



MAXXAM ANALYTICS
#1 2080 39 Ave. NE, Calgary, AB
T2E 6P7

maxxam.ca
Toll Free 800-386-7247
Fax 403-219-3673

AMBIENT AIR MONITORING MONTHLY DATA REPORT
PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
RENO STATION

JOB #: 196-2017-11-93-C

November 2017

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: **December 20, 2017**

Prepared by:

A handwritten signature in blue ink, appearing to read "Wunmi Adekanmbi".

Wunmi Adekanmbi, M.Sc., EPT.
Project Manager, Customer Service, Air Services

Reviewed by:

A handwritten signature in black ink, appearing to read "Cheri Sinclair".

Cheri Sinclair, B.Sc.
Supervisor, Customer Service, Air Services

SUMMARY

In November 2017, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Reno Station, near Peace River Oil Sands Area 1, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for non-compliance parameters, as requested by the PRAMP Committee.

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The daily zero/span schedule was reverted to a 23-hour interval on November 7, as per PRAMP's request.

Non-Conformance: The operational uptime for all gas parameters was less than the 90% requirement.

In response to a protracted elevation in SO₂ and TRS concentrations, a technician was dispatched on November 5 to assess the situation. On arrival, it was found that the sample manifold blower had failed. Analyzers were not receiving fresh ambient samples and the elevated readings were attributed to the instruments' exhausts. The manifold blower was replaced and regular ambient air monitoring was resumed. As the manifold feeds all gas analyzers, TRS, SO₂ and THC/CH₄/NMHC data collected from October 31, hour 06:00, to November 5, hour 17:00, were discarded. 114 hours of downtime were recorded in November due to this event. This was reported to AEP under reference number: 331557.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0, Discussion. On this basis, Maxxam Analytics is issuing this completed report to Peace River Area Monitoring Program Committee, Reno Station.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3677 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Peace River Area Monitoring Program Committee						MAXIMUM VALUES							OPERATIONAL TIME (%)
Reno Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	4	9	9	7.7	SE	1	9	84.2
TRS (ppb)	-	-	-	-	0.39	1.72	24	13	5.1	SSE	0.61	28	84.2
THC (ppm)	-	-	-	-	2.04	3.27	8	9	2.6	SSW	2.22	8	84.2
CH ₄ (ppm)	-	-	-	-	2.04	3.27	8	9	2.6	SSW	2.22	8	84.2
NMHC (ppm)	-	-	-	-	0.00	0.02	6	0	3.1	S	0.00	5	84.2
RELATIVE HUMIDITY (%)	-	-	-	-	75	92	23	3	8.4	SSW	83	23	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	935	955	2	20	5.4	NNE	952	2	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-10.2	4.3	23	13	11.3	WSW	1.6	23	100.0
STATION TEMPERATURE (°C)	-	-	-	-	21.0	22.1	6	15	9.8	WSW	21.9	30	100.0
VECTOR WS (kph)	-	-	-	-	0.8	22.2	26	8	-	E	10.7	26	100.0
VECTOR WD (sec)	-	-	-	-	203 (SSW)	-	-	-	-	-	-	-	100.0

SOUR GAS PROCESSING INDUSTRY
MONTHLY REPORT SUMMARY

Reno Station

Peace River Area Monitoring Program Committee

Plant Name / Location

Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2017	November

CONTINUOUS AMBIENT MONITORING						
PARAMETER	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE	
		MAXIMUM VALUES	NO. READINGS > REGULATION		MAXIMUM VALUES	NO. READINGS > REGULATION
SO ₂	84.2	0.004 ppm	0		0.001 ppm	0
TRS	84.2	0.002 ppm	-		0.001 ppm	-
THC	84.2	3.27 ppm	-		2.22 ppm	-
CH ₄	84.2	3.27 ppm	-		2.22 ppm	-
NMHC	84.2	0.02 ppm	-		0.00 ppm	-
RH	100.0	92 %	-		83 %	-
BP	100.0	955 mb	-		952 mb	-
Ambient TPX	100.0	4.3 °C	-		1.6 °C	-
Station TPX	100.0	22.1 °C	-		21.9 °C	-
Wind Speed	100.0	22.2 kph	-		10.7 kph	-
Wind Direction	100.0	-	-		-	-

SIGNATURE OF COMPANY REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY

Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

In accordance with EPEA and the Substance Release Regulation.

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary.

TABLE OF CONTENTS

<u>Title</u>	<u>Page</u>
SUMMARY	1
MONTHLY CONTINUOUS DATA SUMMARY REPORT	2
SOUR GAS SUMMARY REPORT	3
EXCEEDANCE SUMMARY REPORT	4
TABLE OF CONTENTS	5
 1.0 Discussion	 7
.....	
2.0 Project Personnel	9
.....	
3.0 Plant Monthly Required AMD Summary	9
.....	
4.0 Calculations and Results	9
.....	
5.0 Methods and Procedures	10
.....	
 Appendix I	 Continuous Monitoring Data Results 13
.....	
	Sulphur Dioxide 14
	Total Reduced Sulphur 22
	Total Hydrocarbon 30
	Methane 38
	Non-Methane Hydrocarbon 46
	Wind Speed 54
	Wind Direction 61
	Relative Humidity 64
	Barometric Pressure 67
	Ambient Temperature 70
	Station Temperature 73
Appendix II	Equipment Calibration Results 76
.....	
	Sulphur Dioxide 77
	Total Reduced Sulphur 81
	Total Hydrocarbon 84
	Wind System 87
	Calibrators 90
	

	Calibration Gases	93
Appendix III	Report Certification Form	97
Appendix IV	Data Validation Certification Form	99

1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), Relative Humidity (RH), Barometric Pressure (BP), Ambient Temperature (AmbTPX), Station Temperature (StnTPX), Wind Speed (WS) and Wind Direction (WD).

The sample inlet filter for all continuous air analyzers are replaced before the calibration begins. The sample manifold is cleaned during the site visit each month.

Control checks, consisting of a zero and span, are conducted daily on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinders) is used for zero checks, and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibrations are done a minimum of once a month for each continuous air monitor. An additional calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

Time during the first multi-point calibration is not considered downtime (Data is flagged as C). If more than one calibration is performed during the month, the time during the additional calibration is considered as downtime (Data is flagged as C1).

Only one zero/span check is run per day. Time during the zero/span check is not considered as downtime (Data is flagged as S). If an extra zero/span check is performed, the time during the additional check is considered as downtime (Data is flagged as S1).

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, at a minimum, for each monthly monitoring period.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality (December, 2016). The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

Hourly/minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).

SULPHUR DIOXIDE (SO₂)

- Operational time, for the monitoring period was 84.2%, equivalent to 114 hours of downtime.
- The routine monthly calibration was performed on November 6.
- The sample manifold blower failed on October 31, resulting in compromised samples not representative of ambient concentrations. The blower was replaced on November 5. Data was invalidated back to the point of failure, determined to be October 31 at 06:00. 114 hours of downtime were recorded due to this event.
- Maximum instantaneous data collected on November 9, at hour 09:00, was discarded due to a brief power outage.

TOTAL REDUCED SULPHUR (TRS)

- Operational time, for the monitoring period was 84.2%, equivalent to 114 hours of downtime.
- The routine monthly calibration was performed on November 6.
- The sample manifold blower failed on October 31, resulting in compromised samples not representative of ambient concentrations. The blower was replaced on November 5. Data was invalidated back to the point of failure, determined to be October 31 at 06:00. 114 hours of downtime were recorded due to this event.
- Maximum instantaneous data collected on November 9, at hour 09:00, was discarded due to a brief power outage.

TOTAL HYDROCARBONS (THC), METHANE (CH₄) and NON-METHANE HYDROCARBONS (NMHC)

- Operational time, for the monitoring period was 84.2%, equivalent to 114 hours of downtime.
- The routine monthly calibration was performed on November 6.
- The sample manifold blower failed on October 31, resulting in compromised samples not representative of ambient concentrations. The blower was replaced on November 5. Data was invalidated back to the point of failure, determined to be October 31 at 06:00. 114 hours of downtime were recorded due to this event.
- Maximum instantaneous data collected on November 9, at hour 09:00, was discarded due to a brief power outage.
- The canister sampler is programmed to draw in a whole air sample when the 5-minute average concentration of NMHC is above 0.30 ppm. A representative sample of ambient air is collected over a one-hour period when the canister event is triggered. No canister event was recorded this month.

RELATIVE HUMIDITY (RH)

- Operational time, for the monitoring period, was 100%.

BAROMETRIC PRESSURE (BP)

- Operational time, for the monitoring period, was 100%.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time, for the monitoring period, was 100%.

STATION TEMPERATURE (StnTPX)

- Operational time, for the monitoring period, was 100%.
- Low station temperatures were observed for a short period between November 8 and November 9. A technician checked the sensor onsite on November 9 and no issues were found. No further action was required. There was no apparent impact on gas analyzer data quality.

2.0 Project Personnel

Karla Reesor was the contact for Peace River Area Monitoring Program Committee and the Maxxam field technician was Christopher Wesson.

3.0 Plant Monthly Required AMD Summary

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational uptime for all gas parameters was less than the 90% requirement. This was as a result of a sample manifold blower failure which occurred on October 31. Data collected from October 31, hour 06:00, to November 5, hour 17:00, were discarded. 114 hours of downtime were recorded in November due to this event. This was reported to AEP under reference number: 331557.

4.0 Calculations and Results

All calculations and reporting of results follow the methods described in the AMD, 2016.

5.0 Methods and Procedures

The following methods and procedures were used to complete the monitoring program:

Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring

Maxxam AIR SOP-00208: RM Young Wind Monitor Calibration

Maxxam AIR SOP-00209: Ambient Sulphur Monitoring

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - API 100A UV Fluorescent Analyzer

Total Reduced Sulphur - Thermo 43i - TLE UV Fluorescent Analyzer

Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer

Wind System - RM Young Unit

Relative Humidity - RM Young Unit

Barometric Pressure - Met One Unit

Ambient Temperature - RM Young Unit

Datalogger - ESC 8832

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification

Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/datalogger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.

Level 1 Primary Validation

Validation actions under the step of Level 1 include a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.

Level 2 Final Validation

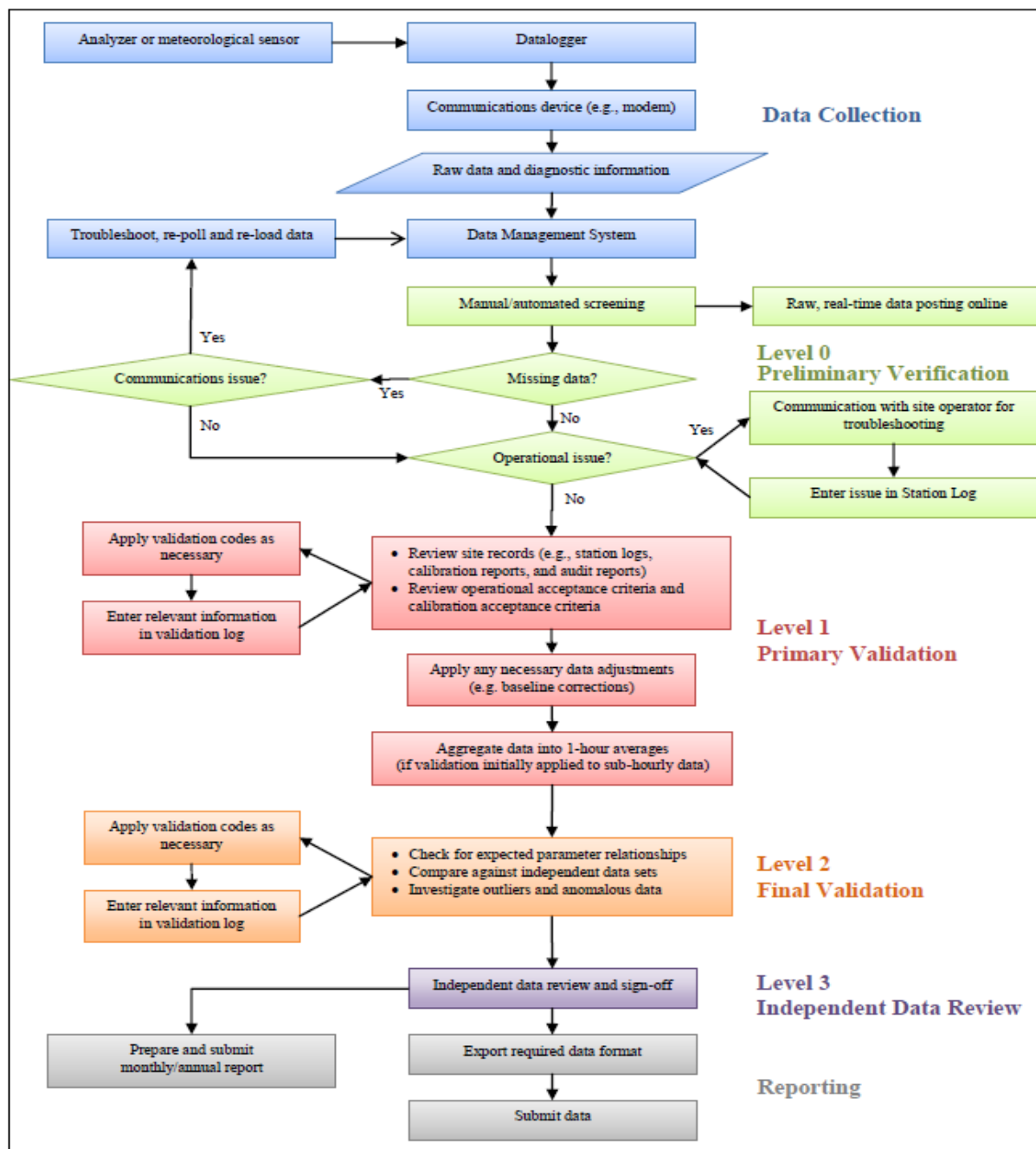
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

Level 3 validation is the last step of data review, and it is completed by an individual that is independent of both field operations and primary data validation. A final independent QA review and endorsement is performed during this step before data is submitted to Alberta Environment.

Post-Final Validation

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. Any data issues or patterns which were not clear on a monthly basis are highlighted during this step. This validation is performed on an annual basis.



Source: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	0	0	0	0	0	0	0	0	0	6
6	0	0	0	0	0	S	0	0	1	1	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	1	24
7	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	24
8	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	24
9	0	0	S	0	0	0	0	0	2	4	4	3	2	2	0	0	0	0	0	0	0	0	0	0	0	4	1	24
10	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	24
11	S	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	24
12	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	24
13	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	S	0	0	0	1	0	24
14	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24
15	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	24
16	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	S	0	0	0	0	0	0	0	0	24
18	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	24
19	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	24
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	24
21	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	24
22	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	24
23	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	24
24	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	24
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	24
26	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	24
27	0	0	0	0	0	0	S	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	24
28	0	0	0	0	0	S	0	0	0	0	1	0	1	1	1	1	0	1	1	1	1	0	1	0	0	1	0	24
29	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
30	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	24
HOURLY MAX	1	1	0	0	0	0	0	1	2	4	4	3	2	2	1	1	0	1	1	1	1	0	1	1				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

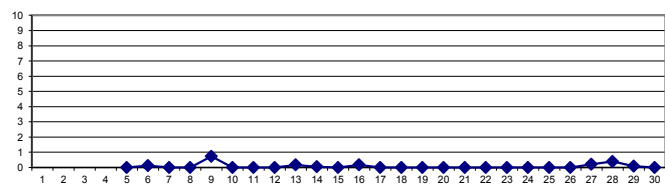
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
----------------------	------	-----	-----	-------	----	-----

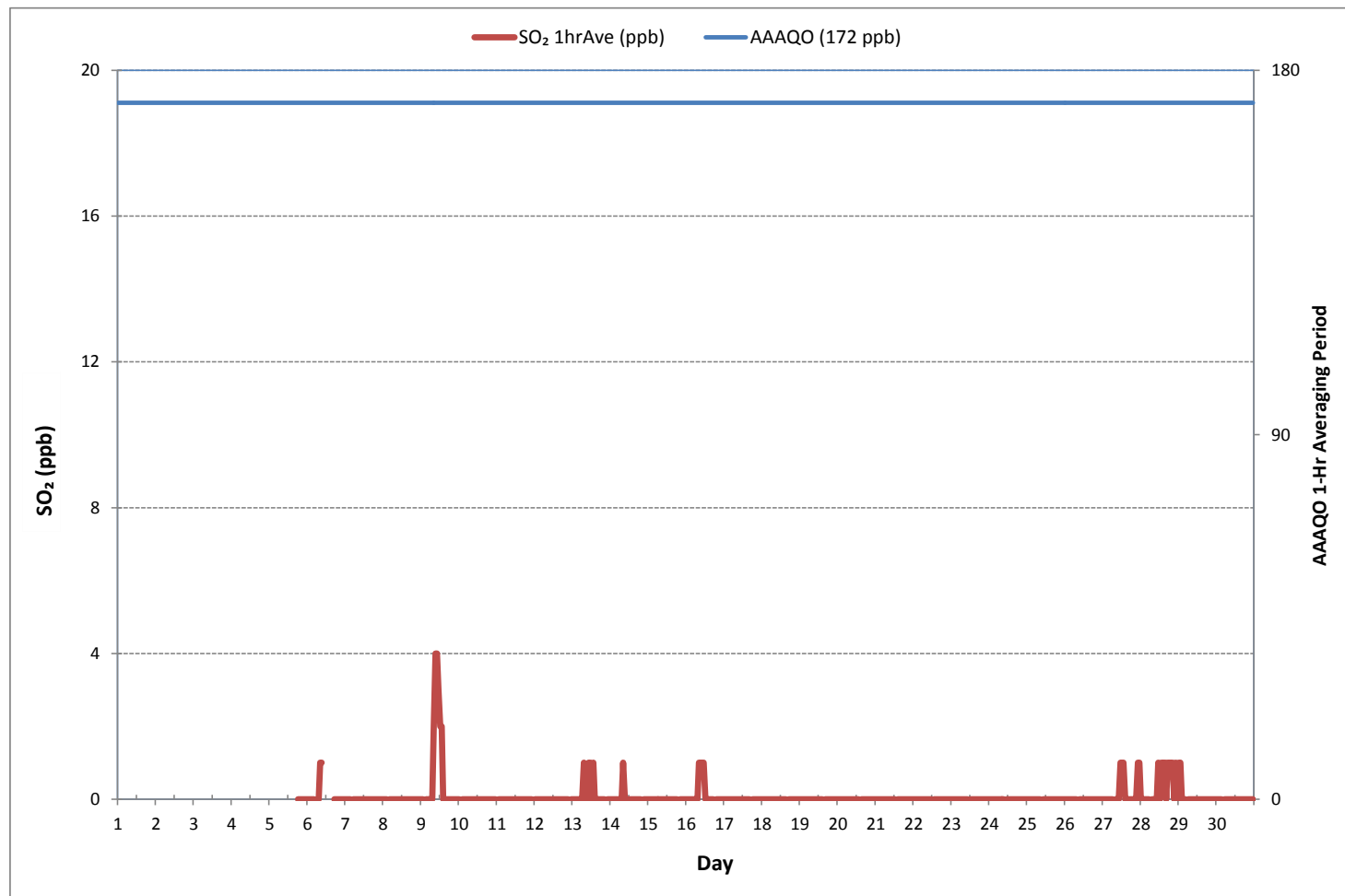
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:		0	
NUMBER OF 24-HR EXCEEDANCES:		0	
NUMBER OF NON-ZERO READINGS:		33	
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	18 ON DAY 5
MAXIMUM 1-HR AVERAGE:	4	ppb @ HOUR	9 ON DAY 9
MAXIMUM 24-HR AVERAGE:	1	ppb	ON DAY 9
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME: 606 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME: 84.2 %
STANDARD DEVIATION:	0		MONTHLY AVERAGE: 0 ppb

24 HR AVERAGES November 2017



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Reno Station - November 2017

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	X	1	0	1	1	0	0	1	1	5
6	1	1	1	1	1	S	1	1	2	2	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	2	1	24
7	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	24
8	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	24
9	0	0	S	0	0	0	0	0	3	P	5	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	5	1	23
10	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	24
11	S	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	24
12	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	24
13	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	24
14	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24
15	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	24
16	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	24
17	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	24
18	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	24
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	1	0	24
20	0	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24
21	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	24
22	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	24
23	0	0	0	0	0	0	0	1	1	1	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
24	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	24
25	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	24
26	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	24
27	0	0	0	0	0	0	S	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
28	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0	24
29	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	24
30	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	24
HOURLY MAX	1	1	1	1	1	0	1	1	3	2	5	3	3	3	1	1	0	1	1	1	0	1	1	0	0	0	0	0	
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

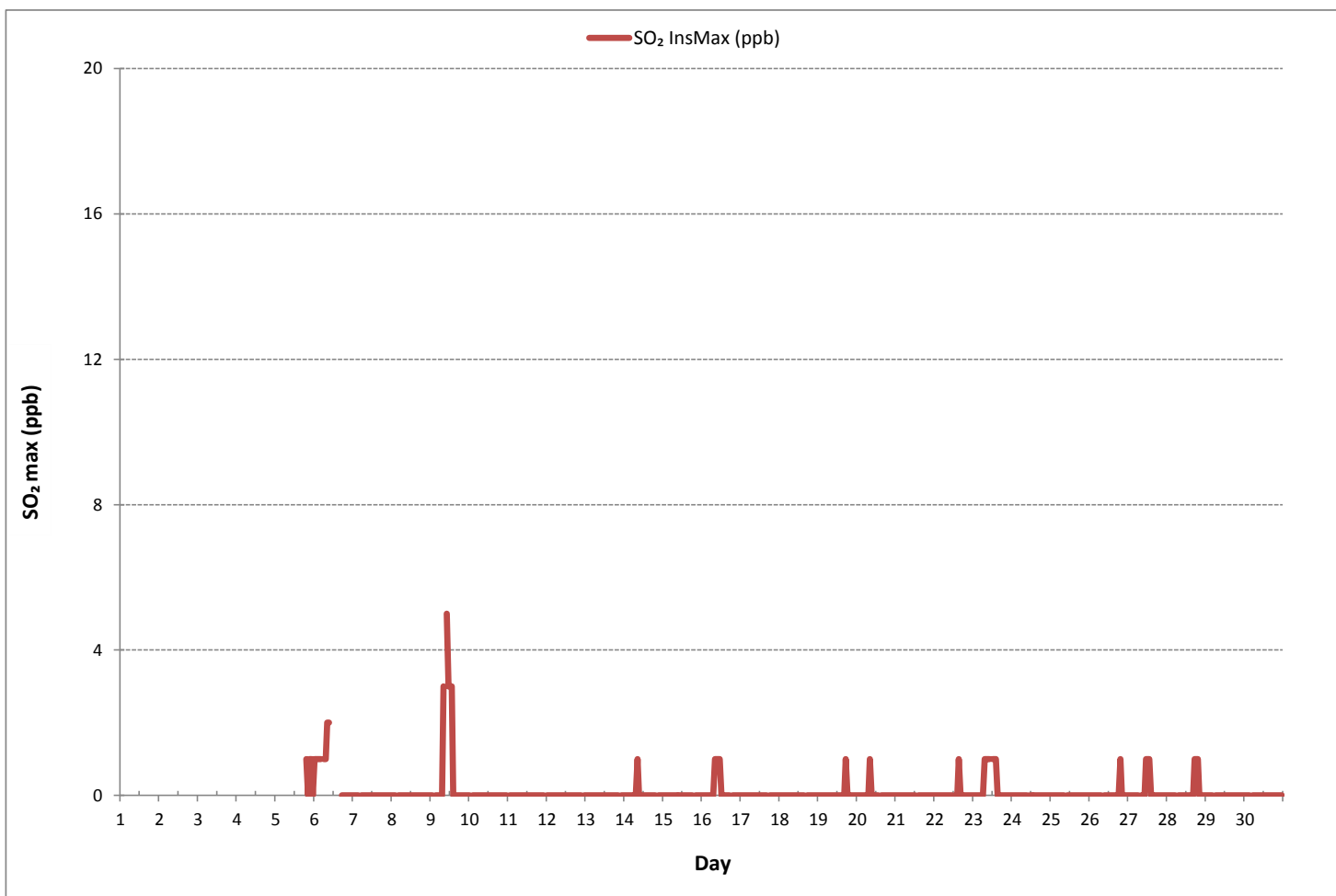
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		39							
MAXIMUM INSTANTANEOUS VALUE:		5	ppb	@ HOUR	10	ON DAY	9		
IZS CALIBRATION TIME:		26	hrs	OPERATIONAL TIME:				604	hrs
MONTHLY CALIBRATION TIME:		7	hrs						
STANDARD DEVIATION:		0							

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



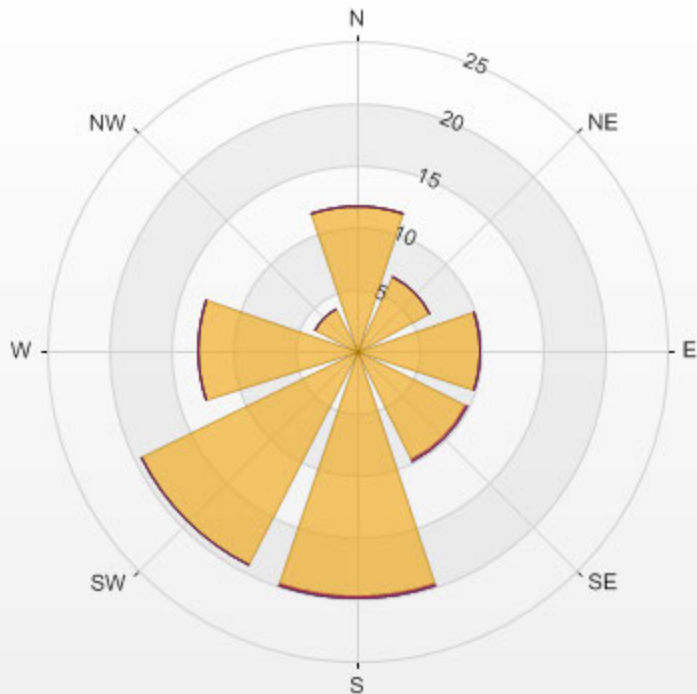
Wind: PRAMP_RENO
Poll.: PRAMP_RENO-SO₂[ppb]
Monthly: 17/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 5.77%

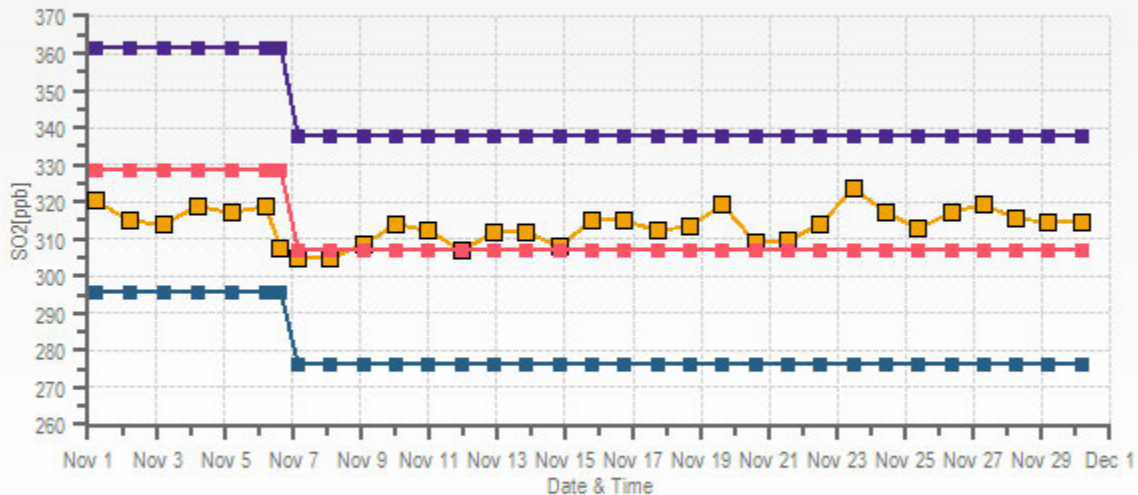
Calm Avg: 0.04 [ppb]

Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	11.7	0.0	0.0	0.0	0.0	11.7
NE	6.6	0.0	0.0	0.0	0.0	6.6
E	10.0	0.0	0.0	0.0	0.0	10.0
SE	9.8	0.2	0.0	0.0	0.0	10.0
S	19.8	0.2	0.0	0.0	0.0	19.9
SW	19.4	0.0	0.0	0.0	0.0	19.4
W	12.8	0.0	0.0	0.0	0.0	12.8
NW	3.9	0.0	0.0	0.0	0.0	3.9
Summary	93.9	0.3	0.0	0.0	0.0	94.2

PRAMP_RENO Poll.: PRAMP_RENO-SO2[ppb] 2017/11/01 00:00 - 2017/11/30 23:00 Calm: 5.77% Calm Poll Avg: 0.04[ppb]



