2016 Annual Report

Southeast Saskatchewan
Airshed Association

Prepared by:
Air & Climate Business Unit - Environment Division
Saskatchewan Research Council
125 – 15 Innovation Blvd.
Saskatoon, SK S7N 2X8
Tel: 306-933-5400
Fax: 306-933-7817

For more information, please contact:
Terry Gibson
Executive Director
Southeast Saskatchewan Airshed Association
Phone: 306.371.2478
Email: tg4air@sasktel.net

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

List of Terms and Definitions

24-hour	A calendar day, average is calculated midnight-to-midnight
8-hour	8-hour running average for O_3 Canada-Wide Standards
SAAQS	Saskatchewan Ambient Air Quality Standard
AQHI	Air Quality Health Index
AQI	Air Quality Index
CAAQS	Canadian Ambient Air Quality Standards
Calm	1-hour average wind speed lower than 1 km/hour
CO	Carbon monoxide
H_2S	Hydrogen sulphide
NH_3	Ammonia
NO_2	Nitrogen dioxide
NO	Nitric oxide
NO_X	Oxides of nitrogen
O_3	Ozone
$PM_{2.5}$	Particulate matter with aerodynamic diameter less than 2.5 µm, referred to as fine or respirable particles
RH	Relative humidity
SO_2	Sulphur dioxide
WD	Wind direction
WS	Wind speed

Units of Measurement

m/s	meter per second
km/hr	kilometer per hour
µg/m^3	microgram per cubic meter
ppb	part per billion by volume
mm	millimeter
°C	degrees Celsius
%	percent of relative humidity, instrument uptime, etc.
Degree	angle of wind direction from the north

MESSAGE FROM THE EXECUTIVE DIRECTOR

2016 was an excellent year for the Southeast Saskatchewan Airshed Association (SESAA) and for air quality monitoring in the south eastern region of Saskatchewan. Monitoring was made easier as we did not face the heavy smoke that was experienced in 2015. SESAA is very pleased to inform our members that eight (8) continuous air monitoring sites managed by SESAA are now operating in the region and providing real-time data on the airshed's website. SESAA will continue to explore every opportunity to collaborate with other agencies in bringing additional air quality monitoring into the region.

This monitoring initiative is multi-purpose it: a) collects real time air quality data throughout the SESAA region, b) demonstrates companies are operating in a safe, environmentally sound manner that is enabling sustainable growth, and c) provides companies considering to invest in Saskatchewan with background data that can be used in any air quality assessment without delaying their process by having to do baseline monitoring, as well as showing that air pollution levels are low enough in this region that it will not be an impediment to growth. The credibility and strength of the continuous monitoring network is scientifically and financially sound. The continuous data includes hourly concentrations of SO_2, H_2S, $NO/NO_2/NO_X$, $PM_{2.5}$ and O_3 , as well as ambient temperature, ambient pressure, relative humidity, wind speed and direction, and precipitation. The data is available on the SESAA website: http://www.sesaa.ca

The SESAA Science Committee is currently reviewing the data gathered over the past three years and will make a determination of the positioning of the instruments and the equipment needs for our area.

Our goal is to collect credible and defensible air quality data and provide excellent service to our members. The credibility and strength of the continuous monitoring network is scientifically and financially sound.

We have and are continuing to communicate the work we do in many ways. When we do a presentation or place an article or a story in a newspaper we highlight our members wherever possible. We list our members on our website and do as much as we can to inform the public the names of our member companies. SESAA also welcomes and encourages comments or questions from the public. This communication work is very important to SESAA and to its members.

Past and ongoing communication initiatives include:

- News articles in the Regina Leader Post, the Weyburn Review, and the Estevan Mercury, and CTV Regina news interviews;
- Saskatchewan Oil and Gas Show, Weyburn;

- Saskatchewan Association of Rural Municipalities (SARM) the Councillor Newsletter Article;
- Quarterly SESAA E-bulletins to all members to keep them informed of any new developments, meeting dates and any other pertinent air quality information;
- Quarterly meetings of Board of Directors meetings at which anyone is welcome to attend;
- reviewing our website and improving our communication abilities;
- hosting a booth at the Saskatchewan Oil Show in June 2015 which was very well attended. We gave away printed material with information about our Association as well as pens, Frisbees and balloons; all with the SESAA website address. We are booked for the Oil Show in 2017.

All of these showcase the work we do and our members' involvement. It is important that the public is comfortable and welcoming of well-run industry in their municipalities as public acceptance plays a large role in helping to foster a business-friendly environment that promotes future industrial growth.

As a part of Clean Air Day on June 8, 2016, the Southeast Saskatchewan Airshed Association announced the winners of the Clean Air Poster Awards. The contest was open to all kindergarten to grade eight students in Estevan. The winners received a Family Day Pass to the Estevan Swimming Pool. The winning posters were scanned and posted on the SESAA website. The posters were judged by an independent panel of the City of Estevan Council. SESAA thanks all students that submitted posters.

SESAA is pleased with the excellent response we received from our members. We have had a very good year financially and with our data monitoring capabilities. This is excellent news for the people of the south east area of Saskatchewan and for all of our valued members. We now have data to help inform our decision making process. The Science committee will review all of this data and bring recommendations to the Board as to how we should proceed with managing our monitoring capabilities. The data will direct our decisions as to how to improve our monitoring network.

Real-time air monitoring data can be seen at www.sesaa.ca. Real time and long-term historical data that can be used to evaluate future development scenarios is available to SESAA members and can be obtained from SESAA by request.

2016 was another successful year for SESAA. The Association continues to maintain a high level of membership support in the region, allowing us to collect and report good air quality information to the citizens of southeast Saskatchewan. SESAA plans to continue building on its success in 2017. Future plans include reviewing and maintaining our network monitoring needs and continuing the development and delivery of a strong communications program that reaches out to organizations such as municipalities, Chambers of Commerce, high school classes, and home and school meetings. SESAA thanks all of our members for their committed participation.

EXECUTIVE SUMMARY

The Southeast Saskatchewan Airshed Association (SESAA), established in October 2005, was Saskatchewan's first airshed association with a mandate to monitor ambient air quality in the southeast region of the Province. SESAA is a collaborative group of industry, government, nongovernment organizations, and private citizens. The airshed covers an area of 36,800 square kilometres and includes 45 municipalities. Major economic activities in the region include agriculture, oil and gas, mining, power generation, and transportation.

SESAA manages a continuous air monitoring network. The continuous air monitoring network consists of seven airpointer® air monitoring stations near Esterhazy, Glen Ewen, Oxbow, Stoughton, Wauchope, Wawota, and Weyburn, as well as a monitoring station in Estevan which was transferred to SESAA in the summer of 2014 (Figure 1). The eight continuous air monitoring stations measure real-time data for one or more of sulphur dioxide (SO_2), hydrogen sulphide (H_2S), nitrogen oxides (NO, NO_2, NO_X), ozone (O_3), fine particulate matter ($PM_{2.5}$), ambient temperature, relative humidity (RH), precipitation, wind speed (WS) and wind direction (WD).

Quarterly calibrations and routine maintenance were performed in accordance with a Quality Assurance Plan provided to SESAA by contractors responsible for the maintenance, calibration and data management for the airshed. Calibrations were performed in February, May, July-August, and November for all stations.

The first airshed site monitoring data was originally made available in early 2011 on the SESAA website (Reference 1). The continuous data is available in real-time on the internet; it includes hourly concentrations of SO_2, H_2S, NO/NO_2/NO_X, $PM_{2.5}$ and O_3, as well as meteorology data and Air Quality Index (AQI) or Air Quality Health Index (AQHI) ratings.

Financial support for installing monitoring stations has come from various sources. Four of the monitoring stations were made possible in 2013 through a matching grant provided to SESAA by the Western Economic Diversification Canada (WEDC) Office in Saskatoon. One was made possible in 2014 through a grant provided by the Saskatchewan Ministry of the Economy. The final site was made possible through a generous donation by SaskPower of its station located in the City of Estevan, which SESAA began managing in the summer of 2014. SESAA is very grateful to the Ministry of the Economy and to SaskPower for providing us with these stations to manage and further enhance our network. Thanks and recognition also needs to be given to the Saskatchewan Ministry of Environment for providing SESAA with a fine particulate monitor, along with meteorological equipment for the Estevan station. SESAA is very excited about what the WEDC initiative, the Ministry of the Economy grant and the SaskPower Station have brought to the Association's monitoring capabilities.

The installation of continuous monitors throughout the region is helping SESAA meet its monitoring goal. Monitoring also allow the Association to show companies already operating or considering operating in the area that this is a good place to invest because we know the air quality is being monitored, and air quality within SESAA is of relatively good quality, although there have been some odour complaints. SESAA continues to work with the Ministries of Environment and Economy to resolve these concerns.

The measured air quality was within the Saskatchewan Ambient Air Quality Standards (SAAQS), with the exception of H_2S and $PM_{2.5}$. There were a total of 64 exceedance events for 1-hour average H_2S, 10 exceedance events for 24-hour average H_2S, and 1 exceedance event for 24-hour average $PM_{2.5}$. The air quality within the SESAA network was rated Low Risk or Good for more than 98% of the time according to the Air Quality Health Index-rated stations, and more than 97% of the time for Air Quality Index-rated stations. Table ES-1 summarizes the annual averages of continuous air quality data.

Table ES-1 Annual Average Concentrations for Continuous Parameters for 2016

Pollutant	Conc. Unit	Annual Average Concentrations for Continuous Data							
		Esterhazy	Estevan	Glen Ewen	Oxbow	Stoughton	Wauchope	Wawota	Weyburn
SO_2	ppb	[a]	1.5	1.1	1.3	0.8	0.9	[a]	1.3
H_2S	ppb	[a]	[a]	0.5	0.6	0.7	0.7	[a]	0.6
NO	ppb	0.5	3.1	0.4	0.4	0.5	[a]	0.8	0.6
NO_2	ppb	1.3	3.6	1.8	1.5	2.0	[a]	1.2	1.5
NO_X	ppb	1.8	6.7	2.2	1.9	2.4	[a]	2.0	2.1
O_3	ppb	28.1	[a]	23.1	[a]	[a]	[a]	28.8	23.8
$PM_{2.5}$	µg/m^3	3.5	2.9	[a]	5.8	4.5	5.6	6.1	3.2

[a] Parameter was not monitored

1 INTRODUCTION

1.1 History

The Southeast Saskatchewan Airshed Association (SESAA) is a collaborative group of industry, non-government organizations, government, and private citizens. SESAA was established in 2005 with a mandate to collect credible, scientifically defensible air quality data and to make this data available to the public. SESAA also provides a forum for open communication of air quality concerns among all sectors of society. Membership in the airshed association is currently voluntary, with members sharing funding responsibilities for monitoring programs and studies. SESAA covers an area of 36,800 square kilometres, including 45 municipalities. The airshed boundaries were established based on common history, meteorology, and funding considerations. Major economic activities in the region include agriculture, oil and gas, mining, power generation, and transportation.

The current SESAA membership includes members of the agriculture, oil and gas, mining and power generation sectors. The Government of Saskatchewan Ministries of Environment, Economy, and Health, as well as representatives of the City of Estevan and Rural Municipality of Tecumseh No. 65, also participate as members of the Board of Directors. SESAA's operating budget consists of membership fees, environmental footprint, and emissions-based fees assessed to facilities operating within the airshed.

SESAA began monitoring in March of 2010 with the installation of the Weyburn airpointer. The second station was installed at Glen Ewen in May 2012. The Stoughton, Esterhazy, Wawota, and Wauchope stations began operation in 2013 following a grant provided to SESAA by the Western Economic Diversification Canada (WEDC) office in Saskatoon. The monitoring station at Estevan was transferred from SaskPower to SESAA in 2014, and SESAA took over management of the station in summer of 2014. The Oxbow station began operation in December 2014 through a grant provided by the Saskatchewan Ministry of the Economy.

1.2 SESAA Mission

The SESAA mission is to collect credible, scientifically defensible air quality data for the southeast Saskatchewan region, and to make this data freely available to all stakeholders. Our objective is to bring together stakeholders from all backgrounds to identify regional air quality issues and to develop innovative solutions for managing these issues.

1.3 SESAA Air Monitoring Network

Air quality data collected by SESAA is used to investigate the trends in air quality resulting from emissions of anthropogenic sources (industry, motor vehicles, etc.) and natural processes (such as forest fires, decomposition of organic matter, etc.).

The SESAA air monitoring network includes eight stations: seven airpointer® continuous monitoring stations near Esterhazy, Glen Ewen, Oxbow, Stoughton, Wauchope, Wawota and Weyburn, and one monitoring station in Estevan. See Figure 1 for a map of the SESAA air monitoring stations.

Table 1 shows the parameters measured at each station. The SESAA continuous air monitoring network measures sulphur dioxide (SO_2), hydrogen sulphide (H_2S), nitrogen oxides (NO, NO_2, NO_x), ozone (O_3), fine particulate matter ($PM_{2.5}$), ambient temperature, relative humidity (RH), precipitation, wind speed (WS) and wind direction (WD). Real-time air monitoring data is available on the SESAA website at: www.sesaa.ca. Please note, climatic factors presented in this report have not been calibrated.

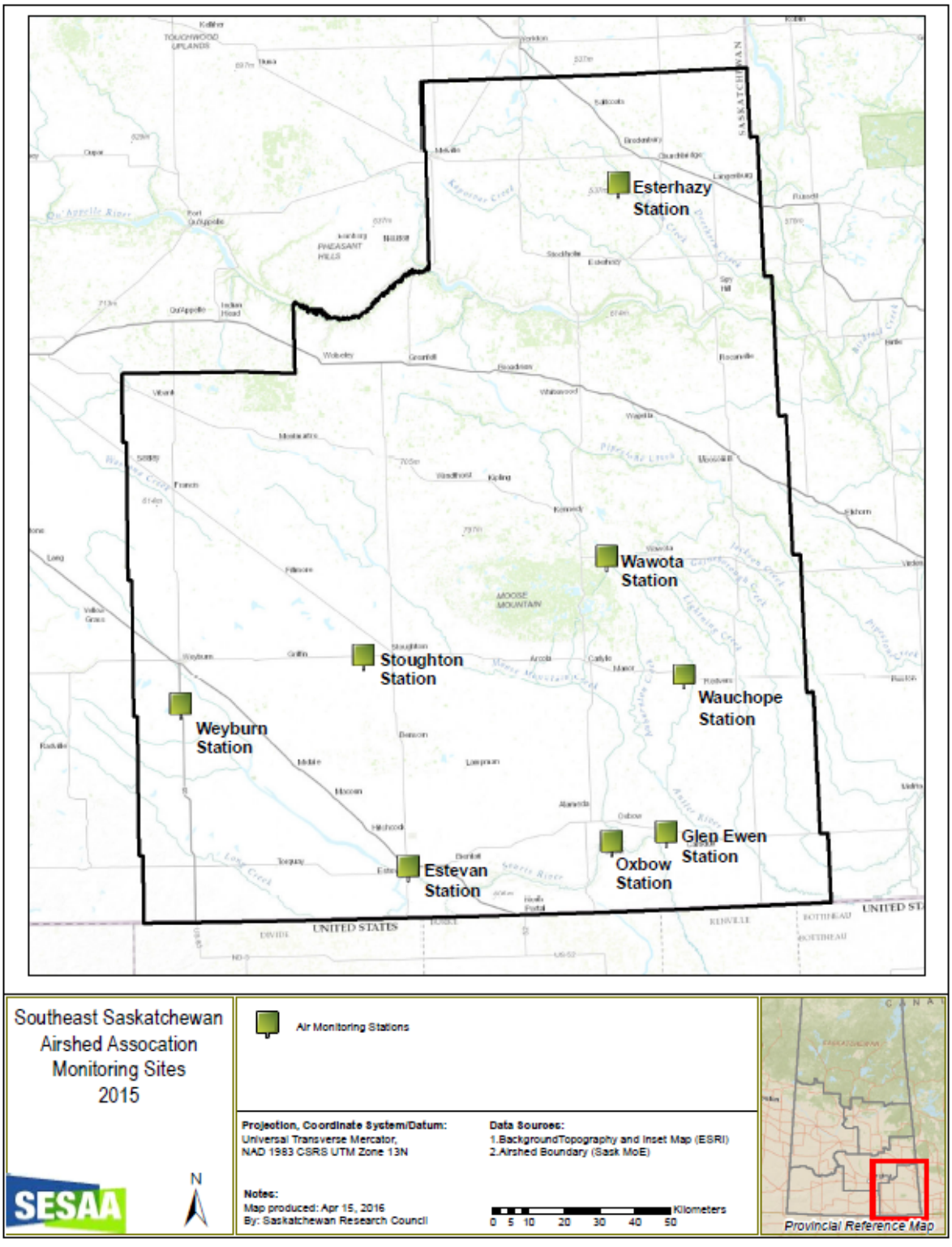


Figure 1 Ambient air monitoring sites of the Southeast Saskatchewan Airshed Association

Table 1 SESAA monitoring station measurement parameters

Parameter	Esterhazy	Estevan	Glen Ewen	Oxbow	Stoughton	Wauchope	Wawota	Weyburn
SO_2		✓	✓	✓	✓	✓		✓
H_2S			✓	✓	✓	✓		✓
NO	✓	✓	✓	✓	✓		✓	✓
NO_2	✓	✓	✓	✓	✓		✓	✓
NO_X	✓	✓	✓	✓	✓		✓	✓
O_3	✓		✓				✓	✓
$PM_{2.5}$	✓	✓		✓	✓	✓	✓	✓
Ambient Temperature	✓	✓	✓	✓	✓	✓	✓	✓
Relative Humidity	✓		✓	✓	✓	✓	✓	✓
Precipitation	✓		✓	✓	✓	✓	✓	✓
Wind Speed	✓	✓	✓	✓	✓	✓	✓	✓
Wind Direction	✓	✓	✓	✓	✓	✓	✓	✓

2 AIR QUALITY MONITORING

2.1 Exceedances above the SAAQS

The SESAA air monitoring network measures air pollutant concentrations to indicate the quality of air in the airshed. When the air quality worsens as a result of an exceedance above the Saskatchewan Ambient Air Quality Standards (SAAQS), the source of the exceedance is investigated and reported to the Ministry of Environment and to SESAA as soon as reasonably achievable.

Table 2 summarizes the SAAQS and the number of exceedances recorded in 2016. A total of 64 exceedance events for 1-hour average H_2S, 10 exceedance events for 24-hour average H_2S, and 1 exceedance event for 24-hour average $PM_{2.5}$ were recorded. The detailed exceedance summaries are presented in Appendix J.

Table 2 Summary of exceedances in 2016

Parameter	No. of Stations Showing Exceedances	Average Type	SAAQS (ppb)	No. of Exceedances
SO_2	1	1-hour	172	0
		24-hour	48	0
		Annual	8	0
H_2S	5	1-hour	11	64
	4	24-hour	3.6	10
NO_2		1-hour	159	0
		24-hour	106	0
		Annual	24	0
O_3		1-hour	82	0
	4	8-hour	63	0[ab]
$PM_{2.5}$	7	24-hour	28 µg/m^3	1
		Annual	10 µg/m^3	0

[a] These events do not necessarily constitute an exceedance because the standard applies to 3-year average of the annual 4th-highest daily maximum 8-hour average concentration

[b] Number of days with 8-hour period exceeding SAAQS threshold for O_3

2.1.1 Canadian Ambient Air Quality Standards

Under the Air Quality Management System, Environment and Climate Change Canada and Health Canada established air quality standards for fine particulate matter and ground-level ozone (Reference 5). The air quality standards were established as objectives under sections 54 and 55 of the Canadian Environmental Protection Act, 1999 on May 25, 2013. The provinces and territories are required to implement actions to achieve the air quality standards to ensure

that the air quality objectives are met. For the first time in Canada, the standards also include a long-term (annual) target for fine particulate matter (Reference 12), shown in Table 3.

As a part of the continuing implementation of the Air Quality Management System, on October 3, 2016 Ministers announced new Canadian Ambient Air Quality Standards (CAAQS) for sulphur dioxide that will drive the improvement of air quality across the country. The standards were developed through a collaborative process that included industry associations, non-governmental organizations, Indigenous organizations and governments (Reference 13).

Table 3 Future CAAQS for Fine Particulate Matter and Ground-Level Ozone

Pollutants	Old Standards	New Standards	
		2015	2020
$PM_{2.5}$ Annual	-	10 µg/m³	8.8 µg/m³
$PM_{2.5}$ for 24-hour	30 µg/m³	28 µg/m³	27 µg/m³
Ozone for 8-hour	65 ppb	63 ppb	62 ppb

Table 4 Future CAAQS for Sulphur Dioxide

Averaging time	Numerical Value in parts per billion (ppb)		Statistical form of the standards (metric)
	Effective 2020	Effective 2025	
1-hour	70	65	The 3-year average of the annual 99th percentile of the SO_2 daily maximum 1-hour average concentrations.
1-calendar year (annual)	5.0	4.0	The arithmetic average over a single calendar year of all 1-hour average SO_2 concentrations.

Work is currently underway to develop standards for nitrogen dioxide.

2.2 Wind Speed and Direction

Wind speed and wind direction are important factors that influence regional air quality. The diffusion and dispersion of air pollutant emissions are greatly impacted by variations in wind speed and corresponding air turbulence. Different degrees of turbulence are created by variable mixing conditions due to the vertical gradient of ambient temperatures and terrain roughness unique to each station.

Figure 3 shows the wind roses for the SESAA stations in 2016. According to the Beaufort Wind Scale (Reference 3), the prevailing winds in SESAA was typically classified as Light Air (<1.4 m/s or 5.0 km/hr), Light Breeze (<3.1 m/s or 11.2 km/hr), and Gentle to Moderate Breeze (<7.8 m/s or 28.1 km/hr). Fresh to Strong Breezes (>7.8 m/s or 28.1 km/hr) were more frequent at Wawota (9.0%), with the next highest proportion of fresh to strong winds at the Weyburn (5.2%) and Glen Ewen (3.1%) stations. Near gale winds (≥13.6 m/s or 49.0 km/hr) occurred at Wawota (0.5%). The occurrence frequency of calm wind (≤0.3 m/s or 1.1 km/hr) ranged from 0.1% (Glen Ewen) to 3.2% (Oxbow).

The prevailing wind direction varied among the monitoring stations. Generally, the prevailing wind direction was from the northwest and southeast quadrants. The Wauchope station exhibited a higher frequency of west winds. The Stoughton station recorded a higher frequency of east winds. The detailed frequency distribution tables and wind roses are presented in the Appendices:

Table B-10, Table C-8, Table D-11, Table E-11, Table F-11, Table G-8, Table H-10, and Table I-12.

The Estevan wind sensor malfunctioned at some point in 2015. Due to this issue, all wind data for Estevan contained in this report was taken from Environment and Climate Change Canada's station in Estevan. This may factor in to the stronger winds observed at Estevan as the Environment and Climate Change Canada tower is 10 m high compared to approximately 2-3 m high for most other stations.

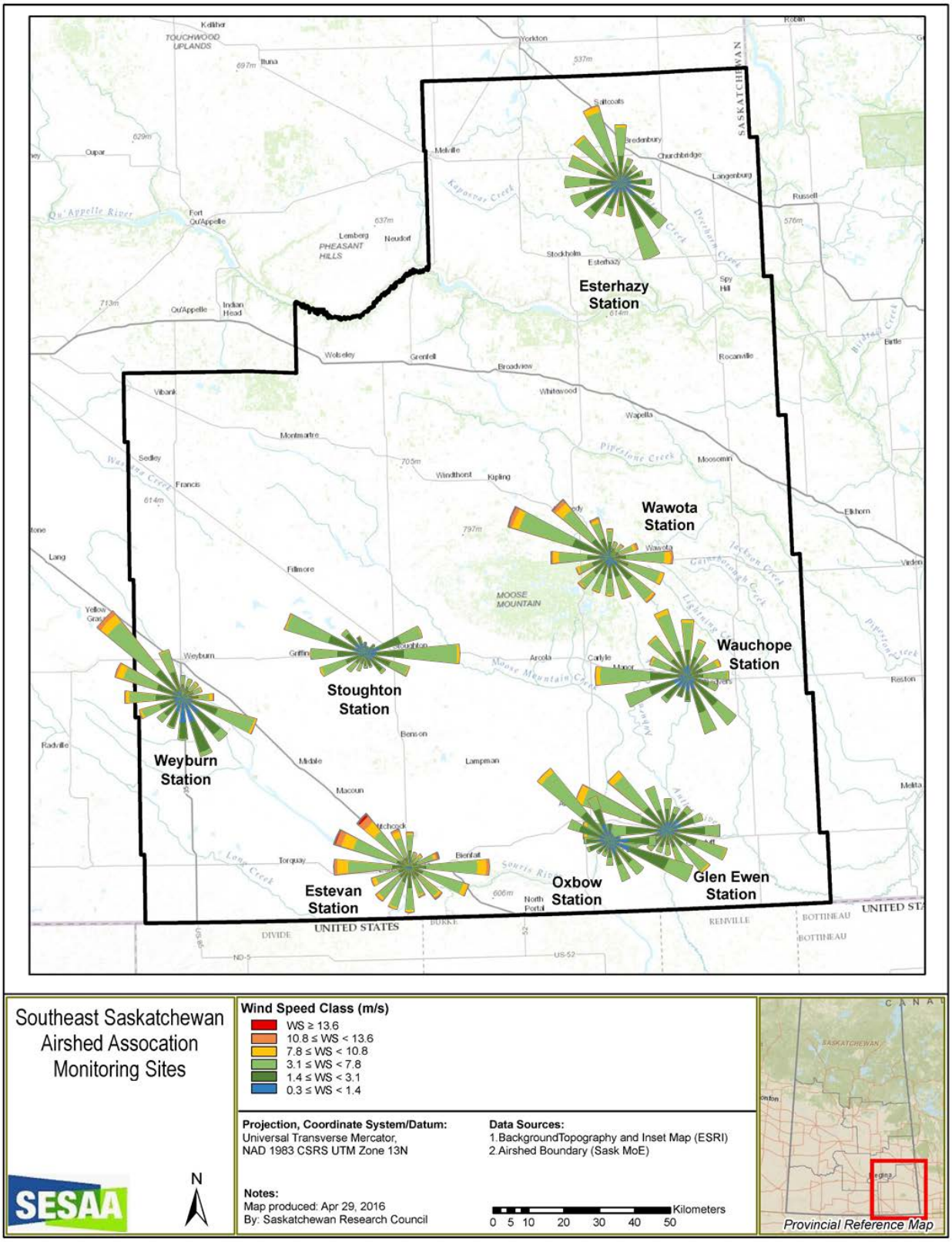


Figure 2 Wind roses for SESAA stations, 2016

2.3 Continuous Air Quality Data

2.3.1 Sulphur Dioxide (SO_2)

Sulphur dioxide (SO_2) is a colourless gas with a pungent irritating odour at high concentrations. At concentrations above 300 ppb, it can be detected by taste and odour. Short-term exposures to SO_2 can harm the human respiratory system and make breathing difficult (Reference 6). SO_2 affects sensitive individuals with pre-existing respiratory conditions such as asthma or bronchitis (Reference 7). At high concentrations, gaseous SO_x can harm trees and plants by damaging foliage and decreasing growth (Reference 7).

SO_2, along with nitrogen oxides, are the main precursors of acid rain, which contributes to the acidification of lakes and streams, accelerated corrosion of buildings, and reduced visibility. SO_2 in the air may deposit to surfaces (water bodies, vegetation, buildings) quickly or may react during atmospheric transport to form larger particles that can be harmful to human health (Reference 8).

Anthropogenic SO_2 emission sources are primarily from combustion of sulphur containing fuels (e.g. gasoline, natural gas and coal) and processing of sulphur containing ores. The major emission sources for SO_2 include large industrial sources (e.g., power plants, petroleum refineries, iron and steel mills, fertilizer plants, pulp and paper mills, smelters) as well as small industries (e.g., small oil and gas plants, battery and well flares).

Table 5 presents the summary statistics for SO_2. The annual average concentration range was from 0.8 ppb to 1.5 ppb among the six stations. The maximum 1-hour concentration of 131.9 ppb and the maximum 24-hour concentration of 18.8 ppb were detected at the Estevan station. No stations reported an exceedance for SO_2 in 2016.

Figures 4 to 9 present the pollutant roses for 1-hour average concentration for SO_2. The measured concentration at all stations was low; greater than 94% of the data was less than 5 ppb (the blue and dark green petals). The pollutant roses indicate that the Estevan, Glen Ewen, and Weyburn stations detected higher concentration events (>5 ppb) than the other stations. The high concentration events at the Estevan station tended to be associated with the winds from the southwest quadrant. At the Glen Ewen station, the high concentration events were associated with the winds from the west quadrant. The high concentration events at the Weyburn station tended to be associated with winds from the southeast quadrant.

The detailed frequency distribution tables for 1-hour average SO_2 data are presented in the Appendices: Table C-2, Table D-2, Table E-2, Table F-2, Table G-2, and I-2.

Table 5 Summary statistics for SO_2 in 2016

Monitoring Station	Annual Average	Instrument Uptime	Maximum SO_2 Conc. and Occurrence Time			
	ppb	%	1-Hr Max		24-Hr Max	
Estevan	1.5	88.0	131.9	11/12/2016 02:00	18.8	5/5/2016
Glen Ewen	1.1	94.6	30.2	1/10/2016 18:00	8.3	1/10/2016
Oxbow	1.3	95.2	22.3	4/6/2016 10:00	4.8	11/27/2016
Stoughton	0.8	94.7	10.4	5/1/2016 07:00	3.2	1/4/2016
Wauchope	0.9	78.6	17.8	3/20/2016 09:00	4.7	3/3/2016
Weyburn	1.3	90.6	24.1	1/13/2016 13:00	7.2	1/18/2016

Table 6 Number of exceedance events for SO_2 in 2016

Monitoring Station	Number of Exceedance Events for Saskatchewan SO_2 Ambient Air Quality Standard (SAAQS)		
	1-hr SAAQS (172 ppb)	24-hr SAAQS (48 ppb)	Annual SAAQS (8 ppb)
Estevan	0	0	0
Glen Ewen	0	0	0
Oxbow	0	0	0
Stoughton	0	0	0
Wauchope	0	0	0
Weyburn	0	0	0

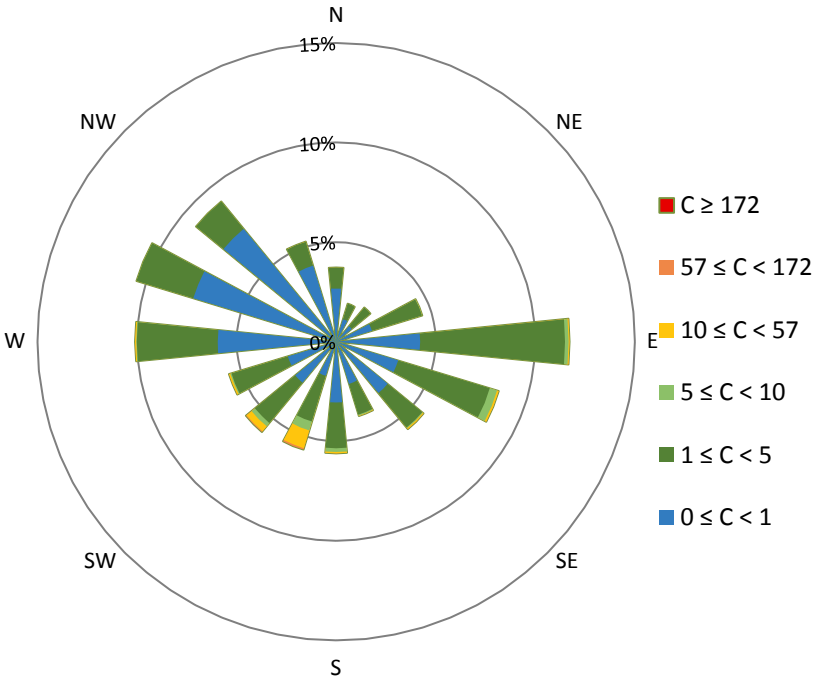


Figure 3 **Pollutant rose for 1-hour average SO_2 data at the Estevan Station (ppb)**

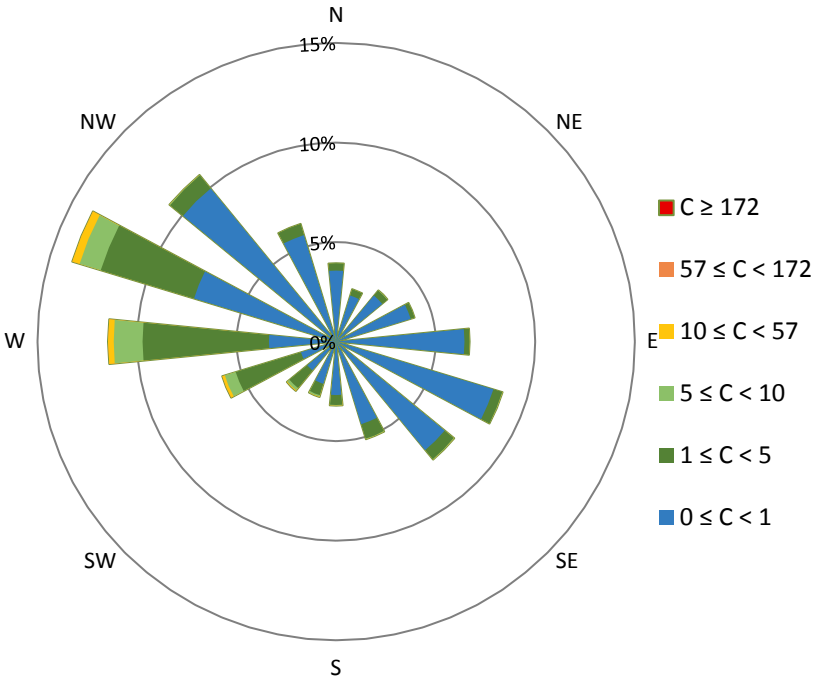


Figure 4 **Pollutant rose for 1-hour average SO_2 data at the Glen Ewen Station (ppb)**

