



# 2017 Annual Report



Southeast Saskatchewan  
Airshed Association

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## List of Terms and Definitions

|                   |                                                                                                            |
|-------------------|------------------------------------------------------------------------------------------------------------|
| 24-hour           | A calendar day, average is calculated midnight-to-midnight                                                 |
| 8-hour            | 8-hour running average for O <sub>3</sub> Canada-Wide Standards                                            |
| AQHI              | Air Quality Health Index                                                                                   |
| AQI               | Air Quality Index                                                                                          |
| AQMS              | Air Quality Management System                                                                              |
| CAAQS             | Canadian Ambient Air Quality Standards                                                                     |
| Calm              | 1-hour average wind speed lower than 1 km/hour                                                             |
| CCME              | Canadian Council of Ministers for the Environment                                                          |
| CO                | Carbon monoxide                                                                                            |
| H <sub>2</sub> S  | Hydrogen sulphide                                                                                          |
| NAPS              | National Air Pollution Surveillance Program                                                                |
| NO <sub>2</sub>   | Nitrogen dioxide                                                                                           |
| NO                | Nitric oxide                                                                                               |
| NO <sub>x</sub>   | Oxides of nitrogen                                                                                         |
| O <sub>3</sub>    | Ozone                                                                                                      |
| PM <sub>10</sub>  | Particulate matter with aerodynamic diameter less than 10 µm                                               |
| PM <sub>2.5</sub> | Particulate matter with aerodynamic diameter less than 2.5 µm, referred to as fine or respirable particles |
| RH                | Relative humidity                                                                                          |
| SAAQS             | Saskatchewan Ambient Air Quality Standards                                                                 |
| SO <sub>2</sub>   | Sulphur dioxide                                                                                            |
| WD                | Wind direction                                                                                             |
| WS                | Wind speed                                                                                                 |

## Units of Measurement

|                   |                                                       |
|-------------------|-------------------------------------------------------|
| m                 | meters                                                |
| m/s               | meters per second                                     |
| km/hr             | kilometers per hour                                   |
| µg/m <sup>3</sup> | micrograms per cubic meter                            |
| µm                | microns or micrometer (1/1,000,000 of a meter)        |
| ppb               | parts per billion by volume                           |
| °C                | degrees Celsius                                       |
| %                 | percent of relative humidity, instrument uptime, etc. |
| Deg               | angle of wind direction from the north                |

## MESSAGE FROM THE EXECUTIVE DIRECTOR

2017 was an excellent year for the Southeast Saskatchewan Airshed Association (SESAA) and for air quality monitoring in the south-eastern region of Saskatchewan. SESAA is very pleased to inform our members that eight (8) continuous air monitoring sites 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. In summary, SESAA now manages a continuous air monitoring network which consists of eight monitoring sites, including the new National Air Pollution Surveillance Program (NAPS) Station in the City of Estevan.

This monitoring initiative is multi-purpose, as 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 data to companies considering investment in Saskatchewan operations that show it is a safe place to invest, being that the air quality is well understood and not an impediment to growth. The credibility and strength of the continuous monitoring network is scientifically and financially sound. The continuous data is available live on the internet; it includes hourly concentrations of SO<sub>2</sub>, H<sub>2</sub>S, NO/NO<sub>2</sub>/NO<sub>x</sub>, PM<sub>2.5</sub> and O<sub>3</sub> as well as meteorological data at about two metres above the ground. The data is available on the SESAA website at [www.sesaa.ca](http://www.sesaa.ca).

After reviewing the past three years of meteorological and ambient air quality data, the SESAA Science Committee has made the decision that two of the existing monitoring stations have provided enough relevant data for those areas and can provide additional useful data if they were relocated elsewhere. The Oxbow airpointer moved from its position in October 2017 to the SaskTel tower site 3.4 kilometers due south of the community of Oxbow. The Esterhazy airpointer will be moved in the Town of Esterhazy in the spring of 2018.

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 of the names of our member companies. This communication work is very important to SESAA and to its members.

In the past three years our communication initiatives included:

- News articles in the Regina Leader Post; the Saskatoon Star Phoenix; the Weyburn Review; the Estevan Mercury; 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.
- We are reviewing our website and improving our communication abilities.

- SESAA had a booth at Saskatchewan Oil Show in June 2017 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 2019
- SESAA has reviewed its communication plan and has decided to redesign our website. It will have all of the data for each site by month since July of 2015. There will also be a feature that will allow our members and the public to search for raw data for the past 120 days. The new website will be launched the week of Clean air Day June 4 to 8, 2018.

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. Future plans include determining the need for additional air monitoring stations and the development of more communication materials.

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.

2017 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 2018. 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 School Community Council 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 (Figure 1). The eight continuous air monitoring stations measure real-time data for one or more of sulphur dioxide (SO<sub>2</sub>), hydrogen sulphide (H<sub>2</sub>S), nitrogen oxides (NO, NO<sub>2</sub>, NO<sub>x</sub>), ozone (O<sub>3</sub>), fine particulate matter (PM<sub>2.5</sub>), ambient temperature, relative humidity (RH), precipitation, wind speed (WS) and wind direction (WD).

Continuous monitoring data is available in real-time on the internet; it includes hourly concentrations of SO<sub>2</sub>, H<sub>2</sub>S, NO/NO<sub>2</sub>/NO<sub>x</sub>, PM<sub>2.5</sub> and O<sub>3</sub>, as well as meteorology data and Air Quality Index (AQI) or Air Quality Health Index (AQHI) ratings.

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-March, May, September-October, and November-December for all stations.

Changes to the monitoring network in 2017 occurred at Oxbow and Estevan. The Estevan station was converted to a NAPS station on September 22, 2017. Ongoing maintenance, calibrations and data validation will be performed by the Saskatchewan Ministry of Environment. In addition, the Estevan station now monitors Black Carbon and PM<sub>10</sub>. The Oxbow station was moved approximately 3 km south of the community of Oxbow and about 2.5 north-northeast of the original monitor position in October 2017.

The installation of continuous monitors throughout the region is helping SESAA meet its monitoring goal. Monitoring also allows 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 Ministry of Environment and Ministry of Energy and Resources (formerly Ministry of the Economy) to resolve these concerns.

The measured air quality was within the Saskatchewan Ambient Air Quality Standards (SAAQS), with the exception of H<sub>2</sub>S and PM<sub>2.5</sub>. There was a total of 123 exceedance events for 1-hour average H<sub>2</sub>S, 20 exceedance events for 24-hour average H<sub>2</sub>S, 21 exceedance events for 24-hour average PM<sub>2.5</sub>, and 3 exceedance events for 24-hour average PM<sub>10</sub>. 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 94% of the time for Air Quality Index-rated stations. Of the AQI-rated stations, Glen Ewen had the lowest proportion of Good rated days at 94.04%, while Fair days accounted for the other 5.96%. Table ES-1 summarizes the annual averages of continuous air quality data.

**Table ES-1 Annual Average Concentrations for Continuous Parameters for 2017**

| Pollutant         | Conc. Unit        | Annual Average Concentrations for Continuous Data |                   |              |              |              |              |              |              |
|-------------------|-------------------|---------------------------------------------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                   |                   | Esterhazy                                         | Estevan           | Glen Ewen    | Oxbow        | Stoughton    | Wauchope     | Wawota       | Weyburn      |
| SO <sub>2</sub>   | ppb               | <sup>a</sup>                                      | 2.1               | 1.1          | 1.2          | 0.6          | 0.5          | <sup>a</sup> | 1.3          |
| H <sub>2</sub> S  | ppb               | <sup>a</sup>                                      | <sup>a</sup>      | 0.5          | 0.7          | 0.5          | 1.0          | <sup>a</sup> | 0.7          |
| NO                | ppb               | 0.4                                               | 3.8 <sup>b</sup>  | 0.4          | 0.3          | 0.6          | <sup>a</sup> | 0.7          | 0.6          |
| NO <sub>2</sub>   | ppb               | 1.8                                               | 1.8 <sup>b</sup>  | 2.0          | 1.6          | 2.5          | <sup>a</sup> | 1.0          | 2.0          |
| NO <sub>x</sub>   | ppb               | 2.2                                               | 5.6 <sup>b</sup>  | 2.4          | 2.0          | 3.1          | <sup>a</sup> | 1.6          | 2.7          |
| O <sub>3</sub>    | ppb               | 31.2                                              | 20.1 <sup>b</sup> | 26.1         | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | 33.5         | 28.7         |
| PM <sub>2.5</sub> | µg/m <sup>3</sup> | 7.1                                               | 7.1               | <sup>a</sup> | 5.9          | 6.3          | 8.3          | 6.5          | 3.7          |
| PM <sub>10</sub>  | µg/m <sup>3</sup> | <sup>a</sup>                                      | 18.8              | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> |
| Black Carbon      | µg/m <sup>3</sup> | <sup>a</sup>                                      | 0.3               | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> | <sup>a</sup> |

<sup>a</sup> Parameter was not monitored

<sup>b</sup> Data only from September 21 to December 31



# **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.

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 donated to SESAA by SaskPower 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 (now Energy and Resources). The Estevan station was converted to a National Air Pollution Surveillance Program (NAPS) Station on September 22, 2017. Ongoing maintenance and calibrations at the Estevan station will be performed by the Ministry of Environment. In addition, the Estevan station now monitors Black Carbon and PM<sub>10</sub>.

The current SESAA membership includes members of the agriculture, oil and gas, mining and power generation sectors. The Government of Saskatchewan Ministries of Environment, Energy and Resources, 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.

## **1.2 SESAA Mission**

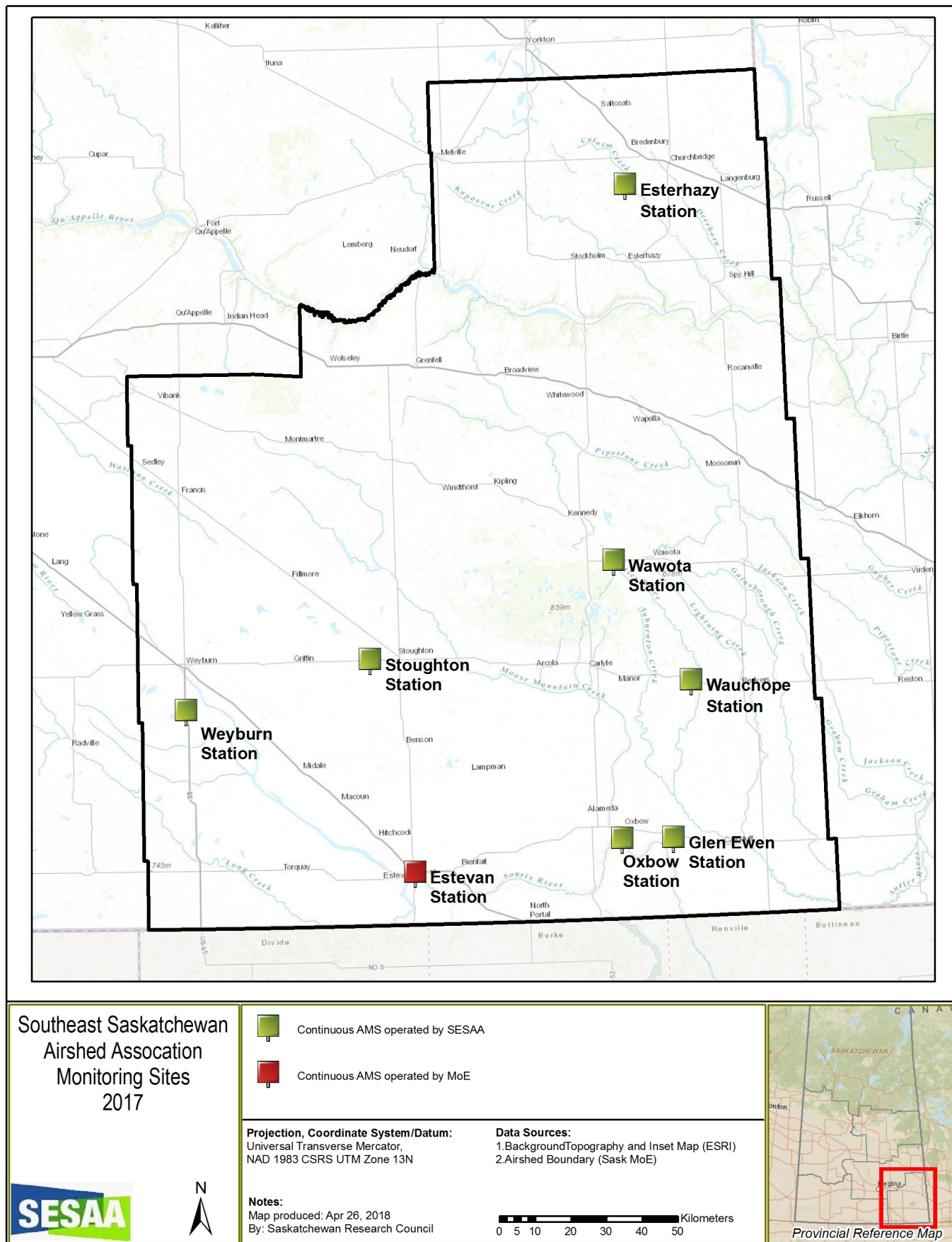
The SESAA mission is to collect credible, scientifically defensible air quality data for the southeast Saskatchewan region, and to make this data freely available to all stakeholders. Our objective is to bring together stakeholders from all backgrounds to identify regional air quality issues and to develop 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 NAPS station in Estevan. See Figure 1 for a map of the SESAA air monitoring stations. The Oxbow station was moved approximately 3 km south of the community of Oxbow and about 2.5 north-northeast of the original monitor in October 2017.

The SESAA continuous air monitoring network measures SO<sub>2</sub>, H<sub>2</sub>S, NO and NO<sub>2</sub> (collectively NO<sub>x</sub>), O<sub>3</sub>, PM<sub>2.5</sub>, ambient temperature, RH, precipitation, WS and WD. Black Carbon and PM<sub>10</sub> are also measured at the Estevan NAPS station as of September 22, 2017. Table 1 shows the parameters measured at each station. Real-time air monitoring data is available on the SESAA website at [www.sesaa.ca](http://www.sesaa.ca) (Reference 1). Please note, meteorological monitors at the SESAA stations 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 <sub>2</sub>     |           | ✓              | ✓         | ✓     | ✓         | ✓        |        | ✓       |
| H <sub>2</sub> S    |           |                | ✓         | ✓     | ✓         | ✓        |        | ✓       |
| NO                  | ✓         | ✓              | ✓         | ✓     | ✓         |          | ✓      | ✓       |
| NO <sub>2</sub>     | ✓         | ✓              | ✓         | ✓     | ✓         |          | ✓      | ✓       |
| NO <sub>x</sub>     | ✓         | ✓              | ✓         | ✓     | ✓         |          | ✓      | ✓       |
| O <sub>3</sub>      | ✓         | ✓ <sup>a</sup> | ✓         |       |           |          | ✓      | ✓       |
| PM <sub>2.5</sub>   | ✓         | ✓              |           | ✓     | ✓         | ✓        | ✓      | ✓       |
| PM <sub>10</sub>    |           | ✓ <sup>a</sup> |           |       |           |          |        |         |
| Black Carbon        |           | ✓ <sup>a</sup> |           |       |           |          |        |         |
| Ambient Temperature | ✓         | ✓              | ✓         | ✓     | ✓         | ✓        | ✓      | ✓       |
| Relative Humidity   | ✓         |                | ✓         | ✓     | ✓         | ✓        | ✓      | ✓       |
| Precipitation       | ✓         |                | ✓         | ✓     | ✓         | ✓        | ✓      | ✓       |
| Wind Speed          | ✓         | ✓              | ✓         | ✓     | ✓         | ✓        | ✓      | ✓       |
| Wind Direction      | ✓         | ✓              | ✓         | ✓     | ✓         | ✓        | ✓      | ✓       |

<sup>a</sup> O<sub>3</sub>, PM<sub>10</sub> and black carbon monitoring at Estevan began when it was converted to a NAPS station on September 22, 2017

## 2 AIR QUALITY MONITORING

### 2.1 Exceedances above the Saskatchewan Ambient Air Quality Standards

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 (Reference 2) and the number of exceedances recorded in 2017. A total of 123 exceedance events over a total of 45 days occurred for 1-hour average H<sub>2</sub>S, 20 exceedance events over 19 days for 24-hour average H<sub>2</sub>S, 21 exceedance events over 13 days for 24-hour average PM<sub>2.5</sub>, and 3 exceedance events over 3 days for 24-hour average PM<sub>10</sub> were recorded. The detailed exceedance summaries are presented in Appendix J.

**Table 2** Summary of exceedances in 2017

| Parameter         | No. of Stations Showing Exceedances | Average Type | SAAQS (ppb)          | No. of Exceedances |
|-------------------|-------------------------------------|--------------|----------------------|--------------------|
| SO <sub>2</sub>   | 0                                   | 1-hour       | 172                  | 0                  |
|                   | 0                                   | 24-hour      | 48                   | 0                  |
|                   | 0                                   | Annual       | 8                    | 0                  |
| H <sub>2</sub> S  | 4                                   | 1-hour       | 11                   | 123                |
|                   | 3                                   | 24-hour      | 3.6                  | 20                 |
| NO <sub>2</sub>   | 0                                   | 1-hour       | 159                  | 0                  |
|                   | 0                                   | 24-hour      | 106                  | 0                  |
|                   | 0                                   | Annual       | 24                   | 0                  |
| O <sub>3</sub>    | 0                                   | 1-hour       | 82                   | 0                  |
|                   | 0                                   | 8-hour       | 63                   | 0                  |
| PM <sub>2.5</sub> | 6                                   | 24-hour      | 28 µg/m <sup>3</sup> | 21                 |
|                   | 0                                   | Annual       | 10 µg/m <sup>3</sup> | 0                  |
| PM <sub>10</sub>  | 1                                   | 24-hour      | 50 µg/m <sup>3</sup> | 3                  |

#### 2.1.1 Canadian Ambient Air Quality Standards

Under the Air Quality Management System (AQMS), the Canadian Council of Ministers of the Environment (CCME) established the Canada-wide Standards (CWS) for fine particulate matter and ground-level ozone (Reference 3). 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, with the exception of Quebec, are required to implement actions to achieve the air quality standards to ensure that the air quality objectives are met.

As a part of the continuing implementation of the AQMS, in 2017 the CCME announced new Canadian Ambient Air Quality Standards (CAAQS) that will drive the improvement of air quality across the country. Updated standards for SO<sub>2</sub> were published in the Canada Gazette in October of 2017 (Reference 4), while new standards for NO<sub>2</sub> were published in December of 2017 (Reference 5). Table 3 summarizes the current CAAQS and future changes to the standards planned for 2020 and 2025 (Reference 6).

**Table 3 Canadian Ambient Air Quality Standards (CAAQS)**

| Pollutants                                   | Averaging Time | Numerical Value        |                       |          | Statistical Form                                                                                                                |
|----------------------------------------------|----------------|------------------------|-----------------------|----------|---------------------------------------------------------------------------------------------------------------------------------|
|                                              |                | 2015                   | 2020                  | 2025     |                                                                                                                                 |
| Fine Particulate Matter (PM <sub>2.5</sub> ) | 24-hour        | 28 µg/m <sup>3</sup>   | 27 µg/m <sup>3</sup>  |          | The 3-year average of the 98 <sup>th</sup> percentile of the daily 24-hour average concentrations.                              |
|                                              | Annual         | 10.0 µg/m <sup>3</sup> | 8.8 µg/m <sup>3</sup> |          | The 3-year average of the annual average of all 1-hour concentrations                                                           |
| Ozone (O <sub>3</sub> )                      | 8-hour         | 63 ppb                 | 62 ppb                |          | The 3-year average of the annual 4 <sup>th</sup> highest daily maximum 8-hour average concentrations                            |
| Sulphur Dioxide (SO <sub>2</sub> )           | 1-hour         | -                      | 70 ppb                | 65 ppb   | The 3-year average of the annual 99 <sup>th</sup> percentile of the SO <sub>2</sub> daily maximum 1-hour average concentrations |
|                                              | Annual         | -                      | 5.0 ppb               | 4.0 ppb  | The average over a single calendar year of all 1-hour average concentrations                                                    |
| Nitrogen Dioxide (NO <sub>2</sub> )          | 1-hour         | -                      | 60 ppb                | 42 ppb   | The 3-year average of the annual 98 <sup>th</sup> percentile of the daily maximum 1-hour average concentrations                 |
|                                              | Annual         | -                      | 17.0 ppb              | 12.0 ppb | The average over a single calendar year of all 1-hour average concentrations                                                    |

## 2.2 Wind Speed and Direction

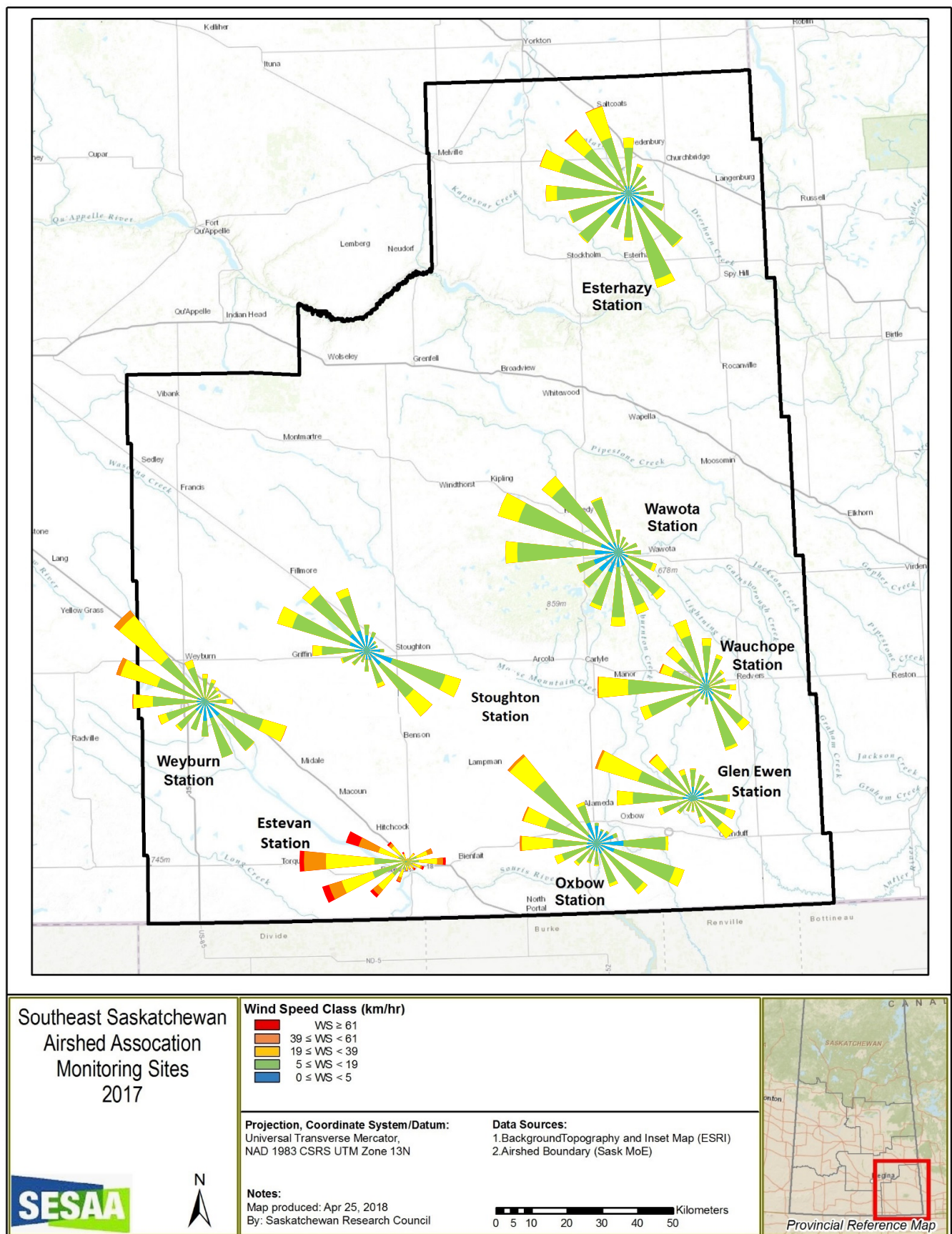
Wind speed and wind direction are important factors that influence regional air quality. The diffusion and dispersion of air pollutant emissions are greatly impacted by variations in wind speed and corresponding air turbulence. Different degrees of turbulence are created by variable mixing conditions 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 2017. According to the Beaufort Wind Scale (Reference 7), the prevailing winds in SESAA was typically classified as Light Air ( $\leq 5.0$  km/hr or 1.4 m/s), Light Breeze ( $< 11$  km/hr or 3.1 m/s), and Gentle to Moderate Breeze ( $< 28$  km/hr or 7.8 m/s). Strong breezes ( $> 39$  km/hr or 10.8 m/s) were more frequent at Weyburn (1.6%), with the next highest proportion of strong breezes at the Oxbow (0.8%) station. Gale-strength winds ( $\geq 61$  km/hr or 16.9 m/s) were only recorded at Weyburn (1 hour). The occurrence frequency of calm wind ( $< 1$  km/hr or 0.3 m/s) ranged from 0.01% (Weyburn) to 1.9% (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.

Estevan shows much higher wind speeds than the other stations as the wind sensor is on a 10-meter tower at that station, compared with 2.5 m to 3 m for the other stations.

The detailed frequency distribution tables and wind roses are presented in the Appendices: Table B-10, Table C-12, Table D-11, Table E-11, Table F-11, Table G-8, Table H-10, and Table I-12.



**Figure 2 Wind roses for SESAA stations, 2017**

## 2.3 Continuous Air Quality Data

### 2.3.1 Sulphur Dioxide (SO<sub>2</sub>)

SO<sub>2</sub> 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<sub>2</sub> can harm the human respiratory system and make breathing difficult (Reference 8). SO<sub>2</sub> affects sensitive individuals with pre-existing respiratory conditions such as asthma or bronchitis (Reference 9). At high concentrations, gaseous SO<sub>x</sub> can harm trees and plants by damaging foliage and decreasing growth (Reference 8).

SO<sub>2</sub>, 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<sub>2</sub> 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 10).

Anthropogenic SO<sub>2</sub> 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<sub>2</sub> 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 4 presents the summary statistics for SO<sub>2</sub>. The annual average concentration range was from 0.5 ppb to 2.1 ppb among the six stations. The maximum 1-hour concentration of 76.2 ppb and the maximum 24-hour concentration of 13.3 ppb were detected at the Estevan station. No stations reported an exceedance of the SAAQS SO<sub>2</sub> in 2017 (Table 5).

Figures 3 to 8 present the pollutant roses for 1-hour average concentration for SO<sub>2</sub>. The measured concentration at all stations was low; greater than 94% of the data was less than 5 ppb (the blue and 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 Glen Ewen station 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.

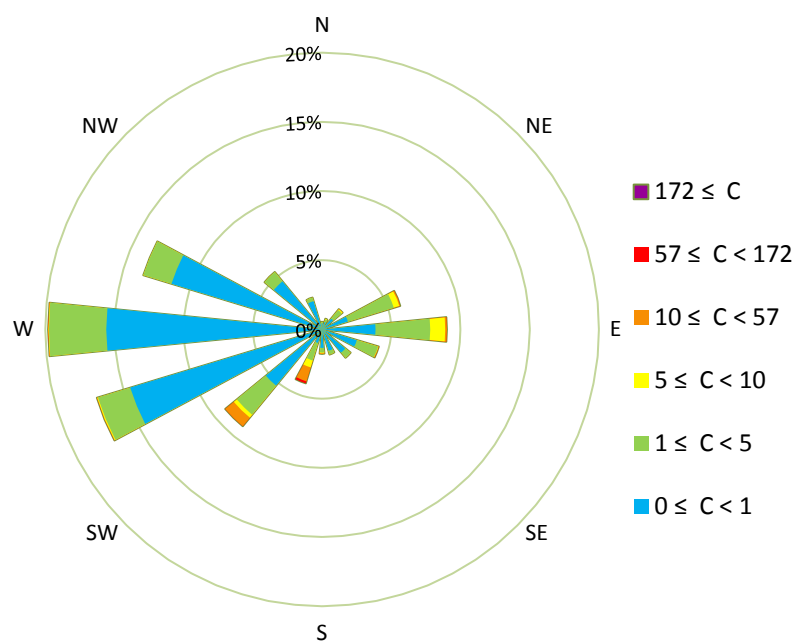
The detailed frequency distribution tables for 1-hour average SO<sub>2</sub> data are presented in the Appendices: Table C-2, Table D-2, Table E-2, Table F-2, Table G-2, and I-2.

**Table 4**      **Summary statistics for SO<sub>2</sub> in 2017**

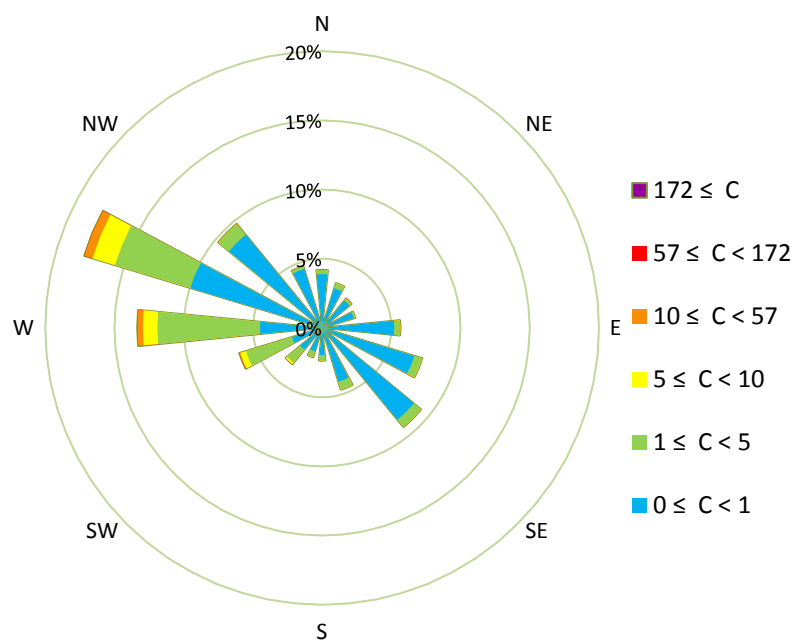
| Monitoring Station | Annual Average | Annual Instrument Uptime | Maximum SO <sub>2</sub> Conc. and Occurrence Time |                 |           |           |
|--------------------|----------------|--------------------------|---------------------------------------------------|-----------------|-----------|-----------|
|                    | ppb            | %                        | 1-Hr Max                                          |                 | 24-Hr Max |           |
| Estevan            | 2.1            | 89.0                     | 76.2                                              | 3/26/2017 11:00 | 13.3      | 10/2/2017 |
| Glen Ewen          | 1.1            | 94.8                     | 49.9                                              | 3/1/2017 13:00  | 5.7       | 3/1/2017  |
| Oxbow              | 1.2            | 83.6                     | 24.9                                              | 5/15/2017 8:00  | 3.6       | 1/10/2017 |
| Stoughton          | 0.6            | 89.5                     | 23.8                                              | 1/21/2017 14:00 | 6.3       | 1/21/2017 |
| Wauchope           | 0.5            | 87.4                     | 13.9                                              | 3/26/2017 14:00 | 2.8       | 1/11/2017 |
| Weyburn            | 1.3            | 85.1                     | 38.8                                              | 6/2/2017 0:00   | 5.9       | 1/15/2017 |

**Table 5**      **Number of exceedance events for SO<sub>2</sub> in 2017**

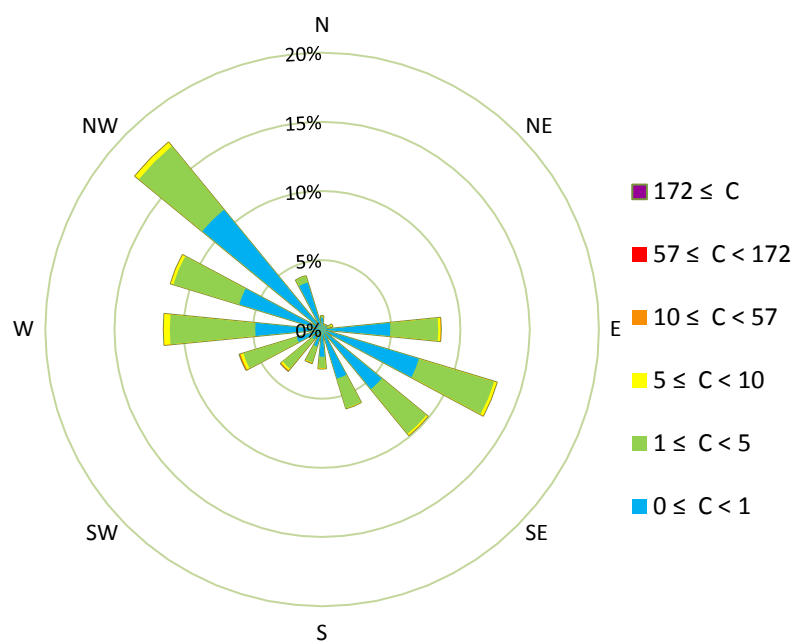
| Monitoring Station | Number of Exceedance Events for Saskatchewan SO <sub>2</sub> Ambient Air Quality Standard (SAAQS) |                         |                         |
|--------------------|---------------------------------------------------------------------------------------------------|-------------------------|-------------------------|
|                    | 1-hr SAAQS<br>(172 ppb)                                                                           | 24-hr SAAQS<br>(48 ppb) | Annual SAAQS<br>(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                       |



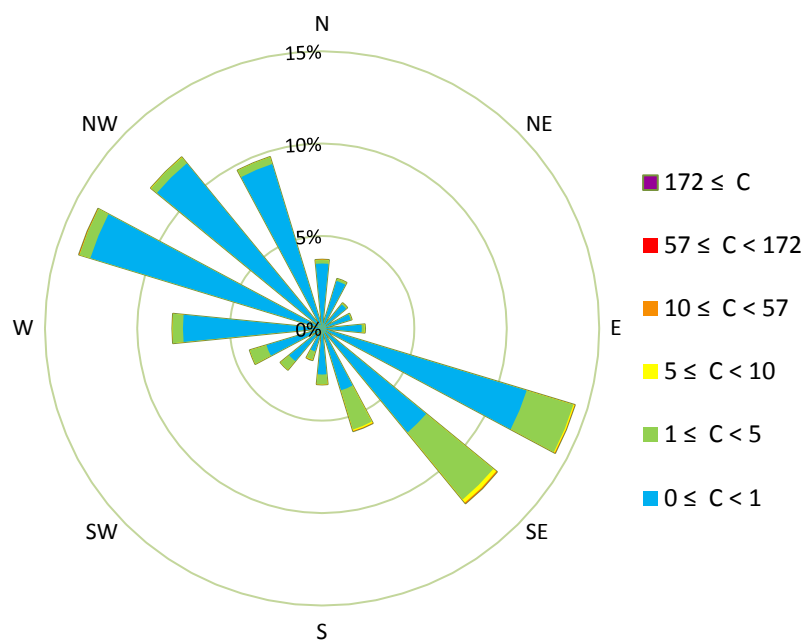
**Figure 3** Pollutant rose for 1-hour average SO<sub>2</sub> data at the Estevan Station (ppb)



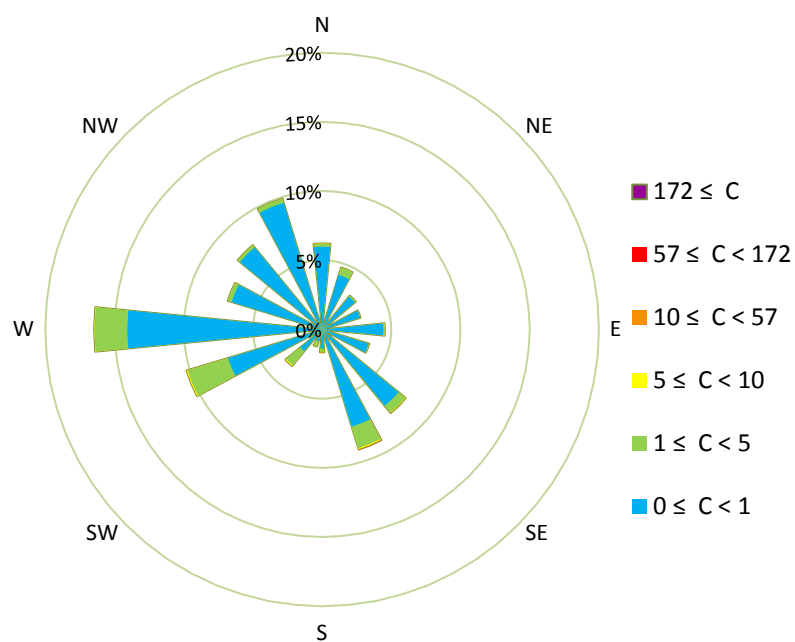
**Figure 4** Pollutant rose for 1-hour average SO<sub>2</sub> data at the Glen Ewen Station (ppb)



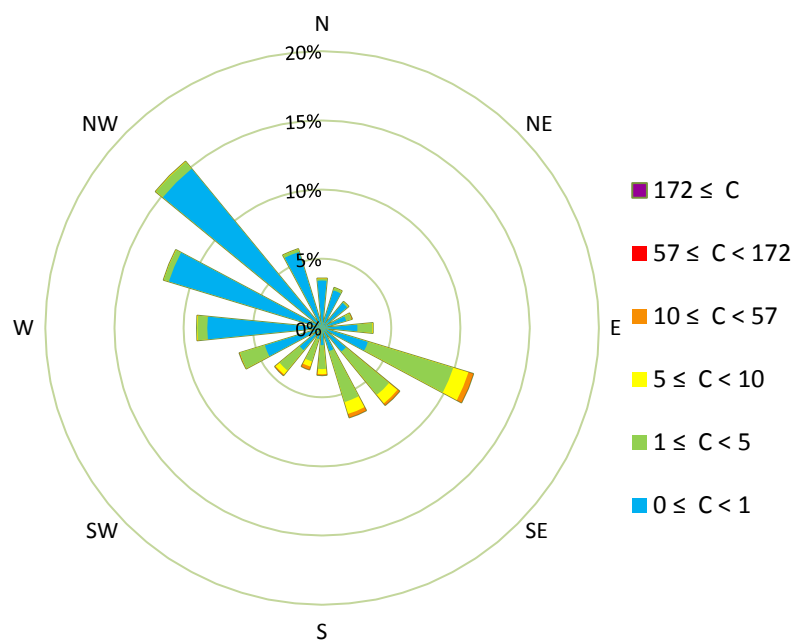
**Figure 5** Pollutant rose for 1-hour average SO<sub>2</sub> data at the Oxbow Station (ppb)



**Figure 6** Pollutant rose for 1-hour average SO<sub>2</sub> data at the Stoughton Station (ppb)



**Figure 7** Pollutant rose for 1-hour average SO<sub>2</sub> data at the Wauchope Station (ppb)



**Figure 8** Pollutant rose for 1-hour average SO<sub>2</sub> data at the Weyburn Station (ppb)

### **2.3.2 Hydrogen Sulphide (H<sub>2</sub>S)**

Hydrogen sulphide is a colourless gas with a characteristic “rotten egg” odour. It is produced both naturally and through anthropogenic emission sources, and 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<sub>2</sub>S as well, forming the characteristic odour commonly associated with sewers, sewage lagoons, and swamps.

H<sub>2</sub>S is highly toxic and flammable at high concentrations. It is heavier than air and tends to accumulate at the bottom of poorly ventilated spaces and in low-lying topography. Exposure to H<sub>2</sub>S 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 11). Potential victims of H<sub>2</sub>S poisoning may be unaware of its presence until it is too late.

Table 6 presents summary statistics for H<sub>2</sub>S. The annual average concentration ranged from 0.5 ppb to 1.0 ppb among the five stations. The maximum 1-hour concentration of 95.7 ppb was detected at the Weyburn station, and the maximum 24-hour concentration of 13.4 ppb was detected at the Wauchope station.

Although H<sub>2</sub>S 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 7 summarizes the number of exceedance events for H<sub>2</sub>S. The complete lists of exceedances can be found in Appendix J.

Figures 9 through 13 present the pollutant roses for 1-hour average concentration of H<sub>2</sub>S. The measured concentration was low at all stations for the majority of the time; greater than 95% of the data at all stations was less than 3.6 ppb (the blue and dark green petals).

At the Glen Ewen station, the 1-hour exceedances were primarily associated with the westerly direction and were associated with Light wind conditions and mainly occurred during the night.

At the Oxbow station, the high concentration events (>5 ppb) were primarily associated with the southeast direction. No exceedances were recorded at Oxbow.

At the Stoughton station, all three exceedances were associated with the north-easterly direction and Light Air wind conditions (<0.7 km/h).

At the Wauchope station, 39 of the 78 exceedances of the 1-hour standard (11 ppb) were associated with northerly wind direction. Exceedances of the 24-hour standard (3.6 ppb)

occurred predominantly during south to west winds. High concentrations occurred during a variety of wind speeds.

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. Forty-two percent of the 1-hour exceedance events were detected during Light Air wind conditions. The remaining 58% were detected during Light Breeze wind conditions (1.7-3.1 m/s or 6-11 km/hr).

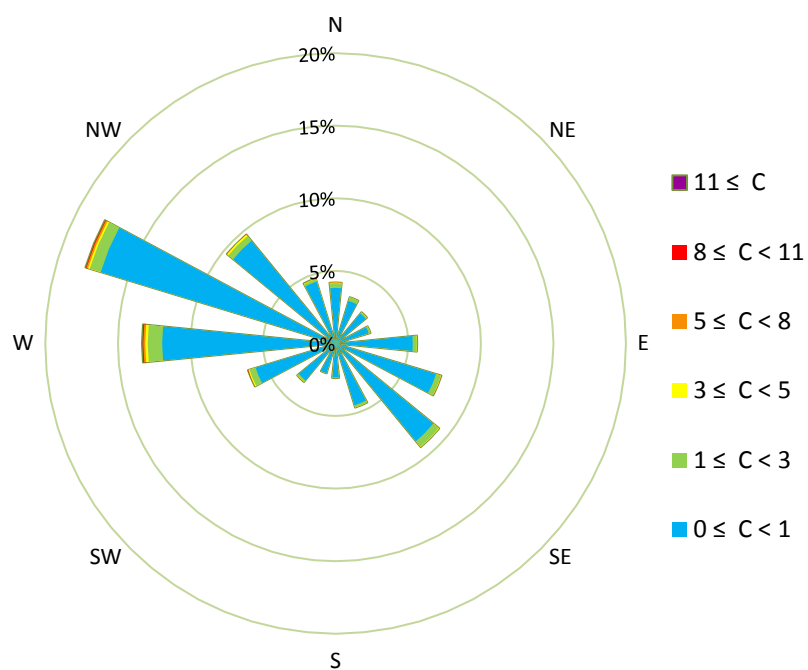
The detailed frequency distribution tables for 1-hour average H<sub>2</sub>S data are presented in the Appendices: Table D-7, Table E-6, Table F-6, Table G-3, and Table I-7.

