

LAFARGE CANADA INC.

AMBIENT AIR QUALITY MONTHLY REPORT

DECEMBER 2019

JANUARY 20, 2020



WSP



**AMBIENT AIR
QUALITY MONTHLY
REPORT
DECEMBER 2019
LAFARGE CANADA INC.**

PROJECT NO.: 171-00556-00
DATE: JANUARY 20, 2020

WSP
SUITE 1000
840 HOWE STREET
VANCOUVER, BC, CANADA V6Z 2M1

T: +1 604 685-9381
F: +1 604 683-8655
WSP.COM



January 20, 2020

LAFARGE CANADA INC.
Highway 1A
Exshaw, AB T0L 2C0

Attention: Janet Brygger

Dear Ms. Brygger

Subject: Ambient Air Quality Monthly Report – December 2019

The operational uptime for the meteorological systems and all analyzers (except for wind and temperature) at the Lagoon station was 100% in December. The wind and temperature sensor had 99.9% uptime for the month of December due to one-hour of maintenance on December 4th at 1:00PM. There was no exceedance of the 24-hour TSP Alberta Ambient Air Quality Objective. Further, there was no exceedance of the 24-hour PM_{2.5} AAAQOs, nor the 1-hour PM_{2.5} AAAQG in December at the Lagoon monitoring location.

The Windridge station was taken out of operation beginning April 8th as a result of construction work for flood mitigation along Exshaw Creek. The monitor at this station is expected to be re-installed sometime in 2020, after the completion of the construction work.

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; the GRIMM monitors are not Air Monitoring Directive (AMD) compliant. The operational uptime at all 3 monitors was as follows: 100% at the West GRIMM, 94.2% at the Berm GRIMM due to 43 hours of machine malfunction and non-routine maintenance, and 86.4% at the Entrance GRIMM due to 100 hours of dryer pump failure. The West GRIMM monitor recorded zero exceedances of the 24-hour TSP AAAQG and the 24-hour PM_{2.5} AAAQG. The Berm GRIMM had 8 exceedances of the TSP guideline and zero exceedances of the PM_{2.5} guideline. The Entrance GRIMM monitor recorded 8 and 0 exceedances for the 24-hour TSP AAAQG and 24-hour PM_{2.5} AAAQG, respectively. High particulate levels and exceedances at the Berm and Entrance monitors are likely influenced by flood mitigation work completed along Exshaw creek. The resulting exposed open soil is likely producing fugitive dust near the monitors. The MD of Bighorn is planning to hydroseed the area in mid 2020.

PM levels in the airshed are likely also influenced by Firesmart and Pine Beetle control work being conducted in the Exshaw / Bow Valley area. This work is planned to continue well into the spring of 2020.

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.

SUITE 1000
840 HOWE STREET
VANCOUVER, BC, CANADA V6Z 2M1

T: +1 604 685-9381
F: +1 604 683-8655
wsp.com

WSP Canada Inc.

Sincerely,

Tyler Abel, M.Sc.
Team Leader, Environmental
Management, Vancouver Office

SIGNATURES

PREPARED BY



January 20, 2020

Dylan Weyell, B.A.
Junior Air Quality Specialist, Environment

Date

APPROVED¹ BY (*must be reviewed for technical accuracy prior to approval*)



January 20, 2020

Tyler Abel, M.Sc.
Team Leader, Environmental Management,
Vancouver Region, Environment

Date

WSP Canada Inc. (WSP) prepared this report solely for the use of the intended recipient, LAFARGE CANADA INC., in accordance with the professional services agreement. The intended recipient is solely responsible for the disclosure of any information contained in this report. The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. WSP does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report. This limitations statement is considered an integral part of this report.

The original of this digital file will be conserved by WSP for a period of not less than 10 years. As the digital file transmitted to the intended recipient is no longer under the control of WSP, its integrity cannot be assured. As such, WSP does not guarantee any modifications made to this digital file subsequent to its transmission to the intended recipient.

¹ Approval of this document is an administrative function indicating readiness for release and does not impart legal liability on to the Approver for any technical content contained herein. Technical accuracy and fit-for-purpose of this content is obtained through the review process. The Approver shall ensure the applicable review process has occurred prior to signing the document.

TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	EXSHAW CREEK FLOOD MITIGATION.....	1
2	DECEMBER 2019 REPORT SUMMARY	2
2.1	Lagoon Station.....	2
2.2	West Grimm	3
2.3	Berm Grimm.....	3
2.4	Entrance Grimm.....	4
3	LAGOON STATION	6
3.1	Operational Summary.....	6
3.2	Monitoring Results and Trends.....	7
4	WEST INDUSTRIAL GRIMM	18
4.1	Operational summary	18
4.2	Monitoring Results and Trends.....	18
5	BERM INDUSTRIAL GRIMM	23
5.1	Operational summary	23
5.2	Monitoring Results and Trends.....	23
6	ENTRANCE INDUSTRIAL GRIMM	30
6.1	Operational summary	30
6.2	Monitoring Results and Trends.....	30
	BIBLIOGRAPHY	39

TABLES

TABLE 2-1	LAGOON STATION DATA SUMMARY	2
TABLE 2-2	WEST STATION DATA SUMMARY... 3	
TABLE 2-3	BERM STATION DATA SUMMARY... 4	
TABLE 2-4	ENTRANCE STATION DATA SUMMARY	4

TABLE 3-1	INSTRUMENTATION LIST AT THE LAGOON STATION	6
TABLE 3-2	SUMMARY OF DECEMBER 2019 DATA AT LAGOON	8
TABLE 4-1	INSTRUMENTATION LIST AT THE WEST MONITORING LOCATION ...	18
TABLE 4-2	SUMMARY OF DECEMBER 2019 DATA AT THE WEST GRIMM	19
TABLE 5-1	INSTRUMENTATION LIST AT THE BERM MONITORING LOCATION ...	23
TABLE 5-2	SUMMARY OF DECEMBER 2019 DATA AT THE BERM GRIMM	24
TABLE 5-3	DAYS EXCEEDING THE GUIDELINE FOR TSP OR PM _{2.5} AT THE BERM MONITOR	25
TABLE 6-1	INSTRUMENTATION LIST AT THE ENTRANCE MONITORING LOCATION	30
TABLE 6-2	SUMMARY OF DECEMBER 2019 DATA AT THE ENTRANCE GRIMM	32
TABLE 6-3	DAYS EXCEEDING THE GUIDELINE FOR TSP OR PM _{2.5} AT THE ENTRANCE MONITOR	33

FIGURES

FIGURE 1-1	PHOTO OF FLOOD MITIGATION CONSTRUCTION AT EXSHAW CREEK.....	1
FIGURE 3-1	INLETS ON THE TOP OF WSP'S LAGOON MONITOR	7
FIGURE 3-2	DECEMBER 2019 WIND ROSE FROM THE LAGOON STATION	9
FIGURE 3-4	1-HOUR CONCENTRATIONS OF NO _x , SO ₂ , PARTICULATE MATTER, WIND DIRECTION AND WIND SPEED AT THE LAGOON STATION.....	10
FIGURE 3-5	HISTOGRAM OF HOURLY NO ₂ CONCENTRATIONS AT THE LAGOON STATION.....	11
FIGURE 3-6	HISTOGRAM OF HOURLY SO ₂ CONCENTRATIONS AT THE LAGOON STATION.....	11

FIGURE 3-7	HISTOGRAM OF HOURLY PM _{2.5} CONCENTRATIONS AT THE LAGOON STATION.....	12
FIGURE 3-8	HISTOGRAM OF HOURLY PM ₁₀ CONCENTRATIONS AT THE LAGOON STATION.....	12
FIGURE 3-9	HISTOGRAM OF HOURLY TSP CONCENTRATIONS AT THE LAGOON STATION.....	13
FIGURE 3-10	24-HOUR CONCENTRATIONS OF NO _x , SO ₂ , AND PARTICULATE MATTER AT THE LAGOON MONITOR	14
FIGURE 3-11	LAGOON MONITOR PARTICULATE MATTER TIME VARIATION.....	15
FIGURE 3-12	LAGOON MONITOR SO ₂ TIME VARIATION.....	16
FIGURE 3-13	LAGOON MONITOR NO _x TIME VARIATION.....	17
FIGURE 4-1	1-HOUR PARTICULATE MATTER CONCENTRATIONS AT THE WEST MONITOR	20
FIGURE 4-2	24-HOUR PARTICULATE MATTER CONCENTRATIONS AT THE WEST MONITOR	21
FIGURE 4-3	WEST PARTICULATE MATTER TIME VARIATION	22
FIGURE 5-1	1-HOUR PARTICULATE MATTER CONCENTRATIONS RECORDED AT THE BERM MONITOR	26
FIGURE 5-2	24-HOUR PARTICULATE MATTER CONCENTRATIONS RECORDED AT THE BERM MONITOR	27
FIGURE 5-3	WIND ROSE FOR TSP EXCEEDANCE DAYS RECORDED AT THE BERM GRIMM.....	28
FIGURE 5-4	BERM PARTICULATE MATTER TIME VARIATION	29
FIGURE 6-1	1-HOUR PARTICULATE MATTER CONCENTRATIONS RECORDED AT THE ENTRANCE MONITOR	35
FIGURE 6-2	24-HOUR PARTICULATE MATTER CONCENTRATIONS AT THE ENTRANCE MONITOR	36
FIGURE 6-3	WIND ROSE FOR TSP EXCEEDANCE DAYS RECORDED AT THE ENTRANCE GRIMM.....	37



FIGURE 6-4 ENTRANCE PARTICULATE MATTER
TIME VARIATION..... 38

APPENDICES

A DATA & CALIBRATION REPORTS

1 INTRODUCTION

This report summarizes the ambient air quality and meteorological data collected at the Lagoon, Windridge, and GRIMM monitors in Exshaw, AB. The stations are operated by WSP on behalf of Lafarge Canada Inc. (Lafarge) and are a requirement of Lafarge's Approval 1702-02-04. This report contains data collected between December 1, 2019 and December 31, 2019.

This monthly report was prepared by Dylan Weyell, Junior Air Quality Specialist with WSP, on behalf of Lafarge and was reviewed by Tyler Abel, Team Leader of Environmental Management in the Vancouver Region at WSP.

1.1 EXSHAW CREEK FLOOD MITIGATION

Due to flood mitigation construction at Exshaw creek (Figure 1-1), the Windridge monitor was taken out of operation and removed from the site on April 8, 2019. The monitoring station will be re-installed after the completion of construction in 2020.

Dust created from the flood mitigation work has the potential to impact particulate matter concentrations at the remaining stations.



Figure 1-1 Photo of Flood Mitigation Construction at Exshaw Creek

2 DECEMBER 2019 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_{2.5} are those above the 1-hour PM_{2.5} 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 ₂ (ppb)	100.0	25.9	0	17.6	-
SO ₂ (ppb)	100.0	11.2	0	2.5	0
PM _{2.5} (µg/m ³)	100.0	42.1	0 ¹	23.7	0
PM ₁₀ (µg/m ³)	100.0	186.9	-	70.1	-
TSP (µg/m ³)	100.0	271.1	-	99.0	0
Temperature (°C)	99.9	7.0	-	5.0	-
Wind Speed (km/hr) /Direction (Degrees)	99.9	60.2/W	-	42.6/WSW	-
Precipitation (mm)	100.0	1.3 ²	-	17.75 ³	-

¹ Any exceedances reported for 1-hour PM_{2.5} are over the guideline level (AAAQG) of 80 µg/m³.

² Maximum Daily Total Accumulation of Precipitation (mm)

³ Monthly Total Accumulation of Precipitation (mm)

Data Quality Notes:

- There were no exceedances of the 24-hour PM_{2.5} AAAQO.
- There were no exceedances of the 1-hour PM_{2.5} AAAQG.
- There were no exceedances of the 24-hour TSP AAAQO.

Calibration/Maintenance Notes:

- All analyzers had 100% uptime for the month of December. Except for the wind and temperature sensor which had 99.9% due to one hour of maintenance on December 4th at 1PM.
-

2.2 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; however, these Industrial monitors are not Alberta Air Monitoring Directive (AMD) compliant and not required to show compliance with the AAAQO.

Table 2-2 West station data summary

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of Guidelines	Maximum Concentration	Exceedances of Guidelines
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	100.0	29.9	0*	18.7	0
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	100.0	41.4	-	23.1	-
TSP ($\mu\text{g}/\text{m}^3$)	100.0	30.6	-	15.7	0

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

Data Quality Notes:

- There were no exceedances of the 24-hour PM_{2.5} AAAQG.
- There were no exceedances of the 1-hour PM_{2.5} AAAQG.
- There were no exceedances of the 24-hour TSP AAAQG.

Calibration/Maintenance Notes:

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

2.3 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; however, these Industrial monitors are not Alberta Air Monitoring Directive (AMD) compliant and not required to show compliance with the AAAQO.

Table 2-3 Berm station data summary

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of Guidelines	Maximum Concentration	Exceedances of Guidelines
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	94.2	51.3	0*	19.4	0
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	94.2	451.9	-	165.0	-
TSP ($\mu\text{g}/\text{m}^3$)	94.2	1748.9	-	663.2	8

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

Data Quality Notes:

- There were no exceedances of the 24-hour PM_{2.5} AAAQG.
- There were no exceedances the 1-hour PM_{2.5} AAAQG.
- There were 8 days exceeding the 24-hour TSP AAAQG.

Calibration/Maintenance Notes:

- The analyzer had 94.2% uptime for the month of December due to two hours of non-routine maintenance on December 4th between 1PM-2PM. Further, 41 hours of machine malfunction occurred from December 17th at 4AM to December 18th at 8:00PM.

2.4 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; however, these Industrial monitors are not Alberta Air Monitoring Directive (AMD) compliant and not required to show compliance with the AAAQO.

Table 2-4 Entrance station data summary

Parameter	Data Completeness (%)	1-Hour Average		24-hour Average	
		Maximum Concentration	Exceedances of Guidelines	Maximum Concentration	Exceedances of Guidelines
PM _{2.5} ($\mu\text{g}/\text{m}^3$)	86.4	54.4	0*	21.6	0
PM ₁₀ ($\mu\text{g}/\text{m}^3$)	86.4	261.2	-	113.6	-
TSP ($\mu\text{g}/\text{m}^3$)	86.6	1457.0	-	431.2	8

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

Data Quality Notes:

- There were no exceedances of the 24-hour PM_{2.5} AAAQG
- There were no exceedances of the 1-hour PM_{2.5} AAAQG.

- There were 8 days exceeding the 24-hour TSP AAAQG.

Calibration/Maintenance Notes:

- The analyzer had 86.4% uptime for the month of December due to 100 hours of pump failure.

3 LAGOON STATION

The Lagoon trailer contains NO_x, SO₂, TSP, PM₁₀, and PM_{2.5} 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), a data summary table (Table 3-2), site visit notes, a wind rose (Figure 3-2) and tables and graphs illustrating the monitoring results for December 2019.

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

3.1 OPERATIONAL SUMMARY

A summary of the station operation for the month is provided in Table 3-1.

Table 3-1 Instrumentation List at the Lagoon Station

Parameter Measured	Equipment Description	Notes
PM_{2.5} Concentrations	MetOne BAM-1020 FRM Continuous Particulate Monitor	The PM _{2.5} monitor was calibrated on December 4 th . The monitor had 100% uptime in December.
PM₁₀ Concentrations	MetOne BAM-1020 Continuous Particulate Monitor	The PM ₁₀ monitor was calibrated on December 4 th . The monitor had 100% uptime in December.
TSP Concentrations	MetOne BAM-1020 Continuous Particulate Monitor	The TSP monitor was calibrated on December 4 th . The monitor had 100% uptime in December.
Oxides of Nitrogen	TEI 42C	Both monitors were calibrated on December 4 th . The monitors had 100% uptime in December.
Sulphur Dioxide	Teledyne API 102A	
Precipitation	MetOne 130 Rain/Snow Gauge	The monitor had 100% uptime in December
Wind Speed	MetOne Wind Sensor	The monitors had 99.9% uptime in December due to one hour of maintenance on December 4 th .
Wind Direction		
Ambient Temperature	MetOne Ambient Temperature Sensor	The monitor had 99.9% uptime in December due to one hour of maintenance on December 4 th .



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

3.2 MONITORING RESULTS AND TRENDS

The following wind rose (Figure 3-2) illustrates the frequency of wind speed by wind direction for the month of December 2019. The wind rose indicates that the winds predominantly came from the west, west-northwest and west-southwest directions.

Table 3-2 summarizes the hourly, daily, and monthly concentrations recorded in December 2019.

Figure 3-3 graphically illustrates the time series for hourly concentrations as well as wind speed and direction, while Figure 3-9 shows daily average concentrations recorded during December 2019 for the pollutants listed in Table 3-2. Additionally, Figure 3-4 to Figure 3-8 show the histograms of the hourly concentrations of NO₂, SO₂, PM_{2.5}, PM₁₀, and TSP measured at the Lagoon station.

Dust created from the flood mitigation work (section 1.1) has the potential to impact the monitored particulate matter concentrations in the airshed, including at the Lagoon station. There was no exceedances of the 24-hour TSP (100 µg/m³) AAAQO. Further, there were no exceedances of the 24-hour PM_{2.5} (29 µg/m³) AAAQO, nor the 1-hour PM_{2.5} AAAQG. The highest PM_{2.5} concentrations recorded during the month were likely, based on wind direction and a corresponding rise in NOx emissions, not attributable to Lafarge operations and could be from woodsmoke from the community or industrial emissions to the east. PM levels at the Lagoon monitor are also likely influenced by the FireSmart and Pine Beetle control work occurring in the area.

Historically in December, the average number of 24-hour TSP AAAQO exceedances and 24-hour PM_{2.5} AAAQO exceedances is zero, respectively.

Table 3-2 Summary of December 2019 data at Lagoon

Parameter	Guideline / Objectives		Station	Exceedances		Monthly		1-hour				24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr	Minimum	Average	Maximum Concentration/Meteorological Variable	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration/Meteorological Variable	Day	
NO ₂ (ppb)	159	-	Lagoon	0	-	0.6	7.2	25.9	12	21	17.1	67.7	17.6	13	100.0
SO ₂ (ppb)	172	48	Lagoon	0	0	0.0	0.7	11.2	29	24	25.0	276.7	2.5	24	100.0
PM _{2.5} (µg/m ³)	80	29	Lagoon	0	0	0.0	4.4	42.1	13	13	5.2	217.6	23.7	13	100.0
PM ₁₀ (µg/m ³)	-	-	Lagoon	-	-	0.0	13.8	186.9	2	16	43.5	274.4	70.1	1	100.0
TSP (µg/m ³)	-	100	Lagoon	-	0	0.0	18.3	271.1	1	12	38.0	295.5	99.0	1	100.0
Temperature (°C)	-	-	Lagoon	-	-	-16.7	-3.6	7.0	3	22	27.3	287.7	5.0	3	99.9
Wind Speed (km/hr)/Direction (degrees)	-	-	Lagoon	-	-	1.1	21.0	60.2/W	17	24	60.2	257.1	42.6/WSW	17	99.9
Precipitation (mm)	-	-	Lagoon	-	-	0.0	0.0	1.3	21	21	11.0	66.5	17.8	-	100.0

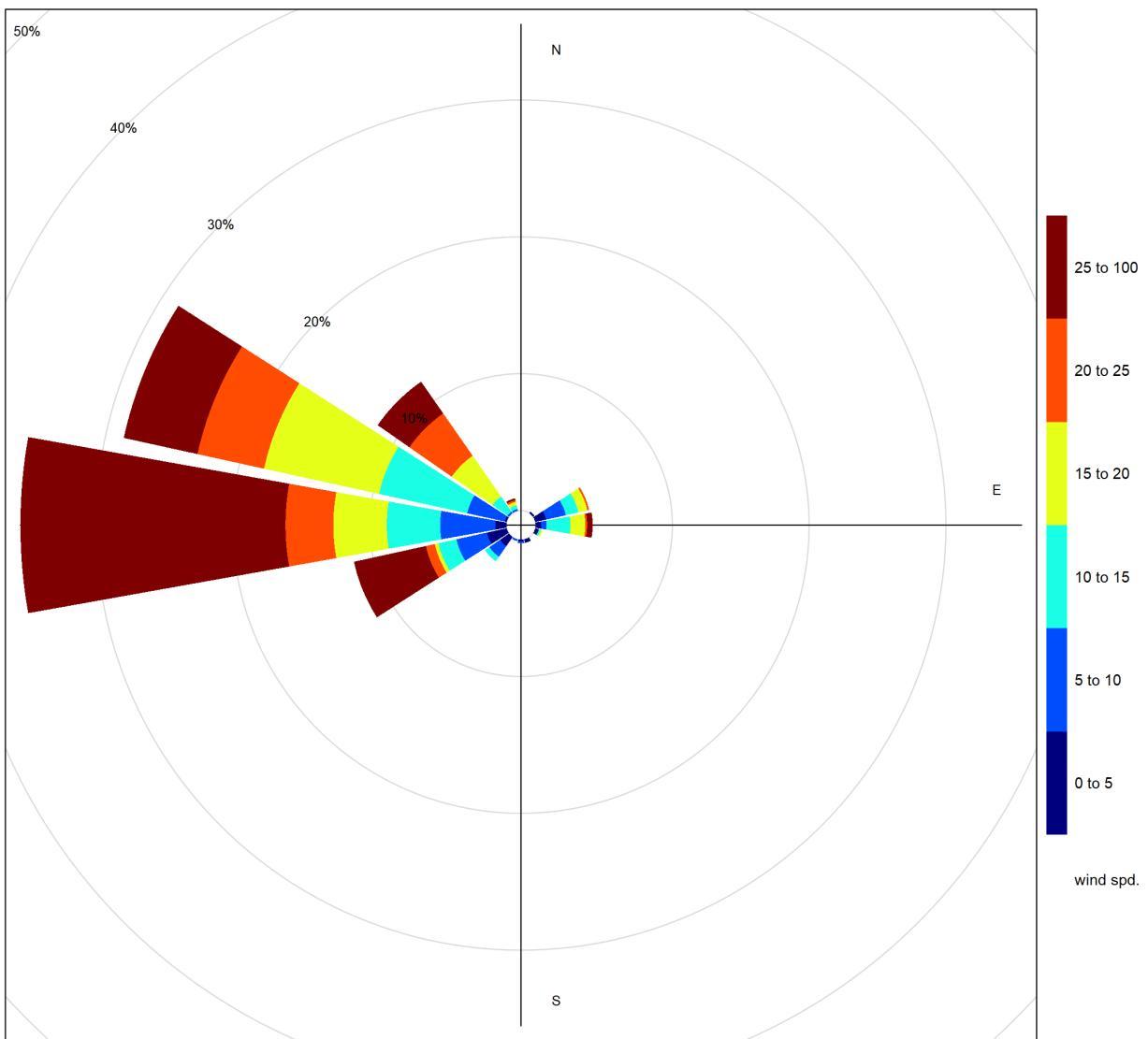


Figure 3-2 December 2019 wind rose from the Lagoon Station

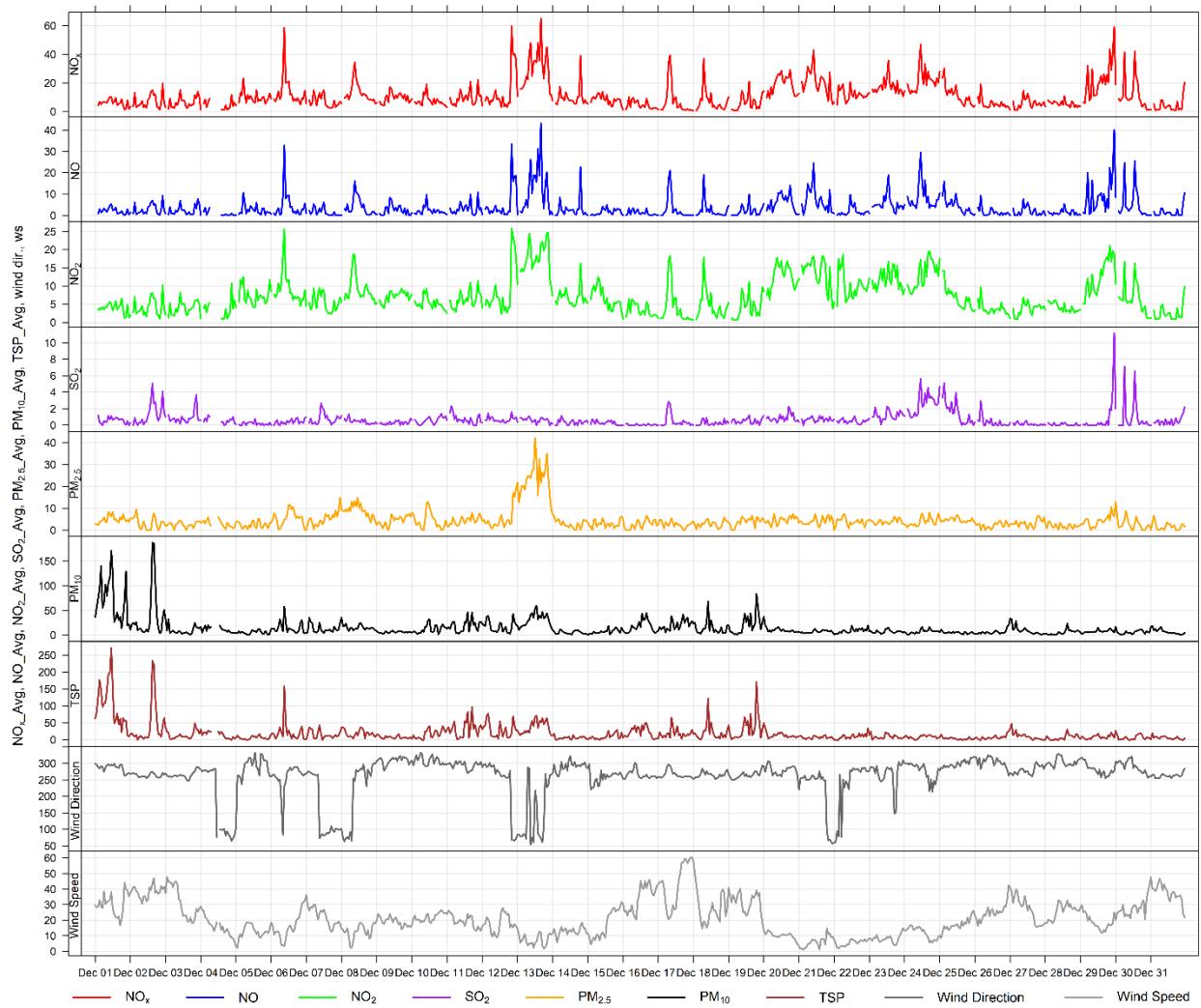


Figure 3-3 1-hour concentrations of NO_x, SO₂, particulate matter, wind direction and wind speed at the Lagoon station

