



**Lakeland Industry & Community Association**

**JULY 2019**

**Monthly Ambient Air Quality Monitoring Report**

**LICA-201907**

**Operation and Maintenance:**

Maxxam Analytics

**Data Validation and Report:**

Lakeland Industry & Community Association

August 12, 2019

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**August 12, 2019**

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**RE: LICA – July 2019 Monthly Ambient Air Quality Monitoring Report**

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Enclosed is the July 2019 Monthly Ambient Air Quality Monitoring Report for the continuous ambient air quality monitoring stations of the Lakeland Industry & Community Association (LICA) regional air quality monitoring network.

The representative of the Person Responsible for this monitoring program is

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This report has been reviewed by Michael Bisaga of the LICA Airshed.

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## LIST OF ACRONYMS

AAAQOs	Alberta Ambient Air Quality Objectives
AEP	Alberta Environment and Parks
AMD	Air Monitoring Directive
AT	Ambient Temperature
BP	Barometric Pressure
CH <sub>4</sub>	Methane
EPEA	Environmental Protection and Enhancement Act
H <sub>2</sub> S	Hydrogen Sulphide
kph	kilometers per hour
LICA	Lakeland Industry & Community Association
mb	millibar
mm	millimeter
NMHC	Non-Methane Hydrocarbons
NO	Nitric Oxide
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Oxide of Nitrogen
ppb	parts per billion
ppm	parts per million
RH	Relative Humidity
SO <sub>2</sub>	Sulphur Dioxide
ST	Station Temperature
STDWD	Standard Deviation Wind Direction
THC	Total Hydrocarbons
TRS	Total Reduced Sulphur
VWD	Vector Wind Direction
VWS	Vector Wind Speed
WD	Wind Direction
WS	Wind Speed
°C	Degrees Celsius

NETWORK STATION SUMMARY

**Listing of Continuous Monitoring Stations and Integrated Sampling Stations**

Station Name		Cold Lake South	Maskwa	St. Lina	Bonnyville East
Station ID		1174	1248	1250	1608
Coordinates		54.41402, -110.23316	54.604935, -110.452637	54.215961, -111.503304	54.252747, -110.690611
Continuous Monitoring Parameter	SO2	√	√	√	√
	TRS	√			
	H2S		√	√	√
	THC	√	√	√	√
	CH4	√	√	√	√
	NMHC	√	√	√	√
	NOX	√	√	√	√
	NO	√	√	√	√
	NO2	√	√	√	√
	O3	√		√	√
	PM2.5	√		√	√
	TPX	√	√	√	
	RH	√	√	√	
	BP		√	√	
	PRECIPTATION		√	√	
	WS	√	√	√	√
	WD	√	√	√	√
STDWD	√	√	√	√	
Integrated Sampling	VOCs	√			√
	PAHs	√			√
	Partisol	√			
	Passive	√			
	NMHC Canister				√

**List of Contractors who performed the air monitoring activities**

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Prepared By	Electronic Submission Conducted By
Continuous Monitoring Station	Maxxam Analytics	Maxxam Analytics	LICA / Maxxam Analytics	LICA
Intermittent ( VOCs/PAHs)	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	LICA
Partisol	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	LICA
Passive	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	LICA
NMHC Canister	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Not Applicable

**Monitoring Notes during the Month of July 2019**

**Cold Lake South**

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- **THC/CH4/NMHC:**
  - The analyzer was put into the maintenance mode on July 12 between 17:57 and 19:59 to investigate the faulty injection issue. Two hours of data were discarded due to this event.
  - Due to the analyzer injection issue, CH4 minute data that were recorded below 1.8 ppm were invalidated. The corresponding THC and NMHC data were also discarded. Hourly averages were recalculated. The injection issues occurred when the station temperature was unstable.
- **ST:** The station HVAC failed on June 26. A portable AC unit was installed on July 1 to try to maintain a stable station temperature. The HVAC unit was repaired by a local service provider in August.

**Maskwa**

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.

### St. Lina Station

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- **H2S:** The analyzer showed a high zero drift on July 24. An additional zero/span check was initiated on July 25 at hour 6 to verify the zero/span system response. The check results passed the zero/span check requirements. One hour of downtime was recorded as a result.
- **Meteorological parameters (AT, RH, WS, WD and precipitation):** On July 26, there were problems related the AC power supply; this affected the analog digital convertor, and the root cause is unknown. Troubleshooting was undertaken on July 26 and July 27 by adding a filter to remove the ‘spikes’ showing on these met channels. One-minute data were reviewed, and data affected by this event were discarded. Hourly averages were recalculated. Three hours of downtime for the wind channels were recoded as 75% of the minimum data completeness criteria was not met.
- **AT/RH:** The temperature / relative humidity probe was replaced on July 26. The Rotronic HC2A-S3, s/n: 20257103, was removed, and the Vausala Oyj. Finland HMP155, s/n R2640785, was installed.
- **Wind System:** The wind system was replaced on July 25. The RM Young 05305VK, s/n: 161466, was removed following a shut-down calibration, and a RM Young 05305VK, s/n 65521, was installed. The replacement wind system was calibrated at Maxxam shop on May 17, 2019. Two hours of downtime were recorded due to this event.

### Bonnyville East Station

- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable, with exceptions of H2S. Twenty-three 1-hr and three 24-hr exceedances were recorded this month.

Date	Time	Avg. Period	Reading (ppb)	AEP Reference #
05-July	20:00	1-hr	14	355714
05-July	23:00	1-hr	0	355714
06-July	00:00	1-hr	14	355715
06-July	01:00	1-hr	34	355715
06-July	02:00	1-hr	17	355715
06-July	03:00	1-hr	17	355715
06-July	04:00	1-hr	11	355715
06-July	06:00	1-hr	17	355715
06-July	-	24-hr	5	355715
07-July	05:00	1-hr	26	355732
16-July	04:00	1-hr	14	356139



16-July	05:00	1-hr	14	356139
16-July	06:00	1-hr	16	356139
16-July	-	24-hr	4	356139
17-July	00:00	1-hr	13	356191
17-July	04:00	1-hr	20	356191
21-July	06:00	1-hr	22	356405
22-July	04:00	1-hr	16	356405
23-July	04:00	1-hr	12	356466
27-July	04:00	1-hr	15	356695
27-July	05:00	1-hr	23	356695
27-July	06:00	1-hr	11	356695
27-July	11:00	1-hr	13	356695
27-July	-	24-hr	4	356695
29-July	23:00	1-hr	1	356815
30-July	02:00	1-hr	23	356814

- H2S:** The analyzer showed a high span drift on July 24. An additional zero/span check was initiated on July 25 between hour 6 and hour 7 to verify the zero/span system response. The check results passed the zero/span check requirements. Two hours of downtime were recorded as a result.

## Integrated Sampling

All the integrated sampling analytical results are included in the July 2019 Integrated Sampling Report.

- VOCs Sampling System:**
  - The VOC sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Five samples were collected this month: on July 2, 8, 14, 20 and 26.
- PAHs Sampling System:**
  - The PAH sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Five samples were collected this month: on July 2, 8, 14, 20 and 26
- Partisol Sampling System:**
  - The Partisol sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Five samples were collected this month: on July 2, 8, 14, 20 and 26
- Passive Sampling System:**
  - The passive sample filters were installed at the stations between July 2 and July 3, and were removed between July 30 and July 31.
  - A total of 9 duplicate samples were collected: 2 for H2S, 3 for SO2, 2 for NO2 and 2 for O3.
- NMHC Canister System:**
  - The canister sampling program collects a 1-hour sample of air when the continuously non-methane hydrocarbon (NMHC) concentration reaches a

specified trigger point. The current trigger points is 0.3 ppm and is based on real-time monitoring data that are averaged over a 5-minute period.

- Three canister events were recorded in July: on July 5 at 04:25, at concentration of 0.39 ppm, on July 16 at 03:40 at concentration of 0.34 ppm, and on July 30 at 05:10 at concentration of 0.50 ppm.

### **Revisions to Alberta's Ambient Air Quality Data Warehouse**

No revisions to historical data previously submitted to the Alberta's Ambient Air Quality Data Warehouse were made this month.

### **Deviations from Authorized Monitoring Methods**

At the Maskwa station, nearby trees exceed the height allowed under section 2.3 of the wind speed and wind direction siting criteria in Chapter 3 of the AMD. This non-conformance was documented in the updated station site documents. Further actions are being considered including siting the wind sensor so that it meets AMD Chapter 3 siting requirements, or obtaining written authorization from "The Director" to deviate from AMD Siting requirements.

At the Cold Lake South station, the height of the existing wind sensor tower is shorter than the AMD requirements listed in section 2.3 of the wind speed and wind direction siting criteria in Chapter 3 of the AMD. This non-conformance was documented in the updated station site documents. Further actions are being considered including siting the wind sensor so that it meets AMD Chapter 3 siting requirements, or obtaining written authorization from "The Director" to deviate from AMD Siting requirements.

### **Disclaimer**

Data verification/validation were performed on the 1-minute, 5-minute and 1-hour data. Hourly data that are included in this report are calculated based on the post- validation 1-minute data set.

Hourly instantaneous maximum data included in this report have not gone through data validation/verification steps and are considered raw data. The intention of including this data set in the report is for reference purposes and should not be used in published documents.

Equipment calibration / maintenance records were provided by Maxxam Analytics.

## Certification

This report was prepared and submitted by Lily Lin in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).



Lily Lin, Data & Reporting Specialist, LICA Airshed

This report was reviewed by Mike Bisaga in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).

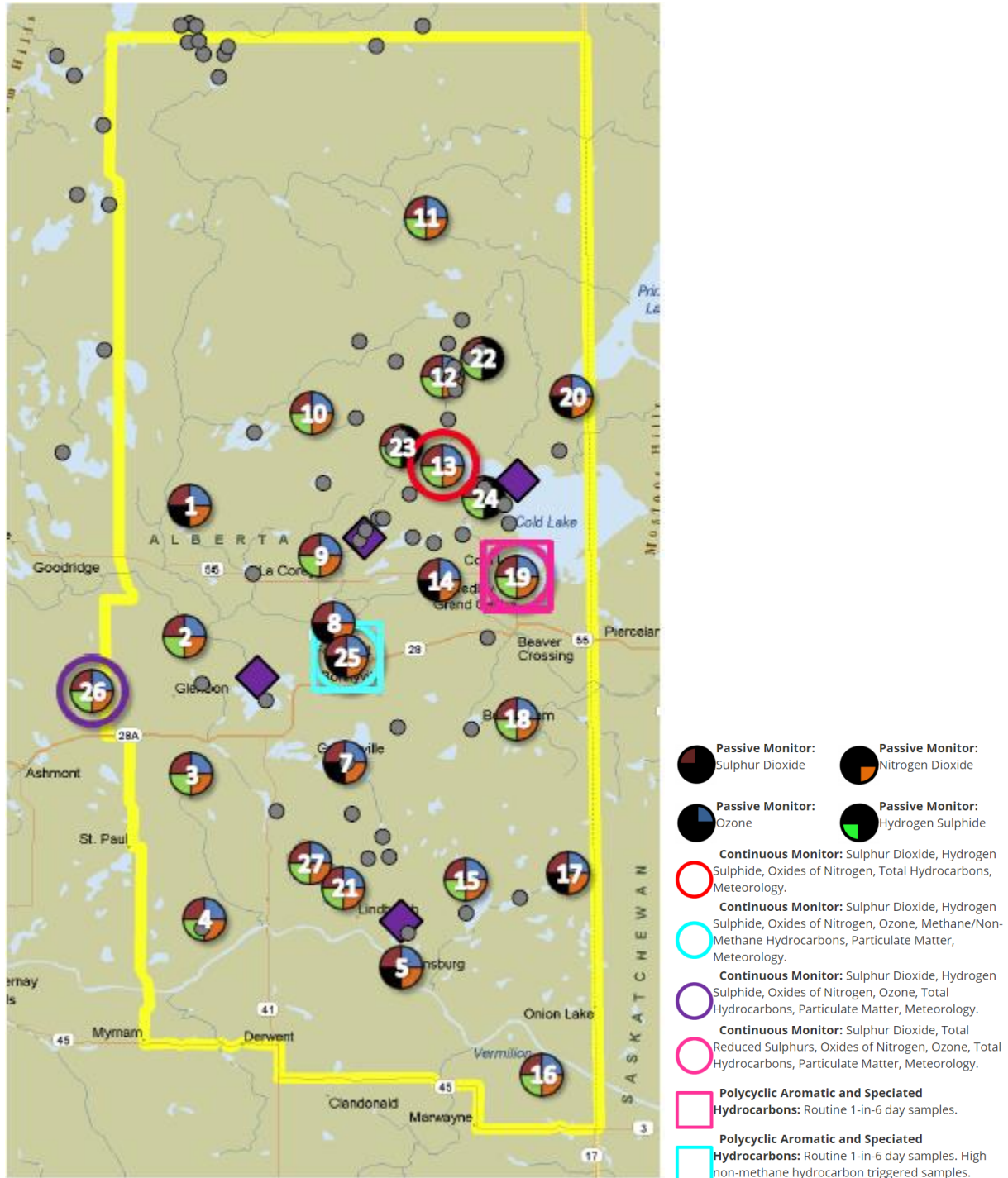
I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. I also certify that at the time of this report's submission, all air data have been electronically uploaded to Alberta's Ambient Air Quality Data Warehouse as required by the AMD, with the exception of electronic submission for the results of intermittent samples, Partisol samples and passive samples. Electronic submission for the intermittent sample, Partisol sample and passive sample results will be performed during the preparation of the July 2019 integrated sampling report. Uploading of VOC data from the canister sampling program was not required at the time of completing this report.



Michael Bisaga, Technical Program Manager, LICA Airshed

August 12, 2019

# Map of LICA Continuous Monitoring Network



CONTINUOUS NETWORK EQUIPMENT AND MONITORING RESULTS SUMMARY

**Cold Lake South Station**

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
<b>Sulphur Dioxide (SO2)</b>	<b>Thermo / 43i-TLE</b>	<b>1180026018</b>	<b>July 16, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Reduced Sulphur (TRS)</b>	<b>Thermo / 450i</b>	<b>812728560</b>	<b>July 16, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)</b>	<b>Thermo / 42i</b>	<b>1505664393</b>	<b>July 16, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Ozone (O3)</b>	<b>Thermo / 49i</b>	<b>700419951</b>	<b>July 17, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)</b>	<b>Thermo / 55i</b>	<b>11800300034</b>	<b>July 17, 2019</b>
<ul style="list-style-type: none"> <li>The analyzer was put into the maintenance mode on July 12 between 17:57 and 19:59 to investigate the faulty injection issue. Two hours of data were discarded due to this event.</li> <li>Due to the analyzer injection issue, CH4 minute data that were recorded below 1.8 ppm were invalidated. The corresponding THC and NMHC data were also discarded. Hourly averages were recalculated. The injection issues occurred when the station temperature was unstable.</li> </ul>			

Parameter	Make / Model	Serial Number	Calibration Date
<b>Particulate Matter 2.5 (PM2.5)</b>	<b>Thermo / Sharp 5030</b>	<b>CM-2209</b>	<b>July 24, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Relative Humidity (RH)</b>	<b>Rotronic / Hydroclip-S3</b>	<b>PFD919-121406 / Part 50.5PS</b>	<b>January 26, 2018</b>
<ul style="list-style-type: none"> <li>Hourly average value for July 24 hour 0 was 103%, which was recorded above the full scale of 100%. The hourly average was corrected to 100%.</li> </ul>			
<b>Ambient Temperature (AT)</b>	<b>Rotronic / Hydroclip-S3</b>	<b>PFD919-121406 / Part 50.5PS</b>	<b>January 26, 2018</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Station Temperature (ST)</b>	<b>Maxxam-supplied</b>	<b>n/a</b>	<b>n/a</b>
<ul style="list-style-type: none"> <li>Unstable station temperature had been recorded since June 26 due to the HVAC failure. A portable AC unit was installed on July 12 to try to maintain a stable station temperature.</li> </ul>			
<b>Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)</b>	<b>Met One / 50.5H</b>	<b>F1644</b>	<b>September 11, 2017</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>AQM Station</b>	<b>National Trailer</b>	<b>2N9MF63843</b>	<b>n/a</b>
<ul style="list-style-type: none"> <li>The HVAC failed on June 26, and it was repaired by a local service provider in August.</li> </ul>			

## Monitored Data Summary for July 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.0	0	4	July 31 at hour 8	1.7	NW	0.4	July 31	100.0	95.0
TRS (ppb)	10	3	-	-	-	-	0.2	0.00	3.00	July 21 at hour 2	0.3	WSW	0.57	July 21	100.0	95.0
Nox (ppb)	-	-	-	-	-	-	1.6	0	10	July 31 at hour 6	2.3	W	2.7	July 31	100.0	94.7
NO (ppb)	-	-	-	-	-	-	0.1	0	6	July 31 at hour 6	2.3	W	0.8	July 31	100.0	94.7
NO2 (ppb)	159	-	-	0	-	-	1.3	0	5	July 4 at hour 3	2.6	SW	2.2	July 11	100.0	94.7
O3 (ppb)	82	-	-	0	-	-	21.4	0.0	49.0	July 14 at hour 14	10.2	WSW	30.3	July 22	100.0	95.0
THC (ppm)	-	-	-	-	-	-	2.16	1.91	3.73	July 16 at hour 5	0.2	ESE	2.45	July 16	99.7	94.9
CH4 (ppm)	-	-	-	-	-	-	2.16	1.92	3.60	July 16 at hour 5	0.2	ESE	2.43	July 16	99.7	94.9
NMHC (ppm)	-	-	-	-	-	-	0.01	0.00	0.28	July 2 at hour 18	11.5	WNW	0.06	July 23	99.7	94.9
PM2.5 (µg/m3)	80	30	-	0	0	-	3.4	0.0	78.0	July 2 at hour 18	11.5	WNW	6.5	July 12	100.0	99.9
RH (%)	-	-	-	-	-	-	74.7	38	100	July 4 at hour 4	4.6	WSW	91.8	July 18	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	16.7	5.7	30.3	July 23 at hour 17	0.4	WNW	23.1	July 23	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	21.7	16.8	28.4	July 23 at hour 18	2.8	ENE	24.4	July 23	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	0.9	0.1	19.7	July 28 at hour 6	19.7	NNW	11.0	July 28	100.0	100.0
WDV (sector)	-	-	-	-	-	-	288 (WNW)	-	-	-	-	-	-	-	100.0	100.0

1- Date/ Time given is the first minimum and maximum value that was recorded

### Alberta Ambient Air Quality Objectives (AAAQOs) Exceedances

The measured ambient air quality for the y was within the AAAQOs for all monitored parameters.

## Maskwa Station

### Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO <sub>2</sub> )	Thermo / 43i-TLE	1180930031	July 18, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Hydrogen Sulphide (H <sub>2</sub> S)	Thermo / 450i	CM17360005	July 18, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NO <sub>x</sub> /NO/NO <sub>2</sub> )	Thermo / 42i	1180930029	July 18, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Total Hydrocarbons / Methane/ Non- methane Hydrocarbons (THC/CH <sub>4</sub> /NMHC)	Thermo / 55i	1180930026	July 19, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Relative Humidity (RH)	Met One / 083D-1-35	F4090	February 15, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Ambient Temperature (AT)	Met One / 083D-1-35	F4090	February 15, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Barometric Pressure (BP)	Met One / Part 090D	F4997	February 15, 2019
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			



<b>Parameter</b>	<b>Make / Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>
<b>Station Temperature (ST)</b>	<b>Maxxam-supplied</b>	<b>n/a</b>	<b>n/a</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Precipitation (PRECIP)</b>	<b>Met One / Part 387-Heated Rain Gauge</b>	<b>F4481</b>	<b>May 28, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)</b>	<b>RM Young / 05305VK</b>	<b>161465</b>	<b>September 17, 2018</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>AQM Station</b>	<b>National Trailer</b>	<b>n/a</b>	<b>n/a</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			

## Monitored Data Summary For July 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.4	0	10	July 2 at hour 18	6.4	WNW	2.9	July 2	100.0	95.0
H2S (ppb)	10	3	-	0	0	-	0.1	0	7	July 31 at hour 23	2.5	ESE	0.7	July 23	100.0	94.9
Nox (ppb)	-	-	-	-	-	-	2.1	0	22	July 21 at hour 3	0.7	SE	7.6	July 2	100.0	94.7
NO (ppb)	-	-	-	-	-	-	0.4	0	17	July 21 at hour 3	0.7	SE	2.3	July 2	100.0	94.7
NO2 (ppb)	159	-	-	0	-	-	1.6	0	12	July 2 at hour 17	7.5	WNW	5.0	July 2	100.0	94.7
THC (ppm)	-	-	-	-	-	-	2.09	1.92	2.68	July 22 at hour 1	0.8	SSE	2.25	July 21	100.0	95.1
CH4 (ppm)	-	-	-	-	-	-	2.09	1.92	2.68	July 22 at hour 1	0.8	SSE	2.25	July 21	100.0	95.1
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.50	July 26 at hour 20	4.2	SSW	0.02	July 26	100.0	95.1
RH (%)	-	-	-	-	-	-	82.3	34	100	July 1 at hour 10	6.9	NNE	99.6	July 7	100.0	100.0
BP (millibar)	-	-	-	-	-	-	937	923	951	July 5 at hour 9	4.3	ENE	949	July 5	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	15.8	4.8	29.1	July 23 at hour 15	3.8	SSE	21.1	July 23	100.0	100.0
Stn. Temp. (°C)	-	-	-	-	-	-	22.7	19.0	25.4	July 16 at hour 19	4.7	S	24.7	July 15	100.0	100.0
Precipitation (mm)*	-	-	-	-	-	-	130.5	0.0	13.5	July 24 at hour 15	0.9	ENE	42.0	July 27	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	0.3	0.1	12.4	July 1 at hour 8	12.4	NNE	5.9	July 2	100.0	100.0
WDV (sector)	-	-	-	-	-	-	247 (WSW)	-	-	-	-	-	-	-	100.0	100.0

1- Date/ Time given is the first minimum and maximum value that was recorded

\* Data represents the total (sum) for the indicated time frame

## Alberta Ambient Air Quality Objectives (AAAQOs) Exceedances

The measured ambient air quality for the Maskwa Site was within the AAAQOs for all monitored parameters.

## St. Lina Station

### Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
<b>Sulphur Dioxide (SO2)</b>	<b>Thermo / 43i-TLE</b>	<b>1180930030</b>	<b>July 12, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Hydrogen Sulphide (H2S)</b>	<b>Thermo / 450i</b>	<b>CM18010058</b>	<b>July 12, 2019</b>
<ul style="list-style-type: none"> <li>The analyzer showed a high zero drift on July 24. An additional zero/span check was initiated on July 25 at hour 6 to verify the zero/span system response. The check results passed the zero/span check requirements. One hour of downtime was recorded as a result.</li> </ul>			
<b>Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)</b>	<b>Thermo / 42i</b>	<b>1180930029</b>	<b>July 12, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Ozone (O3)</b>	<b>Thermo / 49i</b>	<b>1002240371</b>	<b>July 11, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)</b>	<b>Thermo / 55i</b>	<b>1180930025</b>	<b>July 11, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Particulate Matter 2.5 (PM2.5)</b>	<b>Thermo / Sharp 5030i</b>	<b>CM17091001</b>	<b>July 25, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			

<b>Parameter</b>	<b>Make / Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>
<b>Relative Humidity (RH)</b>	<b>Vaisala Oyj. Finland / HMP155</b>	<b>R2640785</b>	<b>June 28, 2019</b>
<ul style="list-style-type: none"> <li>On July 26, there were problems related to the AC power supply; this affected the analog digital convertor, and the root cause is unknown. Troubleshooting was undertaken on July 26 and July 27 by adding a filter to remove the 'spikes'. One-minute data were reviewed, and data affected by this event were discarded. Hourly averages were recalculated.</li> <li>The temperature / relative humidity probe was replaced on July 26. The Rotronic HC2A-S3, s/n: 20257103, was removed, and the Vausala Oyj. Finland HMP155, s/n R2640785, was installed. Three hours of downtime were recorded due to this maintenance event.</li> </ul>			
<b>Ambient Temperature (AT)</b>	<b>Vaisala Oyj. Finland / HMP155</b>	<b>R2640785</b>	<b>June 28, 2019</b>
<ul style="list-style-type: none"> <li>On July 26, there were problems related to the AC power supply; this affected the analog digital convertor, and the root cause is unknown. Troubleshooting was undertaken on July 26 and July 27 by adding a filter to remove the 'spikes'. One-minute data were reviewed, and data affected by this event were discarded. Hourly averages were recalculated.</li> <li>The temperature / relative humidity probe was replaced on July 26. The Rotronic HC2A-S3, s/n: 20257103, was removed, and the Vausala Oyj. Finland HMP155, s/n R2640785, was installed. Three hours of downtime were recorded due to this maintenance event.</li> </ul>			
<b>Barometric Pressure (BP)</b>	<b>Met One / Part 090D</b>	<b>F4998</b>	<b>February 21, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Station Temperature (ST)</b>	<b>Maxxam-supplied</b>	<b>n/a</b>	<b>n/a</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Precipitation (PRECIP)</b>	<b>Met One / Part 387-Heated Rain Gauge</b>	<b>n/a</b>	<b>May 27, 2019</b>
<ul style="list-style-type: none"> <li>On July 26, there were problems related to the AC power supply; this affected the analog digital convertor, and the root cause is unknown. Troubleshooting was undertaken on July 26 and July 27 by adding a filter to remove the 'spikes'. One-minute data were reviewed, and data affected by this event were discarded. Hourly averages were recalculated.</li> </ul>			

Parameter	Make / Model	Serial Number	Calibration Date
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	65521	May 17, 2019
<ul style="list-style-type: none"> <li>On July 26, there were problems related to the AC power supply; this affected the analog digital convertor, and the root cause is unknown. Troubleshooting was undertaken on July 26 and July 27 by adding a filter to remove the 'spikes'. One-minute data were reviewed, and data affected by this event were discarded. Hourly averages were recalculated. Three hours of downtime were recorded due to this event as 75% of the minimum data completeness criteria for an hour was not met.</li> <li>The wind system was replaced on July 25. The RM Young 05305VK, s/n: 161466, was removed following a shut-down calibration, and a RM Young 05305VK, s/n 65521, was installed. The replacement wind system was calibrated at Maxxam shop on May 17, 2019. Two hours of downtime were recorded due to this event.</li> </ul>			
AQM Station	National Trailer	n/a	n/a
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			

## Monitored Data Summary for July 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.0	0	3	July 14 at hour 9	10.1	WSW	0.5	July 14	100.0	95.0
H2S (ppb)	10	3	-	0	0	-	0.2	0	3	July 26 at hour 5	9.3	WSW	0.7	July 23	99.9	94.9
Nox (ppb)	-	-	-	-	-	-	1.3	0	7	July 5 at hour 4	7	ENE	2.3	July 5	100.0	94.7
NO (ppb)	-	-	-	-	-	-	0.1	0	2	July 5 at hour 6	5	ENE	0.2	July 5	100.0	94.7
NO2 (ppb)	159	-	-	0	-	-	1.1	0	7	July 5 at hour 4	7	ENE	1.9	July 5	100.0	94.7
O3 (ppb)	82	-	-	0	-	-	25.7	7	53	July 14 at hour 14	14.4	WSW	33.4	July 22	100.0	94.9
THC (ppm)	-	-	-	-	-	-	2.07	1.90	2.95	July 24 at hour 4	5.6	ENE	2.29	July 24	100.0	95.0
CH4 (ppm)	-	-	-	-	-	-	2.07	1.90	2.95	July 24 at hour 4	5.6	ENE	2.29	July 24	100.0	95.0
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.01	July 30 at hour 20	5.7	NNW	0.00	July 30	100.0	95.0
PM2.5 (µg/m3)	80	30	-	0	0	-	5.0	0.0	19.0	July 15 at hour 8	7.8	NNW	10.0	July 20	100.0	99.9
RH (%)	-	-	-	-	-	-	80.9	44	100	July 1 at hour 10	15.5	NNE	97.7	July 18	99.6	99.6
BP (millibar)	-	-	-	-	-	-	917	905	929	July 5 at hour 6	5	ENE	928	July 5	100.0	100.0
Ext. Temp. (°C)	-	-	-	-	-	-	16.1	5.4	27.3	July 23 at hour 16	4.3	ESE	21.9	July 23	99.6	99.6
Stn. Temp. (°C)	-	-	-	-	-	-	21.2	18.7	22.2	July 4 at hour 14	8.8	N	21.9	July 4	100.0	100.0
Precipitation (mm)*	-	-	-	-	-	-	114.9	0.0	8.4	July 19 at hour 16	4.3	NE	18.0	July 18	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	2.3	0.6	27.7	July 24 at hour 15	27.7	W	17.6	July 25	99.3	99.1
WDV (sector)	-	-	-	-	-	-	269 (W)	-	-	-	-	-	-	-	99.3	99.1

1- Date/ Time given is the first minimum and maximum value that was recorded

\* Data represents the total (sum) for the indicated time frame

### Alberta Ambient Air Quality Objectives (AAAQOs) Exceedances

The measured ambient air quality for the y was within the AAAQOs for all monitored parameters.

## Bonnyville - East Station

### Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
<b>Sulphur Dioxide (SO2)</b>	<b>Thermo / 43i-TLE</b>	<b>1180320046</b>	<b>July 08, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Hydrogen Sulphide (H2S)</b>	<b>Thermo / 450i</b>	<b>CM17360002</b>	<b>July 08, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> <li>The analyzer showed a high span drift on July 24. An additional zero/span check was initiated on July 25 between hour 6 and hour 7 to verify the zero/span system response. The check results passed the zero/span check requirements. Two hours of downtime were recorded as a result.</li> </ul>			
<b>Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)</b>	<b>Thermo / 42i</b>	<b>1180930027</b>	<b>July 08, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Ozone (O3)</b>	<b>Thermo / 49i</b>	<b>1002240372</b>	<b>July 09, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
<b>Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)</b>	<b>Thermo / 55i</b>	<b>1180320044</b>	<b>July 09, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> <li>Three canister events were recorded in July: on July 5 at 04:25, at concentration of 0.39 ppm, on July 16 at 03:40 at concentration of 0.34 ppm, and on July 30 at 05:10 at concentration of 0.50 ppm. The samples were processed for analysis by InnoTech and the results will be provided in the July 2019 Integrated Sampling Report.</li> </ul>			
<b>Particulate Matter 2.5 (PM2.5)</b>	<b>Thermo / Sharp 5030i</b>	<b>CM17071016</b>	<b>July 24, 2019</b>
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			

Parameter	Make / Model	Serial Number	Calibration Date
Station Temperature (ST)	Maxxam-supplied	n/a	n/a
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	56778	October 24, 2018
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			
AQM Station	ITB Trailer	5CU098	n/a
<ul style="list-style-type: none"> <li>No issues were identified this month.</li> </ul>			



## Monitored Data Summary for July 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.1	0	3	July 16 at hour 8	9	SE	0.4	July 16	100.0	95.1
H2S (ppb)	10	3	-	23	3	-	1.4	0	34	July 6 at hour 1	1.8	ESE	5.4	July 6	99.7	94.7
Nox (ppb)	-	-	-	-	-	-	3.4	0	327	July 30 at hour 5	4.2	NE	20.4	July 30	100.0	95.0
NO (ppb)	-	-	-	-	-	-	1.3	0	221	July 30 at hour 5	4.2	NE	12.7	July 30	100.0	95.0
NO2 (ppb)	159	-	-	0	-	-	2.0	0	106	July 30 at hour 5	4.2	NE	7.7	July 30	100.0	95.0
O3 (ppb)	82	-	-	0	-	-	24.6	2	48	July 23 at hour 17	2.4	E	31.9	July 22	100.0	95.1
THC (ppm)	-	-	-	-	-	-	2.13	1.89	3.42	July 30 at hour 4	3.7	NE	2.39	July 23	100.0	95.3
CH4 (ppm)	-	-	-	-	-	-	2.13	1.89	3.42	July 30 at hour 4	3.7	NE	2.39	July 23	100.0	95.3
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.13	July 30 at hour 5	4.2	NE	0.01	July 30	100.0	95.3
PM2.5 (µg/m3)	80	30	-	0	0	-	5.7	1.0	46.0	July 5 at hour 4	1.2	ENE	12.9	July 31	100.0	99.7
Stn. Temp. (°C)	-	-	-	-	-	-	22.0	19.0	23.3	July 30 at hour 23	7.8	NW	22.7	July 1	100.0	100.0
WSV (km/hr)	-	-	-	-	-	-	2.6	0.3	33.5	July 28 at hour 6	33.5	NNW	21.5	July 25	100.0	100.0
WDV (sector)	-	-	-	-	-	-	279 (W)	-	-	-	-	-	-	-	100.0	100.0

1- Date/ Time given is the first minimum and maximum value that was recorded

### Alberta Ambient Air Quality Objectives (AAAQOs) Exceedances

The following exceedances of AAAQOs were observed at the Bonnyville - East Site.

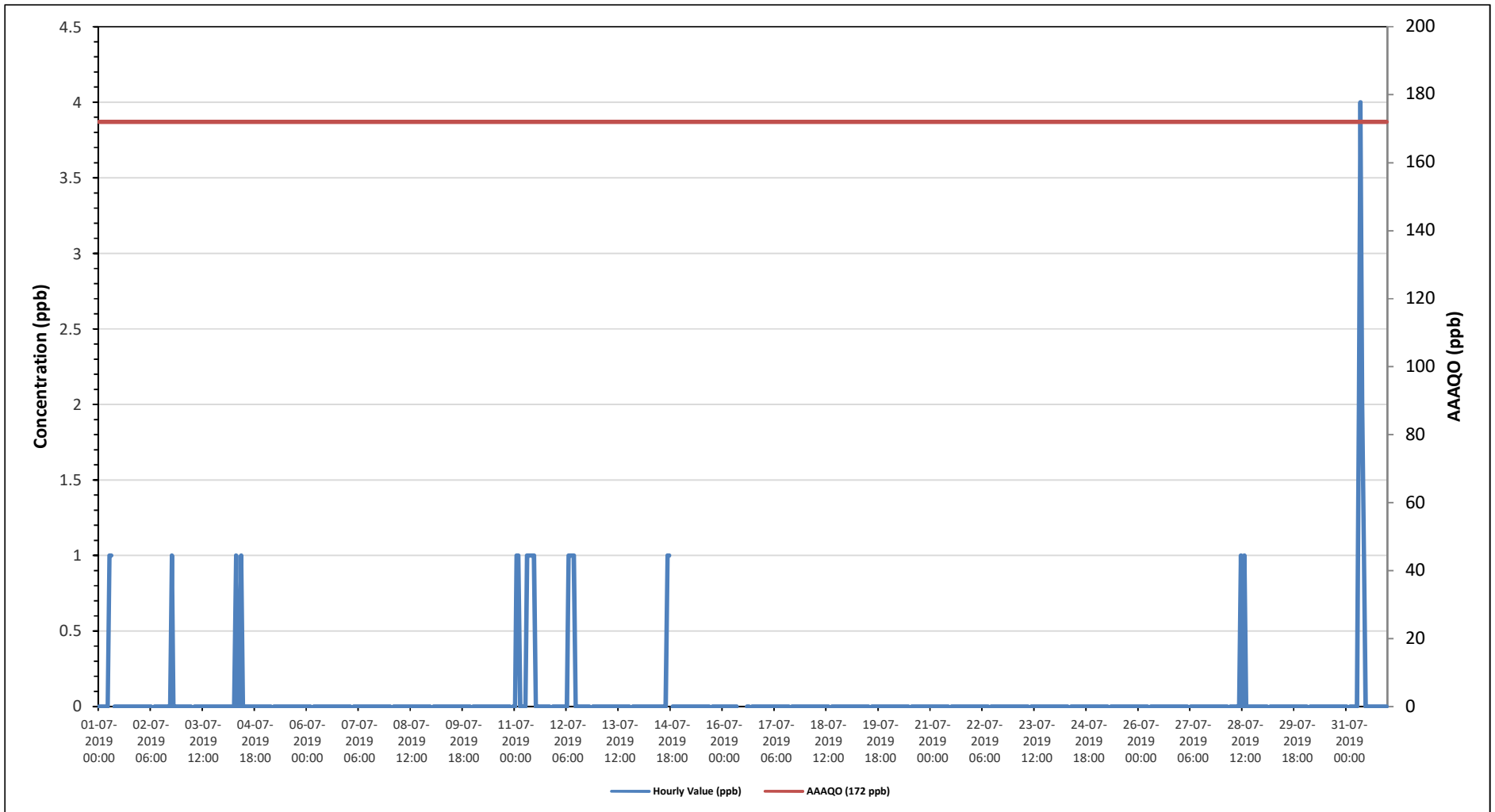
Date	Time (MST)	Parameter	Average Period	AAAQOs	Concentration	Wind speed	Wind Direction	Reference #
July 5	20	H2S	1-Hour	10 ppb	14 ppb	3.8 km/hr	137° (SE)	355714
July 5	23	H2S	1-Hour	10 ppb	0 ppb	2.1 km/hr	105° (ESE)	355714
July 6	0	H2S	1-Hour	10 ppb	14 ppb	1.8 km/hr	110° (ESE)	355715
July 6	1	H2S	1-Hour	10 ppb	34 ppb	1.8 km/hr	123° (ESE)	355715
July 6	2	H2S	1-Hour	10 ppb	17 ppb	3.2 km/hr	148° (SE)	355715
July 6	3	H2S	1-Hour	10 ppb	17 ppb	1.0 km/hr	147° (SE)	355715
July 6	4	H2S	1-Hour	10 ppb	11 ppb	1.9 km/hr	119° (ESE)	355715
July 6	6	H2S	1-Hour	10 ppb	17 ppb	2.7 km/hr	117° (ESE)	355715
July 6	-	H2S	24-Hour	3 ppb	5 ppb	6.8 km/hr	107° (ESE)	355715
July 7	5	H2S	1-Hour	10 ppb	26 ppb	3.9 km/hr	185° (S)	355732
July 16	4	H2S	1-Hour	10 ppb	14 ppb	3.9 km/hr	77° (ENE)	356139
July 16	5	H2S	1-Hour	10 ppb	14 ppb	5.4 km/hr	90° (E)	356139
July 16	6	H2S	1-Hour	10 ppb	16 ppb	5.8 km/hr	92° (E)	356139
July 16	-	H2S	24-Hour	3 ppb	4 ppb	7.4 km/hr	151 (SSE)	356139
July 17	0	H2S	1-Hour	10 ppb	13 ppb	8.3 km/hr	161° (SSE)	356191
July 17	4	H2S	1-Hour	10 ppb	20 ppb	3.5 km/hr	126° (SE)	356191
July 21	6	H2S	1-Hour	10 ppb	22 ppb	0.7 km/hr	148° (SE)	356405
July 22	4	H2S	1-Hour	10 ppb	16 ppb	12.7 km/hr	153° (SSE)	356405
July 23	4	H2S	1-Hour	10 ppb	12 ppb	8.5 km/hr	62° (ENE)	356466
July 27	4	H2S	1-Hour	10 ppb	15 ppb	2.7 km/hr	31° (NNE)	356695
July 27	5	H2S	1-Hour	10 ppb	23 ppb	5.3 km/hr	80° (E)	356695
July 27	6	H2S	1-Hour	10 ppb	11 ppb	5.2 km/hr	123° (ESE)	356695
July 27	11	H2S	1-Hour	10 ppb	13 ppb	8.1 km/hr	148° (SE)	356695
July 27	-	H2S	24-Hour	3 ppb	4 ppb	0.4 km/hr	36° (NE)	356695
July 29	23	H2S	1-Hour	10 ppb	1 ppb	5.2 km/hr	131° (SE)	356812
July 30	2	H2S	1-Hour	10 ppb	23 ppb	3.7 km/hr	115° (ESE)	356814

TABLES, CHARTS, WIND ROSES AND EQUIPMENT CALIBRATION RECORDS

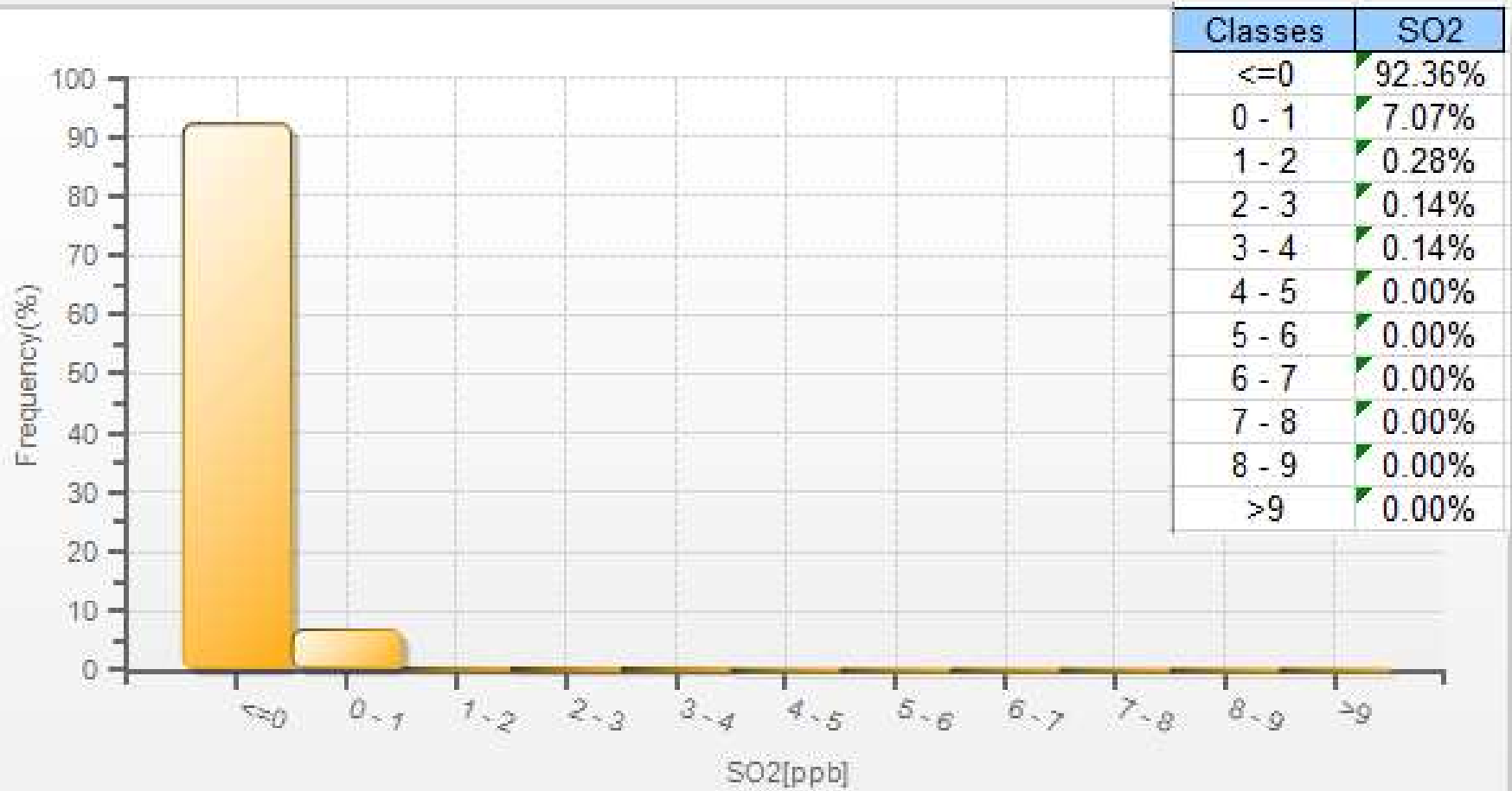
**COLD LAKE SOUTH STATION**



**Timeseries Chart of Hourly Average for SO2 - Cold Lake South Station**



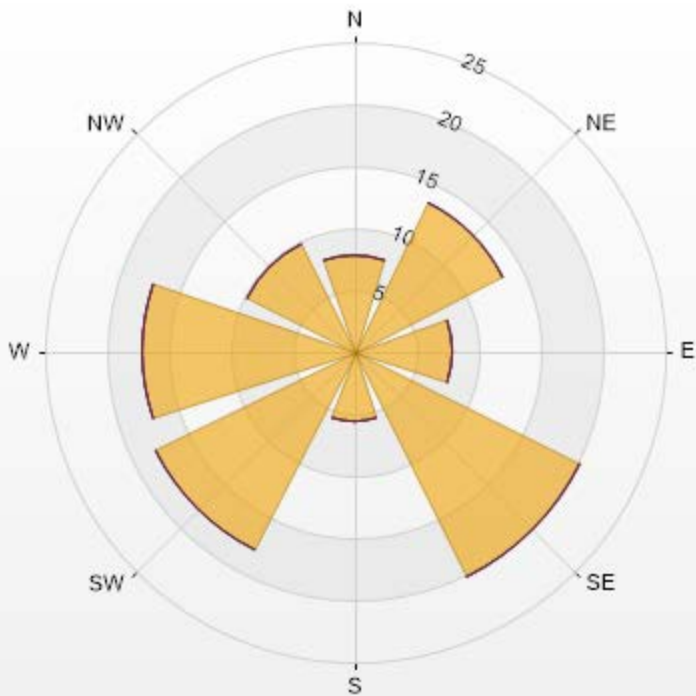
SO2[ppb] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-SO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	7.78	0	0	0	0	7.78
NE	13.44	0	0	0	0	13.44
E	7.92	0	0	0	0	7.92
SE	20.37	0	0	0	0	20.37
S	5.66	0	0	0	0	5.66
SW	17.96	0	0	0	0	17.96
W	17.11	0	0	0	0	17.11
NW	9.76	0	0	0	0	9.76
Summary	100	0	0	0	0	100





LICA-201907-Revision 1

% Icon Classes (ppb)

100

0-10

0

50-100

0

100-172

0

>172.0

0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

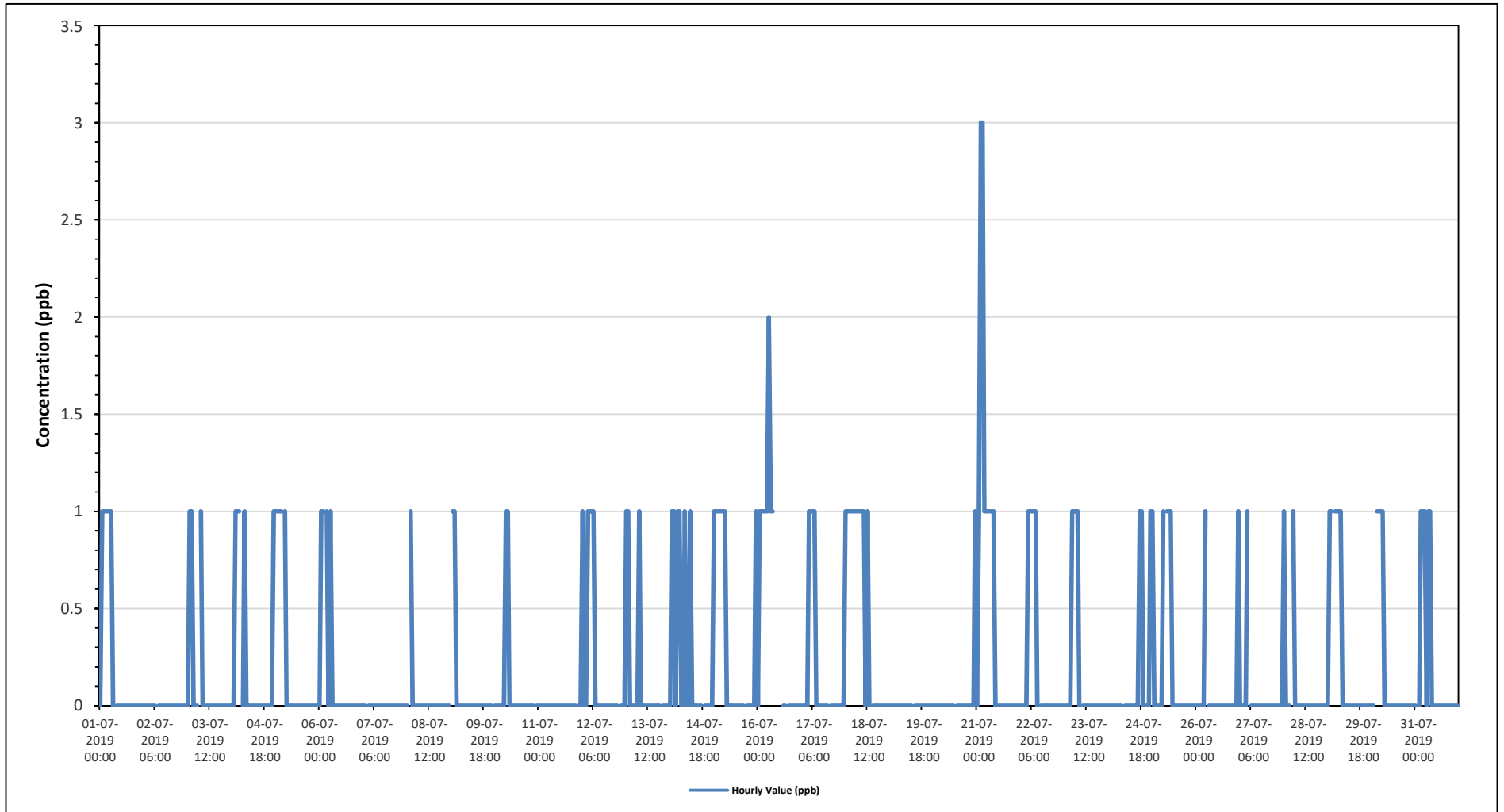
### Cold Lake South Station - July 2019

#### Summary of Hourly Averages

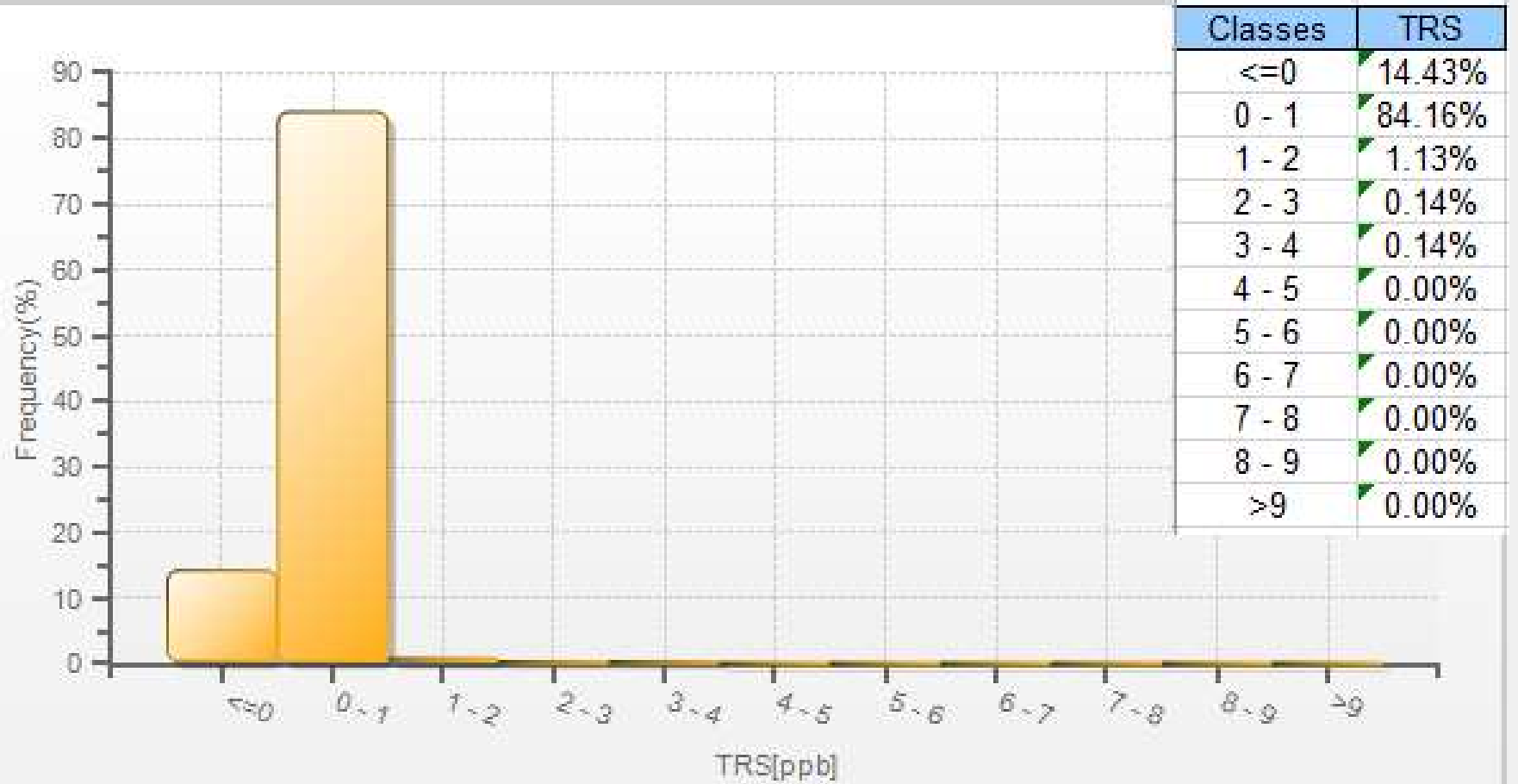
#### TOTAL REDUCED SULPHUR (TRS) in ppb

Alberta Ambient Air Quality Objectives (AAAQO) for H2S: 1-Hour 10 ppb, 24-Hour 3 ppb																																				
Number of 1-Hour Exceedences: 0										Number of 24-Hour Exceedences: 0																										
Maximum Hourly Value: 3 ppb on July 21 at hour 2										Hours in Service: 744																										
Maximum Daily Value: 1 ppb on July 21										Hours of Data: 707																										
Minimum Hourly Value: 0 ppb on July 1 at hour 0										Hours of Missing Data: 0																										
Minimum Daily Value: 0 ppb on July 2										Hours of Calibration: 37																										
Monthly Average: 0.18 ppb										Operational Uptime: 100.0																										
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average										
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23									
Jul 1	0	1	1	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.26			
Jul 2	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00			
Jul 3	0	1	1	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.13				
Jul 4	0	0	1	1	1	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.22				
Jul 5	1	1	1	1	S	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	0.22			
Jul 6	0	1	1	S	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	1	0.17			
Jul 7	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
Jul 8	0	S	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	0.04		
Jul 9	S	1	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	S	0	1	0.09		
Jul 10	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0.00	
Jul 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	S	0	0	0	0	0.00	
Jul 12	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0.22	
Jul 13	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.13	
Jul 14	0	1	1	0	1	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0.26	
Jul 15	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.35		
Jul 16	0	1	1	1	1	1	2	1	1	C	C	C	C	C	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.50		
Jul 17	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.17		
Jul 18	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.52	
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Jul 20	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0.04		
Jul 21	0	1	3	3	1	1	1	1	1	1	1	1	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.57	0	0.57		
Jul 22	0	0	0	0	1	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.22	
Jul 23	0	0	0	0	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.17	
Jul 24	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	1	0.13		
Jul 25	1	0	0	0	0	0	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.22
Jul 26	0	0	0	0	0	1	S	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	1	0	0.09	
Jul 27	0	0	0	0	1	S	0	0	0	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	0.04	
Jul 28	1	0	0	0	S	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	1	0.09	
Jul 29	0	1	1	S	1	1	1	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	1	0.26
Jul 30	0	0	S	1	1	1	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	1	0.17	
Jul 31	0	S	0	1	1	1	0	1	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	1	0.22	
Diurnal Maximum	1.00	1.00	3.00	3.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.17	
Diurnal Average	0.23	0.41	0.52	0.41	0.55	0.55	0.52	0.41	0.24	0.10	0.07	0.03	0.03	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17		
C	Calibration			S	Daily Zero/Span			Q	Quality Assurance			C1	Repeat Calibration			S1	Repeat Daily Zero/Span																			
G	Out for Repair			K	Collection Error			N	Not in Service			O	Operator Error			P	Power Failure																			
R	Recovery			X	Machine Malfunction			Y	Maintenance			T	Exceeds Temperature Limits			N	Not in Service																			
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																																				
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																																				

**Timeseries Chart of Hourly Average for TRS - Cold Lake South Station**

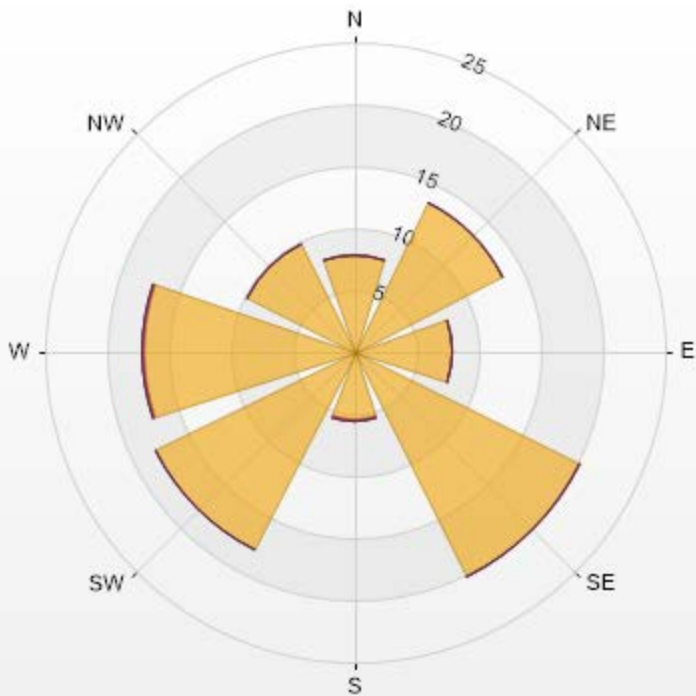


TRS[ppb] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-TRS[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	7.78	0	0	0	0	7.78
NE	13.44	0	0	0	0	13.44
E	7.92	0	0	0	0	7.92
SE	20.37	0	0	0	0	20.37
S	5.52	0.14	0	0	0	5.66
SW	17.96	0	0	0	0	17.96
W	16.97	0.14	0	0	0	17.11
NW	9.76	0	0	0	0	9.76
Summary	100	0.28	0	0	0	100



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% Icon Classes (ppb)	100	0-2	0-5	5-10	0	10-50	0	>50.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

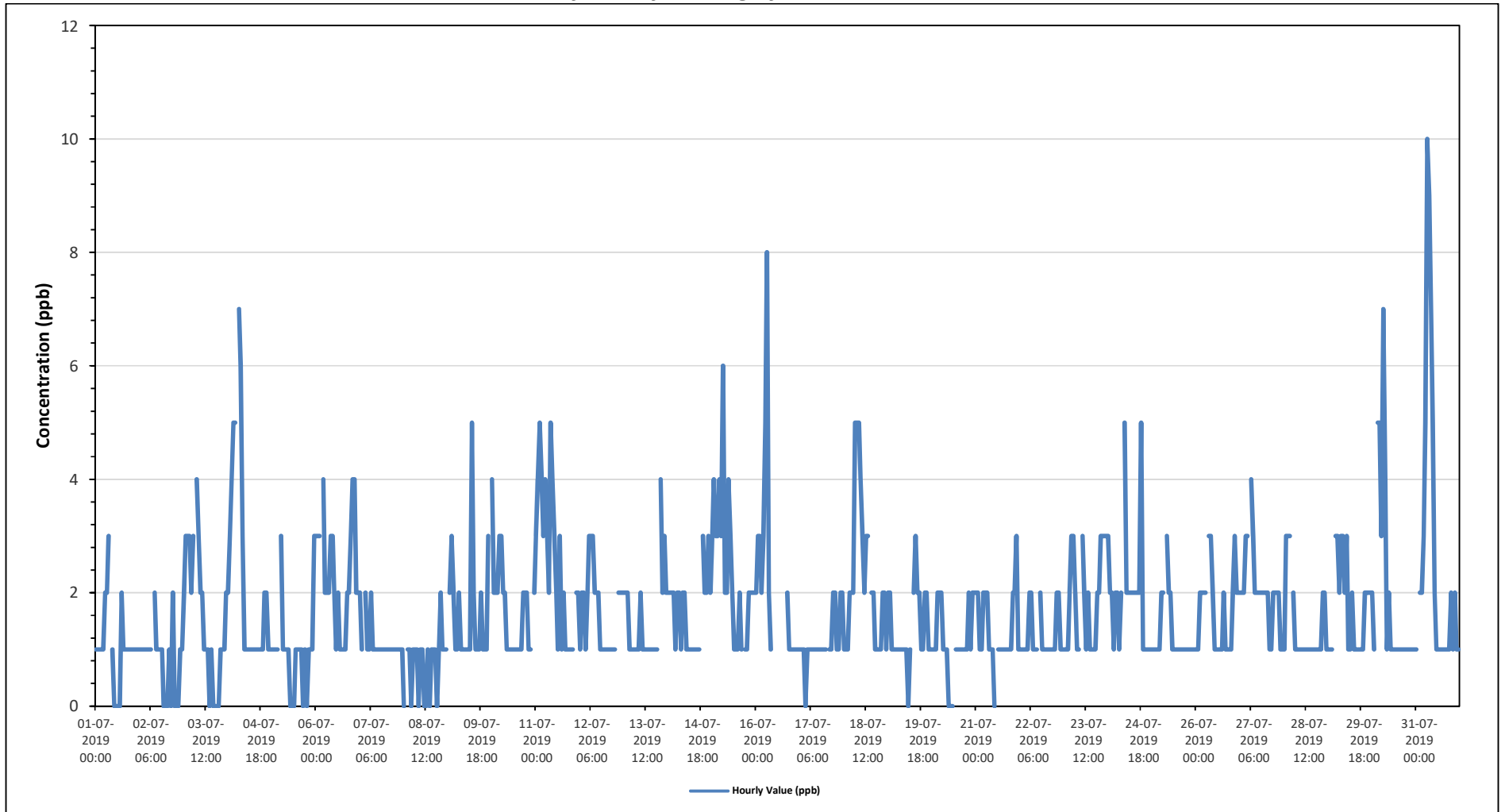
Maximum Hourly Value:	10 ppb on July 31 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.7 ppb on July 31	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.7 ppb on July 8	Hours of Calibration:	39
Monthly Average:	1.6 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Jul 1	1	1	1	1	1	2	2	3	S	1	0	0	0	0	2	1	1	1	1	1	1	1	1	0	3	1.0
Jul 2	1	1	1	1	1	1	1	S	2	1	1	1	1	0	0	0	0	0	2	0	0	0	1	1	2	0.8
Jul 3	2	3	3	3	2	3	S	4	3	2	2	1	1	0	1	0	0	0	2	0	1	1	1	2	4	1.6
Jul 4	2	3	4	5	5	S	7	6	3	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	7	2.3
Jul 5	1	1	1	1	S	3	1	1	1	1	0	0	0	1	1	1	1	0	1	0	1	1	1	3	3	1.0
Jul 6	3	3	3	S	4	2	2	2	3	3	2	1	2	1	1	1	2	2	3	4	4	4	2	2	4	2.3
Jul 7	2	1	S	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1
Jul 8	0	S	1	1	0	1	1	1	0	1	1	0	0	1	0	1	1	1	0	1	2	1	1	1	2	0.7
Jul 9	S	2	3	2	1	1	2	1	1	1	1	1	5	2	1	1	1	1	2	1	1	1	3	S	5	1.6
Jul 10	4	2	2	2	3	3	2	2	1	1	1	1	1	1	1	1	1	2	2	2	1	1	S	2	4	1.7
Jul 11	3	4	5	4	3	4	3	2	5	4	3	2	1	3	1	2	1	1	1	1	1	S	2	2	2	2.5
Jul 12	1	2	2	1	2	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	S	2	2	2	3	1.7
Jul 13	2	2	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	S	4	2	3	2	4	1.5
Jul 14	2	2	2	2	1	2	2	1	2	2	1	1	1	1	1	1	1	1	1	S	2	2	3	2	3	1.7
Jul 15	3	4	3	3	4	3	6	2	2	4	3	2	1	1	2	1	S	1	1	2	2	2	2	2	6	2.4
Jul 16	2	3	3	2	3	5	8	2	1	C	C	C	C	C	C	C	S	2	1	1	1	1	1	1	8	-
Jul 17	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	2	1	1	2	2	0	1.1
Jul 18	1	1	1	2	2	2	5	5	5	4	3	2	3	3	S	2	2	1	1	1	1	2	2	1	5	2.3
Jul 19	2	2	1	1	1	1	1	1	1	1	1	0	1	S	2	3	2	2	1	1	2	2	1	1	3	1.3
Jul 20	1	1	1	2	2	2	1	1	1	0	0	0	S	1	1	1	1	1	1	1	2	1	2	2	2	1.1
Jul 21	2	2	1	1	2	2	2	1	1	1	0	S	1	1	1	1	1	1	1	1	2	2	3	1	3	1.3
Jul 22	1	1	1	1	1	2	2	1	1	1	S	2	1	1	1	1	1	1	1	1	2	2	1	1	2	1.2
Jul 23	1	1	1	2	3	3	2	1	1	S	3	2	1	2	1	1	1	1	1	2	2	3	3	3	3	1.9
Jul 24	3	2	2	1	2	2	1	2	S	5	2	2	2	2	2	2	2	2	5	1	1	1	1	1	5	2.0
Jul 25	1	1	1	1	1	2	2	S	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3
Jul 26	1	1	2	2	2	2	S	3	3	2	1	1	1	1	1	2	1	1	1	1	2	3	2	2	3	1.7
Jul 27	2	2	2	3	3	S	4	3	2	2	2	2	2	2	2	2	1	1	2	2	2	2	1	1	4	2.0
Jul 28	1	3	3	3	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	3	1.4
Jul 29	1	1	1	S	3	3	2	3	3	2	3	1	1	2	1	1	1	1	1	1	2	2	2	2	3	1.7
Jul 30	2	1	S	5	5	3	7	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1.9
Jul 31	1	S	2	2	3	5	10	9	7	5	2	1	1	1	1	1	1	1	1	2	1	2	1	1	10	2.7
Diurnal Maximum	4	4	5	5	5	10	9	7	5	3	2	3	5	2	3	2	2	5	3	4	4	3	3	3	3	
Diurnal Average	1.7	1.9	1.9	2.0	2.2	2.3	2.9	2.3	2.0	1.9	1.4	1.1	1.1	1.3	1.1	1.2	1.1	1.1	1.3	1.2	1.6	1.6	1.7	1.5		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

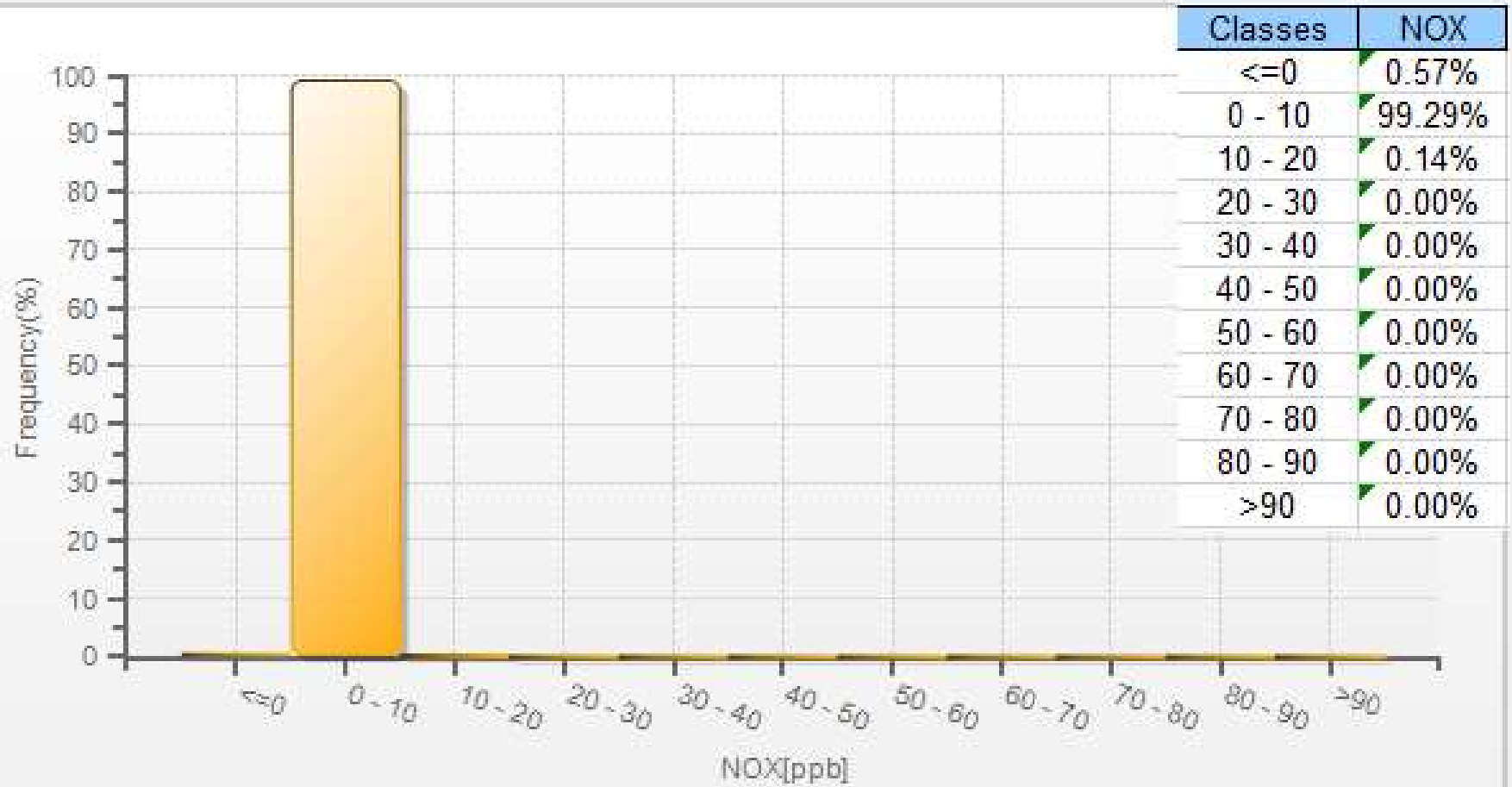
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for NOx - Cold Lake South Station**



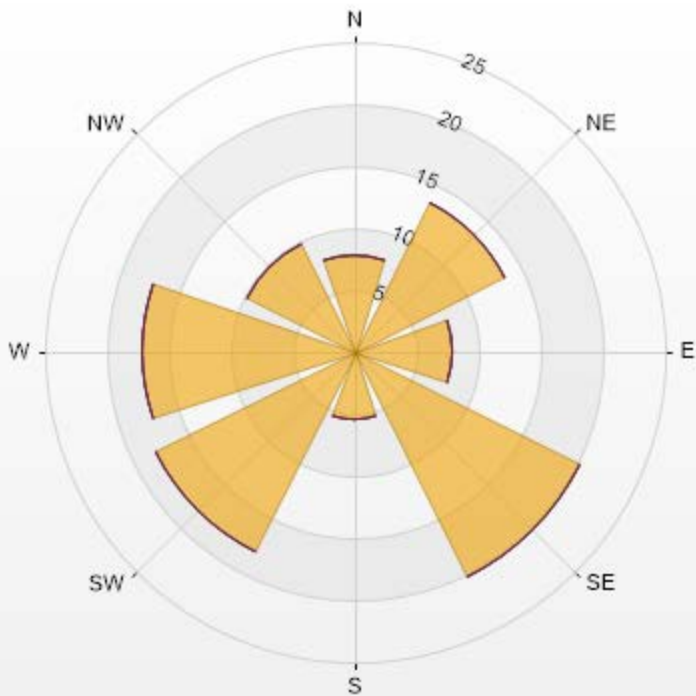


NOX[ppb] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NOX[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	7.8	0	0	0	0	7.8
NE	13.48	0	0	0	0	13.48
E	7.94	0	0	0	0	7.94
SE	20.28	0	0	0	0	20.28
S	5.53	0	0	0	0	5.53
SW	18.01	0	0	0	0	18.01
W	17.16	0	0	0	0	17.16
NW	9.79	0	0	0	0	9.79
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	30-50	50-82	0	82-159	0	>159.0



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019  
Summary of Hourly Averages

## NITRIC OXIDE (NO) in ppb

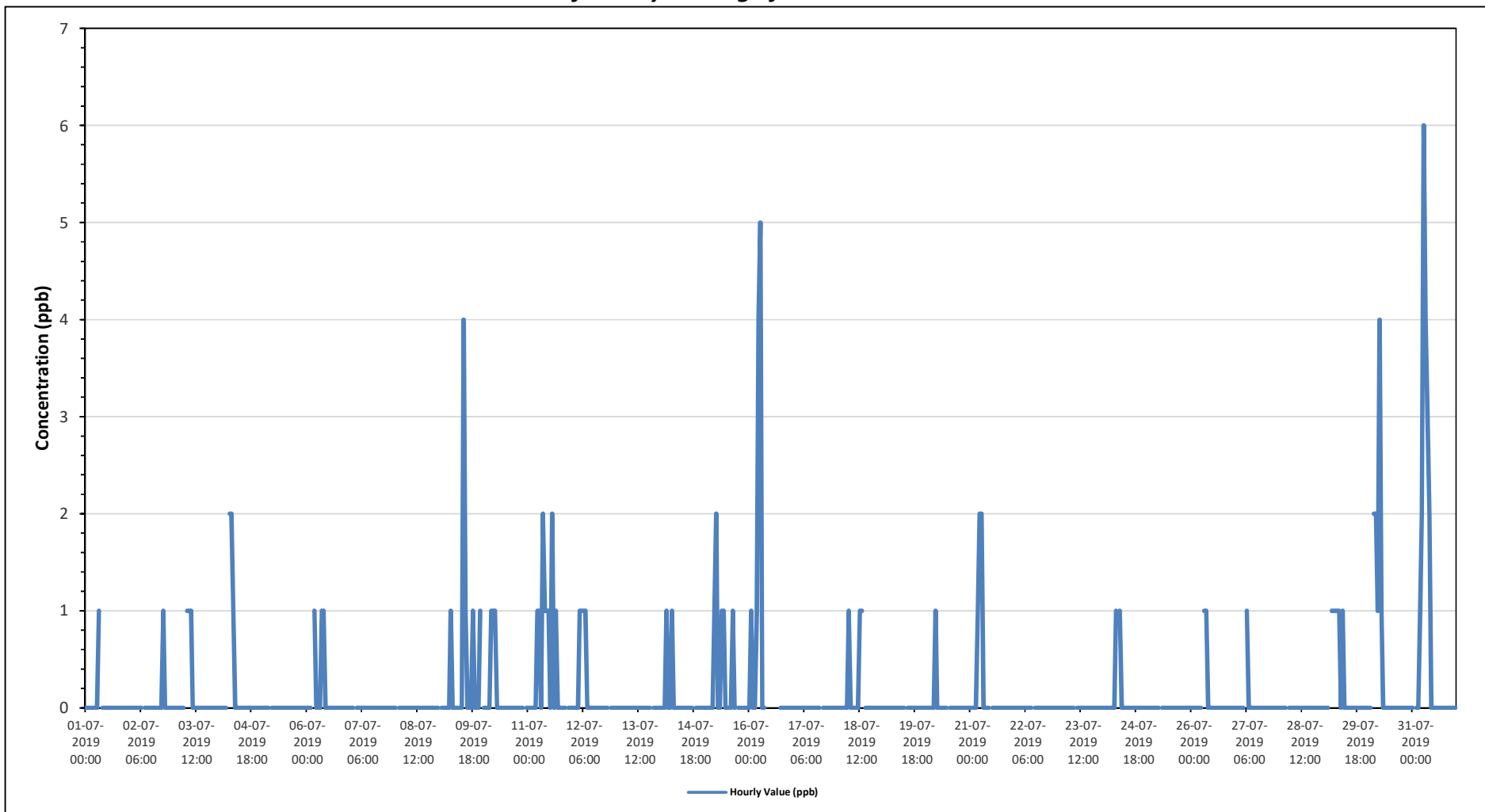
Maximum Hourly Value:	6 ppb on July 31 at hour 6	Hours in Service:	744
Maximum Daily Value:	0.8 ppb on July 31	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 5	Hours of Calibration:	39
Monthly Average:	0.1 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average											
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23														
Jul 1	0	0	0	0	0	0	0	0	1	S	0	0	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
Jul 2	0	0	0	0	0	0	0	0	S	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	1	0.0		
Jul 3	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Jul 4	0	0	0	0	0	0	S	2	2	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	2	0.2		
Jul 5	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 6	0	0	0	S	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 7	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 8	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 9	S	0	0	0	0	0	0	1	0	0	0	0	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	S	0	0	4	0.4			
Jul 10	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.1			
Jul 11	0	0	0	0	0	1	1	0	2	1	1	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	2	0.4			
Jul 12	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.2			
Jul 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	S	0	0	0	0.0		
Jul 14	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Jul 15	0	0	0	0	0	1	2	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	2	0.3		
Jul 16	0	1	0	0	1	4	5	0	0	C	C	C	C	C	C	C	C	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	-				
Jul 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		
Jul 18	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 20	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	1	0.0			
Jul 21	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2			
Jul 22	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 23	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 24	0	0	0	0	0	0	0	0	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 25	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 26	0	0	0	0	0	0	S	1	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	1	0.1			
Jul 27	0	0	0	0	0	S	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				
Jul 28	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 29	0	0	0	S	1	1	1	1	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	1	0.3			
Jul 30	0	0	S	2	2	1	4	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	4	0.4			
Jul 31	0	S	0	0	1	2	6	4	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.8				
Diurnal Maximum	0	1	0	2	2	4	6	4	3	2	1	1	1	4	1	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0			
Diurnal Average	0.0	0.0	0.0	0.1	0.3	0.5	1.0	0.4	0.3	0.2	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.1	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			

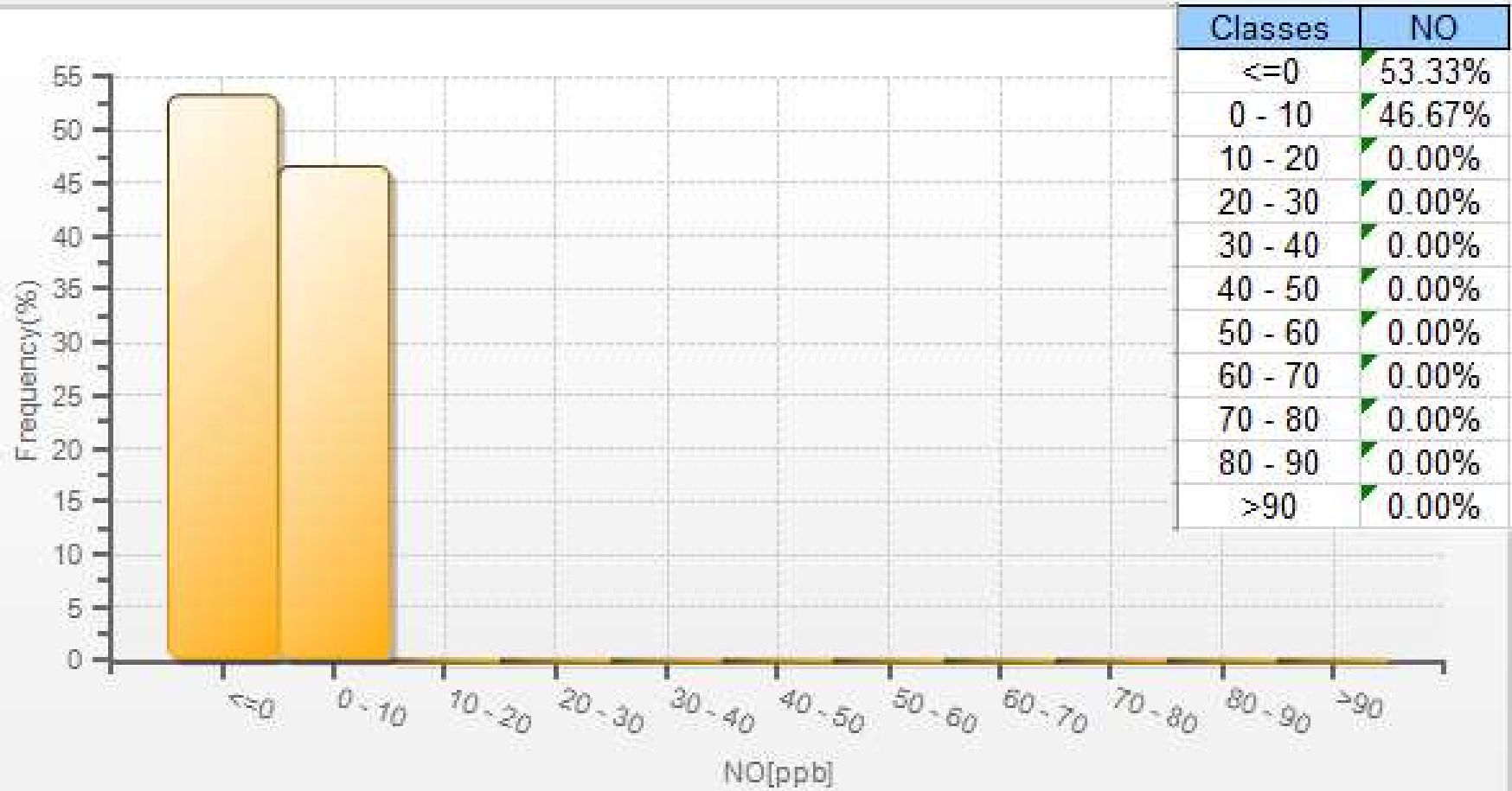
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for NO - Cold Lake South Station**

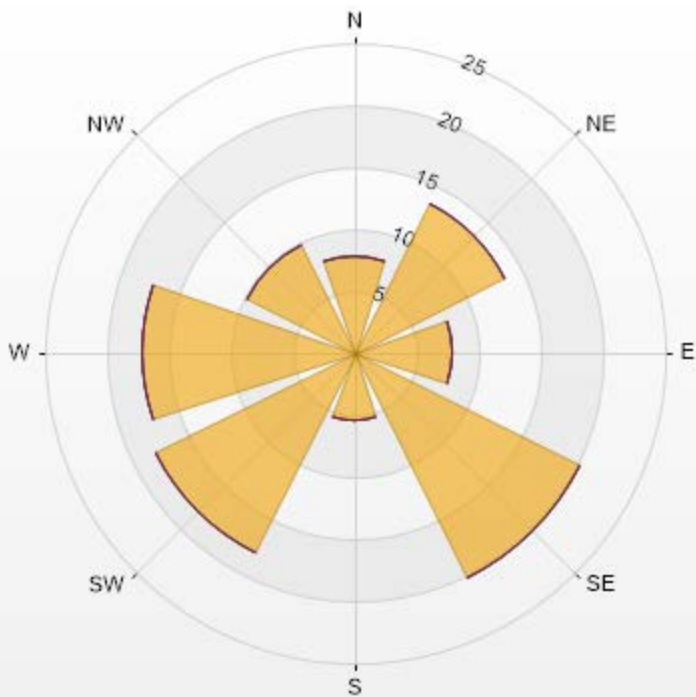


NO[ppb] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NO[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	7.8	0	0	0	0	7.8
NE	13.48	0	0	0	0	13.48
E	7.94	0	0	0	0	7.94
SE	20.28	0	0	0	0	20.28
S	5.53	0	0	0	0	5.53
SW	18.01	0	0	0	0	18.01
W	17.16	0	0	0	0	17.16
NW	9.79	0	0	0	0	9.79
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	30-90	50-82	0	82-159	0	>159.0





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

## Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb

Number of 1-Hour Exceedences: 0

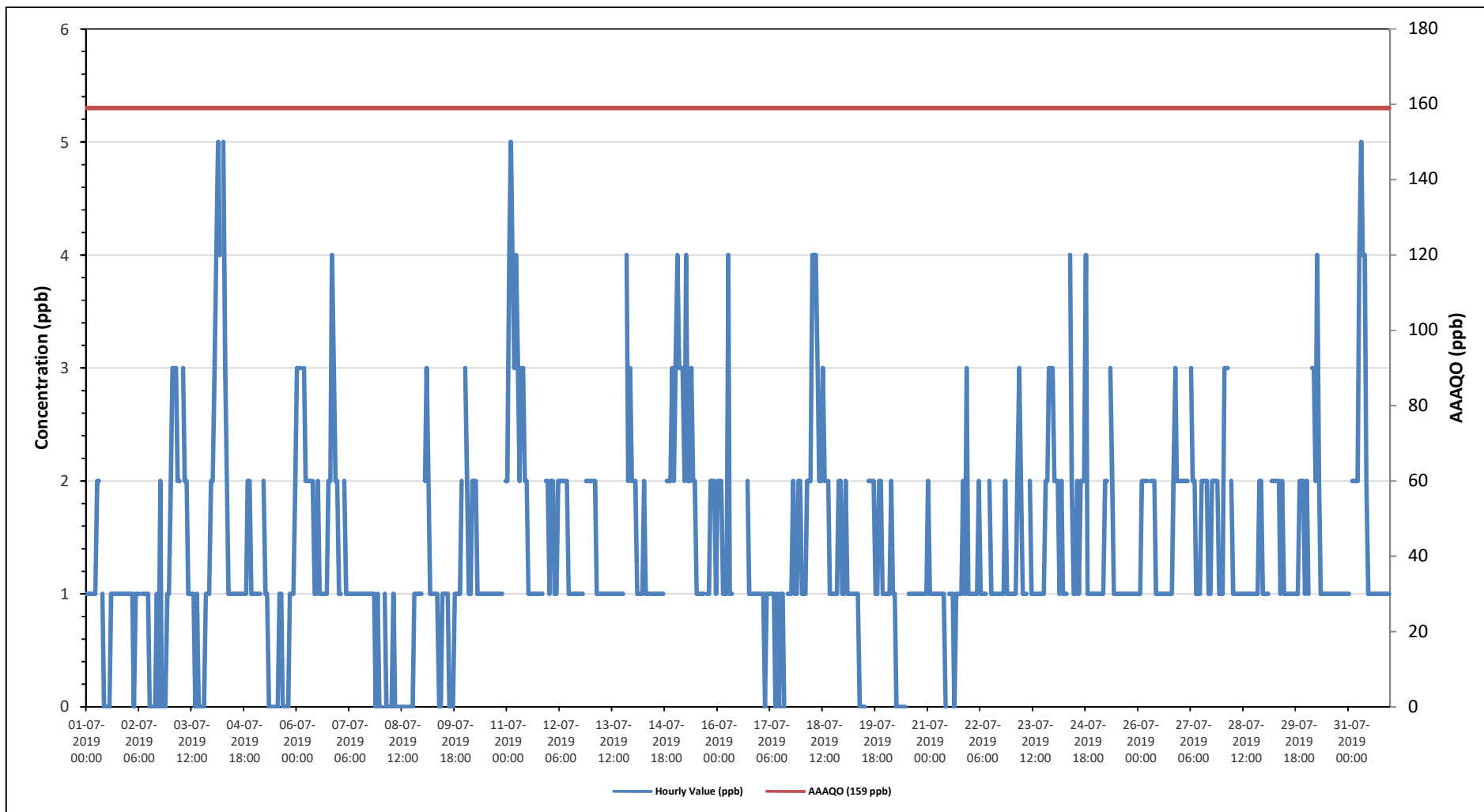
Maximum Hourly Value:	5 ppb on July 4 at hour 3	Hours in Service:	744
Maximum Daily Value:	2.2 ppb on July 11	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.3 ppb on July 8	Hours of Calibration:	39
Monthly Average:	1.3 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	1	1	2	2	S	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	2	0.9	
Jul 2	1	1	1	0	1	1	1	S	1	1	1	1	0	0	0	0	1	0	2	0	0	0	1	1	1	0	0.7	
Jul 3	2	3	3	3	2	2	S	3	2	2	1	1	1	1	0	1	0	0	0	0	1	1	1	2	0	3	1.4	
Jul 4	2	3	4	S	4	S	5	3	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	5	2.0	
Jul 5	1	1	1	1	S	2	1	1	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	2	0	2	0.7	
Jul 6	3	3	3	S	3	2	2	2	2	1	1	2	1	1	1	1	1	1	2	2	4	3	2	2	1	4	2.0	
Jul 7	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	2	2	1.0	
Jul 8	0	S	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0.3	
Jul 9	S	2	3	2	1	1	1	1	1	0	1	1	1	1	1	0	0	0	1	1	1	1	1	1	S	3	1.0	
Jul 10	3	2	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	3	1.3	
Jul 11	2	4	S	4	3	4	3	2	3	3	2	2	1	1	1	1	1	1	1	1	1	S	2	2	1	5	2.2	
Jul 12	1	2	2	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	S	2	2	2	1	2	1.5	
Jul 13	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	4	2	3	2	1	4	1.4	
Jul 14	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	S	2	2	2	3	2	1	3	1.4	
Jul 15	3	4	3	3	3	2	4	2	2	3	2	2	1	1	1	1	1	S	1	1	2	2	2	1	1	4	2.0	
Jul 16	2	2	2	1	1	1	4	1	1	C	C	C	C	C	C	C	S	2	1	1	1	1	1	1	1	4	-	
Jul 17	1	1	1	0	1	1	1	1	1	0	1	0	1	1	0	S	1	1	1	1	2	1	1	2	0	2	1.0	
Jul 18	1	1	1	2	2	2	4	4	4	3	2	2	3	2	S	2	1	1	1	1	1	2	2	1	1	4	2.0	
Jul 19	1	2	1	1	1	1	1	1	1	0	0	0	0	S	2	2	2	2	1	1	2	2	1	1	0	2	1.1	
Jul 20	1	1	1	2	1	1	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	0	2	0.8	
Jul 21	2	1	1	1	1	1	1	1	1	1	0	S	1	1	1	0	1	1	1	1	1	2	1	3	1	3	1.1	
Jul 22	1	1	1	1	1	2	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1.1	
Jul 23	1	1	1	2	3	2	1	1	1	S	2	1	1	1	1	1	1	1	1	1	2	2	3	3	3	1	3	1.6
Jul 24	2	2	2	1	2	1	1	1	S	4	2	1	1	2	1	2	2	2	4	1	1	1	1	1	1	4	1.7	
Jul 25	1	1	1	1	1	2	2	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.2	
Jul 26	1	1	2	2	2	2	S	2	2	2	1	1	1	1	1	1	1	1	1	1	2	3	2	2	1	3	1.5	
Jul 27	2	2	2	2	2	S	3	2	2	1	1	1	2	2	2	2	1	1	2	2	2	2	2	1	1	3	1.7	
Jul 28	1	3	3	3	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	3	1.4	
Jul 29	1	1	1	S	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	2	2	2	1	1	2	1.4	
Jul 30	2	1	S	3	3	2	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.4	
Jul 31	1	S	2	2	2	2	4	S	4	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.8	
Diurnal Maximum	3	4	5	5	4	4	5	5	4	4	2	2	3	2	2	2	2	2	2	4	2	4	3	3	3			
Daiurnal Average	1.5	1.8	1.8	1.7	1.7	1.6	2.0	1.7	1.5	1.4	1.0	0.9	1.0	1.0	0.9	1.0	0.9	0.9	1.1	1.1	1.5	1.5	1.6	1.4				

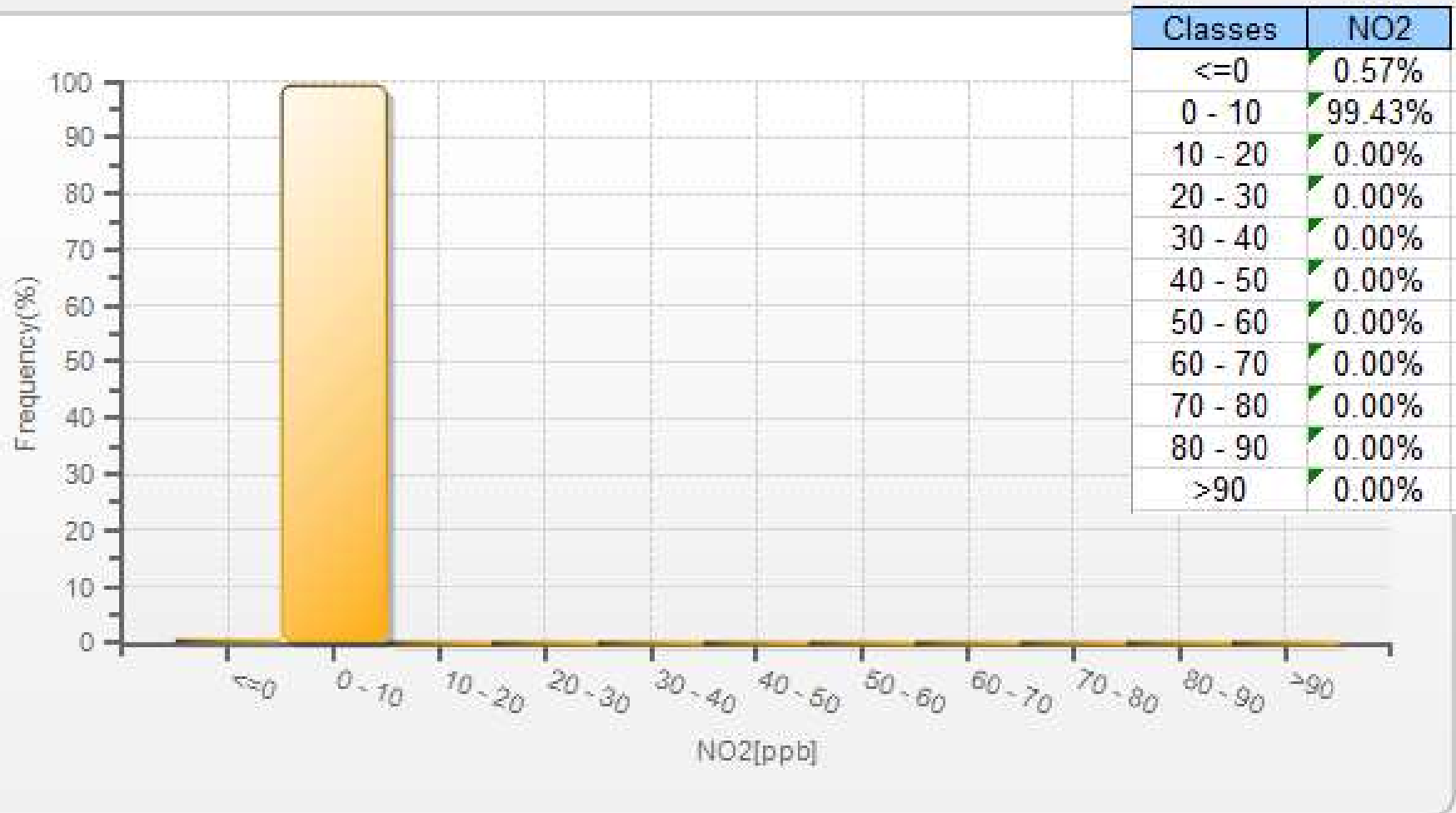
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO2 - Cold Lake South Station

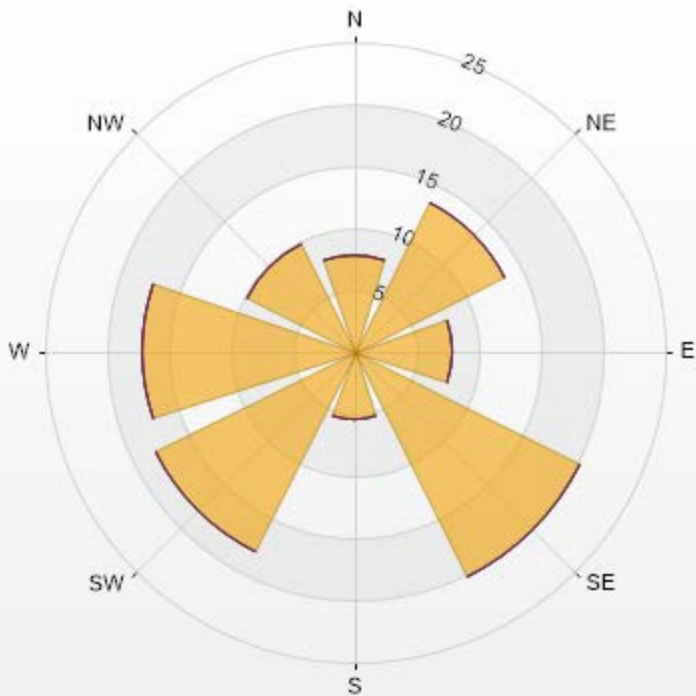


NO2[ppb] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	7.8	0	0	0	0	7.8
NE	13.48	0	0	0	0	13.48
E	7.94	0	0	0	0	7.94
SE	20.28	0	0	0	0	20.28
S	5.53	0	0	0	0	5.53
SW	18.01	0	0	0	0	18.01
W	17.16	0	0	0	0	17.16
NW	9.79	0	0	0	0	9.79
Summary	100	0	0	0	0	100



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# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

OZONE (O<sub>3</sub>) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb**

Number of 1-Hour Exceedences: 0

Maximum Hourly Value:	49 ppb on July 14 at hour 14	Hours in Service:	744
Maximum Daily Value:	30.3 ppb on July 22	Hours of Data:	707
Minimum Hourly Value:	0 ppb on July 21 at hour 3	Hours of Missing Data:	0
Minimum Daily Value:	14.4 ppb on July 29	Hours of Calibration:	37
Monthly Average:	21.4 ppb	Operational Uptime:	100.0

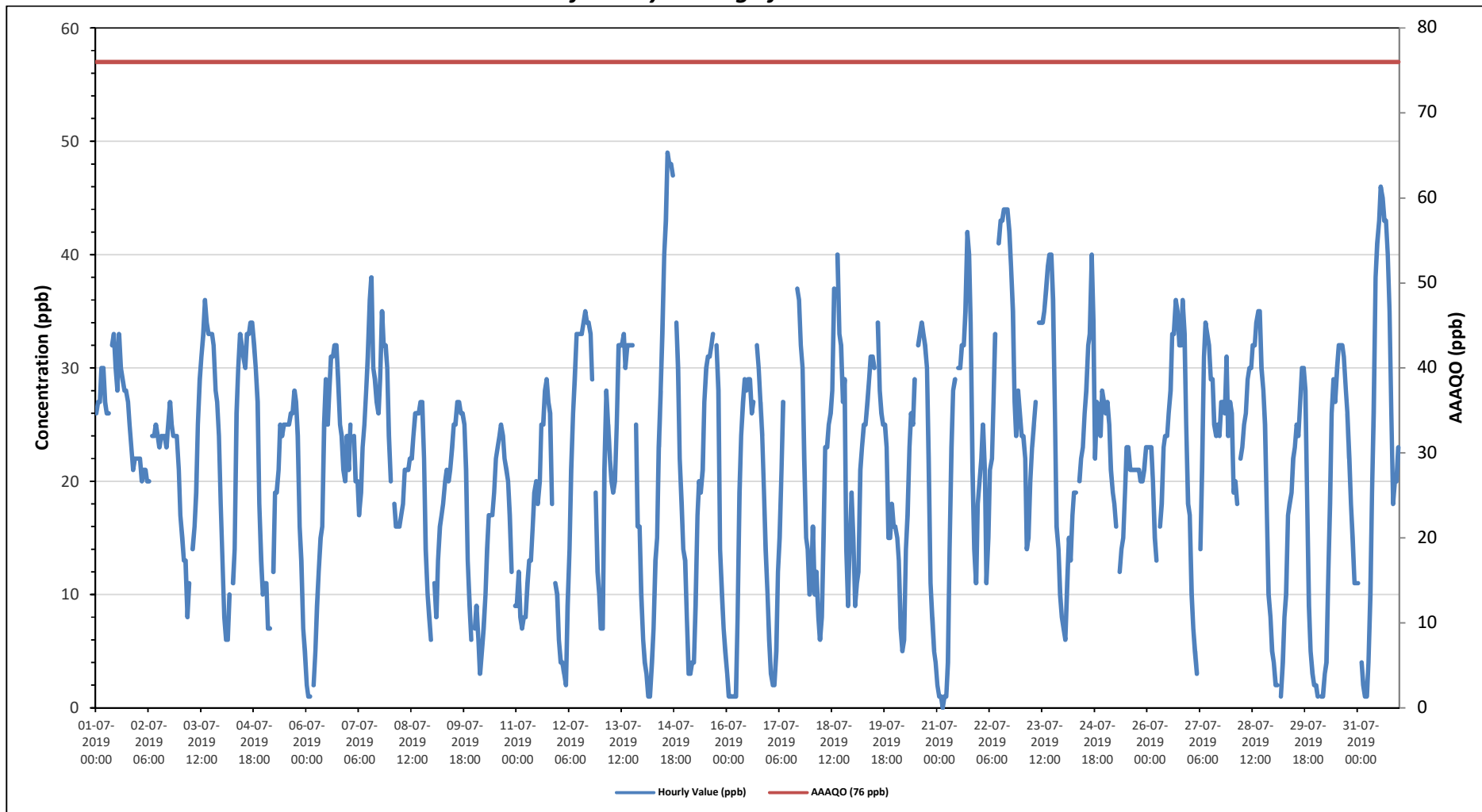
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	26	27	27	30	30	27	26	26	S	32	33	30	28	33	30	29	28	28	27	25	23	21	22	22	21	33	27.4
Jul 2	22	22	20	21	21	20	20	S	24	24	25	24	23	24	24	24	23	25	27	25	24	24	24	21	20	27	23.1
Jul 3	17	15	13	13	8	11	S	14	16	19	25	29	31	33	36	34	33	33	33	32	28	27	24	18	8	36	23.6
Jul 4	13	8	6	6	10	S	11	14	26	30	33	32	31	30	33	33	34	34	32	30	27	18	13	10	6	34	22.3
Jul 5	11	11	7	7	S	12	19	19	21	25	24	25	25	25	25	26	26	28	27	24	16	13	7	5	5	28	18.6
Jul 6	2	1	1	S	2	5	9	12	15	16	25	29	25	28	31	31	32	32	29	25	24	21	20	24	1	32	19.1
Jul 7	21	25	S	24	20	20	17	19	23	25	28	31	36	38	30	29	27	26	29	35	32	32	30	24	17	38	27.0
Jul 8	20	S	18	16	16	16	17	18	21	21	21	22	22	24	26	26	26	27	27	22	14	10	8	6	6	27	19.3
Jul 9	S	11	8	13	16	17	18	20	21	20	21	23	25	25	27	27	26	26	25	21	13	9	6	S	6	27	19.0
Jul 10	7	9	6	3	5	7	10	14	17	17	17	19	22	23	24	25	24	22	21	20	17	12	S	9	3	25	15.2
Jul 11	9	12	8	7	8	8	11	13	13	16	19	20	18	20	25	25	28	29	27	26	18	S	11	10	7	29	16.6
Jul 12	6	4	4	3	2	9	14	21	26	29	33	33	33	33	34	35	34	34	33	29	S	19	12	10	2	35	21.3
Jul 13	7	7	21	28	25	22	20	19	20	25	32	32	32	33	30	32	32	32	32	S	25	16	16	10	7	33	23.8
Jul 14	6	4	3	1	1	4	7	13	15	23	28	33	40	43	49	48	48	47	S	34	30	22	18	14	1	49	23.1
Jul 15	13	8	3	3	4	4	9	17	20	19	21	27	30	31	31	32	33	S	32	28	14	10	7	5	3	33	17.4
Jul 16	3	1	1	1	1	1	8	19	24	27	29	28	29	29	26	27	S	32	30	27	24	19	14	10	1	32	17.8
Jul 17	6	3	2	2	5	12	15	21	27	C	C	C	C	C	36	S	37	36	32	30	22	15	14	10	2	37	18.1
Jul 18	11	16	10	12	8	6	8	15	23	23	25	26	28	37	S	40	33	32	27	29	14	9	15	19	6	40	20.3
Jul 19	15	9	11	12	21	23	25	25	27	29	31	31	30	S	34	28	26	25	25	23	15	15	18	16	9	34	22.3
Jul 20	16	15	13	7	5	6	14	17	23	26	25	29	S	32	33	34	33	32	30	22	11	8	5	4	4	34	19.1
Jul 21	2	1	1	0	1	1	4	14	23	28	29	S	30	30	32	32	35	42	40	34	21	14	11	18	0	42	19.3
Jul 22	20	22	25	21	11	15	21	22	27	33	S	41	43	43	44	44	44	42	39	35	27	24	28	26	11	44	30.3
Jul 23	24	24	22	14	15	20	23	25	27	S	34	34	34	35	37	39	40	40	36	26	16	14	10	8	8	40	26.0
Jul 24	7	6	11	15	13	17	19	19	S	20	22	23	26	28	32	33	40	34	22	27	25	24	28	27	6	40	22.5
Jul 25	26	27	25	21	19	18	16	S	12	14	15	19	23	23	21	21	21	21	21	21	20	20	21	23	12	27	20.3
Jul 26	23	23	23	20	15	13	S	16	18	23	24	24	26	28	33	33	36	35	32	32	36	33	25	18	13	36	25.6
Jul 27	17	10	7	5	3	S	14	21	31	34	33	32	29	29	25	24	25	24	27	27	26	31	24	27	3	34	22.8
Jul 28	26	19	20	18	S	22	23	25	26	29	30	30	32	32	34	35	35	30	28	25	17	10	8	5	5	35	24.3
Jul 29	4	2	2	S	1	4	8	10	17	18	19	22	23	25	24	27	30	30	28	19	9	5	3	2	1	30	14.4
Jul 30	2	1	S	1	1	3	4	12	18	26	29	27	30	32	32	32	31	28	26	22	18	15	11	11	1	32	17.9
Jul 31	11	S	4	2	1	1	4	10	19	26	38	41	43	46	45	43	43	40	35	26	18	20	20	23	1	46	24.3
Diurnal Maximum	26	27	27	30	30	27	26	26	31	34	38	41	43	46	49	48	48	47	40	35	36	33	30	27			
Daiurnal Average	13.1	11.8	11.1	11.2	9.9	11.9	14.3	17.6	21.4	24.0	26.5	28.1	29.2	30.8	31.4	31.6	32.1	31.5	29.3	26.7	20.8	17.7	15.8	14.5			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

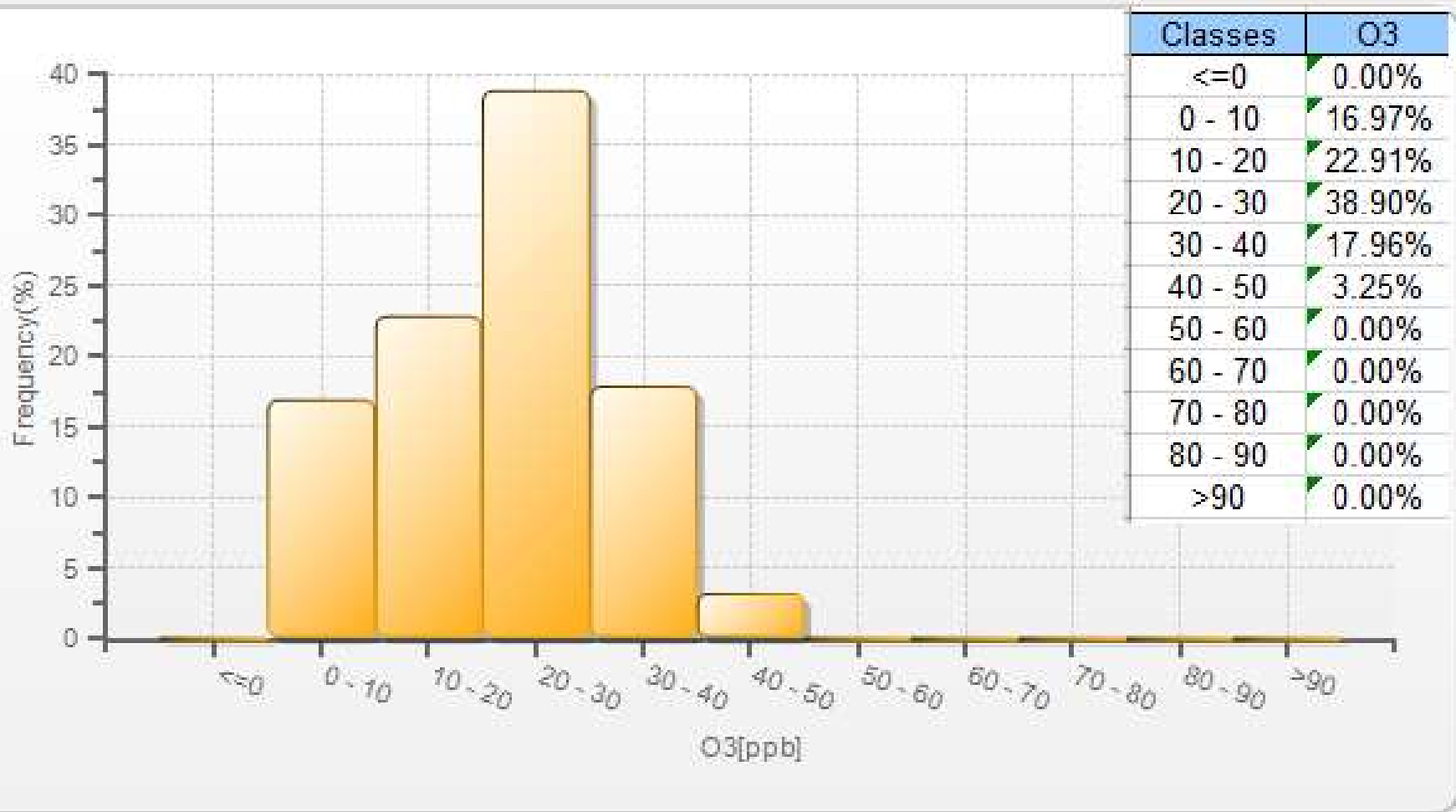
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for O3 - Cold Lake South Station**



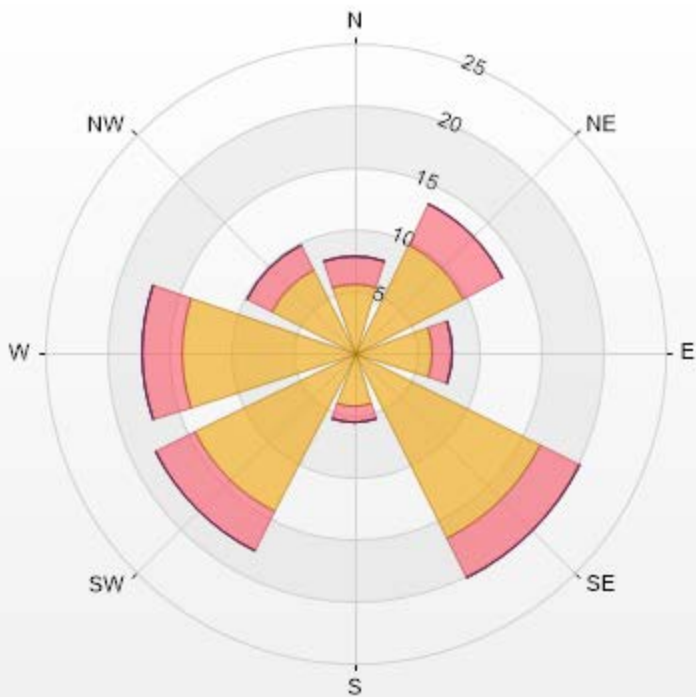
O3[ppb] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.





Wind: Cold Lake South Poll.: Cold Lake South-O3[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	5.52	2.26	0	0	0	7.78
NE	9.76	3.68	0	0	0	13.44
E	6.36	1.56	0	0	0	7.92
SE	16.83	3.54	0	0	0	20.37
S	4.38	1.27	0	0	0	5.65
SW	14.43	3.54	0	0	0	17.97
W	14	3.11	0	0	0	17.11
NW	7.5	2.26	0	0	0	9.76
Summary	78.78	21.22	0	0	0	100



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% Icon Classes (ppb)	79	21	0	0
0-30	79	21	0	0
30-50	21	0	0	0
50-82	0	0	0	0
82-159	0	0	0	0
>159.0	0	0	0	0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

**TOTAL HYDROCARBONS (THC) in ppm**

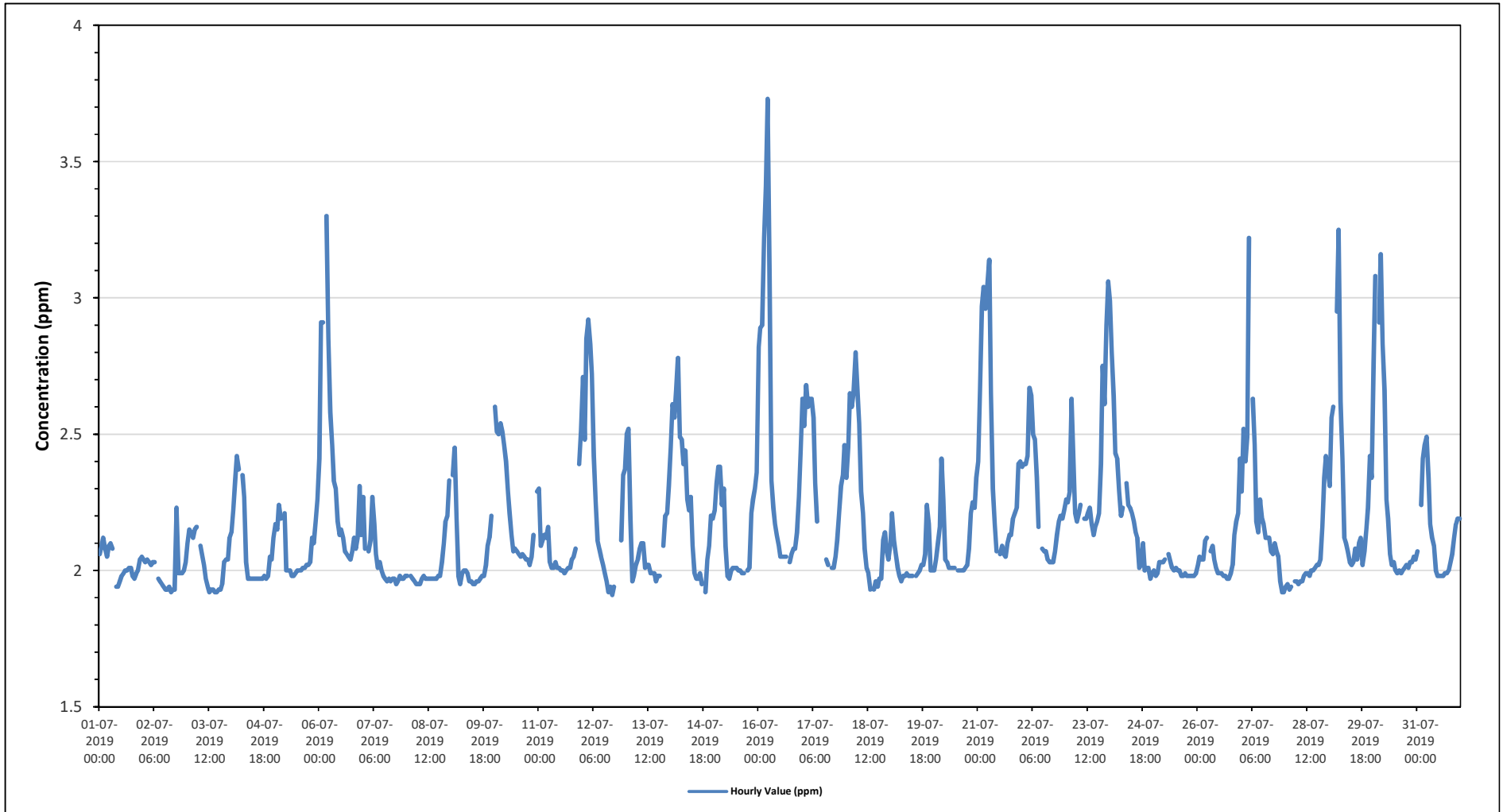
Maximum Hourly Value:	3.73 ppm	on July 16 at hour 5	Hours in Service:	744
Maximum Daily Value:	2.45 ppm	on July 16	Hours of Data:	706
Minimum Hourly Value:	1.91 ppm	on July 12 at hour 16	Hours of Missing Data:	2
Minimum Daily Value:	1.99 ppm	on July 2	Hours of Calibration:	36
Monthly Average:	2.16 ppm		Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.06	2.09	2.12	2.08	2.05	2.09	2.10	2.08	S	1.94	1.94	1.96	1.98	1.99	2.00	2.00	2.01	2.01	1.98	1.97	1.99	2.00	2.04	2.05	1.94	2.12	2.02	
Jul 2	2.04	2.03	2.04	2.03	2.02	2.03	2.03	S	1.97	1.96	1.95	1.94	1.93	1.93	1.94	1.92	1.93	1.93	2.23	1.99	1.99	1.99	2.00	2.03	1.92	2.23	1.99	
Jul 3	2.10	2.15	2.14	2.12	2.15	2.16	S	2.09	2.06	2.02	1.97	1.94	1.92	1.93	1.93	1.92	1.92	1.93	1.93	1.95	2.03	2.04	2.04	2.12	1.92	2.16	2.02	
Jul 4	2.14	2.22	2.33	2.42	2.37	S	2.35	2.27	2.03	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.97	1.98	2.05	2.04	2.12	1.97	2.42	2.09	
Jul 5	2.17	2.15	2.24	2.19	S	2.21	2.00	2.00	2.00	1.98	1.98	1.99	2.00	2.00	2.00	2.01	2.01	2.02	2.02	2.03	2.12	2.10	2.18	2.26	1.98	2.26	2.07	
Jul 6	2.41	2.91	2.91	S	3.30	2.85	2.58	2.46	2.33	2.30	2.18	2.13	2.15	2.12	2.07	2.06	2.05	2.04	2.07	2.12	2.08	2.12	2.31	2.13	2.04	3.30	2.33	
Jul 7	2.27	2.08	S	2.07	2.11	2.27	2.17	2.06	2.01	2.03	2.00	1.98	1.97	1.96	1.97	1.96	1.97	1.97	1.95	1.96	1.98	1.97	1.97	1.98	1.95	2.27	2.03	
Jul 8	1.98	S	1.98	1.97	1.96	1.95	1.95	1.95	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	2.03	2.10	2.18	2.20	2.33	1.95	2.33	2.01	
Jul 9	S	2.35	2.45	2.19	1.98	1.95	1.99	2.00	2.00	1.99	1.96	1.95	1.95	1.95	1.96	1.96	1.97	1.98	1.98	2.02	2.09	2.12	2.20	S	1.95	2.45	2.05	
Jul 10	2.60	2.51	2.50	2.54	2.51	2.46	2.40	2.29	2.21	2.13	2.07	2.08	2.07	2.06	2.05	2.06	2.05	2.04	2.04	2.02	2.05	2.13	S	2.29	2.02	2.60	2.22	
Jul 11	2.30	2.09	2.11	2.13	2.12	2.16	2.03	2.01	2.01	2.03	2.01	2.01	2.00	2.00	1.99	2.00	2.01	2.01	2.04	2.05	2.08	S	2.39	2.51	1.99	2.51	2.09	
Jul 12	2.71	2.48	2.85	2.92	2.83	2.72	2.42	2.25	2.11	2.08	2.05	2.02	1.99	1.96	1.92	1.94	1.91	1.94	Y	Y	S	2.11	2.35	2.37	1.91	2.92	2.28	
Jul 13	2.50	2.52	2.19	1.96	1.98	2.02	2.04	2.08	2.10	2.10	2.01	2.02	2.02	1.99	1.99	1.96	1.98	1.98	S	S	2.09	2.20	2.21	2.31	1.96	2.52	2.10	
Jul 14	2.45	2.61	2.56	2.66	2.78	2.49	2.48	2.39	2.44	2.26	2.22	2.27	2.09	1.99	1.97	1.97	1.99	1.95	S	S	2.04	2.09	2.20	2.19	1.92	2.78	2.16	
Jul 15	2.22	2.32	2.38	2.38	2.24	2.30	2.09	1.98	1.97	2.00	2.01	2.01	2.01	2.00	2.00	1.99	1.99	S	S	2.00	2.01	2.21	2.26	2.30	1.97	2.38	2.13	
Jul 16	2.82	2.89	2.90	3.22	3.41	3.73	3.08	2.33	2.23	2.17	2.13	2.09	2.05	2.05	2.05	2.05	S	S	2.03	2.06	2.08	2.08	2.14	2.27	2.44	2.03	3.73	2.45
Jul 17	2.63	2.53	2.68	2.60	2.63	2.63	2.56	2.32	2.18	C	C	C	C	2.04	2.02	S	S	2.01	2.01	2.05	2.11	2.21	2.31	2.35	2.46	2.01	2.68	2.33
Jul 18	2.34	2.45	2.65	2.60	2.66	2.80	2.67	2.54	2.29	2.21	2.08	2.01	1.99	1.93	S	S	1.93	1.96	1.94	1.97	2.11	2.14	2.07	2.04	1.93	2.80	2.23	
Jul 19	2.10	2.21	2.11	2.06	2.01	1.98	1.96	1.98	1.98	1.99	1.98	1.98	1.98	S	1.98	1.99	2.00	2.02	2.02	2.06	2.24	2.17	2.00	2.00	1.96	2.24	2.03	
Jul 20	2.00	2.04	2.10	2.16	2.41	2.26	2.04	2.03	2.01	2.01	2.01	2.01	S	S	2.00	2.00	2.00	2.01	2.02	2.08	2.21	2.25	2.23	2.34	2.00	2.41	2.10	
Jul 21	2.40	2.66	2.97	3.04	2.96	3.05	3.14	2.65	2.30	2.17	2.07	S	S	2.06	2.09	2.06	2.05	2.10	2.13	2.13	2.19	2.21	2.23	2.39	2.40	2.05	3.14	2.41
Jul 22	2.38	2.39	2.39	2.42	2.67	2.64	2.50	2.48	2.34	2.16	S	S	2.08	2.07	2.07	2.04	2.03	2.03	2.03	2.07	2.13	2.18	2.20	2.19	2.22	2.03	2.67	2.25
Jul 23	2.26	2.25	2.29	2.63	2.39	2.21	2.18	2.21	2.24	S	S	2.19	2.19	2.21	2.23	2.17	2.13	2.16	2.18	2.21	2.39	2.75	2.61	2.90	3.06	2.13	3.06	2.35
Jul 24	2.99	2.80	2.64	2.43	2.41	2.29	2.20	2.23	S	2.32	2.24	2.23	2.21	2.18	2.14	2.12	2.01	2.02	2.10	2.00	2.01	2.01	1.97	1.99	1.97	2.99	2.99	2.24
Jul 25	2.00	1.98	1.99	2.03	2.03	2.03	2.04	S	S	2.06	2.03	2.01	2.00	2.01	2.00	2.00	1.98	1.98	1.99	1.98	1.98	1.98	1.98	1.99	1.98	1.98	2.06	2.00
Jul 26	2.02	2.05	2.04	2.04	2.11	2.12	S	S	2.07	2.09	2.04	2.01	1.99	1.99	1.99	1.98	1.98	1.97	1.97	1.99	2.02	2.13	2.18	2.21	2.41	1.97	2.41	2.06
Jul 27	2.29	2.52	2.40	2.49	3.22	S	S	2.63	2.46	2.18	2.14	2.26	2.19	2.17	2.12	2.12	2.07	2.06	2.10	2.07	2.05	1.96	1.92	1.92	1.92	3.22	2.24	
Jul 28	1.94	1.95	1.93	1.94	S	S	1.96	1.96	1.95	1.96	1.96	1.98	1.99	1.99	1.98	2.00	2.01	2.02	2.02	2.04	2.16	2.34	2.42	2.37	1.93	2.42	2.04	
Jul 29	2.31	2.56	2.60	S	S	2.95	3.25	2.62	2.41	2.12	2.10	2.07	2.03	2.02	2.03	2.08	2.00	2.10	2.12	2.02	2.07	2.15	2.23	2.42	2.34	2.02	3.25	2.29
Jul 30	2.76	3.08	S	S	2.91	3.16	2.83	2.66	2.26	2.19	2.06	2.02	2.03	2.00	1.99	2.00	1.99	2.00	2.01	2.02	2.01	2.03	2.05	2.04	1.99	3.16	2.27	
Jul 31	2.07	S	2.24	2.41	2.46	2.49	2.34	2.17	2.12	2.09	2.00	1.98	1.98	1.98	1.98	1.99	1.99	2.00	2.03	2.06	2.12	2.17	2.19	2.19	1.98	2.49	2.13	
Diurnal Maximum	2.99	3.08	2.97	3.22	3.41	3.73	3.14	2.65	2.44	2.32	2.26	2.27	2.21	2.23	2.17	2.13	2.16	2.18	2.23	2.39	2.75	2.61	2.90	3.06				
Diurnal Average	2.31	2.37	2.37	2.37	2.48	2.41	2.32	2.21	2.12	2.08	2.05	2.04	2.03	2.02	2.01	2.00	2.00	2.01	2.03	2.04	2.12	2.14	2.20	2.24				

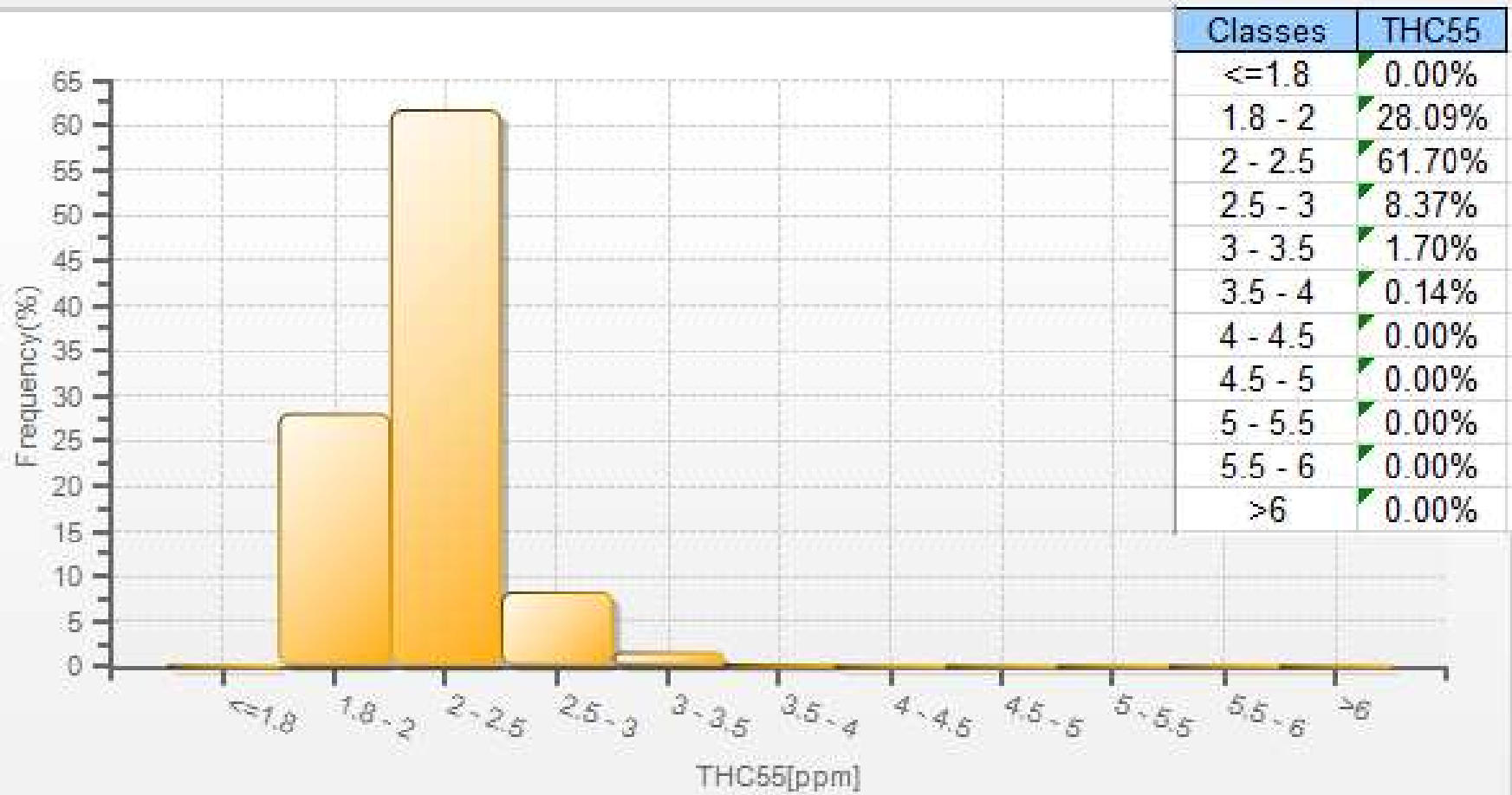
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for THC - Cold Lake South Station**

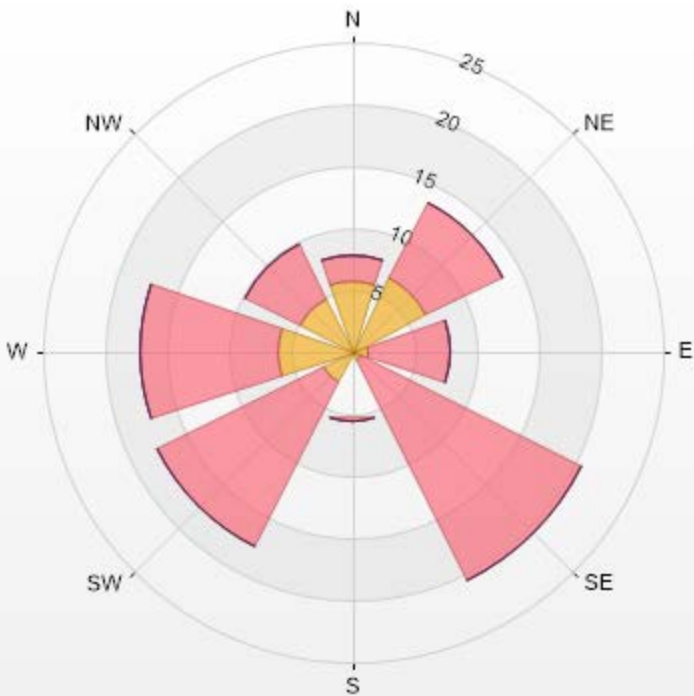


THC55[ppm] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-THC55[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	5.67	2.13	0	0	0	7.8
NE	6.67	6.81	0	0	0	13.48
E	1.28	6.67	0	0	0	7.95
SE	0.85	19.72	0	0	0	20.57
S	0.14	5.53	0	0	0	5.67
SW	2.7	14.89	0	0	0	17.59
W	6.1	11.06	0	0	0	17.16
NW	4.68	5.11	0	0	0	9.79
Summary	28.09	71.92	0	0	0	100



% Icon	Classes (ppm)	28	72	0	0	0
	0-2	28	72	0	0	0
	2.5-5	0	0	0	0	0
	5-10	0	0	0	0	0
	10-40	0	0	0	0	0
	>40.0	0	0	0	0	0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

METHANE (CH4) in ppm

Maximum Hourly Value: 3.60 ppm on July 16 at hour 5	Hours in Service: 744
Maximum Daily Value: 2.43 ppm on July 16	Hours of Data: 706
Minimum Hourly Value: 1.92 ppm on July 2 at hour 15	Hours of Missing Data: 2
Minimum Daily Value: 1.98 ppm on July 2	Hours of Calibration: 36
Monthly Average: 2.16 ppm	Operational Uptime: 99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.06	2.09	2.12	2.08	2.05	2.08	2.10	2.08	S	1.94	1.94	1.96	1.98	1.99	2.00	2.00	2.01	2.01	1.98	1.97	1.99	2.00	2.04	2.05	1.94	2.12	2.02	
Jul 2	2.04	2.03	2.04	2.03	2.02	2.03	2.03	S	1.97	1.96	1.95	1.94	1.93	1.93	1.94	1.92	1.93	1.93	1.94	1.97	1.99	1.99	2.00	2.04	1.92	2.04	1.98	
Jul 3	2.10	2.15	2.14	2.12	2.15	2.16	S	2.09	2.06	2.02	1.97	1.94	1.92	1.93	1.93	1.92	1.92	1.93	1.93	1.95	2.03	2.04	2.04	2.12	1.92	2.16	2.02	
Jul 4	2.14	2.22	2.33	2.41	2.36	S	2.34	2.27	2.03	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.97	1.98	2.05	2.04	2.12	1.97	2.41	2.09	
Jul 5	2.17	2.15	2.24	2.19	S	2.21	2.00	2.00	2.00	1.98	1.98	1.99	2.00	2.00	2.00	2.01	2.01	2.01	2.02	2.03	2.12	2.10	2.18	2.18	1.98	2.24	2.07	
Jul 6	2.24	2.79	2.79	S	3.14	2.81	2.58	2.46	2.33	2.29	2.18	2.13	2.15	2.12	2.07	2.06	2.05	2.04	2.06	2.12	2.08	2.10	2.31	2.12	2.04	3.14	2.31	
Jul 7	2.27	2.08	S	2.07	2.10	2.27	2.17	2.06	2.01	2.03	2.00	1.98	1.97	1.96	1.97	1.96	1.97	1.97	1.96	1.96	1.98	1.97	1.97	1.98	1.96	2.27	2.03	
Jul 8	1.98	S	1.98	1.97	1.96	1.95	1.95	1.95	1.95	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	2.03	2.09	2.17	2.20	2.33	1.95	2.33	2.01	
Jul 9	S	2.35	2.44	2.19	1.98	1.95	1.99	2.00	2.00	1.99	1.96	1.95	1.95	1.95	1.96	1.96	1.97	1.98	1.98	2.02	2.09	2.12	2.20	S	1.95	2.44	2.04	
Jul 10	2.60	2.51	2.50	2.53	2.51	2.46	2.40	2.29	2.21	2.12	2.07	2.08	2.07	2.06	2.05	2.06	2.04	2.04	2.04	2.02	2.05	2.12	S	2.29	2.02	2.60	2.22	
Jul 11	2.29	2.09	2.10	2.13	2.12	2.16	2.03	2.00	2.01	2.02	2.01	2.01	2.00	1.99	1.99	2.00	2.00	2.01	2.04	2.04	2.08	S	2.39	2.51	1.99	2.51	2.09	
Jul 12	2.71	2.46	2.84	2.91	2.83	2.72	2.42	2.24	2.11	2.08	2.04	2.02	1.98	1.96	1.95	1.96	1.94	1.96	Y	Y	S	2.11	2.34	2.37	1.94	2.91	2.28	
Jul 13	2.49	2.52	2.18	1.96	1.98	2.02	2.04	2.08	2.10	2.09	2.01	2.02	2.02	1.98	1.98	1.98	1.98	1.98	1.98	S	S	2.05	2.18	2.20	1.96	2.52	2.09	
Jul 14	2.44	2.60	2.56	2.65	2.77	2.48	2.48	2.39	2.44	2.25	2.21	2.27	2.08	2.00	1.98	1.98	1.99	1.98	S	S	1.96	2.03	2.09	2.20	1.96	2.77	2.26	
Jul 15	2.21	2.32	2.37	2.38	2.24	2.30	2.08	1.97	1.96	1.99	2.00	2.01	2.01	2.00	2.00	1.99	1.99	S	S	2.00	2.01	2.21	2.25	2.29	1.96	2.38	2.13	
Jul 16	2.80	2.84	2.86	3.16	3.33	3.60	2.97	2.33	2.23	2.17	2.13	2.09	2.05	2.05	2.05	2.05	S	S	2.03	2.05	2.07	2.08	2.14	2.27	2.44	2.03	3.60	2.43
Jul 17	2.63	2.53	2.67	2.60	2.63	2.63	2.56	2.32	2.18	C	C	C	C	2.04	2.02	S	2.00	2.01	2.05	2.10	2.20	2.30	2.31	2.42	2.00	2.67	2.33	
Jul 18	2.34	2.45	2.64	2.59	2.66	2.79	2.66	2.53	2.29	2.21	2.08	2.01	1.99	1.93	S	1.93	1.96	1.94	1.97	1.97	2.11	2.14	2.07	2.04	1.93	2.79	2.23	
Jul 19	2.10	2.20	2.11	2.06	2.01	1.98	1.96	1.98	1.98	1.99	1.98	1.98	1.97	S	1.98	1.99	1.99	2.01	2.01	2.06	2.23	2.17	2.00	2.00	1.96	2.23	2.03	
Jul 20	2.00	2.04	2.10	2.16	2.41	2.25	2.03	2.02	2.01	2.01	2.01	2.00	S	2.00	2.00	2.00	2.00	2.01	2.02	2.08	2.20	2.24	2.22	2.34	2.00	2.41	2.09	
Jul 21	2.39	2.65	2.96	3.03	2.94	3.02	3.11	2.65	2.30	2.16	2.07	S	2.06	2.08	2.06	2.05	2.10	2.12	2.13	2.18	2.20	2.22	2.39	2.40	2.05	3.11	2.40	
Jul 22	2.37	2.39	2.39	2.42	2.67	2.63	2.49	2.48	2.34	2.15	S	2.07	2.06	2.07	2.04	2.02	2.02	2.02	2.04	2.09	2.13	2.16	2.17	2.21	2.02	2.67	2.24	
Jul 23	2.25	2.25	2.28	2.63	2.38	2.21	2.18	2.19	2.22	S	2.17	2.17	2.18	2.17	2.11	2.07	2.08	2.09	2.12	2.24	2.57	2.45	2.74	2.88	2.07	2.88	2.29	
Jul 24	2.86	2.68	2.56	2.40	2.37	2.27	2.19	2.23	S	2.21	2.21	2.18	2.14	2.11	2.08	2.08	2.00	2.02	2.10	2.00	2.01	1.97	1.98	1.98	1.97	2.86	2.20	
Jul 25	2.00	1.98	1.99	2.02	2.03	2.03	2.04	S	2.06	2.03	2.00	2.00	2.00	2.11	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	2.06	2.00	
Jul 26	2.02	2.04	2.04	2.04	2.11	2.12	S	2.06	2.08	2.04	2.00	1.99	1.99	1.98	1.98	1.98	1.97	1.97	1.98	2.02	2.12	2.18	2.20	2.40	1.97	2.40	2.06	
Jul 27	2.29	2.51	2.38	2.46	3.21	S	2.62	2.46	2.18	2.11	2.25	2.18	2.13	2.10	2.10	2.10	2.05	2.04	2.09	2.07	2.05	1.96	1.92	1.92	1.92	3.21	2.23	
Jul 28	1.94	1.95	1.93	1.94	S	1.96	1.96	1.95	1.96	1.96	1.98	1.99	1.99	1.98	2.00	2.00	2.01	2.02	2.02	2.04	2.16	2.34	2.42	2.37	1.93	2.42	2.04	
Jul 29	2.31	2.56	2.60	S	2.95	3.25	2.62	2.41	2.12	2.10	2.07	2.02	2.02	2.03	2.07	2.04	2.10	2.11	2.02	2.07	2.14	2.22	2.42	2.33	2.02	3.25	2.29	
Jul 30	2.76	3.08	S	2.85	3.10	2.81	2.64	2.25	2.18	2.06	2.02	2.03	1.99	1.98	1.99	1.99	1.99	2.01	2.02	2.01	2.03	2.03	2.05	2.03	1.98	3.10	2.26	
Jul 31	2.07	S	2.23	2.41	2.46	2.49	2.34	2.17	2.11	2.09	2.00	1.98	1.98	1.98	1.99	1.99	2.00	2.03	2.06	2.11	2.17	2.18	2.18	1.98	2.49	2.13		
Diurnal Maximum	2.86	3.08	2.96	3.16	3.33	3.60	3.11	2.44	2.29	2.25	2.27	2.18	2.17	2.11	2.10	2.10	2.12	2.13	2.24	2.57	2.45	2.74	2.88					
Diurnal Average	2.30	2.36	2.36	2.36	2.46	2.40	2.31	2.20	2.12	2.07	2.04	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.02	2.04	2.10	2.13	2.19	2.23				

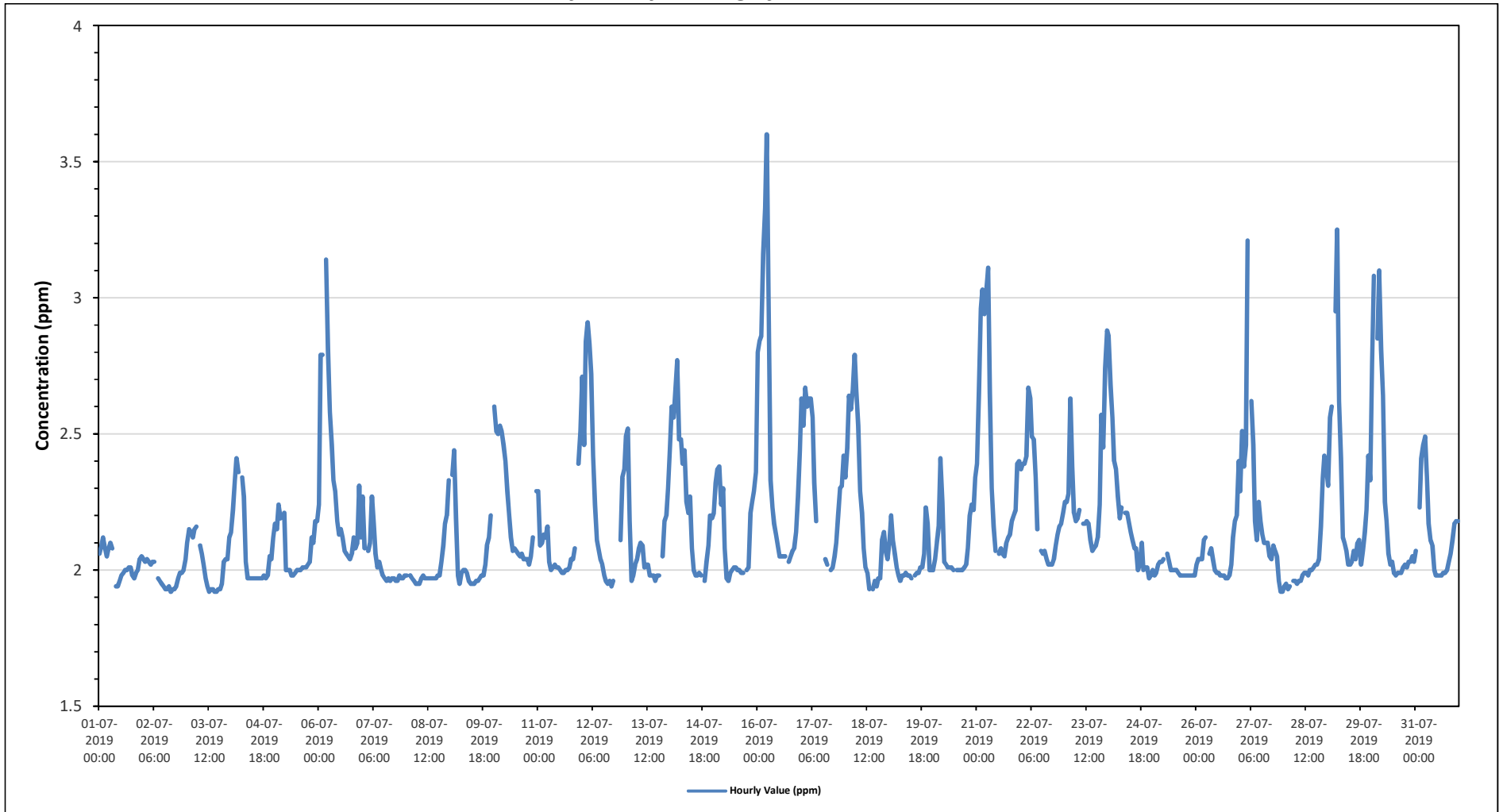
C Calibration	S Daily Zero/Span	Q Quality Assurance
G Out for Repair	K Collection Error	N Not in Service
R Recovery	X Machine Malfunction	Y Maintenance
C1 Repeat Calibration	S1 Repeat Daily Zero/Span	O Operator Error
		P Power Failure
		T Exceeds Temperature Limits
		N Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

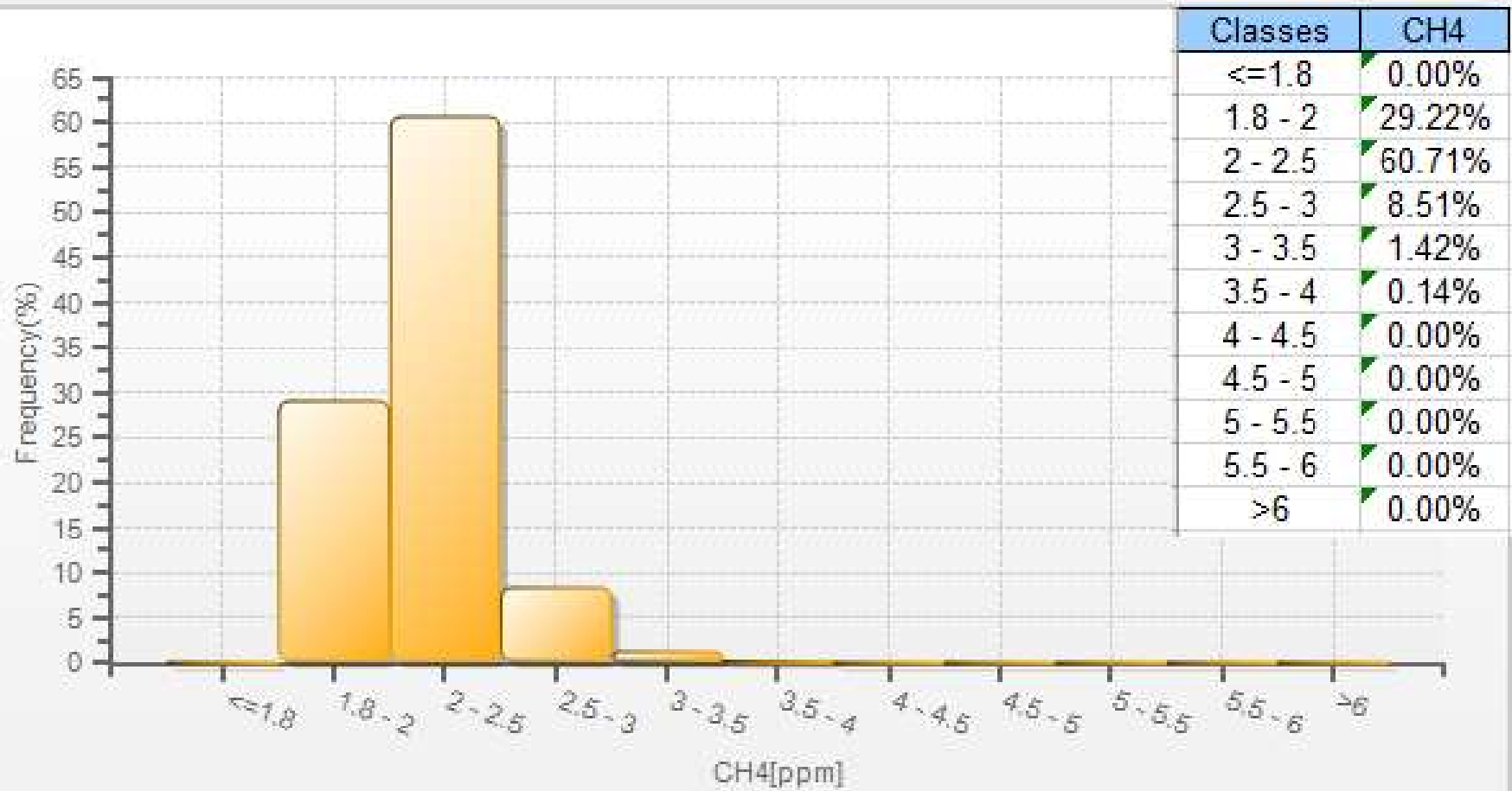
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



**Timeseries Chart of Hourly Average for CH4 - Cold Lake South Station**

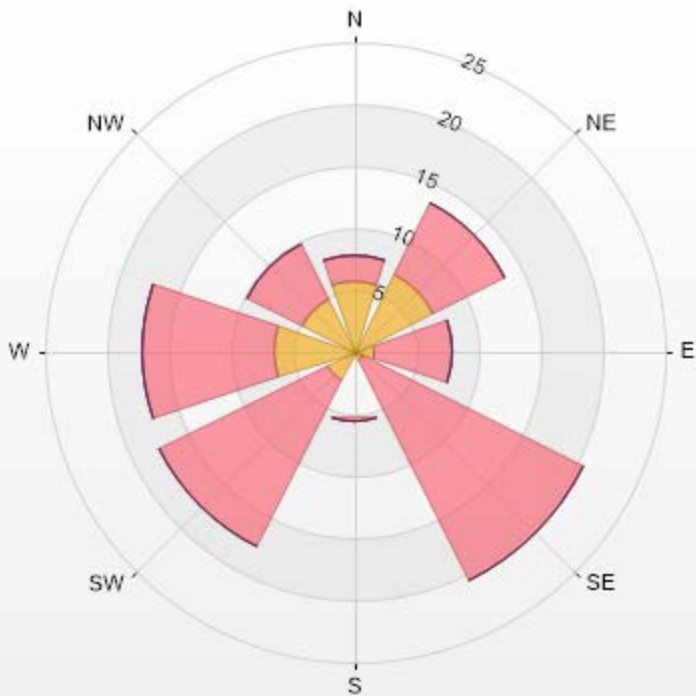


CH4[ppm] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-CH4[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	5.67	2.13	0	0	0	7.8
NE	7.09	6.38	0	0	0	13.47
E	1.56	6.38	0	0	0	7.94
SE	0.85	19.72	0	0	0	20.57
S	0.14	5.53	0	0	0	5.67
SW	2.55	15.04	0	0	0	17.59
W	6.52	10.64	0	0	0	17.16
NW	4.82	4.96	0	0	0	9.78
Summary	29.2	70.78	0	0	0	100

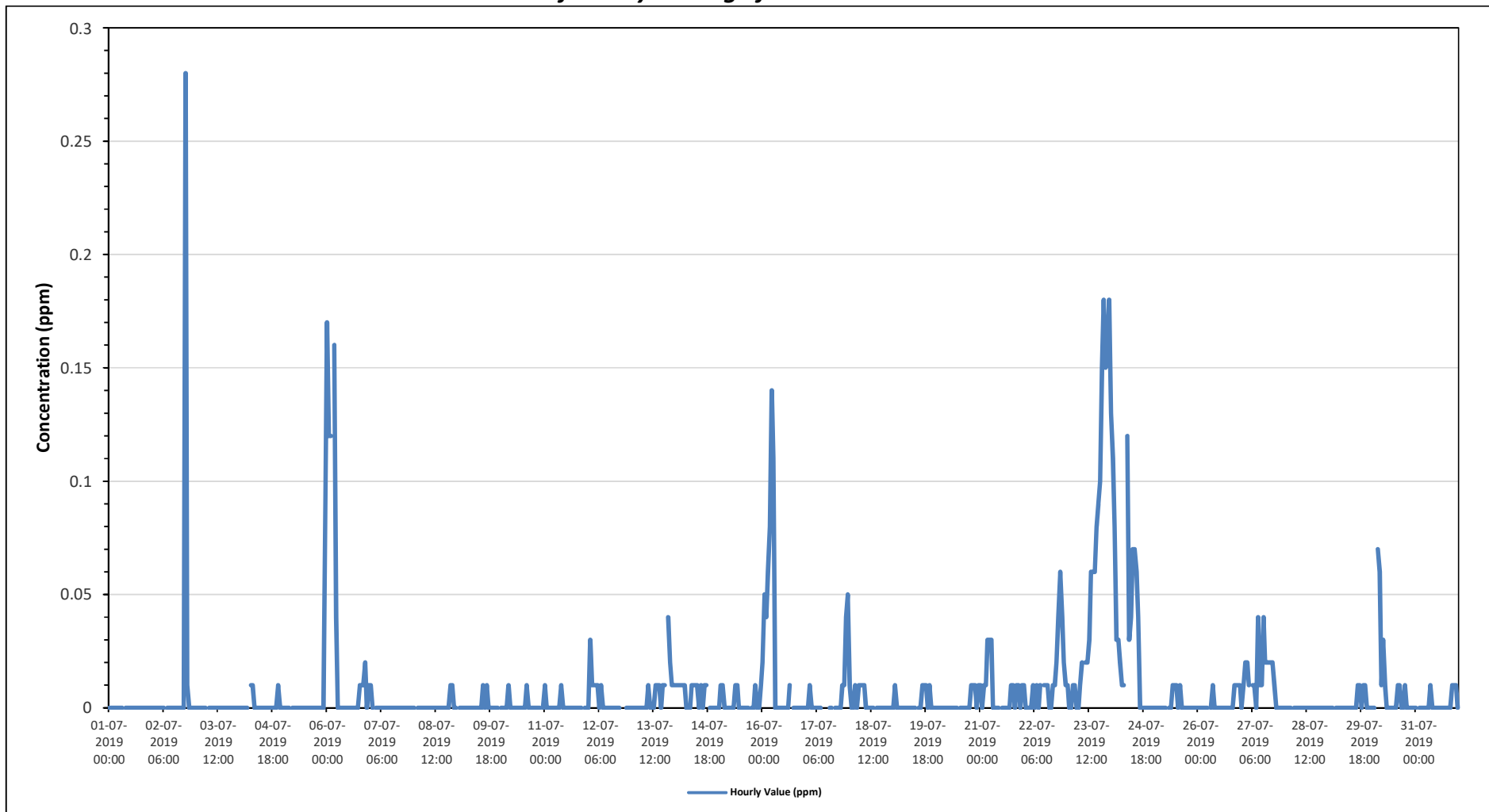


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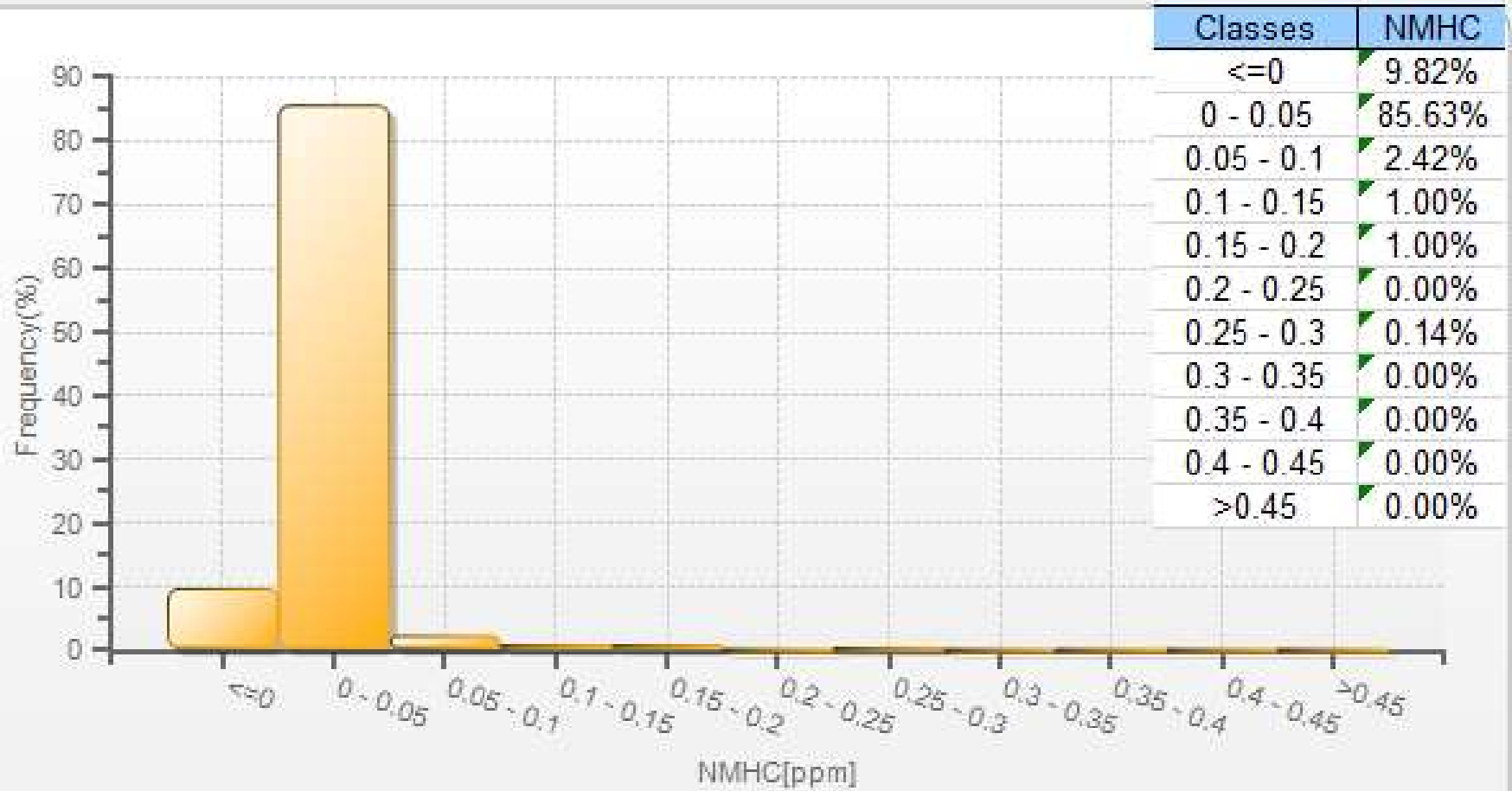
% Icon	Classes (ppm)	Count	Color	Class	Count	Color	Class	Count
29	0-2	7	Yellow	0-2	0	Blue	5-10	0
7	2-5	0	Red	5-10	0	Purple	10-20	0
	>20.0	0	Pink					



*Timeseries Chart of Hourly Average for NMHC - Cold Lake South Station*



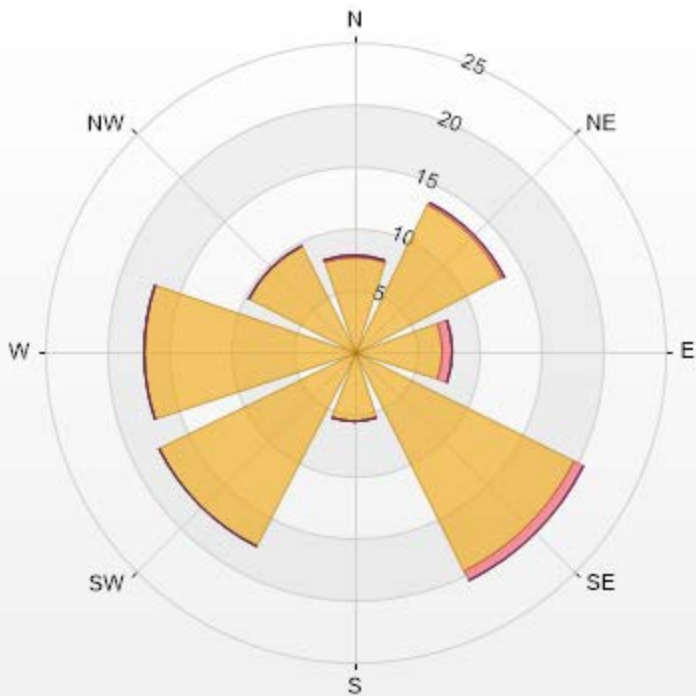
NMHC[ppm] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NMHC[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.49% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	7.68	0.14	0	0	0	7.82
NE	13.23	0.28	0	0	0	13.51
E	7.11	0.85	0	0	0	7.96
SE	19.91	0.71	0	0	0	20.62
S	5.69	0	0	0	0	5.69
SW	17.64	0	0	0	0	17.64
W	17.07	0	0	0	0	17.07
NW	9.53	0.14	0	0	0	9.67
Summary	97.86	2.12	0	0	0	100





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% Icon Classes (ppm)	98	0-0.1	2	0.3-0.9	0	0.9-2	0	>2.0
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# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

PARTICULATE MATTER 2.5 (PM<sub>2.5</sub>) in µg/m<sup>3</sup>

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 80 µg/m<sup>3</sup>, 24-Hour 29 µg/m<sup>3</sup>**

Number of 1-Hour Exceedences: 0                      Number of 24-Hour Exceedences: 0

Maximum Hourly Value:	78 µg/m <sup>3</sup> on July 2 at hour 18	Hours in Service:	744
Maximum Daily Value:	7 µg/m <sup>3</sup> on July 12	Hours of Data:	743
Minimum Hourly Value:	0 µg/m <sup>3</sup> on July 2 at hour 12	Hours of Missing Data:	0
Minimum Daily Value:	1 µg/m <sup>3</sup> on July 25	Hours of Calibration:	1
Monthly Average:	3.4 µg/m <sup>3</sup>	Operational Uptime:	100.0

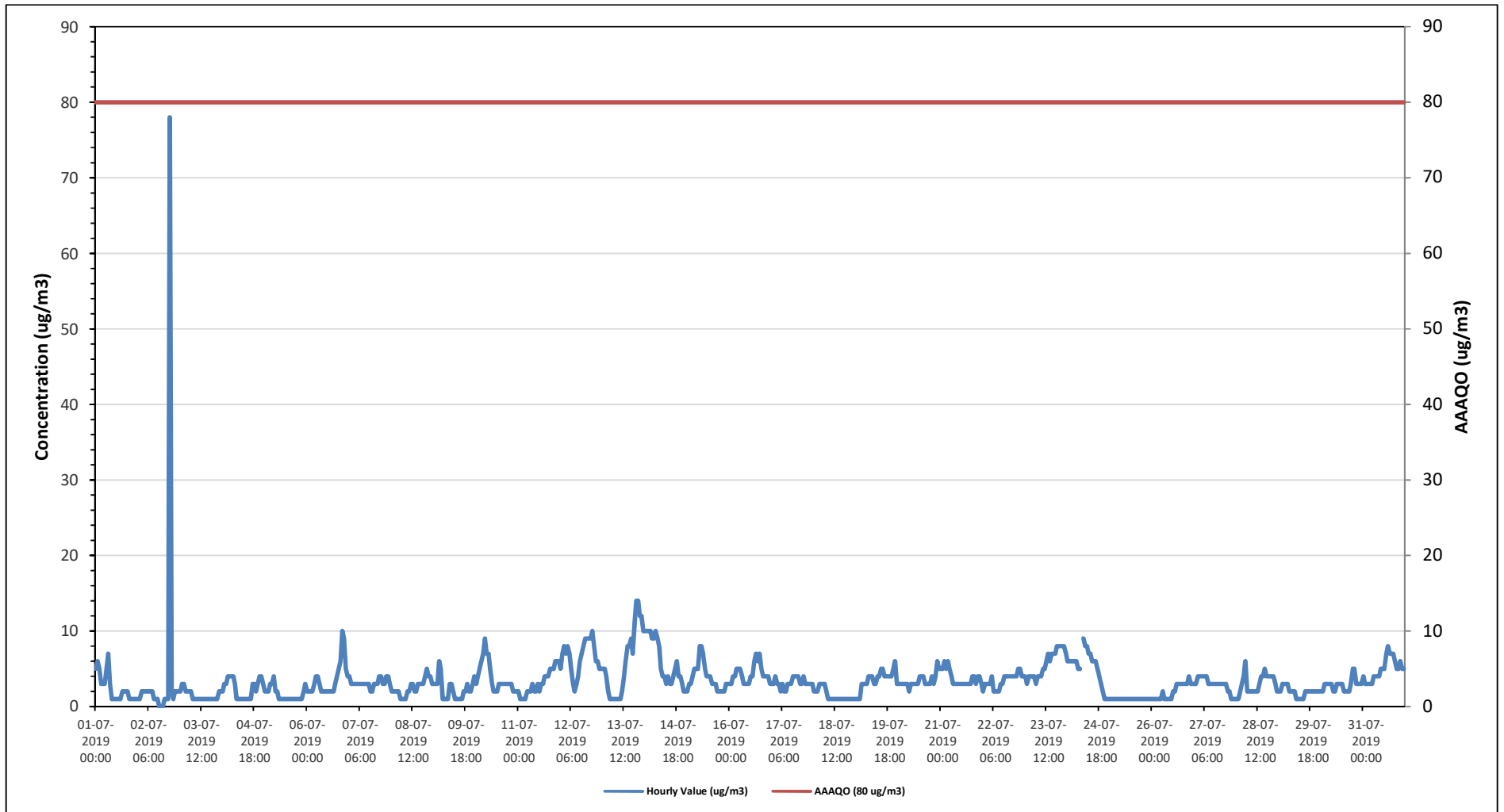
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	5	6	5	3	3	3	5	7	3	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	7	2.5
Jul 2	1	1	2	2	2	2	2	2	2	1	1	1	0	0	0	1	1	1	1	78	2	1	2	2	2	0	78	4.5
Jul 3	2	3	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	3	1.5
Jul 4	2	3	3	4	4	4	4	3	1	1	1	1	1	1	1	1	1	3	3	2	3	4	4	3	1	4	2.4	
Jul 5	2	2	2	3	3	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	1	4	1.6	
Jul 6	2	2	2	2	3	4	4	3	2	2	2	2	2	2	2	2	3	4	5	6	10	9	5	4	2	10	3.5	
Jul 7	4	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	4	4	3	3	4	4	3	2	4	3.1	
Jul 8	2	2	2	2	2	1	1	1	1	2	2	3	3	2	2	3	3	3	3	4	5	4	4	3	1	5	2.5	
Jul 9	3	3	3	6	5	1	1	1	1	3	2	1	1	1	1	1	2	2	3	2	2	3	4	1	6	2.3		
Jul 10	3	4	5	6	7	9	7	7	5	3	2	2	2	3	3	3	3	3	3	3	3	2	2	2	2	9	3.8	
Jul 11	2	1	1	1	1	2	2	2	3	2	2	3	2	3	3	4	4	4	5	5	5	6	6	6	1	6	3.1	
Jul 12	5	7	8	7	8	7	5	3	2	3	4	6	7	8	9	9	9	9	10	8	6	6	5	5	2	10	6.5	
Jul 13	5	5	4	2	1	1	1	1	1	1	2	4	6	8	8	8	9	7	11	14	14	12	12	10	1	14	5.8	
Jul 14	10	10	10	10	9	9	10	9	8	5	4	4	3	4	3	3	4	5	6	4	4	3	2	2	2	10	5.9	
Jul 15	2	3	3	4	5	5	5	8	8	7	5	4	4	4	3	3	3	2	2	2	2	2	3	3	2	8	3.8	
Jul 16	3	3	4	4	5	5	5	4	3	3	3	3	4	4	6	7	6	7	5	4	4	4	3	3	3	7	4.3	
Jul 17	3	3	4	3	3	2	3	2	2	3	3	3	4	4	4	3	3	4	3	4	3	3	3	3	2	4	3.1	
Jul 18	2	2	2	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.5	
Jul 19	1	1	1	3	3	3	3	4	4	4	3	3	4	4	5	5	4	4	4	4	4	5	6	3	1	6	3.5	
Jul 20	3	3	3	3	3	3	2	3	3	3	3	3	4	4	4	3	3	3	3	4	3	4	6	5	2	6	3.4	
Jul 21	5	5	6	5	6	5	4	3	3	3	3	3	3	3	3	3	3	4	4	4	3	4	4	3	3	6	3.8	
Jul 22	2	3	3	3	3	4	2	2	2	2	3	3	4	4	4	4	4	4	4	5	5	4	4	2	2	5	3.4	
Jul 23	4	3	4	4	4	4	3	4	4	4	5	5	6	7	6	7	7	7	8	8	8	8	8	7	3	8	5.6	
Jul 24	6	6	6	6	6	5	5	C	9	8	8	7	7	6	6	6	5	4	3	2	1	1	1	1	1	9	5.2	
Jul 25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
Jul 26	1	1	1	1	1	1	2	1	1	1	1	1	2	2	3	3	3	3	3	3	3	4	3	3	1	4	2.0	
Jul 27	3	3	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1	4	2.9	
Jul 28	1	1	2	3	4	6	2	2	2	2	2	2	3	4	4	5	4	4	4	4	4	4	3	2	1	6	3.0	
Jul 29	2	2	3	3	3	3	2	2	2	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	3	2.0	
Jul 30	2	2	3	3	3	3	3	2	2	3	3	3	3	2	2	2	2	3	5	5	3	3	3	3	2	5	2.8	
Jul 31	4	3	3	3	3	3	4	4	4	4	5	5	5	7	8	7	7	7	6	5	5	6	5	5	3	8	4.9	
Diurnal Maximum	10	10	10	10	9	9	10	9	8	9	8	8	7	8	9	9	9	9	14	14	12	12	10					
Daiurnal Average	3.0	3.1	3.4	3.5	3.6	3.6	3.3	3.2	2.6	2.7	2.6	2.7	2.8	3.1	3.3	3.5	3.5	3.6	6.4	3.7	3.7	3.7	3.6	3.2				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

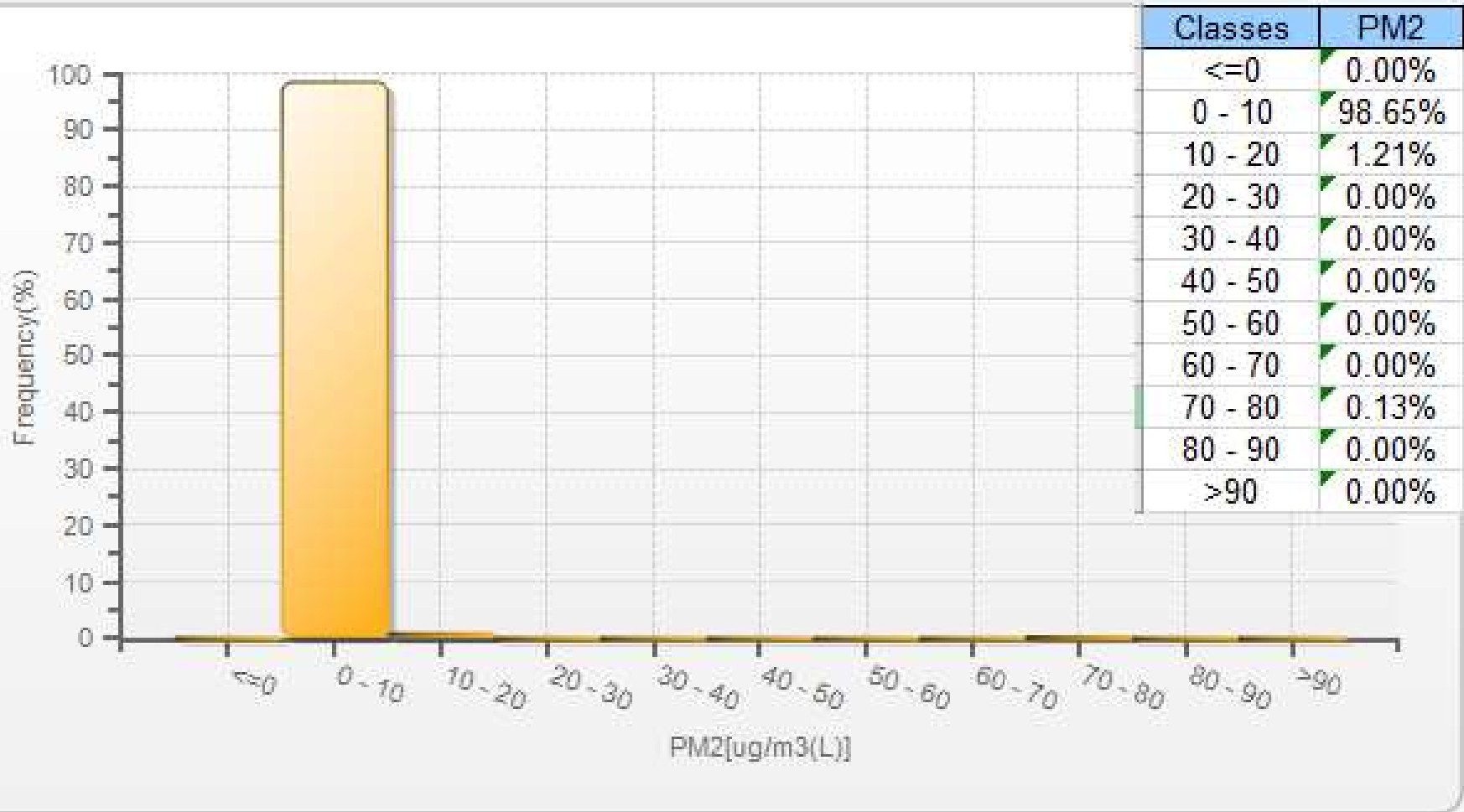
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for PM2.5 - Cold Lake South Station**

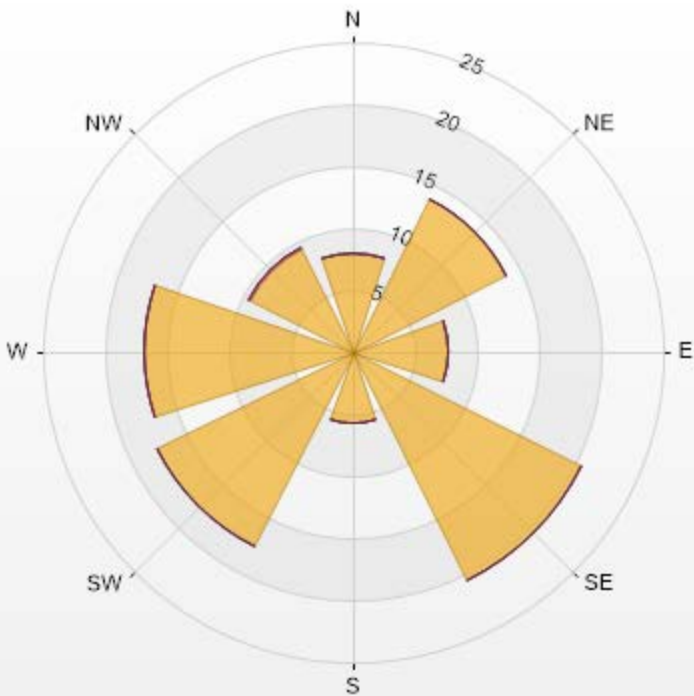


PM2[ug/m3(L)] Histogram: Cold Lake South Monthly: 07-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-PM2[ug/m3(L)] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.16% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	8.05	0	0	0	0	8.05
NE	13.84	0	0	0	0	13.84
E	7.77	0	0	0	0	7.77
SE	20.62	0	0	0	0	20.62
S	5.79	0	0	0	0	5.79
SW	17.66	0	0	0	0	17.66
W	16.81	0	0	0	0	16.81
NW	9.32	0.14	0	0	0	9.46
Summary	100	0.14	0	0	0	100



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## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Cold Lake South Station - July 2019

