

REPORT N° 171-00556-00

# AMBIENT AIR QUALITY MONTHLY REPORT

DECEMBER 2017

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## DECEMBER 2017

**Lafarge Canada Inc.**

Project no: 171-00556-00  
Date: December 2017

**WSP Canada Inc.**  
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Project Number: 171-00556-00

January 30, 2018

Janet Brygger  
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Exshaw, AB T0L 2C0

Dear Ms. Brygger,

**Subject: Ambient Air Quality Monthly Report – December 2017**

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The operational uptime for the meteorological systems and all analyzers at the Lagoon station was 100% in December. There were no contraventions of the 24-hour TSP and PM<sub>2.5</sub> Alberta Ambient Air Quality Objectives (AAAQOs) in December at the Lagoon monitoring location.

All analyzers at the Windridge station had 100% operational uptime in December. There were 7 days exceeding the 24-hour TSP AAAQO while there were no 24-hour PM<sub>2.5</sub> AAAQO exceedances.

Data collected at all of the GRIMM monitors are considered Industrial Ambient Monitors and are meant for assessing the performance of Lafarge Exshaw's Fugitive Dust Control Best Management Practices – Program. While West and Entrance monitors had 100% operational time, Berm monitor had 98.5% operational time due to 11 hours of instrument error. The Entrance GRIMM monitor exceeded the 24-hour TSP AAAQO for 17 days and the 24-hour PM<sub>2.5</sub> AAAQO for 1 day in December, while the Berm GRIMM had 11 exceedances of the TSP Objective and no exceedances of the PM<sub>2.5</sub> Objective. The West GRIMM monitor recorded 3 exceedances of the 24-hour TSP and no exceedances of PM<sub>2.5</sub> Objective, as well as the 1-hour PM<sub>2.5</sub> AAAQG. The Berm and Entrance monitors recorded exceedances of the 1-hour PM<sub>2.5</sub> AAAQG.

I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements.

Sincerely,

Tyler Abel, M.Sc.  
Group Manager, Air Quality  
Environment

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## SIGNATURES

PREPARED BY



---

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### A P P E N D I X A    DATA & CALIBRATION REPORTS

# 1

## INTRODUCTION

This report summarizes the ambient air quality and meteorological data collected at the Lagoon monitoring location and the GRIMM monitors in Exshaw, AB. The station is operated by WSP on behalf of Lafarge Canada Inc. (Lafarge) and is a requirement of Lafarge's Approval 1702-02-04. This report contains data collected between December 1, 2017 and December 31, 2017.

This monthly report was prepared by Byeong Kim, an Air Quality Specialist with WSP, on behalf of Lafarge and was reviewed by Tyler Abel, Manager of Air Quality and Air Quality Specialist at WSP.

# 2

## DECEMBER 2017 REPORT SUMMARY

This summary section provides the pertinent details on data collected and maintenance/calibration activities at each of the monitoring locations. The monitoring results for the stations are described in further detail in their corresponding sections. Maximum hourly concentrations are shown for all particulate matter size fractions, but there are no Alberta Ambient Air Quality Objectives (AAAQO) for 1-hour PM concentrations. The exceedances reported for 1-hour PM<sub>2.5</sub> are those above the 1-hour PM<sub>2.5</sub> Alberta Ambient Air Quality Guidelines (AAAQG).

### 2.1

#### LAGOON STATION

**Table 2-1 Lagoon station data summary**

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of AAAQO or AAAQG	Maximum Concentration	Exceedances of AAAQO
NO <sub>2</sub> (ppb)	100.0	34.7	0	16.0	-
SO <sub>2</sub> (ppb)	100.0	5.3	0	1.5	0
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	100.0	27.5	0	11.6	0
PM <sub>10</sub> (µg/m <sup>3</sup> )	100.0	407.8	-	87.1	-
TSP (µg/m <sup>3</sup> )	100.0	688.5	-	99.6	0
Temperature (°C)	100.0	9.5	-	4.8	-
Wind Speed (km/hr) /Direction (Degrees)	100.0	52.2/W	-	36.4/WSW	-
Precipitation (mm)	100.0	0.3	-	1.3*	-

\* Monthly Total Accumulation of Precipitation (mm)

**Data Quality Notes:**

- There was no exceedance of the 24-hour PM<sub>2.5</sub> AAAQO and the 1-hour PM<sub>2.5</sub> AAAQG.
- There was no exceedance of the 24-hour TSP AAAQO.

**Calibration/Maintenance Notes:**

- The annual, manufacturer recommended 72-hour zero sequence performed on the PM<sub>2.5</sub> analyzer extended into December 1<sup>st</sup> and 2<sup>nd</sup>.

**2.2****WINDRIDGE STATION****Table 2-2 Windridge station data summary**

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of AAAQO or AAAQG	Maximum Concentration	Exceedances of AAAQO
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	100.0	39.4	0*	17.5	0
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	100.0	504.9	-	151.2	-
TSP ( $\mu\text{g}/\text{m}^3$ )	100.0	504.0	-	206.7	7

\* Any exceedances reported for 1-hour PM<sub>2.5</sub> are over the guideline level (AAAQG) of 80  $\mu\text{g}/\text{m}^3$ .

**Data Quality Notes:**

- There was no exceedance of the 24-hour PM<sub>2.5</sub> AAAQO or the 1-hour PM<sub>2.5</sub> AAAQG.
- There were 7 exceedances of the 24-hour TSP AAAQO.

**Calibration/Maintenance Notes:**

- The annual, manufacturer recommended 72-hour zero sequence performed on the PM<sub>2.5</sub> analyzer extended into December 1<sup>st</sup> and 2<sup>nd</sup>.

## 2.3 WEST GRIMM

The GRIMM monitors are Industrial Ambient Monitors meant to aid Lafarge in assessing the performance of their Fugitive Dust Control Best Management Practices – Program (FDCBMP-P). The AAAQO are used as Guidelines to evaluate the performance of the FDCBMP-P.

**Table 2-3 West station data summary**

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of Guidelines	Maximum Concentration	Exceedances of Guidelines
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	100.0	16.0	0*	10.3	0
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	100.0	94.7	-	25.1	-
TSP ( $\mu\text{g}/\text{m}^3$ )	100.0	1160.6	-	180.1	3

\*Exceedance of 1-hour AAAQG

### Data Quality Notes:

- There were no exceedances of the 24-hour PM<sub>2.5</sub> AAAQO or the 1-hour PM<sub>2.5</sub> AAAQG.
- There were 3 exceedances of the 24-hour TSP AAAQO.

### Calibration/Maintenance Notes:

- The monitor had 100% uptime for the month of December.

## 2.4

### BERM GRIMM

The GRIMM monitors are Industrial Ambient Monitors meant to aid Lafarge in assessing the performance of their FDCBMP-P. The AAAQO are used as Guidelines to evaluate the performance of the FDCBMP-P.

**Table 2-4 Berm station data summary**

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of Guidelines	Maximum Concentration	Exceedances of Guidelines
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	98.5	157.7	12*	29.7	0
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	98.5	1293.7	-	281.2	-
TSP ( $\mu\text{g}/\text{m}^3$ )	98.5	3115.5	-	946.8	11

\* The exceedances reported for 1-hour PM<sub>2.5</sub> are over the guideline level (AAAQG) of 80  $\mu\text{g}/\text{m}^3$ .

#### Data Quality Notes:

- There were 0 and 11 exceedances of the 24-hour PM<sub>2.5</sub> and TSP AAAQO, respectively.
- There were 12 exceedances of the 1-hour PM<sub>2.5</sub> AAAQG.

#### Calibration/Maintenance Notes:

- The monitor had 98.5% uptime for the month of December due to 11 hours of instrument error.

## 2.5

### ENTRANCE GRIMM

The GRIMM monitors are Industrial Ambient Monitors meant to aid Lafarge in assessing the performance of their FDCBMP-P. The AAAQO are used as Guidelines to evaluate the performance of the FDCBMP-P.

**Table 2-5 Entrance station data summary**

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of Guidelines	Maximum Concentration	Exceedances of Guidelines
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	100.0	92.4	3*	34.1	1
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	100.0	801.0	-	296.4	-
TSP ( $\mu\text{g}/\text{m}^3$ )	100.0	3084.2	-	1115.4	17

\* The exceedances reported for 1-hour PM<sub>2.5</sub> are over the guideline level (AAAQG) of 80  $\mu\text{g}/\text{m}^3$ .

#### Data Quality Notes:

- There were 1 and 17 exceedances of the 24-hour PM<sub>2.5</sub> and TSP AAAQO, respectively.
- There were 3 exceedances of the 1-hour PM<sub>2.5</sub> AAAQG.

**Calibration/Maintenance Notes:**

- The monitor had 100% uptime for the month of December.

## 3 LAGOON STATION

The Lagoon trailer contains NO<sub>x</sub>, SO<sub>2</sub>, TSP, PM<sub>10</sub>, and PM<sub>2.5</sub> analyzers as well as meteorological sensors, and is shown in Figure 3-1. An ambient air quality station has been at this location since 2002, providing a long-term data record for air quality in the Exshaw area.

This section provides a summary of the monitoring activities for the Lagoon ambient air quality station, including: a table of instrumentation (Table 3-1), site visit notes, wind roses (Figure 3-3, 3-4, 3-5) and tables and graphs illustrating the monitoring results for December 2017.

All of the monitors comply with Alberta Environment and Parks Air Monitoring Directive (2016).

**Table 3-1    Instrumentation List at the Lagoon Station**

Equipment Description	Parameter Measured
MetOne BAM-1020 FRM Continuous Particulate Monitor	PM <sub>2.5</sub> Concentrations
MetOne BAM-1020 Continuous Particulate Monitor	PM <sub>10</sub> Concentrations
MetOne BAM-1020 Continuous Particulate Monitor	TSP Concentrations
TEI 42C	Oxides of Nitrogen
Teledyne API 102A	Sulphur Dioxide
MetOne 130 Rain/Snow Gauge	Precipitation
MetOne Wind Sensor	Wind Speed
	Wind Direction
MetOne Ambient Temperature Sensor	Ambient Temperature



**Figure 3-1 Inlets on the top of WSP's Lagoon monitor**

### **3.1 SITE VISIT NOTES**

A summary of site visit notes for each of the monitors is provided in this section.

#### **3.1.1 NO<sub>x</sub> MONITORING**

The NO<sub>x</sub> monitor underwent monthly calibration on December 7<sup>th</sup> and had 100% uptime.

#### **3.1.2 SO<sub>2</sub> MONITORING**

The SO<sub>2</sub> monitor underwent monthly calibration on December 7<sup>th</sup> and had 100% uptime.

#### **3.1.3 PM MONITORING**

All BAM monitors underwent monthly calibration on December 7<sup>th</sup> and had 100% update. The annual, manufacturer recommended 72-hour zero sequence performed on the PM2.5 analyzer extended into December 1st and 2nd.

#### **3.1.4 METEOROLOGICAL MONITORING**

All meteorological sensors had 100% uptime for the month of December.

### **3.2 MONITORING RESULTS AND TRENDS**

The following wind rose (Figure 3-3) illustrates the frequency of wind speed by wind direction for the month of December 2017. Table 3-2 summarizes the hourly and daily concentrations recorded in December 2017. Figure 3-4 graphically illustrates the time series for hourly concentrations as well as

wind speed and direction, while Figure 3-5 shows daily average concentrations recorded during December 2017 for the pollutants listed in Table 3-2.

There was no exceedance of both the 24-hour TSP ( $100 \mu\text{g}/\text{m}^3$ ) and PM<sub>2.5</sub> ( $30 \mu\text{g}/\text{m}^3$ ) AAQO. Historically in December, there was 1 exceedance of the 24-hour TSP AAQO in 2011 and 2015 and no exceedances of the 24-hour PM<sub>2.5</sub> AAQO.

Since flooding in 2013, the Municipal District has built up stockpiles of dirt on the far western edge of the wastewater treatment facility. During the summer of 2016, the Municipal District has planted grass seed on these stockpiles in an effort to reduce the amount of fugitive dust generated. Figure 3-2 shows the extent of the grass planted by the MD.



**Figure 3-2 Grass planted on the stockpiles near the Lagoon monitor. Photo taken December 12, 2016.**

The wind rose (Figure 3-3) indicates that the winds predominantly came from the west, following the general orientation of the valley. As typical of the wind characteristics at the Lagoon site, the westerly winds were more intense (higher than 20 km/hr) than the easterly winds.

**Table 3-2 Summary of December 2017 data at Lagoon**

Parameter	Objectives		Station	Exceedances		Monthly Average	1-hour					24-hour		Operational Time (Percent)
	1-hr	24-hr		1-hr	24-hr		Maximum Concentration/Meteorological Variable	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration/Meteorological Variable	Day	
NO <sub>2</sub> (ppb)	159	-	Lagoon	0	-	5.5	34.7	22	15	1.3	86.2	16.0	22	100.0
SO <sub>2</sub> (ppb)	172	48	Lagoon	0	0	0.4	5.3	4	4	18.1	292.6	1.5	20	100.0
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	80	30	Lagoon	0	0	5.3	27.5	30	21	5.9	247.4	11.6	30	100.0
PM <sub>10</sub> (µg/m <sup>3</sup> )	-	-	Lagoon	-	-	33.1	407.8	10	7	27.3	256.8	87.1	17	100.0
TSP (µg/m <sup>3</sup> )	-	100	Lagoon	-	0	39.6	688.5	16	21	34.7	257.8	99.6	17	100.0
Temperature (°C)	-	-	Lagoon	-	-	-8.2	9.5	10	7	27.3	256.8	4.8	10	100.0
Wind Speed (km/hr)/Direction (degrees)	-	-	Lagoon	-	-	19.4	52.2/W	17	10	52.2	254.0	36.4/WSW	17	100.0
Precipitation (mm)	-	-	Lagoon	-	-	0.0	0.3					0.0	21	100.0

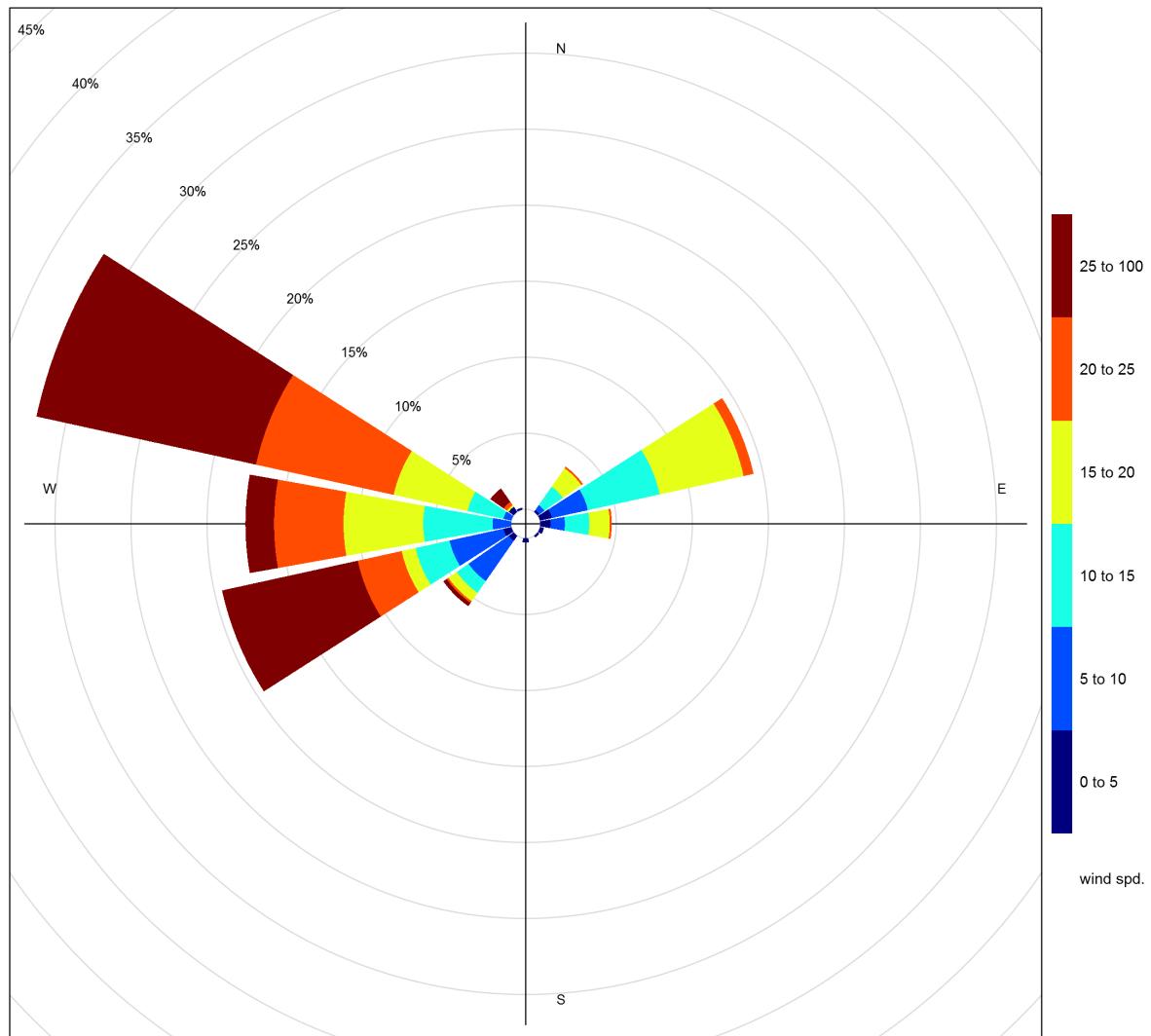
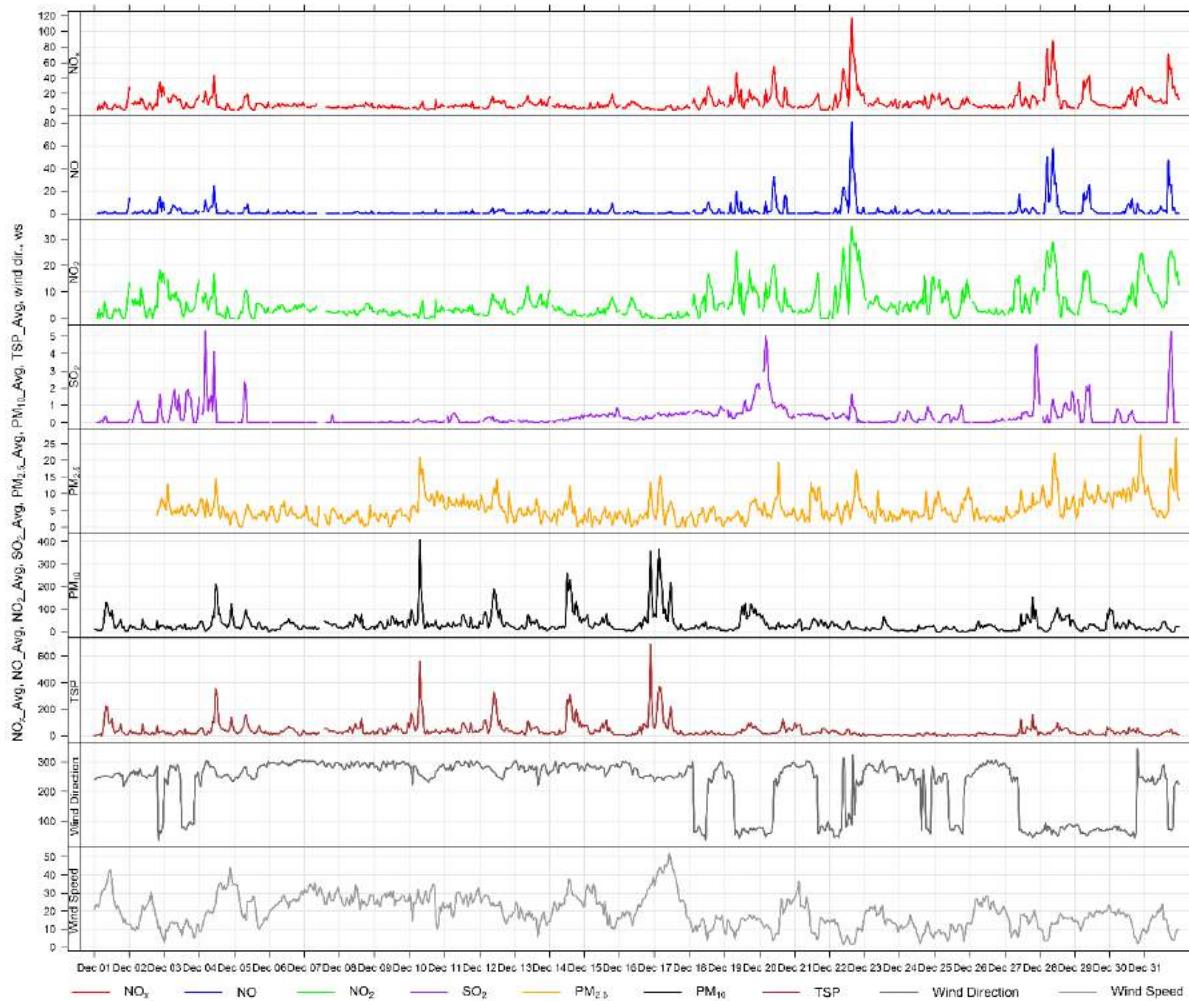
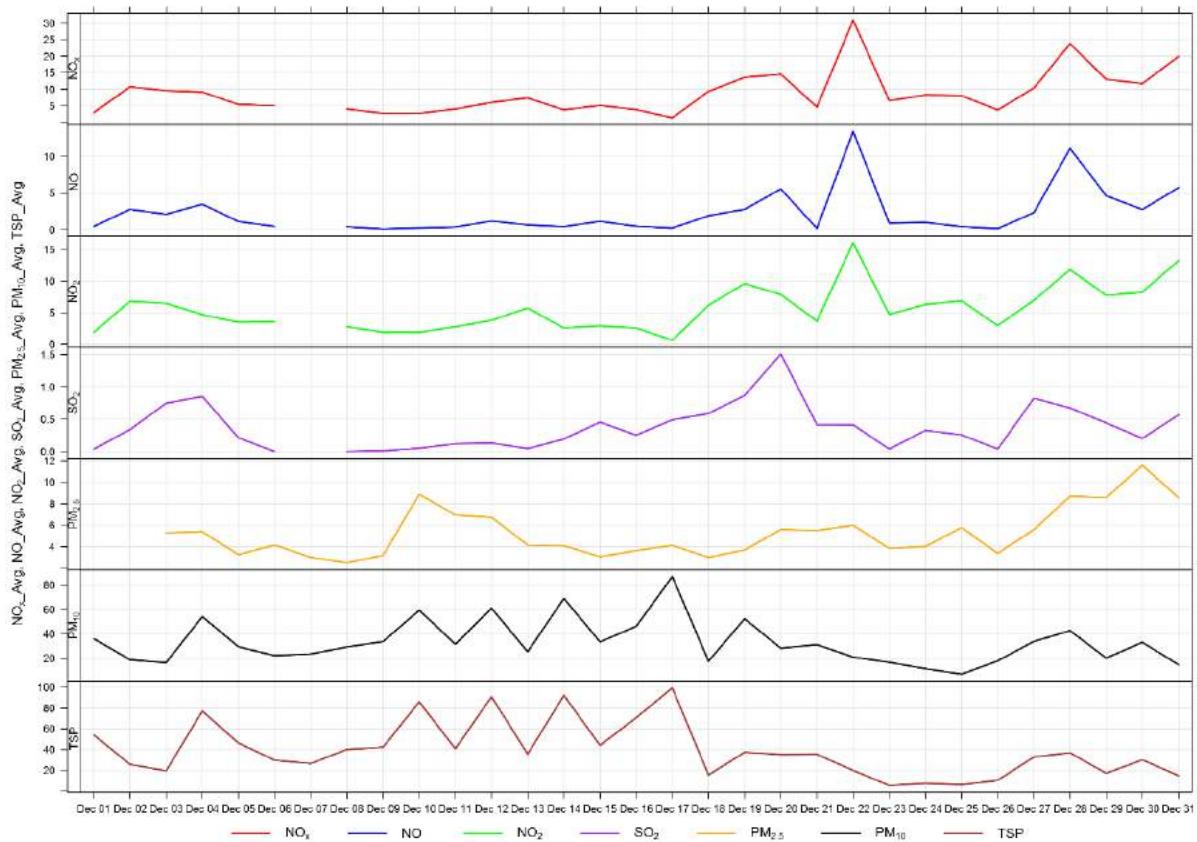


Figure 3-3 December 2017 wind rose from the Lagoon Station



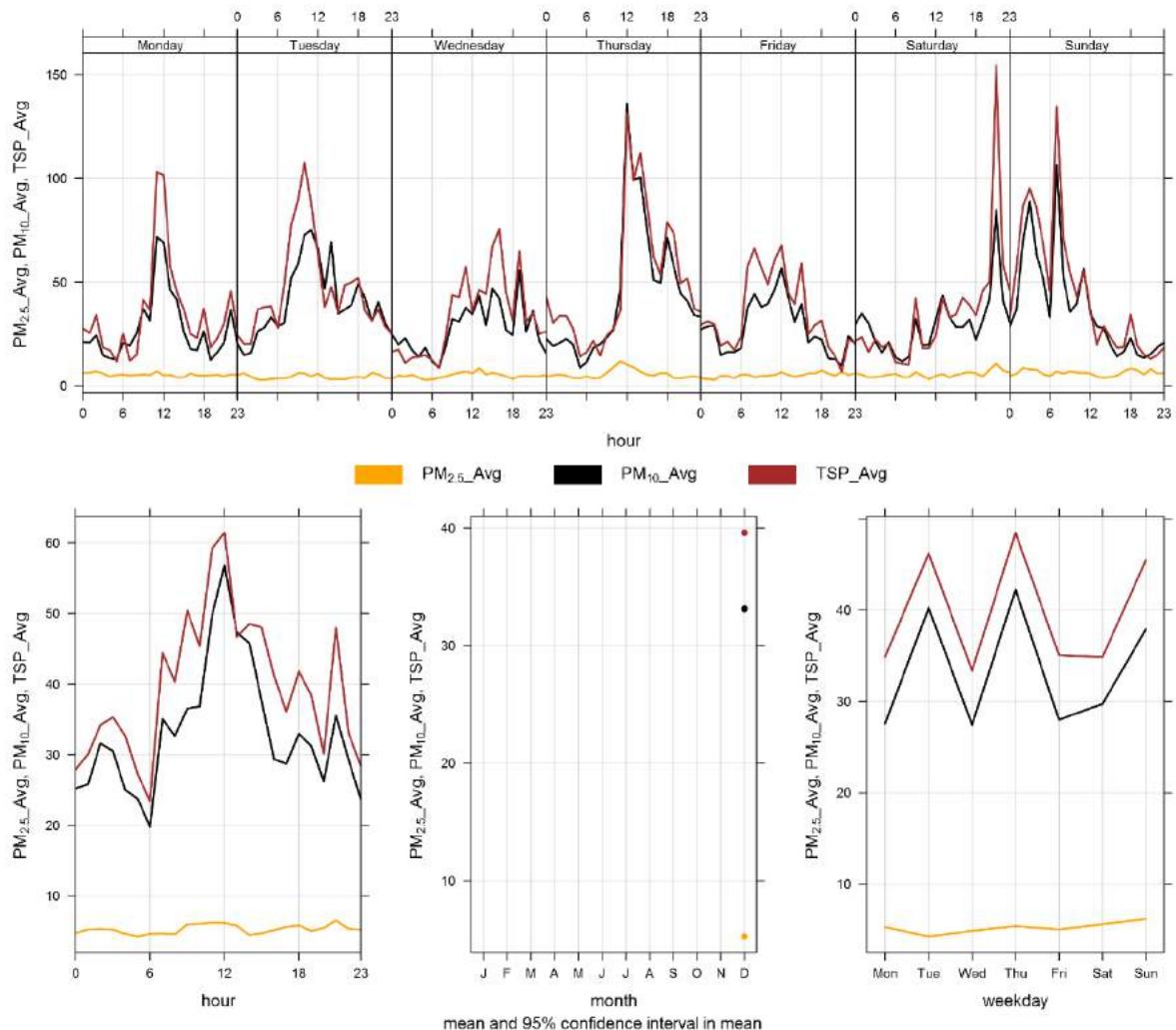
**Figure 3-4 1-hour concentrations of NO<sub>x</sub>, SO<sub>2</sub>, particulate matter, wind direction and wind speed at the Lagoon monitor**



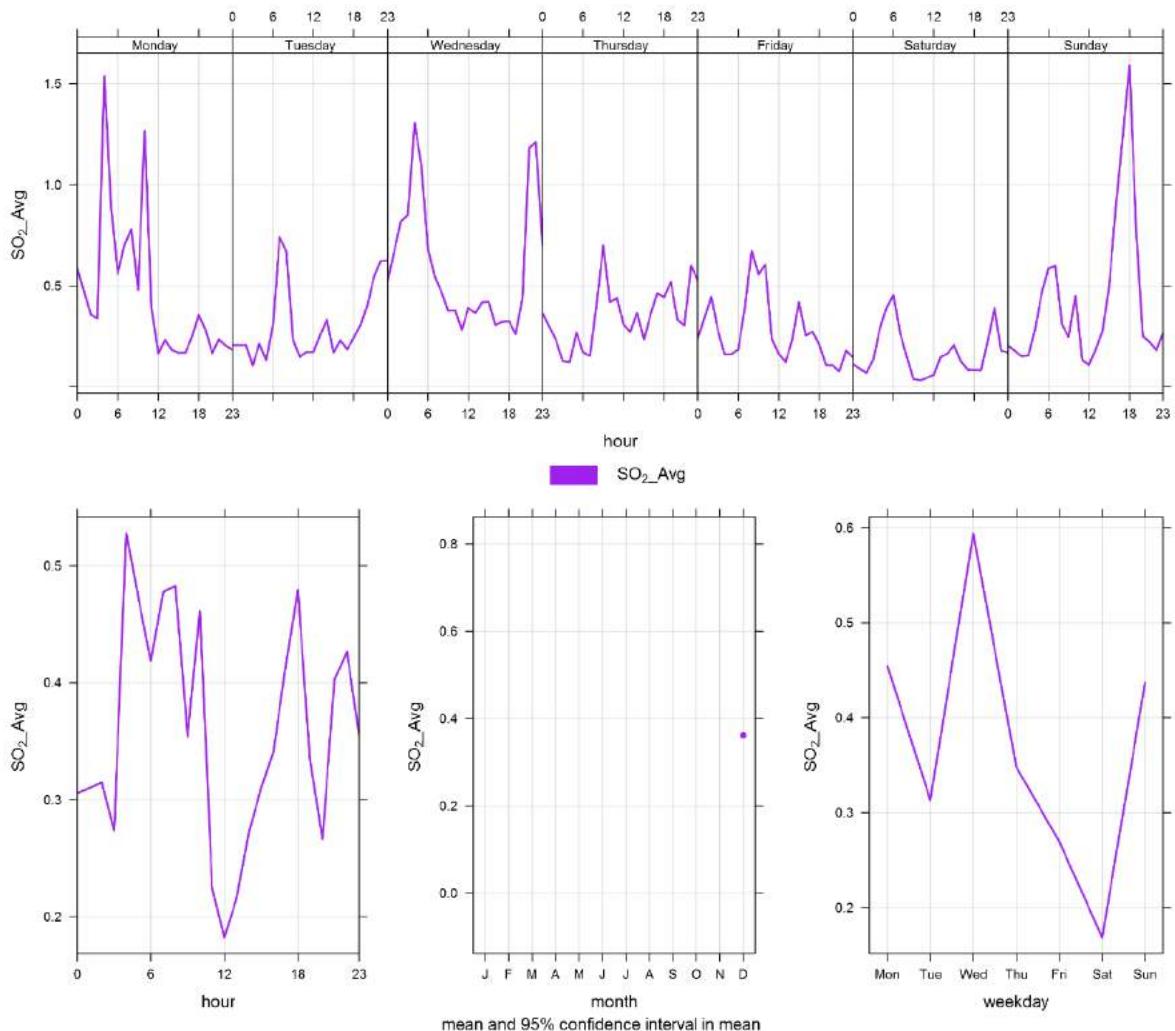
**Figure 3-5 24-hour concentrations of NO<sub>x</sub>, SO<sub>2</sub>, and particulate matter at the Lagoon monitor**

Figure 3-6 through Figure 3-8 show the variation in concentrations over various time averaging periods for PM, SO<sub>2</sub> and NO<sub>x</sub>. The particulate matter plot in Figure 3-6 shows that PM<sub>10</sub> and TSP concentrations tended to rise through the morning before peaking mid-day and decreasing during the afternoon and evening. PM<sub>10</sub> and TSP are generally associated with dust from fugitive sources.

