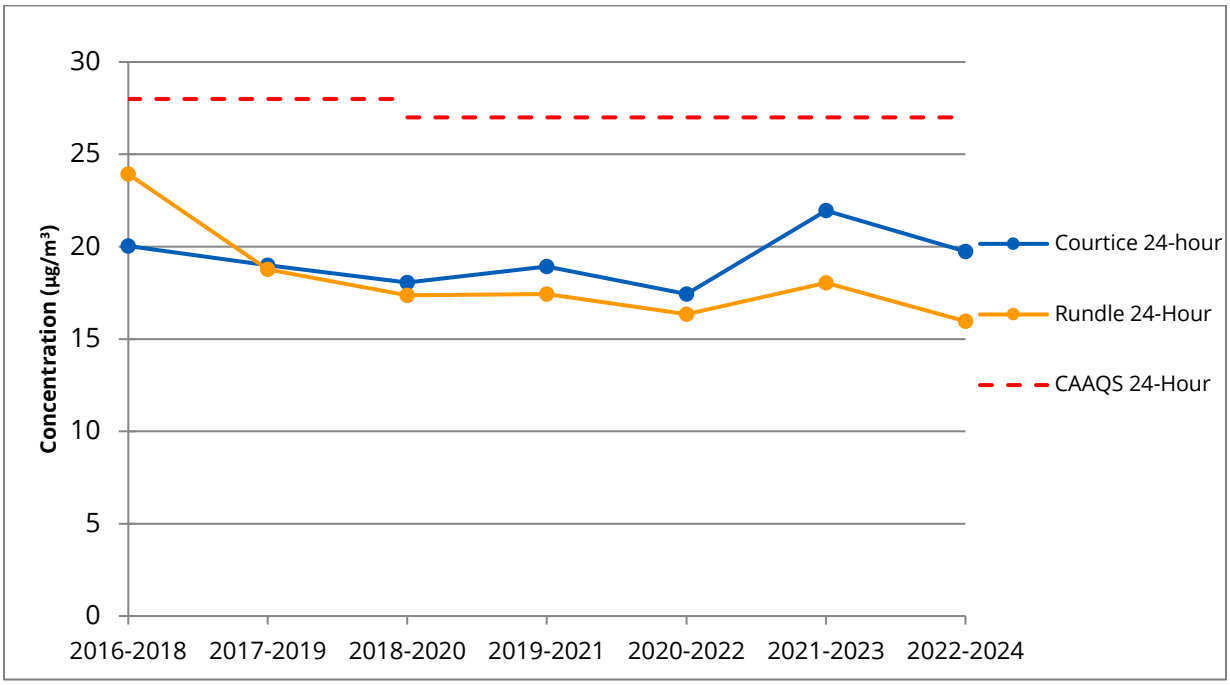


Figure 12: 3-Year Averages of Annual 98th Percentile 24-Hour $PM_{2.5}$ Mean Concentrations by 3-Year Grouping

7.2 TSP and Metals Comparisons

A summary of the maximum measured daily average Total Suspended Particulates (TSP) and Metal concentrations and percentage of the applicable AAQC's/HHRC's from 2018 to 2024 at the Courtice and Rundle Road Monitoring Stations is presented in **Table 15** and **16,** respectively.

There were four (4) exceedances in 2018, one (1) exceedance in 2019, one (1) exceedance in 2022, two (2) exceedances in 2023 and no exceedances in 2024. No other exceedances of TSP or Metals have occurred at the Courtice or Rundle Road Monitoring Stations from 2018 to 2024.

Table 15: 2018-2024 Comparison of Measured TSP and Metals Concentrations at the Courtice Station

Contaminant	Units	AAQC 2024	Maximum Concentration							Percentage of Criteria						
			2018 [1]	2019	2020	2021	2022	2023	2024	2018 [1]	2019	2020	2021	2022	2023	2024
Particulate (TSP)	µg/m³	*120*	84.7	146.4	69.7	101.0	53.9	141.8	63.9	70.6%	122.0%	58.1%	84.2%	44.9%	118.1%	53.2%
Total Mercury (Hg)	µg/m³	*2*	4.19E-05	7.75E-05	4.00E-05	8.80E-05	3.48E-05	2.55E-05	2.55E-05	0.002%	0.004%	0.002%	0.004%	0.002%	0.001%	0.001%
Aluminum (Al)	µg/m³	-	8.95E-01	1.00E+00	5.00E-01	1.07E+00	6.72E-01	7.65E-01	5.34E-01	18.6%	20.8%	10.4%	22.3%	14.0%	15.9%	-
Antimony (Sb)	µg/m³	*25*	7.14E-03	2.55E-03	4.06E-03	3.16E-03	6.20E-03	1.95E-03	3.23E-03	0.03%	0.01%	0.02%	0.01%	0.02%	0.01%	0.01%
Arsenic (As)	µg/m³	*0.3*	4.29E-03	2.76E-03	3.28E-03	1.35E-02	3.83E-03	2.00E-03	6.25E-03	1.4%	0.9%	1.1%	4.5%	1.3%	0.7%	2.1%
Barium (Ba)	µg/m³	*10*	1.89E-02	2.23E-02	1.55E-02	2.10E-02	2.02E-02	2.96E-02	1.71E-02	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%
Beryllium (Be)	µg/m³	*0.01*	1.56E-03	7.19E-05	3.26E-05	4.55E-05	3.91E-05	4.79E-05	1.56E-05	15.6%	0.7%	0.3%	0.5%	0.4%	0.5%	0.2%
Bismuth (Bi)	µg/m³	-	4.29E-03	1.42E-03	5.86E-04	1.57E-03	5.77E-04	5.79E-04	5.62E-04	-	-	-	-	-	-	-
Boron (B)	µg/m³	*120*	1.31E-02	1.39E-02	1.30E-02	1.64E-02	9.02E-03	1.06E-02	1.04E-02	0.011%	0.012%	0.011%	0.014%	0.008%	0.009%	0.009%
Cadmium (Cd)	µg/m³	*0.025*	1.90E-03	6.95E-04	5.45E-03	5.96E-04	1.10E-03	4.63E-04	4.10E-04	7.6%	2.8%	21.8%	2.4%	4.4%	1.9%	1.6%
Chromium (Cr)	µg/m³	*0.5*	9.50E-03	2.25E-02	4.64E-03	5.69E-03	6.16E-03	4.53E-03	3.40E-03	1.9%	4.5%	0.9%	1.1%	1.2%	0.9%	0.7%
Cobalt (Co)	µg/m³	*0.1*	1.43E-03	6.95E-04	6.51E-04	9.77E-04	3.88E-04	5.06E-04	8.39E-04	1.4%	0.7%	0.7%	1.0%	0.4%	0.5%	0.8%
Copper (Cu)	µg/m³	*50*	4.55E-02	6.10E-02	4.70E-02	7.73E-02	1.33E-01	7.90E-02	6.99E-02	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	0.1%
Iron (Fe)	µg/m³	*4*	2.53E+00	3.31E+00	1.26E+00	1.68E+00	1.05E+00	1.32E+00	9.49E-01	63.3%	82.8%	31.6%	42.1%	26.3%	33.1%	23.7%
Lead (Pb)	µg/m³	*0.5*	1.43E-02	1.39E-02	7.81E-03	7.97E-03	6.98E-03	7.64E-03	8.73E-03	0.7%	0.7%	0.4%	0.4%	0.3%	0.4%	1.7%
Magnesium (Mg)	µg/m³	-	1.21E+00	1.25E+00	8.98E-01	9.57E-01	5.79E-01	9.12E-01	8.65E-01	-	-	-	-	-	-	-
Manganese (Mn)	µg/m³	*0.4*	7.25E-02	1.20E-01	3.69E-02	4.97E-02	2.74E-02	6.12E-02	3.45E-02	18.1%	30.1%	9.2%	12.4%	6.9%	15.3%	8.6%
Molybdenum (Mo)	µg/m³	*120*	7.69E-03	2.20E-03	3.01E-03	3.03E-03	4.07E-03	3.24E-03	2.03E-03	0.006%	0.002%	0.003%	0.003%	0.003%	0.003%	0.002%
Nickel (Ni)	µg/m³	*0.2*	3.85E-03	5.35E-03	2.95E-03	3.51E-03	3.79E-03	2.57E-03	6.11E-03	1.9%	2.7%	1.5%	1.8%	1.9%	1.3%	3.1%
Phosphorus (P)	µg/m³	-	1.08E+00	2.02E+00	1.36E+00	5.06E-01	5.13E-01	2.41E-01	5.21E-01	-	-	-	-	-	-	-
Selenium (Se)	µg/m³	*10*	7.14E-03	3.48E-03	3.26E-03	2.98E-03	1.52E-03	1.49E-03	2.35E-03	0.07%	0.03%	0.03%	0.03%	0.02%	0.01%	0.02%
Silver (Ag)	µg/m³	*1*	3.57E-03	3.48E-04	3.26E-04	4.71E-04	6.70E-04	6.68E-04	1.05E-04	0.4%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%
Strontium (Sr)	µg/m³	*120*	1.73E-02	4.35E-02	2.08E-02	2.34E-02	2.88E-02	2.86E-02	2.32E-02	0.01%	0.04%	0.02%	0.02%	0.02%	0.02%	0.02%
Thallium (Tl)	µg/m³	-	7.14E-03	9.81E-05	2.93E-05	1.08E-04	6.59E-05	5.82E-05	2.81E-05	-	-	-	-	-	-	-
Tin (Sn)	µg/m³	*10*	7.14E-03	2.52E-03	2.47E-03	3.46E-03	2.22E-03	2.72E-03	2.47E-03	0.07%	0.03%	0.02%	0.03%	0.02%	0.03%	0.02%
Titanium (Ti)	µg/m³	*120*	3.19E-02	4.31E-02	3.10E-02	4.25E-02	2.28E-02	3.71E-02	2.11E-02	0.03%	0.04%	0.03%	0.04%	0.02%	0.03%	0.02%
Uranium (Ur)	µg/m³	*0.3*	3.57E-03	1.11E-04	6.97E-05	9.63E-05	6.13E-05	1.02E-04	1.34E-04	1.19%	0.04%	0.02%	0.03%	0.02%	0.03%	0.04%
Vanadium (V)	µg/m³	*2*	3.57E-03	2.02E-02	1.63E-03	2.95E-03	1.60E-03	1.61E-03	3.46E-03	0.2%	1.0%	0.1%	0.1%	0.1%	0.1%	0.2%
Zinc (Zn)	µg/m³	*120*	1.86E-01	1.66E-01	9.38E-02	1.49E-01	1.49E-01	3.67E-01	1.48E-01	0.155%	0.138%	0.078%	0.124%	0.124%	0.305%	0.124%
Zirconium (Zr)	µg/m³	-	1.64E-03	2.35E-03	3.33E-03	6.17E-04	6.41E-04	6.43E-04	6.25E-04	0.008%	0.012%	0.017%	0.003%	0.003%	0.003%	-

