Watershed & Airshed Stewardship Branch
Resource Stewardship Division
University Research Park
3535 Research Road, NW
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March 19, 2020 File No: 2019 - 555A/568A

Karla Reesor
Executive Director
Peace River Air Monitoring Program
Suite 91, 305-4625 Varsity Drive NW
Calgary, Alberta
T3A 0Z9

Ms. Reesor:

Subject: 2019 Peace River Air Monitoring Program (PRAMP) Ambient Air Monitoring Network Audit Results and Closure Letter

Between the dates of March 11th and March 13th, 2020 the AEP Ambient Air Monitoring Audit Team conducted a field audit of the PRAMP network stations. All continuous gas analyzers and meteorological sensors met audit criteria; most analyzers responded quite close to the target audit concentrations.

The field level results of this audit were very positive, however there were a few minor issue with the station site and network documentation that must be addressed – as follows:

1. The network documents map needs to be updated with the new 986 station location and the location of the Cadotte Lake station.

2. The windroses for the Reno and 842 stations need to be updated

3. The Reno and 842 station site documents need updated photos

Pramp has committed to updating the site documents in March of 2020 – PRAMP is required submit the updated documents to AEP via air.reporting@gov.ab.ca and copy the audit team on the submission.

Upon receiving notification of this performance audit Pramp was asked to provide the date of the most recent quality system audit as required by AMD Chapter 5 QS 4-A and QS 4-B (b). Pramp indicated that their QAP was last audited April of 2019, and the QAP of their operations contractor – Bureau Veritas – was last audited December of 2019.

Although corrective actions for the minor documentation deficiencies noted above have yet to be completed, the AEP Audit Team is confident Pramp will follow through with the required documentation updates, and now considers this audit closed. If you have any questions or comments, please contact the undersigned at 780 554-2238.

Regards,

Shea Beaton
Monitoring Systems Auditor
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Cell: 780 554-2238
shea.beaton@gov.ab.ca

CC: Al Clark – AEP Ambient Air Monitoring Systems Auditor
Marty Collins – AEP Air Monitoring Manager
Bob Myrick – AEP Director of Airshed Sciences
Madhan Selvaraj – AEP Air Quality Specialist
Owen Cook – AEP Regional Compliance Manger
Okey Obiajulu – AEP Approvals Manager
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Lily Lin – Pramp
Mike Bisaga – Pramp
air.reporting@gov.ab.ca

Audit Summary

Facility / Zone	PRAMP
Total # of parameters that passed	14
Total # of parameters audited in the network	14
Date(s) of the audit	March 11 to 13, 2020
Issue Date of Audit Summary	March 19, 2020

Station Name	Reno		
Auditor	Shea Beaton		
Audit Date	March 11, 2020		
Critical	**Pass**	**Fail**	
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
NMHC	X		
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Zero/Span Systems Operational	X		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Safety	X		
Site Conditions	X		
Non-critical	**OK**	**Opportunity for Improvement**	
Station Temperature	X		
Ambient Temperature	X		
Station Condition	X		
Station Documentation		X	Needs review / or missing

Not monitored at this location

Audit Summary

Facility / Zone	PRAMP
Total # of parameters that passed	14
Total # of parameters audited in the network	14
Date(s) of the audit	March 11 to 13, 2020
Issue Date of Audit Summary	March 19, 2020

Station Name	Cadotte Lake
Auditor	Shea Beaton
Audit Date	March 12, 2020

Critical	**Pass**	**Fail**	
SO_2	X		
TRS	X		
NO / NO_2 / NO_X	X		
O_3	X		
NMHC	X		
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Zero/Span Systems Operational	X		

Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Safety	X		
Site Conditions	X		

Non-critical	**OK**	**Opportunity for Improvement**	
Station Temperature	X		
Ambient Temperature	X		
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Audit Summary

Facility / Zone	PRAMP
Total # of parameters that passed	14
Total # of parameters audited in the network	14
Date(s) of the audit	March 11 to 13, 2020
Issue Date of Audit Summary	March 19, 2020

Station Name	986		
Auditor	Shea Beaton		
Audit Date	March 12, 2020		
Critical	**Pass**	**Fail**	
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
NMHC	X		
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Zero/Span Systems Operational	X		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Safety	X		
Site Conditions	X		
Non-critical	**OK**	**Opportunity for Improvement**	
Station Temperature	X		
Ambient Temperature	X		
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Audit Summary

Facility / Zone	PRAMP
Total # of parameters that passed	14
Total # of parameters audited in the network	14
Date(s) of the audit	March 11 to 13, 2020
Issue Date of Audit Summary	March 19, 2020