Histogram of Hourly NO₂ Readings

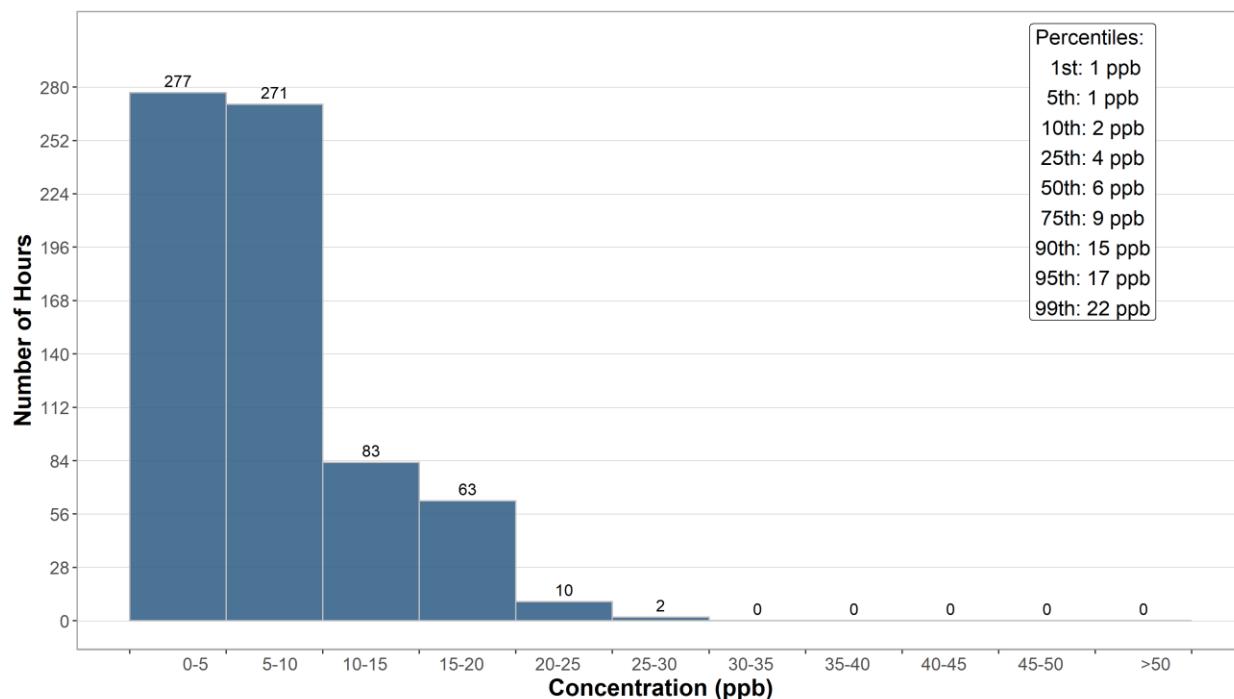


Figure 3-4 Histogram of hourly NO₂ concentrations at the Lagoon station

Histogram of Hourly SO₂ Readings

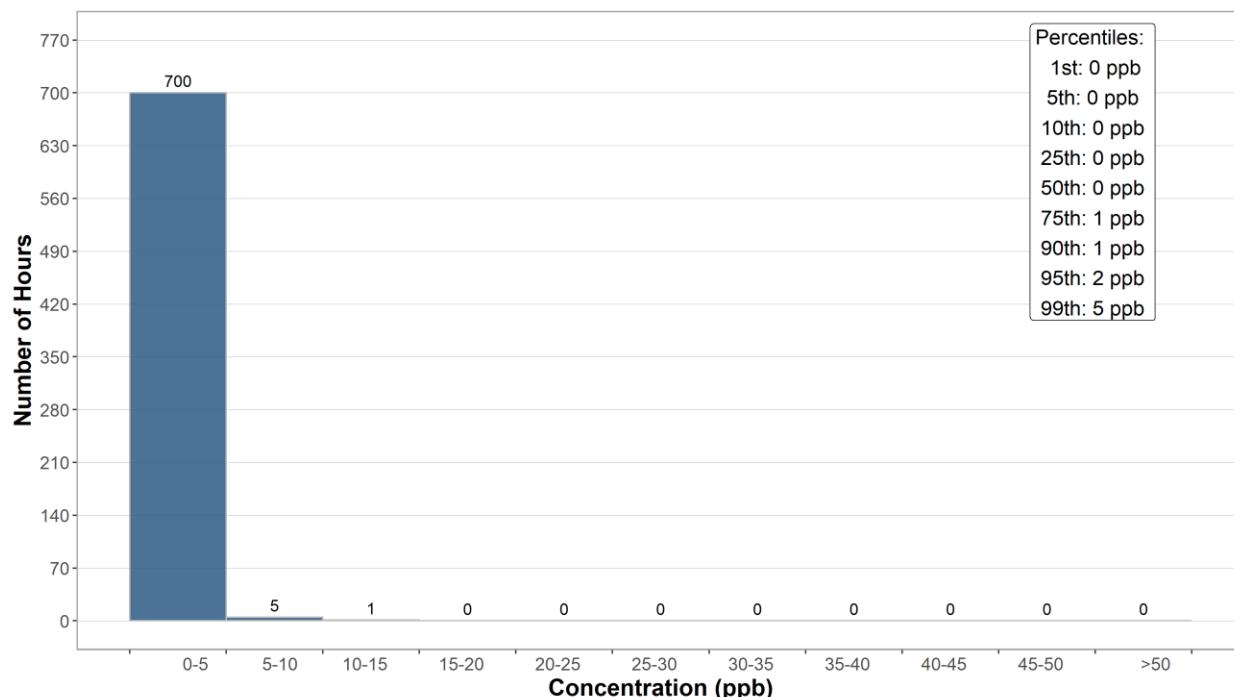


Figure 3-5 Histogram of hourly SO₂ concentrations at the Lagoon station

Histogram of Hourly PM_{2.5} Readings

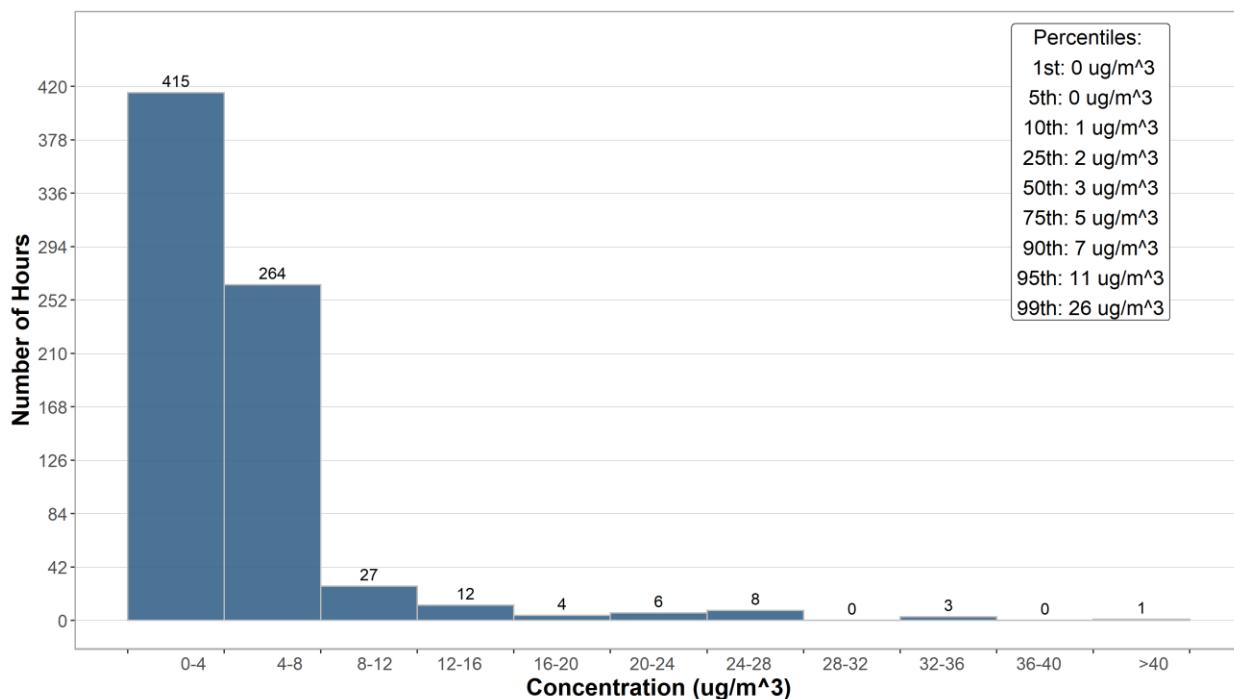


Figure 3-6 Histogram of hourly PM_{2.5} concentrations at the Lagoon station

Histogram of Hourly PM₁₀ Readings

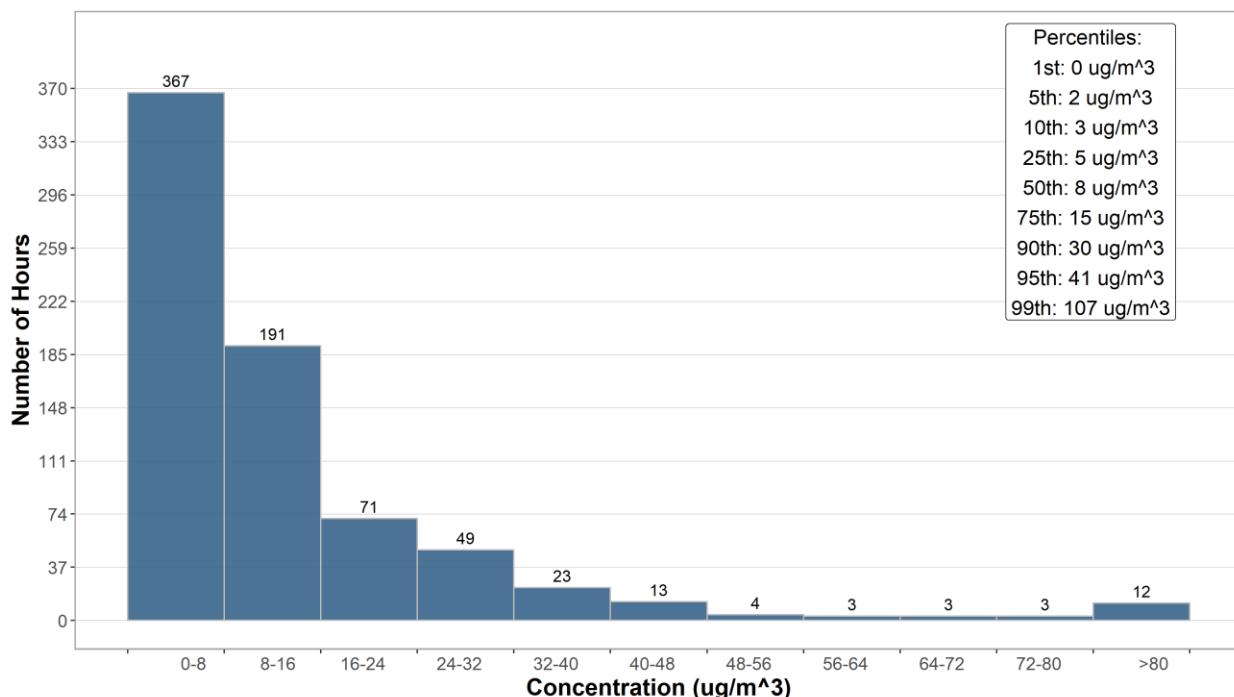


Figure 3-7 Histogram of hourly PM₁₀ concentrations at the Lagoon station

Histogram of Hourly TSP Readings

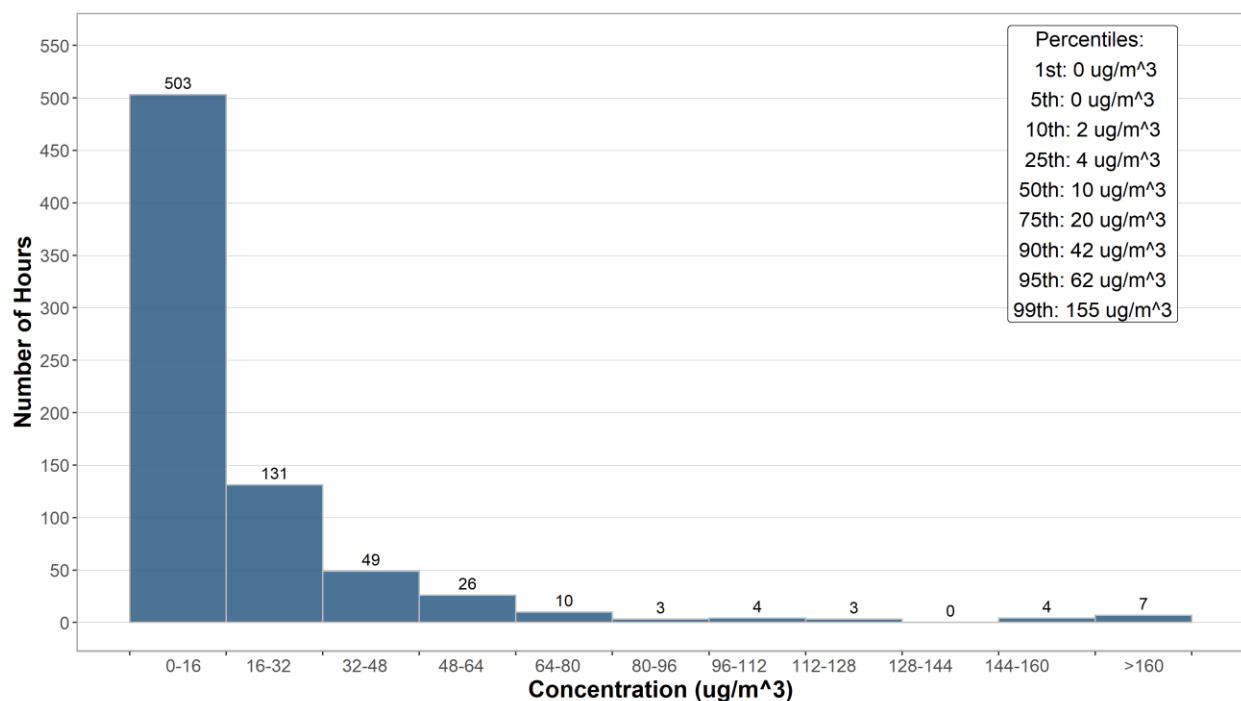


Figure 3-8 Histogram of hourly TSP concentrations at the Lagoon station

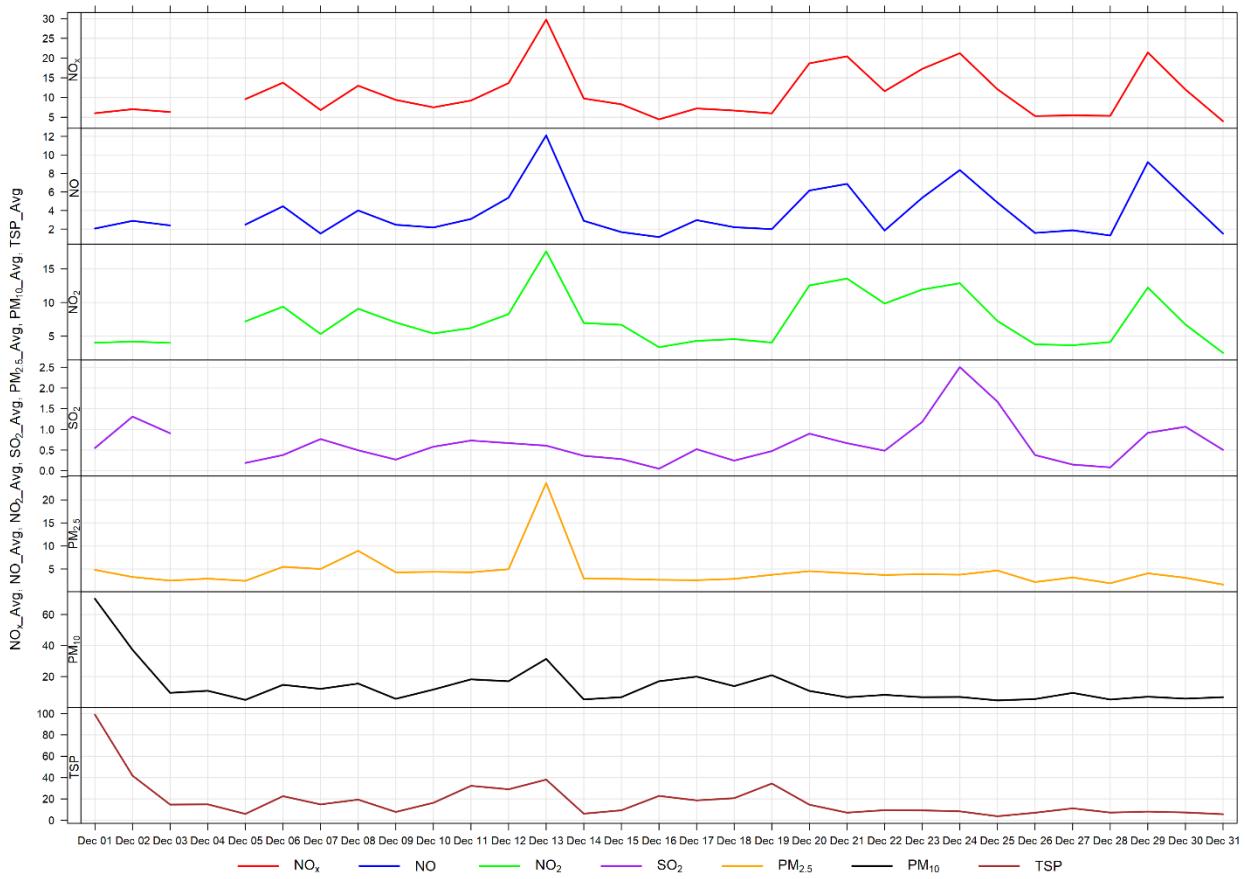


Figure 3-9 24-hour concentrations of NO_x, SO₂, and particulate matter at the Lagoon monitor

Figure 3-10 through Figure 3-12 show the variation in concentrations over various time averaging periods for PM, SO₂ and NO_x. The particulate matter plot in Figure 3-10 shows that PM₁₀ and TSP concentrations shows a diurnal pattern associated with Lafarge operations, daytime emissions from traffic and other activities. The diurnal patterns also follow the diurnal pattern of higher wind speeds during the daytime hours. This month also saw higher PM concentrations during the evening and nighttime hours that could be related to woodsmoke.

Figure 3-11 shows the variation of SO₂ over various time periods. SO₂ concentrations patterns are dependent on the timing of the highest SO₂ concentrations recorded in the month because in general SO₂ concentrations are very low. Figure 3-12 shows the variation of NO_x, NO and NO₂, with the peak of all three pollutants occurring in the early morning. This may be indicative of a peak in traffic.

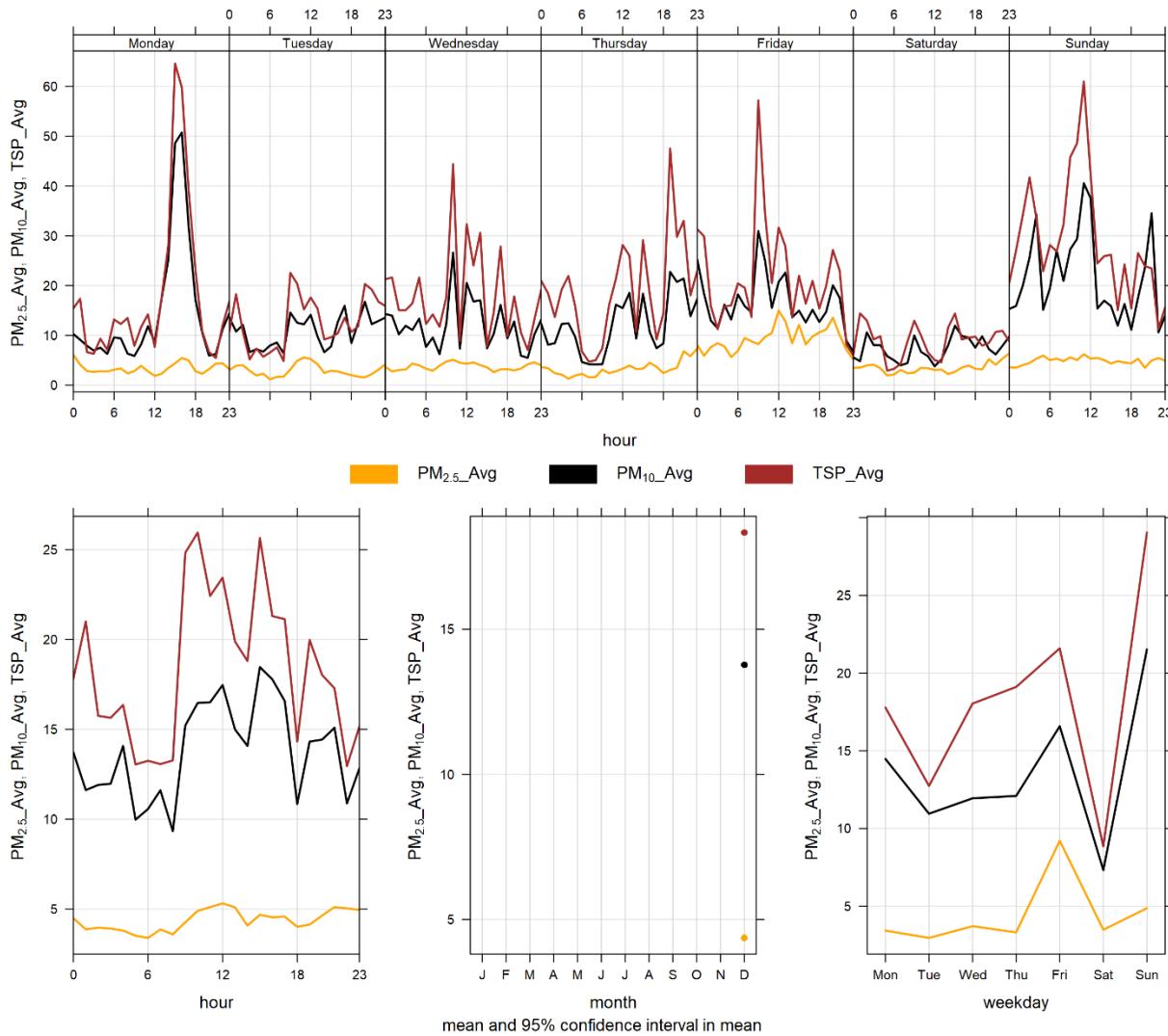


Figure 3-10 Lagoon monitor particulate matter time variation

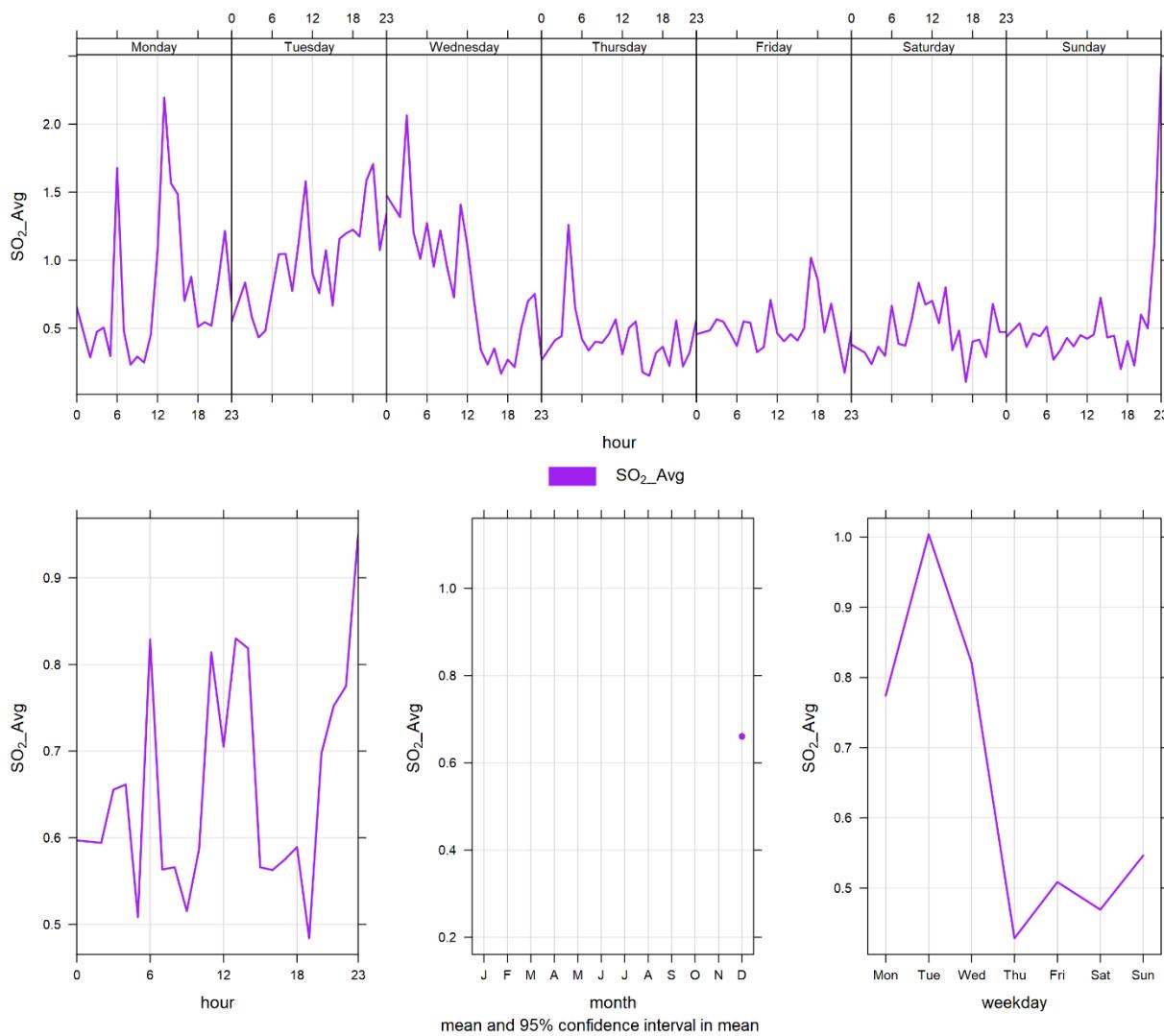


Figure 3-11 Lagoon monitor SO₂ time variation

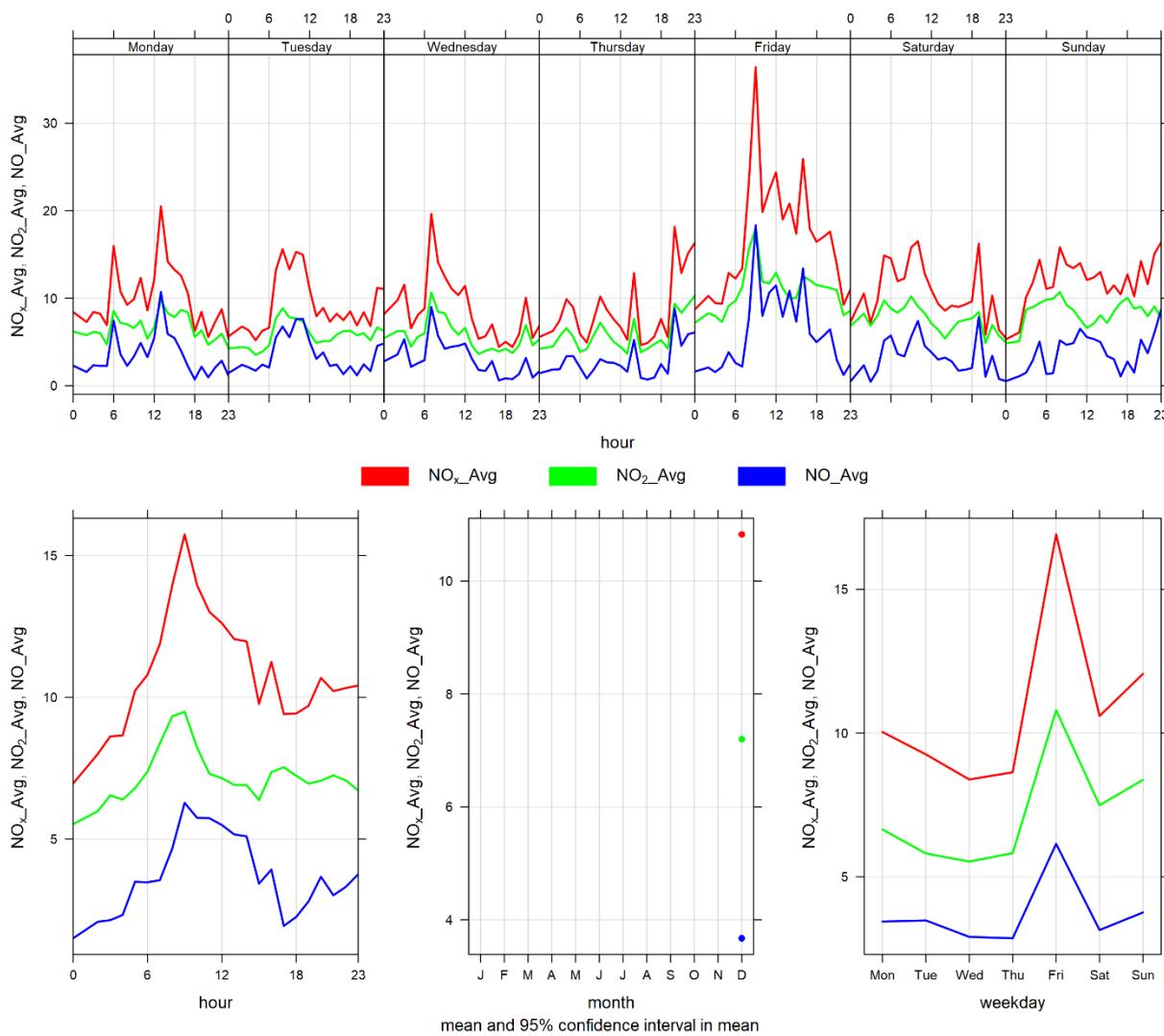


Figure 3-12 Lagoon monitor NO_x time variation

4 WEST INDUSTRIAL GRIMM

4.1 OPERATIONAL SUMMARY

A summary of the station operation for the month is provided in Table 4-1.

Table 4-1 Instrumentation List at the West monitoring location

Parameter Measured	Equipment Description	Notes
PM_{2.5}, PM₁₀, TSP Concentrations	GRIMM 365 Continuous Particulate Monitor	The monitors had 100% uptime in December.

4.2 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. Table 4-2 summarizes the monthly concentrations, and the maximum 1-hour and 24-hour concentrations recorded over the course of the month. This is an industrial monitor that is not Alberta Air Monitoring Directive (AMD) compliant and is not required to show compliance with the AAAQO.

Figure 4-1 and Figure 4-2 show the hourly and daily PM_{2.5}, PM₁₀ and TSP concentrations recorded over the month. PM levels in the airshed are likely influenced by Firesmart and Pine Beetle control work being conducted in the Exshaw / Bow Valley area. This work is planned to continue well into the spring of 2020.

Despite this, there were no exceedances of the 24-hour TSP guideline (100 µg/m³) nor the 24-hour PM_{2.5} guideline (29µg/m³).

Historically in December, the average number of 24-hour TSP AAAQG exceedances and 24-hour PM_{2.5} AAAQG exceedances are one and zero, respectively. The maximum number of 24-hour AAAQG exceedances was 4 days in 2012 for TSP, and 1 day in 2010 for PM_{2.5}.

Table 4-2 Summary of December 2019 data at the West GRIMM

Parameter	Guideline		Station	Exceedances		Monthly		Maximum 1-hour				Maximum 24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr	Minimum	Average	Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM _{2.5} (µg/m ³)	80	29	West	0	0	0.0	2.0	29.9	13	12	2.3	60.8	18.7	13	100.0
PM ₁₀ (µg/m ³)	-	-	West	-	-	0.0	2.4	41.4	13	12	2.3	60.8	23.1	13	100.0
TSP (µg/m ³)	-	100	West	-	0	0.0	1.8	30.6	13	12	2.3	60.8	15.7	13	100.0

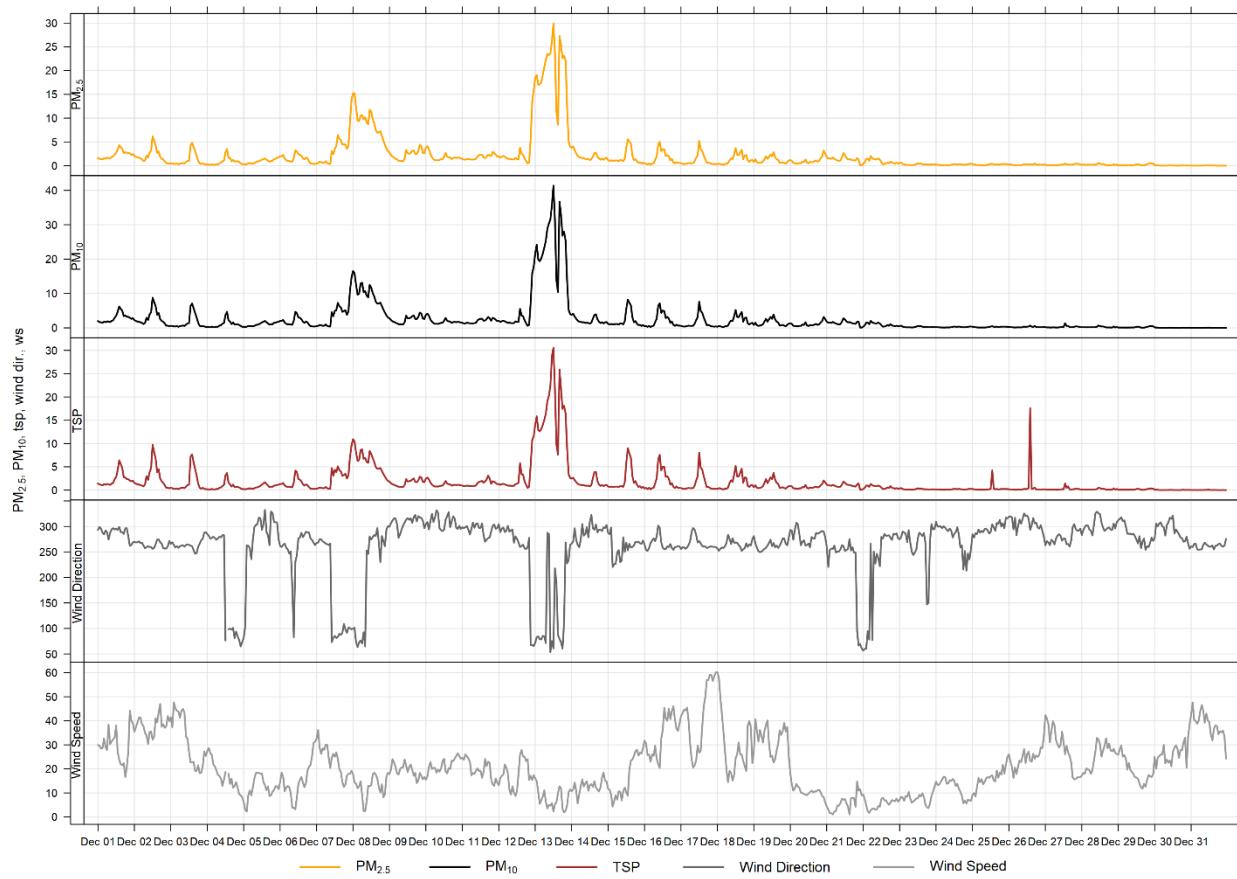


Figure 4-1 1-hour particulate matter concentrations at the West monitor

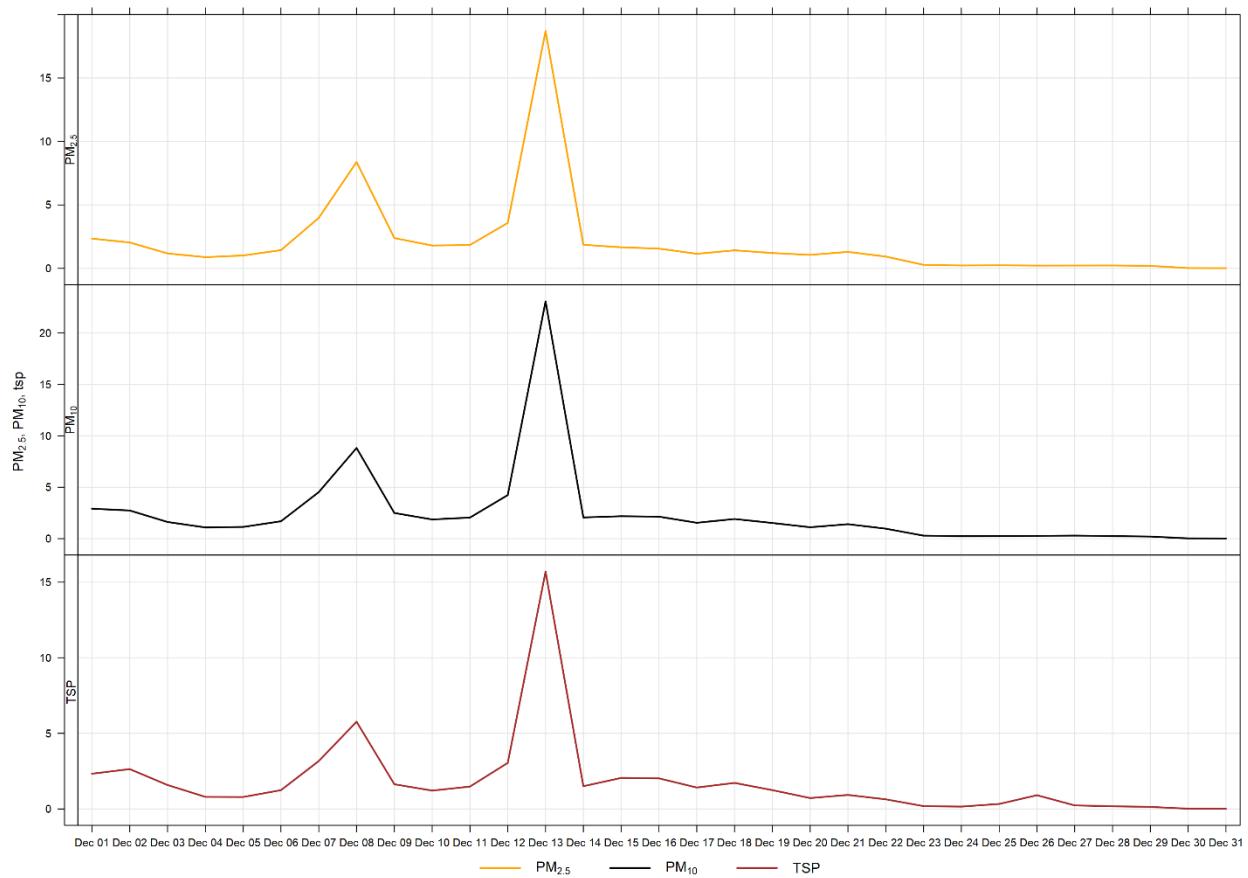


Figure 4-2 24-hour particulate matter concentrations at the West monitor

Figure 4-3 below 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 4-3 is based on data collected during December 2019 and indicates a diurnal relationship that could be due to the proximity of the West monitor to the highway. As the monitor is generally ‘up-wind’ of the facility, the daily variations in PM are more likely a result of higher traffic volume during daylight hours than specific Lafarge operations.

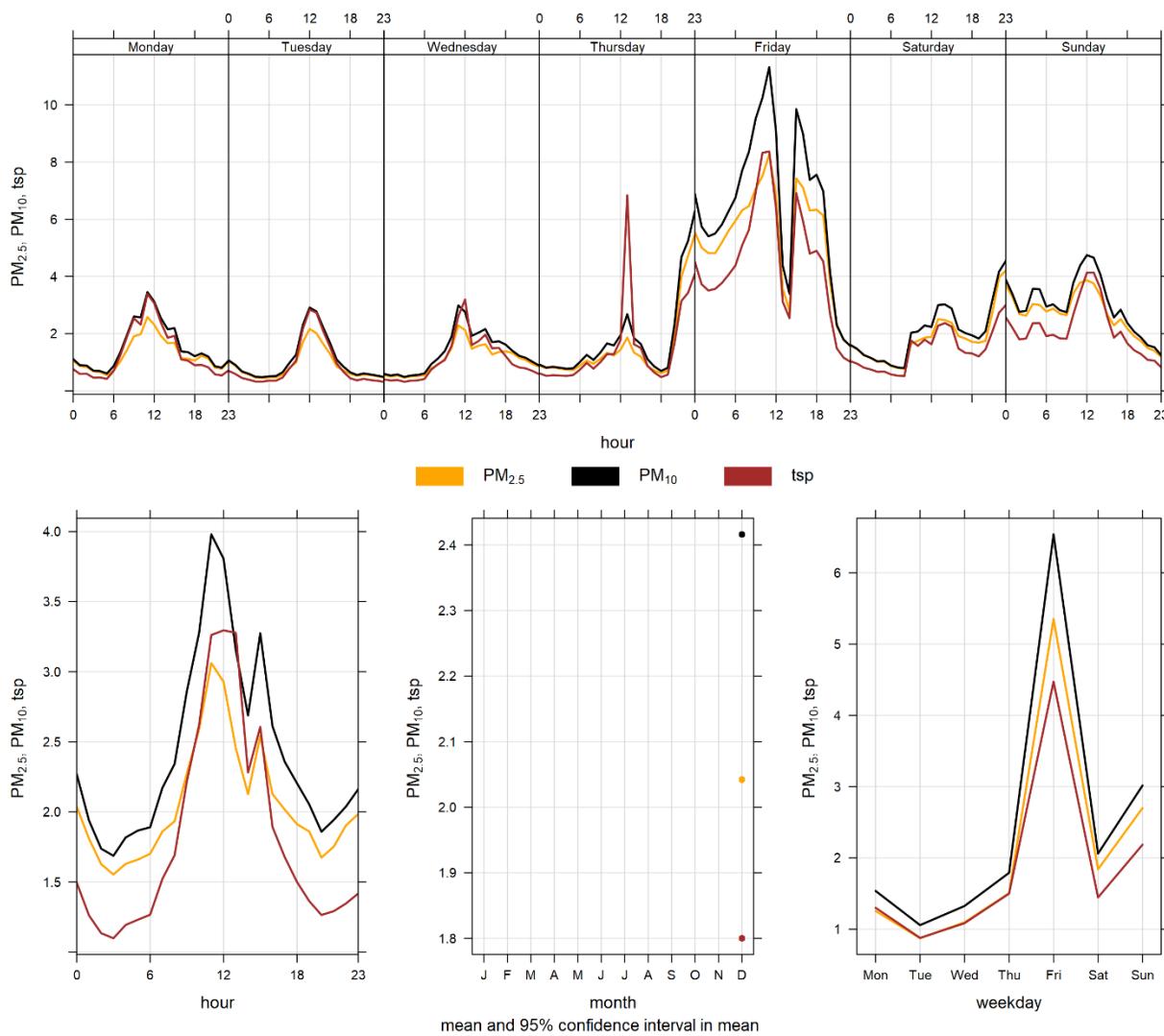


Figure 4-3 **West particulate matter time variation**

5 BERM INDUSTRIAL GRIMM

5.1 OPERATIONAL SUMMARY

A summary of the station operation for the month is provided in Table 5-1.

Table 5-1 Instrumentation List at the Berm monitoring location

Parameter Measured	Equipment Description	Notes
PM_{2.5}, PM₁₀, TSP Concentrations	GRIMM 365 Continuous Particulate Monitor	The monitors had 94.2% uptime in December due to 43 hours of machine malfunction and non-routine maintenance.

5.2 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_{2.5}, PM₁₀ and TSP concentrations recorded over the month. Table 5-2 summarizes the monthly concentrations, and the maximum 1-hour and 24-hour PM concentrations recorded during the month, and Table 5-3 summarizes the recorded exceedances. This is an industrial monitor that is not Alberta Air Monitoring Directive (AMD) compliant and is not required to show compliance with the AAAQO.

There were 8 and 0 exceedances of the 24-hour TSP (100 µg/m³) and PM_{2.5} (29 µg/m³) guidelines, respectively. There were 0 hours exceeding the 1-hour PM_{2.5} AAAQG.

Historically during the month of December, the Berm monitor records an average of 17 and 1 exceedances of the 24-hour TSP and PM_{2.5} guidelines, respectively. The maximum number of TSP exceedances recorded during December occurred in 2011 where there were 24 days that exceeded the guideline. On the other hand, the maximum number of PM_{2.5} exceedances in December occurred in 2018, where there were 12 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_{2.5} size fraction has been shown to match other regulatory approved PM_{2.5} 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 particulate levels and exceedances at the Berm monitor are likely influenced by flood mitigation work along Exshaw creek which is producing fugitive dust near the monitors. FireSmart and Pine Beetle control work is likely to have increased levels of PM_{2.5} as well.

