

Appendix 15: 2021 Stack Testing Report



SOURCE EMISSION SURVEY REPORT

Success Through Science®

AGNICO EAGLE MINES LIMITED
MELIADINE MINE, RANKIN INLET, NUNAVUT
INCINERATOR STACK
Project # 2194

October 19 - 23, 2021

SES-2021-20211019 to 20211023-Incinerator Stack

Attention: ERIC GIROUX

Report Date: March 31, 2022

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ACRONYMS AND ABBREVIATIONS

ABS:	Absorption
Avg:	Average
BV:	Bureau Veritas Canada (2019) Inc. (Bureau Veritas)
°C:	Degrees Celsius
CALA:	Canadian Association for Laboratory Accreditation
CDD:	Chloro Dibenzo-p-Dioxin
CDF:	Chloro Dibenzo-p-Furan
CO:	Carbon Monoxide
CO₂:	Carbon Dioxide
Cond:	Conditions
CVAAS:	Cold Vapor Atomic Absorption Spectroscopy
ECCC:	Environment and Climate Change Canada
EDL:	Estimated Detection Limit
GCMS:	Gas Chromatograph Mass Spectrometry
GC TCD:	Gas Chromatograph With a Thermal Conductivity Detector
H₂:	Hydrogen
H₂O:	Moisture/Water
ICP:	Inductively Coupled Plasma Emission Spectroscopy
ICP-MS:	Inductively Coupled Plasma Emission Spectroscopy – Mass Spectroscopy
ISO:	Isokinetic
EMS:	Emission Services
EPA:	Environmental Protection Agency
EPS:	Environmental Protection Series
K:	Kelvin
MDL:	Method Detection Limit
MW:	Molecular Weight
N/A:	Not Applicable
N/D:	Valid Data Not Available
NIST:	National Institute of Standards and Technology
N₂:	Nitrogen
NO:	Nitrogen Oxide
NO₂:	Nitrogen Dioxide
NO_x:	Oxides of Nitrogen
O₂:	Oxygen
PCDDs:	Polychlorinated Dibenzo-para-Dioxins
PCFDs:	Polychlorinated Dibenzofurans
Press:	Pressure
RDL:	Reportable Detection Limit
Ref:	Reference
RM:	Reference Method
SAIT	Southern Alberta Institute of Technology
SES:	Source Emission Survey
SO₂:	Sulphur Dioxide
SVOC:	Semi-Volatile Organic Compounds
TEF:	Toxic Equivalency Factor
TEQ:	Toxic Equivalency Quotient
v/v:	Volume/Volume
WI:	Work Instruction
QA:	Quality Assurance
QC:	Quality Control



March 31, 2022

Project #: 2194

Agnico Eagle Mines Limited

Meliadine Mine
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Subject: October 2021 - Agnico Eagle Mines Limited - Source Emission Survey Report

On October 19 - 23, 2021, the Emission Services Group of Bureau Veritas conducted a Source Emission Survey on the Incinerator Stack at the Agnico Eagle Mines Limited, Meliadine Mine, Rankin Inlet, Nunavut. Sampling was carried out to determine the concentrations and emission rates of compliance parameters as laid out in the Government of Nunavut Environmental Guideline for the Burning and Incineration of Solid Waste.

SUMMARY OF SOURCE SURVEY RESULTS

Sample Dates	Parameter	Units	Test 1	Test 2	Test 3	Test 4	Overall Average	Approval Limits	In Compliance:
October 19 - 20, 2021	Particulate Matter - Front Half	kg/hr	0.0851	0.0410	0.1328	N/D	0.0863	N/A	N/A
October 19 - 20, 2021	Sulphur Dioxide	kg/hr	0.366	0.043	0.092	N/D	0.167	N/A	N/A
October 19 - 20, 2021	Hydrochloric Acid Gas	kg/hr	0.660	0.200	0.161	N/D	0.340	N/A	N/A
October 19 - 20, 2021	Chlorine	kg/hr	<0.00001	<0.00002	0.00194	N/D	<0.00066	N/A	N/A
October 19 - 20, 2021	Carbon Monoxide	kg/hr	<0.0240	<0.0242	<0.0236	N/D	<0.0239	N/A	N/A
October 19 - 20, 2021	Metals	ug/m3 dry @ 11% O2	1110.55	953.42	1434.10	N/D	1166.02	N/A	N/A
October 19 - 20, 2021	Class One Metals	ug/m3 dry @ 11% O2	726.97	509.91	756.83	N/D	664.57	N/A	N/A
October 19 - 20, 2021	Class Two Metals	ug/m3 dry @ 11% O2	173.95	203.87	250.53	N/D	209.45	N/A	N/A
October 19 - 20, 2021	Class Three Metals	ug/m3 dry @ 11% O2	3.2736	2.1648	1.5416	N/D	2.3267	N/A	N/A
October 19 - 20, 2021	Mercury	ug/m3 dry @ 11% O2	0.4237	0.0772	0.0398	N/D	0.1803	20 ug/m3 @ 11% O2	Yes
October 22 - 23, 2021	NOx	kg/hr	N/D	3.44	2.05	0.68	2.06	N/A	N/A
October 22 - 23, 2021	Total PCDDs	ng/m3 dry @ 11% O2	N/D	0.3164	1.2775	0.2714	0.6218	N/A	N/A
October 22 - 23, 2021	Total PCDFs	ng/m3 dry @ 11% O2	N/D	0.4304	5.9776	1.3175	2.5752	N/A	N/A
October 22 - 23, 2021	Total 2378 Toxic Equivalent	pg/m3 dry @ 11% O2	N/D	7.4927	166.5832	35.5979	69.8912	80 pg/m3 @ 11% O2	Yes

N/A - not applicable

N/D: valid data not available

Report Preparation By:

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I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. Certification of submitted information is specific to the contents of this report and is not intended to represent the onus of the Person Responsible, as outlined in Chapter 9, RC 2-E.

SUMMARY

On October 19 - 23, 2021, the Emission Services Group of Bureau Veritas conducted a Source Emission Survey on the Incinerator Stack at the Agnico Eagle Mines Limited, Meliadine Mine, Rankin Inlet, Nunavut. Sampling was carried out to determine the concentrations and emission rates of compliance parameters as laid out in the Government of Nunavut Environmental Guideline for the Burning and Incineration of Solid Waste.

Following a review of the EPS 1/RM/2 – Semi-Volatile Organic Compounds analytical results by Bureau Veritas, it was determined that the XAD traps used in the sampling train for test #4 and the blank test were mislabeled. Due to this error, the blank XAD recovery extracts were combined with test #4 solvent recovery extracts prior to analyses and vice versa for the test #4 extracts. For reporting purposes, the results from the blank analysis have been combined with the test 4 analytical results, and the blank results have been reported as zero for all parameters.

All sampling, analysis, and QA/QC for this project was performed by Bureau Veritas and complies with the applicable protocols (US EPA Code of Federal Regulations and ECCC Reference Method EPS 1/RM/8). The results are therefore considered to be representative of the source during the testing period. With the exception of EPS 1/RM/2 test #3, all tests were compliant with the approval limits outlined in the Environmental Guideline for the Burning and Incineration of Solid Waste.

The Source Emission Survey was conducted by Anand Mathew, Project Lead and Darwin Gabel, Field Technician.

The following sampling and analytical methods were used to complete the test program:

- US EPA Method 29 - Particulate Matter (Front Half)
- US EPA Method 29 - Metals
- EPS 1/RM/2 – Semi-Volatile Organic Compounds
- US EPA Method 7A - Oxides of Nitrogen
- US EPA Method 6 - Sulphur Dioxide
- US EPA Method 26 - Hydrogen Halides and Halogens
- US EPA Method 10 - Carbon Monoxide
- US EPA Method 3 - Fixed Gas Composition and Molecular Weights by GC
- US EPA Method 1,2,3,and 4 – Temperature, Flue gas Composition and Molecular Weight, Water Determination, Velocity, Flow

Stratification was addressed by taking a full flow traverse measurement on each sample port.

The source was tested to determine if the flows were cyclonic. With an average value of the rotation angle null flow of less than 20 degrees, the flows were determined to be not cyclonic. Results of the cyclonic test are presented in Appendix I.

The summary of results are presented on the following pages. Reference conditions for this report are 25 °C and 760 mmHg.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0 Discussion. On this basis, Bureau Veritas is issuing this completed report to Agnico Eagle Mines Limited, Nunavut, Canada .

We trust that this report meets your requirements. If you have any questions regarding this project, please contact us at 403-219-3689, by email at kimberley.wilson@bureauveritas.com or toll-free at 1-800-386-7247.