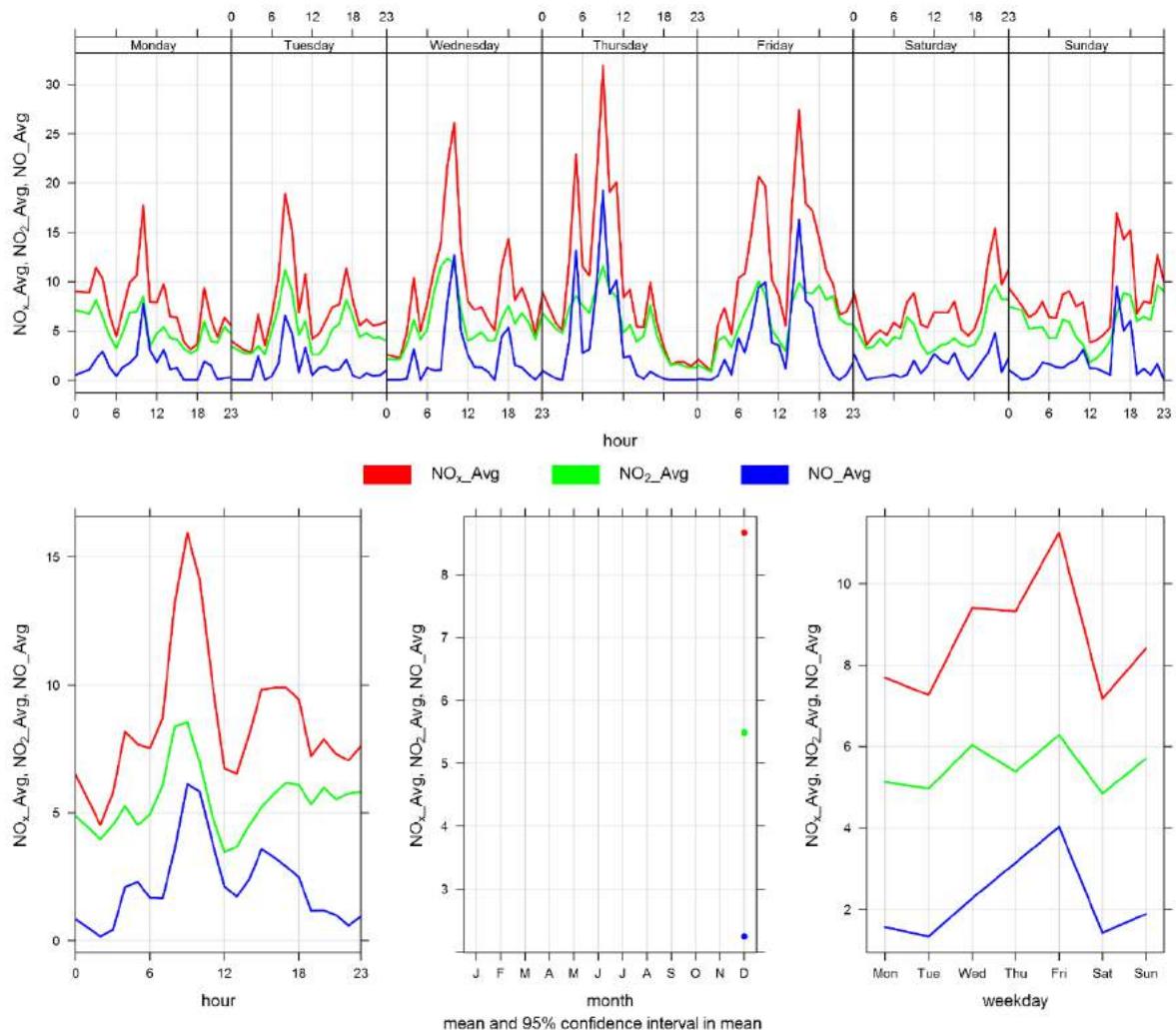
Figure 3-7 shows the variation of SO<sub>2</sub> over various time periods. SO<sub>2</sub> concentrations were very low in December. Figure 3-8 shows the variation of NO<sub>x</sub>, NO and NO<sub>2</sub>, with the peak of all three pollutants occurring in the morning between 6 am and noon. This may be indicative of a peak in traffic.



**Figure 3-6 Lagoon Monitor particulate matter time variation**



**Figure 3-7 Lagoon Monitor  $\text{SO}_2$  time variation**



**Figure 3-8 Lagoon Monitor NO<sub>x</sub> time variation**

# 4 WINDRIDGE STATION

## 4.1 SITE VISIT NOTES

The Windridge station contains TSP, PM<sub>10</sub>, and PM<sub>2.5</sub> analyzers only. This section provides a summary of the monitoring activities for the Windridge ambient air quality station, including: a table of instrumentation (Table 4-1), site visit notes, wind rose (Figure 4-3) and tables and graphs illustrating the monitoring results for December 2017.

All of the monitors comply with Alberta Environment and Parks Air Monitoring Directive (2016).

**Table 4-1 Equipment at the Windridge monitoring location**

Equipment Description	Parameter Measured
MetOne BAM-1020 FRM Continuous Particulate Monitor	PM <sub>2.5</sub> Concentrations
MetOne BAM-1020 Continuous Particulate Monitor	PM <sub>10</sub> Concentrations
MetOne BAM-1020 Continuous Particulate Monitor	TSP Concentrations

## 4.2 SITE VISIT NOTES

All BAM monitors were calibrated on December 11<sup>th</sup>. Also, a 72-hour zero sequence was performed on the PM<sub>2.5</sub> analyzer on December 1<sup>st</sup> and 2<sup>nd</sup>. The operation time for the all BAM monitors was 100% in December.

## 4.3 MONITORING RESULTS AND TRENDS

The following wind rose (Figure 4-3) illustrates the frequency of wind speed by wind direction for the month of December 2017. Table 4-2 summarizes the hourly and daily concentrations recorded in December 2017. Figure 4-4 illustrates the time series for hourly PM.

There were 7 exceedances of the 24-hour TSP (100 µg/m<sup>3</sup>) and no exceedance of the PM<sub>2.5</sub> (30 µg/m<sup>3</sup>) AAAQO.

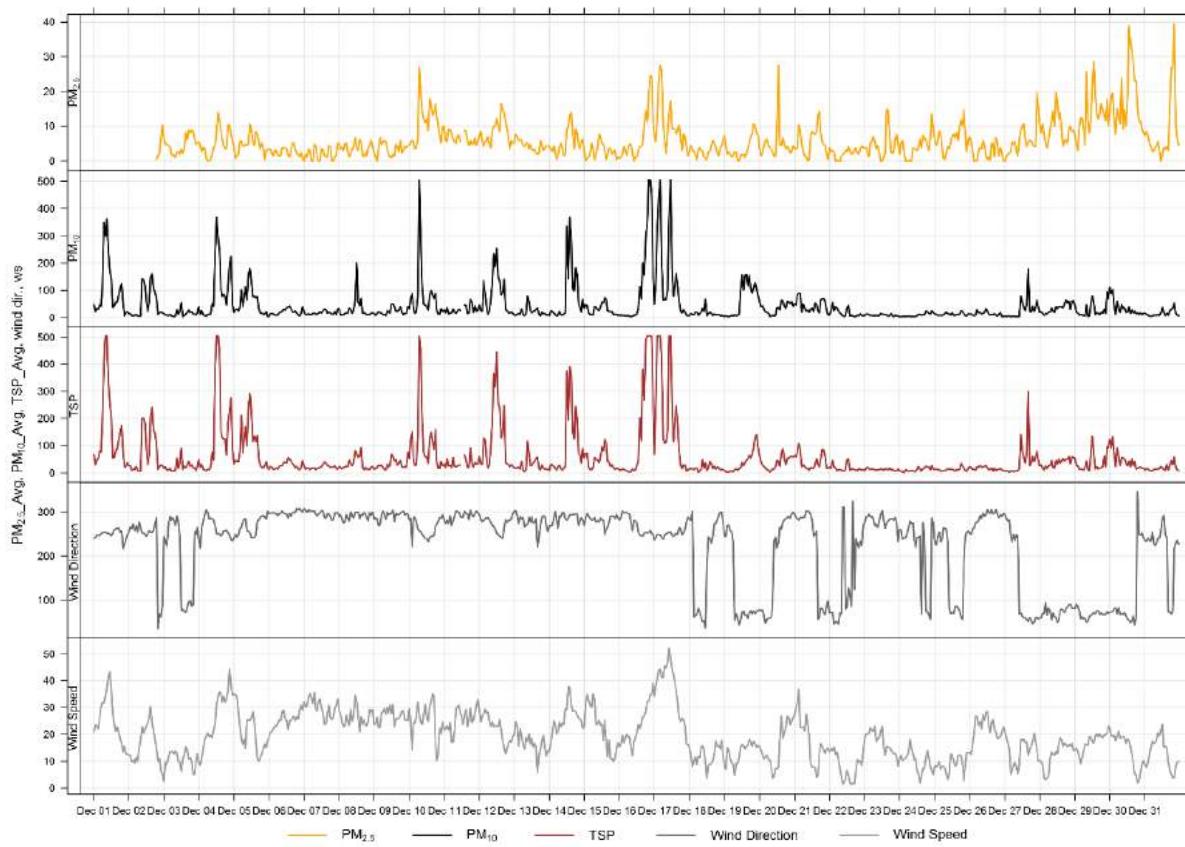
Based on the limited data record at this station, it appears that PM concentrations at this station are highest during high wind speed events from the WSW. Historically, December wind speeds tend to be amongst the highest wind speeds recorded over the year. The wind rose (Figure 4-3) shows the 7 days exceeding the 24-hour TSP Objective. During the exceedance days, the winds were predominantly from the WSW and over 20 km/hr.

**Table 4-2 Summary of December 2017 data at the Windridge Station**

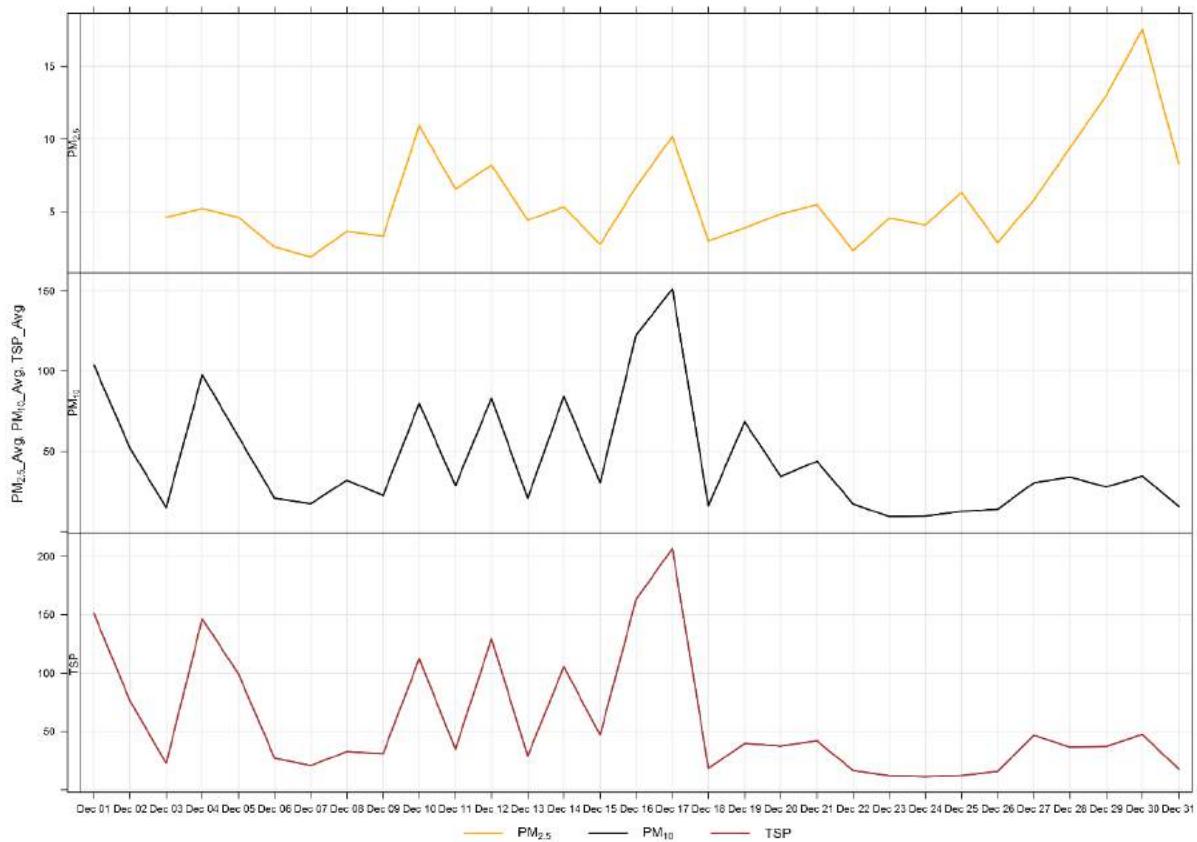
Parameter	Guideline / Objective		Station	Exceedances		Monthly Average	Maximum 1-hour				Maximum 24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr		Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	80	30	Windridge	0	0	5.9	39.4	31	20	3.9	216.5	17.5	30	100.0
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	-	-	Windridge	-	-	44.8	504.9	16	20	32.3	252.9	151.2	17	100.0
TSP ( $\mu\text{g}/\text{m}^3$ )	-	100	Windridge	-	7	59.0	504.0	1	22	13.0	234.9	206.7	17	100.0

**Table 4-3 Days exceeding the Guideline for TSP at the Windridge Monitor**

Date	TSP (ug/m <sup>3</sup> )	PM <sub>2.5</sub> (ug/m <sup>3</sup> )	Average Wind Direction (degrees)	Average Wind Speed (km/hr)	Average RH (%)	Root Cause (Provided by Lafarge)
<b>Windridge</b>						
12/1/2017	151.2	-	249.8	25.3	40.8	high wind event
12/4/2017	146.4	-	258.5	26.1	50.9	high wind event
12/10/2017	112.3	-	260.0	25.0	36.0	high wind event
12/12/2017	129.3	-	272.5	22.3	42.1	high wind event
12/14/2017	105.5	-	285.7	25.5	65.4	high wind event
12/16/2017	163.2	-	265.9	23.1	50.5	high wind event
12/17/2017	206.7	-	250.1	36.4	47.2	high wind event
<b>Total # of Exceedances</b>	<b>7</b>	<b>0</b>				



**Figure 4-1 1-hour particulate matter concentrations recorded at the Windridge monitor**



**Figure 4-2 24-hour particulate matter concentrations at the Windridge monitor**

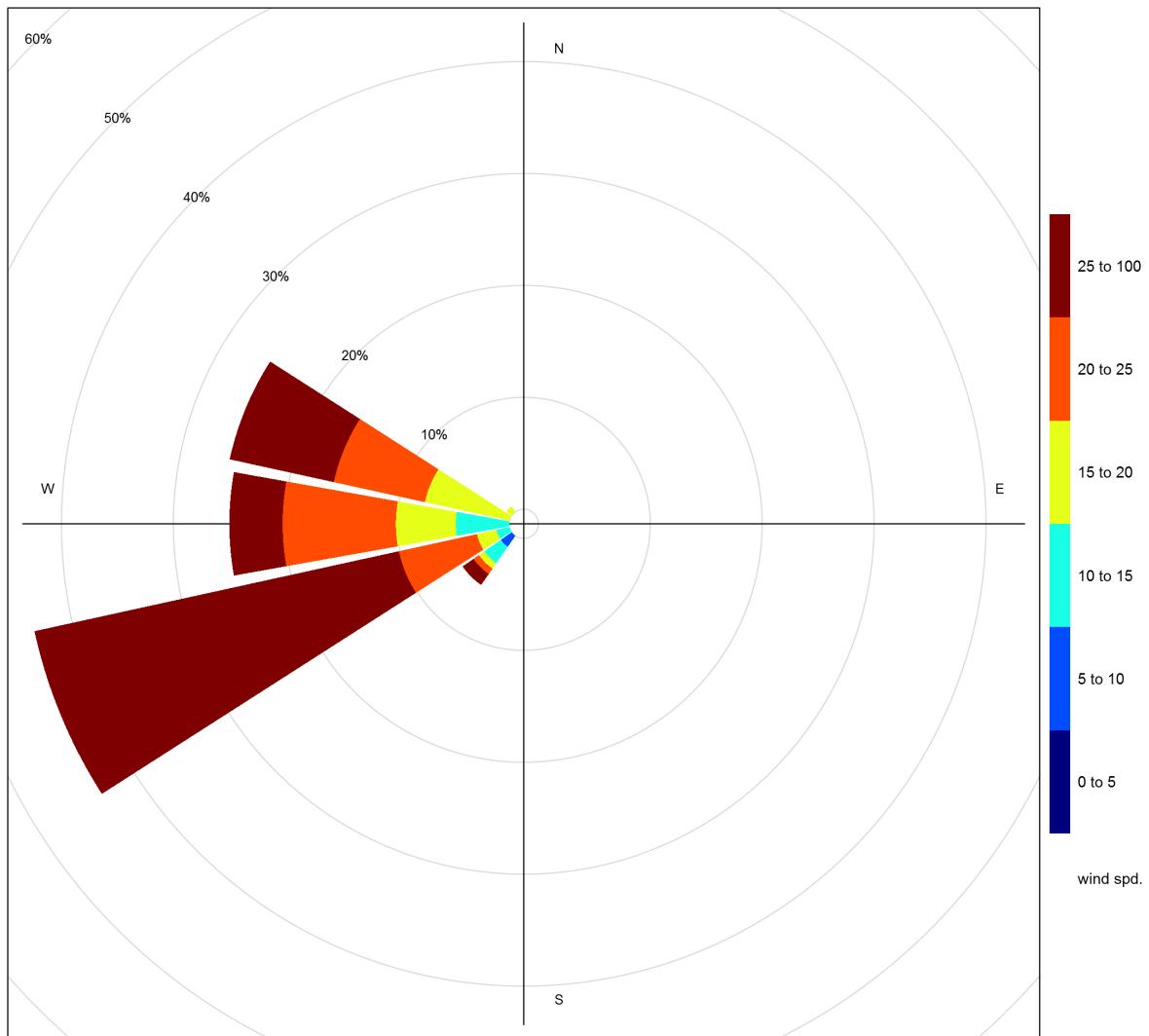
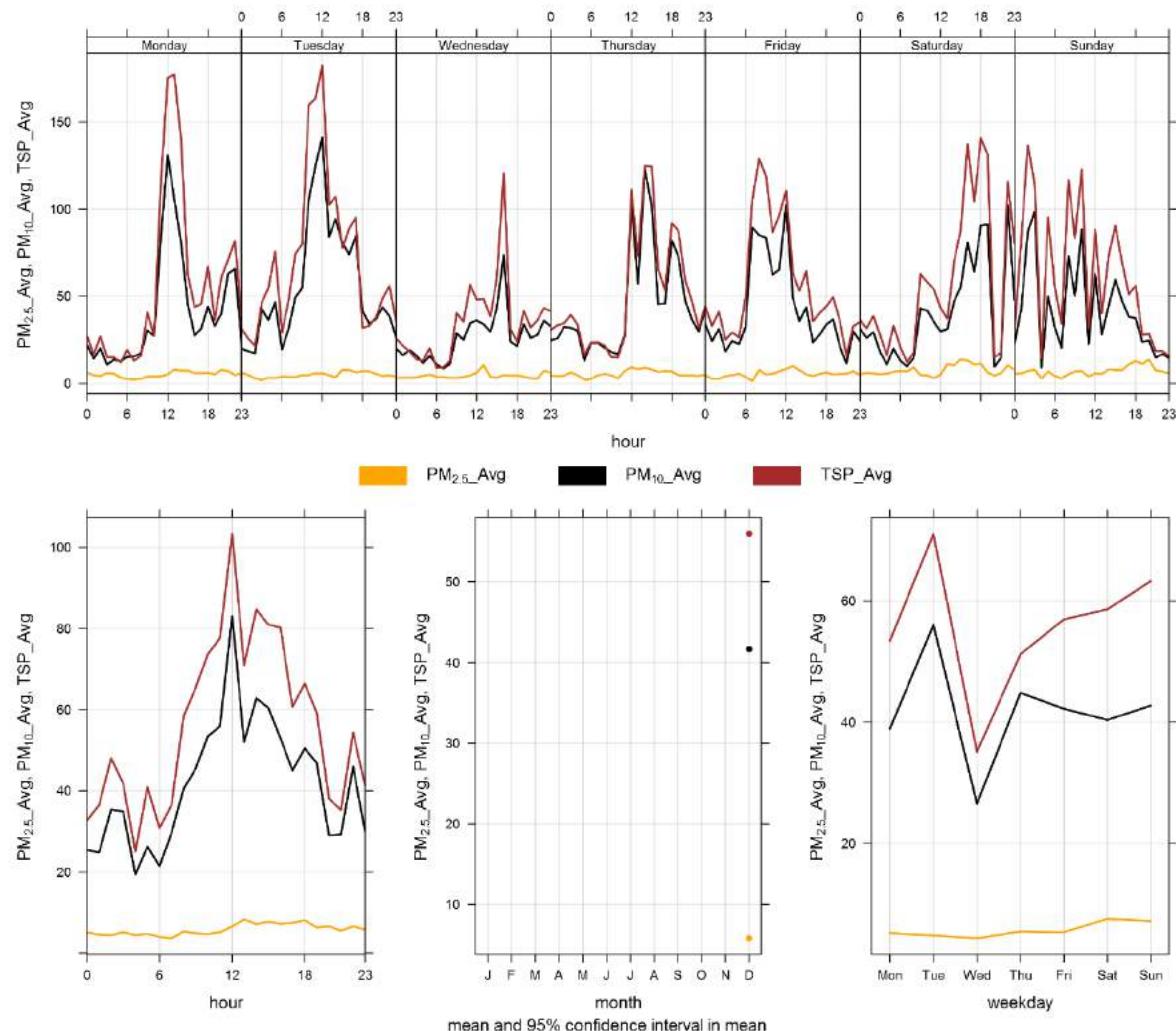


Figure 4-3 Wind rose for TSP exceedance days recorded at the Windridge Station

Figure 4-4Figure 7-5 illustrates the hourly PM concentrations recorded at the Windridge monitor, averaged over different time periods. The plot across the top shows the variation of PM over the course of a week, while the bottom three plots show the changes in PM over the course of a day, month and weekday, respectively. Figure 4-4 is based on data collected during December 2017 and indicates a diurnal pattern that is similar to the Lagoon station and will be analyzed as the data record is added to at this station.



**Figure 4-4 Windridge particulate matter time variation**

# 5 WEST GRIMM

## 5.1 SITE VISIT NOTES

Table 5-1 indicates the equipment that is installed at the West monitoring location. During the month of December, the West GRIMM had 100 % uptime.

**Table 5-1 Equipment at the West monitoring location**

Equipment Description	Parameter Measured
GRIMM 365 Continuous Particulate Monitor	PM <sub>2.5</sub> , PM <sub>10</sub> , TSP Concentrations

## 5.2 MONITORING RESULTS AND TRENDS

The West GRIMM was installed in its current location in order to monitor “background” PM concentrations since the predominant wind pattern is from west to east in the valley. As indicated in Figure 3-3, the majority of winds came from the west during December. Table 5-2 summarizes the maximum 1-hour and 24-hour concentrations recorded over the course of the month.