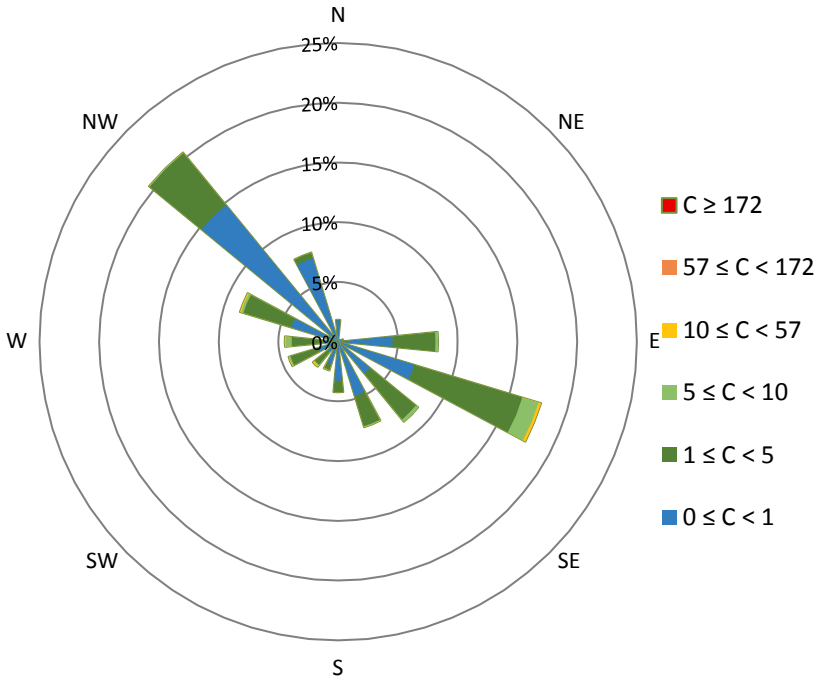


Figure 5 **Pollutant rose for 1-hour average SO_2 data at the Oxbow Station (ppb)**

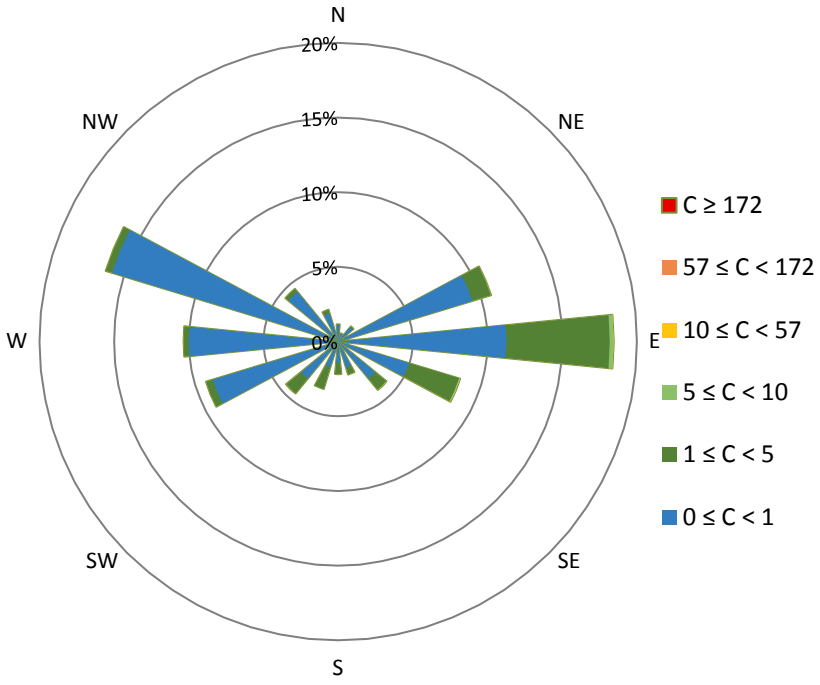


Figure 6 **Pollutant rose for 1-hour average SO_2 data at the Stoughton Station (ppb)**

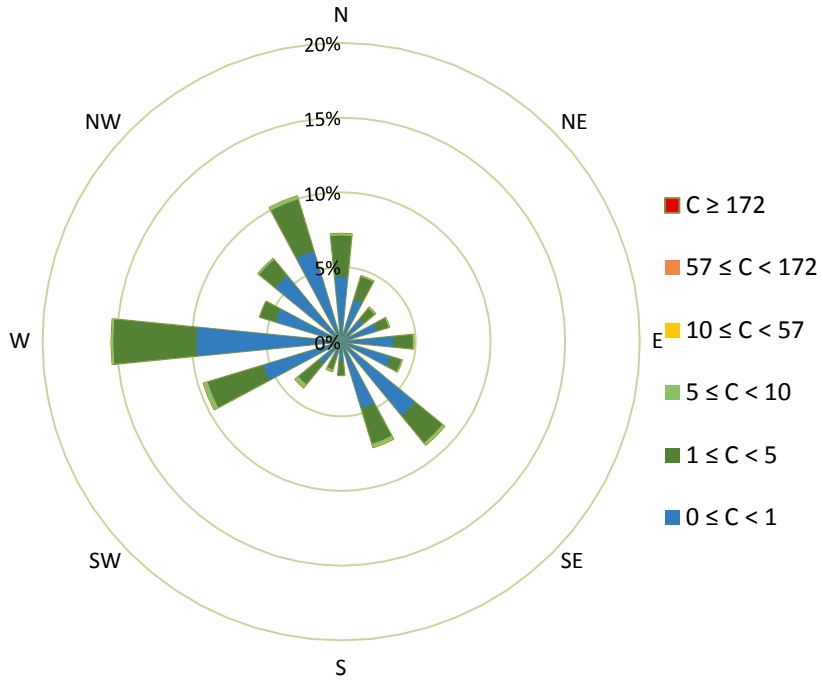


Figure 7 **Pollutant rose for 1-hour average SO_2 data at the Wauchope Station (ppb)**

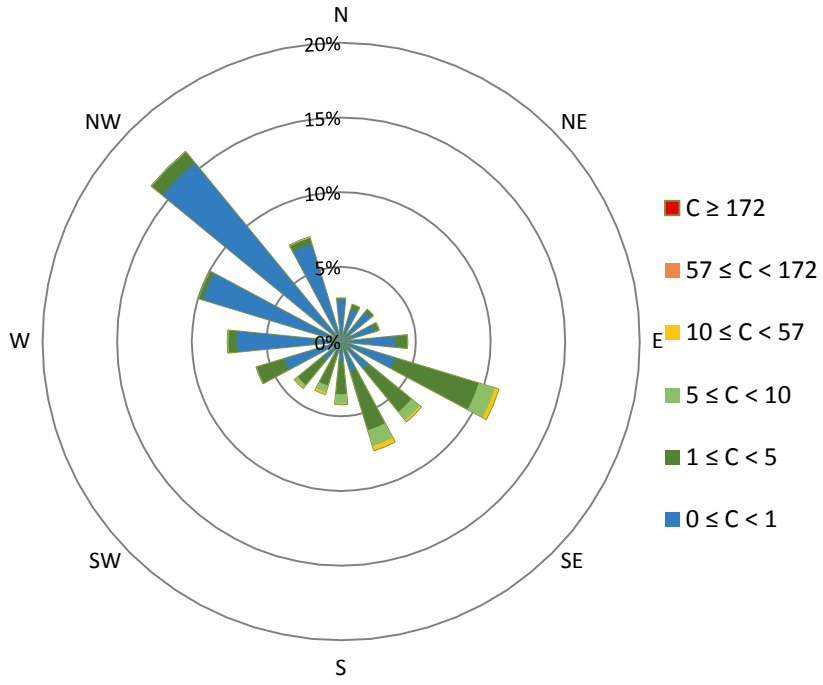


Figure 8 **Pollutant rose for 1-hour average SO_2 data at the Weyburn Station (ppb)**

2.3.2 Hydrogen Sulphide (H_2S)

Hydrogen sulphide (H_2S) is a colourless gas with a characteristic "rotten egg" odour. It is produced both naturally and through anthropogenic emission sources. H_2S occurs naturally in coal, crude oil, natural gas, oil, sulphur hot springs, volcanic gases, sloughs, swamps and lakes. The major anthropogenic emission sources include natural gas and petroleum production, wastewater treatment, pulp and paper mills, rayon textile manufacturing, and tar and asphalt manufacturing. Decomposition of organic matter by bacteria under anaerobic conditions releases H_2S as well, forming the characteristic odour commonly associated with sewers, sewage lagoons, and swamps.

Hydrogen sulphide is a highly toxic and flammable gas. It is heavier than air and tends to accumulate at the bottom of poorly ventilated spaces and in low-lying topography. Exposure to H_2S can have serious health impacts at various concentrations. Although very pungent at first, it quickly deadens the sense of smell at concentrations of 100,000-200,000 ppb (Reference 4). Potential victims of H_2S poisoning may be unaware of its presence until it is too late.

Table 7 presents summary statistics for H_2S. The annual average concentration ranged from 0.5 ppb to 0.7 ppb among the five stations. The maximum 1-hour concentration of 31.3 ppb was detected at the Weyburn station, and the maximum 24-hour concentration of 6.6 ppb was detected at the Wauchope station.

Although H_2S concentration was generally low at all stations in comparison with the SAAQS for the majority of the time, there were occasional spikes causing exceedances of the 1-hour and 24-hour SAAQS. Table 8 summarizes the number of exceedance events for H_2S. The complete lists of exceedances can be found in Appendix J.

Figures 10 through 14 present the pollutant roses for 1-hour average concentration of H_2S. The measured concentration was low at all stations for the majority of the time; greater than 96% of the data was less than 3.6 ppb (the blue and dark green petals). There was a general trend where most of the high concentration events (>5 ppb) were associated with Light Air wind conditions (≤1.4 m/s or 5.0 km/hr).

At the Glen Ewen station, the one 1-hour exceedance was primarily associated with the south direction and was associated with Light Air wind conditions.

At the Oxbow station, the exceedance and high concentration events (>5 ppb) were primarily associated with the southeast direction. Both of the 1-hour exceedance events were associated with Light Air wind conditions.

At the Stoughton station, the exceedances and high concentration events (>5 ppb) were associated with the east and WNW (west-northwest) directions. Bothe of the 1-hour exceedance events were associated with Light Air wind conditions.

At the Wauchope station, the exceedances and high concentration events (>5 ppb) were associated with the WNW (west-northwest), WSW (west-southwest), and east directions. 86% of the 1-hour exceedance events were associated with Light Air wind conditions.

At the Weyburn station, the exceedances and high concentration events (>5 ppb) were primarily associated with the SE-S (southeast to south) directions. The projected area is where more industrial activities exist, such as upstream oil and gas industry. 42% of the 1-hour exceedance events were detected during Light Air wind conditions. The remaining 58% were detected during Light Breeze wind conditions (≤1.4 WS <3.1 m/s or 11.2 km/hr).

The detailed frequency distribution tables for 1-hour average H_2S data are presented in the Appendices: Table D-7, Table E-6, Table F-6, Table G-3, and Table I-7.

Table 7 Summary statistics for H_2S in 2016

Monitoring Station	Annual Average	Instrument Uptime	Maximum H_2S Conc. and Occurrence Time			
	ppb	%	1-Hr Max		24-Hr Max	
Glen Ewen	0.5	90.3	11.5	7/29/2016 05:00	2.1	7/29/2016
Oxbow	0.6	94.9	17.3	8/25/2016 21:00	1.7	8/25/2016
Stoughton	0.7	94.8	11.9	8/16/2016 02:00	2.8	8/16/2016
Wauchope	0.7	93.4	26.6	5/30/2016 04:00	6.6	5/17/2016
Weyburn	0.6	90.3	31.3	1/4/2016 04:00	3.9	12/15/2016

Table 8 Number of exceedance events for H_2S in 2016

Monitoring Station	Number of Exceedance Events for Saskatchewan H_2S Ambient Air Quality Standard (SAAQS)	
	1-hr SAAQS (11 ppb)	24-hr SAAQS (3.6 ppb)
Glen Ewen	1	0
Oxbow	2	0
Stoughton	2	0
Wauchope	47	9
Weyburn	12	1

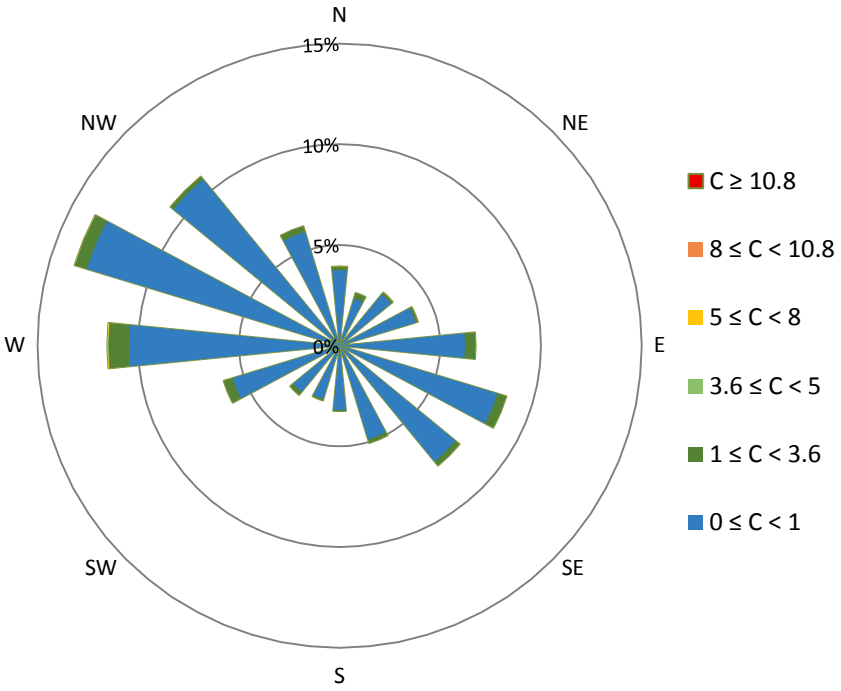


Figure 9 **Pollutant rose for 1-hour average H_2S data at the Glen Ewen Station (ppb)**

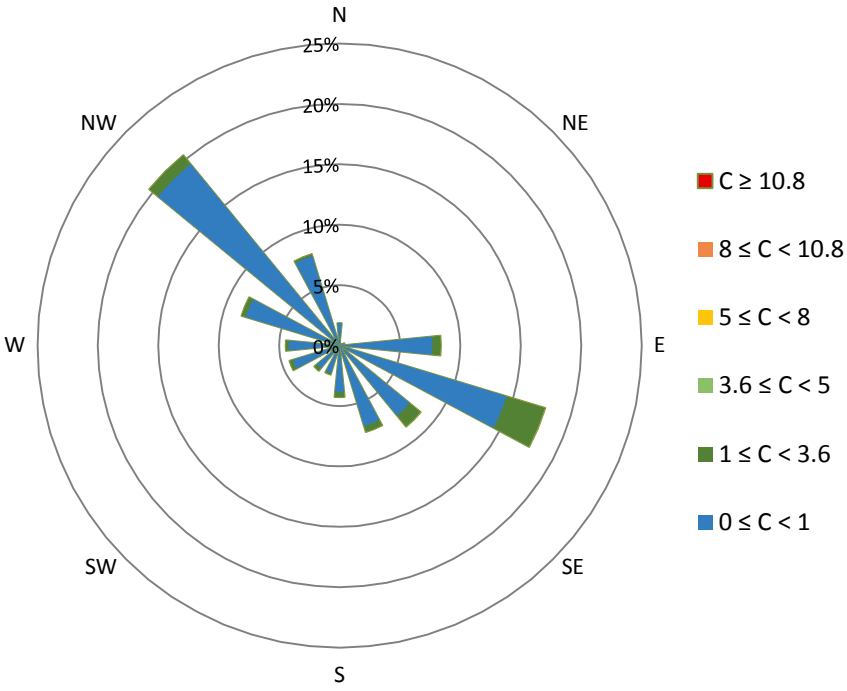


Figure 10 **Pollutant rose for 1-hour average H_2S data at the Oxbow Station (ppb)**

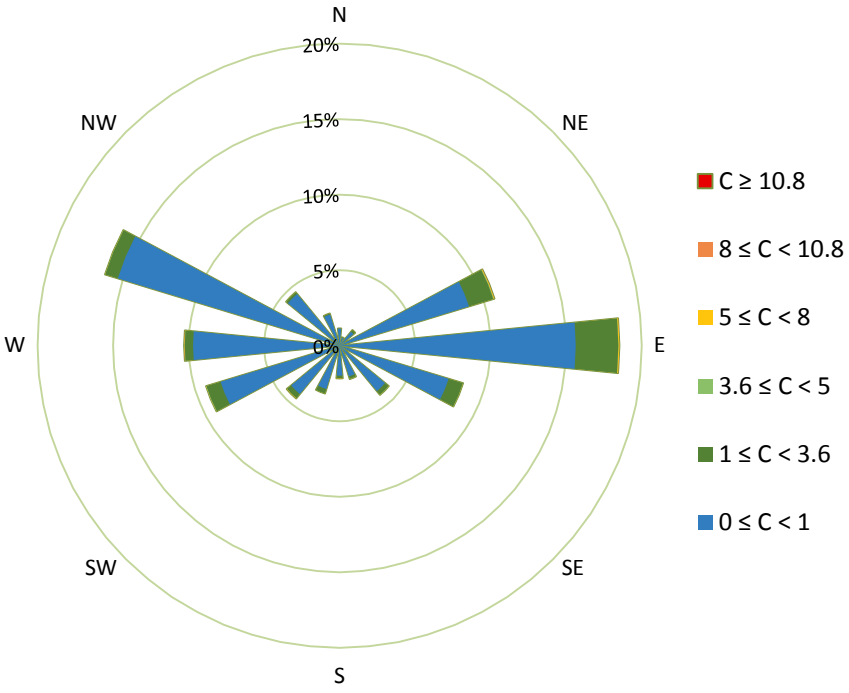


Figure 11 **Pollutant rose for 1-hour average H_2S data at the Stoughton Station (ppb)**

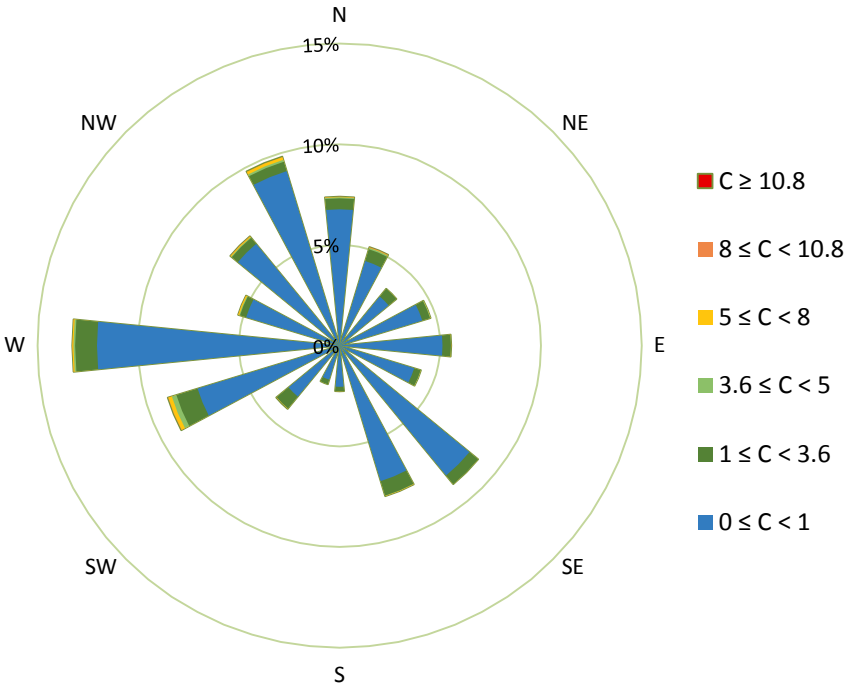


Figure 12 **Pollutant rose for 1-hour average H_2S data at the Wauchope Station (ppb)**

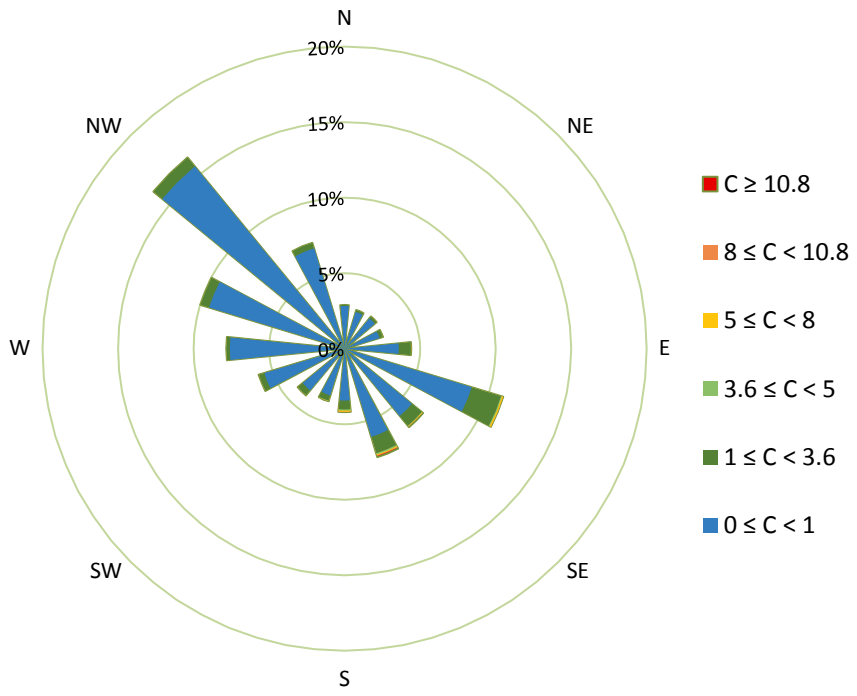


Figure 13 Pollutant rose for 1-hour average H_2S data at the Weyburn Station (ppb)

2.3.3 Nitrogen Dioxide (NO_2)

Nitrogen oxides, also known as oxides of nitrogen (NO_X), is a collective term for nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless gas with a slight odour. NO_2 is a reddish brown, non-flammable gas with a pungent irritating odour. NO_2 is of more interest than NO from both a health and acid rain perspective.

Both NO_2 in its untransformed state, and the acid and nitrate transformation products of NO_2, can have adverse effects on human health or the environment. NO_2 itself can cause adverse effects on respiratory systems of humans and animals, and damage to vegetation. When NO_2 is transformed into nitrate particles that are subsequently deposited on aquatic and terrestrial ecosystems, acidification can result. NO_2 is one of the primary contributing pollutants to the formation of ground-level ozone (Reference 9).

NO_X emissions are mainly produced by fossil fuel combustion. High temperature conditions during combustion result in the formation of NO_X as a by-product. NO emitted during combustion quickly oxidizes to NO_2 in the atmosphere (Reference 9). The major anthropogenic emission sources for NO_X are associated with fuel combustion, including both stationary (e.g., power plants, oil & gas operations, incinerators) and mobile (e.g., automobiles and trains)

sources and residential heating. Non-combustion sources (e.g., nitric acid manufacture, welding processes, and use of explosives) comprise the smaller emission sources. In large cities, motor vehicle emissions are the major source of NO_X, as well as space heating emissions in the winter. The Saskatchewan Ministry of Environment regulates ambient air concentration for nitrogen dioxide but not nitric oxide.

Table 9 presents summary statistics for NO_2 measurement results. The measured NO_2 concentration was low at all stations in comparison with the SAAQS. The annual average concentration ranged from 1.2 ppb to 3.6 ppb. The maximum 1-hour concentration of 35.2 ppb and the maximum 24-hour concentration of 12.9 ppb were detected at the Oxbow and Estevan stations, respectively. There were no exceedances of the 1-hour, 24-hour, or annual SAAQS in 2015 (see Table 10).

Figures 15 through 21 present the pollutant roses for 1-hour average NO_2. The concentration at all stations was generally low; greater than 93% of the data was less than 5 ppb (the blue color petals), with the exception of Estevan (78.5%). Industrial activities, such as upstream oil and gas industry and/or coal-fired power plants, could be the potential sources; however, vehicular emissions may not be excluded. Since Estevan is the only monitoring station located in a community, the residential heating and vehicles may contribute to the higher levels.

The detailed frequency distribution tables for 1-hour NO_2 data are presented in Appendices: Table B-3, Table C-4, Table D-4, Table E-4, Table F-4, Table H-3, and Table I-4. Summaries for NO can be found in in Tables B-2, C-3, D-3, E-3, F-3, H-2, and I-3. The summary tables for NO_X are in Tables B-4, C-5, D-5, E-5, F-5, H-4, and I-5.

Table 9 Summary statistics for NO_2

Monitoring Station	Annual Average	Instrument Uptime	Maximum NO_2 Conc. and Occurrence Time			
	ppb	%	1-Hr Max		24-Hr Max	
Esterhazy	1.3	94.0	20.8	5/23/2016 01:00	5.2	5/24/2016
Estevan	3.6	93.4	31.1	12/27/2016 19:00	12.9	12/15/2016
Glen Ewen	1.8	93.6	16.5	1/18/2016 08:00	7.1	12/15/2016
Oxbow	1.5	95.2	35.2	12/25/2016 09:00	7.3	12/15/2016
Stoughton	2.0	94.9	19.0	1/9/2016 23:00	9.4	1/4/2016
Wawota	1.2	89.4	11.3	1/4/2016 05:00	3.5	1/2/2016
Weyburn	1.5	86.4	24.2	5/29/2016 20:00	7.3	5/19/2016

Table 10 Number of exceedance events for NO_2

Monitoring Station	Number of Exceedance Events for Saskatchewan NO_2 Ambient Air Quality Standard (SAAQS)		
	1-hr SAAQS (159 ppb)	24-hr SAAQS (106 ppb)	Annual SAAQS (24 ppb)
Esterhazy	0	0	0
Estevan	0	0	0
Glen Ewen	0	0	0
Oxbow	0	0	0
Stoughton	0	0	0
Wawota	0	0	0
Weyburn	0	0	0

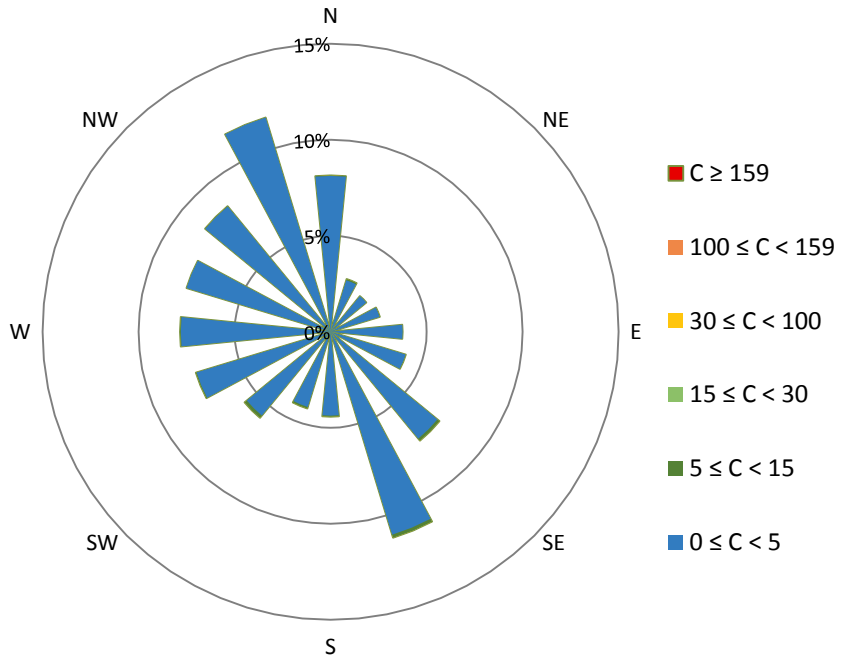


Figure 14 Pollutant rose for 1-hour average NO_2 data at the Esterhazy Station (ppb)

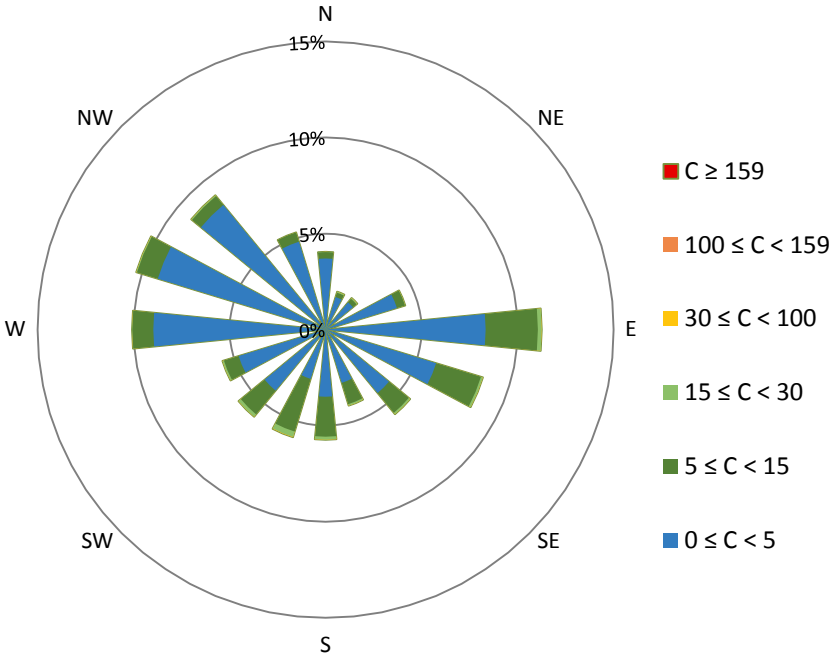


Figure 15 Pollutant rose for 1-hour average NO_2 data at the Estevan Station (ppb)

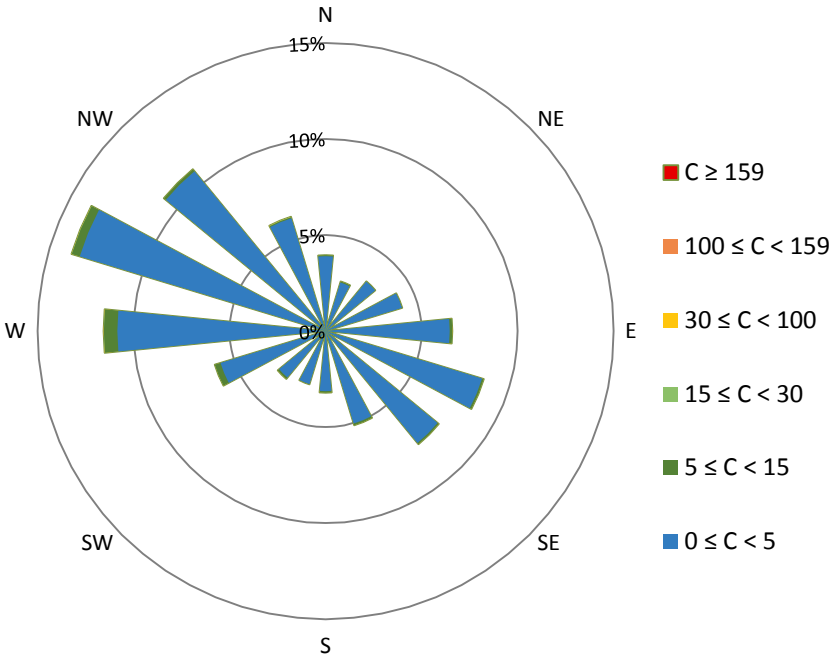


Figure 16 Pollutant rose for 1-hour average NO_2 data at the Glen Ewen Station (ppb)

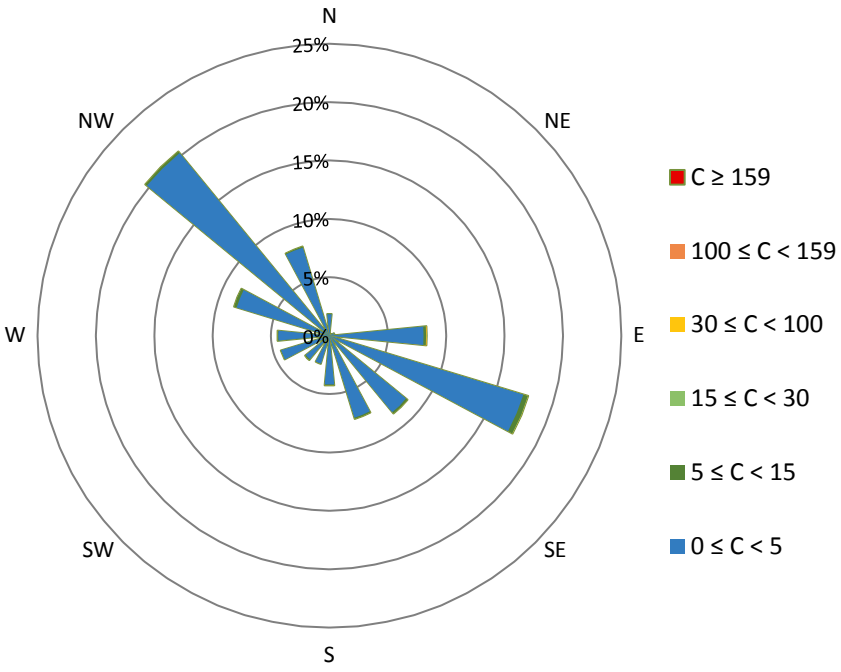


Figure 17 Pollutant rose for 1-hour average NO_2 data at the Oxbow Station (ppb)

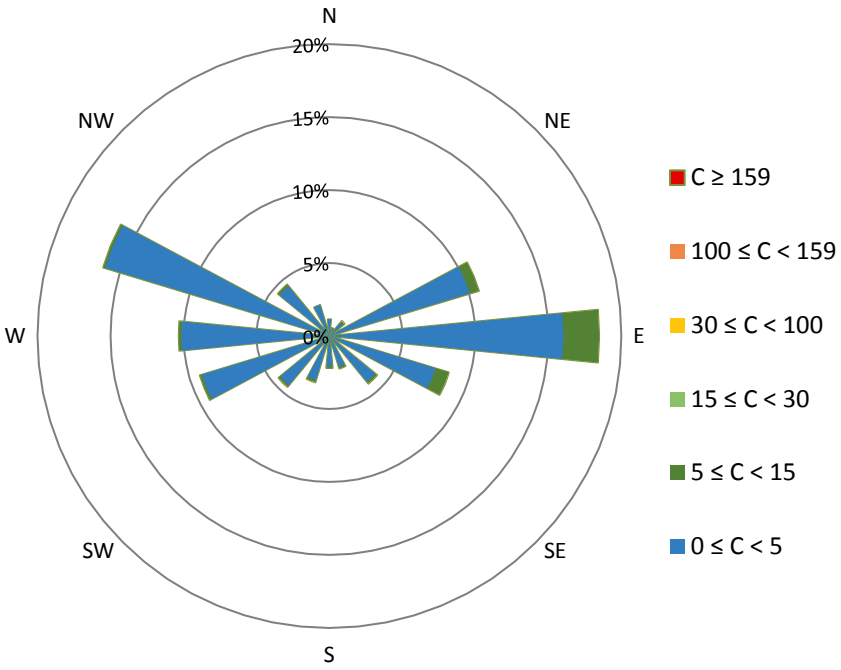


Figure 18 Pollutant rose for 1-hour average NO_2 data at the Stoughton Station (ppb)

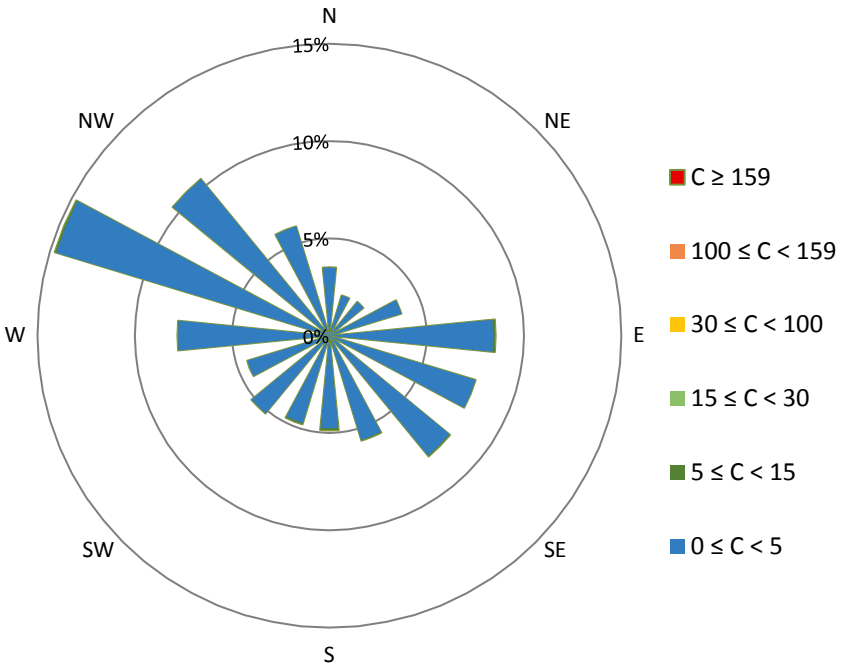


Figure 19 Pollutant rose for 1-hour average NO_2 data at the Wawota Station (ppb)

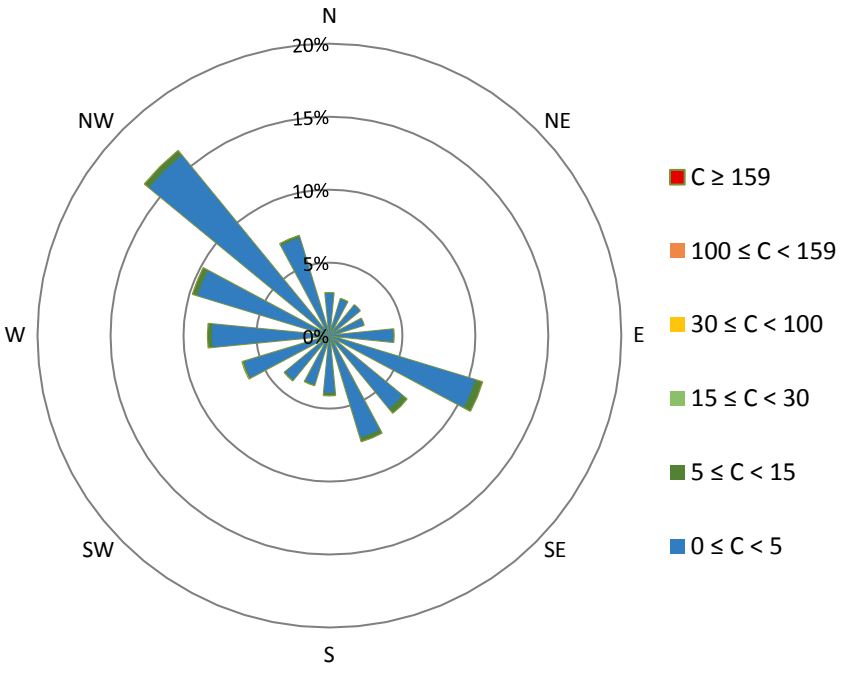


Figure 20 Pollutant rose for 1-hour average NO_2 data at the Weyburn Station (ppb)

2.3.4 Ozone (O_3)

Ozone (O_3) in the upper atmosphere (10 to 50 kilometres above the earth's surface) protects the earth from the sun's harmful ultraviolet radiation. In the lower atmosphere and at ground level, O_3 is harmful to human health as it can cause breathing problems, reduce lung function and aggravate asthma and other lung diseases (Reference 10). Ground-level O_3 is a colourless, odourless gas at ambient concentrations and is one of two major components of summertime smog. Ozone can significantly impact vegetation and decrease the productivity of some crops. It damages cotton, acetate, nylon, polyester and other textile materials. Ozone can also damage other synthetic materials, cause cracks in rubber, accelerate fading of dyes, and speed deterioration of some paints and coatings.