Station Name	842		
Auditor	Shea Beaton		
Audit Date	March 13, 2020		
Critical	**Pass**	**Fail**	
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
NMHC	X		
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Zero/Span Systems Operational	X		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Safety	X		
Site Conditions	X		
Non-critical	**OK**	**Opportunity for Improvement**	
Station Temperature	X		
Ambient Temperature	X		
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Form No. F-AA-001
Version No. 1.3

STATION AUDIT

File No. 2019 - 563A/565A

Date: March 12, 2020 Performed by: SB

Station

Name: 986 Location: Hwy 986

Facility/Zone: Pramp Operator: BV Labs

Temp: 24.4 Barometric Press: 718mmHg

Location

Latitude N 56° 22' 12"
Longitude W 116° 55' 32"
Elevation 630m
Status of Site Documentation Complete
Status of Network Documentation Complete
Status of QAP Pramp Apr 2019, BV Labs Dec 2019

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	24.9km/h @ 315°	NM 20 - 30km/h
Station Temperature	23C	22.1C
Relative Humidity	Not	Audited
Ambient Temperature	-14C	-14.1C
Solar Radiation	NA	NA
Pressure	NA	NA

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

SO_2 ANALYZER AUDIT

File No. 2019 - 564A

Date: March 12, 2020 Performed by: SB

Station

Name: 986 Location: Hwy 986

Facility/Zone: PRAMP Operator: BV Labs

Temp. 24.4 Barometric Press. 718mmHg

Monitor

Make/Model: API 100A Serial No: 1298

Inlet flow (sccm): 547 Full Scale Range ppm: 0.5

Last cal. Date: March 3, 2020 Old Correction Factor: 1.000

Zero/Bkg 101.8

Span Coef 0.894

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF62504 AMU # : 2303

CGA Date: Oct-19 SO_2 Concentration PPM: 50.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4889	0.0	4889	0.0000	-0.0016		
4927	37.9	4965	0.3863	0.3829	0%	± 10%
4920	18.1	4938	0.1855	0.1821	-1%	± 10%
4909	9.0	4918	0.0926	0.0898	-1%	± 10%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9959	**0.90-1.10**
b (Intercept as % of full scale)=	-0.4214	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

TRS ANALYZER AUDIT

File No. 2019 - 563A

Date: March 12, 2020 Performed by: SB

Station

Name: 986 Location: Hwy 986

Facility/Zone: Pramp Operator: BV Labs

Temp. 24.4 Barometric Press. 718mmHg

Monitor

Make/Model: Thermo 43iTLE Serial No: 1152940011

Inlet flow (sccm): 481 Full Scale Range ppm: 0.1

Last cal. Date: March 3, 2019 Old Correction Factor: 1.000

Zero/Bkg 3.10

Span Coef 0.956

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF51720 AMU # : 2303

CGA Date: Oct-19 H_2S Concentration PPM: 9.87

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4889	0.0	4889	0.0000	-0.0008		
4928	37.5	4965	0.0745	0.0747	1%	± 10%
4920	17.8	4938	0.0356	0.0352	1%	± 10%
4909	9.0	4918	0.0181	0.0169	-2%	± 10%
				Absolute Average Percent Difference	0%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0155	**0.90-1.10**
b (Intercept as % of full scale)=	-1.0428	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

Non Methane Analyzer Audit

File No. 2019 - 565A

Date: March 12, 2020 Performed by: SB

Station:

Name: 986 Location: Hwy 986 Operator: BV Labs

Facility/Zone: Pramp Temp. 24.4 BP: 718mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1501663728

Inlet flow (sccm): NA CH_4 Range ppm: 20.0

Last cal. Date: March 3, 2020 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 1.000

Non CH_4: 1.000

THC: 1.000

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 1778

HC cylinder # FF50323 CH_4 conc. (ppm) 1018.0 CH_4 Equiv (C3H8 only) (ppm) 970.8

CGA Date Mar-20 C_3H_8 conc. (ppm) 353.0 Total CH_4 Equiv. (ppm) 1988.8

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
5003	0.0	5003	0.00	0.00	0.00	0.00	0.00	0.00			
5003	69.0	5072	13.85	13.21	27.06	13.94	13.31	27.25	1%	1%	1%
5038	34.3	5072	6.88	6.56	13.45	7.04	6.69	13.74	2%	2%	2%
5035	14.6	5050	2.94	2.81	5.75	3.07	2.79	5.86	4%	-1%	2%
								Absolute Average Percent Difference	2%	1%	2%

Linear Regression Analysis: *y=mx+b (where x=calculated concentration, y=indicated concentration)*

	CH_4	Non CH_4	THC	LIMITS
Correlation Coeff.=	0.9999	1.0000	1.0000	**≥ 0.995**
m (Slope)=	1.0046	1.0097	1.0071	**0.90-1.10**
b (Intercept as % of FS)=	0.3311	-0.0073	0.1668	**± 3% F.S.**

Remarks:

Alberta Government

Station Performance Audit Summary

Company: PRAMP

Facility Name: NA

Approval No.: NA

Site Name: 986

Region: Upper Peace

District: Peace River

Parameters audited:

H_2S		SO_2	X	NO_X		NH_3		O_3	
CO		CH_4		NonCH4	X	THC		TRS	X
$PM_{2.5}$		PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp	X	RH		Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____ N/A__X____									

GENERAL	YES	NO	N/A
Has the location remained unchanged from previous audit?		X	
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		
Date of last calibration. Date: April 24, 2019			

COMMENTS:

AUDITOR: SB

DATE: March 12, 2020

Alberta Government

Station Site Documents Audit Checklist

Station

Name: 986C Location: Hwy 986

Facility/Zone: Pramp Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-B*	**Meets AMD**		**NA**	**Current**	
Do the Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Name of Owner/ Approval Holder	X			X	
(b) Name of Operating Agency	X			X	
(c) Contact Information	X			X	
(d) Date the Site or Station was Established	X			X	
(e) Date the information was last updated	X			X	
(f) Location including Latitude and Longitude	X			X	
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X			X	
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance			X		
(i) List of Instruments Located at the Site	X			X	
(j) Site Description Including the following:					
(i) Land Use By Sector	X			X	
(ii) Site Elevation	X			X	
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X			X	
(iv) Average Building height in the area	X			X	
(v) Distance to Nearest Trees	X			X	

Required Elements of AMD Chapter 3 *SS 4-D*	**Meets AMD**		**NA**	**Current**	
Do the Station Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Recent Area Map Covering Approximately 1Km^2	X			X	
(b) Plan View Sketch	X			X	
(c) Cross-Sectional Sketch of Area Within 500 m Radius			X		
(d) Colour Photos Showing Sample Manifold/Inlet	X			X	
(e) Colour Photo of the Station	X			X	
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance			X		

COMMENTS:

AUDITOR: SB DATE: March 12, 2020

Alberta Government

Network Site Documents Audit Checklist

Network

Name: 986C Location: Hwy 986

Facility/Zone: Pramp Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-C*	**Meets AMD**		**NA**	**Current**	
Do the Network Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X			X	
(ii) Roadways	X			X	
(iii) Railway Lines	X			X	
(iv) Airports	X			X	
(v) Lakes	X			X	
(vi) Rivers	X			X	
(vii) Human Settlements	X			X	
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X			X	
(ix) Other Significant Landmarks	X			X	
(b) A windrose for each Continuous Ambient Air Monitoring Station	X			X	

COMMENTS:

AUDITOR: SB DATE: March 12, 2020

Alberta Government

Form No. F-AA-001
Version No. 1.3

STATION AUDIT

File No. 2019 - 566A/568A

Date: March 13, 2020 Performed by: SB

Station

Name: 842 Location: Twp Rd 842

Facility/Zone: Pramp Operator: BV Labs

Temp: 22.6 Barometric Press: 724mmHg

Location

Latitude N 56° 16' 34"
Longitude W 116° 59' 4"
Elevation 600
Status of Site Documentation Complete - needs update
Status of Network Documentation Complete - needs update
Status of QAP Pramp Apr 2019, BV Labs Dec 2019

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	8.4km/h @ 304°	WNW 5-10km/h
Station Temperature	23.2C	23.6C
Relative Humidity	Not	Audited
Ambient Temperature	-19.5C	-19.3C
Solar Radiation	NA	NA
Pressure	NA	NA

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

SO_2 ANALYZER AUDIT

File No. 2019 - 567A

Date: March 13, 2020 Performed by: SB

Station

Name: 842 Location: Twp Rd 842

Facility/Zone: PRAMP Operator: BV Labs

Temp. 22.6 Barometric Press. 724mmHg

Monitor

Make/Model: Thermo 43i Serial No: 835033373

Inlet flow (sccm): 436 Full Scale Range ppm: 0.5

Last cal. Date: March 2, 2020 Old Correction Factor: 1.000

Zero/Bkg 16

Span Coef 1.079

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF62504 AMU # : 2303

CGA Date: Oct-19 SO_2 Concentration PPM: 50.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4904	0.0	4904	0.0000	0.0001		
4938	37.7	4976	0.3834	0.3925	2%	± 10%
4926	18.0	4944	0.1842	0.1880	2%	± 10%
4920	9.0	4929	0.0924	0.0932	1%	± 10%
				Absolute Average Percent Difference	2%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0247	**0.90-1.10**
b (Intercept as % of full scale)=	-0.1252	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