#### Summary of Hourly Averages

#### RELATIVE HUMIDITY (RH) in %

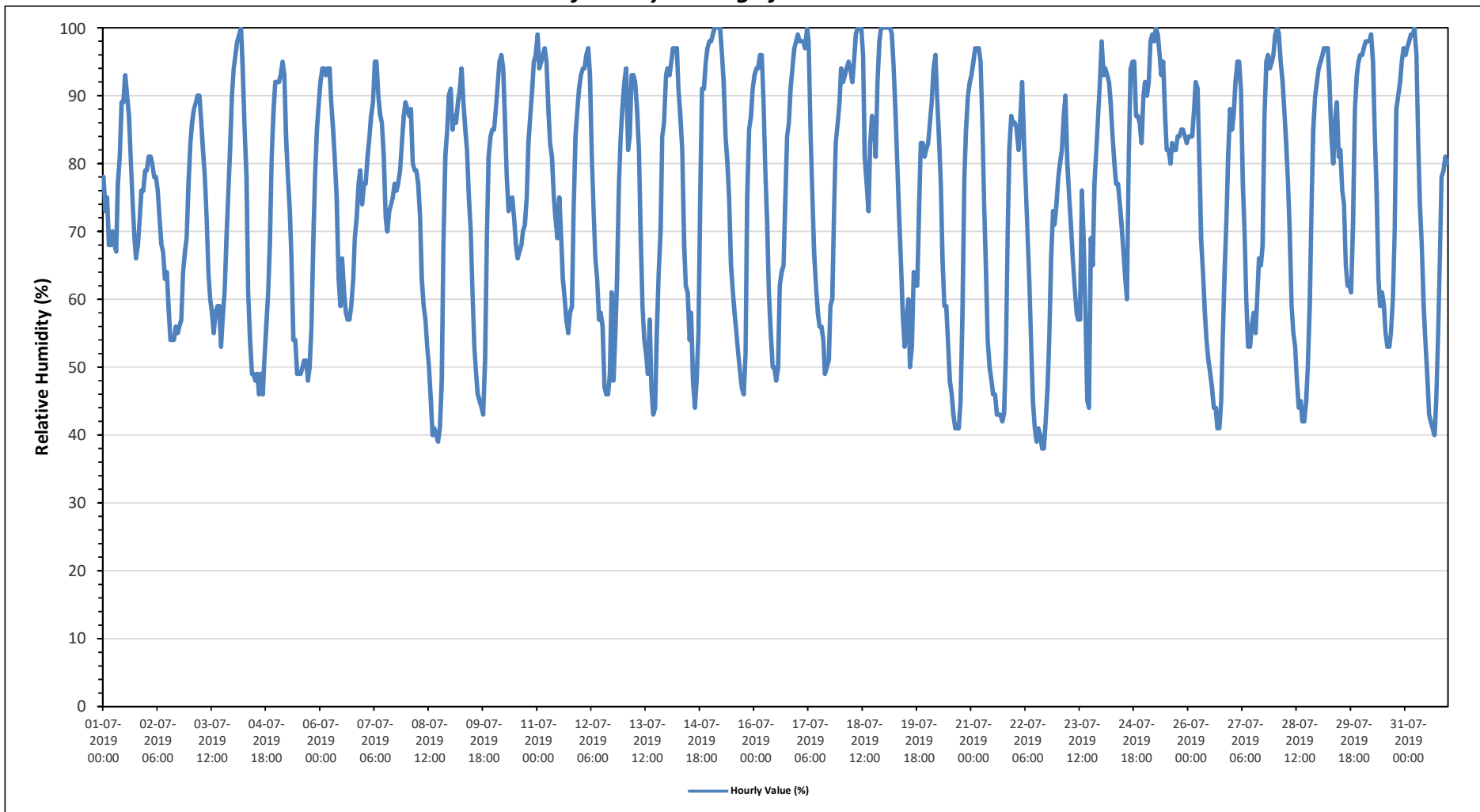
Maximum Hourly Value:	100 %	on July 4 at hour 4	Hours in Service:	744
Maximum Daily Value:	91.8 %	on July 18	Hours of Data:	744
Minimum Hourly Value:	38 %	on July 22 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	61.9 %	on July 22	Hours of Calibration:	0
Monthly Average:	74.7 %		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	78	73	75	68	68	70	68	67	77	81	89	89	93	90	87	81	75	69	66	68	72	76	76	79	66	93	76
Jul 2	79	81	81	80	78	78	76	72	68	67	63	64	59	54	54	54	56	55	56	57	64	67	69	77	54	81	67
Jul 3	83	86	88	89	90	90	86	82	78	72	64	60	58	55	58	59	59	53	58	61	69	76	82	90	53	90	73
Jul 4	94	96	98	99	100	94	85	78	61	54	49	49	48	49	46	49	46	51	56	61	68	81	88	92	46	100	71
Jul 5	92	92	93	95	93	84	78	73	66	54	54	49	49	49	50	51	51	48	50	56	69	78	85	89	48	95	69
Jul 6	92	94	94	93	94	94	89	85	80	75	63	59	66	61	58	57	57	59	63	69	72	77	79	74	57	94	75
Jul 7	77	77	81	84	87	89	95	95	90	87	86	81	72	70	73	74	75	77	76	77	79	83	87	89	70	95	82
Jul 8	88	87	88	80	79	79	77	72	63	59	57	53	50	45	40	41	40	39	41	48	68	81	85	90	39	90	65
Jul 9	91	85	87	86	89	91	94	89	85	82	75	70	62	53	49	46	45	44	43	51	70	81	84	85	43	94	72
Jul 10	85	88	92	95	96	94	87	78	73	74	75	72	68	66	67	68	70	71	75	83	87	91	95	96	66	96	81
Jul 11	99	94	95	96	97	95	88	83	81	75	72	69	75	70	63	60	57	55	58	59	73	84	88	91	55	99	78
Jul 12	93	94	94	96	97	93	81	73	66	63	57	58	56	47	46	46	49	61	48	55	63	77	84	88	46	97	70
Jul 13	92	94	82	84	93	93	92	88	82	70	59	54	52	49	57	47	43	44	55	64	70	84	86	93	43	94	72
Jul 14	94	93	95	97	97	97	91	87	82	68	62	61	54	58	48	44	48	55	76	91	91	95	97	98	44	98	78
Jul 15	98	99	100	100	100	100	96	92	84	80	75	65	61	58	55	52	49	47	46	52	75	85	87	91	46	100	77
Jul 16	93	94	94	96	96	89	79	71	61	55	50	50	48	50	62	64	65	74	84	86	91	94	97	98	48	98	77
Jul 17	99	98	98	98	97	100	98	84	75	67	62	58	56	56	54	49	50	51	59	60	74	83	86	89	49	100	75
Jul 18	94	92	93	94	95	94	92	95	99	100	100	100	96	81	77	73	83	87	86	81	92	98	100	100	73	100	92
Jul 19	100	100	100	100	99	94	87	80	72	65	58	53	57	60	50	53	64	62	62	74	83	83	81	82	50	100	76
Jul 20	83	86	89	94	96	90	84	77	66	59	59	54	48	46	43	41	41	41	45	58	78	85	90	92	41	96	69
Jul 21	93	95	97	97	97	95	86	74	64	54	50	48	46	46	43	43	43	42	43	52	70	82	87	86	42	97	68
Jul 22	86	85	82	87	92	83	76	70	62	53	45	41	39	41	40	38	38	42	47	54	66	73	71	74	38	92	62
Jul 23	78	80	82	87	90	80	75	71	66	62	58	57	57	76	69	58	45	44	69	65	77	82	87	92	44	92	71
Jul 24	98	93	94	93	92	89	84	80	77	77	74	71	67	63	60	81	94	95	95	87	87	86	83	90	60	98	84
Jul 25	92	90	92	98	99	98	100	99	96	93	95	87	82	82	80	83	82	82	84	84	85	85	84	83	80	100	89
Jul 26	84	84	84	88	92	91	80	69	64	58	54	51	49	47	44	44	41	41	45	54	64	72	81	88	41	92	65
Jul 27	85	87	92	95	95	91	77	69	60	53	53	56	58	55	60	66	65	68	87	95	96	94	95	96	53	96	77
Jul 28	99	100	99	95	92	88	83	77	70	59	55	53	48	44	45	42	42	45	50	59	74	85	90	92	42	100	70
Jul 29	94	95	96	97	97	92	84	80	86	89	81	82	76	74	65	62	62	61	71	88	93	95	96	61	97	84	
Jul 30	96	97	98	98	98	99	95	85	76	63	59	61	59	55	53	53	55	60	70	88	90	92	95	97	53	99	79
Jul 31	96	97	98	99	99	100	96	83	74	68	59	54	49	43	42	41	40	45	54	67	78	79	81	80	40	100	72
Diurnal Maximum	100	100	100	100	100	100	100	99	99	100	100	100	96	90	87	83	94	95	95	95	96	98	100	100			
Diurnal Average	90.5	90.5	91.3	92.2	93.0	90.9	86.0	80.1	74.1	68.8	65.2	62.2	60.1	57.9	56.4	55.6	55.8	57.1	61.5	67.3	76.9	83.3	86.3	88.9			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for RH - Cold Lake South Station**







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

### AMBIENT TEMPERATURE (AT) in Degree Celsius

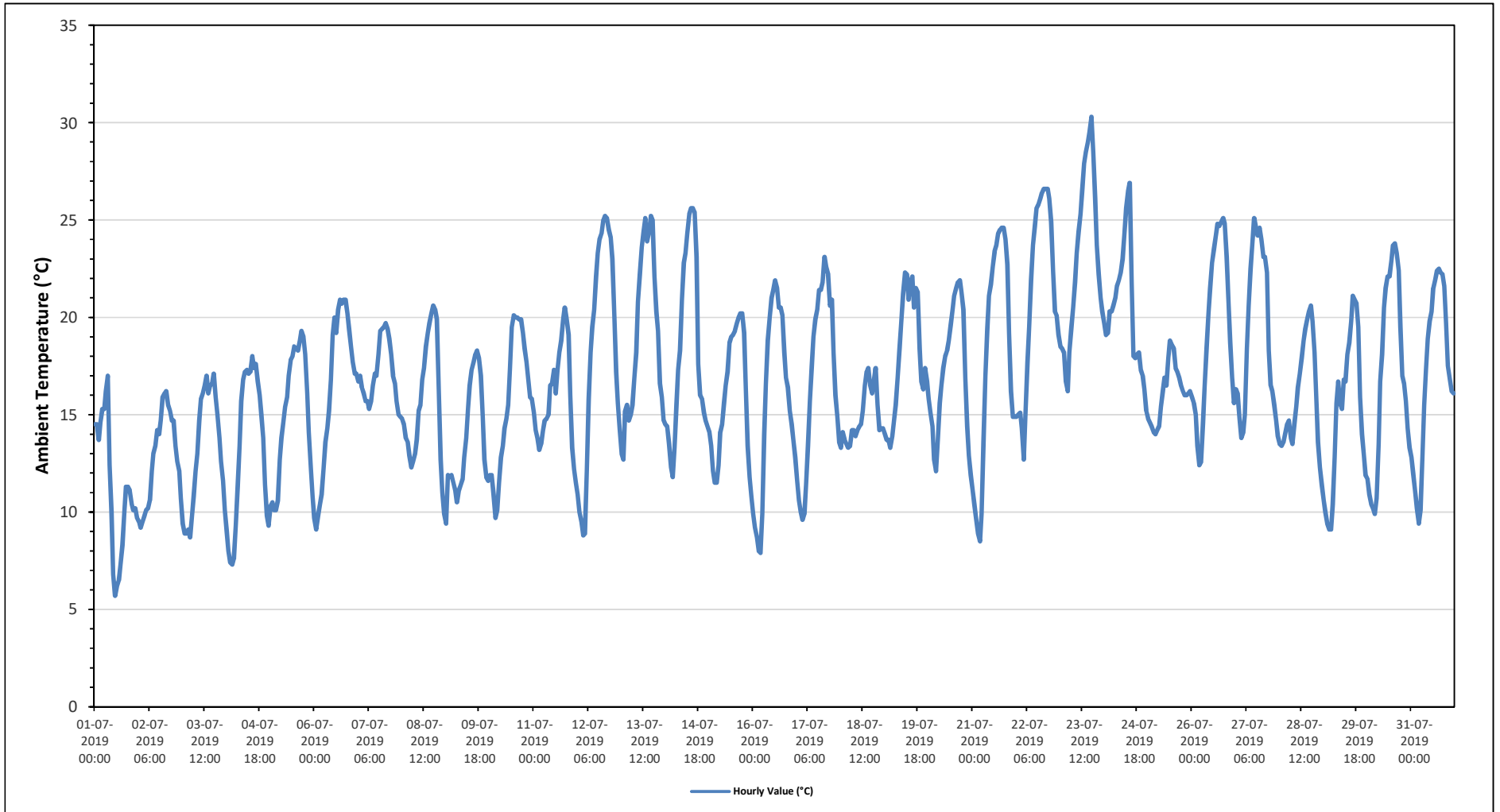
Maximum Hourly Value:	30.3 °C	on July 23 at hour 17	Hours in Service:	744
Maximum Daily Value:	23.1 °C	on July 23	Hours of Data:	744
Minimum Hourly Value:	5.7 °C	on July 1 at hour 11	Hours of Missing Data:	0
Minimum Daily Value:	11.2 °C	on July 1	Hours of Calibration:	0
Monthly Average:	16.7 °C		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	14.5	14.5	13.7	14.6	15.3	15.3	16.2	17.0	12.4	10.0	6.8	5.7	6.2	6.5	7.3	8.3	10.0	11.3	11.3	11.1	10.4	10.1	10.2	9.7	5.7	17.0	11.2
Jul 2	9.5	9.2	9.5	9.8	10.1	10.2	10.6	12.1	13.0	13.4	14.2	14.0	14.7	15.9	16.1	16.2	15.5	15.2	14.7	14.7	13.4	12.6	12.1	10.7	9.2	16.2	12.8
Jul 3	9.4	8.9	8.9	9.1	8.7	9.8	10.8	12.1	13.0	14.7	15.8	16.1	16.5	17.0	16.1	16.5	16.6	17.1	15.9	15.0	13.8	12.6	11.6	10.1	8.7	17.1	13.2
Jul 4	9.0	8.0	7.4	7.3	7.6	9.3	11.3	13.4	15.7	16.8	17.2	17.3	17.1	17.2	18.0	17.4	17.6	16.7	16.0	15.0	13.8	11.4	9.8	9.3	7.3	18.0	13.3
Jul 5	10.3	10.5	10.1	10.1	10.6	12.7	13.8	14.6	15.4	15.9	17.0	17.8	18.0	18.5	18.4	18.3	18.8	19.3	19.0	18.1	16.1	14.1	12.3	10.8	10.1	19.3	15.0
Jul 6	9.7	9.1	9.8	10.4	10.9	12.2	13.6	14.3	15.2	16.8	19.1	20.0	19.2	20.4	20.9	20.7	20.9	20.9	20.2	19.4	18.5	17.7	17.1	17.1	9.1	20.9	16.4
Jul 7	16.7	17.0	16.4	16.1	15.7	15.7	15.3	15.7	16.5	17.1	17.0	18.1	19.3	19.4	19.5	19.7	19.4	18.9	18.1	17.0	16.6	15.7	15.0	14.9	14.9	19.7	17.1
Jul 8	14.8	14.5	13.8	13.6	12.9	12.3	12.6	13.0	13.7	15.2	15.5	16.8	17.4	18.5	19.2	19.7	20.2	20.6	20.4	19.9	16.3	12.7	11.0	9.9	9.9	20.6	15.6
Jul 9	9.4	11.9	11.8	11.9	11.5	11.1	10.5	11.1	11.4	11.7	12.8	13.8	15.3	16.5	17.3	17.7	18.1	18.3	17.9	17.0	14.9	12.7	11.8	11.6	9.4	18.3	13.7
Jul 10	11.9	11.9	10.9	9.7	10.1	11.5	12.8	13.4	14.3	14.8	15.5	17.4	19.5	20.1	20.0	20.0	19.9	19.9	19.2	18.4	17.7	16.8	15.9	15.8	9.7	20.1	15.7
Jul 11	15.1	14.2	13.8	13.2	13.5	14.2	14.7	14.8	15.0	16.5	16.6	17.3	16.1	17.3	18.2	18.8	19.9	20.5	19.9	19.1	16.0	13.3	12.2	11.5	11.5	20.5	15.9
Jul 12	10.9	10.0	9.5	8.8	8.9	12.1	15.8	18.2	19.5	20.4	22.1	23.3	24.0	24.3	25.0	25.2	25.1	24.5	24.1	23.0	20.2	17.2	15.6	14.3	8.8	25.2	18.4
Jul 13	13.0	12.7	15.2	15.5	14.7	15.0	15.5	16.9	18.2	20.8	22.2	23.6	24.4	25.1	23.9	24.4	25.2	25.0	22.1	20.3	19.3	16.6	15.9	14.7	12.7	25.2	19.2
Jul 14	14.5	14.4	13.5	12.3	11.8	13.3	15.5	17.3	18.3	20.9	22.8	23.3	24.3	25.3	25.6	25.6	25.4	23.1	17.6	16.0	15.8	15.1	14.7	14.4	11.8	25.6	18.4
Jul 15	14.1	13.4	12.1	11.5	11.5	12.4	14.1	14.5	15.6	16.5	17.2	18.7	19.0	19.1	19.3	19.7	20.0	20.2	20.2	19.2	16.4	13.4	11.8	10.8	10.8	20.2	15.9
Jul 16	9.9	9.2	8.7	8.0	7.9	9.9	14.0	16.6	18.8	20.0	21.0	21.4	21.9	21.5	20.5	20.1	18.2	16.9	16.4	15.2	14.5	13.7	12.8	7.9	21.9	15.7	
Jul 17	11.6	10.6	10.0	9.6	9.9	11.4	13.4	15.7	17.5	19.0	19.9	20.4	21.4	21.4	21.8	23.1	22.6	22.2	20.6	20.9	18.2	16.0	14.9	13.6	9.6	23.1	16.9
Jul 18	13.3	14.1	13.7	13.5	13.3	13.4	14.2	14.2	13.9	14.2	14.4	14.5	15.2	16.5	17.2	17.4	16.5	16.1	16.7	17.4	15.5	14.2	14.3	14.3	13.3	17.4	14.9
Jul 19	14.0	13.7	13.7	13.3	13.9	14.6	15.5	16.9	18.4	19.7	21.2	22.3	22.2	20.9	21.8	22.1	20.5	21.5	21.3	18.4	16.7	16.3	17.4	16.7	13.3	22.3	18.0
Jul 20	15.8	15.1	14.4	12.7	12.1	13.7	15.6	16.5	17.4	18.0	18.3	18.8	19.6	20.4	21.1	21.5	21.8	21.9	21.3	20.4	16.9	14.4	12.9	11.9	11.9	21.9	17.2
Jul 21	11.1	10.4	9.6	8.9	8.5	9.9	13.6	17.0	19.4	21.1	21.7	22.6	23.4	23.7	24.3	24.5	24.6	24.6	24.0	22.7	19.2	16.2	14.9	14.9	8.5	24.6	18.0
Jul 22	14.9	15.0	15.1	14.3	12.7	15.2	17.7	19.5	21.9	23.7	24.7	25.6	25.8	26.1	26.4	26.6	26.6	26.6	26.1	24.9	22.4	20.3	20.1	19.1	12.7	26.6	21.3
Jul 23	18.5	18.4	18.2	16.7	16.2	18.2	19.4	20.5	21.8	23.3	24.4	25.3	26.5	27.9	28.5	29.0	29.5	30.3	28.5	26.1	23.7	22.2	21.0	20.3	16.2	30.3	23.1
Jul 24	19.7	19.1	19.2	20.3	20.3	20.6	21.0	21.6	21.9	22.3	23.0	24.2	25.6	26.5	26.9	21.8	18.0	17.9	18.1	18.2	17.3	17.0	16.3	15.2	15.2	26.9	20.5
Jul 25	14.8	14.6	14.4	14.1	14.0	14.2	14.4	15.4	16.2	16.9	16.5	17.9	18.8	18.6	18.4	17.4	17.2	16.9	16.5	16.2	16.0	16.0	16.1	16.2	14.0	18.8	16.2
Jul 26	15.9	15.6	15.0	13.4	12.4	12.6	14.6	16.5	18.4	20.2	21.5	22.8	23.5	24.2	24.8	24.7	24.9	25.1	24.8	23.1	20.7	18.7	16.9	15.6	12.4	25.1	19.4
Jul 27	16.3	16.1	14.8	13.8	14.1	15.0	18.4	20.6	22.5	23.7	25.1	24.6	24.2	24.6	24.0	23.1	23.1	22.3	18.3	16.5	16.2	15.5	14.7	13.9	13.8	25.1	19.2
Jul 28	13.5	13.4	13.6	14.0	14.5	14.7	13.8	13.5	14.5	15.4	16.4	17.1	17.9	18.8	19.4	19.9	20.3	20.6	19.8	18.2	15.8	13.6	12.3	11.4	11.4	20.6	15.9
Jul 29	10.6	10.0	9.4	9.1	9.1	10.4	12.8	15.6	16.7	15.6	15.3	16.8	16.7	18.1	18.7	19.8	21.1	20.9	20.7	19.5	15.9	14.0	12.9	11.9	9.1	21.1	15.1
Jul 30	11.7	10.9	10.4	10.2	9.9	10.7	13.5	16.7	18.1	20.5	21.5	22.1	22.1	22.9	23.7	23.8	23.3	22.4	19.5	17.0	16.6	15.7	14.3	13.3	9.9	23.8	17.1
Jul 31	12.8	12.0	11.1	10.2	9.4	10.1	12.8	15.5	17.3	18.9	19.8	20.3	21.5	21.9	22.4	22.5	22.3	22.2	21.6	19.7	17.5	16.8	16.2	16.1	9.4	22.5	17.1
Diurnal Maximum	19.7	19.1	19.2	20.3	20.3	20.6	21.0	21.6	22.5	23.7	25.1	25.6	26.5	27.9	28.5	29.0	29.5	30.3	28.5	26.1	23.7	22.2	21.0	20.3			
Diurnal Average	13.1	12.9	12.5	12.1	12.0	13.0	14.4	15.8	16.8	17.9	18.6	19.4	19.9	20.5	20.8	20.8	20.8	20.7	19.7	18.7	16.9	15.3	14.4	13.6			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for AT - Cold Lake South Station**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

### STATION TEMPERATURE (ST) in Degree Celsius

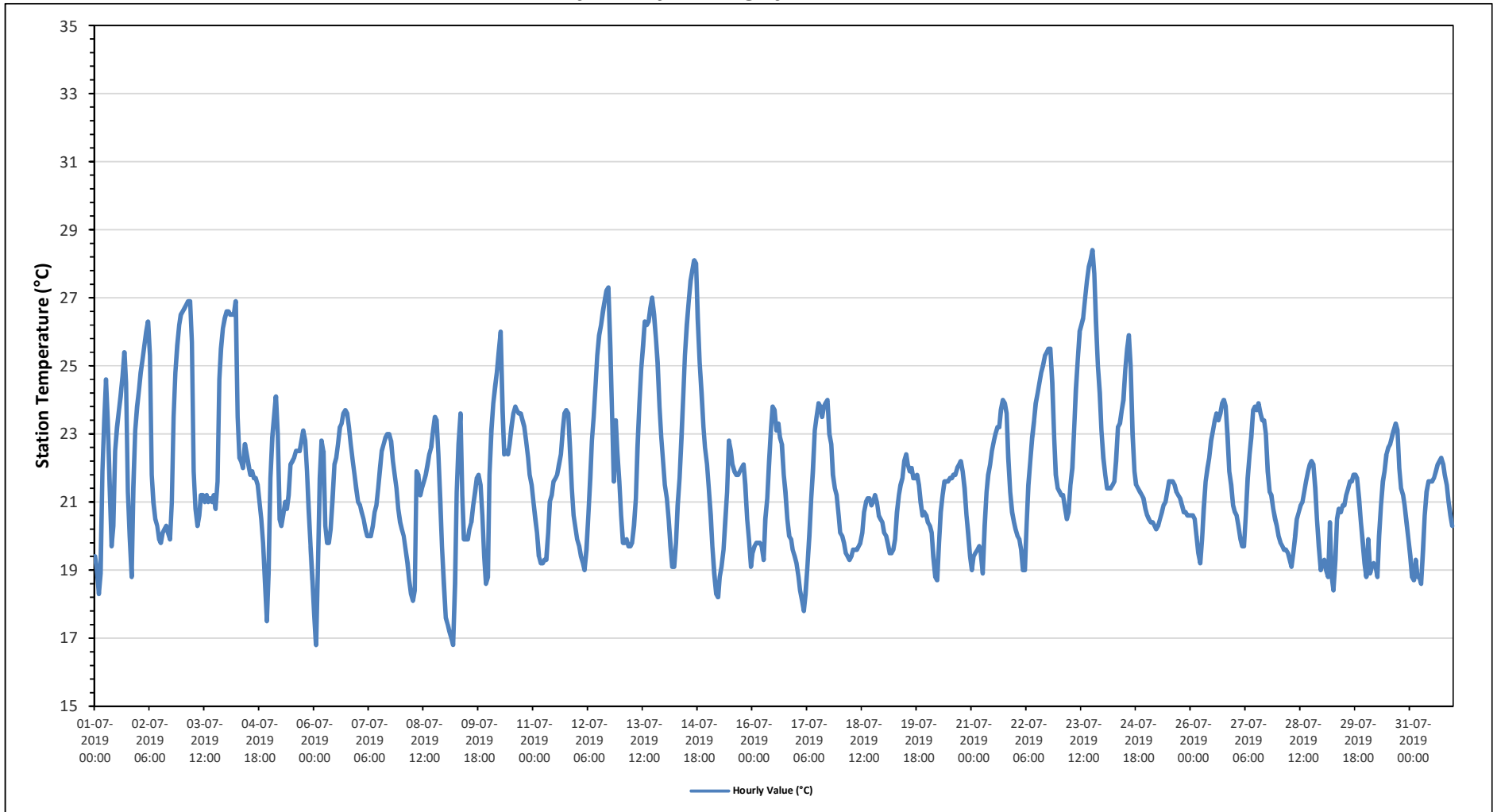
Maximum Hourly Value:	28.4 °C	on July 23 at hour 18	Hours in Service:	744
Maximum Daily Value:	24.4 °C	on July 23	Hours of Data:	744
Minimum Hourly Value:	16.8 °C	on July 6 at hour 1	Hours of Missing Data:	0
Minimum Daily Value:	19.9 °C	on July 9	Hours of Calibration:	0
Monthly Average:	21.7 °C		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	19.4	19.0	18.3	18.9	21.9	23.4	24.6	23.4	21.5	19.7	20.3	22.5	23.2	23.7	24.1	24.7	25.4	24.5	21.3	20.0	18.8	21.4	23.1	23.8	18.3	25.4	22.0
Jul 2	24.3	24.8	25.2	25.6	26.0	26.3	25.3	21.8	21.0	20.5	20.3	19.9	19.8	20.1	20.2	20.3	20.1	19.9	21.0	23.5	24.8	25.6	26.2	26.5	19.8	26.5	22.9
Jul 3	26.6	26.7	26.8	26.9	26.9	25.7	21.9	20.8	20.3	20.6	21.2	21.2	21.0	21.2	21.0	21.1	21.0	21.2	20.8	21.6	24.6	25.5	26.1	26.4	20.3	26.9	23.2
Jul 4	26.6	26.6	26.5	26.5	26.5	26.9	23.5	22.3	22.2	22.0	22.7	22.4	22.1	21.8	21.9	21.7	21.7	21.5	21.0	20.5	19.8	18.7	17.5	18.9	17.5	26.9	22.6
Jul 5	21.7	22.9	23.5	24.1	23.0	20.5	20.3	20.6	21.0	20.8	21.2	22.1	22.2	22.3	22.5	22.5	22.5	22.8	23.1	22.8	21.9	20.8	19.7	18.7	18.7	24.1	21.8
Jul 6	17.7	16.8	19.1	21.7	22.8	22.5	20.3	19.8	19.8	20.2	21.1	22.1	22.3	22.7	23.2	23.3	23.6	23.7	23.6	23.2	22.7	22.2	21.8	21.4	16.8	23.7	21.6
Jul 7	21.0	20.9	20.7	20.5	20.2	20.0	20.0	20.0	20.3	20.7	20.9	21.4	22.0	22.5	22.7	22.9	23.0	23.0	22.8	22.2	21.8	21.4	20.8	20.4	20.0	23.0	21.3
Jul 8	20.2	20.0	19.6	19.2	18.7	18.3	18.1	18.4	21.9	21.8	21.2	21.4	21.6	21.8	22.1	22.4	22.6	23.1	23.5	23.4	22.4	21.0	19.7	18.6	18.1	23.5	20.9
Jul 9	17.6	17.4	17.2	17.0	16.8	18.6	21.3	22.7	23.6	21.2	19.9	19.9	19.9	20.2	20.4	20.9	21.3	21.7	21.8	21.5	20.6	19.4	18.6	18.8	16.8	23.6	19.9
Jul 10	21.8	23.1	23.9	24.4	24.8	25.4	26.0	23.7	22.4	22.5	22.4	22.7	23.2	23.6	23.8	23.7	23.6	23.6	23.4	23.2	22.8	22.3	21.8	21.5	21.5	26.0	23.3
Jul 11	21.0	20.5	20.1	19.4	19.2	19.2	19.3	19.3	20.1	21.0	21.2	21.6	21.7	21.8	22.1	22.4	23.1	23.6	23.7	23.6	22.6	21.4	20.6	20.2	19.2	23.7	21.2
Jul 12	19.9	19.7	19.4	19.2	19.0	19.6	20.6	21.7	22.8	23.5	24.5	25.3	25.9	26.2	26.6	26.9	27.2	27.3	25.5	23.7	21.6	23.4	22.5	21.6	19.0	27.3	23.1
Jul 13	20.6	19.8	19.8	19.9	19.7	19.7	19.8	20.3	21.1	22.6	23.9	24.9	25.6	26.3	26.2	26.3	26.7	27.0	26.5	25.8	25.1	23.8	22.9	22.1	19.7	27.0	23.2
Jul 14	21.5	21.1	20.5	19.7	19.1	19.1	19.8	20.9	21.7	22.9	24.2	25.3	26.2	26.9	27.5	27.8	28.1	28.0	26.4	25.1	24.2	23.2	22.6	22.1	19.1	28.1	23.5
Jul 15	21.4	20.6	19.7	18.9	18.3	18.2	18.8	19.1	19.6	20.4	21.3	22.8	22.5	22.1	21.9	21.8	21.8	21.9	22.0	22.1	21.5	20.5	19.9	19.1	18.2	22.8	20.7
Jul 16	19.5	19.7	19.8	19.8	19.8	19.7	19.3	20.5	21.1	22.2	23.2	23.8	23.7	23.1	23.3	22.9	22.7	21.8	21.3	20.5	20.0	19.9	19.6	19.4	19.3	23.8	21.1
Jul 17	19.2	18.8	18.4	18.1	17.8	18.3	19.1	20.0	21.1	21.9	23.1	23.5	23.9	23.8	23.5	23.8	23.9	24.0	23.0	22.7	21.8	21.4	21.2	20.6	17.8	24.0	21.4
Jul 18	20.1	20.0	19.8	19.5	19.4	19.3	19.4	19.6	19.6	19.6	19.7	19.8	20.1	20.7	21.0	21.1	21.1	20.9	21.0	21.2	21.0	20.6	20.5	20.4	19.3	21.2	20.2
Jul 19	20.1	20.0	19.8	19.5	19.5	19.6	19.9	20.7	21.2	21.5	21.7	22.2	22.4	22.1	21.9	22.0	21.7	21.7	21.8	21.5	21.0	20.6	20.7	20.6	19.5	22.4	21.0
Jul 20	20.4	20.3	20.1	19.4	18.8	18.7	19.8	20.7	21.2	21.6	21.6	21.6	21.7	21.7	21.8	21.8	22.0	22.1	22.2	21.9	21.4	20.6	20.1	19.4	18.7	22.2	20.9
Jul 21	19.0	19.4	19.5	19.6	19.7	19.5	18.9	20.3	21.3	21.8	22.1	22.5	22.8	23.0	23.2	23.2	23.7	24.0	23.9	23.6	22.3	21.3	20.7	20.4	18.9	24.0	21.5
Jul 22	20.2	20.0	19.9	19.6	19.0	19.0	20.4	21.5	22.2	22.9	23.4	23.9	24.2	24.5	24.8	25.0	25.3	25.4	25.5	25.5	24.5	22.9	21.8	21.4	19.0	25.5	22.6
Jul 23	21.3	21.2	21.2	20.8	20.5	20.7	21.5	22.0	23.2	24.3	25.2	26.0	26.2	26.4	27.0	27.5	27.9	28.1	28.4	27.7	26.3	25.0	24.2	23.1	20.5	28.4	24.4
Jul 24	22.3	21.8	21.4	21.4	21.4	21.5	21.6	22.2	23.2	23.3	23.7	24.0	24.9	25.5	25.9	25.0	23.0	21.9	21.5	21.4	21.3	21.2	21.1	20.8	20.8	25.9	22.6
Jul 25	20.6	20.5	20.4	20.4	20.3	20.2	20.3	20.5	20.7	20.9	21.0	21.3	21.6	21.6	21.5	21.3	21.2	21.1	20.9	20.7	20.7	20.6	20.6	20.2	20.2	21.6	20.9
Jul 26	20.6	20.6	20.5	20.0	19.5	19.2	19.9	20.8	21.6	22.0	22.3	22.8	23.1	23.4	23.6	23.4	23.6	23.9	24.0	23.8	22.9	21.9	21.5	20.9	19.2	24.0	21.9
Jul 27	20.7	20.6	20.3	19.9	19.7	19.7	20.6	21.7	22.4	22.9	23.7	23.8	23.7	23.9	23.6	23.4	23.4	23.0	21.9	21.3	21.2	20.8	20.5	20.3	19.7	23.9	21.8
Jul 28	20.0	19.8	19.7	19.6	19.6	19.5	19.3	19.1	19.5	20.0	20.5	20.7	20.9	21.0	21.3	21.6	21.9	22.1	22.2	22.1	21.4	20.5	19.7	19.0	19.0	22.2	20.5
Jul 29	19.2	19.3	19.0	18.8	20.4	18.8	18.4	19.3	20.5	20.8	20.7	20.9	20.9	21.2	21.4	21.6	21.6	21.8	21.8	21.7	21.1	20.4	19.8	19.2	18.4	21.8	20.4
Jul 30	18.8	19.9	18.9	19.1	19.2	19.1	18.8	20.0	20.9	21.6	21.9	22.4	22.6	22.7	22.9	23.1	23.3	23.1	22.0	21.4	21.2	20.9	20.4	19.9	18.8	23.3	21.0
Jul 31	19.4	18.8	18.7	19.3	18.8	18.8	18.6	19.6	20.6	21.3	21.6	21.6	21.6	21.7	21.9	22.1	22.2	22.3	22.1	21.8	21.5	21.0	20.6	20.3	18.6	22.3	20.7
Diurnal Maximum	26.6	26.7	26.8	26.9	26.9	26.0	23.7	23.6	24.3	25.2	26.0	26.2	26.9	27.5	27.8	28.1	28.1	28.4	27.7	26.3	25.6	26.2	26.5				
Diurnal Average	20.7	20.7	20.6	20.5	20.5	20.5	20.5	20.8	21.3	21.6	22.0	22.5	22.7	22.9	23.1	23.2	23.2	23.2	22.9	22.6	22.1	21.6	21.2	20.9			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for ST - Cold Lake South Station**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

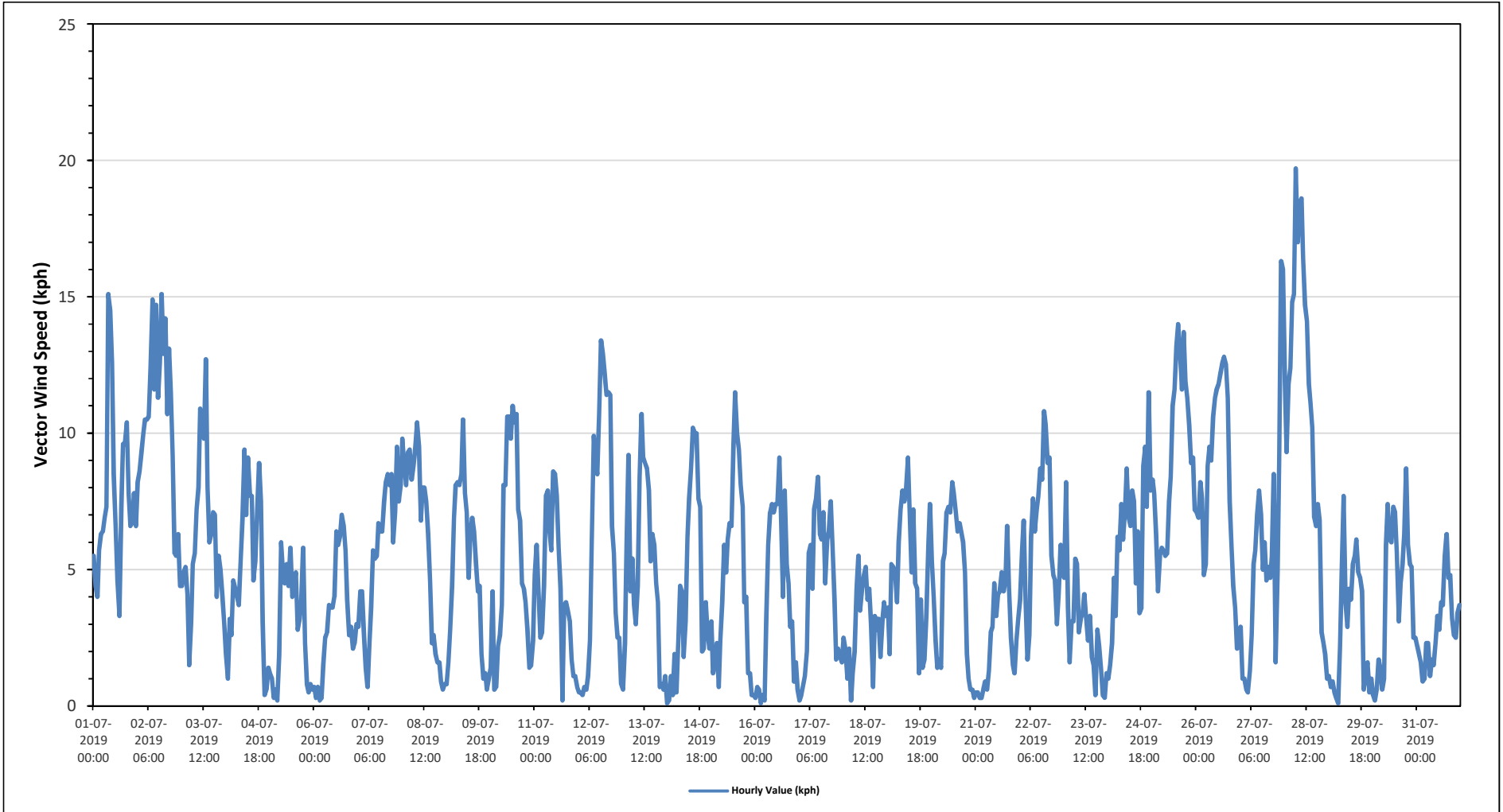
Maximum Hourly Value:	19.7 kph on July 28 at hour 6	Hours in Service:	744
Maximum Daily Value:	11.0 kph on July 28	Hours of Data:	744
Minimum Hourly Value:	0.1 kph on July 14 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	2.6 kph on July 21	Hours of Calibration:	0
Monthly Average:	0.9 kph	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Jul 1	5.5	4.4	4	5.7	6.3	6.4	6.9	7.3	15.1	14.5	12.6	8.5	6.6	4.6	3.3	7.3	9.6	9.6	10.4	7.8	6.6	6.7	7.8	6.6	3.3	15.1	7.7
Jul 2	8.2	8.6	9.3	10	10.5	10.5	10.6	12.4	14.9	11.6	14.7	11.3	12.6	15.1	12.9	14.2	10.7	13.1	11.5	9.2	5.6	5.5	6.3	4.4	4.4	15.1	10.6
Jul 3	4.4	4.9	5.1	4.1	1.5	3.1	5.2	5.6	7.2	8	10.9	10.2	9.8	12.7	8	6	6.3	7.1	7	4	5.5	5	4	3.1	1.5	12.7	6.2
Jul 4	1.9	1	3.2	2.6	4.6	4.3	4	3.7	5.3	6.9	9.4	7	9.1	7.7	7.7	4.6	5.3	7.2	8.9	7.5	3.1	0.4	0.6	1.4	0.4	9.4	4.9
Jul 5	1.2	1	0.3	0.6	0.2	1.9	6	4.8	4.5	5.2	4.4	5.8	4	4.3	4.9	2.8	3.2	3.9	5.8	2.3	0.8	0.5	0.8	0.6	0.2	6.0	2.9
Jul 6	0.7	0.3	0.7	0.2	0.3	1.5	2.5	2.7	3.7	3.6	3.6	4	6.4	5.9	6.2	7	6.6	5.7	3.9	2.6	2.9	2.1	2.3	3	0.2	7.0	3.3
Jul 7	2.9	4.2	4.2	2.8	1.4	0.7	2.3	3.6	5.7	5.4	5.5	6.7	6.4	6.4	7.5	8.2	8.5	8.1	8.5	6	7.1	9.5	7.5	8.1	0.7	9.5	5.7
Jul 8	9.8	8.8	8.1	9.3	9.4	8.3	8.8	9.5	10.4	9.5	6.8	8	8	7.5	6.3	4.6	2.3	2.6	1.9	1.6	1.6	0.9	0.6	0.8	0.6	10.4	6.1
Jul 9	0.8	1.6	2.8	4.4	6.9	8.1	8.2	8.1	8.5	10.5	7.8	7.1	4.7	6.4	6.9	6.4	5.2	4.2	4.4	1.9	1	1.2	0.6	1	0.6	10.5	4.9
Jul 10	1.4	4.2	0.6	0.7	2.2	2.6	3.7	8.1	8.1	10.6	10.6	9.8	11	10.4	10.7	7.2	6.8	4.5	4.3	3.8	2.8	1.4	1.5	2.4	0.6	11.0	5.4
Jul 11	4.8	5.9	4.2	2.5	2.7	4.4	7.7	7.9	6.4	5.7	8.6	8.5	7.7	5.8	4.3	0.2	3.7	3.8	3.5	3.1	1.7	1.1	1.1	0.7	0.2	8.6	4.4
Jul 12	0.5	0.5	0.4	0.7	0.6	1.1	2.4	6	9.9	9	8.5	10.7	13.4	12.9	12.2	11.4	11.5	11.4	6.6	5.6	3.4	2.5	2.5	0.8	0.4	13.4	6.0
Jul 13	0.6	2.3	6.1	9.2	4.2	5.4	3.7	3	4.4	8.4	10.7	9.1	8.9	8.7	7.9	5.3	6.3	5.9	4.5	3.8	0.7	0.8	0.6	1.1	0.6	10.7	5.1
Jul 14	0.1	0.2	1.1	0.4	1.9	0.5	2.4	4.4	4.2	1.8	3.1	6.2	7.6	8.7	10.2	10	10	7.6	7.3	2	2.1	3.8	2.7	2.1	0.1	10.2	4.2
Jul 15	3.1	1.2	1.6	2.3	0.7	2.4	3.8	5.9	4.9	6.1	6.7	6.6	9.5	11.5	10	9.4	8.1	7.3	3.8	4	1.2	1.2	0.4	0.4	0.4	11.5	4.7
Jul 16	0.3	0.7	0.6	0.1	0.4	0.2	3.2	5.9	7.1	7.4	7.1	7.4	7.4	9.1	6.7	4	7.9	5.2	4.5	2.9	3.1	0.9	1.6	0.6	0.1	9.1	3.9
Jul 17	0.2	0.4	0.8	1.1	2	5.6	5.9	4.3	7.2	7.6	8.4	6.3	6.1	7.1	4.5	6.1	6.4	7.5	5.8	3.9	1.7	2.1	1.8	1.6	0.2	8.4	4.4
Jul 18	2.5	2.1	1	2.1	0.2	1.2	2	4.3	5.5	3.5	4.3	4.8	5.1	3.9	4.3	2.9	0.7	3.3	2.8	3.2	1.8	3.1	3.8	3.3	0.2	5.5	3.0
Jul 19	3.6	1.9	5.2	5.1	4.9	3.8	6	7.2	7.9	7.5	7.9	9.1	7	4.9	7.2	4.5	4.3	1.2	3.9	1.4	1.7	3.4	5.9	7.4	1.2	9.1	5.1
Jul 20	5.3	4	2.4	1.4	1.7	1.4	5.3	5.6	7.1	7.3	7.1	8.2	7.8	7.1	6.4	6.7	6.4	6	4.9	1.9	1	0.6	0.6	0.3	0.3	8.2	4.4
Jul 21	0.5	0.5	0.3	0.3	0.6	0.9	0.6	1.3	2.7	2.9	4.5	3.3	4.1	4.2	4.9	4.2	4.6	6.6	4.3	2.5	1.5	1.2	2.4	3.2	0.3	6.6	2.6
Jul 22	3.9	5.7	6.8	3.8	1.7	2.6	6.2	7.6	6.4	7.2	7.7	8.7	8.3	10.8	10.3	8.9	9.1	5.5	4.8	4.6	3	4.1	5.9	5.2	1.7	10.8	6.2
Jul 23	4.7	8.2	3.6	1.6	3.1	3.1	5.4	5.2	2.7	3.2	3.4	4.1	3.2	2.4	3.3	1.8	1.5	0.4	2.8	2.2	1.4	0.4	0.3	1.2	0.3	8.2	2.9
Jul 24	1	1.5	2.3	4.7	3.3	6.2	5.7	7.4	6.1	7.1	8.7	6.9	6.6	7.9	7.5	4.5	6.4	3.4	3.6	8.8	9.5	7.3	11.5	7.9	1.0	11.5	6.1
Jul 25	8.3	7.8	6.3	4.2	5.5	5.8	5.7	5.5	5.6	7.5	8.4	11	11.6	13.2	14	13	11.6	13.7	11.9	11.3	10.3	8.9	9.1	7.2	4.2	14.0	9.1
Jul 26	7.1	6.9	8.2	7.6	4.8	5.2	8.8	9.5	9	10.6	11.3	11.6	11.8	12.2	12.6	12.8	12.5	11.3	7.5	5.8	4.4	3.6	2.1	2.5	2.1	12.8	8.3
Jul 27	2.9	1	1	0.6	0.5	1.3	2.6	5.2	5.7	7	7.9	7	5	6	4.6	5.1	4.7	5.5	8.5	1.6	4.9	9	16.3	16	0.5	16.3	5.4
Jul 28	11.9	9.3	11.8	12.4	14.8	15.1	19.7	17	18.4	18.6	16.4	14.7	14.1	11.8	11.1	10.2	6.9	6.6	7.4	6.8	2.7	2.3	1.9	1	1.0	19.7	11.0
Jul 29	1.1	0.7	0.9	0.5	0.3	0.1	2.2	4.8	7.7	3.8	2.9	4.3	3.9	5.2	5.5	6.1	4.9	4.7	4.2	0.6	1.1	1.6	0.5	1	0.1	7.7	2.9
Jul 30	0.4	0.2	0.6	1.7	1.4	0.6	1	5.9	7.4	6.1	6	7.3	7.1	5.6	3.1	4.5	5.2	6.3	8.7	5.9	5.2	5.1	2.5	2.5	0.2	8.7	4.2
Jul 31	2.2	1.9	1.6	0.9	1	2.3	2.3	1.1	1.7	1.5	2.3	3.3	2.8	3.8	3.7	5.5	6.3	4.7	4.8	3.2	2.6	2.5	3.4	3.7	0.9	6.3	2.9
Diurnal Maximum	12	9	12	12	15	15	20	17	18	19	16	15	14	15	14	14	13	14	12	11	10	10	16	16			
Diurnal Average	3.3	3.3	3.4	3.3	3.2	3.8	5.2	6.2	7.1	7.3	7.7	7.7	7.7	7.9	7.4	6.6	6.6	6.3	5.9	4.3	3.3	3.2	3.5	3.3			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

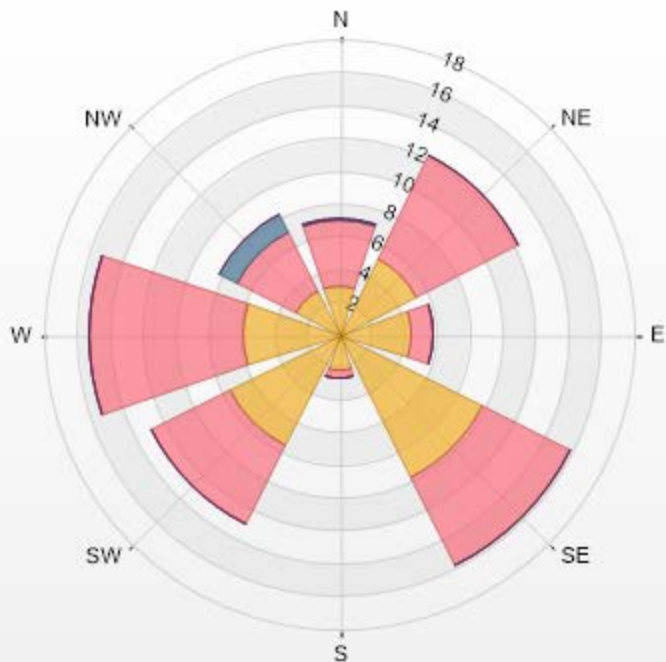
**Timeseries Chart of Hourly Average for VWS - Cold Lake South Station**



Wind: Cold Lake South Poll.: Cold Lake South-WSP[kph] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 20.03% Valid Data: 100.00% Calm Avg: 0.90 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	2.96	4.03	0.13	0	0	7.12
NE	5.24	6.99	0	0	0	12.23
E	4.44	1.34	0	0	0	5.78
SE	9.81	5.91	0	0	0	15.72
S	2.15	0.54	0	0	0	2.69
SW	7.53	5.38	0	0	0	12.91
W	5.91	9.41	0	0	0	15.32
NW	2.96	4.03	1.21	0	0	8.2
Summary	41	37.63	1.34	0	0	79.97

Cold Lake South Poll.: Cold Lake South-WSP[kph] 01-07-2019 00:00 - 31-07-2019 23:00 Calm: 20.03% Calm  
 Poll Avg: 0.90[kph]



LICA-201907-Revision 1

% Icon Classes (kph)	41	0-6	38	15-29	0	29-39	0	>39.0
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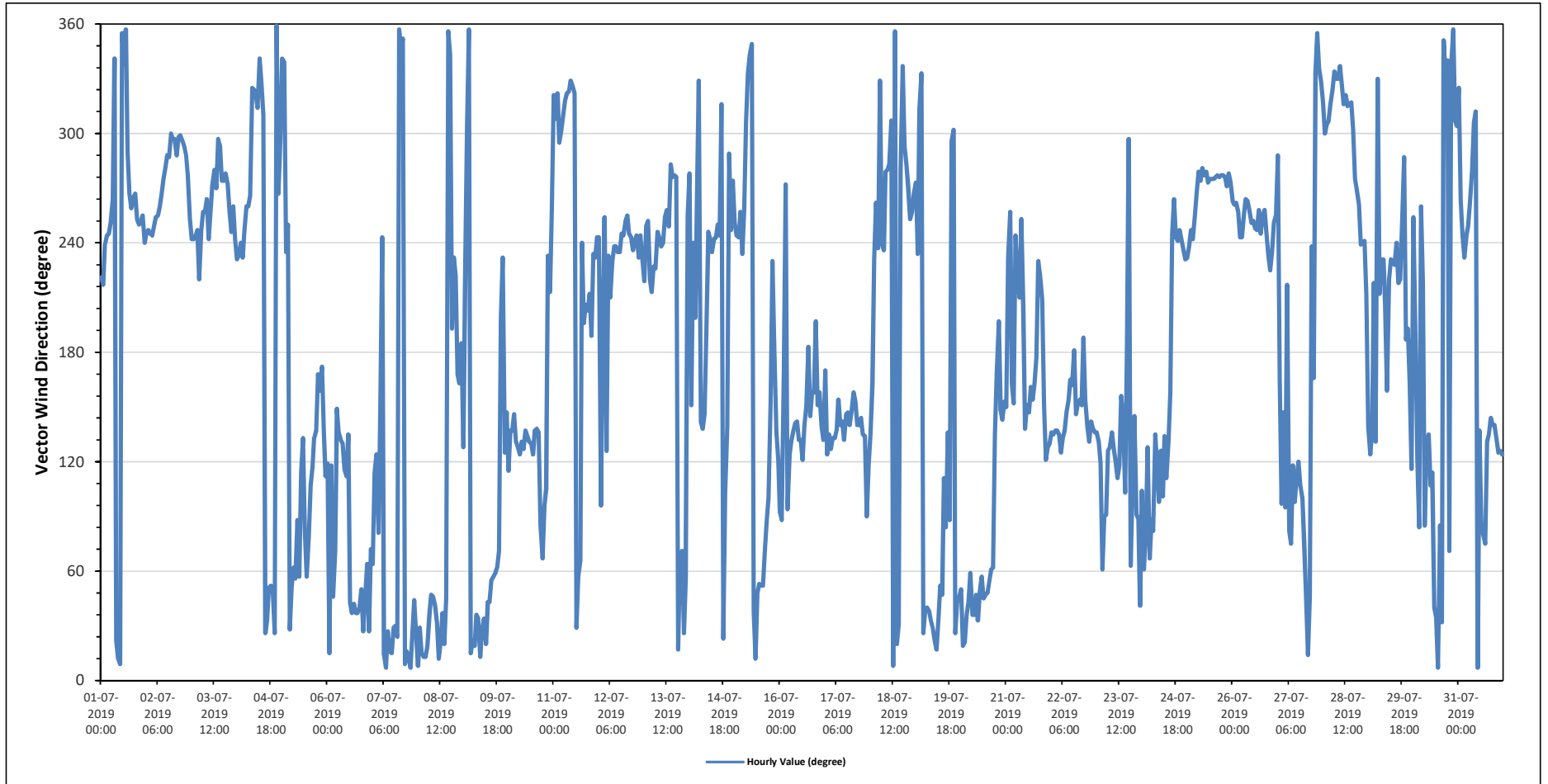
Cold Lake South Station - July 2019

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		288 (WNW) degree													Hours in Service:		744										
															Hours of Data:		744										
															Hours of Missing Data:		0										
															Hours of Calibration:		0										
															Operational Uptime:		100.0										
Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Jul 1	SW	SW	WSW	WSW	WSW	WSW	W	NNW	NNE	NNE	N	N	NNW	N	WNW	W	WSW	W	W	WSW	WSW	WSW	WSW	WSW	289	WNW	
Jul 2	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	W	WSW	276	W	
Jul 3	WSW	WSW	WSW	WSW	SW	WSW	WSW	WSW	W	WSW	WSW	W	W	WNW	WNW	W	W	W	W	WSW	WSW	WSW	WSW	WSW	264	W	
Jul 4	SW	SW	WSW	SW	WSW	WSW	WSW	W	NW	NW	NW	NW	NNW	NW	NW	NNE	NNE	NE	NE	NE	NNE	N	W	WNW	333	NNW	
Jul 5	NNW	NNW	SW	WSW	NNE	NE	ENE	NE	E	ENE	ESE	SE	E	ENE	ENE	ESE	ESE	SE	SE	SSE	SSE	S	SE	ESE	94	E	
Jul 6	ESE	NNE	ESE	NE	ENE	SSE	SE	SE	SE	ESE	ESE	SE	NE	NE	NE	NE	NE	NE	NE	NNE	NE	ENE	NNE	ENE	63	ENE	
Jul 7	ENE	ESE	ESE	E	SSE	WSW	NNE	N	NNE	NNE	NNE	NNE	NNE	NNE	N	NNW	N	N	NNE	NNE	N	NNE	NE	NNE	22	NNE	
Jul 8	N	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	NE	NNE	NNE	NNE	NE	NNE	NE	N	NNW	S	SW	SW	SSE	SSE	S	26	NNE	
Jul 9	SE	SW	WNW	N	NNE	NNE	NNE	NE	NE	NNE	NNE	NE	NNE	NE	NE	ENE	ENE	ENE	ENE	SSW	SW	SE	SE	SE	32	NNE	
Jul 10	ESE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	SE	SE	SE	ESE	SE	SE	SE	E	ENE	E	ESE	SW	SSW	WSW	129	SE	
Jul 11	NW	NW	NW	WNW	WNW	NW	NW	NW	NW	NNW	NW	NW	NNE	ENE	ENE	WSW	SSW	SSW	SSW	SSW	S	SW	SW	WSW	319	NW	
Jul 12	WSW	E	SSW	WSW	SE	SSW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	241	WSW	
Jul 13	SW	WSW	WSW	SW	SSW	SW	SW	WSW	WSW	SW	WSW	WSW	WSW	WSW	W	W	W	W	NNE	ENE	ENE	NNE	NE	WSW	252	WSW	
Jul 14	W	SSE	WSW	SSW	W	NNW	SE	SE	SE	S	WSW	WSW	SW	WSW	WSW	WSW	NW	NNE	ESE	SE	WNW	WSW	W	244	WSW		
Jul 15	WSW	WSW	WSW	WSW	SW	WSW	NW	NNW	NNW	NNW	NE	NNE	NE	NE	NE	ENE	E	E	SSE	SW	S	SE	ESE	ESE	39	NE	
Jul 16	E	E	SSE	W	E	ESE	SE	SE	SE	SE	SE	SE	ESE	SE	SSE	S	SE	SSE	SSE	SSW	SSE	SSE	SE	SE	143	SE	
Jul 17	SSE	ESE	SE	SE	SE	SE	SE	SSE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SE	SE	SE	SE	SE	E	ESE	141	SE	
Jul 18	SE	SSE	SW	W	SW	NNW	WSW	SW	W	W	NW	N	N	NNE	NNE	W	NNW	WNW	W	W	WSW	WSW	W	293	WNW		
Jul 19	W	SW	NW	NNW	NNE	NE	NE	NE	NNE	NNE	NNE	NNE	NE	NE	ESE	E	SE	E	WNW	WNW	NNE	NE	NE	32	NNE		
Jul 20	NE	NNE	NNE	NE	NE	ENE	NE	NE	NE	NNE	NE	ENE	NE	NE	NE	ENE	ENE	SE	SSE	SSW	SE	SE	SSE	52	NE		
Jul 21	SSE	SW	WSW	SSE	SSE	WSW	SW	SSW	WSW	SSW	SE	SSE	SE	SSE	SSE	S	SW	SW	SSW	SSE	ESE	SE	SE	176	S		
Jul 22	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SSE	S	SE	SSE	SSE	SSE	S	SSE	SE	SE	SE	SE	SE	149	SSE	
Jul 23	SE	SE	ESE	ENE	E	E	SE	SE	SE	SE	ESE	ESE	ESE	SSE	SE	ESE	S	WNW	ENE	ESE	SE	E	NE	120	ESE		
Jul 24	ESE	ENE	E	SE	ENE	E	E	SE	ESE	E	SE	E	SE	ESE	SE	SSE	WSW	W	WSW	WSW	WSW	WSW	SW	SW	159	SSE	
Jul 25	SW	SW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	271	W	
Jul 26	W	W	W	WSW	WSW	WSW	WSW	W	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	SW	SW	WSW	WSW	252	WSW	
Jul 27	WNW	SSE	E	SE	E	SW	E	ENE	ESE	E	ESE	ESE	E	ENE	NE	NNE	NE	SW	SSE	NNW	N	NNW	NNW	40	NE		
Jul 28	NW	WNW	WNW	NW	NW	NW	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NW	NW	WNW	W	W	W	WSW	WSW	WSW	SSW	315	NW	
Jul 29	SE	ESE	SE	SW	SE	NNW	SSW	SW	SW	SSW	SSE	SW	SW	SW	SW	WSW	SW	SW	WSW	WNW	S	S	SSE	ESE	220	SW	
Jul 30	WSW	S	ESE	E	WSW	SW	E	SE	SE	ESE	ESE	NE	NE	N	E	NNE	N	NNW	ENE	NNW	N	NW	WNW	36	NE		
Jul 31	NW	W	WSW	SW	WSW	WSW	W	W	NW	NW	N	SE	E	E	ENE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	133	SE	
C	Calibration	S					Daily Zero/Span	Q					Quality Assurance	C1					Repeat Calibration	S1					Repeat Daily Zero/Span		
G	Out for Repair	K					Collection Error	N					Not in Service	O					Operator Error	P					Power Failure		
R	Recovery	X					Machine Malfunction	Y					Maintenance	T					Exceeds Temperature Limits	N					Not in Service		
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

**Timeseries Chart of Hourly Average for VWD - Cold Lake South Station**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hour Standard Deviations

### STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

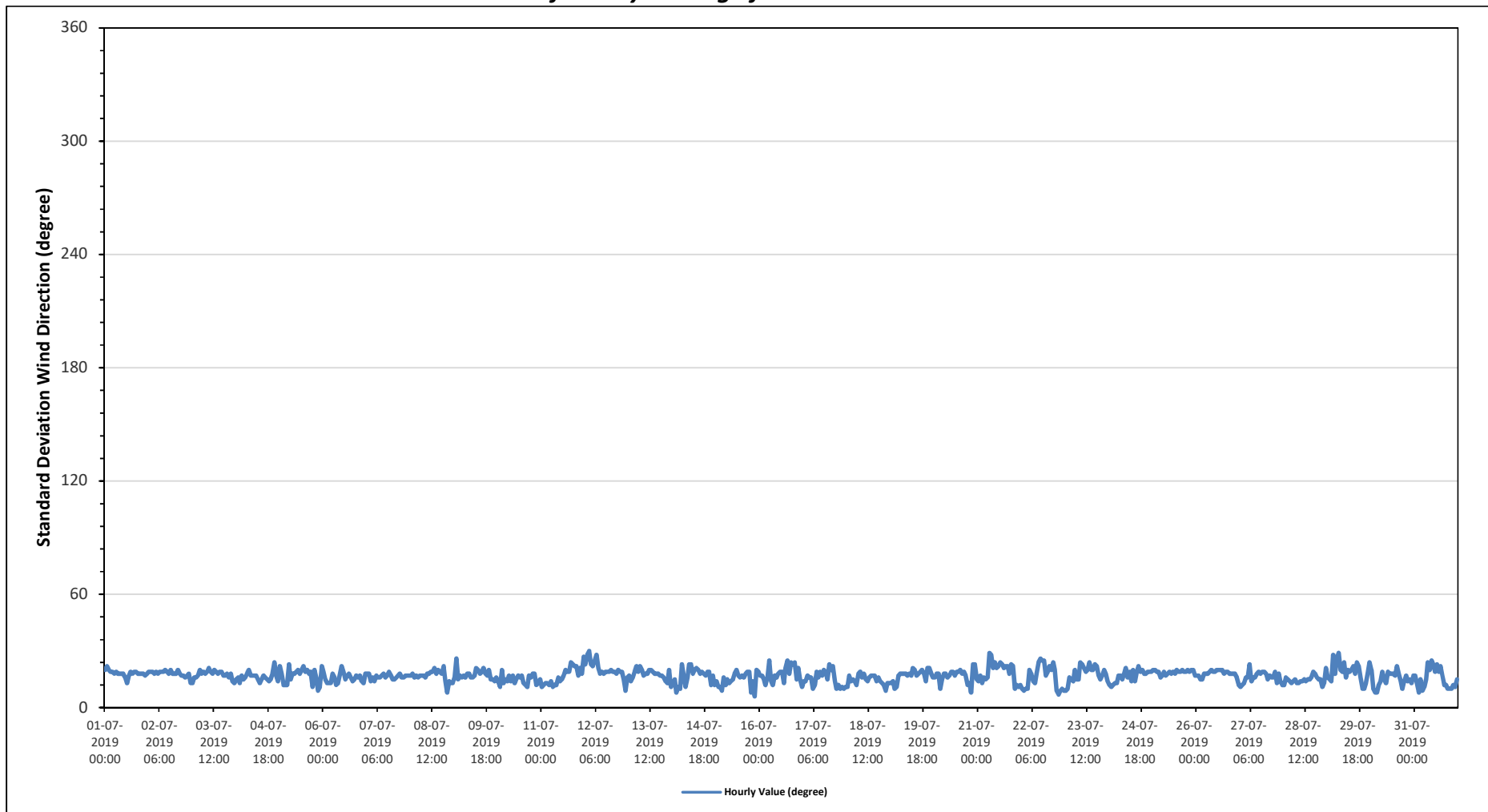
Maximum Hourly Value:	30 degree on July 12 at hour 2	Hours in Service:	744
Minimum Hourly Value:	6 degree on July 15 at hour 21	Hours of Data:	744
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Jul 1	20	22	20	19	19	18	19	18	18	18	18	16	13	17	19	18	19	19	18	18	18	18	17	18	13	22
Jul 2	19	19	19	18	19	18	19	19	19	20	19	18	20	18	18	18	20	18	17	17	16	17	18	13	13	20
Jul 3	13	16	16	17	20	18	19	18	19	21	19	18	20	19	18	19	19	17	17	18	16	18	14	13	13	21
Jul 4	15	16	13	17	15	16	18	20	17	17	17	17	15	13	15	17	16	15	14	15	18	24	17	14	13	24
Jul 5	22	18	12	12	12	23	15	18	18	19	20	18	20	22	19	20	18	19	11	20	16	9	11	22	9	23
Jul 6	19	15	13	13	13	18	16	12	13	18	22	19	15	17	18	16	14	15	17	16	17	14	13	18	12	22
Jul 7	18	18	14	16	14	17	16	16	17	18	16	17	19	17	15	15	16	17	18	16	16	17	17	17	14	19
Jul 8	17	18	16	17	16	17	17	17	16	18	18	19	19	21	18	20	19	18	22	14	8	14	13	13	8	22
Jul 9	16	26	15	17	16	17	16	18	18	16	16	17	21	20	18	19	21	18	17	20	15	15	14	16	14	26
Jul 10	14	11	20	13	15	14	17	14	17	13	15	17	16	17	13	12	11	17	16	18	18	12	13	15	11	20
Jul 11	11	12	13	13	12	14	11	12	12	16	14	15	17	20	19	19	24	23	22	22	17	21	18	27	11	27
Jul 12	23	28	30	23	22	25	28	21	18	19	18	19	19	19	20	19	19	18	20	19	19	15	9	16	9	30
Jul 13	17	14	16	19	22	19	22	20	17	18	18	20	20	19	18	18	17	17	16	14	13	20	11	11	22	22
Jul 14	13	15	8	11	10	23	17	11	16	23	23	18	20	21	20	18	19	18	17	19	19	12	17	12	8	23
Jul 15	14	11	11	9	16	12	15	13	14	15	18	20	17	16	17	16	18	19	19	8	14	6	20	19	6	20
Jul 16	17	17	15	12	16	25	14	12	17	16	18	19	19	13	21	25	18	24	23	24	15	21	15	11	11	25
Jul 17	14	14	17	16	16	10	12	19	16	19	17	20	19	15	23	20	22	14	10	12	10	11	10	11	10	23
Jul 18	11	17	14	15	14	12	18	19	16	18	15	14	16	17	17	17	14	16	14	13	12	9	13	13	9	19
Jul 19	13	14	10	11	17	18	18	18	18	17	18	17	21	20	17	18	19	20	18	14	21	21	18	16	10	21
Jul 20	16	18	18	10	15	18	18	16	17	19	19	17	19	19	20	18	19	17	12	13	8	23	23	15	8	23
Jul 21	14	17	13	16	15	16	29	28	21	24	21	22	24	23	21	22	22	18	23	22	10	12	11	12	10	29
Jul 22	10	9	10	10	20	18	14	13	18	24	26	25	25	17	19	22	20	24	20	9	7	9	10	9	7	26
Jul 23	9	10	16	15	14	20	15	15	24	23	21	19	20	24	20	20	23	22	17	15	17	20	18	14	9	24
Jul 24	12	11	12	13	13	17	17	15	18	21	16	19	14	20	14	19	22	19	20	18	18	19	19	19	11	22
Jul 25	20	20	19	19	16	17	19	17	18	19	18	19	18	20	19	19	20	19	19	20	19	20	20	17	16	20
Jul 26	17	17	15	15	18	18	18	19	20	19	19	20	20	20	20	18	19	19	18	18	18	18	16	12	12	20
Jul 27	11	12	13	16	16	23	14	16	16	18	19	18	19	19	18	15	17	16	16	19	13	18	14	12	11	23
Jul 28	12	16	15	14	13	14	15	13	13	14	14	15	14	15	15	16	19	18	16	15	15	11	13	21	11	21
Jul 29	16	15	14	28	18	26	29	20	19	24	16	20	19	20	22	18	24	22	16	10	10	13	19	24	10	29
Jul 30	20	10	8	8	12	14	19	15	13	19	18	18	17	22	18	14	10	14	17	14	15	13	17	8	22	
Jul 31	17	13	8	15	9	11	15	24	20	25	23	19	23	19	22	17	12	12	10	10	10	12	11	15	8	25
Diurnal Minimum	9	9	8	8	9	10	11	11	12	13	14	14	13	13	13	12	11	10	10	8	7	6	9	9		
Dalurnal Maximum	23	28	30	28	22	26	29	28	24	25	26	25	25	24	23	25	24	24	23	24	21	24	23	27		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	O	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	C1	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for STDWD - Cold Lake South Station**



**MASKWA STATION**



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

Summary of Hourly Averages

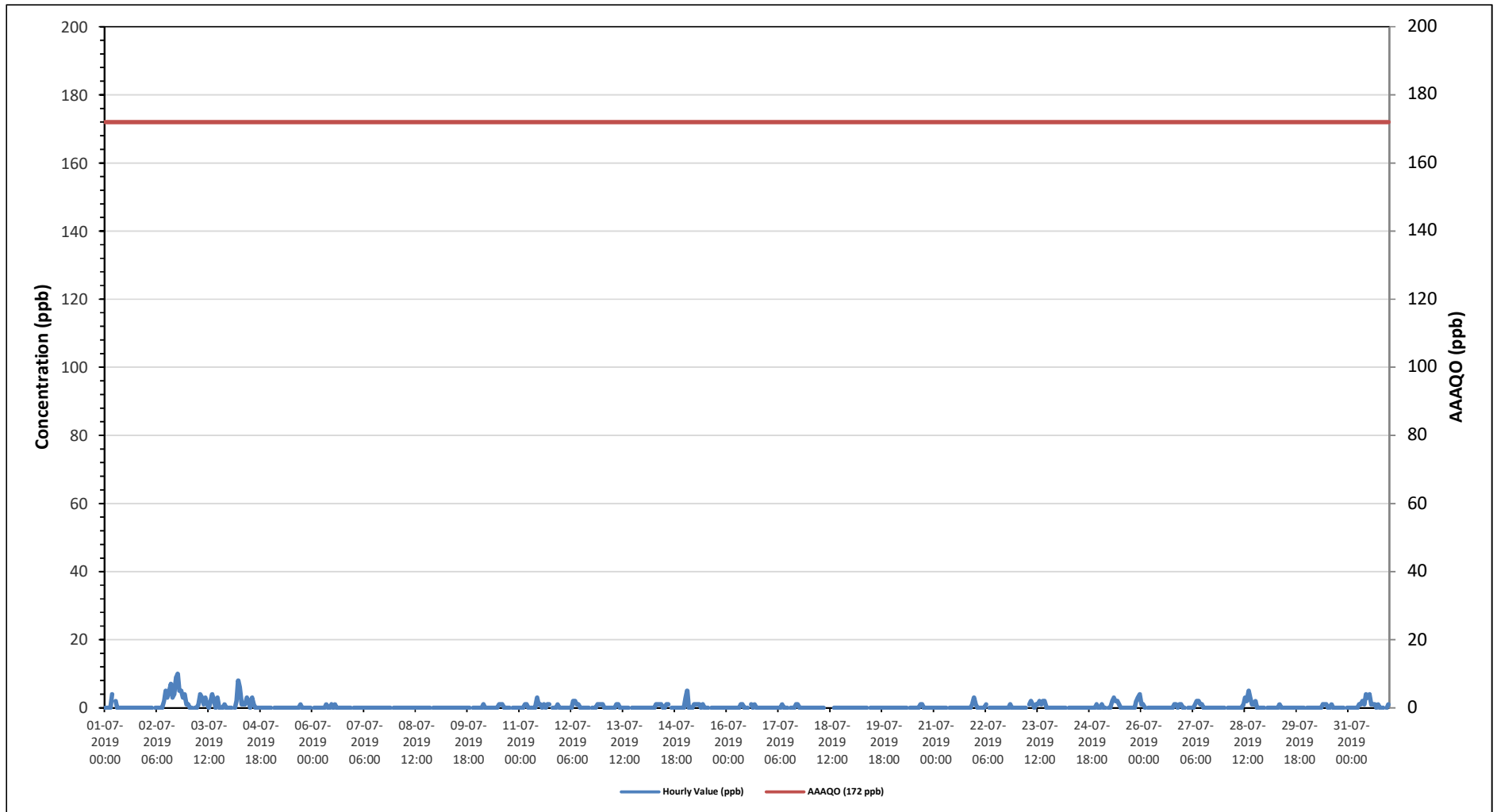
SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																																				
Number of 1-Hour Exceedences:							0							Number of 24-Hour Exceedences:							0						30-Day Exceedence:			0						
Maximum Hourly Value:							10 ppb on July 2 at hour 18							Hours in Service:							744															
Maximum Daily Value:							2.9 ppb on July 2							Hours of Data:							707															
Minimum Hourly Value:							0 ppb on July 1 at hour 0							Hours of Missing Data:							0															
Minimum Daily Value:							0.0 ppb on July 7							Hours of Calibration:							37															
Monthly Average:							0.4 ppb							Operational Uptime:							100.0															
Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average									
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
Jul 1	0	0	0	0	4	S	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	4	0.3
Jul 2	0	0	0	0	S	0	0	0	0	0	2	5	3	5	7	3	4	3	10	5	5	3	4	1	0	0	0	0	0	0	0	0	10	2.9		
Jul 3	1	0	0	S	0	0	1	4	3	1	3	1	0	2	4	2	0	9	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	1.1		
Jul 4	0	0	S	0	2	8	6	1	1	1	3	2	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1.2		
Jul 5	0	S	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	1	0.0		
Jul 6	S	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.1			
Jul 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	S	0	0	0	0	0	0.0		
Jul 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0		
Jul 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	S	0	0	0	0	0	0	0	0.0		
Jul 10	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	1	0.2		
Jul 11	0	0	0	1	1	0	0	0	0	0	3	1	1	0	1	0	1	1	S	0	0	0	0	0	0	0	0	1	0	0	0	3	0.5			
Jul 12	0	0	0	0	0	0	0	2	2	1	1	0	0	0	0	0	0	0	S	0	0	0	0	1	1	1	1	0	0	0	0	2	0.4			
Jul 13	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 14	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3		
Jul 15	3	5	0	0	0	1	1	1	1	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.6			
Jul 16	0	0	0	0	0	0	0	0	1	1	0	0	0	0	S	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2			
Jul 17	0	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 18	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 19	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 20	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Jul 21	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	3	0.2			
Jul 22	1	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0.1		
Jul 23	0	0	0	0	0	0	S	1	2	1	0	1	1	2	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.6		
Jul 24	0	0	0	0	0	S	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	1	0.0			
Jul 25	0	1	0	0	S	0	0	2	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	4	0	4	0.9				
Jul 26	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0	1	0.3				
Jul 27	0	0	S	0	0	0	0	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3			
Jul 28	0	S	0	0	0	0	0	0	0	0	0	0	1	3	2	5	3	1	1	2	0	0	0	0	0	0	0	0	0	0	0	5	0.8			
Jul 29	S	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	1	0.0			
Jul 30	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0.2			
Jul 31	0	0	0	0	0	0	1	1	2	1	4	3	4	1	1	1	0	1	0	0	0	0	0	0	0	S	0	1	0	0	4	0.9				
Diurnal Maximum	3	5	0	1	4	8	6	4	3	2	4	5	4	5	7	3	4	9	10	5	5	3	4	4												
Daiurnal Average	0.2	0.2	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.4	0.8	0.6	0.4	0.6	0.8	0.4	0.4	0.6	0.4	0.2	0.2	0.2	0.4	0.4												

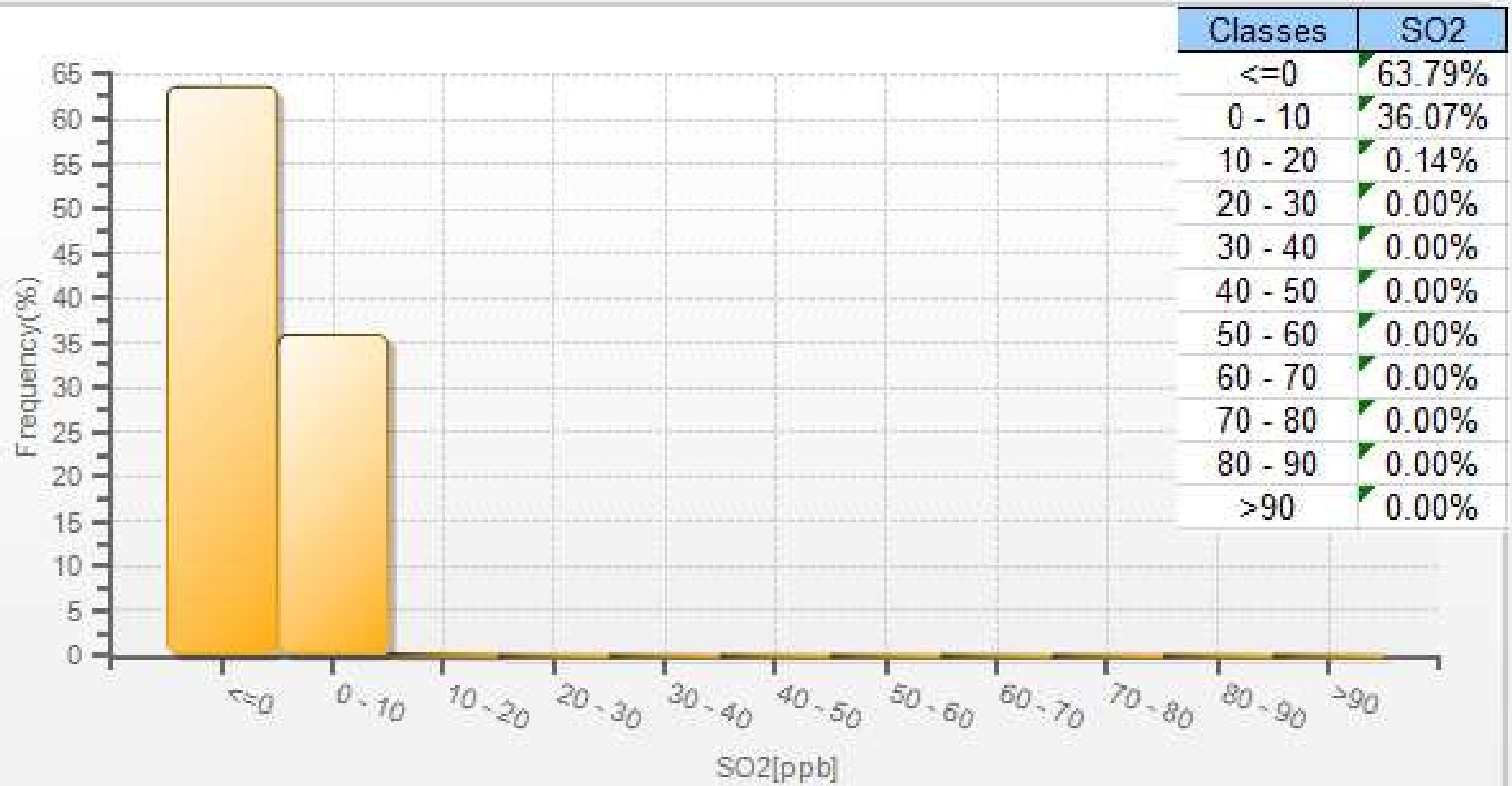
C Calibration S Daily Zero/Span Q Quality Assurance C1 Repeat Calibration S1 Repeat Daily Zero/Span  
 G Out for Repair K Collection Error N Not in Service O Operator Error P Power Failure  
 R Recovery X Machine Malfunction Y Maintenance T Exceeds Temperature Limits N Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for SO<sub>2</sub> - Maskwa Site**



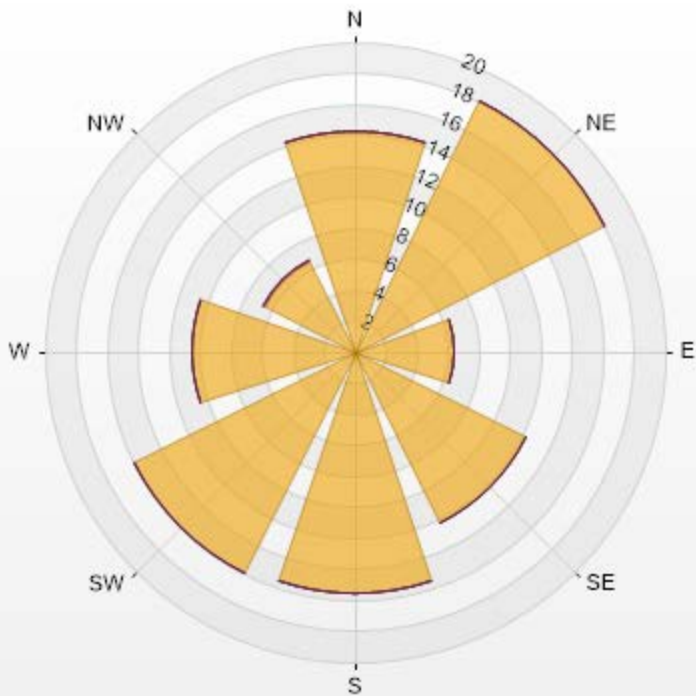
SO2[ppb] Histogram: Maskwa Monthly: 07-2019 1 Hr.





Wind: Maskwa Poll.: Maskwa-SO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	14.29	0	0	0	0	14.29
NE	18.1	0	0	0	0	18.1
E	6.51	0	0	0	0	6.51
SE	12.45	0	0	0	0	12.45
S	15.56	0	0	0	0	15.56
SW	15.98	0	0	0	0	15.98
W	10.47	0	0	0	0	10.47
NW	6.51	0.14	0	0	0	6.65
Summary	100	0.14	0	0	0	100



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% Icon Classes (ppb)

100 0-10

0 50-100

0 100-172

0 >172.0



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

*Maskwa Site - July 2019*

**Summary of Hourly Averages**

**HYDROGEN SULPHIDE (H<sub>2</sub>S) in ppb**

**Alberta Ambient Air Quality Objectives (AAAO): 1-Hour 10 ppb, 24-Hour 3 ppb**

Number of 1-Hour Exceedences: 0                              Number of 24-Hour Exceedences: 0

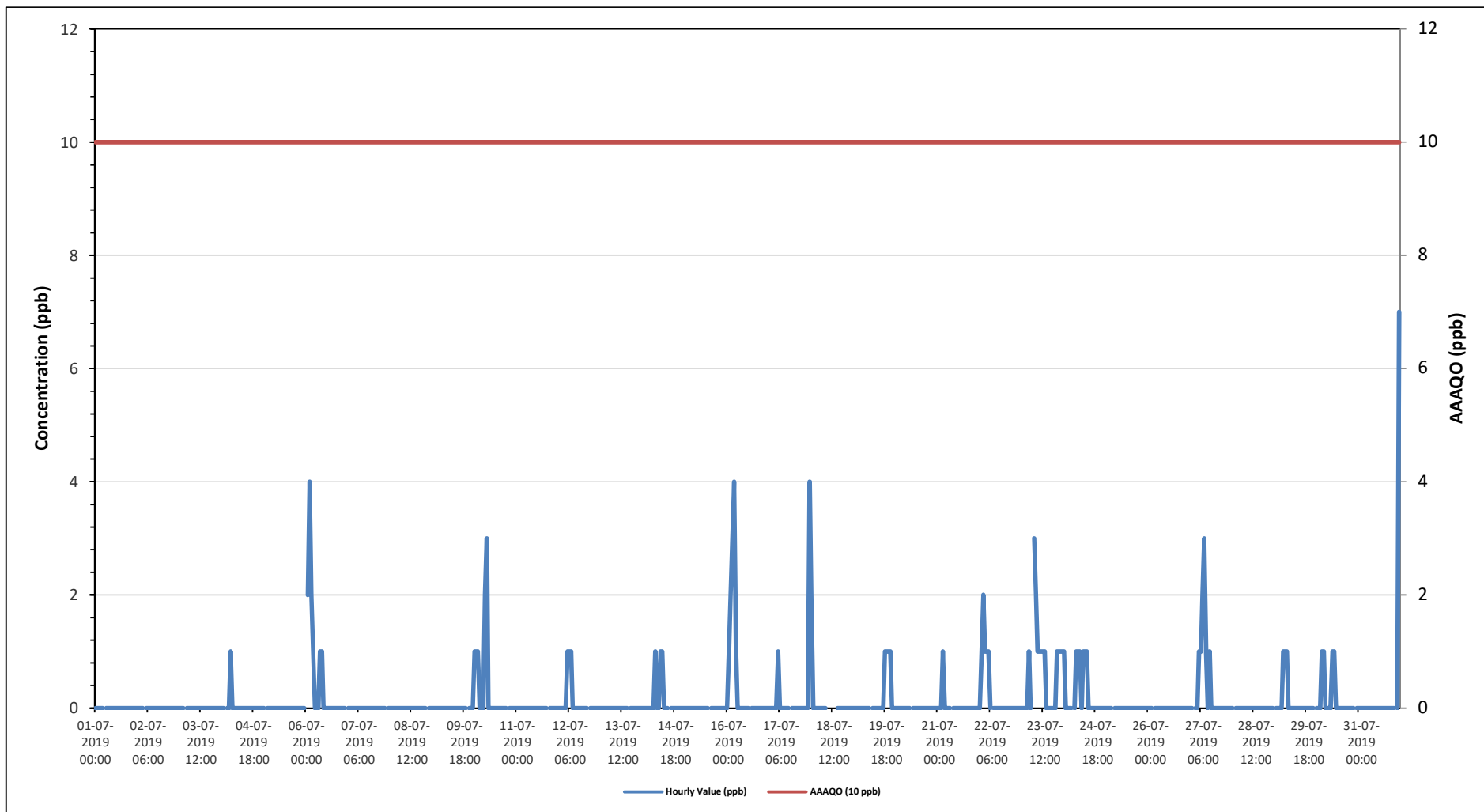
Maximum Hourly Value:	7 ppb on July 31 at hour 23	Hours in Service:	744
Maximum Daily Value:	0.7 ppb on July 23	Hours of Data:	706
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 1	Hours of Calibration:	38
Monthly Average:	0.1 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average					
Jul 1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jul 2	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 3	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 4	0	0	S	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	
Jul 5	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 6	S	2	4	2	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	4	0.5		
Jul 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	
Jul 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	
Jul 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	
Jul 10	1	1	1	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	
Jul 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	
Jul 12	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	
Jul 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 14	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 16	0	1	2	3	4	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 17	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0.2	
Jul 18	2	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
Jul 19	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	1	0.2		
Jul 20	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 21	0	0	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0		
Jul 22	0	1	2	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3		
Jul 23	0	0	0	0	1	0	S	3	2	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	3	0.7		
Jul 24	1	0	0	0	0	S	0	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3		
Jul 25	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 27	0	0	S	0	0	1	1	2	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4		
Jul 28	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jul 29	S	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0.1		
Jul 30	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.2		
Jul 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	7	0	7	0	0	7	0.3		
Diurnal Maximum	2	2	4	3	4	1	2	3	3	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	7				
Daiurnal Average	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.4						

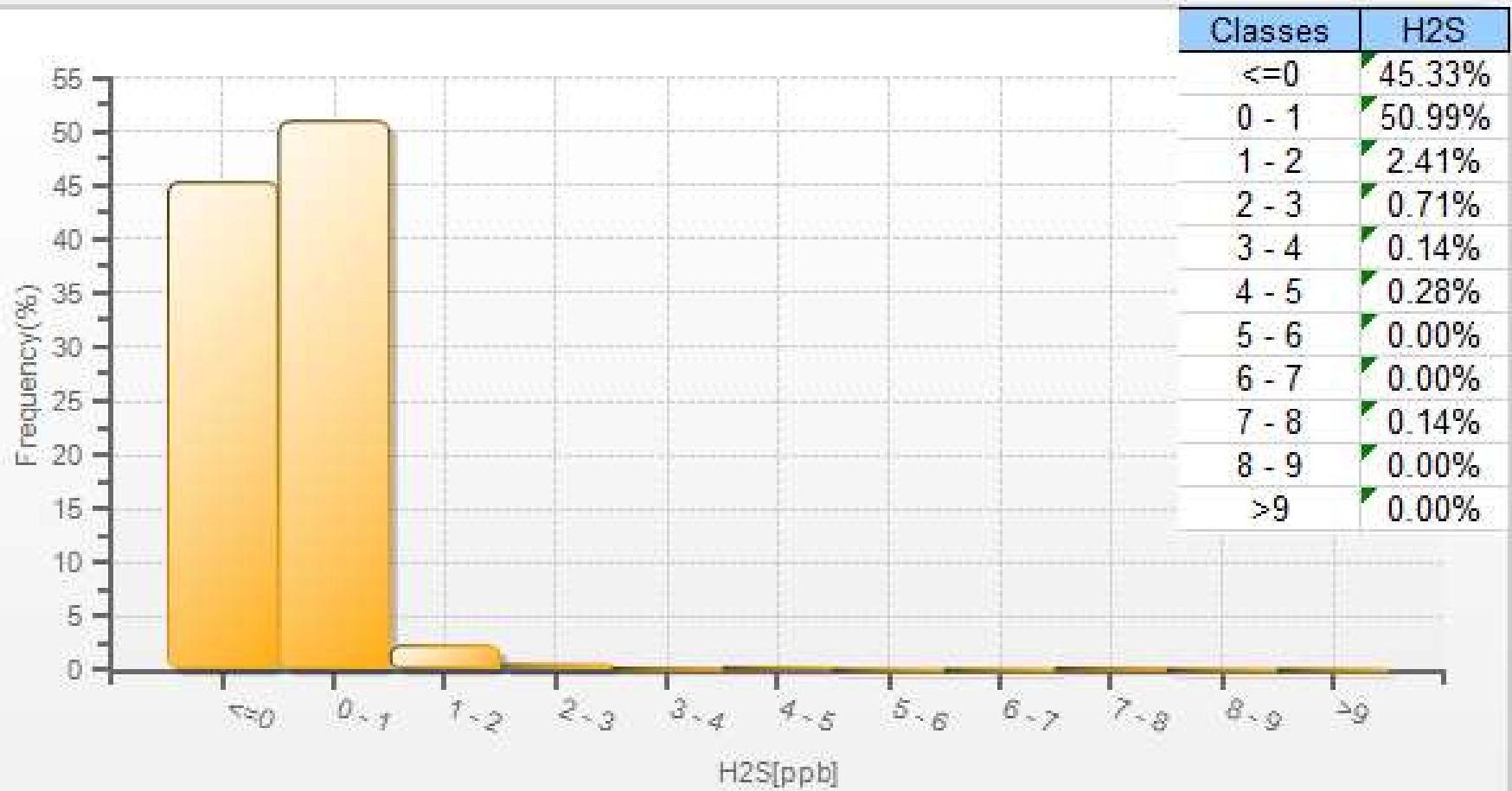
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for H2S - Maskwa Site

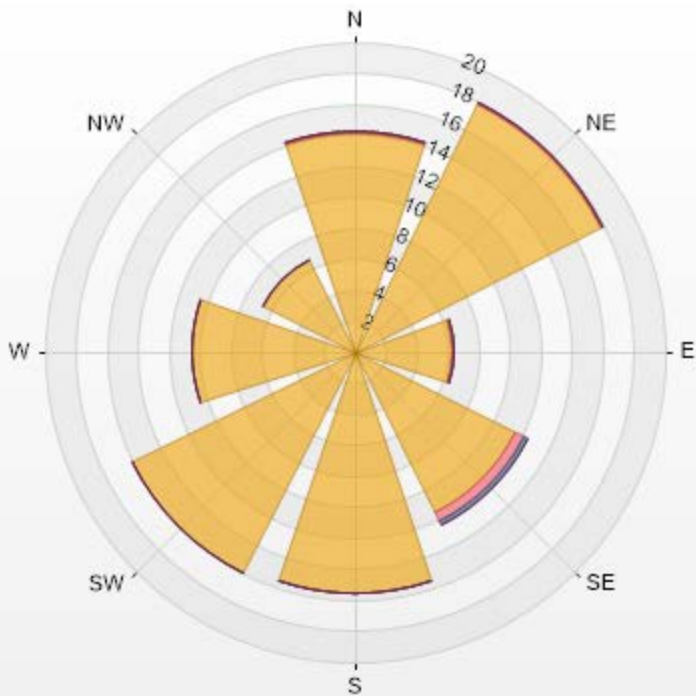


H2S[ppb] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-H2S[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	14.16	0.14	0	0	0	14.3
NE	17.85	0.14	0	0	0	17.99
E	6.37	0.14	0	0	0	6.51
SE	11.61	0.71	0.14	0	0	12.46
S	15.58	0	0	0	0	15.58
SW	16.01	0	0	0	0	16.01
W	10.48	0	0	0	0	10.48
NW	6.66	0	0	0	0	6.66
Summary	98.72	1.13	0.14	0	0	100



LICA-201907-Revision 1



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Averages

#### OXIDES OF NITROGEN (NOx) in ppb

Maximum Hourly Value:	22 ppb on July 21 at hour 3	Hours in Service:	744
Maximum Daily Value:	7.6 ppb on July 2	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 8	Hours of Missing Data:	0
Minimum Daily Value:	0.4 ppb on July 8	Hours of Calibration:	39
Monthly Average:	2.1 ppb	Operational Uptime:	100.0

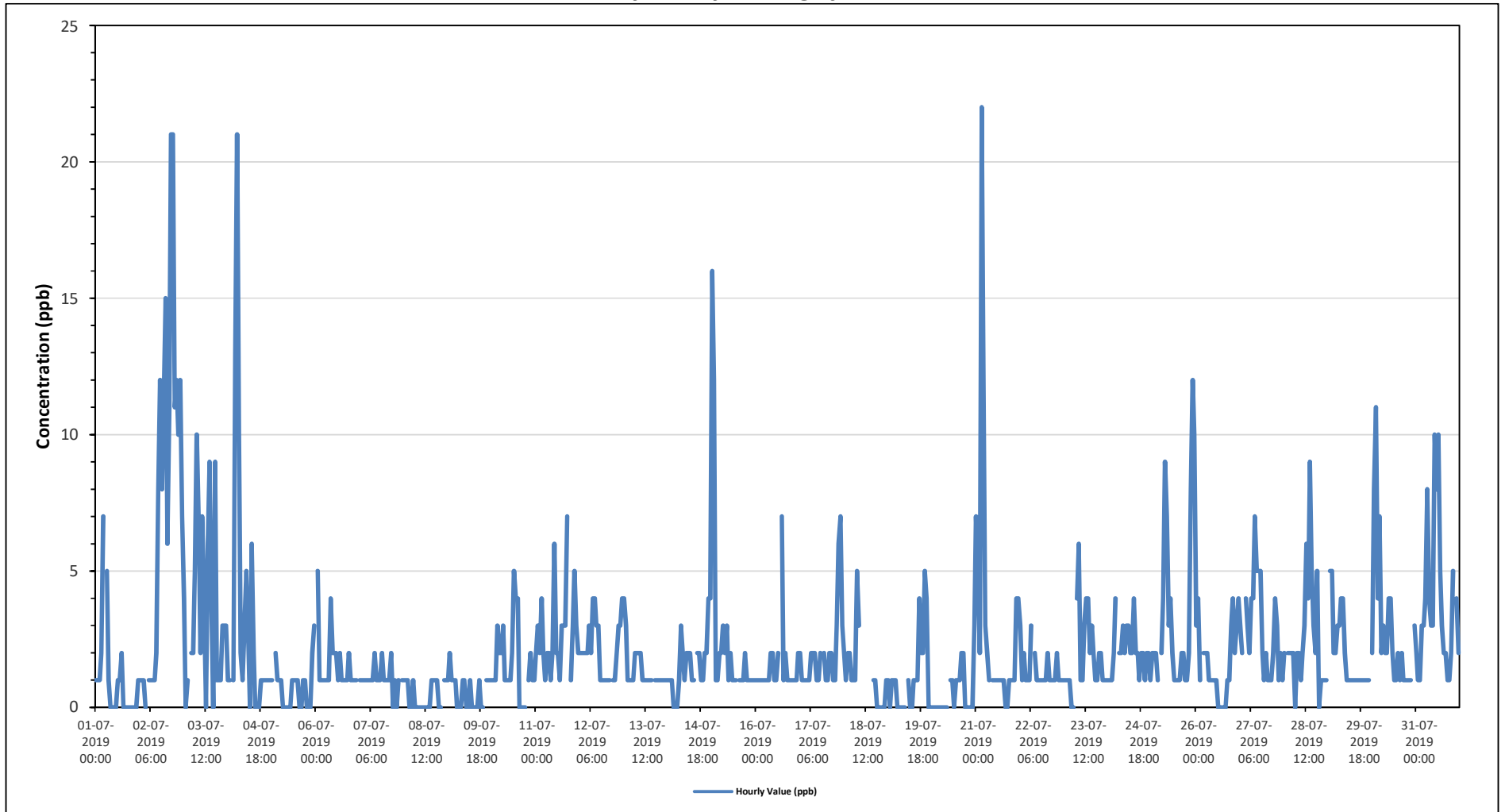
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	1	1	1	2	7	S	5	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	1	0	7	1.0	
Jul 2	1	1	1	0	S	1	1	1	1	2	8	12	8	11	15	6	11	21	11	12	10	12	7	0	21	7.6	
Jul 3	4	0	1	S	2	2	5	10	7	2	7	4	0	6	9	4	0	9	1	1	1	3	3	3	0	10	3.7
Jul 4	1	1	S	1	13	21	10	2	1	3	5	3	0	6	2	0	0	0	1	1	1	1	1	1	0	21	3.3
Jul 5	1	S	2	1	1	1	0	0	0	0	1	1	1	1	0	0	1	1	0	0	0	2	3	0	3	0.7	
Jul 6	S	5	1	1	1	1	1	1	0	4	2	2	1	2	1	1	1	1	2	1	1	1	0	1	5	1.5	
Jul 7	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	2	0	1	0	1	S	1	0	2	1.0
Jul 8	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	S	1	1	0	1	0.4
Jul 9	1	2	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	2	0.6
Jul 10	1	1	1	3	2	2	3	1	1	1	1	2	5	4	4	0	0	0	0	S	1	2	1	1	0	5	1.6
Jul 11	2	3	2	4	2	1	2	2	1	2	6	2	2	1	3	3	3	7	S	1	3	5	3	2	1	7	2.7
Jul 12	2	2	2	2	2	3	2	4	4	3	3	1	1	1	1	1	1	S	1	1	2	3	3	4	1	4	2.1
Jul 13	4	3	1	1	1	1	2	2	2	2	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	4	1.4
Jul 14	1	1	1	0	0	0	1	3	2	1	2	2	2	1	1	S	2	2	1	1	2	2	4	4	0	4	1.6
Jul 15	16	12	1	1	2	2	3	2	3	1	2	1	1	1	S	1	1	1	2	1	1	1	1	1	1	16	2.5
Jul 16	1	1	1	1	1	1	1	1	2	2	1	1	2	S	7	1	2	1	1	1	1	1	1	2	1	7	1.5
Jul 17	2	1	1	1	1	1	2	2	2	1	1	2	S	2	1	1	2	2	1	1	3	6	7	3	1	7	2.0
Jul 18	2	1	2	2	1	1	1	5	3	C	C	C	C	C	C	C	1	1	0	0	0	0	0	1	0	5	-
Jul 19	1	0	1	1	1	0	0	0	0	0	S	1	0	0	1	1	1	4	2	2	5	4	0	0	0	5	1.1
Jul 20	0	0	0	0	0	0	0	0	0	S	1	1	0	1	1	1	2	2	0	0	0	0	0	3	0	3	0.5
Jul 21	7	5	2	22	12	3	2	1	S	1	1	1	1	1	1	0	0	1	1	1	1	4	4	0	22	3.2	
Jul 22	3	1	2	1	1	1	3	S	2	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	3	1.3
Jul 23	1	1	1	1	0	0	S	4	6	1	1	3	4	4	2	3	2	1	1	2	2	1	1	0	6	1.9	
Jul 24	1	1	1	2	4	S	2	2	3	2	3	3	2	2	4	2	2	1	2	2	1	2	2	1	1	4	2.0
Jul 25	2	2	2	1	S	2	4	9	7	3	4	2	1	1	1	1	2	2	1	1	2	8	12	10	1	12	3.5
Jul 26	3	4	1	S	2	2	2	1	1	1	1	0	0	0	0	0	0	1	1	3	4	2	3	4	0	4	1.6
Jul 27	3	2	S	4	3	2	4	4	7	5	5	2	1	2	1	1	1	2	4	3	1	2	1	1	7	2.8	
Jul 28	2	S	2	2	2	2	0	2	2	1	2	3	6	4	9	5	3	2	5	0	1	1	1	1	0	9	2.5
Jul 29	S	5	5	2	2	3	3	4	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.0	
Jul 30	2	8	11	4	7	2	3	2	2	4	4	2	1	1	2	1	2	1	1	1	1	1	1	S	3	11	2.9
Jul 31	2	1	1	3	3	4	8	4	3	3	10	8	10	5	3	2	2	1	1	2	5	S	4	2	1	10	3.8
Diurnal Maximum	16	12	11	22	13	21	10	10	7	5	10	12	10	11	15	6	11	21	21	11	12	10	12	10			
Diurnal Average	2.4	2.3	1.7	2.2	2.6	2.1	2.4	2.4	2.4	1.7	2.6	2.2	2.0	2.1	2.7	1.4	1.5	2.3	1.8	1.4	1.9	2.1	2.5	2.3			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

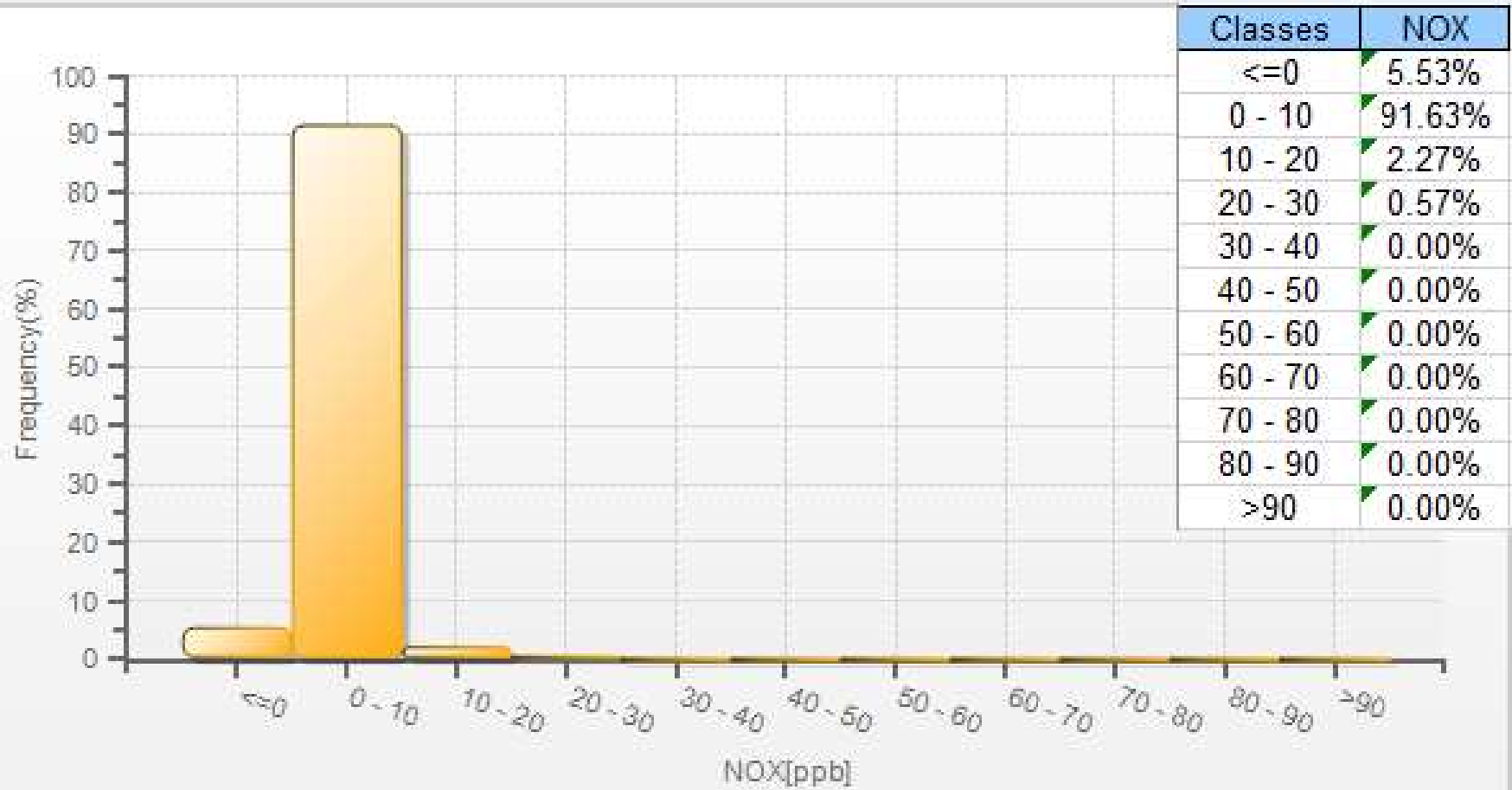
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



*Timeseries Chart of Hourly Average for NOx - Maskwa Site*

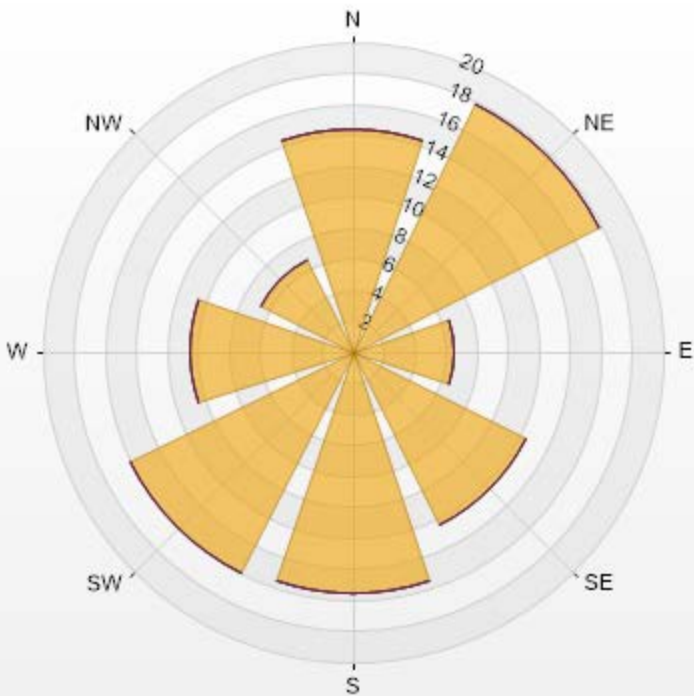


NOX[ppb] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NOX[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

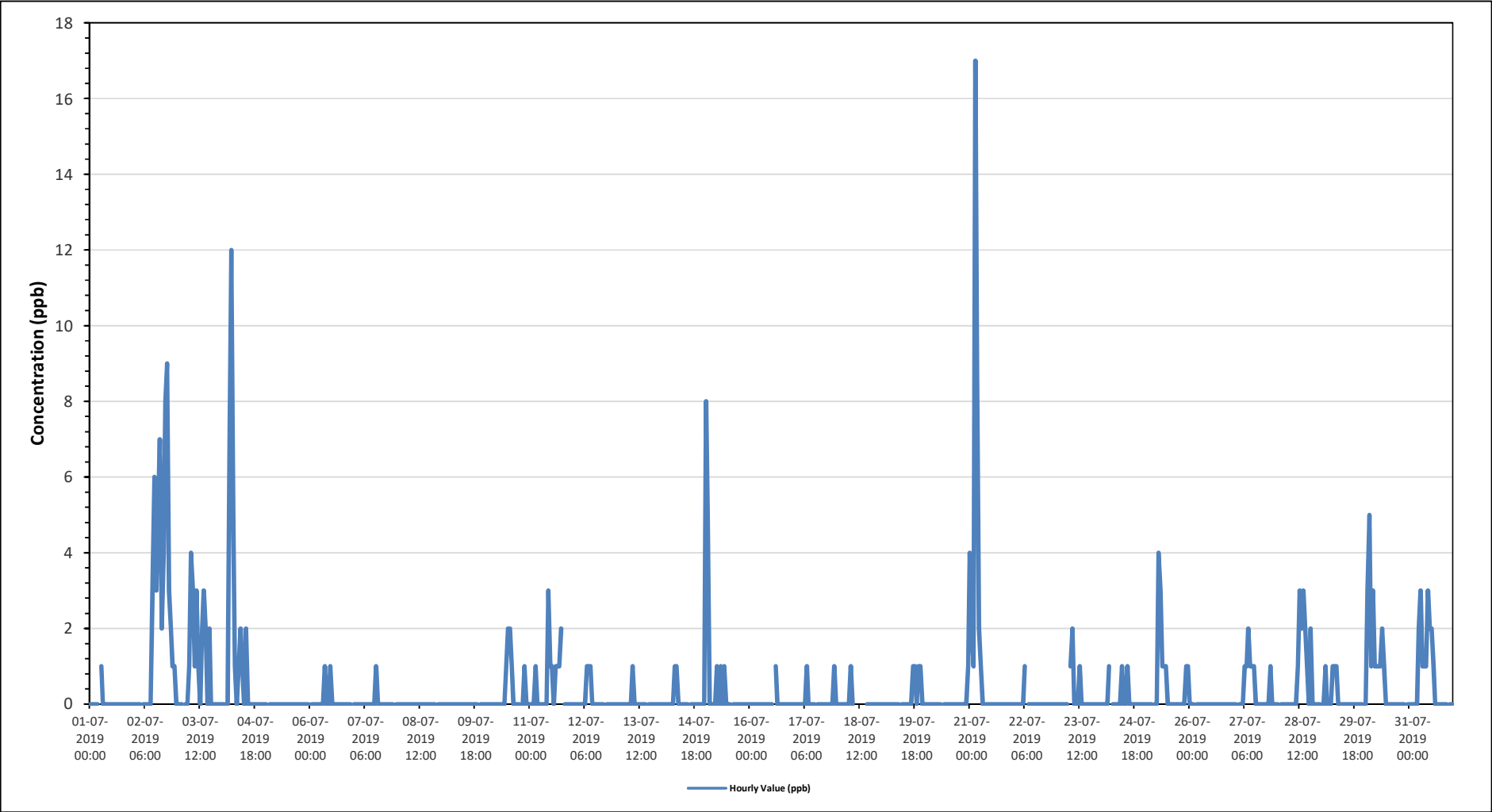
Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	14.33	0	0	0	0	14.33
NE	17.87	0	0	0	0	17.87
E	6.52	0	0	0	0	6.52
SE	12.48	0	0	0	0	12.48
S	15.6	0	0	0	0	15.6
SW	16.03	0	0	0	0	16.03
W	10.5	0	0	0	0	10.5
NW	6.67	0	0	0	0	6.67
Summary	100	0	0	0	0	100



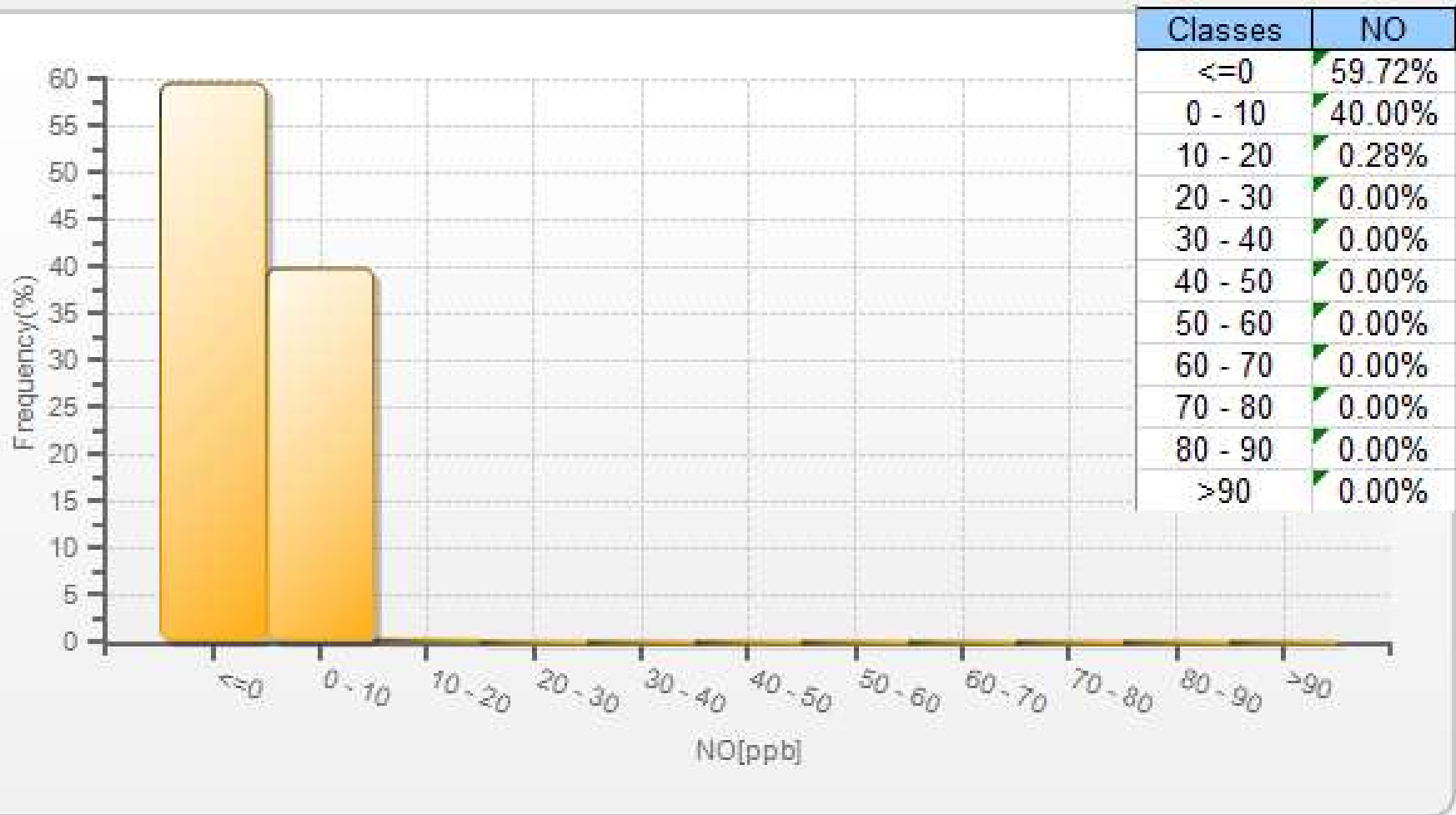
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Timeseries Chart of Hourly Average for NO - Maskwa Site



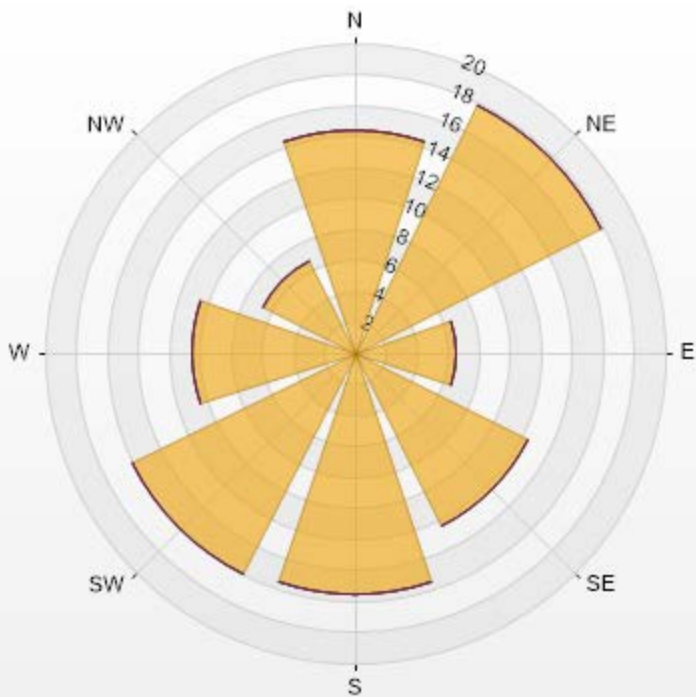
NO[ppb] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NO[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	14.33	0	0	0	0	14.33
NE	17.87	0	0	0	0	17.87
E	6.52	0	0	0	0	6.52
SE	12.48	0	0	0	0	12.48
S	15.6	0	0	0	0	15.6
SW	16.03	0	0	0	0	16.03
W	10.5	0	0	0	0	10.5
NW	6.67	0	0	0	0	6.67
Summary	100	0	0	0	0	100





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# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb**

Number of 1-Hour Exceedences: 0

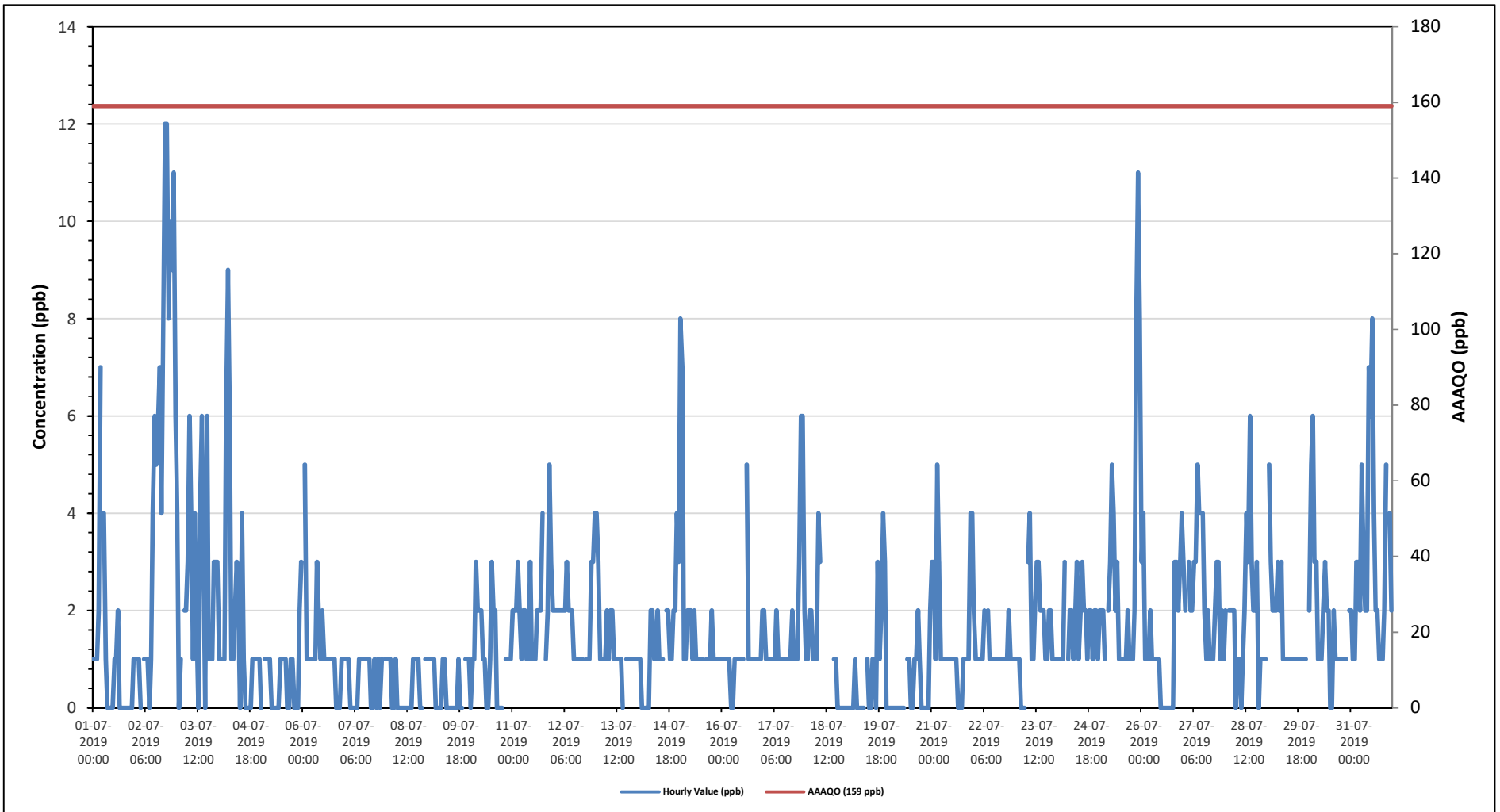
Maximum Hourly Value:	12 ppb on July 2 at hour 17	Hours in Service:	744
Maximum Daily Value:	5.0 ppb on July 2	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 8	Hours of Missing Data:	0
Minimum Daily Value:	0.4 ppb on July 20	Hours of Calibration:	39
Monthly Average:	1.6 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	1	1	1	2	7	S	4	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	1	0	7	1.0			
Jul 2	1	1	1	0	S	1	1	1	0	1	4	6	5	6	7	4	8	12	12	8	10	9	11	6	0	12	5.0		
Jul 3	4	0	1	S	2	2	3	6	4	1	4	2	0	4	6	3	0	6	1	1	1	3	3	3	0	6	2.6		
Jul 4	1	1	S	1	6	9	6	1	1	2	3	2	0	4	1	0	0	0	0	1	1	1	1	1	0	9	1.9		
Jul 5	0	S	1	1	1	1	0	0	0	0	0	1	1	1	1	0	0	1	1	0	0	0	2	3	0	3	0.7		
Jul 6	S	5	1	1	1	1	1	1	3	2	1	2	1	1	1	1	1	1	1	0	0	0	1	S	0	5	1.2		
Jul 7	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0	0	1	0	1	0	1	S	1	0	1	0.6		
Jul 8	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	S	1	1	0	1	0.4		
Jul 9	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	S	1	1	1	0	1	0.4		
Jul 10	0	1	1	3	2	2	2	1	1	0	0	1	3	2	2	0	0	0	0	S	1	1	1	1	0	3	1.1		
Jul 11	2	2	2	3	2	1	2	2	1	1	3	1	1	1	2	2	2	4	S	1	2	5	3	2	1	5	2.0		
Jul 12	2	2	2	2	2	2	2	3	2	2	2	1	1	1	1	1	1	S	1	1	1	3	3	4	1	4	1.8		
Jul 13	4	3	1	1	1	1	2	1	2	2	1	1	1	1	1	0	S	1	1	1	1	1	1	1	0	4	1.3		
Jul 14	1	1	0	0	0	0	0	2	2	1	1	2	1	1	1	S	2	2	1	1	2	2	4	3	0	4	1.3		
Jul 15	8	7	1	1	2	2	2	1	2	1	1	1	1	1	S	1	1	1	2	1	1	1	1	1	1	8	1.8		
Jul 16	1	1	1	1	1	0	0	1	1	1	1	1	1	1	S	5	1	1	1	1	1	1	1	1	2	0	5	1.1	
Jul 17	2	1	1	1	1	1	1	2	1	1	1	1	1	1	S	1	1	1	2	1	1	1	3	6	6	2	1	6	1.7
Jul 18	1	1	2	2	1	1	1	4	3	C	C	C	C	C	C	C	1	1	0	0	0	0	0	0	0	0	4	-	
Jul 19	0	0	0	0	1	0	0	0	0	0	S	1	0	0	1	1	0	3	1	2	4	3	0	0	0	4	0.7		
Jul 20	0	0	0	0	0	0	0	0	0	S	1	1	0	0	1	1	2	1	0	0	0	0	0	2	0	2	0.4		
Jul 21	3	3	1	5	3	1	1	1	S	1	1	1	1	1	1	0	0	0	1	1	1	1	4	4	0	5	1.6		
Jul 22	2	1	1	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1.2		
Jul 23	1	1	1	0	0	0	S	3	4	1	1	2	3	3	2	2	2	1	1	2	2	1	1	1	0	4	1.5		
Jul 24	1	1	1	1	3	S	1	2	2	1	2	3	1	2	3	2	2	1	2	2	1	2	2	1	1	3	1.7		
Jul 25	2	2	2	1	S	2	3	5	4	2	3	1	1	1	1	1	2	1	1	1	2	8	11	8	1	11	2.8		
Jul 26	3	4	1	S	1	2	1	1	1	1	1	0	0	0	0	0	0	0	0	3	3	2	3	4	0	4	1.3		
Jul 27	3	2	S	3	2	2	3	3	5	4	4	4	2	1	2	1	1	1	2	3	3	1	2	1	1	5	2.4		
Jul 28	2	S	2	2	2	2	0	1	1	0	1	2	4	3	6	3	2	2	3	0	1	1	1	1	0	6	1.8		
Jul 29	S	5	3	2	2	2	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.6		
Jul 30	2	5	6	3	3	1	1	1	2	3	2	2	0	0	2	1	1	1	1	1	1	1	1	1	0	6	1.8		
Jul 31	2	1	1	3	3	2	5	3	2	2	7	6	8	4	2	2	1	1	1	2	5	S	4	2	1	8	3.0		
Diurnal Maximum	8	7	6	5	7	9	6	6	5	4	7	6	8	6	7	4	8	12	12	8	10	9	11	8					
Daiurnal Average	1.8	1.9	1.3	1.4	1.7	1.4	1.6	1.6	1.7	1.2	1.7	1.6	1.4	1.5	1.9	1.1	1.2	1.6	1.3	1.2	1.7	2.0	2.4	2.1					

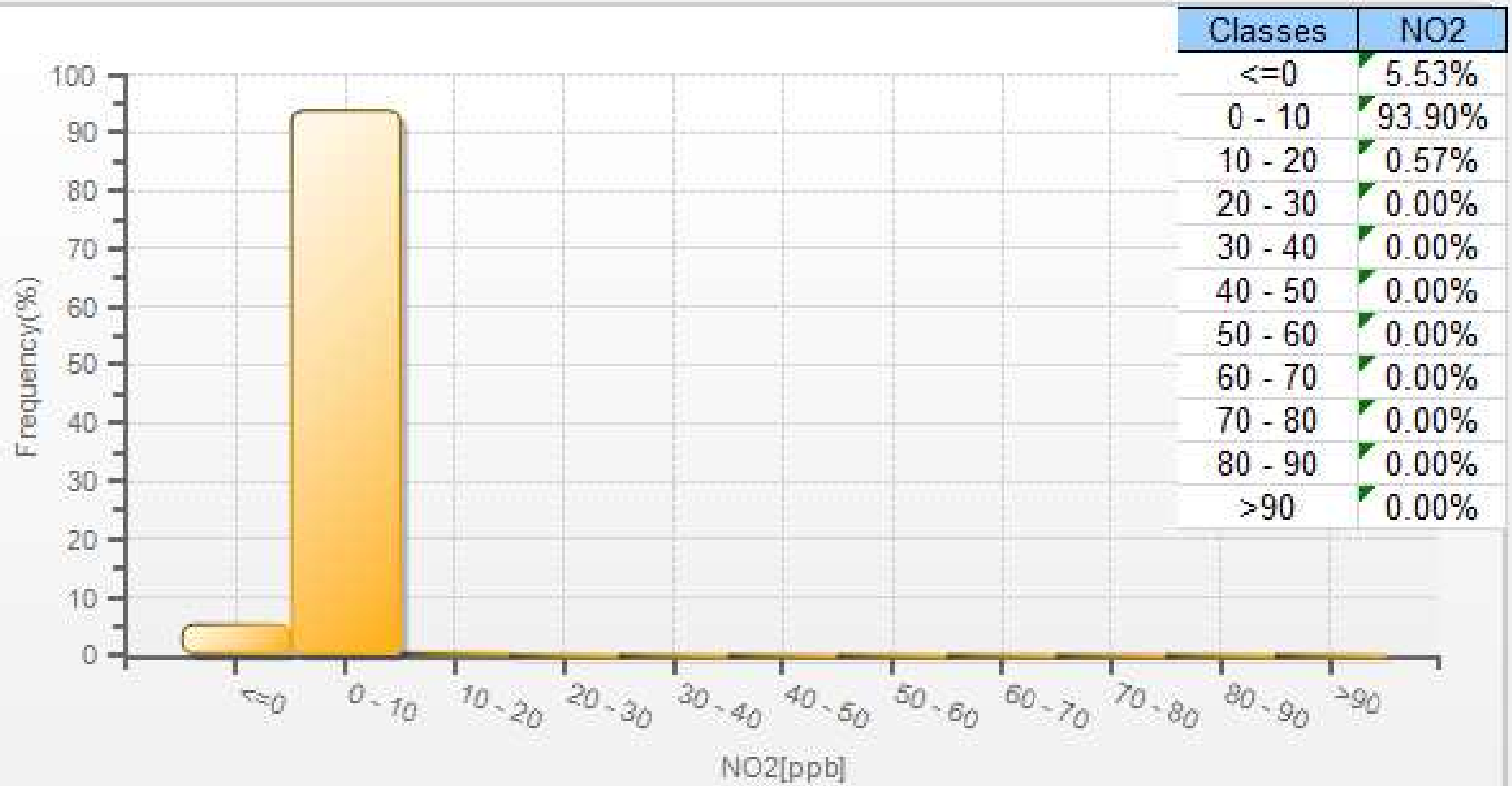
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO2 - Maskwa Site

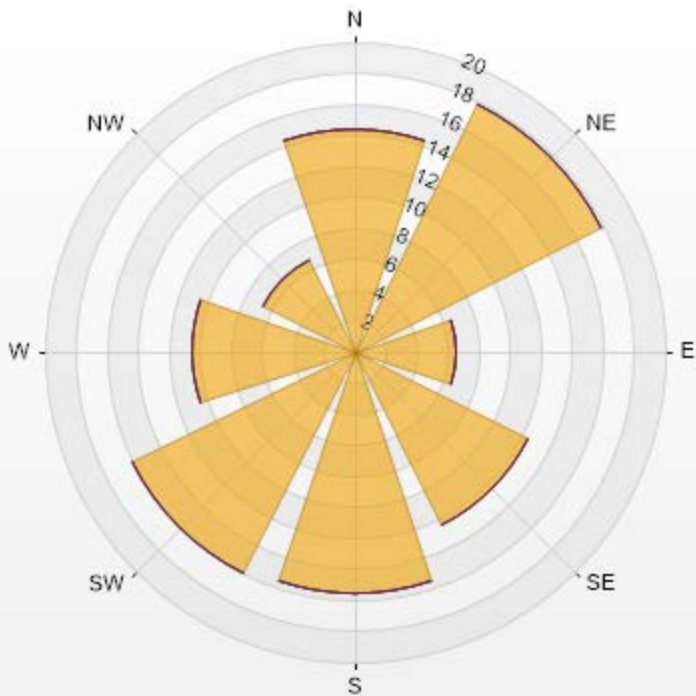


NO2[ppb] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.76% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	14.33	0	0	0	0	14.33
NE	17.87	0	0	0	0	17.87
E	6.52	0	0	0	0	6.52
SE	12.48	0	0	0	0	12.48
S	15.6	0	0	0	0	15.6
SW	16.03	0	0	0	0	16.03
W	10.5	0	0	0	0	10.5
NW	6.67	0	0	0	0	6.67
Summary	100	0	0	0	0	100



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## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Averages

#### TOTAL HYDROCARBONS (THC) in ppm

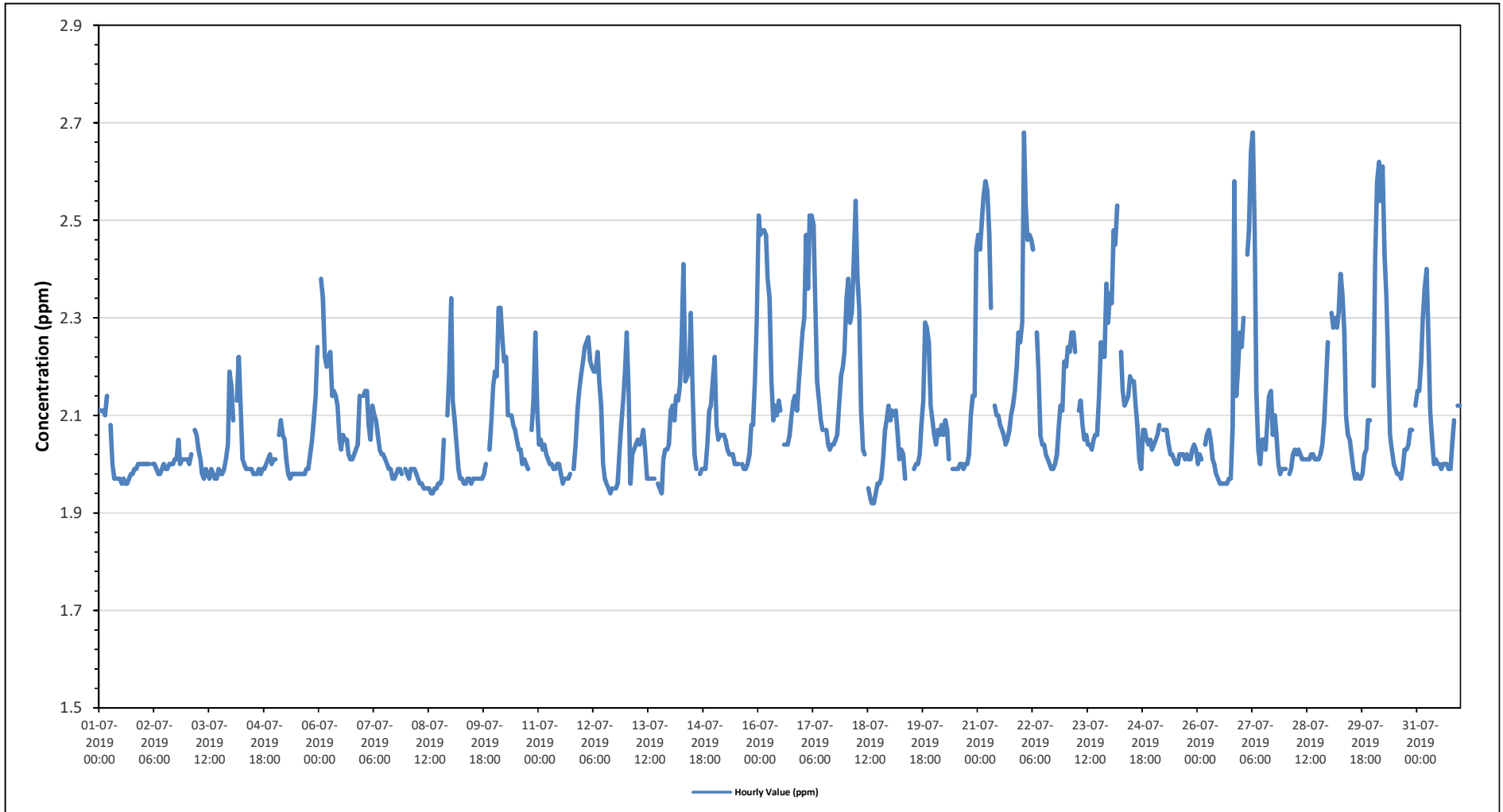
Maximum Hourly Value:	2.68 ppm on July 22 at hour 1	Hours in Service:	744
Maximum Daily Value:	2.25 ppm on July 21	Hours of Data:	708
Minimum Hourly Value:	1.92 ppm on July 18 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	1.98 ppm on July 8	Hours of Calibration:	36
Monthly Average:	2.09 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.11	2.11	2.11	2.10	2.14	S	2.08	2.00	1.97	1.97	1.97	1.97	1.96	1.97	1.96	1.96	1.97	1.98	1.98	1.99	1.99	2.00	2.00	2.00	1.96	2.14	2.01	
Jul 2	2.00	2.00	2.00	2.00	S	2.00	2.00	1.99	1.98	1.98	1.99	2.00	1.99	1.99	2.00	2.00	2.01	2.01	2.05	2.00	2.01	2.01	2.01	2.01	1.98	2.05	2.00	
Jul 3	2.01	2.00	2.02	S	2.07	2.06	2.03	2.01	1.98	1.97	1.99	1.98	1.97	1.99	1.98	1.97	1.99	1.98	1.98	1.99	1.99	2.00	2.01	2.04	2.19	1.97	2.19	2.01
Jul 4	2.16	2.09	S	2.13	2.22	2.12	2.01	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.99	1.98	1.99	1.99	2.00	2.01	2.02	2.00	2.01	1.98	2.22	2.03	
Jul 5	2.01	S	2.06	2.09	2.06	2.05	2.01	1.98	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.99	2.02	2.05	2.09	2.14	2.24	1.97	2.24	2.03		
Jul 6	S	2.38	2.34	2.22	2.20	2.22	2.23	2.14	2.15	2.14	2.12	2.05	2.03	2.06	2.05	2.05	2.02	2.01	2.01	2.02	2.03	2.04	2.14	S	2.01	2.38	2.12	
Jul 7	2.14	2.15	2.15	2.08	2.05	2.12	2.10	2.09	2.06	2.03	2.02	2.02	2.01	2.00	1.99	1.99	1.97	1.97	1.98	1.99	1.99	1.98	S	1.99	1.97	2.15	2.04	
Jul 8	1.98	1.97	1.99	1.99	1.99	1.98	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.94	1.94	1.95	1.95	1.96	1.96	1.97	2.05	S	2.10	2.19	1.94	2.19	1.98	
Jul 9	2.34	2.13	2.09	2.04	1.99	1.97	1.97	1.96	1.96	1.97	1.97	1.96	1.97	1.97	1.97	1.97	1.97	1.98	2.00	S	2.03	2.09	2.16	1.96	2.34	2.02		
Jul 10	2.19	2.18	2.32	2.32	2.26	2.21	2.22	2.10	2.10	2.10	2.08	2.07	2.05	2.03	2.03	2.00	2.01	2.00	1.99	S	2.07	2.13	2.27	2.12	1.99	2.32	2.12	
Jul 11	2.04	2.05	2.03	2.04	2.02	2.01	2.00	2.00	1.99	1.99	2.00	2.00	1.98	1.96	1.97	1.97	1.97	1.98	S	1.99	2.04	2.11	2.15	2.18	1.96	2.18	2.02	
Jul 12	2.21	2.24	2.25	2.26	2.21	2.20	2.19	2.19	2.23	2.17	2.12	2.00	1.97	1.96	1.95	1.94	1.95	S	1.95	1.96	2.03	2.08	2.13	2.19	1.94	2.26	2.10	
Jul 13	2.27	2.16	1.96	2.02	2.03	2.04	2.05	2.04	2.05	2.07	2.03	1.97	1.97	1.97	1.97	1.97	S	1.96	1.95	1.94	2.01	2.03	2.03	2.04	1.94	2.27	2.02	
Jul 14	2.11	2.12	2.09	2.14	2.13	2.16	2.26	2.41	2.17	2.18	2.19	2.31	2.15	2.02	1.99	S	1.98	1.99	1.99	1.99	2.04	2.11	2.12	2.17	1.98	2.41	2.12	
Jul 15	2.22	2.08	2.05	2.06	2.06	2.06	2.05	2.03	2.02	2.02	2.02	2.00	2.00	2.00	S	2.00	1.99	1.99	2.00	2.02	2.08	2.08	2.17	2.29	1.99	2.29	2.06	
Jul 16	2.51	2.47	2.48	2.48	2.47	2.38	2.34	2.17	2.09	2.12	2.10	2.13	2.11	S	2.04	2.04	2.04	2.06	2.10	2.13	2.14	2.11	2.17	2.22	2.04	2.51	2.21	
Jul 17	2.27	2.30	2.47	2.36	2.51	2.51	2.49	2.34	2.17	2.13	2.09	2.07	S	2.07	2.04	2.03	2.04	2.04	2.05	2.06	2.12	2.18	2.20	2.23	2.03	2.51	2.21	
Jul 18	2.34	2.38	2.29	2.31	2.41	2.54	2.39	2.32	2.11	2.03	2.02	S	1.95	1.93	1.92	1.92	1.94	1.96	1.96	1.97	2.01	2.07	2.09	2.12	1.92	2.54	2.13	
Jul 19	2.09	2.11	2.10	2.11	2.06	2.01	2.03	2.02	1.97	C	C	C	C	1.99	2.00	2.00	2.02	2.08	2.13	2.29	2.28	2.25	2.12	2.09	1.97	2.29	2.09	
Jul 20	2.06	2.04	2.07	2.06	2.08	2.06	2.09	2.07	2.01	S	1.99	1.99	1.99	1.99	2.00	2.00	1.99	2.00	2.00	2.02	2.10	2.14	2.14	2.44	1.99	2.44	2.06	
Jul 21	2.47	2.44	2.50	2.55	2.58	2.56	2.47	2.32	S	2.12	2.10	2.10	2.08	2.07	2.06	2.04	2.05	2.07	2.10	2.12	2.15	2.20	2.27	2.25	2.04	2.58	2.25	
Jul 22	2.29	2.68	2.53	2.46	2.47	2.46	2.44	S	2.27	2.19	2.06	2.04	2.04	2.02	2.01	2.00	1.99	1.99	2.00	2.02	2.08	2.12	2.11	2.21	1.99	2.68	2.19	
Jul 23	2.20	2.24	2.23	2.27	2.27	2.23	S	2.11	2.13	2.08	2.05	2.06	2.04	2.04	2.03	2.05	2.06	2.06	2.14	2.25	2.22	2.22	2.37	2.29	2.03	2.37	2.16	
Jul 24	2.35	2.33	2.48	2.45	2.53	S	2.23	2.15	2.12	2.13	2.14	2.18	2.17	2.12	2.08	2.01	1.99	2.07	2.07	2.05	2.04	2.05	2.03	1.99	2.53	2.17	2.03	
Jul 25	2.04	2.05	2.06	2.08	S	2.07	2.07	2.07	2.04	2.02	2.02	2.01	2.00	2.00	2.02	2.02	2.01	2.02	2.01	2.01	2.03	2.04	2.03	2.00	2.08	2.03	2.03	
Jul 26	2.00	2.02	2.01	S	2.04	2.06	2.07	2.05	2.01	2.00	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.97	2.08	2.58	2.14	2.20	2.27	1.96	2.58	2.05	
Jul 27	2.24	2.30	S	2.43	2.48	2.64	2.68	2.48	2.15	2.03	2.00	2.05	2.05	2.03	2.09	2.14	2.15	2.06	2.10	2.06	2.00	1.98	1.99	1.99	1.98	2.68	2.18	
Jul 28	1.99	S	1.98	1.99	2.02	2.03	2.02	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.01	2.01	2.02	2.04	2.09	2.16	2.25	1.98	2.25	2.03		
Jul 29	S	2.31	2.28	2.30	2.28	2.31	2.39	2.35	2.27	2.10	2.06	2.05	2.02	1.99	1.97	1.98	1.97	1.97	1.98	2.02	2.03	2.09	2.09	S	1.97	2.39	2.13	
Jul 30	2.16	2.43	2.58	2.62	2.54	2.61	2.43	2.34	2.21	2.06	2.03	2.00	1.99	1.98	1.98	1.97	1.99	2.03	2.03	2.04	2.07	2.07	S	2.12	1.97	2.62	2.19	
Jul 31	2.15	2.15	2.21	2.30	2.36	2.40	2.25	2.11	2.05	2.00	2.01	2.00	2.00	1.99	2.00	2.00	1.99	1.99	2.04	2.09	S	2.12	2.12	1.99	2.40	2.10		
Diurnal Maximum	2.51	2.68	2.58	2.62	2.58	2.64	2.68	2.48	2.27	2.19	2.19	2.31	2.17	2.17	2.12	2.14	2.15	2.08	2.14	2.29	2.58	2.25	2.37	2.44				
Diurnal Average	2.17	2.20	2.20	2.22	2.23	2.21	2.19	2.13	2.07	2.05	2.04	2.03	2.01	2.00	2.00	2.00	2.00	2.00	2.01	2.04	2.08	2.08	2.12	2.15				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

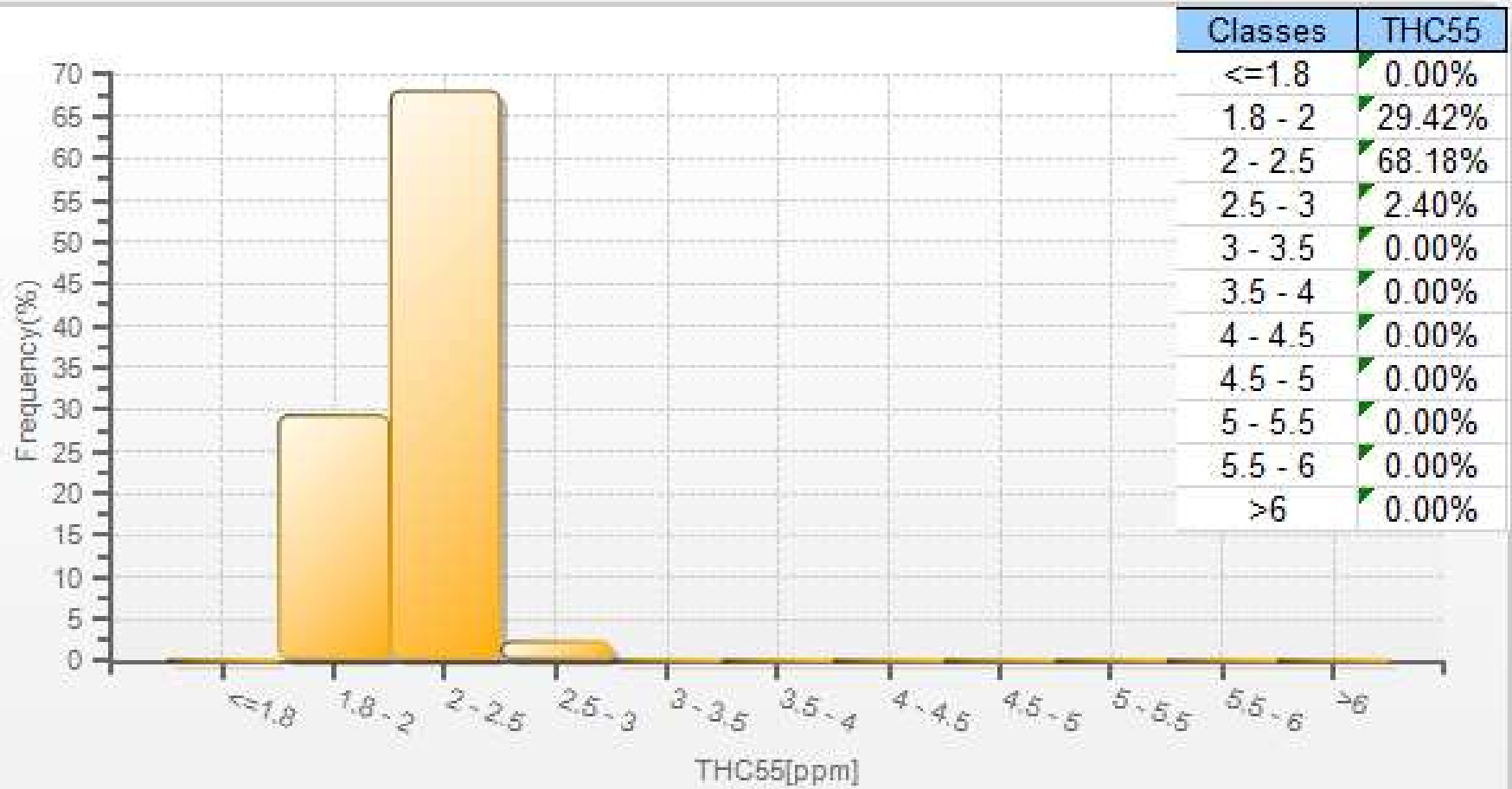
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for THC - Maskwa Site*



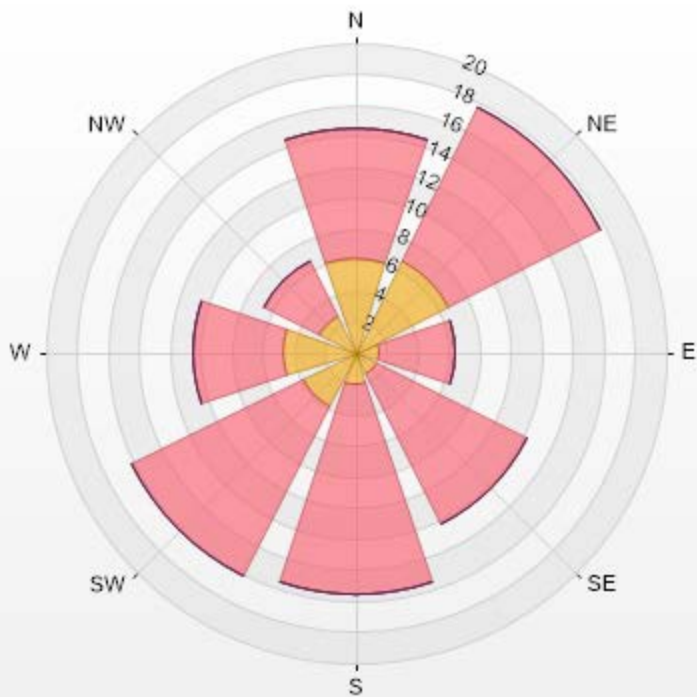


THC55[ppm] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-THC55[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	6.08	8.49	0	0	0	14.57
NE	6.65	11.03	0	0	0	17.68
E	1.56	4.95	0	0	0	6.51
SE	1.56	10.89	0	0	0	12.45
S	2.12	13.44	0	0	0	15.56
SW	3.82	12.31	0	0	0	16.13
W	4.67	5.8	0	0	0	10.47
NW	2.69	3.96	0	0	0	6.65
Summary	29.15	70.87	0	0	0	100



LICA-201907-Revision 1



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

Summary of Hourly Averages

METHANE (CH4) in ppm

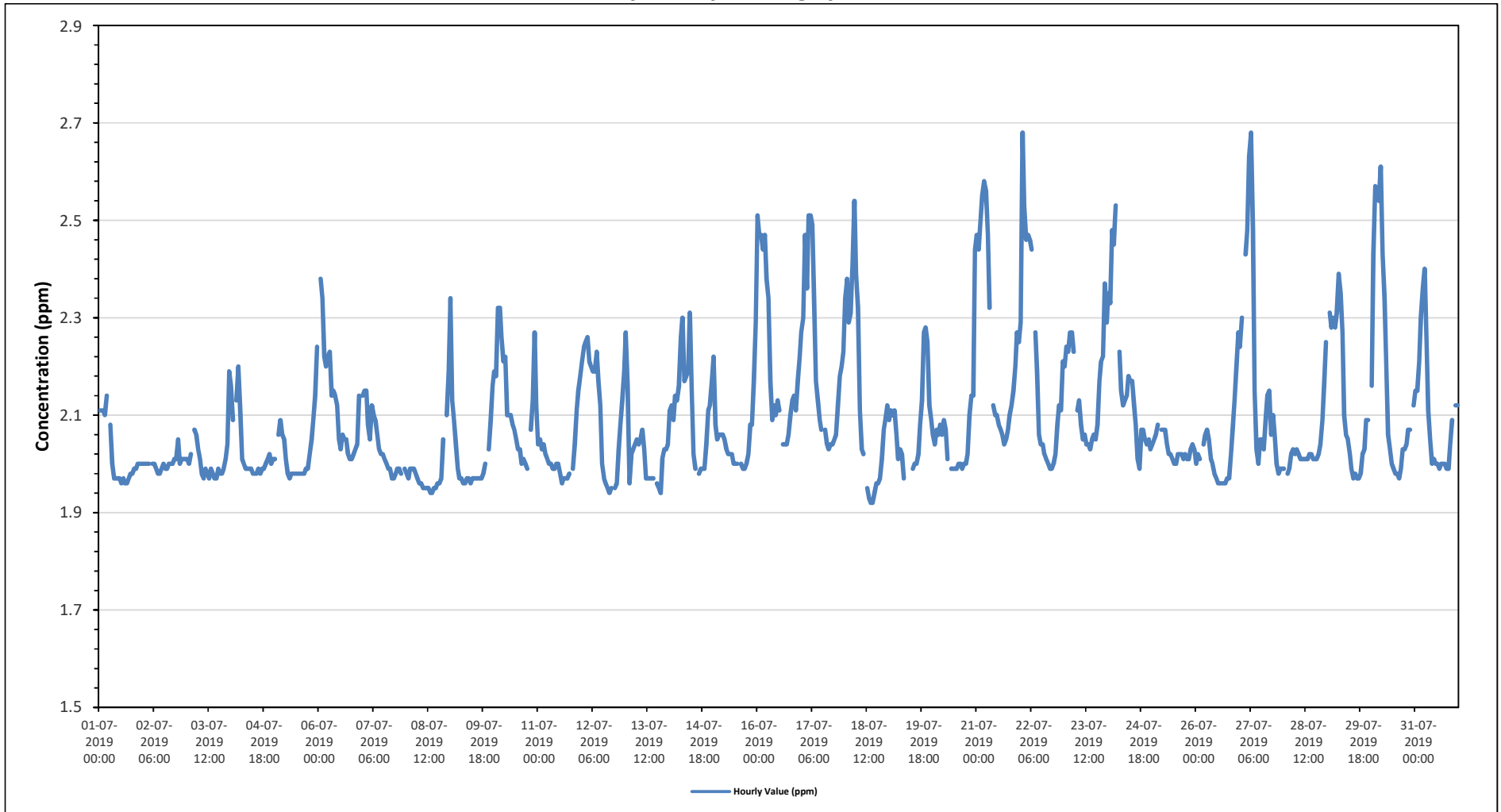
Maximum Hourly Value:	2.68 ppm on July 22 at hour 1	Hours in Service:	744
Maximum Daily Value:	2.25 ppm on July 21	Hours of Data:	708
Minimum Hourly Value:	1.92 ppm on July 18 at hour 14	Hours of Missing Data:	0
Minimum Daily Value:	1.98 ppm on July 8	Hours of Calibration:	36
Monthly Average:	2.09 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	2.11	2.11	2.11	2.10	2.14	S	2.08	2.00	1.97	1.97	1.97	1.97	1.96	1.97	1.96	1.97	1.98	1.98	1.99	1.99	2.00	2.00	2.00	1.96	2.14	2.01	
Jul 2	2.00	2.00	2.00	2.00	S	2.00	2.00	1.99	1.98	1.98	1.99	2.00	1.99	1.99	2.00	2.00	2.01	2.01	2.05	2.00	2.01	2.01	2.01	1.98	2.05	2.00	
Jul 3	2.01	2.00	2.02	S	2.07	2.06	2.03	2.01	1.98	1.97	1.99	1.98	1.97	1.99	1.98	1.97	1.99	1.98	1.98	1.99	1.99	2.00	2.01	2.04	2.19	2.01	
Jul 4	2.16	2.09	S	2.13	2.20	2.11	2.01	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.99	1.98	1.99	1.99	2.00	2.01	2.02	2.00	2.01	1.98	2.20	2.03
Jul 5	2.01	S	2.06	2.09	2.06	2.05	2.01	1.98	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.99	1.99	2.02	2.05	2.09	2.14	2.24	1.97	2.24	2.03	
Jul 6	S	2.38	2.34	2.22	2.20	2.22	2.23	2.14	2.15	2.14	2.12	2.05	2.03	2.06	2.05	2.05	2.02	2.01	2.01	2.02	2.03	2.04	2.14	S	2.01	2.38	2.12
Jul 7	2.14	2.15	2.15	2.08	2.05	2.12	2.10	2.09	2.06	2.03	2.02	2.02	2.01	2.00	1.99	1.99	1.97	1.97	1.98	1.99	1.99	1.98	S	1.99	1.97	2.15	2.04
Jul 8	1.98	1.97	1.99	1.99	1.99	1.98	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.94	1.94	1.95	1.95	1.96	1.96	1.97	2.05	S	2.10	2.19	1.94	2.19	1.98
Jul 9	2.34	2.13	2.09	2.04	1.99	1.97	1.97	1.96	1.96	1.97	1.97	1.96	1.97	1.97	1.97	1.97	1.97	1.98	2.00	S	2.03	2.09	2.16	1.96	2.34	2.02	
Jul 10	2.19	2.18	2.32	2.32	2.26	2.21	2.22	2.10	2.10	2.10	2.08	2.07	2.05	2.03	2.03	2.00	2.01	2.00	1.99	S	2.07	2.13	2.27	2.12	1.99	2.32	2.12
Jul 11	2.04	2.05	2.03	2.04	2.02	2.01	2.00	2.00	1.99	1.99	2.00	2.00	1.98	1.96	1.97	1.97	1.97	1.98	S	1.99	2.04	2.11	2.15	2.18	1.96	2.18	2.02
Jul 12	2.21	2.24	2.25	2.26	2.21	2.20	2.19	2.19	2.23	2.17	2.12	2.00	1.97	1.96	1.95	1.94	1.95	S	1.95	1.96	2.03	2.08	2.13	2.19	1.94	2.26	2.10
Jul 13	2.27	2.16	1.96	2.02	2.03	2.04	2.05	2.04	2.05	2.07	2.03	1.97	1.97	1.97	1.97	1.97	S	1.96	1.95	1.94	2.01	2.03	2.03	2.04	1.94	2.27	2.02
Jul 14	2.11	2.12	2.09	2.14	2.13	2.16	2.26	2.30	2.17	2.18	2.19	2.31	2.15	2.02	1.99	S	1.98	1.99	1.99	1.99	2.04	2.11	2.12	2.17	1.98	2.31	2.12
Jul 15	2.22	2.08	2.05	2.06	2.06	2.06	2.05	2.03	2.02	2.02	2.02	2.00	2.00	S	2.00	1.99	1.99	2.00	2.02	2.08	2.08	2.17	2.29	1.99	2.29	2.06	
Jul 16	2.51	2.47	2.47	2.44	2.47	2.38	2.34	2.17	2.09	2.12	2.10	2.13	2.11	S	2.04	2.04	2.04	2.06	2.10	2.13	2.14	2.11	2.17	2.22	2.04	2.51	2.21
Jul 17	2.27	2.30	2.47	2.36	2.51	2.51	2.49	2.34	2.17	2.13	2.09	2.07	S	2.07	2.04	2.03	2.04	2.04	2.05	2.06	2.12	2.18	2.20	2.23	2.03	2.51	2.21
Jul 18	2.34	2.38	2.29	2.31	2.41	2.54	2.39	2.32	2.11	2.03	2.02	S	1.95	1.93	1.92	1.92	1.94	1.96	1.96	1.97	2.01	2.07	2.09	2.12	1.92	2.54	2.13
Jul 19	2.09	2.11	2.10	2.11	2.06	2.01	2.03	2.02	1.97	C	C	C	C	1.99	2.00	2.00	2.02	2.08	2.13	2.27	2.28	2.25	2.12	2.09	1.97	2.28	2.09
Jul 20	2.06	2.04	2.07	2.06	2.08	2.06	2.09	2.07	2.01	S	1.99	1.99	1.99	1.99	2.00	2.00	1.99	2.00	2.00	2.02	2.10	2.14	2.14	2.44	1.99	2.44	2.06
Jul 21	2.47	2.44	2.50	2.55	2.58	2.56	2.47	2.32	S	2.12	2.10	2.10	2.08	2.07	2.06	2.04	2.05	2.07	2.10	2.12	2.15	2.20	2.27	2.25	2.04	2.58	2.25
Jul 22	2.29	2.68	2.53	2.46	2.47	2.46	2.44	S	2.27	2.19	2.06	2.04	2.04	2.02	2.01	2.00	1.99	1.99	2.00	2.02	2.08	2.12	2.11	2.21	1.99	2.68	2.19
Jul 23	2.20	2.24	2.23	2.27	2.27	2.23	S	2.11	2.13	2.08	2.05	2.06	2.04	2.04	2.03	2.05	2.06	2.05	2.08	2.17	2.21	2.22	2.37	2.29	2.03	2.37	2.15
Jul 24	2.35	2.33	2.48	2.45	2.53	S	2.23	2.15	2.12	2.13	2.14	2.18	2.17	2.12	2.08	2.01	1.99	2.07	2.07	2.05	2.04	2.05	2.03	1.99	2.53	2.17	
Jul 25	2.04	2.05	2.06	2.08	S	2.07	2.07	2.07	2.04	2.02	2.02	2.01	2.00	2.00	2.02	2.02	2.01	2.02	2.01	2.01	2.03	2.04	2.03	2.00	2.08	2.03	
Jul 26	2.00	2.02	2.01	S	2.04	2.06	2.07	2.05	2.01	2.00	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.97	2.02	2.07	2.13	2.20	2.27	1.96	2.27	2.03
Jul 27	2.24	2.30	S	2.43	2.48	2.63	2.68	2.48	2.15	2.03	2.00	2.05	2.05	2.03	2.09	2.14	2.15	2.06	2.10	2.06	2.00	1.98	1.99	1.99	1.98	2.68	2.18
Jul 28	1.99	S	1.98	1.99	2.02	2.03	2.02	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.01	2.01	2.01	2.02	2.04	2.09	2.16	2.25	1.98	2.25	2.03
Jul 29	S	2.31	2.28	2.30	2.28	2.31	2.39	2.35	2.27	2.10	2.06	2.05	2.02	1.99	1.97	1.98	1.97	1.97	1.98	2.02	2.03	2.09	2.09	S	1.97	2.39	2.13
Jul 30	2.16	2.43	2.57	2.56	2.54	2.61	2.43	2.34	2.21	2.06	2.03	2.00	1.99	1.98	1.98	1.97	1.99	2.03	2.03	2.04	2.07	2.07	S	2.12	1.97	2.61	2.18
Jul 31	2.15	2.15	2.21	2.30	2.36	2.40	2.25	2.11	2.05	2.00	2.01	2.00	2.00	1.99	2.00	2.00	1.99	1.99	2.04	2.09	S	2.12	2.12	1.99	2.40	2.10	
Diurnal Maximum	2.51	2.68	2.57	2.56	2.58	2.63	2.68	2.48	2.27	2.19	2.19	2.31	2.17	2.17	2.12	2.14	2.15	2.08	2.13	2.27	2.28	2.25	2.37	2.44			
Diurnal Average	2.17	2.20	2.20	2.21	2.22	2.21	2.19	2.12	2.07	2.05	2.04	2.03	2.01	2.00	2.00	2.00	2.00	2.00	2.01	2.03	2.06	2.08	2.12	2.15			

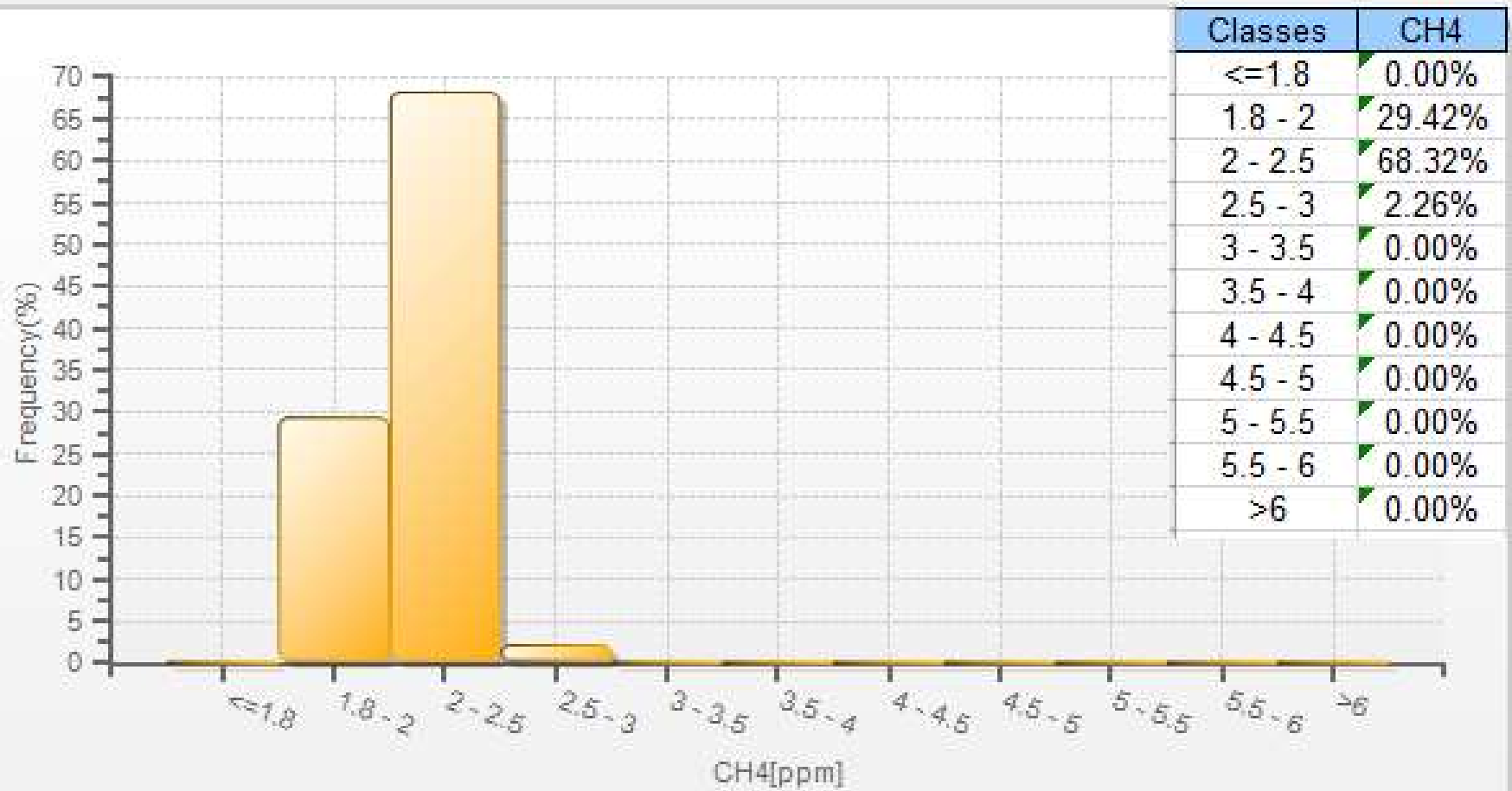
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for CH4 - Maskwa Site*

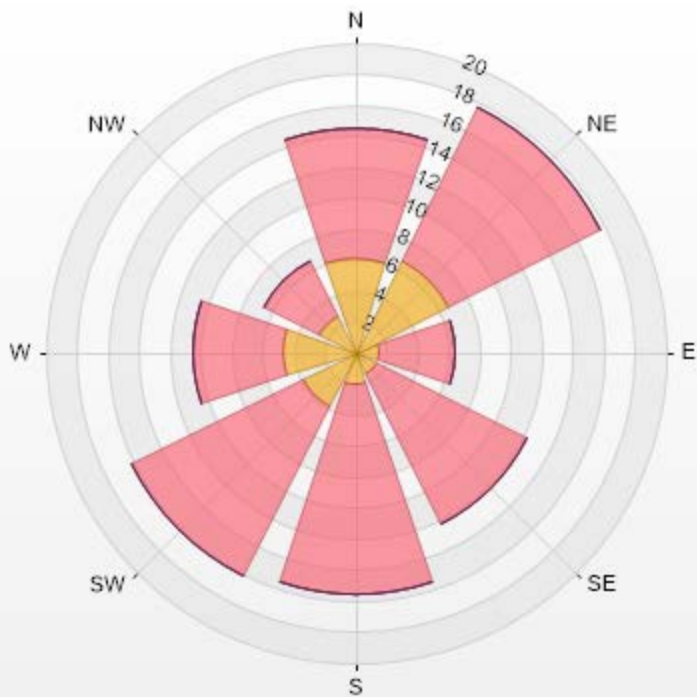


CH4[ppm] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-CH4[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	6.08	8.49	0	0	0	14.57
NE	6.65	11.03	0	0	0	17.68
E	1.56	4.95	0	0	0	6.51
SE	1.56	10.89	0	0	0	12.45
S	2.12	13.44	0	0	0	15.56
SW	3.82	12.31	0	0	0	16.13
W	4.67	5.8	0	0	0	10.47
NW	2.69	3.96	0	0	0	6.65
Summary	29.15	70.87	0	0	0	100



LICA-201907-Revision 1





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Maskwa Site - July 2019**

**Summary of Hourly Averages**

**NON-METHANE HYDROCARBONS (NMHC) in ppm**

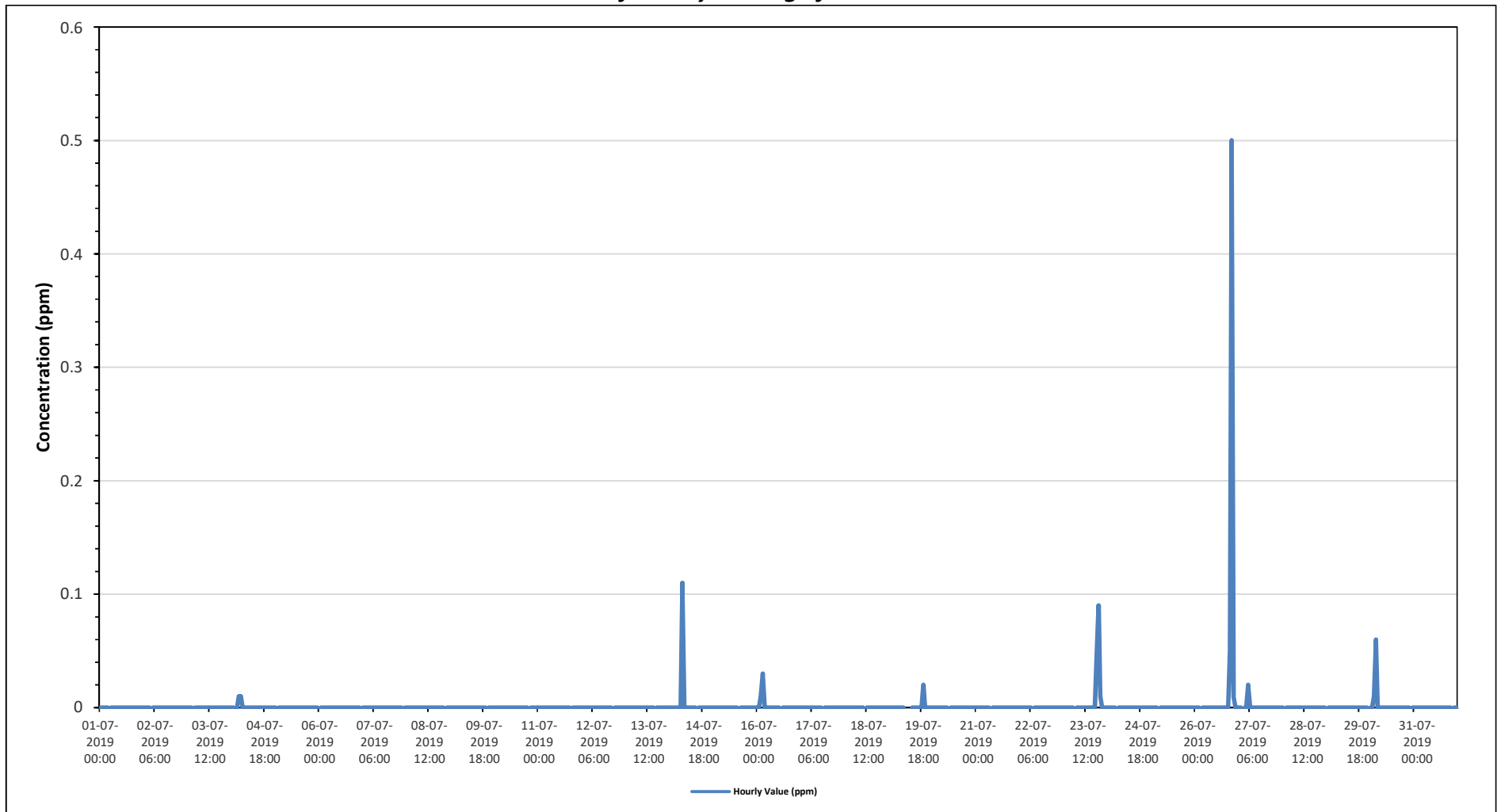
Maximum Hourly Value:	0.50 ppm on July 26 at hour 20	Hours in Service:	744
Maximum Daily Value:	0.02 ppm on July 26	Hours of Data:	708
Minimum Hourly Value:	0.00 ppm on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.00 ppm on July 1	Hours of Calibration:	36
Monthly Average:	0.00 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23				
Jul 1	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 2	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 3	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 4	0.00	0.00	S	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 5	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 6	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	
Jul 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	
Jul 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 16	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 23	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 25	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 26	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.50	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 27	0.00	0.00	S	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 28	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 29	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	
Jul 30	0.00	0.00	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	
Jul 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.00	0.01	0.06	0.01	0.02	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Diurnal Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

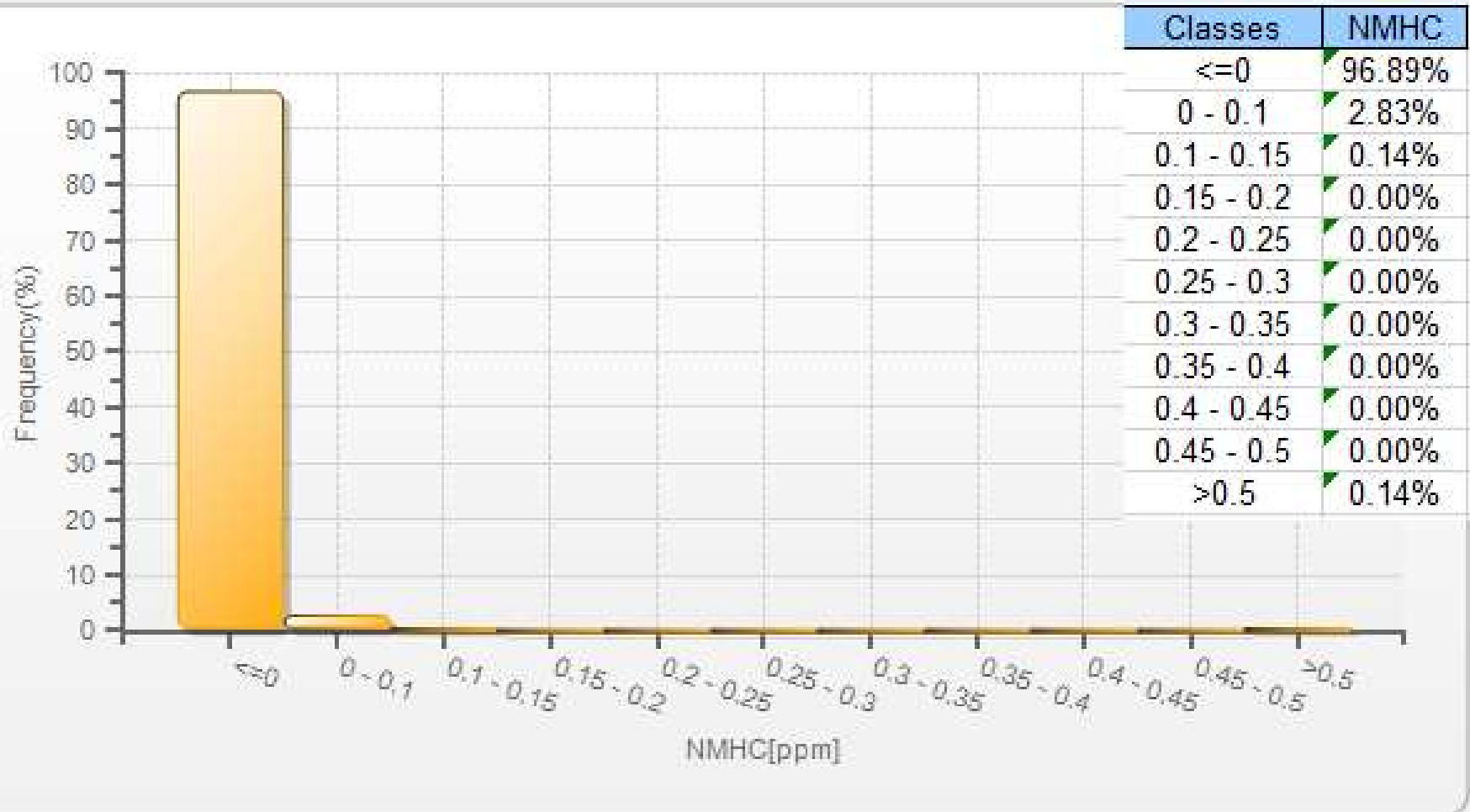
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for NMHC - Maskwa Site**

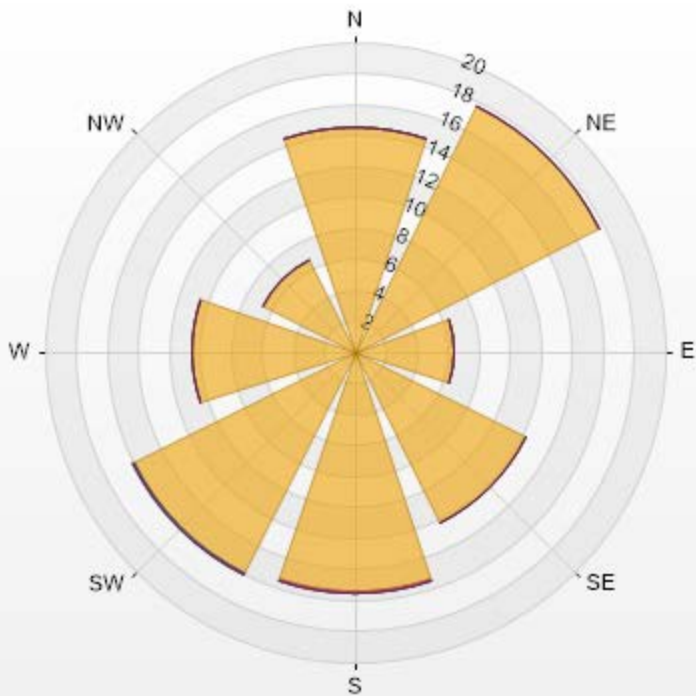


NMHC[ppm] Histogram: Maskwa Monthly: 07-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NMHC[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	14.57	0	0	0	0	14.57
NE	17.68	0	0	0	0	17.68
E	6.51	0	0	0	0	6.51
SE	12.45	0	0	0	0	12.45
S	15.42	0.14	0	0	0	15.56
SW	15.98	0	0.14	0	0	16.12
W	10.47	0	0	0	0	10.47
NW	6.65	0	0	0	0	6.65
Summary	100	0.14	0.14	0	0	100



LICA-201907-Revision 1

% Icon Classes (ppm)	100	0	0	0	0
	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

