



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
THREE CREEKS 986B STATION

JOB #: 8449-2017-07-67-C

July 2017

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: **August 21, 2017**

Prepared by: *Maram Ghaleb*

Maram Ghaleb, B.Sc.
Project Manager, Customer Service, Air Services

Reviewed by: *Wunmi Adekanmbi*

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

SUMMARY

In July 2017, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Three Creeks 986b Station, near Peace River Oil Sands Area 2, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for compliance parameters, as requested by the PRAMP Committee.

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement.

Non-Conformance: The AMD-required internal zero/span check was not executed on July 1, due to a change in the automated zero/span schedule from a 23-hr to 24-hr interval. The daily zero reponse data of June 30 was applied for baseline correction on data collected from July 1, hour 00:00 to July 2, hour 04:00. As both span responses recorded on June 30 and July 2 met AMD requirements, and the analyzers were operating within optimal specifications, no data was discarded. The non-conformance was reported to AEP. Reference number: 328686

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, Three Creeks 986b Station.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3678 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Peace River Area Monitoring Program Committee						MAXIMUM VALUES							OPERATIONAL TIME (%)
Three Creeks 986b 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	2	12	11	3.9	SSW	1	18	100.0
TRS (ppb)	-	-	-	-	0.39	2	13	4	1.5	ESE	1	27	100.0
THC (ppm)	-	-	-	-	1.92	2.50	26	22	1.2	ESE	2.04	25	100.0
CH ₄ (ppm)	-	-	-	-	1.92	2.50	26	22	1.2	ESE	2.04	25	100.0
NMHC (ppm)	-	-	-	-	0.00	0.09	15	1	3.0	ESE	0.01	27	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	67	99	14	6	1.3	S	89	13	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	943	956	31	23	12.1	WNW	953	31	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	17.1	30.1	7	16	5.2	E	21.5	7	100.0
STATION TEMPERATURE (°C)	-	-	-	-	21.0	22.4	8	19	5.1	S	21.5	15	100.0
VECTOR WS (kph)	-	-	-	-	2.5	17.5	17	11	-	NW	8.4	4	100.0
VECTOR WD (sec)	-	-	-	-	239 (WSW)	-	-	-	-	-	-	-	100.0

SOUR GAS PROCESSING INDUSTRY
MONTHLY REPORT SUMMARY

Three Creeks 986b Station

Peace River Area Monitoring Program Committee

Plant Name / Location

Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2017	July

CONTINUOUS AMBIENT MONITORING						
PARAMETER	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE	
		MAXIMUM VALUES		NO. READINGS > REGULATION	MAXIMUM VALUES	NO. READINGS > REGULATION
SO ₂	100.0	0.002 ppm		0	0.001 ppm	0
TRS	100.0	0.002 ppm		-	0.001 ppm	-
THC	100.0	2.50 ppm		-	2.04 ppm	-
CH ₄	100.0	2.50 ppm		-	2.04 ppm	-
NMHC	100.0	0.09 ppm		-	0.01 ppm	-
RH	100.0	99 %		-	89 %	-
BP	100.0	956 mb		-	953 mb	-
Ambient TPX	100.0	30.1 °C		-	21.5 °C	-
Station TPX	100.0	22.4 °C		-	21.5 °C	-
Wind Speed	100.0	18 kph		-	8 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	80
Total Hydrocarbon	83
Wind System	87
Calibrators	89

	Calibration Gases	92
Appendix III	Report Certification Form	96
Appendix IV	Data Validation Certification Form	98

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).

Sample filters for all continuous air monitors are changed 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 100%.
- The routine monthly calibration was performed on July 18. Adjustments may appear larger in the maximum instantaneous data collected following the calibration, this is because baseline zero correction was not applied to instantaneous data.
- Thirteen instances of maximum instantaneous data were discarded this month due to brief power outages.

TOTAL REDUCED SULPHUR (TRS)

- Operational time, for the monitoring period, was 100%.
- The routine monthly calibration was performed on July 18.
- Thirteen instances of maximum instantaneous data were discarded this month due to brief power outages.

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

- Operational time, for the monitoring period, was 100%.
- The routine monthly calibration was performed on July 18.
- Thirteen instances of maximum instantaneous data were discarded this month due to brief power outages.
- 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.

WIND SPEED (WS) and WIND DIRECTION (WD)

- Operational time, for the monitoring period, was 100%.
- Fourteen instances of maximum instantaneous data were discarded this month due to brief power outages.
- Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing from and is measured in degrees from true north.

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%.

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

The AMD-required internal zero/span check was not executed on July 1, due to a change in the automated zero/span schedule from a 23-hr to 24-hr interval. The daily zero reponse data of June 30 was applied for baseline correction on data collected from July 1, hour 00:00 to July 2, hour 04:00. As both span responses recorded on June 30 and July 2 met AMD requirements, and the analyzers were operating within optimal specifications, no data was discarded. The non-conformance was reported to AEP. Reference number: 328686

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement.

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 - Thermo 43C UV Fluorescent Analyzer

Total Reduced Sulphur - Thermo 43i UV Fluorescent Analyzer

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

Wind System - RM Young Unit

Relative Humidity - Campbell Scientific Unit

Barometric Pressure - Met One Unit

Ambient Temperature - Campbell Scientific 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

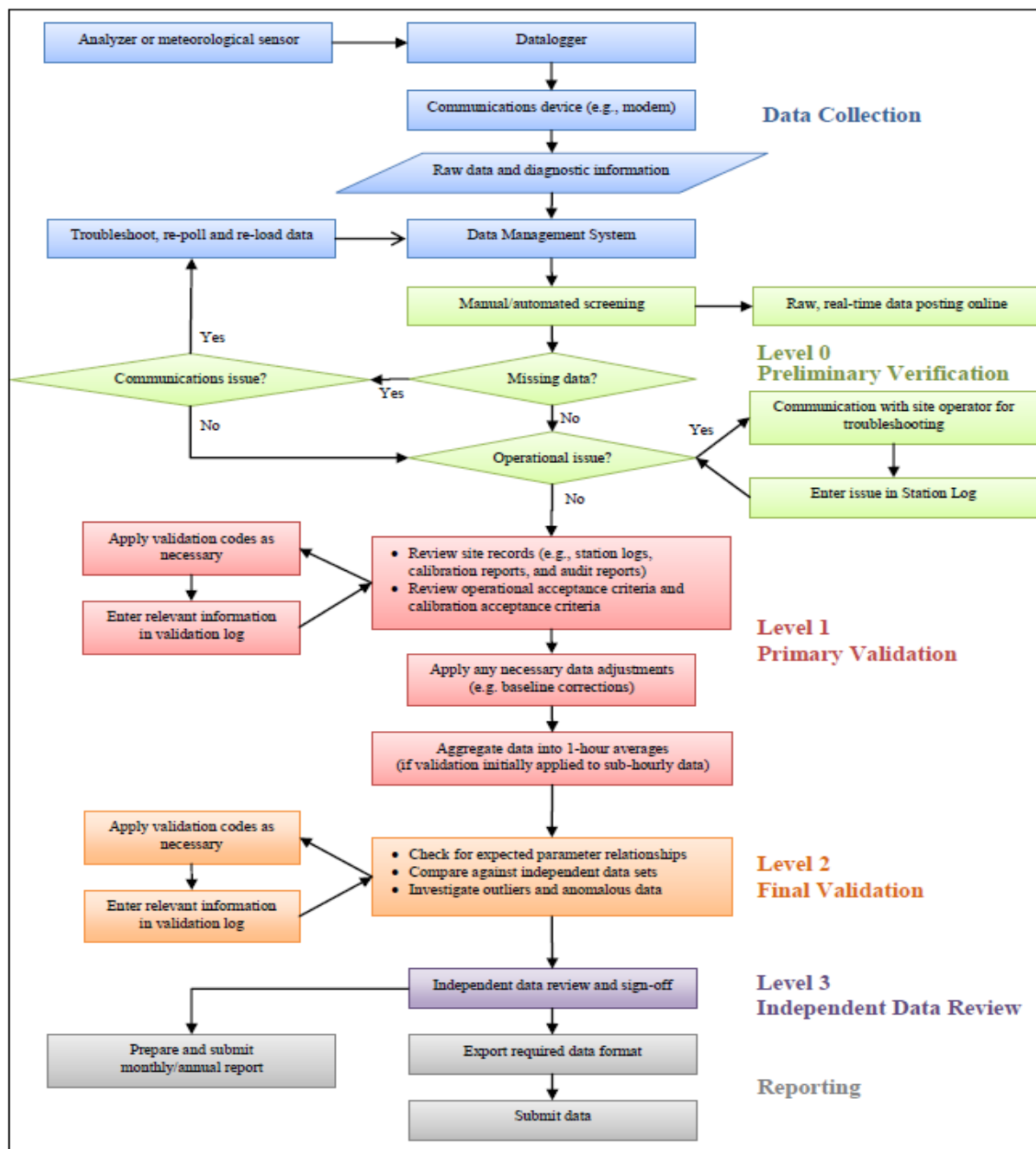
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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	0	0	0	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	
2	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
3	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	24	
4	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	24	
5	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	24	
6	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	24	
7	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
8	0	0	0	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
9	0	0	0	0	0	S	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
10	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
11	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
12	0	0	0	0	0	S	0	0	0	1	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
13	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
14	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
15	0	0	0	0	0	S	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	24	
16	0	0	0	0	0	S	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	24	
17	1	1	1	1	1	S	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	24	
18	0	1	0	1	1	S	1	1	1	1	1	1	1	1	1	C	C	C	C	0	0	1	0	0	0	1	1	24	
19	0	1	1	1	1	S	0	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0	0	0	1	1	24	
20	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
21	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
22	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
23	0	1	1	0	1	S	1	1	1	0	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0	1	0	24	
24	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	24	
25	1	1	1	0	1	S	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	24	
26	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
27	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
28	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
29	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	24	
30	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
31	0	0	0	0	1	S	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	1	1	1	1	1	0	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	1	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	

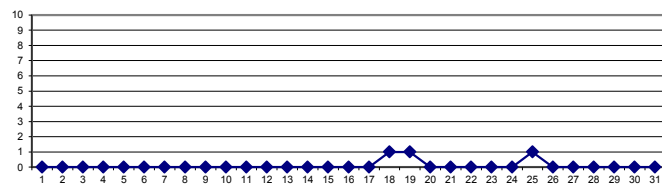
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

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

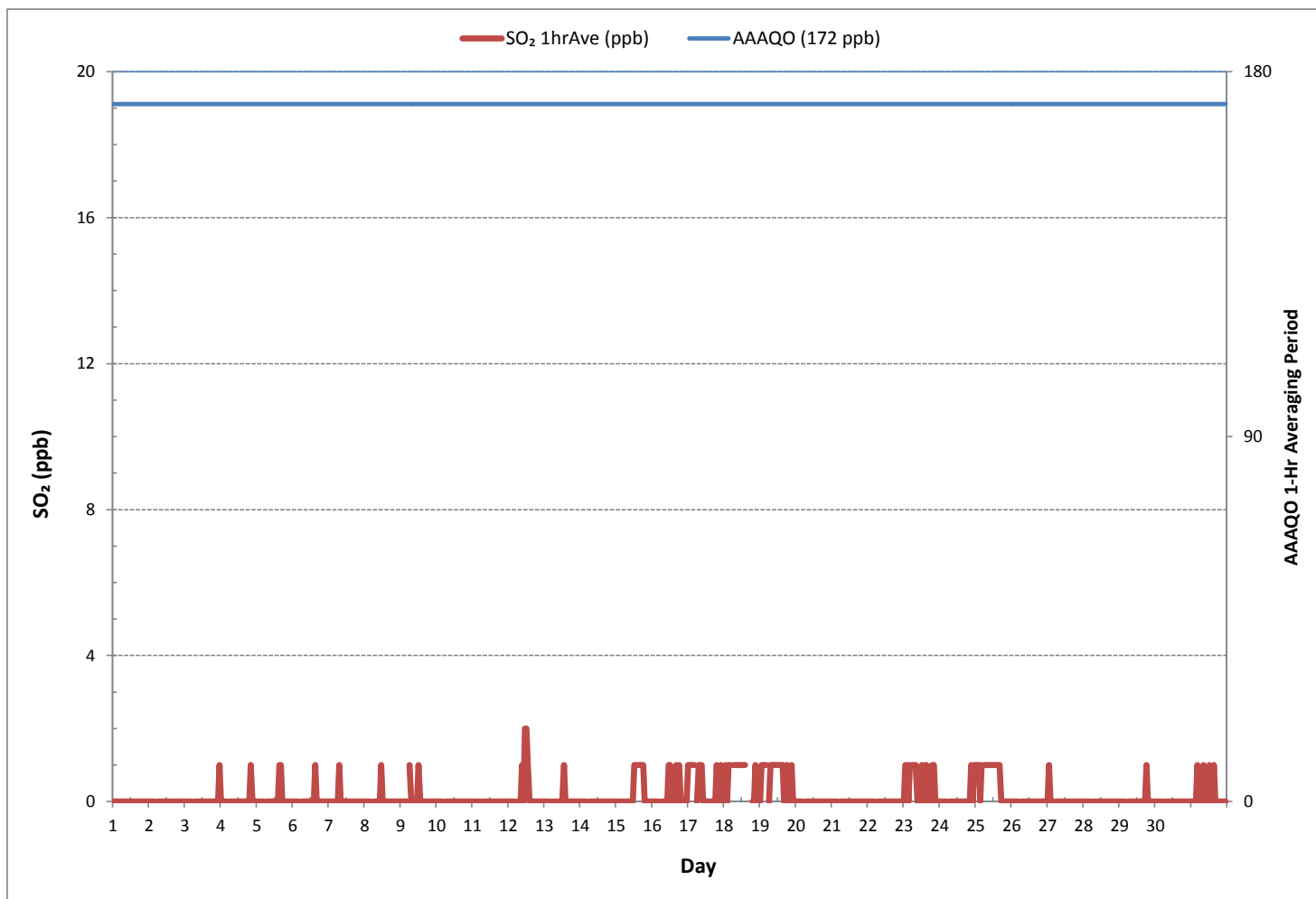
24 HR AVERAGES July 2017



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	97
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	2 ppb @ HOUR 11 ON DAY 12
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 18
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	744 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	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	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24
2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	3	2	3	2	24
3	2	2	2	3	2	S	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	3	2	24
4	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	2	2	2	2	4	2	24
5	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2	24
6	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	24
7	2	2	2	2	3	S	2	2	P	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	23
8	2	2	2	3	2	S	3	3	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	3	2	3	2	24
9	2	2	2	2	3	S	3	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	3	2	24
10	2	2	2	2	2	S	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2	2	2	3	2	24
11	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24
12	2	2	2	2	2	S	2	2	2	2	2	5	4	3	2	2	2	2	2	2	2	2	2	2	2	5	2	24
13	2	3	3	2	2	S	2	3	2	2	2	3	2	3	3	3	2	3	3	2	2	2	3	2	2	3	2	24
14	2	2	2	2	2	S	3	P	2	2	2	2	2	2	2	P	2	2	2	2	2	2	2	2	2	3	2	22
15	2	2	2	2	2	S	2	2	2	2	3	2	3	3	3	3	3	3	3	3	2	2	2	2	2	3	2	24
16	2	2	2	2	2	S	2	3	2	2	P	2	2	3	2	3	2	2	3	2	3	2	2	2	2	3	2	23
17	2	2	3	3	3	S	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	3	2	24
18	2	2	3	P	3	S	2	2	2	4	3	2	2	2	2	C	C	C	C	1	P	1	2	1	1	4	2	22
19	1	1	1	1	1	S	1	1	1	P	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	23
20	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
21	1	1	P	1	1	S	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1	2	1	1	1	2	1	23
22	1	1	1	1	1	S	1	1	2	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	24
23	1	1	1	1	1	S	1	1	1	1	1	1	1	1	2	1	2	1	1	1	2	P	1	1	1	2	1	23
24	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
25	1	1	2	1	1	S	1	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	2	1	1	2	1	24
26	1	1	1	1	1	S	1	2	2	2	1	2	2	2	1	1	P	1	2	1	2	1	1	2	1	2	1	23
27	1	2	2	P	1	S	1	1	2	1	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	23
28	1	1	1	1	1	S	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	24
29	1	1	1	1	1	S	1	1	1	1	2	2	1	1	1	2	1	2	2	2	P	2	1	1	1	2	1	23
30	1	1	1	1	1	S	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1	1	2	1	24
31	1	1	1	1	2	S	2	2	P	1	1	1	2	1	1	2	2	1	2	1	1	1	1	2	1	2	1	23
HOURLY MAX	2	3	3	3	3	2	3	3	2	4	3	5	4	3	3	3	3	3	3	3	3	4	3	3	3			
HOURLY AVG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				

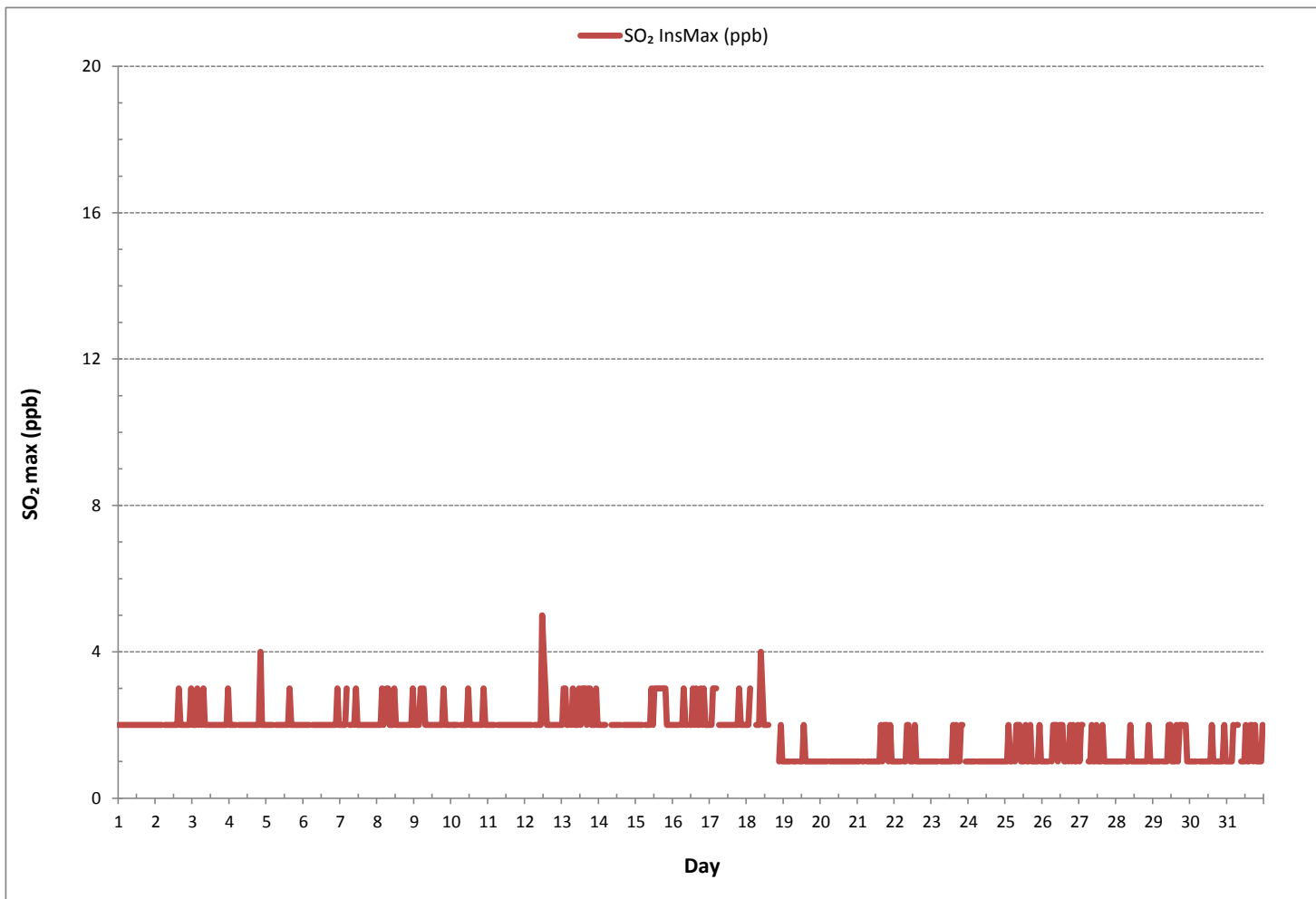
STATUS FLAG CODES

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:	697
MAXIMUM INSTANTANEOUS VALUE:	5 ppb @ HOUR 11 ON DAY 12
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	731 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



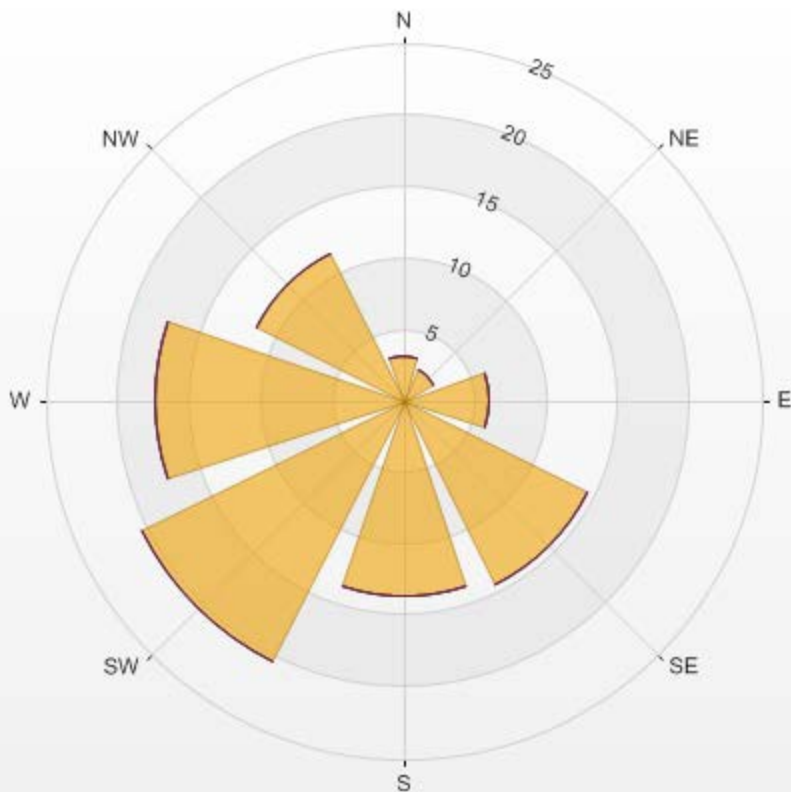
Wind: PRAMP_986
Poll.: PRAMP_986-SO2[ppb]
Monthly: 17/07
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 11.00%

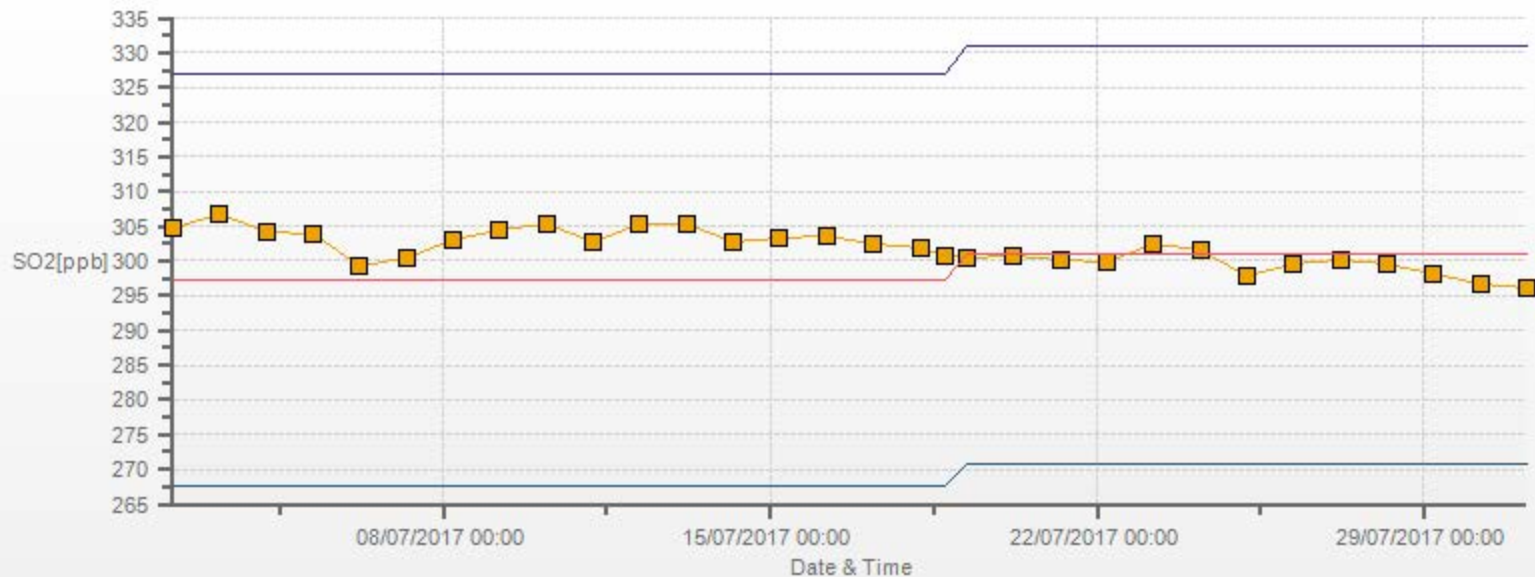
Calm Avg: 0.25 [ppb]

Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	3.1	0.0	0.0	0.0	0.0	3.1
NE	2.4	0.0	0.0	0.0	0.0	2.4
E	6.1	0.0	0.0	0.0	0.0	6.1
SE	14.4	0.0	0.0	0.0	0.0	14.4
S	13.7	0.0	0.0	0.0	0.0	13.7
SW	20.5	0.0	0.0	0.0	0.0	20.5
W	17.4	0.0	0.0	0.0	0.0	17.4
NW	11.6	0.0	0.0	0.0	0.0	11.6
Summary	89.0	0.0	0.0	0.0	0.0	89.0

PRAMP_986 Poll.: PRAMP_986-SO2[ppb] 2017/07/01 00:00 - 2017/07/31 23:00 Calm: 11.00% Calm Poll Avg: 0.25[ppb]



SO₂[ppb] Calibration: PRAMP_986 Monthly: 17/07 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL REDUCED SULPHUR

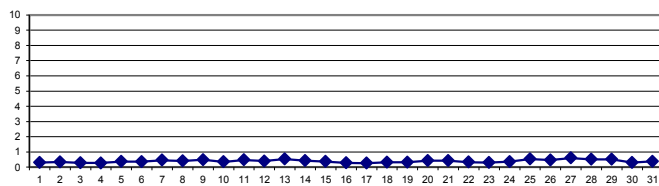
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

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	0.29	0.29	0.30	0.30	0.33	0.35	0.34	0.28	0.29	0.38	0.34	0.27	0.26	0.23	0.24	0.23	0.25	0.27	0.25	0.27	0.31	0.36	0.32	0.32	0.23	0.38	0.29	24
2	0.46	0.53	0.49	0.42	0.63	S	0.47	0.43	0.43	0.37	0.30	0.28	0.26	0.24	0.21	0.22	0.22	0.21	0.21	0.22	0.25	0.30	0.36	0.35	0.21	0.63	0.34	24
3	0.30	0.32	0.34	0.35	0.33	S	0.44	0.39	0.32	0.24	0.22	0.20	0.20	0.21	0.22	0.22	0.20	0.18	0.22	0.22	0.30	0.30	0.26	0.34	0.18	0.44	0.27	24
4	0.26	0.30	0.29	0.32	0.37	S	0.36	0.33	0.30	0.24	0.23	0.24	0.23	0.21	0.21	0.23	0.24	0.25	0.25	0.26	0.31	0.26	0.29	0.29	0.21	0.37	0.27	24
5	0.32	0.36	0.45	0.53	0.60	S	0.51	0.43	0.39	0.38	0.35	0.36	0.30	0.29	0.27	0.27	0.26	0.25	0.27	0.26	0.31	0.39	0.48	0.37	0.25	0.60	0.37	24
6	0.51	0.40	0.47	0.53	0.55	S	0.33	0.30	0.27	0.25	0.25	0.26	0.26	0.27	0.27	0.27	0.26	0.25	0.25	0.26	0.25	0.42	0.65	0.64	0.25	0.65	0.36	24
7	0.88	0.79	0.87	0.88	1.24	S	0.80	0.61	0.45	0.30	0.27	0.25	0.25	0.23	0.23	0.24	0.24	0.22	0.26	0.25	0.27	0.31	0.32	0.31	0.22	1.24	0.46	24
8	0.70	0.66	0.54	0.39	0.35	S	0.51	0.49	0.49	0.42	0.39	0.34	0.31	0.30	0.28	0.26	0.22	0.21	0.23	0.27	0.42	0.59	0.58	0.46	0.21	0.70	0.41	24
9	0.55	0.56	0.63	0.83	0.85	S	0.94	0.47	0.33	0.31	0.33	0.30	0.30	0.34	0.34	0.38	0.34	0.36	0.45	0.46	0.43	0.38	0.47	0.68	0.30	0.94	0.48	24
10	0.48	0.41	0.39	0.35	0.40	S	0.47	0.44	0.40	0.38	0.31	0.28	0.27	0.27	0.26	0.25	0.24	0.24	0.23	0.22	0.23	0.41	0.53	0.60	0.22	0.60	0.35	24
11	0.59	0.67	0.77	0.70	0.66	S	0.73	0.69	0.43	0.40	0.41	0.44	0.38	0.36	0.34	0.34	0.34	0.33	0.29	0.26	0.40	0.45	0.44	0.54	0.26	0.77	0.48	24
12	0.45	0.60	0.67	0.58	0.69	S	0.66	0.54	0.39	0.32	0.29	0.27	0.26	0.25	0.26	0.27	0.28	0.25	0.24	0.29	0.32	0.36	0.46	0.48	0.24	0.69	0.40	24
13	0.73	0.73	0.75	1.26	1.73	S	0.76	0.36	0.34	0.34	0.34	0.31	0.37	0.45	0.31	0.31	0.33	0.38	0.29	0.32	0.34	0.37	0.60	0.52	0.29	1.73	0.53	24
14	0.44	0.56	0.52	0.45	0.86	S	0.50	0.37	0.38	0.38	0.35	0.35	0.36	0.32	0.29	0.28	0.27	0.25	0.25	0.24	0.33	0.64	0.68	0.79	0.24	0.86	0.43	24
15	0.69	0.67	0.40	0.31	0.38	S	0.58	0.39	0.29	0.30	0.33	0.35	0.33	0.33	0.32	0.30	0.32	0.33	0.31	0.31	0.30	0.32	0.33	0.33	0.29	0.69	0.37	24
16	0.39	0.50	0.39	0.32	0.31	S	0.39	0.31	0.33	0.30	0.25	0.25	0.23	0.22	0.20	0.20	0.20	0.21	0.29	0.26	0.19	0.19	0.22	0.23	0.19	0.50	0.28	24
17	0.27	0.32	0.32	0.33	0.37	S	0.32	0.29	0.27	0.25	0.23	0.23	0.20	0.21	0.21	0.22	0.20	0.22	0.19	0.19	0.20	0.22	0.41	0.46	0.19	0.46	0.27	24
18	0.58	0.56	0.40	0.48	0.46	S	0.31	0.25	0.19	0.17	0.17	0.13	C	C	C	C	C	0.21	0.16	0.20	0.28	0.36	0.36	0.33	0.13	0.58	0.31	24
19	0.35	0.45	0.42	0.41	0.40	S	0.45	0.39	0.36	0.32	0.31	0.29	0.27	0.26	0.25	0.25	0.27	0.30	0.30	0.28	0.28	0.26	0.27	0.28	0.25	0.45	0.32	24
20	0.55	0.42	0.31	0.44	0.58	S	0.49	0.41	0.30	0.29	0.29	0.27	0.28	0.33	0.38	0.34	0.31	0.31	0.48	0.51	0.45	0.45	0.77	0.79	0.27	0.79	0.42	24
21	0.92	0.48	0.57	0.83	0.79	S	0.89	0.47	0.27	0.27	0.29	0.32	0.33	0.30	0.27	0.24	0.25	0.25	0.27	0.29	0.33	0.40	0.39	0.34	0.24	0.92	0.42	24
22	0.40	0.43	0.43	0.43	0.43	S	0.48	0.34	0.32	0.32	0.30	0.26	0.25	0.25	0.26	0.25	0.26	0.24	0.25	0.26	0.27	0.31	0.49	0.33	0.24	0.49	0.33	24
23	0.32	0.35	0.37	0.36	0.36	S	0.43	0.40	0.36	0.30	0.24	0.23	0.24	0.24	0.24	0.23	0.23	0.22	0.23	0.33	0.30	0.25	0.27	0.28	0.22	0.43	0.29	24
24	0.29	0.34	0.31	0.31	0.33	S	0.34	0.30	0.29	0.28	0.26	0.29	0.27	0.24	0.24	0.24	0.22	0.22	0.22	0.22	0.45	0.87	0.74	0.86	0.22	0.87	0.35	24
25	0.88	0.95	1.22	1.21	1.17	S	0.71	0.53	0.47	0.41	0.37	0.31	0.29	0.24	0.22	0.20	0.21	0.19	0.23	0.22	0.30	0.53	0.61	0.66	0.19	1.22	0.53	24
26	0.55	0.44	0.46	0.53	0.70	S	0.54	0.38	0.30	0.29	0.29	0.40	0.28	0.23	0.20	0.20	0.21	0.24	0.27	0.54	0.96	1.09	1.06	0.57	0.20	1.09	0.47	24
27	0.92	1.05	0.44	0.70	1.12	S	1.69	0.94	0.44	0.50	0.51	0.42	0.41	0.36	0.37	0.52	0.38	0.36	0.33	0.35	0.43	0.46	0.61	0.44	0.33	1.69	0.60	24
28	0.47	0.41	0.44	0.50	0.49	S	0.53	0.62	0.72	0.69	0.48	0.41	0.35	0.33	0.32	0.30	0.29	0.30	0.35	0.34	0.47	0.97	0.98	0.94	0.29	0.98	0.51	24
29	0.93	0.86	0.92	0.87	0.97	S	0.64	0.44	0.43	0.42	0.44	0.34	0.28	0.25	0.23	0.23	0.21	0.21	0.33	0.34	0.57	0.70	0.60	0.67	0.21	0.97	0.52	24
30	0.81	0.41	0.39	0.59	0.61	S	0.46	0.40	0.39	0.32	0.23	0.22	0.19	0.19	0.17	0.17	0.16	0.16	0.18	0.16	0.18	0.20	0.22	0.27	0.16	0.81	0.31	24
31	0.34	0.39	0.32	0.55	0.81	S	0.69	0.57	0.52	0.35	0.29	0.30	0.33	0.32	0.29	0.30	0.30	0.30	0.28	0.26	0.28	0.28	0.28	0.32	0.26	0.81	0.38	24
HOURLY MAX	0.93	1.05	1.22	1.26	1.73	0.35	1.69	0.94	0.72	0.69	0.51	0.44	0.41	0.45	0.38	0.52	0.38	0.38	0.48	0.54	0.96	1.09	1.06	0.94				
HOURLY AVG	0.54	0.52	0.50	0.55	0.64	0.35	0.57	0.44	0.37	0.34	0.31	0.30	0.28	0.28	0.26	0.27	0.26	0.26	0.27	0.29	0.35	0.43	0.49	0.48				