TRS ANALYZER AUDIT

File No. 2019 - 566A

Date: March 12, 2020 Performed by: SB

Station

Name: 842 Location: Twp rd 842

Facility/Zone: Pramp Operator: BV Labs

Temp. 22.6 Barometric Press. 724mmHg

Monitor

Make/Model: Thermo 43iTLE Serial No: 1162460023

Inlet flow (sccm): 413 Full Scale Range ppm: 0.1

Last cal. Date: March 2, 2020 Old Correction Factor: 1.000

Zero/Bkg 2.95

Span Coef 0.901

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF51720 AMU # : 2303

CGA Date: Oct-19 H_2S Concentration PPM: 9.87

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4904	0.0	4904	0.0000	0.0003		
4938	37.6	4976	0.0746	0.0702	-6%	± 10%
4926	17.9	4944	0.0357	0.0343	-5%	± 10%
4920	8.9	4929	0.0178	0.0169	-7%	± 10%
			Absolute Average Percent Difference		6%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9383	**0.90-1.10**
b (Intercept as % of full scale)=	0.3660	**± 3% F.S.**

Remarks:

- Slow response, overnight and morning temps down to -34C, low RH impact on SO2 scrubber material.

Alberta Government

Form No. F-AA-001
Version No. 1.3

Non Methane Analyzer Audit

File No. 2019 - 568A

Date: March 13, 2020 Performed by: SB

Station:

Name: 842 Location: Twp Rd 842 Operator: BV Labs

Facility/Zone: Pramp Temp. 22.6 BP: 724 mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1314057759

Inlet flow (sccm): NA CH_4 Range ppm: 20.0

Last cal. Date: Marh 2, 2020 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 0.999

Non CH_4: 0.999

THC: 0.999

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 1778

HC cylinder # FF50323 CH_4 conc. (ppm) 1018.0 CH_4 Equiv (C3H8 only) (ppm) 970.8

CGA Date Mar-20 C_3H_8 conc. (ppm) 353.0 Total CH_4 Equiv. (ppm) 1988.8

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas		
			CH_4	Non CH_4	THC	CH_4	Non CH_4	THC	Limit ± 10%		
Air	Gas	Total	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	CH_4	Non CH_4	THC
5031	0.0	5031	0.00	0.00	0.00	0.00	0.00	0.00			
5032	68.5	5100	13.67	13.04	26.71	13.96	13.12	27.07	2%	1%	1%
5051	34.1	5085	6.83	6.51	13.34	6.98	6.56	13.54	2%	1%	2%
5049	14.6	5064	2.93	2.80	5.73	2.99	2.83	5.82	2%	1%	2%
								Absolute Average Percent Difference	2%	1%	1%

Linear Regression Analysis: *y=mx+b (where x=calculated concentration, y=indicated concentration)*

	CH_4	Non CH_4	THC	LIMITS
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	1.0213	1.0059	1.0134	**0.90-1.10**
b (Intercept as % of FS)=	-0.0037	0.0377	0.0216	**± 3% F.S.**

Remarks:

Alberta Government

Station Performance Audit Summary

Company: PRAMP

Facility Name: NA

Approval No.: NA

Site Name: 842

Region: Upper Peace

District: Peace River

Parameters audited:

H_2S		SO_2	X	NO_X		NH_3		O_3	
CO		CH_4		NonCH4	X	THC		TRS	X
$PM_{2.5}$		PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH		Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____ N/A_X_____									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		
Date of last calibration. Date: August 7, 2019			

COMMENTS:

AUDITOR: SB

DATE: March 13, 2020

Alberta Government

Station Site Documents Audit Checklist

Station

Name: 842 Location: Twp Rd 842

Facility/Zone: Pramp Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-B*	**Meets AMD**		**NA**	**Current**	
Do the Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Name of Owner/ Approval Holder	X			X	
(b) Name of Operating Agency	X			X	
(c) Contact Information	X			X	
(d) Date the Site or Station was Established	X			X	
(e) Date the information was last updated	X			X	
(f) Location including Latitude and Longitude	X			X	
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X			X	
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance			X		
(i) List of Instruments Located at the Site	X				X
(j) Site Description Including the following:					
(i) Land Use By Sector	X			X	
(ii) Site Elevation	X			X	
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X			X	
(iv) Average Building height in the area	X			X	
(v) Distance to Nearest Trees	X			X	

Required Elements of AMD Chapter 3 *SS 4-D*	**Meets AMD**		**NA**	**Current**	
Do the Station Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Recent Area Map Covering Approximately $1Km^2$	X			X	
(b) Plan View Sketch	X			X	
(c) Cross-Sectional Sketch of Area Within 500 m Radius			X		
(d) Colour Photos Showing Sample Manifold/Inlet	X			X	
(e) Colour Photo of the Station	X				X
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance			X		