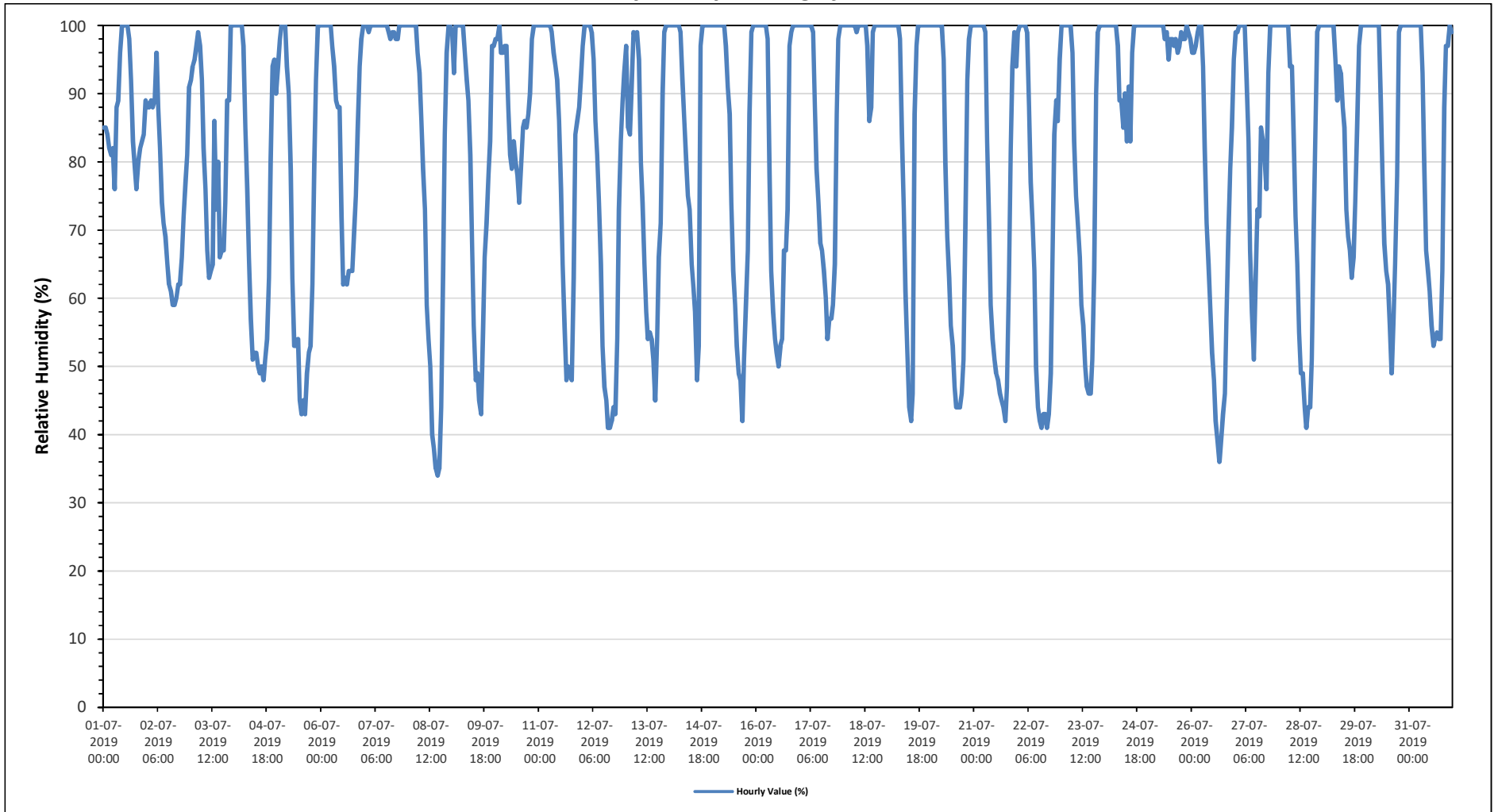
Maximum Hourly Value:	100 %	on July 1 at hour 10	Hours in Service:	744
Maximum Daily Value:	99.6 %	on July 7	Hours of Data:	744
Minimum Hourly Value:	34 %	on July 8 at hour 16	Hours of Missing Data:	0
Minimum Daily Value:	70.4 %	on July 26	Hours of Calibration:	0
Monthly Average:	82.3 %		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	85	85	84	82	81	82	76	88	89	96	100	100	100	100	98	92	83	79	76	80	82	83	84	89	76	100	87	
Jul 2	88	88	89	88	89	96	88	82	74	71	69	65	62	61	59	59	60	62	62	66	72	77	81	91	59	96	75	
Jul 3	92	94	95	97	99	97	92	82	76	67	63	64	65	86	73	80	66	67	67	74	89	89	100	100	63	100	82	
Jul 4	100	100	100	100	100	97	85	76	66	57	51	52	52	50	49	50	48	51	54	63	80	94	95	90	48	100	73	
Jul 5	94	98	100	100	100	94	90	79	63	53	53	54	45	43	45	43	49	52	53	62	80	92	100	100	43	100	73	
Jul 6	100	100	100	100	100	100	97	94	89	88	88	72	62	63	62	64	64	64	70	75	85	94	98	100	62	100	85	
Jul 7	100	100	99	100	100	100	100	100	100	100	100	100	100	99	98	99	99	98	98	100	100	100	100	100	98	100	100	
Jul 8	100	100	100	100	100	96	93	86	79	73	59	54	50	40	38	35	34	35	44	64	84	96	100	100	34	100	73	
Jul 9	99	93	100	100	100	100	100	96	92	89	81	67	56	48	49	45	43	55	66	71	78	83	97	97	43	100	79	
Jul 10	98	98	100	96	96	97	97	88	81	79	83	80	78	74	79	85	86	85	87	90	98	100	100	100	74	100	90	
Jul 11	100	100	100	100	100	100	100	99	96	94	92	86	76	65	56	48	50	49	48	63	84	86	88	92	48	100	82	
Jul 12	97	100	100	100	100	99	95	86	81	74	65	53	47	45	41	41	42	44	43	54	73	83	89	93	41	100	73	
Jul 13	97	85	84	91	99	98	99	95	80	74	65	58	54	55	54	51	45	54	66	71	90	99	100	100	45	100	78	
Jul 14	100	100	100	100	100	100	99	92	86	80	75	73	65	62	58	48	53	97	100	100	100	100	100	100	48	100	87	
Jul 15	100	100	100	100	100	100	100	97	91	87	74	64	59	53	49	48	42	51	59	67	87	99	100	100	42	100	80	
Jul 16	100	100	100	100	100	100	98	78	64	58	54	52	50	53	54	67	67	73	97	99	100	100	100	100	50	100	82	
Jul 17	100	100	100	100	100	100	100	99	88	79	74	68	67	64	60	54	57	57	59	65	87	98	100	100	54	100	82	
Jul 18	100	100	100	100	100	100	100	99	100	100	100	100	100	97	86	88	99	100	100	100	100	100	100	100	86	100	99	
Jul 19	100	100	100	100	100	100	100	98	84	73	61	52	44	42	46	87	97	100	100	100	100	100	100	100	42	100	87	
Jul 20	100	100	100	100	100	100	100	95	80	69	63	56	53	47	44	44	44	46	51	71	92	98	100	100	44	100	77	
Jul 21	100	100	100	100	100	100	99	83	71	59	54	51	49	48	46	45	44	42	47	63	82	94	99	94	42	100	74	
Jul 22	99	100	100	100	100	99	88	77	71	64	50	44	42	41	43	43	41	43	49	65	84	89	86	95	41	100	71	
Jul 23	100	100	100	100	100	100	96	83	75	71	66	59	56	50	47	46	46	51	64	90	99	100	100	100	46	100	79	
Jul 24	100	100	100	100	100	100	100	97	89	89	85	90	83	91	83	96	100	100	100	100	100	100	100	100	83	100	96	
Jul 25	100	100	100	100	100	100	100	100	100	100	98	99	95	98	98	97	98	96	97	99	98	98	100	99	98	95	100	99
Jul 26	96	96	97	99	100	100	94	82	71	65	59	52	48	42	39	36	39	43	46	57	69	79	85	95	36	100	70	
Jul 27	99	99	100	100	100	100	92	83	67	58	51	62	73	72	85	83	80	76	93	100	100	100	100	100	51	100	86	
Jul 28	100	100	100	100	100	100	94	94	84	72	65	55	49	49	44	41	44	44	51	70	86	99	100	100	41	100	77	
Jul 29	100	100	100	100	100	100	100	95	89	94	93	88	85	73	69	67	63	66	74	85	97	100	100	100	63	100	89	
Jul 30	100	100	100	100	100	100	100	100	89	77	68	64	62	56	49	57	65	78	99	100	100	100	100	100	49	100	86	
Jul 31	100	100	100	100	100	100	100	93	80	67	64	61	56	53	54	55	54	54	64	88	97	97	100	99	53	100	81	
Diurnal Maximum	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	99	100	100	100	100	100	100	100	100	100	100	100	100
Diurnal Average	98.2	97.9	98.3	98.5	98.8	98.5	95.9	90.2	82.1	76.6	71.7	67.5	64.1	61.9	59.8	61.1	61.3	64.9	70.5	79.1	89.5	94.5	96.8	97.8				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for RH - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

**Maskwa Site - July 2019**

**Summary of Hourly Averages**

**BAROMETRIC PRESSURE (BP) in millibar**

Maximum Hourly Value:	951 mb	on July 5 at hour 9	Hours in Service:	744
Maximum Daily Value:	949 mb	on July 5	Hours of Data:	744
Minimum Hourly Value:	923 mb	on July 18 at hour 4	Hours of Missing Data:	0
Minimum Daily Value:	923 mb	on July 18	Hours of Calibration:	0
Monthly Average:	937 mb		Operational Uptime:	100.0

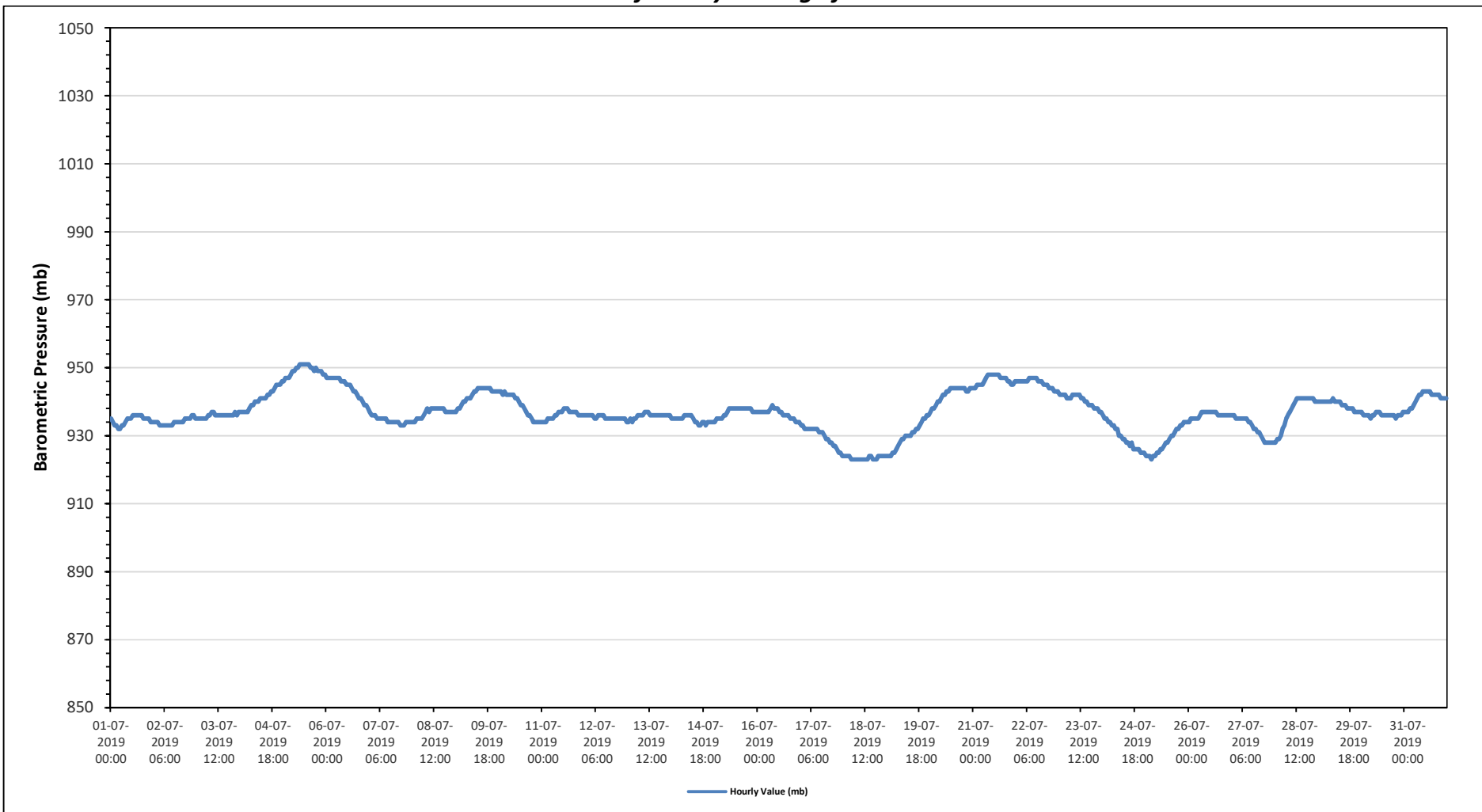
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	935	934	933	933	932	932	933	933	934	935	935	935	936	936	936	936	936	936	935	935	935	934	934	932	936	935	
Jul 2	934	934	934	933	933	933	933	933	933	933	933	934	934	934	934	934	934	935	935	935	936	936	935	933	936	934	
Jul 3	935	935	935	935	935	935	935	936	936	937	937	936	936	936	936	936	936	936	936	936	936	936	937	936	935	937	936
Jul 4	937	937	937	937	937	938	939	939	940	940	940	941	941	941	941	942	942	943	943	944	945	945	946	937	946	941	
Jul 5	946	947	947	947	948	949	949	950	950	951	951	951	951	951	951	950	950	949	950	949	949	948	948	946	951	949	
Jul 6	947	947	947	947	947	947	947	947	946	946	946	945	945	945	944	943	943	942	941	941	940	939	938	938	947	944	
Jul 7	937	936	936	936	935	935	935	935	935	935	935	934	934	934	934	934	934	933	933	933	934	934	934	933	937	935	
Jul 8	934	934	935	935	935	935	936	937	938	937	938	938	938	938	938	938	938	938	937	937	937	937	937	934	938	937	
Jul 9	937	938	938	939	940	940	941	941	941	942	943	943	944	944	944	944	944	944	944	943	943	943	943	937	944	942	
Jul 10	943	943	942	943	942	942	942	942	941	941	940	939	939	938	937	936	936	935	934	934	934	934	934	934	934	939	
Jul 11	934	934	934	935	935	935	935	936	936	937	937	937	938	938	938	937	937	937	937	937	936	936	936	934	938	936	
Jul 12	936	936	936	936	936	935	935	936	936	936	936	935	935	935	935	935	935	935	935	935	935	935	934	934	936	935	
Jul 13	934	935	934	935	935	936	936	936	936	937	937	937	936	936	936	936	936	936	936	936	936	936	936	934	937	936	
Jul 14	935	935	935	935	935	935	935	936	936	936	936	936	936	935	934	934	933	933	934	934	933	934	934	933	936	935	
Jul 15	934	935	935	935	935	936	936	937	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	934	938	937	
Jul 16	937	937	937	937	937	937	937	938	939	938	938	938	937	937	936	936	936	935	935	935	934	934	934	934	939	936	
Jul 17	933	933	932	932	932	932	932	932	932	931	931	931	930	929	929	928	928	927	927	926	925	925	924	924	933	930	
Jul 18	924	924	924	924	923	923	923	923	923	923	923	923	923	923	924	924	923	923	923	924	924	924	924	923	924	923	
Jul 19	924	924	924	925	925	926	927	928	929	929	930	930	930	931	931	932	932	933	934	935	935	936	936	924	936	930	
Jul 20	937	938	938	939	940	940	941	942	942	943	943	944	944	944	944	944	944	944	944	943	943	944	944	937	944	942	
Jul 21	944	944	945	945	945	945	946	947	948	948	948	948	948	948	947	947	947	947	946	946	945	945	946	944	948	946	
Jul 22	946	946	946	946	946	946	946	947	947	947	947	946	946	946	945	945	945	944	944	944	943	943	943	943	947	945	
Jul 23	942	942	942	942	941	941	941	942	942	942	942	941	941	940	940	939	939	939	938	938	938	937	937	937	942	940	
Jul 24	936	935	935	934	934	933	933	932	932	930	930	929	929	928	927	928	926	926	926	926	925	925	925	925	936	930	
Jul 25	924	924	924	923	924	924	925	925	926	926	927	928	928	929	930	930	931	932	932	933	933	934	934	923	934	928	
Jul 26	934	935	935	935	935	935	936	937	937	937	937	937	937	937	937	936	936	936	936	936	936	936	936	934	937	936	
Jul 27	936	936	935	935	935	935	935	935	935	934	934	933	932	932	931	931	930	929	928	928	928	928	928	928	936	932	
Jul 28	928	929	929	930	932	933	935	936	937	938	939	940	941	941	941	941	941	941	941	941	941	940	940	928	941	937	
Jul 29	940	940	940	940	940	940	940	940	941	940	940	940	939	939	939	938	938	938	938	938	937	937	937	937	941	939	
Jul 30	937	936	936	936	936	935	936	936	937	937	937	936	936	936	936	936	936	936	935	936	936	936	935	935	937	936	
Jul 31	937	937	937	938	938	939	940	941	942	942	943	943	943	943	942	942	942	942	941	941	941	941	941	937	943	941	
Diurnal Maximum	947	947	947	947	948	949	949	950	950	951	951	951	951	951	950	950	949	950	949	949	948	948	948	948	948	948	
Diurnal Average	936	936	936	936	936	936	937	937	938	938	938	938	938	937	937	937	937	937	937	937	936	936	936	936	936	936	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



**Timeseries Chart of Hourly Average for BP - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

### AMBIENT TEMPERATURE (AT) in Degree Celsius

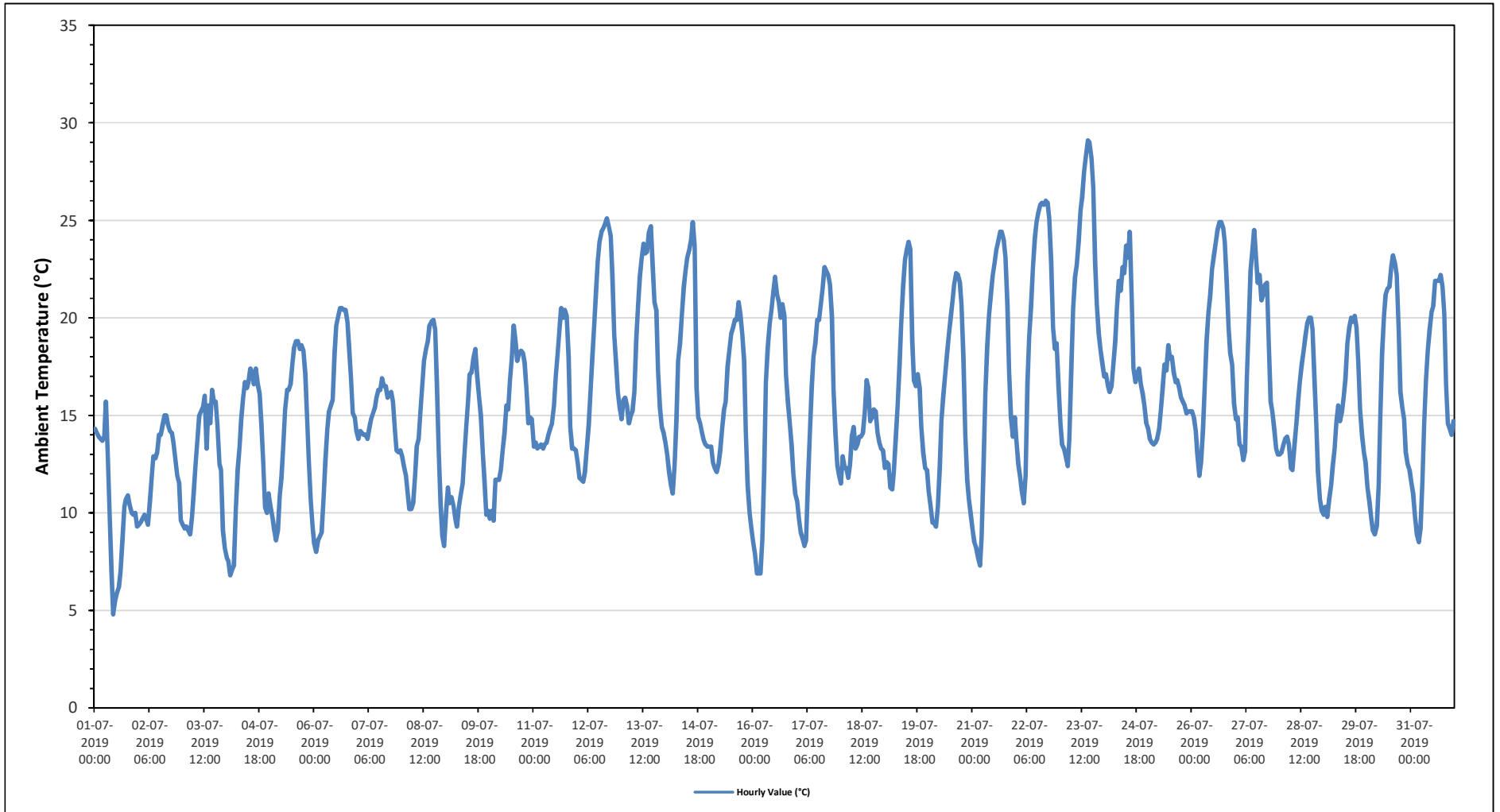
Maximum Hourly Value:	29.1 °C	on July 23 at hour 15	Hours in Service:	744
Maximum Daily Value:	21.1 °C	on July 23	Hours of Data:	744
Minimum Hourly Value:	4.8 °C	on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	10.4 °C	on July 1	Hours of Calibration:	0
Monthly Average:	15.8 °C		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	14.3	14.1	13.9	13.8	13.7	13.9	15.7	12.9	10.0	7.0	4.8	5.5	5.9	6.2	7.0	8.6	10.3	10.7	10.9	10.4	10.0	9.9	10.0	9.3	4.8	15.7	10.4
Jul 2	9.4	9.5	9.7	9.9	9.7	9.4	10.6	11.9	12.9	12.8	13.1	14.0	14.0	14.5	15.0	15.0	14.5	14.2	14.1	13.6	12.7	11.9	11.5	9.6	9.4	15.0	12.2
Jul 3	9.4	9.2	9.3	9.1	8.9	9.8	11.0	12.5	13.7	15.0	15.2	15.4	16.0	13.3	15.5	14.6	16.3	15.7	15.7	14.5	12.5	12.2	9.1	8.2	8.2	16.3	12.6
Jul 4	7.7	7.5	6.8	7.1	7.3	10.1	12.2	13.4	14.8	15.9	16.7	16.4	16.7	17.4	17.2	16.6	17.4	16.6	16.1	14.6	12.6	10.3	10.0	11.0	6.8	17.4	13.0
Jul 5	10.3	9.8	9.2	8.6	9.1	10.9	11.8	13.5	15.3	16.3	16.3	16.6	17.7	18.5	18.8	18.8	18.4	18.6	18.3	17.1	14.7	12.7	10.6	9.3	8.6	18.8	14.2
Jul 6	8.4	8.0	8.6	8.8	9.0	10.7	12.7	14.3	15.2	15.5	15.8	18.2	19.6	20.1	20.5	20.5	20.4	20.4	19.8	18.5	16.9	15.1	14.9	14.2	8.0	20.5	15.3
Jul 7	13.8	14.2	14.1	14.0	14.0	13.8	14.3	14.8	15.1	15.4	15.9	16.3	16.3	16.9	16.5	16.5	15.9	16.1	16.2	15.7	14.2	13.2	13.1	13.2	13.1	16.9	15.0
Jul 8	12.9	12.4	11.9	11.0	10.2	10.2	10.5	11.9	13.4	13.8	15.2	16.5	17.8	18.4	18.8	19.6	19.8	19.9	19.4	16.7	13.1	10.4	8.8	8.3	8.3	19.9	14.2
Jul 9	10.0	11.3	10.5	10.8	10.4	9.7	9.3	10.3	10.9	11.5	12.8	14.4	15.7	17.1	17.2	17.9	18.4	17.1	16.0	15.0	13.1	11.7	9.9	10.1	9.3	18.4	13.0
Jul 10	9.7	10.1	9.6	11.7	11.7	11.7	12.2	13.3	14.1	15.5	15.3	16.8	17.9	19.6	18.8	17.8	18.2	18.3	18.2	17.7	16.3	14.6	14.9	14.8	9.6	19.6	15.0
Jul 11	13.4	13.6	13.3	13.4	13.5	13.3	13.5	13.6	14.0	14.3	14.6	15.5	17.0	18.1	19.3	20.5	20.0	20.4	20.1	18.0	14.4	13.3	13.3	13.2	13.2	20.5	15.6
Jul 12	12.6	11.8	11.7	11.6	12.1	13.3	14.5	16.3	17.9	19.6	21.4	22.9	23.9	24.4	24.6	24.8	25.1	24.7	24.2	22.2	19.1	17.6	16.2	15.4	11.6	25.1	18.7
Jul 13	14.8	15.8	15.9	15.5	14.6	15.0	15.2	16.2	18.9	20.5	22.1	23.1	23.8	23.3	23.4	24.4	24.7	22.8	20.8	20.4	17.3	15.4	14.4	14.1	14.1	24.7	18.9
Jul 14	13.6	13.0	12.1	11.4	11.0	12.4	14.8	17.8	18.7	20.2	21.6	22.4	23.1	23.5	24.0	24.9	23.7	16.4	14.9	14.6	14.1	13.7	13.5	13.4	11.0	24.9	17.0
Jul 15	13.4	13.4	12.6	12.3	12.1	12.5	13.2	14.3	15.3	15.7	17.5	18.4	19.2	19.5	19.9	19.9	20.8	20.2	19.2	17.8	14.2	11.4	10.0	9.2	9.2	20.8	15.5
Jul 16	8.5	7.9	6.9	6.9	6.9	8.6	12.2	16.7	18.5	19.7	20.4	21.3	22.1	21.2	20.8	20.0	20.7	20.1	17.1	15.7	14.6	13.4	12.0	11.0	6.9	22.1	15.1
Jul 17	10.6	9.7	9.0	8.7	8.3	8.6	11.6	14.1	16.5	18.0	18.7	19.9	20.7	21.5	22.6	22.4	22.2	21.7	20.1	16.3	14.1	12.4	11.9	8.3	22.6	15.8	
Jul 18	11.5	12.9	12.3	12.3	11.8	12.5	14.0	14.4	13.3	13.5	13.9	13.9	14.1	15.2	16.8	16.4	14.7	14.9	15.3	15.2	14.1	13.6	13.3	13.2	11.5	16.8	13.9
Jul 19	12.3	12.6	12.5	11.3	11.2	12.1	13.8	15.5	17.6	19.7	21.6	23.0	23.5	23.9	23.5	18.8	16.8	16.5	17.1	16.4	14.4	13.1	12.3	12.2	11.2	23.9	16.3
Jul 20	11.1	10.4	9.5	9.5	9.3	10.3	12.3	14.7	16.0	17.1	18.2	19.1	20.0	20.9	21.7	22.3	22.2	21.8	20.7	18.0	14.0	11.7	10.7	9.9	9.3	22.3	15.5
Jul 21	9.1	8.5	8.2	7.7	7.3	8.7	12.3	16.2	18.6	20.1	21.2	22.2	22.8	23.5	23.9	24.4	24.4	24.0	23.1	20.7	17.3	14.9	13.9	14.9	7.3	24.4	17.0
Jul 22	13.7	12.5	11.8	11.1	10.5	11.9	16.7	19.0	20.6	22.6	24.1	24.9	25.4	25.8	25.9	25.8	26.0	25.9	25.1	22.9	19.5	18.4	18.7	16.5	10.5	26.0	19.8
Jul 23	14.6	13.5	13.3	12.9	12.4	13.8	17.3	20.5	22.1	22.7	23.9	25.5	26.2	27.5	28.3	29.1	29.0	28.2	26.7	22.8	20.7	19.2	18.3	17.7	12.4	29.1	21.1
Jul 24	17.0	17.1	16.5	16.2	16.5	17.6	18.8	20.5	21.9	21.4	22.6	22.3	23.7	23.1	24.4	21.1	17.4	16.7	17.1	17.4	16.6	16.1	15.5	14.6	14.6	24.4	18.8
Jul 25	14.3	13.8	13.6	13.5	13.6	13.8	14.3	15.3	16.5	17.6	17.3	18.6	17.9	18.0	17.2	16.7	16.8	16.4	15.9	15.7	15.5	15.1	15.2	15.2	13.5	18.6	15.7
Jul 26	15.2	14.9	14.2	13.0	11.9	12.6	14.3	16.4	18.8	20.3	21.1	22.5	23.2	23.9	24.5	24.9	24.9	24.6	23.9	21.9	19.5	18.2	17.6	15.6	11.9	24.9	19.1
Jul 27	14.8	14.9	13.5	13.4	12.7	13.1	17.0	19.6	22.4	23.4	24.5	23.1	21.8	22.2	20.9	21.2	21.7	21.8	18.7	15.7	15.2	14.3	13.3	13.0	12.7	24.5	18.0
Jul 28	13.0	13.1	13.5	13.8	13.9	13.5	12.3	12.2	13.4	14.5	15.6	16.7	17.6	18.3	19.0	19.7	20.0	20.0	19.4	16.9	14.5	12.1	10.7	10.1	10.1	20.0	15.2
Jul 29	9.9	10.3	9.8	10.7	11.4	12.4	13.3	14.7	15.5	14.7	15.2	16.0	16.9	18.7	19.5	20.0	19.8	20.1	19.5	17.7	15.3	14.0	13.1	12.6	9.8	20.1	15.0
Jul 30	11.3	10.6	9.7	9.1	8.9	9.3	11.4	14.7	18.2	20.1	21.2	21.5	21.6	22.7	23.2	22.8	22.2	19.3	16.2	15.4	14.8	13.1	12.5	12.2	8.9	23.2	15.9
Jul 31	11.5	11.0	9.8	8.9	8.5	9.2	11.6	14.6	16.8	18.3	19.4	20.3	20.6	21.9	21.9	21.9	22.2	21.6	20.2	16.6	14.6	14.3	14.0	14.7	8.5	22.2	16.0
Diurnal Maximum	17.0	17.1	16.5	16.2	16.5	17.6	18.8	20.5	22.4	23.4	24.5	25.5	26.2	27.5	28.3	29.1	29.0	28.2	26.7	22.9	20.7	19.2	18.7	17.7			
Diurnal Average	12.0	11.9	11.4	11.2	11.0	11.8	13.4	15.0	16.4	17.2	18.0	18.8	19.4	19.9	20.3	20.3	20.2	19.6	18.8	17.3	15.2	13.8	13.0	12.5			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for AT - Bonnyville - East Site**





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

## Summary of Hourly Averages

### STATION TEMPERATURE (ST) in Degree Celsius

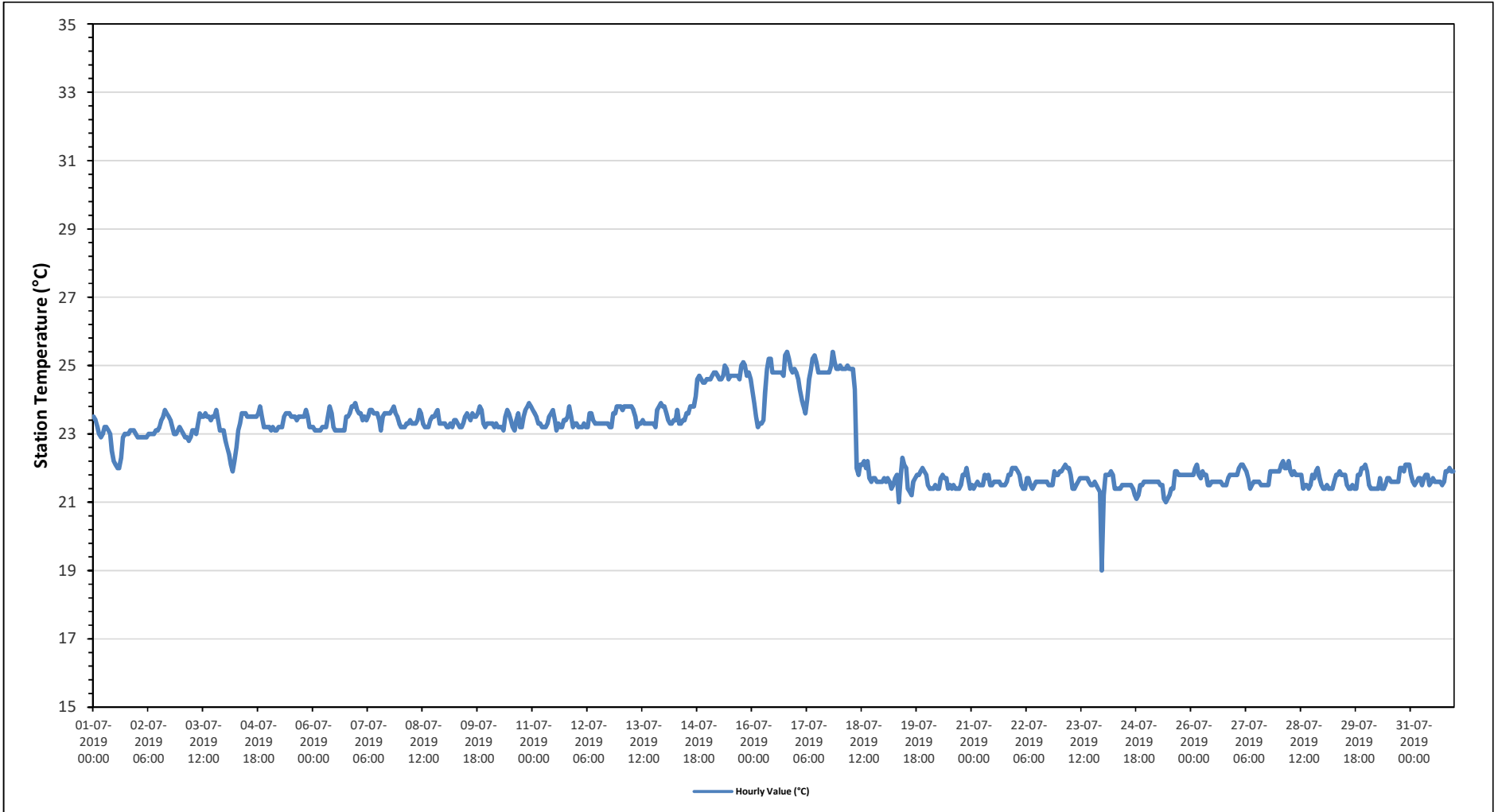
Maximum Hourly Value:	25.4 °C	on July 16 at hour 19	Hours in Service:	744
Maximum Daily Value:	24.7 °C	on July 15	Hours of Data:	744
Minimum Hourly Value:	19.0 °C	on July 23 at hour 23	Hours of Missing Data:	0
Minimum Daily Value:	21.5 °C	on July 24	Hours of Calibration:	0
Monthly Average:	22.7 °C		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	23.5	23.4	23.2	23.0	22.9	23.0	23.2	23.2	23.1	23.0	22.5	22.2	22.1	22.0	22.0	22.3	22.9	23.0	23.0	23.0	23.1	23.1	23.0	23.0	22.0	23.5	22.9
Jul 2	22.9	22.9	22.9	22.9	22.9	22.9	23.0	23.0	23.0	23.0	23.1	23.1	23.2	23.4	23.5	23.7	23.6	23.5	23.4	23.2	23.0	23.0	23.1	23.2	22.9	23.7	23.1
Jul 3	23.1	23.0	22.9	22.9	22.8	22.9	23.1	23.1	23.0	23.3	23.6	23.5	23.5	23.6	23.5	23.5	23.4	23.5	23.5	23.7	23.4	23.1	23.1	23.1	22.8	23.7	23.3
Jul 4	22.8	22.6	22.4	22.1	21.9	22.2	22.6	23.1	23.3	23.6	23.6	23.6	23.5	23.5	23.5	23.5	23.5	23.5	23.6	23.8	23.5	23.2	23.2	23.2	21.9	23.8	23.1
Jul 5	23.2	23.1	23.2	23.1	23.1	23.2	23.2	23.2	23.5	23.6	23.6	23.6	23.5	23.5	23.5	23.4	23.5	23.5	23.5	23.5	23.7	23.5	23.2	23.2	23.1	23.7	23.4
Jul 6	23.2	23.1	23.1	23.1	23.1	23.2	23.2	23.2	23.5	23.8	23.6	23.2	23.1	23.1	23.1	23.1	23.1	23.5	23.5	23.6	23.8	23.8	23.9	23.9	23.1	23.9	23.3
Jul 7	23.7	23.6	23.6	23.4	23.5	23.4	23.5	23.7	23.7	23.6	23.6	23.6	23.4	23.1	23.5	23.6	23.6	23.6	23.6	23.7	23.8	23.6	23.5	23.3	23.1	23.8	23.6
Jul 8	23.2	23.2	23.2	23.3	23.3	23.4	23.3	23.3	23.3	23.4	23.7	23.6	23.3	23.2	23.2	23.2	23.4	23.5	23.5	23.6	23.7	23.3	23.3	23.3	23.2	23.7	23.4
Jul 9	23.3	23.2	23.2	23.3	23.2	23.4	23.4	23.3	23.2	23.2	23.3	23.5	23.6	23.5	23.4	23.6	23.5	23.5	23.6	23.8	23.7	23.3	23.2	23.3	23.2	23.8	23.4
Jul 10	23.3	23.3	23.3	23.2	23.3	23.2	23.2	23.2	23.1	23.5	23.7	23.6	23.4	23.2	23.1	23.4	23.6	23.2	23.2	23.5	23.7	23.8	23.9	23.8	23.1	23.9	23.4
Jul 11	23.7	23.6	23.5	23.3	23.3	23.2	23.2	23.2	23.3	23.5	23.6	23.7	23.4	23.1	23.3	23.2	23.2	23.4	23.4	23.5	23.8	23.5	23.2	23.3	23.1	23.8	23.4
Jul 12	23.3	23.2	23.2	23.2	23.3	23.2	23.2	23.6	23.6	23.4	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.2	23.2	23.6	23.8	23.8	23.2	23.2	23.8	23.4
Jul 13	23.8	23.7	23.8	23.8	23.8	23.8	23.8	23.7	23.5	23.2	23.3	23.3	23.4	23.3	23.3	23.3	23.3	23.3	23.2	23.2	23.7	23.8	23.9	23.8	23.2	23.9	23.5
Jul 14	23.8	23.6	23.4	23.3	23.3	23.4	23.4	23.7	23.3	23.3	23.4	23.4	23.6	23.6	23.8	23.8	23.8	24.1	24.6	24.7	24.6	24.5	24.6	23.3	24.7	23.8	
Jul 15	24.6	24.6	24.7	24.8	24.8	24.7	24.6	24.6	24.7	25.0	24.9	24.6	24.7	24.7	24.7	24.7	24.7	24.6	25.0	25.1	25.0	24.7	24.8	24.6	24.6	25.1	24.7
Jul 16	24.3	23.9	23.5	23.2	23.3	23.3	23.4	24.2	24.9	25.2	25.2	24.8	24.8	24.8	24.8	24.8	24.8	24.7	25.3	25.4	25.2	24.9	24.8	23.2	25.4	24.5	
Jul 17	24.8	24.6	24.3	24.0	23.8	23.6	24.0	24.6	24.9	25.2	25.3	25.1	24.8	24.8	24.8	24.8	24.8	24.8	25.0	25.4	25.1	24.9	24.9	23.6	25.4	24.7	
Jul 18	25.0	24.9	24.9	24.9	25.0	24.9	24.9	24.9	24.3	22.0	21.8	22.1	22.1	22.2	22.0	22.2	21.7	21.6	21.7	21.6	21.6	21.6	21.6	21.6	21.6	25.0	23.0
Jul 19	21.7	21.6	21.7	21.6	21.4	21.5	21.7	21.8	21.0	21.7	22.3	22.1	22.0	21.4	21.3	21.2	21.6	21.7	21.8	21.8	21.9	22.0	21.9	21.8	21.0	22.3	21.7
Jul 20	21.5	21.4	21.4	21.4	21.5	21.4	21.4	21.7	21.8	21.7	21.7	21.4	21.5	21.4	21.5	21.4	21.4	21.4	21.5	21.8	21.8	22.0	21.7	21.4	21.4	22.0	21.5
Jul 21	21.5	21.4	21.5	21.6	21.5	21.5	21.5	21.8	21.7	21.8	21.5	21.5	21.6	21.6	21.6	21.6	21.6	21.5	21.5	21.6	21.8	21.8	22.0	22.0	21.4	22.0	21.6
Jul 22	22.0	21.9	21.8	21.5	21.4	21.4	21.7	21.7	21.5	21.4	21.5	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.5	21.5	21.5	21.9	21.8	21.8	21.4	22.0	21.6
Jul 23	21.9	21.9	22.0	22.1	22.0	22.0	21.8	21.4	21.4	21.5	21.6	21.7	21.7	21.7	21.7	21.7	21.6	21.5	21.5	21.6	21.5	21.4	21.3	19.0	19.0	22.1	21.6
Jul 24	21.2	21.8	21.8	21.8	21.9	21.8	21.4	21.4	21.4	21.4	21.5	21.5	21.5	21.5	21.5	21.5	21.4	21.2	21.1	21.2	21.5	21.5	21.6	21.6	21.1	21.9	21.5
Jul 25	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.5	21.5	21.1	21.0	21.1	21.2	21.4	21.4	21.9	21.9	21.8	21.8	21.8	21.8	21.8	21.8	21.0	21.9	21.6	
Jul 26	21.8	21.8	22.0	22.1	21.8	21.7	21.9	21.8	21.8	21.5	21.5	21.6	21.6	21.6	21.6	21.6	21.6	21.5	21.5	21.5	21.7	21.8	21.8	21.8	21.5	22.1	21.7
Jul 27	21.8	21.8	22.0	22.1	22.1	22.0	21.9	21.7	21.4	21.5	21.6	21.6	21.6	21.5	21.5	21.5	21.5	21.5	21.9	21.9	21.9	21.9	21.9	21.4	22.1	21.7	
Jul 28	21.9	22.1	22.2	22.0	22.0	22.2	21.9	21.8	21.9	21.8	21.8	21.8	21.4	21.5	21.5	21.4	21.5	21.8	21.7	21.9	22.0	21.7	21.5	21.4	22.2	21.8	
Jul 29	21.4	21.4	21.5	21.4	21.4	21.4	21.6	21.8	21.8	21.9	21.8	21.8	21.8	21.5	21.4	21.4	21.5	21.4	21.4	21.8	21.8	22.0	22.0	22.1	21.4	22.1	21.6
Jul 30	21.9	21.5	21.4	21.4	21.4	21.4	21.4	21.7	21.4	21.4	21.5	21.7	21.7	21.6	21.6	21.6	21.6	21.6	22.0	22.0	21.9	22.1	22.1	21.4	22.1	21.7	
Jul 31	21.8	21.6	21.5	21.6	21.7	21.7	21.5	21.7	21.8	21.8	21.5	21.6	21.7	21.6	21.6	21.6	21.6	21.5	21.6	21.9	21.9	22.0	21.9	21.9	21.5	22.0	21.7
Diurnal Maximum	25.0	24.9	24.9	24.9	25.0	24.9	24.9	24.9	24.9	25.2	25.3	25.1	24.8	24.8	24.8	24.8	24.8	24.8	25.3	25.4	25.1	24.9	24.9				
Diurnal Average	22.8	22.8	22.7	22.7	22.7	22.7	22.7	22.8	22.8	22.8	22.8	22.7	22.7	22.6	22.6	22.7	22.7	22.7	22.8	22.9	22.9	22.9	22.8				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for ST - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Averages

#### PRECIPITATION in mm

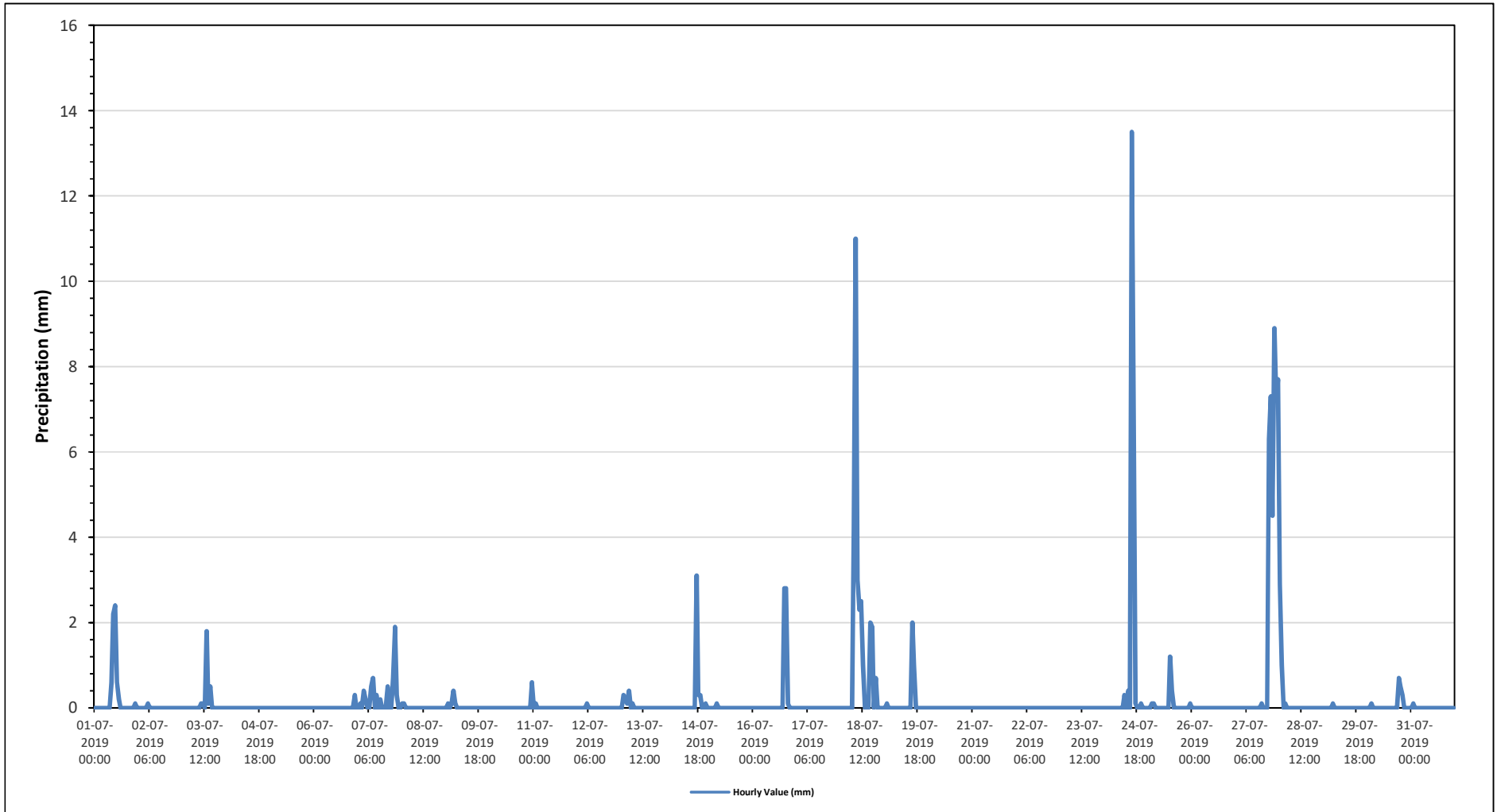
Maximum Hourly Value:	13.5 mm on July 24 at hour 15	Hours in Service:	744
Maximum Daily Value:	42.0 mm on July 27	Hours of Data:	744
Minimum Hourly Value:	0.0 mm on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 mm on July 4	Hours of Calibration:	0
Monthly Total:	#### mm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Total	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.2	2.4	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	2.4	6.1
Jul 2	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	0.0	0.0	0.0	0.0	0.1	0.1
Jul 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	1.8	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.6
Jul 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 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	0.0
Jul 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	0.3	0.0	0.0	0.3	0.3
Jul 7	0.0	0.1	0.0	0.4	0.2	0.0	0.0	0.5	0.7	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.5	0.0	0.0	0.7	1.9	0.3	0.0	0.0	0.0	1.9	5.8
Jul 8	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	0.2
Jul 9	0.0	0.1	0.0	0.1	0.4	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	0.4	0.7
Jul 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	0.6	0.0	0.6	0.6
Jul 11	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Jul 12	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	0.0	0.0	0.0	0.0	0.1	0.1
Jul 13	0.0	0.3	0.2	0.1	0.4	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	0.0	0.0	0.0	0.4	1.1
Jul 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	3.1	0.3	0.3	0.0	0.1	0.0	0.0	3.1	3.8
Jul 15	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	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Jul 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	2.8	2.8	0.1	0.0	0.0	0.0	0.0	2.8	5.7
Jul 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	0.0
Jul 18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	11.0	3.0	2.3	2.5	1.0	0.0	0.0	0.0	2.0	1.9	0.0	0.7	0.0	0.0	0.0	0.0	0.0	11.0	28.6
Jul 19	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	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.1
Jul 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 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	0.0
Jul 24	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	0.4	0.0	13.5	7.4	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	13.5	21.8
Jul 25	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.2	1.9
Jul 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	0.0
Jul 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	0.1	0.0	0.0	0.0	0.0	6.3	7.3	4.5	8.9	7.2	7.7	0.0	8.9	42.0
Jul 28	2.9	1.0	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	0.0	0.0	0.0	0.0	0.0	0.0	2.9	4.0
Jul 29	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	0.0	0.0	0.0	0.0	0.1	0.1
Jul 30	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	0.7	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.7	1.6
Jul 31	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Diurnal Maximum	2.9	1.0	0.2	0.4	0.4	0.1	0.1	4.2	11.0	3.0	2.3	2.5	1.2	1.8	0.1	13.5	7.4	3.1	6.3	7.3	4.5	8.9	7.2	7.7	0.0	0.0	0.0
Diurnal Average	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.2	0.2	0.1	0.1	0.0	0.5	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.0	0.0	0.0

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for Precipitation - Maskwa Site*





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	12.4 kph	on July 1 at hour 8	Hours in Service:	744
Maximum Daily Value:	5.9 kph	on July 2	Hours of Data:	744
Minimum Hourly Value:	0.1 kph	on July 18 at hour 4	Hours of Missing Data:	0
Minimum Daily Value:	1.6 kph	on July 18	Hours of Calibration:	0
Monthly Average:	0.3 kph		Operational Uptime:	100.0

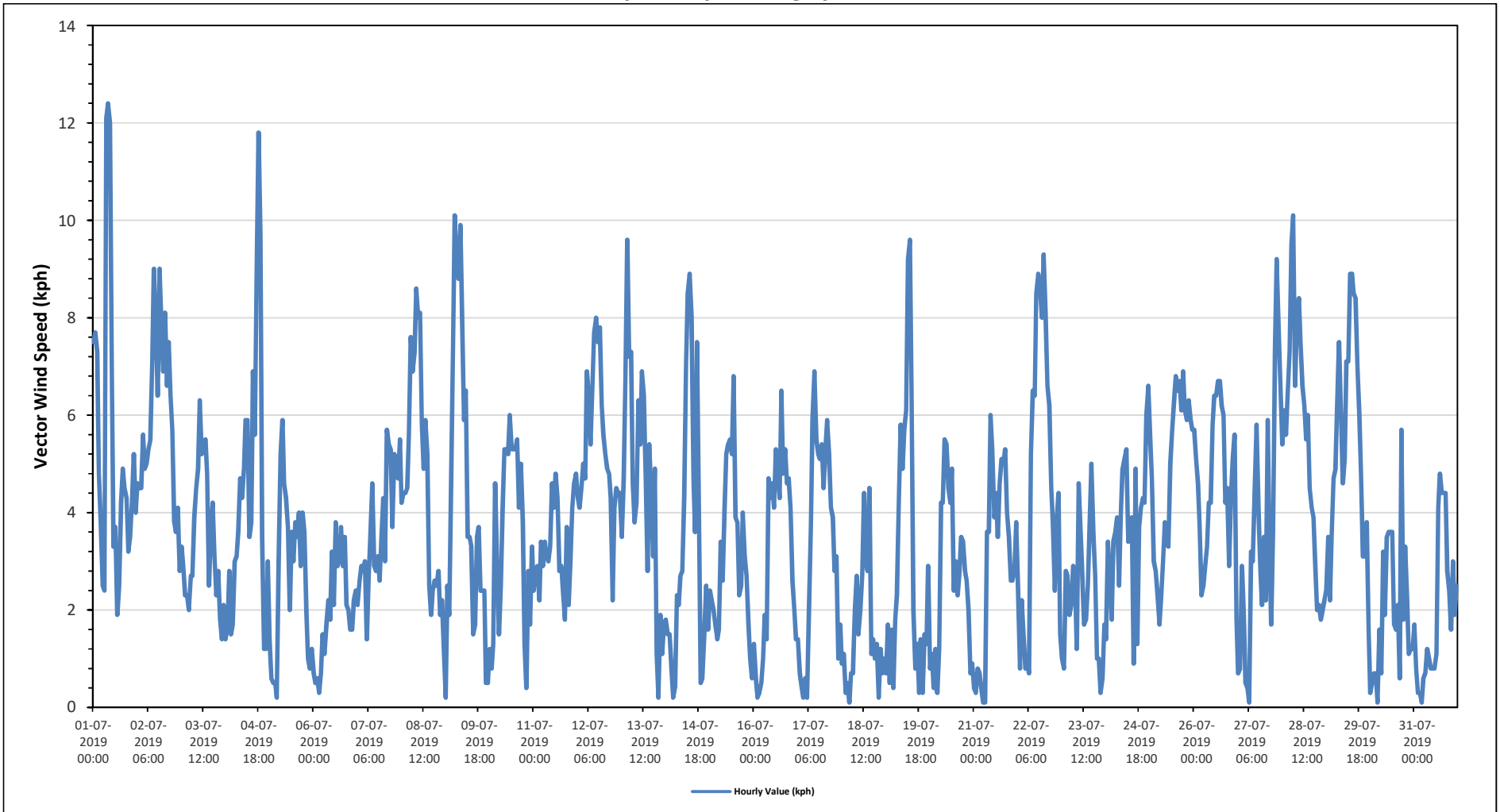
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	7.5	7.7	7.3	4.8	3.8	2.5	2.4	12.1	12.4	12	6.9	3.3	3.7	1.9	2.5	4.2	4.9	4.5	4.3	3.2	3.5	4.2	5.2	4	1.9	12.4	5.4
Jul 2	4.6	4.5	4.5	5.6	4.9	5	5.3	5.5	7.1	9	7.9	6.4	9	7.9	6.9	8.1	6.6	7.5	6.4	5.7	3.8	3.6	4.1	2.8	2.8	9.0	5.9
Jul 3	3.3	2.9	2.3	2.3	2	2.7	2.7	3.9	4.5	4.9	6.3	5.2	5.3	5.5	4.8	2.5	3.7	4.2	3.1	2.3	2.8	1.8	1.4	2.1	1.4	6.3	3.4
Jul 4	1.4	1.6	2.8	1.5	1.7	3	3.1	3.6	4.7	4.3	4.9	5.9	5.9	3.5	3.8	6.9	5.6	9	11.8	9.7	3.5	1.2	1.2	3	1.2	11.8	4.3
Jul 5	1.4	0.6	0.5	0.5	0.2	3	5.2	5.9	4.6	4.3	3.7	2	3.6	3	3.8	3.5	4	2.9	4	3.6	2	1	0.8	1.2	0.2	5.9	2.7
Jul 6	0.7	0.5	0.6	0.3	0.7	1.5	1.1	1.7	2.2	1.8	3.2	2.1	3.8	2.9	3	3.7	2.9	3.5	2.1	2	1.6	1.6	2.2	2.4	0.3	3.8	2.0
Jul 7	2.1	2.6	2.9	2.8	3	1.4	2.7	3.5	4.6	2.9	2.8	3.1	2.6	3.5	4.3	3	5.7	5.4	5.3	3.7	5.2	5	4.7	5.5	1.4	5.7	3.7
Jul 8	4.2	4.4	4.4	4.5	5.6	7.6	6.9	7.3	8.6	8	8.1	5.8	4.9	5.9	5.2	2.5	1.9	2.4	2.6	2.5	2.8	1.9	2.2	1.1	1.1	8.6	4.6
Jul 9	0.2	2.5	1.9	4.7	7.5	10.1	9.1	8.8	9.9	8	5.9	6.5	3.5	3.5	3.3	1.5	1.7	3.5	3.7	2.4	2.4	2.4	0.5	0.5	0.2	10.1	4.3
Jul 10	1.2	0.8	1.3	4.6	3	1.5	2.5	4	5.3	5.3	5.2	6	5.3	5.3	5.3	5.5	4.1	5	3.8	1.3	0.4	2.8	1.7	3.3	0.4	6.0	3.5
Jul 11	2.4	2.8	2.9	2.2	3.4	2.9	3.4	3.1	3	3.3	4.6	4.1	4.8	4.3	2.8	2.9	2.4	1.8	3.7	2.1	3	4.1	4.6	4.8	1.8	4.8	3.3
Jul 12	4.3	4.1	4.5	5	4.7	6.9	6.4	5.4	6.7	7.7	8	7.5	7.8	6.2	5.6	5.2	4.9	4.8	4.3	2.2	4.1	4.5	4.4	4.4	2.2	8.0	5.4
Jul 13	3.5	4.7	6.7	9.6	7.2	7.3	4.6	3.8	4.2	6.3	5.4	6.9	6.4	4.7	2.8	5.4	4.4	3.1	4.9	1.1	0.2	1.9	1.1	1.7	0.2	9.6	4.5
Jul 14	1.8	1.5	1.5	0.8	0.2	0.4	2.3	2.1	2.7	2.8	4.3	7.1	8.5	8.9	8	4.7	3.6	7.5	4.3	0.5	0.6	1.5	2.5	1.6	0.2	8.9	3.3
Jul 15	2.4	2.2	2	1.7	1.4	1.6	3.4	2.6	4.1	5.2	5.4	5.5	5.2	6.8	3.9	3.8	2.3	2.5	4	3.1	2.7	1.7	1	0.6	0.6	6.8	3.1
Jul 16	1.3	0.6	0.2	0.3	0.5	1	1.9	1.4	4.7	4.3	4.6	4.1	5.3	4.8	4.3	6.5	4.8	5.3	4.6	4.7	4.1	2.6	2	1.4	0.2	6.5	3.1
Jul 17	1.4	0.7	0.4	0.2	0.6	0.2	2	3.7	5.9	6.9	5.5	5.2	5.1	5.4	4.5	5.3	5.9	5.2	4.1	3.9	2.8	3.1	1	1.7	0.2	6.9	3.4
Jul 18	0.9	1.1	0.3	0.5	0.1	0.7	0.7	2	2.7	1.5	2	2.7	4.4	3	2.8	4.5	1.1	1.4	1	1.3	0.2	1.2	0.7	1	0.1	4.5	1.6
Jul 19	0.7	1.7	0.5	1.6	0.4	1.8	2.3	4.2	5.8	4.9	5.7	6.1	9.2	9.6	6.6	2	0.8	1.3	0.3	1.4	0.3	1.5	1.3	2.9	0.3	9.6	3.0
Jul 20	0.8	1.1	0.4	1.2	0.3	1.2	4.2	4.2	5.5	5.4	4.5	4.2	4.9	2.4	3	2.3	2.7	3.5	3.4	2.8	2.6	2	0.7	0.9	0.3	5.5	2.7
Jul 21	0.4	0.3	0.8	0.7	0.4	0.1	0.1	3.6	3.6	6	5.3	3.9	4.4	3.5	4.6	5.1	5	5.3	4	3.5	2.6	2.6	2.8	3.8	0.1	6.0	3.0
Jul 22	2.4	0.8	2.2	1.5	0.8	0.9	0.7	5.2	6.5	6.4	8.5	8.9	8.6	8	9.3	8.1	6.6	6.2	4.5	3.8	2.4	3.8	4.4	1.5	0.7	9.3	4.7
Jul 23	1	0.8	2.8	2.7	1.9	2.1	2.9	2.8	1.2	4.6	3.7	2.8	1.7	1.8	2.5	3.8	5	3.6	2.7	1	1	0.3	0.6	1.7	0.3	5.0	2.3
Jul 24	1.4	3.4	2.7	1.8	3.4	3.6	3.9	2.5	4	4.9	5.1	5.3	3.4	3.8	3.9	0.9	4.9	1.3	3.7	4.1	4.3	4.2	6	6.6	0.9	6.6	3.7
Jul 25	5.5	4.7	3	2.8	2.3	1.7	2.2	3	3.8	3.4	3.3	5	5.7	6.3	6.8	6.5	6.7	6.1	6.9	6.1	5.9	6.3	5.9	5.7	1.7	6.9	4.8
Jul 26	5.7	5.1	4.6	3.7	2.3	2.5	2.9	3.3	4.2	4.2	5.8	6.4	6.4	6.7	6.7	6.2	6	4.2	4.5	2.9	4.2	5.1	5.6	1.8	1.8	6.7	4.6
Jul 27	0.7	0.8	2.9	1.9	0.5	0.4	0.1	3.2	3	4.4	5.8	4.1	2.8	2.1	3.5	2.2	5.9	3.7	1.7	3.6	7.3	9.2	7.8	6.6	0.1	9.2	3.5
Jul 28	5.4	6.1	5.6	6.5	7.3	9.5	10.1	6.6	8	8.4	7.5	6.6	6.2	5.5	6	4.5	4.1	3.9	3	2	2.1	1.8	2	2.2	1.8	10.1	5.5
Jul 29	2.4	3.5	2.2	3.6	4.7	4.9	6.4	7.5	6.1	4.6	5.1	7.1	7.1	8.9	8.9	8.5	8.4	7	6	4.8	3.1	3.1	3.8	1.6	1.6	8.9	5.4
Jul 30	0.3	0.5	0.7	0.7	0.1	1.6	0.7	3.2	1.9	3.5	3.6	3.6	3.6	1.7	1.6	2.1	0.6	5.7	1.8	3.3	2.2	1.1	1.2	1.2	0.1	5.7	1.9
Jul 31	1.7	0.8	0.3	0.3	0.1	0.6	0.7	1.2	1	0.8	0.8	0.8	1.1	4.1	4.8	4.4	4.4	4.4	2.8	2.4	1.6	3	1.9	2.5	0.1	4.8	1.9
Diurnal Maximum	8	8	7	10	8	10	10	12	12	12	9	9	9	10	9	9	8	9	12	10	7	9	8	7			
Diurnal Average	2.4	2.4	2.4	2.6	2.4	2.9	3.3	4.2	4.9	5.2	5.1	5.0	5.2	4.9	4.7	4.4	4.2	4.4	4.0	3.1	2.8	2.9	2.8	2.6			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

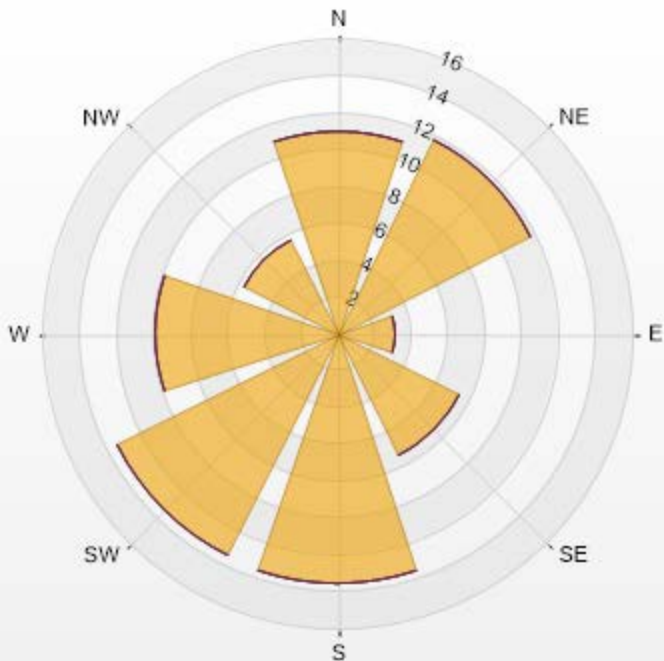


*Timeseries Chart of Hourly Average for VWS - Maskwa Site*



Wind: Maskwa Poll.: Maskwa-NMHC[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 24.19% Valid Data: 95.03% Calm Avg: 0.00 [ppm]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	11.03	0	0	0	0	11.03
NE	11.74	0	0	0	0	11.74
E	3.11	0	0	0	0	3.11
SE	7.36	0	0	0	0	7.36
S	13.58	0	0	0	0	13.58
SW	13.44	0	0	0	0	13.44
W	9.9	0	0	0	0	9.9
NW	5.66	0	0	0	0	5.66
Summary	75.82	0	0	0	0	75.82



LICA-201907-Revision 1

% Icon Classes (ppm)	76	0-6	0	15-29	0	29-39	0	>39.0
	76	0-6	0	15-29	0	29-39	0	>39.0



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

*Maskwa Site - July 2019*

**Summary of Hourly Averages**

**WIND DIRECTION (VWD) in sector**

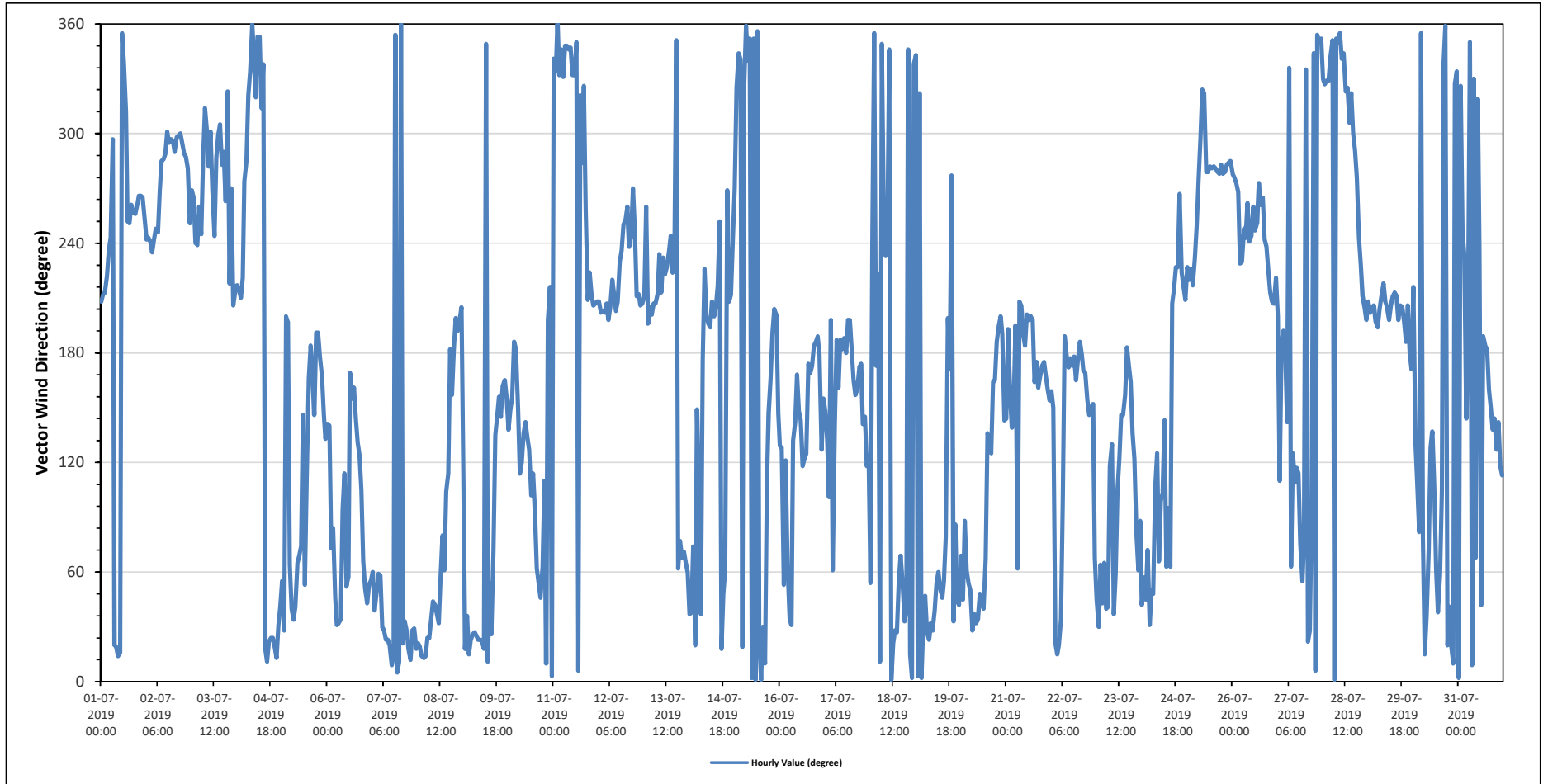
Monthly Average:	247 (WSW) degree	Hours in Service:	744
		Hours of Data:	744
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Jul 1	SSW	SSW	SSW	SW	SW	WSW	WNW	NNE	NNE	NNE	NNE	N	NNW	NW	WSW	WSW	W	WSW	WSW	WSW	W	W	W	WSW	288	WNW	
Jul 2	WSW	WSW	WSW	SW	WSW	WSW	WSW	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	W	WSW	279	W
Jul 3	W	W	WSW	WSW	WSW	WSW	WNW	NW	WNW	W	WNW	W	WSW	WNW	WNW	WNW	W	WNW	W	NW	SW	W	SSW	SSW	276	W	
Jul 4	SW	SSW	SSW	SW	W	WNW	NW	NNW	N	NNW	NW	N	N	NW	NNW	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	358	N	
Jul 5	NE	NNE	SSW	SSW	ENE	NE	NE	NE	ENE	ENE	ENE	SE	NE	ESE	SSE	S	SSE	SE	S	S	S	SSE	SE	SE	107	ESE	
Jul 6	SE	SE	ENE	E	NE	NNE	NNE	NE	E	ESE	NE	ENE	SSE	SSE	SE	SE	ESE	ESE	ENE	NE	NE	NE	NE	NE	99	E	
Jul 7	ENE	NE	NE	ENE	ENE	NNE	NNE	NNE	NNE	NNE	N	NNE	N	N	NNE	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	24	NNE	
Jul 8	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	NE	NE	ENE	E	ENE	ESE	ESE	S	SSE	S	SSW	S	SSW	SSW	44	NE	
Jul 9	ESE	NNE	NE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNW	NNE	NE	NNE	ENE	SE	SSE	SE	SSE	SE	SSE	SSE	SSE	33	NNE	
Jul 10	SE	SSE	SSE	S	S	SSE	ESE	ESE	SE	SE	SE	SE	E	ESE	E	ENE	NE	NE	ENE	ESE	N	SSW	SW	N	114	ESE	
Jul 11	NNW	NNW	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	N	NW	WNW	NW	WSW	SSW	SW	SSW	SSW	SSW	SSW	313	NW	
Jul 12	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SSW	SSW	SSW	SW	SW	WSW	WSW	WSW	SW	WSW	W	WSW	SSW	SSW	SSW	SSW	221	SW	
Jul 13	SSW	WSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SSW	SW	SW	SW	SW	WSW	SW	SW	N	ENE	ENE	ENE	ENE	ENE	ENE	217	SW	
Jul 14	NE	NE	ENE	NNE	SSE	ESE	NE	S	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	NNE	NE	ENE	W	SSW	SSW	WSW	203	SSW	
Jul 15	W	NW	NNW	NNW	NNE	NW	N	NNW	N	N	N	N	N	NNE	N	NNE	N	ESE	SE	SSE	S	SSW	SSW	SE	2	N	
Jul 16	SE	SE	NE	ESE	ENE	NE	NNE	SE	SE	SSE	SE	SE	ESE	ESE	SE	S	SSE	S	S	S	S	S	SE	SSE	153	SSE	
Jul 17	SE	SE	E	SSW	ENE	SE	S	SSE	S	S	S	S	SSW	SSW	S	SSE	SSE	SSE	S	S	SE	SE	ESE	ESE	172	S	
Jul 18	NE	WSW	N	S	SW	NNE	NNW	WSW	SW	WSW	NNW	N	NNE	NNE	NNE	NE	ENE	NE	NNE	NE	NNW	NNE	N	NNW	15	NNE	
Jul 19	NNW	N	NW	N	NNE	NE	NNE	NNE	NNE	NNE	NE	NE	ENE	NE	NE	NE	ENE	SSW	S	W	NNE	E	NE	NE	42	NE	
Jul 20	ENE	NE	E	ENE	NE	NNE	NE	NNE	NE	NE	NE	NE	ENE	SE	SE	SE	SSE	SSE	S	SSW	SSW	S	SE	SE	75	ENE	
Jul 21	SE	S	SSE	SE	SSE	ENE	SSW	ENE	SSW	S	S	SSW	SSW	SSW	SSW	SSE	S	SSE	SSE	S	S	SSE	SSE	SSE	181	S	
Jul 22	SSE	SSE	NNE	NNE	NNE	NE	E	S	S	S	S	S	SSE	S	S	S	SSE	SSE	SSE	SE	SSE	SSE	ENE	ENE	169	SSE	
Jul 23	NE	NNE	ENE	NE	ENE	NE	NE	ESE	SE	NE	ENE	ESE	ESE	SE	SE	SSE	S	SSE	SE	ESE	E	ENE	E	ENE	104	ESE	
Jul 24	NE	ENE	NE	ENE	NNE	NE	NE	ESE	SE	ENE	E	ESE	SE	ENE	E	ENE	SSW	SSW	SW	SW	W	SW	SW	SSW	124	ESE	
Jul 25	SW	SW	SW	SW	SW	WSW	W	WNW	NW	NW	W	W	W	W	W	W	W	W	W	W	W	W	W	WNW	WNW	275	W
Jul 26	W	W	W	W	SW	SW	WSW	WSW	W	WSW	WSW	WSW	WSW	WSW	W	W	W	WSW	SW	SW	SSW	SSW	SSW	SSW	249	WSW	
Jul 27	SSW	ESE	S	S	S	SE	NNW	ENE	SE	ESE	ESE	ENE	NE	E	NNW	NNE	NNE	E	NNW	N	N	N	N	N	38	NE	
Jul 28	NNW	NW	NNW	NNW	NNW	N	N	N	N	N	NNW	NNW	NW	NW	NW	NW	WNW	WNW	W	WSW	SW	SSW	SSW	SSW	331	NNW	
Jul 29	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	SSW	S	S	204	SSW	
Jul 30	SW	SE	ESE	E	N	ENE	NNE	NE	ENE	SE	SE	ESE	ENE	NE	ENE	ESE	NNW	N	NNE	NE	NNE	N	NNW	NNW	57	ENE	
Jul 31	N	NW	WSW	SW	SE	SSW	N	N	NNW	ENE	NW	SW	NE	S	S	S	SSE	SSE	SE	SE	SE	SE	ESE	ESE	155	SSE	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for VWD - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hour Standard Deviations

#### STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

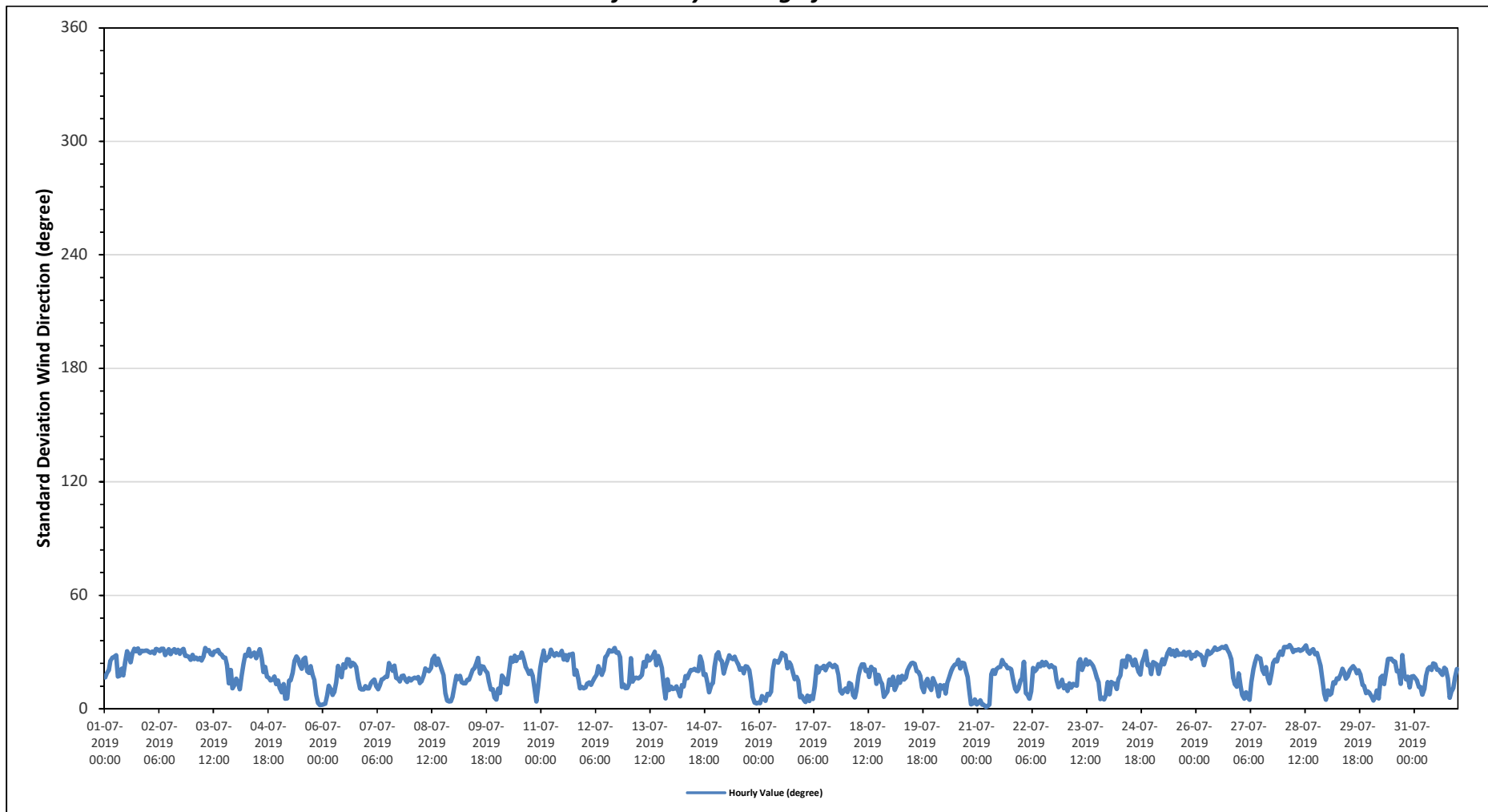
Maximum Hourly Value:	34 degree on July 28 at hour 3	Hours in Service:	744
Minimum Hourly Value:	1 degree on July 21 at hour 4	Hours of Data:	744
		Hours of Missing Data:	0
		Hours of Calibration:	0
		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Jul 1	17	19	20	26	27	28	28	17	17	21	18	24	30	29	25	29	32	30	32	29	31	30	31	31	17	32
Jul 2	30	30	30	29	32	31	31	32	32	28	30	31	29	31	32	30	31	29	31	32	28	28	28	26	26	32
Jul 3	28	26	27	26	27	26	28	32	31	31	29	28	30	30	31	29	29	27	27	23	14	21	11	12	11	32
Jul 4	16	14	10	17	24	28	28	32	28	29	30	27	29	31	27	19	22	17	16	15	15	17	13	15	10	32
Jul 5	11	9	13	5	6	15	15	19	25	28	27	23	21	26	27	20	19	23	18	15	7	3	2	2	2	28
Jul 6	2	3	7	12	10	7	9	14	23	19	17	23	22	26	26	22	24	24	22	16	11	10	10	12	2	26
Jul 7	11	11	13	15	15	12	10	12	15	16	17	17	24	22	20	23	16	16	14	17	17	15	14	16	10	24
Jul 8	15	16	16	16	17	14	15	18	21	20	20	22	26	28	23	27	24	21	18	8	4	4	4	7	4	28
Jul 9	12	17	16	17	14	13	13	15	16	18	21	22	24	27	19	22	22	20	19	14	10	10	6	5	5	27
Jul 10	11	8	18	17	13	13	19	27	25	28	25	27	27	30	27	22	20	18	20	17	11	4	11	22	4	30
Jul 11	26	31	25	27	28	31	29	28	29	28	28	31	26	28	26	29	29	29	18	20	16	11	12	11	11	31
Jul 12	11	13	14	13	14	16	18	22	20	18	21	27	28	31	30	30	32	30	30	27	12	13	11	11	11	32
Jul 13	13	27	14	16	16	16	17	18	25	22	28	25	27	28	30	23	28	25	21	12	6	16	10	12	6	30
Jul 14	10	11	12	10	7	12	12	17	16	19	20	21	21	20	20	28	25	18	18	13	9	12	14	22	7	28
Jul 15	29	30	26	25	19	23	25	28	27	26	28	25	23	21	21	19	23	22	20	14	6	3	3	3	3	30
Jul 16	3	7	5	4	8	7	9	21	26	25	24	27	29	29	28	21	25	23	19	16	17	15	6	7	3	29
Jul 17	5	4	7	4	7	5	12	22	19	22	22	23	20	23	24	23	22	23	22	18	9	8	10	11	4	24
Jul 18	9	14	13	7	6	10	17	22	24	23	20	21	17	22	21	21	13	18	15	13	6	8	9	15	6	24
Jul 19	13	17	10	12	17	14	17	15	16	20	22	24	24	24	20	19	18	11	9	14	16	12	10	16	9	24
Jul 20	14	12	7	13	11	12	8	14	17	20	22	23	24	26	21	24	24	21	17	9	2	3	5	2	2	26
Jul 21	3	4	2	2	1	1	2	18	20	18	21	22	22	26	24	23	21	21	21	15	11	9	11	15	1	26
Jul 22	16	25	8	7	5	9	22	20	21	24	22	25	23	25	23	22	23	22	22	15	11	13	15	11	5	25
Jul 23	12	10	14	11	13	13	12	25	26	21	23	26	23	25	24	23	20	17	14	5	6	5	7	14	5	26
Jul 24	8	14	13	13	11	16	18	25	25	22	28	28	25	23	26	23	20	18	25	27	31	23	23	18	8	31
Jul 25	25	24	23	19	22	26	24	27	30	31	29	31	28	31	28	29	29	30	28	30	30	27	28	28	19	31
Jul 26	30	29	29	27	23	27	31	29	30	31	32	31	31	32	33	32	33	31	29	26	16	13	12	19	12	33
Jul 27	12	7	5	9	6	5	14	21	24	28	27	27	21	18	22	16	13	19	24	26	25	29	30	29	5	30
Jul 28	33	33	33	34	32	30	31	31	31	31	31	32	34	30	29	31	32	29	30	26	23	16	8	5	5	34
Jul 29	10	7	8	14	13	16	16	18	21	19	16	17	20	22	23	21	19	20	18	13	12	8	9	8	7	23
Jul 30	7	4	6	10	6	16	17	13	20	26	26	26	25	25	20	20	13	28	18	16	17	11	17	17	4	28
Jul 31	16	15	12	12	7	10	18	21	22	21	24	24	21	21	19	18	22	21	16	6	9	11	17	21	6	24
Diurnal Minimum	2	3	2	2	1	1	2	12	15	16	16	17	17	18	19	16	13	11	9	5	2	3	2	2		
Dalurnal Maximum	33	33	33	34	32	31	31	32	32	31	32	32	34	32	33	32	33	31	32	32	31	30	31	31		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for STDWD - Maskwa Site**



**ST. LINA STATION**





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

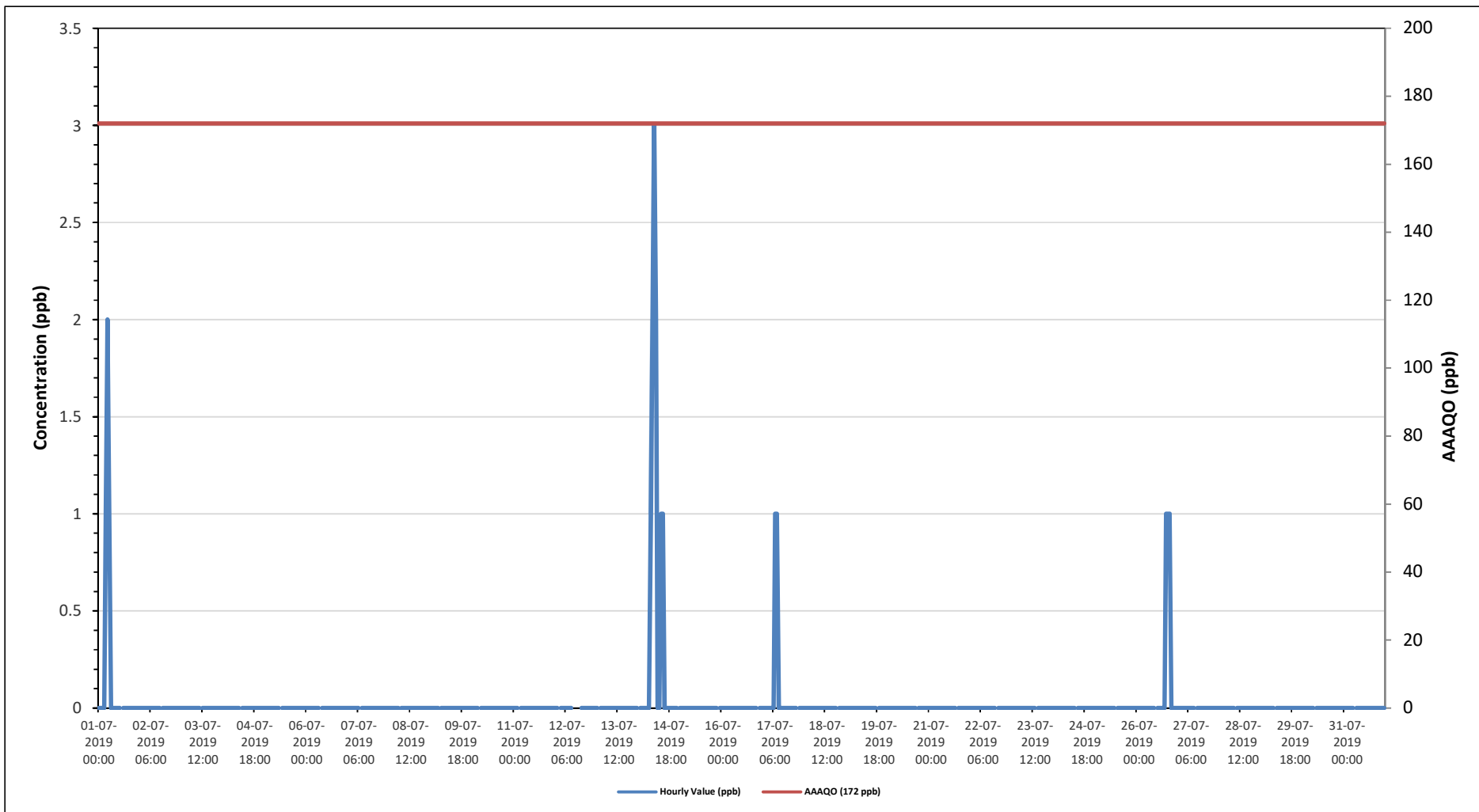
**St. Lina Site - July 2019**

**Summary of Hourly Averages**

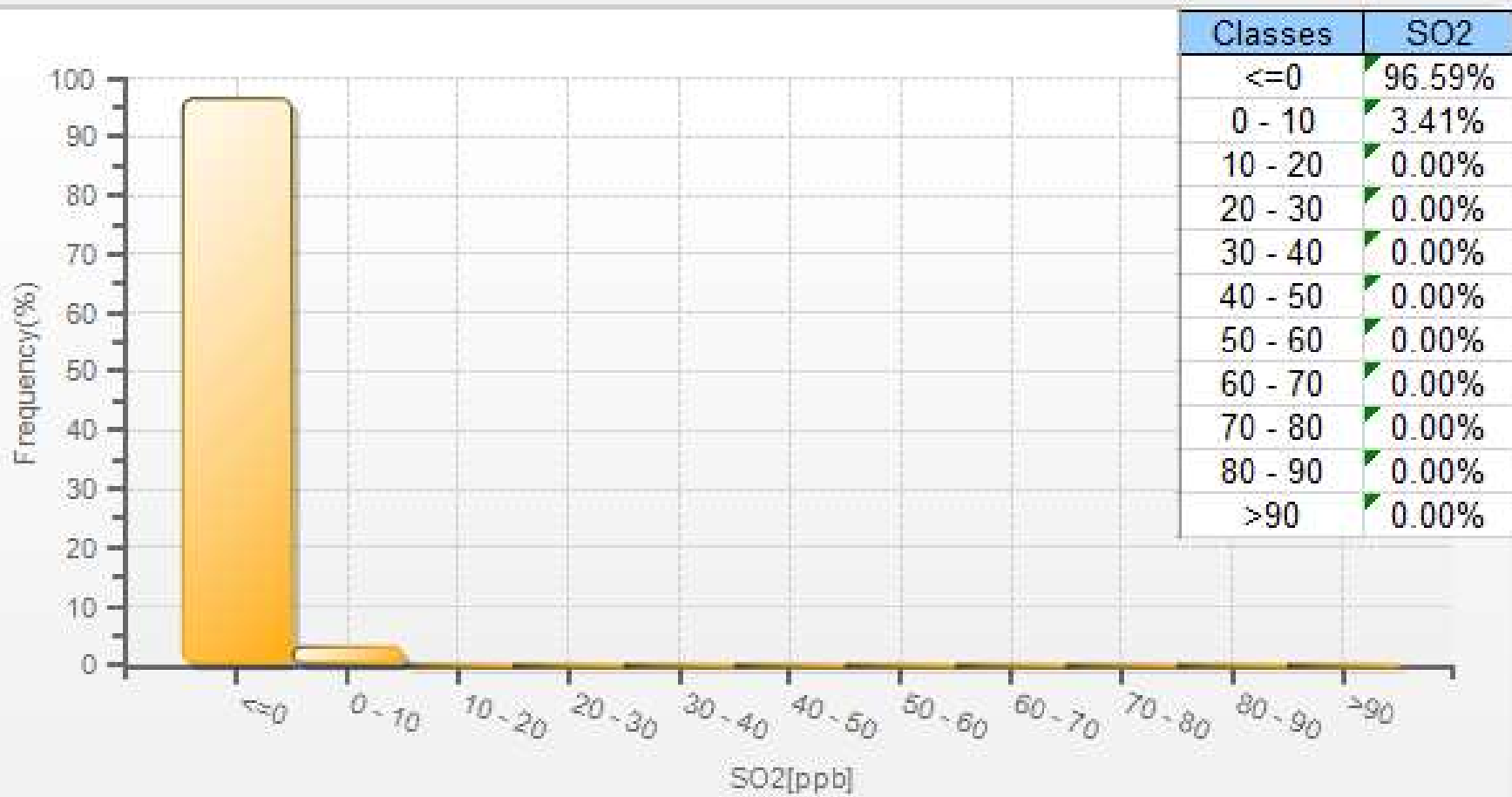
**SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb**

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																															
Number of 1-Hour Exceedences: 0				Number of 24-Hour Exceedences: 0				30-Day Exceedence: 0																							
Maximum Hourly Value: 3 ppb on July 14 at hour 9				Hours in Service: 744																											
Maximum Daily Value: 0.5 ppb on July 14				Hours of Data: 707																											
Minimum Hourly Value: 0 ppb on July 1 at hour 0				Hours of Missing Data: 0																											
Minimum Daily Value: 0.0 ppb on July 2				Hours of Calibration: 37																											
Monthly Average: 0.0 ppb				Operational Uptime: 100.0																											
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23				
Jul 1	0	0	0	0	1	2	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 3	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 4	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 5	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 6	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 7	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 8	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 9	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 10	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 11	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 12	0	0	S	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 13	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 14	S	0	0	0	0	0	0	1	2	3	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	3	0.5	
Jul 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	S	0	0	0	0.0	
Jul 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	S	0	0	0	0.0	
Jul 17	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.1	
Jul 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	S	0	0	0	0	0.0	
Jul 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	S	0	0	0	0	0.0	
Jul 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	
Jul 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	
Jul 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	
Jul 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	S	0	0	0	0	0.0	
Jul 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	S	0	0	0	0	0.0	
Jul 25	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 26	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 27	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 28	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 29	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 30	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 31	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Diurnal Maximum	0	0	0	0	1	2	1	2	3	2	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	
Daiurnal Average	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	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	
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span										
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure										
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service										
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																															
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																															

Timeseries Chart of Hourly Average for SO2 - St. Lina Site

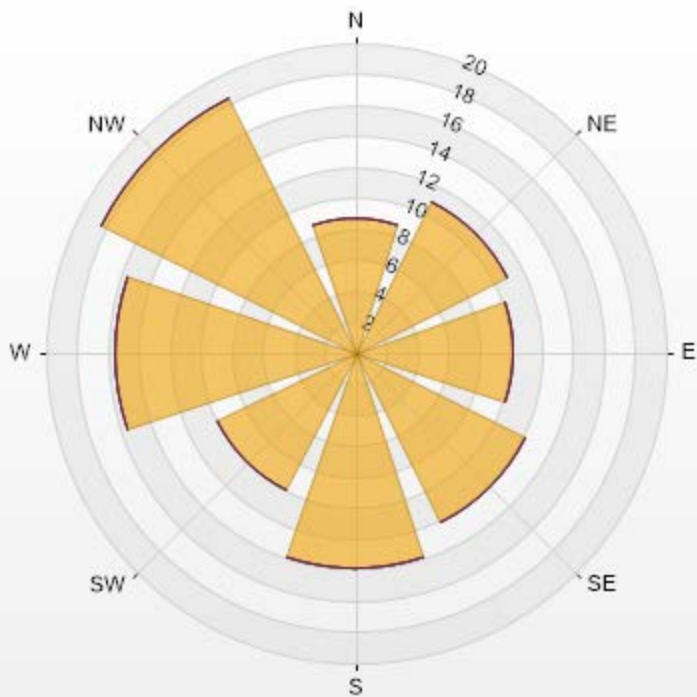


SO2[ppb] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-SO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.28% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	8.65	0	0	0	0	8.65
NE	10.95	0	0	0	0	10.95
E	10.23	0	0	0	0	10.23
SE	12.25	0	0	0	0	12.25
S	13.98	0	0	0	0	13.98
SW	9.94	0	0	0	0	9.94
W	15.56	0	0	0	0	15.56
NW	18.44	0	0	0	0	18.44
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)

100 0-10

0 10-30

50-100

0 100-172

0 >172.0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Averages

#### HYDROGEN SULPHIDE (H<sub>2</sub>S) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb**  
 Number of 1-Hour Exceedences: 0                      Number of 24-Hour Exceedences: 0

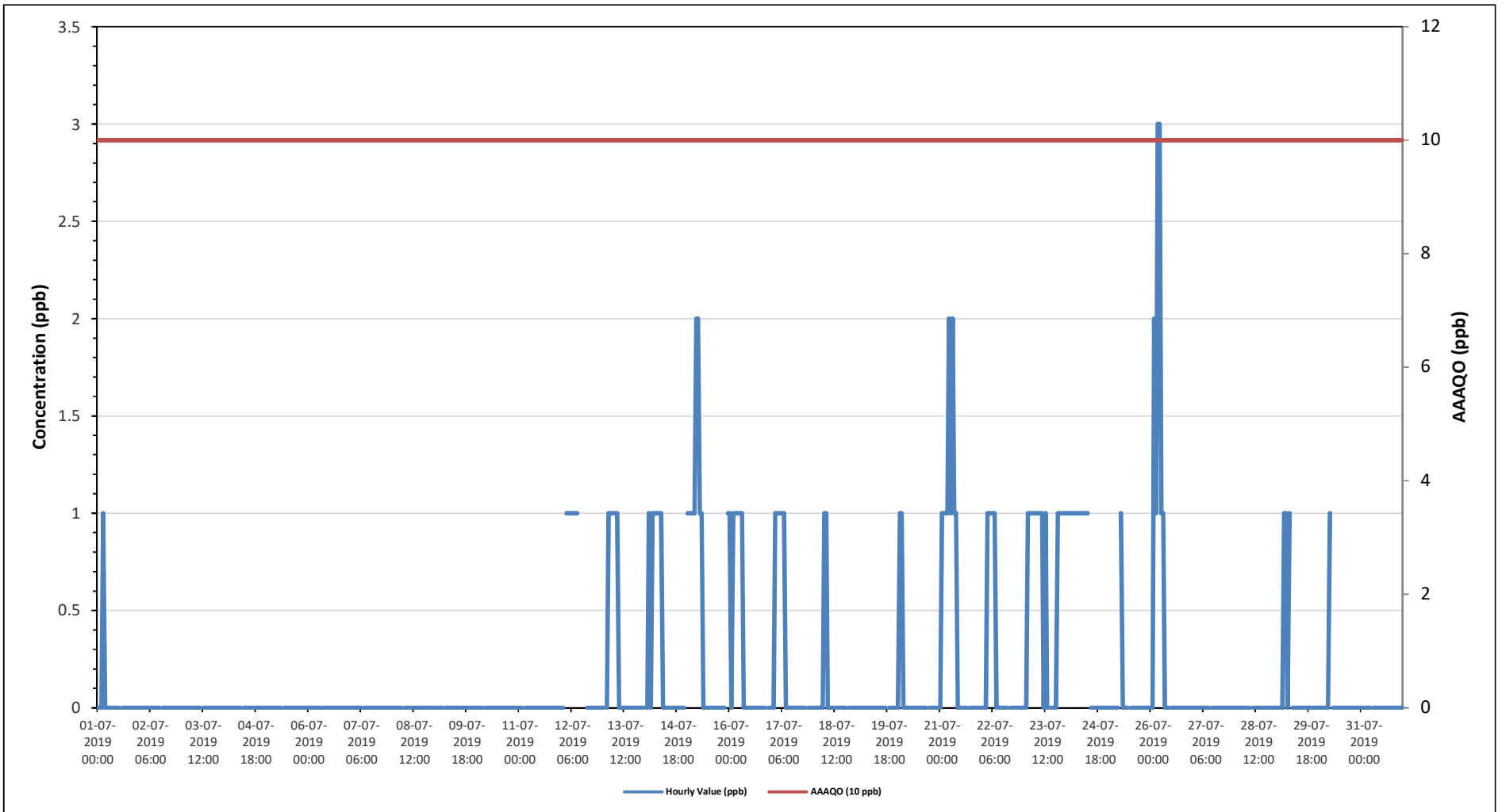
Maximum Hourly Value:	3 ppb	on July 26 at hour 5	Hours in Service:	744
Maximum Daily Value:	0.7 ppb	on July 23	Hours of Data:	706
Minimum Hourly Value:	0 ppb	on July 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb	on July 2	Hours of Calibration:	37
Monthly Average:	0.2 ppb		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																								Daily	Daily	Daily							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average							
Jul 1	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0		
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 3	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 4	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 5	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 6	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 7	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 8	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 9	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 10	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 11	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 12	0	0	S	1	1	1	1	1	1	1	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4		
Jul 13	0	S	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3		
Jul 14	S	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0.3		
Jul 15	1	1	1	1	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	2	0.5		
Jul 16	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.3		
Jul 17	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	1	0.3		
Jul 18	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 20	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 21	0	1	1	1	1	2	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	2	0.5	
Jul 22	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 23	0	0	1	1	1	1	1	1	1	1	1	0	1	0	S	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0.7	
Jul 24	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.6	
Jul 25	0	0	0	0	0	0	S1	1	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	
Jul 26	0	0	2	1	3	3	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.5		
Jul 27	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 28	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 29	0	0	0	0	1	1	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 30	0	0	0	0	0	0	1	S	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	
Jul 31	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Diurnal Maximum	1	1	2	1	3	3	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	
Daiurnal Average	0.1	0.1	0.3	0.4	0.5	0.5	0.5	0.5	0.2	0.2	0.1	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	0.0	0.0	0.0	0.1	0.1	

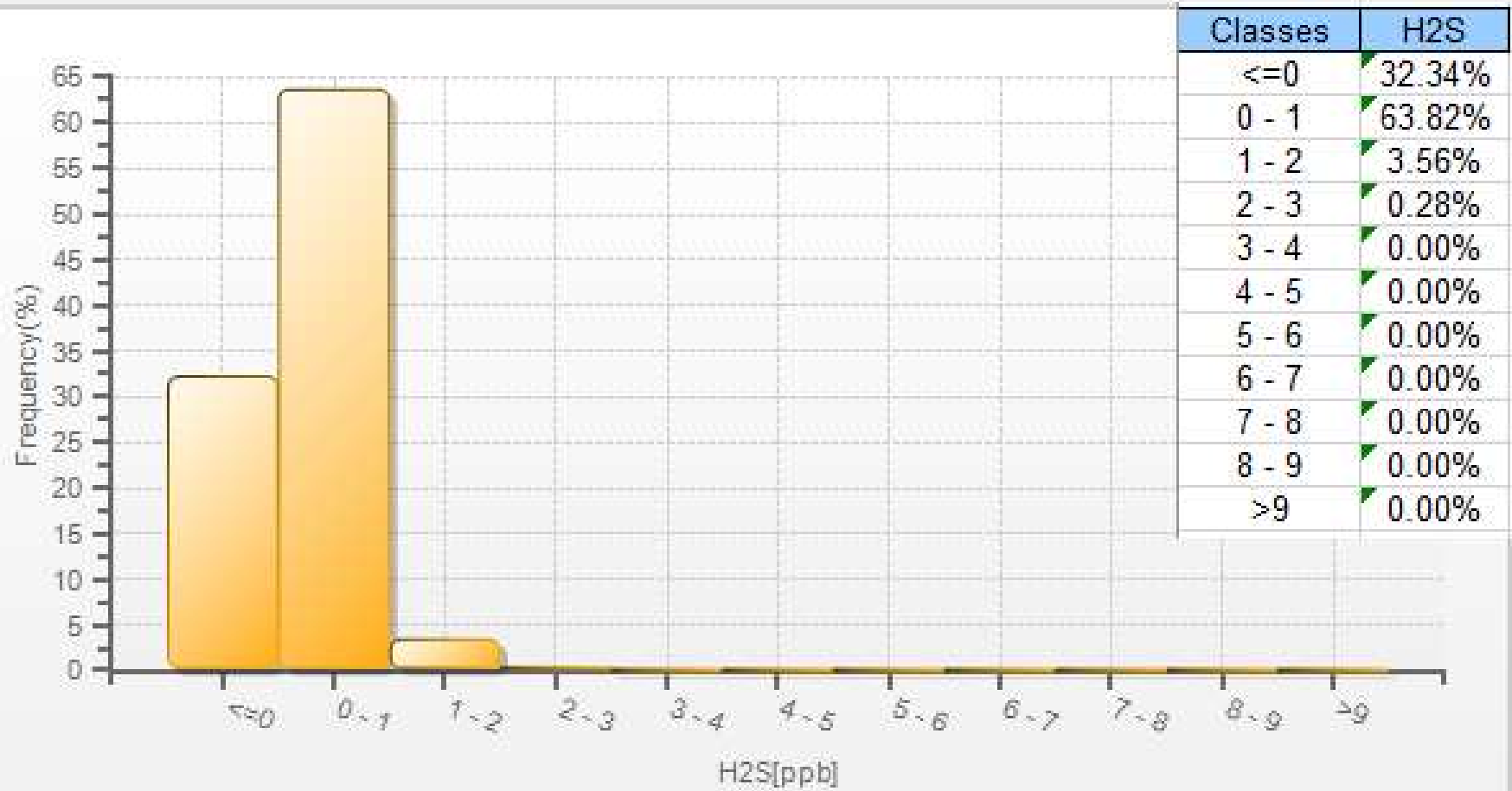
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for H2S - St. Lina Site*



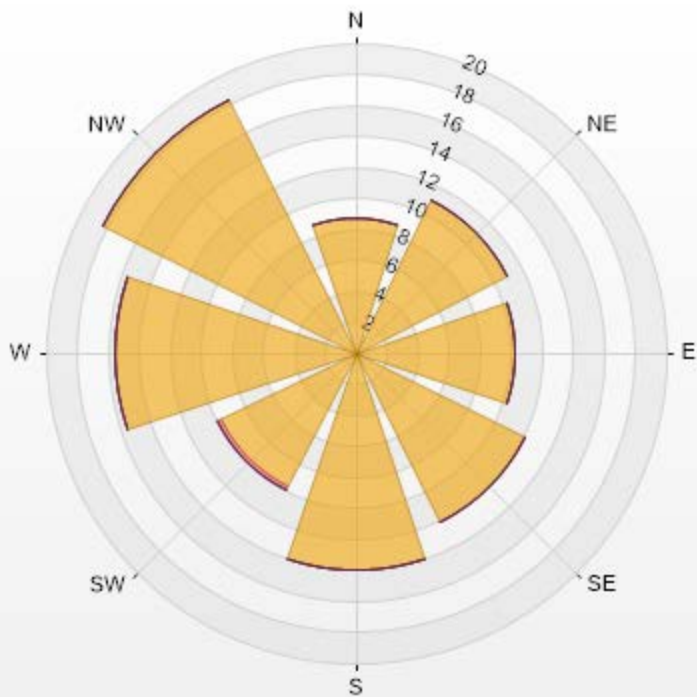
H2S[ppb] Histogram: St. Lina Monthly: 07-2019 1 Hr.





Wind: St. Lina Poll.: St. Lina-H2S[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.01% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	8.67	0	0	0	0	8.67
NE	10.98	0	0	0	0	10.98
E	10.26	0	0	0	0	10.26
SE	12.28	0	0	0	0	12.28
S	14.02	0	0	0	0	14.02
SW	9.68	0.29	0	0	0	9.97
W	15.61	0	0	0	0	15.61
NW	18.21	0	0	0	0	18.21
Summary	100	0.29	0	0	0	100



LICA-201907-Revision 1



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Averages

#### OXIDES OF NITROGEN (NOx) in ppb

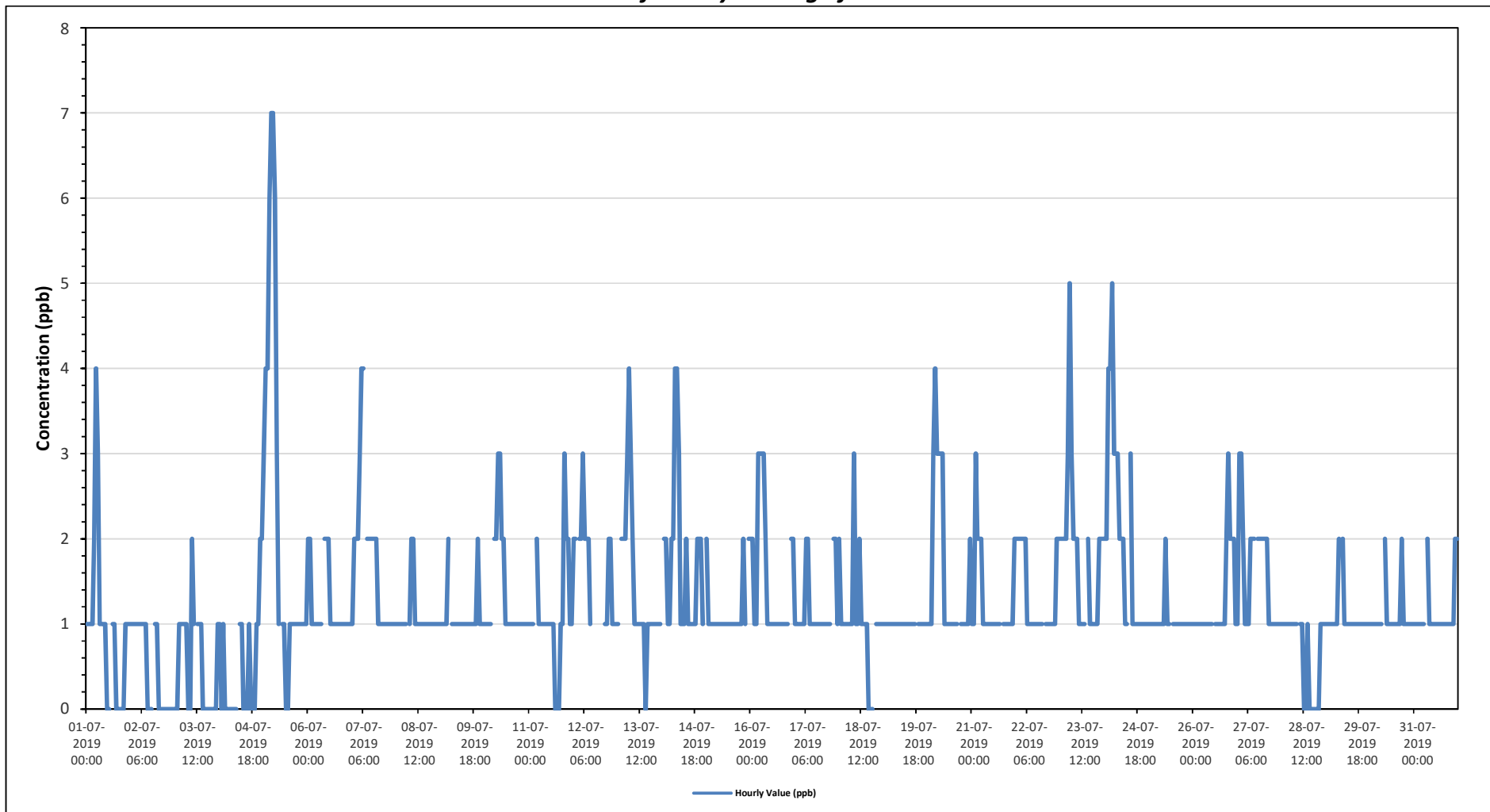
Maximum Hourly Value:	7 ppb on July 5 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.3 ppb on July 5	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 11	Hours of Missing Data:	0
Minimum Daily Value:	0.5 ppb on July 2	Hours of Calibration:	39
Monthly Average:	1.3 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	2	4	3	1	1	1	1	0	0	S	1	1	0	0	0	0	0	1	1	1	0	4	1.0	
Jul 2	1	1	1	1	1	1	1	1	1	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.5
Jul 3	0	0	1	1	1	1	1	0	0	2	1	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.5
Jul 4	1	0	1	0	0	0	0	0	0	0	S	1	1	0	0	0	1	0	0	0	1	1	2	2	0	2	0.5	
Jul 5	3	4	4	6	7	7	6	3	1	S	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	7	2.3	
Jul 6	2	2	1	1	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2
Jul 7	1	2	2	2	3	4	4	S	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	4	1.7	
Jul 8	1	1	1	1	1	1	S	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
Jul 9	1	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1.1	
Jul 10	1	1	1	1	S	2	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3	
Jul 11	1	1	1	S	2	1	1	1	1	1	1	1	1	1	0	0	0	1	1	3	2	2	1	1	0	3	1.1	
Jul 12	2	2	S	2	2	3	2	2	2	1	C	C	C	C	C	C	C	1	1	2	2	1	1	1	1	3	-	
Jul 13	1	S	2	2	2	3	4	3	2	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	4	1.4	
Jul 14	S	2	2	1	1	2	2	4	4	3	1	1	1	2	1	1	1	1	1	1	2	2	2	1	1	4	1.7	
Jul 15	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	S	2	1	2	1.1	
Jul 16	2	2	1	1	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	3	1.6	
Jul 17	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	2	1.2	
Jul 18	2	1	1	1	1	1	1	1	3	1	1	2	1	1	1	1	0	0	0	S	1	1	1	1	0	3	1.0	
Jul 19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1.0
Jul 20	1	1	1	3	4	3	3	3	3	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	2	4	1.6	
Jul 21	1	1	3	2	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	1	3	1.3	
Jul 22	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	2	1	2	1.3	
Jul 23	2	2	2	2	3	5	3	2	2	2	1	1	1	1	S	2	1	1	1	1	1	2	2	2	1	5	1.8	
Jul 24	2	2	4	4	5	3	3	3	2	2	1	1	S	3	1	1	1	1	1	1	1	1	1	1	1	5	2.0	
Jul 25	1	1	1	1	1	1	1	1	1	2	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0	
Jul 26	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	3	2	2	2	1	1	3	1.3	
Jul 27	1	3	3	2	1	1	1	2	2	2	S	2	2	2	2	2	2	2	1	1	1	1	1	1	1	3	1.6	
Jul 28	1	1	1	1	1	1	1	1	1	S	1	1	0	0	1	0	0	0	0	0	0	1	1	1	0	1	0.7	
Jul 29	1	1	1	1	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
Jul 30	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1.1	
Jul 31	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1.1
Diurnal Maximum	3	4	4	6	7	7	6	4	4	3	2	2	2	2	3	2	2	2	2	2	3	2	2	2	2	2	2	2
Daiurnal Average	1.3	1.4	1.5	1.5	1.8	2.0	1.8	1.7	1.6	1.3	1.1	1.1	1.0	1.0	1.0	0.9	0.8	0.8	0.8	1.0	1.1	1.1	1.2	1.2				

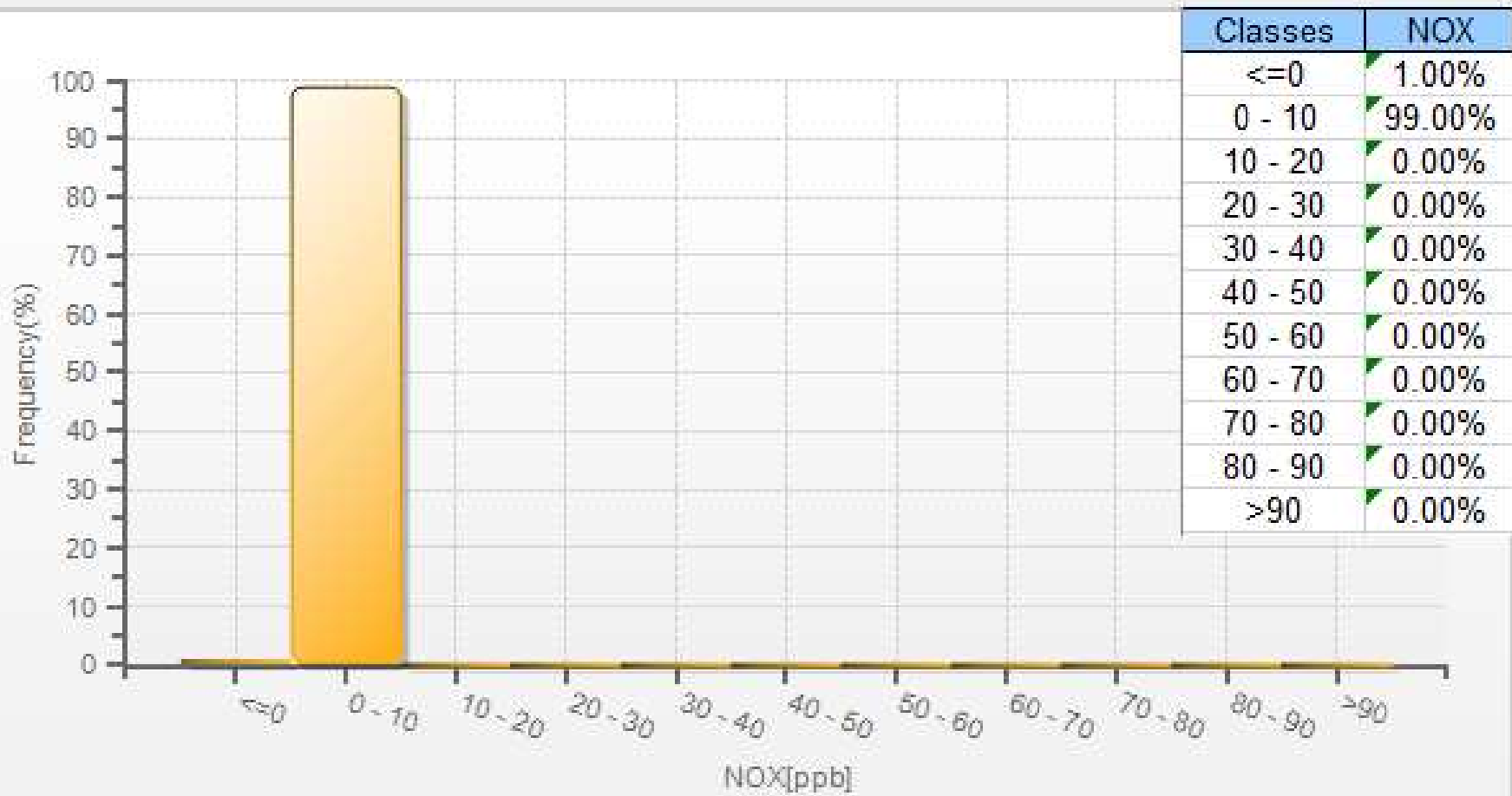
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for NOx - St. Lina Site*

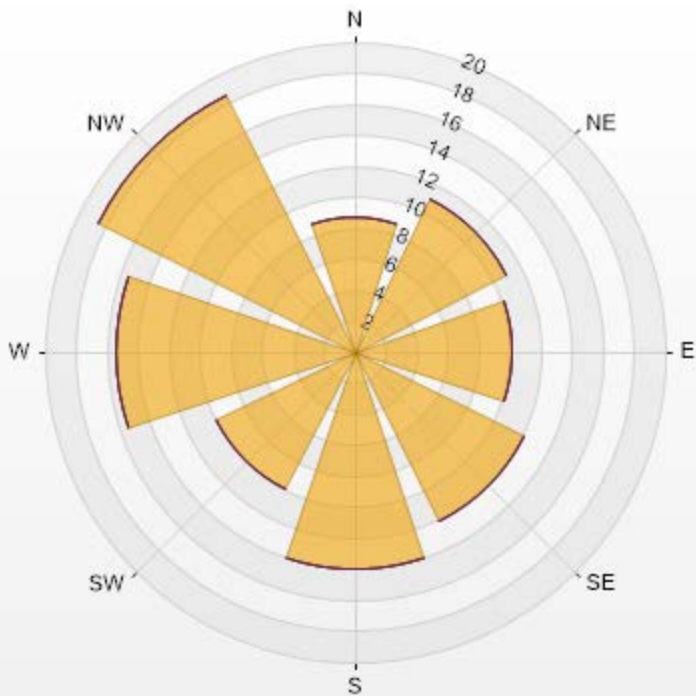


NOX[ppb] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NOX[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.15% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.66	0	0	0	0	8.66
NE	10.97	0	0	0	0	10.97
E	10.25	0	0	0	0	10.25
SE	12.27	0	0	0	0	12.27
S	14	0	0	0	0	14
SW	9.96	0	0	0	0	9.96
W	15.44	0	0	0	0	15.44
NW	18.47	0	0	0	0	18.47
Summary	100	0	0	0	0	100



LICA-201907-Revision 1



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### St. Lina Site - July 2019 Summary of Hourly Averages

#### NITRIC OXIDE (NO) in ppb

Maximum Hourly Value:	2 ppb on July 5 at hour 6	Hours in Service:	744
Maximum Daily Value:	0.2 ppb on July 5	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 2	Hours of Calibration:	39
Monthly Average:	0.1 ppb	Operational Uptime:	100.0

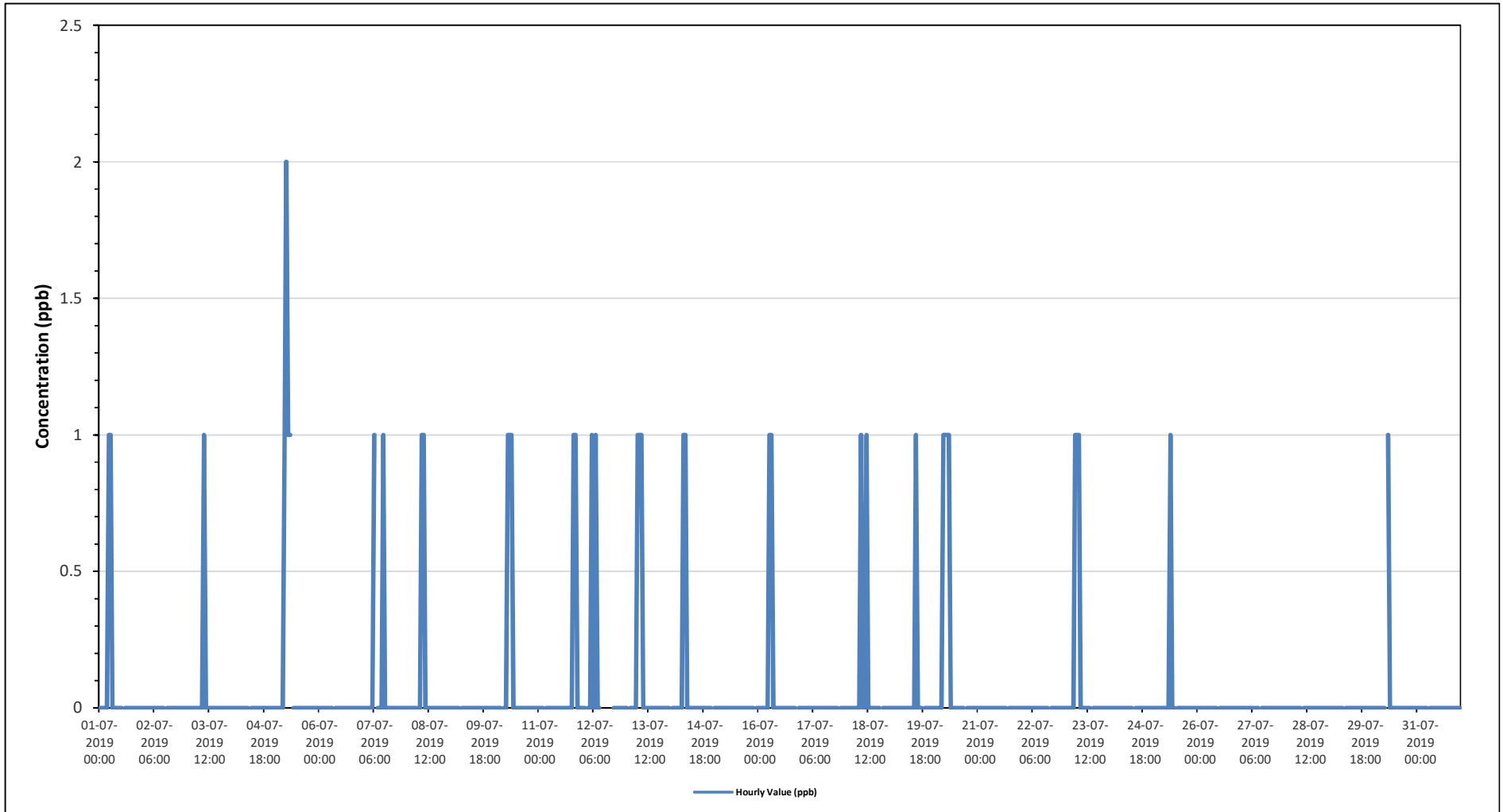
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	0	0	0	0	0	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 3	0	0	0	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 4	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 5	0	0	0	0	0	1	2	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	
Jul 6	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 7	0	0	0	0	0	0	1	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 8	0	0	0	0	0	0	S	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 9	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 10	0	0	0	0	S	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 11	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0.1
Jul 12	0	0	S	0	0	1	0	1	0	0	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	1	-
Jul 13	0	S	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 14	S	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0.1
Jul 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
Jul 16	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 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
Jul 18	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.1
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	0	0	0	0	1	0.0
Jul 20	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.2
Jul 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0
Jul 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 23	0	0	0	0	0	1	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 24	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 25	0	0	0	0	0	0	0	0	0	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 26	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 27	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 28	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 29	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 30	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 31	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Diurnal Maximum	0	0	0	0	0	1	2	1	1	1	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Diurnal Average	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.1	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	0.0	0.0

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

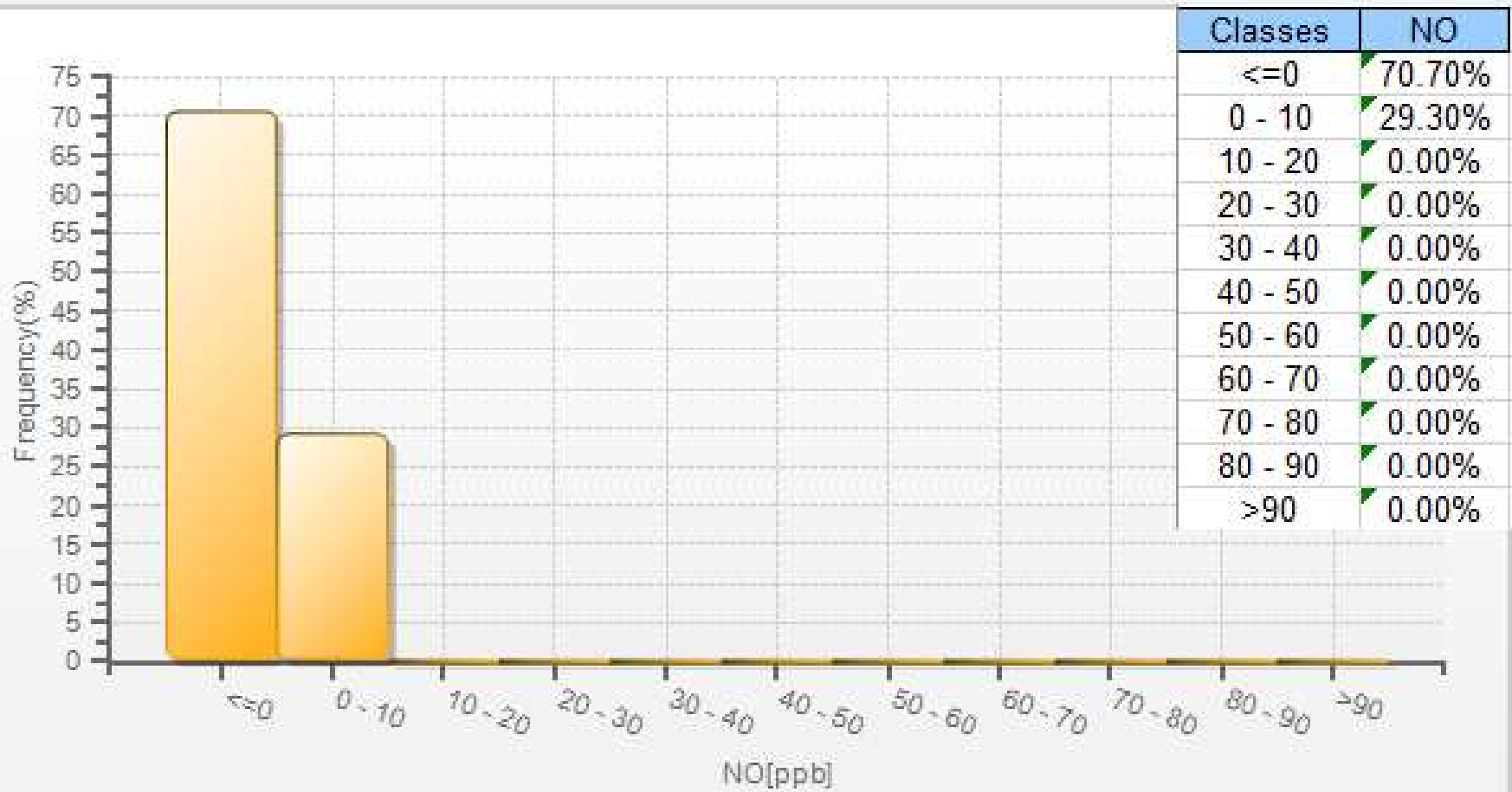
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



**Timeseries Chart of Hourly Average for NO - St. Lina Site**

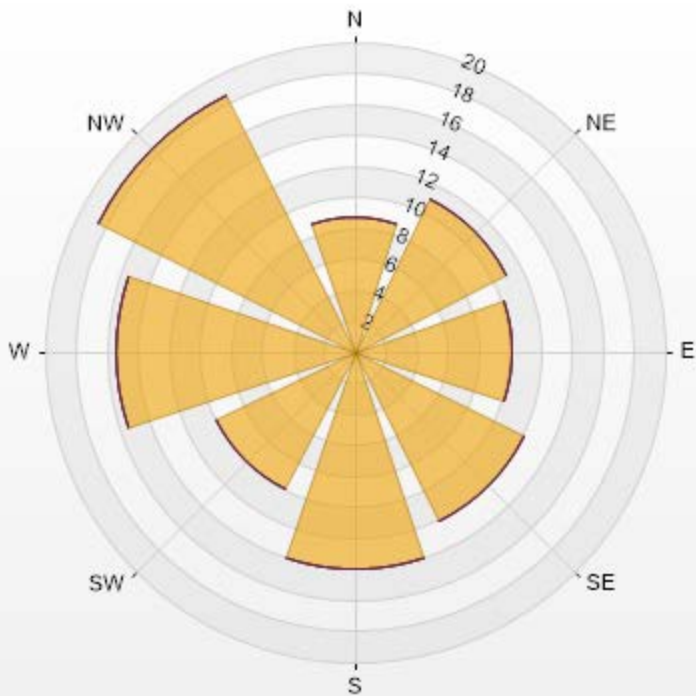


NO[ppb] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NO[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.15% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.66	0	0	0	0	8.66
NE	10.97	0	0	0	0	10.97
E	10.25	0	0	0	0	10.25
SE	12.27	0	0	0	0	12.27
S	14	0	0	0	0	14
SW	9.96	0	0	0	0	9.96
W	15.44	0	0	0	0	15.44
NW	18.47	0	0	0	0	18.47
Summary	100	0	0	0	0	100



LICA-201907-Revision 1



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb**

Number of 1-Hour Exceedences: 0

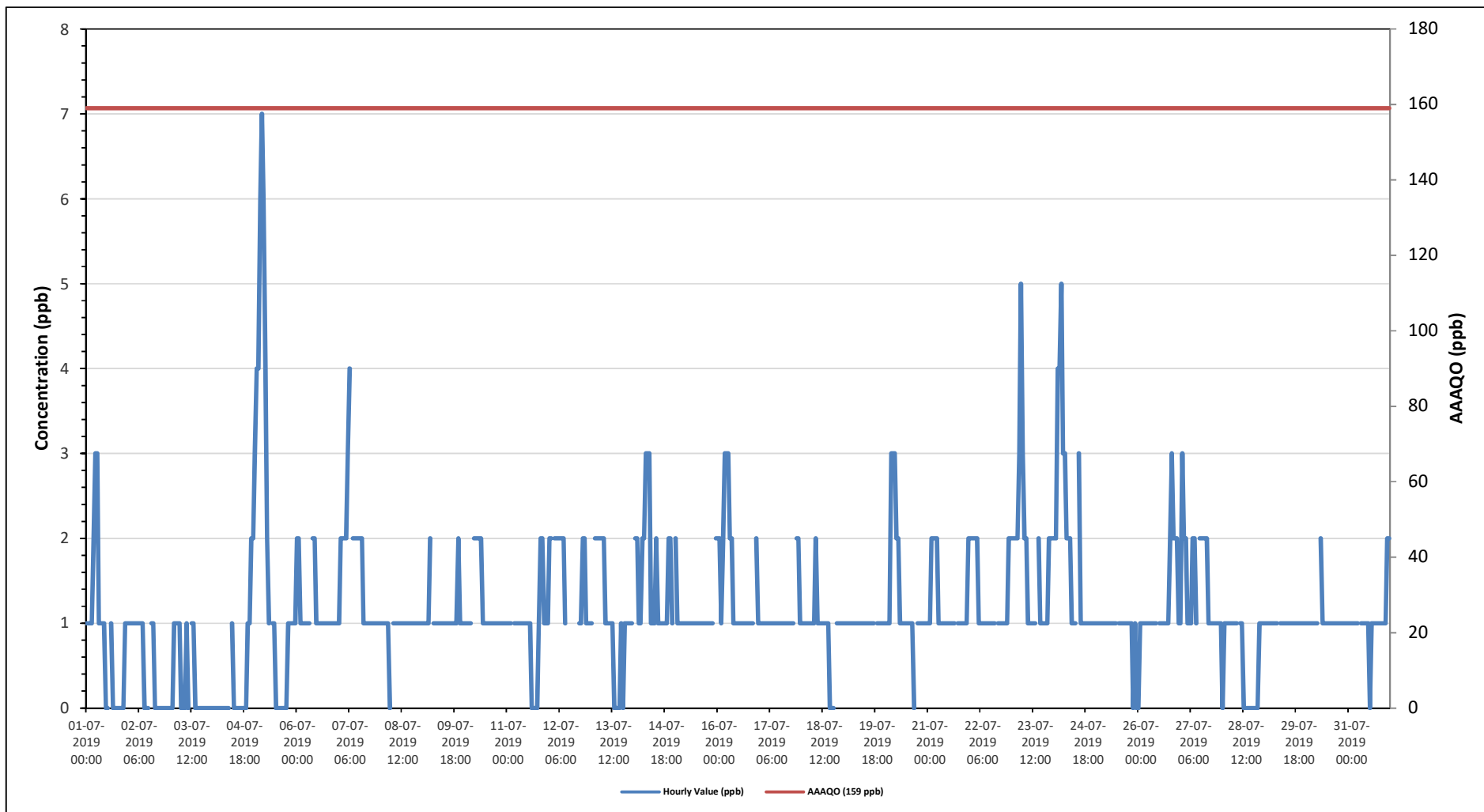
Maximum Hourly Value:	7 ppb on July 5 at hour 4	Hours in Service:	744
Maximum Daily Value:	1.9 ppb on July 5	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 11	Hours of Missing Data:	0
Minimum Daily Value:	0.3 ppb on July 3	Hours of Calibration:	39
Monthly Average:	1.1 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	2	3	3	1	1	1	1	0	0	S	1	0	0	0	0	0	0	0	1	1	0	3	0.8	
Jul 2	1	1	1	1	1	1	1	1	1	0	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	1	0.5
Jul 3	0	0	1	1	1	1	0	0	0	1	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3
Jul 4	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	1	1	2	2	0	2	0.3
Jul 5	3	4	4	6	7	6	4	2	1	S	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	7	1.9
Jul 6	2	2	1	1	1	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2
Jul 7	1	2	2	2	2	3	4	S	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	4	1.7
Jul 8	1	1	1	1	1	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1.0
Jul 9	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1.1
Jul 10	1	1	1	1	S	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2
Jul 11	1	1	1	S	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	2	2	1	1	1	1	0	2	0.9
Jul 12	2	2	S	2	2	2	2	2	2	1	C	C	C	C	C	C	C	1	1	2	2	1	1	1	1	1	2	-
Jul 13	1	S	2	2	2	2	2	2	1	1	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	2	1.0	
Jul 14	S	2	2	1	1	2	2	3	3	3	1	1	1	2	1	1	1	1	1	1	2	2	1	1	1	1	3	1.6
Jul 15	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	2	1.1
Jul 16	2	2	1	2	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	3	1.5
Jul 17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	1	2	1.1
Jul 18	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	0	0	0	S	1	1	1	1	1	0	2	0.9
Jul 19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1.0
Jul 20	1	1	1	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	0	3	1.3
Jul 21	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	2	2	1.2
Jul 22	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	2	1	2	1.3
Jul 23	2	2	2	2	3	5	3	2	2	1	1	1	1	1	S	2	1	1	1	1	1	1	2	2	2	1	5	1.8
Jul 24	2	2	4	4	5	3	3	2	2	2	1	1	1	S	3	1	1	1	1	1	1	1	1	1	1	1	5	1.9
Jul 25	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	1	0	0	1	0.9	
Jul 26	0	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	3	2	2	2	2	1	0	3	1.2
Jul 27	1	3	2	2	1	1	1	2	2	1	S	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	3	1.5
Jul 28	0	1	1	1	1	1	1	1	1	S	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0.6
Jul 29	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Jul 30	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0
Jul 31	1	1	1	1	1	1	S	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	2	2	2	0	2	1.0
Diurnal Maximum	3	4	4	6	7	6	4	3	3	3	2	2	2	2	3	2	1	1	2	3	2	2	2	2	2	2	2	2
Daiurnal Average	1.2	1.4	1.4	1.6	1.7	1.7	1.6	1.3	1.3	1.1	1.0	1.0	0.9	1.0	0.9	0.8	0.7	0.7	0.8	1.0	1.0	1.0	1.0	1.2	1.1			

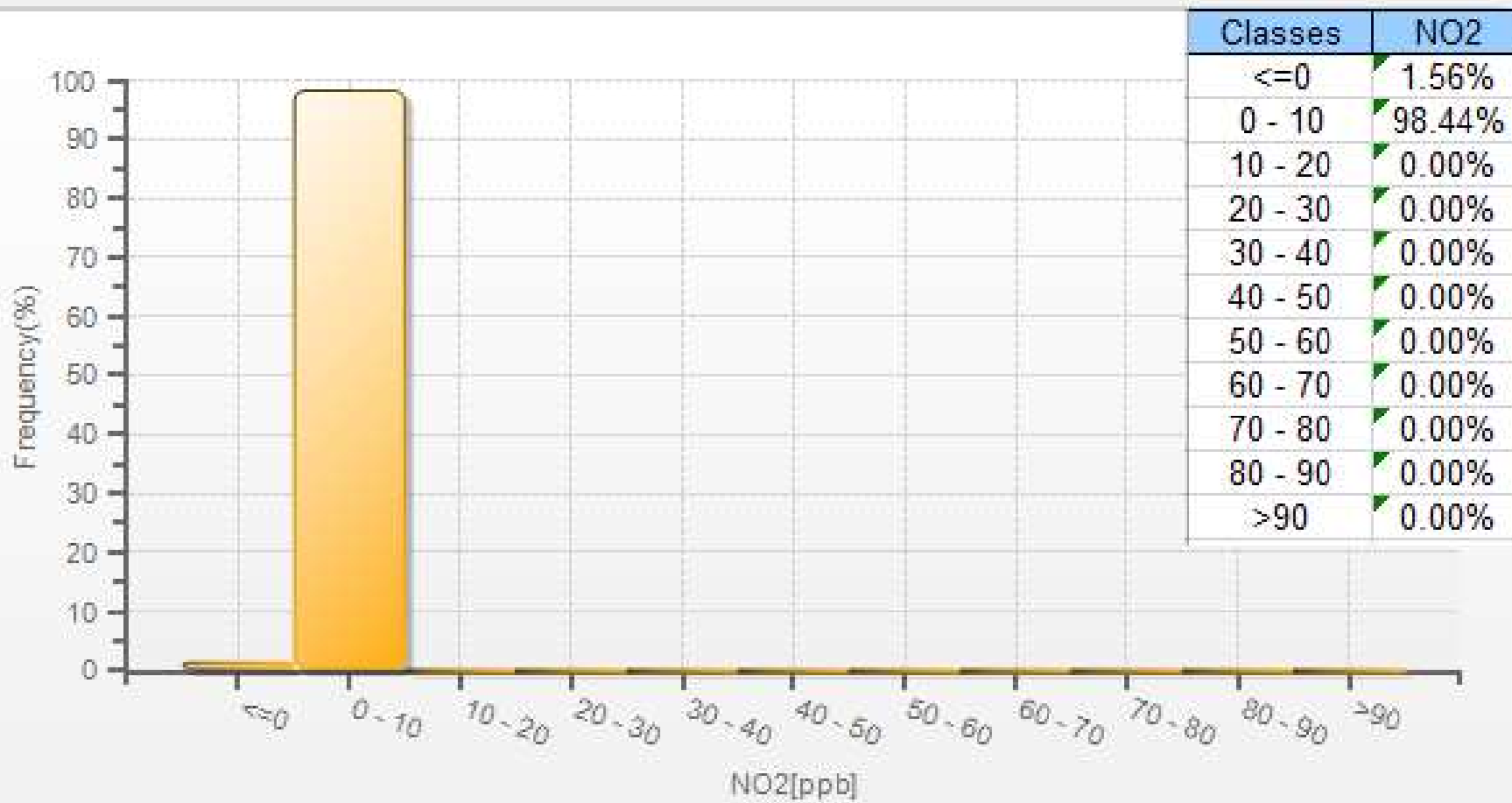
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO2 - St. Lina Site



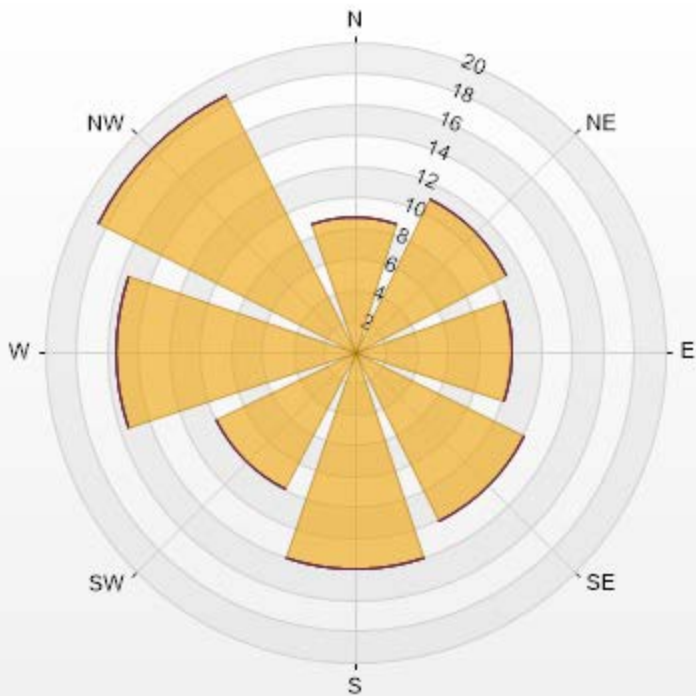
NO2[ppb] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.15% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.66	0	0	0	0	8.66
NE	10.97	0	0	0	0	10.97
E	10.25	0	0	0	0	10.25
SE	12.27	0	0	0	0	12.27
S	14	0	0	0	0	14
SW	9.96	0	0	0	0	9.96
W	15.44	0	0	0	0	15.44
NW	18.47	0	0	0	0	18.47
Summary	100	0	0	0	0	100





LICA-201907-Revision 1



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

Summary of Hourly Averages

OZONE (O<sub>3</sub>) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb**

Number of 1-Hour Exceedences: 0

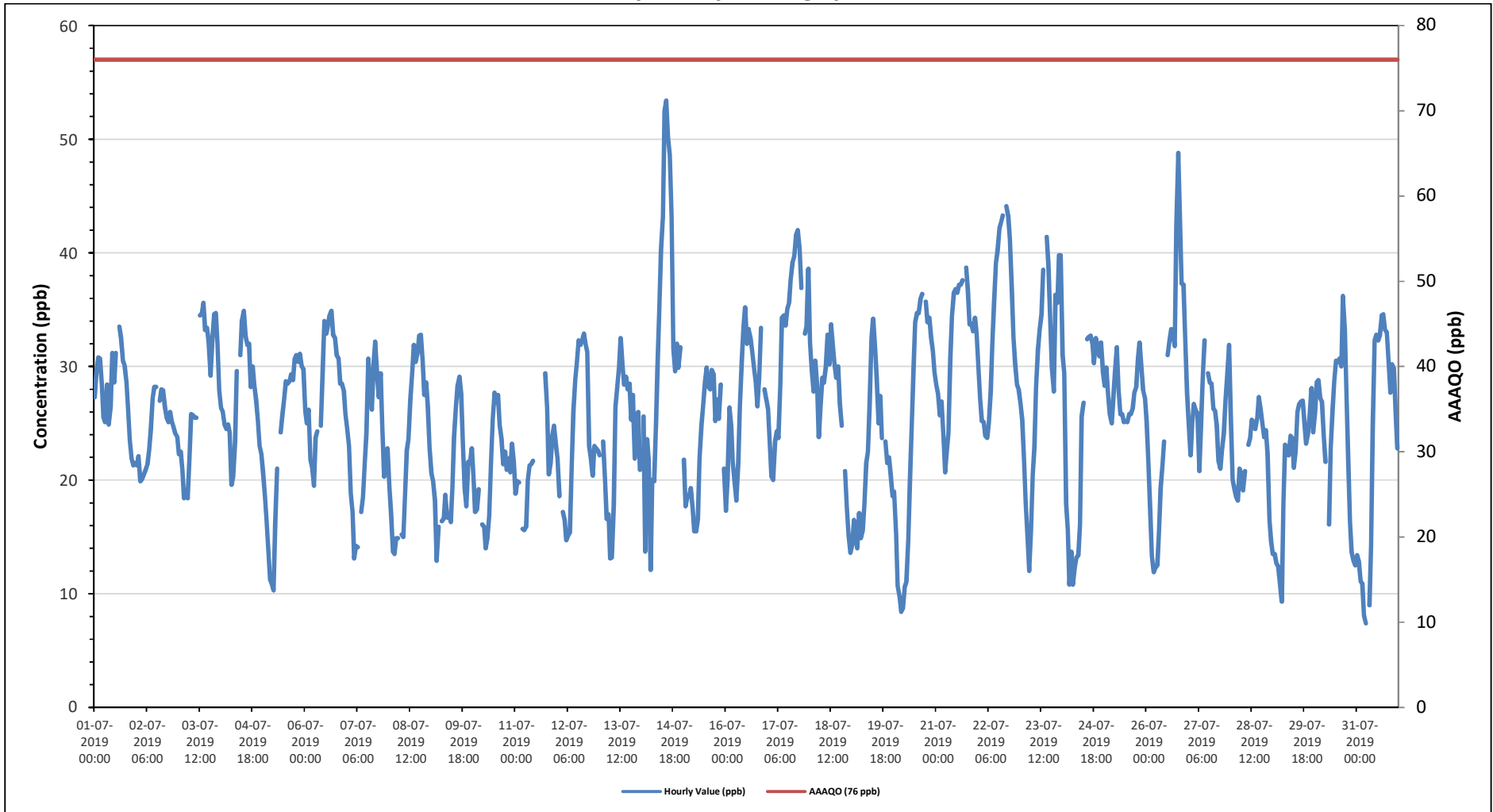
Maximum Hourly Value:	53.4 ppb on July 14 at hour 14	Hours in Service:	744
Maximum Daily Value:	33.4 ppb on July 22	Hours of Data:	706
Minimum Hourly Value:	7.4 ppb on July 31 at hour 5	Hours of Missing Data:	0
Minimum Daily Value:	20.4 ppb on July 9	Hours of Calibration:	38
Monthly Average:	25.7 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	27.3	29.5	30.8	30.7	28.4	25.5	25.1	28.4	24.9	26.5	31.2	28.6	31.2	S	33.5	32.5	30.5	30.1	28.6	26.3	23.5	21.9	21.3	21.5	21.3	33.5	27.7
Jul 2	21.3	22.1	19.9	20.1	20.5	20.9	21.4	22.6	24.4	27.2	28.2	28.2	S	27	28	27.9	26.4	25.5	25.1	26	25.2	24.6	24.1	23.8	19.9	28.2	24.4
Jul 3	22.3	22.5	20.9	18.4	19.1	18.4	22	25.8	25.7	25.5	25.5	S	34.5	34.6	35.6	33.2	33.4	32.2	29.2	32.2	34.6	34.7	32.1	27.9	18.4	35.6	27.8
Jul 4	26.4	26	24.9	24.5	24.9	24.2	19.6	20.3	23.4	29.6	S	31	34.1	34.9	32.7	31.9	32	28.2	30	28.4	27	25.3	23	22.3	19.6	34.9	27.2
Jul 5	20.7	18.6	16.6	13.6	11.3	10.8	10.3	16.2	21	S	24.2	25.7	27	28.7	28.5	28.7	29.3	28.8	30.7	31	30.4	31.1	30	29.8	10.3	31.1	23.6
Jul 6	26	25	26.2	21.8	21.1	19.5	23.8	24.3	S	24.8	29.7	34	32.9	33.6	34.5	34.9	32.8	32.5	31	30.7	28.5	28.5	27.9	25.8	19.5	34.9	28.3
Jul 7	24.5	23	18.8	17.2	13.1	14.2	14.1	S	17.2	18.5	21.5	24.1	30.7	28.3	26.2	30.1	32.2	29.3	27.3	29.4	24.7	20.3	21.5	22.8	13.1	32.2	23.0
Jul 8	19.4	17.1	13.7	13.5	14.9	14.9	S	15.2	15	18.9	22.6	23.6	27.1	29.2	31.9	30.4	31.2	32.7	32.8	30.5	27.5	28.6	26.4	22.9	13.5	32.8	23.5
Jul 9	20.6	19.9	18.2	12.9	15.9	S	16.4	16.6	18.7	16.7	17	16.3	19.3	23.8	26.5	28.3	29.1	27.6	22.8	19.3	17.7	21.6	21.5	22.8	12.9	29.1	20.4
Jul 10	20.3	17.2	17.4	19.2	S	16.1	15.9	14	14.9	16.9	21.5	25.4	27.7	26.8	27.5	24.9	23.6	21.4	22.5	20.9	21.9	20.7	23.2	21.6	14.0	27.7	20.9
Jul 11	18.8	19.9	19.8	S	15.7	15.6	15.9	20	21.3	21.4	21.7	C	C	C	C	C	C	29.4	26.4	20.5	21.5	23.9	24.8	23.1	15.6	29.4	-
Jul 12	21.9	18.6	S	17.2	16.5	14.7	15.1	15.4	21.4	26.1	28.9	30.3	32.3	31.9	32.3	32.9	31.9	31.3	23	21.9	20.4	23	22.8	22.6	14.7	32.9	24.0
Jul 13	22.2	S	23.4	20	16.6	17	13.1	13.2	17.9	26.5	28.2	29.9	32.5	30.1	28.4	29.1	28	28.5	25.3	27.5	21.9	25.8	26	20.9	13.1	32.5	24.0
Jul 14	S	25.6	13.7	23.6	21.8	12.1	20	19.9	24.5	29.9	35.3	40.3	43.2	52.5	53.4	50.2	48.6	43.2	31.5	29.6	32	29.9	31.7	S	12.1	53.4	32.4
Jul 15	21.8	17.7	18.6	18.6	19.3	17.5	15.5	15.5	16.6	21.9	24.8	26.5	28.6	29.9	28.2	28	29.7	29.3	25.2	27.1	25.4	28.4	S	21	15.5	29.9	23.3
Jul 16	17.3	20.2	26.4	24.8	21.5	19.8	18.2	21.5	26.6	30.5	33.5	35.2	32	33.3	32.5	31.4	29.8	28.7	26.5	29	33.4	S	28	27.1	17.3	35.2	27.3
Jul 17	26.2	23.5	20.3	20	23.4	24.3	23.7	28.3	34.3	34.5	33.6	35.1	35.6	37.7	39.2	39.7	41.6	42	40.4	36.9	S	32.9	33.5	38.6	20.0	42.0	32.4
Jul 18	32.1	29.6	27.8	30.5	28.4	23.8	26.6	29	28.6	30	32.8	30.2	33.7	31.6	30.1	29	30	26.7	24.8	S	20.8	17.6	15.1	13.6	13.6	33.7	27.1
Jul 19	14.3	16.5	14.8	14	17.1	14.9	15.6	17.8	21.5	22.5	26.5	32.5	34.2	31.8	29	25	27.4	23.7	S	23.4	21.5	22	20.5	18.6	14.0	34.2	22.0
Jul 20	19	15.3	10.7	9.7	8.4	8.7	10.6	11.1	14.8	20	25.1	29.7	33.9	34.7	34.7	36	36.4	S	35.7	33.9	34.3	32.6	31.3	29.5	8.4	36.4	24.2
Jul 21	28.4	27.6	25.7	26.9	24	20.7	22.6	24.1	30.8	34.5	36.5	36.8	36.5	37.2	37.2	37.6	S	38.7	36.7	33.7	33.8	33.1	34.3	32.9	20.7	38.7	31.8
Jul 22	29.9	27.1	25.2	25.1	23.9	23.7	25	27.8	32.1	35.5	39.1	40.2	42.2	42.7	43.3	S	44.1	43.2	41.2	36.8	32.6	30.3	28.4	28	23.7	44.1	33.4
Jul 23	26.7	25.3	21.6	18.1	15.1	12	15.5	20.5	22.9	28.2	31.5	33.2	34.6	38.5	S	41.4	39	33.9	29.9	27.8	36.3	35.6	39.8	39.8	12.0	41.4	29.0
Jul 24	31	29.4	17.9	15.6	10.8	13.7	10.8	12.4	13.2	13.4	16.1	25.6	26.8	S	32.4	32.6	32.7	32	30.3	32.5	31.9	30.9	32.1	29.5	10.8	32.7	24.1
Jul 25	28.3	29.9	27.4	25.8	25	27.3	29.7	31.7	27.9	25.8	25.8	25.1	S	25.1	25.8	25.8	26.3	27.7	28.2	30.7	32.1	29.9	27.9	27.2	25.0	32.1	27.7
Jul 26	25.1	21.7	17.3	13.3	11.9	12.3	12.5	15.5	19.3	21.4	23.4	S	31	32.4	33.3	32.8	31.8	42.4	48.8	42.7	37.3	37.2	32.6	27.7	11.9	48.8	27.1
Jul 27	24.9	22.2	25.1	26.7	26.1	25.9	20.8	24.9	29.4	32.3	S	29.4	28.6	28.5	26.3	26.1	24.8	21.7	21	22.6	24.2	27.1	29.1	31.9	20.8	32.3	26.1
Jul 28	25.7	20	19.3	18.5	18.2	21	20.5	19.1	20.8	S	23.1	23.7	25.3	25.1	24.5	25.5	27.3	26.3	25	23.8	24.4	22.3	16.5	14.6	14.6	27.3	22.2
Jul 29	13.5	13.5	12.7	12.4	10.9	9.3	18.1	23.1	S	22.2	23.9	23.7	21.1	22.5	26	26.7	26.9	27	25.1	23.2	24.1	25.7	28.1	24.2	9.3	28.1	21.0
Jul 30	26	28.6	28.8	27.2	26.9	23.8	21.6	S	16.1	22.8	26.2	28.7	30.5	30.4	30.7	30	36.2	33.2	27.7	21.4	16.3	13.6	12.9	12.5	12.5	36.2	24.9
Jul 31	13.4	12.9	11.1	10.9	8.1	7.4	S	9	14.2	24.6	32.3	32.8	32.3	32.7	34.5	34.6	33.2	33	30.4	27.7	30.2	29.8	26.2	22.8	7.4	34.6	23.7
Diurnal Maximum	32	30	31	31	28	27	30	32	34	36	39	40	43	53	53	50	49	43	49	43	37	37	40	40			
Daiurnal Average	23.2	22.2	20.5	19.7	18.6	17.7	18.6	20.1	22.0	25.1	27.2	29.5	31.4	32.0	32.0	31.6	31.9	31.0	29.4	28.2	27.2	27.0	26.4	24.9			

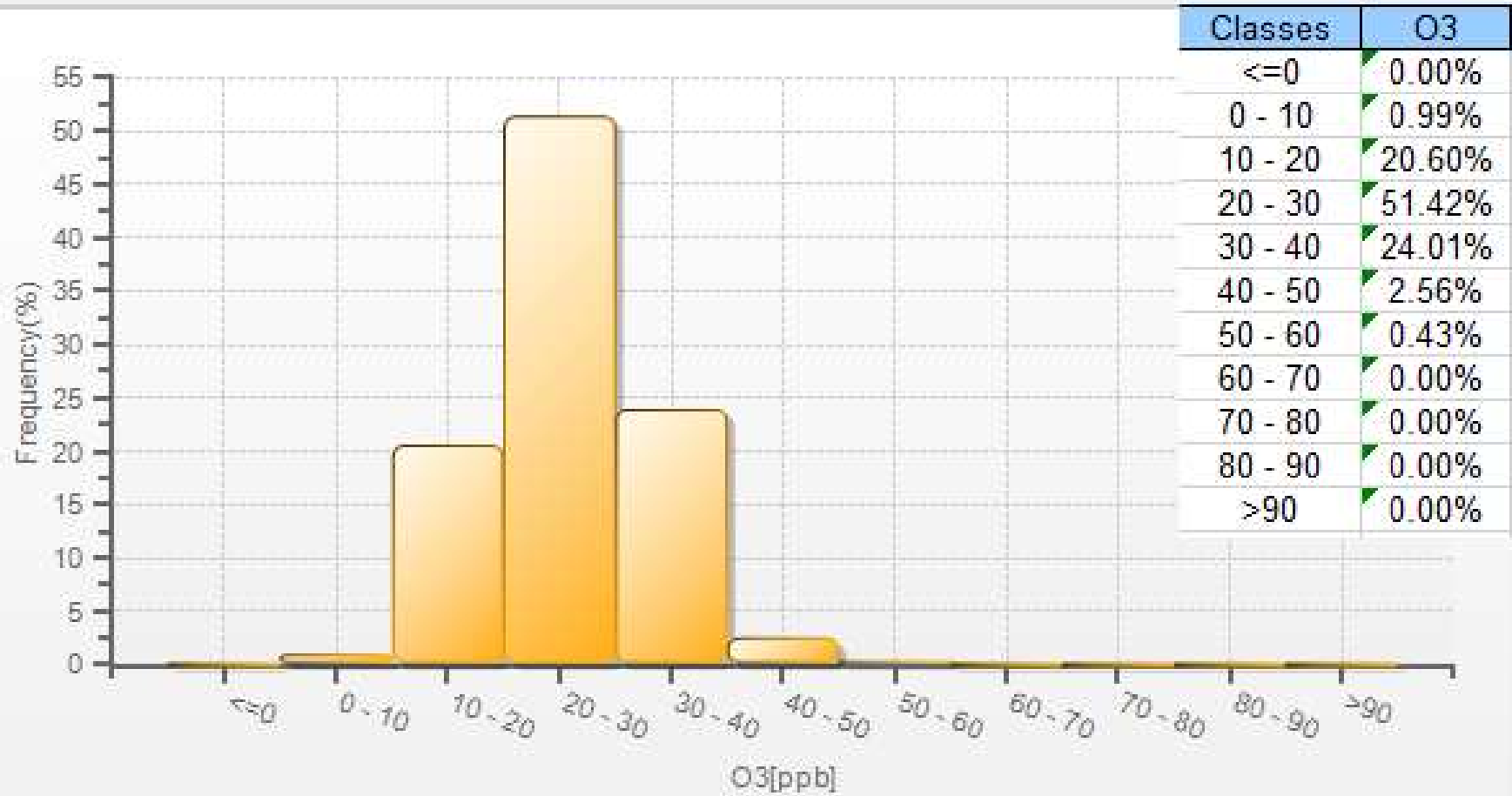
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for O3 - St. Lina Site**

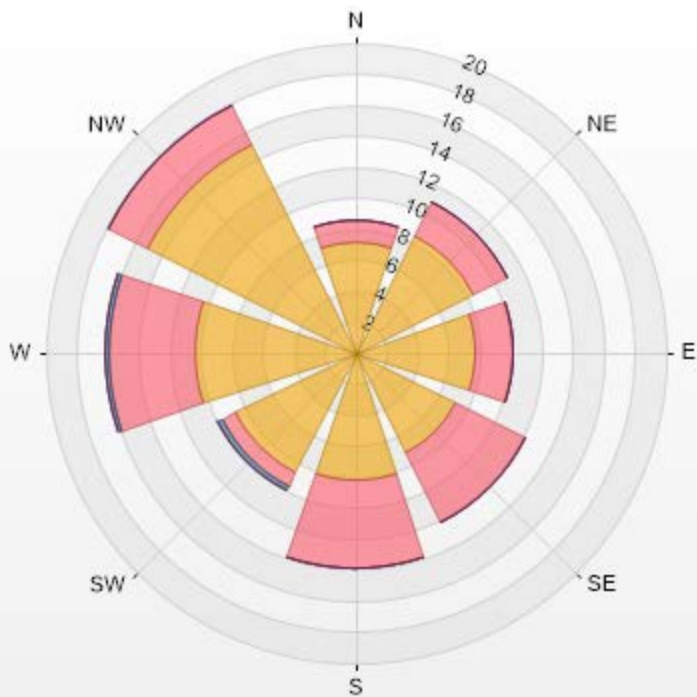


O3[ppb] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-O3[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.28% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	7.2	1.44	0	0	0	8.64
NE	8.5	2.45	0	0	0	10.95
E	7.78	2.45	0	0	0	10.23
SE	7.2	5.04	0	0	0	12.24
S	8.21	5.76	0	0	0	13.97
SW	8.65	1.01	0.29	0	0	9.95
W	10.37	5.62	0.14	0	0	16.13
NW	14.99	2.88	0	0	0	17.87
Summary	72.9	26.65	0.43	0	0	100



LICA-201907-Revision 1

%	Icon	Classes (ppb)	73	27	0	0
73		0-30	27	0	0	0
27		30-50	0	0	0	0
0		50-82	0	0	0	0
0		82-159	0	0	0	0
0		>159.0	0	0	0	0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

**St. Lina Site - July 2019**

### Summary of Hourly Averages

#### TOTAL HYDROCARBONS (THC) in ppm

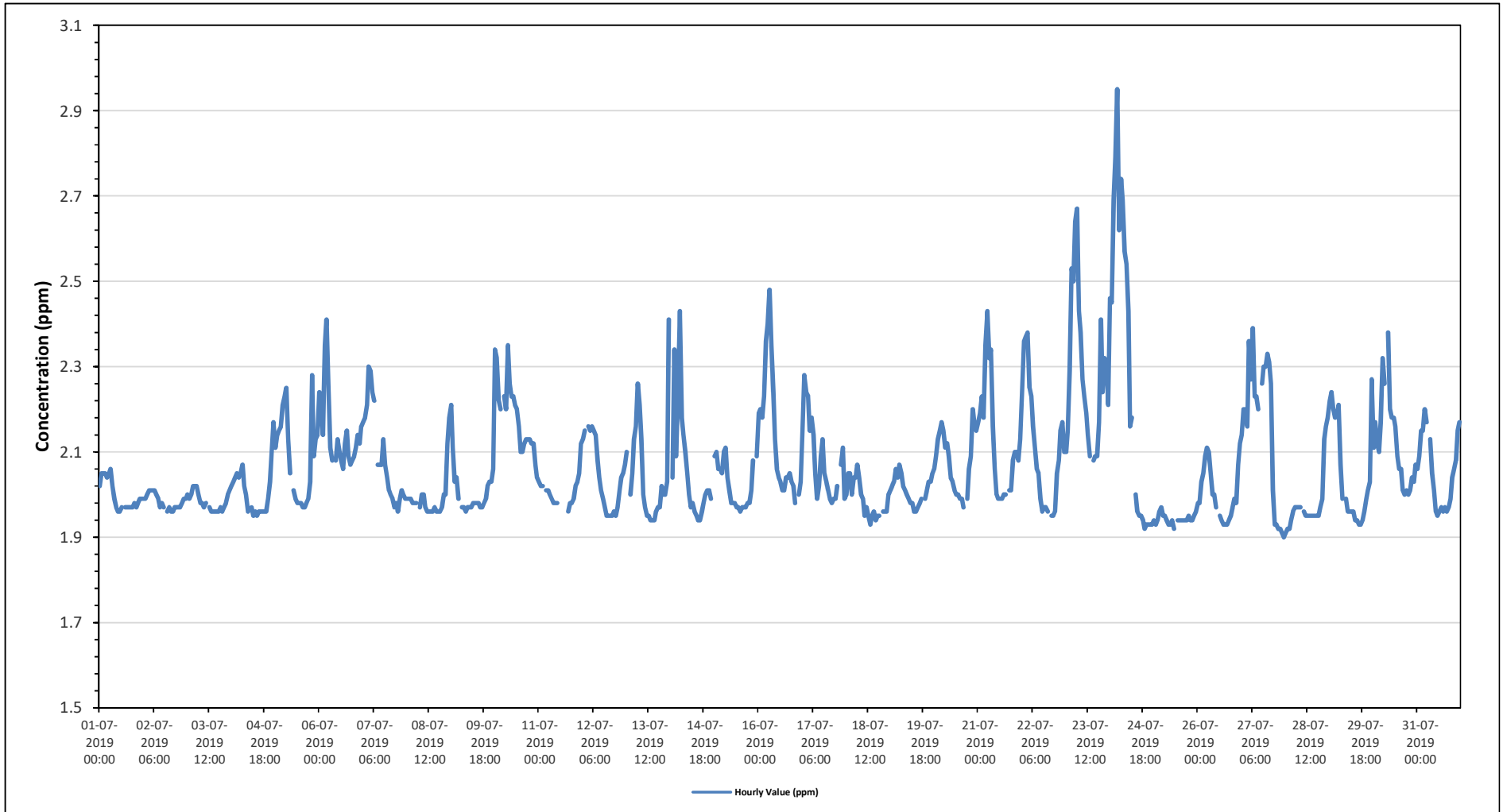
Maximum Hourly Value: 2.95 ppm on July 24 at hour 4	Hours in Service: 744
Maximum Daily Value: 2.29 ppm on July 24	Hours of Data: 707
Minimum Hourly Value: 1.90 ppm on July 27 at hour 23	Hours of Missing Data: 0
Minimum Daily Value: 1.94 ppm on July 25	Hours of Calibration: 37
Monthly Average: 2.07 ppm	Operational Uptime: 100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.02	2.05	2.05	2.05	2.04	2.05	2.06	2.02	1.99	1.97	1.96	1.96	1.97	S	1.97	1.97	1.97	1.97	1.97	1.98	1.97	1.98	1.99	1.99	1.96	2.06	2.00	
Jul 2	1.99	1.99	2.00	2.01	2.01	2.01	2.01	2.00	1.99	1.97	1.98	1.97	S	1.96	1.97	1.96	1.96	1.96	1.96	1.97	1.97	1.98	1.99	1.99	1.96	2.01	1.98	
Jul 3	2.00	1.99	2.00	2.02	2.02	2.02	2.00	1.98	1.98	1.97	1.98	S	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.96	1.97	1.98	2.00	2.01	1.96	2.02	1.98	
Jul 4	2.02	2.03	2.04	2.05	2.04	2.05	2.07	2.02	2.00	1.96	S	1.97	1.95	1.96	1.95	1.96	1.96	1.96	1.96	1.96	1.99	2.03	2.10	2.17	1.95	2.17	2.01	
Jul 5	2.11	2.14	2.15	2.16	2.21	2.23	2.25	2.13	2.05	S	2.01	1.99	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.03	2.28	2.09	2.13	2.14	1.97	2.28	2.08	
Jul 6	2.24	2.21	2.14	2.35	2.41	2.26	2.11	2.08	S	2.08	2.13	2.10	2.08	2.06	2.12	2.15	2.09	2.07	2.08	2.09	2.11	2.14	2.12	2.16	2.06	2.41	2.15	
Jul 7	2.17	2.18	2.21	2.30	2.29	2.24	2.22	S	2.07	2.07	2.07	2.13	2.07	2.04	2.01	2.00	1.99	1.97	1.98	1.96	1.99	2.01	2.00	1.99	1.96	2.30	2.09	
Jul 8	1.99	1.99	1.99	1.98	1.98	1.98	S	1.97	2.00	2.00	1.97	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.97	2.00	2.00	2.12	2.18	1.96	2.18	1.99	
Jul 9	2.21	2.11	2.03	2.04	1.99	S	1.97	1.97	1.96	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.02	2.03	2.03	2.06	1.96	2.21	2.01	
Jul 10	2.34	2.32	2.22	2.20	S	2.23	2.20	2.35	2.26	2.23	2.23	2.21	2.20	2.16	2.10	2.10	2.12	2.13	2.13	2.13	2.12	2.12	2.07	2.04	2.04	2.35	2.18	
Jul 11	2.03	2.02	2.02	S	2.01	2.01	2.00	1.99	1.98	1.98	1.98	C	C	C	C	C	1.96	1.98	1.98	1.99	2.02	2.03	2.05	2.12	1.96	2.12	2.01	
Jul 12	2.13	2.15	S	2.16	2.15	2.16	2.15	2.14	2.08	2.04	2.01	1.99	1.97	1.95	1.95	1.95	1.96	1.95	1.97	2.01	2.04	2.05	2.07	1.95	2.16	2.04		
Jul 13	2.10	S	2.00	2.05	2.13	2.16	2.26	2.21	2.13	2.00	1.97	1.95	1.95	1.94	1.94	1.96	1.97	1.97	2.02	2.00	2.00	2.03	2.41	1.94	2.41	2.05		
Jul 14	S	2.04	2.34	2.09	2.23	2.43	2.18	2.14	2.10	2.05	2.00	1.97	1.98	1.96	1.95	1.94	1.94	1.96	1.98	2.00	2.01	2.01	1.99	S	1.94	2.43	2.06	
Jul 15	2.09	2.10	2.06	2.06	2.05	2.10	2.11	2.04	2.01	1.98	1.98	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.98	1.98	2.01	2.08	S	2.09	1.96	2.11	2.02	
Jul 16	2.19	2.20	2.18	2.23	2.36	2.40	2.48	2.35	2.24	2.13	2.06	2.04	2.03	2.01	2.01	2.04	2.05	2.03	2.02	1.98	S	2.00	2.03	1.98	2.48	2.13		
Jul 17	2.15	2.28	2.24	2.23	2.15	2.18	2.14	2.05	1.99	2.02	2.09	2.13	2.05	2.03	2.01	1.99	1.98	1.99	1.99	2.02	S	2.07	2.11	1.99	1.98	2.28	2.08	
Jul 18	2.00	2.05	2.05	2.00	2.04	2.04	2.07	2.04	2.00	1.99	1.95	1.97	1.95	1.93	1.95	1.96	1.94	1.95	1.95	S	1.96	1.96	2.00	1.93	2.07	1.99		
Jul 19	2.01	2.02	2.03	2.06	2.04	2.07	2.05	2.02	2.01	2.00	1.99	1.98	1.98	1.96	1.96	1.97	1.98	1.99	S	1.99	2.01	2.03	2.03	2.05	1.96	2.07	2.01	
Jul 20	2.06	2.09	2.13	2.15	2.17	2.15	2.11	2.12	2.09	2.04	2.03	2.01	2.00	2.00	1.99	1.99	1.97	S	1.99	2.06	2.09	2.20	2.16	2.15	1.97	2.20	2.08	
Jul 21	2.17	2.19	2.23	2.18	2.35	2.43	2.32	2.34	2.16	2.06	2.00	1.99	1.99	2.00	2.00	S	2.01	2.01	2.08	2.10	2.10	2.08	2.13	1.99	2.43	2.13		
Jul 22	2.25	2.36	2.37	2.38	2.25	2.23	2.16	2.11	2.06	2.05	1.99	1.96	1.97	1.97	1.96	S	1.95	1.95	1.96	2.05	2.08	2.15	2.17	2.10	1.95	2.38	2.11	
Jul 23	2.10	2.15	2.29	2.53	2.50	2.64	2.67	2.43	2.38	2.27	2.23	2.19	2.14	2.09	S	2.08	2.09	2.09	2.17	2.41	2.24	2.32	2.31	2.21	2.08	2.67	2.28	
Jul 24	2.46	2.45	2.69	2.79	2.95	2.62	2.74	2.69	2.57	2.54	2.43	2.16	2.18	S	2.00	1.96	1.95	1.95	1.94	1.92	1.93	1.93	1.93	1.93	1.92	2.95	2.29	
Jul 25	1.94	1.93	1.94	1.96	1.97	1.95	1.95	1.94	1.93	1.93	1.94	1.92	S	1.94	1.94	1.94	1.94	1.94	1.95	1.94	1.94	1.95	1.96	1.92	1.97	1.94		
Jul 26	1.98	1.98	2.03	2.05	2.09	2.11	2.10	2.05	2.00	2.00	1.97	S	1.95	1.94	1.93	1.93	1.93	1.94	1.95	1.97	1.99	1.98	2.07	2.12	1.93	2.12	2.00	
Jul 27	2.14	2.20	2.20	2.16	2.36	2.27	2.39	2.23	2.23	2.20	S	2.26	2.30	2.30	2.33	2.31	2.26	2.01	1.93	1.93	1.92	1.91	1.90	1.90	2.39	2.16		
Jul 28	1.91	1.92	1.92	1.94	1.96	1.97	1.97	1.97	1.97	1.97	S	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.97	1.99	2.13	2.16	2.18	1.91	2.18	1.98	
Jul 29	2.22	2.24	2.20	2.18	2.19	2.21	2.07	1.99	S	1.99	1.96	1.96	1.96	1.96	1.94	1.94	1.93	1.93	1.94	1.96	1.99	2.01	2.03	2.27	1.93	2.27	2.05	
Jul 30	2.11	2.17	2.12	2.10	2.17	2.32	2.26	S	2.38	2.20	2.18	2.18	2.16	2.09	2.06	2.06	2.01	2.00	2.01	2.00	2.01	2.04	2.03	2.07	2.00	2.38	2.12	
Jul 31	2.06	2.09	2.15	2.15	2.20	2.17	S	2.13	2.05	2.01	1.96	1.95	1.96	1.97	1.96	1.97	1.96	1.97	1.99	2.04	2.06	2.08	2.15	2.17	1.95	2.20	2.05	
Diurnal Maximum	2.46	2.45	2.69	2.79	2.95	2.64	2.74	2.69	2.57	2.54	2.43	2.26	2.30	2.33	2.31	2.26	2.13	2.17	2.41	2.28	2.32	2.31	2.41					
Diurnal Average	2.11	2.12	2.13	2.15	2.18	2.19	2.17	2.12	2.09	2.06	2.03	2.03	2.02	2.00	1.99	2.00	1.99	1.98	1.99	2.01	2.03	2.05	2.06	2.09				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

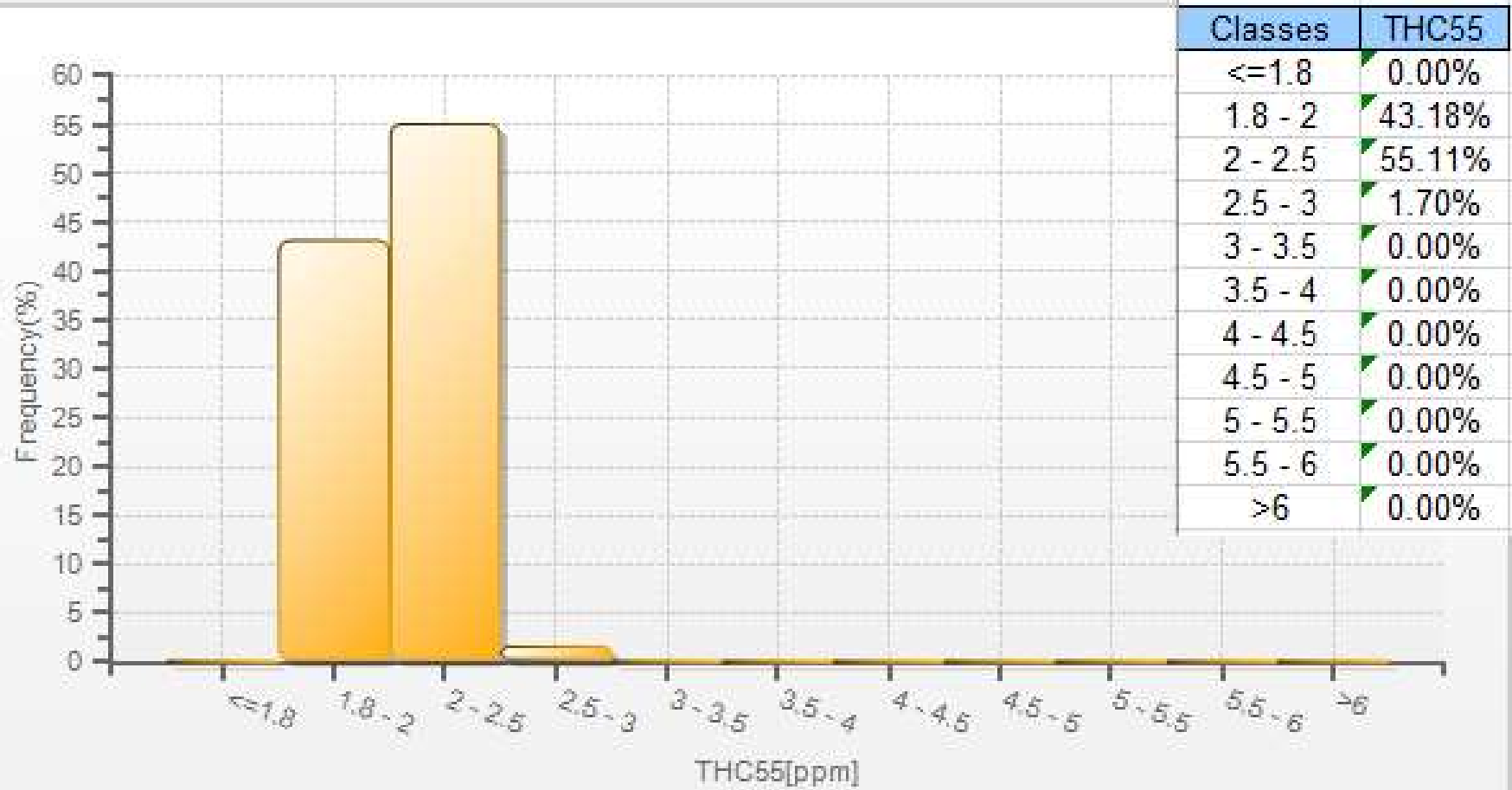
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for THC - St. Lina Site**



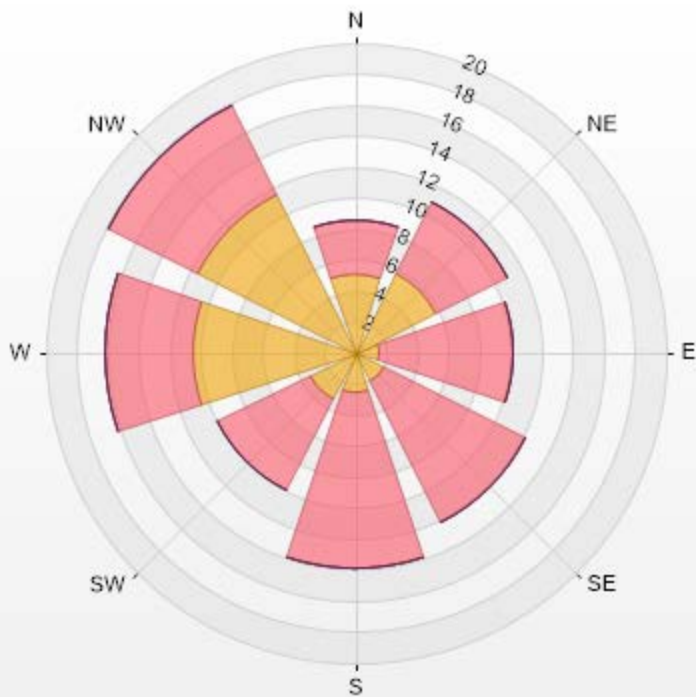


THC55[ppm] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-THC55[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.28% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	5.04	3.6	0	0	0	8.64
NE	5.76	5.19	0	0	0	10.95
E	1.59	8.65	0	0	0	10.24
SE	2.02	10.23	0	0	0	12.25
S	2.59	11.38	0	0	0	13.97
SW	3.31	6.63	0	0	0	9.94
W	10.52	5.62	0	0	0	16.14
NW	11.38	6.48	0	0	0	17.86
Summary	42.21	57.78	0	0	0	100



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% Icon Classes (ppm)	42	56	205	364	0	0
0-2	42	56	205	364	0	0
5-10						
10-40						
>40.0						



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### St. Lina Site - July 2019 Summary of Hourly Averages