In the ambient air, O_3 is a "secondary" pollutant, meaning it is not directly emitted from a source. Instead, ozone is produced from photochemical reactions between oxides of nitrogen (NO_X) and volatile organic compounds (VOCs) in the presence of sunlight. Ground-level ozone could be from intrusion of ozone from the stratosphere, mixing from the upper troposphere, local photochemistry and the medium and long-range transport. There is no scientific consensus on the relative importance of these mechanisms.

Ozone can be formed by electrical discharges and high-energy electromagnetic radiation. In indoor environments, ozone can be present as a result of electronic equipment such as ionic air purifiers, laser printers, photocopiers, and arc welders.

Table 11 presents summary statistics for O_3. The annual average concentration ranged from 23.1 ppb to 28.8 ppb. The maximum 1-hour concentration of 64.1 ppb was detected at the Esterhazy station. The maximum 8-hour average concentration of 50.3 ppb was detected at the Wawota station. There was no exceedance of the 1-hour SAAQS (Table 12).

Figures 22 through 25 present the pollutant roses for 1-hour average concentration of O_3. The pollutant roses did not show an apparent directional trend for high concentration events, indicating high O_3 events may be impacted by regional air quality trends and less likely a localized source.

The detailed frequency distribution table for the pollutant roses are presented in Appendices: Table B-5, Table D-6, Table H-5, and Table I-6.

Table 11 Summary statistics for O_3 in 2016

Monitoring Station	Annual Average	Instrument Uptime	Maximum O_3 Conc. and Occurrence Time					
	ppb	%	1-Hr Max		8-Hr Max		24-Hr Max	
Esterhazy	28.1	94.1	64.1	5/8/2016 13:00	60.7	5/8/2016	49.9	5/8/2016
Glen Ewen	23.1	89.3	53.2	5/7/2016 16:00	49.6	5/8/2016	37.0	5/8/2016
Wawota	28.8	77.9	59.2	5/9/2016 15:00	56.6	5/8/2016	50.3	5/8/2016
Weyburn	23.8	90.8	68.7	8/22/2016 16:00	48.5	8/8/2016	38.5	12/19/2016

Table 12 Number of exceedance events for O_3 in 2016

Monitoring Station	Number of Exceedance Events for Saskatchewan O_3 Ambient Air Quality Standard (SAAQS)	
	1-hr SAAQS (82 ppb)	8-hr SAAQS[ab] (63 ppb)
Esterhazy	0	0
Glen Ewen	0	0
Wawota	0	0
Weyburn	0	0

[a] These events do not necessarily constitute an exceedance because the standard applies to 3-year average of the annual 4th-highest daily maximum 8-hour average concentration

[b] Number of days with 8-hour period exceeding SAAQS threshold for O_3

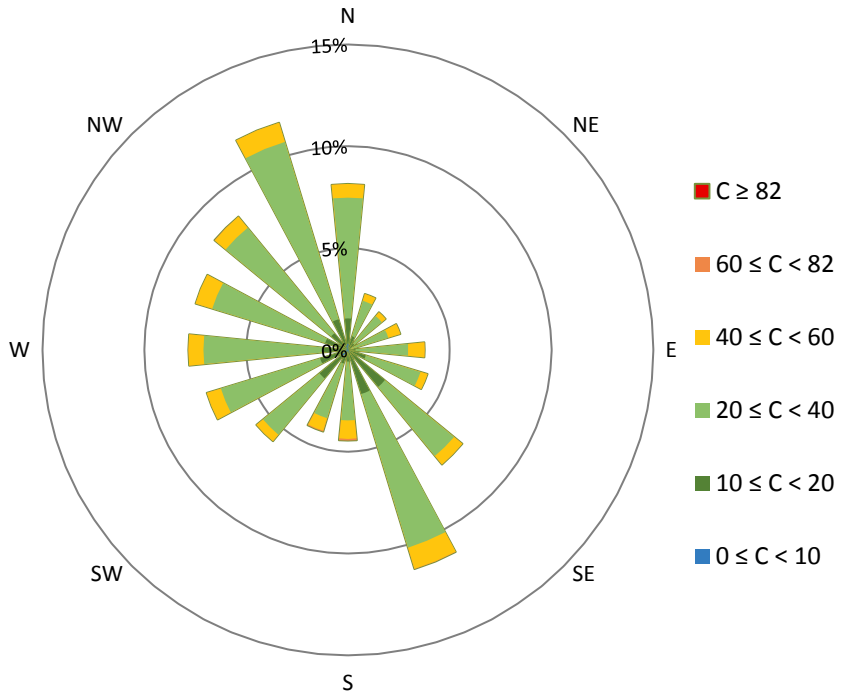


Figure 21 Pollutant rose for 1-hour average O_3 data at the Esterhazy Station (ppb)

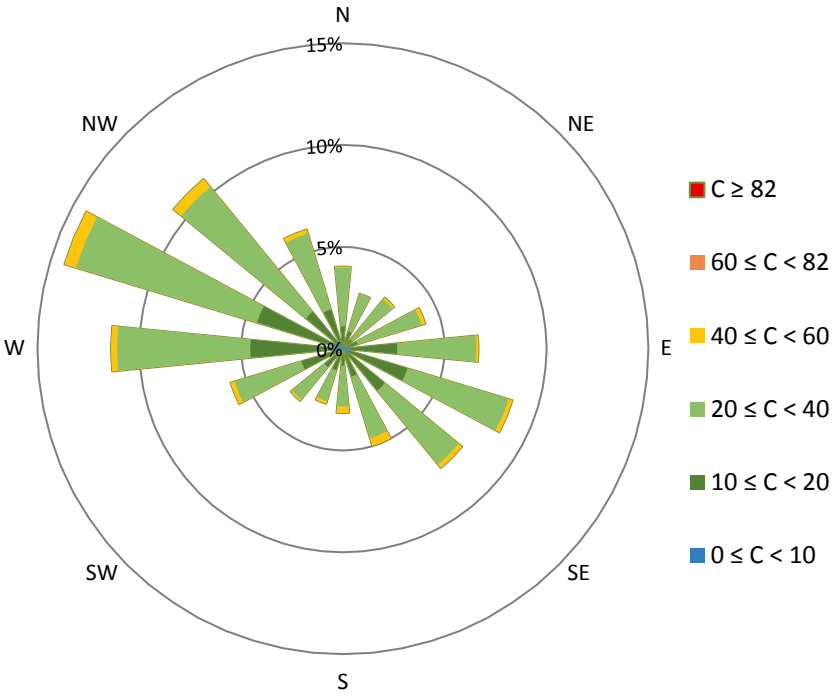


Figure 22 Pollutant rose for 1-hour average O_3 data at the Glen Ewen Station (ppb)

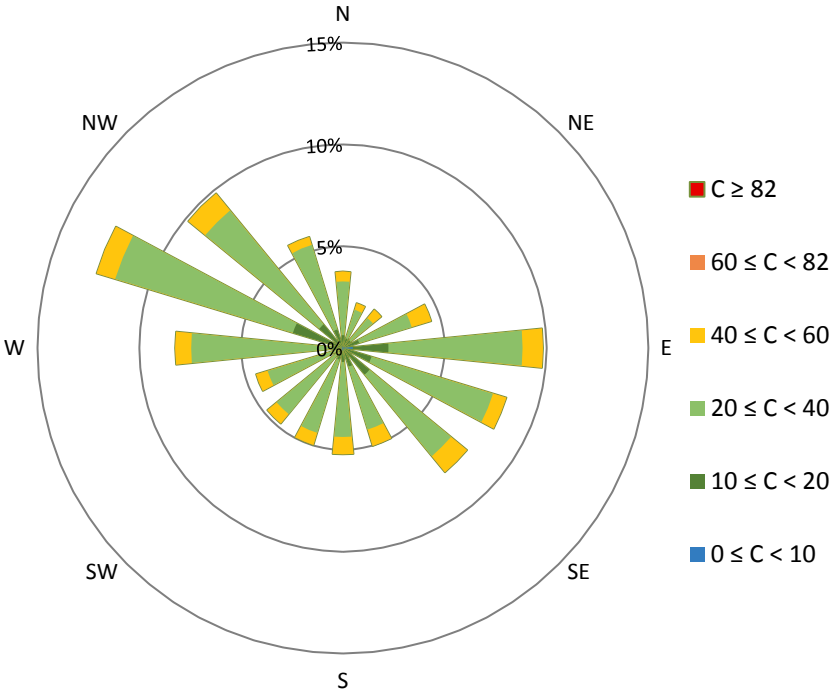


Figure 23 Pollutant rose for 1-hour average O_3 data at the Wawota Station (ppb)

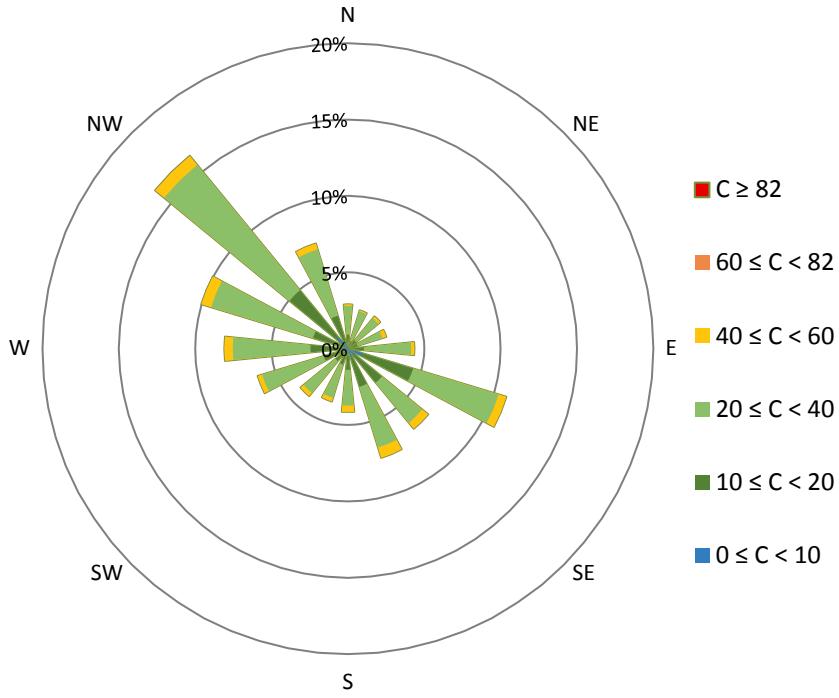


Figure 24 Pollutant rose for 1-hour average O_3 data at the Weyburn Station (ppb)

2.3.5 Fine Particulate Matter ($PM_{2.5}$)

Particulate matter is unique among air pollutants, as it is identified by its size rather than by its composition. The primary particulate contaminants of concern are fine particles referred to as $PM_{2.5}$.

Fine particles are generally emitted from activities such as industrial and residential combustion, and from vehicle exhaust. Fine particles are also formed in the atmosphere when gases such as sulphur dioxide, nitrogen oxides, and volatile organic compounds are transformed by chemical and photochemical reactions in the air. The largest natural contribution of $PM_{2.5}$ comes from forest fires.

When inhaled deeply into the lungs, even small amounts of $PM_{2.5}$ can cause serious health problems such as cardiovascular and respiratory diseases. Along with ground-level ozone, $PM_{2.5}$ is one of the two major components of smog. Fine particulate matter can damage vegetation and structures, contribute to haze, and reduce visibility (Reference 11).

Table 13 presents the summary statistics for $PM_{2.5}$. The annual average concentration ranged from 2.9 µg/m^3 to 6.1 µg/m^3. The maximum 1-hour concentration of 128.2 µg/m^3 and the maximum 24-hour concentration of 62.9 µg/m^3 were detected at the Esterhazy station. There

was one exceedance of the 28 µg/m^3 24-hour standard detected at the Wawota station (see Table 14). August of 2016 saw a number of wildfires in central and northern Saskatchewan which may have contributed to the high $PM_{2.5}$ concentrations (Reference 14).

Currently the only station that has 3 years of continuous $PM_{2.5}$ data available is Weyburn. The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations at Weyburn is 27.5 µg/m^3, which is below the 28 µg/m^3 standard (see Table 14). Values for the annual 98th percentile of the daily 24-hour average concentrations for the current reporting year are presented in Table 13 for all stations. These values are calculated according to the methodology presented in Reference 5.

Figures 26 through 32 present the pollutant roses for 1-hour average concentration of $PM_{2.5}$. Generally, the high concentration events (e.g. >10 µg/m^3 in the yellow, orange and red petals) were associated with all wind directions. There were no apparent directional trends identifiable from the pollutant roses.

The detailed frequency distribution tables for the pollutant roses are presented in Appendices: Table B-6, Table C-6, Table E-7, Table F-7, Table G-4, Table H-6, and Table I-8.

Table 13 Summary Statistics for $PM_{2.5}$ in 2016

Monitoring Station	Annual Average	Instrument Uptime	Maximum $PM_{2.5}$ Conc. and Occurrence Time				98th Percentile for 24-Hr Data	
	µg/m^3	%	1-Hr Max		24-Hr Max		Annual	3-Yr Avg
Esterhazy	3.5	94.8	80.0	8/31/2016 02:00	28.73	8/30/2016	13.0	NA
Estevan	2.9	99.7	23.2	8/22/2016 21:00	8.5	5/15/2016	5.8	NA
Oxbow	5.8	99.6	93.3	5/6/2016 13:00	25.1	7/20/2016	14.2	NA
Stoughton	4.5	96.8	106.7	5/14/2016 22:00	26.6	6/15/2016	13.9	NA
Wauchope	5.6	93.3	102.9	9/19/2016 22:00	27.1	5/8/2016	19.0	NA
Wawota	6.1	94.5	75.0	8/22/2016 23:00	32.7	5/8/2016	17.1	NA
Weyburn	3.2	94.9	51.9	8/22/2016 16:00	19.2	5/15/2016	7.9	27.5

Table 14 Number of exceedance events for $PM_{2.5}$ in 2016

Monitoring Station	Number of Exceedance Events for Saskatchewan $PM_{2.5}$ Ambient Air Quality Standard (SAAQS)	
	24-hr SAAQS [a] ($28\ \mu g/m^3$)	Annual SAAQS ($10\ \mu g/m^3$)
Esterhazy	1	0
Estevan	0	0
Oxbow	0	0
Stoughton	0	0
Wauchope	0	0
Wawota	1	0
Weyburn	0	0

[a] SAAQS applies to 3-year average of the annual 98th percentile of the 24-hour average concentrations

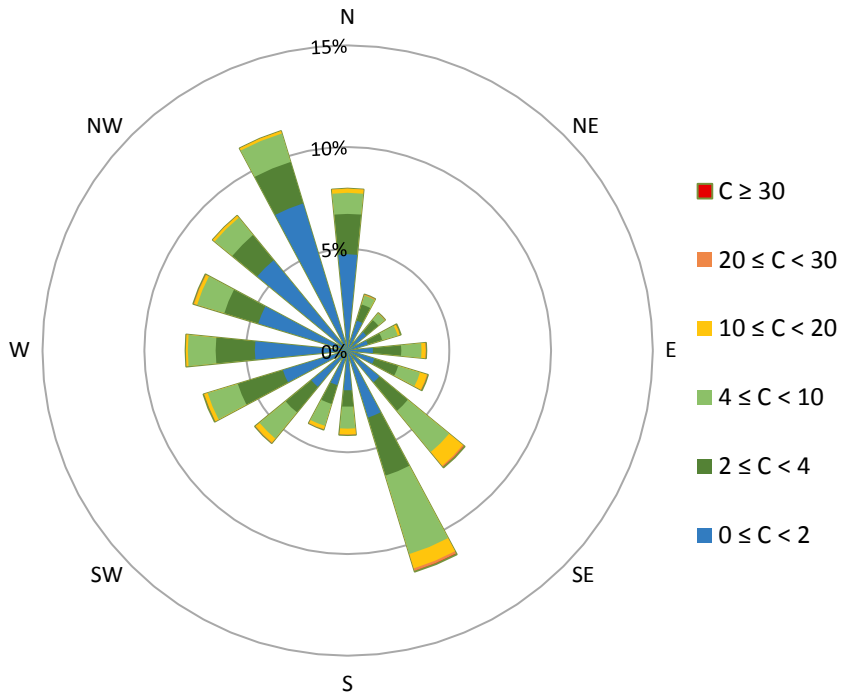


Figure 25 Pollutant rose for 1-hour average $PM_{2.5}$ data at the Esterhazy Station ($\mu g/m^3$)

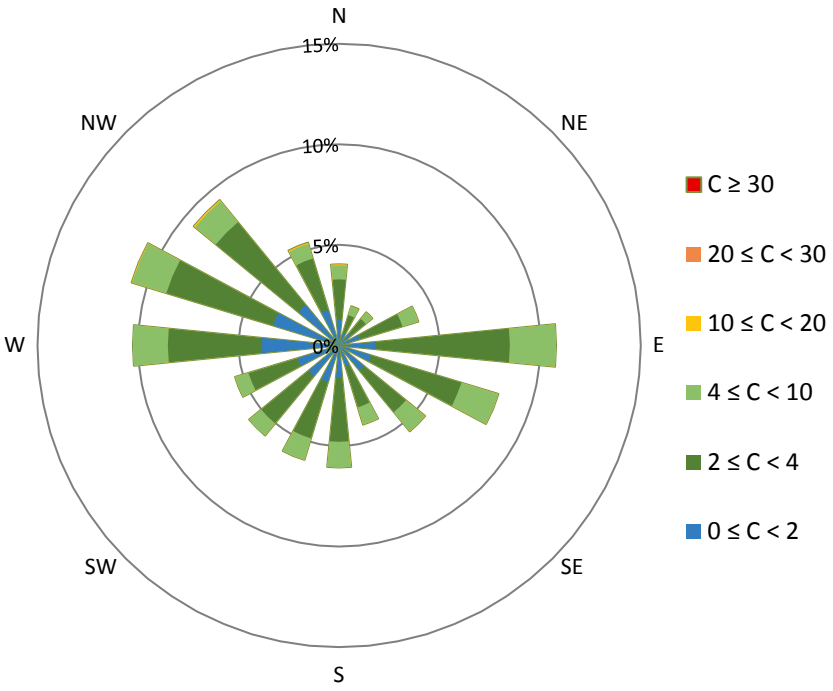


Figure 26 Pollutant rose for 1-hour average $PM_{2.5}$ data at the Estevan Station (µg/m³)

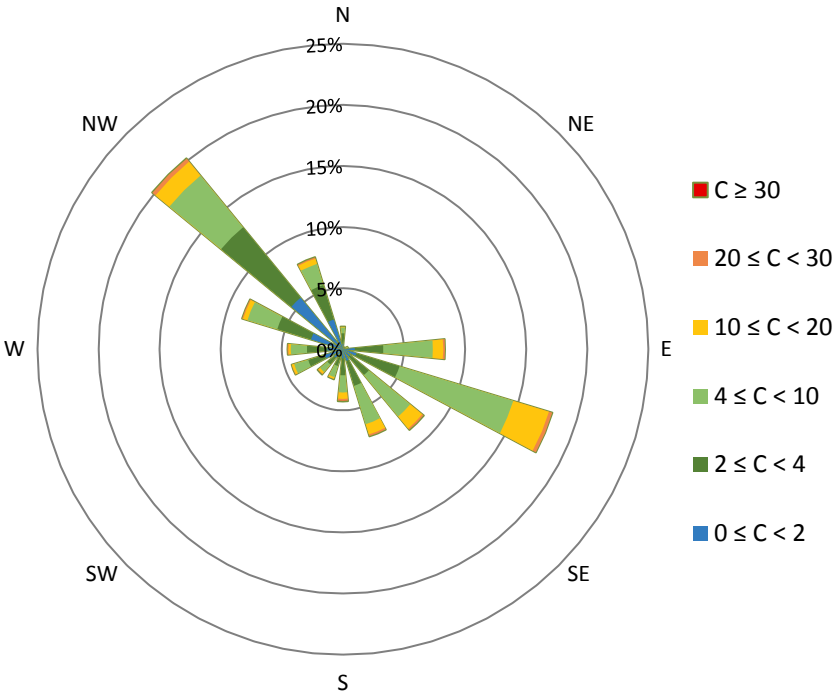


Figure 27 Pollutant rose for 1-hour average $PM_{2.5}$ data at the Oxbow Station (µg/m³)

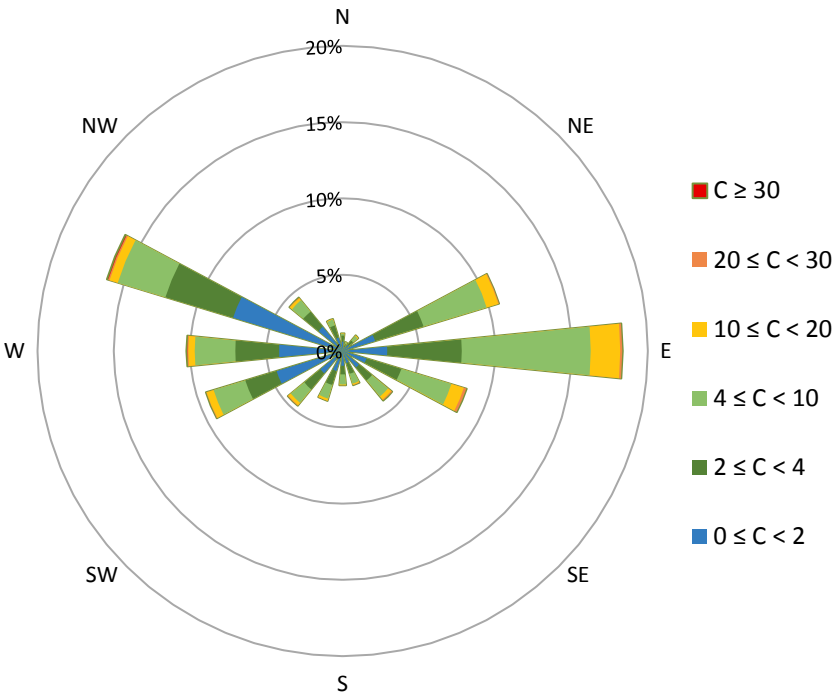


Figure 28 **Pollutant rose for 1-hour average $PM_{2.5}$ data at the Stoughton Station (µg/m³)**

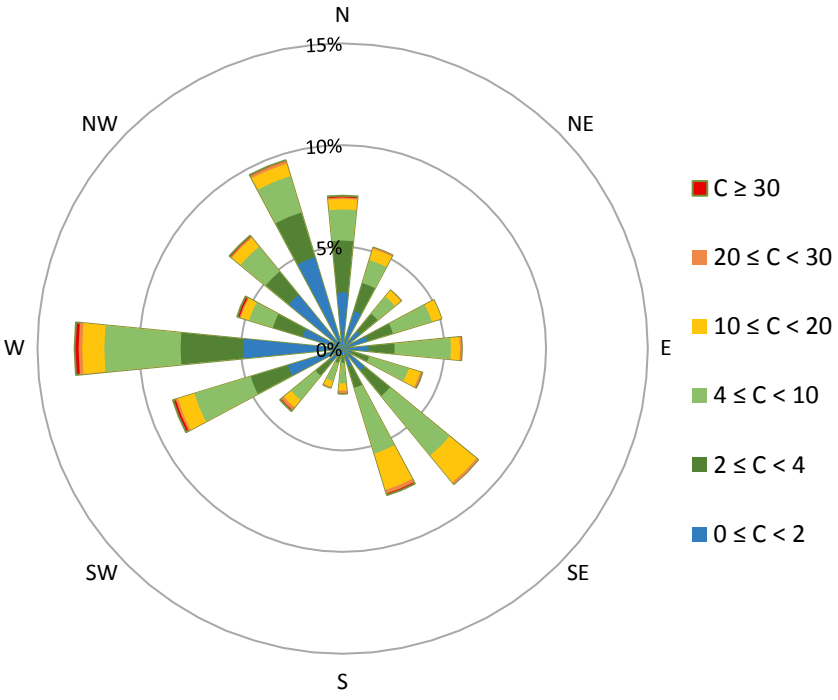


Figure 29 **Pollutant rose for 1-hour average $PM_{2.5}$ data at the Wauchope Station (µg/m³)**

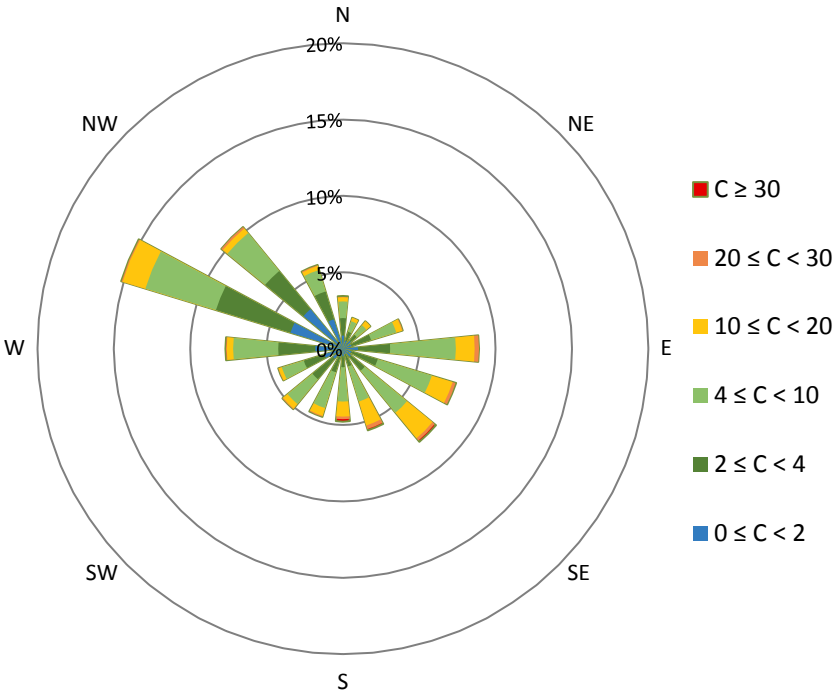


Figure 30 **Pollutant rose for 1-hour average $PM_{2.5}$ data at the Wawota Station (µg/m³)**

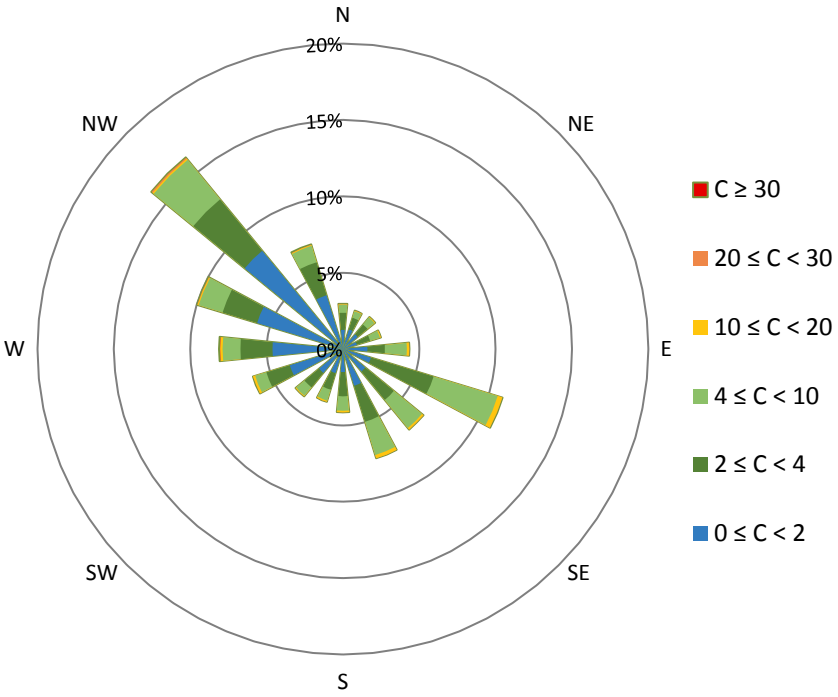


Figure 31 **Pollutant rose for 1-hour average $PM_{2.5}$ data at the Weyburn Station (µg/m³)**

2.4 Air Quality Health Index (AQHI)

The Air Quality Health Index (AQHI) is a health protection tool that is designed to help the public make decisions to protect their health by limiting short-term exposure to air pollution, and adjusting their activity levels during increased levels of air pollution. The AQHI uses readings from three air pollutants to calculate a single numerical value as the indicator of health risk. The three pollutants are fine particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2), and ground-level ozone (O_3). All three pollutants are required to calculate the AQHI.

Figure 33 summarizes the AQHI rating and the health messages for the at-risk population and the general population. The health risk is classified in categories by AQHI: Low Risk (1 to 3), Moderate Risk (4 to 6), High Risk (7 to 10), and Very High Risk (above 10).

The Esterhazy, Wawota and Weyburn stations have the three pollutants required for AQHI reporting. Table 15 summarizes the occurrence statistics for AQHI by the health risk categories. Generally, the air quality was good from health risk perspectives; more than 98% of time the AQHI was rated in the Low Risk category. The frequency of Moderate Risk category ranged from 0.1% to 1.3% for the three stations. High risk and very High Risk air quality was not detected at any of the stations.

Health Risk	Air Quality Heath Index	Health Messages	
		At Risk Population	General Population
Low	1-3	**Enjoy** your usual outdoor activities.	**Ideal** air quality for outdoor activities.
Moderate	4-6	**Consider reducing** or rescheduling strenuous activities outdoors if you are experiencing symptoms.	**No need to modify** your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
High	7-10	**Reduce** or reschedule strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	**Consider reducing** or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
Very High	Above 10	**Avoid** strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	**Reduce** or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

Figure 32 Health Risk Classification and Health Messages for Air Quality Health Index (Environment Canada)

Table 15 Summary of Occurrence Statistics for AQHI Rating

Monitoring Station	Occurrence Statistics	Occurrence Hours and Frequency by AQHI Risk Rating			
		Low Risk	Moderate Risk	High Risk	Very High Risk
Esterhazy	Occurrence Hours	7819	38	0	0
	Occurrence Frequency	99.5%	0.5%	0.0%	0.0%
Wawota	Occurrence Hours	6609	85	0	0
	Occurrence Frequency	98.7%	1.3%	0.0%	0.0%
Weyburn	Occurrence Hours	7569	10	0	0
	Occurrence Frequency	99.9%	0.1%	0.0%	0.0%

2.5 Air Quality Index (AQI)

The Estevan, Glen Ewen, Oxbow and Stoughton stations do not meet the reporting requirements for AQHI. The Air Quality Index (AQI) is used as an alternative index. The AQI index system is developed to provide the public with a meaningful and comparable measure of outdoor air quality. The AQI index is calculated from readings of five major air pollutants: SO_2, NO_2, O_3, $PM_{2.5}$, and carbon monoxide (CO). H_2S is not included as part of the AQI due to the fact that at low concentrations H_2S is a nuisance (odour) pollutant and not a health effect pollutant. A minimum of three pollutants is required to calculate AQI. Air quality is rated in four categories according to AQI value: Good (0 to 25), Fair (26 to 50), Poor (51 to 100), and Very Poor (>100). Table 16 summarizes the effects associated with the AQI ratings.