SO₂[ppb] Calibration: PRAMP_RENO Monthly: 17/11 Type: Span



—■— Span Meas —■— Span Ref —■— Span Low —■— Span High

TOTAL REDUCED SULPHUR

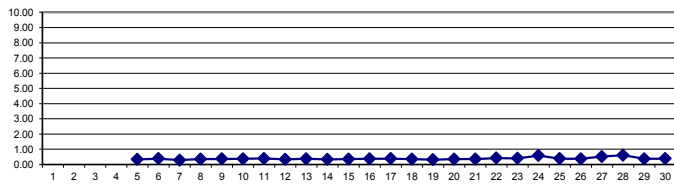
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	0.38	0.36	0.34	0.33	0.34	0.32	0.32	0.38	0.35	0.38	6
6	0.49	0.54	0.49	0.45	0.42	S	0.39	0.36	0.34	0.36	C	C	C	C	C	C	0.36	0.33	0.33	0.32	0.33	0.33	0.32	0.34	0.32	0.54	0.38	24	
7	0.33	0.32	0.30	0.32	S	0.35	0.34	0.29	0.27	0.29	0.30	0.28	0.29	0.28	0.28	0.28	0.27	0.26	0.27	0.26	0.26	0.25	0.27	0.26	0.25	0.35	0.29	24	
8	0.26	0.27	0.29	S	0.35	0.34	0.30	0.29	0.39	0.44	0.32	0.31	0.32	0.33	0.36	0.35	0.39	0.44	0.38	0.38	0.44	0.39	0.42	0.34	0.26	0.44	0.35	24	
9	0.33	0.32	S	0.35	0.32	0.32	0.33	0.32	0.36	0.34	0.37	0.41	0.35	0.38	0.36	0.37	0.39	0.40	0.39	0.40	0.40	0.40	0.41	0.41	0.32	0.41	0.37	24	
10	0.40	S	0.42	0.41	0.41	0.42	0.40	0.40	0.37	0.35	0.37	0.35	0.34	0.34	0.35	0.34	0.34	0.33	0.45	0.41	0.39	0.36	0.36	0.38	0.33	0.45	0.38	24	
11	S	0.46	0.52	0.49	0.41	0.40	0.40	0.40	0.41	0.40	0.38	0.37	0.38	0.37	0.38	0.40	0.37	0.37	0.35	0.36	0.36	0.34	0.34	S	0.34	0.52	0.39	24	
12	0.37	0.33	0.33	0.34	0.33	0.33	0.32	0.33	0.32	0.31	0.31	0.32	0.31	0.32	0.32	0.33	0.31	0.34	0.33	0.34	0.34	0.33	S	0.40	0.31	0.40	0.33	24	
13	0.42	0.47	0.40	0.37	0.45	0.40	0.36	0.37	0.36	0.35	0.35	0.34	0.36	0.33	0.34	0.34	0.33	0.34	0.34	0.34	0.34	S	0.39	0.36	0.33	0.47	0.37	24	
14	0.35	0.35	0.36	0.34	0.35	0.35	0.34	0.33	0.31	0.32	0.34	0.33	0.33	0.34	0.35	0.33	0.34	0.33	0.31	0.32	S	0.35	0.35	0.34	0.31	0.36	0.34	24	
15	0.35	0.34	0.33	0.33	0.32	0.32	0.33	0.33	0.34	0.33	0.35	0.36	0.39	0.38	0.39	0.39	0.36	0.37	0.38	S	0.40	0.39	0.39	0.37	0.32	0.40	0.36	24	
16	0.44	0.43	0.40	0.37	0.35	0.37	0.40	0.42	0.41	0.35	0.37	0.37	0.34	0.34	0.32	0.32	0.32	0.33	S	0.37	0.34	0.36	0.38	0.37	0.32	0.44	0.37	24	
17	0.38	0.35	0.34	0.35	0.36	0.35	0.35	0.37	0.37	0.39	0.40	0.39	0.45	0.43	0.38	0.40	0.39	S	0.41	0.43	0.40	0.40	0.41	0.39	0.34	0.45	0.39	24	
18	0.49	0.41	0.35	0.35	0.36	0.37	0.34	0.32	0.32	0.32	0.33	0.38	0.35	0.36	0.32	0.32	S	0.38	0.37	0.36	0.39	0.39	0.37	0.34	0.32	0.49	0.36	24	
19	0.33	0.30	0.29	0.26	0.27	0.27	0.28	0.27	0.29	0.26	0.30	0.29	0.31	0.46	0.42	S	0.38	0.36	0.37	0.32	0.33	0.31	0.30	0.30	0.26	0.46	0.32	24	
20	0.31	0.27	0.28	0.29	0.29	0.30	0.30	0.31	0.32	0.31	0.32	0.32	0.32	0.32	S	0.42	0.37	0.36	0.34	0.34	0.42	0.45	0.42	0.76	0.27	0.76	0.35	24	
21	0.53	0.38	0.31	0.31	0.32	0.31	0.36	0.31	0.37	0.37	0.35	0.32	0.34	S	0.38	0.33	0.33	0.35	0.36	0.37	0.35	0.36	0.36	0.38	0.31	0.53	0.35	24	
22	0.34	0.35	0.35	0.35	0.43	0.46	0.55	0.55	0.42	0.42	0.44	0.40	S	0.47	0.44	0.42	0.40	0.40	0.40	0.39	0.50	0.48	0.44	0.39	0.34	0.55	0.43	24	
23	0.49	0.45	0.43	0.42	0.44	0.41	0.41	0.41	0.41	0.39	0.39	S	0.41	0.37	0.41	0.38	0.40	0.38	0.36	0.31	0.37	0.43	0.39	0.46	0.31	0.49	0.41	24	
24	0.54	0.56	0.57	0.38	0.39	0.37	0.35	0.33	0.34	0.36	S	0.41	1.38	1.72	1.05	0.44	0.41	0.38	0.72	0.33	0.72	0.71	0.50	0.46	0.33	1.72	0.58	24	
25	0.47	0.40	0.38	0.42	0.37	0.39	0.41	0.41	0.39	S	0.41	0.37	0.38	0.37	0.37	0.35	0.36	0.36	0.36	0.36	0.37	0.38	0.38	0.38	0.35	0.47	0.38	24	
26	0.39	0.40	0.38	0.37	0.38	0.38	0.39	0.38	S	0.44	0.41	0.39	0.39	0.39	0.37	0.38	0.39	0.37	0.36	0.35	0.34	0.35	0.37	0.39	0.34	0.44	0.38	24	
27	0.41	0.51	0.49	0.46	0.64	0.65	0.55	S	0.56	0.55	0.42	0.45	0.48	0.42	0.40	0.34	0.33	0.35	0.45	0.78	0.83	0.58	0.60	0.74	0.33	0.83	0.52	24	
28	0.80	1.25	0.73	0.73	0.86	0.64	S	0.71	0.58	0.63	0.57	0.49	0.49	0.55	0.53	0.43	0.49	0.54	0.55	0.53	0.54	0.58	0.44	0.36	0.36	1.25	0.61	24	
29	0.37	0.38	0.37	0.36	0.37	S	0.40	0.38	0.39	0.38	0.38	0.37	0.35	0.37	0.37	0.37	0.37	0.38	0.40	0.38	0.37	0.38	0.36	0.36	0.35	0.40	0.37	24	
30	0.37	0.36	0.36	0.37	S	0.40	0.38	0.36	0.38	0.39	0.38	0.40	0.39	0.42	0.41	0.38	0.39	0.36	0.37	0.38	0.39	0.39	0.42	0.37	0.36	0.42	0.38	24	
HOURLY MAX	0.80	1.25	0.73	0.73	0.86	0.65	0.55	0.71	0.58	0.63	0.57	0.49	1.38	1.72	1.05	0.44	0.49	0.54	0.72	0.78	0.83	0.71	0.60	0.76					
HOURLY AVG	0.42	0.43	0.39	0.38	0.40	0.39	0.37	0.37	0.38	0.38	0.37	0.37	0.41	0.44	0.40	0.37	0.37	0.37	0.39	0.38	0.41	0.40	0.39	0.40					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

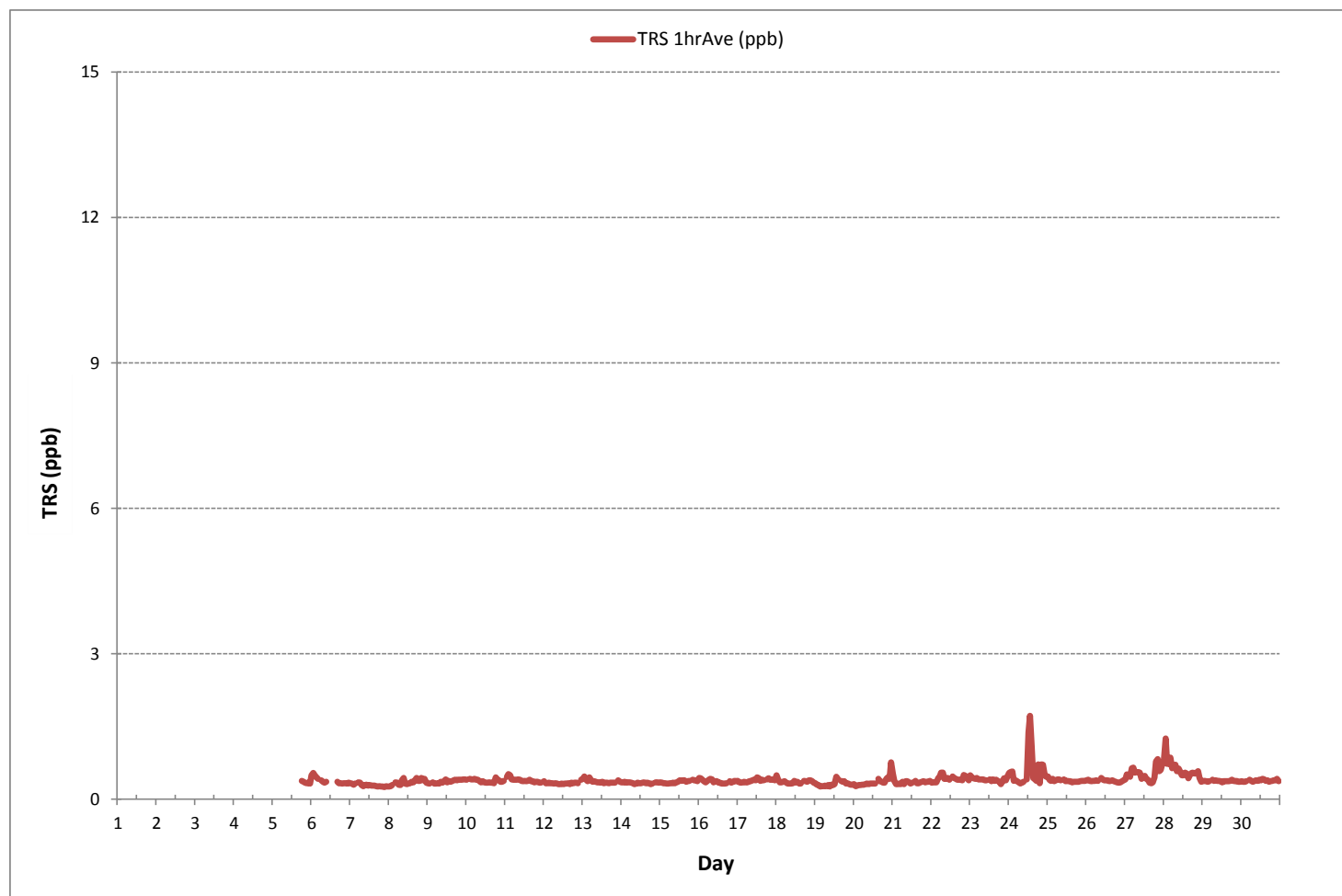
24 HR AVERAGES November 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	574				
MINIMUM 1-HR AVERAGE:	0.25	ppb	@ HOUR	21	ON DAY
MAXIMUM 1-HR AVERAGE:	1.72	ppb	@ HOUR	13	ON DAY
MAXIMUM 24-HR AVERAGE:	0.61	ppb			ON DAY
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	606	hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	84.2	%
STANDARD DEVIATION:	0.12		MONTHLY AVERAGE:	0.39	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	X		0.65	0.63	0.60	0.60	0.60	0.60	0.65	0.62	5
6	0.84	0.84	0.89	0.71	0.76	S	0.65	0.63	0.58	0.60	C	C	C	C	C	C	0.58	0.52	0.52	0.55	0.51	0.53	0.50	0.53	0.50	0.89	0.63	24	
7	0.50	0.50	0.48	0.53	S	0.55	0.50	0.45	0.45	0.53	0.45	0.50	0.48	0.45	0.48	0.45	0.45	0.43	0.45	0.45	0.42	0.45	0.45	0.42	0.42	0.55	0.47	24	
8	0.42	0.42	0.45	S	0.53	0.52	0.48	0.48	0.65	0.63	0.50	0.45	0.50	0.50	0.52	0.55	0.68	0.65	0.68	0.55	0.71	0.58	0.71	0.60	0.42	0.71	0.55	24	
9	0.52	0.52	S	0.58	0.50	0.50	0.50	0.48	0.53	P	0.55	0.60	0.52	0.58	0.50	0.52	0.55	0.58	0.52	0.58	0.55	0.55	0.52	0.60	0.48	0.60	0.54	23	
10	0.58	S	0.58	0.58	0.58	0.58	0.52	0.55	0.52	0.50	0.52	0.50	0.50	0.48	0.50	0.52	0.50	0.52	0.68	0.60	0.55	0.50	0.50	0.58	0.48	0.68	0.54	24	
11	S	0.65	0.81	0.84	0.58	0.55	0.55	0.55	0.60	0.60	0.55	0.50	0.52	0.52	0.55	0.55	0.52	0.52	0.50	0.50	0.50	0.50	0.50	S	0.50	0.84	0.57	24	
12	0.55	0.50	0.48	0.50	0.48	0.48	0.50	0.50	0.48	0.45	0.48	0.48	0.50	0.52	0.47	0.50	0.49	0.50	0.49	0.50	0.58	0.52	S	0.58	0.45	0.58	0.50	24	
13	0.63	0.63	0.60	0.52	0.71	0.60	0.50	0.49	0.50	0.48	0.52	0.52	0.52	0.50	0.49	0.48	0.50	0.48	0.48	0.50	S	0.52	0.50	0.48	0.71	0.53	0.54	24	
14	0.49	0.52	0.50	0.49	0.52	0.52	0.52	0.48	0.48	0.48	0.50	0.50	0.50	0.50	0.52	0.52	0.52	0.48	0.50	0.50	S	0.55	0.52	0.50	0.48	0.55	0.50	24	
15	0.52	0.48	0.50	0.52	0.50	0.50	0.50	0.52	0.48	0.50	0.50	0.50	0.52	0.52	0.55	0.52	0.50	0.52	0.52	S	0.55	0.52	0.55	0.52	0.48	0.55	0.51	24	
16	0.60	0.58	0.55	0.52	0.52	0.55	0.58	0.57	0.58	0.52	0.52	0.52	0.50	0.49	0.48	0.48	0.48	0.50	S	0.58	0.48	0.52	0.55	0.55	0.48	0.60	0.53	24	
17	0.55	0.52	0.54	0.52	0.52	0.52	0.55	0.52	0.55	0.58	0.58	0.60	0.65	0.65	0.58	0.60	0.58	S	0.63	0.63	0.63	0.65	0.60	0.60	0.52	0.65	0.58	24	
18	0.79	0.63	0.58	0.55	0.60	0.63	0.55	0.55	0.52	0.55	0.58	0.63	0.60	0.63	0.58	0.58	S	0.60	0.60	0.60	0.65	0.68	0.58	0.58	0.52	0.79	0.60	24	
19	0.55	0.50	0.50	0.48	0.48	0.48	0.50	0.48	0.55	0.48	0.52	0.52	0.52	0.71	0.63	S	0.63	0.57	0.60	0.55	0.55	0.55	0.52	0.50	0.48	0.71	0.54	24	
20	0.50	0.50	0.50	0.50	0.52	0.52	0.52	0.50	0.50	0.55	0.55	0.55	0.52	0.55	S	0.71	0.60	0.55	0.57	0.55	0.94	0.76	0.68	1.08	0.50	1.08	0.60	24	
21	0.78	0.65	0.55	0.55	0.55	0.55	0.60	0.52	0.60	0.60	0.58	0.55	0.58	S	0.68	0.55	0.52	0.55	0.63	0.60	0.55	0.55	0.55	0.60	0.52	0.78	0.58	24	
22	0.60	0.57	0.52	0.58	0.71	0.65	0.73	0.78	0.60	0.58	0.63	0.58	S	0.68	0.63	0.58	0.58	0.55	0.52	0.55	0.71	0.76	0.60	0.52	0.52	0.78	0.62	24	
23	0.65	0.65	0.58	0.55	0.63	0.55	0.52	0.55	0.52	0.52	0.50	S	0.52	0.50	0.52	0.52	0.55	0.55	0.52	0.45	0.55	0.65	0.55	0.65	0.45	0.65	0.55	24	
24	0.78	0.81	0.94	0.52	0.58	0.52	0.55	0.50	0.50	0.52	S	0.60	2.43	2.35	1.70	0.68	0.63	0.71	1.39	0.50	1.08	0.97	0.71	0.60	0.50	2.43	0.89	24	
25	0.68	0.55	0.50	0.55	0.50	0.55	0.52	0.55	0.50	S	0.55	0.50	0.50	0.48	0.48	0.48	0.50	0.50	0.48	0.48	0.50	0.52	0.50	0.50	0.48	0.68	0.52	24	
26	0.52	0.50	0.50	0.48	0.52	0.52	0.52	0.52	S	0.60	0.55	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.50	0.52	0.49	0.49	0.55	0.55	0.48	0.60	0.52	24	
27	0.58	0.73	0.71	0.63	1.02	0.91	0.84	S	0.78	0.89	0.58	0.65	0.68	0.60	0.81	0.52	0.48	0.58	0.73	1.15	1.18	0.86	0.97	1.10	0.48	1.18	0.78	24	
28	1.31	1.63	1.20	0.97	1.13	0.89	S	1.02	0.84	0.92	0.81	0.78	0.73	0.78	0.73	0.71	0.73	0.73	0.78	0.78	0.73	0.91	0.91	0.52	0.52	1.63	0.89	24	
29	0.52	0.55	0.52	0.52	0.55	S	0.60	0.52	0.60	0.60	0.55	0.54	0.50	0.52	0.58	0.55	0.52	0.55	0.55	0.52	0.54	0.52	0.50	0.52	0.50	0.60	0.54	24	
30	0.55	0.52	0.50	0.52	S	0.57	0.52	0.50	0.52	0.60	0.52	0.58	0.73	0.71	0.60	0.55	0.52	0.47	0.50	0.52	0.50	0.60	0.60	0.50	0.47	0.73	0.55	24	
HOURLY MAX	1.31	1.63	1.20	0.97	1.13	0.91	0.84	1.02	0.84	0.92	0.81	0.78	2.43	2.35	1.70	0.71	0.73	1.39	1.15	1.18	0.97	0.97	1.10						
HOURLY AVG	0.63	0.62	0.60	0.57	0.61	0.57	0.56	0.55	0.56	0.58	0.55	0.55	0.63	0.64	0.61	0.55	0.55	0.55	0.60	0.57	0.62	0.61	0.59	0.59					

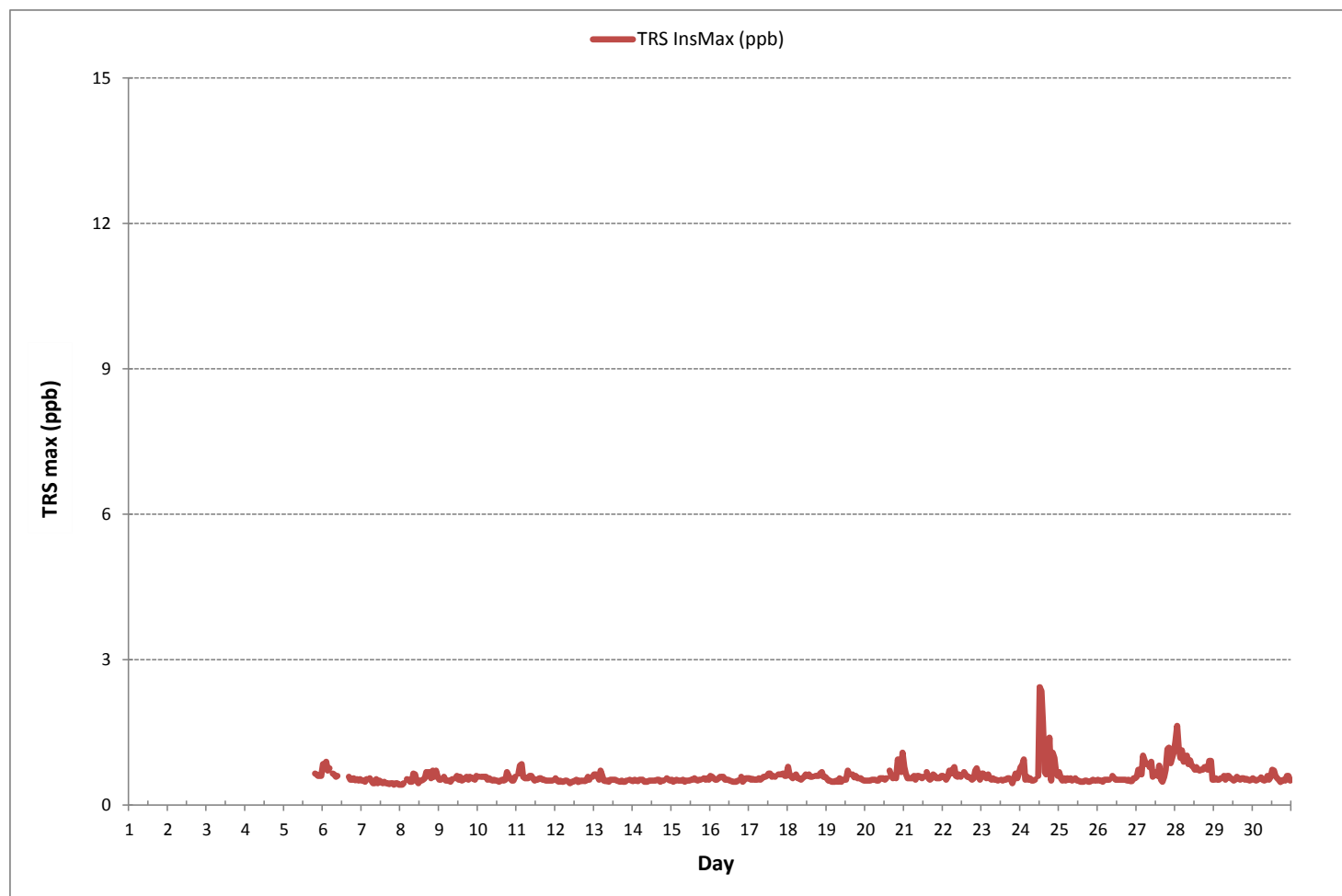
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	572				
MAXIMUM INSTANTANEOUS VALUE:	2.43	ppb	@ HOUR	12	ON DAY 24
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	604	hrs
MONTHLY CALIBRATION TIME:	6	hrs			
STANDARD DEVIATION:	0.18				

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



Wind: PRAMP_RENO
Poll.: PRAMP_RENO-TRS[ppb]
Monthly: 17/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

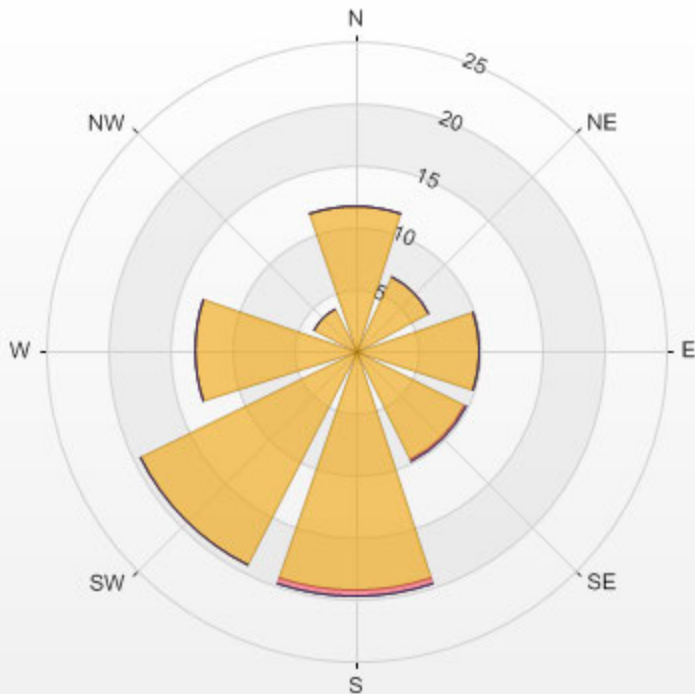
Calm: 5.76%

Calm Avg: 0.35 [ppb]

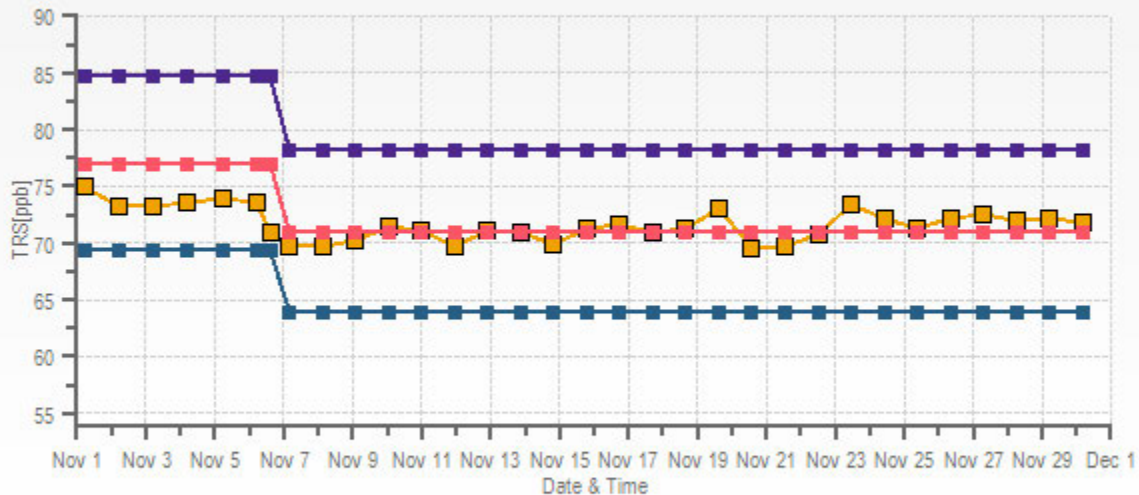
Direction	0-1	1-3	3-10	>10.0	Total
N	11.7	0.0	0.0	0.0	11.7
NE	6.6	0.0	0.0	0.0	6.6
E	10.0	0.0	0.0	0.0	10.0
SE	9.8	0.2	0.0	0.0	9.9
S	19.4	0.5	0.0	0.0	19.9
SW	19.4	0.0	0.0	0.0	19.4
W	12.9	0.0	0.0	0.0	12.9
NW	3.8	0.0	0.0	0.0	3.8
Summary	93.5	0.7	0.0	0.0	94.2

%	Icon	Classes (ppb)
94		0-1
1		1-3
0		3-10
0		>10.0

PRAMP_RENO Poll.: PRAMP_RENO-TRS[ppb] 2017/11/01 00:00 - 2017/11/30 23:00 Calm: 5.76% Calm Poll Avg: 0.35[ppb]



TRS[ppb] Calibration: PRAMP_RENO Monthly: 17/11 Type: Span



■ Span Meas
 ■ Span Ref
 ■ Span Low
 ■ Span High

TOTAL HYDROCARBON



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

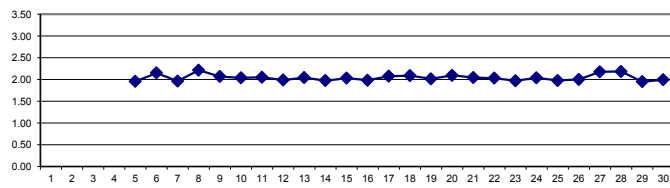
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	1.95	1.96	1.96	1.96	1.96	1.96	1.95	1.96	1.96	6
6	2.53	2.94	2.65	2.07	2.13	S	2.05	2.05	2.02	2.08	2.12	2.06	1.98	1.98	C	C	C	C	C	C	1.98	1.99	1.97	1.97	1.97	1.97	2.94	2.15	24
7	1.97	1.96	1.96	1.97	S	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.96	1.97	1.96	24	
8	1.97	1.99	2.00	S	2.09	2.10	2.02	2.01	2.60	3.27	2.02	1.98	1.99	2.00	2.04	2.07	2.20	2.48	2.60	2.21	2.39	2.46	2.37	2.10	1.97	3.27	2.22	24	
9	2.02	2.03	S	1.99	2.01	2.01	2.04	2.00	2.06	2.03	2.04	2.07	2.04	2.04	2.04	2.10	2.13	2.14	2.14	2.17	2.13	2.12	2.12	2.12	1.99	2.17	2.07	24	
10	2.11	S	2.06	2.06	2.04	2.04	2.04	2.05	2.04	2.03	2.02	1.99	1.98	1.97	1.98	1.99	2.05	2.09	2.24	2.19	2.00	1.99	1.99	2.01	1.97	2.24	2.04	24	
11	S	2.13	2.39	2.44	2.02	2.01	2.02	2.05	2.04	2.05	2.01	2.01	1.98	2.00	2.06	2.02	2.01	2.00	1.99	1.97	1.96	1.96	S	1.96	2.44	2.05	24		
12	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.95	1.96	1.96	1.99	1.98	1.98	1.98	1.99	2.02	2.01	2.03	2.07	2.05	2.07	2.01	S	1.99	1.95	2.07	1.99	24	
13	1.99	1.99	1.98	2.04	2.41	3.00	2.10	1.98	1.98	1.99	1.98	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.97	1.96	1.96	S	1.96	1.97	1.96	3.00	2.04	24	
14	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.98	1.97	1.97	1.97	1.97	S	1.98	1.99	1.96	1.99	1.97	24	
15	1.99	2.06	2.07	1.99	1.98	2.01	1.98	1.98	1.98	1.98	1.99	2.04	2.06	2.05	2.08	2.04	2.03	2.12	2.11	S	2.08	2.06	2.07	2.03	1.98	2.12	2.03	24	
16	2.02	2.01	2.00	1.99	1.99	1.99	2.00	2.02	2.02	1.99	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	S	1.96	1.96	1.97	1.97	1.98	1.96	2.02	1.98	24	
17	1.98	1.97	1.99	1.97	2.00	2.00	2.00	2.00	2.04	2.21	2.05	2.00	2.22	2.25	2.11	2.05	2.12	S	2.02	2.05	2.15	2.19	2.27	2.17	1.97	2.27	2.08	24	
18	2.68	2.25	2.09	2.03	2.14	2.09	2.07	2.02	1.99	2.03	2.04	2.21	2.10	2.11	2.00	2.01	S	2.00	2.00	2.02	2.04	2.04	2.04	2.03	1.99	2.68	2.09	24	
19	2.00	1.97	1.97	1.98	2.00	2.01	2.04	2.04	2.04	2.02	2.08	2.07	2.03	2.07	2.05	S	2.00	2.01	2.02	1.99	1.98	1.99	1.99	1.98	1.97	2.08	2.01	24	
20	1.98	1.98	1.98	1.97	1.97	1.97	1.98	1.97	1.98	1.97	1.97	1.98	1.98	1.98	S	1.99	1.99	2.00	1.99	2.00	3.00	3.14	2.39	2.10	1.97	3.14	2.10	24	
21	2.04	2.05	1.99	2.00	2.01	1.98	1.98	2.04	2.04	2.03	2.09	2.07	2.07	S	2.08	2.01	2.02	2.05	2.07	2.09	2.06	2.06	2.16	2.09	1.98	2.16	2.05	24	
22	2.06	2.05	2.05	2.08	2.10	2.08	2.03	2.08	2.03	2.04	2.04	2.06	S	2.06	2.00	2.03	1.99	2.01	2.01	1.96	1.96	1.98	2.01	2.01	1.96	2.10	2.03	24	
23	2.02	2.05	2.11	2.12	2.10	2.01	1.99	1.97	1.92	1.92	1.91	S	1.91	1.91	1.92	1.93	1.92	1.93	1.99	1.99	1.93	1.93	1.93	1.93	1.91	2.12	1.97	24	
24	1.92	1.93	1.96	2.01	2.01	2.00	1.99	1.98	2.00	2.80	S	2.09	2.03	2.01	1.97	1.99	1.96	1.96	1.96	1.96	1.98	2.05	2.17	2.16	1.92	2.80	2.04	24	
25	2.02	1.99	1.97	1.96	1.94	1.94	1.97	1.99	1.98	S	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.99	1.99	1.98	1.97	1.98	1.94	2.02	1.98	24	
26	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.98	S	1.97	1.99	2.00	2.00	2.01	2.01	2.00	2.01	2.02	2.02	2.01	2.02	2.04	2.02	2.06	1.97	2.06	2.00	24	
27	2.02	2.01	2.02	2.02	2.02	2.02	S	2.04	2.04	2.02	2.02	2.03	2.01	2.00	1.99	1.99	1.99	2.12	2.30	2.82	2.53	2.52	2.80	2.74	1.99	2.82	2.18	24	
28	2.45	2.36	2.45	2.37	2.31	2.24	S	2.19	2.22	1.96	2.05	2.09	2.08	2.02	2.04	2.01	2.05	2.35	2.27	2.04	2.19	2.40	2.16	1.96	1.96	2.45	2.19	24	
29	1.95	1.96	1.95	1.96	1.96	S	1.96	1.96	1.95	1.97	1.95	1.95	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.95	1.94	1.94	1.98	1.94	1.94	1.98	1.95	24	
30	2.00	1.96	1.94	1.94	S	1.95	1.95	1.95	2.05	1.96	1.99	2.09	1.99	2.12	2.06	2.00	1.96	1.95	1.94	1.95	1.94	2.05	2.20	1.94	1.94	2.20	1.99	24	
HOURLY MAX	2.68	2.94	2.65	2.44	2.41	3.00	2.10	2.19	2.60	3.27	2.12	2.21	2.22	2.25	2.11	2.10	2.20	2.48	2.60	2.82	3.00	3.14	2.80	2.74					
HOURLY AVG	2.07	2.06	2.06	2.04	2.05	2.06	2.00	2.01	2.04	2.09	2.01	2.03	2.01	2.01	2.01	2.00	2.01	2.05	2.06	2.05	2.09	2.11	2.10	2.05					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