#### METHANE (CH4) in ppm

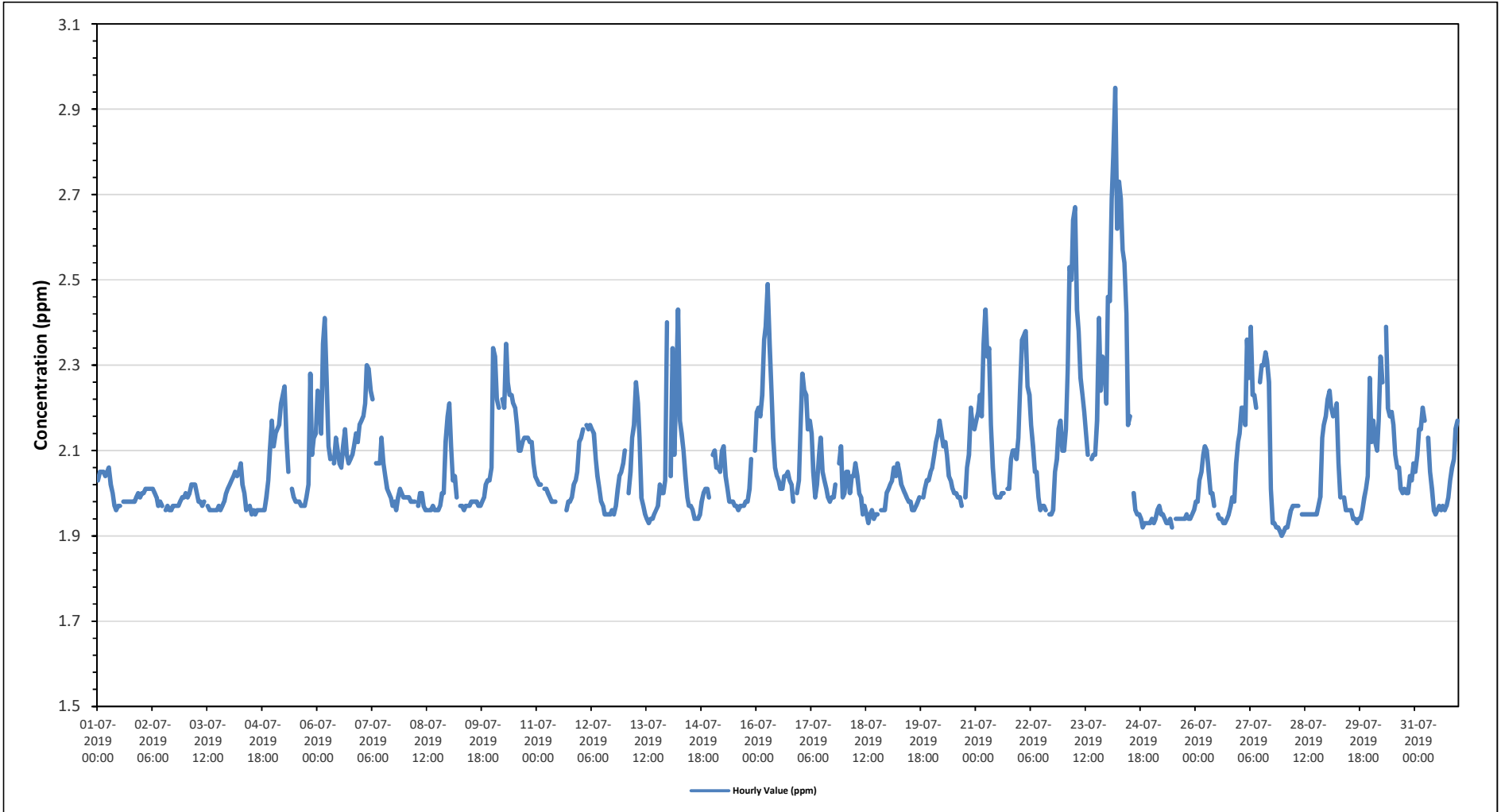
Maximum Hourly Value:	2.95 ppm on July 24 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.29 ppm on July 24	Hours of Data:	707
Minimum Hourly Value:	1.90 ppm on July 27 at hour 23	Hours of Missing Data:	0
Minimum Daily Value:	1.94 ppm on July 25	Hours of Calibration:	37
Monthly Average:	2.07 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	2.03	2.05	2.05	2.05	2.04	2.05	2.06	2.02	2.00	1.97	1.96	1.97	1.97	S	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.00	1.99	1.96	2.06	2.00	
Jul 2	2.00	2.00	2.01	2.01	2.01	2.01	2.01	2.00	1.99	1.97	1.98	1.97	S	1.96	1.97	1.96	1.96	1.96	1.97	1.97	1.97	1.98	1.99	1.99	1.96	2.01	1.98
Jul 3	2.00	1.99	2.00	2.02	2.02	2.02	2.00	1.98	1.98	1.97	1.98	S	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.96	1.97	1.98	2.00	2.01	1.96	2.02	1.98
Jul 4	2.02	2.03	2.04	2.05	2.04	2.05	2.07	2.02	2.00	1.96	S	1.97	1.95	1.96	1.95	1.96	1.96	1.96	1.96	1.96	1.99	2.03	2.10	2.17	1.95	2.17	2.01
Jul 5	2.11	2.14	2.15	2.16	2.21	2.23	2.25	2.13	2.05	S	2.01	1.99	1.98	1.98	1.98	1.97	1.97	1.99	1.99	2.02	2.28	2.09	2.13	2.14	1.97	2.28	2.08
Jul 6	2.24	2.21	2.14	2.35	2.41	2.26	2.11	2.08	S	2.07	2.13	2.10	2.07	2.06	2.11	2.15	2.09	2.07	2.08	2.09	2.11	2.14	2.12	2.16	2.06	2.41	2.15
Jul 7	2.17	2.18	2.21	2.30	2.29	2.24	2.22	S	2.07	2.07	2.07	2.13	2.07	2.04	2.01	2.00	1.99	1.97	1.98	1.96	1.99	2.01	2.00	1.99	1.96	2.30	2.09
Jul 8	1.99	1.99	1.99	1.98	1.98	1.98	S	1.97	2.00	2.00	1.97	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.97	2.00	2.00	2.12	2.18	1.96	2.18	1.99
Jul 9	2.21	2.11	2.03	2.04	1.99	S	1.97	1.97	1.96	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.02	2.03	2.03	2.06	1.96	2.21	2.01
Jul 10	2.34	2.32	2.22	2.20	S	2.22	2.20	2.35	2.26	2.23	2.23	2.21	2.20	2.16	2.10	2.10	2.12	2.13	2.13	2.13	2.12	2.12	2.07	2.04	2.04	2.35	2.18
Jul 11	2.03	2.02	2.02	S	2.01	2.01	2.00	1.99	1.98	1.98	1.98	C	C	C	C	C	1.96	1.98	1.98	1.99	2.02	2.03	2.05	2.12	1.96	2.12	2.01
Jul 12	2.13	2.15	S	2.16	2.15	2.16	2.15	2.14	2.08	2.04	2.01	1.98	1.97	1.95	1.95	1.95	1.95	1.96	1.95	1.97	2.01	2.04	2.05	2.07	1.95	2.16	2.04
Jul 13	2.10	S	2.00	2.05	2.13	2.16	2.26	2.21	2.13	1.99	1.97	1.95	1.94	1.93	1.94	1.94	1.95	1.96	1.97	2.02	2.00	2.00	2.03	2.40	1.93	2.40	2.04
Jul 14	S	2.04	2.34	2.09	2.23	2.43	2.17	2.14	2.10	2.04	1.99	1.97	1.97	1.96	1.94	1.94	1.94	1.95	1.98	2.00	2.01	2.01	1.99	S	1.94	2.43	2.06
Jul 15	2.09	2.10	2.06	2.06	2.05	2.10	2.11	2.04	2.01	1.98	1.98	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.98	1.98	2.01	2.08	S	2.10	1.96	2.11	2.02
Jul 16	2.19	2.20	2.18	2.23	2.36	2.39	2.49	2.35	2.24	2.13	2.06	2.04	2.03	2.01	2.01	2.04	2.05	2.03	2.02	1.98	S	2.00	2.03	1.98	2.49	2.13	
Jul 17	2.15	2.28	2.24	2.23	2.15	2.17	2.14	2.05	1.99	2.02	2.09	2.13	2.05	2.03	2.01	1.99	1.98	1.99	1.99	2.02	S	2.07	2.11	1.99	1.98	2.28	2.08
Jul 18	2.00	2.05	2.05	2.00	2.04	2.04	2.07	2.04	2.00	1.99	1.95	1.97	1.95	1.93	1.95	1.96	1.94	1.95	1.95	S	1.96	1.96	2.00	1.93	2.07	1.99	
Jul 19	2.01	2.02	2.03	2.06	2.04	2.07	2.05	2.02	2.01	2.00	1.99	1.98	1.98	1.96	1.96	1.97	1.98	1.99	S	1.99	2.01	2.03	2.03	2.05	1.96	2.07	2.01
Jul 20	2.06	2.09	2.12	2.14	2.17	2.14	2.11	2.12	2.09	2.04	2.03	2.01	2.00	2.00	1.99	1.99	1.99	1.97	S	1.99	2.06	2.09	2.20	2.16	1.97	2.20	2.07
Jul 21	2.17	2.19	2.23	2.18	2.35	2.43	2.32	2.34	2.16	2.06	2.00	1.99	1.99	2.00	2.00	2.00	S	2.01	2.01	2.08	2.10	2.10	2.08	2.13	1.99	2.43	2.13
Jul 22	2.25	2.36	2.37	2.38	2.25	2.23	2.16	2.11	2.05	2.05	1.99	1.96	1.97	1.97	1.96	S	1.95	1.95	1.96	2.05	2.08	2.15	2.17	2.10	1.95	2.38	2.11
Jul 23	2.10	2.15	2.29	2.53	2.50	2.64	2.67	2.43	2.38	2.27	2.23	2.19	2.14	2.09	S	2.08	2.09	2.09	2.17	2.41	2.24	2.32	2.31	2.21	2.08	2.67	2.28
Jul 24	2.46	2.45	2.69	2.79	2.95	2.62	2.73	2.69	2.57	2.54	2.42	2.16	2.18	S	2.00	1.96	1.95	1.95	1.94	1.92	1.93	1.93	1.93	1.93	1.92	2.95	2.29
Jul 25	1.94	1.93	1.94	1.96	1.97	1.95	1.95	1.94	1.93	1.93	1.94	1.92	S	1.94	1.94	1.94	1.94	1.94	1.95	1.94	1.94	1.95	1.96	1.92	1.97	1.94	
Jul 26	1.98	1.98	2.03	2.05	2.09	2.11	2.10	2.05	2.00	2.00	1.97	S	1.95	1.94	1.94	1.93	1.93	1.94	1.95	1.97	1.99	1.98	2.07	2.12	1.93	2.12	2.00
Jul 27	2.14	2.20	2.20	2.16	2.36	2.27	2.39	2.23	2.23	2.20	S	2.26	2.30	2.30	2.33	2.31	2.26	2.01	1.93	1.93	1.92	1.92	1.91	1.90	1.90	2.39	2.16
Jul 28	1.91	1.92	1.92	1.94	1.96	1.97	1.97	1.97	1.97	1.97	S	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.97	1.99	2.13	2.16	2.18	1.91	2.18	1.98
Jul 29	2.22	2.24	2.20	2.18	2.19	2.21	2.07	1.99	S	1.99	1.96	1.96	1.96	1.96	1.94	1.94	1.93	1.94	1.94	1.96	1.99	2.01	2.04	2.27	1.93	2.27	2.05
Jul 30	2.12	2.17	2.12	2.10	2.17	2.32	2.26	S	2.39	2.20	2.18	2.19	2.16	2.09	2.06	2.06	2.01	2.00	2.01	2.00	2.00	2.04	2.03	2.07	2.00	2.39	2.12
Jul 31	2.05	2.09	2.15	2.15	2.20	2.17	S	2.13	2.05	2.01	1.96	1.95	1.96	1.97	1.96	1.97	1.96	1.97	1.99	2.03	2.06	2.08	2.15	2.17	1.95	2.20	2.05
Diurnal Maximum	2.46	2.45	2.69	2.79	2.95	2.64	2.73	2.69	2.57	2.54	2.42	2.26	2.30	2.30	2.33	2.31	2.26	2.13	2.17	2.41	2.28	2.32	2.31	2.40			
Diurnal Average	2.11	2.12	2.13	2.15	2.18	2.19	2.17	2.12	2.09	2.06	2.03	2.03	2.02	2.00	1.99	2.00	1.99	1.98	1.99	2.01	2.03	2.05	2.06	2.09			

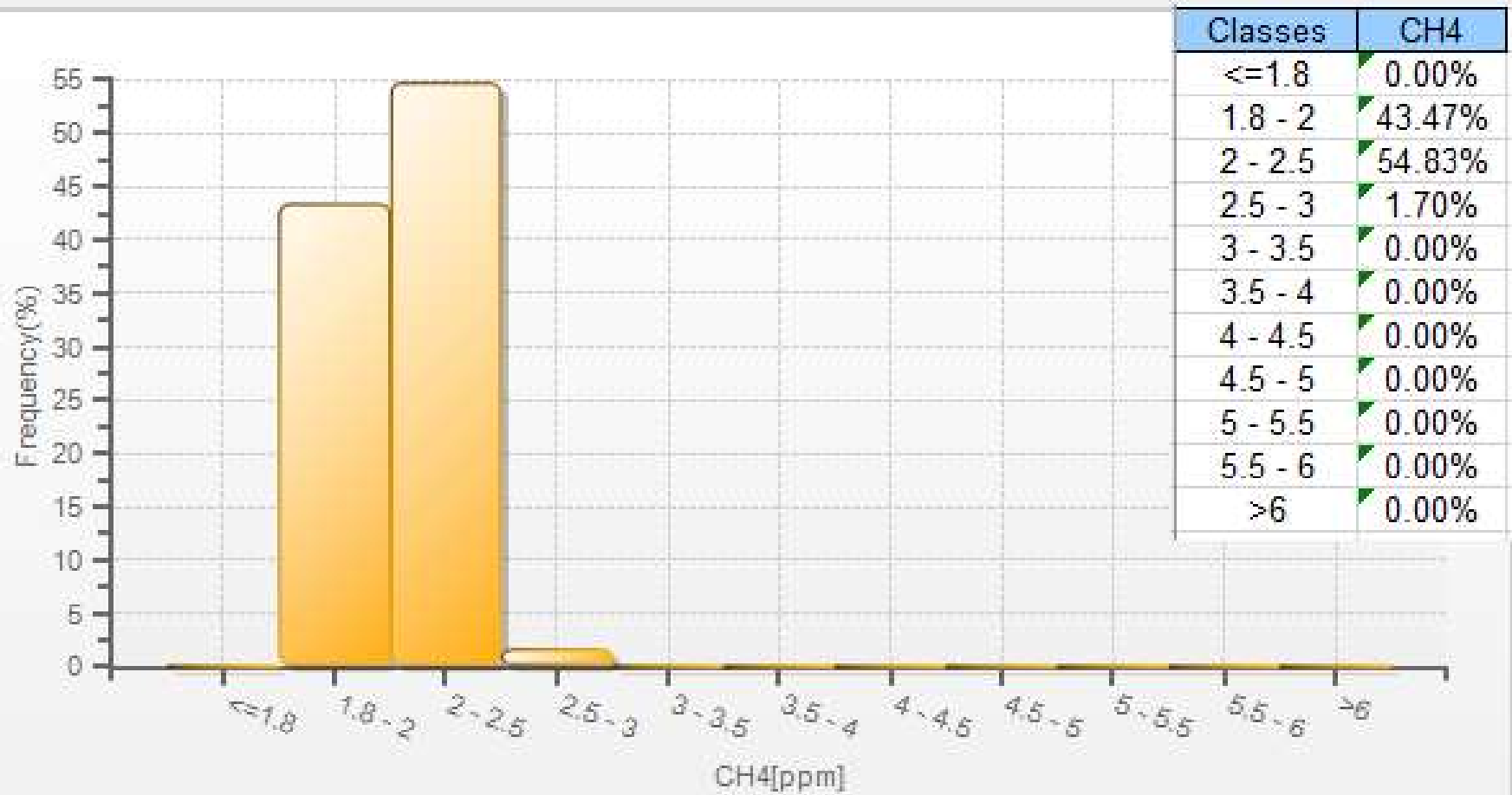
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for CH4 - St. Lina Site**

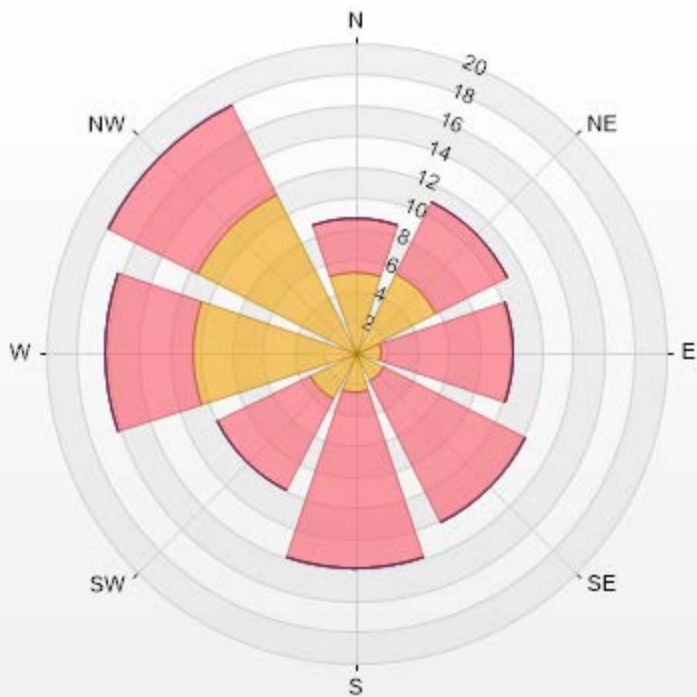


CH4[ppm] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-CH4[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.28% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	5.19	3.46	0	0	0	8.65
NE	5.76	5.19	0	0	0	10.95
E	1.73	8.5	0	0	0	10.23
SE	2.02	10.23	0	0	0	12.25
S	2.59	11.38	0	0	0	13.97
SW	3.31	6.63	0	0	0	9.94
W	10.52	5.62	0	0	0	16.14
NW	11.38	6.48	0	0	0	17.86
Summary	42.5	57.49	0	0	0	100



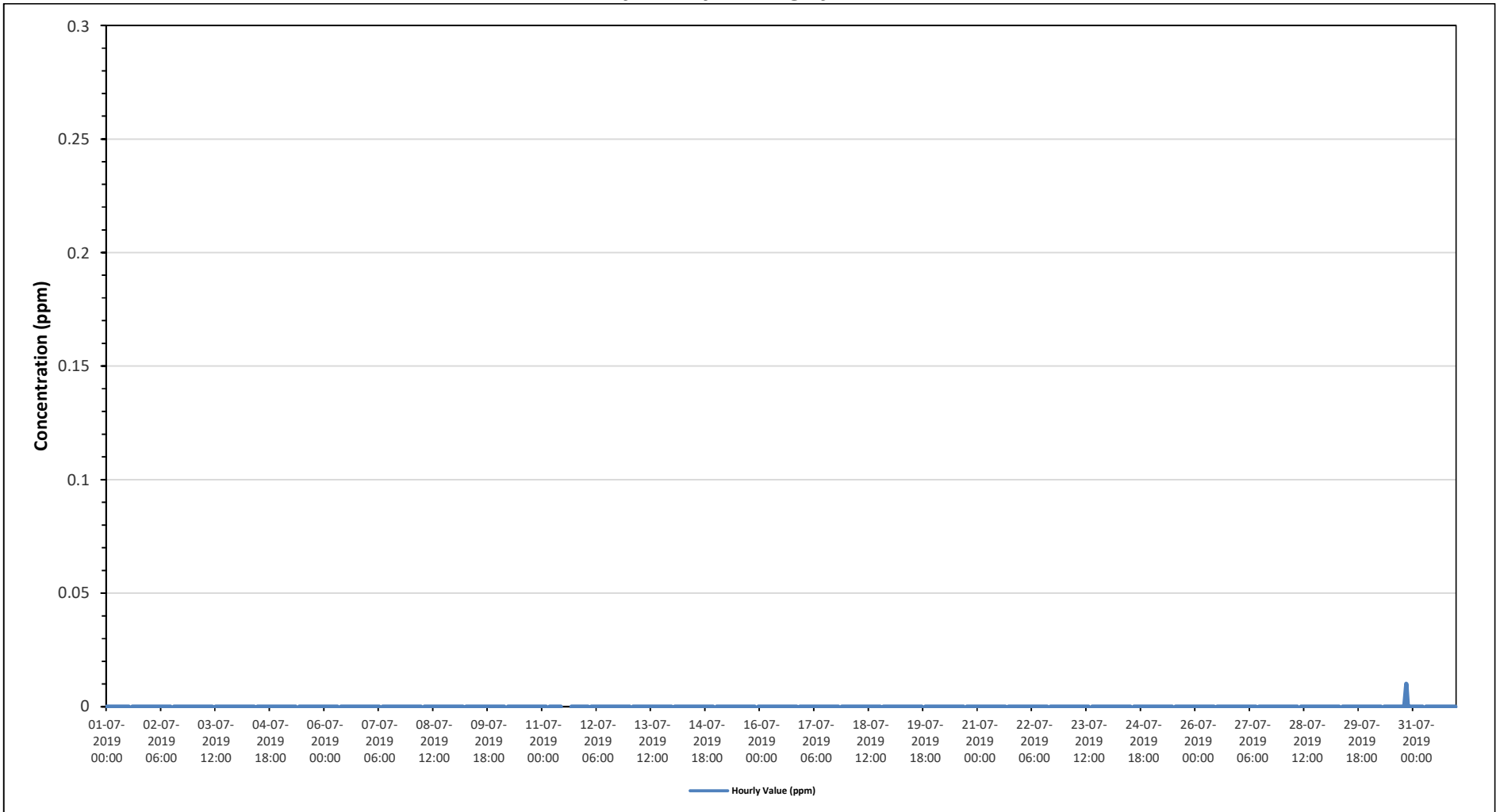
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% Icon Classes (ppm)	43	57	205	364	0	0
0-2	43	57	205	364	0	0
5-10						
10-20						
>20.0						

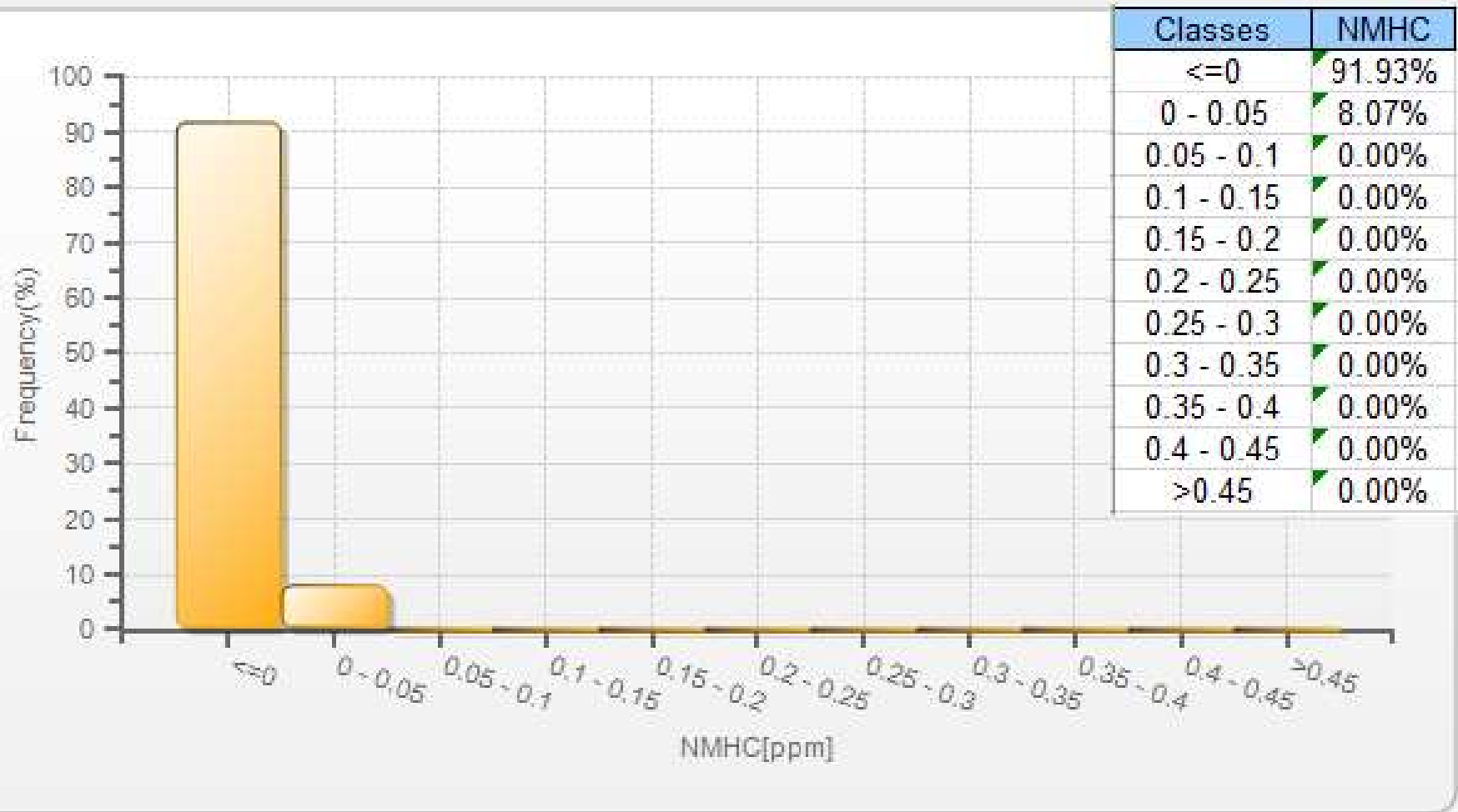




**Timeseries Chart of Hourly Average for NMHC - St. Lina Site**

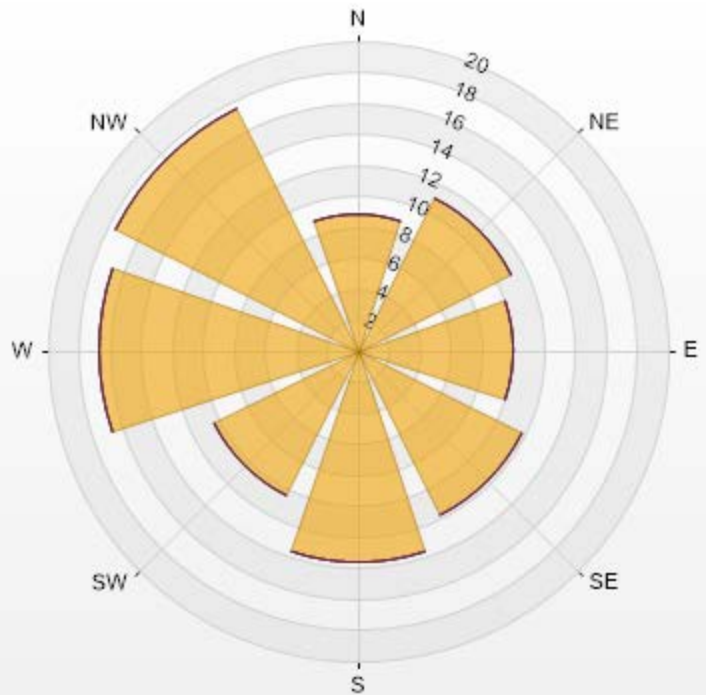


NMHC[ppm] Histogram: St. Lina Monthly: 07-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NMHC[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 83.87% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	8.81	0	0	0	0	8.81
NE	11.06	0	0	0	0	11.06
E	10.1	0	0	0	0	10.1
SE	11.86	0	0	0	0	11.86
S	13.62	0	0	0	0	13.62
SW	10.42	0	0	0	0	10.42
W	16.67	0	0	0	0	16.67
NW	17.47	0	0	0	0	17.47
Summary	100	0	0	0	0	100



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% Icon Classes (ppm)	100	0	0	0	0
	0-0.1	0.1-0.2	0.3-0.9	0.9-2	>2.0



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

## Summary of Hourly Averages

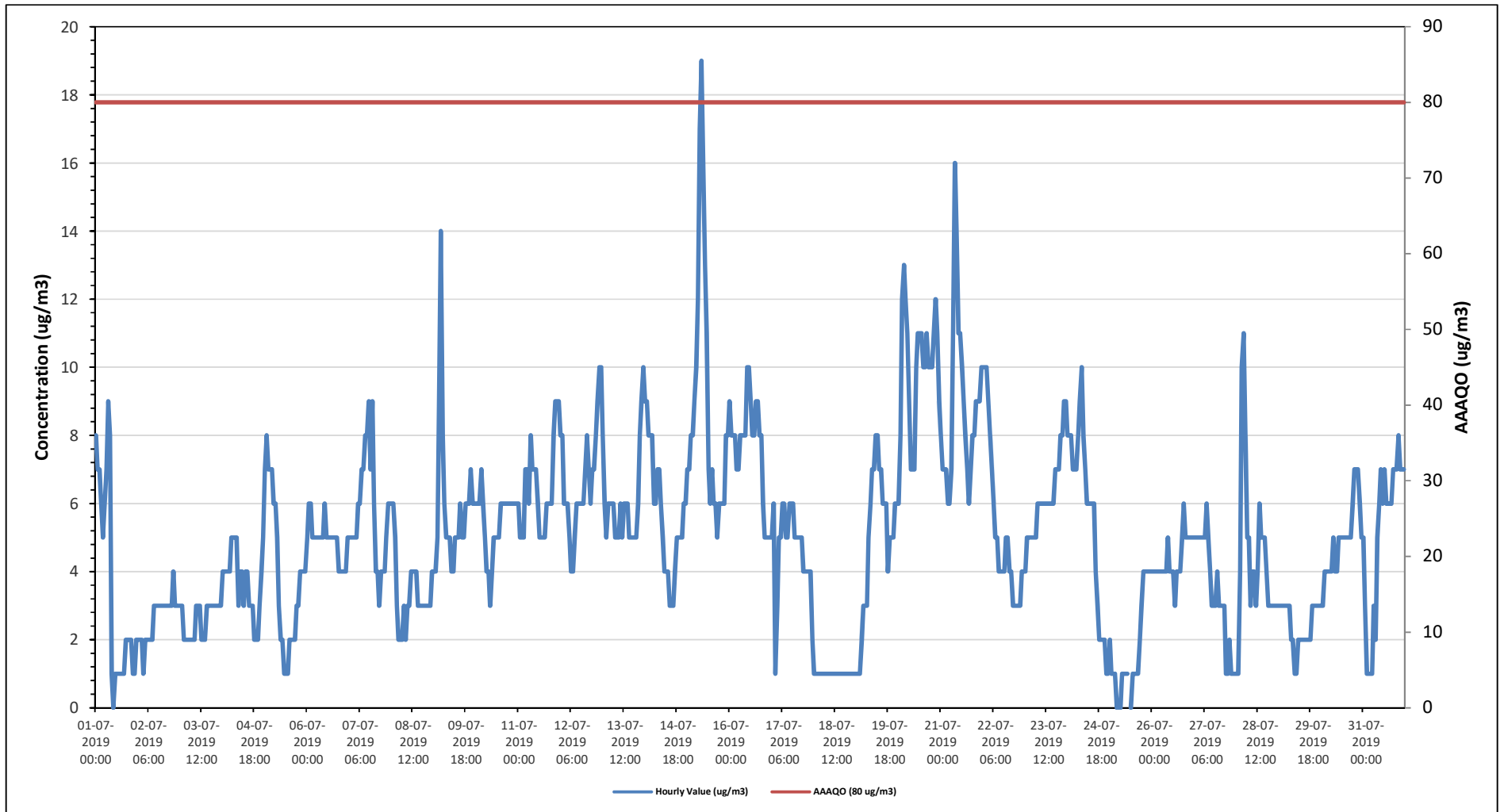
### PARTICULATE MATTER 2.5 (PM<sub>2.5</sub>) in µg/m<sup>3</sup>

Alberta Ambient Air Quality Objectives (AAQO): 1-Hour 80 µg/m <sup>3</sup> , 24-Hour 29 µg/m <sup>3</sup>																												
Number of 1-Hour Exceedences: 0										Number of 24-Hour Exceedences: 0																		
Maximum Hourly Value: 19 µg/m <sup>3</sup> on July 15 at hour 8										Hours in Service: 744																		
Maximum Daily Value: 10 µg/m <sup>3</sup> on July 20										Hours of Data: 743																		
Minimum Hourly Value: 0 µg/m <sup>3</sup> on July 1 at hour 10										Hours of Missing Data: 0																		
Minimum Daily Value: 1 µg/m <sup>3</sup> on July 18										Hours of Calibration: 1																		
Monthly Average: 5.0 µg/m <sup>3</sup>										Operational Uptime: 100.0																		
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	8	7	7	6	5	6	7	9	8	1	0	1	1	1	1	1	1	2	2	2	2	1	1	2	0	9	3.4	
Jul 2	2	2	2	1	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	4	3	3	3	1	4	2.6	
Jul 3	3	3	2	2	2	2	2	2	2	3	3	3	2	2	2	3	3	3	3	3	3	3	3	3	2	3	2.6	
Jul 4	4	4	4	4	4	5	5	5	5	3	4	4	3	4	4	3	3	3	2	2	2	3	4	5	2	5	3.7	
Jul 5	7	8	7	7	7	6	6	5	3	2	2	1	1	1	2	2	2	2	3	3	4	4	4	4	1	8	3.9	
Jul 6	5	6	6	5	5	5	5	5	5	5	6	5	5	5	5	5	5	5	4	4	4	4	4	5	4	6	4.9	
Jul 7	5	5	5	5	5	6	6	7	7	8	8	9	7	9	6	4	4	3	4	4	4	4	5	6	6	3	9	5.8
Jul 8	6	6	5	3	2	2	2	3	2	3	3	4	4	4	4	3	3	3	3	3	3	3	3	3	4	2	6	3.4
Jul 9	4	4	5	9	14	8	6	5	5	5	4	4	5	5	6	5	5	5	6	6	6	6	7	6	6	4	14	5.9
Jul 10	6	6	6	7	6	5	4	4	3	4	5	5	5	5	6	6	6	6	6	6	6	6	6	6	3	7	5.5	
Jul 11	6	5	5	5	7	7	6	8	7	7	7	6	5	5	5	6	6	6	6	6	6	8	9	9	5	9	6.5	
Jul 12	8	8	6	6	6	5	4	4	5	6	6	6	6	6	7	8	7	6	7	7	8	9	10	10	4	10	6.7	
Jul 13	8	6	5	6	6	6	6	5	5	5	6	6	6	6	6	5	5	5	5	5	6	8	9	10	5	10	6.0	
Jul 14	9	9	8	8	8	6	6	7	7	6	5	4	4	4	3	3	3	4	5	5	5	6	6	6	3	9	5.7	
Jul 15	7	7	8	8	9	10	12	17	19	16	13	11	7	6	7	6	5	6	6	6	6	6	8	8	5	19	8.9	
Jul 16	9	8	8	8	7	7	8	8	8	8	10	10	9	8	8	9	9	8	8	8	6	5	5	5	5	5	10	7.7
Jul 17	5	6	1	3	5	5	6	6	5	5	6	6	6	5	5	5	5	5	4	4	4	4	4	2	1	6	4.7	
Jul 18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Jul 19	1	1	1	2	3	3	3	5	6	7	7	8	8	7	7	6	6	6	4	5	5	5	6	6	1	8	4.9	
Jul 20	6	8	12	13	12	11	9	7	7	7	10	11	11	11	10	10	11	10	10	10	11	12	11	9	6	13	10.0	
Jul 21	8	7	7	7	6	6	7	11	16	14	11	11	10	9	8	7	6	7	8	8	9	9	9	10	6	16	8.8	
Jul 22	10	10	10	9	8	7	6	5	5	4	4	4	4	5	5	4	4	3	3	3	3	3	4	4	3	10	5.3	
Jul 23	4	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	7	7	7	8	8	9	9	4	9	6.2	
Jul 24	8	8	8	7	7	8	9	10	8	7	6	6	6	6	6	4	3	2	2	2	2	1	1	1	1	10	5.6	
Jul 25	2	1	1	1	0	0	0	1	1	1	1	C	0	1	1	1	2	3	4	4	4	4	4	0	4	4	1.7	
Jul 26	4	4	4	4	4	4	4	4	4	5	4	4	4	3	4	4	4	5	6	5	5	5	5	5	3	6	4.3	
Jul 27	5	5	5	5	5	5	5	6	5	4	3	3	3	4	3	3	3	3	1	1	2	1	1	1	1	6	3.4	
Jul 28	1	1	4	10	11	8	5	5	3	4	4	3	4	6	5	5	5	4	3	3	3	3	3	3	1	11	4.4	
Jul 29	3	3	3	3	3	3	3	2	2	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	1	3	2.4	
Jul 30	3	3	4	4	4	4	4	5	4	4	5	5	5	5	5	5	5	5	6	7	7	7	6	5	3	7	4.9	
Jul 31	5	3	1	1	1	1	3	2	5	6	7	6	7	6	6	6	7	7	7	7	8	7	7	7	1	8	5.1	
Diurnal Maximum	10	10	12	13	14	11	12	17	19	16	13	11	11	11	10	10	11	10	10	10	11	12	11	10				
Daiurnal Average	5.3	5.2	5.0	5.3	5.5	5.1	5.0	5.5	5.6	5.2	5.2	5.2	4.8	4.9	4.8	4.6	4.5	4.5	4.5	4.5	4.5	4.9	5.0	5.2	5.2			
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span							
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure							
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service							

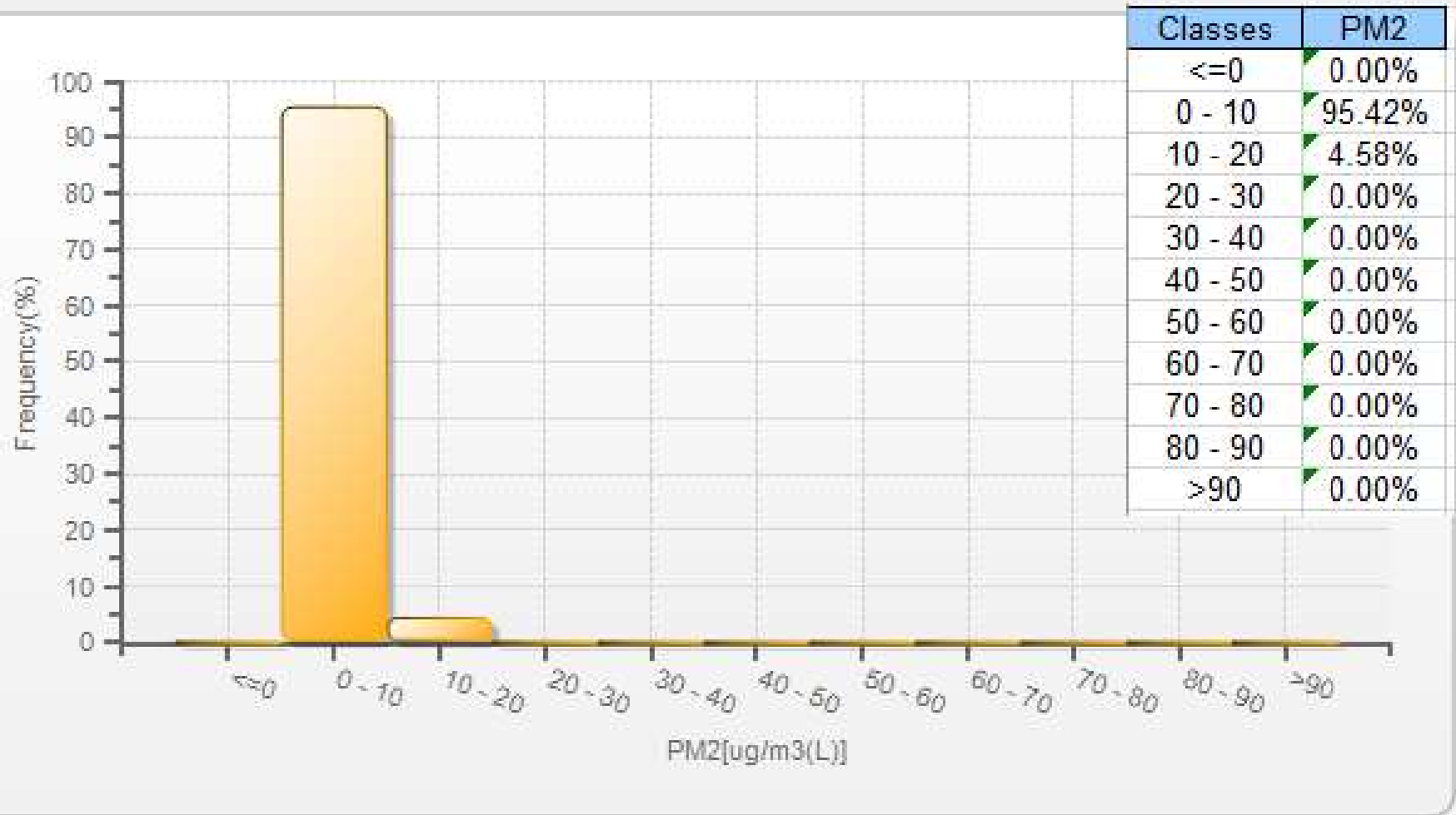
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for PM2.5 - St. Lina Site



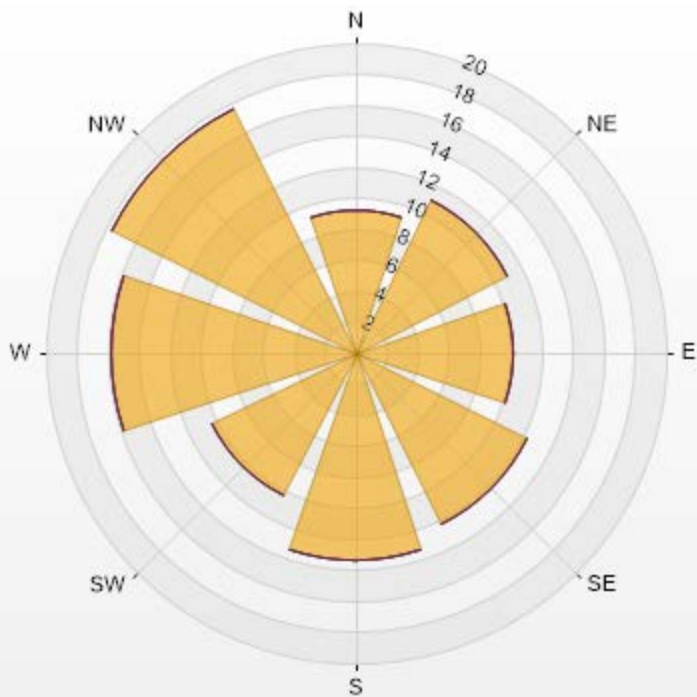
PM2[ug/m3(L)] Histogram: St. Lina Monthly: 07-2019 1 Hr.





Wind: St. Lina Poll.: St. Lina-PM2[ug/m3(L)] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 85.75% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	9.25	0	0	0	0	9.25
NE	10.97	0	0	0	0	10.97
E	10.19	0	0	0	0	10.19
SE	12.38	0	0	0	0	12.38
S	13.48	0	0	0	0	13.48
SW	10.34	0	0	0	0	10.34
W	15.83	0	0	0	0	15.83
NW	17.55	0	0	0	0	17.55
Summary	100	0	0	0	0	100



LICA-201907-Revision 1



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

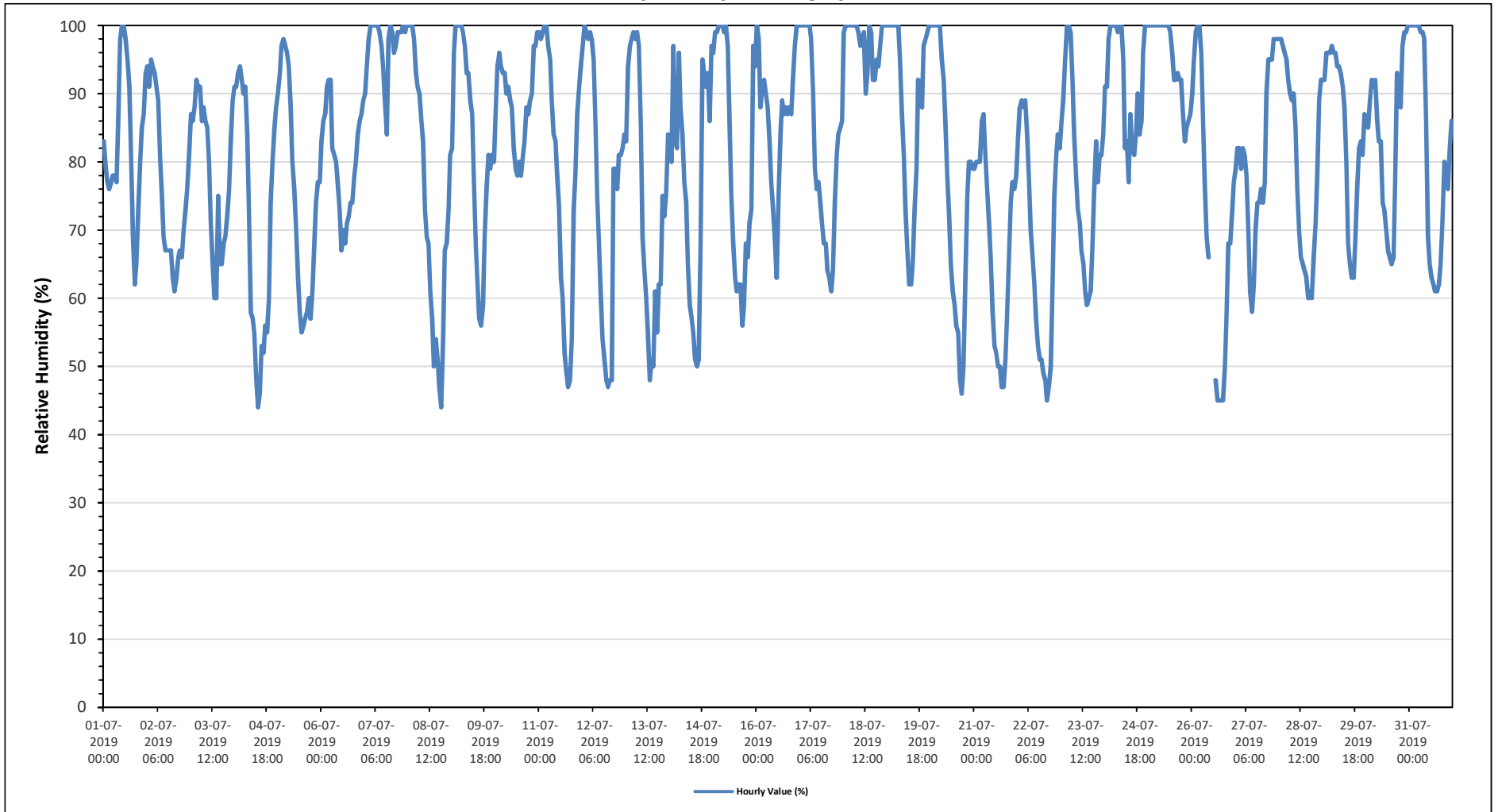
Maximum Hourly Value:	100 %	on July 1 at hour 10	Hours in Service:	744
Maximum Daily Value:	97.7 %	on July 18	Hours of Data:	741
Minimum Hourly Value:	44 %	on July 4 at hour 13	Hours of Missing Data:	3
Minimum Daily Value:	67.6 %	on July 21	Hours of Calibration:	0
Monthly Average:	80.9 %		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	83	79	77	76	77	78	78	77	86	98	100	100	98	95	91	81	69	62	65	73	80	85	87	93	62	100	83	
Jul 2	94	91	95	94	93	91	89	81	75	69	67	67	67	63	61	63	66	67	66	70	73	76	81	61	95	76		
Jul 3	87	86	88	92	91	91	86	88	86	85	80	71	65	60	60	75	65	65	68	69	72	76	83	89	60	92	78	
Jul 4	91	91	93	94	92	90	91	84	73	58	57	55	48	44	46	53	52	56	55	60	74	80	85	88	44	94	71	
Jul 5	90	93	97	98	97	96	94	88	80	76	70	63	58	55	56	57	58	60	57	61	68	74	77	77	55	98	75	
Jul 6	83	86	87	91	92	92	82	81	80	77	73	67	70	68	71	72	74	74	78	80	84	86	87	89	67	92	80	
Jul 7	90	94	98	100	100	100	100	100	99	97	94	89	84	98	100	99	96	97	99	99	99	100	99	100	84	100	97	
Jul 8	100	100	100	98	93	91	90	86	83	73	69	68	61	57	50	54	51	47	44	54	67	68	73	81	44	100	73	
Jul 9	82	96	100	100	100	100	99	97	93	93	89	87	78	68	62	57	56	59	69	76	81	79	81	80	56	100	83	
Jul 10	87	94	96	94	93	93	90	91	89	88	82	79	78	80	78	81	83	88	87	89	90	97	97	99	78	99	88	
Jul 11	99	98	99	100	100	97	95	89	84	83	78	73	63	60	52	49	47	48	54	73	78	87	91	94	47	100	79	
Jul 12	97	100	99	98	99	98	95	86	75	68	60	54	51	48	47	48	48	79	79	76	81	81	82	84	47	100	76	
Jul 13	83	94	97	98	99	98	99	97	85	69	64	60	55	48	51	50	61	55	62	62	75	72	75	84	48	99	75	
Jul 14	82	80	97	83	82	96	88	84	77	74	65	59	57	55	51	50	51	68	95	93	91	93	86	97	50	97	77	
Jul 15	96	99	99	100	100	100	99	100	97	85	75	68	63	61	62	62	56	59	68	66	71	73	97	94	56	100	81	
Jul 16	100	98	88	91	92	90	88	83	77	73	68	63	75	84	89	87	88	87	88	87	92	97	100	100	63	100	87	
Jul 17	100	100	100	100	100	100	98	90	79	76	77	74	71	68	68	64	63	61	64	74	81	84	85	86	61	100	82	
Jul 18	99	100	100	100	100	100	100	100	99	97	98	99	90	93	100	99	92	92	95	94	97	100	100	100	90	100	98	
Jul 19	100	100	100	100	100	100	100	95	87	81	73	67	62	62	65	73	79	92	90	88	97	98	99	100	62	100	88	
Jul 20	100	100	100	100	100	100	95	92	86	78	72	65	61	59	56	55	48	46	50	63	75	80	80	79	46	100	77	
Jul 21	79	80	80	80	86	87	81	76	71	66	58	53	52	50	50	47	47	51	57	66	74	77	76	78	47	87	68	
Jul 22	83	88	89	88	89	84	77	70	66	62	57	53	51	51	49	48	45	47	50	61	75	81	84	82	45	89	68	
Jul 23	86	89	95	100	100	99	92	84	78	73	71	67	65	61	59	60	61	67	76	83	77	81	81	84	59	100	79	
Jul 24	91	91	98	100	100	100	100	100	99	100	100	95	82	83	77	87	82	81	84	90	84	86	96	100	100	77	100	92
Jul 25	100	100	100	100	100	100	100	100	100	100	100	100	100	99	96	92	92	93	92	92	87	83	85	86	87	83	100	95
Jul 26	90	95	99	100	100	96	86	77	69	66	Y	Y	Y	48	45	45	45	45	50	57	68	68	72	77	45	100	71	
Jul 27	79	82	82	79	82	81	78	69	61	58	62	70	74	74	76	74	77	90	95	95	95	98	98	98	58	98	80	
Jul 28	98	98	97	96	95	92	90	89	90	85	76	70	66	65	64	63	60	61	60	66	71	78	89	92	60	98	80	
Jul 29	92	92	96	96	96	97	96	96	94	94	93	91	88	80	68	65	63	63	68	76	82	83	81	87	63	97	85	
Jul 30	86	85	89	92	91	92	86	83	83	74	73	70	67	66	65	66	77	93	89	88	97	99	99	100	65	100	84	
Jul 31	100	100	100	100	100	100	99	99	98	86	69	65	63	62	61	61	62	65	71	80	77	76	82	86	61	100	82	
Diurnal Maximum	100	100	100	100	100	100	100	100	100	100	100	100	100	99	98	100	99	96	97	99	99	99	100	100	100			
Diurnal Average	91.2	92.9	94.7	94.8	94.8	94.5	91.6	88.1	83.9	79.4	75.5	71.6	68.8	66.5	65.6	65.5	64.9	68.4	72.0	75.7	80.9	84.0	86.7	89.2				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for RH - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

**St. Lina Site - July 2019**

### Summary of Hourly Averages

#### BAROMETRIC PRESSURE (BP) in millibar

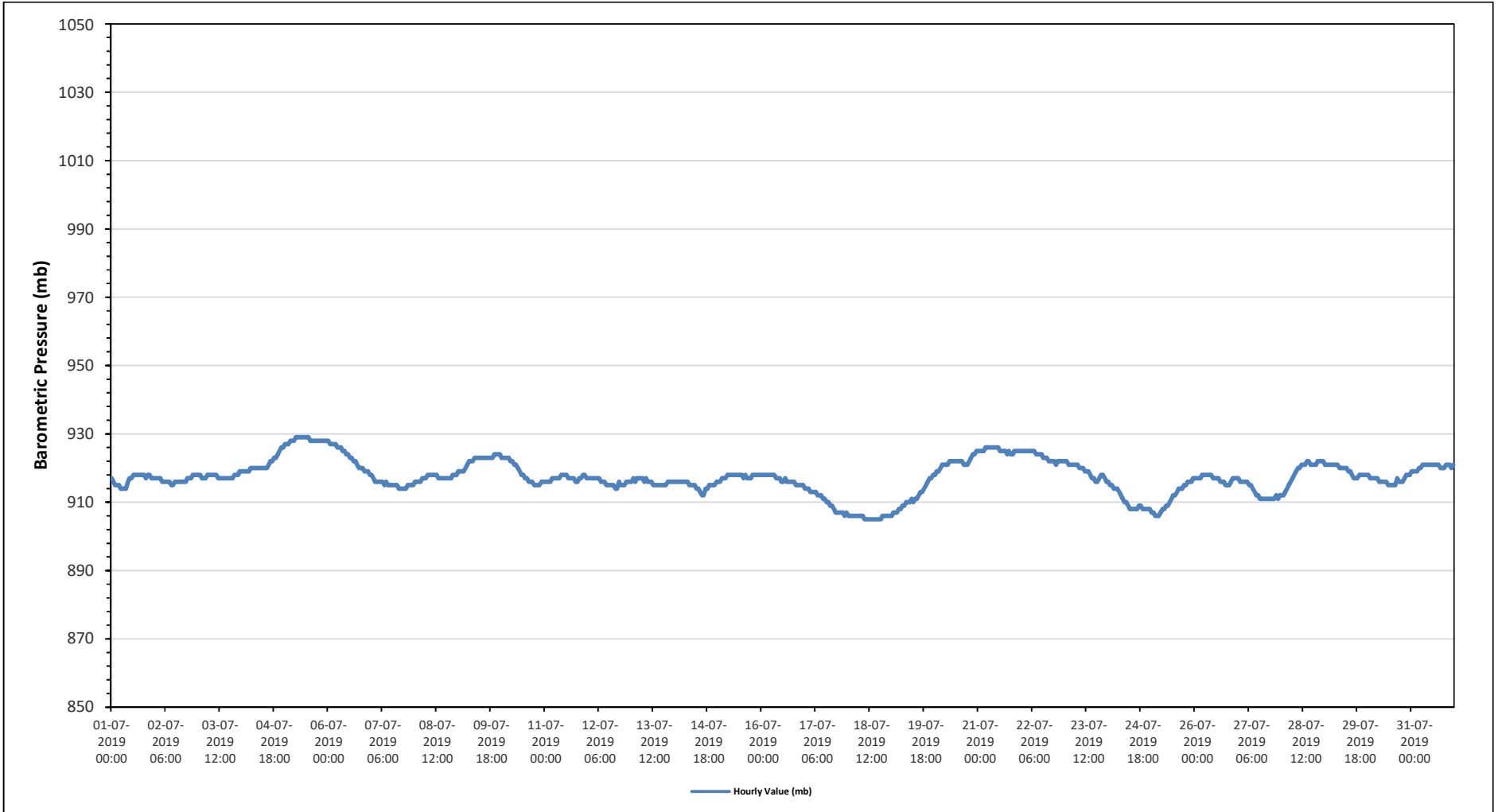
Maximum Hourly Value:	929 mb on July 5 at hour 6	Hours in Service:	744
Maximum Daily Value:	928 mb on July 5	Hours of Data:	744
Minimum Hourly Value:	905 mb on July 18 at hour 9	Hours of Missing Data:	0
Minimum Daily Value:	906 mb on July 18	Hours of Calibration:	0
Monthly Average:	917 mb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Jul 1	917	916	915	915	915	914	914	914	914	916	917	917	918	918	918	918	918	918	918	917	918	918	917	917	914	918	917	
Jul 2	917	917	917	917	916	916	916	916	916	915	915	916	916	916	916	916	916	916	917	917	917	918	918	918	918	915	918	916
Jul 3	918	918	917	917	917	918	918	918	918	918	918	917	917	917	917	917	917	917	917	917	917	918	918	918	919	917	919	918
Jul 4	919	919	919	919	919	920	920	920	920	920	920	920	920	920	920	921	922	922	923	923	924	925	926	926	919	926	921	
Jul 5	927	927	927	928	928	928	929	929	929	929	929	929	929	928	928	928	928	928	928	928	928	928	928	928	927	929	928	
Jul 6	928	927	927	927	927	926	926	926	925	924	924	923	923	922	922	921	920	920	920	919	919	919	918	918	918	928	923	
Jul 7	918	917	916	916	916	916	916	915	916	915	915	915	915	915	914	914	914	914	914	914	915	915	915	914	918	915	915	
Jul 8	916	916	916	916	917	917	917	918	918	918	918	918	918	917	917	917	917	917	917	917	917	918	918	918	916	918	917	
Jul 9	919	919	919	919	920	921	922	922	922	923	923	923	923	923	923	923	923	923	923	923	924	924	924	924	919	924	922	
Jul 10	923	923	923	923	923	922	922	921	921	920	919	918	918	917	916	916	916	916	915	915	915	915	916	916	915	923	919	
Jul 11	916	916	916	916	917	917	917	917	917	918	918	918	918	917	917	917	916	916	917	917	918	918	917	916	918	917	916	
Jul 12	917	917	917	917	917	917	917	916	916	916	915	915	915	915	915	914	914	916	915	915	915	916	916	916	914	917	916	
Jul 13	916	917	916	917	917	917	917	916	917	916	916	915	915	915	915	915	915	915	915	915	916	916	916	916	915	917	916	
Jul 14	916	916	916	916	916	916	916	916	915	915	915	915	914	914	913	912	912	914	914	915	915	915	915	916	912	916	915	
Jul 15	916	916	917	917	917	918	918	918	918	918	918	918	918	918	917	918	917	917	917	918	918	918	918	918	916	918	918	
Jul 16	918	918	918	918	918	918	918	918	917	917	916	916	917	916	916	916	916	916	915	915	915	915	915	915	915	918	917	
Jul 17	914	914	914	913	913	913	913	912	912	912	911	911	910	910	909	909	908	907	907	907	907	906	907	906	906	914	910	
Jul 18	906	906	906	906	906	906	906	906	906	905	905	905	905	905	905	905	905	905	905	905	906	906	906	906	905	906	906	
Jul 19	906	907	907	907	908	908	909	909	910	910	910	911	910	911	911	912	913	913	914	915	916	917	917	918	906	918	911	
Jul 20	918	919	919	920	921	921	921	921	922	922	922	922	922	922	922	921	921	921	922	922	923	924	924	925	918	925	922	
Jul 21	925	925	925	925	926	926	926	926	926	926	926	926	925	925	925	924	925	924	924	924	925	925	925	925	924	926	925	
Jul 22	925	925	925	925	925	925	925	925	924	924	924	924	923	923	923	922	922	922	922	921	922	922	922	922	921	925	923	
Jul 23	922	922	921	921	921	921	921	921	920	920	920	919	919	919	918	917	916	916	917	918	918	917	916	916	916	922	919	
Jul 24	916	915	915	914	914	914	913	912	911	910	910	909	908	908	908	908	909	909	908	908	908	908	908	908	908	916	910	
Jul 25	907	907	906	906	906	907	908	908	909	910	910	911	912	912	913	914	914	914	915	915	916	916	916	917	906	917	911	
Jul 26	917	917	917	917	918	918	918	918	918	918	917	917	917	917	916	916	916	915	915	915	916	917	917	917	915	918	917	
Jul 27	917	916	916	916	916	916	915	915	914	913	912	912	911	911	911	911	911	911	911	911	911	912	911	912	911	917	913	
Jul 28	912	912	913	914	915	916	917	918	919	920	920	921	921	922	922	921	921	921	921	921	922	922	922	922	912	922	919	
Jul 29	921	921	921	921	921	921	921	921	920	920	920	920	920	919	919	918	917	917	917	918	918	918	918	918	917	921	919	
Jul 30	918	917	917	917	917	916	916	916	916	916	915	915	915	915	915	917	916	916	916	916	917	918	918	918	915	918	916	
Jul 31	919	919	919	919	920	920	921	921	921	921	921	921	921	921	921	920	920	920	920	921	921	921	920	921	919	921	920	
Diurnal Maximum	928	927	927	928	928	928	929	929	929	929	929	929	929	928	928	928	928	928	928	928	928	928	928	928	918	928	928	
Diurnal Average	918	917	917	917	918	918	918	918	918	918	917	917	917	917	917	917	917	917	917	917	917	917	918	918	918	918	918	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for BP - St. Lina Site**





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

## Summary of Hourly Averages

### AMBIENT TEMPERATURE (AT) in Degree Celsius

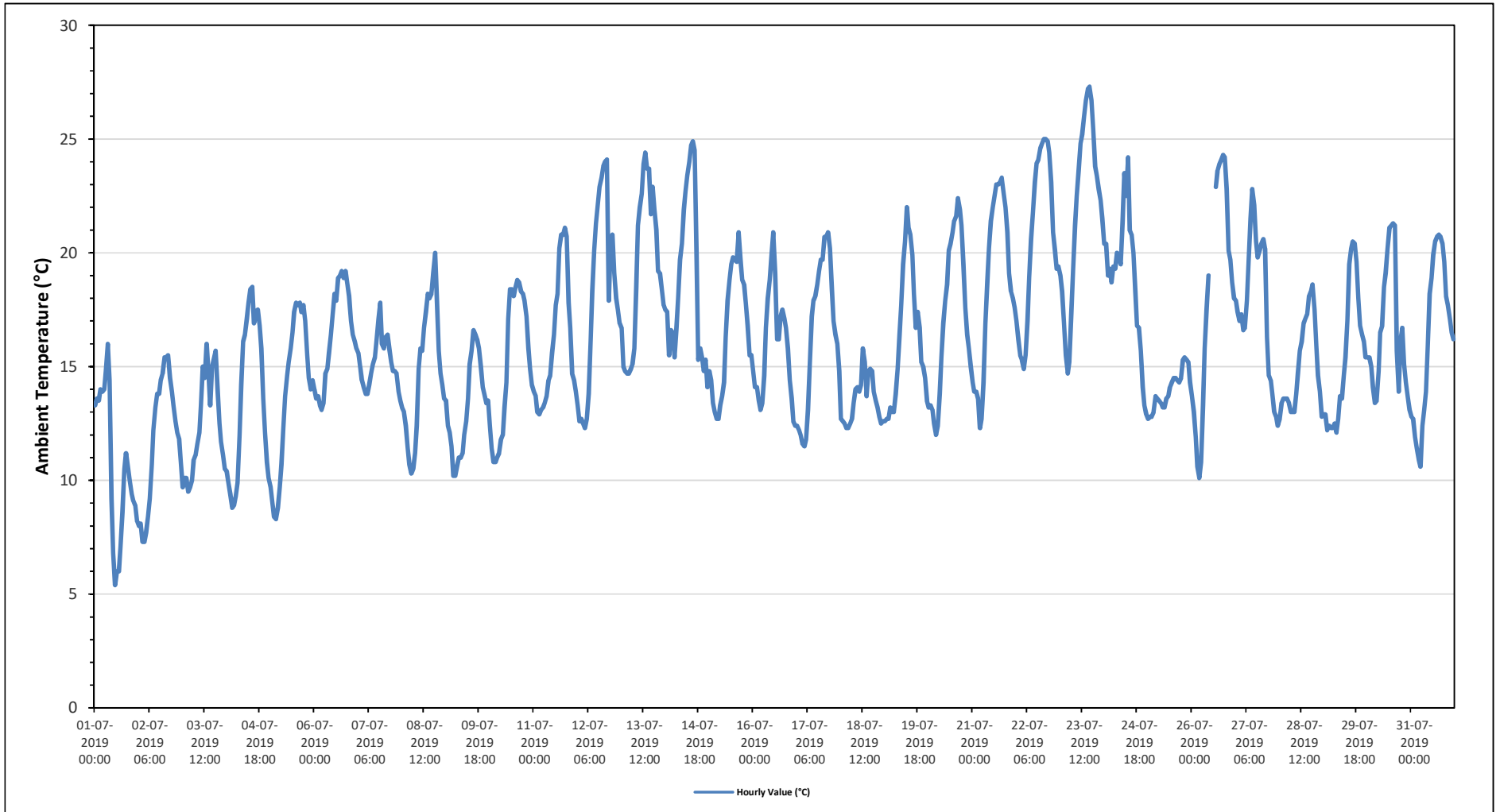
Maximum Hourly Value:	27.3 °C	on July 23 at hour 16	Hours in Service:	744
Maximum Daily Value:	21.9 °C	on July 23	Hours of Data:	741
Minimum Hourly Value:	5.4 °C	on July 1 at hour 11	Hours of Missing Data:	3
Minimum Daily Value:	10.6 °C	on July 1	Hours of Calibration:	0
Monthly Average:	16.1 °C		Operational Uptime:	99.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	13.3	13.6	13.5	14.0	13.9	14.0	14.8	16.0	14.4	9.2	6.8	5.4	6.0	6.0	7.1	8.6	10.5	11.2	10.6	10.0	9.4	9.1	8.9	8.2	5.4	16.0	10.6
Jul 2	8.0	8.1	7.3	7.3	7.7	8.4	9.2	10.7	12.2	13.2	13.8	13.8	14.4	14.7	15.4	15.4	15.5	14.5	13.9	13.3	12.6	12.1	11.8	10.8	7.3	15.5	11.8
Jul 3	9.7	10.1	10.1	9.5	9.7	10.0	10.9	11.1	11.6	12.1	13.3	15.0	14.5	16.0	14.9	13.3	15.0	15.3	15.7	14.0	12.5	11.7	11.1	10.5	9.5	16.0	12.4
Jul 4	10.4	9.9	9.4	8.8	8.9	9.3	9.9	12.0	14.2	16.1	16.4	17.1	17.8	18.4	18.5	16.9	17.2	17.5	16.8	15.8	13.6	12.1	10.8	10.1	8.8	18.5	13.7
Jul 5	9.7	9.0	8.4	8.3	8.8	9.7	10.7	12.3	13.7	14.6	15.2	15.8	16.5	17.4	17.8	17.7	17.8	17.4	17.7	17.0	15.5	14.5	14.0	14.4	8.3	17.8	13.9
Jul 6	14.0	13.6	13.7	13.3	13.1	13.4	14.7	14.9	15.6	16.4	17.3	18.2	17.9	18.9	19.0	19.2	18.9	19.2	18.6	18.1	17.0	16.4	16.1	15.8	13.1	19.2	16.4
Jul 7	15.6	15.0	14.4	14.1	13.8	13.8	14.2	14.7	15.1	15.4	16.1	17.1	17.8	16.0	15.8	16.3	16.4	15.8	15.2	14.8	14.8	14.7	13.9	13.5	13.5	17.8	15.2
Jul 8	13.2	13.0	12.4	11.4	10.7	10.3	10.5	11.2	12.4	14.9	15.8	15.7	16.7	17.4	18.2	18.0	18.2	19.1	20.0	18.0	15.7	14.7	14.2	13.6	10.3	20.0	14.8
Jul 9	13.5	12.4	12.1	11.5	10.2	10.6	11.0	11.0	11.0	11.2	12.0	12.6	13.6	15.1	15.7	16.6	16.4	16.2	15.8	15.0	14.1	13.8	13.4	13.5	10.2	16.6	13.2
Jul 10	12.4	11.4	10.8	10.8	11.0	11.2	11.8	12.0	13.2	14.3	17.1	18.4	18.4	18.1	18.5	18.8	18.7	18.3	18.2	17.9	17.2	15.8	14.9	14.2	10.8	18.8	15.1
Jul 11	13.9	13.7	13.0	12.9	13.1	13.2	13.4	13.7	14.4	14.6	15.6	16.4	17.7	18.2	20.2	20.8	20.8	21.1	20.7	17.8	16.7	14.7	14.4	13.9	12.9	21.1	16.0
Jul 12	13.3	12.6	12.7	12.5	12.3	12.7	13.8	16.1	18.3	20.1	21.3	22.1	22.9	23.3	23.8	24.0	24.1	17.9	20.6	20.8	19.1	18.0	17.5	16.9	12.3	24.1	18.2
Jul 13	16.7	15.0	14.8	14.7	14.7	14.9	15.1	15.8	18.5	21.2	22.0	22.6	23.9	24.4	23.7	23.7	21.7	22.9	21.9	21.0	19.2	19.1	18.4	17.7	14.7	24.4	19.3
Jul 14	17.5	17.4	15.5	16.6	16.5	15.4	16.7	18.0	19.7	20.4	21.9	22.7	23.4	24.0	24.7	24.9	24.5	19.9	15.3	15.8	15.4	14.8	15.3	14.1	14.1	24.9	18.8
Jul 15	14.8	14.4	13.4	13.0	12.7	12.7	13.3	13.7	14.3	16.3	17.9	18.8	19.5	19.8	19.7	19.6	20.9	19.8	18.8	18.6	17.8	16.8	15.5	15.5	12.7	20.9	16.6
Jul 16	14.8	14.1	14.1	13.5	13.1	13.4	14.6	16.7	18.0	18.8	19.9	20.9	19.1	16.2	16.2	17.2	17.5	17.1	16.7	15.8	14.4	13.6	12.6	12.4	12.4	20.9	15.9
Jul 17	12.4	12.2	12.0	11.6	11.5	11.8	13.1	15.2	17.2	17.9	18.1	18.6	19.2	19.7	20.7	20.7	20.9	20.2	18.4	17.0	16.4	16.0	14.8	11.5	20.9	16.5	
Jul 18	12.7	12.6	12.5	12.3	12.3	12.5	12.7	13.4	14.0	14.1	13.9	14.2	15.8	15.2	13.7	14.8	14.9	14.8	13.9	13.5	13.2	12.8	12.5	12.6	12.3	15.8	13.5
Jul 19	12.6	12.7	12.7	13.2	13.0	13.0	13.8	14.9	16.4	17.7	19.5	20.5	22.0	21.1	20.8	19.9	18.2	16.7	17.4	16.7	15.2	15.0	14.5	13.5	12.6	22.0	16.3
Jul 20	13.2	13.3	13.1	12.5	12.0	12.4	13.8	15.4	16.9	17.9	18.6	20.1	20.4	20.9	21.4	21.6	22.4	21.9	21.2	19.5	17.6	16.4	15.8	15.0	12.0	22.4	17.2
Jul 21	14.3	13.9	13.9	13.6	12.3	12.7	14.3	16.9	18.7	20.2	21.4	22.0	22.5	23.0	23.0	23.1	23.3	22.6	22.0	20.9	19.1	18.3	18.0	17.6	12.3	23.3	18.7
Jul 22	17.0	16.2	15.5	15.3	14.9	15.5	17.0	18.9	20.6	21.8	23.1	23.9	24.1	24.6	24.8	25.0	25.0	24.9	24.4	23.1	20.9	20.1	19.3	19.4	14.9	25.0	20.6
Jul 23	19.0	18.3	16.9	15.5	14.7	15.2	17.3	19.3	21.2	22.5	23.6	24.8	25.2	26.0	26.7	27.2	27.3	26.7	25.4	23.8	23.4	22.8	22.3	21.5	14.7	27.3	21.9
Jul 24	20.4	20.4	19.0	19.3	18.7	19.4	19.3	20.0	19.8	19.5	21.4	23.5	22.5	24.2	21.0	20.8	20.0	18.3	16.8	16.7	15.7	14.1	13.3	12.9	12.9	24.2	19.0
Jul 25	12.7	12.8	12.8	13.0	13.7	13.6	13.5	13.4	13.2	13.2	13.6	13.7	14.1	14.3	14.5	14.5	14.4	14.3	14.5	15.3	15.4	15.3	15.2	14.3	12.7	15.4	14.0
Jul 26	13.7	13.0	11.9	10.6	10.1	10.8	13.3	15.8	17.5	19.0	Y	Y	Y	22.9	23.6	23.9	24.1	24.3	24.2	22.8	20.1	19.7	18.7	18.0	10.1	24.3	18.0
Jul 27	17.9	17.4	17.0	17.3	16.6	16.7	17.9	19.7	21.5	22.8	22.1	20.5	19.8	20.1	20.4	20.6	20.2	16.3	14.6	14.4	13.8	13.0	12.8	12.4	12.4	22.8	17.7
Jul 28	12.7	13.4	13.6	13.6	13.6	13.4	13.0	13.0	13.8	14.7	15.7	16.1	16.9	17.1	17.3	18.1	18.3	18.6	17.5	15.9	14.6	13.9	12.8	12.7	18.6	15.0	15.0
Jul 29	12.9	12.9	12.2	12.4	12.3	12.3	12.5	12.1	12.7	13.7	13.6	14.6	15.4	17.0	19.5	20.2	20.5	20.4	19.6	18.0	16.8	16.4	16.1	15.4	12.1	20.5	15.4
Jul 30	15.4	15.4	15.0	14.1	13.4	13.5	14.8	16.5	16.8	18.5	19.1	20.2	21.1	21.2	21.3	21.2	15.7	13.9	16.1	16.7	15.1	14.3	13.7	13.1	13.1	21.3	16.5
Jul 31	12.8	12.7	11.9	11.4	10.9	10.6	12.4	13.1	13.9	15.9	18.2	18.9	19.9	20.5	20.7	20.8	20.7	20.4	19.6	18.1	17.7	17.1	16.5	16.2	10.6	20.8	16.3
Diurnal Maximum	20.4	20.4	19.0	19.3	18.7	19.4	19.3	20.0	21.5	22.8	23.6	24.8	25.2	26.0	26.7	27.2	27.3	26.7	25.4	23.8	23.4	22.8	22.3	21.5			
Diurnal Average	13.9	13.6	13.1	12.8	12.6	12.8	13.6	14.8	15.8	16.7	17.4	18.1	18.6	19.1	19.3	19.4	19.3	18.6	18.2	17.4	16.2	15.4	14.9	14.3			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for AT - St. Lina Site**







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Averages

#### STATION TEMPERATURE (ST) in Degree Celsius

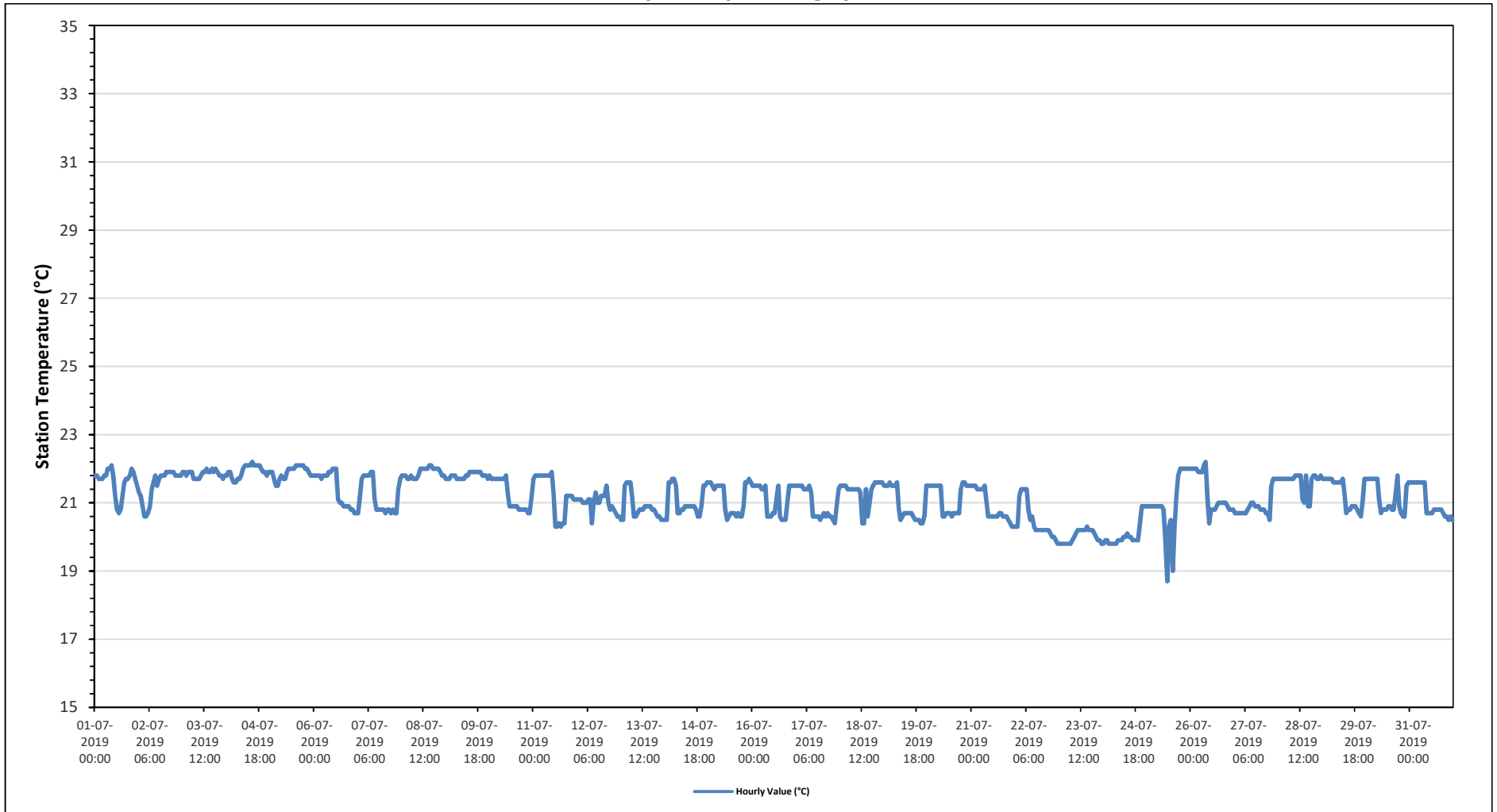
Maximum Hourly Value:	22.2 °C	on July 4 at hour 14	Hours in Service:	744
Maximum Daily Value:	21.9 °C	on July 4	Hours of Data:	744
Minimum Hourly Value:	18.7 °C	on July 25 at hour 11	Hours of Missing Data:	0
Minimum Daily Value:	20.0 °C	on July 23	Hours of Calibration:	0
Monthly Average:	21.2 °C		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23			
Jul 1	21.8	21.8	21.7	21.7	21.7	21.8	21.8	22.0	22.0	22.1	21.8	21.2	20.8	20.7	20.8	21.2	21.6	21.7	21.7	21.8	22.0	21.9	21.7	21.5	20.7	22.1	21.6			
Jul 2	21.3	21.2	20.9	20.6	20.6	20.7	20.9	21.4	21.6	21.8	21.5	21.7	21.8	21.8	21.8	21.9	21.9	21.9	21.9	21.9	21.9	21.8	21.8	21.8	21.8	21.7	21.8	20.6	21.9	21.5
Jul 3	21.9	21.9	21.8	21.9	21.9	21.9	21.9	21.7	21.7	21.7	21.8	21.9	21.9	22.0	21.9	21.9	22.0	21.9	22.0	21.9	22.0	21.9	21.8	21.8	21.7	21.8	21.7	22.0	21.9	
Jul 4	21.8	21.9	21.9	21.7	21.6	21.6	21.7	21.7	21.8	22.0	22.1	22.1	22.1	22.1	22.2	22.1	22.1	22.1	22.1	22.1	22.0	21.9	21.9	21.8	21.9	21.6	22.2	21.9	21.9	
Jul 5	21.9	21.9	21.7	21.5	21.5	21.7	21.8	21.7	21.7	21.9	22.0	22.0	22.0	22.0	22.1	22.1	22.1	22.1	22.1	22.1	22.0	22.0	21.9	21.8	21.8	21.5	22.1	21.9	21.9	
Jul 6	21.8	21.8	21.8	21.8	21.7	21.8	21.8	21.8	21.8	21.9	21.9	22.0	22.0	22.0	21.1	21.0	21.0	20.9	20.9	20.9	20.9	20.8	20.8	20.7	20.7	20.7	22.0	22.0	21.4	
Jul 7	20.7	21.2	21.7	21.8	21.8	21.8	21.8	21.9	21.9	21.1	20.8	20.8	20.8	20.8	20.8	20.7	20.8	20.8	20.7	20.8	20.7	20.8	20.7	21.4	21.7	20.7	21.9	21.2	21.2	
Jul 8	21.8	21.8	21.8	21.7	21.7	21.8	21.7	21.7	21.7	21.8	22.0	22.0	22.0	22.0	22.0	22.1	22.1	22.0	22.0	22.0	22.0	21.9	21.8	21.8	21.7	21.7	22.1	21.9	21.8	
Jul 9	21.7	21.7	21.7	21.8	21.8	21.8	21.7	21.7	21.7	21.7	21.8	21.8	21.8	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.8	21.8	21.8	21.7	21.7	21.9	21.8	21.8	
Jul 10	21.8	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.8	21.2	20.9	20.9	20.9	20.9	20.9	20.8	20.8	20.8	20.8	20.8	20.8	20.7	20.7	21.2	20.7	21.8	21.2	21.2	
Jul 11	21.7	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.9	21.3	20.3	20.3	20.4	20.3	20.4	20.4	21.2	21.2	21.2	21.2	21.1	21.1	20.3	21.9	21.3	21.0	21.0	
Jul 12	21.1	21.1	21.1	21.0	21.0	21.0	21.1	21.1	20.4	21.0	21.3	21.0	21.0	21.2	21.2	21.5	21.0	20.8	20.9	20.8	20.7	20.6	20.6	20.6	20.4	21.5	21.0	21.0	21.0	
Jul 13	20.5	20.5	21.5	21.6	21.6	21.6	21.2	20.6	20.6	20.7	20.8	20.8	20.8	20.9	20.9	20.9	20.8	20.8	20.7	20.6	20.6	20.5	20.5	20.5	20.5	20.5	21.6	20.9	20.9	
Jul 14	20.5	20.5	21.6	21.6	21.7	21.7	21.5	20.7	20.7	20.8	20.8	20.9	20.9	20.9	20.9	20.9	20.9	20.8	20.6	20.6	20.9	21.5	21.5	21.6	20.5	21.7	21.0	21.0	21.0	
Jul 15	21.6	21.6	21.5	21.4	21.5	21.5	21.5	21.5	21.5	20.8	20.5	20.6	20.7	20.7	20.7	20.6	20.7	20.6	20.6	20.6	20.9	21.6	21.6	21.7	21.6	20.5	21.7	21.1	21.1	
Jul 16	21.5	21.5	21.5	21.5	21.5	21.4	21.4	21.5	20.6	20.6	20.6	20.7	21.1	21.5	20.6	20.5	20.5	20.5	21.0	21.5	21.5	21.5	21.5	20.5	21.5	21.1	21.1	21.1		
Jul 17	21.5	21.5	21.5	21.5	21.4	21.4	21.4	21.5	21.3	20.6	20.6	20.6	20.6	20.5	20.6	20.7	20.6	20.7	20.6	20.6	20.5	20.4	20.9	21.4	20.4	21.5	21.0	21.0	21.0	
Jul 18	21.5	21.5	21.5	21.5	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.3	20.4	20.4	21.4	20.6	21.0	21.4	21.5	21.6	21.6	21.6	21.6	20.4	21.6	21.3	21.3	21.3		
Jul 19	21.5	21.5	21.5	21.6	21.5	21.5	21.5	21.6	20.8	20.5	20.6	20.7	20.7	20.7	20.7	20.6	20.5	20.5	20.5	20.4	20.4	20.6	21.5	20.4	21.6	20.9	20.9	20.9		
Jul 20	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	20.6	20.6	20.7	20.7	20.7	20.6	20.7	20.7	20.7	21.4	21.6	21.6	21.5	21.5	21.5	20.6	21.6	21.2	21.2	21.2		
Jul 21	21.5	21.5	21.5	21.4	21.4	21.4	21.4	21.5	21.0	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.7	20.7	20.6	20.6	20.5	20.4	20.3	20.3	20.3	21.5	20.9	20.9		
Jul 22	20.3	20.3	21.2	21.4	21.4	21.4	21.4	20.8	20.5	20.6	20.3	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.1	20.0	19.9	19.8	19.8	21.4	20.5	20.5		
Jul 23	19.8	19.8	19.8	19.8	19.8	19.8	19.8	19.9	20.0	20.1	20.2	20.2	20.2	20.2	20.2	20.3	20.2	20.2	20.2	20.1	20.0	19.9	19.9	19.8	19.8	20.3	20.0	20.0		
Jul 24	19.8	19.9	19.9	19.8	19.8	19.8	19.8	19.8	19.9	19.9	19.9	20.0	20.0	20.1	20.0	20.0	20.0	19.9	19.9	19.9	19.9	20.4	20.9	20.9	19.8	20.9	20.0	20.0	20.0	
Jul 25	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.8	19.8	18.7	20.3	20.5	19.0	20.3	21.2	21.8	22.0	22.0	22.0	22.0	22.0	18.7	22.0	20.9	20.9	20.9	
Jul 26	22.0	22.0	22.0	22.0	21.9	21.9	21.9	22.1	22.2	21.1	20.4	20.8	20.8	20.8	20.9	21.0	21.0	21.0	21.0	21.0	20.9	20.8	20.8	20.8	20.4	22.2	21.3	21.3	21.3	
Jul 27	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.8	20.9	21.0	20.9	20.9	20.9	20.9	20.8	20.8	20.8	20.7	20.7	20.5	21.5	21.7	21.7	21.7	20.5	21.7	20.9	20.9	20.9	
Jul 28	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.8	21.8	21.8	21.8	21.1	21.0	21.8	20.9	20.9	21.7	21.8	21.8	21.7	21.7	21.8	20.9	21.8	21.6	21.6	21.6	
Jul 29	21.7	21.7	21.7	21.7	21.7	21.7	21.6	21.6	21.6	21.6	21.6	21.6	21.7	21.3	20.7	20.8	20.9	20.9	20.9	20.8	20.7	20.6	21.1	21.7	20.6	21.7	21.3	21.3	21.3	
Jul 30	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.1	20.7	20.8	20.8	20.8	20.9	20.9	20.8	20.8	21.3	21.8	20.9	20.7	20.6	20.6	21.5	21.6	20.6	21.8	21.2	21.2	21.2	
Jul 31	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	20.7	20.7	20.7	20.8	20.8	20.8	20.8	20.8	20.8	20.7	20.6	20.6	20.5	20.6	20.5	20.5	21.6	21.0	21.0	21.0	
Diurnal Maximum	22.0	22.0	22.0	22.0	21.9	21.9	21.9	22.1	22.2	22.1	22.1	22.1	22.1	22.1	22.2	22.1	22.1	22.1	22.1	22.1	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	
Diurnal Average	21.3	21.3	21.4	21.4	21.4	21.4	21.4	21.4	21.2	21.1	21.1	21.0	21.0	20.9	21.0	21.0	21.0	21.1	21.1	21.1	21.1	21.1	21.2	21.3	21.3	21.3	21.3	21.3	21.3	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for ST - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### St. Lina Site - July 2019 Summary of Hourly Averages

#### PRECIPITATION in mm

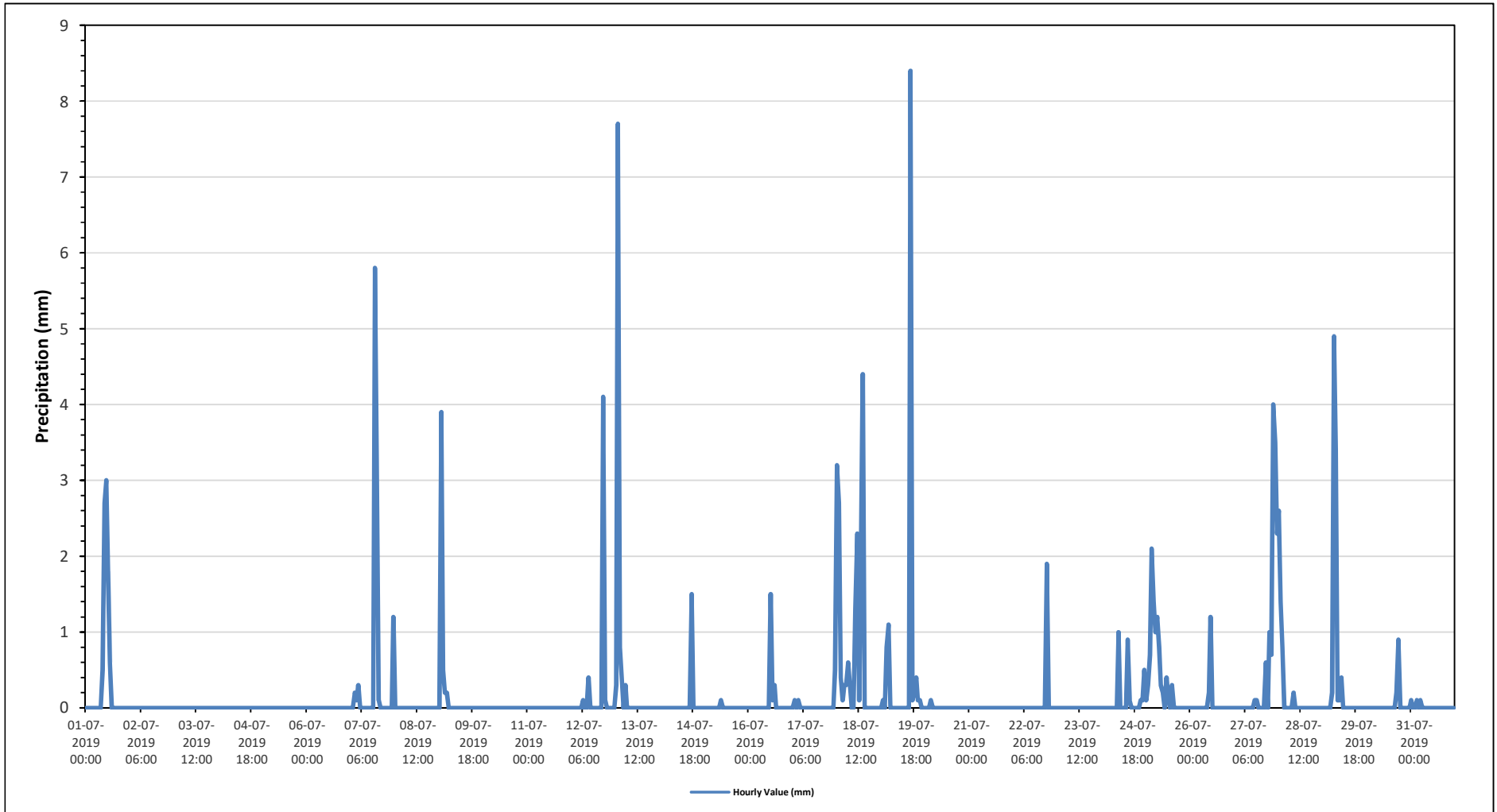
Maximum Hourly Value:	8.4 mm on July 19 at hour 16	Hours in Service:	744
Maximum Daily Value:	18.0 mm on July 18	Hours of Data:	744
Minimum Hourly Value:	0.0 mm on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 mm on July 2	Hours of Calibration:	0
Monthly Total:	114.9 mm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Total										
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23									
Jul 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.7	3.0	1.8	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	3.0	8.6
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 7	0.0	0.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	3.3	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	1.2	0.0	5.8	11.0		
Jul 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 9	0.0	3.9	0.5	0.2	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	0.0	3.9	4.8		
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 12	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	4.7		
Jul 13	0.3	7.7	0.8	0.4	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	7.7	9.5		
Jul 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	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	1.5	1.5		
Jul 15	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1		
Jul 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	1.5	0.1	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	1.5	1.9	1.9		
Jul 17	0.0	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.7			
Jul 18	3.2	2.7	0.4	0.1	0.3	0.3	0.6	0.3	0.0	0.0	1.3	2.3	0.1	2.0	4.4	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	4.4	18.0	18.0			
Jul 19	0.0	0.1	0.0	0.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.1	0.2	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	11.3	11.3			
Jul 20	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1			
Jul 21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Jul 22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	1.9			
Jul 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jul 24	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	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	1.0	2.7	2.7			
Jul 25	0.1	0.3	0.7	2.1	1.4	1.0	1.2	0.8	0.3	0.2	0.0	0.4	0.1	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	2.1	8.9	8.9			
Jul 26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2	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	1.2	1.4	1.4			
Jul 27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.6	0.0	1.0	0.7	4.0	3.5	2.3	0.0	0.0	0.0	0.0	0.0	4.0	12.3	12.3				
Jul 28	2.6	1.4	0.8	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	2.6	5.0	5.0				
Jul 29	0.0	0.0	0.0	0.0	0.0	0.2	4.9	3.4	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	9.1	9.1				
Jul 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	0.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.1	1.1	1.1			
Jul 31	0.1	0.0	0.0	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3			
Diurnal Maximum	3.2	7.7	0.8	2.1	1.4	1.0	4.9	3.4	0.3	1.0	2.7	3.0	1.8	5.8	4.4	0.1	8.4	4.1	1.9	1.0	0.7	4.0	3.5	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Diurnal Average	0.2	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.3	0.3	0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for Precipitation - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

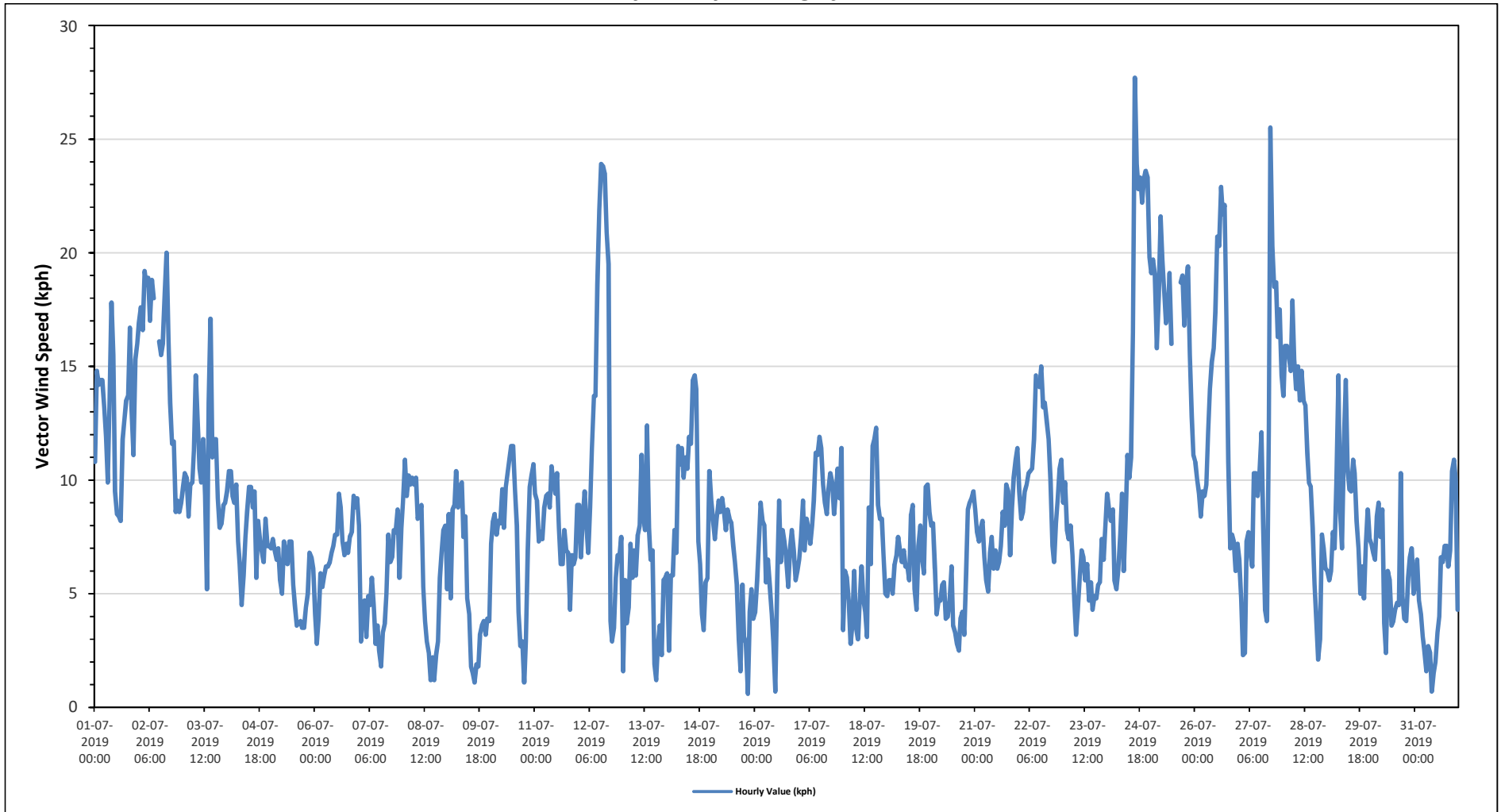
Maximum Hourly Value:	27.7 kph	on July 24 at hour 15	Hours in Service:	744
Maximum Daily Value:	17.6 kph	on July 25	Hours of Data:	737
Minimum Hourly Value:	0.6 kph	on July 15 at hour 20	Hours of Missing Data:	5
Minimum Daily Value:	5.0 kph	on July 31	Hours of Calibration:	2
Monthly Average:	2.3 kph		Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Jul 1	10.8	14.8	14.2	14.4	14.4	13.2	11.9	9.9	13.5	17.8	15.5	9.5	8.5	8.4	8.2	11.8	12.6	13.5	13.7	16.7	13.2	11.1	15.3	16	8.2	17.8	12.9
Jul 2	16.9	17.6	16.6	19.2	18.6	18.9	17	18.8	18	X	X	16.1	15.5	16	18.2	20	16.2	13.4	11.6	11.7	8.6	9.1	8.6	9	8.6	20.0	15.3
Jul 3	9.7	10.3	10.1	8.4	9.8	9.9	11.3	14.6	12.6	10.5	9.9	11.8	9.3	5.2	13.4	17.1	11	11.8	11.8	9.2	7.9	8.1	8.9	9	5.2	17.1	10.5
Jul 4	9.5	10.4	10.4	9.3	9	9.8	7.3	6.3	4.5	5.8	7.5	8.6	9.7	9.7	8.8	9.5	5.7	8.2	7.3	6.8	6.4	8.3	7.1	7.1	4.5	10.4	8.0
Jul 5	7	7.4	6.9	6.5	7	5.6	5	7.3	6.8	6.3	7.3	7.3	5.4	4.5	3.6	3.7	3.8	3.5	3.5	4.4	5	6.8	6.6	6.1	3.5	7.4	5.7
Jul 6	4.1	2.8	3.9	5.9	5.3	5.8	6.2	6.2	6.4	6.8	7.1	7.6	7.6	9.4	8.8	7.3	6.7	7.2	6.8	7.5	7.7	9.3	8.8	9.2	2.8	9.4	6.9
Jul 7	8	2.9	4.5	4.7	3.1	4.9	4.5	5.7	4.5	2.8	3.6	2.5	1.8	3.3	3.7	5	7.6	6.4	6.6	7.8	7.7	8.7	5.7	7.9	1.8	8.7	5.2
Jul 8	9	10.9	9.3	10.2	9.8	10.1	9.8	10.1	8.3	8.5	8.9	5.3	3.8	2.9	2.4	1.2	2.2	1.2	2.3	2.9	5.7	6.8	7.8	8	1.2	10.9	6.6
Jul 9	5.2	8.5	4.8	8.7	8.9	10.4	8.8	9.7	9.9	7.5	8.4	4.1	1.8	1.5	1.1	1.9	1.8	3.2	3.6	3.8	3.2	3.9	3.8	1.1	10.4	5.4	
Jul 10	7.2	8.2	8.5	7.6	8.2	8.1	9.6	7.9	9.7	10.3	11	11.5	11.5	9.6	8	4.2	2.7	2.9	1.1	2.9	6.9	9.7	10.2	10.7	1.1	11.5	7.8
Jul 11	9.4	9.1	7.3	7.7	7.4	8.8	9.3	9.4	8.8	10.6	9.9	9.4	10.3	7.9	6.3	6.3	7.8	6.9	6.8	4.3	6.7	6.3	6.6	8.9	4.3	10.6	8.0
Jul 12	8.9	6.6	8.3	9.5	7.9	6.8	8.8	11.4	13.7	13.7	18.6	21.9	23.9	23.8	23.5	20.9	19.5	3.8	2.9	3.5	5.7	6.7	6.6	7.5	2.9	23.9	11.9
Jul 13	1.6	5.6	3.7	4.4	7.2	5.7	6.9	5.8	7.6	8	11.1	8.4	7.8	12.4	7.9	6.5	6.9	1.9	1.2	2.8	3.6	2.3	5.6	5.7	1.2	12.4	5.9
Jul 14	5.9	2.5	5.8	5.8	7.8	6.8	11.5	10.7	11.4	10.1	11	10.5	11.9	11.6	14.4	14.6	14	7.3	6.3	4.1	3.4	5.5	5.7	10.4	2.5	14.6	8.7
Jul 15	9.1	8.3	7.4	8.3	9.1	8.6	9.2	8.6	7.8	8.7	8.3	8.1	7.1	6.4	5.4	3	1.6	5.4	3.1	2.8	0.6	4.2	5.2	3.9	0.6	9.2	6.3
Jul 16	4.2	5.6	7.2	9	8.2	8	5.5	6.5	5.3	4.1	2.9	0.7	5.5	9.1	6.4	7.8	7.3	6.5	5.3	6.9	7.8	6.9	5.6	6	0.7	9.1	6.2
Jul 17	6.5	7.5	9.1	6.9	8.3	7.9	7.2	8	9.1	11.2	11.1	11.9	11.4	9.8	9	8.5	9.6	10.3	9.9	8.5	9.4	10.5	9.2	11.4	6.5	11.9	9.3
Jul 18	3.4	6	5.7	4.7	2.8	3.6	6	3.5	3	4.6	6.2	4.7	4.2	3.1	8.8	6.3	11.5	11.8	12.3	8.9	8.3	8.3	6.7	5	2.8	12.3	6.2
Jul 19	4.9	5.6	5.6	5	6.3	6.7	7.5	6.9	6.4	6.9	6.2	6.2	5.6	8.5	8.9	5.2	4.3	7.1	8	6.6	5.9	9.7	9.8	8.6	4.3	9.8	6.8
Jul 20	8	8.1	6.1	4.1	4.7	4.7	5.4	5.5	3.9	4	4.7	6.2	3.6	3.3	2.8	2.5	3.9	4.2	3.2	6	8.7	9	9.2	9.5	2.5	9.5	5.5
Jul 21	8.7	7.7	7.3	7.9	8.2	6.6	5.6	5.1	6.8	7.5	6.1	6.9	6.1	6.4	7.1	8.6	8	9.8	9.5	6.7	8.8	10.1	10.9	11.4	5.1	11.4	7.8
Jul 22	9.5	8.3	8.6	9.5	9.8	10.3	10.4	10.5	11.8	14.6	X	14.1	15	13.2	13.4	12.6	11.8	10	7.1	6.4	8.1	9.2	10.5	10.9	6.4	15.0	10.7
Jul 23	9	9.9	7.8	7.4	8	6.7	4.7	3.2	4.3	5.8	6.9	6.6	5.6	6.3	4.7	5.5	4.3	4.9	4.8	5.4	5.5	7.4	6.5	8.1	3.2	9.9	6.2
Jul 24	9.4	8.7	8.2	8.7	5.6	5.2	6	7.6	9.4	6	8.2	11.1	10.1	11	16.5	27.7	23.9	22.8	23.3	22.2	23.3	23.6	23.3	19.8	5.2	27.7	14.2
Jul 25	19.1	19.7	19	15.8	18.1	21.6	19.7	18.3	16.9	17.3	19.1	16	C	C	Y	Y	18.7	19	16.8	18.6	19.4	15.5	12.8	11.1	11.1	21.6	17.6
Jul 26	10.8	10	9.4	8.4	9.5	9.3	9.8	12.1	14	15.2	15.8	17.4	20.7	20.3	22.9	21.7	22.1	17.1	10.8	7	7.6	7.3	6	7.2	6.0	22.9	13.0
Jul 27	6.5	4.8	2.3	2.4	7.3	7.7	6.8	6.2	10.3	10.3	9.3	10.3	12.1	8.2	4.3	3.8	12.2	25.5	20.3	18.5	18.7	16.3	17.5	14.6	2.3	25.5	10.7
Jul 28	13.7	15.9	15.9	15.4	14.8	17.9	15.3	14	15	13.5	14.8	13.5	13.3	11.2	9.9	9.7	7.9	5.4	4	2.1	3	7.6	7	6.1	2.1	17.9	11.1
Jul 29	6	5.6	6	7.7	7	10	14.6	8.7	7	11.6	14.4	10.6	9.6	9.5	10.9	10.3	8.2	7	5	6.2	4.8	7.2	8.7	7.4	4.8	14.6	8.5
Jul 30	7.2	6.8	6.5	8.4	9	7.5	8.7	3.7	2.4	6	5.6	3.6	3.8	4.3	4.6	4.5	10.3	4.9	3.9	3.8	5.7	6.6	7	5	2.4	10.3	5.8
Jul 31	5.5	6.5	4.7	4.1	3.1	2.5	1.6	2.7	2.4	0.7	1.5	2	3.3	4	6.6	6.4	7.1	7.1	6.2	6.9	10.4	10.9	10	4.3	0.7	10.9	5.0
Diurnal Maximum	19	20	19	19	19	22	20	19	18	18	19	22	24	24	24	28	24	26	23	22	23	24	23	20			
Diurnal Average	8.2	8.5	8.1	8.3	8.5	8.7	8.8	8.5	8.8	8.9	9.3	9.2	8.9	8.7	9.0	9.1	9.4	8.7	7.7	7.5	8.0	8.8	8.8	8.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

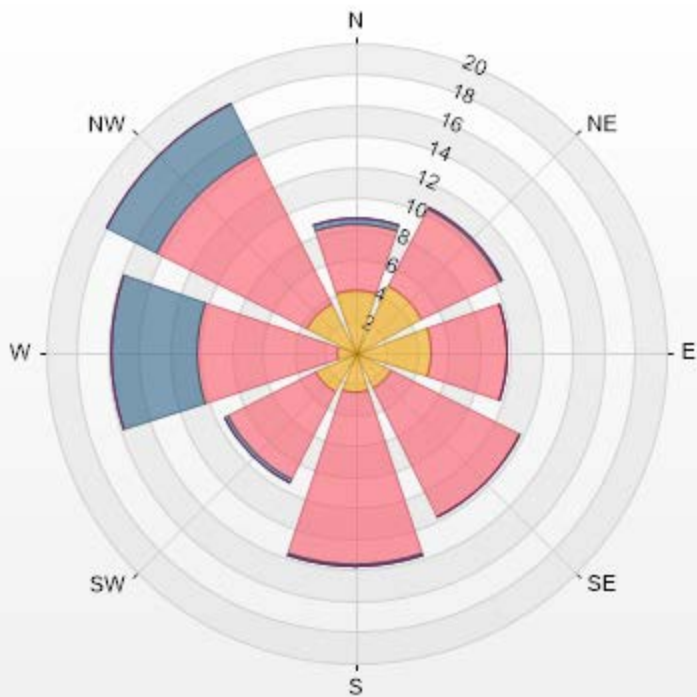
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for VWS - St. Lina Site*



Wind: St. Lina Poll.: St. Lina-WSP[kph] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 1.92% Valid Data: 98.12% Calm Avg: 1.25 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	4.11	4.25	0.41	0	0	8.77
NE	4.79	5.62	0.14	0	0	10.55
E	4.93	4.93	0	0	0	9.86
SE	2.6	9.32	0	0	0	11.92
S	2.6	11.1	0.14	0	0	13.84
SW	2.88	6.3	0.27	0	0	9.45
W	1.23	9.04	5.48	0	0	15.75
NW	3.56	10.82	3.56	0	0	17.94
Summary	26.7	61.38	10	0	0	98.08



LICA-201907-Revision 1

% Icon Classes (kph)	27	0-6	61	6-15	15-29	0	29-39	0	>39.0
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## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

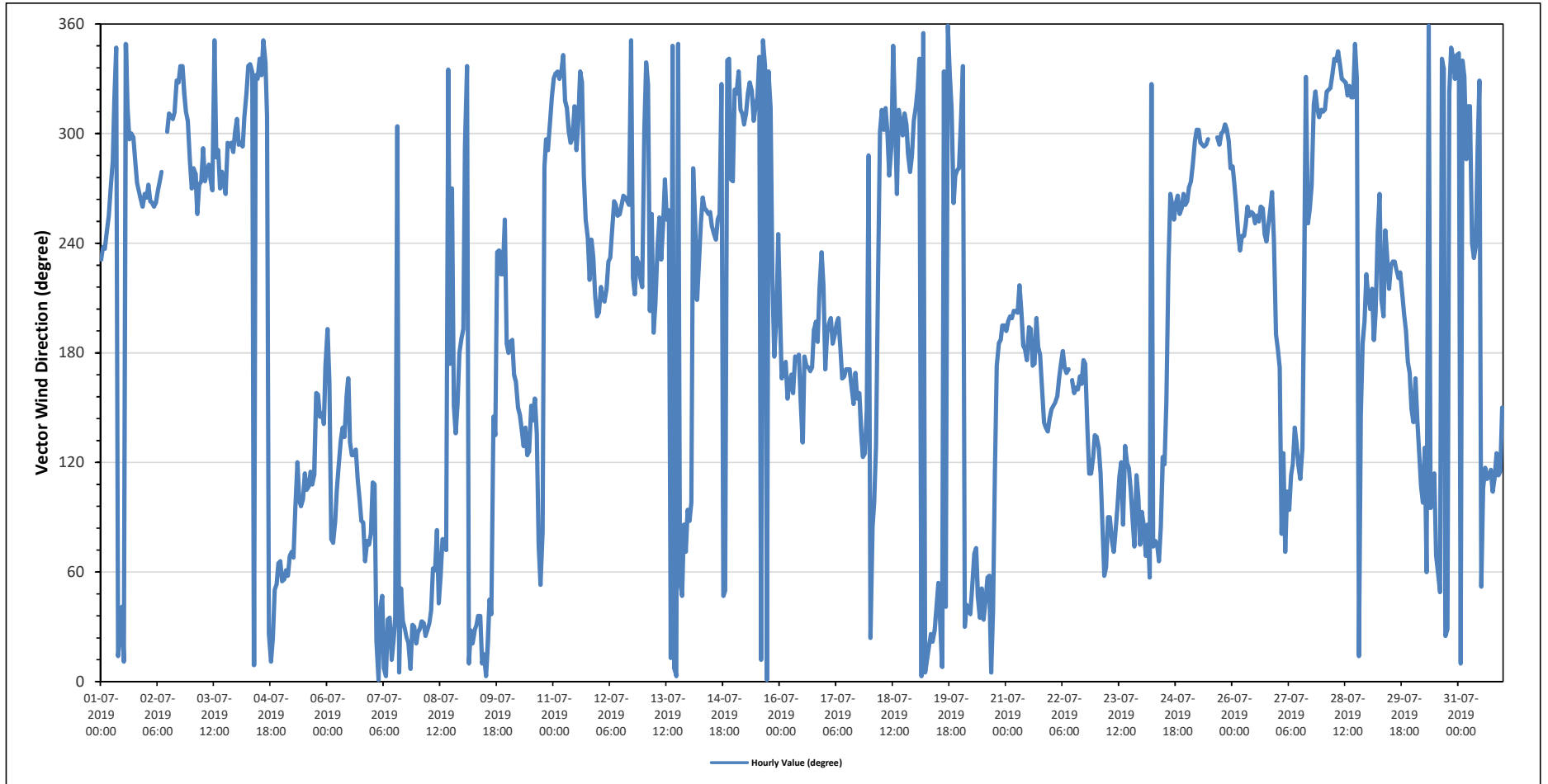
St. Lina Site - July 2019

### Summary of Hourly Averages

#### WIND DIRECTION (VWD) in sector

Monthly Average:		269 (W) degree														Hours in Service:		744											
																Hours of Data:		737											
																Hours of Missing Data:		5											
																Hours of Calibration:		2											
																Operational Uptime:		99.3											
Day	Hourly Period Starting at (MST)																							Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant			
Jul 1	SW	SW	SW	WSW	WSW	W	WNW	NW	NNW	NNE	NNE	NE	NNE	NNW	NW	WNW	WNW	WNW	WNW	W	W	W	WSW	W	289	WNW			
Jul 2	W	W	W	W	WSW	W	W	W	W	X	X	WNW	NW	NW	NW	NW	NNW	NNW	NNW	NNW	NW	NW	NW	WNW	292	WNW			
Jul 3	W	W	W	WSW	W	W	WNW	W	W	W	W	N	WNW	WNW	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	282	W			
Jul 4	NW	WNW	WNW	WNW	NW	NW	NNW	NNW	NNW	N	NNW	NNW	NNW	NNW	N	NNW	NW	NNE	NNE	NNE	NE	NE	ENE	ENE	342	NNW			
Jul 5	NE	NE	ENE	ENE	ENE	ENE	ENE	E	ESE	E	E	E	ESE	ESE	ESE	ESE	ESE	SSE	SSE	SSE	SE	SE	SE	S	102	E			
Jul 6	S	SSE	ENE	ENE	E	ESE	ESE	SE	SE	SSE	SSE	SSE	SE	ESE	ESE	SE	ESE	E	E	E	ENE	ENE	ENE	E	111	ESE			
Jul 7	ESE	ESE	NNE	N	NE	NE	N	N	NE	NE	NNE	NNE	NE	WNW	N	NE	NNE	NNE	NNE	NNE	N	NNE	NNE	NNE	28	NNE			
Jul 8	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	ENE	ENE	E	NE	ENE	ENE	ENE	NNW	S	W	SSE	SE	SSE	S	S	55	NE				
Jul 9	S	WNW	NNW	N	NNE	NNE	NNE	NE	NE	N	NNE	N	NNE	NE	NE	SE	SE	SW	SW	SW	SW	WSW	S	10	N				
Jul 10	S	S	S	SSE	SSE	SSE	SE	SE	SE	SE	ESE	SE	SSE	SE	SSE	SE	ENE	NE	E	W	WNW	WNW	NW	NW	156	SSE			
Jul 11	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	WNW	WNW	WNW	NW	WNW	NW	NNW	NNW	W	WSW	WSW	SW	WSW	SW	SSW	SSW	298	WNW			
Jul 12	SSW	SW	SSW	SSW	SSW	SSW	SW	WSW	W	W	WSW	WSW	W	W	W	W	N	SW	SSW	SW	SW	SW	SW	SW	248	WSW			
Jul 13	WNW	NNW	NW	SSW	WSW	S	SSW	SW	WSW	SW	WSW	W	WSW	WSW	NNE	NNW	N	N	NNW	NE	NE	E	ENE	E	273	W			
Jul 14	E	E	W	WSW	SSW	SW	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	NW	NE	NE	NNW	NNW	W	W	260	WSW				
Jul 15	NW	NW	NNW	NW	NW	WNW	NW	NNW	NW	NNW	NW	NW	NNW	NNE	N	NNW	N	NNW	NW	SW	S	SSW	WSW	319	NW				
Jul 16	SSW	SSE	S	S	SSE	SSE	SSE	SSE	S	S	S	SSE	SE	S	S	S	SSE	S	S	SSW	S	SSW	SW	SW	178	S			
Jul 17	S	S	SSW	SSW	S	S	SSW	SSW	S	SSE	SSE	S	S	S	SSE	SSE	SSE	SSE	SSE	SE	ESE	SE	SSE	WNW	171	S			
Jul 18	NNE	E	E	SE	SW	WNW	NW	WNW	NW	WNW	W	WNW	NNW	NW	W	NW	NW	WNW	NW	WNW	W	WNW	NW	302	WNW				
Jul 19	NW	NW	NNW	N	N	N	NNE	NNE	NNE	NNE	NNE	NE	NE	NNE	N	NNW	NE	N	NNW	NW	W	W	W	W	349	NNW			
Jul 20	NW	NNW	NNE	NE	NE	NE	NE	ENE	ENE	NE	NE	NE	NE	ENE	ENE	N	NE	ESE	S	S	S	SSW	SSW	64	ENE				
Jul 21	S	SSW	SSW	SSW	SSW	SSW	SSW	SW	SSW	S	S	S	SSW	S	S	S	SSW	S	S	SSE	SE	SE	SE	SE	180	S			
Jul 22	SSE	SSE	SSE	SSE	SSE	S	S	S	SSE	S	X	SSE	SSE	SSE	SSE	SSE	SSE	S	S	SE	ESE	ESE	ESE	SE	158	SSE			
Jul 23	SE	SE	ESE	E	ENE	ENE	E	E	ENE	ENE	E	E	ESE	ESE	E	SE	ESE	ESE	E	ENE	ESE	E	ENE	ENE	98	E			
Jul 24	E	E	ENE	E	ENE	NW	ENE	ENE	ENE	ENE	E	ESE	ESE	SSE	SW	W	W	WSW	W	W	WSW	WSW	W	W	251	WSW			
Jul 25	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	C	C	Y	Y	WNW	WNW	WNW	WNW	WNW	WNW	WNW	W	292	WNW			
Jul 26	W	W	W	WSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WSW	253	WSW			
Jul 27	S	S	E	SE	ENE	ESE	E	ESE	ESE	SE	SE	ESE	ESE	SE	SW	NNW	WSW	WSW	W	NW	NW	NW	NW	276	W				
Jul 28	NW	NW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	NW	NNW	NNW	NNE	SE	S	SSW	SW	325	NW			
Jul 29	SSW	SSW	SSW	S	SSW	WSW	W	SSW	SSW	WSW	SW	SSW	SW	SW	SW	SW	SW	SSW	SSW	S	S	SSE	SSE	217	SW				
Jul 30	SE	SSE	SE	SE	ESE	E	SE	ENE	N	E	ESE	ESE	ENE	ENE	NE	NNW	NNW	NNE	NNE	NW	NNW	NNW	NNW	67	ENE				
Jul 31	NNW	N	NNW	NNW	WNW	NW	NW	WSW	SW	SW	WNW	NNW	NE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	100	E				
C	Calibration					S	Daily Zero/Span					Q	Quality Assurance					C1	Repeat Calibration					S1	Repeat Daily Zero/Span				
G	Out for Repair					K	Collection Error					N	Not in Service					O	Operator Error					P	Power Failure				
R	Recovery					X	Machine Malfunction					Y	Maintenance					T	Exceeds Temperature Limits					N	Not in Service				
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																													
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																													

*Timeseries Chart of Hourly Average for VWD - St. Lina Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hour Standard Deviations

#### STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

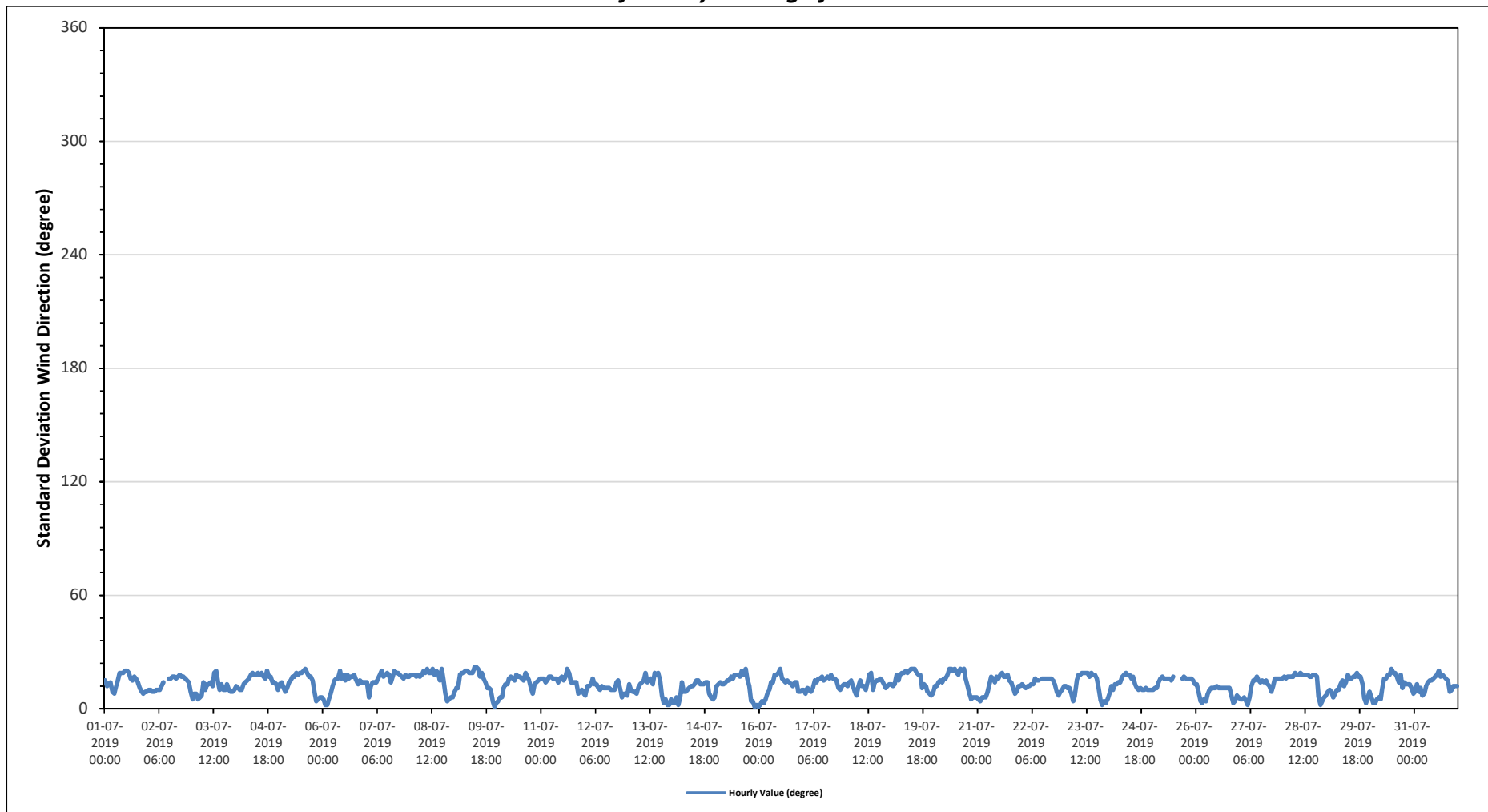
Maximum Hourly Value:	22 degree on July 9 at hour	Hours in Service:	744
Minimum Hourly Value:	1 degree on July 9 at hour	Hours of Data:	737
		Hours of Missing Data:	5
		Hours of Calibration:	2
		Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Jul 1	15	12	13	14	9	8	12	15	19	19	19	20	20	19	16	15	17	16	14	11	9	8	9	9	8	20
Jul 2	10	10	9	9	10	10	10	12	14	X	X	16	16	17	17	16	17	18	17	17	16	15	14	9	9	18
Jul 3	5	8	8	5	6	7	14	10	13	13	14	12	19	20	14	10	13	10	10	13	10	9	9	10	5	20
Jul 4	12	11	10	10	13	14	15	16	18	19	18	18	19	18	19	17	16	20	17	17	14	14	13	10	10	20
Jul 5	13	14	11	9	11	14	15	17	17	19	18	19	19	20	21	19	17	17	15	9	4	5	6	6	4	21
Jul 6	5	2	2	5	8	12	15	16	16	20	16	18	15	18	16	17	17	18	15	13	15	14	14	14	2	20
Jul 7	14	6	12	14	14	14	16	18	20	17	18	19	18	14	17	20	19	19	18	17	16	18	17	17	6	20
Jul 8	18	18	18	17	18	17	18	20	19	21	19	19	21	18	20	19	15	21	15	8	4	5	6	6	4	21
Jul 9	9	11	11	18	19	19	20	20	19	19	19	22	22	21	17	19	16	14	11	11	10	4	1	3	1	22
Jul 10	4	6	6	11	13	13	16	17	16	15	18	17	17	16	15	19	17	15	11	8	13	14	15	16	4	19
Jul 11	16	16	14	15	17	17	16	16	16	14	16	17	15	17	21	19	14	14	14	14	8	9	10	8	8	21
Jul 12	7	12	12	13	16	13	13	11	10	12	11	11	11	11	10	10	10	14	15	11	6	8	8	7	6	16
Jul 13	13	10	9	9	8	11	13	14	15	19	14	15	16	13	19	18	19	15	7	3	5	2	2	5	2	19
Jul 14	3	3	6	2	6	14	9	9	10	11	12	12	13	15	15	13	13	13	14	14	8	6	5	6	2	15
Jul 15	12	13	14	13	13	14	15	15	17	16	18	18	18	17	20	18	21	16	12	4	4	1	2	1	1	21
Jul 16	2	4	3	5	8	10	14	14	18	18	19	21	16	15	14	15	14	13	12	14	14	9	9	10	2	21
Jul 17	10	8	11	10	9	11	15	14	16	16	17	15	16	17	16	18	16	16	15	11	10	12	13	13	8	18
Jul 18	12	14	15	12	9	7	12	15	12	12	10	14	18	19	10	14	15	15	16	15	13	11	12	13	7	19
Jul 19	13	12	13	18	15	18	19	19	20	19	20	21	21	21	19	18	18	11	13	12	9	8	7	8	7	21
Jul 20	12	12	14	15	14	16	16	18	21	21	20	21	19	18	21	20	21	16	12	8	5	6	6	6	5	21
Jul 21	5	4	6	6	6	9	13	17	16	14	17	16	18	19	17	17	18	15	14	11	8	9	12	12	4	19
Jul 22	13	12	11	12	12	13	13	16	15	15	X	16	16	16	16	16	16	15	13	9	7	9	10	12	7	16
Jul 23	12	11	11	8	4	7	15	18	18	19	19	19	19	17	19	18	18	16	11	5	2	4	3	5	2	19
Jul 24	8	12	10	13	13	14	14	17	18	19	18	18	16	17	13	11	10	11	10	10	11	10	10	10	8	19
Jul 25	10	11	11	14	16	17	16	16	16	16	15	17	C	C	Y	Y	16	17	16	16	16	16	15	13	10	17
Jul 26	13	9	4	3	5	4	8	10	11	11	11	12	11	11	11	11	11	11	11	7	3	4	7	6	3	13
Jul 27	5	5	6	4	2	6	12	15	15	17	15	14	15	14	15	13	12	9	12	16	16	16	16	16	2	17
Jul 28	17	16	17	17	17	17	19	18	18	19	18	18	18	18	17	17	18	18	17	6	2	4	6	7	2	19
Jul 29	9	10	9	6	8	10	10	13	15	12	14	18	16	16	17	17	19	17	17	13	6	3	6	9	3	19
Jul 30	6	3	3	5	6	5	11	16	16	18	18	21	19	19	17	14	18	11	14	13	13	13	11	8	3	21
Jul 31	9	13	9	11	7	8	12	14	15	15	16	17	18	20	17	18	17	16	15	9	10	12	12	12	7	20
Diurnal Minimum	2	2	2	2	2	4	8	9	10	11	10	11	11	11	10	10	10	9	7	3	2	1	1	1		
Diurnal Maximum	18	18	18	18	19	19	20	20	21	21	20	22	22	21	21	20	21	21	18	17	16	18	17	17		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for STDWD - St. Lina Site**



**BONNYVILLE -EAST STATION**



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

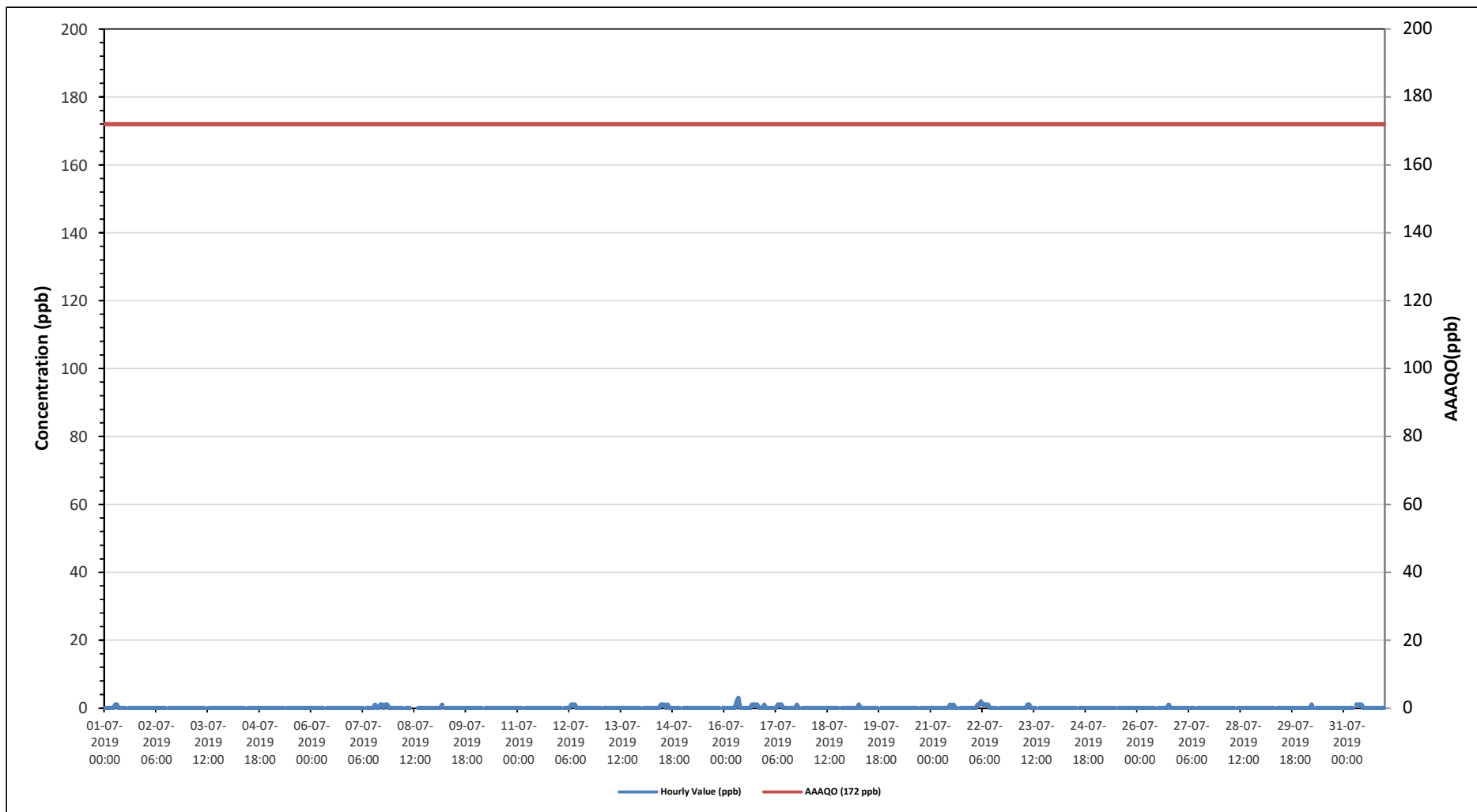
*Bonnyville - East Site - July 2019*

Summary of Hourly Averages

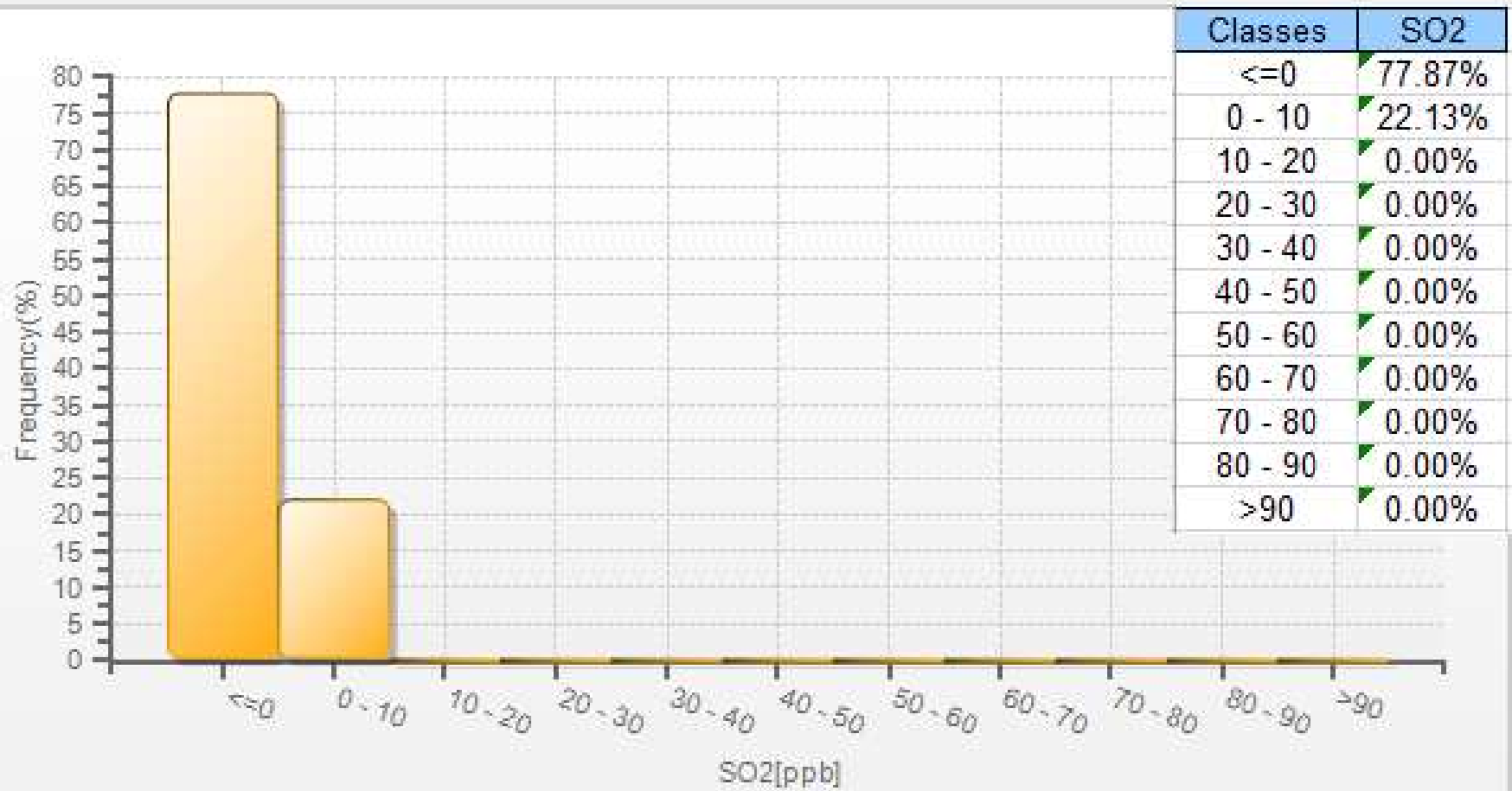
SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																																								
Number of 1-Hour Exceedences:					0					Number of 24-Hour Exceedences:					0					30-Day Exceedence:					0															
Maximum Hourly Value:					3 ppb on July 16 at hour 8					Hours in Service:					744																									
Maximum Daily Value:					0.4 ppb on July 16					Hours of Data:					708																									
Minimum Hourly Value:					0 ppb on July 1 at hour 0					Hours of Missing Data:					0																									
Minimum Daily Value:					0.0 ppb on July 2					Hours of Calibration:					36																									
Monthly Average:					0.1 ppb					Operational Uptime:					100.0																									
Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23																
Jul 1	0	0	0	0	0	0	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1					
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0					
Jul 3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0					
Jul 4	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0					
Jul 5	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0					
Jul 6	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0					
Jul 7	0	0	0	0	0	0	0	S	0	0	0	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					
Jul 8	0	0	0	0	0	0	S	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Jul 9	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Jul 10	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Jul 11	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Jul 12	0	0	S	0	0	0	0	0	1	1	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	0.1			
Jul 13	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Jul 14	S	0	0	0	0	0	0	0	0	0	0	0	0	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			
Jul 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	S	0	0	0.0			
Jul 16	0	0	0	0	0	0	0	0	0	0	2	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	0.4		
Jul 17	0	0	0	0	0	0	0	0	0	0	1	1	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	0.2		
Jul 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		
Jul 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		
Jul 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1		
Jul 22	0	0	0	1	1	2	1	1	1	1	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	0.3	
Jul 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	0.1	
Jul 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	
Jul 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	
Jul 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	
Jul 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	
Jul 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	
Jul 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	
Jul 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	
Jul 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	0.2	
Diurnal Maximum	0	0	0	1	1	2	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Daiurnal Average	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	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
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span																			
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure																			
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service																			
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																																								
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																																								

**Timeseries Chart of Hourly Average for SO<sub>2</sub> - Bonnyville - East Site**



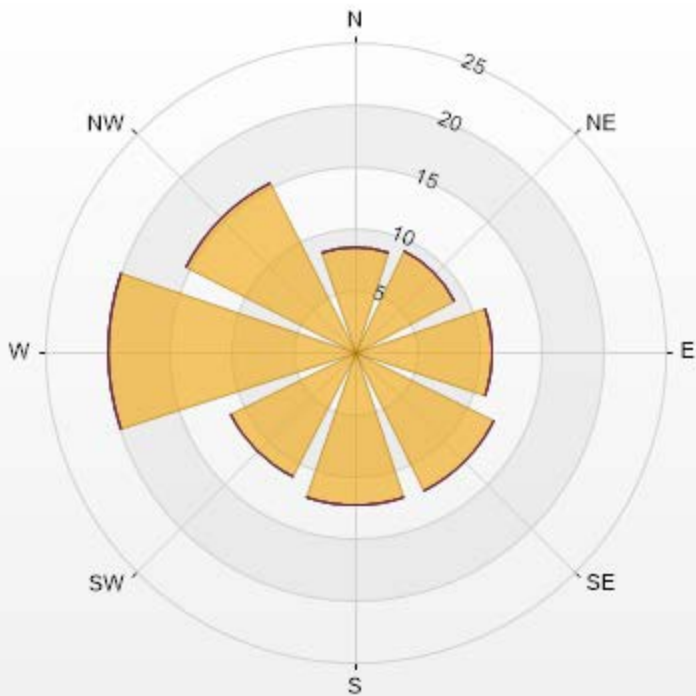
SO2[ppb] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.





Wind: Bonnyville East Poll.: Bonnyville East-SO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	8.52	0	0	0	0	8.52
NE	9.09	0	0	0	0	9.09
E	11.08	0	0	0	0	11.08
SE	12.64	0	0	0	0	12.64
S	12.36	0	0	0	0	12.36
SW	11.22	0	0	0	0	11.22
W	19.89	0	0	0	0	19.89
NW	15.2	0	0	0	0	15.2
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)

100 0-10

0 10-50

0 50-100

0 100-172

0 >172.0



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

HYDROGEN SULPHIDE (H<sub>2</sub>S) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb**

Number of 1-Hour Exceedences: 23      Number of 24-Hour Exceedences: 3

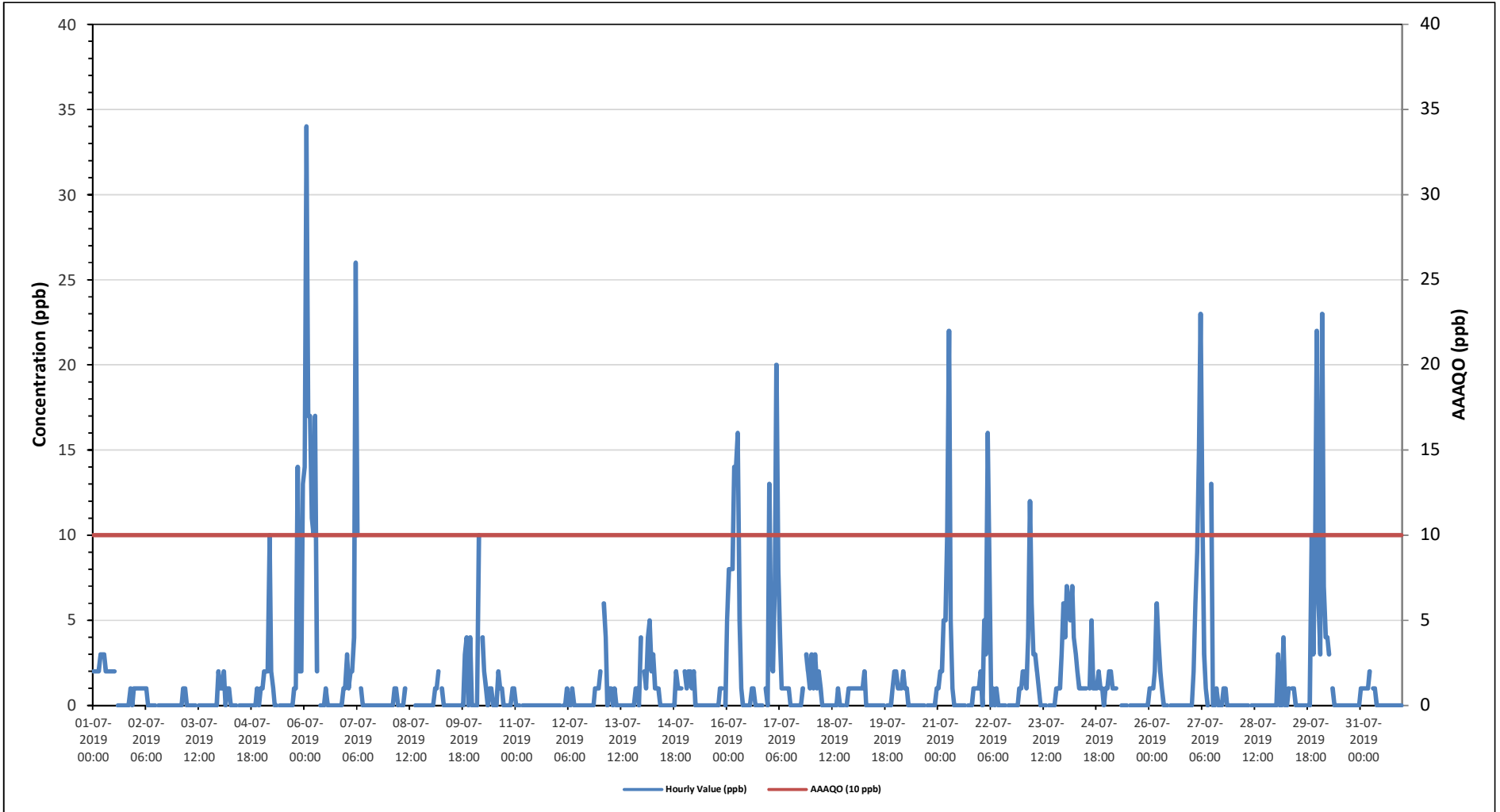
Maximum Hourly Value:	34 ppb on July 6 at hour 1	Hours in Service:	744
Maximum Daily Value:	5.4 ppb on July 6	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 14	Hours of Missing Data:	2
Minimum Daily Value:	0.0 ppb on July 11	Hours of Calibration:	37
Monthly Average:	1.4 ppb	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2	2	2	2	3	3	3	2	2	2	2	2	2	S	0	0	0	0	0	0	0	1	0	1	0	3	1.3	
Jul 2	1	1	1	1	1	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.3	
Jul 3	0	0	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	2	0	2	0.2	
Jul 4	1	1	2	0	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0.3	
Jul 5	1	2	2	2	10	2	1	0	0	S	0	0	0	0	0	0	0	0	0	1	1	14	2	2	13	0	14	2.3
Jul 6	14	34	17	17	11	10	17	2	S	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	34	5.4	
Jul 7	3	1	2	2	4	26	10	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	2.1
Jul 8	0	0	0	1	1	0	S	0	0	1	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	1	0.2
Jul 9	0	0	1	1	2	S	1	0	0	0	0	0	0	0	0	0	0	0	0	3	4	0	4	0	0	4	0.7	
Jul 10	0	0	0	10	S	4	2	1	0	1	1	0	0	0	2	1	1	0	0	0	0	0	1	1	0	10	1.1	
Jul 11	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 12	0	0	S	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0.2
Jul 13	2	S	6	4	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	4	0	6	0.9	
Jul 14	S	2	1	4	5	2	3	1	1	1	0	0	0	0	0	0	0	0	0	2	1	1	1	1	S	5	1.1	
Jul 15	2	1	2	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	S	0	0	2	0.5	
Jul 16	5	8	8	8	14	14	16	5	1	0	0	0	0	0	1	1	0	0	0	0	0	S	1	0	0	16	3.6	
Jul 17	13	3	2	7	20	8	4	1	1	1	1	1	0	0	0	0	0	0	0	1	S	3	2	1	0	20	3.0	
Jul 18	3	1	3	1	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	S	0	1	1	1	0	3	0.7
Jul 19	1	1	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	2	0	2	0.5
Jul 20	2	1	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	2	0.4
Jul 21	1	2	2	5	5	10	22	5	1	0	0	0	0	0	0	0	S	0	0	0	0	1	1	1	0	22	2.5	
Jul 22	2	0	5	3	16	8	0	1	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	1	1	0	16	1.7
Jul 23	2	2	1	4	12	6	3	3	2	1	0	0	0	0	S	0	0	0	0	0	1	1	1	3	6	0	12	2.1
Jul 24	4	7	6	5	7	4	3	2	1	1	1	1	S	1	5	1	1	1	2	1	1	0	1	0	1	0	7	2.5
Jul 25	1	2	2	1	1	1	S1	S1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4
Jul 26	1	1	1	2	6	4	2	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.8
Jul 27	0	2	6	9	15	23	11	3	1	0	S	13	0	0	1	0	0	0	1	1	0	0	0	0	0	0	23	3.7
Jul 28	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 29	0	3	0	0	4	0	0	1	S	1	1	0	0	0	0	0	0	0	0	0	0	10	3	10	22	0	22	2.4
Jul 30	6	3	23	7	4	4	3	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	2.2
Jul 31	1	1	1	1	1	2	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4
Diurnal Maximum	14	34	23	17	20	26	22	5	2	2	2	13	2	0	2	5	1	1	1	3	14	3	10	22				
Daiurnal Average	2.3	2.7	3.3	3.4	5.0	4.7	3.8	1.0	0.5	0.3	0.2	0.6	0.1	0.0	0.2	0.3	0.1	0.0	0.1	0.4	1.1	0.6	1.0	2.0				

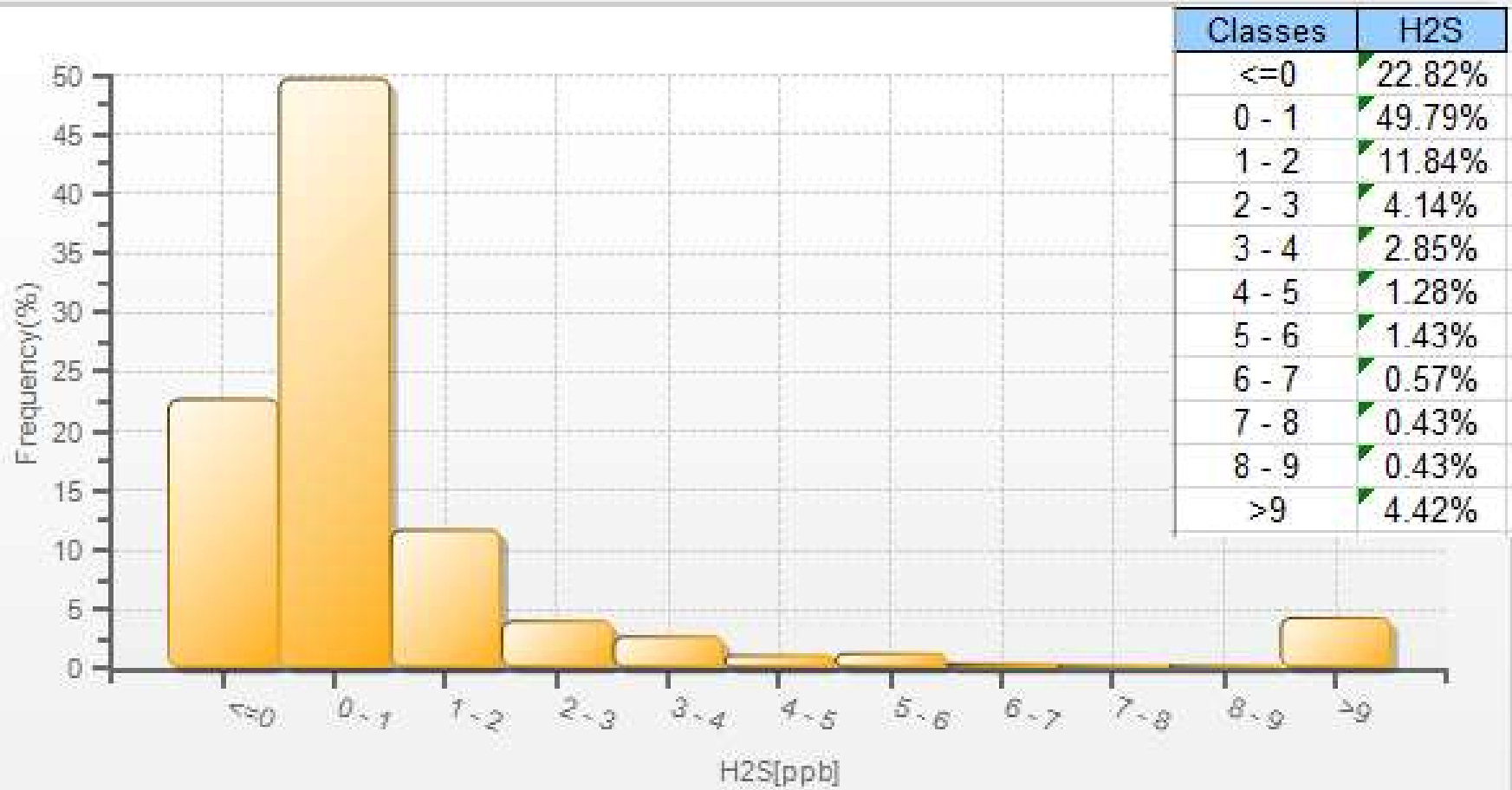
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for H2S - Bonnyville - East Site**

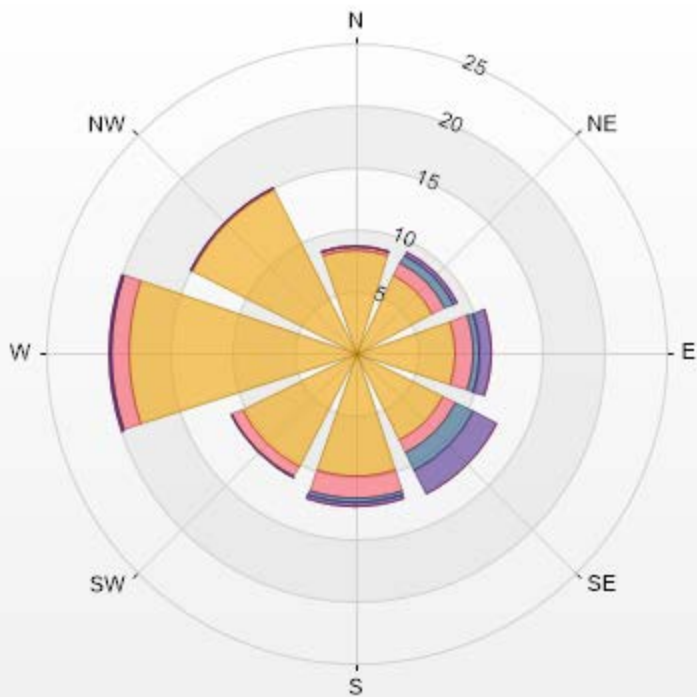


H2S[ppb] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-H2S[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	8.27	0.29	0	0	0	8.56
NE	6.99	1.14	0.71	0.29	0	9.13
E	7.99	1.57	0.43	1	0	10.99
SE	7.85	1.14	1.71	2	0	12.7
S	9.99	1.71	0.43	0.29	0	12.42
SW	10.27	0.86	0.14	0	0	11.27
W	18.26	1.43	0.14	0.14	0	19.97
NW	14.69	0.29	0	0	0	14.98
Summary	84.31	8.43	3.56	3.72	0	100



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% Icon	Classes (ppb)	84	8	4	0
	0-2	84	8	4	0
	2-5	0	8	0	0
	5-10	0	0	4	0
	10-50	0	0	0	4
	>50.0	0	0	0	0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

Maximum Hourly Value:	327 ppb	on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	20.4 ppb	on July 30	Hours of Data:	707
Minimum Hourly Value:	0 ppb	on July 1 at hour 19	Hours of Missing Data:	0
Minimum Daily Value:	1.0 ppb	on July 3	Hours of Calibration:	37
Monthly Average:	3.4 ppb		Operational Uptime:	100.0

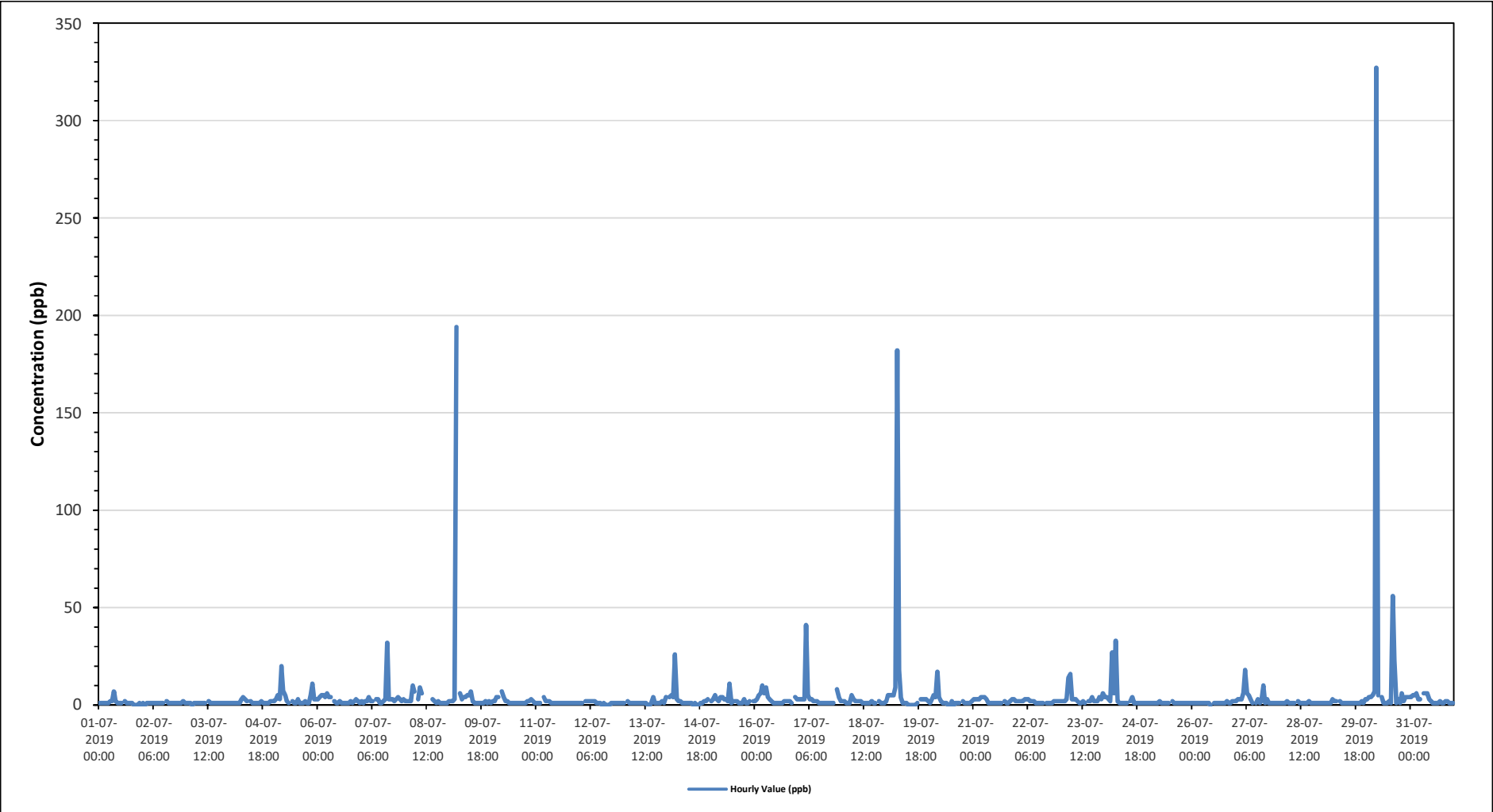
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	1	1	1	1	1	1	2	2	7	2	1	1	1	S	2	1	1	1	1	0	0	0	1	0	0	7	1.3
Jul 2	1	0	1	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	2	1	0	2	1.0
Jul 3	1	1	1	0	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	0	2	1.0	
Jul 4	1	1	1	1	1	1	3	4	3	2	S	2	1	1	1	1	1	2	1	1	1	1	2	2	1	4	1.5
Jul 5	2	3	5	3	20	7	5	2	1	S	2	1	1	3	1	1	1	2	1	1	5	11	3	3	1	20	3.7
Jul 6	3	4	5	5	4	6	4	4	S	2	1	1	2	1	1	1	1	2	1	2	1	2	3	2	1	6	2.5
Jul 7	2	1	2	2	4	2	2	S	3	3	1	1	2	3	32	3	3	3	2	3	4	3	2	3	1	32	3.7
Jul 8	2	2	2	2	10	7	S	3	9	6	C	C	C	C	C	3	2	1	2	1	1	1	1	1	1	10	3.1
Jul 9	2	2	2	3	194	S	6	3	4	4	5	5	7	2	1	1	1	1	1	1	2	1	2	1	1	194	10.9
Jul 10	2	2	4	4	S	7	4	2	2	1	1	1	1	1	1	1	1	1	1	2	2	3	2	1	1	7	2.0
Jul 11	1	1	1	S	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.3
Jul 12	1	1	S	2	2	2	2	2	2	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	0	2	1.1
Jul 13	1	S	2	1	1	1	1	1	1	1	1	1	1	0	0	1	4	1	1	1	1	1	2	1	4	1.3	
Jul 14	S	4	5	4	26	3	2	2	1	1	1	1	1	1	0	1	0	0	1	1	2	2	3	S	0	26	2.8
Jul 15	2	3	5	3	2	4	4	3	3	2	11	1	2	2	2	1	1	1	3	1	1	2	S	2	1	11	2.7
Jul 16	2	3	5	6	10	6	9	4	3	2	1	1	1	1	1	1	2	2	2	2	1	S	4	3	1	10	3.1
Jul 17	3	3	3	3	41	5	3	3	2	2	2	1	1	1	1	1	1	1	2	1	S	S	8	4	2	41	4.0
Jul 18	2	2	1	1	1	5	3	2	2	2	2	1	1	1	1	1	2	1	1	S	2	1	1	1	1	5	1.6
Jul 19	2	5	5	5	5	9	182	18	4	1	1	1	0	0	0	0	0	1	S	3	3	3	3	2	0	182	11.0
Jul 20	1	3	5	4	17	4	2	1	1	1	0	0	2	0	1	1	1	S	2	1	1	1	1	2	0	17	2.3
Jul 21	3	3	3	3	4	4	4	3	1	1	1	1	1	1	1	1	S	2	1	1	2	3	3	2	1	4	2.1
Jul 22	2	2	2	2	3	3	3	2	2	2	1	1	1	1	S	1	1	1	1	1	2	2	2	2	1	3	1.7
Jul 23	2	2	2	3	14	16	3	3	3	2	1	1	2	1	S	2	2	4	2	2	2	4	3	6	1	16	3.6
Jul 24	4	4	3	2	27	6	33	2	1	1	1	1	1	S	2	4	1	1	1	1	1	1	1	1	1	33	4.3
Jul 25	1	1	1	1	1	1	2	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	2	1.1
Jul 26	1	1	1	1	1	1	1	1	1	1	0	S	1	1	1	1	1	1	1	2	1	1	1	2	0	2	1.1
Jul 27	2	3	3	3	6	18	6	5	3	1	S	1	3	1	2	10	1	3	1	1	1	1	1	1	1	18	3.3
Jul 28	1	1	1	1	2	1	1	1	1	S	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1.1
Jul 29	1	1	1	1	1	3	2	2	S	2	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	3	1.3
Jul 30	3	4	4	5	7	327	5	S	4	1	1	1	2	1	56	23	1	3	1	6	2	4	4	4	1	327	20.4
Jul 31	4	5	5	6	3	3	S	6	6	6	3	2	1	1	1	1	2	1	2	2	1	1	1	1	1	6	2.8
Diurnal Maximum	4	5	5	6	194	327	182	18	9	6	11	5	7	3	56	23	4	4	3	6	5	11	4	6			
Diurnal Average	1.9	2.3	2.7	2.6	13.8	15.2	10.3	3.0	2.6	1.9	1.6	1.2	1.5	1.2	4.0	2.2	1.3	1.4	1.3	1.4	1.6	2.2	1.9	1.9			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

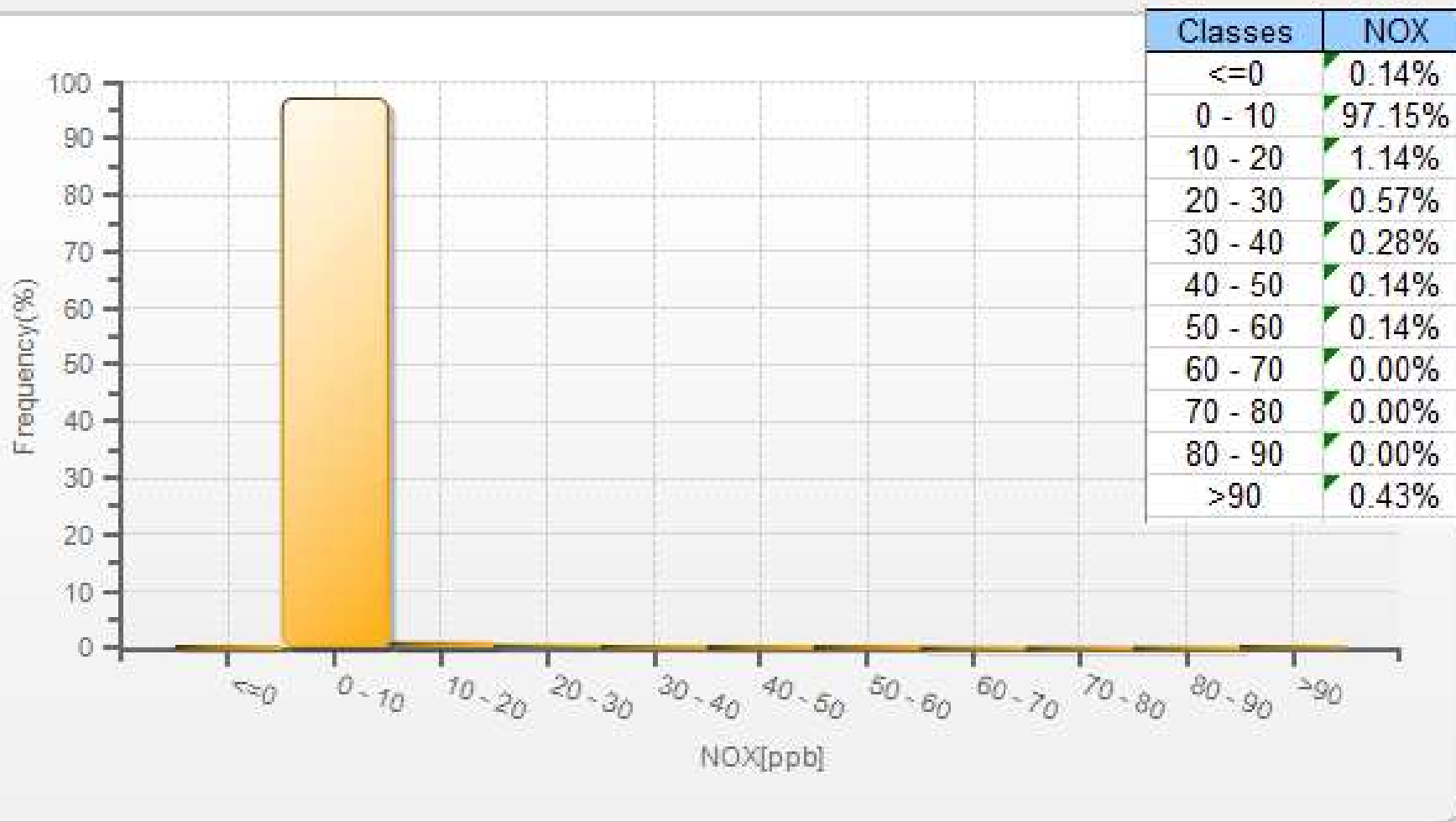
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



*Timeseries Chart of Hourly Average for NOx - Bonnyville - East Site*

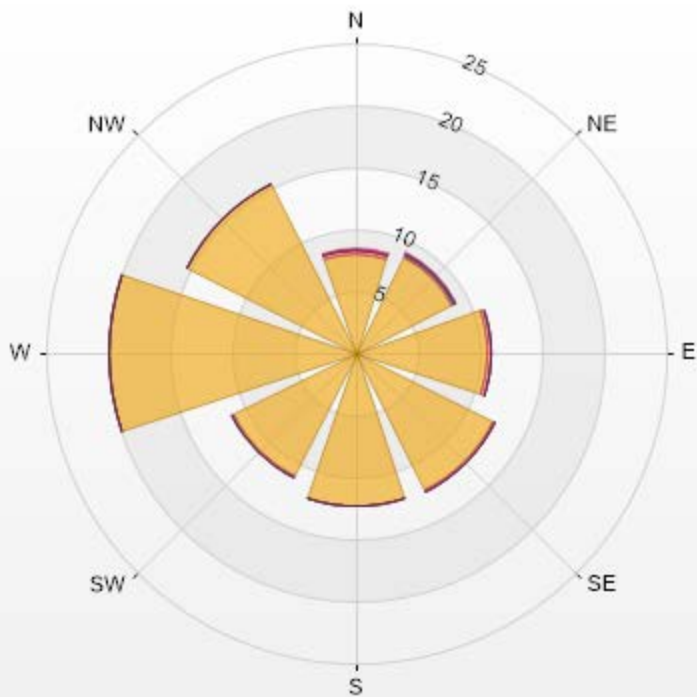


NOX[ppb] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NOX[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppb]

Direction	0-20	20-50	50-82	82-159	>159.0	Total
N	7.98	0.28	0	0	0.28	8.54
NE	8.69	0.14	0.14	0	0.14	9.11
E	10.68	0.28	0	0	0	10.96
SE	12.39	0.14	0	0	0	12.53
S	12.39	0	0	0	0	12.39
SW	11.11	0.14	0	0	0	11.25
W	19.94	0	0	0	0	19.94
NW	15.24	0	0	0	0	15.24
Summary	98.42	0.98	0.14	0	0.42	100



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% Icon Classes (ppb)	98	0-20	1	20-50	50-82	0	82-159	0	>159.0



### LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

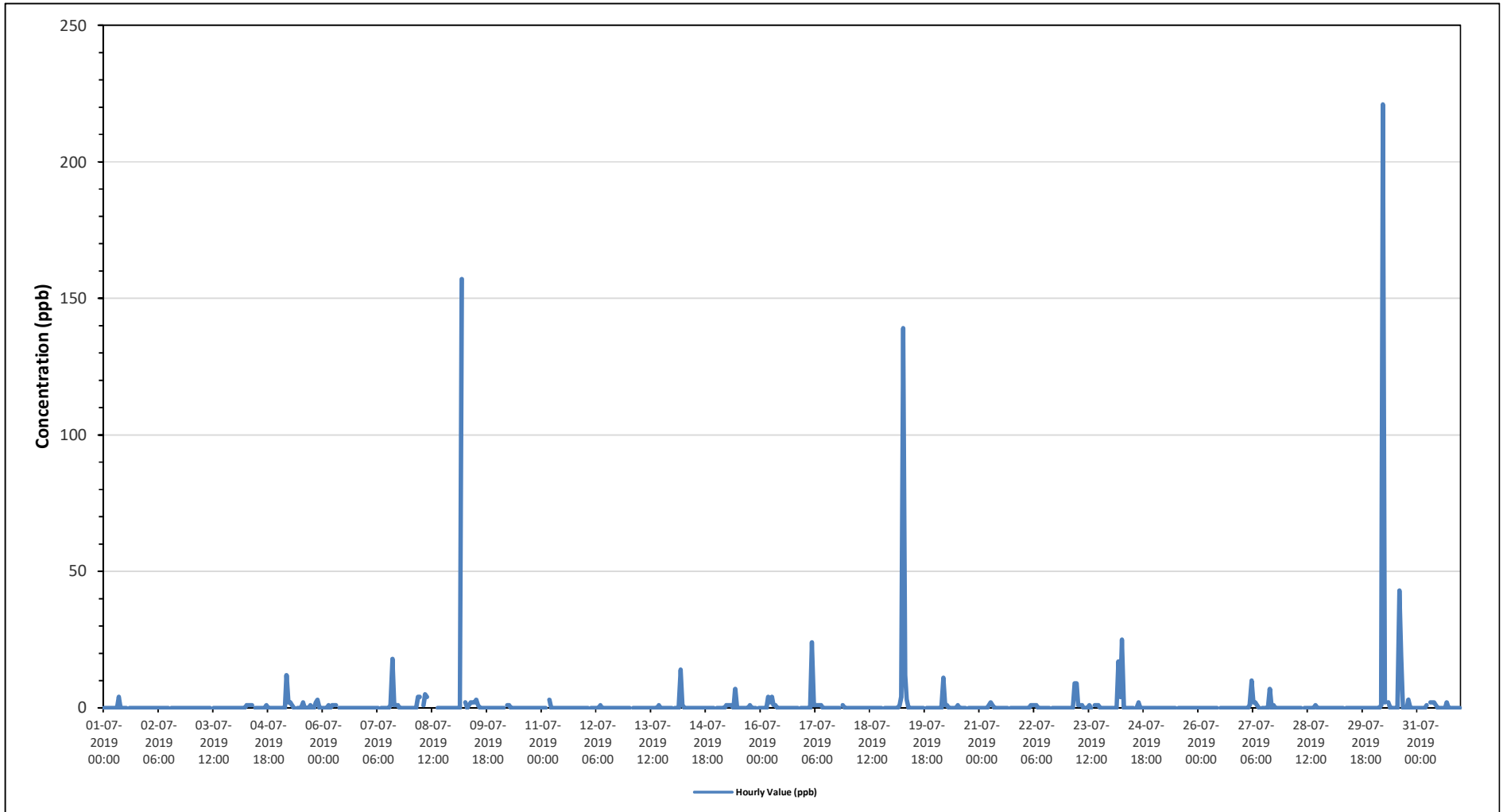
Maximum Hourly Value:	221 ppb	on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	12.7 ppb	on July 30	Hours of Data:	707
Minimum Hourly Value:	0 ppb	on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb	on July 2	Hours of Calibration:	37
Monthly Average:	1.3 ppb		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
Jul 1	0	0	0	0	0	0	0	0	4	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.2
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 4	0	0	0	0	0	0	1	1	1	1	S	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0.2	
Jul 5	0	0	0	0	12	2	2	1	0	S	0	0	0	0	2	0	0	0	1	0	0	2	3	0	0	0	0	0	0	12	1.1	
Jul 6	0	0	0	1	0	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 7	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	18	1	1	1	0	0	0	0	0	0	0	0	0	0	18	1.0	
Jul 8	0	0	0	0	4	4	S	1	5	4	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1.0	
Jul 9	0	0	0	0	157	S	2	0	1	2	2	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	157	7.4	
Jul 10	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 11	0	0	0	S	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	3	0.1	
Jul 12	0	0	S	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	1	0.0	
Jul 13	0	S	0	0	0	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	
Jul 14	S	0	0	0	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	14	0.7	
Jul 15	0	0	0	0	0	1	1	1	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0.5	
Jul 16	0	0	0	0	4	2	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.5	
Jul 17	0	0	0	0	24	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	1.3	
Jul 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.0	
Jul 19	0	0	0	0	1	4	139	12	3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	139	6.9	
Jul 20	0	0	0	0	11	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	11	0.6	
Jul 21	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	2	0.2	
Jul 22	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 23	0	0	0	0	9	9	1	1	1	0	0	0	0	1	0	S	1	1	1	0	0	0	0	0	0	0	0	0	0	9	1.1	
Jul 24	0	0	0	0	17	4	25	0	0	0	0	0	0	0	S	0	2	0	0	0	0	0	0	0	0	0	0	0	0	25	2.1	
Jul 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 26	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 27	0	0	0	0	1	10	2	2	1	0	S	0	0	0	0	0	7	0	1	0	0	0	0	0	0	0	0	0	0	10	1.0	
Jul 28	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	
Jul 29	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 30	0	0	0	0	1	221	2	S	2	0	0	0	0	0	0	43	19	0	0	0	0	3	0	0	0	0	0	0	0	221	12.7	
Jul 31	0	0	0	0	0	1	S	2	2	2	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0.4	
Diurnal Maximum	0	0	0	1	157	221	139	12	5	4	7	2	3	2	43	19	2	1	1	3	2	3	0	0	0	0	0	0	0	0	0	
Diurnal Average	0.0	0.0	0.0	0.0	8.6	8.8	6.4	0.9	0.8	0.3	0.4	0.1	0.2	0.1	2.1	1.0	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

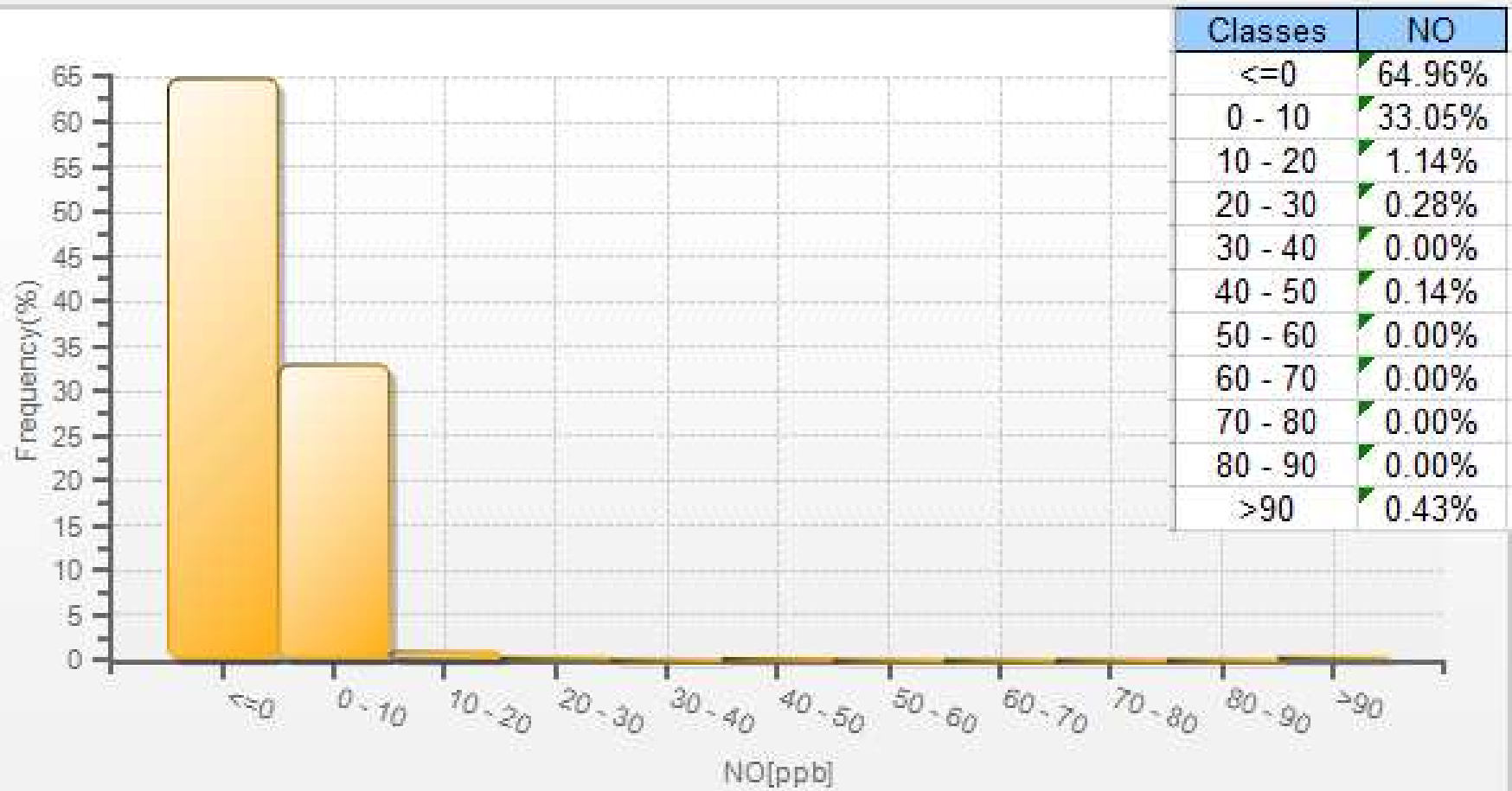
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for NO - Bonnyville - East Site**



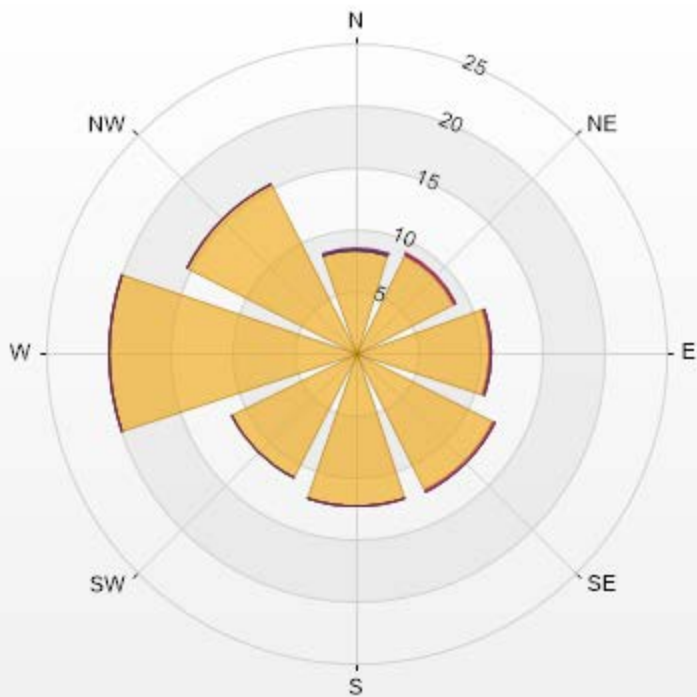
NO[ppb] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NO[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppb]

Direction	0-20	20-50	50-82	82-159	>159.0	Total
N	8.26	0	0	0.28	0	8.54
NE	8.83	0.14	0	0	0.14	9.11
E	10.83	0.14	0	0	0	10.97
SE	12.39	0.14	0	0	0	12.53
S	12.39	0	0	0	0	12.39
SW	11.25	0	0	0	0	11.25
W	19.94	0	0	0	0	19.94
NW	15.24	0	0	0	0	15.24
Summary	99.13	0.42	0	0.28	0.14	100





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% Icon Classes (ppb)	99	0-20	0	20-50	50-82	0	82-159	0	>159.0