Table 5-2 Summary of December 2019 data at the Berm GRIMM

Parameter	Guideline		Station	Exceedances		Monthly		Maximum 1-hour				Maximum 24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr	Minimum	Average	Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM _{2.5} (µg/m ³)	80	29	West	0	0	0.1	5.0	51.3	19	19	35.7	276.5	19.4	2	94.2
PM ₁₀ (µg/m ³)	-	-	West	-	-	0.1	26.3	451.9	2	16	43.5	274.4	165.0	2	94.2
TSP (µg/m ³)	-	100	West	-	8	0.1	100.5	1748.9	2	16	43.5	274.4	663.2	2	94.2

Table 5-3 Days exceeding the Guideline for TSP or PM_{2.5} at the Berm Monitor

Date	TSP (ug/m ³)	PM _{2.5} (ug/m ³)	Average Wind Direction (degrees)	Average Wind Speed (km/hr)	Average RH (%)	Root Cause (Provided by Lafarge)
Entrance						
2019-12-01	504.0	-	285.2	30.0	51.8	High wind event; Dust, possibly from flood mitigation work
2019-12-02	663.2	-	264.3	38.2	43.8	High wind event; Dust, possibly from flood mitigation work
2019-12-03	147.8	-	264.4	31.3	48.0	High wind event; Dust, possibly from flood mitigation work
2019-12-12	117.2	-	281.7	17.7	62.2	TSP - Dust, possibly from flood mitigation work
2019-12-15	108.0	-	262.9	16.9	59.8	TSP - Dust, possibly from flood mitigation work
2019-12-16	439.8	-	263.0	34.1	47.1	High wind event; Dust, possibly from flood mitigation work
2019-12-19	442.8	-	263.4	32.1	42.2	High wind event; Dust, possibly from flood mitigation work
2019-12-31	100.2	-	262.1	37.6	57.8	High wind event; Dust, possibly from flood mitigation work
Total # of Exceedances	8	0				
Maximum # of Exceedances (December)	24 (2011)	12 (2018)				
Average # of Exceedances (December)	17	1				
Minimum # of Exceedances (December)	11 (2017)	0 (2012, 2013, 2015, 2016, 2017)				

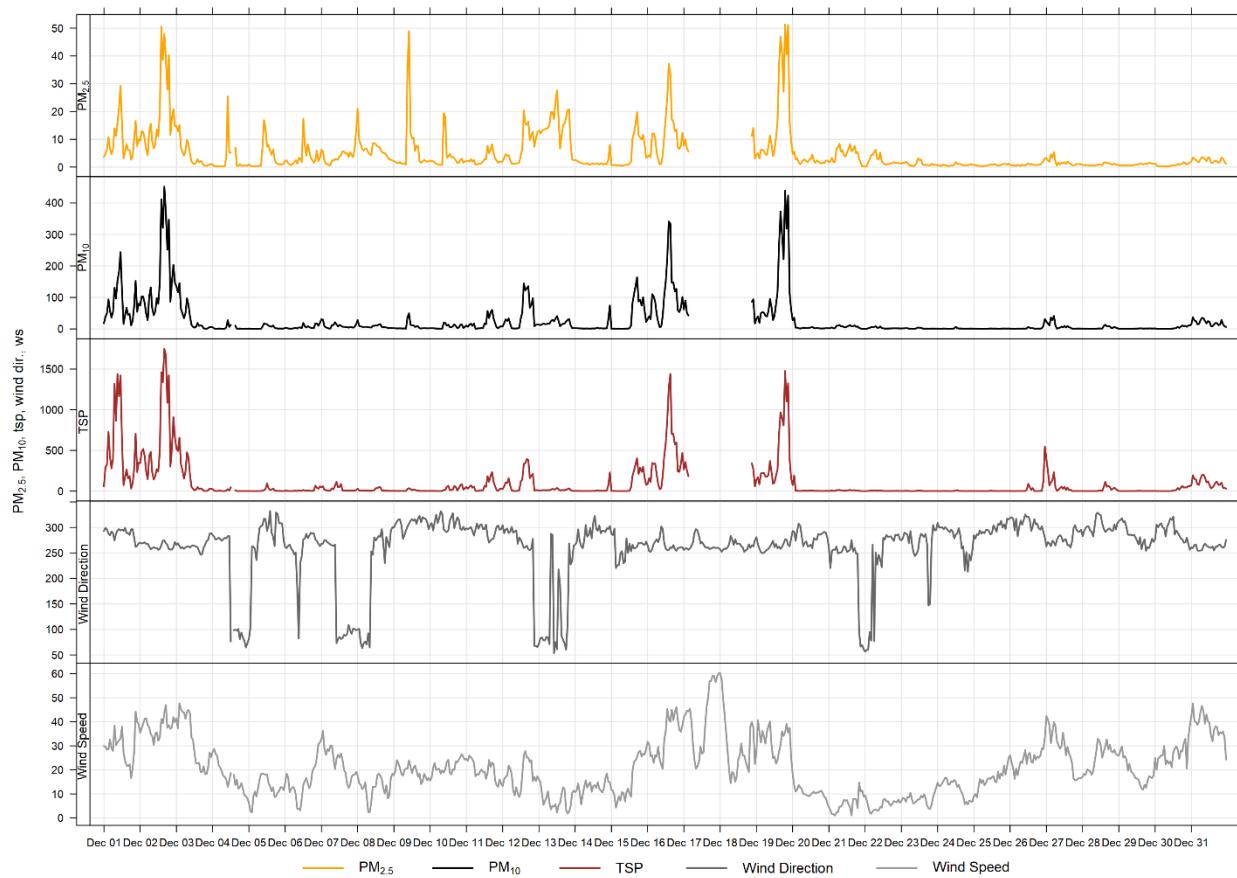


Figure 5-1 1-hour particulate matter concentrations recorded at the Berm monitor

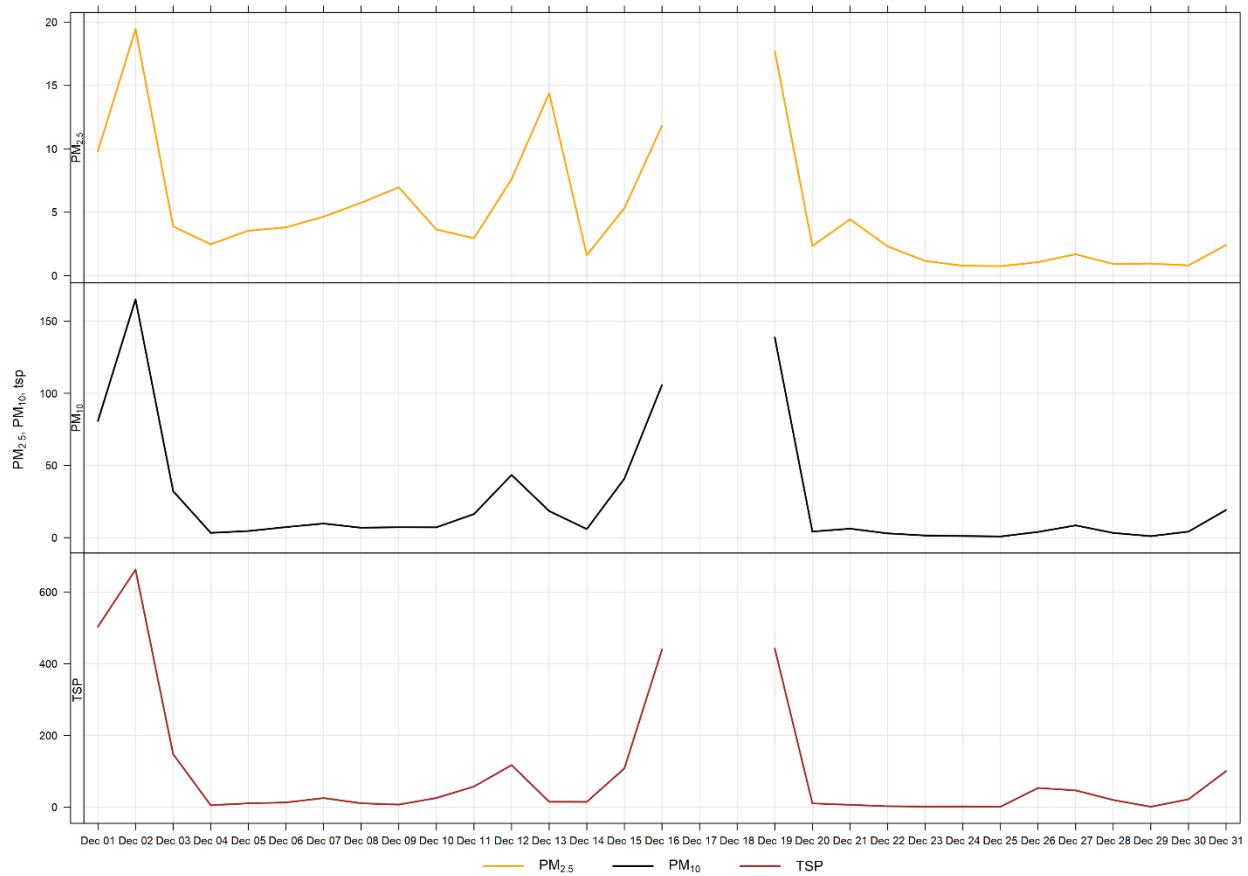


Figure 5-2 24-hour particulate matter concentrations recorded at the Berm monitor

Figure 5-3 shows the wind rose for the 8 days of TSP exceedances recorded this month. The wind rose shows that the winds predominantly came from the west, west-southwest and west-northwest directions.

Figure 5-4 shows the variation of PM recorded at the Berm monitor over various time averaging periods. The Berm monitor diurnal pattern, similar to the Windridge and Lagoon stations, is associated with Lafarge operations, but also daytime emissions from traffic and other activities in Exshaw, such as the flood mitigation work that is currently underway.

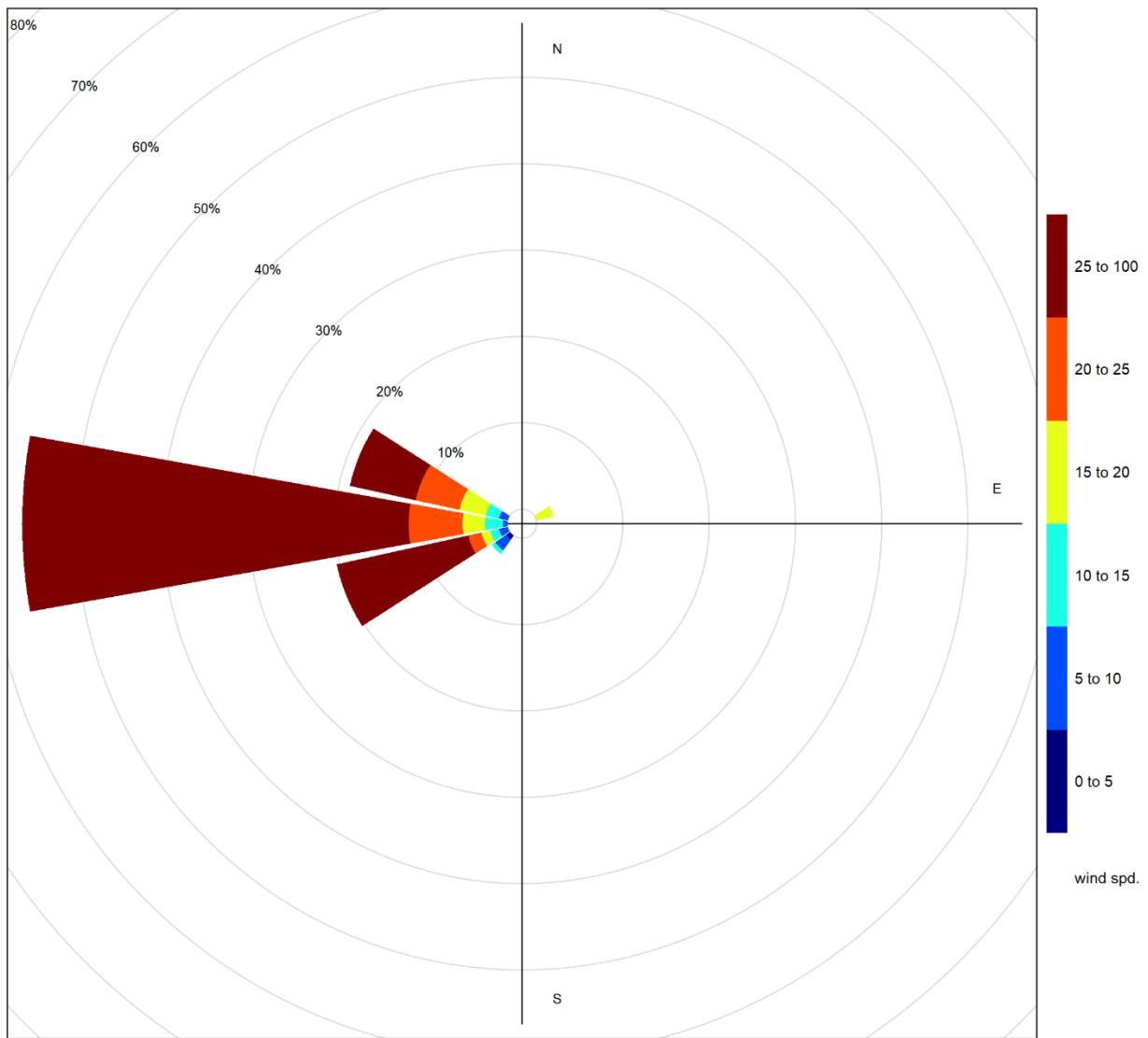


Figure 5-3 Wind rose for TSP exceedance days recorded at the Berm GRIMM

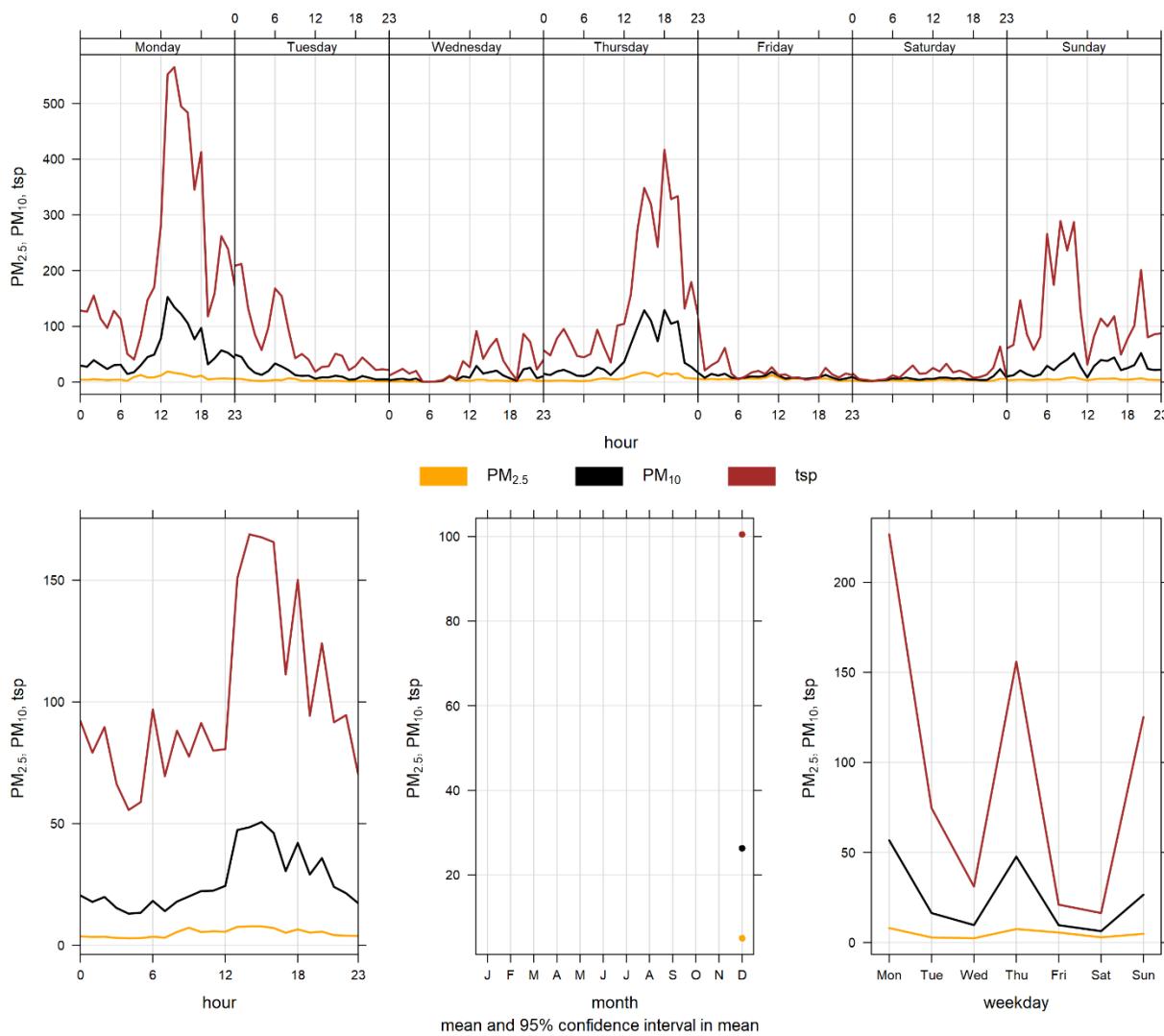


Figure 5-4 **Berm particulate matter time variation**

6 ENTRANCE INDUSTRIAL GRIMM

6.1 OPERATIONAL SUMMARY

A summary of the station operation for the month is provided in Table 6-1.

Table 6-1 Instrumentation List at the Entrance monitoring location

Parameter Measured	Equipment Description	Notes
PM_{2.5}, PM₁₀, TSP Concentrations	GRIMM 365 Continuous Particulate Monitor	The monitors had 86.4% uptime in December due to 100 hours of pump failure.

6.2 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_{2.5}, PM₁₀ and TSP concentrations recorded over the month. Table 6-2 summarizes the monthly concentrations, and the maximum 1-hour and 24-hour PM concentrations recorded during the month. Table 6-3 summarizes the recorded exceedances. This is an industrial monitor that is not Alberta Air Monitoring Directive (AMD) compliant and is not required to show compliance with the AAAQO.

During December, there were 8 and zero exceedances of the 24-hour TSP (100 µg/m³) and PM_{2.5} (29 µg/m³) guidelines, respectively. Dust created from the flood mitigation work (section 1.1) has the potential to impact particulate matter concentrations and may have contributed to particulate at the Entrance monitor.

Historically, the Entrance monitor records an average of 18 and 1 exceedances of the 24-hour TSP and PM_{2.5} guidelines respectively, during the month of December. The maximum number of TSP exceedances recorded during December occurred in 2013 (27 days), while the minimum occurred in 2016 with 12 exceedances. On the other hand, the maximum number of PM_{2.5} exceedances in December was 5 days, occurring in 2014.

It should also be noted that the GRIMM monitors become more conservative in the reported PM concentrations as the size fraction increases. The PM_{2.5} size fraction has been shown to match other regulatory approved PM_{2.5} 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 high wind events. Trucks also pass near to the Entrance monitor as they enter and exit the Lafarge facility for loading and deliveries. 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 6-3 shows the wind rose for the 8 days that exceeded the TSP guideline. The wind rose indicates that the winds predominantly came from the west, west-southwest and west-northwest directions. High wind speeds and flood mitigation work could be attributed as the causation for the 8 TSP exceedances recorded during the month of December.

High particulate levels and exceedances at the Entrance monitor are likely influenced by flood mitigation work along Exshaw creek which is producing fugitive dust near the monitors. FireSmart and Pine Beetle control work is likely to have increased levels of PM_{2.5} as well.

Table 6-2 Summary of December 2019 data at the Entrance GRIMM

Parameter	Guideline		Station	Exceedances		Monthly		Maximum 1-hour				Maximum 24-hour		Operational Time (Percent)	
	1-hr	24-hr		1-hr	24-hr	Minimum	Average	Maximum Concentration	Day	Hour	Wind Speed (km/hr)	Wind Direction (degrees)	Maximum Concentration	Day	
PM _{2.5} (µg/m ³)	80	29	Entrance	0	0	0.6	7.3	54.4	22	22	7.6	286.3	21.6	13	86.4
PM ₁₀ (µg/m ³)	-	-	Entrance	-	-	0.7	24.7	261.2	10	10	20.2	292.7	113.6	10	86.4
TSP (µg/m ³)	-	100	Entrance	-	8	0.5	89.3	1457.0	1	4	32.7	284.4	431.2	1	86.6

Table 6-3 Days exceeding the Guideline for TSP or PM_{2.5} at the Entrance Monitor

Date	TSP (ug/m ³)	PM _{2.5} (ug/m ³)	Average Wind Direction (degrees)	Average Wind Speed (km/hr)	Average RH (%)	Root Cause (Provided by Lafarge)
Entrance						
2019-12-01	431.2	-	285.2	30.0	51.8	High wind event; Dust, possibly from flood mitigation work
2019-12-02	109.2	-	264.3	38.2	43.8	High wind event; Dust, possibly from flood mitigation work
2019-12-10	427.6	-	307.0	21.7	70.2	High wind event; Dust, possibly from flood mitigation work
2019-12-11	145.9	-	293.2	19.4	64.5	TSP - Dust, possibly from flood mitigation work
2019-12-16	188.2	-	263.0	34.1	47.1	High wind event; Dust, possibly from flood mitigation work
2019-12-19	134.2	-	263.4	32.1	42.2	High wind event; Dust, possibly from flood mitigation work
2019-12-26	198.2	-	303.2	25.1	71.6	High wind event; Dust, possibly from flood mitigation work
2019-12-27	129.5	-	275.7	27.4	62.6	High wind event; Dust, possibly from flood mitigation work

Total # of Exceedances	8	0				
Maximum # of Exceedances (December)	27 (2013)	5 (2014)				
Average # of Exceedances (December)	18	1				
Minimum # of Exceedances (December)	12 (2016)	0 (2011, 2012, 2013, 2015, 2016)				

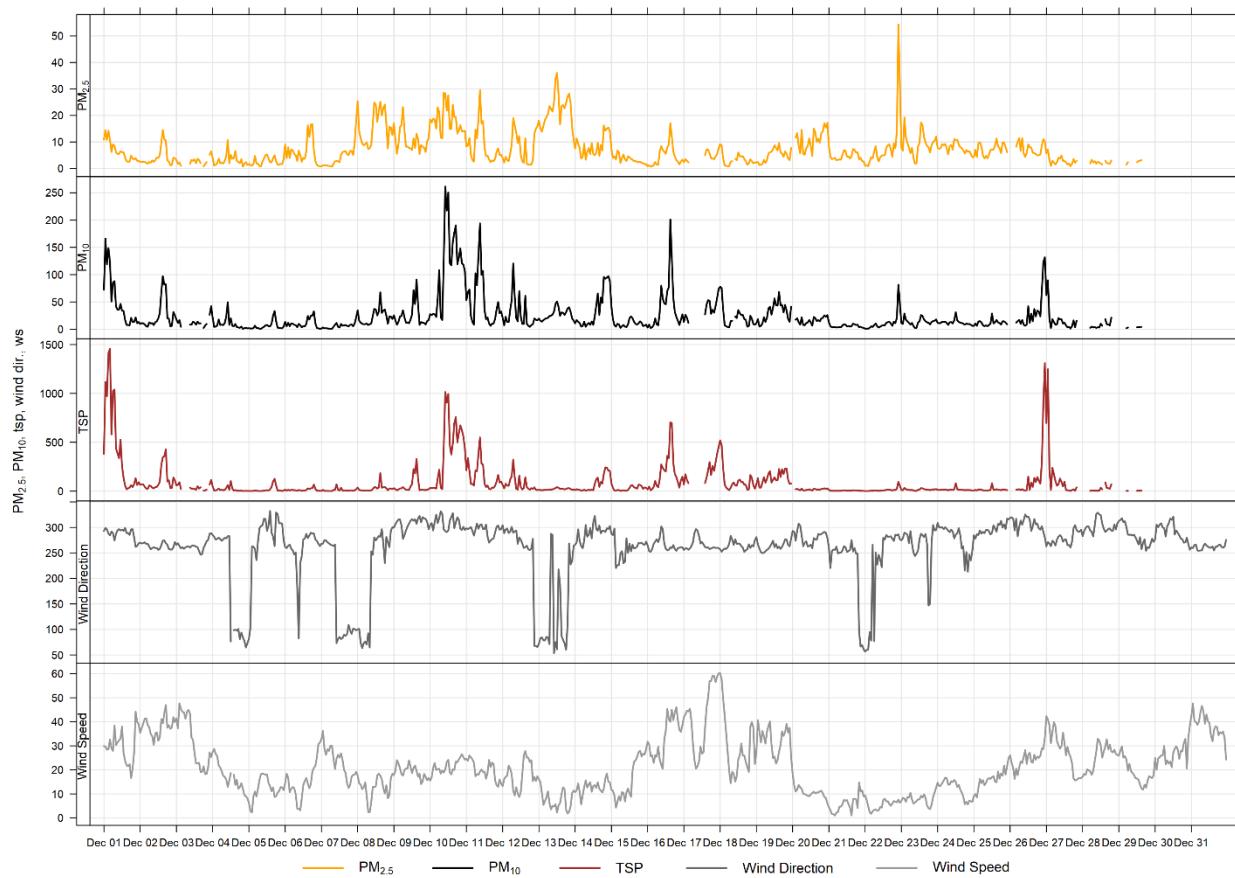


Figure 6-1 1-hour particulate matter concentrations recorded at the Entrance monitor

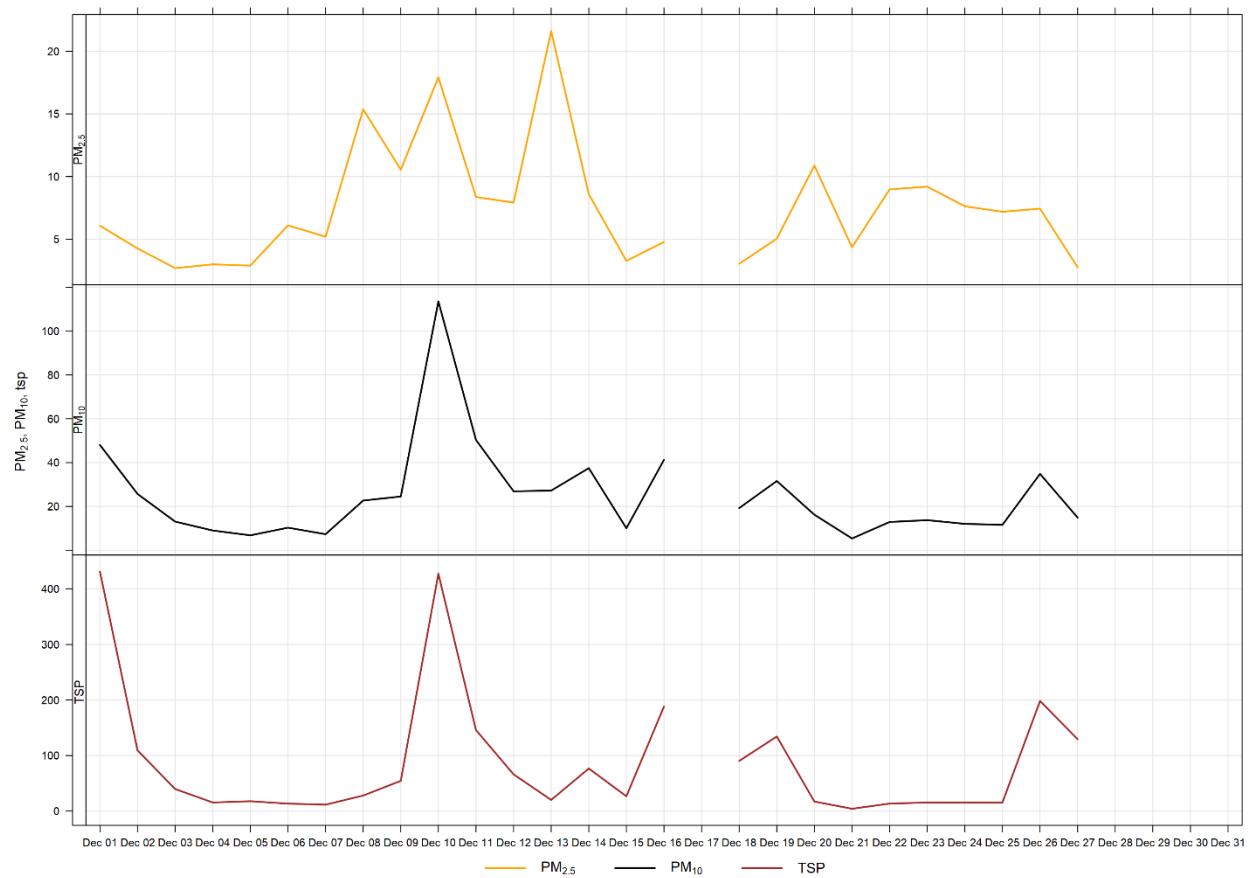


Figure 6-2 24-hour particulate matter concentrations at the Entrance monitor

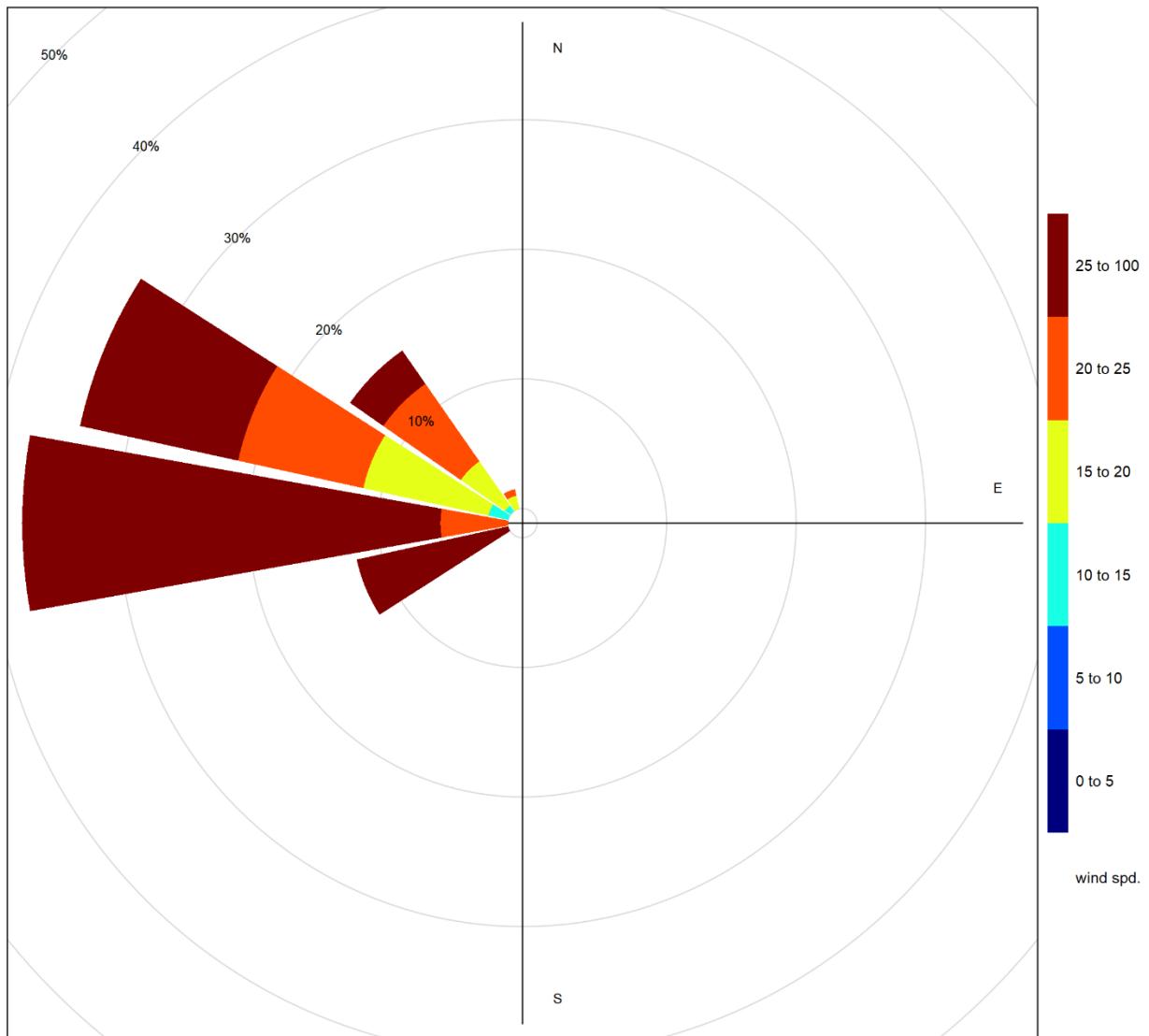


Figure 6-3 Wind rose for TSP exceedance days recorded at the Entrance GRIMM

Figure 6-4 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 6-4 is based on data collected during December 2019. The diurnal pattern is likely more influenced by daytime traffic emission (from vehicles serving Lafarge as well as regular highway traffic) given its location near the highway entrance to Lafarge, but can also be influenced by the flood mitigation work currently underway, as well as industry and rail sources.

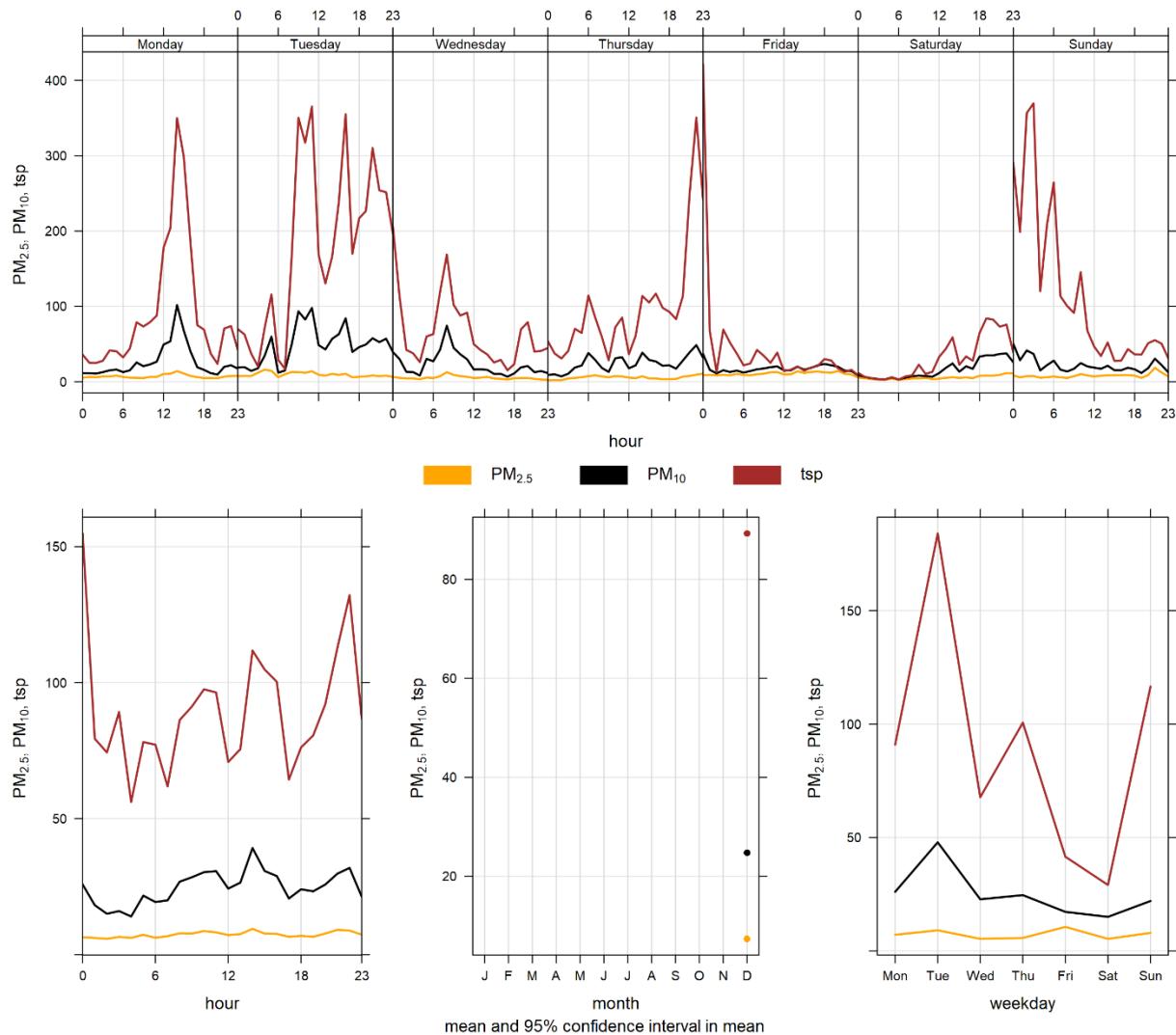


Figure 6-4 Entrance particulate matter time variation

BIBLIOGRAPHY

- Alberta Environment and Parks. (2019, January). Alberta Ambient Air Quality Objectives and Guidelines Summary. Alberta, Canada.
- Alberta Environment and Parks. (2016, February). Air Monitoring Directive. Alberta, Canada.
- 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