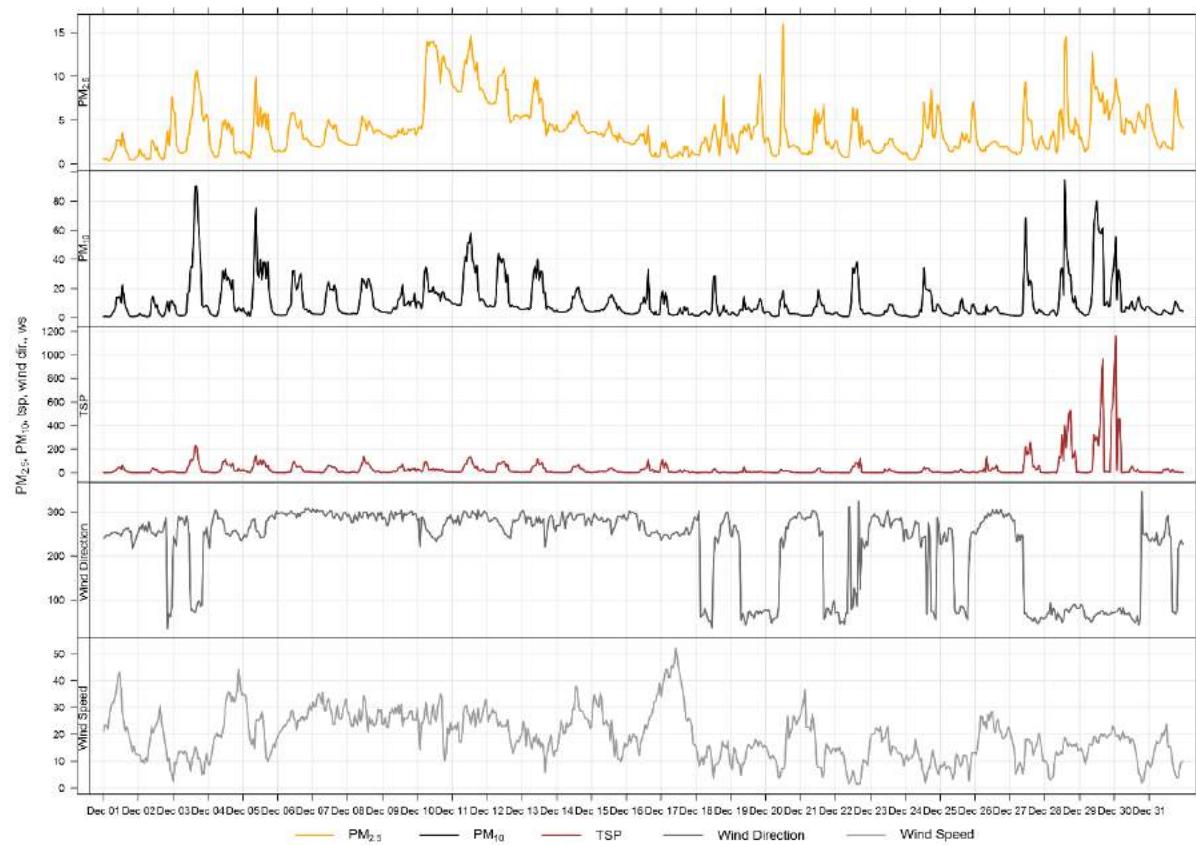
Figure 5-1 and Figure 5-2 show the hourly and daily PM<sub>2.5</sub>, PM<sub>10</sub> and TSP concentrations recorded over the month. There were 3 and 0 exceedances of the 24-hour TSP (100 µg/m<sup>3</sup>) and PM<sub>2.5</sub> (30 µg/m<sup>3</sup>) Guidelines, respectively. Exceedances of the TSP Guideline at the West monitor in December are rare, with a maximum of 4 days exceeding the Guideline in 2012, and all other years reporting zero exceedances.

**Table 5-2 Summary of December 2017 data at the West GRIMM**

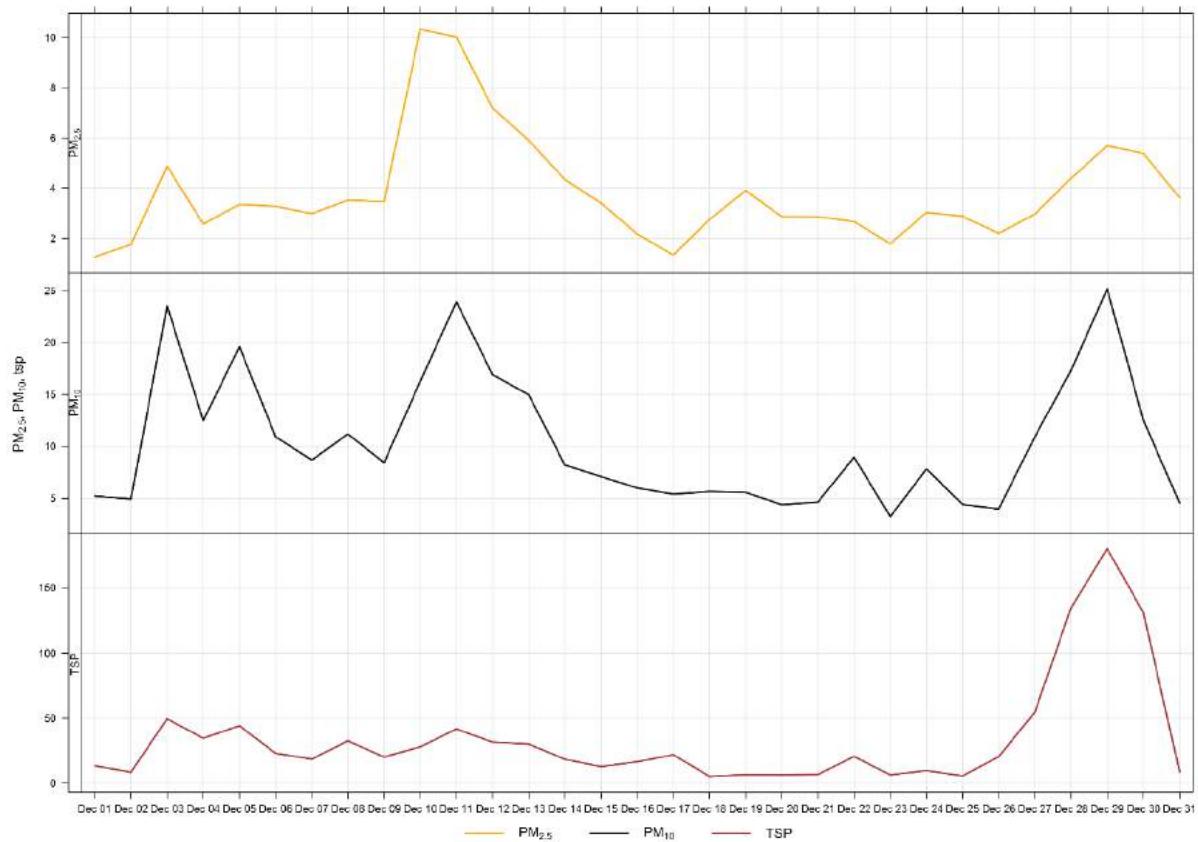
Parameter	Guideline		Station	Exceedances		Monthly Average	Maximum 1-hour				Maximum 24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr		Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	80	30	West	0	0	3.8	16.0	20	12	7.2	218.3	10.3	10	100.0
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	-	-	West	-	-	10.4	94.7	28	14	18.7	77.9	25.1	29	100.0
TSP ( $\mu\text{g}/\text{m}^3$ )	-	100	West	-	3	33.7	1160.6	30	1	19.6	72.7	180.1	29	100.0

**Table 5-3 Days exceeding the Guideline for TSP at the West GRIMM**

Date	TSP (ug/m <sup>3</sup> )	PM <sub>2.5</sub> (ug/m <sup>3</sup> )	Average Wind Direction (degrees)	Average Wind Speed (km/hr)	Average RH (%)	Root Cause (Provided by Lafarge)
West						
12/28/2017	134.6	-	72.9	12.5	76.1	
12/29/2017	180.1	-	68.4	17.1	72.6	
12/30/2017	131.0	-	67.8	14.3	68.8	
<b>Total # of Exceedances</b>	<b>3</b>	<b>0</b>				
<b>Maximum # of Exceedances (December)</b>	<b>4 (2012)</b>	<b>1 (2010)</b>				
<b>Average # of Exceedances (December)</b>	<b>1</b>	<b>0</b>				
<b>Minimum # of Exceedances (December)</b>	<b>0 (2010, 2014 ~ 2016)</b>	<b>0 (2011 ~ 2016)</b>				

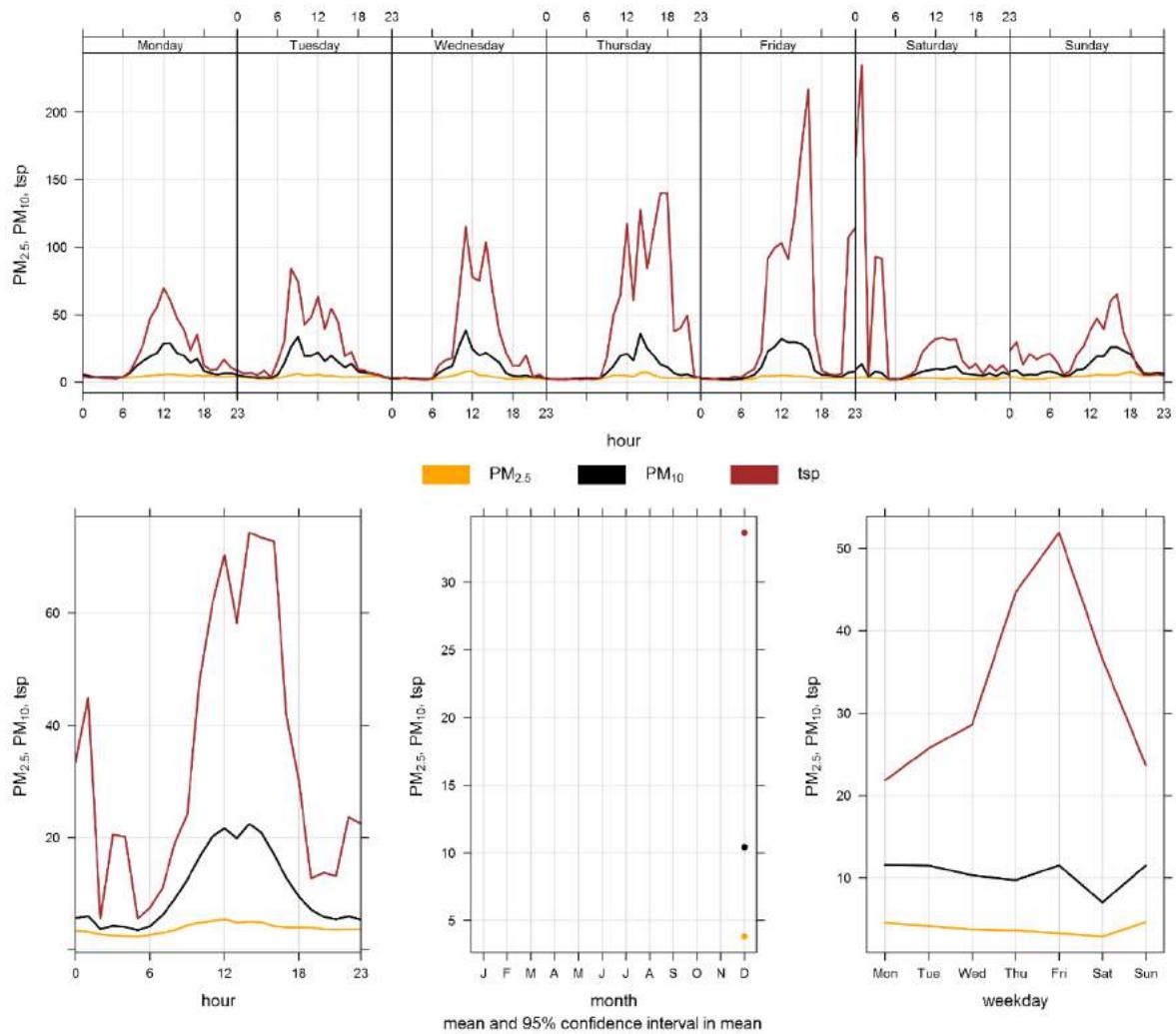


**Figure 5-1 1-hour particulate matter concentrations at the West monitor**



**Figure 5-2 24-hour particulate matter concentrations at the West monitor**

Figure 5-3 illustrates the hourly PM concentrations recorded at the West monitor, averaged over different time periods. The plot across the top shows the variation of PM over the course of a week, while the bottom three plots show the changes in PM over the course of a day, month and weekday, respectively. Figure 5-3 is based on data collected during December 2017 and indicates a strong relationship between TSP and hours which Lafarge is typically operational. Due to the proximity of the West monitor to the highway, the daily variations in PM may also be a result of higher traffic volume during daylight hours.



**Figure 5-3 West particulate matter time variation**

# 6 BERM GRIMM

## 6.1 SITE VISIT NOTES

This station was found to be in good operating condition and no repairs were required during the month. During the month of December, the Berm GRIMM had 98.5% uptime due to 11 hours of instrument error.

**Table 6-1 Equipment at the Berm monitoring location**

Equipment Description	Parameter Measured
GRIMM 365 Continuous Particulate Monitor	PM <sub>2.5</sub> , PM <sub>10</sub> , TSP Concentrations

## 6.2 MONITORING RESULTS AND TRENDS

The Berm monitor was placed at its current location as a result of the dispersion modelling conducted for the facility in 2009. Figure 5-1 and Figure 5-2 show the hourly and daily PM<sub>2.5</sub>, PM<sub>10</sub> and TSP concentrations recorded over the month. Table 5-2 summarizes the maximum 1-hour and 24-hour PM concentrations recorded during the month, and Table 5-3 summarizes the recorded exceedances.

In December, there were 11 and 0 exceedances of the 24-hour TSP (30 µg/m<sup>3</sup>) and PM<sub>2.5</sub> (100 µg/m<sup>3</sup>) Guidelines, respectively. Historically, the Berm monitor records an average of 18 and 0 exceedances of the 24-hour TSP and PM<sub>2.5</sub> Guidelines respectively, during the month of December. The largest number of TSP exceedances recorded during December occurred in 2011, which had 24 days that exceeded the Guideline. The fewest number of TSP exceedances, prior to this year, was recorded during December 2015, which had 14 days that exceeded the Guideline. The largest number of PM<sub>2.5</sub> exceedances recorded during December occurred in 2010, which had 2 day that exceeded the Guideline.

It should also be noted that the GRIMM monitors become more conservative in the reported PM concentrations as the size fraction increases. The PM<sub>2.5</sub> size fraction has been shown to match other regulatory approved PM<sub>2.5</sub> monitors, but the TSP concentrations recorded by the GRIMM tend to be higher than regulatory approved monitors (Levelton, 2015).

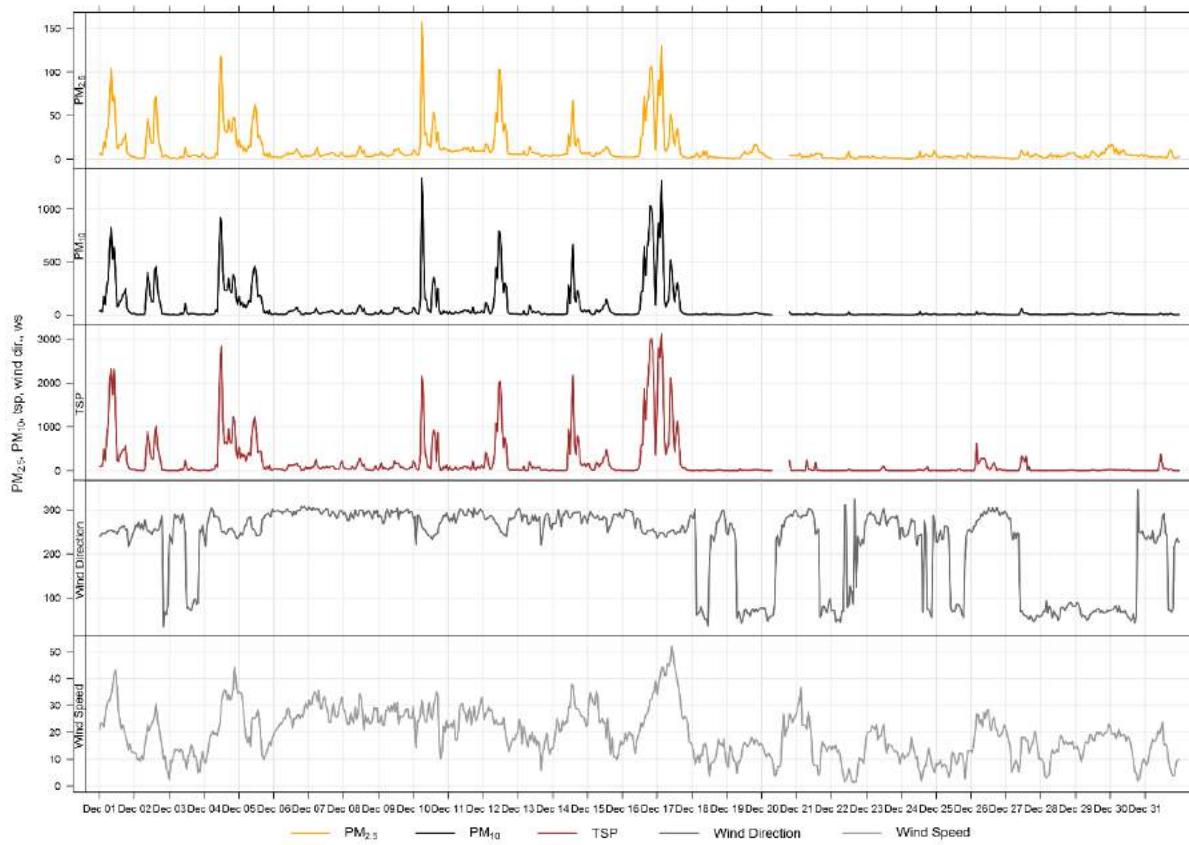
The Berm monitor is located along a ridge at the edge of the Lafarge property and is in an area where on-site trucks drive through site, which can create fugitive dust. Quarry blasting also has the potential to impact short term PM immediately following a blast. High TSP concentrations in the month generally corresponded to the high wind speed events recorded in December.

**Table 6-2 Summary of December 2017 data at the Berm GRIMM**

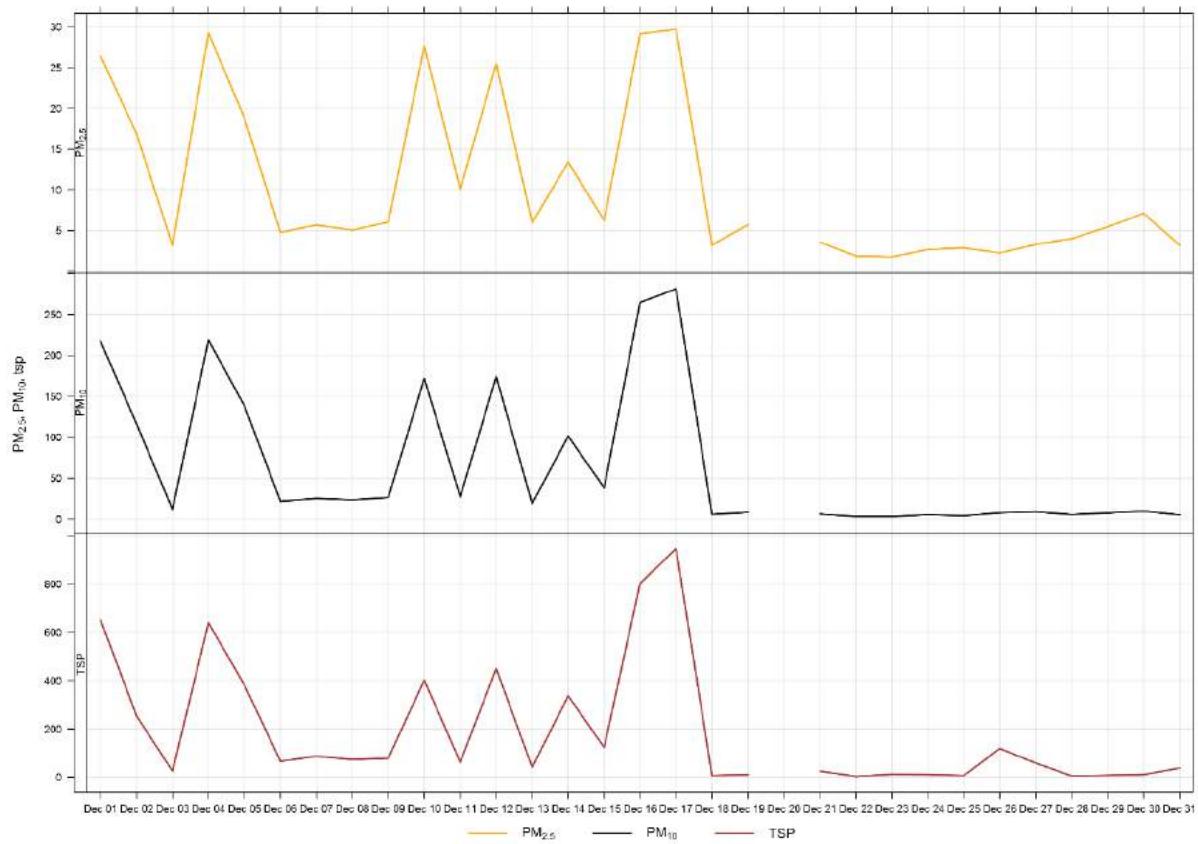
Parameter	Guideline		Station	Exceedances		Monthly Average	Maximum 1-hour				Maximum 24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr		Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	80	30	Berm	12	0	10.2	157.7	10	6	32.1	261.4	29.7	17	98.5
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	-	-	Berm	-	-	64.3	1293.7	10	6	32.1	261.4	281.2	17	98.5
TSP ( $\mu\text{g}/\text{m}^3$ )	-	100	Berm	-	11	188.4	3115.5	17	3	43.9	248.0	946.8	17	98.5

**Table 6-3 Days exceeding the Guideline for TSP at the Berm Monitor**

Date	TSP (ug/m <sup>3</sup> )	PM <sub>2.5</sub> (ug/m <sup>3</sup> )	Average Wind Direction (degrees)	Average Wind Speed (km/hr)	Average RH (%)	Root Cause (Provided by Lafarge)
<b>Berm</b>						
12/1/2017	651.4	-	249.8	25.3	40.8	high wind event
12/2/2017	254.1	-	260.2	16.3	54.9	
12/4/2017	639.4	-	258.5	26.1	50.9	high wind event
12/5/2017	381.7	-	260.5	21.0	44.9	high wind event
12/10/2017	401.9	-	260.0	25.0	36.0	high wind event
12/12/2017	449.9	-	272.5	22.3	42.1	high wind event
12/14/2017	336.7	-	285.7	25.5	65.4	high wind event
12/15/2017	123.8	-	280.8	22.3	58.6	high wind event
12/16/2017	802.0	-	265.9	23.1	50.5	high wind event
12/17/2017	946.8	-	250.1	36.4	47.2	high wind event
12/26/2017	118.7	-	288.2	22.2	63.0	high wind event
<b>Total # of Exceedances</b>	<b>11</b>	<b>0</b>				
<b>Maximum # of Exceedances (December)</b>	<b>24 (2011)</b>	<b>2 (2010)</b>				
<b>Average # of Exceedances (December)</b>	<b>18</b>	<b>0</b>				
<b>Minimum # of Exceedances (December)</b>	<b>14 (2015)</b>	<b>0 (2012, 2013, 2015, 2016)</b>				



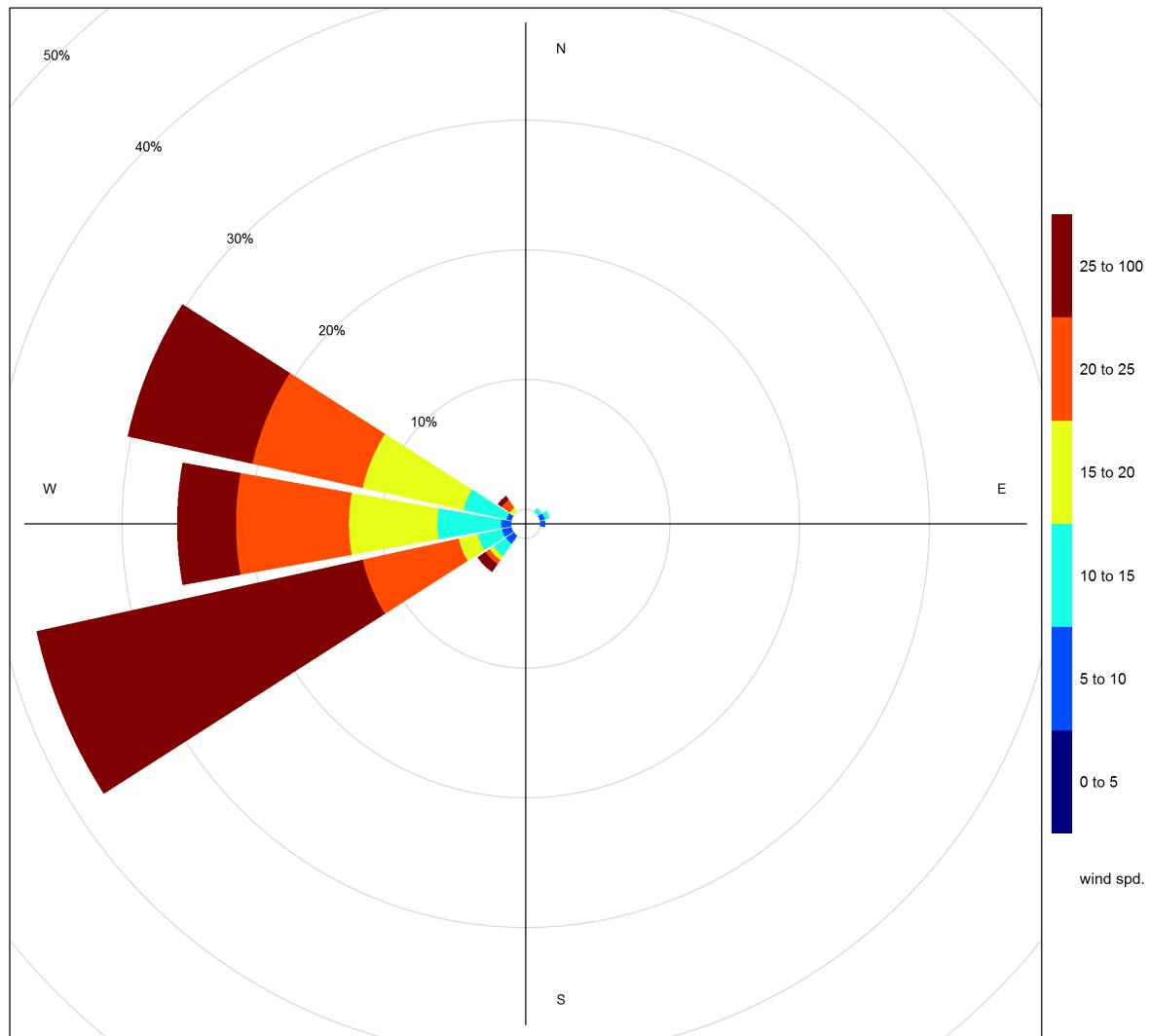
**Figure 6-1 1-hour particulate matter concentrations recorded at the Berm monitor**



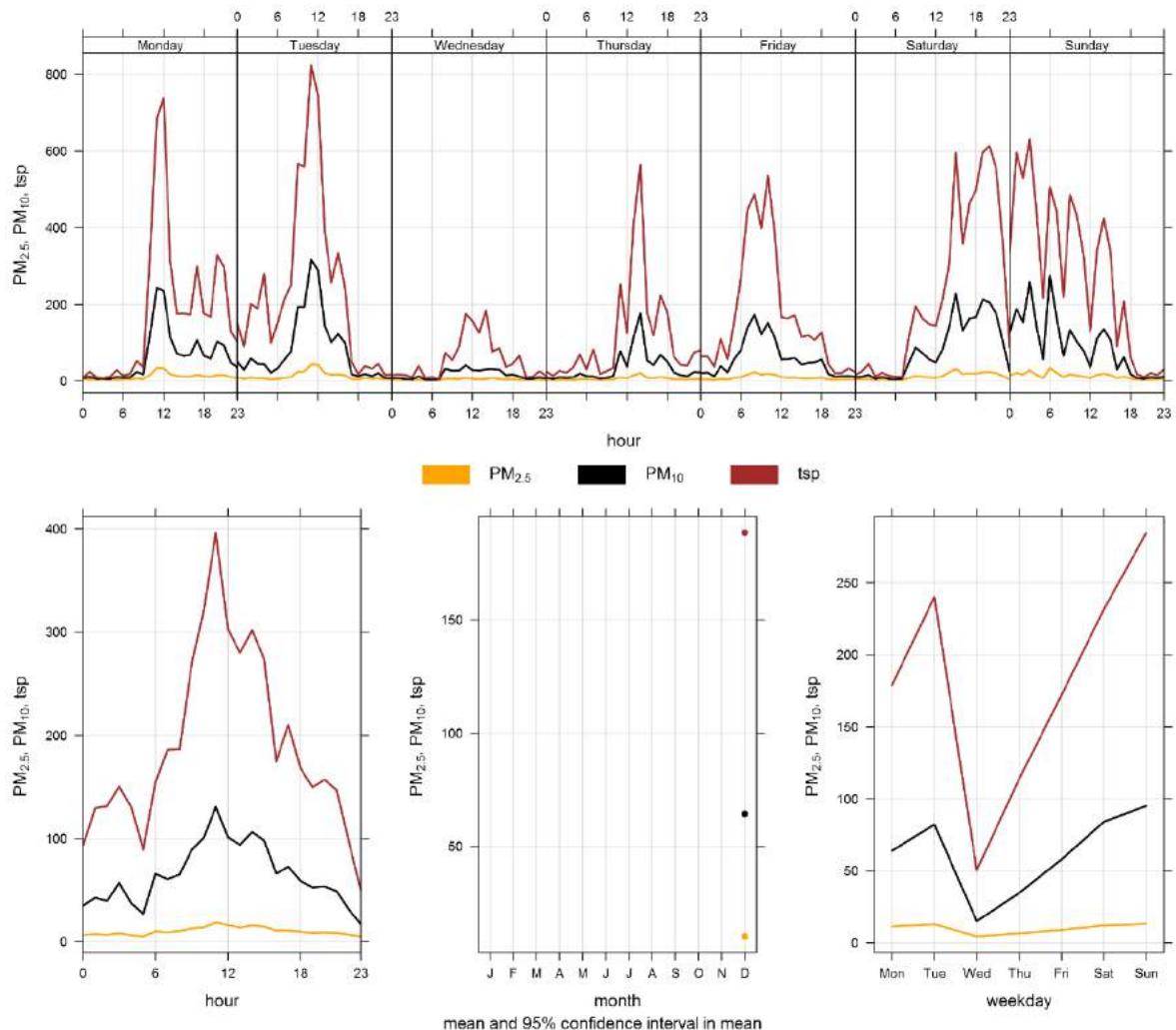
**Figure 6-2 24-hour particulate matter concentrations recorded at the Berm monitor**

Figure 5-3 shows the wind rose for the 11 days which recorded a TSP exceedance. This wind rose shows that the winds predominantly come from the west and over 25 km/hr.