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb**

Number of 1-Hour Exceedences: 0

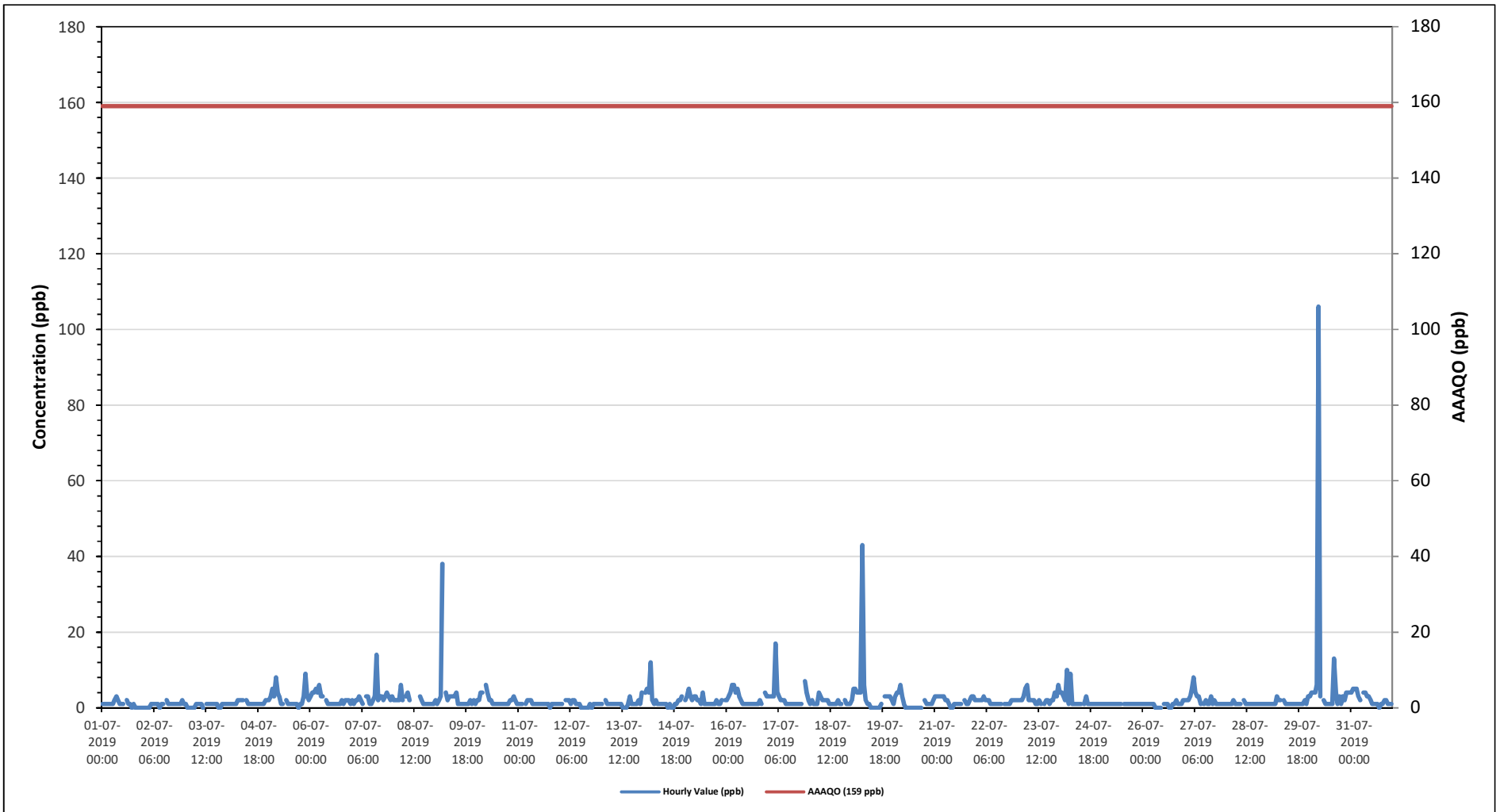
Maximum Hourly Value:	106 ppb on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	7.7 ppb on July 30	Hours of Data:	707
Minimum Hourly Value:	0 ppb on July 1 at hour 17	Hours of Missing Data:	0
Minimum Daily Value:	0.7 ppb on July 3	Hours of Calibration:	37
Monthly Average:	2.0 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23			
Jul 1	1	1	1	1	1	1	1	2	3	2	1	1	1	S	2	1	1	0	1	0	0	0	0	0	0	0	0	0	3	1.0
Jul 2	0	0	0	0	1	1	1	1	1	0	1	1	S	2	1	1	1	1	1	1	1	1	2	1	1	0	2	0.9		
Jul 3	1	0	0	0	0	0	1	1	1	1	0	S	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0.7		
Jul 4	1	1	1	1	1	1	2	2	2	2	S	2	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1.3			
Jul 5	2	3	5	3	8	4	3	1	1	S	2	1	1	1	1	1	1	0	1	1	3	9	3	2	0	9	2.5			
Jul 6	3	4	4	5	4	6	3	3	S	2	1	1	1	1	1	1	1	2	1	2	2	2	2	1	1	6	2.3			
Jul 7	2	1	2	2	3	2	1	S	3	3	1	1	2	3	14	2	3	3	2	3	4	3	2	3	1	14	2.8			
Jul 8	2	2	2	2	6	2	S	3	4	2	C	C	C	C	C	3	2	1	1	1	1	1	1	1	1	6	2.1			
Jul 9	2	1	2	3	38	S	4	2	3	3	3	3	4	1	1	1	1	1	1	1	2	1	2	1	1	38	3.5			
Jul 10	2	2	4	4	S	6	4	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	3	2	1	6	2.0			
Jul 11	1	1	1	S	1	2	2	2	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	2	1.1		
Jul 12	1	1	S	2	2	2	1	2	2	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	2	1.0		
Jul 13	1	S	2	1	1	1	1	1	1	1	1	0	0	0	1	3	1	1	1	1	1	2	1	2	1	4	1.2			
Jul 14	S	4	5	4	12	2	1	2	1	1	1	1	1	1	0	1	0	0	1	1	2	2	3	S	0	12	2.1			
Jul 15	2	3	5	3	2	3	3	2	2	1	4	1	1	1	1	1	1	1	2	1	1	2	S	2	1	5	2.0			
Jul 16	2	3	4	6	6	4	5	3	2	1	1	1	1	1	1	1	1	1	1	2	1	S	4	3	1	6	2.4			
Jul 17	3	3	3	3	17	4	3	2	2	2	2	1	1	1	1	1	1	1	1	1	S	7	4	2	1	17	2.8			
Jul 18	1	2	1	1	1	4	3	2	2	2	2	1	1	1	1	1	2	1	1	S	2	1	1	1	1	1	4	1.5		
Jul 19	2	5	5	4	4	4	43	6	2	1	1	0	0	0	0	0	0	1	S	3	3	3	3	2	0	43	4.0			
Jul 20	1	3	4	4	6	3	1	0	0	0	0	0	0	0	0	0	0	S	2	1	1	1	1	2	0	6	1.3			
Jul 21	3	3	3	3	3	3	2	2	1	0	0	1	1	1	1	1	S	2	1	1	1	2	3	3	2	0	3	1.8		
Jul 22	2	2	2	2	3	2	2	2	1	1	1	1	1	1	1	S	1	1	1	1	2	2	2	2	1	3	1.6			
Jul 23	2	2	2	3	5	6	2	2	2	2	1	1	2	1	S	1	2	2	1	2	2	4	3	6	1	6	2.4			
Jul 24	4	4	3	2	10	1	9	1	1	1	1	1	1	S	1	3	1	1	1	1	1	1	1	1	1	10	2.2			
Jul 25	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0		
Jul 26	1	1	1	1	1	1	1	0	0	0	0	S	1	1	1	0	0	1	1	2	1	1	1	2	0	2	0.8			
Jul 27	2	2	2	3	5	8	4	3	3	1	S	1	2	1	1	3	1	2	1	1	1	1	1	1	1	8	2.2			
Jul 28	1	1	1	1	2	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1			
Jul 29	1	1	1	1	1	3	2	2	S	2	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	3	1.3			
Jul 30	3	4	4	4	6	106	3	S	2	1	1	1	1	1	13	4	1	3	1	3	2	4	4	4	1	106	7.7			
Jul 31	4	5	5	5	3	2	S	4	4	3	3	2	1	1	1	0	1	1	2	2	2	1	1	1	0	5	2.3			
Diurnal Maximum	4	5	5	6	38	106	43	6	4	3	4	3	4	3	14	4	3	3	2	3	4	9	4	6						
Daiurnal Average	1.8	2.2	2.5	2.5	5.1	6.2	3.8	2.0	1.8	1.3	1.2	1.1	1.1	1.0	1.7	1.2	1.0	1.1	1.1	1.3	1.5	2.1	1.8	1.8						

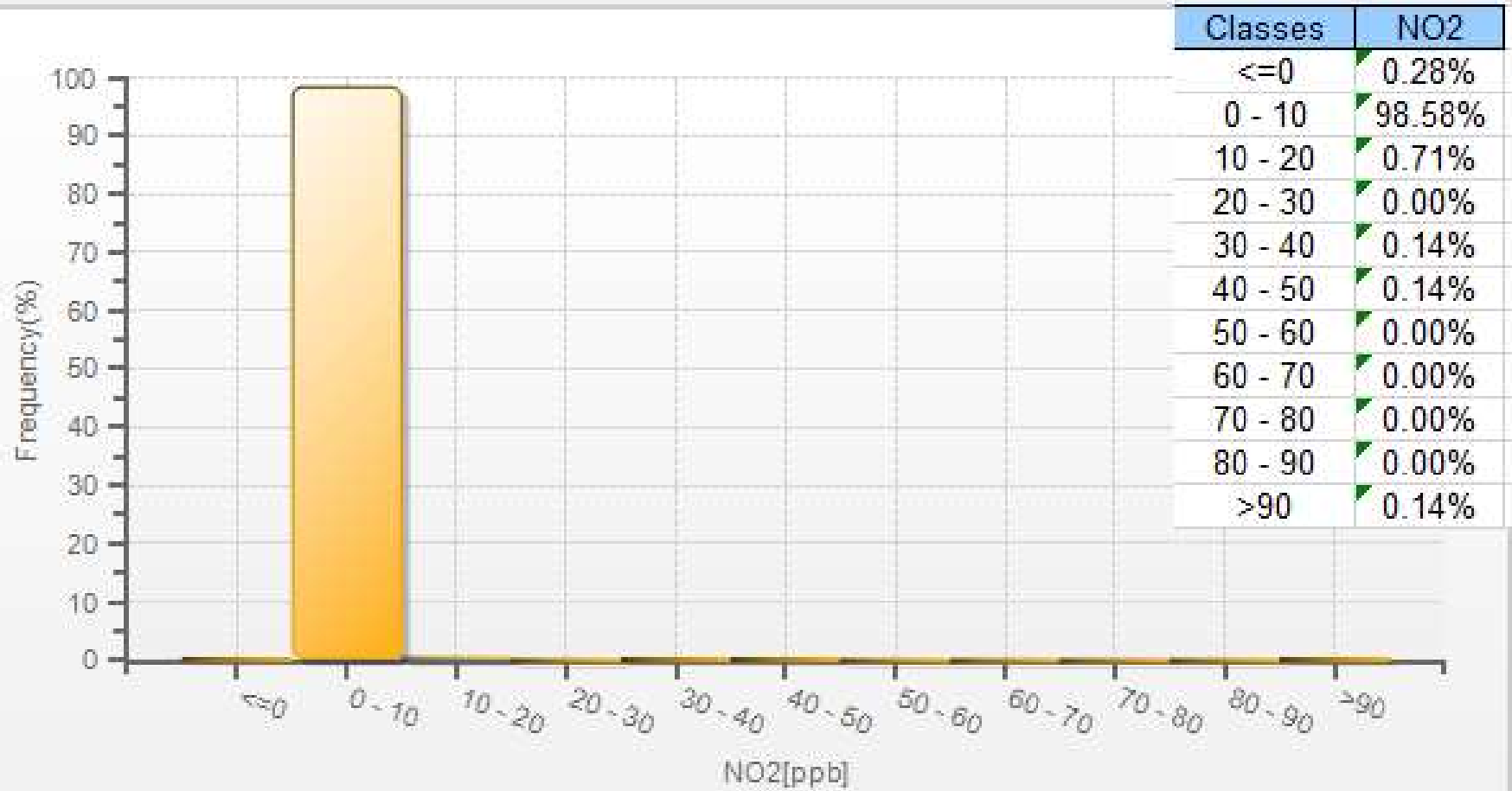
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for NO2 - Bonnyville - East Site**

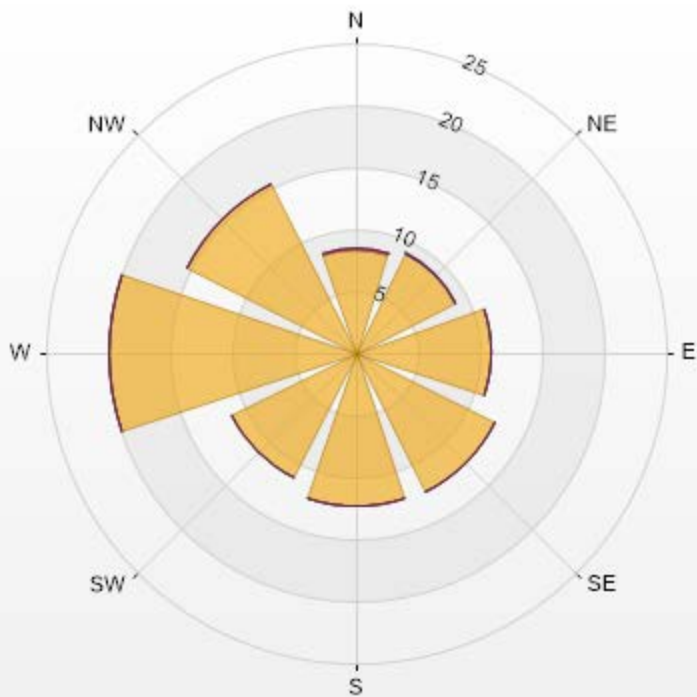


NO2[ppb] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NO2[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppb]

Direction	0-20	20-50	50-82	82-159	>159.0	Total
N	8.26	0.28	0	0	0	8.54
NE	8.97	0	0	0.14	0	9.11
E	10.97	0	0	0	0	10.97
SE	12.54	0	0	0	0	12.54
S	12.39	0	0	0	0	12.39
SW	11.25	0	0	0	0	11.25
W	19.94	0	0	0	0	19.94
NW	15.24	0	0	0	0	15.24
Summary	100	0.28	0	0.14	0	100



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# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

OZONE (O<sub>3</sub>) in ppb

## Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 76 ppb

Number of 1-Hour Exceedences: 0

Maximum Hourly Value:	47.7 ppb on July 23 at hour 17	Hours in Service:	744
Maximum Daily Value:	31.9 ppb on July 22	Hours of Data:	708
Minimum Hourly Value:	2.2 ppb on July 30 at hour 4	Hours of Missing Data:	0
Minimum Daily Value:	18.8 ppb on July 30	Hours of Calibration:	36
Monthly Average:	24.6 ppb	Operational Uptime:	100.0

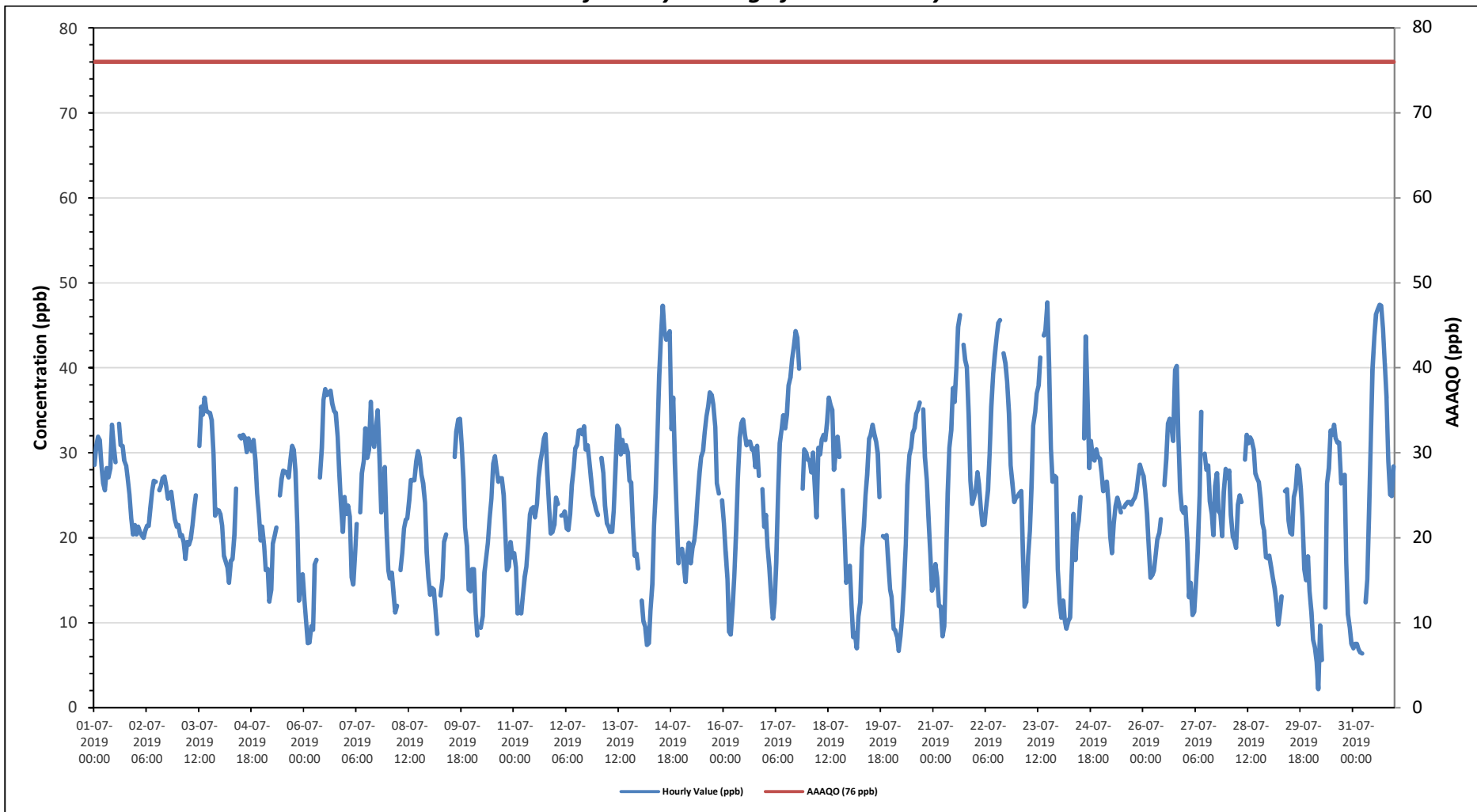
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	28.6	30.7	31.9	31.5	28.3	26.4	25.6	28.2	27.1	28.2	33.3	30.6	28.9	S	33.4	30.9	30.8	29.1	28.5	27	25.1	22.3	20.4	21.5	20.4	33.4	28.2
Jul 2	20.4	21.3	20.7	20.3	20	20.8	21.4	21.4	23.5	25.6	26.7	26.6	S	25.6	26.1	27	27.2	26.1	24.6	25.1	25.4	23.5	22.2	21.3	20.0	27.2	23.6
Jul 3	21.5	20.2	20.3	19.5	17.5	19.5	19.2	19.8	21.5	23.4	25	S	30.8	35.4	34.5	36.5	34.9	34.8	34.7	33.9	29.8	22.6	23.3	23.2	17.5	36.5	26.2
Jul 4	22.8	21.4	17.9	17.2	16.5	14.7	17.3	17.5	20.4	25.8	S	32	31.7	32.1	31.8	30.1	31.7	30.7	30.2	31.5	29	25.2	22.8	19.7	14.7	32.1	24.8
Jul 5	21.3	19	16.2	16.3	12.5	13.9	19.3	20.2	21.2	S	25	26.9	27.9	27.8	27.6	27.1	29.1	30.8	30.3	27.8	21.3	12.6	15.2	15.7	12.5	30.8	22.0
Jul 6	12.6	10.3	7.6	7.7	9.6	9.2	16.9	17.4	S	27.1	30.6	36.2	37.5	36.8	37	37.3	35.8	34.9	34.7	31.9	27.7	23.9	20.7	24.8	7.6	37.5	24.7
Jul 7	22.8	23.8	22.5	15.4	14.5	18.1	21.6	S	23	27.6	29	32.9	29.4	30.4	36	31.3	30.7	32.8	35	29.3	23	24.8	28.3	21.3	14.5	36.0	26.2
Jul 8	16.2	15.2	15.9	13.5	11.2	12	S	16.2	18.2	21.1	22.1	22.3	24.4	26.8	26.8	26.8	29	30.2	29.4	27.4	26.4	24.1	18.3	15.3	11.2	30.2	21.3
Jul 9	13.3	14.1	13.9	11.6	8.7	S	13.2	15.2	19.5	20.4	C	C	C	C	29.5	32.5	33.9	34	30.8	26.9	21.2	19	13.9	13.7	8.7	34.0	20.3
Jul 10	16.3	16.3	11.1	8.5	S	9.4	10.8	15.9	17.6	19.4	22.3	24.6	28.7	29.6	28	26.6	27	27	25	20.5	16.2	16.6	19.5	17.7	8.5	29.6	19.8
Jul 11	18.2	16.5	11.1	S	11.1	13.1	15.4	16.6	19.4	22.7	23.4	23.6	22.4	24	27	29	30.1	31.6	32.2	27.7	23.5	20.5	20.7	21.5	11.1	32.2	21.8
Jul 12	24.7	24	S	22.6	22.7	23.1	21.1	20.9	22.8	26.2	28.2	30.5	30.9	32.6	32.7	32.2	33.1	30.4	30.9	29.2	26.9	25	24	23.2	20.9	33.1	26.9
Jul 13	22.7	S	29.4	27.6	23.8	21.7	21.3	20.7	23.2	28.6	33.2	32.8	29.8	31.5	30.1	30.9	30	26.7	26.5	21.3	17.9	18.1	16.4	16.4	33.2	25.4	
Jul 14	S	12.6	10.2	9.5	7.4	7.6	11.4	14.6	21.4	25.2	32.5	39	44.1	47.3	44.4	43.3	43.7	44.3	32.8	36.5	28.8	23.3	17	S	7.4	47.3	27.1
Jul 15	18.7	16.9	14.8	18.1	19.4	17	18.8	19.7	21.6	24.7	27.6	29.5	30.2	32.4	34.3	35.5	37.1	36.8	35.7	33	26.4	25.2	S	24.4	14.8	37.1	26.0
Jul 16	21.7	18.4	15.1	8.9	8.6	12.1	15.5	21	26.9	31.8	33.5	33.9	32.1	30.9	31.3	31.3	30.4	30.5	28.3	30.8	27.3	S	25.7	21.3	8.6	33.9	24.7
Jul 17	22.7	19	16.5	13.2	10.5	12.3	17.1	25.5	31.1	32.8	34.4	32.9	34.5	37.9	38.8	41	42.5	44.3	43.5	39.9	S	25.8	30.4	30	10.5	44.3	29.4
Jul 18	29.2	29.1	27.7	30	25.8	22.4	30.6	29.8	31.5	32.1	31.5	33.6	36.5	35.6	35	28	30.2	31.9	29.5	S	25.6	20.8	14.7	16.1	14.7	36.5	28.6
Jul 19	16.7	11.9	8.3	8.8	7	10.7	12.4	18.8	21.3	25	27.4	31.6	32.1	33.3	32.2	31.3	29.9	24.8	S	20.2	20	20.3	17.3	13.9	7.0	33.3	20.7
Jul 20	13	9.3	9.1	8.3	6.7	8.4	10.9	14.3	19.3	26.2	29.7	30.6	32.3	32.9	34.6	35.1	35.9	S	35.1	29.5	26.8	22.5	18	13.8	6.7	35.9	21.8
Jul 21	14.4	16.9	15.3	12	11.9	8.4	9.6	16	25.2	30.6	32.7	37.6	36	40.1	44.8	46.2	S	42.7	40.9	40.1	34.3	26.7	24	24.7	8.4	46.2	27.4
Jul 22	25.6	27.7	26.3	23.2	21.5	21.6	23.5	25.6	29.9	35.4	39.3	41.5	43.7	45.3	45.6	S	41.7	40.5	38.4	34.6	28.5	26.5	24.2	24.7	21.5	45.6	31.9
Jul 23	24.9	25.2	25.5	18.1	11.9	12.5	17.8	20.8	26.2	33.2	34.8	37	38	41.2	S	43.8	44.4	47.7	40.4	30.5	26.6	27.3	27.1	16.3	11.9	47.7	29.2
Jul 24	12.4	10.6	12.6	10.2	9.3	10.2	10.6	16.8	22.8	17.4	20.7	22	24.8	S	31.7	43.7	36.1	28.2	31.4	29.3	29.1	30.4	29.5	29.3	9.3	43.7	22.6
Jul 25	27.6	25.5	25.8	26.6	23.9	20.1	18.2	21.6	23.7	24.7	24	23	S	23.6	24	24.2	24.2	23.9	24.4	24.7	25.5	27.3	28.6	27.8	18.2	28.6	24.5
Jul 26	27.3	25.6	22.8	19	15.3	15.6	16.2	18.1	19.8	20.6	22.2	S	26.2	29.3	33.4	34	33	31.4	39.7	40.2	32.1	25.5	23.3	22.9	15.3	40.2	25.8
Jul 27	23.6	19.5	13	14.7	10.9	11.3	14.8	18.4	25	34.8	S	29.9	28	28.5	24.3	22.8	20.3	26.1	27.6	23.1	22.8	20.2	25.4	28.1	10.9	34.8	22.3
Jul 28	27	27.9	22.7	20.1	19.7	18.8	23.9	25	24.2	S	29.2	32.1	31.1	31.8	31.4	30.3	27.6	27	26.5	24.6	21.7	20.8	17.7	17.6	17.6	32.1	25.2
Jul 29	17.9	16.5	15.3	14	12.3	9.8	11.2	13.1	S	25.5	25.7	22	20.6	20.4	24.8	25.7	28.5	28	25.7	22.4	16.3	15	17.8	13.7	9.8	28.5	19.2
Jul 30	11.2	8	7.1	5.4	2.2	9.7	5.6	S	11.8	26.4	28.2	32.6	32.1	33.3	31.7	31.2	31.2	26.4	27.1	27.4	17	11	9.4	7.5	2.2	33.3	18.8
Jul 31	7	7.5	7.5	6.9	6.5	6.4	S	12.4	15.1	22.4	31.6	39.8	43.7	46.3	46.9	47.4	47.3	44.6	40.5	36.4	29	25.1	24.9	28.4	6.4	47.4	27.1
Diurnal Maximum	29	31	32	32	28	26	31	30	32	35	39	42	44	47	47	47	47	48	44	40	34	30	30	30			
Daiurnal Average	20.1	18.7	17.1	16.0	14.2	14.6	16.9	19.4	22.5	26.2	28.5	31.0	31.8	32.9	33.0	33.1	32.9	32.7	32.0	29.6	25.2	22.4	21.4	20.5			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

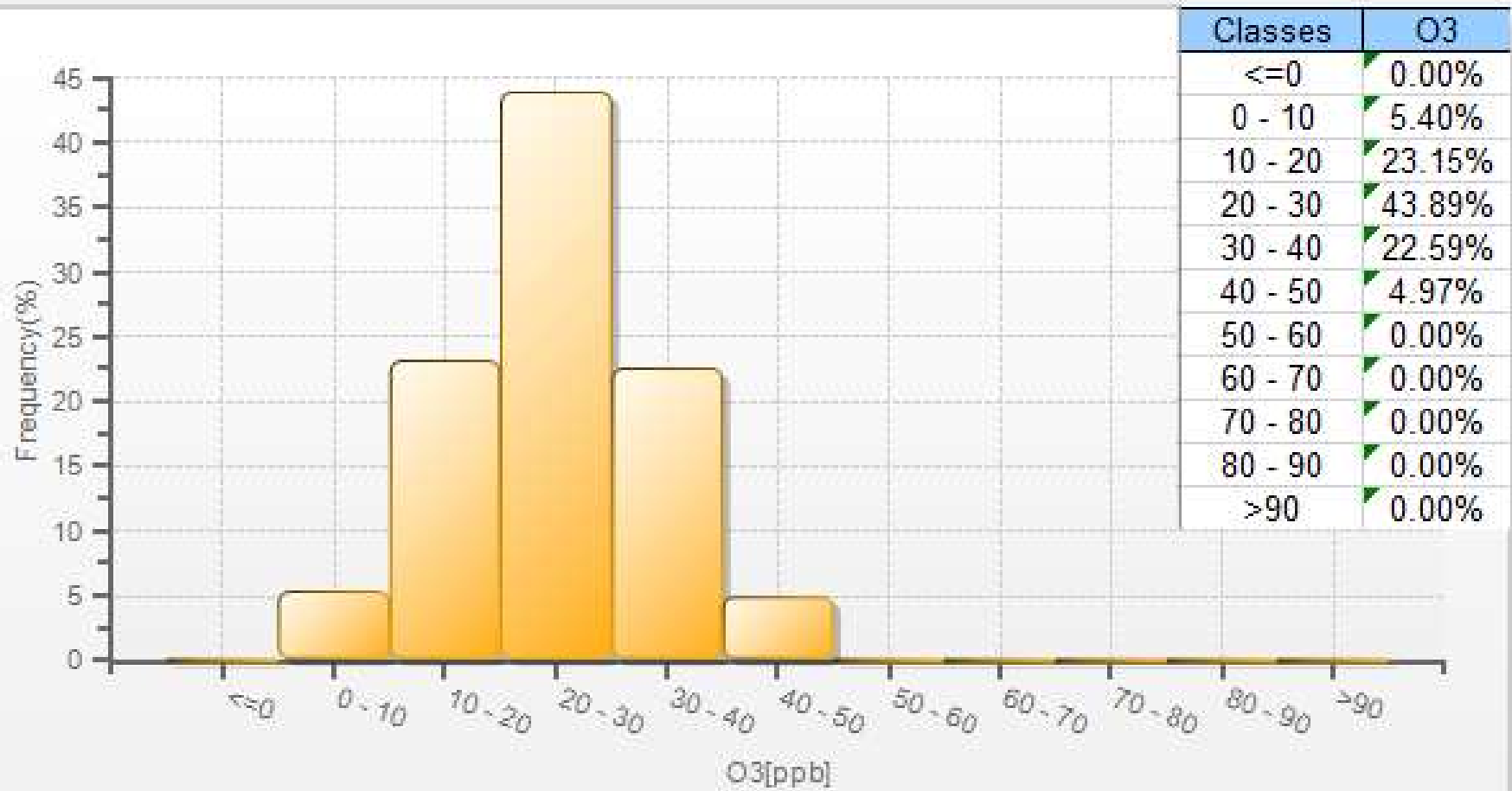
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for O3 - Bonnyville - East Site**



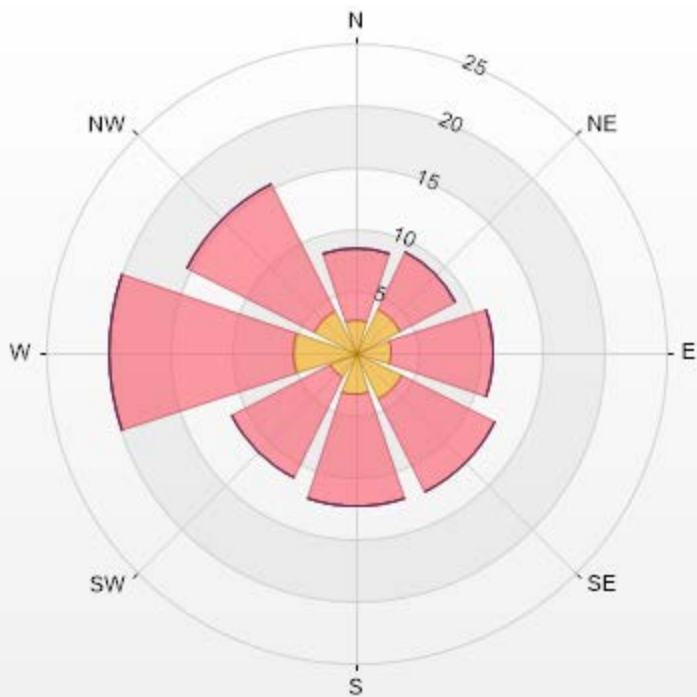


O3[ppb] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-O3[ppb] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppb]

Direction	0-20	20-50	50-82	82-159	>159.0	Total
N	2.7	5.82	0	0	0	8.52
NE	3.98	5.11	0	0	0	9.09
E	2.98	8.1	0	0	0	11.08
SE	4.26	8.38	0	0	0	12.64
S	3.41	8.95	0	0	0	12.36
SW	2.27	8.95	0	0	0	11.22
W	5.11	14.77	0	0	0	19.88
NW	3.84	11.36	0	0	0	15.2
Summary	28.55	71.44	0	0	0	100



LICA-201907-Revision 1

%	Icon	Classes (ppb)	Count	Icon	Classes (ppb)	Count	Icon	Classes (ppb)	Count	Icon	Classes (ppb)	Count
29		0-20	71		>159.0	0		50-82	0		82-159	0



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

**Bonnyville - East Site - July 2019**

### Summary of Hourly Averages

#### TOTAL HYDROCARBONS (THC) in ppm

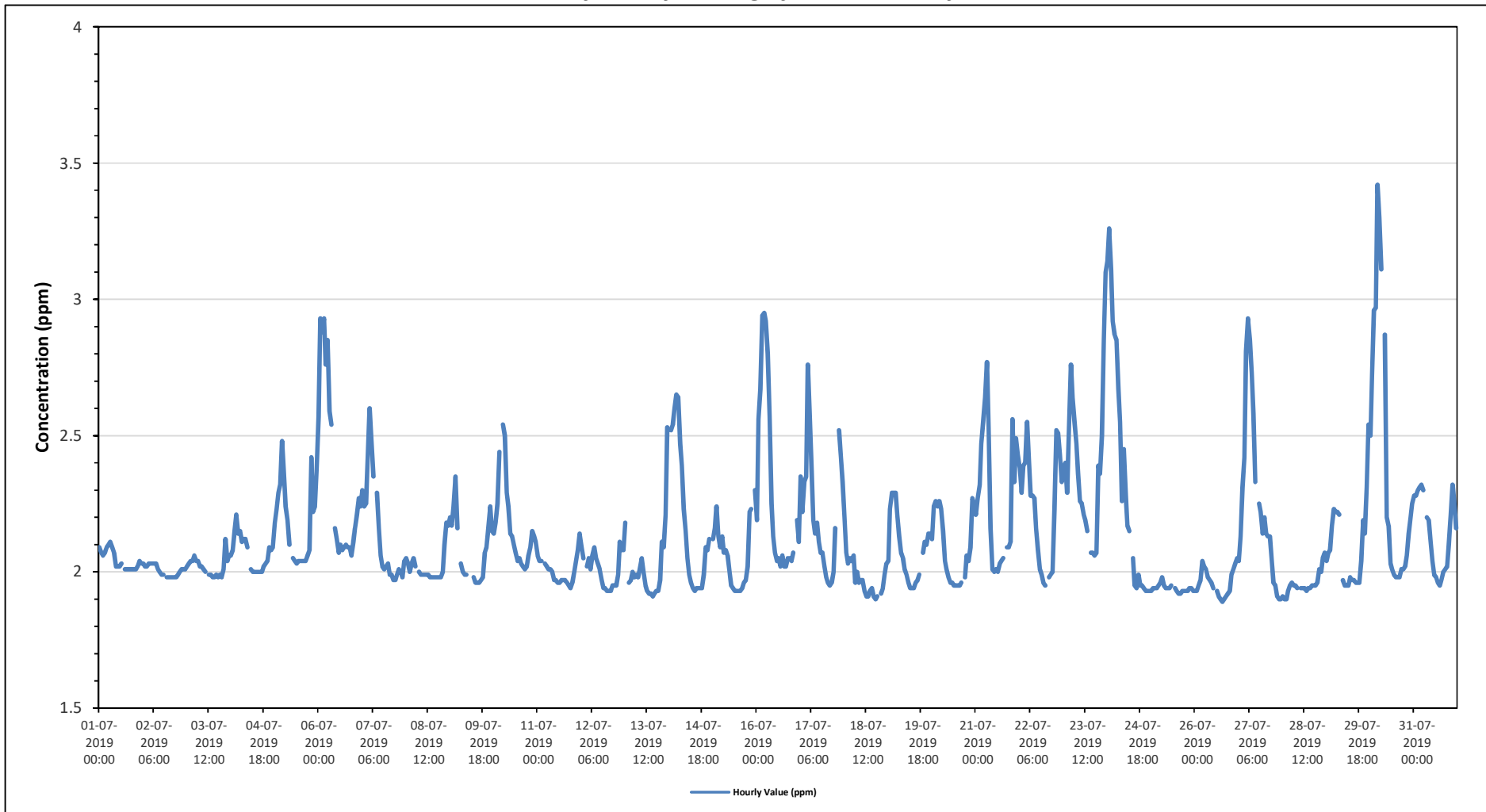
Maximum Hourly Value: 3.42 ppm on July 30 at hour 4	Hours in Service: 744
Maximum Daily Value: 2.39 ppm on July 23	Hours of Data: 709
Minimum Hourly Value: 1.89 ppm on July 26 at hour 15	Hours of Missing Data: 0
Minimum Daily Value: 1.94 ppm on July 25	Hours of Calibration: 35
Monthly Average: 2.13 ppm	Operational Uptime: 100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.09	2.07	2.06	2.07	2.09	2.10	2.11	2.09	2.07	2.02	2.02	2.02	2.03	S	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.04	2.03	2.01	2.11	2.04	
Jul 2	2.03	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.01	2.00	1.99	1.99	S	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.01	2.01	2.01	1.98	2.03	2.00
Jul 3	2.02	2.03	2.04	2.04	2.06	2.04	2.04	2.02	2.02	2.01	2.00	S	1.99	1.99	1.98	1.98	1.99	1.98	1.99	1.98	2.01	2.12	2.04	2.06	1.98	2.12	2.02	
Jul 4	2.06	2.08	2.15	2.21	2.14	2.15	2.11	2.12	2.12	2.09	S	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.02	2.03	2.04	2.09	2.08	2.09	2.00	2.21	2.07	
Jul 5	2.18	2.23	2.29	2.32	2.48	2.36	2.24	2.19	2.10	S	2.05	2.04	2.03	2.04	2.04	2.04	2.06	2.08	2.08	2.42	2.22	2.24	2.38	2.03	2.48	2.18		
Jul 6	2.57	2.93	2.88	2.93	2.76	2.85	2.59	2.54	S	2.16	2.12	2.07	2.10	2.08	2.09	2.10	2.09	2.09	2.06	2.11	2.16	2.21	2.27	2.24	2.06	2.93	2.35	
Jul 7	2.30	2.24	2.25	2.42	2.60	2.48	2.35	S	2.29	2.16	2.06	2.02	2.01	2.02	2.03	1.99	1.99	1.97	1.97	1.99	2.01	2.00	1.98	2.04	1.97	2.60	2.14	
Jul 8	2.05	2.03	2.00	2.03	2.05	2.02	S	2.00	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	2.00	2.10	2.18	2.17	1.98	2.18	2.02	
Jul 9	2.20	2.17	2.24	2.35	2.16	S	2.03	2.00	1.99	1.99	C	C	C	1.98	1.96	1.96	1.96	1.97	1.98	2.07	2.09	2.16	2.24	2.15	1.96	2.35	2.08	
Jul 10	2.14	2.18	2.25	2.44	S	2.54	2.50	2.29	2.24	2.14	2.13	2.10	2.07	2.04	2.05	2.03	2.02	2.01	2.02	2.06	2.09	2.15	2.13	2.11	2.01	2.54	2.16	
Jul 11	2.06	2.04	2.04	S	2.03	2.02	2.01	2.01	2.00	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.96	1.95	1.94	1.96	2.00	2.04	2.08	2.14	1.94	2.14	2.00	
Jul 12	2.09	2.05	S	2.02	2.05	2.01	2.06	2.09	2.05	2.03	2.01	1.97	1.94	1.94	1.93	1.93	1.93	1.95	1.95	1.95	1.99	2.11	2.08	2.08	1.93	2.11	2.01	
Jul 13	2.18	S	1.96	1.97	2.00	1.98	1.99	1.98	2.01	2.05	2.00	1.95	1.93	1.92	1.92	1.91	1.92	1.93	1.93	1.97	2.11	2.09	2.21	2.53	1.91	2.53	2.02	
Jul 14	S	2.52	2.54	2.60	2.65	2.64	2.47	2.39	2.23	2.15	2.05	1.99	1.96	1.94	1.93	1.94	1.94	1.94	1.94	1.99	2.09	2.08	2.12	S	1.93	2.65	2.19	
Jul 15	2.12	2.16	2.24	2.13	2.09	2.13	2.07	2.08	2.06	2.00	1.95	1.94	1.93	1.93	1.93	1.93	1.94	1.96	1.97	2.02	2.22	2.23	S	2.30	1.93	2.30	2.06	
Jul 16	2.19	2.56	2.67	2.94	2.95	2.92	2.80	2.57	2.25	2.13	2.07	2.04	2.05	2.02	2.06	2.02	2.02	2.05	2.05	2.04	2.07	S	2.19	2.11	2.02	2.95	2.29	
Jul 17	2.35	2.22	2.33	2.35	2.76	2.58	2.37	2.19	2.14	2.18	2.11	2.07	2.07	2.02	1.98	1.96	1.95	1.96	2.00	2.16	S	2.52	2.42	2.33	1.95	2.76	2.22	
Jul 18	2.20	2.07	2.03	2.05	2.04	2.06	1.96	2.00	1.96	1.97	1.97	1.93	1.91	1.91	1.93	1.94	1.91	1.90	1.91	S	1.92	1.94	1.99	2.03	1.90	2.20	1.98	
Jul 19	2.04	2.23	2.29	2.29	2.29	2.21	2.13	2.07	2.05	2.01	1.99	1.96	1.94	1.94	1.94	1.96	1.97	1.99	S	2.07	2.11	2.10	2.14	2.14	1.94	2.29	2.08	
Jul 20	2.12	2.24	2.26	2.24	2.26	2.23	2.15	2.04	2.01	1.98	1.96	1.96	1.95	1.95	1.95	1.95	1.95	1.95	S	1.98	2.06	2.04	2.09	2.27	2.25	1.95	2.27	2.08
Jul 21	2.21	2.27	2.32	2.47	2.55	2.64	2.77	2.53	2.16	2.01	2.00	2.01	2.00	2.03	2.04	2.05	S	2.09	2.09	2.11	2.56	2.33	2.49	2.43	2.00	2.77	2.27	
Jul 22	2.38	2.29	2.39	2.40	2.55	2.41	2.28	2.28	2.27	2.16	2.08	2.01	1.99	1.96	1.95	S	1.98	1.99	2.00	2.23	2.52	2.51	2.43	2.33	1.95	2.55	2.23	
Jul 23	2.36	2.40	2.29	2.54	2.76	2.64	2.55	2.47	2.36	2.26	2.25	2.21	2.19	2.15	S	2.07	2.07	2.06	2.07	2.39	2.36	2.50	2.85	3.10	2.06	3.10	2.39	
Jul 24	3.14	3.26	3.11	2.92	2.87	2.85	2.67	2.55	2.26	2.45	2.28	2.17	2.15	S	2.05	1.95	1.94	1.99	1.95	1.95	1.94	1.93	1.93	1.93	1.93	3.26	2.36	
Jul 25	1.93	1.94	1.94	1.94	1.95	1.96	1.98	1.95	1.94	1.94	1.94	1.95	S	1.94	1.93	1.92	1.92	1.93	1.93	1.93	1.93	1.94	1.94	1.93	1.92	1.98	1.94	
Jul 26	1.93	1.93	1.95	1.97	2.04	2.02	2.01	1.98	1.97	1.96	1.94	S	1.93	1.91	1.90	1.89	1.90	1.91	1.92	1.93	1.99	2.01	2.03	2.05	1.89	2.05	1.96	
Jul 27	2.04	2.13	2.31	2.42	2.81	2.93	2.85	2.73	2.58	2.33	S	2.25	2.22	2.14	2.20	2.14	2.13	2.13	2.04	1.96	1.95	1.91	1.90	1.90	1.90	2.93	2.26	
Jul 28	1.91	1.90	1.90	1.93	1.95	1.96	1.95	1.95	1.94	S	1.94	1.94	1.94	1.93	1.94	1.94	1.95	1.95	1.95	1.96	2.01	2.00	2.05	2.07	1.90	2.07	1.95	
Jul 29	2.04	2.07	2.08	2.17	2.23	2.22	2.22	2.21	S	1.97	1.95	1.95	1.95	1.98	1.97	1.97	1.96	1.96	1.96	2.04	2.19	2.14	2.31	2.54	1.95	2.54	2.09	
Jul 30	2.50	2.72	2.96	2.97	3.42	3.30	3.11	S	2.87	2.20	2.17	2.03	2.01	1.99	1.98	1.98	1.98	2.01	2.01	2.02	2.06	2.14	2.20	2.25	1.98	3.42	2.39	
Jul 31	2.28	2.28	2.30	2.31	2.32	2.30	S	2.20	2.19	2.11	2.04	1.99	1.98	1.96	1.95	1.97	2.00	2.01	2.02	2.10	2.21	2.32	2.26	2.16	1.95	2.32	2.14	
Diurnal Maximum	3.14	3.26	3.11	2.97	3.42	3.30	3.11	2.73	2.87	2.45	2.28	2.25	2.22	2.15	2.20	2.14	2.13	2.13	2.09	2.39	2.56	2.52	2.85	3.10				
Diurnal Average	2.19	2.24	2.27	2.32	2.36	2.35	2.29	2.19	2.14	2.08	2.04	2.02	2.01	1.99	1.99	1.98	1.98	1.99	1.99	2.04	2.10	2.13	2.17	2.20				

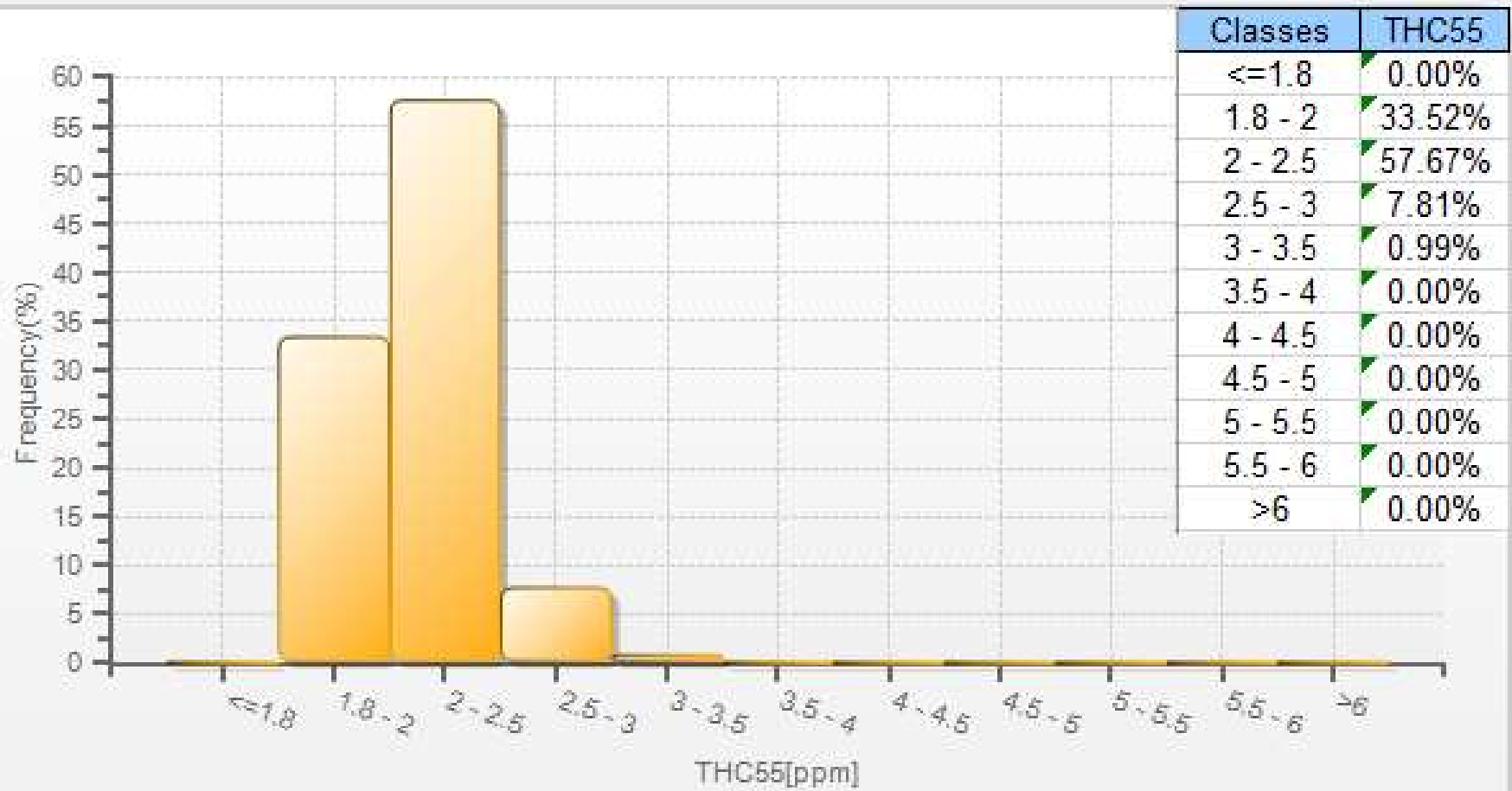
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for THC - Bonnyville - East Site**

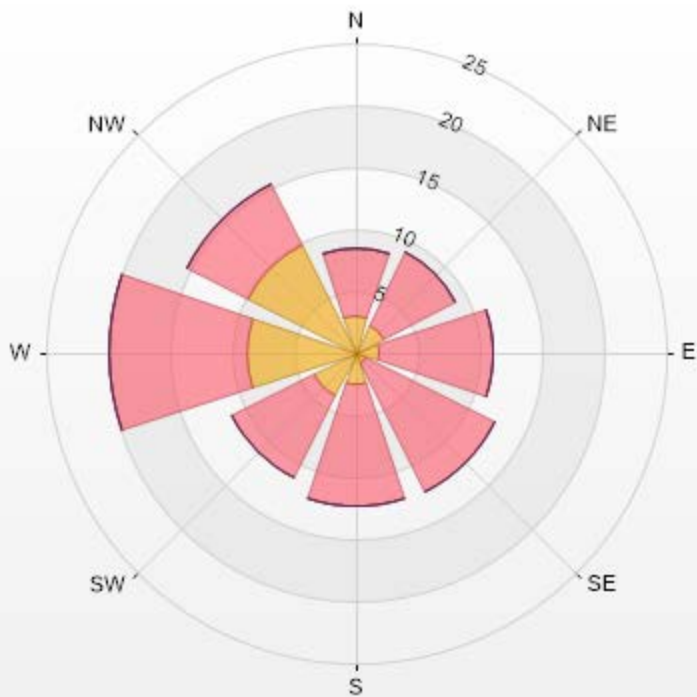


THC55[ppm] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-THC55[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	2.98	5.54	0	0	0	8.52
NE	2.56	6.53	0	0	0	9.09
E	1.99	9.09	0	0	0	11.08
SE	0.99	11.65	0	0	0	12.64
S	2.56	9.8	0	0	0	12.36
SW	3.84	7.39	0	0	0	11.23
W	8.81	11.08	0	0	0	19.89
NW	9.8	5.4	0	0	0	15.2
Summary	33.53	66.48	0	0	0	100



LICA-201907-Revision 1

% Icon Classes (ppm)	34	66	205	364	0	0
0-2	34	66	205	364	0	0
5-10						
10-40						
>40.0						





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

## Bonnyville - East Site - July 2019

### Summary of Hourly Averages

#### METHANE (CH4) in ppm

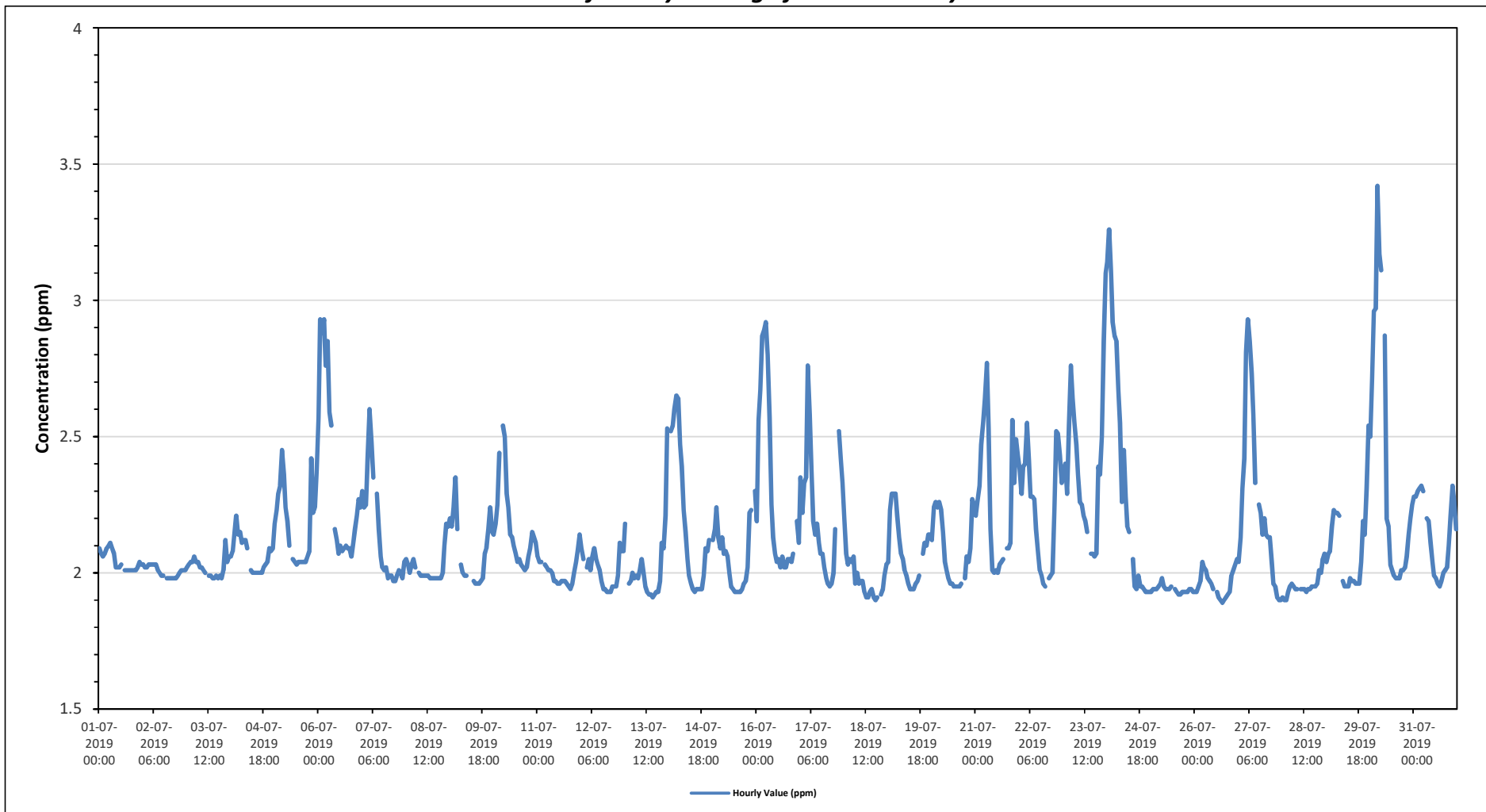
Maximum Hourly Value:	3.42 ppm on July 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.39 ppm on July 23	Hours of Data:	709
Minimum Hourly Value:	1.89 ppm on July 26 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	1.94 ppm on July 25	Hours of Calibration:	35
Monthly Average:	2.13 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.09	2.07	2.06	2.07	2.09	2.10	2.11	2.09	2.07	2.02	2.02	2.02	2.03	S	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.04	2.03	2.01	2.11	2.04	
Jul 2	2.03	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.01	2.00	1.99	1.99	S	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.01	2.01	2.01	1.98	2.03	2.00
Jul 3	2.02	2.03	2.04	2.04	2.06	2.04	2.04	2.02	2.02	2.01	2.00	S	1.99	1.99	1.98	1.98	1.99	1.98	1.99	1.98	2.01	2.12	2.04	2.06	1.98	2.12	2.02	
Jul 4	2.06	2.08	2.15	2.21	2.14	2.15	2.11	2.12	2.12	2.09	S	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.02	2.03	2.04	2.09	2.08	2.09	2.00	2.21	2.07	
Jul 5	2.18	2.23	2.29	2.32	2.45	2.36	2.24	2.19	2.10	S	2.05	2.04	2.03	2.04	2.04	2.04	2.06	2.08	2.08	2.42	2.22	2.24	2.38	2.03	2.45	2.18		
Jul 6	2.57	2.93	2.88	2.93	2.76	2.85	2.59	2.54	S	2.16	2.12	2.07	2.10	2.08	2.09	2.10	2.09	2.09	2.06	2.11	2.16	2.21	2.27	2.24	2.06	2.93	2.35	
Jul 7	2.30	2.24	2.25	2.42	2.60	2.48	2.35	S	2.29	2.16	2.06	2.02	2.01	2.02	1.98	1.99	1.99	1.97	1.97	1.99	2.01	2.00	1.98	2.04	1.97	2.60	2.14	
Jul 8	2.05	2.03	2.00	2.03	2.05	2.02	S	2.00	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	2.00	2.10	2.18	2.17	1.98	2.18	2.02	
Jul 9	2.20	2.17	2.24	2.35	2.16	S	2.03	2.00	1.99	1.99	C	C	C	1.97	1.96	1.96	1.96	1.97	1.98	2.07	2.09	2.16	2.24	2.15	1.96	2.35	2.08	
Jul 10	2.14	2.18	2.25	2.44	S	2.54	2.50	2.29	2.24	2.14	2.13	2.10	2.07	2.04	2.05	2.03	2.02	2.01	2.02	2.06	2.09	2.15	2.13	2.11	2.01	2.54	2.16	
Jul 11	2.06	2.04	2.04	S	2.03	2.02	2.01	2.01	2.00	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.96	1.95	1.94	1.96	2.00	2.04	2.08	2.14	1.94	2.14	2.00	
Jul 12	2.09	2.05	S	2.02	2.05	2.01	2.06	2.09	2.05	2.03	2.01	1.97	1.94	1.94	1.93	1.93	1.93	1.95	1.95	1.95	1.99	2.11	2.08	2.08	1.93	2.11	2.01	
Jul 13	2.18	S	1.96	1.97	2.00	1.98	1.99	1.98	2.01	2.05	2.00	1.95	1.93	1.92	1.92	1.91	1.92	1.93	1.93	1.97	2.11	2.09	2.21	2.53	1.91	2.53	2.02	
Jul 14	S	2.52	2.54	2.60	2.65	2.64	2.47	2.39	2.23	2.15	2.05	1.99	1.96	1.94	1.93	1.94	1.94	1.94	1.94	1.99	2.09	2.08	2.12	S	1.93	2.65	2.19	
Jul 15	2.12	2.16	2.24	2.13	2.09	2.13	2.07	2.08	2.06	2.00	1.95	1.94	1.93	1.93	1.93	1.93	1.94	1.96	1.97	2.02	2.22	2.23	S	2.30	1.93	2.30	2.06	
Jul 16	2.19	2.56	2.67	2.87	2.89	2.92	2.80	2.57	2.25	2.13	2.07	2.04	2.05	2.02	2.06	2.02	2.02	2.05	2.05	2.04	2.07	S	2.19	2.11	2.02	2.92	2.29	
Jul 17	2.35	2.22	2.33	2.35	2.76	2.58	2.37	2.19	2.14	2.18	2.11	2.07	2.07	2.02	1.98	1.96	1.95	1.96	2.00	2.16	S	2.52	2.42	2.33	1.95	2.76	2.22	
Jul 18	2.20	2.07	2.03	2.05	2.04	2.06	1.96	2.00	1.96	1.97	1.97	1.93	1.91	1.91	1.93	1.94	1.91	1.90	1.91	S	1.92	1.94	1.99	2.03	1.90	2.20	1.98	
Jul 19	2.04	2.23	2.29	2.29	2.29	2.21	2.13	2.07	2.05	2.01	1.99	1.96	1.94	1.94	1.94	1.96	1.97	1.99	S	2.07	2.11	2.10	2.14	2.14	1.94	2.29	2.08	
Jul 20	2.12	2.24	2.26	2.24	2.26	2.23	2.15	2.04	2.01	1.98	1.96	1.96	1.95	1.95	1.95	1.95	1.95	S	1.98	2.06	2.04	2.09	2.27	2.25	1.95	2.27	2.08	
Jul 21	2.21	2.27	2.32	2.47	2.55	2.64	2.77	2.53	2.16	2.01	2.00	2.01	2.00	2.03	2.04	2.05	S	2.09	2.09	2.11	2.56	2.33	2.49	2.43	2.00	2.77	2.27	
Jul 22	2.38	2.29	2.39	2.40	2.55	2.41	2.28	2.28	2.27	2.16	2.08	2.01	1.99	1.96	1.95	S	1.98	1.99	2.00	2.23	2.52	2.51	2.43	2.33	1.95	2.55	2.23	
Jul 23	2.36	2.40	2.29	2.54	2.76	2.64	2.55	2.47	2.36	2.26	2.25	2.21	2.19	2.15	S	2.07	2.07	2.06	2.07	2.39	2.36	2.50	2.85	3.10	2.06	3.10	2.39	
Jul 24	3.14	3.26	3.11	2.92	2.87	2.85	2.67	2.55	2.26	2.45	2.28	2.17	2.15	S	2.05	1.95	1.94	1.99	1.95	1.95	1.94	1.93	1.93	1.93	1.93	3.26	2.36	
Jul 25	1.93	1.94	1.94	1.94	1.95	1.96	1.98	1.95	1.94	1.94	1.94	1.95	S	1.94	1.93	1.92	1.92	1.93	1.93	1.93	1.94	1.94	1.94	1.93	1.92	1.98	1.94	
Jul 26	1.93	1.93	1.95	1.97	2.04	2.02	2.01	1.98	1.97	1.96	1.94	S	1.93	1.91	1.90	1.89	1.90	1.91	1.92	1.93	1.99	2.01	2.03	2.05	1.89	2.05	1.96	
Jul 27	2.04	2.13	2.31	2.42	2.81	2.93	2.85	2.73	2.58	2.33	S	2.25	2.22	2.14	2.20	2.14	2.13	2.13	2.04	1.96	1.95	1.91	1.90	1.90	1.90	2.93	2.26	
Jul 28	1.91	1.90	1.90	1.93	1.95	1.96	1.95	1.94	1.94	S	1.94	1.94	1.94	1.93	1.94	1.94	1.95	1.95	1.95	1.96	2.01	2.00	2.05	2.07	1.90	2.07	1.95	
Jul 29	2.04	2.07	2.08	2.17	2.23	2.22	2.22	2.21	S	1.97	1.95	1.95	1.95	1.98	1.97	1.97	1.96	1.96	1.96	2.04	2.19	2.14	2.31	2.54	1.95	2.54	2.09	
Jul 30	2.50	2.71	2.96	2.97	3.42	3.17	3.11	S	2.87	2.20	2.17	2.03	2.01	1.99	1.98	1.98	1.98	2.01	2.01	2.02	2.06	2.14	2.20	2.25	1.98	3.42	2.38	
Jul 31	2.28	2.28	2.30	2.31	2.32	2.30	S	2.20	2.19	2.11	2.04	1.99	1.98	1.96	1.95	1.97	2.00	2.01	2.02	2.10	2.21	2.32	2.26	2.16	1.95	2.32	2.14	
Diurnal Maximum	3.14	3.26	3.11	2.97	3.42	3.17	3.11	2.73	2.87	2.45	2.28	2.25	2.22	2.15	2.20	2.14	2.13	2.13	2.09	2.39	2.56	2.52	2.85	3.10				
Diurnal Average	2.19	2.24	2.27	2.31	2.36	2.35	2.29	2.19	2.14	2.08	2.04	2.02	2.01	1.99	1.98	1.98	1.98	1.99	1.99	2.04	2.10	2.13	2.17	2.20				

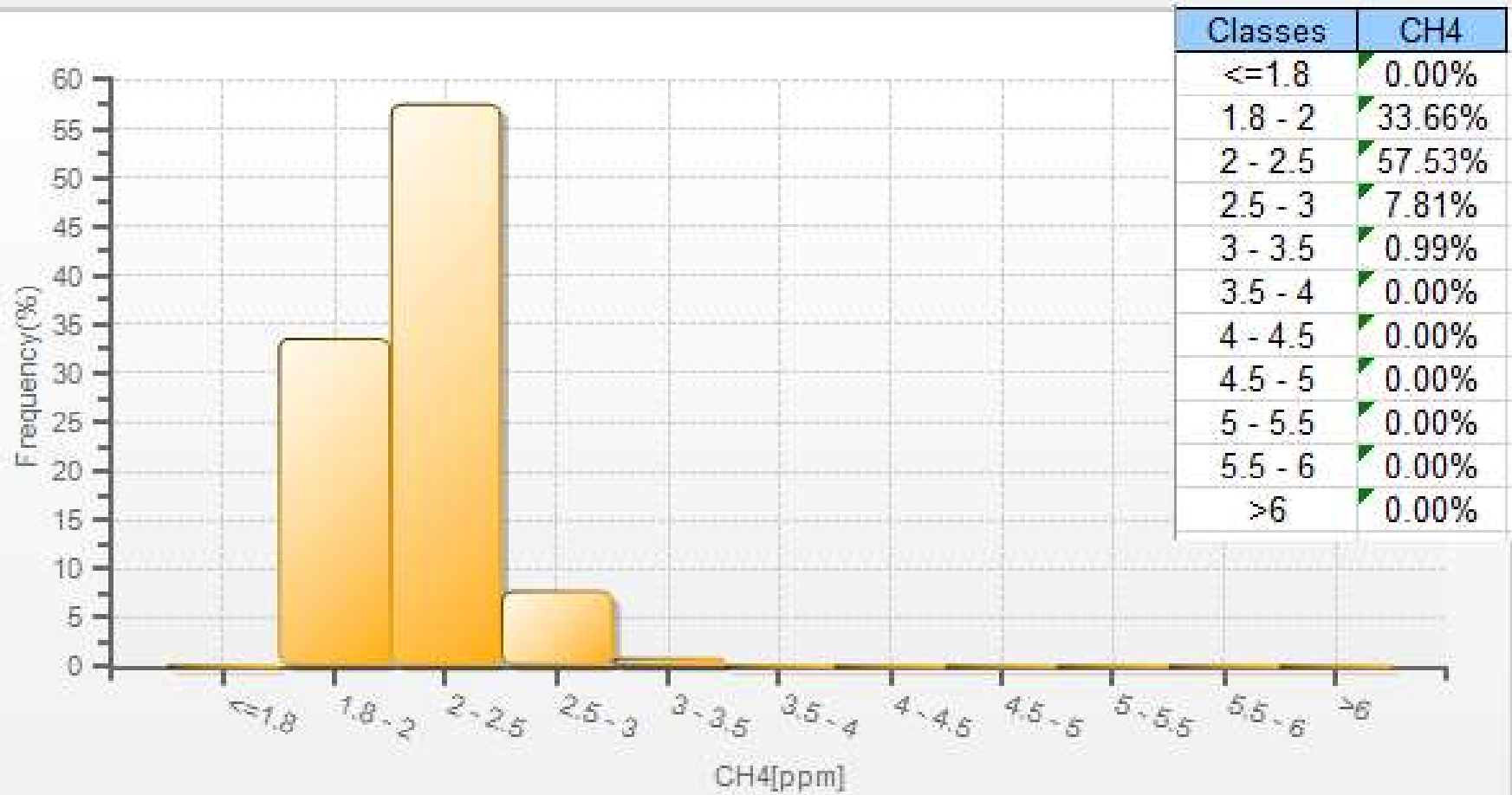
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for CH4 - Bonnyville - East Site**

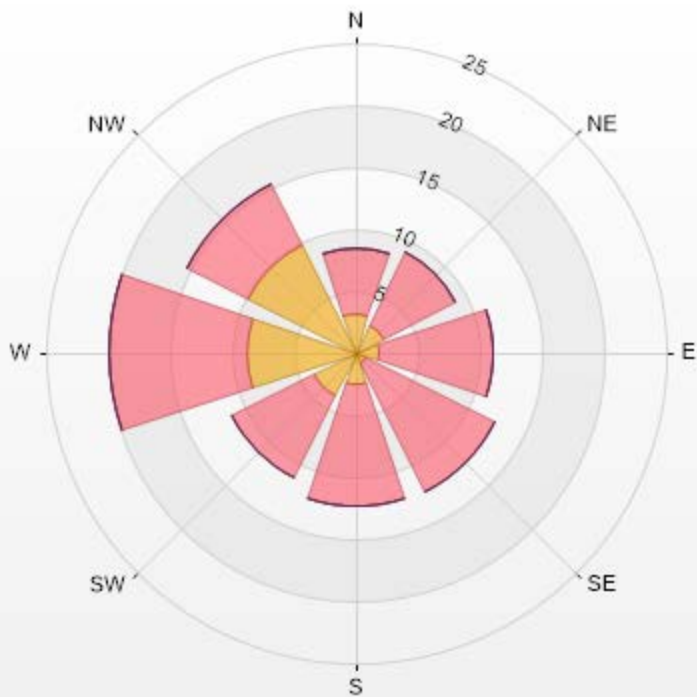


CH4[ppm] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-CH4[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	3.13	5.4	0	0	0	8.53
NE	2.56	6.53	0	0	0	9.09
E	1.99	9.09	0	0	0	11.08
SE	0.99	11.65	0	0	0	12.64
S	2.56	9.8	0	0	0	12.36
SW	3.84	7.39	0	0	0	11.23
W	8.81	11.08	0	0	0	19.89
NW	9.8	5.4	0	0	0	15.2
Summary	33.68	66.34	0	0	0	100



LICA-201907-Revision 1

% Icon Classes (ppm)	34	0-2	66	5-10	0	10-20	0
	34	0-2	66	5-10	0	10-20	0
	205	364	205	364	205	364	205
	>20.0						



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

### Summary of Hourly Averages

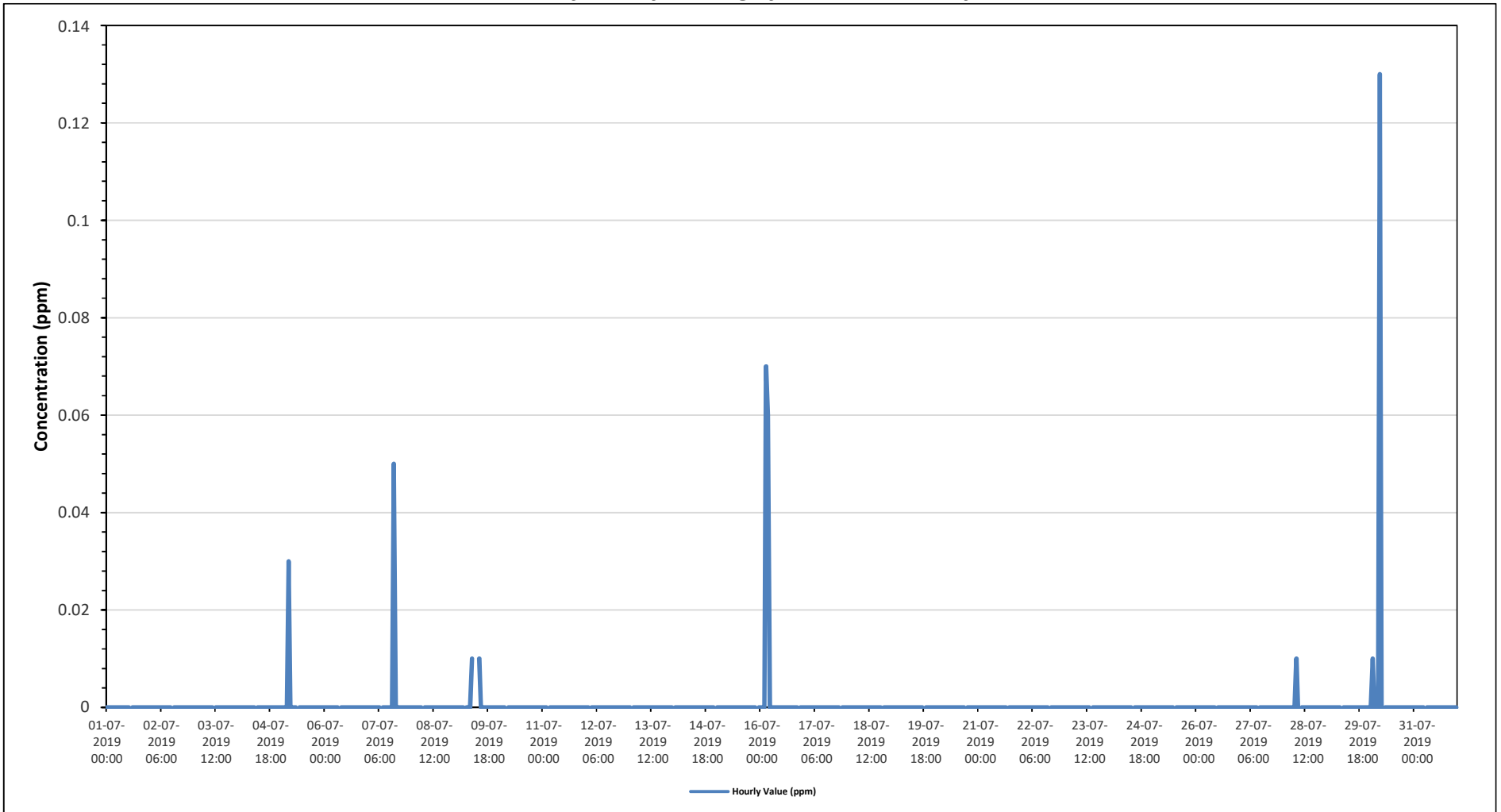
#### NON-METHANE HYDROCARBONS (NMHC) in ppm

Maximum Hourly Value:	0.13 ppm on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	0.01 ppm on July 30	Hours of Data:	709
Minimum Hourly Value:	0.00 ppm on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.00 ppm on July 1	Hours of Calibration:	35
Monthly Average:	0.00 ppm	Operational Uptime:	100.0

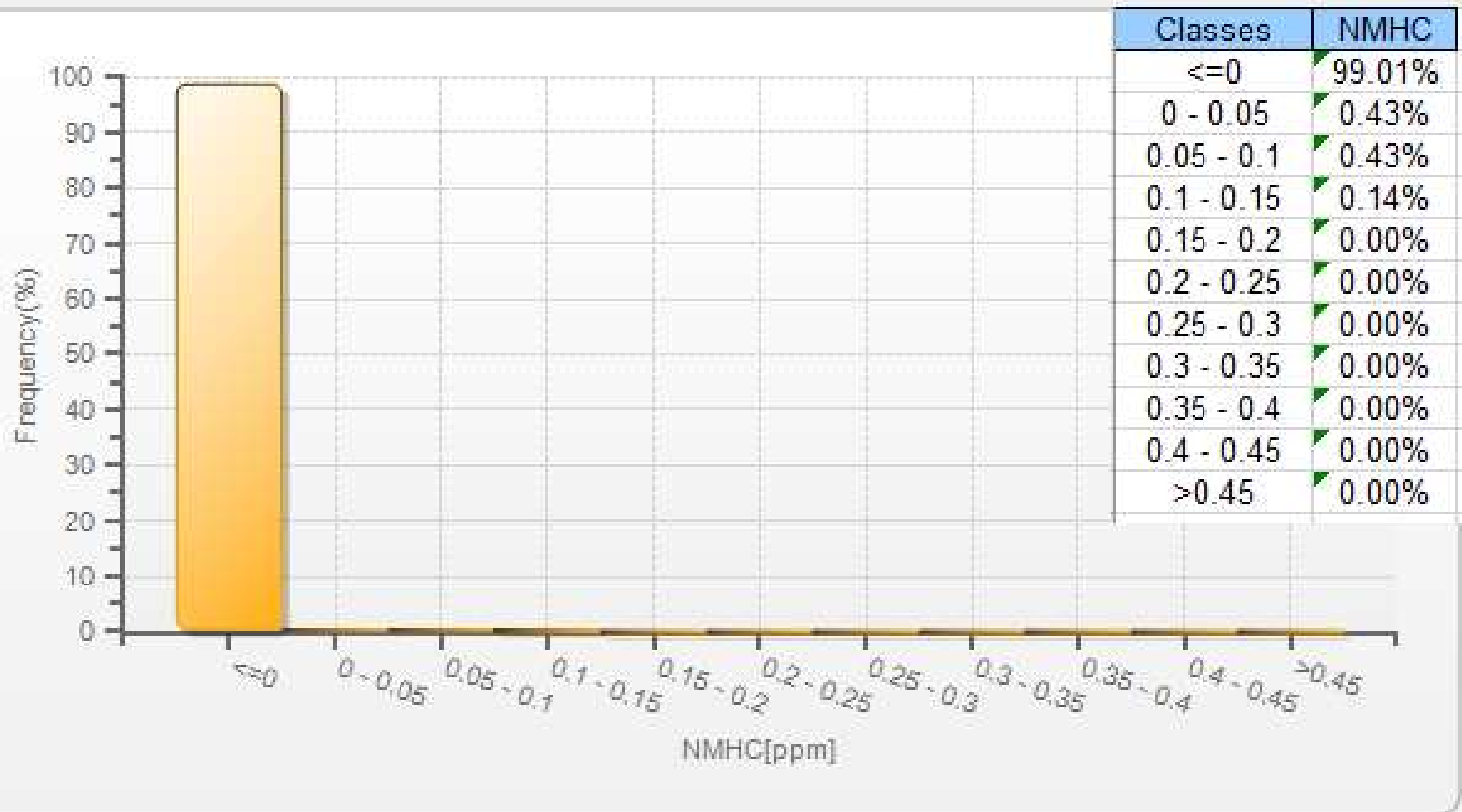
  

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 5	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 7	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 8	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 9	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.01	C	C	C	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 10	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 11	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 12	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 13	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 14	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00
Jul 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00
Jul 16	0.00	0.00	0.00	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	S	0.00	0.00	0.00	0.00
Jul 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	S	0.00	0.00	0.00	0.00	0.00
Jul 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00
Jul 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Jul 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 30	0.00	0.01	0.00	0.00	0.00	<b>0.13</b>	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<b>0.13</b>	<b>0.01</b>
Jul 31	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.01	0.00	0.07	0.06	0.13	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span								
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure								
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service								
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met. Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																													

**Timeseries Chart of Hourly Average for NMHC - Bonnyville - East Site**



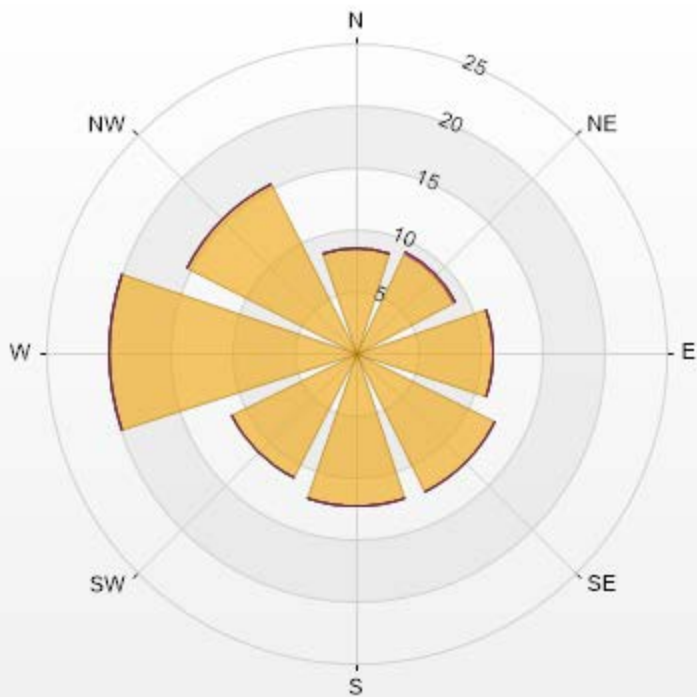
NMHC[ppm] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.





Wind: Bonnyville East Poll.: Bonnyville East-NMHC[ppm] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.62% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	8.52	0	0	0	0	8.52
NE	8.95	0.14	0	0	0	9.09
E	11.08	0	0	0	0	11.08
SE	12.64	0	0	0	0	12.64
S	12.36	0	0	0	0	12.36
SW	11.22	0	0	0	0	11.22
W	19.89	0	0	0	0	19.89
NW	15.2	0	0	0	0	15.2
Summary	100	0.14	0	0	0	100



LICA-201907-Revision 1



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

PARTICULATE MATTER 2.5 (PM<sub>2.5</sub>) in µg/m<sup>3</sup>

**Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 80 µg/m<sup>3</sup>, 24-Hour 29 µg/m<sup>3</sup>**

Number of 1-Hour Exceedences: 0      Number of 24-Hour Exceedences: 0

Maximum Hourly Value:	46 µg/m <sup>3</sup> on July 5 at hour 4	Hours in Service:	744
Maximum Daily Value:	13 µg/m <sup>3</sup> on July 31	Hours of Data:	742
Minimum Hourly Value:	1 µg/m <sup>3</sup> on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	2 µg/m <sup>3</sup> on July 18	Hours of Calibration:	2
Monthly Average:	5.7 µg/m <sup>3</sup>	Operational Uptime:	100.0

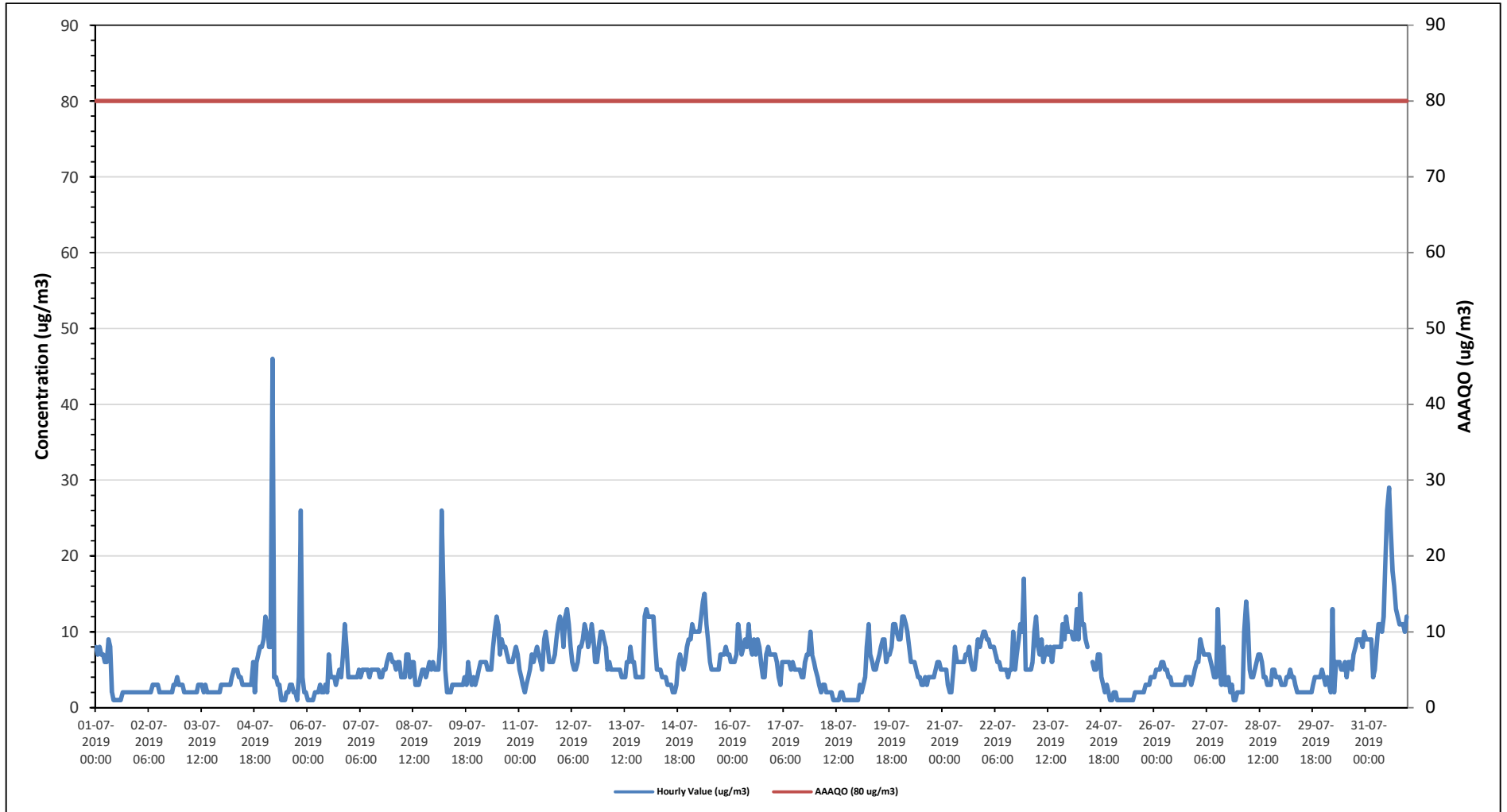
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	8	7	8	7	7	6	6	9	8	2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	9	3.8	
Jul 2	2	2	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2	3	3	4	3	2	4	2.4	
Jul 3	3	3	2	2	2	2	2	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	2	3	2	3	2.3	
Jul 4	3	3	3	3	3	4	5	5	5	4	4	3	3	3	3	3	3	6	2	6	7	8	8	9	2	9	4.4	
Jul 5	12	11	8	8	46	4	4	3	3	1	1	1	2	2	3	3	2	2	1	4	26	4	2	2	1	46	6.5	
Jul 6	1	1	1	1	2	2	2	3	2	2	3	2	7	4	4	3	4	3	4	5	4	7	11	8	4	1	11	3.6
Jul 7	4	4	4	4	4	5	4	5	5	5	5	4	5	5	5	5	5	4	4	5	5	6	7	7	4	7	4.8	
Jul 8	6	6	5	6	6	4	4	4	7	7	4	6	6	3	3	3	4	5	5	4	5	6	5	6	3	7	5.0	
Jul 9	5	5	5	8	26	14	5	2	2	2	3	3	3	3	3	3	4	3	6	4	3	4	3	2	26	5.1		
Jul 10	4	5	6	6	6	6	5	5	5	8	10	12	11	7	9	8	8	7	6	6	6	7	8	7	4	12	7.0	
Jul 11	5	4	3	2	3	4	5	7	6	7	8	7	6	5	9	10	8	6	6	6	7	9	11	12	2	12	6.5	
Jul 12	11	8	12	13	11	8	6	5	5	6	8	8	9	11	10	8	9	11	9	6	6	8	10	10	5	13	8.7	
Jul 13	9	8	5	6	5	5	5	5	5	4	4	4	6	6	8	6	6	4	4	4	4	4	4	12	4	12	5.6	
Jul 14	13	12	12	12	12	8	5	5	5	4	4	4	3	3	3	2	2	3	6	7	6	5	6	8	2	13	6.3	
Jul 15	9	9	11	10	10	10	10	12	14	15	11	9	6	5	5	5	5	7	7	7	8	7	7	7	5	15	8.5	
Jul 16	6	6	6	7	11	9	7	8	9	8	11	8	7	9	7	9	8	6	4	4	7	8	7	7	4	11	7.5	
Jul 17	7	7	6	4	3	6	6	6	6	6	5	6	5	5	5	4	4	6	7	7	10	7	6	3	10	5.8		
Jul 18	5	4	3	2	3	3	2	2	2	2	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	5	1.8	
Jul 19	1	3	2	3	4	8	11	7	6	5	5	6	7	8	9	9	6	7	7	8	11	11	10	9	1	11	6.8	
Jul 20	9	12	12	11	10	8	6	6	6	5	4	4	3	3	4	3	4	4	4	4	5	6	6	5	3	12	6.0	
Jul 21	5	5	5	3	2	2	5	8	6	6	6	6	6	7	7	8	6	5	7	9	8	9	10	2	10	6.1		
Jul 22	10	9	9	8	8	8	7	6	6	5	5	5	4	5	5	10	5	7	9	11	10	17	5	4	17	7.5		
Jul 23	5	5	5	6	10	12	8	7	9	6	7	8	7	8	6	8	8	8	8	8	11	9	12	10	5	12	8.0	
Jul 24	10	10	9	9	13	9	15	11	11	9	8	C	C	6	5	5	7	7	4	3	2	3	2	1	1	15	7.2	
Jul 25	1	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	4	4	1	4	1.8	
Jul 26	4	5	5	5	6	6	5	5	4	4	3	3	3	3	3	3	3	3	4	4	4	3	4	5	3	6	4.0	
Jul 27	6	6	9	8	7	7	7	7	6	5	4	4	13	5	3	8	3	3	3	4	2	3	1	1	2	1	13	5.2
Jul 28	2	2	2	10	14	11	5	4	4	5	6	7	7	6	4	4	3	3	3	5	5	4	4	4	2	14	5.2	
Jul 29	3	3	3	4	4	5	4	4	3	2	2	2	2	2	2	2	2	2	3	4	4	4	4	5	2	5	3.1	
Jul 30	4	3	4	3	2	13	2	6	6	6	5	5	6	4	6	6	5	7	8	9	9	9	8	10	2	13	6.1	
Jul 31	9	9	9	9	4	5	8	11	11	10	12	20	26	29	24	18	16	13	12	11	11	11	10	12	4	29	12.9	
Diurnal Maximum	13	12	12	13	46	14	15	12	14	15	12	20	26	29	24	18	16	13	12	11	26	11	17	12				
Daiurnal Average	5.9	5.8	5.7	5.9	8.0	6.4	5.5	5.6	5.6	5.1	5.1	5.2	5.7	5.3	5.3	5.3	4.9	4.8	4.7	5.2	6.5	6.0	6.3	6.2				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

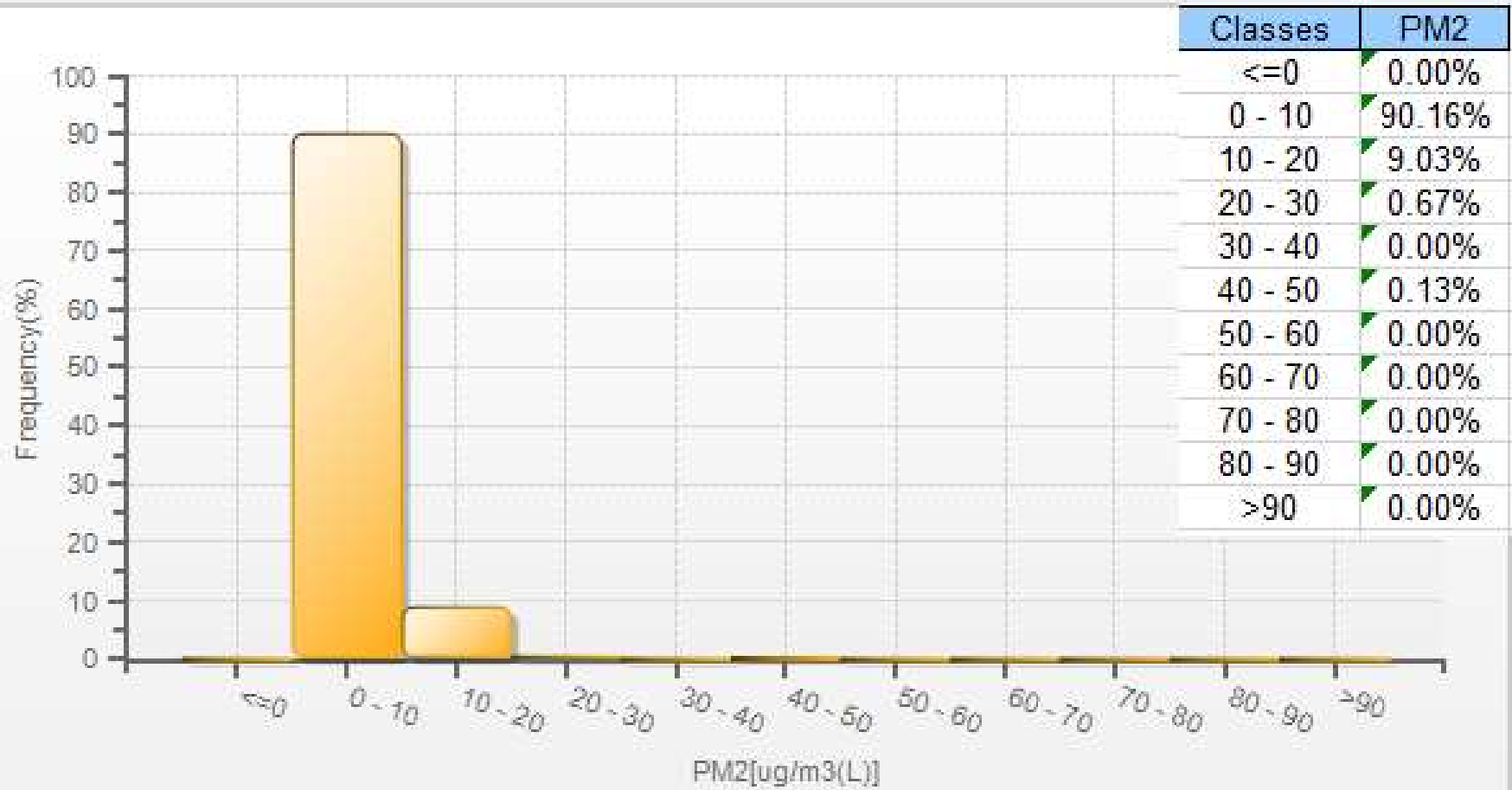
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Average for PM2.5 - Bonnyville - East Site*

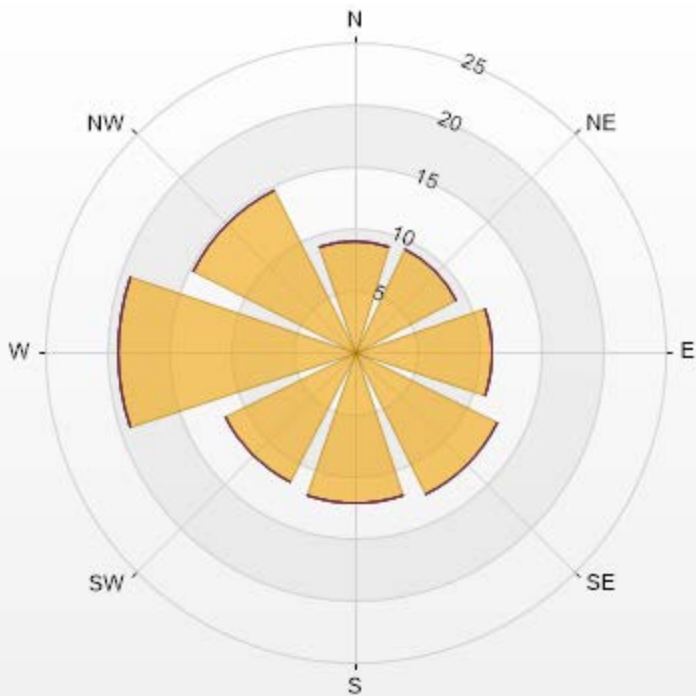


PM2[ug/m3(L)] Histogram: Bonnyville East Monthly: 07-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-PM2[ug/m3(L)] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 87.10% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	8.95	0	0	0	0	8.95
NE	9.26	0	0	0	0	9.26
E	11.11	0	0	0	0	11.11
SE	12.96	0	0	0	0	12.96
S	12.19	0	0	0	0	12.19
SW	11.73	0	0	0	0	11.73
W	19.14	0	0	0	0	19.14
NW	14.66	0	0	0	0	14.66
Summary	100	0	0	0	0	100



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% Icon	Classes (ug/m3(L))	100	0-50	0	80-120	0	120-240	0	>240.0



# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

Maximum Hourly Value:	33.5 kph	on July 28 at hour 6	Hours in Service:	744
Maximum Daily Value:	21.5 kph	on July 25	Hours of Data:	744
Minimum Hourly Value:	0.3 kph	on July 7 at hour 6	Hours of Missing Data:	0
Minimum Daily Value:	5.0 kph	on July 29	Hours of Calibration:	0
Monthly Average:	2.6 kph		Operational Uptime:	100.0

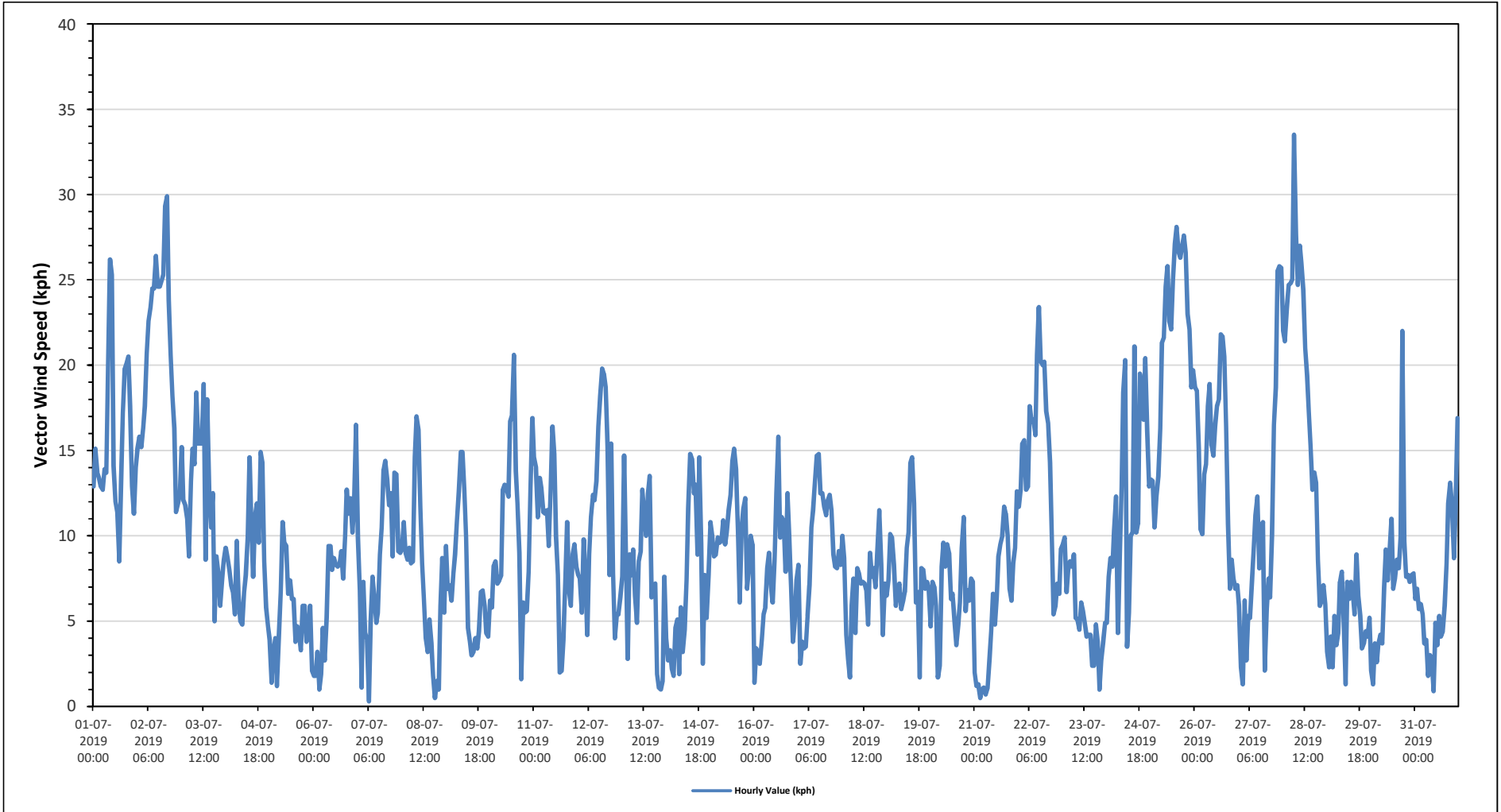
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	12.9	15.1	13.7	13.4	12.9	12.7	13.9	13.7	20.1	26.2	25.3	14.1	12	11.4	8.5	13.4	17.2	19.8	20.1	20.5	17.6	12.9	11.3	14	8.5	26.2	15.5	
Jul 2	15.1	15.8	15.2	16.3	17.6	20.7	22.6	23.4	24.5	24.5	26.4	24.6	24.6	24.9	25.3	29.3	29.9	23.8	20.6	18.2	16.3	11.4	11.9	12.4	11.4	29.9	20.6	
Jul 3	15.2	12.1	11.8	11	8.8	13.2	15.1	14.2	18.4	15.4	15.4	18.9	8.6	18	12.6	10.5	12.5	5	8.8	7.8	5.9	7.5	8.6	5.0	18.9	12.1		
Jul 4	9.3	8.7	8	7.1	6.7	5.4	9.7	6.6	5	4.8	6.7	7.7	9.9	14.6	10.4	7.6	11.2	11.9	9.6	14.9	14.3	8.5	5.8	4.7	4.7	14.9	8.7	
Jul 5	3.9	1.4	3.3	4	1.2	4.1	6.7	10.8	9.6	9.4	6.6	7.4	6.3	6.3	3.8	4.7	4.1	3.3	5.9	5.9	3.8	4.2	5.9	2.1	1.2	10.8	5.2	
Jul 6	1.8	1.8	3.2	1	1.9	4.6	2.7	5.2	9.4	9.4	8	8.7	8.3	8.2	8.3	9.1	7.5	9.9	12.7	11.3	12.2	10.2	11.8	16.5	1.0	16.5	7.7	
Jul 7	9.9	6.8	1.1	7.3	4.3	3.9	0.3	4.9	7.6	6.3	4.9	5.5	8.9	10.5	13.9	14.4	13.3	11.8	12.5	8.8	13.7	13.6	9.1	9	0.3	14.4	8.4	
Jul 8	9.2	10.8	9	8.6	9.3	8.4	8.5	14.6	17	16.2	11.7	8.4	6.3	4	3.2	5.1	3.7	1.8	0.5	1.5	1	5.9	8.7	5.5	0.5	17.0	7.5	
Jul 9	9.4	6.9	7.1	6.2	7.8	8.9	10.9	12.6	14.9	14.9	12.7	9.9	4.6	3.8	3	3.2	4	3.4	4.4	6.7	6.8	5.9	4.3	4.1	3.0	14.9	7.4	
Jul 10	6.2	5.8	8.2	8.5	7.2	7.4	7.7	12.7	13	12.7	12.3	16.7	17.1	20.6	13.8	11.9	9	1.6	6.1	5.5	5.6	7.9	12.7	16.9	1.6	20.6	10.3	
Jul 11	14.6	14	11.1	13.4	12.8	11.4	11.3	11.5	9.4	12.5	16.4	14.8	10	7.7	2	2.1	3.9	7.3	10.8	6.7	5.9	8.9	9.5	8.2	2.0	16.4	9.8	
Jul 12	7.7	7.5	5.5	9.8	7.3	4.2	8.9	11.1	12.4	12.1	13.2	16.4	18.2	19.8	19.5	18.7	15.2	7.7	15.4	7.8	4	5.4	5.4	6.4	4.0	19.8	10.8	
Jul 13	7.6	14.7	9.4	2.8	8.9	7.7	9.2	6.5	4.9	8.5	9.1	12.7	11.2	10	12.5	13.5	6.4	7.1	7.2	1.9	1.1	1	1.5	7.6	1.0	14.7	7.6	
Jul 14	4	2.7	3.3	2.2	1.8	4.6	5.1	1.9	5.8	3.2	4.5	7.4	11.6	14.8	14.5	12.5	13	8.9	14.6	9.5	2.5	7.7	5.2	7.7	1.8	14.8	7.0	
Jul 15	10.8	10	8.8	8.9	9.9	9.6	9.7	10.9	9.5	10.2	11.5	12.4	14.4	15.1	13.9	10.3	6.1	10.4	11.6	12.2	6.9	8.2	10	9.5	6.1	15.1	10.5	
Jul 16	1.4	3.4	3	2.5	3.9	5.4	5.8	8.1	9	7	6.1	8.5	12.5	15.8	9.9	11.1	10.8	7.9	12.5	10	7	3.8	5.1	7.4	1.4	15.8	7.4	
Jul 17	8.3	2.5	3.8	3.4	3.5	5.3	7.1	10.5	11.5	13.2	14.7	14.8	12.5	12.5	11.7	11.2	12.1	12.4	11.5	8.9	8.2	8.1	9.1	8.3	2.5	14.8	9.4	
Jul 18	10	8.7	4.2	2.8	1.7	5.9	7.5	4.3	8.1	7.8	7.2	7.3	7.2	6.8	4.8	9	7.6	8.1	7	9.1	11.5	8.3	4.2	7.2	1.7	11.5	6.9	
Jul 19	6.5	7.4	10.1	9.9	8.3	5.9	6.8	7.2	5.7	6.2	6.7	9.3	10.2	14.3	14.6	11.9	6.1	6.7	1.7	8.1	8	6.9	7.3	6.9	1.7	14.6	8.0	
Jul 20	4.7	7.3	7	5.9	1.7	2.4	8.2	9.6	8.2	9.5	9	6.3	6.6	5.1	3.6	4.8	6.1	9.3	11.1	5.6	6.8	6.2	7.5	7.3	1.7	11.1	6.7	
Jul 21	2	1.2	1.3	0.5	1	1.1	0.7	1.1	2.8	4.4	6.6	4.8	6.4	8.8	9.5	10	11.7	11.3	10	6.9	6.2	8.4	9.3	12.6	0.5	12.6	5.8	
Jul 22	11.7	12.7	15.4	15.6	12.7	12.9	17.6	16.7	16.8	15.9	20.6	23.4	20.2	20	20.2	17.3	16.6	14.3	9.6	5.4	5.9	7.2	6.6	9.2	5.4	23.4	14.4	
Jul 23	9.5	9.9	6.7	8	8.5	8.2	8.9	5.2	5.1	4.5	6.1	5.6	4.9	4.1	4.2	4.2	2.4	2.4	4.8	3.8	1	2.7	3.8	4.9	1.0	9.9	5.4	
Jul 24	4.9	7.6	8.7	8.2	10.3	12.3	4.3	8.8	12.9	18.4	20.3	3.5	5.5	10	10.2	21.1	10.2	10.7	19.5	18.5	16.8	20.4	16.2	12.9	3.5	21.1	12.2	
Jul 25	13.3	13.2	10.5	12.3	13.5	16.3	21.3	21.6	24.6	25.8	22.6	22.1	25	27.1	28.1	26.7	26.3	27	27.6	26.6	23	22.1	18.7	19.7	10.5	28.1	21.5	
Jul 26	18.7	18.5	15.1	10.4	10.1	13.6	14.2	17.6	18.9	15.3	14.7	16.4	17.6	18	21.8	21.7	20.5	16.4	10.7	6.9	8.6	7.5	6.9	7.1	6.9	21.8	14.5	
Jul 27	5.9	2.3	1.3	6.2	2.7	5.3	5.2	7.3	9.1	11.2	12.3	8.1	9.8	10.8	2.1	5.7	7.5	6.4	10.1	16.5	18.7	25.5	25.8	25.7	1.3	25.8	10.1	
Jul 28	22	21.4	23.3	24.7	24.8	25	33.5	27.7	24.7	27	26	24.4	21	19.4	17.3	15.3	12.7	13.7	13.1	8.6	5.9	6.2	7.1	6	5.9	33.5	18.8	
Jul 29	3.2	2.3	4.1	2.3	5.3	3.6	4.3	7.3	7.9	5	1.3	7.3	6.3	7.3	6.5	5.4	8.9	6.5	5.3	3.4	3.7	4.4	4.1	5.2	1.3	8.9	5.0	
Jul 30	2.1	1.3	3.7	2.6	3.7	4.2	3.7	7	9.2	7.4	9.2	11	6.9	7.5	8.6	8.1	9.9	22	9.7	7.6	7.7	7.3	7.7	7.8	1.3	22.0	7.3	
Jul 31	6.3	6.9	5.7	6	5.4	3.7	3.9	1.8	3	2.8	0.9	4.9	3.6	5.3	4.1	4.4	5.9	8.4	11.9	13.1	11.7	8.7	11.7	16.9	0.9	16.9	6.5	
Diurnal Maximum	22	21	23	25	25	25	34	28	25	27	26	25	25	27	28	29	30	27	28	27	23	26	26	26				
Diurnal Average	8.6	8.4	7.8	7.8	7.6	8.3	9.5	10.4	11.6	11.9	11.9	11.6	11.6	12.0	11.2	11.5	10.7	10.5	10.7	9.7	8.7	8.8	8.8	9.6				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



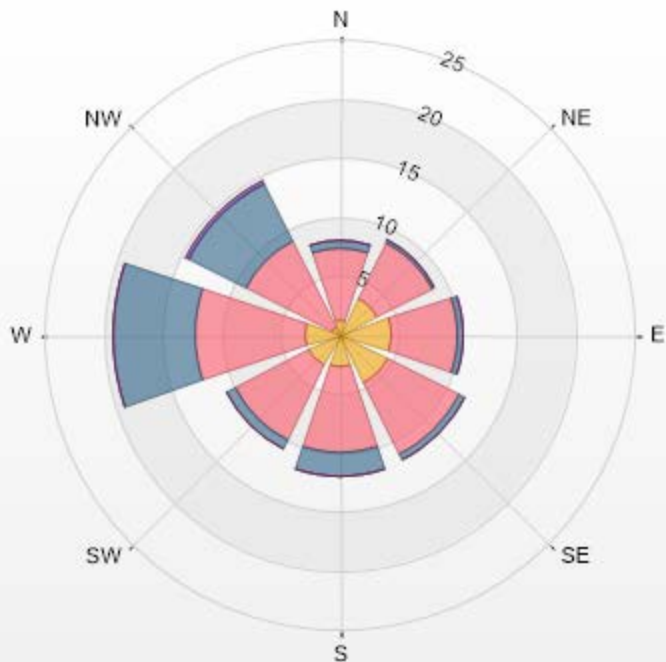
*Timeseries Chart of Hourly Average for VWS - Bonnyville - East Site*



Wind: Bonnyville East Poll.: Bonnyville East-WSP[kph] Monthly: 07-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 3.90% Valid Data: 99.87% Calm Avg: 1.17 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	1.35	6.06	0.67	0	0	8.08
NE	3.5	5.25	0.27	0	0	9.02
E	4.44	5.52	0.54	0	0	10.5
SE	4.58	6.86	0.4	0	0	11.84
S	2.69	7.27	2.02	0	0	11.98
SW	2.96	7	0.81	0	0	10.77
W	2.96	9.29	7	0	0	19.25
NW	0.81	8.08	5.38	0.4	0	14.67
Summary	23.29	55.33	17.09	0.4	0	96.11

Bonnyville East Poll.: Bonnyville East-WSP[kph] 01-07-2019 00:00 - 31-07-2019 23:00 Calm: 3.90% Calm Poll  
 Avg: 1.17[kph]



LICA-201907-Revision 1

% Icon	Classes (kph)	23	0-6	55	6-14	15-29	0	29-39	0	>39.0
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## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

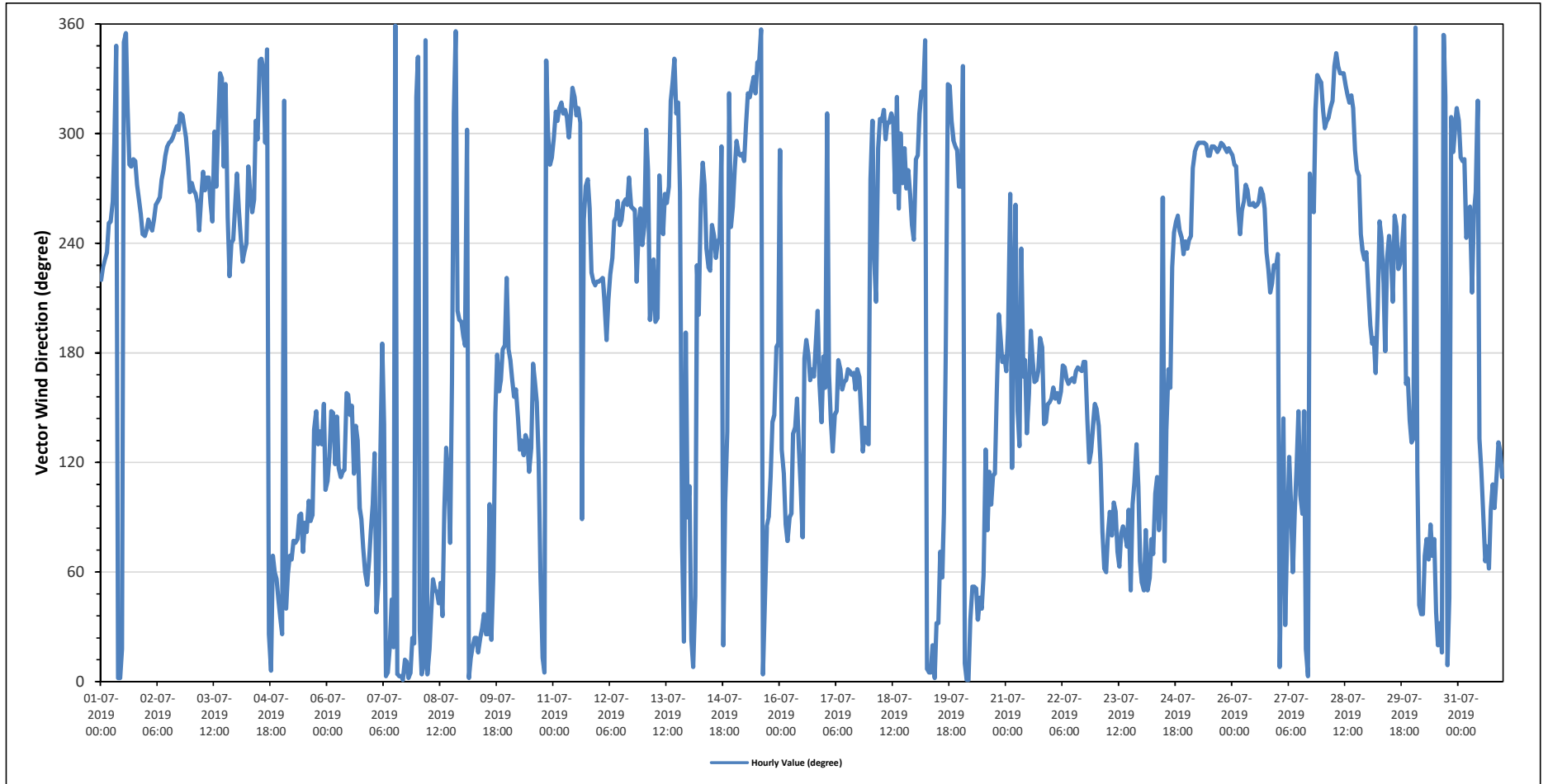
Bonnyville - East Site - July 2019

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		279 (W) degree													Hours in Service:		744										
															Hours of Data:		744										
															Hours of Missing Data:		0										
															Hours of Calibration:		0										
															Operational Uptime:		100.0										
Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Jul 1	SW	SW	SW	SW	WSW	WSW	W	WNW	NNW	N	N	NNE	N	N	NW	W	W	WNW	WNW	W	W	WSW	WSW	WSW	287	WNW	
Jul 2	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	WNW	WNW	WNW	W	284	WNW	
Jul 3	W	W	W	W	WSW	W	W	W	W	W	W	WSW	WNW	W	WNW	NNW	NNW	W	NW	WSW	SW	WSW	WSW	WSW	275	W	
Jul 4	W	WSW	WSW	SW	SW	WSW	W	W	WSW	W	NW	WNW	NNW	NNW	NNW	WNW	NNW	NNE	N	ENE	ENE	NE	NE	NE	327	NW	
Jul 5	NNE	NW	NE	ENE	ENE	ENE	ENE	ENE	E	E	ENE	E	E	E	E	E	E	SE	SE	SE	SE	SE	SSE	ESE	91	E	
Jul 6	ESE	ESE	SE	SE	ESE	SE	ESE	ESE	ESE	ESE	SSE	SSE	SE	SSE	ESE	SE	SE	E	E	ENE	ENE	NE	ENE	E	107	ESE	
Jul 7	E	SE	NE	NE	SE	S	SE	N	N	NNE	NE	NNE	N	N	N	N	N	NNE	NNE	N	N	NNE	NNE	NW	16	NNE	
Jul 8	NNW	NNE	N	N	N	N	NNE	NE	NE	NE	NE	NE	NE	NE	E	SE	ESE	ENE	SSE	NW	N	SSW	SSW	SSW	36	NE	
Jul 9	S	S	WNW	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	E	NNE	ENE	NE	S	SSE	SSE	S	S	SW	37	NE		
Jul 10	S	S	SSE	SSE	SSE	SE	SE	SE	ESE	SE	SE	ESE	SE	S	SSE	SSE	ESE	ENE	NNE	N	NNW	WNW	W	WNW	149	SSE	
Jul 11	WNW	NW	NW	NW	NW	NW	NW	WNW	NW	NW	NW	NW	NW	NW	NW	E	WSW	W	W	WSW	SW	SW	SW	SW	297	WNW	
Jul 12	SW	SW	SW	SSW	S	SSW	SW	SW	WSW	WSW	W	WSW	WSW	W	W	W	WSW	WSW	WSW	WSW	SW	WSW	WSW	WSW	248	WSW	
Jul 13	WSW	WNW	W	SSW	SSW	SW	SSW	SSW	W	WSW	WSW	W	W	W	NW	NNW	NNW	NW	NW	W	ENE	NNE	S	E	272	W	
Jul 14	ESE	NNE	N	NE	SW	SSW	W	WNW	W	SW	SW	SW	WSW	WSW	SW	WSW	WSW	WNW	NNE	E	SE	NW	WSW	WSW	255	WSW	
Jul 15	W	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NNW	NW	NNW	NNW	N	N	NE	E	E	ESE	SE	SE	S	S	326	NW	
Jul 16	WNW	SE	ESE	E	ENE	E	E	SE	SE	SSE	SE	ESE	ENE	S	S	S	SSE	S	SSE	S	SSW	SSE	SE	S	151	SSE	
Jul 17	SSE	NW	SSE	SE	SE	SE	SE	S	S	SSE	SSE	SSE	S	SSE	SSE	SSE	SSE	S	SSE	SE	SE	SE	SE	SE	159	SSE	
Jul 18	W	NW	SW	SSW	WNW	NW	NW	NW	WNW	NW	NW	NW	NW	W	NW	WSW	WNW	W	WNW	W	W	W	WSW	WSW	285	WNW	
Jul 19	WNW	WNW	NW	NW	NW	N	N	N	N	NNE	N	NNE	NNE	ENE	ENE	E	S	NW	NW	NW	WNW	WNW	WNW	W	350	N	
Jul 20	W	NNW	N	N	N	NE	NE	NE	NE	NE	NE	NE	ENE	SE	E	ESE	E	ESE	ESE	SSE	SSW	S	S	S	78	ENE	
Jul 21	SSE	SSW	W	ESE	SSW	W	SE	SE	SW	SSE	S	SE	SSE	S	SSE	SSE	SSE	S	S	SE	SE	SE	SSE	SSE	167	SSE	
Jul 22	SSE	SSE	SSE	SSE	SSE	SSE	S	S	SSE	SSE	SSE	SSE	SSE	SSE	S	S	SSE	S	S	SE	ESE	SE	SE	SSE	163	SSE	
Jul 23	SSE	SE	ESE	E	ENE	ENE	E	E	E	E	ENE	ENE	E	E	E	ENE	E	NE	E	ESE	SE	ESE	ENE	ENE	90	E	
Jul 24	NE	NE	E	NE	ENE	ENE	ENE	ESE	ESE	E	E	W	ENE	SE	S	SSE	SW	WSW	WSW	WSW	WSW	WSW	SW	WSW	170	SSE	
Jul 25	SW	WSW	WSW	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	289	WNW
Jul 26	WNW	W	W	WSW	WSW	WSW	W	W	W	W	W	W	WSW	W	W	W	WSW	SW	SW	SSW	SW	SW	SW	SW	261	W	
Jul 27	SW	N	E	SE	NNE	E	ESE	E	ENE	E	ESE	SE	E	E	SE	NNE	N	W	WSW	WSW	NW	NNW	NNW	NNW	353	N	
Jul 28	NW	WNW	NW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NW	WNW	W	W	WSW	SW	SW	SW	317	NW	
Jul 29	SW	SSW	S	S	SSE	SSW	WSW	WSW	SW	S	SW	WSW	SW	SSW	WSW	WSW	SW	WSW	WSW	SSE	SSE	SE	SE	SE	215	SSW	
Jul 30	SE	N	ESE	NE	NE	NE	ENE	ENE	ENE	E	ENE	ENE	NE	NNE	NNE	N	NW	N	NE	NW	WNW	WNW	NW	NW	20	NNE	
Jul 31	NW	WNW	WNW	WNW	WSW	WSW	WSW	SSW	WSW	W	NW	SE	ESE	E	ENE	ENE	ENE	E	ESE	E	ESE	SE	SE	ESE	114	ESE	
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span						
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure						
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service						
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

**Timeseries Chart of Hourly Average for VWD - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Bonnyville - East Site - July 2019 Summary of Hour Standard Deviations

#### STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

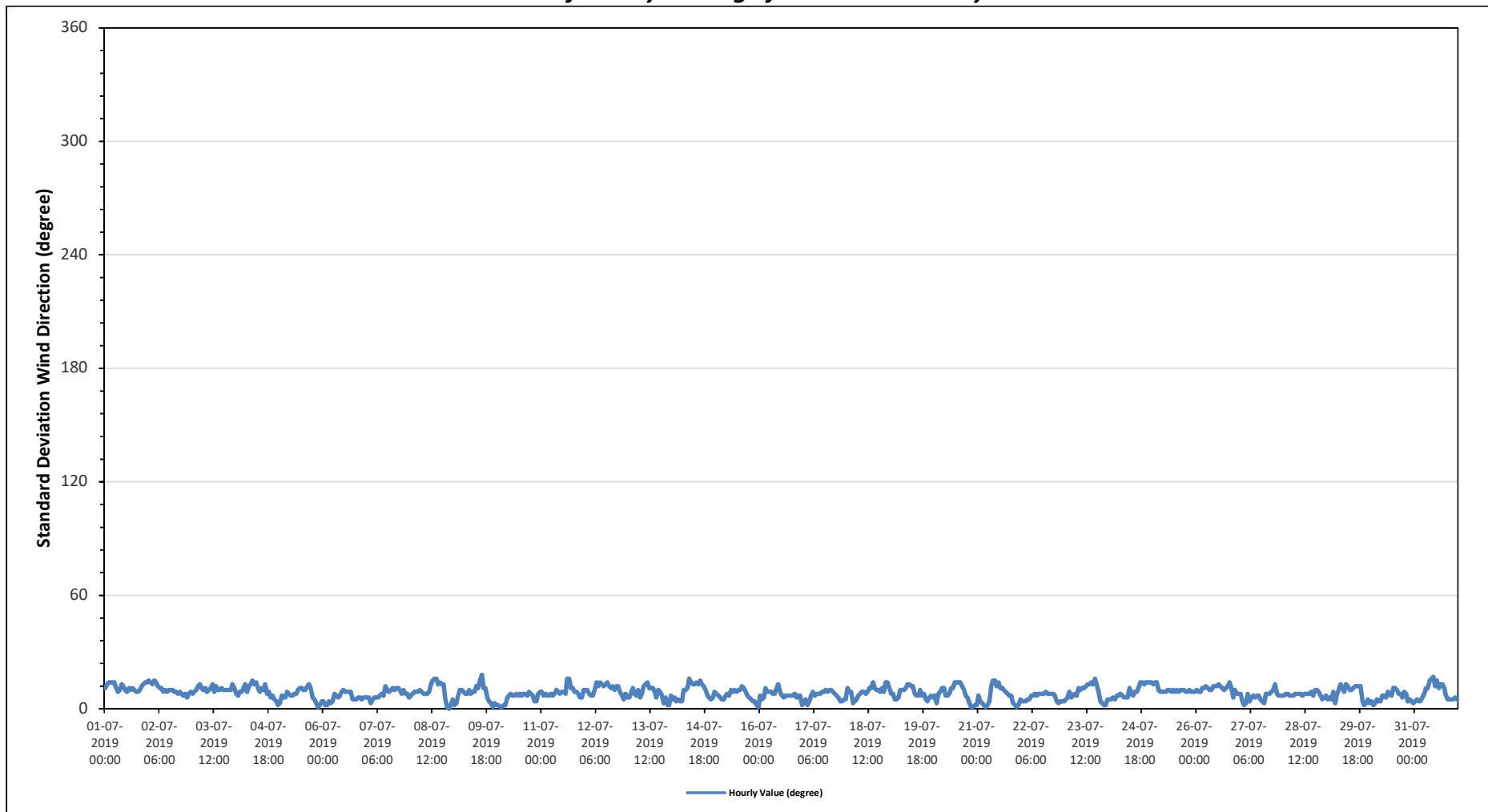
Maximum Hourly Value: 18 degree on July 9 at hour 15	Hours in Service: 744
	Hours of Data: 744
Minimum Hourly Value: 0 degree on July 8 at hour 21	Hours of Missing Data: 0
	Hours of Calibration: 0
	Operational Uptime: 100.0

Day	Hourly Period Starting at (MST)																							Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	
Jul 1	11	13	14	14	14	14	11	9	10	13	12	10	9	11	10	11	10	9	9	10	12	13	14	14	9	14	
Jul 2	15	14	13	15	14	12	11	11	9	10	9	10	10	10	9	9	8	9	8	7	8	6	8	9	6	15	
Jul 3	8	9	10	12	13	11	10	11	9	10	11	13	9	12	10	10	11	10	10	10	10	13	11	8	13		
Jul 4	8	7	9	9	11	13	9	12	13	15	13	14	11	9	11	10	13	8	9	6	7	5	4	2	2	15	
Jul 5	3	7	6	6	9	8	7	7	8	8	10	11	11	10	10	12	13	11	6	5	3	1	2	4	1	13	
Jul 6	4	2	2	4	3	4	8	7	6	7	9	10	9	9	9	5	5	5	6	6	5	6	6	2	10		
Jul 7	6	6	3	5	6	6	6	7	8	7	12	10	9	10	11	10	11	11	10	8	10	8	8	6	3	12	
Jul 8	7	8	9	9	9	10	9	8	8	8	9	13	15	16	16	13	14	13	13	5	1	0	2	5	0	16	
Jul 9	2	3	7	10	10	9	8	8	10	8	9	9	12	11	15	18	11	11	6	4	3	1	3	2	1	18	
Jul 10	2	1	1	2	2	6	7	8	7	7	8	7	8	7	8	8	7	9	8	7	4	4	8	9	1	9	
Jul 11	9	7	8	7	7	8	7	8	10	9	8	9	9	8	16	16	11	11	9	9	8	6	6	10	6	16	
Jul 12	10	10	8	7	7	10	14	12	14	13	12	13	14	12	11	12	10	12	12	9	7	5	8	6	5	14	
Jul 13	6	8	11	8	7	10	6	8	12	13	14	11	11	11	9	6	10	9	7	3	6	2	2	7	2	14	
Jul 14	5	6	4	5	4	4	10	10	11	16	14	13	13	14	13	15	13	12	10	7	6	5	6	9	4	16	
Jul 15	8	7	6	5	5	7	8	7	10	9	10	9	10	10	12	11	9	7	6	5	4	4	2	1	1	12	
Jul 16	7	5	6	11	9	9	9	8	8	11	13	9	7	6	7	7	7	7	8	6	6	7	7	2	2	13	
Jul 17	3	5	2	4	7	9	7	8	8	8	9	9	10	9	10	10	9	8	7	6	4	4	5	5	2	10	
Jul 18	11	9	9	3	4	5	7	8	9	9	8	9	11	11	14	11	10	10	9	11	9	14	14	11	3	14	
Jul 19	8	8	5	5	6	10	10	10	11	13	13	12	12	8	7	7	10	7	8	5	4	6	7	6	4	13	
Jul 20	7	3	8	9	11	11	7	7	8	11	11	14	14	14	14	12	10	7	6	3	1	1	2	2	1	14	
Jul 21	7	4	3	2	1	2	4	12	15	15	12	14	11	11	10	9	8	7	7	3	2	1	2	5	1	15	
Jul 22	4	4	4	5	5	7	7	8	7	8	8	8	8	8	9	8	8	8	7	4	3	4	4	4	3	9	
Jul 23	5	6	9	6	7	8	7	11	10	11	11	12	13	13	14	13	16	13	9	4	3	2	2	5	2	16	
Jul 24	5	5	6	5	7	7	8	7	6	6	11	8	7	9	9	11	14	14	13	14	14	14	14	14	5	14	
Jul 25	13	14	14	10	9	9	9	9	10	10	9	10	9	10	9	10	10	10	9	9	10	9	9	9	9	9	14
Jul 26	10	9	9	11	11	12	11	10	10	12	12	12	13	12	11	10	11	12	14	11	6	10	8	8	6	14	
Jul 27	8	4	2	3	8	4	6	7	6	7	5	4	3	8	8	8	9	10	13	8	7	7	7	7	2	13	
Jul 28	7	8	8	7	7	7	8	8	8	8	7	8	8	8	8	9	7	10	10	9	7	5	6	7	5	10	
Jul 29	5	6	5	9	3	7	10	13	11	9	13	12	10	10	11	12	12	12	12	4	2	3	5	3	2	13	
Jul 30	4	2	3	5	4	4	7	7	6	9	8	7	11	11	10	8	8	6	9	8	4	5	4	3	2	11	
Jul 31	4	5	4	4	6	8	11	11	15	16	17	12	15	11	13	13	11	7	5	5	5	6	5	4	17		
Diurnal Minimum	2	1	1	2	1	2	4	7	6	6	6	5	4	3	7	6	5	5	5	3	1	0	2	1			
Dalurnal Maximum	15	14	14	15	14	14	14	13	15	16	17	14	15	16	16	18	16	14	14	13	14	14	14	14			

C Calibration	S Daily Zero/Span	Q Quality Assurance	C1 Repeat Calibration
G Out for Repair	K Collection Error	N Not in Service	O Operator Error
R Recovery	X Machine Malfunction	Y Maintenance	T Exceeds Temperature Limits
			S1 Repeat Daily Zero/Span
			P Power Failure
			N Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Average for STDWD - Bonnyville - East Site**



## REFERENCE DOCUMENTS

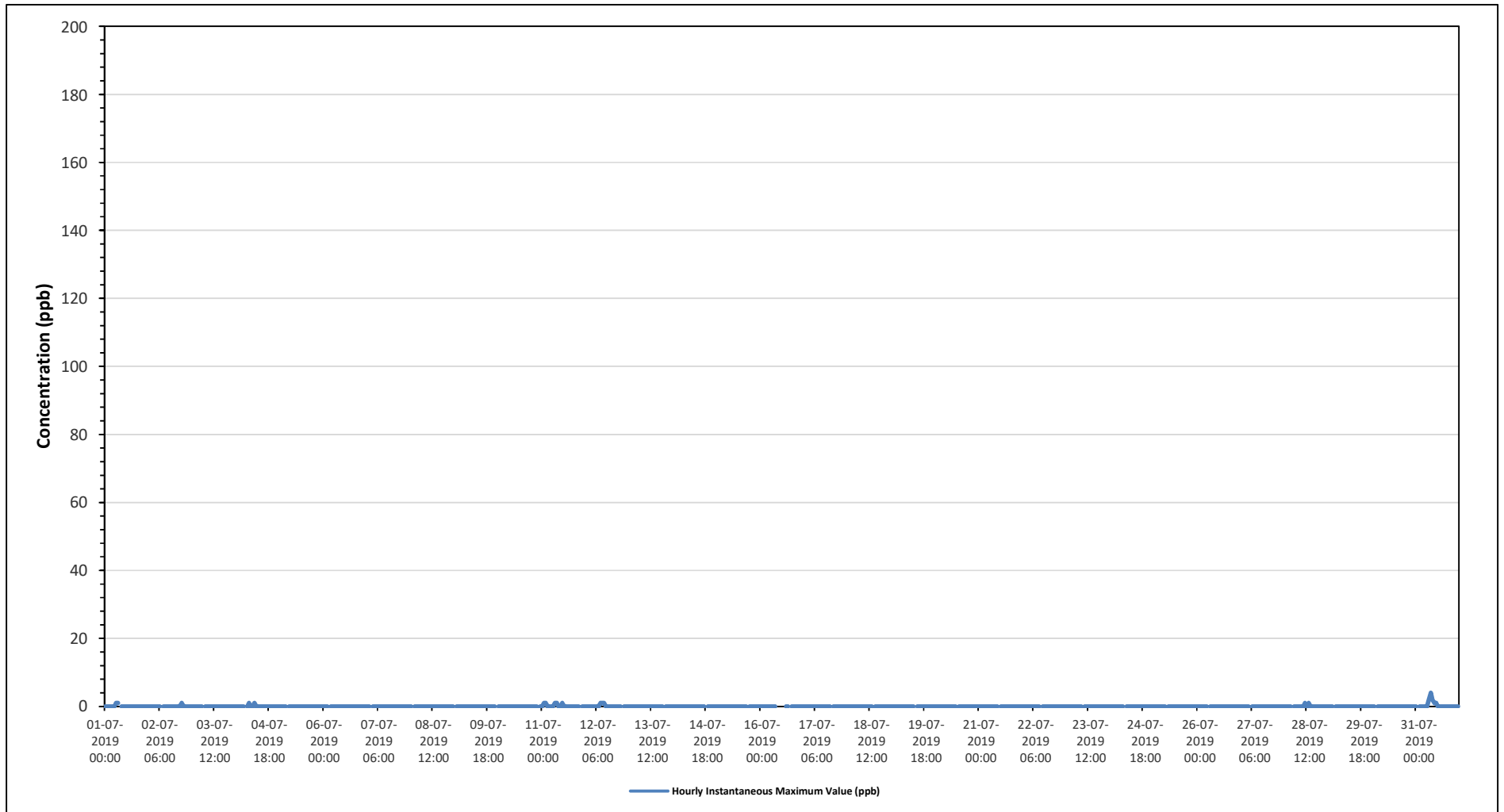


**HOURLY INSTANTANEOUS DATA**

COLD LAKE SOUTH STATION



**Timeseries Chart of Hourly Instantaneous Maximum for SO2 - Cold Lake South Station**





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019  
 Summary of Hourly Instantaneous Maximums

TOTAL REDUCED SULPHUR (TRS) in ppb

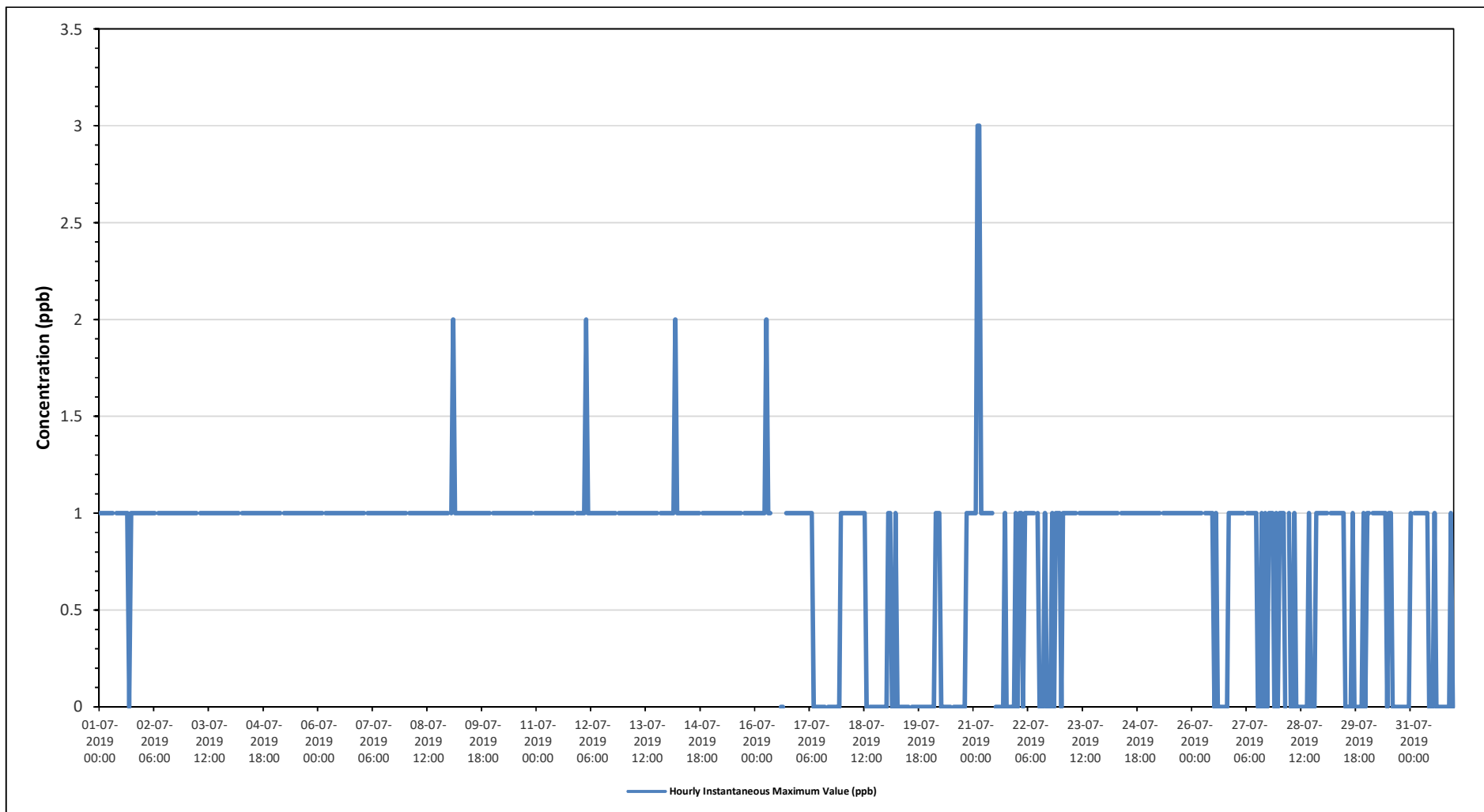
Maximum Hourly Value:	3 ppb on July 21 at hour 2	Hours in Service:	744
Maximum Daily Value:	1 ppb on July 9	Hours of Data:	707
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0 ppb on July 19	Hours of Calibration:	37
Monthly Average:	0.81 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Jul 1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0.96
Jul 2	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 3	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 4	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 5	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 6	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 7	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 8	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 9	S	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1.05
Jul 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1.00
Jul 11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1.00
Jul 12	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1.04
Jul 13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1.00
Jul 14	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1.04
Jul 15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1.00
Jul 16	1	1	1	1	1	1	2	1	1	C	C	C	C	C	0	0	S	1	1	1	1	1	1	1	0	0.94
Jul 17	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.39
Jul 18	1	1	1	1	1	1	1	1	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0.57
Jul 19	0	1	1	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.13
Jul 20	0	0	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	1	1	0	0.30
Jul 21	1	1	3	3	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.74
Jul 22	0	1	1	0	1	1	1	1	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0.61
Jul 23	0	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.96
Jul 24	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 25	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00
Jul 26	1	1	1	1	1	1	S	1	1	1	1	1	0	1	0	0	0	0	0	0	0	1	1	1	1	0.70
Jul 27	1	1	1	1	1	S	1	1	1	1	1	1	0	0	1	0	1	0	1	1	1	0	1	0	0	0.74
Jul 28	1	1	1	0	S	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0.43
Jul 29	1	1	1	S	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0.57
Jul 30	1	1	S	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.52
Jul 31	1	S	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.48
Diurnal Maximum	1.00	1.00	3.00	3.00	2.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Daily Average	0.87	0.97	1.07	1.00	1.00	1.00	0.93	0.90	0.90	0.86	0.83	0.79	0.69	0.72	0.63	0.63	0.67	0.63	0.63	0.67	0.73	0.73	0.83	0.80		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Instantaneous Maximum for TRS - Cold Lake South Station*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Cold Lake South Station - July 2019 Summary of Hourly Instantaneous Maximums

#### OXIDES OF NITROGEN (NOx) in ppb

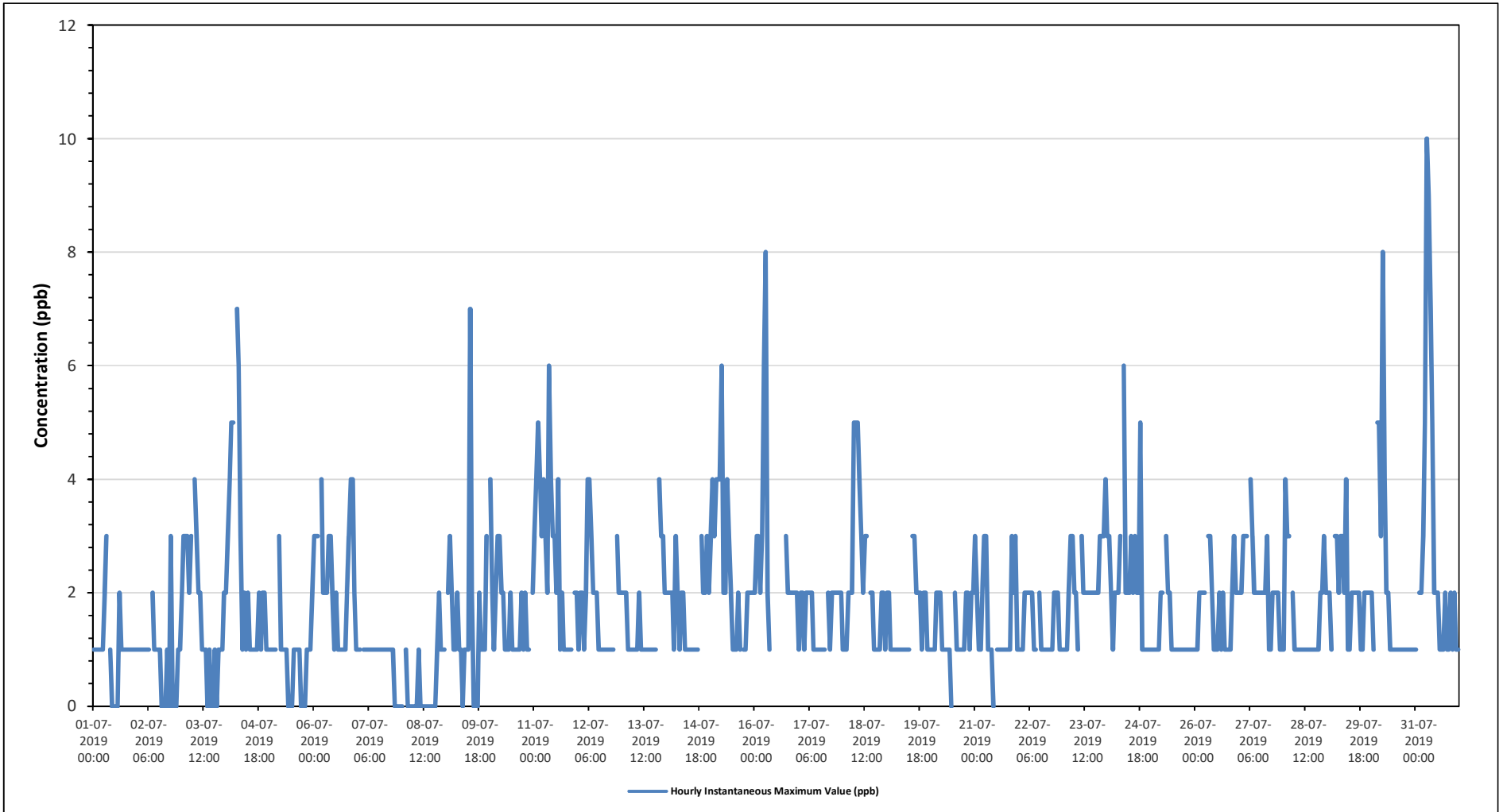
Maximum Hourly Value:	10 ppb on July 31 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.8 ppb on July 31	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.3 ppb on July 8	Hours of Calibration:	39
Monthly Average:	1.7 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Jul 1	1	1	1	1	1	1	2	3	S	1	0	0	0	0	2	1	1	1	1	1	1	1	1	0	3	1.0
Jul 2	1	1	1	1	1	1	1	S	2	1	1	1	1	0	0	0	0	0	3	0	0	0	1	1	1	0.8
Jul 3	2	3	3	3	2	3	S	4	3	2	2	1	1	1	0	1	0	0	1	0	1	1	1	2	0	1.6
Jul 4	2	3	4	5	5	S	7	6	3	1	2	1	2	1	1	1	1	2	1	2	2	1	1	1	1	2.4
Jul 5	1	1	1	S	S	3	1	1	1	1	0	0	0	1	1	1	1	0	0	0	1	1	1	2	0	0.9
Jul 6	3	3	3	S	4	2	2	2	3	3	2	1	2	1	1	1	1	1	2	3	4	4	2	1	1	2.2
Jul 7	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0.8
Jul 8	0	S	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2	1	1	1	0	0.3
Jul 9	S	2	3	2	1	1	2	1	1	0	1	1	7	2	0	0	0	2	1	1	1	1	3	S	0	1.5
Jul 10	4	2	1	2	3	3	2	2	1	1	2	1	1	1	1	1	1	2	1	2	1	1	S	2	1	1.7
Jul 11	3	4	5	4	3	4	3	2	6	4	3	3	2	4	1	2	1	1	1	1	1	S	2	2	1	2.7
Jul 12	1	2	2	1	2	4	4	3	2	2	2	1	1	1	1	1	1	1	1	1	S	3	2	2	1	1.8
Jul 13	2	2	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	S	S	4	3	3	2	1	1.5
Jul 14	2	2	2	2	1	3	2	1	2	2	1	1	1	1	1	1	1	1	S	3	2	2	3	2	1	1.7
Jul 15	3	4	3	4	4	4	6	2	2	4	3	2	1	1	2	1	S	1	1	2	2	2	2	2	1	2.5
Jul 16	2	3	3	2	3	6	8	2	1	C	C	C	C	C	C	C	S	3	2	2	2	2	2	2	1	-
Jul 17	1	2	2	1	2	2	2	2	1	1	1	1	1	1	1	S	2	1	2	2	2	2	2	2	1	1.6
Jul 18	1	1	1	2	2	2	5	5	5	4	3	2	3	3	S	2	2	1	1	1	1	2	2	1	1	2.3
Jul 19	2	2	1	1	1	1	1	1	1	1	1	1	S	3	3	2	2	2	2	1	2	2	1	1	1	1.5
Jul 20	1	1	1	2	2	2	1	1	1	1	0	S	2	1	1	1	1	1	1	2	2	1	2	2	0	1.3
Jul 21	3	2	1	1	2	3	3	1	1	1	0	S	1	1	1	1	1	1	1	1	3	2	3	1	0	1.5
Jul 22	1	1	1	2	2	2	2	2	1	1	S	2	1	1	1	1	1	1	1	2	2	2	1	1	1	1.4
Jul 23	1	1	1	2	3	3	2	2	1	S	3	2	2	2	2	2	2	2	2	2	3	3	3	4	1	2.2
Jul 24	3	3	2	1	2	2	2	3	S	6	2	2	2	3	2	3	2	2	5	1	1	1	1	1	1	2.3
Jul 25	1	1	1	1	1	2	2	S	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.3
Jul 26	1	1	2	2	2	2	S	3	3	2	1	1	1	2	1	2	1	1	1	1	2	3	2	2	1	1.7
Jul 27	2	2	3	3	3	S	4	3	2	2	2	2	2	2	3	1	1	2	2	2	2	2	1	1	1	2.1
Jul 28	1	4	3	3	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	2	1	1.6
Jul 29	2	2	1	S	3	3	2	3	3	2	4	1	1	2	2	2	2	2	1	1	2	2	2	2	1	2.0
Jul 30	2	1	S	5	5	3	8	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2.0
Jul 31	1	S	2	2	3	5	10	9	7	5	2	2	2	1	1	2	1	1	2	1	2	1	2	1	1	2.8
Diurnal Maximum	4	4	5	5	5	6	10	9	7	6	4	3	3	7	3	3	2	3	5	3	4	4	3	4		
Diurnal Average	1.7	2.0	2.0	2.0	2.2	2.4	3.0	2.4	2.1	2.0	1.5	1.2	1.2	1.5	1.2	1.3	1.1	1.1	1.4	1.3	1.7	1.7	1.7	1.5		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NOx - Cold Lake South Station**







# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

## Cold Lake South Station - July 2019

### Summary of Hourly Instantaneous Maximums

#### NITRIC OXIDE (NO) in ppb

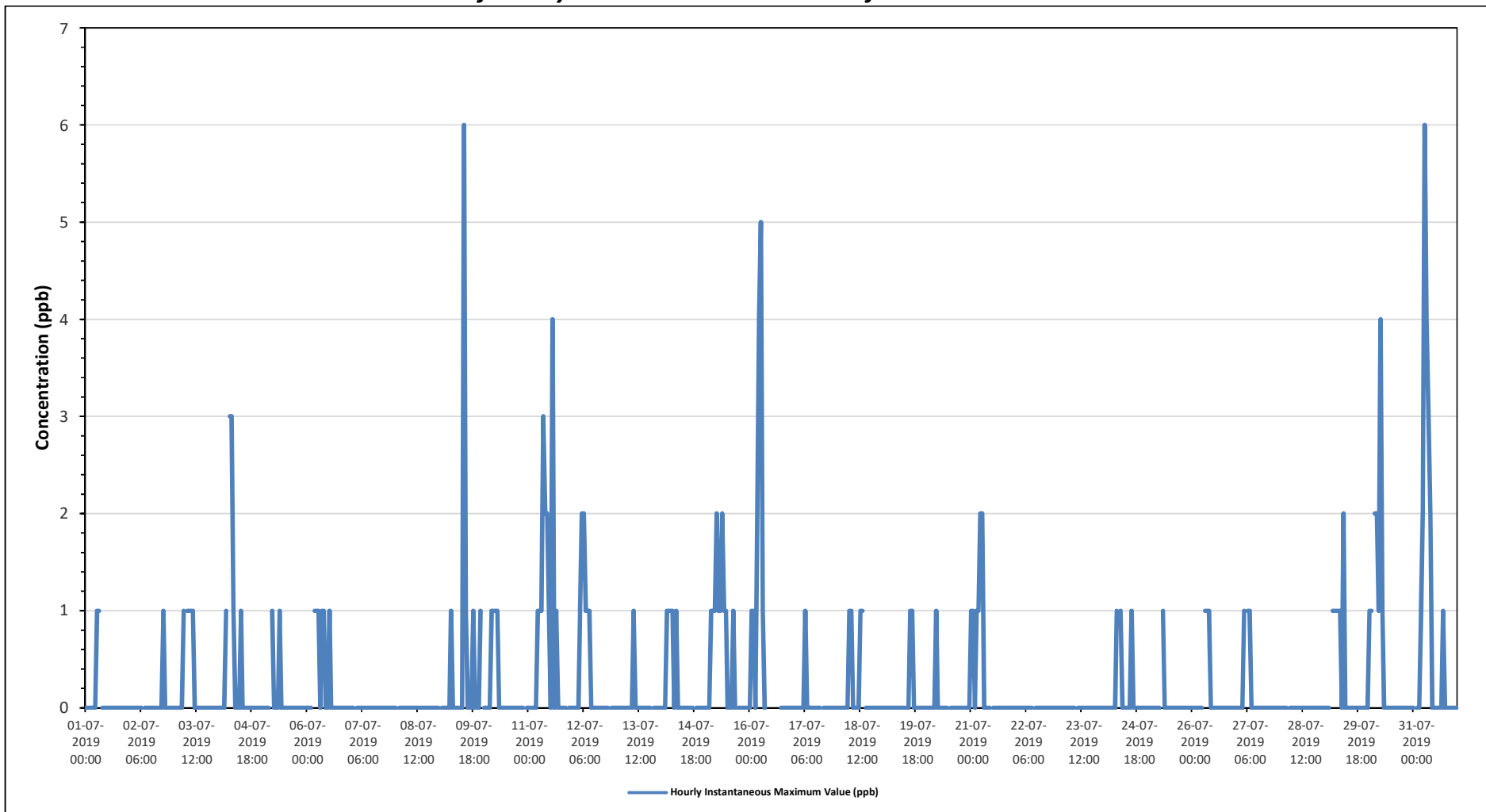
Maximum Hourly Value:	6 ppb on July 9 at hour 13	Hours in Service:	744
Maximum Daily Value:	0.8 ppb on July 31	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 7	Hours of Calibration:	39
Monthly Average:	0.2 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																									Daily Minimum	Daily Maximum	Daily Average								
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
Jul 1	0	0	0	0	0	0	1	1	S	0	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	0.1
Jul 2	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	
Jul 3	0	0	0	0	0	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 4	0	0	0	0	1	S	3	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4	
Jul 5	0	0	0	0	S	1	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	1	0.1		
Jul 6	0	0	0	S	1	1	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3		
Jul 7	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 8	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 9	S	0	0	0	0	0	1	0	0	0	0	0	0	6	1	0	0	0	1	0	0	0	0	0	0	0	1	S	0	0	6	0.5				
Jul 10	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.2			
Jul 11	0	0	0	0	0	1	1	1	3	2	2	1	0	4	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	4	0.7			
Jul 12	0	0	0	0	1	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	2	0.3			
Jul 13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.0			
Jul 14	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0.2		
Jul 15	0	0	0	1	1	1	2	1	1	2	1	1	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.5		
Jul 16	0	1	1	0	2	4	5	1	0	C	C	C	C	C	C	C	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	-			
Jul 17	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0			
Jul 18	0	0	0	0	0	0	1	1	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2			
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 20	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0			
Jul 21	1	1	0	1	1	2	2	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3			
Jul 22	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 23	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 24	0	0	0	0	0	0	0	1	S	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Jul 25	0	0	0	0	0	0	0	S	1	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			
Jul 26	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 27	0	0	0	0	1	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1			
Jul 28	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 29	0	0	0	S	1	1	1	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3			
Jul 30	1	1	S	2	2	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.5				
Jul 31	0	S	0	0	1	2	6	4	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.8			
Diurnal Maximum	1	1	1	2	2	4	6	4	3	2	2	1	1	6	1	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		
Diurnal Average	0.1	0.1	0.0	0.2	0.5	0.7	1.2	0.7	0.5	0.4	0.2	0.1	0.1	0.4	0.0	0.1	0.1	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		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NO - Cold Lake South Station**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Cold Lake South Station - July 2019 Summary of Hourly Instantaneous Maximums

#### NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

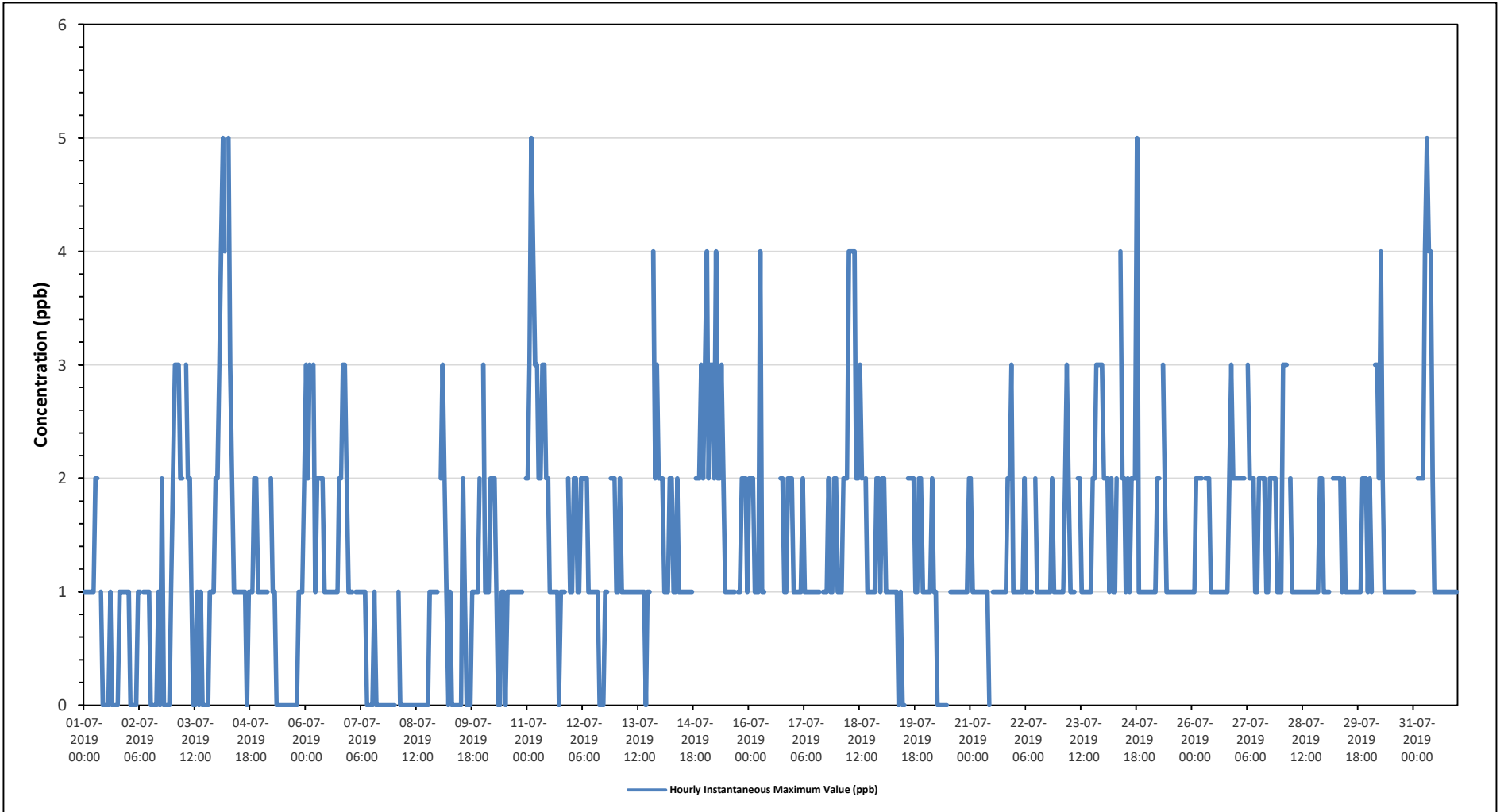
Maximum Hourly Value:	5 ppb on July 4 at hour 3	Hours in Service:	744
Maximum Daily Value:	2.0 ppb on July 18	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.3 ppb on July 8	Hours of Calibration:	39
Monthly Average:	1.3 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	1	1	2	2	S	1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	0	2	0.7	
Jul 2	1	0	0	0	1	1	1	S	1	1	1	1	0	0	0	0	1	0	0	2	0	0	0	0	1	0	0.5	
Jul 3	2	3	3	3	2	2	S	3	2	2	1	0	0	1	0	1	0	0	0	0	1	1	1	2	0	3	1.3	
Jul 4	2	3	4	5	4	S	5	3	2	1	1	1	1	1	1	0	1	1	1	1	2	2	1	1	0	5	1.9	
Jul 5	1	1	1	1	S	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0	2	0.6	
Jul 6	3	2	3	S	3	1	2	2	2	2	1	1	1	1	1	1	1	1	2	2	3	3	2	1	1	3	1.8	
Jul 7	1	1	S	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4	
Jul 8	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0.3	
Jul 9	S	2	3	2	1	0	1	0	0	0	0	0	2	1	0	0	0	0	1	1	1	1	2	S	0	3	0.8	
Jul 10	3	1	1	1	2	2	2	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	S	2	0	3	1.1	
Jul 11	2	3	5	4	3	3	2	2	3	3	2	2	1	1	1	1	0	1	1	1	1	S	2	1	0	5	2.0	
Jul 12	1	2	2	1	1	2	2	2	2	1	1	1	1	1	1	0	0	0	1	1	S	2	2	2	0	2	1.3	
Jul 13	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	S	4	2	3	2	0	4	1.3	
Jul 14	2	2	1	1	1	2	2	1	1	2	1	1	1	1	1	1	1	1	S	2	2	3	2	1	1	3	1.5	
Jul 15	3	4	2	3	3	2	4	2	2	3	2	1	1	1	1	1	1	S	1	1	2	2	2	1	1	4	2.0	
Jul 16	2	2	2	1	1	1	4	1	1	C	C	C	C	C	C	C	S	2	2	1	1	2	2	1	1	4	-	
Jul 17	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	S	1	1	1	2	1	1	2	2	1	2	1.2	
Jul 18	1	1	1	2	2	2	4	4	4	4	2	2	3	2	S	2	1	1	1	1	1	2	2	1	1	4	2.0	
Jul 19	2	2	1	1	1	1	1	1	1	0	1	0	0	S	2	2	2	2	1	1	2	2	1	1	0	2	1.2	
Jul 20	1	1	1	2	1	1	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	2	0	2	0.8	
Jul 21	2	1	1	1	1	1	1	1	1	0	1	0	S	1	1	1	1	1	1	1	1	2	2	3	1	0	1.2	
Jul 22	1	1	1	1	1	2	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1.1
Jul 23	1	1	1	2	3	2	1	1	1	S	2	2	1	1	1	1	1	1	1	1	2	2	3	3	3	1	3	1.7
Jul 24	2	2	2	1	2	1	1	2	S	4	2	2	1	2	1	2	2	2	5	1	1	1	1	1	1	5	1.8	
Jul 25	1	1	1	1	1	2	2	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.2
Jul 26	1	1	2	2	2	2	S	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	3	2	2	1	3	1.5
Jul 27	2	2	2	2	2	S	3	2	2	2	1	1	2	2	2	2	1	1	2	2	2	2	1	1	1	3	1.8	
Jul 28	1	3	3	3	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	3	1.4	
Jul 29	1	1	1	S	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	1.4	
Jul 30	2	1	S	3	3	2	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.4	
Jul 31	1	S	2	2	2	2	4	5	4	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.8	
Diurnal Maximum	3	4	5	5	4	3	5	5	4	4	2	2	3	2	2	2	2	2	2	5	2	4	3	3	3			
Diurnal Average	1.5	1.6	1.8	1.7	1.7	1.6	1.9	1.6	1.4	1.4	1.0	0.9	0.8	1.0	0.9	0.9	0.8	0.8	1.1	1.0	1.5	1.5	1.6	1.4				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Cold Lake South Station**





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

## Cold Lake South Station - July 2019

### Summary of Hourly Instantaneous Maximums

#### OZONE (O<sub>3</sub>) in ppb

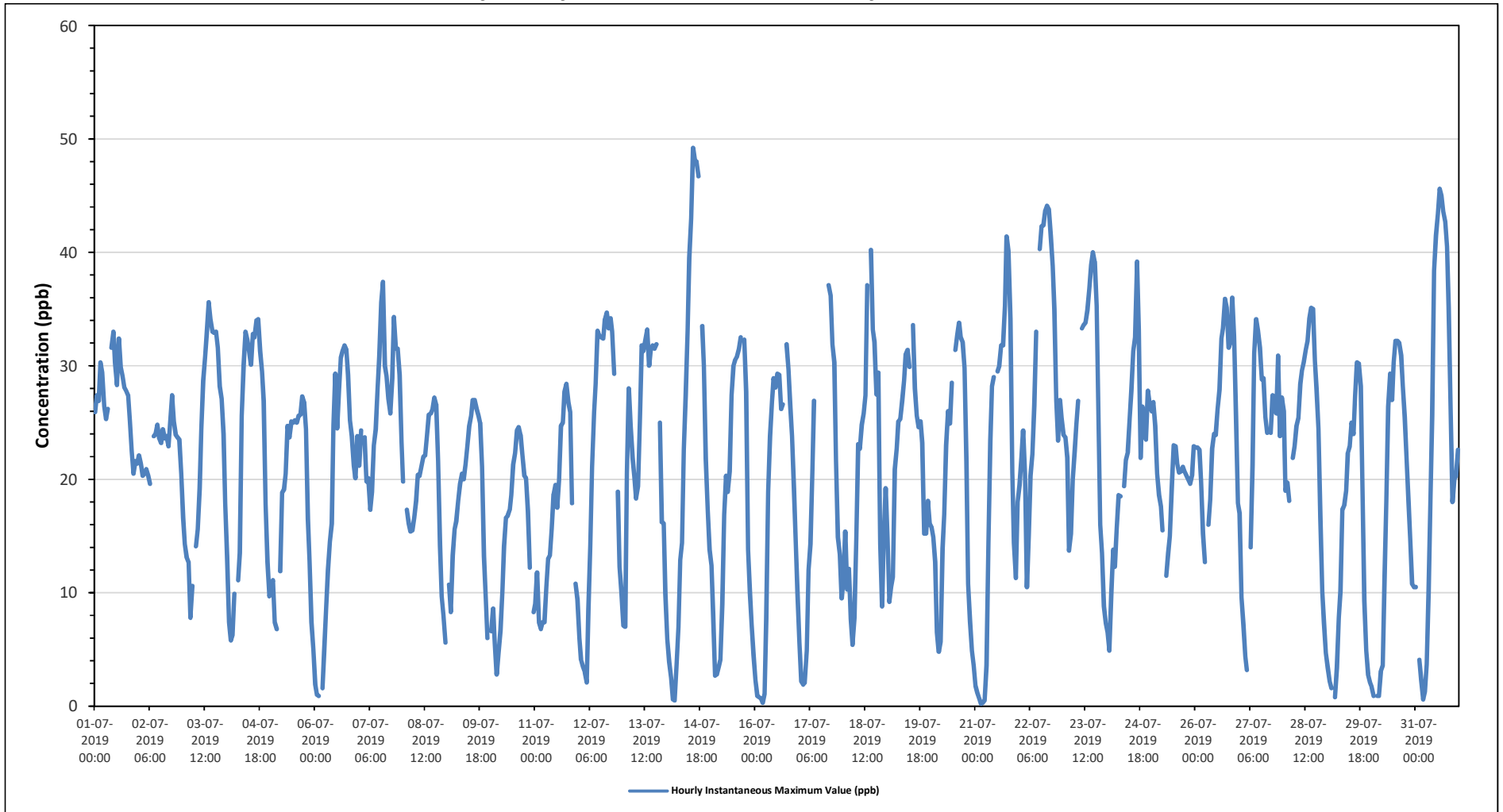
Maximum Hourly Value:	49 ppb on July 14 at hour 14	Hours in Service:	744
Maximum Daily Value:	29.9 ppb on July 22	Hours of Data:	707
Minimum Hourly Value:	0 ppb on July 21 at hour 3	Hours of Missing Data:	0
Minimum Daily Value:	14.4 ppb on July 29	Hours of Calibration:	37
Monthly Average:	21.2 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	25.9	27.4	26.9	30.3	29.4	26.4	25.3	26.2	S	31.6	33	30.3	28.3	32.4	29.9	29.1	28.1	27.8	27.4	25.1	22.5	20.5	21.6	21.4	20.5	33.0	27.3	
Jul 2	22.1	21.4	20.3	20.5	20.9	20.3	19.6	S	23.8	24	24.8	23.6	23.2	24.4	23.6	23.8	22.9	24.9	27.4	25.1	23.9	23.7	23.5	20.5	19.6	27.4	23.0	
Jul 3	16.6	14.3	13.1	12.7	7.8	10.6	S	14.1	15.6	19.2	24.4	28.7	30.8	33.2	35.6	34.1	33	32.9	33	31.6	28.2	27.1	24	17.9	7.8	35.6	23.4	
Jul 4	13.2	7.4	5.8	6.3	9.9	S	11.1	13.5	25.6	30	33	32.3	31.3	30.1	32.8	32.5	34	34.1	31.3	29.5	26.9	17.8	12.7	9.7	5.8	34.1	22.2	
Jul 5	10.5	11.1	7.4	6.8	S	11.9	18.8	19.1	20.5	24.7	23.7	25.1	25	25.2	25	25.6	25.7	27.3	26.8	24.4	16.5	12.8	7.4	5	5.0	27.3	18.5	
Jul 6	1.9	1	0.9	S	1.6	4.8	8.5	12	14.5	16.1	24.8	29.3	24.5	27.8	30.7	31.3	31.8	31.4	29.2	25.2	23.8	21.2	20.1	23.8	0.9	31.8	19.0	
Jul 7	21.2	24.3	S	23.7	19.8	20.1	17.3	18.9	23	24.4	28.1	30.8	35.6	37.4	30	29.1	27.1	25.8	28.9	34.3	31.5	31.5	29.2	23.3	17.3	37.4	26.8	
Jul 8	19.8	S	17.3	16.1	15.4	15.5	16.6	18.1	20.4	20.3	21.2	22	22.1	23.8	25.7	25.8	26.2	27.2	26.6	21.6	14.2	9.7	8	5.6	5.6	27.2	19.1	
Jul 9	S	10.7	8.3	13.3	15.6	16.3	18.1	19.6	20.5	20	21.3	22.9	24.7	25.6	27	27	26.2	25.6	25	21.1	13.2	9.3	6	S	6.0	27.0	19.0	
Jul 10	6.6	8.6	5.5	2.8	4.7	6.7	10.1	14.1	16.6	16.8	17.3	18.6	21.3	22.3	24.3	24.6	23.9	22.1	20.3	20.1	17.2	12.2	S	8.3	2.8	24.6	15.0	
Jul 11	9	11.8	7.4	6.8	7.4	7.4	10.5	13	13.3	15.6	18.7	19.5	17.5	19.9	24.7	25	27.7	28.4	26.8	25.9	17.9	S	10.8	9.4	6.8	28.4	16.3	
Jul 12	6	4.1	3.5	3	2.1	8.5	14.2	21.1	25.9	28.4	33.1	32.6	32.5	32.4	34.1	34.7	33.3	34.2	33	29.3	S	18.9	12.3	10.1	2.1	34.7	21.2	
Jul 13	7.1	7	20.6	28	24.7	21.9	20.3	18.3	19.4	25	31.8	31.3	32.2	33.2	34.2	30	31.4	31.8	31.5	31.9	S	25	16.2	16.1	9.9	7.0	33.2	23.7
Jul 14	5.9	3.9	2.5	0.6	0.5	3.4	7	12.9	14.4	22.6	27.4	33.1	39.5	43	49.2	48.1	48	46.7	S	33.5	30	21.8	17.4	13.8	0.5	49.2	23.8	
Jul 15	12.4	8.1	2.7	2.8	3.5	4.1	9	16.9	20.3	18.9	20.7	27.4	30	30.5	30.8	31.5	32.5	S	32.3	27.7	13.8	9.9	7.2	4.5	2.7	32.5	17.3	
Jul 16	2.3	0.9	0.8	0.7	0.3	1.1	7.7	18.9	23.8	26.8	28.9	28.1	29.3	29.2	26.2	26.6	S	31.9	29.7	26.7	23.8	19.2	14.2	10	0.3	31.9	17.7	
Jul 17	5.6	2.2	1.9	2.1	4.9	12	14.3	20.6	26.9	C	C	C	C	C	35.8	S	37.1	36.2	31.9	30.3	21.7	14.9	13.4	9.5	1.9	37.1	17.9	
Jul 18	11.1	15.4	10.3	12.1	7.7	5.4	7.8	14.8	23.1	22.7	24.8	25.8	27.4	37.1	S	40.2	33.2	32.1	27.5	29.4	14.3	8.8	15	19.2	5.4	40.2	20.2	
Jul 19	14.8	9.2	10.5	11.4	20.9	22.7	25.1	25.3	26.9	28.7	31	31.4	29.9	S	33.6	28	25.6	24.6	25.1	23.2	15.2	15.2	18.1	16.1	9.2	33.6	22.3	
Jul 20	15.8	14.9	12.7	6.5	4.8	5.7	13.9	16.9	23	26	24.9	28.5	S	31.4	32.7	33.8	32.5	32.1	29.8	21.5	10.8	7.5	4.9	3.6	3.6	33.8	18.9	
Jul 21	1.8	1.2	0.7	0.2	0.3	0.5	3.6	14.4	23.4	28.2	29	S	29.5	30	31.8	31.8	35.3	41.4	40.1	34.1	20.6	14.4	11.3	18	0.2	41.4	19.2	
Jul 22	19.5	22	24.3	20.5	10.5	15.1	20.3	22.2	26.5	33	S	40.3	42.3	42.4	43.6	44.1	43.8	41.4	38.8	35	26.9	23.4	27	25.4	10.5	44.1	29.9	
Jul 23	23.9	23.7	21.9	13.7	15.2	20	22.5	24.8	26.9	S	33.3	33.6	33.8	34.9	36.8	38.9	40	39.2	35.3	25.6	16	13.5	8.8	7.3	7.3	40.0	25.6	
Jul 24	6.5	4.9	9.9	13.8	12.3	15.7	18.6	18.5	S	19.4	21.7	22.4	25.4	27.8	31.3	32.5	39.2	33.2	21.9	26.4	24.4	23.5	27.8	26.6	4.9	39.2	21.9	
Jul 25	26	26.8	24.7	20.5	18.6	17.6	15.5	S	11.5	13.5	15	19.2	23	22.9	21.4	20.6	20.7	21.1	20.7	20.3	20	19.6	20.4	22.9	11.5	26.8	20.1	
Jul 26	22.8	22.8	22.6	19.8	15.2	12.7	S	16	18.2	22.7	24	23.9	26.2	27.9	32.4	33.3	35.9	35.1	31.6	32.1	36	32.6	25.5	17.9	12.7	36.0	25.5	
Jul 27	17	9.6	7.2	4.4	3.2	S	14	21.2	31.1	34.1	33.1	31.6	28.8	28.9	25.5	24.1	24.3	24.1	27.4	26.8	25.8	30.9	23.8	27.2	3.2	34.1	22.8	
Jul 28	26	19	19.7	18.1	S	21.9	22.9	24.7	25.4	28.4	29.6	30.3	31.4	32.2	34.2	35.1	35	30.4	27.9	24.4	16.6	10.1	7.4	4.7	4.7	35.1	24.1	
Jul 29	3.4	2.2	1.6	S	0.8	3.4	7.8	10.1	17.3	17.7	19	22.3	22.9	25	24	27.3	30.3	30.2	28.2	19.5	9.3	4.9	2.8	2.1	0.8	30.3	14.4	
Jul 30	1.7	0.9	S	0.9	0.9	3.1	3.6	11.7	18	26.4	29.3	27	30.3	32.2	32.2	32	30.9	28.2	25.5	21.7	18	14.8	10.8	10.5	0.9	32.2	17.9	
Jul 31	10.5	S	4.1	2.3	0.6	1.3	3.7	10.1	18.5	25.6	38.4	41.5	43.4	45.6	45	43.6	42.7	40.5	35.1	26.3	18	20	20.3	22.6	0.6	45.6	24.3	
Diurnal Maximum	26	27	27	30	29	26	25	26	31	34	38	42	43	46	49	48	48	47	40	35	36	33	29	27				
Diurnal Average	12.9	11.6	10.9	11.1	9.6	11.6	14.1	17.5	21.2	23.8	26.4	28.0	29.0	30.6	31.3	31.5	32.0	31.4	29.2	26.6	20.7	17.5	15.6	14.2				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for O3 - Cold Lake South Station**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Instantaneous Maximums