SUMMARY OF SOURCE SURVEY RESULTS

INCINERATOR STACK

		Test #1	Test #2	Test #3	Averages
Date		19-Oct-21	20-Oct-21	20-Oct-21	
Start Time		12:00	11:10	14:00	
End Time		16:20	13:30	16:25	
Particulate Matter - Front Half Only	- mg/m ³ wet	14.94	7.18	24.12	15.42
	- mg/m ³ dry	16.22	7.76	25.75	16.58
	- g/kg wet	0.0128	0.0061	0.0205	0.0131
	- g/kg dry	0.0134	0.0064	0.0213	0.0137
	- Mass Flow Rate - kg/hr	0.0851	0.0410	0.1328	0.0863
Sulphur Dioxide Concentration	- ppmv wet	24.552	2.863	6.404	11.273
	- ppmv dry	26.649	3.094	6.838	12.194
	- mg/m ³ wet	64.289	7.498	16.768	29.518
	- mg/m ³ dry	69.781	8.102	17.905	31.929
	- Mass Flow Rate - kg/hr	0.366	0.043	0.092	0.167
Hydrochloric Acid Gas Concentration	- ppmv wet	77.750	23.497	19.583	40.277
	- ppmv dry	84.391	25.390	20.911	43.564
	- mg/m ³ wet	115.872	35.017	29.185	60.025
	- mg/m ³ dry	125.769	37.839	31.164	64.924
	- Mass Flow Rate - kg/hr	0.660	0.200	0.161	0.340
Chlorine Concentration*	- ppmv wet	< 0.00082	< 0.00126	0.12137	< 0.04115
	- ppmv dry	< 0.00089	< 0.00136	0.12960	< 0.04395
	- mg/m ³ wet	< 0.00238	< 0.00364	0.35177	< 0.11926
	- mg/m ³ dry	< 0.00258	< 0.00393	0.37561	< 0.12738
	- Mass Flow Rate - kg/hr	< 0.00001	< 0.00002	0.00194	< 0.00066
Carbon Monoxide Concentration*	- ppmv wet	< 3.6852	< 3.7017	< 3.7460	< 3.7110
	- ppmv dry	< 4.0000	< 4.0000	< 4.0000	< 4.0000
	- mg/m ³ wet	< 4.2191	< 4.2380	< 4.2888	< 4.2486
	- mg/m ³ dry	< 4.5795	< 4.5795	< 4.5795	< 4.5795
	- Mass Flow Rate - kg/hr	< 0.0240	< 0.0242	< 0.0236	< 0.0239
Metals Concentration**	- mg/m ³ wet	0.8929	0.7736	1.1694	0.9453
	- mg/m ³ dry	0.9692	0.8359	1.2487	1.0179
	- mg/m ³ dry @ 11% O ₂	1.1105	0.9534	1.4341	1.1660
	- ug/m ³ dry @ 11% O ₂	1110.55	953.42	1434.10	1166.02
	- Mass Flow Rate - g/h	5.0872	4.4103	6.4413	5.3130
Class One**	- mg/m ³ wet	0.5845	0.4137	0.6171	0.5385
	- mg/m ³ dry	0.6344	0.4471	0.6590	0.5802
	- mg/m ³ dry @ 11% O ₂	0.7270	0.5099	0.7568	0.6646
	- ug/m ³ dry @ 11% O ₂	726.97	509.91	756.83	664.57
	- Mass Flow Rate - g/h	3.3301	2.3587	3.3994	3.0294
Class Two**	- mg/m ³ wet	0.1399	0.1654	0.2043	0.1699
	- mg/m ³ dry	0.1518	0.1787	0.2181	0.1829
	- mg/m ³ dry @ 11% O ₂	0.1740	0.2039	0.2505	0.2094
	- ug/m ³ dry @ 11% O ₂	173.95	203.87	250.53	209.45
	- Mass Flow Rate - g/h	0.7969	0.9430	1.1253	0.9550
Class Three**	- mg/m ³ wet	0.0026	0.0018	0.0013	0.0019
	- mg/m ³ dry	0.0029	0.0019	0.0013	0.0020
	- mg/m ³ dry @ 11% O ₂	0.0033	0.0022	0.0015	0.0023
	- ug/m ³ dry @ 11% O ₂	3.2736	2.1648	1.5416	2.3267
	- Mass Flow Rate - g/h	0.0150	0.0100	0.0069	0.0106
Mercury Concentration**	- mg/m ³ wet	0.0003	0.0001	0.0000	0.0001
	- mg/m ³ dry	0.0004	0.0001	0.0000	0.0002
	- mg/m ³ dry @ 11% O ₂	0.0004	0.0001	0.0000	0.0002
	- ug/m ³ dry @ 11% O ₂	0.4237	0.0772	0.0398	0.1803
	Approval Limit	- ug/m ³ @ 11% O ₂			

*When analytical results are less than the MDL, the MDL has been used to calculate emission results.

**When analytical results are less than the MDL, zero has been used to calculate emission results.



SUMMARY OF SOURCE SURVEY RESULTS

INCINERATOR STACK

		Test #1	Test #2	Test #3	Averages
Date		19-Oct-21	20-Oct-21	20-Oct-21	
Start Time		12:00	11:10	14:00	
End Time		16:20	13:30	16:25	
Stack Height	- m	11.10	11.10	11.10	11.10
Stack Diameter	- m	0.98	0.98	0.98	0.98
Average Gas Temperature	- DegC	803.75	885.79	861.63	850.39
Average Gas Velocity	- m/s	7.64	8.22	8.07	7.98
Total Effluent Flow Rate	- Rm ³ /s	1.58	1.58	1.53	1.57
Dry Effluent Flow Rate	- Rm ³ /s	1.46	1.47	1.43	1.45
Water Concentration	- mole %	7.87	7.46	6.35	7.23
- Mass Flow Rate	- t/h	0.33	0.31	0.26	0.30
Oxygen Concentration - Tedlar Bag	- mole % wet	11.30	11.31	11.50	11.37
	- mole % dry	12.26	12.22	12.28	12.25
- Mass Flow Rate	- t/h	0.84	0.84	0.83	0.84
Carbon Dioxide Concentration - Tedlar Bag	- mole % wet	5.89	5.93	6.05	5.96
	- mole % dry	6.39	6.41	6.46	6.42
- Mass Flow Rate	- t/h	0.60	0.61	0.60	0.60
Oxygen Concentration - Glass Bomb	- mole % wet	11.12	11.25	11.28	11.22
	- mole % dry	12.07	12.16	12.04	12.09
- Mass Flow Rate	- t/h	0.83	0.84	0.81	0.83
Carbon Dioxide Concentration - Glass Bomb	- mole % wet	6.26	6.27	6.40	6.31
	- mole % dry	6.79	6.78	6.83	6.80
- Mass Flow Rate	- t/h	0.64	0.64	0.63	0.64
Carbon Monoxide Concentration - Glass Bomb*	- mole % wet	< 0.0004	< 0.0004	< 0.0004	< 0.0004
	- mole % dry	< 0.0004	< 0.0004	< 0.0004	< 0.0004
- Mass Flow Rate	- kg/h	< 0.0241	< 0.0242	< 0.0236	< 0.0240
Isokinetics	- %	103.93%	102.04%	101.09%	

*When analytical results are less than the MDL, the MDL has been used to calculate emission results.