COMMENTS: - Complete but needs some updates

AUDITOR: SB DATE: March 13, 2020

Alberta Government

Network Site Documents Audit Checklist

Network

Name: 842 Location: Twp Rd 842

Facility/Zone: Pramp Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-C*

Do the Network Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X				X
(ii) Roadways	X			X	
(iii) Railway Lines	X			X	
(iv) Airports	X			X	
(v) Lakes	X			X	
(vi) Rivers	X			X	
(vii) Human Settlements	X			X	
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X			X	
(ix) Other Significant Landmarks	X			X	
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				X

COMMENTS:

AUDITOR: SB DATE: March 13, 2020

Alberta Government

Form No. F-AA-001
Version No. 1.3

STATION AUDIT

File No. 2019 - 555A/557A

Date: March 11, 2020 Performed by: SB

Station

Name: Reno Location: Twp Rd 794

Facility/Zone: Pramp Operator: BV Labs

Temp: 21.8 Barometric Press: 702mmHg

Location

Latitude N 55° 52' 11"
Longitude W 117° 3' 27"
Elevation 640m
Status of Site Documentation Complete, need update
Status of Network Documentation Needs Windrose
Status of QAP PRAMP Apr 2019, BV Labs Dec 2019

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	13.2km/h @ 20°	NNE 10 - 15km/h
Station Temperature	21.2C	21.8C
Relative Humidity	Not	Audited
Ambient Temperature	-2.4C	-2.5C
Solar Radiation	NA	NA
Pressure	936mbar	936mbar

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

SO_2 ANALYZER AUDIT

File No. 2019 - 556A

Date: March 11, 2020 Performed by: SB

Station

Name: Reno Location: TWP 794

Facility/Zone: PRAMP Operator: BV Labs

Temp. 21.8 Barometric Press. 702mmHg

Monitor

Make/Model: API 100A Serial No: 841

Inlet flow (sccm): 592 Full Scale Range ppm: 0.5

Last cal. Date: February 6, 2020 Old Correction Factor: 1.000

Zero/Bkg 58.4

Span Coef 1.108

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF62504 AMU # : 2303

CGA Date: Oct-19 SO_2 Concentration PPM: 50.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4913	0.0	4913	0.0000	0.0001		
4950	37.8	4988	0.3835	0.3890	1%	± 10%
4936	18.1	4954	0.1849	0.1861	1%	± 10%
4926	9.1	4935	0.0933	0.0916	-2%	± 10%
				Absolute Average Percent Difference	0%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0166	**0.90-1.10**
b (Intercept as % of full scale)=	-0.2921	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

TRS ANALYZER AUDIT

File No. 2019-555A

Date: March 11, 2020 Performed by: SB

Station

Name: Reno Location: Twp Rd 794

Facility/Zone: Pramp Operator: BV Labs

Temp. 21.8 Barometric Press. 702mmHg

Monitor

Make/Model: Thermo 43iTLE Serial No: 1162460022

Inlet flow (sccm): 408 Full Scale Range ppm: 0.1

Last cal. Date: February 6, 2020 Old Correction Factor: 1.000

Zero/Bkg 2.330

Span Coef 0.974

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF51720 AMU # : 2303

CGA Date: Oct-19 H_2S Concentration PPM: 9.87

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4913	0.0	4913	0.0000	0.0001		
4950	37.6	4988	0.0744	0.0754	1%	± 10%
4936	17.7	4954	0.0353	0.0365	3%	± 10%
4926	8.9	4935	0.0178	0.0182	2%	± 10%
				Absolute Average Percent Difference	2%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	0.9999	**≥ 0.995**
m (Slope)=	1.0125	**0.90-1.10**
b (Intercept as % of full scale)=	0.2859	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

Non Methane Analyzer Audit

File No. 2019 - 557A

Date: March 11, 2020 Performed by: SB

Station:

Name: Reno Location: TWP Rd 794 Operator: BV Labs

Facility/Zone: Pramp Temp. 21.8 BP: 702mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1191032505

Inlet flow (sccm): NA CH_4 Range ppm: 20.0

Last cal. Date: February 6, 2020 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 1.000

Non CH_4: 1.000

THC: 1.000

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 1778

HC cylinder # FF50323 CH_4 conc. (ppm) 1018.0 CH_4 Equiv (C3H8 only) (ppm) 970.8

CGA Date Mar-20 C_3H_8 conc. (ppm) 353.0 Total CH_4 Equiv. (ppm) 1988.8

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas		
									Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
5048	0.0	5048	0.00	0.00	0.00	0.00	0.00	0.00			
5048	69.0	5117	13.73	13.09	26.82	13.44	13.21	26.65	-2%	1%	-1%
5066	34.7	5101	6.93	6.60	13.53	6.75	6.70	13.45	-3%	1%	-1%
5073	14.9	5088	2.98	2.84	5.82	2.90	2.93	5.83	-3%	3%	0%
								Absolute Average Percent Difference	2%	2%	0%