Figure 6-4 shows the variation of PM recorded at the Berm monitor over various time averaging periods. Similar to the Entrance monitor, the Berm, on average, records elevated PM concentrations during standard operating hours of Lafarge.



**Figure 6-3 Wind rose for TSP exceedance days recorded at the Berm GRIMM**



**Figure 6-4 Berm particulate matter time variation**

# 7

# ENTRANCE GRIMM

## 7.1

### SITE VISIT NOTES

This station was found to be in good operating condition and no repairs were required during the month. During the month of December, the Entrance GRIMM had 100% uptime.

**Table 7-1 Equipment at the Entrance monitoring location**

Equipment Description	Parameter Measured
GRIMM 365 Continuous Particulate Monitor	PM <sub>2.5</sub> , PM <sub>10</sub> , TSP Concentrations

## 7.2

### MONITORING RESULTS AND TRENDS

The Entrance monitor was placed at its current location as a result of dispersion modelling conducted in 2009. This area was indicated as being the area where the maximum PM concentrations were expected. Figure 6-1 and Figure 6-2 show the hourly and daily PM<sub>2.5</sub>, PM<sub>10</sub> and TSP concentrations recorded over the month. Table 6-2 summarizes the maximum 1-hour and 24-hour PM concentrations recorded during the month. Table 6-3 summarizes the recorded exceedances.

During December, there were 17 and 1 exceedances of the 24-hour TSP (100 µg/m<sup>3</sup>) and PM<sub>2.5</sub> (30 µg/m<sup>3</sup>) Guideline, respectively. Historically, the Entrance monitor records an average of 18 and 0 exceedances of the 24-hour TSP and PM<sub>2.5</sub> Guidelines respectively, during the month of December. The largest number of TSP exceedances recorded during December occurred in 2013, which had 27 days that exceeded the Guideline. The fewest number of TSP exceedances recorded during December occurred in 2016, which had 12 days that exceeded the Guideline. The largest number of PM<sub>2.5</sub> exceedances recorded during December occurred in 2014, which had 5 days that exceeded the Guideline.

It should also be noted that the GRIMM monitors become more conservative in the reported PM concentrations as the size fraction increases. The PM<sub>2.5</sub> size fraction has been shown to match other regulatory approved PM<sub>2.5</sub> monitors, but the TSP concentrations recorded by the GRIMM tend to be higher than regulatory approved monitors (Levelton, 2015).

The Entrance monitor is impacted by fugitive dust from plant activities, and the high wind events described under the Berm monitor section. Trucks also queue nearby the Entrance monitor while waiting to be loaded with material. Additionally, the monitor is closely located to Highway 1A. Traffic, particularly large trucks, can create dust while crossing over the railway tracks. This can all lead to the monitor recording high TSP concentrations, which are typically associated with fugitive dust sources.

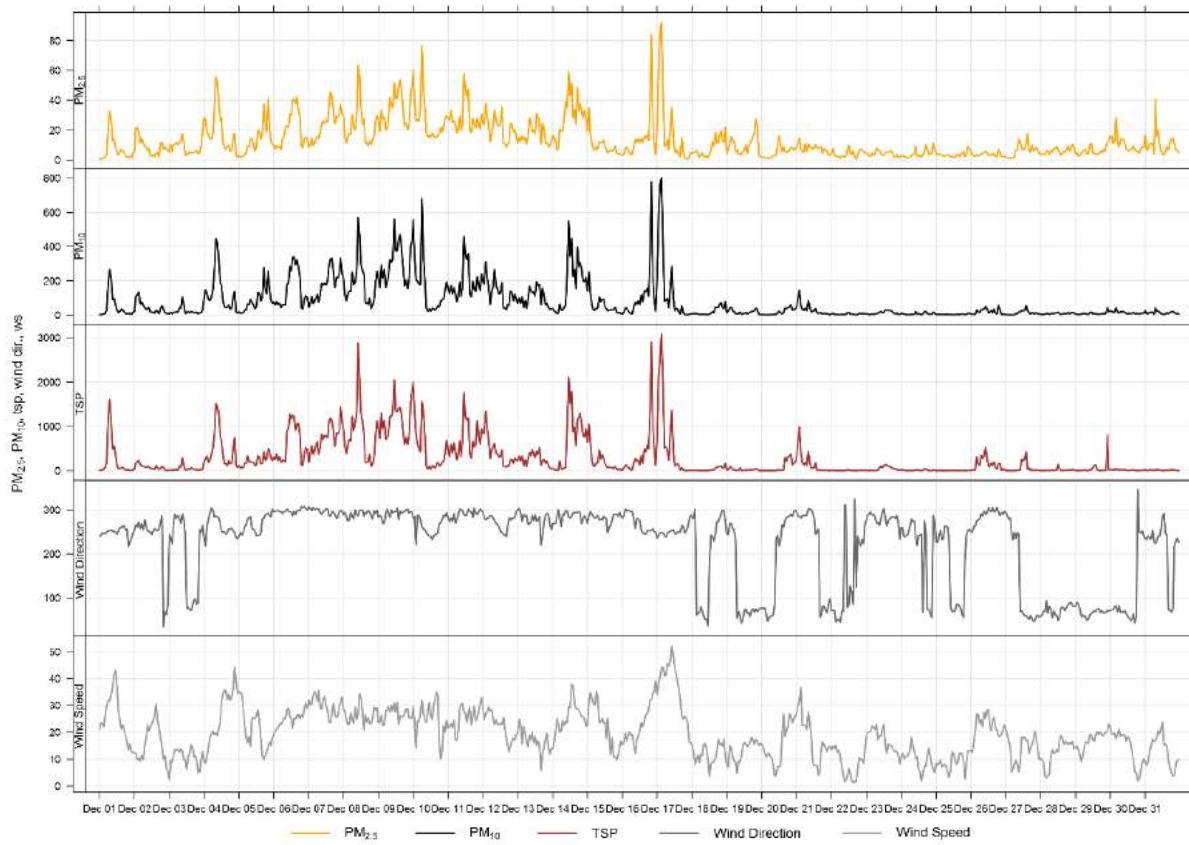
Figure 7-3 and Figure 6-4 show the wind roses for the days that exceeded the TSP and PM<sub>2.5</sub> Guidelines at the Entrance GRIMM. During the 17 TSP exceedance days, winds were predominantly from the west and above 25 km/hr.

**Table 7-2 Summary of December 2017 data at the Entrance GRIMM**

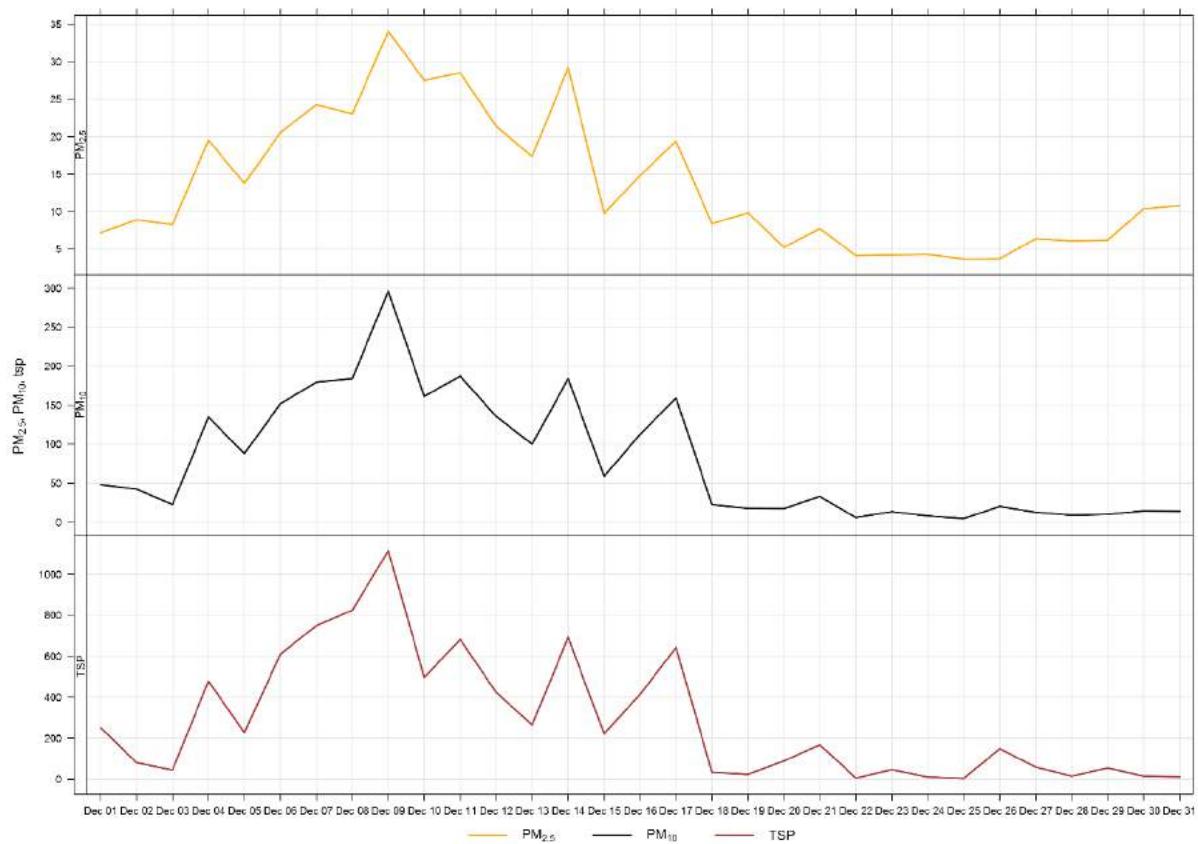
Parameter	Guideline		Station	Exceedances		Monthly Average	Maximum 1-hour					Maximum 24-hour		Operational Time (Percent)
	1-hr	24-hr		1-hr	24-hr		Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	80	30	Entrance	3	1	13.5	92.4	17	3	43.9	248.0	34.1	9	100.0
PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	-	-	Entrance	-	-	79.0	801.0	17	3	43.9	248.0	296.4	9	100.0
TSP ( $\mu\text{g}/\text{m}^3$ )	-	100	Entrance	-	17	287.3	3084.2	17	3	43.9	248.0	1115.4	9	100.0

**Table 7-3 Days exceeding the Guideline for TSP at the Entrance Monitor**

Date	TSP (ug/m <sup>3</sup> )	PM <sub>2.5</sub> (ug/m <sup>3</sup> )	Average Wind Direction (degrees)	Average Wind Speed (km/hr)	Average RH (%)	Root Cause (Provided by Lafarge)
<b>Entrance</b>						
12/1/2017	252.4	-	249.8	25.3	40.8	high wind event
12/4/2017	478.0	-	258.5	26.1	50.9	high wind event
12/5/2017	226.3	-	260.5	21.0	44.9	high wind event
12/6/2017	610.1	-	297.4	25.1	62.4	high wind event
12/7/2017	749.4	-	296.6	30.0	63.3	high wind event
12/8/2017	824.2	-	290.8	26.4	59.7	high wind event
12/9/2017	1115.4	34	291.8	26.7	52.4	high wind event
12/10/2017	497.2	-	260.0	25.0	36.0	high wind event
12/11/2017	681.7	-	291.1	25.6	56.2	high wind event
12/12/2017	423.8	-	272.5	22.3	42.1	high wind event
12/13/2017	264.0	-	280.4	16.9	59.9	
12/14/2017	692.0	-	285.7	25.5	65.4	high wind event
12/15/2017	221.5	-	280.8	22.3	58.6	high wind event
12/16/2017	413.8	-	265.9	23.1	50.5	high wind event
12/17/2017	642.8	-	250.1	36.4	47.2	high wind event
12/21/2017	168.1	-	300.4	17.9	74.4	
12/26/2017	148.5	-	288.2	22.2	63.0	high wind event
<b>Total # of Exceedances</b>	<b>17</b>	<b>1</b>				
<b>Maximum # of Exceedances (December)</b>	<b>27 (2013)</b>	<b>5 (2014)</b>				
<b>Average # of Exceedances (December)</b>	<b>18</b>	<b>0</b>				
<b>Minimum # of Exceedances (December)</b>	<b>12 (2016)</b>	<b>0 (2011 ~ 2013, 2015, 2016)</b>				



**Figure 7-1 1-hour particulate matter concentrations recorded at the Entrance monitor**



**Figure 7-2 24-hour particulate matter concentrations at the Entrance monitor**

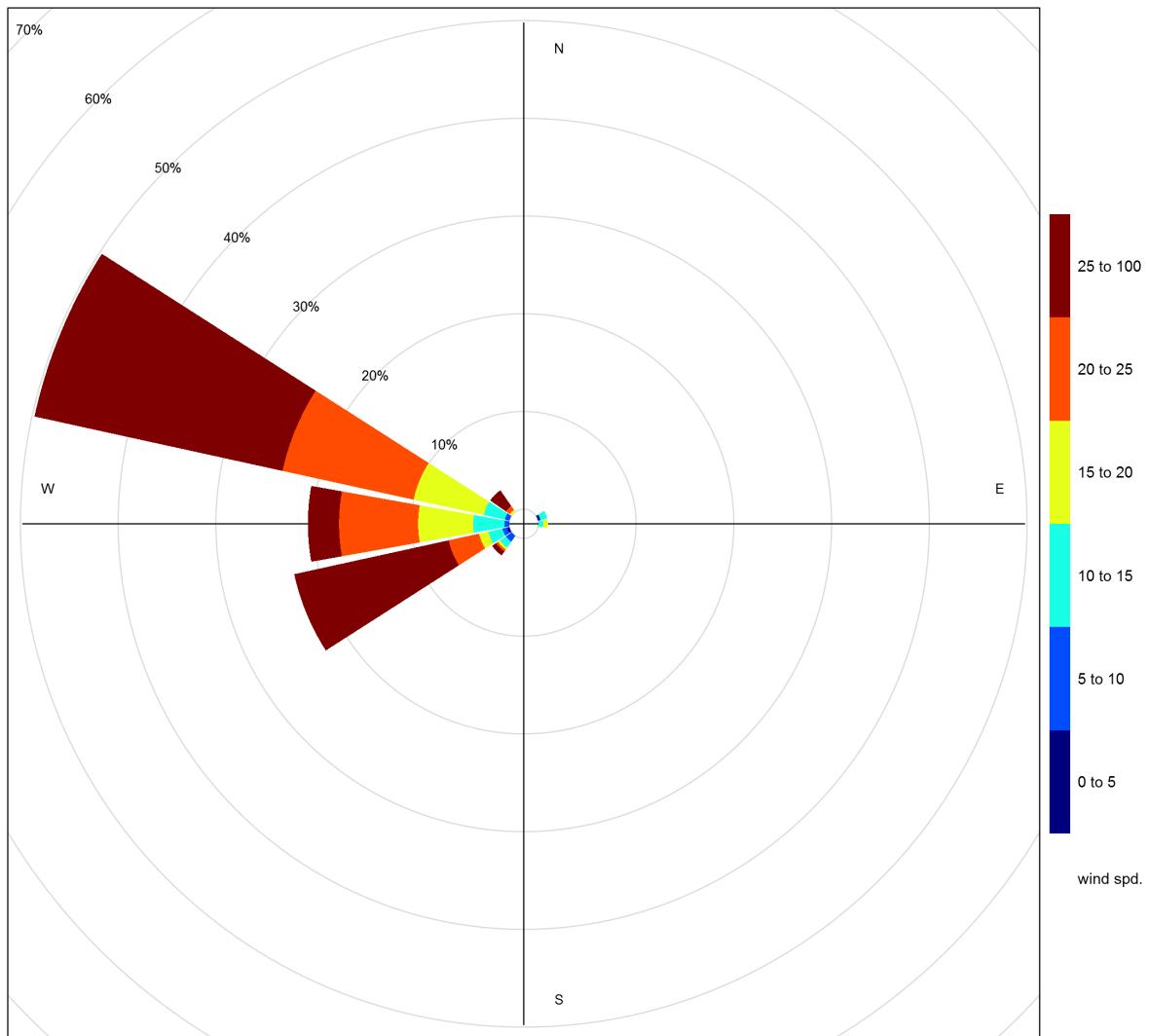
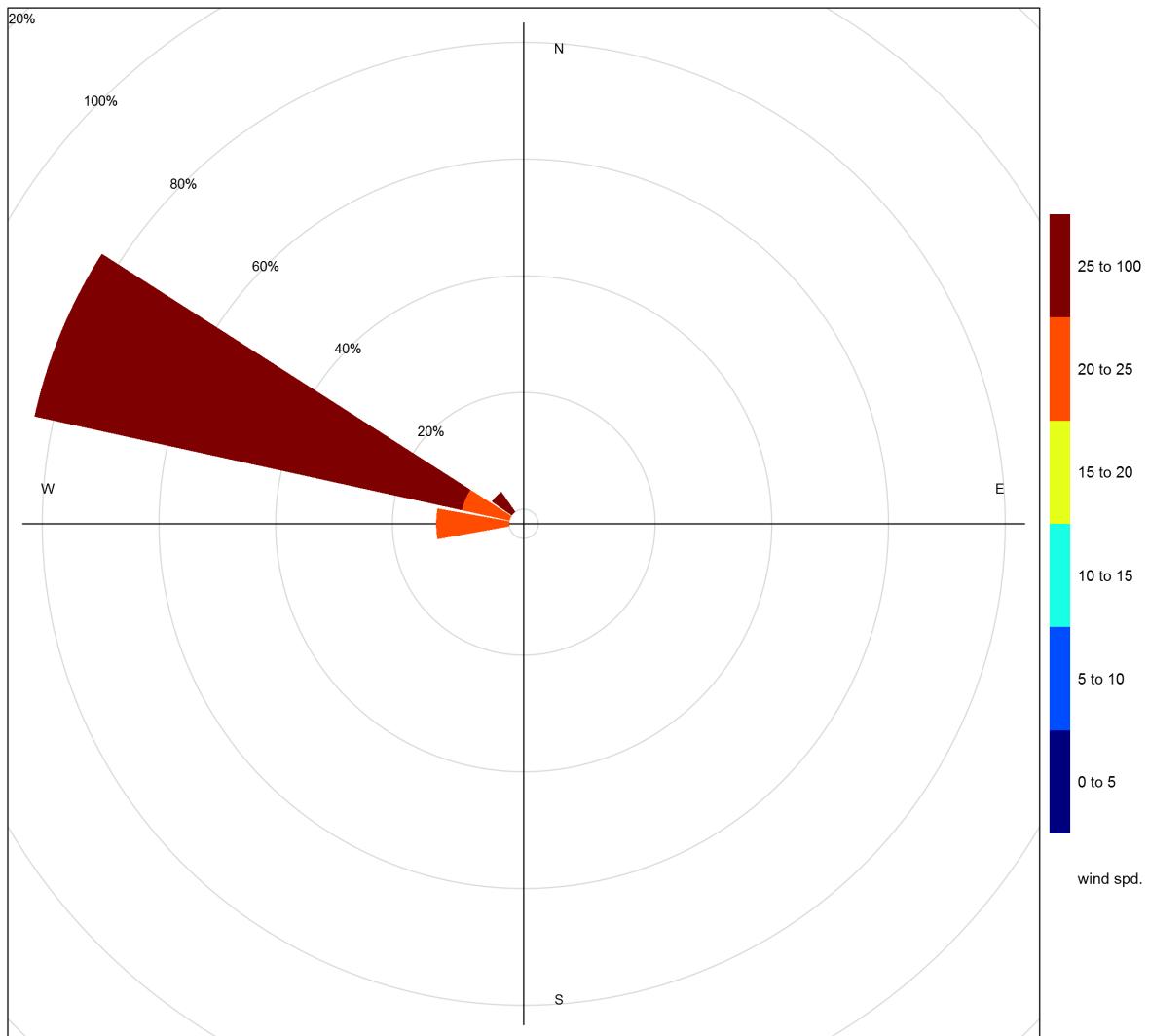
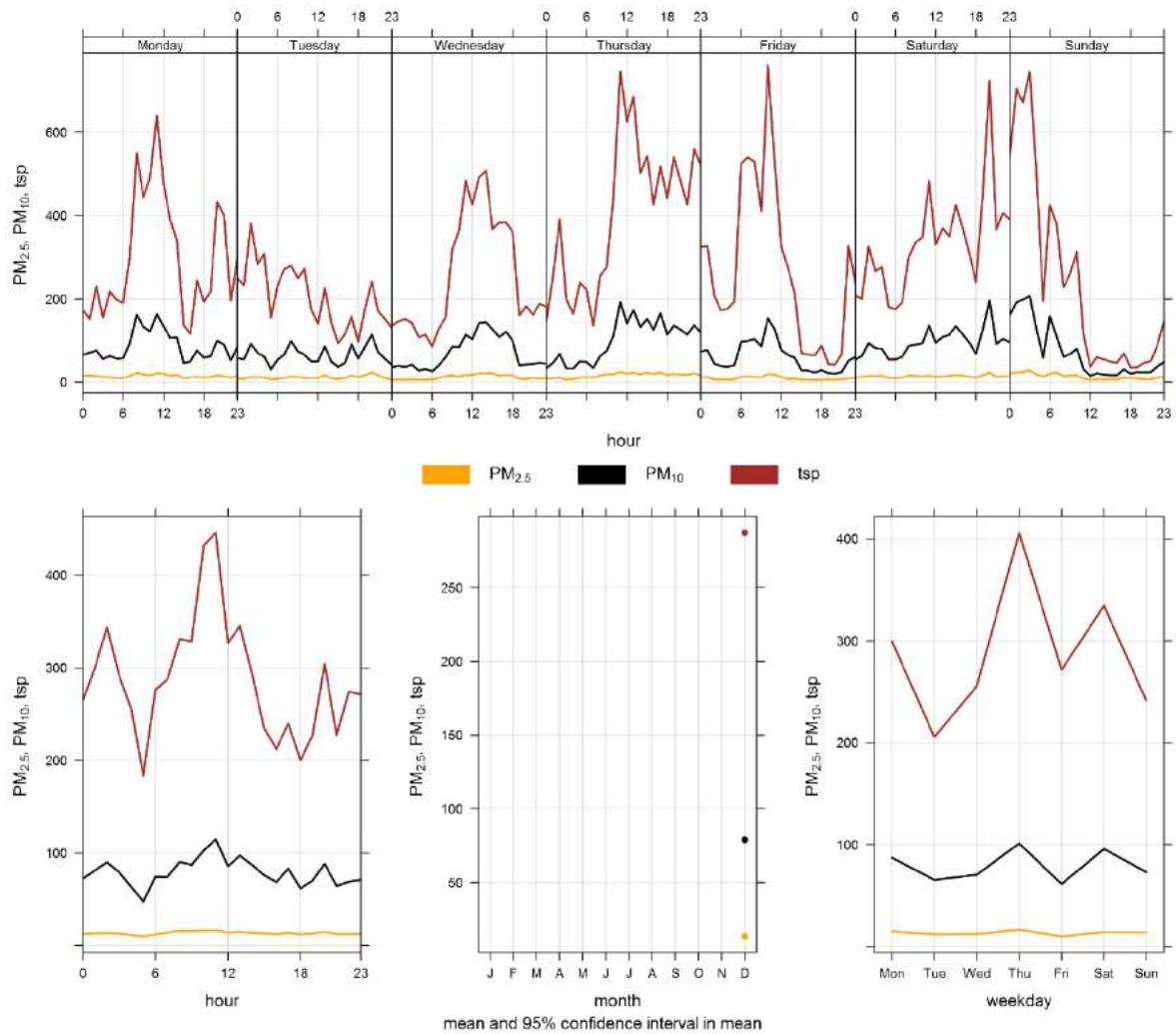


Figure 7-3 Wind rose for TSP exceedance days recorded at the Entrance GRIMM



**Figure 7-4 Wind rose for PM2.5 exceedance days recorded at the Entrance GRIMM**

Figure 7-5 illustrates the hourly PM concentrations recorded at the Entrance monitor, averaged over different time periods. The plot across the top shows the variation of PM over the course of a week, while the bottom three plots show the changes in PM over the course of a day, month and weekday, respectively. Figure 7-5 is based on data collected during December 2017 and shows less of the diurnal pattern typical of this station, perhaps due to changes in activity as a result of the holiday season.



**Figure 7-5   Entrance particulate matter time variation**

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- Carslaw, D.C. and K. Ropkins, (2012). Openair — an R package for air quality data analysis. *Environmental Modelling & Software*. Volume 27–28, 52–61.
- Levelton Consultants Ltd. (2015, June 15). Comparison of GRIMM and E-BAM Data. Alberta, Canada.