**Table 6 Summary statistics for H<sub>2</sub>S in 2017**

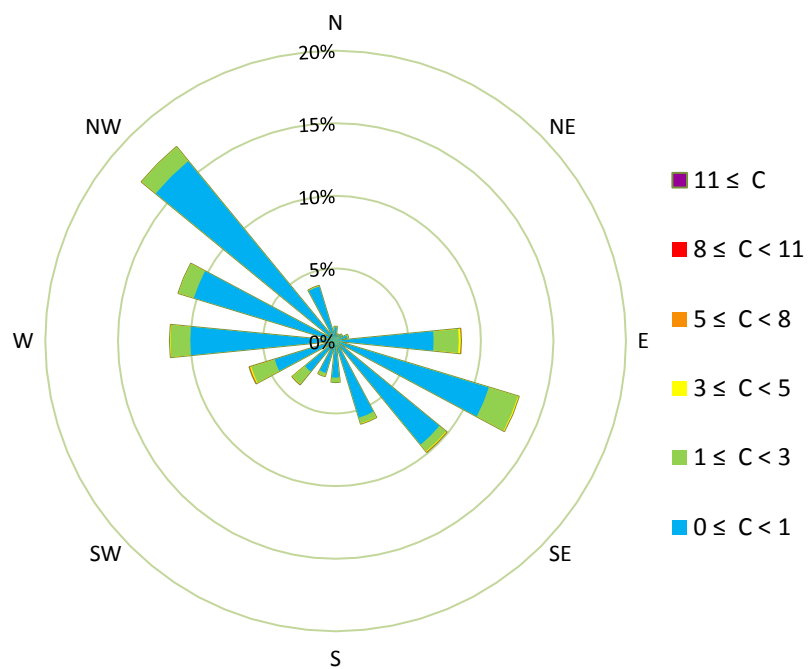
| Monitoring Station | Annual Average | Annual Instrument Uptime | Maximum H <sub>2</sub> S Conc. and Occurrence Time |                |           |           |
|--------------------|----------------|--------------------------|----------------------------------------------------|----------------|-----------|-----------|
|                    | ppb            | %                        | 1-Hr Max                                           |                | 24-Hr Max |           |
| Glen Ewen          | 0.5            | 90.8                     | 36.3                                               | 6/29/2017 1:00 | 7.4       | 6/26/2017 |
| Oxbow              | 0.7            | 83.2                     | 8.08                                               | 6/4/2017 6:00  | 2.5       | 1/20/2017 |
| Stoughton          | 0.5            | 88.6                     | 14.8                                               | 9/5/2017 23:00 | 2.2       | 1/20/2017 |
| Wauchope           | 1.0            | 86.8                     | 79.6                                               | 8/27/2017 6:00 | 13.4      | 8/27/2017 |
| Weyburn            | 0.7            | 84.8                     | 95.7                                               | 8/4/2017 5:00  | 7.8       | 1/14/2017 |

**Table 7 Number of exceedance events for H<sub>2</sub>S in 2017**

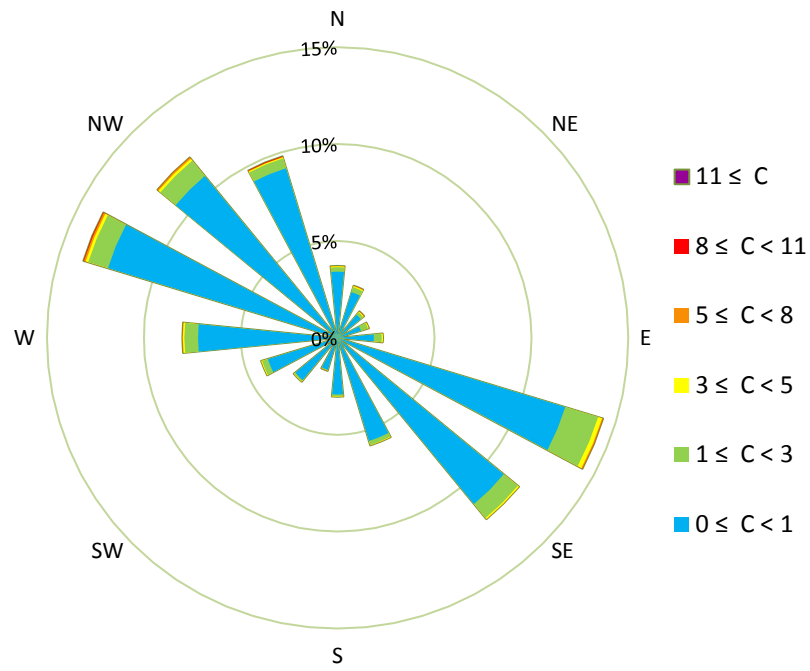
| Monitoring Station | Number of Exceedance Events for Saskatchewan H <sub>2</sub> S Ambient Air Quality Standard (SAAQS) |             |
|--------------------|----------------------------------------------------------------------------------------------------|-------------|
|                    | 1-hr SAAQS                                                                                         | 24-hr SAAQS |
|                    | (11 ppb)                                                                                           | (3.6 ppb)   |
| Glen Ewen          | 33                                                                                                 | 4           |
| Oxbow              | 0                                                                                                  | 0           |
| Stoughton          | 3                                                                                                  | 0           |
| Wauchope           | 78                                                                                                 | 14          |
| Weyburn            | 9                                                                                                  | 2           |



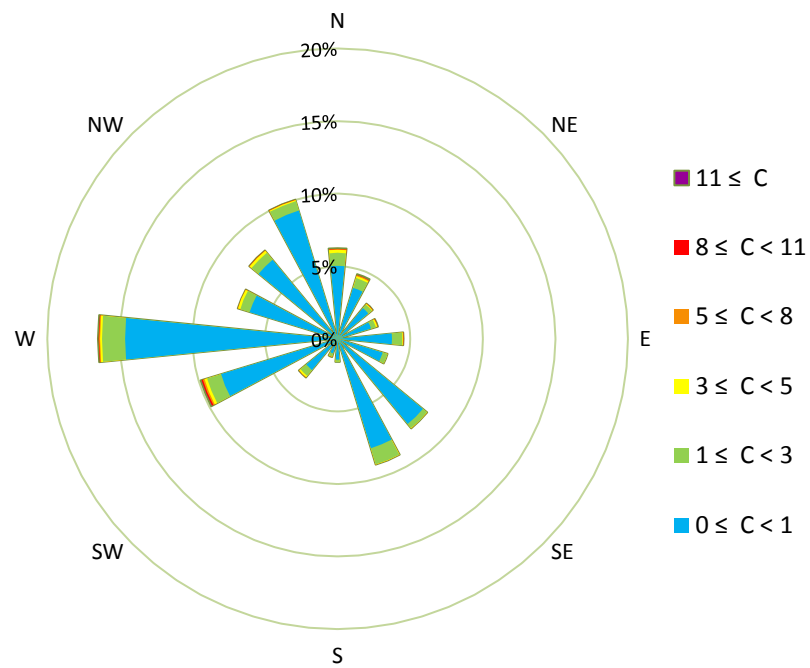
**Figure 9** Pollutant rose for 1-hour average H<sub>2</sub>S data at the Glen Ewen Station (ppb)



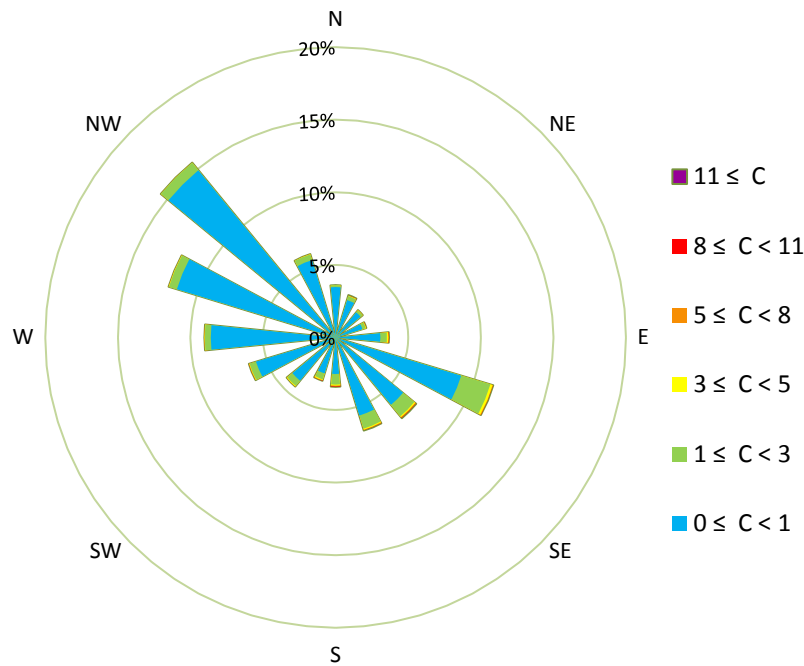
**Figure 10** Pollutant rose for 1-hour average H<sub>2</sub>S data at the Oxbow Station (ppb)



**Figure 11** Pollutant rose for 1-hour average H<sub>2</sub>S data at the Stoughton Station (ppb)



**Figure 12** Pollutant rose for 1-hour average H<sub>2</sub>S data at the Wauchope Station (ppb)



**Figure 13** Pollutant rose for 1-hour average H<sub>2</sub>S data at the Weyburn Station (ppb)

### 2.3.3 Nitrogen Dioxide (NO<sub>2</sub>)

Nitrogen oxides, also known as oxides of nitrogen (NO<sub>x</sub>), is a collective term for NO and NO<sub>2</sub>. NO is a colorless gas with a slight odour. NO<sub>2</sub> is a reddish brown, non-flammable gas with a pungent irritating odour. NO<sub>2</sub> is of more interest than NO from both a health and acid rain perspective.

Both NO<sub>2</sub> in its untransformed state, and the acid and nitrate transformation products of NO<sub>2</sub>, can have adverse effects on human health or the environment. NO<sub>2</sub> itself can cause adverse effects on respiratory systems of humans and animals, and damage to vegetation. When NO<sub>2</sub> is transformed into nitrate particles that are subsequently deposited on aquatic and terrestrial ecosystems, acidification can result. NO<sub>2</sub> is one of the primary contributing pollutants to the formation of ground-level ozone (Reference 12).

NO<sub>x</sub> emissions are mainly produced by fossil fuel combustion. High temperature conditions during combustion result in the formation of NO<sub>x</sub> as a by-product. NO emitted during combustion quickly oxidizes to NO<sub>2</sub> in the atmosphere (Reference 12). The major anthropogenic emission sources for NO<sub>x</sub> 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<sub>x</sub>, 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 8 presents summary statistics for NO<sub>2</sub> measurement results. The measured NO<sub>2</sub> concentration was low at all stations in comparison with the SAAQS. The annual average concentration ranged from 1.0 ppb to 2.5 ppb. The maximum 1-hour concentration of 52.0 ppb and the maximum 24-hour concentration of 14.5 ppb were detected at the Estevan and Stoughton stations, respectively. There were no exceedances of the 1-hour, 24-hour, or annual SAAQS in 2015 (see Table 9).

Figures 14 through 20 present the pollutant roses for 1-hour average NO<sub>2</sub>. The concentration at all stations was generally low; greater than 89% of the data was less than 5 ppb (the blue color petals). Industrial activities, such as upstream oil and gas industry and/or coal-fired power plants, could be potential sources of higher concentrations; however, vehicular emissions may not be excluded.

The detailed frequency distribution tables for 1-hour NO<sub>2</sub> 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<sub>x</sub> are in Tables B-4, C-5, D-5, E-5, F-5, H-4, and I-5.

**Table 8 Summary statistics for NO<sub>2</sub>**

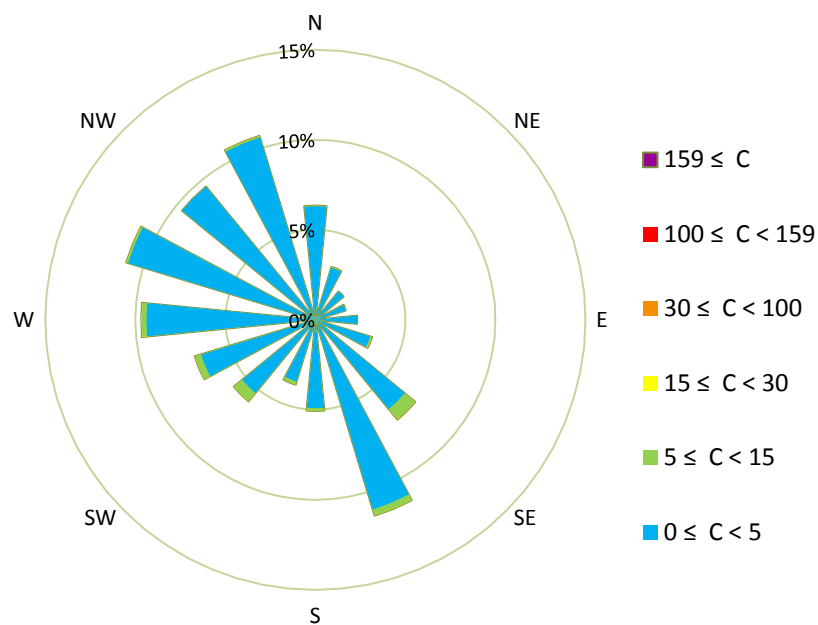
| Monitoring Station   | Annual Average | Annual Instrument Uptime | Maximum NO <sub>2</sub> Conc. and Occurrence Time |                  |           |            |
|----------------------|----------------|--------------------------|---------------------------------------------------|------------------|-----------|------------|
|                      | ppb            | %                        | 1-Hr Max                                          |                  | 24-Hr Max |            |
| Esterhazy            | 1.8            | 94.4                     | 18.0                                              | 11/20/2017 09:00 | 7.9       | 1/20/2017  |
| Estevan <sup>a</sup> | 1.8            | 26.2                     | 52.0                                              | 11/23/2017 6:00  | 7.0       | 11/23/2017 |
| Glen Ewen            | 2.0            | 94.9                     | 30.4                                              | 1/7/2017 18:00   | 7.9       | 1/20/2017  |
| Oxbow                | 1.6            | 77.6                     | 32.1                                              | 3/2/2017 8:00    | 6.5       | 1/20/2017  |
| Stoughton            | 2.5            | 84.7                     | 29.2                                              | 1/19/2017 18:00  | 14.5      | 1/20/2017  |
| Wawota               | 1.0            | 85.2                     | 9.2                                               | 11/13/2017 16:00 | 5.1       | 11/13/2017 |
| Weyburn              | 2.0            | 86.9                     | 17.7                                              | 7/31/2017 22:00  | 6.9       | 1/21/2017  |

<sup>a</sup>Data from September 21 to December 31

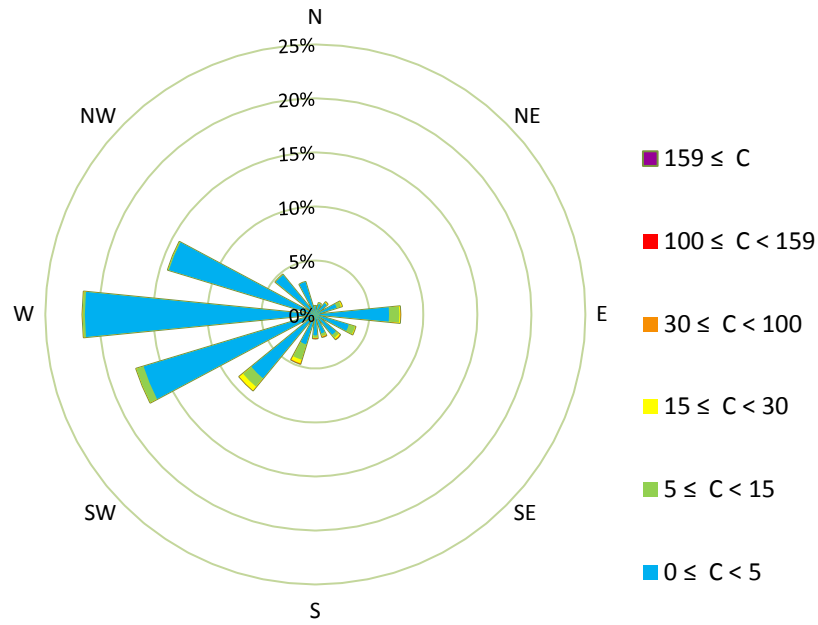
**Table 9**      **Number of exceedance events for NO<sub>2</sub>**

| Monitoring Station   | Number of Exceedance Events for Saskatchewan NO <sub>2</sub> Ambient Air Quality Standard (SAAQS) |                       |                       |
|----------------------|---------------------------------------------------------------------------------------------------|-----------------------|-----------------------|
|                      | 1-hr SAAQS (159 ppb)                                                                              | 24-hr SAAQS (106 ppb) | Annual SAAQS (24 ppb) |
| Esterhazy            | 0                                                                                                 | 0                     | 0                     |
| Estevan <sup>a</sup> | 0                                                                                                 | 0                     | 0                     |
| Glen Ewen            | 0                                                                                                 | 0                     | 0                     |
| Oxbow                | 0                                                                                                 | 0                     | 0                     |
| Stoughton            | 0                                                                                                 | 0                     | 0                     |
| Wawota               | 0                                                                                                 | 0                     | 0                     |
| Weyburn              | 0                                                                                                 | 0                     | 0                     |

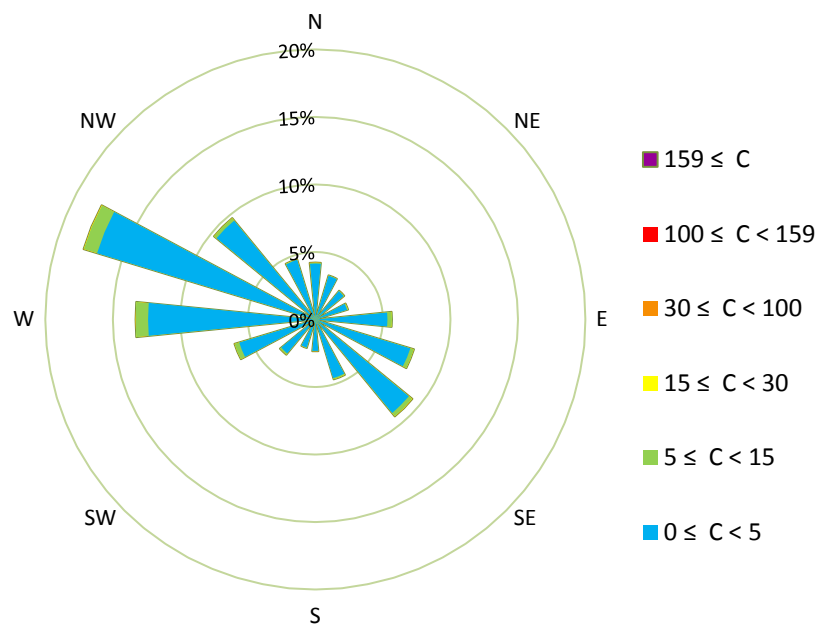
<sup>a</sup>Data from September 21 to December 31



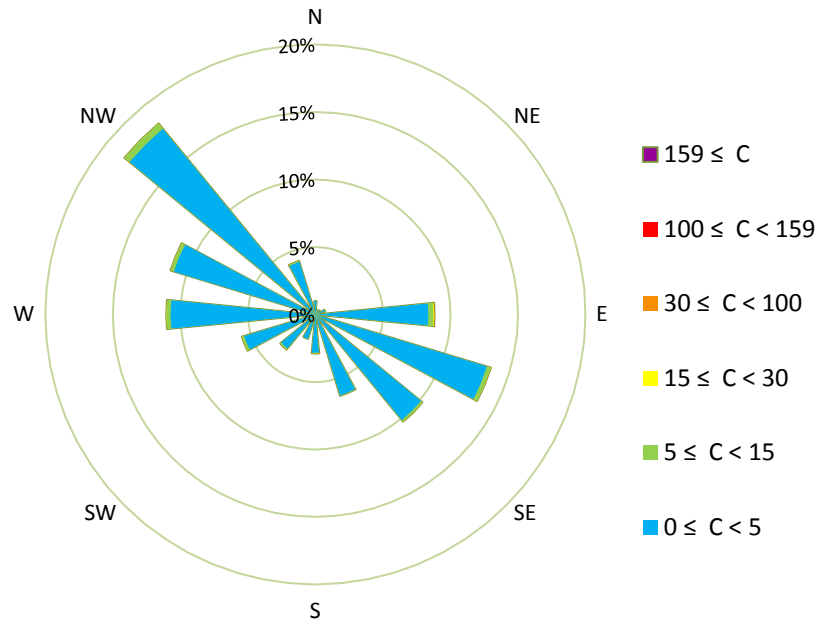
**Figure 14**      **Pollutant rose for 1-hour average NO<sub>2</sub> data at the Esterhazy Station (ppb)**



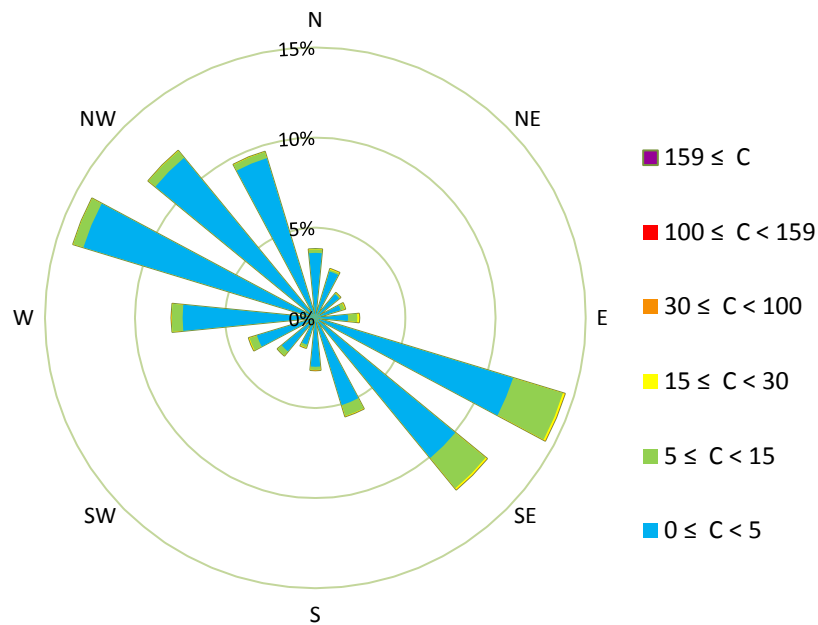
**Figure 15** Pollutant rose for 1-hour average NO<sub>2</sub> data at the Estevan Station (ppb)



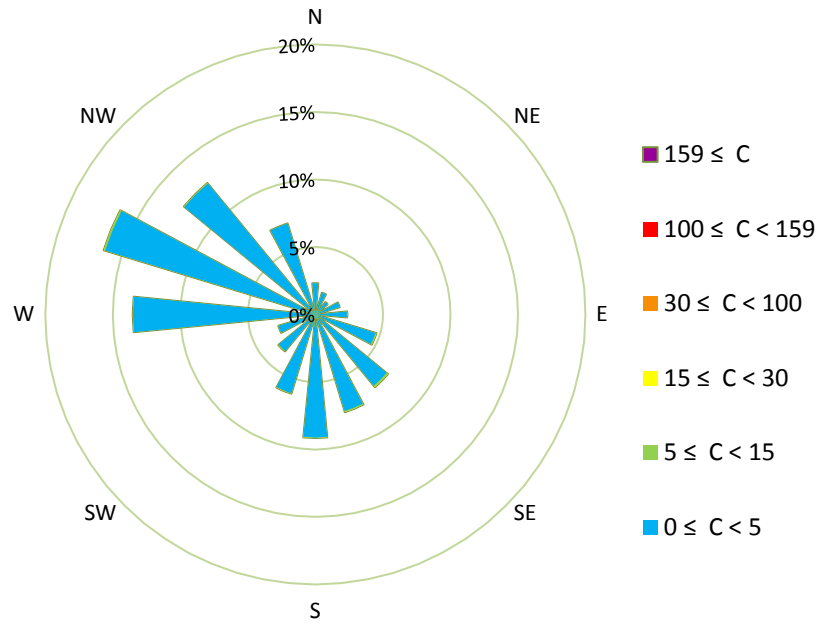
**Figure 16** Pollutant rose for 1-hour average NO<sub>2</sub> data at the Glen Ewen Station (ppb)



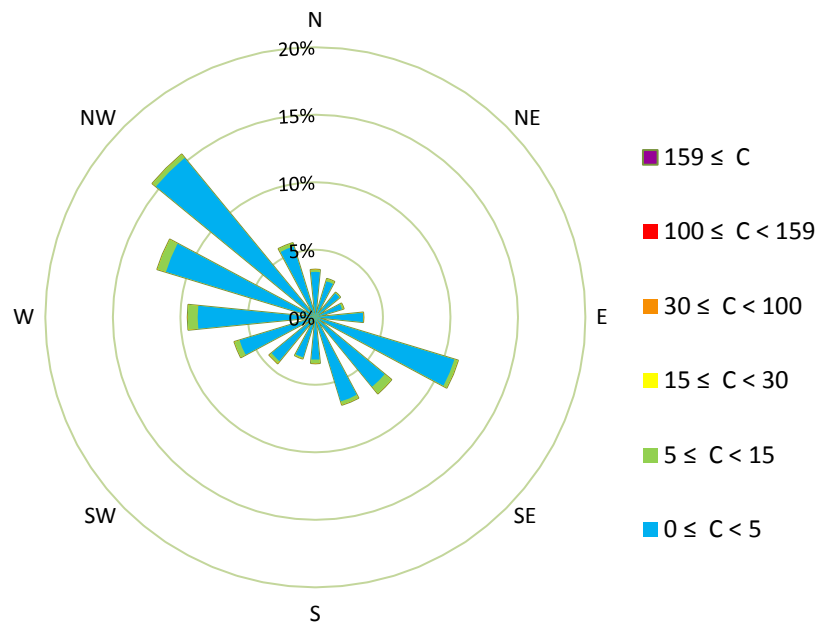
**Figure 17** Pollutant rose for 1-hour average NO<sub>2</sub> data at the Oxbow Station (ppb)



**Figure 18** Pollutant rose for 1-hour average NO<sub>2</sub> data at the Stoughton Station (ppb)



**Figure 19** Pollutant rose for 1-hour average NO<sub>2</sub> data at the Wawota Station (ppb)



**Figure 20** Pollutant rose for 1-hour average NO<sub>2</sub> data at the Weyburn Station (ppb)

### **2.3.4 Ozone (O<sub>3</sub>)**

Ozone 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<sub>3</sub> is harmful to human health as it can cause breathing problems, reduce lung function and aggravate asthma and other lung diseases (Reference 13). Ground-level O<sub>3</sub> 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<sub>3</sub> is a "secondary" pollutant, meaning it is not directly emitted from a source. Instead, ozone is produced from photochemical reactions between NO<sub>x</sub> 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 10 presents summary statistics for O<sub>3</sub>. The annual average concentration ranged from 26.1 ppb to 33.5 ppb. The maximum 1-hour concentration of 70.8 ppb was detected at the Wawota station. The maximum 8-hour average concentration of 63.9 ppb was detected at the Esterhazy station. There was no exceedance of the 1-hour SAAQS (Table 11). Two exceedances of the 8-hour SAAQS occurred (Table 11); one exceedance was at Esterhazy (63.9 ppb, Table 10) and one exceedance was at Wawota (63.1, Table 10).

Figures 21 through 25 present the pollutant roses for 1-hour average concentration of O<sub>3</sub>. The pollutant roses did not show an apparent directional trend for high concentration events, indicating high O<sub>3</sub> events may be impacted by regional air quality trends and less likely a localized source. Estevan's pollutant rose only includes data from September 21 to December 31.

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 10** Summary statistics for O<sub>3</sub> in 2017

| Monitoring Station   | Annual Average | Annual Instrument Uptime | Maximum O <sub>3</sub> Conc. and Occurrence Time |                  |          |           |           |            |
|----------------------|----------------|--------------------------|--------------------------------------------------|------------------|----------|-----------|-----------|------------|
|                      |                |                          | 1-Hr Max                                         |                  | 8-Hr Max |           | 24-Hr Max |            |
|                      | ppb            | %                        |                                                  |                  |          |           |           |            |
| Esterhazy            | 31.2           | 88.2                     | 69.0                                             | 5/5/2017 12:00   | 63.9     | 5/5/2017  | 47.9      | 5/5/2017   |
| Estevan <sup>a</sup> | 20.1           | 26.2                     | 37.9                                             | 10/17/2017 15:00 | 35.2     | 10/7/2017 | 31.7      | 12/25/2017 |
| Glen Ewen            | 26.1           | 94.9                     | 56.5                                             | 6/4/2017 16:00   | 51.8     | 6/4/2017  | 38.4      | 4/28/2017  |
| Wawota               | 33.5           | 70.0                     | 70.8                                             | 7/21/2017 18:00  | 63.1     | 6/1/2017  | 51.5      | 7/10/2017  |
| Weyburn              | 28.7           | 89.4                     | 67.6                                             | 7/8/2017 16:00   | 61.5     | 6/4/2017  | 43.3      | 3/14/2017  |

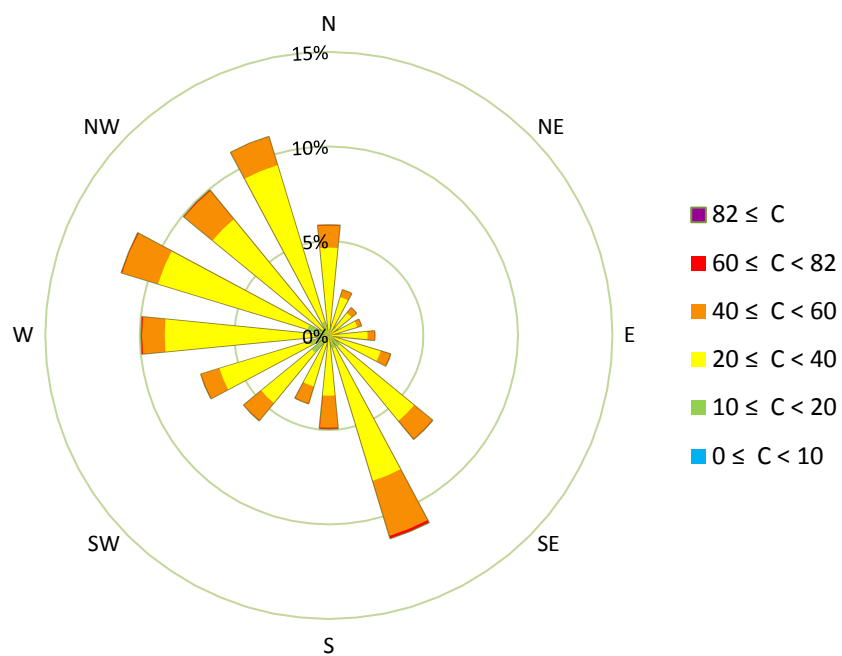
<sup>a</sup>Data from September 21 to December 31**Table 11** Number of exceedance events for O<sub>3</sub> in 2017

| Monitoring Station   | Number of Exceedance Events for Saskatchewan O <sub>3</sub> Ambient Air Quality Standard (SAAQS) |            |
|----------------------|--------------------------------------------------------------------------------------------------|------------|
|                      | 1-hr SAAQS                                                                                       | 8-hr SAAQS |
|                      | (82 ppb)                                                                                         | (63 ppb)   |
| Esterhazy            | 0                                                                                                | 1          |
| Estevan <sup>a</sup> | 0                                                                                                | 0          |
| Glen Ewen            | 0                                                                                                | 0          |
| Wawota               | 0                                                                                                | 1          |
| Weyburn              | 0                                                                                                | 0          |

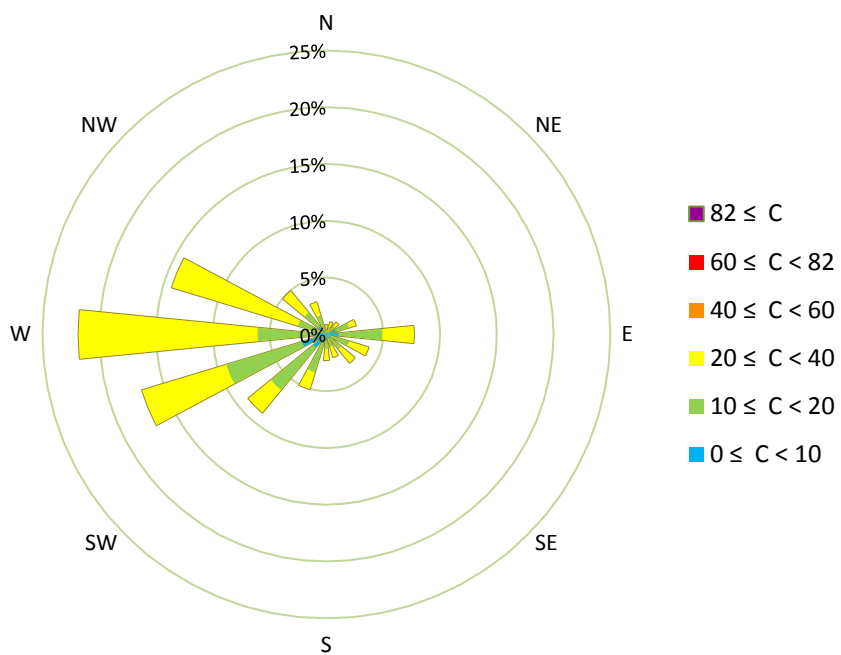
<sup>a</sup>Data from September 21 to December 31**Table 12** 4<sup>th</sup> Highest Daily Maximum 8-hour O<sub>3</sub> concentrations

| Monitoring Station | Concentration (ppb) |      |      |                             |
|--------------------|---------------------|------|------|-----------------------------|
|                    | 2015                | 2016 | 2017 | 3-year Average <sup>a</sup> |
| Esterhazy          | 67.9                | 55.7 | 59.7 | 61.1                        |
| Glen Ewen          | 65.2                | 46.5 | 49.6 | 53.7                        |
| Wawota             | 63.3                | 53.5 | 60.8 | 59.2                        |
| Weyburn            | 70.9                | 48.5 | 57.2 | 58.9                        |

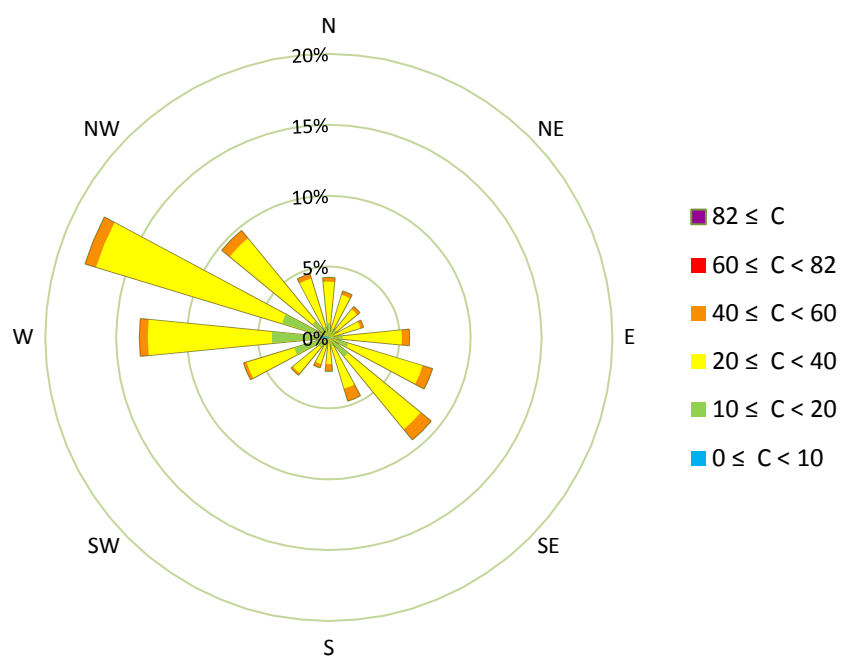
<sup>a</sup> SAAQS 3-year average of the annual 4<sup>th</sup>-highest daily maximum 8-hour average concentration = 63ppb.



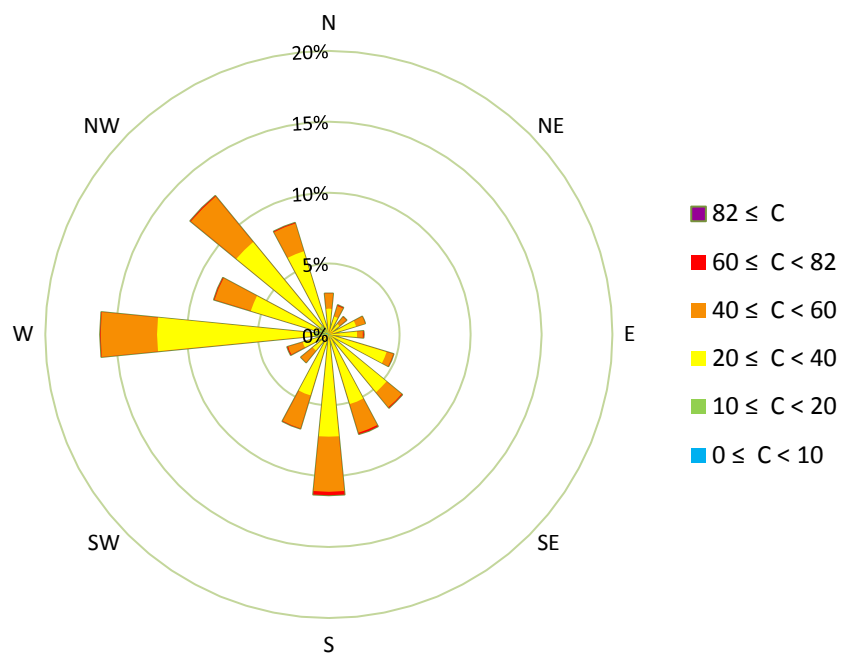
**Figure 21** Pollutant rose for 1-hour average O<sub>3</sub> data at the Esterhazy Station (ppb)



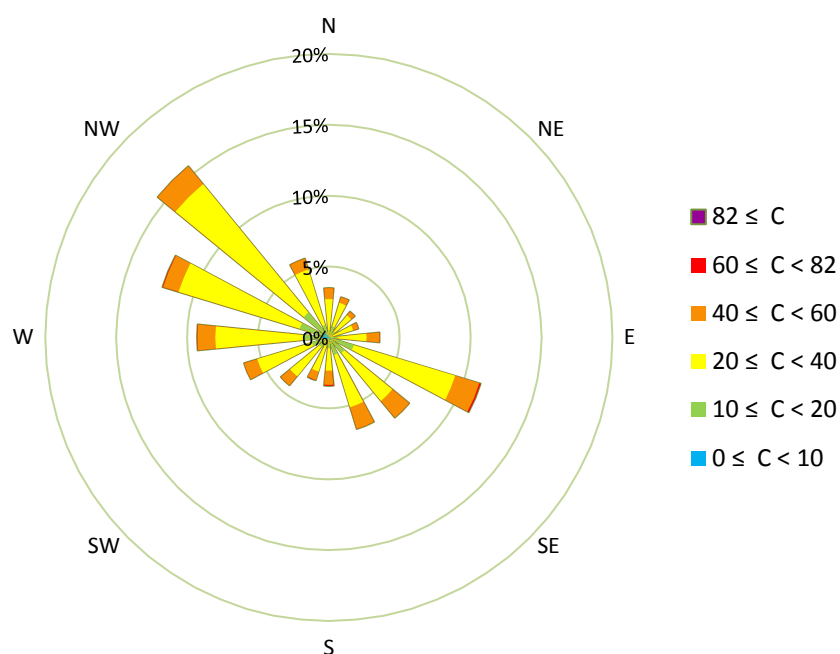
**Figure 22** Pollutant rose for 1-hour average O<sub>3</sub> data at the Estevan station (ppb)



**Figure 23** Pollutant rose for 1-hour average O<sub>3</sub> data at the Glen Ewen Station (ppb)



**Figure 24** Pollutant rose for 1-hour average O<sub>3</sub> data at the Wawota Station (ppb)



**Figure 25 Pollutant rose for 1-hour average O<sub>3</sub> data at the Weyburn Station (ppb)**

### **2.3.5 Particulate Matter (PM)**

Particulate matter is unique among air pollutants, as it is identified by its size rather than by its composition. The major concern for particulate matter deals with small particles referred to as inhalable particulate, or PM<sub>10</sub>. PM<sub>10</sub> is defined as particles that have aerodynamic diameters less than 10 microns (or 0.010 mm). PM<sub>10</sub> can be divided into two groups of particles based on size: fine particles and coarse particles. The fine particles are those particles with an aerodynamic diameter smaller than 2.5 microns (0.0025 mm) and are identified as PM<sub>2.5</sub>. In contrast, coarse particles are those with aerodynamic diameter greater than 2.5 microns and less than 10 microns.

Primary PM is emitted at the emissions source in particle form, for example, the smokestack of an electrical power plant or a recently tilled field subject to wind erosion. Numerous studies have linked PM to aggravated cardiac and respiratory diseases such as asthma, bronchitis and emphysema and to various forms of heart disease. PM can also have adverse effects on vegetation and structures, and contributes to visibility deterioration and regional haze (Reference 14).

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 SO<sub>2</sub>, NO<sub>2</sub>, and VOCs are transformed by chemical and photochemical reactions in the air. The largest natural contribution of PM<sub>2.5</sub> comes from forest fires.

When inhaled deeply into the lungs, even small amounts of PM<sub>2.5</sub> can cause serious health problems such as cardiovascular and respiratory diseases. Along with ground-level ozone, PM<sub>2.5</sub> is one of the two major components of smog. Fine particulate matter can damage vegetation and structures, contribute to haze, and reduce visibility (Reference 15).

Table 13 presents the summary statistics for PM<sub>2.5</sub>. The annual average concentration ranged from 5.9 µg/m<sup>3</sup> to 8.3 µg/m<sup>3</sup>. The maximum 1-hour concentration of 319.0 µg/m<sup>3</sup> and the maximum 24-hour concentration of 77.2 µg/m<sup>3</sup> were detected at the Esterhazy station and Wawota station respectively. There was a total of 21 exceedances of the 28 µg/m<sup>3</sup> 24-hour SAAQS detected at all of the stations except Oxbow (see Table 14).

Table 14 presents the summary statistics for PM<sub>10</sub> at the Esterhazy station. The annual average concentration was 18.8 µg/m<sup>3</sup>. A maximum 1-hour concentration of 544.5 µg/m<sup>3</sup> and a maximum 24-hour concentration of 102.2 µg/m<sup>3</sup> was detected. There was a total of 3 exceedances of the 50 µg/m<sup>3</sup> 24-hour SAAQS.

Values for the annual 98<sup>th</sup> 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 3. The 3-year average of the annual 98<sup>th</sup> percentile of the daily 24-hour average concentrations exceeded the CWS of 28 µg/m<sup>3</sup> at Wawota (31.0 µg/m<sup>3</sup>), Wauchope (33.2 µg/m<sup>3</sup>) and Stoughton (34.0 µg/m<sup>3</sup>) (Table 13).

Figures 26 through 32 present the pollutant roses for 1-hour average concentration of PM<sub>2.5</sub>. Generally, the high concentration events (e.g. >10 µg/m<sup>3</sup> in the yellow, orange and red petals) were associated with all wind directions; however, higher concentrations from the southeast occurred at Estevan. Figure 33 presents the pollutant rose for the 1-hour average concentration of PM<sub>10</sub> at the Estevan station.

The detailed frequency distribution tables for the PM<sub>2.5</sub> 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. The detailed frequency distribution table for the PM<sub>10</sub> pollutant rose is presented in Appendix C-7.

**Table 13 Summary Statistics for PM<sub>2.5</sub> in 2017**

| Monitoring Station | Annual Average    | Annual Instrument Uptime | Maximum PM <sub>2.5</sub> Conc. and Occurrence Time |                 |           |           | 98 <sup>th</sup> Percentile for 24-Hr Data |          |
|--------------------|-------------------|--------------------------|-----------------------------------------------------|-----------------|-----------|-----------|--------------------------------------------|----------|
|                    | µg/m <sup>3</sup> | %                        | 1-Hr Max                                            |                 | 24-Hr Max |           | Annual                                     | 3-Yr Avg |
| Esterhazy          | 7.1               | 93.4                     | 319.0                                               | 5/4/2017 21:00  | 52.9      | 9/11/2017 | 28.8                                       | 23.8     |
| Estevan            | 7.1               | 99.4                     | 104.4                                               | 9/12/2017 16:00 | 45.7      | 9/12/2017 | 19.0                                       | 14.8     |
| Oxbow              | 5.9               | 83.7                     | 73.2                                                | 9/7/2017 15:00  | 24.1      | 7/17/2017 | 16.6                                       | 15.6     |
| Stoughton          | 6.3               | 63.0                     | 175.1                                               | 9/12/2017 13:00 | 62.0      | 9/12/2017 | 24.4                                       | 34.0     |
| Wauchope           | 8.3               | 91.4                     | 316.8                                               | 9/12/2017 18:00 | 71.9      | 9/12/2017 | 27.7                                       | 33.2     |
| Wawota             | 6.5               | 83.6                     | 305.3                                               | 9/12/2017 17:00 | 77.2      | 9/12/2017 | 18.3                                       | 31.0     |
| Weyburn            | 3.7               | 93.4                     | 86.9                                                | 9/12/2017 12:00 | 29.0      | 7/17/2017 | 13.8                                       | 27.1     |

**Table 14 Summary Statistics for PM<sub>10</sub> in 2017**

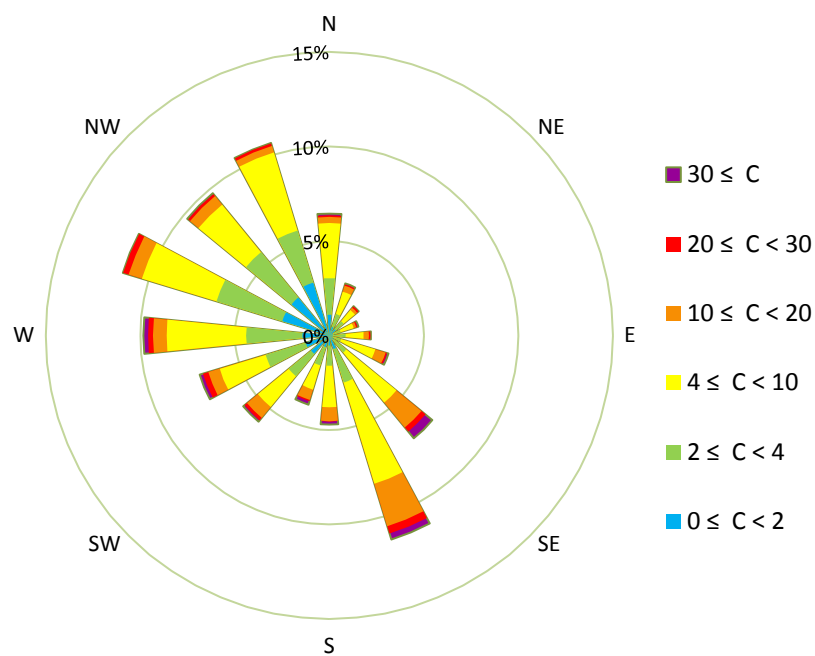
| Monitoring Station   | Annual Average    | Annual Instrument Uptime | Maximum PM <sub>2.5</sub> Conc. and Occurrence Time |                 |           |            |
|----------------------|-------------------|--------------------------|-----------------------------------------------------|-----------------|-----------|------------|
|                      | µg/m <sup>3</sup> | %                        | 1-Hr Max                                            |                 | 24-Hr Max |            |
| Estevan <sup>a</sup> | 18.8              | 27.8                     | 544.5                                               | 10/18/2017 0:00 | 102.2     | 10/20/2017 |

<sup>a</sup>Data from September 21 to December 21

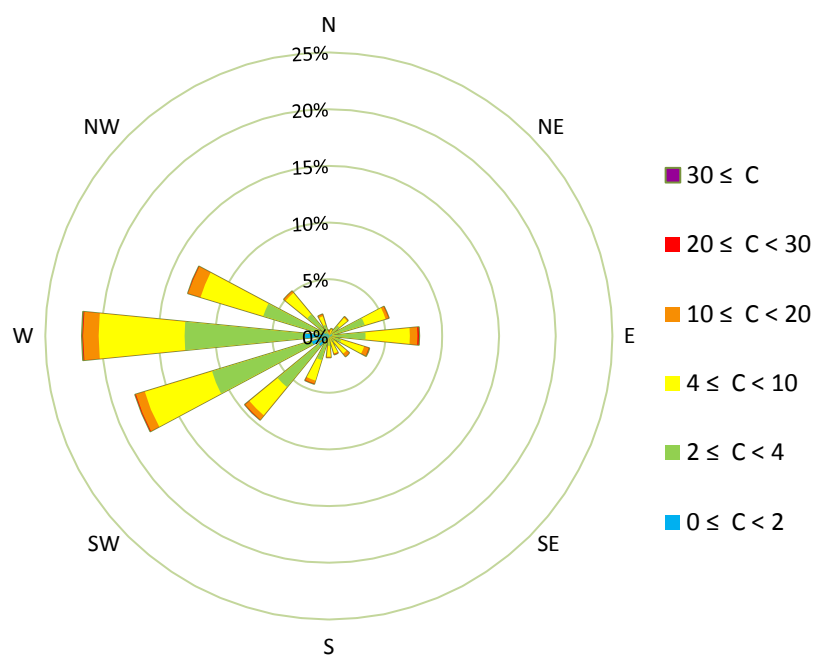
**Table 15 Number of exceedance events for PM<sub>2.5</sub> and PM<sub>10</sub> in 2017**

| Monitoring Station | Number of Exceedance Events for Saskatchewan Ambient Air Quality Standard (SAAQS) |                                                           |                                                                      |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------|
|                    | 24-hr PM <sub>2.5</sub> SAAQS <sup>a</sup><br>(28 µg/m <sup>3</sup> )             | Annual PM <sub>2.5</sub> SAAQS<br>(10 µg/m <sup>3</sup> ) | 24-hr PM <sub>10</sub> SAAQS <sup>a</sup><br>(50 µg/m <sup>3</sup> ) |
| Esterhazy          | 7                                                                                 | 0                                                         | -                                                                    |
| Estevan            | 1                                                                                 | 0                                                         | 3                                                                    |
| Oxbow              | 0                                                                                 | 0                                                         | -                                                                    |
| Stoughton          | 3                                                                                 | 0                                                         | -                                                                    |
| Wauchope           | 6                                                                                 | 0                                                         | -                                                                    |
| Wawota             | 3                                                                                 | 0                                                         | -                                                                    |
| Weyburn            | 1                                                                                 | 0                                                         | -                                                                    |

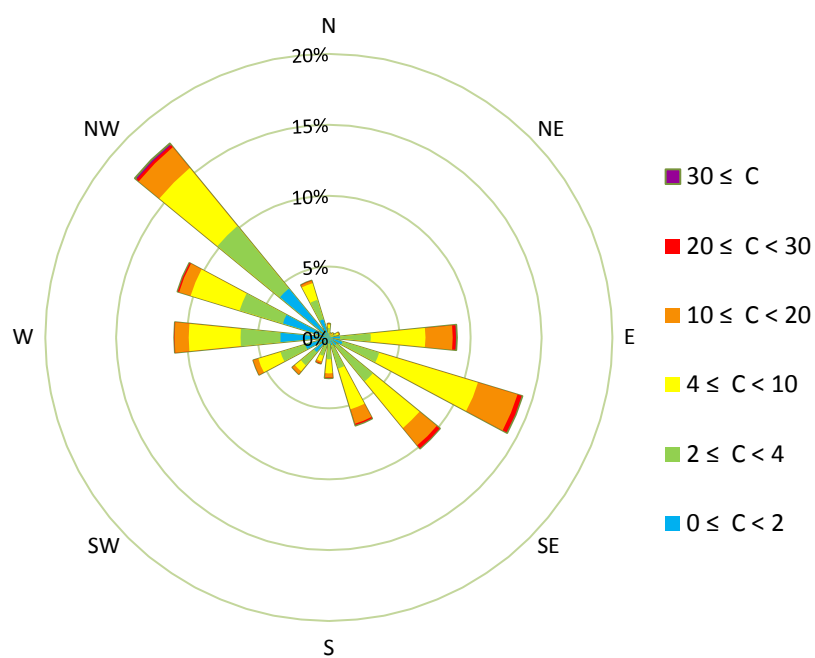
<sup>a</sup> SAAQS applies to 3-year average of the annual 98<sup>th</sup> percentile of the 24-hour average concentrations