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).

Table 16: 2018-2024 Comparison of Measured TSP and Metals Concentrations at the Rundle Road Station

Contaminant	Units	AAQC 2024	Maximum Concentration							Percentage of Criteria						
			2018[1]	2019	2020	2021	2022	2023	2024	2018[1]	2019	2020	2021	2022	2023	2024
Particulate (TSP)	µg/m³	*120*	203.6	81.7	102.3	75.6	120.9	148.3	87.1	169.7%	68.1%	85.2%	63.0%	100.8%	123.6%	72.6%
Total Mercury (Hg)	µg/m³	*2*	9.83E-05	6.10E-05	4.40E-05	1.87E-04	2.95E-05	4.24E-05	3.74E-05	0.005%	0.003%	0.002%	0.009%	0.001%	0.002%	0.002%
Aluminum (Al)	µg/m³	-	1.42E+00	6.64E-01	1.19E+00	9.25E-01	1.62E+00	1.28E+00	8.15E-01	29.6%	13.8%	24.8%	19.3%	33.8%	26.7%	-
Antimony (Sb)	µg/m³	*25*	2.64E-02	4.81E-03	1.53E-03	3.06E-03	2.70E-03	2.11E-03	4.65E-03	0.11%	0.019%	0.006%	0.012%	0.011%	0.008%	0.019%
Arsenic (As)	µg/m³	*0.3*	2.06E-02	4.79E-03	1.11E-02	1.29E-01	4.92E-03	5.36E-03	2.40E-03	6.9%	1.6%	3.7%	43.1%	1.6%	1.8%	0.8%
Barium (Ba)	µg/m³	*10*	2.58E-02	2.67E-02	1.97E-02	2.14E-02	2.53E-02	2.53E-02	1.82E-02	0.3%	0.3%	0.2%	0.2%	0.3%	0.3%	0.2%
Beryllium (Be)	µg/m³	*0.01*	1.81E-03	3.27E-05	3.37E-05	4.15E-05	6.83E-05	7.79E-05	3.95E-05	18.1%	0.3%	0.3%	0.4%	0.7%	0.8%	0.4%
Bismuth (Bi)	µg/m³	-	2.63E-03	1.46E-03	6.07E-04	1.65E-03	5.71E-04	5.83E-04	1.85E-03	-	-	-	-	-	-	-
Boron (B)	µg/m³	*120*	1.33E-02	1.31E-02	1.35E-02	1.87E-02	1.57E-02	1.60E-02	1.09E-02	0.011%	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%
Cadmium (Cd)	µg/m³	*0.025*	4.73E-03	6.54E-04	3.55E-03	6.10E-04	6.57E-04	1.23E-03	6.83E-04	18.9%	2.6%	14.2%	2.4%	2.6%	4.9%	2.7%
Chromium (Cr)	µg/m³	*0.5*	8.20E-03	8.54E-03	5.08E-03	4.87E-03	1.25E-02	6.29E-03	1.12E-02	1.6%	1.7%	1.0%	1.0%	2.5%	1.3%	2.2%
Cobalt (Co)	µg/m³	*0.1*	8.77E-04	6.54E-04	1.27E-03	7.16E-04	8.27E-04	8.97E-04	4.60E-04	0.9%	0.7%	1.3%	0.7%	0.8%	0.9%	0.5%
Copper (Cu)	µg/m³	*50*	6.15E-02	8.54E-02	7.30E-02	2.55E-01	6.79E-02	1.48E-01	1.18E-01	0.1%	0.2%	0.1%	0.5%	0.1%	0.3%	0.2%
Iron (Fe)	µg/m³	*4*	2.97E+00	1.25E+00	2.00E+00	1.73E+00	2.41E+00	2.19E+00	1.17E+00	74.1%	31.2%	50.1%	43.2%	60.2%	54.8%	29.3%
Lead (Pb)	µg/m³	*0.5*	3.96E-01	5.81E-03	5.93E-03	7.56E-03	2.85E-02	7.69E-03	1.56E-02	19.8%	0.3%	0.3%	0.4%	1.4%	0.4%	3.1%
Magnesium (Mg)	µg/m³	-	2.10E+00	9.90E-01	9.86E-01	9.01E-01	1.19E+00	2.51E+00	1.72E+00	-	-	-	-	-	-	-
Manganese (Mn)	µg/m³	*0.4*	1.13E-01	5.56E-02	3.68E-02	4.35E-02	6.52E-02	7.29E-02	4.37E-02	28.1%	13.9%	9.2%	10.9%	16.3%	18.2%	10.9%
Molybdenum (Mo)	µg/m³	*120*	6.26E-03	2.20E-03	2.90E-03	2.65E-02	3.37E-03	9.28E-03	5.79E-03	0.005%	0.002%	0.002%	0.022%	0.003%	0.008%	0.005%
Nickel (Ni)	µg/m³	*0.2*	3.26E-03	2.42E-03	3.02E-03	2.84E-03	3.57E-03	4.34E-03	4.61E-03	1.6%	1.2%	1.5%	1.4%	1.8%	2.2%	2.3%
Phosphorus (P)	µg/m³	-	1.75E+00	2.15E+00	6.77E-01	2.33E-01	6.91E-01	2.43E-01	5.20E-01	-	-	-	-	-	-	-
Selenium (Se)	µg/m³	*10*	4.39E-03	3.27E-03	3.37E-03	3.05E-03	1.72E-03	2.98E-03	5.42E-03	0.04%	0.03%	0.03%	0.03%	0.02%	0.03%	0.05%
Silver (Ag)	µg/m³	*1*	1.06E-02	3.27E-04	3.37E-04	5.29E-04	5.66E-04	2.96E-04	2.31E-04	1.1%	0.03%	0.03%	0.05%	0.06%	0.03%	0.02%
Strontium (Sr)	µg/m³	*120*	5.82E-02	3.13E-02	4.07E-02	1.87E-02	4.48E-02	5.21E-02	3.26E-02	0.05%	0.03%	0.03%	0.02%	0.04%	0.04%	0.03%
Thallium (Tl)	µg/m³	-	4.39E-03	6.36E-05	3.03E-05	7.40E-05	1.27E-04	9.81E-05	1.62E-04	-	-	-	-	-	-	-
Tin (Sn)	µg/m³	*10*	3.09E-02	4.30E-03	2.97E-03	1.11E-02	1.71E-03	2.52E-03	5.20E-03	0.31%	0.04%	0.03%	0.11%	0.02%	0.03%	0.05%
Titanium (Ti)	µg/m³	*120*	5.57E-02	2.52E-02	7.13E-02	3.51E-02	8.27E-02	4.20E-02	3.53E-02	0.05%	0.02%	0.06%	0.03%	0.07%	0.04%	0.03%
Uranium (Ur)	µg/m³	*0.3*	1.97E-04	3.27E-05	1.43E-04	7.80E-05	1.52E-04	1.02E-04	1.29E-04	0.07%	0.01%	0.05%	0.03%	0.05%	0.03%	0.04%
Vanadium (V)	µg/m³	*2*	1.88E-02	3.46E-02	1.69E-03	1.55E-03	3.95E-03	3.36E-03	4.56E-03	0.9%	1.7%	0.1%	0.1%	0.2%	0.2%	0.2%
Zinc (Zn)	µg/m³	*120*	1.12E-01	5.87E-02	1.05E-01	1.27E-01	6.24E-01	2.47E-01	1.97E-01	0.093%	0.049%	0.087%	0.105%	0.520%	0.206%	0.164%
Zirconium (Zr)	µg/m³	-	2.19E-03	6.54E-04	1.43E-03	6.21E-04	1.23E-03	1.24E-03	6.48E-04	0.011%	0.003%	0.01%	0.00%	0.006%	0.006%	-