# Appendix A

**DATA & CALIBRATION REPORTS**















## Lagoon Temperature (°C) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	2.8	2.8	2.7	2.4	2.5	2.4	2.2	2.1	2.0	2.0	2.5	2.9	2.8	2.8	2.6	2.5	2.4	2.0	1.8	1.6	1.3	1.3	0.8	0.6	2.9	2.2
2	0.4	-0.2	-0.4	-0.5	-0.9	-1.0	-1.0	-0.7	-0.2	0.7	1.8	2.2	2.2	2.1	1.5	1.4	1.3	1.0	0.3	-0.6	-2.3	-4.2	-5.1	-6.1	2.2	-0.4
3	-7.2	-6.2	-5.5	-4.8	-4.5	-4.5	-4.4	-4.2	-4.5	-4.7	-4.3	-3.0	-2.3	-2.1	-2.3	-2.9	-4.3	-5.2	-6.0	-6.8	-7.7	-8.9	-8.6	-8.4	-2.1	-5.1
4	-8.2	-8.3	-8.3	-8.9	-8.4	-8.5	-8.4	-8.6	-8.5	-8.3	-7.0	-4.7	-3.0	-2.3	-1.9	-1.7	-1.7	-1.6	-1.5	-1.3	-1.1	-0.9	-1.4	-1.2	-0.9	-4.8
5	-0.7	-1.1	-0.6	-0.5	-1.0	-1.2	-1.6	-1.8	-1.9	-0.9	0.3	1.6	2.3	3.0	3.2	2.9	1.6	1.1	0.6	-0.2	-0.9	-1.8	-2.8	-3.6	3.2	-0.2
6	-4.7	-5.6	-6.2	-6.7	-7.2	-7.7	-8.2	-8.6	-8.7	-8.6	-7.8	-5.9	-4.1	-2.9	-2.1	-1.3	-1.2	-1.5	-2.4	-3.1	-4.0	-4.7	-5.3	-5.8	-1.2	-5.2
7	-6.0	-6.1	-6.0	-6.2	-6.4	-6.6	-6.7	-6.8	-6.2	-6.1	-4.8	-3.7	-1.8	-0.4	-0.2	-0.1	0.0	-0.5	-1.4	-2.0	-2.7	-3.3	-3.4	-3.7	0.0	-3.8
8	-4.3	-4.6	-5.1	-5.1	-4.5	-4.6	-5.1	-5.3	-4.5	-5.0	-4.7	-2.7	-0.6	0.7	1.4	1.3	0.6	-0.1	-1.3	-2.5	-3.8	-4.5	-5.2	-5.5	1.4	-3.1
9	-5.7	-5.6	-5.9	-6.0	-6.2	-5.6	-5.6	-5.8	-5.2	-4.3	-2.2	-0.7	1.0	1.1	1.1	0.8	0.0	-0.7	-1.1	-0.6	-0.2	0.3	-0.2	1.1	-2.6	
10	0.1	0.2	-0.3	-1.0	-1.4	0.2	6.6	9.5	9.4	7.3	8.3	8.6	8.8	9.0	8.8	8.1	7.7	7.6	6.6	4.7	3.6	1.9	0.4	-0.6	9.5	4.8
11	-0.8	-2.1	-2.5	-2.6	-2.4	-2.3	-2.5	-3.0	-2.8	-3.0	-2.2	-0.2	1.2	2.0	2.7	3.2	3.0	2.1	2.2	1.3	1.2	0.9	0.6	0.8	3.2	-0.2
12	0.6	0.2	-0.1	-0.3	-0.5	-0.6	1.6	4.1	5.8	6.2	6.4	7.6	9.0	9.3	8.8	8.3	7.7	6.6	5.2	4.3	2.9	2.0	0.9	0.3	9.3	4.0
13	-0.7	-1.5	-2.2	-2.3	-2.5	-2.5	-2.3	-2.7	-3.1	-3.4	-2.8	-1.5	0.3	1.5	2.2	2.5	1.5	0.2	0.3	0.3	-0.3	-1.2	-2.0	-2.8	2.5	-1.0
14	-3.6	-4.2	-4.4	-4.5	-4.3	-4.5	-4.1	-4.2	-4.4	-4.4	-3.6	-2.1	-0.8	0.0	0.4	1.1	1.1	1.0	0.1	-0.5	-0.8	-1.0	-1.4	-2.3	1.1	-2.1
15	-2.9	-3.6	-3.7	-3.2	-2.4	-1.8	-1.3	-0.5	-0.6	-1.0	-1.0	-0.2	0.0	1.2	2.8	2.8	1.8	1.4	0.3	-0.9	-1.5	-2.0	-2.9	-3.5	2.8	-0.9
16	-4.0	-4.4	-4.8	-4.9	-5.5	-6.6	-7.1	-7.9	-8.8	-9.2	-8.7	-6.5	-4.5	-2.7	-2.2	-1.9	-2.0	-2.1	-2.4	-2.2	-1.6	-1.4	-1.9	-1.8	-1.4	-4.4
17	-1.2	-1.3	-0.6	-0.6	0.1	-0.4	-0.6	-0.1	0.1	0.7	1.9	2.9	3.2	3.3	3.1	2.8	2.3	1.6	1.0	0.7	0.4	0.1	-0.7	-1.2	3.3	0.7
18	-1.3	-1.5	-1.7	-2.5	-3.0	-3.3	-3.3	-3.4	-3.8	-4.2	-4.3	-4.1	-3.3	-3.6	-3.4	-3.5	-4.0	-4.2	-4.4	-4.9	-5.4	-5.7	-6.6	-7.1	-1.3	-3.8
19	-7.5	-7.8	-7.9	-8.1	-8.4	-8.6	-8.7	-9.1	-8.0	-7.5	-7.5	-7.3	-6.9	-7.1	-7.1	-7.2	-7.5	-7.7	-8.0	-8.2	-8.5	-9.0	-9.2	-9.6	-6.9	-8.0
20	-10.0	-10.4	-10.6	-10.7	-10.9	-11.1	-11.0	-11.1	-11.2	-11.7	-12.6	-10.9	-9.4	-9.3	-8.4	-7.8	-8.2	-8.7	-9.0	-10.0	-10.9	-11.7	-11.9	-11.8	-7.8	-10.4
21	-12.1	-12.4	-11.8	-11.7	-12.1	-11.8	-11.5	-9.9	-10.2	-9.3	-8.4	-6.5	-6.3	-6.7	-6.8	-6.8	-6.6	-6.1	-6.4	-7.0	-7.6	-8.1	-8.3	-8.5	-6.1	-8.9
22	-9.3	-9.9	-10.5	-11.0	-11.4	-11.8	-12.1	-12.3	-13.3	-14.3	-13.5	-11.9	-11.0	-11.5	-13.9	-15.6	-17.3	-19.1	-19.1	-17.8	-18.5	-18.3	-18.5	-18.3	-9.3	-14.2
23	-18.5	-18.9	-19.0	-19.6	-20.3	-20.6	-20.9	-21.4	-21.6	-21.1	-20.4	-18.2	-16.4	-14.9	-13.5	-12.3	-12.2	-11.8	-11.7	-11.7	-11.5	-12.0	-12.6	-13.3	-11.5	-16.4
24	-13.8	-14.5	-15.1	-15.6	-16.1	-16.4	-16.6	-17.0	-18.1	-18.7	-19.4	-17.8	-16.3	-16.8	-15.9	-13.6	-13.7	-15.9	-16.1	-16.4	-16.8	-17.0	-17.9	-19.1	-13.6	-16.4
25	-20.6	-21.5	-22.1	-22.6	-22.0	-21.2	-20.6	-20.9	-21.2	-21.4	-20.6	-18.5	-17.6	-17.4	-18.3	-18.9	-19.5	-20.3	-21.4	-22.6	-24.5	-25.2	-24.7	-25.2	-17.4	-21.2
26	-25.4	-25.6	-25.5	-25.6	-25.4	-24.7	-24.5	-23.8	-23.9	-23.2	-22.1	-20.5	-18.8	-17.7	-16.7	-15.5	-14.8	-14.9	-15.6	-16.0	-16.5	-17.3	-17.9	-18.2	-14.8	-20.4
27	-18.2	-18.4	-18.3	-18.4	-18.3	-19.3	-19.8	-19.0	-19.2	-20.5	-20.2	-17.9	-17.1	-17.0	-17.1	-17.2	-17.0	-17.0	-17.2	-17.2	-18.1	-18.6	-18.8	-19.9	-17.0	-18.3
28	-20.8	-21.2	-22.3	-24.3	-25.7	-26.6	-25.2	-23.4	-22.1	-21.2	-19.5	-18.3	-16.7	-16.6	-17.2	-17.4	-17.6	-17.9	-18.3	-19.0	-19.6	-20.4	-21.3	-16.6	-20.6	
29	-21.7	-22.4	-22.9	-23.5	-24.2	-24.9	-25.3	-25.8	-25.2	-24.8	-24.6	-23.9	-23.3	-22.7	-22.8	-23.2	-23.7	-24.2	-24.7	-24.9	-25.0	-25.2	-25.5	-21.7	-24.2	
30	-25.6	-25.6	-25.9	-26.2	-26.2	-26.1	-26.7	-27.0	-27.4	-27.5	-27.1	-26.8	-25.8	-25.2	-24.8	-24.7	-24.6	-24.9	-25.3	-27.2	-28.9	-29.0	-28.6	-28.2	-24.6	-26.5
31	-28.0	-28.1	-28.5	-28.2	-27.8	-27.2	-27.0	-27.2	-26.4	-25.2	-23.4	-20.1	-17.4	-15.6	-15.5	-15.3	-22.3	-25.6	-26.9	-27.7	-27.0	-22.0	-21.4	-21.2	-15.3	-24.0
Hourly Max	2.8	2.8	2.7	2.4	2.5	2.4	6																			

## Lagoon Wind Speed (km/hr) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	21.1	23.5	23.2	22.1	26.1	30.0	31.8	31.8	34.0	36.9	41.6	43.1	36.5	27.6	23.9	21.2	22.8	20.7	18.2	16.6	13.4	15.6	13.0	12.5	43.1	25.3
2	12.5	12.3	9.8	10.3	9.3	11.5	9.9	15.1	17.9	23.0	20.5	22.1	23.2	24.4	26.1	30.5	24.3	21.7	17.9	14.8	10.1	11.2	6.4	5.4	30.5	16.3
3	2.5	9.6	8.9	11.4	13.6	13.4	13.6	12.8	13.8	13.1	9.9	9.7	6.3	11.1	12.3	15.4	14.4	10.7	11.4	9.6	5.1	5.3	9.8	12.8	15.4	10.7
4	9.2	8.6	11.3	14.5	18.1	19.3	20.6	19.0	19.6	18.8	21.6	24.1	31.1	34.0	35.7	35.4	32.1	34.2	32.0	33.3	36.2	44.3	38.6	34.5	44.3	26.1
5	35.1	34.7	33.9	28.2	22.7	18.1	16.2	18.2	15.0	25.3	25.4	25.2	26.1	28.4	24.8	17.6	11.1	9.9	11.6	12.8	14.6	16.5	15.1	17.9	35.1	21.0
6	19.0	20.7	21.2	22.1	23.1	23.1	24.0	25.4	25.1	28.4	28.9	25.8	25.0	21.7	25.1	25.1	26.0	26.7	25.1	26.5	25.6	28.8	30.9	28.9	30.9	25.1
7	32.2	30.3	30.6	33.7	35.1	33.6	31.6	35.4	29.0	28.6	32.2	33.3	29.8	28.1	23.8	23.7	27.6	30.8	26.2	25.5	26.1	29.9	30.9	33.2	35.4	30.0
8	28.7	27.8	24.9	22.9	23.1	27.1	24.8	23.4	29.2	24.9	27.0	34.4	32.6	26.9	21.0	26.6	24.0	25.5	23.3	23.2	24.9	29.3	28.3	29.1	34.4	26.4
9	23.6	24.0	26.3	22.6	22.6	27.9	28.4	29.6	27.5	30.1	27.9	31.0	27.5	31.2	23.0	26.0	25.6	26.0	27.0	28.6	28.7	25.4	25.5	25.3	31.2	26.7
10	29.6	24.3	14.2	24.4	24.3	26.7	32.1	27.3	24.6	23.7	27.7	31.2	26.2	24.8	30.4	32.3	35.1	33.8	16.3	10.2	12.9	22.4	20.2	24.5	35.1	25.0
11	21.7	22.3	23.2	21.7	24.5	17.0	17.1	21.2	29.4	30.6	30.8	27.6	27.1	23.7	27.2	29.1	22.8	25.8	29.8	24.4	25.4	27.8	30.7	32.9	32.9	25.6
12	28.9	24.7	26.9	27.5	29.3	27.9	28.3	25.0	23.1	24.7	22.9	23.0	23.2	23.0	25.5	21.6	17.5	14.9	12.7	14.9	16.7	17.7	17.0	19.1	29.3	22.3
13	19.8	24.8	23.1	15.7	22.1	19.4	16.4	14.6	18.8	17.3	20.1	16.4	18.5	15.2	16.7	15.4	5.9	12.0	14.4	17.6	19.5	14.6	12.1	14.1	24.8	16.9
14	13.9	16.8	20.7	25.1	23.4	20.0	20.7	24.4	22.8	24.1	23.6	29.3	29.2	37.8	37.1	31.1	28.6	28.7	28.3	27.0	26.0	25.8	25.1	22.4	37.8	25.5
15	22.7	31.4	34.7	32.7	30.9	30.1	35.2	32.8	23.5	24.1	25.2	23.5	23.9	17.8	25.2	18.4	11.9	17.8	10.8	11.1	9.8	11.2	14.6	16.7	35.2	22.3
16	15.5	16.4	19.5	16.8	18.7	20.1	18.9	19.2	15.3	12.2	17.2	18.6	20.6	23.7	22.2	24.2	26.5	26.9	28.4	32.2	32.3	34.7	34.9	39.1	39.1	23.1
17	34.1	38.0	40.6	43.9	44.3	41.1	41.3	45.6	44.6	46.6	52.2	48.3	44.0	42.1	39.2	36.2	32.2	26.1	25.0	26.0	25.4	23.3	16.4	16.3	52.2	36.4
18	15.1	12.2	8.2	10.0	11.7	8.7	11.9	11.3	15.4	15.8	14.4	9.7	3.7	8.4	8.8	9.1	10.2	12.7	17.4	15.5	15.8	14.8	17.6	11.4	17.6	12.1
19	8.1	7.1	15.1	14.2	11.0	9.4	8.8	4.7	9.1	9.1	11.5	15.3	16.2	15.7	14.7	15.4	16.2	18.1	17.3	15.6	17.4	16.6	15.1	15.9	18.1	13.2
20	15.5	14.2	12.5	10.8	12.0	12.2	10.6	10.4	8.0	3.7	4.4	7.3	7.2	7.7	18.6	26.8	18.5	20.8	22.4	26.8	26.1	23.6	25.0	26.2	26.8	15.5
21	27.3	30.2	31.9	36.6	22.6	22.7	22.5	21.4	27.6	23.8	19.2	9.0	7.8	7.7	7.6	4.1	5.0	13.6	16.6	15.4	14.5	13.0	14.5	14.7	36.6	17.9
22	13.6	14.8	14.0	15.3	12.6	13.4	10.8	7.1	4.4	1.5	2.2	3.6	6.6	4.9	2.0	1.3	1.6	1.7	6.3	10.6	9.7	10.0	8.5	14.1	15.3	7.9
23	18.7	20.2	20.3	20.2	22.4	21.8	21.2	23.0	17.3	18.5	18.6	21.3	22.9	15.4	12.3	15.6	15.2	15.1	14.2	13.3	13.0	12.9	11.7	8.3	23.0	17.2
24	10.7	12.2	10.2	11.0	11.1	12.2	13.1	18.1	14.8	12.9	10.4	11.1	6.7	5.3	1.9	4.8	7.3	7.4	11.4	14.1	11.1	7.9	6.4	5.1	18.1	9.9
25	8.4	7.8	8.6	9.8	7.0	7.9	8.0	7.4	5.3	3.4	5.6	12.7	12.3	10.0	8.2	8.9	12.3	12.5	11.9	8.4	2.7	8.2	13.2	8.9	13.2	8.9
26	13.3	12.6	16.3	20.4	26.8	26.7	23.4	24.7	22.1	27.4	25.4	28.1	28.4	23.2	20.7	24.4	25.5	21.9	20.9	18.5	18.6	19.1	20.9	22.8	28.4	22.2
27	21.2	18.8	16.7	14.7	5.1	6.3	8.3	9.5	8.2	5.4	8.7	18.2	17.7	18.3	17.0	17.2	12.3	14.3	15.6	17.3	20.5	17.3	14.6	10.1	21.2	13.9
28	10.2	9.8	8.8	3.8	3.3	3.9	4.5	11.0	13.5	12.5	12.4	13.7	12.9	17.1	18.7	18.0	15.5	16.6	16.2	15.4	16.2	15.7	16.5	14.0	18.7	12.5
29	14.3	14.8	13.6	11.4	9.1	11.7	14.4	16.5	16.2	16.0	19.2	18.9	17.2	16.8	19.3	20.3	19.1	20.1	19.0	18.8	19.8	20.4	23.1	23.1	17.1	
30	22.4	19.6	19.2	19.5	17.7	19.1	21.2	18.6	18.7	19.2	18.6	16.6														

## Lagoon Wind Direction (°) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average			
b	239.8	242.1	247.1	247.2	246.1	250.5	252.0	253.5	254.5	251.8	251.2	249.5	245.9	251.8	259.6	261.2	261.4	263.9	253.6	256.0	216.8	226.7	234.9	246.9	263.9	249.8			
2	254.1	265.5	261.8	272.5	258.1	267.8	254.6	277.2	263.2	252.2	252.5	249.0	244.6	252.0	257.2	253.3	253.1	257.7	272.4	285.7	35.2	67.9	62.0	88.2	285.7	260.2			
3	243.9	232.9	222.4	269.2	289.2	280.8	286.0	281.8	269.8	290.3	277.0	242.2	77.1	79.2	73.7	71.2	85.2	95.8	97.8	86.3	90.3	255.2	248.9	264.4	290.3	276.0			
4	235.1	218.2	264.6	278.1	292.6	304.4	299.2	282.7	284.8	283.5	281.0	267.9	251.1	250.0	250.3	245.3	249.0	256.2	256.6	258.3	252.5	247.7	236.8	234.0	304.4	258.5			
5	241.1	248.9	243.2	248.0	261.8	264.6	278.2	282.4	283.7	258.3	255.5	253.1	242.0	242.1	242.5	247.2	278.6	281.0	287.3	289.0	291.2	287.4	283.3	301.4	301.4	260.5			
6	294.6	297.3	296.8	298.5	295.6	295.3	290.8	294.9	296.6	301.8	296.3	294.3	294.0	285.6	295.9	288.3	296.7	300.0	297.4	306.8	304.3	307.1	303.3	299.3	307.1	297.4			
7	306.8	303.0	298.8	305.2	300.8	302.4	301.9	301.4	293.0	289.5	294.2	297.6	302.8	301.5	286.7	284.9	294.7	294.5	288.3	280.6	282.7	296.2	298.4	297.0	306.8	296.6	297.0		
8	288.2	292.8	284.7	274.6	276.5	293.1	284.8	279.4	300.0	290.1	285.8	298.2	299.7	298.7	284.1	293.3	291.6	298.5	295.2	286.7	279.6	297.9	291.7	298.9	300.0	290.8	291.7		
9	282.3	285.6	283.8	268.9	270.3	291.1	301.6	294.0	282.5	299.7	292.4	295.4	295.1	303.8	277.4	296.4	293.3	293.5	296.2	299.2	301.4	292.0	295.6	294.0	303.8	291.8	294.0		
10	281.3	284.5	221.1	286.7	286.3	276.9	261.4	256.8	255.0	248.7	244.6	239.7	239.1	231.9	242.1	244.4	245.2	247.1	268.2	270.4	278.0	286.5	284.4	292.5	292.5	260.0	292.5		
11	281.8	273.0	280.3	273.6	290.5	269.2	278.8	290.1	301.4	300.5	298.8	288.0	287.4	287.5	301.3	296.6	295.5	281.9	304.2	291.4	288.2	295.2	301.8	297.7	304.2	291.1	291.1		
12	293.0	282.0	277.1	279.7	282.0	285.9	285.7	281.6	275.5	269.4	266.5	260.6	251.2	248.6	245.5	242.4	239.2	265.3	281.2	276.2	280.5	280.1	283.2	294.4	294.4	272.5	294.4		
13	300.8	302.8	291.4	273.6	288.5	283.2	286.4	265.6	270.5	270.3	286.9	275.9	288.6	274.4	276.2	283.9	219.3	242.1	269.6	286.7	290.6	289.7	265.9	255.6	302.8	280.4	280.4		
14	268.0	268.7	269.6	285.1	300.6	279.7	262.3	289.3	288.0	297.9	297.1	283.2	281.2	284.3	292.4	292.5	293.8	293.7	294.5	294.2	268.8	278.3	285.5	280.2	300.6	285.7	285.7		
15	269.8	286.0	295.2	289.5	284.6	281.1	281.8	286.5	276.1	278.8	276.6	284.9	281.6	279.8	248.4	259.1	265.3	275.5	289.0	289.5	289.9	284.3	293.2	285.1	295.2	280.8	295.2		
16	281.1	286.2	301.2	296.9	299.4	297.8	295.5	294.5	277.4	258.2	279.6	278.5	274.7	254.8	247.0	246.7	245.0	252.1	253.1	252.8	252.9	257.8	250.9	249.4	301.2	265.9	265.9		
17	235.6	241.9	248.7	248.0	248.1	242.9	237.5	247.3	249.8	251.9	254.0	254.5	246.7	244.9	249.6	250.2	249.4	264.1	261.2	247.8	252.9	260.5	277.0	287.0	287.0	250.1	250.1		
18	282.3	280.8	301.0	62.2	64.2	67.2	81.5	71.9	59.6	51.3	52.2	37.4	178.3	242.9	240.7	228.9	244.0	272.6	273.5	281.4	291.3	300.0	298.3	274.4	301.0	313.0	269.1	64.2	
19	246.0	244.5	268.5	269.1	257.5	254.4	228.3	53.8	68.5	58.6	44.1	54.1	72.9	74.9	64.9	65.8	58.3	70.9	76.2	68.4	75.7	68.9	73.8	76.8	299.3	298.4	298.4		
20	77.9	75.5	78.1	63.1	47.0	56.3	58.5	59.2	61.5	85.9	231.8	242.9	218.3	230.1	265.7	260.9	275.8	281.8	283.6	286.0	289.6	284.7	295.5	299.3	299.3	300.4	302.6		
21	293.9	285.1	284.4	281.3	286.4	286.0	286.8	287.4	302.6	300.6	300.4	292.7	280.6	245.3	248.6	256.2	56.5	60.5	82.3	81.7	71.9	66.6	87.2	98.5	303.0	300.4	302.6		
22	70.5	72.5	71.2	46.0	50.8	50.7	45.9	70.1	69.3	311.6	311.3	80.0	84.3	126.9	113.3	86.2	324.0	123.5	239.6	226.0	218.4	232.8	223.3	270.7	324.0	68.9			
23	276.1	288.6	288.4	294.3	288.2	289.4	283.0	269.8	270.8	264.5	279.1	293.0	303.0	280.1	263.3	275.1	279.0	282.5	283.7	283.8	280.5	286.4	273.5	232.6	303.0	281.5	281.5		
24	260.0	258.8	237.4	241.0	241.0	250.1	263.4	278.8	273.4	274.1	234.2	218.8	242.1	244.9	68.1	274.9	247.0	74.3	73.7	65.8	56.3	285.6	272.7	285.6	285.6	258.8	263.0	179.1	263.0
25	227.8	224.9	242.8	254.2	232.1	233.1	263.0	262.1	260.7	230.9	81.5	69.4	71.0	69.8	85.5	86.3	82.6	75.2	61.0	55.7	184.4	241.6	253.7	255.7	230.6	288.2	288.2	305.6	293.7
26	251.3	249.2	261.1	263.2	274.2	276.6	278.8	290.5	284.8	296.5	289.3	292.7	305.1	299.7	295.4	305.2	294.4	296.7											

## Lagoon Pressure (mmHg) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average	
1	648.1	647.8	647.9	647.6	647.3	647.2	647.0	646.9	647.1	647.1	647.0	647.1	647.2	647.1	646.8	646.7	646.8	646.8	646.7	646.8	646.8	646.8	646.7	648.1	647.1		
2	646.4	646.4	646.2	646.0	645.7	645.7	645.6	645.6	645.7	646.1	646.7	646.8	646.9	647.0	646.8	646.6	646.8	646.7	646.7	646.5	646.6	646.6	646.4	646.4	647.0	646.4	
3	646.2	645.8	645.6	645.5	645.4	645.5	645.7	645.9	646.0	646.2	646.9	647.2	647.3	647.2	647.4	647.9	648.9	649.8	650.6	651.3	651.8	652.1	652.6	653.1	653.1	648.0	
4	653.4	653.6	653.9	654.3	654.3	654.7	654.8	655.0	655.1	655.2	655.1	654.8	654.5	654.8	654.3	654.6	655.1	654.9	655.2	654.8	654.1	654.4	654.4	655.0	655.2	654.6	
5	655.2	655.4	655.6	655.8	656.0	656.2	656.4	656.8	657.2	657.6	657.2	658.1	658.4	658.6	659.0	659.4	660.0	660.7	661.3	661.8	662.4	662.9	663.3	663.8	664.3	664.3	659.0
6	664.7	664.9	665.3	665.8	665.8	665.9	666.0	666.2	666.2	666.3	666.4	666.1	665.7	664.9	664.5	664.1	663.9	664.0	664.4	664.6	664.6	664.3	664.1	664.1	666.4	665.1	664.2
7	664.0	664.1	664.1	664.1	664.2	664.1	664.1	664.1	664.1	664.2	664.1	664.0	663.6	663.3	663.0	662.6	662.7	662.8	662.8	662.9	663.1	663.2	663.3	663.4	664.2	663.6	664.2
8	663.2	663.1	663.0	662.8	662.5	662.2	661.9	661.7	661.5	661.5	661.1	660.7	660.2	659.6	659.7	660.2	660.5	660.6	660.6	660.8	660.9	660.8	660.8	660.9	660.7	661.3	661.3
9	660.7	660.5	660.4	660.5	660.2	660.1	660.2	660.1	660.2	660.2	660.1	659.5	659.1	659.0	658.8	658.7	658.7	658.7	658.6	658.8	658.6	658.7	658.6	658.6	660.7	659.6	660.7
10	658.3	658.2	658.2	658.0	657.6	656.9	656.5	657.2	659.0	659.5	659.0	659.2	659.9	659.4	658.9	658.8	658.9	658.9	659.3	660.2	660.9	661.2	661.2	661.3	661.5	661.5	659.1
11	661.7	661.8	661.7	661.9	662.0	662.1	662.0	661.9	662.0	662.0	662.0	661.6	661.3	660.8	660.5	660.5	660.5	660.2	659.7	659.4	659.0	658.6	658.2	657.9	662.1	660.8	662.1
12	657.8	657.4	656.9	656.3	655.7	654.9	653.9	653.5	653.6	653.9	654.5	654.7	654.8	655.2	655.3	655.4	655.8	656.5	657.1	657.2	657.4	657.6	657.8	657.8	657.8	655.9	657.8
13	657.3	657.3	657.5	657.6	657.6	657.7	658.0	658.3	658.7	658.8	658.6	658.8	658.6	658.5	658.7	659.4	659.9	659.8	659.6	659.9	660.5	660.9	661.0	661.0	658.8	661.0	658.8
14	661.1	660.9	660.5	659.9	659.7	659.2	658.7	658.5	658.0	658.1	657.7	656.9	655.7	655.3	655.1	655.0	654.5	654.1	653.7	653.3	652.7	652.0	651.5	650.9	661.1	656.4	661.1
15	650.0	648.8	648.3	648.0	647.6	647.3	646.7	646.5	646.6	646.8	646.7	647.0	646.6	646.2	646.1	646.2	646.7	647.2	647.4	647.8	648.2	648.5	649.0	649.2	650.0	647.5	650.0
16	649.5	649.9	650.3	650.6	650.9	651.2	651.4	651.7	651.9	652.2	652.4	652.0	651.3	650.6	650.0	649.8	649.6	649.3	648.9	648.5	648.2	647.8	647.6	647.2	652.4	650.1	652.4
17	646.3	645.8	645.3	644.9	645.2	645.3	645.0	644.6	645.1	644.7	644.2	643.8	643.8	643.6	643.4	643.1	643.3	643.3	643.4	643.0	642.6	642.1	641.9	641.6	646.3	644.0	650.5
18	641.5	641.5	641.9	642.3	642.5	642.9	643.5	644.2	645.0	645.8	646.5	646.8	646.9	647.1	647.4	647.9	648.5	649.0	649.1	649.4	649.8	649.9	650.3	650.5	650.5	646.3	650.5
19	650.8	650.9	650.9	651.0	650.9	650.9	651.1	651.2	651.2	651.1	651.0	650.5	649.9	649.3	649.0	648.7	648.4	648.2	647.9	647.8	647.6	647.7	647.8	648.0	651.2	649.7	
20	648.2	648.5	648.9	649.2	649.7	650.1	650.7	651.1	651.6	652.0	652.1	652.5	652.3	651.7	651.5	651.8	652.2	652.7	652.9	652.9	652.9	653.0	653.3	651.5	653.3	653.3	
21	652.7	652.5	652.6	652.4	652.6	652.1	651.4	651.2	651.1	650.9	651.0	651.0	651.0	651.0	650.9	651.4	651.6	652.0	652.6	653.3	653.7	654.2	654.6	654.7	652.2	654.7	
22	654.9	655.2	655.6	656.0	656.1	656.2	656.4	656.5	656.5	656.7	657.0	657.0	656.6	656.2	656.1	656.1	656.0	656.3	656.5	656.6	656.6	656.8	657.1	657.1	656.3	656.9	
23	656.9	656.7	656.7	656.8	656.7	656.4	656.3	656.5	656.5	656.2	656.0	655.5	655.3	654.8	654.5	654.5	654.6	654.6	654.8	655.0	655.3	655.6	655.7	656.0	655.9	655.7	655.9
24	656.1	656.1	656.3	656.4	656.6	656.5	656.3	656.2	656.6	657.0	657.2	657.0	656.7	656.3	656.0	655.9	655.7	655.9	656.1	656.1	655.9	655.8	655.7	657.2	656.3	656.3	
25	655.3	655.2	655.2	655.2	655.3	655.5	655.8	656.2	656.5	656.7	657.1	656.9	656.9	656.6	656.6	656.6	657.0	657.2	657.4	657.2	657.2	656.8	656.6	657.4	656.4	656.4	
26	656.0	655.6	655.5	655.5	655.3	654.9	654.8	654.4	654.3	654.2	654.2	654.2	653.8	653.5	653.0	652.9	652.6	652.6									