TOTAL HYDROCARBONS (THC) in ppm

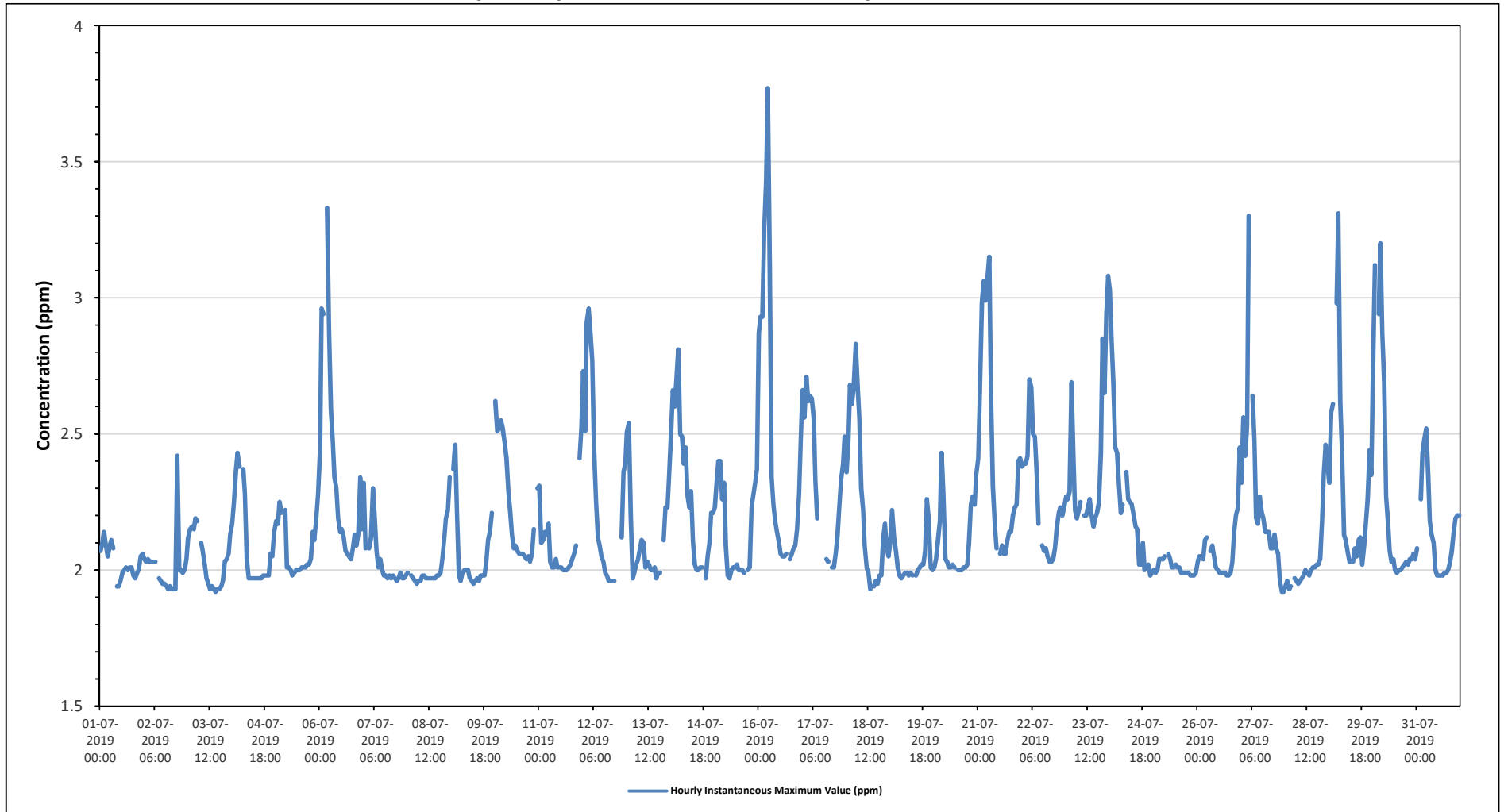
Maximum Hourly Value:	3.77 ppm on July 16 at hour 5	Hours in Service:	744
Maximum Daily Value:	2.47 ppm on July 16	Hours of Data:	706
Minimum Hourly Value:	1.92 ppm on July 3 at hour 15	Hours of Missing Data:	2
Minimum Daily Value:	2.00 ppm on July 2	Hours of Calibration:	36
Monthly Average:	2.18 ppm	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	2.07	2.10	2.14	2.09	2.05	2.09	2.11	2.08	S	1.94	1.94	1.96	1.99	2.00	2.01	2.00	2.01	2.01	1.98	1.97	1.99	2.00	2.05	2.06	1.94	2.14	2.03
Jul 2	2.04	2.03	2.04	2.03	2.03	2.03	2.03	S	1.97	1.96	1.95	1.95	1.94	1.93	1.94	1.93	1.93	1.93	2.42	2.00	2.00	1.99	2.00	2.04	1.93	2.42	2.00
Jul 3	2.12	2.15	2.16	2.15	2.19	2.18	S	2.10	2.07	2.02	1.97	1.95	1.93	1.94	1.93	1.92	1.93	1.93	1.94	1.96	2.03	2.04	2.06	2.13	1.92	2.19	2.03
Jul 4	2.17	2.25	2.36	2.43	2.38	S	2.37	2.28	2.04	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.98	2.06	2.05	2.14	1.97	2.43	2.10
Jul 5	2.18	2.17	2.25	2.21	S	2.22	2.01	2.01	2.00	1.98	1.99	2.00	2.00	2.00	2.01	2.01	2.01	2.02	2.02	2.04	2.14	2.11	2.19	2.28	1.98	2.28	2.08
Jul 6	2.43	2.96	2.94	S	3.33	2.89	2.59	2.47	2.34	2.30	2.19	2.14	2.15	2.12	2.07	2.06	2.05	2.04	2.08	2.13	2.09	2.13	2.34	2.15	2.04	3.33	2.35
Jul 7	2.32	2.08	S	2.08	2.12	2.30	2.18	2.07	2.01	2.04	2.00	1.98	1.98	1.97	1.98	1.97	1.98	1.97	1.96	1.97	1.99	1.97	1.97	1.98	1.96	2.32	2.04
Jul 8	1.99	S	1.98	1.97	1.96	1.95	1.96	1.96	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.99	2.04	2.12	2.19	2.22	2.34	1.95	2.34	2.02
Jul 9	S	2.37	2.46	2.20	1.98	1.96	1.99	2.00	2.00	1.97	1.96	1.95	1.96	1.97	1.96	1.98	1.98	1.98	1.98	2.03	2.11	2.14	2.21	S	1.95	2.46	2.05
Jul 10	2.62	2.51	2.52	2.55	2.52	2.47	2.41	2.29	2.22	2.13	2.08	2.09	2.07	2.06	2.06	2.05	2.04	2.05	2.03	2.06	2.15	S	2.30	2.03	2.03	2.62	2.23
Jul 11	2.31	2.10	2.11	2.14	2.13	2.17	2.03	2.01	2.01	2.04	2.01	2.01	2.01	2.00	2.00	2.00	2.01	2.02	2.04	2.06	2.09	S	2.41	2.52	2.00	2.52	2.10
Jul 12	2.73	2.51	2.91	2.96	2.86	2.77	2.43	2.25	2.12	2.09	2.05	2.03	1.99	1.98	1.96	1.96	1.96	1.96	Y	Y	S	2.12	2.36	2.39	1.96	2.96	2.30
Jul 13	2.51	2.54	2.20	1.97	1.99	2.02	2.04	2.08	2.11	2.10	2.01	2.03	2.02	2.00	2.00	2.01	1.97	1.99	1.99	S	2.11	2.23	2.23	2.34	1.97	2.54	2.11
Jul 14	2.49	2.66	2.60	2.70	2.81	2.50	2.49	2.39	2.45	2.27	2.23	2.29	2.11	2.02	2.00	2.00	2.01	2.01	S	2.07	2.05	2.10	2.21	2.21	1.97	2.81	2.19
Jul 15	2.23	2.33	2.40	2.40	2.26	2.32	2.09	1.98	1.97	2.00	2.01	2.01	2.02	2.00	2.00	2.00	1.99	S	2.00	2.01	2.23	2.27	2.32	2.37	1.97	2.40	2.14
Jul 16	2.87	2.93	2.93	3.26	3.43	3.77	3.12	2.34	2.24	2.18	2.14	2.10	2.06	2.05	2.05	2.06	S	2.04	2.06	2.08	2.09	2.15	2.28	2.49	2.04	3.77	2.47
Jul 17	2.66	2.56	2.71	2.62	2.64	2.63	2.56	2.33	2.19	C	C	C	C	2.04	2.03	S	2.01	2.01	2.06	2.12	2.23	2.33	2.39	2.49	2.01	2.71	2.35
Jul 18	2.36	2.47	2.68	2.61	2.68	2.83	2.69	2.56	2.30	2.22	2.09	2.01	1.99	1.93	S	1.94	1.96	1.95	1.98	1.98	2.12	2.17	2.08	2.05	1.93	2.83	2.25
Jul 19	2.11	2.22	2.12	2.07	2.01	1.98	1.97	1.98	1.99	1.99	1.98	1.99	1.98	S	1.98	2.00	2.01	2.02	2.02	2.07	2.26	2.19	2.01	2.00	1.97	2.26	2.04
Jul 20	2.01	2.04	2.11	2.18	2.43	2.28	2.04	2.03	2.01	2.01	2.02	2.01	S	2.00	2.00	2.00	2.01	2.01	2.02	2.10	2.24	2.27	2.24	2.35	2.00	2.43	2.10
Jul 21	2.41	2.67	2.98	3.06	2.99	3.07	3.15	2.66	2.31	2.17	2.08	S	2.06	2.09	2.06	2.06	2.11	2.14	2.14	2.20	2.23	2.24	2.40	2.41	2.06	3.15	2.42
Jul 22	2.38	2.39	2.39	2.42	2.70	2.67	2.50	2.49	2.35	2.17	S	2.09	2.07	2.08	2.05	2.03	2.03	2.04	2.08	2.16	2.21	2.23	2.20	2.23	2.03	2.70	2.26
Jul 23	2.27	2.26	2.29	2.69	2.41	2.22	2.19	2.22	2.25	S	2.20	2.20	2.23	2.26	2.20	2.16	2.19	2.21	2.25	2.43	2.85	2.65	2.94	3.08	2.16	3.08	2.38
Jul 24	3.03	2.84	2.67	2.45	2.43	2.31	2.21	2.24	S	2.36	2.26	2.25	2.24	2.20	2.16	2.15	2.02	2.02	2.10	2.00	2.01	2.02	1.98	1.99	1.98	3.03	2.26
Jul 25	2.00	1.99	2.00	2.04	2.04	2.04	2.05	S	2.06	2.04	2.01	2.01	2.02	2.01	2.01	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.99	1.98	2.06	2.01
Jul 26	2.03	2.05	2.05	2.04	2.11	2.12	S	2.07	2.09	2.05	2.01	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.99	2.03	2.14	2.20	2.23	2.45	1.98	2.45	2.07
Jul 27	2.32	2.56	2.42	2.53	3.30	S	2.64	2.47	2.19	2.17	2.27	2.21	2.19	2.14	2.14	2.14	2.08	2.08	2.13	2.08	2.06	1.96	1.92	1.92	1.92	3.30	2.26
Jul 28	1.94	1.96	1.93	1.94	S	1.97	1.96	1.95	1.96	1.97	1.98	2.00	1.99	1.98	2.00	2.01	2.02	2.02	2.04	2.18	2.36	2.46	2.39	1.93	2.46	2.04	
Jul 29	2.32	2.58	2.61	S	2.98	3.31	2.62	2.42	2.13	2.11	2.07	2.03	2.03	2.08	2.05	2.11	2.12	2.02	2.09	2.18	2.26	2.44	2.35	2.02	3.31	2.30	
Jul 30	2.80	3.12	S	2.94	3.20	2.87	2.69	2.27	2.19	2.07	2.03	2.04	2.00	1.99	2.00	2.00	2.01	2.02	2.03	2.02	2.04	2.06	2.04	1.99	3.20	2.28	
Jul 31	2.08	S	2.26	2.43	2.48	2.52	2.35	2.18	2.13	2.10	2.00	1.98	1.98	1.98	1.98	1.99	1.99	2.00	2.03	2.07	2.14	2.19	2.20	2.20	1.98	2.52	2.14
Diurnal Maximum	3.03	3.12	2.98	3.26	3.43	3.77	3.15	2.66	2.45	2.36	2.27	2.29	2.24	2.26	2.20	2.16	2.19	2.21	2.42	2.43	2.85	2.65	2.94	3.08			
Diurnal Average	2.33	2.39	2.39	2.38	2.50	2.43	2.33	2.21	2.13	2.08	2.05	2.04	2.03	2.02	2.02	2.01	2.01	2.02	2.05	2.06	2.13	2.16	2.21	2.26			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for THC - Cold Lake South Station**







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Instantaneous Maximums

METHANE (CH4) in ppm

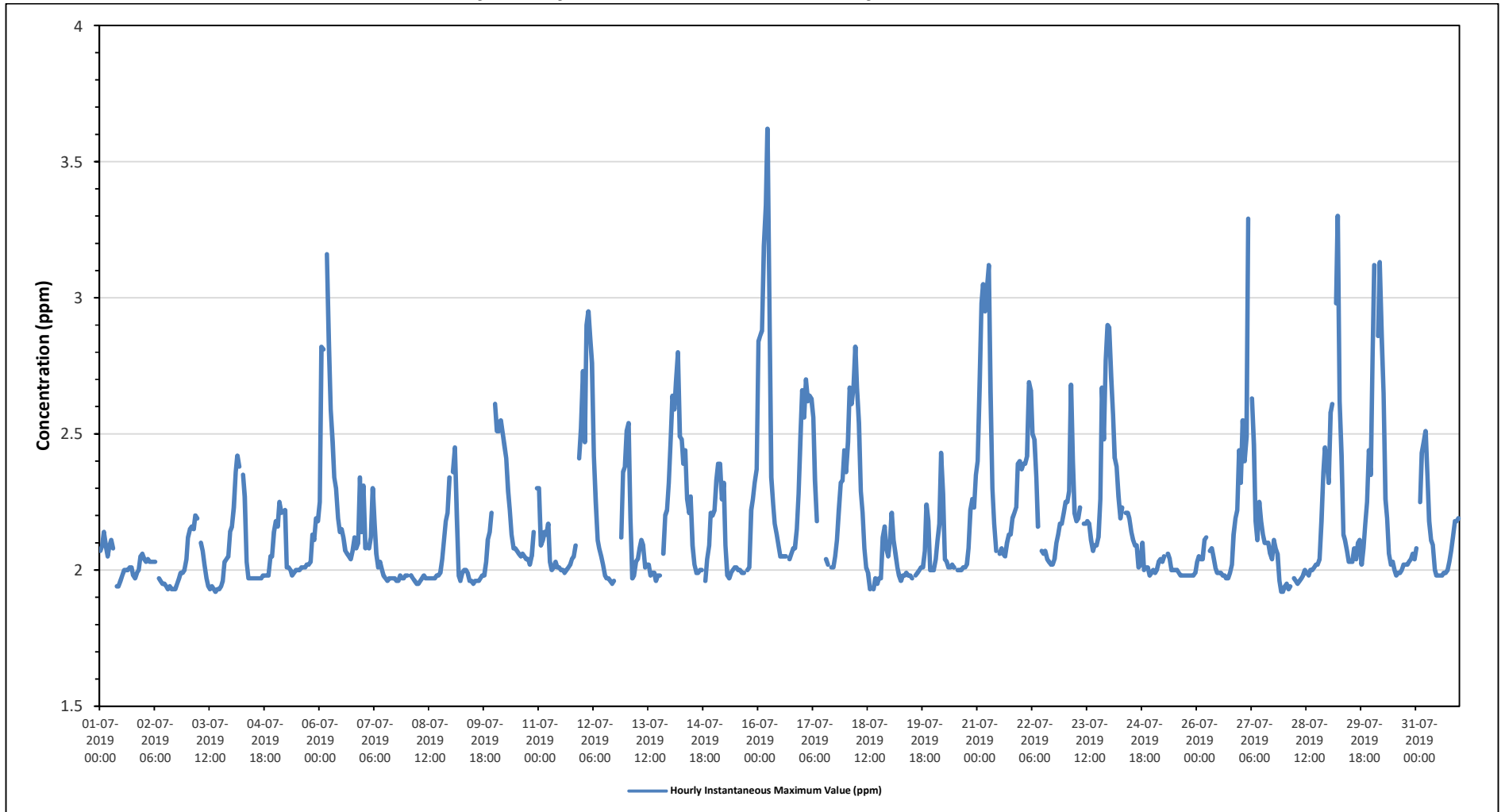
Maximum Hourly Value:	3.62 ppm on July 16 at hour 5	Hours in Service:	744
Maximum Daily Value:	2.44 ppm on July 16	Hours of Data:	706
Minimum Hourly Value:	1.92 ppm on July 3 at hour 15	Hours of Missing Data:	2
Minimum Daily Value:	1.98 ppm on July 2	Hours of Calibration:	36
Monthly Average:	2.16 ppm	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	2.07	2.09	2.14	2.09	2.05	2.09	2.11	2.08	S	1.94	1.94	1.96	1.98	2.00	2.00	2.00	2.01	2.01	1.98	1.97	1.99	2.00	2.05	2.06	1.94	2.14	2.03
Jul 2	2.04	2.03	2.04	2.03	2.03	2.03	2.03	S	1.97	1.96	1.95	1.95	1.94	1.93	1.94	1.93	1.93	1.93	1.95	1.97	1.99	1.99	2.00	2.04	1.93	2.04	1.98
Jul 3	2.12	2.15	2.16	2.15	2.20	2.19	S	2.10	2.07	2.02	1.97	1.94	1.93	1.94	1.93	1.92	1.93	1.93	1.94	1.96	2.03	2.04	2.05	2.14	1.92	2.20	2.04
Jul 4	2.16	2.23	2.36	2.42	2.38	S	2.35	2.27	2.03	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.98	2.05	2.05	2.14	1.97	2.42	2.09
Jul 5	2.18	2.16	2.25	2.21	S	2.22	2.01	2.01	2.00	1.98	1.99	2.00	2.00	2.00	2.01	2.01	2.01	2.02	2.02	2.03	2.13	2.11	2.19	2.18	1.98	2.25	2.07
Jul 6	2.25	2.82	2.81	S	3.16	2.84	2.59	2.47	2.34	2.30	2.19	2.10	2.15	2.12	2.07	2.06	2.05	2.04	2.07	2.12	2.08	2.10	2.34	2.14	2.04	3.16	2.32
Jul 7	2.31	2.08	S	2.08	2.12	2.30	2.17	2.06	2.01	2.03	2.00	1.98	1.97	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.98	1.97	1.97	1.98	1.96	2.31	2.03
Jul 8	1.98	S	1.98	1.97	1.96	1.95	1.95	1.96	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.99	2.04	2.11	2.18	2.21	2.34	1.95	2.34	2.02
Jul 9	S	2.36	2.45	2.20	1.98	1.96	1.99	2.00	2.00	1.99	1.96	1.95	1.96	1.96	1.96	1.97	1.98	1.98	1.98	2.03	2.11	2.14	2.21	S	1.95	2.45	2.05
Jul 10	2.61	2.51	2.51	2.55	2.51	2.46	2.41	2.29	2.22	2.13	2.08	2.08	2.07	2.06	2.05	2.06	2.05	2.04	2.04	2.02	2.05	2.14	S	2.30	2.02	2.61	2.23
Jul 11	2.30	2.09	2.11	2.14	2.13	2.17	2.03	2.00	2.01	2.03	2.01	2.01	2.00	2.00	1.99	2.00	2.01	2.02	2.04	2.05	2.09	S	2.41	2.52	1.99	2.52	2.09
Jul 12	2.73	2.47	2.90	2.95	2.85	2.76	2.42	2.25	2.11	2.08	2.05	2.02	1.98	1.97	1.96	1.95	1.96	Y	Y	S	2.12	2.36	2.38	1.95	2.95	2.30	
Jul 13	2.51	2.54	2.19	1.97	1.98	2.03	2.04	2.08	2.11	2.09	2.01	2.02	2.02	1.98	1.99	1.99	1.96	1.98	S	S	2.06	2.20	2.22	2.32	1.96	2.54	2.10
Jul 14	2.47	2.64	2.59	2.69	2.80	2.49	2.48	2.39	2.44	2.26	2.21	2.27	2.09	2.02	1.99	1.99	2.00	2.00	S	1.96	2.04	2.09	2.21	2.20	1.96	2.80	2.27
Jul 15	2.22	2.33	2.39	2.39	2.26	2.32	2.09	1.98	1.97	1.99	2.00	2.01	2.01	2.00	2.00	1.99	1.99	S	2.00	2.01	2.22	2.26	2.32	2.37	1.97	2.39	2.14
Jul 16	2.84	2.86	2.88	3.19	3.34	3.62	3.00	2.34	2.24	2.17	2.13	2.09	2.05	2.05	2.05	2.05	S	2.04	2.06	2.08	2.08	2.15	2.28	2.49	2.04	3.62	2.44
Jul 17	2.66	2.56	2.70	2.62	2.64	2.63	2.56	2.33	2.18	C	C	C	C	2.04	2.02	S	2.01	2.01	2.05	2.11	2.22	2.32	2.33	2.44	2.01	2.70	2.34
Jul 18	2.36	2.47	2.67	2.61	2.67	2.82	2.67	2.54	2.29	2.21	2.08	2.01	1.99	1.93	S	1.93	1.97	1.95	1.97	1.97	2.12	2.16	2.08	2.05	1.93	2.82	2.24
Jul 19	2.11	2.21	2.11	2.06	2.01	1.98	1.96	1.98	1.98	1.99	1.98	1.98	1.97	S	1.98	1.99	2.00	2.01	2.01	2.07	2.24	2.18	2.00	2.00	1.96	2.24	2.03
Jul 20	2.00	2.04	2.11	2.17	2.43	2.28	2.04	2.03	2.01	2.01	2.02	2.01	S	2.00	2.00	2.00	2.01	2.01	2.02	2.08	2.22	2.26	2.23	2.35	2.00	2.43	2.10
Jul 21	2.40	2.67	2.98	3.05	2.95	3.03	3.12	2.66	2.30	2.17	2.07	S	2.06	2.08	2.06	2.05	2.10	2.13	2.13	2.19	2.21	2.23	2.39	2.40	2.05	3.12	2.41
Jul 22	2.37	2.39	2.39	2.42	2.69	2.66	2.50	2.48	2.34	2.16	S	2.07	2.06	2.07	2.04	2.03	2.02	2.02	2.04	2.10	2.13	2.17	2.17	2.21	2.02	2.69	2.24
Jul 23	2.25	2.25	2.29	2.68	2.40	2.21	2.18	2.19	2.23	S	2.17	2.17	2.18	2.17	2.11	2.07	2.09	2.09	2.12	2.26	2.67	2.48	2.77	2.90	2.07	2.90	2.30
Jul 24	2.89	2.71	2.57	2.41	2.38	2.27	2.19	2.23	S	2.21	2.21	2.19	2.14	2.11	2.09	2.09	2.01	2.02	2.10	2.00	2.01	1.98	1.99	1.99	1.98	2.89	2.21
Jul 25	2.00	1.99	2.00	2.03	2.04	2.03	2.05	S	2.06	2.04	2.00	2.00	2.00	2.00	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.98	2.06	2.00
Jul 26	2.03	2.05	2.04	2.04	2.11	2.12	S	2.07	2.08	2.05	2.01	1.99	1.99	1.99	1.98	1.98	1.97	1.97	1.99	2.02	2.13	2.19	2.22	2.44	1.97	2.44	2.06
Jul 27	2.32	2.55	2.40	2.49	3.29	S	2.63	2.46	2.18	2.11	2.25	2.18	2.13	2.10	2.10	2.10	2.06	2.04	2.11	2.08	2.06	1.96	1.92	1.92	1.92	3.29	2.24
Jul 28	1.94	1.95	1.93	1.94	S	1.97	1.96	1.95	1.96	1.97	1.98	2.00	1.99	1.98	2.00	2.00	2.01	2.02	2.02	2.04	2.18	2.36	2.45	2.39	1.93	2.45	2.04
Jul 29	2.32	2.58	2.61	S	2.98	3.30	2.62	2.42	2.13	2.11	2.07	2.03	2.03	2.08	2.04	2.10	2.11	2.02	2.08	2.17	2.25	2.44	2.35	2.02	3.30	2.30	
Jul 30	2.80	3.12	S	2.86	3.13	2.86	2.65	2.26	2.19	2.06	2.02	2.03	2.00	1.98	1.99	1.99	2.00	2.02	2.02	2.02	2.03	2.04	2.06	2.04	1.98	3.13	2.27
Jul 31	2.08	S	2.25	2.43	2.47	2.51	2.34	2.18	2.11	2.09	2.00	1.98	1.98	1.98	1.99	1.99	2.00	2.03	2.07	2.12	2.18	2.18	2.19	1.98	2.51	2.14	
Diurnal Maximum	2.89	3.12	2.98	3.19	3.34	3.62	3.12	2.66	2.44	2.30	2.25	2.27	2.18	2.17	2.11	2.10	2.10	2.13	2.13	2.26	2.67	2.48	2.77	2.90			
Diurnal Average	2.31	2.38	2.37	2.37	2.48	2.42	2.32	2.21	2.12	2.07	2.04	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.02	2.04	2.11	2.14	2.20	2.24			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

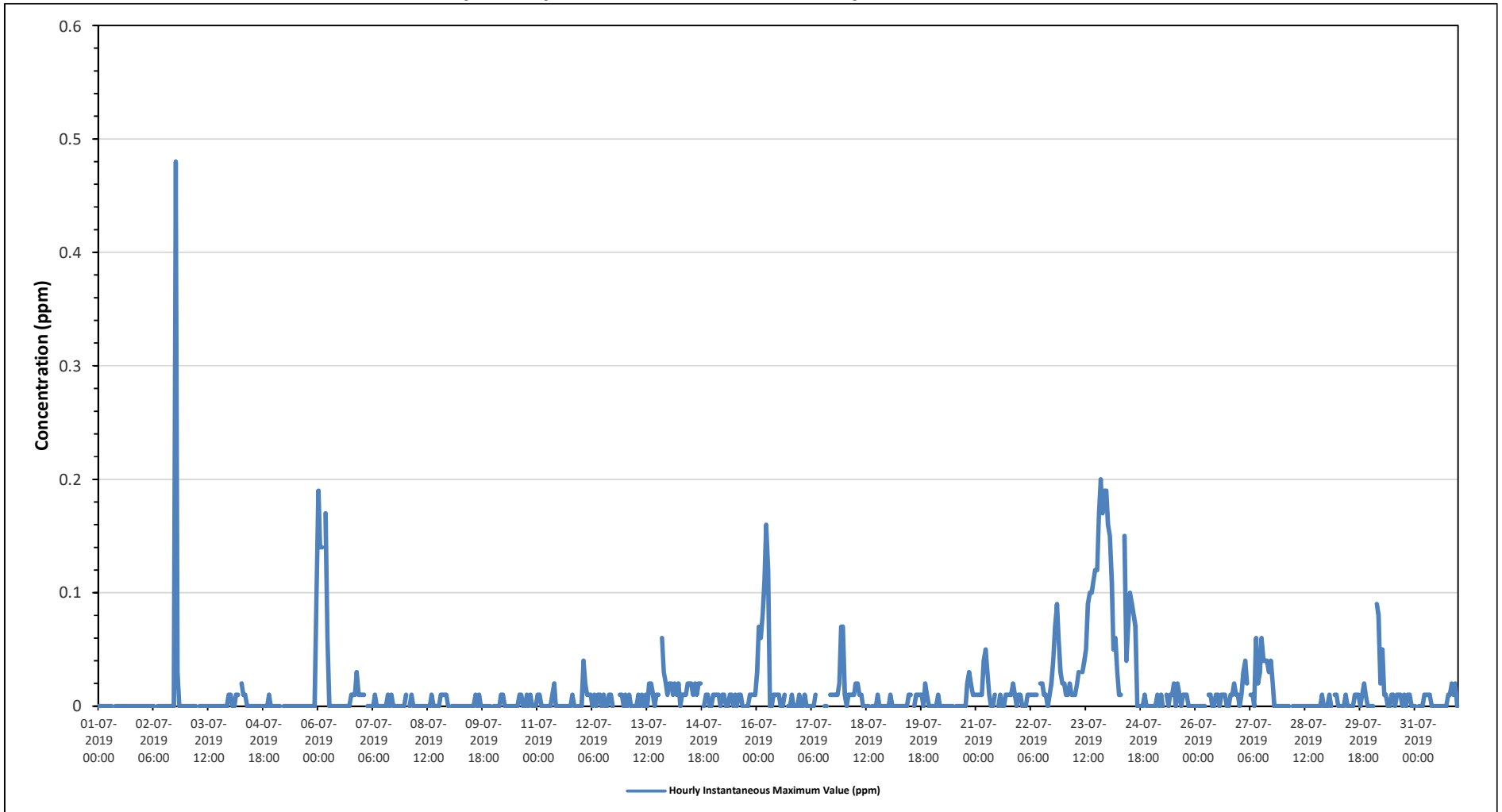
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Cold Lake South Station**





**Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Cold Lake South Station**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - July 2019

Summary of Hourly Instantaneous Maximums

WIND SPEED (WS) in km/h

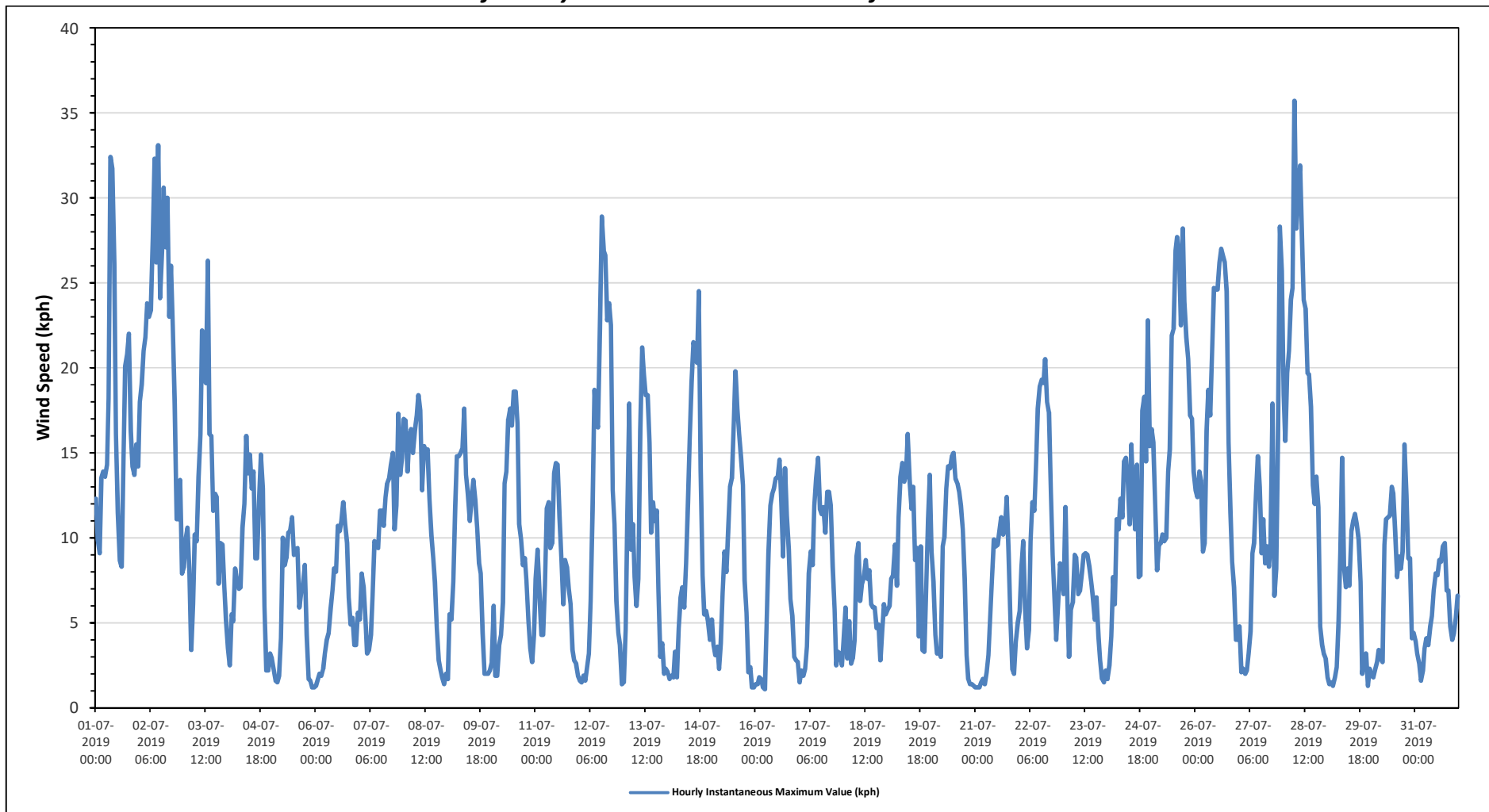
Maximum Hourly Value:	35.7 kph	on July 28 at hour 6	Hours in Service:	744
Maximum Daily Value:	22.5 kph	on July 2	Hours of Data:	744
Minimum Hourly Value:	1.1 kph	on July 16 at hour 5	Hours of Missing Data:	0
Minimum Daily Value:	5.5 kph	on July 31	Hours of Calibration:	0
Monthly Average:	10.2 kph		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	12.3	9.9	9.1	13.5	13.9	13.6	14.3	18.2	32.4	31.7	26.1	16.1	11.5	8.7	8.3	14.8	20.1	20.8	22.0	16.3	14.2	13.7	15.5	14.2	8.3	32.4	16.3	
Jul 2	18.0	19.0	21.0	21.8	23.8	23.0	23.4	27.6	32.3	26.2	33.1	24.1	26.9	30.6	27.1	30.0	23.0	26.0	22.4	17.9	11.1	11.1	13.4	7.9	7.9	33.1	22.5	
Jul 3	8.3	9.9	10.6	8.2	3.4	6.1	10.2	9.8	13.6	16.1	22.2	20.2	19.1	26.3	16.1	16.0	11.6	12.6	12.4	7.3	9.7	9.6	7.1	5.2	3.4	26.3	12.2	
Jul 4	3.5	2.5	5.5	5.1	8.2	7.5	7.0	7.1	10.6	12.0	16.0	13.8	14.9	12.9	13.9	8.8	8.8	12.0	14.9	12.9	6.0	2.2	2.2	3.2	2.2	16.0	8.8	
Jul 5	2.9	2.3	1.6	1.5	1.9	4.1	10.0	8.4	8.8	10.3	10.4	11.2	9.0	9.2	9.4	5.9	6.8	7.3	8.4	4.3	1.7	1.6	1.2	1.2	1.2	11.2	5.8	
Jul 6	1.3	1.6	2.0	1.9	2.3	3.2	4.0	4.4	5.8	6.9	8.2	8.0	10.7	10.4	11.0	12.1	10.8	9.7	6.5	4.9	5.3	3.7	3.7	5.6	1.3	12.1	6.0	
Jul 7	5.2	7.9	7.1	5.5	3.2	3.4	4.3	6.6	9.8	9.5	9.4	11.6	11.6	10.7	12.4	13.2	13.5	14.3	15.0	10.5	11.9	17.3	13.7	14.7	3.2	17.3	10.1	
Jul 8	17.0	16.9	13.9	16.0	16.4	15.0	16.3	17.2	18.4	17.5	12.8	15.4	14.9	15.2	12.3	10.2	8.8	7.4	4.7	2.8	2.2	1.8	1.4	2.0	1.4	18.4	11.5	
Jul 9	1.7	5.5	5.2	7.4	11.8	14.8	14.8	15.0	15.3	17.6	13.7	12.6	11.0	12.4	13.4	12.2	10.6	8.5	7.9	4.4	2.0	2.0	2.0	2.2	1.7	17.6	9.3	
Jul 10	2.7	6.0	1.9	1.9	3.7	4.3	6.2	13.2	13.9	17.0	17.6	16.6	18.6	18.6	16.7	10.8	9.9	8.4	8.8	7.5	5.1	3.5	2.7	4.3	1.9	18.6	9.2	
Jul 11	7.6	9.3	6.7	4.3	4.3	7.2	11.7	12.1	9.4	9.7	13.8	14.4	14.3	11.2	8.7	6.1	8.7	8.3	7.0	6.1	3.4	2.8	2.6	1.9	1.9	14.4	8.0	
Jul 12	1.6	1.5	1.9	1.6	2.4	3.2	6.3	11.6	18.7	16.9	16.5	22.3	28.9	26.9	26.6	22.8	23.8	22.5	12.8	10.8	6.3	4.4	3.7	1.4	1.4	28.9	12.3	
Jul 13	1.5	4.6	11.1	17.9	9.3	10.8	7.7	6.0	7.6	16.3	21.2	19.6	18.4	18.4	15.6	10.3	12.1	11.0	11.6	6.9	3.0	3.8	2.0	2.3	1.5	21.2	10.4	
Jul 14	2.1	1.7	1.9	1.8	3.3	1.8	4.7	6.5	7.1	5.9	8.5	12.1	15.7	19.1	21.5	20.8	20.3	24.5	14.0	7.8	5.5	5.7	5.1	4.0	1.7	24.5	9.2	
Jul 15	5.2	3.7	3.1	3.6	2.3	3.8	6.8	9.2	8.0	10.3	13.0	13.5	16.8	19.8	17.6	16.1	14.7	13.1	7.5	5.6	2.1	2.4	1.2	1.2	1.2	19.8	8.4	
Jul 16	1.4	1.4	1.8	1.7	1.2	1.1	4.8	9.1	11.9	12.6	12.9	13.5	13.6	14.6	12.1	8.9	14.1	11.3	9.3	6.4	5.4	3.0	2.8	2.7	1.1	14.6	7.4	
Jul 17	1.5	2.2	1.9	2.3	3.6	7.9	9.2	8.4	11.9	13.5	14.7	11.7	11.4	11.8	10.3	12.7	12.7	11.9	8.3	5.8	2.5	3.3	3.2	2.5	1.5	14.7	7.7	
Jul 18	3.9	5.9	2.9	5.1	2.6	2.9	4.0	8.9	9.7	6.3	7.3	7.7	8.7	7.6	8.1	6.1	5.9	5.9	4.7	4.9	2.8	4.6	6.1	5.5	2.6	9.7	5.8	
Jul 19	5.8	6.0	7.6	7.8	9.6	7.2	11.2	13.6	14.4	13.3	13.7	16.1	13.4	11.7	13.0	8.7	9.4	4.2	9.5	3.4	3.3	7.1	11.1	13.7	3.3	16.1	9.8	
Jul 20	9.2	7.4	4.3	3.2	3.3	3.0	9.5	10.0	12.9	14.2	14.1	14.8	15.0	13.5	13.2	12.7	11.9	10.5	7.6	3.1	1.7	1.4	1.4	1.3	1.3	15.0	8.3	
Jul 21	1.2	1.2	1.2	1.5	1.7	1.4	2.1	3.1	5.7	7.6	9.9	9.5	9.6	10.4	11.2	10.2	10.6	12.4	9.1	5.0	2.3	2.0	3.9	5.0	1.2	12.4	5.7	
Jul 22	5.7	8.3	9.8	5.9	3.5	4.6	9.8	12.1	11.6	14.5	17.6	18.9	19.3	19.1	20.5	18.0	17.4	12.7	9.0	6.5	4.0	6.2	8.5	7.8	3.5	20.5	11.3	
Jul 23	6.7	11.8	6.4	3.0	5.8	6.2	9.0	8.8	6.7	6.9	8.0	9.1	9.0	8.3	7.4	6.5	5.2	6.5	4.2	2.8	1.7	1.5	2.2	1.5	1.5	11.8	6.4	
Jul 24	1.7	2.5	4.2	7.7	6.1	11.1	10.5	12.3	11.2	14.5	14.7	13.3	10.8	15.5	12.3	10.5	14.3	7.7	7.8	17.5	18.3	14.5	22.8	15.4	1.7	22.8	11.6	
Jul 25	16.4	15.6	11.9	8.1	9.6	9.7	10.2	9.8	10.0	13.9	15.2	21.9	22.3	26.9	27.7	26.6	22.5	28.2	23.9	21.8	20.5	17.2	17.0	13.9	8.1	28.2	17.5	
Jul 26	12.8	12.4	13.9	13.4	9.2	9.7	16.3	18.7	17.2	20.9	24.7	24.6	24.6	26.2	27.0	26.6	26.2	24.5	15.6	11.5	8.6	7.1	4.0	4.0	4.0	4.0	27.0	16.7
Jul 27	4.8	2.1	2.3	2.0	2.2	3.2	4.5	9.1	9.7	12.6	14.8	13.0	9.1	11.1	8.5	9.5	8.3	9.7	17.9	6.6	8.2	15.8	28.3	25.7	2.0	28.3	10.0	
Jul 28	18.4	15.7	19.7	21.0	24.0	24.7	35.7	28.2	30.7	31.9	28.0	24.0	23.5	19.7	19.6	17.7	13.1	12.0	13.6	11.8	4.8	3.7	3.2	2.9	2.9	35.7	18.7	
Jul 29	1.8	1.4	1.5	1.3	1.8	2.4	5.1	9.1	14.7	8.2	7.1	8.2	7.2	10.4	11.0	11.4	10.8	9.9	7.4	2.0	2.9	3.2	1.3	2.3	1.3	14.7	5.9	
Jul 30	1.9	1.8	2.3	2.7	3.4	2.9	2.7	9.6	11.1	11.2	11.3	13.0	12.6	10.3	7.7	8.9	8.2	9.2	15.5	12.5	8.8	8.8	4.1	4.4	1.8	15.5	7.7	
Jul 31	3.9	3.2	2.6	1.6	2.2	3.5	4.1	3.7	4.8	5.4	6.9	7.9	7.8	8.7	8.6	9.5	9.7	6.9	6.9	4.8	4.0	4.4	5.3	6.6	1.6	9.7	5.5	
Diurnal Maximum	18.4	19.0	21.0	21.8	24.0	24.7	35.7	28.2	32.4	31.9	33.1	24.6	28.9	30.6	27.7	30.0	26.2	28.2	23.9	21.8	20.5	17.3	28.3	25.7				
Diurnal Average	6.1	6.5	6.4	6.5	6.5	7.2	9.6	11.2	13.1	13.9	14.9	14.8	14.8	15.4	14.5	13.4	13.1	12.5	11.2	8.2	6.1	6.1	6.5	6.0				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Instantaneous Maximum for WS - Cold Lake South Station*



MASKWA STATION



## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb

Maximum Hourly Value:	11 ppb	on July 2 at hour 18	Hours in Service:	744
Maximum Daily Value:	3.1 ppb	on July 2	Hours of Data:	707
Minimum Hourly Value:	0 ppb	on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb	on July 7	Hours of Calibration:	37
Monthly Average:	0.4 ppb		Operational Uptime:	100.0

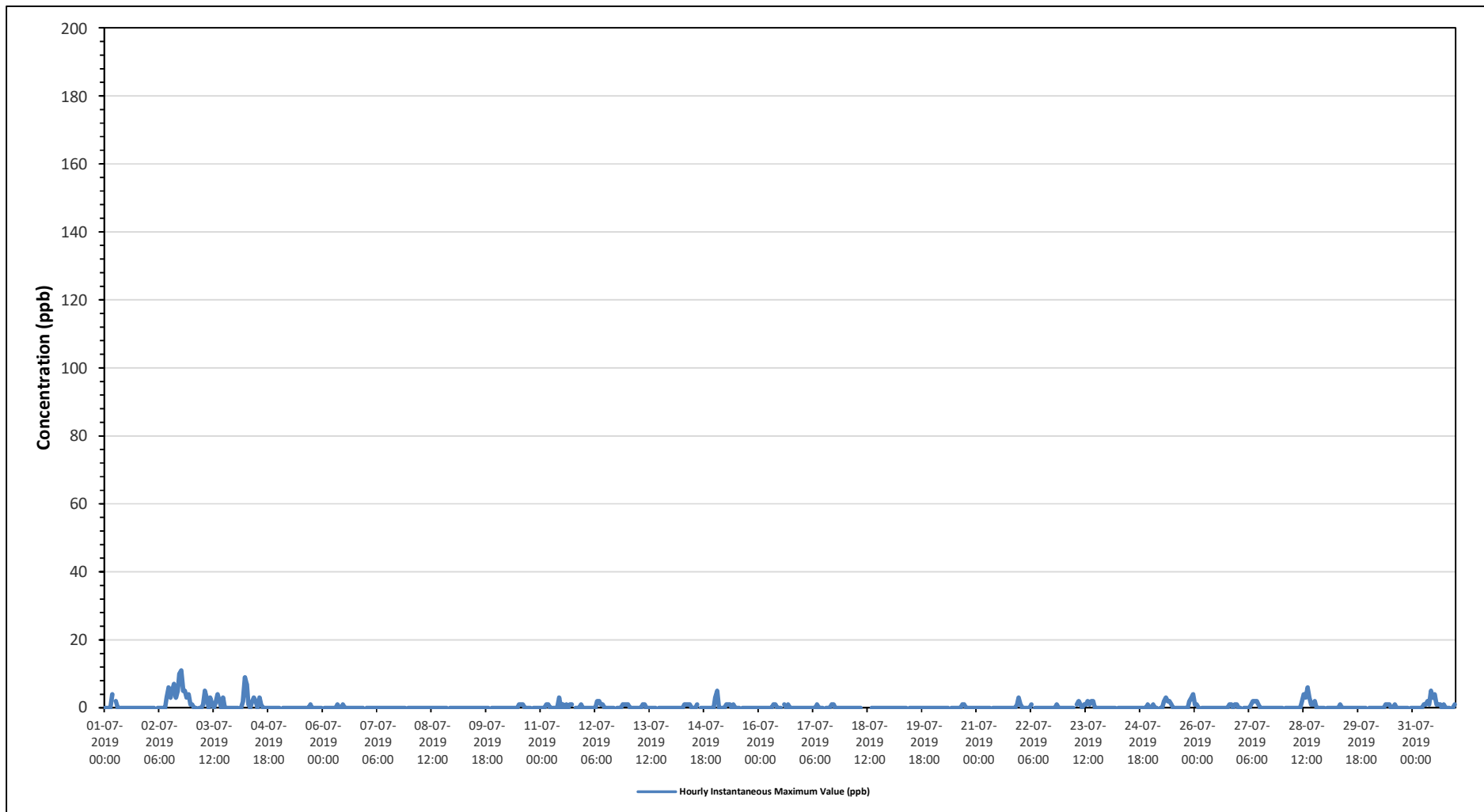
Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average		
Jul 1	0	0	0	0	4	S	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.3
Jul 2	0	0	0	0	S	0	0	0	0	0	3	6	3	5	7	3	5	10	11	5	5	3	4	1	0	11	3.1		
Jul 3	1	0	0	S	0	0	1	5	3	0	3	1	0	2	4	2	0	3	0	0	0	0	0	0	0	0	5	1.1	
Jul 4	0	0	S	0	2	9	7	1	0	2	3	2	0	3	1	0	0	0	0	0	0	0	0	0	0	0	9	1.3	
Jul 5	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.0		
Jul 6	S	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0.1	
Jul 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	
Jul 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.0	
Jul 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0	
Jul 10	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	S	0	0	0	0	0	1	0.1	
Jul 11	0	0	0	1	1	0	0	0	0	0	3	0	1	0	1	0	1	1	S	0	0	0	1	0	0	3	0.4		
Jul 12	0	0	0	0	0	0	0	2	2	1	1	0	0	0	0	0	0	S	0	0	0	1	1	1	0	2	0.4		
Jul 13	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.1		
Jul 14	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 15	3	5	0	0	0	0	1	1	1	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	5	0.5	
Jul 16	0	0	0	0	0	0	0	0	1	1	0	0	0	S	1	0	1	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 17	0	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0.1	
Jul 18	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 19	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 20	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0.1		
Jul 21	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	0.2		
Jul 22	1	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0.1		
Jul 23	0	0	0	0	0	0	S	1	2	1	0	1	1	2	1	2	2	0	0	0	0	0	0	0	0	2	0.6		
Jul 24	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.0		
Jul 25	0	1	0	0	S	0	0	2	3	2	2	1	0	0	0	0	0	0	0	0	0	2	3	4	0	4	0.9		
Jul 26	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	0.3		
Jul 27	0	0	S	0	0	0	0	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3		
Jul 28	0	S	0	0	0	0	0	0	0	0	2	4	3	6	3	1	1	2	0	0	0	0	0	0	0	6	1.0		
Jul 29	S	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0.0	
Jul 30	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	S	0	0	1	0.2		
Jul 31	0	0	0	0	0	0	1	1	2	1	5	3	4	1	1	0	1	0	0	0	0	S	0	1	0	5	1.0		
Diurnal Maximum	3	5	0	1	4	9	7	5	3	2	5	6	4	5	7	3	5	10	11	5	5	3	4	4					
Daily Average	0.2	0.2	0.0	0.0	0.2	0.3	0.4	0.5	0.7	0.4	0.9	0.6	0.5	0.6	0.8	0.4	0.4	0.6	0.4	0.2	0.2	0.2	0.4	0.4					

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



**Timeseries Chart of Hourly Instantaneous Maximum for SO2 - Maskwa Site**





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Maskwa Site - July 2019**

**Summary of Hourly Instantaneous Maximums**

**HYDROGEN SULPHIDE (H<sub>2</sub>S) in ppb**

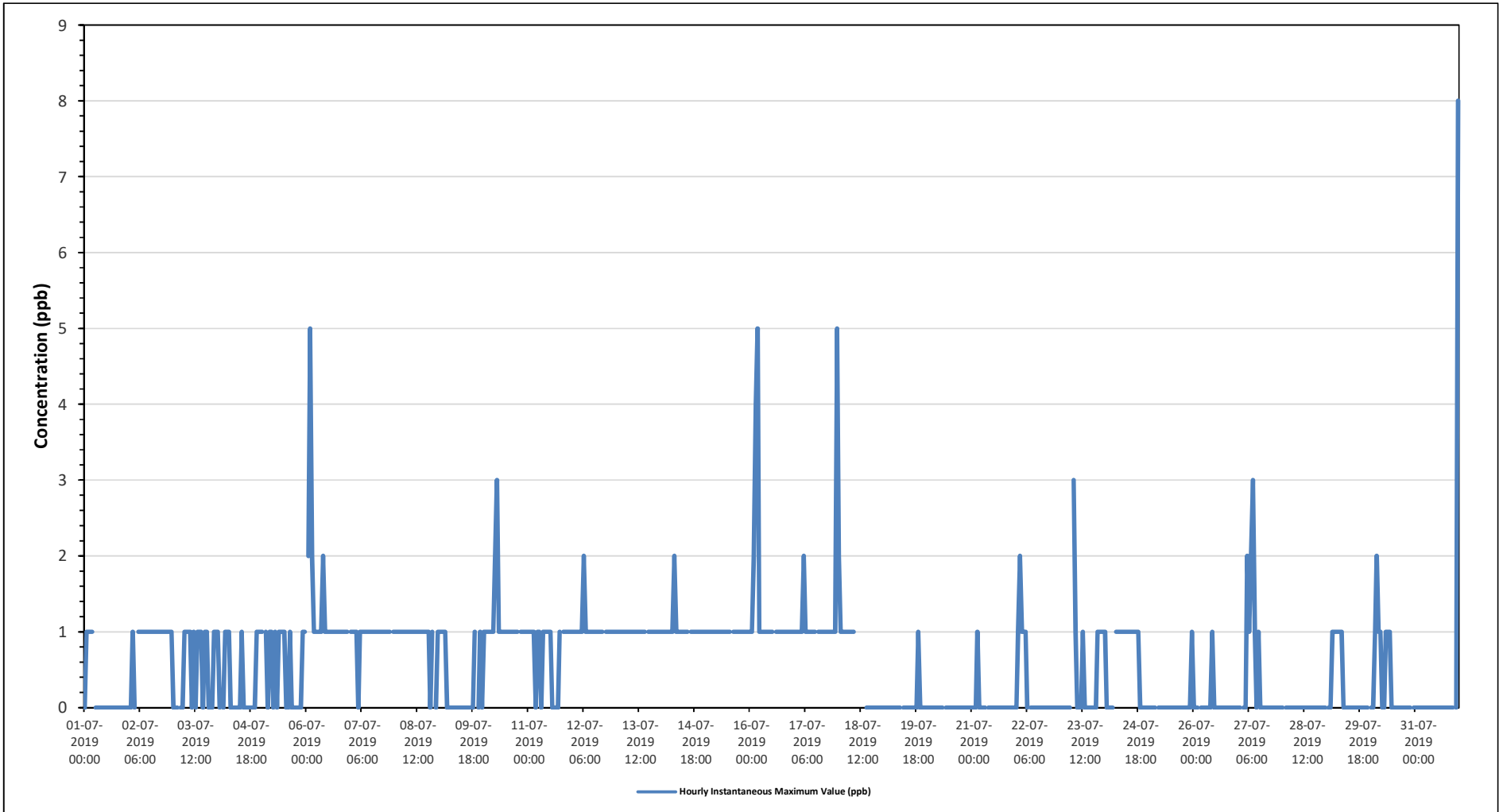
Maximum Hourly Value:	8 ppb	on July 31 at hour 23	Hours in Service:	744
Maximum Daily Value:	1.3 ppb	on July 16	Hours of Data:	706
Minimum Hourly Value:	0 ppb	on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb	on July 20	Hours of Calibration:	38
Monthly Average:	0.6 ppb		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average								
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23							
Jul 1	0	1	1	1	1	S	0	0	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	0.2
Jul 2	0	0	1	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.9	
Jul 3	0	0	0	S	0	0	1	1	1	1	0	1	0	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	0	1	0.5		
Jul 4	1	0	S	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0.3		
Jul 5	1	S	1	0	1	1	0	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	1	1	1	1	0	1	0.5		
Jul 6	S	2	5	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	5	1.3		
Jul 7	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	0	1	1.0		
Jul 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	S	0	1	0	1	0	1	0.9		
Jul 9	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	1	0	0.3		
Jul 10	1	1	1	1	1	0	1	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	3	1.1	
Jul 11	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	0	0	0	1	S	1	1	1	1	1	1	1	1	1	0	1	0.7		
Jul 12	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	1.0		
Jul 13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0		
Jul 14	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0		
Jul 15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0		
Jul 16	1	1	2	4	5	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.3			
Jul 17	1	1	1	1	1	2	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	5	1.2			
Jul 18	2	1	1	1	1	1	1	1	1	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.6			
Jul 19	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0.0			
Jul 20	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 21	0	0	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0		
Jul 22	0	1	2	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3			
Jul 23	0	0	0	0	0	0	S	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	3	0.4				
Jul 24	1	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0.6			
Jul 25	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.0			
Jul 26	0	0	0	S	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	1	0.0			
Jul 27	0	0	S	0	0	2	1	2	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.4				
Jul 28	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 29	S	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3			
Jul 30	0	0	1	2	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3			
Jul 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	8	0.3				
Diurnal Maximum	2	2	5	4	5	2	2	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8				
Diurnal Average	0.6	0.6	0.8	0.8	0.7	0.7	0.7	0.8	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	1.0						

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for H2S - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### OXIDES OF NITROGEN (NOx) in ppb

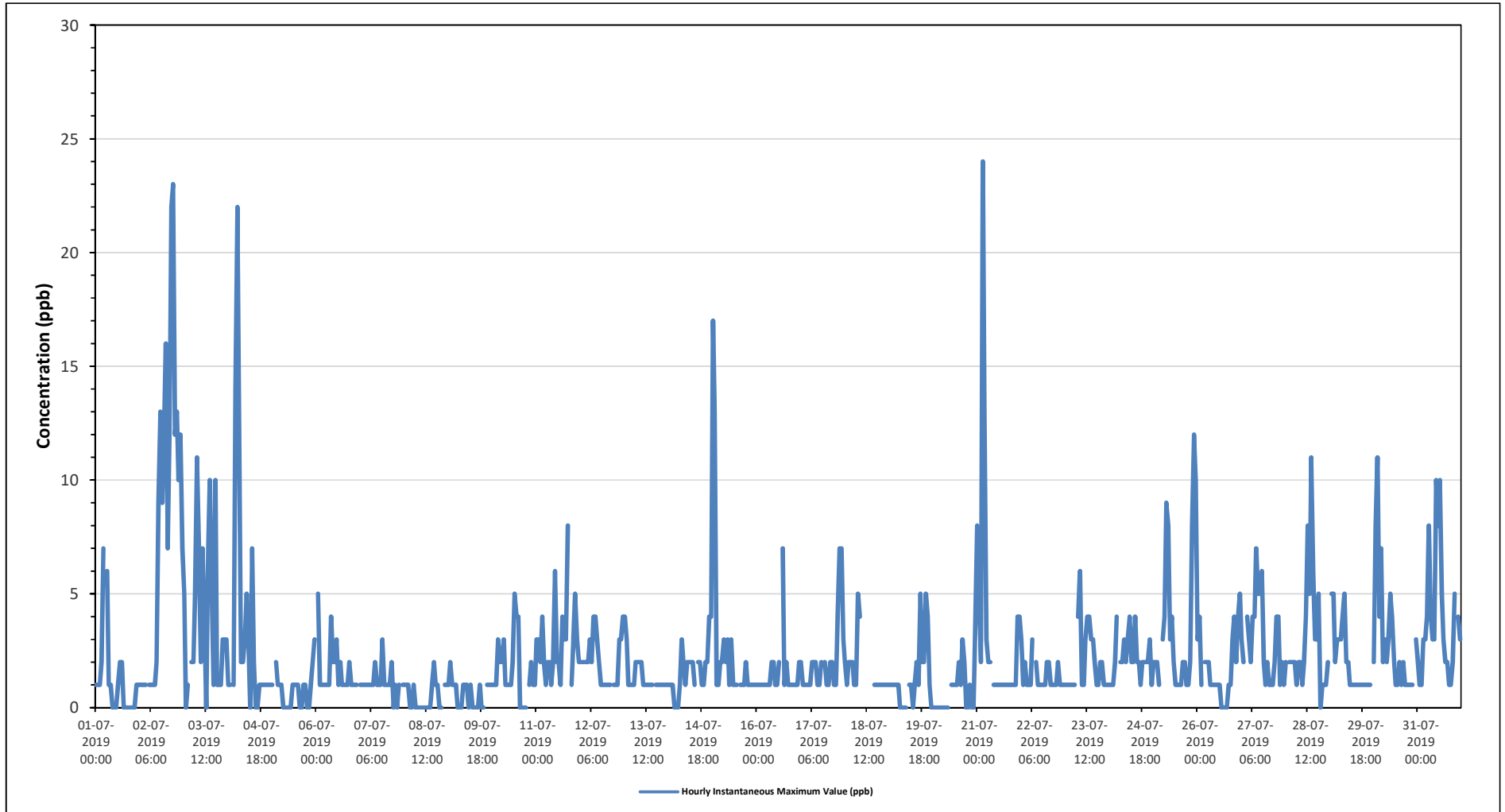
Maximum Hourly Value:	24 ppb on July 21 at hour 3	Hours in Service:	744
Maximum Daily Value:	8.1 ppb on July 2	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 9	Hours of Missing Data:	0
Minimum Daily Value:	0.5 ppb on July 8	Hours of Calibration:	39
Monthly Average:	2.3 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	2	7	S	6	1	1	0	0	1	2	2	0	0	0	0	0	0	0	1	1	0	7	1.2		
Jul 2	1	1	1	1	S	1	1	1	1	2	9	13	9	12	16	7	12	22	23	12	13	10	12	7	1	23	8.1	
Jul 3	5	0	1	S	2	2	5	11	7	2	7	4	0	7	10	5	1	10	1	1	1	3	3	3	0	11	4.0	
Jul 4	1	1	S	1	14	22	11	2	2	3	5	3	0	7	2	0	0	1	1	1	1	1	1	1	0	22	3.5	
Jul 5	1	S	2	1	1	1	0	0	0	0	1	1	1	1	0	0	1	1	0	0	1	2	3	0	3	0.8		
Jul 6	S	5	1	1	1	1	1	1	4	2	2	3	1	2	1	1	1	1	2	1	1	1	1	2	1	5	1.6	
Jul 7	1	1	1	1	1	1	1	1	2	1	1	3	1	1	1	1	2	0	1	0	1	S	1	0	3	1.1		
Jul 8	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	2	1	1	1	0	0	S	1	1	0	2	0.5	
Jul 9	1	2	1	1	1	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0	S	1	1	1	0	2	0.6	
Jul 10	1	1	1	3	2	2	3	1	1	1	1	2	5	4	4	0	0	0	1	0	S	1	2	1	1	0	5	1.6
Jul 11	3	3	2	4	2	1	2	2	1	2	6	2	2	1	4	3	3	8	S	1	3	5	3	2	1	8	2.8	
Jul 12	2	2	2	2	2	3	2	4	4	3	2	1	1	1	1	1	1	S	1	1	1	3	3	4	1	4	2.0	
Jul 13	4	3	1	1	1	1	2	2	2	2	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	4	1.4	
Jul 14	1	1	1	0	0	0	1	3	2	1	2	2	2	2	1	S	2	2	1	1	2	2	4	4	0	4	1.6	
Jul 15	17	13	1	1	2	2	3	2	3	1	3	1	1	1	S	1	1	1	2	1	1	1	1	1	1	17	2.7	
Jul 16	1	1	1	1	1	1	1	1	2	2	1	1	2	S	7	1	2	1	1	1	1	1	1	2	1	7	1.5	
Jul 17	2	1	1	1	1	1	2	2	2	1	1	2	S	2	1	1	2	2	1	1	4	7	7	3	1	7	2.1	
Jul 18	2	1	2	2	2	1	1	5	4	C	C	C	C	C	C	C	1	1	1	1	1	1	1	1	1	5	-	
Jul 19	1	1	1	1	1	1	0	0	0	0	S	1	1	0	1	2	1	5	2	2	5	4	1	0	0	5	1.3	
Jul 20	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	2	1	3	2	0	0	1	0	0	4	0	0.7	
Jul 21	8	5	2	24	13	3	2	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	1	24	3.5	
Jul 22	3	1	2	1	1	1	3	S	2	1	1	1	1	1	2	2	1	1	1	1	2	1	1	1	1	3	1.4	
Jul 23	1	1	1	1	1	1	S	4	6	1	1	3	4	4	3	3	2	1	1	2	2	1	1	1	1	6	2.0	
Jul 24	1	1	1	2	4	S	2	2	3	2	3	4	2	2	4	2	2	1	2	2	2	2	3	1	1	4	2.2	
Jul 25	2	2	2	1	S	3	4	9	8	3	4	2	1	1	1	2	2	1	1	2	8	12	10	1	12	3.6		
Jul 26	3	4	1	S	2	2	2	1	1	1	1	1	0	0	0	0	1	1	3	4	2	4	5	0	5	1.7		
Jul 27	3	2	S	4	3	2	4	4	7	5	5	6	2	1	2	1	1	1	2	4	4	1	2	1	7	2.9		
Jul 28	2	S	2	2	2	2	1	2	2	1	2	4	8	5	11	6	3	3	5	0	1	1	1	2	0	11	3.0	
Jul 29	S	5	5	2	3	3	3	4	5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.1	
Jul 30	2	8	11	4	7	2	3	2	3	5	4	2	1	1	2	1	2	1	1	1	1	1	1	1	1	11	3.0	
Jul 31	2	1	1	3	3	4	8	4	3	3	10	8	10	5	3	2	2	1	1	2	5	S	4	3	1	10	3.8	
Diurnal Maximum	17	13	11	24	14	22	11	11	8	5	10	13	10	12	16	7	12	22	23	12	13	10	12	10				
Diurnal Average	2.5	2.4	1.7	2.3	2.8	2.2	2.5	2.4	2.6	1.7	2.7	2.4	2.2	2.3	2.9	1.6	1.7	2.5	1.9	1.5	2.1	2.2	2.7	2.5				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NOx - Maskwa Site**





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**Maskwa Site - July 2019**

**Summary of Hourly Instantaneous Maximums**

**NITRIC OXIDE (NO) in ppb**

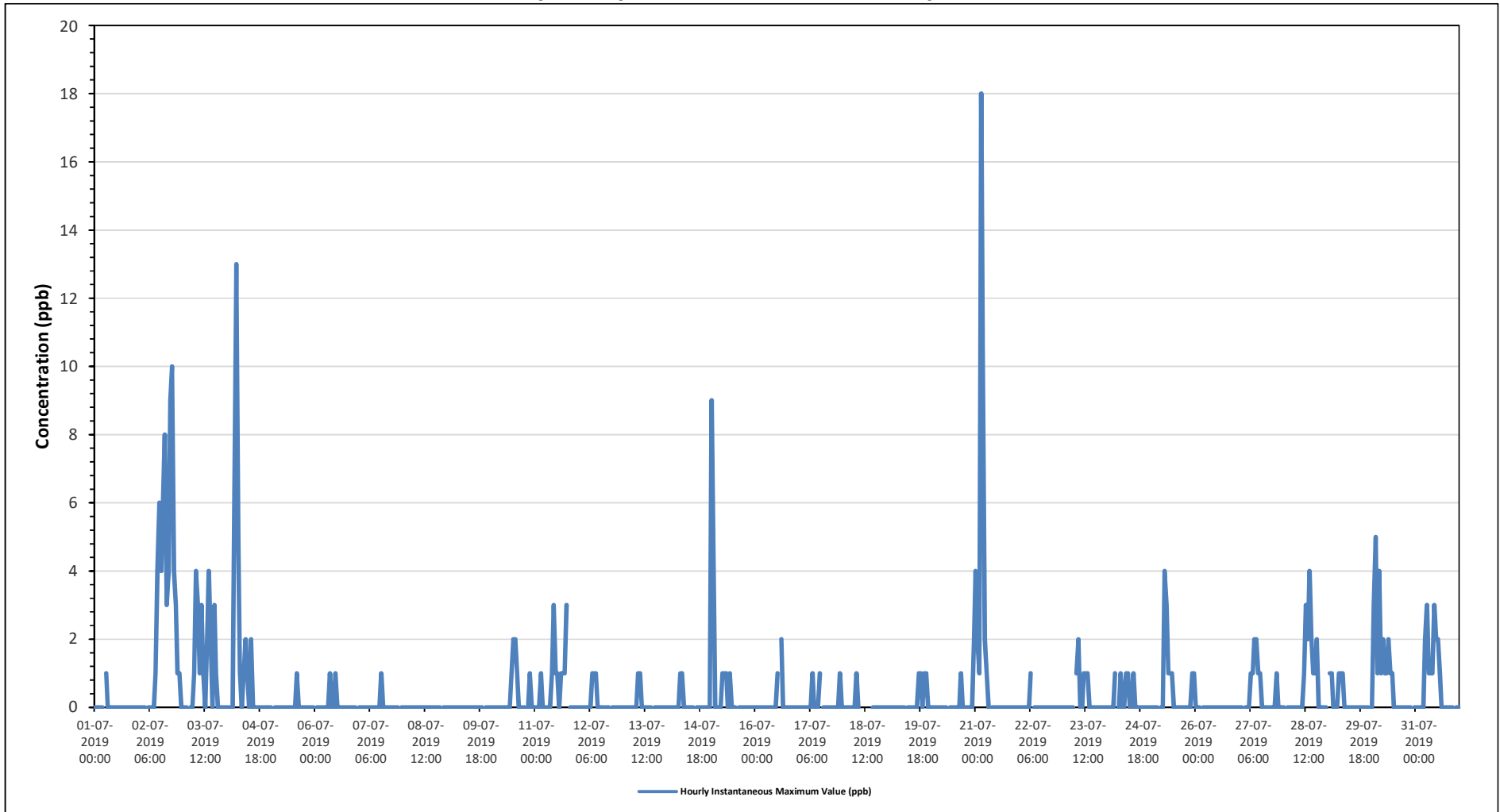
Maximum Hourly Value:	18 ppb on July 21 at hour 3	Hours in Service:	744
Maximum Daily Value:	2.8 ppb on July 2	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 8	Hours of Calibration:	39
Monthly Average:	0.4 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23												
Jul 1	0	0	0	0	0	S	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	1	0.0
Jul 2	0	0	0	0	S	0	0	0	0	1	4	6	4	6	8	3	4	9	10	4	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	10	2.8		
Jul 3	0	0	0	S	0	0	1	4	3	1	3	1	0	2	4	2	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1.1			
Jul 4	0	0	S	0	7	13	5	1	0	1	2	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	1.4				
Jul 5	0	S	0	0	0	0	0	0	0	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				
Jul 6	S	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1				
Jul 7	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	1	0.0				
Jul 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 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		
Jul 10	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	2	0.3			
Jul 11	0	0	0	1	0	0	0	0	0	1	3	1	1	0	1	1	1	3	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.6				
Jul 12	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1					
Jul 13	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1					
Jul 14	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1				
Jul 15	9	5	0	0	0	0	1	1	1	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0.8					
Jul 16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.1					
Jul 17	0	0	0	0	0	0	0	1	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0.1						
Jul 18	0	0	0	0	0	0	0	1	0	C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-					
Jul 19	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	1	0.2						
Jul 20	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	2	0.1					
Jul 21	4	2	1	18	10	2	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	1.7					
Jul 22	0	0	0	0	0	0	1	S	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					
Jul 23	0	0	0	0	0	0	S	1	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3					
Jul 24	0	0	0	0	1	S	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2					
Jul 25	0	0	0	0	S	0	0	4	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	4	0.5						
Jul 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0				
Jul 27	0	0	S	0	0	0	1	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4					
Jul 28	0	S	0	0	0	0	0	0	0	0	0	1	3	2	4	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.7					
Jul 29	S	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2					
Jul 30	0	3	5	1	4	1	2	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1.0					
Jul 31	0	0	0	0	0	2	3	1	1	1	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	3	0.7					
Diurnal Maximum	9	5	5	18	10	13	5	4	3	2	4	6	4	6	8	3	4	9	10	4	3	1	1	2															
Daily Average	0.4	0.4	0.2	0.7	0.8	0.6	0.6	0.7	0.6	0.4	0.7	0.7	0.5	0.6	0.8	0.3	0.2	0.6	0.5	0.1	0.2	0.1	0.1	0.1															

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Instantaneous Maximum for NO - Maskwa Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

Maximum Hourly Value:	13 ppb on July 2 at hour 17	Hours in Service:	744
Maximum Daily Value:	5.4 ppb on July 2	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.4 ppb on July 8	Hours of Calibration:	39
Monthly Average:	1.7 ppb	Operational Uptime:	100.0

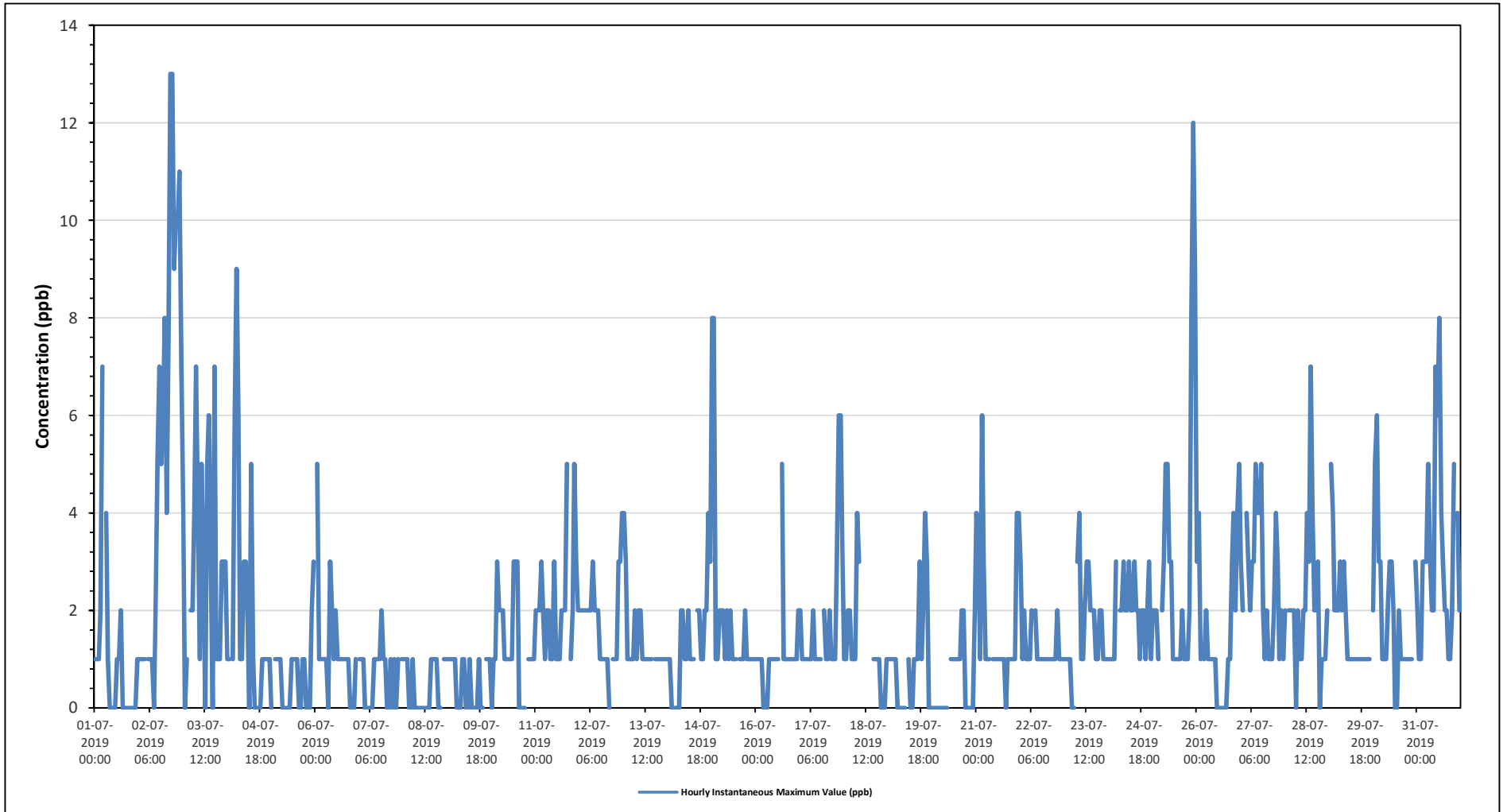
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	2	7	S	4	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	1	0	7	1.0		
Jul 2	1	1	1	1	S	2	1	1	0	2	5	7	6	8	4	8	13	13	9	10	10	11	7	0	13	5.4		
Jul 3	4	0	1	S	2	2	4	7	4	1	5	3	0	5	6	3	0	7	1	1	1	3	3	3	0	7	2.9	
Jul 4	1	1	S	1	6	9	6	1	1	3	3	2	0	5	1	0	0	0	0	1	1	1	1	1	0	9	2.0	
Jul 5	0	S	1	1	1	1	0	0	0	0	1	1	1	1	0	0	1	1	1	0	0	0	2	3	0	3	0.7	
Jul 6	S	5	1	1	1	1	1	0	3	2	1	2	1	1	1	1	1	1	1	0	0	0	1	S	0	5	1.2	
Jul 7	1	1	1	0	0	0	0	0	1	1	1	1	2	1	1	0	0	1	0	1	0	1	S	1	0	2	0.7	
Jul 8	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	S	1	1	0	1	0.4	
Jul 9	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	S	1	1	1	0	1	0.5	
Jul 10	0	1	1	3	2	2	2	1	1	1	1	3	3	3	0	0	0	1	0	S	1	1	1	1	0	3	1.3	
Jul 11	2	2	2	3	2	1	2	2	1	1	3	1	1	1	2	2	2	5	S	1	2	5	3	2	1	5	2.1	
Jul 12	2	2	2	2	2	2	2	3	2	2	2	1	1	1	1	1	0	S	1	1	1	3	3	4	0	4	1.8	
Jul 13	4	3	1	1	1	1	2	1	2	2	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	4	1.3	
Jul 14	1	1	0	0	0	0	0	2	2	1	1	2	1	1	1	S	2	2	1	1	2	2	4	3	0	4	1.3	
Jul 15	8	8	1	1	2	2	2	1	2	1	2	1	1	1	S	1	1	1	2	1	1	1	1	1	1	8	1.9	
Jul 16	1	1	1	1	0	0	0	1	1	1	1	1	1	S	5	1	1	1	1	1	1	1	1	2	0	5	1.1	
Jul 17	2	1	1	1	1	1	1	2	1	1	1	S	2	1	1	2	1	1	1	1	1	3	6	6	3	1	6	1.8
Jul 18	1	1	2	2	1	1	1	4	3	C	C	C	C	C	C	C	1	1	1	1	0	0	0	1	0	4	-	
Jul 19	1	1	1	1	1	0	0	0	0	0	S	1	0	0	1	1	1	3	1	2	4	3	0	0	0	4	1.0	
Jul 20	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	2	2	0	0	0	0	0	2	0	2	0.5	
Jul 21	4	3	1	6	3	1	1	1	S	1	1	1	1	1	1	1	0	1	1	1	1	1	4	4	0	6	1.7	
Jul 22	3	1	2	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	3	1.3	
Jul 23	1	1	1	1	0	0	S	3	4	1	1	2	3	3	2	2	2	1	1	2	2	1	1	0	4	1.6		
Jul 24	1	1	1	1	3	S	2	2	3	2	2	3	2	2	3	2	2	1	2	2	1	2	3	1	1	3	1.9	
Jul 25	2	2	2	1	S	2	3	5	5	3	3	1	1	1	1	1	2	1	1	1	2	8	12	9	1	12	3.0	
Jul 26	3	4	1	S	1	2	1	1	1	1	0	0	0	0	0	0	0	1	1	3	4	2	4	5	0	5	1.6	
Jul 27	3	2	S	4	3	2	3	3	5	4	4	5	2	1	2	1	1	2	4	3	1	2	1	1	5	2.6		
Jul 28	2	S	2	2	2	2	0	2	1	1	2	2	4	3	7	4	2	2	3	0	1	1	1	2	0	7	2.1	
Jul 29	S	5	4	2	2	2	3	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1.7	
Jul 30	2	5	6	3	3	1	1	1	2	3	3	2	0	0	2	1	1	1	1	1	1	1	S	3	0	6	1.9	
Jul 31	2	1	1	3	3	3	5	3	2	2	7	6	8	4	3	2	2	1	1	2	5	S	4	2	1	8	3.1	
Diurnal Maximum	8	8	6	6	7	9	6	7	5	4	7	7	8	6	8	4	8	13	13	9	10	10	12	9				
Diurnal Average	1.9	2.0	1.4	1.6	1.8	1.4	1.6	1.7	1.8	1.4	1.9	1.7	1.5	1.7	2.0	1.2	1.2	1.8	1.4	1.3	1.7	2.0	2.5	2.3				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



*Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Maskwa Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### TOTAL HYDROCARBONS (THC) in ppm

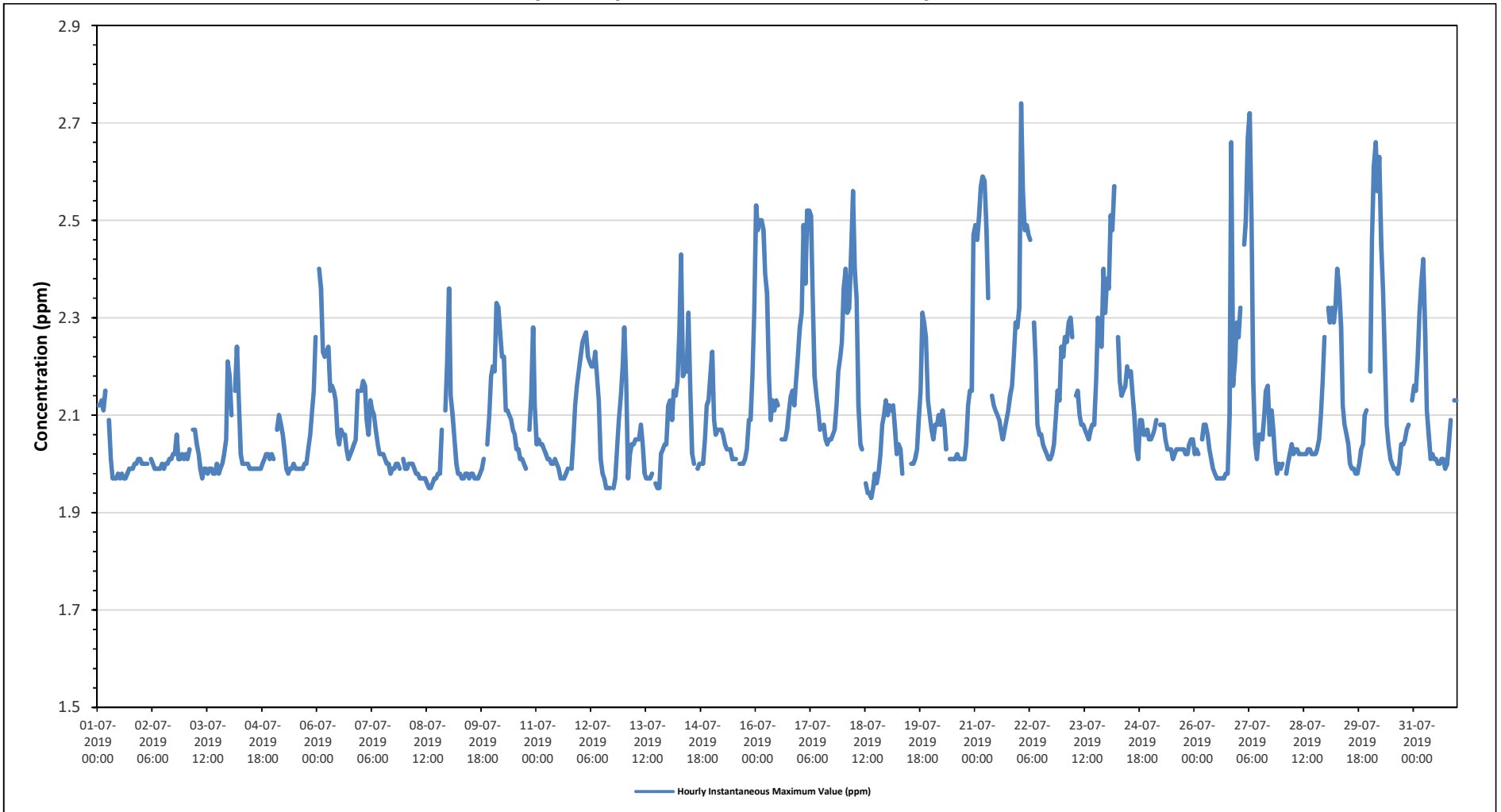
Maximum Hourly Value:	2.74 ppm on July 22 at hour 1	Hours in Service:	744
Maximum Daily Value:	2.26 ppm on July 21	Hours of Data:	708
Minimum Hourly Value:	1.93 ppm on July 18 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	2.00 ppm on July 8	Hours of Calibration:	36
Monthly Average:	2.10 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23				
Jul 1	2.12	2.12	2.13	2.11	2.15	S	2.09	2.01	1.97	1.97	1.97	1.98	1.97	1.98	1.97	1.97	1.98	1.99	1.99	1.99	2.00	2.00	2.01	2.01	2.01	2.01	1.97	2.15	2.02		
Jul 2	2.00	2.00	2.00	2.00	S	2.01	2.00	1.99	1.99	1.99	1.99	2.00	1.99	2.00	2.01	2.01	2.02	2.02	2.06	2.01	2.01	2.02	2.02	2.01	2.01	1.99	2.06	2.01			
Jul 3	2.02	2.01	2.03	S	2.07	2.07	2.04	2.02	1.99	1.97	1.99	1.99	1.98	1.99	1.98	1.98	2.00	1.98	1.99	2.00	2.02	2.05	2.21	1.97	2.21	1.97	2.21	2.02			
Jul 4	2.18	2.10	S	2.15	2.24	2.13	2.02	2.00	2.00	2.00	2.00	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.01	2.02	2.02	2.01	2.02	1.99	2.24	2.04	1.99	2.24	2.04		
Jul 5	2.01	S	2.07	2.10	2.08	2.06	2.03	1.99	1.98	1.99	1.99	2.00	1.99	1.99	1.99	1.99	2.00	2.00	2.03	2.06	2.10	2.15	2.26	1.98	2.26	2.04	1.98	2.26	2.04		
Jul 6	S	2.40	2.36	2.23	2.22	2.23	2.24	2.15	2.16	2.15	2.13	2.06	2.04	2.07	2.06	2.03	2.01	2.02	2.03	2.04	2.05	2.15	S	2.01	2.40	2.13	2.01	2.40	2.13		
Jul 7	2.15	2.17	2.16	2.09	2.06	2.13	2.11	2.10	2.07	2.04	2.02	2.02	2.02	2.01	2.00	2.00	1.98	1.99	1.99	2.00	2.00	1.99	S	2.01	1.98	2.17	2.05	1.98	2.17	2.05	
Jul 8	1.99	1.99	2.00	2.00	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.96	1.95	1.95	1.96	1.97	1.97	1.98	1.98	2.07	S	2.11	2.21	1.95	2.21	2.00	1.95	2.21	2.00	
Jul 9	2.36	2.14	2.10	2.05	2.00	1.98	1.98	1.97	1.97	1.98	1.98	1.97	1.98	1.98	1.97	1.97	1.98	1.99	2.01	S	2.04	2.10	2.18	1.97	2.36	2.03	1.97	2.36	2.03		
Jul 10	2.20	2.19	2.33	2.32	2.27	2.22	2.22	2.11	2.11	2.10	2.09	2.07	2.06	2.03	2.01	2.01	2.00	1.99	S	2.07	2.14	2.28	2.12	1.99	2.33	2.13	1.99	2.33	2.13		
Jul 11	2.04	2.05	2.04	2.04	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.00	1.99	1.97	1.97	1.97	1.98	1.99	S	1.99	2.05	2.12	2.16	1.97	2.19	2.03	1.97	2.19	2.03		
Jul 12	2.22	2.25	2.26	2.27	2.22	2.21	2.20	2.20	2.23	2.18	2.13	2.01	1.98	1.97	1.95	1.95	1.95	S	1.95	1.97	2.04	2.09	2.14	2.20	1.95	2.27	2.11	1.95	2.27	2.11	
Jul 13	2.28	2.17	1.97	2.02	2.04	2.04	2.05	2.05	2.05	2.08	2.04	1.98	1.97	1.97	1.98	S	1.96	1.96	1.95	1.95	2.02	2.03	2.04	2.04	1.95	2.28	2.03	1.95	2.28	2.03	
Jul 14	2.12	2.13	2.09	2.15	2.14	2.17	2.27	2.43	2.18	2.19	2.19	2.31	2.16	2.02	2.00	S	1.99	2.00	2.00	2.05	2.12	2.13	2.18	1.99	2.43	2.13	1.99	2.43	2.13		
Jul 15	2.23	2.09	2.06	2.07	2.07	2.07	2.06	2.04	2.03	2.03	2.03	2.01	2.01	2.01	S	2.00	2.00	2.00	2.01	2.03	2.09	2.09	2.18	2.31	2.00	2.31	2.07	2.00	2.31	2.07	
Jul 16	2.53	2.48	2.50	2.50	2.48	2.39	2.35	2.18	2.09	2.13	2.11	2.13	2.12	S	2.05	2.05	2.05	2.07	2.11	2.14	2.15	2.12	2.18	2.23	2.05	2.53	2.22	2.05	2.53	2.22	
Jul 17	2.28	2.31	2.49	2.37	2.52	2.52	2.51	2.35	2.18	2.14	2.11	2.07	S	2.08	2.05	2.04	2.05	2.05	2.06	2.07	2.12	2.19	2.22	2.25	2.04	2.52	2.22	2.04	2.52	2.22	
Jul 18	2.36	2.40	2.31	2.32	2.43	2.56	2.40	2.34	2.12	2.04	2.03	S	1.96	1.94	1.94	1.93	1.95	1.98	1.96	1.98	2.02	2.08	2.10	2.13	1.93	2.56	2.14	1.93	2.56	2.14	
Jul 19	2.10	2.12	2.11	2.12	2.07	2.02	2.04	2.03	1.98	C	C	C	C	2.00	2.00	2.01	2.03	2.09	2.15	2.31	2.29	2.26	2.13	2.10	1.98	2.31	2.10	1.98	2.31	2.10	
Jul 20	2.07	2.05	2.08	2.08	2.10	2.08	2.11	2.08	2.03	S	2.01	2.01	2.01	2.01	2.02	2.01	2.01	2.01	2.01	2.04	2.12	2.15	2.15	2.47	2.01	2.47	2.07	2.01	2.47	2.07	
Jul 21	2.49	2.46	2.51	2.57	2.59	2.58	2.48	2.34	S	2.14	2.12	2.11	2.10	2.09	2.07	2.05	2.07	2.09	2.11	2.14	2.16	2.22	2.29	2.28	2.05	2.59	2.26	2.05	2.59	2.26	
Jul 22	2.32	2.74	2.56	2.48	2.49	2.47	2.46	S	2.29	2.21	2.08	2.06	2.06	2.04	2.03	2.02	2.01	2.01	2.02	2.04	2.10	2.15	2.13	2.24	2.01	2.74	2.22	2.01	2.74	2.22	
Jul 23	2.22	2.26	2.25	2.29	2.30	2.26	S	2.14	2.15	2.10	2.08	2.08	2.07	2.06	2.05	2.07	2.08	2.08	2.17	2.30	2.25	2.24	2.40	2.31	2.05	2.40	2.18	2.05	2.40	2.18	
Jul 24	2.38	2.36	2.51	2.48	2.57	S	2.26	2.17	2.14	2.15	2.16	2.20	2.18	2.19	2.14	2.10	2.03	2.01	2.09	2.09	2.06	2.06	2.07	2.05	2.01	2.57	2.19	2.01	2.57	2.19	
Jul 25	2.05	2.06	2.07	2.09	S	2.08	2.08	2.08	2.05	2.03	2.03	2.03	2.01	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.04	2.05	2.05	2.05	2.01	2.09	2.04	2.01	2.09	2.04	
Jul 26	2.02	2.03	2.02	S	2.05	2.08	2.08	2.06	2.03	2.01	1.99	1.98	1.97	1.97	1.97	1.97	1.97	1.98	1.98	2.10	2.66	2.16	2.21	2.29	1.97	2.66	2.07	1.97	2.66	2.07	
Jul 27	2.26	2.32	S	2.45	2.50	2.67	2.72	2.50	2.17	2.04	2.01	2.06	2.06	2.05	2.10	2.15	2.16	2.06	2.11	2.07	2.01	1.98	2.00	1.99	1.98	2.72	2.19	1.98	2.72	2.19	
Jul 28	2.00	S	1.98	2.00	2.02	2.04	2.02	2.03	2.03	2.02	2.02	2.02	2.02	2.02	2.03	2.03	2.02	2.02	2.02	2.03	2.05	2.10	2.17	2.26	1.98	2.26	2.04	1.98	2.26	2.04	
Jul 29	S	2.32	2.29	2.32	2.29	2.32	2.40	2.36	2.28	2.12	2.08	2.06	2.04	2.00	1.99	1.99	1.98	1.98	2.00	2.03	2.04	2.10	2.11	S	1.98	2.40	2.14	1.98	2.40	2.14	
Jul 30	2.19	2.46	2.61	2.66	2.56	2.63	2.45	2.35	2.22	2.08	2.04	2.01	2.00	1.99	1.99	1.98	2.00	2.04	2.04	2.05	2.07	2.08	S	2.13	1.98	2.66	2.20	1.98	2.66	2.20	
Jul 31	2.16	2.15	2.22	2.31	2.37	2.42	2.27	2.11	2.06	2.01	2.02	2.01	2.01	2.00	2.00	2.01	2.01	1.99	2.00	2.04	2.09	S	2.13	2.13	1.99	2.42	2.11	1.99	2.42	2.11	
Diurnal Maximum	2.53	2.74	2.61	2.66	2.59	2.67	2.72	2.50	2.29	2.21	2.19	2.31	2.18	2.19	2.14	2.15	2.16	2.09	2.17	2.31	2.66	2.26	2.40	2.47							
Diurnal Average	2.18	2.22	2.21	2.23	2.24	2.22	2.20	2.14	2.08	2.06	2.05	2.04	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.05	2.09	2.13	2.17							

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for THC - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### METHANE (CH4) in ppm

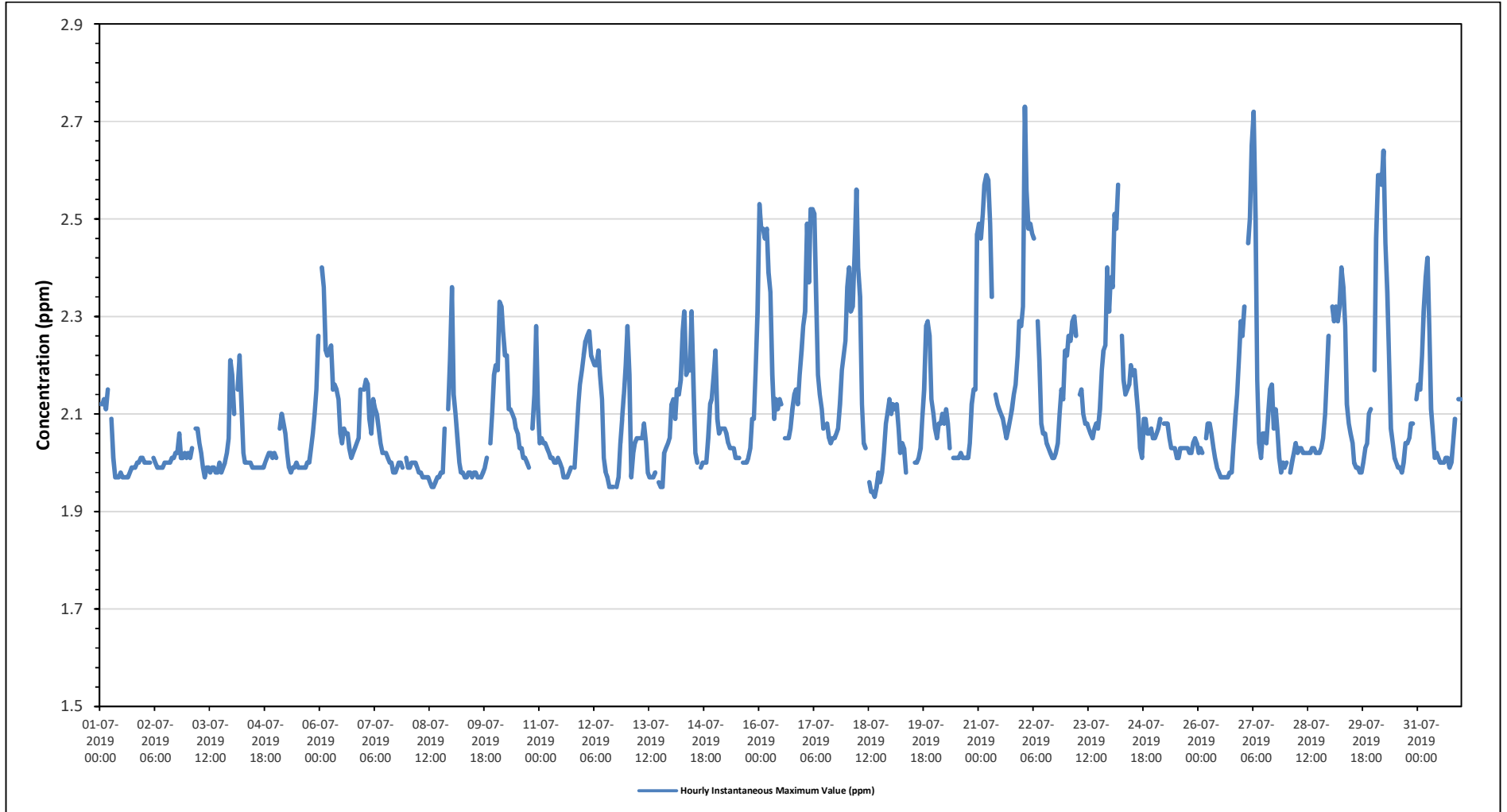
Maximum Hourly Value:	2.73 ppm on July 22 at hour 1	Hours in Service:	744
Maximum Daily Value:	2.26 ppm on July 21	Hours of Data:	708
Minimum Hourly Value:	1.93 ppm on July 18 at hour 15	Hours of Missing Data:	0
Minimum Daily Value:	2.00 ppm on July 8	Hours of Calibration:	36
Monthly Average:	2.10 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	2.12	2.12	2.13	2.11	2.15	S	2.09	2.01	1.97	1.97	1.97	1.98	1.97	1.97	1.97	1.97	1.98	1.99	1.99	1.99	2.00	2.00	2.01	2.01	2.01	2.01	1.97	2.15	2.02
Jul 2	2.00	2.00	2.00	2.00	S	2.01	2.00	1.99	1.99	1.99	1.99	2.00	2.00	2.00	2.01	2.01	2.01	2.02	2.02	2.06	2.01	2.01	2.02	2.02	2.01	1.99	2.06	2.01	
Jul 3	2.02	2.01	2.03	S	2.07	2.07	2.04	2.02	1.99	1.97	1.99	1.99	1.98	1.99	1.98	1.98	2.00	1.98	1.99	2.00	2.02	2.05	2.21	1.97	2.21	1.97	2.21	2.02	
Jul 4	2.18	2.10	S	2.15	2.22	2.12	2.02	2.00	2.00	2.00	2.00	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.01	2.02	2.02	2.01	2.02	1.99	2.22	2.03	2.03	
Jul 5	2.01	S	2.07	2.10	2.08	2.06	2.02	1.99	1.98	1.99	1.99	2.00	1.99	1.99	1.99	1.99	2.00	2.00	2.03	2.06	2.10	2.15	2.26	1.98	2.26	2.04	2.04	2.04	
Jul 6	S	2.40	2.36	2.23	2.22	2.23	2.24	2.15	2.16	2.15	2.13	2.06	2.04	2.07	2.06	2.03	2.01	2.02	2.03	2.04	2.05	2.15	S	2.01	2.40	2.13	2.01	2.13	
Jul 7	2.15	2.17	2.16	2.09	2.06	2.13	2.11	2.10	2.07	2.04	2.02	2.02	2.02	2.01	2.00	2.00	1.98	1.98	1.99	2.00	1.99	S	2.01	1.98	2.17	2.05	2.05	2.05	
Jul 8	1.99	1.99	2.00	2.00	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.96	1.95	1.95	1.96	1.97	1.97	1.98	1.98	2.07	S	2.11	2.21	1.95	2.21	2.00	2.00	
Jul 9	2.36	2.14	2.10	2.05	2.00	1.98	1.98	1.97	1.97	1.98	1.98	1.97	1.98	1.98	1.97	1.97	1.98	1.99	2.01	S	2.04	2.10	2.18	1.97	2.36	2.03	2.03	2.03	
Jul 10	2.20	2.19	2.33	2.32	2.27	2.22	2.22	2.11	2.11	2.10	2.09	2.07	2.06	2.03	2.03	2.01	2.00	1.99	S	2.07	2.14	2.28	2.12	1.99	2.33	2.13	2.13	2.13	
Jul 11	2.04	2.05	2.04	2.04	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.00	1.99	1.97	1.97	1.97	1.98	1.99	S	1.99	2.05	2.12	2.16	1.97	2.19	2.03	2.03	2.03	
Jul 12	2.22	2.25	2.26	2.27	2.22	2.21	2.20	2.20	2.23	2.18	2.13	2.01	1.98	1.97	1.95	1.95	1.95	S	1.95	1.97	2.04	2.09	2.14	2.20	1.95	2.27	2.11	2.11	
Jul 13	2.28	2.18	1.97	2.02	2.04	2.05	2.05	2.05	2.05	2.08	2.04	1.98	1.97	1.97	1.98	S	1.96	1.95	1.95	2.02	2.03	2.04	2.05	1.95	2.28	2.03	2.03	2.03	
Jul 14	2.12	2.13	2.09	2.15	2.14	2.17	2.27	2.31	2.18	2.19	2.19	2.31	2.16	2.02	2.00	S	1.99	2.00	2.00	2.05	2.12	2.13	2.18	1.99	2.31	2.13	2.13	2.13	
Jul 15	2.23	2.09	2.06	2.07	2.07	2.07	2.06	2.04	2.03	2.03	2.03	2.01	2.01	2.01	S	2.00	2.00	2.00	2.01	2.03	2.09	2.09	2.19	2.00	2.31	2.07	2.07	2.07	
Jul 16	2.53	2.48	2.48	2.46	2.48	2.39	2.35	2.18	2.09	2.13	2.11	2.13	2.12	S	2.05	2.05	2.05	2.07	2.11	2.14	2.15	2.12	2.18	2.23	2.05	2.53	2.22	2.22	
Jul 17	2.28	2.31	2.49	2.37	2.52	2.52	2.51	2.35	2.18	2.14	2.11	2.07	S	2.08	2.05	2.04	2.05	2.05	2.06	2.07	2.12	2.19	2.22	2.25	2.04	2.52	2.22	2.22	
Jul 18	2.36	2.40	2.31	2.32	2.43	2.56	2.40	2.34	2.12	2.04	2.03	S	1.96	1.94	1.94	1.93	1.95	1.98	1.96	1.98	2.02	2.08	2.10	2.13	1.93	2.56	2.14	2.14	
Jul 19	2.10	2.12	2.11	2.12	2.07	2.02	2.04	2.03	1.98	C	C	C	C	2.00	2.00	2.01	2.03	2.09	2.15	2.28	2.29	2.26	2.13	2.10	1.98	2.29	2.10	2.10	
Jul 20	2.07	2.05	2.08	2.08	2.10	2.08	2.11	2.08	2.03	S	2.01	2.01	2.01	2.01	2.02	2.01	2.01	2.01	2.01	2.04	2.12	2.15	2.15	2.47	2.01	2.47	2.07	2.07	
Jul 21	2.49	2.46	2.51	2.57	2.59	2.58	2.49	2.34	S	2.14	2.12	2.11	2.10	2.09	2.07	2.05	2.07	2.09	2.11	2.14	2.16	2.22	2.29	2.28	2.05	2.59	2.26	2.26	
Jul 22	2.32	2.73	2.56	2.48	2.49	2.47	2.46	S	2.29	2.21	2.08	2.06	2.06	2.04	2.03	2.02	2.01	2.01	2.02	2.04	2.10	2.15	2.13	2.23	2.01	2.73	2.22	2.22	
Jul 23	2.22	2.26	2.25	2.29	2.30	2.26	S	2.14	2.15	2.10	2.08	2.08	2.07	2.06	2.05	2.07	2.08	2.07	2.11	2.19	2.23	2.24	2.40	2.31	2.05	2.40	2.17	2.17	
Jul 24	2.38	2.36	2.51	2.48	2.57	S	2.26	2.17	2.14	2.15	2.16	2.20	2.18	2.19	2.14	2.10	2.03	2.01	2.09	2.09	2.06	2.06	2.07	2.05	2.01	2.57	2.19	2.19	
Jul 25	2.05	2.06	2.07	2.09	S	2.08	2.08	2.08	2.05	2.03	2.03	2.03	2.01	2.01	2.03	2.03	2.03	2.03	2.02	2.02	2.04	2.05	2.04	2.01	2.09	2.04	2.04	2.04	
Jul 26	2.02	2.03	2.02	S	2.05	2.08	2.08	2.06	2.03	2.01	1.99	1.98	1.97	1.97	1.97	1.97	1.97	1.98	1.98	2.04	2.09	2.14	2.21	2.29	1.97	2.29	2.04	2.04	
Jul 27	2.26	2.32	S	2.45	2.50	2.65	2.72	2.50	2.17	2.04	2.01	2.06	2.06	2.04	2.10	2.15	2.16	2.07	2.11	2.07	2.01	1.98	2.00	1.99	1.98	2.72	2.19	2.19	
Jul 28	2.00	S	1.98	2.00	2.02	2.04	2.02	2.03	2.03	2.02	2.02	2.02	2.02	2.02	2.03	2.03	2.02	2.02	2.02	2.03	2.05	2.10	2.17	2.26	1.98	2.26	2.04	2.04	
Jul 29	S	2.32	2.29	2.32	2.29	2.32	2.40	2.36	2.28	2.12	2.08	2.06	2.04	2.00	1.99	1.99	1.98	1.98	2.00	2.03	2.04	2.10	2.11	S	1.98	2.40	2.14	2.14	
Jul 30	2.19	2.46	2.59	2.59	2.57	2.64	2.45	2.35	2.22	2.07	2.04	2.01	2.00	1.99	1.99	1.98	2.00	2.04	2.04	2.05	2.08	2.08	S	2.13	1.98	2.64	2.20	2.20	
Jul 31	2.16	2.15	2.22	2.31	2.38	2.42	2.27	2.11	2.06	2.01	2.02	2.01	2.00	2.00	2.00	2.01	2.01	1.99	2.00	2.04	2.09	S	2.13	2.13	1.99	2.42	2.11	2.11	
Diurnal Maximum	2.53	2.73	2.59	2.59	2.59	2.65	2.72	2.50	2.29	2.21	2.19	2.31	2.18	2.19	2.14	2.15	2.16	2.09	2.15	2.28	2.29	2.26	2.40	2.47					
Diurnal Average	2.18	2.22	2.21	2.23	2.24	2.22	2.20	2.14	2.08	2.06	2.05	2.04	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.04	2.07	2.09	2.13	2.17				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

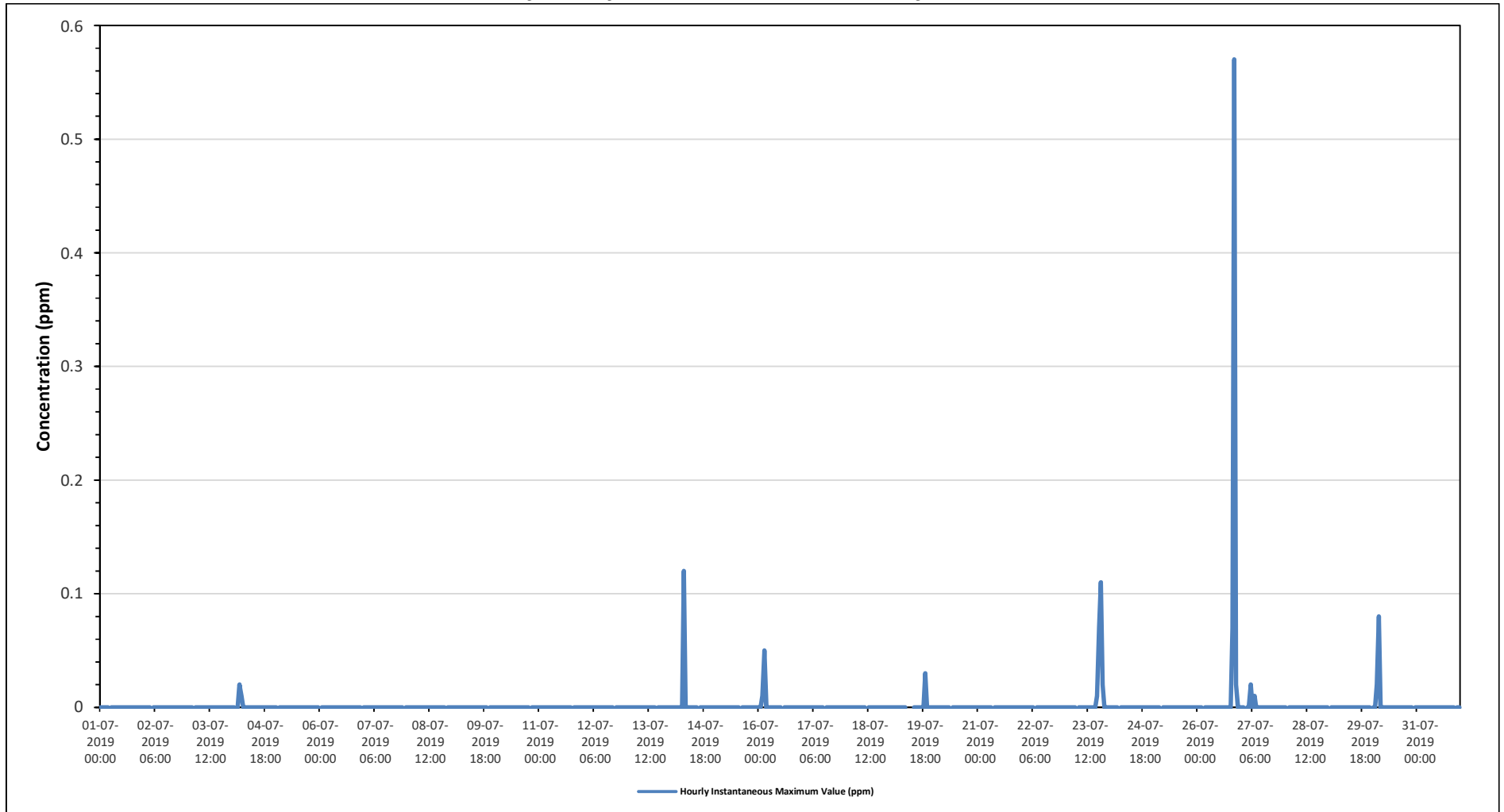
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Maskwa Site**





**Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Maskwa Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### WIND SPEED (WS) in km/h

Maximum Hourly Value:	25.0 kph	on July 28 at hour 6	Hours in Service:	744
Maximum Daily Value:	13.8 kph	on July 28	Hours of Data:	744
Minimum Hourly Value:	0.1 kph	on July 21 at hour 5	Hours of Missing Data:	0
Minimum Daily Value:	3.6 kph	on July 18	Hours of Calibration:	0
Monthly Average:	7.7 kph		Operational Uptime:	100.0

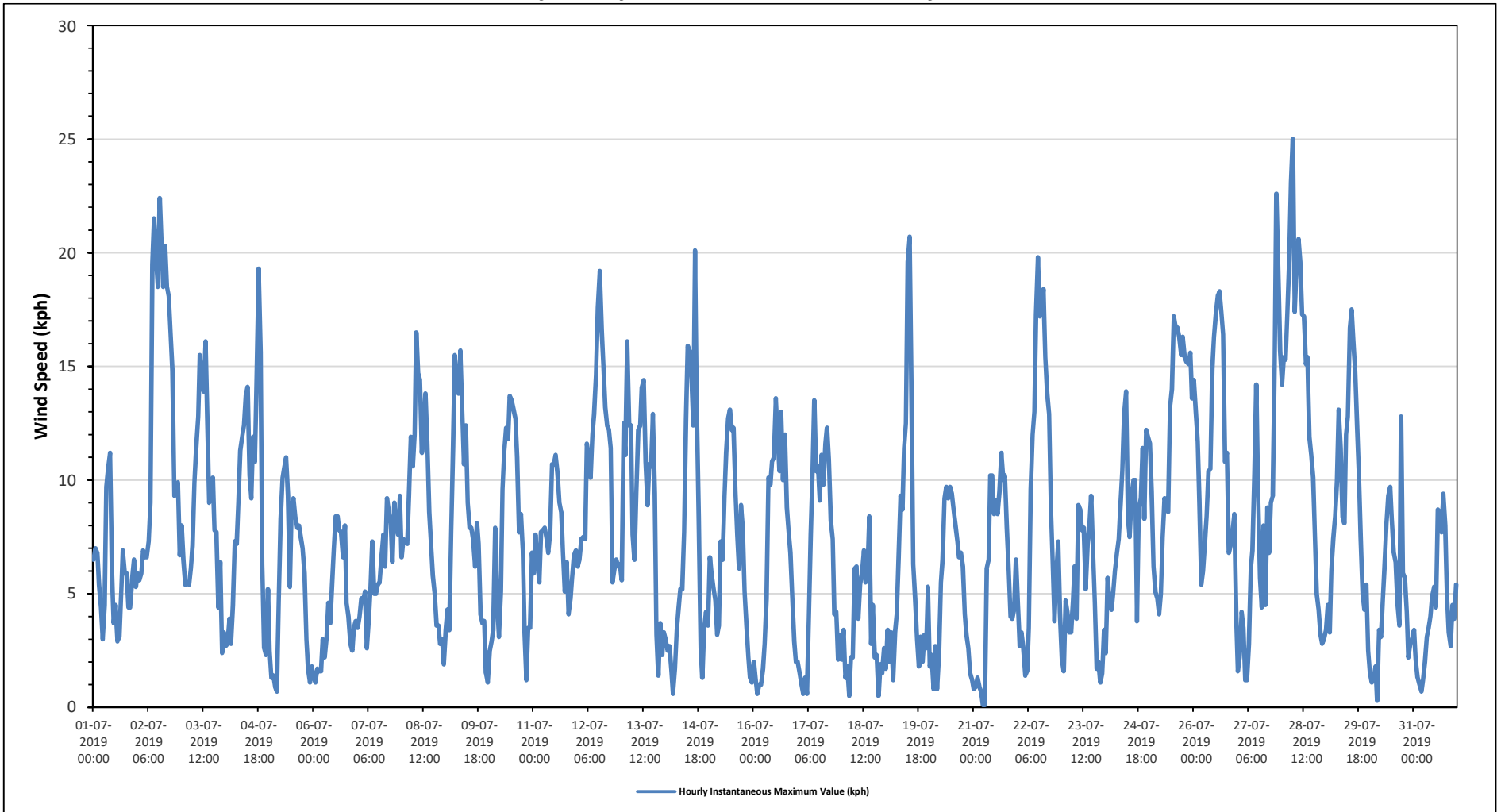
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	6.5	7.0	6.8	5.4	4.4	3.0	4.5	9.7	10.5	11.2	5.9	3.7	4.5	2.9	3.1	5.1	6.9	5.9	5.9	4.4	4.4	5.6	6.5	5.3	2.9	11.2	5.8
Jul 2	5.9	5.6	5.9	6.9	6.6	6.6	7.3	9.0	19.5	21.5	19.9	18.5	22.4	20.6	18.5	20.3	18.5	18.1	16.5	14.8	9.3	9.6	9.9	6.7	5.6	22.4	13.3
Jul 3	8.0	6.5	5.4	5.5	5.4	6.1	7.1	9.9	11.5	12.8	15.5	14.4	13.9	16.1	12.8	9.0	9.7	10.1	7.8	7.7	4.4	6.4	2.4	3.3	2.4	16.1	8.8
Jul 4	2.7	2.8	3.9	2.8	4.5	7.3	7.2	9.0	11.3	11.9	12.4	13.7	14.1	10.2	9.2	11.9	10.8	14.7	19.3	15.6	6.3	2.6	2.3	5.2	2.3	19.3	8.8
Jul 5	2.5	1.3	1.4	0.9	0.7	4.7	8.3	10.1	10.5	11.0	9.3	5.3	8.9	9.2	8.4	7.9	8.0	7.5	7.0	5.9	3.0	1.7	1.1	1.8	0.7	11.0	5.7
Jul 6	1.3	1.1	1.7	1.6	1.6	3.0	2.2	3.0	4.6	3.7	5.3	7.0	8.4	8.4	7.8	7.7	6.6	8.0	4.6	4.0	2.8	2.5	3.5	3.8	1.1	8.4	4.3
Jul 7	3.5	4.0	4.8	4.7	5.1	2.6	3.9	5.2	7.3	5.0	5.0	5.4	5.5	6.6	7.6	6.2	9.2	8.6	8.1	6.4	9.0	8.1	7.6	9.3	2.6	9.3	6.2
Jul 8	6.6	7.4	7.3	7.2	9.3	11.9	10.6	12.0	16.5	14.7	14.4	11.2	12.0	13.8	11.7	8.6	7.1	5.8	5.0	3.6	3.6	2.8	3.0	1.9	1.9	16.5	8.7
Jul 9	3.4	4.3	3.4	7.7	11.5	15.5	14.3	13.8	15.7	13.2	10.7	12.4	9.0	7.9	7.9	7.4	6.2	8.1	7.2	4.1	3.7	3.8	1.5	1.1	1.1	15.7	8.1
Jul 10	2.5	2.9	3.4	7.9	4.7	3.1	5.1	9.6	11.3	12.3	11.8	13.7	13.5	13.1	12.7	11.0	7.7	8.5	6.9	3.4	1.2	3.5	3.5	6.8	1.2	13.7	7.5
Jul 11	5.9	7.6	6.4	5.5	7.7	7.8	7.9	7.4	6.8	7.7	10.7	10.7	11.1	10.3	9.0	8.6	6.8	5.1	6.4	4.1	4.8	5.7	6.7	6.9	4.1	11.1	7.4
Jul 12	6.2	6.5	7.4	7.5	7.4	11.6	11.0	10.1	12.0	12.9	14.6	17.6	19.2	16.6	15.1	13.2	12.4	12.2	11.4	5.5	6.1	6.5	6.2	6.3	5.5	19.2	10.6
Jul 13	5.6	12.5	11.1	16.1	12.4	12.4	7.6	6.5	9.5	12.2	12.4	14.1	14.4	10.8	8.9	10.7	10.6	12.9	9.4	3.2	1.4	3.7	2.3	3.3	1.4	16.1	9.3
Jul 14	3.0	2.5	2.7	1.6	0.6	1.7	3.4	4.4	5.2	5.2	7.7	12.7	15.9	15.7	14.5	12.4	20.1	13.1	8.4	2.6	1.3	3.5	4.2	3.6	0.6	20.1	6.9
Jul 15	6.6	5.9	5.3	4.7	3.2	3.6	7.3	6.5	9.3	11.2	12.7	13.1	12.2	12.3	9.5	7.6	6.1	8.9	7.9	5.1	3.6	2.2	1.3	1.1	1.1	13.1	7.0
Jul 16	2.0	1.2	0.6	1.0	1.0	1.7	2.8	4.8	10.1	9.8	10.8	11.0	13.6	12.0	10.4	13.0	10.0	12.0	8.8	7.8	6.8	4.8	2.9	2.0	0.6	13.6	6.7
Jul 17	2.0	1.5	1.0	0.6	1.3	0.6	3.9	7.6	10.1	13.5	10.4	10.6	9.1	11.1	9.8	11.6	12.3	10.9	8.2	7.4	4.1	4.2	2.1	3.2	0.6	13.5	6.5
Jul 18	2.1	3.4	1.3	1.8	0.5	2.2	2.2	6.1	6.2	3.9	5.4	5.9	6.9	5.5	5.7	8.4	2.8	4.5	2.2	2.3	0.5	1.9	1.5	2.6	0.5	8.4	3.6
Jul 19	1.7	3.4	2.0	3.3	1.2	3.3	4.1	6.6	9.3	8.7	11.4	12.5	19.6	20.7	14.3	6.3	4.8	3.0	1.8	3.1	2.0	3.2	2.6	5.3	1.2	20.7	6.4
Jul 20	1.8	2.3	0.8	2.7	0.8	2.4	5.5	6.5	9.2	9.7	9.2	9.7	9.4	8.7	8.0	7.3	6.6	6.8	6.2	4.1	3.2	2.6	1.5	1.2	0.8	9.7	5.3
Jul 21	0.8	0.9	1.3	0.9	0.7	0.1	0.1	6.1	6.5	10.2	10.2	8.5	9.1	8.5	9.5	11.2	10.0	10.2	7.9	6.0	4.0	3.9	4.3	6.5	0.1	11.2	5.7
Jul 22	4.6	2.7	3.3	2.6	1.4	1.6	3.5	9.6	12.0	13.0	17.3	19.8	17.2	17.6	18.4	15.4	13.8	12.9	8.8	6.4	3.8	5.9	7.3	4.2	1.4	19.8	9.3
Jul 23	2.1	1.6	4.7	4.2	3.3	3.3	4.7	6.2	3.9	8.9	8.7	7.8	7.9	5.2	7.2	8.1	9.3	6.8	4.6	1.7	2.0	1.1	1.5	3.4	1.1	9.3	4.9
Jul 24	2.4	5.7	4.6	4.3	5.0	6.0	6.8	7.4	9.0	10.4	12.9	13.9	8.3	7.5	9.3	10.0	10.0	3.8	8.7	9.2	11.4	8.3	12.2	11.9	2.4	13.9	8.3
Jul 25	11.6	9.5	6.2	5.1	4.8	4.1	5.0	7.5	9.2	8.8	8.6	13.2	14.0	17.2	16.8	16.7	16.3	15.5	16.3	15.4	15.2	15.1	15.6	13.6	4.1	17.2	11.7
Jul 26	14.4	13.0	11.7	9.1	5.4	6.0	7.3	8.4	10.4	10.5	14.9	16.3	17.3	18.1	18.3	17.4	16.4	10.8	11.2	6.8	7.1	7.6	8.5	4.1	4.1	18.3	11.3
Jul 27	1.6	2.2	4.2	3.5	1.2	1.2	2.8	6.1	6.9	10.3	14.2	9.3	5.7	4.4	8.0	4.5	8.8	6.8	9.0	9.3	15.2	22.6	19.4	15.7	1.2	22.6	8.0
Jul 28	14.2	15.4	15.3	17.4	19.7	23.1	25.0	17.4	19.6	20.6	19.6	17.3	17.2	15.1	15.4	11.9	11.1	10.1	7.7	5.0	4.3	3.2	2.8	3.0	2.8	25.0	13.8
Jul 29	3.4	4.5	3.3	6.0	7.4	8.4	10.0	13.1	11.4	8.4	8.1	12.0	12.8	16.7	17.5	16.1	14.8	12.4	10.1	7.5	5.0	4.3	5.4	2.5	2.5	17.5	9.2
Jul 30	1.5	1.1	1.3	1.8	0.3	3.4	3.1	4.8	6.2	8.1	9.3	9.7	8.3	6.8	6.4	4.6	3.6	12.8	5.9	5.7	4.2	2.2	2.8	3.0	0.3	12.8	4.9
Jul 31	3.4	2.1	1.3	1.0	0.7	1.2	2.0	3.1	3.5	4.0	4.9	5.3	4.4	8.7	8.6	7.7	9.4	8.0	5.0	3.3	2.7	4.5	3.9	5.4	0.7	9.4	4.3
Diurnal Maximum	14.4	15.4	15.3	17.4	19.7	23.1	25.0	17.4	19.6	21.5	19.9	19.8	22.4	20.7	18.5	20.3	20.1	18.1	19.3	15.6	15.2	22.6	19.4	15.7			
Diurnal Average	4.5	4.8	4.5	4.9	4.5	5.5	6.3	8.0	9.8	10.5	11.1	11.5	11.8	11.6	11.0	10.3	9.9	9.5	8.2	6.2	5.0	5.3	5.0	5.0			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



*Timeseries Chart of Hourly Instantaneous Maximum for WS - Maskwa Site*



ST. LINA STATION



**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

**St. Lina Site - July 2019**

**Summary of Hourly Instantaneous Maximums**

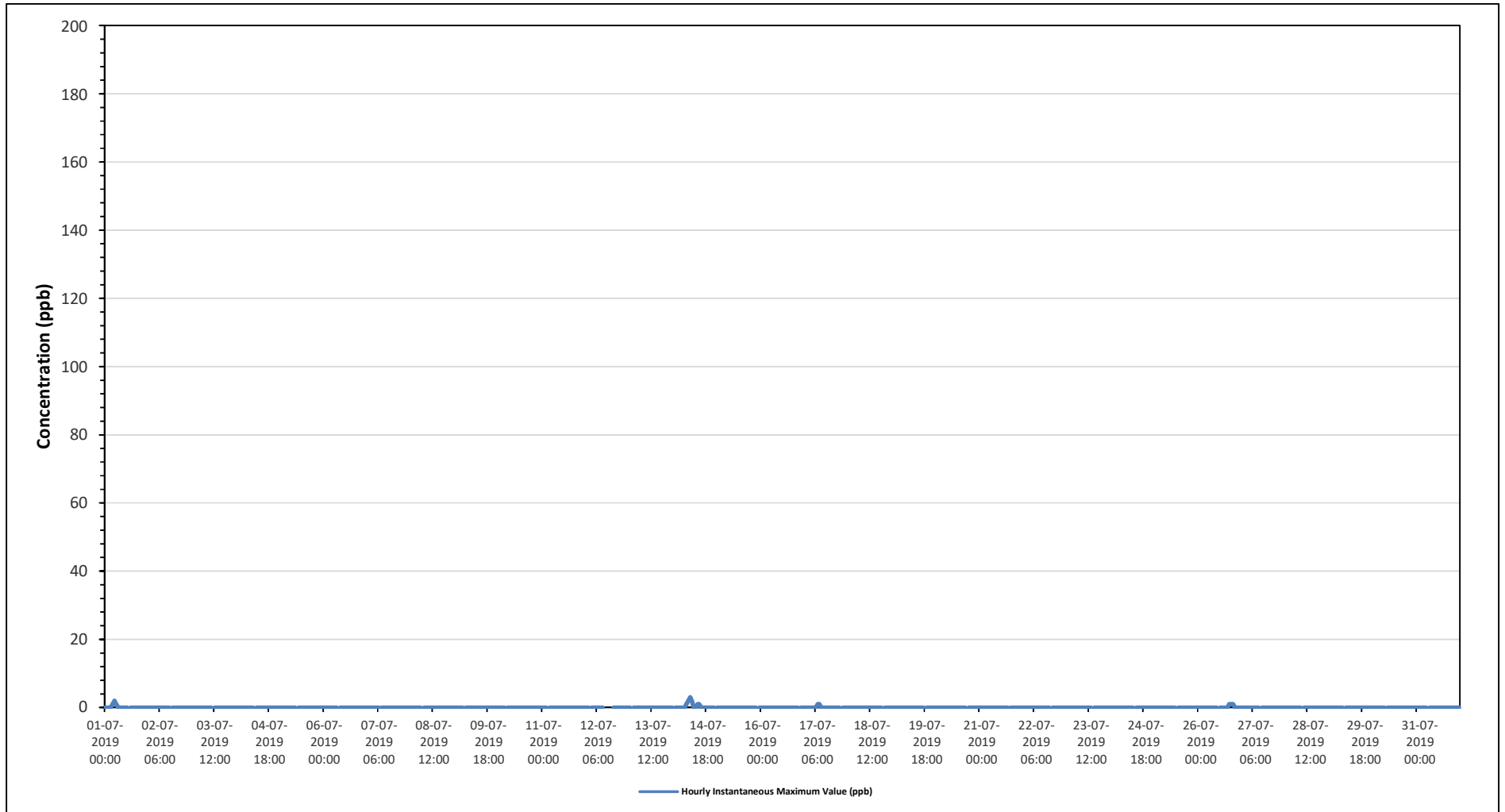
**SULPHUR DIOXIDE (SO<sub>2</sub>) in ppb**

Maximum Hourly Value:	3 ppb	on July 14 at hour 9	Hours in Service:	744
Maximum Daily Value:	0.5 ppb	on July 14	Hours of Data:	707
Minimum Hourly Value:	0 ppb	on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb	on July 2	Hours of Calibration:	37
Monthly Average:	0.0 ppb		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average											
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23										
Jul 1	0	0	0	0	1	2	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 4	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 5	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 6	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 7	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 8	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 9	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 10	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 11	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 12	0	S	S	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 13	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 14	S	0	0	0	0	0	0	1	2	3	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	3	0.5			
Jul 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		
Jul 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		
Jul 17	0	0	0	0	0	0	0	1	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	1	0.1		
Jul 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 24	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 25	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 26	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.1	
Jul 27	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 28	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Jul 29	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 30	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 31	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Diurnal Maximum	0	0	0	0	1	2	1	1	2	3	2	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Diurnal Average	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	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	0.0		

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for SO2 - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

**St. Lina Site - July 2019**

### Summary of Hourly Instantaneous Maximums

#### HYDROGEN SULPHIDE (H<sub>2</sub>S) in ppb

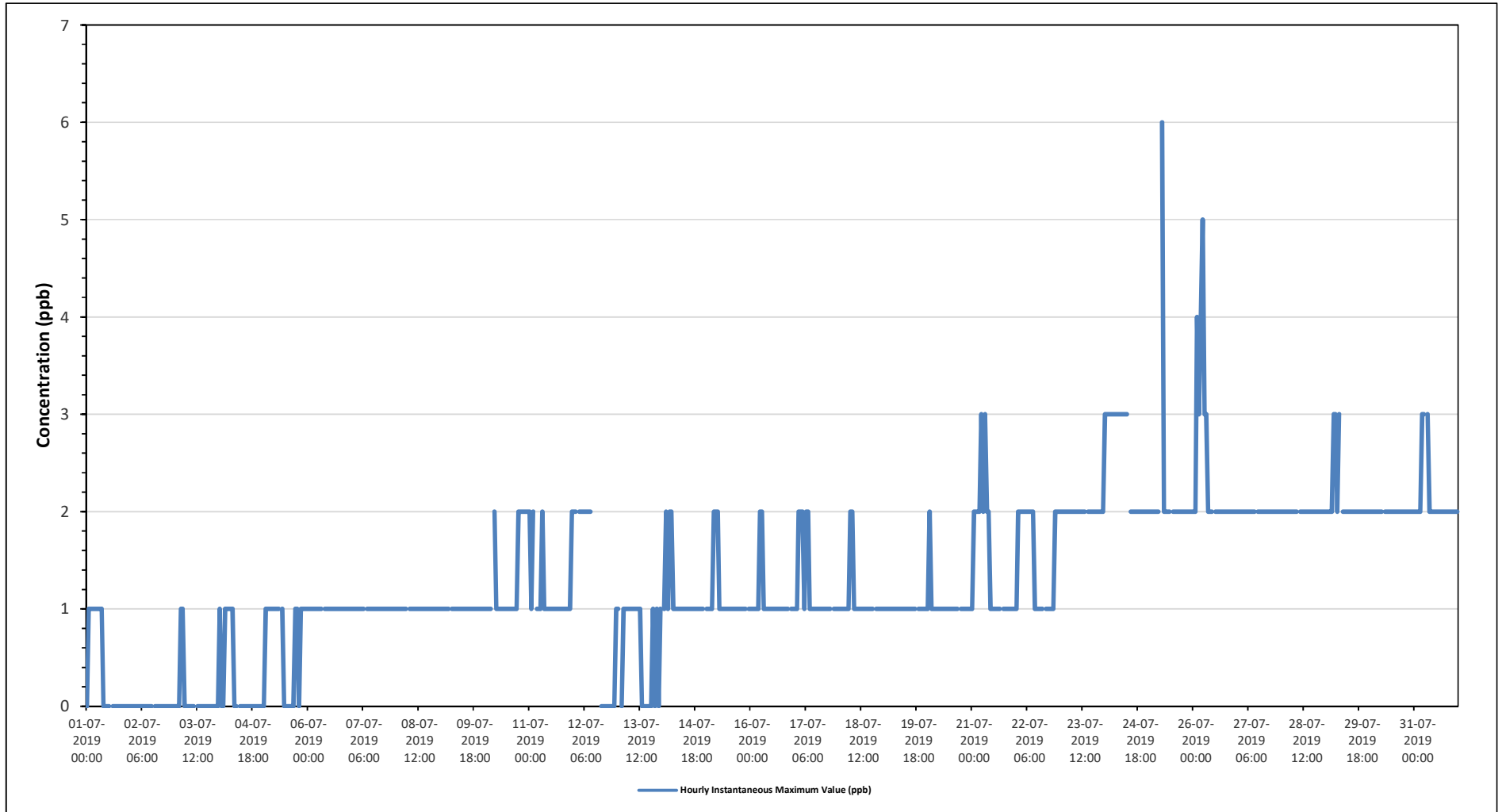
Maximum Hourly Value:	6 ppb on July 25 at hour 7	Hours in Service:	744
Maximum Daily Value:	2.6 ppb on July 24	Hours of Data:	706
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on July 2	Hours of Calibration:	37
Monthly Average:	1.3 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
Jul 1	0	1	1	1	1	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 3	0	0	0	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 4	1	0	0	1	1	1	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	
Jul 5	0	1	1	1	1	1	1	1	1	S	1	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1	0	1	0.7	
Jul 6	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
Jul 7	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
Jul 8	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
Jul 9	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	
Jul 10	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	2	1.3
Jul 11	2	1	2	S	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1.2
Jul 12	2	2	S	2	2	2	2	2	2	2	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1.1
Jul 13	1	S	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	1	0.6
Jul 14	S	1	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	1.1
Jul 15	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	1.1
Jul 16	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	2	1.1
Jul 17	1	1	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	S	1	1	1	1	1	1	2	1.2
Jul 18	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1.1
Jul 19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1.0
Jul 20	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1.0
Jul 21	1	2	2	2	2	3	2	3	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	3	1.5
Jul 22	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	1.5
Jul 23	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2.0
Jul 24	3	3	3	3	3	3	3	3	3	3	3	3	3	S	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2.6	
Jul 25	2	2	2	2	2	2	S1	6	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	6	2.2	
Jul 26	2	2	4	3	4	5	3	3	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	5	2.4	
Jul 27	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.0
Jul 28	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.0
Jul 29	2	2	2	2	3	3	2	3	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2.1	
Jul 30	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.0
Jul 31	2	2	2	2	3	3	S	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2.1	
Diurnal Maximum	3	3	4	3	4	5	3	6	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Diurnal Average	1.3	1.4	1.4	1.5	1.6	1.7	1.5	1.7	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for H2S - St. Lina Site**





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

## Summary of Hourly Instantaneous Maximums

### OXIDES OF NITROGEN (NOx) in ppb

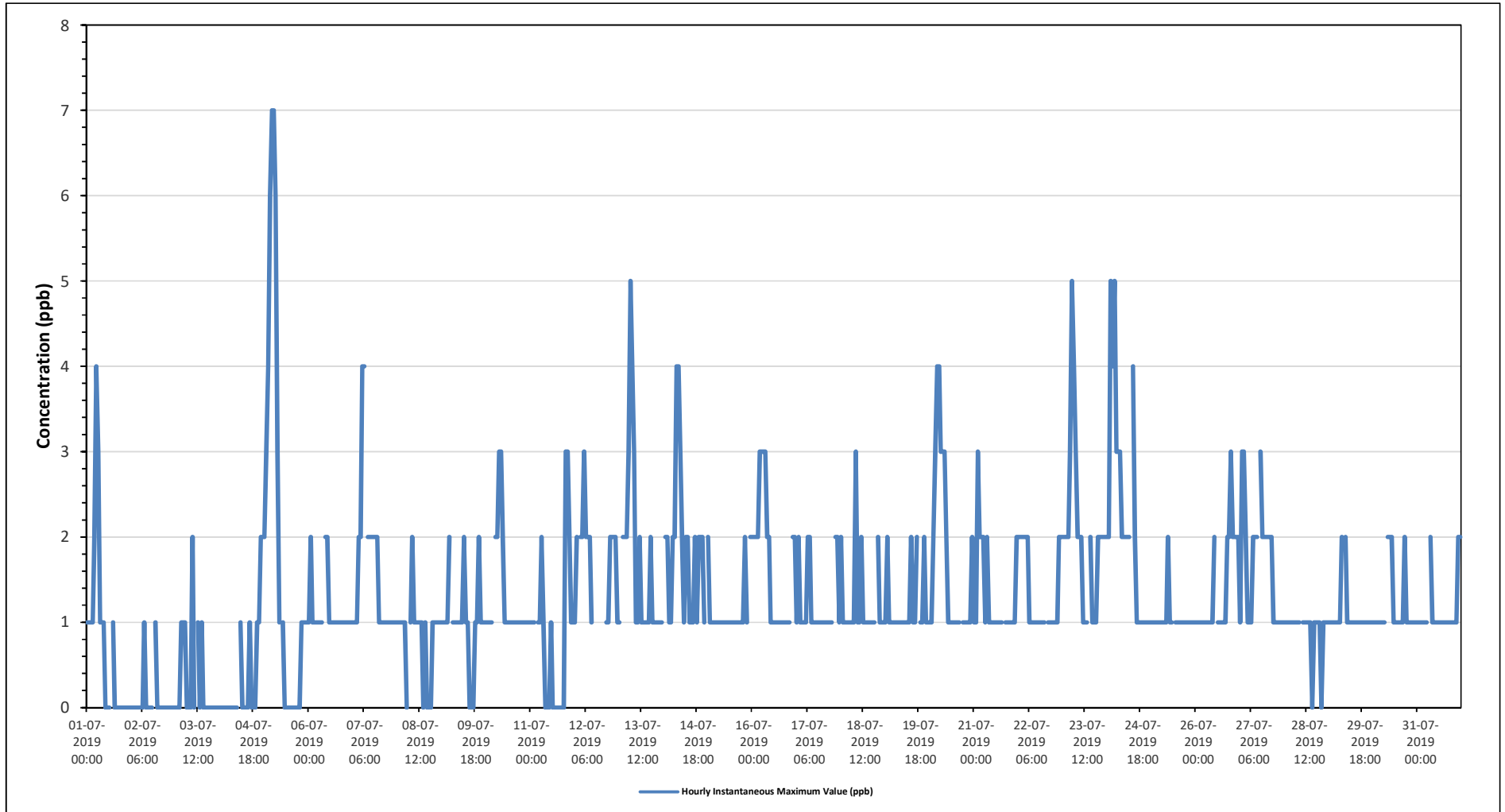
Maximum Hourly Value:	7 ppb on July 5 at hour 44	Hours in Service:	744
Maximum Daily Value:	2.2 ppb on July 24	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.1 ppb on July 2	Hours of Calibration:	39
Monthly Average:	1.2 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23					
Jul 1	1	1	1	1	2	4	3	1	1	1	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.7
Jul 2	0	0	0	0	0	0	0	1	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 3	0	0	0	1	1	1	0	0	0	2	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3		
Jul 4	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	1	1	2	2	0	2	0.3				
Jul 5	2	3	4	6	7	7	6	3	1	S	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	7	1.9			
Jul 6	1	2	1	1	1	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1		
Jul 7	1	1	1	2	2	4	4	S	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.6		
Jul 8	1	1	1	1	1	0	S	1	2	1	1	1	1	1	0	1	0	0	0	0	1	1	1	1	1	1	1	0	2	0.8		
Jul 9	1	1	1	1	2	S	2	1	1	1	1	1	2	1	1	0	0	0	1	1	2	1	1	1	1	1	1	0	2	1.0		
Jul 10	1	1	1	1	S	2	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3		
Jul 11	1	1	1	S	1	1	2	1	0	0	0	1	0	0	0	0	0	0	0	0	3	3	2	1	1	0	3	0.8				
Jul 12	1	2	S	2	2	3	2	2	2	1	C	C	C	C	C	C	C	1	1	2	2	2	2	2	1	1	3	-				
Jul 13	1	S	2	2	2	3	5	4	3	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	5	1.7				
Jul 14	S	2	2	1	1	2	2	4	4	3	2	1	2	2	2	1	1	1	2	1	2	2	2	1	1	1	4	1.9				
Jul 15	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	S	2	1	2	1.1				
Jul 16	2	2	2	2	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	3	1.7				
Jul 17	1	2	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	S	2	2	1	1	2	1.2			
Jul 18	2	1	1	1	1	1	1	1	3	1	1	2	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	3	1.2			
Jul 19	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	S	1	1	2	1	1	1	2	1.2				
Jul 20	1	1	2	3	4	4	3	3	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	4	1.7				
Jul 21	1	1	3	2	2	2	1	2	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1	3	1.3				
Jul 22	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	2	2	1	2	1.3			
Jul 23	2	2	2	2	3	5	4	3	2	2	2	1	1	S	2	1	1	1	1	2	2	2	2	2	2	1	5	2.0				
Jul 24	2	2	5	4	5	3	3	3	2	2	2	2	S	4	2	1	1	1	1	1	1	1	1	1	1	1	5	2.2				
Jul 25	1	1	1	1	1	1	1	1	1	2	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.0				
Jul 26	1	1	1	1	1	1	1	1	1	1	2	S	1	1	1	1	1	1	2	2	3	2	2	2	2	2	3	1.4				
Jul 27	1	3	3	2	1	1	1	2	2	2	S	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	3	1.7				
Jul 28	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	0.9			
Jul 29	1	1	1	1	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1			
Jul 30	1	1	1	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1.2			
Jul 31	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1.1			
Diurnal Maximum	2	3	5	6	7	7	6	4	4	3	2	3	2	2	4	2	2	2	2	2	3	3	2	2	2	2	2	2				
Diurnal Average	1.1	1.3	1.5	1.5	1.7	1.9	1.9	1.8	1.5	1.4	1.1	1.1	1.0	1.0	1.0	0.8	0.8	0.9	0.8	1.1	1.2	1.1	1.2	1.2	1.2	1.2	1.2					

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NOx - St. Lina Site**







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### NITRIC OXIDE (NO) in ppb

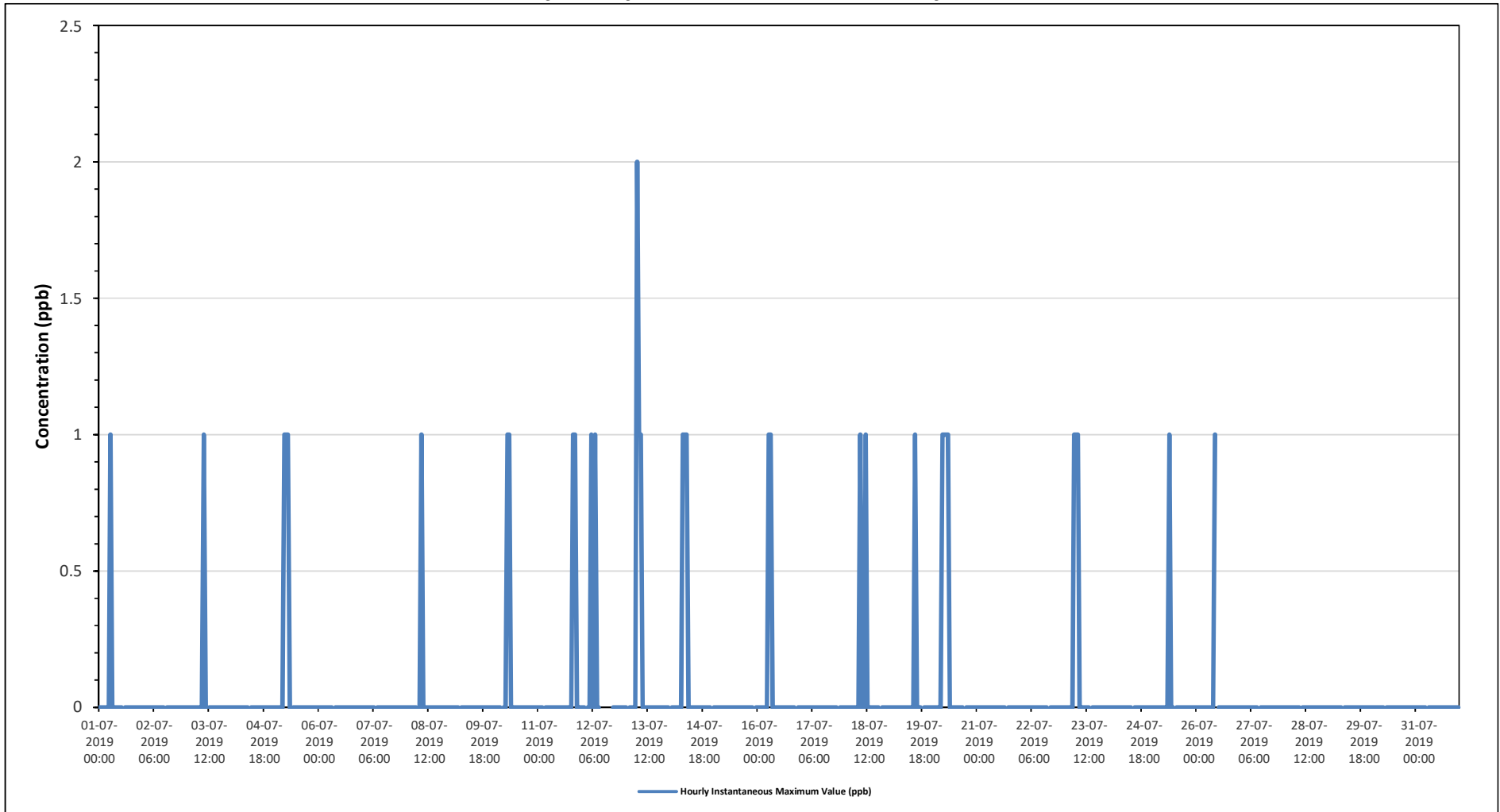
Maximum Hourly Value:	2 ppb on July 13 at hour 6	Hours in Service:	744
Maximum Daily Value:	0.2 ppb on July 13	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 2	Hours of Calibration:	39
Monthly Average:	0.0 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	0	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 3	0	0	0	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 4	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 5	0	0	0	0	0	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 6	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 7	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 8	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 9	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 10	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 11	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0.1
Jul 12	0	0	S	0	0	1	0	1	0	0	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	1	-
Jul 13	0	S	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	
Jul 14	S	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 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
Jul 16	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Jul 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
Jul 18	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.1
Jul 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	0	0	0	0	1	0.0
Jul 20	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.2
Jul 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0
Jul 22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.0
Jul 23	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.1
Jul 24	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 25	0	0	0	0	0	0	0	0	0	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 26	0	0	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Jul 27	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 28	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 29	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 30	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 31	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Diurnal Maximum	0	0	0	0	0	1	2	1	1	1	1	1	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Diurnal Average	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	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

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NO - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

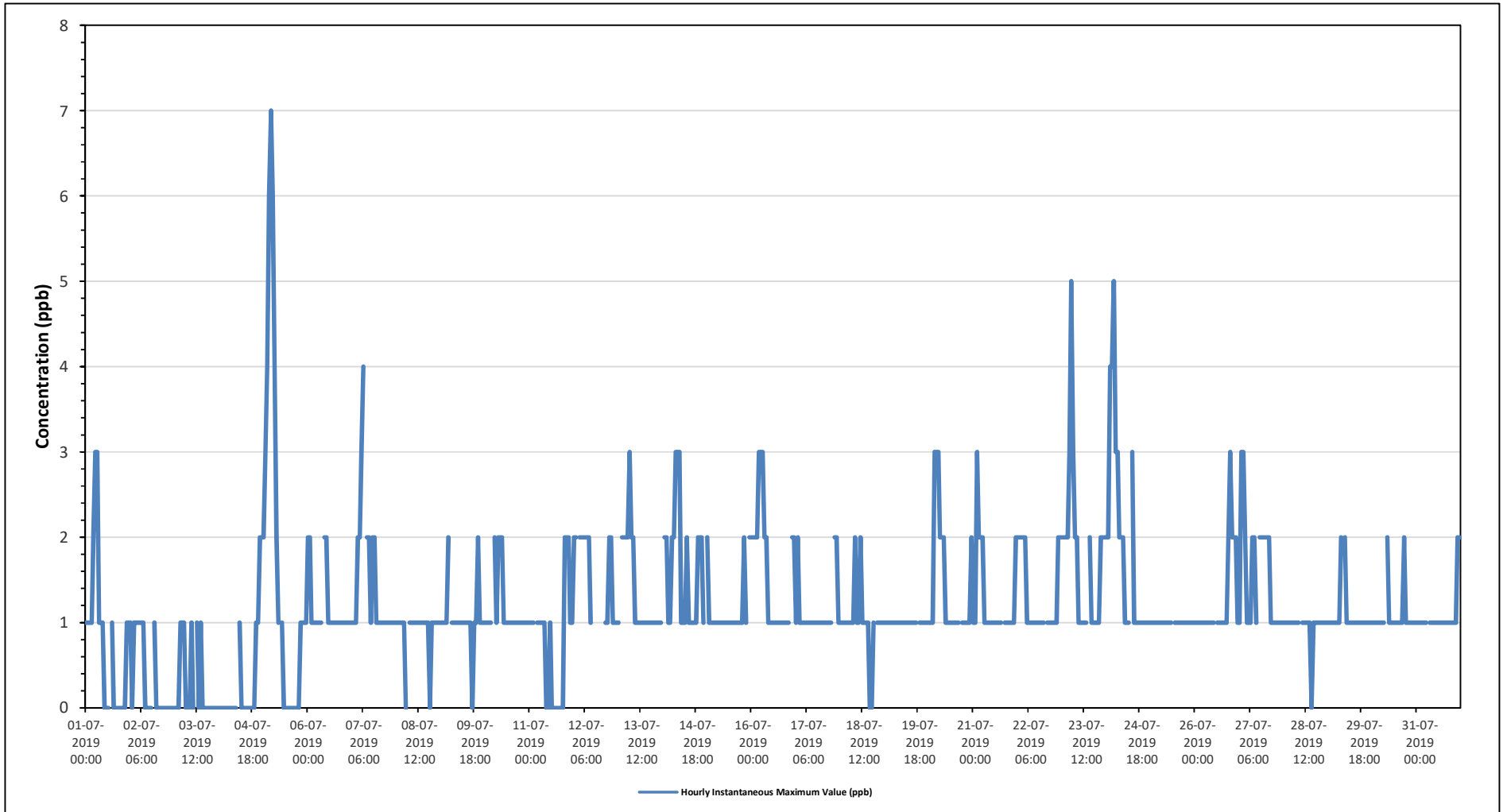
Maximum Hourly Value:	7 ppb on July 5 at hour 4	Hours in Service:	744
Maximum Daily Value:	1.9 ppb on July 24	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 1 at hour 10	Hours of Missing Data:	0
Minimum Daily Value:	0.3 ppb on July 3	Hours of Calibration:	39
Monthly Average:	1.2 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	2	3	3	1	1	1	0	0	0	S	1	0	0	0	0	0	0	0	1	1	0	3	0.8	
Jul 2	1	0	1	1	1	1	1	1	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3
Jul 3	0	0	0	1	1	1	0	0	0	1	0	S	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3
Jul 4	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	1	1	2	2	0	2	0.3
Jul 5	2	3	4	6	7	6	4	2	1	S	2	1	0	0	0	0	0	0	0	0	1	1	1	1	1	7	1.7	
Jul 6	2	2	1	1	1	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2
Jul 7	1	1	1	2	2	3	4	S	2	2	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.5
Jul 8	1	1	1	1	1	0	S	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0.9
Jul 9	1	1	1	1	2	S	1	1	1	1	1	1	1	1	1	1	1	0	1	1	2	1	1	1	1	0	2	1.0
Jul 10	1	1	1	1	S	2	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2
Jul 11	1	1	1	S	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	2	2	2	1	1	1	0	2	0.7
Jul 12	2	2	S	2	2	2	2	2	2	1	C	C	C	C	C	C	C	1	1	2	2	1	1	1	1	2	-	
Jul 13	1	S	2	2	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3
Jul 14	S	2	2	1	1	2	2	3	3	3	1	1	1	2	1	1	1	1	1	1	2	2	2	1	1	S	3	1.6
Jul 15	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	S	2	2	2	1.1
Jul 16	2	2	2	2	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	3	1.6
Jul 17	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	1	2	1.1
Jul 18	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	0	0	1	S	1	1	1	1	1	0	2	1.0
Jul 19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1.0
Jul 20	1	1	1	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	1	1.4
Jul 21	1	1	3	2	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1	3	1.3
Jul 22	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	2	2	1	1.3
Jul 23	2	2	2	2	3	5	3	2	2	1	1	1	1	1	S	2	1	1	1	1	1	1	2	2	2	1	5	1.8
Jul 24	2	2	4	4	5	3	3	2	2	2	1	1	1	S	3	1	1	1	1	1	1	1	1	1	1	1	5	1.9
Jul 25	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Jul 26	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	3	2	2	2	1	1	3	1.3
Jul 27	1	3	3	2	1	1	1	2	2	1	S	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	3	1.6
Jul 28	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1.0
Jul 29	1	1	1	1	1	1	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1
Jul 30	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1.1
Jul 31	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1.1
Diurnal Maximum	2	3	4	6	7	6	4	3	3	3	2	2	2	2	3	2	2	2	2	2	3	2	2	2	2	2	2	
Diurnal Average	1.2	1.3	1.4	1.6	1.7	1.7	1.6	1.3	1.3	1.1	0.9	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.8	0.8	1.0	1.1	1.1	1.2	1.2			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Instantaneous Maximum for NO2 - St. Lina Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Instantaneous Maximums

OZONE (O<sub>3</sub>) in ppb

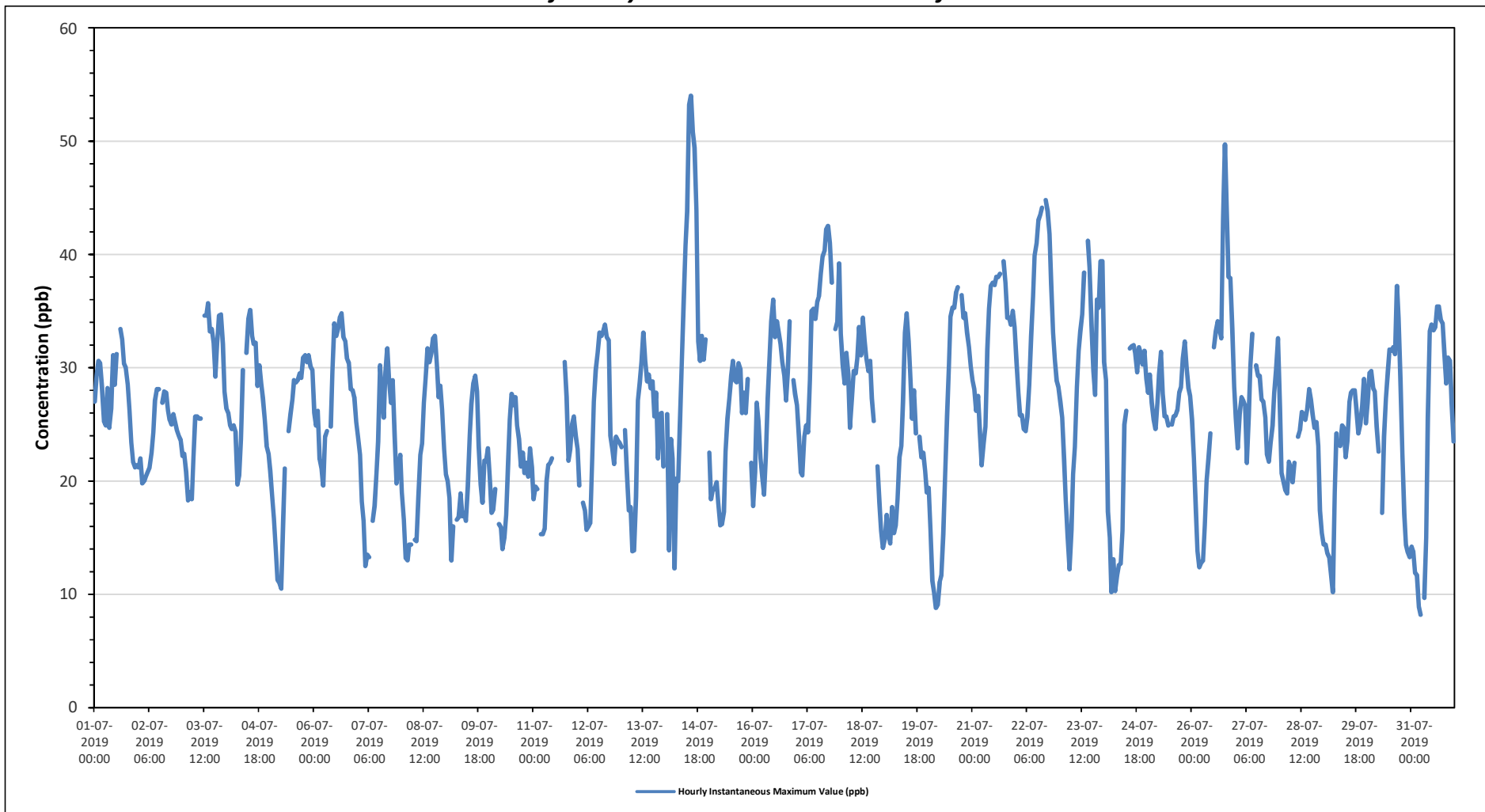
Maximum Hourly Value:	54.0 ppb on July 14 at hour 14	Hours in Service:	744
Maximum Daily Value:	34.0 ppb on July 22	Hours of Data:	706
Minimum Hourly Value:	8.2 ppb on July 31 at hour 5	Hours of Missing Data:	0
Minimum Daily Value:	20.6 ppb on July 9	Hours of Calibration:	38
Monthly Average:	26.0 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	27	29.3	30.6	30.4	28.2	25.3	24.9	28.2	24.7	26.4	31.1	28.5	31.2	S	33.4	32.5	30.4	30	28.5	26.2	23.4	21.7	21.2	21.4	21.2	33.4	27.6	
Jul 2	21.2	22	19.8	20	20.4	20.8	21.2	22.5	24.3	27.1	28.1	28.1	S	26.9	27.9	27.8	26.2	25.4	25	25.9	25.1	24.5	24	23.6	19.8	28.1	24.3	
Jul 3	22.2	22.4	20.8	18.3	19	18.4	21.9	25.7	25.7	25.5	25.5	S	34.6	34.6	35.7	33.2	33.4	32.2	29.2	32.2	34.6	34.7	32.1	27.9	18.3	35.7	27.8	
Jul 4	26.4	26	24.9	24.6	24.9	24.3	19.7	20.5	23.7	29.8	S	31.3	34.3	35.1	32.8	32.1	32.2	28.4	30.2	28.6	27.3	25.4	23.1	22.4	19.7	35.1	27.3	
Jul 5	20.9	18.7	16.7	13.7	11.3	11	10.5	16.4	21.1	S	24.4	25.9	27.2	28.9	28.7	28.9	29.5	29.1	30.9	31.1	30.5	31.1	30.1	29.8	10.5	31.1	23.8	
Jul 6	26	24.9	26.2	21.9	21.1	19.6	23.9	24.4	S	24.8	29.7	33.9	32.8	33.4	34.4	34.8	32.7	32.3	30.8	30.4	28.1	28	27.4	25.2	19.6	34.8	28.1	
Jul 7	23.9	22.3	18.2	16.5	12.5	13.5	13.3	S	16.5	17.8	20.7	23.5	30.2	27.8	25.6	29.6	31.7	28.8	26.9	28.9	24.1	19.8	21.1	22.3	12.5	31.7	22.4	
Jul 8	19	16.6	13.2	13	14.4	14.4	S	14.8	14.7	18.6	22.3	23.3	26.9	29.1	31.7	30.5	31.3	32.6	32.8	30.4	27.4	28.4	26.3	22.8	13.0	32.8	23.2	
Jul 9	20.6	20	18.5	13	16	S	16.6	16.8	18.9	16.9	17.2	16.5	19.5	24	26.8	28.6	29.3	27.9	23.1	19.7	18.1	21.8	21.7	22.9	13.0	29.3	20.6	
Jul 10	20.4	17.2	17.5	19.3	S	16.2	15.9	14	15	17	21.5	25.4	27.7	26.7	27.4	24.9	23.7	21.3	22.5	20.7	21.6	20.4	22.9	21.2	14.0	27.7	20.9	
Jul 11	18.4	19.5	19.3	S	15.3	15.3	15.8	20	21.4	21.6	22	C	C	C	C	C	C	30.5	27.4	21.8	22.8	25	25.7	24	15.3	30.5	-	
Jul 12	22.8	19.6	S	18.1	17.4	15.7	16	16.3	22.3	27	29.8	31.3	33.1	32.8	33.2	33.8	32.7	32.4	24	22.8	21.5	23.9	23.6	23.4	15.7	33.8	24.9	
Jul 13	23	S	24.5	20.8	17.4	17.7	13.8	13.9	18.6	27.1	28.7	30.5	33.1	30.6	28.8	29.4	28.2	28.8	25.7	27.8	22	25.9	26	21.3	13.8	33.1	24.5	
Jul 14	S	25.9	13.9	23.7	22	12.3	20.2	20	24.8	30.3	35.7	40.8	43.8	53.2	54.0	50.8	49.4	43.9	32.3	30.6	32.8	30.7	32.5	S	12.3	54.0	32.9	
Jul 15	22.5	18.4	19.3	19.3	19.9	18.1	16.1	16.2	17.3	22.6	25.5	27.3	29.3	30.6	28.9	28.7	30.4	29.9	26	27.8	26	29	S	21.6	16.1	30.6	23.9	
Jul 16	17.8	20.8	26.9	25.3	22	20.3	18.8	22.1	27.3	31.1	34.1	36	32.7	34.1	33.1	32.1	30.5	29.3	27.1	29.6	34.1	S	28.9	27.7	17.8	36.0	27.9	
Jul 17	26.7	24	20.8	20.5	23.9	24.9	24.3	28.9	35	35.2	34.3	35.8	36.3	38.3	39.8	40.3	42.2	42.5	41	37.5	S	33.4	34	39.2	20.5	42.5	33.0	
Jul 18	33	30.3	28.6	31.3	29.4	24.7	27.3	29.7	29.5	30.8	33.6	31.1	34.4	32.4	30.8	29.7	30.6	27.3	25.3	S	21.3	18.1	15.6	14.1	14.1	34.4	27.8	
Jul 19	14.9	17	15.3	14.5	17.7	15.4	16.1	18.4	22.1	23.1	27	33.1	34.8	32.3	29.5	25.5	28	24.2	S	23.9	22.1	22.5	20.9	19	14.5	34.8	22.5	
Jul 20	19.4	15.7	11.2	10.2	8.8	9.1	11.1	11.7	15.3	20.6	25.7	30.3	34.5	35.3	35.3	36.7	37.1	S	36.4	34.4	34.8	33.1	31.8	30.1	8.8	37.1	24.7	
Jul 21	28.9	28.1	26.2	27.5	24.6	21.4	23.3	24.8	31.6	35.2	37.2	37.5	37.3	38	38	38.3	S	39.4	37.5	34.4	34.4	34.4	33.8	35	33.6	21.4	39.4	32.4
Jul 22	30.6	27.8	25.8	25.8	24.6	24.4	25.7	28.5	32.8	36.3	39.9	41	43	43.5	44.1	S	44.8	43.8	41.8	37.4	33.1	30.7	28.8	28.3	24.4	44.8	34.0	
Jul 23	27	25.6	21.9	18.3	15.2	12.2	15.7	20.6	23	28.3	31.5	33.2	34.7	38.4	S	41.2	38.8	33.9	29.7	27.6	36	35.3	39.4	39.4	12.2	41.2	29.0	
Jul 24	30.5	28.9	17.3	15	10.2	13.1	10.3	11.7	12.6	12.7	15.6	25	26.2	S	31.7	31.9	32	31.3	29.6	31.8	31.2	30.3	31.5	29	10.2	32.0	23.5	
Jul 25	27.8	29.4	26.9	25.4	24.6	26.9	29.4	31.4	27.7	25.7	25.7	24.9	S	25	25.7	25.8	26.3	27.8	28.3	30.8	32.3	30.1	28.2	27.5	24.6	32.3	27.5	
Jul 26	25.4	22	17.6	13.8	12.4	12.8	13	16.1	20	22	24.2	S	31.8	33.2	34.1	33.5	32.6	43.2	49.7	43.7	38	37.9	33.4	28.3	12.4	49.7	27.8	
Jul 27	25.6	22.9	25.9	27.4	27.1	26.7	21.6	25.8	30.2	33	S	30.2	29.3	29.3	27.2	27	25.6	22.4	21.7	23.4	24.9	27.8	29.8	32.6	21.6	33.0	26.8	
Jul 28	26.5	20.7	20	19.2	18.9	21.7	21.2	19.9	21.6	S	23.9	24.5	26.1	25.9	25.4	26.3	28.1	27.2	25.9	24.7	25.2	23.1	17.4	15.4	15.4	28.1	23.0	
Jul 29	14.4	14.4	13.6	13.3	11.8	10.2	19	24.2	S	23.1	24.9	24.7	22.1	23.5	27	27.8	28	28	26.1	24.2	25	26.6	29	25.1	10.2	29.0	22.0	
Jul 30	26.9	29.5	29.7	28.2	27.9	24.8	22.6	S	17.2	23.9	27.3	29.6	31.6	31.5	31.8	31.2	37.2	34.4	28.8	22.4	17.1	14.4	13.7	13.3	13.3	37.2	25.9	
Jul 31	14.2	13.8	11.9	11.7	8.9	8.2	S	9.7	15	25.6	33.2	33.8	33.3	33.6	35.4	35.4	34.2	33.9	31.4	28.6	30.9	30.6	26.9	23.5	8.2	35.4	24.5	
Diurnal Maximum	33	30	31	31	29	27	29	31	35	36	40	41	44	53	54	51	49	44	50	44	38	38	39	39				
Diurnal Average	23.5	22.5	20.8	20.0	18.9	18.0	18.9	20.5	22.4	25.5	27.6	29.9	31.9	32.4	32.4	32.0	32.3	31.4	29.9	28.6	27.5	27.3	26.7	25.2				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for O3 - St. Lina Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### TOTAL HYDROCARBONS (THC) in ppm

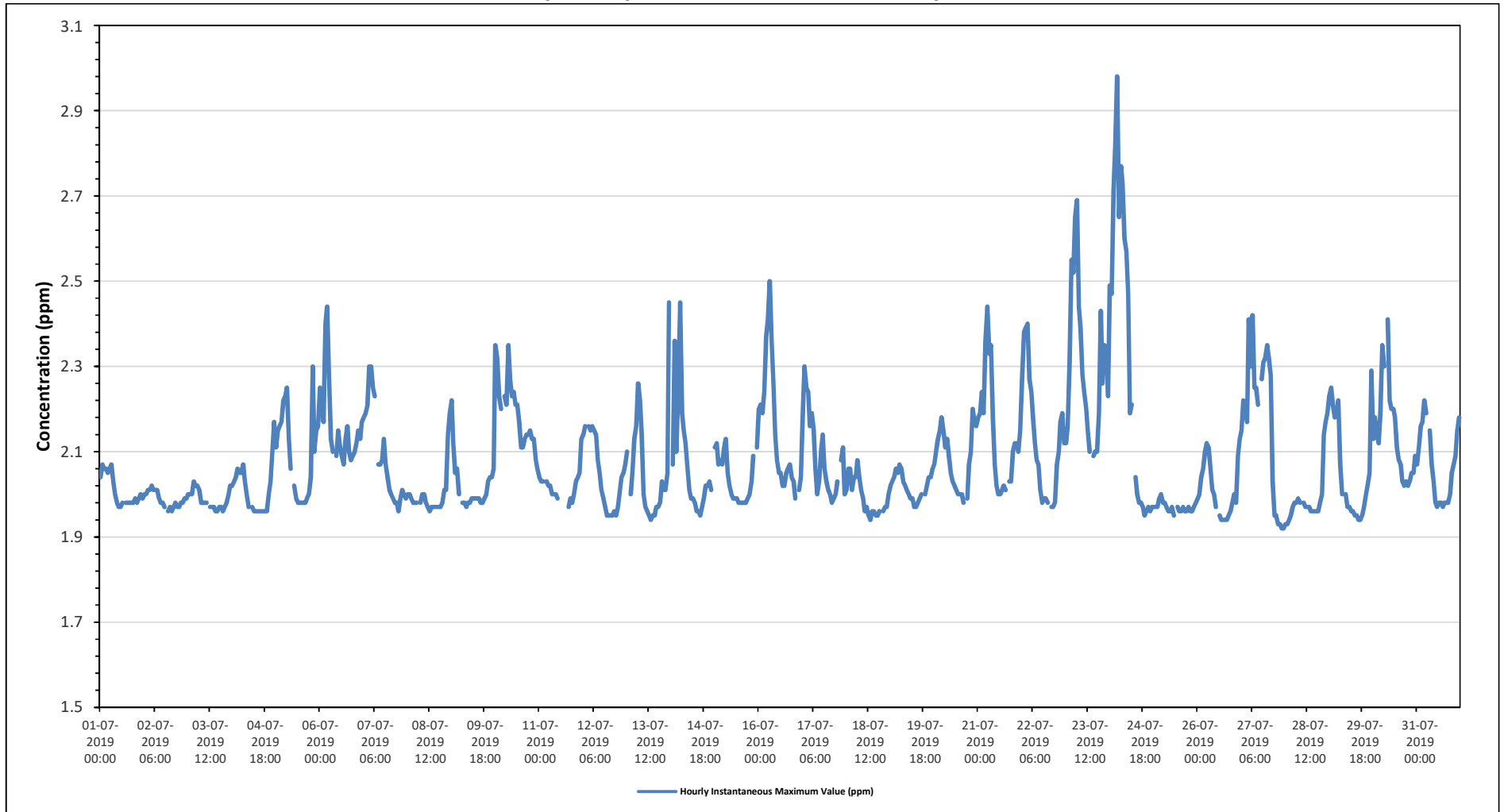
Maximum Hourly Value:	2.98 ppm on July 24 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.32 ppm on July 24	Hours of Data:	707
Minimum Hourly Value:	1.92 ppm on July 27 at hour 22	Hours of Missing Data:	0
Minimum Daily Value:	1.97 ppm on July 25	Hours of Calibration:	37
Monthly Average:	2.08 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	2.04	2.07	2.06	2.06	2.05	2.06	2.07	2.03	2.00	1.98	1.97	1.97	1.98	S	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.99	2.00	1.99	1.97	2.07	2.01
Jul 2	2.00	2.00	2.01	2.01	2.02	2.01	2.01	2.01	1.99	1.98	1.98	1.97	S	1.96	1.97	1.96	1.97	1.98	1.97	1.97	1.98	1.98	1.99	1.99	1.96	2.02	1.99
Jul 3	2.00	2.00	2.00	2.03	2.02	2.02	2.01	1.98	1.98	1.98	1.98	S	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.96	1.97	1.98	2.00	2.02	1.96	2.03	1.99
Jul 4	2.02	2.03	2.04	2.06	2.05	2.05	2.07	2.03	2.00	1.97	S	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	2.00	2.03	2.10	2.17	1.96	2.17	2.01
Jul 5	2.11	2.15	2.16	2.17	2.22	2.23	2.25	2.13	2.06	S	2.02	1.99	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.04	2.30	2.10	2.15	2.16	1.98	2.30	2.09
Jul 6	2.25	2.22	2.17	2.40	2.44	2.28	2.13	2.10	S	2.09	2.15	2.11	2.09	2.07	2.13	2.16	2.10	2.08	2.09	2.10	2.12	2.15	2.13	2.17	2.07	2.44	2.16
Jul 7	2.18	2.19	2.21	2.30	2.30	2.25	2.23	S	2.07	2.07	2.08	2.13	2.07	2.04	2.01	2.00	1.99	1.98	1.98	1.96	1.99	2.01	2.00	1.99	1.96	2.30	2.09
Jul 8	2.00	2.00	1.99	1.98	1.98	1.98	S	1.98	2.00	2.00	1.98	1.97	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.98	2.01	2.01	2.14	2.19	1.96	2.19	2.00
Jul 9	2.22	2.12	2.05	2.06	2.00	S	1.98	1.98	1.97	1.98	1.98	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.99	2.00	2.03	2.04	2.04	2.06	1.97	2.22	2.02
Jul 10	2.35	2.32	2.23	2.20	S	2.23	2.21	2.35	2.27	2.23	2.24	2.21	2.21	2.17	2.11	2.11	2.13	2.14	2.14	2.15	2.13	2.13	2.08	2.06	2.06	2.35	2.19
Jul 11	2.04	2.03	2.03	S	2.03	2.02	2.02	2.00	2.00	2.00	1.99	C	C	C	C	C	1.97	1.99	1.98	2.00	2.03	2.04	2.05	2.13	1.97	2.13	2.02
Jul 12	2.14	2.16	S	2.16	2.15	2.16	2.15	2.14	2.08	2.05	2.01	1.99	1.97	1.95	1.95	1.95	1.95	1.96	1.95	1.97	2.01	2.04	2.05	2.07	1.95	2.16	2.04
Jul 13	2.10	S	2.00	2.06	2.13	2.16	2.26	2.22	2.14	2.00	1.97	1.96	1.95	1.94	1.95	1.95	1.97	1.97	1.98	2.03	2.01	2.01	2.05	2.45	1.94	2.45	2.05
Jul 14	S	2.07	2.36	2.10	2.25	2.45	2.19	2.15	2.12	2.06	2.01	1.99	1.99	1.98	1.96	1.96	1.95	1.97	1.99	2.02	2.02	2.03	2.01	S	1.95	2.45	2.07
Jul 15	2.11	2.12	2.07	2.08	2.07	2.11	2.13	2.05	2.02	2.00	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.03	2.09	S	2.11	1.98	2.13	2.04
Jul 16	2.20	2.21	2.19	2.24	2.37	2.41	2.50	2.36	2.26	2.14	2.08	2.05	2.05	2.02	2.02	2.05	2.06	2.07	2.04	2.03	1.99	S	2.01	2.04	1.99	2.50	2.15
Jul 17	2.17	2.30	2.25	2.24	2.16	2.19	2.15	2.06	2.00	2.03	2.10	2.14	2.06	2.03	2.01	2.00	1.98	1.99	2.00	2.03	S	2.08	2.11	2.00	1.98	2.30	2.09
Jul 18	2.01	2.06	2.06	2.01	2.04	2.04	2.08	2.04	2.01	1.99	1.96	1.97	1.95	1.94	1.96	1.96	1.95	1.95	1.96	S	1.96	1.97	1.97	2.00	1.94	2.08	1.99
Jul 19	2.02	2.03	2.04	2.06	2.05	2.07	2.06	2.03	2.02	2.01	2.00	1.99	1.99	1.97	1.97	1.98	1.99	2.00	S	2.00	2.02	2.04	2.04	2.06	1.97	2.07	2.02
Jul 20	2.07	2.10	2.13	2.15	2.18	2.15	2.11	2.13	2.09	2.05	2.03	2.02	2.01	2.00	2.00	2.00	1.98	S	1.99	2.07	2.10	2.20	2.17	2.16	1.98	2.20	2.08
Jul 21	2.18	2.19	2.24	2.19	2.36	2.44	2.33	2.35	2.18	2.07	2.02	2.00	2.01	2.02	2.01	S	2.03	2.03	2.10	2.12	2.12	2.10	2.15	2.00	2.44	2.14	
Jul 22	2.27	2.38	2.39	2.40	2.27	2.24	2.18	2.12	2.08	2.07	2.01	1.98	1.99	1.99	1.98	S	1.97	1.97	1.98	2.07	2.10	2.17	2.19	2.12	1.97	2.40	2.13
Jul 23	2.12	2.16	2.31	2.55	2.52	2.65	2.69	2.44	2.39	2.28	2.24	2.20	2.15	2.10	S	2.09	2.10	2.10	2.19	2.43	2.26	2.35	2.34	2.23	2.09	2.69	2.30
Jul 24	2.49	2.47	2.71	2.82	2.98	2.65	2.77	2.73	2.60	2.57	2.47	2.19	2.21	S	2.04	2.00	1.98	1.98	1.97	1.95	1.96	1.97	1.96	1.97	1.95	2.98	2.32
Jul 25	1.97	1.97	1.97	1.99	2.00	1.98	1.98	1.97	1.96	1.96	1.97	1.95	S	1.97	1.96	1.96	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.98	1.95	2.00	1.97
Jul 26	1.99	2.00	2.04	2.06	2.10	2.12	2.11	2.06	2.01	2.00	1.97	S	1.95	1.94	1.94	1.94	1.94	1.95	1.96	1.98	2.00	1.98	2.09	2.13	1.94	2.13	2.01
Jul 27	2.15	2.22	2.21	2.17	2.41	2.30	2.42	2.25	2.25	2.21	S	2.27	2.31	2.32	2.35	2.32	2.28	2.03	1.95	1.95	1.93	1.92	1.92	1.92	1.92	2.42	2.18
Jul 28	1.93	1.93	1.94	1.95	1.97	1.98	1.98	1.99	1.98	S	1.98	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.98	2.00	2.14	2.17	2.19	1.93	2.19	1.99
Jul 29	2.23	2.25	2.21	2.18	2.19	2.22	2.07	2.00	S	2.00	1.97	1.97	1.96	1.96	1.95	1.95	1.94	1.94	1.95	1.97	2.00	2.02	2.05	2.29	1.94	2.29	2.06
Jul 30	2.13	2.18	2.14	2.12	2.19	2.35	2.30	S	2.41	2.22	2.20	2.20	2.18	2.11	2.08	2.07	2.03	2.02	2.03	2.02	2.03	2.05	2.05	2.09	2.02	2.41	2.14
Jul 31	2.07	2.11	2.16	2.17	2.22	2.19	S	2.15	2.07	2.03	1.98	1.97	1.98	1.98	1.97	1.98	1.98	1.98	2.00	2.05	2.07	2.09	2.15	2.18	1.97	2.22	2.07
Diurnal Maximum	2.49	2.47	2.71	2.82	2.98	2.65	2.77	2.73	2.60	2.57	2.47	2.27	2.31	2.32	2.35	2.32	2.28	2.14	2.19	2.43	2.30	2.35	2.34	2.45			
Diurnal Average	2.12	2.13	2.15	2.17	2.19	2.20	2.19	2.13	2.10	2.07	2.05	2.04	2.03	2.01	2.00	2.01	2.00	1.99	2.00	2.02	2.04	2.06	2.07	2.10			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