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).

7.3 PAH Comparisons

A summary of the maximum measured daily average Polycyclic Aromatic Hydrocarbons (PAH) concentrations and percentage of the applicable AAQC's from 2018 to 2024 for both the Courtice and Rundle Road Monitoring Stations is presented in **Table 17** and **18,** respectively.

The maximum measured PAH concentrations, with the exception of Benzo(a)Pyrene, were all well below applicable AAQC's from 2018-2024. There have been twenty-three (23) exceedances of Benzo(a)Pyrene above the applicable AAQC from 2018-2024 at the Courtice Monitoring Station and thirty-six (36) exceedances of Benzo(a)Pyrene above the applicable AAQC from 2018-2024 at the Rundle Road Monitoring Station.

In the 2024 Q4 report, it was noted that the December 20, 2024 PUF sample results availability were delayed due to an issue at the laboratory. The December 20, 2024 results were made available and are included in the calculations and comparisons for this report. The December 20, 2024 PUF results will not be included in the 2025 Q1 report, as suggested in the Q4 2024 Q4 report.

Table 17: 2018-2024 Comparison of Measured PAH Concentrations at the Courtice Station

Contaminant	Units	*MECP Criteria 2024*	Maximum Concentration							Percentage of Criteria						
			2018[1]	2019	2020	2021	2022	2023	2024	2018[1]	2019	2020	2021	2022	2023	2024
1-Methylnaphthalene	ng/m^3	-	21.8	14.6	16.9	34.1	15.6	49.7	6.4	0.2%	0.1%	0.1%	0.3%	0.1%	0.4%	-
2-Methylnaphthalene	ng/m^3	-	39.9	23.5	28.8	77.0	32.3	98.4	12.4	0.4%	0.2%	0.3%	0.8%	0.3%	1.0%	-
Acenaphthene	ng/m^3	-	20.2	10.1	14.3	37.9	18.6	112.4	12.8	-	-	-	-	-	-	-
Acenaphthylene	ng/m^3	-	0.6	0.5	1.6	1.3	1.1	3.3	0.8	0.02%	0.01%	0.05%	0.04%	0.03%	0.09%	-
Anthracene	ng/m^3	-	0.8	0.4	0.5	1.4	0.6	20.1	0.3	0.4%	0.2%	0.3%	0.7%	0.3%	10.0%	-
Benzo(a)Anthracene	ng/m^3	-	0.1	0.1	0.1	0.1	0.1	1.9	0.1	-	-	-	-	-	-	-
Benzo(a)fluorene	ng/m^3	-	0.2	0.1	0.1	0.1	0.1	3.0	0.2	-	-	-	-	-	-	-
Benzo(a)Pyrene	ng/m^3	*0.05*[2]	0.2	0.1	0.1	0.2	0.1	0.6	0.1	361%	197%	185%	397%	137%	1118%	230%
Benzo(b)Fluoranthene	ng/m^3	-	0.3	0.1	0.3	0.2	0.4	0.9	0.2	-	-	-	-	-	-	-
Benzo(b)fluorene	ng/m^3	-	0.2	0.1	0.1	0.1	0.1	0.8	0.0	-	-	-	-	-	-	-
Benzo(e)Pyrene	ng/m^3	-	0.2	0.1	0.2	0.2	0.1	0.6	0.1	-	-	-	-	-	-	-
Benzo(g,h,i)Perylene	ng/m^3	-	0.1	0.1	0.2	0.2	0.1	0.2	0.1	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	ng/m^3	-	0.1	0.1	0.2	0.2	0.3	0.8	0.1	-	-	-	-	-	-	-
Biphenyl	ng/m^3	-	10.1	5.0	8.6	19.7	8.6	71.7	4.3	-	-	-	-	-	-	-
Chrysene	ng/m^3	-	0.3	0.2	0.4	0.3	0.2	2.7	0.2	-	-	-	-	-	-	-
Dibenzo(a,h)Anthracene	ng/m^3	-	0.1	0.03	0.0	0.0	0.03	0.07	0.02	-	-	-	-	-	-	-
Fluoranthene	ng/m^3	-	3.3	1.2	2.1	2.3	3.1	28.7	2.0	-	-	-	-	-	-	-
Fluorene	ng/m^3	-	-	2.9	9.8	21.3	16.6	55.9	6.7	-	-	-	-	-	-	-
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	0.1	0.1	0.2	0.2	0.1	0.2	0.1	-	-	-	-	-	-	-
Naphthalene	ng/m^3	*22500*	77.8	48.1	67.1	119.2	47.3	70.5	27.5	0.3%	0.2%	0.3%	0.5%	0.2%	0.3%	0.1%
o-Terphenyl	ng/m^3	-	0.2	0.02	0.0	0.0	0.03	0.04	0.05	-	-	-	-	-	-	-
Perylene	ng/m^3	-	0.2	0.02	0.0	0.0	0.05	0.15	0.02	-	-	-	-	-	-	-
Phenanthrene	ng/m^3	-	21.6	8.7	15.8	22.0	24.2	75.2	9.9	-	-	-	-	-	-	-
Pyrene	ng/m^3	-	1.4	0.6	1.0	1.0	1.1	16.2	0.9	-	-	-	-	-	-	-
Tetralin	ng/m^3	-	4.6	7.8	12.7	80.0	6.2	3.5	7.8	-	-	-	-	-	-	-
Total PAH[3]	ng/m^3	-	203.6	117.9	170.2	333.0	135.4	616.6	69.3	-	-	-	-	-	-	-