Linear Regression Analysis: *y=mx+b (where x=calculated concentration, y=indicated concentration)*

	CH_4	Non CH_4	THC	LIMITS
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9793	1.0077	0.9932	**0.90-1.10**
b (Intercept as % of FS)=	-0.0680	0.1611	0.0466	**± 3% F.S.**

Remarks:

Alberta Government

Station Performance Audit Summary

Company: PRAMP

Facility Name: NA

Approval No.: NA

Site Name: Reno

Region: Upper Peace

District: Peace River

Parameters audited:

H_2S		SO_2	X	NO_X		NH_3		O_3	
CO		CH_4		NonCH4	X	THC		TRS	X
$PM_{2.5}$		PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp	X	RH		Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____ N/A_____X									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		
Date of last calibration. Date: April 24, 2019			

COMMENTS:

AUDITOR: SB

DATE: March 11, 2020

Alberta Government

Station Site Documents Audit Checklist

Station

Name: Reno Location: TW Rd 794

Facility/Zone: PRAMP Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-B*	**Meets AMD**		**NA**	**Current**	
Do the Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Name of Owner/ Approval Holder	X			X	
(b) Name of Operating Agency	X			X	
(c) Contact Information	X				X
(d) Date the Site or Station was Established	X			X	
(e) Date the information was last updated	X			X	
(f) Location including Latitude and Longitude	X			X	
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X			X	
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance			X		
(i) List of Instruments Located at the Site	X				X
(j) Site Description Including the following:					
(i) Land Use By Sector	X			X	
(ii) Site Elevation	X			X	
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X			X	
(iv) Average Building height in the area	X			X	
(v) Distance to Nearest Trees	X			X	

Required Elements of AMD Chapter 3 *SS 4-D*	**Meets AMD**		**NA**	**Current**	
Do the Station Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Recent Area Map Covering Approximately 1Km^2	X			X	
(b) Plan View Sketch	X			X	
(c) Cross-Sectional Sketch of Area Within 500 m Radius			X		
(d) Colour Photos Showing Sample Manifold/Inlet	X			X	
(e) Colour Photo of the Station	X				X
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance			X		

COMMENTS: - Some photos need updating but not a major issue

AUDITOR: SB DATE: March 11, 2020

Alberta Government

Network Site Documents Audit Checklist

Network

Name: Reno

Location: TWP Rd 794

Facility/Zone: Pramp

Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-C*	**Meets AMD**		**NA**	**Current**	
Do the Network Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X			X	
(ii) Roadways	X			X	
(iii) Railway Lines	X			X	
(iv) Airports	X			X	
(v) Lakes	X			X	
(vi) Rivers	X			X	
(vii) Human Settlements	X			X	
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X			X	
(ix) Other Significant Landmarks	X			X	
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				X

COMMENTS: Windrose needs updating.

AUDITOR: SB

DATE: March 11, 2020

Alberta Government

Form No. F-AA-001
Version No. 1.3

STATION AUDIT

File No. 2019 - 558A/562A

Date: March 12, 2020 Performed by: SB

Station

Name: Cadotte Lake Location: Cadotte Lake

Facility/Zone: Pramp Operator: BV Labs

Temp: 21.8 Barometric Press: 702mmHg

Location

Latitude N 56° 29' 25"
Longitude W 116° 25' 38"
Elevation 584
Status of Site Documentation Complete
Status of Network Documentation Map needs update
Status of QAP Pramp Apr 19, BV Labs Dec 19

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	12.8km/h @ 317°	NNW 10 - 15km/h
Station Temperature	21.5C	20.8C
Relative Humidity	Not	Audited
Ambient Temperature	-13.3C	-12.8C
Solar Radiation	NA	NA
Pressure	NA	NA

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

SO_2 ANALYZER AUDIT

File No. 2019 - 559A

Date: March 12, 2020 Performed by: SB

Station

Name: Cadotte Lake Location: Cadotte Lake

Facility/Zone: PRAMP Operator: BV Labs

Temp. 21.8 Barometric Press. 702mmHg

Monitor

Make/Model: TAPI T100 Serial No: 722

Inlet flow (sccm): 547 Full Scale Range ppm: 0.5

Last cal. Date: March 4, 2020 Old Correction Factor: 1.000

Zero/Bkg 17.3

Span Coef 0.944

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF62504 AMU # : 2303

CGA Date: Oct-19 SO_2 Concentration PPM: 50.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4914	0.0	4914	0.0000	-0.0003		
4948	38.0	4986	0.3856	0.3805	-1%	± 10%
4933	18.0	4951	0.1840	0.1815	-1%	± 10%
4929	9.0	4938	0.0922	0.0898	-2%	± 10%
				Absolute Average Percent Difference	2%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9884	**0.90-1.10**
b (Intercept as % of full scale)=	-0.1308	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