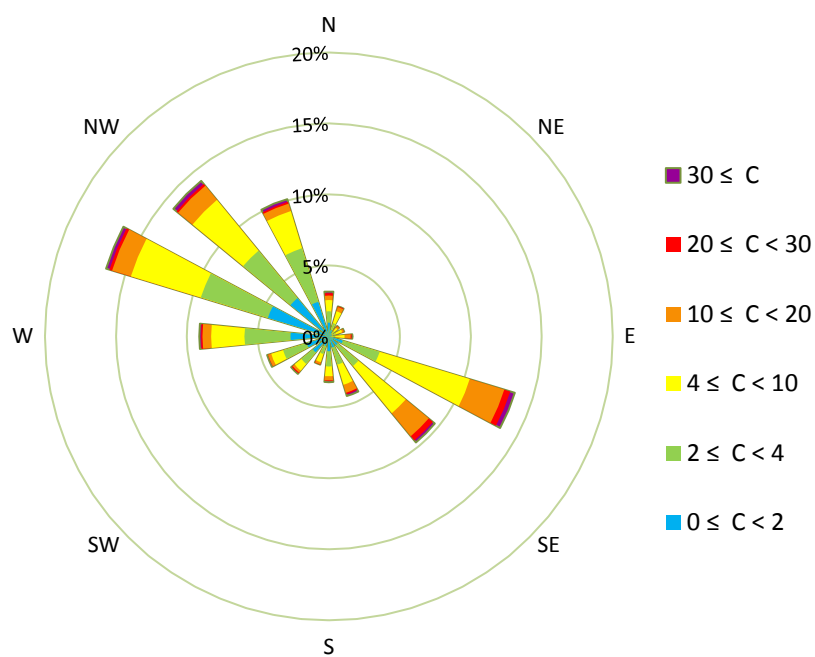
**Figure 26** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Esterhazy Station (µg/m³)



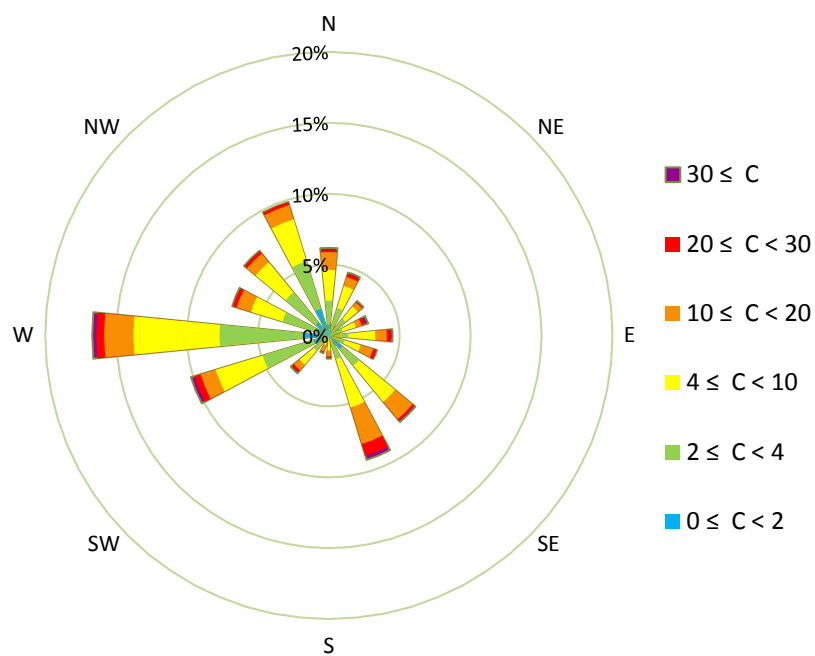
**Figure 27** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Estevan Station (µg/m³)



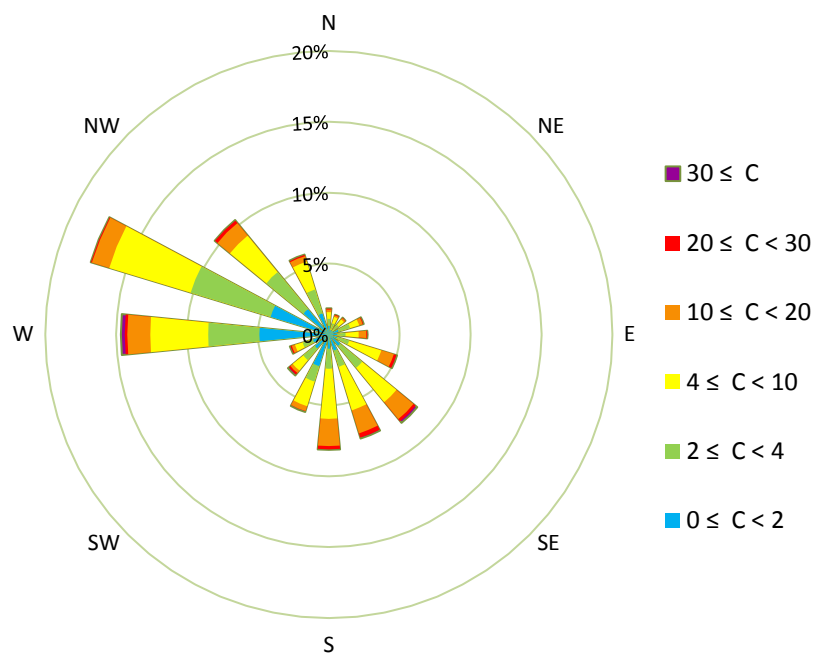
**Figure 28** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Oxbow Station (µg/m³)



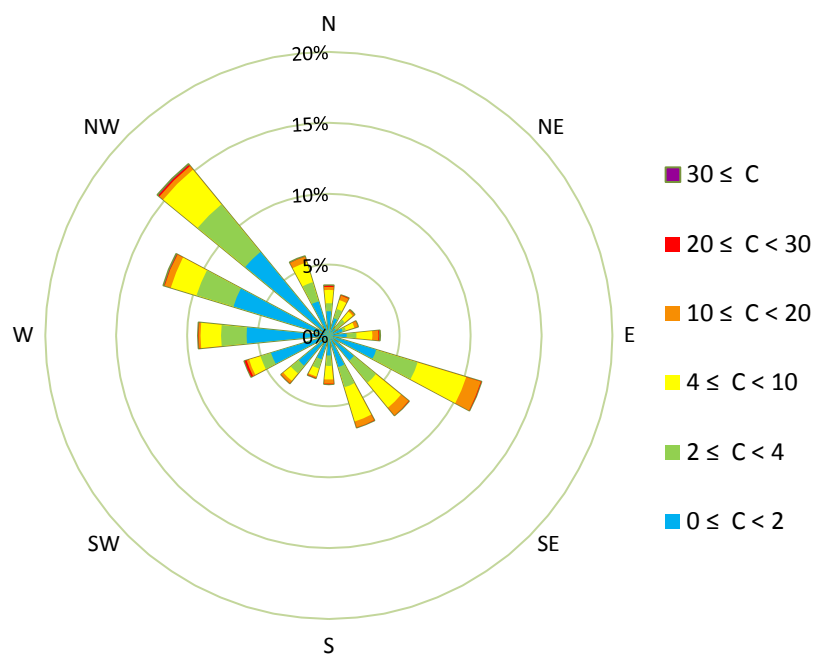
**Figure 29** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Stoughton Station (µg/m³)



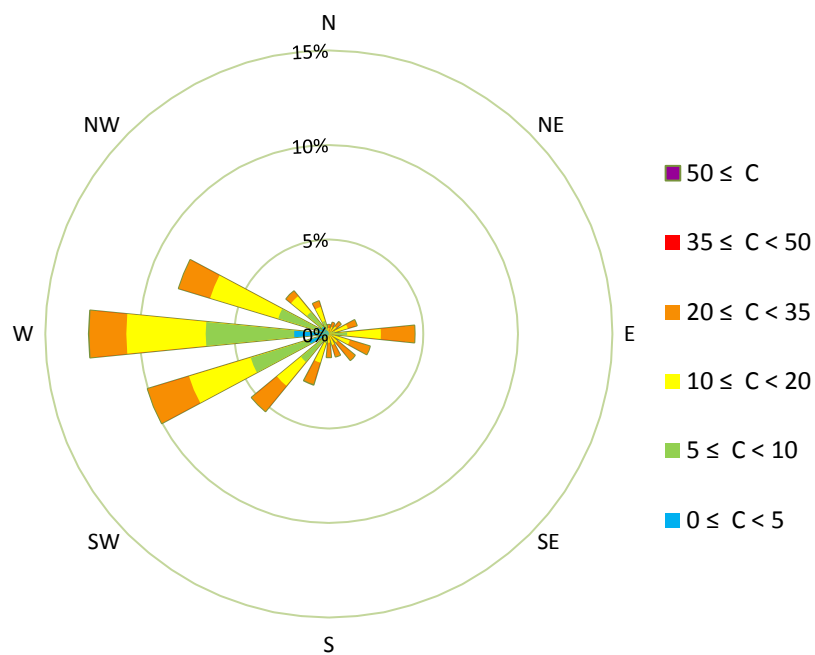
**Figure 30** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Wauchope Station (µg/m³)



**Figure 31** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Wawota Station (µg/m³)



**Figure 32** Pollutant rose for 1-hour average PM<sub>2.5</sub> data at the Weyburn Station (µg/m³)



**Figure 33** Pollutant rose for 1-hour average PM<sub>10</sub> data at the Estevan Station (µg/m³)

### 2.3.6 Black Carbon

Black carbon is a short-lived, small aerosol (or airborne) particle linked to both climate warming and adverse health effects. It is emitted from incomplete combustion of carbon-based fuels (i.e., fossil fuels, biofuels, wood) in the form of very fine particulate matter. Black carbon is not emitted on its own, but as a component of PM<sub>2.5</sub>. When black carbon particles settle on snow and ice, they darken the surface and enhance absorption of solar radiation, thus increasing the rate of melting (Reference 16).

In addition to being linked to climate warming, black carbon emissions are also a public health concern. As a component of PM<sub>2.5</sub>, black carbon particles are small enough to be inhaled and absorbed into the lungs and bloodstream. Black carbon has been linked to a variety of negative health effects, particularly on the respiratory and circulatory systems (Reference 16).

Table 16 presents the summary statistics for Black Carbon from September to December for the Estevan station. The average concentration was 0.3 µg/m<sup>3</sup>. The maximum 1-hour concentration was 3.4 µg/m<sup>3</sup> and the maximum 24-hour concentration was 1.1 µg/m<sup>3</sup>.

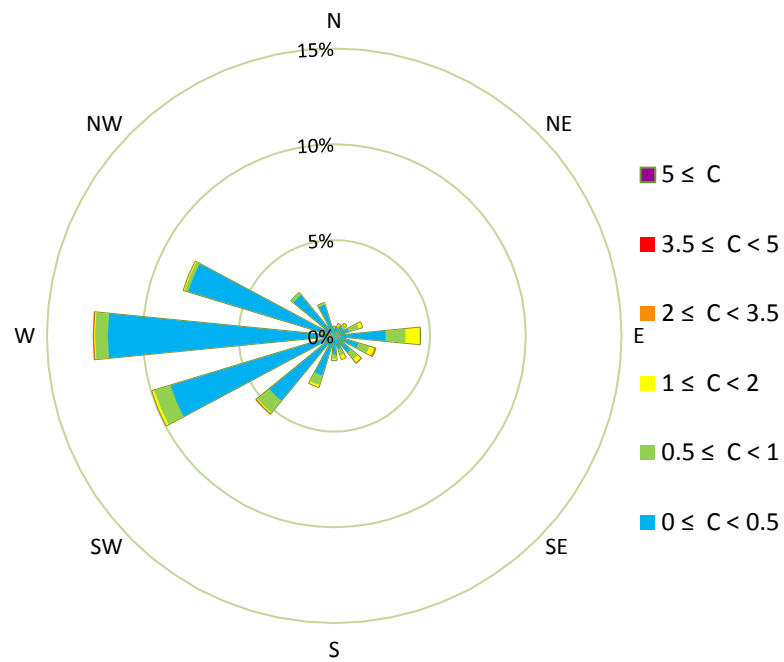
Figure 34 presents the pollutant rose for 1-hour average concentration of Black Carbon at the Estevan station from September to December.

The detailed frequency distribution tables for the pollutant rose is presented in Appendices: Table C-8.

**Table 16      Summary Statistics for Black Carbon in 2017**

| Monitoring Station   | Annual Average    | Annual Instrument Uptime | Maximum Black Carbon Conc. and Occurrence Time |                 |           |            |
|----------------------|-------------------|--------------------------|------------------------------------------------|-----------------|-----------|------------|
|                      | µg/m <sup>3</sup> | %                        | 1-Hr Max                                       |                 | 24-Hr Max |            |
| Estevan <sup>a</sup> | 0.3               | 27.7                     | 3.4                                            | 5/10/2017 20:00 | 1.1       | 20/10/2017 |

<sup>a</sup>Data from September 21 to December 31



**Figure 34** Pollutant rose for 1-hour average Black Carbon data at the Estevan Station ( $\mu\text{g}/\text{m}^3$ )

## 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 the rolling three-hour average concentration levels of PM<sub>2.5</sub>, NO<sub>2</sub>, and O<sub>3</sub> to calculate a single numerical value to evaluate the health risk associated with air pollution. All three pollutants are required to calculate the AQHI according to the following equation (Reference 17):

$$AQHI = \left( \frac{1000}{10.4} \right) \times [(e^{0.000537 \times O_3} - 1) + (e^{0.000871 \times NO_2} - 1) + (e^{0.000487 \times PM_{2.5}} - 1)]$$

Among the SESAA air monitoring stations, Esterhazy, Wawota and Weyburn are eligible for AQHI reporting.

Table 17 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).

Table 18 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 0.99% to 1.65% for the three stations. High Risk and Very High Risk air quality were detected at the Esterhazy (3 and 1 hours, respectively), Wawota (1 and 4 hours, respectively), and Weyburn (1 and 0 hours, respectively).

**Table 17 Health Risk Classification for Air Quality Health Index (Environment Canada)**

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

**Table 18 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      | 7102                                               | 119           | 3         | 1              |
|                      | Occurrence Frequency  | 98.30%                                             | 1.65%         | 0.04%     | 0.01%          |
| Estevan <sup>a</sup> | Occurrence Hours      | 2169                                               | 9             | 0         | 0              |
|                      | Occurrence Frequency  | 99.6%                                              | 0.413%        | 0.000%    | 0.000%         |
| Wawota               | Occurrence Hours      | 4577                                               | 70            | 1         | 4              |
|                      | Occurrence Frequency  | 98.4%                                              | 1.51%         | 0.02%     | 0.09%          |
| Weyburn              | Occurrence Hours      | 7540                                               | 75            | 1         | 0              |
|                      | Occurrence Frequency  | 99.00%                                             | 0.99%         | 0.01%     | 0.00%          |

<sup>a</sup> Data from September 21 to December 31

## 2.5 Air Quality Index (AQI)

The Glen Ewen, Oxbow, Stoughton stations do not meet the reporting requirements for AQHI. In addition, the Estevan station did not meet the reporting requirements prior to its conversion to NAPS in September. 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 hourly readings of five major air pollutants: SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>2.5</sub>, and carbon monoxide (CO). H<sub>2</sub>S is not included as part of the AQI due to the fact that at concentrations typically measured in the air zone H<sub>2</sub>S 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 19 summarizes the effects associated with the AQI ratings.

Table 20 summarizes the occurrence statistics for AQI rating. The Estevan station's AQI was calculated for September 21 to December 31 using SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>2.5</sub>. The AQI was not calculated for Estevan prior to September 21 as the NO<sub>2</sub> data were invalidated. In addition, this station does not measure CO and only started measuring O<sub>3</sub> on September 21, 2017. The Glen Ewen AQI was calculated from SO<sub>2</sub>, NO<sub>2</sub>, and O<sub>3</sub>, as the airpointer does not measure CO or PM<sub>2.5</sub>. The Oxbow and Stoughton AQIs were calculated from SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>2.5</sub>, as the airpointers do not measure CO or O<sub>3</sub>.

The AQI at the Estevan station was rated Good for 98.7% of time, Fair 1.2% of the time, Poor 0.04% of the time, and Very Poor 0.04% of the time.

The AQI at the Glen Ewen station was rated Good for 94.04% of time and Fair 5.96% of time. In 2017, the AQI rating never fell in the Poor or Very Poor category.

The AQI at the Oxbow station was rated Good for 97.68% of time, was rated Fair 2.28% of time, and Poor 0.04% of the time. In 2017, the AQI rating never fell in the Very Poor category.

The AQI at the Stoughton station was rated Good for 94.87% of time, Fair 4.48% of the time, Poor 0.43% of the time, and Very Poor 0.22% of the time. All ratings of Fair, Poor, and Very Poor were due to increased concentrations of PM<sub>2.5</sub>, with 97% of these ratings occurring in July through November.

**Table 19      AQI Rating and Effect Description**

| <b>AQI</b> | <b>Air Quality Rating</b> | <b>Effect Description</b>                                                                                                                                                                                                                              |
|------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-25       | Good                      | <u>Desirable Range</u> : 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                      | <u>Acceptable Range</u> : Adequate protection against harmful effects to soil, water, vegetation, animals, materials, visibility and human health.                                                                                                     |
| 51-100     | Poor                      | <u>Tolerable Range</u> : 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                 | <u>Intolerable Range</u> : Continued high readings could pose a risk to public health.                                                                                                                                                                 |

**Table 20      Summary of Occurrence Statistics for AQI Rating**

| <b>Monitoring Station</b> | <b>Occurrence Statistics</b> | <b>Occurrence Hours and Frequency by AQI Risk Rating</b> |             |             |                  |
|---------------------------|------------------------------|----------------------------------------------------------|-------------|-------------|------------------|
|                           |                              | <b>Good</b>                                              | <b>Fair</b> | <b>Poor</b> | <b>Very Poor</b> |
| Estevan                   | Occurrence Hours             | 2269                                                     | 27          | 1           | 1                |
|                           | Occurrence Frequency         | 98.74%                                                   | 1.17%       | 0.04%       | 0.04%            |
| Glen Ewen                 | Occurrence Hours             | 7807                                                     | 495         | 0           | 0                |
|                           | Occurrence Frequency         | 94.04%                                                   | 5.96%       | 0.00%       | 0.00%            |
| Oxbow                     | Occurrence Hours             | 6524                                                     | 152         | 3           | 0                |
|                           | Occurrence Frequency         | 97.68%                                                   | 2.28%       | 0.04%       | 0.00%            |
| Stoughton                 | Occurrence Hours             | 4400                                                     | 208         | 20          | 10               |
|                           | Occurrence Frequency         | 94.87%                                                   | 4.48%       | 0.43%       | 0.22%            |

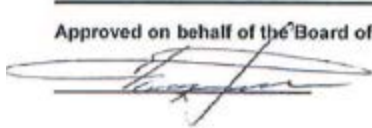
### 3 AUDITED FINANCIAL STATEMENT

The 2017 audited financial summary for the SESAA is presented in the following table. The complete audited report is presented in Appendix K.

**Table 21 SESAA Financial Summary for the Year 2017**

| <b>Southeast Saskatchewan Airshed Association Inc.</b><br><b>Statement of Financial Position</b><br><i>As at December 31, 2017</i> |         |         |
|------------------------------------------------------------------------------------------------------------------------------------|---------|---------|
|                                                                                                                                    | 2017    | 2016    |
| <b>Assets</b>                                                                                                                      |         |         |
| <b>Current</b>                                                                                                                     |         |         |
| Cash                                                                                                                               | 146,550 | 97,436  |
| Marketable securities (Note 3)                                                                                                     | 101,257 | 100,000 |
| Prepaid expenses and deposits                                                                                                      | 4,542   | 3,776   |
|                                                                                                                                    | 252,349 | 201,212 |
| <b>Capital assets (Note 4)</b>                                                                                                     | 304,193 | 380,242 |
|                                                                                                                                    | 556,542 | 581,454 |
| <b>Liabilities</b>                                                                                                                 |         |         |
| <b>Current</b>                                                                                                                     |         |         |
| Accounts payable and accruals                                                                                                      | 28,018  | 27,225  |
| Current portion deferred contributions (Note 5)                                                                                    | 50,900  | 70,900  |
| Government remittances payable                                                                                                     | 3,907   | 5,596   |
|                                                                                                                                    | 82,825  | 103,721 |
| <b>Deferred contributions (Note 5)</b>                                                                                             | 15,450  | 66,350  |
|                                                                                                                                    | 98,275  | 170,071 |
| <b>Net Assets</b>                                                                                                                  |         |         |
| Unrestricted net assets                                                                                                            | 458,267 | 411,383 |
|                                                                                                                                    | 556,542 | 581,454 |

Approved on behalf of the Board of Directors




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## APPENDIX A SASKATCHEWAN AMBIENT AIR QUALITY STANDARDS

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

| TABLE 20: SASKATCHEWAN AMBIENT AIR QUALITY STANDARDS ( $\mu\text{g}/\text{m}^3$ ) |                        |                              |                  |                             |
|-----------------------------------------------------------------------------------|------------------------|------------------------------|------------------|-----------------------------|
| Air Pollutant                                                                     | 1 Hour                 | 8 Hours                      | 24 Hours         | Annual                      |
| Particulate Matter ( $\text{PM}_{2.5}$ )                                          |                        |                              | 28 <sup>a</sup>  | 10                          |
| Particulate Matter ( $\text{PM}_{10}$ )                                           |                        |                              | 50               |                             |
| Total Suspended Particulates (TSP)                                                |                        |                              | 100              | 60 <sup>b</sup>             |
| Nitrogen Dioxide ( $\text{NO}_2$ )                                                | 300<br>(159 ppb)       |                              | 200<br>(106 ppb) | 45 <sup>c</sup><br>(24 ppb) |
| Sulphur Dioxide ( $\text{SO}_2$ )                                                 | 450<br>(172 ppb)       |                              | 125<br>(48 ppb)  | 20 <sup>c</sup><br>(8 ppb)  |
| Hydrogen Sulphide ( $\text{H}_2\text{S}$ )                                        | 15<br>(11 ppb)         |                              | 5<br>(3.6 ppb)   |                             |
| Ozone ( $\text{O}_3$ )                                                            | 160<br>(82 ppb)        | 124 <sup>d</sup><br>(63 ppb) |                  |                             |
| Carbon Monoxide (CO)                                                              | 15,000<br>(13,000 ppb) | 6,000<br>(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 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| NO                  | ppb               | 416               | 8242                | 94.1%                 | 0.4                                | < 0.1   | 21.5    |
| NO <sub>2</sub>     | ppb               | 416               | 8269                | 94.4%                 | 1.8                                | 0.1     | 18.0    |
| NO <sub>x</sub>     | ppb               | 416               | 8240                | 94.1%                 | 2.2                                | 0.3     | 32.6    |
| O <sub>3</sub>      | ppb               | 391               | 7728                | 88.2%                 | 31.2                               | 2.2     | 69.0    |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 21                | 8182                | 93.4%                 | 7.1                                | < 0.1   | 319.0   |
| Precipitation       | mm                | 0                 | 8707                | 99.4%                 | 187.2 (total)                      | < 0.1   | 10.2    |
| Ambient Temperature | °C                | 0                 | 8707                | 99.4%                 | 3.3                                | -36.6   | 32.8    |
| Relative Humidity   | %                 | 0                 | 8707                | 99.4%                 | 65.1                               | 16.3    | 91.9    |
| Wind Speed          | km/hr             | 0                 | 8707                | 99.4%                 | 11.0                               | Calm    | 49.3    |

\*Value is total, not average

**Table B-2 Esterhazy Station: Summary of Airpointer NO Monitoring Results for the Year 2017**

| 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   | 688                   | 92.5%                | 0.4                 | 4.0                      | 1.1                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 0.4                 | 3.8                      | 1.0                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 705                   | 94.8%                | 0.4                 | 3.6                      | 1.0                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                   | 95.6%                | 0.3                 | 1.2                      | 0.3                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 703                   | 94.5%                | 0.3                 | 1.6                      | 0.5                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 689                   | 95.7%                | 0.7                 | 21.5                     | 2.6                       | 98.5%                                       | 1.3%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 693                   | 93.1%                | 0.4                 | 3.5                      | 0.8                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 702                   | 94.4%                | 0.5                 | 4.4                      | 1.2                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 661                   | 91.8%                | 0.3                 | 2.8                      | 0.5                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 692                   | 93.0%                | 0.3                 | 1.3                      | 0.4                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 676                   | 93.9%                | 0.4                 | 7.6                      | 1.7                       | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 702                   | 94.4%                | 0.3                 | 2.0                      | 0.7                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 8242                  | 94.1%                | 0.4                 | 21.5                     | 2.6                       | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |

**Table B-3 Esterhazy Station: Summary of Airpointer NO<sub>2</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | 1-Hour Exceedance<br>(no.) | Maximum 24-Hr Conc.<br>(ppb) | 24-Hour Exceedance<br>(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   | 689                      | 92.6%                   | 2.3                    | 14.8                        | 0                          | 7.9                          | 0                           | 94.8%                                       | 5.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                      | 95.7%                   | 1.7                    | 8.6                         | 0                          | 5.3                          | 0                           | 96.9%                                       | 3.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 706                      | 94.9%                   | 1.6                    | 6.5                         | 0                          | 3.1                          | 0                           | 99.3%                                       | 0.7%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                      | 95.6%                   | 1.1                    | 5.0                         | 0                          | 1.8                          | 0                           | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 703                      | 94.5%                   | 1.5                    | 11.1                        | 0                          | 4.1                          | 0                           | 97.4%                                       | 2.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 689                      | 95.7%                   | 2.9                    | 16.9                        | 0                          | 5.8                          | 0                           | 82.6%                                       | 17.0%      | 0.4%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 692                      | 93.0%                   | 1.7                    | 9.8                         | 0                          | 3.3                          | 0                           | 95.4%                                       | 4.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 705                      | 94.8%                   | 1.8                    | 9.2                         | 0                          | 3.4                          | 0                           | 94.8%                                       | 5.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 670                      | 93.1%                   | 1.8                    | 11.8                        | 0                          | 3.1                          | 0                           | 96.7%                                       | 3.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 692                      | 93.0%                   | 1.7                    | 7.9                         | 0                          | 3.6                          | 0                           | 97.1%                                       | 2.9%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 680                      | 94.4%                   | 2.3                    | 18.0                        | 0                          | 5.3                          | 0                           | 93.2%                                       | 6.6%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                      | 95.7%                   | 1.7                    | 9.3                         | 0                          | 3.2                          | 0                           | 99.4%                                       | 0.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 8269                     | 94.4%                   | 1.8                    | 18.0                        | 0                          | 7.9                          | 0                           | 95.6%                                       | 4.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |

**Table B-4 Esterhazy Station: Summary of Airpointer NO<sub>x</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | Maximum 24-Hr Conc.<br>(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   | 688                      | 92.5%                   | 2.6                    | 15.2                        | 9.0                          | 93.2%                                       | 6.7%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                      | 95.7%                   | 2.1                    | 11.4                        | 6.4                          | 95.5%                                       | 4.5%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 705                      | 94.8%                   | 2.0                    | 10.1                        | 3.7                          | 98.0%                                       | 2.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                      | 95.6%                   | 1.3                    | 5.3                         | 2.1                          | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 703                      | 94.5%                   | 1.8                    | 11.6                        | 4.5                          | 96.2%                                       | 3.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 689                      | 95.7%                   | 3.6                    | 32.6                        | 6.6                          | 80.0%                                       | 18.4%      | 1.5%        | 0.1%         | 0.0%          | 0.0%    |
| July      | 691                      | 92.9%                   | 2.1                    | 11.8                        | 4.1                          | 93.3%                                       | 6.7%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 702                      | 94.4%                   | 2.3                    | 11.6                        | 4.6                          | 92.3%                                       | 7.7%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 661                      | 91.8%                   | 2.0                    | 14.6                        | 3.4                          | 96.2%                                       | 3.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 692                      | 93.0%                   | 1.9                    | 8.1                         | 4.0                          | 95.7%                                       | 4.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 676                      | 93.9%                   | 2.7                    | 25.1                        | 6.9                          | 91.3%                                       | 8.1%       | 0.6%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 702                      | 94.4%                   | 2.0                    | 9.6                         | 3.6                          | 98.6%                                       | 1.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 8240                     | 94.1%                   | 2.2                    | 32.6                        | 9.0                          | 94.2%                                       | 5.6%       | 0.2%        | 0.0%         | 0.0%          | 0.0%    |

**Table B-5 Esterhazy Station: Summary of Airpointer O<sub>3</sub> Monitoring Results for the Year 2017**

| 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   | 689                   | 92.6%                | 33.1                | 48.4                     | 0                       | 44.0                      | 0.0%                                        | 3.9%        | 81.0%       | 15.1%       | 0.0%        | 0.0%   |
| February  | 643                   | 95.7%                | 35.7                | 49.7                     | 0                       | 45.6                      | 0.0%                                        | 3.3%        | 70.8%       | 26.0%       | 0.0%        | 0.0%   |
| March     | 705                   | 94.8%                | 34.6                | 51.6                     | 0                       | 44.7                      | 0.9%                                        | 2.4%        | 73.9%       | 22.8%       | 0.0%        | 0.0%   |
| April     | 687                   | 95.4%                | 34.9                | 64.2                     | 0                       | 47.5                      | 0.0%                                        | 3.5%        | 69.0%       | 26.9%       | 0.6%        | 0.0%   |
| May       | 702                   | 94.4%                | 36.6                | 69.0                     | 0                       | 47.9                      | 0.1%                                        | 4.6%        | 57.1%       | 37.0%       | 1.1%        | 0.0%   |
| June      | 689                   | 95.7%                | 29.4                | 67.6                     | 0                       | 44.6                      | 4.5%                                        | 21.6%       | 52.2%       | 19.7%       | 1.9%        | 0.0%   |
| July      | 710                   | 95.4%                | 28.4                | 58.5                     | 0                       | 37.6                      | 4.6%                                        | 18.2%       | 62.3%       | 14.9%       | 0.0%        | 0.0%   |
| August    | 680                   | 91.4%                | 25.9                | 53.8                     | 0                       | 36.5                      | 8.2%                                        | 27.5%       | 49.9%       | 14.4%       | 0.0%        | 0.0%   |
| September | 223                   | 31.0%                | 29.5                | 51.4                     | 0                       | 42.3                      | 0.9%                                        | 16.6%       | 64.6%       | 17.9%       | 0.0%        | 0.0%   |
| October   | 608                   | 81.7%                | 26.1                | 49.1                     | 0                       | 35.1                      | 1.8%                                        | 21.9%       | 70.9%       | 5.4%        | 0.0%        | 0.0%   |
| November  | 680                   | 94.4%                | 28.1                | 45.5                     | 0                       | 35.9                      | 0.0%                                        | 10.6%       | 88.8%       | 0.6%        | 0.0%        | 0.0%   |
| December  | 712                   | 95.7%                | 30.6                | 42.4                     | 0                       | 38.5                      | 1.4%                                        | 6.0%        | 89.0%       | 3.5%        | 0.0%        | 0.0%   |
| Annual    | 7728                  | 88.2%                | 31.2                | 69.0                     | 0                       | 47.9                      | 1.9%                                        | 11.3%       | 69.4%       | 17.1%       | 0.3%        | 0.0%   |

**Table B-6 Esterhazy Station: Summary of Airpointer PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Conc. (µg/m <sup>3</sup> ) | Maximum 1-Hr Conc. (µg/m <sup>3</sup> ) | Maximum 24-Hr Conc. (µg/m <sup>3</sup> ) | 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   | 721                   | 96.9%                | 3.8                                | 20.0                                    | 10.6                                     | 0                        | 0                                           | 64.8%     | 31.1%      | 4.2%        | 0.0%        | 0.0%   |
| February  | 672                   | 100.0%               | 3.4                                | 19.7                                    | 9.4                                      | 0                        | 31.8%                                       | 38.8%     | 27.2%      | 2.1%        | 0.0%        | 0.0%   |
| March     | 705                   | 94.8%                | 5.0                                | 23.9                                    | 13.1                                     | 0                        | 21.6%                                       | 25.7%     | 43.7%      | 8.8%        | 0.3%        | 0.0%   |
| April     | 636                   | 88.3%                | 5.3                                | 62.0                                    | 10.8                                     | 0                        | 22.0%                                       | 33.2%     | 33.0%      | 9.3%        | 2.2%        | 0.3%   |
| May       | 470                   | 63.2%                | 7.5                                | 319.0                                   | 25.8                                     | 0                        | 6.4%                                        | 24.7%     | 50.2%      | 17.0%       | 1.1%        | 0.6%   |
| June      | 720                   | 100.0%               | 5.1                                | 49.8                                    | 14.4                                     | 0                        | 25.6%                                       | 31.8%     | 31.0%      | 9.0%        | 1.7%        | 1.0%   |
| July      | 688                   | 92.5%                | 9.1                                | 92.6                                    | 31.5                                     | 1                        | 9.3%                                        | 17.4%     | 46.8%      | 18.9%       | 3.5%        | 4.1%   |
| August    | 736                   | 98.9%                | 9.4                                | 177.6                                   | 24.3                                     | 0                        | 3.7%                                        | 18.2%     | 49.0%      | 19.3%       | 7.9%        | 1.9%   |
| September | 702                   | 97.5%                | 11.5                               | 163.9                                   | 52.9                                     | 3                        | 0.0%                                        | 0.4%      | 66.7%      | 23.2%       | 4.4%        | 5.3%   |
| October   | 732                   | 98.4%                | 11.2                               | 154.0                                   | 42.1                                     | 2                        | 4.9%                                        | 9.3%      | 59.0%      | 14.3%       | 4.5%        | 7.9%   |
| November  | 665                   | 92.4%                | 10.7                               | 88.0                                    | 33.1                                     | 1                        | 5.1%                                        | 13.4%     | 52.5%      | 18.5%       | 6.0%        | 4.5%   |
| December  | 735                   | 98.8%                | 3.2                                | 10.5                                    | 6.0                                      | 0                        | 26.3%                                       | 49.3%     | 24.4%      | 0.1%        | 0.0%        | 0.0%   |
| Annual    | 8182                  | 93.4%                | 7.1                                | 319.0                                   | 52.9                                     | 7                        | 15.6%                                       | 24.9%     | 42.7%      | 11.9%       | 2.7%        | 2.2%   |

**Table B-7 Esterhazy Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                          |                         |                       |                              |                               | <=5                                         | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 721                      | 96.9%                   | 0.3                   | 0.3                          | 0.3                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | 1.4                   | 1.3                          | 1.4                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 744                      | 100.0%                  | 1.1                   | 0.5                          | 0.7                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 7.3                   | 3.1                          | 3.4                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 742                      | 99.7%                   | 31.9                  | 5.8                          | 9.5                           | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| June      | 720                      | 100.0%                  | 64.9                  | 10.2                         | 43.4                          | 99.4%                                       | 0.3%   | 0.3%    | 0.0%    | 0.0%    | 0.0% |
| July      | 743                      | 99.9%                   | 24.5                  | 6.0                          | 6.7                           | 99.7%                                       | 0.3%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| August    | 739                      | 99.3%                   | 33.0                  | 9.5                          | 14.5                          | 99.5%                                       | 0.5%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| September | 710                      | 98.6%                   | 14.9                  | 3.0                          | 7.6                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 734                      | 98.7%                   | 7.1                   | 2.2                          | 3.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 718                      | 99.7%                   | 0.0                   | 0.0                          | 0.0                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | 0.8                   | 0.4                          | 0.8                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| Annual    | 8707                     | 99.4%                   | 187.2                 | 10.2                         | 43.4                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |

**Table B-8 Esterhazy Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Temp.<br>(°C) | Minimum 1-Hr Temp.<br>(°C) | Maximum 1-Hr Temp.<br>(°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|--------------------------|-------------------------|-----------------------|----------------------------|----------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                          |                         |                       |                            |                            | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 721                      | 96.9%                   | -11.9                 | -33.5                      | 7.0                        | 2.6%                                      | 38.7%     | 48.7%   | 10.0%  | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | -9.3                  | -27.8                      | 8.3                        | 0.0%                                      | 30.5%     | 51.2%   | 18.3%  | 0.0%    | 0.0% |
| March     | 744                      | 100.0%                  | -7.1                  | -28.7                      | 11.8                       | 0.0%                                      | 25.9%     | 49.5%   | 24.6%  | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 4.5                   | -7.8                       | 18.6                       | 0.0%                                      | 0.0%      | 25.3%   | 70.8%  | 3.9%    | 0.0% |
| May       | 742                      | 99.7%                   | 11.7                  | -2.0                       | 26.1                       | 0.0%                                      | 0.0%      | 1.1%    | 72.2%  | 26.7%   | 0.0% |
| June      | 720                      | 100.0%                  | 15.9                  | 5.4                        | 29.4                       | 0.0%                                      | 0.0%      | 0.0%    | 49.7%  | 50.3%   | 0.0% |
| July      | 743                      | 99.9%                   | 19.4                  | 8.5                        | 32.8                       | 0.0%                                      | 0.0%      | 0.0%    | 26.1%  | 72.3%   | 1.6% |
| August    | 739                      | 99.3%                   | 17.4                  | 5.4                        | 32.3                       | 0.0%                                      | 0.0%      | 0.0%    | 40.3%  | 58.9%   | 0.8% |
| September | 710                      | 98.6%                   | 12.8                  | 2.5                        | 29.3                       | 0.0%                                      | 0.0%      | 0.0%    | 68.3%  | 31.7%   | 0.0% |
| October   | 734                      | 98.7%                   | 5.0                   | -9.2                       | 23.4                       | 0.0%                                      | 0.0%      | 20.4%   | 72.2%  | 7.4%    | 0.0% |
| November  | 718                      | 99.7%                   | -7.4                  | -20.6                      | 5.6                        | 0.0%                                      | 8.1%      | 80.6%   | 11.3%  | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | -12.5                 | -36.6                      | 3.6                        | 7.0%                                      | 29.8%     | 54.7%   | 8.5%   | 0.0%    | 0.0% |
| Annual    | 8707                     | 99.4%                   | 3.3                   | -36.6                      | 32.8                       | 0.8%                                      | 11.0%     | 27.4%   | 39.4%  | 21.1%   | 0.2% |

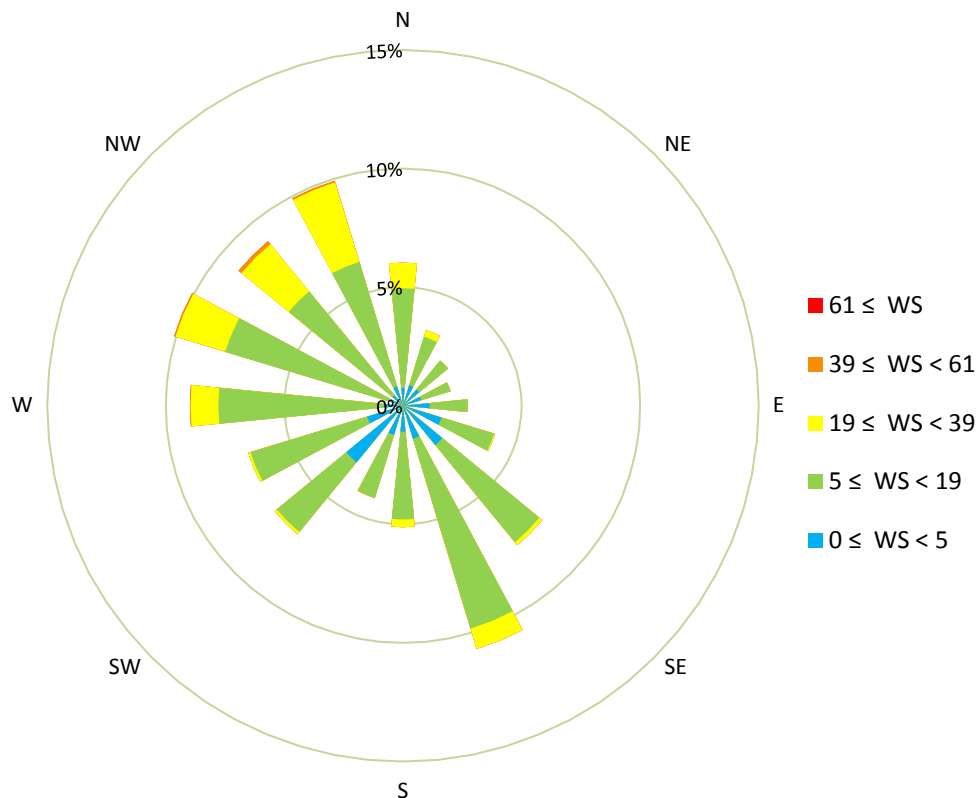
**Table B-9      Esterhazy Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid<br>1-Hr data<br>(no.) | Operational<br>Time<br>(%) | Average<br>RH<br>(%) | Minimum<br>1-Hr RH<br>(%) | Maximum<br>1-Hr RH<br>(%) | Percent of Data in each Relative Humidity Range |         |         |         |         |      |
|-----------|-----------------------------|----------------------------|----------------------|---------------------------|---------------------------|-------------------------------------------------|---------|---------|---------|---------|------|
|           |                             |                            |                      |                           |                           | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90  |
| January   | 721                         | 96.9%                      | 72                   | 53                        | 88                        | 0.0%                                            | 0.0%    | 6.8%    | 81.8%   | 11.4%   | 0.0% |
| February  | 672                         | 100.0%                     | 70                   | 46                        | 88                        | 0.0%                                            | 0.0%    | 9.8%    | 80.7%   | 9.5%    | 0.0% |
| March     | 744                         | 100.0%                     | 71                   | 37                        | 90                        | 0.0%                                            | 0.0%    | 20.4%   | 54.2%   | 25.4%   | 0.0% |
| April     | 720                         | 100.0%                     | 59                   | 16                        | 91                        | 0.0%                                            | 6.8%    | 40.3%   | 42.6%   | 9.3%    | 1.0% |
| May       | 742                         | 99.7%                      | 53                   | 17                        | 91                        | 0.0%                                            | 18.2%   | 39.8%   | 33.8%   | 8.0%    | 0.3% |
| June      | 720                         | 100.0%                     | 61                   | 18                        | 92                        | 0.0%                                            | 5.1%    | 39.3%   | 34.4%   | 19.0%   | 2.1% |
| July      | 743                         | 99.9%                      | 65                   | 30                        | 92                        | 0.0%                                            | 0.1%    | 40.5%   | 32.3%   | 24.1%   | 3.0% |
| August    | 739                         | 99.3%                      | 62                   | 18                        | 92                        | 0.0%                                            | 4.9%    | 40.3%   | 27.5%   | 22.9%   | 4.5% |
| September | 710                         | 98.6%                      | 63                   | 23                        | 90                        | 0.0%                                            | 5.1%    | 36.8%   | 35.9%   | 22.3%   | 0.0% |
| October   | 734                         | 98.7%                      | 62                   | 19                        | 92                        | 0.0%                                            | 5.6%    | 33.7%   | 45.1%   | 13.5%   | 2.2% |
| November  | 718                         | 99.7%                      | 74                   | 52                        | 86                        | 0.0%                                            | 0.0%    | 3.2%    | 78.6%   | 18.2%   | 0.0% |
| December  | 744                         | 100.0%                     | 71                   | 52                        | 85                        | 0.0%                                            | 0.0%    | 3.5%    | 88.3%   | 8.2%    | 0.0% |
|           |                             |                            |                      |                           |                           |                                                 |         |         |         |         |      |
| Annual    | 8707                        | 99.4%                      | 65                   | 16                        | 92                        | 0.0%                                            | 3.8%    | 26.3%   | 52.7%   | 16.0%   | 1.1% |

**Table B-10 Esterhazy Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         |        |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS | Totals |
| North NorthEast       | 0.9%                                                         | 2.1%        | 0.3%         | 0.0%         | 0.0%    | 3.3%   |
| NorthEast             | 0.9%                                                         | 1.6%        | 0.0%         | 0.0%         | 0.0%    | 2.5%   |
| East NorthEast        | 0.8%                                                         | 1.3%        | 0.0%         | 0.0%         | 0.0%    | 2.1%   |
| East                  | 1.1%                                                         | 1.6%        | 0.0%         | 0.0%         | 0.0%    | 2.7%   |
| East SouthEast        | 1.7%                                                         | 2.3%        | 0.0%         | 0.0%         | 0.0%    | 4.1%   |
| SouthEast             | 2.1%                                                         | 5.3%        | 0.2%         | 0.0%         | 0.0%    | 7.6%   |
| South SouthEast       | 1.5%                                                         | 8.4%        | 0.9%         | 0.0%         | 0.0%    | 10.7%  |
| South                 | 1.1%                                                         | 3.7%        | 0.3%         | 0.0%         | 0.0%    | 5.1%   |
| South SouthWest       | 1.3%                                                         | 2.8%        | 0.0%         | 0.0%         | 0.0%    | 4.1%   |
| Southwest             | 3.1%                                                         | 3.8%        | 0.1%         | 0.0%         | 0.0%    | 7.0%   |
| West SouthWest        | 1.6%                                                         | 5.1%        | 0.1%         | 0.0%         | 0.0%    | 6.8%   |
| West                  | 0.8%                                                         | 7.0%        | 1.2%         | 0.0%         | 0.0%    | 9.0%   |
| West NorthWest        | 0.6%                                                         | 7.3%        | 2.2%         | 0.1%         | 0.0%    | 10.1%  |
| NorthWest             | 0.6%                                                         | 5.7%        | 2.6%         | 0.2%         | 0.0%    | 9.0%   |
| North NorthWest       | 0.8%                                                         | 5.5%        | 3.5%         | 0.1%         | 0.0%    | 9.9%   |
| North                 | 0.7%                                                         | 4.2%        | 1.1%         | 0.0%         | 0.0%    | 6.0%   |
| Total                 | 19.6%                                                        | 67.6%       | 12.4%        | 0.3%         | 0.0%    | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 0.3% |
| Number of Valid Hourly-Average Data | 8707 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX C ESTEVAN STATION: CONTINUOUS MONITORING DATA