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).
[2] Ontario AAQC. The Standard for benzo(a)Pyrene (B(a)P) is for B(a)P as a surrogate for PAHs.
[3] The reported total PAH is the sum of all analysed PAH species.

Table 18: 2018-2024 Comparison of Measured PAH Concentrations at the Rundle Road Station

Contaminant	Units	*MECP Criteria 2024*	Maximum Concentration							Percentage of Criteria						
			2018[1]	2019	2020	2021	2022	2023	2024	2018[1]	2019	2020	2021	2022	2023	2024
1-Methylnaphthalene	ng/m^3	-	26.6	16.1	27.0	22.1	9.9	9.6	6.8	0.2%	0.1%	0.2%	0.2%	0.1%	0.1%	-
2-Methylnaphthalene	ng/m^3	-	54.1	29.4	48.5	43.0	20.3	16.1	12.9	0.5%	0.3%	0.5%	0.4%	0.2%	0.2%	-
Acenaphthene	ng/m^3	-	40.4	18.0	26.9	17.5	15.3	11.2	7.9	-	-	-	-	-	-	-
Acenaphthylene	ng/m^3	-	0.6	0.6	0.9	0.7	5.3	0.8	1.1	0.02%	0.02%	0.02%	0.02%	0.15%	0.02%	-
Anthracene	ng/m^3	-	2.6	1.9	2.1	1.2	2.4	1.3	1.8	1.3%	0.9%	1.1%	0.6%	1.2%	0.6%	-
Benzo(a)Anthracene	ng/m^3	-	0.1	0.1	0.2	0.1	0.6	0.1	0.1	-	-	-	-	-	-	-
Benzo(a)fluorene	ng/m^3	-	0.3	0.1	0.2	0.1	0.7	0.2	0.3	-	-	-	-	-	-	-
Benzo(a)Pyrene	ng/m^3	*0.05*[2]	0.1	0.1	0.2	0.3	1.2	0.1	0.1	278%	221%	364%	653.7%	2320%	290%	250%
Benzo(b)Fluoranthene	ng/m^3	-	0.1	0.2	0.2	0.2	1.3	0.2	0.2	-	-	-	-	-	-	-
Benzo(b)fluorene	ng/m^3	-	0.3	0.1	0.1	0.1	0.6	0.1	0.1	-	-	-	-	-	-	-
Benzo(e)Pyrene	ng/m^3	-	0.3	0.1	0.2	0.2	1.0	0.1	0.1	-	-	-	-	-	-	-
Benzo(g,h,i)Perylene	ng/m^3	-	0.1	0.1	0.2	0.2	1.3	0.2	0.1	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	ng/m^3	-	0.1	0.1	0.2	0.2	1.1	0.3	0.2	-	-	-	-	-	-	-
Biphenyl	ng/m^3	-	13.2	5.5	19.3	9.9	8.1	8.1	9.2	-	-	-	-	-	-	-
Chrysene	ng/m^3	-	0.2	0.2	0.3	0.3	1.4	0.4	0.4	-	-	-	-	-	-	-
Dibenzo(a,h)Anthracene	ng/m^3	-	0.1	0.03	0.1	0.0	0.1	0.0	0.0	-	-	-	-	-	-	-
Fluoranthene	ng/m^3	-	13.5	4.7	6.2	3.3	8.5	5.9	5.9	-	-	-	-	-	-	-
Fluorene	ng/m^3	-	-	6.9	16.5	12.2	15.5	10.2	8.3	-	-	-	-	-	-	-
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	0.1	0.1	0.2	0.2	1.1	0.2	0.1	-	-	-	-	-	-	-
Naphthalene	ng/m^3	*22500*	74.2	53.7	104.7	81.1	49.5	29.1	33.7	0.3%	0.2%	0.5%	0.4%	0.2%	0.1%	0.2%
o-Terphenyl	ng/m^3	-	0.3	0.02	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-
Perylene	ng/m^3	-	0.3	0.02	0.0	0.0	0.2	0.3	0.0	-	-	-	-	-	-	-
Phenanthrene	ng/m^3	-	58.1	24.0	30.6	16.2	36.7	23.6	20.4	-	-	-	-	-	-	-
Pyrene	ng/m^3	-	5.4	2.0	3.6	1.4	4.3	2.5	2.6	-	-	-	-	-	-	-
Tetralin	ng/m^3	-	7.7	36.0	16.8	94.5	5.4	3.8	6.7	-	-	-	-	-	-	-
Total PAH[3]	ng/m^3	-	292.1	160.3	274.2	216.3	138.1	90.7	83.7	-	-	-	-	-	-	-

Notes:
[1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).
[2] Ontario AAQC. The Standard for benzo(a)Pyrene (B(a)P) is for B(a)P as a surrogate for PAHs.
[3] The reported total PAH is the sum of all analysed PAH species.

7.4 Dioxins and Furans Comparisons

The maximum measured ambient toxic equivalent Dioxins and Furans (D&F) concentrations from 2018 – 2024 and their specific measurement period for both Courtice and Rundle Road Monitoring Stations is presented in **Table 19**.

There was one (1) exceedance of the maximum measured toxic equivalent D&F concentration AAQC at the Courtice Monitoring Station in 2018, but none from 2019 to 2024. The maximum measured toxic equivalent D&F concentrations at the Rundle Road Station were all below the applicable AAQC from 2018-2024.

Table 19: 2018-2024 Comparison of Maximum Measured D&F Concentrations at the Courtice and Rundle Road Stations

Year	Courtice Station		Rundle Road Station	
	Maximum Concentration (pg TEQ/m^3)	No. of Exceedances	Maximum Concentration (pg TEQ/m^3)	No. of Exceedances
2018 [1]	0.109	1	0.091	0
2019	0.012	0	0.025	0
2020	0.025	0	0.030	0
2021	0.015	0	0.046	0
2022	0.024	0	0.067	0
2023	0.023	0	0.010	0
2024	0.009	0	0.009	0

Notes: [1] 2018 Q1 & Q2 data taken from Stantec's 2018 Q1 (Stantec, 2018a) and Q2 Reports (Stantec, 2018b).

8 CONCLUSIONS

The ambient air monitoring program at the DYEC for 2024 had three (3) Benzo(a)pyrene daily average concentrations above the applicable AAQC at the Courtice and Rundle Road Monitoring Stations.

At the beginning of 2020, the SO_2 1-hour AAQC limit was reduced from 250 to 40 ppb. The ambient air monitoring program at the DYEC for 2024 had one-hundred and eighty-four (184) SO_2 1-hour average concentrations above the AAQC at the Courtice and Rundle Road Monitoring Stations. There were also four hundred and thirty-four (434) exceedances of the rolling 10-minute average AAQC for SO_2 throughout 2024. There was one (1) exceedance of the 1-hour CAAQS SO2 for 2024.