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

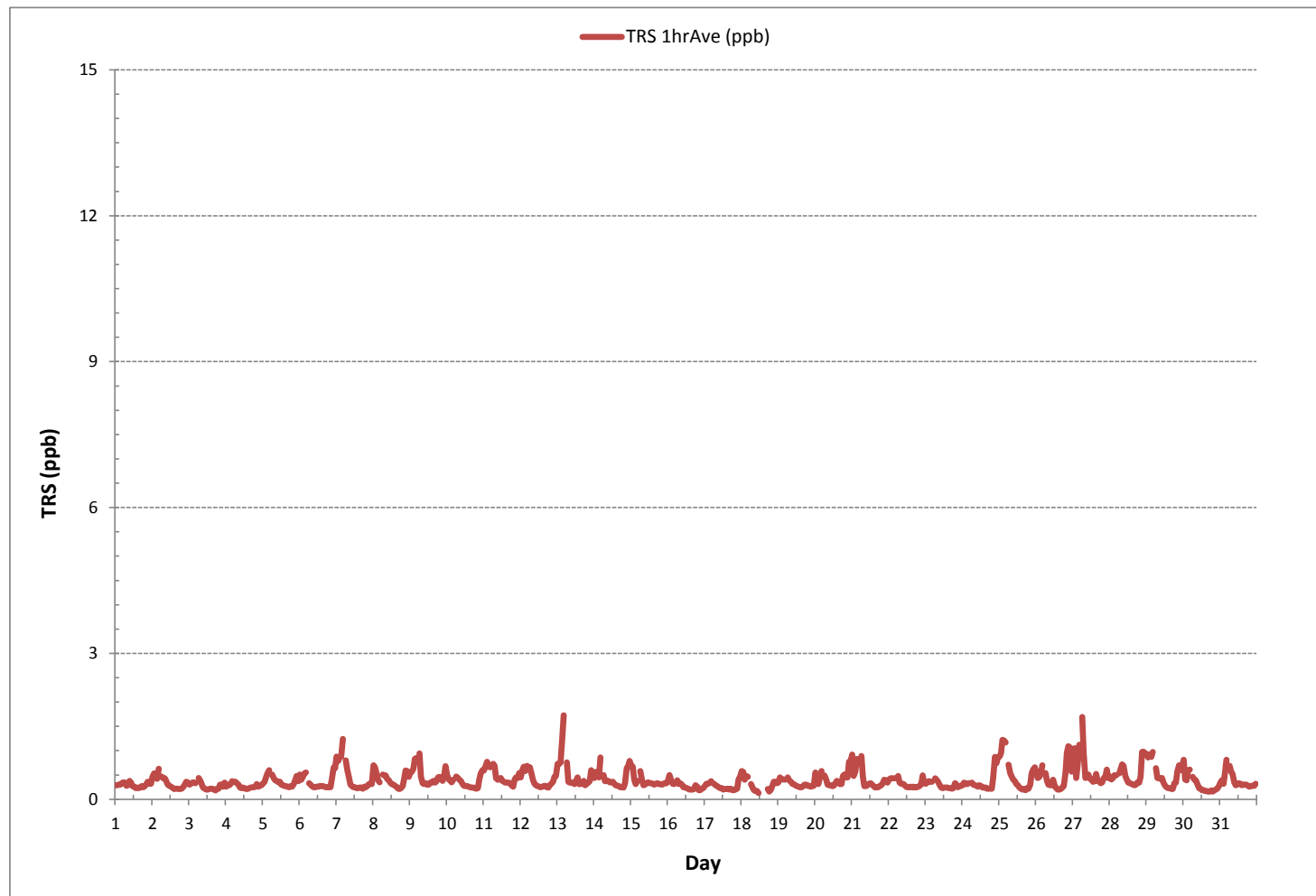
24 HR AVERAGES July 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	709				
MINIMUM 1-HR AVERAGE:	0.13	ppb @ HOUR	11	ON DAY	18
MAXIMUM 1-HR AVERAGE:	1.73	ppb @ HOUR	4	ON DAY	13
MAXIMUM 24-HR AVERAGE:	0.60	ppb		ON DAY	27
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0.39	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



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	0.31	0.31	0.31	0.31	0.36	0.36	0.39	0.30	0.34	0.46	0.41	0.26	0.28	0.23	0.23	0.23	0.25	0.28	0.31	0.29	0.36	0.39	0.34	0.34	0.23	0.46	0.32	24
2	0.57	0.58	0.55	0.49	0.65	S	0.52	0.44	0.44	0.39	0.34	0.28	0.26	0.26	0.23	0.21	0.26	0.24	0.23	0.23	0.28	0.36	0.44	0.39	0.21	0.65	0.38	24
3	0.31	0.36	0.36	0.39	0.34	S	0.49	0.41	0.41	0.26	0.26	0.23	0.23	0.26	0.28	0.26	0.21	0.21	0.28	0.23	0.39	0.42	0.31	0.44	0.21	0.49	0.32	24
4	0.31	0.33	0.31	0.34	0.39	S	0.41	0.33	0.31	0.26	0.26	0.26	0.23	0.23	0.18	0.23	0.23	0.26	0.26	0.28	0.36	0.28	0.31	0.29	0.18	0.41	0.29	24
5	0.33	0.36	0.65	0.60	0.70	S	0.55	0.46	0.41	0.39	0.39	0.36	0.31	0.31	0.31	0.26	0.28	0.26	0.28	0.26	0.36	0.63	0.65	0.65	0.26	0.70	0.42	24
6	0.65	0.54	0.60	0.78	0.78	S	0.46	0.33	0.31	0.28	0.28	0.28	0.31	0.28	0.28	0.28	0.28	0.26	0.26	0.31	0.26	0.84	1.36	0.78	0.26	1.36	0.47	24
7	1.26	1.02	1.12	1.15	1.88	S	0.89	0.65	P	0.34	0.28	0.26	0.26	0.26	0.28	0.26	0.26	0.26	0.28	0.28	0.31	0.44	0.44	0.39	0.26	1.88	0.57	23
8	0.83	0.76	0.83	0.52	0.41	S	0.65	0.54	0.55	0.54	0.44	0.41	0.36	0.36	0.33	0.31	0.26	0.26	0.26	0.34	0.55	0.76	0.68	0.52	0.26	0.83	0.50	24
9	0.70	0.70	0.78	0.94	0.94	S	1.21	0.60	0.42	0.36	0.37	0.31	0.33	0.39	0.41	0.41	0.34	0.41	0.44	0.47	0.44	0.36	0.65	0.99	0.31	1.21	0.56	24
10	0.57	0.39	0.36	0.31	0.36	S	0.52	0.49	0.39	0.39	0.29	0.26	0.26	0.26	0.23	0.23	0.23	0.23	0.21	0.21	0.26	0.63	0.89	0.83	0.21	0.89	0.38	24
11	0.73	0.89	1.31	0.81	0.73	S	0.83	0.81	0.47	0.41	0.55	0.47	0.39	0.36	0.36	0.36	0.36	0.33	0.28	0.26	0.52	0.52	0.76	1.15	0.26	1.31	0.59	24
12	0.57	0.86	0.83	0.83	1.18	S	0.83	0.63	0.41	0.36	0.31	0.28	0.28	0.31	0.31	0.31	0.34	0.26	0.28	0.33	0.39	0.39	0.73	0.57	0.26	1.18	0.50	24
13	0.97	1.75	1.31	1.77	2.17	S	1.13	0.44	0.36	0.42	0.34	0.31	0.42	0.50	0.31	0.31	0.36	0.55	0.32	0.34	0.39	0.47	0.73	0.60	0.31	2.17	0.71	24
14	0.81	0.68	0.70	0.65	1.26	S	0.63	P	0.39	0.39	0.39	0.39	0.36	0.34	0.31	P	0.28	0.28	0.26	0.28	0.57	0.89	0.89	0.99	0.26	1.26	0.56	22
15	1.07	0.97	0.52	0.39	0.55	S	1.26	0.55	0.28	0.34	0.36	0.39	0.34	0.34	0.34	0.31	0.32	0.32	0.32	0.31	0.31	0.47	0.44	0.50	0.28	1.26	0.48	24
16	0.57	0.73	0.44	0.31	0.39	S	0.49	0.31	0.34	0.33	P	0.23	0.23	0.21	0.18	0.21	0.18	0.21	0.31	0.31	0.18	0.18	0.24	0.23	0.18	0.73	0.31	23
17	0.28	0.31	0.36	0.36	0.41	S	0.33	0.31	0.26	0.26	0.21	0.21	0.18	0.21	0.21	0.21	0.21	0.36	0.18	0.21	0.23	0.21	1.96	0.86	0.18	1.96	0.36	24
18	0.78	0.73	0.52	P	0.73	S	0.36	0.29	0.23	0.26	0.28	0.23	C	C	C	C	C	0.44	0.36	0.44	P	0.60	0.50	0.52	0.23	0.78	0.45	22
19	0.52	0.55	0.55	0.57	0.55	S	0.55	0.49	0.44	P	0.39	0.36	0.33	0.34	0.34	0.34	0.39	0.39	0.39	0.34	0.36	0.34	0.39	0.50	0.33	0.57	0.43	23
20	0.81	0.81	0.37	0.65	0.76	S	0.60	0.50	0.42	0.37	0.41	0.34	0.36	0.47	0.52	0.47	0.37	0.37	0.63	0.78	0.66	0.79	1.15	1.10	0.34	1.15	0.60	24
21	1.31	0.97	P	0.99	1.13	S	1.24	0.94	0.32	0.34	0.34	0.39	0.39	0.36	0.34	0.31	0.31	0.36	0.36	0.37	0.42	0.47	0.47	0.39	0.31	1.31	0.57	23
22	0.65	0.57	0.52	0.55	0.50	S	0.55	0.42	0.36	0.34	0.36	0.29	0.31	0.31	0.31	0.31	0.31	0.29	0.28	0.31	0.31	0.42	0.97	0.42	0.28	0.97	0.42	24
23	0.42	0.46	0.44	0.44	0.46	S	0.50	0.47	0.44	0.42	0.31	0.28	0.31	0.31	0.31	0.28	0.31	0.28	0.31	0.47	0.47	P	0.34	0.36	0.28	0.50	0.38	23
24	0.39	0.44	0.39	0.36	0.39	S	0.44	0.36	0.34	0.33	0.31	0.36	0.31	0.31	0.29	0.33	0.31	0.31	0.26	0.28	0.96	1.31	1.10	1.10	0.26	1.31	0.48	24
25	1.41	1.72	1.77	1.60	1.80	S	0.91	0.81	0.63	0.50	0.57	0.39	0.39	0.34	0.31	0.28	0.28	0.28	0.36	0.31	0.44	0.76	0.81	0.94	0.28	1.80	0.77	24
26	0.91	0.65	0.65	0.86	1.23	S	0.73	0.60	0.44	0.44	0.44	0.52	0.42	0.36	0.28	0.28	P	0.52	0.54	1.21	1.28	1.55	1.36	1.12	0.28	1.55	0.75	23
27	1.57	1.86	1.57	P	1.57	S	2.39	1.49	0.50	0.57	0.68	0.57	0.55	0.47	0.55	0.73	0.49	0.42	0.39	0.44	0.55	0.55	0.91	0.47	0.39	2.39	0.88	23
28	0.52	0.47	0.50	1.04	0.57	S	0.63	0.68	0.76	0.76	0.57	0.44	0.37	0.36	0.36	0.34	0.31	0.31	0.55	0.52	0.99	1.13	1.55	1.72	0.31	1.72	0.67	24
29	1.23	1.13	1.52	1.60	1.64	S	0.92	0.73	0.47	0.49	0.63	0.44	0.37	0.31	0.31	0.31	0.29	0.34	0.44	0.50	P	0.97	0.91	0.97	0.29	1.64	0.75	23
30	1.07	0.73	0.66	0.81	0.78	S	0.68	0.55	0.52	0.47	0.36	0.31	0.29	0.28	0.26	0.26	0.26	0.23	0.34	0.26	0.29	0.28	0.34	0.36	0.23	1.07	0.45	24
31	0.50	0.57	0.47	0.84	0.91	S	0.92	0.68	P	0.44	0.39	0.39	0.42	0.39	0.36	0.39	0.36	0.39	0.39	0.34	0.39	0.42	0.39	0.52	0.34	0.92	0.49	23
HOURLY MAX	1.57	1.86	1.77	1.77	2.17	0.36	2.39	1.49	0.76	0.76	0.68	0.57	0.55	0.50	0.55	0.73	0.49	0.55	0.63	1.21	1.28	1.55	1.96	1.72				
HOURLY AVG	0.74	0.75	0.71	0.73	0.86	0.36	0.74	0.55	0.41	0.40	0.38	0.34	0.33	0.32	0.31	0.31	0.30	0.32	0.33	0.37	0.46	0.59	0.74	0.68				

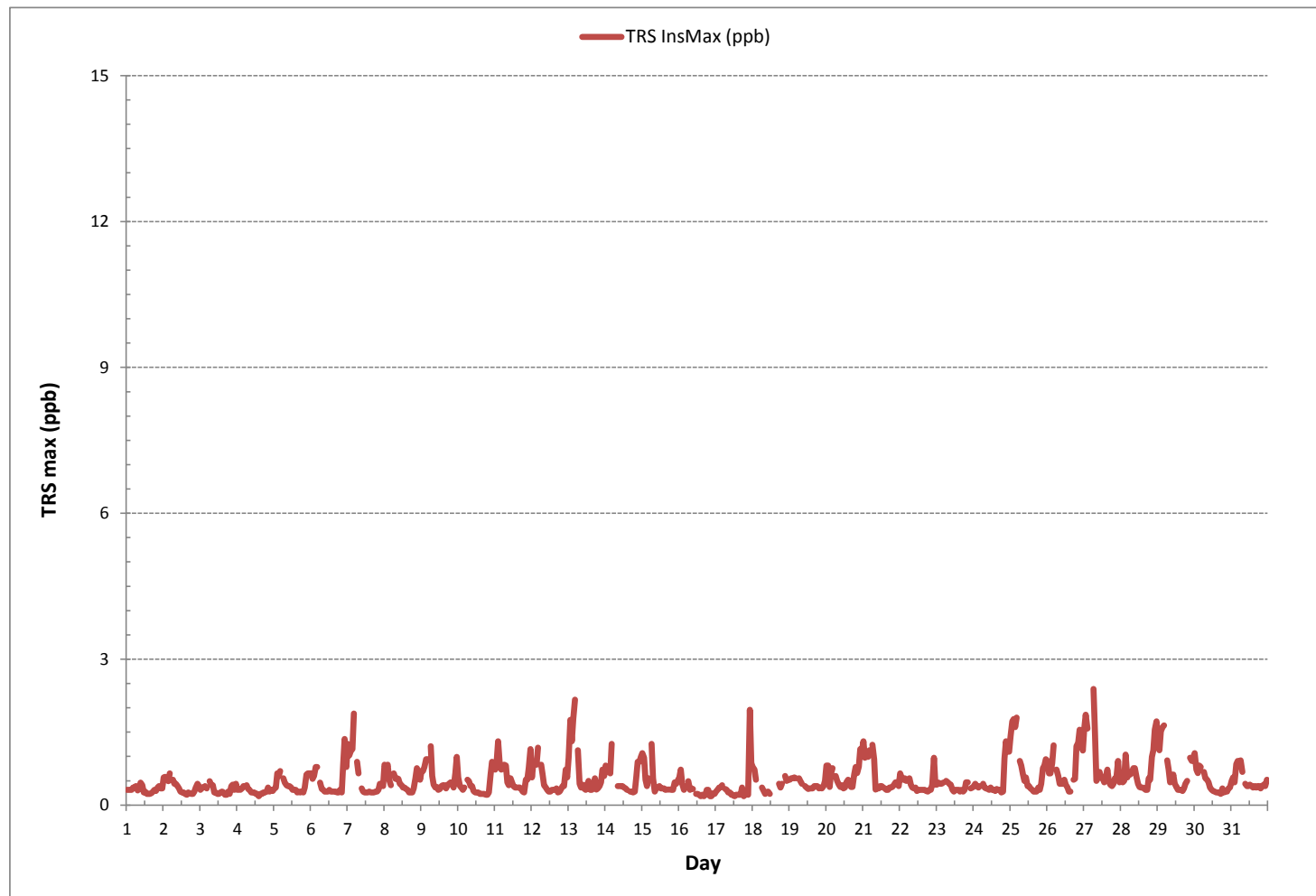
STATUS FLAG CODES

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:	696				
MAXIMUM INSTANTANEOUS VALUE:	2.39	ppb	@ HOUR	6	ON DAY 27
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	731	hrs
MONTHLY CALIBRATION TIME:	5	hrs			
STANDARD DEVIATION:	0				

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



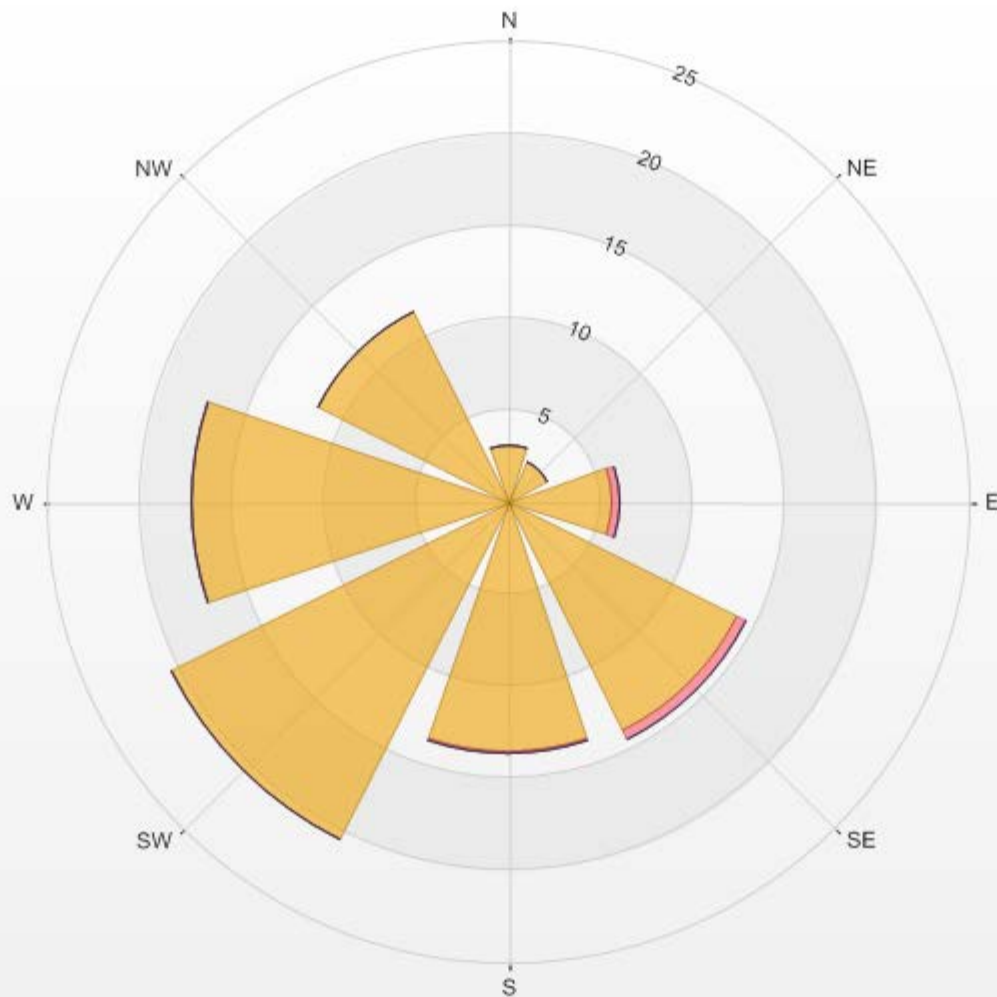
Wind: PRAMP_986
Poll.: PRAMP_986-TRS[ppb]
Monthly: 2017/07
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 11.02%

Calm Avg: 0.56 [ppb]

Direction	0-1	1-3	3-10	>10.0	Total
N	3.1	0.0	0.0	0.0	3.1
NE	2.4	0.0	0.0	0.0	2.4
E	5.7	0.4	0.0	0.0	6.1
SE	13.8	0.6	0.0	0.0	14.4
S	13.6	0.1	0.0	0.0	13.7
SW	20.5	0.0	0.0	0.0	20.5
W	17.2	0.0	0.0	0.0	17.2
NW	11.6	0.0	0.0	0.0	11.6
Summary	87.9	1.1	0.0	0.0	89.0

PRAMP_986 Poll.: PRAMP_986-TRS[ppb] 2017/07/01 00:00 - 2017/07/31 23:00 Calm: 11.02% Calm Poll Avg: 0.56[ppb]



TRS[ppb] Calibration: PRAMP_986 Monthly: 17/07 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL HYDROCARBON

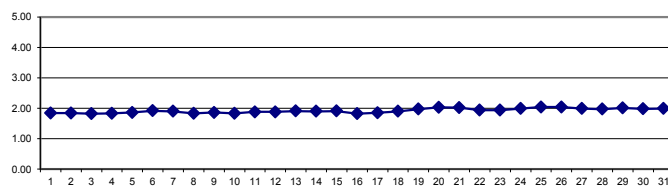
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	1.84	1.84	1.85	1.85	1.88	1.91	1.83	1.83	1.83	1.85	1.84	1.84	1.83	1.82	1.81	1.81	1.83	1.82	1.82	1.83	1.83	1.82	1.84	1.85	1.81	1.91	1.84	24	
2	1.86	1.90	1.90	1.88	1.90	S	1.87	1.85	1.84	1.84	1.83	1.82	1.81	1.81	1.81	1.80	1.80	1.80	1.81	1.82	1.82	1.82	1.83	1.80	1.90	1.84	24		
3	1.80	1.80	1.81	1.82	1.83	S	1.84	1.83	1.82	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.82	1.83	1.82	1.84	1.85	1.83	1.80	1.85	1.82	24	
4	1.82	1.82	1.83	1.83	1.84	S	1.85	1.84	1.83	1.83	1.82	1.82	1.82	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.84	1.83	1.83	1.82	1.85	1.83	24	
5	1.83	1.87	1.96	1.92	1.91	S	1.85	1.83	1.83	1.83	1.83	1.83	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.85	1.85	2.03	1.94	1.93	1.82	2.03	1.86	24	
6	2.09	1.97	2.33	2.03	2.19	S	1.85	1.85	1.84	1.85	1.85	1.85	1.85	1.85	1.84	1.84	1.84	1.84	1.84	1.85	1.93	2.02	1.92	1.84	2.33	1.92	24		
7	2.09	1.98	2.01	2.01	2.10	S	2.02	1.98	1.93	1.86	1.84	1.84	1.84	1.84	1.84	1.83	1.83	1.83	1.84	1.85	1.85	1.85	1.83	1.83	2.10	1.90	24		
8	1.81	1.81	1.81	1.81	1.81	S	1.83	1.83	1.82	1.82	1.82	1.82	1.81	1.81	1.82	1.82	1.81	1.81	1.82	1.81	1.92	1.86	1.87	1.86	1.81	1.92	1.83	24	
9	1.91	1.90	1.91	1.93	1.97	S	1.95	1.89	1.84	1.82	1.83	1.83	1.83	1.84	1.83	1.83	1.82	1.82	1.84	1.85	1.85	1.81	1.84	1.88	1.81	1.97	1.86	24	
10	1.83	1.84	1.82	1.82	1.83	S	1.85	1.84	1.83	1.83	1.83	1.83	1.83	1.83	1.82	1.82	1.82	1.82	1.82	1.82	1.83	1.84	1.85	1.91	1.82	1.91	1.83	24	
11	1.92	1.95	1.94	1.91	1.90	S	1.94	1.95	1.86	1.87	1.87	1.87	1.86	1.86	1.85	1.84	1.84	1.84	1.83	1.84	1.85	1.87	1.91	1.91	1.83	1.95	1.88	24	
12	1.89	1.93	1.91	1.94	1.99	S	1.93	1.93	1.90	1.87	1.86	1.84	1.84	1.84	1.84	1.85	1.85	1.85	1.85	1.85	1.86	1.87	1.85	1.86	1.84	1.99	1.88	24	
13	2.06	2.00	2.19	2.03	1.97	S	2.04	1.87	1.88	1.88	1.87	1.88	1.88	1.88	1.87	1.86	1.85	1.86	1.83	1.83	1.84	1.84	1.86	1.91	1.83	2.19	1.91	24	
14	1.87	1.88	1.90	1.89	1.95	S	1.93	1.86	1.86	1.86	1.86	1.85	1.85	1.85	1.84	1.83	1.83	1.84	1.85	1.85	1.88	2.01	2.12	2.22	1.83	2.22	1.90	24	
15	2.10	2.05	1.90	1.90	1.95	S	2.18	1.93	1.87	1.87	1.87	1.87	1.86	1.87	1.88	1.87	1.87	1.87	1.88	1.88	1.86	1.85	1.85	1.84	1.84	2.18	1.91	24	
16	1.84	1.87	1.84	1.83	1.83	S	1.83	1.83	1.83	1.82	1.82	1.82	1.81	1.82	1.81	1.81	1.81	1.81	1.82	1.83	1.81	1.82	1.82	1.82	1.81	1.87	1.82	24	
17	1.83	1.84	1.84	1.84	1.84	S	1.84	1.84	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.84	1.84	1.85	1.85	1.86	1.84	1.91	1.91	1.83	1.91	1.85	24	
18	1.92	1.91	1.87	1.87	1.88	S	1.85	1.85	1.84	1.84	1.84	1.85	C	C	C	C	1.95	1.95	1.94	1.95	1.96	1.99	1.95	1.97	1.84	1.99	1.90	24	
19	1.98	2.03	2.00	2.00	1.98	S	2.00	1.97	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.94	1.93	1.94	1.96	1.96	1.95	1.96	1.99	1.93	2.03	1.97	24	
20	2.04	1.99	2.04	2.03	2.00	S	2.00	1.98	1.98	1.99	1.99	1.99	1.98	1.99	2.01	1.99	2.00	1.99	2.02	2.03	2.08	2.08	2.14	2.28	1.98	2.28	2.03	24	
21	2.37	2.10	2.32	2.13	2.17	S	2.13	2.00	1.94	1.94	1.95	1.95	1.95	1.95	1.94	1.93	1.94	1.94	1.94	1.94	1.96	2.02	1.94	1.94	1.93	2.37	2.02	24	
22	1.98	1.96	1.97	1.97	1.96	S	1.96	1.95	1.95	1.94	1.93	1.93	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.94	1.96	1.97	1.95	1.92	1.98	1.94	24	
23	1.94	1.95	1.95	1.95	1.95	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.94	1.94	1.95	1.95	1.94	1.95	1.94	24	
24	1.95	1.96	1.97	1.97	1.96	S	1.96	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	1.98	2.05	2.10	2.21	2.07	1.95	2.21	1.99	24
25	2.09	2.18	2.27	2.29	2.28	S	2.10	2.02	2.02	2.00	1.98	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.96	1.97	1.99	1.99	2.01	2.03	1.95	2.29	2.04	24	
26	2.07	2.05	2.04	2.04	2.07	S	2.06	2.04	2.01	1.99	2.00	2.00	1.97	1.96	1.96	1.95	1.95	1.96	1.96	2.09	2.10	2.06	2.50	2.13	1.95	2.50	2.04	24	
27	2.21	2.25	1.96	1.96	1.98	S	2.09	2.02	1.95	1.94	1.95	1.95	1.94	1.94	1.94	1.97	1.93	1.92	1.93	1.93	1.94	2.01	2.09	2.00	1.92	2.25	1.99	24	
28	1.97	1.97	1.95	1.99	2.00	S	1.97	1.96	1.95	1.95	1.94	1.94	1.93	1.93	1.93	1.93	1.93	1.92	1.93	1.97	2.04	2.11	2.01	2.05	1.92	2.11	1.97	24	
29	2.07	2.15	2.05	2.03	2.04	S	2.01	1.98	1.98	1.98	1.98	1.96	1.95	1.95	1.95	1.94	1.95	1.95	1.97	1.97	2.23	1.99	2.03	2.14	1.94	2.23	2.01	24	
30	2.18	2.01	1.97	1.98	2.00	S	1.97	1.97	1.97	1.95	1.96	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.99	1.95	2.18	1.98	24	
31	2.04	2.02	2.00	2.10	2.08	S	2.03	2.00	1.99	1.97	1.96	1.96	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.98	2.01	2.01	1.98	1.96	2.10	1.99	24	
HOURLY MAX	2.37	2.25	2.33	2.29	2.28	1.91	2.18	2.04	2.02	2.00	2.00	2.00	1.98	1.99	2.01	1.99	2.00	1.99	2.02	2.09	2.23	2.11	2.50	2.28					
HOURLY AVG	1.97	1.96	1.97	1.95	1.97	1.91	1.95	1.92	1.90	1.89	1.89	1.89	1.89	1.89	1.88	1.88	1.88	1.88	1.89	1.90	1.92	1.93	1.96	1.96					

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

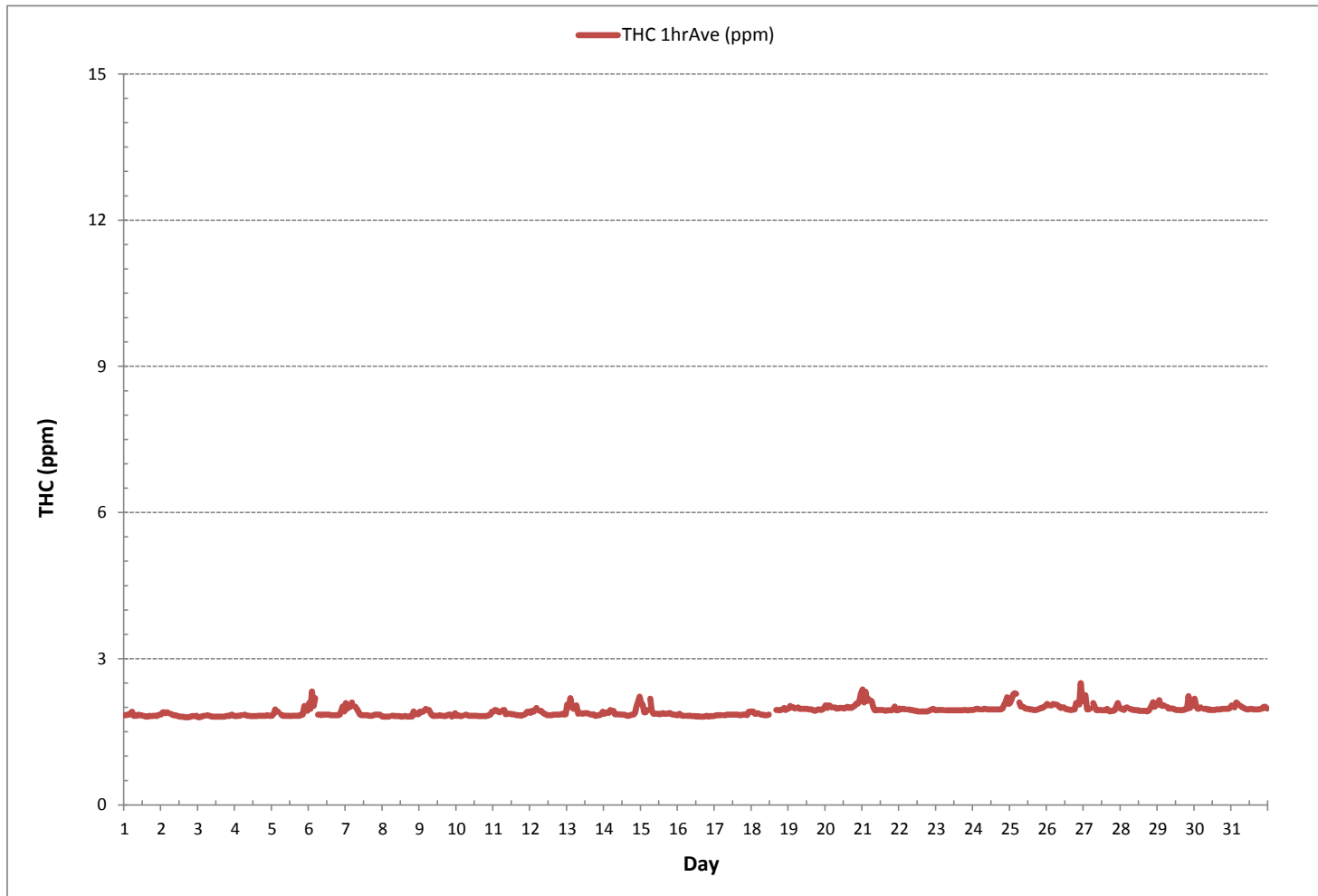
24 HR AVERAGES July 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	710				
MINIMUM 1-HR AVERAGE:	1.80	ppm	@ HOUR	15	ON DAY 2
MAXIMUM 1-HR AVERAGE:	2.50	ppm	@ HOUR	22	ON DAY 26
MAXIMUM 24-HR AVERAGE:	2.04	ppm			ON DAY 25
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.10		MONTHLY AVERAGE:	1.92	ppm