Table 17 summarizes the occurrence statistics for AQI rating. The Estevan station's AQI was calculated using SO_2, NO_2, and $PM_{2.5}$, as the station does not measure CO or O_3. The Glen Ewen AQI was calculated from SO_2, NO_2, and O_3, as the airpointer does not measure CO or $PM_{2.5}$. The Oxbow and Stoughton AQIs were calculated from SO_2, NO_2, and $PM_{2.5}$, as the airpointers do not measure CO or O_3.

The Air Quality Index at the Estevan station was rated Good for 100% of time.

AQI at the Glen Ewen station was rated Good for 97.2% of time and Fair 2.8% of time. In 2016, the AQI rating never fell in the Poor or Very Poor category.

The Air Quality Index at the Oxbow station was rated Good for 97.0% of time, was rated Fair 2.8% of time, and Poor 0.1% of the time. In 2016, the AQI rating never fell in the Very Poor category.

The Air Quality Index at the Stoughton station was rated Good for 98.5% of time, Fair 1.3% of the time, and Poor 0.1% of the time. In 2016, the AQI rating never fell in the Very Poor category.

Table 16 AQI Rating and Effect Description

AQI	Air Quality Rating	Effect Description
0-25	Good	Desirable Range: No known harmful effects to soil, water, vegetation, animals, materials, visibility or human health. The long-term goal is for air quality to be in this range all of the time in Canada.
26-50	Fair	Acceptable Range: Adequate protection against harmful effects to soil, water, vegetation, animals, materials, visibility and human health.
51-100	Poor	Tolerable Range: Not all aspects of human health or the environment are adequately protected from possible adverse effects. Long-term control action may be necessary, depending on the frequency, duration and circumstances of the readings.
>100	Very Poor	Intolerable Range: Continued high readings could pose a risk to public health.

Table 17 Summary of Occurrence Statistics for AQI Rating

Monitoring Station	Occurrence Statistics	Occurrence Hours and Frequency by AQHI Risk Rating			
		Good	Fair	Poor	Very Poor
Estevan	Occurrence Hours	7728	0	0	0
	Occurrence Frequency	100%	0.0%	0.0%	0.0%
Glen Ewen	Occurrence Hours	7527	216	0	0
	Occurrence Frequency	97.2%	2.8%	0.0%	0.0%
Oxbow	Occurrence Hours	8077	236	10	1
	Occurrence Frequency	97.0%	2.8%	0.1%	0.0%
Stoughton	Occurrence Hours	7961	108	11	1
	Occurrence Frequency	98.5%	1.3%	0.1%	0.0%

3 AUDITED FINANCIAL STATEMENT

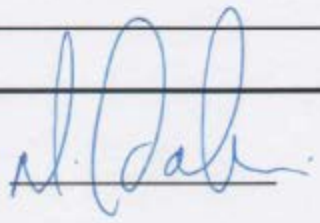
The 2016 audited financial summary for the SESAA is presented in the following table. The complete audited report is presented in Appendix K.

Table 18 SESAA Financial Summary for the Year 2016

Southeast Saskatchewan Airshed Association Inc.
Statement of Financial Position
As at December 31, 2016

	2016	2015
Assets		
Current		
Cash	**97,436**	101,993
Marketable securities *(Note 3)*	**100,000**	-
Prepaid expenses and deposits	**3,775**	3,987
	201,211	105,980
Capital assets *(Note 4)*	**380,242**	475,303
	581,453	581,283
Liabilities		
Current		
Accounts payable and accruals	**27,225**	27,281
Current portion deferred contributions *(Note 5)*	**70,900**	70,900
Government remittances payable	**5,596**	2,631
	103,721	100,812
Deferred contributions *(Note 5)*	**66,350**	137,250
	170,071	238,062
Net Assets		
Unrestricted net assets	**411,382**	343,221
	581,453	581,283

Approved on behalf of the Board of Directors



4 REFERENCES

1. SESAA website. Retrieved from: http://sesaa.ca/
2. Table 20: Saskatchewan Ambient Air Quality Standards (2015). Retrieved April 21, 2017 from: https://envrbrportal.crm.saskatchewan.ca/Pages/SEQS/Table20-SEQS-SAAQS.pdf
3. Environment and Climate Change Canada. Beaufort Wind Scale Table. Retrieved April 21, 2017 from: https://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=80C039A3-1
4. Government of Saskatchewan website. Retrieved April 21, 2017 from: https://www.saskatchewan.ca/government/municipal-administration/community-planning-land-use-and-development/residential-development-and-oil-wells
5. Canadian Council of Ministers of the Environment (2012). Guidance Document on Achievement Determination Canadian Ambient Air Quality Standards for Fine Particulate Matter and Ozone
6. United States Environmental Protection Agency. Sulfur Dioxide Basics. Retrieved April 21, 2017 from: https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#what is so2
7. Environment and Climate Change Canada. Sulphur Dioxide. Retrieved April 21, 2017 from: https://www.ec.gc.ca/toxiques-toxics/Default.asp?lang=En&n=22B1EA72-1
8. United States Environmental Protection Agency. What is Acid Rain? Retrieved April 21, 2017 from: https://www.epa.gov/acidrain/what-acid-rain
9. Environment and Climate Change Canada. Nitrogen Oxides – NOx. Retrieved April 21, 2017 from: https://www.ec.gc.ca/air/default.asp?lang=En&n=489FEE7D-1
10. Environment and Climate Change Canada. Ambient Levels of Ozone. Retrieved April 21, 2017 from: https://ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=9EBBCA88-1
11. Environment and Climate Change Canada. Ambient Levels of Fine Particulate Matter. Retrieved April 21, 2017 from: https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=029BB000-
12. Environment and Climate Change Canada. Canadian Ambient Air Quality Standards. Retrieved April 21, 2017 from: http://www.ec.gc.ca/default.asp?lang=En&n=56D4043B-1&news=A4B2C28A-2DFB-4BF4-8777-ADF29B4360BD
13. Canadian Council of Ministers of the Environment. Resources. Sulphur Dioxide. Retrieved April 21, 2017 from: http://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html
14. Natural Resources Canada. Canadian Wildland Fire Information System, Interactive map – August 2016. Retrieved from: http://cwfis.cfs.nrcan.gc.ca/interactive-map .

APPENDIX A SASKATCHEWAN AMBIENT AIR QUALITY STANDARDS

Table A-1 Saskatchewan Ambient Air Quality Standards (SAAQS)

TABLE 20: SASKATCHEWAN AMBIENT AIR QUALITY STANDARDS ($\mu g/m^3$)				
Air Pollutant	**1 Hour**	**8 Hours**	**24 Hours**	**Annual**
Particulate Matter ($PM_{2.5}$)			28[a]	10
Particulate Matter (PM_{10})			50	
Total Suspended Particulates (TSP)			100	60[b]
Nitrogen Dioxide (NO_2)	300 (159 ppb)		200 (106 ppb)	45[c] (24 ppb)
Sulphur Dioxide (SO_2)	450 (172 ppb)		125 (48 ppb)	20[c] (8 ppb)
Hydrogen Sulphide (H_2S)	15 (11 ppb)		5 (3.6 ppb)	
Ozone (O_3)	160 (82 ppb)	124[d] (63 ppb)		
Carbon Monoxide (CO)	15,000 (13,000 ppb)	6,000 (5,000 ppb)		

Footnotes

(a) The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.
(b) Geometric means
(c) Arithmetic means
(d) The 3-year average of the annual 4th-highest daily maximum 8-hour average concentrations.

APPENDIX B ESTERHAZY STATION: CONTINUOUS MONITORING DATA

Table B-1 Esterhazy Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
NO	ppb	410	8306	94.6%	0.5	< 0.1	41.0
NO_2	ppb	410	8260	94.0%	1.3	< 0.1	20.8
NO_x	ppb	410	8252	93.9%	1.8	0.2	61.8
O_3	ppb	410	8268	94.1%	28.1	3.5	64.1
$PM_{2.5}$	µg/m^3	4	8325	94.8%	3.5	< 0.1	80.0
Precipitation (total)	mm	0	8731	99.4%	441.7*	< 0.1	17.1
Ambient Temperature	˚C	0	8731	99.4%	4.5	(31.9)	32.1
Relative Humidity	%	0	8731	99.4%	69.4	13.3	93.0
Wind Speed	m/s	0	8731	99.4%	2.8	<1	11.6

*Value is total, not average

Table B-2 Esterhazy Station: Summary of Airpointer NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	707	95.0%	0.4	2.1	0.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	659	94.7%	0.4	1.5	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	706	94.9%	0.4	3.3	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	688	95.6%	0.4	1.3	0.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	703	94.5%	0.9	41.0	4.1	98.0%	1.4%	0.4%	0.1%	0.0%	0.0%
June	687	95.4%	0.4	1.9	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
July	686	92.2%	0.5	3.7	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	690	92.7%	0.5	4.6	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
September	688	95.6%	0.5	2.4	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
October	704	94.6%	0.4	1.7	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	678	94.2%	0.5	3.4	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	710	95.4%	0.7	9.1	1.6	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
Annual	8306	94.6%	0.5	41.0	4.1	99.8%	0.1%	0.0%	0.0%	0.0%	0.0%

Table B-3 Esterhazy Station: Summary of Airpointer NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	707	95.0%	1.7	9.3	-	3.9	-	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%
February	659	94.7%	1.3	5.9	-	3.2	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
March	706	94.9%	1.0	6.2	-	2.4	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
April	688	95.6%	0.6	3.5	-	1.7	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	703	94.5%	2.5	20.8	-	5.2	-	88.3%	11.2%	0.4%	0.0%	0.0%	0.0%
June	688	95.6%	1.6	8.4	-	3.5	-	96.9%	3.1%	0.0%	0.0%	0.0%	0.0%
July	660	88.7%	0.8	3.8	-	1.3	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	672	90.3%	0.8	3.8	-	1.5	-	99.9%	0.0%	0.0%	0.0%	0.0%	0.1%
September	685	95.1%	1.0	5.3	-	2.0	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
October	704	94.6%	1.0	3.8	-	2.3	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	678	94.2%	1.6	8.1	-	3.4	-	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%
December	711	95.6%	1.4	6.8	-	3.2	-	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%
Annual	8260	94.0%	1.3	20.8	0	5.2	0	98.4%	1.5%	0.0%	0.0%	0.0%	0.0%

Table B-4 Esterhazy Station: Summary of Airpointer NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	707	95.0%	2.0	9.5	4.4	96.9%	3.1%	0.0%	0.0%	0.0%	0.0%
February	659	94.7%	1.7	6.3	3.9	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%
March	706	94.9%	1.4	7.5	3.1	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%
April	688	95.6%	1.0	3.9	2.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	703	94.5%	3.4	61.8	8.9	84.8%	13.1%	1.7%	0.4%	0.0%	0.0%
June	687	95.4%	2.0	9.2	4.1	95.5%	4.5%	0.0%	0.0%	0.0%	0.0%
July	659	88.6%	1.3	5.7	1.9	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
August	667	89.7%	1.3	4.9	2.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
September	684	95.0%	1.5	5.9	2.5	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
October	704	94.6%	1.4	4.7	3.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	678	94.2%	2.1	8.4	3.8	98.1%	1.9%	0.0%	0.0%	0.0%	0.0%
December	710	95.4%	2.1	15.5	4.6	97.7%	2.1%	0.1%	0.0%	0.0%	0.0%
Annual	8252	93.9%	1.8	61.8	8.9	97.5%	2.3%	0.2%	0.0%	0.0%	0.0%

Table B-5 Esterhazy Station: Summary of Airpointer O_3 Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
							0 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 40	40 ≤ C < 60	60 ≤ C < 82	C ≥ 82
January	707	95.0%	28.68	39.2	-	35.3	0.0%	3.7%	96.3%	0.0%	0.0%	0.0%
February	659	94.7%	33.06	43.5	-	39.2	0.0%	1.4%	91.0%	7.6%	0.0%	0.0%
March	658	88.4%	32.39	48.8	-	39.8	0.0%	3.8%	87.8%	8.4%	0.0%	0.0%
April	689	95.7%	35.32	53.8	-	41.3	0.0%	2.3%	74.3%	23.4%	0.0%	0.0%
May	703	94.5%	34.95	64.1	-	49.9	3.4%	10.4%	50.4%	34.3%	1.6%	0.0%
June	688	95.6%	34.22	57.2	-	44.1	0.4%	9.4%	58.0%	32.1%	0.0%	0.0%
July	688	92.5%	24.66	55.1	-	40.9	5.1%	29.7%	60.6%	4.7%	0.0%	0.0%
August	695	93.4%	22.16	50.2	-	28.1	8.9%	34.4%	53.5%	3.0%	0.0%	0.1%
September	689	95.7%	22.24	49.9	-	33.1	5.4%	38.6%	54.9%	1.2%	0.0%	0.0%
October	704	94.6%	19.50	42.3	-	27.2	8.4%	45.0%	46.2%	0.4%	0.0%	0.0%
November	678	94.2%	20.19	40.8	-	30.8	6.6%	44.7%	48.4%	0.3%	0.0%	0.0%
December	711	95.6%	30.30	44.5	-	38.9	0.0%	2.3%	95.9%	1.8%	0.0%	0.0%
Annual	8268	94.1%	28.12	64.1	-	49.9	3.2%	18.9%	68.0%	9.8%	0.1%	0.0%

Table B-6 Esterhazy Station: Summary of Airpointer $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. ($\mu g/m^3$)	Maximum 1-Hr Conc. ($\mu g/m^3$)	Maximum 24-Hr Conc. ($\mu g/m^3$)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
							0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	739	99.3%	4.1	26.5	10.5	-	37.1%	22.3%	33.3%	6.8%	0.5%	0.0%
February	692	99.4%	2.9	14.1	8.4	-	46.4%	29.5%	22.5%	1.6%	0.0%	0.0%
March	739	99.3%	3.3	18.4	6.5	-	36.5%	34.2%	27.3%	1.9%	0.0%	0.0%
April	720	100.0%	3.4	20.1	6.8	-	36.9%	37.2%	22.5%	3.1%	0.3%	0.0%
May	505	67.9%	8.0	64.5	27.6	-	12.5%	21.8%	38.6%	22.0%	3.4%	1.8%
June	679	94.3%	4.0	19.6	10.1	-	34.2%	24.4%	35.1%	6.3%	0.0%	0.0%
July	688	92.5%	4.0	21.2	13.6	-	38.4%	23.3%	31.5%	6.5%	0.3%	0.0%
August	665	89.4%	5.1	80.0	28.7	1	44.1%	22.7%	23.3%	5.3%	1.5%	3.2%
September	711	98.8%	2.2	15.0	8.9	-	62.3%	16.5%	19.1%	2.1%	0.0%	0.0%
October	736	98.9%	1.2	11.9	5.4	-	79.6%	15.2%	4.9%	0.3%	0.0%	0.0%
November	708	98.3%	2.3	30.6	11.4	-	63.1%	16.9%	17.8%	1.6%	0.4%	0.1%
December	743	99.9%	2.9	16.5	7.0	-	45.9%	33.6%	18.8%	1.6%	0.0%	0.0%
Annual	8325	94.8%	3.5	80.0	28.7	1	45.6%	24.9%	24.1%	4.5%	0.5%	0.4%

Table B-7 Esterhazy Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Total Precip.	Maximum 1-Hr Precip.	Maximum 24-Hr Precip.	Percent of Data in each Precipitation Range					
	(no.)	(%)	(mm)	(mm)	(mm)	<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	739	99.3%	2.6	1.4	2.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	692	99.4%	1.2	0.5	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	739	99.3%	2.9	0.8	1.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	720	100.0%	11.2	3.6	5.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	742	99.7%	48.1	4.1	19.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
June	718	99.7%	97.0	17.1	19.5	99.2%	0.7%	0.1%	0.0%	0.0%	0.0%
July	721	96.9%	106.7	16.5	17.0	99.0%	0.7%	0.3%	0.0%	0.0%	0.0%
August	733	98.5%	40.0	7.5	9.8	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
September	720	100.0%	56.6	9.0	30.1	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
October	744	100.0%	72.8	8.4	24.0	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
November	720	100.0%	2.6	1.2	2.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	743	99.9%	0	0	0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8731	99.4%	441.7	17.1	30.1	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%

Table B-8 Esterhazy Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	739	99.3%	(11.3)	(29.3)	3.8	0.0%	34.6%	59.5%	5.8%	0.0%	0.0%
February	692	99.4%	(7.7)	(26.6)	7.0	0.0%	10.1%	81.6%	8.2%	0.0%	0.0%
March	739	99.3%	(1.5)	(23.6)	12.1	0.0%	1.2%	61.7%	37.1%	0.0%	0.0%
April	720	100.0%	3.1	(9.3)	21.3	0.0%	0.0%	36.1%	57.8%	6.1%	0.0%
May	742	99.7%	13.8	(1.0)	32.1	0.0%	0.0%	1.2%	57.1%	40.7%	0.9%
June	718	99.7%	17.2	6.8	29.5	0.0%	0.0%	0.0%	35.4%	64.6%	0.0%
July	721	96.9%	18.4	8.5	29.9	0.0%	0.0%	0.0%	24.5%	75.5%	0.0%
August	733	98.5%	16.9	6.3	30.6	0.0%	0.0%	0.0%	40.9%	58.7%	0.4%
September	720	100.0%	12.2	2.0	29.6	0.0%	0.0%	0.0%	71.1%	28.9%	0.0%
October	744	100.0%	4.0	(5.3)	22.2	0.0%	0.0%	15.2%	82.9%	1.9%	0.0%
November	720	100.0%	2.1	(10.8)	20.1	0.0%	0.0%	42.5%	54.9%	2.6%	0.0%
December	743	99.9%	(13.5)	(31.9)	0.9	2.7%	40.6%	56.1%	0.5%	0.0%	0.0%
Annual	8731	99.4%	4.5	(31.9)	32.1	0.2%	7.3%	29.4%	39.8%	23.2%	0.1%

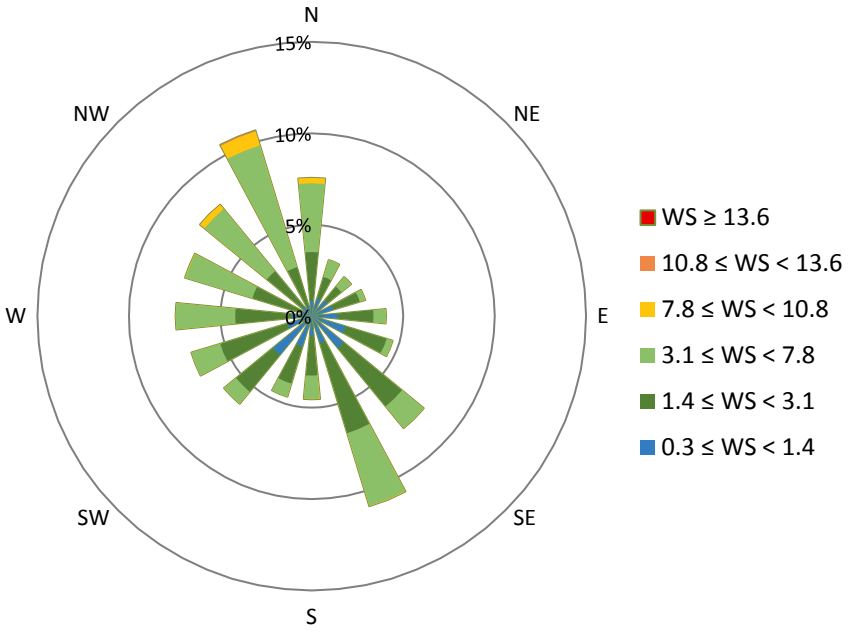
Table B-9 Esterhazy Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	739	99.3%	74	57	87	0.0%	0.0%	0.3%	83.5%	16.2%	0.0%
February	692	99.4%	73	46	89	0.0%	0.0%	6.1%	73.1%	20.8%	0.0%
March	739	99.3%	72	34	88	0.0%	0.0%	15.8%	58.7%	25.4%	0.0%
April	720	100.0%	57	18	90	0.0%	10.0%	42.2%	36.4%	10.8%	0.6%
May	742	99.7%	56	13	92	0.5%	16.8%	37.9%	25.2%	15.5%	4.0%
June	718	99.7%	65	29	92	0.0%	0.7%	39.8%	30.6%	24.7%	4.2%
July	721	96.9%	74	37	93	0.0%	0.0%	20.0%	31.8%	33.1%	15.1%
August	733	98.5%	71	32	92	0.0%	0.0%	30.2%	29.2%	30.8%	9.8%
September	720	100.0%	67	22	92	0.0%	1.0%	31.1%	38.6%	25.1%	4.2%
October	744	100.0%	79	43	92	0.0%	0.0%	5.9%	38.0%	46.6%	9.4%
November	720	100.0%	74	28	91	0.0%	0.1%	13.8%	46.4%	38.5%	1.3%
December	743	99.9%	70	54	86	0.0%	0.0%	7.4%	81.4%	11.2%	0.0%
Annual	8731	99.4%	69	13	93	0.0%	2.4%	20.8%	47.7%	24.9%	4.1%

Table B-10 Esterhazy Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	1.0%	1.2%	1.0%	0.0%	0.0%	0.0%	3.2%
Northeast	1.1%	1.0%	0.7%	0.0%	0.0%	0.0%	2.8%
East Northeast	1.2%	1.5%	0.3%	0.0%	0.0%	0.0%	3.0%
East	1.4%	2.0%	0.7%	0.0%	0.0%	0.0%	4.1%
East Southeast	1.9%	2.3%	0.4%	0.0%	0.0%	0.0%	4.6%
Southeast	2.2%	4.1%	1.5%	0.0%	0.0%	0.0%	7.9%
South Southeast	1.5%	5.2%	4.2%	0.0%	0.0%	0.0%	10.9%
South	1.1%	2.2%	1.3%	0.0%	0.0%	0.0%	4.5%
South Southwest	1.7%	2.1%	0.8%	0.0%	0.0%	0.0%	4.6%
Southwest	2.7%	2.6%	0.8%	0.0%	0.0%	0.0%	6.2%
West Southwest	1.4%	3.8%	1.7%	0.0%	0.0%	0.0%	6.9%
West	1.1%	3.1%	3.2%	0.0%	0.0%	0.0%	7.4%
West Northwest	0.6%	2.8%	3.8%	0.0%	0.0%	0.0%	7.2%
Northwest	0.7%	2.5%	4.4%	0.3%	0.0%	0.0%	7.9%
North Northwest	0.6%	2.2%	7.0%	0.8%	0.1%	0.0%	10.6%
North	0.9%	2.6%	3.8%	0.3%	0.0%	0.0%	7.6%
Total	21.2%	41.3%	35.5%	1.5%	0.1%	0.0%	99.5%

Percent Calm (<0.3 m/s)	0.6%
Number of Valid Hourly-Average Data	8731
Total Workable Hours in Time Period	8784



APPENDIX C ESTEVAN STATION: CONTINUOUS MONITORING DATA

Table C-1 Estevan Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
SO_2	ppb	12	7733	88.0%	1.5	< 0.1	131.9
NO	ppb	16.5	8203	93.4%	3.1	< 0.1	57.4
NO_2	ppb	16.5	8204	93.4%	3.6	< 0.1	31.1
NO_x	ppb	16.5	8203	93.4%	6.7	0.3	85.4
$PM_{2.5}$	µg/m^3	0	8757	99.7%	2.9	< 0.1	23.2
Ambient Temperature	˚C	0	8759	99.7%	5.3	(20.2)	24.4
Wind Speed	m/s	0	8156	92.9%	5.1	Calm	23.3

Table C-2 Estevan Station: Summary of SO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 5	5 ≤ C < 10	10 ≤ C < 57	57 ≤ C < 172	C ≥ 172
January	744	100.0%	1.3	27.8	-	4.2	-	60.6%	34.9%	2.8%	1.6%	0.0%	0.0%
February	692	99.4%	1.5	31.8	-	4.6	-	62.7%	32.8%	2.3%	2.2%	0.0%	0.0%
March	744	100.0%	1.3	24.8	-	3.1	-	47.0%	49.9%	1.6%	1.5%	0.0%	0.0%
April	720	100.0%	1.5	30.5	-	3.8	-	34.9%	61.5%	2.2%	1.4%	0.0%	0.0%
May	740	99.5%	1.9	81.6	-	18.8	-	47.8%	47.3%	1.9%	2.6%	0.4%	0.0%
June	714	99.2%	1.0	12.0	-	1.7	-	60.9%	38.4%	0.6%	0.1%	0.0%	0.0%
July	740	99.5%	1.0	15.8	-	2.5	-	68.8%	30.1%	0.7%	0.4%	0.0%	0.0%
August	259	34.8%	0.7	4.1	-	1.0	-	88.0%	12.0%	0.0%	0.0%	0.0%	0.0%
September	227	31.5%	0.8	3.2	-	1.2	-	81.5%	18.5%	0.0%	0.0%	0.0%	0.0%
October	742	99.7%	1.1	17.5	-	2.7	-	56.7%	42.3%	0.1%	0.8%	0.0%	0.0%
November	667	92.6%	2.3	131.9	-	13.8	-	59.2%	35.2%	1.9%	3.1%	0.4%	0.0%
December	744	100.0%	2.2	97.2	-	13.4	-	39.1%	55.8%	2.3%	2.6%	0.3%	0.0%
Annual	7733	88.0%	1.5	131.9	0	18.8	0	55.7%	41.2%	1.5%	1.5%	0.1%	0.0%

Table C-3 Estevan Station: Summary of NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	744	100.0%	2.4	57.4	8.1	90.7%	7.7%	1.3%	0.3%	0.0%	0.0%
February	692	99.4%	2.5	48.9	6.9	88.7%	10.5%	0.4%	0.3%	0.0%	0.0%
March	744	100.0%	2.2	40.4	4.7	91.7%	7.7%	0.5%	0.1%	0.0%	0.0%
April	720	100.0%	1.6	14.5	2.8	96.8%	3.2%	0.0%	0.0%	0.0%	0.0%
May	740	99.5%	2.1	16.4	3.6	95.4%	4.5%	0.1%	0.0%	0.0%	0.0%
June	713	99.0%	2.5	7.9	3.4	96.9%	3.1%	0.0%	0.0%	0.0%	0.0%
July	740	99.5%	2.9	12.3	4.2	91.1%	8.9%	0.0%	0.0%	0.0%	0.0%
August	258	34.7%	2.6	5.7	2.9	98.8%	1.2%	0.0%	0.0%	0.0%	0.0%
September	697	96.8%	3.7	28.5	5.9	83.9%	15.6%	0.4%	0.0%	0.0%	0.0%
October	744	100.0%	4.3	45.3	8.2	80.9%	16.9%	1.7%	0.4%	0.0%	0.0%
November	667	92.6%	5.2	53.2	10.3	69.0%	27.0%	3.0%	1.0%	0.0%	0.0%
December	744	100.0%	4.8	32.1	8.9	70.3%	27.6%	1.9%	0.3%	0.0%	0.0%
Annual	8203	93.4%	3.1	57.4	10.3	87.3%	11.6%	0.8%	0.2%	0.0%	0.0%

Table C-4 Estevan Station: Summary of NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	744	100.0%	4.6	28.0	-	10.2	-	66.3%	30.9%	2.8%	0.0%	0.0%	0.0%
February	692	99.4%	3.8	20.9	-	6.5	-	76.3%	22.8%	0.9%	0.0%	0.0%	0.0%
March	744	100.0%	3.7	28.1	-	7.2	-	79.8%	18.1%	2.0%	0.0%	0.0%	0.0%
April	720	100.0%	2.2	13.1	-	4.1	-	92.9%	7.1%	0.0%	0.0%	0.0%	0.0%
May	740	99.5%	3.3	19.1	-	6.9	-	78.9%	20.5%	0.5%	0.0%	0.0%	0.0%
June	713	99.0%	2.8	12.2	-	5.0	-	88.1%	11.9%	0.0%	0.0%	0.0%	0.0%
July	741	99.6%	3.0	16.3	-	5.2	-	87.3%	12.3%	0.4%	0.0%	0.0%	0.0%
August	258	34.7%	2.1	7.5	-	2.9	-	97.7%	2.3%	0.0%	0.0%	0.0%	0.0%
September	697	96.8%	2.0	15.0	-	5.9	-	93.8%	6.2%	0.0%	0.0%	0.0%	0.0%
October	744	100.0%	3.8	23.6	-	8.6	-	76.5%	22.6%	0.9%	0.0%	0.0%	0.0%
November	667	92.6%	5.1	28.8	-	9.2	-	61.8%	35.7%	2.5%	0.0%	0.0%	0.0%
December	744	100.0%	6.1	31.1	-	12.9	-	55.1%	38.7%	6.0%	0.1%	0.0%	0.0%
Annual	8204	93.4%	3.6	31.1	0	12.9	0	78.5%	20.1%	1.4%	0.0%	0.0%	0.0%

Table C-5 Estevan Station: Summary of NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	744	100.0%	7.0	85.4	17.7	51.1%	41.1%	5.9%	1.9%	0.0%	0.0%
February	692	99.4%	6.3	62.6	12.0	54.8%	39.6%	4.5%	1.2%	0.0%	0.0%
March	744	100.0%	5.9	63.8	11.2	63.3%	29.7%	5.9%	1.1%	0.0%	0.0%
April	720	100.0%	3.8	27.6	6.5	81.0%	17.6%	1.4%	0.0%	0.0%	0.0%
May	740	99.5%	5.5	31.4	9.9	56.4%	40.9%	2.4%	0.3%	0.0%	0.0%
June	713	99.0%	5.3	16.4	8.1	56.0%	43.9%	0.1%	0.0%	0.0%	0.0%
July	740	99.5%	5.9	28.0	9.0	49.3%	48.4%	2.3%	0.0%	0.0%	0.0%
August	258	34.7%	4.7	11.0	5.8	65.9%	34.1%	0.0%	0.0%	0.0%	0.0%
September	697	96.8%	5.7	40.5	11.8	51.9%	46.1%	1.7%	0.3%	0.0%	0.0%
October	744	100.0%	8.1	63.4	16.8	29.6%	61.2%	8.3%	0.9%	0.0%	0.0%
November	667	92.6%	10.3	76.9	19.5	20.7%	63.4%	12.7%	3.1%	0.0%	0.0%
December	744	100.0%	10.9	58.0	21.6	14.4%	65.7%	16.7%	3.2%	0.0%	0.0%
Annual	8203	93.4%	6.7	85.4	21.6	48.7%	44.8%	5.5%	1.0%	0.0%	0.0%

Table C-6 Estevan Station: Summary of $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (µg/m^3)	Maximum 1-Hr Conc. (µg/m^3)	Maximum 24-Hr Conc. (µg/m^3)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
							0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	744	100.0%	2.1	5.8	3.6	-	52.6%	44.6%	2.8%	0.0%	0.0%	0.0%
February	692	99.4%	2.0	4.0	3.0	-	56.2%	43.6%	0.1%	0.0%	0.0%	0.0%
March	744	100.0%	2.2	7.3	3.1	-	42.3%	56.3%	1.3%	0.0%	0.0%	0.0%
April	720	100.0%	1.8	4.7	2.8	-	67.5%	31.7%	0.8%	0.0%	0.0%	0.0%
May	740	99.5%	4.4	11.9	8.5	-	6.1%	47.7%	44.3%	1.9%	0.0%	0.0%
June	716	99.4%	3.7	7.7	4.9	-	3.9%	58.1%	38.0%	0.0%	0.0%	0.0%
July	741	99.6%	4.2	10.0	5.3	-	3.1%	40.4%	56.5%	0.0%	0.0%	0.0%
August	740	99.5%	3.8	23.2	6.6	-	2.4%	62.7%	33.8%	0.7%	0.4%	0.0%
September	720	100.0%	2.4	8.8	4.8	-	42.9%	51.5%	5.6%	0.0%	0.0%	0.0%
October	744	100.0%	2.2	5.4	3.3	-	51.3%	44.9%	3.8%	0.0%	0.0%	0.0%
November	712	98.9%	2.7	7.0	3.7	-	19.5%	71.1%	9.4%	0.0%	0.0%	0.0%
December	744	100.0%	3.4	11.4	4.4	-	9.8%	61.4%	28.5%	0.3%	0.0%	0.0%
Annual	8757	99.7%	2.9	23.2	8.5	0	29.7%	51.2%	18.9%	0.2%	0.0%	0.0%

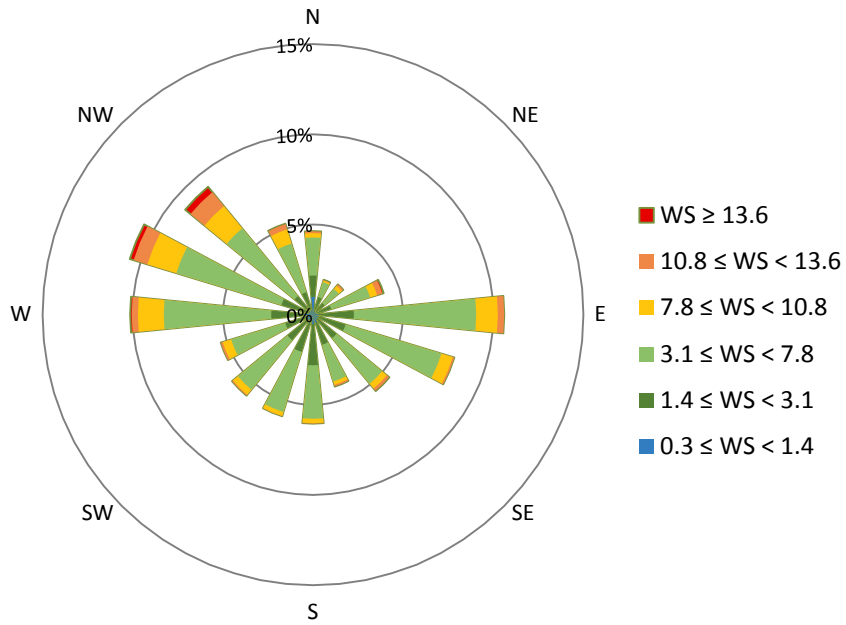
Table C-7 Estevan Station: Summary of Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	744	100.0%	(5.0)	(19.4)	5.6	0.0%	3.5%	81.3%	15.2%	0.0%	0.0%
February	692	99.4%	(1.2)	(11.2)	9.4	0.0%	0.0%	63.7%	36.3%	0.0%	0.0%
March	744	100.0%	1.9	(8.7)	12.4	0.0%	0.0%	36.6%	63.4%	0.0%	0.0%
April	720	100.0%	5.0	(6.1)	16.3	0.0%	0.0%	8.1%	90.7%	1.3%	0.0%
May	740	99.5%	10.1	(0.2)	21.7	0.0%	0.0%	0.1%	83.0%	16.9%	0.0%
June	715	99.3%	13.1	4.4	21.9	0.0%	0.0%	0.0%	66.9%	33.1%	0.0%
July	741	99.6%	14.3	7.5	22.7	0.0%	0.0%	0.0%	58.0%	42.0%	0.0%
August	741	99.6%	13.9	5.4	24.4	0.0%	0.0%	0.0%	61.4%	38.6%	0.0%
September	719	99.9%	9.9	(0.3)	20.9	0.0%	0.0%	0.3%	87.3%	12.4%	0.0%
October	744	100.0%	5.0	(3.3)	15.6	0.0%	0.0%	2.2%	97.2%	0.7%	0.0%
November	715	99.3%	3.0	(6.2)	14.9	0.0%	0.0%	26.0%	74.0%	0.0%	0.0%
December	744	100.0%	(7.0)	(20.2)	1.5	0.0%	9.4%	83.5%	7.1%	0.0%	0.0%
Annual	8759	99.7%	5.3	(20.2)	24.4	0.0%	1.1%	25.1%	61.6%	12.1%	0.0%