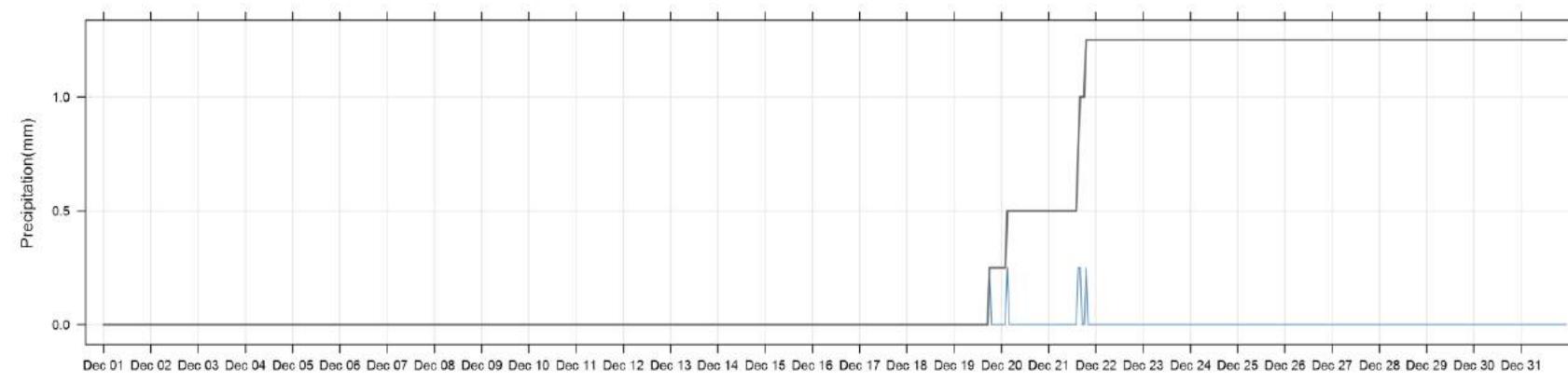
## Lagoon Relative Humidity (%) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	37.8	36.8	36.6	36.8	34.9	35.2	35.0	34.0	35.0	36.6	35.6	36.0	37.0	37.3	39.1	40.8	41.6	46.0	47.5	48.2	49.2	51.3	54.1	56.7	56.7	40.8
2	57.7	62.0	63.4	66.1	69.3	72.0	70.5	64.2	53.6	44.8	39.0	34.5	34.7	37.1	39.8	39.4	37.6	38.1	42.6	45.1	60.1	78.2	82.1	85.1	85.1	54.9
3	86.6	84.1	77.9	74.5	75.4	76.0	75.6	73.7	73.1	72.2	70.4	63.7	58.3	54.4	54.4	53.1	56.5	60.4	65.4	69.4	71.8	74.8	74.7	74.9	86.6	69.6
4	72.9	67.9	64.3	64.7	60.0	58.8	57.9	59.1	58.7	58.0	53.7	45.9	41.3	39.5	39.0	38.9	39.9	39.9	41.4	41.9	42.9	43.2	45.6	45.6	72.9	50.9
5	45.0	47.5	46.5	46.9	48.9	50.2	51.8	52.5	52.9	48.7	43.7	39.5	37.4	34.1	33.0	33.6	37.3	38.5	40.0	43.7	46.1	49.8	53.4	56.2	56.2	44.9
6	61.1	64.2	66.7	68.3	70.2	71.7	72.7	73.9	73.7	72.5	69.1	62.0	56.0	52.2	49.9	47.8	47.8	49.7	54.1	56.8	60.6	63.0	65.4	67.5	73.9	62.4
7	68.3	68.7	68.2	68.9	69.4	70.3	70.5	71.0	69.7	69.3	64.8	60.8	55.5	52.0	52.3	53.1	53.3	55.4	58.9	60.7	62.9	64.3	64.5	65.2	71.0	63.3
8	67.3	68.3	69.6	68.8	66.8	66.7	67.5	68.1	64.4	65.6	64.3	56.4	49.5	45.9	43.9	43.3	45.6	47.9	52.8	56.8	61.1	62.4	64.2	64.6	69.6	59.7
9	65.6	64.7	64.0	65.0	65.1	64.8	61.9	61.7	63.1	59.8	55.8	48.3	43.6	38.9	39.5	39.4	40.8	43.8	46.8	48.3	46.0	44.4	41.6	43.8	65.6	52.4
10	42.3	41.8	43.8	45.5	46.0	39.0	24.4	23.3	25.4	30.8	30.3	30.0	29.5	29.0	29.0	29.9	29.8	29.9	31.7	37.2	41.1	46.6	51.9	55.0	55.0	36.0
11	54.8	59.8	61.4	62.0	61.0	61.0	61.6	63.3	61.8	62.7	60.0	53.4	49.4	47.4	46.0	45.1	46.8	51.2	51.5	55.6	56.6	57.9	59.4	58.9	63.3	56.2
12	59.5	61.3	62.3	62.9	63.2	61.8	48.5	33.9	28.6	28.7	29.8	29.1	27.5	27.8	28.8	29.4	30.4	32.1	35.6	38.5	43.1	46.5	50.1	52.0	63.2	42.1
13	55.2	57.7	60.2	60.7	61.4	62.0	61.6	63.2	64.7	66.4	64.5	60.2	54.5	51.2	49.6	49.7	54.0	60.1	59.7	59.5	61.2	64.3	67.1	70.1	70.1	59.9
14	72.9	74.3	73.8	73.2	73.0	72.6	74.2	73.0	73.5	74.6	71.7	66.1	61.2	58.7	56.6	54.1	54.2	57.4	59.3	59.8	59.2	59.7	62.6	74.6	65.4	
15	64.0	65.6	64.8	63.5	62.4	61.8	63.9	67.9	69.9	69.3	66.9	63.6	61.7	56.8	50.4	44.9	45.8	43.3	46.9	52.6	53.8	53.6	55.2	56.8	69.9	58.6
16	57.0	58.3	60.3	59.4	61.3	66.0	66.9	68.8	71.7	71.9	68.6	58.4	50.1	39.0	34.6	33.1	33.0	34.6	36.8	36.2	34.2	35.0	38.4	39.2	71.9	50.5
17	39.1	40.9	40.0	41.4	40.8	43.5	45.0	44.6	44.6	43.8	41.7	39.3	38.4	37.7	37.0	38.0	39.6	41.6	45.5	50.3	54.7	61.6	66.0	73.4	80.5	47.2
18	81.4	83.4	85.0	88.5	90.8	90.9	90.3	90.8	91.6	90.3	87.4	82.9	78.3	78.4	80.6	79.8	73.4	62.9	60.7	61.9	63.8	63.2	66.6	68.2	91.6	78.8
19	69.2	69.4	70.7	71.8	73.0	75.3	78.8	72.9	70.3	80.8	85.1	83.7	86.1	84.0	83.4	83.5	85.5	86.2	83.2	85.8	86.2	86.4	86.4	79.4		
20	86.6	86.2	86.0	86.0	86.1	85.3	85.0	85.1	84.7	84.9	79.8	73.0	69.9	61.9	60.0	63.5	65.3	65.5	68.9	71.0	72.8	72.2	70.7	86.6	76.5	
21	70.6	70.9	68.6	67.9	69.7	68.9	68.7	64.3	67.3	66.2	65.4	61.6	63.7	75.2	82.6	87.0	89.1	89.5	85.3	83.2	83.0	82.9	77.3	76.9	89.5	74.4
22	82.8	83.1	78.7	82.1	83.9	82.2	82.0	81.1	82.0	83.1	82.7	77.2	73.5	69.3	77.3	80.7	81.8	80.8	81.7	82.1	81.5	80.8	78.6	75.0	83.9	80.2
23	72.8	71.5	69.7	69.7	70.0	69.6	68.9	69.7	70.3	69.0	67.6	64.6	62.1	62.3	61.2	59.0	59.4	58.6	59.1	59.2	58.4	60.1	61.3	64.1	72.8	64.9
24	65.0	66.1	67.7	68.7	70.8	70.3	69.8	69.8	71.5	71.9	74.4	70.4	65.5	69.8	70.5	68.5	68.3	72.6	77.1	77.5	77.3	77.7	77.9	78.6	78.6	71.6
25	79.6	78.4	77.2	76.5	78.8	78.3	76.2	75.6	75.8	76.2	76.5	72.1	67.7	63.1	66.2	69.3	72.0	74.4	75.6	76.3	76.0	76.2	75.7	74.4	79.6	74.5
26	71.9	70.1	68.2	67.1	65.6	64.7	64.5	63.9	63.9	63.4	63.1	62.8	62.6	61.3	60.5	56.9	55.1	56.3	58.8	58.8	59.7	62.9	64.2	64.8	71.9	63.0
27	64.9	65.8	65.8	66.6	67.4	70.4	70.8	73.6	74.7	75.1	76.7	71.7	68.3	68.6	71.8	73.6	73.2	75.5	79.4	79.4	78.8	78.5	77.8	79.4	72.8	
28	77.9	77.6	76.3	75.6	74.1	73.5	74.9	76.3	76.6	77.3	76.9	76.5	74.4	75.1	74.3	76.7	77.8	78.3	78.1	78.0	76.3	74.7	74.3	75.2	78.3	76.1
29	75.1	73.6	73.7	74.1	74.3	73.5	74.3	74.4	74.4	74.0	73.1	71.5	69.7	68.9	69.8	70.9	71.8	72.7	73.6	74.2	73.7	71.9	69.0	70.5	75.1	72.6
30	71.3	72.5	71.7	70.4</td																						

## Lagoon Precipitation (mm) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Total
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	
20	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.8	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Hourly Max	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	
Hourly Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

1-hour Precipitation (mm) at Trailer



## Windridge PM<sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ ) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-	-	
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	0.4	1.5	2.2	7.1	10.1	-	-	
3	6.2	4.8	4.8	4.4	4.0	1.8	1.5	1.8	0.9	2.6	2.6	1.8	3.3	2.2	3.7	8.1	6.2	8.8	8.1	8.8	8.4	6.2	4.8	5.1	8.8	4.6
4	5.5	4.4	2.6	3.7	3.7	0.7	0.0	0.0	0.4	1.8	3.7	4.4	8.4	13.9	11.4	8.8	6.3	4.4	3.3	3.7	10.3	10.3	7.7	5.9	13.9	5.2
5	3.7	0.7	1.5	1.8	5.8	5.5	4.4	4.0	4.8	4.4	4.8	10.6	8.8	5.5	4.4	8.4	7.7	5.5	3.3	5.1	3.7	0.4	2.6	3.3	10.6	4.6
6	3.3	3.3	2.2	1.5	2.9	2.9	1.5	1.4	1.5	3.7	3.7	3.7	3.3	1.5	1.1	2.7	5.1	5.1	3.3	2.1	1.8	1.1	2.2	0.7	5.1	2.6
7	0.0	1.8	1.1	3.3	2.9	0.0	0.0	4.8	4.0	0.8	0.0	0.0	3.3	3.3	1.5	1.1	1.1	4.4	4.0	0.0	0.0	1.1	1.5	5.1	5.1	1.9
8	5.1	3.3	3.8	2.9	4.8	5.1	2.6	1.1	2.2	3.3	4.0	6.6	4.0	2.9	6.2	5.1	1.4	1.1	2.2	1.5	3.7	4.3	5.9	4.4	6.6	3.7
9	2.2	1.1	0.0	3.3	6.6	4.8	5.5	5.9	5.5	3.3	1.8	1.1	0.8	1.8	1.5	4.8	4.0	2.6	5.9	2.2	2.9	4.0	3.7	4.4	6.6	3.3
10	4.4	5.5	5.9	5.5	3.3	3.8	6.3	27.1	19.8	13.9	12.1	11.0	12.1	8.8	18.0	15.8	13.2	13.9	16.5	12.8	10.3	7.1	5.1	9.9	27.1	10.9
11	9.9	5.9	5.5	9.2	8.8	8.1	6.2	5.5	5.1	7.3	7.3	5.5	C	C	8.8	8.4	5.9	4.4	5.9	4.8	5.1	6.6	4.4	5.9	9.9	6.6
12	7.3	8.4	5.5	4.0	5.5	5.9	7.0	4.8	3.7	8.8	9.9	9.9	12.1	10.3	8.4	16.5	14.3	13.9	11.0	9.2	6.2	3.3	5.9	5.1	16.5	8.2
13	5.1	7.7	7.0	5.9	6.2	5.9	4.4	4.0	5.1	5.2	3.3	4.8	3.3	2.9	3.3	2.2	1.8	2.2	5.9	4.4	2.9	3.7	4.4	4.4	7.7	4.4
14	4.0	3.3	2.6	4.4	2.2	0.4	1.5	3.7	5.1	3.7	1.5	1.8	9.2	9.5	13.2	13.9	8.1	3.3	9.2	8.1	4.4	3.3	5.5	6.3	13.9	5.3
15	2.6	0.0	0.7	1.1	1.8	5.1	3.3	0.4	2.2	3.8	7.7	6.6	5.1	4.8	2.6	0.4	1.8	3.7	3.3	1.8	2.7	2.9	0.4	1.1	7.7	2.8
16	0.7	0.9	1.8	4.0	2.9	1.5	3.3	4.8	4.8	2.6	0.0	1.1	1.1	2.9	4.0	4.0	5.2	10.3	14.3	11.0	19.1	24.5	24.5	11.7	24.5	6.7
17	7.7	5.5	11.7	22.7	27.5	26.0	11.0	5.9	2.2	8.4	13.9	17.2	9.2	9.2	7.7	8.8	10.3	7.0	2.9	7.7	7.0	4.0	1.5	27.5	10.2	
18	2.7	4.4	2.9	2.6	1.8	0.4	3.3	3.6	2.9	2.8	1.1	0.7	0.4	2.6	2.6	4.4	5.9	5.2	4.0	2.1	1.5	3.7	4.4	6.2	6.2	3.0
19	7.3	4.4	1.8	2.6	1.8	1.1	1.5	2.6	2.6	0.0	0.0	1.4	1.8	1.8	0.9	2.1	3.7	5.1	7.0	7.7	10.6	9.9	8.1	7.3	10.6	3.9
20	3.7	1.5	2.2	4.4	5.9	6.2	4.4	3.7	3.3	2.6	1.5	1.1	8.4	27.5	4.4	4.4	6.6	4.8	3.3	4.0	3.3	2.2	2.6	4.4	27.5	4.8
21	3.7	3.3	3.7	10.3	8.4	4.8	2.6	1.5	1.1	0.0	0.4	7.3	8.4	7.7	7.7	8.4	13.2	14.3	8.1	5.5	4.8	4.4	1.8	0.4	14.3	5.5
22	3.7	2.6	2.9	2.6	0.0	0.0	0.0	0.0	1.5	1.8	2.2	2.9	2.6	4.0	2.7	1.8	2.2	2.9	3.7	2.2	2.0	3.3	4.3	4.3	2.3	
23	3.7	3.6	1.8	1.1	5.1	5.5	7.0	5.9	3.3	4.3	2.2	0.0	0.0	1.1	1.8	15.0	14.3	7.7	2.2	2.6	2.2	6.2	7.7	4.8	15.0	4.6
24	1.8	5.1	5.9	2.2	0.0	0.0	0.0	0.0	0.0	3.7	3.3	3.3	2.9	3.7	6.2	3.7	7.3	6.2	4.4	2.9	6.6	13.6	8.8	13.6	4.1	
25	6.2	4.4	5.9	8.5	8.1	4.4	0.8	0.4	2.2	4.0	3.3	5.5	7.0	7.7	6.6	8.1	5.9	10.1	11.7	9.9	14.7	8.1	2.6	5.9	14.7	6.3
26	7.0	5.5	2.9	0.0	0.0	0.0	2.9	3.7	3.3	5.9	4.4	1.5	0.4	1.1	0.0	4.8	5.1	1.1	6.6	5.5	1.5	3.7	2.2	0.0	7.0	2.9
27	0.0	1.1	1.8	2.2	2.6	5.5	4.8	5.5	2.9	1.5	6.2	8.8	9.9	10.6	6.2	4.0	5.5	5.9	4.8	4.0	4.0	19.8	15.8	19.8	5.8	
28	10.6	8.1	10.6	7.7	5.1	3.7	6.2	8.8	11.4	14.3	9.9	19.8	16.5	12.1	13.9	9.2	4.0	5.9	6.2	5.1	9.2	9.9	8.4	8.8	19.8	9.4
29	7.7	4.4	2.9	10.0	12.5	12.1	8.8	4.4	25.7	11.3	8.1	11.7	21.6	28.6	19.1	13.6	12.1	13.6	16.5	14.7	13.2	11.4	17.7	10.1	28.6	13.0
30	13.9	19.1	19.4	12.1	7.7	15.0	12.5	10.6	23.8	9.2	14.7	10.0	18.3	38.8	34.1	31.5	28.9	22.9	23.1	15.4	11.3	11.4	9.2	8.1	38.8	17.5
31	7.3	8.4	7.3	5.2	4.0	2.6	2.9	3.8	4.0	5.5	2.9	0.0	1.5	3.7	3.3	4.0	2.9	15.4	26.8	26.8	39.4	10.6	6.6	4.4	39.4	8.3
Hourly Max	13.9	19.1	19.4	22.7	27.5	26.0	12.5	27.1	25.7	14.3	14.7	19.8	21.6	38.8	34.1	31.5	28.9	22.9	23.1	15.4	19.1	24.5	24.5	15.8		
Hourly Average	5.0	4.4	4.3	5.1	5.3	4.9	4.0	4.5	5.4	4.8	4.8	5.7	6													

## Windridge PM<sub>10</sub> ( $\mu\text{g}/\text{m}^3$ ) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	46.3	22.4	33.0	30.1	46.4	40.0	104.9	348.7	298.8	362.2	245.9	171.1	141.5	37.2	43.5	54.8	56.9	83.0	108.4	124.6	47.1	6.2	17.4	21.7	362.2	103.8
2	13.3	13.9	8.3	6.2	9.0	10.4	6.6	5.4	6.2	142.2	138.0	115.4	54.1	22.4	54.8	147.9	159.2	106.3	92.2	68.9	11.8	18.1	20.3	16.7	159.2	52.0
3	14.6	10.4	9.0	8.2	11.2	7.6	4.7	3.3	6.9	28.7	12.4	23.1	54.1	4.7	8.3	13.2	18.9	27.3	18.9	21.7	13.2	12.5	9.7	16.7	54.1	15.0
4	39.3	12.5	25.2	10.4	8.3	5.5	11.1	11.8	13.2	50.5	41.4	234.6	367.2	293.9	249.4	107.7	76.0	83.7	76.7	45.6	115.4	193.7	224.0	45.6	367.2	97.6
5	18.9	28.7	31.5	24.5	37.2	102.1	40.7	70.3	112.6	64.7	155.6	179.2	133.8	75.3	78.6	71.7	76.4	31.5	16.7	16.7	11.1	13.2	21.7	4.0	179.2	59.0
6	4.7	13.9	15.3	13.2	9.7	9.0	9.7	17.4	20.3	23.1	30.8	27.3	35.8	38.6	41.4	32.2	22.4	19.6	24.5	16.7	10.4	6.9	15.3	39.3	41.4	20.7
7	21.0	11.1	11.1	13.7	10.4	10.4	15.3	16.0	12.5	12.5	15.3	21.7	17.4	24.3	31.5	29.0	16.7	19.6	17.4	12.5	12.5	21.7	11.1	31.5	31.5	17.3
8	32.2	9.7	9.7	10.4	13.9	17.4	16.0	34.4	29.4	15.5	29.4	61.9	200.8	56.9	43.5	70.3	15.3	18.1	15.3	11.1	10.4	11.1	16.1	16.7	200.8	31.9
9	14.5	8.5	14.6	21.7	18.8	16.0	10.4	11.1	8.3	25.2	19.6	17.4	49.2	49.9	40.7	22.5	23.1	27.3	39.3	18.8	11.1	15.3	15.3	40.0	49.9	22.4
10	31.5	68.2	87.2	37.2	16.0	20.0	77.4	504.7	280.4	107.0	47.8	45.6	40.0	28.0	78.8	98.8	83.0	69.6	88.6	27.3	13.2	12.5	32.2	22.4	504.7	79.9
11	28.0	18.1	35.8	13.2	17.4	17.1	31.5	19.6	16.0	24.5	30.1	25.9	C	C	45.6	44.2	14.6	16.7	65.4	53.4	18.9	42.1	24.1	25.9	65.4	28.6
12	44.9	25.2	23.8	135.2	93.6	47.1	12.5	25.2	63.3	128.8	233.5	186.7	253.1	147.2	133.8	83.0	92.2	139.4	28.7	25.2	17.4	16.3	20.3	16.0	253.1	83.0
13	10.4	8.3	12.3	14.6	12.5	31.5	10.4	8.3	13.9	78.1	56.9	25.2	17.4	22.4	23.8	29.4	34.4	11.8	6.9	19.6	14.6	13.9	9.0	11.1	78.1	20.7
14	8.3	25.1	21.7	16.7	9.7	6.9	8.3	22.4	11.1	9.0	13.2	17.4	334.0	141.5	367.2	291.7	105.7	98.3	183.1	154.9	50.3	36.5	21.0	66.8	367.2	84.2
15	35.1	46.4	42.8	17.4	11.1	11.8	9.7	40.7	37.9	28.7	26.6	37.9	56.1	53.4	72.4	66.8	25.2	22.4	21.7	22.4	11.1	11.8	11.8	8.3	72.4	30.4
16	10.4	7.6	9.0	8.3	6.9	5.4	9.0	5.8	3.3	6.2	7.6	9.7	13.2	33.0	113.3	67.3	199.5	156.3	293.1	343.9	504.9	504.7	457.4	162.0	504.9	122.4
17	47.8	123.2	324.0	436.3	504.7	209.9	64.0	64.7	66.1	101.3	368.6	504.7	174.0	76.7	117.6	160.6	115.4	61.2	24.5	16.6	28.8	21.0	8.4	8.3	504.7	151.2
18	8.0	14.6	11.8	10.4	20.3	19.6	9.0	16.1	19.6	33.0	23.8	66.8	7.6	14.6	20.3	16.0	8.1	13.2	9.7	11.1	11.1	7.6	7.6	6.9	66.8	16.1
19	4.0	6.6	5.5	3.3	5.5	8.3	6.9	9.7	7.6	9.0	12.5	100.1	154.9	101.4	154.9	156.1	116.9	154.2	110.9	88.7	107.7	127.7	107.7	80.4	156.1	68.3
20	58.7	38.6	42.8	30.1	21.0	18.9	17.4	4.7	6.2	9.0	7.6	7.6	35.1	37.2	28.0	61.9	60.5	41.4	33.7	58.3	56.1	51.3	56.9	40.7	61.9	34.3
21	49.9	46.4	81.6	88.0	86.6	20.3	49.2	34.4	23.8	27.3	19.6	30.8	33.0	22.4	52.0	47.8	24.5	16.9	63.3	68.2	69.6	58.7	27.3	9.0	88.0	43.8
22	11.1	23.1	54.1	25.2	39.3	33.7	25.2	17.0	11.8	6.7	4.0	8.3	34.4	43.5	6.9	8.3	6.2	4.2	4.0	9.0	7.6	13.2	8.3	6.9	54.1	17.2
23	8.3	12.5	13.2	11.1	8.3	9.0	7.6	7.6	9.0	7.6	7.7	15.3	12.5	11.8	11.1	9.7	5.5	7.6	13.9	6.9	3.3	9.0	7.6	5.5	15.3	9.2
24	4.0	2.6	5.5	4.7	4.7	4.7	6.2	4.0	4.0	4.0	4.0	4.0	7.6	12.5	10.4	9.0	11.1	9.7	23.1	21.7	15.3	13.2	24.5	9.5	24.5	18.2
25	13.2	11.8	8.3	9.0	9.0	8.3	9.7	14.6	20.3	13.9	13.2	9.7	17.4	9.0	8.3	11.8	11.1	12.5	25.0	21.7	14.6	8.3	6.9	13.2	25.0	12.5
26	12.5	13.3	9.0	8.3	9.0	28.7	17.9	19.6	13.9	16.0	18.9	32.3	22.4	12.5	9.7	11.1	10.4	13.9	9.8	6.2	11.8	17.4	4.7	4.7	32.3	13.9
27	6.2	4.0	6.2	6.2	3.3	4.0	6.2	4.0	4.0	4.7	4.7	78.8	56.2	37.9	25.9	49.9	176.8	23.1	20.3	41.3	23.1	39.3	62.7	40.0	176.8	30.4
28	19.6	21.0	15.9	9.0	14.6	14.6	19.6	20.2	34.4	23.8	19.0	40.7	33.0	40.7	38.6	39.3	35.1	48.5	64.0	54.8	58.4	29.4	59.8	61.2	64.0	34.0
29	45.7	19.6	16.7	9.0	11.2	9.7	7.6	6.2	47.1	4.7	6.2	46.8	78.8	54.8	11.8	18.0	14.6	11.8	19.6	16.7	30.9	15.3	95.7	67.5	95.7	27.7
30	110.5	88.0	101.7	42.8																						

## Windridge TSP ( $\mu\text{g}/\text{m}^3$ ) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	66.8	30.1	47.8	52.7	81.7	75.3	189.5	391.2	504.0	503.9	340.3	260.0	203.6	55.5	57.6	80.9	88.6	121.8	151.4	174.7	70.3	21.0	21.7	37.9	504.0	151.2
2	26.6	25.2	9.0	13.2	11.8	23.1	9.0	6.0	6.2	201.4	200.1	181.7	81.6	29.5	65.4	206.4	241.0	155.6	146.5	100.6	13.2	22.4	29.3	241.0	76.3	
3	16.0	20.3	9.0	9.7	15.3	6.9	6.1	6.8	8.3	54.8	15.3	38.6	91.5	13.2	25.2	18.1	28.7	43.5	23.8	30.1	17.4	18.1	7.6	91.5	22.8	
4	48.5	21.0	30.1	13.2	9.7	7.6	11.8	11.8	19.6	74.6	49.1	387.8	504.0	504.0	446.9	153.5	131.7	124.6	126.0	65.4	185.2	226.1	275.5	504.0	146.4	
5	34.4	45.6	42.7	40.7	78.8	211.4	73.8	123.2	169.7	99.9	236.0	291.7	229.0	115.5	136.5	115.7	138.0	51.6	26.6	19.6	17.4	27.3	41.4	16.0	291.7	99.3
6	12.4	22.4	20.3	12.5	13.9	17.4	13.9	23.1	25.9	25.2	39.3	37.9	38.6	56.2	49.9	46.4	35.8	30.1	17.7	23.1	14.6	11.1	18.1	45.0	56.2	27.1
7	25.2	13.2	17.4	16.7	11.7	17.4	16.0	18.1	11.1	15.3	16.7	19.6	21.7	31.5	40.0	37.9	27.3	24.5	20.3	20.3	21.7	25.2	14.6	40.0	20.8	
8	23.1	20.3	14.6	18.9	20.3	25.2	22.4	47.8	34.4	25.9	40.0	82.3	68.9	58.3	60.5	93.6	18.9	11.1	19.6	13.2	13.6	11.8	20.3	93.6	32.8	
9	13.2	15.3	17.4	28.7	24.5	28.7	17.4	13.2	11.1	33.0	20.3	28.0	68.9	59.8	44.2	49.9	28.0	37.2	45.6	22.4	19.6	23.8	19.6	74.6	31.0	
10	51.3	122.5	151.4	49.2	27.3	28.7	129.5	503.9	443.5	182.4	74.6	59.0	59.7	37.2	121.8	148.6	114.7	87.2	159.2	42.1	16.7	16.0	42.8	503.9	112.3	
11	32.3	18.9	52.7	24.5	28.7	18.9	56.2	22.4	23.1	24.2	28.7	28.0	C	C	66.1	49.2	19.0	20.3	92.2	35.8	21.0	39.3	33.7	33.0	92.2	34.9
12	60.5	34.1	30.1	128.8	123.9	63.4	17.4	28.7	91.5	190.2	363.6	317.8	444.1	257.2	239.5	129.5	157.7	247.3	37.9	33.7	30.1	21.0	30.8	23.8	444.1	129.3
13	18.9	15.3	18.9	18.9	13.9	43.5	8.3	4.7	10.4	115.4	73.1	25.2	26.6	36.5	42.8	52.7	57.6	16.0	10.4	28.7	16.7	13.9	12.5	115.4	29.0	
14	8.3	33.7	27.3	23.1	16.0	9.7	21.0	28.0	15.3	10.4	16.7	22.4	372.8	193.7	391.1	362.9	150.7	124.6	245.9	193.7	71.7	65.4	37.2	89.6	391.1	105.5
15	56.9	71.7	72.4	19.6	11.8	12.3	18.1	56.2	51.3	47.1	38.6	61.2	95.7	79.5	124.0	111.2	42.6	39.3	23.1	30.1	18.1	12.5	17.6	15.3	124.0	46.9
16	9.7	9.7	14.6	11.8	9.0	7.6	4.7	4.0	4.0	13.7	7.6	9.7	27.3	43.5	202.2	116.9	379.9	267.0	487.1	504.0	504.0	503.9	504.0	269.9	504.0	163.2
17	68.2	251.5	504.0	504.0	503.9	423.6	123.9	108.7	111.2	157.0	503.9	504.0	258.3	115.4	196.5	247.4	181.2	82.3	27.9	14.6	28.7	28.0	6.2	9.7	504.0	206.7
18	15.3	14.6	15.3	11.1	15.3	16.7	1.6	9.0	11.8	49.2	17.6	37.2	7.6	18.8	42.1	33.7	14.8	24.5	13.9	21.0	18.1	10.4	12.5	9.7	49.2	18.4
19	8.7	4.7	1.9	2.6	6.2	5.5	4.7	11.1	14.6	8.8	15.3	17.4	38.6	26.4	39.9	47.1	53.4	65.4	55.5	68.2	90.8	131.0	140.8	93.6	140.8	39.7
20	64.7	41.4	28.7	22.4	17.5	11.8	9.0	3.3	9.0	13.2	13.9	21.0	44.9	44.2	23.8	71.7	88.7	53.4	30.8	53.4	54.8	59.8	62.2	58.4	88.7	37.6
21	64.0	58.4	77.4	107.4	81.6	22.4	30.1	23.1	14.6	16.0	9.0	18.9	16.0	15.3	32.3	52.7	30.8	21.0	50.3	85.1	83.7	64.0	16.7	16.0	107.4	41.9
22	19.6	15.3	45.7	21.7	17.7	7.6	10.4	11.1	9.7	6.2	6.2	13.2	48.5	52.0	8.7	14.6	13.9	11.8	9.0	7.6	15.3	12.5	9.7	9.7	52.0	16.6
23	9.0	17.4	19.6	14.6	13.2	13.9	13.8	10.4	9.7	11.1	10.4	14.6	13.2	8.3	15.3	12.5	11.1	17.8	9.7	13.2	8.3	6.2	6.2	19.6	12.2	
24	6.9	6.2	3.3	0.5	9.7	9.0	5.5	8.3	7.6	7.6	4.7	5.5	12.5	23.1	13.2	6.9	14.6	16.0	23.8	21.7	21.0	10.4	26.6	11.5		
25	12.5	13.2	10.4	11.8	6.2	5.5	7.6	8.9	9.0	14.6	13.9	11.8	13.9	9.0	6.2	11.8	9.7	13.2	35.1	23.8	18.2	8.3	5.5	16.0	35.1	12.3
26	22.4	18.2	11.8	13.2	9.7	21.7	20.4	26.6	21.0	20.3	23.8	26.4	16.7	10.4	12.5	17.9	6.2	16.7	7.6	11.1	13.9	15.5	10.4	7.6	26.6	15.9
27	6.9	7.6	5.5	2.0	6.9	8.3	4.7	6.2	6.2	7.6	15.3	142.3	82.3	56.9	37.2	71.6	300.2	25.2	35.8	61.1	42.1	59.8	80.2	300.2	46.7	
28	25.2	28.7	16.0	10.4	25.2	15.3	26.6	25.2	45.8	18.9	17.4	46.4	33.7	52.0	36.1	44.2	53.4	44.2	50.6	51.3	60.5	33.7	59.8	56.4	60.5	36.5
29	54.1	27.3	25.2	12.5	14.6	11.8	10.3	20.3	44.3	12.5	7.6	65.4	135.9	71.7	14.6	21.7	13.9	17.4	18.2	21.7	62.6	23.1	95.0	90.8	135.9	37.2
30	123.2	90.8	133.0	69.6	22.7	92.2	59.7																			