TOTAL HYDROCARBONS Hourly Averages (THC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - July 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	1.87	1.85	1.86	1.86	1.90	1.93	1.84	1.85	1.88	1.86	1.85	2.05	1.89	1.87	1.81	1.83	1.86	1.83	1.87	2.08	1.89	1.85	1.99	1.96	1.81	2.08	1.89	24
2	1.88	1.95	1.97	1.96	2.00	S	1.97	1.92	1.84	1.86	1.84	1.82	1.86	1.84	1.84	1.81	1.83	1.87	1.82	1.89	1.86	1.85	1.84	2.04	1.81	2.04	1.89	24
3	1.82	1.82	1.81	1.83	1.85	S	1.84	1.85	1.83	1.81	1.84	1.82	1.83	1.84	1.83	1.84	1.82	1.83	1.89	1.87	1.86	1.88	2.00	1.86	1.81	2.00	1.85	24
4	1.83	1.84	1.83	1.86	1.86	S	1.91	1.87	1.85	1.85	1.84	1.84	1.83	1.84	1.85	1.97	1.97	1.95	1.86	1.86	1.84	1.92	1.89	1.83	1.83	1.97	1.87	24
5	1.85	1.93	2.18	2.12	2.22	S	1.87	1.84	1.85	1.83	1.84	1.84	1.84	1.85	1.84	1.86	1.85	1.85	1.85	1.90	1.89	2.74	2.33	2.59	1.83	2.74	1.99	24
6	2.93	2.70	3.82	2.59	2.82	S	1.89	1.87	1.87	1.87	1.86	1.86	1.86	1.86	1.85	1.86	1.85	1.86	1.86	1.85	1.87	3.27	3.16	2.05	1.85	3.82	2.23	24
7	3.18	2.03	2.11	2.05	2.41	S	2.04	2.01	P	1.87	1.85	1.86	1.84	1.86	1.86	1.83	1.86	1.84	1.89	1.92	1.91	1.88	1.88	1.90	1.83	3.18	1.99	23
8	1.84	1.86	1.83	1.88	1.85	S	1.87	1.87	1.83	1.85	1.83	1.84	1.84	1.81	1.83	1.82	1.85	1.82	1.83	1.83	2.20	1.93	2.18	1.89	1.81	2.20	1.88	24
9	1.96	1.96	1.93	1.96	2.02	S	1.99	1.95	1.86	1.83	1.86	1.83	1.85	1.86	1.87	1.85	1.84	1.83	1.90	1.93	2.02	1.83	2.12	2.43	1.83	2.43	1.93	24
10	1.94	1.93	1.82	1.84	1.85	S	1.92	1.84	1.83	1.83	1.85	1.84	1.85	1.87	1.84	1.82	1.84	1.85	1.84	1.86	1.95	1.91	1.92	1.97	1.82	1.97	1.87	24
11	1.94	2.05	2.10	1.96	1.96	S	2.06	2.06	1.87	1.88	1.90	1.89	1.88	1.89	1.87	1.86	1.85	1.89	1.95	1.91	1.90	1.95	2.02	2.07	1.85	2.10	1.94	24
12	1.96	2.07	1.94	2.18	2.11	S	1.94	1.93	1.91	1.88	1.87	1.85	1.90	1.85	1.85	1.90	1.87	1.86	1.90	1.98	2.07	1.95	1.88	2.07	1.85	2.18	1.94	24
13	2.64	2.20	3.33	3.33	2.34	S	2.38	1.88	1.92	1.89	1.88	1.92	1.91	1.92	1.89	1.87	1.88	1.90	1.85	1.84	1.86	1.91	1.93	2.28	1.84	3.33	2.12	24
14	1.93	1.92	1.96	1.94	2.03	S	2.12	P	1.87	1.87	1.87	1.86	1.86	1.87	1.85	P	1.85	1.86	1.90	1.91	2.03	2.58	2.53	4.05	1.85	4.05	2.08	22
15	2.74	2.24	1.92	2.03	2.15	S	2.47	2.09	1.89	1.87	1.87	1.87	1.88	1.88	1.89	1.89	1.89	1.90	1.95	1.90	1.89	1.95	1.92	1.86	1.86	2.74	2.00	24
16	1.87	1.90	1.86	1.86	1.86	S	1.85	1.84	1.85	1.83	P	1.82	1.83	1.83	1.83	1.84	1.83	1.83	1.86	1.89	1.83	1.84	1.83	1.84	1.82	1.90	1.85	23
17	1.86	1.86	1.87	1.86	1.88	S	1.86	1.84	1.91	1.87	1.86	1.87	1.86	1.88	1.88	1.86	1.85	1.86	1.86	1.89	1.99	1.85	2.31	2.51	1.84	2.51	1.92	24
18	2.34	2.04	1.92	P	1.94	S	1.88	1.86	1.85	1.87	1.85	1.87	C	C	C	C	C	1.97	1.96	1.97	P	2.04	1.98	2.04	1.85	2.34	1.96	22
19	2.03	2.11	2.08	2.09	2.01	S	2.05	1.99	1.99	P	1.99	1.99	1.99	1.99	1.97	1.99	2.01	1.95	1.95	2.00	1.97	1.96	2.17	2.27	1.95	2.27	2.03	23
20	2.49	2.07	2.48	2.51	2.12	S	2.16	1.99	1.99	2.02	2.02	2.00	2.03	2.14	2.07	2.05	2.03	2.01	2.10	2.28	2.76	2.26	2.59	3.59	1.99	3.59	2.25	24
21	5.07	2.29	P	2.34	2.40	S	2.17	2.11	1.96	1.96	2.01	1.96	1.98	1.98	1.97	1.95	1.96	1.97	1.94	1.94	2.08	2.12	1.99	2.09	1.94	5.07	2.19	23
22	2.10	2.01	2.09	2.07	1.99	S	1.99	1.96	1.97	1.94	1.96	1.93	1.95	1.94	1.92	1.94	1.93	1.94	1.92	1.94	1.97	2.09	2.06	1.99	1.92	2.10	1.98	24
23	2.01	1.97	1.97	1.97	1.96	S	1.97	1.94	1.97	1.96	1.93	1.97	1.95	1.97	1.96	1.96	1.95	1.98	2.07	1.98	2.03	P	2.01	1.99	1.93	2.07	1.98	23
24	1.98	1.99	2.02	1.99	1.99	S	1.96	1.99	1.96	1.99	1.96	1.99	1.96	1.97	1.97	1.97	1.99	1.97	1.97	2.11	2.34	2.78	2.61	2.43	1.96	2.78	2.08	24
25	2.25	2.40	2.63	2.60	2.72	S	2.17	2.06	2.09	2.05	2.00	1.99	1.98	1.98	1.97	1.96	1.98	1.97	1.97	1.99	2.03	2.02	2.05	2.23	1.96	2.72	2.13	24
26	2.19	2.18	2.38	2.20	2.10	S	2.15	2.11	2.04	1.99	2.02	2.01	1.99	1.97	1.97	2.02	P	1.96	1.99	2.55	2.34	2.22	3.52	3.62	1.96	3.62	2.25	23
27	2.60	2.85	2.43	P	2.06	S	2.36	2.18	1.97	1.94	2.15	2.23	1.96	1.95	1.99	2.05	1.99	1.95	1.96	1.95	2.04	2.23	2.29	2.14	1.94	2.85	2.15	23
28	2.06	2.07	2.02	2.10	2.05	S	1.99	1.95	1.97	1.97	1.99	1.95	1.96	1.96	1.96	1.94	1.93	1.95	1.99	2.10	2.21	2.26	2.16	2.16	1.93	2.26	2.03	24
29	2.20	2.74	2.19	2.19	2.20	S	2.07	2.05	2.01	2.01	2.01	1.99	1.96	1.97	1.94	1.96	1.95	1.96	2.03	2.40	P	2.14	2.25	2.33	1.94	2.74	2.12	23
30	2.50	2.18	2.01	2.05	2.06	S	1.99	1.99	1.97	1.97	1.96	1.99	1.98	1.97	1.97	2.00	1.99	1.97	1.99	1.97	1.99	1.97	1.99	2.07	1.96	2.50	2.02	24
31	2.17	2.11	2.14	2.42	2.18	S	2.10	2.04	P	2.00	1.96	1.97	2.03	1.99	1.97	1.97	1.97	1.98	1.99	2.06	2.25	2.25	2.12	2.00	1.96	2.42	2.08	23
HOURLY MAX	5.07	2.85	3.82	3.33	2.82	1.93	2.47	2.18	2.09	2.05	2.15	2.23	2.03	2.14	2.07	2.05	2.03	2.01	2.10	2.55	2.76	3.27	3.52	4.05				
HOURLY AVG	2.26	2.10	2.15	2.13	2.09	1.93	2.03	1.96	1.92	1.91	1.92	1.92	1.91	1.91	1.90	1.91	1.91	1.91	1.93	1.99	2.03	2.11	2.18	2.26				

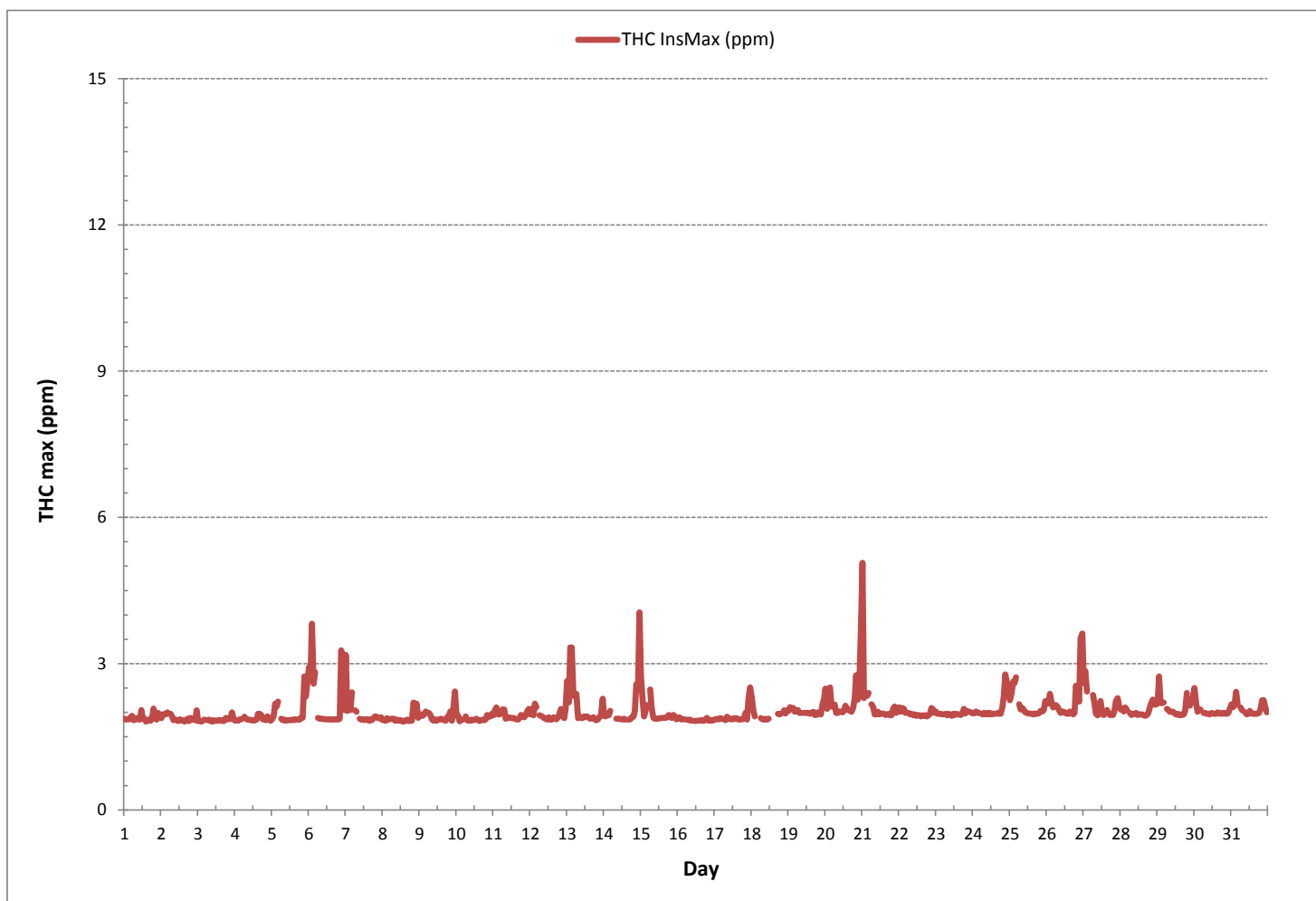
STATUS FLAG CODES

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:	696				
MAXIMUM INSTANTANEOUS VALUE:	5.07	ppm	@ HOUR	0	ON DAY 21
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	731	hrs
MONTHLY CALIBRATION TIME:	5	hrs			
STANDARD DEVIATION:	0.28				

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



Wind: PRAMP_986
Poll.: PRAMP_986-THC55[ppm]
Monthly: 2017/07
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

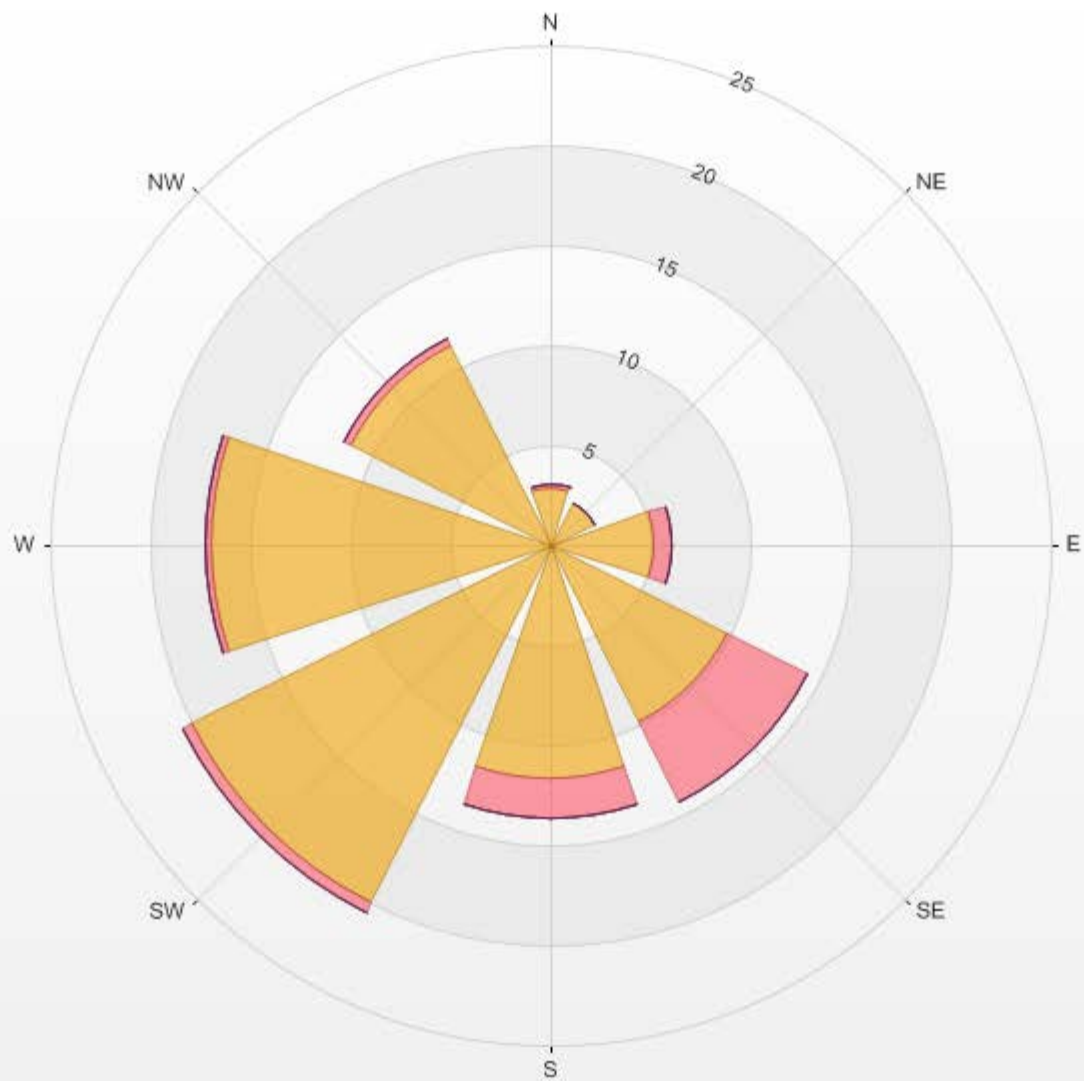
Calm: 11.00%

Calm Avg: 2.01 [ppm]

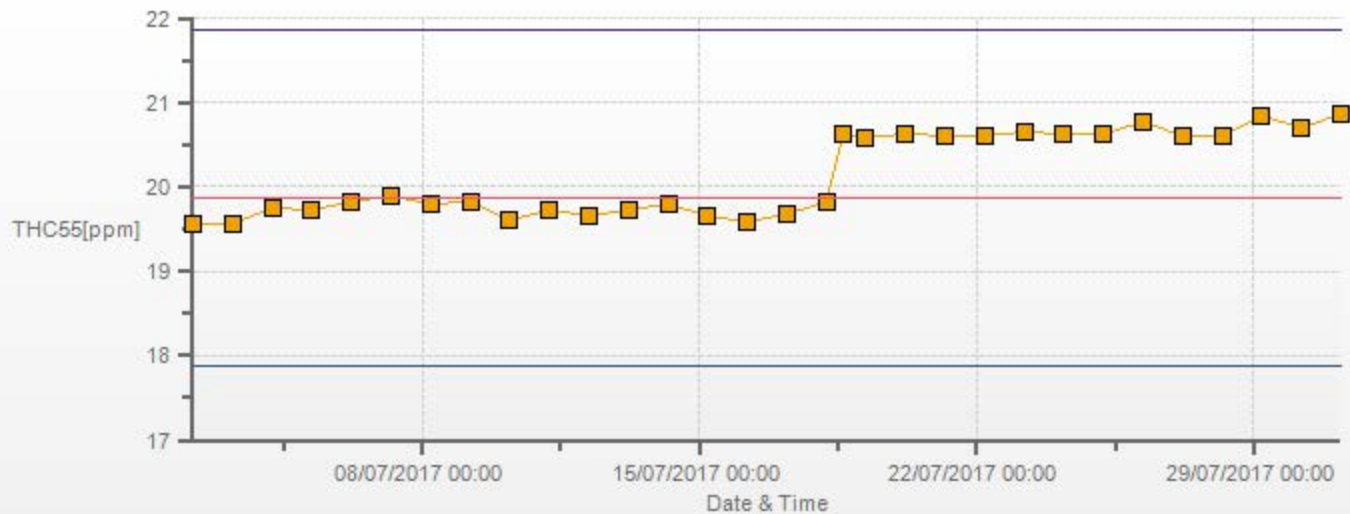
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	2.8	0.3	0.0	0.0	0.0	3.1
NE	2.4	0.0	0.0	0.0	0.0	2.4
E	5.2	0.9	0.0	0.0	0.0	6.1
SE	9.9	4.5	0.0	0.0	0.0	14.4
S	11.7	2.0	0.0	0.0	0.0	13.7
SW	20.0	0.6	0.0	0.0	0.0	20.6
W	16.9	0.3	0.0	0.0	0.0	17.2
NW	11.1	0.4	0.0	0.0	0.0	11.6
Summary	80.1	8.9	0.0	0.0	0.0	89.0

% Icon	Classes (ppm)	80	9	0	0	0
		0-2	2-3	3-5	5-10	>10.0

PRAMP_986 Poll.: PRAMP_986-THC55[ppm] 2017/07/01 00:00 - 2017/07/31 23:00 Calm: 11.00% Calm Poll Avg: 2.01[ppm]



THC55[ppm] Calibration: PRAMP_986 Monthly: 17/07 Type: Span



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

METHANE

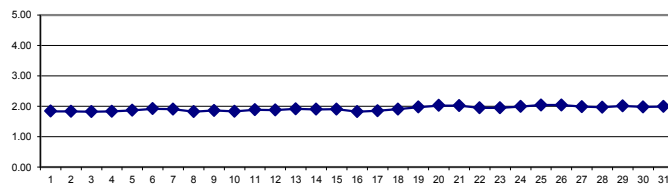
METHANE Hourly Averages (CH₄ ppm)

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	1.84	1.84	1.85	1.85	1.88	1.91	1.83	1.83	1.83	1.84	1.84	1.84	1.83	1.82	1.81	1.81	1.83	1.82	1.82	1.83	1.83	1.83	1.82	1.84	1.85	1.81	1.91	1.84	24
2	1.86	1.90	1.90	1.87	1.90	S	1.87	1.85	1.84	1.84	1.83	1.82	1.81	1.81	1.81	1.81	1.80	1.80	1.80	1.81	1.82	1.82	1.82	1.83	1.80	1.90	1.84	24	
3	1.80	1.80	1.81	1.82	1.83	S	1.84	1.83	1.82	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.82	1.83	1.82	1.84	1.85	1.83	1.80	1.85	1.82	24	
4	1.82	1.82	1.83	1.83	1.84	S	1.85	1.84	1.83	1.83	1.82	1.82	1.82	1.82	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.84	1.83	1.83	1.82	1.85	1.83	24	
5	1.83	1.87	1.96	1.92	1.91	S	1.85	1.83	1.83	1.83	1.83	1.83	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.85	1.85	2.03	1.94	1.93	1.82	2.03	1.86	24	
6	2.09	1.97	2.33	2.03	2.19	S	1.85	1.85	1.84	1.85	1.85	1.85	1.85	1.85	1.84	1.84	1.84	1.84	1.84	1.84	1.85	1.93	2.01	1.92	1.84	2.33	1.92	24	
7	2.09	1.98	2.01	2.01	2.10	S	2.02	1.98	1.93	1.86	1.84	1.84	1.84	1.84	1.84	1.83	1.83	1.83	1.83	1.85	1.85	1.85	1.85	1.83	1.83	2.10	1.90	24	
8	1.81	1.81	1.81	1.81	1.81	S	1.83	1.83	1.82	1.82	1.82	1.82	1.81	1.81	1.82	1.82	1.81	1.81	1.81	1.81	1.92	1.86	1.87	1.86	1.81	1.92	1.83	24	
9	1.91	1.90	1.91	1.93	1.97	S	1.95	1.89	1.84	1.82	1.83	1.83	1.83	1.83	1.83	1.83	1.82	1.82	1.84	1.84	1.85	1.81	1.84	1.88	1.81	1.97	1.86	24	
10	1.83	1.84	1.82	1.82	1.83	S	1.85	1.84	1.83	1.83	1.83	1.83	1.83	1.83	1.82	1.82	1.82	1.82	1.81	1.82	1.83	1.84	1.85	1.91	1.81	1.91	1.83	24	
11	1.92	1.95	1.94	1.91	1.90	S	1.94	1.94	1.86	1.87	1.87	1.87	1.86	1.86	1.85	1.84	1.85	1.84	1.84	1.83	1.84	1.85	1.87	1.91	1.91	1.83	1.95	1.88	24
12	1.89	1.93	1.91	1.94	1.99	S	1.93	1.93	1.90	1.87	1.86	1.84	1.84	1.84	1.84	1.84	1.85	1.85	1.85	1.85	1.86	1.87	1.85	1.86	1.84	1.99	1.88	24	
13	2.06	2.00	2.19	2.03	1.97	S	2.04	1.87	1.88	1.88	1.87	1.88	1.88	1.88	1.87	1.86	1.85	1.86	1.83	1.83	1.84	1.84	1.86	1.91	1.83	2.19	1.91	24	
14	1.87	1.88	1.90	1.89	1.95	S	1.93	1.86	1.86	1.86	1.86	1.85	1.85	1.85	1.84	1.83	1.83	1.84	1.85	1.85	1.88	2.01	2.12	2.22	1.83	2.22	1.90	24	
15	2.09	1.97	1.90	1.90	1.95	S	2.18	1.93	1.87	1.87	1.87	1.87	1.86	1.87	1.88	1.87	1.87	1.87	1.88	1.88	1.86	1.85	1.85	1.84	1.84	2.18	1.90	24	
16	1.84	1.87	1.84	1.83	1.83	S	1.83	1.83	1.83	1.82	1.82	1.82	1.81	1.82	1.81	1.81	1.81	1.81	1.82	1.83	1.81	1.82	1.82	1.82	1.81	1.87	1.82	24	
17	1.83	1.84	1.84	1.84	1.84	S	1.84	1.84	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.84	1.84	1.85	1.85	1.86	1.84	1.91	1.91	1.83	1.91	1.85	24	
18	1.92	1.91	1.87	1.87	1.88	S	1.85	1.85	1.84	1.84	1.84	1.85	C	C	C	C	1.95	1.95	1.94	1.95	1.96	1.99	1.95	1.97	1.84	1.99	1.90	24	
19	1.98	2.03	2.00	2.00	1.98	S	2.00	1.97	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.94	1.93	1.94	1.96	1.96	1.95	1.96	1.99	1.93	2.03	1.97	24	
20	2.04	1.99	2.04	2.03	2.00	S	2.00	1.98	1.98	1.99	1.99	1.99	1.98	1.99	2.01	1.99	2.00	1.99	2.02	2.03	2.08	2.08	2.14	2.28	1.98	2.28	2.03	24	
21	2.37	2.10	2.32	2.13	2.17	S	2.13	2.00	1.94	1.94	1.95	1.95	1.95	1.95	1.94	1.93	1.94	1.94	1.94	1.93	1.96	2.02	1.94	1.94	1.93	2.37	2.02	24	
22	1.98	1.96	1.97	1.97	1.96	S	1.96	1.95	1.95	1.94	1.93	1.93	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.94	1.96	1.97	1.95	1.92	1.98	1.94	24	
23	1.94	1.95	1.95	1.95	1.95	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.94	1.94	1.95	1.95	1.94	1.95	1.94	24	
24	1.95	1.96	1.97	1.97	1.96	S	1.96	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	1.98	2.05	2.10	2.21	2.07	1.95	2.21	1.99	24
25	2.09	2.18	2.27	2.29	2.28	S	2.10	2.02	2.02	2.00	1.98	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.96	1.97	1.99	1.99	2.01	2.03	1.95	2.29	2.04	24	
26	2.07	2.05	2.04	2.04	2.07	S	2.06	2.04	2.01	1.99	2.00	2.00	1.97	1.96	1.96	1.95	1.95	1.95	1.96	1.96	2.04	2.08	2.06	2.50	2.13	1.95	2.50	2.04	24
27	2.15	2.20	1.96	1.96	1.98	S	2.09	2.02	1.95	1.94	1.95	1.95	1.94	1.94	1.94	1.96	1.93	1.92	1.93	1.93	1.94	2.01	2.09	2.00	1.92	2.20	1.99	24	
28	1.97	1.97	1.95	1.99	2.00	S	1.97	1.96	1.95	1.95	1.94	1.94	1.93	1.93	1.93	1.93	1.93	1.92	1.93	1.97	2.03	2.11	2.01	2.05	1.92	2.11	1.97	24	
29	2.07	2.15	2.05	2.03	2.04	S	2.01	1.98	1.98	1.98	1.98	1.96	1.95	1.95	1.95	1.94	1.95	1.95	1.97	1.97	2.23	1.99	2.03	2.14	1.94	2.23	2.01	24	
30	2.18	2.01	1.97	1.98	2.00	S	1.97	1.97	1.97	1.95	1.96	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.99	1.95	2.18	1.98	24	
31	2.04	2.02	2.00	2.10	2.08	S	2.03	2.00	1.99	1.97	1.96	1.96	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.98	2.01	2.01	1.98	1.96	2.10	1.99	24	
HOURLY MAX	2.37	2.20	2.33	2.29	2.28	1.91	2.18	2.04	2.02	2.00	2.00	2.00	1.98	1.99	2.01	1.99	2.00	1.99	2.02	2.04	2.23	2.11	2.50	2.28					
HOURLY AVG	1.97	1.96	1.97	1.95	1.97	1.91	1.95	1.92	1.90	1.89	1.89	1.89	1.89	1.89	1.89	1.88	1.88	1.88	1.89	1.90	1.92	1.93	1.96	1.96					

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

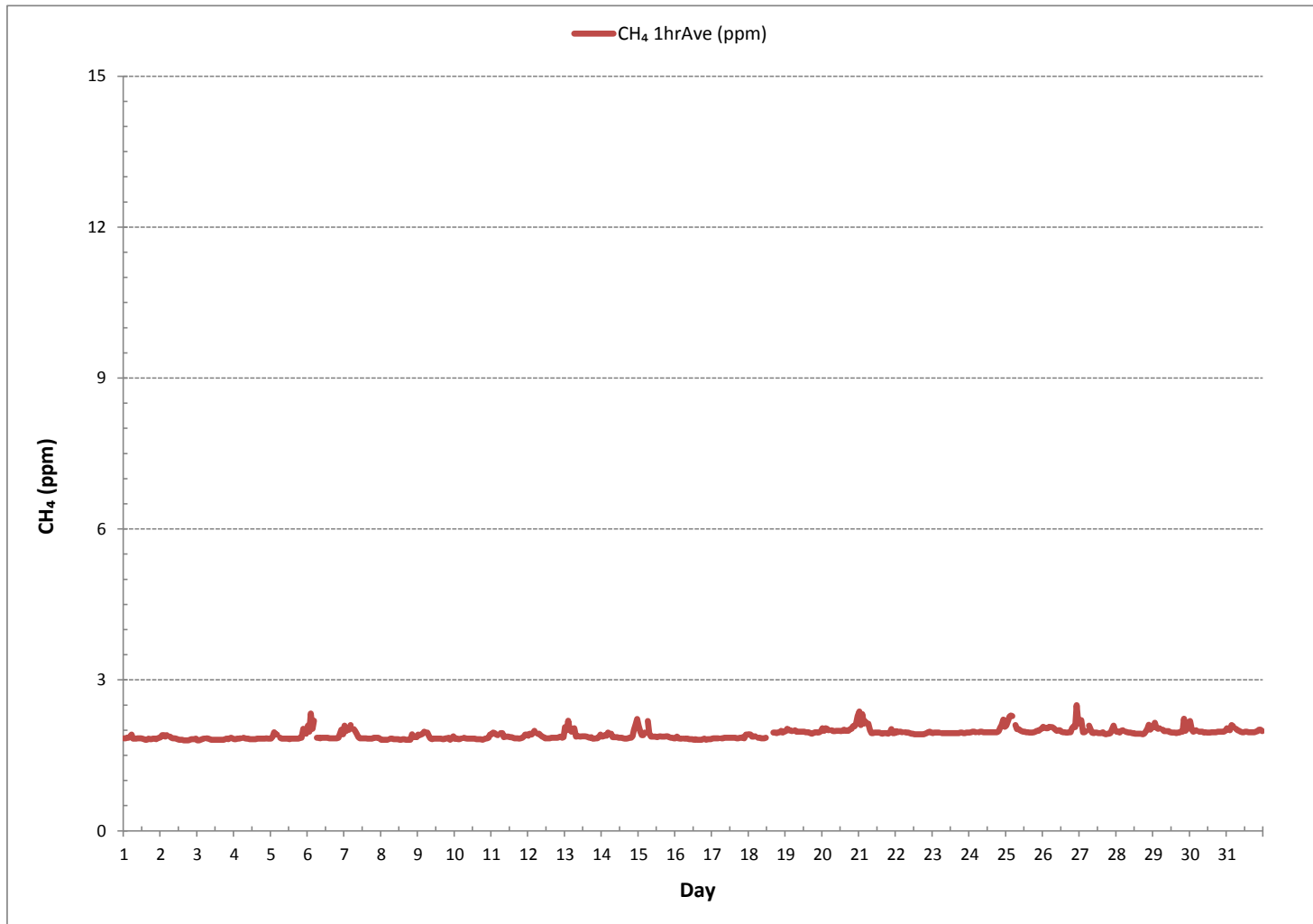
24 HR AVERAGES July 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	710				
MINIMUM 1-HR AVERAGE:	1.80	ppm	@ HOUR	15	ON DAY 2
MAXIMUM 1-HR AVERAGE:	2.50	ppm	@ HOUR	22	ON DAY 26
MAXIMUM 24-HR AVERAGE:	2.04	ppm			ON DAY 25
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.10		MONTHLY AVERAGE:	1.92	ppm