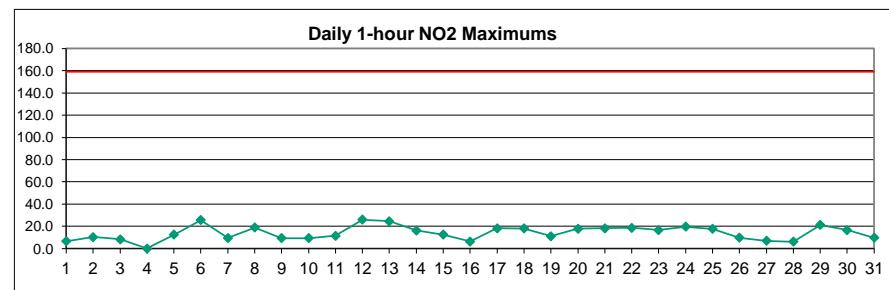
A DATA & CALIBRATION REPORTS

APPENDIX



Lagoon NO₂ (ppb) – December 2019

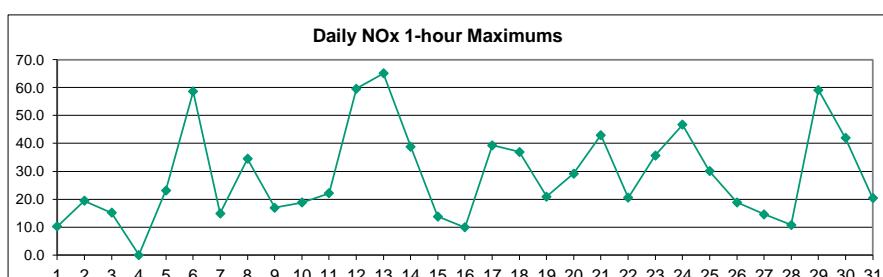
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	4.3	S	3.4	3.9	3.6	4.3	3.5	4.2	4.3	5.2	5.6	4.9	3.3	4.2	5.9	3.5	4.3	4.7	6.6	3.8	1.2	1.5	4.8	1.4	4.0	6.6
2	2.0	S	2.8	7.1	2.4	2.9	3.0	3.6	4.5	2.0	2.9	1.7	4.5	5.2	7.9	8.1	6.6	6.6	2.3	2.0	1.0	3.4	10.3	3.8	4.2	10.3
3	2.0	S	1.3	5.3	2.0	2.0	1.9	3.8	2.9	4.5	8.3	4.9	5.2	5.0	2.1	2.0	3.6	3.4	4.1	4.3	6.0	6.1	6.3	5.0	4.0	8.3
4	1.0	S	3.9	4.8	2.7	4.7	5.4	C	C	C	C	C	C	C	1.1	1.0	1.0	3.7	1.0	1.8	2.8	10.8	3.7	6.1	-	-
5	4.1	S	5.6	11.7	10.6	12.5	6.1	5.3	9.0	6.9	6.6	5.2	4.2	4.1	9.1	6.0	7.3	7.4	6.7	7.0	5.2	5.5	7.6	11.6	7.2	12.5
6	8.6	S	7.8	6.9	8.0	10.7	8.4	10.6	18.4	25.7	12.2	11.1	11.7	8.0	8.1	6.2	7.2	6.6	7.0	6.9	4.5	6.3	6.2	8.9	9.4	25.7
7	4.5	S	5.3	3.5	4.2	9.4	6.1	3.9	7.9	9.5	7.1	9.0	8.8	4.2	3.1	2.5	2.6	2.3	3.0	6.0	3.2	4.0	5.3	6.9	5.3	9.5
8	5.6	S	6.3	8.0	6.6	6.7	10.0	14.6	18.8	18.3	12.6	9.0	8.1	7.0	7.5	7.1	9.7	10.5	8.7	7.9	7.9	6.3	6.7	5.0	9.1	18.8
9	5.4	S	6.2	4.9	4.4	3.9	6.3	7.4	5.5	8.7	8.6	7.5	6.7	7.8	7.5	7.8	8.3	9.3	8.2	8.6	7.2	8.4	6.1	7.2	7.0	9.3
10	7.7	S	5.9	4.8	4.5	5.1	4.3	3.7	8.9	7.8	9.3	6.1	5.4	4.8	3.7	6.2	4.1	6.4	5.0	4.8	4.9	4.0	3.6	3.2	5.4	9.3
11	2.5	S	6.1	4.2	3.5	3.8	2.9	6.2	5.3	9.0	7.6	4.9	5.6	6.6	5.8	8.8	11.0	5.0	4.4	5.4	7.0	11.5	8.1	7.8	6.2	11.5
12	4.0	S	4.6	6.3	5.5	4.1	5.6	6.0	7.9	10.3	6.9	7.0	5.4	2.3	6.9	3.1	4.2	2.7	4.2	4.3	25.9	23.6	21.8	17.9	8.3	25.9
13	10.5	S	14.0	14.7	14.1	15.2	17.1	18.5	24.5	21.7	14.7	16.0	16.7	18.4	16.6	16.9	21.8	22.2	19.8	21.0	24.5	24.6	12.2	9.7	17.6	24.6
14	7.3	S	5.8	5.0	7.2	9.0	6.8	7.7	7.3	9.6	7.6	5.8	5.1	5.3	4.4	4.4	5.1	7.2	7.5	16.2	7.6	5.3	6.8	5.8	7.0	16.2
15	5.3	S	6.3	8.9	10.1	8.6	10.1	12.4	11.8	7.3	9.7	5.8	5.1	6.7	3.4	5.1	3.0	3.2	5.5	5.1	5.6	5.8	5.7	3.1	6.7	12.4
16	1.0	S	1.4	3.1	6.4	2.6	6.3	6.1	5.0	5.2	5.0	2.5	2.0	3.0	3.2	2.1	5.6	4.9	2.2	1.8	1.6	2.2	2.1	1.9	3.4	6.4
17	1.2	S	1.2	1.2	2.2	3.6	7.1	16.6	18.3	14.2	4.2	6.4	6.8	2.0	2.1	3.7	1.4	0.9	0.8	0.9	1.5	0.8	1.0	0.7	4.3	18.3
18	0.7	S	0.8	1.9	3.2	6.3	6.3	18.0	11.5	8.6	5.6	4.4	8.2	2.5	3.2	1.9	1.2	3.3	4.5	2.0	1.8	1.1	3.3	4.4	4.6	18.0
19	5.4	S	1.2	0.9	0.6	0.7	0.7	2.0	3.0	9.3	8.0	4.1	4.5	5.8	11.1	2.4	1.8	5.8	4.5	1.8	2.5	1.8	5.3	9.7	4.0	11.1
20	8.7	S	7.5	9.3	6.3	9.7	10.5	13.9	15.5	17.8	15.7	15.0	16.9	13.3	12.6	15.2	16.9	15.0	15.0	12.9	10.7	8.9	9.9	11.2	12.5	17.8
21	12.0	S	15.7	13.3	15.6	15.3	16.3	15.8	15.5	17.8	18.2	14.3	11.7	10.7	11.1	15.6	18.3	17.9	15.9	8.0	6.1	15.3	7.7	3.8	13.6	18.3
22	5.5	S	4.3	17.5	14.5	15.6	18.6	10.2	5.5	6.3	7.0	10.9	7.0	6.5	8.9	7.3	9.6	11.8	11.5	10.4	9.4	9.3	8.5	10.2	9.8	18.6
23	12.1	S	11.6	9.2	10.7	8.3	10.5	12.6	14.8	11.5	14.8	9.9	12.3	16.7	11.5	10.4	16.1	15.8	12.3	15.7	9.0	11.0	10.0	7.6	11.9	16.7
24	9.1	S	10.4	9.2	7.9	7.7	8.8	9.9	9.4	10.1	15.0	17.2	10.0	10.1	16.7	12.5	19.1	19.6	17.5	17.3	16.0	13.7	15.8	12.7	12.9	19.6
25	17.6	S	14.1	14.2	8.5	7.6	9.3	7.9	8.5	7.3	6.9	8.2	6.0	4.7	4.4	4.2	3.7	3.6	7.0	5.8	6.9	4.4	3.4	3.0	7.3	17.6
26	3.4	S	6.5	3.7	9.7	5.1	3.1	3.5	3.0	2.3	2.6	3.7	3.7	2.4	3.6	3.6	3.7	3.2	5.5	3.8	3.9	2.4	2.5	2.0	3.8	9.7
27	1.1	S	3.9	1.0	0.9	0.9	2.8	2.1	4.1	6.9	5.0	4.6	6.4	4.8	2.7	1.9	4.2	4.5	4.3	4.6	5.0	3.8	4.0	4.5	3.6	6.9
28	3.4	S	6.1	5.6	5.0	5.3	6.0	6.0	5.2	4.0	3.4	4.0	2.9	5.4	3.0	3.1	3.4	2.6	4.4	3.5	2.6	3.2	3.0	3.5	4.1	6.1
29	3.4	S	5.1	5.2	10.1	12.1	7.0	8.3	13.2	9.0	8.2	7.4	9.6	11.0	14.6	12.8	15.9	17.2	18.0	16.9	21.1	16.8	19.7	19.0	12.2	21.1
30	10.5	S	7.0	6.5	6.2	5.9	16.7	6.2	5.4	5.6	5.9	5.3	8.1	16.3	11.6	10.9	6.7	5.3	2.9	3.6	4.5	1.3	1.2	1.2	6.7	16.7
31	1.1	S	3.3	0.9	1.0	1.0	1.1	4.4	4.9	2.4	1.7	2.0	2.6	2.6	0.9	1.0	0.9	0.8	4.0	1.4	1.8	1.3	6.6	9.8	2.5	9.8
NO.	31	-	31	31	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	706	100%
MEAN	5.5	-	6.0	6.5	6.4	6.8	7.4	8.4	9.3	9.5	8.2	7.3	7.1	6.9	6.4	7.4	7.5	7.2	7.0	7.1	7.2	6.7	-	-	-	
MAX	17.6	-	15.7	17.5	15.6	15.6	18.6	18.5	24.5	25.7	18.2	17.2	16.9	18.4	16.7	16.9	21.8	22.2	19.8	21.0	25.9	21.8	19.0	-	-	



Number of 1HR Exceedences	0
Number of Non-Zero Readings	706
Maximum 1-HR Average	25.9 PPB
Maximum 24-HR Average	17.6 PPB
Monthly Calibration Standard Deviation	4.9
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	7.2 PPB

Lagoon NOx (ppb) – December 2019

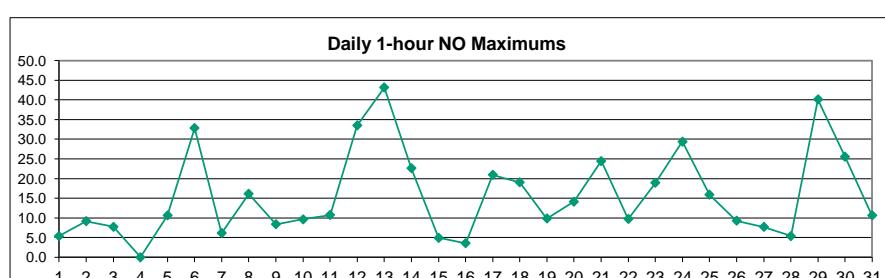
Day	Hour																									Mean	Max
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	5.4	S	4.1	6.8	4.9	6.3	6.7	6.5	5.9	8.3	10.1	10.2	5.5	6.9	9.5	4.4	5.3	5.9	8.6	4.3	1.3	2.2	7.7	1.7	6.0	10.2	
2	3.3	S	3.6	13.1	2.7	3.9	4.3	5.3	7.3	2.8	4.4	2.6	8.3	9.4	14.0	15.0	11.2	11.9	3.7	2.5	1.1	6.0	19.4	6.1	7.0	19.4	
3	2.7	S	1.6	9.1	2.8	2.8	2.4	6.2	4.4	7.6	15.1	7.4	7.7	7.3	2.7	2.5	5.1	3.9	4.6	4.8	11.4	9.2	14.0	10.3	6.3	15.1	
4	1.1	S	5.6	8.4	2.8	6.3	8.9	C	C	C	C	C	C	C	1.2	1.0	1.0	4.3	1.1	2.1	3.0	11.6	3.7	5.9	-	-	-
5	4.1	S	6.1	12.9	11.4	23.1	12.1	6.0	11.6	8.8	10.9	8.6	6.7	6.0	15.0	7.3	8.1	7.6	9.9	10.3	5.3	7.0	8.9	12.7	9.6	23.1	
6	9.1	S	8.6	6.9	10.0	14.0	8.5	11.3	27.0	58.6	19.9	20.3	21.0	11.7	12.2	7.3	8.9	7.3	9.3	7.3	4.7	9.1	9.0	14.5	13.8	58.6	
7	5.5	S	7.7	4.1	5.6	14.7	10.3	4.1	9.2	12.9	8.6	13.1	14.9	5.0	3.7	2.7	2.7	2.4	2.9	7.6	3.1	3.9	5.2	6.8	6.8	14.9	
8	5.5	S	9.2	10.2	11.8	8.4	11.5	16.7	26.0	34.5	23.5	18.9	17.0	12.6	11.1	12.4	11.8	10.9	8.8	8.0	8.2	7.8	8.4	5.5	13.0	34.5	
9	5.8	S	6.9	4.8	4.4	4.0	10.0	11.3	6.3	16.9	16.1	11.5	8.8	11.3	9.4	12.2	12.9	11.1	9.1	11.7	7.3	11.0	6.1	7.1	9.4	16.9	
10	8.7	S	6.7	5.3	6.6	7.3	4.9	4.2	13.6	11.5	18.8	8.6	8.3	6.7	4.6	9.1	5.2	8.6	7.4	5.8	6.6	5.3	4.9	3.8	7.5	18.8	
11	2.9	S	9.5	5.5	4.3	5.6	3.4	9.0	7.4	15.5	11.8	6.9	9.6	11.5	7.9	13.0	20.8	5.7	4.4	5.4	8.3	22.1	10.6	11.3	9.2	22.1	
12	4.3	S	7.4	10.4	8.6	4.8	7.7	7.0	10.5	14.8	8.5	9.3	7.4	3.0	10.3	3.6	4.9	3.0	6.2	6.1	59.6	39.7	40.4	36.5	13.7	59.6	
13	10.7	S	15.7	15.7	17.5	19.6	24.4	22.2	40.0	48.0	24.9	35.0	35.6	34.2	47.8	35.6	65.1	32.9	23.0	36.0	45.0	31.5	12.5	11.3	29.8	65.1	
14	7.5	S	5.7	4.9	9.0	17.3	9.4	9.3	7.6	13.4	10.1	7.9	7.6	7.6	7.2	5.2	5.3	10.2	10.4	38.9	10.3	5.6	8.1	6.1	9.8	38.9	
15	5.4	S	6.4	9.3	10.2	8.6	10.5	13.0	12.2	8.6	13.8	8.7	7.4	11.7	4.7	7.4	3.6	3.7	8.7	7.3	8.7	8.6	8.3	3.6	8.3	13.8	
16	1.0	S	1.4	3.6	9.9	2.9	8.8	9.6	5.7	7.1	8.0	3.4	2.5	4.2	4.3	2.8	9.0	5.5	2.3	1.8	1.8	2.6	2.5	2.0	4.5	9.9	
17	1.4	S	1.2	1.3	3.3	5.5	10.9	33.5	39.3	25.9	5.5	8.8	9.9	2.7	2.8	5.3	1.9	1.1	0.9	0.9	1.7	0.8	1.1	0.6	7.2	39.3	
18	0.6	S	0.7	2.2	4.1	9.0	7.9	37.0	18.8	10.3	8.5	5.8	13.0	3.2	4.1	2.4	1.6	4.1	4.8	2.3	1.9	1.0	3.3	7.3	6.7	37.0	
19	9.9	S	1.3	1.0	0.6	0.7	0.6	3.1	4.7	14.6	11.8	5.0	5.9	8.6	20.9	2.8	2.4	8.6	7.5	1.9	2.9	2.0	2.0	7.5	13.2	6.0	20.9
20	14.1	S	9.6	14.2	9.1	17.0	11.8	17.9	21.3	24.5	26.3	25.3	28.5	21.4	19.6	24.3	23.4	23.9	29.2	20.0	14.9	10.9	10.4	11.6	18.7	29.2	
21	12.5	S	20.9	13.4	18.1	22.4	31.3	27.7	26.3	32.5	42.9	23.4	16.7	14.0	18.6	24.4	23.8	22.0	18.4	12.5	7.2	27.2	9.3	5.0	20.4	42.9	
22	6.5	S	4.5	18.4	14.6	16.7	19.1	10.8	5.5	7.0	8.5	20.5	11.8	10.2	14.7	8.9	10.6	13.1	11.8	9.5	10.4	10.2	12.0	11.6	20.5		
23	13.0	S	15.6	13.4	15.6	13.2	15.5	17.6	18.6	15.0	24.1	16.5	24.4	35.7	19.0	15.5	20.4	17.1	12.8	21.6	12.2	15.4	14.4	10.4	17.3	35.7	
24	14.2	S	19.2	15.1	12.4	14.6	13.6	14.3	12.7	18.3	34.8	46.7	25.2	19.0	33.3	18.4	27.9	23.1	22.5	21.6	20.6	17.5	23.1	20.1	21.2	46.7	
25	28.0	S	23.4	30.1	15.0	11.4	12.9	16.1	11.6	12.9	18.4	11.6	8.3	6.2	4.6	3.7	9.7	7.9	10.4	5.4	4.2	3.0	12.1	30.1			
26	4.0	S	10.2	5.6	18.9	7.2	3.2	3.6	3.0	2.6	3.4	7.5	6.8	3.4	5.3	4.9	4.1	3.3	6.8	3.8	4.9	2.8	3.8	2.9	5.3	18.9	
27	1.0	S	7.2	1.0	0.9	0.9	4.3	2.2	5.3	14.6	8.3	8.8	12.4	8.7	3.6	2.3	6.3	7.6	4.3	4.6	5.8	3.8	5.1	6.5	5.5	14.6	
28	3.4	S	7.8	6.5	6.0	5.2	7.3	6.6	6.0	4.4	4.4	7.1	4.5	10.8	4.9	4.4	4.3	2.6	7.0	6.0	2.8	4.5	2.8	3.9	5.4	10.8	
29	3.6	S	6.3	6.0	17.5	31.9	7.5	9.4	29.6	10.9	11.2	11.7	18.7	20.4	25.0	19.6	26.0	18.7	25.7	20.3	43.6	28.9	40.8	59.2	21.4	59.2	
30	19.0	S	8.9	7.2	8.4	10.6	41.3	10.0	8.4	7.7	9.1	9.1	16.4	41.9	24.3	20.9	9.3	7.1	3.3	4.6	5.5	1.3	1.3	1.2	12.0	41.9	
31	1.2	S	5.1	0.9	1.0	1.1	1.3	7.7	8.0	3.3	2.3	3.3	4.1	4.1	1.1	1.2	0.9	0.8	6.9	1.4	1.8	1.3	12.8	20.4	4.0	20.4	
NO.	31	-	31	31	31	31	31	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	706	100%	
MEAN	7.0	-	8.0	8.6	8.6	10.2	10.8	11.9	13.9	15.7	14.0	13.0	12.6	12.1	12.0	9.8	11.2	9.4	9.4	9.7	10.7	10.2	10.3	10.4			
MAX	28.0	-	23.4	30.1	18.9	31.9	41.3	37.0	40.0	58.6	42.9	46.7	35.6	41.9	47.8	35.6	65.1	32.9	29.2	38.9	59.6	39.7	40.8	59.2			



Number of Non-Zero Readings	706
Maximum 1-HR Average	65.1 PPB
Maximum 24-HR Average	29.8 PPB
Monthly Calibration Standard Deviation	9.437
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	10.8 PPB

Lagoon NO (ppb) – December 2019

Day	Hour																									Mean	Max
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1		1.1	S	0.8	3.0	1.4	2.1	3.3	2.3	1.6	3.2	4.5	5.4	2.3	2.7	3.7	0.9	1.0	1.2	2.0	0.6	0.2	0.7	2.9	0.4	2.1	5.4
2		1.4	S	0.8	6.0	0.4	1.0	1.3	1.7	2.8	0.8	1.5	0.9	3.9	4.3	6.2	7.0	4.7	5.4	1.4	0.6	0.2	2.6	9.1	2.4	2.9	9.1
3		0.8	S	0.4	3.9	0.8	0.8	0.6	2.4	1.6	3.1	6.8	2.6	2.5	2.3	0.6	0.6	1.6	0.5	0.6	0.5	5.6	3.3	7.8	5.4	2.4	7.8
4		0.2	S	1.7	3.6	0.2	1.7	3.6	C	C	C	C	C	C	C	0.2	0.1	0.1	0.6	0.1	0.3	0.2	0.9	0.2	0.0	-	-
5		0.0	S	0.6	1.3	1.0	10.6	6.0	0.8	2.8	1.9	4.4	3.5	2.6	1.9	5.9	1.2	0.9	0.3	3.3	3.4	0.2	1.6	1.5	1.3	2.5	10.6
6		0.6	S	0.9	0.2	2.2	3.4	0.3	0.9	8.6	32.8	7.8	9.2	9.4	3.8	4.2	1.1	1.9	0.8	2.5	0.5	0.3	2.8	2.7	5.6	4.5	32.8
7		1.0	S	2.3	0.6	1.4	5.2	4.1	0.3	1.4	3.4	1.5	4.0	6.1	0.9	0.7	0.2	0.1	0.1	0.0	1.6	0.0	0.0	0.1	0.1	1.5	6.1
8		0.0	S	3.1	2.2	5.2	1.8	1.6	2.1	7.3	16.1	10.9	10.1	9.0	5.8	3.7	5.3	2.2	0.5	0.3	0.3	0.5	1.6	1.8	0.7	4.0	16.1
9		0.5	S	0.9	0.1	0.1	0.2	3.8	4.0	0.9	8.3	7.5	4.0	2.2	3.6	2.0	4.4	4.7	1.8	1.0	3.3	0.2	2.7	0.2	0.1	2.5	8.3
10		1.2	S	0.9	0.6	2.1	2.3	0.7	0.6	4.8	3.8	9.6	2.6	3.0	2.0	0.9	2.9	1.2	2.3	2.5	1.0	1.8	1.3	1.4	0.7	2.2	9.6
11		0.5	S	3.3	1.3	0.9	1.9	0.6	2.9	2.2	6.5	4.3	2.0	4.0	4.9	2.1	4.2	9.8	0.7	0.2	0.2	1.4	10.7	2.6	3.6	3.1	10.7
12		0.4	S	2.8	4.1	3.1	0.7	2.1	1.2	2.7	4.6	1.7	2.4	2.0	0.8	3.5	0.5	0.7	0.4	2.0	1.8	33.5	15.9	18.5	18.5	5.4	33.5
13		0.3	S	1.8	1.2	3.5	4.4	7.3	3.8	15.4	26.2	10.2	18.9	18.8	15.7	31.2	18.6	43.1	10.7	3.2	14.9	20.2	6.8	0.5	1.8	12.1	43.1
14		0.3	S	0.0	0.0	1.9	8.4	2.6	1.7	0.5	3.9	2.7	2.1	2.6	2.3	2.7	0.8	0.3	3.1	3.0	22.7	2.7	0.4	1.4	0.4	2.9	22.7
15		0.2	S	0.2	0.5	0.2	0.2	0.5	0.7	0.5	1.3	4.2	3.0	2.4	5.0	1.3	2.3	0.7	0.6	3.3	2.2	3.1	2.9	2.7	0.6	1.7	5.0
16		0.1	S	0.1	0.5	3.5	0.4	2.5	3.5	0.8	1.9	2.9	0.9	0.6	1.2	1.1	0.7	3.4	0.6	0.2	0.1	0.1	0.5	0.4	0.2	1.1	3.5
17		0.2	S	0.0	0.1	1.2	2.0	3.9	16.9	21.0	11.7	1.3	2.4	3.1	0.7	0.7	1.6	0.5	0.3	0.2	0.1	0.3	0.0	0.2	0.0	3.0	21.0
18		0.0	S	0.0	0.4	1.0	2.7	1.6	19.0	7.3	1.8	3.0	1.4	4.8	0.7	1.0	0.5	0.4	0.9	0.4	0.4	0.2	0.0	0.1	3.0	2.2	19.0
19		4.6	S	0.2	0.2	0.1	0.1	0.0	1.1	1.7	5.3	3.8	0.9	1.4	2.8	9.8	0.5	0.6	2.9	3.1	0.1	0.4	0.3	2.3	3.6	2.0	9.8
20		5.5	S	2.2	4.9	2.9	7.4	1.4	4.0	5.8	6.7	10.6	10.3	11.6	8.1	7.1	9.1	6.5	9.0	14.1	7.1	4.3	2.1	0.6	0.5	6.2	14.1
21		0.6	S	5.2	0.2	2.5	7.1	14.9	11.9	10.7	14.6	24.5	9.0	5.0	3.4	7.5	8.8	5.5	4.1	2.4	4.5	1.2	11.9	1.6	1.2	6.9	24.5
22		1.0	S	0.2	0.9	0.2	1.2	0.6	0.7	0.1	0.7	1.6	9.7	4.9	3.8	5.9	1.6	1.1	1.4	0.5	1.0	0.2	1.2	1.8	1.9	1.8	9.7
23		1.0	S	4.1	4.3	4.9	5.0	5.1	5.1	3.8	3.6	9.2	6.7	12.1	18.9	7.6	5.1	4.3	1.3	0.6	6.0	3.2	4.4	4.5	2.9	5.4	18.9
24		5.1	S	8.8	5.9	4.5	6.9	4.8	4.5	3.4	8.2	19.8	29.4	15.3	8.9	16.5	6.0	8.8	3.5	5.0	4.3	4.6	3.8	7.3	7.5	8.4	29.4
25		10.4	S	9.2	15.9	6.6	3.8	5.8	5.1	7.6	4.3	6.1	10.2	5.7	3.7	3.9	2.1	0.9	0.2	2.8	2.1	3.5	1.1	0.8	0.1	4.9	15.9
26		0.7	S	3.8	1.9	9.2	2.1	0.2	0.2	0.1	0.4	0.8	3.7	3.1	1.0	1.7	1.4	0.6	0.2	1.4	0.1	1.1	0.5	1.3	1.0	1.6	9.2
27		0.0	S	3.4	0.0	0.1	0.1	1.5	0.1	1.2	7.7	3.3	4.2	6.1	3.9	0.8	0.4	2.2	3.2	0.2	0.2	0.9	0.1	1.2	2.1	1.9	7.7
28		0.1	S	1.8	1.0	1.0	0.0	1.4	0.7	0.9	0.5	0.9	3.1	1.6	5.4	2.0	1.4	1.0	0.0	2.7	2.6	0.2	1.3	0.0	0.5	1.3	5.4
29		0.3	S	1.3	0.9	7.5	20.0	0.6	1.2	16.4	2.0	3.1	4.4	9.3	9.5	10.4	6.8	10.2	1.5	7.7	3.4	22.3	12.1	21.0	40.1	9.2	40.1
30		8.5	S	2.0	0.8	2.3	4.7	24.6	3.9	3.0	2.1	3.3	3.8	8.5	25.5	12.6	10.0	2.6	1.9	0.4	1.0	1.0	0.0	0.1	0.1	5.3	25.5
31		0.1	S	1.8	0.0	0.0	0.1	0.3	3.4	3.2	1.0	0.5	1.3	1.4	1.5	0.2	0.2	0.0	0.0	2.9	0.0	0.0	6.1	10.6	1.5	10.6	
NO.		31	-	31	31	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	706	100%
MEAN		1.5	-	2.1	2.1	2.3	3.5	3.5	3.5	4.7	6.3	5.7	5.7	5.5	5.2	5.1	3.4	3.9	1.9	2.3	2.8	3.7	3.0	3.3	3.8		
MAX		10.4	-	9.2	15.9	9.2	20.0	24.6	19.0	21.0	32.8	24.5	29.4	18.8	25.5	31.2	18.6	43.1	10.7	14.1	22.7	33.5	15.9	21.0	40.1		

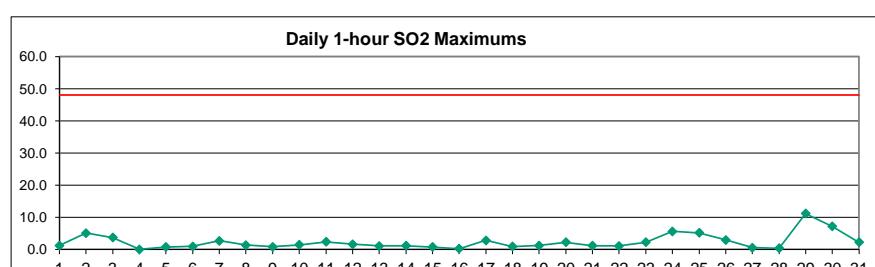


Number of Non-Zero Readings	696
Maximum 1-HR Average	43.1 PPB
Maximum 24-HR Average	12.1 PPB
Monthly Calibration Standard Deviation	5.221
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	3.7 PPB

Lagoon SO₂ (ppb) – December 2019

Day	HOUR																								MEAN	MAX	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	0.0	S	1.2	0.4	0.2	0.0	0.5	0.4	0.4	1.1	0.7	1.1	0.6	0.7	0.9	0.9	0.6	0.7	0.8	0.7	0.2	0.0	0.5	0.0	0.6	1.2	
2	0.3	S	0.0	0.9	0.3	0.0	0.3	0.3	0.7	0.1	0.4	0.5	1.2	1.7	3.0	5.1	2.6	2.8	1.2	0.5	0.9	1.8	4.1	1.5	1.3	5.1	
3	1.0	S	1.3	0.5	0.6	0.8	0.8	0.3	0.7	0.6	0.1	1.1	0.7	0.6	0.3	0.3	0.8	0.8	0.9	1.0	2.6	3.7	0.7	0.6	0.9	3.7	
4	0.6	S	0.4	0.8	0.4	1.2	1.0	C	C	C	C	C	C	C	0.3	0.4	0.0	0.1	0.5	0.4	0.7	0.6	1.0	0.3	-	-	-
5	0.1	S	0.1	0.0	0.0	0.4	0.3	0.0	0.3	0.4	0.3	0.1	0.8	0.0	0.2	0.2	0.0	0.2	0.1	0.1	0.0	0.0	0.3	0.0	0.2	0.8	
6	0.0	S	0.0	0.3	0.6	0.1	0.0	0.5	0.2	0.3	0.1	0.5	0.3	0.6	0.8	0.2	0.4	0.8	0.9	0.2	0.4	0.4	0.2	0.9	0.4	0.9	
7	1.0	S	0.3	0.8	0.2	0.2	0.4	0.1	0.2	0.8	2.7	2.1	1.8	0.8	1.2	0.6	0.6	0.0	0.3	0.3	0.6	1.1	0.9	0.8	0.8	2.7	
8	1.2	S	0.8	0.5	0.8	1.3	0.4	0.3	0.5	0.7	0.5	0.5	0.5	0.3	0.7	0.3	0.7	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.4	0.5	1.3
9	0.2	S	0.2	0.3	0.1	0.1	0.0	0.3	0.1	0.4	0.1	0.3	0.2	0.6	0.4	0.6	0.0	0.4	0.1	0.4	0.4	0.1	0.3	0.3	0.8	0.3	0.8
10	0.6	S	0.7	0.4	0.1	0.0	0.0	0.1	0.4	0.5	0.7	0.9	1.0	0.6	0.3	0.0	0.2	0.5	0.9	1.0	1.4	1.0	0.8	1.1	0.6	1.4	
11	0.6	S	1.5	2.3	1.7	0.7	1.2	0.4	0.7	0.6	0.6	0.3	0.9	0.5	0.5	0.1	0.9	0.4	0.0	0.0	0.0	1.1	1.3	0.3	0.7	2.3	
12	0.3	S	0.6	0.6	1.4	0.6	1.0	1.0	0.5	0.6	0.5	0.6	0.4	0.4	0.7	0.3	0.3	0.5	0.5	0.7	1.6	0.8	0.8	1.0	0.7	1.6	
13	0.4	S	0.9	0.9	0.6	0.8	0.6	0.9	1.1	0.7	0.4	0.5	0.7	0.0	0.5	0.4	0.9	0.9	0.7	0.6	0.8	0.6	0.0	0.3	0.6	1.1	
14	0.2	S	0.0	0.0	0.7	0.3	1.1	0.7	0.4	0.4	0.0	0.0	0.3	0.6	0.6	0.0	0.3	0.0	0.6	0.6	0.1	0.3	0.4	0.6	0.4	1.1	
15	0.3	S	0.1	0.7	0.5	0.2	0.7	0.4	0.2	0.1	0.3	0.1	0.3	0.4	0.6	0.4	0.6	0.1	0.5	0.1	0.0	0.0	0.0	0.0	0.3	0.7	
16	0.0	S	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.2	
17	0.0	S	0.0	0.0	0.0	0.1	2.0	2.8	2.6	1.4	0.2	0.2	0.1	0.2	0.1	0.3	0.0	0.6	0.4	0.3	0.2	0.3	0.0	0.1	0.5	2.8	
18	0.0	S	0.0	0.0	0.0	0.1	0.8	0.8	0.1	0.9	0.0	0.0	0.1	0.2	0.0	0.4	0.2	0.0	0.4	0.1	0.0	0.8	0.2	0.5	0.2	0.9	
19	0.3	S	0.3	0.7	0.1	0.4	0.4	0.2	0.3	0.7	0.5	0.7	0.9	1.2	0.2	0.1	0.2	0.8	0.2	0.5	0.0	0.5	0.9	0.5	1.2		
20	1.2	S	0.8	1.1	0.6	0.5	0.7	0.8	0.7	0.3	0.6	1.3	0.8	1.1	0.4	0.9	0.6	2.2	1.9	1.1	1.5	0.6	0.4	0.6	0.9	2.2	
21	0.4	S	0.7	0.0	0.6	0.6	0.8	0.7	0.9	1.1	0.6	0.3	0.5	0.4	1.2	0.8	1.1	0.4	0.7	0.8	0.4	1.0	0.6	0.5	0.7	1.2	
22	0.7	S	0.5	0.3	0.6	0.7	0.9	0.3	0.5	0.2	0.4	0.5	0.4	0.8	1.1	0.5	0.2	0.1	0.0	0.3	0.6	0.4	0.6	0.6	0.5	1.1	
23	0.8	S	1.0	1.0	2.1	1.3	0.9	0.1	0.1	0.7	0.8	0.7	2.2	2.1	1.6	1.0	0.8	0.7	0.7	1.6	1.1	1.8	1.6	1.2	1.2	2.2	
24	1.1	S	2.0	1.7	1.0	0.9	1.1	1.5	1.1	1.3	3.9	5.6	2.2	2.3	3.9	2.7	4.5	3.3	3.5	3.2	3.1	2.5	2.4	2.7	2.5	5.6	
25	4.7	S	3.3	5.1	2.7	2.0	2.1	1.6	2.8	1.4	1.5	3.9	2.3	1.4	0.5	0.0	0.3	0.1	0.2	0.4	1.3	0.2	0.5	0.0	1.7	5.1	
26	0.4	S	0.7	0.4	2.9	1.4	0.0	0.0	0.6	0.4	0.2	0.8	0.0	0.0	0.3	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0	0.0	0.4	2.9	
27	0.3	S	0.2	0.0	0.3	0.5	0.2	0.0	0.2	0.0	0.4	0.6	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.6	
28	0.0	S	0.3	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.1	0.3	0.0	0.1	0.0	0.5	0.0	2.0	1.8	4.4	11.2	0.9	0.1	0.3	
29	0.0	S	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.3	0.0	0.1	0.0	0.5	0.0	2.0	1.8	4.4	11.2	0.9	1.1	7.1	
30	2.0	S	0.0	0.0	0.0	0.0	7.1	0.8	0.3	0.0	0.0	0.9	1.7	6.5	2.7	2.7	0.1	0.2	0.5	0.2	0.2	0.4	0.0	0.0	1.1	7.1	
31	0.0	S	0.3	0.3	0.5	0.6	0.0	0.5	0.4	0.0	0.7	0.1	0.4	0.1	0.7	0.0	0.2	0.9	0.4	0.2	0.6	1.1	1.4	2.2	0.5	2.2	

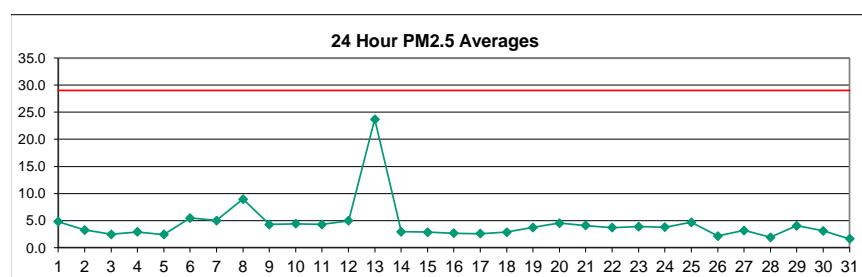
NO.	31	-	31	31	31	31	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	706	100%
MEAN	0.6	-	0.6	0.7	0.7	0.5	0.8	0.6	0.6	0.5	0.6	0.8	0.7	0.8	0.6	0.6	0.6	0.6	0.7	0.8	0.8	1.0	1.0	0.9	0.9
MAX	4.7	-	3.3	5.1	2.9	2.0	7.1	2.8	2.8	1.4	3.9	5.6	2.3	6.5	3.9	5.1	4.5	3.3	3.5	3.2	3.1	3.7	4.4	11.2	11.2



Number of 1HR Exceedences	0
Number of Non-Zero Readings	590
Maximum 1-HR Average	11.2 PPB
Maximum 24-HR Average	2.5 PPB
Monthly Calibration Standard Deviation	0.937
Opperational Time	744 HRS
Opperational Uptime	100.0 %
Monthly Average	0.7 PPB