**Table C-1 Estevan Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| SO <sub>2</sub>     | ppb               | 133               | 7797                | 89.0%                 | 2.1                                | < 0.1   | 76.2    |
| NO                  | ppb               | 133               | 2298                | 26.2%                 | 3.8                                | < 0.1   | 25.2    |
| NO <sub>2</sub>     | ppb               | 133               | 2298                | 26.2%                 | 1.8                                | < 0.1   | 52.0    |
| NO <sub>x</sub>     | ppb               | 133               | 2298                | 26.2%                 | 5.6                                | < 0.1   | 71.5    |
| O <sub>3</sub>      | ppb               | 116               | 2296                | 26.2%                 | 20.1                               | 0.2     | 37.9    |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 0                 | 8705                | 99.4%                 | 7.1                                | < 0.1   | 104.4   |
| PM <sub>10</sub>    | µg/m <sup>3</sup> | 0                 | 2431                | 27.8%                 | 18.8                               | 1.0     | 544.5   |
| Black Carbon        | µg/m <sup>3</sup> | 0                 | 2429                | 27.7%                 | 0.3                                | < 0.1   | 3.4     |
| Precipitation       | mm                | 0                 | 2435                | 27.8%                 | 17.9 (total)                       | < 0.1   | 2.8     |
| Ambient Temperature | °C                | 0                 | 8726                | 99.6%                 | 6.2                                | -35.2   | 36.4    |
| Relative Humidity   | %                 | 0                 | 2435                | 27.8%                 | 66.7                               | 17.0    | 91.0    |
| Wind Speed          | m/s               | 0                 | 8760                | 47.9%                 | 29.7                               | Calm    | 106.6   |

**Table C-2 Estevan Station: Summary of SO<sub>2</sub> Monitoring Results for the Year 2017**

| 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 < 5 | 5 ≤ C < 10 | 10 ≤ C < 57 | 57 ≤ C < 172 | C ≥ 172 |
| January   | 356                   | 47.8%                | 1.9                 | 70.5                     | -                       | 7.7                       | -                        | 44.4%                                       | 52.2%     | 1.4%       | 1.7%        | 0.3%         | 0.0%    |
| February  | 277                   | 41.2%                | 1.0                 | 3.8                      | -                       | 1.5                       | -                        | 65.7%                                       | 34.3%     | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| March     | 738                   | 99.2%                | 2.4                 | 76.2                     | -                       | 7.7                       | -                        | 22.2%                                       | 70.3%     | 5.1%       | 2.2%        | 0.1%         | 0.0%    |
| April     | 720                   | 100.0%               | 3.0                 | 56.5                     | -                       | 7.2                       | -                        | 0.3%                                        | 92.1%     | 5.1%       | 2.5%        | 0.0%         | 0.0%    |
| May       | 740                   | 99.5%                | 2.6                 | 36.7                     | -                       | 5.8                       | -                        | 2.7%                                        | 90.7%     | 5.0%       | 1.6%        | 0.0%         | 0.0%    |
| June      | 720                   | 100.0%               | 2.5                 | 24.8                     | -                       | 6.7                       | -                        | 2.4%                                        | 93.6%     | 2.5%       | 1.5%        | 0.0%         | 0.0%    |
| July      | 744                   | 100.0%               | 2.0                 | 22.1                     | -                       | 6.9                       | -                        | 32.4%                                       | 61.2%     | 4.3%       | 2.2%        | 0.0%         | 0.0%    |
| August    | 744                   | 100.0%               | 2.8                 | 18.4                     | -                       | 4.6                       | -                        | 0.3%                                        | 91.8%     | 6.6%       | 1.3%        | 0.0%         | 0.0%    |
| September | 665                   | 92.4%                | 1.3                 | 25.2                     | -                       | 5.1                       | -                        | 63.2%                                       | 33.4%     | 2.0%       | 1.5%        | 0.0%         | 0.0%    |
| October   | 712                   | 95.7%                | 2.3                 | 59.8                     | -                       | 13.3                      | -                        | 82.3%                                       | 9.3%      | 2.8%       | 5.1%        | 0.6%         | 0.0%    |
| November  | 670                   | 93.1%                | 1.4                 | 46.0                     | -                       | 5.4                       | -                        | 78.7%                                       | 14.9%     | 4.6%       | 1.8%        | 0.0%         | 0.0%    |
| December  | 711                   | 95.6%                | 1.1                 | 40.6                     | -                       | 8.8                       | -                        | 81.6%                                       | 15.5%     | 1.3%       | 1.7%        | 0.0%         | 0.0%    |
| Annual    | 7797                  | 89.0%                | 2.1                 | 76.2                     | 0                       | 13.3                      | 0                        | 37.2%                                       | 57.0%     | 3.7%       | 2.0%        | 0.1%         | 0.0%    |

**Table C-3 Estevan Station: Summary of NO Monitoring Results for the Year 2017**

| 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   | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| February  | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| March     | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| April     | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| May       | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| June      | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| July      | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| August    | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| September | 205                   | 28.5%                | 4.3                 | 21.9                     | 8.0                       | 75.1%                                       | 23.4%      | 1.5%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 712                   | 95.7%                | 3.2                 | 23.7                     | 8.1                       | 79.8%                                       | 18.5%      | 1.7%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 670                   | 93.1%                | 4.4                 | 25.2                     | 10.7                      | 70.3%                                       | 27.3%      | 2.4%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 711                   | 95.6%                | 3.8                 | 19.8                     | 10.7                      | 80.3%                                       | 17.9%      | 1.8%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 2298                  | 26.2%                | 3.8                 | 25.2                     | 10.7                      | 76.8%                                       | 21.3%      | 1.9%        | 0.0%         | 0.0%          | 0.0%    |

**Table C-4 Estevan Station: Summary of NO<sub>2</sub> Monitoring Results for the Year 2017**

| 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   | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| February  | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| March     | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| April     | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| May       | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| June      | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| July      | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| August    | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -          | -           | -            | -             | -       |
| September | 205                   | 28.5%                | 2.3                 | 26.0                     | 0                       | 4.8                       | 0                        | 87.8%                                       | 10.2%      | 2.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 712                   | 95.7%                | 1.8                 | 28.2                     | 0                       | 5.2                       | 0                        | 90.3%                                       | 8.1%       | 1.5%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 670                   | 93.1%                | 2.0                 | 52.0                     | 0                       | 7.0                       | 0                        | 92.2%                                       | 6.1%       | 1.0%        | 0.6%         | 0.0%          | 0.0%    |
| December  | 711                   | 95.6%                | 1.4                 | 26.5                     | 0                       | 6.7                       | 0                        | 94.8%                                       | 3.9%       | 1.3%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 2298                  | 26.2%                | 1.8                 | 52.0                     | 0                       | 7.0                       | 0                        | 92.0%                                       | 6.4%       | 1.3%        | 0.2%         | 0.0%          | 0.0%    |

**Table C-5 Estevan Station: Summary of NO<sub>x</sub> Monitoring Results for the Year 2017**

| 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   | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| February  | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| March     | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| April     | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| May       | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| June      | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| July      | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| August    | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| September | 205                   | 28.5%                | 6.6                 | 39.9                     | 10.3                      | 56.6%                                       | 36.1%      | 5.9%        | 1.5%         | 0.0%          | 0.0%    |
| October   | 712                   | 95.7%                | 5.0                 | 47.6                     | 13.3                      | 69.0%                                       | 24.6%      | 5.2%        | 1.3%         | 0.0%          | 0.0%    |
| November  | 670                   | 93.1%                | 6.4                 | 71.5                     | 15.0                      | 57.3%                                       | 34.6%      | 6.6%        | 1.5%         | 0.0%          | 0.0%    |
| December  | 711                   | 95.6%                | 5.2                 | 43.8                     | 15.7                      | 69.9%                                       | 25.5%      | 3.5%        | 1.1%         | 0.0%          | 0.0%    |
| Annual    | 2298                  | 26.2%                | 5.6                 | 71.5                     | 15.7                      | 64.8%                                       | 28.8%      | 5.1%        | 1.3%         | 0.0%          | 0.0%    |

**Table C-6 Estevan Station: Summary of O<sub>3</sub> Monitoring Results for the Year 2017**

| 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 | 82 ≤ C |
| January   | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| February  | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| March     | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| April     | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| May       | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| June      | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| July      | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| August    | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| September | 204                   | 28.3%                | 15.0                | 34.7                     | -                       | 23.4                      | 33.3%                                       | 40.2%       | 26.5%       | 0.0%        | 0.0%        | 0.0%   |
| October   | 712                   | 95.7%                | 18.5                | 37.9                     | -                       | 27.7                      | 15.9%                                       | 42.8%       | 41.3%       | 0.0%        | 0.0%        | 0.0%   |
| November  | 669                   | 92.9%                | 19.6                | 35.2                     | -                       | 26.8                      | 9.9%                                        | 39.3%       | 50.8%       | 0.0%        | 0.0%        | 0.0%   |
| December  | 712                   | 95.7%                | 23.6                | 34.7                     | -                       | 31.7                      | 2.8%                                        | 25.7%       | 71.3%       | 0.0%        | 0.0%        | 0.1%   |
| Annual    | 2296                  | 26.2%                | 20.1                | 37.9                     | -                       | 31.7                      | 11.6%                                       | 36.3%       | 52.1%       | 0.0%        | 0.0%        | 0.0%   |

**Table C-7 Estevan Station: Summary of PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Conc. (µg/m³) | Maximum 1-Hr Conc. (µg/m³) | Maximum 24-Hr Conc. (µg/m³) | 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   | 743                   | 99.9%                | 3.7                   | 11.3                       | 6.8                         | 0                        | 5.0%                                        | 64.2%     | 30.6%      | 0.3%        | 0.0%        | 0.0%   |
| February  | 672                   | 100.0%               | 3.4                   | 9.5                        | 5.2                         | 0                        | 5.2%                                        | 73.4%     | 21.4%      | 0.0%        | 0.0%        | 0.0%   |
| March     | 737                   | 99.1%                | 5.7                   | 19.4                       | 11.9                        | 0                        | 1.4%                                        | 31.6%     | 60.4%      | 6.6%        | 0.0%        | 0.0%   |
| April     | 720                   | 100.0%               | 6.3                   | 21.4                       | 9.0                         | 0                        | 0.0%                                        | 8.1%      | 86.0%      | 5.8%        | 0.1%        | 0.0%   |
| May       | 732                   | 98.4%                | 5.4                   | 16.5                       | 8.7                         | 0                        | 2.9%                                        | 27.9%     | 63.8%      | 5.5%        | 0.0%        | 0.0%   |
| June      | 720                   | 100.0%               | 5.9                   | 20.4                       | 8.7                         | 0                        | 1.5%                                        | 20.7%     | 70.1%      | 7.5%        | 0.1%        | 0.0%   |
| July      | 744                   | 100.0%               | 13.7                  | 48.1                       | 26.7                        | 0                        | 0.9%                                        | 0.7%      | 23.0%      | 63.8%       | 9.0%        | 2.6%   |
| August    | 742                   | 99.7%                | 12.5                  | 32.4                       | 23.6                        | 0                        | 1.5%                                        | 1.8%      | 36.3%      | 47.7%       | 12.0%       | 0.8%   |
| September | 689                   | 95.7%                | 11.2                  | 104.4                      | 45.7                        | 1                        | 2.2%                                        | 19.4%     | 38.2%      | 26.9%       | 9.9%        | 3.5%   |
| October   | 744                   | 100.0%               | 6.0                   | 91.2                       | 14.3                        | 0                        | 10.2%                                       | 28.6%     | 48.8%      | 10.6%       | 1.2%        | 0.5%   |
| November  | 718                   | 99.7%                | 7.2                   | 24.9                       | 16.6                        | 0                        | 12.3%                                       | 15.7%     | 48.1%      | 23.1%       | 0.8%        | 0.0%   |
| December  | 744                   | 100.0%               | 4.3                   | 13.4                       | 7.5                         | 0                        | 11.4%                                       | 43.0%     | 44.4%      | 1.2%        | 0.0%        | 0.0%   |
| Annual    | 8705                  | 99.4%                | 7.1                   | 104.4                      | 45.7                        | 1                        | 4.5%                                        | 27.7%     | 47.7%      | 16.7%       | 2.8%        | 0.6%   |

**Table C-8 Estevan Station: Summary of PM<sub>10</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Conc. (µg/m³) | Maximum 1-Hr Conc. (µg/m³) | Maximum 24-Hr Conc. (µg/m³) | 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   | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| February  | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| March     | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| April     | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| May       | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| June      | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| July      | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| August    | -                     | 0.0%                 | -                     | -                          | -                           | 0                        | -                                           | -         | -          | -           | -           | -      |
| September | 225                   | 31.3%                | 20.5                  | 164.5                      | 37.8                        | 0                        | 2.2%                                        | 24.0%     | 34.7%      | 28.4%       | 8.0%        | 2.7%   |
| October   | 744                   | 100.0%               | 29.7                  | 544.5                      | 102.2                       | 3                        | 4.6%                                        | 12.1%     | 30.9%      | 26.1%       | 13.6%       | 12.8%  |
| November  | 719                   | 99.9%                | 16.3                  | 158.4                      | 28.7                        | 0                        | 7.2%                                        | 25.6%     | 42.8%      | 18.8%       | 3.2%        | 2.4%   |
| December  | 744                   | 100.0%               | 9.6                   | 57.1                       | 17.4                        | 0                        | 13.8%                                       | 46.9%     | 35.9%      | 3.0%        | 0.1%        | 0.3%   |
| Annual    | 2431                  | 27.8%                | 18.8                  | 544.5                      | 102.2                       | 3                        | 8.0%                                        | 27.8%     | 36.3%      | 17.1%       | 5.9%        | 4.9%   |

**Table C-9 Estevan Station: Summary of Black Carbon Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>( $\mu\text{g}/\text{m}^3$ ) | Maximum 1-Hr Conc.<br>( $\mu\text{g}/\text{m}^3$ ) | Maximum 24-Hr Conc.<br>( $\mu\text{g}/\text{m}^3$ ) | Percent of Data in each Concentration Range |                  |                |                  |                  |            |
|-----------|--------------------------|-------------------------|-----------------------------------------------|----------------------------------------------------|-----------------------------------------------------|---------------------------------------------|------------------|----------------|------------------|------------------|------------|
|           |                          |                         |                                               |                                                    |                                                     | $0 \leq C < 0.5$                            | $0.5 \leq C < 1$ | $1 \leq C < 2$ | $2 \leq C < 3.5$ | $3.5 \leq C < 5$ | $5 \leq C$ |
| January   | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| February  | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| March     | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| April     | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| May       | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| June      | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| July      | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| August    | -                        | 0.0%                    | -                                             | -                                                  | -                                                   | -                                           | -                | -              | -                | -                | -          |
| September | 225                      | 31.3%                   | 0.4                                           | 2.2                                                | 0.6                                                 | 78.7%                                       | 16.4%            | 4.4%           | 0.4%             | 0.0%             | 0.0%       |
| October   | 744                      | 100.0%                  | 0.4                                           | 3.4                                                | 1.1                                                 | 75.4%                                       | 18.5%            | 5.6%           | 0.4%             | 0.0%             | 0.0%       |
| November  | 718                      | 99.7%                   | 0.3                                           | 2.2                                                | 1.0                                                 | 82.5%                                       | 12.3%            | 4.9%           | 0.3%             | 0.0%             | 0.1%       |
| December  | 743                      | 99.9%                   | 0.2                                           | 2.2                                                | 0.5                                                 | 95.3%                                       | 3.9%             | 0.7%           | 0.1%             | 0.0%             | 0.0%       |
| Annual    | 2429                     | 27.7%                   | 0.3                                           | 3.4                                                | 1.1                                                 | 83.9%                                       | 12.0%            | 3.8%           | 0.3%             | 0.0%             | 0.0%       |

**Table C-10 Estevan Station: Summary of Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |        |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|--------|
|           |                          |                         |                       |                              |                               | $\leq 5$                                    | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | $> 75$ |
| January   | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| February  | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| March     | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| April     | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| May       | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| June      | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| July      | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| August    | -                        | 0.0%                    | -                     | -                            | -                             | -                                           | -      | -       | -       | -       | -      |
| September | 227                      | 31.5%                   | 10.2                  | 2.8                          | 5.9                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0%   |
| October   | 744                      | 100.0%                  | 6.8                   | 1.6                          | 5.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0%   |
| November  | 720                      | 100.0%                  | 0.8                   | 0.5                          | 0.6                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0%   |
| December  | 744                      | 100.0%                  | 0.1                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0%   |
| Annual    | 2435                     | 27.8%                   | 17.9                  | 2.8                          | 5.9                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0%   |

**Table C-11 Estevan Station: Summary of Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Temp. (°C) | Minimum 1-Hr Temp. (°C) | Maximum 1-Hr Temp. (°C) | Percent of Data in each Temperature Range |           |         |        |         |       |
|-----------|-----------------------|----------------------|--------------------|-------------------------|-------------------------|-------------------------------------------|-----------|---------|--------|---------|-------|
|           |                       |                      |                    |                         |                         | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30   |
| January   | 743                   | 99.9%                | -6.4               | -17.9                   | 4.5                     | 0.0%                                      | 6.6%      | 76.9%   | 16.6%  | 0.0%    | 0.0%  |
| February  | 672                   | 100.0%               | -3.6               | -19.9                   | 6.2                     | 0.0%                                      | 2.5%      | 61.5%   | 36.0%  | 0.0%    | 0.0%  |
| March     | 738                   | 99.2%                | (1.1               | -13.0                   | 17.2                    | 0.0%                                      | 0.0%      | 54.9%   | 43.0%  | 2.2%    | 0.0%  |
| April     | 720                   | 100.0%               | 6.0                | -8.4                    | 23.7                    | 0.0%                                      | 0.0%      | 22.5%   | 66.9%  | 10.6%   | 0.0%  |
| May       | 744                   | 100.0%               | 13.5               | -0.6                    | 29.5                    | 0.0%                                      | 0.0%      | 0.3%    | 58.7%  | 41.0%   | 0.0%  |
| June      | 720                   | 100.0%               | 17.9               | 4.8                     | 33.1                    | 0.0%                                      | 0.0%      | 0.0%    | 37.4%  | 60.3%   | 2.4%  |
| July      | 744                   | 100.0%               | 22.9               | 9.9                     | 36.4                    | 0.0%                                      | 0.0%      | 0.0%    | 10.3%  | 75.4%   | 14.2% |
| August    | 744                   | 100.0%               | 19.6               | 4.8                     | 34.7                    | 0.0%                                      | 0.0%      | 0.0%    | 26.5%  | 68.0%   | 5.5%  |
| September | 693                   | 96.3%                | 14.3               | 1.9                     | 32.4                    | 0.0%                                      | 0.0%      | 0.0%    | 59.9%  | 37.5%   | 2.6%  |
| October   | 744                   | 100.0%               | 6.1                | -10.1                   | 25.3                    | 0.0%                                      | 0.0%      | 16.9%   | 74.2%  | 8.9%    | 0.0%  |
| November  | 720                   | 100.0%               | -5.1               | -19.1                   | 14.9                    | 0.0%                                      | 7.5%      | 67.6%   | 24.9%  | 0.0%    | 0.0%  |
| December  | 744                   | 100.0%               | -10.4              | -35.2                   | 7.2                     | 6.7%                                      | 23.0%     | 54.2%   | 16.1%  | 0.0%    | 0.0%  |
| Annual    | 8726                  | 99.6%                | 6.2                | -35.2                   | 36.4                    | 0.6%                                      | 3.3%      | 29.4%   | 39.1%  | 25.5%   | 2.1%  |

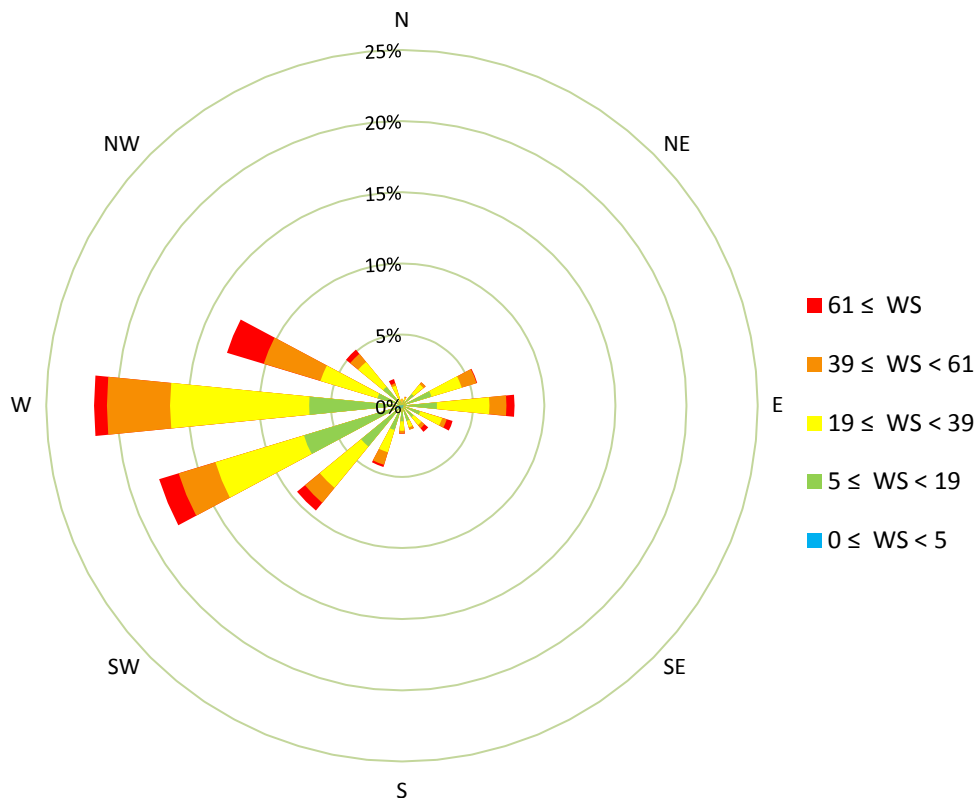
**Table C-12 Estevan Station: Summary of Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average RH (%) | Minimum 1-Hr RH (%) | Maximum 1-Hr RH (%) | Percent of Data in each Relative Humidity Range |         |         |         |         |      |
|-----------|-----------------------|----------------------|----------------|---------------------|---------------------|-------------------------------------------------|---------|---------|---------|---------|------|
|           |                       |                      |                |                     |                     | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90  |
| January   | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| February  | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| March     | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| April     | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| May       | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| June      | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| July      | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| August    | -                     | 0.0%                 | -              | -                   | -                   | -                                               | -       | -       | -       | -       | -    |
| September | 227                   | 31.5%                | 66             | 28                  | 88                  | 0.0%                                            | 1.3%    | 31.3%   | 43.6%   | 23.8%   | 0.0% |
| October   | 744                   | 100.0%               | 58             | 17                  | 91                  | 0.0%                                            | 5.4%    | 51.5%   | 35.2%   | 7.7%    | 0.3% |
| November  | 720                   | 100.0%               | 72             | 31                  | 91                  | 0.0%                                            | 0.0%    | 15.0%   | 66.4%   | 18.3%   | 0.3% |
| December  | 744                   | 100.0%               | 71             | 44                  | 88                  | 0.0%                                            | 0.0%    | 6.7%    | 87.6%   | 5.6%    | 0.0% |
| Annual    | 2435                  | 27.8%                | 67             | 17                  | 91                  | 0.0%                                            | 1.8%    | 25.1%   | 61.2%   | 11.7%   | 0.2% |

**Table C-12 Estevan Airport: Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |                  |                   |                   |              |        |
|-----------------------|--------------------------------------------------------------|------------------|-------------------|-------------------|--------------|--------|
|                       | $0 \leq WS < 5$                                              | $5 \leq WS < 19$ | $19 \leq WS < 39$ | $39 \leq WS < 61$ | $61 \leq WS$ | Totals |
| North NorthEast       | 0.0%                                                         | 0.4%             | 0.2%              | 0.1%              | 0.0%         | 0.7%   |
| NorthEast             | 0.0%                                                         | 1.0%             | 0.9%              | 0.2%              | 0.0%         | 2.1%   |
| East NorthEast        | 0.1%                                                         | 2.0%             | 2.2%              | 1.1%              | 0.0%         | 5.5%   |
| East                  | 0.0%                                                         | 2.4%             | 3.7%              | 1.2%              | 0.6%         | 7.9%   |
| East SouthEast        | 0.1%                                                         | 1.3%             | 1.6%              | 0.3%              | 0.4%         | 3.7%   |
| SouthEast             | 0.1%                                                         | 0.9%             | 0.7%              | 0.3%              | 0.3%         | 2.4%   |
| South SouthEast       | 0.1%                                                         | 1.0%             | 0.5%              | 0.2%              | 0.0%         | 1.8%   |
| South                 | 0.2%                                                         | 0.9%             | 0.7%              | 0.2%              | 0.0%         | 2.0%   |
| South SouthWest       | 0.2%                                                         | 1.6%             | 1.6%              | 0.9%              | 0.2%         | 4.5%   |
| Southwest             | 0.3%                                                         | 3.4%             | 3.7%              | 1.4%              | 0.7%         | 9.5%   |
| West SouthWest        | 0.5%                                                         | 6.7%             | 6.5%              | 2.7%              | 1.4%         | 17.8%  |
| West                  | 0.2%                                                         | 6.3%             | 9.8%              | 4.4%              | 0.9%         | 21.6%  |
| West NorthWest        | 0.0%                                                         | 1.8%             | 4.2%              | 4.2%              | 2.7%         | 12.8%  |
| NorthWest             | 0.0%                                                         | 1.7%             | 2.3%              | 0.7%              | 0.4%         | 5.1%   |
| North NorthWest       | 0.0%                                                         | 0.4%             | 1.1%              | 0.2%              | 0.3%         | 2.0%   |
| North                 | 0.0%                                                         | 0.3%             | 0.2%              | 0.0%              | 0.0%         | 0.5%   |
|                       |                                                              |                  |                   |                   |              |        |
| Total                 | 2.0%                                                         | 32.1%            | 39.9%             | 18.0%             | 8.0%         | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 0.1% |
| Number of Valid Hourly-Average Data | 4196 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX D GLEN EWEN STATION: CONTINUOUS MONITORING DATA

**Table D-1 Glen Ewen Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit  | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |       |                   |                     |                       | Average                            | Minimum | Maximum |
| SO <sub>2</sub>     | ppb   | 426               | 8308                | 94.8%                 | 1.1                                | < 0.1   | 49.9    |
| NO                  | ppb   | 426               | 8305                | 94.8%                 | 0.4                                | < 0.1   | 17.4    |
| NO <sub>2</sub>     | ppb   | 426               | 8316                | 94.9%                 | 2.0                                | < 0.1   | 30.4    |
| NO <sub>x</sub>     | ppb   | 426               | 8305                | 94.8%                 | 2.4                                | 0.2     | 36.0    |
| O <sub>3</sub>      | ppb   | 426               | 7951                | 90.8%                 | 0.5                                | < 0.1   | 36.3    |
| H <sub>2</sub> S    | ppb   | 426               | 8310                | 94.9%                 | 26.1                               | 2.0     | 56.5    |
| Precipitation       | mm    | 0                 | 8735                | 99.7%                 | 277.8 (total)                      | < 0.1   | 24.1    |
| Ambient Temperature | °C    | 0                 | 8735                | 99.7%                 | 3.8                                | -36.6   | 32.1    |
| Relative Humidity   | %     | 0                 | 8735                | 99.7%                 | 69.1                               | 18.8    | 94.1    |
| Wind Speed          | km/hr | 0                 | 8735                | 99.7%                 | 12.4                               | Calm    | 59.8    |

**Table D-2 Glen Ewen Station: Summary of Airpointer SO<sub>2</sub> Monitoring Results for the Year 2017**

| 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 < 5 | 5 ≤ C < 10 | 10 ≤ C < 57 | 57 ≤ C < 172 | C ≥ 172 |
| January   | 711                   | 95.6%                | 2.1                 | 16.3                     | -                       | 4.1                       | -                        | 42.8%                                       | 47.5%     | 6.5%       | 3.2%        | 0.0%         | 0.0%    |
| February  | 643                   | 95.7%                | 1.8                 | 17.3                     | -                       | 5.1                       | -                        | 56.0%                                       | 36.1%     | 5.8%       | 2.2%        | 0.0%         | 0.0%    |
| March     | 702                   | 94.4%                | 0.6                 | 49.9                     | -                       | 5.7                       | -                        | 92.3%                                       | 6.8%      | 0.4%       | 0.4%        | 0.0%         | 0.0%    |
| April     | 688                   | 95.6%                | 0.6                 | 23.0                     | -                       | 2.4                       | -                        | 87.2%                                       | 11.9%     | 0.6%       | 0.3%        | 0.0%         | 0.0%    |
| May       | 701                   | 94.2%                | 0.6                 | 6.6                      | -                       | 1.7                       | -                        | 86.0%                                       | 13.0%     | 1.0%       | 0.0%        | 0.0%         | 0.0%    |
| June      | 689                   | 95.7%                | 0.9                 | 15.4                     | -                       | 2.5                       | -                        | 76.8%                                       | 21.6%     | 1.3%       | 0.3%        | 0.0%         | 0.0%    |
| July      | 708                   | 95.2%                | 0.6                 | 30.9                     | -                       | 2.8                       | -                        | 89.7%                                       | 9.2%      | 0.7%       | 0.4%        | 0.0%         | 0.0%    |
| August    | 689                   | 92.6%                | 0.7                 | 22.3                     | -                       | 3.1                       | -                        | 87.8%                                       | 9.9%      | 1.7%       | 0.6%        | 0.0%         | 0.0%    |
| September | 678                   | 94.2%                | 0.8                 | 15.2                     | -                       | 3.0                       | -                        | 86.0%                                       | 11.4%     | 1.9%       | 0.7%        | 0.0%         | 0.0%    |
| October   | 710                   | 95.4%                | 1.4                 | 17.0                     | -                       | 3.8                       | -                        | 65.1%                                       | 29.0%     | 4.9%       | 1.0%        | 0.0%         | 0.0%    |
| November  | 677                   | 94.0%                | 1.5                 | 18.7                     | -                       | 4.0                       | -                        | 66.3%                                       | 26.3%     | 6.4%       | 1.0%        | 0.0%         | 0.0%    |
| December  | 712                   | 95.7%                | 1.8                 | 19.0                     | -                       | 4.5                       | -                        | 55.8%                                       | 35.5%     | 6.9%       | 1.8%        | 0.0%         | 0.0%    |
| Annual    | 8308                  | 94.8%                | 1.1                 | 49.9                     | 0                       | 5.7                       | 0                        | 74.3%                                       | 21.5%     | 3.2%       | 1.0%        | 0.0%         | 0.0%    |

**Table D-3 Glen Ewen Station: Summary of Airpointer NO Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 0.6                 | 6.0                      | 1.5                       | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 0.6                 | 17.4                     | 1.8                       | 99.7%                                       | 0.0%       | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 700                   | 94.1%                | 0.4                 | 7.6                      | 1.4                       | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                   | 95.6%                | 0.3                 | 1.8                      | 0.4                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 702                   | 94.4%                | 0.3                 | 2.8                      | 0.5                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 688                   | 95.6%                | 0.3                 | 3.9                      | 0.6                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 707                   | 95.0%                | 0.3                 | 4.6                      | 0.7                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 693                   | 93.1%                | 0.4                 | 4.7                      | 0.8                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 677                   | 94.0%                | 0.4                 | 3.2                      | 0.7                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 709                   | 95.3%                | 0.4                 | 3.5                      | 0.8                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 676                   | 93.9%                | 0.5                 | 5.1                      | 1.3                       | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 0.4                 | 4.6                      | 0.9                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 8305                  | 94.8%                | 0.4                 | 17.4                     | 1.8                       | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |

**Table D-4 Glen Ewen Station: Summary of Airpointer NO<sub>2</sub> Monitoring Results for the Year 2017**

| 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   | 711                   | 95.6%                | 3.9                 | 30.4                     | -                       | 7.9                       | -                        | 76.2%                                       | 23.2%      | 0.4%        | 0.1%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 2.3                 | 15.8                     | -                       | 5.2                       | -                        | 96.3%                                       | 3.6%       | 0.2%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 702                   | 94.4%                | 2.0                 | 16.8                     | -                       | 5.7                       | -                        | 95.3%                                       | 4.4%       | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                   | 95.6%                | 1.1                 | 3.5                      | -                       | 2.2                       | -                        | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 702                   | 94.4%                | 1.3                 | 6.8                      | -                       | 2.8                       | -                        | 99.3%                                       | 0.7%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 689                   | 95.7%                | 2.0                 | 7.9                      | -                       | 4.0                       | -                        | 95.2%                                       | 4.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 709                   | 95.3%                | 1.2                 | 5.9                      | -                       | 2.0                       | -                        | 99.6%                                       | 0.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 695                   | 93.4%                | 1.4                 | 6.5                      | -                       | 2.9                       | -                        | 99.6%                                       | 0.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 678                   | 94.2%                | 1.6                 | 10.2                     | -                       | 4.6                       | -                        | 98.2%                                       | 1.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 710                   | 95.4%                | 1.8                 | 6.8                      | -                       | 3.0                       | -                        | 99.0%                                       | 1.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 677                   | 94.0%                | 2.7                 | 11.9                     | -                       | 5.1                       | -                        | 90.8%                                       | 9.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 2.2                 | 9.4                      | -                       | 4.0                       | -                        | 97.2%                                       | 2.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 8316                  | 94.9%                | 2.0                 | 30.4                     | 0                       | 7.9                       | 0                        | 95.5%                                       | 4.4%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |

**Table D-5 Glen Ewen Station: Summary of Airpointer NO<sub>x</sub> Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 4.4                 | 36.0                     | 8.8                       | 67.9%                                       | 31.5%      | 0.4%        | 0.1%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 2.9                 | 30.7                     | 6.1                       | 91.4%                                       | 8.1%       | 0.3%        | 0.2%         | 0.0%          | 0.0%    |
| March     | 700                   | 94.1%                | 2.4                 | 19.8                     | 7.1                       | 93.3%                                       | 6.1%       | 0.6%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                   | 95.6%                | 1.3                 | 5.1                      | 2.4                       | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 702                   | 94.4%                | 1.7                 | 9.3                      | 3.4                       | 98.9%                                       | 1.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 688                   | 95.6%                | 2.3                 | 9.6                      | 4.6                       | 93.5%                                       | 6.5%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 707                   | 95.0%                | 1.6                 | 7.3                      | 2.6                       | 99.0%                                       | 1.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 693                   | 93.1%                | 1.8                 | 11.2                     | 3.8                       | 98.0%                                       | 2.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 677                   | 94.0%                | 1.9                 | 10.9                     | 5.2                       | 96.6%                                       | 3.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 709                   | 95.3%                | 2.1                 | 8.6                      | 3.5                       | 97.7%                                       | 2.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 676                   | 93.9%                | 3.1                 | 15.6                     | 6.0                       | 85.5%                                       | 14.3%      | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 2.6                 | 14.0                     | 4.9                       | 94.4%                                       | 5.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 8305                  | 94.8%                | 2.4                 | 36.0                     | 8.8                       | 93.0%                                       | 6.9%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |

**Table D-6 Glen Ewen Station: Summary of Airpointer O<sub>3</sub> Monitoring Results for the Year 2017**

| 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   | 708                   | 95.2%                | 28.7                | 42.9                     | -                       | 38.1                      | 0.0%                                        | 7.1%        | 91.5%       | 1.4%        | 0.0%        | 0.0%   |
| February  | 643                   | 95.7%                | 30.5                | 41.9                     | -                       | 36.6                      | 0.2%                                        | 3.7%        | 95.0%       | 1.1%        | 0.0%        | 0.0%   |
| March     | 702                   | 94.4%                | 28.8                | 40.7                     | -                       | 36.6                      | 0.1%                                        | 9.3%        | 90.3%       | 0.3%        | 0.0%        | 0.0%   |
| April     | 688                   | 95.6%                | 29.5                | 51.9                     | -                       | 38.4                      | 0.0%                                        | 12.8%       | 74.6%       | 12.6%       | 0.0%        | 0.0%   |
| May       | 702                   | 94.4%                | 30.0                | 51.8                     | -                       | 37.2                      | 0.3%                                        | 18.7%       | 61.3%       | 19.8%       | 0.0%        | 0.0%   |
| June      | 689                   | 95.7%                | 27.5                | 56.5                     | -                       | 35.4                      | 3.0%                                        | 22.2%       | 60.2%       | 14.5%       | 0.0%        | 0.0%   |
| July      | 709                   | 95.3%                | 27.4                | 53.4                     | -                       | 34.5                      | 4.7%                                        | 23.3%       | 56.8%       | 15.2%       | 0.0%        | 0.0%   |
| August    | 694                   | 93.3%                | 23.7                | 55.7                     | -                       | 37.7                      | 13.7%                                       | 27.8%       | 48.7%       | 9.8%        | 0.0%        | 0.0%   |
| September | 676                   | 93.9%                | 21.8                | 55.5                     | -                       | 32.7                      | 11.2%                                       | 37.1%       | 45.6%       | 6.1%        | 0.0%        | 0.0%   |
| October   | 710                   | 95.4%                | 20.8                | 40.8                     | -                       | 31.3                      | 9.3%                                        | 40.0%       | 50.4%       | 0.3%        | 0.0%        | 0.0%   |
| November  | 677                   | 94.0%                | 21.3                | 33.9                     | -                       | 27.7                      | 4.4%                                        | 30.3%       | 65.3%       | 0.0%        | 0.0%        | 0.0%   |
| December  | 712                   | 95.7%                | 23.0                | 32.5                     | -                       | 30.7                      | 2.2%                                        | 27.7%       | 70.1%       | 0.0%        | 0.0%        | 0.0%   |
| Annual    | 8310                  | 94.9%                | 26.1                | 56.5                     | -                       | 38.4                      | 4.1%                                        | 21.7%       | 67.4%       | 6.8%        | 0.0%        | 0.0%   |

**Table D-7 Glen Ewen Station: Summary of Airpointer H<sub>2</sub>S Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | 1-Hour Exceedance<br>(no.) | Maximum 24-Hr Conc.<br>(ppb) | 24-Hour Exceedance<br>(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   | 673                      | 90.5%                   | 0.3                    | 7.2                         | -                          | 0.9                          | -                           | 96.4%                                       | 3.3%        | 0.0%        | 0.3%      | 0.0%         | 0.0%     |
| February  | 609                      | 90.6%                   | 0.2                    | 1.7                         | -                          | 0.5                          | -                           | 99.7%                                       | 0.3%        | 0.0%        | 0.0%      | 0.0%         | 0.0%     |
| March     | 671                      | 90.2%                   | 0.3                    | 4.6                         | -                          | 0.9                          | -                           | 96.6%                                       | 3.3%        | 0.1%        | 0.0%      | 0.0%         | 0.0%     |
| April     | 656                      | 91.1%                   | 0.2                    | 1.2                         | -                          | 0.3                          | -                           | 99.8%                                       | 0.2%        | 0.0%        | 0.0%      | 0.0%         | 0.0%     |
| May       | 668                      | 89.8%                   | 0.4                    | 10.1                        | -                          | 1.8                          | -                           | 90.9%                                       | 7.3%        | 0.9%        | 0.7%      | 0.1%         | 0.0%     |
| June      | 657                      | 91.3%                   | 1.8                    | 36.3                        | 25                         | 7.4                          | 3                           | 69.7%                                       | 16.9%       | 4.9%        | 3.2%      | 1.5%         | 3.8%     |
| July      | 675                      | 90.7%                   | 1.4                    | 24.4                        | 8                          | 4.4                          | 1                           | 65.8%                                       | 22.4%       | 6.1%        | 2.7%      | 1.9%         | 1.2%     |
| August    | 659                      | 88.6%                   | 0.7                    | 7.8                         | -                          | 1.8                          | -                           | 80.0%                                       | 19.0%       | 0.9%        | 0.2%      | 0.0%         | 0.0%     |
| September | 647                      | 89.9%                   | 0.4                    | 8.3                         | -                          | 0.9                          | -                           | 94.1%                                       | 5.7%        | 0.0%        | 0.0%      | 0.2%         | 0.0%     |
| October   | 677                      | 91.0%                   | 0.3                    | 1.4                         | -                          | 0.6                          | -                           | 99.4%                                       | 0.6%        | 0.0%        | 0.0%      | 0.0%         | 0.0%     |
| November  | 647                      | 89.9%                   | 0.3                    | 2.8                         | -                          | 0.6                          | -                           | 98.3%                                       | 1.7%        | 0.0%        | 0.0%      | 0.0%         | 0.0%     |
| December  | 712                      | 95.7%                   | 0.3                    | 9.0                         | -                          | 0.7                          | -                           | 98.0%                                       | 1.4%        | 0.3%        | 0.1%      | 0.1%         | 0.0%     |
| Annual    | 7951                     | 90.8%                   | 0.5                    | 36.3                        | 33                         | 7.4                          | 4                           | 90.7%                                       | 6.9%        | 1.1%        | 0.6%      | 0.3%         | 0.4%     |

**Table D-8 Glen Ewen Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                          |                         |                       |                              |                               | ≤5                                          | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 744                      | 100.0%                  | 0.2                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | 0.3                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 741                      | 99.6%                   | 4.6                   | 1.1                          | 2.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 8.2                   | 0.8                          | 1.4                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 743                      | 99.9%                   | 79.8                  | 24.1                         | 27.5                          | 99.7%                                       | 0.1%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |
| June      | 720                      | 100.0%                  | 75.3                  | 9.3                          | 29.6                          | 99.3%                                       | 0.7%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| July      | 743                      | 99.9%                   | 24.2                  | 7.3                          | 9.9                           | 99.7%                                       | 0.3%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| August    | 727                      | 97.7%                   | 32.8                  | 5.6                          | 12.4                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| September | 720                      | 100.0%                  | 49.6                  | 7.5                          | 17.0                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 743                      | 99.9%                   | 2.2                   | 0.8                          | 1.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 718                      | 99.7%                   | 0.4                   | 0.1                          | 0.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | 0.2                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| Annual    | 8735                     | 99.7%                   | 277.8                 | 24.1                         | 29.6                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |

**Table D-9 Glen Ewen Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Temp. (°C) | Minimum 1-Hr Temp. (°C) | Maximum 1-Hr Temp. (°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|-----------------------|----------------------|--------------------|-------------------------|-------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                       |                      |                    |                         |                         | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 744                   | 100.0%               | -12.9              | -34.6                   | 4.0                     | 2.6%                                      | 40.9%     | 48.7%   | 7.9%   | 0.0%    | 0.0% |
| February  | 672                   | 100.0%               | -8.9               | -31.0                   | 5.5                     | 0.3%                                      | 31.8%     | 46.6%   | 21.3%  | 0.0%    | 0.0% |
| March     | 741                   | 99.6%                | -6.2               | -25.8                   | 13.1                    | 0.0%                                      | 21.2%     | 48.3%   | 30.5%  | 0.0%    | 0.0% |
| April     | 720                   | 100.0%               | 5.3                | -7.5                    | 20.9                    | 0.0%                                      | 0.0%      | 19.9%   | 73.8%  | 6.4%    | 0.0% |
| May       | 743                   | 99.9%                | 12.0               | 0.0                     | 25.5                    | 0.0%                                      | 0.0%      | 0.0%    | 69.0%  | 31.0%   | 0.0% |
| June      | 720                   | 100.0%               | 16.1               | 4.5                     | 29.3                    | 0.0%                                      | 0.0%      | 0.0%    | 47.8%  | 52.2%   | 0.0% |
| July      | 743                   | 99.9%                | 20.3               | 8.3                     | 32.1                    | 0.0%                                      | 0.0%      | 0.0%    | 21.3%  | 75.5%   | 3.2% |
| August    | 727                   | 97.7%                | 17.5               | 4.1                     | 31.2                    | 0.0%                                      | 0.0%      | 0.0%    | 38.8%  | 60.4%   | 0.8% |
| September | 720                   | 100.0%               | 13.0               | 1.4                     | 30.7                    | 0.0%                                      | 0.0%      | 0.0%    | 66.4%  | 33.2%   | 0.4% |
| October   | 743                   | 99.9%                | 5.2                | -14.4                   | 25.3                    | 0.0%                                      | 0.0%      | 20.5%   | 73.4%  | 6.2%    | 0.0% |
| November  | 718                   | 99.7%                | -6.2               | -22.9                   | 10.2                    | 0.0%                                      | 8.4%      | 74.4%   | 17.3%  | 0.0%    | 0.0% |
| December  | 744                   | 100.0%               | -10.6              | -36.6                   | 7.6                     | 6.0%                                      | 24.9%     | 52.3%   | 16.8%  | 0.0%    | 0.0% |
| Annual    | 8735                  | 99.7%                | 3.8                | -36.6                   | 32.1                    | 0.8%                                      | 10.5%     | 25.8%   | 40.4%  | 22.2%   | 0.4% |

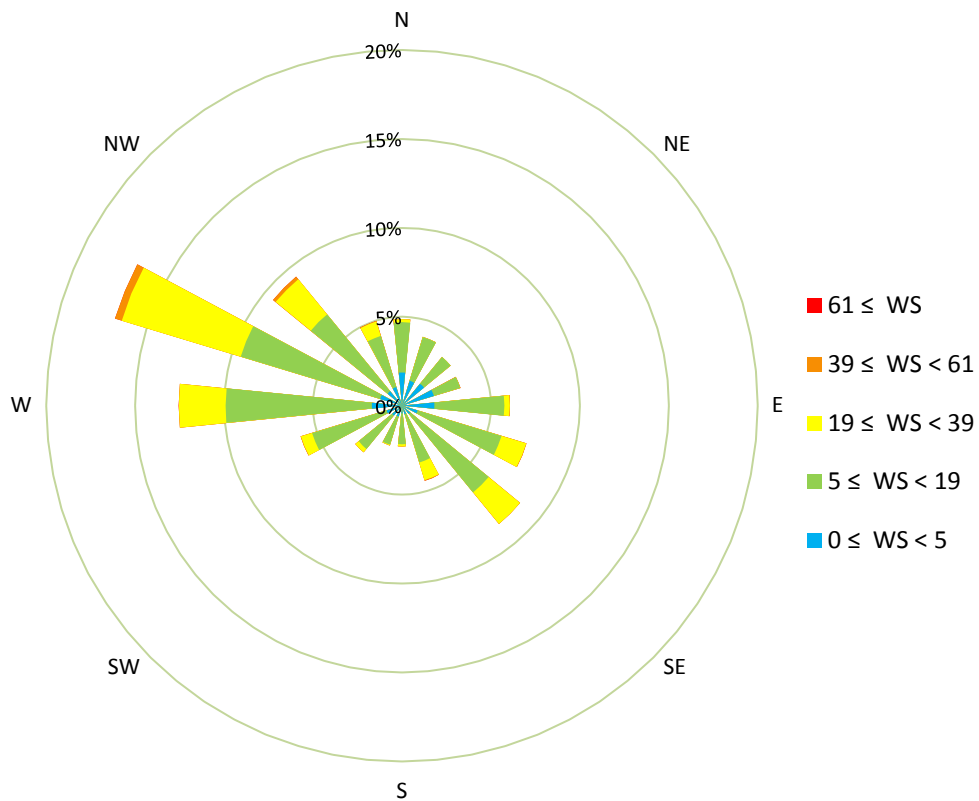
**Table D-10 Glen Ewen Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average RH (%) | Minimum 1-Hr RH (%) | Maximum 1-Hr RH (%) | Percent of Data in each Relative Humidity Range |         |         |         |         |       |
|-----------|-----------------------|----------------------|----------------|---------------------|---------------------|-------------------------------------------------|---------|---------|---------|---------|-------|
|           |                       |                      |                |                     |                     | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90   |
| January   | 744                   | 100.0%               | 76             | 60                  | 89                  | 0.0%                                            | 0.0%    | 0.0%    | 73.9%   | 26.1%   | 0.0%  |
| February  | 672                   | 100.0%               | 76             | 57                  | 91                  | 0.0%                                            | 0.0%    | 0.7%    | 70.2%   | 25.6%   | 3.4%  |
| March     | 741                   | 99.6%                | 78             | 51                  | 92                  | 0.0%                                            | 0.0%    | 3.4%    | 46.3%   | 43.5%   | 6.9%  |
| April     | 720                   | 100.0%               | 64             | 20                  | 93                  | 0.0%                                            | 5.0%    | 34.2%   | 36.9%   | 20.6%   | 3.3%  |
| May       | 743                   | 99.9%                | 59             | 24                  | 93                  | 0.0%                                            | 6.7%    | 42.9%   | 31.8%   | 16.0%   | 2.6%  |
| June      | 720                   | 100.0%               | 65             | 24                  | 93                  | 0.0%                                            | 2.6%    | 33.6%   | 38.3%   | 19.7%   | 5.7%  |
| July      | 743                   | 99.9%                | 66             | 32                  | 94                  | 0.0%                                            | 0.0%    | 39.6%   | 29.9%   | 23.4%   | 7.1%  |
| August    | 727                   | 97.7%                | 66             | 23                  | 94                  | 0.0%                                            | 2.8%    | 36.0%   | 27.8%   | 20.8%   | 12.7% |
| September | 720                   | 100.0%               | 66             | 22                  | 92                  | 0.0%                                            | 5.3%    | 30.0%   | 30.3%   | 28.2%   | 6.3%  |
| October   | 743                   | 99.9%                | 63             | 19                  | 93                  | 0.0%                                            | 3.8%    | 37.3%   | 41.2%   | 16.2%   | 1.6%  |
| November  | 718                   | 99.7%                | 76             | 44                  | 89                  | 0.0%                                            | 0.0%    | 5.8%    | 57.2%   | 36.9%   | 0.0%  |
| December  | 744                   | 100.0%               | 73             | 44                  | 87                  | 0.0%                                            | 0.0%    | 4.4%    | 82.5%   | 13.0%   | 0.0%  |
| Annual    | 8735                  | 99.7%                | 69             | 19                  | 94                  | 0.0%                                            | 2.2%    | 22.4%   | 47.1%   | 24.1%   | 4.1%  |