Throughout the 2024 year, there were a few minor issues with equipment failures and malfunctions. These were addressed as soon as they were identified, and preventive actions were put in place to prevent reoccurrences.

Data recovery was 88% or higher at each station for all contaminants, which exceeds the MECP's requirement of 75% of collected readings to be considered valid. The overall data recovery average was 98% for the Courtice Monitoring Station and was 97% for the Rundle Road Monitoring Station.

9 REFERENCES

1. Jacques Whitford, (2009). Final Environmental Assessment, December 4, 2009.

2. Stantec Consulting Ltd., (2012). Ambient Air Quality Monitoring Plan, Durham York Residual Waste Study, May 8, 2012.

3. Stantec Consulting Ltd., (2018a). Quarterly Ambient Air Quality Monitoring Report for the Durham York Energy Centre – January to March 2018.

4. Stantec Consulting Ltd., (2018b). Quarterly Ambient Air Quality Monitoring Report for the Durham York Energy Centre – April to June 2018.

10 GENERAL STATEMENT OF LIMITATIONS

This report entitled "2024 Annual Ambient Air Quality Monitoring Report: Continuous & Periodic Monitoring Program", dated May 12, 2025, was prepared by RWDI AIR Inc. ("RWDI") for The Regional Municipality of Durham ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the project described herein ("Project"). This report was prepared using scientific principles, published methodologies and professional judgment in assessing available information and data. The findings presented within this document are based on available data within the limits of the existing information, budgeted scope of work, and schedule. The conclusions contained in this report are based on the information available to RWDI when this report was prepared; subsequent changes made by the Client after the date of this report have not been reflected in the conclusions.

This report was prepared for the exclusive use of The Regional Municipality of Durham and the MECP. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibility of such third parties. RWDI accepts no responsibility for damages, if any, suffered by any third party as result of decisions made or actions based on this report.

APPENDIX A

EPA Sampling Schedule 2024

Important Dates

Notes

3-Day schedule is shown in orange, green, and purple

6-Day schedule is shown in green and purple

12-Day schedule is shown in purple

January

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

March

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

July

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

APPENDIX B

Table B1: 2024 Monitoring Summary Results for PM2.5 at Courtice Station

Data Statistics	Annual Arithmetic Mean	Maximum Running 1 hr Mean	Maximum Running 24 hr Mean	98th Percentile (24 hr Mean) [1]	Number of valid Hours	% valid data
Compound	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$
	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	No.	%
2024	5.2	328.5	19.8	14.7	8649	98.5

[1] - This value is the 98th percentile of daily average levels for the 2024 year.

Table B2: 2024 Monitoring Summary Results for $PM_{2.5}$ at Rundle Station

Data Statistics	Annual Arithmetic Mean	Maximum Running 1 hr Mean	Maximum Running 24 hr Mean	98th Percentile (24 hr Mean) [1]	Number of valid Hours	% valid data
Compound	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$	$PM_{2.5}$
	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	No.	%
2024	5.0	49.5	20.6	12.6	8663	98.6

[1] - This value is the 98th percentile of daily average levels for the 2024 year.

Table B3: 2024 Monitoring Summary Results for NOx at Courtice Station

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Annual Arithmetic Mean	Maximum Running 1 hr Mean	Maximum Running 24 hr Mean	Number of valid Hours	% valid data
Compound	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
2024	N/A	N/A	6.5	68.7	26.0	8663	98.6

Table B4: 2024 Monitoring Summary Results for NOx at Rundle Station

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Annual Arithmetic Mean	Maximum Running 1 hr Mean	Maximum Running 24 hr Mean	Number of Valid Hours	% Valid Data
Compound	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x	NO_x
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
2024	N/A	N/A	5.0	135.7	23.7	8670	98.7

Table B5: 2024 Monitoring Summary Results for NO at Courtice Station

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Annual Arithmetic Mean	Maximum Running 1 hr Mean	Maximum Running 24 hr Mean	Number of valid Hours	% valid data
Compound	NO	NO	NO	NO	NO	NO	NO
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
2024	N/A	N/A	1.4	46.0	12.3	8663	98.6

Table B6: 2024 Monitoring Summary Results for NO at Rundle Station

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Annual Arithmetic Mean	Maximum Running 1 hr Mean	Maximum Running 24 hr Mean	Number of valid Hours	% valid data
Compound	NO	NO	NO	NO	NO	NO	NO
	No.	No.	(ppb)	(ppb)	(ppb)	No.	%
2024	N/A	N/A	1.1	91.3	13.2	8670	98.7

Table B7: 2024 Monitoring Summary Results for NO_2 at Courtice Station

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Events > Annual AAQC	Annual Arithmetic Mean	Maximum Running 1 hr Mean	98th Percentile (Daily Max 1 hr Mean) [1]	Maximum Running 24 hr Mean	Number of valid Hours	% valid data
Compound	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	No.	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
2024	0	0	0	5.2	39.1	30.8	17.4	8663	98.6

[1] - This value is the 98th percentile of daily maximum 1-hour average concentrations for the 2024 year.

Table B8: 2024 Monitoring Summary Results for NO_2 at Rundle Station

Data Statistics	Events > 1 hr AAQC	Events > 24 hr AAQC	Events > Annual AAQC	Annual Arithmetic Mean	Maximum Running 1 hr Mean	98th Percentile (Daily Max 1 hr Mean) [1]	Maximum Running 24 hr Mean	Number of valid Hours	% valid data
Compound	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2	NO_2
	No.	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
2024	0	0	0	4.0	44.4	25.3	16.9	8670	98.7

[1] - This value is the 98th percentile of daily maximum 1-hour average concentrations for the 2024 year.

Table B9: 2024 Monitoring Summary Results for SO_2 at Courtice Station

Data Statistics	Events > 10 min AAQC	Events > 1 hr AAQC	Events > Annual AAQC	Annual Arithmetic Mean	Maximum Running 10 min Mean	Maximum Running 1 hr Mean	99th Percentile (Daily Max 1 hr Mean) [1]	Maximum Running 24 hr Mean	Number of Valid Hours	% Valid Data
Compound	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2
	No.	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
2024	434	184	0	3.7	590.1	187.8	112.6	38.2	8665	98.6

[1] - This value is the 99th percentile of daily maximum 1-hour average concentrations for the 2024 year.

Table B10: 2024 Monitoring Summary Results for SO_2 at Rundle Station

Data Statistics	Events > 10 min AAQC	Events > 1 hr AAQC	Events > Annual AAQC	Events > Annual CAAQS	Annual Arithmetic Mean	Maximum Running 10 min Mean	Maximum Running 1 hr Mean	99th Percentile (Daily Max 1 hr Mean) [1]	Maximum Running 24 hr Mean	Number of Valid Hours	% Valid Data
Compound	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2	SO_2
	No.	No.	No.	No.	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	No.	%
2024	0	0	0	0	0.3	5.0	4.8	2.4	1.1	8654	98.5

[1] - This value is the 99th percentile of daily maximum 1-hour average concentrations for the 2024 year.