TRS ANALYZER AUDIT

File No. 2019 - 558A

Date: March 12, 2020 Performed by: SB

Station

Name: Cadotte Lake Location: Cadotte Lake

Facility/Zone: Pramp Operator: BV Labs

Temp. 23.6 Barometric Press. 717mmHg

Monitor

Make/Model: TAPI T100U Serial No: 132

Inlet flow (sccm): 527 Full Scale Range ppm: 0.1

Last cal. Date: March 4, 2020 Old Correction Factor: 1.000

Zero/Bkg 16.900

Span Coef 1.036

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : FF51720 AMU # : 2303

CGA Date: Oct-19 H_2S Concentration PPM: 9.87

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4914	0.0	4914	0.0000	-0.0004		
4949	37.5	4986	0.0742	0.0712	-4%	± 10%
4933	17.7	4951	0.0353	0.0339	-3%	± 10%
4929	8.9	4938	0.0178	0.0165	-5%	± 10%
				Absolute Average Percent Difference	4%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9660	**0.90-1.10**
b (Intercept as % of full scale)=	-0.4460	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

Non Methane Analyzer Audit

File No. Draft

Date: March 12, 2020 Performed by: 2019 - 560A

Station:

Name: Cadotte Lake Location: Cadotte Lake Operator: BV Labs

Facility/Zone: Pramp Temp. 21.8 BP: 702mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1501663728

Inlet flow (sccm): NA CH_4 Range ppm: 20.0

Last cal. Date: March 4, 2020 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 1.000

Non CH_4: 1.001

THC: 1.000

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 2303

HC cylinder # FF50323 CH_4 conc. (ppm) 1018.0 CH_4 Equiv (C3H8 only) (ppm) 970.8

CGA Date Mar-20 C_3H_8 conc. (ppm) 353.0 Total CH_4 Equiv. (ppm) 1988.8

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas		
			CH_4	Non CH_4	THC	CH_4	Non CH_4	THC	Limit ± 10%		
Air	Gas	Total	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	CH_4	Non CH_4	THC
4908	0.0	4908	0.00	0.00	0.00	0.00	0.00	0.00			
4909	68.9	4978	14.09	13.44	27.53	14.30	13.57	27.87	1%	1%	1%
4915	34.7	4950	7.14	6.81	13.94	7.09	6.80	13.90	-1%	0%	0%
4914	14.9	4929	3.08	2.93	6.01	3.01	2.94	5.95	-2%	0%	-1%
								Absolute Average Percent Difference	0%	0%	0%

Linear Regression Analysis: *y=mx+b (where x=calculated concentration, y=indicated concentration)*

	CH_4	Non CH_4	THC	LIMITS
Correlation Coeff.=	0.9999	1.0000	1.0000	**≥ 0.995**
m (Slope)=	1.0165	1.0099	1.0133	**0.90-1.10**
b (Intercept as % of FS)=	-0.3808	-0.1192	-0.2452	**± 3% F.S.**

Remarks:

Alberta Government

Form No. F-AA-001
Version No. 1.3

NO-NOx-NO2 Analyzer Audit

File No. 2019 - 561A

Date: March 12, 2020 Performed by: SB

Station:

Name: Cadotte Lake Location: Cadotte Lake Operator: BV Labs

Facility/Zone: Pramp Temp. 21.8 BP: 702mmHg

Monitor:

Make/Model: TAPI T200 Serial No. 837

Inlet flow (sccm): 450 Range ppm: 0.5

Last cal. Date: March 4, 2020 Old CF: NO: 1.000

NOx: 1.000

NO2: 0.997

NO Bkg 0.6

NOx Bkg 0.7

NO Coef 1.078

NOx Coef 1.077

NO2 Coef

Calibration Method: Gas Dilution / GPT

Calibrator: Make/Model: Sabio 2010 AMU# 1778

NO cylinder # FF62473 NO conc. ppm 52.2 NOx conc. ppm 52.3

CGA Date Oct-19

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
5047	0.0	5047	0.0000	0.0000	-0.0001	0.0000	Limit ± 10%	
5042	39.4	5081	0.4048	0.4056	0.4073	0.4090	1%	1%
5048	19.6	5068	0.2019	0.2023	0.2038	0.2031	1%	0%
5045	9.7	5055	0.1002	0.1004	0.1005	0.1006	0%	0%
						Absolute Average Percent Difference	1%	1%

Linear Regression Analysis: *y=mx+b (where x=calculated concentration, y=indicated concentration)*

	NO	NOx	NO_2	LIMITS
Correlation Coeff.=	1.0000	1.0000	1.0000	≥ 0.995
m (Slope)=	1.0069	1.0088	1.0026	0.90-1.10
b (Intercept as % of full scale)=	-0.0086	-0.0844	-0.1436	± 3% F.S.