Lagoon PM_{2.5} ($\mu\text{g}/\text{m}^3$) – December 2019

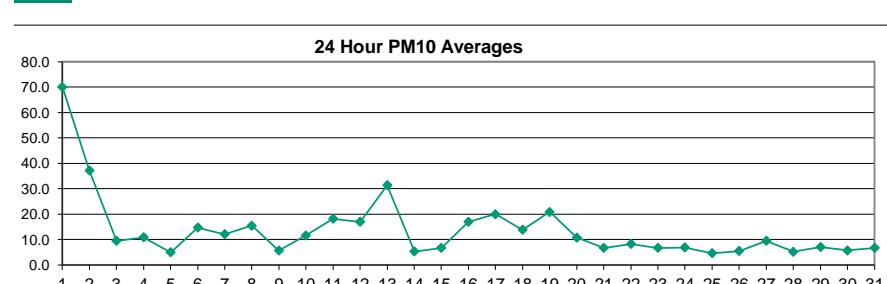
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	2.6	2.6	2.2	3.7	4.0	4.6	5.8	3.7	3.7	8.3	7.3	6.2	8.3	4.8	5.1	4.0	3.3	5.8	4.8	7.3	5.1	4.0	4.6	3.7	4.8	8.3
2	5.5	5.1	5.5	6.2	9.4	5.5	1.5	0.4	1.2	4.0	1.9	0.0	0.1	0.0	0.0	4.8	7.6	5.8	2.0	0.0	0.8	3.7	4.0	3.4	3.3	9.4
3	1.9	1.9	3.0	3.3	3.0	1.5	0.0	2.7	3.0	4.0	4.4	3.7	2.2	1.5	0.1	1.3	2.2	2.2	2.2	0.8	2.6	4.0	3.9	4.0	2.5	4.4
4	3.3	3.7	4.4	3.0	4.4	5.8	3.0	1.9	C	C	C	C	5.8	4.8	3.3	2.2	1.2	0.4	3.3	2.6	1.5	1.5	0.8	1.2	2.9	5.8
5	3.8	4.0	3.7	2.6	0.8	0.8	2.1	1.5	0.4	2.2	1.2	4.0	4.4	1.5	0.8	5.1	5.1	1.5	0.8	2.2	3.3	1.9	0.8	3.4	2.4	5.1
6	3.3	4.8	7.6	6.5	4.0	0.4	0.4	1.9	3.0	4.8	5.1	7.3	11.6	11.2	9.4	10.5	7.6	5.5	6.2	5.5	5.8	6.2	2.6	0.0	5.5	11.6
7	0.0	3.0	5.1	5.5	3.3	0.4	2.6	2.2	1.5	4.0	4.4	2.6	3.7	7.3	6.2	6.9	4.8	5.1	6.9	5.8	9.1	6.1	8.8	14.8	5.0	14.8
8	9.4	8.7	8.7	9.4	8.3	10.1	8.7	13.0	10.5	13.4	10.9	14.8	10.1	12.3	8.7	8.7	9.1	6.2	7.6	5.5	3.3	7.3	6.2	4.0	9.0	14.8
9	2.2	3.7	3.7	2.2	0.8	2.2	3.7	0.8	0.0	2.6	7.3	6.2	4.4	5.5	5.1	5.1	6.2	5.5	3.3	5.1	6.9	6.5	7.3	6.2	4.3	7.3
10	8.0	7.3	4.6	2.2	3.0	3.7	1.2	0.0	0.0	4.4	12.3	12.9	10.5	8.4	5.8	5.1	4.4	1.5	2.2	1.9	0.0	0.0	1.5	4.4	4.4	12.9
11	1.9	1.5	3.0	2.6	5.8	4.0	2.6	1.9	2.2	4.0	6.2	5.1	3.0	4.0	5.5	5.5	4.0	8.0	5.5	3.3	3.8	5.5	7.6	6.5	4.3	8.0
12	4.0	4.8	3.3	3.0	4.4	2.8	0.8	0.8	2.6	2.6	1.9	2.2	4.8	6.9	3.7	1.2	3.0	4.4	4.8	2.6	3.3	17.0	15.2	19.1	5.0	19.1
13	21.6	12.7	17.0	20.2	20.2	18.4	22.7	24.9	24.5	23.8	27.0	27.7	42.1	32.8	15.9	32.4	21.7	26.3	24.5	27.6	34.9	24.5	15.9	9.4	23.7	42.1
14	7.3	6.3	3.8	4.4	5.1	3.3	2.2	4.0	2.6	1.9	1.9	1.2	2.6	1.9	0.8	0.1	0.1	3.3	2.2	0.1	2.2	4.8	4.4	4.0	2.9	7.3
15	3.7	1.9	1.5	0.0	4.4	5.1	1.5	2.6	3.3	2.6	5.5	3.8	0.8	2.6	3.0	1.5	3.3	2.7	0.8	1.9	2.0	1.9	5.5	6.3	2.8	6.3
16	5.1	0.8	0.0	0.0	0.1	2.6	2.0	0.4	2.7	4.8	4.0	1.2	0.4	3.0	4.0	6.5	5.5	3.7	3.0	2.2	4.8	4.8	1.9	2.6	6.5	
17	2.6	4.8	4.8	2.6	0.8	3.7	2.6	1.9	3.3	5.5	3.7	1.5	3.3	3.0	2.2	2.2	1.2	0.1	0.1	1.2	2.2	2.2	3.0	3.3	2.6	5.5
18	4.0	2.2	0.4	3.0	2.1	1.3	3.3	2.6	3.7	4.8	5.1	2.2	1.5	3.7	3.3	3.3	1.3	0.4	0.8	1.5	3.7	5.8	4.4	4.0	2.9	5.8
19	3.4	2.6	0.0	0.0	0.0	2.2	3.7	4.0	2.7	6.2	5.5	4.8	3.3	4.8	5.2	4.4	6.5	4.4	0.8	5.8	5.8	4.0	4.0	5.5	3.7	6.5
20	4.8	3.3	3.3	4.4	2.6	1.2	3.3	7.5	4.4	1.5	2.6	5.5	5.8	4.8	5.1	4.0	3.0	5.8	6.5	5.1	7.3	5.1	6.2	5.5	4.5	7.5
21	3.3	4.0	3.3	2.6	2.6	3.0	2.6	3.0	4.0	4.1	4.4	7.3	5.1	1.9	1.2	3.3	6.5	4.8	3.0	6.2	7.0	4.0	6.5	4.8	4.1	7.3
22	0.0	1.4	5.1	4.8	4.8	6.9	7.3	5.5	2.2	0.8	3.7	2.6	3.0	3.7	3.8	4.8	3.3	5.1	2.6	1.2	4.0	4.4	3.7	7.3	3.7	6.2
23	4.8	4.4	4.0	3.3	2.2	2.6	3.3	4.8	4.4	2.2	3.7	3.7	3.7	2.6	3.0	4.0	4.0	6.2	5.1	3.3	5.9	5.5	3.7	2.6	3.9	6.2
24	2.6	2.2	1.2	2.2	2.6	2.6	2.1	3.0	1.5	1.9	2.6	6.1	7.6	5.5	3.0	4.4	3.8	8.0	5.5	4.8	2.6	2.2	4.8	7.6	3.8	8.0
25	5.5	3.7	4.4	4.0	5.1	4.7	4.4	5.2	5.8	5.5	4.0	6.2	6.9	5.8	4.0	3.3	4.0	3.9	3.3	4.4	4.4	4.0	5.5	4.0	4.7	6.9
26	3.3	2.2	2.6	3.0	0.0	1.9	2.6	0.0	0.8	1.5	1.2	0.1	0.8	2.6	3.3	2.6	3.4	4.4	3.3	1.5	1.5	4.4	3.3	1.5	2.2	4.4
27	2.6	3.0	2.6	2.6	4.4	2.6	1.2	3.7	3.3	3.0	4.0	1.5	0.4	2.6	3.3	1.5	0.4	1.5	5.2	6.5	6.2	4.4	3.7	5.8	3.2	6.5
28	3.3	0.8	3.7	4.0	2.6	1.2	1.2	3.0	1.5	0.1	3.3	2.6	0.8	1.5	0.8	0.4	2.8	2.6	1.2	0.6	2.6	1.5	1.5	2.1	1.9	4.0
29	2.2	3.0	2.6	4.4	5.1	5.1	2.2	0.1	1.2	1.4	0.8	2.6	4.8	4.8	4.8	3.7	3.7	4.8	5.5	6.9	4.4	10.5	6.9	6.2	4.1	10.5
30	13.0	6.5	1.2	1.5	1.5	3.3	4.4	8.7	5.8	2.6	1.9	0.0	0.0	3.0	6.2	4.0	3.0	1.9	0.0	0.1	1.2	2.2	2.1	3.1	3.1	13.0
31	0.1	3.3	6.6	4.0	0.4	0.0	0.0	0.8	0.8	0.0	1.5	3.7	2.6	2.8	1.2	1.5	2.2	0.0	0.0	0.4	2.6	2.6	1.6	1.6	6.6	
NO.	31	31	31	31	31	31	31	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	740	100%
MEAN	4.5	3.9	4.0	3.9	3.8	3.5	3.4	3.9	3.6	4.3	4.9	5.1	5.3	5.1	4.1	4.7	4.5	4.6	4.0	4.1	4.6	5.1	5.0	4.9		
MAX	21.6	12.7	17.0	20.2	20.2	18.4	22.7	24.9	24.5	23.8	27.0	27.7	42.1	32.8	15.9	32.4	21.7	26.3	24.5	27.6	34.9	24.5	15.9	19.1		



Number of 24HR Exceedences	0
Number of Non-Zero Readings	709
Maximum 1-HR Average	42.1 UG/M3
Maximum 24-HR Average	23.7 UG/M3
Monthly Calibration Standard Deviation	4.546
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	4.4 UG/M3

Lagoon PM₁₀ ($\mu\text{g}/\text{m}^3$) – December 2019

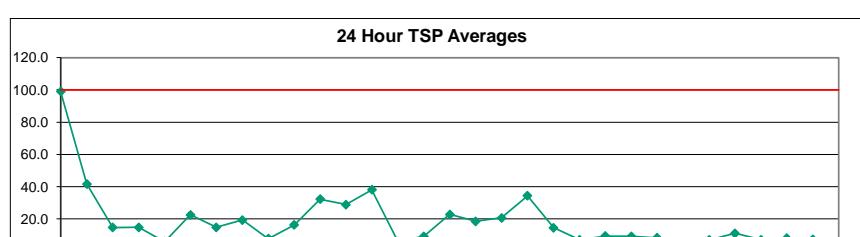
Day	HOUR																								MEAN	MAX		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
1	35.8	55.5	73.9	94.1	140.2	54.8	65.0	102.2	79.2	106.3	116.5	171.3	124.6	26.3	33.1	46.0	30.4	37.2	13.5	37.2	70.4	128.7	19.6	21.6	70.1	171.3		
2	10.8	21.6	24.3	21.6	25.7	9.4	12.1	12.5	8.0	5.3	6.7	10.8	6.7	16.9	73.1	186.9	186.2	107.7	39.7	14.8	3.7	4.9	33.8	50.7	37.2	186.9		
3	32.4	9.2	32.4	3.3	6.0	8.7	6.0	4.3	4.0	7.5	6.7	2.6	3.3	4.0	5.3	4.0	1.9	0.0	4.0	24.3	15.5	14.8	13.4	9.5	32.4			
4	16.2	4.6	13.3	18.9	8.0	20.2	13.5	16.2	C	C	C	C	C	18.9	13.5	10.1	10.1	9.0	6.0	9.4	5.3	4.6	4.7	3.6	10.8	20.2		
5	4.0	3.3	7.6	4.0	6.7	4.6	3.3	1.9	0.0	0.0	4.0	10.1	8.0	8.1	5.3	10.8	12.1	6.7	2.6	1.9	8.0	4.0	0.0	2.6	5.0	12.1		
6	12.1	12.1	12.1	8.0	8.1	17.0	31.8	20.2	7.4	57.6	25.0	5.3	13.5	12.8	10.1	10.1	6.7	4.0	5.3	10.1	25.0	30.4	4.7	3.2	14.7	57.6		
7	3.5	6.0	34.5	26.3	24.3	7.3	5.3	4.7	7.6	25.1	10.8	6.0	4.0	10.1	8.7	9.4	10.8	8.0	6.0	16.8	11.4	8.7	10.8	24.3	12.1	34.5		
8	35.1	18.2	18.2	23.0	12.8	8.0	13.6	14.1	9.4	11.5	13.6	12.8	22.3	24.3	19.6	14.1	10.8	14.1	13.4	12.1	13.8	14.8	12.8	9.4	15.5	35.1		
9	7.7	5.3	4.0	4.7	1.9	3.3	7.4	6.0	3.3	4.6	7.4	8.7	5.3	4.7	6.0	8.1	8.0	6.7	5.3	4.7	6.0	4.7	6.7	5.3	5.7	8.7		
10	4.6	6.7	6.7	3.7	1.9	4.6	4.0	9.4	6.0	16.2	17.1	29.7	31.8	7.4	5.3	7.4	20.2	19.6	1.3	6.7	16.8	21.6	16.2	14.8	11.7	31.8		
11	12.8	15.5	12.1	20.9	27.0	27.0	3.3	4.0	2.6	5.3	8.0	8.0	25.9	24.3	46.1	6.7	23.6	46.0	20.2	25.0	12.1	8.0	25.7	27.0	18.2	46.1		
12	22.9	19.9	18.2	36.5	39.2	26.3	10.1	8.0	7.3	7.6	5.3	9.4	25.0	22.9	6.7	10.8	16.2	4.2	4.7	2.6	13.5	42.6	27.0	20.8	17.0	42.6		
13	18.9	10.1	14.9	18.2	18.9	19.0	22.3	27.8	30.6	41.2	44.6	35.1	53.4	59.5	31.8	39.2	34.5	46.7	33.8	36.5	44.0	33.8	22.9	15.5	31.4	59.5		
14	9.5	6.7	2.6	2.6	2.6	10.8	10.1	6.7	4.7	4.0	2.6	2.6	2.0	0.6	6.7	8.7	9.4	10.0	8.0	4.0	1.9	2.6	1.9	5.3	10.8			
15	0.0	1.9	2.6	1.9	6.7	4.0	3.3	4.3	4.7	7.4	6.0	5.3	7.4	7.6	18.2	1.3	4.0	9.4	10.8	15.5	12.9	7.6	4.0	14.8	6.7	18.2		
16	8.7	5.3	3.3	3.3	4.9	8.0	19.6	16.2	13.5	11.4	18.2	26.3	16.2	43.3	30.4	31.8	44.6	30.4	25.0	20.2	10.8	6.7	3.3	6.7	17.0	44.6		
17	8.1	16.2	11.4	14.1	16.9	4.9	13.5	10.3	8.0	37.9	29.0	11.4	15.5	25.7	10.1	16.9	28.4	41.4	25.0	31.8	35.1	16.9	23.6	27.7	20.0	41.4		
18	22.9	25.0	8.7	4.7	4.7	2.6	8.0	13.5	12.8	25.0	68.3	8.0	29.7	18.2	5.3	10.2	6.7	3.7	6.7	15.5	3.6	4.7	4.7	18.9	13.8	68.3		
19	20.1	6.7	6.1	4.0	1.3	1.9	0.6	4.3	3.3	4.7	24.3	43.3	25.7	37.9	16.8	44.0	9.4	16.2	22.3	83.2	56.8	31.8	11.6	25.7	20.9	83.2		
20	36.9	19.6	14.8	6.7	9.4	6.0	10.2	9.4	12.4	14.1	16.2	11.4	8.0	11.5	8.0	7.4	7.4	6.7	6.7	8.7	5.3	6.7	6.0	10.8	36.9			
21	6.7	4.7	5.3	3.3	3.3	4.6	4.6	4.2	4.9	9.4	12.1	7.4	6.0	6.0	6.7	10.1	10.1	8.7	9.4	7.4	6.7	8.7	5.3	6.7	12.1			
22	1.0	1.9	1.9	3.3	6.0	4.0	9.4	9.4	6.1	4.7	4.6	5.3	18.8	10.8	6.7	12.1	7.4	13.5	10.8	14.1	7.4	10.8	8.7	19.0	8.2	19.0		
23	7.4	8.0	4.8	4.0	4.0	9.4	6.7	4.7	2.2	3.3	4.2	12.1	12.8	14.8	8.7	7.4	4.9	4.0	5.3	7.4	6.7	7.6	6.2	4.6	6.7	14.8		
24	6.0	4.0	0.6	0.0	4.0	5.3	3.6	2.7	6.0	4.0	3.6	12.1	16.2	7.4	8.7	7.4	9.0	16.2	10.2	7.4	7.4	8.0	8.0	6.9	16.2			
25	5.3	10.8	6.7	3.3	4.7	3.6	6.0	4.7	3.3	6.7	3.5	5.9	6.0	5.8	3.3	2.6	1.0	5.9	4.8	1.3	2.6	4.7	6.0	3.3	4.7	10.8		
26	2.3	2.6	1.9	4.7	2.6	5.9	4.7	2.6	6.0	4.7	3.3	1.9	3.3	5.3	8.7	8.0	4.9	2.6	4.0	3.3	4.7	7.4	16.9	20.1	5.5	20.1		
27	33.1	31.8	10.1	12.8	28.4	10.8	8.7	6.0	8.0	10.8	14.1	10.2	8.0	6.7	4.7	3.3	1.9	3.3	5.0	3.6	2.6	0.6	1.3	2.3	9.5	33.1		
28	2.7	1.9	0.0	0.0	1.9	0.6	0.0	0.0	1.3	6.0	4.0	2.6	1.9	4.0	10.8	22.9	9.4	10.1	7.4	7.4	6.3	7.4	9.6	7.4	5.2	22.9		
29	4.6	1.9	3.3	6.0	5.9	4.9	6.0	5.3	5.3	6.7	6.0	8.0	14.8	8.0	7.4	6.0	7.4	7.4	7.4	9.1	13.5	10.8	8.1	5.0	7.0	14.8		
30	16.9	5.3	3.3	1.3	1.3	1.3	2.2	7.7	4.7	4.7	4.6	1.3	2.6	6.7	7.7	9.0	10.1	10.8	10.7	6.0	2.6	7.4	6.0	4.7	5.8	16.9		
31	16.9	17.8	9.4	12.1	7.4	10.1	12.8	16.2	8.0	7.4	6.2	5.3	4.0	4.6	3.7	3.3	4.0	2.6	1.9	1.9	0.0	0.0	1.9	3.9	6.7	17.8		
NO.	31	31	31	31	31	31	31	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	739	100%		
MEAN	13.7	11.6	11.9	12.0	14.1	10.0	10.6	11.6	9.3	15.2	16.5	16.5	17.5	15.0	14.1	18.5	17.8	16.6	10.8	14.3	14.4	15.1	10.9	12.8				
MAX	36.9	55.5	73.9	94.1	140.2	54.8	65.0	102.2	79.2	106.3	116.5	171.3	124.6	59.5	73.1	186.9	186.2	107.7	39.7	83.2	70.4	128.7	33.8	50.7				



Number of Non-Zero Readings	727
Maximum 1-HR Average	186.9 UG/M3
Maximum 24-HR Average	70.1 UG/M3
Monthly Calibration Standard Deviation	5
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	13.8 UG/M3

Lagoon TSP ($\mu\text{g}/\text{m}^3$) – December 2019

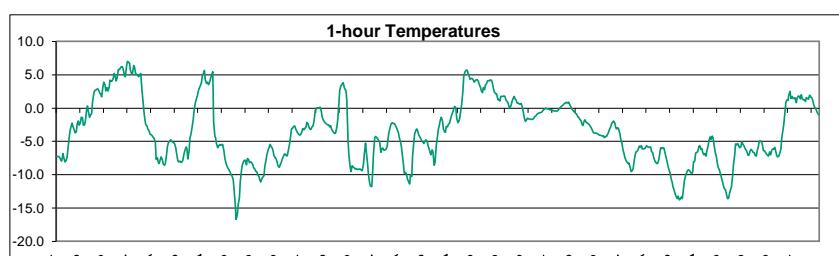
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	62.4	81.8	126.0	175.8	145.4	97.0	106.8	109.4	145.4	193.7	197.9	271.1	149.5	48.3	58.3	77.6	45.9	62.4	22.3	63.8	55.5	55.5	14.0	9.9	99.0	271.1
2	15.4	19.6	12.7	9.9	14.0	0.2	8.5	11.3	7.1	3.0	8.1	7.1	5.7	18.2	74.9	232.4	221.4	124.6	62.4	16.8	16.5	8.5	40.3	63.8	41.8	232.4
3	36.2	23.7	20.9	3.0	1.6	4.4	4.4	8.5	9.8	11.3	16.8	8.5	9.9	8.5	10.6	7.1	4.4	4.4	9.9	20.9	48.6	32.0	29.2	18.1	14.7	48.6
4	30.6	14.1	20.9	22.3	16.8	27.9	23.7	23.7	C	C	C	C	23.7	16.8	23.7	18.2	9.9	4.4	3.0	4.4	1.6	0.0	8.5	4.4	14.9	30.6
5	5.7	13.0	7.1	3.0	3.0	1.6	3.0	0.2	0.0	1.3	5.7	12.6	9.9	9.9	5.7	11.3	16.8	7.1	5.7	4.4	5.7	1.6	1.1	7.1	5.9	16.8
6	16.8	19.6	15.4	3.0	9.9	21.0	37.5	22.3	9.9	157.8	45.8	14.0	27.9	15.4	4.4	16.8	7.1	5.7	3.0	14.0	29.2	38.9	4.4	1.3	22.5	157.8
7	1.6	16.3	37.5	32.0	32.0	5.7	3.0	5.5	24.1	43.1	16.8	0.0	7.1	11.3	11.3	12.7	12.7	9.9	4.9	10.4	14.0	9.9	12.7	22.3	14.9	43.1
8	36.1	37.5	33.4	19.6	11.3	8.5	11.3	7.7	4.4	12.7	22.3	12.6	25.1	37.5	34.8	29.2	4.4	20.9	22.3	14.0	16.8	20.7	12.6	8.5	19.3	37.5
9	15.4	15.4	9.9	5.7	3.0	3.0	11.3	7.1	9.9	9.9	7.1	5.3	3.0	5.7	12.7	16.8	5.2	4.4	7.1	5.3	7.1	4.4	5.2	7.1	7.8	16.8
10	3.1	13.1	5.7	3.0	5.7	5.7	4.4	0.0	0.0	24.0	25.1	36.1	40.3	8.5	7.1	15.4	27.9	26.5	9.9	12.7	25.1	40.3	30.6	22.3	16.4	40.3
11	30.6	37.5	19.6	27.9	40.3	54.1	14.0	0.9	3.0	8.5	7.1	7.1	54.1	50.0	81.8	5.7	43.1	97.0	32.0	44.4	25.1	9.9	37.5	43.1	32.3	97.0
12	30.6	38.9	43.1	69.3	77.6	45.2	12.6	9.9	8.5	8.5	14.0	3.0	54.0	30.6	9.9	23.2	37.6	7.1	5.7	8.5	18.3	69.3	43.1	27.7	29.0	77.6
13	27.9	18.2	14.0	19.6	18.2	26.5	20.9	26.5	20.9	41.7	55.5	39.9	67.9	70.7	34.8	55.5	51.4	63.8	45.8	54.1	63.8	43.1	20.9	12.7	38.1	70.7
14	12.7	18.2	0.2	0.2	2.9	4.4	4.4	3.0	7.9	7.1	5.7	9.9	1.6	0.0	14.0	5.7	4.4	3.0	7.1	8.5	7.1	10.3	7.1	3.0	6.2	18.2
15	0.8	5.7	4.4	9.9	5.2	1.6	4.4	1.6	0.0	4.4	3.0	5.7	5.4	11.3	26.5	7.1	11.3	13.1	19.6	24.0	29.2	3.2	5.7	20.9	9.3	29.2
16	5.7	12.7	10.5	8.5	16.8	23.7	34.8	30.2	41.7	22.3	38.9	34.8	11.3	43.1	29.2	48.6	50.0	33.4	20.9	18.2	4.4	1.6	3.0	3.0	22.8	50.0
17	4.4	22.3	12.7	7.1	12.7	7.1	18.2	19.6	5.7	65.2	43.1	12.6	23.7	40.3	12.7	16.8	3.0	18.5	11.3	11.3	16.8	13.3	19.6	29.2	18.6	65.2
18	16.8	19.6	12.7	7.1	3.0	0.2	8.5	26.5	25.1	40.3	121.8	16.5	51.3	29.2	14.0	7.1	5.7	8.5	4.4	20.9	7.1	15.4	7.1	27.9	20.7	121.8
19	43.1	14.0	1.6	4.4	7.1	8.5	7.1	7.7	8.5	14.0	38.9	66.9	43.1	55.5	13.2	76.3	14.0	18.2	37.5	170.2	84.5	54.1	5.7	32.0	34.4	170.2
20	48.7	34.8	20.9	4.4	5.7	8.5	7.9	16.8	12.7	14.0	20.9	19.6	22.3	16.8	9.9	15.4	7.1	8.5	8.5	8.5	12.6	8.5	7.1	9.9	14.6	48.7
21	9.9	12.7	8.5	4.4	4.4	1.6	5.7	5.7	3.0	1.6	13.0	11.3	8.5	7.1	4.4	8.5	5.7	12.6	14.0	4.4	5.7	8.5	4.4	7.1	14.0	
22	0.2	0.2	0.0	0.2	5.7	5.7	14.0	14.0	3.0	7.1	7.1	3.0	13.1	16.8	5.7	8.5	8.1	19.6	9.9	16.8	8.2	16.8	9.9	33.4	9.5	33.4
23	14.0	23.7	0.2	5.7	9.9	7.1	4.4	4.4	5.7	4.4	4.4	22.3	18.2	18.5	9.9	9.9	4.4	14.0	11.3	9.9	4.4	5.7	4.4	5.7	9.3	23.7
24	8.5	12.6	8.5	4.4	8.5	5.7	3.0	0.0	0.2	1.6	7.1	13.1	11.3	15.4	12.7	8.5	12.6	14.0	12.7	9.9	9.9	10.3	4.4	5.7	8.4	15.4
25	7.1	15.4	7.1	3.0	5.7	4.4	3.0	5.7	7.1	4.4	4.4	3.0	0.2	0.2	3.0	0.2	0.0	1.6	0.0	1.6	8.5	3.0	0.2	1.6	3.8	15.4
26	4.4	7.9	3.0	0.2	0.0	8.2	4.4	1.2	3.0	5.7	5.7	3.0	5.7	8.1	14.0	5.7	4.4	4.4	8.5	7.1	10.6	7.1	22.3	25.1	7.1	25.1
27	32.1	47.2	13.3	18.2	29.2	8.2	15.4	12.7	11.3	15.4	15.4	8.5	8.5	5.7	0.2	0.0	5.7	4.4	3.0	3.0	1.6	0.0	0.2	11.1	47.2	
28	0.2	10.7	5.7	0.2	0.0	0.0	0.0	3.0	0.2	0.0	4.4	5.3	3.0	0.0	16.8	30.6	14.0	12.6	13.0	8.5	7.1	16.8	15.4	5.7	7.2	30.6
29	3.0	9.9	7.1	3.2	0.2	1.6	4.4	1.6	8.5	11.3	12.6	12.6	18.4	8.5	4.4	8.5	5.7	5.4	3.0	14.0	9.9	20.9	14.0	5.7	8.1	20.9
30	26.5	15.4	0.0	1.6	3.0	1.6	7.1	8.5	3.1	0.0	0.0	1.6	0.2	1.6	14.0	15.4	18.2	19.6	14.0	4.4	1.2	7.1	7.1	4.4	7.3	26.5
31	1.6	19.6	5.7	8.5	8.3	5.6	3.0	9.9	8.5	10.8	9.9	5.7	3.0	4.4	3.0	0.2	4.4	4.4	9.9	4.4	1.3	0.2	0.0	4.1	5.7	19.6
NO.	31	31	31	31	31	31	31	31	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	740	100%
MEAN	17.8	21.0	15.8	15.6	16.4	13.0	13.2	13.1	13.3	24.8	26.0	22.4	23.4	19.9	18.8	25.7	21.3	21.1	14.3	20.0	18.0	17.3	13.0	15.2		
MAX	62.4	81.8	126.0	175.8	145.4	97.0	106.8	109.4	145.4	193.7	197.9	271.1	149.5	70.7	81.8	232.4	221.4	124.6	62.4	170.2	84.5	69.3	43.1	63.8		



Number of 24HR Exceedences	0
Number of Non-Zero Readings	717
Maximum 1-HR Average	271.1 $\mu\text{g}/\text{m}^3$
Maximum 24-HR Average	99.0 $\mu\text{g}/\text{m}^3$
Monthly Calibration Standard Deviation	27.9
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	18.3 $\mu\text{g}/\text{m}^3$

Lagoon Temperature (°C) – December 2019

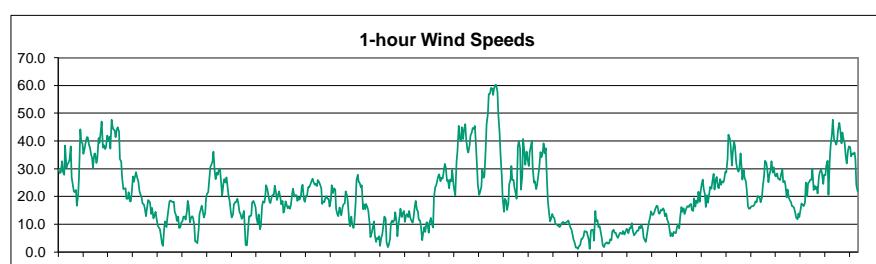
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	-7.3	-7.3	-7.2	-7.4	-7.8	-8.0	-6.8	-7.5	-8.1	-8.0	-7.4	-6.2	-4.5	-3.4	-2.7	-2.3	-2.8	-3.3	-3.7	-3.6	-2.4	-1.9	-2.6	-2.2	-5.2	-1.9
2	-1.4	-1.4	-2.6	-2.5	-1.8	-0.2	0.3	-0.5	-1.4	-1.1	-0.8	0.9	2.1	2.6	2.7	2.8	2.9	2.6	2.2	2.1	1.7	3.1	3.9	3.5	0.8	3.9
3	2.6	3.1	2.6	3.1	4.2	4.0	4.1	4.5	5.2	4.6	4.1	4.5	5.8	5.8	6.0	6.2	6.2	5.7	4.8	4.7	6.4	7.0	6.8	6.8	5.0	7.0
4	5.7	5.1	5.1	6.4	6.2	5.0	5.1	4.9	4.7	5.0	5.2	2.6	Y	-0.8	-1.8	-2.5	-2.7	-3.1	-3.4	-3.9	-4.0	-4.2	-4.4	-4.5	1.1	6.4
5	-5.1	-7.7	-7.5	-8.2	-8.3	-7.7	-7.3	-7.8	-8.4	-8.6	-8.4	-7.0	-5.7	-5.1	-5.0	-4.8	-5.0	-5.1	-5.2	-5.3	-5.9	-6.7	-7.9	-8.1	-6.7	-4.8
6	-7.9	-8.1	-8.1	-7.8	-6.9	-6.4	-5.8	-6.2	-7.6	-6.5	-4.5	-3.7	-3.0	-1.7	-0.5	0.7	1.2	1.8	2.5	3.1	3.3	3.9	4.9	5.1	-2.4	5.1
7	5.7	4.2	3.7	3.9	3.5	3.8	4.5	4.9	5.5	2.0	4.2	4.5	5.4	5.9	5.7	5.5	5.6	5.5	5.5	6.5	7.5	8.3	8.7	9.1	2.1	5.7
8	-9.3	-9.6	-10.0	-10.2	-10.7	-12.0	-14.5	-16.7	-16.0	-14.5	-13.4	-11.1	-9.3	-8.5	-8.0	-7.9	-7.8	-8.5	-7.6	-7.7	-8.2	-8.1	-8.1	-8.4	-10.3	-7.6
9	-9.0	-9.2	-9.5	-9.6	-10.0	-10.3	-10.8	-11.1	-10.6	-10.4	-10.2	-8.8	-7.7	-7.0	-6.3	-5.9	-5.4	-5.8	-6.0	-6.4	-7.1	-7.5	-7.6	-8.2	-8.3	-5.4
10	-8.7	-8.9	-8.5	-8.1	-7.6	-7.2	-6.9	-6.9	-7.2	-7.1	-6.2	-5.6	-4.3	-3.1	-3.0	-2.8	-2.7	-3.1	-3.5	-3.8	-3.9	-4.1	-3.9	-3.6	-5.4	-2.7
11	-3.0	-3.2	-3.0	-2.8	-2.1	-2.4	-2.8	-3.2	-3.2	-2.8	-2.7	-1.6	-0.4	-0.1	0.1	-0.1	0.0	0.1	-0.5	-1.4	-1.9	-2.1	-2.3	-2.4	-1.8	0.1
12	-2.5	-2.5	-2.8	-2.6	-3.1	-3.4	-3.6	-3.8	-3.7	-2.9	-1.9	0.6	2.7	3.4	3.5	3.8	3.4	2.9	2.6	1.3	4.9	7.0	8.8	9.5	-1.6	3.8
13	-8.7	-8.8	-9.0	-9.1	-9.1	-9.2	-9.2	-9.1	-9.2	-9.3	-9.4	-8.4	-7.0	-5.3	-6.6	-8.4	-10.0	-11.3	-11.7	-11.8	-9.8	-7.0	-4.5	-4.2	-8.6	-4.2
14	-4.4	-4.6	-4.9	-5.2	-6.6	-6.1	-6.0	-6.3	-6.2	-6.2	-5.7	-4.6	-3.7	-3.0	-2.4	-2.2	-2.3	-2.3	-2.5	-2.9	-3.2	-3.7	-4.4	-5.1	-4.4	-2.2
15	-5.7	-6.8	-8.4	-9.8	-9.6	-9.9	-10.7	-11.0	-11.4	-10.0	-10.3	-7.2	-5.2	-3.9	-3.3	-3.1	-3.4	-4.1	-4.2	-4.6	-4.9	-5.1	-5.3	-4.9	-6.8	-3.1
16	-4.8	-5.0	-5.6	-6.2	-6.6	-7.0	-6.3	-6.6	-8.1	-5.5	-4.7	-3.2	-2.7	-1.8	-1.4	-1.9	-3.2	-3.6	-3.6	-2.8	-2.8	-2.5	-2.2	-4.4	-1.4	
17	-1.7	-1.1	-0.7	-0.2	0.2	0.0	-1.5	-2.2	-2.0	-1.6	-0.3	0.5	2.6	4.8	5.4	5.6	5.7	5.3	4.8	4.3	4.4	4.4	4.2	3.9	1.9	5.7
18	4.1	4.2	4.3	4.1	3.6	3.2	2.7	2.3	3.1	2.8	3.5	3.7	4.1	4.1	4.1	4.3	4.1	3.7	2.7	2.4	2.1	2.2	1.2	1.3	3.2	4.3
19	1.0	1.7	1.7	1.8	1.8	1.3	1.0	0.8	0.2	0.0	0.5	1.0	1.5	1.7	1.3	1.2	0.8	0.8	0.6	0.6	0.7	0.0	-0.6	1.0	1.8	
20	-1.6	-2.0	-1.7	-1.5	-1.6	-1.6	-1.7	-1.7	-1.6	-1.3	-1.2	-1.0	-0.8	-0.8	-0.8	-0.7	-0.7	-0.6	-0.4	-0.2	-0.1	0.0	-0.1	-1.0	0.0	
21	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-0.1	0.0	0.2	0.4	0.5	0.7	0.8	0.8	0.8	0.9	0.6	0.2	0.0	-0.3	0.1	0.9	
22	-0.5	-0.6	-0.8	-0.9	-1.3	-1.4	-1.7	-1.8	-2.4	-2.6	-2.0	-1.8	-2.1	-2.2	-2.3	-2.4	-2.7	-2.9	-3.2	-3.6	-3.8	-3.8	-3.8	-2.3	-0.5	
23	-3.9	-4.0	-4.1	-4.1	-4.2	-4.1	-4.5	-4.3	-4.3	-4.0	-3.6	-3.2	-2.8	-2.3	-2.1	-1.9	-2.3	-2.9	-3.1	-3.0	-3.2	-3.8	-4.6	-5.2	-3.6	-1.9
24	-6.1	-6.8	-7.4	-7.9	-8.1	-8.4	-8.3	-9.0	-9.5	-9.5	-9.1	-7.0	-6.6	-6.4	-6.2	-5.7	-5.9	-5.7	-6.1	-6.2	-6.1	-6.0	-5.7	-7.1	-5.7	
25	-5.9	-5.9	-5.8	-6.5	-6.7	-7.3	-7.9	-8.1	-8.3	-8.2	-7.7	-6.8	-6.0	-6.1	-5.9	-6.0	-6.6	-7.4	-7.9	-8.8	-9.2	-9.8	-10.6	-7.3	-5.8	
26	-11.2	-11.9	-12.2	-12.9	-13.2	-13.6	-13.2	-13.8	-13.6	-13.4	-13.6	-12.1	-10.9	-10.1	-9.8	-9.4	-9.3	-9.3	-9.6	-9.9	-9.6	-8.1	-7.9	-6.8	-11.1	-6.8
27	-6.7	-6.6	-5.7	-5.6	-6.2	-6.1	-6.7	-7.0	-6.8	-7.2	-6.4	-5.7	-4.9	-4.3	-4.7	-4.2	-4.5	-5.8	-6.6	-7.3	-8.2	-8.8	-9.3	-9.7	-6.5	-4.2
28	-10.4	-10.9	-11.6	-12.1	-12.3	-12.9	-13.6	-13.5	-12.7	-12.2	-11.9	-10.1	-8.5	-7.0	-5.4	-5.5	-5.4	-5.7	-6.0	-5.8	-5.1	-5.4	-5.7	-6.1	-9.0	-5.1
29	-6.3	-6.5	-7.0	-7.1	-6.4	-6.2	-6.4	-6.6	-6.7	-7.1	-7.2	-6.5	-5.7	-5.0	-4.9	-5.1	-5.4	-6.4	-6.7	-6.9	-7.1	-7.2	-6.6	-6.4	-4.9	
30	-7.0	-6.3	-6.1	-6.2	-5.9	-6.3	-7.1	-7.3	-7.2	-6.8	-6.1	-4.5	-3.3	-2.4	-0.5	0.9	1.2	1.2	2.0	2.5	1.5	1.8	1.4	1.4	-2.9	2.5
31	1.6	0.8	1.5	1.8	1.7	1.4	2.0	1.4	1.3	1.3	1.0	1.6	1.5	1.3	1.9	1.7	1.6	1.3	0.5	0.1	-0.1	-0.5	-0.7	-1.0	1.0	2.0
NO.	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	743	100%
MEAN	-3.8	-4.1	-4.2	-4.3	-4.4	-4.5	-4.6	-4.9	-5.0	-5.1	-4.7	-3.8	-3.1	-2.4	-2.1	-1.9	-2.0	-2.4	-2.6	-2.9	-3.2	-3.3	-3.4			
MAX	5.7	5.1	5.1	6.4	6.2	5.0	5.1	4.9	5.5	5.0	5.2	4.5	5.8	5.8	6.0	6.2	6.2	5.7	4.8	4.7	6.4	7.0	6.8	6.8		



Number of Non-Zero Readings	743
Maximum 1-HR Average	7.0 C
Maximum 24-HR Average	5.0 C
Monthly Calibration Standard Deviation	4.718
Operational Time	743 HRS
Operational Uptime	100.0 %
Monthly Average	-3.6 C