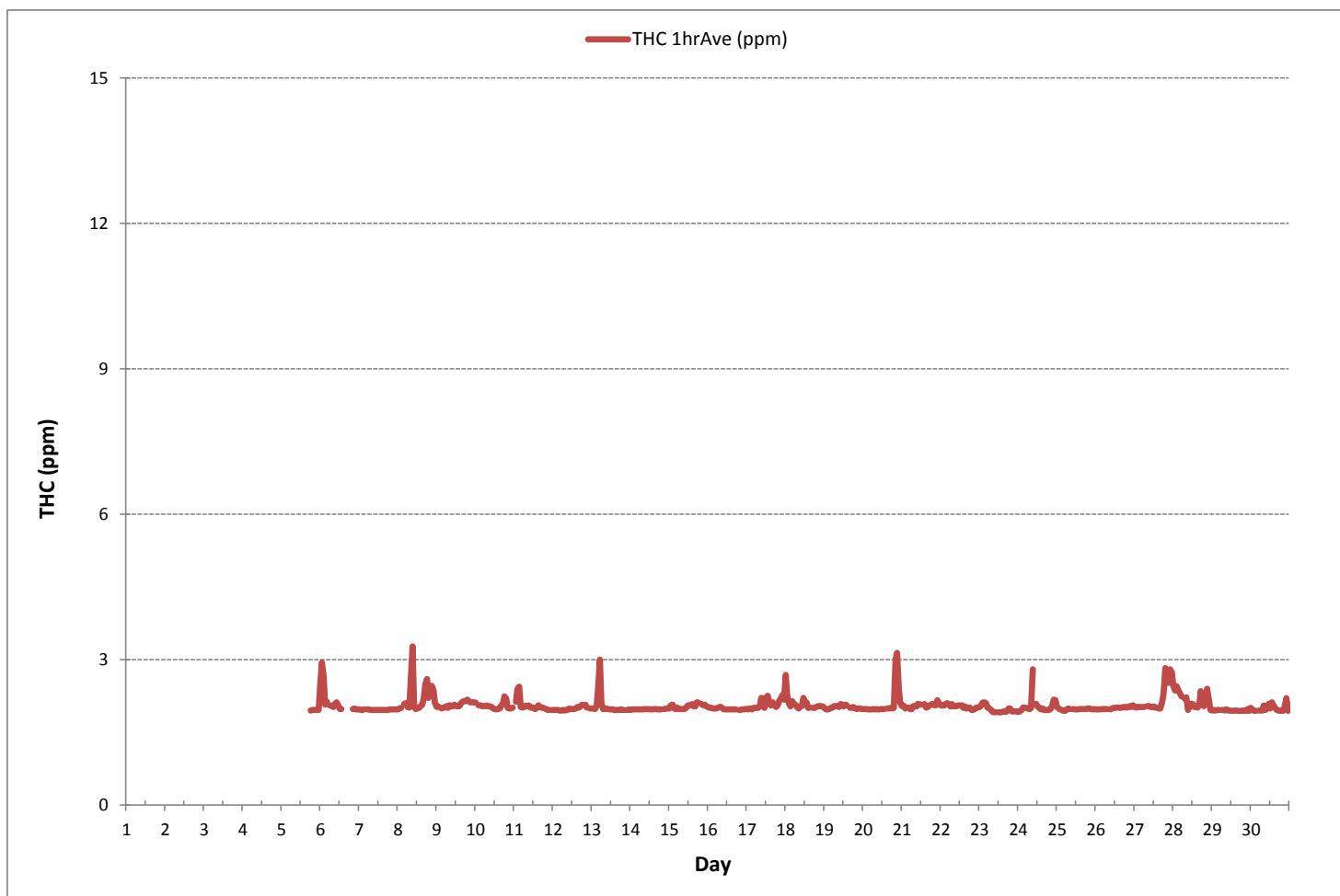
24 HR AVERAGES November 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	574				
MINIMUM 1-HR AVERAGE:	1.91	ppm	@ HOUR	10	ON DAY 23
MAXIMUM 1-HR AVERAGE:	3.27	ppm	@ HOUR	9	ON DAY 8
MAXIMUM 24-HR AVERAGE:	2.22	ppm			ON DAY 8
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	606	hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	84.2	%
STANDARD DEVIATION:	0.16		MONTHLY AVERAGE:	2.04	ppm

TOTAL HYDROCARBONS Hourly Averages (THC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	Y	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	5
6	3.05	3.75	3.75	2.30	2.37	S	2.36	2.18	2.15	2.33	2.34	2.29	2.03	2.02	C	C	C	C	C	C	2.03	2.02	2.00	1.98	1.98	1.98	3.75	2.41	24
7	1.99	1.98	1.98	1.99	S	1.99	1.99	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.98	1.99	1.99	1.97	1.99	1.98	24	
8	1.99	2.04	2.13	S	2.20	2.22	2.32	2.45	4.96	5.13	2.42	2.00	2.02	2.03	2.20	2.22	2.69	2.95	3.95	2.45	3.16	3.05	2.99	2.42	1.99	5.13	2.70	24	
9	2.05	2.10	S	2.02	2.14	2.10	2.14	2.07	2.12	P	2.07	2.21	2.11	2.06	2.08	2.14	2.19	2.23	2.21	2.25	2.21	2.23	2.17	2.17	2.02	2.25	2.14	23	
10	2.14	S	2.09	2.07	2.12	2.05	2.06	2.08	2.06	2.06	2.04	2.02	2.00	2.01	2.05	2.15	2.80	2.36	2.33	2.37	2.03	2.03	2.03	2.08	2.00	2.80	2.13	24	
11	S	2.39	2.64	3.26	2.12	2.03	2.05	2.10	2.07	2.43	2.09	2.06	2.05	2.02	2.08	2.11	2.10	2.03	2.03	2.03	2.00	1.99	1.98	S	1.98	3.26	2.17	24	
12	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.97	1.98	1.98	2.05	2.01	2.01	2.01	2.08	2.15	2.16	2.16	2.17	2.13	2.15	2.03	S	2.02	1.97	2.17	2.04	24	
13	2.02	2.02	2.02	2.56	2.90	4.38	2.99	2.02	2.01	2.01	2.02	1.99	1.98	1.99	1.98	1.98	1.99	1.98	1.99	1.98	1.98	S	1.99	1.99	1.98	4.38	2.21	24	
14	1.98	1.99	1.98	1.99	1.99	1.99	1.99	2.01	1.99	2.01	2.01	1.99	2.03	2.00	1.99	2.00	2.01	2.01	1.99	1.99	S	2.01	2.02	2.02	1.98	2.03	2.00	24	
15	2.02	2.16	2.14	2.07	2.01	2.10	2.01	2.01	2.01	2.01	2.02	2.12	2.14	2.15	2.19	2.17	2.05	2.25	2.25	S	2.22	2.12	2.13	2.06	2.01	2.25	2.10	24	
16	2.04	2.04	2.02	2.02	2.03	2.02	2.03	2.09	2.04	2.03	2.00	1.99	1.99	2.01	1.99	1.99	1.99	1.99	S	1.98	1.98	1.99	1.99	2.01	1.98	2.09	2.01	24	
17	2.01	2.01	2.06	2.01	2.21	2.32	2.08	2.06	2.51	3.95	2.25	2.11	2.35	2.39	2.37	2.28	2.41	S	2.16	2.24	2.37	2.60	2.58	2.36	2.01	3.95	2.33	24	
18	3.51	2.50	2.31	2.17	2.38	2.29	2.21	2.19	2.01	2.19	2.24	2.48	2.41	2.34	2.03	2.04	S	2.03	2.03	2.04	2.06	2.06	2.06	2.05	2.01	3.51	2.24	24	
19	2.03	2.00	1.99	2.01	2.02	2.04	2.07	2.07	2.08	2.07	2.13	2.13	2.13	2.10	2.07	S	2.03	2.04	2.05	2.02	2.01	2.03	2.03	2.04	1.99	2.13	2.05	24	
20	2.03	2.01	2.02	2.01	2.01	2.00	2.00	2.01	2.01	2.01	2.01	2.00	1.99	2.01	S	2.11	2.03	2.03	2.03	2.11	6.21	5.03	3.20	2.25	1.99	6.21	2.40	24	
21	2.38	2.17	2.06	2.06	2.18	2.02	2.03	2.52	2.25	2.26	2.25	2.30	2.26	S	2.38	2.05	2.10	2.12	2.24	2.24	2.09	2.13	2.32	2.15	2.02	2.52	2.20	24	
22	2.10	2.08	2.08	2.21	2.25	2.17	2.17	2.17	2.11	2.12	2.12	2.21	S	2.21	2.03	2.14	2.18	2.24	2.22	1.99	1.99	2.15	2.13	2.08	1.99	2.25	2.14	24	
23	2.05	2.19	2.31	2.32	2.35	2.11	2.02	2.14	1.95	1.94	1.93	S	1.94	1.93	1.95	1.97	1.95	1.96	2.26	2.06	1.96	1.96	1.95	1.95	1.93	2.35	2.05	24	
24	1.95	1.95	2.04	2.04	2.03	2.03	2.02	2.00	2.18	3.76	S	2.42	2.28	2.26	2.12	2.08	2.03	1.99	2.04	2.04	2.10	2.28	2.42	2.38	1.95	3.76	2.19	24	
25	2.18	2.02	2.00	1.98	1.96	1.99	2.00	2.02	1.99	S	2.00	1.99	1.99	1.99	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.01	2.01	1.96	2.18	2.01	24	
26	1.99	1.99	1.99	1.99	1.99	2.01	2.01	2.01	S	2.01	2.01	2.03	2.03	2.03	2.05	2.03	2.05	2.06	2.05	2.03	2.07	2.08	2.07	2.18	1.99	2.18	2.03	24	
27	2.04	2.04	2.04	2.04	2.04	2.04	2.06	S	2.06	2.06	2.04	2.04	2.05	2.04	2.03	2.02	2.02	2.59	2.66	3.99	3.03	3.02	4.95	3.62	2.02	4.95	2.46	24	
28	3.24	3.16	3.31	2.65	2.57	2.77	S	2.86	2.83	2.09	2.37	2.39	2.34	2.37	2.38	2.52	2.39	2.73	2.84	2.38	2.78	3.35	2.91	2.10	2.09	3.35	2.67	24	
29	1.97	1.97	1.97	1.98	1.98	S	1.98	1.99	1.97	2.04	1.97	1.97	1.96	1.96	2.16	1.97	1.97	1.96	1.96	1.97	1.96	1.96	2.58	1.96	1.96	2.58	2.01	24	
30	2.47	2.30	1.96	1.97	S	1.97	1.99	2.03	2.98	2.68	2.30	2.51	2.34	2.56	2.47	2.15	2.04	1.97	1.97	1.97	1.97	2.81	2.86	1.96	1.96	2.98	2.27	24	
HOURLY MAX	3.51	3.75	3.75	3.26	2.90	4.38	2.99	2.86	4.96	5.13	2.42	2.51	2.41	2.56	2.47	2.52	2.80	2.95	3.95	3.99	6.21	5.03	4.95	3.62					
HOURLY AVG	2.22	2.20	2.20	2.15	2.17	2.20	2.11	2.13	2.26	2.40	2.11	2.14	2.10	2.10	2.12	2.10	2.14	2.16	2.24	2.18	2.33	2.36	2.37	2.15					

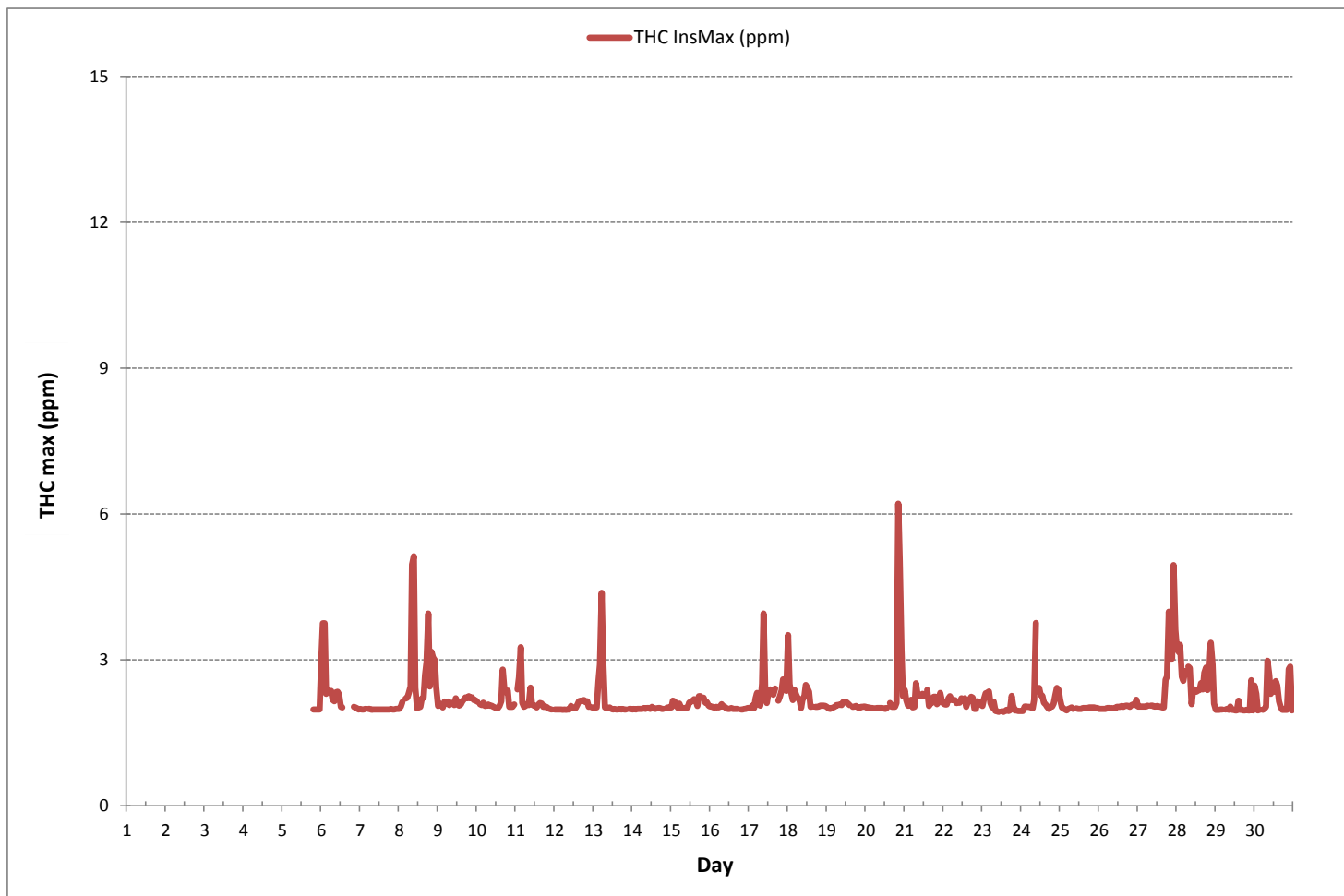
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	572				
MAXIMUM INSTANTANEOUS VALUE:	6.21	ppm	@ HOUR	20	ON DAY 20
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	604	hrs
MONTHLY CALIBRATION TIME:	6	hrs			
STANDARD DEVIATION:	0.43				

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



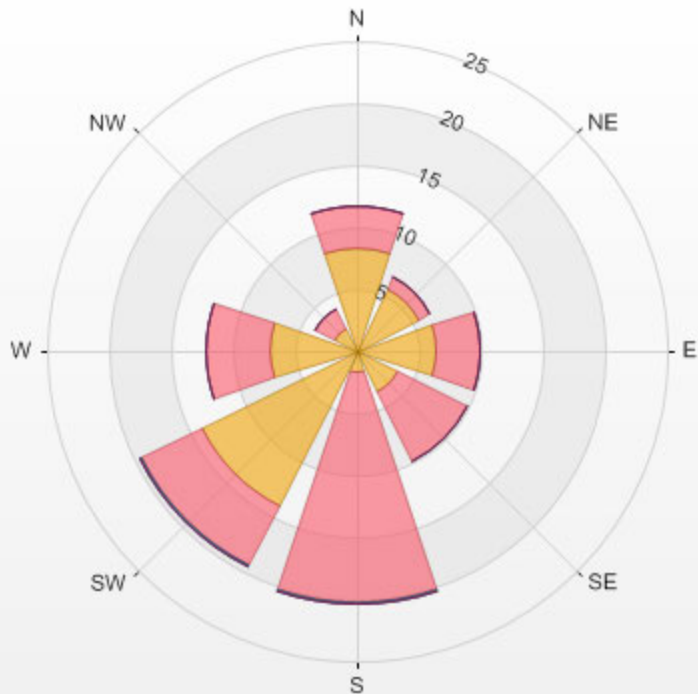
Wind: PRAMP_RENO
Poll.: PRAMP_RENO-THC55[ppm]
Monthly: 17/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 5.76%

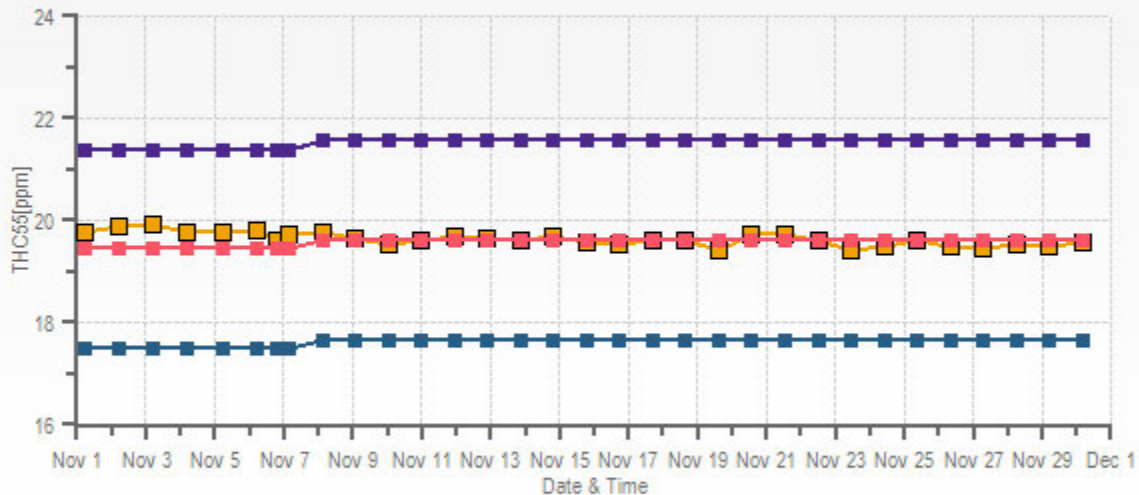
Calm Avg: 2.11 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	8.4	3.3	0.0	0.0	0.0	11.7
NE	5.6	1.1	0.0	0.0	0.0	6.6
E	6.5	3.5	0.0	0.0	0.0	10.0
SE	3.7	6.3	0.0	0.0	0.0	9.9
S	1.8	18.5	0.2	0.0	0.0	20.4
SW	14.0	5.4	0.2	0.0	0.0	19.5
W	7.0	5.2	0.0	0.0	0.0	12.2
NW	2.1	1.8	0.0	0.0	0.0	3.8
Summary	48.9	45.0	0.3	0.0	0.0	94.2

PRAMP_RENO Poll.: PRAMP_RENO-THC55[ppm] 2017/11/01 00:00 - 2017/11/30 23:00 Calm: 5.76% Calm Poll Avg: 2.11[ppm]



THC55[ppm] Calibration: PRAMP_RENO Monthly: 17/11 Type: Span



—■— Span Meas —■— Span Ref —■— Span Low —■— Span High

METHANE

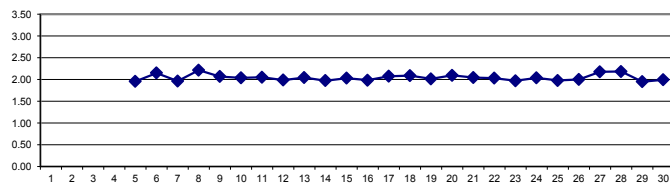
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	1.95	1.96	1.96	1.96	1.96	1.95	1.96	1.96	6
6	2.51	2.93	2.65	2.07	2.13	S	2.05	2.05	2.02	2.08	2.12	2.06	1.98	1.98	C	C	C	C	C	C	1.98	1.99	1.97	1.97	1.97	2.93	2.15	24
7	1.97	1.96	1.96	1.97	S	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.96	1.97	1.96	24	
8	1.97	1.99	2.00	S	2.09	2.10	2.02	2.01	2.60	3.27	2.02	1.98	1.99	2.00	2.04	2.07	2.20	2.48	2.60	2.21	2.39	2.46	2.37	2.10	1.97	3.27	2.22	24
9	2.02	2.03	S	1.99	2.01	2.01	2.04	2.00	2.06	2.03	2.04	2.07	2.04	2.04	2.04	2.10	2.13	2.13	2.14	2.17	2.13	2.11	2.12	2.12	1.99	2.17	2.07	24
10	2.11	S	2.06	2.06	2.04	2.04	2.04	2.05	2.04	2.03	2.02	1.99	1.98	1.97	1.98	1.99	2.05	2.09	2.24	2.19	2.00	1.99	1.99	2.01	1.97	2.24	2.04	24
11	S	2.13	2.39	2.43	2.02	2.01	2.02	2.05	2.04	2.05	2.01	2.01	1.98	2.00	2.06	2.02	2.01	2.00	1.99	1.97	1.96	1.96	S	1.96	2.43	2.05	24	
12	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.95	1.96	1.96	1.99	1.98	1.98	1.98	1.99	2.02	2.01	2.02	2.07	2.05	2.07	2.00	S	1.99	1.95	2.07	1.99	24
13	1.99	1.99	1.98	2.04	2.41	2.99	2.10	1.98	1.98	1.99	1.98	1.97	1.96	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96	S	1.96	1.97	1.96	2.99	2.04	24
14	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.98	1.97	1.97	1.97	1.97	S	1.98	1.99	1.96	1.99	1.97	24
15	1.99	2.06	2.07	1.99	1.98	2.01	1.98	1.98	1.98	1.98	1.99	2.04	2.06	2.05	2.08	2.04	2.03	2.12	2.11	S	2.08	2.06	2.07	2.03	1.98	2.12	2.03	24
16	2.02	2.01	2.00	1.99	1.99	1.99	2.00	2.02	2.02	1.99	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	S	1.96	1.96	1.97	1.98	1.96	2.02	1.98	24
17	1.98	1.97	1.99	1.97	2.00	2.00	2.00	2.00	2.04	2.21	2.05	2.00	2.22	2.25	2.11	2.05	2.12	S	2.02	2.05	2.15	2.19	2.27	2.17	1.97	2.27	2.08	24
18	2.68	2.25	2.09	2.03	2.14	2.09	2.07	2.02	1.99	2.03	2.04	2.21	2.10	2.11	2.00	2.01	S	2.00	2.00	2.02	2.04	2.04	2.04	2.03	1.99	2.68	2.09	24
19	2.00	1.97	1.97	1.98	2.00	2.01	2.04	2.04	2.04	2.02	2.08	2.07	2.03	2.07	2.05	S	2.00	2.01	2.02	1.99	1.98	1.99	1.99	1.98	1.97	2.08	2.01	24
20	1.98	1.98	1.98	1.97	1.97	1.97	1.98	1.97	1.98	1.97	1.97	1.98	1.98	1.98	S	1.99	1.99	2.00	1.99	2.00	3.00	3.14	2.39	2.10	1.97	3.14	2.10	24
21	2.04	2.05	1.99	2.00	2.01	1.98	1.98	2.04	2.04	2.03	2.09	2.07	2.07	S	2.08	2.01	2.02	2.05	2.07	2.09	2.06	2.06	2.16	2.09	1.98	2.16	2.05	24
22	2.06	2.05	2.05	2.08	2.10	2.08	2.03	2.08	2.03	2.04	2.04	2.06	S	2.06	2.00	2.03	1.99	2.01	2.01	1.96	1.96	1.98	2.01	2.01	1.96	2.10	2.03	24
23	2.02	2.05	2.11	2.12	2.10	2.01	1.99	1.97	1.92	1.92	1.91	S	1.91	1.91	1.92	1.93	1.92	1.93	1.99	1.99	1.93	1.93	1.93	1.93	1.91	2.12	1.97	24
24	1.92	1.93	1.96	2.01	2.01	2.00	1.99	1.98	2.00	2.80	S	2.09	2.03	2.01	1.97	1.99	1.96	1.96	1.96	1.96	1.98	2.05	2.17	2.16	1.92	2.80	2.04	24
25	2.02	1.99	1.97	1.96	1.94	1.94	1.97	1.99	1.98	S	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.99	1.99	1.98	1.97	1.98	1.94	2.02	1.98	24
26	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.98	S	1.97	1.99	2.00	2.00	2.01	2.01	2.00	2.01	2.02	2.02	2.01	2.02	2.04	2.02	2.06	1.97	2.06	2.00	24
27	2.02	2.01	2.02	2.02	2.02	2.02	S	2.04	2.04	2.02	2.02	2.03	2.01	2.00	1.99	1.99	1.99	2.12	2.30	2.80	2.53	2.52	2.80	2.74	1.99	2.80	2.18	24
28	2.45	2.36	2.45	2.37	2.31	2.24	S	2.19	2.22	1.96	2.05	2.09	2.08	2.02	2.04	2.01	2.05	2.35	2.27	2.04	2.19	2.40	2.16	1.95	1.95	2.45	2.18	24
29	1.95	1.95	1.95	1.96	1.96	S	1.96	1.96	1.95	1.97	1.95	1.95	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.95	1.94	1.94	1.98	1.94	1.94	1.98	1.95	24
30	2.00	1.96	1.94	1.94	S	1.94	1.95	1.95	2.05	1.96	1.99	2.09	1.99	2.12	2.06	2.00	1.96	1.94	1.94	1.95	1.94	2.05	2.20	1.94	1.94	2.20	1.99	24
HOURLY MAX	2.68	2.93	2.65	2.43	2.41	2.99	2.10	2.19	2.60	3.27	2.12	2.21	2.22	2.25	2.11	2.10	2.20	2.48	2.60	2.80	3.00	3.14	2.80	2.74				
HOURLY AVG	2.07	2.06	2.06	2.04	2.05	2.06	2.00	2.01	2.04	2.09	2.01	2.03	2.01	2.01	2.01	2.00	2.01	2.04	2.06	2.05	2.09	2.11	2.10	2.05				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