Table C-8 Estevan Airport: Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	0.2%	0.8%	0.9%	0.1%	0.0%	0.0%	2.0%
Northeast	0.2%	0.6%	1.0%	0.2%	0.1%	0.0%	2.2%
East Northeast	0.2%	0.9%	2.3%	0.4%	0.3%	0.1%	4.1%
East	0.3%	2.0%	6.8%	1.2%	0.4%	0.0%	10.6%
East Southeast	0.3%	1.6%	5.6%	0.7%	0.1%	0.0%	8.2%
Southeast	0.3%	1.3%	3.3%	0.3%	0.2%	0.0%	5.5%
South Southeast	0.5%	1.3%	2.1%	0.2%	0.1%	0.0%	4.2%
South	0.5%	2.3%	3.0%	0.2%	0.0%	0.0%	6.0%
South Southwest	0.3%	1.8%	3.5%	0.2%	0.0%	0.0%	5.9%
Southwest	0.4%	1.4%	3.6%	0.4%	0.1%	0.0%	5.8%
West Southwest	0.4%	1.2%	3.1%	0.5%	0.1%	0.0%	5.3%
West	0.5%	1.8%	6.0%	1.4%	0.3%	0.1%	10.1%
West Northwest	0.3%	1.6%	6.1%	1.7%	0.8%	0.2%	10.6%
Northwest	0.2%	1.1%	4.9%	1.6%	1.0%	0.4%	9.2%
North Northwest	0.2%	1.1%	2.8%	0.8%	0.3%	0.0%	5.3%
North	1.0%	1.2%	2.1%	0.2%	0.1%	0.0%	4.6%
Total	5.7%	22.1%	56.9%	10.2%	3.9%	0.9%	99.7%

Percent Calm (<0.3 m/s)	0.3%
Number of Valid Hourly-Average Data	8156
Total Workable Hours in Time Period	8784



APPENDIX D GLEN EWEN STATION: CONTINUOUS MONITORING DATA

Table D-1 Glen Ewen Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
SO_2	ppb	423	8314	94.6%	1.1	< 0.1	30.2
NO	ppb	423	8219	93.6%	0.4	< 0.1	14.7
NO_2	ppb	423	8219	93.6%	1.8	< 0.1	16.5
NO_x	ppb	423	8219	93.6%	2.2	0.3	21.6
O_3	ppb	403	7840	89.3%	23.1	0.6	53.2
H_2S	ppb	423	7933	90.3%	0.5	< 0.1	11.5
Precipitation (total)	mm	0	8752	99.6%	595.2	< 0.1	25.0
Ambient Temperature	˚C	0	8752	99.6%	5.3	(34.6)	34.0
Relative Humidity	%	0	8752	99.6%	70.6	15.6	95.1
Wind Speed	m/s	0	8752	99.6%	3.3	Calm	14.2

Table D-2 Glen Ewen Station: Summary of Airpointer SO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 5	5 ≤ C < 10	10 ≤ C < 57	57 ≤ C < 172	C ≥ 172
January	712	95.7%	2.3	30.2	-	8.3	-	49.3%	38.5%	8.4%	3.8%	0.0%	0.0%
February	661	95.0%	1.5	20.6	-	4.2	-	65.2%	28.7%	4.8%	1.2%	0.0%	0.0%
March	711	95.6%	0.9	12.3	-	3.2	-	82.7%	14.6%	2.3%	0.4%	0.0%	0.0%
April	689	95.7%	0.6	6.2	-	1.5	-	92.2%	7.3%	0.6%	0.0%	0.0%	0.0%
May	694	93.3%	1.0	24.3	-	4.1	-	76.4%	21.3%	2.2%	0.1%	0.0%	0.0%
June	688	95.6%	0.9	10.0	-	2.0	-	79.9%	18.3%	1.7%	0.0%	0.0%	0.0%
July	685	92.1%	1.0	20.7	-	3.4	-	79.4%	17.2%	3.1%	0.3%	0.0%	0.0%
August	691	92.9%	1.0	17.8	-	2.7	-	77.4%	19.4%	2.6%	0.6%	0.0%	0.0%
September	689	95.7%	0.8	10.4	-	2.7	-	85.8%	12.9%	1.0%	0.3%	0.0%	0.0%
October	710	95.4%	0.8	7.9	-	2.6	-	84.1%	14.2%	1.7%	0.0%	0.0%	0.0%
November	672	93.3%	1.0	16.8	-	4.3	-	81.8%	14.3%	3.1%	0.7%	0.0%	0.0%
December	712	95.7%	1.8	19.4	-	4.9	-	50.7%	40.9%	6.7%	1.7%	0.0%	0.0%
Annual	8314	94.6%	1.1	30.2	0	8.3	0	75.3%	20.7%	3.2%	0.8%	0.0%	0.0%

Table D-3 Glen Ewen Station: Summary of Airpointer NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	0.5	5.1	0.9	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
February	661	95.0%	0.3	2.5	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	0.2	1.6	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	689	95.7%	0.2	3.3	0.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	694	93.3%	0.4	7.9	1.1	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
June	688	95.6%	0.4	2.1	0.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
July	647	87.0%	0.4	5.5	0.9	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
August	634	85.2%	0.4	3.0	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	0.4	3.9	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
October	710	95.4%	0.4	14.7	1.1	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
November	672	93.3%	0.5	5.3	1.3	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	0.6	5.3	1.5	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
Annual	8219	93.6%	0.4	14.7	1.5	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%

Table D-4 Glen Ewen Station: Summary of Airpointer NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	2.6	16.5	-	4.9	-	93.8%	5.9%	0.3%	0.0%	0.0%	0.0%
February	661	95.0%	1.8	8.8	-	3.6	-	98.8%	1.2%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	1.5	6.7	-	2.8	-	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
April	689	95.7%	1.0	4.3	-	1.9	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	694	93.3%	2.5	12.3	-	5.0	-	91.6%	8.4%	0.0%	0.0%	0.0%	0.0%
June	688	95.6%	1.4	5.2	-	2.8	-	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
July	647	87.0%	1.1	5.0	-	1.8	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	634	85.2%	1.4	6.9	-	2.3	-	99.1%	0.9%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	1.3	6.6	-	2.2	-	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%
October	710	95.4%	1.3	8.6	-	2.5	-	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%
November	672	93.3%	2.2	10.2	-	4.4	-	96.4%	3.6%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	3.0	15.7	-	7.1	-	88.3%	11.2%	0.4%	0.0%	0.0%	0.0%
Annual	8219	93.6%	1.8	16.5	0	7.1	0	97.0%	2.9%	0.1%	0.0%	0.0%	0.0%

Table D-5 Glen Ewen Station: Summary of Airpointer NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	3.1	21.6	5.7	89.0%	10.4%	0.6%	0.0%	0.0%	0.0%
February	661	95.0%	2.0	9.2	4.1	97.0%	3.0%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	1.8	7.4	3.2	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%
April	689	95.7%	1.2	6.3	2.2	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
May	694	93.3%	3.0	20.2	5.7	87.6%	12.1%	0.3%	0.0%	0.0%	0.0%
June	688	95.6%	1.8	6.2	3.3	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%
July	647	87.0%	1.5	8.4	2.4	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%
August	634	85.2%	1.8	7.9	2.8	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	1.7	8.7	2.8	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%
October	710	95.4%	1.7	20.2	3.3	97.6%	2.3%	0.1%	0.0%	0.0%	0.0%
November	672	93.3%	2.7	11.5	5.0	93.5%	6.5%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	3.6	18.6	8.5	81.0%	18.4%	0.6%	0.0%	0.0%	0.0%
Annual	8219	93.6%	2.2	21.6	8.5	94.8%	5.1%	0.1%	0.0%	0.0%	0.0%

Table D-6 Glen Ewen Station: Summary of Airpointer O_3 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	0 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 40	40 ≤ C < 60	60 ≤ C < 82	C ≥ 82
January	711	95.6%	24.7	32.7	-	29.8	0.0%	14.1%	85.9%	0.0%	0.0%	0.0%
February	661	95.0%	25.4	35.9	-	31.2	0.3%	18.3%	81.4%	0.0%	0.0%	0.0%
March	711	95.6%	24.2	42.9	-	31.9	1.1%	30.4%	67.4%	1.1%	0.0%	0.0%
April	688	95.6%	28.9	45.8	-	34.0	0.4%	9.6%	83.6%	6.4%	0.0%	0.0%
May	268	36.0%	30.2	53.2	-	37.0	0.4%	15.7%	61.9%	22.0%	0.0%	0.0%
June	687	95.4%	28.0	50.0	-	36.4	2.5%	21.0%	63.3%	13.2%	0.0%	0.0%
July	680	91.4%	21.4	46.9	-	36.4	12.8%	35.7%	48.8%	2.6%	0.0%	0.0%
August	694	93.3%	21.7	50.9	-	32.4	13.7%	35.2%	45.5%	5.6%	0.0%	0.0%
September	689	95.7%	17.6	43.8	-	27.2	20.3%	40.9%	38.0%	0.7%	0.0%	0.0%
October	671	90.2%	16.2	34.0	-	25.7	17.6%	53.9%	28.5%	0.0%	0.0%	0.0%
November	668	92.8%	16.7	40.7	-	27.1	17.8%	50.0%	32.0%	0.1%	0.0%	0.0%
December	712	95.7%	26.4	38.4	-	34.5	0.4%	7.2%	92.4%	0.0%	0.0%	0.0%
Annual	7840	89.3%	23.1	53.2	-	37.0	7.6%	28.1%	60.9%	3.4%	0.0%	0.0%

Table D-7 Glen Ewen Station: Summary of Airpointer H_2S Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 1	1 ≤ C < 3.6	3.6 ≤ C < 5	5 ≤ C < 8	8 ≤ C < 10.8	C ≥ 10.8
January	680	91.4%	0.3	1.6	-	0.4	-	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
February	631	90.7%	0.3	2.0	-	0.5	-	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
March	679	91.3%	0.4	4.3	-	0.6	-	98.8%	1.0%	0.1%	0.0%	0.0%	0.0%
April	657	91.3%	0.3	0.8	-	0.4	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	662	89.0%	0.6	4.0	-	1.4	-	86.6%	13.3%	0.2%	0.0%	0.0%	0.0%
June	657	91.3%	0.5	4.4	-	1.0	-	90.7%	9.1%	0.2%	0.0%	0.0%	0.0%
July	651	87.5%	0.9	11.5	1	2.1	-	74.0%	23.5%	1.8%	0.5%	0.0%	0.2%
August	660	88.7%	0.8	7.6	-	1.5	-	72.9%	26.8%	0.2%	0.2%	0.0%	0.0%
September	658	91.4%	0.5	2.4	-	1.1	-	93.5%	6.5%	0.0%	0.0%	0.0%	0.0%
October	677	91.0%	0.3	6.7	-	0.7	-	97.8%	2.1%	0.0%	0.1%	0.0%	0.0%
November	641	89.0%	0.3	5.4	-	0.7	-	98.8%	1.1%	0.0%	0.2%	0.0%	0.0%
December	680	91.4%	0.2	5.0	-	0.6	-	99.7%	0.1%	0.1%	0.0%	0.0%	0.0%
Annual	7933	90.3%	0.5	11.5	1	2.1	0	92.7%	7.0%	0.2%	0.1%	0.0%	0.0%

Table D-8 Glen Ewen Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Total Precip. (mm)	Maximum 1-Hr Precip. (mm)	Maximum 24-Hr Precip. (mm)	Percent of Data in each Precipitation Range					
						<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	744	100.0%	0.0	0.0	0.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	696	100.0%	0.5	0.1	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	744	100.0%	2.3	0.5	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	720	100.0%	33.8	5.5	22.3	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
May	742	99.7%	82.0	10.4	47.0	99.6%	0.3%	0.1%	0.0%	0.0%	0.0%
June	719	99.9%	148.7	17.8	23.1	98.6%	1.0%	0.4%	0.0%	0.0%	0.0%
July	718	96.5%	78.6	19.7	31.7	99.3%	0.4%	0.3%	0.0%	0.0%	0.0%
August	744	100.0%	43.6	7.9	7.9	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%
September	720	100.0%	77.0	11.2	28.5	99.2%	0.4%	0.4%	0.0%	0.0%	0.0%
October	743	99.9%	127.5	25.0	98.6	99.2%	0.5%	0.3%	0.0%	0.0%	0.0%
November	718	99.7%	1.1	0.3	0.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	744	100.0%	0.3	0.2	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8752	99.6%	595.2	25.0	98.6	99.6%	0.3%	0.1%	0.0%	0.0%	0.0%

Table D-9 Glen Ewen Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	744	100.0%	(10.4)	(32.9)	4.1	0.8%	26.2%	64.5%	8.5%	0.0%	0.0%
February	696	100.0%	(5.1)	(23.2)	10.7	0.0%	5.9%	78.6%	15.5%	0.0%	0.0%
March	744	100.0%	0.4	(16.5)	18.1	0.0%	1.1%	51.3%	46.9%	0.7%	0.0%
April	720	100.0%	4.5	(10.3)	21.8	0.0%	0.0%	24.4%	69.0%	6.5%	0.0%
May	742	99.7%	13.5	(0.9)	31.5	0.0%	0.0%	0.9%	60.4%	38.0%	0.7%
June	719	99.9%	17.3	7.1	31.7	0.0%	0.0%	0.0%	33.9%	65.6%	0.4%
July	718	96.5%	18.8	7.5	30.6	0.0%	0.0%	0.0%	24.5%	75.3%	0.1%
August	744	100.0%	18.2	6.5	34.0	0.0%	0.0%	0.0%	33.2%	64.8%	2.0%
September	720	100.0%	12.8	1.7	30.2	0.0%	0.0%	0.0%	66.9%	32.8%	0.3%
October	743	99.9%	5.3	(6.0)	21.1	0.0%	0.0%	10.6%	84.7%	4.7%	0.0%
November	718	99.7%	2.5	(13.0)	19.8	0.0%	0.0%	42.9%	53.2%	3.9%	0.0%
December	744	100.0%	(14.2)	(34.6)	(0.0)	5.6%	42.1%	52.3%	0.0%	0.0%	0.0%
Annual	8752	99.6%	5.3	(34.6)	34.0	0.5%	6.4%	27.1%	41.4%	24.3%	0.3%

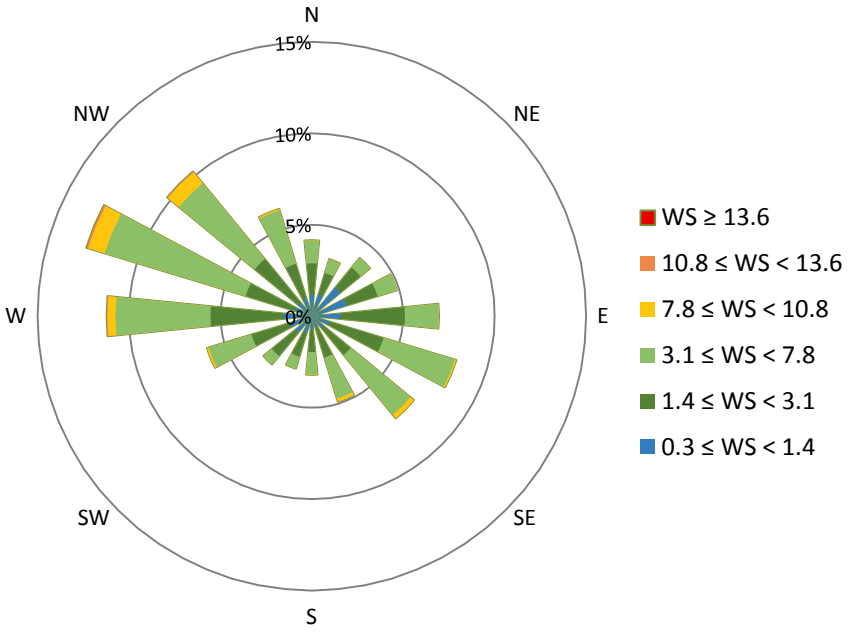
Table D-10 Glen Ewen Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	744	100.0%	78	61	89	0.0%	0.0%	0.0%	60.6%	39.4%	0.0%
February	696	100.0%	75	43	92	0.0%	0.0%	7.5%	56.6%	31.3%	4.6%
March	744	100.0%	70	23	91	0.0%	1.2%	23.0%	45.0%	29.6%	1.2%
April	720	100.0%	58	17	93	0.0%	9.0%	45.0%	27.8%	15.4%	2.8%
May	742	99.7%	58	16	93	0.0%	15.8%	36.4%	22.8%	15.8%	9.3%
June	719	99.9%	69	30	94	0.0%	0.0%	32.5%	34.8%	23.9%	8.8%
July	718	96.5%	75	33	95	0.0%	0.0%	23.0%	26.9%	28.7%	21.4%
August	744	100.0%	66	21	93	0.0%	3.1%	34.9%	27.3%	26.3%	8.3%
September	720	100.0%	69	23	94	0.0%	0.8%	30.8%	29.0%	26.9%	12.4%
October	743	99.9%	79	40	94	0.0%	0.0%	8.1%	34.7%	41.9%	15.3%
November	718	99.7%	74	34	93	0.0%	0.0%	15.0%	40.3%	42.6%	2.1%
December	744	100.0%	76	58	90	0.0%	0.0%	0.4%	72.2%	27.4%	0.0%
Annual	8752	99.6%	71	16	95	0.0%	2.5%	21.4%	39.9%	29.1%	7.2%

Table D-11 Glen Ewen Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	1.3%	1.2%	0.8%	0.0%	0.0%	0.0%	3.3%
Northeast	2.0%	1.4%	0.7%	0.0%	0.0%	0.0%	4.1%
East Northeast	2.0%	1.8%	1.1%	0.0%	0.0%	0.0%	4.9%
East	1.6%	3.5%	1.9%	0.0%	0.0%	0.0%	7.0%
East Southeast	1.0%	3.1%	4.1%	0.1%	0.0%	0.0%	8.3%
Southeast	0.8%	1.9%	4.2%	0.3%	0.0%	0.0%	7.2%
South Southeast	0.6%	1.7%	2.4%	0.2%	0.0%	0.0%	4.9%
South	0.7%	1.2%	1.2%	0.0%	0.0%	0.0%	3.2%
South Southwest	0.9%	1.4%	0.7%	0.0%	0.0%	0.0%	3.0%
Southwest	1.1%	1.7%	0.6%	0.0%	0.0%	0.0%	3.4%
West Southwest	1.2%	2.2%	2.4%	0.1%	0.0%	0.0%	6.0%
West	1.6%	4.0%	5.2%	0.4%	0.0%	0.0%	11.2%
West Northwest	1.0%	2.8%	8.1%	0.9%	0.1%	0.0%	12.9%
Northwest	0.9%	3.1%	5.4%	0.8%	0.0%	0.0%	10.2%
North Northwest	1.0%	2.0%	3.1%	0.1%	0.0%	0.0%	6.1%
North	1.2%	1.7%	1.3%	0.0%	0.0%	0.0%	4.2%
Total	19.0%	34.8%	43.0%	2.9%	0.2%	0.0%	99.9%

Percent Calm (<0.3 m/s)	0.1%
Number of Valid Hourly-Average Data	8752
Total Workable Hours in Time Period	8784



APPENDIX E OXBOW STATION: CONTINUOUS MONITORING DATA

Table E-1 Oxbow Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
SO_2	ppb	418	8358	95.2%	1.3	< 0.1	22.3
NO	ppb	418	8346	95.0%	0.4	< 0.1	24.4
NO_2	ppb	418	8362	95.2%	1.5	< 0.1	35.2
NO_x	ppb	418	8346	95.0%	1.9	< 0.1	58.3
H_2S	ppb	418	8335	94.9%	0.6	< 0.1	17.3
$PM_{2.5}$	µg/m^3	4	8746	99.6%	5.8	< 0.1	93.3
Precipitation (total)	mm	0	8782	100.0%	559.6	< 0.1	25.3
Ambient Temperature	˚C	0	8782	100.0%	5.7	(33.7)	34.5
Relative Humidity	%	0	8782	100.0%	68.1	14.6	93.1
Wind Speed	m/s	0	8782	100.0%	2.4	Calm	11.8

Table E-2 Oxbow Station: Summary of Airpointer SO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	1.4	18.9	-	3.1	-	56.9%	38.8%	3.8%	0.6%
February	662	95.1%	1.2	14.3	-	3.0	-	64.8%	31.9%	2.6%	0.8%
March	711	95.6%	1.3	10.2	-	3.8	-	62.4%	34.3%	3.1%	0.1%
April	689	95.7%	1.2	22.3	-	2.9	-	70.2%	26.4%	2.8%	0.6%
May	701	94.2%	1.2	20.4	-	2.6	-	64.9%	32.0%	2.4%	0.7%
June	689	95.7%	1.1	6.8	-	2.0	-	64.0%	34.8%	1.2%	0.0%
July	711	95.6%	1.4	12.4	-	2.8	-	57.8%	39.4%	2.4%	0.4%
August	697	93.7%	1.4	16.5	-	3.0	-	60.3%	36.3%	2.9%	0.6%
September	689	95.7%	1.2	8.5	-	2.1	-	62.0%	36.6%	1.5%	0.0%
October	711	95.6%	1.2	6.9	-	2.6	-	55.1%	44.2%	0.7%	0.0%
November	675	93.8%	1.3	12.4	-	4.8	-	63.7%	31.9%	3.3%	1.2%
December	711	95.6%	1.6	14.3	-	3.4	-	48.9%	46.4%	3.9%	0.7%
Annual	8358	95.2%	1.3	22.3	0	4.8	0	60.9%	36.1%	2.5%	0.5%

Table E-3 Oxbow Station: Summary of Airpointer NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	0.5	13.8	1.4	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%
February	662	95.1%	0.3	12.8	0.8	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	0.4	11.8	1.0	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
April	689	95.7%	0.3	5.1	0.7	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
May	697	93.7%	0.4	3.0	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
June	683	94.9%	0.4	6.5	0.9	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
July	707	95.0%	0.5	8.9	1.3	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%
August	700	94.1%	0.4	15.4	0.9	99.7%	0.1%	0.1%	0.0%	0.0%	0.0%
September	688	95.6%	0.4	2.4	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
October	710	95.4%	0.3	4.8	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
November	675	93.8%	0.4	8.1	1.0	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	0.7	24.4	3.6	98.0%	1.4%	0.6%	0.0%	0.0%	0.0%
Annual	8346	95.0%	0.4	24.4	3.6	99.5%	0.5%	0.1%	0.0%	0.0%	0.0%

Table E-4 Oxbow Station: Summary of Airpointer NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	1.7	20.9	-	3.6	-	96.6%	3.1%	0.3%	0.0%	0.0%	0.0%
February	662	95.1%	1.2	16.4	-	2.2	-	98.9%	0.9%	0.2%	0.0%	0.0%	0.0%
March	711	95.6%	1.2	6.6	-	2.5	-	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
April	689	95.7%	0.8	6.7	-	1.7	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
May	701	94.2%	2.3	14.9	-	5.1	-	93.7%	6.3%	0.0%	0.0%	0.0%	0.0%
June	689	95.7%	1.5	11.0	-	3.0	-	96.2%	3.8%	0.0%	0.0%	0.0%	0.0%
July	711	95.6%	1.0	4.6	-	2.0	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	700	94.1%	1.1	6.2	-	1.6	-	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	1.0	4.1	-	1.6	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
October	711	95.6%	1.1	6.8	-	2.2	-	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
November	675	93.8%	2.1	13.8	-	5.8	-	95.1%	4.9%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	2.6	35.2	-	7.3	-	90.3%	9.0%	0.3%	0.4%	0.0%	0.0%
Annual	8362	95.2%	1.5	35.2	0	7.3	0	97.5%	2.5%	0.1%	0.0%	0.0%	0.0%

Table E-5 Oxbow Station: Summary of Airpointer NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	2.2	31.6	4.9	94.7%	4.4%	0.7%	0.3%	0.0%	0.0%
February	662	95.1%	1.5	29.3	2.7	98.0%	1.7%	0.3%	0.0%	0.0%	0.0%
March	711	95.6%	1.5	18.2	3.5	98.5%	1.3%	0.3%	0.0%	0.0%	0.0%
April	689	95.7%	1.1	9.3	2.1	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%
May	697	93.7%	2.6	15.4	5.8	90.0%	9.9%	0.1%	0.0%	0.0%	0.0%
June	683	94.9%	1.9	17.5	3.9	95.2%	4.7%	0.1%	0.0%	0.0%	0.0%
July	707	95.0%	1.5	13.2	2.8	97.7%	2.3%	0.0%	0.0%	0.0%	0.0%
August	700	94.1%	1.5	20.2	2.4	99.1%	0.7%	0.1%	0.0%	0.0%	0.0%
September	688	95.6%	1.4	5.2	2.2	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
October	710	95.4%	1.4	8.6	2.5	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
November	675	93.8%	2.5	15.5	6.6	91.6%	8.3%	0.1%	0.0%	0.0%	0.0%
December	712	95.7%	3.3	58.3	8.6	86.2%	12.2%	1.1%	0.4%	0.0%	0.0%
Annual	8346	95.0%	1.9	58.3	8.6	95.8%	3.9%	0.3%	0.1%	0.0%	0.0%

Table E-6 Oxbow Station: Summary of Airpointer H_2S Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 1	1 ≤ C < 3.6	3.6 ≤ C < 5	5 ≤ C < 8	8 ≤ C < 10.8	C ≥ 10.8
January	712	95.7%	0.4	3.4	-	0.7	-	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%
February	662	95.1%	0.5	1.8	-	0.9	-	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
March	710	95.4%	0.6	2.7	-	1.1	-	92.7%	7.3%	0.0%	0.0%	0.0%	0.0%
April	689	95.7%	0.5	2.8	-	0.8	-	97.8%	2.2%	0.0%	0.0%	0.0%	0.0%
May	701	94.2%	0.7	8.0	-	1.0	-	85.0%	14.8%	0.0%	0.0%	0.1%	0.0%
June	689	95.7%	0.7	3.4	-	1.3	-	84.0%	16.0%	0.0%	0.0%	0.0%	0.0%
July	710	95.4%	0.8	4.0	-	1.3	-	73.0%	26.9%	0.1%	0.0%	0.0%	0.0%
August	700	94.1%	0.9	17.3	2	1.7	-	73.1%	26.6%	0.0%	0.0%	0.0%	0.3%
September	689	95.7%	0.8	5.3	-	1.2	-	80.1%	19.7%	0.0%	0.1%	0.0%	0.0%
October	710	95.4%	0.6	3.6	-	1.3	-	93.7%	6.2%	0.1%	0.0%	0.0%	0.0%
November	675	93.8%	0.5	4.1	-	1.3	-	94.1%	5.8%	0.1%	0.0%	0.0%	0.0%
December	688	92.5%	0.5	2.1	-	0.8	-	97.1%	2.9%	0.0%	0.0%	0.0%	0.0%
Annual	8335	94.9%	0.6	17.3	2	1.7	0	88.7%	11.2%	0.0%	0.0%	0.0%	0.0%

Table E-7 Oxbow Station: Summary of Airpointer $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	(no.)	0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	744	100.0%	5.7	23.1	14.2	-	18.7%	27.3%	39.0%	14.0%	1.1%	0.0%
February	696	100.0%	4.9	22.5	12.6	-	16.1%	35.3%	38.8%	9.5%	0.3%	0.0%
March	744	100.0%	4.9	20.0	8.8	-	23.9%	28.9%	37.8%	9.3%	0.1%	0.0%
April	720	100.0%	4.6	21.3	7.4	-	15.3%	34.3%	45.6%	4.6%	0.3%	0.0%
May	742	99.7%	9.6	93.3	24.9	-	13.9%	17.0%	35.2%	22.0%	8.1%	3.9%
June	687	95.4%	5.1	25.6	14.9	-	19.1%	29.8%	41.2%	9.8%	0.1%	0.0%
July	744	100.0%	7.4	57.4	25.1	-	8.1%	21.1%	47.0%	19.9%	3.1%	0.8%
August	743	99.9%	7.2	45.1	18.3	-	17.1%	17.4%	45.2%	13.6%	6.1%	0.7%
September	720	100.0%	4.9	40.9	9.4	-	20.8%	29.3%	40.6%	8.3%	0.8%	0.1%
October	744	100.0%	4.7	32.6	11.3	-	29.2%	28.6%	33.7%	6.7%	1.6%	0.1%
November	720	100.0%	5.7	69.2	13.8	-	18.1%	31.8%	33.8%	14.2%	1.5%	0.7%
December	742	99.7%	4.3	68.0	9.9	-	21.7%	42.5%	31.5%	3.5%	0.4%	0.4%
Annual	8746	99.6%	5.8	93.3	25.1	0	18.5%	28.5%	39.1%	11.3%	2.0%	0.6%

Table E-8 Oxbow Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Total Precip.	Maximum 1-Hr Precip.	Maximum 24-Hr Precip.	Percent of Data in each Precipitation Range					
	(no.)	(%)	(mm)	(mm)	(mm)	<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	744	100.0%	0.1	0.1	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	696	100.0%	0.6	0.2	0.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	744	100.0%	4.5	1.9	1.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	720	100.0%	22.5	7.3	11.0	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
May	742	99.7%	95.4	13.6	31.1	99.3%	0.4%	0.3%	0.0%	0.0%	0.0%
June	720	100.0%	123.1	17.0	20.1	98.8%	1.1%	0.1%	0.0%	0.0%	0.0%
July	744	100.0%	63.8	16.1	18.8	99.6%	0.1%	0.3%	0.0%	0.0%	0.0%
August	744	100.0%	31.7	10.3	11.1	99.9%	0.0%	0.1%	0.0%	0.0%	0.0%
September	720	100.0%	111.1	25.3	38.8	99.2%	0.3%	0.4%	0.1%	0.0%	0.0%
October	744	100.0%	103.3	16.9	80.1	99.3%	0.3%	0.4%	0.0%	0.0%	0.0%
November	720	100.0%	1.5	0.8	1.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	744	100.0%	2.1	1.5	1.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8782	100.0%	559.6	25.3	80.1	99.7%	0.2%	0.1%	0.0%	0.0%	0.0%

Table E-9 Oxbow Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	744	100.0%	(10.1)	(32.3)	4.8	0.7%	25.0%	65.3%	9.0%	0.0%	0.0%
February	696	100.0%	(4.8)	(21.3)	11.7	0.0%	5.3%	77.3%	17.4%	0.0%	0.0%
March	744	100.0%	0.7	(17.1)	18.5	0.0%	1.1%	49.5%	47.7%	1.7%	0.0%
April	720	100.0%	4.9	(11.5)	22.3	0.0%	0.0%	20.0%	72.4%	7.6%	0.0%
May	742	99.7%	13.8	(0.8)	32.1	0.0%	0.0%	1.1%	58.8%	39.4%	0.8%
June	720	100.0%	17.7	6.1	31.9	0.0%	0.0%	0.0%	31.8%	67.6%	0.6%
July	744	100.0%	19.5	8.5	32.5	0.0%	0.0%	0.0%	21.4%	76.6%	2.0%
August	744	100.0%	18.9	6.6	34.5	0.0%	0.0%	0.0%	29.7%	66.7%	3.6%
September	720	100.0%	13.2	1.3	30.7	0.0%	0.0%	0.0%	65.7%	33.9%	0.4%
October	744	100.0%	5.6	(6.2)	21.3	0.0%	0.0%	9.4%	85.8%	4.8%	0.0%
November	720	100.0%	2.8	(13.1)	20.4	0.0%	0.0%	40.7%	55.1%	4.2%	0.0%
December	744	100.0%	(13.7)	(33.7)	0.3	4.2%	40.7%	54.7%	0.4%	0.0%	0.0%
Annual	8782	100.0%	5.7	(33.7)	34.5	0.4%	6.1%	26.3%	41.2%	25.3%	0.6%

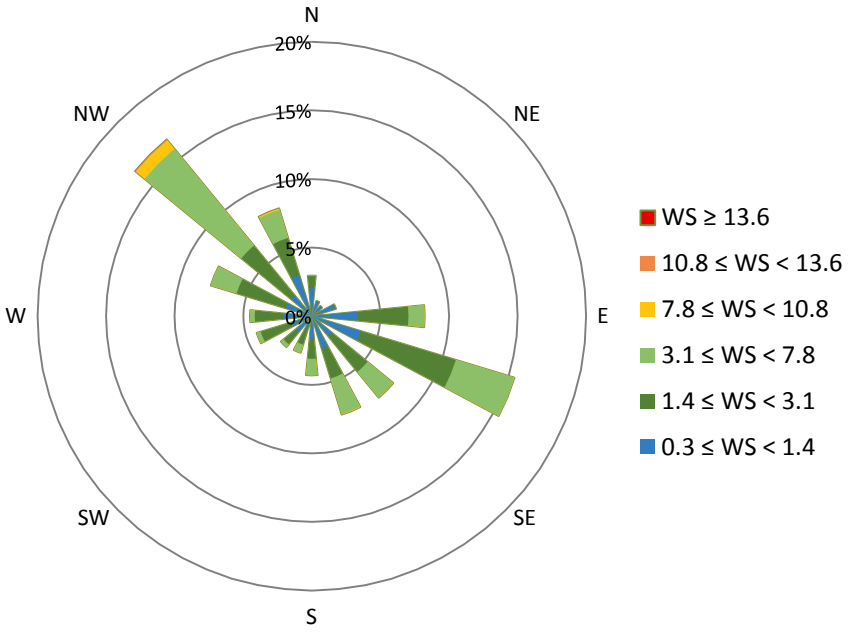
Table E-10 Oxbow Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	744	100.0%	76	57	88	0.0%	0.0%	0.4%	69.1%	30.5%	0.0%
February	696	100.0%	74	37	90	0.0%	0.0%	10.2%	60.3%	29.0%	0.4%
March	744	100.0%	67	20	90	0.0%	2.3%	27.7%	45.4%	24.6%	0.0%
April	720	100.0%	56	17	92	0.0%	9.9%	50.6%	23.6%	14.4%	1.5%
May	742	99.7%	56	15	92	0.3%	16.7%	38.1%	20.9%	15.9%	8.1%
June	720	100.0%	66	28	92	0.0%	1.1%	36.7%	32.2%	26.3%	3.8%
July	744	100.0%	72	32	93	0.0%	0.0%	28.2%	28.8%	31.0%	12.0%
August	744	100.0%	62	19	92	0.0%	7.0%	38.0%	29.7%	20.7%	4.6%
September	720	100.0%	66	22	92	0.0%	2.8%	34.4%	30.1%	24.9%	7.8%
October	744	100.0%	76	38	92	0.0%	0.0%	12.0%	42.1%	37.8%	8.2%
November	720	100.0%	71	32	90	0.0%	0.0%	19.4%	49.9%	30.6%	0.1%
December	744	100.0%	74	57	88	0.0%	0.0%	0.8%	79.2%	20.0%	0.0%
Annual	8782	100.0%	68	15	93	0.0%	3.3%	24.7%	42.6%	25.5%	3.9%