SUMMARY OF SOURCE SURVEY RESULTS

INCINERATOR STACK

		Test #2	Test #3	Test #4	Averages
Date		22-Oct-21	22-Oct-21	23-Oct-21	
Start Time		09:35	14:15	11:40	
End Time		13:50	18:30	16:00	
Oxides of Nitrogen Concentration (as NO ₂)	- ppmv wet	235.40	144.35	47.19	142.31
	- ppmv dry	255.99	154.10	51.42	153.84
	- mg/m ³ wet	442.61	271.41	88.72	267.45
	- mg/m ³ dry	481.32	289.74	96.69	289.25
	- Mass Flow Rate - kg/hr	3.44	2.05	0.68	2.06
Total PCDDs *	- ng/m3 dry basis*	0.2789	1.1465	0.2403	0.5552
	- ng/m3 dry @ 11% O ₂ *	0.3164	1.2775	0.2714	0.6218
	- Mass Flow Rate - ug/h*	1.9923	8.1123	1.6955	3.9334
Total PCDFs *	- ng/m3 dry basis*	0.3794	5.3648	1.1666	2.3036
	- ng/m3 dry @ 11% O ₂ *	0.4304	5.9776	1.3175	2.5752
	- Mass Flow Rate - ug/h*	2.7099	37.9588	8.2313	16.3000
Total 2378 Toxic Equivalent *	- ng/m3 dry basis*	0.0066	0.1495	0.0315	0.0625
	- ng/m3 dry @ 11% O ₂ *	0.0075	0.1666	0.0356	0.0699
	- pg/m ³ dry @ 11% O ₂ *	7.4927	166.5832	35.5979	69.8912
Approval Limit	- pg/m3 @ 11% O ₂				80
- Mass Flow Rate	- ug/h*	0.0472	1.0578	0.2224	0.4425
Stack Height	- m	11.10	11.10	11.10	11.10
Stack Diameter	- m	0.98	0.98	0.98	0.98
Average Gas Temperature	- DegC	864.69	870.13	848.56	861.13
Average Gas Velocity	- m/s	11.01	10.76	10.71	10.83
Total Effluent Flow Rate	- Rm ³ /s	2.16	2.10	2.14	2.13
Dry Effluent Flow Rate	- Rm ³ /s	1.98	1.97	1.96	1.97
Water Concentration	- mole %	8.04	6.33	8.24	7.54
- Mass Flow Rate	- t/h	0.46	0.35	0.47	0.43
Oxygen Concentration	- mole % wet	11.20	11.26	11.14	11.20
	- mole % dry	12.18	12.02	12.14	12.11
	- Mass Flow Rate - t/h	1.14	1.11	1.12	1.12
Carbon Dioxide Concentration	- mole % wet	5.80	6.27	5.93	6.00
	- mole % dry	6.31	6.69	6.46	6.49
	- Mass Flow Rate - t/h	0.81	0.85	0.82	0.83
Carbon Monoxide Concentration**	- mole % wet	< 0.0004	< 0.0004	< 0.0004	< 0.0004
	- mole % dry	< 0.0004	< 0.0004	< 0.0004	< 0.0004
	- Mass Flow Rate - kg/h	< 0.0327	< 0.0324	< 0.0323	< 0.0325
Isokinetics	- %	102.50%	101.26%	102.91%	

*When analytical results are less than the MDL, zero has been used to calculate emission results.

**When analytical results are less than the MDL, the MDL has been used to calculate emission results.

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1.0 Discussion

US EPA Method 29 tests #1, #2, #3 and the overall average were all acceptable and below the allowable mercury limit of 20 ug/m³ @ 11% O₂ with values of 0.4237 ug/m³ dry @ 11% O₂, 0.0772 ug/m³ dry @ 11% O₂, 0.0398 ug/m³ dry @ 11% O₂ and 0.1803 ug/m³ dry @ 11% O₂, respectively. The mercury limit of 20 ug/m³ @ 11% O₂ has been referenced from the Environmental Guideline for the Burning and Incineration of Solid Waste.

The test #1 results from EPS 1/RM/2 – Semi-Volatile Organic Compounds and US EPA Method 7A sampling have been discarded, due to a failed post-test leak check on the isokinetic sampling train. The US EPA Method 7A test #1 sample results were also discarded as an accurate moisture number could not be used to calculate the NO_x mass emission results. The EPS 1/RM/2 and US EPA Method 7A test results presented in this report are from tests 2, 3, and 4.

Following a review of the EPS 1/RM/2 – Semi-Volatile Organic Compounds analytical results by Bureau Veritas, it was determined that the XAD traps used in the sampling train for test #4 and the blank test were mislabeled. Due to this error, the blank XAD recovery extracts were combined with test #4 solvent recovery extracts prior to analyses and vice versa for the test #4 extracts. For reporting purposes, the results from the blank analysis have been combined with the test 4 analytical results, and the blank results have been reported as zero for all parameters.

EPS 1/RM/2 test #3 has exceeded the Total 2378 Toxic Equivalent limit of 80 pg/m³ @ 11% O₂ with a value of 166.58 pg/m³ dry @ 11% O₂. Tests 2, 4 and the overall average were acceptable with values of 7.49 pg/m³ dry @ 11% O₂, 35.60 pg/m³ dry @ 11% O₂ and 69.89 pg/m³ dry @ 11% O₂, respectively. The Total 2378 Toxic Equivalent limit of 80 pg/m³ @ 11% O₂ has been referenced from the Environmental Guideline for the Burning and Incineration of Solid Waste.

NO_x sample 2A has been invalidated due to a suspected sample leak. The test results presented in this report are from NO_x samples 2B, 3A, 3B, 4A and 4B.

Stratification was addressed by taking a full flow traverse measurement on each sample port.

The source was tested to determine if the flows were cyclonic. With an average value of the rotation angle null flow of less than 20 degrees, the flows were determined to be not cyclonic. Results of the cyclonic test are presented in Appendix I.

With the exception of the discarded organics and NO_x tests, the organics XAD mislabeling and the test #3 2378 toxic equivalent results, there were no operational or analytical problems encountered during the field sampling or sample analysis. The values reported are considered to be representative of the conditions that existed during the testing period and are compliant with the approval limits outlined in the Environmental Guideline for the Burning and Incineration of Solid Waste.

2.0 Sampling Personnel

Robin Allard was the Environment General Supervisor for Agnico Eagle Mines Limited, and the Bureau Veritas field sampling team consisted of Anand Mathew, Project Lead and Darwin Gabel, Field Technician.

3.0 Plant Operating Parameters

Bureau Veritas sampling team members were not made aware of any plant operating variances or upsets during the time of sampling. All sampling was conducted during steady plant operating conditions. If a plant upset were to occur, the field team would halt sampling, remove the probe from the stack and seal the inlet with an inert plug until the plant process was back at normal operating conditions. At this time the probe would be unsealed and placed back into the stack and sampling would resume.

4.0 Sampling and Analytical Test Methods

US EPA Method 29 - Particulate Matter (Front Half)

Particulate matter was collected and analyzed following the protocols in Method #29 - Determination of Metals Emissions from Stationary Sources as outlined in the US EPA Code of Federal Regulations. Particulate matter is withdrawn isokinetically from the source and collected heated, high-purity, quartz-glass fibre filter. The sample was then passed through a series of impingers containing known volumes of an aqueous acidified solution of hydrogen peroxide and an aqueous acidic solution of potassium permanganate (4% KMnO₄/10% H₂SO₄).

US EPA Method 29 - Metals

Metals samples were collected and analyzed following the protocols in Method #29 - Determination of Metals Emissions from Stationary Sources as outlined in the US EPA Code of Federal Regulations. Samples were collected isokinetically through a heated, Teflon™ or quartz glass lined stainless steel sampling probe and captured on a heated, high-purity, quartz-glass fibre filter. The sample was then passed through a series of impingers containing known volumes of an aqueous acidified solution of hydrogen peroxide and an aqueous acidic solution of potassium permanganate (4% KMnO₄/10% H₂SO₄).

The samples from the probe wash, filter paper, and in the empty and HNO₃/H₂O₂ impingers were analyzed for all target metals, including mercury. The samples from the KMnO₄/H₂SO₄ impinger were analyzed for mercury only. These recovered samples were digested and the appropriate fractions were analyzed for Hg by cold vapor atomic absorption spectroscopy (CVAAS). Inductively coupled plasma emission spectroscopy (ICP) or inductively coupled plasma emission spectroscopy – mass spectroscopy (ICP-MS) were used to analyze for all other target metals.

<i>Class I</i>	<i>Class II</i>	<i>Class III</i>	<i>Additional</i>	
Antimony	Arsenic	Cadmium	Barium	Phosphorous
Copper	Chromium	Mercury	Beryllium	Silver
Lead	Cobalt	Thallium	Boron	Strontium
Manganese	Nickel		Lithium	Titanium
Vanadium	Selenium		Magnesium	
Zinc	Tellurium			

EPS 1/RM/2 Semi-Volatile Organic Compounds

Semi-volatile organic compounds were sampled following the protocols in Report EPS 1/RM/2 – Reference Method for Source Testing: Measurement of Releases of Selected Semi-Volatile Organic Compounds from Stationary Sources: Pollution Measurement Division, River Road Technology Centre, Conservation and Protection, Environment Canada. The samples were collected isokinetically through a glass or Teflon™ lined stainless steel sampling probe and captured on heated glass fibre filters. The sample was then passed through a condenser and Amberlite XAD-2 resin, followed by a series of impingers. Analysis was by GCMS, following the protocols in Reference Method EPS 1/RM/3 (revised) – A Method for the Analysis of Polychlorinated Dibenzo-para-Dioxins (PCDDs), Polychlorinated Dibenzofurans (PCDFs) and Polychlorinated Biphenyls (PCBs) in Samples from the Incineration of PCB Waste, Issued by Environment Canada. Samples were also analyzed for Chlorobenzenes by GCMS.