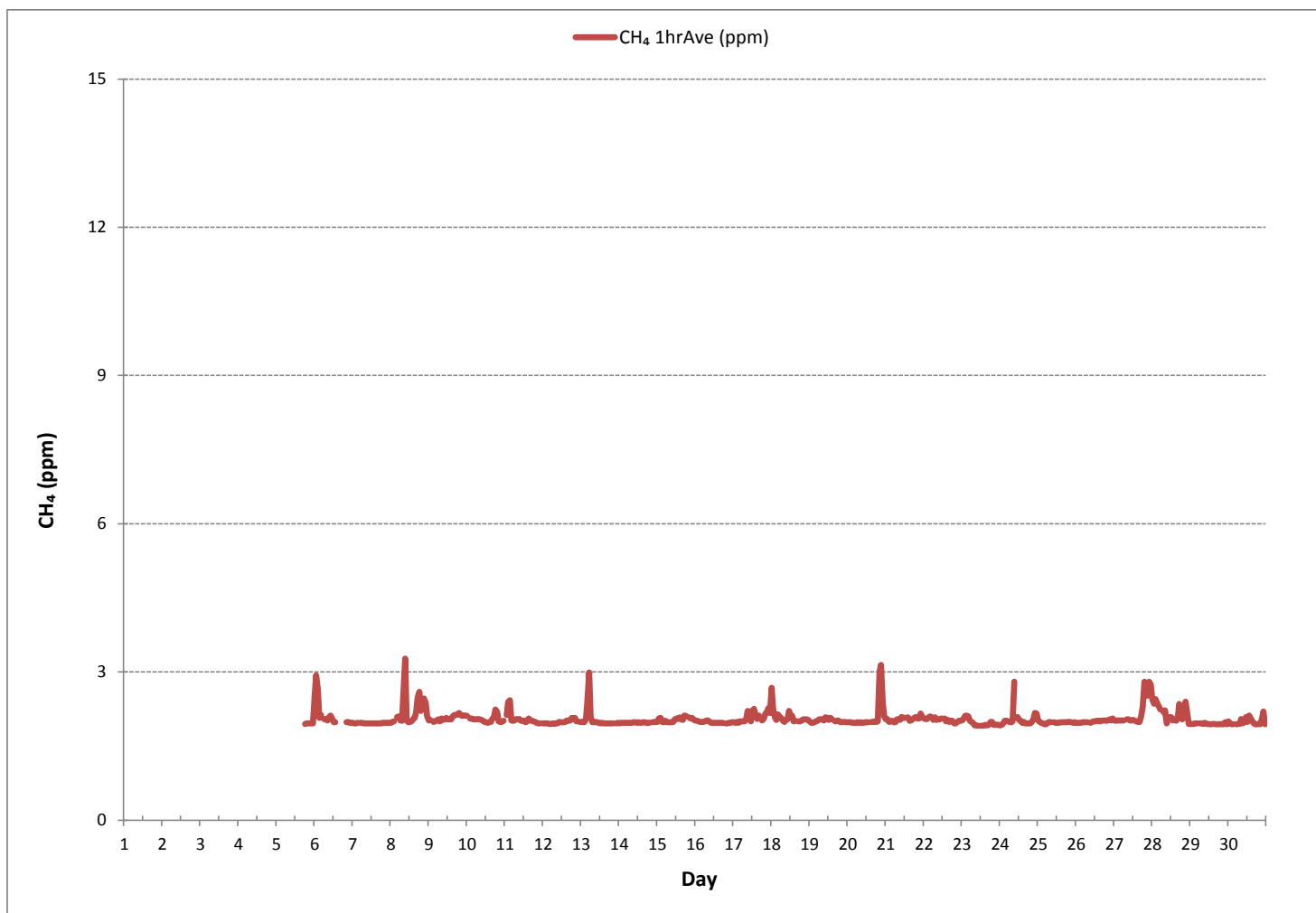
24 HR AVERAGES November 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	574				
MINIMUM 1-HR AVERAGE:	1.91	ppm	@ HOUR	10	ON DAY 23
MAXIMUM 1-HR AVERAGE:	3.27	ppm	@ HOUR	9	ON DAY 8
MAXIMUM 24-HR AVERAGE:	2.22	ppm			ON DAY 8
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	606	hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	84.2	%
STANDARD DEVIATION:	0.16		MONTHLY AVERAGE:	2.04	ppm

METHANE Hourly Averages (CH₄ ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	Y	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	5
6	2.92	3.75	3.75	2.29	2.36	S	2.35	2.18	2.14	2.32	2.33	2.28	2.03	2.00	C	C	C	C	C	C	2.03	2.00	1.99	1.98	1.98	1.98	3.75	2.39	24
7	1.98	1.97	1.98	1.98	S	1.98	1.99	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.97	1.98	1.97	1.98	1.98	1.98	1.98	1.98	1.99	1.97	1.99	1.98	24	
8	1.99	2.03	2.12	S	2.19	2.22	2.31	2.45	4.96	5.12	2.42	2.00	2.01	2.01	2.19	2.21	2.69	2.94	3.95	2.44	3.16	3.05	2.99	2.42	1.99	5.12	2.69	24	
9	2.03	2.09	S	2.00	2.13	2.09	2.13	2.07	2.11	P	2.07	2.20	2.10	2.06	2.08	2.13	2.14	2.14	2.17	2.18	2.15	2.14	2.14	2.13	2.00	2.20	2.11	23	
10	2.13	S	2.08	2.07	2.06	2.05	2.06	2.08	2.06	2.06	2.03	2.01	1.99	2.00	2.05	2.14	2.79	2.36	2.32	2.36	2.02	2.03	2.01	2.08	1.99	2.79	2.12	24	
11	S	2.38	2.63	3.26	2.11	2.03	2.04	2.09	2.07	2.43	2.08	2.05	2.03	2.00	2.07	2.10	2.09	2.03	2.02	2.01	1.99	1.98	1.98	S	1.98	3.26	2.16	24	
12	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	2.05	2.00	2.00	2.00	2.08	2.14	2.15	2.15	2.16	2.12	2.14	2.03	S	2.01	1.97	2.16	2.03	24	
13	2.01	2.01	2.00	2.55	2.89	4.37	2.98	2.00	2.00	2.00	2.00	1.98	1.98	1.98	1.97	1.98	1.98	1.97	1.98	1.97	1.97	S	1.98	1.98	1.97	4.37	2.20	24	
14	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	S	1.99	2.00	2.00	1.98	2.03	1.99	24	
15	2.00	2.15	2.13	2.07	2.00	2.09	1.99	1.99	1.99	2.00	2.00	2.11	2.13	2.14	2.18	2.16	2.05	2.24	2.25	S	2.21	2.11	2.12	2.05	1.99	2.25	2.09	24	
16	2.03	2.03	2.01	2.01	2.01	2.00	2.01	2.08	2.04	2.01	1.99	1.99	1.98	1.99	1.99	1.98	1.98	1.98	1.98	S	1.97	1.98	1.98	1.99	1.99	1.97	2.08	2.00	24
17	1.99	1.99	2.06	1.99	2.20	2.31	2.08	2.05	2.51	3.95	2.24	2.10	2.34	2.38	2.37	2.26	2.40	S	2.15	2.24	2.36	2.59	2.57	2.35	1.99	3.95	2.33	24	
18	3.52	2.50	2.30	2.17	2.38	2.27	2.20	2.18	2.00	2.18	2.23	2.47	2.40	2.33	2.01	2.04	S	2.03	2.02	2.04	2.05	2.00	2.06	2.06	2.05	2.00	3.52	2.24	24
19	2.02	1.99	1.99	2.00	2.01	2.03	2.07	2.07	2.07	2.07	2.12	2.12	2.12	2.09	2.07	S	2.02	2.04	2.05	2.00	2.00	2.01	2.01	2.02	1.99	2.12	2.04	24	
20	2.02	2.00	2.01	2.00	2.00	1.99	2.00	1.99	2.00	1.99	1.99	1.99	1.99	2.00	S	2.10	2.03	2.03	2.01	2.10	6.21	5.02	3.20	2.24	1.99	6.21	2.39	24	
21	2.37	2.16	2.06	2.06	2.18	2.00	2.02	2.52	2.23	2.26	2.24	2.29	2.25	S	2.37	2.05	2.09	2.11	2.24	2.24	2.08	2.12	2.31	2.14	2.00	2.52	2.19	24	
22	2.09	2.08	2.08	2.20	2.24	2.17	2.16	2.16	2.11	2.11	2.12	2.20	S	2.20	2.03	2.13	2.17	2.24	2.21	1.99	1.99	2.14	2.12	2.08	1.99	2.24	2.13	24	
23	2.04	2.18	2.30	2.31	2.28	2.10	2.01	2.13	1.94	1.94	1.92	S	1.93	1.92	1.94	1.96	1.95	1.95	2.26	2.06	1.95	1.95	1.94	1.94	1.92	2.31	2.04	24	
24	1.94	1.94	2.04	2.03	2.03	2.02	2.01	2.00	2.17	3.76	S	2.41	2.27	2.26	2.11	2.08	2.02	1.99	2.03	2.03	2.09	2.26	2.42	2.38	1.94	3.76	2.19	24	
25	2.18	2.00	1.99	1.97	1.96	1.99	2.00	2.00	1.99	S	1.99	1.99	1.99	1.99	1.99	1.99	2.00	1.99	2.00	2.00	2.00	2.01	1.99	1.99	1.96	2.18	2.00	24	
26	1.99	1.99	1.98	1.99	1.99	1.99	1.99	2.00	S	1.99	2.00	2.02	2.02	2.03	2.03	2.03	2.05	2.06	2.05	2.03	2.07	2.08	2.07	2.17	1.98	2.17	2.03	24	
27	2.04	2.03	2.04	2.03	2.03	2.04	2.06	S	2.06	2.06	2.03	2.03	2.04	2.03	2.01	2.00	2.01	2.58	2.65	3.99	3.02	3.02	4.95	3.62	2.00	4.95	2.45	24	
28	3.24	3.15	3.30	2.64	2.56	2.75	S	2.85	2.82	2.08	2.36	2.38	2.33	2.36	2.37	2.52	2.38	2.73	2.83	2.37	2.77	3.34	2.90	2.08	2.08	3.34	2.66	24	
29	1.97	1.97	1.97	1.97	1.98	S	1.98	1.98	1.97	2.03	1.96	1.96	1.96	1.96	2.15	1.96	1.96	1.96	1.96	1.97	1.96	1.96	2.57	1.95	1.95	2.57	2.00	24	
30	2.46	2.29	1.96	1.96	S	1.96	1.99	2.02	2.97	2.67	2.29	2.51	2.33	2.55	2.46	2.14	2.03	1.96	1.97	1.96	1.96	2.80	2.85	1.96	1.96	2.97	2.26	24	
HOURLY MAX	3.52	3.75	3.75	3.26	2.89	4.37	2.98	2.85	4.96	5.12	2.42	2.51	2.40	2.55	2.46	2.52	2.79	2.94	3.95	3.99	6.21	5.02	4.95	3.62					
HOURLY AVG	2.21	2.19	2.20	2.15	2.15	2.19	2.10	2.12	2.26	2.39	2.10	2.13	2.09	2.09	2.11	2.09	2.13	2.15	2.23	2.17	2.32	2.34	2.36	2.14					

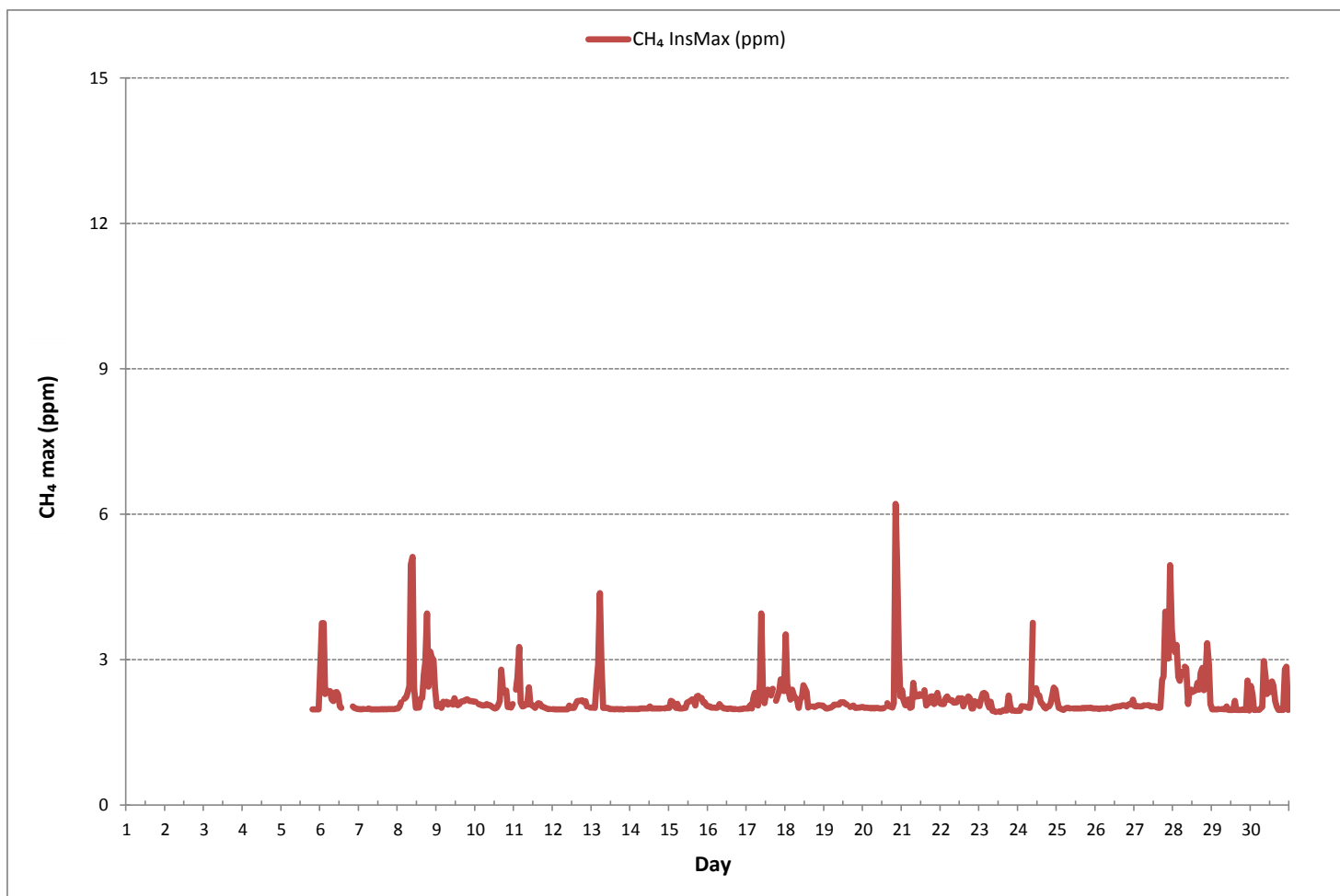
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	572				
MAXIMUM INSTANTANEOUS VALUE:	6.21	ppm	@ HOUR	20	ON DAY 20
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	604	hrs
MONTHLY CALIBRATION TIME:	6	hrs			
STANDARD DEVIATION:	0.43				

METHANE MAX Instantaneous Maximum (CH₄ ppm)



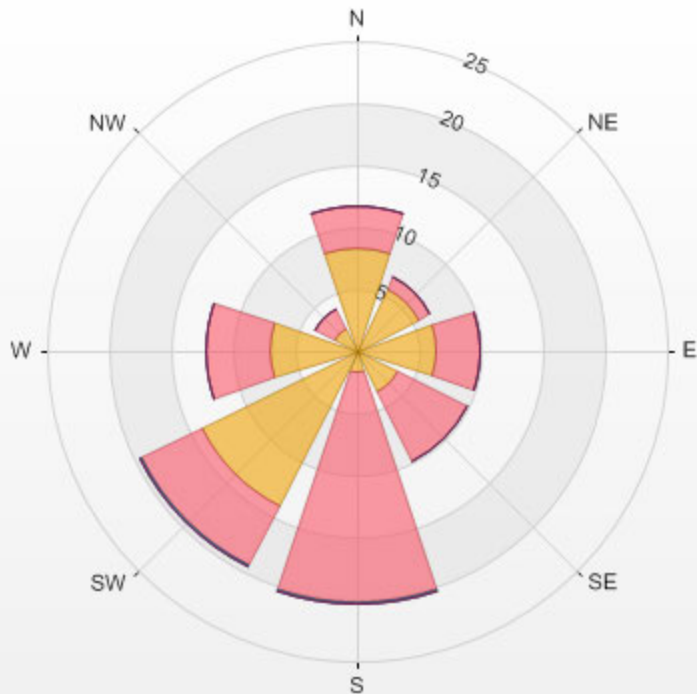
Wind: PRAMP_RENO
Poll.: PRAMP_RENO-CH₄[ppm]
Monthly: 17/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 5.76%

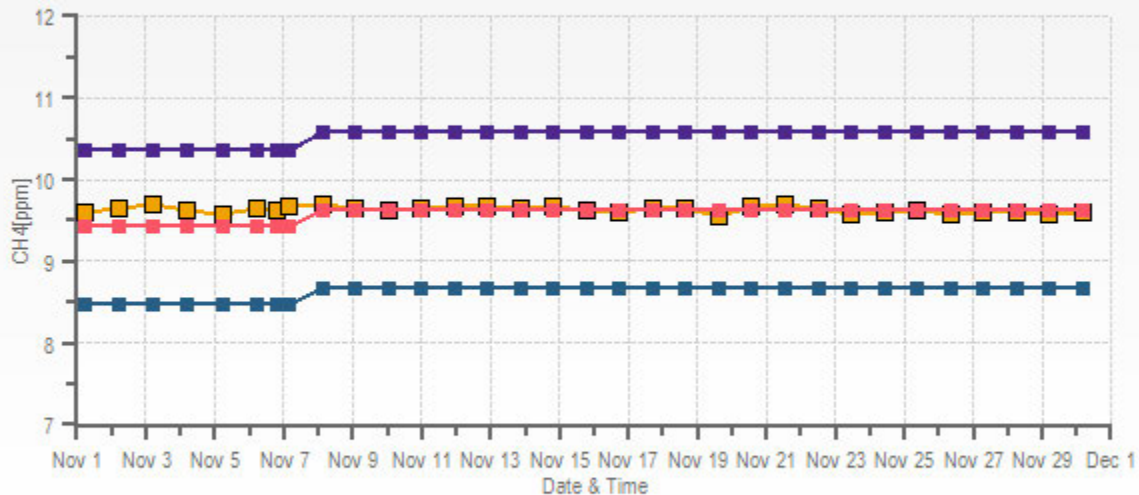
Calm Avg: 2.11 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	8.4	3.3	0.0	0.0	0.0	11.7
NE	5.6	1.1	0.0	0.0	0.0	6.6
E	6.5	3.5	0.0	0.0	0.0	10.0
SE	3.7	6.3	0.0	0.0	0.0	9.9
S	1.8	18.5	0.2	0.0	0.0	20.4
SW	14.0	5.4	0.2	0.0	0.0	19.5
W	7.0	5.2	0.0	0.0	0.0	12.2
NW	2.1	1.8	0.0	0.0	0.0	3.8
Summary	48.9	45.0	0.3	0.0	0.0	94.2

PRAMP_RENO Poll.: PRAMP_RENO-CH4[ppm] 2017/11/01 00:00 - 2017/11/30 23:00 Calm: 5.76% Calm Poll Avg: 2.11[ppm]



CH₄[ppm] Calibration: PRAMP_RENO Monthly: 17/11 Type: Span



—■— Span Meas —■— Span Ref —■— Span Low —■— Span High

NON-METHANE HYDROCARBON



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

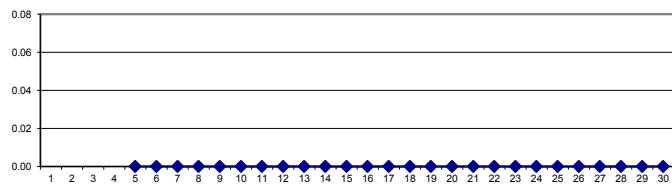
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.02	0.01	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	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
8	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
9	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
10	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
11	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	S	0.00	0.00	0.00	0.00
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	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00
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	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	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
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	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
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	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
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	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
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	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
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	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
24	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
25	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
26	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
27	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	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	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
29	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
30	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
HOURLY MAX	0.02	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	0.02	0.00	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

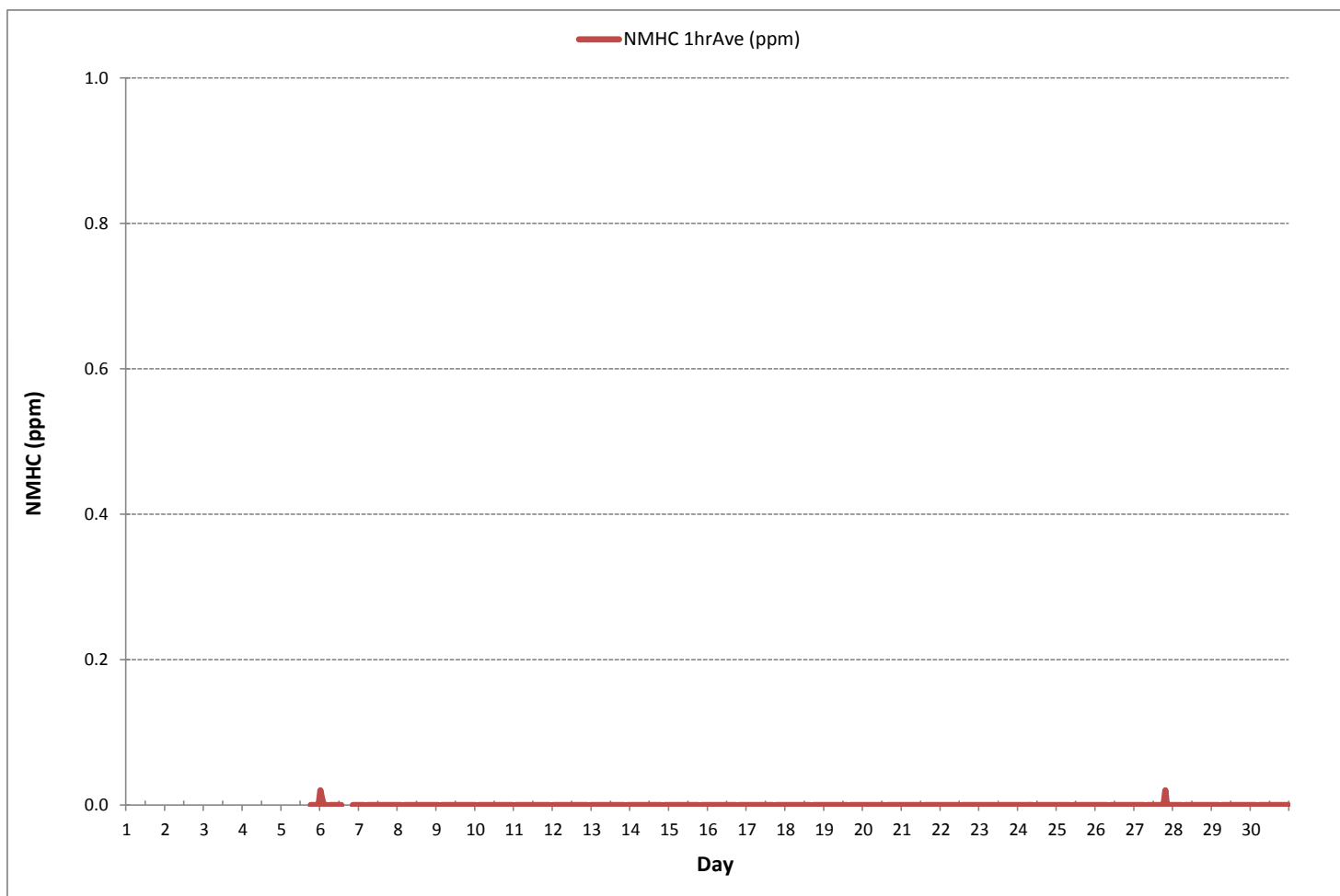
24 HR AVERAGES November 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	3				
MINIMUM 1-HR AVERAGE:	0.00	ppm	@ HOUR	18	ON DAY 5
MAXIMUM 1-HR AVERAGE:	0.02	ppm	@ HOUR	0	ON DAY 6
MAXIMUM 24-HR AVERAGE:	0.00	ppm			ON DAY 5
IZS CALIBRATION TIME:	26	hrs	OPERATIONAL TIME:	606	hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	84.2	%
STANDARD DEVIATION:	0.00		MONTHLY AVERAGE:	0.00	ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5
6	0.15	0.14	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.02	24
7	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	24
8	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
9	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	P	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.05	0.06	0.06	0.10	0.03	0.03	0.00	0.10	0.02	23	
10	0.00	S	0.00	0.00	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	0.06	0.00	24	
11	S	0.00	0.00	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	S	0.00	0.06	0.00	24	
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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24	
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	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	24	
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	24	
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
16	0.00	0.00	0.00	0.00	0.00	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	24	
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
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	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	24	
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	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	24	
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	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	24	
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	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	24	
23	0.00	0.00	0.00	0.10	0.09	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	0.10	0.01	24
24	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
25	0.14	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	0.14	0.01	24
26	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	24	
27	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	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.01	24
28	0.00	0.00	0.00	0.00	0.00	S	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	24	
29	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	24	
30	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	24	
HOURLY MAX	0.15	0.14	0.00	0.10	0.09	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.05	0.17	0.06	0.10	0.03	0.03					
HOURLY AVG	0.01	0.01	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	0.01	0.00	0.00	0.00	0.00					

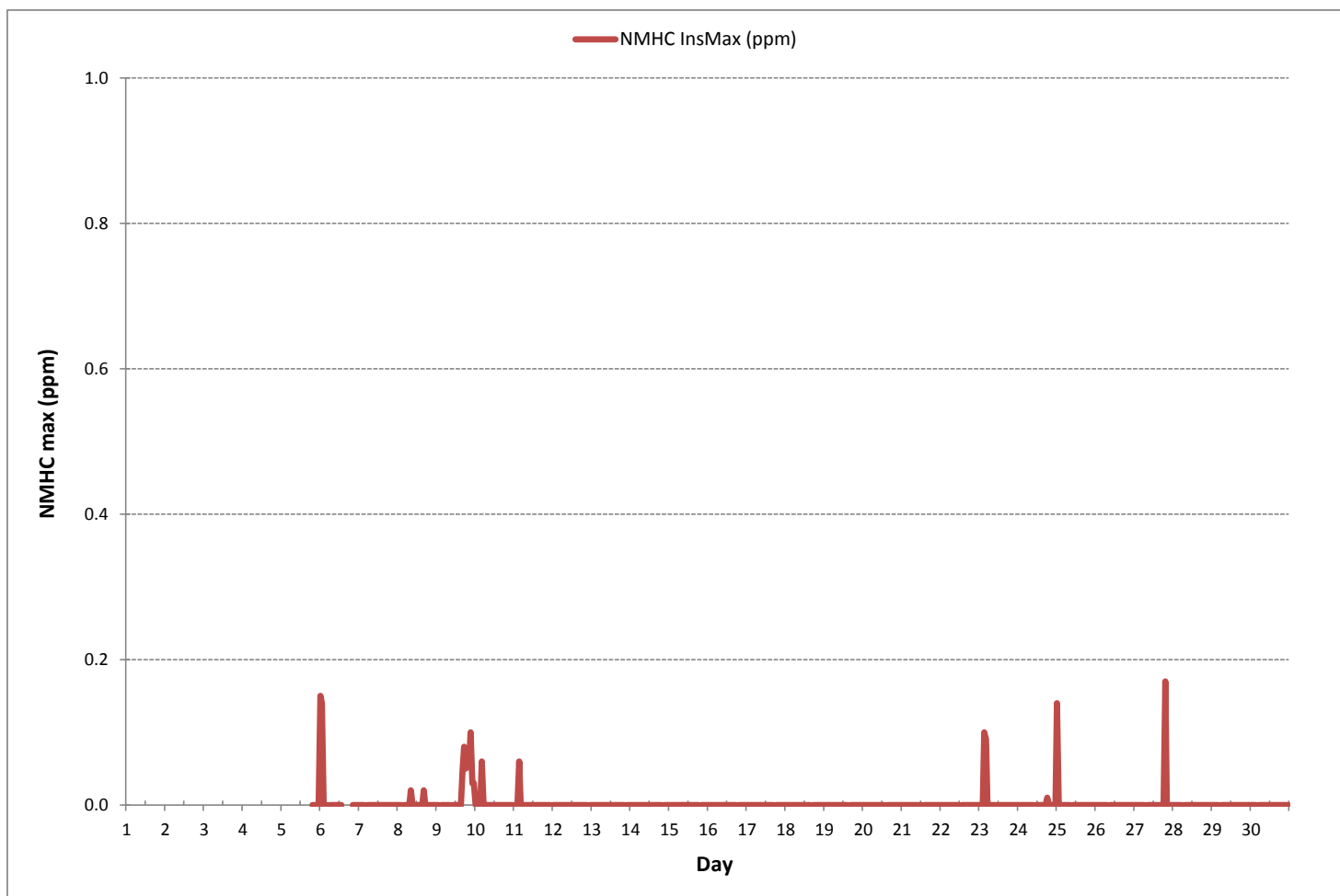
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	19
MAXIMUM INSTANTANEOUS VALUE:	0.17 ppm @ HOUR 19 ON DAY 27
IZS CALIBRATION TIME:	26 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.02
OPERATIONAL TIME:	604 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)



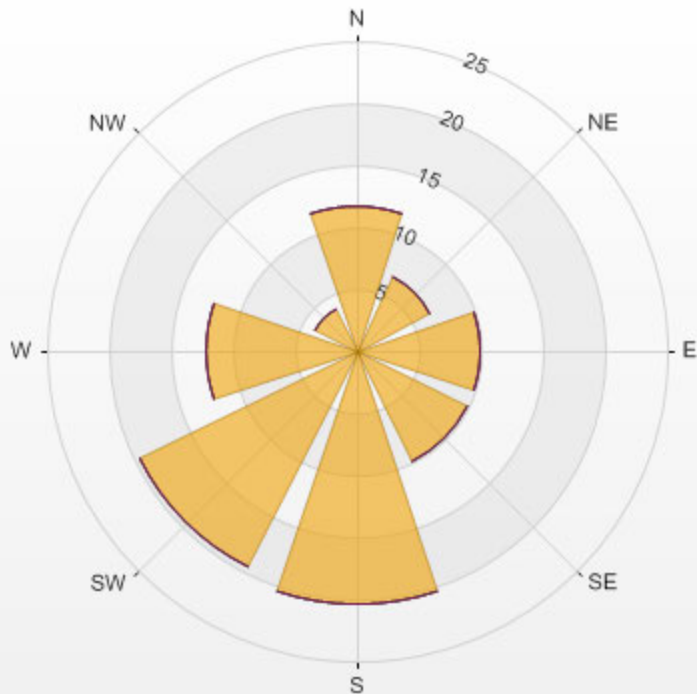
Wind: PRAMP_RENO
Poll.: PRAMP_RENO-NMHC[ppm]
Monthly: 17/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 5.76%