METHANE Hourly Averages (CH₄ ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	1.88	1.85	1.87	1.86	1.91	1.94	1.85	1.86	1.89	1.87	1.86	2.05	1.90	1.88	1.82	1.84	1.86	1.84	1.89	2.10	1.90	1.85	2.00	1.98	1.82	2.10	1.90	24
2	1.89	1.96	1.98	1.98	2.02	S	1.98	1.93	1.85	1.87	1.85	1.83	1.86	1.84	1.85	1.82	1.84	1.88	1.83	1.90	1.87	1.85	1.85	2.05	1.82	2.05	1.89	24
3	1.83	1.83	1.82	1.84	1.86	S	1.85	1.86	1.83	1.82	1.84	1.82	1.84	1.84	1.84	1.85	1.82	1.84	1.90	1.88	1.87	1.89	2.02	1.87	1.82	2.02	1.85	24
4	1.84	1.85	1.84	1.87	1.86	S	1.93	1.87	1.86	1.86	1.85	1.85	1.84	1.85	1.86	1.98	1.98	1.96	1.86	1.87	1.85	1.93	1.90	1.84	1.84	1.98	1.88	24
5	1.85	1.94	2.19	2.14	2.23	S	1.88	1.85	1.86	1.84	1.85	1.85	1.84	1.86	1.85	1.87	1.86	1.86	1.86	1.91	1.90	2.76	2.34	2.60	1.84	2.76	2.00	24
6	2.95	2.72	3.83	2.60	2.85	S	1.90	1.88	1.88	1.88	1.87	1.87	1.87	1.87	1.86	1.87	1.86	1.87	1.87	1.86	1.88	3.29	3.18	2.06	1.86	3.83	2.24	24
7	3.20	2.04	2.11	2.05	2.42	S	2.05	2.02	P	1.89	1.86	1.86	1.85	1.87	1.87	1.84	1.86	1.85	1.86	1.87	1.88	1.89	1.89	1.91	1.84	3.20	2.00	23
8	1.85	1.87	1.84	1.89	1.86	S	1.88	1.88	1.84	1.86	1.83	1.85	1.85	1.82	1.84	1.83	1.85	1.83	1.84	1.83	2.21	1.94	2.19	1.91	1.82	2.21	1.89	24
9	1.97	1.97	1.94	1.97	2.03	S	2.01	1.97	1.87	1.83	1.86	1.84	1.85	1.86	1.87	1.86	1.84	1.84	1.91	1.94	1.96	1.83	2.12	2.45	1.83	2.45	1.94	24
10	1.95	1.94	1.83	1.84	1.86	S	1.93	1.85	1.84	1.84	1.85	1.85	1.85	1.89	1.85	1.83	1.84	1.86	1.85	1.86	1.97	1.92	1.93	1.98	1.83	1.98	1.88	24
11	1.96	2.06	2.11	1.97	1.98	S	2.06	2.07	1.89	1.90	1.91	1.90	1.90	1.90	1.87	1.87	1.85	1.90	1.96	1.92	1.91	1.97	2.03	2.08	1.85	2.11	1.96	24
12	1.97	2.08	1.95	2.19	2.12	S	1.95	1.94	1.92	1.90	1.89	1.85	1.90	1.86	1.86	1.91	1.88	1.87	1.90	2.00	2.09	1.96	1.89	2.08	1.85	2.19	1.95	24
13	2.65	2.21	3.35	3.35	2.35	S	2.39	1.90	1.93	1.90	1.89	1.93	1.92	1.93	1.90	1.88	1.89	1.91	1.86	1.85	1.86	1.92	1.94	2.29	1.85	3.35	2.13	24
14	1.94	1.93	1.97	1.95	2.04	S	2.14	P	1.87	1.89	1.89	1.86	1.87	1.88	1.86	P	1.86	1.86	1.91	1.92	2.04	2.59	2.55	4.06	1.86	4.06	2.09	22
15	2.76	2.16	1.93	2.04	2.16	S	2.48	2.11	1.90	1.88	1.88	1.89	1.90	1.89	1.90	1.90	1.90	1.91	1.96	1.92	1.90	1.96	1.93	1.87	1.87	2.76	2.01	24
16	1.88	1.92	1.87	1.87	1.87	S	1.86	1.84	1.85	1.83	P	1.83	1.84	1.83	1.83	1.85	1.83	1.83	1.87	1.91	1.83	1.85	1.84	1.85	1.83	1.92	1.85	23
17	1.87	1.87	1.89	1.87	1.89	S	1.87	1.85	1.93	1.89	1.87	1.87	1.87	1.89	1.90	1.87	1.86	1.87	1.87	1.90	2.01	1.86	2.33	2.52	1.85	2.52	1.93	24
18	2.36	2.05	1.93	P	1.95	S	1.89	1.86	1.86	1.88	1.86	1.87	C	C	C	C	C	1.98	1.97	1.98	P	2.05	2.00	2.05	1.86	2.36	1.97	22
19	2.04	2.12	2.09	2.10	2.02	S	2.06	2.01	2.00	P	2.01	2.01	2.00	2.00	1.98	1.99	2.02	1.96	1.96	2.02	1.99	1.97	2.19	2.28	1.96	2.28	2.04	23
20	2.51	2.08	2.49	2.52	2.14	S	2.18	2.00	2.00	2.03	2.03	2.01	2.04	2.15	2.07	2.06	2.03	2.01	2.11	2.29	2.78	2.27	2.60	3.61	2.00	3.61	2.26	24
21	5.08	2.32	P	2.35	2.42	S	2.18	2.12	1.97	1.97	2.01	1.97	2.00	1.99	1.98	1.96	1.97	1.98	1.96	1.96	2.09	2.13	2.01	2.10	1.96	5.08	2.21	23
22	2.11	2.02	2.10	2.08	2.01	S	2.01	1.98	1.98	1.95	1.98	1.94	1.96	1.95	1.94	1.95	1.94	1.95	1.94	1.96	1.98	2.11	2.07	2.01	1.94	2.11	2.00	24
23	2.02	1.98	1.98	1.98	1.97	S	1.98	1.95	1.98	1.97	1.95	1.98	1.96	1.98	1.97	1.97	1.96	1.99	2.08	2.00	2.04	P	2.02	2.00	1.95	2.08	1.99	23
24	2.00	2.00	2.03	2.01	2.00	S	1.98	2.00	1.97	1.99	1.97	2.00	1.98	1.99	1.99	1.99	1.99	1.99	1.98	2.12	2.35	2.80	2.62	2.45	1.97	2.80	2.10	24
25	2.27	2.41	2.64	2.61	2.73	S	2.18	2.07	2.11	2.05	2.01	2.00	2.00	1.99	1.98	1.97	1.99	1.98	1.98	2.01	2.04	2.03	2.06	2.24	1.97	2.73	2.15	24
26	2.20	2.20	2.39	2.21	2.11	S	2.17	2.12	2.05	2.01	2.03	2.02	2.01	1.98	1.98	2.03	P	1.97	2.00	2.29	2.27	2.24	3.55	3.64	1.97	3.64	2.25	23
27	2.35	2.58	2.26	P	2.07	S	2.37	2.19	1.99	1.95	2.07	2.10	1.97	1.96	2.01	2.06	2.00	1.96	1.97	1.96	2.04	2.25	2.31	2.16	1.95	2.58	2.12	23
28	2.07	2.07	2.03	2.11	2.06	S	2.00	1.97	1.98	1.98	2.00	1.97	1.97	1.97	1.98	1.95	1.94	1.96	2.01	2.11	2.23	2.27	2.17	2.17	1.94	2.27	2.04	24
29	2.22	2.76	2.20	2.20	2.21	S	2.07	2.06	2.02	2.02	2.02	2.00	1.97	1.98	1.96	1.97	1.97	1.97	2.03	2.41	P	2.16	2.27	2.34	1.96	2.76	2.13	23
30	2.51	2.19	2.02	2.06	2.06	S	2.00	2.00	1.98	1.98	1.97	2.00	1.98	1.98	1.99	2.01	2.00	1.98	2.01	1.99	2.00	1.99	2.00	2.09	1.97	2.51	2.03	24
31	2.18	2.13	2.16	2.43	2.19	S	2.11	2.04	P	2.00	1.98	1.98	2.04	1.99	1.98	1.98	1.98	2.00	2.01	2.06	2.26	2.27	2.12	2.01	1.98	2.43	2.09	23
HOURLY MAX	5.08	2.76	3.83	3.35	2.85	1.94	2.48	2.19	2.11	2.05	2.07	2.10	2.04	2.15	2.07	2.06	2.03	2.01	2.11	2.41	2.78	3.29	3.55	4.06				
HOURLY AVG	2.26	2.10	2.15	2.14	2.10	1.94	2.04	1.97	1.93	1.92	1.92	1.92	1.92	1.92	1.91	1.92	1.91	1.92	1.94	1.99	2.03	2.13	2.19	2.28				

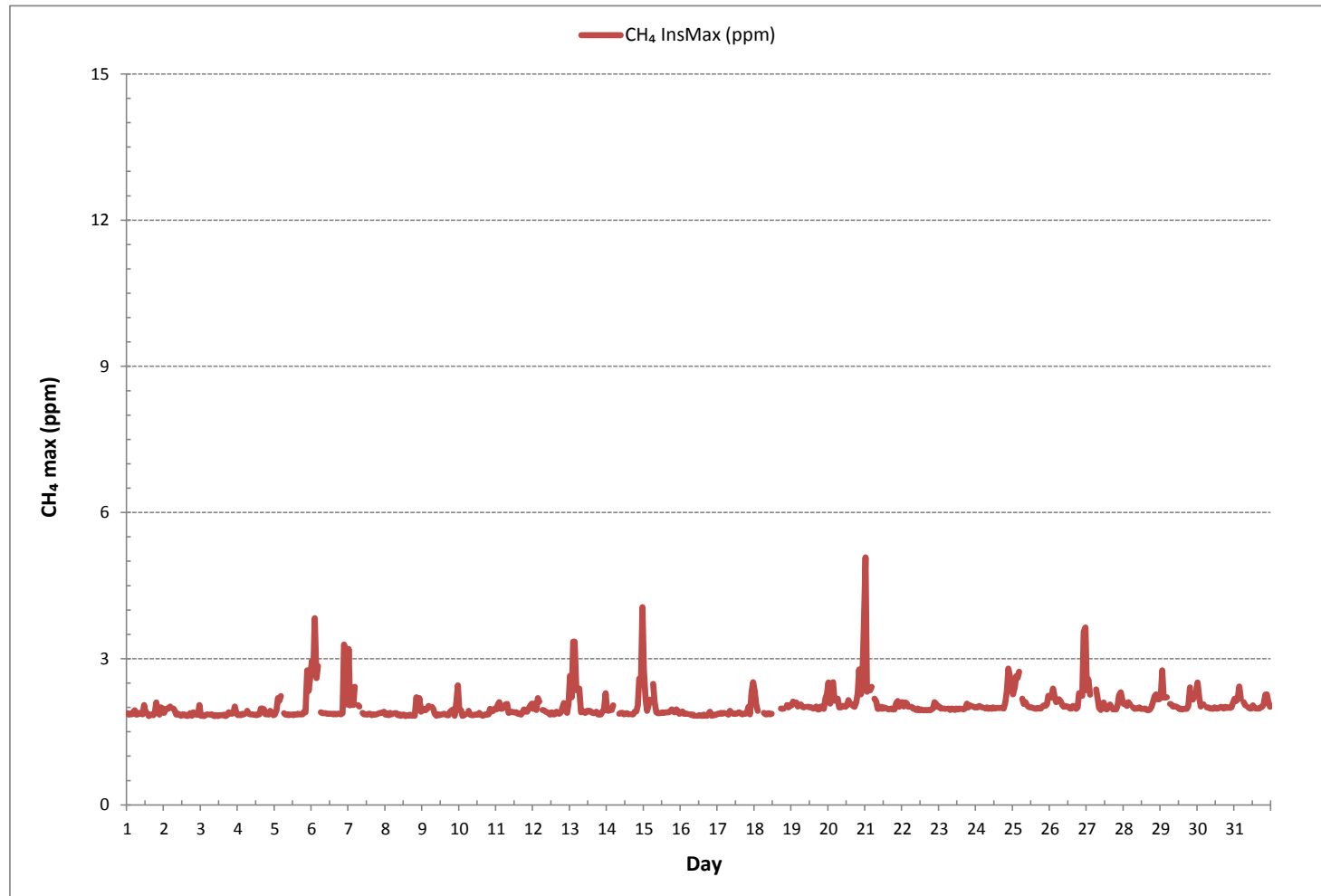
STATUS FLAG CODES

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:	696				
MAXIMUM INSTANTANEOUS VALUE:	5.08	ppm	@ HOUR	0	ON DAY 21
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	731	hrs
MONTHLY CALIBRATION TIME:	5	hrs			
STANDARD DEVIATION:	0.28				

METHANE MAX Instantaneous Maximum (CH₄ ppm)



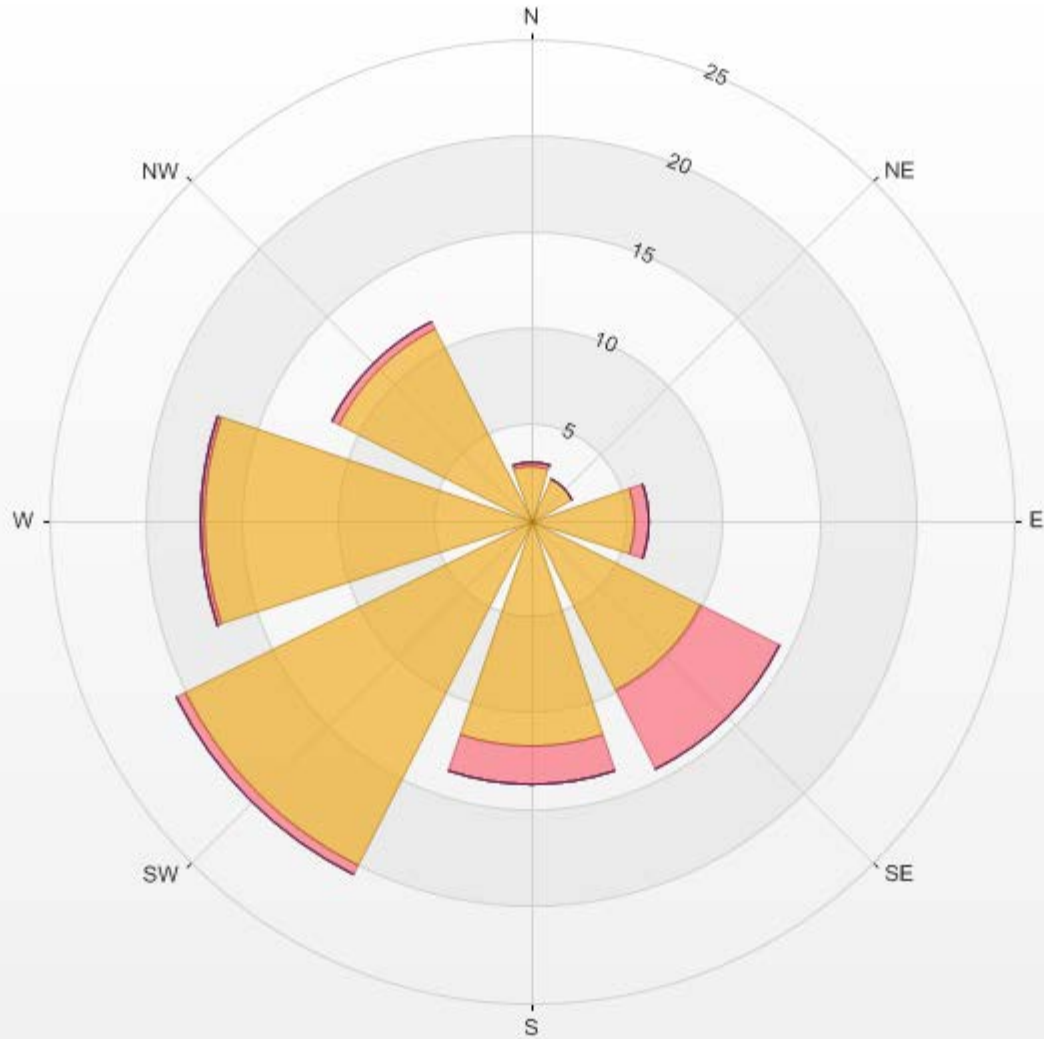
Wind: PRAMP_986
Poll.: PRAMP_986-CH4[ppm]
Monthly: 2017/07
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 11.00%

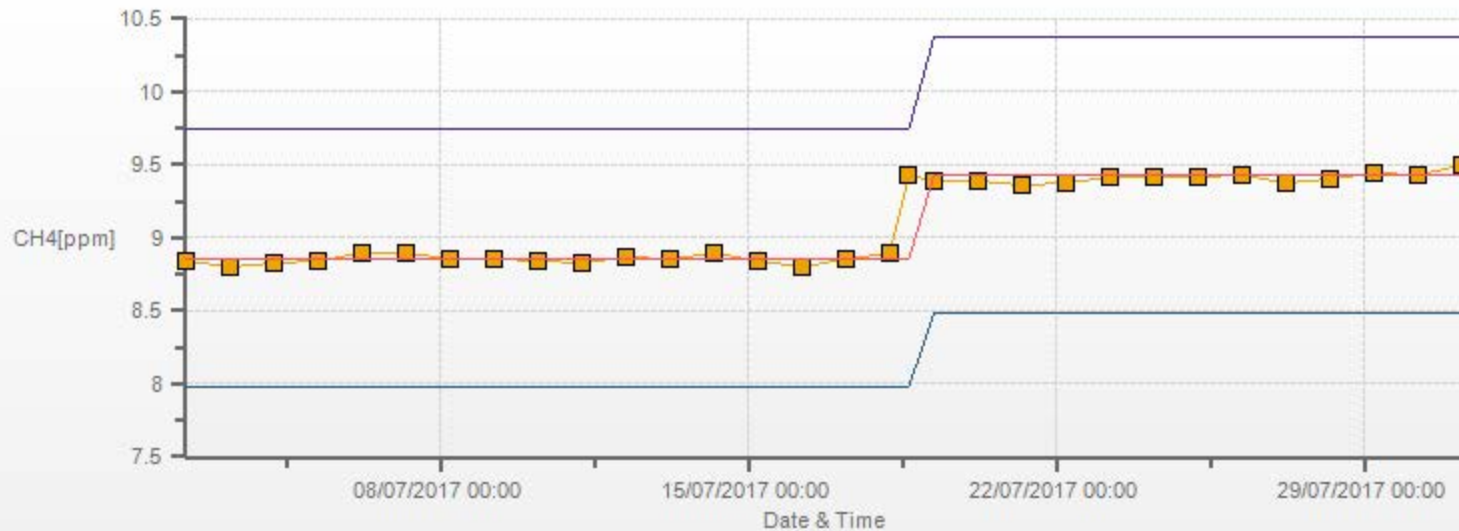
Calm Avg: 2.01 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	2.8	0.3	0.0	0.0	0.0	3.1
NE	2.4	0.0	0.0	0.0	0.0	2.4
E	5.4	0.7	0.0	0.0	0.0	6.1
SE	9.9	4.5	0.0	0.0	0.0	14.4
S	11.7	2.0	0.0	0.0	0.0	13.7
SW	20.0	0.6	0.0	0.0	0.0	20.6
W	16.9	0.3	0.0	0.0	0.0	17.2
NW	11.1	0.4	0.0	0.0	0.0	11.6
Summary	80.3	8.7	0.0	0.0	0.0	89.0

PRAMP_986 Poll.: PRAMP_986-CH4[ppm] 2017/07/01 00:00 - 2017/07/31 23:00 Calm: 11.00% Calm Poll Avg: 2.01[ppm]



CH4[ppm] Calibration: PRAMP_986 Monthly: 17/07 Type: Span



Span Meas Span Ref Span Low Span High

NON-METHANE HYDROCARBON



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 2017

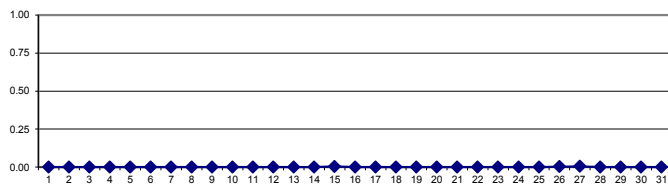
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
2	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
3	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
4	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
5	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
6	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
7	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
8	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	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	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
10	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
11	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
12	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
13	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
14	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
15	0.00	0.09	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	0.09	0.00	24
16	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
17	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
18	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	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
20	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
21	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
22	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
23	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
24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	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
26	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	0.05	0.02	0.00	0.01	0.00	0.00	0.05	0.00	24
27	0.06	0.06	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	0.06	0.01	24
28	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
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	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
31	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
HOURLY MAX	0.06	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.00	0.01	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

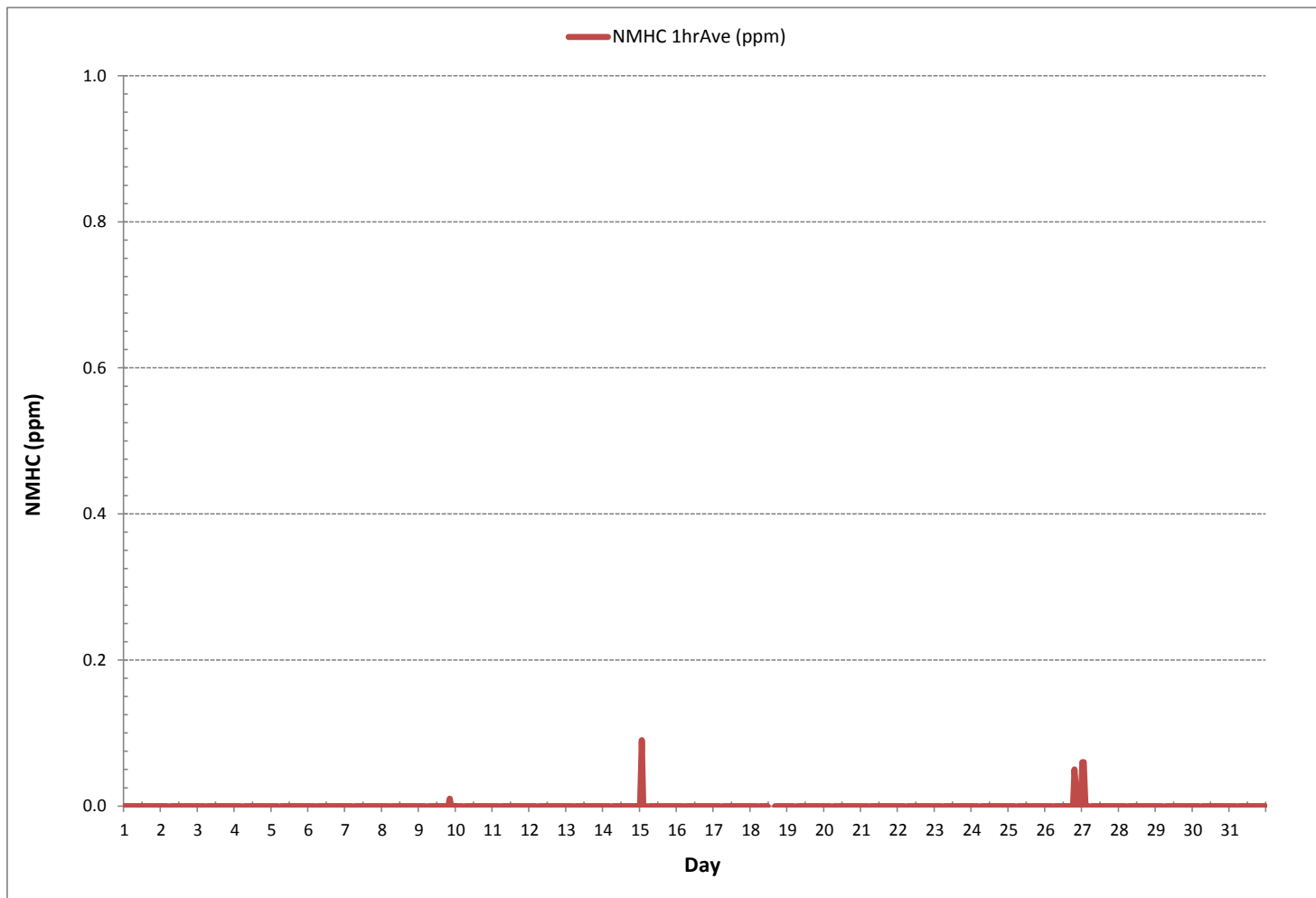
24 HR AVERAGES July 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	7				
MINIMUM 1-HR AVERAGE:	0.00	ppm	@ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.09	ppm	@ HOUR	1	ON DAY 15
MAXIMUM 24-HR AVERAGE:	0.01	ppm			ON DAY 27
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.01		MONTHLY AVERAGE:	0.00	ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
2	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	24
3	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	24
4	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	24
5	0.00	0.00	0.00	0.00	0.00	S	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
6	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	0.05	0.05	0.00	0.05	0.00	0.00	24
7	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	P	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.08	0.06	0.04	0.04	0.00	0.00	0.08	0.01	0.00	23
8	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	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	0.04	0.00	0.00	0.01	0.00	0.00	0.07	0.06	0.00	0.04	0.13	0.00	0.13	0.02	0.00	24
10	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	24
11	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	24
12	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	24
13	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	24
14	0.00	0.00	0.00	0.00	0.00	S	0.00	P	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	22
15	0.06	0.26	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.01	24
16	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	P	0.00	0.00	0.00	0.00	0.00	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
17	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	24
18	0.00	0.00	0.00	P	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.00	0.00	P	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22
19	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	P	0.00	0.00	0.00	0.00	0.00	0.00	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
20	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	24
21	0.00	0.00	P	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	23
22	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	24
23	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	P	0.00	0.00	0.00	0.00	0.00	0.00	23
24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09	0.00	0.00	24
25	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	24
26	0.00	0.00	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	P	0.00	0.00	0.29	0.18	0.06	0.07	0.06	0.00	0.29	0.03	0.00	23
27	0.28	0.30	0.18	P	0.00	S	0.00	0.00	0.00	0.00	0.09	0.15	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.05	23
28	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	0.11	0.08	0.00	0.00	0.00	0.11	0.01	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	P	0.00	0.00	0.00	0.00	0.07	0.00	0.00	23
30	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	24
31	0.00	0.00	0.00	0.00	0.07	S	0.00	0.00	P	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	0.07	0.00	0.00	23
HOURLY MAX	0.28	0.30	0.18	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.09	0.15	0.00	0.04	0.00	0.07	0.01	0.00	0.05	0.29	0.18	0.08	0.09	0.13					
HOURLY AVG	0.01	0.02	0.01	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	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.01					

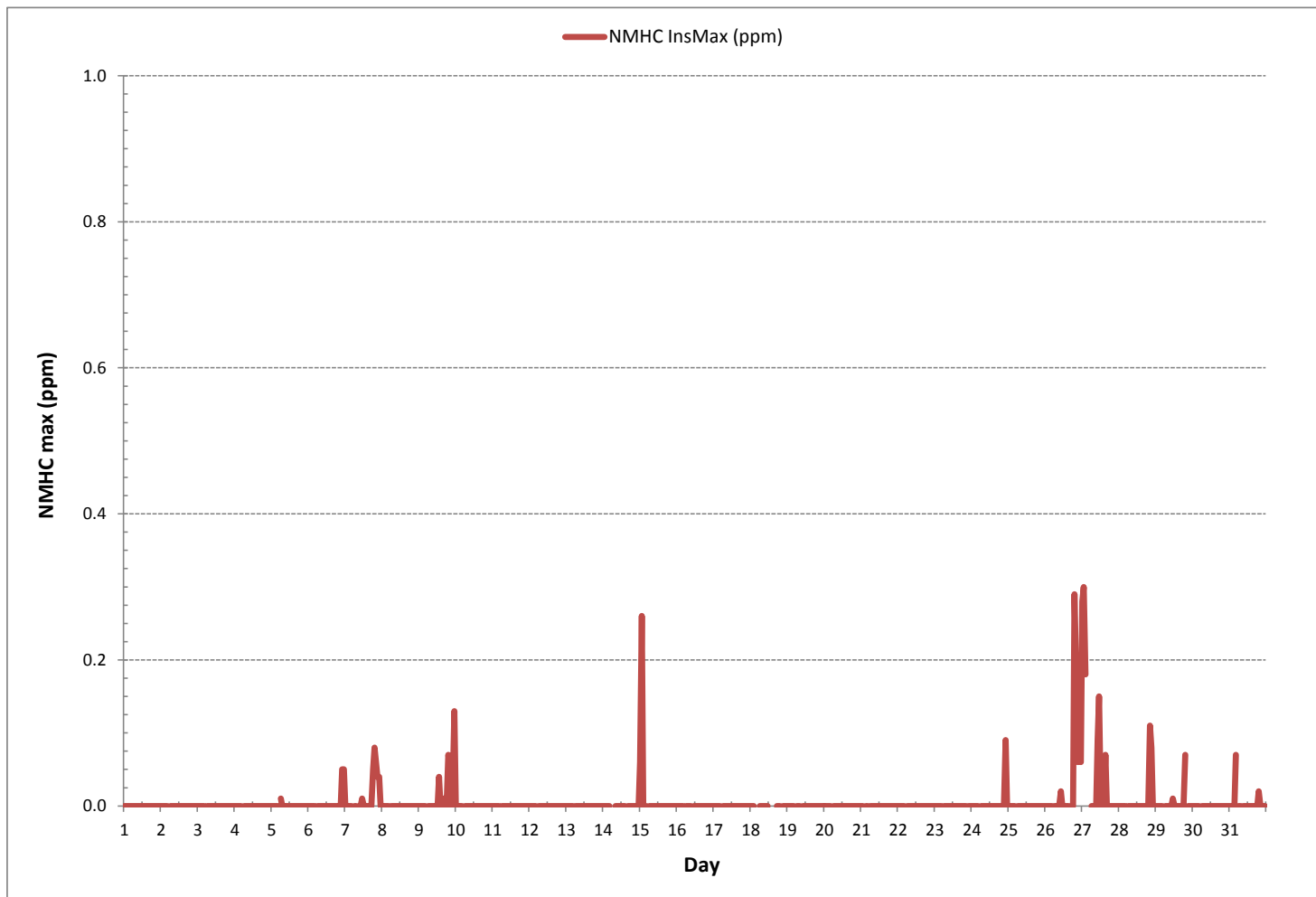
STATUS FLAG CODES

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:	36
MAXIMUM INSTANTANEOUS VALUE:	0.30 ppm @ HOUR 1 ON DAY 27
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.03
OPERATIONAL TIME:	731 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)



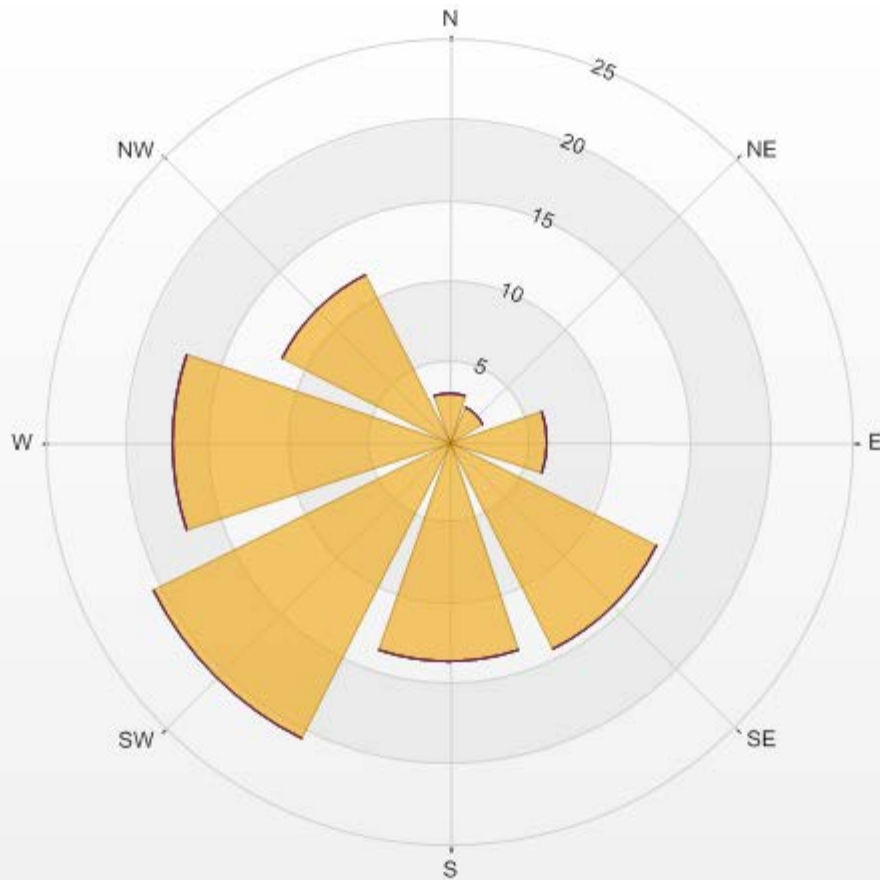
Wind: PRAMP_986
Poll.: PRAMP_986-NMHC[ppm]
Monthly: 2017/07
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 11.00%