US EPA Method 7A - Oxides of Nitrogen

Oxides of nitrogen samples were collected following the protocols in Method #7A - Determination of Nitrogen Oxide Emissions from Stationary Sources (Ion Chromatographic Method), as outlined in the US EPA Code of Federal Regulations. Grab samples are collected in evacuated flasks containing a dilute sulphuric acid-hydrogen peroxide absorbing solution. The nitrogen oxides, excluding nitrous oxide, were oxidized to nitrate, measured using ion chromatography, and reported as NO₂ equivalent.

US EPA Method 6 - Sulphur Dioxide

Sulphur dioxide samples were collected and analyzed following the protocols in Method #8 - Determination of Sulphuric Acid Mist and Sulphur Dioxide Emissions from Stationary Sources, as outlined in the US EPA Code of Federal Regulations. This method uses the constant sampling technique listed as an approved alternative in Section 1.2 of the method, and the isopropyl alcohol impinger has been removed, as sulphuric acid mist was not sampled for. A gas sample is extracted at a constant sampling rate from a source. The sulphur dioxide is measured by ion chromatograph following standard procedures.

US EPA Method 26 - Hydrogen Halides and Halogens

Halogen Halide and Halogen samples were collected and analyzed following the protocols in Method #26 – Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources, as outlined in the US EPA Code of Federal Regulations. An integrated sample is extracted at a constant rate from the source and passed through dilute sulphuric acid and dilute sodium hydroxide solutions, which collect the hydrogen halides and halogens, respectively. The separate solutions are then analyzed by ion chromatograph.

US EPA Method 10 - Carbon Monoxide

Carbon monoxide was sampled and analyzed following the protocols in Method #10 – Determination of Carbon Monoxide Emissions from Stationary Sources, as outlined in the US EPA Code of Federal Regulations. Samples were collected using the integrated bag sampling technique, and were stored in a sealed cooler upon completion of the test. Samples were analyzed using a gas chromatograph with a thermal conductivity detector (GC TCD), which has lower method and reportable detection limits than the Luft-type nondispersive infrared analyzer (NDIR) mentioned in the method.

US EPA Method 3 - Fixed Gas Composition and Molecular Weights by GC

Fixed gas samples were collected using the integrated bag sampling technique following the protocols in Method #3 - Gas Analysis for the Determination of Molecular Weights as outlined in the US EPA Code of Federal Regulations. Compositional analysis was by gas chromatography.

US EPA Method 3 - Fixed Gas Composition and Molecular Weights by Fyrites

Fixed gas sampling and analysis for Oxygen and Carbon Dioxide was performed on site using Fyrite™ analyzers, following the protocols in Method #3 - Gas Analysis for the Determination of Molecular Weights as outlined in the US EPA Code of Federal Regulations. Values for Nitrogen and Carbon Monoxide were obtained by difference.

US EPA Method 4 - Flue Gas Moisture Content

Flue gas moisture content was determined simultaneously with the target parameter sample runs following the protocols in Method #4 as outlined in the US EPA Code of Federal Regulations. Moisture was measured volumetrically for each sample run.

US EPA Method 2 - Flue Gas Velocities and Volumetric Rates

Flue gas velocities and volumetric flow rates were determined following the protocols in Method # 2 - Determination of Stack Gas Velocity and Volumetric Flow Rates (Type S Pitot Tube) as outlined in the US EPA Code of Federal Regulations. An S-type pitot tube and oil manometer capable of detecting pressure differences of 0.005 inches of water were used for these determinations.

US EPA Method 2 - Stack Temperatures

Stack temperatures were determined using a calibrated type "K" thermocouple and digital thermometer.

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Equipment Used	Identification Number
Pitobe	B061
ISO Kit	ISO001
ABS Kit	ABS005, ABS010
Barometer	50
Balance	26, 30

Certification and Calibration sheets for equipment listed above can be found in Appendix V.

*Bureau Veritas is accredited to ISO/IEC 17025 by the Standards Council of Canada.
Method equipment diagrams are presented in Appendix VI of this report.*

5.0 Equipment Calibration Methods

Field Barometer

All field barometers were calibrated as per the protocols as outlined in Method #5 of the US EPA Code of Federal Regulations.

Dry Gas Meters

Units are calibrated and calibration data is documented as per the protocols outlined in Section 16.1, Method #5 of US EPA Code of Federal Regulations.

Thermocouples

Thermocouples were calibrated and calibration data is documented as per the protocols outlined in Method #2 of the US EPA Code of Federal Regulations. All thermocouples have been previously calibrated against a NIST calibrated reference thermometer at three temperatures: in an ice bath, at the boiling point of water, and at an elevated temperature.

Pitot Tubes

Pitot tubes were calibrated and calibration data is documented as per the protocols outlined in Method #2 of the US EPA Code of Federal Regulations. All pitot tubes have been previously calibrated against a standard pitot tube with a NIST traceable coefficient. Calibration data and pitot tube coefficients are based on multiple flow rate measurements obtained at the Southern Alberta Institute of Technology (SAIT) wind tunnel.

Sample Collection Glassware and Probe Liners

All glassware and probe liners used for the collection of flue gas samples were cleaned using laboratory grade glassware detergent and thoroughly rinsed with de-ionized water.

Additionally, glassware for metals and mercury tests are soaked in 10% (v/v) nitric acid for a minimum of 4 hours; the glassware is then rinsed three times with deionized water, once with acetone, and then is allowed to air dry before being sealed with Parafilm for transport.

All calibration data is presented in Appendix V of this report.

All equipment used has been calibrated according to Bureau Veritas Work Instructions EMS WI-00019, EMS WI-00116, EMS WI-00117, EMS WI-00129, and EMS WI-00131.

6.0 Quality Assurance/Quality Control

Bureau Veritas Source Testing Department

Bureau Veritas' source testing department QA/QC protocols include, but are not limited to the following:

- i - regular maintenance and calibration of all field sampling equipment as per the applicable sampling method protocols. All calibration records are retained on site for inspection
- ii - on site leak checks (sample systems & pitot tubes), flow checks, moisture verifications and % isokinetic determinations
- iii - sample glassware cleaning, and proofing when required
- iv - proper sealing, labeling, storing, transport, and chain of custody/log in procedures upon return to the laboratory
- v - submission of field blank sampling absorbing solution for analysis to determine if background contamination has occurred

Bureau Veritas Analytical Departments

Bureau Veritas' analytical departments QA/QC protocols include, but are not limited to the following:

- i - Canadian Association for Laboratory Accreditation (CALA) performance evaluation samples every six months
- ii - Canadian Association for Laboratory Accreditation (CALA) laboratory audits every two years
- iii - analytical instrument calibration curves based on five (5) varying standards
- iv - minimum of one QC check sample is run with each set of stack samples
- v - minimum of one (1) QC blank sample is analyzed with each set of stack samples, routinely blank samples are run between each individual stack sample
- vi - all stack samples are analyzed in duplicate when appropriate or required

7.0 Conclusion

The Source Emission Survey conducted by Bureau Veritas on the Incinerator Stack at the Agnico Eagle Mines Limited, Meliadine Mine took place on October 19-23, 2021. All parameters were sampled as per the approved methods outlined in Section 4.0 Sampling and Analytical Test Methods. All 3 US EPA Method 29 tests and the overall average were acceptable and were below the allowable limit of 20 ug/m³ @ 11% O₂. With the exception of test #3, the EPS 1/RM/2 tests and overall average were acceptable and were below the allowable limit of 80 pg/m³ @ 11% O₂. These limits have been referenced from the Government of Nunavut Environmental Guideline for the Burning and Incineration of Solid Waste.