Lagoon Wind Speed (km/hr) –December 2019

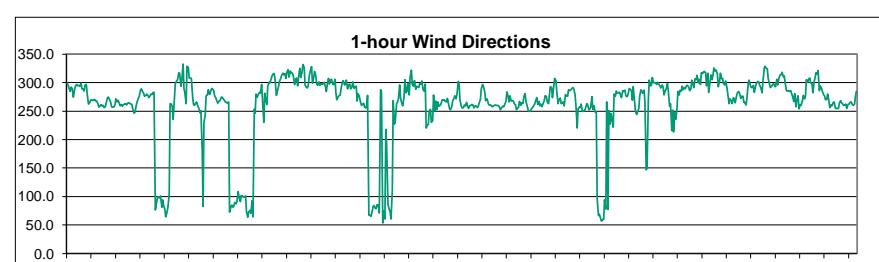
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	29.7	28.4	28.7	32.7	29.0	27.9	38.4	30.3	31.4	32.3	33.0	38.0	27.0	23.9	21.9	21.5	22.4	16.6	20.6	27.3	44.2	40.0	39.0	35.4	30.0	44.2
2	37.4	39.2	41.3	41.4	38.6	37.8	35.0	33.9	30.4	35.3	35.5	32.1	33.4	41.1	39.4	43.5	47.0	37.5	38.5	37.1	37.7	41.9	39.9	41.5	38.2	47.0
3	37.3	47.7	45.3	44.1	43.9	41.3	44.2	44.9	43.3	33.4	32.5	27.0	22.7	22.8	22.9	19.2	19.2	21.5	18.2	18.3	21.0	27.3	25.4	27.4	31.3	47.7
4	28.7	26.6	25.8	21.8	21.0	19.5	17.5	17.1	16.0	12.9	15.5	18.7	Y	18.0	13.8	15.8	12.1	12.9	14.4	12.2	9.5	9.0	8.2	6.2	16.2	28.7
5	2.9	2.3	9.0	11.0	9.0	12.1	15.9	18.2	18.5	18.3	17.9	18.1	14.5	13.2	11.2	12.7	8.7	9.0	10.6	11.2	12.8	12.7	11.6	14.6	12.3	18.5
6	18.4	16.8	10.8	12.2	12.9	12.5	9.9	3.9	3.8	3.2	8.1	13.7	15.4	16.6	14.3	12.4	14.1	19.3	20.9	21.6	25.3	30.7	31.4	32.7	15.9	32.7
7	36.2	28.9	26.2	28.6	27.9	30.1	30.0	24.6	20.4	24.6	26.2	25.1	26.9	24.2	24.0	20.0	18.7	14.5	12.5	13.6	17.2	17.9	19.2	17.7	22.9	36.2
8	14.4	13.9	12.0	12.6	14.8	9.2	2.5	2.4	6.6	12.9	12.8	13.2	17.7	18.4	17.6	16.1	12.3	10.2	13.6	8.2	9.5	16.7	18.3	17.8	12.7	18.4
9	19.7	24.0	22.7	20.8	18.2	17.7	19.9	20.6	20.7	23.9	21.4	18.7	20.8	21.8	19.6	17.2	18.3	14.1	15.1	18.3	17.1	15.7	16.6	15.5	19.1	24.0
10	16.9	20.9	22.9	20.0	20.4	20.4	18.4	19.7	18.9	20.2	23.3	24.2	18.9	18.1	20.3	20.0	23.4	23.2	24.3	25.4	26.5	25.3	24.3	24.6	21.7	26.5
11	23.8	26.0	25.2	24.3	22.9	17.4	18.3	18.0	19.3	20.1	19.1	19.2	16.3	18.8	24.1	21.2	23.0	22.4	15.6	13.6	13.0	16.0	14.3	13.2	19.4	26.0
12	16.1	17.2	17.6	21.8	20.5	18.2	11.3	9.4	12.8	10.1	8.7	10.8	18.0	26.0	27.8	25.1	25.1	23.3	24.0	15.4	17.1	15.4	17.4	16.1	17.7	27.8
13	14.9	10.3	5.4	7.0	8.5	11.1	6.2	3.6	5.0	4.7	5.7	2.3	5.2	6.2	9.9	12.8	11.9	3.4	1.8	2.6	4.8	10.4	11.4	10.8	7.3	14.9
14	11.5	14.3	10.8	5.7	9.5	12.9	15.6	12.7	13.9	14.9	10.9	13.3	13.6	12.6	14.9	12.2	11.4	10.6	12.3	16.5	18.5	15.1	14.8	11.7	12.9	18.5
15	11.4	9.3	4.3	6.6	9.0	7.3	10.7	10.4	6.9	10.7	12.2	10.2	8.8	19.6	23.4	23.9	25.4	27.4	28.0	25.6	26.7	26.4	28.7	31.7	16.9	31.7
16	30.6	25.7	26.0	22.9	26.1	25.5	29.6	24.3	22.0	20.4	32.6	36.1	45.4	41.0	40.0	45.0	40.7	44.0	46.0	40.8	36.8	35.8	38.6	41.9	34.1	46.0
17	43.1	44.6	44.4	45.5	40.2	30.8	24.0	20.6	21.5	23.5	29.7	26.8	27.4	37.5	46.0	49.8	56.9	57.0	59.2	59.0	56.5	58.8	60.1	60.2	42.6	60.2
18	57.7	49.5	42.6	35.2	27.3	19.4	14.5	19.2	18.4	15.1	17.4	24.4	26.2	31.0	25.9	26.0	23.3	21.1	19.2	38.0	39.9	37.5	22.4	27.2	28.3	57.7
19	40.7	35.9	31.4	36.2	33.9	30.9	35.9	38.3	40.1	30.5	24.9	25.5	22.6	24.0	27.6	30.3	36.0	34.2	35.7	39.1	35.6	37.4	25.2	18.3	32.1	40.7
20	13.6	11.0	11.8	13.8	12.7	12.1	10.1	9.9	9.6	9.3	9.1	9.8	10.4	11.0	10.2	10.6	10.6	11.1	11.3	10.3	8.7	8.3	6.1	4.4	10.2	13.8
21	3.2	1.6	1.1	2.2	2.5	4.7	4.8	5.7	7.5	7.2	7.4	5.7	4.3	1.1	7.8	8.0	7.9	4.2	14.7	11.0	11.5	9.0	9.3	6.0	14.7	
22	7.5	4.9	2.4	1.7	2.8	3.4	3.6	3.0	3.2	4.6	4.3	7.5	8.0	6.9	6.9	5.8	5.1	6.0	7.0	6.8	6.5	7.6	6.3	7.1	5.4	8.0
23	8.4	8.0	6.7	8.7	8.5	10.4	7.7	6.0	6.4	7.1	7.7	7.2	9.2	8.5	9.9	8.4	5.2	4.1	3.7	5.6	8.7	10.6	12.6	14.7	8.1	14.7
24	13.3	13.4	14.5	15.6	16.7	16.6	13.9	13.9	15.3	15.0	15.8	15.0	12.8	13.8	11.8	10.6	8.8	5.7	6.7	5.6	7.2	6.9	6.8	9.2	11.9	16.7
25	10.0	8.5	12.5	16.2	14.5	15.7	13.7	14.6	16.1	16.6	16.3	17.0	17.4	15.1	14.9	19.3	16.4	18.5	17.6	21.7	18.0	21.7	24.9	26.1	16.8	26.1
26	23.0	20.8	16.3	20.5	17.8	21.0	23.4	22.9	25.4	28.2	22.5	26.2	27.1	23.3	23.0	26.3	24.3	25.5	25.0	25.9	28.9	28.7	33.4	42.3	25.1	42.3
27	41.0	38.7	31.1	35.8	39.9	38.2	32.1	30.2	28.9	29.9	35.5	31.1	26.1	29.5	26.9	25.4	22.7	16.5	15.6	15.8	16.4	16.5	16.6	17.2	27.4	41.0
28	18.3	17.9	20.2	19.8	19.5	17.9	19.5	23.5	27.4	32.9	32.3	30.2	25.1	27.7	29.6	32.7	28.6	30.5	27.7	27.3	28.4	26.7	26.2	25.9	25.7	32.9
29	28.1	29.7	25.1	25.7	24.3	19.7	22.5	19.6	18.7	17.9	16.6	16.4	15.9	13.9	12.2	11.8	13.8	12.6	15.4	17.4	17.0	16.6	17.8	25.0	18.9	29.7
30	20.1	24.7	25.3	26.0	26.0	30.0	22.3	23.9	22.6	23.4	21.1	27.1	28.8	29.8	24.6	27.9	27.7	31.1	32.9	20.6	33.3	38.4	42.5	27.4	42.5	
31	47.6	40.3	39.9	38.8	40.1	43.9	46.6	44.2	39.2	43.0	40.2	39.5	34.2	31.9	36.6	38.1	37.8	34.4	35.6	35.3	35.9	33.3	24.3	21.8	37.6	47.6
NO.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	743	100%
MEAN	23.4	22.6	21.3	21.7	21.2	20.4	19.9	19.0	19.0	19.4	19.9	20.4	20.1	21.0	21.0	21.4	21.1	20.0	20.4	21.5	21.9	23.0	22.2	22.9		
MAX	57.7	49.5	45.3	45.5	43.9	43.9	46.6	44.9	43.3	43.0	40.2	39.5	45.4	41.1	46.0	49.8	56.9	57.0	59.2	59.0	56.5	58.8	60.1	60.2		



Number of Non-Zero Readings	743
Maximum 1-HR Average	60.2 KM/HR
Maximum 24-HR Average	42.6 KM/HR
Monthly Calibration Standard Deviation	11.65
Operational Time	743 HRS
Operational Uptime	99.9 %
Monthly Average	21.0 KM/HR

Lagoon Wind Direction (°) – December 2019

Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	299.0	296.0	287.9	284.4	291.8	288.9	274.4	287.3	294.2	296.6	294.1	295.5	293.3	299.1	288.8	289.0	285.4	296.1	296.5	280.3	261.9	263.5	268.9	269.9	285.2	299.1
2	268.6	269.1	270.7	267.6	268.0	262.5	257.2	259.3	261.2	259.6	259.8	260.0	258.0	265.1	274.0	274.4	269.1	265.9	257.5	256.6	256.6	261.1	271.3	265.9	264.3	274.4
3	268.9	263.5	258.9	261.2	258.1	260.9	262.5	262.9	260.4	263.6	264.5	263.8	262.2	261.2	253.6	246.4	247.9	260.1	266.0	272.8	275.8	287.7	288.7	285.0	264.4	288.7
4	281.6	276.1	277.6	279.7	277.3	273.8	276.5	279.7	278.7	282.6	283.0	76.4	Y	98.5	99.4	97.5	101.0	81.1	93.8	84.4	77.6	64.6	73.0	81.5	298.9	283.0
5	103.7	263.0	262.0	257.8	235.8	272.5	298.3	302.8	304.4	317.0	316.3	293.3	304.0	332.2	289.7	282.1	263.3	329.0	326.4	308.0	308.4	307.3	274.7	261.4	295.7	332.2
6	259.6	264.0	266.1	258.4	255.0	246.9	250.8	181.4	82.8	230.4	243.4	276.6	278.1	287.4	279.1	284.0	289.4	288.1	287.8	276.4	273.6	267.9	263.4	267.7	270.0	289.4
7	268.2	274.9	274.6	270.8	268.8	266.3	265.1	263.5	266.2	73.1	81.3	85.3	81.3	83.3	89.5	87.3	91.5	108.8	98.1	91.4	101.5	100.7	98.5	99.8	95.2	274.9
8	101.1	73.5	63.4	72.9	76.1	70.7	92.4	64.6	252.8	246.2	280.2	274.5	279.1	283.0	281.5	296.6	268.1	230.2	281.1	271.4	261.3	293.8	300.2	299.6	291.3	300.2
9	306.3	311.6	315.4	315.6	304.2	277.5	284.6	294.0	301.8	307.5	313.0	316.4	313.1	316.0	307.0	318.0	322.3	309.9	320.1	317.5	316.6	311.2	296.6	304.6	308.5	322.3
10	308.4	294.0	310.5	324.8	308.6	317.9	331.6	326.7	296.2	292.7	290.8	293.6	313.2	320.1	327.8	298.6	309.6	319.7	315.0	297.3	295.1	301.1	295.1	298.2	307.0	331.6
11	296.9	298.3	300.7	293.0	284.1	295.7	307.3	297.4	304.8	306.0	296.9	297.0	305.5	282.3	270.0	274.2	277.1	278.4	290.1	301.2	303.7	295.5	296.7	304.3	293.2	307.3
12	288.7	295.6	297.8	288.9	291.7	301.0	289.7	292.1	293.9	267.9	280.2	275.9	268.5	259.8	261.5	264.0	257.0	255.6	259.0	277.5	67.7	67.6	65.4	71.8	281.7	301.0
13	83.1	84.3	78.7	78.6	85.4	83.9	71.2	287.6	285.0	53.4	75.2	60.8	217.6	188.3	87.2	79.5	72.8	60.3	110.1	268.4	227.3	233.9	264.0	266.0	87.6	287.6
14	270.5	296.1	273.2	263.4	259.2	274.4	304.7	281.9	285.1	298.7	278.6	309.8	296.6	303.6	288.6	293.3	293.2	291.0	298.2	297.0	302.8	287.4	292.0	322.2		
15	285.1	297.6	220.4	225.9	226.4	249.1	253.3	230.0	233.1	278.6	250.2	267.9	253.1	265.8	258.7	259.7	262.5	269.5	268.8	270.0	266.9	265.8	272.2	264.8	262.9	297.6
16	253.5	252.1	257.8	267.6	272.2	276.6	271.2	279.8	301.8	296.9	268.9	258.3	255.2	255.9	260.6	259.5	265.4	257.6	254.2	259.5	259.9	261.5	261.1	255.6	263.0	301.8
17	259.0	258.8	256.2	258.8	263.5	270.9	289.2	296.7	293.6	283.4	268.5	271.1	266.7	261.6	260.3	260.5	257.8	258.5	260.2	260.7	259.8	260.1	259.3	257.1	263.2	296.7
18	252.4	256.2	258.6	257.8	261.2	267.9	283.6	276.1	265.7	276.7	268.5	267.9	263.4	260.4	252.0	260.4	252.0	257.3	266.8	259.8	264.9	262.7	274.9	280.9	263.0	283.6
19	266.5	258.5	251.2	249.5	250.4	253.3	255.9	258.1	262.4	267.6	273.9	261.3	267.2	259.2	262.2	257.9	262.1	268.3	276.5	276.2	265.8	263.1	278.0	293.0	263.4	293.0
20	291.4	274.0	293.4	307.3	303.6	284.0	263.2	269.8	272.7	262.7	263.5	266.3	259.3	279.0	276.6	275.9	287.2	287.2	287.0	289.3	291.1	289.6	279.0	260.6	281.1	307.3
21	220.4	253.7	256.5	255.9	262.3	249.1	250.3	250.5	254.7	263.1	261.4	252.0	253.7	255.9	275.0	252.8	259.2	248.5	248.6	95.5	66.5	69.3	61.0	56.6	256.5	275.0
22	59.9	60.1	94.5	78.2	266.1	77.1	250.5	227.1	246.2	236.9	222.0	279.5	276.1	285.0	281.7	282.0	282.5	277.7	273.6	285.6	284.4	286.3	276.7	274.9	278.3	286.3
23	278.8	289.6	288.0	285.9	269.2	292.6	268.4	250.6	243.9	248.4	254.3	277.1	287.6	284.7	281.3	286.9	267.9	147.0	150.1	271.8	304.6	294.1	294.9	308.9	280.0	308.9
24	300.0	299.6	300.0	296.6	300.3	297.4	293.6	290.8	295.6	291.9	278.4	285.6	288.9	298.4	284.5	258.6	262.8	215.4	251.6	213.4	246.8	235.5	255.2	284.5	284.2	300.3
25	278.1	286.7	285.2	293.9	287.8	291.2	288.7	294.8	295.5	292.4	286.2	289.3	304.1	298.1	291.6	306.7	312.7	299.7	306.0	317.0	315.6	319.1	299.8	319.1		
26	319.5	317.3	294.3	316.8	282.8	300.8	313.4	305.3	314.5	325.4	320.3	321.5	314.9	293.1	302.4	316.5	306.2	307.1	297.8	295.8	302.4	291.2	280.1	263.0	303.2	325.4
27	271.3	268.3	263.3	273.8	270.9	264.7	276.0	282.0	284.7	281.6	272.0	276.1	265.1	265.5	260.6	272.4	298.4	304.5	294.9	291.6	291.5	295.5	283.0	275.7	304.5	
28	292.6	299.1	302.2	301.6	294.0	291.3	282.3	303.1	325.9	328.8	325.5	323.8	307.3	297.4	291.1	293.7	296.9	298.0	293.9	292.9	305.7	296.0	308.0	312.4	303.6	328.8
29	314.5	317.9	310.4	311.9	300.4	285.8	285.4	285.7	284.1	285.7	280.7	274.0	266.6	280.7	257.3	270.0	276.4	254.2	261.2	259.7	277.9	271.7	285.4	317.9		
30	305.2	300.4	305.6	307.9	300.0	298.4	282.1	302.3	307.8	317.0	314.7	321.0	286.0	289.5	284.4	278.2	276.9	270.1	270.7	279.8	267.0	256.4	260.6	288.3	321.0	
31	259.5	265.5	266.2	254.8	254.3	254.9	255.0	263.8	268.1	264.5	262.4	260.1	260.4	262.6	254.8	261.9	262.4	265.3	266.3	261.7	260.3	262.4	275.5	284.7	262.1	284.7



Number of Non-Zero Readings	743
Maximum 1-HR Average	332 degrees
Maximum 24-HR Average	308 degrees
Monthly Calibration Standard Deviation	60.51
Operational Time	743 HRS
Operational Uptime	99.9 %
Monthly Average	261.1 degrees

Lagoon Pressure (mmHg) – December 2019

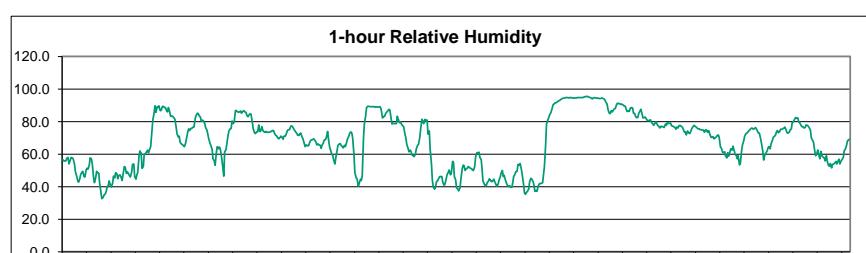
Day	HOUR																								MEAN	MAX	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	649.1	649.0	648.8	648.7	648.6	648.5	648.5	648.7	648.6	648.6	648.3	647.9	647.6	647.2	646.9	646.9	646.4	646.7	646.7	646.6	646.1	646.0	645.9	645.6	647.6	649.1	
2	645.3	644.9	644.8	644.9	645.2	645.2	645.9	646.3	646.5	646.6	646.4	646.5	645.3	645.9	645.3	645.0	644.8	645.0	645.5	645.8	645.1	645.8	645.5	645.9	645.9	645.6	646.6
3	645.5	644.9	645.0	644.7	644.5	644.6	644.4	644.5	644.8	645.4	645.6	645.6	645.5	645.4	645.4	645.5	645.6	645.8	645.6	645.6	644.9	644.7	644.6	644.4	645.1	645.8	
4	644.3	643.9	643.6	643.4	642.9	642.7	642.6	642.5	642.7	642.8	643.2	644.0	Y	645.5	646.2	646.6	647.2	647.8	648.4	648.7	649.1	649.3	649.4	649.9	645.5	649.9	
5	650.0	650.3	650.7	651.0	651.1	651.2	651.3	651.5	651.5	651.8	652.1	651.9	651.5	650.9	650.7	650.8	651.0	651.3	651.4	651.7	652.1	652.0	651.8	651.3	651.3	652.1	
6	650.6	650.1	650.1	650.1	649.9	649.5	649.4	649.6	649.8	650.0	649.7	649.1	648.3	647.6	646.9	646.5	646.1	645.9	645.5	645.0	644.6	644.1	643.5	643.4	647.7	650.6	
7	643.1	643.2	643.4	643.1	642.6	642.1	641.7	641.7	641.8	643.0	644.4	644.7	645.0	645.1	645.0	645.4	645.8	646.0	646.1	646.0	646.0	646.1	646.4	646.5	644.4	646.5	
8	647.0	647.4	647.5	647.6	647.8	648.0	648.4	648.9	649.3	649.4	649.7	649.4	648.9	648.4	648.3	648.3	648.8	649.1	649.5	650.5	650.8	650.4	650.5	651.0	649.0	651.0	
9	651.4	651.5	651.9	652.4	652.4	652.6	652.6	652.7	652.9	653.1	652.9	652.6	652.5	652.5	652.5	652.7	653.0	653.0	653.1	653.2	653.1	653.1	653.0	653.2	652.6	653.2	
10	652.8	652.4	652.1	652.0	651.9	651.8	651.7	651.7	651.5	651.5	651.6	651.5	651.3	650.9	650.4	650.1	650.0	649.7	649.5	649.0	648.6	648.0	647.8	647.7	650.6	652.8	
11	647.3	647.3	647.3	647.2	647.1	647.0	647.0	646.9	647.0	647.4	647.7	647.8	647.5	647.2	647.1	647.3	647.4	647.4	647.3	647.0	646.5	646.0	645.7	645.5	647.0	647.8	
12	645.3	644.7	644.2	643.7	643.3	642.9	642.6	642.6	642.7	642.7	642.8	642.8	642.7	642.6	642.6	642.9	643.3	643.9	644.1	644.4	645.0	645.5	646.1	646.7	643.8	646.7	
13	647.0	647.3	647.6	648.0	648.1	648.3	648.5	648.6	648.8	648.9	649.1	648.9	648.4	647.9	647.9	647.8	648.1	648.2	648.2	647.9	647.7	647.4	647.1	646.9	646.9	648.0	649.1
14	646.6	646.5	646.5	646.6	646.4	646.3	646.4	646.4	646.4	646.4	646.1	645.8	645.5	645.5	645.2	645.2	645.2	644.9	644.9	644.7	645.0	645.2	645.6	645.8	646.6	646.6	
15	645.7	646.0	646.4	646.5	646.5	646.6	646.8	646.9	647.1	647.4	647.4	647.3	646.9	646.5	646.5	646.7	646.9	647.4	647.4	648.0	648.3	648.8	649.4	647.1	649.4		
16	649.9	650.4	650.9	651.4	651.6	651.8	652.2	652.6	652.6	652.5	652.2	651.7	650.5	650.0	650.0	650.0	650.3	650.6	650.5	650.7	651.0	651.0	651.2	651.1	652.6		
17	651.2	651.2	651.4	651.4	651.6	651.6	651.7	651.4	651.0	650.5	649.9	649.4	648.5	647.4	646.3	645.5	645.1	645.2	645.4	645.2	644.7	644.5	644.8	644.9	648.0	651.7	
18	644.6	644.6	645.1	645.5	646.0	646.4	646.2	645.7	645.5	645.9	646.3	645.6	644.9	644.2	644.0	643.8	644.0	644.2	644.2	643.3	643.0	642.7	642.9	642.8	644.6		
19	642.1	642.1	641.9	641.7	641.6	641.6	641.7	642.2	643.4	644.0	644.2	643.9	644.0	644.3	644.7	645.0	645.4	645.4	645.4	644.9	644.3	643.6	643.4	642.9	643.3		
20	642.2	641.6	641.4	641.6	641.8	641.9	642.0	642.1	642.1	642.5	642.9	642.9	642.9	643.1	643.5	644.1	644.6	644.7	644.7	644.8	644.7	644.9	645.0	643.1	645.0		
21	644.6	644.2	644.2	643.9	643.3	642.9	642.5	641.9	641.3	641.4	641.2	640.7	640.1	639.8	639.2	639.4	639.7	640.1	640.3	640.9	641.8	642.5	643.1	643.6	641.8	644.6	
22	644.3	644.6	645.1	645.8	646.1	646.4	646.7	647.0	647.3	647.9	648.2	648.0	647.7	647.3	647.2	647.3	647.3	647.2	646.9	646.5	646.2	646.0	645.8	646.7	648.2		
23	645.5	645.2	645.1	645.1	645.0	645.0	645.3	645.7	646.2	646.6	646.9	646.9	646.8	646.4	646.3	646.2	646.4	646.4	646.5	646.5	646.5	646.5	646.5	646.1	646.9		
24	646.1	645.6	645.6	645.6	645.1	644.7	644.5	644.5	644.3	644.5	644.5	644.0	643.2	642.7	642.3	642.4	642.1	642.3	642.4	642.5	642.5	642.6	642.8	643.7	646.1		
25	643.2	643.4	643.8	644.3	644.8	645.3	645.8	646.4	646.8	647.4	647.9	648.2	648.2	648.1	648.2	648.6	649.2	649.7	649.8	650.1	650.5	651.2	647.6	651.6			
26	651.5	651.5	651.5	651.8	651.5	651.3	651.2	650.9	650.9	650.6	649.8	649.1	648.4	648.3	648.1	648.1	648.1	647.8	647.5	647.0	646.7	646.4	646.0	649.4	651.8		
27	646.1	646.3	646.5	646.5	646.5	646.6	646.6	646.8	646.7	647.0	647.2	647.2	646.9	647.0	647.5	648.1	648.6	649.4	649.6	649.9	650.4	650.8	651.7	648.0	651.7		
28	652.1	652.4	652.7	653.1	653.2	653.0	652.9	652.8	653.0	653.0	652.8	652.5	651.8	651.2	650.7	650.7	650.6	650.5	650.5	650.4	650.1	649.9	649.8	650.0	650.5		
29	650.7	650.7	650.8	651.3	651.7	651.8	652.1	652.4	652.5	652.9	653.4	653.4	653.4	653.4	653.5	653.6	654.1	654.2	654.1	653.9	654.0	654.3	654.2	651.1	654.3		
30	654.3	654.1	654.1	654.2	654.1	654.1	653.9	654.0	653.7	653.5	653.2	652.8	652.2	651.4	650.7	649.8	649.1	649.1	648.7	647.8	648.1	647.5	647.0	646.4	641.5	645.8	
31	645.8	645.7	645.6	645.6	645.1	644.4	643.8	643.9	643.7	643.6	643.5	643.0	642.2	641.8	640.7	639.8	639.1	638.9	638.9	638.2	637.3	636.7	636.3	636.0	635.4		



Number of Non-Zero Readings	743
Maximum 1-HR Average	654 MMHg
Maximum 24-HR Average	653 MMHg
Operational Time	743 HRS
Monthly Calibration Standard Deviation	3.485
Operational Uptime	99.9 %
Monthly Average	647.2 MMHg

Lagoon Relative Humidity (%) –December 2019

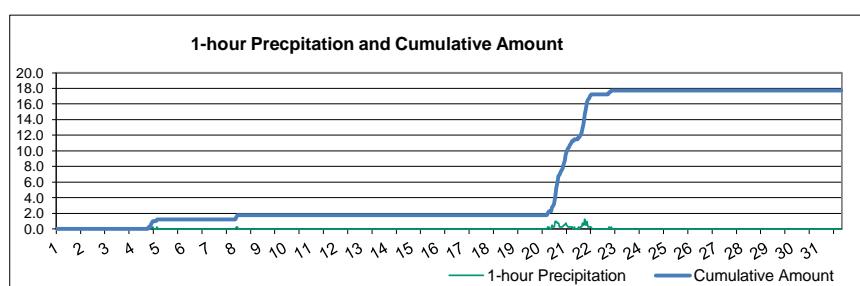
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	56.7	55.9	55.8	55.9	57.3	57.9	54.0	56.0	57.9	57.6	57.0	53.7	49.1	46.4	44.0	42.8	44.5	47.2	49.0	49.4	46.3	46.1	50.4	51.3	51.8	57.9
2	50.9	53.1	57.6	57.1	53.9	45.6	42.4	45.6	49.4	48.5	48.5	42.1	36.5	32.6	33.5	34.7	35.5	36.9	39.6	41.0	43.6	40.6	39.7	42.2	43.8	57.6
3	46.4	45.5	48.6	47.8	44.8	46.6	47.4	46.2	43.9	47.2	52.4	52.2	48.2	49.1	48.4	46.9	45.9	48.8	53.6	54.0	46.3	44.7	47.4	48.6	48.0	54.0
4	58.6	61.9	60.6	51.4	52.3	59.7	60.3	61.1	62.6	61.0	62.6	64.5	Y	81.2	83.7	89.7	85.7	89.1	88.6	89.8	86.8	86.8	89.3	89.5	72.9	89.8
5	88.7	88.6	86.6	85.9	88.5	86.0	83.3	83.3	82.3	81.4	76.3	72.3	70.6	71.2	67.4	66.3	65.9	65.3	64.7	67.2	70.0	74.1	75.5	76.9	88.7	
6	74.6	75.8	75.8	76.6	76.6	81.9	83.8	85.3	84.8	83.6	82.7	80.1	80.8	80.3	78.9	76.5	74.9	72.3	69.6	66.8	65.5	63.0	57.0	55.9	75.1	85.3
7	53.3	61.3	64.5	63.2	64.5	63.1	58.1	53.5	46.6	61.4	62.7	66.4	71.9	74.3	75.4	75.7	80.5	78.7	79.9	86.8	86.9	86.0	85.7	86.0	70.3	86.9
8	86.4	85.3	86.1	86.8	85.9	85.7	83.7	83.0	84.3	84.9	84.3	79.5	79.5	73.2	72.6	73.6	73.8	78.0	73.9	74.0	76.8	74.9	73.7	73.6	79.6	86.8
9	73.9	73.3	73.5	73.4	73.7	73.8	74.5	74.6	72.9	71.6	71.4	69.9	69.5	70.4	70.9	70.9	69.3	71.1	70.9	72.1	74.5	75.0	74.9	76.7	72.6	76.7
10	77.4	76.9	75.8	74.6	73.7	72.6	71.5	71.5	72.7	72.8	70.5	69.4	66.5	64.5	65.8	65.3	65.1	66.8	68.1	68.9	69.0	69.5	68.6	67.5	70.2	77.4
11	65.8	66.3	65.7	65.4	63.6	65.4	66.8	68.5	68.9	70.1	73.9	69.1	63.7	62.5	60.3	59.0	56.3	54.0	57.8	62.5	65.4	66.2	66.6	65.4	64.5	73.9
12	64.6	63.8	65.5	64.6	67.4	69.6	71.1	72.9	73.8	73.0	69.6	59.2	48.7	45.3	44.8	40.2	42.0	44.5	43.8	46.9	70.4	78.7	83.6	88.6	62.2	88.6
13	89.5	89.5	89.3	89.2	89.2	89.0	89.1	89.0	88.9	88.8	89.3	89.0	86.9	82.3	83.1	83.4	84.8	86.0	86.4	87.6	87.2	81.4	78.5	86.9	89.5	
14	79.1	78.7	78.9	78.7	83.2	80.9	79.4	79.7	78.4	77.7	76.6	73.4	69.7	65.9	63.6	61.5	62.5	61.5	59.5	59.0	58.6	60.2	63.3	65.3	70.6	83.2
15	65.9	70.3	75.3	81.5	80.4	78.8	81.4	80.8	80.8	72.4	74.4	63.1	54.2	44.3	40.0	38.5	39.4	43.2	43.6	45.3	46.3	46.1	43.0	59.8	81.5	
16	41.0	41.5	44.7	47.2	48.8	50.3	47.3	48.4	55.6	54.7	46.3	44.1	39.3	38.4	37.3	39.3	44.3	50.7	53.0	53.3	49.9	51.1	51.2	52.4	47.1	55.6
17	51.8	51.3	51.1	50.2	49.9	52.3	58.3	61.0	60.9	61.1	57.9	56.6	51.0	43.6	41.6	40.7	40.8	42.4	43.5	44.9	43.8	43.0	43.6	44.5	49.4	61.1
18	43.2	41.5	40.4	41.5	43.8	45.8	48.3	50.0	46.1	47.0	44.2	42.6	40.6	40.1	40.6	39.5	39.7	42.4	46.3	47.6	49.3	49.4	53.6	44.9	53.6	
19	54.3	50.4	46.9	41.3	36.3	35.2	36.8	37.1	38.8	43.0	45.0	44.6	42.9	40.8	37.0	37.6	37.3	40.7	41.7	41.9	41.8	42.4	47.4	51.8	42.2	54.3
20	65.9	78.4	80.8	82.4	84.6	85.5	88.2	90.1	91.1	91.5	91.7	92.2	92.7	93.0	93.4	94.0	94.3	94.5	94.6	94.7	94.7	94.8	94.6	94.7	89.7	94.8
21	94.7	94.6	94.6	94.6	94.6	94.7	94.7	94.7	94.8	94.8	94.9	95.1	95.2	95.4	95.5	95.3	95.0	94.7	94.4	93.8	94.6	94.7	94.6	94.6	94.8	95.5
22	94.5	94.4	94.3	94.3	94.3	94.4	94.4	94.0	93.2	92.0	90.8	87.7	85.3	85.0	86.9	85.9	87.3	88.0	88.2	90.5	91.4	91.1	91.0	90.5	90.8	94.5
23	90.7	90.2	89.8	89.4	87.9	86.3	86.6	86.3	88.3	88.5	88.4	85.2	84.9	83.1	82.5	82.6	84.8	86.6	87.6	84.6	82.3	82.4	82.7	81.9	86.0	90.7
24	80.7	80.7	81.2	79.7	79.7	78.8	77.8	78.9	78.9	77.7	76.9	76.1	77.2	77.0	76.9	76.4	78.5	77.6	79.3	78.8	79.0	79.0	77.5	78.5	81.2	
25	77.2	77.0	76.5	75.4	76.7	76.2	77.4	77.7	77.2	76.6	75.3	73.5	73.6	71.8	74.4	73.2	72.5	73.8	75.9	76.6	77.6	77.1	76.6	76.1	75.7	77.7
26	75.5	75.6	74.9	75.0	74.7	74.7	73.5	75.1	74.9	73.4	74.6	72.7	70.4	70.2	70.8	69.5	69.9	70.4	71.2	71.9	70.6	64.3	63.7	61.2	71.6	75.6
27	60.9	61.3	58.8	57.7	60.8	58.9	61.3	63.4	62.6	64.9	62.0	59.8	59.1	57.2	58.9	53.3	54.2	62.1	65.7	68.4	71.0	72.6	73.0	73.5	62.6	73.5
28	74.6	75.0	75.8	76.0	75.3	75.7	76.4	75.7	75.9	73.0	72.9	69.6	66.5	61.8	56.5	59.8	60.5	62.0	63.9	64.6	66.2	68.4	70.3	69.1	76.4	
29	71.0	71.5	73.9	74.5	73.2	73.9	75.3	75.3	75.6	76.1	76.7	74.7	73.2	72.9	73.5	74.7	75.6	79.7	80.0	81.2	82.5	82.0	82.2	80.0	76.2	82.5
30	79.3	77.9	77.0	76.8	76.0	76.5	78.1	77.7	77.3	76.4	74.9	70.3	68.3	67.6	61.9	59.0	60.3	62.4	59.9	57.2	61.8	58.7	58.3	57.7	68.8	79.3
31	55.8	59.1	55.6	52.8	52.6	54.1	51.6	53.6	54.1	54.4	55.5	54.0	55.8	56.8	54.0	55.8	56.7	57.9	62.0	63.3	64.9	68.4	68.7	69.3	57.8	69.3
NO.	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	743	100%
MEAN	69.1	69.9	70.2	69.8	69.8	70.0	70.1	70.7	70.8	70.9	70.5	68.0	65.7	64.6	63.8	63.3	63.7	65.5	66.3	67.2	68.0	68.1	68.7	68.9		
MAX	94.7	94.6	94.6	94.6	94.6	94.7	94.7	94.8	94.8	94.9	94.9	95.1	95.2	95.4	95.5	95.3	95.0	94.7	94.7	94.8	94.7	94.7	94.7	94.7	94.7	



Number of Non-Zero Readings	743
Maximum 1-HR Average	95.5 %
Maximum 24-HR Average	94.8 %
Monthly Calibration Standard Deviation	16.07
Operational Time	743 HRS
Operational Uptime	99.9 %
Monthly Average	68.1 %

Lagoon Precipitation (mm) – December 2019

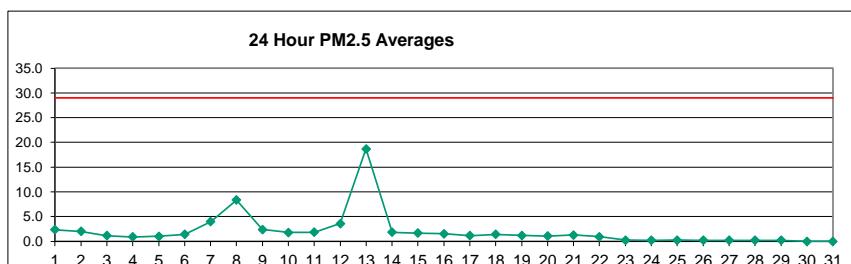
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	0.3	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.3	0.1
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	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	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	0.0
8	0.0	0.0	0.3	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
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	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	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	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	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	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	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	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	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	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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	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	0.5	0.3	0.3	1.0	1.0	0.8	0.8	0.3	0.3	0.3	0.3	0.3	0.3
21	0.5	0.5	0.8	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.3	0.8	0.5	1.3	0.5	1.0	0.3	0.4	1.3
22	0.3	0.3	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	0.1	0.3
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	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	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	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	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	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	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	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	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	0.0



Number of Non-Zero Readings	44
Maximum 1-HR Average	1.3 MM
Maximum 24-HR Average	0.4 MM
Monthly Calibration Standard Deviation	0.115
Operational Time	744 HRS
Operational Uptime	100.0 %
Monthly Average	0.02 MM