APPENDIX C

Table C1: 2024 Courtice Station Monitoring Results for TSP and Metals

DYEC AAQM Courtice Station Monitoring Results for Total Suspended Particulate and Metals									
Contaminant	**Units**	**AAQC**	**No. > AAQC**	**Geometric Mean**	**Arithmetic Mean**	**Maximum Concentration**	**Minimum Concentration**	**Number of Valid Samples**	**% Valid data**
Particulate (TSP)	µg/m^3	*120*	0	21.8	25.1	63.9	6.50	56	91.8
Total Mercury (Hg)	µg/m^3	*2*	0	5.99E-06	7.57E-06	2.55E-05	2.83E-06	56	91.8
Aluminum (Al)	µg/m^3	-	-	1.33E-01	1.78E-01	5.34E-01	2.69E-03	56	91.8
Antimony (Sb)	µg/m^3	*25*	0	8.14E-04	1.01E-03	3.23E-03	7.47E-05	56	91.8
Arsenic (As)	µg/m^3	*0.3*	0	9.47E-04	1.02E-03	6.25E-03	8.48E-04	56	91.8
Barium (Ba)	µg/m^3	*10*	0	5.95E-03	7.44E-03	1.71E-02	1.49E-04	56	91.8
Beryllium (Be)	µg/m^3	*0.01*	0	1.50E-05	1.50E-05	1.56E-05	1.41E-05	56	91.8
Bismuth (Bi)	µg/m^3	-	-	5.40E-04	5.40E-04	5.62E-04	5.09E-04	56	91.8
Boron (B)	µg/m^3	*120*	0	4.62E-03	4.68E-03	1.04E-02	4.24E-03	56	91.8
Cadmium (Cd)	µg/m^3	*0.025*	0	9.84E-05	1.22E-04	4.10E-04	8.07E-06	56	91.8
Chromium (Cr)	µg/m^3	*0.5*	0	1.52E-03	1.69E-03	3.40E-03	9.62E-04	56	91.8
Cobalt (Co)	µg/m^3	*0.1*	0	1.05E-04	1.36E-04	8.39E-04	8.97E-06	56	91.8
Copper (Cu)	µg/m^3	*50*	0	1.47E-02	2.03E-02	6.99E-02	2.99E-04	56	91.8
Iron (Fe)	µg/m^3	*4*	0	3.08E-01	4.01E-01	9.49E-01	3.59E-03	56	91.8
Lead (Pb)	µg/m^3	*0.5*	0	1.90E-03	2.37E-03	8.73E-03	3.59E-05	56	91.8
Magnesium (Mg)	µg/m^3	-	-	2.00E-01	2.49E-01	8.65E-01	1.79E-02	56	91.8
Manganese (Mn)	µg/m^3	*0.4*	0	8.36E-03	1.11E-02	3.45E-02	1.35E-04	56	91.8
Molybdenum (Mo)	µg/m^3	*120*	0	8.02E-04	8.98E-04	2.03E-03	2.60E-04	56	91.8
Nickel (Ni)	µg/m^3	*0.2*	0	9.71E-04	1.09E-03	6.11E-03	5.13E-04	56	91.8
Phosphorus (P)	µg/m^3	-	-	2.37E-01	2.43E-01	5.21E-01	2.12E-01	56	91.8
Selenium (Se)	µg/m^3	*10*	0	4.65E-04	5.30E-04	2.35E-03	3.68E-04	56	91.8
Silver (Ag)	µg/m^3	*1*	0	2.92E-05	3.11E-05	1.05E-04	2.55E-05	56	91.8
Strontium (Sr)	µg/m^3	*120*	0	6.50E-03	7.96E-03	2.32E-02	1.87E-03	56	91.8
Thallium (Tl)	µg/m^3	-	-	2.70E-05	2.70E-05	2.81E-05	2.55E-05	56	91.8
Tin (Sn)	µg/m^3	*10*	0	8.84E-04	9.95E-04	2.47E-03	1.86E-04	56	91.8
Titanium (Ti)	µg/m^3	*120*	0	6.78E-03	8.30E-03	2.11E-02	3.11E-03	56	91.8
Uranium (Ur)	µg/m^3	*0.3*	0	1.69E-05	2.33E-05	1.34E-04	1.85E-06	56	91.8
Vanadium (V)	µg/m^3	*2*	0	1.52E-03	1.54E-03	3.46E-03	1.41E-03	56	91.8
Zinc (Zn)	µg/m^3	*120*	0	3.28E-02	3.80E-02	1.48E-01	1.30E-02	56	91.8
Zirconium (Zr)	µg/m^3	-	-	6.00E-04	6.00E-04	6.25E-04	5.66E-04	56	91.8

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

Table C2: 2024 Rundle Road Station Monitoring Results for TSP and Metals

DYEC AAQM
Rundle Road Station Monitoring Results for Total Suspended Particulate and Metals

Contaminant	Units	AAQC	No. > AAQC	Geometric Mean	Arithmetic Mean	Maximum Concentration	Minimum Concentration	Number of Valid Samples	% Valid data
Particulate (TSP)	µg/m^3	*120*	0	23.7	28.0	87.1	8.31	54	88.5
Total Mercury (Hg)	µg/m^3	*2*	0	5.57E-06	7.25E-06	3.74E-05	2.91E-06	54	88.5
Aluminum (Al)	µg/m^3	-	-	1.69E-01	2.26E-01	8.15E-01	2.69E-03	54	88.5
Antimony (Sb)	µg/m^3	*25*	0	6.52E-04	8.17E-04	4.65E-03	7.47E-05	54	88.5
Arsenic (As)	µg/m^3	*0.3*	0	9.36E-04	9.53E-04	2.40E-03	8.74E-04	54	88.5
Barium (Ba)	µg/m^3	*10*	0	6.42E-03	7.69E-03	1.82E-02	1.49E-04	54	88.5
Beryllium (Be)	µg/m^3	*0.01*	0	1.58E-05	1.62E-05	3.95E-05	1.46E-05	54	88.5
Bismuth (Bi)	µg/m^3	-	-	5.56E-04	5.68E-04	1.85E-03	5.24E-04	54	88.5
Boron (B)	µg/m^3	*120*	0	4.61E-03	4.65E-03	1.09E-02	4.37E-03	54	88.5
Cadmium (Cd)	µg/m^3	*0.025*	0	7.79E-05	1.05E-04	6.83E-04	8.07E-06	54	88.5
Chromium (Cr)	µg/m^3	*0.5*	0	1.61E-03	1.94E-03	1.12E-02	9.93E-04	54	88.5
Cobalt (Co)	µg/m^3	*0.1*	0	1.38E-04	1.66E-04	4.60E-04	8.97E-06	54	88.5
Copper (Cu)	µg/m^3	*50*	0	4.63E-02	5.67E-02	1.18E-01	2.99E-04	54	88.5
Iron (Fe)	µg/m^3	*4*	0	3.52E-01	4.44E-01	1.17E+00	3.59E-03	54	88.5
Lead (Pb)	µg/m^3	*0.5*	0	2.12E-03	2.70E-03	1.56E-02	3.59E-05	54	88.5
Magnesium (Mg)	µg/m^3	-	-	2.53E-01	3.26E-01	1.72E+00	1.79E-02	54	88.5
Manganese (Mn)	µg/m^3	*0.4*	0	9.55E-03	1.22E-02	4.37E-02	1.35E-04	54	88.5
Molybdenum (Mo)	µg/m^3	*120*	0	2.18E-03	2.42E-03	5.79E-03	4.74E-04	54	88.5
Nickel (Ni)	µg/m^3	*0.2*	0	1.02E-03	1.16E-03	4.61E-03	3.89E-04	54	88.5
Phosphorus (P)	µg/m^3	-	-	2.43E-01	2.51E-01	5.20E-01	2.19E-01	54	88.5
Selenium (Se)	µg/m^3	*10*	0	4.97E-04	6.35E-04	5.42E-03	3.80E-04	54	88.5
Silver (Ag)	µg/m^3	*1*	0	3.65E-05	4.27E-05	2.31E-04	2.62E-05	54	88.5
Strontium (Sr)	µg/m^3	*120*	0	7.01E-03	8.69E-03	3.26E-02	2.14E-03	54	88.5
Thallium (Tl)	µg/m^3	-	-	3.02E-05	3.31E-05	1.62E-04	2.62E-05	54	88.5
Tin (Sn)	µg/m^3	*10*	0	9.70E-04	1.12E-03	5.20E-03	3.70E-04	54	88.5
Titanium (Ti)	µg/m^3	*120*	0	7.85E-03	1.00E-02	3.53E-02	3.21E-03	54	88.5
Uranium (Ur)	µg/m^3	*0.3*	0	1.88E-05	2.69E-05	1.29E-04	4.54E-06	54	88.5
Vanadium (V)	µg/m^3	*2*	0	1.56E-03	1.60E-03	4.56E-03	1.46E-03	54	88.5
Zinc (Zn)	µg/m^3	*120*	0	3.35E-02	4.25E-02	1.97E-01	1.05E-02	54	88.5
Zirconium (Zr)	µg/m^3	-	-	6.05E-04	6.05E-04	6.48E-04	5.82E-04	54	88.5