***APPENDIX I
EMISSION RESULTS***



SOURCE CONDITIONS AND EMISSION RATES

INCINERATOR STACK

		#1	#2	#3	Average
Date		19-Oct-21	20-Oct-21	20-Oct-21	
Time		12:00-16:20	11:10-13:30	14:00-16:25	
SAMPLING CONDITIONS					
Number of Points		48	24	24	
Time per Point	min	5.00	5.00	5.00	
Total Sampling Time	min	240	120	120	
Nozzle Diameter	mm	12.70	12.70	12.70	
Pitot tube Cal Factor		0.827	0.827	0.827	
Barometric Pressure	mmHg	757.17	758.19	730.25	748.54
Static Pressure	mmHg	-0.04	-0.06	-0.06	-0.05
Stack Pressure	mmHg	757.14	758.13	730.19	748.49
Dry Gas Meter Cal Factor		1.017	1.017	1.017	1.017
Average Meter Temp	°C	18.20	14.73	33.77	22.23
Average Orifice Press	mm H ₂ O	18.81	18.19	18.73	18.58
Volume Sampled	m ³ dry @ Ref Cond	3.68	1.82	1.76	2.42
Average Sampling Rate	m ³ /min	0.0166	0.0164	0.0157	0.0162
Average Isokinetic	%	103.93%	102.04%	101.09%	102.35%
Stack Diameter	meters	0.98	0.98	0.98	
Stack area	m ²	0.75	0.75	0.75	
Stack Height	meters	11.10	11.10	11.10	
Avg. Stack Temperature	°C	803.75	885.79	861.63	850.39
MW Dry		29.51	29.51	29.52	29.52
MW Wet		28.61	28.66	28.79	28.69
SAMPLING CONDITIONS - Tedlar Bag Fixed Gas Results					
H ₂ O	%	7.87	7.46	6.35	7.23
O ₂	% dry	12.26	12.22	12.28	12.25
CO ₂	% dry	6.39	6.41	6.46	6.42
CO*	% dry	< 0.0004	< 0.0004	< 0.0004	< 0.0004
N ₂ +H ₂	% dry	81.35	81.37	81.26	81.33
SAMPLING CONDITIONS - Glass Bomb Fixed Gas Results					
H ₂ O	%	7.87	7.46	6.35	7.23
O ₂	% dry	12.07	12.16	12.04	12.09
CO ₂	% dry	6.79	6.78	6.83	6.80
CO*	% dry	< 0.0004	< 0.0004	< 0.0004	< 0.0004
N ₂ +H ₂	% dry	81.14	81.06	81.13	81.11
Velocity	m/s	7.64	8.22	8.07	7.98
Avg. Velocity Press	mm H ₂ O	1.41	1.53	1.45	1.47
Volumetric Flow - Stack Cond	m ³ /s	5.74	6.17	6.06	5.99
Volumetric Flow - Ref Cond	m ³ /s wet	1.58	1.58	1.53	1.57
Volumetric Flow - Ref Cond	m ³ /s dry	1.46	1.47	1.43	1.45

Reference conditions are 25 °C and 760 mmHg

*When analytical results are less than the MDL, the MDL has been used to calculate emission results.



ISOKINETIC SAMPLING EMISSION RESULTS

INCINERATOR STACK

		#1	#2	#3	Average
	Date	19-Oct-21	20-Oct-21	20-Oct-21	
	Time	12:00-16:20	11:10-13:30	14:00-16:25	
PARTICULATE EMISSION RESULTS					
Analytical Results	Filter (g)	0.0513	0.0056	0.0335	0.0301
	Probe Wash (g)	0.0084	0.0085	0.0118	0.0096
	Impinger Filtration (g)	n/a	n/a	n/a	
	Total Front Half (g)	0.0597	0.0141	0.0453	0.0397
	TOTAL (g)	0.0597	0.0141	0.0453	0.0397
Concentrations and Emission Rates Front Half and Impinger Filtration Only	mg/m ³ wet	14.94	7.18	24.12	15.42
	mg/m ³ dry	16.22	7.76	25.75	16.58
	g/kg Effluent wet	0.0128	0.0061	0.0205	0.0131
	g/kg Effluent dry	0.0134	0.0064	0.0213	0.0137
	kg/hr	0.0851	0.0410	0.1328	0.0863
Particulate Distribution	Probe Wash	14.07%	60.28%	26.05%	33.47%
	Filter	85.93%	39.72%	73.95%	66.53%
	Impinger Catch	n/a	n/a	n/a	
	Total Front Half	100.00%	100.00%	100.00%	100.00%
	Impinger/Back Half	0.00%	0.00%	0.00%	0.00%
	TOTAL	100.00%	100.00%	100.00%	100.00%

Reference conditions are 25 °C and 760 mmHg

CONSTANT SAMPLING EMISSION RESULTS
INCINERATOR STACK

		#1	#2	#3	Average
	Date	19-Oct-21	20-Oct-21	20-Oct-21	
	Time	12:00-13:00	11:15-12:15	14:00-15:00	
Volumetric Flow - Ref Cond	m ³ /s wet	1.58	1.58	1.53	1.57
% H ₂ O		7.87	7.46	6.35	7.23
SULPHUR DIOXIDE EMISSION RESULTS					
Dry Gas Meter Cal Factor		1.009	0.998	0.998	
Water Collected	ml	34	14	18	
Water in Silica	g	6	3	3	
Average Meter Temp	°C	17.79	27.14	22.43	22.45
Volume Sampled	m ³ dry @ Meter Cond	0.460	0.342	0.345	0.382
Volume Sampled	m ³ dry @ Ref Cond	0.470	0.326	0.334	0.377
Analytical Results	Total mg	32.762	2.643	5.983	13.796
Concentrations and Emission Rates	ppm wet	24.552	2.863	6.404	11.273
	ppm dry	26.649	3.094	6.838	12.194
	mg/m ³ wet	64.289	7.498	16.768	29.518
	mg/m ³ dry	69.781	8.102	17.905	31.929
	kg/hr	0.366	0.043	0.092	0.167
HYDROCHLORIC ACID GAS EMISSION RESULTS					
Dry Gas Meter Cal Factor		0.998	1.009	1.009	
Water Collected	ml	38	20	52	
Water in Silica	g	4	4	6	
Average Meter Temp	°C	18.00	20.57	20.14	19.57
Volume Sampled	m ³ dry @ Meter Cond	0.547	0.395	0.419	0.454
Volume Sampled	m ³ dry @ Ref Cond	0.558	0.386	0.409	0.451
Analytical Results	Total mg	70.143	14.594	12.750	32.496
Concentrations and Emission Rates	ppm wet	77.750	23.497	19.583	40.277
	ppm dry	84.391	25.390	20.911	43.564
	mg/m ³ wet	115.872	35.017	29.185	60.025
	mg/m ³ dry	125.769	37.839	31.164	64.924
	kg/hr	0.660	0.200	0.161	0.340
CHLORINE EMISSION RESULTS					
Dry Gas Meter Cal Factor		0.998	0.998	0.998	
Water Collected	ml	38	20	52	
Water in Silica	g	4	4	6	
Average Meter Temp	°C	18.00	20.57	20.14	19.57
Volume Sampled	m ³ dry @ Meter Cond	0.547	0.391	0.414	0.451
Volume Sampled	m ³ dry @ Ref Cond	0.558	0.381	0.405	0.448
Analytical Results	Total mg	< 0.001	< 0.002	0.152	< 0.052
Concentrations and Emission Rates	ppm wet	< 0.00082	< 0.00126	0.12137	< 0.04115
	ppm dry	< 0.00089	< 0.00136	0.12960	< 0.04395
	mg/m ³ wet	< 0.00238	< 0.00364	0.35177	< 0.11926
	mg/m ³ dry	< 0.00258	< 0.00393	0.37561	< 0.12738
	kg/hr	< 0.00001	< 0.00002	0.00194	< 0.00066

Reference conditions are 25 °C and 760 mmHg

Where results are less than the Method Detection Limit, the MDL has been used to calculate concentration and emission rates.



GASEOUS COMPOUND EMISSION RESULTS

INCINERATOR STACK

		#1	#2	#3	Average
Date		19-Oct-21	20-Oct-21	20-Oct-21	
Time		12:05 - 13:05	11:15 - 12:15	14:05 - 15:05	
Volumetric Flow - Ref Cond	m³/s wet	1.58	1.58	1.53	1.57
	% H₂O	7.87	7.46	6.35	7.23
Carbon Monoxide <i>MDL = 4 ppm dry</i>	ppm wet	< 3.6852	< 3.7017	< 3.7460	< 3.7110
	ppm dry	< 4.0000	< 4.0000	< 4.0000	< 4.0000
	mg/m³ wet	< 4.2191	< 4.2380	< 4.2888	< 4.2486
	mg/m³ dry	< 4.5795	< 4.5795	< 4.5795	< 4.5795
	kg/hr	< 0.0240	< 0.0242	< 0.0236	< 0.0239

Reference conditions are 25 °C and 760 mmHg

Where results are less than the Method Detection Limit, the MDL has been used to calculate concentration and emission rates.