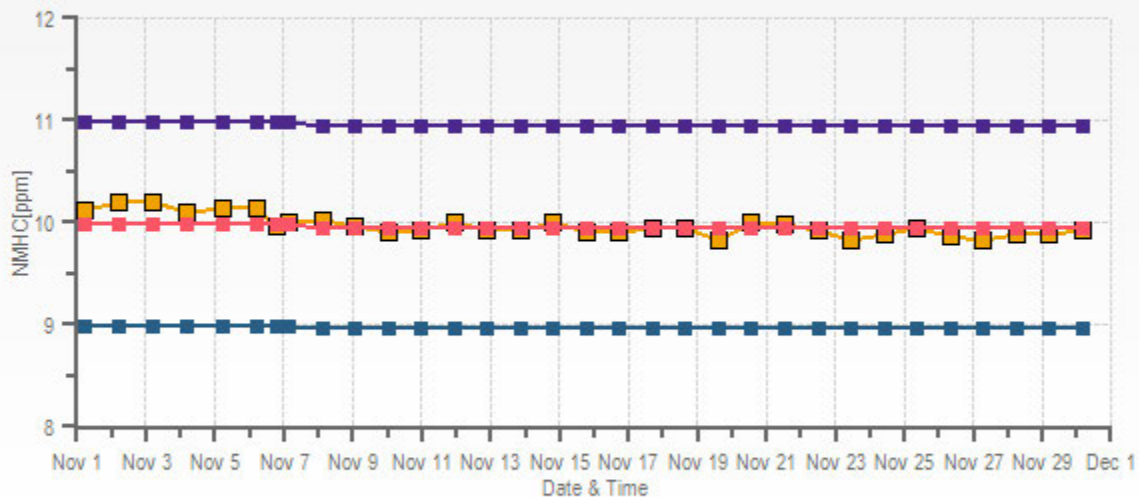
Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	11.7	0.0	0.0	0.0	0.0	11.7
NE	6.6	0.0	0.0	0.0	0.0	6.6
E	10.0	0.0	0.0	0.0	0.0	10.0
SE	10.0	0.0	0.0	0.0	0.0	10.0
S	20.4	0.0	0.0	0.0	0.0	20.4
SW	19.6	0.0	0.0	0.0	0.0	19.6
W	12.2	0.0	0.0	0.0	0.0	12.2
NW	3.8	0.0	0.0	0.0	0.0	3.8
Summary	94.3	0.0	0.0	0.0	0.0	94.3

PRAMP_RENO Poll.: PRAMP_RENO-NMHC[ppm] 2017/11/01 00:00 - 2017/11/30 23:00 Calm: 5.76% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_RENO Monthly: 17/11 Type: Span



—■— Span Meas —■— Span Ref —■— Span Low —■— Span High

WIND SPEED

WIND SPEED Hourly Averages (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	10.5	10.9	10.2	9.4	9.1	9.5	10.3	8.9	7.2	9.0	9.8	9.9	9.1	11.1	14.3	14.1	12.4	10.1	11.6	11.0	10.8	14.0	13.1	8.7	7.2	14.3	10.5	24
2	8.1	10.6	12.2	11.2	10.3	11.3	9.3	9.0	8.2	8.3	8.5	8.4	10.0	10.5	8.8	8.8	6.5	7.5	7.2	5.5	5.4	3.9	2.1	2.1	2.1	12.2	8.0	24
3	0.5	0.3	0.8	2.1	1.9	1.5	1.5	1.8	2.1	2.4	3.8	7.6	8.3	6.8	7.3	5.9	4.6	3.6	6.6	6.8	5.6	5.6	6.2	5.7	0.3	8.3	4.1	24
4	5.0	5.3	4.7	4.4	4.0	3.3	3.0	3.4	3.3	4.8	4.5	5.8	4.8	2.6	4.2	4.7	2.5	1.3	2.5	3.2	5.6	5.5	5.3	5.6	1.3	5.8	3.6	24
5	5.4	4.8	4.4	5.2	5.5	5.8	4.9	5.0	4.3	5.3	4.6	9.0	7.1	6.2	8.0	8.4	6.6	7.0	6.3	7.1	5.5	4.2	4.3	3.9	3.9	9.0	5.3	24
6	3.1	4.3	4.8	5.6	5.1	5.3	5.6	5.6	5.6	7.5	8.8	8.1	8.2	11.2	8.9	9.8	8.5	6.8	5.6	5.0	3.6	3.2	4.5	4.9	3.1	11.2	4.7	24
7	5.5	5.3	4.0	2.4	5.4	4.7	8.3	10.2	8.6	8.3	8.9	8.3	9.3	7.9	6.5	4.8	5.5	4.3	4.0	2.8	0.6	1.6	2.5	1.8	0.6	10.2	5.3	24
8	1.0	0.9	1.5	1.7	1.0	1.2	2.9	1.7	2.2	2.6	4.2	6.3	6.8	6.0	4.9	4.2	2.6	3.1	2.9	2.0	2.7	3.4	3.6	5.3	0.9	6.8	2.9	24
9	6.6	6.4	5.9	8.3	6.2	5.6	7.3	6.8	8.5	7.7	7.0	5.9	7.0	9.0	5.6	6.3	4.1	5.5	5.3	7.5	9.3	8.5	5.5	6.3	4.1	9.3	3.7	24
10	6.2	6.9	5.4	5.8	4.9	3.8	3.2	2.9	2.8	2.9	3.7	3.6	2.5	3.1	3.4	2.5	1.5	0.6	2.4	2.7	5.3	7.4	6.6	6.6	0.6	7.4	1.6	24
11	6.1	3.9	3.8	4.0	5.8	5.0	6.9	2.8	2.8	3.1	4.7	4.9	4.8	3.4	1.8	2.8	3.6	3.0	2.5	3.7	5.8	7.9	8.6	10.1	1.8	10.1	1.6	24
12	9.1	9.1	8.2	10.6	8.0	6.6	7.5	6.1	3.6	3.8	7.3	8.3	6.0	3.1	3.1	2.8	3.0	3.5	3.6	3.3	3.0	3.1	2.9	3.0	2.8	10.6	2.8	24
13	4.6	2.2	3.6	1.5	0.6	0.4	4.1	4.0	5.8	5.3	5.4	7.9	9.4	10.3	10.1	10.9	11.9	13.8	16.0	11.5	9.6	12.0	11.1	9.8	0.4	16.0	6.3	24
14	9.0	8.9	7.4	6.3	7.2	5.7	3.8	2.6	1.6	2.0	3.1	3.7	4.6	5.5	6.7	6.6	5.2	6.3	7.2	6.9	8.2	8.9	7.4	7.1	1.6	9.0	5.0	24
15	6.6	7.7	7.3	7.7	8.8	7.8	8.0	7.8	8.9	7.7	7.5	7.6	7.4	5.6	6.0	5.9	3.9	1.6	3.9	4.1	2.0	0.3	1.0	3.2	0.3	8.9	5.3	24
16	6.6	6.3	6.4	5.2	5.1	4.5	3.0	1.7	3.4	5.7	8.1	7.0	8.0	10.5	8.7	8.0	6.5	5.0	5.2	6.6	7.5	6.0	6.1	4.9	1.7	10.5	5.2	24
17	4.2	2.6	1.9	2.3	1.7	2.2	2.7	2.8	2.3	2.7	3.8	3.8	3.7	4.8	3.3	3.6	4.2	5.0	5.5	5.2	5.1	4.8	4.3	3.7	1.7	5.5	3.1	24
18	4.0	4.4	4.6	4.9	6.1	7.0	7.3	8.2	7.4	7.0	6.8	5.8	4.2	3.8	3.4	3.1	8.7	9.5	9.8	9.3	9.1	9.9	9.7	7.7	3.1	9.9	0.5	24
19	7.8	12.9	12.4	15.9	14.7	14.0	12.8	11.7	8.1	7.5	7.4	3.9	2.9	9.4	9.2	7.6	6.4	7.9	6.1	7.9	8.9	5.2	7.4	7.3	2.9	15.9	2.2	24
20	6.5	7.1	7.2	9.2	7.4	6.9	6.7	6.9	7.6	6.8	7.0	7.7	6.4	5.9	5.2	2.7	1.8	2.6	3.1	2.9	1.0	3.8	2.9	3.1	1.0	9.2	5.0	24
21	3.5	3.4	4.3	2.2	5.4	8.0	8.2	8.4	6.4	6.0	4.8	4.2	5.3	5.6	4.5	3.7	1.3	0.3	1.3	1.4	1.4	0.5	1.2	1.0	0.3	8.4	3.0	24
22	1.9	0.5	3.2	2.1	2.9	3.2	3.8	4.4	4.6	5.2	5.3	3.6	3.8	4.8	3.3	4.2	5.8	6.9	7.5	9.8	9.7	8.0	7.5	8.3	0.5	9.8	4.5	24
23	6.9	6.7	6.3	8.4	9.5	10.8	9.1	9.2	11.0	11.6	10.3	7.4	11.6	11.3	5.6	5.0	4.6	3.3	2.0	4.1	6.3	7.6	7.4	7.7	2.0	11.6	7.0	24
24	5.8	5.1	4.5	7.2	6.5	7.2	4.6	2.6	1.0	2.5	3.1	3.9	4.4	5.1	6.1	6.4	7.2	8.6	8.8	6.7	7.1	5.8	6.1	6.3	1.0	8.8	2.3	24
25	6.2	7.0	8.6	10.2	9.3	6.3	7.0	8.9	10.1	12.7	12.2	12.5	11.5	9.1	8.7	8.3	9.1	8.7	8.1	6.0	5.0	7.1	8.2	10.2	5.0	12.7	4.7	24
26	10.4	10.3	12.2	12.4	14.2	14.8	15.0	20.0	22.2	21.1	19.3	15.5	13.5	11.7	10.7	9.7	9.3	8.9	8.6	7.8	5.1	0.5	2.5	3.9	0.5	22.2	10.7	24
27	5.4	4.9	5.8	3.4	3.9	4.2	3.8	4.3	5.8	6.3	5.7	7.4	8.8	11.7	10.1	5.4	4.7	3.8	2.7	2.6	3.5	3.8	4.1	4.9	2.6	11.7	4.8	24
28	4.0	3.9	3.4	3.9	4.0	4.4	4.2	3.9	4.7	5.4	5.8	7.0	6.2	6.2	5.9	5.8	6.8	5.5	5.8	6.4	5.3	4.4	7.0	7.6	3.4	7.6	5.2	24
29	9.7	6.9	6.3	6.5	8.3	7.7	6.4	5.2	7.2	7.5	9.1	8.9	9.9	10.1	7.6	9.0	10.5	10.8	11.9	10.9	12.1	9.1	6.7	8.3	5.2	12.1	8.5	24
30	7.8	6.9	8.6	8.7	9.6	9.7	7.7	7.2	5.4	7.7	7.0	6.2	6.7	6.5	7.1	7.4	7.7	11.3	13.3	12.9	10.1	8.5	6.7	9.8	5.4	13.3	8.3	24
HOURLY MAX	10.5	12.9	12.4	15.9	14.7	14.8	15.0	20.0	22.2	21.1	19.3	15.5	13.5	11.7	14.3	14.1	12.4	13.8	16.0	12.9	12.1	14.0	13.1	10.2				
HOURLY AVG	0.6	0.3	0.3	0.8	0.9	0.9	0.7	0.9	1.0	0.9	1.1	1.1	1.4	1.9	1.3	1.0	0.5	0.5	0.5	1.3	1.5	0.9	0.6	1.0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:

April 6, 2017

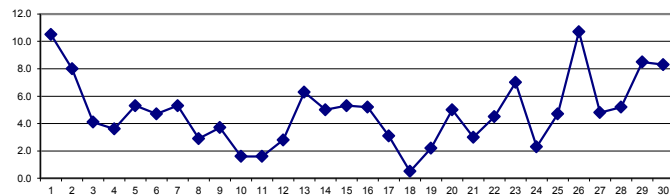
DECLINATION :

MAGNETIC DECLINATION 15 DEGREE EAST

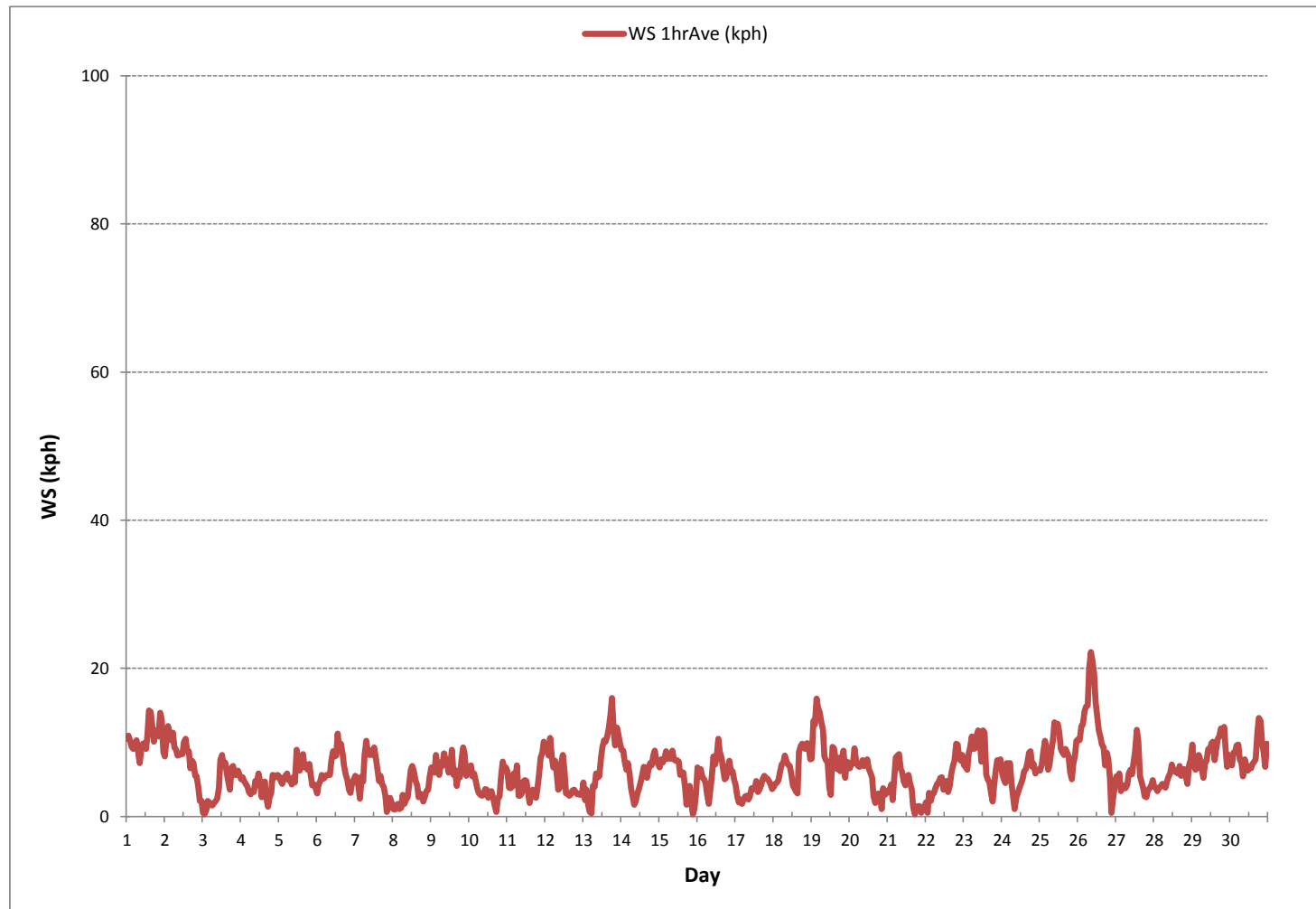
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720				
MINIMUM 1-HR AVERAGE	0.3	kph	@ HOUR	1	ON DAY 3
MAXIMUM 1-HR AVERAGE:	22.2	kph	@ HOUR	8	ON DAY 26
MAXIMUM 24-HR AVERAGE:	10.7	kph			ON DAY 26
MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	3.2		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	0.8	kph

24 HR AVERAGES November 2017



WIND SPEED Hourly Averages (WS kph)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	26.2	25.0	27.3	25.2	26.7	26.0	26.0	21.2	19.2	26.1	30.5	25.4	20.8	33.2	39.8	39.6	34.6	30.0	32.3	28.6	27.0	41.1	34.8	19.9	19.2	41.1	28.6	24
2	20.4	29.9	35.1	31.3	29.6	30.0	24.3	23.7	23.1	21.7	21.0	20.7	25.5	25.1	23.8	22.1	22.7	20.2	18.3	13.3	12.3	8.7	7.4	4.7	4.7	35.1	21.5	24
3	3.5	3.3	2.9	3.9	3.5	2.9	3.2	3.4	3.7	5.2	17.5	20.2	21.5	16.8	17.9	15.0	12.3	8.1	19.4	16.8	12.8	14.8	16.5	16.5	2.9	21.5	10.9	24
4	8.0	10.8	14.7	7.3	11.6	6.9	4.4	5.7	5.7	11.1	10.6	13.5	13.0	8.3	10.1	10.5	9.9	6.6	8.3	7.3	10.4	11.7	11.6	11.9	4.4	14.7	9.6	24
5	10.4	12.3	11.4	13.7	15.7	13.2	11.5	13.6	14.2	16.4	16.7	25.3	21.9	18.5	23.6	24.1	16.4	15.4	14.3	15.3	12.7	10.6	11.5	8.6	8.6	25.3	15.3	24
6	7.5	7.5	8.9	11.3	10.7	10.6	7.9	12.4	10.2	19.0	21.9	19.7	22.4	28.9	23.5	22.3	22.2	14.8	13.6	12.1	10.0	9.1	12.3	12.9	7.5	28.9	14.7	24
7	13.0	13.9	12.6	7.8	14.5	13.3	26.1	25.6	23.1	21.6	23.8	20.7	21.6	18.9	16.7	12.9	12.3	11.9	10.3	9.0	3.1	5.7	7.5	3.5	3.1	26.1	14.6	24
8	2.9	6.0	5.4	5.3	3.3	4.3	5.8	5.9	3.8	8.0	12.4	12.9	14.6	14.0	12.8	11.6	4.4	4.5	5.4	6.9	8.7	9.5	12.9	13.0	2.9	14.6	8.1	24
9	16.4	14.7	14.0	19.2	17.3	12.7	19.3	16.2	22.1	P	18.9	17.9	17.5	21.7	16.3	16.9	13.6	13.7	15.3	20.8	22.8	23.5	18.4	15.7	12.7	23.5	17.6	23
10	15.6	17.1	12.7	13.5	13.8	10.3	8.7	7.8	6.9	6.4	8.5	7.5	6.1	7.5	8.7	8.6	5.5	7.1	8.4	13.0	14.8	21.8	17.0	16.1	5.5	21.8	11.0	24
11	12.1	7.6	7.4	8.4	13.2	12.5	14.4	8.8	8.1	8.0	10.9	11.2	11.0	9.8	5.8	7.7	10.0	9.0	9.8	8.8	16.8	17.5	18.7	23.8	5.8	23.8	11.3	24
12	20.9	19.0	19.7	21.0	17.7	12.6	15.1	13.1	10.2	8.8	20.8	20.2	14.3	10.5	9.5	7.9	13.7	12.0	11.5	8.9	7.6	8.9	7.9	10.0	7.6	21.0	13.4	24
13	12.9	7.0	10.1	7.5	4.3	4.5	12.7	10.6	12.8	16.3	13.1	20.5	23.5	21.9	19.6	20.4	27.8	29.8	33.5	29.2	21.8	25.9	25.9	23.1	4.3	33.5	18.1	24
14	20.7	20.7	15.8	15.2	17.2	12.7	10.3	7.5	5.5	6.2	8.1	10.5	11.7	13.8	15.0	12.4	11.8	12.6	14.5	13.8	15.9	17.4	15.4	15.7	5.5	20.7	13.4	24
15	14.8	19.4	16.9	20.8	20.7	18.5	18.9	15.3	18.6	17.8	16.8	17.5	19.5	17.0	13.6	11.4	8.7	5.9	8.5	12.4	7.4	2.3	3.8	9.2	2.3	20.8	14.0	24
16	16.6	18.5	15.7	16.2	13.2	13.4	11.6	7.3	13.8	17.3	18.3	17.1	18.2	23.2	22.3	19.2	15.9	18.9	15.6	16.0	17.4	14.1	14.1	12.9	7.3	23.2	16.1	24
17	13.0	7.1	6.7	6.5	5.8	5.0	5.7	6.0	4.7	5.9	8.5	10.5	8.5	11.2	10.6	9.5	10.6	11.7	12.5	7.7	9.5	7.3	6.0	5.9	4.7	13.0	8.2	24
18	6.6	6.1	10.8	13.4	14.1	18.2	20.2	21.2	20.7	16.4	14.5	12.5	13.9	10.5	10.3	13.9	23.2	20.3	21.8	19.5	20.0	22.0	21.0	20.3	6.1	23.2	16.3	24
19	23.3	24.8	30.3	35.1	35.2	29.5	29.4	30.2	21.4	17.4	17.2	11.9	19.6	23.9	23.4	20.5	21.9	26.3	21.2	24.7	25.5	18.7	25.5	25.7	11.9	35.2	24.3	24
20	19.7	20.1	22.3	23.3	18.5	18.0	19.0	16.8	18.3	17.8	19.3	20.7	17.3	17.1	13.7	9.6	8.5	9.9	8.5	7.7	10.7	9.2	4.8	5.1	4.8	23.3	14.8	24
21	9.7	8.0	12.5	9.4	17.3	21.7	21.4	22.4	20.3	19.8	13.7	13.9	13.8	14.1	12.9	11.5	5.7	5.0	6.3	5.4	5.0	3.5	4.6	4.6	3.5	22.4	11.8	24
22	6.1	4.2	7.4	7.5	10.8	8.5	10.1	10.6	13.3	15.2	17.0	13.5	11.8	12.1	12.8	12.7	14.5	16.5	18.4	23.6	22.8	24.5	26.5	22.0	4.2	26.5	14.3	24
23	18.8	16.2	15.9	23.0	26.5	29.8	20.5	23.1	27.2	26.5	23.6	21.1	32.2	31.1	19.8	13.8	13.7	8.2	6.4	10.8	18.7	20.3	18.9	19.0	6.4	32.2	20.2	24
24	13.6	14.4	18.4	17.1	15.1	19.3	15.5	7.6	4.5	4.8	9.3	12.1	14.9	14.9	16.5	15.3	18.0	24.4	25.9	20.6	18.3	14.8	16.7	13.7	4.5	25.9	15.2	24
25	15.7	18.8	20.5	22.9	23.6	23.6	20.7	24.7	26.5	30.3	30.1	32.5	33.1	21.3	20.2	22.2	23.7	19.7	19.4	16.9	12.7	17.1	16.8	19.2	12.7	33.1	22.2	24
26	20.8	20.8	23.2	25.2	29.4	33.2	32.6	46.8	59.5	47.1	49.9	36.4	36.2	26.1	27.3	27.8	26.4	19.2	21.0	21.2	15.0	8.7	8.6	21.4	8.6	59.5	28.5	24
27	14.0	12.2	15.1	9.4	11.9	10.4	11.4	11.2	15.4	16.9	18.2	22.4	24.0	25.4	27.7	17.5	14.7	10.3	6.0	5.2	6.0	6.1	10.0	6.6	5.2	27.7	13.7	24
28	10.7	6.2	6.7	8.7	7.7	7.3	9.0	5.9	9.7	10.0	13.5	15.1	14.5	17.9	10.6	12.5	10.9	8.3	8.3	12.5	8.3	7.0	17.1	18.0	5.9	18.0	10.7	24
29	22.7	24.8	16.3	18.1	19.5	19.8	16.0	14.2	16.4	16.9	18.0	18.8	26.2	26.1	17.6	25.5	26.5	25.0	33.2	25.9	26.8	23.1	16.3	19.6	14.2	33.2	21.4	24
30	20.8	18.1	18.1	17.5	20.5	19.8	18.1	15.5	12.5	17.3	17.4	17.4	18.2	15.7	17.8	20.6	19.7	30.4	31.1	30.2	25.2	20.2	17.5	21.4	12.5	31.1	20.0	24
HOURLY MAX	26.2	29.9	35.1	35.1	35.2	33.2	32.6	46.8	59.5	47.1	49.9	36.4	36.2	33.2	39.8	39.6	34.6	30.4	33.5	30.2	27.0	41.1	34.8	25.7				
HOURLY AVG	14.6	14.5	15.2	15.5	16.3	15.6	15.7	15.1	15.7	16.3	18.0	18.0	18.9	18.6	17.3	16.5	16.0	15.2	16.0	15.5	14.9	14.8	14.9	14.7				

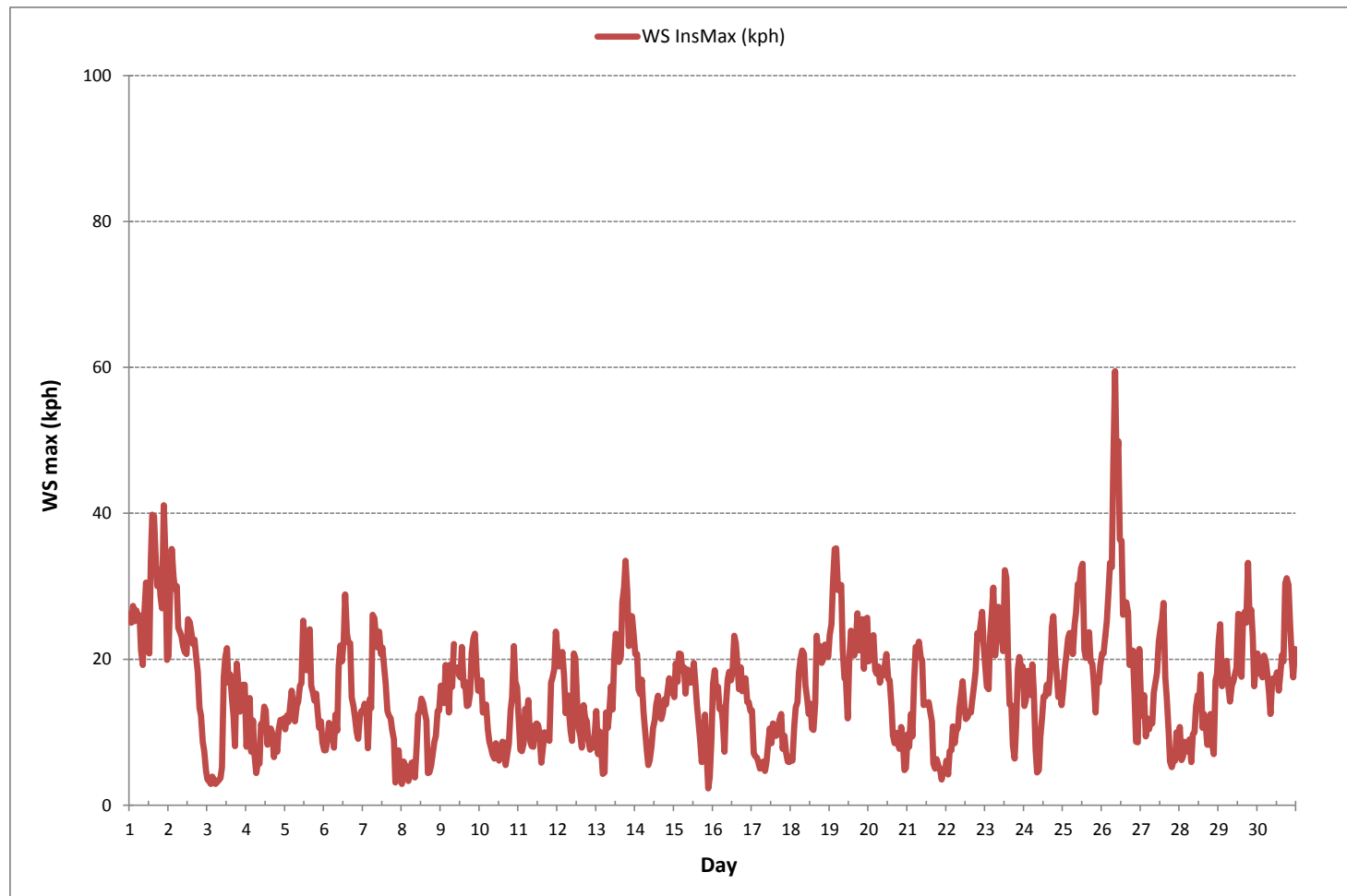
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	59.5	kph	@ HOUR	8	ON DAY	26
OPERATIONAL TIME:	719	hrs				

WIND SPEED Instantaneous Maximum (WS kph)



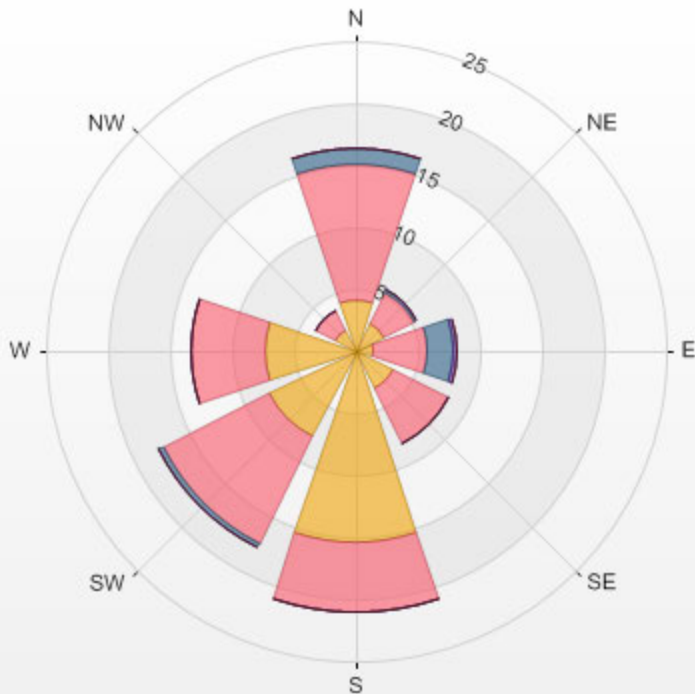
Wind: PRAMP_RENO
 Monitor: WSP [kph]
 Monthly: 17/11
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 5.69%