**Table D-11 Glen Ewen Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         |        |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS | Totals |
| North NorthEast       | 1.5%                                                         | 2.6%        | 0.0%         | 0.0%         | 0.0%    | 4.0%   |
| NorthEast             | 1.6%                                                         | 1.9%        | 0.0%         | 0.0%         | 0.0%    | 3.5%   |
| East NorthEast        | 1.9%                                                         | 1.5%        | 0.0%         | 0.0%         | 0.0%    | 3.4%   |
| East                  | 1.8%                                                         | 3.9%        | 0.3%         | 0.0%         | 0.0%    | 6.1%   |
| East SouthEast        | 0.9%                                                         | 4.9%        | 1.5%         | 0.0%         | 0.0%    | 7.3%   |
| SouthEast             | 0.6%                                                         | 5.7%        | 2.3%         | 0.0%         | 0.0%    | 8.6%   |
| South SouthEast       | 0.5%                                                         | 2.9%        | 1.0%         | 0.0%         | 0.0%    | 4.4%   |
| South                 | 0.4%                                                         | 1.7%        | 0.1%         | 0.0%         | 0.0%    | 2.3%   |
| South SouthWest       | 0.6%                                                         | 1.6%        | 0.0%         | 0.0%         | 0.0%    | 2.3%   |
| Southwest             | 0.7%                                                         | 2.4%        | 0.2%         | 0.0%         | 0.0%    | 3.4%   |
| West SouthWest        | 0.9%                                                         | 4.4%        | 0.7%         | 0.0%         | 0.0%    | 6.0%   |
| West                  | 1.7%                                                         | 8.2%        | 2.6%         | 0.0%         | 0.0%    | 12.5%  |
| West NorthWest        | 1.3%                                                         | 8.2%        | 7.0%         | 0.4%         | 0.0%    | 16.9%  |
| NorthWest             | 1.1%                                                         | 5.6%        | 2.6%         | 0.2%         | 0.0%    | 9.4%   |
| North NorthWest       | 1.1%                                                         | 3.0%        | 0.8%         | 0.0%         | 0.0%    | 5.0%   |
| North                 | 1.9%                                                         | 2.8%        | 0.2%         | 0.0%         | 0.0%    | 4.9%   |
|                       |                                                              |             |              |              |         | 0.0%   |
| Total                 | 18.5%                                                        | 61.5%       | 19.3%        | 0.7%         | 0.0%    | 100.0% |

|                                     |       |
|-------------------------------------|-------|
| Percent Calm (<1 km/hr)             | 0.07% |
| Number of Valid Hourly-Average Data | 8735  |
| Total Workable Hours in Time Period | 8760  |



## APPENDIX E OXBOW STATION: CONTINUOUS MONITORING DATA

**Table E-1 Oxbow Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| SO <sub>2</sub>     | ppb               | 387               | 7323                | 83.6%                 | 1.2                                | < 0.1   | 24.9    |
| NO                  | ppb               | 364               | 6731                | 76.8%                 | 0.3                                | < 0.1   | 24.6    |
| NO <sub>2</sub>     | ppb               | 364               | 6796                | 77.6%                 | 1.6                                | < 0.1   | 32.1    |
| NO <sub>x</sub>     | ppb               | 364               | 6729                | 76.8%                 | 2.0                                | < 0.1   | 56.4    |
| H <sub>2</sub> S    | ppb               | 387               | 7284                | 83.2%                 | 0.7                                | < 0.1   | 8.1     |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 33                | 7335                | 83.7%                 | 5.9                                | < 0.1   | 73.2    |
| Precipitation       | mm                | 0                 | 7938                | 90.6%                 | 207.7 (total)                      | < 0.1   | 20.2    |
| Ambient Temperature | °C                | 0                 | 7938                | 90.6%                 | 3.6                                | -36.4   | 33.3    |
| Relative Humidity   | %                 | 0                 | 7938                | 90.6%                 | 65.6                               | 17.3    | 91.5    |
| Wind Speed          | km/hr             | 0                 | 7938                | 90.6%                 | 10.9                               | Calm    | 52.3    |

**Table E-2 Oxbow Station: Summary of Airpointer SO<sub>2</sub> Monitoring Results for the Year 2017**

| 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 < 1                                   | 1 ≤ C < 5 | 5 ≤ C < 10 | 10 ≤ C < 57 | 57 ≤ C < 172 | 172 ≤ C |
| January   | 711                   | 95.6%                | 2.0                 | 9.3                      | 3.6                       | 25.6%                                       | 70.2%     | 4.2%       | 0.0%        | 0.0%         | 0.0%    |
| February  | 626                   | 93.2%                | 1.6                 | 14.9                     | 3.0                       | 37.1%                                       | 60.1%     | 2.7%       | 0.2%        | 0.0%         | 0.0%    |
| March     | 708                   | 95.2%                | 1.1                 | 6.9                      | 2.8                       | 63.0%                                       | 36.3%     | 0.7%       | 0.0%        | 0.0%         | 0.0%    |
| April     | 688                   | 95.6%                | 1.0                 | 8.0                      | 2.6                       | 68.9%                                       | 30.1%     | 1.0%       | 0.0%        | 0.0%         | 0.0%    |
| May       | 703                   | 94.5%                | 0.9                 | 24.9                     | 2.5                       | 73.4%                                       | 25.7%     | 0.6%       | 0.3%        | 0.0%         | 0.0%    |
| June      | 687                   | 95.4%                | 1.0                 | 10.0                     | 2.0                       | 72.6%                                       | 26.1%     | 1.2%       | 0.1%        | 0.0%         | 0.0%    |
| July      | 704                   | 94.6%                | 1.0                 | 5.9                      | 1.7                       | 66.9%                                       | 32.5%     | 0.6%       | 0.0%        | 0.0%         | 0.0%    |
| August    | 653                   | 87.8%                | 1.2                 | 11.1                     | 2.8                       | 60.5%                                       | 37.8%     | 1.5%       | 0.2%        | 0.0%         | 0.0%    |
| September | 46                    | 6.4%                 | 1.4                 | 5.2                      | 1.9                       | 41.3%                                       | 56.5%     | 2.2%       | 0.0%        | 0.0%         | 0.0%    |
| October   | 429                   | 57.7%                | 1.1                 | 14.2                     | 2.9                       | 67.6%                                       | 30.8%     | 1.2%       | 0.5%        | 0.0%         | 0.0%    |
| November  | 656                   | 91.1%                | 1.3                 | 9.7                      | 2.4                       | 55.5%                                       | 41.6%     | 2.9%       | 0.0%        | 0.0%         | 0.0%    |
| December  | 712                   | 95.7%                | 1.3                 | 14.2                     | 2.8                       | 55.5%                                       | 41.7%     | 2.4%       | 0.4%        | 0.0%         | 0.0%    |
| Annual    | 7323                  | 83.6%                | 1.2                 | 24.9                     | 3.6                       | 58.5%                                       | 39.6%     | 1.7%       | 0.1%        | 0.0%         | 0.0%    |

**Table E-3 Oxbow Station: Summary of Airpointer NO Monitoring Results for the Year 2017**

| 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 |                 |                  |                   |                    |              |
|-----------|-----------------------|----------------------|---------------------|--------------------------|---------------------------|---------------------------------------------|-----------------|------------------|-------------------|--------------------|--------------|
|           |                       |                      |                     |                          |                           | $0 \leq C < 5$                              | $5 \leq C < 15$ | $15 \leq C < 30$ | $30 \leq C < 100$ | $100 \leq C < 159$ | $159 \leq C$ |
| January   | 710                   | 95.4%                | 0.5                 | 5.6                      | 1.1                       | 99.6%                                       | 0.4%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| February  | 626                   | 93.2%                | 0.4                 | 20.0                     | 2.5                       | 98.7%                                       | 1.0%            | 0.3%             | 0.0%              | 0.0%               | 0.0%         |
| March     | 709                   | 95.3%                | 0.4                 | 24.3                     | 1.5                       | 99.3%                                       | 0.6%            | 0.1%             | 0.0%              | 0.0%               | 0.0%         |
| April     | 687                   | 95.4%                | 0.2                 | 2.3                      | 0.3                       | 100.0%                                      | 0.0%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| May       | 704                   | 94.6%                | 0.2                 | 2.5                      | 0.5                       | 100.0%                                      | 0.0%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| June      | 686                   | 95.3%                | 0.3                 | 4.6                      | 0.7                       | 100.0%                                      | 0.0%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| July      | 633                   | 85.1%                | 0.3                 | 1.5                      | 0.5                       | 100.0%                                      | 0.0%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| August    | 622                   | 83.6%                | 0.4                 | 23.0                     | 1.9                       | 99.4%                                       | 0.5%            | 0.2%             | 0.0%              | 0.0%               | 0.0%         |
| September | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -               | -                | -                 | -                  | -            |
| October   | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -               | -                | -                 | -                  | -            |
| November  | 642                   | 89.2%                | 0.4                 | 24.6                     | 1.3                       | 99.8%                                       | 0.0%            | 0.2%             | 0.0%              | 0.0%               | 0.0%         |
| December  | 712                   | 95.7%                | 0.2                 | 1.7                      | 0.5                       | 100.0%                                      | 0.0%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| Annual    | 6731                  | 76.8%                | 0.3                 | 24.6                     | 2.5                       | 99.7%                                       | 0.2%            | 0.1%             | 0.0%              | 0.0%               | 0.0%         |

**Table E-4 Oxbow Station: Summary of Airpointer NO<sub>2</sub> Monitoring Results for the Year 2017**

| 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 |                 |                  |                   |                    |              |
|-----------|-----------------------|----------------------|---------------------|--------------------------|-------------------------|---------------------------|--------------------------|---------------------------------------------|-----------------|------------------|-------------------|--------------------|--------------|
|           |                       |                      |                     |                          |                         |                           |                          | $0 \leq C < 5$                              | $5 \leq C < 15$ | $15 \leq C < 30$ | $30 \leq C < 100$ | $100 \leq C < 159$ | $C \geq 159$ |
| January   | 711                   | 95.6%                | 3.1                 | 10.8                     | 0                       | 6.5                       | 0                        | 84.8%                                       | 15.2%           | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| February  | 626                   | 93.2%                | 2.1                 | 19.5                     | 0                       | 3.8                       | 0                        | 96.6%                                       | 3.0%            | 0.3%             | 0.0%              | 0.0%               | 0.0%         |
| March     | 709                   | 95.3%                | 1.6                 | 32.1                     | 0                       | 4.2                       | 0                        | 98.3%                                       | 1.4%            | 0.1%             | 0.1%              | 0.0%               | 0.0%         |
| April     | 688                   | 95.6%                | 1.0                 | 5.2                      | 0                       | 1.8                       | 0                        | 99.9%                                       | 0.1%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| May       | 704                   | 94.6%                | 1.2                 | 8.2                      | 0                       | 2.8                       | 0                        | 98.4%                                       | 1.6%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| June      | 689                   | 95.7%                | 1.7                 | 10.7                     | 0                       | 3.5                       | 0                        | 95.5%                                       | 4.5%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| July      | 635                   | 85.3%                | 1.0                 | 6.3                      | 0                       | 2.1                       | 0                        | 99.7%                                       | 0.3%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| August    | 626                   | 84.1%                | 0.9                 | 5.8                      | 0                       | 2.3                       | 0                        | 98.9%                                       | 1.1%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| September | 54                    | 7.5%                 | 0.5                 | 2.6                      | 0                       | 1.0                       | 0                        | 100.0%                                      | 0.0%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| October   | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                        | -                                           | -               | -                | -                 | -                  | -            |
| November  | 642                   | 89.2%                | 2.3                 | 14.5                     | 0                       | 4.6                       | 0                        | 95.2%                                       | 4.8%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| December  | 712                   | 95.7%                | 1.6                 | 6.6                      | 0                       | 2.9                       | 0                        | 99.3%                                       | 0.7%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |
| Annual    | 6796                  | 77.6%                | 1.6                 | 32.1                     | 0                       | 6.5                       | 0                        | 96.6%                                       | 3.3%            | 0.0%             | 0.0%              | 0.0%               | 0.0%         |

**Table E-5 Oxbow Station: Summary of Airpointer NO<sub>x</sub> Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 3.5                 | 13.6                     | 7.5                       | 77.2%                                       | 22.8%      | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 626                   | 93.2%                | 2.5                 | 39.5                     | 6.3                       | 94.1%                                       | 5.0%       | 0.6%        | 0.3%         | 0.0%          | 0.0%    |
| March     | 709                   | 95.3%                | 2.0                 | 56.4                     | 5.7                       | 97.7%                                       | 1.3%       | 0.8%        | 0.1%         | 0.0%          | 0.0%    |
| April     | 687                   | 95.4%                | 1.2                 | 6.0                      | 2.0                       | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 704                   | 94.6%                | 1.5                 | 8.4                      | 3.1                       | 98.0%                                       | 2.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 686                   | 95.3%                | 2.1                 | 11.2                     | 4.0                       | 93.4%                                       | 6.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 632                   | 84.9%                | 1.3                 | 7.9                      | 2.5                       | 99.2%                                       | 0.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 621                   | 83.5%                | 1.3                 | 27.6                     | 3.5                       | 97.4%                                       | 2.1%       | 0.5%        | 0.0%         | 0.0%          | 0.0%    |
| September | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| October   | -                     | 0.0%                 | -                   | -                        | -                         | -                                           | -          | -           | -            | -             | -       |
| November  | 642                   | 89.2%                | 2.6                 | 39.1                     | 5.3                       | 91.6%                                       | 8.3%       | 0.0%        | 0.2%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 1.8                 | 7.9                      | 3.4                       | 99.2%                                       | 0.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 6729                  | 76.8%                | 2.0                 | 56.4                     | 7.5                       | 94.7%                                       | 5.1%       | 0.2%        | 0.1%         | 0.0%          | 0.0%    |

**Table E-6 Oxbow Station: Summary of Airpointer H<sub>2</sub>S Monitoring Results for the Year 2017**

| 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 | 3 ≤ C < 5 | 5 ≤ C < 8 | 8 ≤ C < 11 | 11 ≤ C |
| January   | 689                   | 92.6%                | 0.8                 | 4.6                      | 0                       | 2.5                       | 0                        | 74.9%                                       | 23.4%     | 1.7%      | 0.0%      | 0.0%       | 0.0%   |
| February  | 608                   | 90.5%                | 0.5                 | 1.9                      | 0                       | 1.2                       | 0                        | 93.6%                                       | 6.4%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| March     | 699                   | 94.0%                | 0.7                 | 3.0                      | 0                       | 1.7                       | 0                        | 81.1%                                       | 18.7%     | 0.1%      | 0.0%      | 0.0%       | 0.0%   |
| April     | 673                   | 93.5%                | 0.5                 | 1.6                      | 0                       | 0.8                       | 0                        | 97.5%                                       | 2.5%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| May       | 696                   | 93.5%                | 0.4                 | 3.1                      | 0                       | 0.8                       | 0                        | 96.7%                                       | 3.2%      | 0.1%      | 0.0%      | 0.0%       | 0.0%   |
| June      | 683                   | 94.9%                | 0.7                 | 8.1                      | 0                       | 1.8                       | 0                        | 82.1%                                       | 15.8%     | 1.6%      | 0.3%      | 0.1%       | 0.0%   |
| July      | 699                   | 94.0%                | 0.8                 | 5.7                      | 0                       | 1.3                       | 0                        | 77.4%                                       | 20.9%     | 1.6%      | 0.1%      | 0.0%       | 0.0%   |
| August    | 647                   | 87.0%                | 0.6                 | 2.9                      | 0                       | 1.0                       | 0                        | 84.9%                                       | 15.1%     | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| September | 46                    | 6.4%                 | 0.7                 | 4.0                      | 0                       | 1.2                       | 0                        | 80.4%                                       | 17.4%     | 2.2%      | 0.0%      | 0.0%       | 0.0%   |
| October   | 455                   | 61.2%                | 0.5                 | 6.2                      | 0                       | 1.2                       | 0                        | 95.6%                                       | 3.5%      | 0.7%      | 0.2%      | 0.0%       | 0.0%   |
| November  | 678                   | 94.2%                | 0.8                 | 5.3                      | 0                       | 1.6                       | 0                        | 76.8%                                       | 22.9%     | 0.1%      | 0.1%      | 0.0%       | 0.0%   |
| December  | 711                   | 95.6%                | 0.9                 | 6.0                      | 0                       | 2.2                       | 0                        | 84.0%                                       | 15.0%     | 0.7%      | 0.3%      | 0.0%       | 0.0%   |
| Annual    | 7284                  | 83.2%                | 0.7                 | 8.1                      | 0                       | 2.5                       | 0                        | 85.4%                                       | 13.8%     | 0.6%      | 0.1%      | 0.0%       | 0.0%   |

**Table E-7 Oxbow Station: Summary of Airpointer PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(µg/m <sup>3</sup> ) | Maximum 1-Hr Conc.<br>(µg/m <sup>3</sup> ) | Maximum 24-Hr Conc.<br>(µg/m <sup>3</sup> ) | 24-Hour Exceedance<br>(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%                  | 5.4                                   | 54.7                                       | 17.9                                        | 0                           | 0                                           | 50.4%     | 39.4%      | 8.6%        | 0.7%        | 0.9%   |
| February  | 672                      | 100.0%                  | 4.5                                   | 28.0                                       | 10.5                                        | 0                           | 31.7%                                       | 24.4%     | 34.8%      | 8.8%        | 0.3%        | 0.0%   |
| March     | 708                      | 95.2%                   | 6.4                                   | 38.4                                       | 13.0                                        | 0                           | 11.7%                                       | 24.2%     | 46.5%      | 16.5%       | 0.8%        | 0.3%   |
| April     | 720                      | 100.0%                  | 4.2                                   | 39.5                                       | 11.9                                        | 0                           | 19.3%                                       | 47.1%     | 29.6%      | 2.2%        | 1.3%        | 0.6%   |
| May       | 741                      | 99.6%                   | 4.8                                   | 20.2                                       | 8.6                                         | 0                           | 26.2%                                       | 21.9%     | 43.6%      | 8.2%        | 0.1%        | 0.0%   |
| June      | 720                      | 100.0%                  | 4.8                                   | 30.8                                       | 8.4                                         | 0                           | 23.5%                                       | 33.1%     | 32.6%      | 9.7%        | 1.0%        | 0.1%   |
| July      | 742                      | 99.7%                   | 9.1                                   | 47.1                                       | 24.1                                        | 0                           | 3.5%                                        | 16.8%     | 46.8%      | 27.6%       | 3.1%        | 2.2%   |
| August    | 699                      | 94.0%                   | 9.0                                   | 32.3                                       | 19.5                                        | 0                           | 9.7%                                        | 14.0%     | 39.9%      | 30.0%       | 5.7%        | 0.6%   |
| September | 176                      | 24.4%                   | 10.2                                  | 73.2                                       | 16.6                                        | 0                           | 5.7%                                        | 9.7%      | 47.2%      | 30.7%       | 5.1%        | 1.7%   |
| October   | 2                        | 0.3%                    | 4.5                                   | 9.0                                        | 9.0                                         | 0                           | 0.0%                                        | 0.0%      | 50.0%      | 0.0%        | 0.0%        | 50.0%  |
| November  | 679                      | 94.3%                   | 6.1                                   | 23.4                                       | 15.3                                        | 0                           | 22.1%                                       | 25.9%     | 30.2%      | 20.5%       | 1.3%        | 0.0%   |
| December  | 733                      | 98.5%                   | 3.7                                   | 15.4                                       | 7.2                                         | 0                           | 28.5%                                       | 39.2%     | 30.0%      | 2.3%        | 0.0%        | 0.0%   |
| Annual    | 7335                     | 83.7%                   | 5.9                                   | 73.2                                       | 24.1                                        | 0                           | 18.6%                                       | 27.9%     | 37.7%      | 13.8%       | 1.5%        | 0.5%   |

**Table E-8 Oxbow Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                          |                         |                       |                              |                               | ≤5                                          | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 744                      | 100.0%                  | 0.5                   | 0.5                          | 0.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | 0.7                   | 0.3                          | 0.3                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 742                      | 99.7%                   | 6.3                   | 1.1                          | 2.0                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 5.0                   | 1.8                          | 1.8                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 743                      | 99.9%                   | 45.9                  | 7.7                          | 21.3                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| June      | 720                      | 100.0%                  | 53.4                  | 11.9                         | 24.8                          | 99.6%                                       | 0.3%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |
| July      | 742                      | 99.7%                   | 56.1                  | 20.2                         | 20.2                          | 99.5%                                       | 0.3%   | 0.3%    | 0.0%    | 0.0%    | 0.0% |
| August    | 744                      | 100.0%                  | 37.1                  | 12.8                         | 13.2                          | 99.7%                                       | 0.1%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |
| September | 176                      | 24.4%                   | 1.3                   | 0.8                          | 0.8                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 474                      | 63.7%                   | 0.9                   | 0.3                          | 0.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 717                      | 99.6%                   | 0.4                   | 0.1                          | 0.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | 0.2                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| Annual    | 7938                     | 90.6%                   | 207.7                 | 20.2                         | 24.8                          | 99.9%                                       | 0.1%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |

**Table E-9 Oxbow Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Temp. (°C) | Minimum 1-Hr Temp. (°C) | Maximum 1-Hr Temp. (°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|-----------------------|----------------------|--------------------|-------------------------|-------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                       |                      |                    |                         |                         | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 744                   | 100.0%               | -12.7              | -33.1                   | 4.6                     | 1.3%                                      | 41.7%     | 48.8%   | 8.2%   | 0.0%    | 0.0% |
| February  | 672                   | 100.0%               | -8.5               | -31.6                   | 7.3                     | 0.7%                                      | 29.3%     | 46.4%   | 23.5%  | 0.0%    | 0.0% |
| March     | 742                   | 99.7%                | -5.4               | -23.8                   | 14.4                    | 0.0%                                      | 17.1%     | 48.5%   | 34.4%  | 0.0%    | 0.0% |
| April     | 720                   | 100.0%               | 5.5                | -9.2                    | 20.9                    | 0.0%                                      | 0.0%      | 20.0%   | 72.9%  | 7.1%    | 0.0% |
| May       | 743                   | 99.9%                | 12.5               | -1.4                    | 26.4                    | 0.0%                                      | 0.0%      | 0.5%    | 63.8%  | 35.7%   | 0.0% |
| June      | 720                   | 100.0%               | 16.7               | 5.3                     | 30.8                    | 0.0%                                      | 0.0%      | 0.0%    | 44.0%  | 55.7%   | 0.3% |
| July      | 742                   | 99.7%                | 21.1               | 8.9                     | 33.3                    | 0.0%                                      | 0.0%      | 0.0%    | 15.5%  | 78.2%   | 6.3% |
| August    | 744                   | 100.0%               | 18.3               | 3.8                     | 32.0                    | 0.0%                                      | 0.0%      | 0.0%    | 31.2%  | 66.4%   | 2.4% |
| September | 176                   | 24.4%                | 16.8               | 5.1                     | 30.3                    | 0.0%                                      | 0.0%      | 0.0%    | 44.3%  | 55.1%   | 0.6% |
| October   | 474                   | 63.7%                | 4.7                | -12.7                   | 25.1                    | 0.0%                                      | 0.0%      | 27.6%   | 64.8%  | 7.6%    | 0.0% |
| November  | 717                   | 99.6%                | -6.1               | -22.2                   | 11.0                    | 0.0%                                      | 8.9%      | 72.4%   | 18.7%  | 0.0%    | 0.0% |
| December  | 744                   | 100.0%               | -10.5              | -36.4                   | 7.4                     | 6.2%                                      | 24.2%     | 53.4%   | 16.3%  | 0.0%    | 0.0% |
| Annual    | 7938                  | 90.6%                | 3.6                | -36.4                   | 33.3                    | 0.8%                                      | 11.1%     | 28.1%   | 35.0%  | 24.2%   | 0.9% |

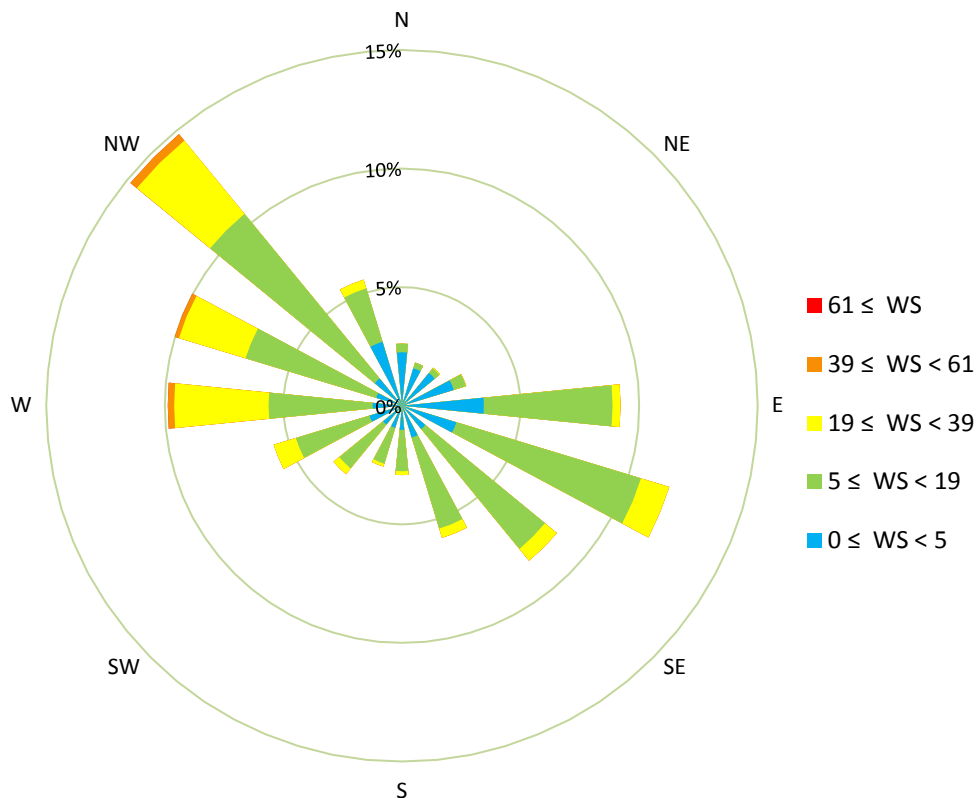
**Table E-10 Oxbow Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average RH (%) | Minimum 1-Hr RH (%) | Maximum 1-Hr RH (%) | Percent of Data in each Relative Humidity Range |         |         |         |         |      |
|-----------|-----------------------|----------------------|----------------|---------------------|---------------------|-------------------------------------------------|---------|---------|---------|---------|------|
|           |                       |                      |                |                     |                     | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90  |
| January   | 744                   | 100.0%               | 74             | 57                  | 87                  | 0.0%                                            | 0.0%    | 1.9%    | 80.4%   | 17.7%   | 0.0% |
| February  | 672                   | 100.0%               | 74             | 51                  | 89                  | 0.0%                                            | 0.0%    | 3.0%    | 78.4%   | 18.6%   | 0.0% |
| March     | 742                   | 99.7%                | 75             | 39                  | 90                  | 0.0%                                            | 0.0%    | 5.9%    | 59.4%   | 34.6%   | 0.0% |
| April     | 720                   | 100.0%               | 60             | 17                  | 91                  | 0.0%                                            | 7.5%    | 38.2%   | 37.2%   | 16.1%   | 1.0% |
| May       | 743                   | 99.9%                | 55             | 20                  | 91                  | 0.0%                                            | 12.5%   | 45.5%   | 27.2%   | 13.7%   | 1.1% |
| June      | 720                   | 100.0%               | 60             | 19                  | 91                  | 0.0%                                            | 5.8%    | 40.0%   | 34.9%   | 17.2%   | 2.1% |
| July      | 742                   | 99.7%                | 61             | 25                  | 91                  | 0.0%                                            | 2.6%    | 43.3%   | 34.8%   | 17.8%   | 1.6% |
| August    | 744                   | 100.0%               | 61             | 20                  | 92                  | 0.0%                                            | 7.7%    | 38.6%   | 29.6%   | 20.0%   | 4.2% |
| September | 176                   | 24.4%                | 49             | 18                  | 87                  | 0.0%                                            | 22.2%   | 42.0%   | 29.0%   | 6.8%    | 0.0% |
| October   | 474                   | 63.7%                | 59             | 19                  | 88                  | 0.0%                                            | 5.5%    | 44.3%   | 41.4%   | 8.9%    | 0.0% |
| November  | 717                   | 99.6%                | 74             | 42                  | 87                  | 0.0%                                            | 0.0%    | 8.1%    | 67.1%   | 24.8%   | 0.0% |
| December  | 744                   | 100.0%               | 71             | 43                  | 86                  | 0.0%                                            | 0.0%    | 4.7%    | 88.2%   | 7.1%    | 0.0% |
| Annual    | 7938                  | 90.6%                | 66             | 17                  | 92                  | 0.0%                                            | 4.2%    | 24.7%   | 52.3%   | 17.9%   | 0.9% |

**Table E-11 Oxbow Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         |        |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS | Totals |
| North NorthEast       | 1.7%                                                         | 0.3%        | 0.0%         | 0.0%         | 0.0%    | 1.9%   |
| NorthEast             | 1.8%                                                         | 0.3%        | 0.0%         | 0.0%         | 0.0%    | 2.1%   |
| East NorthEast        | 2.3%                                                         | 0.5%        | 0.0%         | 0.0%         | 0.0%    | 2.8%   |
| East                  | 3.5%                                                         | 5.4%        | 0.3%         | 0.0%         | 0.0%    | 9.2%   |
| East SouthEast        | 2.4%                                                         | 8.1%        | 1.2%         | 0.0%         | 0.0%    | 11.8%  |
| SouthEast             | 1.3%                                                         | 6.5%        | 0.6%         | 0.0%         | 0.0%    | 8.5%   |
| South SouthEast       | 1.4%                                                         | 4.0%        | 0.4%         | 0.0%         | 0.0%    | 5.8%   |
| South                 | 1.0%                                                         | 1.7%        | 0.2%         | 0.0%         | 0.0%    | 2.9%   |
| South SouthWest       | 1.0%                                                         | 1.6%        | 0.1%         | 0.0%         | 0.0%    | 2.7%   |
| Southwest             | 1.0%                                                         | 2.4%        | 0.3%         | 0.0%         | 0.0%    | 3.7%   |
| West SouthWest        | 1.4%                                                         | 3.3%        | 1.0%         | 0.0%         | 0.0%    | 5.7%   |
| West                  | 1.2%                                                         | 4.4%        | 4.0%         | 0.3%         | 0.0%    | 9.9%   |
| West NorthWest        | 1.1%                                                         | 5.8%        | 2.9%         | 0.2%         | 0.0%    | 10.0%  |
| NorthWest             | 1.5%                                                         | 9.0%        | 4.0%         | 0.4%         | 0.0%    | 14.8%  |
| North NorthWest       | 2.8%                                                         | 2.4%        | 0.4%         | 0.0%         | 0.0%    | 5.6%   |
| North                 | 2.3%                                                         | 0.4%        | 0.0%         | 0.0%         | 0.0%    | 2.6%   |
| Total                 | 27.6%                                                        | 56.0%       | 15.6%        | 0.8%         | 0.0%    | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 1.9% |
| Number of Valid Hourly-Average Data | 7938 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX F      STOUGHTON STATION: CONTINUOUS MONITORING DATA

**Table F-1      Stoughton Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| SO <sub>2</sub>     | ppb               | 407               | 7840                | 89.5%                 | 0.6                                | < 0.1   | 23.8    |
| NO                  | ppb               | 385               | 7418                | 84.7%                 | 0.6                                | < 0.1   | 46.1    |
| NO <sub>2</sub>     | ppb               | 385               | 7416                | 84.7%                 | 2.5                                | < 0.1   | 29.2    |
| NO <sub>x</sub>     | ppb               | 385               | 7411                | 84.6%                 | 3.1                                | 0.1     | 70.7    |
| H <sub>2</sub> S    | ppb               | 407               | 7764                | 88.6%                 | 0.5                                | < 0.1   | 14.8    |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 2                 | 5523                | 63.0%                 | 6.3                                | < 0.1   | 175.1   |
| Precipitation       | mm                | 0                 | 8455                | 96.5%                 | 206.1 (total)                      | < 0.1   | 10.8    |
| Ambient Temperature | °C                | 0                 | 8455                | 96.5%                 | 3.1                                | -35.7   | 32.9    |
| Relative Humidity   | %                 | 0                 | 8455                | 96.5%                 | 65.7                               | 17.0    | 91.3    |
| Wind Speed          | km/hr             | 0                 | 8463                | 96.6%                 | 11.1                               | Calm    | 49.7    |

**Table F-2      Stoughton Station: Summary of Airpointer SO<sub>2</sub> Monitoring Results for the Year 2017**

| 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 < 5 | 5 ≤ C < 10 | 10 ≤ C < 57 | 57 ≤ C < 172 | C ≥ 172 |
| January   | 697                   | 93.7%                | 0.9                 | 23.8                     | 0                       | 6.3                       | 0                        | 79.9%                                       | 18.7%     | 0.7%       | 0.7%        | 0.0%         | 0.0%    |
| February  | 643                   | 95.7%                | 0.8                 | 5.5                      | 0                       | 2.1                       | 0                        | 78.8%                                       | 21.0%     | 0.2%       | 0.0%        | 0.0%         | 0.0%    |
| March     | 695                   | 93.4%                | 0.7                 | 8.6                      | 0                       | 2.6                       | 0                        | 80.6%                                       | 19.0%     | 0.4%       | 0.0%        | 0.0%         | 0.0%    |
| April     | 661                   | 91.8%                | 0.7                 | 10.4                     | 0                       | 4.1                       | 0                        | 82.9%                                       | 15.9%     | 1.1%       | 0.2%        | 0.0%         | 0.0%    |
| May       | 680                   | 91.4%                | 0.6                 | 9.2                      | 0                       | 2.6                       | 0                        | 89.1%                                       | 10.1%     | 0.7%       | 0.0%        | 0.0%         | 0.0%    |
| June      | 684                   | 95.0%                | 0.6                 | 6.5                      | 0                       | 2.0                       | 0                        | 85.8%                                       | 13.5%     | 0.7%       | 0.0%        | 0.0%         | 0.0%    |
| July      | 487                   | 65.5%                | 0.7                 | 12.3                     | 0                       | 1.6                       | 0                        | 79.3%                                       | 20.3%     | 0.2%       | 0.2%        | 0.0%         | 0.0%    |
| August    | 663                   | 89.1%                | 0.7                 | 4.6                      | 0                       | 1.9                       | 0                        | 81.9%                                       | 18.1%     | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| September | 677                   | 94.0%                | 0.6                 | 4.6                      | 0                       | 1.6                       | 0                        | 85.7%                                       | 14.3%     | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| October   | 701                   | 94.2%                | 0.5                 | 19.3                     | 0                       | 3.3                       | 0                        | 89.0%                                       | 10.3%     | 0.4%       | 0.3%        | 0.0%         | 0.0%    |
| November  | 540                   | 75.0%                | 0.5                 | 3.7                      | 0                       | 1.7                       | 0                        | 90.7%                                       | 9.3%      | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| December  | 712                   | 95.7%                | 0.4                 | 5.9                      | 0                       | 1.9                       | 0                        | 93.3%                                       | 6.6%      | 0.1%       | 0.0%        | 0.0%         | 0.0%    |
| Annual    | 7840                  | 89.5%                | 0.6                 | 23.8                     | 0                       | 6.3                       | 0                        | 84.8%                                       | 14.6%     | 0.4%       | 0.1%        | 0.0%         | 0.0%    |

**Table F-3 Stoughton Station: Summary of Airpointer NO Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 0.9                 | 27.1                     | 3.2                       | 97.3%                                       | 2.5%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 0.9                 | 46.1                     | 3.3                       | 98.6%                                       | 1.1%       | 0.2%        | 0.2%         | 0.0%          | 0.0%    |
| March     | 702                   | 94.4%                | 0.8                 | 18.1                     | 1.9                       | 99.4%                                       | 0.4%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 663                   | 92.1%                | 0.6                 | 43.1                     | 3.4                       | 98.0%                                       | 1.5%       | 0.3%        | 0.2%         | 0.0%          | 0.0%    |
| May       | 705                   | 94.8%                | 0.5                 | 24.6                     | 2.0                       | 99.0%                                       | 0.9%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 686                   | 95.3%                | 0.6                 | 7.4                      | 1.2                       | 99.4%                                       | 0.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 469                   | 63.0%                | 0.4                 | 4.8                      | 0.8                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 669                   | 89.9%                | 0.6                 | 20.3                     | 1.6                       | 99.4%                                       | 0.4%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| September | 327                   | 45.4%                | 0.4                 | 13.9                     | 1.4                       | 99.1%                                       | 0.9%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 585                   | 78.6%                | 0.6                 | 24.8                     | 2.1                       | 98.8%                                       | 0.9%       | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 547                   | 76.0%                | 0.4                 | 7.5                      | 0.8                       | 99.8%                                       | 0.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 0.3                 | 6.4                      | 1.4                       | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7418                  | 84.7%                | 0.6                 | 46.1                     | 3.4                       | 99.0%                                       | 0.8%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |

**Table F-4 Stoughton Station: Summary of Airpointer NO<sub>2</sub> Monitoring Results for the Year 2017**

| 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   | 711                   | 95.6%                | 4.0                 | 29.2                     | 0                       | 14.5                      | 0                        | 76.5%                                       | 20.4%      | 3.1%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 3.0                 | 24.6                     | 0                       | 6.2                       | 0                        | 84.6%                                       | 15.1%      | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 703                   | 94.5%                | 2.9                 | 18.7                     | 0                       | 7.3                       | 0                        | 85.3%                                       | 13.7%      | 1.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 665                   | 92.4%                | 1.6                 | 17.6                     | 0                       | 4.7                       | 0                        | 95.5%                                       | 4.1%       | 0.5%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 705                   | 94.8%                | 2.2                 | 22.8                     | 0                       | 10.0                      | 0                        | 91.3%                                       | 7.9%       | 0.7%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 686                   | 95.3%                | 3.2                 | 18.7                     | 0                       | 6.4                       | 0                        | 80.9%                                       | 18.7%      | 0.4%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 469                   | 63.0%                | 2.2                 | 11.4                     | 0                       | 3.7                       | 0                        | 94.2%                                       | 5.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 670                   | 90.1%                | 2.5                 | 16.8                     | 0                       | 6.2                       | 0                        | 90.7%                                       | 9.1%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| September | 327                   | 45.4%                | 1.9                 | 9.6                      | 0                       | 3.5                       | 0                        | 92.4%                                       | 7.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 585                   | 78.6%                | 1.8                 | 11.6                     | 0                       | 5.0                       | 0                        | 93.8%                                       | 6.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 540                   | 75.0%                | 2.6                 | 11.5                     | 0                       | 6.0                       | 0                        | 91.1%                                       | 8.9%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 1.9                 | 8.7                      | 0                       | 3.7                       | 0                        | 97.2%                                       | 2.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7416                  | 84.7%                | 2.5                 | 29.2                     | 0                       | 14.5                      | 0                        | 89.1%                                       | 10.3%      | 0.6%        | 0.0%         | 0.0%          | 0.0%    |

**Table F-5 Stoughton Station: Summary of Airpointer NO<sub>x</sub> Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 4.9                 | 32.9                     | 17.7                      | 69.0%                                       | 26.3%      | 4.2%        | 0.4%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 4.0                 | 70.7                     | 9.5                       | 74.8%                                       | 24.3%      | 0.6%        | 0.3%         | 0.0%          | 0.0%    |
| March     | 702                   | 94.4%                | 3.7                 | 30.3                     | 8.7                       | 78.1%                                       | 20.4%      | 1.4%        | 0.1%         | 0.0%          | 0.0%    |
| April     | 663                   | 92.1%                | 2.2                 | 60.6                     | 8.1                       | 93.8%                                       | 5.3%       | 0.5%        | 0.5%         | 0.0%          | 0.0%    |
| May       | 705                   | 94.8%                | 2.7                 | 39.0                     | 12.0                      | 89.1%                                       | 9.6%       | 1.1%        | 0.1%         | 0.0%          | 0.0%    |
| June      | 686                   | 95.3%                | 3.8                 | 20.4                     | 7.4                       | 75.5%                                       | 23.5%      | 1.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 469                   | 63.0%                | 2.7                 | 12.1                     | 4.4                       | 90.6%                                       | 9.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 669                   | 89.9%                | 3.2                 | 24.3                     | 6.2                       | 84.5%                                       | 15.1%      | 0.4%        | 0.0%         | 0.0%          | 0.0%    |
| September | 327                   | 45.4%                | 2.3                 | 19.2                     | 4.4                       | 91.4%                                       | 8.3%       | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 585                   | 78.6%                | 2.4                 | 33.4                     | 5.7                       | 90.3%                                       | 9.2%       | 0.2%        | 0.3%         | 0.0%          | 0.0%    |
| November  | 540                   | 75.0%                | 2.9                 | 16.1                     | 6.5                       | 84.3%                                       | 15.6%      | 0.2%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 2.1                 | 12.7                     | 5.1                       | 94.9%                                       | 5.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7411                  | 84.6%                | 3.1                 | 70.7                     | 17.7                      | 84.1%                                       | 14.8%      | 0.9%        | 0.2%         | 0.0%          | 0.0%    |

**Table F-6 Stoughton Station: Summary of Airpointer H<sub>2</sub>S Monitoring Results for the Year 2017**

| 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 | 3 ≤ C < 5 | 5 ≤ C < 8 | 8 ≤ C < 11 | 11 ≤ C |
| January   | 697                   | 93.7%                | 0.5                 | 7.8                      | 0                       | 2.2                       | 0                        | 91.1%                                       | 8.0%      | 0.7%      | 0.1%      | 0.0%       | 0.0%   |
| February  | 633                   | 94.2%                | 0.3                 | 6.0                      | 0                       | 0.8                       | 0                        | 96.1%                                       | 3.6%      | 0.2%      | 0.2%      | 0.0%       | 0.0%   |
| March     | 695                   | 93.4%                | 0.3                 | 1.4                      | 0                       | 0.6                       | 0                        | 99.1%                                       | 0.9%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| April     | 653                   | 90.7%                | 0.3                 | 2.1                      | 0                       | 0.5                       | 0                        | 99.2%                                       | 0.8%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| May       | 678                   | 91.1%                | 0.4                 | 3.6                      | 0                       | 1.2                       | 0                        | 94.1%                                       | 5.8%      | 0.1%      | 0.0%      | 0.0%       | 0.0%   |
| June      | 681                   | 94.6%                | 0.7                 | 8.7                      | 0                       | 1.9                       | 0                        | 80.5%                                       | 15.6%     | 3.2%      | 0.4%      | 0.3%       | 0.0%   |
| July      | 488                   | 65.6%                | 1.0                 | 9.0                      | 0                       | 1.9                       | 0                        | 70.7%                                       | 24.6%     | 2.5%      | 2.0%      | 0.2%       | 0.0%   |
| August    | 666                   | 89.5%                | 1.1                 | 9.4                      | 0                       | 2.0                       | 0                        | 67.1%                                       | 25.4%     | 5.0%      | 2.1%      | 0.5%       | 0.0%   |
| September | 672                   | 93.3%                | 0.7                 | 14.8                     | 3                       | 2.0                       | 0                        | 86.6%                                       | 10.1%     | 2.4%      | 0.4%      | 0.0%       | 0.4%   |
| October   | 698                   | 93.8%                | 0.5                 | 5.0                      | 0                       | 1.0                       | 0                        | 92.7%                                       | 6.4%      | 0.7%      | 0.1%      | 0.0%       | 0.0%   |
| November  | 492                   | 68.3%                | 0.4                 | 2.3                      | 0                       | 0.8                       | 0                        | 98.0%                                       | 2.0%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| December  | 711                   | 95.6%                | 0.3                 | 2.9                      | 0                       | 0.9                       | 0                        | 98.2%                                       | 1.8%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| Annual    | 7764                  | 88.6%                | 0.5                 | 14.8                     | 3                       | 2.2                       | 0                        | 89.7%                                       | 8.5%      | 1.2%      | 0.4%      | 0.1%       | 0.0%   |