METHOD 29 - METALS RESULTS - Page 1

INCINERATOR STACK

		Averages						#1						
Date								19-Oct-21						
Time								12:00-16:20						
SAMPLING CONDITIONS														
Volume Sampled	m ³ dry @ Ref Cond	2.42						3.68						
Volumetric Flow	m ³ /s dry @ Ref Cond	1.45						1.46						
	m ³ /s wet @ Ref Cond	1.57						1.58						
Water Concentration	%	7.23						7.87						
Oxygen Concentration	% dry	12.25						12.26						
PARAMETER	Front Half Analytical ug	Back Half Analytical ug	Total Analytical ug	mg/Rm ³ wet basis	mg/Rm ³ dry basis	mg/m3 dry @ 11% O2	g/h	Front Half Corrected ug	Back Half Corrected ug	Total Analytical ug	mg/Rm ³ wet basis	mg/Rm ³ dry basis	mg/m3 dry @ 11% O2	g/h
Antimony	118.03	0.00	118.03	0.0349	0.0378	0.0433	0.1982	294.00	0.00	294.00	0.0736	0.0799	0.0915	0.4192
Arsenic	146.97	0.15	147.11	0.0465	0.0502	0.0575	0.2630	334.50	0.00	334.50	0.0837	0.0909	0.1041	0.4770
Barium	4.48	4.65	9.13	0.0036	0.0039	0.0045	0.0204	6.25	6.27	12.52	0.0031	0.0034	0.0039	0.0178
Beryllium	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Boron	0.00	45.83	45.83	0.0156	0.0169	0.0193	0.0883	0.00	91.50	91.50	0.0229	0.0249	0.0285	0.1305
Cadmium	3.82	0.97	4.80	0.0017	0.0018	0.0021	0.0096	6.80	1.97	8.77	0.0022	0.0024	0.0027	0.0125
Chromium	266.50	0.00	266.50	0.1197	0.1287	0.1474	0.6714	214.50	0.00	214.50	0.0537	0.0583	0.0668	0.3059
Cobalt	0.34	0.10	0.45	0.0002	0.0002	0.0002	0.0009	0.59	0.21	0.80	0.0002	0.0002	0.0002	0.0011
Copper	126.73	0.28	127.02	0.0456	0.0492	0.0563	0.2569	229.00	0.00	229.00	0.0573	0.0622	0.0713	0.3266
Lead	357.17	0.11	357.28	0.1420	0.1529	0.1751	0.7984	491.50	0.33	491.83	0.1231	0.1336	0.1531	0.7013
Lithium	19.08	0.00	19.08	0.0059	0.0064	0.0073	0.0336	44.35	0.00	44.35	0.0111	0.0120	0.0138	0.0632
Magnesium	298.33	52.83	351.17	0.1673	0.1796	0.2058	0.9345	97.00	87.50	184.50	0.0462	0.0501	0.0574	0.2631
Manganese	7.98	23.94	31.92	0.0154	0.0166	0.0190	0.0866	12.65	0.62	13.27	0.0033	0.0036	0.0041	0.0189
Mercury	0.02	0.50	0.52	0.0001	0.0002	0.0002	0.0008	0.00	1.36	1.36	0.0003	0.0004	0.0004	0.0019
Nickel	4.80	2.14	6.94	0.0032	0.0034	0.0039	0.0178	4.20	0.70	4.90	0.0012	0.0013	0.0015	0.0070
Phosphorus	90.67	0.00	90.67	0.0227	0.0246	0.0282	0.1293	272.00	0.00	272.00	0.0681	0.0739	0.0847	0.3879
Selenium	0.87	0.50	1.37	0.0003	0.0004	0.0004	0.0019	2.60	1.50	4.10	0.0010	0.0011	0.0013	0.0058
Silver	29.75	0.00	29.75	0.0121	0.0130	0.0149	0.0678	38.25	0.00	38.25	0.0096	0.0104	0.0119	0.0545
Strontium	2.56	0.18	2.73	0.0011	0.0012	0.0014	0.0063	3.41	0.00	3.41	0.0009	0.0009	0.0011	0.0049
Tellurium	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Thallium	0.13	0.00	0.13	0.0000	0.0000	0.0000	0.0002	0.39	0.00	0.39	0.0001	0.0001	0.0001	0.0006
Titanium	12.80	2.92	15.72	0.0067	0.0072	0.0083	0.0377	11.90	4.45	16.35	0.0041	0.0044	0.0051	0.0233
Vanadium	1.19	0.00	1.19	0.0004	0.0005	0.0005	0.0024	2.18	0.00	2.18	0.0005	0.0006	0.0007	0.0031
Zinc	800.00	0.00	800.00	0.3001	0.3233	0.3703	1.6870	1305.00	0.00	1305.00	0.3266	0.3545	0.4062	1.8609
TOTAL				0.9453	1.0179	1.1660	5.3130				0.8929	0.9692	1.1105	5.0872
Class One				0.5385	0.5802	0.6646	3.0294				0.5845	0.6344	0.7270	3.3301
Class Two				0.1699	0.1829	0.2094	0.9550				0.1399	0.1518	0.1740	0.7969
Class Three				0.0019	0.0020	0.0023	0.0106				0.0026	0.0029	0.0033	0.0150

Notes - Where results are less than the Method Detection Limit, "zero" has been used to calculate concentration and emission rates.

- Class One = Antimony, Copper, Lead, Manganese, Vanadium, Zinc
- Class Two = Arsenic, Chromium, Cobalt, Nickel, Selenium, Tellurium
- Class Three = Cadmium, Mercury, Thallium



METHOD 29 - METALS RESULTS - Page 2

INCINERATOR STACK

		#2						#3						
Date		20-Oct-21						20-Oct-21						
Time		11:10-13:30						14:00-16:25						
SAMPLING CONDITIONS														
Volume Sampled	m ³ dry @ Ref Cond	1.82						1.76						
Volumetric Flow	m ³ /s dry @ Ref Cond	1.47						1.43						
	m ³ /s wet @ Ref Cond	1.58						1.53						
Water Concentration	%	7.46						6.35						
Oxygen Concentration	% dry	12.22						12.28						
PARAMETER	Front Half Corrected ug	Back Half Corrected ug	Total Analytical ug	mg/Rm3 wet basis	mg/Rm3 dry basis	mg/m3 dry @ 11% O2	g/h	Front Half Corrected ug	Back Half Corrected ug	Total Analytical ug	mg/Rm3 wet basis	mg/Rm3 dry basis	mg/m3 dry @ 11% O2	g/h
Antimony	32.70	0.00	32.70	0.0167	0.0180	0.0205	0.0950	27.40	0.00	27.40	0.0146	0.0156	0.0179	0.0804
Arsenic	52.40	0.00	52.40	0.0267	0.0289	0.0329	0.1522	54.00	0.44	54.44	0.0290	0.0309	0.0355	0.1597
Barium	3.10	3.76	6.86	0.0035	0.0038	0.0043	0.0199	4.10	3.91	8.01	0.0043	0.0046	0.0052	0.0235
Beryllium	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Boron	0.00	22.00	22.00	0.0112	0.0121	0.0138	0.0639	0.00	24.00	24.00	0.0128	0.0136	0.0157	0.0704
Cadmium	2.37	0.95	3.32	0.0017	0.0018	0.0021	0.0097	2.30	0.00	2.30	0.0012	0.0013	0.0015	0.0067
Chromium	263.00	0.00	263.00	0.1340	0.1448	0.1652	0.7641	322.00	0.00	322.00	0.1714	0.1831	0.2102	0.9443
Cobalt	0.21	0.00	0.21	0.0001	0.0001	0.0001	0.0006	0.23	0.10	0.33	0.0002	0.0002	0.0002	0.0010
Copper	64.20	0.00	64.20	0.0327	0.0354	0.0403	0.1865	87.00	0.85	87.85	0.0468	0.0499	0.0574	0.2576
Lead	263.00	0.00	263.00	0.1340	0.1448	0.1652	0.7641	317.00	0.00	317.00	0.1688	0.1802	0.2070	0.9297
Lithium	7.70	0.00	7.70	0.0039	0.0042	0.0048	0.0224	5.20	0.00	5.20	0.0028	0.0030	0.0034	0.0152
Magnesium	268.00	31.00	299.00	0.1524	0.1646	0.1878	0.8686	530.00	40.00	570.00	0.3035	0.3240	0.3722	1.6716
Manganese	6.20	37.10	43.30	0.0221	0.0238	0.0272	0.1258	5.10	34.10	39.20	0.0209	0.0223	0.0256	0.1150
Mercury	0.02	0.11	0.12	0.0001	0.0001	0.0001	0.0004	0.03	0.03	0.06	0.0000	0.0000	0.0000	0.0002
Nickel	4.30	4.70	9.00	0.0046	0.0050	0.0057	0.0261	5.90	1.03	6.93	0.0037	0.0039	0.0045	0.0203
Phosphorus	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Selenium	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Silver	24.30	0.00	24.30	0.0124	0.0134	0.0153	0.0706	26.70	0.00	26.70	0.0142	0.0152	0.0174	0.0783
Strontium	1.88	0.00	1.88	0.0010	0.0010	0.0012	0.0055	2.38	0.53	2.91	0.0015	0.0017	0.0019	0.0085
Tellurium	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Thallium	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000
Titanium	14.50	1.90	16.40	0.0084	0.0090	0.0103	0.0476	12.00	2.40	14.40	0.0077	0.0082	0.0094	0.0422
Vanadium	0.71	0.00	0.71	0.0004	0.0004	0.0004	0.0021	0.69	0.00	0.69	0.0004	0.0004	0.0005	0.0020
Zinc	408.00	0.00	408.00	0.2079	0.2247	0.2562	1.1853	687.00	0.00	687.00	0.3658	0.3906	0.4486	2.0147
TOTAL				0.7736	0.8359	0.9534	4.4103				1.1694	1.2487	1.4341	6.4413
Class One				0.4137	0.4471	0.5099	2.3587				0.6171	0.6590	0.7568	3.3994
Class Two				0.1654	0.1787	0.2039	0.9430				0.2043	0.2181	0.2505	1.1253
Class Three				0.0018	0.0019	0.0022	0.0100				0.0013	0.0013	0.0015	0.0069

Notes - Where results are less than the Method Detection Limit, "zero" has been used to calculate concentration and emission rates.