## West PM<sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ ) – December 2017

Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	0.6	0.5	0.6	0.4	0.3	0.5	0.9	1.3	1.4	2.7	2.7	2.8	2.0	3.6	2.5	1.6	1.3	0.9	0.5	0.5	0.5	0.5	0.7	0.8	3.6	1.2
2	1.0	1.7	1.2	0.9	1.0	0.6	0.6	0.5	0.6	2.7	2.7	2.1	1.5	1.9	1.0	0.8	0.6	0.4	0.8	2.0	3.7	2.0	4.0	7.6	7.6	1.8
3	6.0	5.9	2.3	1.6	1.4	1.2	1.2	1.3	1.3	1.4	3.1	3.4	5.2	5.5	7.5	10.0	10.7	9.5	8.5	8.1	5.7	4.8	5.4	5.6	10.7	4.9
4	5.1	2.7	1.5	1.3	0.9	0.7	0.7	1.1	2.0	3.1	4.8	4.5	5.1	3.9	4.7	4.1	3.4	4.1	1.5	1.2	1.3	1.3	1.3	1.2	5.1	2.6
5	1.4	1.2	1.2	0.8	1.0	0.6	1.6	3.3	6.4	9.9	4.5	4.2	6.5	4.2	5.6	5.8	4.0	5.7	3.4	3.0	1.7	1.6	1.4	1.3	9.9	3.3
6	1.4	1.5	1.4	1.4	1.4	1.5	1.9	3.8	4.7	5.8	5.8	5.8	5.2	4.4	4.1	4.5	5.0	3.2	2.8	2.8	2.9	2.6	2.6	2.1	5.8	3.3
7	2.1	2.0	1.9	2.0	1.9	1.9	2.0	2.2	2.5	3.8	4.4	5.1	4.4	4.3	3.9	4.4	4.3	3.2	2.7	2.7	2.6	2.4	2.4	2.3	5.1	3.0
8	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.6	3.2	4.1	5.4	5.0	4.7	3.8	4.7	4.9	4.4	4.2	3.5	3.7	3.8	3.8	3.8	3.6	5.4	3.5
9	3.4	3.4	3.3	3.3	3.1	3.2	2.8	3.0	3.2	3.1	3.3	3.8	3.5	3.6	4.1	3.3	3.3	3.5	4.0	3.8	3.9	4.0	4.0	3.3	4.1	3.5
10	3.6	4.1	4.2	4.0	4.9	7.6	12.2	14.0	13.5	13.9	14.0	13.9	13.4	13.6	12.2	11.1	9.2	11.8	12.4	11.8	11.0	10.9	10.8	10.1	14.0	10.3
11	9.2	8.8	8.7	8.5	8.3	8.2	8.2	9.2	11.1	11.9	11.4	12.5	13.3	14.7	12.5	11.4	10.6	11.6	9.7	8.5	8.6	8.4	8.0	7.5	14.7	10.0
12	7.2	6.9	7.0	6.8	6.8	7.0	6.9	8.2	9.9	10.1	10.1	10.4	11.0	8.4	8.6	5.6	4.7	4.9	5.0	5.5	5.6	5.5	5.4	5.2	11.0	7.2
13	5.4	5.5	5.6	5.5	5.6	5.2	5.4	7.4	8.7	9.8	8.4	9.6	6.8	7.5	7.3	4.8	5.0	3.2	3.8	4.6	4.4	4.5	3.9	3.8	9.8	5.9
14	4.4	3.8	3.6	3.6	3.7	3.8	4.0	4.0	4.4	4.8	4.6	5.7	5.1	5.7	6.0	5.5	4.6	4.4	4.4	4.1	3.7	3.6	3.5	3.5	6.0	4.3
15	3.7	3.6	3.6	3.6	3.4	3.4	3.4	3.4	3.1	3.4	3.9	4.0	4.9	4.4	3.6	3.3	3.1	3.2	2.5	3.5	3.0	2.9	2.6	2.5	4.9	3.4
16	2.5	2.5	2.4	2.2	2.2	2.3	2.3	2.7	2.7	3.2	3.4	3.2	3.5	2.2	2.5	4.3	1.5	1.0	0.9	0.8	1.2	0.8	0.9	4.3	2.2	
17	1.9	2.5	1.7	2.6	1.7	0.9	0.7	0.7	0.7	1.0	1.0	0.8	1.3	1.4	1.1	0.9	1.9	1.7	2.0	0.7	1.0	1.4	1.2	1.0	2.6	1.3
18	1.0	1.0	1.0	1.8	2.5	2.4	3.1	2.9	2.1	1.3	2.0	3.0	4.0	4.5	3.2	2.5	0.9	2.8	4.1	7.8	3.2	4.7	2.1	2.0	7.8	2.7
19	1.7	3.4	2.6	1.8	1.2	1.5	3.4	3.7	3.5	4.3	3.9	3.7	4.6	3.7	3.4	4.2	4.3	4.5	7.0	10.1	8.1	3.7	2.4	10.1	3.9	
20	2.8	3.0	2.7	2.0	1.1	0.9	0.8	0.9	1.1	1.1	2.6	7.9	16.0	4.1	3.7	2.6	1.8	2.0	2.0	2.2	2.1	1.9	1.5	16.0	2.9	
21	1.3	1.2	1.1	1.2	1.1	1.0	1.5	1.2	1.5	4.6	6.3	3.5	5.8	4.5	5.0	5.6	6.8	2.8	2.1	2.5	2.2	1.8	1.7	2.2	6.8	2.9
22	2.6	2.6	1.6	1.2	1.0	0.8	0.8	0.8	0.7	0.8	2.4	3.6	6.4	5.0	4.8	6.3	4.1	1.9	4.3	2.2	2.3	2.5	2.6	2.7	6.4	2.7
23	2.2	1.9	1.4	1.5	1.2	1.3	1.2	1.3	1.5	1.6	2.3	2.2	2.3	2.9	2.8	2.8	2.2	1.9	1.7	1.6	1.4	1.4	1.2	1.1	2.9	1.8
24	1.2	1.2	0.8	0.6	0.5	0.5	0.5	0.7	1.1	1.3	2.1	1.8	2.8	7.0	4.8	4.3	3.9	6.0	8.5	3.2	2.9	3.7	6.7	6.5	8.5	3.0
25	5.6	3.8	2.9	2.7	2.4	2.2	1.5	1.4	1.3	1.5	1.9	2.1	1.7	1.7	2.6	3.6	2.9	2.7	3.4	2.9	2.4	2.5	6.1	7.1	2.9	
26	5.4	3.1	2.2	1.9	1.5	1.4	1.6	1.4	2.1	2.0	2.2	2.4	2.4	2.5	2.6	2.5	2.2	1.9	2.0	1.9	1.8	2.0	2.0	1.7	5.4	2.2
27	1.5	1.4	1.3	1.3	1.1	1.1	1.3	1.4	2.4	8.4	9.4	5.5	4.9	5.0	4.7	2.4	2.1	1.6	1.6	2.8	3.0	3.2	2.4	9.4	3.0	
28	2.0	1.8	1.6	1.7	2.7	3.2	3.7	2.7	1.2	1.5	5.8	6.3	4.9	2.8	13.9	14.5	6.2	4.1	3.6	3.8	3.3	5.3	4.4	14.5	4.4	
29	2.9	3.0	2.4	1.7	1.3	1.7	1.8	3.4	5.8	12.7	9.2	8.5	8.8	8.2	7.1	8.2	5.8	5.9	7.2	5.0	6.0	6.1	6.7	12.7	5.7	
30	7.2	9.7	8.3	7.6	6.8	3.6	3.7	3.4	5.2	4.8	4.6	4.8	4.6	3.7	3.5	4.4	5.2	5.9	5.2	4.8	4.6	4.0	6.6	6.8	9.7	5.4
31	6.6	5.4	4.2	3.5	3.1	2.5	2.1	1.9	1.7	2.3	2.5	2.4	2.0	1.8	1.7	1.6	5.1	8.6	7.4	5.5	4.7	4.3	4.1	8.6	3.6	
Hourly Max	9.2	9.7	8.7	8.5	8.3	8.2	12.2	14.0	13.5	13.9	14.0	13.9	16.0	14.7	13.9	14.5	10.7	11.8	12.4	11.8	11.0	10.9	10.8	10.1		
Hourly Average	3.4	3.3	2.8	2.6	2.5	2.4	2.7	3.1	3.5</																	















## Entrance TSP ( $\mu\text{g}/\text{m}^3$ ) – December 2017

Day/ Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily Max	24-hour Average
1	6.1	13.1	12.9	30.6	74.4	189.3	1193.1	1596.3	1087.0	493.2	550.1	360.5	108.1	40.3	46.7	61.5	72.6	34.2	17.9	16.1	18.6	9.9	3.8	22.3	1596.3	252.4
2	32.0	180.3	194.0	239.8	132.2	113.7	94.0	89.9	69.6	91.3	92.5	50.1	46.6	41.0	30.2	112.4	62.6	27.6	50.1	91.5	74.3	13.5	8.8	7.5	239.8	81.1
3	6.6	14.2	6.0	16.7	19.0	20.6	19.7	96.2	83.7	289.1	116.8	13.8	24.8	40.6	22.0	65.3	45.6	30.7	23.4	29.7	6.7	21.3	15.4	32.5	289.1	44.2
4	204.9	276.4	329.5	198.5	238.9	374.7	512.0	809.1	1511.7	1449.1	1300.1	781.0	668.4	402.1	161.3	156.4	110.1	232.1	148.7	175.9	498.4	749.2	115.2	69.4	1511.7	478.0
5	111.5	57.3	76.0	60.9	167.8	166.7	335.8	211.4	208.5	197.0	188.0	109.4	138.1	337.6	310.1	146.9	158.9	429.2	237.1	278.8	497.2	468.4	300.6	238.7	497.2	226.3
6	308.0	250.1	379.1	232.3	316.5	199.6	246.5	229.5	203.8	906.9	960.6	1263.8	1163.1	1249.7	1224.2	912.8	1050.7	1063.1	839.9	129.3	124.0	388.9	511.4	488.2	1263.8	610.1
7	189.7	389.9	560.0	374.4	455.4	597.3	651.8	380.0	523.4	824.7	705.9	795.7	783.0	744.9	1116.8	1181.4	1129.1	897.9	547.2	844.9	833.6	886.9	1446.2	1124.4	1446.2	749.4
8	958.6	558.2	389.7	581.6	699.6	667.2	1221.4	913.3	1086.2	1283.4	2872.0	1992.4	1273.7	1087.8	823.9	192.4	184.2	216.0	369.1	90.6	140.8	285.0	770.9	1123.4	2872.0	824.2
9	957.8	720.6	1297.6	960.1	1134.7	708.4	747.4	818.5	1216.5	1221.4	1315.6	2045.1	1357.0	1334.1	1415.2	1421.2	1256.0	866.3	597.3	748.0	590.9	756.3	1481.3	1802.3	2045.1	1115.4
10	1998.2	1368.3	800.5	605.6	497.1	426.6	1560.6	1309.0	795.8	96.7	42.3	96.5	39.1	110.8	87.0	56.0	124.9	188.9	105.8	124.8	201.1	219.1	397.0	682.3	1998.2	497.2
11	476.5	321.5	584.4	409.0	622.8	413.8	246.0	390.1	680.9	321.8	656.4	1762.5	1227.4	1143.1	1180.1	372.8	292.1	663.1	535.3	592.8	1129.9	799.1	596.7	943.2	1762.5	681.7
12	860.9	841.8	1343.7	969.0	720.4	273.5	475.5	522.1	612.9	393.5	383.5	306.2	317.3	460.3	91.8	98.2	83.8	118.9	97.2	245.0	261.1	163.5	285.3	246.8	1343.7	423.8
13	232.4	331.2	223.7	334.0	112.5	254.3	96.6	281.4	404.8	350.6	473.7	392.1	300.1	433.8	374.4	510.8	125.7	233.3	265.2	176.0	217.6	114.1	56.2	42.2	510.8	264.0
14	53.2	24.4	17.5	9.2	12.8	224.7	33.8	33.6	59.0	68.5	1004.3	2110.0	1522.6	1778.9	876.9	972.0	557.6	1150.2	1206.7	1294.8	1081.8	795.7	772.5	946.2	2110.0	692.0
15	649.6	1042.3	629.6	245.9	99.8	101.8	192.4	174.7	465.2	271.7	357.4	275.8	155.3	112.3	74.1	71.3	69.7	67.1	45.7	91.8	38.2	19.4	44.6	20.9	1042.3	221.5
16	16.7	68.9	116.6	110.8	58.4	55.0	17.2	23.7	186.6	275.8	217.6	242.2	128.4	336.7	162.6	485.9	425.3	570.8	491.8	1368.4	2898.6	1024.1	522.9	126.2	2898.6	413.8
17	682.0	2111.9	2534.4	3084.2	1938.4	511.5	539.1	456.7	239.9	894.7	1365.5	437.0	98.6	142.3	154.8	103.9	14.4	67.5	19.2	5.5	4.5	3.4	11.2	6.9	3084.2	642.8
18	6.1	7.9	7.6	9.1	5.2	1.8	2.8	5.8	3.9	2.2	3.9	2.0	6.3	12.8	19.6	15.1	58.2	78.4	85.6	94.3	100.5	53.6	63.8	168.1	168.1	33.9
19	21.4	24.9	81.1	81.7	33.0	19.7	8.5	6.9	11.9	58.5	5.4	8.0	10.0	15.5	6.8	12.6	17.6	20.6	24.1	28.0	45.4	35.8	3.2	1.6	81.7	24.3
20	1.5	1.6	1.3	1.1	1.0	1.4	1.1	2.0	2.4	3.2	3.1	14.3	16.6	9.8	9.1	15.4	301.4	229.1	320.7	326.7	378.7	130.8	177.8	190.1	378.7	89.2
21	333.9	611.6	984.1	407.4	181.6	130.4	197.8	122.0	434.8	196.7	50.8	64.3	56.4	180.8	10.7	8.0	8.8	12.5	5.6	10.5	9.4	7.2	3.9	4.4	984.1	168.1
22	5.5	11.5	4.3	3.4	2.9	2.4	1.6	2.8	3.0	2.4	2.7	15.6	16.4	6.4	4.8	5.1	1.7	0.7	4.0	9.1	8.4	6.7	7.7	6.2	16.4	5.6
23	7.8	6.9	4.1	3.2	7.7	4.5	6.3	9.7	10.3	65.8	100.9	69.4	112.9	128.7	132.1	97.9	94.1	68.6	58.6	33.3	51.5	24.9	11.0	13.0	132.1	46.8
24	12.6	19.7	8.8	4.6	2.2	2.2	3.4	4.4	4.7	6.3	23.2	6.7	14.8	4.7	7.1	40.6	45.6	9.4	4.8	5.2	4.7	15.4	6.5	45.6	10.9	
25	3.6	2.7	4.6	3.4	2.3	2.2	3.1	3.4	3.6	2.8	2.3	12.7	3.9	1.7	3.7	2.9	3.1	5.2	5.2	5.3	1.7	3.5	8.3	9.3	12.7	4.2
26	6.8	9.3	21.6	18.7	312.3	159.7	117.8	345.4	284.0	349.8	514.9	275.4	97.0	88.3	169.1	115.3	202.5	64.8	32.4	154.5	163.2	10.5	18.0	32.9	514.9	148.5
27	4.1	3.9	2.1	1.6	0.9	1.5	1.3	5.8	7.8	13.7	20.7	263.4	226.2	278.2	424.2	30.5	56.0	7.4	16.7	8.7	11.1	13.6	9.7	6.1	424.2	59.0
28	5.0	3.6	3.7	5.3	8.3	8.5	4.8	9.0	6.5	10.8	11.5	13.8	138.6	37.2	4.5	7.5										



**AIR QUALITY MONITORING**

## MetOne BAM PM<sub>2.5</sub> Calibration

STATION: Lafarge  
 LOCATION: Exshaw - Lagoon  
 START TIME (MST): 8:30

OPERATOR: Darrin Pike  
 DATE: October 13, 2017  
 END TIME (MST): 9:30

MONITOR INFO / PARAMETER VALUES:

Make/Model	<u>MetOne BAM</u>	Audit Device Model	<u>Delta Cal</u>
Configuration	<u>PM2.5</u>	Audit Device S/N	<u>624</u>
Serial Number	<u>T19087</u>	Certification Date	<u>02-Dec-16</u>

AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C)	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (l)	-2.6	650	0.00	16.7
	MEASURED ( AF )	<u>-2.0</u>	<u>650</u>	<u>0.30</u>	<u>16.30</u>
Adjusted Data	AF Difference (AF-l)	0.6	0	0.30	-0.40
	MEASURED ( M )	<u>-2.0</u>	<u>650</u>	<u>0.30</u>	<u>16.74</u>
	Adj Difference (M-l)	0.6	0	0.30	0.04
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 1.0 L/min
					±2 min

Sample Head Inspect/Cleaning: Cleaned.

Status of sampling tape: New roll

Nozzle Inspection / cleanliness: Inspected and cleaned.

COMMENTS:

Performed self-test, all passed.



## AIR QUALITY MONITORING

# MetOne BAM PM<sub>2.5</sub> Calibration

STATION: Lafarge  
LOCATION: Exshaw - Lagoon  
START TIME (MST): 10:00

OPERATOR: Darrin Pike  
DATE: October 13, 2017  
END TIME (MST): 11:00

### MONITOR INFO / PARAMETER VALUES:

Make/Model	MetOne BAM	Audit Device Model	Delta Cal
Configuration	PM2.5	Audit Device S/N	624
Serial Number	T19087	Certification Date	02-Dec-16

### AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C )	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (I)	23.8	658	0.00	16.7
	MEASURED ( AF )	11.0	658	0.10	16.90
	AF Difference (AF-I)	-12.8	0	0.10	0.20
Adjusted Data	MEASURED ( M )	11.0	658	0.10	16.70
	Adj Difference (M-I)	-12.8	0	0.10	0.00
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 1.0 L/min

Sample Head Inspect/Cleaning: Cleaned.

Status of sampling tape: 3/4 roll

Nozzle Inspection / cleanliness: Inspected and cleaned.

### COMMENTS:

Sample pump malfunctioned, installed replacement. Performed leak check and flow calibration. Self-test passed OK.



## AIR QUALITY MONITORING

# MetOne BAM PM<sub>10</sub> Calibration

STATION: Lafarge  
LOCATION: Exshaw - Lagoon  
START TIME (MST): 9:30

OPERATOR: Darrin Pike  
DATE: October 13, 2017  
END TIME (MST): 10:00

### MONITOR INFO / PARAMETER VALUES:

Make/Model	<u>MetOne BAM</u>	Audit Device Model	<u>Delta Cal</u>
Configuration	<u>PM10</u>	Audit Device S/N	<u>624</u>
Serial Number	<u>A3315</u>	Certification Date	<u>02-Dec-16</u>

### AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C )	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (I)	-1.8	651	0.00	16.7
	MEASURED ( AF )	<u>-1.7</u>	<u>651</u>	<u>0.40</u>	<u>16.47</u>
Adjusted Data	AF Difference (AF-I)	0.5	0	0.40	-0.23
	MEASURED ( M )	<u>-1.7</u>	<u>651</u>	<u>0.40</u>	<u>16.63</u>
	Adj Difference (M-I)	0.1	0	0.40	-0.07
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 1.0 L/min
					±2 min

Sample Head Inspect/Cleaning: Cleaned

Status of sampling tape: new roll

Nozzle Inspection / cleanliness: Inspected and cleaned

### COMMENTS:

Performed self test, all passed.



# MetOne BAM TSP Calibration

AIR QUALITY MONITORING

STATION: Lafarge  
LOCATION: Exshaw - Lagoon  
START TIME (MST): 10:00

OPERATOR: Darrin Pike  
DATE: October 13, 2017  
END TIME (MST): 10:30

MONITOR INFO / PARAMETER VALUES:

Make/Model	MetOne BAM	Audit Device Model	Delta Cal
Configuration	TSP	Audit Device S/N	624
Serial Number	A3589	Certification Date	02-Dec-16

AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C )	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (I)	-1.7	650	0.00	16.7
	MEASURED ( AF )	-1.1	650	0.60	16.15
Adjusted Data	AF Difference (AF-I)	0.6	0	0.60	-0.55
	MEASURED ( M )	-1.1	650	0.60	16.71
	Adj Difference (M-I)	0.6	0	0.01	0:01
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 1.0 L/min
					±2 min

Sample Head Inspect/Cleaning: Cleaned

Status of sampling tape: New roll

Nozzle Inspection / cleanliness: Inspected and cleaned.

COMMENTS:

Performed self test, all passed.

# Calibration Report



Parameter **NO<sub>x</sub>-NO-NO<sub>2</sub>**  
Air Monitoring Network **Lafarge - Exshaw**

**AIR QUALITY MONITORING**

## Station Information

Calibration Date	October 16, 2017		Previous Calibration	September 11, 2017
Station Number	N/A		Station Location	Exshaw - Lagoon
Reason:	Routine	Installation	Removal	Other:
Start Time (MST)	9:50		End Time (MST)	14:55
Barometric Pressure	651	mmHg	Station Temperature	23.0 Deg C
Calibrator	SABIO 2010		Serial Number	103951108
NO Cal Gas Conc	51.4	ppm	Cal Gas Expiry Date	July 26, 2019
NOx Cal Gas Conc	51.5	ppm	Cal Gas Serial #	cc27839

## DACS Information

DACS make	Campbell Scientific CR1000	DACS serial No.	67802
Parameter	NO2	NOx	NO
Before	0.998039	0.998368	0.999391
Data Offset	1.609560	3.366560	3.333772
After	0.995179	0.991116	0.995311
Data Offset	-0.629602	2.309463	2.544159
Channel #	3	1	2
Voltage Range	0 - 5 VDC	0 - 5 VDC	0 - 5 VDC

## Analyzer Information

Analyzer make/model	T200	Analyzer serial #	642	
Test Point	before		after	
Concentration range	0 - 500	ppb	0 - 500	ppb
NO Slope	1.010		1.033	
NO Offset	0.2	mV	0.2	mV
NOX Slope	1.010		1.039	
NOX Offset	0.2	mV	0.6	mV
HVPS	771	V	771	V
Moly Temp	316.9	degC	316.8	degC
O3 Flow	79	ccm	80	ccm
RxCell Press	6.0	inHg	6.4	inHg
Sample press	24.0	inHg	24.2	inHg
Sample flow	437	ccm	446	ccm

Notes: Zero and Span adjusted.

# Calibration Report



AIR QUALITY MONITORING

Parameter **NOx-NO-NO<sub>2</sub>**  
 Air Monitoring Network **Lafarge - Exshaw**

## Station Information

Calibration Date: **October 16, 2017**

Station Location:

**Exshaw - Lagoon**

## Calibration Data

	Dilution flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
zero	5000	0.00	0.0	0.0	0.0	-1.4	-1.4	-1.2	N/A	N/A
1	5000	39.00	398.6	397.8	0.8	400.2	397.5	1.7	0.9960	1.0007
2	5000	20.00	205.2	204.8	0.4	204.5	203.2	0.5	1.0032	1.0076
3	7000	14.00	102.8	102.6	0.2	100.2	98.9	0.1	1.0255	1.0372
AFZ	5000	0.00	0.0	0.0	0.0	-1.4	-1.3	-1.3	0.0000	0.0000
AFS	5000	40.00	408.7	407.9	0.8	386.7	386.5	-0.7	1.0571	1.0555
								Average Correction Factor	1.0082	1.0152

As Found Concentrations: **NO<sub>x</sub>= 391.4**

**NO= 391.1**

As Found Percent Change **NO<sub>x</sub>= -4.2%**

**NO= -4.1%**

## GPT Calibration Data

Dilution Flow **5000** ccm Source Gas Flow **39.00** ccm

O <sub>3</sub> Setpoint (V)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO <sub>2</sub> conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO <sub>2</sub> conc (ppb)	NOx Correction factor	NO Correction factor	NO <sub>2</sub> Correction factor	Converter Efficiency
0	-1.4	-1.4	0.0	-1.4	-1.4	-1.2	N/A	N/A	N/A	N/A
NO point	398.4	398.4	0.0	401.9	398.4	2.4	0.9914	1.0000	N/A	N/A
0.87V	398.4	83.5	314.9	400.4	83.5	315.8	0.9950	1.0000	0.9972	100.3%
0.54V	398.4	218.0	180.5	402.4	218.0	183.3	0.9901	1.0000	0.9846	101.6%
0.30V	398.4	313.3	85.2	402.5	313.3	88.1	0.9899	1.0000	0.9673	103.4%
								Average Correction Factor	0.9917	1.0000
									0.9830	101.7%

## AIC Data

Parameter	Previous calibration				Current calibration			
	NOx	NO <sub>2</sub>	NO	ppb	NOx	NO <sub>2</sub>	NO	ppb
Auto zero	1.7	-0.3	1.8	ppb	0.8	-1.9	1.2	ppb
Auto span	380.6	-0.2	381.5	ppb	388.8	0.4	388.8	ppb

Calibration Performed By: Darrin Pike

## Calibration Summary



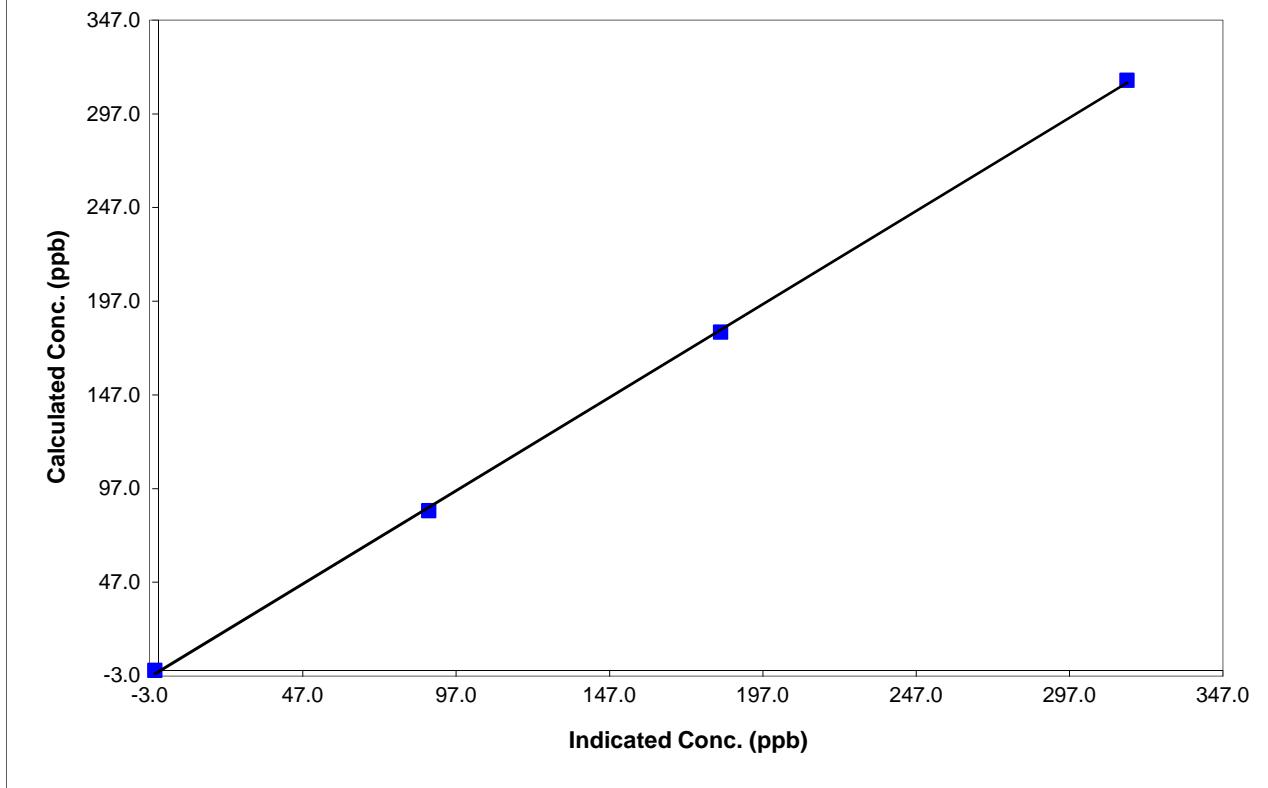
Parameter **NO<sub>2</sub>**  
 Air Monitoring Network **Lafarge - Exshaw**