**Table F-7 Stoughton Station: Summary of Airpointer PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(µg/m <sup>3</sup> ) | Maximum 1-Hr Conc.<br>(µg/m <sup>3</sup> ) | Maximum 24-Hr Conc.<br>(µg/m <sup>3</sup> ) | 24-Hour Exceedance<br>(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   | 724                      | 97.3%                   | 3.7                                   | 24.7                                       | 12.0                                        | 0                           | 0.14%                                       | 68.2%     | 26.5%      | 4.8%        | 0.3%        | 0.0%   |
| February  | 672                      | 100.0%                  | 3.6                                   | 16.7                                       | 7.2                                         | 0                           | 31.5%                                       | 34.5%     | 32.3%      | 1.6%        | 0.0%        | 0.0%   |
| March     | 139                      | 18.7%                   | 6.9                                   | 20.3                                       | 9.1                                         | 0                           | 0.7%                                        | 20.9%     | 59.7%      | 18.0%       | 0.7%        | 0.0%   |
| April     | -                        | 0.0%                    | -                                     | -                                          | -                                           | -                           | -                                           | -         | -          | -           | -           | -      |
| May       | -                        | 0.0%                    | -                                     | -                                          | -                                           | -                           | -                                           | -         | -          | -           | -           | -      |
| June      | 213                      | 29.6%                   | 4.0                                   | 12.8                                       | 6.7                                         | 0                           | 23.5%                                       | 38.0%     | 34.3%      | 4.2%        | 0.0%        | 0.0%   |
| July      | 198                      | 26.6%                   | 13.3                                  | 72.0                                       | 35.0                                        | 1                           | 4.5%                                        | 3.0%      | 41.4%      | 36.4%       | 5.1%        | 9.6%   |
| August    | 717                      | 96.4%                   | 8.3                                   | 32.3                                       | 21.5                                        | 0                           | 9.3%                                        | 17.3%     | 47.1%      | 21.1%       | 3.6%        | 1.5%   |
| September | 718                      | 99.7%                   | 10.4                                  | 175.1                                      | 62.0                                        | 2                           | 18.5%                                       | 23.5%     | 29.9%      | 14.6%       | 6.4%        | 7.0%   |
| October   | 689                      | 92.6%                   | 6.6                                   | 105.9                                      | 22.4                                        | 0                           | 26.9%                                       | 32.5%     | 22.6%      | 11.8%       | 3.3%        | 2.9%   |
| November  | 717                      | 99.6%                   | 6.4                                   | 81.6                                       | 17.3                                        | 0                           | 21.9%                                       | 21.8%     | 36.7%      | 17.7%       | 1.1%        | 0.8%   |
| December  | 736                      | 98.9%                   | 3.8                                   | 154.3                                      | 13.7                                        | 0                           | 28.5%                                       | 41.7%     | 27.9%      | 1.5%        | 0.1%        | 0.3%   |
| Annual    | 5523                     | 63.0%                   | 6.3                                   | 175.1                                      | 62.0                                        | 3                           | 22.9%                                       | 28.7%     | 33.0%      | 11.4%       | 2.1%        | 2.0%   |

**Table F-8 Stoughton Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                          |                         |                       |                              |                               | ≤5                                          | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 744                      | 100.0%                  | 0.4                   | 0.1                          | 0.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | 2.1                   | 1.2                          | 1.8                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 743                      | 99.9%                   | 7.8                   | 2.3                          | 5.7                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 680                      | 94.4%                   | 10.0                  | 1.7                          | 3.3                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 743                      | 99.9%                   | 32.6                  | 9.1                          | 12.8                          | 99.7%                                       | 0.3%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| June      | 718                      | 99.7%                   | 85.5                  | 10.8                         | 47.1                          | 99.0%                                       | 0.8%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |
| July      | 517                      | 69.5%                   | 10.7                  | 3.1                          | 4.9                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| August    | 717                      | 96.4%                   | 27.7                  | 3.6                          | 8.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| September | 720                      | 100.0%                  | 20.3                  | 2.1                          | 9.6                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 740                      | 99.5%                   | 8.1                   | 3.2                          | 7.0                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 717                      | 99.6%                   | 0.9                   | 0.2                          | 0.3                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | 0.1                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| Annual    | 8455                     | 96.5%                   | 206.1                 | 10.8                         | 47.1                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |

**Table F-9 Stoughton Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Temp. (°C) | Minimum 1-Hr Temp. (°C) | Maximum 1-Hr Temp. (°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|-----------------------|----------------------|--------------------|-------------------------|-------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                       |                      |                    |                         |                         | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 744                   | 100.0%               | -13.4              | -31.6                   | 2.9                     | 1.7%                                      | 44.9%     | 48.5%   | 4.8%   | 0.0%    | 0.0% |
| February  | 672                   | 100.0%               | -9.4               | -34.0                   | 5.6                     | 2.2%                                      | 28.6%     | 51.3%   | 17.9%  | 0.0%    | 0.0% |
| March     | 743                   | 99.9%                | -5.7               | -25.2                   | 14.6                    | 0.0%                                      | 19.0%     | 47.9%   | 33.1%  | 0.0%    | 0.0% |
| April     | 680                   | 94.4%                | 5.0                | -8.9                    | 20.2                    | 0.0%                                      | 0.0%      | 23.1%   | 70.9%  | 6.0%    | 0.0% |
| May       | 743                   | 99.9%                | 12.4               | -3.9                    | 27.4                    | 0.0%                                      | 0.0%      | 0.8%    | 64.3%  | 34.9%   | 0.0% |
| June      | 718                   | 99.7%                | 16.3               | 4.8                     | 30.3                    | 0.0%                                      | 0.0%      | 0.0%    | 46.5%  | 53.1%   | 0.4% |
| July      | 517                   | 69.5%                | 20.3               | 8.0                     | 32.9                    | 0.0%                                      | 0.0%      | 0.0%    | 21.9%  | 73.9%   | 4.3% |
| August    | 717                   | 96.4%                | 18.0               | 3.6                     | 32.4                    | 0.0%                                      | 0.0%      | 0.0%    | 34.6%  | 64.3%   | 1.1% |
| September | 720                   | 100.0%               | 13.0               | 0.2                     | 30.9                    | 0.0%                                      | 0.0%      | 0.0%    | 66.9%  | 32.6%   | 0.4% |
| October   | 740                   | 99.5%                | 4.9                | -11.1                   | 25.0                    | 0.0%                                      | 0.0%      | 20.4%   | 72.7%  | 6.9%    | 0.0% |
| November  | 717                   | 99.6%                | -7.1               | -21.6                   | 8.4                     | 0.0%                                      | 15.2%     | 69.6%   | 15.2%  | 0.0%    | 0.0% |
| December  | 744                   | 100.0%               | -11.5              | -35.7                   | 6.8                     | 6.5%                                      | 25.8%     | 55.6%   | 12.1%  | 0.0%    | 0.0% |
| Annual    | 8455                  | 96.5%                | 3.1                | -35.7                   | 32.9                    | 0.9%                                      | 11.4%     | 27.1%   | 38.7%  | 21.4%   | 0.4% |

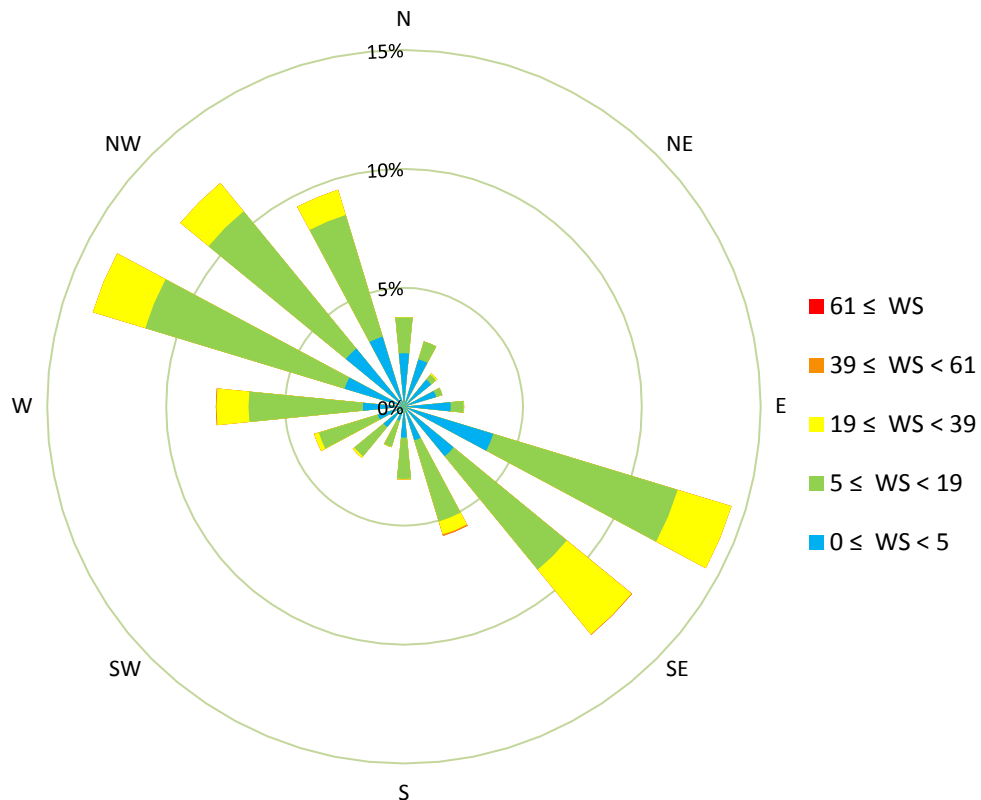
**Table F-10 Stoughton Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average RH (%) | Minimum 1-Hr RH (%) | Maximum 1-Hr RH (%) | Percent of Data in each Relative Humidity Range |         |         |         |         |      |
|-----------|-----------------------|----------------------|----------------|---------------------|---------------------|-------------------------------------------------|---------|---------|---------|---------|------|
|           |                       |                      |                |                     |                     | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90  |
| January   | 744                   | 100.0%               | 75             | 63                  | 87                  | 0.0%                                            | 0.0%    | 0.0%    | 79.2%   | 20.8%   | 0.0% |
| February  | 672                   | 100.0%               | 75             | 47                  | 89                  | 0.0%                                            | 0.0%    | 1.3%    | 74.7%   | 24.0%   | 0.0% |
| March     | 743                   | 99.9%                | 76             | 35                  | 90                  | 0.0%                                            | 0.0%    | 5.9%    | 55.7%   | 38.0%   | 0.4% |
| April     | 680                   | 94.4%                | 62             | 18                  | 90                  | 0.0%                                            | 5.4%    | 37.4%   | 38.4%   | 18.8%   | 0.0% |
| May       | 743                   | 99.9%                | 52             | 18                  | 90                  | 0.0%                                            | 20.2%   | 41.2%   | 26.9%   | 11.6%   | 0.1% |
| June      | 718                   | 99.7%                | 59             | 17                  | 91                  | 0.0%                                            | 8.9%    | 39.6%   | 33.1%   | 16.7%   | 1.7% |
| July      | 517                   | 69.5%                | 60             | 25                  | 91                  | 0.0%                                            | 1.7%    | 45.3%   | 36.6%   | 15.3%   | 1.2% |
| August    | 717                   | 96.4%                | 59             | 17                  | 91                  | 0.0%                                            | 10.0%   | 38.6%   | 31.0%   | 17.6%   | 2.8% |
| September | 720                   | 100.0%               | 61             | 18                  | 90                  | 0.0%                                            | 9.0%    | 34.4%   | 34.3%   | 22.2%   | 0.0% |
| October   | 740                   | 99.5%                | 60             | 18                  | 90                  | 0.0%                                            | 5.5%    | 42.0%   | 41.6%   | 10.7%   | 0.1% |
| November  | 717                   | 99.6%                | 75             | 45                  | 87                  | 0.0%                                            | 0.0%    | 4.7%    | 70.3%   | 25.0%   | 0.0% |
| December  | 744                   | 100.0%               | 73             | 45                  | 86                  | 0.0%                                            | 0.0%    | 2.4%    | 85.8%   | 11.8%   | 0.0% |
| Annual    | 8455                  | 96.5%                | 66             | 17                  | 91                  | 0.0%                                            | 5.2%    | 23.9%   | 51.0%   | 19.4%   | 0.5% |

**Table F-11 Stoughton Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         |        |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS | Totals |
| North NorthEast       | 2.1%                                                         | 0.8%        | 0.0%         | 0.0%         | 0.0%    | 2.9%   |
| NorthEast             | 1.5%                                                         | 0.3%        | 0.1%         | 0.0%         | 0.0%    | 1.8%   |
| East NorthEast        | 1.4%                                                         | 0.3%        | 0.0%         | 0.0%         | 0.0%    | 1.7%   |
| East                  | 2.0%                                                         | 0.6%        | 0.0%         | 0.0%         | 0.0%    | 2.5%   |
| East SouthEast        | 3.9%                                                         | 8.1%        | 2.4%         | 0.0%         | 0.0%    | 14.4%  |
| SouthEast             | 2.7%                                                         | 6.2%        | 3.5%         | 0.0%         | 0.0%    | 12.4%  |
| South SouthEast       | 1.5%                                                         | 3.6%        | 0.6%         | 0.1%         | 0.0%    | 5.7%   |
| South                 | 1.3%                                                         | 1.7%        | 0.0%         | 0.0%         | 0.0%    | 3.1%   |
| South SouthWest       | 0.6%                                                         | 1.2%        | 0.0%         | 0.0%         | 0.0%    | 1.8%   |
| Southwest             | 1.1%                                                         | 1.6%        | 0.1%         | 0.0%         | 0.0%    | 2.8%   |
| West SouthWest        | 1.1%                                                         | 2.6%        | 0.2%         | 0.0%         | 0.0%    | 3.9%   |
| West                  | 1.7%                                                         | 4.8%        | 1.3%         | 0.0%         | 0.0%    | 7.9%   |
| West NorthWest        | 2.6%                                                         | 8.8%        | 2.3%         | 0.0%         | 0.0%    | 13.7%  |
| NorthWest             | 3.2%                                                         | 7.5%        | 1.5%         | 0.0%         | 0.0%    | 12.2%  |
| North NorthWest       | 3.1%                                                         | 5.3%        | 1.1%         | 0.0%         | 0.0%    | 9.5%   |
| North                 | 2.2%                                                         | 1.5%        | 0.0%         | 0.0%         | 0.0%    | 3.8%   |
| Total                 | 32.0%                                                        | 54.7%       | 13.2%        | 0.1%         | 0.0%    | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 0.2% |
| Number of Valid Hourly-Average Data | 8463 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX G WAUCHOPE STATION: CONTINUOUS MONITORING DATA

**Table G-1 Wauchope Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| SO <sub>2</sub>     | ppb               | 384               | 7652                | 87.4%                 | 0.5                                | < 0.1   | 13.9    |
| H <sub>2</sub> S    | ppb               | 384               | 7605                | 86.8%                 | 1.0                                | < 0.1   | 79.6    |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 24                | 8011                | 91.4%                 | 8.3                                | < 0.1   | 316.8   |
| Precipitation       | mm                | 0                 | 8093                | 92.4%                 | 180.5 (total)                      | < 0.1   | 13.6    |
| Ambient Temperature | °C                | 0                 | 8092                | 92.4%                 | 2.3                                | -36.3   | 31.1    |
| Relative Humidity   | %                 | 0                 | 8092                | 92.4%                 | 66.0                               | 18.6    | 91.3    |
| Wind Speed          | km/hr             | 0                 | 8090                | 92.4%                 | 11.9                               | Calm    | 46.8    |

**Table G-2 Wauchope Station: Summary of Airpointer SO<sub>2</sub> Monitoring Results for the Year 2017**

| 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 < 5 | 5 ≤ C < 10 | 10 ≤ C < 57 | 57 ≤ C < 172 | C ≥ 172 |
| January   | 710                   | 95.4%                | 1.0                 | 11.7                     | 0                       | 2.8                       | 0                        | 69.4%                                       | 29.2%     | 1.3%       | 0.1%        | 0.0%         | 0.0%    |
| February  | 585                   | 87.1%                | 0.8                 | 5.8                      | 0                       | 2.3                       | 0                        | 72.8%                                       | 27.0%     | 0.2%       | 0.0%        | 0.0%         | 0.0%    |
| March     | 707                   | 95.0%                | 0.5                 | 13.9                     | 0                       | 1.6                       | 0                        | 88.5%                                       | 10.9%     | 0.4%       | 0.1%        | 0.0%         | 0.0%    |
| April     | 688                   | 95.6%                | 0.4                 | 3.7                      | 0                       | 1.4                       | 0                        | 94.0%                                       | 6.0%      | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| May       | 706                   | 94.9%                | 0.4                 | 3.8                      | 0                       | 1.0                       | 0                        | 95.5%                                       | 4.5%      | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| June      | 689                   | 95.7%                | 0.3                 | 5.1                      | 0                       | 0.7                       | 0                        | 96.2%                                       | 3.6%      | 0.1%       | 0.0%        | 0.0%         | 0.0%    |
| July      | 356                   | 47.8%                | 0.3                 | 1.9                      | 0                       | 0.6                       | 0                        | 96.9%                                       | 3.1%      | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| August    | 425                   | 57.1%                | 0.4                 | 4.0                      | 0                       | 0.8                       | 0                        | 96.0%                                       | 4.0%      | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| September | 683                   | 94.9%                | 0.5                 | 2.9                      | 0                       | 1.1                       | 0                        | 89.0%                                       | 11.0%     | 0.0%       | 0.0%        | 0.0%         | 0.0%    |
| October   | 710                   | 95.4%                | 0.6                 | 8.6                      | 0                       | 2.1                       | 0                        | 84.4%                                       | 14.9%     | 0.7%       | 0.0%        | 0.0%         | 0.0%    |
| November  | 681                   | 94.6%                | 0.4                 | 6.2                      | 0                       | 1.4                       | 0                        | 93.2%                                       | 6.5%      | 0.3%       | 0.0%        | 0.0%         | 0.0%    |
| December  | 712                   | 95.7%                | 0.4                 | 8.5                      | 0                       | 1.1                       | 0                        | 93.5%                                       | 6.3%      | 0.1%       | 0.0%        | 0.0%         | 0.0%    |
| Annual    | 7652                  | 87.4%                | 0.5                 | 13.9                     | 0                       | 2.8                       | 0                        | 88.7%                                       | 11.0%     | 0.3%       | 0.0%        | 0.0%         | 0.0%    |

**Table G-3 Wauchope Station: Summary of Airpointer H<sub>2</sub>S Monitoring Results for the Year 2017**

| 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 | 3 ≤ C < 5 | 5 ≤ C < 8 | 8 ≤ C < 11 | 11 ≤ C |
| January   | 613                   | 82.4%                | 0.5                 | 3.0                      | 0                       | 1.2                       | 0                        | 94.1%                                       | 5.9%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| February  | 642                   | 95.5%                | 0.5                 | 2.5                      | 0                       | 0.9                       | 0                        | 96.3%                                       | 3.7%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| March     | 705                   | 94.8%                | 0.8                 | 14.1                     | 2                       | 3.3                       | 0                        | 84.1%                                       | 11.1%     | 2.6%      | 1.8%      | 0.1%       | 0.3%   |
| April     | 688                   | 95.6%                | 0.5                 | 3.8                      | 0                       | 1.2                       | 0                        | 97.8%                                       | 1.7%      | 0.4%      | 0.0%      | 0.0%       | 0.0%   |
| May       | 704                   | 94.6%                | 0.6                 | 4.2                      | 0                       | 1.1                       | 0                        | 95.0%                                       | 4.7%      | 0.3%      | 0.0%      | 0.0%       | 0.0%   |
| June      | 688                   | 95.6%                | 1.0                 | 16.0                     | 2                       | 2.8                       | 0                        | 73.4%                                       | 22.2%     | 3.2%      | 0.7%      | 0.1%       | 0.3%   |
| July      | 356                   | 47.8%                | 2.1                 | 31.8                     | 8                       | 6.2                       | 1                        | 55.3%                                       | 27.8%     | 8.4%      | 3.4%      | 2.8%       | 2.2%   |
| August    | 423                   | 56.9%                | 4.5                 | 79.6                     | 52                      | 13.4                      | 9                        | 44.7%                                       | 24.8%     | 9.5%      | 5.7%      | 2.8%       | 12.5%  |
| September | 683                   | 94.9%                | 1.6                 | 35.2                     | 13                      | 5.9                       | 4                        | 62.1%                                       | 27.4%     | 4.7%      | 2.8%      | 1.2%       | 1.9%   |
| October   | 710                   | 95.4%                | 0.8                 | 16.5                     | 1                       | 2.5                       | 0                        | 84.8%                                       | 13.8%     | 1.0%      | 0.3%      | 0.0%       | 0.1%   |
| November  | 681                   | 94.6%                | 0.4                 | 1.7                      | 0                       | 0.8                       | 0                        | 97.8%                                       | 2.2%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| December  | 712                   | 95.7%                | 0.5                 | 2.5                      | 0                       | 2.0                       | 0                        | 92.7%                                       | 7.3%      | 0.0%      | 0.0%      | 0.0%       | 0.0%   |
| Annual    | 7605                  | 86.8%                | 1.0                 | 79.6                     | 78                      | 13.4                      | 14                       | 83.8%                                       | 11.7%     | 2.0%      | 1.0%      | 0.4%       | 1.0%   |

**Table G-4 Wauchope Station: Summary of Airpointer PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Conc. (µg/m <sup>3</sup> ) | Maximum 1-Hr Conc. (µg/m <sup>3</sup> ) | Maximum 24-Hr Conc. (µg/m <sup>3</sup> ) | 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   | 730                   | 98.1%                | 3.9                                | 19.3                                    | 9.1                                      | 0                        | 0                                           | 74.4%     | 22.9%      | 2.7%        | 0.0%        | 0.0%   |
| February  | 672                   | 100.0%               | 3.9                                | 37.0                                    | 19.3                                     | 0                        | 22.3%                                       | 52.4%     | 18.9%      | 4.8%        | 0.9%        | 0.7%   |
| March     | 718                   | 96.5%                | 5.3                                | 26.8                                    | 14.3                                     | 0                        | 16.2%                                       | 31.1%     | 42.6%      | 9.6%        | 0.6%        | 0.0%   |
| April     | 720                   | 100.0%               | 5.0                                | 17.9                                    | 10.5                                     | 0                        | 3.5%                                        | 45.4%     | 45.7%      | 5.4%        | 0.0%        | 0.0%   |
| May       | 733                   | 98.5%                | 8.5                                | 113.5                                   | 19.0                                     | 0                        | 12.3%                                       | 14.5%     | 40.5%      | 26.6%       | 4.8%        | 1.4%   |
| June      | 720                   | 100.0%               | 9.2                                | 45.3                                    | 19.0                                     | 0                        | 2.9%                                        | 14.7%     | 49.2%      | 25.7%       | 6.7%        | 0.8%   |
| July      | 373                   | 50.1%                | 12.5                               | 39.8                                    | 18.4                                     | 0                        | 0.0%                                        | 8.6%      | 37.5%      | 38.9%       | 12.9%       | 2.1%   |
| August    | 427                   | 57.4%                | 18.1                               | 125.2                                   | 32.2                                     | 1                        | 0.9%                                        | 3.7%      | 27.2%      | 36.5%       | 16.6%       | 15.0%  |
| September | 719                   | 99.9%                | 15.8                               | 316.8                                   | 71.9                                     | 4                        | 3.5%                                        | 16.3%     | 32.0%      | 25.3%       | 12.7%       | 10.3%  |
| October   | 743                   | 99.9%                | 11.3                               | 89.9                                    | 33.4                                     | 1                        | 7.8%                                        | 16.3%     | 39.8%      | 20.1%       | 8.5%        | 7.5%   |
| November  | 718                   | 99.7%                | 7.6                                | 123.0                                   | 18.4                                     | 0                        | 19.1%                                       | 21.4%     | 35.4%      | 19.8%       | 2.5%        | 1.8%   |
| December  | 738                   | 99.2%                | 3.7                                | 37.9                                    | 6.3                                      | 0                        | 34.1%                                       | 29.3%     | 33.5%      | 3.0%        | 0.0%        | 0.1%   |
| Annual    | 8011                  | 91.4%                | 8.3                                | 316.8                                   | 71.9                                     | 6                        | 11.0%                                       | 28.9%     | 35.7%      | 16.7%       | 4.8%        | 3.0%   |

**Table G-5 Wauchope Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                          |                         |                       |                              |                               | <=5                                         | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 743                      | 99.9%                   | 0.1                   | 0.1                          | 0.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | 0.7                   | 0.4                          | 0.7                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 744                      | 100.0%                  | 4.6                   | 1.0                          | 2.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 3.6                   | 0.9                          | 1.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 744                      | 100.0%                  | 38.7                  | 6.3                          | 14.9                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| June      | 720                      | 100.0%                  | 84.9                  | 13.6                         | 41.4                          | 99.3%                                       | 0.4%   | 0.3%    | 0.0%    | 0.0%    | 0.0% |
| July      | 373                      | 50.1%                   | 6.0                   | 3.2                          | 3.9                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| August    | 452                      | 60.8%                   | 5.9                   | 1.5                          | 5.3                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| September | 720                      | 100.0%                  | 32.1                  | 3.4                          | 11.9                          | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 743                      | 99.9%                   | 3.4                   | 1.1                          | 1.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 718                      | 99.7%                   | 0.4                   | 0.1                          | 0.2                           | 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    | 8093                     | 92.4%                   | 180.5                 | 13.6                         | 41.4                          | 99.9%                                       | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |

**Table G-6 Wauchope Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Temp.<br>(°C) | Minimum 1-Hr Temp.<br>(°C) | Maximum 1-Hr Temp.<br>(°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|--------------------------|-------------------------|-----------------------|----------------------------|----------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                          |                         |                       |                            |                            | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 742                      | 99.7%                   | -12.8                 | -32.7                      | 2.7                        | 2.4%                                      | 43.4%     | 49.1%   | 5.1%   | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | -9.8                  | -31.8                      | 4.4                        | 1.5%                                      | 31.0%     | 52.1%   | 15.5%  | 0.0%    | 0.0% |
| March     | 744                      | 100.0%                  | -6.5                  | -28.3                      | 11.2                       | 0.0%                                      | 21.4%     | 49.9%   | 28.8%  | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 4.8                   | -7.2                       | 20.6                       | 0.0%                                      | 0.0%      | 21.9%   | 72.8%  | 5.3%    | 0.0% |
| May       | 744                      | 100.0%                  | 12.0                  | -1.4                       | 26.2                       | 0.0%                                      | 0.0%      | 0.7%    | 69.6%  | 29.7%   | 0.0% |
| June      | 720                      | 100.0%                  | 16.2                  | 6.0                        | 29.6                       | 0.0%                                      | 0.0%      | 0.0%    | 45.7%  | 54.3%   | 0.0% |
| July      | 373                      | 50.1%                   | 19.9                  | 9.3                        | 31.1                       | 0.0%                                      | 0.0%      | 0.0%    | 19.8%  | 78.8%   | 1.3% |
| August    | 452                      | 60.8%                   | 18.1                  | 5.3                        | 30.9                       | 0.0%                                      | 0.0%      | 0.0%    | 34.3%  | 64.6%   | 1.1% |
| September | 720                      | 100.0%                  | 13.0                  | 1.1                        | 30.0                       | 0.0%                                      | 0.0%      | 0.0%    | 66.4%  | 33.6%   | 0.0% |
| October   | 743                      | 99.9%                   | 4.8                   | -10.0                      | 23.8                       | 0.0%                                      | 0.0%      | 20.9%   | 72.9%  | 6.2%    | 0.0% |
| November  | 718                      | 99.7%                   | -6.9                  | -22.6                      | 6.7                        | 0.0%                                      | 8.6%      | 79.2%   | 12.1%  | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | -11.4                 | -36.3                      | 4.8                        | 6.3%                                      | 27.4%     | 52.4%   | 13.8%  | 0.0%    | 0.0% |
| Annual    | 8092                     | 92.4%                   | 2.3                   | -36.3                      | 31.1                       | 0.9%                                      | 11.8%     | 29.2%   | 39.1%  | 18.8%   | 0.1% |

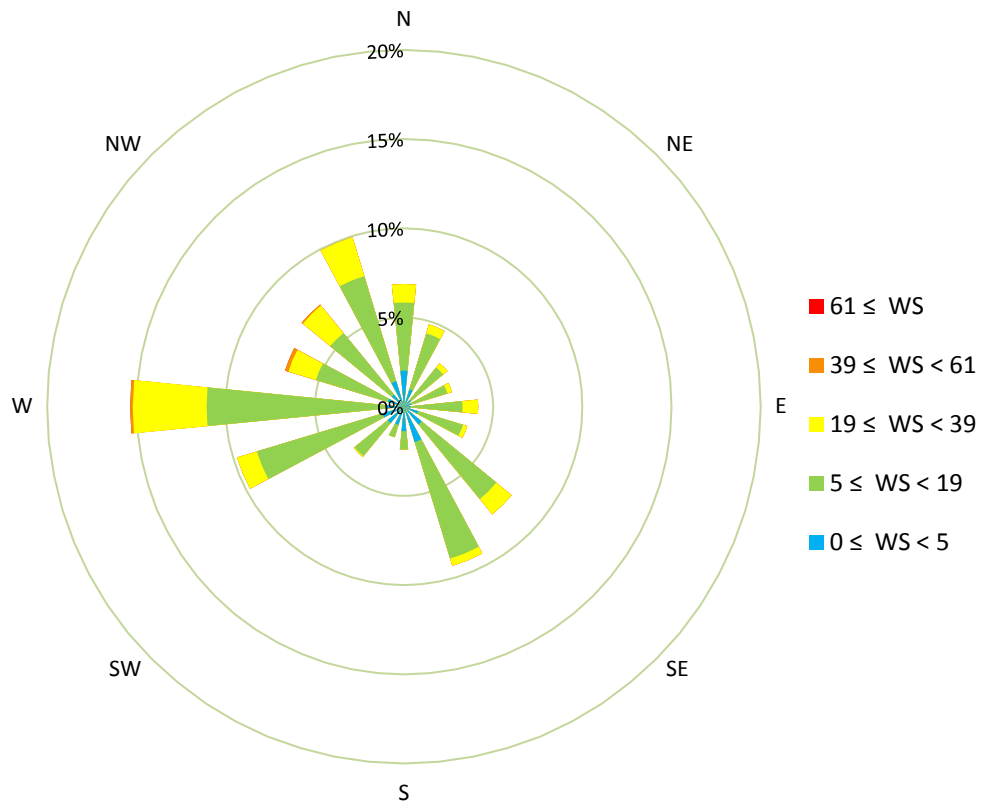
**Table G-7      Wauchope Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid<br>1-Hr data<br>(no.) | Operational<br>Time<br>(%) | Average<br>RH<br>(%) | Minimum<br>1-Hr RH<br>(%) | Maximum<br>1-Hr RH<br>(%) | Percent of Data in each Relative Humidity Range |         |         |         |         |      |
|-----------|-----------------------------|----------------------------|----------------------|---------------------------|---------------------------|-------------------------------------------------|---------|---------|---------|---------|------|
|           |                             |                            |                      |                           |                           | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90  |
| January   | 742                         | 99.7%                      | 73                   | 55                        | 86                        | 0.0%                                            | 0.0%    | 1.1%    | 88.5%   | 10.4%   | 0.0% |
| February  | 672                         | 100.0%                     | 74                   | 49                        | 88                        | 0.0%                                            | 0.0%    | 4.0%    | 77.1%   | 18.9%   | 0.0% |
| March     | 744                         | 100.0%                     | 74                   | 44                        | 90                        | 0.0%                                            | 0.0%    | 11.8%   | 56.3%   | 31.6%   | 0.3% |
| April     | 720                         | 100.0%                     | 61                   | 20                        | 91                        | 0.0%                                            | 4.6%    | 39.4%   | 40.8%   | 14.9%   | 0.3% |
| May       | 744                         | 100.0%                     | 54                   | 22                        | 90                        | 0.0%                                            | 13.4%   | 45.0%   | 32.4%   | 9.1%    | 0.0% |
| June      | 720                         | 100.0%                     | 61                   | 19                        | 91                        | 0.0%                                            | 4.6%    | 40.3%   | 37.5%   | 17.4%   | 0.3% |
| July      | 373                         | 50.1%                      | 65                   | 32                        | 91                        | 0.0%                                            | 0.0%    | 41.8%   | 36.5%   | 19.3%   | 2.4% |
| August    | 452                         | 60.8%                      | 60                   | 23                        | 91                        | 0.0%                                            | 4.9%    | 43.6%   | 31.9%   | 18.1%   | 1.5% |
| September | 720                         | 100.0%                     | 63                   | 22                        | 90                        | 0.0%                                            | 5.4%    | 35.1%   | 32.5%   | 26.8%   | 0.1% |
| October   | 743                         | 99.9%                      | 61                   | 19                        | 91                        | 0.0%                                            | 3.5%    | 38.9%   | 47.4%   | 9.7%    | 0.5% |
| November  | 718                         | 99.7%                      | 74                   | 45                        | 87                        | 0.0%                                            | 0.0%    | 3.2%    | 75.2%   | 21.6%   | 0.0% |
| December  | 744                         | 100.0%                     | 70                   | 47                        | 85                        | 0.0%                                            | 0.0%    | 7.5%    | 86.8%   | 5.6%    | 0.0% |
|           |                             |                            |                      |                           |                           |                                                 |         |         |         |         |      |
| Annual    | 8092                        | 92.4%                      | 66                   | 19                        | 91                        | 0.0%                                            | 3.1%    | 24.8%   | 55.0%   | 16.7%   | 0.3% |

**Table G-8 Wauchope Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         | Totals |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS |        |
| North NorthEast       | 1.0%                                                         | 3.3%        | 0.5%         | 0.0%         | 0.0%    | 4.8%   |
| NorthEast             | 0.5%                                                         | 2.3%        | 0.3%         | 0.0%         | 0.0%    | 3.2%   |
| East NorthEast        | 0.4%                                                         | 2.1%        | 0.3%         | 0.0%         | 0.0%    | 2.8%   |
| East                  | 0.4%                                                         | 2.9%        | 0.9%         | 0.0%         | 0.0%    | 4.2%   |
| East SouthEast        | 0.8%                                                         | 2.6%        | 0.2%         | 0.0%         | 0.0%    | 3.7%   |
| SouthEast             | 1.3%                                                         | 5.4%        | 1.1%         | 0.0%         | 0.0%    | 7.8%   |
| South SouthEast       | 2.1%                                                         | 6.8%        | 0.4%         | 0.0%         | 0.0%    | 9.3%   |
| South                 | 1.4%                                                         | 1.0%        | 0.0%         | 0.0%         | 0.0%    | 2.4%   |
| South SouthWest       | 1.1%                                                         | 0.7%        | 0.0%         | 0.0%         | 0.0%    | 1.8%   |
| Southwest             | 1.2%                                                         | 2.4%        | 0.1%         | 0.0%         | 0.0%    | 3.6%   |
| West SouthWest        | 1.3%                                                         | 7.4%        | 1.1%         | 0.0%         | 0.0%    | 9.8%   |
| West                  | 1.0%                                                         | 10.0%       | 4.1%         | 0.1%         | 0.0%    | 15.4%  |
| West NorthWest        | 1.0%                                                         | 4.2%        | 1.6%         | 0.2%         | 0.0%    | 7.0%   |
| NorthWest             | 0.9%                                                         | 4.5%        | 2.0%         | 0.1%         | 0.0%    | 7.4%   |
| North NorthWest       | 1.5%                                                         | 6.2%        | 2.3%         | 0.0%         | 0.0%    | 9.9%   |
| North                 | 2.0%                                                         | 3.8%        | 1.0%         | 0.0%         | 0.0%    | 6.9%   |
|                       |                                                              |             |              |              |         |        |
| Total                 | 17.8%                                                        | 65.7%       | 16.1%        | 0.4%         | 0.0%    | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 0.1% |
| Number of Valid Hourly-Average Data | 8090 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX H WAWOTA STATION: CONTINUOUS MONITORING DATA

**Table H-1 Wawota Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| NO                  | ppb               | 387               | 7448                | 85.0%                 | 0.7                                | < 0.1   | 21.9    |
| NO <sub>2</sub>     | ppb               | 387               | 7461                | 85.2%                 | 1.0                                | < 0.1   | 9.2     |
| NO <sub>x</sub>     | ppb               | 387               | 7448                | 85.0%                 | 1.6                                | < 0.1   | 29.1    |
| O <sub>3</sub>      | ppb               | 405               | 6131                | 70.0%                 | 33.5                               | 4.4     | 70.8    |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 31                | 7319                | 83.6%                 | 6.5                                | < 0.1   | 305.3   |
| Precipitation       | mm                | 0                 | 8361                | 95.4%                 | 350.9 (total)                      | < 0.1   | 20.7    |
| Ambient Temperature | °C                | 0                 | 8361                | 95.4%                 | 3.2                                | -35.3   | 31.0    |
| Relative Humidity   | %                 | 0                 | 8361                | 95.4%                 | 67.3                               | 18.0    | 95.2    |
| Wind Speed          | m/s               | 0                 | 8326                | 95.0%                 | 9.9                                | Calm    | 42.2    |

**Table H-2 Wawota Station: Summary of Airpointer NO Monitoring Results for the Year 2017**

| 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   | 705                   | 94.8%                | 0.9                 | 9.4                      | 1.5                       | 99.4%                                       | 0.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 642                   | 95.5%                | 0.9                 | 15.7                     | 2.1                       | 98.9%                                       | 0.9%       | 0.2%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 700                   | 94.1%                | 0.7                 | 4.3                      | 1.0                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 561                   | 77.9%                | 0.8                 | 21.9                     | 1.5                       | 99.6%                                       | 0.2%       | 0.2%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 304                   | 40.9%                | 0.6                 | 4.9                      | 1.2                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 683                   | 94.9%                | 0.6                 | 3.9                      | 0.9                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 459                   | 61.7%                | 0.6                 | 8.2                      | 1.2                       | 99.6%                                       | 0.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 614                   | 82.5%                | 0.6                 | 4.0                      | 0.9                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 678                   | 94.2%                | 0.6                 | 13.1                     | 1.7                       | 99.4%                                       | 0.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 709                   | 95.3%                | 0.5                 | 4.4                      | 0.7                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 681                   | 94.6%                | 0.6                 | 15.1                     | 1.6                       | 99.4%                                       | 0.4%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 0.5                 | 4.2                      | 1.1                       | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7448                  | 85.0%                | 0.7                 | 21.9                     | 2.1                       | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |

**Table H-3 Wawota Station: Summary of Airpointer NO<sub>2</sub> Monitoring Results for the Year 2017**

| 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                 | 8.6                      | 0                       | 3.8                       | 0                        | 97.7%                                       | 2.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 642                   | 95.5%                | 1.3                 | 7.9                      | 0                       | 3.3                       | 0                        | 99.4%                                       | 0.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 702                   | 94.4%                | 1.2                 | 5.8                      | 0                       | 2.9                       | 0                        | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 561                   | 77.9%                | 1.1                 | 7.1                      | 0                       | 1.8                       | 0                        | 99.8%                                       | 0.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 304                   | 40.9%                | 0.4                 | 7.7                      | 0                       | 1.9                       | 0                        | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 685                   | 95.1%                | 0.3                 | 7.0                      | 0                       | 1.2                       | 0                        | 99.6%                                       | 0.4%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 459                   | 61.7%                | 0.1                 | 2.6                      | 0                       | 0.7                       | 0                        | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 617                   | 82.9%                | 0.1                 | 2.2                      | 0                       | 0.3                       | 0                        | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 680                   | 94.4%                | 0.6                 | 7.8                      | 0                       | 1.6                       | 0                        | 99.3%                                       | 0.7%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 710                   | 95.4%                | 1.1                 | 4.6                      | 0                       | 2.1                       | 0                        | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 682                   | 94.7%                | 1.8                 | 9.2                      | 0                       | 5.1                       | 0                        | 97.2%                                       | 2.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 1.4                 | 6.4                      | 0                       | 2.7                       | 0                        | 99.2%                                       | 0.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7461                  | 85.2%                | 1.0                 | 9.2                      | 0                       | 5.1                       | 0                        | 99.2%                                       | 0.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |

**Table H-4 Wawota Station: Summary of Airpointer NO<sub>x</sub> Monitoring Results for the Year 2017**

| 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   | 705                   | 94.8%                | 2.6                 | 17.0                     | 5.1                       | 92.3%                                       | 7.5%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 642                   | 95.5%                | 2.2                 | 23.7                     | 5.4                       | 95.3%                                       | 4.2%       | 0.5%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 700                   | 94.1%                | 1.9                 | 9.6                      | 3.9                       | 98.4%                                       | 1.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 561                   | 77.9%                | 1.8                 | 29.1                     | 2.8                       | 97.9%                                       | 2.0%       | 0.2%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 304                   | 40.9%                | 1.1                 | 12.6                     | 3.1                       | 99.3%                                       | 0.7%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 683                   | 94.9%                | 0.9                 | 7.8                      | 2.1                       | 99.0%                                       | 1.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 459                   | 61.7%                | 0.7                 | 8.3                      | 1.3                       | 99.1%                                       | 0.9%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 614                   | 82.5%                | 0.7                 | 5.3                      | 1.1                       | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 678                   | 94.2%                | 1.2                 | 19.5                     | 2.9                       | 98.2%                                       | 1.3%       | 0.4%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 709                   | 95.3%                | 1.6                 | 7.7                      | 2.6                       | 98.9%                                       | 1.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 681                   | 94.6%                | 2.3                 | 23.2                     | 6.7                       | 94.4%                                       | 5.3%       | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 712                   | 95.7%                | 1.9                 | 9.8                      | 3.4                       | 97.2%                                       | 2.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7448                  | 85.0%                | 1.6                 | 29.1                     | 6.7                       | 97.3%                                       | 2.6%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |

**Table H-5 Wawota Station: Summary of Airpointer O<sub>3</sub> Monitoring Results for the Year 2017**

| 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   | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| February  | -                     | 0.0%                 | -                   | -                        | -                       | -                         | -                                           | -           | -           | -           | -           | -      |
| March     | 234                   | 31.5%                | 34.2                | 53.2                     | 0                       | 40.2                      | 0.0%                                        | 0.4%        | 83.8%       | 15.8%       | 0.0%        | 0.0%   |
| April     | 657                   | 91.3%                | 38.9                | 64.2                     | 0                       | 49.3                      | 0.0%                                        | 1.4%        | 59.7%       | 38.1%       | 0.9%        | 0.0%   |
| May       | 700                   | 94.1%                | 39.2                | 63.8                     | 0                       | 46.6                      | 0.0%                                        | 3.0%        | 48.6%       | 46.6%       | 1.9%        | 0.0%   |
| June      | 685                   | 95.1%                | 35.6                | 68.1                     | 0                       | 48.6                      | 1.3%                                        | 6.6%        | 57.8%       | 31.5%       | 2.8%        | 0.0%   |
| July      | 459                   | 61.7%                | 32.8                | 70.8                     | 0                       | 51.5                      | 4.4%                                        | 11.3%       | 57.7%       | 25.9%       | 0.7%        | 0.0%   |
| August    | 617                   | 82.9%                | 29.2                | 65.7                     | 0                       | 46.7                      | 5.7%                                        | 18.8%       | 54.9%       | 20.3%       | 0.3%        | 0.0%   |
| September | 680                   | 94.4%                | 26.5                | 62.7                     | 0                       | 42.2                      | 6.5%                                        | 26.0%       | 54.9%       | 12.4%       | 0.3%        | 0.0%   |
| October   | 705                   | 94.8%                | 27.5                | 51.9                     | 0                       | 38.9                      | 4.3%                                        | 16.5%       | 71.5%       | 7.8%        | 0.0%        | 0.0%   |
| November  | 682                   | 94.7%                | 33.7                | 45.3                     | 0                       | 39.1                      | 0.0%                                        | 1.0%        | 89.0%       | 10.0%       | 0.0%        | 0.0%   |
| December  | 712                   | 95.7%                | 37.1                | 48.7                     | 0                       | 43.7                      | 0.3%                                        | 0.8%        | 66.6%       | 32.3%       | 0.0%        | 0.0%   |
| Annual    | 6131                  | 70.0%                | 33.5                | 70.8                     | 0                       | 51.5                      | 2.3%                                        | 9.0%        | 63.4%       | 24.6%       | 0.7%        | 0.0%   |

**Table H-6 Wawota Station: Summary of Airpointer PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data (no.) | Operational Time (%) | Average Conc. (µg/m <sup>3</sup> ) | Maximum 1-Hr Conc. (µg/m <sup>3</sup> ) | Maximum 24-Hr Conc. (µg/m <sup>3</sup> ) | 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%               | 4.9                                | 28.6                                    | 10.0                                     | 0                        | 0                                           | 54.7%     | 35.1%      | 9.7%        | 0.5%        | 0.0%   |
| February  | 672                   | 100.0%               | 5.1                                | 29.8                                    | 9.7                                      | 0                        | 17.0%                                       | 32.7%     | 40.8%      | 9.4%        | 0.1%        | 0.0%   |
| March     | 736                   | 98.9%                | 6.0                                | 40.6                                    | 13.6                                     | 0                        | 16.4%                                       | 24.6%     | 41.7%      | 16.6%       | 0.5%        | 0.1%   |
| April     | 690                   | 95.8%                | 5.2                                | 38.3                                    | 14.4                                     | 0                        | 23.2%                                       | 31.6%     | 33.0%      | 9.4%        | 2.0%        | 0.7%   |
| May       | 434                   | 58.3%                | 8.0                                | 121.9                                   | 18.3                                     | 0                        | 12.7%                                       | 19.1%     | 41.7%      | 24.0%       | 1.2%        | 1.4%   |
| June      | 14                    | 1.9%                 | 5.7                                | 9.7                                     | 5.7                                      | 0                        | 0.0%                                        | 42.9%     | 57.1%      | 0.0%        | 0.0%        | 0.0%   |
| July      | 477                   | 64.1%                | 6.9                                | 32.3                                    | 17.9                                     | 0                        | 15.5%                                       | 21.4%     | 41.7%      | 17.8%       | 3.1%        | 0.4%   |
| August    | 645                   | 86.7%                | 9.8                                | 36.7                                    | 23.6                                     | 0                        | 9.1%                                        | 12.7%     | 38.8%      | 29.6%       | 7.6%        | 2.2%   |
| September | 706                   | 98.1%                | 9.6                                | 305.3                                   | 77.2                                     | 1                        | 19.3%                                       | 24.5%     | 30.9%      | 15.0%       | 5.8%        | 4.5%   |
| October   | 743                   | 99.9%                | 7.1                                | 196.6                                   | 34.7                                     | 2                        | 31.0%                                       | 24.6%     | 25.2%      | 12.1%       | 4.0%        | 3.1%   |
| November  | 720                   | 100.0%               | 6.6                                | 68.5                                    | 17.3                                     | 0                        | 28.8%                                       | 12.8%     | 35.6%      | 19.0%       | 2.6%        | 1.3%   |
| December  | 738                   | 99.2%                | 3.3                                | 24.2                                    | 6.5                                      | 0                        | 44.4%                                       | 26.6%     | 25.3%      | 3.1%        | 0.5%        | 0.0%   |
| Annual    | 7319                  | 83.6%                | 6.5                                | 305.3                                   | 77.2                                     | 3                        | 22.3%                                       | 24.5%     | 34.9%      | 14.5%       | 2.5%        | 1.3%   |