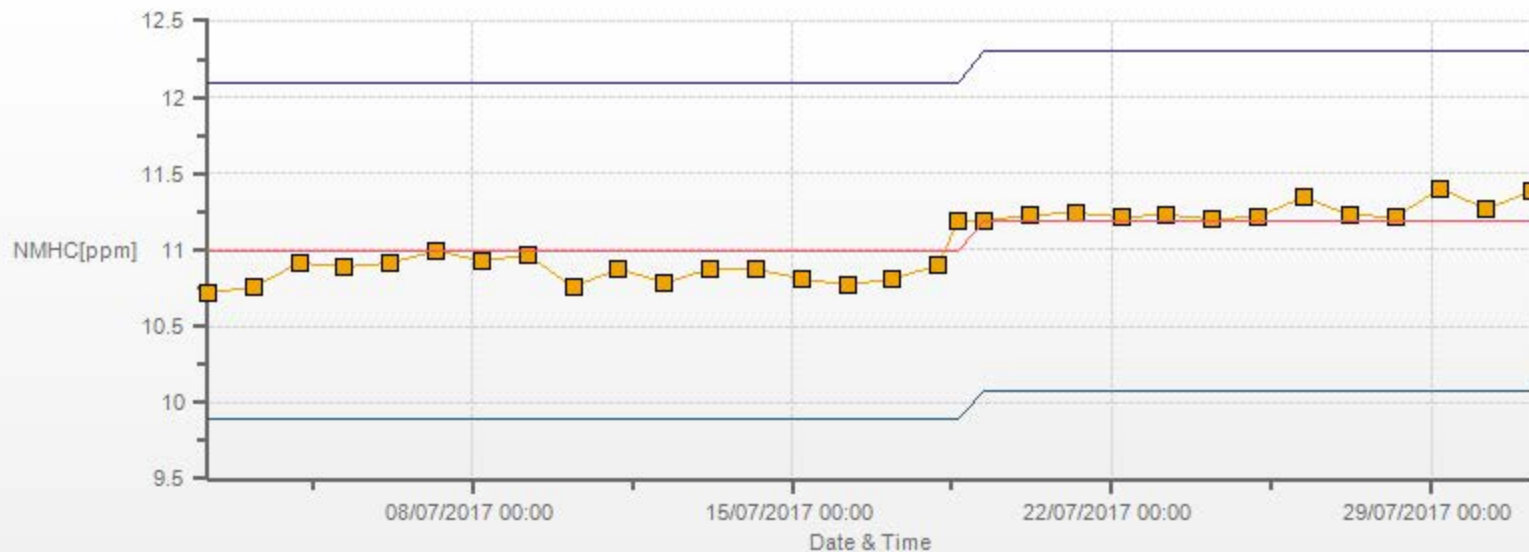
Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	3.1	0.0	0.0	0.0	0.0	3.1
NE	2.4	0.0	0.0	0.0	0.0	2.4
E	6.1	0.0	0.0	0.0	0.0	6.1
SE	14.4	0.0	0.0	0.0	0.0	14.4
S	13.7	0.0	0.0	0.0	0.0	13.7
SW	20.6	0.0	0.0	0.0	0.0	20.6
W	17.2	0.0	0.0	0.0	0.0	17.2
NW	11.6	0.0	0.0	0.0	0.0	11.6
Summary	89.0	0.0	0.0	0.0	0.0	89.0

PRAMP_986 Poll.: PRAMP_986-NMHC[ppm] 2017/07/01 00:00 - 2017/07/31 23:00 Calm: 11.00% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_986 Monthly: 17/07 Type: Span



Span Meas Span Ref Span Low Span High

WIND SPEED

WIND SPEED Hourly Averages (WS kph)

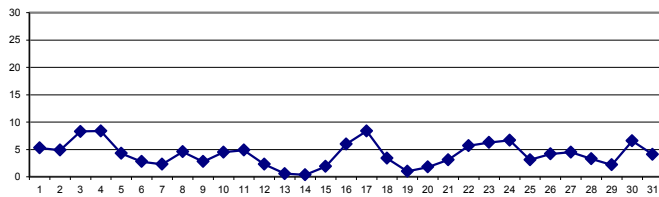
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	5.2	6.5	8.5	7.1	5.6	5.0	7.9	11.0	10.3	11.6	6.8	6.0	7.0	6.7	8.5	6.8	7.0	7.7	4.9	3.4	2.8	4.4	3.1	2.0	2.0	11.6	5.3	24
2	4.2	3.4	3.6	4.8	2.9	5.1	4.6	5.8	4.5	6.6	6.3	7.4	8.2	10.3	9.1	8.9	9.2	8.4	6.1	4.6	9.2	1.5	5.4	3.1	1.5	10.3	4.9	24
3	7.1	6.5	3.8	4.5	5.1	5.3	4.8	7.3	11.0	13.8	13.0	13.0	13.4	13.1	10.8	14.5	14.4	15.6	11.8	9.9	3.6	4.2	8.7	9.1	3.6	15.6	8.3	24
4	3.6	5.4	6.1	5.4	6.4	5.7	6.4	7.6	10.3	12.8	11.8	11.5	11.7	12.7	13.7	14.9	13.6	14.3	12.2	9.9	6.8	2.8	4.5	5.0	2.8	14.9	8.4	24
5	3.7	3.2	2.7	1.3	1.3	2.7	3.0	5.0	7.2	6.5	7.3	7.8	9.2	9.0	8.5	8.3	6.9	7.1	6.4	7.8	2.7	0.6	2.7	1.8	0.6	9.2	4.3	24
6	0.2	2.7	1.3	0.8	0.2	1.1	7.2	9.9	7.9	8.1	7.7	6.6	6.8	5.2	2.3	3.9	2.7	2.9	2.6	3.5	3.5	2.3	1.7	2.4	0.2	9.9	2.8	24
7	2.3	2.7	2.8	3.2	1.9	2.7	1.3	0.9	1.5	1.6	2.5	3.2	1.4	2.4	4.6	4.3	5.2	6.1	3.2	3.1	3.4	3.6	3.8	9.3	0.9	9.3	2.3	24
8	8.3	1.8	11.8	8.6	2.8	3.9	7.3	3.5	7.1	7.7	9.2	8.3	5.7	6.7	6.0	5.8	6.1	5.6	4.7	5.1	4.9	2.0	2.7	3.4	1.8	11.8	4.6	24
9	3.8	3.3	3.4	3.1	3.3	3.6	5.0	6.1	6.5	11.0	7.0	6.8	8.3	9.1	5.7	5.8	3.7	3.0	2.3	0.1	17.1	10.0	2.4	3.6	0.1	17.1	2.8	24
10	4.6	4.5	6.6	6.1	5.1	3.2	3.7	3.7	4.4	4.3	5.1	8.8	9.8	11.2	8.2	8.4	6.1	5.0	4.0	4.7	2.0	2.0	1.7	3.4	1.7	11.2	4.5	24
11	4.4	1.3	2.9	2.6	5.0	5.4	4.0	3.7	4.4	5.9	7.2	7.6	8.4	9.3	7.6	8.7	7.3	8.1	6.2	2.6	3.6	4.6	3.6	2.1	1.3	9.3	4.9	24
12	2.1	2.2	2.9	1.4	1.5	1.8	4.1	3.5	4.1	4.4	3.0	3.9	3.9	2.0	4.1	7.2	5.9	3.8	3.0	3.8	3.1	3.5	2.6	3.1	1.4	7.2	2.3	24
13	1.3	0.6	1.3	1.4	1.5	0.1	1.2	4.3	0.1	1.9	0.4	2.4	7.3	3.3	6.5	3.8	1.7	7.8	4.8	2.8	7.2	0.8	1.9	2.6	0.1	7.8	0.6	24
14	2.5	2.4	1.0	1.5	2.1	1.3	1.3	2.0	3.2	2.3	2.6	3.5	2.3	1.4	2.0	3.3	0.5	2.1	3.6	0.6	0.6	0.8	0.2	0.5	0.2	3.6	0.4	24
15	1.4	3.0	4.3	2.4	1.4	1.6	0.6	7.0	6.3	3.4	1.6	4.0	1.5	3.2	5.0	3.8	2.7	4.9	2.2	9.6	14.0	1.6	3.3	5.0	0.6	14.0	1.9	24
16	3.8	2.3	3.9	5.0	3.5	3.1	4.1	6.7	7.7	8.8	8.8	9.6	9.1	10.2	9.1	9.0	8.6	10.1	11.4	6.9	7.4	6.3	3.6	4.4	2.3	11.4	6.0	24
17	5.8	8.9	8.4	4.9	6.9	11.3	15.6	9.5	9.7	13.7	16.7	17.5	11.4	14.4	8.3	13.4	12.4	6.9	7.7	3.1	3.4	3.9	0.7	0.9	0.7	17.5	8.4	24
18	0.7	0.6	1.7	1.4	1.2	1.6	1.8	3.0	4.6	5.3	3.6	4.6	5.3	6.0	5.6	6.2	5.7	6.5	7.0	5.6	3.9	4.1	6.0	5.0	0.6	7.0	3.4	24
19	3.6	3.1	2.8	3.3	4.6	3.4	3.5	6.6	4.5	3.9	6.4	5.9	5.1	5.7	6.5	4.5	6.7	2.1	2.7	3.8	5.3	6.9	3.4	1.7	1.7	6.9	1.0	24
20	4.1	1.9	2.4	2.7	2.0	1.6	1.4	2.5	3.8	2.6	2.1	2.3	3.7	6.8	5.4	0.4	5.9	3.5	5.2	2.7	1.5	0.5	1.3	0.8	0.4	6.8	1.8	24
21	0.5	1.6	0.1	1.8	2.9	1.0	0.8	4.5	4.7	6.4	5.0	5.6	6.4	5.6	6.6	6.2	6.8	6.5	5.2	4.7	2.5	3.3	4.0	3.5	0.1	6.8	3.1	24
22	3.0	3.4	4.5	4.3	5.0	5.2	5.1	6.7	7.5	7.1	9.9	10.5	9.7	10.8	8.7	8.3	9.9	7.9	7.5	5.0	4.3	3.3	2.8	3.7	2.8	10.8	5.7	24
23	3.5	4.3	5.0	4.2	3.7	4.8	6.0	6.3	6.8	9.4	9.6	10.5	11.5	10.2	10.4	6.2	5.5	5.2	4.4	6.8	11.9	12.1	6.0	6.8	3.5	12.1	6.3	24
24	3.8	3.0	4.0	7.7	8.8	10.0	10.3	9.0	11.3	12.1	11.6	11.7	13.2	13.1	11.4	11.6	9.3	4.9	3.4	1.8	1.0	1.6	2.2	2.6	1.0	13.2	6.7	24
25	2.4	2.1	2.2	3.4	3.0	3.1	3.6	5.1	4.2	3.7	4.3	6.3	6.4	7.0	4.7	4.9	6.2	5.3	8.6	6.8	5.5	5.2	4.2	3.7	2.1	8.6	3.1	24
26	3.4	4.9	5.9	5.4	4.8	6.3	8.7	8.4	5.5	5.4	5.3	7.2	8.5	7.4	6.4	6.2	6.0	7.4	6.0	3.1	0.7	2.3	1.2	5.0	0.7	8.7	4.2	24
27	1.4	2.1	7.2	2.4	3.4	2.1	2.3	2.7	5.7	6.0	5.0	7.2	6.6	7.4	4.4	9.3	8.9	9.3	6.6	6.5	4.5	3.0	3.0	4.0	1.4	9.3	4.5	24
28	3.7	3.4	3.4	4.0	3.9	3.1	4.5	4.5	4.8	4.8	5.8	6.3	6.9	8.4	8.6	8.3	7.1	5.1	0.5	2.9	2.3	1.0	2.0	2.1	0.5	8.6	3.3	24
29	2.5	1.6	3.4	4.0	4.3	3.3	4.4	3.8	4.6	4.8	4.6	6.0	5.8	7.5	6.9	7.1	6.5	3.4	3.6	0.1	0.7	2.0	2.4	1.2	0.1	7.5	2.2	24
30	3.5	6.3	3.1	7.3	7.0	2.7	5.1	4.4	6.7	9.2	9.9	10.0	12.2	11.5	13.4	12.4	12.2	11.8	12.5	10.0	7.0	6.4	10.0	3.4	2.7	13.4	6.6	24
31	2.0	2.1	2.8	0.2	2.9	3.4	2.7	3.3	5.2	7.6	7.0	9.1	6.3	7.9	10.1	10.2	9.0	5.2	4.8	3.8	2.6	3.0	3.0	12.1	0.2	12.1	4.1	24
HOURLY MAX	8.3	8.9	11.8	8.6	8.8	11.3	15.6	11.0	11.3	13.8	16.7	17.5	13.4	14.4	13.7	14.9	14.4	15.6	12.5	10.0	17.1	12.1	10.0	12.1				
HOURLY AVG	1.8	1.3	2.2	2.3	1.8	1.6	1.8	2.3	3.0	3.7	4.0	4.7	4.9	5.1	4.4	4.6	4.3	3.7	3.2	2.7	2.3	0.8	0.9	1.5				

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

LAST CALIBRATION: April 5, 2017
DECLINATION: MAGNETIC DECLINATION 15 DEGREE EAST

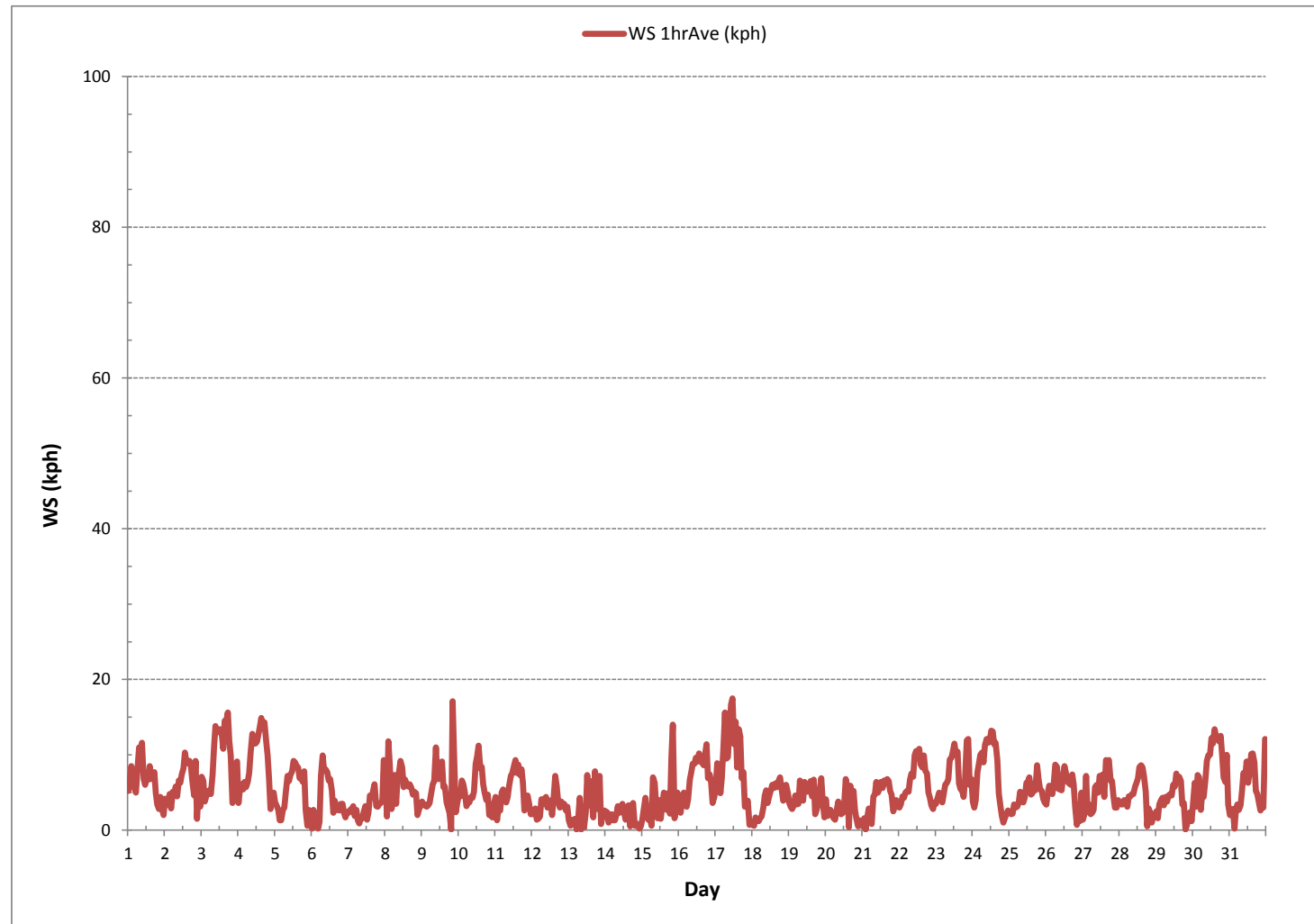
24 HR AVERAGES July 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	744				
MINIMUM 1-HR AVERAGE:	0.1 kph	@ HOUR	19	ON DAY	9
MAXIMUM 1-HR AVERAGE:	17.5 kph	@ HOUR	11	ON DAY	17
MAXIMUM 24-HR AVERAGE:	8.4 kph			ON DAY	4
MONTHLY CALIBRATION TIME:	0 hrs	OPERATIONAL TIME:	744 hrs		
STANDARD DEVIATION:	3.3	AMD OPERATION UPTIME:	100.0 %		
		MONTHLY AVERAGE:	2.5 kph		

WIND SPEED Hourly Averages (WS kph)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	13.1	15.2	18.3	16.6	11.5	12.0	14.3	20.0	22.1	22.6	24.3	23.1	28.9	23.1	29.5	30.6	21.6	15.5	21.0	11.0	5.7	7.7	18.3	8.8	5.7	30.6	18.1	24
2	9.2	7.3	8.9	10.3	8.6	12.4	12.7	17.1	13.3	19.1	22.6	28.0	32.5	37.9	29.5	40.3	33.9	29.1	23.5	15.8	45.2	18.8	14.2	11.9	7.3	45.2	20.9	24
3	24.0	19.6	14.7	16.1	16.1	16.7	16.1	28.1	39.8	43.6	47.2	55.7	44.8	46.5	38.4	55.6	47.2	66.7	34.5	26.9	7.6	19.2	27.7	27.4	7.6	66.7	32.5	24
4	17.6	19.9	20.1	20.8	20.5	17.8	23.1	25.0	35.0	38.7	37.1	45.9	38.8	40.8	51.9	40.7	49.2	37.1	37.1	34.0	21.9	12.4	13.0	18.8	12.4	51.9	29.9	24
5	13.4	11.3	7.3	4.8	5.0	5.8	10.8	14.2	17.7	18.2	33.4	26.2	28.5	26.6	26.3	35.3	26.2	23.8	21.9	19.0	9.5	3.5	16.6	8.7	3.5	35.3	17.3	24
6	13.4	6.7	5.7	5.4	4.8	11.9	20.1	22.5	19.5	19.2	19.2	18.3	18.4	19.7	19.4	16.6	12.0	14.4	12.7	12.6	7.8	8.2	8.8	7.5	4.8	22.5	13.5	24
7	6.7	5.9	7.1	7.0	6.1	7.6	6.5	3.2	P	11.9	12.1	14.7	14.3	13.4	19.4	16.7	19.6	27.3	13.4	8.0	11.9	12.7	12.8	47.7	3.2	47.7	13.3	23
8	36.2	15.6	23.3	26.5	16.0	11.0	15.9	10.7	13.7	15.6	16.8	17.4	25.9	20.7	18.7	18.9	22.3	19.8	14.3	10.8	7.7	5.4	7.1	8.2	5.4	36.2	16.6	24
9	7.8	7.6	7.7	7.5	8.4	8.0	11.3	13.0	18.1	26.6	22.4	23.2	27.1	27.0	30.4	21.4	11.8	11.3	6.5	4.2	56.2	36.1	7.3	9.8	4.2	56.2	17.1	24
10	13.9	17.3	20.0	19.2	16.0	13.3	9.7	14.2	17.0	14.4	13.4	18.6	23.1	26.6	21.9	30.4	21.5	17.4	18.8	17.0	10.7	6.2	7.4	8.0	6.2	30.4	16.5	24
11	8.9	4.8	5.6	6.7	14.7	P	7.4	9.2	13.4	16.5	15.8	17.6	16.1	15.7	18.4	18.4	17.1	16.1	13.5	8.1	7.8	10.8	12.3	6.7	4.8	18.4	12.2	23
12	5.6	7.6	7.1	6.1	5.2	6.8	9.2	8.2	11.1	11.1	11.9	15.9	16.8	11.1	16.3	22.9	15.1	11.6	16.5	24.8	40.2	15.9	10.3	8.0	5.2	40.2	13.1	24
13	6.7	4.6	5.9	4.1	5.2	2.9	6.8	13.4	5.9	10.6	8.7	14.7	18.6	15.5	23.6	14.9	9.1	38.4	18.4	16.6	16.1	6.5	5.1	4.8	2.9	38.4	11.5	24
14	6.1	5.1	4.6	4.6	5.0	4.2	4.8	P	11.8	8.0	11.6	13.3	14.5	12.0	12.3	P	10.2	9.8	9.8	4.4	4.9	3.8	3.2	3.3	3.2	14.5	7.6	22
15	6.1	12.3	15.3	11.3	7.3	7.7	6.0	17.9	19.6	11.9	7.5	11.0	10.7	17.1	14.3	11.5	13.3	11.1	8.1	24.2	48.7	14.0	13.4	12.2	6.0	48.7	13.9	24
16	11.3	12.4	14.2	13.0	13.4	14.8	14.7	23.3	25.6	27.4	P	41.2	31.1	40.7	34.4	32.0	35.3	36.6	28.7	26.7	29.7	22.9	16.0	13.7	11.3	41.2	24.3	23
17	16.9	20.1	21.8	15.5	17.7	33.3	38.9	24.1	25.1	32.5	38.1	36.9	29.6	30.3	24.5	25.0	26.0	21.5	23.2	9.2	24.6	15.9	4.4	3.6	3.6	38.9	23.3	24
18	3.2	6.6	8.9	P	4.9	5.3	6.4	8.3	12.6	15.4	12.9	16.6	17.0	20.3	22.0	19.1	20.8	22.1	20.2	18.3	P	10.3	15.4	11.5	3.2	22.1	13.6	22
19	12.2	6.5	6.3	5.5	7.0	7.6	17.0	20.2	14.5	P	19.5	16.4	16.9	19.4	30.0	22.4	25.9	8.4	6.3	19.9	16.2	19.9	12.5	20.4	5.5	30.0	15.3	23
20	10.8	13.6	8.6	10.9	12.0	7.4	4.9	8.5	12.4	9.3	11.3	10.3	15.1	20.3	24.6	7.9	16.8	14.3	13.5	10.8	9.5	4.8	7.1	6.5	4.8	24.6	11.3	24
21	18.5	7.8	P	7.4	6.7	4.9	3.9	11.6	11.1	13.4	15.3	16.8	18.1	21.3	24.5	22.3	20.2	18.6	18.3	18.7	9.9	12.3	15.9	13.5	3.9	24.5	14.4	23
22	6.8	8.3	8.8	8.7	9.7	10.8	20.3	23.9	24.1	27.7	32.2	38.5	32.1	36.1	30.1	28.7	32.5	32.4	30.8	22.6	15.8	12.3	13.1	13.6	6.8	38.5	21.7	24
23	13.7	16.7	18.4	14.3	15.0	19.7	22.2	21.5	25.8	28.5	30.7	32.7	35.3	31.8	29.3	16.9	18.7	17.0	18.0	18.2	30.7	P	12.5	15.6	12.5	35.3	21.9	23
24	14.8	8.8	7.7	15.7	17.8	19.5	23.1	24.4	26.1	27.0	27.5	33.9	39.4	38.9	29.8	29.9	21.5	15.2	10.4	7.2	3.3	5.2	5.1	5.8	3.3	39.4	19.1	24
25	5.0	5.1	5.2	6.6	6.4	8.6	8.8	9.6	10.5	11.5	16.1	22.7	25.5	24.1	19.8	18.2	21.9	19.2	20.0	21.1	10.9	7.1	6.9	6.8	5.0	25.5	13.2	24
26	7.6	9.6	9.8	10.4	9.4	11.1	14.9	14.5	14.2	16.1	15.4	19.8	25.6	27.7	19.8	21.2	P	19.1	13.1	6.6	3.3	6.6	5.6	31.1	3.3	31.1	14.5	23
27	13.9	24.5	30.3	P	8.4	6.9	7.2	9.0	16.3	12.9	15.6	21.0	22.7	32.1	16.6	17.2	25.6	24.3	23.5	20.9	15.1	10.0	8.4	14.1	6.9	32.1	17.2	23
28	10.9	9.3	11.4	11.2	8.9	9.4	13.5	13.6	15.7	12.9	18.8	22.4	31.1	30.1	31.9	32.7	31.4	17.4	8.4	8.3	5.2	5.3	5.0	5.9	5.0	32.7	15.4	24
29	12.1	8.8	8.9	8.7	8.4	10.5	11.1	13.3	13.8	13.7	15.7	19.7	19.5	22.0	21.9	24.2	28.3	13.3	10.0	2.2	P	5.1	7.2	4.0	2.2	28.3	13.1	23
30	9.7	27.4	13.7	13.8	12.8	11.1	13.7	16.3	22.1	30.7	30.2	30.6	36.4	54.0	44.7	40.6	38.9	41.5	36.1	32.0	21.7	22.5	23.9	20.1	9.7	54.0	26.9	24
31	6.3	9.6	11.2	6.2	6.1	6.6	8.8	10.7	P	21.9	19.9	25.7	21.4	22.9	41.8	30.1	20.4	21.5	17.0	11.7	6.4	9.2	14.4	27.2	6.1	41.8	16.4	23
HOURLY MAX	36.2	27.4	30.3	26.5	20.5	33.3	38.9	28.1	39.8	43.6	47.2	55.7	44.8	54.0	51.9	55.6	49.2	66.7	37.1	34.0	56.2	36.1	27.7	47.7				
HOURLY AVG	11.7	11.5	11.9	10.9	10.2	10.9	13.0	15.7	18.2	19.6	20.8	24.2	25.0	26.6	26.3	25.4	23.8	22.3	18.3	15.9	17.4	11.7	11.3	13.1				

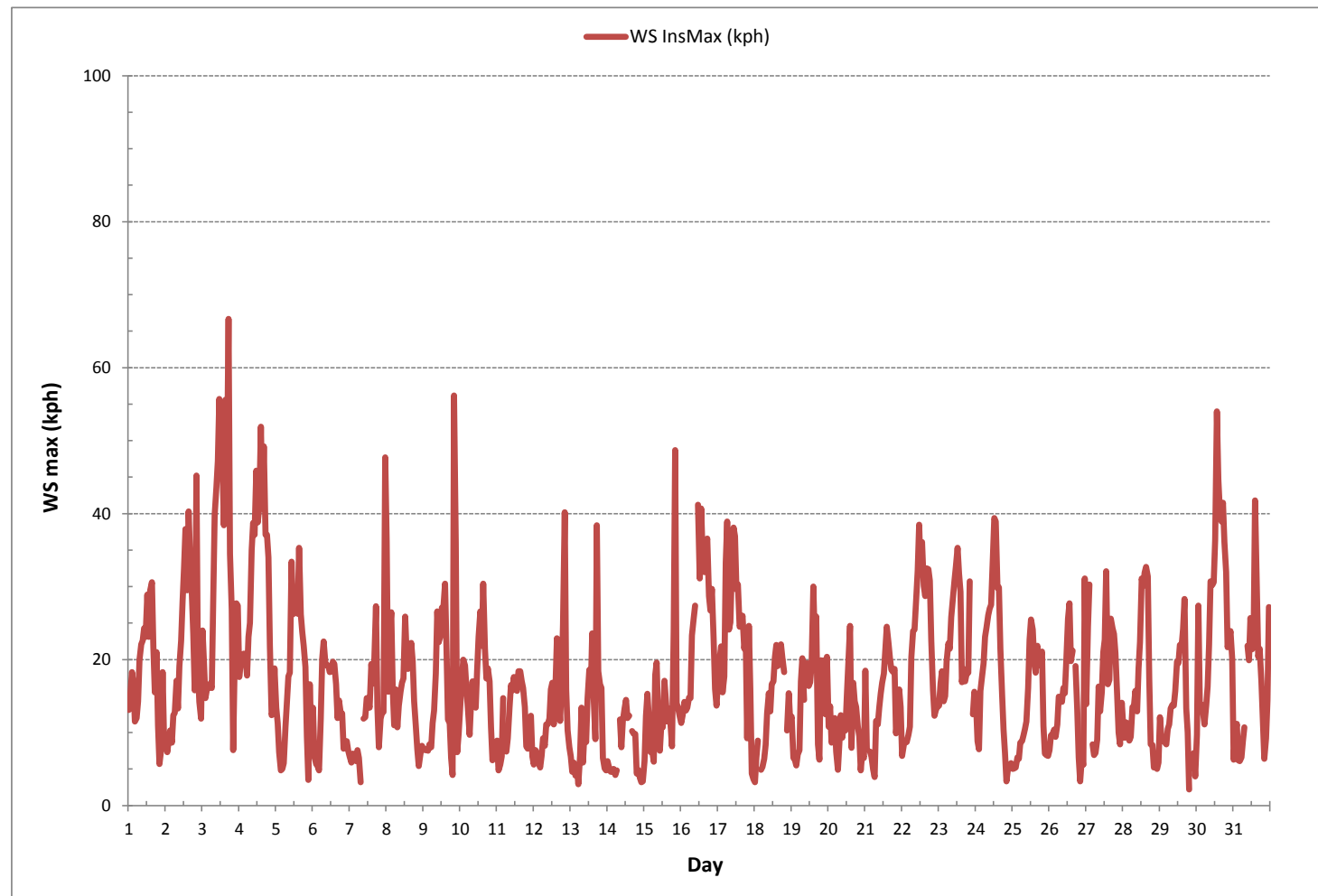
STATUS FLAG CODES

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:	66.7	kph	@ HOUR	17	ON DAY	3
OPERATIONAL TIME:	730	hrs				

WIND SPEED Instantaneous Maximum (WS kph)



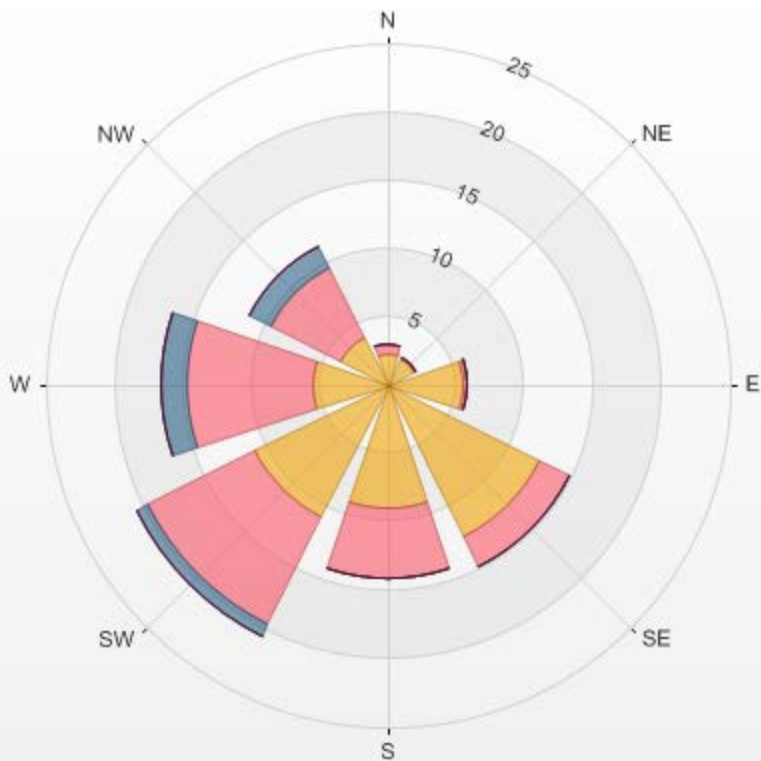
Wind: PRAMP_986
 Monitor: WSP [kph]
 Monthly: 17/07
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 11.42%

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	2.3	0.7	0.0	0.0	0.0	0.0	3.0
NE	2.2	0.1	0.0	0.0	0.0	0.0	2.3
E	5.5	0.4	0.0	0.0	0.0	0.0	5.9
SE	12.4	2.6	0.0	0.0	0.0	0.0	14.9
S	9.0	5.1	0.0	0.0	0.0	0.0	14.1
SW	10.9	8.7	0.9	0.0	0.0	0.0	20.6
W	5.5	9.1	1.9	0.0	0.0	0.0	16.5
NW	3.9	5.7	1.8	0.0	0.0	0.0	11.3
Summary	51.6	32.4	4.6	0.0	0.0	0.0	88.6

%	Icon	Classes (kph)
52		1.8-6.0
32		6.0-12.0
5		12.0-20.0
0		20.0-29.0
0		29.0-39.0
0		>39.0

PRAMP_986 2017/07/01 00:00 - 2017/07/31 23:00 Calm: 11.42% Calm Wind Avg Speed: 1.08(kph)