West PM_{2.5} ($\mu\text{g}/\text{m}^3$) – December 2019

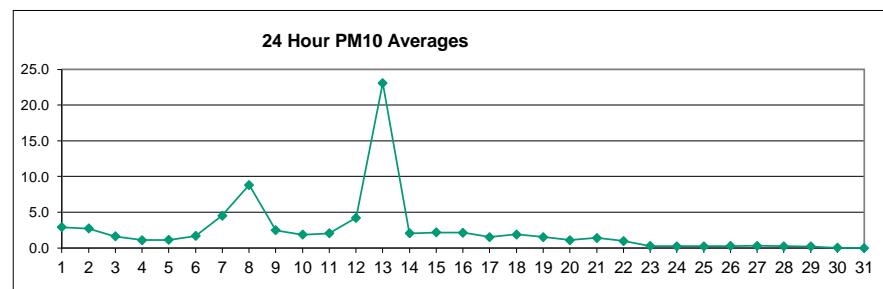
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	1.4	1.4	1.3	1.5	1.5	1.6	1.6	1.5	1.8	1.9	2.3	2.7	3.4	4.3	3.9	3.5	2.6	2.9	2.7	2.7	2.6	2.3	2.4	2.1	2.3	4.3
2	1.9	1.7	1.7	1.5	1.4	1.0	1.1	2.1	1.7	2.7	3.2	6.2	5.2	4.4	2.7	3.0	1.8	1.5	1.3	1.0	0.5	0.5	0.4	0.5	2.0	6.2
3	0.5	0.4	0.4	0.5	0.3	0.4	0.5	0.6	0.5	0.8	1.0	1.0	4.3	4.8	3.9	3.1	2.1	1.1	0.5	0.4	0.4	0.4	0.2	0.2	1.2	4.8
4	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.5	0.6	0.9	1.1	2.8	3.5	1.6	1.7	0.9	1.2	0.9	0.9	0.9	0.8	0.5	0.3	0.3	0.9	3.5
5	0.2	0.3	0.5	0.5	0.5	0.5	0.5	0.8	0.8	1.0	1.1	1.3	1.3	1.5	1.3	1.0	0.8	1.0	1.0	1.4	1.5	1.7	2.0	1.7	1.0	2.0
6	2.0	2.3	1.5	1.1	1.0	1.0	0.9	0.8	1.6	3.2	3.0	2.4	2.3	2.0	1.6	1.3	1.7	1.5	0.9	0.5	0.4	0.4	0.4	0.5	1.4	3.2
7	0.6	0.8	0.7	0.6	0.6	0.9	0.6	0.4	0.4	3.1	2.4	3.5	4.2	6.4	5.7	5.4	4.5	4.5	4.4	3.5	4.1	9.1	13.9	15.2	4.0	15.2
8	15.2	12.3	9.5	9.4	10.5	10.6	9.8	10.2	9.1	8.7	11.7	11.4	9.7	8.8	7.5	7.0	7.0	7.3	6.3	5.3	4.4	3.6	3.0	2.8	8.4	15.2
9	2.3	1.9	1.7	1.5	1.3	1.1	1.0	1.0	0.9	1.5	3.3	2.7	2.5	2.7	3.1	3.2	2.5	2.4	3.1	4.4	4.1	2.7	2.6	3.8	2.4	4.4
10	4.1	3.5	2.4	1.8	1.4	1.1	1.2	1.1	1.2	1.4	1.4	1.9	2.7	1.9	1.8	1.7	1.4	1.6	1.7	1.6	1.7	1.7	1.5	1.4	1.8	4.1
11	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.9	2.3	2.3	2.3	1.7	1.6	1.9	2.3	2.1	2.0	2.9	2.6	2.3	1.9	2.0	1.8	2.9
12	1.7	1.9	2.0	1.9	1.7	1.4	1.5	1.4	1.3	1.3	1.6	1.4	1.3	3.8	2.5	2.3	1.6	1.0	0.5	0.7	5.7	13.2	15.9	18.5	3.6	18.5
13	19.1	17.0	17.1	17.5	19.2	20.7	22.3	23.5	23.3	23.6	26.1	29.9	23.7	11.3	8.6	27.3	25.4	22.6	23.1	22.1	12.5	5.1	4.0	3.8	18.7	29.9
14	4.1	3.3	2.6	2.1	1.8	1.7	1.6	1.6	1.4	1.4	1.4	1.2	1.4	2.0	2.6	2.7	1.9	1.6	1.3	1.5	1.3	1.6	1.7	1.2	1.9	4.1
15	1.0	1.1	1.0	1.1	1.1	0.9	1.2	1.1	1.0	1.5	3.8	5.6	5.1	4.7	2.2	1.2	1.4	0.9	0.6	0.7	0.5	0.6	0.4	1.7	5.6	
16	0.4	0.3	0.5	0.2	0.4	0.6	1.2	1.9	4.4	5.0	3.1	3.5	3.4	2.1	2.2	1.9	1.1	1.4	0.7	0.5	0.8	0.6	0.6	0.5	1.6	5.0
17	0.4	0.3	0.4	0.5	0.6	0.5	0.5	0.6	1.0	1.7	2.3	5.2	3.5	3.1	2.2	1.3	0.6	0.7	0.5	0.4	0.4	0.3	0.4	0.3	1.1	5.2
18	0.4	0.4	0.3	0.2	0.4	0.4	0.5	1.1	1.5	1.4	2.3	3.7	2.3	2.2	2.8	3.3	1.3	2.1	2.2	1.1	0.8	1.1	1.2	0.8	1.4	3.7
19	1.3	0.7	0.6	0.6	0.6	0.9	1.4	2.0	1.4	1.8	2.3	2.0	2.8	1.8	1.3	1.2	0.6	0.6	0.7	0.6	0.4	0.8	1.1	1.2	1.2	2.8
20	1.0	0.6	0.5	0.5	0.5	0.6	0.5	0.8	0.8	1.3	0.7	0.5	0.8	0.7	0.8	1.0	1.1	0.9	1.0	1.6	2.0	3.2	2.5	1.8	1.1	3.2
21	1.5	1.5	1.4	1.7	1.5	1.3	1.1	1.0	1.1	1.8	2.6	2.3	1.6	1.3	1.4	1.3	1.2	1.1	1.1	1.6	1.3	0.1	0.1	0.3	1.3	2.6
22	0.7	1.4	1.5	1.1	2.0	1.5	1.4	1.3	1.3	1.5	1.3	0.8	0.3	0.4	0.5	0.7	0.5	0.5	0.8	0.6	0.6	0.5	0.6	0.5	0.9	2.0
23	0.6	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.5	0.4	0.5	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.6
24	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.2	0.4
25	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.3	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.2	0.4	0.2	0.4
26	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5
27	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.5
28	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.6	0.4	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.2	0.1	0.2	0.6
29	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.4	0.6	0.5	0.5	0.1	0.2	0.6	
30	0.1	0.1	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	0.1
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1
NO.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	744	100%
MEAN	2.0	1.8	1.6	1.6	1.6	1.7	1.7	1.9	1.9	2.3	2.6	3.1	2.9	2.5	2.1	2.5	2.1	2.0	1.9	1.9	1.7	1.8	1.9	2.0		
MAX	19.1	17.0	17.1	17.5	19.2	20.7	22.3	23.5	23.3	23.6	26.1	29.9	23.7	11.3	8.6	27.3	25.4	22.6	23.1	22.1	12.5	13.2	15.9	18.5		



Number of 24HR Exceedences		0 Proposed Guideline
Number of Non-Zero Readings		735
Maximum 1-HR Average		29.9 UG/M3
Maximum 24-HR Average		18.7 UG/M3
IZS Calibration Time		
Down Time		0
Operational Time		
Standard Deviation		3.942
Operational Uptime		
Monthly Average		2.0 UG/M3
744 HRS		
100.0 %		

West PM₁₀ ($\mu\text{g}/\text{m}^3$) –December 2019

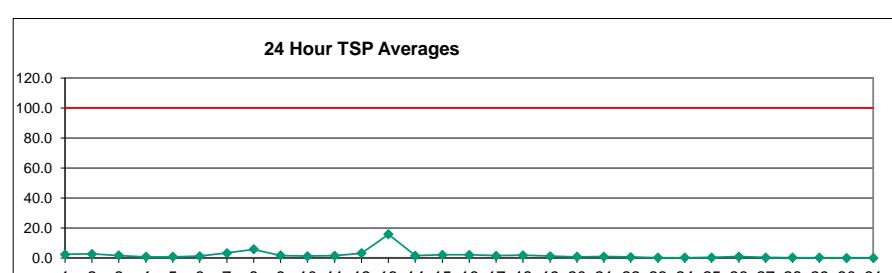
Day	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	1.7	1.6	1.5	1.8	1.7	1.9	1.8	1.7	2.0	2.2	3.0	3.5	4.7	6.2	5.5	5.0	3.4	3.6	3.2	3.2	3.0	2.6	2.8	2.2	2.9	6.2
2	2.0	1.8	1.8	1.6	1.4	1.1	1.4	2.9	2.3	3.9	4.6	8.8	7.5	6.3	3.8	4.3	2.6	2.0	1.7	1.3	0.7	0.6	0.5	0.6	2.7	8.8
3	0.6	0.4	0.4	0.5	0.3	0.5	0.6	0.7	0.5	0.9	1.3	1.4	6.4	7.1	5.7	4.3	3.0	1.5	0.6	0.4	0.5	0.4	0.3	0.3	1.6	7.1
4	0.2	0.2	0.4	0.2	0.2	0.3	0.3	0.7	0.8	1.2	1.4	3.7	4.7	2.2	1.8	1.1	1.6	1.0	1.0	1.0	0.9	0.6	0.3	0.3	1.1	4.7
5	0.3	0.3	0.5	0.6	0.5	0.5	0.6	0.8	0.9	1.1	1.3	1.6	1.8	2.0	1.6	1.3	0.9	1.1	1.1	1.5	1.5	1.7	1.8	2.0	1.1	2.0
6	2.0	2.3	1.6	1.2	1.0	1.1	1.0	0.9	2.1	4.7	4.3	3.1	2.9	2.5	1.8	1.5	1.8	1.6	0.9	0.5	0.4	0.4	0.4	0.5	1.7	4.7
7	0.6	0.8	0.8	0.6	0.6	1.0	0.6	0.4	0.4	4.6	3.4	4.9	5.1	7.3	6.3	5.9	4.7	4.9	5.1	3.8	4.8	10.8	14.6	16.5	4.5	16.5
8	15.9	12.5	9.6	9.9	12.9	13.1	10.4	10.7	9.3	8.9	12.5	11.7	10.1	9.1	7.6	7.1	7.1	7.3	6.4	5.3	4.5	3.6	3.0	2.8	8.8	15.9
9	2.3	1.9	1.8	1.5	1.3	1.1	1.1	1.0	1.0	1.6	3.6	2.8	2.8	3.0	3.4	3.6	2.6	2.6	3.2	4.4	4.1	2.7	2.6	3.8	2.5	4.4
10	4.1	3.5	2.4	1.8	1.4	1.2	1.2	1.1	1.3	1.4	1.5	2.1	2.9	2.1	1.9	1.8	1.4	1.7	1.8	1.6	1.8	1.7	1.6	1.5	1.9	4.1
11	1.3	1.3	1.5	1.4	1.4	1.3	1.3	1.4	1.5	2.2	2.5	2.6	2.7	2.1	2.1	2.5	3.2	2.8	2.1	2.9	2.7	2.4	2.0	2.0	2.0	3.2
12	1.7	1.9	2.1	1.9	1.7	1.5	1.5	1.4	1.4	1.9	1.7	1.7	5.5	3.6	3.4	2.2	1.4	0.6	0.9	7.2	15.9	17.7	21.6	4.2	21.6	
13	24.2	19.9	19.4	20.2	21.6	23.4	25.3	28.9	30.3	31.6	35.7	41.4	31.3	13.7	10.4	36.7	32.8	26.8	27.9	25.4	13.8	5.3	4.0	3.8	23.1	41.4
14	4.1	3.3	2.6	2.1	1.8	1.7	1.6	1.4	1.4	1.4	1.2	1.5	2.7	3.8	3.9	2.5	1.8	1.4	1.6	1.3	1.6	1.7	1.2	2.1	4.1	
15	1.0	1.1	1.1	1.1	1.1	1.1	1.0	1.3	1.3	1.1	2.0	5.6	8.2	7.3	6.6	3.1	1.6	2.0	1.2	0.8	0.9	0.6	0.8	0.5	2.2	8.2
16	0.5	0.3	0.6	0.2	0.5	0.6	1.7	2.7	6.4	7.1	4.4	5.0	4.8	2.9	3.2	2.7	1.5	1.8	0.9	0.6	0.9	0.7	0.7	0.6	2.1	7.1
17	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.6	1.2	2.3	3.2	7.6	4.9	4.4	3.0	1.9	0.8	0.9	0.7	0.4	0.4	0.4	0.4	0.3	1.5	7.6
18	0.6	0.4	0.3	0.2	0.5	0.4	0.7	1.6	2.1	2.0	3.3	5.2	3.2	3.1	3.9	4.6	1.8	2.9	3.0	1.3	1.0	1.3	1.4	0.9	1.9	5.2
19	1.5	0.8	0.6	0.7	0.8	1.1	1.8	2.6	1.8	2.5	3.2	2.6	3.9	2.5	1.8	1.6	0.7	0.8	0.7	0.5	0.9	1.2	1.3	1.5	3.9	
20	1.2	0.6	0.6	0.5	0.5	0.6	0.6	1.0	0.9	1.6	0.7	0.5	0.8	0.7	0.8	1.0	1.1	0.9	1.0	1.6	2.0	3.2	2.5	1.8	1.1	3.2
21	1.5	1.5	1.4	1.7	1.5	1.3	1.1	1.0	1.1	1.8	2.8	2.5	1.8	1.6	1.7	1.5	1.3	1.2	1.1	1.8	1.8	0.1	0.1	0.3	1.4	2.8
22	0.7	1.5	1.5	1.1	2.0	1.6	1.4	1.3	1.3	1.5	1.3	0.8	0.3	0.4	0.5	0.8	0.6	1.1	0.7	0.6	0.5	0.6	0.5	0.5	1.0	2.0
23	0.7	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.3	0.6	0.5	0.5	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.7
24	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.2	0.2	0.4
25	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.3	0.3	0.4	0.2	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.5
26	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.4	0.3	0.4	0.4	0.7	0.4	0.3	0.6	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.7
27	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.3	1.4	0.6	0.6	0.6	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.2	0.2	0.3	1.4
28	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.7	0.5	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.3	0.1	0.2	0.7
29	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.1	0.1	0.2	0.3	0.4	0.6	0.5	0.5	0.1	0.2	0.6	
30	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1
NO.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	744	100%
MEAN	2.3	1.9	1.7	1.7	1.8	1.9	1.9	2.2	2.3	2.9	3.3	4.0	3.8	3.2	2.7	3.3	2.6	2.4	2.2	1.9	1.9	2.0	2.2			
MAX	24.2	19.9	19.4	20.2	21.6	23.4	25.3	28.9	30.3	31.6	35.7	41.4	31.3	13.7	10.4	36.7	32.8	26.8	27.9	25.4	13.8	15.9	17.7	21.6		



Number of Non-Zero Readings	735
Maximum 1-HR Average	41.4 UG/M3
Maximum 24-HR Average	23.1 UG/M3
Izs Calibration Time	
Down Time	0
OpperatioEl Time	
Standard Deviation	4.8
OpperatioEl Uptime	
Monthly Average	
	744 HRS
	100.0 %
	2.4 UG/M3

West TSP ($\mu\text{g}/\text{m}^3$) – December 2019

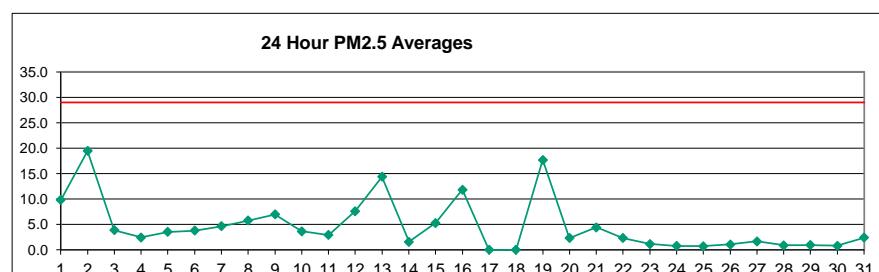
Day	HOUR																								MEAN	MAX			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
1	1.2	1.1	1.0	1.3	1.1	1.3	1.2	1.1	1.4	1.5	2.3	2.8	4.3	6.4	5.6	4.8	2.7	2.7	2.4	2.3	2.0	1.9	2.0	1.5	2.3	6.4			
2	1.4	1.2	1.2	1.1	1.0	0.8	1.2	3.0	2.2	3.8	4.7	9.8	8.2	6.8	3.8	4.5	2.5	1.9	1.5	1.1	0.5	0.5	0.4	0.5	2.6	9.8			
3	0.4	0.3	0.3	0.3	0.2	0.4	0.5	0.5	0.4	0.7	1.1	1.2	7.2	7.6	6.0	4.5	3.1	1.4	0.5	0.3	0.5	0.3	0.2	0.2	1.6	7.6			
4	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.5	0.6	0.9	1.1	3.1	3.7	1.6	1.2	0.8	1.2	0.6	0.7	0.7	0.6	0.4	0.2	0.2	0.8	3.7			
5	0.2	0.2	0.3	0.4	0.3	0.3	0.4	0.5	0.6	0.7	0.9	1.2	1.4	1.7	1.3	1.0	0.6	0.7	0.7	1.0	1.0	1.1	1.1	1.3	0.8	1.7			
6	1.3	1.5	1.0	0.8	0.7	0.7	0.6	0.6	1.6	4.2	3.9	2.4	2.2	1.8	1.3	1.0	1.2	1.0	0.6	0.3	0.3	0.3	0.3	0.3	1.2	4.2			
7	0.4	0.5	0.5	0.4	0.4	0.4	0.6	0.4	0.3	0.3	4.7	3.1	4.4	3.9	5.1	4.3	4.0	3.1	3.2	3.5	2.5	3.2	7.0	9.5	10.9	3.2	10.9		
8	10.5	8.1	6.3	6.4	8.6	8.7	6.7	6.9	6.0	5.9	8.4	7.7	6.9	6.0	4.9	4.6	4.6	4.7	4.1	3.5	2.9	2.3	2.0	1.8	5.8	10.5			
9	1.5	1.2	1.1	1.0	0.9	0.9	0.7	0.7	0.7	1.1	2.3	1.8	1.9	2.0	2.3	2.5	1.7	1.7	2.1	2.9	2.7	1.8	1.7	2.5	1.6	2.9			
10	2.7	2.3	1.6	1.2	0.9	0.8	0.8	0.7	0.8	0.9	1.0	1.4	1.9	1.4	1.3	1.2	0.9	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.2	2.7			
11	0.8	0.8	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.5	1.7	1.9	1.9	1.6	1.8	2.3	3.1	2.5	1.3	1.9	1.8	1.5	1.3	1.3	1.5	3.1			
12	1.1	1.2	1.3	1.2	1.1	0.9	1.0	0.9	0.9	0.9	1.3	1.3	1.6	5.8	3.4	3.3	1.8	1.2	0.5	0.7	5.3	10.7	11.6	14.0	3.0	14.0			
13	15.8	12.9	12.6	13.1	14.0	15.1	16.4	19.1	20.2	22.4	28.7	30.6	21.5	9.7	7.6	25.9	21.7	17.4	18.1	16.5	8.9	3.4	2.6	2.5	15.7	30.6			
14	2.6	2.1	1.7	1.4	1.2	1.1	1.1	1.1	0.9	0.9	0.9	0.8	1.1	2.6	3.8	3.9	1.9	1.2	0.9	1.1	0.8	1.1	1.1	0.8	1.5	3.9			
15	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.9	0.8	0.7	1.7	5.9	9.0	7.9	7.0	3.0	1.5	1.9	1.2	0.7	0.8	0.5	0.7	0.3	2.1	9.0			
16	0.5	0.2	0.5	0.2	0.4	0.5	1.4	2.5	6.6	7.6	4.2	5.0	5.0	2.8	3.0	2.4	1.2	1.5	0.7	0.4	0.8	0.5	0.4	0.4	2.0	7.6			
17	0.3	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.9	2.1	3.0	8.0	4.9	4.4	3.0	1.7	0.6	0.7	0.5	0.3	0.3	0.2	0.3	0.2	1.4	8.0			
18	0.4	0.3	0.2	0.1	0.3	0.3	0.5	1.5	2.1	1.8	3.3	5.2	2.9	2.9	3.7	4.6	1.5	2.7	2.6	0.9	0.7	1.0	1.1	0.6	1.7	5.2			
19	1.0	0.5	0.4	0.5	0.6	0.8	1.5	2.4	1.5	2.1	2.7	2.3	3.7	2.3	1.6	1.3	0.5	0.5	0.6	0.4	0.3	0.6	0.8	0.9	1.2	3.7			
20	0.8	0.4	0.4	0.3	0.3	0.4	0.4	0.6	0.6	1.1	0.5	0.4	0.5	0.5	0.6	0.7	0.6	0.7	1.0	1.3	2.0	1.6	1.2	0.7	2.0				
21	1.0	1.0	0.9	1.1	1.0	0.8	0.7	0.7	0.7	1.2	1.8	1.6	1.2	1.1	1.1	1.0	0.9	0.8	0.7	1.2	1.4	0.1	0.0	0.2	0.9	1.8			
22	0.5	1.0	1.0	0.7	1.3	1.0	0.9	0.9	0.9	1.0	0.8	0.5	0.2	0.3	0.3	0.6	0.4	0.8	0.5	0.4	0.3	0.4	0.3	0.3	0.6	1.3			
23	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.4			
24	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.3			
25	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	4.2			
26	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.4	17.6	0.2	0.3	0.5	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.9	17.6		
27	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.4	0.4	0.8	0.2	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.2	1.4			
28	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.5	0.4	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.2	0.1	0.5			
29	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.0	0.1	0.1	0.2	0.3	0.4	0.3	0.3	0.1	0.1	0.4			
30	0.1	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	0.1			
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1			
NO.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	744	100%			
MEAN	1.5	1.3	1.1	1.1	1.2	1.2	1.3	1.5	1.7	2.2	2.6	3.3	3.3	3.3	2.3	2.6	1.9	1.7	1.5	1.4	1.3	1.3	1.4						
MAX	15.8	12.9	12.6	13.1	14.0	15.1	16.4	19.1	20.2	22.4	28.7	30.6	21.5	17.6	7.6	25.9	21.7	17.4	18.1	16.5	8.9	10.7	11.6	14.0					



Number of 24HR Exceedences	0	Proposed Guideline
Number of Non-Zero Readings	735	
Maximum 1-HR Average	30.6 UG/M3	
Maximum 24-HR Average	15.7 UG/M3	
Izs Calibration Time		
Down Time	0	
Standard Deviation	3.468	
Operational Time		
Operational Uptime		
Monthly Average	1.8 UG/M3	
744 HRS		
100.0 %		
0.00		

Berm PM_{2.5} ($\mu\text{g}/\text{m}^3$) – December 2019

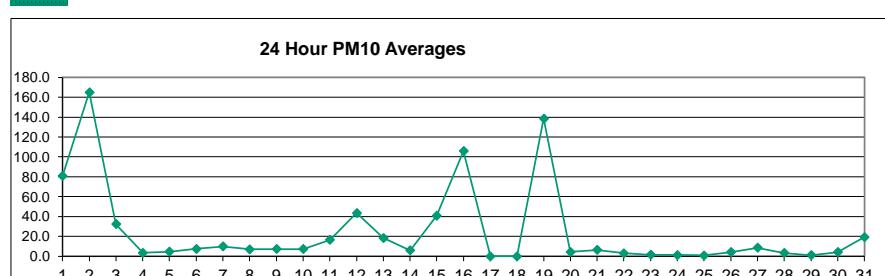
DAY	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	4.6	6.2	10.7	6.9	4.6	6.4	13.9	11.2	15.6	21.7	29.3	15.0	3.2	5.5	8.4	6.2	6.1	2.7	4.0	9.9	16.6	7.6	10.1	9.5	9.8	29.3
2	12.9	12.6	10.1	6.3	4.3	12.8	15.6	9.2	6.7	8.1	13.5	11.1	19.8	50.6	38.5	47.9	39.1	28.0	40.3	11.6	17.5	20.8	14.7	14.7	19.4	50.6
3	12.9	15.2	7.0	5.4	4.1	5.8	9.8	8.4	4.8	2.0	1.4	1.1	1.6	2.8	1.7	2.2	1.8	0.7	0.5	0.5	0.6	1.0	1.1	1.0	3.9	15.2
4	0.4	0.3	0.3	0.3	0.2	0.2	0.3	3.5	25.4	5.3	5.1	NRM	NRM	7.0	0.5	0.4	1.1	0.5	0.4	0.6	0.7	0.5	0.9	2.5	25.4	
5	0.5	0.3	0.2	0.3	0.3	0.4	0.5	0.5	7.3	16.9	14.1	7.3	7.9	5.9	4.5	6.3	2.9	1.5	1.2	1.0	1.0	1.0	1.1	2.3	3.5	16.9
6	2.4	1.4	0.9	0.7	1.2	1.7	2.5	1.2	3.2	3.1	1.8	17.5	8.2	4.1	8.2	5.9	3.2	2.5	1.6	2.5	5.9	2.2	3.3	6.2	3.8	17.5
7	5.7	2.4	1.1	1.0	0.7	0.7	2.4	2.3	2.8	2.8	2.7	3.8	4.3	5.7	5.5	4.9	5.1	3.6	5.4	4.3	3.6	6.6	13.1	21.0	4.6	21.0
8	9.8	8.2	6.6	6.0	6.6	6.5	5.2	4.6	4.2	8.5	8.7	8.2	7.5	7.3	6.6	5.5	5.1	5.1	4.3	3.4	2.7	2.7	2.4	2.2	5.7	9.8
9	1.8	1.5	1.4	1.8	1.3	1.2	1.3	0.9	36.3	48.9	12.2	10.3	10.6	5.8	7.6	7.6	2.0	1.5	2.0	2.5	2.2	2.0	2.1	2.2	7.0	48.9
10	2.3	2.1	1.6	1.2	1.0	0.8	0.8	0.8	19.4	18.0	3.4	3.9	4.8	3.5	3.7	3.2	2.4	1.5	1.5	2.6	3.0	1.6	2.0	2.1	3.6	19.4
11	2.2	2.1	2.8	2.0	2.6	0.9	0.9	1.2	1.2	1.5	2.1	2.9	2.8	7.7	5.0	6.3	8.2	5.0	3.1	2.4	1.6	1.9	1.9	2.1	2.9	8.2
12	3.3	4.6	4.0	4.2	2.7	1.2	1.3	1.2	1.3	1.4	1.7	4.3	6.6	20.4	15.5	15.3	16.4	9.8	11.4	12.7	7.3	10.3	12.6	13.1	7.6	20.4
13	12.1	13.1	13.4	13.7	13.9	14.0	15.3	19.8	19.9	17.2	23.8	27.6	18.0	6.7	11.0	15.0	15.7	17.8	20.5	20.8	8.4	2.8	2.5	2.6	14.4	27.6
14	2.4	2.0	1.7	1.5	1.3	1.1	1.1	1.5	0.9	0.9	1.2	1.2	1.0	1.2	1.3	0.9	1.4	1.2	1.0	1.2	1.0	2.8	8.0	0.7	1.6	8.0
15	0.6	0.8	0.6	0.6	0.7	0.5	0.4	0.6	0.8	0.8	0.9	1.2	2.0	10.3	12.3	15.6	19.7	11.4	10.6	9.9	11.6	8.3	3.3	3.8	5.3	19.7
16	4.3	3.5	12.0	12.2	10.4	5.1	2.9	1.0	1.3	4.4	11.2	18.0	25.2	37.2	33.7	17.1	16.6	12.9	13.6	7.2	6.5	7.8	12.2	7.7	11.8	37.2
17	9.9	6.8	5.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	
18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	
19	5.0	3.1	6.2	6.3	5.7	4.7	4.4	7.7	11.3	8.2	4.0	6.1	10.7	16.5	36.5	47.0	40.7	27.2	51.3	40.6	51.2	16.3	9.7	4.7	17.7	51.3
20	5.6	2.8	3.1	1.7	1.0	1.7	2.4	2.8	2.2	1.8	2.7	3.0	4.5	2.4	1.5	2.4	2.0	1.6	1.2	1.7	1.4	2.4	2.3	1.8	2.3	5.6
21	2.1	3.4	1.8	1.8	6.7	7.1	8.4	5.6	6.1	4.3	3.8	5.3	6.5	8.3	5.8	6.1	7.7	5.0	5.4	3.0	1.7	0.2	0.4	0.1	4.4	8.4
22	0.2	1.7	2.7	4.3	4.4	5.4	6.2	3.0	2.7	5.2	2.0	1.5	0.9	0.9	1.1	1.1	1.4	1.4	1.8	1.6	1.6	1.4	1.4	1.3	2.3	6.2
23	1.5	1.5	1.9	1.6	0.7	0.5	0.5	0.3	0.6	1.4	3.2	2.5	2.7	0.9	0.7	0.8	0.8	0.6	0.6	1.2	0.8	0.9	0.7	0.7	1.2	3.2
24	0.6	0.4	0.5	0.9	0.6	0.6	0.3	0.4	0.7	0.5	0.8	1.8	1.1	1.1	1.0	0.9	0.6	0.7	0.6	0.7	0.8	1.1	0.9	0.8	0.8	1.8
25	0.7	0.6	0.5	0.4	0.4	0.2	0.5	0.4	0.6	0.7	1.0	0.8	1.0	1.0	0.8	0.5	0.5	0.8	1.1	1.1	0.9	1.3	0.8	0.7	1.3	
26	0.6	0.6	0.5	0.5	0.7	0.6	0.5	0.8	0.7	0.6	1.0	1.3	1.0	1.1	0.9	0.8	0.7	0.8	0.8	0.9	1.5	2.2	3.2	1.1	3.2	
27	2.3	2.0	4.6	3.4	5.4	1.9	0.6	1.6	1.0	1.5	1.4	1.8	1.1	2.0	1.5	1.2	0.7	0.6	0.8	1.1	1.1	1.2	0.9	0.8	1.7	5.4
28	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.8	0.8	0.6	1.7	1.4	1.4	1.4	0.9	0.9	1.2	0.9	0.9	0.6	0.9	1.7
29	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.0	1.1	1.3	1.2	1.5	1.4	1.2	1.2	1.2	1.2	0.9	0.9	1.5
30	0.6	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.6	0.6	0.6	0.7	1.1	0.8	1.1	1.2	1.7	1.4	0.9	1.4	1.6	2.0	0.8	2.0
31	3.5	2.8	2.6	2.0	1.8	2.9	3.6	3.3	2.9	2.1	3.4	3.4	1.7	1.5	2.0	2.4	2.0	1.5	2.0	3.4	3.0	1.9	1.2	0.8	2.4	3.6
NO.	30	30	30	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	30	30	30	30	30	701	94%
MEAN	3.7	3.5	3.5	3.0	2.9	3.0	3.6	3.2	5.5	7.2	5.5	5.8	5.6	7.6	7.8	7.8	7.1	5.2	6.6	5.2	5.6	4.2	4.0	3.8		
MAX	12.9	15.2	13.4	13.7	13.9	14.0	15.6	19.8	36.3	48.9	29.3	27.6	25.2	50.6	38.5	47.9	40.7	28.0	51.3	40.6	51.2	20.8	14.7	21.0		



Number of 24HR Exceedences	0	Proposed Guideline
Number of Non-Zero Readings	701	
Maximum 1-HR Average	51.3 UG/M3	
Maximum 24-HR Average	19.4 UG/M3	
Monthly Calibration Standard Deviation	7.6	Operational Time Operational Uptime Monthly Average 701 HRS 94.2 % 5.0 UG/M3

Berm PM₁₀ ($\mu\text{g}/\text{m}^3$) – December 2019

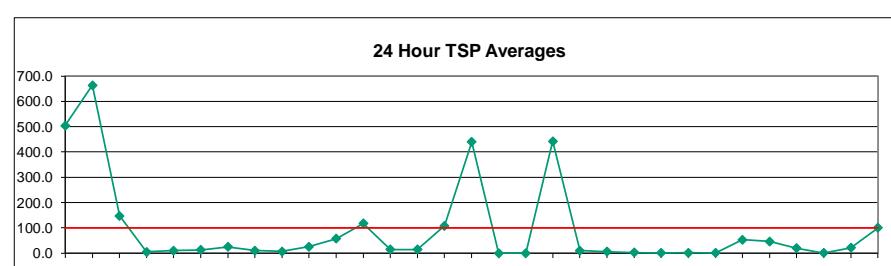
DAY	HOUR																								MEAN	MAX
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	38.3	49.4	93.7	57.2	36.4	53.1	130.4	96.9	153.4	182.0	243.7	118.5	15.7	43.5	67.0	44.3	48.1	11.2	25.5	71.5	152.5	54.4	79.9	74.3	80.9	243.7
2	103.0	102.5	81.6	47.7	27.8	102.9	131.8	64.7	43.4	56.3	97.7	80.0	148.1	411.5	321.3	451.9	369.8	251.7	346.8	86.5	148.8	203.3	147.0	135.0	165.0	451.9
3	116.5	145.3	63.4	49.1	34.1	49.8	97.2	76.0	39.4	12.8	6.6	4.0	6.7	19.1	9.9	10.9	9.9	1.9	0.9	0.6	2.5	6.1	5.8	5.3	32.3	145.3
4	1.4	0.5	0.5	1.2	1.1	0.2	0.3	0.5	4.7	27.5	6.4	12.7	NRM	NRM	10.4	0.7	0.4	1.3	0.5	0.5	0.6	0.8	0.5	1.0	3.3	27.5
5	0.6	0.3	0.2	0.4	0.3	0.4	0.6	0.5	7.4	17.5	15.9	14.7	10.6	8.0	7.2	10.9	4.0	2.3	1.3	1.3	1.1	1.1	1.2	3.1	4.6	17.5
6	3.2	1.5	1.0	0.7	1.5	2.4	3.6	1.5	4.6	4.5	2.4	18.8	8.6	4.3	8.7	6.1	3.3	2.7	2.5	17.1	17.3	10.1	19.0	30.7	7.3	30.7
7	29.3	8.4	4.8	3.3	1.2	1.4	12.3	12.3	21.0	14.6	7.9	12.7	10.1	6.8	6.7	5.9	6.4	3.9	6.7	5.5	3.9	6.9	15.0	28.1	9.8	29.3
8	9.8	8.2	6.6	6.1	6.7	6.5	5.3	4.7	4.4	9.9	9.8	11.1	11.1	13.6	15.4	6.4	5.3	5.4	4.5	3.4	2.8	2.9	2.6	2.5	6.9	15.4
9	2.0	1.7	1.6	2.2	1.4	1.5	1.6	1.1	37.0	49.6	13.5	10.8	11.5	6.3	8.0	7.9	2.1	1.6	2.0	2.6	2.2	2.0	2.1	2.2	7.3	49.6
10	2.3	2.3	1.8	1.2	1.2	0.8	0.9	0.9	20.1	18.8	10.3	13.6	6.0	5.4	8.3	14.3	9.8	2.7	4.4	13.2	13.7	3.2	6.3	10.6	7.2	20.1
11	7.0	13.5	16.2	9.7	16.9	1.2	1.0	2.2	1.8	3.4	3.0	16.7	14.9	56.8	34.6	52.3	60.4	33.2	18.3	5.1	2.1	7.0	7.9	7.8	16.4	60.4
12	18.0	30.3	25.5	33.1	16.0	2.1	1.6	1.3	1.6	1.8	3.8	33.9	51.7	144.3	122.4	129.7	135.5	67.5	76.0	97.4	8.8	12.7	14.0	13.5	43.4	144.3
13	12.2	14.3	16.8	15.1	15.4	16.4	16.7	24.6	28.9	23.9	33.0	40.8	26.0	8.6	13.6	16.3	16.7	23.6	28.8	31.0	11.9	2.9	2.6	2.6	18.5	40.8
14	2.4	2.0	1.7	1.6	1.3	1.2	1.2	1.6	0.9	0.9	1.4	1.6	1.2	2.8	3.8	1.7	2.2	1.7	1.5	1.9	2.0	30.7	74.7	0.8	5.9	74.7
15	0.8	0.9	0.7	0.6	0.7	0.5	0.4	0.6	0.8	0.9	1.1	2.3	10.9	83.2	111.2	137.0	163.8	87.2	92.2	74.2	100.4	57.6	22.3	30.9	40.9	163.8
16	40.0	31.1	110.2	103.3	86.3	45.6	21.5	5.9	7.4	42.6	107.2	150.5	226.3	340.9	334.6	146.7	148.1	119.1	127.3	58.8	53.7	67.1	101.2	62.0	105.7	340.9
17	90.0	51.1	42.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	86.6	93.9	17.4	32.5	-	-
19	39.8	19.0	50.1	53.6	51.1	41.7	39.8	56.8	95.5	69.8	28.5	42.0	78.6	116.9	265.8	373.0	299.4	221.5	438.7	318.7	423.7	115.2	61.5	27.7	138.7	438.7
20	35.8	3.9	4.4	2.3	1.3	2.3	3.5	3.7	3.0	2.4	3.9	4.3	6.6	3.3	1.9	3.2	2.4	1.8	1.3	1.7	1.5	2.6	2.5	2.0	4.2	35.8
21	2.9	4.8	2.2	2.0	9.8	10.5	12.4	8.3	8.6	5.8	5.0	7.5	9.4	12.3	8.4	8.9	11.0	6.7	7.7	3.1	1.7	0.2	0.5	0.1	6.2	12.4
22	0.2	2.1	3.4	5.6	5.9	6.8	8.2	3.8	3.8	7.6	2.6	1.9	1.2	1.1	1.3	1.3	1.8	1.7	2.2	1.9	2.0	1.7	1.7	1.5	3.0	8.2
23	1.9	1.9	2.6	2.3	0.9	0.7	0.7	0.3	0.8	2.0	4.7	3.7	3.9	1.2	0.9	0.9	0.9	0.7	0.7	1.3	0.8	1.0	0.9	0.8	1.5	4.7
24	0.7	0.5	0.7	1.3	0.8	0.9	0.4	0.5	0.7	0.6	2.0	6.6	2.5	1.4	1.3	1.1	0.7	0.8	0.7	0.8	0.9	1.2	0.9	0.9	1.2	6.6
25	0.7	0.6	0.6	0.5	0.4	0.2	0.6	0.5	0.7	0.8	1.6	0.9	1.1	1.1	0.9	0.6	0.6	0.8	1.3	1.2	1.2	1.0	1.4	1.0	0.8	1.6
26	0.7	0.7	0.6	0.6	1.0	0.8	0.6	1.1	0.9	0.8	1.8	6.4	3.4	2.5	2.5	0.9	0.8	0.9	1.0	1.1	2.0	9.5	31.8	4.0	31.8	
27	17.1	10.9	36.1	28.3	41.2	10.5	1.0	2.5	4.2	7.2	4.9	9.7	4.4	9.3	5.4	3.8	1.0	0.7	0.8	1.1	1.1	1.2	0.9	0.8	8.5	41.2
28	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	1.1	1.6	1.1	1.3	9.5	13.3	8.6	9.0	8.0	2.5	3.3	6.8	4.0	2.2	0.7	3.3	13.3
29	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	1.1	1.4	1.6	1.8	1.2	1.3	1.5	1.3	1.6	1.5	1.2	1.4	1.6	1.1	1.8
30	0.6	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.4	0.9	1.3	1.9	3.1	6.7	3.3	7.2	11.0	8.7	9.9	6.8	10.9	11.0	14.5	4.2	14.5
31	37.2	26.6	25.4	14.8	15.4	27.4	34.9	34.3	25.2	17.7	24.9	22.2	9.0	8.5	14.2	18.7	18.2	12.0	14.0	28.5	14.2	8.2	6.3	2.6	19.2	37.2
NO.	30	30	30	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	29	30	30	30	30	701	94%
MEAN	20.5	17.9	19.9	15.4	13.0	13.4	18.3	14.1	18.0	20.1	22.3	22.5	24.4	47.4	48.5	50.6	46.2	30.5	42.1	29.1	35.8	24.0	21.4	17.3		
MAX	116.5	145.3	110.2	103.3	86.3	102.9	131.8	96.9	153.4	182.0	243.7	150.5	226.3	411.5	334.6	451.9	369.8	251.7	438.7	318.7	423.7	203.3	147.0	135.0		