Table E-11 Oxbow Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%
Northeast	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
East Northeast	1.8%	0.1%	0.0%	0.0%	0.0%	0.0%	1.8%
East	3.3%	3.8%	1.2%	0.0%	0.0%	0.0%	8.2%
East Southeast	3.7%	7.2%	4.5%	0.0%	0.0%	0.0%	15.4%
Southeast	1.9%	3.4%	2.4%	0.0%	0.0%	0.0%	7.7%
South Southeast	2.5%	2.3%	2.7%	0.0%	0.0%	0.0%	7.5%
South	1.7%	1.5%	1.2%	0.0%	0.0%	0.0%	4.3%
South Southwest	1.1%	1.1%	0.6%	0.0%	0.0%	0.0%	2.8%
Southwest	1.5%	1.1%	0.3%	0.0%	0.0%	0.0%	2.9%
West Southwest	1.6%	2.3%	0.3%	0.0%	0.0%	0.0%	4.2%
West	2.0%	2.1%	0.4%	0.0%	0.0%	0.0%	4.5%
West Northwest	2.0%	3.7%	2.0%	0.0%	0.0%	0.0%	7.7%
Northwest	1.9%	4.7%	9.1%	0.8%	0.1%	0.0%	16.7%
North Northwest	3.1%	2.8%	2.1%	0.1%	0.0%	0.0%	8.2%
North	2.1%	0.9%	0.0%	0.0%	0.0%	0.0%	3.0%
Total	32.2%	37.0%	26.8%	1.0%	0.1%	0.0%	97.1%

Percent Calm (<0.3 m/s)	3.2%
Number of Valid Hourly-Average Data	8782
Total Workable Hours in Time Period	8784



APPENDIX F STOUGHTON STATION: CONTINUOUS MONITORING DATA

Table F-1 Stoughton Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
SO_2	ppb	415	8319	94.7%	0.8	< 0.1	10.4
NO	ppb	415	8332	94.9%	0.5	< 0.1	60.9
NO_2	ppb	415	8333	94.9%	2.0	< 0.1	19.0
NO_x	ppb	415	8332	94.9%	2.4	0.1	76.2
H_2S	ppb	415	8323	94.8%	0.7	< 0.1	11.9
$PM_{2.5}$	$\mu g/m^3$	4	8498	96.7%	4.5	< 0.1	106.7
Precipitation (total)	mm	0	8747	99.6%	381.4	< 0.1	14.6
Ambient Temperature	˚C	0	8747	99.6%	5.2	(36.2)	35.4
Relative Humidity	%	0	8747	99.6%	68.7	13.7	92.4
Wind Speed	m/s	0	8747	99.6%	2.9	Calm	12.1

Table F-2 Stoughton Station: Summary of Airpointer SO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 5	5 ≤ C < 10	10 ≤ C < 57	57 ≤ C < 172	C ≥ 172
January	695	93.4%	1.1	10.0	-	3.2	-	64.7%	33.5%	1.7%	0.0%	0.0%	0.0%
February	657	94.4%	0.8	5.0	-	1.7	-	80.8%	19.0%	0.2%	0.0%	0.0%	0.0%
March	700	94.1%	0.8	6.1	-	1.9	-	86.4%	13.4%	0.1%	0.0%	0.0%	0.0%
April	688	95.6%	0.9	10.3	-	2.6	-	84.3%	14.7%	0.9%	0.1%	0.0%	0.0%
May	697	93.7%	0.9	10.4	-	1.9	-	81.3%	17.6%	0.9%	0.1%	0.0%	0.0%
June	686	95.3%	0.8	5.0	-	1.5	-	83.4%	16.6%	0.0%	0.0%	0.0%	0.0%
July	711	95.6%	0.7	3.6	-	1.3	-	86.6%	13.4%	0.0%	0.0%	0.0%	0.0%
August	700	94.1%	0.8	5.3	-	1.3	-	84.0%	15.9%	0.1%	0.0%	0.0%	0.0%
September	689	95.7%	0.8	5.2	-	1.9	-	83.9%	16.0%	0.1%	0.0%	0.0%	0.0%
October	707	95.0%	0.7	2.6	-	1.2	-	92.5%	7.5%	0.0%	0.0%	0.0%	0.0%
November	677	94.0%	0.7	4.0	-	1.2	-	87.9%	12.1%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	0.9	4.6	-	1.9	-	77.4%	22.6%	0.0%	0.0%	0.0%	0.0%
Annual	8319	94.7%	0.8	10.4	0	3.2	0	82.8%	16.9%	0.3%	0.0%	0.0%	0.0%

Table F-3 Stoughton Station: Summary of Airpointer NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	695	93.4%	0.6	17.1	2.6	98.8%	0.9%	0.3%	0.0%	0.0%	0.0%
February	657	94.4%	0.5	31.6	2.3	99.2%	0.6%	0.0%	0.2%	0.0%	0.0%
March	700	94.1%	0.4	60.9	3.1	99.9%	0.0%	0.0%	0.1%	0.0%	0.0%
April	688	95.6%	0.3	3.2	0.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	702	94.4%	0.4	16.2	1.2	99.9%	0.0%	0.1%	0.0%	0.0%	0.0%
June	689	95.7%	0.5	14.7	1.3	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
July	711	95.6%	0.5	4.9	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	701	94.2%	0.4	9.5	1.2	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	0.6	19.7	1.4	99.1%	0.7%	0.1%	0.0%	0.0%	0.0%
October	711	95.6%	0.5	10.8	1.6	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
November	677	94.0%	0.6	9.0	1.5	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	0.6	10.2	2.4	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%
Annual	8332	94.9%	0.5	60.9	3.1	99.5%	0.4%	0.0%	0.0%	0.0%	0.0%

Table F-4 Stoughton Station: Summary of Airpointer NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	695	93.4%	3.0	19.0	-	9.4	-	83.9%	15.7%	0.4%	0.0%	0.0%	0.0%
February	657	94.4%	2.2	15.9	-	5.2	-	92.8%	7.0%	0.2%	0.0%	0.0%	0.0%
March	700	94.1%	1.7	15.3	-	3.4	-	97.6%	2.3%	0.1%	0.0%	0.0%	0.0%
April	688	95.6%	1.0	8.6	-	3.2	-	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%
May	702	94.4%	2.6	13.5	-	5.4	-	86.6%	13.4%	0.0%	0.0%	0.0%	0.0%
June	689	95.7%	1.9	10.2	-	4.6	-	92.3%	7.7%	0.0%	0.0%	0.0%	0.0%
July	711	95.6%	1.3	7.7	-	2.5	-	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%
August	701	94.2%	1.5	8.0	-	2.9	-	98.0%	2.0%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	1.6	12.6	-	3.5	-	96.2%	3.8%	0.0%	0.0%	0.0%	0.0%
October	711	95.6%	1.6	9.5	-	3.7	-	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
November	678	94.2%	2.3	10.0	-	4.7	-	92.8%	7.2%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	2.6	18.0	-	6.2	-	85.5%	13.9%	0.6%	0.0%	0.0%	0.0%
Annual	8333	94.9%	2.0	19.0	0	9.4	0	93.3%	6.6%	0.1%	0.0%	0.0%	0.0%

Table F-5 Stoughton Station: Summary of Airpointer NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	695	93.4%	3.7	35.4	12.0	78.7%	20.0%	1.0%	0.3%	0.0%	0.0%
February	657	94.4%	2.8	44.2	6.9	88.7%	10.2%	0.9%	0.2%	0.0%	0.0%
March	700	94.1%	2.1	76.2	6.1	95.7%	4.1%	0.0%	0.1%	0.0%	0.0%
April	688	95.6%	1.2	8.8	3.7	98.4%	1.6%	0.0%	0.0%	0.0%	0.0%
May	702	94.4%	3.0	20.8	6.5	83.8%	16.0%	0.3%	0.0%	0.0%	0.0%
June	689	95.7%	2.4	21.2	5.3	89.4%	10.4%	0.1%	0.0%	0.0%	0.0%
July	711	95.6%	1.8	8.9	3.0	97.2%	2.8%	0.0%	0.0%	0.0%	0.0%
August	701	94.2%	1.9	13.3	3.5	94.9%	5.1%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	2.2	25.1	4.2	93.5%	6.0%	0.6%	0.0%	0.0%	0.0%
October	711	95.6%	2.1	17.0	4.7	92.3%	7.5%	0.3%	0.0%	0.0%	0.0%
November	677	94.0%	2.9	15.6	6.2	86.7%	13.1%	0.1%	0.0%	0.0%	0.0%
December	712	95.7%	3.3	27.0	8.6	81.0%	17.4%	1.5%	0.0%	0.0%	0.0%
Annual	8332	94.9%	2.4	76.2	12.0	90.0%	9.5%	0.4%	0.0%	0.0%	0.0%

Table F-6 Stoughton Station: Summary of Airpointer H_2S Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 3.6	3.6 ≤ C < 5	5 ≤ C < 8	8 ≤ C < 10.8	C ≥ 10.8
January	695	93.4%	0.5	2.8	-	1.0	-	94.7%	5.3%	0.0%	0.0%	0.0%	0.0%
February	657	94.4%	0.6	3.6	-	0.8	-	96.0%	3.8%	0.2%	0.0%	0.0%	0.0%
March	700	94.1%	0.5	1.6	-	0.7	-	98.0%	2.0%	0.0%	0.0%	0.0%	0.0%
April	688	95.6%	0.5	1.2	-	0.7	-	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
May	699	94.0%	1.0	9.7	-	2.3	-	70.2%	25.5%	1.7%	2.0%	0.6%	0.0%
June	689	95.7%	1.0	10.2	-	2.2	-	70.2%	26.4%	1.7%	1.2%	0.4%	0.0%
July	711	95.6%	1.3	9.6	-	2.5	-	63.2%	30.7%	2.7%	3.0%	0.6%	0.0%
August	700	94.1%	1.1	11.9	2	2.8	-	65.3%	31.3%	1.7%	1.0%	0.4%	0.3%
September	689	95.7%	0.8	5.5	-	1.9	-	78.1%	21.3%	0.3%	0.3%	0.0%	0.0%
October	711	95.6%	0.6	3.6	-	1.0	-	96.8%	3.1%	0.1%	0.0%	0.0%	0.0%
November	675	93.8%	0.6	2.2	-	1.0	-	96.7%	3.3%	0.0%	0.0%	0.0%	0.0%
December	709	95.3%	0.5	5.2	-	0.9	-	98.7%	1.0%	0.1%	0.1%	0.0%	0.0%
Annual	8323	94.8%	0.7	11.9	2	2.8	0	85.5%	12.9%	0.7%	0.6%	0.2%	0.0%

Table F-7 Stoughton Station: Summary of Airpointer $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	(no.)	0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	668	89.8%	4.3	21.9	12.5	-	35.5%	23.7%	32.6%	7.5%	0.7%	0.0%
February	669	96.1%	3.3	14.8	6.9	-	34.4%	36.8%	27.2%	1.6%	0.0%	0.0%
March	725	97.4%	2.9	15.3	7.6	-	46.2%	28.3%	24.4%	1.1%	0.0%	0.0%
April	715	99.3%	3.1	12.8	6.2	-	37.3%	34.7%	27.0%	1.0%	0.0%	0.0%
May	701	94.2%	7.5	106.7	21.6	-	23.5%	18.3%	34.5%	17.5%	4.4%	1.7%
June	714	99.2%	7.2	57.9	26.6	-	13.3%	20.2%	46.1%	16.8%	2.0%	1.7%
July	744	100.0%	5.9	29.0	11.6	-	11.6%	22.7%	53.5%	12.0%	0.3%	0.0%
August	698	93.8%	5.9	33.4	10.8	-	14.0%	22.6%	50.3%	11.5%	1.3%	0.3%
September	712	98.9%	4.7	48.1	11.7	-	24.9%	31.9%	36.2%	5.1%	1.5%	0.4%
October	736	98.9%	2.9	18.9	6.0	-	42.7%	38.9%	16.7%	1.8%	0.0%	0.0%
November	706	98.1%	3.1	35.5	8.2	-	46.9%	30.6%	18.0%	4.0%	0.3%	0.3%
December	710	95.4%	2.6	32.0	7.1	-	51.4%	29.0%	18.7%	0.6%	0.1%	0.1%
Annual	8498	96.7%	4.5	106.7	26.6	0	31.8%	28.1%	32.1%	6.7%	0.9%	0.4%

Table F-8 Stoughton Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Total Precip.	Maximum 1-Hr Precip.	Maximum 24-Hr Precip.	Percent of Data in each Precipitation Range					
	(no.)	(%)	(mm)	(mm)	(mm)	<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	728	97.8%	0.1	0.0	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	691	99.3%	1.0	0.7	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	731	98.3%	5.2	1.3	2.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	719	99.9%	42.3	10.1	29.6	99.7%	0.1%	0.1%	0.0%	0.0%	0.0%
May	743	99.9%	60.9	5.1	21.8	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
June	720	100.0%	84.6	14.6	18.2	99.3%	0.4%	0.3%	0.0%	0.0%	0.0%
July	744	100.0%	77.3	12.9	22.6	99.5%	0.3%	0.3%	0.0%	0.0%	0.0%
August	744	100.0%	10.5	2.4	2.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
September	720	100.0%	50.0	6.6	15.8	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
October	744	100.0%	48.3	5.6	19.1	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
November	719	99.9%	0.4	0.2	0.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	744	100.0%	0.9	0.3	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8747	99.6%	381.4	14.6	29.6	99.8%	0.1%	0.1%	0.0%	0.0%	0.0%

Table F-9 Stoughton Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	728	97.8%	(11.3)	(36.2)	3.4	1.4%	27.6%	65.2%	5.8%	0.0%	0.0%
February	691	99.3%	(5.4)	(21.7)	10.1	0.0%	5.2%	81.3%	13.5%	0.0%	0.0%
March	731	98.3%	0.0	(15.2)	14.0	0.0%	0.5%	55.7%	43.8%	0.0%	0.0%
April	719	99.9%	5.2	(10.3)	23.3	0.0%	0.0%	19.7%	71.5%	8.8%	0.0%
May	743	99.9%	13.8	(1.4)	31.6	0.0%	0.0%	0.9%	59.2%	39.3%	0.5%
June	720	100.0%	17.3	5.0	29.7	0.0%	0.0%	0.0%	34.7%	65.3%	0.0%
July	744	100.0%	19.1	8.7	32.0	0.0%	0.0%	0.0%	23.3%	75.8%	0.9%
August	744	100.0%	18.3	4.1	35.4	0.0%	0.0%	0.0%	35.8%	61.6%	2.7%
September	720	100.0%	12.8	(1.3)	31.1	0.0%	0.0%	0.4%	68.2%	30.7%	0.7%
October	744	100.0%	4.8	(5.5)	21.1	0.0%	0.0%	14.0%	82.0%	4.0%	0.0%
November	719	99.9%	1.8	(12.3)	21.9	0.0%	0.0%	44.8%	51.9%	3.3%	0.0%
December	744	100.0%	(14.2)	(35.5)	0.2	4.6%	42.5%	52.7%	0.3%	0.0%	0.0%
Annual	8747	99.6%	5.2	(36.2)	35.4	0.5%	6.4%	27.6%	40.9%	24.3%	0.4%

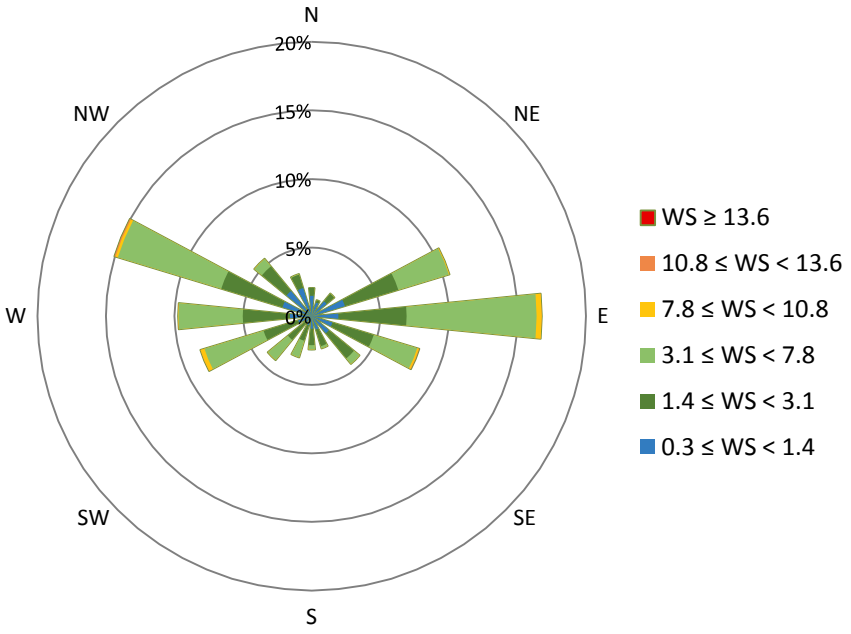
Table F-10 Stoughton Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	728	97.8%	77	59	87	0.0%	0.0%	0.3%	67.4%	32.3%	0.0%
February	691	99.3%	77	46	90	0.0%	0.0%	4.9%	55.4%	37.3%	2.3%
March	731	98.3%	71	27	90	0.0%	0.3%	20.5%	49.4%	29.8%	0.0%
April	719	99.9%	55	15	92	0.0%	13.2%	44.4%	29.1%	12.1%	1.3%
May	743	99.9%	55	14	91	0.4%	19.7%	33.2%	27.2%	17.6%	1.9%
June	720	100.0%	66	27	91	0.0%	0.3%	35.7%	37.4%	25.0%	1.7%
July	744	100.0%	71	29	92	0.0%	0.3%	27.7%	27.8%	36.0%	8.2%
August	744	100.0%	61	14	92	0.4%	6.7%	37.4%	31.6%	19.1%	4.8%
September	720	100.0%	65	22	92	0.0%	3.6%	33.8%	34.0%	24.2%	4.4%
October	744	100.0%	78	40	92	0.0%	0.0%	10.2%	34.3%	52.2%	3.4%
November	719	99.9%	74	32	90	0.0%	0.0%	13.4%	45.9%	40.5%	0.3%
December	744	100.0%	75	60	87	0.0%	0.0%	0.1%	78.0%	21.9%	0.0%
Annual	8747	99.6%	69	14	92	0.1%	3.7%	21.8%	43.1%	29.0%	2.4%

Table F-11 Stoughton Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	1.2%
Northeast	1.4%	0.7%	0.0%	0.0%	0.0%	0.0%	2.1%
East Northeast	2.5%	4.1%	3.9%	0.0%	0.0%	0.0%	10.5%
East	1.9%	5.0%	9.5%	0.4%	0.0%	0.0%	16.8%
East Southeast	1.6%	3.1%	3.3%	0.1%	0.0%	0.0%	8.2%
Southeast	1.6%	2.4%	0.5%	0.0%	0.0%	0.0%	4.5%
South Southeast	1.0%	1.3%	0.2%	0.0%	0.0%	0.0%	2.5%
South	0.9%	1.2%	0.3%	0.0%	0.0%	0.0%	2.4%
South Southwest	0.7%	1.2%	1.3%	0.0%	0.0%	0.0%	3.1%
Southwest	0.6%	1.6%	1.9%	0.0%	0.0%	0.0%	4.1%
West Southwest	1.0%	2.6%	4.5%	0.3%	0.0%	0.0%	8.5%
West	1.6%	3.4%	4.7%	0.0%	0.0%	0.0%	9.7%
West Northwest	2.2%	4.7%	7.9%	0.2%	0.1%	0.0%	15.0%
Northwest	2.4%	2.3%	0.7%	0.0%	0.0%	0.0%	5.4%
North Northwest	2.1%	1.0%	0.0%	0.0%	0.0%	0.0%	3.2%
North	1.5%	0.6%	0.0%	0.0%	0.0%	0.0%	2.1%
Total	24.2%	35.4%	38.7%	1.1%	0.1%	0.0%	99.5%

Percent Calm (<0.3 m/s)	0.6%
Number of Valid Hourly-Average Data	8747
Total Workable Hours in Time Period	8784



APPENDIX G WAUCHOPE STATION: CONTINUOUS MONITORING DATA

Table G-1 Wauchope Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
SO_2	ppb	385	6900	78.6%	0.9	< 0.1	17.8
H_2S	ppb	417	8206	93.4%	0.7	< 0.1	26.6
$PM_{2.5}$	$\mu g/m^3$	4	8197	93.3%	5.7	< 0.1	102.9
Precipitation (total)	mm	0	8773	99.9%	641.5	< 0.1	38.9
Ambient Temperature	˚C	0	8773	99.9%	5.0	(33.0)	32.7
Relative Humidity	%	0	8773	99.9%	68.9	13.3	93.0
Wind Speed	m/s	0	8773	99.9%	3.2	Calm	13.2

Table G-2 Wauchope Station: Summary of Airpointer SO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 5	5 ≤ C < 10	10 ≤ C < 57	57 ≤ C < 172	C ≥ 172
January	710	95.4%	1.3	8.3	-	2.9	-	41.7%	56.3%	2.0%	0.0%	0.0%	0.0%
February	661	95.0%	1.7	12.2	-	4.2	-	25.3%	72.2%	2.4%	0.2%	0.0%	0.0%
March	711	95.6%	2.7	17.8	-	4.7	-	16.0%	73.6%	9.8%	0.6%	0.0%	0.0%
April	326	45.3%	1.6	7.0	-	2.5	-	30.1%	68.4%	1.5%	0.0%	0.0%	0.0%
May	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
June	322	44.7%	0.4	7.2	-	1.1	-	93.2%	6.2%	0.6%	0.0%	0.0%	0.0%
July	698	93.8%	0.3	5.2	-	1.3	-	96.8%	3.0%	0.1%	0.0%	0.0%	0.0%
August	692	93.0%	0.4	7.8	-	1.4	-	91.3%	8.5%	0.1%	0.0%	0.0%	0.0%
September	689	95.7%	0.4	9.5	-	1.2	-	92.3%	7.3%	0.4%	0.0%	0.0%	0.0%
October	711	95.6%	0.1	2.9	-	0.5	-	98.6%	1.4%	0.0%	0.0%	0.0%	0.0%
November	668	92.8%	0.4	15.5	-	2.4	-	90.6%	8.7%	0.6%	0.1%	0.0%	0.0%
December	712	95.7%	0.6	6.3	-	2.7	-	80.8%	18.8%	0.4%	0.0%	0.0%	0.0%
Annual	6900	78.6%	0.9	17.8	0	4.7	0	69.6%	28.6%	1.7%	0.1%	0.0%	0.0%

Table G-3 Wauchope Station: Summary of Airpointer H_2S Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 3.6	3.6 ≤ C < 5	5 ≤ C < 8	8 ≤ C < 10.8	C ≥ 10.8
January	710	95.4%	0.3	7.4	-	0.8	-	99.2%	0.4%	0.3%	0.1%	0.0%	0.0%
February	661	95.0%	0.4	7.2	-	1.1	-	97.3%	2.4%	0.2%	0.2%	0.0%	0.0%
March	711	95.6%	0.4	6.0	-	1.0	-	95.8%	4.1%	0.0%	0.1%	0.0%	0.0%
April	689	95.7%	0.4	1.7	-	0.7	-	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
May	709	95.3%	1.4	26.6	18	6.6	3	70.1%	22.6%	2.3%	1.7%	0.8%	2.5%
June	680	94.4%	0.9	7.1	-	1.8	-	75.9%	21.8%	1.5%	0.9%	0.0%	0.0%
July	698	93.8%	1.6	23.8	18	5.3	4	66.2%	24.5%	2.4%	3.0%	1.3%	2.6%
August	568	76.3%	1.7	17.7	4	3.7	1	56.5%	28.5%	5.1%	7.0%	2.1%	0.7%
September	689	95.7%	1.1	23.6	7	3.9	1	77.4%	16.3%	2.3%	2.3%	0.7%	1.0%
October	711	95.6%	0.3	3.3	-	0.9	-	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%
November	668	92.8%	0.3	3.0	-	1.1	-	97.6%	2.4%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	0.2	2.7	-	0.5	-	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%
Annual	8206	93.4%	0.7	26.6	47	6.6	9	86.5%	10.2%	1.1%	1.2%	0.4%	0.6%

Table G-4 Wauchope Station: Summary of Airpointer $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	(no.)	0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	742	99.7%	4.3	18.0	9.0	-	30.5%	26.3%	36.3%	7.0%	0.0%	0.0%
February	694	99.7%	3.4	15.5	8.6	-	37.9%	31.1%	27.1%	3.9%	0.0%	0.0%
March	744	100.0%	3.9	26.0	8.0	-	30.4%	29.2%	37.9%	2.4%	0.1%	0.0%
April	720	100.0%	3.9	21.8	9.0	-	29.7%	29.9%	36.5%	3.8%	0.1%	0.0%
May	742	99.7%	10.8	73.5	27.1	-	16.6%	16.0%	24.3%	26.8%	10.9%	5.4%
June	718	99.7%	6.3	33.3	15.5	-	15.6%	23.8%	40.9%	19.5%	0.0%	0.1%
July	631	84.8%	6.0	26.3	12.4	-	17.6%	23.8%	40.4%	17.7%	0.5%	0.0%
August	532	71.5%	11.0	80.0	20.1	-	8.1%	12.2%	35.7%	33.1%	6.4%	4.5%
September	712	98.9%	7.5	102.9	26.1	-	15.7%	18.1%	44.0%	18.5%	1.5%	2.1%
October	617	82.9%	5.2	73.5	16.3	-	29.3%	23.5%	35.2%	9.7%	1.3%	1.0%
November	600	83.3%	6.3	32.3	13.5	-	7.5%	22.2%	55.2%	14.3%	0.7%	0.2%
December	744	100.0%	0.8	5.6	3.0	-	91.7%	6.9%	1.5%	0.0%	0.0%	0.0%
Annual	8196	93.3%	5.6	102.9	27.1	0	28.5%	22.0%	34.1%	12.6%	1.7%	1.1%

Table G-5 Wauchope Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Total Precip.	Maximum 1-Hr Precip.	Maximum 24-Hr Precip.	Percent of Data in each Precipitation Range					
	(no.)	(%)	(mm)	(mm)	(mm)	<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	742	99.7%	0.4	0.2	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	694	99.7%	0.4	0.1	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	744	100.0%	4.3	1.2	1.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	720	100.0%	35.2	7.4	25.3	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
May	743	99.9%	93.4	11.5	69.2	99.3%	0.5%	0.1%	0.0%	0.0%	0.0%
June	718	99.7%	136.4	16.6	21.2	98.7%	1.0%	0.3%	0.0%	0.0%	0.0%
July	741	99.6%	127.4	38.9	52.9	99.2%	0.4%	0.3%	0.1%	0.0%	0.0%
August	743	99.9%	14.4	1.9	3.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
September	720	100.0%	92.1	20.9	28.6	99.2%	0.6%	0.3%	0.0%	0.0%	0.0%
October	744	100.0%	136.0	20.6	75.8	98.9%	0.8%	0.3%	0.0%	0.0%	0.0%
November	720	100.0%	0.2	0.1	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	744	100.0%	1.2	0.5	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8773	99.9%	641.5	38.9	75.8	99.6%	0.3%	0.1%	0.0%	0.0%	0.0%

Table G-6 Wauchope Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	742	99.7%	(10.9)	(31.4)	4.6	0.5%	27.8%	66.2%	5.5%	0.0%	0.0%
February	694	99.7%	(6.5)	(23.7)	6.3	0.0%	7.6%	82.4%	9.9%	0.0%	0.0%
March	744	100.0%	(0.5)	(19.5)	16.1	0.0%	2.0%	54.8%	42.9%	0.3%	0.0%
April	720	100.0%	3.8	(9.6)	21.8	0.0%	0.0%	27.9%	66.1%	6.0%	0.0%
May	743	99.9%	13.6	(0.4)	31.5	0.0%	0.0%	0.8%	60.2%	38.4%	0.7%
June	718	99.7%	17.3	7.0	31.4	0.0%	0.0%	0.0%	33.0%	66.6%	0.4%
July	741	99.6%	18.9	7.8	31.7	0.0%	0.0%	0.0%	22.1%	77.1%	0.8%
August	743	99.9%	18.2	7.6	32.7	0.0%	0.0%	0.0%	30.7%	67.8%	1.5%
September	720	100.0%	12.7	1.1	30.1	0.0%	0.0%	0.0%	69.3%	30.6%	0.1%
October	744	100.0%	5.0	(4.5)	20.8	0.0%	0.0%	10.3%	86.6%	3.1%	0.0%
November	720	100.0%	2.1	(9.8)	18.4	0.0%	0.0%	42.2%	55.4%	2.4%	0.0%
December	744	100.0%	(14.2)	(33.0)	(0.2)	3.9%	41.0%	55.1%	0.0%	0.0%	0.0%
Annual	8773	99.9%	5.0	(33.0)	32.7	0.4%	6.6%	28.1%	40.2%	24.4%	0.3%

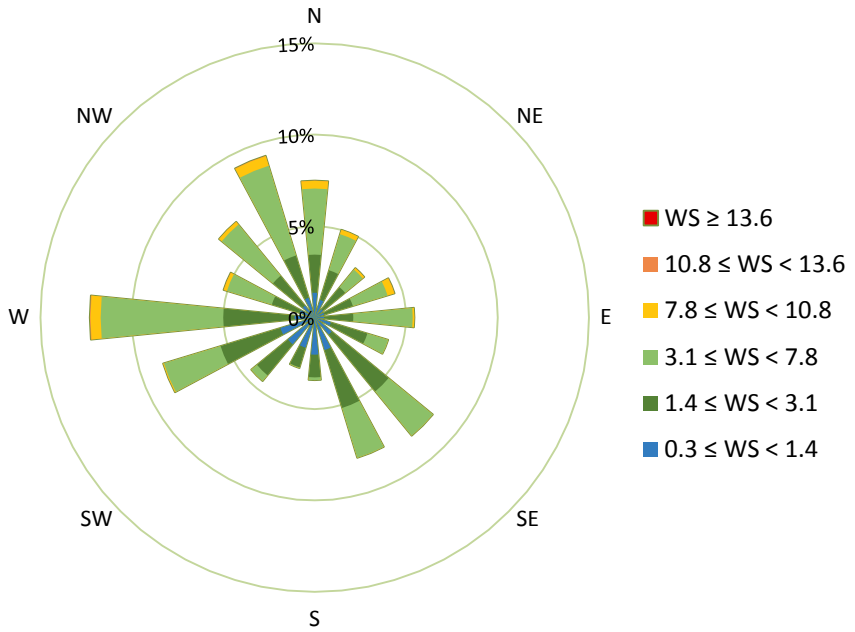
Table G-7 Wauchope Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	742	99.7%	75	59	87	0.0%	0.0%	0.3%	72.6%	27.1%	0.0%
February	694	99.7%	74	46	88	0.0%	0.0%	6.3%	68.6%	25.1%	0.0%
March	744	100.0%	70	29	89	0.0%	0.1%	18.0%	59.4%	22.4%	0.0%
April	720	100.0%	57	17	91	0.0%	10.3%	43.2%	33.5%	11.9%	1.1%
May	743	99.9%	56	13	91	0.5%	17.8%	36.1%	22.7%	20.3%	2.6%
June	718	99.7%	65	29	92	0.0%	0.6%	39.6%	32.9%	25.1%	1.9%
July	741	99.6%	73	37	93	0.0%	0.0%	24.6%	29.3%	32.1%	14.0%
August	743	99.9%	64	23	92	0.0%	2.2%	38.1%	32.8%	25.4%	1.5%
September	720	100.0%	67	27	92	0.0%	0.8%	32.8%	36.0%	26.7%	3.8%
October	744	100.0%	77	35	92	0.0%	0.0%	8.5%	43.3%	39.1%	9.1%
November	720	100.0%	74	39	90	0.0%	0.0%	13.1%	51.7%	34.4%	0.8%
December	744	100.0%	73	52	86	0.0%	0.0%	2.4%	78.9%	18.7%	0.0%
Annual	8773	99.9%	69	13	93	0.0%	2.7%	21.9%	46.8%	25.7%	2.9%

Table G-8 Wauchope Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	1.0%	1.7%	2.1%	0.3%	0.0%	0.0%	5.0%
Northeast	0.6%	1.6%	1.2%	0.1%	0.0%	0.0%	3.5%
East Northeast	0.5%	1.6%	2.0%	0.4%	0.0%	0.0%	4.6%
East	0.5%	1.6%	3.2%	0.1%	0.0%	0.0%	5.4%
East Southeast	0.9%	2.1%	1.2%	0.0%	0.0%	0.0%	4.2%
Southeast	1.2%	4.0%	3.1%	0.0%	0.0%	0.0%	8.4%
South Southeast	1.9%	3.3%	2.8%	0.0%	0.0%	0.0%	8.0%
South	2.0%	1.2%	0.1%	0.0%	0.0%	0.0%	3.4%
South Southwest	1.7%	1.1%	0.0%	0.0%	0.0%	0.0%	2.9%
Southwest	1.9%	2.2%	0.4%	0.0%	0.0%	0.0%	4.5%
West Southwest	2.0%	3.4%	3.2%	0.0%	0.0%	0.0%	8.7%
West	1.1%	3.9%	6.7%	0.6%	0.0%	0.0%	12.3%
West Northwest	0.9%	1.6%	2.6%	0.2%	0.0%	0.0%	5.2%
Northwest	0.8%	2.1%	3.6%	0.2%	0.0%	0.0%	6.8%
North Northwest	1.1%	2.4%	5.1%	0.5%	0.0%	0.0%	9.2%
North	1.4%	2.1%	3.6%	0.4%	0.0%	0.0%	7.5%
Total	19.5%	36.0%	41.2%	2.8%	0.1%	0.0%	99.6%