**Table H-7 Wawota Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid<br>1-Hr data<br>(no.) | Operational<br>Time<br>(%) | Total<br>Precip.<br>(mm) | Maximum<br>1-Hr Precip.<br>(mm) | Maximum<br>24-Hr<br>Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|-----------------------------|----------------------------|--------------------------|---------------------------------|-------------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                             |                            |                          |                                 |                                     | <=5                                         | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 744                         | 100.0%                     | 0.1                      | 0.0                             | 0.1                                 | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                         | 100.0%                     | 1.6                      | 0.8                             | 1.0                                 | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 739                         | 99.3%                      | 6.0                      | 0.9                             | 3.5                                 | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 690                         | 95.8%                      | 9.6                      | 2.6                             | 5.1                                 | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 741                         | 99.6%                      | 44.5                     | 8.7                             | 16.4                                | 99.7%                                       | 0.3%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| June      | 718                         | 99.7%                      | 147.3                    | 14.0                            | 55.9                                | 98.1%                                       | 1.7%   | 0.3%    | 0.0%    | 0.0%    | 0.0% |
| July      | 485                         | 65.2%                      | 32.1                     | 20.3                            | 21.6                                | 99.8%                                       | 0.0%   | 0.2%    | 0.0%    | 0.0%    | 0.0% |
| August    | 645                         | 86.7%                      | 40.2                     | 20.7                            | 37.3                                | 99.7%                                       | 0.2%   | 0.2%    | 0.0%    | 0.0%    | 0.0% |
| September | 720                         | 100.0%                     | 42.9                     | 5.3                             | 14.3                                | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 743                         | 99.9%                      | 24.5                     | 6.7                             | 9.8                                 | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 720                         | 100.0%                     | 1.6                      | 0.9                             | 1.3                                 | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| December  | 744                         | 100.0%                     | 0.6                      | 0.3                             | 0.5                                 | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| Annual    | 8361                        | 95.4%                      | 350.9                    | 20.7                            | 55.9                                | 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 2017**

| Month     | Valid<br>1-Hr data<br>(no.) | Operational<br>Time<br>(%) | Average<br>Temp.<br>(°C) | Minimum<br>1-Hr Temp.<br>(°C) | Maximum<br>1-Hr Temp.<br>(°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|-----------------------------|----------------------------|--------------------------|-------------------------------|-------------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                             |                            |                          |                               |                               | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 744                         | 100.0%                     | -10.6                    | -32.9                         | 9.2                           | 0.7%                                      | 37.4%     | 47.8%   | 14.1%  | 0.0%    | 0.0% |
| February  | 672                         | 100.0%                     | -7.9                     | -26.7                         | 11.7                          | 0.0%                                      | 27.4%     | 51.3%   | 21.3%  | 0.0%    | 0.0% |
| March     | 739                         | 99.3%                      | -5.6                     | -28.2                         | 14.4                          | 0.0%                                      | 18.9%     | 47.5%   | 33.6%  | 0.0%    | 0.0% |
| April     | 690                         | 95.8%                      | 4.3                      | -8.3                          | 20.1                          | 0.0%                                      | 0.0%      | 25.4%   | 70.7%  | 3.9%    | 0.0% |
| May       | 741                         | 99.6%                      | 11.5                     | -1.8                          | 25.5                          | 0.0%                                      | 0.0%      | 0.8%    | 73.8%  | 25.4%   | 0.0% |
| June      | 718                         | 99.7%                      | 15.4                     | 3.6                           | 28.2                          | 0.0%                                      | 0.0%      | 0.0%    | 52.5%  | 47.5%   | 0.0% |
| July      | 485                         | 65.2%                      | 19.5                     | 6.9                           | 31.0                          | 0.0%                                      | 0.0%      | 0.0%    | 23.3%  | 75.3%   | 1.4% |
| August    | 645                         | 86.7%                      | 17.3                     | 6.8                           | 30.3                          | 0.0%                                      | 0.0%      | 0.0%    | 37.5%  | 62.0%   | 0.5% |
| September | 720                         | 100.0%                     | 12.7                     | 0.9                           | 29.4                          | 0.0%                                      | 0.0%      | 0.0%    | 66.8%  | 33.2%   | 0.0% |
| October   | 743                         | 99.9%                      | 5.4                      | -10.0                         | 21.8                          | 0.0%                                      | 0.0%      | 18.3%   | 73.2%  | 8.5%    | 0.0% |
| November  | 720                         | 100.0%                     | -5.8                     | -19.4                         | 13.4                          | 0.0%                                      | 5.8%      | 73.2%   | 21.0%  | 0.0%    | 0.0% |
| December  | 744                         | 100.0%                     | -10.8                    | -35.3                         | 8.7                           | 3.4%                                      | 30.8%     | 51.2%   | 14.7%  | 0.0%    | 0.0% |
| Annual    | 8361                        | 95.4%                      | 3.2                      | -35.3                         | 31.0                          | 0.4%                                      | 10.4%     | 27.2%   | 42.4%  | 19.4%   | 0.1% |

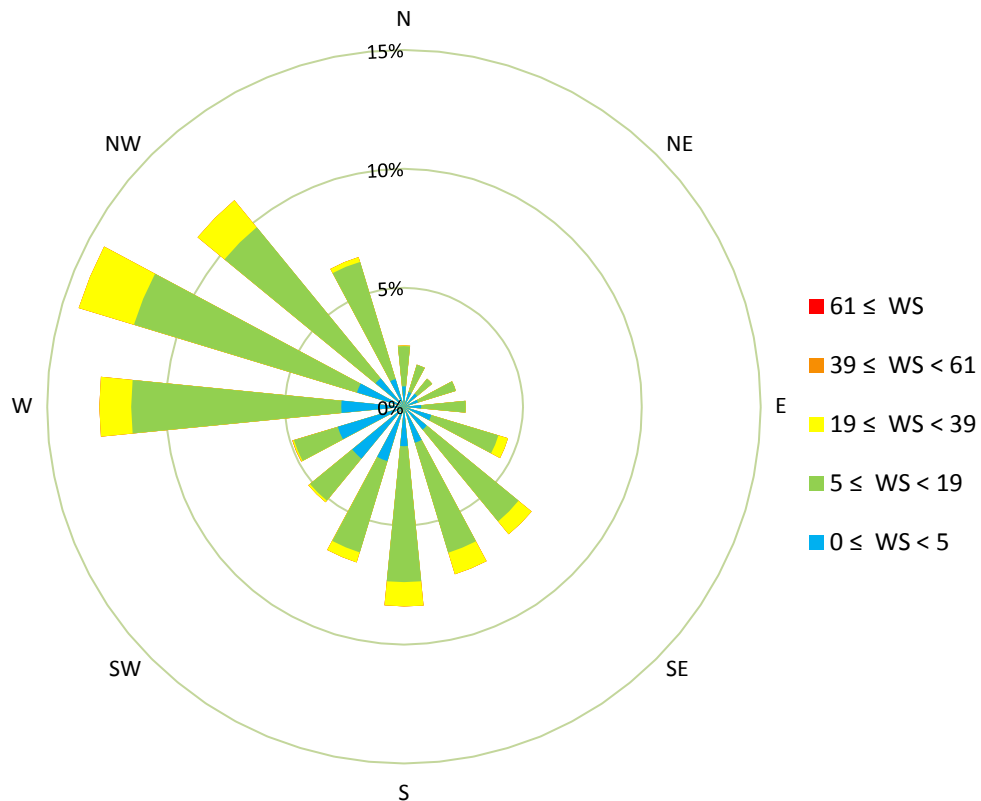
**Table H-9 Wawota Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid<br>1-Hr data<br>(no.) | Operational<br>Time<br>(%) | Average<br>RH<br>(%) | Minimum<br>1-Hr RH<br>(%) | Maximum<br>1-Hr RH<br>(%) | Percent of Data in each Relative Humidity Range |         |         |         |         |       |
|-----------|-----------------------------|----------------------------|----------------------|---------------------------|---------------------------|-------------------------------------------------|---------|---------|---------|---------|-------|
|           |                             |                            |                      |                           |                           | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90   |
| January   | 744                         | 100.0%                     | 76                   | 45                        | 94                        | 0.0%                                            | 0.0%    | 9.9%    | 46.2%   | 36.6%   | 7.3%  |
| February  | 672                         | 100.0%                     | 76                   | 39                        | 95                        | 0.0%                                            | 0.0%    | 10.0%   | 49.3%   | 32.9%   | 7.9%  |
| March     | 739                         | 99.3%                      | 76                   | 29                        | 95                        | 0.0%                                            | 0.1%    | 11.1%   | 46.0%   | 29.5%   | 13.3% |
| April     | 690                         | 95.8%                      | 62                   | 18                        | 93                        | 0.0%                                            | 5.8%    | 38.8%   | 33.0%   | 16.4%   | 5.9%  |
| May       | 741                         | 99.6%                      | 55                   | 21                        | 93                        | 0.0%                                            | 16.6%   | 40.8%   | 27.3%   | 14.0%   | 1.3%  |
| June      | 718                         | 99.7%                      | 62                   | 19                        | 94                        | 0.0%                                            | 4.5%    | 40.8%   | 30.5%   | 20.2%   | 4.0%  |
| July      | 485                         | 65.2%                      | 63                   | 30                        | 93                        | 0.0%                                            | 0.0%    | 46.8%   | 29.1%   | 17.1%   | 7.0%  |
| August    | 645                         | 86.7%                      | 63                   | 23                        | 94                        | 0.0%                                            | 2.9%    | 42.9%   | 26.4%   | 17.7%   | 10.1% |
| September | 720                         | 100.0%                     | 64                   | 21                        | 93                        | 0.0%                                            | 5.1%    | 35.7%   | 30.0%   | 22.6%   | 6.5%  |
| October   | 743                         | 99.9%                      | 61                   | 19                        | 93                        | 0.0%                                            | 5.4%    | 40.5%   | 38.5%   | 14.1%   | 1.5%  |
| November  | 720                         | 100.0%                     | 75                   | 47                        | 91                        | 0.0%                                            | 0.0%    | 10.3%   | 56.0%   | 32.4%   | 1.4%  |
| December  | 744                         | 100.0%                     | 72                   | 38                        | 88                        | 0.0%                                            | 0.0%    | 7.1%    | 79.0%   | 13.8%   | 0.0%  |
|           |                             |                            |                      |                           |                           |                                                 |         |         |         |         |       |
| Annual    | 8361                        | 95.4%                      | 67                   | 18                        | 95                        | 0.0%                                            | 3.5%    | 27.2%   | 41.5%   | 22.4%   | 5.4%  |

**Table H-10 Wawota Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         |        |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS | Totals |
| North NorthEast       | 0.6%                                                         | 1.2%        | 0.0%         | 0.0%         | 0.0%    | 1.8%   |
| NorthEast             | 0.7%                                                         | 0.8%        | 0.0%         | 0.0%         | 0.0%    | 1.5%   |
| East NorthEast        | 0.6%                                                         | 1.7%        | 0.0%         | 0.0%         | 0.0%    | 2.3%   |
| East                  | 0.7%                                                         | 1.9%        | 0.0%         | 0.0%         | 0.0%    | 2.6%   |
| East SouthEast        | 1.2%                                                         | 3.0%        | 0.4%         | 0.0%         | 0.0%    | 4.6%   |
| SouthEast             | 1.2%                                                         | 5.0%        | 0.7%         | 0.0%         | 0.0%    | 6.9%   |
| South SouthEast       | 1.6%                                                         | 4.8%        | 0.9%         | 0.0%         | 0.0%    | 7.4%   |
| South                 | 1.7%                                                         | 5.7%        | 1.0%         | 0.0%         | 0.0%    | 8.4%   |
| South SouthWest       | 2.4%                                                         | 4.0%        | 0.4%         | 0.0%         | 0.0%    | 6.8%   |
| Southwest             | 2.8%                                                         | 2.3%        | 0.1%         | 0.0%         | 0.0%    | 5.2%   |
| West SouthWest        | 2.9%                                                         | 1.9%        | 0.0%         | 0.0%         | 0.0%    | 4.9%   |
| West                  | 2.6%                                                         | 8.8%        | 1.3%         | 0.0%         | 0.0%    | 12.8%  |
| West NorthWest        | 2.1%                                                         | 9.8%        | 2.4%         | 0.0%         | 0.0%    | 14.3%  |
| NorthWest             | 1.5%                                                         | 8.2%        | 1.5%         | 0.0%         | 0.0%    | 11.2%  |
| North NorthWest       | 1.2%                                                         | 5.2%        | 0.2%         | 0.0%         | 0.0%    | 6.6%   |
| North                 | 0.9%                                                         | 1.7%        | 0.0%         | 0.0%         | 0.0%    | 2.6%   |
|                       |                                                              |             |              |              |         |        |
| Total                 | 24.8%                                                        | 66.0%       | 9.1%         | 0.0%         | 0.0%    | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 0.7% |
| Number of Valid Hourly-Average Data | 8326 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX I WEYBURN STATION: CONTINUOUS MONITORING DATA

**Table I-1 Weyburn Station: Summary Statistics for Continuous Air Monitoring Results for 2017**

| Parameter           | Unit              | Calibration Hours | Hours of Valid Data | Annual Percent Uptime | Summary Statistics for 1-Hour Data |         |         |
|---------------------|-------------------|-------------------|---------------------|-----------------------|------------------------------------|---------|---------|
|                     |                   |                   |                     |                       | Average                            | Minimum | Maximum |
| SO <sub>2</sub>     | ppb               | 407               | 7452                | 85.1%                 | 1.3                                | < 0.1   | 38.8    |
| NO                  | ppb               | 407               | 7608                | 86.8%                 | 0.6                                | < 0.1   | 19.3    |
| NO <sub>2</sub>     | ppb               | 407               | 7616                | 86.9%                 | 2.0                                | < 0.1   | 17.7    |
| NO <sub>x</sub>     | ppb               | 407               | 7608                | 86.8%                 | 2.7                                | < 0.1   | 36.2    |
| O <sub>3</sub>      | ppb               | 407               | 7430                | 84.8%                 | 0.7                                | < 0.1   | 95.7    |
| H <sub>2</sub> S    | ppb               | 407               | 7828                | 89.4%                 | 28.7                               | 0.4     | 67.6    |
| PM <sub>2.5</sub>   | µg/m <sup>3</sup> | 42                | 8182                | 93.4%                 | 3.7                                | < 0.1   | 86.9    |
| Precipitation       | mm                | 0                 | 8236                | 94.0%                 | 207.4 (total)                      | < 0.1   | 22.9    |
| Ambient Temperature | °C                | 0                 | 8236                | 94.0%                 | 4.1                                | -36.2   | 35.8    |
| Relative Humidity   | %                 | 0                 | 8236                | 94.0%                 | 63.4                               | 13.0    | 91.3    |
| Wind Speed          | km/hr             | 0                 | 8234                | 94.0%                 | 13.1                               | Calm    | 61.1    |

**Table I-2 Weyburn Station: Summary of Airpointer SO<sub>2</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | 1-Hour Exceedance<br>(no.) | Maximum 24-Hr Conc.<br>(ppb) | 24-Hour Exceedance<br>(no.) | Percent of Data in each Concentration Range |           |            |             |              |         |
|-----------|--------------------------|-------------------------|------------------------|-----------------------------|----------------------------|------------------------------|-----------------------------|---------------------------------------------|-----------|------------|-------------|--------------|---------|
|           |                          |                         |                        |                             |                            |                              |                             | 0 ≤ C < 1                                   | 1 ≤ C < 5 | 5 ≤ C < 10 | 10 ≤ C < 57 | 57 ≤ C < 172 | C ≥ 172 |
| January   | 472                      | 63.4%                   | 1.3                    | 13.0                        | 0                          | 5.9                          | 0                           | 73.1%                                       | 18.9%     | 6.8%       | 1.3%        | 0.0%         | 0.0%    |
| February  | 643                      | 95.7%                   | 1.0                    | 26.2                        | 0                          | 2.7                          | 0                           | 72.8%                                       | 24.1%     | 2.6%       | 0.5%        | 0.0%         | 0.0%    |
| March     | 705                      | 94.8%                   | 1.6                    | 23.5                        | 0                          | 4.3                          | 0                           | 54.2%                                       | 39.3%     | 5.5%       | 1.0%        | 0.0%         | 0.0%    |
| April     | 688                      | 95.6%                   | 1.1                    | 12.7                        | 0                          | 3.1                          | 0                           | 71.1%                                       | 26.3%     | 2.2%       | 0.4%        | 0.0%         | 0.0%    |
| May       | 453                      | 60.9%                   | 1.1                    | 13.8                        | 0                          | 4.0                          | 0                           | 73.5%                                       | 21.6%     | 3.8%       | 1.1%        | 0.0%         | 0.0%    |
| June      | 688                      | 95.6%                   | 1.0                    | 38.8                        | 0                          | 3.9                          | 0                           | 77.0%                                       | 19.2%     | 2.5%       | 1.3%        | 0.0%         | 0.0%    |
| July      | 711                      | 95.6%                   | 1.4                    | 19.0                        | 0                          | 3.4                          | 0                           | 65.3%                                       | 28.3%     | 5.8%       | 0.7%        | 0.0%         | 0.0%    |
| August    | 703                      | 94.5%                   | 1.7                    | 17.7                        | 0                          | 4.9                          | 0                           | 60.6%                                       | 30.9%     | 6.4%       | 2.1%        | 0.0%         | 0.0%    |
| September | 493                      | 68.5%                   | 1.4                    | 15.6                        | 0                          | 3.7                          | 0                           | 65.9%                                       | 28.0%     | 4.9%       | 1.2%        | 0.0%         | 0.0%    |
| October   | 508                      | 68.3%                   | 1.6                    | 15.5                        | 0                          | 5.0                          | 0                           | 66.9%                                       | 25.0%     | 5.5%       | 2.6%        | 0.0%         | 0.0%    |
| November  | 686                      | 95.3%                   | 1.6                    | 14.5                        | 0                          | 4.2                          | 0                           | 61.5%                                       | 31.3%     | 6.0%       | 1.2%        | 0.0%         | 0.0%    |
| December  | 702                      | 94.4%                   | 0.7                    | 12.6                        | 0                          | 3.3                          | 0                           | 84.8%                                       | 13.8%     | 1.0%       | 0.4%        | 0.0%         | 0.0%    |
| Annual    | 7452                     | 85.1%                   | 1.3                    | 38.8                        | 0                          | 5.9                          | 0                           | 68.7%                                       | 25.9%     | 4.3%       | 1.1%        | 0.0%         | 0.0%    |

**Table I-3 Weyburn Station: Summary of Airpointer NO Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | Maximum 24-Hr Conc.<br>(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   | 710                      | 95.4%                   | 0.7                    | 7.4                         | 1.3                          | 99.7%                                       | 0.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                      | 95.7%                   | 0.5                    | 3.9                         | 1.3                          | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 705                      | 94.8%                   | 0.5                    | 6.3                         | 0.8                          | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                      | 95.6%                   | 0.7                    | 4.4                         | 2.2                          | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 454                      | 61.0%                   | 0.5                    | 3.8                         | 0.9                          | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 686                      | 95.3%                   | 0.8                    | 15.4                        | 2.5                          | 97.7%                                       | 2.2%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 710                      | 95.4%                   | 0.6                    | 19.3                        | 2.7                          | 97.9%                                       | 2.0%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 668                      | 89.8%                   | 0.8                    | 15.8                        | 2.7                          | 97.0%                                       | 2.8%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| September | 447                      | 62.1%                   | 0.8                    | 9.4                         | 3.1                          | 98.4%                                       | 1.6%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 509                      | 68.4%                   | 0.4                    | 3.5                         | 0.7                          | 100.0%                                      | 0.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 686                      | 95.3%                   | 0.6                    | 5.7                         | 1.4                          | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 702                      | 94.4%                   | 0.4                    | 6.1                         | 1.1                          | 99.9%                                       | 0.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7608                     | 86.8%                   | 0.6                    | 19.3                        | 3.1                          | 99.2%                                       | 0.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |

**Table I-4 Weyburn Station: Summary of Airpointer NO<sub>2</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | 1-Hour Exceedance<br>(no.) | Maximum 24-Hr Conc.<br>(ppb) | 24-Hour Exceedance<br>(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   | 710                      | 95.4%                   | 2.2                    | 11.2                        | 0                          | 6.9                          | 0                           | 93.0%                                       | 7.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                      | 95.7%                   | 1.5                    | 6.4                         | 0                          | 3.6                          | 0                           | 99.2%                                       | 0.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 705                      | 94.8%                   | 2.1                    | 8.1                         | 0                          | 4.6                          | 0                           | 95.0%                                       | 5.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                      | 95.6%                   | 2.3                    | 12.7                        | 0                          | 5.7                          | 0                           | 93.0%                                       | 7.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 454                      | 61.0%                   | 1.7                    | 13.3                        | 0                          | 4.0                          | 0                           | 94.7%                                       | 5.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 689                      | 95.7%                   | 2.9                    | 17.1                        | 0                          | 5.7                          | 0                           | 82.4%                                       | 17.1%      | 0.4%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 711                      | 95.6%                   | 2.2                    | 17.7                        | 0                          | 4.9                          | 0                           | 91.3%                                       | 8.4%       | 0.3%        | 0.0%         | 0.0%          | 0.0%    |
| August    | 671                      | 90.2%                   | 2.6                    | 14.5                        | 0                          | 5.5                          | 0                           | 86.6%                                       | 13.4%      | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| September | 448                      | 62.2%                   | 1.9                    | 7.9                         | 0                          | 3.8                          | 0                           | 94.9%                                       | 5.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 509                      | 68.4%                   | 1.1                    | 7.1                         | 0                          | 3.3                          | 0                           | 98.8%                                       | 1.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 686                      | 95.3%                   | 2.2                    | 9.9                         | 0                          | 5.6                          | 0                           | 93.9%                                       | 6.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 702                      | 94.4%                   | 1.4                    | 9.1                         | 0                          | 3.3                          | 0                           | 98.9%                                       | 1.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7616                     | 86.9%                   | 2.0                    | 17.7                        | 0                          | 6.9                          | 0                           | 93.3%                                       | 6.7%       | 0.1%        | 0.0%         | 0.0%          | 0.0%    |

**Table I-5 Weyburn Station: Summary of Airpointer NO<sub>x</sub> Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 2.9                 | 15.2                     | 7.7                       | 88.2%                                       | 11.7%      | 0.1%        | 0.0%         | 0.0%          | 0.0%    |
| February  | 643                   | 95.7%                | 2.1                 | 7.7                      | 4.5                       | 96.7%                                       | 3.3%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| March     | 705                   | 94.8%                | 2.6                 | 13.3                     | 5.4                       | 91.8%                                       | 8.2%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| April     | 688                   | 95.6%                | 3.0                 | 17.0                     | 7.9                       | 83.1%                                       | 16.4%      | 0.4%        | 0.0%         | 0.0%          | 0.0%    |
| May       | 454                   | 61.0%                | 2.2                 | 14.4                     | 4.6                       | 91.9%                                       | 8.1%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| June      | 686                   | 95.3%                | 3.7                 | 24.7                     | 7.8                       | 78.4%                                       | 19.0%      | 2.6%        | 0.0%         | 0.0%          | 0.0%    |
| July      | 710                   | 95.4%                | 2.8                 | 36.2                     | 6.8                       | 88.0%                                       | 10.1%      | 1.7%        | 0.1%         | 0.0%          | 0.0%    |
| August    | 668                   | 89.8%                | 3.4                 | 27.8                     | 8.3                       | 82.0%                                       | 16.0%      | 1.9%        | 0.0%         | 0.0%          | 0.0%    |
| September | 447                   | 62.1%                | 2.8                 | 12.0                     | 6.1                       | 87.5%                                       | 12.5%      | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| October   | 509                   | 68.4%                | 1.5                 | 7.8                      | 3.7                       | 97.2%                                       | 2.8%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| November  | 686                   | 95.3%                | 2.8                 | 13.1                     | 7.0                       | 87.9%                                       | 12.1%      | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| December  | 702                   | 94.4%                | 1.8                 | 9.4                      | 3.8                       | 96.0%                                       | 4.0%       | 0.0%        | 0.0%         | 0.0%          | 0.0%    |
| Annual    | 7608                  | 86.8%                | 2.7                 | 36.2                     | 8.3                       | 88.8%                                       | 10.5%      | 0.6%        | 0.0%         | 0.0%          | 0.0%    |

**Table I-6 Weyburn Station: Summary of Airpointer O<sub>3</sub> Monitoring Results for the Year 2017**

| 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   | 710                   | 95.4%                | 31.6                | 44.1                     | 0                       | 42.1                      | 0.0%                                        | 3.9%        | 83.1%       | 13.0%       | 0.0%        | 0.0%   |
| February  | 643                   | 95.7%                | 33.5                | 44.0                     | 0                       | 41.1                      | 0.0%                                        | 2.2%        | 86.3%       | 11.5%       | 0.0%        | 0.0%   |
| March     | 705                   | 94.8%                | 30.9                | 51.4                     | 0                       | 43.3                      | 0.6%                                        | 14.0%       | 71.9%       | 13.5%       | 0.0%        | 0.0%   |
| April     | 688                   | 95.6%                | 30.4                | 54.7                     | 0                       | 38.2                      | 1.5%                                        | 16.3%       | 61.5%       | 20.8%       | 0.0%        | 0.0%   |
| May       | 454                   | 61.0%                | 32.0                | 56.9                     | 0                       | 39.8                      | 3.7%                                        | 15.2%       | 50.4%       | 30.6%       | 0.0%        | 0.0%   |
| June      | 689                   | 95.7%                | 30.1                | 64.9                     | 0                       | 42.2                      | 8.3%                                        | 17.1%       | 50.8%       | 22.9%       | 0.9%        | 0.0%   |
| July      | 711                   | 95.6%                | 31.9                | 67.6                     | 0                       | 42.7                      | 7.3%                                        | 16.3%       | 44.2%       | 30.7%       | 1.5%        | 0.0%   |
| August    | 712                   | 95.7%                | 27.2                | 59.8                     | 0                       | 37.3                      | 13.2%                                       | 21.6%       | 42.3%       | 22.9%       | 0.0%        | 0.0%   |
| September | 618                   | 85.8%                | 22.6                | 57.5                     | 0                       | 34.0                      | 16.7%                                       | 31.1%       | 41.6%       | 10.7%       | 0.0%        | 0.0%   |
| October   | 509                   | 68.4%                | 22.5                | 41.8                     | 0                       | 33.1                      | 6.3%                                        | 34.4%       | 58.3%       | 1.0%        | 0.0%        | 0.0%   |
| November  | 687                   | 95.4%                | 23.6                | 38.2                     | 0                       | 31.2                      | 3.8%                                        | 25.0%       | 71.2%       | 0.0%        | 0.0%        | 0.0%   |
| December  | 702                   | 94.4%                | 26.7                | 38.3                     | 0                       | 35.5                      | 1.9%                                        | 10.8%       | 87.3%       | 0.0%        | 0.0%        | 0.0%   |
| Annual    | 7828                  | 89.4%                | 28.7                | 67.6                     | 0                       | 43.3                      | 5.2%                                        | 16.9%       | 62.9%       | 14.7%       | 0.2%        | 0.0%   |

**Table I-7 Weyburn Station: Summary of Airpointer H<sub>2</sub>S Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(ppb) | Maximum 1-Hr Conc.<br>(ppb) | 1-Hour Exceedance<br>(no.) | Maximum 24-Hr Conc.<br>(ppb) | 24-Hour Exceedance<br>(no.) | Percent of Data in each Concentration Range |             |             |           |            |        |
|-----------|--------------------------|-------------------------|------------------------|-----------------------------|----------------------------|------------------------------|-----------------------------|---------------------------------------------|-------------|-------------|-----------|------------|--------|
|           |                          |                         |                        |                             |                            |                              |                             | 0 ≤ C < 1                                   | 1 ≤ C < 3.6 | 3.6 ≤ C < 5 | 5 ≤ C < 8 | 8 ≤ C < 11 | C ≥ 11 |
| January   | 468                      | 62.9%                   | 0.8                    | 19.8                        | 2                          | 7.8                          | 1                           | 82.1%                                       | 12.4%       | 3.0%        | 1.5%      | 0.6%       | 0.4%   |
| February  | 640                      | 95.2%                   | 0.6                    | 17.4                        | 1                          | 1.9                          | 0                           | 93.3%                                       | 5.0%        | 0.9%        | 0.5%      | 0.2%       | 0.2%   |
| March     | 698                      | 93.8%                   | 0.7                    | 10.3                        | 0                          | 2.4                          | 0                           | 87.4%                                       | 11.3%       | 0.9%        | 0.3%      | 0.1%       | 0.0%   |
| April     | 682                      | 94.7%                   | 0.4                    | 8.2                         | 0                          | 1.4                          | 0                           | 94.6%                                       | 4.5%        | 0.7%        | 0.0%      | 0.1%       | 0.0%   |
| May       | 453                      | 60.9%                   | 0.6                    | 5.9                         | 0                          | 1.1                          | 0                           | 86.8%                                       | 11.3%       | 1.5%        | 0.4%      | 0.0%       | 0.0%   |
| June      | 689                      | 95.7%                   | 0.8                    | 6.8                         | 0                          | 2.7                          | 0                           | 79.1%                                       | 18.4%       | 1.5%        | 1.0%      | 0.0%       | 0.0%   |
| July      | 711                      | 95.6%                   | 0.7                    | 7.0                         | 0                          | 1.0                          | 0                           | 81.3%                                       | 17.4%       | 1.1%        | 0.1%      | 0.0%       | 0.0%   |
| August    | 704                      | 94.6%                   | 1.1                    | 95.7                        | 4                          | 6.8                          | 1                           | 75.9%                                       | 20.5%       | 2.3%        | 0.7%      | 0.1%       | 0.6%   |
| September | 491                      | 68.2%                   | 0.8                    | 13.2                        | 1                          | 3.0                          | 0                           | 81.3%                                       | 17.1%       | 1.0%        | 0.0%      | 0.4%       | 0.2%   |
| October   | 508                      | 68.3%                   | 0.7                    | 16.2                        | 1                          | 1.4                          | 0                           | 89.4%                                       | 9.8%        | 0.4%        | 0.2%      | 0.0%       | 0.2%   |
| November  | 684                      | 95.0%                   | 0.7                    | 4.9                         | 0                          | 1.2                          | 0                           | 89.3%                                       | 10.1%       | 0.6%        | 0.0%      | 0.0%       | 0.0%   |
| December  | 702                      | 94.4%                   | 0.5                    | 10.8                        | 0                          | 1.5                          | 0                           | 96.9%                                       | 2.6%        | 0.1%        | 0.1%      | 0.3%       | 0.0%   |
| Annual    | 7430                     | 84.8%                   | 0.7                    | 95.7                        | 9                          | 7.8                          | 2                           | 86.5%                                       | 11.7%       | 1.1%        | 0.4%      | 0.1%       | 0.1%   |

**Table I-8 Weyburn Station: Summary of Airpointer PM<sub>2.5</sub> Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Conc.<br>(µg/m <sup>3</sup> ) | Maximum 1-Hr Conc.<br>(µg/m <sup>3</sup> ) | Maximum 24-Hr Conc.<br>(µg/m <sup>3</sup> ) | 24-Hour Exceedance<br>(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   | 743                      | 99.9%                   | 1.9                                   | 16.1                                       | 9.4                                         | 0                           | 0.1%                                        | 93.3%     | 5.2%       | 1.3%        | 0.0%        | 0.0%   |
| February  | 672                      | 100.0%                  | 1.6                                   | 12.3                                       | 6.3                                         | 0                           | 79.3%                                       | 12.2%     | 7.3%       | 1.2%        | 0.0%        | 0.0%   |
| March     | 736                      | 98.9%                   | 2.4                                   | 13.3                                       | 6.6                                         | 0                           | 57.9%                                       | 25.0%     | 16.4%      | 0.7%        | 0.0%        | 0.0%   |
| April     | 720                      | 100.0%                  | 1.9                                   | 19.0                                       | 6.5                                         | 0                           | 72.8%                                       | 18.5%     | 6.9%       | 1.8%        | 0.0%        | 0.0%   |
| May       | 476                      | 64.0%                   | 2.8                                   | 24.6                                       | 5.9                                         | 0                           | 53.4%                                       | 23.9%     | 19.5%      | 2.5%        | 0.6%        | 0.0%   |
| June      | 720                      | 100.0%                  | 4.4                                   | 14.9                                       | 7.5                                         | 0                           | 8.2%                                        | 33.8%     | 57.1%      | 1.0%        | 0.0%        | 0.0%   |
| July      | 744                      | 100.0%                  | 8.9                                   | 48.4                                       | 29.0                                        | 1                           | 2.7%                                        | 9.0%      | 61.2%      | 23.4%       | 1.5%        | 2.3%   |
| August    | 744                      | 100.0%                  | 7.4                                   | 34.5                                       | 20.4                                        | 0                           | 3.4%                                        | 18.5%     | 56.5%      | 18.5%       | 3.0%        | 0.1%   |
| September | 642                      | 89.2%                   | 6.1                                   | 86.9                                       | 26.7                                        | 0                           | 31.3%                                       | 31.9%     | 18.1%      | 13.7%       | 3.1%        | 1.9%   |
| October   | 533                      | 71.6%                   | 3.2                                   | 44.1                                       | 8.8                                         | 0                           | 53.7%                                       | 22.9%     | 19.1%      | 3.6%        | 0.4%        | 0.4%   |
| November  | 718                      | 99.7%                   | 2.6                                   | 14.1                                       | 6.6                                         | 0                           | 46.7%                                       | 36.1%     | 16.7%      | 0.6%        | 0.0%        | 0.0%   |
| December  | 734                      | 98.7%                   | 1.3                                   | 10.3                                       | 3.1                                         | 0                           | 84.1%                                       | 12.8%     | 3.0%       | 0.1%        | 0.0%        | 0.0%   |
| Annual    | 8182                     | 93.4%                   | 3.7                                   | 86.9                                       | 29.0                                        | 1                           | 46.6%                                       | 22.0%     | 24.4%      | 5.9%        | 0.7%        | 0.4%   |

**Table I-9 Weyburn Station: Summary of Airpointer Precipitation Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Total Precip.<br>(mm) | Maximum 1-Hr Precip.<br>(mm) | Maximum 24-Hr Precip.<br>(mm) | Percent of Data in each Precipitation Range |        |         |         |         |      |
|-----------|--------------------------|-------------------------|-----------------------|------------------------------|-------------------------------|---------------------------------------------|--------|---------|---------|---------|------|
|           |                          |                         |                       |                              |                               | <=5                                         | 5 ~ 10 | 10 ~ 25 | 25 ~ 50 | 50 ~ 75 | >75  |
| January   | 743                      | 99.9%                   | 1.9                   | 0.3                          | 1.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | 0.5                   | 0.2                          | 0.3                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| March     | 744                      | 100.0%                  | 3.1                   | 0.6                          | 1.1                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| April     | 720                      | 100.0%                  | 17.0                  | 4.5                          | 5.2                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| May       | 486                      | 65.3%                   | 12.2                  | 5.1                          | 5.1                           | 99.8%                                       | 0.2%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| June      | 720                      | 100.0%                  | 81.7                  | 10.0                         | 40.9                          | 99.2%                                       | 0.7%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |
| July      | 744                      | 100.0%                  | 24.5                  | 11.9                         | 12.6                          | 99.9%                                       | 0.0%   | 0.1%    | 0.0%    | 0.0%    | 0.0% |
| August    | 744                      | 100.0%                  | 47.3                  | 22.9                         | 35.6                          | 99.7%                                       | 0.0%   | 0.3%    | 0.0%    | 0.0%    | 0.0% |
| September | 665                      | 92.4%                   | 13.9                  | 1.6                          | 5.7                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| October   | 534                      | 71.8%                   | 1.3                   | 0.2                          | 0.5                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| November  | 720                      | 100.0%                  | 1.4                   | 0.4                          | 0.7                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | 2.7                   | 1.5                          | 1.6                           | 100.0%                                      | 0.0%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |
| Annual    | 8236                     | 94.0%                   | 207.4                 | 22.9                         | 40.9                          | 99.9%                                       | 0.1%   | 0.0%    | 0.0%    | 0.0%    | 0.0% |

**Table I-10 Weyburn Station: Summary of Airpointer Ambient Temperature Monitoring Results for the Year 2017**

| Month     | Valid 1-Hr data<br>(no.) | Operational Time<br>(%) | Average Temp.<br>(°C) | Minimum 1-Hr Temp.<br>(°C) | Maximum 1-Hr Temp.<br>(°C) | Percent of Data in each Temperature Range |           |         |        |         |      |
|-----------|--------------------------|-------------------------|-----------------------|----------------------------|----------------------------|-------------------------------------------|-----------|---------|--------|---------|------|
|           |                          |                         |                       |                            |                            | <=-30                                     | -30 ~ -15 | -15 ~ 0 | 0 ~ 15 | 15 ~ 30 | >30  |
| January   | 743                      | 99.9%                   | -12.2                 | -31.8                      | 3.6                        | 1.1%                                      | 44.5%     | 41.5%   | 12.9%  | 0.0%    | 0.0% |
| February  | 672                      | 100.0%                  | -8.0                  | -31.6                      | 7.2                        | 0.7%                                      | 26.9%     | 48.4%   | 24.0%  | 0.0%    | 0.0% |
| March     | 744                      | 100.0%                  | -4.0                  | -22.7                      | 15.9                       | 0.0%                                      | 14.8%     | 44.4%   | 39.9%  | 0.9%    | 0.0% |
| April     | 720                      | 100.0%                  | 5.3                   | -10.0                      | 23.7                       | 0.0%                                      | 0.0%      | 23.5%   | 69.9%  | 6.7%    | 0.0% |
| May       | 486                      | 65.3%                   | 13.4                  | 0.0                        | 29.5                       | 0.0%                                      | 0.0%      | 0.0%    | 58.4%  | 41.6%   | 0.0% |
| June      | 720                      | 100.0%                  | 16.7                  | 3.5                        | 31.8                       | 0.0%                                      | 0.0%      | 0.0%    | 42.1%  | 56.1%   | 1.8% |
| July      | 744                      | 100.0%                  | 21.2                  | 7.9                        | 35.8                       | 0.0%                                      | 0.0%      | 0.0%    | 20.3%  | 71.9%   | 7.8% |
| August    | 744                      | 100.0%                  | 18.2                  | 4.4                        | 33.2                       | 0.0%                                      | 0.0%      | 0.0%    | 34.3%  | 63.3%   | 2.4% |
| September | 665                      | 92.4%                   | 13.4                  | 1.2                        | 32.2                       | 0.0%                                      | 0.0%      | 0.0%    | 64.1%  | 35.0%   | 0.9% |
| October   | 534                      | 71.8%                   | 5.0                   | -11.2                      | 26.2                       | 0.0%                                      | 0.0%      | 24.7%   | 65.0%  | 10.3%   | 0.0% |
| November  | 720                      | 100.0%                  | -6.4                  | -23.8                      | 12.0                       | 0.0%                                      | 16.3%     | 63.5%   | 20.3%  | 0.0%    | 0.0% |
| December  | 744                      | 100.0%                  | -10.4                 | -36.2                      | 9.4                        | 8.1%                                      | 22.2%     | 50.3%   | 19.5%  | 0.0%    | 0.0% |
| Annual    | 8236                     | 94.0%                   | 4.1                   | -36.2                      | 35.8                       | 0.9%                                      | 11.0%     | 25.4%   | 37.8%  | 23.7%   | 1.2% |

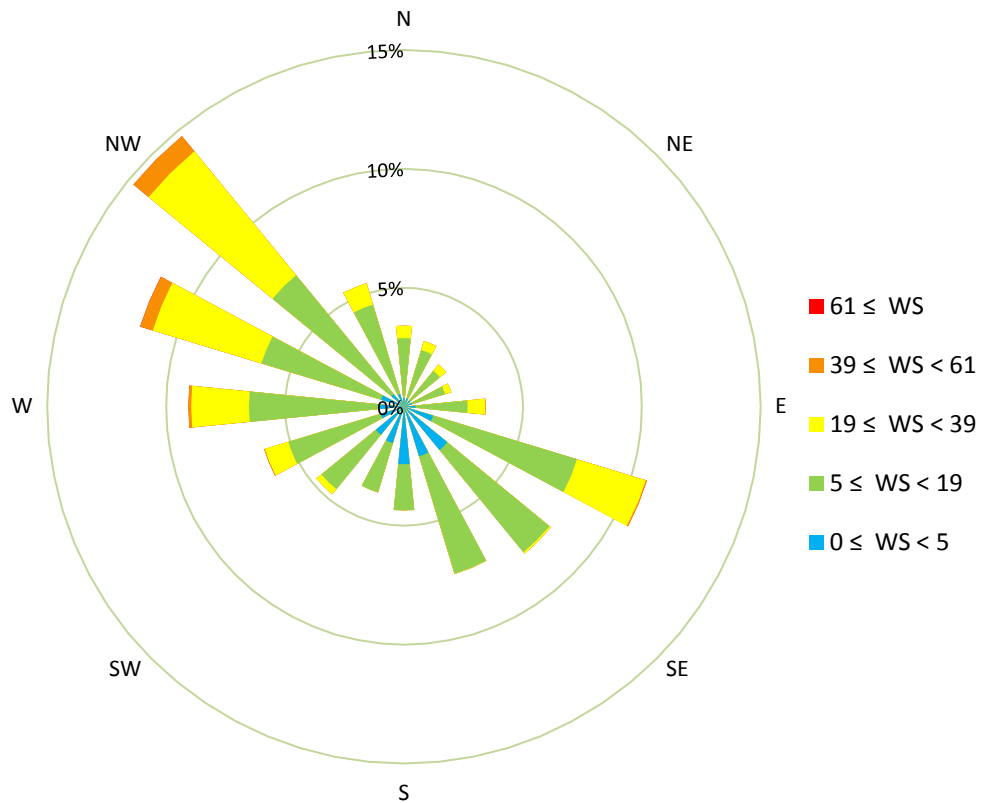
**Table I-11 Weyburn Station: Summary of Airpointer Relative Humidity Monitoring Results for the Year 2017**

| Month     | Valid<br>1-Hr data<br>(no.) | Operational<br>Time<br>(%) | Average<br>RH<br>(%) | Minimum<br>1-Hr RH<br>(%) | Maximum<br>1-Hr RH<br>(%) | Percent of Data in each Relative Humidity Range |         |         |         |         |      |
|-----------|-----------------------------|----------------------------|----------------------|---------------------------|---------------------------|-------------------------------------------------|---------|---------|---------|---------|------|
|           |                             |                            |                      |                           |                           | <=15                                            | 15 ~ 30 | 30 ~ 60 | 60 ~ 80 | 80 ~ 90 | >90  |
| January   | 743                         | 99.9%                      | 74                   | 57                        | 88                        | 0.0%                                            | 0.0%    | 0.4%    | 85.9%   | 13.7%   | 0.0% |
| February  | 672                         | 100.0%                     | 74                   | 54                        | 88                        | 0.0%                                            | 0.0%    | 3.1%    | 81.0%   | 15.9%   | 0.0% |
| March     | 744                         | 100.0%                     | 73                   | 31                        | 90                        | 0.0%                                            | 0.0%    | 11.4%   | 59.5%   | 29.0%   | 0.0% |
| April     | 720                         | 100.0%                     | 61                   | 18                        | 90                        | 0.0%                                            | 7.6%    | 34.7%   | 39.7%   | 17.5%   | 0.4% |
| May       | 486                         | 65.3%                      | 49                   | 17                        | 89                        | 0.0%                                            | 23.7%   | 43.0%   | 26.3%   | 7.0%    | 0.0% |
| June      | 720                         | 100.0%                     | 56                   | 15                        | 90                        | 0.0%                                            | 11.5%   | 41.5%   | 33.2%   | 13.3%   | 0.4% |
| July      | 744                         | 100.0%                     | 55                   | 20                        | 89                        | 0.0%                                            | 13.7%   | 41.3%   | 31.0%   | 14.0%   | 0.0% |
| August    | 744                         | 100.0%                     | 57                   | 15                        | 91                        | 0.0%                                            | 15.9%   | 37.2%   | 27.0%   | 18.4%   | 1.5% |
| September | 665                         | 92.4%                      | 57                   | 13                        | 89                        | 0.5%                                            | 14.6%   | 35.5%   | 31.0%   | 18.5%   | 0.0% |
| October   | 534                         | 71.8%                      | 54                   | 15                        | 82                        | 0.2%                                            | 9.7%    | 48.3%   | 41.2%   | 0.6%    | 0.0% |
| November  | 720                         | 100.0%                     | 73                   | 34                        | 87                        | 0.0%                                            | 0.0%    | 8.8%    | 72.4%   | 18.9%   | 0.0% |
| December  | 744                         | 100.0%                     | 70                   | 38                        | 85                        | 0.0%                                            | 0.0%    | 6.6%    | 87.5%   | 5.9%    | 0.0% |
|           |                             |                            |                      |                           |                           |                                                 |         |         |         |         |      |
| Annual    | 8236                        | 94.0%                      | 63                   | 13                        | 91                        | 0.0%                                            | 7.6%    | 25.0%   | 52.3%   | 14.9%   | 0.2% |

**Table I-12 Weyburn Station: Airpointer Wind Frequency Table for the Year 2017**

| Wind Direction Sector | Percent Data in each Wind Speed Range, wind speed unit km/hr |             |              |              |         |        |
|-----------------------|--------------------------------------------------------------|-------------|--------------|--------------|---------|--------|
|                       | 0 ≤ WS < 5                                                   | 5 ≤ WS < 19 | 19 ≤ WS < 39 | 39 ≤ WS < 61 | 61 ≤ WS | Totals |
| North NorthEast       | 0.4%                                                         | 2.1%        | 0.4%         | 0.0%         | 0.0%    | 2.9%   |
| NorthEast             | 0.4%                                                         | 1.6%        | 0.3%         | 0.0%         | 0.0%    | 2.3%   |
| East NorthEast        | 0.4%                                                         | 1.4%        | 0.3%         | 0.0%         | 0.0%    | 2.1%   |
| East                  | 0.5%                                                         | 2.2%        | 0.8%         | 0.0%         | 0.0%    | 3.4%   |
| East SouthEast        | 1.3%                                                         | 6.3%        | 3.0%         | 0.0%         | 0.0%    | 10.7%  |
| SouthEast             | 2.4%                                                         | 5.6%        | 0.1%         | 0.0%         | 0.0%    | 8.0%   |
| South SouthEast       | 2.2%                                                         | 5.2%        | 0.0%         | 0.0%         | 0.0%    | 7.3%   |
| South                 | 2.4%                                                         | 1.9%        | 0.0%         | 0.0%         | 0.0%    | 4.4%   |
| South SouthWest       | 1.6%                                                         | 2.2%        | 0.0%         | 0.0%         | 0.0%    | 3.8%   |
| Southwest             | 1.5%                                                         | 3.0%        | 0.3%         | 0.0%         | 0.0%    | 4.8%   |
| West SouthWest        | 1.0%                                                         | 4.1%        | 1.0%         | 0.0%         | 0.0%    | 6.1%   |
| West                  | 1.0%                                                         | 5.5%        | 2.4%         | 0.1%         | 0.0%    | 9.1%   |
| West NorthWest        | 1.0%                                                         | 5.3%        | 4.8%         | 0.5%         | 0.0%    | 11.6%  |
| NorthWest             | 0.7%                                                         | 6.5%        | 6.7%         | 0.8%         | 0.0%    | 14.7%  |
| North NorthWest       | 0.5%                                                         | 3.9%        | 0.9%         | 0.0%         | 0.0%    | 5.4%   |
| North                 | 0.4%                                                         | 2.5%        | 0.5%         | 0.0%         | 0.0%    | 3.4%   |
| Total                 | 17.6%                                                        | 59.2%       | 21.6%        | 1.6%         | 0.0%    | 100.0% |

|                                     |      |
|-------------------------------------|------|
| Percent Calm (<1 km/hr)             | 0.0% |
| Number of Valid Hourly-Average Data | 8234 |
| Total Workable Hours in Time Period | 8760 |



## APPENDIX J      SESAA EXCEEDANCE SUMMARY

**Table J-1      Esterhazy Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                             | Other Parameters During the Exceedance Event |           |           |            |                        |                       |
|------------------------------|-------|-----------------------------|----------------------------------------------|-----------|-----------|------------|------------------------|-----------------------|
| Pollutant                    | Conc. | Exceedance Day<br>dd-mmm-yy | WS<br>km/hr                                  | WD<br>deg | AQHI<br>- | Rain<br>mm | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb |
| PM <sub>2.5</sub>            | 31.5  | 28-Jul-17                   | 9.7                                          | 190.4     | 3.6       | -          | 1.6                    | 37.6                  |
| PM <sub>2.5</sub>            | 52.9  | 11-Sep-17                   | 9.3                                          | 237.9     | 4.1       | -          | 2.5                    | 25.7                  |
| PM <sub>2.5</sub>            | 33.5  | 12-Sep-17                   | 8.0                                          | 275.2     | -         | -          | 2.4                    | -                     |
| PM <sub>2.5</sub>            | 28.8  | 14-Sep-17                   | 9.8                                          | 43.2      | -         | -          | 1.3                    | -                     |
| PM <sub>2.5</sub>            | 37.5  | 19-Oct-17                   | 8.3                                          | 179.8     | 3.6       | -          | 2.7                    | 30.8                  |
| PM <sub>2.5</sub>            | 42.1  | 20-Oct-17                   | 7.7                                          | 133.8     | 3.9       | -          | 3.6                    | 31.6                  |
| PM <sub>2.5</sub>            | 33.1  | 12-Nov-17                   | 6.1                                          | 177.6     | 3.6       | -          | 3.0                    | 33.5                  |