Direction	1.8-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	4.2	11.0	1.3	0.0	0.0	0.0	16.4
NE	2.5	2.8	0.3	0.0	0.0	0.0	5.6
E	1.5	4.3	2.1	0.3	0.0	0.0	8.2
SE	3.3	5.0	0.0	0.0	0.0	0.0	8.3
S	15.6	5.6	0.0	0.0	0.0	0.0	21.1
SW	7.8	9.6	0.4	0.0	0.0	0.0	17.8
W	7.4	6.0	0.0	0.0	0.0	0.0	13.3
NW	1.8	1.8	0.0	0.0	0.0	0.0	3.6
Summary	44.0	46.0	4.0	0.3	0.0	0.0	94.3

%	Icon	Classes (kph)
44		1.8-6.0
46		6.0-12.0
4		12.0-20.0
0		20.0-29.0
0		29.0-39.0
0		>39.0

PRAMP_RENO 2017/11/01 00:00 - 2017/11/30 23:00 Calm: 5.69% Calm Wind Avg Speed: 1.14(kph)



WIND DIRECTION



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

WIND DIRECTION Hourly Averages (WD)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	24-HR	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT	RDGS.	
DAY																											
1	N	N	NNE	N	N	N	N	N	N	N	N	N	N	NNW	N	N	N	N	NNW	N	NNW	N	N	N	N	N	24
2	N	NNW	N	NNW	NNW	N	N	NNW	NNW	N	N	N	N	N	N	N	N	N	N	NNE	NNE	NNE	NNE	NE	NE	N	24
3	E	SSE	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	24
4	S	S	S	S	S	S	S	S	S	SSW	SSW	SSW	SW	S	SW	SW	SW	WSW	WSW	SW	WSW	WSW	WSW	WSW	WSW	SSW	24
5	WSW	WSW	W	W	W	W	W	W	W	WNW	WNW	NW	NW	W	W	W	W	WSW	WSW	WSW	WSW	SW	SW	SW	W	24	
6	S	S	S	S	S	S	S	S	S	S	S	S	SSW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	NW	NNW	NNW	SSW	24	
7	N	N	N	NW	NNW	NNW	NNW	N	N	N	N	N	NNE	N	N	N	N	NNE	NE	N	NNW	NNE	ENE	ENE	N	24	
8	ENE	SE	S	S	S	SSW	SSW	SW	SSW	SSW	SW	SSW	SSW	SSW	S	S	S	S	S	S	S	SSE	SSE	SSW	SSW	24	
9	SE	SE	SE	SE	ESE	E	ESE	ESE	ESE	SE	SE	S	SW	SSW	WSW	WSW	SW	SSW	SW	WSW	WSW	WSW	WSW	WSW	S	24	
10	WSW	WSW	WSW	WSW	WSW	WSW	WSW	NW	NNW	N	NE	ENE	E	SSE	SSE	SE	SSW	SE	SSE	SSE	SSE	SSE	SSE	S	SSW	24	
11	S	S	SSW	SSW	SW	SW	WSW	WNW	W	W	NNW	NNE	N	NNE	NE	N	N	N	NNE	NNE	NE	NE	NNE	N	NNW	24	
12	NNE	NNE	NNE	NE	ENE	ENE	ENE	NE	NE	NE	ESE	SE	SE	SE	S	SE	SE	S	SSE	S	WSW	SW	WSW	ENE	ENE	24	
13	WSW	WSW	WSW	SSW	SW	SE	ENE	E	ENE	NE	NE	NE	NE	NE	NE	NE	NE	NNE	NNE	NE	NNE	NNE	NNE	NNE	NE	24	
14	NNE	NNE	NNE	N	NNE	NNE	NNE	NNE	NNW	NNW	NE	E	ENE	ENE	ENE	ENE	E	ENE	E	E	E	E	ENE	ENE	NE	24	
15	E	ESE	ESE	E	E	ESE	E	ENE	E	E	ESE	ESE	ESE	ESE	E	ENE	ESE	ESE	ESE	ESE	ESE	SW	SW	NW	E	24	
16	NW	NNW	NNW	NW	NW	NW	NW	W	W	WSW	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	24	
17	W	W	W	WSW	SW	WSW	SW	WSW	SW	SW	SSW	SSW	S	S	S	S	S	S	S	S	S	S	S	S	SSW	24	
18	SSW	SSW	S	S	S	SSE	SSE	SSE	S	S	S	S	SSW	SW	NW	N	N	N	N	NNE	NNE	NNE	NNE	NNE	SE	24	
19	NE	ENE	E	E	E	ESE	ESE	ESE	E	E	ESE	ESE	W	NW	NW	NW	WNW	WNW	WNW	W	W	W	WNW	NW	ENE	24	
20	W	W	W	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	W	S	SSW	S	S	WSW	24
21	SE	ESE	SE	ESE	SE	SSE	SE	SE	SE	SSE	S	S	S	S	S	SSW	W	WNW	E	NNW	NNE	N	W	N	SSE	24	
22	NNE	NNE	ENE	SE	S	S	SSE	S	SSE	SSE	SE	SSE	SSE	SSE	SE	SE	ESE	ESE	SE	SE	SSE	SSE	SE	SE	SE	24	
23	SSE	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SW	WSW	WSW	W	W	WSW	SW	SSW	SW	SW	SW	WSW	WSW	SW	24	
24	WSW	WSW	NW	NNW	N	N	N	NNE	SSE	SSW	S	S	SSE	SSE	SSE	SSE	SSE	SE	SE	SE	SE	S	S	S	SSE	24	
25	SSW	SSW	SSW	SSW	SW	W	NNW	N	N	N	N	NNE	N	N	N	N	N	N	NNE	NNE	N	ENE	ENE	ENE	ENE	N	24
26	ENE	ENE	ENE	E	E	E	E	E	E	E	E	ESE	ESE	ESE	E	E	ESE	ESE	ESE	SE	ESE	WSW	NW	SW	E	24	
27	WSW	W	WSW	WSW	W	WSW	W	W	W	W	W	W	WSW	WSW	WSW	SW	SSW	SSW	S	SSW	SSW	SSW	SSW	SSW	WSW	24	
28	S	SSW	SSW	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	24	
29	SSW	SW	SW	SW	WSW	WSW	WSW	SW	SW	SSW	SW	SW	SW	SW	SSW	SW	SW	SW	SW	SW	SSW	SW	SSW	SSW	SSW	SW	24
30	SSW	SSW	SW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	SSW	SSW	SSW	SSW	SW	SW	SSW	SSW	SSW	SSW	SSW	SSW	24

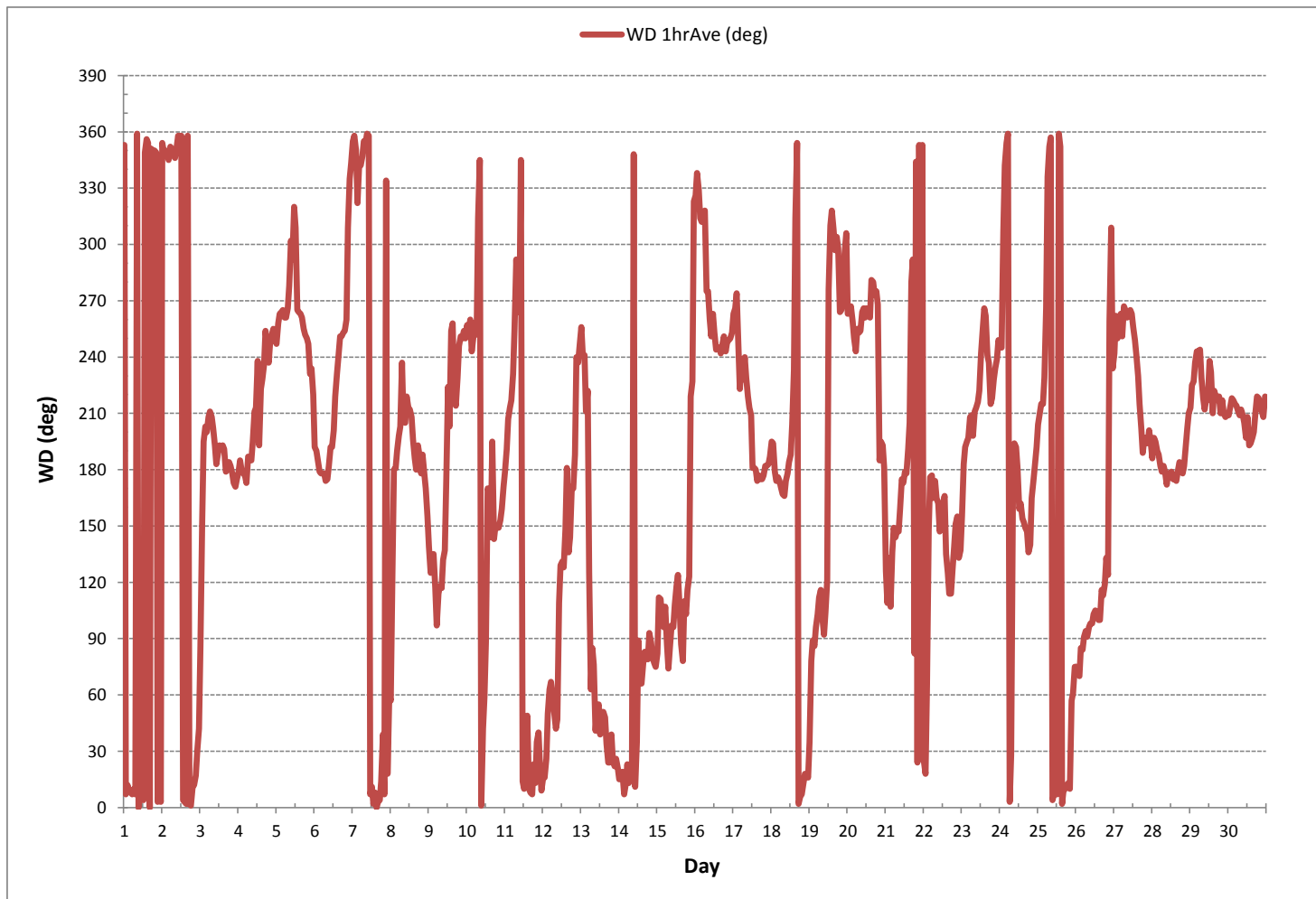
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	April 6, 2017
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	95		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	203 (SSW)	

WIND DIRECTION Hourly Averages (WD)



RELATIVE HUMIDITY

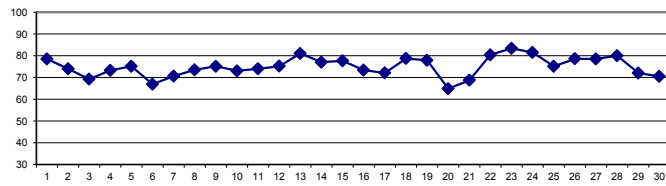
RELATIVE HUMIDITY Hourly Averages (RH %)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	87	84	84	84	85	83	78	83	85	82	78	77	74	82	76	73	72	71	70	74	81	74	71	78	70	87	79	24
2	80	80	72	72	74	75	76	77	78	77	76	75	69	69	68	68	70	70	72	75	76	76	76	75	68	80	74	24
3	74	73	72	72	73	74	72	71	72	73	73	70	62	58	56	58	64	68	69	70	72	73	72	72	56	74	69	24
4	74	73	73	74	74	74	74	74	73	71	69	67	66	64	66	69	72	75	77	78	79	80	81	81	64	81	73	24
5	81	83	84	85	84	84	83	82	81	77	72	67	64	65	65	67	68	71	73	73	73	74	72	77	64	85	75	24
6	80	80	78	77	77	77	76	76	75	71	65	58	54	55	53	54	58	61	62	61	64	64	63	66	53	80	67	24
7	68	71	75	77	79	82	78	66	68	67	68	65	63	63	61	63	64	71	70	73	76	76	76	76	61	82	71	24
8	76	75	74	74	75	76	77	76	75	74	73	72	69	66	64	65	72	75	76	77	76	76	76	77	64	77	74	24
9	79	78	78	77	75	75	74	75	76	74	71	68	71	69	71	74	75	76	77	77	77	78	79	79	68	79	75	24
10	79	78	78	78	79	79	80	79	77	77	74	70	65	58	57	60	66	73	74	75	73	73	75	77	57	80	73	24
11	79	81	81	81	81	81	79	79	78	77	76	74	71	67	66	66	69	72	72	70	69	68	69	71	66	81	74	24
12	73	78	78	74	74	74	74	76	78	77	75	71	68	66	66	69	71	76	79	80	81	82	83	83	66	83	75	24
13	83	84	84	81	79	79	83	83	83	83	83	80	77	76	77	81	82	81	81	82	81	80	80	76	84	81	24	
14	81	81	80	78	79	78	78	77	77	76	73	72	71	73	76	78	79	79	78	76	76	77	78	79	71	81	77	24
15	79	77	77	76	75	76	77	78	77	78	78	75	72	73	74	78	81	82	81	80	80	80	81	80	72	82	78	24
16	78	77	77	77	78	76	74	75	75	72	74	72	70	69	68	70	71	73	73	72	72	73	73	74	68	78	73	24
17	75	74	72	74	74	73	74	73	73	73	73	72	63	60	61	70	73	73	71	72	76	78	77	77	60	78	72	24
18	77	76	77	78	79	80	80	81	79	78	77	75	72	73	74	77	80	83	82	81	82	83	83	83	72	83	79	24
19	84	83	82	80	80	79	78	79	79	81	82	83	85	79	77	77	77	78	76	73	69	67	65	65	65	85	78	24
20	66	66	65	66	66	67	66	66	66	66	64	63	61	60	59	60	64	67	67	67	66	66	66	67	59	67	65	24
21	68	69	70	69	69	69	69	70	70	70	66	65	64	63	64	66	70	71	72	72	72	72	70	70	63	72	69	24
22	70	71	69	72	75	76	77	79	80	80	80	77	76	82	85	87	87	86	86	86	87	87	88	88	69	88	80	24
23	89	89	91	92	92	89	88	87	84	81	77	76	74	73	77	77	82	84	89	92	84	80	79	76	73	92	83	24
24	77	77	80	89	89	88	86	86	86	86	84	82	84	81	80	81	83	80	77	72	78	79	77	75	72	89	82	24
25	74	73	74	77	72	70	80	83	82	83	81	73	70	69	71	71	73	74	75	76	77	76	75	74	69	83	75	24
26	74	74	74	76	78	79	79	79	78	80	81	77	73	74	76	78	79	80	81	82	82	83	85	85	73	85	79	24
27	83	82	83	83	83	83	83	83	81	81	80	80	79	78	76	73	72	72	74	74	75	76	75	76	72	83	79	24
28	78	80	80	81	82	82	82	83	84	83	81	79	78	77	74	77	79	81	82	83	83	83	78	72	72	84	80	24
29	70	73	76	78	79	82	83	84	82	80	76	71	63	59	65	67	67	67	63	66	68	69	71	71	59	84	72	24
30	72	73	72	74	74	76	78	81	82	81	71	67	61	63	62	65	67	66	64	65	66	69	74	70	61	82	71	24
HOURLY MAX	89	89	91	92	92	89	88	87	86	86	84	83	85	82	85	87	87	86	89	92	87	87	88	88				
HOURLY AVG	77	77	77	78	78	78	78	78	78	77	75	73	70	69	69	71	73	75	75	75	76	76	76	76				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES November 2017

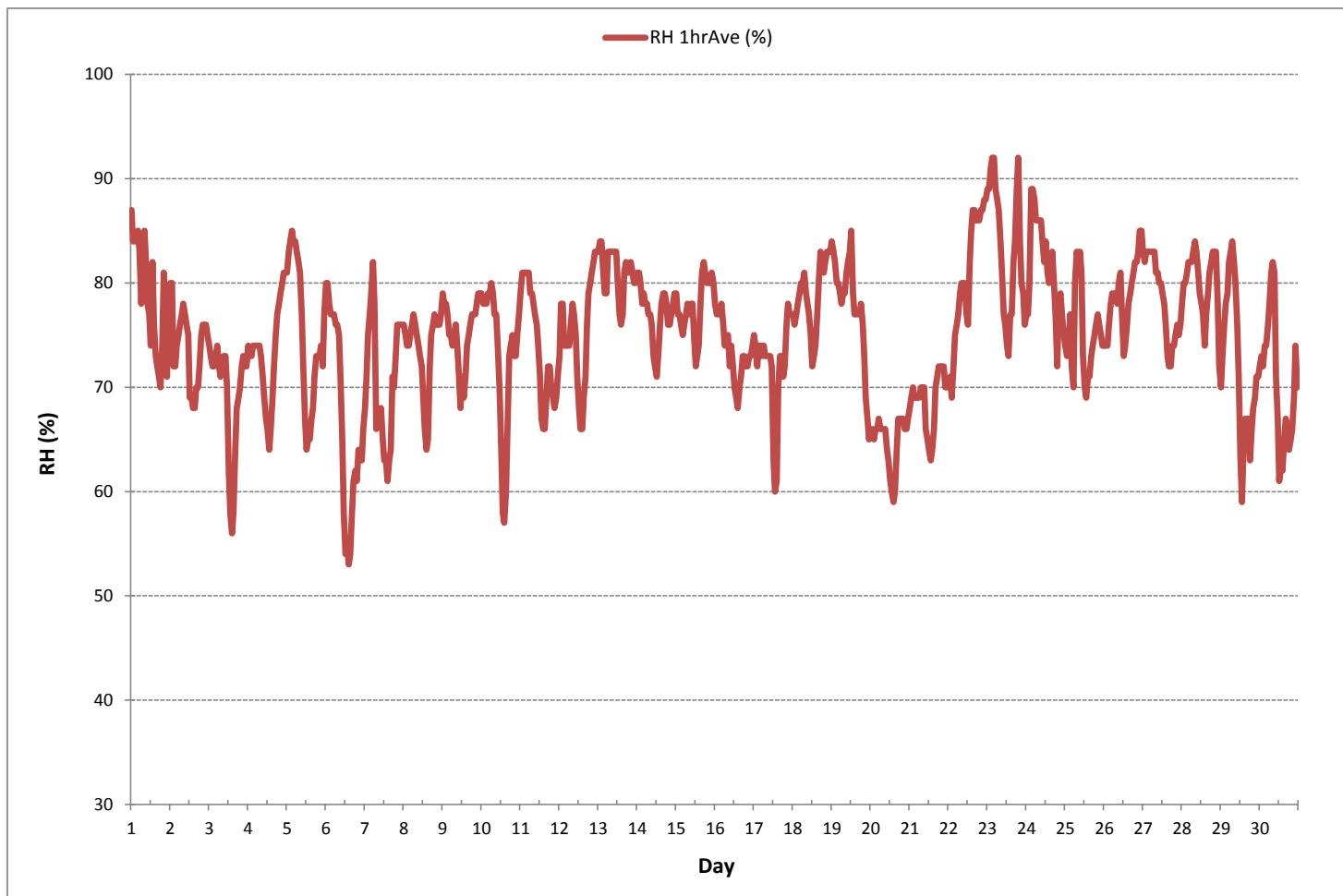


MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	53	%	@ HOUR	14	ON DAY	6
MAXIMUM 1-HR AVERAGE:	92	%	@ HOUR	3	ON DAY	23
MAXIMUM 24-HR AVERAGE:	83	%			ON DAY	23

OPERATIONAL TIME:	720	hrs
AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	7	
MONTHLY AVERAGE:	75	%

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Reno Station - November 2017

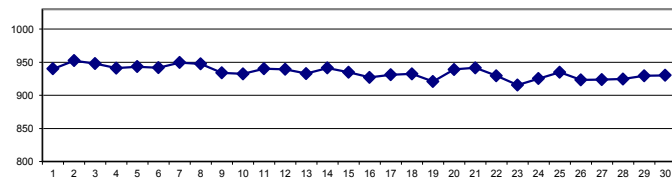
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	933	933	934	934	935	935	936	937	937	938	939	939	940	941	941	942	943	944	944	945	946	947	948	948	933	948	940	24	
2	949	949	950	950	950	951	951	951	952	952	952	953	953	953	953	954	954	954	954	955	955	955	954	949	955	952	24		
3	954	954	953	952	952	951	951	951	951	950	949	948	948	947	946	946	945	945	944	944	944	944	943	942	942	942	954	948	24
4	942	942	941	941	941	941	941	941	941	941	940	940	941	940	940	941	941	941	941	942	942	942	942	942	940	942	941	24	
5	943	943	943	942	942	942	943	943	943	943	944	944	944	944	943	943	943	944	944	944	944	944	944	944	942	944	943	24	
6	944	943	943	943	942	942	941	941	940	940	940	940	940	940	940	940	941	942	942	943	944	944	944	945	940	945	942	24	
7	946	947	947	948	948	949	949	950	950	951	951	951	951	951	951	950	950	950	950	950	950	950	950	950	946	951	950	24	
8	950	949	949	949	949	948	948	948	948	948	948	948	948	948	948	948	948	947	947	946	945	944	944	944	944	950	947	24	
9	943	942	941	940	939	938	937	936	935	933	932	932	931	930	930	931	930	930	930	930	930	930	931	931	930	943	934	24	
10	931	931	932	932	932	932	933	933	933	933	933	933	933	933	933	932	933	933	933	933	933	932	932	933	931	933	933	24	
11	933	934	934	935	935	936	937	938	939	940	940	941	941	942	942	942	943	944	944	944	944	944	944	945	933	945	940	24	
12	945	945	945	945	944	944	944	943	942	942	940	939	938	937	936	936	936	935	934	934	934	934	934	934	934	945	939	24	
13	934	934	934	934	935	934	934	934	934	933	933	932	931	931	931	931	931	931	931	932	933	934	934	935	931	935	933	24	
14	936	936	937	938	939	940	940	941	941	942	942	942	943	943	943	943	943	943	943	943	943	943	943	942	936	943	941	24	
15	942	942	941	941	940	939	939	938	937	936	936	935	934	933	933	932	931	931	930	930	929	929	928	928	928	942	935	24	
16	928	928	928	927	927	927	927	927	927	927	927	927	926	926	926	927	927	927	927	927	927	928	928	928	926	928	927	24	
17	928	928	928	929	929	929	929	930	930	931	930	931	931	932	932	933	933	934	934	934	934	934	934	934	928	934	931	24	
18	935	934	934	934	933	932	932	931	931	931	931	931	931	931	932	932	932	933	933	933	933	933	932	931	931	935	932	24	
19	931	929	928	926	925	923	922	920	920	918	917	916	915	915	916	916	917	918	919	920	921	923	924	925	915	931	921	24	
20	926	927	929	930	931	933	934	935	937	938	939	940	940	941	942	944	945	946	946	946	946	947	948	948	926	948	939	24	
21	948	948	948	947	947	946	945	945	944	944	943	942	942	941	940	939	939	938	937	936	935	935	935	934	934	948	942	24	
22	934	934	934	934	934	934	934	934	933	933	932	931	931	930	929	929	928	927	925	924	923	922	921	919	919	934	930	24	
23	918	917	917	917	916	916	914	914	914	913	913	914	914	914	915	915	915	916	916	916	916	917	918	919	913	919	916	24	
24	920	920	921	922	923	924	925	926	927	927	927	927	927	927	927	927	927	927	926	925	925	926	926	926	920	927	925	24	
25	927	928	928	929	929	930	931	932	933	934	936	937	937	938	939	939	939	939	939	939	939	939	938	937	927	939	935	24	
26	937	936	935	934	932	931	929	927	926	924	922	921	920	920	919	918	918	917	916	915	915	915	915	916	915	937	923	24	
27	916	916	917	917	917	918	918	919	921	922	923	924	925	926	927	928	929	929	929	929	929	929	929	929	916	929	924	24	
28	928	928	928	928	928	927	927	926	925	925	925	925	924	924	923	923	923	923	922	922	922	922	923	922	922	928	925	24	
29	923	924	925	925	926	927	928	929	930	931	932	932	932	933	933	932	932	932	931	931	931	930	930	930	923	933	930	24	
30	930	930	931	931	931	931	931	931	931	931	932	932	931	931	930	930	929	929	929	929	929	929	929	929	929	932	930	24	
HOURLY MAX	954	954	953	952	952	951	951	951	952	952	952	953	953	953	953	953	954	954	954	954	955	955	955	954					
HOURLY AVG	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935	935					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

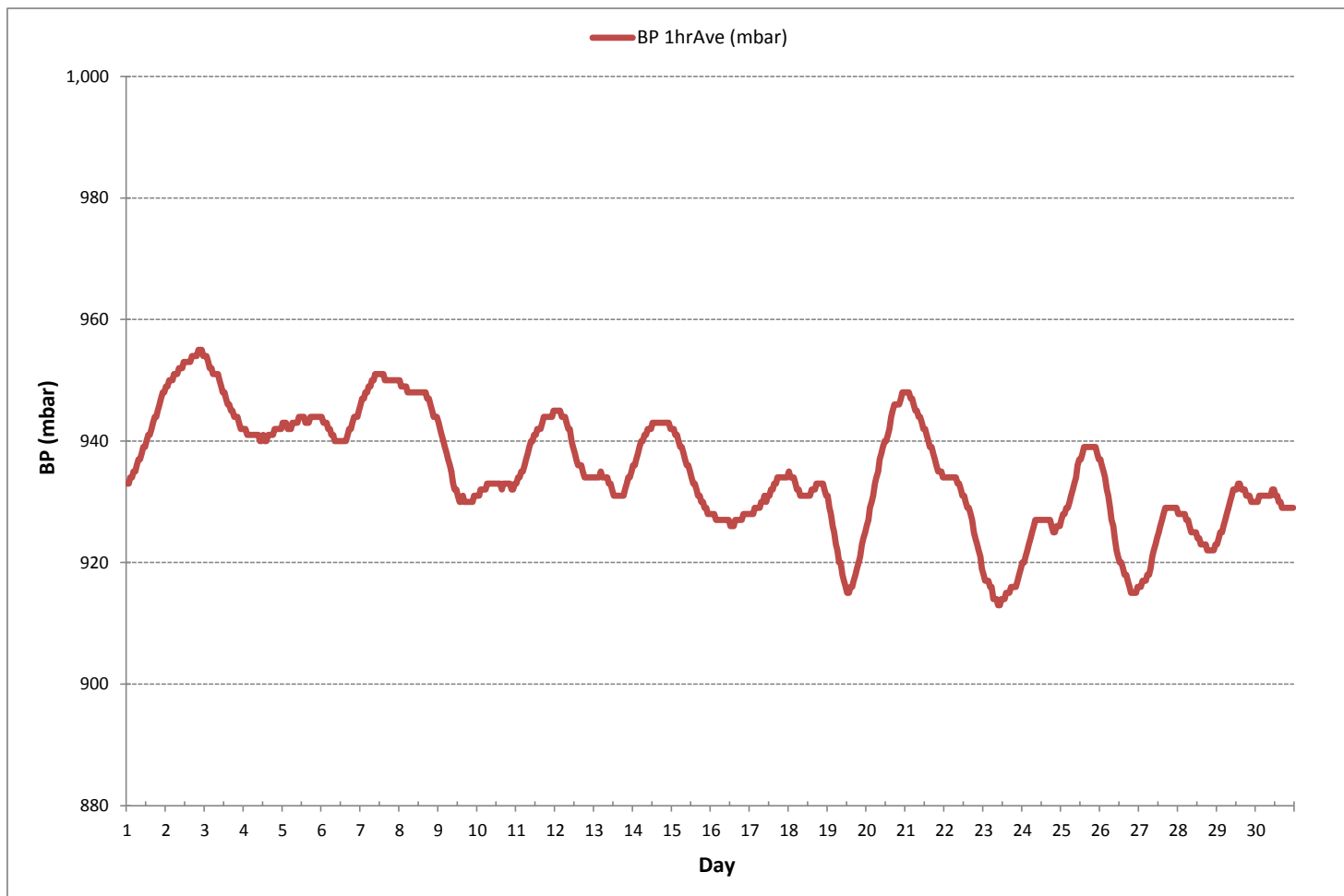
24 HR AVERAGES November 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	913	mbar	@ HOUR	9	ON DAY	23
MAXIMUM 1-HR AVERAGE:	955	mbar	@ HOUR	20	ON DAY	2
MAXIMUM 24-HR AVERAGE:	952	mbar			ON DAY	2
OPERATIONAL TIME:					720	hrs
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	10		MONTHLY AVERAGE:		935	mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE

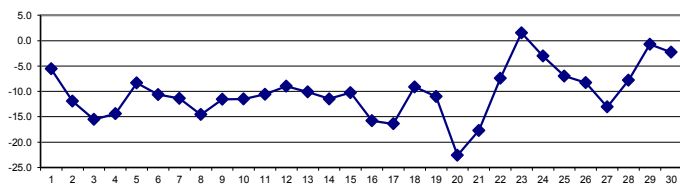
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	-2.8	-3.0	-3.3	-3.7	-4.1	-4.4	-4.9	-5.4	-5.5	-5.3	-4.8	-4.4	-3.9	-4.6	-5.2	-5.9	-6.4	-6.8	-7.0	-7.6	-8.0	-8.3	-8.8	-9.2	-9.2	-2.8	-5.6	24
2	-9.1	-9.2	-9.8	-10.1	-10.4	-10.5	-10.7	-10.8	-10.9	-10.8	-10.5	-10.4	-10.1	-10.3	-10.3	-10.8	-12.1	-12.3	-13.4	-15.6	-15.8	-17.4	-17.8	-17.5	-17.8	-9.1	-11.9	24
3	-18.2	-19.3	-19.6	-20.3	-19.5	-19.1	-19.6	-20.5	-20.0	-16.6	-13.2	-12.5	-11.1	-9.9	-9.6	-10.0	-12.0	-14.4	-13.9	-13.9	-14.7	-15.4	-14.7	-14.9	-20.5	-9.6	-15.5	24
4	-16.3	-16.5	-16.6	-17.8	-16.7	-16.5	-17.2	-17.6	-18.1	-15.6	-14.0	-13.3	-13.0	-12.4	-12.4	-12.6	-13.1	-13.8	-13.3	-12.6	-12.3	-11.9	-11.4	-10.7	-18.1	-10.7	-14.4	24
5	-10.7	-9.8	-8.9	-8.4	-8.4	-8.5	-8.2	-7.7	-7.8	-7.9	-7.7	-6.4	-6.1	-6.3	-6.1	-6.5	-7.7	-8.7	-9.1	-9.4	-9.3	-9.8	-9.2	-11.1	-11.1	-6.1	-8.3	24
6	-13.4	-14.9	-16.0	-15.5	-16.2	-16.0	-15.9	-15.5	-14.6	-12.8	-10.8	-9.1	-7.0	-6.2	-5.4	-5.5	-6.0	-7.1	-7.8	-7.5	-8.1	-7.9	-7.6	-8.1	-16.2	-5.4	-10.6	24
7	-8.6	-8.6	-8.5	-9.0	-8.7	-9.0	-9.3	-10.1	-10.6	-10.8	-10.9	-11.1	-11.2	-11.0	-11.1	-11.3	-11.5	-12.3	-13.6	-13.9	-14.4	-15.8	-16.3	-15.7	-16.3	-8.5	-11.4	24
8	-14.9	-13.9	-13.3	-13.3	-13.4	-13.8	-15.9	-16.8	-17.4	-15.5	-13.0	-12.7	-12.3	-12.3	-11.6	-11.8	-14.7	-16.3	-16.4	-16.3	-16.2	-16.7	-16.1	-15.1	-17.4	-11.6	-14.6	24
9	-13.1	-12.3	-12.4	-12.7	-12.6	-12.8	-12.0	-11.7	-11.1	-10.1	-8.0	-5.7	-8.6	-7.4	-11.0	-13.9	-13.3	-13.4	-13.1	-12.3	-12.4	-12.3	-12.4	-12.8	-13.9	-5.7	-11.6	24
10	-12.8	-12.5	-11.9	-11.3	-11.0	-11.4	-12.6	-13.4	-15.1	-13.7	-12.7	-11.4	-10.3	-8.8	-8.3	-9.1	-10.8	-12.9	-12.8	-12.6	-10.5	-9.8	-10.1	-10.6	-15.1	-8.3	-11.5	24
11	-10.9	-11.8	-12.1	-12.0	-11.8	-11.6	-12.4	-13.4	-13.5	-13.4	-10.7	-10.5	-9.4	-8.3	-8.2	-8.8	-9.6	-10.4	-9.9	-9.1	-8.7	-8.4	-8.8	-9.7	-13.5	-8.2	-10.6	24
12	-10.1	-10.5	-10.7	-10.5	-10.6	-10.6	-10.6	-12.5	-13.5	-13.5	-10.6	-8.5	-7.2	-6.5	-6.1	-6.2	-6.5	-6.8	-6.9	-7.0	-7.2	-7.4	-7.6	-7.9	-13.5	-6.1	-9.0	24
13	-8.5	-9.6	-10.8	-13.0	-14.8	-14.7	-12.1	-10.7	-9.9	-9.7	-9.1	-8.5	-8.3	-7.9	-7.9	-8.0	-8.4	-8.9	-9.5	-10.0	-10.3	-10.4	-10.5	-10.6	-14.8	-7.9	-10.1	24
14	-10.7	-10.8	-11.2	-11.5	-12.1	-14.9	-14.5	-14.7	-14.5	-13.4	-12.5	-11.2	-9.9	-9.9	-9.7	-9.5	-9.8	-10.2	-10.3	-10.3	-10.4	-10.7	-10.9	-11.6	-14.9	-9.5	-11.5	24
15	-11.3	-10.6	-10.5	-10.4	-10.4	-10.5	-10.6	-10.7	-10.7	-10.5	-10.2	-9.7	-9.2	-9.1	-9.2	-9.4	-9.7	-9.7	-9.8	-10.1	-10.4	-10.6	-10.8	-11.5	-11.5	-9.1	-10.2	24
16	-13.0	-13.9	-14.2	-14.3	-14.5	-14.8	-15.0	-15.0	-15.5	-16.1	-16.2	-16.2	-16.6	-16.4	-17.0	-17.0	-17.4	-17.2	-16.9	-16.6	-16.7	-16.6	-16.5	-17.4	-13.0	-15.8	24	
17	-16.4	-16.3	-16.3	-16.4	-17.9	-18.7	-18.4	-18.5	-19.2	-18.7	-16.4	-15.4	-13.9	-13.7	-14.9	-17.3	-18.1	-16.9	-15.2	-15.4	-14.7	-13.8	-15.4	-15.6	-19.2	-13.7	-16.4	24
18	-15.7	-16.2	-15.2	-13.9	-11.5	-10.2	-8.4	-8.1	-7.7	-8.7	-8.2	-6.5	-3.3	-3.2	-2.8	-3.6	-6.6	-7.8	-8.6	-10.1	-10.8	-10.8	-10.7	-10.5	-16.2	-2.8	-9.1	24
19	-9.3	-8.2	-8.6	-9.1	-9.0	-8.5	-8.6	-8.6	-8.1	-7.8	-7.2	-6.3	-5.8	-10.4	-11.5	-12.3	-13.0	-13.1	-13.8	-14.8	-15.3	-16.8	-18.2	-19.4	-19.4	-5.8	-11.0	24
20	-21.0	-21.6	-22.2	-22.9	-22.9	-23.6	-23.3	-23.9	-24.2	-23.8	-23.1	-22.2	-20.9	-20.4	-19.9	-19.7	-20.7	-21.5	-22.5	-23.4	-24.5	-25.0	-25.0	-24.1	-25.0	-19.7	-22.6	24
21	-22.7	-22.7	-22.3	-22.3	-22.0	-20.4	-19.4	-18.5	-18.9	-19.3	-17.9	-16.9	-15.5	-14.4	-14.5	-14.6	-15.6	-15.6	-15.3	-15.2	-15.4	-15.3	-14.9	-14.9	-22.7	-14.4	-17.7	24
22	-14.7	-14.4	-14.2	-13.5	-12.6	-12.1	-11.9	-11.2	-10.4	-9.7	-8.7	-7.2	-5.7	-4.7	-3.2	-2.6	-3.4	-3.8	-3.7	-3.0	-2.7	-2.1	-1.4	-0.7	-14.7	-0.7	-7.4	24
23	-0.7	-0.3	-0.3	-0.1	0.7	1.9	2.0	2.2	2.9	3.0	3.5	3.9	4.2	4.3	3.3	3.3	1.7	0.7	-1.0	-1.2	1.0	0.9	0.6	1.0	-1.2	4.3	1.6	24
24	0.6	0.6	-1.2	-5.6	-6.8	-7.4	-7.4	-6.9	-7.6	-7.6	-5.8	-6.1	-4.9	-2.6	-1.5	-1.3	-1.4	-0.9	0.0	1.0	-0.3	-0.8	0.3	1.1	-7.6	1.1	-3.0	24
25	1.2	1.0	0.9	1.0	2.0	1.9	-0.9	-4.0	-5.4	-7.4	-8.9	-9.5	-9.9	-10.2	-10.7	-11.2	-12.0	-12.6	-12.8	-12.9	-13.0	-12.0	-11.0	-10.8	-13.0	2.0	-7.0	24
26	-10.6	-10.3	-10.0	-9.6	-9.2	-9.0	-8.8	-8.7	-8.7	-8.2	-8.1	-7.8	-7.4	-7.3	-7.2	-7.3	-7.6	-7.5	-7.6	-7.5	-7.3	-7.3	-7.5	-7.7	-10.6	-7.2	-8.3	24
27	-8.9	-9.6	-10.0	-10.4	-10.6	-10.8	-11.1	-11.5	-12.4	-12.4	-11.7	-11.4	-11.6	-12.4	-12.6	-13.0	-14.4	-15.0	-16.9	-18.2	-17.8	-16.9	-17.3	-16.6	-18.2	-8.9	-13.1	24
28	-14.7	-13.3	-12.6	-11.8	-11.5	-11.0	-10.2	-9.4	-7.8	-7.5	-7.1	-5.8	-4.5	-4.1	-3.5	-4.6	-6.3	-7.9	-8.4	-7.8	-7.9	-6.8	-2.1	-0.4	-14.7	-0.4	-7.8	24
29	0.0	-0.6	-1.2	-2.3	-2.9	-3.4	-3.8	-4.2	-3.2	-3.1	-1.9	-0.8	1.0	2.0	0.6	0.8	1.0	1.5	2.6	1.5	0.5	0.1	-0.8	-0.7	-4.2	2.6	-0.7	24
30	-1.2	-1.7	-1.7	-2.4	-2.0	-2.3	-3.6	-4.4	-5.2	-4.7	-2.3	-1.8	0.0	-1.2	-1.2	-1.7	-1.8	-1.4	-0.8	-1.4	-1.5	-3.0	-4.5	-2.8	-5.2	0.0	-2.3	24
HOURLY MAX	1.2	1.0	0.9	1.0	2.0	1.9	2.0	2.2	2.9	3.0	3.5	3.9	4.2	4.3	3.3	3.3	1.7	1.5	2.6	1.5	1.0	0.9	0.6	1.1				
HOURLY AVG	-10.6	-10.7	-10.8	-11.1	-11.0	-11.1	-11.2	-11.4	-11.5	-11.0	-10.0	-9.2	-8.4	-8.2	-8.3	-8.7	-9.6	-10.1	-10.3	-10.5	-10.5	-10.6	-10.6	-10.5				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES November 2017



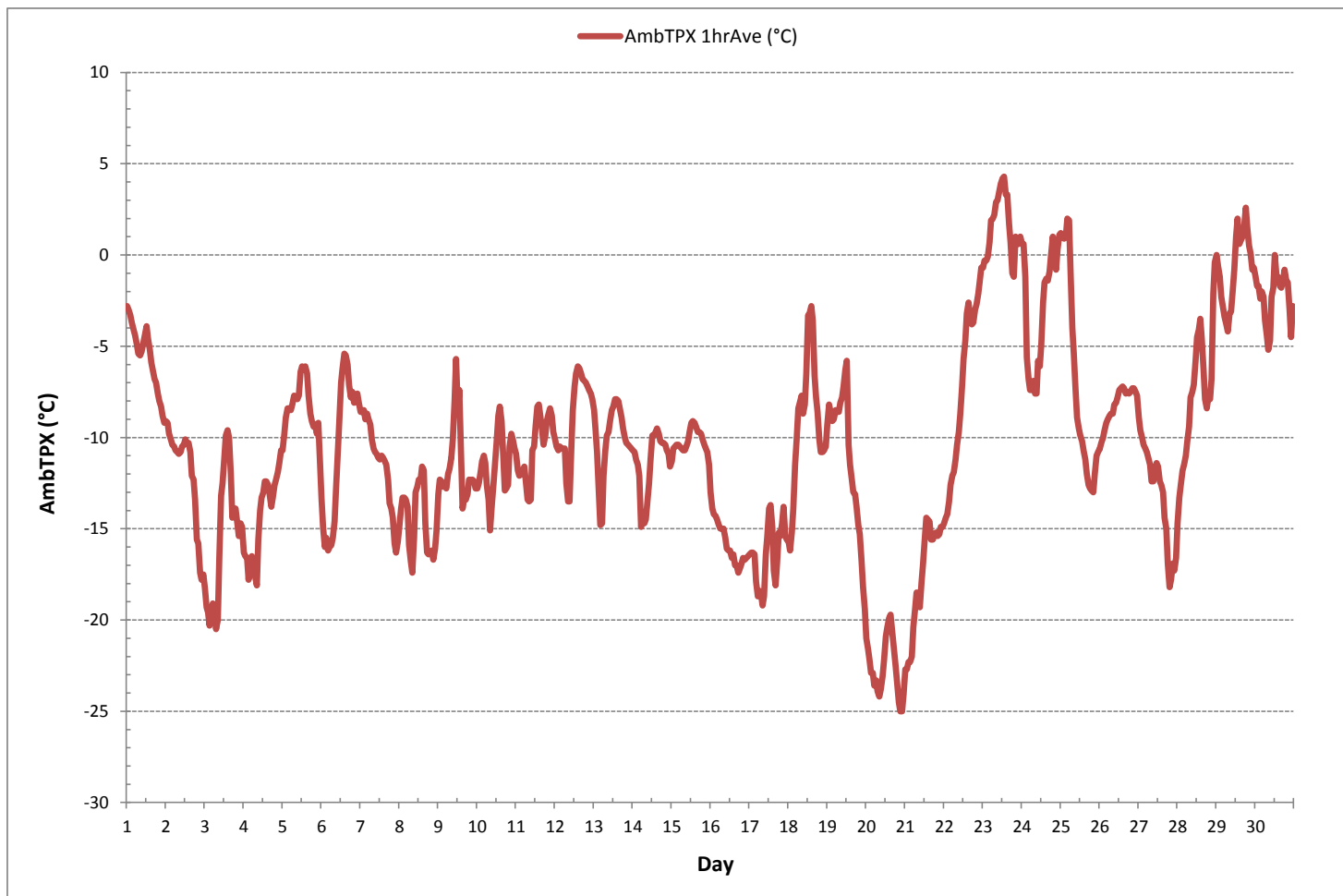
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-25.0	°C	@ HOUR	21	ON DAY	20
MAXIMUM 1-HR AVERAGE:	4.3	°C	@ HOUR	13	ON DAY	23
MAXIMUM 24-HR AVERAGE:	1.6	°C			ON DAY	23

OPERATIONAL TIME:	720	hrs
AMD OPERATION UPTIME:	100.0	%

STANDARD DEVIATION:	5.7		MONTHLY AVERAGE:	-10.2	°C
---------------------	-----	--	------------------	-------	----

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE

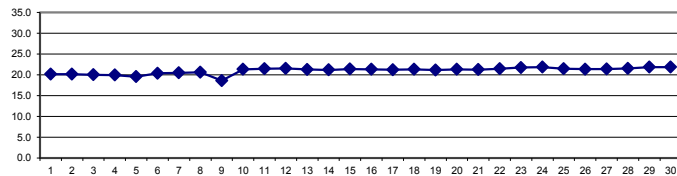
STATION TEMPERATURE Hourly Averages (StnTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	20.2	20.1	20.2	20.2	20.3	20.2	20.0	20.2	20.3	20.2	20.1	20.0	19.9	19.9	20.2	20.0	20.2	20.0	20.3	20.5	20.1	19.9	19.8	20.0	19.8	20.5	20.1	24	
2	20.3	20.4	20.2	20.1	20.1	20.1	20.0	19.8	19.7	19.8	19.8	20.0	20.2	20.2	20.4	19.8	20.2	20.3	20.1	19.9	20.7	20.5	20.4	20.1	19.7	20.7	20.1	24	
3	20.5	20.3	20.3	20.3	20.3	20.4	20.3	20.6	20.7	19.8	19.3	19.6	19.3	19.4	19.2	19.3	20.0	20.4	20.3	20.0	19.7	19.8	20.2	19.6	19.2	20.7	20.0	24	
4	20.2	19.6	20.3	20.0	19.7	20.2	19.7	20.2	20.1	19.7	19.4	19.5	19.7	20.1	19.6	19.9	20.1	20.2	20.2	20.1	20.0	19.9	19.8	19.9	19.4	20.3	19.9	24	
5	20.0	20.1	20.3	20.1	20.2	19.9	20.2	20.0	20.2	19.7	19.7	19.1	19.0	18.9	19.1	18.9	18.9	18.8	19.4	19.3	19.2	19.3	19.4	19.4	18.8	20.3	19.5	24	
6	19.3	19.7	19.8	20.1	19.4	20.3	20.0	19.5	21.2	20.2	19.6	18.2	20.2	20.9	21.6	22.1	22.1	21.3	20.6	19.5	20.6	20.7	20.5	20.9	18.2	22.1	20.3	24	
7	20.6	17.8	20.5	20.6	20.8	20.8	20.7	20.7	19.5	20.7	20.7	20.6	20.8	20.4	20.3	20.3	20.6	20.5	20.7	20.6	20.3	20.7	20.9	20.8	17.8	20.9	20.5	24	
8	20.7	20.5	20.8	20.5	20.8	20.5	20.7	20.9	20.9	20.7	20.6	20.4	20.5	20.7	21.1	21.1	21.3	20.9	20.6	20.7	20.7	20.7	20.9	17.6	17.6	21.3	20.6	24	
9	5.5	1.0	16.6	16.1	18.0	15.8	15.6	19.3	20.1	20.7	20.9	20.9	21.2	21.6	21.7	21.3	21.1	21.1	21.1	21.4	21.3	21.4	21.2	21.3	1.0	21.7	18.6	24	
10	21.3	21.3	21.2	21.2	21.3	21.2	21.1	21.4	21.3	21.3	21.1	20.9	21.1	21.5	21.5	21.6	21.9	21.8	21.5	21.1	21.2	21.3	21.1	21.1	20.9	21.9	21.3	24	
11	21.4	21.0	21.3	21.3	21.3	21.3	21.2	21.2	21.4	21.3	21.0	21.2	21.3	21.6	21.7	21.8	22.0	21.9	21.8	21.7	21.7	21.6	21.5	21.4	21.0	22.0	21.5	24	
12	21.1	21.1	21.3	21.0	21.4	21.0	21.1	21.3	21.3	21.3	21.1	21.0	21.2	21.6	22.0	22.0	22.0	21.9	22.0	22.0	22.0	22.0	22.1	22.0	21.0	22.1	21.5	24	
13	22.0	22.0	21.9	21.6	21.1	21.3	21.3	21.2	21.0	21.3	21.1	21.0	21.1	21.1	21.2	21.1	21.0	21.3	21.2	21.4	21.1	21.2	21.2	21.2	21.0	22.0	21.3	24	
14	21.1	21.1	21.1	21.2	21.2	21.2	21.3	21.3	21.3	21.3	21.0	20.9	21.0	21.1	21.2	21.3	21.3	21.2	21.2	21.1	21.1	21.0	21.4	21.0	20.9	21.4	21.2	24	
15	21.4	21.3	21.1	21.5	21.2	21.3	21.3	21.2	21.2	21.4	21.3	21.2	21.2	21.2	21.3	21.3	21.4	21.4	21.5	21.6	21.6	21.6	21.6	21.6	21.1	21.6	21.4	24	
16	21.3	21.1	21.3	21.3	21.3	21.3	21.3	21.2	21.5	21.4	21.4	21.4	21.3	21.2	21.3	21.2	21.3	21.4	21.4	21.4	21.3	21.3	21.3	21.3	21.1	21.5	21.3	24	
17	21.4	21.3	21.2	21.3	21.3	21.3	21.3	21.3	21.4	21.3	21.2	20.9	20.8	20.8	21.0	21.0	21.0	21.1	21.3	21.1	21.1	21.3	21.2	21.2	20.8	21.4	21.2	24	
18	21.2	21.2	21.2	21.2	21.1	21.0	20.8	20.9	21.0	21.1	21.2	21.5	21.8	21.6	21.7	21.7	21.7	21.8	21.7	21.4	21.2	20.9	21.1	21.0	20.8	21.8	21.3	24	
19	20.8	20.9	21.0	20.9	20.8	21.1	21.1	20.9	20.9	21.0	21.3	21.5	21.8	21.6	21.3	21.2	20.9	21.1	21.1	21.3	21.2	21.3	21.3	21.2	20.8	21.8	21.1	24	
20	21.3	21.3	21.4	21.4	21.4	21.3	21.4	21.4	21.4	21.5	21.3	21.1	21.2	21.0	21.0	21.0	21.1	21.3	21.2	21.3	21.5	21.4	21.3	21.5	21.0	21.5	21.3	24	
21	21.4	21.4	21.4	21.4	21.4	21.4	21.5	21.5	21.3	21.5	21.2	21.1	21.0	20.9	21.1	21.1	21.1	21.1	21.0	21.2	21.2	21.2	21.1	21.0	20.9	21.5	21.2	24	
22	21.2	21.1	21.1	21.2	20.9	20.8	20.8	21.3	21.1	21.0	21.1	21.3	21.8	21.8	21.8	21.8	21.8	21.8	21.9	21.9	21.9	21.8	21.9	21.8	20.8	21.9	21.5	24	
23	21.8	21.8	21.8	21.8	21.8	21.8	21.7	21.8	21.7	21.8	21.7	21.5	21.6	21.7	21.6	21.6	21.6	21.8	21.8	21.9	21.8	21.9	21.8	21.9	21.8	21.5	21.9	21.7	24
24	21.9	21.8	21.9	21.8	21.9	21.8	21.9	22.0	22.1	22.0	21.9	21.8	21.7	21.7	21.6	21.8	21.8	21.9	21.8	21.8	21.9	21.8	21.8	21.8	21.6	22.1	21.8	24	
25	21.8	21.8	21.8	21.8	21.8	21.7	21.7	21.8	21.8	21.9	21.7	21.4	21.2	21.1	21.0	20.9	21.1	21.1	21.3	21.2	21.2	21.2	21.2	21.1	20.9	21.9	21.4	24	
26	21.1	21.2	21.2	21.0	21.3	21.1	21.1	21.2	21.2	21.3	21.3	21.3	21.2	21.2	21.3	21.4	21.4	21.4	21.5	21.5	21.6	21.8	21.9	22.0	21.0	22.0	21.4	24	
27	21.9	21.9	21.8	21.7	21.7	21.6	21.5	21.3	21.2	21.3	21.1	21.2	21.2	21.1	21.3	21.0	21.2	21.2	21.4	21.3	21.3	21.4	21.4	21.4	21.0	21.9	21.4	24	
28	21.3	21.2	21.3	21.3	21.2	21.1	21.4	21.0	20.8	20.9	21.1	21.4	21.9	21.9	21.8	21.8	21.9	21.9	21.9	21.9	21.8	21.8	22.0	21.9	20.8	22.0	21.5	24	
29	21.9	21.9	21.8	21.9	22.0	21.9	21.9	22.0	21.9	21.9	21.9	21.8	21.7	21.6	21.5	21.7	21.7	21.9	21.8	21.8	21.8	21.8	21.9	21.8	21.9	21.5	22.0	21.8	24
30	21.9	21.9	21.9	22.0	21.9	22.0	21.9	22.0	22.0	22.0	21.9	21.7	21.5	21.5	21.6	21.6	21.8	21.9	22.0	21.9	21.9	21.9	22.0	21.9	22.0	21.5	22.0	21.9	24
HOURLY MAX	22.0	22.0	21.9	22.0	22.0	22.0	21.9	22.0	22.1	22.0	21.9	21.8	21.9	21.9	22.0	22.1	22.1	21.9	22.0	22.0	22.0	22.0	22.1	22.0					
HOURLY AVG	20.6	20.3	21.0	20.9	21.0	20.9	20.9	21.0	21.1	21.0	20.9	20.8	21.0	21.0	21.1	21.1	21.2	21.2	21.2	21.2	21.1	21.1	21.2	21.2	21.0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

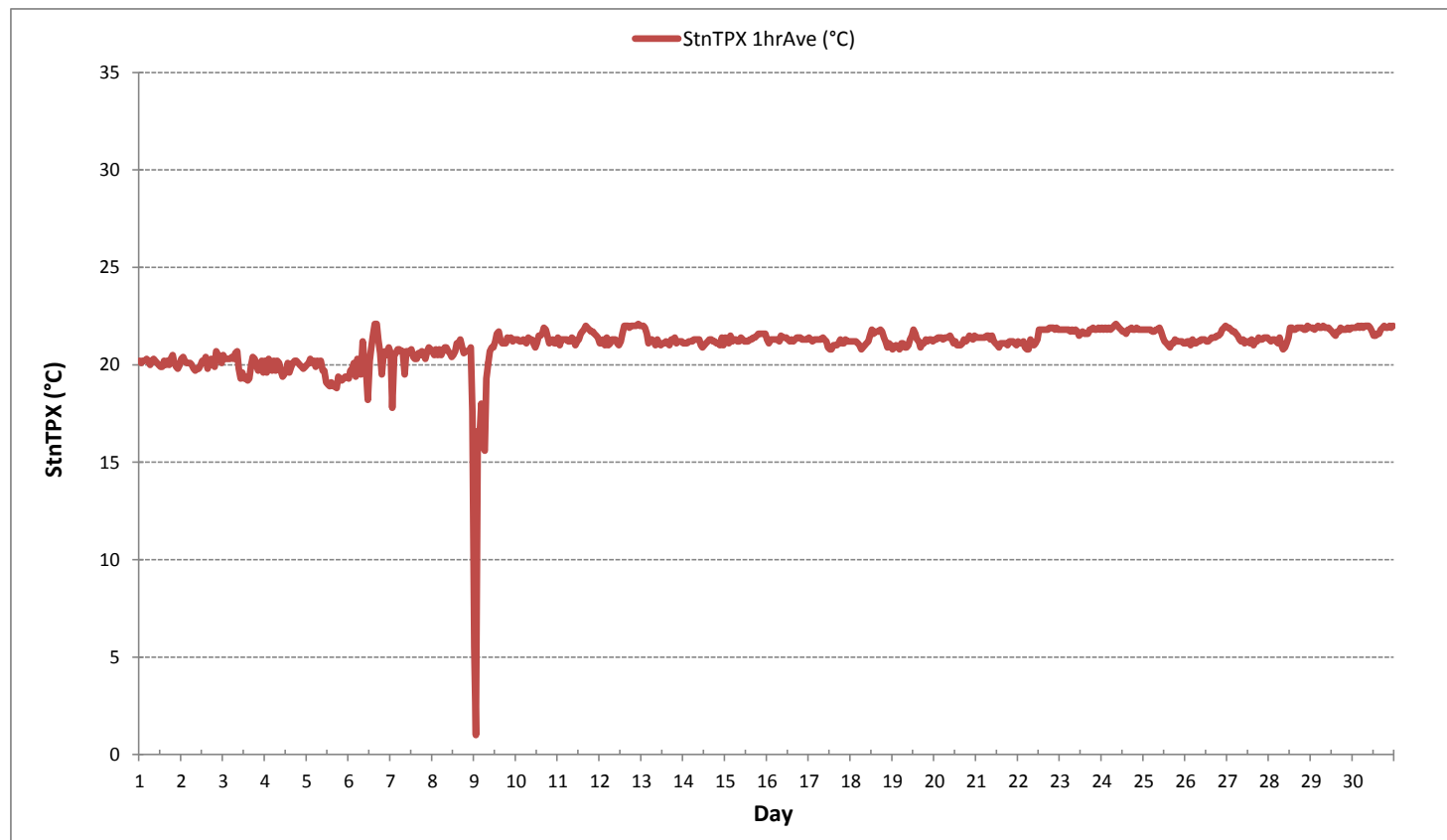
24 HR AVERAGES November 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	1.0	°C	@ HOUR	1	ON DAY	9
MAXIMUM 1-HR AVERAGE:	22.1	°C	@ HOUR	15	ON DAY	6
MAXIMUM 24-HR AVERAGE:	21.9	°C			ON DAY	30
OPERATIONAL TIME:					720	hrs
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	1.2		MONTHLY AVERAGE:		21.0	°C

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100A Sulphur Dioxide Analyzer Calibration

Date: November 6, 2017	Barometer/B.P./units: Brunton 05535 expires December 5, 2017	940	millibars
Company/Airshed: PRAMP	Thermometer/Station Temp: F.S. 160459244 expires May 18, 2018	22	°C
Location/Station Name: Reno	Weather Conditions: Mix of sun and clouds		
Parameter: Sulphur Dioxide	Calibration Purpose: shut down		
Start Time 24 hr. (mst): 10:07	Performed By/Reviewer: Chris Wesson	Tom Bourque	
End Time 24 hr. (mst): 12:44	Cal Gas Expiry Date: December 8, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable):	n/a	

Analyzer:	
ID# or Serial Number: 841	Range ppb: 500
Last Calibration Date: October 5, 2017	As Found C.F.: 0.975
Previous C.F.: 1.000	New C.F.: n/a

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender 530+ Low #156151, Expiry 02-Oct-2018 High Flow Meter ID/Expiry Date: Defender 530+ High #156312, Expiry 02-Oct-2018 Calibrator ID/Expiry Date: Sabio id# 17100415 expires May 16, 2018 Cal Gas Cylinder I.D. #: EY0000597 Cal Gas Conc. (ppm): 50.4	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</td><td>180</td></tr> <tr><td>Low</td><td>90</td></tr> </table>	Point	ppb	High	380	Mid	180	Low	90
Point	ppb								
High	380								
Mid	180								
Low	90								

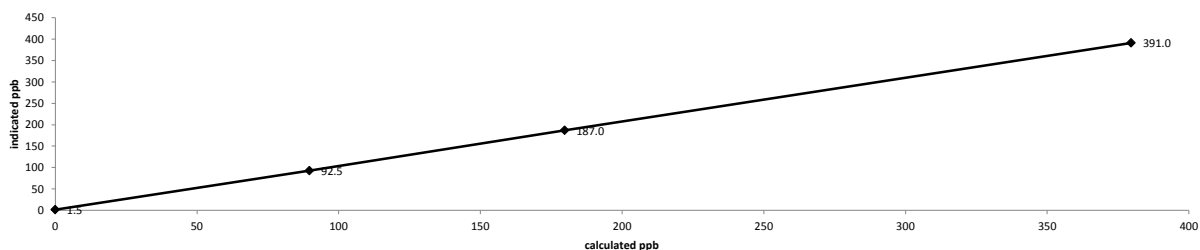
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	6005	0.00	6005	0.0	1.5	n/a
as found high	5957	45.21	6002	379.6	391.0	0.975
mid	5991	21.44	6012	179.8	187.0	0.969
low	5999	10.70	6010	89.7	92.5	0.986
Average C.F. =						0.976

Linear Regression/Calibration Results:

	LIMITS
Correlation Coefficient = 1.000	> or = 0.995
Slope = 0.974	0.90-1.10
b (Intercept as % of full scale) = -0.26%	± 3% F.S.
% change in C.F. from last cal = 2.53%	± 10%

API 100A Sulphur Dioxide Analyzer Calibration



As found:	As left:
Slope: 0.980	Slope: n/a
Offset: 49.7	Offset: n/a
Hvps: 763	Hvps: n/a
Dcps: 2560	Dcps: n/a
Rcell Temp: 49.6	Rcell Temp: n/a
Box Temp: 32.5	Box Temp: n/a
Pmt Temp: 7.0	Pmt Temp: n/a
Izs Temp: 45.2	Izs Temp: n/a
Pres: 25.0	Pres: n/a
Samp Fl: 682	Samp Fl: n/a
Pmt: 60.6	Pmt: n/a
Uv Lamp: 1747	Uv Lamp: n/a
Lamp Ratio: 78.7	Lamp Ratio: n/a
Expected Value: 328.5	Expected Value: n/a

Comments:

The manifold blower was found to be working normally.