Percent Calm (<0.3 m/s)	0.5%
Number of Valid Hourly-Average Data	8773
Total Workable Hours in Time Period	8784



APPENDIX H WAWOTA STATION: CONTINUOUS MONITORING DATA

Table H-1 Wawota Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
NO	ppb	392	7825	89.1%	0.8	< 0.1	33.7
NO_2	ppb	392	7850	89.4%	1.2	< 0.1	11.3
NO_x	ppb	392	7825	89.1%	2.0	0.5	42.3
O_3	ppb	327	6839	77.9%	28.8	2.9	59.2
$PM_{2.5}$	$\mu g/m^3$	4	8299	94.5%	6.1	< 0.1	75.0
Precipitation (total)	mm	0	8396	95.6%	467.3	< 0.1	28.7
Ambient Temperature	˚C	0	8401	95.6%	5.0	(31.7)	31.4
Relative Humidity	%	0	8401	95.6%	70.4	15.0	95.9
Wind Speed	m/s	0	8008	91.2%	4.1	Calm	23.3

Table H-2 Wawota Station: Summary of Airpointer NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	710	95.4%	0.8	15.5	1.5	99.6%	0.3%	0.1%	0.0%	0.0%	0.0%
February	662	95.1%	0.6	4.8	1.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	707	95.0%	0.6	9.2	1.0	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
April	630	87.5%	0.6	6.0	0.9	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
May	696	93.5%	1.0	5.1	1.5	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
June	685	95.1%	0.6	3.4	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
July	707	95.0%	0.7	7.4	1.1	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
August	700	94.1%	0.9	9.1	1.2	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	0.9	33.7	2.5	99.3%	0.6%	0.0%	0.1%	0.0%	0.0%
October	569	76.5%	1.0	14.2	1.8	98.9%	1.1%	0.0%	0.0%	0.0%	0.0%
November	484	67.2%	0.9	9.0	1.4	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
December	586	78.8%	1.1	6.3	1.6	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
Annual	7825	89.1%	0.8	33.7	2.5	99.6%	0.3%	0.0%	0.0%	0.0%	0.0%

Table H-3 Wawota Station: Summary of Airpointer NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	710	95.4%	1.7	11.3	-	3.5	-	98.3%	1.7%	0.0%	0.0%	0.0%	0.0%
February	662	95.1%	1.2	5.1	-	2.8	-	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
March	708	95.2%	1.3	6.5	-	2.6	-	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
April	630	87.5%	0.8	3.7	-	1.6	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	696	93.5%	1.8	10.4	-	3.1	-	97.4%	2.6%	0.0%	0.0%	0.0%	0.0%
June	685	95.1%	1.0	3.9	-	2.4	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
July	710	95.4%	0.7	3.3	-	1.0	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	702	94.4%	0.8	6.1	-	1.6	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
September	689	95.7%	0.9	8.6	-	1.6	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
October	588	79.0%	1.0	5.9	-	2.7	-	99.5%	0.5%	0.0%	0.0%	0.0%	0.0%
November	484	67.2%	1.4	7.3	-	2.7	-	99.0%	1.0%	0.0%	0.0%	0.0%	0.0%
December	586	78.8%	1.3	7.9	-	2.9	-	99.1%	0.9%	0.0%	0.0%	0.0%	0.0%
Annual	7850	89.4%	1.2	11.3	0	3.5	0	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%

Table H-4 Wawota Station: Summary of Airpointer NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(ppb)	0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	710	95.4%	2.5	23.2	4.4	94.8%	4.9%	0.3%	0.0%	0.0%	0.0%
February	662	95.1%	1.8	9.9	3.6	98.8%	1.2%	0.0%	0.0%	0.0%	0.0%
March	707	95.0%	1.9	15.2	3.5	98.2%	1.7%	0.1%	0.0%	0.0%	0.0%
April	630	87.5%	1.3	9.4	2.4	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
May	696	93.5%	2.8	14.0	4.3	91.4%	8.6%	0.0%	0.0%	0.0%	0.0%
June	685	95.1%	1.7	7.3	3.3	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
July	707	95.0%	1.4	10.7	1.9	99.3%	0.7%	0.0%	0.0%	0.0%	0.0%
August	700	94.1%	1.7	15.2	2.6	98.4%	1.4%	0.1%	0.0%	0.0%	0.0%
September	689	95.7%	1.8	42.3	3.4	98.1%	1.6%	0.1%	0.1%	0.0%	0.0%
October	569	76.5%	2.0	19.3	4.7	97.0%	2.6%	0.4%	0.0%	0.0%	0.0%
November	484	67.2%	2.3	12.2	4.0	96.1%	3.9%	0.0%	0.0%	0.0%	0.0%
December	586	78.8%	2.4	12.2	4.3	95.9%	4.1%	0.0%	0.0%	0.0%	0.0%
Annual	7825	89.1%	2.0	42.3	4.7	97.3%	2.6%	0.1%	0.0%	0.0%	0.0%

Table H-5 Wawota Station: Summary of Airpointer O_3 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	0 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 40	40 ≤ C < 60	60 ≤ C < 82	C ≥ 82
January	710	95.4%	29.7	40.8	-	35.6	0.0%	2.8%	96.9%	0.3%	0.0%	0.0%
February	662	95.1%	31.6	45.0	-	36.2	0.2%	1.7%	96.7%	1.5%	0.0%	0.0%
March	708	95.2%	29.8	47.8	-	37.4	0.1%	5.5%	87.3%	7.1%	0.0%	0.0%
April	689	95.7%	34.4	52.2	-	42.2	0.0%	3.9%	75.0%	21.0%	0.0%	0.0%
May	696	93.5%	34.7	59.2	-	50.3	1.4%	12.2%	51.7%	34.6%	0.0%	0.0%
June	685	95.1%	34.3	58.8	-	42.3	0.0%	6.7%	63.9%	29.3%	0.0%	0.0%
July	710	95.4%	25.0	46.4	-	34.9	7.9%	19.7%	67.0%	5.4%	0.0%	0.0%
August	702	94.4%	25.2	53.5	-	37.7	5.1%	27.5%	61.5%	5.8%	0.0%	0.0%
September	689	95.7%	21.4	46.8	-	30.9	8.3%	38.5%	52.2%	1.0%	0.0%	0.0%
October	588	79.0%	20.6	38.7	-	25.0	3.1%	44.2%	52.7%	0.0%	0.0%	0.0%
November	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
December	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Annual	6839	77.9%	28.8	59.2	-	50.3	2.6%	15.9%	70.8%	10.7%	0.0%	0.0%

Table H-6 Wawota Station: Summary of Airpointer $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(no.)	0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	743	99.9%	4.9	21.3	11.9	-	23.3%	27.3%	40.6%	8.3%	0.4%	0.0%
February	696	100.0%	4.0	14.8	6.4	-	19.4%	40.7%	36.6%	3.3%	0.0%	0.0%
March	741	99.6%	5.0	40.4	11.1	-	20.8%	32.0%	37.9%	8.6%	0.4%	0.3%
April	720	100.0%	4.4	26.6	9.3	-	24.6%	30.0%	39.3%	5.8%	0.3%	0.0%
May	737	99.1%	9.6	56.3	32.7	1	8.8%	19.0%	37.3%	24.3%	6.5%	4.1%
June	627	87.1%	5.6	21.3	12.2	-	14.0%	25.7%	47.8%	12.3%	0.2%	0.0%
July	743	99.9%	6.8	26.3	14.3	-	10.4%	20.1%	49.3%	18.6%	1.7%	0.0%
August	742	99.7%	9.2	75.0	20.9	-	9.4%	16.3%	42.6%	23.6%	5.1%	3.0%
September	720	100.0%	7.4	65.2	17.8	-	20.7%	18.5%	36.1%	19.7%	3.8%	1.3%
October	615	82.7%	4.9	34.5	13.4	-	34.0%	20.5%	32.0%	11.5%	1.8%	0.2%
November	510	70.8%	6.1	50.6	13.8	-	20.2%	23.5%	39.2%	15.1%	1.2%	0.8%
December	705	94.8%	4.3	18.1	9.8	-	17.9%	39.7%	36.9%	5.5%	0.0%	0.0%
Annual	8299	94.5%	6.1	75.0	32.7	1	18.4%	26.1%	39.7%	13.1%	1.8%	0.8%

Table H-7 Wawota Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Total Precip.	Maximum 1-Hr Precip.	Maximum 24-Hr Precip.	Percent of Data in each Precipitation Range					
	(no.)	(%)	(mm)	(mm)	(mm)	<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	743	99.9%	0.2	0.1	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	696	100.0%	1.1	0.4	0.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	741	99.6%	5.0	3.3	3.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	720	100.0%	36.9	5.4	29.5	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
May	737	99.1%	99.6	11.9	61.6	99.2%	0.7%	0.1%	0.0%	0.0%	0.0%
June	718	99.7%	106.4	28.7	45.5	99.2%	0.4%	0.3%	0.1%	0.0%	0.0%
July	743	99.9%	85.0	7.5	26.6	99.2%	0.8%	0.0%	0.0%	0.0%	0.0%
August	741	99.6%	24.9	5.5	9.1	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
September	720	100.0%	43.5	6.5	12.0	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
October	615	82.7%	63.8	5.4	27.1	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
November	515	71.5%	0.3	0.1	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	707	95.0%	0.6	0.3	0.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8396	95.6%	467.3	28.7	61.6	99.7%	0.2%	0.0%	0.0%	0.0%	0.0%

Table H-8 Wawota Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	743	99.9%	(10.0)	(30.2)	4.2	0.3%	28.7%	60.2%	10.9%	0.0%	0.0%
February	696	100.0%	(5.9)	(26.1)	9.1	0.0%	7.5%	78.9%	13.6%	0.0%	0.0%
March	741	99.6%	(0.7)	(23.2)	13.9	0.0%	2.7%	57.4%	39.9%	0.0%	0.0%
April	720	100.0%	3.6	(10.3)	21.6	0.0%	0.0%	32.2%	62.2%	5.6%	0.0%
May	737	99.1%	13.2	(1.2)	29.7	0.0%	0.0%	1.6%	59.8%	38.5%	0.0%
June	718	99.7%	16.8	6.6	29.9	0.0%	0.0%	0.0%	37.7%	62.3%	0.0%
July	743	99.9%	18.4	7.7	30.3	0.0%	0.0%	0.0%	24.8%	75.1%	0.1%
August	741	99.6%	17.3	6.1	31.4	0.0%	0.0%	0.0%	38.3%	60.7%	0.9%
September	720	100.0%	12.3	1.7	29.1	0.0%	0.0%	0.0%	71.7%	28.3%	0.0%
October	615	82.7%	4.5	(6.0)	20.2	0.0%	0.0%	18.7%	77.4%	3.9%	0.0%
November	515	71.5%	0.9	(12.7)	20.9	0.0%	0.0%	59.0%	38.4%	2.5%	0.0%
December	712	95.7%	(12.4)	(31.7)	1.4	1.8%	41.0%	56.3%	0.8%	0.0%	0.0%
Annual	8401	95.6%	5.0	(31.7)	31.4	0.2%	6.9%	29.6%	39.2%	24.0%	0.1%

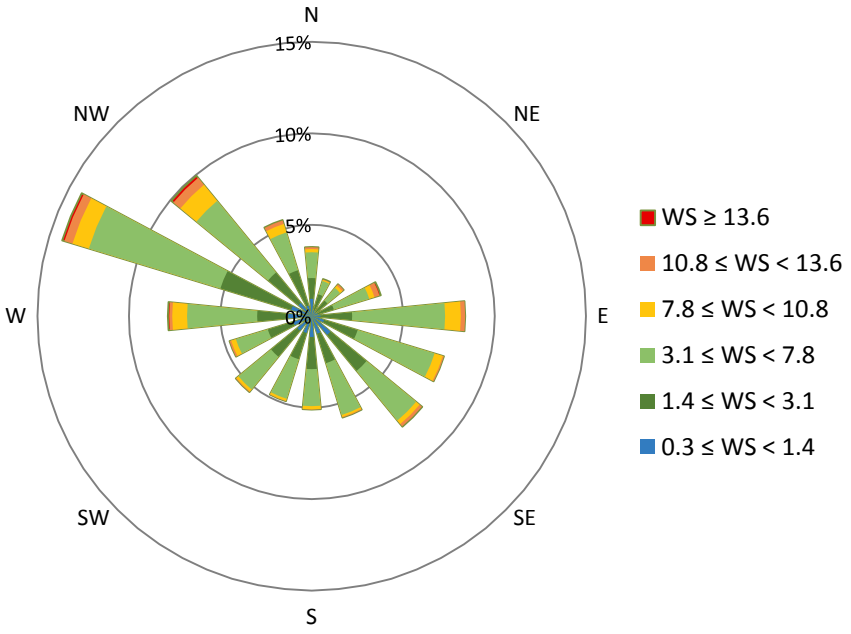
Table H-9 Wawota Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	743	99.9%	77	44	89	0.0%	0.0%	3.6%	56.5%	39.8%	0.0%
February	696	100.0%	75	40	91	0.0%	0.0%	8.6%	53.4%	33.9%	4.0%
March	741	99.6%	72	26	91	0.0%	0.4%	20.0%	40.5%	37.4%	1.8%
April	720	100.0%	58	18	91	0.0%	11.4%	39.7%	31.4%	16.7%	0.8%
May	737	99.1%	56	15	91	0.1%	17.1%	37.2%	21.7%	21.2%	2.7%
June	718	99.7%	65	30	91	0.0%	0.3%	39.1%	37.5%	22.1%	1.0%
July	743	99.9%	73	31	92	0.0%	0.0%	26.6%	27.7%	32.0%	13.6%
August	741	99.6%	68	25	95	0.0%	0.8%	35.2%	27.5%	24.7%	11.7%
September	720	100.0%	69	28	95	0.0%	0.4%	29.2%	34.7%	21.5%	14.2%
October	615	82.7%	80	39	96	0.0%	0.0%	9.6%	30.6%	33.8%	26.0%
November	515	71.5%	77	31	95	0.0%	0.0%	17.3%	29.1%	33.8%	19.8%
December	712	95.7%	77	44	93	0.0%	0.0%	5.2%	54.8%	32.3%	7.7%
Annual	8401	95.6%	70	15	96	0.0%	2.6%	23.0%	37.3%	28.9%	8.1%

Table H-10 Wawota Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	0.3%	0.9%	0.8%	0.1%	0.0%	0.0%	2.1%
Northeast	0.3%	0.8%	0.9%	0.2%	0.1%	0.0%	2.3%
East Northeast	0.3%	0.9%	2.0%	0.3%	0.3%	0.1%	3.9%
East	0.5%	1.7%	5.1%	0.9%	0.2%	0.0%	8.4%
East Southeast	0.7%	1.9%	4.4%	0.5%	0.1%	0.0%	7.6%
Southeast	1.3%	2.5%	3.5%	0.2%	0.2%	0.0%	7.8%
South Southeast	1.0%	1.7%	3.0%	0.1%	0.0%	0.0%	5.8%
South	1.1%	1.8%	2.0%	0.2%	0.0%	0.0%	5.1%
South Southwest	1.0%	1.5%	2.3%	0.1%	0.0%	0.0%	4.9%
Southwest	1.0%	1.9%	2.3%	0.1%	0.0%	0.0%	5.4%
West Southwest	1.0%	1.5%	1.8%	0.3%	0.1%	0.0%	4.7%
West	1.3%	1.7%	3.8%	0.8%	0.2%	0.1%	7.9%
West Northwest	1.2%	4.0%	7.5%	0.9%	0.5%	0.1%	14.3%
Northwest	0.9%	2.1%	5.1%	1.1%	0.5%	0.1%	9.9%
North Northwest	0.6%	2.0%	2.2%	0.5%	0.2%	0.0%	5.5%
North	0.9%	1.1%	1.4%	0.2%	0.1%	0.0%	3.8%
Total	13.6%	28.2%	48.0%	6.5%	2.5%	0.5%	99.3%

Percent Calm (<0.3 m/s)	0.7%
Number of Valid Hourly-Average Data	8008
Total Workable Hours in Time Period	8784



APPENDIX I WEYBURN STATION: CONTINUOUS MONITORING DATA

Table I-1 Weyburn Station: Summary Statistics for Continuous Air Monitoring Results for 2016

Parameter	Unit	Calibration Hours	Hours of Valid Data	Annual Percent Uptime	Summary Statistics for 1-Hour Data		
					Average	Minimum	Maximum
SO_2	ppb	397	7955	90.6%	1.3	< 0.1	24.1
NO	ppb	405	7579	86.3%	0.6	< 0.1	46.2
NO_2	ppb	405	7587	86.4%	1.5	< 0.1	24.2
NO_x	ppb	405	7579	86.3%	2.1	< 0.1	59.6
O_3	ppb	399	7975	90.8%	23.8	0.9	68.7
H_2S	ppb	397	7935	90.3%	0.6	< 0.1	31.3
$PM_{2.5}$	$\mu g/m^3$	4	8336	94.9%	3.2	< 0.1	51.9
Precipitation (total)	mm	0	8384	95.4%	505.9	< 0.1	15.5
Ambient Temperature	˚C	0	8384	95.4%	5.3	(34.3)	35.3
Relative Humidity	%	0	8384	95.4%	68.5	12.9	92.0
Wind Speed	m/s	0	8384	95.4%	3.2	Calm	14.9

Table I-2 Weyburn Station: Summary of Airpointer SO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Conc.	Maximum 1-Hr Conc.	1-Hour Exceedance	Maximum 24-Hr Conc.	24-Hour Exceedance	Percent of Data in each Concentration Range					
	(no.)	(%)	(ppb)	(ppb)	(no.)	(ppb)	(no.)	0 ≤ C < 1	1 ≤ C < 5	5 ≤ C < 10	10 ≤ C < 57	57 ≤ C < 172	C ≥ 172
January	712	95.7%	2.3	24.1	-	7.2	-	58.1%	26.1%	10.5%	5.2%	0.0%	0.0%
February	661	95.0%	1.1	13.1	-	3.8	-	70.5%	25.3%	3.2%	1.1%	0.0%	0.0%
March	711	95.6%	1.2	13.8	-	3.3	-	66.5%	28.8%	4.1%	0.6%	0.0%	0.0%
April	630	87.5%	1.0	16.3	-	3.3	-	74.6%	22.2%	2.9%	0.3%	0.0%	0.0%
May	388	52.2%	1.4	16.5	-	2.6	-	66.2%	29.4%	3.6%	0.8%	0.0%	0.0%
June	689	95.7%	1.1	10.8	-	2.5	-	69.4%	27.6%	2.9%	0.1%	0.0%	0.0%
July	695	93.4%	1.5	15.4	-	3.6	-	58.1%	36.7%	4.5%	0.7%	0.0%	0.0%
August	709	95.3%	1.1	19.0	-	3.1	-	74.8%	21.3%	3.0%	1.0%	0.0%	0.0%
September	685	95.1%	1.2	14.1	-	3.3	-	70.5%	24.5%	4.5%	0.4%	0.0%	0.0%
October	709	95.3%	1.0	12.4	-	3.7	-	71.8%	25.0%	3.1%	0.1%	0.0%	0.0%
November	674	93.6%	1.5	12.9	-	4.9	-	59.1%	34.6%	5.9%	0.4%	0.0%	0.0%
December	692	93.0%	1.1	13.1	-	3.3	-	75.1%	19.4%	4.9%	0.6%	0.0%	0.0%
Annual	7955	90.6%	1.3	24.1	0	7.2	0	67.9%	26.6%	4.5%	1.0%	0.0%	0.0%

Table I-3 Weyburn Station: Summary of Airpointer NO Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	711	95.6%	0.7	13.6	1.2	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
February	661	95.0%	0.4	4.7	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	0.4	17.2	1.2	99.9%	0.0%	0.1%	0.0%	0.0%	0.0%
April	630	87.5%	0.4	4.5	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
May	390	52.4%	1.7	46.2	7.6	93.6%	5.1%	0.5%	0.8%	0.0%	0.0%
June	687	95.4%	0.8	10.1	2.3	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
July	353	47.4%	0.4	2.3	0.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	709	95.3%	0.4	10.7	1.4	99.9%	0.1%	0.0%	0.0%	0.0%	0.0%
September	683	94.9%	0.6	13.9	2.2	99.1%	0.9%	0.0%	0.0%	0.0%	0.0%
October	658	88.4%	0.5	5.0	1.0	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
November	674	93.6%	0.5	3.7	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	0.7	8.5	1.5	99.6%	0.4%	0.0%	0.0%	0.0%	0.0%
Annual	7579	86.3%	0.6	46.2	7.6	99.4%	0.5%	0.0%	0.0%	0.0%	0.0%

Table I-4 Weyburn Station: Summary of Airpointer NO_2 Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	712	95.7%	2.3	15.1	-	5.7	-	90.7%	9.1%	0.1%	0.0%	0.0%	0.0%
February	662	95.1%	1.6	6.9	-	3.4	-	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	1.1	6.5	-	2.4	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
April	630	87.5%	0.8	6.2	-	1.6	-	99.8%	0.2%	0.0%	0.0%	0.0%	0.0%
May	390	52.4%	3.5	24.2	-	7.3	-	75.1%	23.3%	1.5%	0.0%	0.0%	0.0%
June	689	95.7%	2.0	18.1	-	5.6	-	93.5%	6.4%	0.1%	0.0%	0.0%	0.0%
July	355	47.7%	0.8	3.7	-	1.4	-	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	709	95.3%	1.1	8.8	-	2.2	-	98.7%	1.3%	0.0%	0.0%	0.0%	0.0%
September	685	95.1%	1.4	9.3	-	2.7	-	97.2%	2.8%	0.0%	0.0%	0.0%	0.0%
October	658	88.4%	1.3	6.4	-	5.0	-	98.2%	1.8%	0.0%	0.0%	0.0%	0.0%
November	674	93.6%	1.4	5.1	-	2.9	-	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	1.4	10.5	-	3.2	-	97.9%	2.1%	0.0%	0.0%	0.0%	0.0%
Annual	7587	86.4%	1.5	24.2	0	7.3	0	96.3%	3.6%	0.1%	0.0%	0.0%	0.0%

Table I-5 Weyburn Station: Summary of Airpointer NO_X Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
						0 ≤ C < 5	5 ≤ C < 15	15 ≤ C < 30	30 ≤ C < 100	100 ≤ C < 159	C ≥ 159
January	711	95.6%	3.0	28.7	6.9	85.7%	14.1%	0.3%	0.0%	0.0%	0.0%
February	661	95.0%	2.0	8.4	3.8	96.7%	3.3%	0.0%	0.0%	0.0%	0.0%
March	711	95.6%	1.5	23.6	2.8	98.6%	1.3%	0.1%	0.0%	0.0%	0.0%
April	630	87.5%	1.2	10.7	2.1	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
May	390	52.4%	5.2	59.6	13.3	68.7%	24.4%	5.4%	1.5%	0.0%	0.0%
June	687	95.4%	2.7	27.5	7.8	85.7%	13.4%	0.9%	0.0%	0.0%	0.0%
July	353	47.4%	1.2	4.2	1.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
August	709	95.3%	1.5	17.6	3.2	98.2%	1.7%	0.1%	0.0%	0.0%	0.0%
September	683	94.9%	2.0	19.3	4.4	94.0%	5.7%	0.3%	0.0%	0.0%	0.0%
October	658	88.4%	1.8	9.6	5.8	95.1%	4.9%	0.0%	0.0%	0.0%	0.0%
November	674	93.6%	1.9	7.6	3.4	98.5%	1.5%	0.0%	0.0%	0.0%	0.0%
December	712	95.7%	2.2	12.4	4.6	94.0%	6.0%	0.0%	0.0%	0.0%	0.0%
Annual	7579	86.3%	2.1	59.6	13.3	93.5%	6.0%	0.4%	0.1%	0.0%	0.0%

Table I-6 Weyburn Station: Summary of Airpointer O_3 Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	Percent of Data in each Concentration Range					
							0 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 40	40 ≤ C < 60	60 ≤ C < 82	C ≥ 82
January	711	95.6%	26.53	35.2	-	31.1	0.0%	10.7%	89.3%	0.0%	0.0%	0.0%
February	662	95.1%	25.14	41.3	-	32.1	1.1%	23.6%	75.1%	0.3%	0.0%	0.0%
March	711	95.6%	20.96	39.8	-	28.7	10.4%	31.2%	58.4%	0.0%	0.0%	0.0%
April	630	87.5%	26.90	44.5	-	33.5	2.5%	20.6%	70.0%	6.8%	0.0%	0.0%
May	390	52.4%	26.30	54.5	-	33.6	12.8%	20.8%	49.5%	16.9%	0.0%	0.0%
June	688	95.6%	30.07	54.5	-	37.0	3.5%	19.6%	51.7%	25.1%	0.0%	0.0%
July	695	93.4%	23.57	52.4	-	32.3	16.0%	23.9%	51.2%	8.9%	0.0%	0.0%
August	709	95.3%	24.65	68.7	-	36.4	13.8%	25.2%	50.4%	10.4%	0.1%	0.0%
September	685	95.1%	19.32	48.1	-	32.5	20.1%	36.2%	41.2%	2.5%	0.0%	0.0%
October	708	95.2%	17.58	39.9	-	24.4	17.9%	46.8%	35.3%	0.0%	0.0%	0.0%
November	674	93.6%	17.51	37.9	-	26.1	14.5%	49.3%	36.2%	0.0%	0.0%	0.0%
December	712	95.7%	28.39	41.6	-	38.5	0.4%	10.4%	88.8%	0.4%	0.0%	0.0%
Annual	7975	90.8%	23.81	68.7	-	38.5	9.4%	26.7%	58.4%	5.5%	0.0%	0.0%

Table I-7 Weyburn Station: Summary of Airpointer H_2S Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. (ppb)	Maximum 1-Hr Conc. (ppb)	1-Hour Exceedance (no.)	Maximum 24-Hr Conc. (ppb)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
								0 ≤ C < 1	1 ≤ C < 3.6	3.6 ≤ C < 5	5 ≤ C < 8	8 ≤ C < 10.8	C ≥ 10.8
January	711	95.6%	0.8	31.3	4	3.3	-	89.2%	7.7%	0.7%	1.1%	0.7%	0.6%
February	661	95.0%	0.5	6.2	-	1.2	-	95.9%	3.8%	0.2%	0.2%	0.0%	0.0%
March	711	95.6%	0.6	26.6	1	2.4	-	88.3%	10.7%	0.1%	0.6%	0.1%	0.1%
April	629	87.4%	0.4	11.7	1	0.9	-	94.9%	4.9%	0.0%	0.0%	0.0%	0.2%
May	387	52.0%	0.7	7.2	-	1.6	-	82.7%	16.3%	0.3%	0.8%	0.0%	0.0%
June	688	95.6%	0.7	3.0	-	1.2	-	84.3%	15.7%	0.0%	0.0%	0.0%	0.0%
July	695	93.4%	0.8	8.4	-	1.4	-	71.8%	26.8%	1.0%	0.3%	0.1%	0.0%
August	709	95.3%	0.8	9.9	-	1.9	-	77.0%	22.0%	0.6%	0.1%	0.3%	0.0%
September	685	95.1%	0.8	22.5	2	2.9	-	80.4%	18.1%	0.6%	0.3%	0.3%	0.3%
October	709	95.3%	0.6	6.9	-	1.3	-	90.1%	8.6%	0.8%	0.4%	0.0%	0.0%
November	674	93.6%	0.5	9.2	-	1.4	-	89.9%	9.2%	0.4%	0.1%	0.3%	0.0%
December	676	90.9%	0.5	17.1	4	3.9	1	92.6%	5.6%	0.3%	0.7%	0.1%	0.6%
Annual	7935	90.3%	0.6	31.3	12	3.9	1	86.5%	12.4%	0.4%	0.4%	0.2%	0.2%

Table I-8 Weyburn Station: Summary of Airpointer $PM_{2.5}$ Monitoring Results for the Year 2016

Month	Valid 1-Hr data (no.)	Operational Time (%)	Average Conc. ($\mu g/m^3$)	Maximum 1-Hr Conc. ($\mu g/m^3$)	Maximum 24-Hr Conc. ($\mu g/m^3$)	24-Hour Exceedance (no.)	Percent of Data in each Concentration Range					
							0 ≤ C < 2	2 ≤ C < 4	4 ≤ C < 10	10 ≤ C < 20	20 ≤ C < 30	C ≥ 30
January	744	100.0%	2.8	19.3	8.1	-	51.7%	26.5%	20.2%	1.6%	0.0%	0.0%
February	692	99.4%	2.6	13.6	8.3	-	58.2%	20.4%	19.2%	2.2%	0.0%	0.0%
March	744	100.0%	2.1	11.9	5.2	-	60.2%	28.1%	11.6%	0.1%	0.0%	0.0%
April	658	91.4%	1.9	33.5	3.3	-	68.5%	24.6%	6.2%	0.5%	0.0%	0.2%
May	408	54.8%	5.5	37.6	19.2	-	14.7%	44.6%	29.9%	5.6%	3.2%	2.0%
June	720	100.0%	3.4	12.6	6.2	-	21.8%	44.3%	32.9%	1.0%	0.0%	0.0%
July	728	97.8%	4.6	18.2	8.5	-	10.3%	37.0%	49.5%	3.3%	0.0%	0.0%
August	742	99.7%	5.5	51.9	15.8	-	7.3%	29.8%	57.0%	4.7%	0.3%	0.9%
September	716	99.4%	3.7	40.6	9.2	-	23.3%	49.9%	23.0%	3.4%	0.1%	0.3%
October	742	99.7%	2.6	9.9	6.2	-	48.7%	32.2%	19.1%	0.0%	0.0%	0.0%
November	698	96.9%	2.3	18.2	5.1	-	55.7%	29.5%	13.9%	0.9%	0.0%	0.0%
December	744	100.0%	1.7	10.4	6.2	-	78.6%	13.8%	7.4%	0.1%	0.0%	0.0%
Annual	8336	94.9%	3.2	51.9	19.2	0	42.4%	31.3%	24.1%	1.8%	0.2%	0.2%

Table I-9 Weyburn Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Total Precip.	Maximum 1-Hr Precip.	Maximum 24-Hr Precip.	Percent of Data in each Precipitation Range					
	(no.)	(%)	(mm)	(mm)	(mm)	<=5	5 ~ 10	10 ~ 25	25 ~ 50	50 ~ 75	>75
January	744	100.0%	1.6	0.7	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
February	696	100.0%	16.7	3.0	6.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
March	744	100.0%	9.6	3.8	4.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
April	660	91.7%	61.7	12.4	40.2	99.4%	0.5%	0.2%	0.0%	0.0%	0.0%
May	418	56.2%	69.1	4.5	37.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
June	720	100.0%	114.1	13.5	15.5	98.8%	1.0%	0.3%	0.0%	0.0%	0.0%
July	739	99.3%	77.9	15.5	23.1	99.5%	0.4%	0.1%	0.0%	0.0%	0.0%
August	742	99.7%	23.2	4.1	4.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
September	717	99.6%	66.8	8.6	23.8	99.4%	0.6%	0.0%	0.0%	0.0%	0.0%
October	742	99.7%	59.2	9.7	27.3	99.7%	0.3%	0.0%	0.0%	0.0%	0.0%
November	718	99.7%	2.3	0.6	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
December	744	100.0%	3.7	2.0	2.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual	8384	95.4%	505.9	15.5	40.2	99.7%	0.2%	0.0%	0.0%	0.0%	0.0%

Table I-10 Weyburn Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average Temp.	Minimum 1-Hr Temp.	Maximum 1-Hr Temp.	Percent of Data in each Temperature Range					
	(no.)	(%)	(˚C)	(˚C)	(˚C)	<=-30	-30 ~ -15	-15 ~ 0	0 ~ 15	15 ~ 30	>30
January	744	100.0%	(10.4)	(34.3)	4.6	1.1%	24.5%	63.8%	10.6%	0.0%	0.0%
February	696	100.0%	(3.8)	(20.8)	12.7	0.0%	2.4%	75.4%	22.1%	0.0%	0.0%
March	744	100.0%	0.5	(13.9)	16.4	0.0%	0.0%	54.2%	44.6%	1.2%	0.0%
April	660	91.7%	5.2	(12.5)	23.4	0.0%	0.0%	19.4%	72.7%	7.9%	0.0%
May	418	56.2%	14.3	1.0	27.8	0.0%	0.0%	0.0%	60.5%	39.5%	0.0%
June	720	100.0%	17.6	4.6	31.0	0.0%	0.0%	0.0%	35.1%	64.3%	0.6%
July	739	99.3%	18.9	8.1	32.5	0.0%	0.0%	0.0%	26.3%	72.3%	1.5%
August	742	99.7%	18.3	5.6	35.3	0.0%	0.0%	0.0%	37.3%	59.3%	3.4%
September	717	99.6%	13.0	(1.6)	33.9	0.0%	0.0%	0.6%	66.0%	31.8%	1.7%
October	742	99.7%	5.0	(6.7)	22.0	0.0%	0.0%	16.4%	79.0%	4.6%	0.0%
November	718	99.7%	2.3	(12.9)	22.8	0.0%	0.0%	44.7%	50.3%	5.0%	0.0%
December	744	100.0%	(13.5)	(33.8)	1.1	2.8%	45.0%	50.9%	1.2%	0.0%	0.0%
Annual	8384	95.4%	5.3	(34.3)	35.3	0.3%	6.4%	28.1%	41.2%	23.4%	0.6%

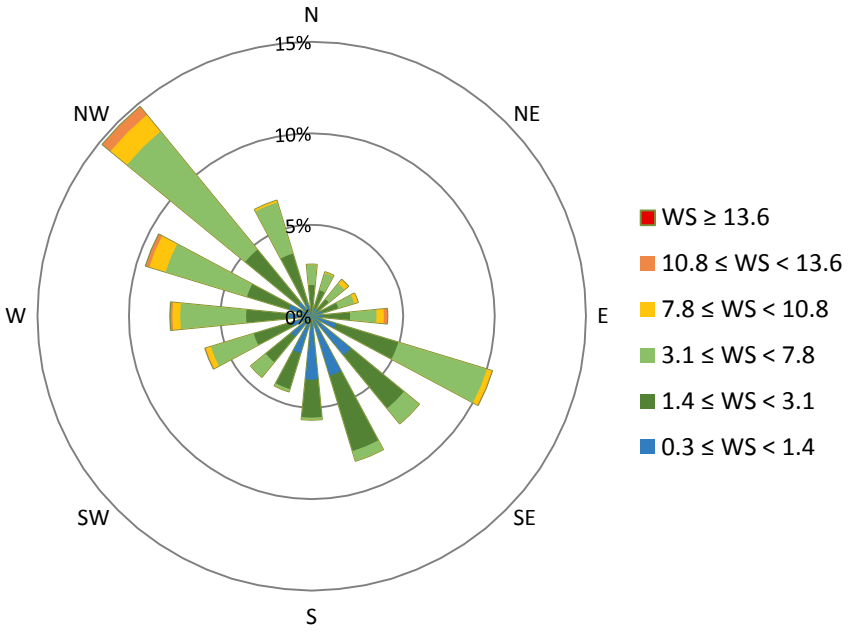
Table I-11 Weyburn Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2016