WIND DIRECTION



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 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	SE	SE	SE	SE	SE	SE	SE	SSE	S	S	SSW	SW	WSW	WSW	SSW	SW	SSW	S	SW	SSW	S	SE	S	SSE	S	24	
2	ESE	SE	SSE	SE	SE	S	SSW	SW	SW	SSW	SW	SW	WSW	WSW	SSW	SW	SW	SW	SW	SSW	WSW	WSW	SSE	SSW	SSW	24	
3	SSW	SSW	SSW	SW	SSW	SSW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WNW	WNW	S	WSW	WNW	W	WSW	24	
4	SW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	WSW	SW	SW	WSW	24	
5	SW	WNW	SSW	SSE	SE	S	SW	WSW	WNW	W	W	W	W	WNW	W	W	W	W	W	WNW	NW	NE	N	NNE	W	24	
6	NW	NNW	SE	SE	ENE	NW	NNW	NNW	NNW	NW	WNW	WNW	NW	NW	N	NNW	NNE	ENE	NNE	NNE	NE	ENE	ESE	ESE	NNW	24	
7	ESE	ESE	ESE	ESE	ESE	ESE	E	E	ENE	NNE	NNE	ESE	NE	SSE	ENE	E	E	ENE	E	ENE	E	E	ESE	SW	E	24	
8	WSW	E	SE	S	SSW	S	S	S	SSE	S	S	S	SW	WSW	WSW	SW	WSW	SW	SW	S	SSE	ESE	ESE	ESE	S	24	
9	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	ESE	ESE	E	SE	SSE	NNE	ENE	E	SE	S	WNW	NW	SSE	S	ESE	24	
10	SSE	SSW	SW	SW	WSW	SSW	S	SW	SW	SW	SSW	S	S	S	S	SSW	SW	WSW	WSW	WSW	WSW	SE	ESE	ESE	SSW	24	
11	ESE	ESE	SE	ESE	SE	SE	SSE	S	SSW	S	S	S	SSE	SSE	SSE	S	SSE	S	SSW	SE	SE	SE	ESE	ESE	SSE	24	
12	ESE	ESE	ESE	E	ENE	ESE	ESE	ESE	SE	SE	ENE	SSW	SSE	E	E	SE	ESE	ENE	NNE	NNW	SE	NW	NE	ESE	ESE	24	
13	SE	NNE	NW	SE	ESE	E	ENE	NE	NE	S	WNW	W	WNW	N	ENE	ENE	SE	W	N	SW	WNW	SSW	SE	SE	NNW	24	
14	SE	SSE	SSE	SE	SE	ESE	S	WSW	WSW	W	NNW	NNE	E	ESE	ESE	SSE	W	WNW	WNW	WNW	ENE	ESE	NE	ESE	S	24	
15	E	ESE	ESE	NE	NE	N	NNW	NNW	N	NNE	ESE	SSE	S	W	WNW	NW	NNW	NW	NNW	NW	NW	N	NNW	S	NNW	24	
16	ESE	SSW	SSW	SSW	SSW	SW	SSW	SW	SW	WSW	SW	WSW	WSW	WSW	WSW	WSW	W	W	WNW	W	W	WSW	WSW	WSW	WSW	24	
17	W	WNW	WNW	W	WNW	WNW	NW	NNW	NNW	NW	NW	NW	NW	NNW	NNW	WNW	WNW	WNW	NW	WNW	WNW	N	N	S	S	NW	24
18	SSE	SW	SSW	S	S	WNW	W	W	WNW	WNW	W	WSW	SSW	SW	W	SW	SW	SW	SW	SSW	S	S	S	S	SW	24	
19	SSE	ESE	SE	SE	SE	SE	S	SSW	SW	WSW	WNW	W	WSW	W	W	W	NNW	E	ENE	NNE	NNW	ENE	N	W	24		
20	ESE	N	N	ESE	E	NNW	N	ESE	ESE	E	E	NE	E	SE	SSE	E	NE	ENE	SE	SE	NW	E	ESE	NNE	E	24	
21	SSE	ENE	ENE	SE	NW	SE	SE	NW	NW	WNW	W	W	W	W	W	WSW	W	WSW	WSW	WSW	SSW	SSW	SW	SW	W	24	
22	S	S	S	SSE	SSE	S	SSW	SW	SW	SW	SW	WSW	WSW	SW	WSW	SW	WSW	WSW	WSW	WSW	W	SW	S	SSW	SW	24	
23	SSW	SW	SW	SW	SW	SW	WSW	WSW	WSW	W	WSW	WSW	W	W	WNW	W	WSW	WSW	WSW	WNW	NW	WNW	WNW	NW	W	24	
24	NW	NNW	WNW	WNW	NW	NW	NW	NNW	NW	NW	NNW	NNW	NNW	NW	NW	WNW	WNW	WNW	WNW	W	ESE	E	SE	SE	NW	24	
25	ESE	ESE	ESE	SE	ESE	SE	SE	SSE	SSE	SSE	SSW	SW	WSW	W	WSW	WSW	WSW	SW	S	S	S	SSE	SE	SE	S	24	
26	ESE	SE	SE	SE	ESE	SE	SE	SSE	SSW	S	SW	SSW	S	SSW	SSW	SSW	SSW	S	S	SSE	ESE	ESE	ESE	NW	S	24	
27	ESE	S	S	SE	SE	ESE	SE	S	SSW	SSW	SW	SSW	SSW	WSW	SW	SSE	S	SSW	SSW	SW	SW	SSW	SSW	SW	SSW	24	
28	SW	SSW	SSW	S	S	SSW	SSW	SW	SW	WSW	WSW	WSW	SW	SW	WSW	WSW	WNW	N	NE	S	S	E	SE	ESE	SW	24	
29	ESE	ESE	SE	SE	SE	SE	S	SW	WSW	W	WSW	SW	WSW	W	SSW	WSW	WSW	WSW	WNW	WSW	ESE	ESE	ESE	E	SW	24	
30	SE	SW	S	SE	SE	SSW	SSW	SW	WSW	W	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	WNW	W	WSW	24	
31	SSW	SW	W	NNE	SE	SE	SSW	W	WNW	NW	NW	NW	WNW	NW	NNW	NW	NW	WNW	NW	NW	N	N	W	WNW	NW	24	

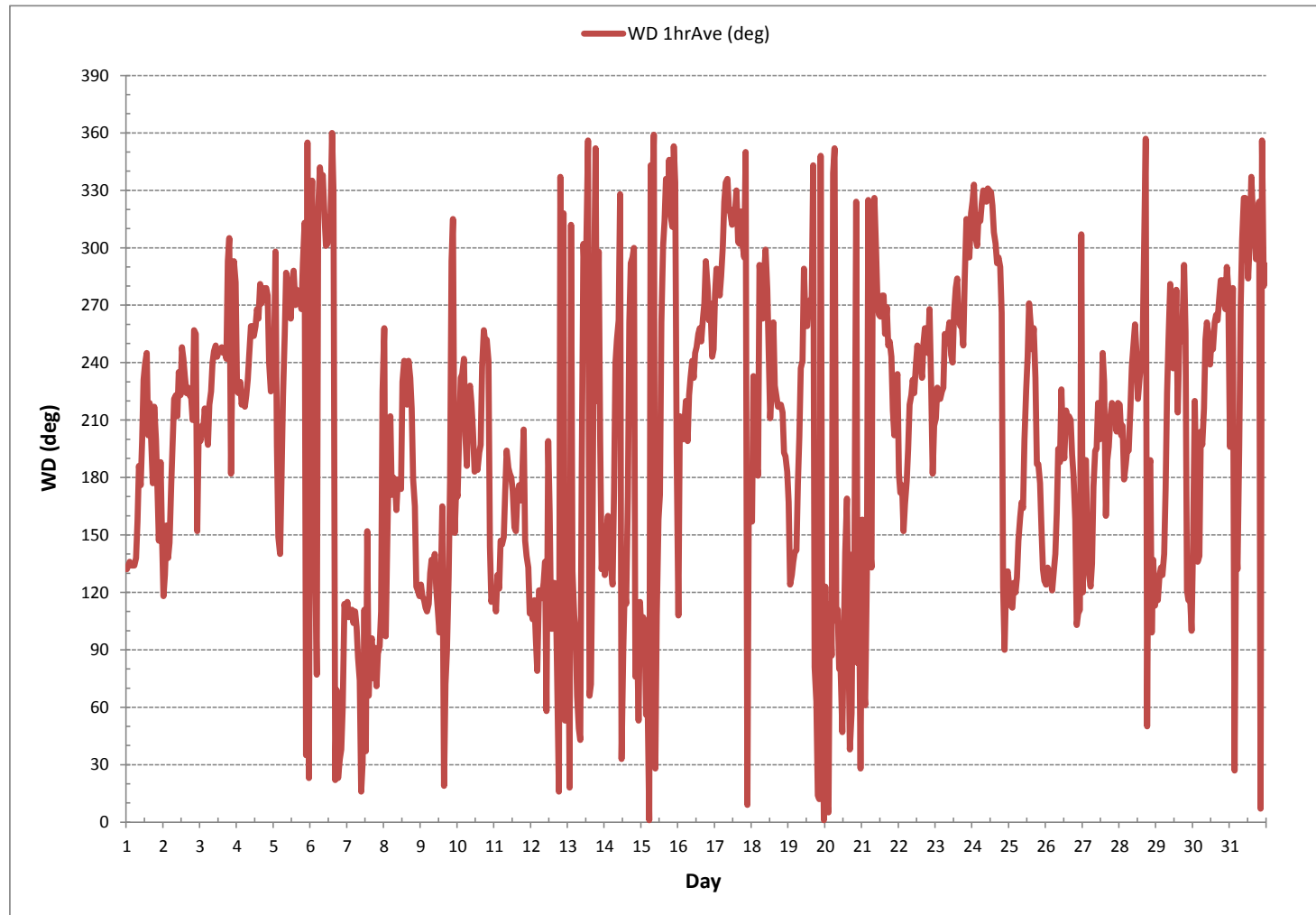
STATUS FLAG CODES

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 5, 2017
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	744	hrs
STANDARD DEVIATION:	81		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	239 (WSW)	

WIND DIRECTION Hourly Averages (WD)



RELATIVE HUMIDITY

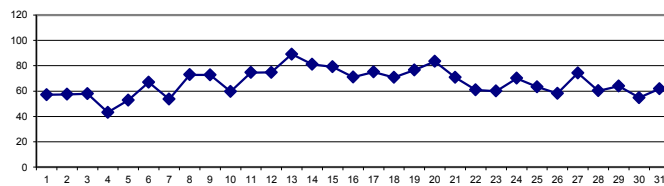
RELATIVE HUMIDITY Hourly Averages (RH %)

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	82	82	81	81	83	81	73	62	56	59	51	46	38	35	36	34	38	42	30	38	46	62	63	70	30	83	57	24
2	75	78	83	82	88	83	71	58	57	55	50	44	39	33	33	32	31	31	32	38	52	73	80	81	31	88	57	24
3	81	82	83	82	85	87	80	62	54	45	43	40	41	40	39	35	33	35	54	53	64	58	61	54	33	87	58	24
4	58	57	55	58	58	58	54	51	47	41	39	37	35	33	32	31	31	31	29	30	32	41	47	50	29	58	43	24
5	53	58	75	83	87	78	65	59	58	54	49	47	41	38	34	31	29	28	28	30	38	58	75	71	28	87	53	24
6	85	89	90	93	92	82	77	74	72	70	65	60	55	50	48	43	43	43	42	43	50	66	83	89	42	93	67	24
7	90	90	88	90	90	80	69	57	51	43	39	35	33	32	30	29	28	31	35	39	43	48	51	64	28	90	54	24
8	85	94	93	90	88	91	91	93	94	89	81	72	59	53	49	46	43	43	45	52	56	74	82	85	43	94	73	24
9	87	88	89	89	91	80	74	64	59	53	52	50	48	47	62	93	83	77	72	75	73	68	81	88	47	93	73	24
10	89	83	76	74	76	77	74	64	61	59	56	53	48	44	43	41	38	38	38	35	45	60	75	81	35	89	60	24
11	82	86	88	85	85	85	84	84	81	79	81	78	80	75	64	56	51	50	47	50	60	78	88	93	47	93	75	24
12	93	94	96	96	96	96	93	89	78	69	62	51	47	46	47	45	44	48	55	75	85	95	96	97	44	97	75	24
13	97	97	98	98	98	98	98	96	88	84	74	73	83	90	87	81	75	80	90	87	86	90	94	96	73	98	89	24
14	97	97	97	98	98	98	99	99	99	98	92	82	74	66	59	51	48	46	48	56	70	86	93	94	46	99	81	24
15	95	96	91	90	95	95	93	92	83	77	73	70	66	64	62	59	58	56	66	71	83	85	88	92	56	96	79	24
16	95	96	96	94	90	86	85	78	70	67	67	62	55	50	50	51	55	57	60	61	58	67	76	79	50	96	71	24
17	80	81	82	83	85	94	95	92	87	74	62	59	66	75	72	63	57	52	54	60	70	79	87	90	52	95	75	24
18	92	94	94	94	95	92	87	75	70	66	62	58	52	48	46	49	50	50	51	60	63	79	86	87	46	95	71	24
19	90	93	95	96	97	96	89	74	73	67	63	60	57	53	50	56	88	69	71	76	77	79	79	87	50	97	76	24
20	92	89	94	96	94	95	91	78	74	69	64	59	55	57	84	94	93	84	80	80	91	95	96	97	55	97	83	24
21	97	98	98	98	98	99	99	96	85	78	71	66	58	53	48	42	39	41	44	46	52	67	67	60	39	99	71	24
22	73	77	82	83	86	84	73	62	60	56	52	45	44	43	44	45	44	46	47	52	55	62	75	70	43	86	61	24
23	76	75	77	79	80	74	64	60	60	48	45	44	42	42	39	41	41	43	48	54	66	74	82	86	39	86	60	24
24	89	93	93	93	92	92	91	89	84	77	65	59	53	54	49	42	40	38	36	39	58	78	87	90	36	93	70	24
25	92	93	94	95	95	96	91	76	67	61	54	48	44	37	36	35	32	32	37	39	44	67	74	80	32	96	63	24
26	81	76	78	81	83	83	75	60	54	51	48	47	37	33	31	29	32	36	40	48	65	78	79	68	29	83	58	24
27	73	77	84	92	95	96	96	86	77	68	63	58	66	73	81	81	64	57	54	57	67	69	78	70	54	96	74	24
28	67	76	76	80	85	84	76	66	62	58	53	48	45	41	38	38	42	45	41	38	46	73	81	85	38	85	60	24
29	86	89	92	89	91	90	79	63	61	59	54	48	41	38	38	34	37	37	42	54	69	81	80	81	34	92	64	24
30	87	76	86	92	93	92	88	78	72	56	45	43	35	35	27	24	23	25	28	32	38	41	43	54	23	93	55	24
31	68	67	66	78	87	89	77	64	58	53	50	46	45	47	48	48	52	58	45	50	66	67	70	84	45	89	62	24
HOURLY MAX	97	98	98	98	98	99	99	99	99	98	92	82	83	90	87	94	93	84	90	87	91	95	96	97				
HOURLY AVG	83	85	86	87	89	87	82	74	69	64	59	54	51	49	49	48	47	47	48	52	60	71	77	80				

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

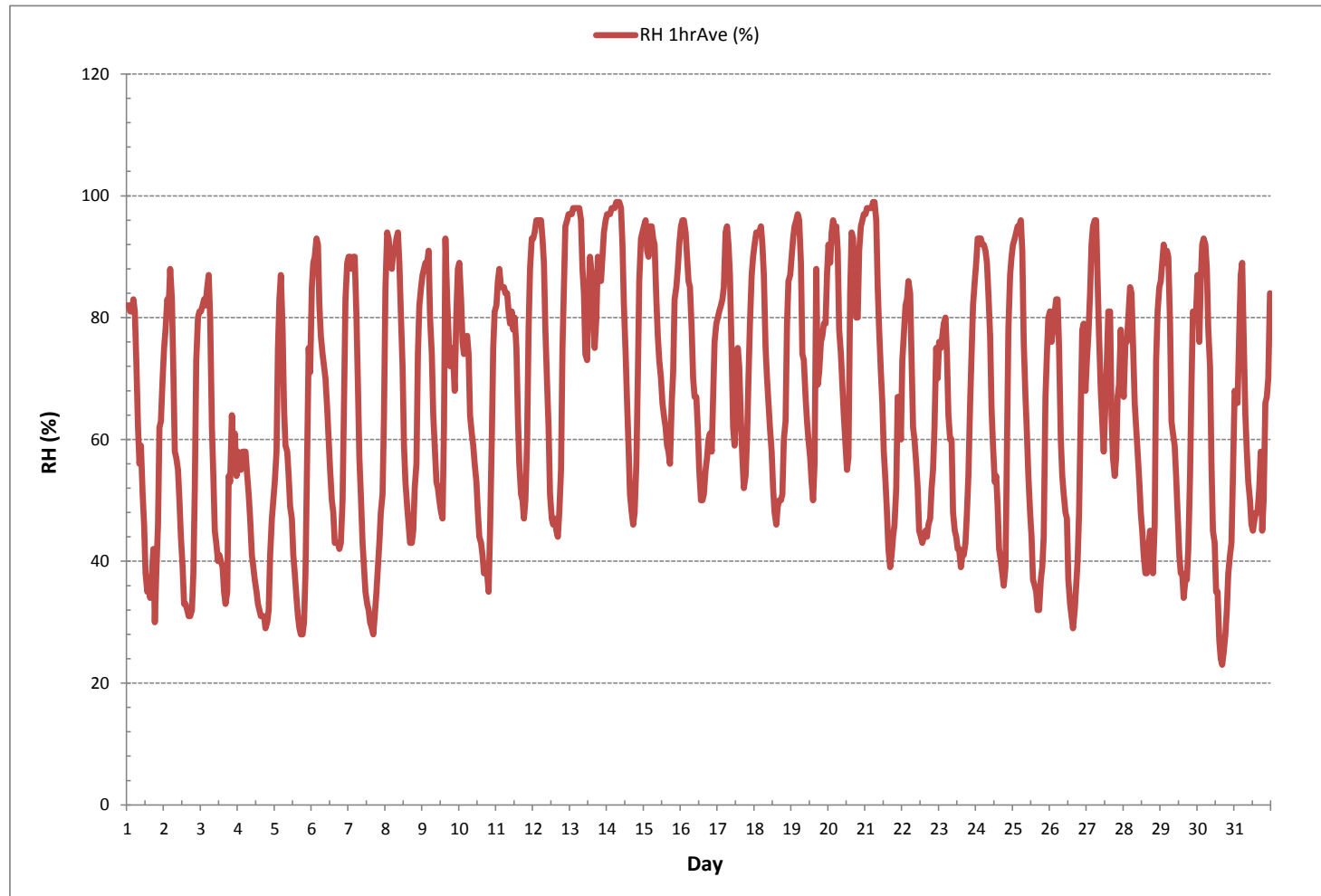
24 HR AVERAGES July 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	23	%	@ HOUR	16	ON DAY	30
MAXIMUM 1-HR AVERAGE:	99	%	@ HOUR	6	ON DAY	14
MAXIMUM 24-HR AVERAGE:	89	%			ON DAY	13
OPERATIONAL TIME:					744	hrs
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	20		MONTHLY AVERAGE:		67	%

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE

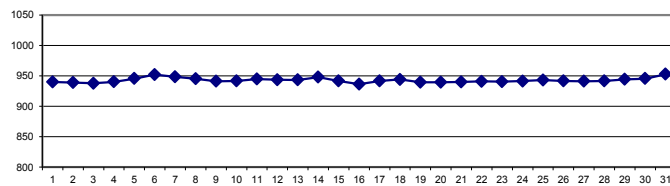
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

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	942	941	941	941	941	941	940	940	940	940	940	940	940	940	940	939	939	939	939	939	939	939	939	940	939	942	940	24	
2	939	939	939	939	940	940	940	940	941	940	941	940	939	939	939	938	937	937	937	937	938	937	937	937	937	937	941	939	24
3	937	937	937	937	937	937	937	937	937	937	937	938	938	938	938	937	938	938	938	938	939	938	939	939	939	937	939	938	24
4	940	940	940	940	940	940	941	940	940	940	940	940	940	940	940	940	940	940	940	941	941	941	941	941	940	941	940	24	
5	942	942	943	943	943	944	945	945	945	946	946	946	946	946	946	946	946	946	946	947	947	948	948	949	942	949	945	24	
6	949	950	950	951	951	952	952	953	953	953	953	953	953	953	953	952	952	952	951	951	952	952	952	952	949	953	952	24	
7	952	951	951	951	951	951	951	951	951	951	950	950	949	948	947	946	945	945	945	945	945	944	944	946	944	952	948	24	
8	948	946	945	945	945	946	946	946	946	946	946	946	946	945	945	945	944	944	944	944	944	944	944	944	944	948	945	24	
9	944	943	943	943	943	943	943	943	942	942	941	941	940	939	939	939	939	938	938	938	940	941	941	941	938	944	941	24	
10	941	941	941	941	941	941	941	941	942	942	942	942	942	942	942	941	941	942	942	941	942	942	942	942	941	942	942	24	
11	942	943	943	943	943	944	944	945	945	945	946	946	946	946	946	946	946	945	945	945	946	946	946	946	945	942	946	945	24
12	945	945	944	944	944	944	945	945	945	944	944	944	943	943	943	942	942	942	942	942	942	942	943	943	942	945	943	24	
13	943	943	943	943	943	943	943	942	943	943	943	943	943	943	942	942	943	944	944	943	944	945	945	945	942	945	943	24	
14	946	946	946	947	947	947	948	948	949	949	949	949	949	949	949	948	948	948	947	947	948	948	948	947	946	949	948	24	
15	947	947	946	944	944	944	944	944	943	943	943	942	942	941	941	940	939	938	938	938	938	938	937	939	937	947	942	24	
16	938	937	937	937	937	937	937	937	937	936	936	936	936	936	936	936	936	936	936	936	936	936	936	937	936	938	936	24	
17	937	937	937	938	938	938	939	940	941	942	942	942	943	944	944	944	944	944	944	944	944	945	945	945	937	945	942	24	
18	945	945	945	945	945	946	946	946	946	946	946	945	945	945	944	944	944	943	942	942	942	941	941	941	941	946	944	24	
19	941	940	940	940	939	939	939	939	939	939	940	940	940	940	939	939	939	939	939	939	940	940	940	940	939	941	940	24	
20	940	940	940	940	940	940	940	940	940	940	940	940	940	939	939	939	939	939	939	939	939	939	940	939	939	940	940	24	
21	939	939	939	939	939	939	940	940	940	940	940	941	941	941	940	940	940	940	940	940	940	940	941	941	939	941	940	24	
22	941	941	941	941	941	941	942	942	942	942	941	941	941	941	941	941	941	940	940	940	940	940	940	940	940	942	941	24	
23	940	940	940	940	940	941	941	941	941	941	940	940	940	940	940	940	940	940	940	940	940	941	941	941	940	941	940	24	
24	941	941	941	941	941	941	941	941	941	941	942	942	942	942	942	941	941	941	941	941	941	941	942	942	941	942	941	24	
25	942	942	942	942	942	943	943	944	944	944	944	944	944	944	944	943	943	943	942	942	943	943	943	943	942	944	943	24	
26	943	943	943	943	943	943	943	943	943	943	943	942	942	942	941	941	941	941	941	940	940	940	940	941	940	943	942	24	
27	941	941	942	941	941	941	941	941	941	941	941	942	942	943	942	941	941	941	940	940	941	941	940	940	940	940	943	941	24
28	941	940	940	940	941	941	942	942	942	942	942	942	942	942	942	942	942	942	942	942	942	943	943	943	940	943	942	24	
29	943	943	943	943	944	944	944	945	945	945	945	945	945	945	945	945	945	945	944	944	944	944	944	944	943	945	944	24	
30	944	945	945	945	944	945	945	945	945	945	945	945	945	945	945	945	945	945	946	946	947	947	948	948	944	948	945	24	
31	949	949	949	950	950	951	952	952	953	953	953	953	953	953	954	954	954	954	954	954	954	955	955	956	949	956	953	24	
HOURLY MAX	952	951	951	951	951	952	952	953	953	953	953	953	953	953	954	954	954	954	954	954	954	955	955	956					
HOURLY AVG	943	942	942	942	943	943	943	943	943	943	943	943	943	943	943	942	942	942	942	942	942	943	943	943					

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

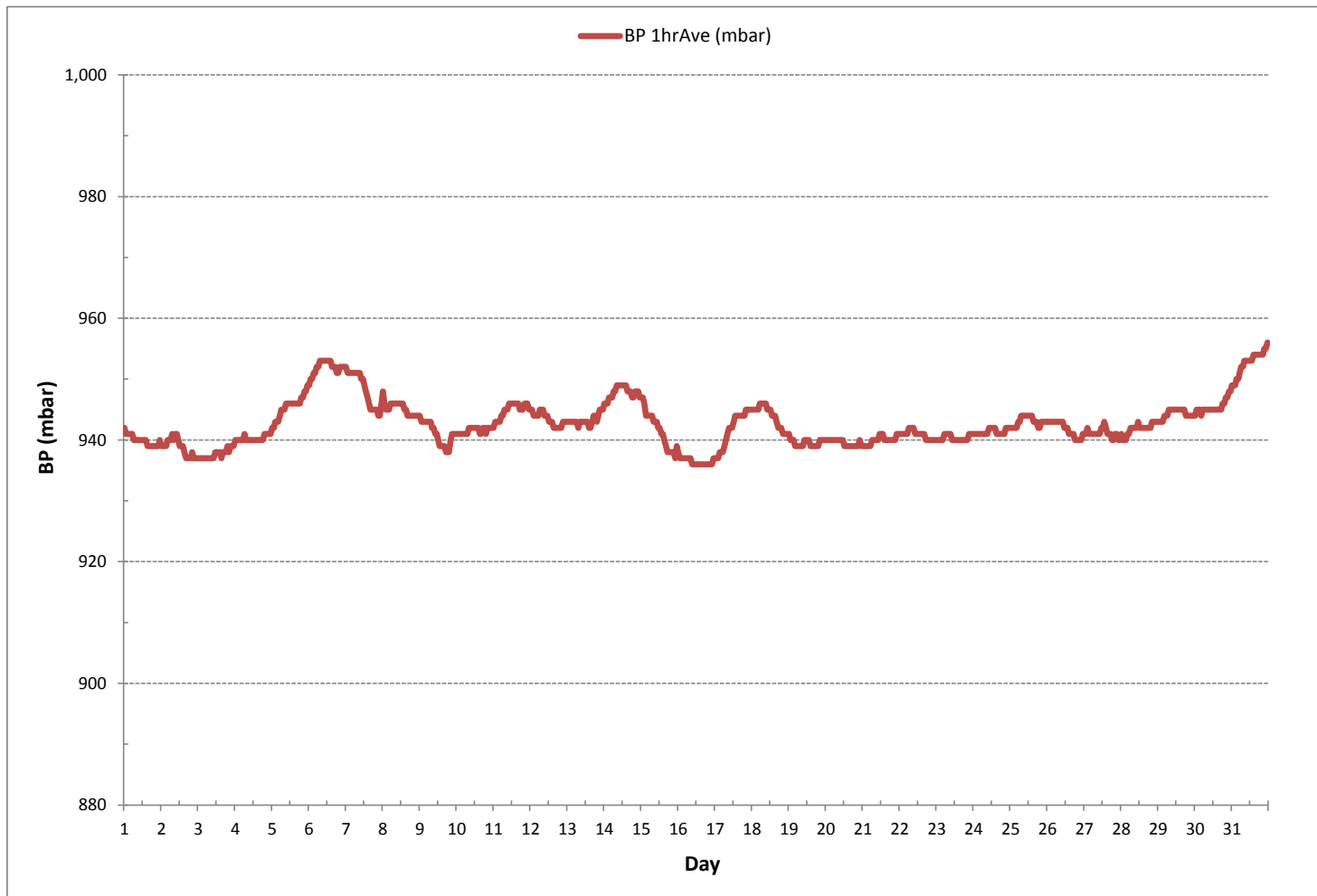
24 HR AVERAGES July 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	936	mbar	@ HOUR	9	ON DAY	16
MAXIMUM 1-HR AVERAGE:	956	mbar	@ HOUR	23	ON DAY	31
MAXIMUM 24-HR AVERAGE:	953	mbar			ON DAY	31
OPERATIONAL TIME:						744 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	4				MONTHLY AVERAGE:	943 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Three Creeks 986b Station - July 2017

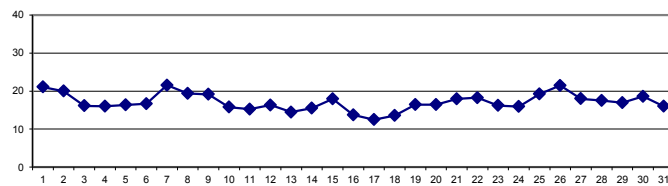
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	14.3	14.3	15.0	15.4	15.5	16.1	17.3	20.0	21.6	22.0	23.4	24.2	25.6	26.0	26.4	26.5	27.5	26.4	27.5	24.7	22.3	18.2	18.4	17.5	14.3	27.5	21.1	24
2	16.6	16.0	14.1	13.9	12.5	14.8	17.6	19.9	19.7	20.6	21.4	23.5	24.4	25.1	25.8	26.4	26.5	26.2	26.0	24.0	20.2	16.2	14.5	14.0	12.5	26.5	20.0	24
3	14.3	14.5	14.0	13.9	13.0	12.4	13.5	16.4	16.8	17.4	18.2	18.5	18.5	18.9	18.5	19.5	19.7	19.0	15.9	15.9	15.1	14.5	13.9	14.7	12.4	19.7	16.1	24
4	13.9	12.9	12.0	10.8	10.5	10.8	12.3	13.8	15.0	16.2	17.1	18.2	19.0	19.2	19.9	20.1	20.4	20.0	20.3	19.3	18.9	16.2	14.1	13.7	10.5	20.4	16.0	24
5	12.9	11.6	7.4	5.3	4.4	7.6	12.7	14.6	15.1	16.6	18.3	19.4	20.5	21.2	22.6	23.1	23.6	23.7	23.8	22.9	22.1	17.4	12.8	13.2	4.4	23.8	16.4	24
6	9.3	8.9	7.0	6.2	5.3	9.4	13.0	14.0	15.3	16.6	18.0	19.4	21.0	22.3	23.1	24.1	24.5	25.0	24.9	24.2	22.3	18.8	14.2	12.5	5.3	25.0	16.6	24
7	11.6	11.7	11.5	10.5	9.5	12.7	16.4	20.4	22.4	23.8	25.4	26.6	27.3	28.6	28.9	29.7	30.1	28.6	27.1	25.7	24.3	22.7	21.7	19.3	9.5	30.1	21.5	24
8	15.8	14.9	14.9	15.0	15.0	14.9	14.7	14.6	14.9	16.3	18.3	20.8	22.5	23.5	24.7	25.6	25.8	26.0	25.9	24.8	24.2	19.3	16.6	15.6	14.6	26.0	19.4	24
9	14.6	13.6	12.9	12.1	11.6	14.6	17.5	21.0	22.8	23.6	23.8	25.6	26.3	26.7	22.9	18.2	20.5	21.5	23.6	22.8	19.0	15.9	15.0	13.2	11.6	26.7	19.1	24
10	13.0	13.8	14.4	13.9	12.9	11.8	11.6	12.1	13.0	14.1	15.1	16.8	18.1	19.0	19.8	20.5	20.2	19.4	19.1	19.9	18.1	16.7	13.5	11.8	11.6	20.5	15.8	24
11	11.2	10.6	11.2	11.6	11.6	12.0	12.6	13.4	14.1	15.4	15.3	15.6	15.7	16.3	18.1	19.8	21.1	21.1	21.5	20.8	18.9	14.3	11.9	10.9	10.6	21.5	15.2	24
12	10.6	8.6	9.0	7.7	6.7	8.5	11.1	13.5	16.5	18.5	19.9	21.8	22.9	23.6	23.7	24.7	24.7	23.1	22.0	18.6	16.1	14.2	13.2	12.7	6.7	24.7	16.3	24
13	11.6	10.2	9.2	8.3	7.9	8.5	11.6	13.9	15.9	17.8	20.0	20.0	17.9	16.9	17.3	18.8	19.8	18.0	14.9	16.7	15.8	13.9	11.7	10.3	7.9	20.0	14.5	24
14	9.9	8.6	8.2	7.7	7.5	9.7	11.6	12.3	12.5	13.2	14.2	16.6	18.7	20.5	21.8	23.5	23.6	23.8	23.2	22.1	19.7	16.3	14.1	13.3	7.5	23.8	15.5	24
15	12.7	13.3	14.8	14.3	11.9	11.8	12.5	14.3	16.5	18.1	19.8	21.1	22.1	23.1	23.8	24.6	25.0	24.7	23.1	21.1	17.9	15.3	14.7	14.2	11.8	25.0	17.9	24
16	13.7	12.9	12.3	11.5	11.0	10.6	10.4	11.6	12.8	13.1	13.7	14.6	15.6	17.3	17.3	17.4	16.4	16.2	15.3	15.2	14.6	12.9	11.3	11.3	10.4	17.4	13.7	24
17	11.8	12.0	12.1	12.0	11.9	11.2	10.3	10.6	11.3	13.1	14.2	14.3	13.2	12.1	12.9	13.7	14.6	15.4	15.1	14.4	12.9	10.6	10.2	9.8	9.8	15.4	12.5	24
18	9.5	9.2	8.9	8.7	8.6	9.0	10.1	11.6	11.9	12.6	14.2	15.4	17.1	17.4	17.0	17.7	17.7	18.6	18.9	17.1	16.7	13.3	12.2	12.0	8.6	18.9	13.6	24
19	11.1	9.1	8.7	8.2	8.4	9.0	11.7	15.9	16.5	18.4	19.5	21.0	22.2	23.2	24.0	22.7	16.7	21.4	21.6	20.8	18.5	16.2	15.5	13.6	8.2	24.0	16.4	24
20	12.5	12.8	11.3	10.7	11.2	10.8	12.8	16.7	18.5	19.9	21.5	22.8	24.2	22.9	18.4	16.7	17.1	18.5	19.5	17.9	16.4	15.0	13.6	12.3	10.7	24.2	16.4	24
21	11.2	11.5	10.3	9.8	10.0	9.9	11.0	13.8	16.0	17.3	18.9	20.3	21.7	22.9	24.2	25.2	25.5	25.6	25.4	24.7	22.8	18.6	17.4	17.1	9.8	25.6	18.0	24
22	14.3	13.1	12.1	11.6	10.7	11.1	14.4	17.3	18.4	19.9	21.2	22.4	22.9	23.5	23.4	23.3	23.0	22.6	22.2	20.8	20.0	18.0	15.5	16.1	10.7	23.5	18.2	24
23	14.7	14.5	13.4	12.6	12.3	13.6	14.9	16.0	16.4	17.3	18.2	18.9	19.1	19.8	20.6	19.8	19.8	19.2	18.2	16.6	15.0	13.4	12.5	11.7	11.7	20.6	16.2	24
24	11.0	10.6	10.9	11.2	11.3	11.1	11.0	11.3	12.6	14.2	16.1	17.8	19.4	19.7	20.9	22.0	22.5	23.4	24.1	24.1	19.8	15.5	12.1	10.3	10.3	24.1	16.0	24
25	9.5	8.7	8.1	7.6	7.2	8.5	12.1	16.9	19.8	21.9	23.8	24.9	25.8	26.3	27.1	27.8	27.9	28.3	27.9	26.9	24.7	18.8	16.5	14.7	7.2	28.3	19.2	24
26	14.0	14.5	13.7	13.0	12.5	12.5	15.8	20.8	22.7	24.0	25.4	26.9	28.1	28.3	29.0	29.6	28.9	27.8	26.9	25.5	21.6	17.9	17.3	18.7	12.5	29.6	21.5	24
27	17.4	16.7	16.4	15.1	14.0	12.9	13.5	17.1	19.0	20.5	21.5	22.5	20.5	17.8	16.0	17.6	21.3	22.8	23.1	22.0	19.6	16.6	13.7	13.9	12.9	23.1	18.0	24
28	14.1	11.9	11.7	10.5	9.7	10.0	12.5	15.6	16.4	18.2	19.7	21.2	22.4	23.3	23.6	23.3	22.3	22.8	23.7	25.5	22.5	15.3	13.0	11.0	9.7	25.5	17.5	24
29	10.3	8.8	8.1	8.5	7.8	8.2	12.1	16.2	16.8	17.3	19.4	21.3	22.7	23.4	24.6	24.8	24.0	23.6	23.0	21.4	18.5	15.4	15.4	15.1	7.8	24.8	16.9	24
30	13.6	16.0	15.1	14.3	13.9	13.8	15.0	17.0	17.7	19.0	19.7	21.0	21.9	22.6	23.4	24.1	24.1	23.2	21.6	20.0	18.7	17.8	17.2	15.1	13.6	24.1	18.6	24
31	12.2	11.9	11.4	9.0	6.3	6.3	10.7	13.9	16.0	18.2	19.3	20.3	21.0	20.5	21.5	20.6	20.0	18.8	22.1	20.6	17.2	16.1	15.4	14.3	6.3	22.1	16.0	24
HOURLY MAX	17.4	16.7	16.4	15.4	15.5	16.1	17.6	21.0	22.8	24.0	25.4	26.9	28.1	28.6	29.0	29.7	30.1	28.6	27.9	26.9	24.7	22.7	21.7	19.3				
HOURLY AVG	12.7	12.2	11.6	11.0	10.4	11.1	13.0	15.4	16.6	17.9	19.2	20.4	21.2	21.7	22.0	22.3	22.4	22.4	22.2	21.2	19.2	16.2	14.5	13.7				