Shut-down due to changes in lamp performance

Flow measurements after mid - point



API 100A Sulphur Dioxide Analyzer Calibration

Date:	November 6, 2017	Barometer/B.P./units:	Brunton 05535 expires December 5, 2017	940	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160459244 expires May 18, 2018	21	°C
Location/Station Name:	Reno	Weather Conditions:	Mix of sun and clouds		
Parameter:	Sulphur Dioxide	Calibration Purpose:	post repair		
Start Time 24 hr. (mst):	13:14	Performed By/Reviewer:	Chris Wesson	Tom Bourque	
End Time 24 hr. (mst):	16:39	Cal Gas Expiry Date:	December 8, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		

Analyzer:	ID# or Serial Number:	841	Range ppb:	500
	Last Calibration Date:	October 5, 2017	As Found C.F.:	n/a
	Previous C.F.:	n/a	New C.F.:	1.001

Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: Defender 530+ Low #156151, Expiry 02-Oct-2018	<table><tr><td>Point</td><td>ppb</td></tr><tr><td>High</td><td>380</td></tr><tr><td>Mid</td><td>180</td></tr><tr><td>Low</td><td>90</td></tr></table>	Point	ppb	High	380	Mid	180	Low	90
Point	ppb								
High	380								
Mid	180								
Low	90								
High Flow Meter ID/Expiry Date: Defender 530+ High #156312, Expiry 02-Oct-2018									
Calibrator ID/Expiry Date: Sabio id# 17100415 expires May 16, 2018									
Cal Gas Cylinder I.D. #: EY0000597									
Cal Gas Conc. (ppm): 50.4									

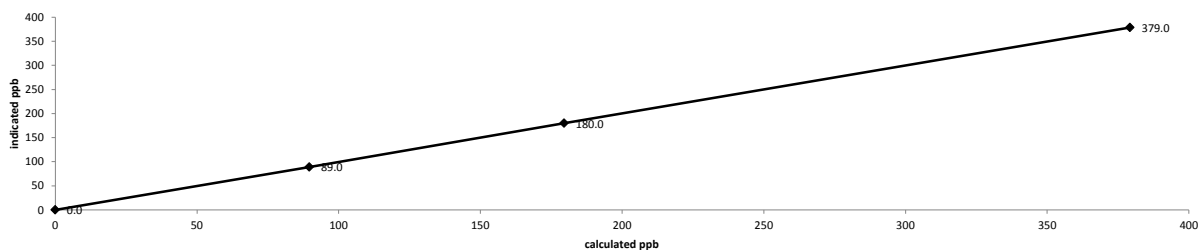
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
adjusted zero	6005	0.00	6005	0.0	0.0	n/a
adjusted high	5961	45.19	6006	379.2	379.0	1.001
mid	5997	21.44	6018	179.6	180.0	0.998
low	6010	10.71	6021	89.7	89.0	1.007
calibrator zero	6005	0.00	6005	0.0	-0.1	n/a
Average C.F. =						1.002

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS
Slope =	1.000	> or = 0.995
b (Intercept as % of full scale) =	0.02%	0.95-1.05
% change in C.F. from last cal =	n/a	± 3% F.S.
		n/a

API 100A Sulphur Dioxide Analyzer Calibration



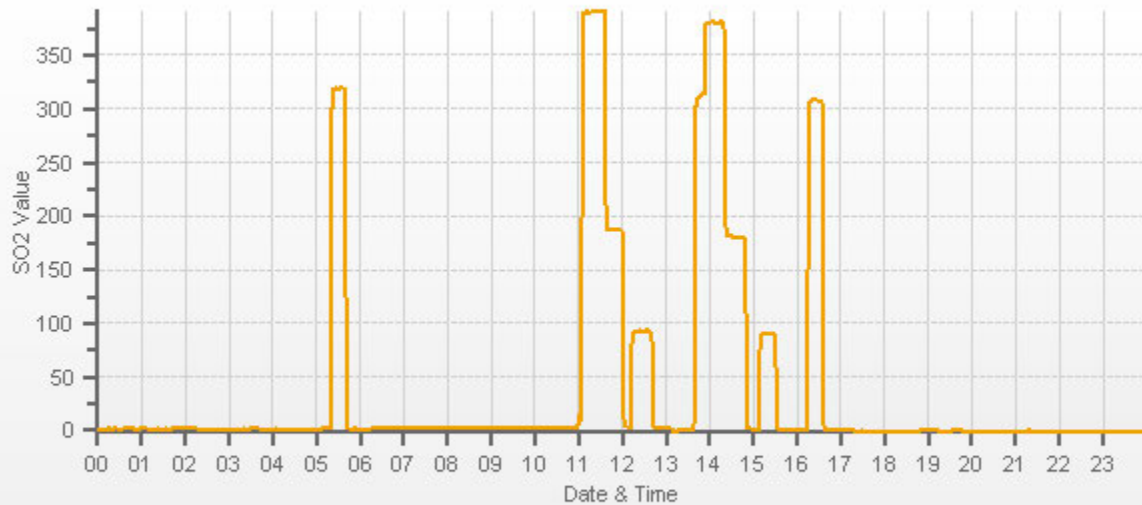
As found:	As left:
Slope: 0.980	Slope: 1.167
Offset: 49.7	Offset: 42.0
Hvps: 763	Hvps: 763
Dcps: 2561	Dcps: 2561
Rcell Temp: 49.4	Rcell Temp: 50.0
Box Temp: 29.1	Box Temp: 31.3
Pmt Temp: 7.2	Pmt Temp: 7.0
Izs Temp: 45.0	Izs Temp: 45.0
Pres: 25.0	Pres: 25.0
Samp Fl: 687	Samp Fl: 684
Pmt: 60.2	Pmt: 59.5
Uv Lamp: 1887	Uv Lamp: 1890
Lamp Ratio: 100.6	Lamp Ratio: 101.0
Expected Value: 328.5	Expected Value: 307.0

Comments: The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

The Analyzer #841 was shutdown to undergo lamp peaking and a ratio reset. A post-repair calibration was conducted after the maintenance event.

Flow measurements after mid-point

SO2[ppb] Station: PRAMP_RENO Daily: 17/11/06 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

TOTAL REDUCED SULPHUR



Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration

Date:	November 6, 2017	Barometer/B.P./units:	Brunton 05535 expires December 5, 2017	940	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160459244 expires May 18, 2018	22	°C
Location/Station Name:	Reno	Weather Conditions:	Mix of sun and clouds		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	10:07	Performed By/Reviewer:	Chris Wesson	Tom Bourque	
End Time 24 hr. (mst):	15:17	Cal Gas Expiry Date:	May 16, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CD Nova CDN-101 #534		

Analyzer:	ID# or Serial Number:	1162460022	Range ppb:	100
	Last Calibration Date:	October 6, 2017	As Found C.F.:	0.958
	Previous C.F.:	1.000	New C.F.:	1.001

Calibration Standards:	Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date: Defender 530+ Low #156151, Expiry 02-Oct-2018	Point	Start/End Time 24 hr.: 11:12 / 11:22
High Flow Meter ID/Expiry Date: Defender 530+ High #156312, Expiry 02-Oct-2018	High	SO2 Analyzer Range: 500
Calibrator ID/Expiry Date: API id# 830 expires February 14, 2018	Mid	Target Concentration (ppb): 380
Cal Gas Cylinder I.D. #: LL119420	Low	As Found Zero: 0.0
Cal Gas Conc. (ppm): 10.2		Analyzer Response: (ppb): 0.0
		Zero Corrected Result (ppb): 0.0

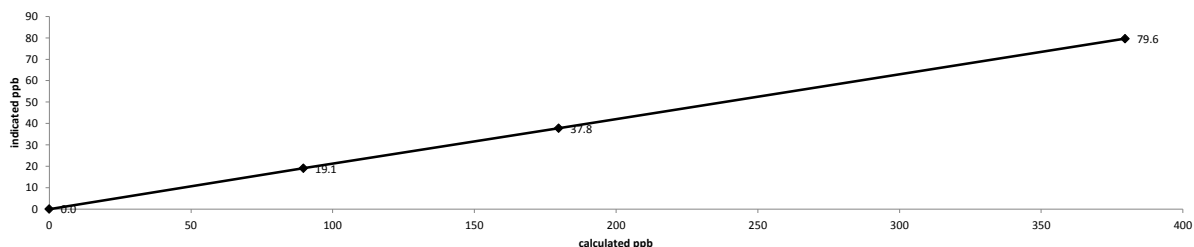
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7513	0.00	7513	0.0	0.1	n/a
as found high	7458	58.70	7517	79.6	83.2	0.958
adjusted zero	7513	0.00	7513	0.0	0.0	n/a
adjusted high	7458	58.70	7517	79.6	79.6	1.001
mid	7485	27.86	7513	37.8	37.8	1.001
low	7492	14.16	7506	19.2	19.1	1.007
calibrator zero	7513	0.00	7513	0.0	0.2	n/a
Average C.F. =						1.003

Linear Regression/Calibration Results:

		LIMITS
Correlation Coefficient =	1.000	> or = 0.995
Slope =	1.000	0.95-1.05
b (Intercept as % of full scale) =	0.05%	± 3% F.S.
% change in C.F. from last cal =	4.15%	± 10%

Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration



As found:		As left:	
Bkg:	2.11	Bkg:	2.09
Coef:	0.990	Coef:	0.947
Pmt:	-706.3	Pmt:	-706.7
Flash:	1001	Flash:	1001
Internal:	32.8	Internal:	31.1
Chamber:	45.0	Chamber:	44.9
Perm Oven Gas:	35.00	Perm Oven Gas:	35.00
Perm Oven Heater:	34.15	Perm Oven Heater:	34.13
Pressure:	639.8	Pressure:	640.1
Sample Flow:	0.413	Sample Flow:	0.412
Lamp Intensity:	83	Lamp Intensity:	84
Converter:	825	Converter:	825
Converter Set:	825	Converter Set:	825
Averaging Time:	120	Averaging Time:	120
Expected Value:	77.0	Expected Value:	71.0

Comments:

The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

There was a gas flow interruption error to the Analyzer 1162460022 during the "As-Found High" measurement at 11:58. The "As-Found High" measurement restarts at 12:06.

Flow measurements after mid -point

TRS[ppb] Station: PRAMP_RENO Daily: 17/11/06 Type: AVG 1 Min. [1 Min.]



— TRS[ppb]

TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	November 6, 2017	Barometer/B.P./units:	Brunton 05535 expires December 5, 2017	940	millibars
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160459244 expires May 18, 2018	21	°C
Location/Station Name:	Reno	Weather Conditions:	A few clouds		
Parameter:	CH ₄ / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	14:31 / 19:30	Performed By/Reviewer:	Chris Wesson	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	ID# or Serial Number:	1314057759	Correction Factors:			
	Measured Flow:	1.3 L/min	Previous C.F.:	As Found C.F.:	New C.F.:	
	Last Calibration Date:	October 5, 2017	CH ₄ =	1.000	1.005	1.003
	Range ppm:	20 CH ₄ /20 NMHC/40 THC	NMHC =	1.000	0.984	1.002
			THC =	1.000	0.994	1.003

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date:	Defender 530+ Low #156151, Expiry 02-Oct-2018	Point	CH ₄	NMHC	THC
High Flow Meter ID/Expiry Date:	Defender 530+ High #156312, Expiry 02-Oct-2018	High	13.00	13.00	26.00
Calibrator ID/Expiry Date:	Sabio id# 17100415 expires May 16, 2018	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL86139	Low	3.00	3.00	6.00
CH ₄ Cylinder Conc.:	599.0				
	211.0				
	580.3				
CH ₄ expressed as C ₃ H ₈ =	1179.3				

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015												
Calibrator Flow Rates (cc/min)				Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
Point	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	2506	0.00	2506	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a
as found high	2465	62.57	2528	14.83	14.36	29.19	14.75	14.60	29.36	1.005	0.984	0.994
adjusted zero	2506	0.00	2506	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a
adjusted high	2442	60.57	2503	14.49	14.04	28.54	14.45	14.01	28.47	1.003	1.002	1.003
mid	2465	30.37	2495	7.29	7.06	14.35	7.28	7.06	14.35	1.001	1.000	1.001
low	2480	15.67	2496	3.76	3.64	7.40	3.77	3.65	7.43	0.997	0.998	0.998
calibrator zero	2506	0.00	2506	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a
Average C.F. =										1.001	1.000	1.000

Linear Regression/Calibration Results:			
Correlation Coefficient =	1.000	1.000	1.000
Slope =	0.996	0.998	0.997
b (Intercept as % of full scale) =	0.05%	0.04%	0.07%
% change in C.F. from last cal =	-0.52%	1.63%	0.55%
LIMITS			
> or = 0.995			
0.95-1.05			
± 3% F.S.			
± 10%			

As Left Instrument Diagnostics:						
Interface Board Voltages:	Bias Supply:	-289.3	Calibration History cnt'd:	NM Peak Area:	88712	
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a	
	Filter:	175.0		Methane End:	n/a	
	Column Oven:	75.0		Backflush:	n/a	
	Internal:	31.8		NMHV Start:	n/a	
Cylinder Pressures/reg.:	Carrier:	1600	40	NMHC End:	n/a	
	Fuel:	2000	50	Date:	06Nov2017	
	Span Gas:	1150	20	Time:	18:13	
	Zero Air Generator:	50		CH ₄ PK HT:	0	
Internal Pressures:	Carrier:	31.3		CH ₄ RT:	8.0	
	Fuel:	41.6		CH ₄ Baseline:	2049	
	Air:	25.9		CH ₄ LOD:	83	
FID Status:	Status:	LIT		CH ₄ SD:	27	
	Counts:	24948		CH ₄ CONC:	0.00	
	Flame:	405.0		NM PK HT:	0	
	Det Base:	175.1		NM Peak Area:	0	
Flame and Power Stats:	Last Power On:	05Oct2017@14:16		NM CONC:	0.00	
	Flameouts:	3		NM Base Start:	2024	
	Det Oven at Start:	133.5		NM Base End:	2019	
	Col Oven at Start:	74.5		NM LOD:	9	
Calibration History:	Time:	06Nov2017@16:55		NM Start IDX:	39	
	Type:	Span		NM End IDX:	67	
	Status:	Good		NM Max Slope:	3.5e-0.1	
	Check/Adjust:	Adjust		NM Min Slope:	-7.1e-01	
	CH ₄ Span Conc:	14.49		NM PT Count:	0	
	CH ₄ SP Ratio:	0.000769		Expected Values:	Previous CH ₄ :	9.42
	CH ₄ RT:	11.6			Previous NMHC:	9.98
	CH ₄ PK IDX:	18			Previous THC:	19.44
	CH ₄ PK HT:	18844			New CH ₄ :	9.62
	NM Span Conc:	14.04			New NMHC:	9.95
	NM SP Ratio:	0.00158			New THC:	19.60

Comments:

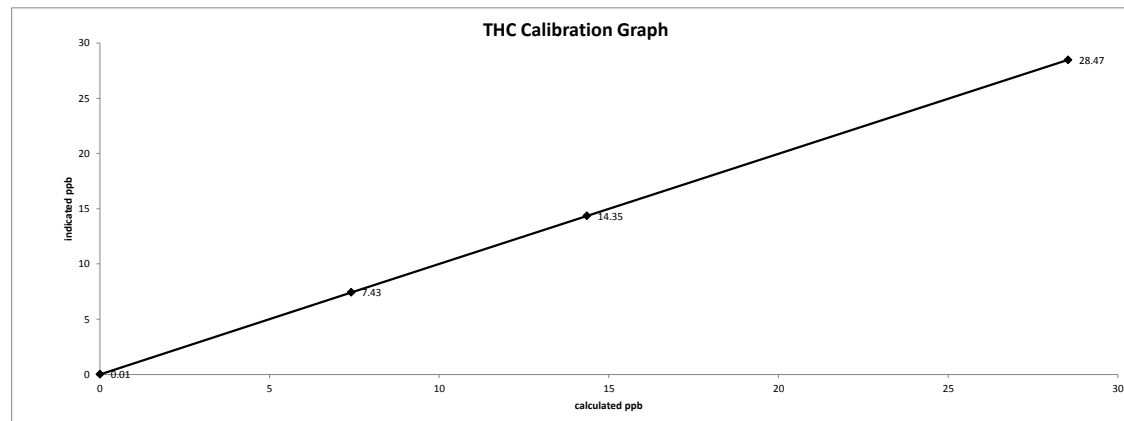
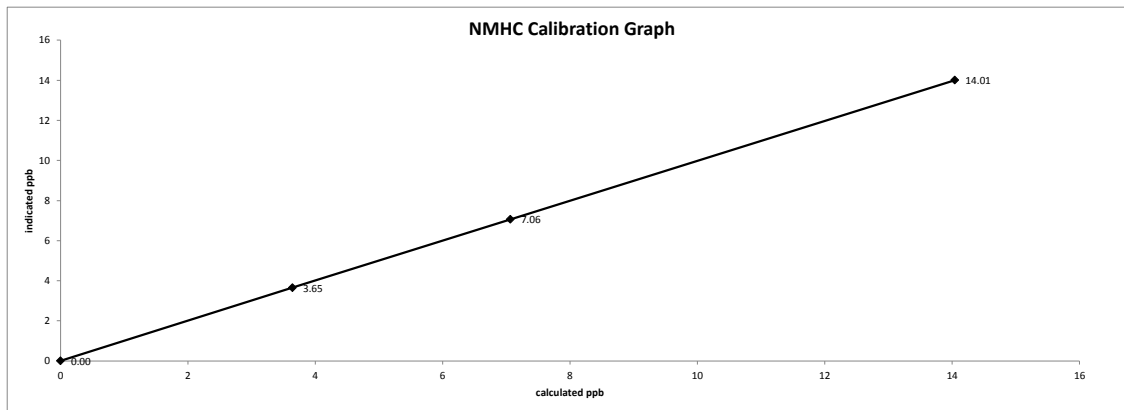
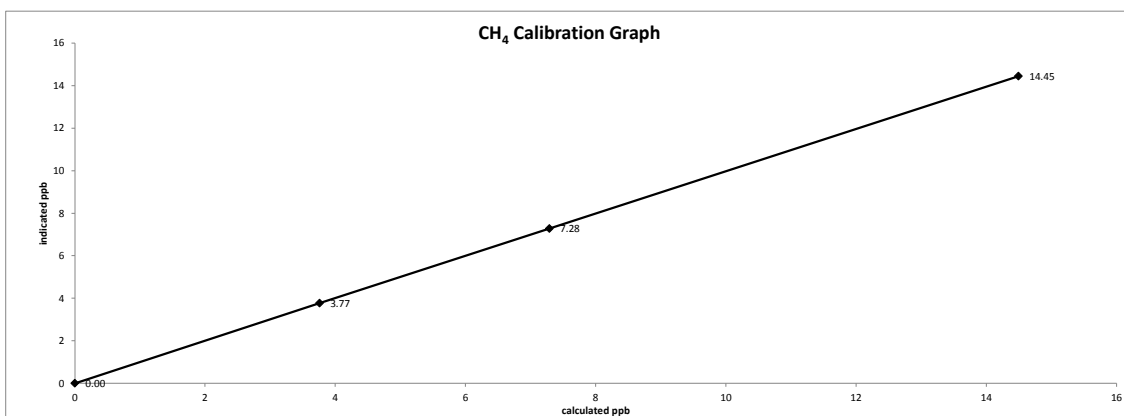
The manifold blower was found to be working normally.

The "As-Found Zero and "As-Found High" were successfully performed with calibrator API700#830. Calibrator exhibited some noise during adjustments; adjusted high point was restarted with an alternate calibrator (Sabio #17100415) at 17:01, as a precaution.

Flow measurements after mid - point

Date: November 6, 2017
Company/Airshed: PRAMP
Location/Station Name: Reno

Start/End Time 24 hr. (mst): 14:31 / 19:30
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



Station: PRAMP_RENO Periodically: 2017/11/06 07:00-2017/11/07 03:00 Type: AVG 1 Min. [1 Min.]



— CH4[ppm]

— NMHC[ppm]

WIND SYSTEM



Meteorological Sensor Audit/Calibration

Location Information

Company: PRAMP
Audit Location: Reno
Audit Date: April 6, 2017

Performed By: Limin Li
Reviewed By: Trina Whitsitt
Start /EndTime (mst): 15:20/16:50

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 #:	149769	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	February 16, 2017	Direction Unit Output Range:	0-360 degrees

Wind Calibrator Information

Calibrator Make/ Model: RM Young 18802
Maxxam Unit ID #: 13-3357
Serial #: CA 0309
Certification Date: October 6, 2016

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	0.999
2000	36.9	36.8	36.8	1.003
3000	55.3	55.1	55.1	1.003
4000	73.7	73.5	73.5	1.002
5000	92.2	92.0	92.0	1.003
6000	110.6	110.4	110.4	1.002
7000	129.0	128.9	128.9	1.001
8000	147.4	147.3	147.3	1.001
9000	165.9	165.9	165.9	1.000
10000	184.3	184.4	184.4	0.999
The audit meets AMD requirements.			Average Correction Factor=	1.001

Wind Direction Audit Data ****+/- 5° 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	353	0.2	1.7	0.9
30	330	30	328	0.4	2.1	1.3
60	300	61	299	-0.8	1.2	1.0
90	270	91	269	-1.1	0.9	1.0
120	240	121	240	-1.3	0.2	0.7
150	210	151	211	-1.2	-0.7	0.9
180	180	181	181	-1.3	-1.2	1.3
210	150	211	151	-0.7	-1.4	1.1
240	120	240	121	0.0	-1.4	0.7
270	90	270	91	0.5	-1.1	0.8
300	60	299	61	1.3	-0.9	1.1
330	30	328	30	2.2	0.3	1.3
355	0	353	0	1.7	0.2	0.9
The audit meets AMD requirements.			Average Absolute Degrees Difference=			1.0

Comments: Wind speed gain adjusted before calibration.

CALIBRATORS

Company Maxxam **Operator:** Micheal Espiritu

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>Mesa Defender 530</u>		
Serial Number	<u>17100415</u>			Serial Number	<u>L-152019 H-148944</u>		
Last Verification Date	<u>May 2016</u>			Temperature (°C)	<u>25.0 C</u>		
NO Cylinder S/N	<u>EY0000597</u>			Barometric Pressure	<u>697 mmhg</u>		
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)
 Pt. #1 5000 Pt. #2 5000 Pt. #3 5000
Gas Flow (sccm)
 Pt. #1 80 Pt. #2 40 Pt. #3 20

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4996	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5029	80.3	0.784	0.783	0.808	-0.013	0.794	3%	1%
5054	38.8	0.376	0.376	0.392	-0.006	0.386	4%	3%
5051	19.5	0.189	0.189	0.196	-0.003	0.193	4%	2%
Absolute Average Percent Difference							4%	2%

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)=	1.0311	0.90-1.10		m (Slope)=	1.0140
b (Intercept % of FS)=	0.1350	± 3% F.S.		b (Intercept % of FS)=	0.1531

Flow	O ₂ Conc (LC)	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
5029	0.000	0.000	0.803	-0.013	0.790	NO ₂	% Diff. Limit
5029	1.508	0.568	0.235	0.552	0.787	-1%	± 10%
5029	0.882	0.312	0.491	0.298	0.789	0%	± 10%
5029	0.390	0.108	0.695	0.095	0.789	0%	± 10%
Absolute Average Percent Difference						0%	± 10%

LINEAR REGRESSION ANALYSIS

y=mx+b (where x=calculated concentration, y=indicated concentration)

NO₂		LIMITS	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9945	0.90-1.10	
b (Intercept % of FS)=	-1.2646	± 3% F.S.	

AENV Standards		NOx Analyzer	
Audit Calibrator		Make/Model	<u>Teco 42i</u>
Make/Model	<u>Teco 146i</u>	Serial/AMU Number	<u>AMU 1868</u>
Serial/AMU Number	<u>AMU 1809</u>	Last Calibration Date	<u>May 16, 2017</u>
SRM Gas Cylinder No.	<u>CAL018101</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Cylinder Gas Expiry Date	<u>March 2019</u>

COMMENTS: Contains 50.4 ppm SO₂.

Auditor: Al Clark
 Operator Signature: *[Signature]*

Date: May 16, 2017
 Location: McIntyre Center Edmonton

Company: Maxxam

Operator: Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Bios Defender 530+</u>
Serial Number	<u>830</u>	Serial Number	<u>Hi148944 Lo 152019</u>
Last Verification Date	<u>January 19, 2016</u>	Temperature (°C)	<u>24.6</u>
SO ₂ Cylinder Conc.	<u>50.5</u>	Barometric Pressure	<u>701.4mmHg</u>
SO ₂ Cylinder S/N	<u>EY0000769</u>		
Expiry Date	<u>December 8, 2019</u>		

Flow Measurements

Pt. No. 1 78.0 Pt. No. 2 37.7 Pt. No. 3 18.6

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
4978	0.0000	0.0000		
4974	0.7920	0.7912	0%	± 10%
4978	0.3825	0.3825	0%	± 10%
4975	0.1900	0.1908	0%	± 10%
Absolute Average Percent Difference			0%	± 10%

LINEAR REGRESSION ANALYSIS

$y=mx+b$ (where x =calculated concentration, y =indicated concentration)

SO₂ **LIMITS**

Correlation= 1.0000 **≥ 0.995**

m (Slope)= 0.9986 **0.90-1.10**

b (Intercept % of FS)= 0.0477 **± 3% F.S.**

AENV Standards

Audit Calibrator

Make/Model R&R MFC 201

Serial/AMU Number 1690

SO₂

SRM Gas Cylinder No. CAL016625

Cylinder Conc. (ppm) 98.07

SO₂ Analyzer

Make/Model Themro 43i

Serial/AMU Number 1623

Last Calibration Date January 31, 2017

Full Scale (ppm) 1.0

Expiry Date January 5, 2019

COMMENTS: Analyzer verified prior to audit

Auditor: Shea Beaton

Date: February 14, 2017

Operator Signature: [Signature]

Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-438CGA

Company: Maxxam Operator's Name: Chris
Cylinder #: EY0000597 Concentration PPM: 50.4 Tolerance(%) 1.0 Certified By: Praxair
Expiry Date: December 8, 2019

Reference Calibrator and Gas:

Make/Model: Thermo 146i
Serial Number: AMU 1809
Last Verification Date: January 26, 2017
Gas Type: SO2 Conc. 98.07
Cylinder Number: CAL016625
Expiry Date: January 5, 2019

Flow Measurement Device:

Make/Model: Bios Befiner 220
Serial Number: AMU1941
Temp. °C: 24.4
B.P. 704.7

Reference Analyzer:

Make/Model: Themro 43C Serial/AMU Number: AMU 1623
Instrument Settings: Zero: 9.5 Span: 1.023 Range: 1.0
Last Calibration: Date: 25-Jan-17 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
4923	0.0	0.000			
4916	80.7	0.834	0.01642	60.917	50.8
4902	40.3	0.416	0.00822	121.638	50.6
4916	19.9	0.206	0.00405	247.035	50.9
Average Cylinder Concentration:					50.7

Previous Stated Concentration PPM: 50.4

Percent variance from Stated: 0.7

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: Shea Beaton
Operator Signature: _____

Date: January 26, 2017
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-135CGA

Company: Maxxam Operator's Name: Raja Abid Ashraf
Cylinder #: LL119420 Concentration PPM: 10.2 Tolerance(%) 2 Certified By: Praxair
Expiry Date: May 16, 2020

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: July 27, 2017
Gas Type: H2S Conc. 20.43
Cylinder Number: CAL015272
Expiry Date: January 2019

Flow Measurement Device:

Make/Model: Mesa Definer 220
Serial Number: H-133034 L-132702
Temp. °C: 22.0 C
B.P. 700 mmhg

Reference Analyzer:

Make/Model: Teco 450i Serial/AMU Number: 1980
Instrument Settings: Zero: 21.9 Span: 1.069 Range: 0.1
Last Calibration: Date: July 27, 2017 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	0.0020	~~0.00760~~	~~131.542~~	~~10.0~~
5117	38.9	0.0781	0.00760	131.542	10.0
5103	18.4	0.0379	0.00361	277.337	10.5
5097	9.4	0.0198	0.00184	542.234	10.7
Average Cylinder Concentration:					10.4

Previous Stated Concentration PPM: 10.2

Percent variance from Stated: 2

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: *Al Clark*

Date: July 27, 2017
Location: McIntyre Center Edmonton



Calibration Gas Audit

CH₄ / C₃H₈ Cylinder Gas

File No. 2015-091CGA

Company: Maxxam Operators name: Chris Wesson
Cylinder #: LL86139 Conc CH₄ (PPM) 599/211 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

Make/Model R&R MFC 201
Serial Number AMU 1698
Last Verification Date January 18, 2016
Gas Type CH₄ Conc. 999.2
Cylinder Number D751932
Gas Type C₃H₈ Conc. 246.5
Cylinder Number XF0037998

Flow Measurement Device:

Make/Model Bios DC-2
Serial Number Bios D
Temp. °C 23
B.P. 599mmHg

Reference Analyzer:

Make/Model Thermo 55C Serial/AMU Number: 1643
Instrument Settings Zero: NA Span: NA Range: 20.0
Last Calibration: Date: 18-Jan-16 C.F. 1.000 Done By: SB

Calibrator Flows (scm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH ₄	C ₃ H ₈			CH ₄	C ₃ H ₈
2583	0.00	0.00	0.00				
2635	56.52	12.80	12.59	0.02145	46.621	597	213
2592	19.72	4.54	4.49	0.00761	131.440	597	215
2584	9.69	2.25	2.24	0.00375	266.667	600	217
Average Cylinder Concentration:						598	215

	<u>CH₄</u>	<u>C₃H₈</u>
Previous Stated Concentration PPM:	<u>599</u>	<u>211</u>
Percent variance from Stated:	<u>0.2</u>	<u>1.9</u>

Cylinder gas tolerances based on CH₄ only

Meets Manufacturer Tolerance. Use manufacturers stated concentration ☒

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration ☐

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder ☐

COMMENTS: C₃H₈ manufacturers tolerance 1.1%

Auditor: Shea Beaton
Operator Signature: [Signature]

Date: January 19, 2016
Location: McIntyre Center Edmonton

APPENDIX III
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Peace River Area Monitoring Program Committee	Reno Station
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
☐ Yes ☒ No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
NA	NA
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
NA	NA

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

Signature of the Representative of the Person
Responsible / External Person Certifying the Report

December 20, 2017

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client: Peace River Area Monitoring Program Committee

Project #: 196-2017-11-93-C

Site: Reno Station

Contact: Karla Reesor

Level 0 Preliminary Verification

CSA Smba

Date December 06, 2017

Level 1 Primary Validation

CSA Smba

Date December 06, 2017

Level 2 Final Validation

CSA Smba

Date December 20, 2017

Level 3 Independent Data Review

Cheri Sinclair

Date December 20, 2017

Post-Final Validation

NA

Date NA

Notes

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.