Month	Valid 1-Hr data	Operational Time	Average RH	Minimum 1-Hr RH	Maximum 1-Hr RH	Percent of Data in each Relative Humidity Range					
	(no.)	(%)	(%)	(%)	(%)	<=15	15 ~ 30	30 ~ 60	60 ~ 80	80 ~ 90	>90
January	744	100.0%	75	55	86	0.0%	0.0%	1.7%	72.2%	26.1%	0.0%
February	696	100.0%	75	37	90	0.0%	0.0%	11.2%	55.9%	32.9%	0.0%
March	744	100.0%	68	23	88	0.0%	2.3%	23.8%	48.1%	25.8%	0.0%
April	660	91.7%	56	15	89	0.0%	11.2%	46.2%	27.1%	15.5%	0.0%
May	418	56.2%	60	19	91	0.0%	15.3%	31.3%	25.8%	25.6%	1.9%
June	720	100.0%	65	26	90	0.0%	1.5%	37.8%	34.7%	25.3%	0.7%
July	739	99.3%	71	28	92	0.0%	0.3%	28.0%	27.2%	39.1%	5.4%
August	742	99.7%	61	13	91	0.4%	9.0%	35.6%	30.1%	22.2%	2.7%
September	717	99.6%	64	20	92	0.0%	6.8%	33.5%	28.7%	26.8%	4.2%
October	742	99.7%	77	32	91	0.0%	0.0%	11.9%	34.9%	50.5%	2.7%
November	718	99.7%	72	25	88	0.0%	0.4%	17.7%	45.1%	36.8%	0.0%
December	744	100.0%	73	55	87	0.0%	0.0%	1.1%	81.2%	17.7%	0.0%
Annual	8384	95.4%	68	13	92	0.0%	3.4%	22.8%	43.4%	28.9%	1.5%

Table I-12 Weyburn Station: Airpointer Wind Frequency Table for the Year 2016

Wind Direction Sector	Percent Data in each Wind Speed Range, wind speed unit m/s						
	0.3 ≤ WS < 1.4	1.4 ≤ WS < 3.1	3.1 ≤ WS < 7.8	7.8 ≤ WS < 10.8	10.8 ≤ WS < 13.6	WS ≥ 13.6	Totals
North Northeast	0.4%	1.0%	1.0%	0.0%	0.0%	0.0%	2.5%
Northeast	0.4%	0.8%	1.1%	0.3%	0.0%	0.0%	2.6%
East Northeast	0.6%	0.9%	0.9%	0.2%	0.0%	0.0%	2.6%
East	0.6%	1.5%	1.4%	0.4%	0.2%	0.0%	4.1%
East Southeast	1.4%	3.6%	5.1%	0.3%	0.0%	0.0%	10.3%
Southeast	2.8%	3.8%	1.1%	0.0%	0.0%	0.0%	7.6%
South Southeast	3.4%	4.3%	0.6%	0.0%	0.0%	0.0%	8.3%
South	3.5%	2.1%	0.1%	0.0%	0.0%	0.0%	5.7%
South Southwest	2.1%	2.0%	0.1%	0.0%	0.0%	0.0%	4.3%
Southwest	1.4%	1.8%	1.0%	0.0%	0.0%	0.0%	4.3%
West Southwest	1.2%	2.2%	2.4%	0.3%	0.0%	0.0%	6.1%
West	1.3%	2.3%	3.6%	0.4%	0.1%	0.0%	7.7%
West Northwest	1.3%	2.4%	4.7%	0.9%	0.2%	0.0%	9.5%
Northwest	1.0%	3.7%	8.4%	1.2%	0.6%	0.0%	14.8%
North Northwest	0.8%	2.8%	2.9%	0.1%	0.0%	0.0%	6.6%
North	0.4%	1.3%	1.1%	0.0%	0.0%	0.0%	2.8%
Total	22.6%	36.4%	35.6%	4.1%	1.1%	0.0%	99.8%

Percent Calm (<0.3 m/s)	0.2%
Number of Valid Hourly-Average Data	8384
Total Workable Hours in Time Period	8784



APPENDIX J SESAA EXCEEDANCE SUMMARY

Table J-1 Esterhazy Station: Summary of Exceedances for 24-hour SAAQS for the Year 2016

24-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event					
Pollutant	Conc.	Exceedance Day	WS	WD	AQHI	Rain	NO_2	O_3
		dd-mmm-yy	m/s	deg	-	mm	ppb	ppb
$PM_{2.5}$	28.7	30-Aug-16	1.1	132.9	2.7	-	1.0	24.9

Table J-2 Glen Ewen Station: Summary of Exceedances for 1-hour SAAQS for the Year 2016

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event							
Pollutant	Conc.	Exceedance Time	WS	WD	AQI	Rain	SO_2	NO_2	O_3	$PM_{2.5}$
		dd-mmm-yy hh:mm	m/s	deg	-	mm	ppb	ppb	ppb	µg/m3
H_2S	11.5	29-Jul-16 05:00	0.5	179.6	1.1	-	0.7	1.8	1.6	-

Table J-3 Oxbow Station: Summary of Exceedances for 1-hour SAAQS for the Year 2016

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event						
Pollutant	Conc.	Exceedance Time	WS	WD	AQI	Rain	SO_2	NO_2	$PM_{2.5}$
		dd-mmm-yy hh:mm	m/s	deg	-	mm	ppb	ppb	µg/m^3
H_2S	17.3	25-Aug-16 21:00	0.5	83.6	19.9	-	1.4	1.1	15.1
H_2S	13.2	25-Aug-16 22:00	0.7	105.5	15.5	-	1.4	1.7	12.3

Table J-4 Stoughton Station: Summary of Exceedances for 1-hour SAAQS for the Year 2016

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event						
Pollutant	Conc.	Exceedance Time dd-mmm-yy hh:mm	WS m/s	WD deg	AQI -	Rain mm	SO_2 ppb	NO_2 ppb	$PM_{2.5}$ µg/m^3
H_2S	11.1	16-Aug-16 01:00	0.5	261.2	11.1	-	0.5	6.0	8.9
H_2S	11.9	16-Aug-16 02:00	0.4	291.5	13.9	-	0.5	5.7	11.1

Table J-5 Wauchope Station: Summary of Exceedances for 1-hour SAAQS for the Year 2016

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event						
Pollutant	Conc.	Exceedance Time dd-mmm-yy hh:mm	WS m/s	WD deg	Rain mm	SO_2 ppb	NO_2 ppb	O_3 ppb	$PM_{2.5}$ µg/m^3
H_2S	13.4	17-May-16 00:00	0.6	6.0	-	-	-	-	46.2
H_2S	14.9	17-May-16 01:00	0.5	347.8	-	-	-	-	38.1
H_2S	20.1	17-May-16 02:00	0.6	358.8	-	-	-	-	27.3
H_2S	16.0	17-May-16 03:00	0.7	23.9	-	-	-	-	24.5
H_2S	11.7	17-May-16 04:00	0.3	213.5	-	-	-	-	19.3
H_2S	22.5	17-May-16 05:00	0.4	356.7	-	-	-	-	15.8
H_2S	11.1	17-May-16 06:00	0.4	104.2	-	-	-	-	13.8
H_2S	11.3	23-May-16 01:00	1.4	254.0	-	-	-	-	35.8
H_2S	13.3	24-May-16 03:00	0.8	267.7	-	-	-	-	6.1
H_2S	14.2	24-May-16 04:00	0.5	178.1	-	-	-	-	6.4
H_2S	13.4	25-May-16 00:00	0.5	9.9	-	-	-	-	32.0
H_2S	13.5	25-May-16 01:00	0.8	17.1	-	-	-	-	26.2
H_2S	14.5	30-May-16 00:00	0.5	347.4	-	-	-	-	10.0
H_2S	15.1	30-May-16 01:00	1.0	224.7	-	-	-	-	9.9
H_2S	14.8	30-May-16 02:00	0.5	260.9	-	-	-	-	9.9
H_2S	22.7	30-May-16 03:00	0.5	350.7	-	-	-	-	8.9

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event						
Pollutant	Conc.	Exceedance Time dd-mmm-yy hh:mm	WS m/s	WD deg	Rain mm	SO_2 ppb	NO_2 ppb	O_3 ppb	$PM_{2.5}$ µg/m^3
H_2S	26.6	30-May-16 04:00	0.6	358.3	-	-	-	-	8.9
H_2S	23.5	30-May-16 05:00	0.4	356.8	-	-	-	-	8.9
H_2S	16.0	6-Jul-16 02:00	0.6	318.5	-	(0.0)	-	-	6.5
H_2S	12.2	6-Jul-16 03:00	0.4	245.5	-	0.0	-	-	7.0
H_2S	23.0	6-Jul-16 04:00	0.5	336.4	-	(0.1)	-	-	6.6
H_2S	21.6	6-Jul-16 05:00	0.5	17.8	-	(0.0)	-	-	4.3
H_2S	13.6	6-Jul-16 06:00	0.4	80.2	-	0.1	-	-	5.7
H_2S	11.8	8-Jul-16 01:00	0.4	6.3	-	-	-	-	12.6
H_2S	16.1	25-Jul-16 03:00	0.5	1.5	-	0.0	-	-	-
H_2S	16.1	25-Jul-16 04:00	0.5	48.1	-	0.2	-	-	-
H_2S	20.4	25-Jul-16 05:00	0.7	4.4	-	0.1	-	-	-
H_2S	15.2	25-Jul-16 06:00	0.8	10.2	0.0	0.2	-	-	-
H_2S	11.5	28-Jul-16 02:00	0.6	4.1	-	0.0	-	-	6.7
H_2S	14.5	28-Jul-16 03:00	0.7	11.3	-	-	-	-	5.3
H_2S	16.9	28-Jul-16 04:00	0.6	8.0	-	0.1	-	-	6.0
H_2S	18.2	28-Jul-16 05:00	0.8	10.2	-	0.1	-	-	5.0
H_2S	16.7	28-Jul-16 06:00	0.4	14.0	-	0.2	-	-	6.0
H_2S	13.7	29-Jul-16 04:00	0.3	351.7	-	0.1	-	-	6.8
H_2S	23.8	29-Jul-16 05:00	0.3	103.6	-	0.1	-	-	6.1
H_2S	17.4	29-Jul-16 06:00	0.6	343.2	-	0.2	-	-	6.4
H_2S	17.2	17-Aug-16 04:00	0.2	15.4	-	0.2	-	-	14.5
H_2S	17.7	17-Aug-16 05:00	0.4	78.7	-	0.2	-	-	13.5
H_2S	17.5	20-Aug-16 05:00	1.0	344.0	-	0.0	-	-	3.3
H_2S	13.1	20-Aug-16 06:00	1.3	327.2	-	0.1	-	-	3.4
H_2S	12.0	3-Sep-16 20:00	0.8	245.1	-	0.3	-	-	5.5

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event						
Pollutant	Conc.	Exceedance Time	WS	WD	Rain	SO_2	NO_2	O_3	$PM_{2.5}$
		dd-mmm-yy hh:mm	m/s	deg	mm	ppb	ppb	ppb	µg/m^3
H_2S	14.5	4-Sep-16 02:00	0.5	357.9	-	0.1	-	-	6.0
H_2S	23.6	4-Sep-16 03:00	1.1	336.4	-	0.1	-	-	5.6
H_2S	14.7	17-Sep-16 03:00	0.4	349.8	-	0.0	-	-	17.5
H_2S	12.2	17-Sep-16 04:00	0.6	7.6	-	0.0	-	-	14.6
H_2S	13.3	17-Sep-16 05:00	0.5	7.3	-	0.1	-	-	13.1
H_2S	12.1	17-Sep-16 06:00	0.3	35.0	-	(0.0)	-	-	11.6

Table J-6 Wauchope Station: Summary of Exceedances for 24-hour SAAQS for the Year 2016

24-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event					
Pollutant	Conc.	Exceedance Day	WS	WD	Rain	SO_2	H_2S	$PM_{2.5}$
		dd-mmm-yy	m/s	deg	mm	ppb	ppb	µg/m^3
H_2S	6.6	17-May-16	1.5	187.0	-	-	6.6	23.1
H_2S	3.9	24-May-16	1.9	219.5	0.0	-	3.9	8.6
H_2S	6.1	30-May-16	2.4	259.1	4.9	-	6.1	7.4
H_2S	5.3	06-Jul-16	1.4	177.8	0.0	0.2	5.3	5.6
H_2S	4.1	25-Jul-16	1.0	120.9	0.0	0.4	4.1	7.4
H_2S	4.9	28-Jul-16	0.8	112.0	-	0.4	4.9	6.1
H_2S	4.5	29-Jul-16	0.9	190.5	0.0	0.3	4.5	8.4
H_2S	3.7	17-Aug-16	1.8	171.5	0.3	1.0	3.7	14.1
H_2S	3.9	17-Sep-16	1.8	182.2	-	0.5	3.9	12.6

Table J-7 Wawota Station: Summary of Exceedances for 24-hour SAAQS for the Year 2016

24-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event					
Pollutant	Conc.	Exceedance Day	WS	WD	AQHI	Rain	NO_2	O_3
		dd-mmm-yy	m/s	deg	-	mm	ppb	ppb
$PM_{2.5}$	32.7	08-May-16	7.9	168.8	4.4	-	2.4	50.3

Table J-8 Weyburn Station: Summary of Exceedances for 1-hour SAAQS for the Year 2016

1-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event								
Pollutant	Conc.	Exceedance Time	WS	WD	AQHI	Rain	SO_2	NO_2	O_3	H_2S	$PM_{2.5}$
		dd-mmm-yy hh:mm	m/s	deg	-	mm	ppb	ppb	ppb	ppb	µg/m^3
H_2S	25.9	3-Jan-16 07:00	1.7	136.0	1.3	-	4.3	1.9	20.2	25.9	1.2
H_2S	31.3	4-Jan-16 04:00	1.7	129.0	1.6	-	1.8	6.5	17.2	31.3	2.8
H_2S	22.5	18-Jan-16 03:00	1.6	147.4	1.5	-	6.3	1.0	26.9	22.5	0.3
H_2S	17.7	28-Jan-16 07:00	1.6	144.8	1.3	-	1.0	3.8	18.7	17.7	1.1
H_2S	26.6	14-Mar-16 02:00	1.2	162.1	0.9	-	3.4	0.6	16.2	26.6	0.8
H_2S	11.7	3-Apr-16 21:00	0.8	137.3	1.1	-	0.6	1.7	16.7	11.7	1.3
H_2S	13.8	11-Sep-16 00:00	0.8	142.0	0.6	-	1.7	1.8	7.4	13.8	2.1
H_2S	22.5	11-Sep-16 01:00	1.2	129.7	0.6	-	2.9	1.7	6.7	22.5	2.2
H_2S	11.8	15-Dec-16 07:00	1.5	152.4	1.6	-	1.8	1.8	27.7	11.8	0.7
H_2S	17.1	15-Dec-16 09:00	1.5	162.5	1.6	-	0.8	3.9	24.6	17.1	0.8
H_2S	15.1	15-Dec-16 10:00	1.1	150.3	1.7	-	1.4	4.6	24.0	15.1	1.3
H_2S	12.8	15-Dec-16 11:00	1.6	151.0	1.8	-	4.4	4.8	25.1	12.8	2.0

Table J-9 Weyburn Station: Summary of Exceedances for 24-hour SAAQS for the Year 2016

24-Hour Exceedance Pollutant			Other Parameters During the Exceedance Event							
Pollutant	Conc.	Exceedance Day	WS	WD	AQHI	Rain	SO_2	NO_2	O_3	$PM_{2.5}$
		dd-mmm-yy	m/s	deg	-	mm	ppb	ppb	ppb	$\mu g/m^3$
H_2S	3.9	15-Dec-16	2.0	211.9	1.8	-	1.9	3.1	27.7	1.4

APPENDIX K 2016 FINANCIAL STATEMENTS

Southeast Saskatchewan Airshed Association Inc.

Financial Statements

December 31, 2016

Management's Responsibility

To the Members of Southeast Saskatchewan Airshed Association Inc.:

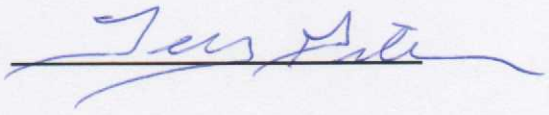
Management is responsible for the preparation and presentation of the accompanying financial statements, including responsibility for significant accounting judgments and estimates in accordance with Canadian accounting standards for not-for-profit organizations. This responsibility includes selecting appropriate accounting principles and methods, and making decisions affecting the measurement of transactions in which objective judgment is required.

In discharging its responsibilities for the integrity and fairness of the financial statements, management designs and maintains the necessary accounting systems and related internal controls to provide reasonable assurance that transactions are authorized, assets are safeguarded and financial records are properly maintained to provide reliable information for the preparation of financial statements.

The Board of Directors is composed entirely of Directors who are neither management nor employees of the Organization. The Board is responsible for overseeing management in the performance of its financial reporting responsibilities and for approving the financial information. The Board fulfils these responsibilities by reviewing the financial information prepared by management and discussing relevant matters with management and external auditors.

MNP LLP is appointed by the directors to audit the financial statements and report directly to them; their report follows. The external auditors have full and free access to, and may meet periodically and separately with, both the Board and management to discuss their audit findings.

April 10, 2017



Independent Auditors' Report

To the Members of Southeast Saskatchewan Airshed Association Inc.:

We have audited the accompanying financial statements of Southeast Saskatchewan Airshed Association Inc. which comprise the statement of financial position as at December 31, 2016 and the statements of revenue and expenses and changes in net assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained in our audit is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Southeast Saskatchewan Airshed Association Inc. as at December 31, 2016 and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Estevan, Saskatchewan

April 10, 2017

MNP LLP

Chartered Professional Accountants

Southeast Saskatchewan Airshed Association Inc.

Statement of Financial Position

As at December 31, 2016

	2016	2015
Assets		
Current		
Cash	**97,436**	101,993
Marketable securities *(Note 3)*	**100,000**	-
Prepaid expenses and deposits	**3,775**	3,987
	201,211	105,980
Capital assets *(Note 4)*	**380,242**	475,303
	581,453	581,283
Liabilities		
Current		
Accounts payable and accruals	**27,225**	27,281
Current portion deferred contributions *(Note 5)*	**70,900**	70,900
Government remittances payable	**5,596**	2,631
	103,721	100,812
Deferred contributions *(Note 5)*	**66,350**	137,250
	170,071	238,062
Net Assets		
Unrestricted net assets	**411,382**	343,221
	581,453	581,283

Approved on behalf of the Board of Directors

The accompanying notes are an integral part of these financial statements

Southeast Saskatchewan Airshed Association Inc.
Statement of Revenue and Expenses and Changes in Net Assets
For the year ended December 31, 2016

	2016	*2015*
Revenue		
Membership fees	**270,408**	290,278
Amortization of deferred contributions *(Note 5)*	**70,900**	70,900
	341,308	361,178
Expenses		
Advertising	**1,500**	3,704
Air monitoring	**88,246**	112,014
Amortization	**95,061**	118,826
Bank charges	**112**	135
Insurance	**9,271**	12,174
Licences and fees	**-**	246
Management fees	**50,760**	53,690
Meetings	**662**	749
Office and data collection	**5,312**	5,740
Professional fees	**6,917**	7,880
Repairs and maintenance	**14,071**	69,924
Travel	**1,235**	1,565
	273,147	386,647
Excess (deficiency) of revenue over expenses	**68,161**	(25,469)
Net assets, beginning of year	**343,221**	368,690
Net assets, end of year	**411,382**	343,221

The accompanying notes are an integral part of these financial statements

Southeast Saskatchewan Airshed Association Inc.

Statement of Cash Flows

For the year ended December 31, 2016

	2016	*2015*
Cash provided by (used for) the following activities:		
Operating		
Cash receipts from membership fees	**270,408**	290,278
Cash paid to suppliers	**(174,965)**	(253,188)
	95,443	37,090
Investing		
Purchase of marketable securities	**(100,000)**	-
(Decrease) increase in cash resources	**(4,557)**	37,090
Cash resources, beginning of year	**101,993**	64,903
Cash resources, end of year	**97,436**	101,993

The accompanying notes are an integral part of these financial statements

1. Incorporation and nature of the organization

Southeast Saskatchewan Airshed Association Inc. (the "Organization") was incorporated under The Non-Profit Corporations Act, 1995 on October 7, 2005, and is exempt from income taxes. In order to maintain its status as a not-for-profit organization under the Act, the Organization must meet certain requirements within the Act. In the opinion of management these requirements have been met.

The Organization collects and monitors ambient air quality data in Southeast Saskatchewan and makes this data available to all members.

2. Significant accounting policies

The financial statements have been prepared in accordance with Canadian accounting standards for Not-for-profit organizations as issued by the Accounting Standards Board in Canada and include the following significant accounting policies:

Cash and cash equivalents

Cash and cash equivalents include balances with banks and short-term investments with maturities of three months or less.

Marketable securities

Marketable securities with prices quoted in an active market are measured at fair value while those that are not quoted in an active market are measured at cost less impairment.

Equipment

Purchased capital assets are recorded at cost. Contributed capital assets are recorded at fair value at the date of contribution if fair value can be reasonably determined.

Amortization is provided using the declining balance method at rates intended to amortize the cost of assets over their estimated useful lives.

	Rate
Equipment	20 %

Revenue recognition

The Organization follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred. Unrestricted contributions are recognized as revenue when received. Membership fees are recognized when received.

Financial instruments

The Organization recognizes its financial instruments when the Organization becomes party to the contractual provisions of the financial instrument. All financial instruments are initially recorded at their fair value, including financial assets and liabilities originated and issued in a related party transaction with management.

At initial recognition, the Organization may irrevocably elect to subsequently measure any financial instrument at fair value. The Organization has not made such an election during the year. All financial assets and liabilities are subsequently measured at amortized cost.

Transaction costs and financing fees are added to the carrying amount for those financial instruments subsequently measured at amortized cost or cost.

2. Significant accounting policies *(Continued from previous page)*

Financial asset impairment

The Organization assesses impairment of all of its financial assets measured at cost or amortized cost. The Organization groups assets for impairment testing when available information is not sufficient to permit identification of each individually impaired financial asset in the group. When there is an indication of impairment, the Organization determines whether it has resulted in a significant adverse change in the expected timing or amount of future cash flows during the year. If so, the Organization reduces the carrying amount of any impaired financial assets to the highest of: the present value of cash flows expected to be generated by holding the assets; the amount that could be realized by selling the assets; and the amount expected to be realized by exercising any rights to collateral held against those assets. Any impairment, which is not considered temporary, is included in current year excess of revenue over expenses.

The Organization reverses impairment losses on financial assets when there is a decrease in impairment and the decrease can be objectively related to an event occurring after the impairment loss was recognized. The amount of the reversal is recognized in the excess of revenue over expenses in the year the reversal occurs.

Measurement uncertainty

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period.

Amortization is based on the estimated useful lives of equipment.

These estimates and assumptions are reviewed periodically and, as adjustments become necessary they are reported in excess of revenue over expenses in the periods in which they become known.

Long-lived assets

Long-lived assets consist of equipment. Long-lived assets held (or used) are measured and amortized as described in the applicable accounting policies.

When the Organization determines that a long-lived asset no longer has any long-term service potential to the Organization, the excess of its net carrying amount over any residual value is recognized as an expense in the statement of revenue and expenses. Write-downs are not reversed.

3. Marketable securities

	2016	*2015*
Measured at cost:		
CIBC GIC	**100,000**	-

The GIC was issued December 16, 2016 and matures December 18, 2017, bearing interest at 1.25% per annum.

4. Capital assets

	Cost	***Accumulated amortization***	***2016 Net book value***	*2015 Net book value*
Equipment	**837,840**	**457,598**	**380,242**	475,303

5. Deferred contributions

Deferred capital contributions consist of the unamortized amount of contributions received for the purchase of equipment. Recognition of these amounts as revenue is deferred to periods when the related equipment are amortized. Changes in deferred capital contributions are as follows:

	2016	*2015*
Balance, beginning of year	**208,150**	279,049
Less: Amount recognized as revenue during the year	**(70,900)**	(70,899)
Balance, end of year	**137,250**	208,150
Less: current portion	**70,900**	70,900
Balance, end of year	**66,350**	137,250

6. Financial instruments

The Organization, as part of its operations, carries a number of financial instruments. It is management's opinion that the Organization is not exposed to significant interest, currency, credit, liquidity or other price risks arising from these financial instruments except otherwise disclosed.

Liquidity risk

Liquidity risk is the risk that the Organization will encounter difficulty in meeting obligations associated with financial liabilities. The Organization's exposure to liquidity risk is dependent on the collection of membership fee revenue and obligations to sustain operations.

7. Related party transactions

The Organization has entered into a contract agreement for management services with Terry Gibson Consulting Inc., expiring November 2016. The contract was renewed on December 1, 2016 and extends to December 30, 2017. The contract is based on hours required, to a maximum of $60,000. Any overage is required to be approved by the Board of Directors. Included in expenses for the current year are $50,760 (2015 - $53,690) of management fees. The expenses were incurred in the normal course of operations and measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

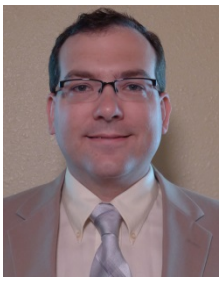
8. Commitment

The entity has the following commitment for operations:

Equipment maintenance	
2017	$33,309

APPENDIX L BOARD OF DIRECTORS AND ALTERNATES

Holland Thompson Board Chair, Mosaic Potash Esterhazy



Holland Thompson grew up in rural Minnesota and attended Florida Institute of Technology, graduating in 1996 with a BS in Chemical Engineering. He has 18 years of environmental experience in various industries, including waste management, printed circuit board manufacturing, phosphate fertilizer manufacturing and potash mining. Holland has held various roles with Mosaic for the past 7 years and relocated from Florida to Esterhazy, SK in 2012 to assume his current position of Environmental Manager for Mosaic's Esterhazy facilities.

Rae Lynn Crooks Cenovus Energy

Board Chair, SESAA

Rae Lynn Crooks is an Environmental and Regulatory Advisor with Cenovus Energy. Her focus main is environmental liability reduction with respect to reclamation and remediation in southern Saskatchewan.

Debbie Nielsen Vice Chair (Director, Environment, SaskPower)

Ms. Nielsen has worked with SaskPower in a variety of capacities dealing with environmental issues and programs for the past 22 years. In her current capacity she manages SaskPower's corporate environmental department which provides technical, analytical, environmental and regulatory decision-making support to the company's business units and support groups.

Engaging with key environmental stakeholders to develop a better understanding of issues is also a key responsibility of her position. She is a strong believer that by working in collaborative partnerships such as the airshed association, more sustainable outcomes can be achieved.

Alternate: Imran Maqsood

Darlene Sakires Secretary Treasurer, Canadian Natural Resources Limited

Ms. Sakires is an Environmental Coordinator who is responsible for CNRL's Environmental Management Plan and Environmental Operating Guidelines. She manages site decommissioning and remediation projects across the prairies, ensuring compliance with environmental regulatory requirements in all aspects of the company's operations. She is active on a variety of committees, including the Saskatchewan Petroleum Industry Government Environmental Committee and the Saskatchewan Environmental Managers Association.

Alternate: John Hutt

Dean Pylypuk Saskatchewan Ministry of the Economy

Dean Pylypuk is the Regional Manager for Area 4 with the Ministry of the Economy. Dean began his career in the oil and gas industry in 1972 working throughout Western Canada and the Arctic Islands. In 1980 the Pylypuk family moved overseas where Dean was employed as a Rig Manager with Kenting Drilling UK. Returning to Canada, Dean joined the Petroleum Development Branch of the then Department of Energy and Mines in July of 1984 and has been head quartered in Estevan from that time to present. A graduate of the University of Regina Extension Program, Mr. Pylypuk has two certificates in Administration and has been a member of Saskatchewan Applied Science Technologists and Technicians since 1987.

Alternate: Todd Han

Mr. Todd Han is a senior consultant with Matrix Solutions Inc. specializing in Oil and Gas Operation Environmental Regulatory Management Systems, Liability Management and Contaminated Sites Remediation. Mr. Todd Han has over 24 years of experience in developing and delivering environmental protection and public safety programs as a regulator while working for the Saskatchewan Government, including: Well and Facility Licensing; Orphan Wells and Facilities Liability Management; Upstream Air Contaminant Emission Management; Flaring and Venting Emission Reduction; Spill Response and Clean-up; Contaminated Sites Remediation and Reclamation; Upstream Waste Management; Well Abandonment; and Field Inspections and Enforcement.

Gerald Knibbs Councillor, Rural Municipality of Tecumseh Number 65

Mr. Knibbs is an organic grain farmer near Stoughton. He currently serves as a counsellor for the R.M. of Tecumsch. He and his wife Dawn were born and raised in the area and are currently raising their family in their community. Air and water quality are important issues now and in the future

---

Brian Johnson Councillor, City of Estevan

Brian has served as an Estevan City Councillor for the past 12 years and recently re-elected for another term. He presently works at SaskPower at BDPS as a Electrical Supervisor, he has been working with this Crown Corporation for 36 years now.

Kristin Waroma Health Representative

Kristin Waroma is the Senior Public Health Inspector for Sun Country Health Region based in the Weyburn office. She has been working in public health since 2008. Her health inspector duties include water, wastewater, food safety, communicable disease control, recreational water, land use reviews, tobacco control, indoor and outdoor air quality and many other programs. She enjoys the challenges of working in busy Southeastern Saskatchewan.

Neil Hungle EHSS Senior Manager

Mr. Hungle was born & raised in rural Saskatchewan (Dilke), Neil has a BaSc Degree from University of Regina (Industrial Systems Engineering). He started career in 1999 and joined Mosaic Potash in 2005. Started at Belle Plaine as a maintenance engineer, Production Supt & maintenance Supt. (8 years), transferred to Colonsay for 2 1/2 years as the maintenance Supt. Currently working in Esterhazy as the EHSS Senior Manager for K1, K2 & Inflow.

Terry Gibson Executive Director

Mr. Gibson brings more than 30 years of Public Health/Environmental Health experience to the position. He has held the positions of President of the Saskatchewan Public Health Association and Vice-Chair of the Saskatchewan Epidemiology Association. He teaches Public Health Protection at the University of Saskatchewan Master of Public Health Program and has served on many provincial and national boards and committees. Terry is committed to working with industry and regulators in a consensus decision making process to ensure that the health of the environment of south east Saskatchewan is always protected.

APPENDIX M SESAA MEMBER COMPANIES

- 101033165 Saskatchewan Ltd.
- 618555 Saskatchewan Ltd. TDL Petroleum
- Abenteuer Resources Corp.
- Admiralty Oils
- Advantage Oil and Gas
- Aldon Oils
- Antoinway Resources
- Apache Canada Ltd.
- ARC Resources
- Astra Pol Corp
- ATCO Energy Solutions
- AvenEx Energy
- Barracuda Energy
- Base Resources Inc.
- Baytex
- Black Rider Resources Inc.
- Bluebird Resources
- Bonterra Energy
- Border Energy Ltd
- Brown Bros. Resources
- Brownstone Resources Ltd.
- Bulldog Oil and Gas
- Burgess Creek Exploration
- Caje Holdings Ltd.
- Canada Capital Energy
- Canadian Natural Resources Limited
- Canamax
- Can Era Energy Corp.
- Caprice Resources
- Capital Energy Corp
- Cenovus Energy Inc.
- C-Group Energy
- Cheveyo Energy
- Chinook Iteration
- Clan Oil
- Coast Resources
- Condor Canada
- Conoco Phillips
- Contact Exploration
- Crescent Point Resources Partnership
- Daylight Energy
- Devon Canada Corporation
- Diaz Resources Ltd.
- EERG Energy ULC
- Elanco Exploration
- Elkhorn Resources
- Elswick Energy Ltd.
- Enermark Inc.
- Enerplus Corporation
- Enbridge Pipelines
- Fairborne Energy Ltd.
- Federated Co-op
- Firesky Energy
- Flagstone Energy
- Frank R. Lee Investments
- Freehold Royalties
- Freemantle Petroleum
- GKN Resources Ltd.
- Golden Key Oil
- Gold River Oil and Gas
- Grand Bow Petroleum Limited
- Halo Exploration
- Halvar Resources
- Harvest Operations
- Highrock Energy
- Hillsdale Drilling
- Hummingbird Energy Inc. (Virtus Group)
- Husky Oil Operations Limited
- JDM Petroleum
- Jedi Exploration & Development
- K and S Investments Ltd.
- Kenwood Resources Ltd.

- Keystone Royalty
- Kinwest 2008 Energy
- Kiwi Resources Ltd.
- Kootenay Energy
- Lakeco Holdings
- Lakeview Energy
- Legacy Oil and Gas
- Lightstream Resources Ltd.
- Long Fortune
- Longview Oil
- Magellan Resources Ltd.
- Mancal Energy Inc.
- Marquee Energy LTD
- Midale Petroleums Ltd.
- Molopo Energy
- Mosaic
- NAL Resources Limited
- Nexxtep Resources
- Noramera Bioenergy
- Novus Energy Inc.
- Nuloch Resources Inc.
- Omatius Oil & Gas Ltd.
- Oneex Operations
- Openfield Oil
- Painted Pony Petroleum
- Pemoco Ltd.
- Penn West Petroleum Ltd.
- Petrex Energy
- Petro One Energy
- Petrox Resources
- Pinecrest Energy
- Phase Energy Ltd.
- Pinto Resources
- Plains Midstream
- Postell Energy
- Potash Corp.
- Powder Mountain
- Primrose Drilling Ventures Ltd.
- Questerre Energy Corporation
- Red Beds Resources Ltd.
- Regent Resources Ltd.
- Renegade Petroleum
- Ridgeback Resources
- Rife Resources
- Runcible Oil Corp.
- Saskatchewan Environmental Industry and Managers Association SEIMA
- SaskEnergy Incorporated/TransGas Limited
- SaskPower
- Prairie Mines & Royalty ULC
- Silver Bay Resources Ltd.
- Skywest Energy
- Southern Exploration
- Spartan Energy
- Spectrum Resource Group
- Spyglass Resources
- Spyhill Rower Northland
- Steel Reef Infrastructure
- Sure Energy Inc.
- T-45 Oil Corporation
- TAQA North
- Tamarack Acquisition Corp
- TAQA North
- T. Bird Oil Ltd.
- Terra Energy
- Tetonka Resources
- Texalta Petroleum Ltd.
- TORC Oil and Gas
- TransGas/SaskEnergy
- Triwest Exploration
- Valleyview Petroleums Ltd.
- Vermillion Resources
- Villanova Resources Inc.
- Villanova 4 Oil
- Viterra Inc.
- Willbrow Resources
- Williston Hunter Canada Inc.
- Zargon Oil & Gas Ltd.