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

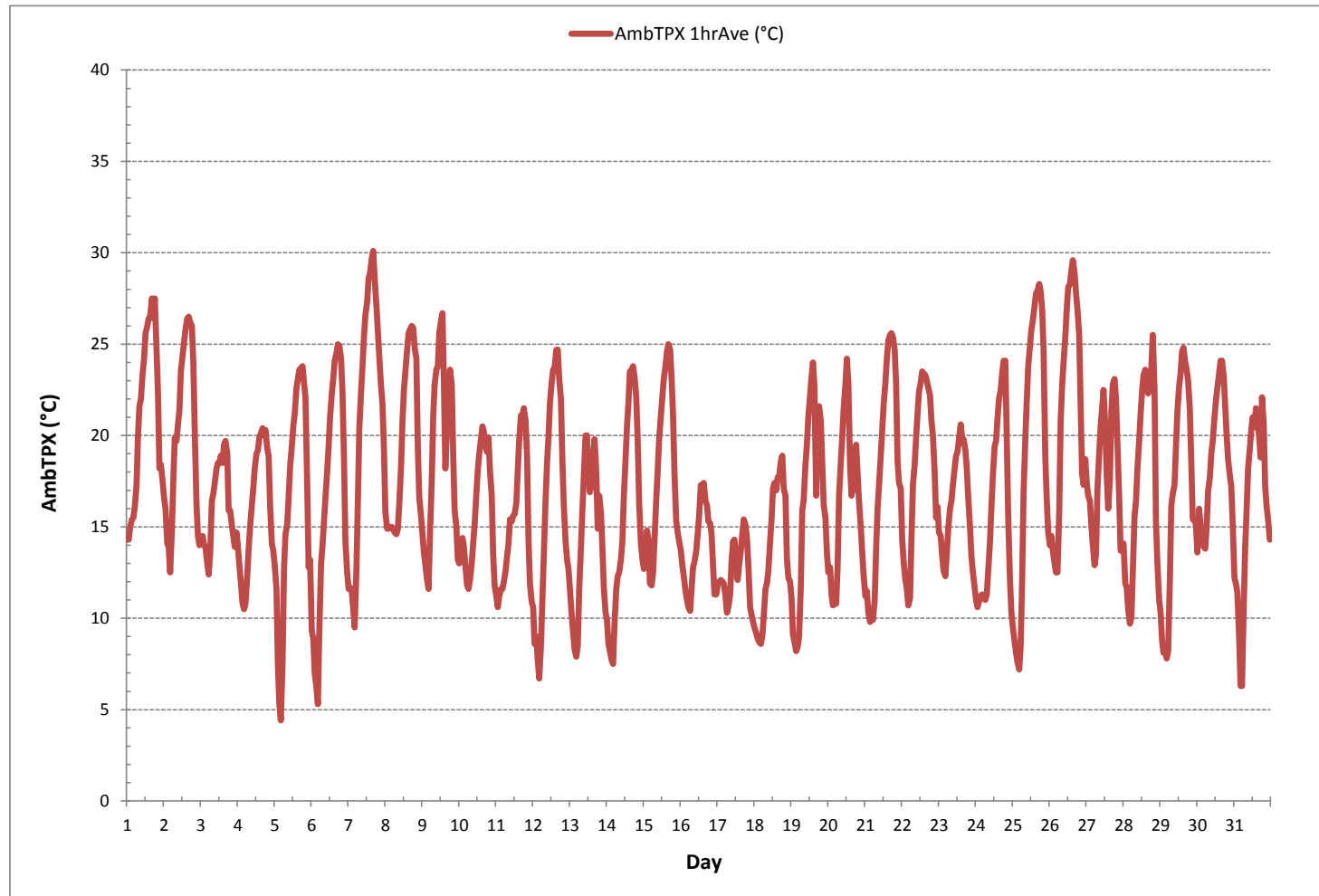
24 HR AVERAGES July 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	4.4	°C	@ HOUR	4	ON DAY	5
MAXIMUM 1-HR AVERAGE:	30.1	°C	@ HOUR	16	ON DAY	7
MAXIMUM 24-HR AVERAGE:	21.5	°C			ON DAY	7
OPERATIONAL TIME:					744	hrs
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	5.2				MONTHLY AVERAGE:	17.1 °C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE

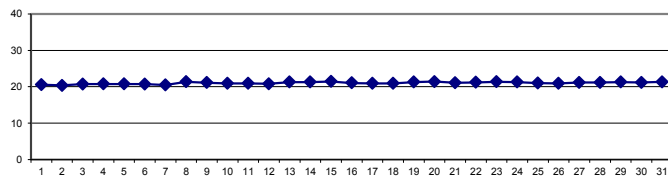
STATION TEMPERATURE Hourly Averages (StnTPX °C)

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	20.8	20.7	21.0	21.2	20.5	21.1	21.0	20.8	20.3	20.7	21.2	21.5	20.6	19.8	19.9	19.6	20.1	20.4	20.2	19.8	20.0	20.9	20.6	20.7	19.6	21.5	20.6	24	
2	21.0	20.6	20.9	20.6	20.8	20.9	20.8	20.7	20.8	20.4	20.2	19.9	20.0	19.8	19.8	19.9	19.8	19.7	19.8	19.9	20.2	20.7	20.9	20.5	19.7	21.0	20.4	24	
3	21.0	20.6	20.8	20.7	21.1	21.1	21.2	20.7	21.0	20.7	20.1	20.4	20.3	20.1	21.0	20.4	20.8	20.9	20.6	21.0	20.7	20.7	20.9	20.6	20.1	21.2	20.7	24	
4	21.0	21.2	21.3	20.8	21.6	21.3	21.3	21.1	21.2	20.7	20.2	20.3	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.9	21.1	21.1	21.3	20.2	21.6	20.8	24	
5	21.0	21.0	21.4	21.6	21.7	22.0	21.4	21.2	20.8	20.3	20.3	20.3	20.3	20.2	20.1	20.1	20.2	20.1	20.2	20.1	20.0	20.4	21.1	21.2	21.2	20.0	22.0	20.8	24
6	20.9	21.0	21.4	21.8	21.3	21.8	21.4	21.3	20.7	20.3	20.3	20.3	20.3	20.2	20.1	20.2	20.1	20.2	20.2	20.1	20.2	20.9	21.0	20.9	20.1	21.8	20.7	24	
7	21.2	21.1	21.0	21.2	21.4	21.3	21.1	20.9	20.3	20.2	20.3	20.1	20.0	20.0	19.8	19.8	19.8	19.9	19.9	20.2	20.1	20.2	20.3	20.8	19.8	21.4	20.5	24	
8	21.0	21.2	20.8	21.1	21.1	21.0	21.3	20.9	21.1	21.2	20.9	21.3	21.0	21.3	21.8	21.7	21.6	21.5	22.3	22.4	22.4	22.0	21.2	21.2	20.8	22.4	21.4	24	
9	21.7	21.0	20.8	20.8	21.0	21.3	20.7	20.5	20.4	20.0	20.2	20.0	21.6	21.6	21.8	21.5	21.4	21.5	21.6	21.7	21.4	21.7	21.5	21.4	20.0	21.8	21.1	24	
10	21.1	21.2	21.7	21.2	21.2	21.4	21.7	21.2	21.3	20.8	21.1	20.8	20.7	20.5	20.4	20.1	20.1	20.6	20.9	21.1	21.1	20.7	20.9	20.9	20.1	21.7	20.9	24	
11	20.7	21.1	21.1	21.1	21.2	21.1	21.2	21.1	21.1	20.8	20.8	21.0	20.7	21.1	20.7	20.8	20.5	21.1	20.7	20.7	20.8	20.8	20.6	21.0	20.5	21.2	20.9	24	
12	21.1	21.3	21.1	21.3	21.5	21.9	21.1	21.3	20.8	20.5	20.2	20.1	20.0	19.9	19.9	20.0	20.1	20.6	20.7	20.8	20.9	21.5	21.2	21.2	19.9	21.9	20.8	24	
13	21.2	21.4	21.5	21.1	21.1	21.4	21.1	21.0	20.8	20.8	20.7	20.7	21.4	21.5	21.9	21.8	21.8	21.7	21.6	21.7	21.4	21.4	21.2	21.4	20.7	21.9	21.3	24	
14	21.5	21.0	21.1	21.4	21.2	21.4	21.5	21.1	21.2	20.7	20.9	20.4	20.5	20.9	20.9	21.2	21.7	22.0	22.2	22.1	21.8	21.1	22.0	21.3	20.4	22.2	21.3	24	
15	21.4	21.8	21.2	21.3	21.4	21.1	20.9	20.6	20.9	21.1	20.7	20.8	21.1	21.7	22.2	21.7	22.1	21.6	22.3	22.3	21.8	21.5	21.8	21.8	20.6	22.3	21.5	24	
16	21.6	21.5	21.5	21.1	21.2	21.6	21.3	21.2	21.2	20.6	20.8	21.1	20.3	21.1	20.8	20.7	21.0	20.7	20.8	21.1	20.6	20.9	21.1	20.3	21.6	21.0	24		
17	20.7	21.0	20.7	21.0	20.7	21.0	21.1	21.1	20.9	20.9	20.8	20.8	21.1	20.7	20.9	21.2	21.0	20.8	21.0	21.1	20.8	20.9	20.7	21.2	20.9	24			
18	21.0	21.3	21.3	21.5	21.6	21.2	21.0	21.2	21.0	21.0	20.5	20.1	20.3	20.8	20.8	21.5	20.8	20.7	20.1	20.4	20.8	21.0	21.4	21.5	20.1	21.6	21.0	24	
19	21.6	22.0	21.9	22.2	22.3	21.9	22.2	21.8	21.8	21.3	21.2	20.8	20.9	20.6	20.2	20.2	20.9	21.1	20.6	20.5	20.8	21.0	21.4	21.5	20.2	22.3	21.3	24	
20	21.7	21.9	21.9	21.8	22.1	22.0	21.9	21.9	21.7	21.3	21.2	20.9	20.5	20.5	20.8	21.1	21.3	21.3	21.2	21.2	21.3	21.3	21.3	21.7	20.5	22.1	21.4	24	
21	21.7	21.6	22.0	21.7	22.2	21.8	22.2	21.7	21.6	21.3	21.3	21.0	20.9	20.6	20.3	20.2	20.5	20.1	20.1	20.2	20.2	20.6	21.0	21.3	20.1	22.2	21.1	24	
22	21.4	21.6	21.7	22.0	21.8	21.9	21.9	21.7	21.7	21.1	21.2	20.9	20.7	20.9	20.6	20.5	20.8	20.6	20.6	20.8	20.9	20.8	21.3	21.5	20.5	22.0	21.2	24	
23	21.5	21.6	21.7	21.7	21.9	22.0	21.8	21.6	21.6	21.3	21.3	21.0	21.2	20.8	21.1	20.8	20.8	21.1	21.0	21.1	21.3	21.6	21.7	21.7	20.8	22.0	21.4	24	
24	21.8	22.0	21.9	21.7	21.8	22.0	21.7	21.8	22.0	21.7	21.4	21.3	21.2	21.0	20.8	21.0	20.6	20.8	20.6	20.3	20.2	20.8	21.0	21.5	20.2	22.0	21.3	24	
25	21.8	22.0	21.9	22.3	22.2	22.0	22.3	21.9	21.6	21.3	20.8	20.7	20.2	20.4	20.2	20.1	20.1	19.9	20.1	19.9	20.6	20.9	21.1	19.9	22.3	21.0	24		
26	21.5	21.6	21.7	21.8	21.8	21.8	21.8	21.8	21.1	21.2	20.5	20.4	20.1	20.4	19.7	20.1	20.0	20.1	20.0	20.4	20.5	21.0	21.0	21.2	19.7	21.8	20.9	24	
27	21.4	21.5	21.4	21.4	21.5	21.6	21.7	21.6	21.6	21.1	21.2	20.7	20.9	20.9	21.1	21.3	21.1	20.8	20.7	20.6	20.5	20.8	21.2	21.5	20.5	21.7	21.2	24	
28	21.6	21.6	22.0	21.9	22.0	22.0	21.9	21.5	21.6	21.0	21.1	20.7	20.7	20.6	20.4	20.7	20.5	20.5	20.4	20.3	20.7	21.0	21.5	20.3	22.0	21.2	24		
29	21.9	21.9	21.9	22.2	22.3	22.1	22.1	21.9	21.8	21.3	21.3	20.8	21.0	20.5	20.3	20.3	20.3	20.7	20.5	20.6	21.0	21.1	21.5	21.6	20.3	22.3	21.3	24	
30	21.6	21.6	21.6	21.6	21.6	21.7	21.7	21.4	21.6	21.2	21.3	20.9	21.0	20.8	20.6	20.7	20.7	20.5	20.7	20.7	21.1	21.0	21.4	21.5	20.5	21.7	21.2	24	
31	21.6	21.8	21.8	21.8	22.1	22.3	22.4	21.9	21.8	21.2	21.3	20.8	21.0	20.6	21.0	20.7	20.7	21.1	21.0	20.6	20.7	21.3	21.3	21.3	20.6	22.4	21.3	24	
HOURLY MAX	21.9	22.0	22.0	22.3	22.3	22.3	22.4	21.9	22.0	21.7	21.4	21.5	21.6	21.7	22.2	21.8	22.1	22.0	22.3	22.4	22.4	22.0	22.0	21.8					
HOURLY AVG	21.3	21.4	21.4	21.4	21.5	21.6	21.5	21.3	21.2	20.9	20.8	20.7	20.7	20.6	20.7	20.6	20.7	20.8	20.7	20.8	20.8	21.0	21.1	21.2					

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

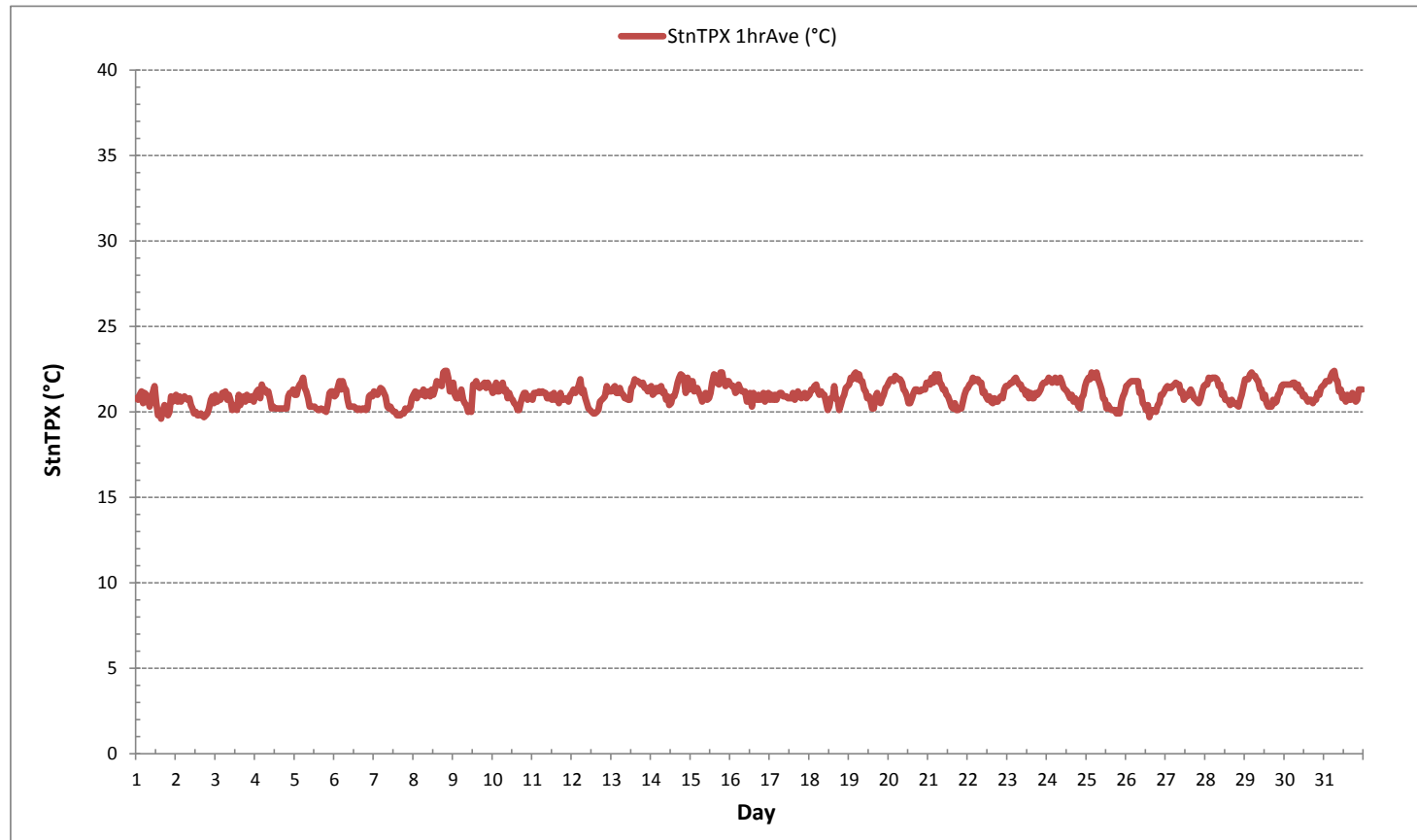
24 HR AVERAGES July 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	19.6	°C	@ HOUR	15	ON DAY	1
MAXIMUM 1-HR AVERAGE:	22.4	°C	@ HOUR	19	ON DAY	8
MAXIMUM 24-HR AVERAGE:	21.5	°C			ON DAY	15
OPERATIONAL TIME:						744 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	0.6					
MONTHLY AVERAGE:						21.0 °C

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43CSulphur Dioxide Analyzer Calibration

Date:	July 18, 2017	Barometer Data/B.P.:	Brunton 05535, December 5, 2016	943.8 hPa
Company/Airshed:	PRAMP	Thermometer Data/Station Temp °C:	Fisher Scientific 160459244, May 19, 2016	21°C
Location/Station Name:	986b	Weather Conditions:	A few clouds	
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly	
Start Time 24 hr. (mst):	15:02	Performed By/Reviewer:	Chris Wesson	Trina Whatsitt
End Time 24 hr. (mst):	18:45	Cal Gas Expiry Date:	December 8, 2019	
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a	

Analyzer:

ID# or Serial Number:	43C-62339-335	Range ppb:	500
Last Calibration Date:	June 7, 2017	As Found C.F.:	0.996
Previous C.F.:	1.000	New C.F.:	0.999

Calibration Standards:

Low Flow Meter ID/Cert. Date: Definer Low ID# 129069 February 5, 2017
High Flow Meter ID/Cert. Date: Definer High ID# 128686 February 5, 2017
Calibrator ID/Cert. Date: Sabio 2010 17100415, May 16, 2017
Cal Gas Cylinder I.D. #: EY0000597
Cal Gas Conc. (ppm): 50.4

Standard Calibration Points for Ranges

Point	ppb
High	380
Mid	180
Low	90

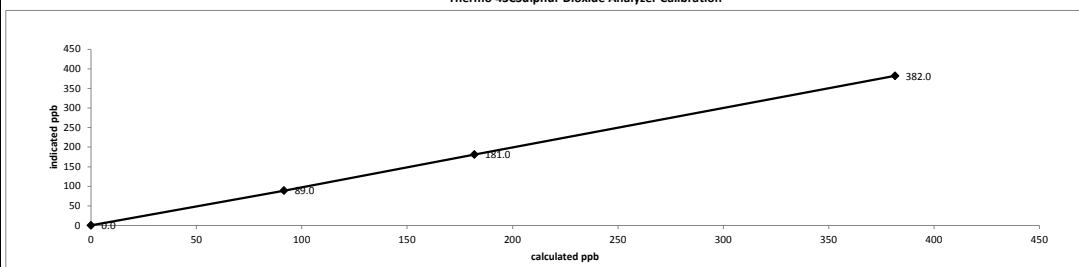
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	6003	0.00	6003	0.0	0.8	n/a
as found high	5966	45.51	6011	381.5	384.0	0.996
adjusted zero	6003	0.00	6003	0.0	0.0	n/a
adjusted high	5966	45.51	6011	381.5	382.0	0.999
mid	5987	21.69	6009	181.9	181.0	1.005
low	5998	10.92	6009	91.6	89.0	1.029
calibrator zero	6003	0.00	6003	0.0	0.0	n/a
Average C.F.=						1.011

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.997		.95-1.05
b (Intercept as % of full scale)=	0.26%		± 3% F.S.
% change in C.F. from last cal=	0.43%		± 10%

Thermo 43CSulphur Dioxide Analyzer Calibration



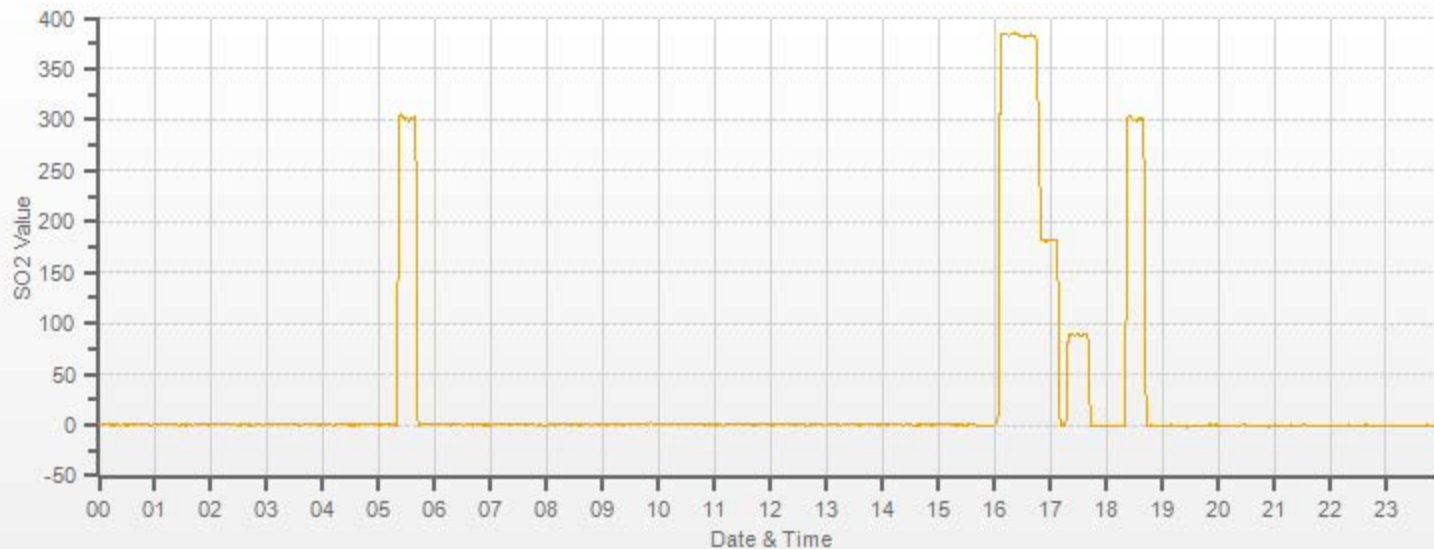
As found:		As left:	
Bkg:	74.3	Bkg:	75.5
Coef:	0.886	Coef:	0.885
Pmt:	-654	Pmt:	-654
0	Lamp=849	0	Lamp=849
Battery:	3.3	Battery:	3.3
Internal:	33.6	Internal:	33.7
Chamber:	45.7	Chamber:	45.7
Pressure:	451.9	Pressure:	451.5
Flow:	0.796	Flow:	0.796
Intensity:	~38000	Intensity:	~38000
Averaging Time:	120	Averaging Time:	120
Expected Value:	297.2	Expected Value:	301.0

Comments:

The analyzer sample inlet filter was changed.

Flow measurements completed after mid-point.

SO2[ppb] Station: PRAMP_986 Daily: 17.07.18 Type: AVG 1 Min. [1 Min.]

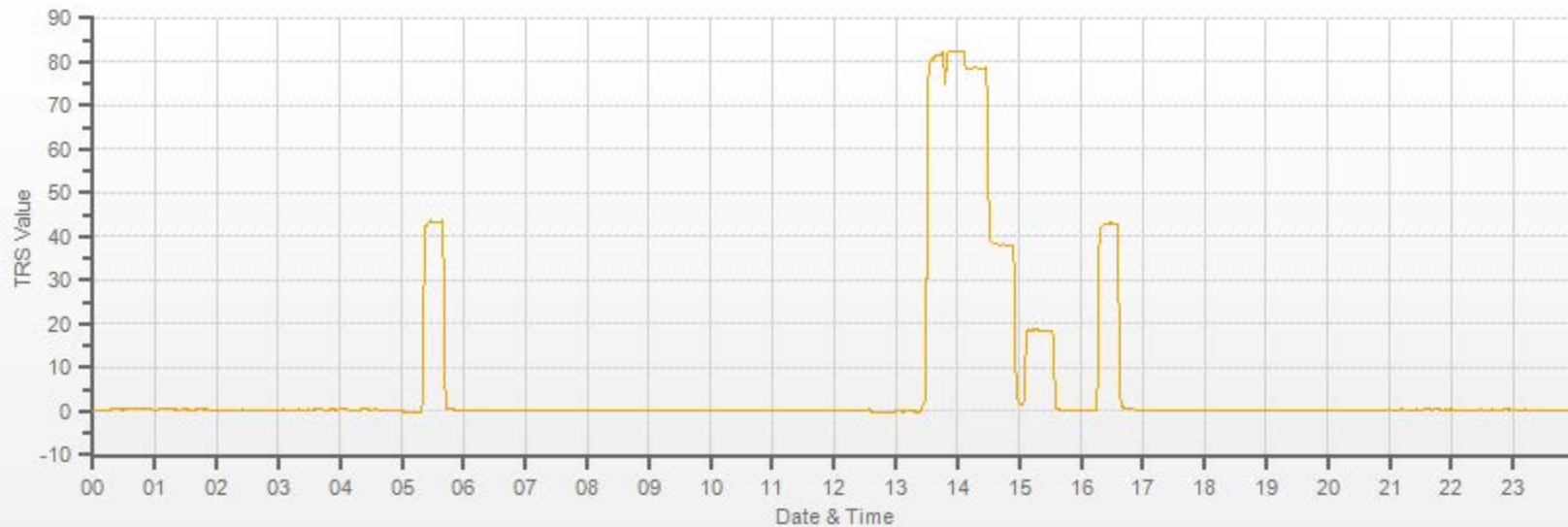


— SO2[ppb]