- Class One = Antimony, Copper, Lead, Manganese, Vanadium, Zinc
- Class Two = Arsenic, Chromium, Cobalt, Nickel, Selenium, Tellurium
- Class Three = Cadmium, Mercury, Thallium



CYCLONIC TEST ANGLES

INCINERATOR STACK

Port ID	East		North		East		North	
Date	19-Oct-21		19-Oct-21		19-Oct-21		19-Oct-21	
Time	16:30		16:50		17:55		18:20	
Point #	Null Angle	Test Angle	Null Angle	Test Angle	Null Angle	Test Angle	Null Angle	Test Angle
1	88	2	89	1	87	3	86	4
2	89	1	89	1	86	4	85	5
3	87	3	88	2	86	4	85	5
4	87	3	88	2	86	4	87	3
5	87	3	87	3	85	5	86	4
6	88	2	88	2	85	5	85	5
7	88	2	88	2	87	3	84	6
8	87	3	87	3	85	5	84	6
9	87	3	88	2	82	8	84	6
10	88	2	87	3	82	8	85	5
11	88	2	88	2	83	7	87	3
12	89	1	88	2	83	7	88	2
Average	88	2	88	2	85	5	86	5

*Note - source is cyclonic if the average rotation angle needed to achieve the Null Angle is >20 °.



SOURCE CONDITIONS AND EMISSION RATES

INCINERATOR STACK

		#2	#3	#4	Average
Date		22-Oct-21	22-Oct-21	23-Oct-21	
Time		09:35-13:50	14:15-18:30	11:40-16:00	
SAMPLING CONDITIONS					
Number of Points		48	48	48	
Time per Point	min	5.00	5.00	5.00	
Total Sampling Time	min	240	240	240	
Nozzle Diameter	mm	10.92	10.92	10.92	
Pitot tube Cal Factor		0.827	0.827	0.827	
Barometric Pressure	mmHg	756.92	756.92	759.46	757.77
Static Pressure	mmHg	-0.09	-0.09	-0.07	-0.09
Stack Pressure	mmHg	756.83	756.83	759.39	757.68
Dry Gas Meter Cal Factor		1.017	1.017	1.017	1.017
Average Meter Temp	°C	20.58	32.58	25.32	26.16
Average Orifice Press	mm H ₂ O	18.64	18.54	18.49	18.56
Volume Sampled	m ³ dry @ Ref Cond	3.65	3.58	3.62	3.62
Average Sampling Rate	m ³ /min	0.0166	0.0159	0.0165	0.0163
Average Isokinetic	%	102.50%	101.26%	102.91%	102.23%
Stack Diameter	meters	0.98	0.98	0.98	
Stack area	m ²	0.75	0.75	0.75	
Stack Height	meters	11.10	11.10	11.10	
Avg. Stack Temperature	°C	864.69	870.13	848.56	861.13
MW Dry		29.50	29.55	29.52	29.52
MW Wet		28.57	28.82	28.57	28.65
H ₂ O	%	8.04	6.33	8.24	7.54
O ₂	% dry	12.18	12.02	12.14	12.11
CO ₂	% dry	6.31	6.69	6.46	6.49
CO*	% dry	< 0.0004	< 0.0004	< 0.0004	< 0.0004
N ₂ +H ₂	% dry	81.51	81.29	81.40	81.40
Velocity	m/s	11.01	10.76	10.71	10.83
Avg. Velocity Press	mm H ₂ O	2.77	2.66	2.67	2.70
Volumetric Flow - Stack Cond	m ³ /s	8.27	8.08	8.04	8.13
Volumetric Flow - Ref Cond	m ³ /s wet	2.16	2.10	2.14	2.13
Volumetric Flow - Ref Cond	m ³ /s dry	1.98	1.97	1.96	1.97

Reference conditions are 25 °C and 760 mmHg

*When analytical results are less than the MDL, the MDL has been used to calculate emission results.



OXIDES OF NITROGEN EMISSION RESULTS

INCINERATOR STACK

		#2		#3		#4		Average
		A	B	A	B	A	B	
Date		22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	23-Oct-21	23-Oct-21	
Time		13:00	13:05	14:30	14:40	14:35	14:45	
Volumetric Flow - Ref Cond	m³/s wet	2.16		2.10		2.14		2.13
% H₂O		8.04		6.33		8.24		7.54
Analytical Results - NO_x as NO₂	Total mg	0.6460	1.0460	0.4170	0.7290	0.2040	0.1840	
Volume Sampled	mL	2051	2173	1930	2006	2052	1958	
Oxides of Nitrogen as NO₂	ppm wet	N/D	235.40	107.62	181.08	48.52	45.86	
	ppm dry	N/D	255.99	114.89	193.31	52.87	49.97	
	mg/m³ dry	N/D	481.32	216.02	363.46	99.41	93.96	
	Average ppm wet		235.40		144.35		47.19	142.31
	Average ppm dry		255.99		154.10		51.42	153.84
	Average mg/m³ wet		442.61		271.41		88.72	267.45
	Average mg/m³ dry		481.32		289.74		96.69	289.25
	kg/hr		3.44		2.05		0.68	2.06