*Timeseries Chart of Hourly Instantaneous Maximum for THC - St. Lina Site*







## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### METHANE (CH4) in ppm

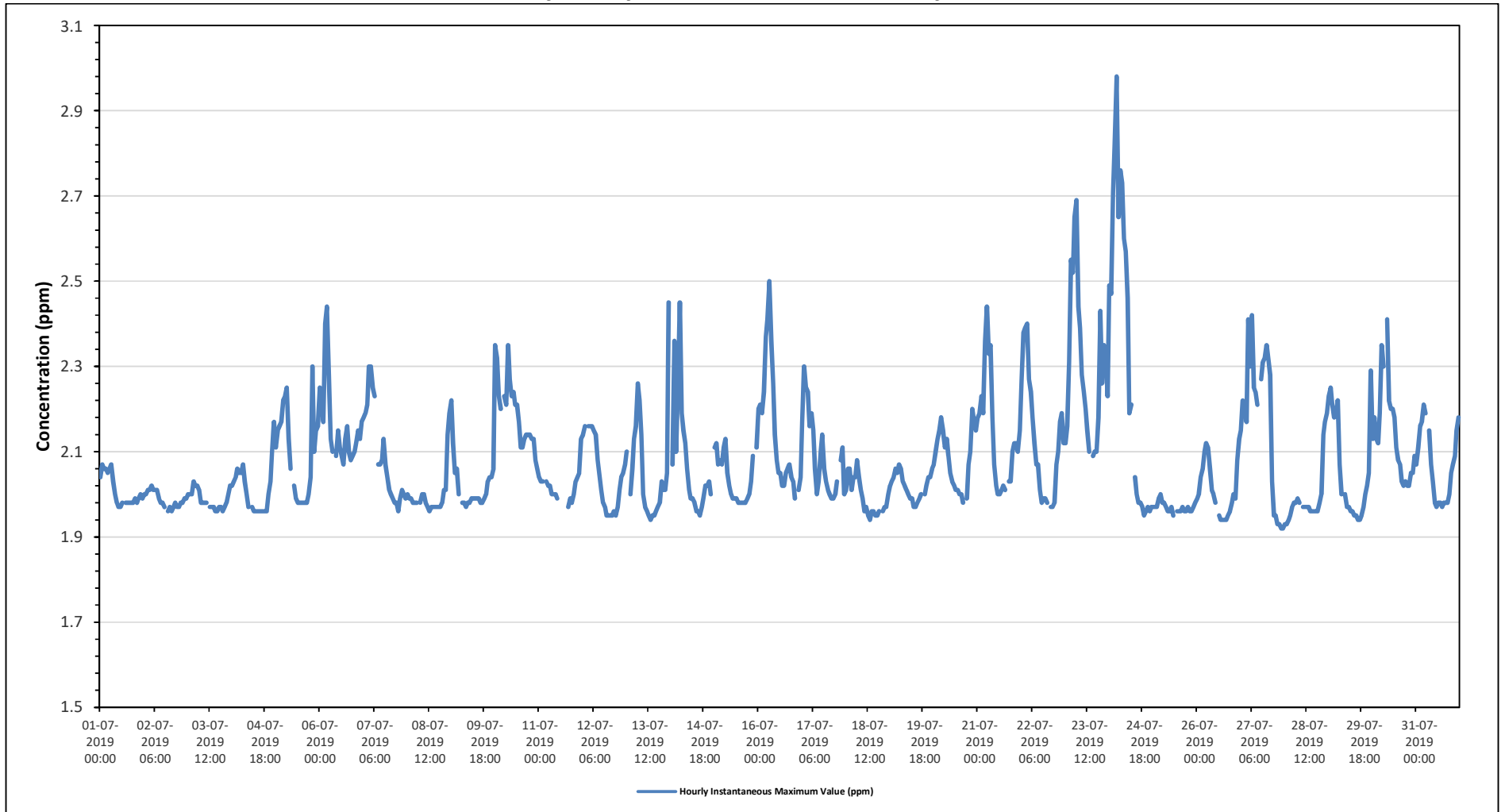
Maximum Hourly Value:	2.98 ppm on July 24 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.32 ppm on July 24	Hours of Data:	707
Minimum Hourly Value:	1.92 ppm on July 27 at hour 22	Hours of Missing Data:	0
Minimum Daily Value:	1.97 ppm on July 25	Hours of Calibration:	37
Monthly Average:	2.08 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.04	2.07	2.06	2.06	2.05	2.06	2.07	2.03	2.00	1.98	1.97	1.97	1.98	S	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.99	2.00	1.99	1.97	2.07	2.01	
Jul 2	2.00	2.00	2.01	2.01	2.02	2.01	2.01	2.01	1.99	1.98	1.98	1.97	S	1.96	1.97	1.96	1.97	1.98	1.97	1.97	1.98	1.98	1.99	1.99	1.96	2.02	1.99	
Jul 3	2.00	2.00	2.00	2.03	2.02	2.02	2.01	1.98	1.98	1.98	1.98	S	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.96	1.97	1.98	2.00	2.02	1.96	2.03	1.99	
Jul 4	2.02	2.03	2.04	2.06	2.05	2.05	2.07	2.03	2.00	1.97	S	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	2.00	2.03	2.10	2.17	1.96	2.17	2.01	
Jul 5	2.11	2.15	2.16	2.17	2.22	2.23	2.25	2.13	2.06	S	2.02	1.99	1.98	1.98	1.98	1.98	1.98	2.00	2.04	2.30	2.10	2.15	2.16	1.98	2.30	2.09		
Jul 6	2.25	2.22	2.17	2.40	2.44	2.28	2.13	2.10	S	2.09	2.15	2.11	2.09	2.07	2.13	2.16	2.10	2.08	2.09	2.10	2.12	2.15	2.13	2.17	2.07	2.44	2.16	
Jul 7	2.18	2.19	2.21	2.30	2.30	2.25	2.23	S	2.07	2.07	2.08	2.13	2.07	2.04	2.01	2.00	1.99	1.98	1.98	1.96	1.99	2.01	2.00	1.99	1.96	2.30	2.09	
Jul 8	2.00	1.99	1.99	1.98	1.98	1.98	S	1.98	2.00	2.00	1.98	1.97	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.98	2.01	2.01	2.14	2.19	1.96	2.19	2.00	
Jul 9	2.22	2.12	2.05	2.06	2.00	S	1.98	1.98	1.97	1.98	1.98	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.99	2.00	2.03	2.04	2.04	2.06	1.97	2.22	2.02	
Jul 10	2.35	2.32	2.23	2.20	S	2.23	2.21	2.35	2.27	2.23	2.24	2.21	2.21	2.17	2.11	2.11	2.13	2.14	2.14	2.14	2.13	2.13	2.08	2.06	2.06	2.35	2.19	
Jul 11	2.04	2.03	2.03	S	2.03	2.02	2.02	2.00	2.00	2.00	1.99	C	C	C	C	C	1.97	1.99	1.98	2.00	2.03	2.04	2.05	2.13	1.97	2.13	2.02	
Jul 12	2.14	2.16	S	2.16	2.16	2.16	2.15	2.14	2.08	2.05	2.01	1.98	1.97	1.95	1.95	1.95	1.95	1.96	1.95	1.97	2.01	2.04	2.05	2.07	1.95	2.16	2.04	
Jul 13	2.10	S	2.00	2.06	2.13	2.16	2.26	2.22	2.14	2.00	1.97	1.96	1.95	1.94	1.95	1.96	1.97	1.98	2.03	2.01	2.01	2.05	2.45	1.94	2.45	2.05		
Jul 14	S	2.07	2.36	2.10	2.25	2.45	2.19	2.15	2.12	2.06	2.01	1.99	1.99	1.98	1.96	1.96	1.95	1.97	1.99	2.02	2.02	2.03	2.00	S	1.95	2.45	2.07	
Jul 15	2.11	2.12	2.07	2.08	2.07	2.11	2.13	2.05	2.02	2.00	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.03	2.09	S	2.11	1.98	2.13	2.04	
Jul 16	2.20	2.21	2.19	2.24	2.37	2.41	2.50	2.36	2.26	2.14	2.08	2.05	2.05	2.02	2.02	2.05	2.06	2.07	2.04	2.03	1.99	S	2.01	2.04	1.99	2.50	2.15	
Jul 17	2.17	2.30	2.25	2.24	2.16	2.19	2.15	2.06	2.00	2.03	2.10	2.14	2.06	2.03	2.01	2.00	1.99	1.99	2.00	2.03	S	2.08	2.11	2.00	1.99	2.30	2.09	
Jul 18	2.01	2.06	2.06	2.01	2.04	2.04	2.08	2.04	2.01	1.99	1.96	1.97	1.95	1.94	1.96	1.96	1.95	1.95	1.96	S	1.96	1.97	1.97	2.00	1.94	2.08	1.99	
Jul 19	2.02	2.03	2.04	2.06	2.05	2.07	2.06	2.03	2.02	2.01	2.00	1.99	1.99	1.97	1.97	1.98	1.99	2.00	S	2.00	2.02	2.04	2.04	2.06	1.97	2.07	2.02	
Jul 20	2.07	2.10	2.13	2.15	2.18	2.15	2.11	2.13	2.09	2.05	2.03	2.02	2.01	2.01	2.00	2.00	1.98	S	1.99	2.07	2.10	2.20	2.17	2.15	1.98	2.20	2.08	
Jul 21	2.18	2.19	2.23	2.19	2.36	2.44	2.33	2.35	2.18	2.07	2.02	2.00	2.01	2.02	2.01	2.02	2.01	S	2.03	2.10	2.12	2.12	2.10	2.15	2.00	2.44	2.14	
Jul 22	2.27	2.38	2.39	2.40	2.27	2.24	2.18	2.12	2.07	2.07	2.01	1.98	1.99	1.99	1.98	S	1.97	1.97	1.98	2.07	2.10	2.17	2.19	2.12	1.97	2.40	2.13	
Jul 23	2.12	2.16	2.31	2.55	2.52	2.65	2.69	2.44	2.39	2.28	2.24	2.20	2.15	2.10	S	2.09	2.10	2.10	2.18	2.43	2.26	2.35	2.34	2.23	2.09	2.69	2.30	
Jul 24	2.49	2.47	2.71	2.82	2.98	2.65	2.76	2.73	2.60	2.57	2.46	2.19	2.21	S	2.04	2.00	1.98	1.98	1.97	1.95	1.96	1.97	1.96	1.97	1.95	2.98	2.32	
Jul 25	1.97	1.97	1.97	1.99	2.00	1.98	1.98	1.97	1.96	1.96	1.97	1.95	S	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.97	1.96	1.96	1.97	1.98	1.95	2.00	1.97
Jul 26	1.99	2.00	2.04	2.06	2.10	2.12	2.11	2.06	2.01	2.00	1.98	S	1.95	1.94	1.94	1.94	1.94	1.95	1.96	1.98	2.00	1.99	2.08	2.13	1.94	2.13	2.01	
Jul 27	2.15	2.22	2.21	2.17	2.41	2.30	2.42	2.25	2.24	2.21	S	2.27	2.31	2.32	2.35	2.32	2.28	2.03	1.95	1.95	1.93	1.92	1.92	1.92	1.92	2.42	2.18	
Jul 28	1.93	1.93	1.94	1.95	1.97	1.98	1.98	1.99	1.98	S	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.98	2.00	2.14	2.17	2.19	1.93	2.19	1.99	
Jul 29	2.23	2.25	2.21	2.18	2.19	2.22	2.07	2.00	S	2.00	1.97	1.97	1.96	1.96	1.95	1.95	1.94	1.94	1.95	1.97	2.00	2.02	2.05	2.29	1.94	2.29	2.06	
Jul 30	2.13	2.18	2.13	2.12	2.19	2.35	2.30	S	2.41	2.22	2.20	2.20	2.18	2.11	2.08	2.07	2.03	2.02	2.03	2.02	2.02	2.05	2.05	2.09	2.02	2.41	2.14	
Jul 31	2.07	2.11	2.16	2.17	2.21	2.19	S	2.15	2.07	2.03	1.98	1.97	1.98	1.98	1.97	1.98	1.98	1.98	2.00	2.05	2.07	2.09	2.15	2.18	1.97	2.21	2.07	
Diurnal Maximum	2.49	2.47	2.71	2.82	2.98	2.65	2.76	2.73	2.60	2.57	2.46	2.27	2.31	2.32	2.35	2.32	2.28	2.14	2.18	2.43	2.30	2.35	2.34	2.45				
Diurnal Average	2.12	2.13	2.15	2.17	2.19	2.20	2.19	2.13	2.10	2.07	2.05	2.04	2.03	2.01	2.00	2.01	2.00	1.99	2.00	2.02	2.04	2.06	2.07	2.10				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

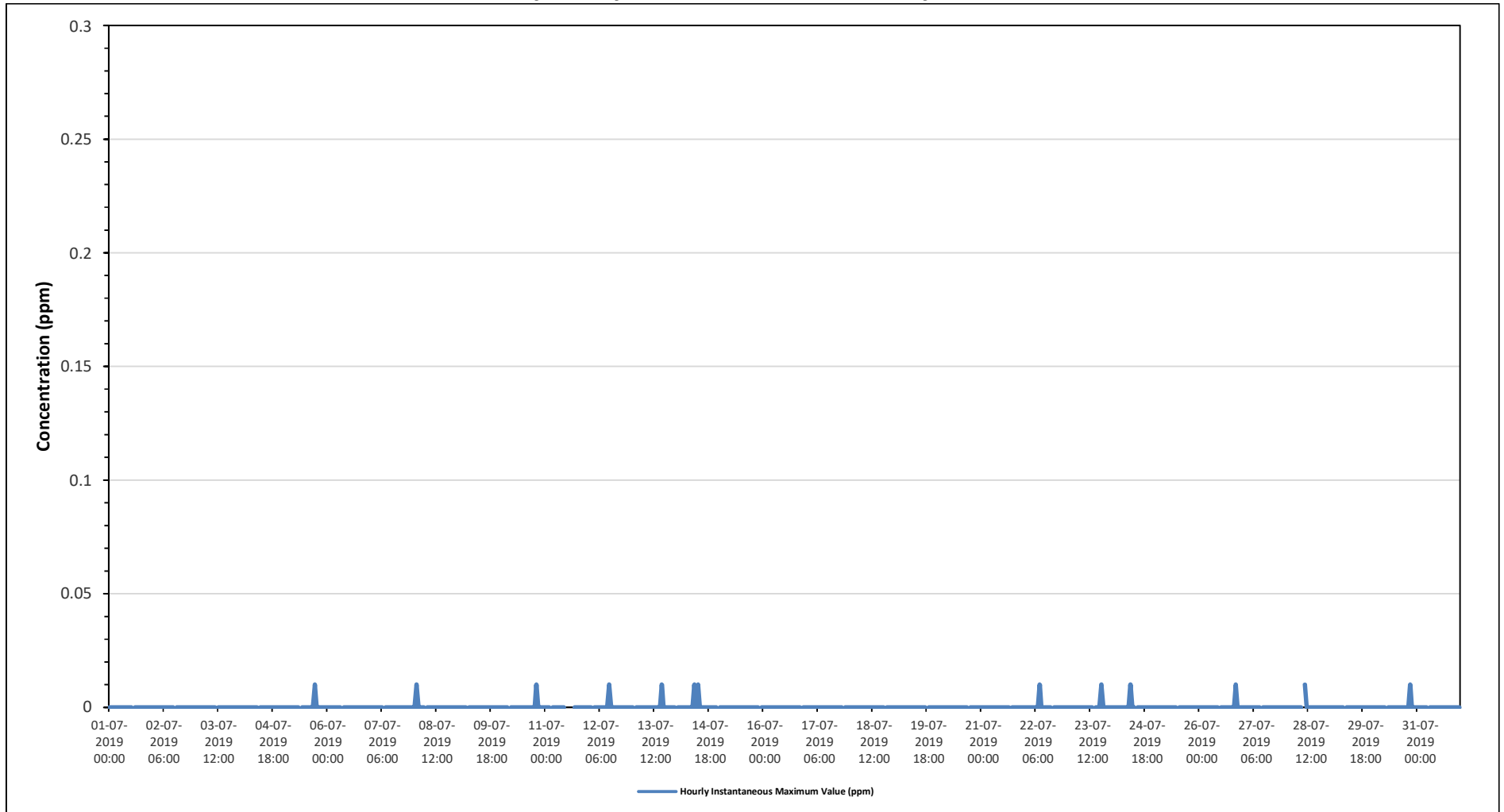
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for CH4 - St. Lina Site**





*Timeseries Chart of Hourly Instantaneous Maximum for NMHC - St. Lina Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### WIND SPEED (WS) in km/h

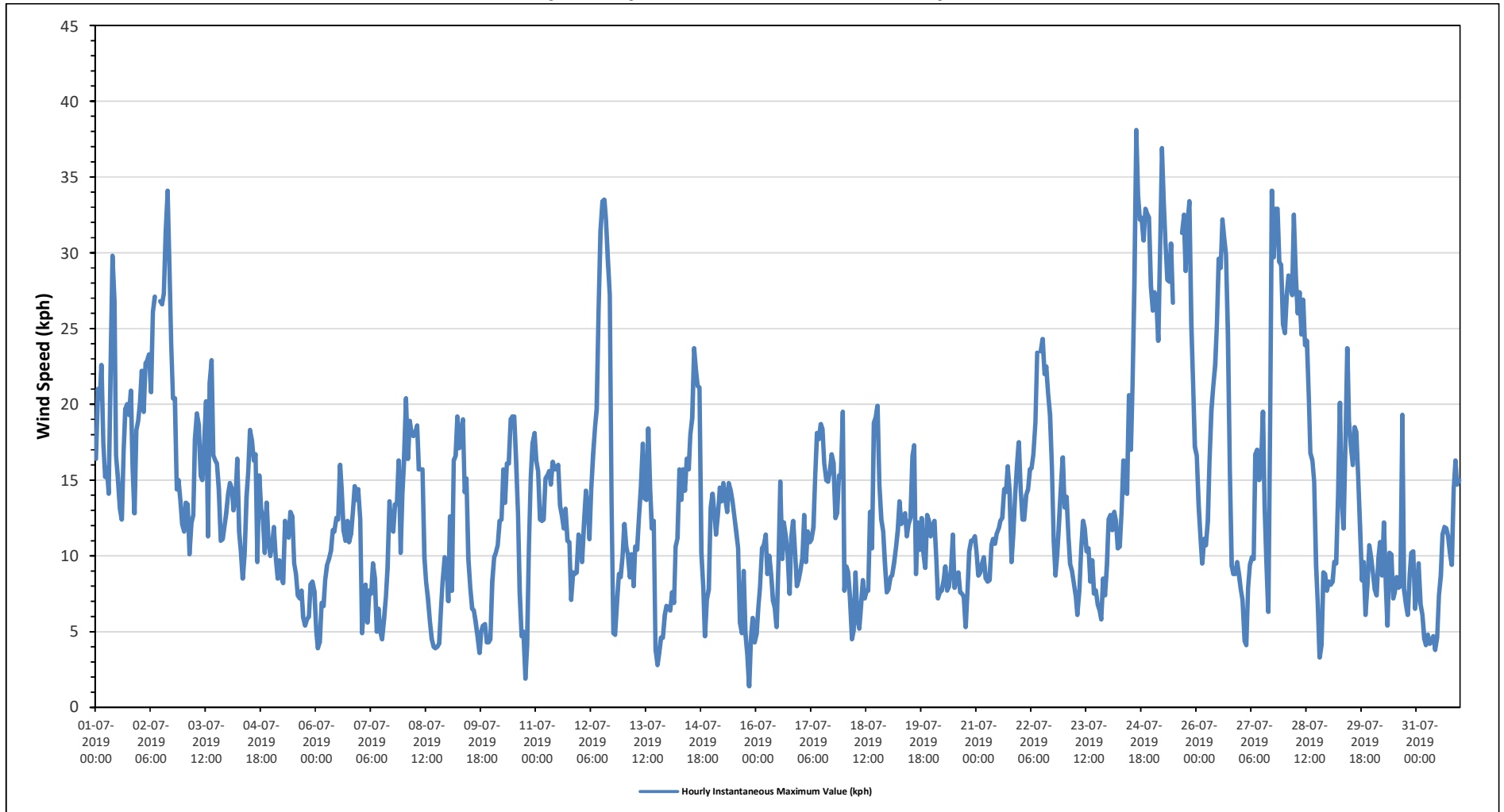
Maximum Hourly Value:	38.1 kph	on July 24 at hour 15	Hours in Service:	744
Maximum Daily Value:	28.6 kph	on July 25	Hours of Data:	737
Minimum Hourly Value:	1.4 kph	on July 15 at hour 20	Hours of Missing Data:	5
Minimum Daily Value:	8.7 kph	on July 31	Hours of Calibration:	2
Monthly Average:	13.5 kph		Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	16.4	21.0	20.4	22.6	17.4	15.2	15.8	14.1	22.2	29.8	26.8	16.6	15.1	13.1	12.4	17.0	19.7	20.0	19.3	20.9	15.8	12.8	18.3	18.9	12.4	29.8	18.4
Jul 2	20.1	22.2	19.5	22.7	22.9	23.3	20.8	26.1	27.1	X	X	26.8	26.6	27.3	31.3	34.1	29.2	24.0	20.4	20.4	14.4	15.0	13.7	12.1	12.1	34.1	22.7
Jul 3	11.6	13.5	13.4	10.1	12.2	12.7	17.7	19.4	18.6	15.3	15.0	17.6	20.2	11.3	21.4	22.9	16.6	16.3	16.1	14.4	11.0	11.1	12.0	12.8	10.1	22.9	15.1
Jul 4	14.1	14.8	14.4	13.0	13.8	16.4	11.6	10.3	8.5	10.1	13.9	15.5	18.3	17.6	16.3	16.7	9.6	15.3	13.1	12.4	10.2	13.5	11.0	10.0	8.5	18.3	13.4
Jul 5	10.7	11.9	9.8	8.5	9.7	8.6	8.2	12.3	11.8	11.2	12.9	12.6	9.5	8.8	7.4	7.2	7.7	5.9	5.4	5.8	6.0	8.1	8.3	7.7	5.4	12.9	9.0
Jul 6	5.0	3.9	4.3	6.9	6.7	8.4	9.4	9.8	10.3	11.7	11.6	12.5	12.4	16.0	14.4	11.6	11.0	12.3	10.9	11.4	12.9	14.6	13.7	14.4	3.9	16.0	10.7
Jul 7	12.4	4.9	6.6	8.1	5.6	7.7	7.5	9.5	8.5	5.0	6.5	5.0	4.5	5.8	7.3	9.2	13.6	11.8	11.6	13.4	13.4	16.3	10.2	14.1	4.5	16.3	9.1
Jul 8	16.4	20.4	16.4	18.9	18.1	17.9	18.1	18.6	15.7	15.7	15.7	9.9	8.3	7.2	5.7	4.5	4.0	3.9	4.0	4.2	6.6	8.3	9.9	9.6	3.9	20.4	11.6
Jul 9	7.0	12.6	7.7	16.3	16.6	19.2	17.1	18.3	19.0	14.2	15.1	9.8	7.9	6.5	6.4	5.6	4.6	3.6	5.0	5.4	5.5	4.3	4.3	4.5	3.6	19.2	9.9
Jul 10	8.3	9.9	10.2	10.7	12.3	12.4	15.7	13.5	16.1	16.1	19.0	19.2	19.2	16.2	12.7	7.6	4.7	5.0	1.9	4.1	10.8	15.2	17.5	18.1	1.9	19.2	12.4
Jul 11	16.3	15.6	12.4	12.3	12.4	15.1	15.3	15.6	14.7	16.2	15.7	15.7	16.0	13.3	12.6	11.8	13.1	11.0	10.9	7.1	8.9	8.8	8.9	11.4	7.1	16.3	13.0
Jul 12	11.0	9.6	12.1	14.3	13.2	11.1	14.4	16.7	18.5	19.7	26.3	31.4	33.4	33.5	32.2	29.5	27.2	13.5	4.9	4.8	7.0	8.8	8.6	9.9	4.8	33.5	17.2
Jul 13	12.1	10.6	10.1	8.6	10.1	8.0	10.6	10.4	12.6	14.5	17.4	13.8	13.7	18.4	14.4	11.8	12.3	3.8	2.8	3.5	4.6	4.6	6.1	6.7	2.8	18.4	10.1
Jul 14	6.5	6.4	7.6	6.9	10.6	11.2	15.7	13.7	15.7	14.3	16.4	15.7	18.0	19.1	23.7	22.3	21.2	21.1	10.2	7.9	4.7	7.1	7.8	13.2	4.7	23.7	13.2
Jul 15	14.1	12.9	11.4	12.8	14.5	13.6	14.8	13.8	12.9	14.8	14.3	13.6	12.5	11.6	10.5	5.6	4.9	9.0	5.0	3.5	1.4	4.7	5.9	4.3	1.4	14.8	10.1
Jul 16	4.8	6.7	7.9	10.5	10.7	11.4	8.8	10.0	8.8	7.0	6.6	5.3	9.7	14.9	9.8	12.2	11.3	10.0	7.5	11.2	12.3	10.3	8.0	8.4	4.8	14.9	9.3
Jul 17	9.0	9.9	12.7	9.6	11.6	10.9	11.1	11.9	15.1	18.1	17.7	18.7	18.4	16.1	15.0	14.9	15.6	16.7	16.1	12.5	12.8	15.3	15.2	19.5	9.0	19.5	14.4
Jul 18	7.7	9.3	8.9	7.2	4.5	5.1	8.9	5.8	5.2	6.7	8.4	7.2	7.7	7.7	12.9	10.5	18.8	19.1	19.9	14.7	12.4	11.6	9.6	7.6	4.5	19.9	9.9
Jul 19	7.8	8.6	8.7	9.5	10.5	11.7	13.6	12.1	12.3	12.8	11.3	12.1	12.5	16.6	17.3	8.8	12.2	10.4	12.5	10.2	9.2	12.7	12.3	11.3	7.8	17.3	11.5
Jul 20	12.0	12.3	9.8	7.2	7.6	7.7	8.4	9.3	7.7	8.0	9.2	11.4	7.9	8.4	8.9	7.6	7.5	7.3	5.3	7.8	10.3	11.0	11.0	11.3	5.3	12.3	9.0
Jul 21	10.3	8.7	8.9	9.5	9.9	8.5	8.3	8.4	10.7	11.1	10.8	11.5	11.8	12.3	12.5	14.4	14.2	15.9	14.2	9.6	11.4	13.9	15.9	17.5	8.3	17.5	11.7
Jul 22	14.4	12.4	12.4	14.0	14.4	15.7	15.8	16.7	18.8	23.4	X	23.5	24.3	22.0	22.5	20.7	19.3	15.8	10.9	8.7	10.1	12.4	14.8	16.5	8.7	24.3	16.5
Jul 23	13.2	13.9	11.3	9.5	9.0	8.2	7.3	6.1	7.7	10.4	12.3	11.8	10.3	10.5	8.3	9.7	7.5	7.7	6.8	6.4	5.8	8.5	7.4	9.4	5.8	13.9	9.1
Jul 24	12.4	12.7	11.7	12.9	12.3	10.5	10.6	12.9	16.3	14.2	14.1	20.6	17.0	21.1	27.9	38.1	33.8	32.2	32.3	30.8	32.9	32.6	32.3	27.8	10.5	38.1	21.7
Jul 25	26.2	27.4	26.8	24.2	30.5	36.9	33.4	30.6	28.2	28.1	30.6	26.7	C	C	Y	Y	31.3	32.5	28.8	31.9	33.4	25.3	21.1	17.2	17.2	36.9	28.6
Jul 26	16.6	13.3	11.1	9.5	11.1	10.7	12.3	16.2	19.6	21.2	22.6	25.2	29.6	29.0	32.2	31.0	29.9	24.7	15.8	9.3	8.8	8.8	9.6	8.7	8.7	32.2	17.8
Jul 27	7.8	7.1	4.4	4.1	7.9	9.4	9.9	9.8	16.7	17.0	15.0	16.0	19.5	13.2	9.5	6.3	19.3	34.1	29.7	32.9	32.9	29.4	29.2	25.3	4.1	34.1	16.9
Jul 28	24.7	27.1	28.5	27.8	27.2	32.5	28.5	26.0	27.4	24.6	26.9	23.9	24.2	20.4	16.8	16.3	14.9	9.4	6.9	3.3	4.1	8.9	8.8	7.7	3.3	32.5	19.5
Jul 29	8.3	8.1	8.3	9.6	9.5	14.0	20.1	13.8	11.8	17.3	23.7	18.9	17.3	16.0	18.5	18.2	15.3	11.9	8.4	9.6	6.1	8.1	10.7	9.9	6.1	23.7	13.1
Jul 30	8.9	7.8	7.4	9.9	10.9	8.7	12.2	8.0	5.4	10.2	10.1	7.2	7.6	8.6	7.9	8.0	19.3	7.8	6.8	6.1	8.8	10.2	10.3	6.5	5.4	19.3	8.9
Jul 31	7.7	9.5	6.8	6.1	4.5	4.1	4.8	4.2	4.4	4.7	3.8	4.6	7.4	8.7	11.4	11.9	11.8	11.3	10.2	9.4	14.4	16.3	14.7	15.0	3.8	16.3	8.7
Diurnal Maximum	26.2	27.4	28.5	27.8	30.5	36.9	33.4	30.6	28.2	29.8	30.6	31.4	33.4	33.5	32.2	38.1	33.8	34.1	32.3	32.9	33.4	32.6	32.3	27.8			
Diurnal Average	12.1	12.4	11.7	12.1	12.5	13.1	13.8	13.7	14.5	14.8	15.5	15.5	15.4	15.0	15.3	14.9	15.5	14.3	12.1	11.4	11.6	12.5	12.5				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for WS - St. Lina Site**

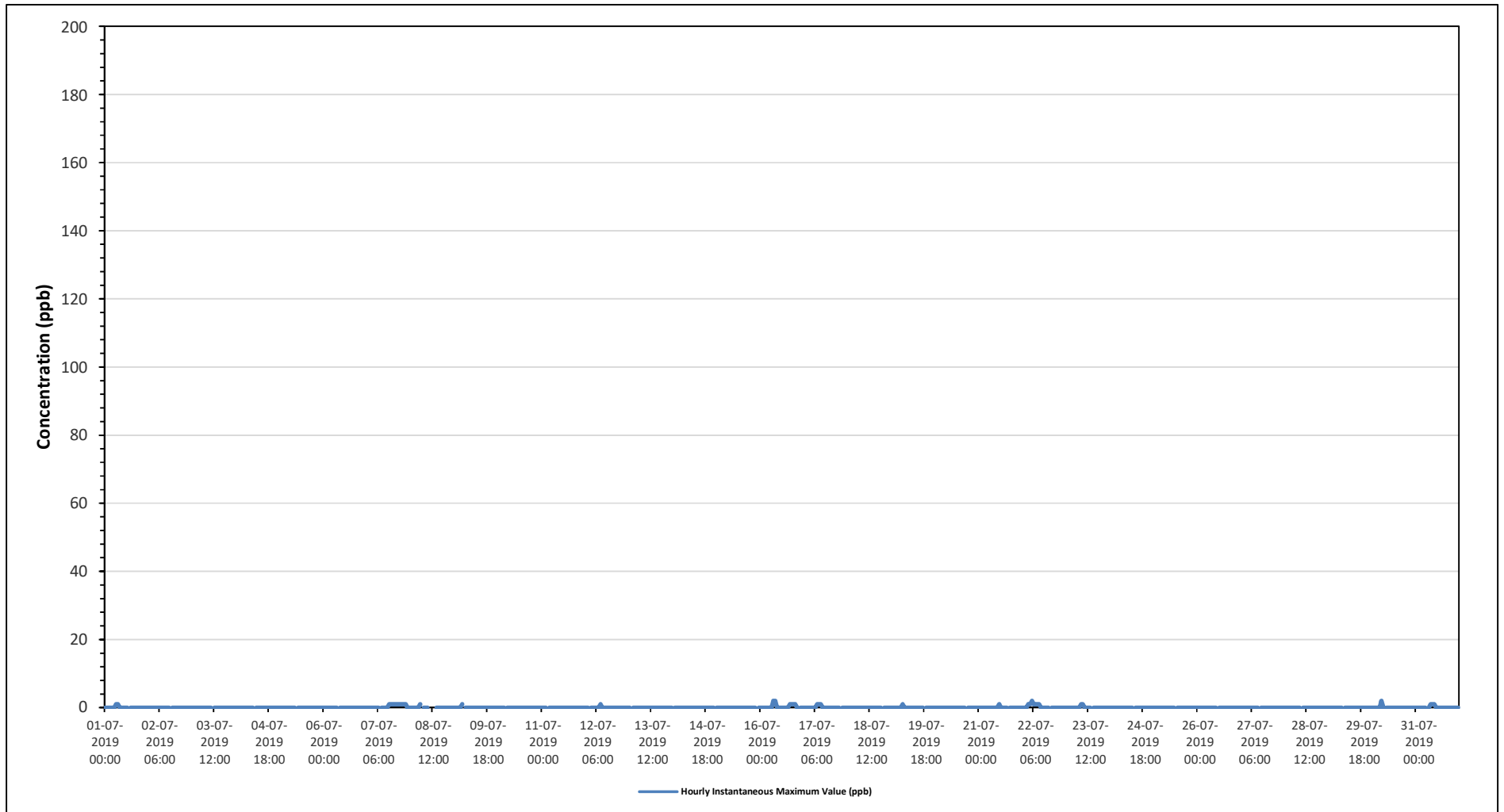


BONNYVILLE -EAST STATION





**Timeseries Chart of Hourly Instantaneous Maximum for SO2 - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Bonnyville - East Site - July 2019 Summary of Hourly Instantaneous Maximums

#### HYDROGEN SULPHIDE (H<sub>2</sub>S) in ppb

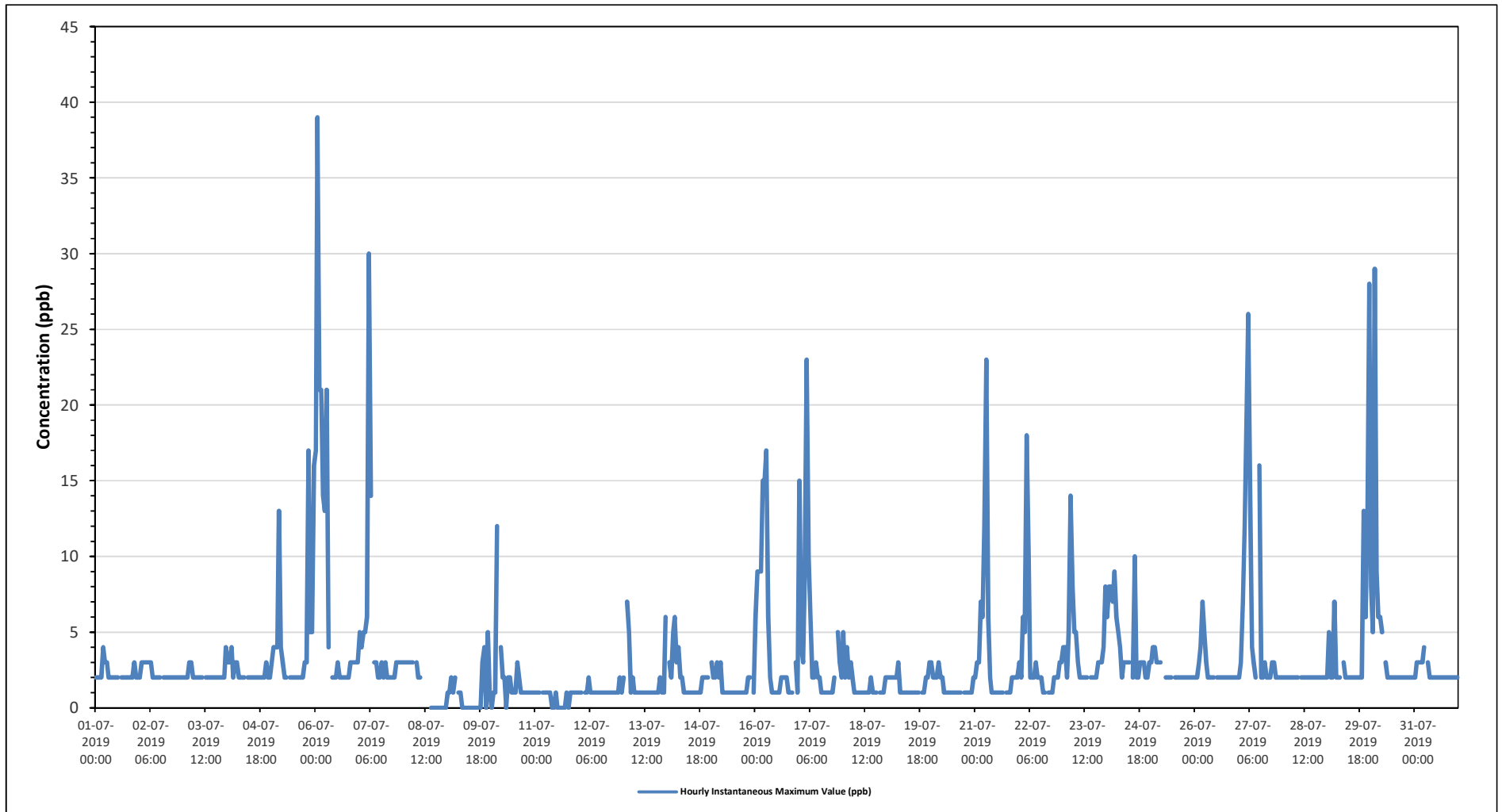
Maximum Hourly Value:	39 ppb on July 6 at hour 1	Hours in Service:	744
Maximum Daily Value:	8.1 ppb on July 6	Hours of Data:	705
Minimum Hourly Value:	0 ppb on July 8 at hour 15	Hours of Missing Data:	2
Minimum Daily Value:	0.7 ppb on July 11	Hours of Calibration:	37
Monthly Average:	2.9 ppb	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	2	2	2	2	4	3	3	2	2	2	2	2	S	2	2	2	2	2	2	2	3	2	2	2	2	4	2.2		
Jul 2	2	3	3	3	3	3	3	2	2	2	2	S	S	2	2	2	2	2	2	2	2	2	2	2	2	3	2.3		
Jul 3	2	2	2	3	3	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	4	2.2		
Jul 4	3	3	4	2	3	3	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	3	2	2	2	4	2.3		
Jul 5	3	4	4	4	13	4	3	2	2	S	2	2	2	2	2	2	2	2	2	3	3	17	5	5	16	2	4.5		
Jul 6	17	39	21	21	14	13	21	4	S	2	2	2	3	2	2	2	2	2	2	3	3	3	3	3	3	2	8.1		
Jul 7	5	4	5	5	6	30	14	S	3	3	2	2	3	2	3	2	2	2	2	2	3	3	3	3	3	2	4.7		
Jul 8	3	3	3	3	3	3	S	3	2	2	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	1.4		
Jul 9	1	1	2	1	2	S	1	1	0	0	0	0	0	0	0	0	0	0	0	3	4	0	5	1	0	1.0			
Jul 10	0	1	1	12	S	4	2	2	0	2	2	1	1	1	3	2	1	1	1	1	1	1	1	1	1	0	1.8		
Jul 11	1	1	1	S	1	1	1	1	1	0	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0.7		
Jul 12	1	1	S	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1.1		
Jul 13	2	S	7	5	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	6	1	7	1.8		
Jul 14	S	3	2	5	6	3	4	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	S	1	2.0		
Jul 15	3	2	2	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	S	1	1	1.5		
Jul 16	6	9	9	9	15	15	17	6	2	1	1	1	1	1	2	2	2	2	2	1	1	1	S	3	1	1	4.7		
Jul 17	15	4	3	9	23	10	6	2	2	3	2	2	1	1	1	1	1	1	1	1	2	S	5	3	2	1	23	4.3	
Jul 18	5	2	4	2	3	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	S	1	1	1	2	1	5	1.6	
Jul 19	2	2	2	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	2	3	1	3	1.5
Jul 20	3	2	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	2	1	3	1.4	
Jul 21	2	3	3	7	6	12	23	6	2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	2	2	1	23	3.6
Jul 22	3	2	6	5	18	10	2	2	2	3	2	2	2	1	1	S	1	1	1	1	2	2	2	3	3	3	1	18	3.3
Jul 23	4	4	2	5	14	8	5	5	3	2	2	2	2	2	S	2	2	2	2	2	3	3	3	3	4	8	2	14	3.9
Jul 24	6	8	8	7	9	6	5	4	2	3	3	3	3	S	2	10	2	2	2	3	3	3	2	2	3	2	10	4.3	
Jul 25	3	4	4	3	3	3	S1	S1	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	2.4
Jul 26	2	2	3	4	7	5	3	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	7	2.5
Jul 27	2	3	7	12	19	26	14	4	3	2	S	16	2	2	3	2	2	2	2	2	3	3	2	2	2	2	2	26	5.9
Jul 28	2	2	2	2	2	2	2	2	S	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.0
Jul 29	2	5	2	2	7	2	2	2	S	3	2	2	2	2	2	2	2	2	2	2	2	2	13	6	13	28	2	28	4.7
Jul 30	8	5	29	9	6	6	5	S	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	29	4.4
Jul 31	2	3	3	3	3	4	S	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	2.3	
Diurnal Maximum	17	39	29	21	23	30	23	6	3	3	3	16	3	2	3	10	2	2	2	3	3	17	6	13	28				
Diurnal Average	3.7	4.3	4.9	5.1	6.7	6.4	5.3	2.4	1.8	1.7	1.6	2.1	1.6	1.4	1.6	1.8	1.5	1.5	1.5	1.8	2.8	2.2	2.6	3.6					

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for H2S - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Bonnyville - East Site - July 2019 Summary of Hourly Instantaneous Maximums

#### OXIDES OF NITROGEN (NOx) in ppb

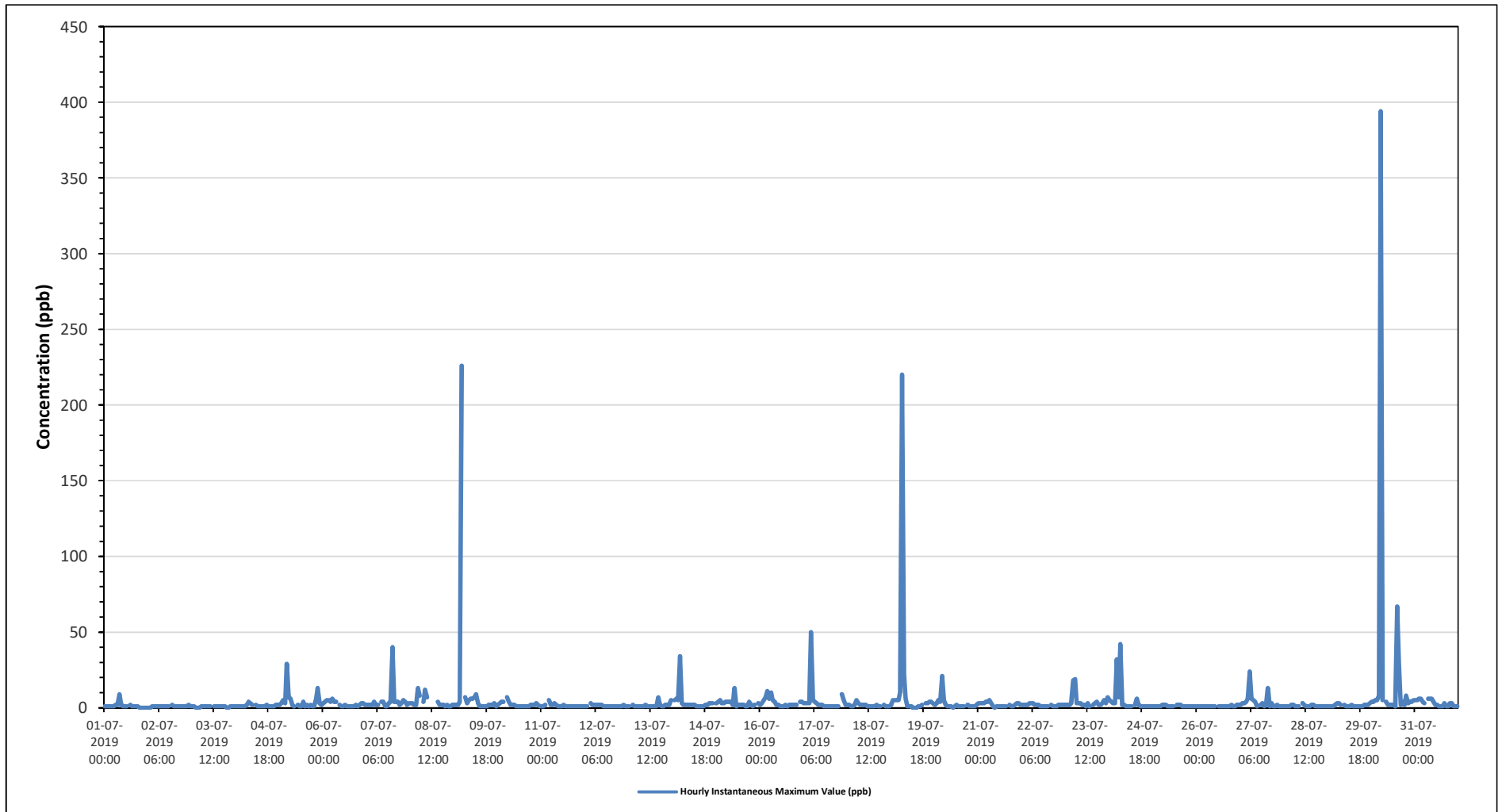
Maximum Hourly Value:	394 ppb	on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	24.6 ppb	on July 30	Hours of Data:	707
Minimum Hourly Value:	0 ppb	on July 1 at hour 19	Hours of Missing Data:	0
Minimum Daily Value:	0.8 ppb	on July 3	Hours of Calibration:	37
Monthly Average:	3.9 ppb		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	1	1	2	2	9	2	1	1	1	S	2	1	1	1	1	0	0	0	0	0	0	0	9	1.3
Jul 2	0	0	1	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	2	1	1	0	2	1.0
Jul 3	1	1	0	0	0	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0.8
Jul 4	1	1	1	1	1	1	2	4	3	2	S	2	1	1	1	1	1	2	1	1	1	1	2	2	1	4	1.5	
Jul 5	2	3	5	3	29	7	6	2	1	S	2	1	1	4	1	2	1	2	1	1	6	13	3	2	1	29	4.3	
Jul 6	3	4	5	5	4	6	4	4	S	2	1	1	2	1	1	1	1	2	1	2	1	2	3	3	2	1	6	2.6
Jul 7	2	2	2	2	4	2	2	S	4	4	1	1	3	4	40	4	4	4	2	3	5	4	2	3	1	40	4.5	
Jul 8	3	3	2	2	13	8	S	4	12	7	C	C	C	C	C	4	2	2	2	1	2	1	1	2	1	13	3.9	
Jul 9	2	2	2	4	226	S	7	3	5	6	6	7	9	3	1	1	1	1	1	2	2	2	3	1	1	226	12.9	
Jul 10	2	3	4	4	S	7	4	2	2	2	1	1	1	1	1	1	1	1	2	2	2	3	2	1	1	7	2.2	
Jul 11	1	1	2	S	5	2	2	3	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	5	1.5	
Jul 12	1	1	S	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	3	1.4	
Jul 13	1	S	2	1	1	1	1	1	1	2	1	1	1	1	1	1	7	2	1	1	2	2	2	5	1	7	1.7	
Jul 14	S	5	6	5	34	3	2	2	2	2	2	2	2	1	1	1	1	1	1	2	3	3	3	S	1	34	3.9	
Jul 15	3	4	5	3	3	4	4	4	4	2	13	1	2	2	2	2	1	1	4	2	1	2	S	3	1	13	3.1	
Jul 16	2	3	5	7	11	6	10	5	4	2	2	1	1	1	1	2	1	2	2	2	2	S	4	4	1	11	3.5	
Jul 17	3	3	3	3	50	5	4	3	2	2	2	1	1	1	1	1	1	1	1	1	S	S	9	5	2	1	50	4.6
Jul 18	2	2	1	1	2	5	3	2	2	2	2	1	1	1	1	1	2	1	1	S	2	1	1	1	1	5	1.7	
Jul 19	2	5	5	5	5	10	220	22	6	1	1	1	0	0	0	1	1	2	S	3	3	4	4	3	0	220	13.2	
Jul 20	2	3	5	4	21	5	2	1	1	0	1	2	1	1	1	1	1	1	S	2	1	1	1	2	0	21	2.6	
Jul 21	3	3	3	3	4	4	5	3	1	0	1	1	1	1	1	1	S	2	1	1	2	3	3	2	0	5	2.1	
Jul 22	2	2	2	2	3	3	3	2	2	2	1	1	1	1	1	S	2	1	1	1	2	2	2	2	1	3	1.8	
Jul 23	2	2	2	3	18	19	3	3	3	2	2	1	3	1	S	2	3	4	2	2	3	5	3	7	1	19	4.1	
Jul 24	5	4	3	3	32	7	42	2	2	1	1	1	1	S	2	6	2	1	1	1	1	1	1	1	1	42	5.3	
Jul 25	1	1	1	1	1	2	2	2	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	1	2	1.3	
Jul 26	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1	1	2	2	1	2	1.1	
Jul 27	2	3	3	4	6	24	6	5	4	1	S	2	3	1	2	13	1	3	1	1	2	1	1	1	1	24	3.9	
Jul 28	1	1	1	1	2	2	1	1	1	S	3	2	1	1	1	2	2	1	1	1	1	1	1	1	1	3	1.3	
Jul 29	1	1	1	1	2	3	3	2	S	2	1	1	1	2	1	1	1	1	1	1	2	2	2	3	1	3	1.6	
Jul 30	4	4	5	5	8	394	5	S	4	2	2	2	2	2	1	67	29	2	4	2	8	3	4	4	5	1	394	24.6
Jul 31	5	5	6	6	4	3	S	6	6	6	4	2	2	1	1	1	3	1	1	3	3	1	1	1	1	6	3.1	
Diurnal Maximum	5	5	6	7	226	394	220	22	12	7	13	7	9	4	67	29	7	4	4	8	6	13	5	7				
Diurnal Average	2.0	2.5	2.8	2.8	16.5	18.0	12.1	3.3	3.1	2.1	2.0	1.4	1.7	1.4	4.8	2.9	1.7	1.6	1.4	1.6	1.9	2.5	2.1	2.1				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NOx - Bonnyville - East Site**





# LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

## Summary of Hourly Instantaneous Maximums

### NITRIC OXIDE (NO) in ppb

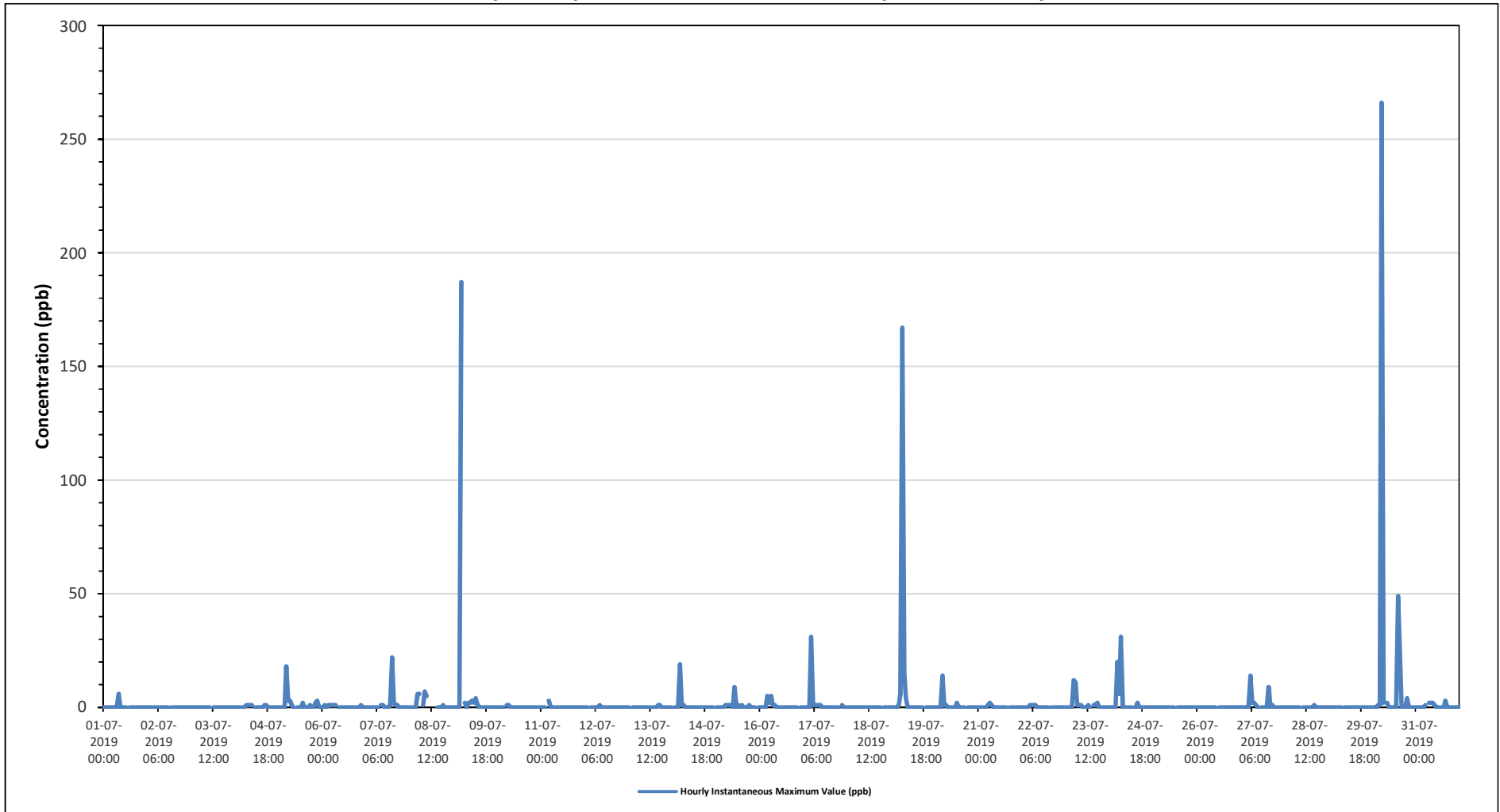
Maximum Hourly Value:	266 ppb on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	15.2 ppb on July 30	Hours of Data:	707
Minimum Hourly Value:	0 ppb on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.0 ppb on July 2	Hours of Calibration:	37
Monthly Average:	1.6 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Jul 1	0	0	0	0	0	0	0	0	6	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.3
Jul 2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Jul 4	0	0	0	0	0	0	1	1	1	1	S	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0.3	
Jul 5	0	0	0	0	18	3	3	1	0	S	0	0	0	2	0	0	0	1	0	0	2	3	0	0	0	0	18	1.4	
Jul 6	0	1	0	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0.3	
Jul 7	0	0	0	0	0	0	0	S	1	1	0	0	0	1	22	2	1	1	0	0	0	0	0	0	0	0	22	1.3	
Jul 8	0	0	0	0	6	6	S	1	7	5	C	C	C	C	C	0	0	0	1	0	0	0	0	0	0	0	7	1.4	
Jul 9	0	0	0	0	187	S	2	0	2	2	3	2	4	1	0	0	0	0	0	0	0	0	0	0	0	0	187	8.8	
Jul 10	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Jul 11	0	0	0	S	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.1	
Jul 12	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	
Jul 13	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0.1	
Jul 14	S	0	0	0	19	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	19	1.0
Jul 15	0	0	0	0	0	1	1	1	1	0	9	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	9	0.7	
Jul 16	0	0	0	0	5	2	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.6	
Jul 17	0	0	0	0	31	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	1.6	
Jul 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	1	0	0	0	0	0.0	
Jul 19	0	0	0	0	1	6	167	15	4	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	167	8.4	
Jul 20	0	0	0	0	14	1	1	0	0	0	0	2	0	0	0	0	0	0	0	S	0	0	0	0	0	0	14	0.8	
Jul 21	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	2	0.2	
Jul 22	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0.2	
Jul 23	0	0	0	0	12	11	1	1	1	0	0	0	1	0	S	1	1	2	0	0	0	0	0	0	0	0	12	1.3	
Jul 24	0	0	0	0	20	6	31	0	0	0	0	0	0	S	0	2	0	0	0	0	0	0	0	0	0	0	31	2.6	
Jul 25	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 26	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 27	0	0	0	0	0	14	2	2	1	0	S	0	0	0	0	9	0	1	0	0	0	0	0	0	0	0	14	1.3	
Jul 28	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0.0	
Jul 29	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Jul 30	0	0	0	1	1	266	2	S	2	0	0	0	0	0	0	49	25	0	0	0	4	0	0	0	0	0	266	15.2	
Jul 31	0	0	0	0	0	1	S	2	2	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0.5	
Diurnal Maximum	0	1	0	1	187	266	167	15	7	5	9	2	4	2	49	25	3	2	1	4	2	3	0	0	0	0	0	0	
Diurnal Average	0.0	0.0	0.0	0.1	10.6	10.8	7.7	1.0	1.1	0.4	0.5	0.1	0.3	0.1	2.5	1.3	0.3	0.2	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for NO - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Bonnyville - East Site - July 2019 Summary of Hourly Instantaneous Maximums

#### NITROGEN DIOXIDE (NO<sub>2</sub>) in ppb

Maximum Hourly Value:	136 ppb	on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	9.7 ppb	on July 30	Hours of Data:	707
Minimum Hourly Value:	0 ppb	on July 1 at hour 17	Hours of Missing Data:	0
Minimum Daily Value:	0.7 ppb	on July 3	Hours of Calibration:	37
Monthly Average:	2.4 ppb		Operational Uptime:	100.0

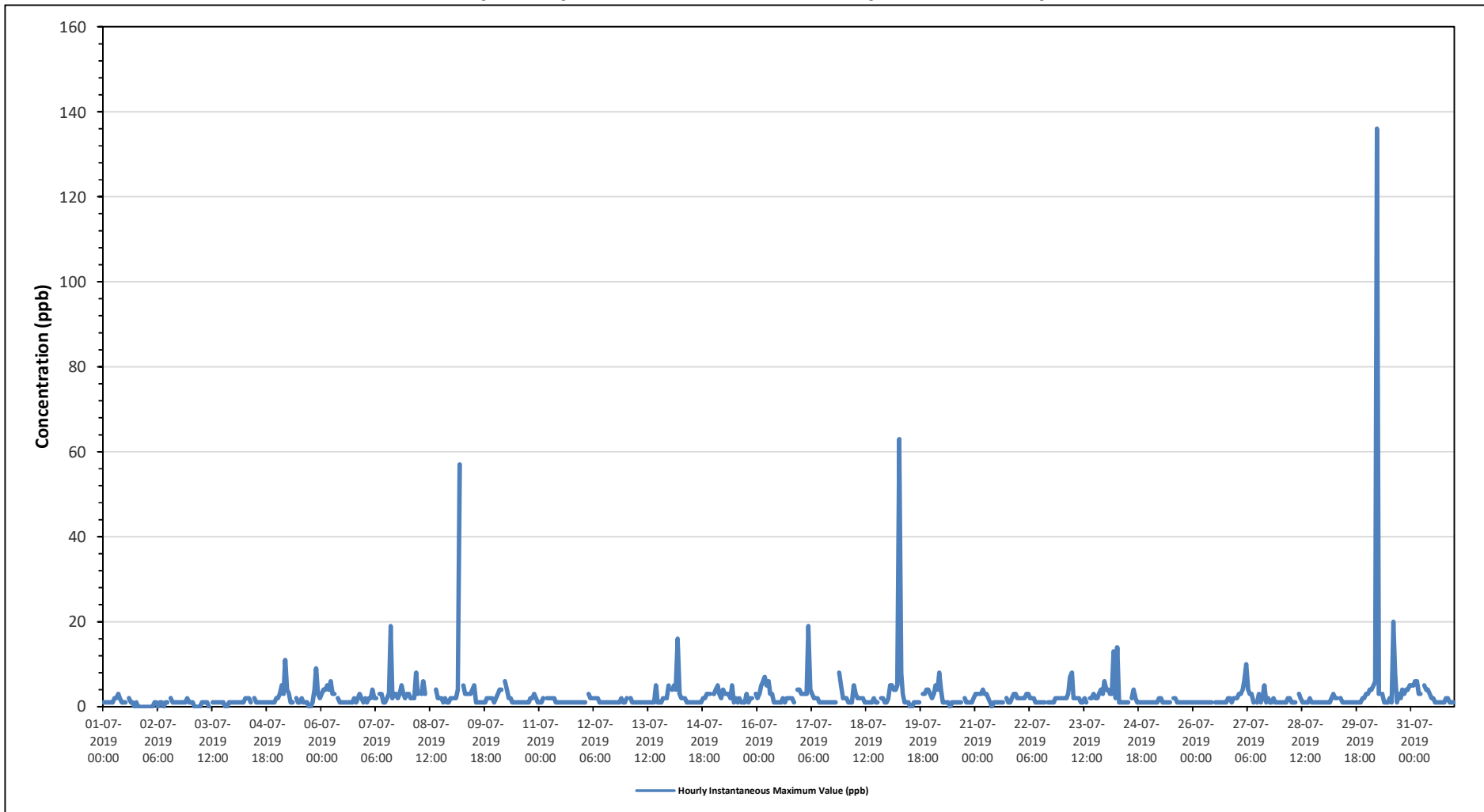
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	1	1	1	1	1	1	2	2	3	2	1	1	1	S	2	1	1	0	1	0	0	0	0	0	0	0	3	1.0
Jul 2	0	0	0	0	1	0	1	1	1	0	1	1	S	2	1	1	1	1	1	1	1	1	2	1	1	0	2	0.8
Jul 3	1	1	0	0	0	0	1	1	1	1	0	S	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0.7
Jul 4	1	1	1	1	1	1	2	2	2	2	1	S	2	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1.2
Jul 5	2	3	5	3	11	4	3	1	1	S	2	1	1	2	1	1	1	0	0	1	4	9	3	2	0	11	2.7	
Jul 6	3	4	4	5	4	6	3	3	S	2	1	1	1	1	1	1	1	2	1	2	3	2	1	1	1	6	2.3	
Jul 7	2	1	2	2	4	2	2	S	3	3	1	1	2	3	19	2	3	3	2	3	5	3	2	3	1	19	3.2	
Jul 8	3	2	2	2	8	3	S	3	6	3	C	C	C	C	C	4	2	2	2	1	2	1	1	2	1	8	2.7	
Jul 9	2	2	2	4	57	S	5	3	3	3	3	4	5	1	1	1	1	1	1	2	2	2	2	1	1	57	4.7	
Jul 10	2	3	4	4	S	6	4	2	2	1	1	1	1	1	1	1	1	1	1	2	2	3	2	1	1	6	2.0	
Jul 11	1	1	2	S	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.3	
Jul 12	1	1	S	3	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	3	1.3	
Jul 13	2	S	2	1	1	1	1	1	1	1	1	1	1	1	1	5	1	1	1	1	2	2	2	5	1	5	1.6	
Jul 14	S	4	5	4	16	3	2	2	2	1	1	1	1	1	1	1	1	1	2	2	3	3	3	S	1	16	2.7	
Jul 15	3	4	5	3	2	4	3	3	3	2	5	1	2	1	2	1	1	1	3	1	2	2	S	3	1	5	2.5	
Jul 16	2	3	5	6	7	5	6	3	3	1	1	1	1	2	1	2	2	2	2	2	1	S	4	4	1	7	2.8	
Jul 17	3	3	3	3	19	4	3	2	2	2	1	1	1	1	1	1	1	1	2	1	S	S	5	2	1	19	3.0	
Jul 18	2	2	1	1	1	5	3	2	2	2	2	1	1	1	1	1	2	1	1	S	2	2	1	1	1	5	1.7	
Jul 19	2	5	5	4	4	5	63	8	3	1	1	1	0	0	1	1	1	1	S	3	3	4	4	3	0	63	5.3	
Jul 20	2	3	5	4	8	4	1	1	1	0	1	1	1	1	1	1	1	S	2	1	1	1	1	2	0	8	1.9	
Jul 21	3	3	3	3	4	3	3	2	1	0	1	1	1	1	1	1	S	2	1	1	2	3	3	2	0	4	2.0	
Jul 22	2	2	2	2	3	3	2	2	2	1	1	1	1	1	1	S	1	1	1	1	2	2	2	2	1	3	1.7	
Jul 23	2	2	2	3	7	8	2	2	2	2	1	1	2	1	S	2	2	3	2	2	3	4	3	6	1	8	2.8	
Jul 24	4	4	3	3	13	2	14	1	1	1	1	1	S	2	4	2	1	1	1	1	1	1	1	1	1	14	2.8	
Jul 25	1	1	1	1	1	2	2	1	1	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	2	1.2	
Jul 26	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	2	1	2	2	1	2	1.2	
Jul 27	2	3	3	4	6	10	4	3	3	1	S	1	3	1	2	5	1	2	1	1	2	1	1	1	1	10	2.7	
Jul 28	1	1	1	1	2	2	1	1	1	S	3	2	1	1	1	1	2	1	1	1	1	1	1	1	1	3	1.3	
Jul 29	1	1	1	1	2	3	2	2	S	2	1	1	1	1	1	1	1	1	1	1	1	2	2	3	1	3	1.4	
Jul 30	3	4	4	5	6	136	3	S	3	1	1	1	2	1	20	8	1	3	2	4	3	4	4	5	1	136	9.7	
Jul 31	5	5	6	6	3	3	S	5	4	4	3	2	1	1	1	1	1	1	1	2	2	1	1	1	1	6	2.7	
Diurnal Maximum	5	5	6	6	57	136	63	8	6	4	5	4	5	3	20	8	5	3	3	4	5	9	5	6	1			
Diurnal Average	2.0	2.4	2.7	2.7	6.6	7.7	4.9	2.2	2.1	1.5	1.4	1.2	1.4	1.1	2.5	1.6	1.4	1.3	1.3	1.4	1.8	2.3	2.0	2.0				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



**Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

### Summary of Hourly Instantaneous Maximums

OZONE (O<sub>3</sub>) in ppb

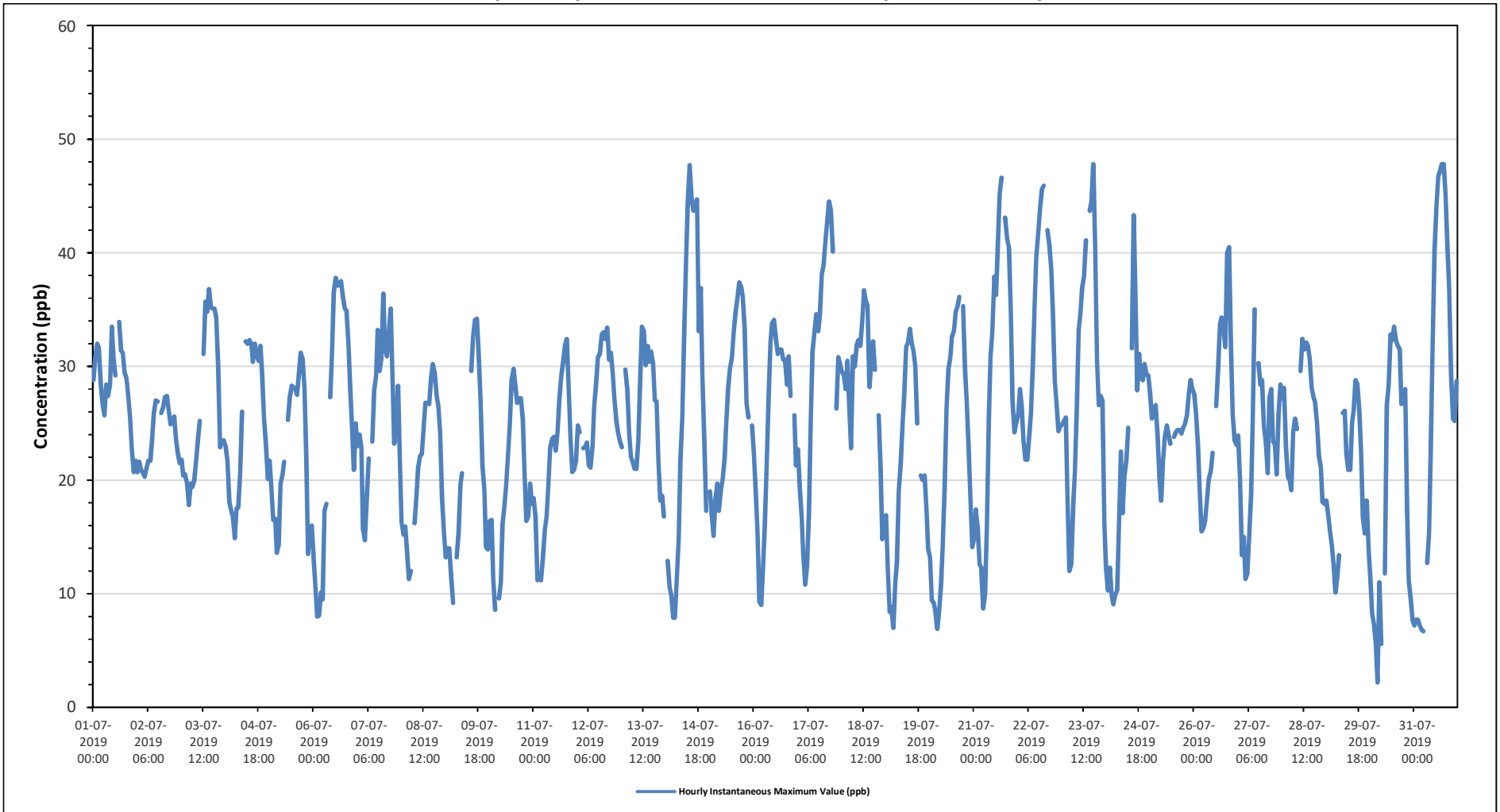
Maximum Hourly Value:	47.8 ppb on July 23 at hour 17	Hours in Service:	744
Maximum Daily Value:	32.2 ppb on July 22	Hours of Data:	708
Minimum Hourly Value:	2.2 ppb on July 30 at hour 4	Hours of Missing Data:	0
Minimum Daily Value:	19.1 ppb on July 30	Hours of Calibration:	36
Monthly Average:	24.9 ppb	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	28.8	30.8	32	31.6	28.4	26.6	25.7	28.4	27.4	28.4	33.5	30.7	29.2	S	33.9	31.4	31.2	29.5	28.9	27.3	25.4	22.6	20.7	21.7	20.7	33.9	28.4
Jul 2	20.7	21.6	20.9	20.6	20.3	21.1	21.7	21.7	23.8	25.9	27	26.9	S	25.9	26.4	27.3	27.4	26.3	24.9	25.3	25.6	23.7	22.4	21.5	20.3	27.4	23.9
Jul 3	21.8	20.4	20.5	19.7	17.8	19.7	19.4	20	21.8	23.7	25.2	S	31.1	35.7	34.8	36.8	35.2	35.1	35.1	34.3	30	22.9	23.5	23.5	17.8	36.8	26.4
Jul 4	23	21.7	18.1	17.4	16.8	14.9	17.5	17.6	20.6	26	S	32.2	32	32.3	32	30.4	32	31	30.5	31.8	29.3	25.4	23.1	20.1	14.9	32.3	25.0
Jul 5	21.7	19.3	16.5	16.6	13.6	14.3	19.7	20.5	21.6	S	25.3	27.3	28.3	28.2	28	27.5	29.4	31.2	30.7	28.2	21.9	13.5	15.5	16	13.5	31.2	22.4
Jul 6	13	10.7	8	8.1	10.1	9.5	17.3	17.9	S	27.3	30.9	36.5	37.8	37.1	37.2	37.5	36.1	35.1	34.9	32.1	27.9	24.3	20.9	25	8.0	37.8	25.0
Jul 7	23	24	22.9	15.6	14.7	18.5	21.9	S	23.4	27.9	29.2	33.2	29.6	30.7	36.4	31.6	30.9	33	35.1	29.5	23.2	25	28.3	21.4	14.7	36.4	26.5
Jul 8	16.3	15.2	15.9	13.5	11.3	12	S	16.2	18.3	21.1	22.1	22.3	24.6	26.8	26.8	26.7	29	30.2	29.5	27.5	26.5	24.2	18.4	15.4	11.3	30.2	21.3
Jul 9	13.2	14	14	11.5	9.2	S	13.2	15.3	19.6	20.6	C	C	C	C	29.6	32.7	34.1	34.2	31.1	27.1	21.3	19.2	14.1	13.9	9.2	34.2	20.4
Jul 10	16.4	16.5	11.3	8.6	S	9.6	11	16.1	17.7	19.6	22.5	24.8	28.9	29.8	28.2	26.8	27.2	27.2	25.3	20.7	16.4	16.8	19.7	17.9	8.6	29.8	20.0
Jul 11	18.4	16.7	11.2	S	11.2	13.2	15.6	16.8	19.6	22.9	23.6	23.8	22.6	24.2	27.2	29.2	30.3	31.8	32.4	28	23.7	20.7	20.9	21.7	11.2	32.4	22.0
Jul 12	24.8	24.2	S	22.8	22.9	23.3	21.3	21.1	23	26.4	28.4	30.8	31.1	32.8	33	32.4	33.4	30.6	31.2	29.5	27.1	25.2	24.2	23.4	21.1	33.4	27.1
Jul 13	22.9	S	29.7	28	24.1	22	21.6	21	21	23.5	28.9	33.5	33.1	30.1	31.8	30.4	31.3	30.3	27	26.9	21.7	18.2	18.6	16.8	16.8	33.5	25.8
Jul 14	S	12.9	10.6	9.8	7.9	7.9	11.6	14.9	21.7	25.5	32.9	39.4	44.4	47.7	44.8	43.7	44.1	44.7	33.1	36.9	29.3	23.6	17.3	S	7.9	47.7	27.5
Jul 15	19	17.1	15.1	18.3	19.7	17.3	19.1	20.1	21.9	25	28.1	29.9	30.7	32.9	34.7	36	37.4	37	36.1	33.3	26.7	25.5	S	24.8	15.1	37.4	26.3
Jul 16	22.2	18.8	15.4	9.3	9	12.4	15.9	21.2	27.1	32.1	33.8	34.1	32.4	31.1	31.5	31.5	30.6	30.6	28.4	30.9	27.4	S	25.7	21.3	9.0	34.1	24.9
Jul 17	22.7	19.3	16.7	13.4	10.8	12.4	17.2	25.7	31.3	33	34.6	33.1	34.6	38.1	38.9	41.2	42.7	44.5	43.7	40.1	S	26.3	30.8	30.2	10.8	44.5	29.6
Jul 18	29.5	29.3	28	30.5	26.4	22.8	30.9	30	31.9	32.3	31.8	33.9	36.7	35.8	35.3	28.2	30.5	32.2	29.7	S	25.7	21	14.8	16.2	14.8	36.7	28.8
Jul 19	16.9	12	8.4	8.8	7	10.9	12.7	19.1	21.4	25	27.5	31.7	32.1	33.3	32.2	31.3	30	25	S	20.4	20	20.4	17.4	14	7.0	33.3	20.8
Jul 20	13.2	9.4	9.2	8.4	6.9	8.5	10.9	14.3	19.4	26.4	29.8	30.8	32.6	33.1	34.8	35.3	36.1	S	35.3	29.8	27.1	23	18.4	14.1	6.9	36.1	22.0
Jul 21	14.8	17.4	15.8	12.6	12.3	8.7	10	16.2	25.5	30.9	33	37.9	36.3	40.5	45.2	46.6	S	43.1	41.3	40.5	34.7	27	24.2	25	8.7	46.6	27.8
Jul 22	25.8	28	26.5	23.4	21.8	21.8	23.7	25.8	30.1	35.7	39.6	41.8	43.9	45.6	45.9	S	42	40.7	38.6	34.7	28.7	26.7	24.3	24.7	21.8	45.9	32.2
Jul 23	24.9	25.2	25.5	18.3	12	12.6	17.8	20.7	26.2	33.2	34.7	36.9	37.9	41.1	S	43.7	44.5	47.8	40.4	30.6	26.6	27.4	27	16.2	12.0	47.8	29.2
Jul 24	12.3	10.3	12.3	9.8	9.1	9.9	10.3	16.5	21.1	20.3	21.7	24.6	S	31.6	43.3	35.8	27.9	31.1	29	28.8	30.2	29.3	29.2	9.1	43.3	22.3	
Jul 25	27.5	25.4	25.7	26.6	23.9	20	18.2	21.7	23.8	17.8	24.1	23.2	S	23.8	24.2	24.4	24.1	24.6	24.9	25.7	27.5	28.8	28	18.2	28.8	24.6	
Jul 26	27.6	25.8	23	19.2	15.5	15.8	16.5	18.3	20.1	20.8	22.4	S	26.5	29.7	33.7	34.3	33.2	31.7	40	40.5	32.4	25.8	23.5	23.1	15.5	40.5	26.1
Jul 27	23.9	20	13.4	15	11.3	11.8	15.1	18.7	25.3	35	S	30.3	28.4	28.8	24.7	23.4	20.6	27.2	28	23.4	23.1	20.5	25.8	28.4	11.3	35.0	22.7
Jul 28	27.2	28.1	23	20.3	20	19.1	24.2	25.4	24.5	S	29.6	32.4	31.5	32.1	31.8	30.7	28.1	27.3	26.8	25	22.1	21.1	18.1	17.9	17.9	32.4	25.5
Jul 29	18.2	16.9	15.5	14.3	12.6	10.1	11.5	13.4	S	25.9	26.1	22.3	20.9	20.9	25.1	26.1	28.8	28.4	26	22.7	16.7	15.3	18.2	13.9	10.1	28.8	19.6
Jul 30	11.5	8.2	7.3	5.6	2.2	11	5.6	S	11.8	26.6	28.4	32.8	32.3	33.5	32.3	31.8	31.5	26.7	27.5	28	17.3	11.1	9.6	7.7	2.2	33.5	19.1
Jul 31	7.2	7.7	7.7	7.2	6.8	6.7	S	12.7	15.4	22.8	32	40.2	44.1	46.7	47.2	47.8	47.8	45	40.9	36.8	29.3	25.4	25.2	28.7	6.7	47.8	27.4
Diurnal Maximum	30	31	32	32	28	27	31	30	32	36	40	42	44	48	47	48	48	48	44	41	35	30	31	30			
Diurnal Average	20.3	18.9	17.3	16.2	14.5	14.8	17.1	19.6	22.7	26.4	28.8	31.2	32.1	33.2	33.3	33.3	33.2	33.0	32.3	29.9	25.4	22.7	21.6	20.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for O3 - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Bonnyville - East Site - July 2019 Summary of Hourly Instantaneous Maximums

#### TOTAL HYDROCARBONS (THC) in ppm

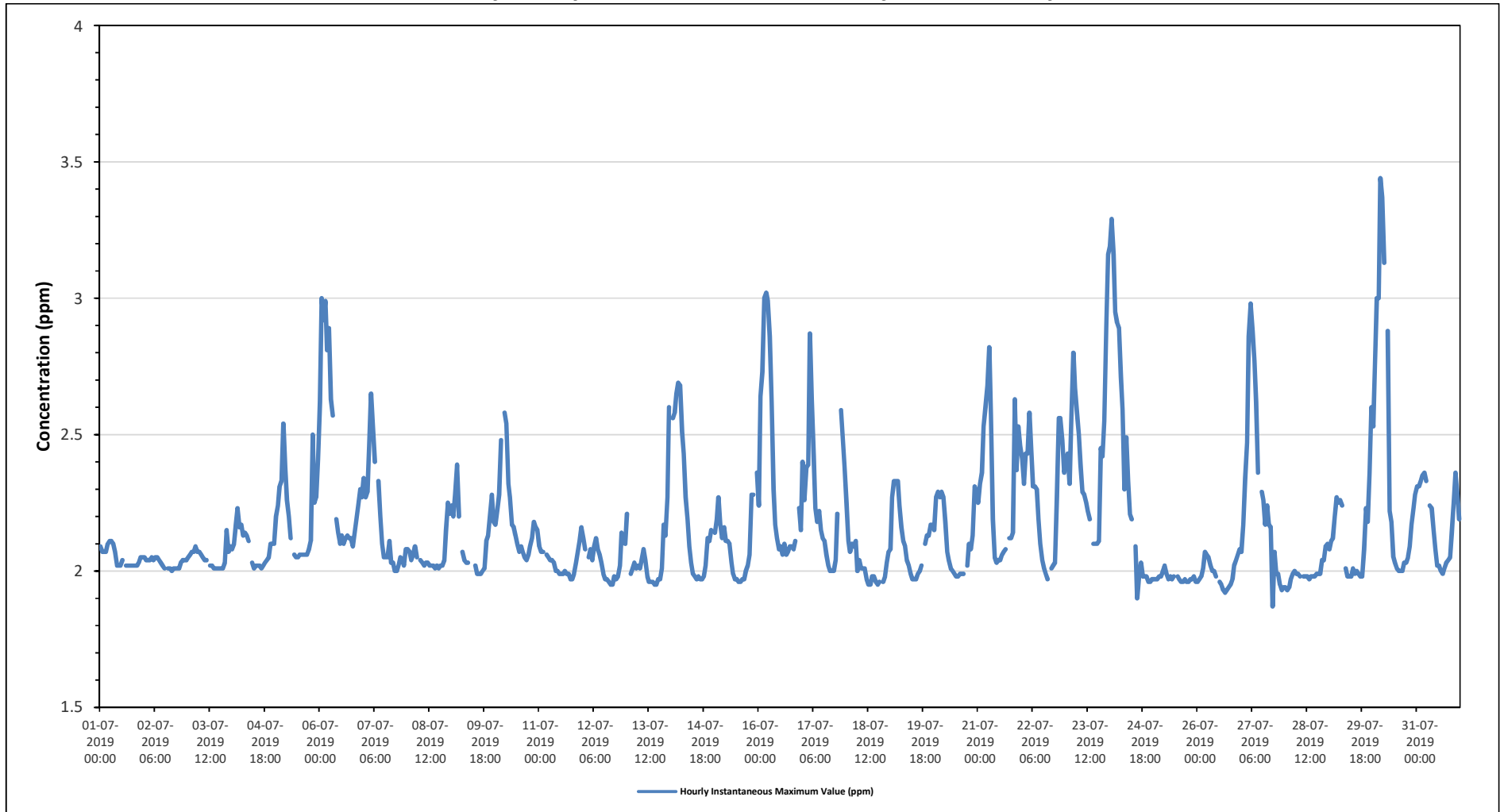
Maximum Hourly Value:	3.44 ppm on July 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.43 ppm on July 23	Hours of Data:	709
Minimum Hourly Value:	1.87 ppm on July 27 at hour 17	Hours of Missing Data:	0
Minimum Daily Value:	1.97 ppm on July 25	Hours of Calibration:	35
Monthly Average:	2.16 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.09	2.07	2.07	2.07	2.10	2.11	2.11	2.10	2.07	2.02	2.02	2.02	2.04	S	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.03	2.05	2.05	2.02	2.11	2.05	
Jul 2	2.05	2.04	2.04	2.04	2.05	2.04	2.05	2.05	2.04	2.03	2.02	2.01	S	2.01	2.01	2.00	2.01	2.01	2.01	2.01	2.01	2.03	2.04	2.04	2.04	2.00	2.05	2.03
Jul 3	2.05	2.06	2.07	2.07	2.09	2.07	2.07	2.06	2.05	2.04	2.04	S	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.03	2.15	2.07	2.09	2.01	2.15	2.05	
Jul 4	2.08	2.10	2.17	2.23	2.16	2.17	2.13	2.14	2.13	2.11	S	2.03	2.01	2.02	2.02	2.02	2.01	2.02	2.03	2.04	2.05	2.10	2.10	2.10	2.01	2.23	2.09	
Jul 5	2.20	2.24	2.31	2.33	2.54	2.38	2.26	2.20	2.12	S	2.06	2.05	2.05	2.06	2.06	2.06	2.06	2.06	2.08	2.11	2.50	2.25	2.27	2.41	2.05	2.54	2.20	
Jul 6	2.62	3.00	2.92	2.99	2.81	2.89	2.63	2.57	S	2.19	2.14	2.10	2.13	2.10	2.12	2.13	2.12	2.09	2.14	2.19	2.24	2.30	2.27	2.09	3.00	2.38		
Jul 7	2.34	2.27	2.29	2.46	2.65	2.53	2.40	S	2.33	2.20	2.10	2.05	2.05	2.05	2.11	2.03	2.03	2.00	2.00	2.02	2.05	2.04	2.02	2.08	2.00	2.65	2.18	
Jul 8	2.08	2.07	2.04	2.06	2.09	2.05	S	2.04	2.03	2.02	2.03	2.03	2.02	2.02	2.02	2.01	2.02	2.01	2.02	2.02	2.04	2.15	2.25	2.21	2.01	2.25	2.06	
Jul 9	2.24	2.20	2.28	2.39	2.20	S	2.07	2.04	2.03	2.03	C	C	C	2.02	1.99	1.99	1.99	2.00	2.01	2.11	2.13	2.20	2.28	2.18	1.99	2.39	2.12	
Jul 10	2.17	2.22	2.28	2.48	S	2.58	2.54	2.32	2.27	2.17	2.16	2.13	2.10	2.07	2.09	2.07	2.05	2.04	2.06	2.09	2.12	2.18	2.16	2.15	2.04	2.58	2.20	
Jul 11	2.09	2.07	2.07	S	2.06	2.05	2.04	2.04	2.03	2.00	2.00	1.99	1.99	1.99	2.00	1.99	1.99	1.97	1.97	1.99	2.03	2.07	2.11	2.16	1.97	2.16	2.03	
Jul 12	2.12	2.08	S	2.05	2.08	2.04	2.09	2.12	2.08	2.06	2.03	1.99	1.97	1.97	1.96	1.95	1.95	1.98	1.97	1.98	2.02	2.14	2.11	2.10	1.95	2.14	2.04	
Jul 13	2.21	S	1.99	2.01	2.03	2.01	2.02	2.01	2.04	2.08	2.04	1.98	1.96	1.96	1.95	1.95	1.97	1.97	2.01	2.17	2.13	2.27	2.60	1.95	2.60	2.06		
Jul 14	S	2.56	2.58	2.65	2.69	2.68	2.51	2.43	2.27	2.19	2.09	2.03	1.99	1.98	1.97	1.98	1.97	1.98	2.02	2.12	2.11	2.15	S	1.97	2.69	2.22		
Jul 15	2.14	2.19	2.27	2.17	2.12	2.16	2.11	2.11	2.10	2.03	1.99	1.97	1.97	1.96	1.96	1.97	1.97	2.00	2.02	2.06	2.28	2.28	S	2.36	1.96	2.36	2.10	
Jul 16	2.24	2.64	2.73	3.00	3.02	2.99	2.86	2.62	2.30	2.17	2.12	2.08	2.09	2.06	2.10	2.06	2.07	2.09	2.09	2.08	2.11	S	2.23	2.15	2.06	3.02	2.34	
Jul 17	2.40	2.26	2.38	2.39	2.87	2.63	2.42	2.23	2.18	2.22	2.15	2.12	2.11	2.06	2.02	2.00	2.00	2.04	2.21	S	2.59	2.47	2.38	2.00	2.87	2.27		
Jul 18	2.25	2.11	2.07	2.10	2.09	2.11	2.00	2.04	2.01	2.01	2.01	1.97	1.95	1.95	1.98	1.98	1.96	1.95	1.96	S	1.96	1.98	2.03	2.07	1.95	2.25	2.02	
Jul 19	2.08	2.27	2.33	2.33	2.33	2.24	2.16	2.11	2.09	2.04	2.02	1.99	1.97	1.97	1.97	1.99	2.00	2.02	S	2.10	2.13	2.13	2.17	2.17	1.97	2.33	2.11	
Jul 20	2.15	2.27	2.29	2.27	2.29	2.27	2.18	2.07	2.04	2.01	2.00	1.99	1.98	1.98	1.99	1.99	1.99	S	2.02	2.10	2.08	2.13	2.31	2.29	1.98	2.31	2.12	
Jul 21	2.25	2.32	2.36	2.53	2.60	2.68	2.82	2.57	2.19	2.05	2.03	2.04	2.04	2.06	2.07	2.08	S	2.12	2.12	2.14	2.63	2.37	2.53	2.46	2.03	2.82	2.31	
Jul 22	2.41	2.32	2.43	2.43	2.58	2.44	2.31	2.31	2.30	2.19	2.10	2.04	2.01	1.99	1.97	S	2.01	2.02	2.03	2.27	2.56	2.56	2.48	2.36	1.97	2.58	2.27	
Jul 23	2.40	2.43	2.32	2.58	2.80	2.67	2.58	2.50	2.39	2.29	2.28	2.25	2.22	2.19	S	2.10	2.10	2.10	2.11	2.45	2.42	2.55	2.90	3.16	2.10	3.16	2.43	
Jul 24	3.19	3.29	3.16	2.95	2.91	2.89	2.71	2.59	2.30	2.49	2.33	2.21	2.19	S	2.09	1.90	1.98	2.03	1.98	1.98	1.98	1.96	1.96	1.97	1.90	3.29	2.39	
Jul 25	1.97	1.97	1.97	1.98	1.98	2.00	2.02	1.99	1.97	1.98	1.97	1.98	S	1.98	1.97	1.96	1.96	1.97	1.96	1.96	1.97	1.97	1.98	1.96	1.96	2.02	1.97	
Jul 26	1.96	1.97	1.98	2.01	2.07	2.06	2.05	2.02	2.00	2.00	1.98	S	1.96	1.95	1.93	1.92	1.93	1.94	1.95	1.97	2.02	2.04	2.06	2.08	1.92	2.08	1.99	
Jul 27	2.07	2.17	2.34	2.47	2.86	2.98	2.88	2.77	2.62	2.36	S	2.29	2.26	2.17	2.24	2.17	2.16	1.87	2.07	1.99	1.99	1.95	1.93	1.94	1.87	2.98	2.28	
Jul 28	1.94	1.93	1.94	1.97	1.99	2.00	1.99	1.99	1.98	S	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.98	1.99	1.99	1.99	2.04	2.09	2.10	1.93	2.10	1.99	
Jul 29	2.08	2.11	2.12	2.20	2.27	2.25	2.26	2.24	S	2.01	1.98	1.98	1.98	2.01	1.99	2.00	1.99	1.98	1.98	2.08	2.23	2.18	2.36	2.60	1.98	2.60	2.13	
Jul 30	2.53	2.75	3.00	3.00	3.44	3.37	3.13	S	2.88	2.22	2.18	2.05	2.03	2.01	2.00	2.00	2.00	2.03	2.03	2.05	2.09	2.17	2.23	2.28	2.00	3.44	2.41	
Jul 31	2.31	2.31	2.33	2.35	2.36	2.33	S	2.24	2.23	2.15	2.08	2.02	2.02	2.00	1.99	2.01	2.03	2.04	2.05	2.14	2.25	2.36	2.29	2.19	1.99	2.36	2.18	
Diurnal Maximum	3.19	3.29	3.16	3.00	3.44	3.37	3.13	2.77	2.88	2.49	2.33	2.29	2.26	2.19	2.24	2.17	2.16	2.12	2.12	2.45	2.63	2.59	2.90	3.16				
Diurnal Average	2.22	2.28	2.30	2.35	2.40	2.39	2.32	2.22	2.17	2.12	2.07	2.05	2.04	2.02	2.02	2.01	2.01	2.01	2.02	2.07	2.14	2.17	2.21	2.23				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for THC - Bonnyville - East Site**





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

### Bonnyville - East Site - July 2019 Summary of Hourly Instantaneous Maximums

#### METHANE (CH4) in ppm

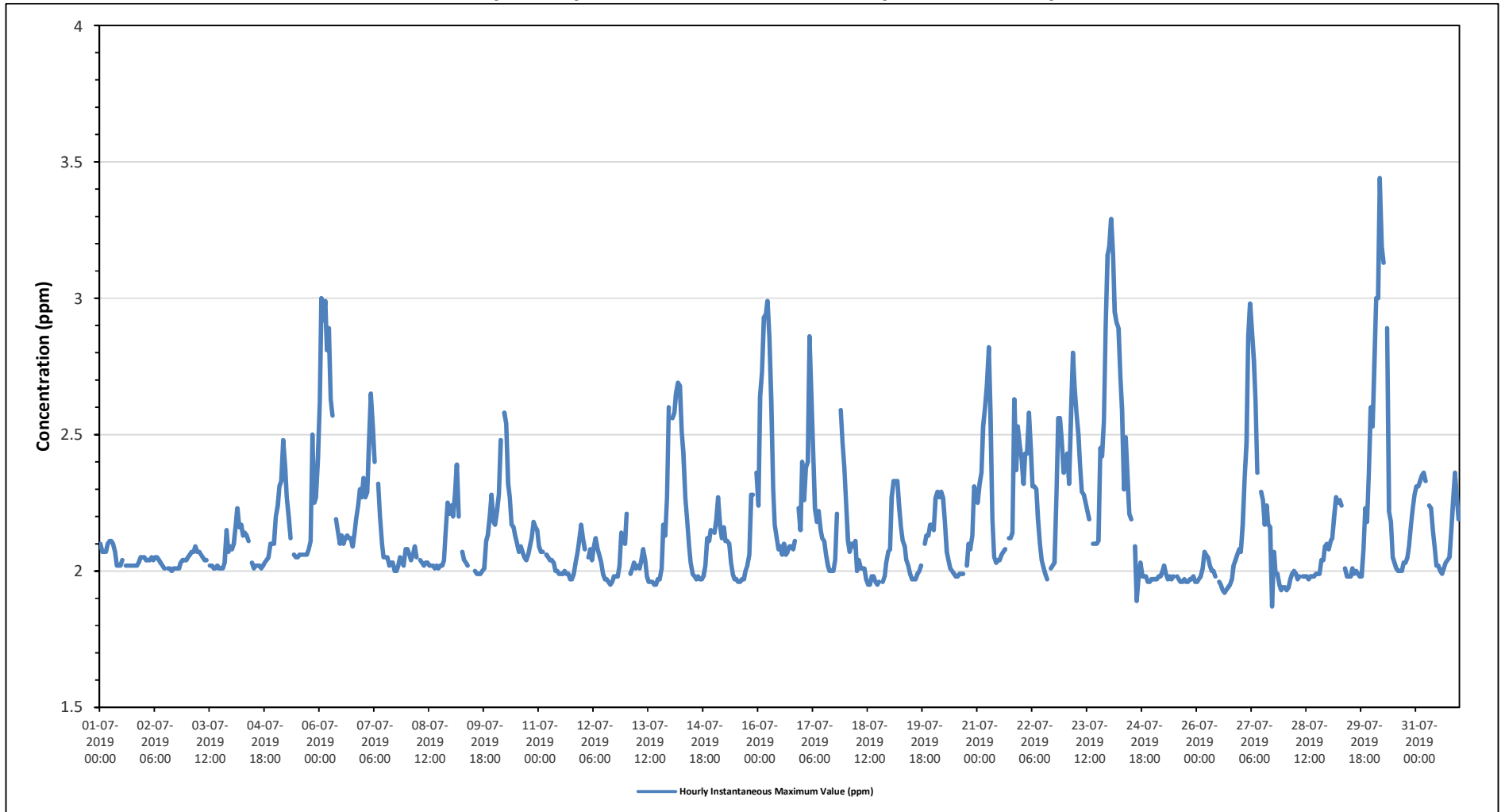
Maximum Hourly Value:	3.44 ppm on July 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	2.43 ppm on July 23	Hours of Data:	709
Minimum Hourly Value:	1.87 ppm on July 27 at hour 17	Hours of Missing Data:	0
Minimum Daily Value:	1.97 ppm on July 25	Hours of Calibration:	35
Monthly Average:	2.16 ppm	Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	2.10	2.07	2.07	2.07	2.10	2.11	2.11	2.10	2.07	2.02	2.02	2.02	2.04	S	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.03	2.05	2.05	2.02	2.11	2.05	
Jul 2	2.05	2.04	2.04	2.04	2.05	2.04	2.05	2.05	2.04	2.03	2.02	2.01	S	2.01	2.01	2.00	2.01	2.01	2.01	2.01	2.01	2.03	2.04	2.04	2.04	2.00	2.05	2.03
Jul 3	2.05	2.06	2.07	2.07	2.09	2.07	2.07	2.06	2.05	2.04	2.04	S	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.03	2.15	2.07	2.09	2.01	2.15	2.05	
Jul 4	2.08	2.10	2.17	2.23	2.16	2.17	2.13	2.14	2.13	2.11	S	2.03	2.01	2.02	2.02	2.02	2.01	2.02	2.03	2.04	2.05	2.10	2.10	2.10	2.01	2.23	2.09	
Jul 5	2.20	2.24	2.31	2.33	2.48	2.38	2.27	2.20	2.12	S	2.06	2.05	2.05	2.06	2.06	2.06	2.06	2.08	2.11	2.50	2.25	2.27	2.41	2.05	2.50	2.20		
Jul 6	2.62	3.00	2.92	2.99	2.81	2.89	2.63	2.57	S	2.19	2.14	2.10	2.13	2.10	2.12	2.13	2.12	2.09	2.14	2.19	2.24	2.30	2.27	2.09	3.00	2.38		
Jul 7	2.34	2.27	2.29	2.46	2.65	2.53	2.40	S	2.32	2.20	2.10	2.05	2.05	2.05	2.02	2.03	2.03	2.00	2.00	2.02	2.05	2.04	2.02	2.08	2.00	2.65	2.17	
Jul 8	2.08	2.06	2.04	2.06	2.09	2.05	S	2.04	2.03	2.02	2.03	2.03	2.02	2.02	2.02	2.01	2.02	2.01	2.02	2.02	2.04	2.15	2.25	2.21	2.01	2.25	2.06	
Jul 9	2.24	2.20	2.28	2.39	2.20	S	2.07	2.04	2.03	2.02	C	C	C	2.00	1.99	1.99	1.99	2.00	2.01	2.11	2.13	2.20	2.28	2.18	1.99	2.39	2.12	
Jul 10	2.17	2.22	2.28	2.48	S	2.58	2.54	2.32	2.27	2.17	2.16	2.13	2.10	2.07	2.09	2.07	2.05	2.04	2.06	2.09	2.12	2.18	2.16	2.15	2.04	2.58	2.20	
Jul 11	2.09	2.07	2.07	S	2.06	2.05	2.04	2.04	2.03	2.00	2.00	1.99	1.99	1.99	2.00	1.99	1.99	1.97	1.97	1.99	2.03	2.07	2.11	2.17	1.97	2.17	2.03	
Jul 12	2.12	2.08	S	2.05	2.08	2.04	2.09	2.12	2.08	2.06	2.03	1.99	1.97	1.97	1.96	1.95	1.96	1.98	1.98	1.98	2.02	2.14	2.11	2.10	1.95	2.14	2.04	
Jul 13	2.21	S	1.99	2.01	2.03	2.01	2.02	2.01	2.04	2.08	2.04	1.98	1.96	1.96	1.95	1.95	1.97	1.97	2.01	2.17	2.13	2.27	2.60	1.95	2.60	2.06		
Jul 14	S	2.56	2.58	2.65	2.69	2.68	2.51	2.43	2.27	2.19	2.09	2.03	1.99	1.98	1.97	1.98	1.97	1.97	1.98	2.02	2.12	2.11	2.15	S	1.97	2.69	2.22	
Jul 15	2.14	2.19	2.27	2.17	2.12	2.16	2.11	2.11	2.10	2.03	1.99	1.97	1.97	1.96	1.96	1.97	1.97	2.00	2.02	2.06	2.28	2.28	S	2.36	1.96	2.36	2.10	
Jul 16	2.24	2.64	2.73	2.93	2.94	2.99	2.86	2.62	2.30	2.17	2.12	2.08	2.09	2.06	2.10	2.06	2.07	2.09	2.09	2.08	2.11	S	2.23	2.15	2.06	2.99	2.34	
Jul 17	2.40	2.26	2.38	2.40	2.86	2.63	2.42	2.23	2.18	2.22	2.15	2.12	2.11	2.06	2.02	2.00	2.00	2.04	2.21	S	2.59	2.47	2.38	2.00	2.86	2.27		
Jul 18	2.25	2.11	2.07	2.10	2.09	2.11	2.00	2.04	2.01	2.01	2.01	1.97	1.95	1.95	1.98	1.98	1.96	1.95	1.96	S	1.96	1.98	2.03	2.07	1.95	2.25	2.02	
Jul 19	2.08	2.27	2.33	2.33	2.33	2.24	2.16	2.11	2.09	2.04	2.02	1.99	1.97	1.97	1.97	1.99	2.00	2.02	S	2.10	2.13	2.13	2.17	2.17	1.97	2.33	2.11	
Jul 20	2.15	2.27	2.29	2.27	2.29	2.27	2.18	2.07	2.04	2.01	2.00	1.99	1.98	1.98	1.99	1.99	1.99	S	2.02	2.10	2.08	2.13	2.31	2.29	1.98	2.31	2.12	
Jul 21	2.25	2.32	2.36	2.53	2.60	2.68	2.82	2.57	2.19	2.05	2.03	2.04	2.04	2.06	2.07	2.08	S	2.12	2.12	2.14	2.63	2.37	2.53	2.46	2.03	2.82	2.31	
Jul 22	2.41	2.32	2.43	2.43	2.58	2.44	2.31	2.31	2.30	2.19	2.10	2.04	2.01	1.99	1.97	S	2.01	2.02	2.03	2.27	2.56	2.56	2.48	2.36	1.97	2.58	2.27	
Jul 23	2.40	2.43	2.32	2.57	2.80	2.67	2.58	2.50	2.39	2.29	2.28	2.25	2.22	2.19	S	2.10	2.10	2.11	2.45	2.42	2.55	2.90	3.16	2.10	3.16	2.43		
Jul 24	3.19	3.29	3.16	2.95	2.91	2.89	2.71	2.59	2.30	2.49	2.33	2.21	2.19	S	2.09	1.89	1.98	2.03	1.98	1.98	1.98	1.96	1.96	1.97	1.89	3.29	2.39	
Jul 25	1.97	1.97	1.97	1.98	1.98	2.00	2.02	1.99	1.97	1.98	1.97	1.98	S	1.98	1.97	1.96	1.96	1.97	1.96	1.96	1.97	1.97	1.98	1.96	1.96	2.02	1.97	
Jul 26	1.96	1.97	1.98	2.01	2.07	2.06	2.05	2.02	2.00	2.00	1.98	S	1.96	1.95	1.93	1.92	1.93	1.94	1.95	1.97	2.02	2.04	2.06	2.08	1.92	2.08	1.99	
Jul 27	2.07	2.17	2.34	2.47	2.86	2.98	2.88	2.77	2.62	2.36	S	2.29	2.26	2.17	2.24	2.17	2.16	1.87	2.07	1.99	1.99	1.95	1.93	1.94	1.87	2.98	2.28	
Jul 28	1.94	1.93	1.94	1.97	1.99	2.00	1.99	1.97	1.98	S	1.98	1.98	1.98	1.97	1.98	1.98	1.98	1.99	1.99	1.99	2.04	2.04	2.09	2.10	1.93	2.10	1.99	
Jul 29	2.08	2.11	2.12	2.20	2.27	2.25	2.26	2.24	S	2.01	1.98	1.98	1.98	2.01	1.99	2.00	1.99	1.98	1.98	2.08	2.23	2.18	2.36	2.60	1.98	2.60	2.13	
Jul 30	2.53	2.75	3.00	3.00	3.44	3.19	3.13	S	2.89	2.22	2.18	2.05	2.03	2.01	2.00	2.00	2.00	2.03	2.03	2.05	2.09	2.17	2.23	2.28	2.00	3.44	2.40	
Jul 31	2.31	2.31	2.33	2.35	2.36	2.33	S	2.24	2.23	2.15	2.08	2.02	2.02	2.00	1.99	2.01	2.03	2.04	2.05	2.14	2.25	2.36	2.29	2.19	1.99	2.36	2.18	
Diurnal Maximum	3.19	3.29	3.16	3.00	3.44	3.19	3.13	2.77	2.89	2.49	2.33	2.29	2.26	2.19	2.24	2.17	2.16	2.12	2.12	2.45	2.63	2.59	2.90	3.16				
Diurnal Average	2.22	2.28	2.30	2.35	2.40	2.38	2.32	2.22	2.17	2.12	2.07	2.05	2.04	2.02	2.02	2.01	2.01	2.01	2.02	2.07	2.14	2.17	2.21	2.23				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Bonnyville - East Site**





**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**

*Bonnyville - East Site - July 2019*

**Summary of Hourly Instantaneous Maximums**

**NON-METHANE HYDROCARBONS (NMHC) in ppm**

Maximum Hourly Value:	0.18 ppm on July 30 at hour 5	Hours in Service:	744
Maximum Daily Value:	0.01 ppm on July 30	Hours of Data:	709
Minimum Hourly Value:	0.00 ppm on July 1 at hour 0	Hours of Missing Data:	0
Minimum Daily Value:	0.00 ppm on July 1	Hours of Calibration:	35
Monthly Average:	0.00 ppm	Operational Uptime:	100.0

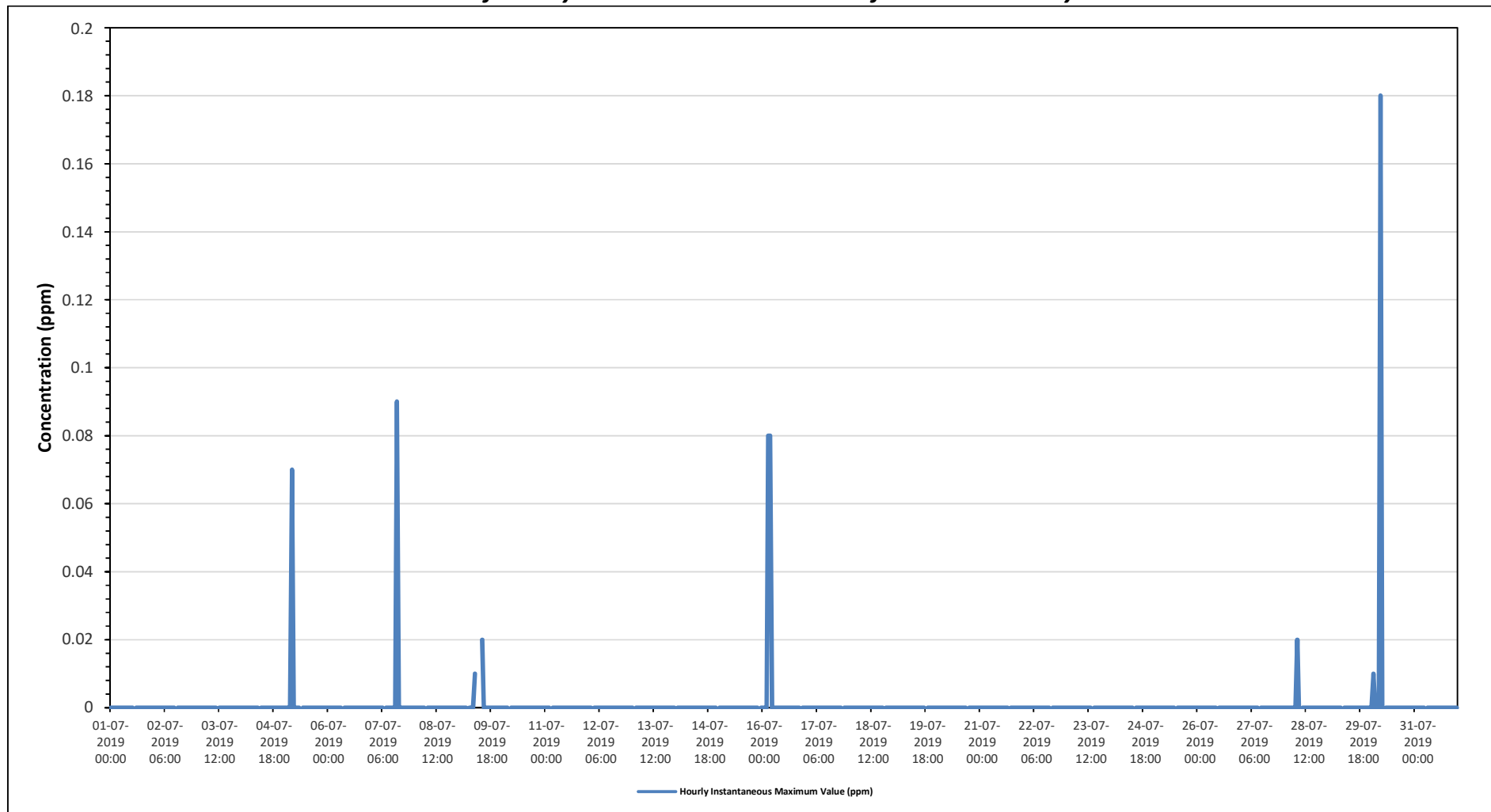
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Jul 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 5	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 9	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	C	C	C	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 10	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 11	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 12	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 13	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 14	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00
Jul 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00
Jul 16	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00
Jul 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Jul 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 30	0.00	0.01	0.00	0.00	0.00	0.18	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul 31	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.01	0.00	0.08	0.08	0.18	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Average	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.



*Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Bonnyville - East Site*





## LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - July 2019

### Summary of Hourly Instantaneous Maximums

#### WIND SPEED (WS) in km/h

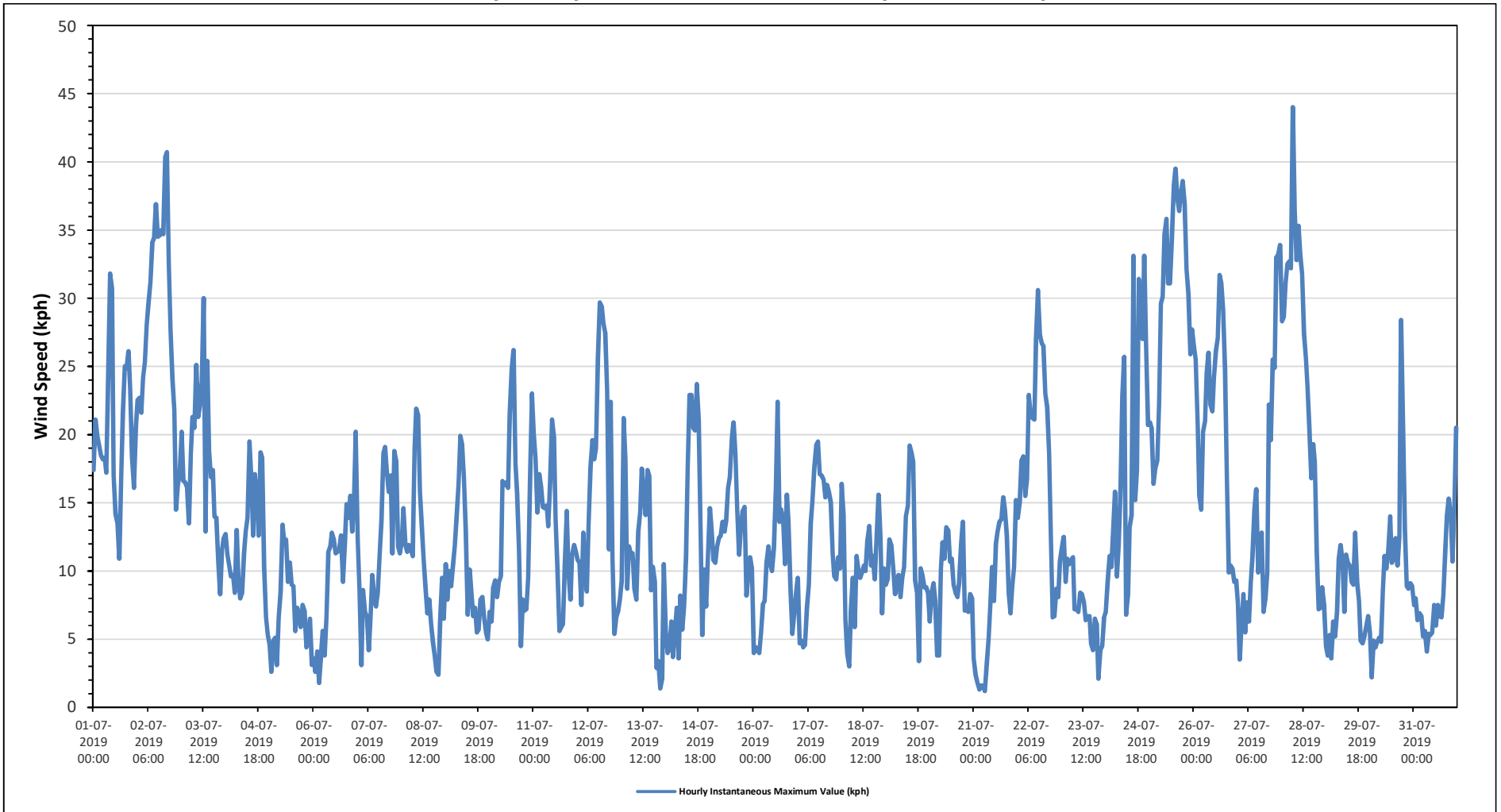
Maximum Hourly Value:	44.0 kph	on July 28 at hour 6	Hours in Service:	744
Maximum Daily Value:	30.1 kph	on July 25	Hours of Data:	744
Minimum Hourly Value:	1.2 kph	on July 21 at hour 6	Hours of Missing Data:	0
Minimum Daily Value:	7.1 kph	on July 5	Hours of Calibration:	0
Monthly Average:	13.8 kph		Operational Uptime:	100.0

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Jul 1	17.4	21.1	19.9	19.3	18.5	18.2	18.3	17.2	24.1	31.8	30.7	17.0	14.2	13.5	10.9	17.0	21.6	25.0	24.9	26.1	23.4	18.4	16.1	20.5	10.9	31.8	20.2
Jul 2	22.5	22.7	21.6	24.2	25.3	28.0	29.7	31.2	34.1	34.4	36.9	34.5	34.6	35.0	34.7	40.3	40.7	32.7	27.7	24.1	21.8	14.5	16.3	17.2	14.5	40.7	28.5
Jul 3	20.2	16.6	16.5	16.1	13.5	18.6	21.3	20.5	25.1	21.3	22.1	23.9	30.0	12.9	25.4	18.8	16.9	17.4	14.0	13.9	10.6	8.3	11.6	12.4	8.3	30.0	17.8
Jul 4	12.7	11.2	10.3	9.6	9.7	8.4	13.0	9.6	8.0	8.4	11.3	12.9	13.9	19.5	16.9	12.6	17.1	15.5	12.6	18.7	18.3	10.3	6.6	5.3	5.3	19.5	12.2
Jul 5	4.6	2.6	4.9	5.1	3.1	6.6	8.5	13.4	12.1	12.3	9.2	10.6	9.0	8.9	5.6	7.3	6.6	5.9	7.5	7.1	4.4	4.7	6.5	3.1	2.6	13.4	7.1
Jul 6	3.6	2.6	4.1	1.8	3.8	5.6	3.8	6.6	11.4	11.8	12.8	12.3	11.3	11.4	11.6	12.6	9.2	12.1	14.9	13.9	15.5	12.9	15.0	20.2	1.8	20.2	10.0
Jul 7	12.3	8.6	3.1	8.6	7.0	6.7	4.2	6.4	9.7	8.0	7.4	8.4	11.1	13.7	18.6	19.1	17.2	15.8	17.0	11.3	18.8	18.1	11.8	11.3	3.1	19.1	11.4
Jul 8	12.1	14.6	11.9	11.4	11.9	11.6	11.1	19.1	21.9	21.4	15.8	13.2	11.0	8.9	6.9	7.9	6.1	4.9	3.8	2.6	2.4	6.3	9.5	6.5	2.4	21.9	10.5
Jul 9	10.5	7.9	10.0	8.9	10.5	11.8	14.0	16.4	19.9	19.3	16.9	12.9	6.8	10.1	8.6	6.7	7.3	5.5	5.7	7.9	8.1	6.5	5.5	5.0	5.0	19.9	10.1
Jul 10	7.0	6.3	8.8	9.3	8.1	9.2	9.6	16.6	16.3	16.5	16.1	21.5	24.8	26.2	17.9	15.7	11.5	4.5	7.9	7.1	7.2	9.5	16.6	23.0	4.5	26.2	13.2
Jul 11	20.1	18.3	14.3	17.1	16.2	14.7	14.6	14.8	13.3	16.5	21.1	19.8	13.8	10.1	5.6	5.9	6.1	10.5	14.4	9.9	7.9	11.2	11.9	11.4	5.6	21.1	13.3
Jul 12	10.8	10.6	7.5	12.8	9.7	8.5	13.5	17.6	19.6	18.2	19.0	25.5	29.7	29.4	28.2	27.5	23.2	11.6	22.4	10.9	5.4	6.6	7.0	7.9	5.4	29.7	16.0
Jul 13	9.3	21.2	18.2	8.7	11.8	11.2	11.3	8.7	7.9	12.9	14.3	17.5	15.6	14.1	17.4	17.0	8.6	10.3	9.2	2.9	3.4	1.4	2.1	10.5	1.4	21.2	11.1
Jul 14	5.6	4.0	4.3	6.3	3.7	5.7	7.3	3.6	8.2	5.7	7.4	11.0	17.5	22.9	22.9	20.5	20.3	23.7	21.0	12.8	5.3	10.1	7.4	11.2	3.6	23.7	11.2
Jul 15	14.6	13.1	10.8	10.6	11.8	12.4	12.6	13.6	12.9	13.7	16.1	16.9	19.8	20.9	18.6	14.5	11.2	13.3	14.4	14.7	8.2	9.7	11.0	10.2	8.2	20.9	13.6
Jul 16	4.0	4.4	4.3	4.0	5.5	7.6	7.8	10.6	11.8	10.5	10.0	11.7	16.0	22.4	13.6	14.5	13.7	10.5	15.6	13.6	8.9	5.4	6.9	8.3	4.0	22.4	10.1
Jul 17	9.5	4.7	4.9	4.4	4.6	7.3	9.0	13.5	15.1	17.5	19.2	19.5	17.1	17.0	16.7	15.4	16.3	15.8	15.0	11.2	9.6	9.4	11.0	10.2	4.4	19.5	12.2
Jul 18	16.4	14.1	6.4	3.9	3.0	7.1	9.5	5.9	11.1	10.1	9.5	9.9	10.4	10.0	12.2	13.3	10.4	11.1	9.4	12.6	15.6	12.6	6.9	10.2	3.0	16.4	10.1
Jul 19	9.0	9.4	12.3	11.9	10.3	8.3	9.1	9.7	8.1	9.5	10.3	14.0	14.8	19.2	18.7	18.0	9.3	8.4	3.4	10.2	9.7	8.8	8.8	8.4	3.4	19.2	10.8
Jul 20	6.3	8.4	9.1	7.8	3.8	3.8	10.2	12.1	10.9	13.2	13.0	10.7	10.9	9.0	8.4	8.1	9.1	11.9	13.6	7.1	7.4	7.0	8.3	8.0	3.8	13.6	9.1
Jul 21	3.6	2.4	1.8	1.3	1.6	1.6	1.2	3.2	5.1	7.3	10.3	7.8	12.0	12.9	13.6	13.8	15.4	14.5	12.6	8.3	6.9	8.9	10.3	15.2	1.2	15.4	8.0
Jul 22	13.9	15.1	18.1	18.4	15.5	16.7	22.9	21.6	21.2	21.1	27.0	30.6	27.3	26.7	26.5	23.0	22.0	18.6	12.4	6.6	6.7	8.7	8.1	10.7	6.6	30.6	18.3
Jul 23	11.7	12.5	9.2	10.9	10.5	10.8	11.0	7.2	7.2	7.0	8.4	8.3	7.7	6.4	6.7	6.7	4.7	4.2	6.5	6.1	2.1	4.2	4.5	6.6	2.1	12.5	7.5
Jul 24	7.0	9.2	11.1	10.3	13.0	15.8	9.6	11.9	16.2	22.8	25.7	6.8	8.3	13.2	14.1	33.1	15.2	17.4	31.4	28.9	27.0	33.1	26.3	20.7	6.8	33.1	17.8
Jul 25	20.9	20.5	16.4	17.5	18.1	22.3	29.6	30.1	34.7	35.8	31.1	31.1	34.5	38.3	39.5	37.3	36.4	37.9	38.6	36.9	32.1	30.3	25.9	27.7	16.4	39.5	30.1
Jul 26	26.5	25.5	20.7	15.5	14.5	20.2	21.0	24.5	26.0	22.2	21.7	24.2	26.1	27.1	31.7	31.1	29.2	24.8	16.7	9.9	10.4	10.2	9.2	9.3	9.2	31.7	20.8
Jul 27	7.7	3.5	6.3	8.3	5.5	7.7	6.3	9.2	11.0	14.5	16.0	9.9	11.7	12.8	7.0	8.0	9.9	22.2	19.6	25.5	24.9	33.0	33.2	33.9	3.5	33.9	14.5
Jul 28	28.3	28.6	31.1	32.5	32.7	32.2	44.0	36.4	32.8	35.3	33.2	31.8	27.4	25.6	23.6	20.5	16.8	19.3	18.0	11.5	7.2	7.3	8.8	7.5	7.2	44.0	24.7
Jul 29	4.5	3.8	5.3	3.6	6.3	5.2	7.0	10.9	11.9	10.7	7.0	11.2	10.6	10.4	9.2	9.0	12.8	9.2	7.8	4.9	4.7	5.2	6.0	6.7	3.6	12.8	7.7
Jul 30	5.5	2.2	4.9	4.4	4.8	5.1	4.8	8.6	11.1	10.2	11.5	14.0	10.6	10.9	12.4	10.4	12.5	28.4	21.3	13.1	8.9	8.7	9.1	8.9	2.2	28.4	10.1
Jul 31	7.5	8.0	6.4	6.9	6.7	5.2	5.6	4.1	5.4	5.3	5.5	7.5	6.0	7.5	6.7	6.6	8.2	11.4	14.1	15.3	14.2	10.7	14.3	20.5	4.1	20.5	8.7
Diurnal Maximum	28.3	28.6	31.1	32.5	32.7	32.2	44.0	36.4	34.7	35.8	36.9	34.5	34.6	38.3	39.5	40.3	40.7	37.9	38.6	36.9	32.1	33.1	33.2	33.9			
Diurnal Average	11.8	11.4	10.8	10.7	10.4	11.4	12.9	14.0	15.6	16.3	16.7	16.4	16.6	17.0	16.5	16.5	15.0	15.3	15.3	13.1	11.5	11.4	11.4	12.5			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.  
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

**Timeseries Chart of Hourly Instantaneous Maximum for WS - Bonnyville - East Site**



END OF REPORT

This report, 364 of 364, ends the July 2019 Monthly Ambient Air Quality Monitoring Report.



**Lakeland Industry & Community Association**

**JULY 2019**

**Ambient Air Monitoring Calibration Report**

**- COLD LAKE SOUTH STATION-**

**CAL-LICA-201907-01174**

**Station Operation and Maintenance:**

Maxxam Analytics

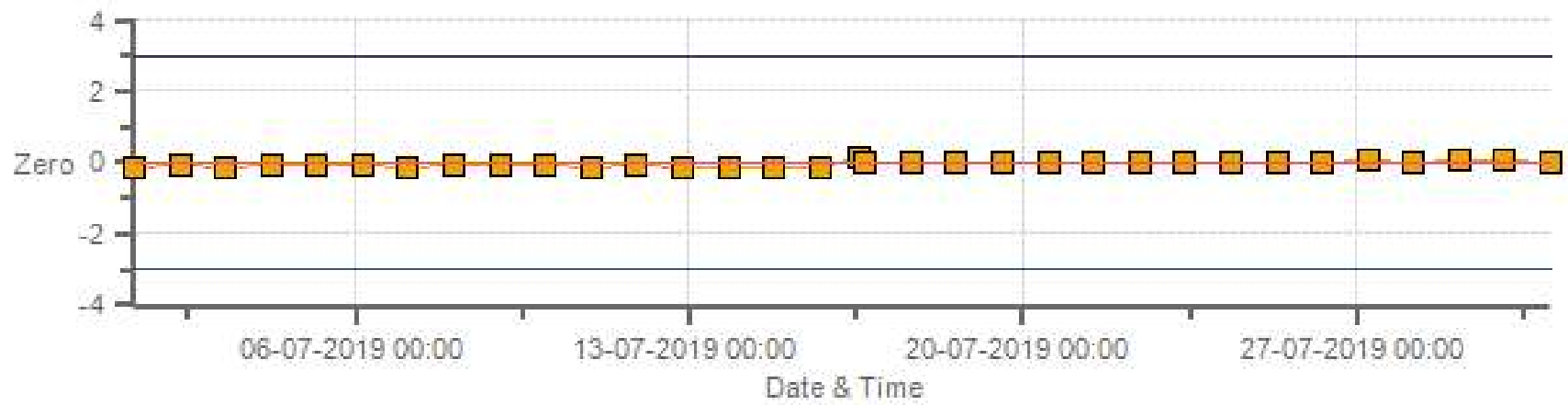
**Data Validation and Report:**

Maxxam Analytics

August 12, 2019

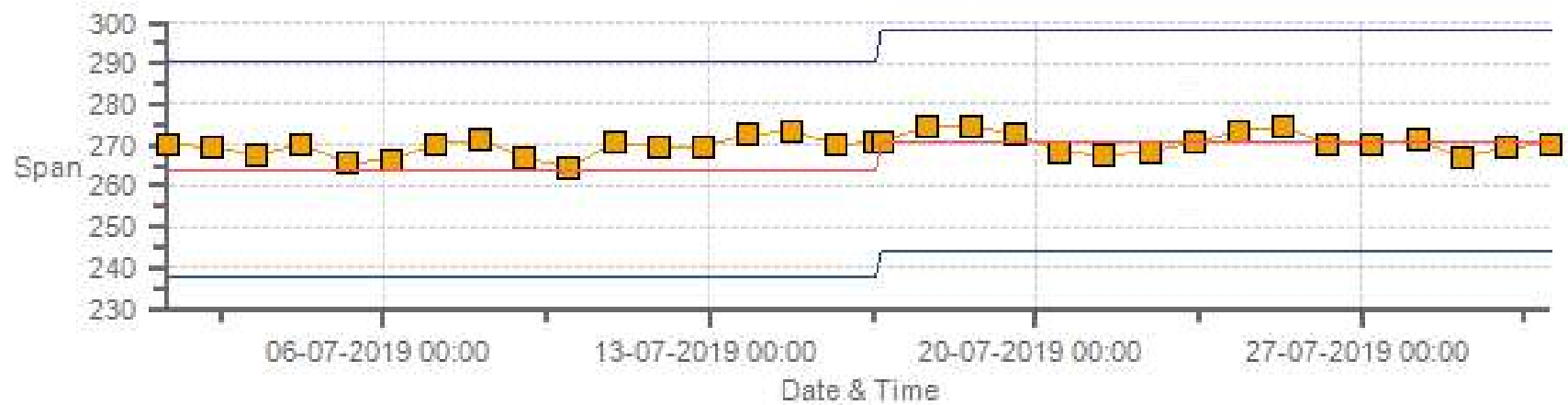
# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



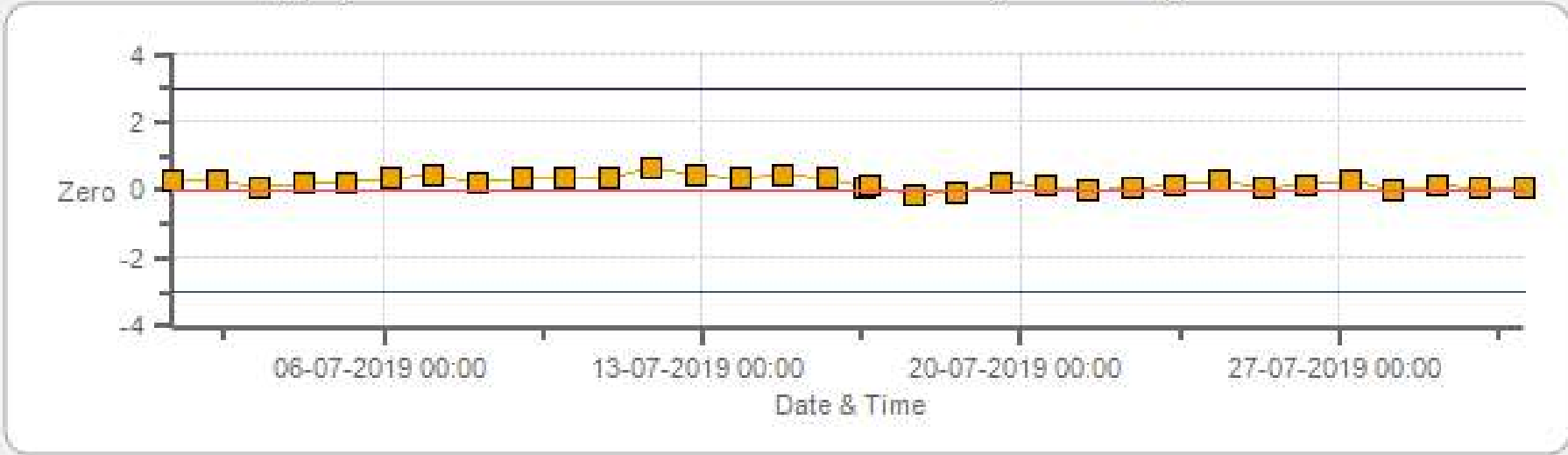
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



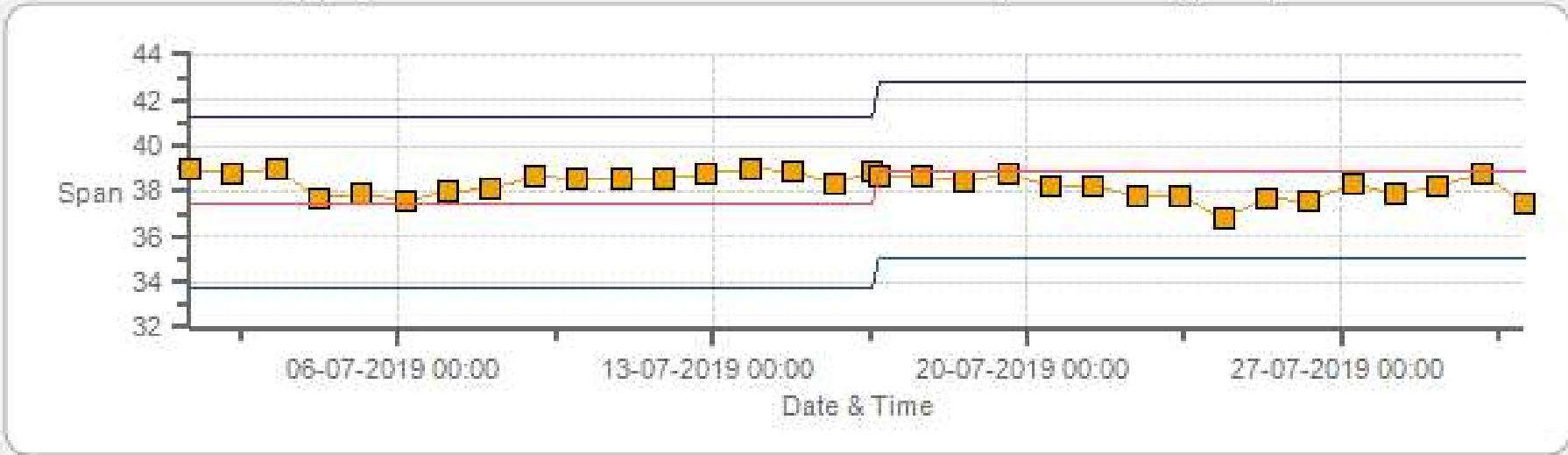
Span SpanRef Span Low Span High

TRS [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

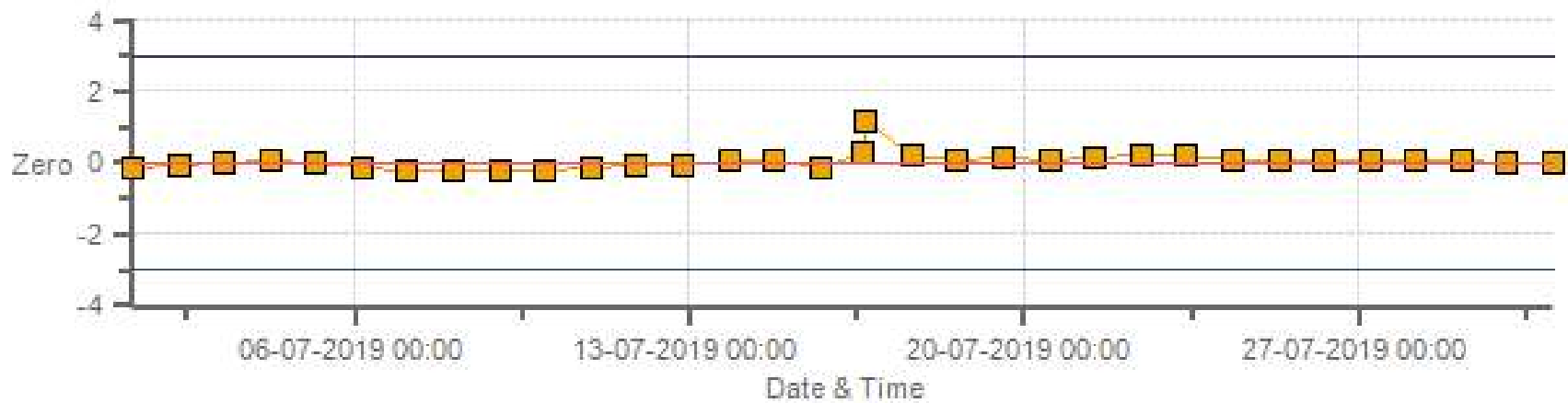
TRS [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High



NOX [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



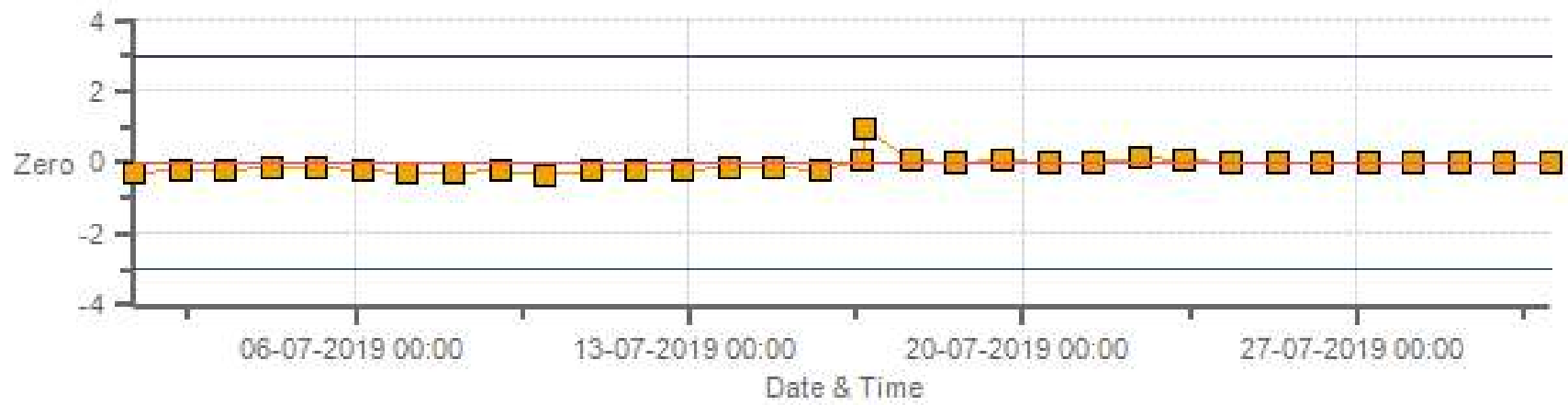
Zero Zero Ref Zero Low Zero High

NOX [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



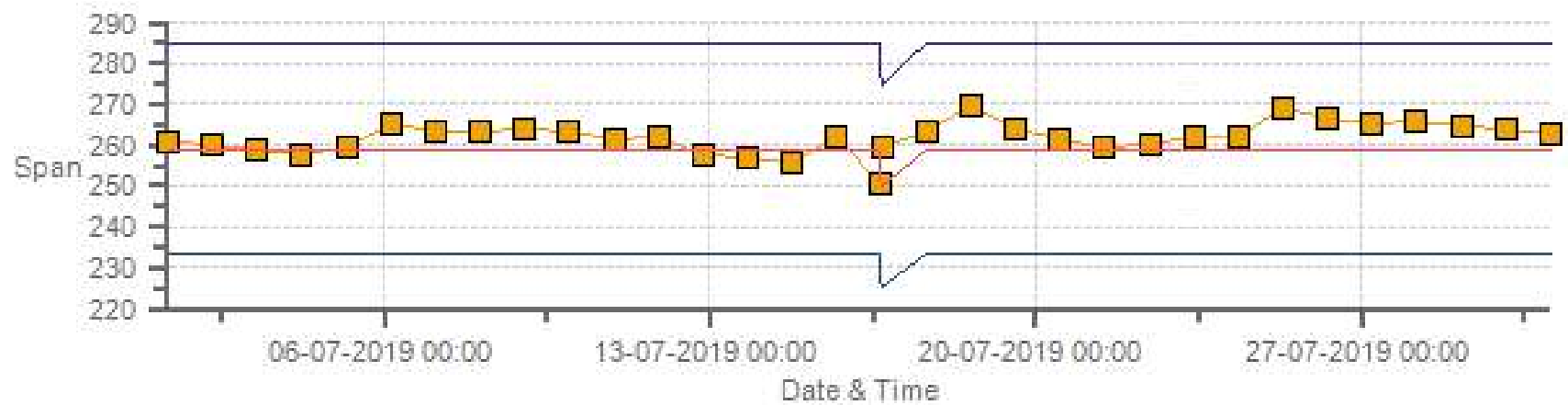
Span SpanRef Span Low Span High

NO2 [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



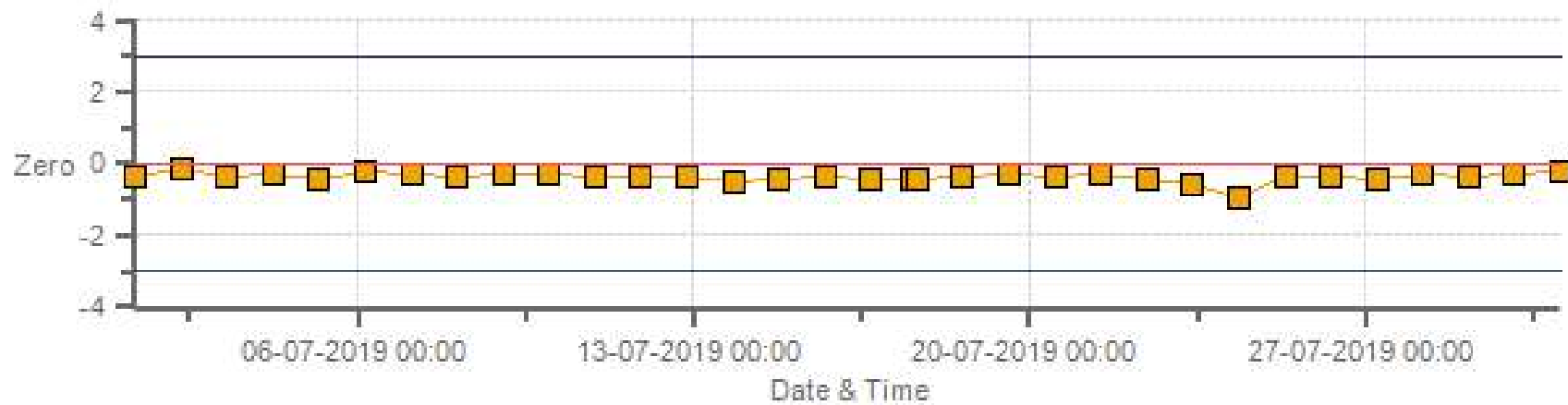
Zero Zero Ref Zero Low Zero High

NO2 [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



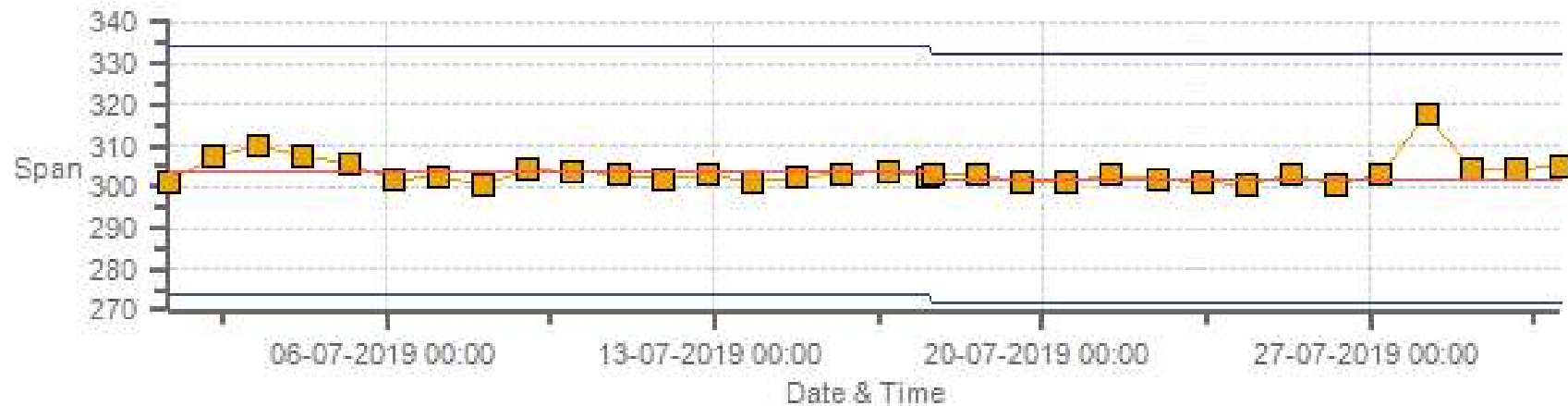
Span SpanRef Span Low Span High

O3 [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



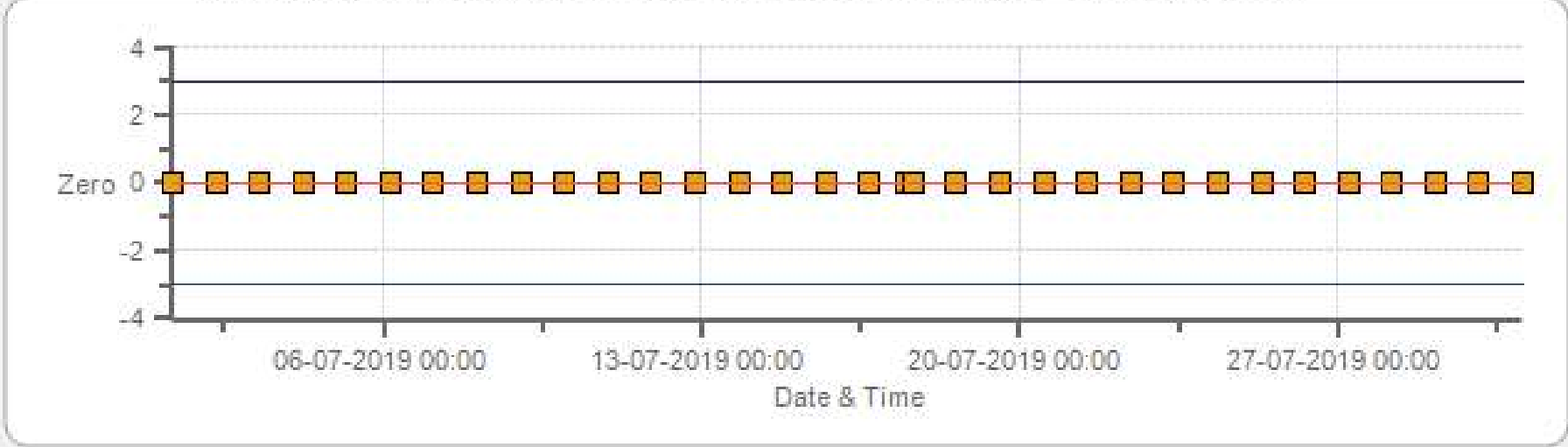
Zero Zero Ref Zero Low Zero High

O3 [ppb] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



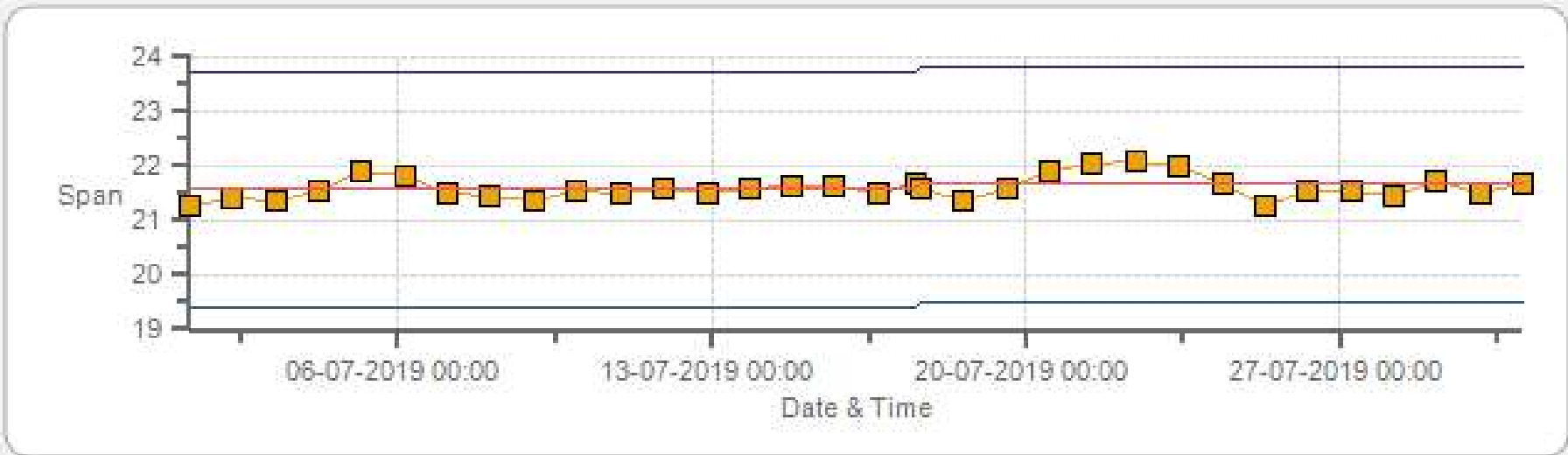
Span SpanRef Span Low Span High

THC [ppm] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



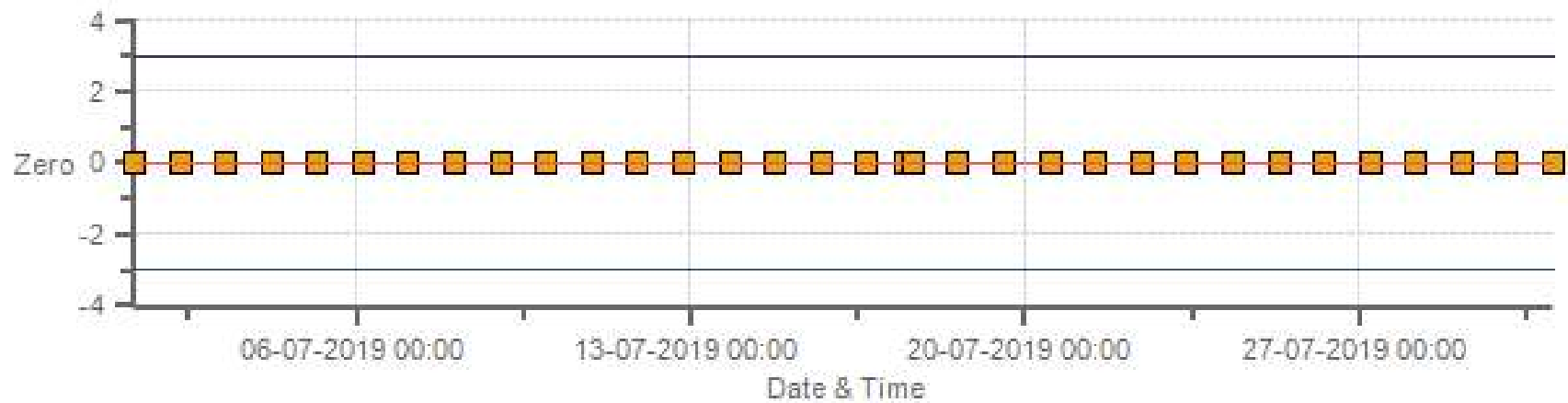
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



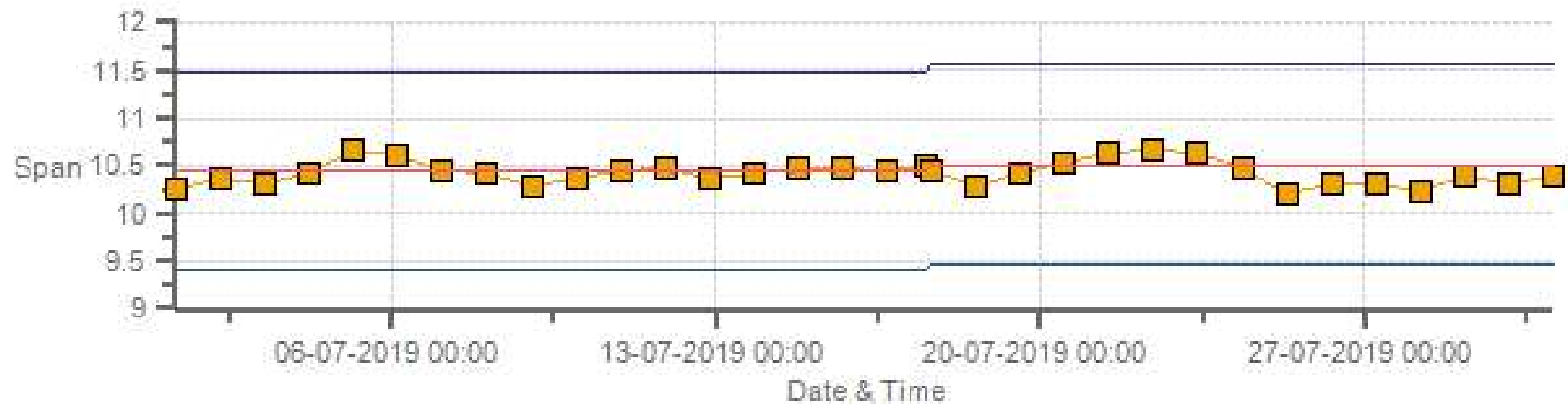
Span Span Ref Span Low Span High

CH4 [ppm] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



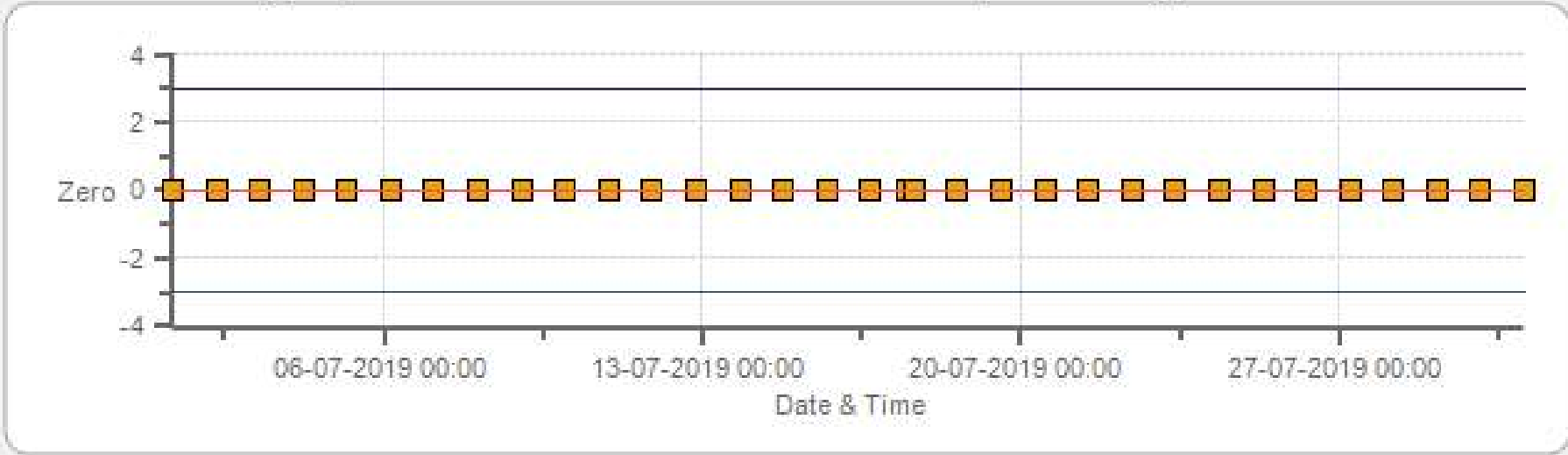
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



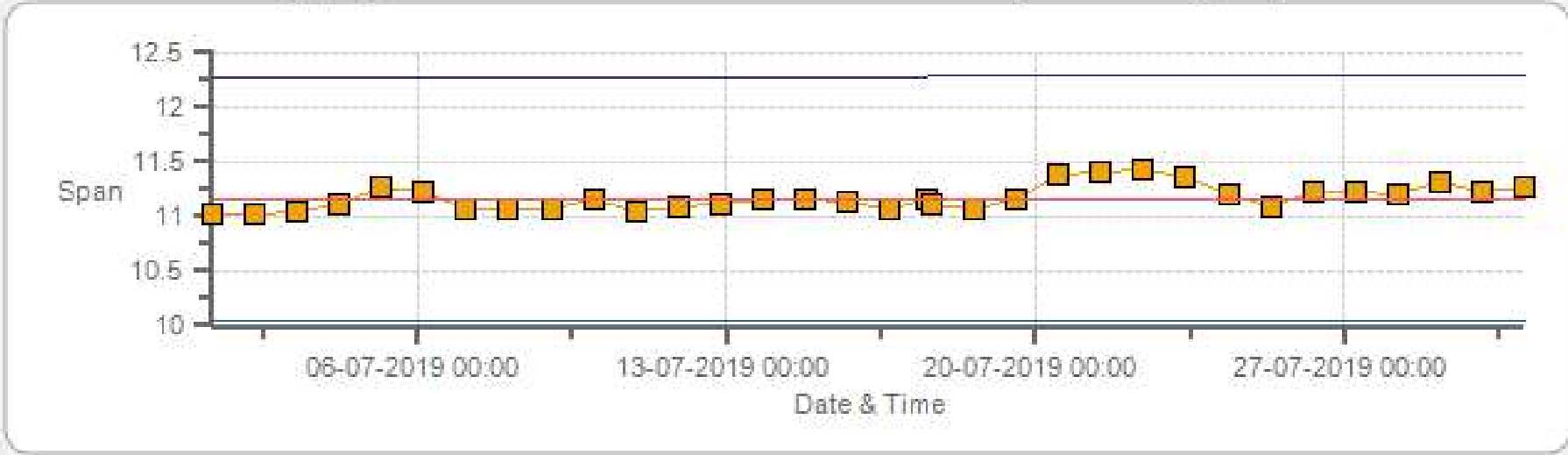
Span Span Ref Span Low Span High

NMHC [ppm] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA Cold Lake South Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High

# MULTI-POINT CALIBRATION RECORDS

# SO2 Analyzer Calibration by Dilution



DATE:	16-Jul-2019	PREVIOUS CALIBRATION DATE:	11-Jun-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	948
PURPOSE:	Routine	START TIME (MST):	09:06
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:31

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	500 ppb
SERIAL #	1180026018	FLOW (mL/min)	449
INITIAL		FINAL	
BKG/OFFSET	1.79	BKG/OFFSET	1.64
COEF/SLOPE	0.987	COEF/SLOPE	0.985
Expected (reference) Value	264	Expected (reference) Value	271

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1400	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	390	190	95
RANGE	300 - 400	150 - 200	50 - 100

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

## CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>37.90</del>	5000	0.00	0	0	<del>1.011</del>	<del>1.001</del>
4962	37.90	5000	375.21	371	375	1.011	1.001
4982	18.00	5000	178.20	n/a	178	n/a	1.001
4991	8.90	5000	88.11	n/a	88	n/a	1.001

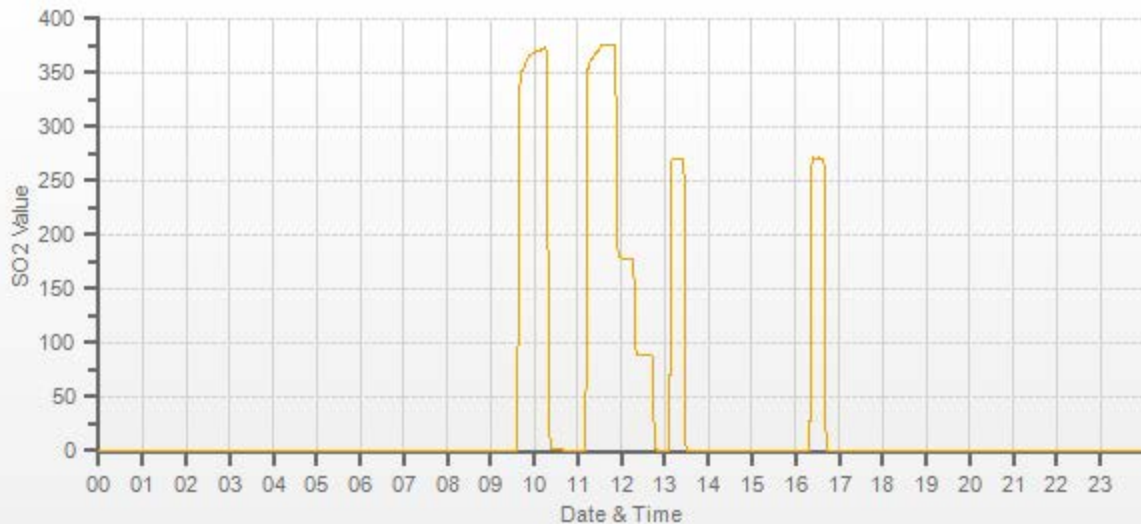
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.999	0.0%

## COMMENTS:

Sample inlet filter was changed.





# TRS Analyzer Calibration by Dilution



DATE:	16-Jul-2019	PREVIOUS CALIBRATION DATE:	11-Jun-2019
PARAMETER:	TRS	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	948
PURPOSE:	Routine	START TIME (MST):	09:06
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:27

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	812728560	FLOW (mL/min)	486
INITIAL		FINAL	
BKG/OFFSET	15.9	BKG/OFFSET	16.3
COEF/SLOPE	0.916	COEF/SLOPE	0.924
Expected (reference) Value	37.7	Expected (reference) Value	38.9

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	700	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	09:11	SO2 Conc (ppb)	380
END TIME:	09:26	Analyzer Response (ppb)	0.0

## CALIBRATION:

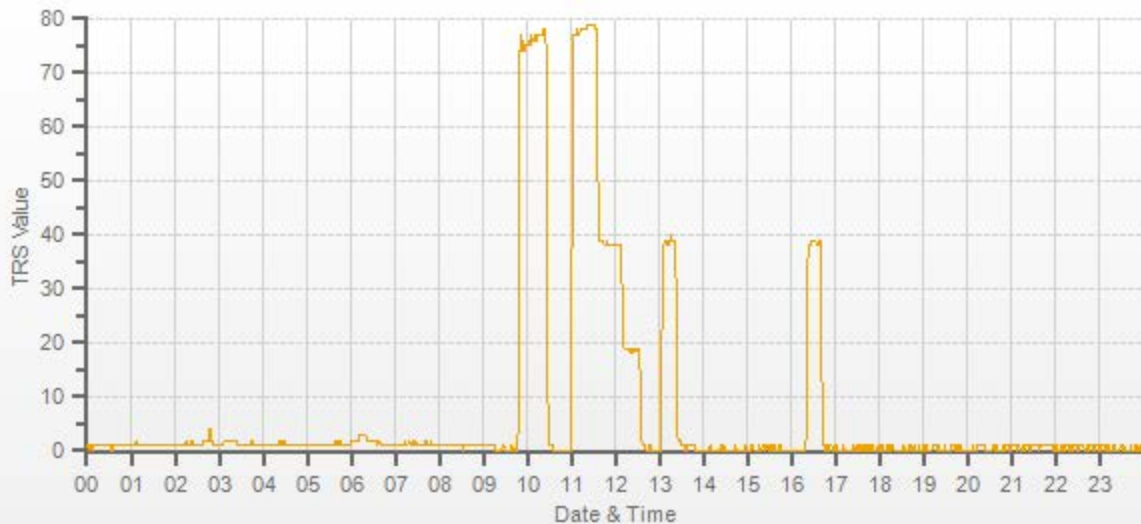
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>61.20</del>	7500	0.00	0.4	0	<del>1.004</del>	<del>1.000</del>
7439	61.20	7500	77.93	78	77.9	1.004	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	19	n/a	0.999

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.



# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	16-Jul-2019	PREVIOUS CALIBRATION DATE:	11-Jun-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1505664393	NOx	0.999
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	948.00	FLOW (mL/min)	765	NO	0.999
PURPOSE:	Routine	START TIME (MST):	09:06	RANGE (ppb)	500	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:35	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1   50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1400	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	5	4	n/a	BKG/OFFSET:	5	5	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

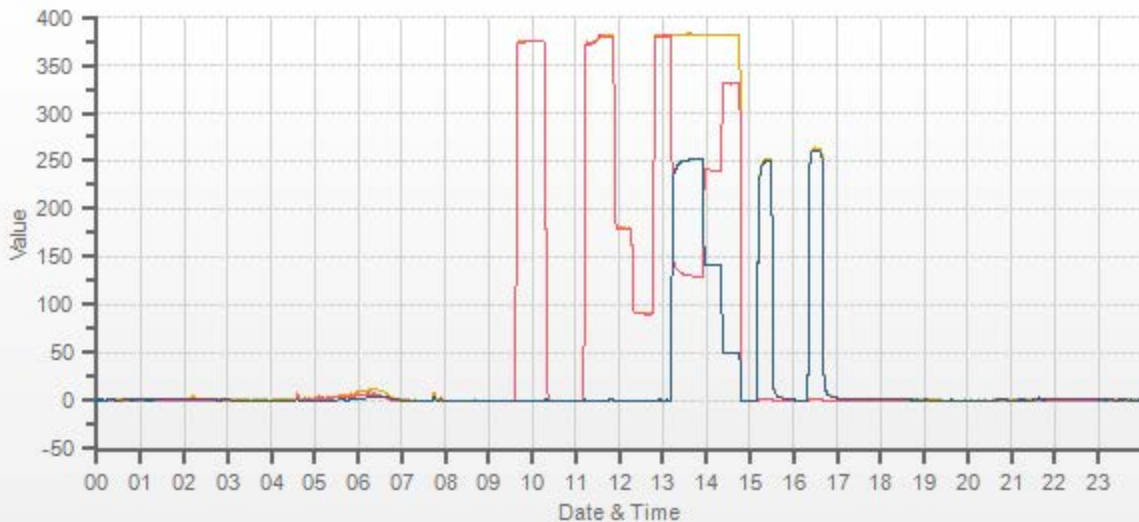
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	261	2	259.0		262	2	259.0

POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	380	250	230-265	n/a
MID	180	125	115-150	n/a
LOW	90	45	40-55	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	<del>37.90</del>	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<del>1.013</del>	<del>1.012</del>	<del>0.999</del>	<del>0.999</del>	<del>0.999</del>	<del>0.999</del>
4962	37.90	5000	379.8	380.5	0.8	375.0	376.0	1.0	380.0	381.0	1.0	1.013	1.012	0.999	0.999	0.999	0.999
4982	18.00	5000	180.4	180.7	0.4	n/a	n/a	n/a	180.0	181.0	1.0	n/a	n/a	1.002	0.998	0.998	0.998
4991	8.90	5000	89.2	89.4	0.2	n/a	n/a	n/a	90.0	90.0	0.0	n/a	n/a	0.991	0.993	0.993	0.993

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	37.80	5000	0	380.0	381.0	1.0	<del>249</del>	<del>249</del>	<del>1.000</del>	<del>100.00%</del>
AS-FOUND HIGH	37.80	5000	245	131.0	381.0	250.0	249	249	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	37.80	5000	140	240.0	381.0	141.0	140	140	1.000	100.00%
LOW	37.80	5000	45	331.0	381.0	50.0	49	49	1.000	100.00%
NO2 adjustment not required.									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.04%	
NOx	1.000	1.000	0.04%	
NO2	1.000	1.000	0.00%	



CAL-LICA-201907-01174

# Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	17-Jul-2019	PREVIOUS CALIBRATION DATE:	12-Jun-2019
PARAMETER:	Ozone	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	21.0
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	950
PURPOSE:	Routine	START TIME (MST):	09:00
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:21

## ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	700419951	FLOW (mL/min)	1455
INITIAL		FINAL	
BKG/OFFSET	0	BKG/OFFSET	0
COEF/SLOPE	1.04	COEF/SLOPE	1.04
Expected (reference) Value	304	Expected (reference) Value	302

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
RANGE	300 - 400	150 - 200	50 - 100

## CALIBRATION:

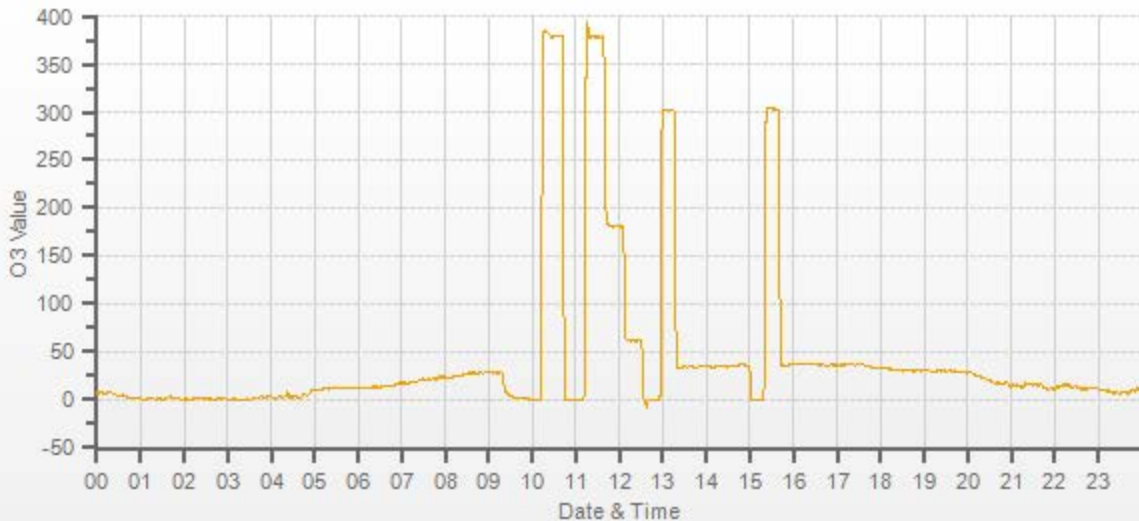
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>5000</del>	5000	0.0	0.0	0.0	<del>1.000</del>	<del>1.000</del>
5000	<del>5000</del>	5000	380.0	380.0	380.0	1.000	1.000
5000	<del>5000</del>	5000	180.0	n/a	180.0	n/a	1.000
5000	<del>5000</del>	5000	61.0	n/a	61.0	n/a	1.000

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.



# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	17-Jul-2019	PREVIOUS CALIBRATION DATE:	12-Jun-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	21.0		Thermo 55i	1180030034	1121
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	950	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	09:00	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	12:36	PREVIOUS CF:	n/a	n/a	n/a

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	598.0   198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

POINT (CH <sub>4</sub> /NMHC)	HIGH	MID	LOW	CH <sub>4</sub> EQUIVILANCE	
TARGET	14	7	3.5	C <sub>3</sub> H <sub>8</sub> as CH <sub>4</sub>	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH <sub>4</sub>	1142.5

## EXPECTED (REFERENCE) VALUE:

INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	10.44	11.15	21.59		10.50	11.17	21.66

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3000	<del>X</del>	3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
2930	70.00	3000	13.95	12.71	26.66	13.81	12.52	26.33	13.95	12.71	26.66	1.010	1.015	1.012	1.000	1.000	1.000
2962	38.00	3000	7.57	6.90	14.47	n/a	n/a	n/a	7.64	6.91	14.56	n/a	n/a	n/a	0.991	0.998	0.994
2981	19.00	3000	3.79	3.45	7.24	n/a	n/a	n/a	3.85	3.47	7.32	n/a	n/a	n/a	0.984	0.994	0.989

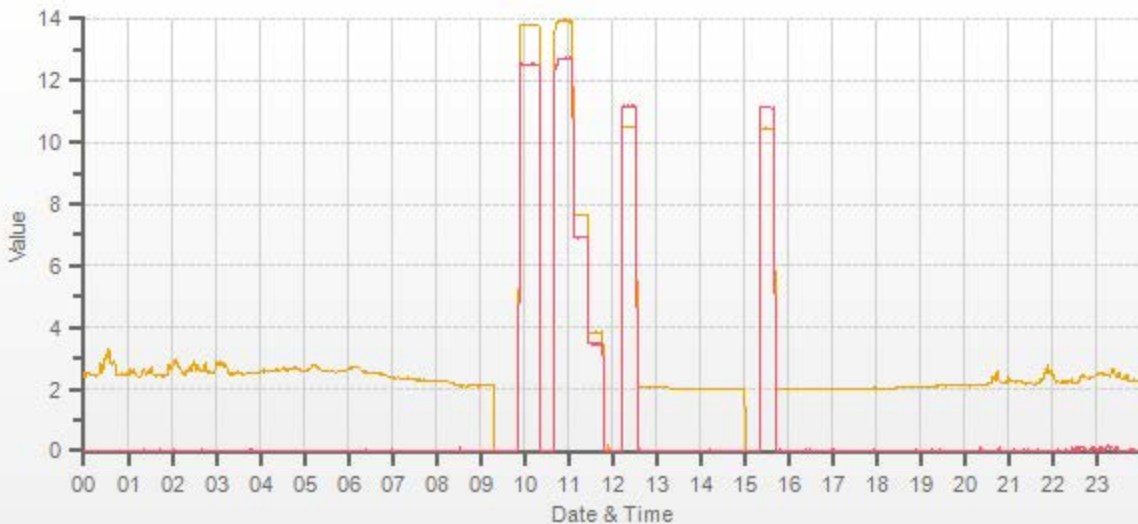
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH <sub>4</sub>	1.000	0.999	0.2%
NMHC	1.000	1.000	0.0%
THC	1.000	1.000	0.1%

## COMMENTS:

Sample inlet filter was changed.





CAL-LICA-201907-01174

Page 21 of 30  
CH4 [ppm] NMHC [ppm]

## Thermo 5030 SHARP Monitor Monthly Check



Date: July 24, 2019  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: June 12, 2019  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Rob Fisher  
 Start Time (mst): 7:45  
 End Time (mst): 9:01  
 Calibration Purpose: routine monthly  
 Weather Conditions: Mainly sunny

**SHARP Information and Status:**

Serial Number: CM-2209 Status: 0.00  
 Approx Tape remaining: 3/10 Error Code: E - 01

**Reference Standards:**

**Air Flow**

	Manometer	Orifice	Pressure:	Temperature:
Make:	Dwyer	Chinook	Fisher Scientific	Fisher Scientific
Model:	475 Mk. III	170101	FB61291	11-661-7B 11745843
Serial Number:	#3	#4	130168457 17-Jan-20	160348895
Calibration Expiration Date:	January 17, 2020	January 31, 2020	January 17, 2020	June 19, 2020

**As found temperature and pressure:**

Tolerance +/- 4°C SHARP T1 °C: <u>21.0</u> Reference °C: <u>22.1</u> Difference °C: <u>1.1</u>	Tolerance +/- 13.33 hPa SHARP P3 (hPa): <u>942.000</u> Reference (hPa): <u>942.000</u> Difference (hPa): <u>0.000</u>
---	--

**As left temperature and pressure (same as above if as found adequate):**

Tolerance +/- 4°C SHARP T1 °C: <u>21.0</u> Reference °C: <u>22.1</u> Difference °C: <u>1.1</u>	Tolerance +/- 13.33 hPa SHARP P3 (hPa): <u>942.000</u> Reference (hPa): <u>942.000</u> Difference : <u>0.000</u>
---	---

**As found flows:**

Targets: 1000 l/hr / <90% SHARP AirFlow l/hr: <u>1000.00</u> Pump Voltage (%): <u>48.70</u>	Flow Tolerance 16.67 lpm +/- 0.67 lpm SHARP Airflow (l/min): <u>16.67</u> Reference AirFlow (l/min): <u>16.65</u> Difference (l/min): <u>-0.02</u>
---	---

**As left flows (same as above if as found adequate):**

Targets: 1000 l/hr / <90% SHARP AirFlow l/hr: <u>1000.00</u> Pump Voltage (%): <u>48.70</u>	Flow Tolerance 16.67 lpm +/- 0.67 lpm SHARP Airflow (l/min): <u>16.67</u> Reference AirFlow (l/min): <u>16.65</u> Difference (l/min): <u>-0.02</u>
---	---

**Inlet Assembly:**

	Yes/No?	If No, give reason
PM10 Inlet Cleaned	yes	
PM2.5 Cyclone Cleaned	yes	

**Comments:**

Error code :E - 01 - T4 exceeds max-heater temp > 2°C. This error is a result of the Sample RH threshold being chosed at 35%. Leak check 16.63 vs 16.64, 0.01 < 0.8 lpm, passed.



# Met One Instruments

## Sonic Wind Sensor Certificate of Calibration

Sensor Model No.: 50.5H      Sensor Serial No.: F1644  
 Sensor Output Swing: 0V - 1.0V      Sensor Output Range: 0 - 50.0 MPS  
 Customer: Maxxam Analytics      Sales Order No.: 125713  
 Tested per PO: P00000003392      Calibration Date: 11/09/2017  
 Calibrated by: David Frith D7      QC Inspection: Byron Paulsen

Instrument Condition Within Tolerance:      As Found       As Left   
 Corrective Action: No Adjustment       Adjust       Repair   
    Preventative Maintenance

As Found Test Date: N/A      As Left Test Date: 11/09/2017

Quality Control Manual Revision: September 16, 2013 MP42201 Rev. G.

All Work Performed per Customer Purchase Order Requirements.

Calibration Document No. 50.5-6100

### Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Voltage Accuracy	Time Base Accuracy
Data Acquisition	Campbell Scientific	CR1000	6569	4/06/2015	4/06/2018	+/- 3mV	< 6 ppm
NIST Cupset	Met One Instruments	170-41	3309	1/26/2017	1/26/2022	Accuracy < 0.15 mph or 1% WS	

Environmental Data: Temperature 65 to 80 Deg F      Vibration none  
    Humidity 20 to 70%      Radiation none

**Firmware Version: 3194-01 R2.62**

*The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated heron, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instrument's accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with IS) 9001:2008 requirements*

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <u>Tom Bourque</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>690</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>March 2018</u>	Temperature (°C)	<u>24.4 C</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>699 mmHg</u>
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>
Expiry Date	<u>December 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b><u>NO</u></b>		<b><u>LIMITS</u></b>		<b><u>NOx</u></b>			
Correlation=	1.0000	≥	<b>0.990</b>	Correlation=	1.0000		
m (Slope)=	0.9974		<b>0.90-1.10</b>	m (Slope)=	0.9833		
b (Intercept % of FS)=	-0.0592	±	<b>3% F.S.</b>	b (Intercept % of FS)=	-0.1772		

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO <sub>2</sub>	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b><u>NO<sub>2</sub></u></b>		<b><u>LIMITS</u></b>					
Correlation=	0.9998	≥	<b>0.995</b>	<b>Big shift down in NOx when entering GPT function.</b> <b>Possible flow change.</b>			
m (Slope)=	0.9649		<b>0.90-1.10</b>				
b (Intercept % of FS)=	-1.4907	±	<b>3% F.S.</b>				

<b>AENV Standards</b>		<b>NO<sub>x</sub> Analyzer</b>	
<b>Audit Calibrator</b>			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

 COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: <u>Al Clark</u>	Date: <u>April 16, 2019</u>
Operator Signature:	Location: <u>McIntyre Center Edmonton</u>

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>11900613</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>August 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

### LINEAR REGRESSION ANALYSIS

*y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO	LIMITS	NOx
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0117	0.90-1.10	m (Slope)= 1.0039
b (Intercept % of FS)= 0.2171	± 3% F.S.	b (Intercept % of FS)= -0.0020

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO <sub>2</sub>	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

### LINEAR REGRESSION ANALYSIS

*y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO <sub>2</sub>	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0062	0.90-1.10
b (Intercept % of FS)= -1.0004	± 3% F.S.