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

Table C3: 2024 Courtice Station Monitoring Results for PAHs

DYEC AAQM Courtice Station Monitoring Results for Polycyclic Aromatic Hydrocarbons									
Contaminant	**Units**	***MECP Criteria***	**No. > AAQC**	**Geometric Mean**	**Arithmetic Mean**	**Maximum Concentration**	**Minimum Concentration**	**Number of Valid Samples**	**% Valid data**
1-Methylnaphthalene	ng/m^3	-	-	1.96E+00	2.49E+00	6.37E+00	4.21E-01	29	96.7
2-Methylnaphthalene	ng/m^3	-	-	3.70E+00	4.69E+00	1.24E+01	7.78E-01	29	96.7
Acenaphthene	ng/m^3	-	-	1.42E+00	2.45E+00	1.28E+01	2.94E-01	29	96.7
Acenaphthylene	ng/m^3	-	-	2.10E-01	3.08E-01	8.33E-01	3.66E-02	29	96.7
Anthracene	ng/m^3	-	-	8.50E-02	1.30E-01	3.15E-01	6.03E-03	29	96.7
Benzo(a)Anthracene	ng/m^3	-	-	1.21E-02	1.68E-02	8.22E-02	1.66E-03	29	96.7
Benzo(a)fluorene	ng/m^3	-	-	3.33E-02	4.62E-02	2.35E-01	1.54E-03	29	96.7
Benzo(a)Pyrene	ng/m^3	*0.05* [1]	1	9.64E-03	1.59E-02	1.15E-01	1.54E-03	29	96.7
Benzo(b)Fluoranthene	ng/m^3	-	-	3.31E-02	4.31E-02	1.82E-01	6.98E-03	29	96.7
Benzo(b)fluorene	ng/m^3	-	-	5.97E-03	8.23E-03	4.16E-02	1.54E-03	29	96.7
Benzo(e)Pyrene	ng/m^3	-	-	2.21E-02	2.88E-02	9.80E-02	4.82E-03	29	96.7
Benzo(g,h,i)Perylene	ng/m^3	-	-	2.43E-02	2.99E-02	9.90E-02	6.31E-03	29	96.7
Benzo(k)Fluoranthene	ng/m^3	-	-	3.16E-02	4.00E-02	1.27E-01	9.30E-03	29	96.7
Biphenyl	ng/m^3	-	-	1.54E+00	1.82E+00	4.27E+00	4.47E-01	29	96.7
Chrysene	ng/m^3	-	-	6.81E-02	8.01E-02	2.17E-01	2.54E-02	29	96.7
Dibenzo(a,h)Anthracene	ng/m^3	-	-	3.44E-03	4.75E-03	2.25E-02	1.54E-03	29	96.7
Fluoranthene	ng/m^3	-	-	5.63E-01	7.03E-01	2.02E+00	1.14E-01	29	96.7
Fluorene	ng/m^3	-	-	1.38E+00	1.85E+00	6.69E+00	3.57E-01	29	96.7
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	-	1.97E-02	2.60E-02	9.76E-02	3.65E-03	29	96.7
Naphthalene	ng/m^3	*22500*	0	7.45E+00	1.01E+01	2.75E+01	1.27E+00	29	96.7
o-Terphenyl	ng/m^3	-	-	6.94E-03	9.01E-03	5.00E-02	1.54E-03	29	96.7
Perylene	ng/m^3	-	-	2.72E-03	3.50E-03	1.63E-02	1.54E-03	29	96.7
Phenanthrene	ng/m^3	-	-	2.48E+00	3.16E+00	9.87E+00	6.95E-01	29	96.7
Pyrene	ng/m^3	-	-	2.76E-01	3.30E-01	8.57E-01	4.15E-02	29	96.7
Tetralin	ng/m^3	-	-	6.54E-01	1.01E+00	7.77E+00	1.00E-01	29	96.7
Total PAH[2]	ng/m^3	-	-	2.54E+01	2.94E+01	6.93E+01	7.95E+00	29	96.7

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

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

[2] Total PAH sums all PAH contaminants

Table C4: 2024 Rundle Road Station Monitoring Results for PAHs

DYEC AAQM Rundle Road Station Monitoring Results for Polycyclic Aromatic Hydrocarbons									
Contaminant	**Units**	***MECP Criteria***	**No. > AAQC**	**Geometric Mean**	**Arithmetic Mean**	**Maximum Concentration**	**Minimum Concentration**	**Number of Valid Samples**	**% Valid data**
1-Methylnaphthalene	ng/m^3	-	-	2.10E+00	2.61E+00	6.83E+00	2.36E-01	29	96.7
2-Methylnaphthalene	ng/m^3	-	-	3.89E+00	4.89E+00	1.29E+01	5.12E-01	29	96.7
Acenaphthene	ng/m^3	-	-	1.66E+00	2.68E+00	7.92E+00	1.01E-01	29	96.7
Acenaphthylene	ng/m^3	-	-	2.27E-01	3.06E-01	1.15E+00	2.24E-02	29	96.7
Anthracene	ng/m^3	-	-	1.76E-01	3.34E-01	1.77E+00	2.99E-02	29	96.7
Benzo(a)Anthracene	ng/m^3	-	-	1.59E-02	2.15E-02	9.90E-02	2.64E-03	29	96.7
Benzo(a)fluorene	ng/m^3	-	-	4.84E-02	6.97E-02	3.43E-01	7.26E-03	29	96.7
Benzo(a)Pyrene	ng/m^3	*0.05* [1]	2	1.31E-02	2.10E-02	1.25E-01	1.65E-03	29	96.7
Benzo(b)Fluoranthene	ng/m^3	-	-	3.98E-02	5.56E-02	1.98E-01	6.77E-03	29	96.7
Benzo(b)fluorene	ng/m^3	-	-	7.47E-03	1.17E-02	7.11E-02	1.45E-03	29	96.7
Benzo(e)Pyrene	ng/m^3	-	-	2.61E-02	3.45E-02	1.05E-01	5.28E-03	29	96.7
Benzo(g,h,i)Perylene	ng/m^3	-	-	2.94E-02	3.62E-02	1.16E-01	7.76E-03	29	96.7
Benzo(k)Fluoranthene	ng/m^3	-	-	3.48E-02	4.69E-02	1.54E-01	8.91E-03	29	96.7
Biphenyl	ng/m^3	-	-	1.56E+00	2.00E+00	9.24E+00	2.02E-01	29	96.7
Chrysene	ng/m^3	-	-	8.84E-02	1.08E-01	3.81E-01	1.50E-02	29	96.7
Dibenzo(a,h)Anthracene	ng/m^3	-	-	4.01E-03	5.68E-03	2.72E-02	1.45E-03	29	96.7
Fluoranthene	ng/m^3	-	-	9.34E-01	1.46E+00	5.91E+00	1.37E-01	29	96.7
Fluorene	ng/m^3	-	-	1.77E+00	2.51E+00	8.27E+00	3.51E-01	29	96.7
Indeno(1,2,3-cd)Pyrene	ng/m^3	-	-	2.39E-02	3.16E-02	1.07E-01	4.79E-03	29	96.7
Naphthalene	ng/m^3	*22500*	0	7.23E+00	9.75E+00	3.37E+01	1.31E+00	29	96.7
o-Terphenyl	ng/m^3	-	-	7.19E-03	9.69E-03	4.95E-02	1.45E-03	29	96.7
Perylene	ng/m^3	-	-	2.91E-03	3.72E-03	1.61E-02	1.45E-03	29	96.7
Phenanthrene	ng/m^3	-	-	3.69E+00	5.37E+00	2.04E+01	7.57E-01	29	96.7
Pyrene	ng/m^3	-	-	4.56E-01	6.79E-01	2.64E+00	6.70E-02	29	96.7
Tetralin	ng/m^3	-	-	6.38E-01	1.01E+00	6.70E+00	1.34E-01	29	96.7
Total PAH[2]	ng/m^3	-	-	2.95E+01	3.41E+01	8.37E+01	1.04E+01	29	96.7