Number of Non-Zero Readings	701
Maximum 1-HR Average	451.9 UG/M3
Maximum 24-HR Average	165.0 UG/M3
Monthly Calibration Standard Deviation	59.34
Operational Time	701 HRS
Operational Uptime	94.2 %
Monthly Average	26.3 UG/M3

Berm TSP ($\mu\text{g}/\text{m}^3$) – December 2019

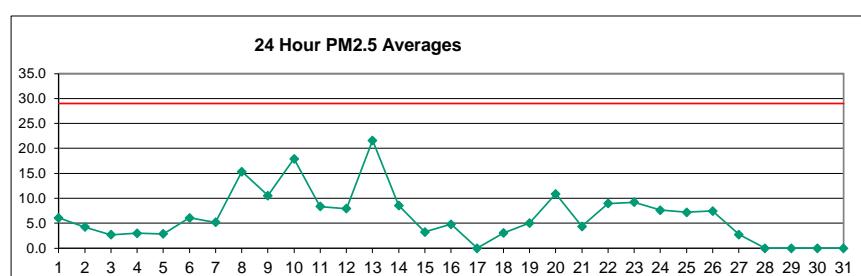
DAY	HOUR																								MEAN	MAX	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	293.2	324.9	726.2	418.7	278.7	398.0	1318.1	864.3	1437.6	1164.6	1420.7	580.5	72.5	172.3	264.6	155.6	183.0	30.6	95.6	265.3	704.8	234.2	348.1	344.1	504.0	1437.6	
2	481.3	517.8	426.5	232.9	145.2	433.7	479.8	228.2	141.8	185.6	270.3	240.3	494.2	1461.7	1340.1	1748.9	1672.2	1085.6	1422.3	300.9	514.6	907.9	662.2	522.8	663.2	1748.9	
3	492.4	656.3	332.5	255.4	152.2	238.6	475.9	413.5	195.5	50.3	28.7	10.1	18.2	49.1	25.3	33.2	24.0	3.2	1.5	0.5	9.2	30.7	28.3	21.9	147.8	656.3	
4	4.8	1.0	0.8	3.4	5.2	0.2	0.2	0.3	5.2	22.1	5.9	46.0	NRM	NRM	10.3	0.6	0.3	0.9	0.3	0.3	0.4	0.5	0.3	0.7	5.0	46.0	
5	0.4	0.2	0.1	0.2	0.2	0.3	0.4	0.3	4.8	11.7	23.7	93.0	35.4	14.1	16.0	31.4	7.4	2.6	0.8	1.9	1.1	0.7	0.9	2.7	10.4	93.0	
6	3.0	1.0	0.6	0.5	1.2	2.0	3.8	1.3	4.8	4.8	2.2	13.1	5.8	2.9	4.1	2.2	1.8	4.7	66.4	40.7	28.4	57.2	46.2	12.7	66.4		
7	58.6	14.4	12.1	5.6	3.1	7.6	33.7	21.9	66.5	112.8	48.1	50.9	87.0	5.2	4.9	4.5	5.4	2.5	5.5	4.7	2.6	4.6	12.2	29.0	25.1	112.8	
8	6.3	5.4	4.3	3.9	4.4	4.2	3.4	3.0	2.9	7.4	11.5	35.4	34.6	47.8	48.4	7.9	3.6	3.9	3.1	2.2	1.8	2.0	1.9	1.8	10.5	48.4	
9	1.4	1.2	1.1	1.8	1.1	1.2	1.4	0.8	24.9	35.4	24.8	11.2	18.9	13.9	7.9	5.2	1.3	1.0	1.3	1.7	1.5	1.3	1.4	1.4	6.8	35.4	
10	1.5	1.6	1.4	0.8	0.8	0.6	0.6	0.6	13.8	12.9	51.5	66.1	12.3	12.8	18.3	62.4	50.4	6.5	35.6	72.4	85.2	17.9	32.8	49.4	25.3	85.2	
11	29.8	51.5	69.9	41.7	54.4	1.6	0.6	3.4	5.5	10.9	6.8	64.7	51.8	182.4	113.8	187.5	232.4	113.7	58.3	11.1	3.8	24.4	32.2	23.5	57.3	232.4	
12	57.7	106.4	97.2	157.8	67.6	7.4	1.2	0.9	1.1	1.4	9.2	118.4	141.3	333.7	342.6	393.7	380.7	159.7	189.0	209.4	7.4	11.1	10.0	8.8	117.2	393.7	
13	7.9	9.3	11.3	10.0	10.2	10.8	10.8	18.4	26.5	19.6	24.2	37.2	23.6	7.2	11.9	11.0	11.1	19.0	22.8	33.6	12.1	1.9	1.7	1.7	14.7	37.2	
14	1.6	1.3	1.1	1.2	0.9	0.8	0.9	1.2	0.6	0.6	1.0	1.6	1.3	5.5	5.4	2.2	3.0	1.4	2.9	1.6	6.8	73.7	230.0	0.5	14.5	230.0	
15	1.1	1.8	0.4	0.4	0.5	0.3	0.3	0.4	0.5	0.6	0.8	3.3	45.2	254.1	333.6	401.5	209.3	287.3	236.7	296.3	163.0	76.6	88.6	108.0	401.5		
16	156.8	111.5	345.3	333.0	338.7	203.5	82.2	22.8	34.6	189.7	434.0	590.0	881.3	1269.6	1439.6	701.4	701.9	575.8	595.8	240.9	236.2	335.9	468.3	266.9	439.8	1439.6	
17	355.7	253.3	182.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-		
18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	340.5	263.2	56.6	135.8	-	-		
19	169.7	84.4	216.2	222.7	221.4	178.9	175.7	199.3	368.6	237.6	89.8	105.8	190.9	267.6	705.0	967.7	887.4	807.4	1476.3	1101.1	1324.1	395.9	159.7	74.4	442.8	1476.3	
20	191.8	3.5	3.6	1.7	1.0	1.8	3.1	3.0	2.6	1.9	3.5	3.9	6.1	2.7	1.5	2.2	1.7	1.2	0.8	1.1	0.9	1.9	1.7	1.4	10.2	191.8	
21	2.5	4.8	1.8	1.4	1.0	11.3	13.3	8.4	8.7	4.8	3.8	6.9	9.9	13.5	8.5	8.7	11.4	6.0	7.2	2.0	1.1	0.1	0.3	0.1	6.1	13.5	
22	0.2	1.4	2.4	4.1	4.6	4.9	5.9	2.9	3.3	7.5	2.0	1.5	1.0	0.8	0.9	0.9	1.5	1.2	1.6	1.4	1.5	1.2	1.3	1.0	2.3	7.5	
23	1.3	1.3	2.4	2.1	0.6	0.5	0.5	0.2	0.5	1.6	5.0	3.8	4.0	1.0	0.7	0.6	0.6	0.5	0.6	0.9	0.6	0.8	0.7	0.5	1.3	5.0	
24	0.5	0.4	0.5	1.2	0.6	0.6	0.3	0.4	0.5	0.5	1.8	8.5	10.7	1.1	1.1	0.8	0.5	0.6	0.5	0.5	0.6	0.8	0.6	0.6	1.4	10.7	
25	0.5	0.5	0.5	0.4	0.3	0.2	0.5	0.3	0.4	0.5	3.8	1.6	1.5	0.7	0.6	0.4	0.4	0.5	1.0	0.8	0.8	0.8	1.0	0.7	0.8	3.8	
26	0.5	0.5	0.4	0.4	0.9	0.7	0.5	0.9	0.7	0.6	17.7	88.6	50.1	12.5	35.4	0.7	0.6	0.7	0.9	1.9	119.3	546.9	395.4	53.2	546.9		
27	250.5	69.5	105.0	136.4	232.2	44.6	2.0	16.1	35.1	53.8	28.4	52.1	13.8	42.3	12.1	16.7	1.2	0.5	0.5	0.7	0.7	0.8	0.6	0.5	46.5	250.5	
28	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.9	7.0	3.8	2.7	51.4	112.6	53.3	62.4	52.5	14.9	27.7	42.4	24.5	12.3	0.4	19.7	112.6	
29	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.6	0.7	3.1	1.1	1.7	0.8	0.9	1.0	1.1	0.8	1.0	1.4	0.8	3.1	0.8	3.1	
30	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.4	5.8	6.9	15.0	37.4	17.7	41.4	62.7	43.6	44.8	43.9	63.1	60.4	72.7	21.6	72.7
31	193.2	148.5	141.8	84.0	75.8	151.4	194.8	202.3	168.6	107.2	119.4	76.0	33.0	45.8	69.0	107.1	112.8	74.8	78.4	102.6	37.7	37.5	30.0	14.4	100.2	202.3	
NO.	30	30	30	29	29	29	29	29	29	29	29	29	28	28	29	29	29	29	29	30	30	30	30	30	701	94%	
MEAN	92.2	79.2	89.7	66.3	55.6	58.9	96.9	69.5	88.2	77.5	91.3	80.0	80.6	150.8	168.8	167.6	165.6	111.3	150.1	94.3	124.1	91.6	94.6	70.3			
MAX	492.4	656.3	726.2	418.7	338.7	433.7	1318.1	864.3	1437.6	1164.6	1420.7	590.0	881.3	1461.7	1439.6	1748.9	1672.2	1085.6	1476.3	1101.1	1324.1	907.9	662.2	522.8			



Number of 24HR Exceedences	8	Proposed Guideline
Number of Non-Zero Readings	701	
Maximum 1-HR Average	1748.9 UG/M3	
Maximum 24-HR Average	663.2 UG/M3	
Izs Calibration Time		
Monthly Calibration	0	Operational Time
Standard Deviation	241.9	Operational Uptime
		701 HRS
		94.2 %
		100.5 UG/M3

Entrance PM_{2.5} ($\mu\text{g}/\text{m}^3$) – December 2019

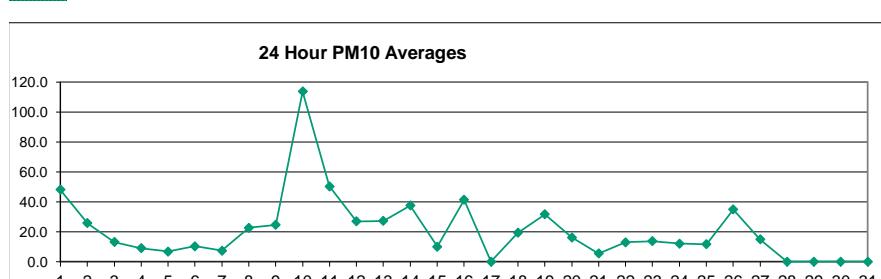
Day	HOUR																								MEAN	MAX	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	14.4	10.8	14.2	10.8	6.2	9.1	8.5	6.1	5.5	5.5	6.5	6.1	6.1	4.1	2.7	2.6	2.6	4.8	3.7	3.4	3.9	2.9	2.9	2.5	6.1	14.4	
2	2.5	2.6	2.5	2.1	1.8	2.4	2.2	3.0	2.5	3.2	4.0	4.0	4.9	9.7	14.5	10.9	10.6	3.0	2.5	1.2	1.3	4.0	3.9	3.2	4.3	14.5	
3	1.7	2.2	1.0	X	X	1.3	X	1.7	3.2	2.8	3.4	2.0	3.6	3.2	2.0	X	0.8	1.6	2.4	X	5.1	6.4	3.9	2.7	6.4		
4	1.1	1.4	1.9	3.6	2.0	2.1	1.9	2.8	4.8	10.6	1.9	5.1	3.7	3.9	6.6	2.8	2.4	2.0	3.5	0.7	1.7	2.3	1.3	1.7	3.0	10.6	
5	1.3	1.1	1.6	4.7	1.9	1.7	0.9	0.8	2.6	5.0	3.8	5.0	5.3	3.8	2.3	2.3	3.9	4.9	2.7	1.4	1.5	1.7	1.6	3.5	2.9	9.1	
6	4.0	7.9	4.0	7.2	6.8	5.5	5.0	2.8	6.7	5.0	2.5	4.0	3.6	6.5	16.2	11.9	16.5	16.8	7.0	2.8	1.4	1.0	0.8	0.9	6.1	16.8	
7	1.1	1.2	1.2	1.0	0.9	0.9	0.7	1.7	2.7	2.8	2.7	2.4	5.1	6.2	6.4	6.6	5.3	5.1	6.6	6.6	5.0	9.4	17.9	25.4	5.2	25.4	
8	14.1	11.3	9.4	8.7	9.1	9.8	7.3	7.7	8.9	16.8	24.9	24.2	17.6	21.7	25.2	20.0	22.9	24.1	16.7	7.6	15.7	15.4	12.7	17.0	15.4	25.2	
9	10.9	5.6	9.0	15.5	16.3	23.1	14.3	8.2	8.3	7.7	7.5	6.9	11.3	7.7	13.1	11.1	5.5	8.8	8.3	7.7	6.2	10.1	11.4	18.5	10.5	23.1	
10	17.4	18.8	18.4	15.1	23.0	21.3	11.7	11.4	28.5	28.3	21.8	27.6	14.9	14.9	24.0	19.5	19.3	13.1	14.3	16.3	14.1	14.0	14.2	8.3	17.9	28.5	
11	8.7	11.5	5.1	3.1	2.6	14.6	11.4	18.8	29.7	17.0	17.9	7.9	4.6	4.8	3.4	2.4	3.0	2.7	3.6	6.3	7.6	5.2	5.1	4.0	8.4	29.7	
12	2.2	4.4	3.1	2.8	5.5	9.0	19.0	16.2	13.6	9.6	12.2	5.0	2.7	2.1	11.4	1.7	1.4	1.5	1.4	3.0	13.0	15.0	16.0	18.0	7.9	19.0	
13	15.1	13.9	16.1	18.3	19.4	20.6	23.5	22.5	21.5	24.9	33.9	36.0	28.0	16.6	23.5	23.9	22.7	24.6	27.2	28.2	24.5	15.5	10.8	7.5	21.6	36.0	
14	11.3	9.4	7.6	3.7	4.3	9.3	3.3	6.2	7.6	5.4	9.5	5.4	5.0	5.9	9.7	4.8	8.8	6.7	16.2	14.2	15.0	15.4	14.0	7.4	8.6	16.2	
15	3.9	4.5	3.4	6.7	6.0	2.1	3.8	5.3	3.4	2.8	4.6	4.2	3.6	3.3	2.7	2.9	2.4	2.3	2.5	2.1	1.9	1.6	1.6	0.8	3.3	6.7	
16	1.2	0.6	0.9	1.2	2.4	1.4	1.4	6.3	8.5	7.0	6.3	5.5	7.8	9.1	17.0	12.0	6.3	4.5	3.1	2.5	1.5	2.6	3.3	2.3	4.8	17.0	
17	3.5	2.9	2.3	X	X	X	X	X	X	X	X	X	X	X	5.0	7.1	7.1	5.7	3.9	3.8	3.5	4.6	5.4	7.6	9.2	-	-
18	8.5	3.7	1.1	0.9	0.9	0.9	2.6	2.7	X	3.6	3.1	6.0	4.6	4.5	4.6	4.6	3.6	2.6	1.5	2.0	3.4	2.7	1.9	2.2	3.0	8.5	
19	2.4	1.3	1.4	1.7	3.2	2.0	3.2	5.6	6.2	6.3	7.2	8.7	7.7	6.8	9.6	6.1	5.5	4.4	6.4	5.5	3.8	3.2	7.7	X	5.0	9.6	
20	X	11.7	13.3	8.6	5.7	14.6	5.4	5.2	7.6	8.4	11.3	8.6	4.7	15.0	13.6	10.0	11.2	9.8	13.3	13.9	17.0	15.4	17.2	10.9	17.2	10.9	
21	4.4	3.5	3.7	4.0	3.1	3.3	3.3	3.3	5.2	6.9	6.6	4.4	4.5	3.8	4.6	7.3	7.0	6.0	6.1	3.4	4.0	2.7	2.6	1.0	4.4	7.3	
22	1.2	0.9	2.5	4.3	3.9	6.5	8.4	4.2	2.6	4.2	4.9	5.0	4.9	7.9	8.7	9.1	7.3	4.4	9.4	7.6	14.0	54.4	31.7	7.7	9.0	54.4	
23	6.7	19.2	11.6	9.6	7.8	5.8	7.7	4.1	1.8	1.9	8.3	9.6	17.3	16.2	11.8	9.8	8.5	8.0	6.0	8.8	10.1	10.4	12.0	7.7	9.2	19.2	
24	7.4	7.6	9.1	8.8	9.2	7.7	5.3	8.5	8.8	7.1	11.0	10.7	10.8	9.0	8.0	7.6	6.8	5.6	6.9	6.3	6.5	5.4	4.3	7.6	11.0	11.0	
25	7.0	4.3	9.5	9.9	8.3	4.9	3.8	4.8	3.9	5.2	7.0	7.1	7.2	8.6	11.3	8.4	7.6	5.8	9.8	9.7	8.1	6.1	X	X	7.2	11.3	
26	X	X	X	8.2	9.9	11.4	6.7	11.4	5.7	4.3	5.9	9.1	8.0	7.8	5.9	5.8	5.4	4.9	5.0	5.3	8.6	11.1	10.1	5.7	7.4	11.4	
27	7.1	3.2	1.0	2.9	2.1	1.5	2.3	4.0	3.8	4.9	2.8	2.8	2.3	1.5	1.8	0.8	1.7	3.5	2.1	2.9	X	X	X	X	2.8	7.1	
28	X	X	1.4	X	1.9	3.3	2.3	2.7	1.8	2.4	2.2	1.8	1.5	X	2.9	2.0	1.9	1.7	3.0	X	X	X	X	X	-	-	
29	X	1.9	X	X	1.4	2.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-		
30	X	4.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-		
31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-		
NO.	25	28	27	25	27	27	27	26	26	27	27	28	28	28	29	28	27	28	28	27	25	26	25	24	643	86%	
MEAN	6.4	6.1	5.8	6.5	6.1	7.3	6.2	6.8	7.8	7.7	8.7	8.2	7.2	7.5	9.5	7.7	7.6	6.5	6.9	6.6	7.8	9.1	8.8	7.4			
MAX	17.4	19.2	18.4	18.3	23.0	23.1	23.5	22.5	29.7	28.3	33.9	36.0	28.0	21.7	25.2	23.9	22.9	24.6	27.2	28.2	24.5	54.4	31.7	25.4			



Number of 24HR Exceedences	0	Proposed Guideline
Number of Non-Zero Readings	643	
Maximum 1-HR Average	54.4 UG/M3	
Maximum 24-HR Average	21.6 UG/M3	
Monthly Calibration Standard Deviation	6.385	Operational Time Operational Uptime Monthly Average
		643 HRS 86.4 % 7.3 UG/M3

Entrance PM₁₀ ($\mu\text{g}/\text{m}^3$) – December 2019

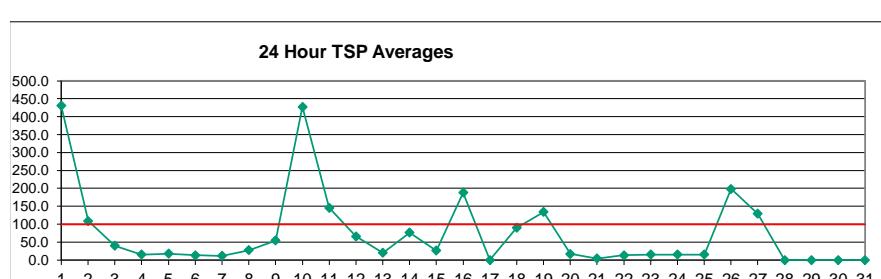
Day	HOUR																								MEAN	MAX	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	165.8	118.9	148.7	123.3	50.9	86.0	88.0	41.6	36.0	35.9	46.5	33.8	33.6	17.4	7.9	8.0	7.4	20.8	13.1	13.6	21.6	11.2	13.3	9.9	48.0	165.8	
2	11.2	10.9	9.0	5.6	4.7	12.5	10.8	11.1	7.8	13.0	14.6	20.0	29.7	67.5	97.3	81.9	82.6	20.3	19.3	5.4	6.5	31.6	25.4	17.8	25.7	97.3	
3	11.6	16.7	4.6	X	X	6.3	X	8.5	8.4	13.9	12.3	8.3	14.0	10.8	11.0	X	2.5	6.8	9.7	X	26.6	42.2	21.2	13.1	42.2		
4	4.3	5.0	6.8	17.8	7.9	8.4	7.7	11.4	23.5	49.6	8.0	20.0	6.5	5.5	9.6	4.1	3.3	2.7	4.9	0.8	2.0	2.7	1.7	2.0	9.0	49.6	
5	1.4	1.4	2.1	6.5	2.6	2.4	1.1	1.0	2.9	4.7	7.1	7.9	5.7	5.3	10.1	25.0	33.4	15.0	3.0	2.4	2.2	1.7	4.9	13.6	6.8	33.4	
6	5.6	11.9	5.9	10.8	10.2	8.2	7.4	3.8	9.8	7.3	3.5	5.8	5.3	9.7	24.3	17.8	24.8	25.1	32.9	10.8	2.5	1.6	1.1	1.3	10.3	32.9	
7	3.4	1.9	2.1	1.6	1.1	1.0	0.7	4.6	8.2	11.7	4.7	3.2	9.7	6.6	7.2	7.8	6.2	5.4	8.1	8.7	5.5	10.3	21.7	34.6	7.3	34.6	
8	15.8	12.1	10.0	9.3	9.4	10.4	7.8	9.3	10.6	24.1	37.3	36.2	25.4	32.5	67.5	30.0	34.3	36.1	24.7	10.1	23.5	23.1	19.0	25.5	22.7	67.5	
9	16.4	8.3	13.4	23.3	24.5	34.7	21.4	12.2	12.4	11.1	17.6	26.9	71.5	46.3	91.1	44.5	8.1	13.2	12.1	11.5	8.9	14.9	17.0	27.7	24.5	91.1	
10	26.0	28.2	27.5	22.5	55.5	108.2	21.8	17.0	126.9	261.2	217.3	250.4	121.2	116.9	160.3	177.1	190.3	119.1	131.2	148.0	120.9	118.3	106.4	53.3	113.6	261.2	
11	68.0	72.7	24.3	13.2	8.5	102.5	80.5	136.1	193.9	99.8	106.8	35.7	18.4	21.5	10.5	6.4	10.1	10.7	18.9	36.6	49.9	29.5	32.4	21.2	50.3	193.9	
12	7.4	22.9	13.1	13.2	35.9	53.3	120.4	59.7	20.4	14.5	70.0	23.2	9.9	9.9	61.2	10.1	6.3	4.5	7.7	9.3	19.7	17.4	16.5	19.5	26.9	120.4	
13	15.7	14.0	16.7	19.0	20.1	21.0	24.2	24.9	26.7	32.4	46.5	51.0	41.2	24.6	30.7	30.2	26.2	31.3	38.1	40.2	31.9	19.8	15.9	11.0	27.2	51.0	
14	16.9	13.8	11.3	5.1	6.2	13.9	4.6	9.2	11.4	8.0	14.3	8.0	23.9	43.9	65.5	26.2	57.9	48.5	95.7	94.5	97.3	88.4	42.0	37.5	97.3		
15	18.7	7.4	4.9	10.0	8.8	2.6	5.5	7.8	4.8	4.1	8.8	20.6	23.4	20.2	13.5	9.9	8.6	11.1	14.5	11.7	6.0	6.7	8.4	3.1	10.1	23.4	
16	8.5	2.2	3.8	7.8	19.8	8.9	7.5	31.3	79.8	56.0	47.7	45.7	70.1	77.0	201.0	130.4	57.2	31.7	22.7	15.6	7.8	17.2	27.1	13.1	41.3	201.0	
17	26.4	21.2	11.8	X	X	X	X	X	X	X	X	X	X	X	27.3	45.0	53.3	52.1	28.4	35.6	30.5	42.7	57.4	73.8	78.0	-	-
18	75.1	35.9	7.5	5.6	4.1	3.5	14.8	15.5	X	23.3	20.6	35.1	29.6	25.9	26.2	18.7	17.2	4.9	6.0	24.6	19.4	9.5	8.3	11.2	19.2	75.1	
19	18.5	5.1	6.3	10.6	22.1	13.4	21.1	38.2	41.3	26.8	39.3	56.3	43.9	43.4	68.2	43.8	44.5	31.1	44.6	34.1	18.9	13.7	41.4	X	31.6	68.2	
20	X	17.5	20.0	12.8	8.4	21.8	7.9	7.5	11.3	12.5	16.9	12.7	6.7	22.4	20.3	15.0	16.7	12.7	14.6	20.0	20.9	25.6	23.1	25.8	16.2	25.8	
21	5.7	3.6	3.8	4.2	3.2	3.6	3.8	3.8	7.0	9.3	8.4	5.3	6.0	4.9	5.9	10.1	9.2	7.8	8.4	3.7	4.7	3.1	2.7	1.0	5.4	10.1	
22	1.3	1.0	2.7	5.2	4.3	7.9	10.6	5.3	3.2	4.9	6.6	7.3	7.3	11.8	13.0	13.6	10.8	6.4	13.9	11.2	20.9	81.5	47.6	11.3	12.9	81.5	
23	9.9	28.8	17.4	14.4	11.6	8.7	11.6	5.9	2.4	2.6	12.2	14.3	26.0	24.3	17.8	14.7	12.7	11.9	9.0	13.2	15.1	15.5	18.0	11.6	13.7	28.8	
24	11.2	11.4	13.7	13.2	13.8	11.5	7.9	12.7	13.3	10.7	16.6	31.1	16.2	13.5	12.0	11.4	10.3	8.4	10.4	9.5	9.7	8.0	6.4	6.3	12.0	31.1	
25	10.5	6.4	14.3	14.8	12.5	7.3	5.7	7.1	5.7	7.8	10.4	28.8	10.7	12.9	16.9	12.6	11.4	8.7	14.6	14.5	12.1	9.1	X	X	11.6	28.8	
26	X	X	X	12.2	14.9	17.1	10.0	17.1	8.5	6.5	8.8	42.3	12.0	28.5	14.7	37.0	23.6	34.2	31.7	23.7	71.6	123.1	131.8	62.5	34.9	131.8	
27	89.5	19.9	2.1	18.4	13.2	8.4	9.1	20.6	18.2	18.2	10.6	12.0	7.1	3.5	4.5	1.3	5.8	16.2	3.7	15.6	X	X	X	X	14.9	89.5	
28	X	X	1.8	X	2.7	4.8	3.3	4.0	2.6	3.6	3.2	10.1	6.5	X	18.5	9.3	8.8	7.0	21.1	X	X	X	X	X	-	-	
29	X	3.5	X	X	1.8	3.2	X	X	X	X	X	3.6	3.9	4.1	4.5	X	X	X	X	X	X	X	X	-	-		
30	X	6.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-		
31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-		
NO.	25	28	27	25	27	27	26	26	27	27	28	28	28	29	28	28	27	28	28	27	25	26	25	24	643	86%	
MEAN	25.8	18.2	15.0	16.0	14.0	21.7	19.3	20.0	26.8	28.4	30.3	30.7	24.3	26.5	39.2	30.8	28.9	20.6	24.0	23.3	25.8	29.8	31.9	21.3			
MAX	165.8	118.9	148.7	123.3	55.5	108.2	120.4	136.1	193.9	261.2	217.3	250.4	121.2	116.9	201.0	177.1	190.3	119.1	131.2	148.0	120.9	123.1	131.8	78.0			



Number of Non-Zero Readings	643
Maximum 1-HR Average	261.2 UG/M3
Maximum 24-HR Average	113.6 UG/M3
Monthly Calibration Standard Deviation	33.62
Operational Time	643 HRS
Operational Uptime	86.4 %
Monthly Average	24.7 UG/M3

Entrance TSP ($\mu\text{g}/\text{m}^3$) –December 2019

Day	HOUR																								MEAN	MAX	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	1116.5	970.4	1413.1	1457.0	580.9	1025.2	1039.6	435.2	387.5	337.8	526.1	255.4	137.4	58.3	18.6	29.0	35.4	60.4	41.7	71.9	131.8	62.3	91.6	65.1	431.2	1457.0	
2	68.9	69.2	45.0	26.0	21.0	57.7	52.1	33.7	27.5	41.4	42.7	64.0	95.0	267.6	347.5	357.1	427.9	98.0	110.2	29.8	32.6	138.7	110.0	57.9	109.2	427.9	
3	65.3	90.7	20.4	X	X	44.4	X	35.7	24.3	26.2	14.2	49.5	26.1	38.8	X	6.3	6.5	15.5	X	66.8	113.3	48.0	39.6	113.3	39.6	113.3	
4	6.3	7.0	13.0	25.6	10.9	13.2	9.5	12.0	32.1	60.9	13.5	102.5	27.2	5.4	10.1	3.9	2.9	2.3	4.5	0.5	1.4	1.9	1.4	1.4	15.4	102.5	
5	1.0	1.2	1.7	5.8	2.2	2.2	0.8	0.7	2.1	3.9	7.3	9.0	6.4	18.0	42.8	99.5	125.7	58.3	5.3	5.0	3.6	1.2	5.2	15.2	17.7	125.7	
6	5.2	13.6	6.4	12.3	11.6	9.2	8.4	3.3	11.0	7.9	3.2	5.7	5.4	10.9	27.8	20.5	28.7	29.1	66.4	22.7	3.6	2.8	2.5	1.8	13.3	66.4	
7	12.1	1.4	1.7	1.8	0.7	1.1	0.5	11.1	12.5	69.4	14.9	5.3	35.1	4.5	5.3	6.2	5.0	3.7	7.2	7.9	3.9	7.7	18.6	36.4	11.4	69.4	
8	12.2	8.5	6.6	6.1	6.1	6.8	5.1	6.3	7.1	20.1	39.2	38.8	25.8	37.3	184.2	34.6	39.7	41.9	27.7	9.7	26.9	26.7	21.8	29.6	27.9	184.2	
9	18.9	9.1	15.3	27.0	28.4	40.3	24.8	13.9	14.1	11.6	46.6	71.4	225.2	180.7	329.6	123.2	8.9	15.2	12.2	13.1	9.4	16.0	19.0	31.8	54.4	329.6	
10	29.6	32.4	32.0	25.7	127.6	218.7	34.4	19.7	445.2	1014.3	906.1	994.3	471.7	374.6	487.6	696.3	757.0	498.7	592.1	672.9	625.4	558.0	433.8	213.3	427.6	1014.3	
11	337.4	206.5	73.1	72.6	57.4	209.5	203.0	386.4	549.4	281.3	271.1	76.9	42.0	56.6	23.1	18.0	36.4	33.7	54.5	97.6	165.0	88.1	97.2	63.7	145.9	549.4	
12	27.8	75.2	55.3	54.7	119.0	151.7	322.5	140.9	23.5	16.5	158.2	42.4	16.7	30.5	142.1	41.6	24.8	14.4	30.1	22.0	38.6	12.9	10.9	13.5	66.1	322.5	
13	10.4	9.1	10.9	12.3	13.0	13.6	15.7	16.3	18.2	22.6	32.0	40.1	34.9	21.4	26.0	22.1	17.9	21.7	29.3	29.7	21.1	13.2	17.7	11.3	20.0	40.1	
14	19.0	15.3	12.6	5.0	6.5	15.6	4.4	10.2	13.0	9.0	16.4	9.0	73.8	122.8	137.0	43.5	92.7	77.9	176.0	241.8	240.5	209.6	207.0	79.5	76.6	241.8	
15	33.5	7.3	5.2	11.1	9.9	2.3	5.6	8.4	4.7	4.2	11.2	32.2	58.4	58.3	38.6	32.2	25.3	65.1	63.1	51.1	22.4	37.4	33.5	17.3	26.6	65.1	
16	46.1	8.4	20.9	42.8	103.8	54.7	39.5	122.2	272.2	238.1	214.5	200.0	360.9	338.4	702.3	697.3	286.4	173.8	144.2	91.4	35.9	110.1	146.0	67.1	188.2	702.3	
17	172.3	115.7	81.0	X	X	X	X	X	X	X	X	X	X	82.5	137.3	209.2	296.6	165.0	257.7	207.2	294.4	382.3	452.1	519.3	-	-	-
18	469.6	230.3	66.7	35.7	22.0	9.4	34.3	70.4	87.4	58.5	55.1	107.1	118.4	91.7	92.4	66.2	64.1	15.6	18.1	163.9	136.0	60.0	24.6	69.3	90.3	469.6	
19	131.9	35.8	35.7	88.9	142.8	86.3	123.0	180.8	202.6	87.5	114.9	140.6	109.4	110.0	226.1	144.2	224.2	175.8	230.3	229.6	116.3	73.9	76.2	X	134.2	230.3	
20	X	18.7	22.8	14.4	9.2	24.6	8.1	7.4	11.3	12.6	17.9	13.0	5.6	22.9	21.2	14.7	17.4	15.0	21.3	22.6	28.8	23.6	27.5	12.4	17.1	28.8	
21	4.5	2.3	2.4	2.7	2.1	2.4	2.7	2.6	6.1	8.2	6.8	3.7	4.8	3.8	4.5	8.5	7.6	5.7	6.6	2.4	3.2	2.1	1.7	0.6	4.1	8.5	
22	0.8	0.6	1.8	3.5	2.9	5.3	7.3	3.9	2.2	3.3	5.4	7.6	7.9	13.3	14.6	15.1	11.6	5.9	12.7	11.1	23.5	94.7	54.8	11.7	13.4	94.7	
23	9.6	32.3	18.8	15.9	13.0	9.5	12.9	6.3	2.0	2.2	12.5	16.3	30.2	28.1	20.4	16.8	14.5	13.6	9.9	15.1	17.2	17.8	20.7	13.1	15.4	32.3	
24	12.6	12.7	15.6	15.0	15.9	13.1	8.9	14.5	15.3	12.3	19.1	79.8	18.7	15.5	13.6	13.1	11.6	9.4	11.5	10.6	10.9	8.9	6.9	15.5	79.8		
25	11.9	7.0	16.4	17.0	14.3	8.2	6.3	7.8	6.2	8.6	11.7	80.2	12.0	14.8	19.4	14.2	12.9	9.4	16.5	16.5	13.7	9.8	X	X	15.2	80.2	
26	X	X	X	13.8	16.9	19.2	11.0	19.6	9.2	6.8	10.0	148.8	13.7	85.8	44.3	135.4	93.0	144.2	105.2	75.9	295.2	907.7	1309.6	697.0	198.2	1309.6	
27	1247.7	227.2	11.3	237.6	173.0	102.5	55.2	70.0	128.4	95.1	47.5	95.8	10.8	8.6	6.3	1.7	11.4	17.9	3.3	37.8	X	X	X	X	129.5	1247.7	
28	X	X	1.5	X	2.7	5.3	3.6	4.5	2.7	3.9	3.4	34.8	17.8	X	89.0	32.0	29.2	24.2	68.9	X	X	X	X	X	-	-	-
29	X	7.4	X	X	1.5	2.7	X	X	X	X	X	3.1	3.6	3.8	4.2	X	X	X	X	X	X	X	X	-	-	-	
30	X	6.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	
31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	
NO.	25	28	27	25	27	27	26	27	27	27	28	28	28	28	29	28	27	28	28	27	25	26	25	24	644	87%	
MEAN	154.8	79.4	74.3	89.2	56.1	78.2	77.2	61.8	86.3	91.2	97.5	96.4	70.8	75.6	111.8	104.8	100.3	64.4	76.2	80.6	92.1	112.9	132.1	86.8			
MAX	1247.7	970.4	1413.1	1457.0	580.9	1025.2	1039.6	435.2	549.4	1014.3	906.1	994.3	471.7	374.6	702.3	697.3	757.0	498.7	592.1	672.9	625.4	907.7	1309.6	697.0			



Number of 24HR Exceedences	8	Proposed Guideline
Number of Non-Zero Readings	644	
Maximum 1-HR Average	1457.0 UG/M3	
Maximum 24-HR Average	431.2 UG/M3	
Monthly Calibration Standard Deviation	186.5	Opperational Time Opperational Uptime Monthly Average
		644 HRS 86.6 % 89.3 UG/M3