AENV Standards Audit Calibrator	NO <sub>x</sub> Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019  
 Operator Signature:  Location: McIntyre Center Edmonton



## Calibration Gas Audit Single Component Cylinder Gas

File No. 2019-392CGA

**Company:** Maxxam **Operator's Name:** Alex  
**Cylinder #:** LL107918 **Concentration PPM:** 49.5 **Tolerance(%):** 1 **Certified By:** Praxair  
**Expiry Date:** August 2026

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Sabio 2010</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 2092</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>January 14, 2019</u>	Temp. °C: <u>22.7 C</u>
Gas Type: <u>SO2</u> Conc. <u>50.26</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>FF28071</u>	
Expiry Date: <u>March 2020</u>	

**Reference Analyzer:**  
 Make/Model: Teco 43i Serial/AMU Number: 2195  
 Instrument Settings: Zero: 11.8 Span: 0.980 Range: 1.0  
 Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.00000</del>	<del>0.00000</del>	<del>0.00000</del>
4898	78.1	0.790	0.01595	62.714	49.5
4893	38.7	0.389	0.00791	126.434	49.2
4894	19.3	0.192	0.00394	253.575	48.7
Average Cylinder Concentration:					<b>49.1</b>

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 1

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:** \_\_\_\_\_  
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration  \_\_\_\_\_  
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder  \_\_\_\_\_

Auditor: Al Clark Date: January 15, 2019  
 Operator Signature:  Location: McIntyre Center Edmonton



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike  
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair  
 Expiry Date: October 2020

**Reference Calibrator and Gas:**  
 Make/Model: Sabio 2010  
 Serial Number: AMU 2092  
 Last Verification Date: January 17, 2018  
 Gas Type: H2S Conc. 20.43  
 Cylinder Number: CAL015272  
 Expiry Date: January 2019

**Flow Measurement Device:**  
 Make/Model: Mesa Defender 530  
 Serial Number: H-153961 / L-153874  
 Temp. °C: 23.0 C  
 B.P.: 697 mmHg

**Reference Analyzer:**  
 Make/Model: Teco 450i Serial/AMU Number: 1980  
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1  
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000			
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					<b>9.58</b>

Previous Stated Concentration PPM: 9.55  
 Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration  COMMENTS: Used AEP regulator  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 18, 2018  
 Operator Signature: [Signature] Location: McIntyre Center Edmonton



# Calibration Gas Audit

## NO Cylinder Gas

File No. 2019-391CGA

**Company:** Maxxam                      **Operators name:** Alex

Cylinder #: LL107918    Conc (PPM) 50.1/50.2    Tolerance (%) 1    Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

**Reference Analyzer:**

Make/Model Teco 42i                      Serial/AMU Number: 2268

Instrument Settings    Zero: 9.2                      Span: 1.223                      Range: 1.0

Last Calibration:                      Date: Jan 14/19                      C.F. 1.000                      Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						<b>49.7</b>	<b>49.7</b>

<b>NO</b>	<b>NOx</b>
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

**Cylinder gas tolerances based on NO only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark                      Date: Janaury 15, 2019

Operator Signature: *Al Clark*                      Location: McIntyre Center Edmonton





**End of Report**



**Lakeland Industry & Community Association**

**JULY 2019**

**Ambient Air Monitoring Calibration Report**

**- MASKWA STATION-**

**CAL-LICA-201907-01248**

**Station Operation and Maintenance:**

Maxxam Analytics

**Data Validation and Report:**

Maxxam Analytics

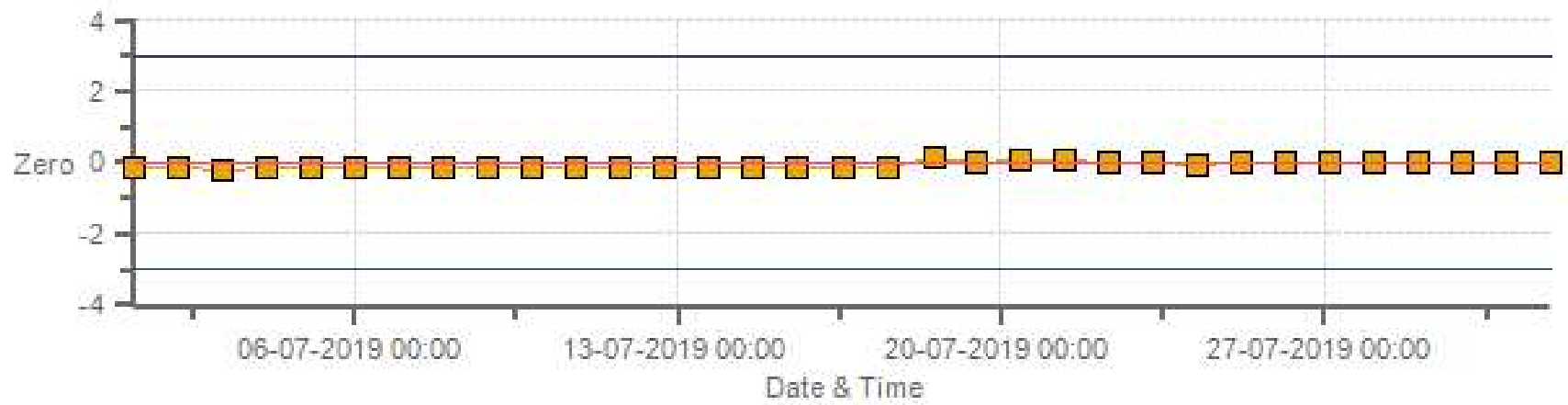
August 12, 2019



Lakeland Industry & Community Association  
5107 50 St  
Bonnyville, AB T9N2J7

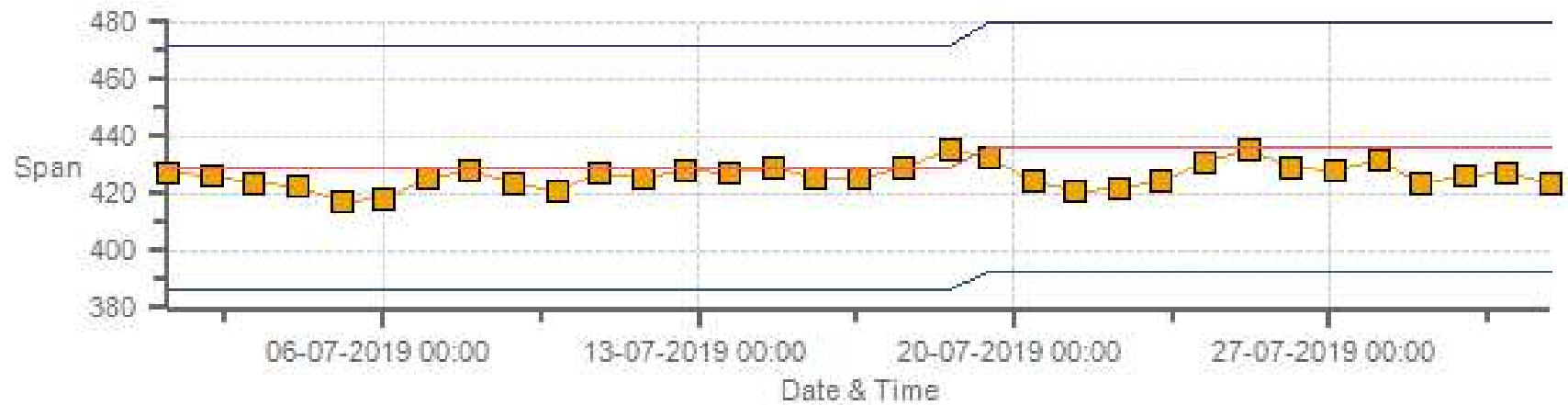
# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



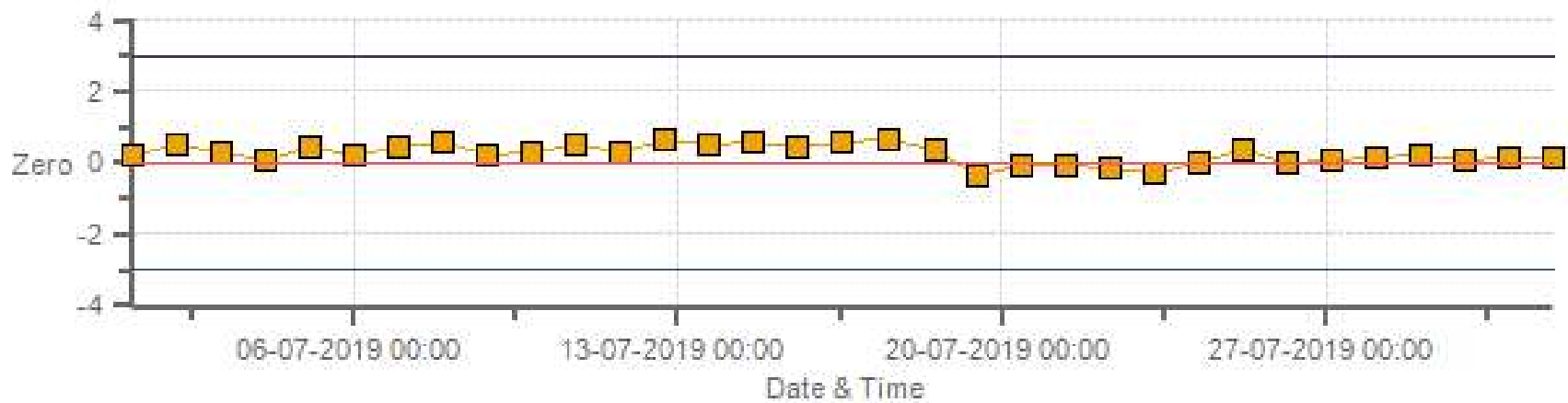
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span



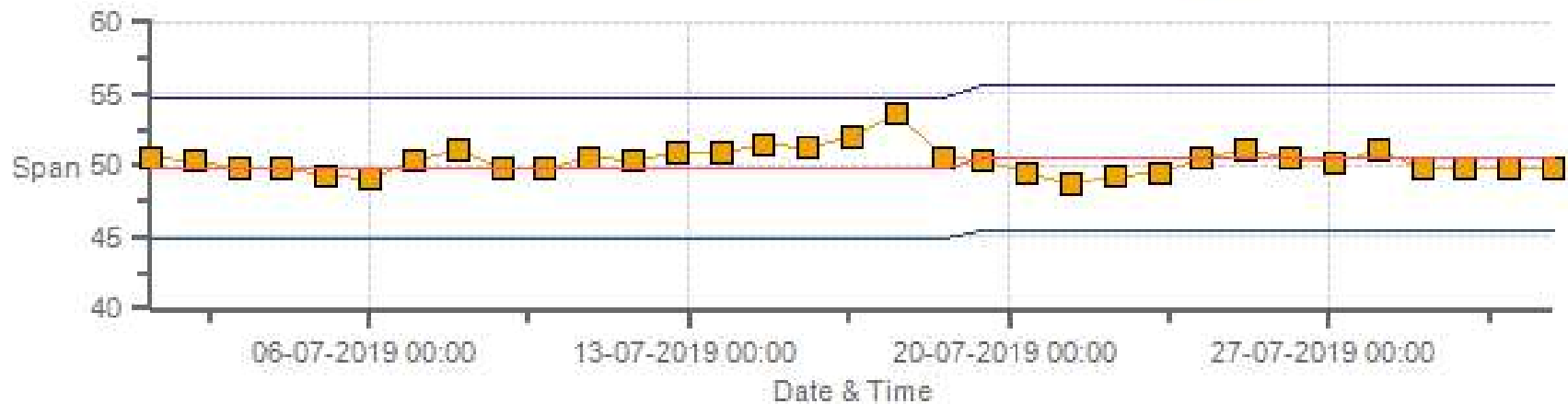
Span Span Ref Span Low Span High

H2S [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



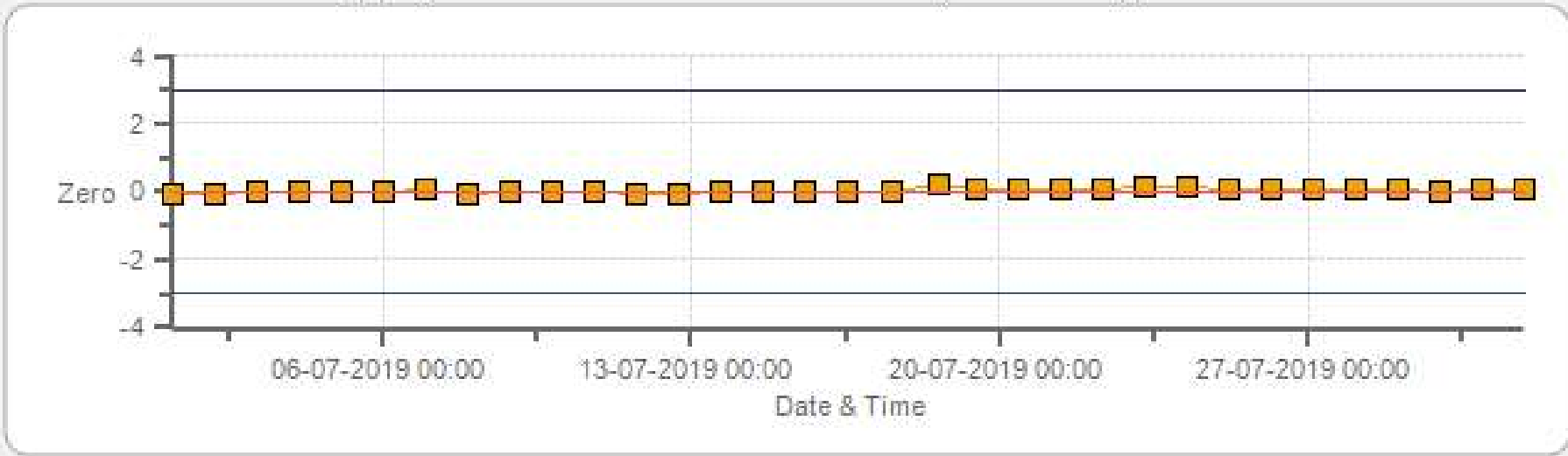
Zero Zero Ref Zero Low Zero High

H2S [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span

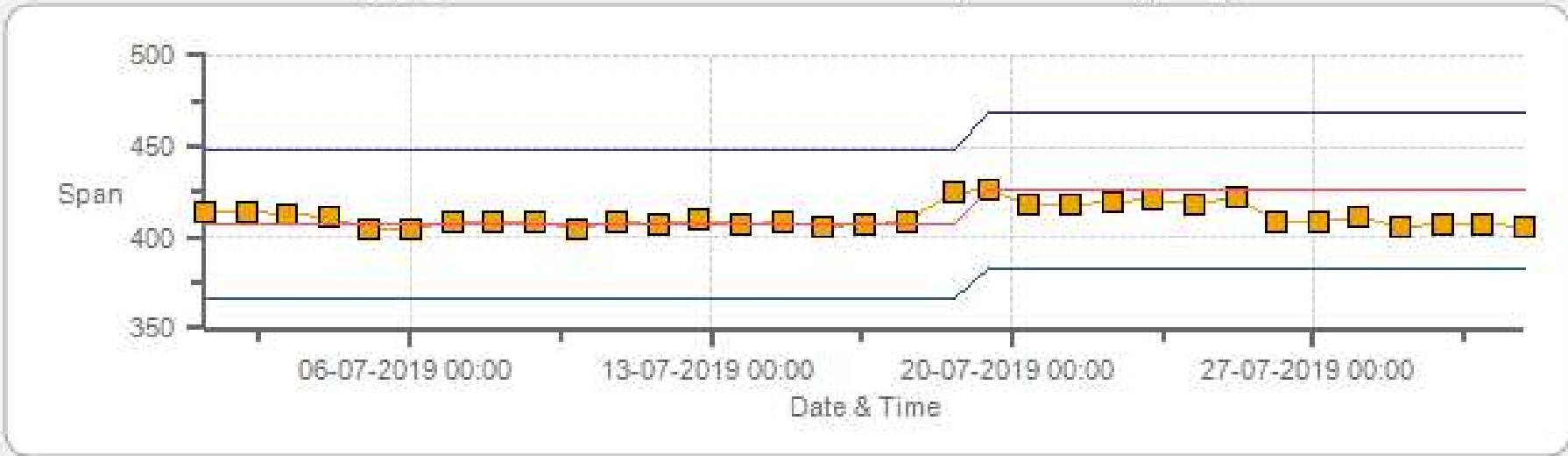


Span SpanRef Span Low Span High

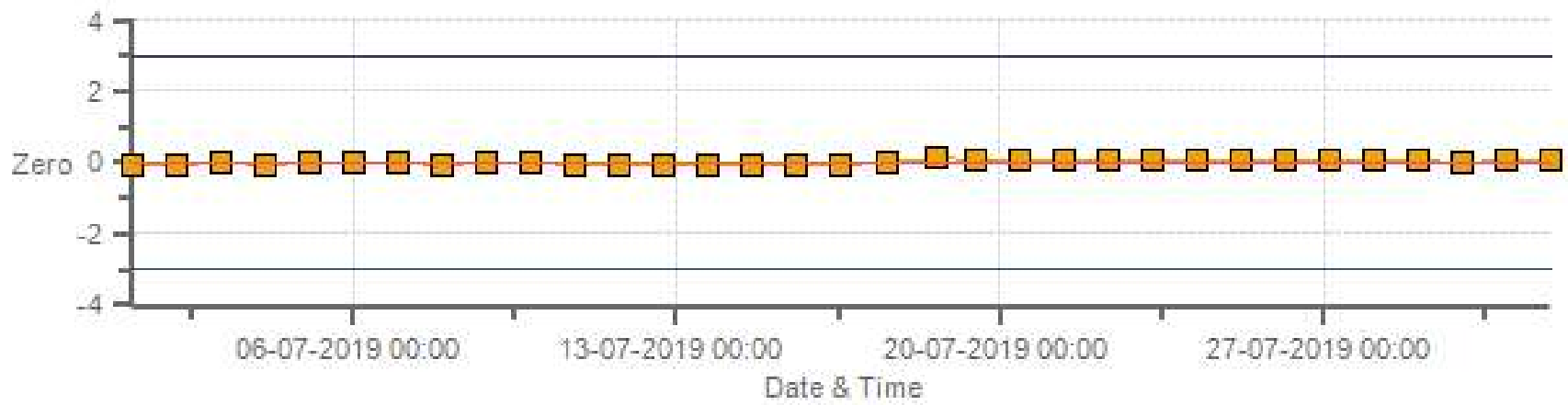
NOx [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



NOx [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span

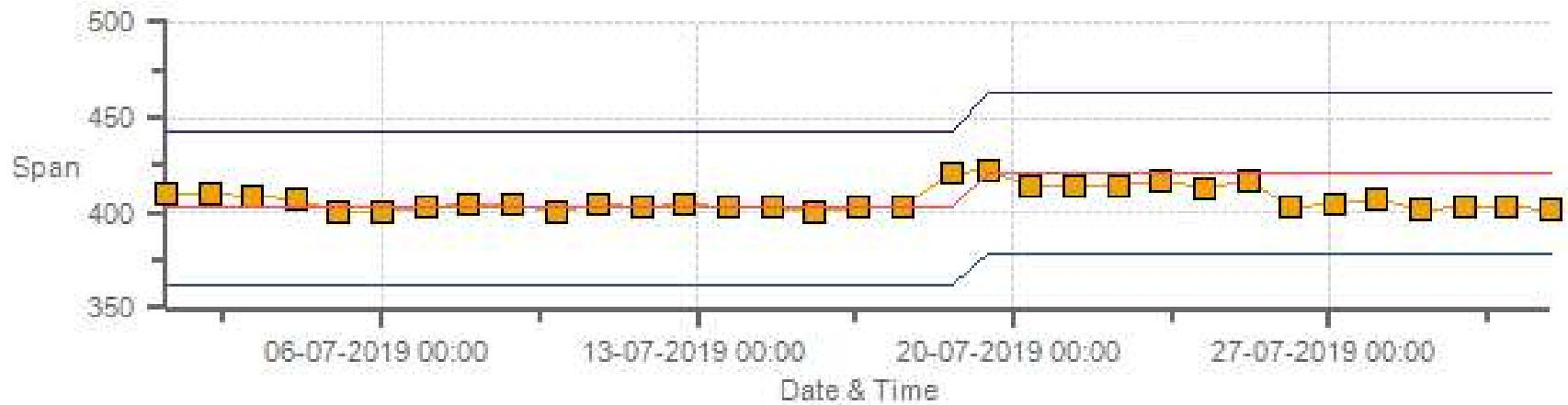


NO2 [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

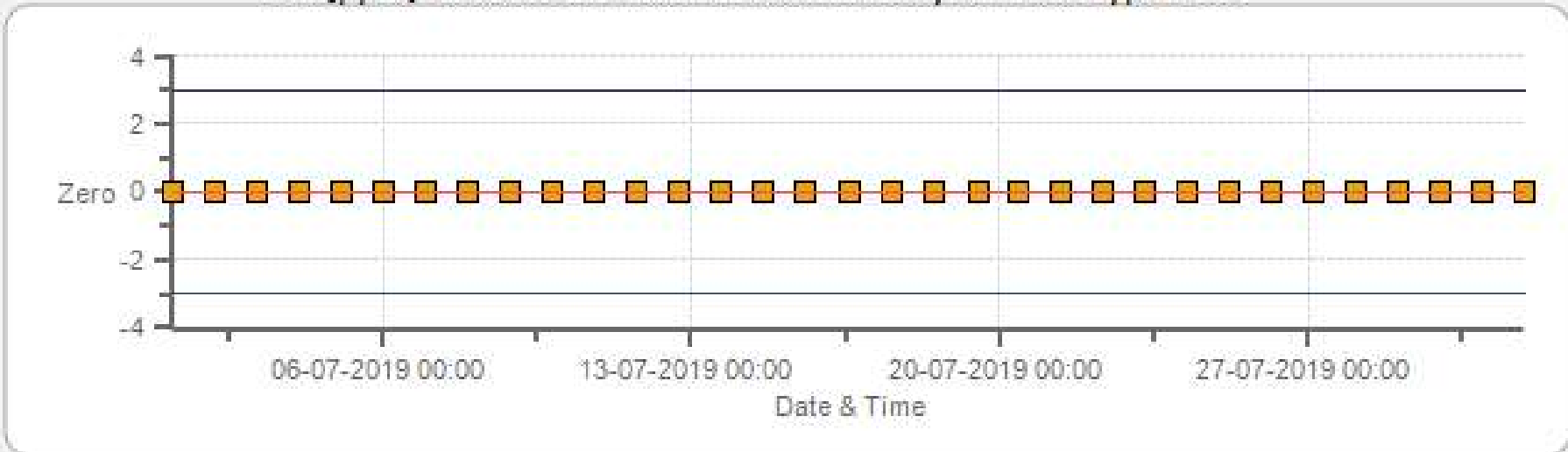
NO2 [ppb] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High

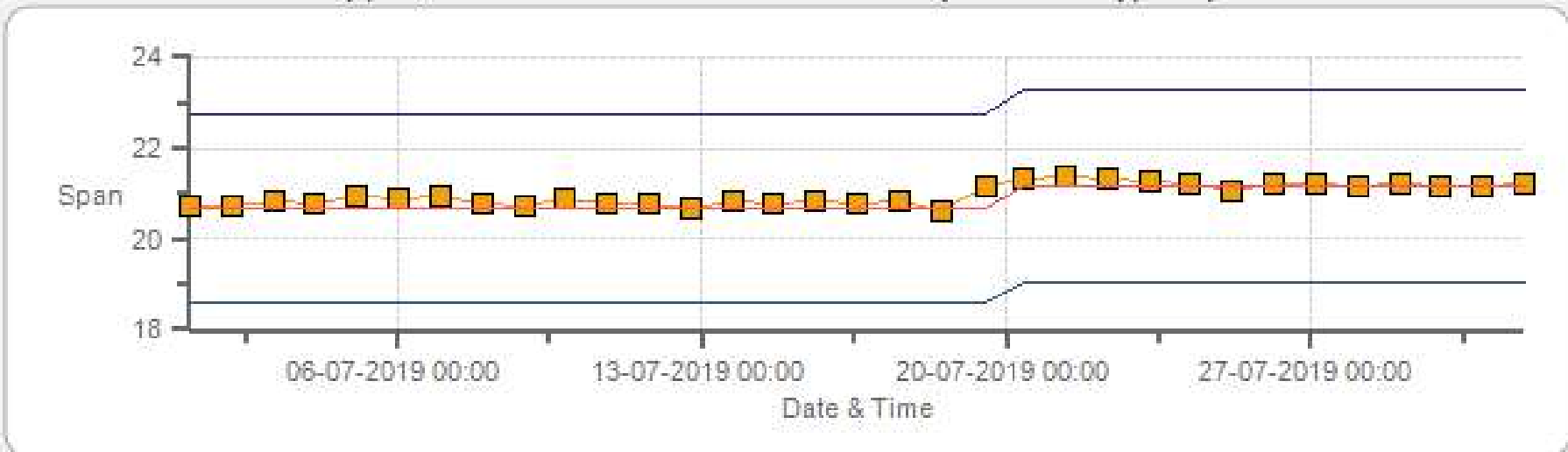


THC [ppm] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



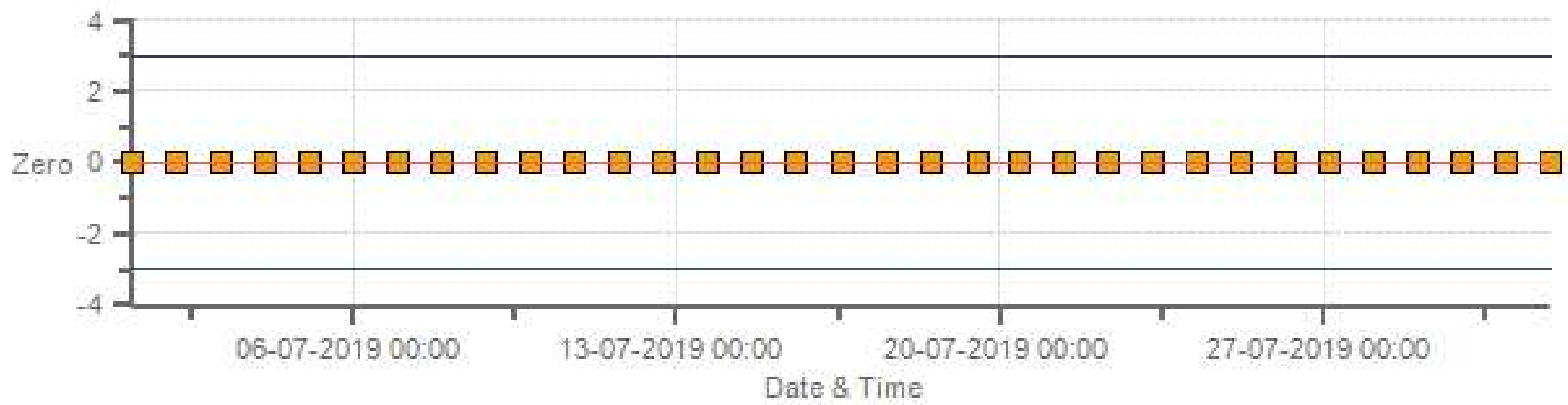
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span



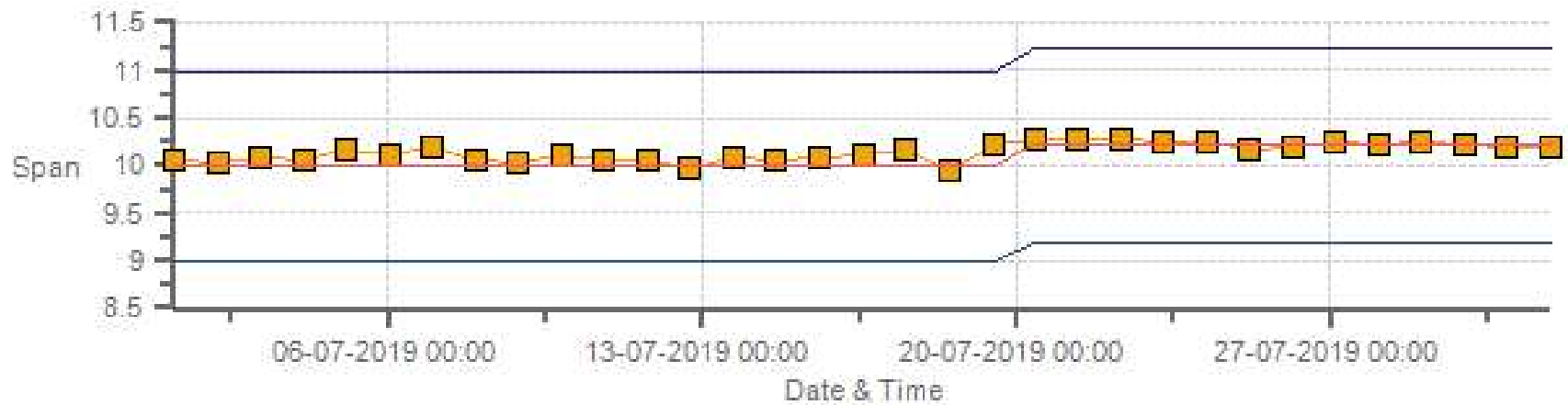
Span SpanRef Span Low Span High

CH4 [ppm] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



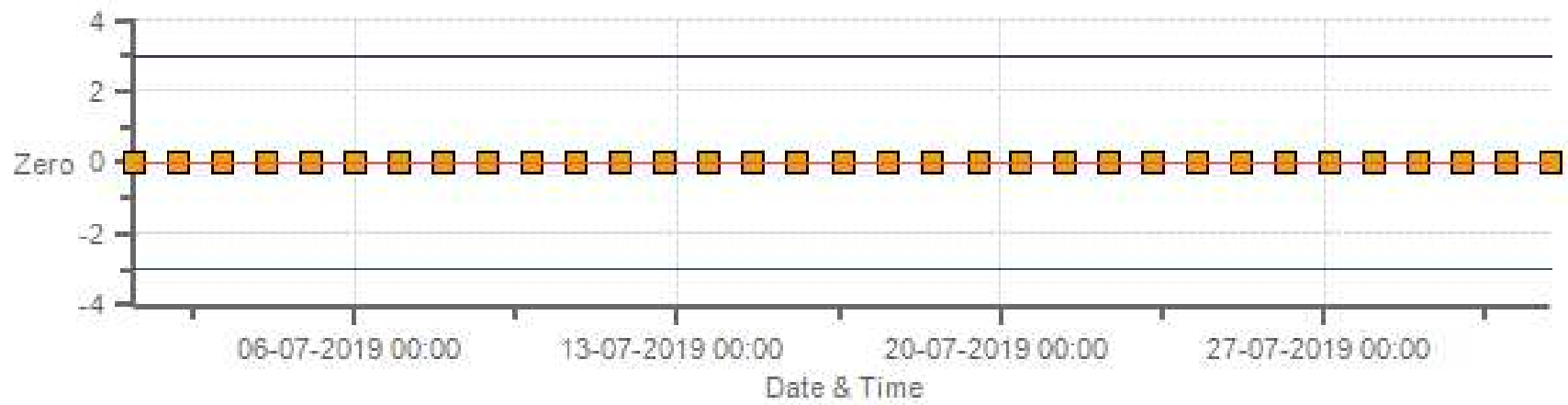
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span



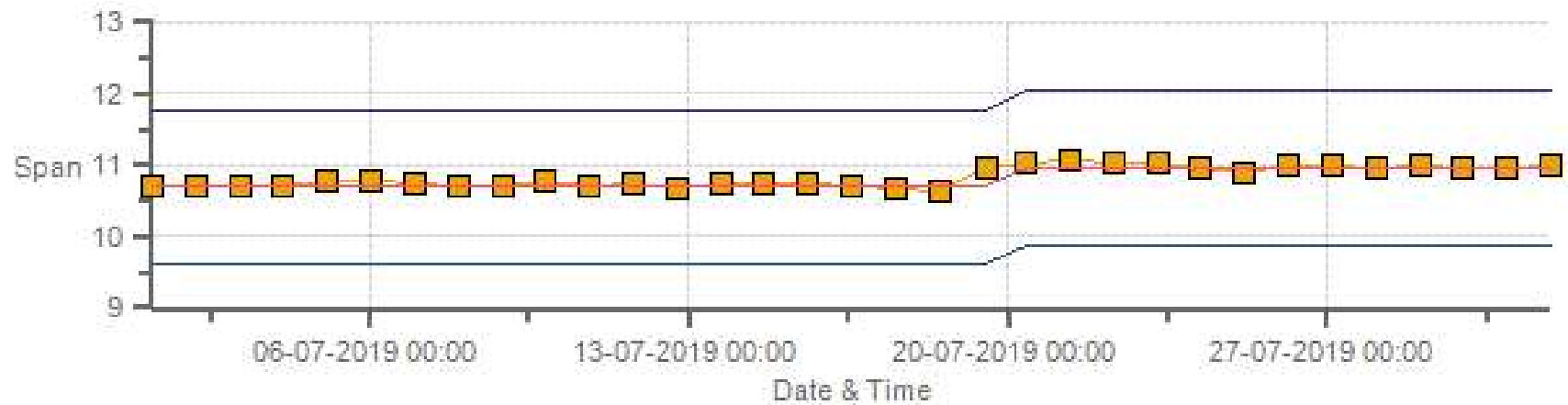
Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA Maskwa Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA Maskwa Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High



Lakeland Industry & Community Association  
5107 50 St  
Bonnyville, AB T9N2J7

# MULTI-POINT CALIBRATION RECORDS

# SO2 Analyzer Calibration by Dilution



DATE:	18-Jul-2019	PREVIOUS CALIBRATION DATE:	14-Jun-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Maskwa	BAROMETRIC (mBar):	923
PURPOSE:	Routine	START TIME (MST):	09:41
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:31

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	1000 ppb
SERIAL #	1180930031	FLOW (mL/min)	449
INITIAL		FINAL	
BKG/OFFSET	2.25	BKG/OFFSET	2.1
COEF/SLOPE	0.948	COEF/SLOPE	0.956
Expected (reference) Value	429	Expected (reference) Value	436

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	780	380	190
RANGE	600 - 800	300 - 400	100 - 200

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

## CALIBRATION:

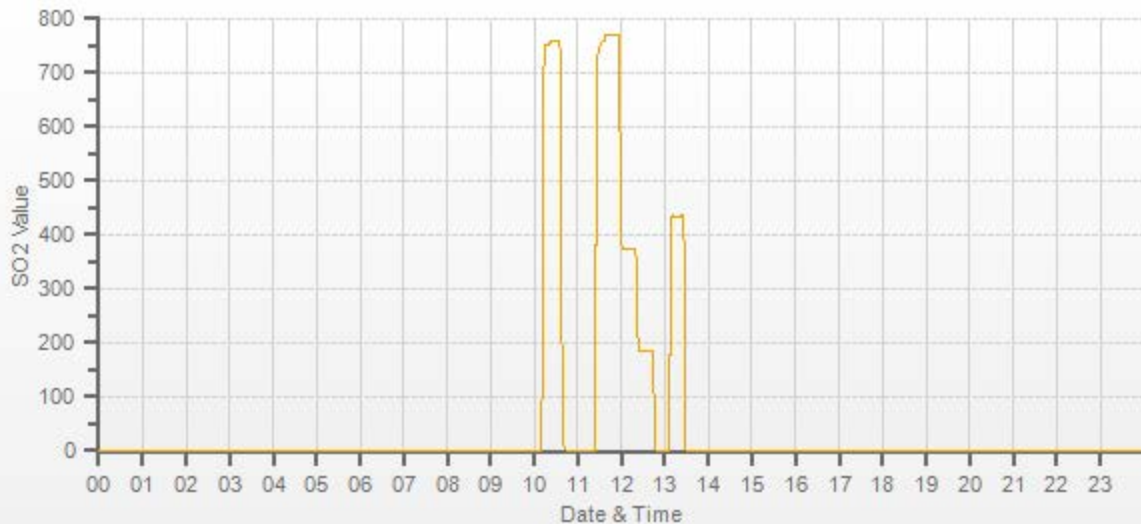
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>77.80</del>	5000	0.00	0	0	<del>1.012</del>	<del>1.000</del>
4922	77.80	5000	770.22	761	770	1.012	1.000
4962	37.90	5000	375.21	n/a	375	n/a	1.001
4981	18.90	5000	187.11	n/a	186	n/a	1.006

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed. 11:00 - scheduled ZS check interfered with the calibration. Adjusted Zero phase started from beginning.



# H2S Analyzer Calibration by Dilution



DATE:	18-Jul-2019	PREVIOUS CALIBRATION DATE:	14-Jun-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Maskwa	BAROMETRIC (mBar):	923
PURPOSE:	Routine	START TIME (MST):	09:41
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:15

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360005	FLOW (mL/min)	926
INITIAL		FINAL	
BKG/OFFSET	20.8	BKG/OFFSET	21.6
COEF/SLOPE	0.778	COEF/SLOPE	0.779
Expected (reference) Value	49.8	Expected (reference) Value	50.6

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	700	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	09:46	SO2 Conc (ppb)	780
END TIME:	10:01	Analyzer Response (ppb)	0.0

## CALIBRATION:

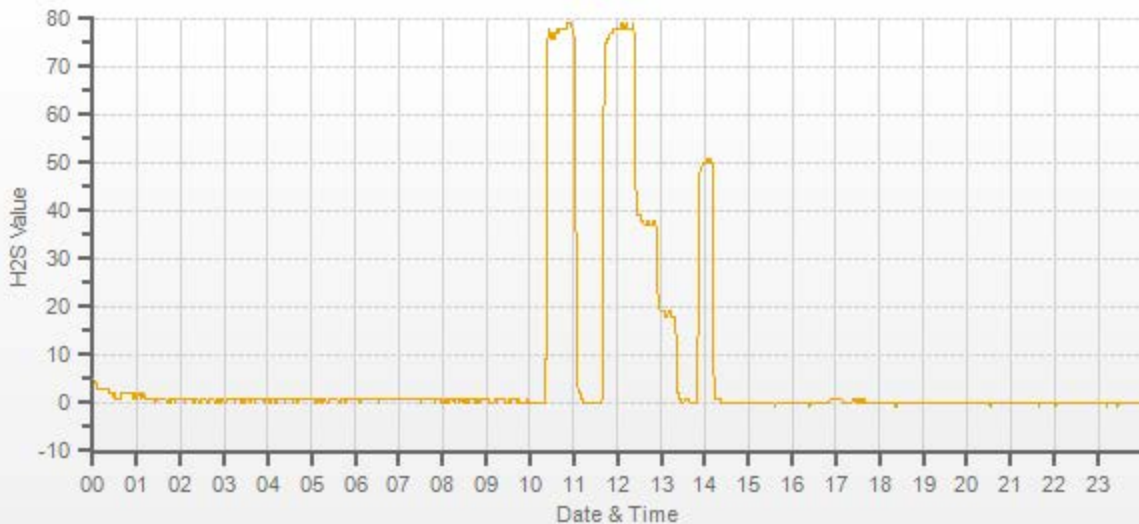
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>61.20</del>	7500	0.00	0.4	0	<del>1.002</del>	<del>1.000</del>
7439	61.20	7500	77.93	78.2	77.9	1.002	1.000
7470	29.80	7500	37.95	n/a	37.7	n/a	1.007
7485	14.90	7500	18.97	n/a	18.7	n/a	1.015

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	-0.2%

## COMMENTS:

Sample inlet filter was changed.11:00 - scheduled ZS check interfered with the calibration.





# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	18-Jul-2019	PREVIOUS CALIBRATION DATE:	14-Jun-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930028	NOx	1.000
LOCATION:	Maskwa	BAROMETRIC (mBar):	923.00	FLOW (mL/min)	487	NO	0.999
PURPOSE:	Routine	START TIME (MST):	09:41	RANGE (ppb)	1000	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:40	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1   50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	3	3	n/a	BKG/OFFSET:	3	3	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	407	4	403.0		426	5	421.0

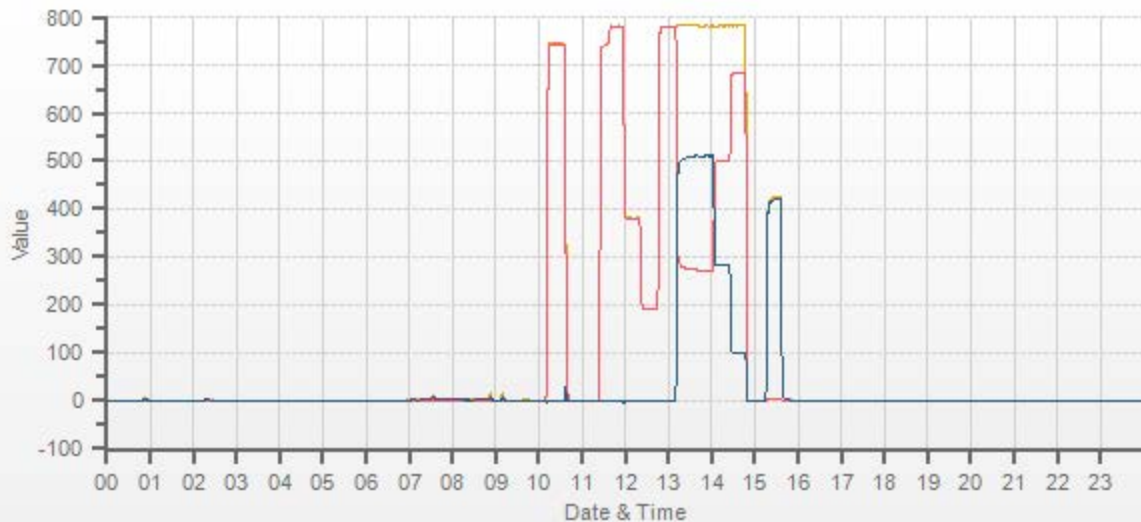
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	780	500	470-540	n/a
MID	380	275	235-310	n/a
LOW	190	90	80-115	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	<del>77.80</del>	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<del>1.049</del>	<del>1.051</del>	<del>0.999</del>	<del>1.000</del>	<del>0.999</del>	<del>0.999</del>
4922	77.80	5000	779.6	781.1	1.6	743.0	743.0	0.0	780.0	781.0	1.0	1.049	1.051	0.999	1.000	0.999	0.999
4962	37.90	5000	379.8	380.5	0.8	n/a	n/a	n/a	380.0	381.0	1.0	n/a	n/a	0.999	0.999	0.999	0.999
4981	18.90	5000	189.4	189.8	0.4	n/a	n/a	n/a	190.0	191.0	1.0	n/a	n/a	0.997	0.993	0.997	0.993

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	77.80	5000	0	780.0	781.0	1.0	<del>507</del>	<del>510</del>	<del>0.994</del>	<del>100.59%</del>
AS-FOUND HIGH	77.80	5000	490	273.0	783.0	511.0	507	510	0.994	100.59%
ADJUSTED HIGH	77.80	500	490	272.0	781.0	509.0	508	508	1.000	100.00%
MID	77.80	5000	270	499.0	781.0	282.0	281	281	1.000	100.00%
LOW	77.80	5000	95	684.0	782.0	98.0	96	97	0.990	101.04%
NO2 COEF/CONVERTER EFFICIENCY ADJUSTED									AVERAGE:	100.35%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.02%	
NOx	1.000	1.000	0.06%	
NO2	1.000	0.998	0.10%	

Sample inlet filter was changed. 11:00 - scheduled ZS check interfered with the calibration. Adjusted Zero phase started from beginning.



CAL-LICA-201907-01248

# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	19-Jul-2019	PREVIOUS CALIBRATION DATE:	14-Jun-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1180930026	1112
LOCATION:	Maskwa	BAROMETRIC (mBar):	929	PARAMETER:	CH4	NMHC	THC
PURPOSE	Routine	START TIME (MST):	08:48	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	12:20	PREVIOUS CF:	1.000	1.000	1.000

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	598.0   198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

POINT (CH <sub>4</sub> /NMHC)	HIGH	MID	LOW	CH <sub>4</sub> EQUIVILANCE	
TARGET	14	7	3.5	C <sub>3</sub> H <sub>8</sub> as CH <sub>4</sub>	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH <sub>4</sub>	1142.5

## EXPECTED (REFERENCE) VALUE:

INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	9.99	10.70	20.69		10.21	10.96	21.17

## CALIBRATION:

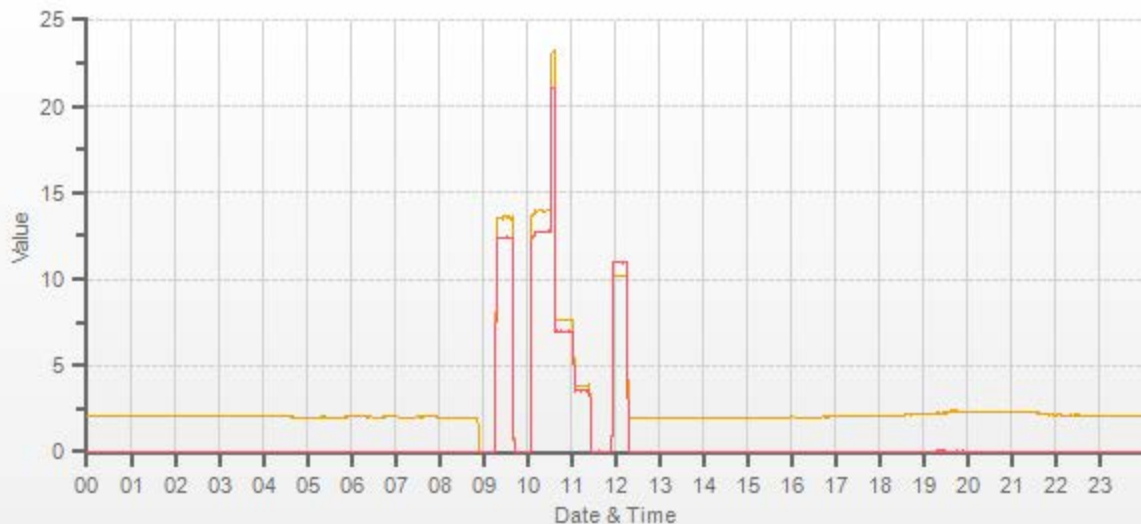
FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3000	<del>X</del>	3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
2930	70.00	3000	13.95	12.71	26.66	13.56	12.41	25.97	13.95	12.71	26.66	1.029	1.024	1.027	1.000	1.000	1.000
2962	38.00	3000	7.57	6.90	14.47	n/a	n/a	n/a	7.62	6.92	14.54	n/a	n/a	n/a	0.994	0.997	0.995
2981	19.00	3000	3.79	3.45	7.24	n/a	n/a	n/a	3.87	3.51	7.38	n/a	n/a	n/a	0.979	0.982	0.980

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH <sub>4</sub>	1.000	0.998	0.2%
NMHC	1.000	1.000	0.1%
THC	1.000	0.999	0.2%

## COMMENTS:

Sample inlet filter was changed. Operator error at 10:33 - the mid point was reset at 10:38.



CAL-LICA-201907-01248



# Meteorological Sensor Audit/Calibration

## Location Information

Company:	LICA	Performed By:	Alex Yakupov
Audit Location:	Maskwa	Reviewed By:	Rob Fisher
Audit Date:	September 17, 2018	Start/End Time (mst):	9:36 / 12:48
Calibration Purpose:	installation	Weather Conditions:	Cloudy/Overcast

## Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	161465	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	May 17, 2018	Direction Unit Output Range:	0-360 degrees

## Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744; expiration May 18, 2019

## Wind Speed Audit Data **\*\*+/- 2% of the average correction factor is the limit\*\***

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.5	18.5	0.995
2000	36.9	36.9	36.9	1.000
3000	55.3	55.4	55.4	0.998
4000	73.7	73.8	73.8	0.999
5000	92.2	92.3	92.3	0.999
6000	110.6	110.8	110.8	0.998
7000	129.0	129.3	129.3	0.998
8000	147.4	147.7	147.7	0.998
9000	165.9	166.1	166.1	0.999
10000	184.3	184.9	184.9	0.997
The audit meets AMD requirements.			Average Correction Factor=	0.998

## Wind Direction Audit Data **\*\*+/- 3° of the absolute average degrees difference for all points is the limit\*\***

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	355	0.3	0.1	0.2
30	330	30	329	-0.4	0.7	0.5
60	300	62	300	-1.9	-0.3	1.1
90	270	91	270	-1.3	-0.3	0.8
120	240	121	241	-1.0	-0.8	0.9
150	210	152	212	-1.7	-1.7	1.7
180	180	181	182	-1.1	-2.0	1.6
210	150	211	152	-1.1	-1.8	1.5
240	120	241	122	-0.5	-1.8	1.2
270	90	270	91	-0.1	-0.8	0.5
300	60	300	61	0.4	-0.6	0.5
330	30	330	31	-0.1	-0.7	0.4
355	0	354	0	0.6	0.3	0.5
The audit meets AMD requirements.			Average Absolute Degrees Difference=		0.9	

Comments:

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>API 700</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>690</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>March 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

**LINEAR REGRESSION ANALYSIS** *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO</u>	<u>LIMITS</u>	<u>NOx</u>
Correlation= 1.0000	≥ <b>0.990</b>	Correlation= 1.0000
m (Slope)= 0.9974	<b>0.90-1.10</b>	m (Slope)= 0.9833
b (Intercept % of FS)= -0.0592	± <b>3% F.S.</b>	b (Intercept % of FS)= -0.1772

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO <sub>2</sub>	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

**LINEAR REGRESSION ANALYSIS** *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO<sub>2</sub></u>	<u>LIMITS</u>	
Correlation= 0.9998	≥ <b>0.995</b>	<b>Big shift down in NOx when entering GPT function. Possible flow change.</b>
m (Slope)= 0.9649	<b>0.90-1.10</b>	
b (Intercept % of FS)= -1.4907	± <b>3% F.S.</b>	

AENV Standards Audit Calibrator	NO <sub>x</sub> Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: Al Clark

Date: April 16, 2019

Operator Signature:

Location: McIntyre Center Edmonton

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <u>Tom Bourque</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>August 2018</u>	Temperature (°C)	<u>24.4 C</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>699 mmHg</u>
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>
Expiry Date	<u>December 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO</b>		<b>LIMITS</b>		<b>NO<sub>x</sub></b>			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0117	0.90-1.10		m (Slope)=	1.0039		
b (Intercept % of FS)=	0.2171	± 3% F.S.		b (Intercept % of FS)=	-0.0020		

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO <sub>2</sub>	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO<sub>2</sub></b>		<b>LIMITS</b>					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0062	0.90-1.10					
b (Intercept % of FS)=	-1.0004	± 3% F.S.					

<b>AENV Standards</b>		<b>NO<sub>x</sub> Analyzer</b>	
<b>Audit Calibrator</b>			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019  
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



## Calibration Gas Audit

### Single Component Cylinder Gas

File No. 2019-392CGA

**Company:** Maxxam **Operator's Name:** Alex

Cylinder #: LL107918 Concentration PPM: 49.5 Tolerance(%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Sabio 2010</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 2092</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>January 14, 2019</u>	Temp. °C: <u>22.7 C</u>
Gas Type: <u>SO2</u> Conc. <u>50.26</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>FF28071</u>	
Expiry Date: <u>March 2020</u>	

**Reference Analyzer:**

Make/Model: Teco 43i Serial/AMU Number: 2195

Instrument Settings: Zero: 11.8 Span: 0.980 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.000</del>	<del>0.000</del>	<del>0.000</del>
4898	78.1	0.790	0.01595	62.714	49.5
4893	38.7	0.389	0.00791	126.434	49.2
4894	19.3	0.192	0.00394	253.575	48.7
Average Cylinder Concentration:					<b>49.1</b>

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 1

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:** \_\_\_\_\_

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration  \_\_\_\_\_

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder  \_\_\_\_\_

Auditor: Al Clark

Operator Signature:

Date: January 15, 2019

Location: McIntyre Center Edmonton





# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike  
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair  
 Expiry Date: October 2020

**Reference Calibrator and Gas:**  
 Make/Model: Sabio 2010  
 Serial Number: AMU 2092  
 Last Verification Date: January 17, 2018  
 Gas Type: H2S Conc. 20.43  
 Cylinder Number: CAL015272  
 Expiry Date: January 2019

**Flow Measurement Device:**  
 Make/Model: Mesa Defender 530  
 Serial Number: H-153961 / L-153874  
 Temp. °C: 23.0 C  
 B.P.: 697 mmHg

**Reference Analyzer:**  
 Make/Model: Teco 450i Serial/AMU Number: 1980  
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1  
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>0.0000</del>	<del>0.0000</del>
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					<b>9.58</b>

Previous Stated Concentration PPM: 9.55

Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration  COMMENTS: Used AEP regulator  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark

Date: January 18, 2018

Operator Signature: *Al Clark*

Location: McIntyre Center Edmonton



# Calibration Gas Audit

## NO Cylinder Gas

File No. 2019-391CGA

**Company:** Maxxam                      **Operators name:** Alex

Cylinder #: LL107918    Conc (PPM) 50.1/50.2    Tolerance (%) 1    Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

**Reference Analyzer:**

Make/Model Teco 42i                      Serial/AMU Number: 2268

Instrument Settings    Zero: 9.2                      Span: 1.223                      Range: 1.0

Last Calibration:                      Date: Jan 14/19                      C.F. 1.000                      Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						<b>49.7</b>	<b>49.7</b>

<b>NO</b>	<b>NOx</b>
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

**Cylinder gas tolerances based on NO only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark                      Date: Janaury 15, 2019

Operator Signature: *Al Clark*                      Location: McIntyre Center Edmonton



# Calibration Gas Audit

## CH<sub>4</sub> / C<sub>3</sub>H<sub>8</sub> Cylinder Gas

File No. 2019-393CGA

**Company:** Maxxam **Operators name:** Alex  
**Cylinder #:** LL29687 **Conc CH<sub>4</sub> (PPM)** 598/198 **Tolerance (%)** 1 **Certified By:** Praxair  
**Expiry Date:** August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 2092</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>23.8 C</u>
Gas Type	<u>CH<sub>4</sub></u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>05604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C<sub>3</sub>H<sub>8</sub></u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

**Reference Analyzer:**  
 Make/Model Teco 55i Serial/AMU Number: 2221  
 Instrument Settings Zero: N/A Span: N/A Range: 20.0  
 Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH <sub>4</sub>	C <sub>3</sub> H <sub>8</sub>			CH <sub>4</sub>	C <sub>3</sub> H <sub>8</sub>
5000	0.0	0.00	0.00	<del>0.02</del>	<del>51.48</del>	<del>603</del>	<del>209</del>
3990	77.5	11.71	11.18	0.02	51.48	603	209
3976	39.1	5.87	5.71	0.01	101.69	597	211
3986	20.0	2.96	2.86	0.01	199.30	590	207
Average Cylinder Concentration:						<b>597</b>	<b>209</b>

<b><u>CH<sub>4</sub></u></b>	<b><u>C<sub>3</sub>H<sub>8</sub></u></b>
Previous Stated Concentration PPM: <u>598</u>	<u>198</u>
Percent variance from Stated: <u>0</u>	<u>6</u>

**Cylinder gas tolerances based on CH<sub>4</sub> only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 15, 2019  
 Operator Signature:  Location: McIntyre Center Edmonton

# End of Report



**Lakeland Industry & Community Association**

**JULY 2019**

**Ambient Air Monitoring Calibration Report**

**- ST. LINA STATION-**

**CAL-LICA-201907-01250**

**Station Operation and Maintenance:**

Maxxam Analytics

**Data Validation and Report:**

Maxxam Analytics

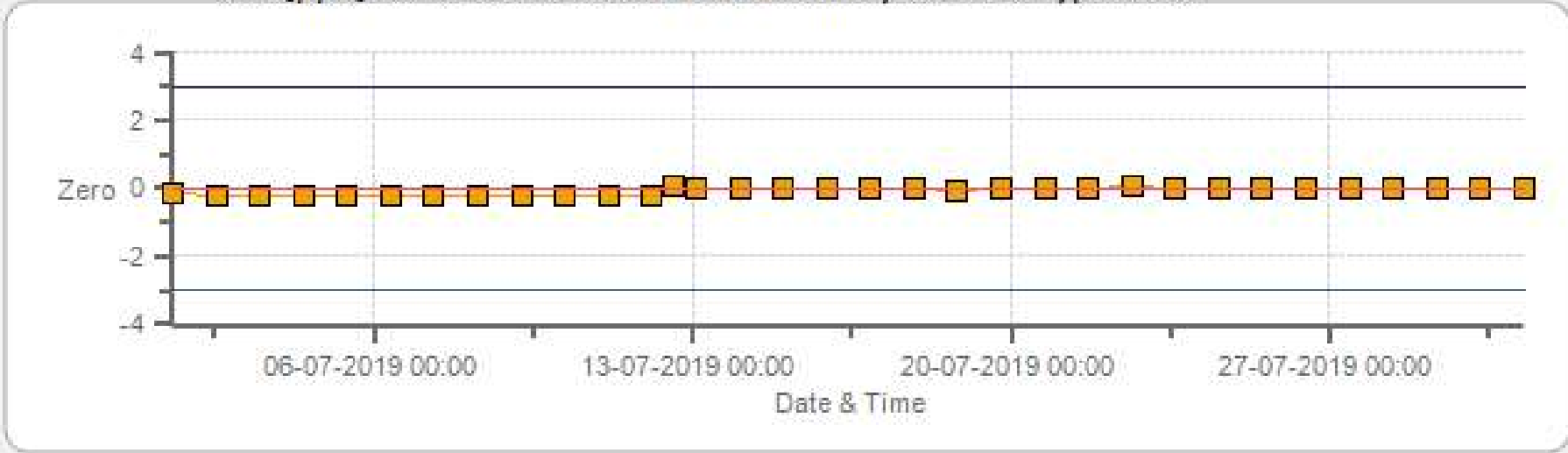
August 12, 2019



Lakeland Industry & Community Association  
5107 50 St  
Bonnyville, AB T9N2J7

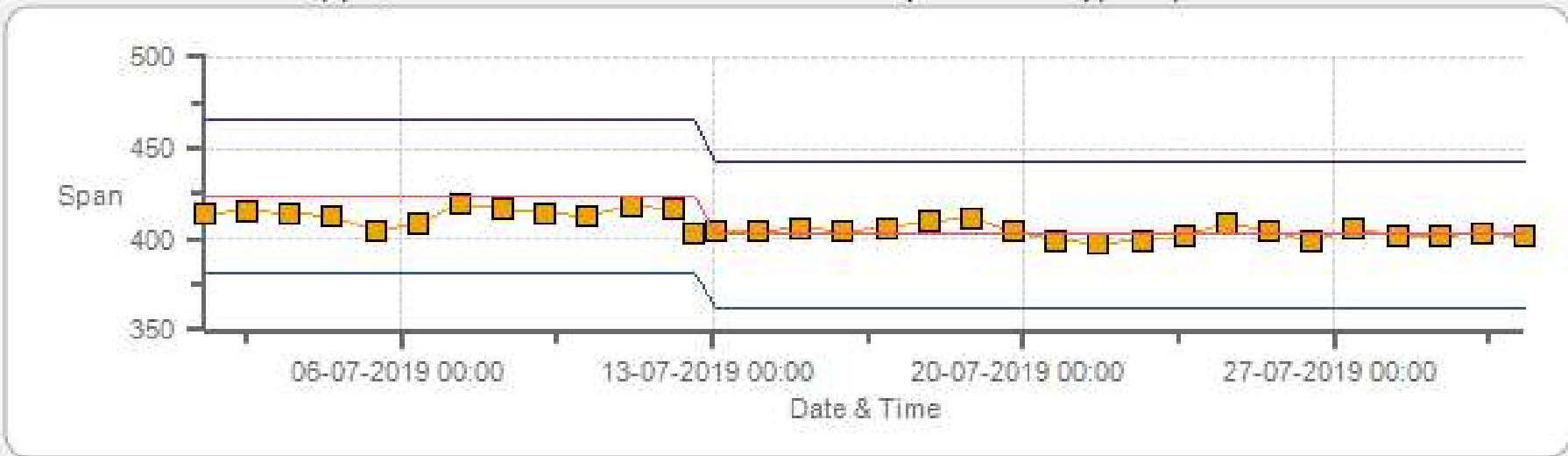
# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



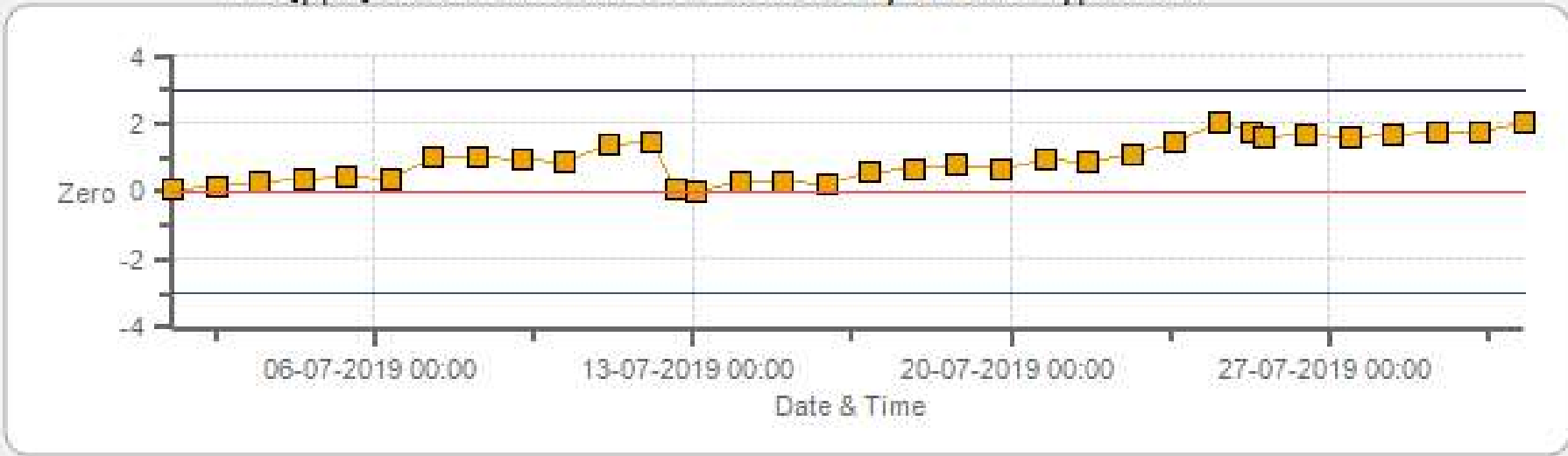
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



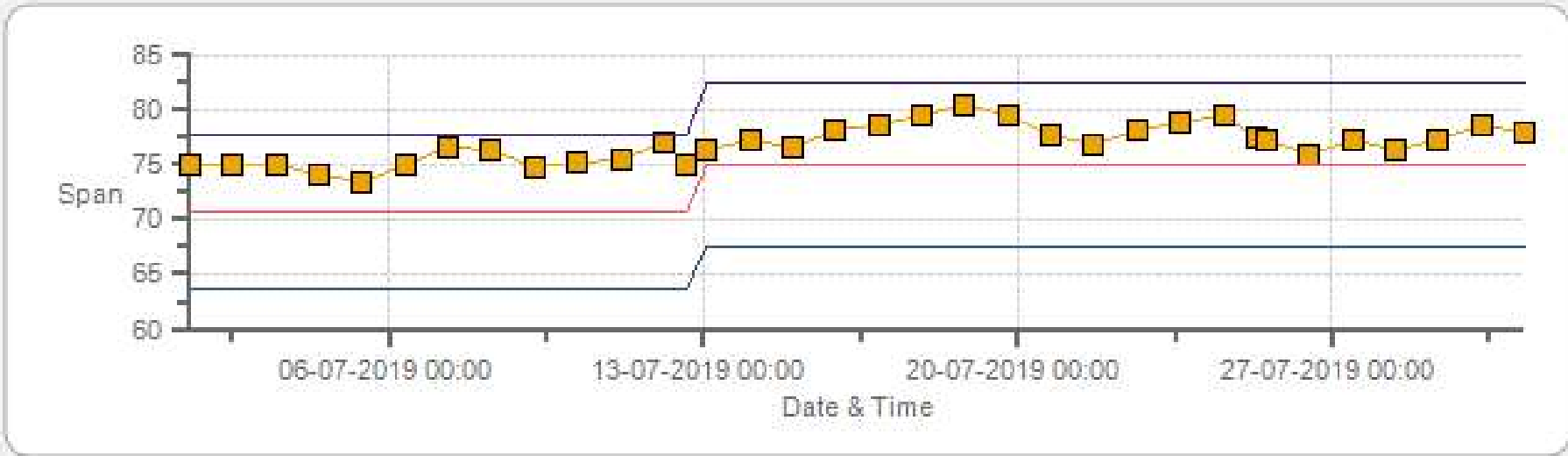
Span SpanRef Span Low Span High

H2S [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

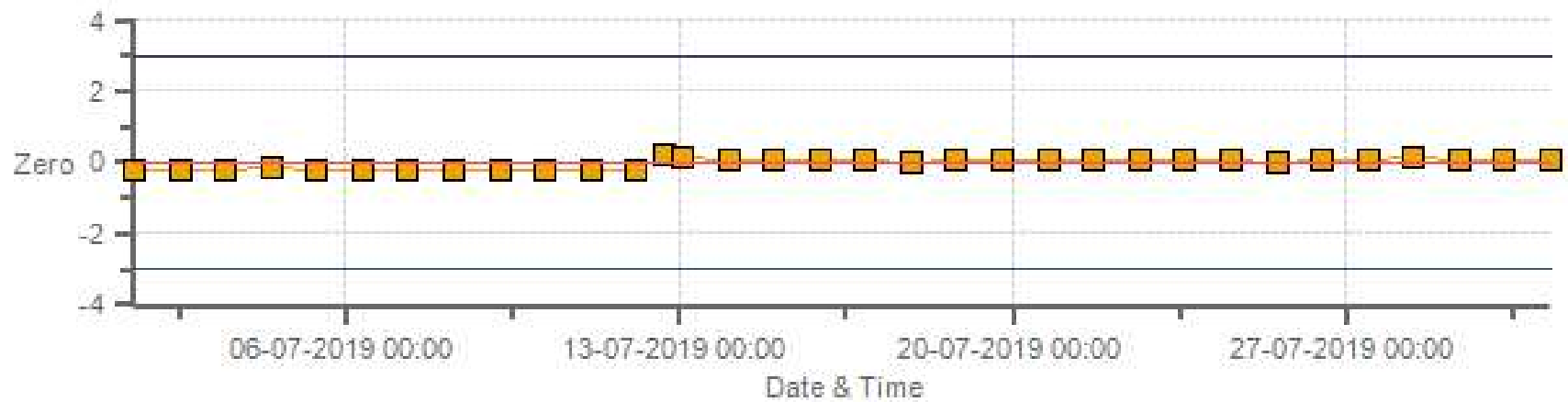
H2S [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High

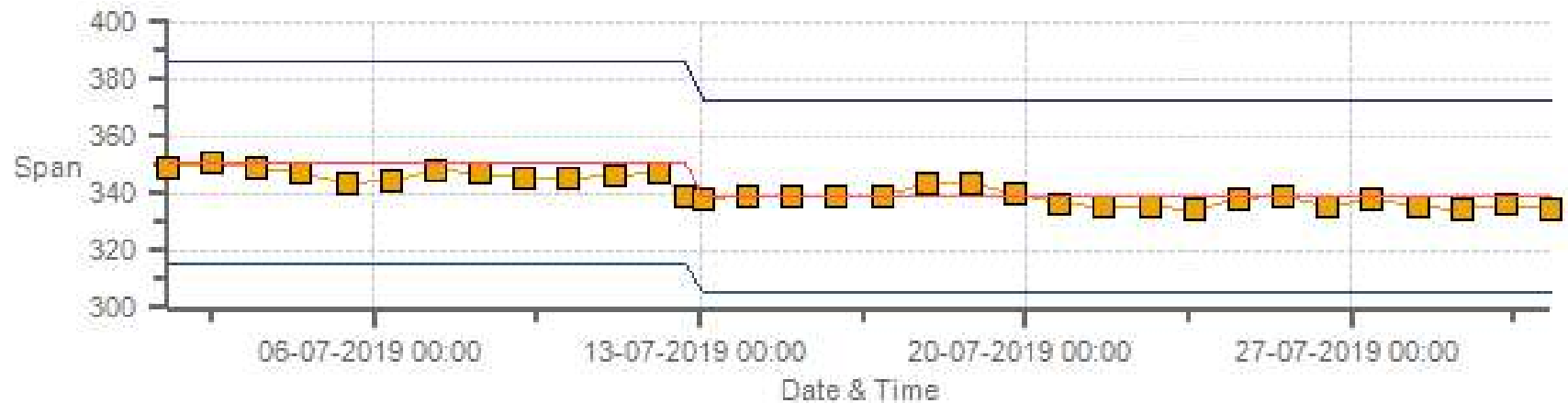


NOx [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



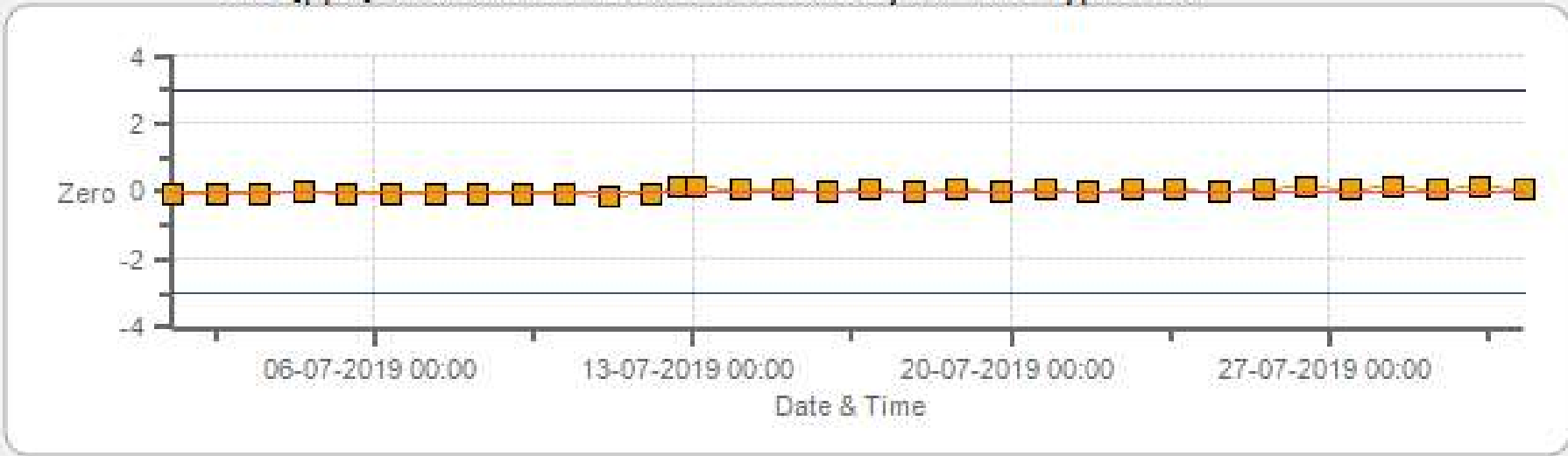
Zero Zero Ref Zero Low Zero High

NOx [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



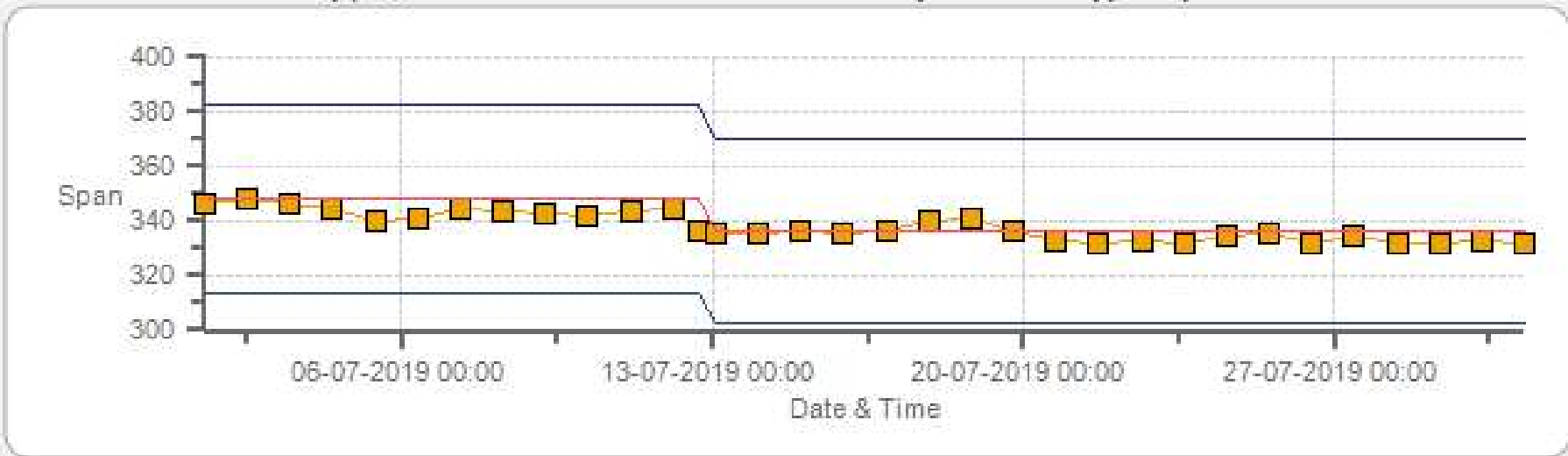
Span SpanRef Span Low Span High

NO2 [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



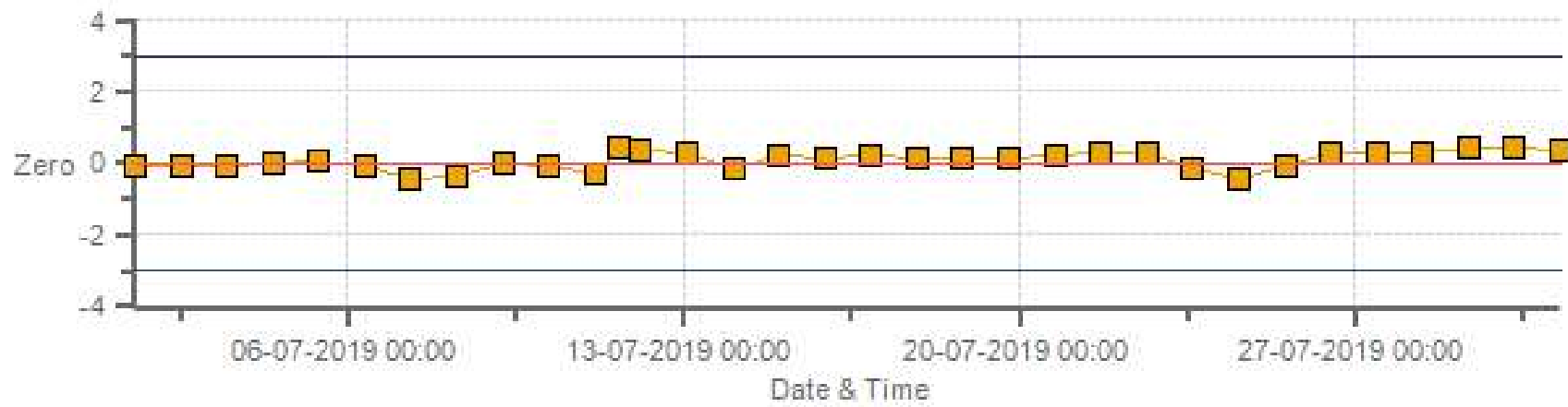
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NO2 [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



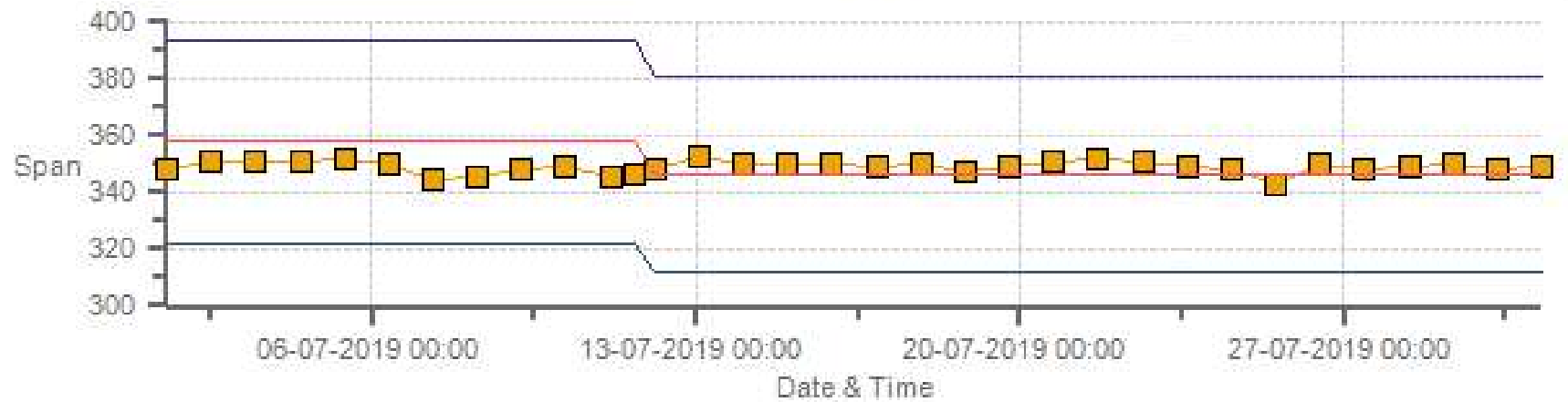
Span SpanRef Span Low Span High

O3 [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



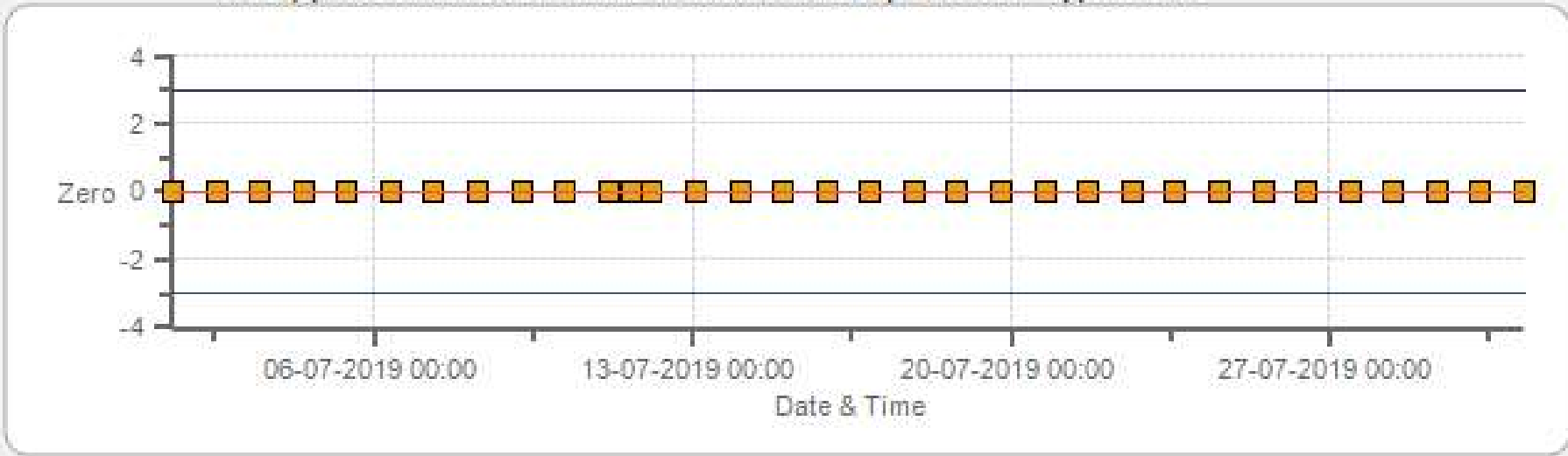
Zero Zero Ref Zero Low Zero High

O3 [ppb] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



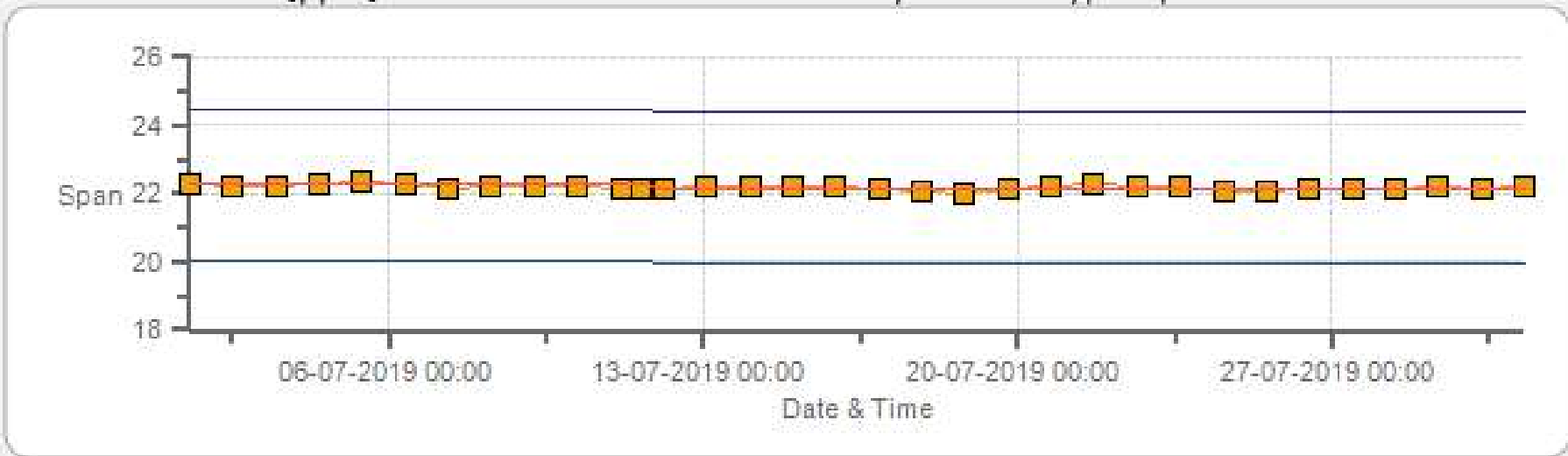
Span SpanRef Span Low Span High

THC [ppm] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



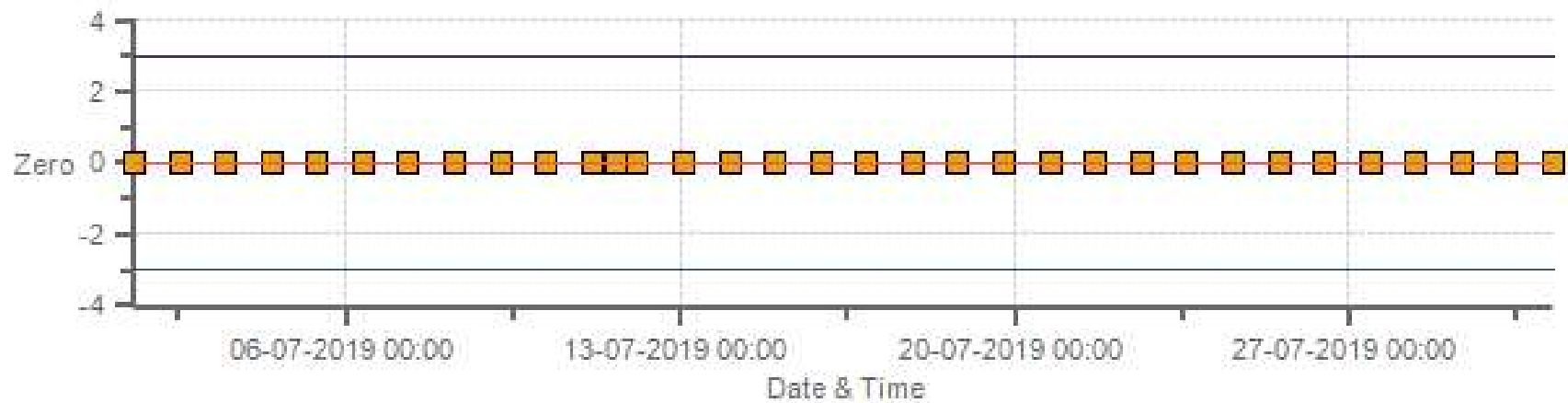
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



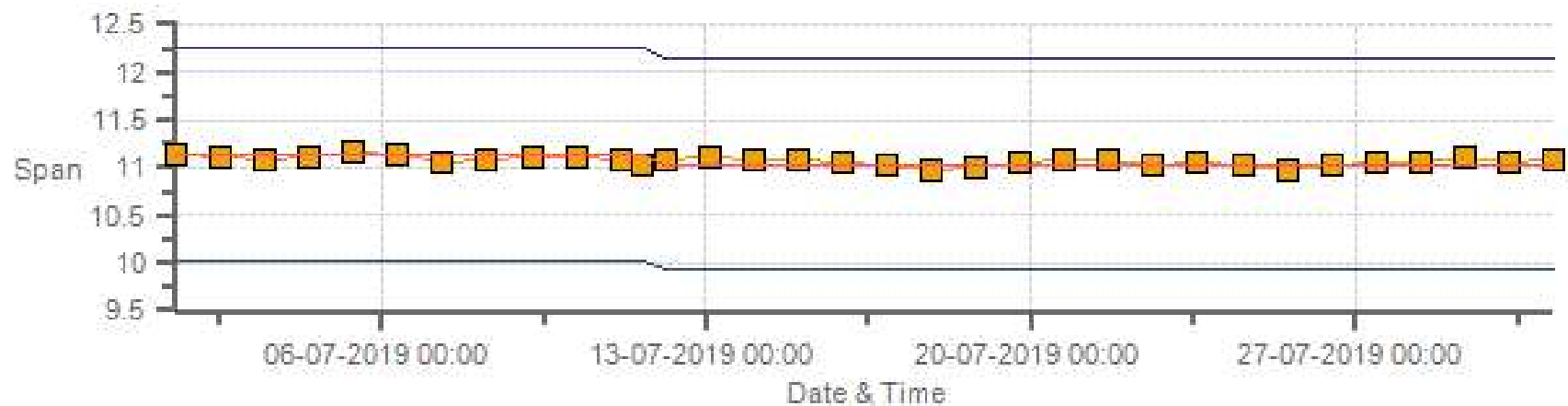
Span SpanRef Span Low Span High

CH4 [ppm] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



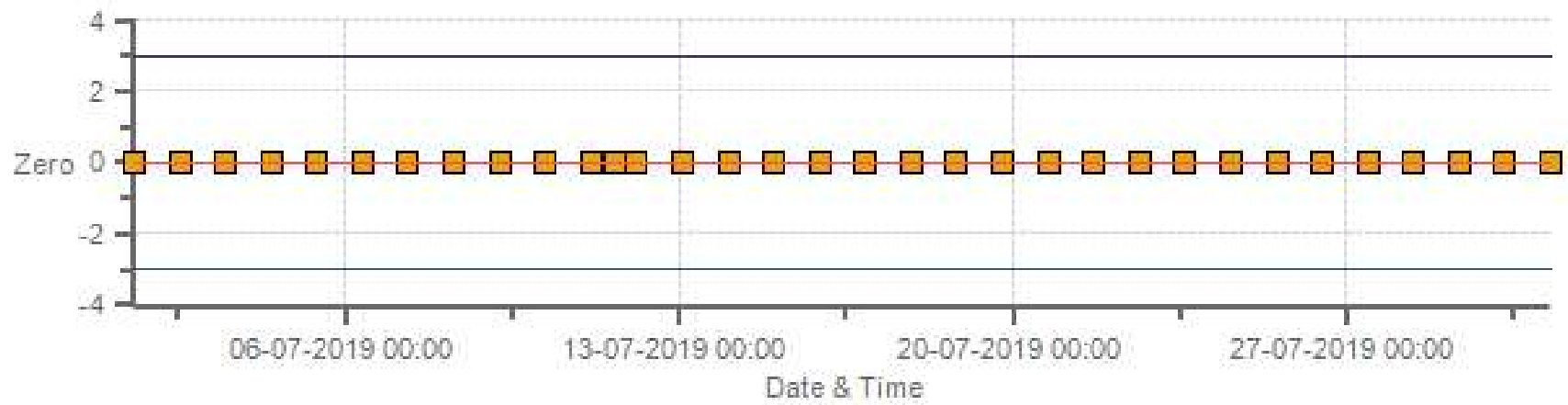
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



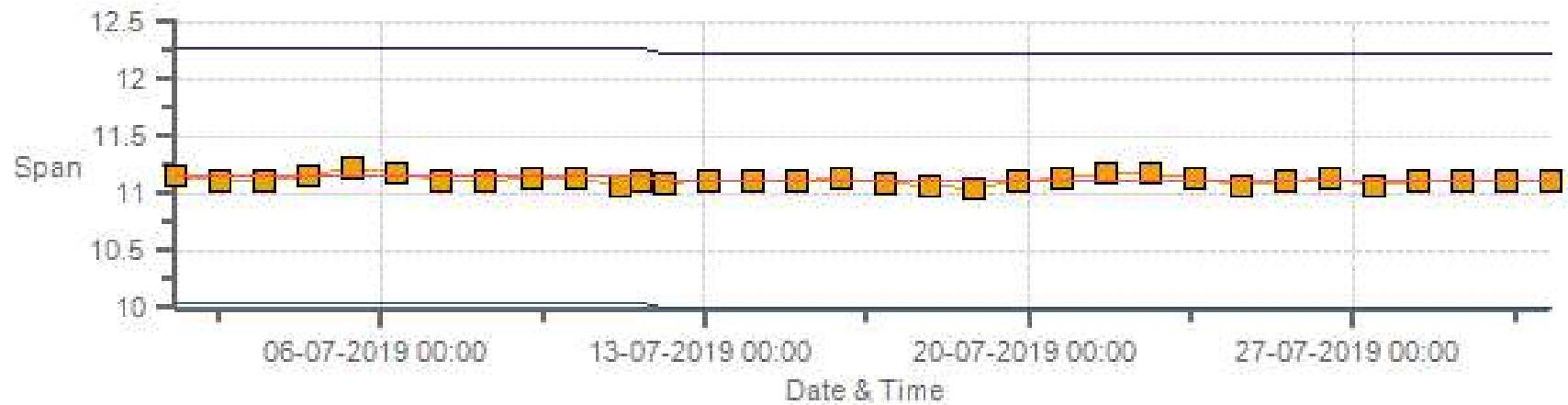
Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA ST. LINA Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High



Lakeland Industry & Community Association  
5107 50 St  
Bonnyville, AB T9N2J7

# MULTI-POINT CALIBRATION RECORDS

# SO2 Analyzer Calibration by Dilution



DATE:	12-Jul-2019	PREVIOUS CALIBRATION DATE:	04-Jun-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	915
PURPOSE:	Routine	START TIME (MST):	10:09
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:24

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	1000 ppb
SERIAL #	1180930030	FLOW (mL/min)	437
INITIAL		FINAL	
BKG/OFFSET	3.9	BKG/OFFSET	3.63
COEF/SLOPE	1.115	COEF/SLOPE	1.085
Expected (reference) Value	423	Expected (reference) Value	403

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	780	380	190
RANGE	600 - 800	300 - 400	100 - 200

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

## CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>77.80</del>	5000	0.00	-0.2	0	<del>0.976</del>	<del>1.000</del>
4922	77.80	5000	770.22	789	770	0.976	1.000
4962	37.90	5000	375.21	n/a	375	n/a	1.001
4981	18.90	5000	187.11	n/a	187	n/a	1.001

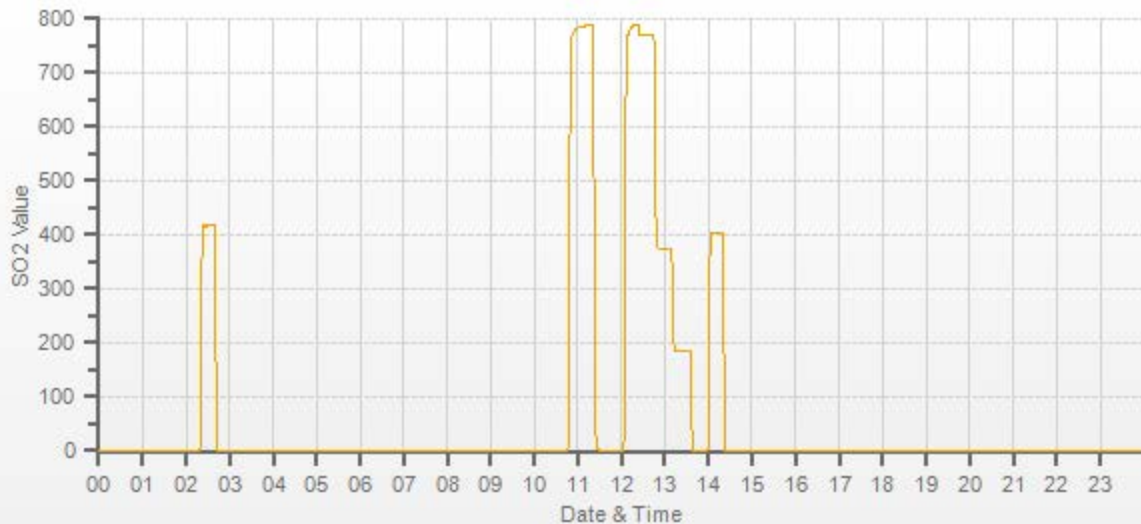
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.





# H2S Analyzer Calibration by Dilution



DATE:	12-Jul-2019	PREVIOUS CALIBRATION DATE:	24-Jun-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	915
PURPOSE:	Routine	START TIME (MST):	10:09
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:58

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 18010058	FLOW (mL/min)	818
INITIAL		FINAL	
BKG/OFFSET	42.6	BKG/OFFSET	43.6
COEF/SLOPE	0.834	COEF/SLOPE	0.832
Expected (reference) Value	70.7	Expected (reference) Value	75

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	700	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	10:16	SO2 Conc (ppb)	780
END TIME:	10:31	Analyzer Response (ppb)	0.0

## CALIBRATION:

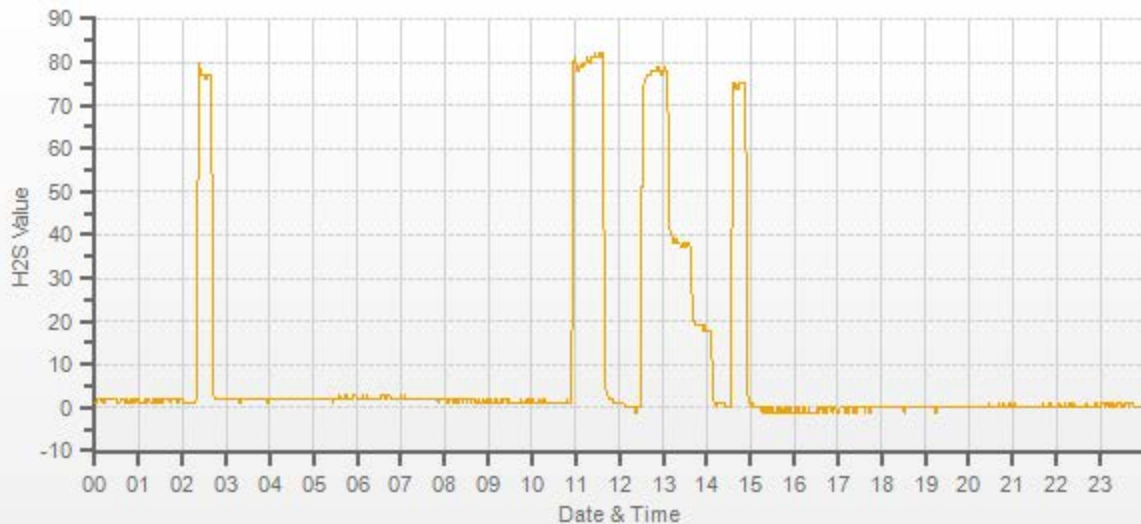
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>61.20</del>	7500	0.00	1.4	0	<del>1.003</del>	<del>1.000</del>
7439	61.20	7500	77.93	79.1	77.9	1.003	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	19	n/a	0.999

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.



# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	12-Jul-2019	PREVIOUS CALIBRATION DATE:	04-Jun-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930029	NOx	1.000
LOCATION:	St. Lina	BAROMETRIC (mBar):	915.00	FLOW (mL/min)	513	NO	0.999
PURPOSE:	Routine	START TIME (MST):	10:11	RANGE (ppb)	1000	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:18	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1   50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	6	6	n/a	BKG/OFFSET:	6	6	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

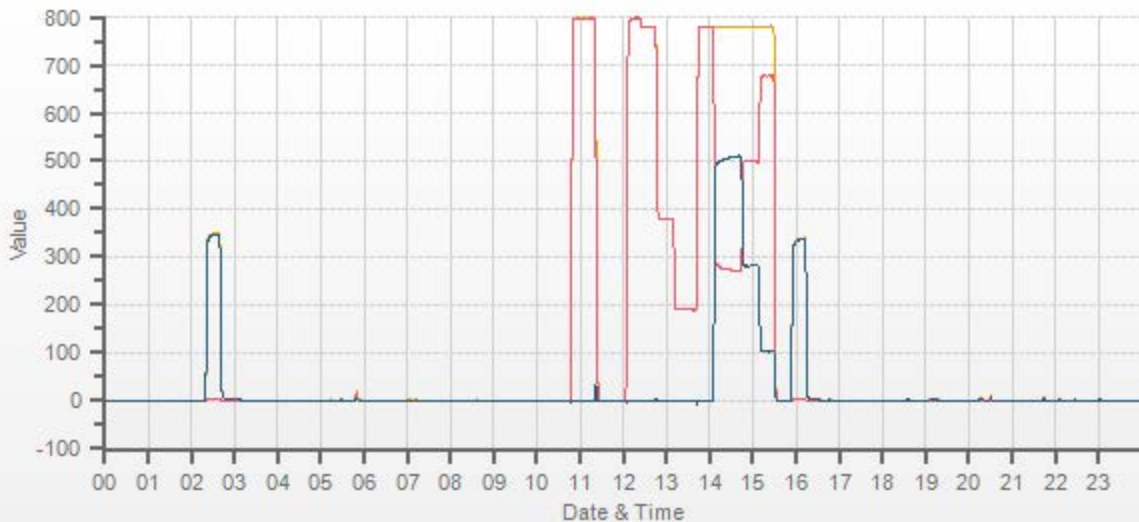
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	351	3	348.0		339	3	336.0

POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	780	500	470-540	n/a
MID	380	275	235-310	n/a
LOW	190	90	80-115	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	<del>77.80</del>	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<del>0.978</del>	<del>0.980</del>	<del>0.999</del>	<del>1.000</del>	<del>0.999</del>	<del>0.999</del>
4922	77.80	5000	779.6	781.1	1.6	797.0	797.0	0.0	780.0	781.0	1.0	0.978	0.980	0.999	1.000	0.999	0.999
4962	37.90	5000	379.8	380.5	0.8	n/a	n/a	n/a	380.0	381.0	0.0	n/a	n/a	0.999	0.999	0.999	0.999
4981	18.90	5000	189.4	189.8	0.4	n/a	n/a	n/a	190.0	190.0	0.0	n/a	n/a	0.997	0.999	0.999	0.999

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	77.80	5000	0	780.0	780.0	0.0	<del>502</del>	<del>502</del>	<del>1.000</del>	<del>100.00%</del>
AS-FOUND HIGH	77.80	5000	490	278.0	780.0	502.0	502	502	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	77.80	5000	270	500.0	780.0	280.0	280	280	1.000	100.00%
LOW	77.80	5000	100	677.0	780.0	103.0	103	103	1.000	100.00%
NO2 adjustment not required.									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.02%	
NOx	1.000	1.000	0.02%	
NO2	1.000	1.000	0.00%	



CAL-LICA-201907-01250

# Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	11-Jul-2019	PREVIOUS CALIBRATION DATE:	05-Jun-2019
PARAMETER:	Ozone	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	917
PURPOSE:	Routine	START TIME (MST):	11:40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:16

## ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	1002240371	FLOW (mL/min)	1521
INITIAL		FINAL	
BKG/OFFSET	-0.2	BKG/OFFSET	-0.7
COEF/SLOPE	1.009	COEF/SLOPE	1.009
Expected (reference) Value	358	Expected (reference) Value	346

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
RANGE	300 - 400	150 - 200	50 - 100

## CALIBRATION:

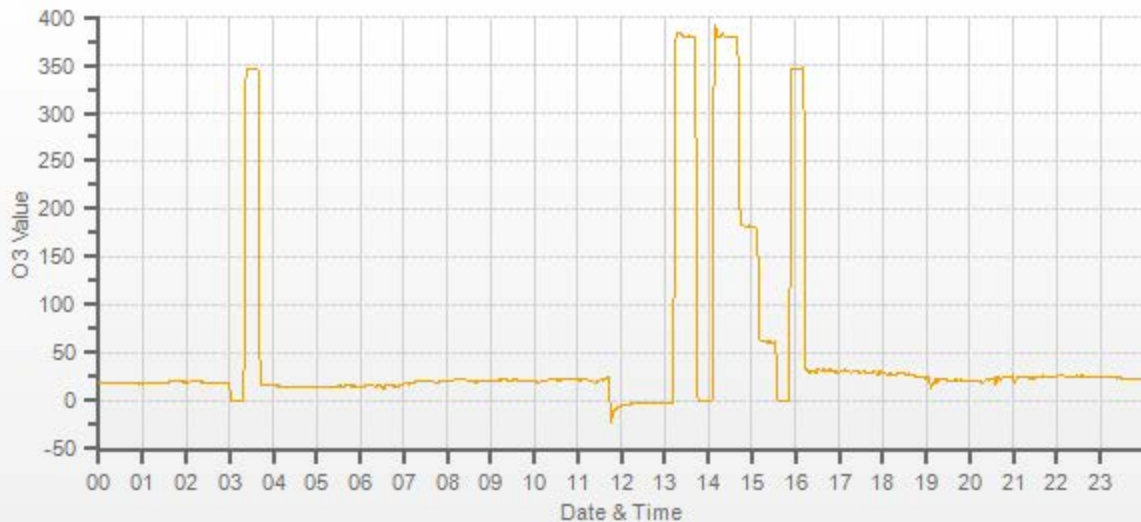
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>5000</del>	5000	0.0	0.0	0.0	<del>1.000</del>	<del>1.000</del>
5000	<del>5000</del>	5000	380.0	380.0	380.0	1.000	1.000
5000	<del>5000</del>	5000	181.0	n/a	181.0	n/a	1.000
5000	<del>5000</del>	5000	61.0	n/a	61.0	n/a	1.000

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.



# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	11-Jul-2019	PREVIOUS CALIBRATION DATE:	05-Jun-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1180930025	1210
LOCATION:	St. Lina	BAROMETRIC (mBar):	917	PARAMETER:	CH4	NMHC	THC
PURPOSE	Routine	START TIME (MST):	11:40	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:22	PREVIOUS CF:	1.000	1.000	1.000

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	598.0   198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

POINT (CH <sub>4</sub> /NMHC)	HIGH	MID	LOW	CH <sub>4</sub> EQUIVILANCE	
TARGET	14	7	3.5	C <sub>3</sub> H <sub>8</sub> as CH <sub>4</sub>	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH <sub>4</sub>	1142.5

## EXPECTED (REFERENCE) VALUE:

INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	11.13	11.15	22.28		11.04	11.12	22.16

## CALIBRATION:

FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3025	<del>X</del>	3025	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
2955	70.00	3025	13.84	12.60	26.44	13.87	12.63	26.50	13.84	12.60	26.44	0.998	0.998	0.998	1.000	1.000	1.000
2987	38.00	3025	7.51	6.84	14.35	n/a	n/a	n/a	7.54	6.98	14.52	n/a	n/a	n/a	0.996	0.980	0.988
3006	19.00	3025	3.76	3.42	7.18	n/a	n/a	n/a	3.83	3.57	7.40	n/a	n/a	n/a	0.981	0.958	0.970

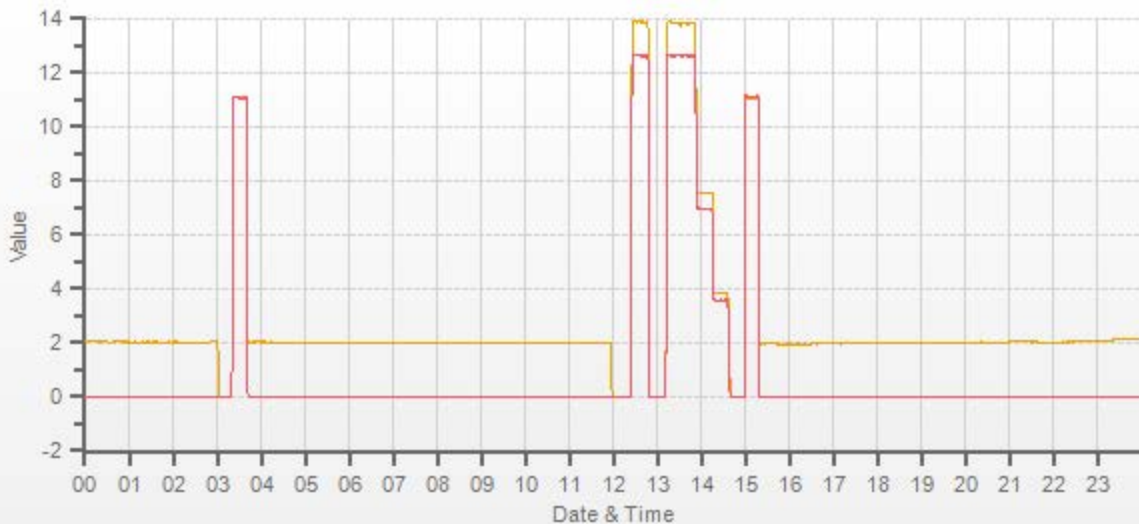
## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH <sub>4</sub>	1.000	0.999	0.2%
NMHC	1.000	1.000	0.4%
THC	1.000	0.998	0.3%

## COMMENTS:

Sample inlet filter was changed.





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CH4 [ppm] NMHC [ppm]

## Thermo 5030i SHARP Monitor Monthly Check



**Date:** July 25, 2019  
**Company:** LICA  
**Station Name/Location:** St.Lina  
**Previous Audit Date:** June 5, 2019  
**Parameter:** PM 2.5

**Performed By/Reviewer:** Alex Yakupov | Rob Fisher  
**Start Time (mst):** 10:53  
**End Time (mst):** 11:45  
**Calibration Purpose:** routine monthly  
**Weather Conditions:** Rain fall heavy at times

**SHARP 5030i Information and Status:**

**Serial Number:** CM 17091001      **Filter Tape Counter:** 355

**Reference Standards:**

**Air Flow**

	Manometer	Orifice	Pressure:	Temp / RH:
<b>Make:</b>	Dwyer	Chinook	Fisher Scientific	Fisher Scientific
<b>Model:</b>	475 Mk. III	170101	FB61291	11-661-7B    11745843
<b>Serial Number:</b>	#3	#4	130168457	160348895
<b>Calibration Expiration Date:</b>	January 17, 2020	January 31, 2020	January 17, 2020	June 19, 2020

Ambient Temperature (°C)				Range	Action
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	< ± 2°C	OK
#1	13.40	12.3	1.1	2-3 °C	Recalibrate
				> 3°C	Fail

Ambient Relative Humidity (%RH)				Range	Action
<b>As Found:</b>					
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	< ± 2 %RH	OK
#1	97.10	97.0	0.1	2-5 %RH	Recalibrate
				> 5 %RH	Fail

Barometric Pressure (mmHg)				Range	Action
<b>As Found:</b>					
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	< ± 10 mmHg	OK
#1	682.0	683.0	-1.0	10-12 mmHg	Recalibrate
				> 12 mmHg	Fail

Flow Audit (L/min)						Range	Action
<b>As Found:</b>							
	<b>Reference</b>	<b>SHARP</b>				< ± 4%	OK
#1	16.67	16.66		% Difference	-0.020012007	4-5%	Recalibrate
#2	16.64	16.64				>5%	Fail
#3	16.66	16.66					
<b>Average</b>	16.66	16.65					

Leak Check (L/min)							
Without Leak Check Adapter			With leak Check Adapter				
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	
#1	16.66	16.66	0.00	16.64	16.65	-0.01	<i>Leak Limit: 0.80 L/min</i>
						<b>LEAK RATE:</b>	<b>-0.01</b>



# Meteorological Sensor Audit/Calibration

## Location Information

**Company:** LICA  
**Audit Location:** St. Lina  
**Audit Date:** July 25, 2019  
**Calibration Purpose:** shut down  
**Performed By:** Alex Yakupov  
**Reviewed By:** Rob Fisher  
**Start/End Time (mst):** 11:48  
**Weather Conditions:** Rain fall heavy at times

## Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	161466	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	May 3, 2019	Direction Unit Output Range:	0-360 degrees

## Wind Calibrator Information

**Calibrator I.D. and Expiry Date:** Model 18860-90/18802 SN: CA 4744, expires - June 19, 2020,

## Wind Speed Audit Data **\*\*+/- 2% of the average correction factor is the limit\*\***

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.5	18.5	0.995
2000	36.9	36.9	37.0	0.999
3000	55.3	55.5	55.5	0.996
4000	73.7	74.0	74.0	0.996
5000	92.2	92.5	92.5	0.997
6000	110.6	111.1	111.1	0.995
7000	129.0	129.6	129.6	0.995
8000	147.4	148.2	148.2	0.995
9000	165.9	166.8	166.8	0.995
10000	184.3	185.4	185.4	0.994
The audit meets AMD requirements.			Average Correction Factor=	0.996

## Wind Direction Audit Data **\*\*+/- 3° of the absolute average degrees difference for all points is the limit\*\***

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	1	355	0.8	0.0	0.4
30	330	31	330	-1.0	0.0	0.5
60	300	62	300	-2.4	0.0	1.2
90	270	94	271	-3.6	-0.6	2.1
120	240	124	241	-4.1	-1.4	2.8
150	210	154	212	-3.7	-2.1	2.9
180	180	183	183	-2.7	-2.9	2.8
210	150	212	153	-2.3	-3.0	2.7
240	120	242	124	-2.0	-4.3	3.2
270	90	271	95	-1.0	-4.5	2.8
300	60	300	63	0.0	-3.4	1.7
330	30	330	32	0.1	-2.1	1.1
355	0	355	2	0.0	1.5	0.8
The audit meets AMD requirements.				Average Absolute Degrees Difference=		1.9

## Comments:

A Shutdown was completed because of WS Max spikes issue.



# Meteorological Sensor Audit/Calibration

## Location Information

Company:	N/A	Performed By:	Chris Wesson
Audit Location:	Edm Shop	Reviewed By:	Rob Fisher
Audit Date:	May 17, 2019	Start/End Time (mst):	08:10 / 08:51
Calibration Purpose:	shut down	Weather Conditions:	Mainly sunny

## Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 kph
Serial #:	65521	Direction Voltage Output Range:	0-1V
Previous Cal/Audit Date:	March 20, 2018	Direction Unit Output Range:	0-360 DEG

## Wind Calibrator Information

Calibrator I.D. and Expiry Date: RM Young 18802 id# CA03309 expires October 3, 2019

## Wind Speed Audit Data **\*\*+/- 2% of the average correction factor is the limit\*\***

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.4	18.4	1.002
2000	36.9	36.8	36.9	1.000
3000	55.3	55.2	55.2	1.002
4000	73.7	73.6	73.6	1.002
5000	92.2	92.0	92.0	1.002
6000	110.6	110.4	110.4	1.002
7000	129.0	128.8	128.7	1.002
8000	147.4	147.2	147.2	1.002
9000	165.9	165.5	165.6	1.002
10000	184.3	183.9	183.9	1.002
The audit meets AMD requirements.			Average Correction Factor=	1.002

## Wind Direction Audit Data **\*\*+/- 3° of the absolute average degrees difference for all points is the limit\*\***

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	355	353	5.0	2.1	3.6
30	330	27	328	2.6	1.8	2.2
60	300	58	299	2.2	1.1	1.7
90	270	88	270	1.9	0.3	1.1
120	240	119	240	1.4	0.1	0.8
150	210	149	210	0.6	0.2	0.4
180	180	180	179	0.4	0.6	0.5
210	150	210	149	-0.2	0.9	0.5
240	120	240	119	0.0	1.3	0.6
270	90	271	88	-0.6	1.8	1.2
300	60	300	58	0.3	1.8	1.1
330	30	328	27	2.1	2.6	2.4
355	0	353	355	2.4	4.7	3.5
The audit meets AMD requirements.			Average Absolute Degrees Difference=		1.5	

## Comments:

Physical inspection completed. No issues. Completed at Edm shop.

# CALIBRATION CERTIFICATE

**Instrument** Humidity and Temperature Probe HMP155  
**Serial number** R2640785  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 28th June 2019

The above instrument was calibrated by comparing the readings of the instrument to working standards of the manufacturer. The reference humidity was calculated from dewpoint temperature and temperature readings with the exception of the driest condition that was measured as relative humidity. Dewpoint temperature was measured with a 373 LHX dewpoint meter. Temperature and relative humidity were measured with two factory working standards. At the time of shipment, the instrument described above met its operating specifications.

The 373 LHX dewpoint meter has been calibrated at Centre for metrology and accreditation (MIKES) by using a MIKES working standard traceable to National Institute of Standards and Technology (NIST). The temperature readings of the factory working standards have been calibrated at an ISO/IEC 17025 accredited calibration laboratory (FINAS), Vaisala Measurement Standards Laboratory (MSL) by using MSL working standards traceable to NIST. The relative humidity readings of the factory working standards have been calibrated at the Vaisala factory by using a 373 LHX dewpoint meter.

**Humidity calibration results**

Reference humidity	Reference temperature	Observed humidity	Observed probe temperature	Additional probe temperature	Humidity difference	Permissible difference
%RH	°C	%RH	°C	°C	%RH	%RH
+ 0.1	+ 21.99	+ 0.1	+ 21.99	-	0.0	±1.0
+ 12.6	+ 22.00	+ 12.7	+ 22.00	-	+ 0.1	± 1.0
+ 33.4	+ 21.98	+ 33.4	+ 21.99	-	0.0	± 1.0
+ 54.5	+ 21.98	+ 54.6	+ 21.98	-	+ 0.1	± 1.0
+ 75.5	+ 21.99	+ 75.7	+ 21.99	-	+ 0.2	± 1.0
+ 95.5	+ 21.98	+ 95.9	+ 21.98	-	+ 0.4	± 1.7

**Temperature calibration results**

Reference temperature	Observed probe temperature	Temperature difference	Additional probe temperature	Temperature difference	Permissible difference
°C	°C	°C	°C	°C	°C
+ 21.99	+ 21.99	0.00	-	-	± 0.10

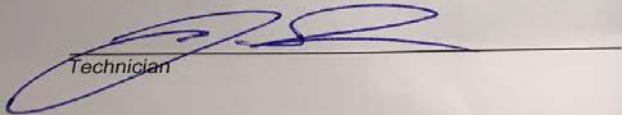
**Equipment used in calibration**

Type	Serial number	Calibration date	Certificate number
373 LHX	03-1218	2019-01-23	M-19H001
PTU303	H0730005	2019-01-10	K008-C00144
HMT337	G0810118	2018-10-19	K008-B02988
PTU303 / RH	H0730005	2019-05-14	H54-19201001
HMT337 / RH	G0810118	2019-05-14	H54-19201002

**Uncertainties ( 95 % confidence level, k=2)**

Humidity ± 0.6%RH @ 0...40%RH, ± 1.0%RH @ 40...97%RH  
 Temperature ± 0.10 °C.

**Ambient conditions** / Humidity 32 ± 5%RH, Temperature 22 ± 1 °C, Pressure 1010 ± 1 hPa.

  
 Technician

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Doc216127-C

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 Email [firstname.lastname@vaisala.com](mailto:firstname.lastname@vaisala.com) | [www.vaisala.com](http://www.vaisala.com)  
 Domicile Vantaa, Finland | VAT FI01244162 | Business ID 0124416-2

# CALIBRATION CERTIFICATE

**Instrument** Humidity and Temperature Probe HMP155  
**Order code** A2JB11A0A0A1A0A  
**Serial number** R2640785  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 1st July 2019

The analog outputs of the above instrument were measured by using working standards of the manufacturer. The outputs were forced by digital input signals to three output values. The observed values were determined by measuring the voltage over the output terminals. All results are traceable in terms of voltage to NIST.

**Analog output channel 1 calibration results**

Output forced to V	Observed output V	Difference V	Permissible difference V
0.100	0.100	0.000	±0.001
0.500	0.500	0.000	±0.001
0.900	0.900	0.000	±0.001

**Analog output channel 2 calibration results**

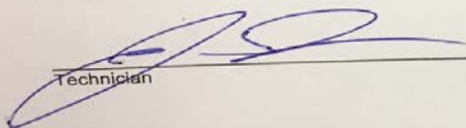
Output forced to V	Observed output V	Difference V	Permissible difference V
0.100	0.100	0.000	±0.001
0.500	0.500	0.000	±0.001
0.900	0.900	0.000	±0.001

**Equipment used in calibration**

<b>Type</b>	<b>Serial number</b>	<b>Calibration date</b>	<b>Certificate number</b>
HP34970A	MY41019763	2018-11-20	1250-307098482

**Uncertainty ( 95 % confidence level, k=2)**  
 Voltage ±0.00064V

**Ambient conditions** / Humidity 47.23± 5%RH, Temperature 23.34 ± 2 °C, Pressure 992.99 ± 20 hPa.

  
 \_\_\_\_\_  
 Technician

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doc211861b

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 Domicile Vantaa, Finland | VAT FI01244162 | Business ID 0124416-2

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <u>Tom Bourque</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>690</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>March 2018</u>	Temperature (°C)	<u>24.4 C</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>699 mmHg</u>
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>
Expiry Date	<u>December 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b><u>NO</u></b>		<b><u>LIMITS</u></b>		<b><u>NOx</u></b>			
Correlation=	1.0000	≥	<b>0.990</b>	Correlation=	1.0000		
m (Slope)=	0.9974		<b>0.90-1.10</b>	m (Slope)=	0.9833		
b (Intercept % of FS)=	-0.0592	±	<b>3% F.S.</b>	b (Intercept % of FS)=	-0.1772		

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO <sub>2</sub>	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b><u>NO<sub>2</sub></u></b>		<b><u>LIMITS</u></b>					
Correlation=	0.9998	≥	<b>0.995</b>	<b>Big shift down in NOx when entering GPT function.</b> <b>Possible flow change.</b>			
m (Slope)=	0.9649		<b>0.90-1.10</b>				
b (Intercept % of FS)=	-1.4907	±	<b>3% F.S.</b>				

<b>AENV Standards</b>		<b>NO<sub>x</sub> Analyzer</b>	
<b>Audit Calibrator</b>			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

 COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

 Auditor: Al Clark

 Date: April 16, 2019

Operator Signature:

 Location: McIntyre Center Edmonton

<b>Company</b> <u>Maxxam</u>		<b>Operator:</b> <u>Tom Bourque</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>August 2018</u>	Temperature (°C)	<u>24.4 C</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>699 mmHg</u>
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>
Expiry Date	<u>December 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
		Pt. #3	<u>5000</u>
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
		Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO</b>		<b>LIMITS</b>		<b>NOx</b>			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0117	0.90-1.10		m (Slope)=	1.0039		
b (Intercept % of FS)=	0.2171	± 3% F.S.		b (Intercept % of FS)=	-0.0020		

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO <sub>2</sub>	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO<sub>2</sub></b>		<b>LIMITS</b>					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0062	0.90-1.10					
b (Intercept % of FS)=	-1.0004	± 3% F.S.					

<b>AENV Standards</b>		<b>NO<sub>x</sub> Analyzer</b>	
<b>Audit Calibrator</b>			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019  
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton





# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2019-392CGA

**Company:** Maxxam **Operator's Name:** Alex

Cylinder #: LL107918 Concentration PPM: 49.5 Tolerance(%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Sabio 2010</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 2092</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>January 14, 2019</u>	Temp. °C: <u>22.7 C</u>
Gas Type: <u>SO2</u> Conc. <u>50.26</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>FF28071</u>	
Expiry Date: <u>March 2020</u>	

**Reference Analyzer:**

Make/Model: Teco 43i Serial/AMU Number: 2195

Instrument Settings: Zero: 11.8 Span: 0.980 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	<del>0.00000</del>	<del>0.00000</del>	<del>0.00000</del>
4898	78.1	0.790	0.01595	62.714	49.5
4893	38.7	0.389	0.00791	126.434	49.2
4894	19.3	0.192	0.00394	253.575	48.7
Average Cylinder Concentration:					<b>49.1</b>

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 1

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:** \_\_\_\_\_

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration  \_\_\_\_\_

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder  \_\_\_\_\_

Auditor: Al Clark

Operator Signature:

Date: January 15, 2019

Location: McIntyre Center Edmonton



# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike  
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair  
 Expiry Date: October 2020

**Reference Calibrator and Gas:**  
 Make/Model: Sabio 2010  
 Serial Number: AMU 2092  
 Last Verification Date: January 17, 2018  
 Gas Type: H2S Conc. 20.43  
 Cylinder Number: CAL015272  
 Expiry Date: January 2019

**Flow Measurement Device:**  
 Make/Model: Mesa Defender 530  
 Serial Number: H-153961 / L-153874  
 Temp. °C: 23.0 C  
 B.P.: 697 mmHg

**Reference Analyzer:**  
 Make/Model: Teco 450i Serial/AMU Number: 1980  
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1  
 Last Calibration: Date: Jan 17/18 C.F.: 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>0.0000</del>	<del>0.0000</del>
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					<b>9.58</b>

Previous Stated Concentration PPM: 9.55

Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration  COMMENTS: Used AEP regulator  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark

Date: January 18, 2018

Operator Signature: *Al Clark*

Location: McIntyre Center Edmonton





# Calibration Gas Audit

## NO Cylinder Gas

File No. 2019-391CGA

**Company:** Maxxam                      **Operators name:** Alex

Cylinder #: LL107918    Conc (PPM) 50.1/50.2    Tolerance (%) 1    Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

**Reference Analyzer:**

Make/Model Teco 42i                      Serial/AMU Number: 2268

Instrument Settings    Zero: 9.2                      Span: 1.223                      Range: 1.0

Last Calibration:                      Date: Jan 14/19                      C.F. 1.000                      Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						<b>49.7</b>	<b>49.7</b>

<b>NO</b>	<b>NOx</b>
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

**Cylinder gas tolerances based on NO only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark                      Date: Janaury 15, 2019

Operator Signature: *Al Clark*                      Location: McIntyre Center Edmonton

# End of Report



**Lakeland Industry & Community Association**

**JULY 2019**

**Ambient Air Monitoring Calibration Report**

**- BONNYVILLE EAST STATION-**

**CAL-LICA-201907-01608**

**Station Operation and Maintenance:**

Maxxam Analytics

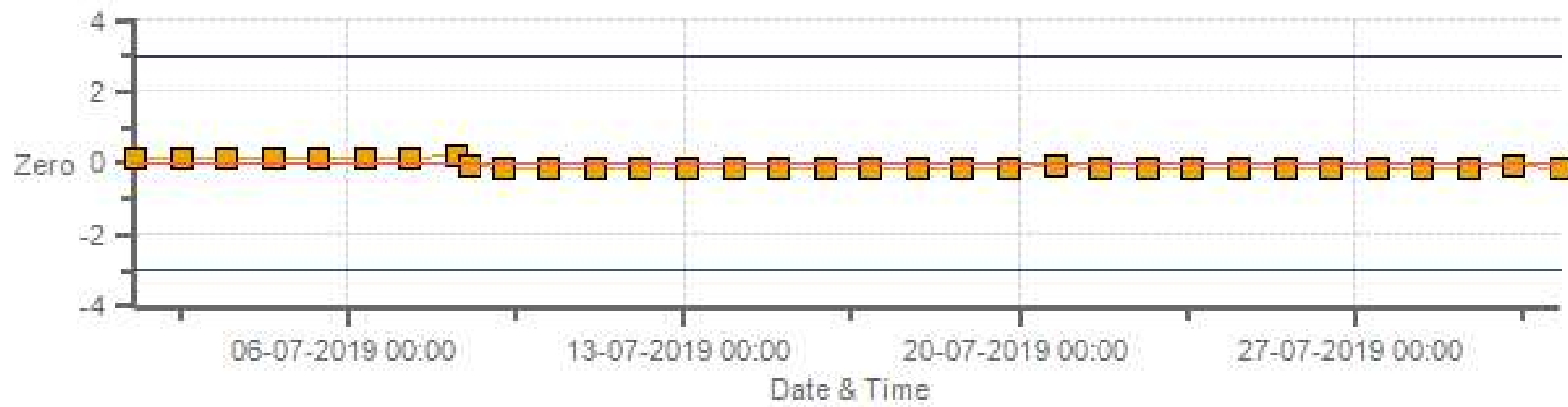
**Data Validation and Report:**

Maxxam Analytics

August 12, 2019

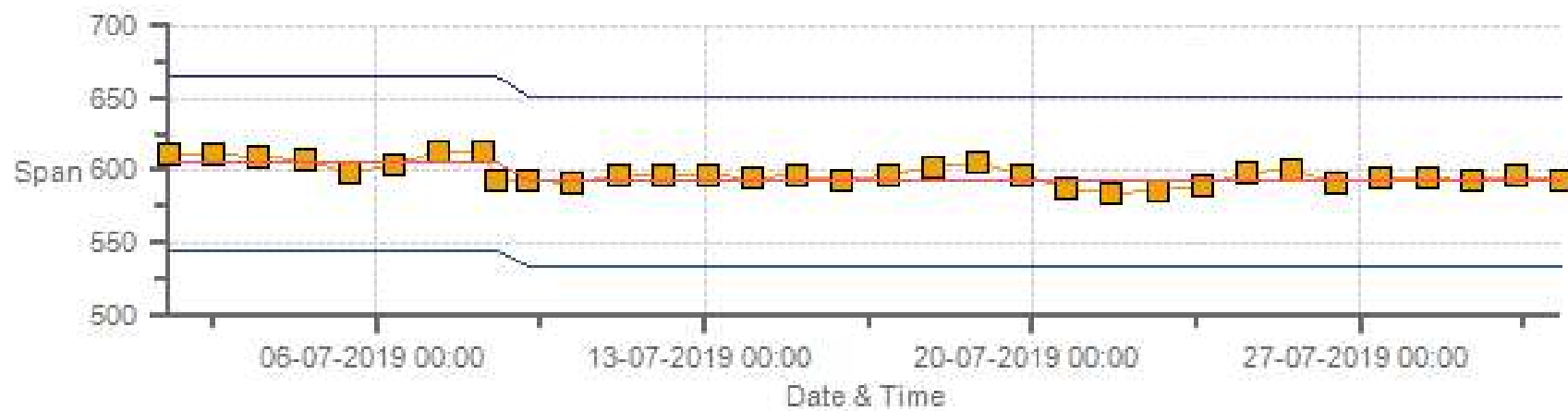
# DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

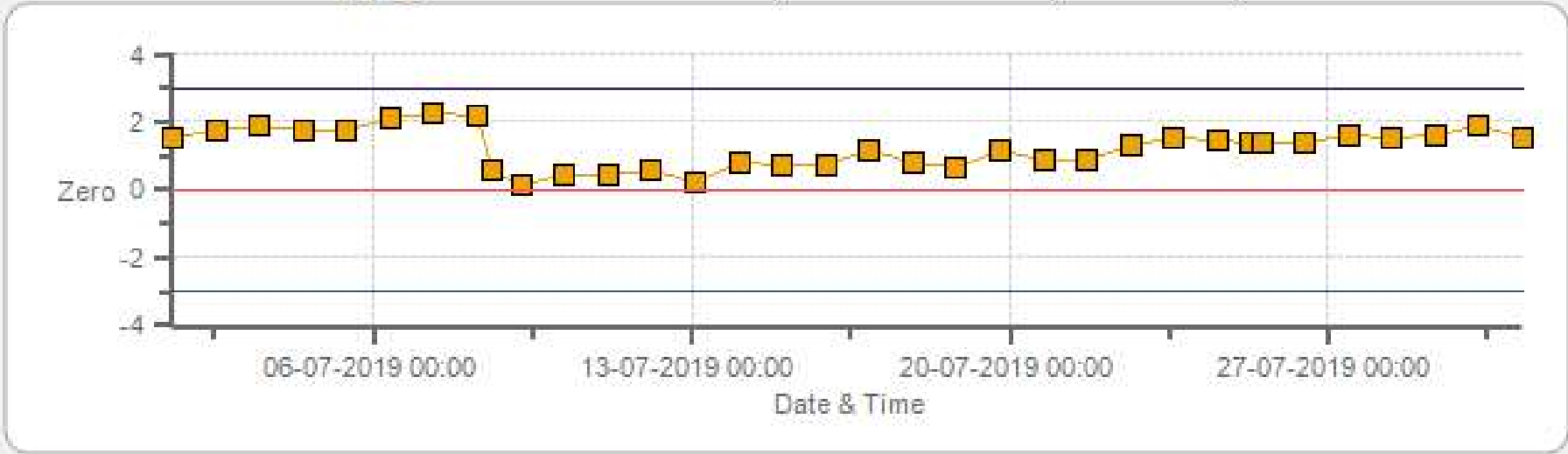
SO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High

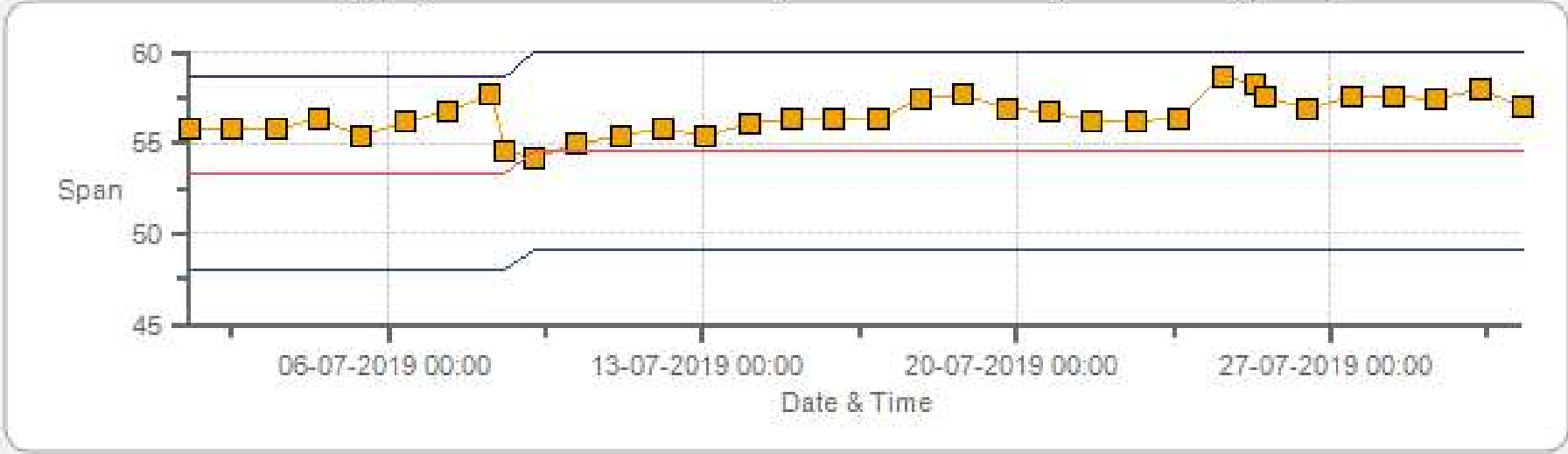


H2S [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



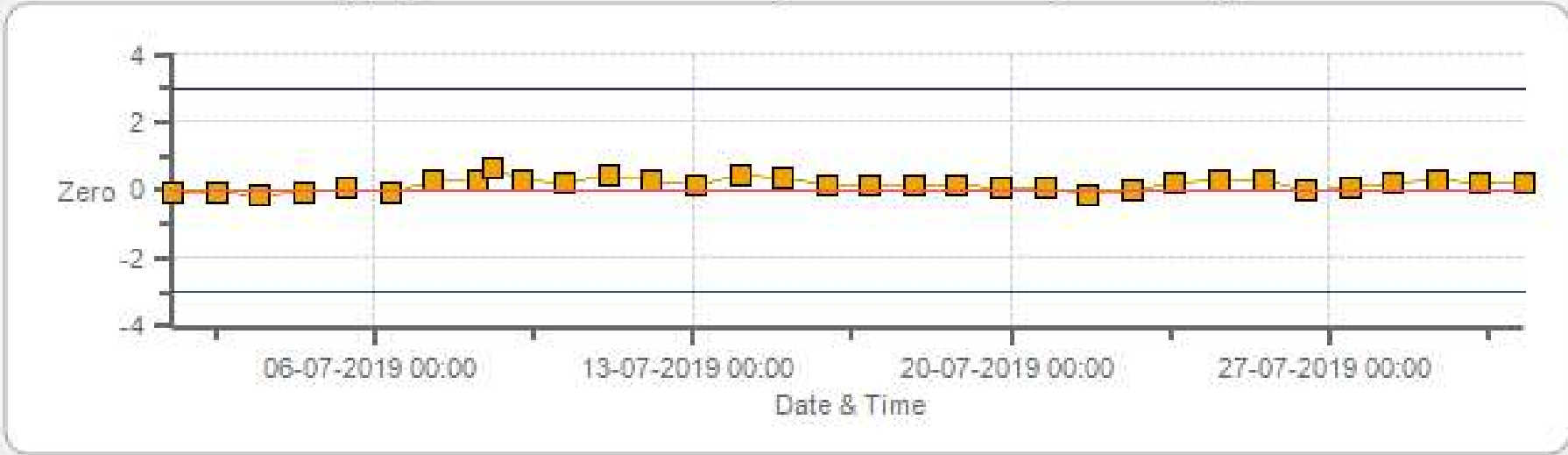
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H2S [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



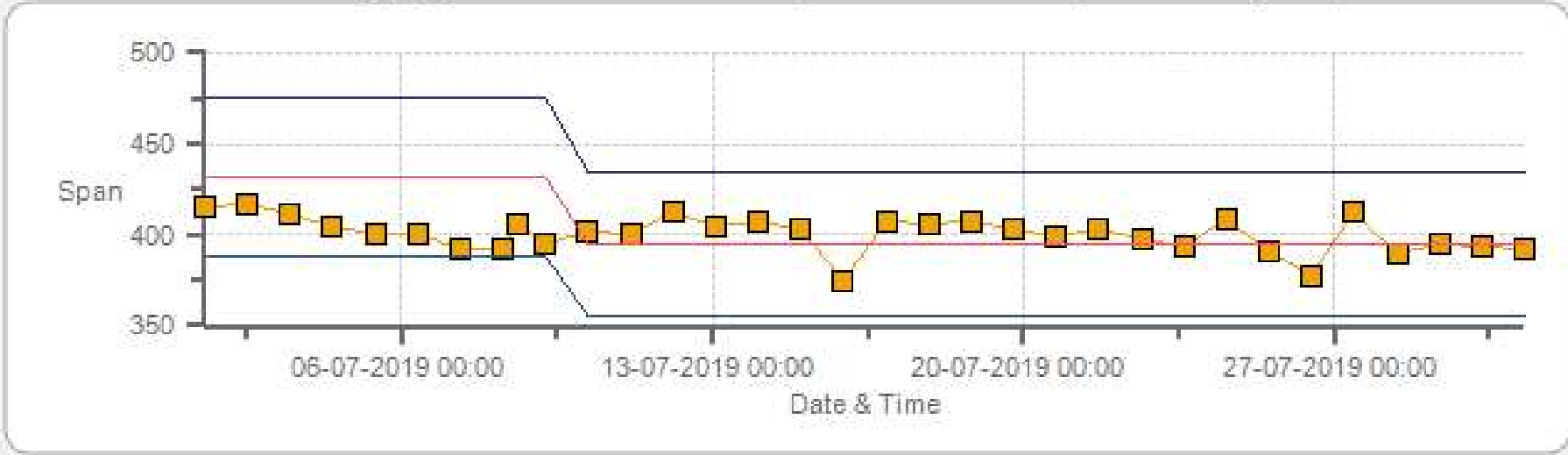
Span SpanRef Span Low Span High

NOx [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



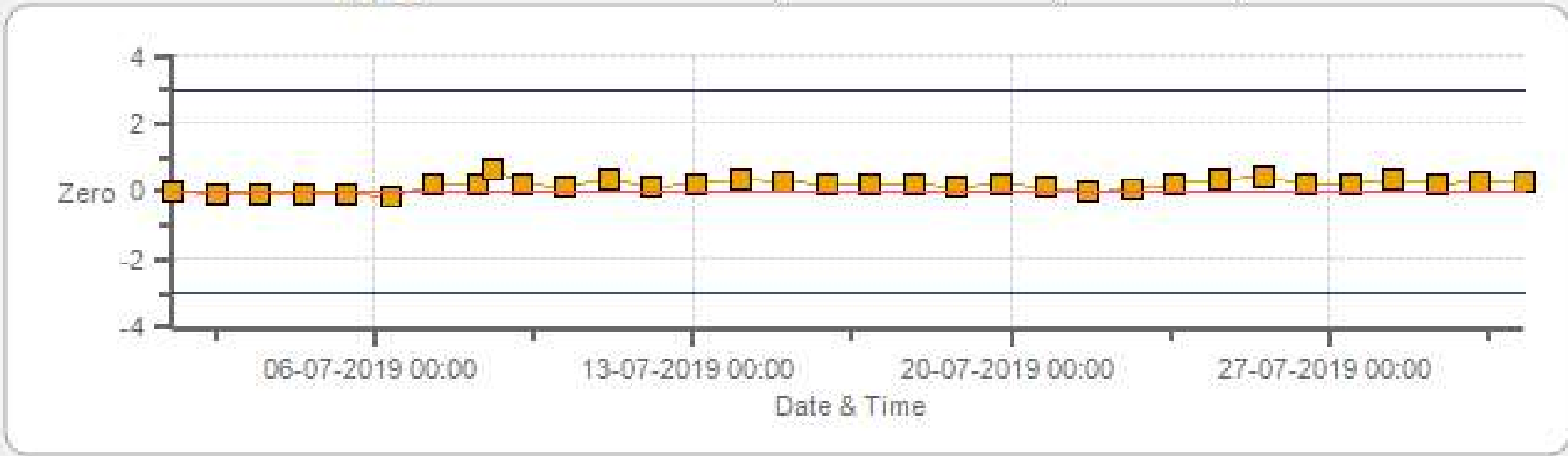
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NOx [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



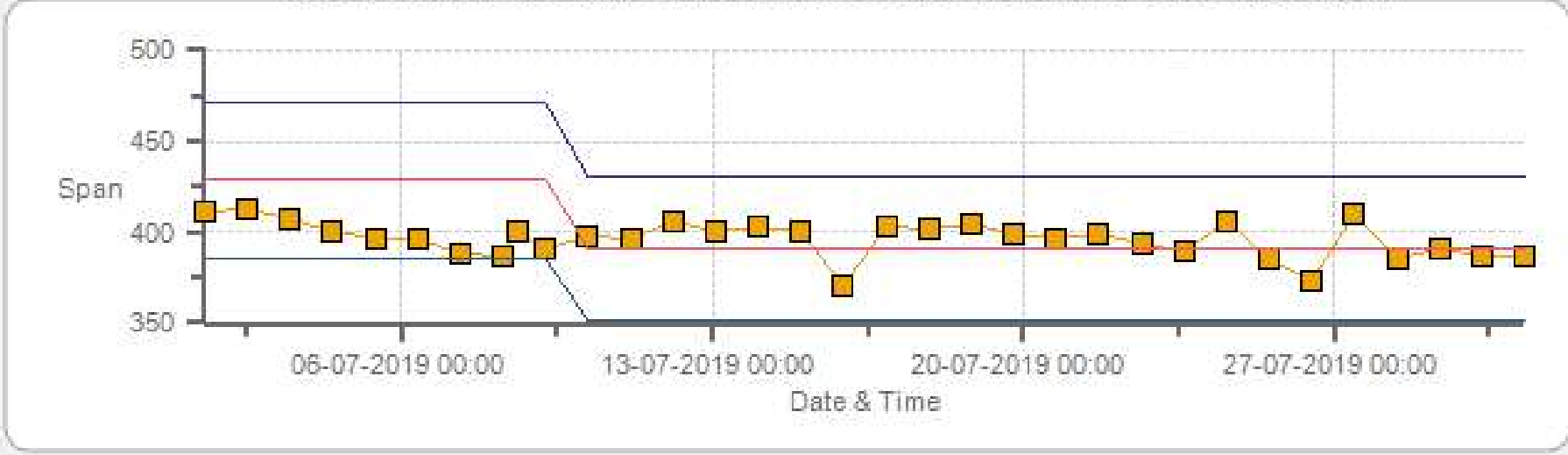
Span SpanRef Span Low Span High

NO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



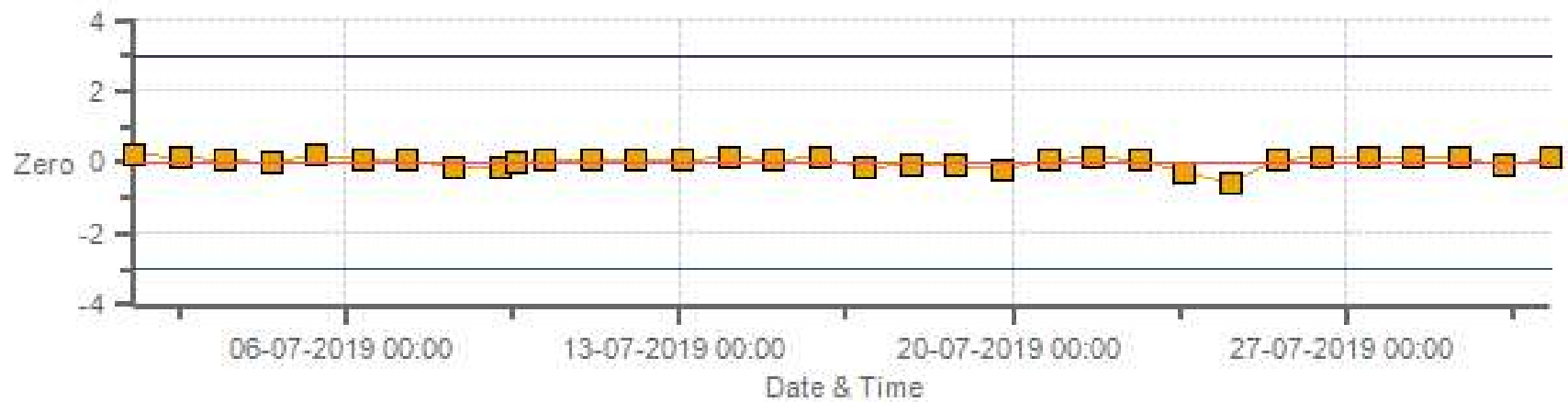
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NO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



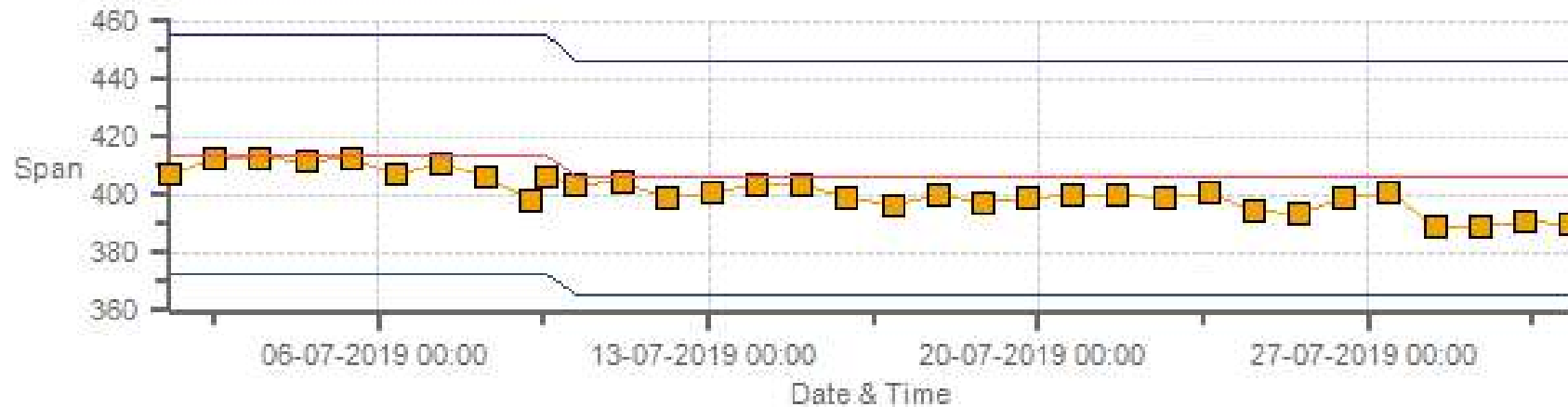
Span Span Ref Span Low Span High

O3 [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



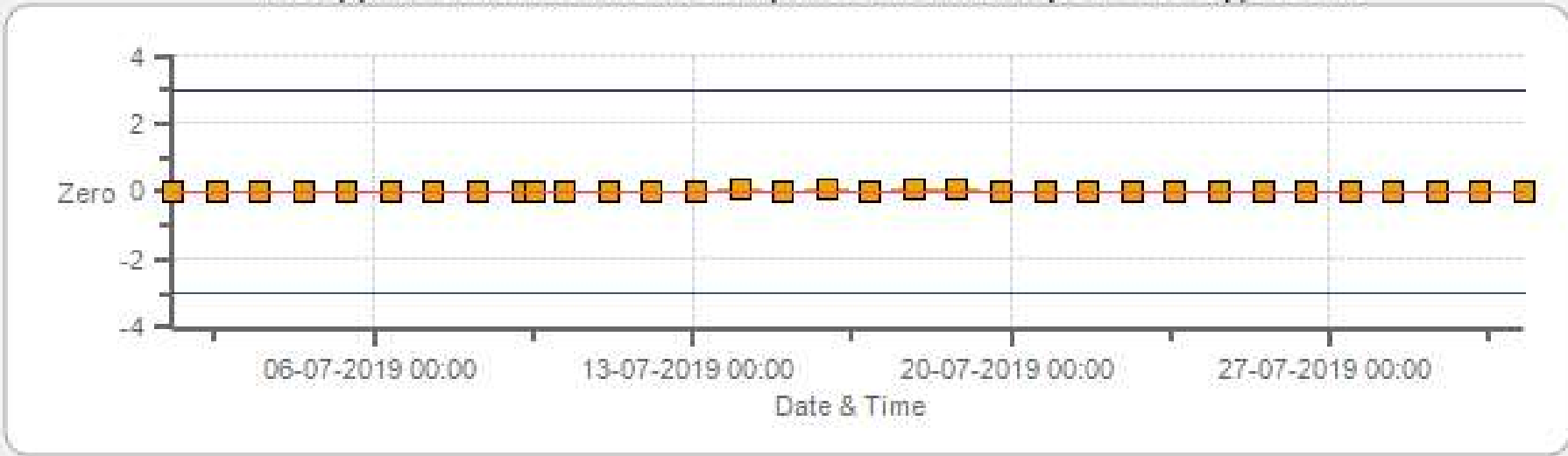
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O3 [ppb] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



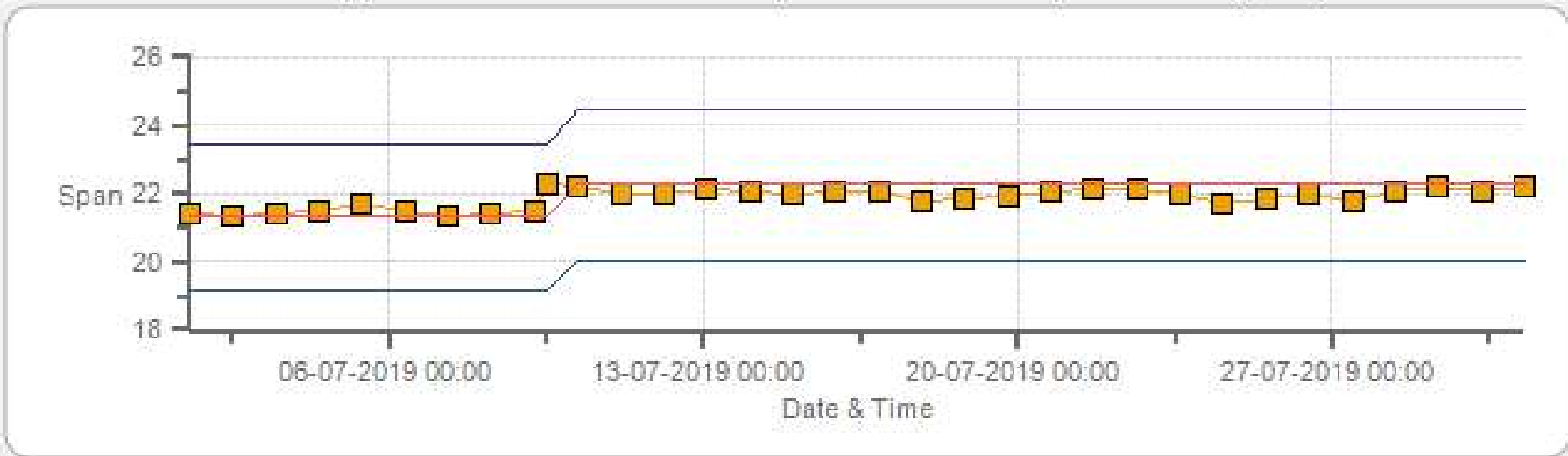
Span Span Ref Span Low Span High

THC [ppm] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



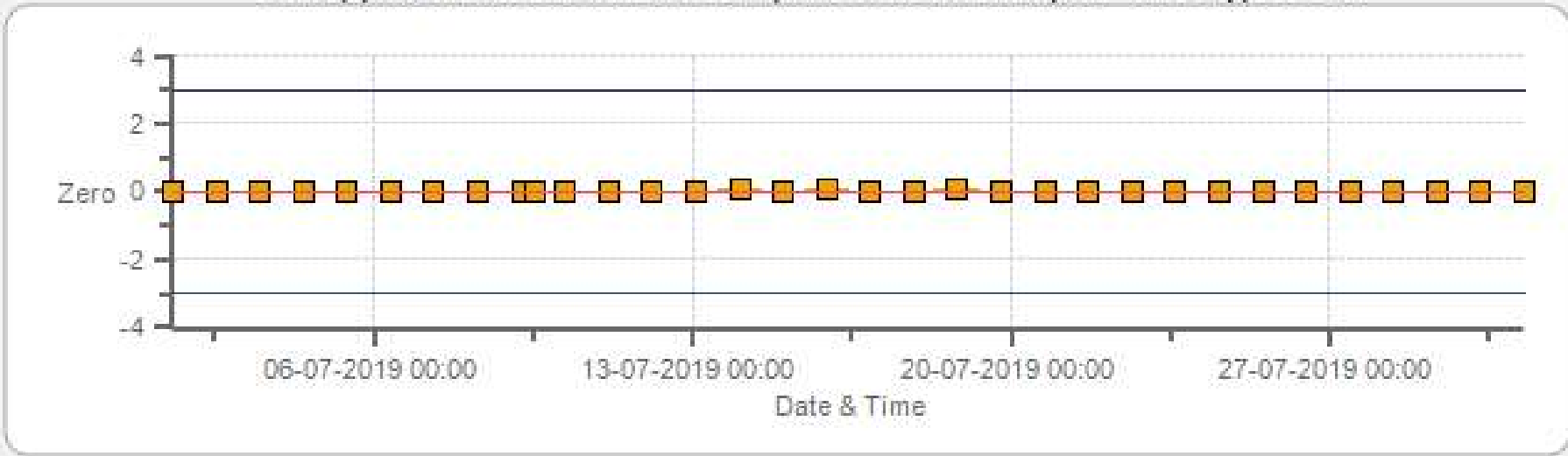
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THC [ppm] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



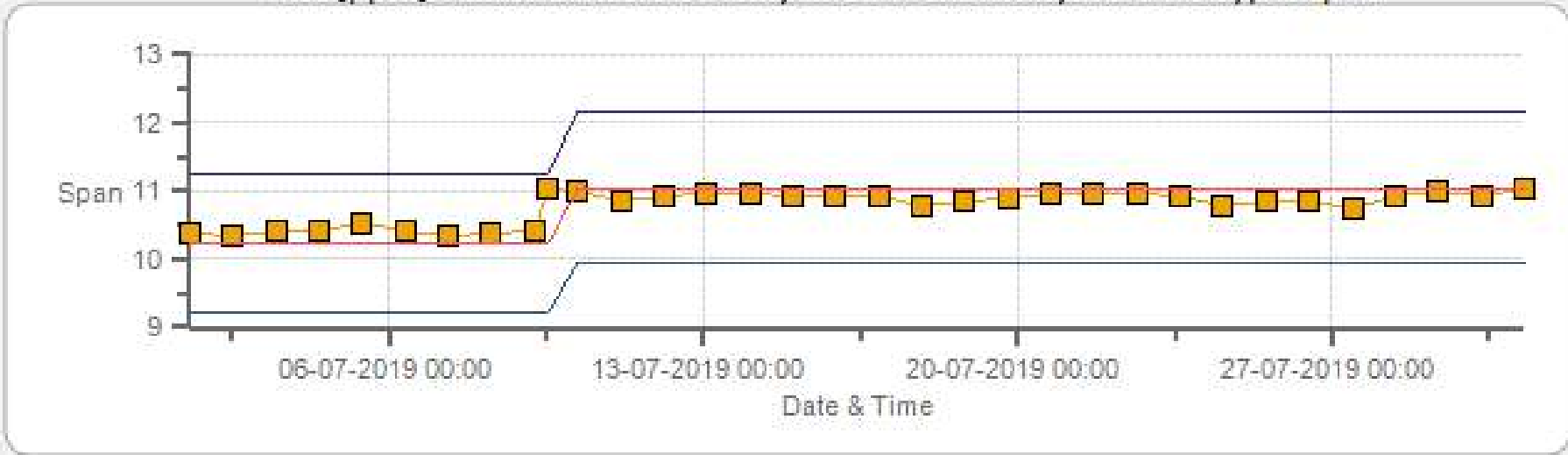
Span SpanRef Span Low Span High

CH4 [ppm] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



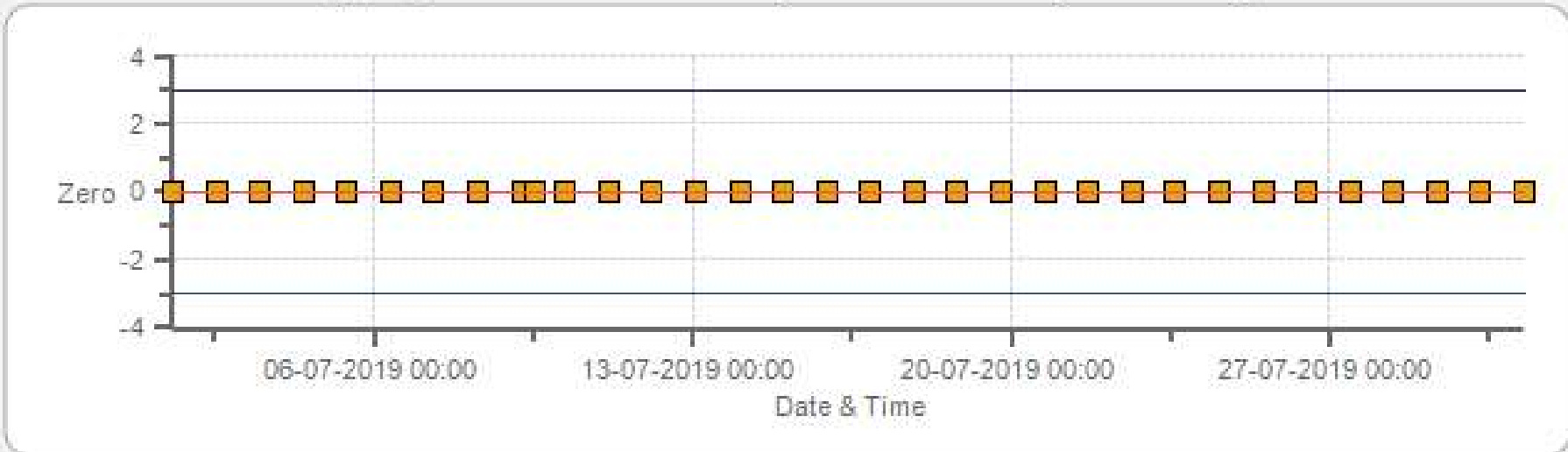
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



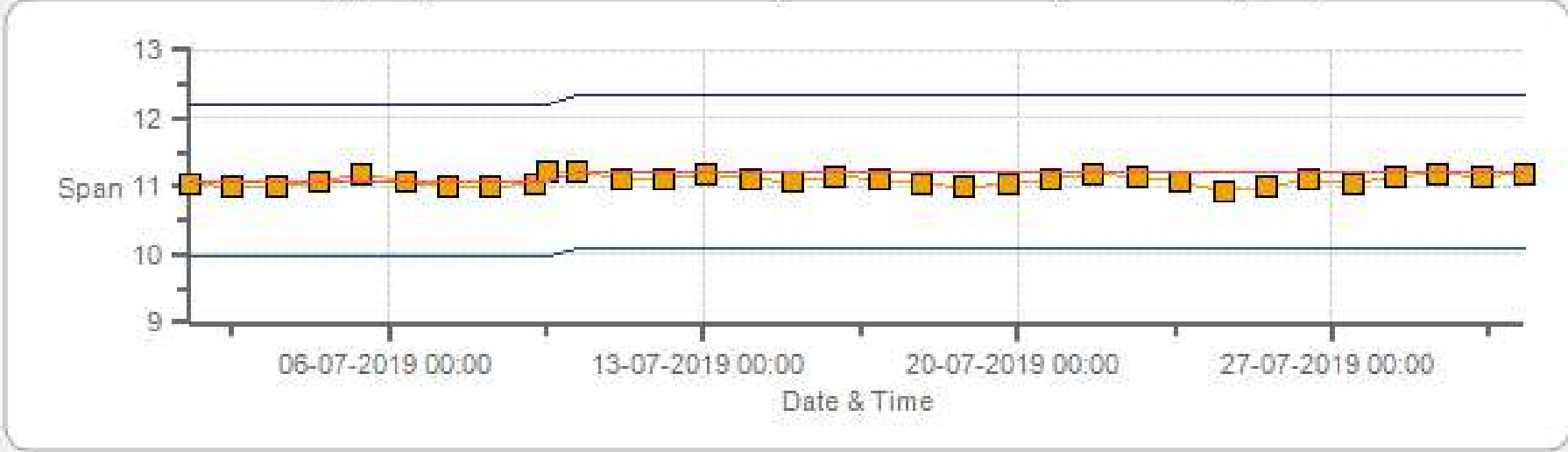
Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA Bonnyville-East Monthly: 07-2019 Type: Span



Span SpanRef Span Low Span High

# MULTI-POINT CALIBRATION RECORDS



# SO2 Analyzer Calibration by Dilution



DATE:	08-Jul-2019	PREVIOUS CALIBRATION DATE:	06-Jun-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	943
PURPOSE:	Routine	START TIME (MST):	09:58
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:22

## ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	1000 ppb
SERIAL #	1180320043	FLOW (mL/min)	455
INITIAL		FINAL	
BKG/OFFSET	4.55	BKG/OFFSET	4.72
COEF/SLOPE	0.96	COEF/SLOPE	0.934
Expected (reference) Value	605	Expected (reference) Value	592

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1400	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	780	380	190
RANGE	600 - 800	300 - 400	100 - 200

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

## CALIBRATION:

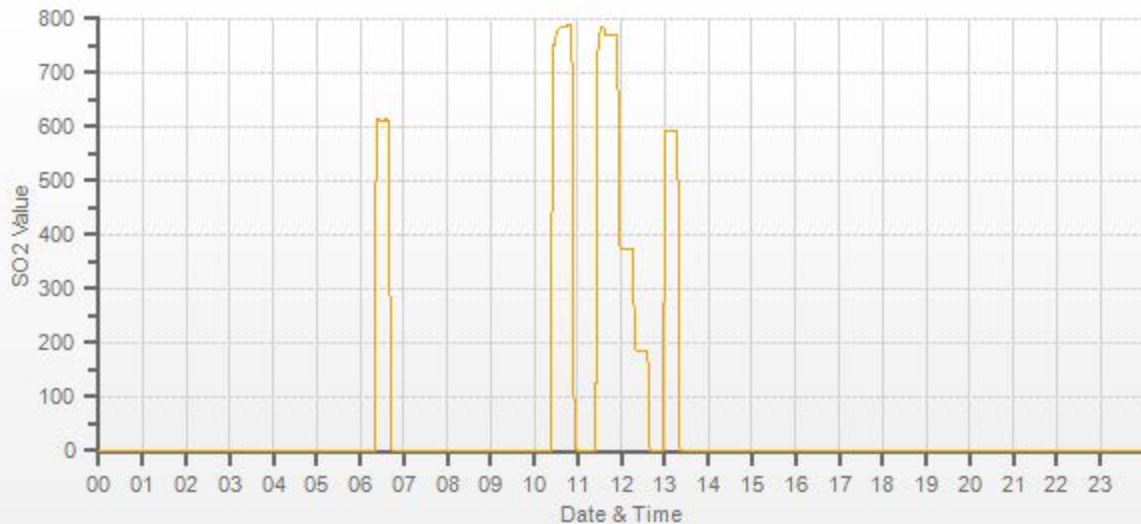
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>77.80</del>	5000	0.00	0.2	0	<del>0.978</del>	<del>1.000</del>
4922	77.80	5000	770.22	788	770	0.978	1.000
4962	37.90	5000	375.21	n/a	375	n/a	1.001
4981	18.90	5000	187.11	n/a	185	n/a	1.011

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	-0.1%

## COMMENTS:

Sample inlet filter was changed.



# H2S Analyzer Calibration by Dilution



DATE:	08-Jul-2019	PREVIOUS CALIBRATION DATE:	06-Jun-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	943
PURPOSE:	Routine	START TIME (MST):	09:58
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:25

## ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360002	FLOW (mL/min)	953
INITIAL		FINAL	
BKG/OFFSET	25	BKG/OFFSET	26.9
COEF/SLOPE	1.146	COEF/SLOPE	1.139
Expected (reference) Value	53.3	Expected (reference) Value	54.5

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	700	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

## SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	10:06	SO2 Conc (ppb)	780
END TIME:	10:21	Analyzer Response (ppb)	0.0

## CALIBRATION:

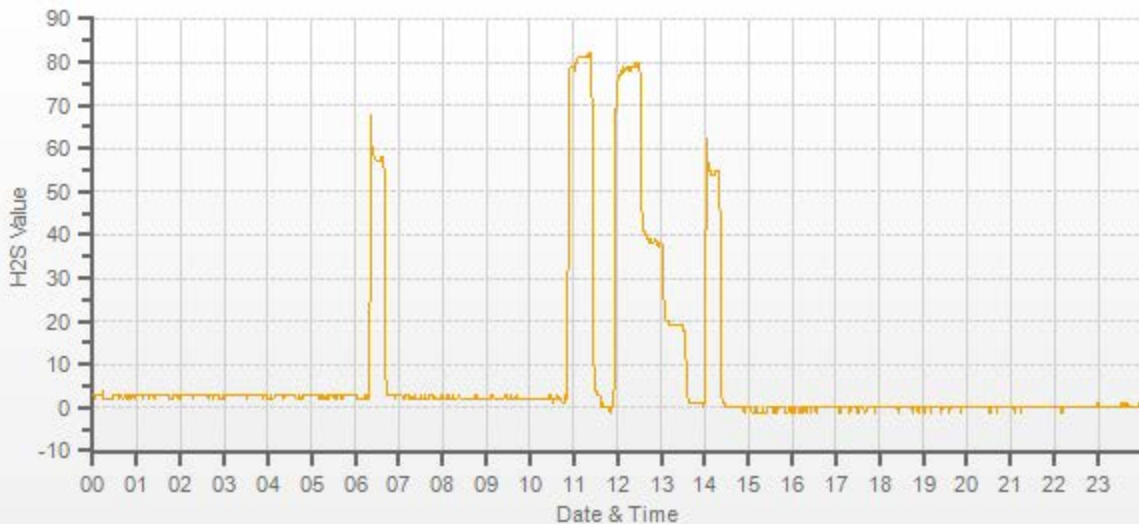
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	<del>61.20</del>	7500	0.00	2.2	0	<del>0.993</del>	<del>1.000</del>
7439	61.20	7500	77.93	80.7	77.9	0.993	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	19	n/a	0.999

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.



# NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	08-Jul-2019	PREVIOUS CALIBRATION DATE:	06-Jun-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930027	NOx	1.000
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	943.00	FLOW (mL/min)	694	NO	1.000
PURPOSE:	Routine	START TIME (MST):	09:58	RANGE (ppb)	1000	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:05	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1   50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1400	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2020	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	7	7	n/a	BKG/OFFSET:	7	7	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

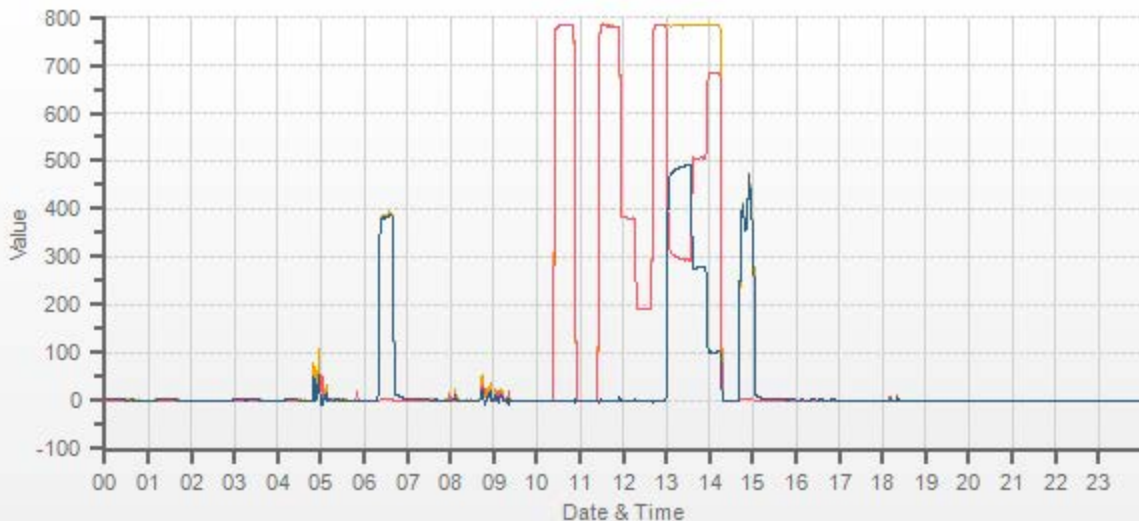
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	432	3	429.0		395	4	391.0

POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	780	500	470-540	n/a
MID	380	275	235-310	n/a
LOW	190	90	80-115	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	<del>77.80</del>	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<del>0.996</del>	<del>0.996</del>	<del>0.999</del>	<del>0.999</del>	<del>1.000</del>	<del>1.000</del>
4922	77.80	5000	779.6	781.1	1.6	783.0	784.0	1.0	780.0	781.0	1.0	0.996	0.996	0.999	1.000	1.000	1.000
4962	37.90	5000	379.8	380.5	0.8	n/a	n/a	n/a	380.0	381.0	1.0	n/a	n/a	0.999	0.999	0.999	0.999
4981	18.90	5000	189.4	189.8	0.4	n/a	n/a	n/a	190.0	190.0	0.0	n/a	n/a	0.997	0.999	0.999	0.999

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	77.80	5000	0	783.0	784.0	1.0	<del>490</del>	<del>490</del>	<del>1.000</del>	<del>100.00%</del>
AS-FOUND HIGH	77.80	5000	480	293.0	784.0	491.0	490	490	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	77.80	5000	270	506.0	784.0	278.0	277	277	1.000	100.00%
LOW	77.80	5000	100	682.0	784.0	102.0	101	101	1.000	100.00%
NO2 adjustment not required.									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.02%	
NOx	1.000	1.000	0.02%	
NO2	1.000	1.000	0.00%	



CAL-LICA-201907-01608

# Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	09-Jul-2019	PREVIOUS CALIBRATION DATE:	07-Jun-2019
PARAMETER:	Ozone	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Bonnyville	BAROMETRIC (mBar):	949
PURPOSE:	Routine	START TIME (MST):	09:46
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:39

## ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	1002240372	FLOW (mL/min)	1.521
INITIAL		FINAL	
BKG/OFFSET	-0.3	BKG/OFFSET	-0.3
COEF/SLOPE	1.026	COEF/SLOPE	1.033
Expected (reference) Value	414	Expected (reference) Value	406

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

## CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
RANGE	300 - 400	150 - 200	50 - 100

## CALIBRATION:

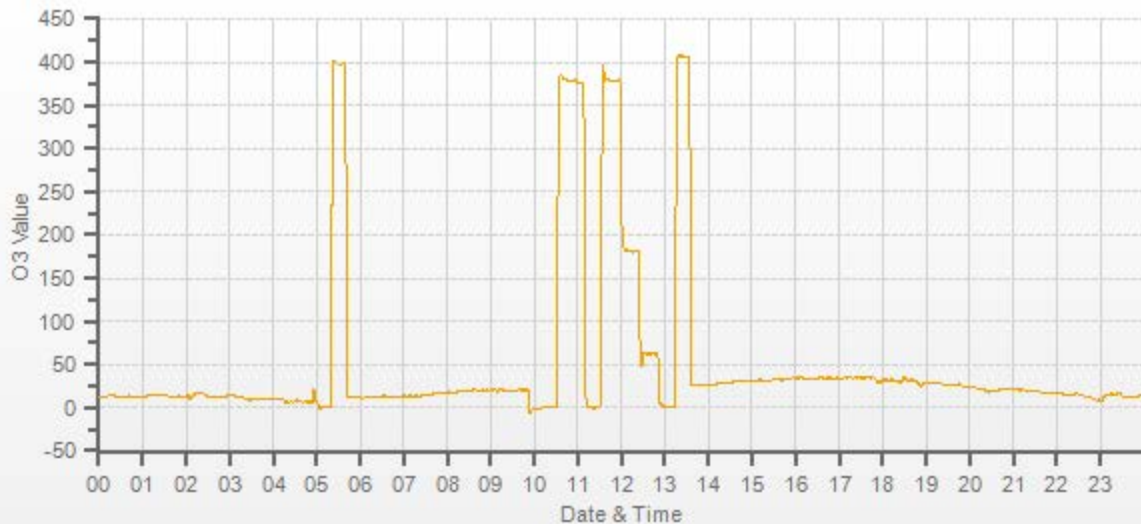
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	<del>5000</del>	5000	0.0	0.0	0.0	<del>1.000</del>	<del>1.000</del>
5000	<del>5000</del>	5000	380.0	380.0	380.0	1.000	1.000
5000	<del>5000</del>	5000	181.0	n/a	181.0	n/a	1.000
5000	<del>5000</del>	5000	62.0	n/a	62.0	n/a	1.000

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

## COMMENTS:

Sample inlet filter was changed.





# Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	09-Jul-2019	PREVIOUS CALIBRATION DATE:	07-Jun-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1180320044	1050
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	949	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	09:46	RANGE (ppm):	20	20	40
PERFORMED BY:	Ale Yakupov	END TIME (MST):	13:09	PREVIOUS CF:	1.000	1.000	1.000

## CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> (ppm):	598.0   198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1400	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

## CALIBRATION PARAMETERS:

POINT (CH <sub>4</sub> /NMHC)	HIGH	MID	LOW	CH <sub>4</sub> EQUIVILANCE	
TARGET	14	7	3.5	C <sub>3</sub> H <sub>8</sub> as CH <sub>4</sub>	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH <sub>4</sub>	1142.5

## EXPECTED (REFERENCE) VALUE:

INITIAL	CH <sub>4</sub>	NMHC	THC	FINAL	CH <sub>4</sub>	NMHC	THC
	10.24	11.09	21.33		11.05	11.22	22.27

## CALIBRATION:

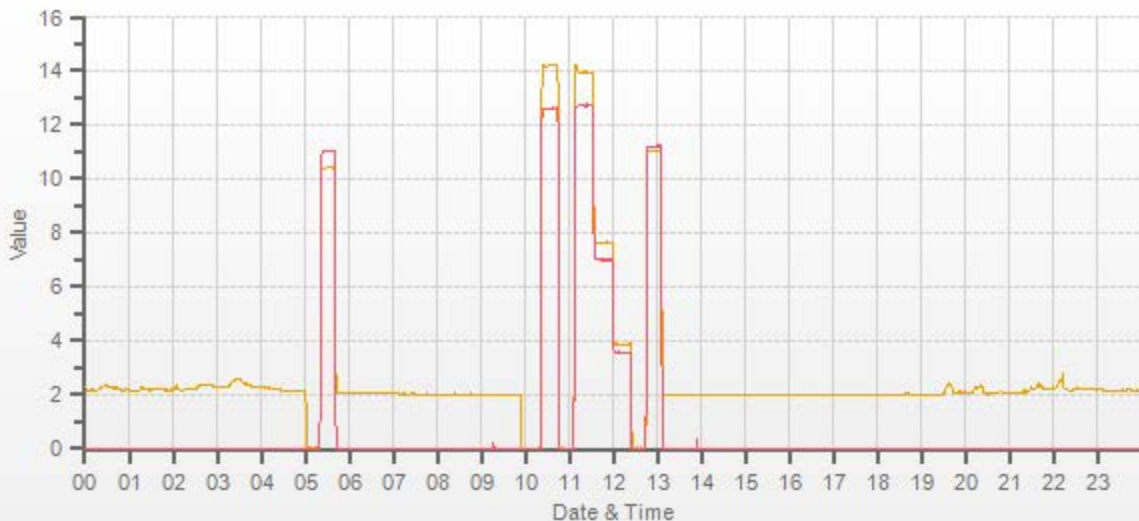
FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC	CH <sub>4</sub>	NMHC	THC
3000	<del>X</del>	3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>	<del>X</del>
2930	70.00	3000	13.95	12.71	26.66	14.19	12.60	26.78	13.95	12.71	26.66	0.983	1.008	0.995	1.000	1.000	1.000
2962	38.00	3000	7.57	6.90	14.47	n/a	n/a	n/a	7.63	6.99	14.64	n/a	n/a	n/a	0.993	0.987	0.989
2981	19.00	3000	3.79	3.45	7.24	n/a	n/a	n/a	3.87	3.54	7.41	n/a	n/a	n/a	0.979	0.974	0.976

## LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH <sub>4</sub>	1.000	0.998	0.2%
NMHC	1.000	1.000	0.3%
THC	1.000	0.999	0.2%

## COMMENTS:

Sample inlet filter was changed. New CH<sub>4</sub>/C<sub>3</sub>H<sub>8</sub>, N<sub>2</sub> and H<sub>2</sub> gas cylinders were connected.



CAL-LICA-201907-01608

## Thermo 5030i SHARP Monitor Monthly Check



**Date:** July 24, 2019  
**Company:** LICA  
**Station Name/Location:** Bonnyville - East  
**Previous Audit Date:** June 20, 2019  
**Parameter:** PM 2.5

**Performed By/Reviewer:** Alex Yakupov | Rob Fisher  
**Start Time (mst):** 11:37  
**End Time (mst):** 12:08  
**Calibration Purpose:** routine monthly  
**Weather Conditions:** Mainly sunny

**SHARP 5030i Information and Status:**

**Serial Number:** CM 17071016      **Filter Tape Counter:** 358

**Reference Standards:**

**Air Flow**

	Manometer	Orifice	Pressure:	Temp / RH:
<b>Make:</b>	Dwyer	chinook	Fisher Scientific	Fisher Scientific
<b>Model:</b>	475 Mk. III	CHN0901	FB61291	11-661-7B    11745843
<b>Serial Number:</b>	#3	#2	130168457	160348895
<b>Calibration Expiration Date:</b>	January 17, 2020	January 31, 2020	January 17, 2020	June 19, 2020

Ambient Temperature (°C)				Range	Action
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	< ± 2°C	OK
#1	23.10	22.1	1.0	2-3 °C	Recalibrate
				> 3°C	Fail

Ambient Relative Humidity (%RH)				Range	Action
<b>As Found:</b>					
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	< ± 2 %RH	OK
#1	81.70	82.0	-0.3	2-5 %RH	Recalibrate
				> 5 %RH	Fail

Barometric Pressure (mmHg)				Range	Action
<b>As Found:</b>					
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	< ± 10 mmHg	OK
#1	702.0	701.2	0.8	10-12 mmHg	Recalibrate
				> 12 mmHg	Fail

Flow Audit (L/min)				Range	Action
<b>As Found:</b>					
	<b>Reference</b>	<b>SHARP</b>		< ± 4%	OK
#1	16.69	16.68	% Difference      -0.039984006	4-5%	Recalibrate
#2	16.66	16.65		>5%	Fail
#3	16.67	16.67			
<b>Average</b>	16.67	16.67			

Leak Check (L/min)						
Without Leak Check Adapter			With leak Check Adapter			
	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>	<b>Reference</b>	<b>SHARP</b>	<b>Difference</b>
#1	16.67	16.67	0.00	16.63	16.64	-0.01
					<b>LEAK RATE:</b>	<b>-0.01</b>
<i>Leak Limit: 0.80 L/min</i>						



# Meteorological Sensor Audit/Calibration

## Location Information

Company:	LICA	Performed By:	Alex Yakupov
Audit Location:	Bonnyville East	Reviewed By:	Rob Fisher
Audit Date:	October 24, 2018	Start/End Time (mst):	12:56 / 14:01
Calibration Purpose:	installation	Weather Conditions:	Mainly sunny

## Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	56778	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	n/a or unknown	Direction Unit Output Range:	0-360 degrees

## Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744, calibrated on May 18, 2018

### Wind Speed Audit Data **\*\*+/- 2% of the average correction factor is the limit\*\***

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.0	0.0	-
1000	18.4	18.4	18.4	1.000
2000	36.9	36.8	36.8	1.003
3000	55.3	55.4	55.4	0.998
4000	73.7	73.8	73.8	0.999
5000	92.2	92.2	92.2	1.000
6000	110.6	110.6	110.6	1.000
7000	129.0	129.0	129.0	1.000
8000	147.4	147.4	147.4	1.000
9000	165.9	165.8	166.0	1.000
10000	184.3	184.0	184.4	1.001
The audit meets AMD requirements.			Average Correction Factor=	1.000

### Wind Direction Audit Data **\*\*+/- 3° of the absolute average degrees difference for all points is the limit\*\***

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	355	0.0	0.0	0.0
30	330	30	331	0.0	-0.6	0.3
60	300	60	301	0.0	-0.8	0.4
90	270	90	271	0.0	-1.0	0.5
120	240	121	241	-0.6	-0.8	0.7
150	210	151	211	-0.8	-1.3	1.1
180	180	181	182	-0.9	-1.8	1.4
210	150	211	152	-1.0	-2.3	1.7
240	120	240	121	-0.3	-1.4	0.9
270	90	270	92	0.0	-2.0	1.0
300	60	300	62	0.1	-1.6	0.9
330	30	330	31	-0.1	-1.0	0.6
355	0	355	0	0.0	0.3	0.2
The audit meets AMD requirements.			Average Absolute Degrees Difference=		0.7	

## Comments:

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>API 700</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>690</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>March 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

**LINEAR REGRESSION ANALYSIS** *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO</u>	<u>LIMITS</u>	<u>NOx</u>
Correlation= 1.0000	≥ <b>0.990</b>	Correlation= 1.0000
m (Slope)= 0.9974	<b>0.90-1.10</b>	m (Slope)= 0.9833
b (Intercept % of FS)= -0.0592	± <b>3% F.S.</b>	b (Intercept % of FS)= -0.1772

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO <sub>2</sub>	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

**LINEAR REGRESSION ANALYSIS** *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO<sub>2</sub></u>	<u>LIMITS</u>	
Correlation= 0.9998	≥ <b>0.995</b>	<b>Big shift down in NOx when entering GPT function. Possible flow change.</b>
m (Slope)= 0.9649	<b>0.90-1.10</b>	
b (Intercept % of FS)= -1.4907	± <b>3% F.S.</b>	

AENV Standards Audit Calibrator	NO <sub>x</sub> Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: Al Clark Date: April 16, 2019  
 Operator Signature: Location: McIntyre Center Edmonton

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>11900613</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>August 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

### LINEAR REGRESSION ANALYSIS

*y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO	LIMITS	NO <sub>x</sub>
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0117	0.90-1.10	m (Slope)= 1.0039
b (Intercept % of FS)= 0.2171	± 3% F.S.	b (Intercept % of FS)= -0.0020

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO <sub>2</sub>	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

### LINEAR REGRESSION ANALYSIS

*y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO <sub>2</sub>	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0062	0.90-1.10
b (Intercept % of FS)= -1.0004	± 3% F.S.

AENV Standards Audit Calibrator	NO <sub>x</sub> Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019  
 Operator Signature:  Location: McIntyre Center Edmonton





# Calibration Gas Audit

## Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike  
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair  
 Expiry Date: October 2020

**Reference Calibrator and Gas:**  
 Make/Model: Sabio 2010  
 Serial Number: AMU 2092  
 Last Verification Date: January 17, 2018  
 Gas Type: H2S Conc. 20.43  
 Cylinder Number: CAL015272  
 Expiry Date: January 2019

**Flow Measurement Device:**  
 Make/Model: Mesa Defender 530  
 Serial Number: H-153961 / L-153874  
 Temp. °C: 23.0 C  
 B.P.: 697 mmHg

**Reference Analyzer:**  
 Make/Model: Teco 450i Serial/AMU Number: 1980  
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1  
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000			
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					<b>9.58</b>

Previous Stated Concentration PPM: 9.55  
 Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration  COMMENTS: Used AEP regulator  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 18, 2018  
 Operator Signature: [Signature] Location: McIntyre Center Edmonton





# Calibration Gas Audit

## NO Cylinder Gas

File No. 2019-391CGA

**Company:** Maxxam                      **Operators name:** Alex

Cylinder #: LL107918    Conc (PPM) 50.1/50.2    Tolerance (%) 1    Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

**Reference Analyzer:**

Make/Model Teco 42i                      Serial/AMU Number: 2268

Instrument Settings    Zero: 9.2                      Span: 1.223                      Range: 1.0

Last Calibration:                      Date: Jan 14/19                      C.F. 1.000                      Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						<b>49.7</b>	<b>49.7</b>

<b>NO</b>	<b>NOx</b>
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

**Cylinder gas tolerances based on NO only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark                      Date: Janaury 15, 2019

Operator Signature: *Al Clark*                      Location: McIntyre Center Edmonton



# Calibration Gas Audit

## CH<sub>4</sub> / C<sub>3</sub>H<sub>8</sub> Cylinder Gas

File No. 2019-393CGA

**Company:** Maxxam **Operators name:** Alex  
**Cylinder #:** LL29687 **Conc CH<sub>4</sub> (PPM):** 598/198 **Tolerance (%):** 1 **Certified By:** Praxair  
**Expiry Date:** August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>Mesa Definer 220</u>		
Serial Number	<u>AMU 2092</u>	Serial Number	<u>H-133034 / L-132702</u>		
Last Verification Date	<u>January 14, 2019</u>	Temp. °C	<u>23.8 C</u>		
Gas Type	<u>CH<sub>4</sub></u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>05604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C<sub>3</sub>H<sub>8</sub></u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

**Reference Analyzer:**  
 Make/Model Teco 55i Serial/AMU Number: 2221  
 Instrument Settings Zero: N/A Span: N/A Range: 20.0  
 Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH <sub>4</sub>	C <sub>3</sub> H <sub>8</sub>			CH <sub>4</sub>	C <sub>3</sub> H <sub>8</sub>
5000	0.0	0.00	0.00	<del>0.02</del>	<del>51.48</del>	<del>603</del>	<del>209</del>
3990	77.5	11.71	11.18	0.02	51.48	603	209
3976	39.1	5.87	5.71	0.01	101.69	597	211
3986	20.0	2.96	2.86	0.01	199.30	590	207
Average Cylinder Concentration:						<b>597</b>	<b>209</b>

<b><u>CH<sub>4</sub></u></b>	<b><u>C<sub>3</sub>H<sub>8</sub></u></b>
Previous Stated Concentration PPM: <u>598</u>	<u>198</u>
Percent variance from Stated: <u>0</u>	<u>6</u>

**Cylinder gas tolerances based on CH<sub>4</sub> only**

Meets Manufacturer Tolerance. Use manufacturers stated concentration  **COMMENTS:**  
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration   
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 15, 2019  
 Operator Signature:  Location: McIntyre Center Edmonton

**End of Report**