**Table J-2      Estevan Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                          | Other Parameters During the Exceedance Event |           |          |            |                        |                        |                                        |                                       |                                   |
|------------------------------|-------|--------------------------|----------------------------------------------|-----------|----------|------------|------------------------|------------------------|----------------------------------------|---------------------------------------|-----------------------------------|
| Pollutant                    | Conc. | Exceedance Day<br>mmm-dd | WS<br>km/hr                                  | WD<br>deg | AQI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> | PM <sub>10</sub><br>µg/m <sup>3</sup> | Black Carbon<br>ng/m <sup>3</sup> |
| PM <sub>2.5</sub>            | 45.7  | 12-Sep-17                | -                                            | -         | -        | -          | 1.7                    | -                      | -                                      | -                                     | -                                 |
| PM <sub>10</sub>             | 102.2 | 20-Oct-17                | 26.9                                         | 109.1     | 18.7     | 376.8      | 2.6                    | 1.9                    | 14.3                                   | -                                     | 1,071.9                           |
| PM <sub>10</sub>             | 77.4  | 18-Oct-17                | 19.2                                         | 241.0     | 16.3     | 376.8      | 0.1                    | 0.7                    | 12.8                                   | -                                     | 264.7                             |
| PM <sub>10</sub>             | 58.1  | 19-Oct-17                | 8.7                                          | 156.1     | 11.5     | 376.8      | 6.0                    | 3.3                    | 9.2                                    | -                                     | 715.1                             |

**Table J-3 Glen Ewen Station: Summary of Exceedances for 1-hour SAAQS for the Year 2017**

| 1-Hour Exceedance Pollutant |       |                                 | Other Parameters During the Exceedance Event |           |          |            |                        |                        |                       |                         |
|-----------------------------|-------|---------------------------------|----------------------------------------------|-----------|----------|------------|------------------------|------------------------|-----------------------|-------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>mmm-dd hh:mm | WS<br>km/hr                                  | WD<br>deg | AQI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb | H <sub>2</sub> S<br>ppb |
| H <sub>2</sub> S            | 13.0  | 4-Jun-17 04:00                  | 1.2                                          | 268.6     | 8.9      | -          | 1.0                    | 4.7                    | 13.7                  | 13.0                    |
| H <sub>2</sub> S            | 12.5  | 8-Jun-17 02:00                  | 4.4                                          | 106.6     | 10.7     | -          | 0.6                    | 4.2                    | 16.5                  | 12.5                    |
| H <sub>2</sub> S            | 21.8  | 8-Jun-17 05:00                  | 3.6                                          | 183.7     | 7.2      | -          | 0.5                    | 3.9                    | 11.0                  | 21.8                    |
| H <sub>2</sub> S            | 12.5  | 10-Jun-17 00:00                 | 4.0                                          | 349.9     | 13.8     | 0.1        | 0.1                    | 4.2                    | 21.2                  | 12.5                    |
| H <sub>2</sub> S            | 11.2  | 11-Jun-17 21:00                 | 3.2                                          | 302.2     | 17.3     | -          | 0.4                    | 2.3                    | 26.9                  | 11.2                    |
| H <sub>2</sub> S            | 15.3  | 11-Jun-17 22:00                 | 3.6                                          | 285.7     | 13.3     | -          | 0.5                    | 4.2                    | 20.5                  | 15.3                    |
| H <sub>2</sub> S            | 29.4  | 12-Jun-17 01:00                 | 3.5                                          | 277.6     | 8.7      | -          | 0.6                    | 3.9                    | 13.4                  | 29.4                    |
| H <sub>2</sub> S            | 13.1  | 12-Jun-17 02:00                 | 3.6                                          | 263.6     | 8.6      | -          | 0.8                    | 4.3                    | 13.2                  | 13.1                    |
| H <sub>2</sub> S            | 12.4  | 12-Jun-17 03:00                 | 2.4                                          | 258.1     | 7.4      | -          | 0.7                    | 3.8                    | 11.4                  | 12.4                    |
| H <sub>2</sub> S            | 12.8  | 12-Jun-17 04:00                 | 1.4                                          | 278.3     | 7.1      | -          | 0.8                    | 3.6                    | 10.9                  | 12.8                    |
| H <sub>2</sub> S            | 13.9  | 12-Jun-17 05:00                 | 2.3                                          | 329.5     | 5.7      | 0.0        | 0.8                    | 7.0                    | 8.7                   | 13.9                    |
| H <sub>2</sub> S            | 11.6  | 17-Jun-17 05:00                 | 2.7                                          | 314.0     | 5.5      | -          | 0.3                    | 2.4                    | 8.5                   | 11.6                    |
| H <sub>2</sub> S            | 17.0  | 20-Jun-17 02:00                 | 1.9                                          | 272.1     | 11.8     | -          | 0.8                    | 1.5                    | 18.0                  | 17.0                    |
| H <sub>2</sub> S            | 13.4  | 20-Jun-17 03:00                 | 1.8                                          | 270.8     | 6.6      | -          | 0.4                    | 1.6                    | 10.1                  | 13.4                    |
| H <sub>2</sub> S            | 26.8  | 25-Jun-17 23:00                 | 3.1                                          | 283.6     | 6.1      | -          | 0.5                    | 1.8                    | 9.3                   | 26.8                    |
| H <sub>2</sub> S            | 25.1  | 26-Jun-17 00:00                 | 4.9                                          | 301.9     | 5.7      | -          | 0.4                    | 1.9                    | 8.7                   | 25.1                    |
| H <sub>2</sub> S            | 27.7  | 26-Jun-17 01:00                 | 2.7                                          | 277.8     | 5.4      | -          | 0.4                    | 1.7                    | 8.3                   | 27.7                    |
| H <sub>2</sub> S            | 13.2  | 26-Jun-17 02:00                 | 2.6                                          | 343.0     | 5.8      | -          | 0.4                    | 2.3                    | 8.8                   | 13.2                    |
| H <sub>2</sub> S            | 30.4  | 26-Jun-17 03:00                 | 2.6                                          | 313.5     | 4.3      | -          | 0.5                    | 1.1                    | 6.6                   | 30.4                    |
| H <sub>2</sub> S            | 25.5  | 26-Jun-17 04:00                 | 1.6                                          | 289.5     | 4.1      | -          | 0.3                    | 1.2                    | 6.4                   | 25.5                    |
| H <sub>2</sub> S            | 23.2  | 26-Jun-17 05:00                 | 1.4                                          | 273.0     | 3.7      | -          | 0.4                    | 1.9                    | 5.6                   | 23.2                    |
| H <sub>2</sub> S            | 12.2  | 26-Jun-17 06:00                 | 1.5                                          | 291.0     | 4.7      | -          | 0.6                    | 3.6                    | 7.3                   | 12.2                    |
| H <sub>2</sub> S            | 36.3  | 29-Jun-17 01:00                 | 2.8                                          | 266.3     | 7.5      | -          | 0.4                    | 1.5                    | 11.5                  | 36.3                    |
| H <sub>2</sub> S            | 30.1  | 29-Jun-17 02:00                 | 1.2                                          | 293.3     | 7.8      | -          | 0.4                    | 1.4                    | 11.9                  | 30.1                    |
| H <sub>2</sub> S            | 17.7  | 29-Jun-17 03:00                 | 1.4                                          | 266.0     | 5.4      | -          | 0.3                    | 1.3                    | 8.4                   | 17.7                    |

| 1-Hour Exceedance Pollutant |       |                                 | Other Parameters During the Exceedance Event |           |          |            |                        |                        |                       |                         |
|-----------------------------|-------|---------------------------------|----------------------------------------------|-----------|----------|------------|------------------------|------------------------|-----------------------|-------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>mmm-dd hh:mm | WS<br>km/hr                                  | WD<br>deg | AQI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb | H <sub>2</sub> S<br>ppb |
| H <sub>2</sub> S            | 15.5  | 2-Jul-17 01:00                  | 1.7                                          | 346.7     | 7.5      | -          | 0.3                    | 1.0                    | 11.5                  | 15.5                    |
| H <sub>2</sub> S            | 11.8  | 2-Jul-17 05:00                  | 2.3                                          | 30.6      | 5.3      | -          | 0.3                    | 1.2                    | 8.2                   | 11.8                    |
| H <sub>2</sub> S            | 11.8  | 8-Jul-17 00:00                  | 1.8                                          | 320.7     | 9.7      | -          | 0.5                    | 1.8                    | 14.9                  | 11.8                    |
| H <sub>2</sub> S            | 11.7  | 8-Jul-17 01:00                  | 1.8                                          | 284.9     | 10.5     | -          | 0.3                    | 1.6                    | 16.1                  | 11.7                    |
| H <sub>2</sub> S            | 11.0  | 10-Jul-17 00:00                 | 1.2                                          | 304.1     | 10.6     | -          | 0.2                    | 1.6                    | 16.3                  | 11.0                    |
| H <sub>2</sub> S            | 14.9  | 10-Jul-17 02:00                 | 2.4                                          | 300.6     | 7.6      | -          | 0.1                    | 1.8                    | 11.6                  | 14.9                    |
| H <sub>2</sub> S            | 24.4  | 10-Jul-17 05:00                 | 1.2                                          | 15.7      | 3.4      | -          | 0.1                    | 2.6                    | 5.2                   | 24.4                    |
| H <sub>2</sub> S            | 11.7  | 10-Jul-17 06:00                 | 2.4                                          | 332.8     | 6.1      | 0.0        | 0.2                    | 2.7                    | 9.4                   | 11.7                    |

**Table J-4 Glen Ewen Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                          | Other Parameters During the Exceedance Event |           |          |            |                        |                        |                       |                         |
|------------------------------|-------|--------------------------|----------------------------------------------|-----------|----------|------------|------------------------|------------------------|-----------------------|-------------------------|
| Pollutant                    | Conc. | Exceedance Day<br>mmm-dd | WS<br>km/hr                                  | WD<br>deg | AQI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb | H <sub>2</sub> S<br>ppb |
| H <sub>2</sub> S             | 4.6   | 12-Jun-17                | 6.5                                          | 140.1     | 18.6     | 0.1        | 0.5                    | 3.0                    | 29.0                  | 4.6                     |
| H <sub>2</sub> S             | 7.4   | 26-Jun-17                | 8.2                                          | 203.4     | 16.7     | -          | 0.6                    | 1.4                    | 25.9                  | 7.4                     |
| H <sub>2</sub> S             | 4.9   | 29-Jun-17                | 7.9                                          | 246.0     | 16.2     | 0.3        | 0.8                    | 1.1                    | 25.0                  | 4.9                     |
| H <sub>2</sub> S             | 4.4   | 10-Jul-17                | 13.5                                         | 168.2     | 19.9     | 9.9        | 0.4                    | 1.4                    | 31.3                  | 4.4                     |

**Table J-5 Stoughton Station: Summary of Exceedances for 1-hour SAAQS for the Year 2017**

| 1-Hour Exceedance Pollutant |       |                                    | Other Parameters During the Exceedance Event |           |          |            |                        |                        |                                        |
|-----------------------------|-------|------------------------------------|----------------------------------------------|-----------|----------|------------|------------------------|------------------------|----------------------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>dd-mmm-yy hh:mm | WS<br>km/hr                                  | WD<br>deg | AQI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| H <sub>2</sub> S            | 11.0  | 5-Sep-17 22:00                     | 0.7                                          | 72.3      | 33.9     | -          | 0.3                    | 5.5                    | 25.7                                   |
| H <sub>2</sub> S            | 14.8  | 5-Sep-17 23:00                     | 0.6                                          | 81.0      | 21.8     | -          | 0.3                    | 3.6                    | 16.2                                   |
| H <sub>2</sub> S            | 12.5  | 7-Sep-17 01:00                     | 0.2                                          | 88.5      | 35.0     | -          | 0.7                    | 5.6                    | 27.1                                   |

**Table J-6 Stoughton Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                          | Other Parameters During the Exceedance Event |           |          |            |                        |                        |                         |                                        |
|------------------------------|-------|--------------------------|----------------------------------------------|-----------|----------|------------|------------------------|------------------------|-------------------------|----------------------------------------|
| Pollutant                    | Conc. | Exceedance Day<br>mmm-dd | WS<br>km/hr                                  | WD<br>deg | AQI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| PM <sub>2.5</sub>            | 35.0  | 17-Jul-17                | 9.3                                          | 318.7     | 41.1     | -          | 0.4                    | 2.7                    | 0.9                     | 35.0                                   |
| PM <sub>2.5</sub>            | 62.0  | 12-Sep-17                | 6.3                                          | 240.8     | 67.9     | -          | 0.9                    | 3.5                    | 1.0                     | 62.0                                   |
| PM <sub>2.5</sub>            | 29.7  | 14-Sep-17                | 3.8                                          | 154.6     | 37.1     | 0.3        | 0.3                    | 0.8                    | 0.6                     | 29.7                                   |

**Table J-7 Wauchope Station: Summary of Exceedances for 1-hour SAAQS for the Year 2017**

| 1-Hour Exceedance Pollutant |       |                                 | Other Parameters During the Exceedance Event |           |            |                        |                         |                                        |  |
|-----------------------------|-------|---------------------------------|----------------------------------------------|-----------|------------|------------------------|-------------------------|----------------------------------------|--|
| Pollutant                   | Conc. | Exceedance Time<br>mmm-dd hh:mm | WS<br>km/hr                                  | WD<br>deg | Rain<br>mm | SO <sub>2</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |  |
| H <sub>2</sub> S            | 14.1  | 27-Mar-17 03:00                 | 2.6                                          | 323.5     | -          | 0.2                    | 14.1                    | 8.1                                    |  |
| H <sub>2</sub> S            | 13.1  | 27-Mar-17 04:00                 | 2.8                                          | 339.8     | -          | 0.1                    | 13.1                    | 8.9                                    |  |
| H <sub>2</sub> S            | 11.2  | 8-Jun-17 03:00                  | 2.5                                          | 358.3     | -          | 0.2                    | 11.2                    | 11.1                                   |  |
| H <sub>2</sub> S            | 16.0  | 8-Jun-17 05:00                  | 2.3                                          | 19.7      | -          | 0.2                    | 16.0                    | 9.3                                    |  |
| H <sub>2</sub> S            | 12.3  | 5-Jul-17 03:00                  | 2.7                                          | 1.3       | -          | 0.3                    | 12.3                    | 13.5                                   |  |
| H <sub>2</sub> S            | 17.1  | 5-Jul-17 04:00                  | 2.5                                          | 140.8     | -          | 0.2                    | 17.1                    | 17.6                                   |  |
| H <sub>2</sub> S            | 21.5  | 10-Jul-17 02:00                 | 1.4                                          | 358.4     | -          | 0.1                    | 21.5                    | 21.9                                   |  |
| H <sub>2</sub> S            | 17.9  | 10-Jul-17 03:00                 | 1.3                                          | 338.9     | -          | 0.0                    | 17.9                    | 21.9                                   |  |
| H <sub>2</sub> S            | 31.8  | 10-Jul-17 04:00                 | 2.3                                          | 15.1      | -          | 0.1                    | 31.8                    | 14.0                                   |  |
| H <sub>2</sub> S            | 28.0  | 10-Jul-17 05:00                 | 1.8                                          | 344.8     | -          | 0.1                    | 28.0                    | 17.5                                   |  |
| H <sub>2</sub> S            | 12.1  | 10-Jul-17 06:00                 | 2.9                                          | 303.3     | -          | 0.2                    | 12.1                    | 17.9                                   |  |
| H <sub>2</sub> S            | 20.6  | 13-Jul-17 01:00                 | 1.2                                          | 146.4     | -          | 0.0                    | 20.6                    | 14.5                                   |  |
| H <sub>2</sub> S            | 11.1  | 12-Aug-17 23:00                 | 1.8                                          | 344.6     | -          | 0.1                    | 11.1                    | 10.5                                   |  |
| H <sub>2</sub> S            | 13.3  | 13-Aug-17 00:00                 | 2.6                                          | 4.7       | -          | 0.1                    | 13.3                    | 5.3                                    |  |
| H <sub>2</sub> S            | 12.4  | 13-Aug-17 01:00                 | 3.0                                          | 7.1       | -          | 0.1                    | 12.4                    | 4.3                                    |  |

| 1-Hour Exceedance Pollutant |       |                                 | Other Parameters During the Exceedance Event |           |            |                        |                         |                                        |
|-----------------------------|-------|---------------------------------|----------------------------------------------|-----------|------------|------------------------|-------------------------|----------------------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>mmm-dd hh:mm | WS<br>km/hr                                  | WD<br>deg | Rain<br>mm | SO <sub>2</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| H <sub>2</sub> S            | 12.7  | 13-Aug-17 02:00                 | 3.2                                          | 8.8       | -          | 0.1                    | 12.7                    | 4.1                                    |
| H <sub>2</sub> S            | 14.2  | 13-Aug-17 03:00                 | 4.1                                          | 13.2      | -          | 0.1                    | 14.2                    | 4.5                                    |
| H <sub>2</sub> S            | 16.7  | 13-Aug-17 04:00                 | 2.4                                          | 353.5     | -          | 0.1                    | 16.7                    | 4.8                                    |
| H <sub>2</sub> S            | 23.1  | 13-Aug-17 05:00                 | 2.4                                          | 351.6     | -          | 0.1                    | 23.1                    | 5.1                                    |
| H <sub>2</sub> S            | 22.2  | 13-Aug-17 06:00                 | 2.6                                          | 16.1      | -          | 0.2                    | 22.2                    | 5.4                                    |
| H <sub>2</sub> S            | 13.9  | 14-Aug-17 00:00                 | 1.5                                          | 343.7     | -          | 0.1                    | 13.9                    | 14.7                                   |
| H <sub>2</sub> S            | 22.1  | 14-Aug-17 01:00                 | 1.9                                          | 336.4     | -          | 0.1                    | 22.1                    | 13.7                                   |
| H <sub>2</sub> S            | 24.6  | 14-Aug-17 02:00                 | 1.9                                          | 7.5       | -          | 0.1                    | 24.6                    | 12.4                                   |
| H <sub>2</sub> S            | 33.8  | 14-Aug-17 03:00                 | 2.2                                          | 350.6     | -          | 0.1                    | 33.8                    | 10.2                                   |
| H <sub>2</sub> S            | 40.4  | 14-Aug-17 04:00                 | 1.9                                          | 354.7     | -          | 0.1                    | 40.4                    | 8.8                                    |
| H <sub>2</sub> S            | 37.1  | 14-Aug-17 05:00                 | 2.6                                          | 3.9       | -          | 0.1                    | 37.1                    | 8.3                                    |
| H <sub>2</sub> S            | 18.7  | 14-Aug-17 07:00                 | 3.9                                          | 31.5      | -          | 0.4                    | 18.7                    | 9.1                                    |
| H <sub>2</sub> S            | 18.0  | 17-Aug-17 02:00                 | 1.4                                          | 339.1     | -          | 0.2                    | 18.0                    | 9.1                                    |
| H <sub>2</sub> S            | 17.2  | 17-Aug-17 04:00                 | 4.6                                          | 25.1      | -          | 0.1                    | 17.2                    | 5.4                                    |
| H <sub>2</sub> S            | 26.4  | 18-Aug-17 03:00                 | 3.2                                          | 266.2     | -          | 0.1                    | 26.4                    | 4.4                                    |
| H <sub>2</sub> S            | 31.6  | 18-Aug-17 04:00                 | 2.4                                          | 284.7     | -          | 0.1                    | 31.6                    | 2.8                                    |
| H <sub>2</sub> S            | 21.9  | 18-Aug-17 05:00                 | 3.5                                          | 262.4     | -          | 0.1                    | 21.9                    | 7.2                                    |
| H <sub>2</sub> S            | 14.4  | 18-Aug-17 06:00                 | 5.0                                          | 255.8     | -          | 0.1                    | 14.4                    | 9.9                                    |
| H <sub>2</sub> S            | 11.3  | 18-Aug-17 07:00                 | 3.8                                          | 271.3     | -          | 0.3                    | 11.3                    | 6.6                                    |
| H <sub>2</sub> S            | 14.9  | 18-Aug-17 22:00                 | 1.9                                          | 169.3     | -          | 0.2                    | 14.9                    | 52.8                                   |
| H <sub>2</sub> S            | 15.3  | 19-Aug-17 05:00                 | 1.4                                          | 171.4     | -          | 0.2                    | 15.3                    | 41.7                                   |
| H <sub>2</sub> S            | 13.4  | 19-Aug-17 06:00                 | 1.9                                          | 165.5     | -          | 0.3                    | 13.4                    | 45.0                                   |
| H <sub>2</sub> S            | 14.7  | 20-Aug-17 04:00                 | 5.6                                          | 248.0     | -          | 0.1                    | 14.7                    | 5.0                                    |
| H <sub>2</sub> S            | 13.2  | 20-Aug-17 05:00                 | 6.4                                          | 254.3     | -          | 0.1                    | 13.2                    | 5.9                                    |
| H <sub>2</sub> S            | 11.5  | 20-Aug-17 06:00                 | 7.0                                          | 258.3     | -          | 0.2                    | 11.5                    | 5.6                                    |
| H <sub>2</sub> S            | 22.5  | 21-Aug-17 06:00                 | 1.9                                          | 340.1     | -          | 0.2                    | 22.5                    | -                                      |

| 1-Hour Exceedance Pollutant |       |                                 | Other Parameters During the Exceedance Event |           |            |                        |                         |                                        |
|-----------------------------|-------|---------------------------------|----------------------------------------------|-----------|------------|------------------------|-------------------------|----------------------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>mmm-dd hh:mm | WS<br>km/hr                                  | WD<br>deg | Rain<br>mm | SO <sub>2</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| H <sub>2</sub> S            | 14.9  | 21-Aug-17 07:00                 | 3.1                                          | 334.6     | -          | 0.3                    | 14.9                    | -                                      |
| H <sub>2</sub> S            | 12.8  | 26-Aug-17 06:00                 | 2.7                                          | 36.7      | -          | 0.2                    | 12.8                    | 9.1                                    |
| H <sub>2</sub> S            | 17.2  | 26-Aug-17 22:00                 | 1.3                                          | 333.3     | -          | 0.2                    | 17.2                    | 81.1                                   |
| H <sub>2</sub> S            | 27.2  | 26-Aug-17 23:00                 | 1.4                                          | 18.0      | -          | 0.2                    | 27.2                    | 50.0                                   |
| H <sub>2</sub> S            | 33.7  | 27-Aug-17 00:00                 | 1.4                                          | 342.1     | -          | 0.2                    | 33.7                    | 26.5                                   |
| H <sub>2</sub> S            | 43.9  | 27-Aug-17 01:00                 | 2.6                                          | 343.7     | -          | 0.2                    | 43.9                    | 19.5                                   |
| H <sub>2</sub> S            | 35.5  | 27-Aug-17 04:00                 | 1.9                                          | 336.1     | -          | 0.3                    | 35.5                    | 17.1                                   |
| H <sub>2</sub> S            | 36.9  | 27-Aug-17 05:00                 | 1.5                                          | 337.4     | -          | 0.2                    | 36.9                    | 16.5                                   |
| H <sub>2</sub> S            | 79.6  | 27-Aug-17 06:00                 | 1.4                                          | 5.3       | -          | 0.4                    | 79.6                    | 19.5                                   |
| H <sub>2</sub> S            | 30.4  | 27-Aug-17 07:00                 | 2.2                                          | 275.4     | -          | 0.5                    | 30.4                    | 26.8                                   |
| H <sub>2</sub> S            | 12.6  | 28-Aug-17 02:00                 | 3.6                                          | 20.4      | -          | 0.2                    | 12.6                    | 28.8                                   |
| H <sub>2</sub> S            | 19.6  | 28-Aug-17 03:00                 | 3.0                                          | 11.1      | -          | 0.2                    | 19.6                    | 31.8                                   |
| H <sub>2</sub> S            | 26.2  | 28-Aug-17 04:00                 | 2.6                                          | 5.3       | -          | 0.2                    | 26.2                    | 22.8                                   |
| H <sub>2</sub> S            | 42.0  | 28-Aug-17 05:00                 | 3.2                                          | 358.4     | -          | 0.3                    | 42.0                    | 19.8                                   |
| H <sub>2</sub> S            | 27.4  | 28-Aug-17 06:00                 | 4.4                                          | 13.5      | -          | 0.4                    | 27.4                    | 17.7                                   |
| H <sub>2</sub> S            | 17.5  | 28-Aug-17 07:00                 | 4.7                                          | 19.3      | -          | 0.9                    | 17.5                    | 20.2                                   |
| H <sub>2</sub> S            | 16.1  | 29-Aug-17 01:00                 | 1.8                                          | 234.8     | -          | 0.4                    | 16.1                    | 26.4                                   |
| H <sub>2</sub> S            | 19.7  | 29-Aug-17 02:00                 | 3.3                                          | 244.0     | -          | 0.5                    | 19.7                    | 27.3                                   |
| H <sub>2</sub> S            | 38.1  | 29-Aug-17 03:00                 | 2.2                                          | 287.7     | -          | 0.3                    | 38.1                    | 25.2                                   |
| H <sub>2</sub> S            | 13.6  | 29-Aug-17 04:00                 | 5.8                                          | 263.8     | -          | 0.3                    | 13.6                    | 21.7                                   |
| H <sub>2</sub> S            | 20.4  | 29-Aug-17 06:00                 | 3.5                                          | 359.1     | -          | 0.5                    | 20.4                    | 18.7                                   |
| H <sub>2</sub> S            | 12.3  | 30-Aug-17 05:00                 | 3.0                                          | 46.4      | -          | 0.2                    | 12.3                    | 14.7                                   |
| H <sub>2</sub> S            | 14.6  | 30-Aug-17 06:00                 | 4.1                                          | 60.6      | -          | 0.3                    | 14.6                    | 13.0                                   |
| H <sub>2</sub> S            | 13.9  | 2-Sep-17 03:00                  | 4.3                                          | 256.4     | -          | 0.2                    | 13.9                    | 22.4                                   |
| H <sub>2</sub> S            | 11.7  | 2-Sep-17 04:00                  | 6.6                                          | 267.0     | -          | 0.3                    | 11.7                    | 21.5                                   |
| H <sub>2</sub> S            | 11.9  | 2-Sep-17 06:00                  | 3.5                                          | 286.1     | -          | 0.2                    | 11.9                    | 13.9                                   |

| 1-Hour Exceedance Pollutant |       |                                 | Other Parameters During the Exceedance Event |           |            |                        |                         |                                        |
|-----------------------------|-------|---------------------------------|----------------------------------------------|-----------|------------|------------------------|-------------------------|----------------------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>mmm-dd hh:mm | WS<br>km/hr                                  | WD<br>deg | Rain<br>mm | SO <sub>2</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| H <sub>2</sub> S            | 20.5  | 2-Sep-17 23:00                  | 1.8                                          | 2.7       | -          | 1.2                    | 20.5                    | 57.3                                   |
| H <sub>2</sub> S            | 13.2  | 3-Sep-17 00:00                  | 1.8                                          | 203.8     | -          | 0.6                    | 13.2                    | 52.0                                   |
| H <sub>2</sub> S            | 14.1  | 3-Sep-17 02:00                  | 3.5                                          | 4.8       | -          | 0.6                    | 14.1                    | 45.9                                   |
| H <sub>2</sub> S            | 35.2  | 3-Sep-17 03:00                  | 2.1                                          | 340.3     | -          | 0.3                    | 35.2                    | 42.3                                   |
| H <sub>2</sub> S            | 18.6  | 3-Sep-17 04:00                  | 4.5                                          | 8.3       | -          | 0.3                    | 18.6                    | 34.9                                   |
| H <sub>2</sub> S            | 16.3  | 3-Sep-17 05:00                  | 4.0                                          | 351.0     | -          | 0.5                    | 16.3                    | 34.5                                   |
| H <sub>2</sub> S            | 15.4  | 3-Sep-17 06:00                  | 6.1                                          | 7.1       | -          | 0.4                    | 15.4                    | 31.7                                   |
| H <sub>2</sub> S            | 14.2  | 6-Sep-17 01:00                  | 1.5                                          | 290.1     | -          | 0.2                    | 14.2                    | 43.9                                   |
| H <sub>2</sub> S            | 14.6  | 6-Sep-17 21:00                  | 1.8                                          | 278.7     | -          | 0.2                    | 14.6                    | 126.5                                  |
| H <sub>2</sub> S            | 18.2  | 6-Sep-17 22:00                  | 1.4                                          | 306.4     | -          | 0.2                    | 18.2                    | 88.9                                   |
| H <sub>2</sub> S            | 16.5  | 1-Oct-17 06:00                  | 2.0                                          | 336.0     | -          | 0.3                    | 16.5                    | 8.6                                    |

**Table J-8      Wauchope Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                          | Other Parameters During the Exceedance Event |           |            |                        |                         |                                        |
|------------------------------|-------|--------------------------|----------------------------------------------|-----------|------------|------------------------|-------------------------|----------------------------------------|
| Pollutant                    | Conc. | Exceedance Day<br>mmm-dd | WS<br>km/hr                                  | WD<br>deg | Rain<br>mm | SO <sub>2</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| PM <sub>2.5</sub>            | 32.2  | 16-Aug-17                | 12.8                                         | 185.9     | -          | 0.3                    | 2.8                     | 32.2                                   |
| PM <sub>2.5</sub>            | 30.2  | 2-Sep-17                 | 13.8                                         | 271.8     | -          | 0.4                    | 4.7                     | 30.2                                   |
| PM <sub>2.5</sub>            | 36.5  | 6-Sep-17                 | 9.8                                          | 265.5     | -          | 0.6                    | 4.9                     | 36.5                                   |
| PM <sub>2.5</sub>            | 71.9  | 12-Sep-17                | 8.8                                          | 242.9     | -          | 1.1                    | 3.9                     | 71.9                                   |
| PM <sub>2.5</sub>            | 33.4  | 13-Sep-17                | 10.8                                         | 58.0      | 1.0        | 0.5                    | 1.6                     | 33.4                                   |
| PM <sub>2.5</sub>            | 33.4  | 20-Oct-17                | 11.8                                         | 117.5     | -          | 2.1                    | 1.4                     | 33.4                                   |
| H <sub>2</sub> S             | 6.2   | 10-Jul-17                | 4.6                                          | 189.4     | 1.1        | 0.4                    | 6.2                     | 17.0                                   |
| H <sub>2</sub> S             | 6.1   | 13-Aug-17                | 3.8                                          | 119.8     | -          | 0.2                    | 6.1                     | 7.6                                    |
| H <sub>2</sub> S             | 9.7   | 14-Aug-17                | 4.8                                          | 152.1     | -          | 0.2                    | 9.7                     | 20.6                                   |
| H <sub>2</sub> S             | 3.8   | 17-Aug-17                | 11.6                                         | 159.2     | 0.1        | 0.3                    | 3.8                     | 14.4                                   |
| H <sub>2</sub> S             | 6.9   | 18-Aug-17                | 4.8                                          | 280.2     | -          | 0.2                    | 6.9                     | 17.1                                   |
| H <sub>2</sub> S             | 3.7   | 20-Aug-17                | 12.6                                         | 226.8     | 0.3        | 0.3                    | 3.7                     | 11.7                                   |
| H <sub>2</sub> S             | 4.9   | 26-Aug-17                | 8.6                                          | 169.6     | -          | 0.4                    | 4.9                     | 20.3                                   |
| H <sub>2</sub> S             | 13.4  | 27-Aug-17                | 8.5                                          | 178.1     | -          | 0.5                    | 13.4                    | 20.4                                   |
| H <sub>2</sub> S             | 8.0   | 28-Aug-17                | 6.3                                          | 122.9     | -          | 0.4                    | 8.0                     | 22.3                                   |
| H <sub>2</sub> S             | 7.1   | 29-Aug-17                | 5.6                                          | 99.6      | -          | 0.8                    | 7.1                     | 20.0                                   |
| H <sub>2</sub> S             | 4.7   | 2-Sep-17                 | 9.6                                          | 271.8     | -          | 0.4                    | 4.7                     | 30.2                                   |
| H <sub>2</sub> S             | 5.9   | 3-Sep-17                 | 3.8                                          | 214.7     | -          | 0.4                    | 5.9                     | 22.9                                   |
| H <sub>2</sub> S             | 4.9   | 6-Sep-17                 | 8.6                                          | 265.5     | -          | 0.6                    | 4.9                     | 36.5                                   |
| H <sub>2</sub> S             | 3.9   | 12-Sep-17                | 10.6                                         | 242.9     | -          | 1.1                    | 3.9                     | 71.9                                   |

**Table J-9 Wawota Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                             | Other Parameters During the Exceedance Event |           |           |            |                        |                       |
|------------------------------|-------|-----------------------------|----------------------------------------------|-----------|-----------|------------|------------------------|-----------------------|
| Pollutant                    | Conc. | Exceedance Day<br>dd-mmm-yy | WS<br>km/hr                                  | WD<br>deg | AQHI<br>- | Rain<br>mm | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb |
| PM <sub>2.5</sub>            | 77.2  | 12-Sep-17                   | 6.0                                          | 245.1     | 6.0       | 14.3       | 1.6                    | 42.2                  |
| PM <sub>2.5</sub>            | 28.7  | 20-Oct-17                   | 8.9                                          | 133.2     | 3.6       | 5.3        | 2.1                    | 38.9                  |
| PM <sub>2.5</sub>            | 34.7  | 21-Oct-17                   | 14.2                                         | 255.9     | 3.0       | 0.1        | 1.7                    | 23.3                  |

**Table J-10 Weyburn Station: Summary of Exceedances for 1-hour SAAQS for the Year 2017**

| 1-Hour Exceedance Pollutant |       |                                    | Other Parameters During the Exceedance Event |           |           |            |                        |                        |                       |                         |                                        |
|-----------------------------|-------|------------------------------------|----------------------------------------------|-----------|-----------|------------|------------------------|------------------------|-----------------------|-------------------------|----------------------------------------|
| Pollutant                   | Conc. | Exceedance Time<br>dd-mmm-yy hh:mm | WS<br>km/hr                                  | WD<br>deg | AQHI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb | H <sub>2</sub> S<br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| H <sub>2</sub> S            | 14.7  | 12-Jan-17 20:00                    | 8.3                                          | 176.1     | 20.0      | -          | 6.5                    | 0.8                    | 31.4                  | 14.7                    | 2.0                                    |
| H <sub>2</sub> S            | 19.8  | 14-Jan-17 13:00                    | 5.5                                          | 150.9     | 26.4      | -          | 5.7                    | 1.5                    | 42.2                  | 19.8                    | 1.8                                    |
| H <sub>2</sub> S            | 17.4  | 20-Feb-17 23:00                    | 6.1                                          | 111.7     | 12.7      | -          | 3.1                    | 1.6                    | 19.5                  | 17.4                    | 0.9                                    |
| H <sub>2</sub> S            | 34.6  | 4-Aug-17 02:00                     | 4.1                                          | 135.8     | 5.8       | -          | 2.8                    | 7.4                    | 8.2                   | 34.6                    | 4.6                                    |
| H <sub>2</sub> S            | 95.7  | 4-Aug-17 05:00                     | 5.3                                          | 137.6     | 6.3       | -          | 0.5                    | 5.5                    | 7.6                   | 95.7                    | 5.0                                    |
| H <sub>2</sub> S            | 14.6  | 5-Aug-17 05:00                     | 9.3                                          | 24.5      | 13.3      | 0.0        | 0.4                    | 2.8                    | 20.4                  | 14.6                    | 6.9                                    |
| H <sub>2</sub> S            | 20.8  | 6-Aug-17 00:00                     | 3.6                                          | 28.6      | 7.5       | -          | 0.2                    | 7.6                    | 5.7                   | 20.8                    | 6.0                                    |
| H <sub>2</sub> S            | 13.2  | 28-Sep-17 02:00                    | 4.2                                          | 89.0      | 5.2       | -          | 3.0                    | 3.2                    | 8.0                   | 13.2                    | 2.9                                    |
| H <sub>2</sub> S            | 16.2  | 18-Oct-17 21:00                    | 5.8                                          | 163.8     | 9.8       | -          | 1.9                    | 4.6                    | 15.1                  | 16.2                    | 6.7                                    |

**Table J-11 Weyburn Station: Summary of Exceedances for 24-hour SAAQS for the Year 2017**

| 24-Hour Exceedance Pollutant |       |                             | Other Parameters During the Exceedance Event |           |           |            |                        |                        |                       |                                        |
|------------------------------|-------|-----------------------------|----------------------------------------------|-----------|-----------|------------|------------------------|------------------------|-----------------------|----------------------------------------|
| Pollutant                    | Conc. | Exceedance Day<br>dd-mmm-yy | WS<br>km/hr                                  | WD<br>deg | AQHI<br>- | Rain<br>mm | SO <sub>2</sub><br>ppb | NO <sub>2</sub><br>ppb | O <sub>3</sub><br>ppb | PM <sub>2.5</sub><br>µg/m <sup>3</sup> |
| PM <sub>2.5</sub>            | 29.0  | 17-Jul-17                   | 12.1                                         | 284.7     | 3.2       | 0.0        | 0.2                    | 1.7                    | 32.2                  | 29.0                                   |
| H <sub>2</sub> S             | 7.8   | 14-Jan-17                   | 5.5                                          | 171.2     | 2.3       | -          | 4.4                    | 2.0                    | 39.6                  | 1.0                                    |
| H <sub>2</sub> S             | 6.8   | 04-Aug-17                   | 6.0                                          | 125.0     | 2.0       | 0.1        | 2.3                    | 4.0                    | 28.8                  | 4.1                                    |

**APPENDIX K      2017 FINANCIAL STATEMENTS**

**Southeast Saskatchewan Airshed Association Inc.**  
**Financial Statements**  
*December 31, 2017*

## **Management's Responsibility**

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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 19, 2018



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## Independent Auditors' Report

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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, 2017 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, 2017 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 19, 2018

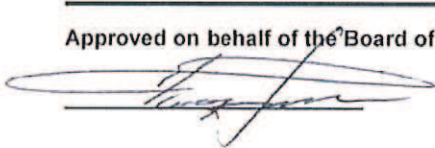
Chartered Professional Accountants

**Southeast Saskatchewan Airshed Association Inc.**  
**Statement of Financial Position**

*As at December 31, 2017*

|                                                 | 2017    | 2016    |
|-------------------------------------------------|---------|---------|
| <b>Assets</b>                                   |         |         |
| <b>Current</b>                                  |         |         |
| Cash                                            | 146,550 | 97,436  |
| Marketable securities (Note 3)                  | 101,257 | 100,000 |
| Prepaid expenses and deposits                   | 4,542   | 3,776   |
|                                                 | 252,349 | 201,212 |
| <b>Capital assets (Note 4)</b>                  | 304,193 | 380,242 |
|                                                 | 556,542 | 581,454 |
| <b>Liabilities</b>                              |         |         |
| <b>Current</b>                                  |         |         |
| Accounts payable and accruals                   | 28,018  | 27,225  |
| Current portion deferred contributions (Note 5) | 50,900  | 70,900  |
| Government remittances payable                  | 3,907   | 5,596   |
|                                                 | 82,825  | 103,721 |
| <b>Deferred contributions (Note 5)</b>          | 15,450  | 66,350  |
|                                                 | 98,275  | 170,071 |
| <b>Net Assets</b>                               |         |         |
| Unrestricted net assets                         | 458,267 | 411,383 |
|                                                 | 556,542 | 581,454 |

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, 2017*

|                                                           | <b>2017</b>    | <b>2016</b> |
|-----------------------------------------------------------|----------------|-------------|
| <b>Revenue</b>                                            |                |             |
| Membership fees                                           | <b>271,203</b> | 270,408     |
| Amortization of deferred contributions <i>(Note 5)</i>    | <b>70,900</b>  | 70,900      |
|                                                           | <b>342,103</b> | 341,308     |
| <b>Expenses</b>                                           |                |             |
| Advertising                                               | <b>1,678</b>   | 1,500       |
| Air monitoring                                            | <b>93,180</b>  | 88,246      |
| Amortization                                              | <b>76,048</b>  | 95,061      |
| Bank charges                                              | <b>138</b>     | 112         |
| Insurance                                                 | <b>9,375</b>   | 9,271       |
| Management fees                                           | <b>56,940</b>  | 50,760      |
| Meetings                                                  | <b>524</b>     | 662         |
| Office and data collection                                | <b>7,104</b>   | 5,312       |
| Professional fees                                         | <b>7,230</b>   | 6,917       |
| Repairs and maintenance                                   | <b>43,068</b>  | 14,071      |
| Travel                                                    | <b>1,191</b>   | 1,235       |
|                                                           | <b>296,476</b> | 273,147     |
| <b>Excess of revenue over expenses before other items</b> | <b>45,627</b>  | 68,161      |
| <b>Other items</b>                                        |                |             |
| Interest income                                           | <b>1,257</b>   | -           |
| <b>Excess of revenue over expenses</b>                    | <b>46,884</b>  | 68,161      |
| <b>Net assets, beginning of year</b>                      | <b>411,383</b> | 343,222     |
| <b>Net assets, end of year</b>                            | <b>458,267</b> | 411,383     |

*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, 2017

|                                                              | 2017      | 2016      |
|--------------------------------------------------------------|-----------|-----------|
| <b>Cash provided by (used for) the following activities:</b> |           |           |
| <b>Operating</b>                                             |           |           |
| Cash receipts from membership fees                           | 271,203   | 270,409   |
| Cash paid to suppliers                                       | (222,089) | (174,966) |
| Cash receipts from interest                                  | 1,257     | -         |
|                                                              | 50,371    | 95,443    |
| <b>Investing</b>                                             |           |           |
| Purchase of marketable securities                            | (1,257)   | (100,000) |
| <b>Increase (decrease) in cash resources</b>                 | 49,114    | (4,557)   |
| <b>Cash resources, beginning of year</b>                     | 97,436    | 101,993   |
| <b>Cash resources, end of year</b>                           | 146,550   | 97,436    |

The accompanying notes are an integral part of these financial statements

# Southeast Saskatchewan Airshed Association Inc.

## Notes to the Financial Statements

*For the year ended December 31, 2017*

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### 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.

|           | <b>Rate</b> |
|-----------|-------------|
| 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. The Organization subsequently measures marketable securities with prices quoted in an active market at fair value. All other 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.

**Southeast Saskatchewan Airshed Association Inc.**  
**Notes to the Financial Statements**  
*For the year ended December 31, 2017*

**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**

|                   | <b>2017</b>    | <b>2016</b> |
|-------------------|----------------|-------------|
| Measured at cost: |                |             |
| CIBC GIC          | <b>101,257</b> | 100,000     |

The GIC was issued December 16, 2017 and matures December 18, 2018, bearing interest at 0.55% (2016 - 1.25%) per annum.

**4. Capital assets**

|           | <b>Cost</b>    | <b>Accumulated<br/>amortization</b> | <b>2017<br/>Net book<br/>value</b> | <b>2016<br/>Net book<br/>value</b> |
|-----------|----------------|-------------------------------------|------------------------------------|------------------------------------|
| Equipment | <b>837,840</b> | <b>533,647</b>                      | <b>304,193</b>                     | 380,242                            |

**Southeast Saskatchewan Airshed Association Inc.**  
**Notes to the Financial Statements**  
*For the year ended December 31, 2017*

**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:

|                                                    | <b>2017</b>     | <b>2016</b> |
|----------------------------------------------------|-----------------|-------------|
| Balance, beginning of year                         | <b>137,250</b>  | 208,150     |
| Less: Amount recognized as revenue during the year | <b>(70,900)</b> | (70,900)    |
| Balance, end of year                               | <b>66,350</b>   | 137,250     |
| Less: current portion                              | <b>50,900</b>   | 70,900      |
| Balance, end of year                               | <b>15,450</b>   | 66,350      |

**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 2017. The contract was renewed on December 1, 2017 and extends to December 30, 2018. 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 \$56,940 (2016 - \$50,760) 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 |          |
| 2018                  | \$34,974 |

## APPENDIX L      BOARD OF DIRECTORS AND ALTERNATES

### **Rae Lynn Crooks**

Board Chair, SESAA (Cenovus Energy)



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.

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### **Todd Han**

Board Vice Chair (Senior Consultant, Matrix Solutions)

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

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### **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.

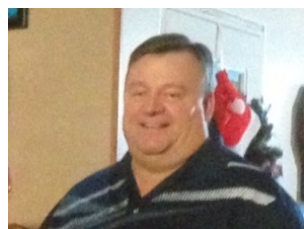
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**Dean Pylypuk****Saskatchewan Ministry of the Economy**

Dean PMr. Pylypuk is the Regional Manager for Area 4 with The Ministry of Energy and Resources. 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.

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**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

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**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.

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**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.

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**Stuart Goranson****Field Regulatory Coordinator, Crescent Point Energy**

Stuart Goranson is a Field Regulatory Coordinator with Crescent Point Energy. Stuart's main focus is ensuring operational regulatory compliance in Crescent Point's Saskatchewan operations. Stuart is a registered Professional Engineer with a degree in Environmental Systems Engineering.

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**Imran Maqsood, Ph.D., P.Eng.** Senior Engineer, Strategic Issues Management, Environment SaskPower

Dr. Imran Maqsood is a senior engineer with SaskPower, where he provides technical, environmental and regulatory decision-making support to the company's operational groups. He holds a PhD degree in Environmental Systems Engineering from University of Regina and is a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of Saskatchewan since 2005. Previously, he has held the positions of Manager Air Science & Monitoring and Senior Air Quality Scientist with the Saskatchewan Ministry of Environment and Adjunct Professor at University of Regina. Dr. Maqsood has produced over 50 publications in peer-reviewed journals and conferences.

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**Terry Gibson****Executive Director**

Mr. Gibson brings nearly 35 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 Ltd.
- Antoinway Resources
- Apache Canada Ltd.
- ARC Resources
- Astra Oil 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
- Cajé Holdings Ltd.
- Canada Capital Energy
- Canadian Natural Resources Limited
- Can Era Energy Corp.
- Canamax Energy
- Capital Energy Corp.
- Caprice Resources
- 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
- 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
- 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 Petroleum
- 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
- Pinecrest Energy
- Phase Energy Ltd.
- Pinto Resources
- Plains Midstream
- Potash Corp.
- Powder Mountain
- Prairie Mines and Royalty
- 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 Resources Group
- Spyglass Resources
- Southern Exploration
- Steel Reef
- Sure Energy Inc.
- T-45 Oil Corporation
- TAQA North
- T. Bird Oil Ltd.
- Tetonka Resources
- Texalta Petroleum Ltd.
- TORC Oil and Gas
- TransGas/SaskEnergy
- Triwest Exploration
- Valleyview Petroleums Ltd.
- Vermilion Energy
- Villanova Resources Inc.
- Villanova 4 Oil
- Viterra Inc.
- Willbrow Resources
- Williston Hunter Canada Inc.
- Zargon Oil & Gas Ltd.