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

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

[2] Total PAH sums all PAH contaminants

Table C5: 2024 Courtice Station Monitoring Results for Dioxins & Furans

DYEC AAQM									
Courtice Station Monitoring Results for Dioxins & Furans									
Contaminant	**Units**	**AAQC**	**No. > AAQC**	**Geometric Mean**	**Arithmetic Mean**	**Maximum Concentration**	**Minimum Concentration**	**Number of Valid Samples**	**% Valid data**
2,3,7,8-TCDD	pg TEQ/m^3	-	-	7.77E-04	1.09E-03	5.02E-03	3.53E-04	15	100.0
1,2,3,7,8-PeCDD	pg TEQ/m^3	-	-	9.27E-04	1.08E-03	2.42E-03	3.35E-04	15	100.0
1,2,3,4,7,8-HxCDD	pg TEQ/m^3	-	-	1.27E-04	1.60E-04	3.36E-04	4.05E-05	15	100.0
1,2,3,6,7,8-HxCDD	pg TEQ/m^3	-	-	1.62E-04	1.97E-04	4.14E-04	4.22E-05	15	100.0
1,2,3,7,8,9-HxCDD	pg TEQ/m^3	-	-	1.30E-04	1.60E-04	3.71E-04	4.10E-05	15	100.0
1,2,3,4,6,7,8-HpCDD	pg TEQ/m^3	-	-	3.20E-04	4.02E-04	9.90E-04	7.50E-05	15	100.0
OCDD	pg TEQ/m^3	-	-	4.05E-05	4.74E-05	1.25E-04	1.19E-05	15	100.0
2,3,7,8-TCDF	pg TEQ/m^3	-	-	1.02E-04	1.18E-04	3.46E-04	4.72E-05	15	100.0
1,2,3,7,8-PeCDF	pg TEQ/m^3	-	-	3.69E-05	4.17E-05	7.73E-05	1.55E-05	15	100.0
2,3,4,7,8-PeCDF	pg TEQ/m^3	-	-	2.93E-04	3.25E-04	6.75E-04	1.45E-04	15	100.0
1,2,3,4,7,8-HxCDF	pg TEQ/m^3	-	-	1.40E-04	1.88E-04	5.65E-04	2.91E-05	15	100.0
1,2,3,6,7,8-HxCDF	pg TEQ/m^3	-	-	1.03E-04	1.35E-04	3.49E-04	2.91E-05	15	100.0
2,3,4,6,7,8-HxCDF	pg TEQ/m^3	-	-	8.56E-05	1.00E-04	2.48E-04	2.91E-05	15	100.0
1,2,3,7,8,9-HxCDF	pg TEQ/m^3	-	-	7.46E-05	8.55E-05	2.42E-04	3.39E-05	15	100.0
1,2,3,4,6,7,8-HpCDF	pg TEQ/m^3	-	-	4.57E-05	6.64E-05	2.06E-04	8.89E-06	15	100.0
1,2,3,4,7,8,9-HpCDF	pg TEQ/m^3	-	-	9.34E-06	1.07E-05	3.29E-05	3.57E-06	15	100.0
OCDF	pg TEQ/m^3	-	-	2.50E-06	4.33E-06	1.83E-05	3.33E-07	15	100.0
Total Toxic Equivalency	pg TEQ/m^3	0.1 1[1]	0	3.78E-03	4.21E-03	9.12E-03	1.77E-03	15	100.0

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

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

Table C6: 2024 Rundle Road Station Monitoring Results for Dioxins & Furans

DYEC AAQM									
Rundle Road Station Monitoring Results for Dioxins & Furans									
Contaminant	**Units**	**AAQC**	**No. > AAQC**	**Geometric Mean**	**Arithmetic Mean**	**Maximum Concentration**	**Minimum Concentration**	**Number of Valid Samples**	**% Valid data**
2,3,7,8-TCDD	pg TEQ/m^3	-	-	7.00E-04	7.79E-04	1.98E-03	3.93E-04	14	93.3
1,2,3,7,8-PeCDD	pg TEQ/m^3	-	-	1.37E-03	1.54E-03	3.27E-03	5.47E-04	14	93.3
1,2,3,4,7,8-HxCDD	pg TEQ/m^3	-	-	1.21E-04	1.49E-04	5.68E-04	5.62E-05	14	93.3
1,2,3,6,7,8-HxCDD	pg TEQ/m^3	-	-	1.61E-04	2.30E-04	1.30E-03	6.86E-05	14	93.3
1,2,3,7,8,9-HxCDD	pg TEQ/m^3	-	-	1.45E-04	1.82E-04	4.10E-04	5.45E-05	14	93.3
1,2,3,4,6,7,8-HpCDD	pg TEQ/m^3	-	-	2.92E-04	3.53E-04	9.01E-04	6.99E-05	14	93.3
OCDD	pg TEQ/m^3	-	-	3.17E-05	3.65E-05	8.61E-05	9.69E-06	14	93.3
2,3,7,8-TCDF	pg TEQ/m^3	-	-	9.44E-05	1.04E-04	2.14E-04	4.64E-05	14	93.3
1,2,3,7,8-PeCDF	pg TEQ/m^3	-	-	3.94E-05	4.62E-05	1.15E-04	1.67E-05	14	93.3
2,3,4,7,8-PeCDF	pg TEQ/m^3	-	-	3.59E-04	4.31E-04	1.08E-03	1.28E-04	14	93.3
1,2,3,4,7,8-HxCDF	pg TEQ/m^3	-	-	1.10E-04	1.42E-04	3.57E-04	3.88E-05	14	93.3
1,2,3,6,7,8-HxCDF	pg TEQ/m^3	-	-	1.35E-04	1.51E-04	3.29E-04	6.92E-05	14	93.3
2,3,4,6,7,8-HxCDF	pg TEQ/m^3	-	-	1.09E-04	1.36E-04	3.42E-04	2.89E-05	14	93.3
1,2,3,7,8,9-HxCDF	pg TEQ/m^3	-	-	8.69E-05	9.95E-05	1.89E-04	4.53E-05	14	93.3
1,2,3,4,6,7,8-HpCDF	pg TEQ/m^3	-	-	5.67E-05	7.31E-05	1.85E-04	1.44E-05	14	93.3
1,2,3,4,7,8,9-HpCDF	pg TEQ/m^3	-	-	1.22E-05	1.63E-05	4.89E-05	4.64E-06	14	93.3
OCDF	pg TEQ/m^3	-	-	1.57E-06	2.24E-06	7.43E-06	3.72E-07	14	93.3
Total Toxic Equivalency	pg TEQ/m^3	0.1 1[1]	0	4.12E-03	4.47E-03	8.59E-03	2.10E-03	14	93.3

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

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