<b>Station Information</b>			
Calibration Date	October 16, 2017	Previous Calibration	September 11, 2017
Station Number	N/A	Station Location	Exshaw - Lagoon
Start Time (MST)	9:50	End Time (MST)	14:55
Analyzer make	T200	Analyzer serial #	642

### **Calibration Data**

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-1.2	N/A	Correlation Coefficient	0.999814
314.9	315.8	0.9972		
180.5	183.3	0.9846		
85.2	88.1	0.9673		
			Slope	0.995179
			Intercept	-0.629602

### **NO<sub>2</sub> Calibration Curve**



## Calibration Summary



Parameter **NO<sub>x</sub>**  
 Air Monitoring Network **Lafarge - Exshaw**

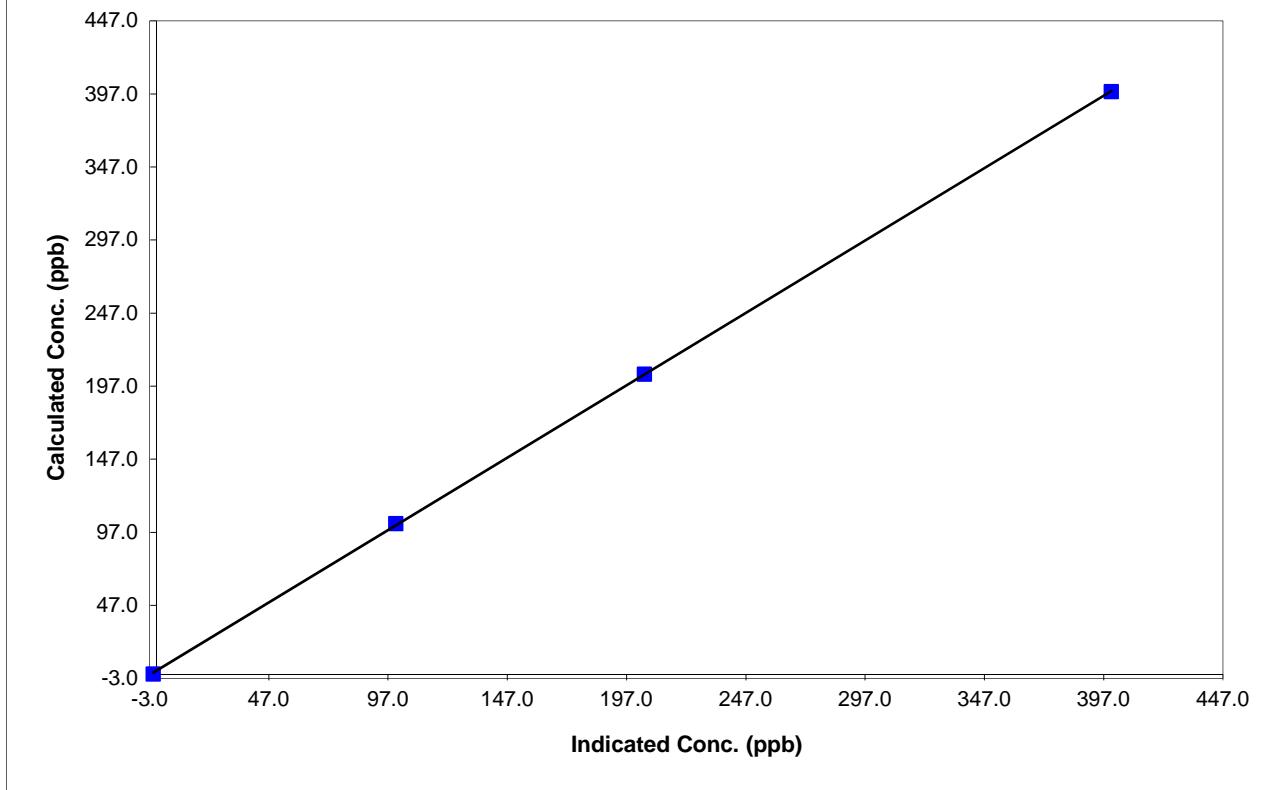
### Station Information

Calibration Date	October 16, 2017	Previous Calibration	September 11, 2017
Station Number	N/A	Station Location	Exshaw - Lagoon
Start Time (MST)	9:50	End Time (MST)	14:55
Analyzer make	T200	Analyzer serial #	642

### Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-1.4	N/A	Correlation Coefficient	0.999973
398.6	400.2	0.9960		
205.2	204.5	1.0032		
102.8	100.2	1.0255		
			Slope	0.991116
			Intercept	2.309463

### NOx Calibration Curve



## Calibration Summary



Parameter NO  
 Air Monitoring Network Lafarge - Exshaw

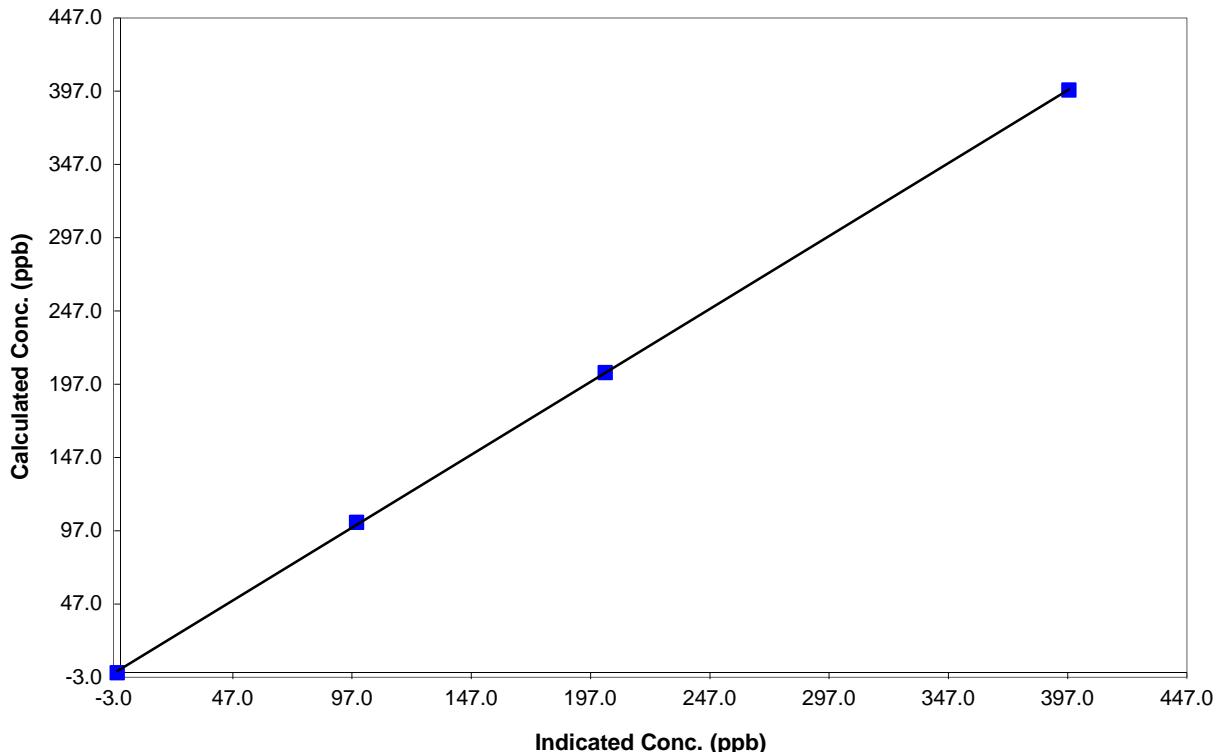
### Station Information

Calibration Date	October 16, 2017	Previous Calibration	September 11, 2017
Station Number	N/A	Station Location	Exshaw - Lagoon
Start Time (MST)	9:50	End Time (MST)	14:55
Analyzer make	T200	Analyzer serial #	642

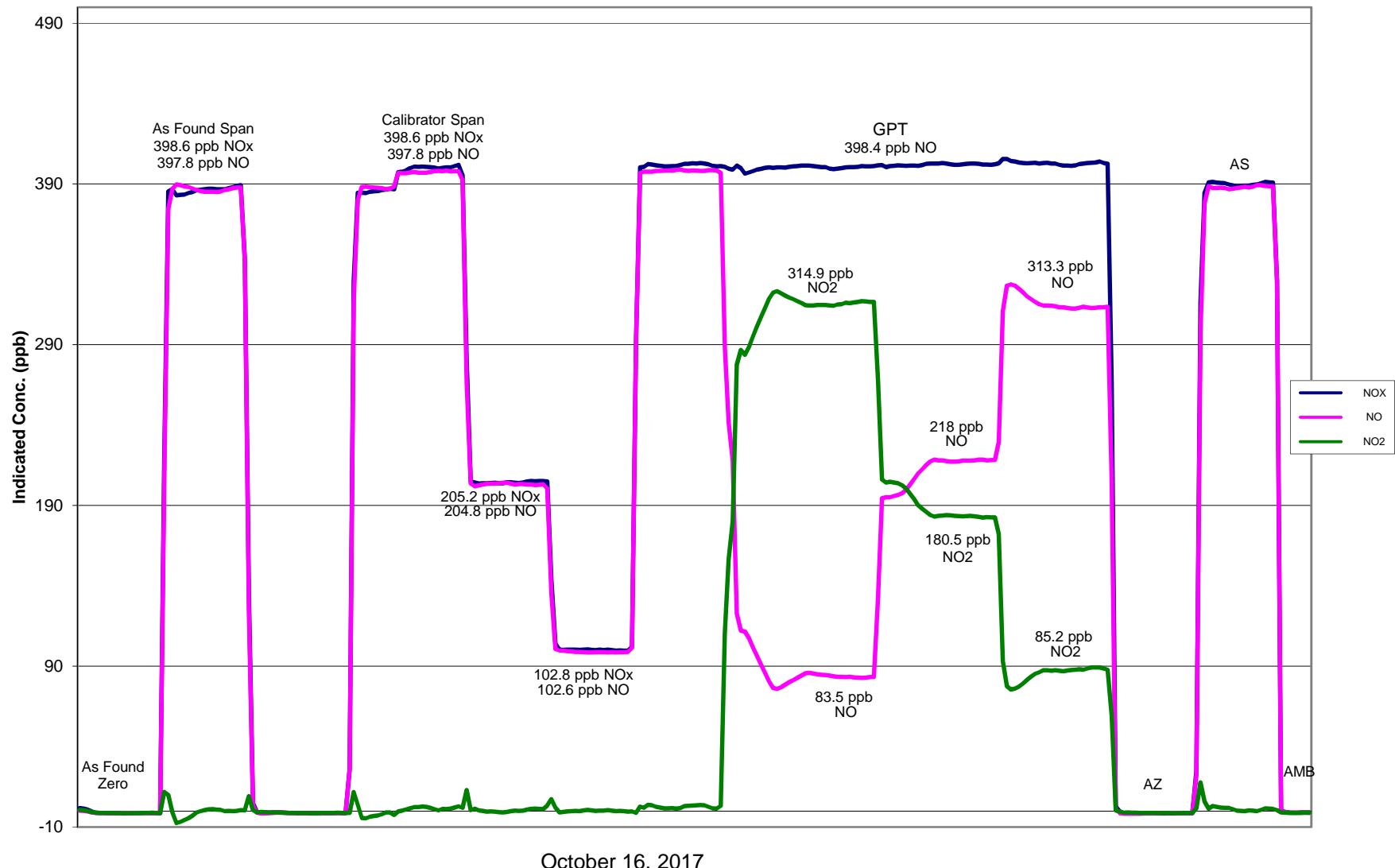
### Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
			Correlation Coefficient	Slope
0.0	-1.4	N/A		
397.8	397.5	1.0007		
204.8	203.2	1.0076		
102.6	98.9	1.0372		
			0.999953	0.995311
				2.544159

### NO Calibration Curve



### NOX Calibration



October 16, 2017

# Calibration Report



Parameter **SO<sub>2</sub>**  
Air Monitoring Network **Lafarge - Exshaw**

AIR QUALITY MONITORING

## Station Information

Calibration Date	October 16, 2017	Previous Calibration	September 11, 2017
Station Number	N/A	Station Location	Exshaw - Lagoon
Reason:	Routine	Install	Removal
			Other:
Start Time (MST)	9:50	End Time (MST)	14:55
Barometric Pressure	650 mmHg	Station Temperature	23.0 Deg C
Calibrator	SABIO 2010	Serial Number	103951108
Cal Gas Concentration	50.8 ppm	Cal Gas Expiry Date	July 14, 2020
Gas Cert Reference	cc27839		
DACS make	Campbell Scientific CR1000	DACS serial No.	67802
DACS voltage range	0 - 5 VDC	DACS channel #	4
DACS Scale High	500	DACS slope	500
DACS Scale Low	0	DACS intercept	0
Calculated slope	0.994786	Calculated slope	0.992125
Calculated intercept	1.579001	Calculated intercept	1.020080

Analyzer make	API Model 102A	Analyzer serial #	393
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Concentration range	before		after	
	0-500	ppb	0-500	ppb
Slope	0.897		0.911	
Offset	47.2	mV	45.4	mV
Pressure	23.6	in Hg	23.5	in Hg
Sample Flow	488	ccm	482	ccm
UV Lamp	2802	mV	2772	mV
HVPS	690	V	690	V
PMT Temp	7.4	degC	7.3	degC

## Calibration Data

Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
5000	0.00	0.0	0.2	N/A
5000	39.00	393.2	395.9	0.9931
5000	20.00	202.4	202.3	1.0004
7000	14.00	101.4	100.0	1.0141
5000	0.00	0.0	-1.0	As found zero
5000	39.00	393.2	385.0	As found span
Average Correction Factor				1.0026

Calculated value of As Found Response: 385.6 ppb      Percent Change of As Found: 1.9%

Auto zero	before calibration		after calibration	
	-0.2	ppb	0.1	ppb
	379.2	ppb	385.5	ppb

Notes: Adjusted Zero and Span.

Calibration Performed By: Darrin Pike

## Calibration Summary

Parameter SO<sub>2</sub>  
Air Monitoring Network Lafarge - Exshaw

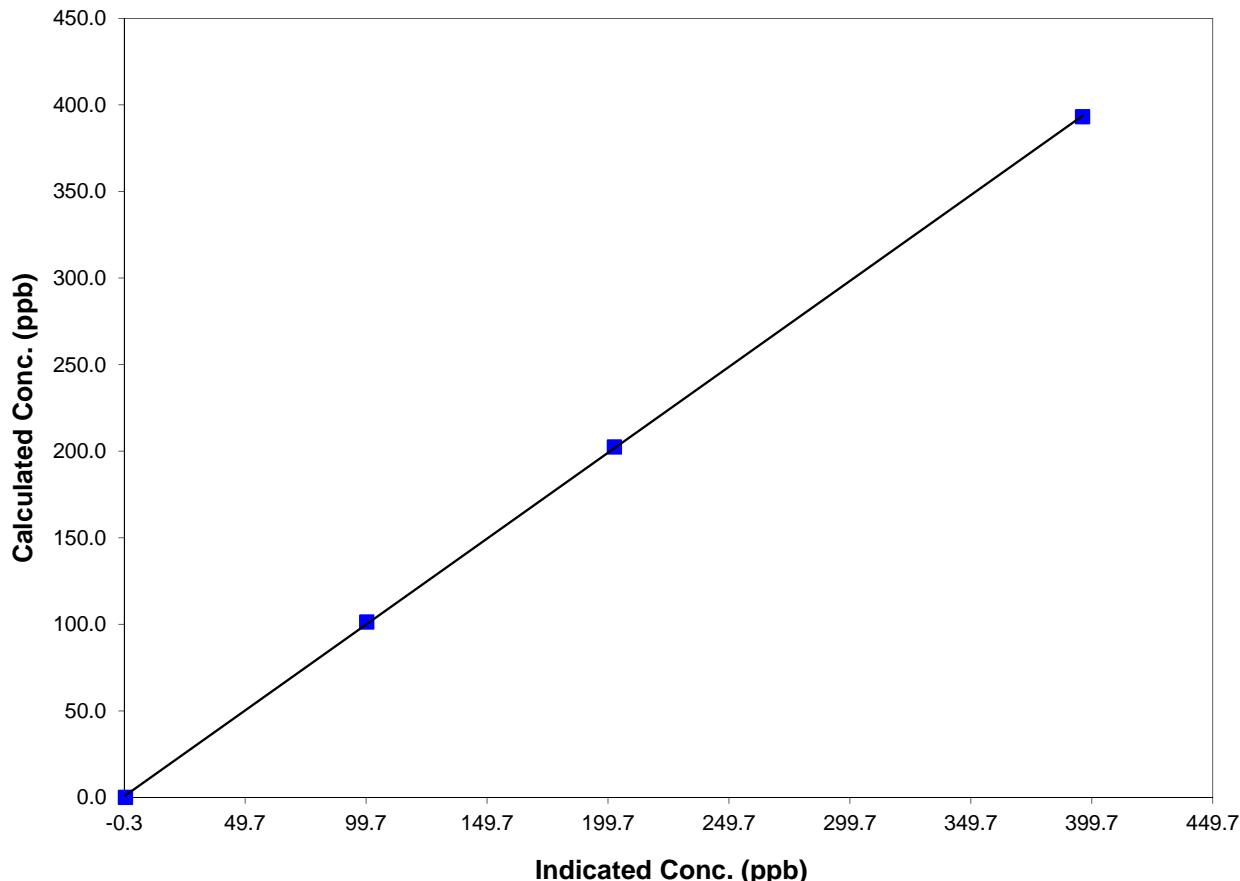


Station Information			
Calibration Date	October 16, 2017	Previous Calibration	September 11, 2017
Station Number	N/A	Station Location	Exshaw - Lagoon
Start Time (MST)	9:50	End Time (MST)	14:55
Analyzer make/model	API Model 102A	Analyzer serial #	393

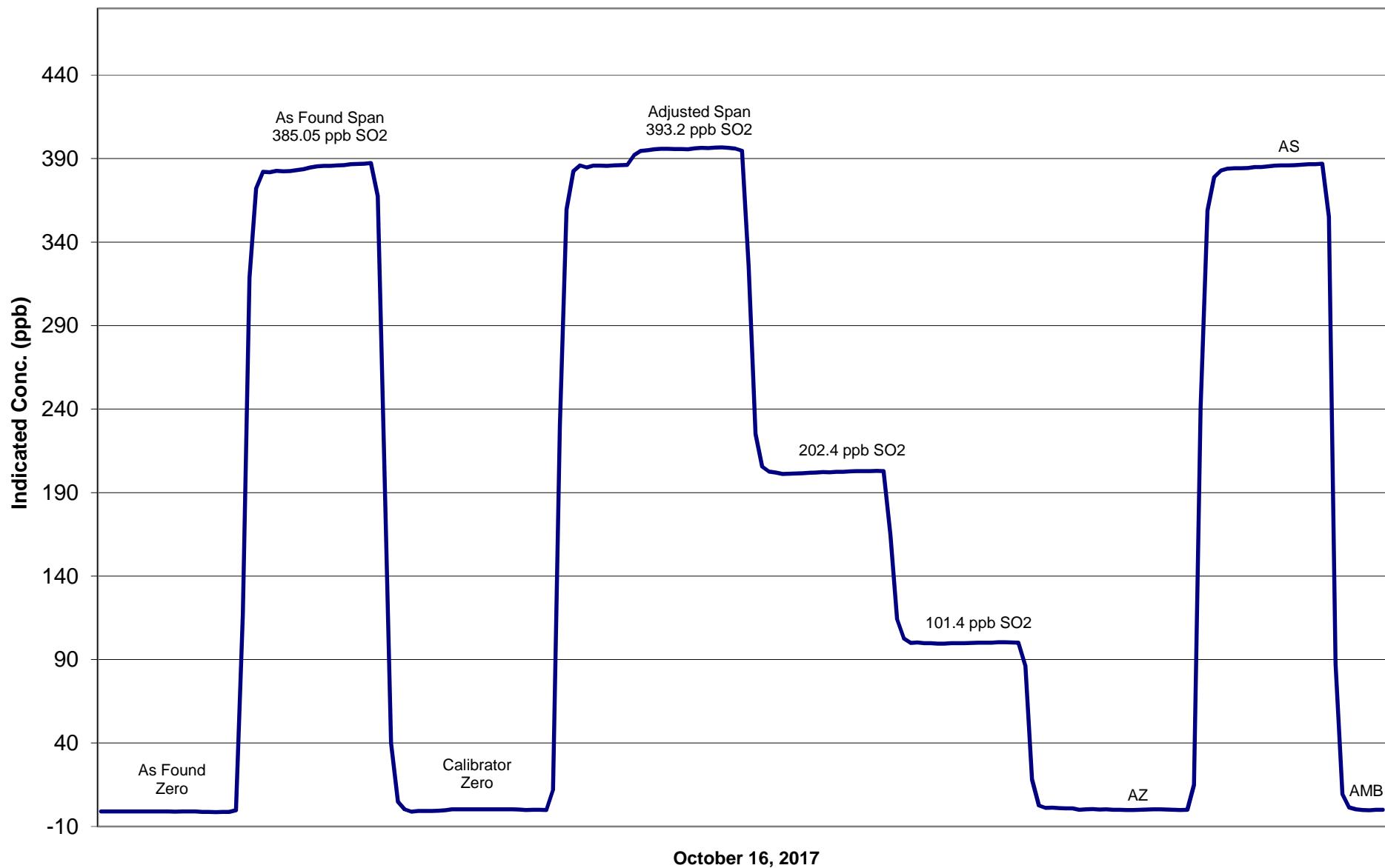
### Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.2	N/A		
393.2	395.9	0.9931	Correlation Coefficient	0.999956
202.4	202.3	1.0004	Slope	0.992125
101.4	100.0	1.0141	Intercept	1.020080

### SO<sub>2</sub> Calibration Curve



## SO2 Calibration





AIR QUALITY MONITORING

## MetOne BAM PM<sub>2.5</sub> Calibration

STATION: Lafarge  
LOCATION: Exshaw - Windridge  
START TIME (MST): 11:30

OPERATOR: Darrin Pike  
DATE: December 11, 2017  
END TIME (MST): 12:10

MONITOR INFO / PARAMETER VALUES:

Make/Model	<u>MetOne BAM</u>	Audit Device Model	<u>Delta Cal</u>
Configuration	<u>PM2.5</u>	Audit Device S/N	<u>620</u>
Serial Number	<u>U21074</u>	Certification Date	<u>14-Jun-17</u>

AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C)	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (I)	0.8	659	0.00	16.7
	MEASURED ( AF )	0.9	659	0.60	16.67
Adjusted Data	AF Difference (AF-I)	0.1	0	0.60	-0.03
	MEASURED ( M )	0.8	659	0.60	12:04
	Adj Difference ( M-I )	0.0	0	0.60	-0.03
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 1.0 L/min
					±2 min

Sample Head Inspect/Cleaning: Cleaned.

Status of sampling tape: new roll

Nozzle Inspection / cleanliness: Inspected and cleaned.

COMMENTS:

Performed self-test, all passed.



## AIR QUALITY MONITORING

# MetOne BAM PM<sub>10</sub> Calibration

STATION: Lafarge  
 LOCATION: Exshaw - windridge  
 START TIME (MST): 12:00

OPERATOR: Darrin Pike  
 DATE: December 11, 2017  
 END TIME (MST): 12:25

MONITOR INFO / PARAMETER VALUES:

Make/Model	<u>MetOne BAM</u>	Audit Device Model	<u>Delta Cal</u>
Configuration	<u>PM10</u>	Audit Device S/N	<u>620</u>
Serial Number	<u>U21075</u>	Certification Date	<u>14-Jun-17</u>

AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C)	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (I)	1.1	659	0.00	16.7
	MEASURED ( AF )	1.1	659	0.50	16.71
Adjusted Data	AF Difference (AF-I)	0.0	0	0.50	0.01
	MEASURED ( M )	1.1	659	0.50	16.71
	Adj Difference (M-I)	0.0	0	0.01	0:00
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 2 min

Sample Head Inspect/Cleaning: Cleaned

Status of sampling tape: New roll

Nozzle Inspection / cleanliness: Inspected and cleaned

COMMENTS:

Performed self test, all passed.



## AIR QUALITY MONITORING

# MetOne BAM TSP Calibration

STATION: Lafarge  
LOCATION: Exshaw - Windridge  
START TIME (MST): 12:20

OPERATOR: Darrin Pike  
DATE: December 11, 2017  
END TIME (MST): 12:40

### MONITOR INFO / PARAMETER VALUES:

Make/Model	<u>MetOne BAM</u>	Audit Device Model	<u>Delta Cal</u>
Configuration	<u>TSP</u>	Audit Device S/N	<u>620</u>
Serial Number	<u>U21073</u>	Certification Date	<u>14-Jun-17</u>

### AUDIT / CALIBRATION RESULTS:

	Ambient Temp. (° C)	Ambient Pres. (mmHg)	Leak Check (L/min)	Flow Rate (lpm)	Time settings (hh:mm)
As Found Data	Audit values (I)	1.6	659	0.00	16.7
	MEASURED ( AF )	1.3	659	0.50	16.80
Adjusted Data	AF Difference (AF-I)	-0.3	0	0.50	0.10
	MEASURED ( M )	1.3	659	0.50	16.72
	Adj Difference (M-I)	-0.3	0	0.50	0.02
	LIMITS	± 4.0 °C	5 mm Hg	1.0 L/min	± 1.0 L/min
					±2 min

Sample Head Inspect/Cleaning: Cleaned

Status of sampling tape: new roll

Nozzle Inspection / cleanliness: Inspected and cleaned.

### COMMENTS:

Performed self test, all passed.

**WSP**  
**AIR QUALITY MONITORING**  
**Field Service Report**

Air Monitoring Network / Client: Lafarge – Exshaw

**Station Information**

Visit Date: December 11, 2017 Project Number: 151-09626-00  
Station Location: Exshaw – Windridge Station Name: Lafarge – Windridge  
Reason for Visit: Routine monthly calibrations  
Arrival Time: 11:00 MST Departure Time: 15:00 MST  
Weather Conditions: clear and 1 degC.

**Record of Hours**

**Parts Used**

Employee	Category	Hours	Qty	Parts Description
DP	CAL	4	3	BAM Filter tape #460180
	TRV	3		

**Station Information**

**Time (MST)      Comments**

11:00 – Arrived at LaFarge plant, signed in  
  
11:30 - Flagged all PM channels at Windridge site  
  
12:10 - BAM PM2.5 calibration completed with no issues.  
  
12:25 - BAM PM10 calibration completed with no issues. .  
  
12:40 - BAM TSP calibration completed with no issues.  
  
12:45– left station to conduct audit on Grimms  
  
West Sharp:  
Measured Sample flow = 1.14 LPM  
Sharp AmbT = 1.2 degC  
Audit AmbT = 1 degC  
  
Berm Sharp:  
Measured Sample flow = 1.15 LPM  
Sharp AmbT = 1.3 degC  
Audit AmbT = 1.2 degC  
  
Entrance Sharp:  
Measured Sample flow = 1.148 LPM  
Sharp AmbT = 1.2 degC  
Audit AmbT = 1.2 degC  
  
15:00 - Left site after signing out of control room.

NOTES:

  
**AIR QUALITY MONITORING**  
**Field Service Report**

- All analyzers in sample mode → OK
- Confirmed operation of manifold intake fan → OK
- All sample lines connected properly → OK

Technician: Darrin Pike

Test Records	
BAM-1020 Serial Number:	U21074
Test Performed By:	Lenin Flores
Test Start Date:	11/29/2017
Test End Date:	12/2/2017
Previous BKGD Value:	-0.0007
BKGD Value During Test:	0.0000

Rev C Oct 2011  
Met One Instruments  
Dennis Hart

Dataset Statistics (milligrams)		
Zero Data Average	0.0047	
Hourly Standard Deviation ( $\sigma$ )	0.0013	Within Lab Spec < .0024 mg
Background Setting (BKGD)	-0.0047	Set this value in the BAM-1020