O_3 Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO_2 Increase	% Difference vs Audit Gas	
		NO	NOx	NO_2				
0.000	5081	0.4082	0.4066	-0.0017				%Dif Limit
0.555	5081	0.0974	0.4069	0.3094	0.311	0.311	0%	± 10%
0.350	5081	0.2276	0.4079	0.1782	0.181	0.180	0%	± 10%
0.175	5081	0.3405	0.4068	0.0657	0.068	0.067	0%	± 10%
						Absolute Average Percent Difference	0%	

Converter Efficiency

Average Converter Efficiency 99.8%

Remarks:

Alberta Government

O_3 ANALYZER AUDIT

File No. 2019 - 562A

Date: March 12, 2020 Performed by: SB

Station

Name: Cadotte Lake Location: Cadotte Lake

Facility/Zone: Pramp Operator: BV Labs

Temp. 23.6 Barometric Press. 717mmHg

Monitor

Make/Model: TAPI T400 Serial No: 824

Inlet flow (sccm): 784 Full Scale Range ppm: 0.5

Last cal. Date: March 4, 2020 Old Correction Factor: 1.000

Zero/Bkg -1.2

Span Coeff. 1.049

Calibrator

Calibration Method: Generator / Photometer

Make/Model: Thermo 49iPS AMU # : 2247

NO cylinder # : NA NO concentration ppm: NA

Ozone Setting PPB/Current	Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference	
	Air	Gas	Total			vs Audit Gas	Limits
0	3259		3259	0.0000	0.0004		
400	3259		3259	0.4000	0.4088	2%	± 10%
200	3259		3259	0.2000	0.2047	2%	± 10%
100	3259		3259	0.1000	0.1024	2%	± 10%
				Absolute Average Percent Difference		2%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0211	**0.90-1.10**
b (Intercept as % of full scale)=	0.0760	**± 3% F.S.**

Remarks:

Alberta Government

Station Performance Audit Summary

Company: PRAMP

Facility Name: NA

Approval No.: NA

Site Name: Cadotte Lake

Region: Upper Peace

District: Peace River

Parameters audited:

H_2S		SO_2	X	NO_X	X	NH_3		O_3	X
CO		CH_4		NonCH4	X	THC		TRS	X
$PM_{2.5}$		PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp	X	RH		Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____ N/A__X____									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?			X
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		
Date of last calibration. Date: June 28 / Dec 17 2019			

COMMENTS:

AUDITOR: SB

DATE: March 12, 2020

Alberta Government

Station Site Documents Audit Checklist

Station

Name: Cadotte Lake Location: Cadotte Lake

Facility/Zone: Pramp Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-B*	**Meets AMD**		**NA**	**Current**	
Do the Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Name of Owner/ Approval Holder	X			X	
(b) Name of Operating Agency	X			X	
(c) Contact Information	X			X	
(d) Date the Site or Station was Established	X			X	
(e) Date the information was last updated	X			X	
(f) Location including Latitude and Longitude	X			X	
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X			X	
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance			X		
(i) List of Instruments Located at the Site	X			X	
(j) Site Description Including the following:					
(i) Land Use By Sector	X			X	
(ii) Site Elevation	X			X	
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X			X	
(iv) Average Building height in the area	X			X	
(v) Distance to Nearest Trees	X			X	

Required Elements of AMD Chapter 3 *SS 4-D*	**Meets AMD**		**NA**	**Current**	
Do the Station Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) Recent Area Map Covering Approximately 1Km^2	X			X	
(b) Plan View Sketch	X			X	
(c) Cross-Sectional Sketch of Area Within 500 m Radius			X		
(d) Colour Photos Showing Sample Manifold/Inlet	X			X	
(e) Colour Photo of the Station	X			X	
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance			X		

COMMENTS:

AUDITOR: SB DATE: March 12, 2020

Alberta Government

Network Site Documents Audit Checklist

Network

Name: Cadotte Lake Location: Cadotte Lake

Facility/Zone: Pramp Operator: BV Labs

Required Elements of AMD Chapter 3 *SS 4-C*	**Meets AMD**		**NA**	**Current**	
Do the Network Site Documents Contain the Following:	**YES**	**NO**		**YES**	**NO**
(a) A Recent Area Map Showing the Following:					
(i) Station Locations		X			X
(ii) Roadways	X			X	
(iii) Railway Lines	X			X	
(iv) Airports	X			X	
(v) Lakes	X			X	
(vi) Rivers	X			X	
(vii) Human Settlements	X			X	
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X			X	
(ix) Other Significant Landmarks	X			X	
(b) A windrose for each Continuous Ambient Air Monitoring Station	X			X	

COMMENTS: - Network map needs update - Cadotte Lake not on the map

AUDITOR: SB DATE: March 12, 2020

Alberta Government