TOTAL REDUCED SULPHUR

Thermo 43i Total Reduced Sulphur Analyzer Calibration																																																																							
Date: July 18, 2017 Company/Airshed: PRAMP Location/Station Name: 986b Parameter: Total Reduced Sulphur Start Time 24 hr. (mst): 12:33 End Time 24 hr. (mst): 16:40 Calibration Method: Gas Dilution	Barometer Data/B.P.: Brunton 05535, December 5, 2016 944.8 hPa Thermometer Data/Station Temp °C: Fisher Scientific 160459244, May 19, 2016 22°C Weather Conditions: Mainly sunny Calibration Purpose: routine monthly Performed By/Reviewer: Chris Wesson Trina Whitsitt Cal Gas Expiry Date: December 1, 2018 Converter Model & s/n (if applicable): CD Nova CDN-101 #506																																																																						
Analyzer: ID# or Serial Number: 1152940011 Last Calibration Date: June 7, 2017 Previous C.F.: 0.993	Range ppb: 100 As Found C.F.: 0.953 New C.F.: 1.000																																																																						
Calibration Standards: Low Flow Meter ID/Cert. Date: Definer Low ID# 129069 February 5, 2017 High Flow Meter ID/Cert. Date: Definer High ID# 128686 February 5, 2017 Calibrator ID/Cert. Date: API 700 829, January 27, 2017 Cal Gas Cylinder I.D. #: BLM002197 Cal Gas Conc. (ppm): 10.3	<table border="1" style="width: 100%; border-collapse: collapse;"> <caption>Standard Calibration Points for Ranges</caption> <thead> <tr> <th>Point</th> <th>ppb</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>78</td> </tr> <tr> <td>Mid</td> <td>38</td> </tr> <tr> <td>Low</td> <td>19</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <caption>SO2 Scrubber Check (10 minutes):</caption> <tbody> <tr> <td>Start/End Time 24 hr.:</td> <td>13:12/13:22</td> </tr> <tr> <td>SO2 Analyzer Range:</td> <td>500</td> </tr> <tr> <td>Target Concentration (ppb):</td> <td>380</td> </tr> <tr> <td>As Found Zero:</td> <td>0.0</td> </tr> <tr> <td>Analyzer Response: (ppb):</td> <td>0.0</td> </tr> <tr> <td>Zero Corrected Result (ppb):</td> <td>0.0</td> </tr> </tbody> </table>	Point	ppb	High	78	Mid	38	Low	19	Start/End Time 24 hr.:	13:12/13:22	SO2 Analyzer Range:	500	Target Concentration (ppb):	380	As Found Zero:	0.0	Analyzer Response: (ppb):	0.0	Zero Corrected Result (ppb):	0.0																																																		
Point	ppb																																																																						
High	78																																																																						
Mid	38																																																																						
Low	19																																																																						
Start/End Time 24 hr.:	13:12/13:22																																																																						
SO2 Analyzer Range:	500																																																																						
Target Concentration (ppb):	380																																																																						
As Found Zero:	0.0																																																																						
Analyzer Response: (ppb):	0.0																																																																						
Zero Corrected Result (ppb):	0.0																																																																						
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015																																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Calibrator Flow Rates (cc/min)</th> <th>Calculated Concentration:</th> <th>Indicated Concentration:</th> <th>Correction Factors (C.F.):</th> </tr> <tr> <th>Point</th> <th>Diluent</th> <th>Cal Gas</th> <th>Total</th> <th>(ppb)</th> <th>(ppb)</th> <th></th> </tr> </thead> <tbody> <tr> <td>as found zero</td> <td>7512</td> <td>0.00</td> <td>7512</td> <td>0.0</td> <td>-0.1</td> <td>n/a</td> </tr> <tr> <td>as found high</td> <td>7453</td> <td>57.26</td> <td>7511</td> <td>78.5</td> <td>82.3</td> <td>0.953</td> </tr> <tr> <td>adjusted zero</td> <td>7512</td> <td>0.00</td> <td>7512</td> <td>0.0</td> <td>0.0</td> <td>n/a</td> </tr> <tr> <td>adjusted high</td> <td>7453</td> <td>57.26</td> <td>7511</td> <td>78.5</td> <td>78.5</td> <td>1.000</td> </tr> <tr> <td>mid</td> <td>7473</td> <td>27.76</td> <td>7501</td> <td>38.1</td> <td>38.0</td> <td>1.003</td> </tr> <tr> <td>low</td> <td>7485</td> <td>13.78</td> <td>7498</td> <td>18.9</td> <td>18.7</td> <td>1.012</td> </tr> <tr> <td>calibrator zero</td> <td>7512</td> <td>0.00</td> <td>7512</td> <td>0.0</td> <td>0.2</td> <td>n/a</td> </tr> <tr> <td colspan="5" style="text-align: right;">Average C.F.=</td> <td colspan="2">1.005</td> </tr> </tbody> </table>		Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):	Point	Diluent	Cal Gas	Total	(ppb)	(ppb)		as found zero	7512	0.00	7512	0.0	-0.1	n/a	as found high	7453	57.26	7511	78.5	82.3	0.953	adjusted zero	7512	0.00	7512	0.0	0.0	n/a	adjusted high	7453	57.26	7511	78.5	78.5	1.000	mid	7473	27.76	7501	38.1	38.0	1.003	low	7485	13.78	7498	18.9	18.7	1.012	calibrator zero	7512	0.00	7512	0.0	0.2	n/a	Average C.F.=					1.005	
Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):																																																																	
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)																																																																		
as found zero	7512	0.00	7512	0.0	-0.1	n/a																																																																	
as found high	7453	57.26	7511	78.5	82.3	0.953																																																																	
adjusted zero	7512	0.00	7512	0.0	0.0	n/a																																																																	
adjusted high	7453	57.26	7511	78.5	78.5	1.000																																																																	
mid	7473	27.76	7501	38.1	38.0	1.003																																																																	
low	7485	13.78	7498	18.9	18.7	1.012																																																																	
calibrator zero	7512	0.00	7512	0.0	0.2	n/a																																																																	
Average C.F.=					1.005																																																																		
Linear Regression/Calibration Results: <table style="width: 100%;"> <tr> <td style="width: 50%;">Correlation Coefficient = 1.000</td> <td style="width: 50%;">LIMITS > or = 0.995</td> </tr> <tr> <td>Slope = 0.999</td> <td>.95-1.05</td> </tr> <tr> <td>b (Intercept as % of full scale)= 0.11%</td> <td>± 3% F.S.</td> </tr> <tr> <td>% change in C.F. from last cal= 4.03%</td> <td>± 10%</td> </tr> </table>		Correlation Coefficient = 1.000	LIMITS > or = 0.995	Slope = 0.999	.95-1.05	b (Intercept as % of full scale)= 0.11%	± 3% F.S.	% change in C.F. from last cal= 4.03%	± 10%																																																														
Correlation Coefficient = 1.000	LIMITS > or = 0.995																																																																						
Slope = 0.999	.95-1.05																																																																						
b (Intercept as % of full scale)= 0.11%	± 3% F.S.																																																																						
% change in C.F. from last cal= 4.03%	± 10%																																																																						
Thermo 43i Total Reduced Sulphur Analyzer Calibration 																																																																							
<table style="width: 100%;"> <thead> <tr> <th style="text-align: left;">As found:</th> <th style="text-align: left;">As left:</th> </tr> </thead> <tbody> <tr><td>Bkg: 1.88</td><td>Bkg: 1.71</td></tr> <tr><td>Coef: 1.002</td><td>Coef: 0.953</td></tr> <tr><td>Pmt: -686.7</td><td>Pmt: -687.5</td></tr> <tr><td>Flash: 962</td><td>Flash: 961</td></tr> <tr><td>Internal: 31.5</td><td>Internal: 31.9</td></tr> <tr><td>Chamber: 45.2</td><td>Chamber: 45.1</td></tr> <tr><td>Perm Oven Gas: 45.00</td><td>Perm Oven Gas: 45.00</td></tr> <tr><td>Perm Oven Heater: 44.25</td><td>Perm Oven Heater: 44.25</td></tr> <tr><td>Pressure: 655.9</td><td>Pressure: 655.6</td></tr> <tr><td>Sample Flow: 0.470</td><td>Sample Flow: 0.468</td></tr> <tr><td>Lamp Intensity: 91</td><td>Lamp Intensity: 92</td></tr> <tr><td>Converter: 820</td><td>Converter: 820</td></tr> <tr><td>Converter Set: 820</td><td>Converter Set: 820</td></tr> <tr><td>Averaging Time: 120</td><td>Averaging Time: 120</td></tr> <tr><td>Expected Value: 45.2</td><td>Expected Value: 43.1</td></tr> </tbody> </table>		As found:	As left:	Bkg: 1.88	Bkg: 1.71	Coef: 1.002	Coef: 0.953	Pmt: -686.7	Pmt: -687.5	Flash: 962	Flash: 961	Internal: 31.5	Internal: 31.9	Chamber: 45.2	Chamber: 45.1	Perm Oven Gas: 45.00	Perm Oven Gas: 45.00	Perm Oven Heater: 44.25	Perm Oven Heater: 44.25	Pressure: 655.9	Pressure: 655.6	Sample Flow: 0.470	Sample Flow: 0.468	Lamp Intensity: 91	Lamp Intensity: 92	Converter: 820	Converter: 820	Converter Set: 820	Converter Set: 820	Averaging Time: 120	Averaging Time: 120	Expected Value: 45.2	Expected Value: 43.1																																						
As found:	As left:																																																																						
Bkg: 1.88	Bkg: 1.71																																																																						
Coef: 1.002	Coef: 0.953																																																																						
Pmt: -686.7	Pmt: -687.5																																																																						
Flash: 962	Flash: 961																																																																						
Internal: 31.5	Internal: 31.9																																																																						
Chamber: 45.2	Chamber: 45.1																																																																						
Perm Oven Gas: 45.00	Perm Oven Gas: 45.00																																																																						
Perm Oven Heater: 44.25	Perm Oven Heater: 44.25																																																																						
Pressure: 655.9	Pressure: 655.6																																																																						
Sample Flow: 0.470	Sample Flow: 0.468																																																																						
Lamp Intensity: 91	Lamp Intensity: 92																																																																						
Converter: 820	Converter: 820																																																																						
Converter Set: 820	Converter Set: 820																																																																						
Averaging Time: 120	Averaging Time: 120																																																																						
Expected Value: 45.2	Expected Value: 43.1																																																																						
Comments: The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned.																																																																							
As-found high slow to stabilize. Regulator flushed at 13:46 and point restarted. Flow measurements completed after mid-point.																																																																							

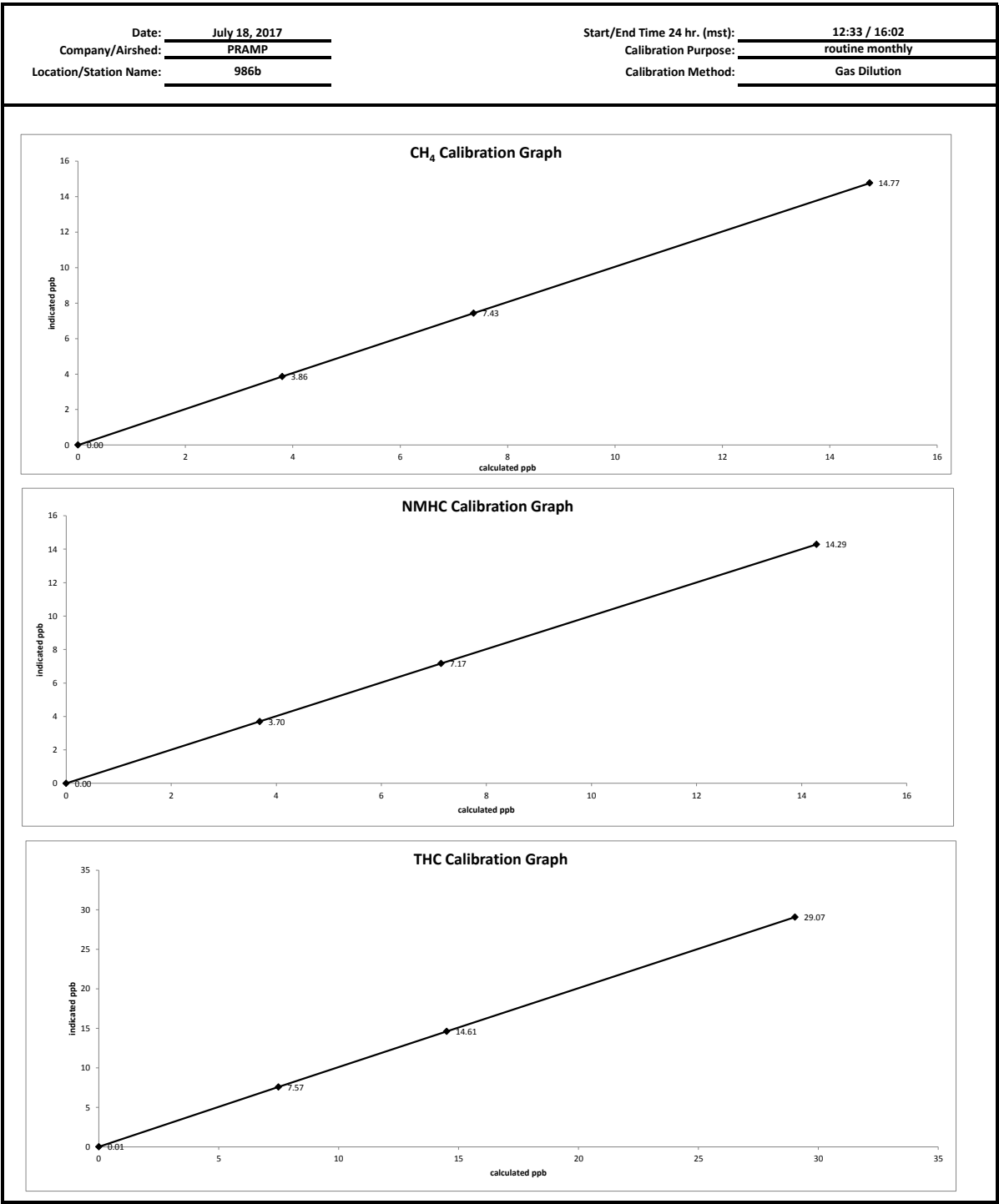
TRS[ppb] Station: PRAMP_986 Daily: 17.07.18 Type: AVG 1 Min. [1 Min.]



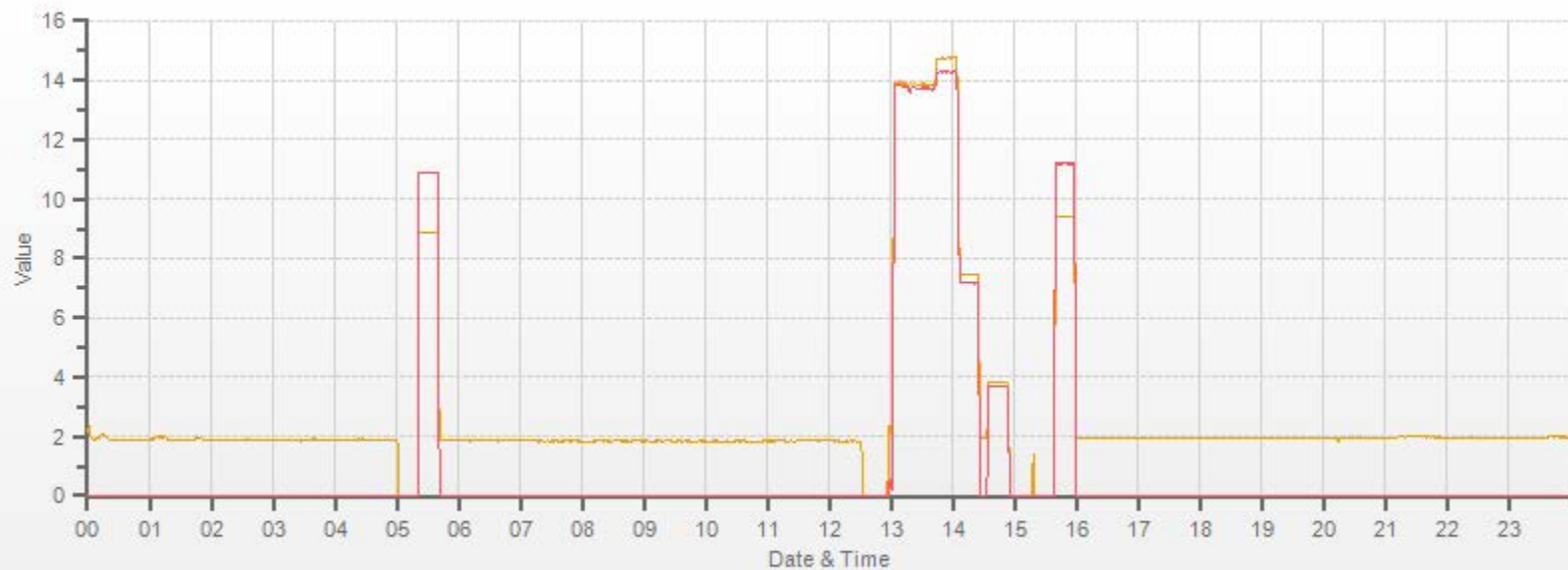
— TRS[ppb]

TOTAL HYDROCARBON

Thermo 55i Methane/Non-Methane Analyzer Calibration																																																																																																																																			
Date: July 18, 2017 Company/Airshed: PRAMP Location/Station Name: 986b Parameter: CH ₄ / NMHC / THC Start/End Time 24 hr. (mst): 12:33 / 16:02 Calibration Method: Gas Dilution	Barometer Data/B.P.: Brunton 05535, December 5, 2016 944.8 hPa Thermometer Data/Station Temp °C: Fisher Scientific 160459244, May 19, 2016 22°C Weather Conditions: Mix of sun and clouds Calibration Purpose: routine monthly Performed By/Reviewer: Chris Wesson / Trina Whitsitt Cal Gas Expiry Date: November 25, 2023																																																																																																																																		
Analyzer:																																																																																																																																			
ID# or Serial Number: 1022143392 Measured Flow: 1.02 L/min Last Calibration Date: June 7, 2017 Range ppm: 20 CH ₄ /20 NMHC/40 THC	Correction Factors: <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> <tr> <td>CH₄ =</td> <td>1.000</td> <td>1.062</td> <td>0.998</td> </tr> <tr> <td>NMHC =</td> <td>1.000</td> <td>1.038</td> <td>0.999</td> </tr> <tr> <td>THC =</td> <td>1.000</td> <td>1.050</td> <td>0.999</td> </tr> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	CH ₄ =	1.000	1.062	0.998	NMHC =	1.000	1.038	0.999	THC =	1.000	1.050	0.999																																																																																																																		
	Previous C.F.:	As Found C.F.:	New C.F.:																																																																																																																																
CH ₄ =	1.000	1.062	0.998																																																																																																																																
NMHC =	1.000	1.038	0.999																																																																																																																																
THC =	1.000	1.050	0.999																																																																																																																																
Calibration Standards:																																																																																																																																			
Low Flow Meter ID/Cert. Date: Definer Low ID# 129069 February 5, 2017 High Flow Meter ID/Cert. Date: Definer High ID# 128686 February 5, 2017 Calibrator ID/Cert. Date: Sabio 2010 17100415, May 18, 2016 Cal Gas Cylinder I.D. # : LL86139 CH₄ Cylinder Conc. = 599.0 211.0 =C ₃ H ₈ Cylinder Conc. CH₄ as C₃H₈ = 580.3 1179.3 =total CH ₄ equivalent	Standard Calibration Points for Analyzer Range of 20/20/40 ppm <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>CH₄</th> <th>NMHC</th> <th>THC</th> </tr> <tr> <td>High</td> <td>13.00</td> <td>13.00</td> <td>26.00</td> </tr> <tr> <td>Mid</td> <td>7.00</td> <td>7.00</td> <td>14.00</td> </tr> <tr> <td>Low</td> <td>3.00</td> <td>3.00</td> <td>6.00</td> </tr> </table>	Point	CH ₄	NMHC	THC	High	13.00	13.00	26.00	Mid	7.00	7.00	14.00	Low	3.00	3.00	6.00																																																																																																																		
Point	CH ₄	NMHC	THC																																																																																																																																
High	13.00	13.00	26.00																																																																																																																																
Mid	7.00	7.00	14.00																																																																																																																																
Low	3.00	3.00	6.00																																																																																																																																
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015																																																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">Calibrator Flow Rates (cc/min)</th> <th>Calculated CH₄ (ppm)</th> <th>Calculated NMHC (ppm)</th> <th>Calculated THC (ppm)</th> <th>Indicated CH₄ (ppm)</th> <th>Indicated NMHC (ppm)</th> <th>Indicated THC (ppm)</th> <th colspan="3">Correction Factors:</th> </tr> <tr> <th>Point</th> <th>Diluent</th> <th>Cal Gas</th> <th>Total Flow</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>CH₄</th> <th>NMHC</th> <th>THC</th> </tr> <tr> <td>as found zero</td> <td>2488</td> <td>0.00</td> <td>2488</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.01</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>as found high</td> <td>2425</td> <td>61.19</td> <td>2486</td> <td>14.74</td> <td>14.28</td> <td>29.03</td> <td>13.88</td> <td>13.76</td> <td>27.65</td> <td>1.062</td> <td>1.038</td> <td>1.050</td> </tr> <tr> <td>adjusted zero</td> <td>2488</td> <td>0.00</td> <td>2488</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.01</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>adjusted high</td> <td>2425</td> <td>61.19</td> <td>2486</td> <td>14.74</td> <td>14.28</td> <td>29.03</td> <td>14.77</td> <td>14.29</td> <td>29.07</td> <td>0.998</td> <td>0.999</td> <td>0.999</td> </tr> <tr> <td>mid</td> <td>2463</td> <td>30.67</td> <td>2493</td> <td>7.37</td> <td>7.14</td> <td>14.50</td> <td>7.43</td> <td>7.17</td> <td>14.61</td> <td>0.992</td> <td>0.995</td> <td>0.993</td> </tr> <tr> <td>low</td> <td>2483</td> <td>15.87</td> <td>2499</td> <td>3.80</td> <td>3.69</td> <td>7.49</td> <td>3.86</td> <td>3.70</td> <td>7.57</td> <td>0.986</td> <td>0.996</td> <td>0.991</td> </tr> <tr> <td>calibrator zero</td> <td>2488</td> <td>0.00</td> <td>2488</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.00</td> <td>0.01</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td colspan="10" style="text-align: right;">Average C.F. =</td> <td>0.992</td> <td>0.997</td> <td>0.994</td> </tr> </table>		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	2488	0.00	2488	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a	as found high	2425	61.19	2486	14.74	14.28	29.03	13.88	13.76	27.65	1.062	1.038	1.050	adjusted zero	2488	0.00	2488	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a	adjusted high	2425	61.19	2486	14.74	14.28	29.03	14.77	14.29	29.07	0.998	0.999	0.999	mid	2463	30.67	2493	7.37	7.14	14.50	7.43	7.17	14.61	0.992	0.995	0.993	low	2483	15.87	2499	3.80	3.69	7.49	3.86	3.70	7.57	0.986	0.996	0.991	calibrator zero	2488	0.00	2488	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a	Average C.F. =										0.992	0.997	0.994
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	2488	0.00	2488	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a																																																																																																																							
as found high	2425	61.19	2486	14.74	14.28	29.03	13.88	13.76	27.65	1.062	1.038	1.050																																																																																																																							
adjusted zero	2488	0.00	2488	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a																																																																																																																							
adjusted high	2425	61.19	2486	14.74	14.28	29.03	14.77	14.29	29.07	0.998	0.999	0.999																																																																																																																							
mid	2463	30.67	2493	7.37	7.14	14.50	7.43	7.17	14.61	0.992	0.995	0.993																																																																																																																							
low	2483	15.87	2499	3.80	3.69	7.49	3.86	3.70	7.57	0.986	0.996	0.991																																																																																																																							
calibrator zero	2488	0.00	2488	0.00	0.00	0.00	0.00	0.00	0.01	n/a	n/a	n/a																																																																																																																							
Average C.F. =										0.992	0.997	0.994																																																																																																																							
Linear Regression/Calibration Results: <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th> <th>CH₄</th> <th>NMHC</th> <th>THC</th> <th>LIMITS</th> </tr> <tr> <td>Correlation Coefficient =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> <td>> or = 0.995</td> </tr> <tr> <td>Slope =</td> <td>1.001</td> <td>1.000</td> <td>1.001</td> <td>.95-1.05</td> </tr> <tr> <td>b (Intercept as % of full scale) =</td> <td>0.15%</td> <td>0.05%</td> <td>0.13%</td> <td>± 3% F.S.</td> </tr> <tr> <td>% change in C.F. from last cal =</td> <td>-6.22%</td> <td>-3.80%</td> <td>-5.02%</td> <td>± 10%</td> </tr> </table>			CH ₄	NMHC	THC	LIMITS	Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995	Slope =	1.001	1.000	1.001	.95-1.05	b (Intercept as % of full scale) =	0.15%	0.05%	0.13%	± 3% F.S.	% change in C.F. from last cal =	-6.22%	-3.80%	-5.02%	± 10%																																																																																																									
	CH ₄	NMHC	THC	LIMITS																																																																																																																															
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995																																																																																																																															
Slope =	1.001	1.000	1.001	.95-1.05																																																																																																																															
b (Intercept as % of full scale) =	0.15%	0.05%	0.13%	± 3% F.S.																																																																																																																															
% change in C.F. from last cal =	-6.22%	-3.80%	-5.02%	± 10%																																																																																																																															
<table style="width:100%;"> <tr> <td style="width: 50%; vertical-align: top;"> As found: Interface Board Voltages: Bias Supply: -311.7 Temperatures: Detector Oven: 175.1 Filter: 175.0 Column Oven: 75.5 Internal: 36.7 Cylinder Pressures/reg.: Carrier: 2400 50 Fuel: 750 50 Span Gas: 650 18 Zero Air Generator: 45 Internal Pressures: Carrier: 31.4 Fuel: 40.5 Air: 32.2 FID Status: Status: LIT Counts: 20375 Flame: 321.5 Det Base: 175.1 Flame and Power Stats: Last Power On: 30Jun2017@08:17 Flameouts: 1 Det Oven at Start: 70.5 Col Oven at Start: 51.2 Calibration History: Time: 01Jan1970@00:00 Type: n/a Status: n/a Check/Adjust: n/a CH₄ Span Conc: n/a CH₄ SP Ratio: n/a CH₄ RT: n/a CH₄ PK IDX: n/a CH₄ PK HT: n/a NM Span Conc: n/a NM SP Ratio: n/a </td> <td style="width: 50%; vertical-align: top;"> As left: Calibration History cnt'd: NM Peak Area: n/a Crucial Settings: Methane Start: n/a Methane End: n/a Backflush: n/a NMHV Start: n/a NMHC End: n/a Run History>1: Date: 18Jul2017 Time: 13:02 CH₄ PK HT: 0 CH₄ RT: 12.2 CH₄ Baseline: 1625 CH₄ LOD: 35 CH₄ SD: 11 CH₄ CONC: 0.00 NM PK HT: 0 NM Peak Area: 0 NM CONC: 0.00 NM Base Start: 1629 NM Base End: 1627 NM LOD: 9 NM Start IDX: 14 NM End IDX: 35 NM Max Slope: 7.6e-01 NM Min Slope: -5.1e-01 NM PT Count: 0 Previous CH₄: 8.86 Previous NMHC: 10.99 Previous THC: 19.87 New CH₄: 9.43 New NMHC: 11.19 New THC: 20.62 </td> </tr> </table>		As found: Interface Board Voltages: Bias Supply: -311.7 Temperatures: Detector Oven: 175.1 Filter: 175.0 Column Oven: 75.5 Internal: 36.7 Cylinder Pressures/reg.: Carrier: 2400 50 Fuel: 750 50 Span Gas: 650 18 Zero Air Generator: 45 Internal Pressures: Carrier: 31.4 Fuel: 40.5 Air: 32.2 FID Status: Status: LIT Counts: 20375 Flame: 321.5 Det Base: 175.1 Flame and Power Stats: Last Power On: 30Jun2017@08:17 Flameouts: 1 Det Oven at Start: 70.5 Col Oven at Start: 51.2 Calibration History: Time: 01Jan1970@00:00 Type: n/a Status: n/a Check/Adjust: n/a CH ₄ Span Conc: n/a CH ₄ SP Ratio: n/a CH ₄ RT: n/a CH ₄ PK IDX: n/a CH ₄ PK HT: n/a NM Span Conc: n/a NM SP Ratio: n/a	As left: Calibration History cnt'd: NM Peak Area: n/a Crucial Settings: Methane Start: n/a Methane End: n/a Backflush: n/a NMHV Start: n/a NMHC End: n/a Run History>1: Date: 18Jul2017 Time: 13:02 CH ₄ PK HT: 0 CH ₄ RT: 12.2 CH ₄ Baseline: 1625 CH ₄ LOD: 35 CH ₄ SD: 11 CH ₄ CONC: 0.00 NM PK HT: 0 NM Peak Area: 0 NM CONC: 0.00 NM Base Start: 1629 NM Base End: 1627 NM LOD: 9 NM Start IDX: 14 NM End IDX: 35 NM Max Slope: 7.6e-01 NM Min Slope: -5.1e-01 NM PT Count: 0 Previous CH ₄ : 8.86 Previous NMHC: 10.99 Previous THC: 19.87 New CH ₄ : 9.43 New NMHC: 11.19 New THC: 20.62																																																																																																																																
As found: Interface Board Voltages: Bias Supply: -311.7 Temperatures: Detector Oven: 175.1 Filter: 175.0 Column Oven: 75.5 Internal: 36.7 Cylinder Pressures/reg.: Carrier: 2400 50 Fuel: 750 50 Span Gas: 650 18 Zero Air Generator: 45 Internal Pressures: Carrier: 31.4 Fuel: 40.5 Air: 32.2 FID Status: Status: LIT Counts: 20375 Flame: 321.5 Det Base: 175.1 Flame and Power Stats: Last Power On: 30Jun2017@08:17 Flameouts: 1 Det Oven at Start: 70.5 Col Oven at Start: 51.2 Calibration History: Time: 01Jan1970@00:00 Type: n/a Status: n/a Check/Adjust: n/a CH ₄ Span Conc: n/a CH ₄ SP Ratio: n/a CH ₄ RT: n/a CH ₄ PK IDX: n/a CH ₄ PK HT: n/a NM Span Conc: n/a NM SP Ratio: n/a	As left: Calibration History cnt'd: NM Peak Area: n/a Crucial Settings: Methane Start: n/a Methane End: n/a Backflush: n/a NMHV Start: n/a NMHC End: n/a Run History>1: Date: 18Jul2017 Time: 13:02 CH ₄ PK HT: 0 CH ₄ RT: 12.2 CH ₄ Baseline: 1625 CH ₄ LOD: 35 CH ₄ SD: 11 CH ₄ CONC: 0.00 NM PK HT: 0 NM Peak Area: 0 NM CONC: 0.00 NM Base Start: 1629 NM Base End: 1627 NM LOD: 9 NM Start IDX: 14 NM End IDX: 35 NM Max Slope: 7.6e-01 NM Min Slope: -5.1e-01 NM PT Count: 0 Previous CH ₄ : 8.86 Previous NMHC: 10.99 Previous THC: 19.87 New CH ₄ : 9.43 New NMHC: 11.19 New THC: 20.62																																																																																																																																		
Comments: The analyzer sample inlet filter was changed. No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes. The analyzer cooling fan filter(s) were cleaned.																																																																																																																																			
Flow measurements completed after mid-point.																																																																																																																																			



Station: PRAMP_986 Daily: 17.07.18 Type: AVG 1 Min. [1 Min.]



— CH4[ppm] — NMHC[ppm]

WIND SYSTEM



Meteorological Sensor Audit/Calibration

Location Information

Company: PRAMP
Audit Location: 986b
Audit Date: April 5, 2017

Performed By: Limin Li
Reviewed By: Trina Whitsitt
Start /EndTime (mst): 13:30/15:30

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 #:	129612	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	February 15, 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	55.2	55.2	1.002
4000	73.7	73.6	73.6	1.002
5000	92.2	92.0	92.0	1.002
6000	110.6	110.5	110.5	1.001
7000	129.0	128.9	128.9	1.001
8000	147.4	147.4	147.4	1.000
9000	165.9	165.9	165.9	1.000
10000	184.3	184.5	184.5	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	0.4	2.5	1.5
30	330	29	329	1.4	1.3	1.3
60	300	60	300	0.4	0.3	0.3
90	270	89	271	0.8	-1.2	1.0
120	240	120	242	0.5	-1.6	1.1
150	210	150	212	0.1	-1.8	1.0
180	180	181	181	-0.9	-1.1	1.0
210	150	212	151	-1.5	-0.8	1.2
240	120	241	120	-1.3	-0.2	0.8
270	90	271	90	-0.5	-0.1	0.3
300	60	300	60	0.2	0.5	0.3
330	30	329	29	1.4	0.7	1.1
355	0	353	0	2.5	0.3	1.4
The audit meets AMD requirements.			Average Absolute Degrees Difference=			0.9

Comments: Adjust wind speed gain 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 <u>5000</u>	Pt. #2 <u>5000</u>	Pt. #3 <u>5000</u>
Gas Flow (sccm)		
Pt. #1 <u>80</u>	Pt. #2 <u>40</u>	Pt. #3 <u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO 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 <u>Maxxam</u>		Operator: <u>Chris</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Definer 530</u>
Serial Number	<u>829</u>	Serial Number	<u>H-148944, L-152019</u>
Last Verification Date	<u>February 3, 2016</u>	Temperature (°C)	<u>23.5</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>707.1 mmHg</u>
NO [PPM]	<u>49.0</u> NOx [PPM] <u>49.0</u>		
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)			
Pt. #1 <u>4846</u>	Pt. #2 <u>4888</u>	Pt. #3 <u>4908</u>	
Gas Flow (sccm)			
Pt. #1 <u>80.6</u>	Pt. #2 <u>38.9</u>	Pt. #3 <u>18.4</u>	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
	0.0	0.0000	0.0000	0.0000	0.0001	0.0001	Limit ± 10%	
4927	80.6	0.8016	0.8016	0.8021	0.0015	0.8036	0.1%	0.2%
4927	38.9	0.3867	0.3867	0.3862	0.0001	0.3863	-0.1%	-0.1%
4927	18.4	0.1830	0.1830	0.1820	0.0004	0.1824	-0.5%	-0.4%
Absolute Average Percent Difference							0.2%	0.1%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO		LIMITS		NOx			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0010	0.90-1.10		m (Slope)=	1.0027		
b (Intercept % of FS)=	-0.0604	± 3% F.S.		b (Intercept % of FS)=	-0.0652		

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4927	0	0.0000	0.8016	0.0010	0.8020	NO ₂	% Diff. Limit
4927	500	0.5450	0.2566	0.5421	0.7987	-0.7%	± 10%
4927	250	0.2797	0.5219	0.2797	0.8016	-0.4%	± 10%
4927	80	0.0954	0.7062	0.0958	0.8026	-0.6%	± 10%
Absolute Average Percent Difference						1%	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO₂		LIMITS					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	0.9931	0.90-1.10					
b (Intercept % of FS)=	0.1220	± 3% F.S.					

AENV Standards		NO_x Analyzer	
Audit Calibrator			
Make/Model	<u>Thermo 146i</u>	Make/Model	<u>Thermo 42i</u>
Serial/AMU Number	<u>AMU1809</u>	Serial/AMU Number	<u>AMU 1868</u>
SRM Gas Cylinder No.	<u>CAL018140</u>	Last Calibration Date	<u>January 25, 2017</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>March 25, 2019</u>

COMMENTS: _____

Auditor: Shana Beaton Date: January 27, 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. 2015-112CGA

Company: Maxxam Operator's Name: Chris Wesson
Cylinder #: BLM002197 Concentration PPM: 10.3 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: February 2, 2016
Gas Type: H2S Conc. 20.43
Cylinder Number: CAL015584

Flow Measurement Device:

Make/Model: Bios DC-2
Serial Number: Bios D
Temp. °C: 24.5
B.P. 702mmHg

Reference Analyzer:

Make/Model: Thermo 450i Serial/AMU Number: 1980
Instrument Settings: Zero: 15.3 Span: 1.126 Range: 0.1
Last Calibration: Date: 1-Feb-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5017	0.0	0.000	0.00751	133.140	10.4
5054	37.96	0.078	0.00751	133.140	10.4
5055	17.78	0.037	0.00352	284.308	10.4
5029	9.07	0.019	0.00180	554.465	10.3
Average Cylinder Concentration:					10.3

Previous Stated Concentration PPM: 10.3

Percent variance from Stated: 0.5

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: [Signature]

Date: February 2, 2016
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 ☒ COMMENTS:

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration ☐ C₃H₈ manufacturers tolerance 1.1%

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

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	Three Creeks 986b Station
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Maram Ghaleb	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.

Maram Ghaleb

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

August 21, 2017

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client: Peace River Area Monitoring Program Committee

Project #: 8449-2017-07-67-C

Site: Three Creeks 986b Station

Contact: Karla Reesor

Level 0 Preliminary Verification

Maram Ghaleb

Date August 10, 2017

Level 1 Primary Validation

Maram Ghaleb

Date August 10, 2017

Level 2 Final Validation

Maram Ghaleb

Date August 18, 2017

Level 3 Independent Data Review

Carla Reesor

Date August 21, 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.