Reference conditions are 25 °C and 760 mmHg

N/D: valid data not available



DIBENZODIOXIN/FURAN EMISSION RESULTS - Page 1

INCINERATOR STACK

		Averages						#2						
Date								22-Oct-21						
Time								09:35-13:50						
SAMPLING CONDITIONS														
Volume Sampled	m ³ dry @ Ref Cond	3.62						3.65						
Volumetric Flow	m ³ /s dry @ Ref Cond	1.97						1.98						
Oxygen Concentration	% dry	12.11						12.18						
RESULTS	Blank Corr Analytical pg	ng/m ³ dry basis*	ng/m ³ dry @ 11% O ₂ *	2378 TEQ ng/m ³ dry*	2378 TEQ ng/m ³ dry @ 11% O ₂ *	ug/h*	2378 TEQ ug/h*	Blank Corr Analytical pg	ng/m ³ dry basis*	ng/m ³ dry @ 11% O ₂ *	2378 TEQ ng/m ³ dry*	2378 TEQ ng/m ³ dry @ 11% O ₂ *	ug/h*	2378 TEQ ug/h*
2378 - TCDD	20.2000	0.0019	0.0021	0.0019	0.0021	0.0133	0.0133	< 3.9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12378 - PeCDD	37.4500	0.0070	0.0078	0.0070	0.0078	0.0493	0.0493	< 3.9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
123478 - HxCDD	22.4667	0.0063	0.0070	0.0006	0.0007	0.0443	0.0044	7.6000	0.0021	0.0024	0.0002	0.0002	0.0149	0.0015
123678 - HxCDD	44.7333	0.0125	0.0139	0.0012	0.0014	0.0882	0.0088	15.8000	0.0043	0.0049	0.0004	0.0005	0.0309	0.0031
123789 - HxCDD	60.1667	0.0168	0.0187	0.0017	0.0019	0.1187	0.0119	20.5000	0.0056	0.0064	0.0006	0.0006	0.0401	0.0040
1234678 - HpCDD	179.0667	0.0498	0.0558	0.0005	0.0006	0.3527	0.0035	128.0000	0.0350	0.0397	0.0004	0.0004	0.2503	0.0025
1,2,3,4,6,7,8,9-Octa CDD	209.6667	0.0581	0.0653	0.0000	0.0000	0.4121	0.0001	203.0000	0.0556	0.0630	0.0000	0.0000	0.3969	0.0001
TOTAL TCDD	306.4667	0.0853	0.0955			0.6041		102.0000	0.0279	0.0317			0.1994	
TOTAL PeCDD	502.4333	0.1400	0.1566			0.9905		118.0000	0.0323	0.0366			0.2307	
TOTAL HxCDD	711.8333	0.1980	0.2217			1.4030		359.0000	0.0983	0.1115			0.7019	
TOTAL HpCDD	475.4667	0.1319	0.1480			0.9358		440.0000	0.1204	0.1366			0.8603	
2378 - TCDF	350.6000	0.0323	0.0364	0.0032	0.0036	0.2276	0.0228	< 110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12378 - PeCDF	155.1000	0.0289	0.0322	0.0009	0.0010	0.2041	0.0061	< 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23478 - PeCDF	265.4333	0.0740	0.0827	0.0222	0.0248	0.5238	0.1571	35.3000	0.0097	0.0110	0.0029	0.0033	0.0690	0.0207
123478 - HxCDF	546.7500	0.1018	0.1136	0.0102	0.0114	0.7204	0.0720	< 57	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
123678 - HxCDF	163.2667	0.0455	0.0509	0.0046	0.0051	0.3222	0.0322	23.6000	0.0065	0.0073	0.0006	0.0007	0.0461	0.0046
234678 - HxCDF	253.4667	0.0707	0.0790	0.0071	0.0079	0.5004	0.0500	40.5000	0.0111	0.0126	0.0011	0.0013	0.0792	0.0079
123789 - HxCDF	30.2000	0.0028	0.0031	0.0003	0.0003	0.0199	0.0020	< 4.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1234678 - HpCDF	397.2667	0.1107	0.1238	0.0011	0.0012	0.7841	0.0078	118.0000	0.0323	0.0366	0.0003	0.0004	0.2307	0.0023
1234789 - HpCDF	44.6000	0.0124	0.0139	0.0001	0.0001	0.0880	0.0009	20.4000	0.0056	0.0063	0.0001	0.0001	0.0399	0.0004
1,2,3,4,6,7,8,9-Octa CDF	62.3333	0.0173	0.0194	0.0000	0.0000	0.1227	0.0000	45.0000	0.0123	0.0140	0.0000	0.0000	0.0880	0.0000
TOTAL TCDF	3442.8667	0.9592	1.0728			6.7867		585.0000	0.1601	0.1817			1.1438	
TOTAL PeCDF	2624.2333	0.7316	0.8178			5.1761		379.0000	0.1037	0.1177			0.7410	
TOTAL HxCDF	1617.0000	0.4511	0.5039			3.1923		229.0000	0.0627	0.0711			0.4477	
TOTAL HpCDF	580.0667	0.1617	0.1807			1.1448		193.0000	0.0528	0.0599			0.3773	
Total PCDD		0.5552	0.6218			3.9334			0.2789	0.3164			1.9923	
Total PCDF		2.3036	2.5752			16.3000			0.3794	0.4304			2.7099	
Totals		2.8588	3.1969	0.0625	0.0699	20.2333	0.4425		0.6583	0.7468	0.0066	0.0075	4.7022	0.0472

Where results are less than the Method Detection Limit, "zero" has been used to calculate concentration and emission rates.
 *Results presented at reference conditions of 25 °C and 760 mmHg



DIBENZODIOXIN/FURAN EMISSION RESULTS - Page 2

INCINERATOR STACK

		#3						#4						
Date		22-Oct-21						23-Oct-21						
Time		14:15-18:30						11:40-16:00						
SAMPLING CONDITIONS														
Volume Sampled	m ³ dry @ Ref Cond	3.58						3.62						
Volumetric Flow	m ³ /s dry @ Ref Cond	1.97						1.96						
Oxygen Concentration	% dry	12.02						12.14						
RESULTS	Blank Corr Analytical pg	ng/m ³ dry basis*	ng/m ³ dry @ 11% O ₂ *	2378 TEQ ng/m ³ dry*	2378 TEQ ng/m ³ dry @ 11% O ₂ *	ug/h*	2378 TEQ ug/h*	Blank Corr Analytical pg	ng/m ³ dry basis*	ng/m ³ dry @ 11% O ₂ *	2378 TEQ ng/m ³ dry*	2378 TEQ ng/m ³ dry @ 11% O ₂ *	ug/h*	2378 TEQ ug/h*
2378 - TCDD	20.2000	0.0057	0.0063	0.0057	0.0063	0.0400	0.0400	< 2.7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12378 - PeCDD	64.4000	0.0180	0.0201	0.0180	0.0201	0.1275	0.1275	10.5000	0.0029	0.0033	0.0029	0.0033	0.0204	0.0204
123478 - HxCDD	49.3000	0.0138	0.0154	0.0014	0.0015	0.0976	0.0098	10.5000	0.0029	0.0033	0.0003	0.0003	0.0204	0.0020
123678 - HxCDD	100.0000	0.0280	0.0312	0.0028	0.0031	0.1979	0.0198	18.4000	0.0051	0.0057	0.0005	0.0006	0.0358	0.0036
123789 - HxCDD	140.0000	0.0392	0.0436	0.0039	0.0044	0.2771	0.0277	20.0000	0.0055	0.0062	0.0006	0.0006	0.0390	0.0039
1234678 - HpCDD	344.0000	0.0962	0.1072	0.0010	0.0011	0.6808	0.0068	65.2000	0.0180	0.0203	0.0002	0.0002	0.1270	0.0013
1,2,3,4,6,7,8,9-Octa CDD	309.0000	0.0864	0.0963	0.0000	0.0000	0.6115	0.0002	117.0000	0.0323	0.0365	0.0000	0.0000	0.2279	0.0001
TOTAL TCDD	667.0000	0.1866	0.2079			1.3200		150.4000	0.0415	0.0469			0.2929	
TOTAL PeCDD	1110.0000	0.3105	0.3459			2.1968		279.3000	0.0771	0.0871			0.5439	
TOTAL HxCDD	1500.0000	0.4196	0.4675			2.9686		276.5000	0.0763	0.0862			0.5385	
TOTAL HpCDD	822.0000	0.2299	0.2562			1.6268		164.4000	0.0454	0.0512			0.3202	
2378 - TCDF	< 1500	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	350.6000	0.0968	0.1093	0.0097	0.0109	0.6828	0.0683
12378 - PeCDF	260.0000	0.0727	0.0810	0.0022	0.0024	0.5146	0.0154	50.2000	0.0139	0.0156	0.0004	0.0005	0.0978	0.0029
23478 - PeCDF	644.0000	0.1801	0.2007	0.0540	0.0602	1.2745	0.3824	117.0000	0.0323	0.0365	0.0097	0.0109	0.2279	0.0684
123478 - HxCDF	1000.0000	0.2797	0.3117	0.0280	0.0312	1.9791	0.1979	93.5000	0.0258	0.0291	0.0026	0.0029	0.1821	0.0182
123678 - HxCDF	398.0000	0.1113	0.1240	0.0111	0.0124	0.7877	0.0788	68.2000	0.0188	0.0213	0.0019	0.0021	0.1328	0.0133
234678 - HxCDF	630.0000	0.1762	0.1963	0.0176	0.0196	1.2468	0.1247	89.9000	0.0248	0.0280	0.0025	0.0028	0.1751	0.0175
123789 - HxCDF	30.2000	0.0084	0.0094	0.0008	0.0009	0.0598	0.0060	< 3.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1234678 - HpCDF	958.0000	0.2680	0.2986	0.0027	0.0030	1.8960	0.0190	115.8000	0.0320	0.0361	0.0003	0.0004	0.2255	0.0023
1234789 - HpCDF	101.0000	0.0283	0.0315	0.0003	0.0003	0.1999	0.0020	12.4000	0.0034	0.0039	0.0000	0.0000	0.0241	0.0002
1,2,3,4,6,7,8,9-Octa CDF	116.0000	0.0324	0.0362	0.0000	0.0000	0.2296	0.0001	26.0000	0.0072	0.0081	0.0000	0.0000	0.0506	0.0000
TOTAL TCDF	7620.0000	2.1314	2.3748			15.0806		2123.6000	0.5862	0.6620			4.1358	
TOTAL PeCDF	6120.0000	1.7118	1.9073			12.1120		1373.7000	0.3792	0.4282			2.6753	
TOTAL HxCDF	4050.0000	1.1328	1.2622			8.0153		572.0000	0.1579	0.1783			1.1140	
TOTAL HpCDF	1390.0000	0.3888	0.4332			2.7509		157.2000	0.0434	0.0490			0.3062	
Total PCDD		1.1465	1.2775			8.1123			0.2403	0.2714			1.6955	
Total PCDF		5.3648	5.9776			37.9588			1.1666	1.3175			8.2313	
Totals		6.5113	7.2551	0.1495	0.1666	46.0710	1.0578		1.4069	1.5889	0.0315	0.0356	9.9268	0.2224

Where results are less than the Method Detection Limit, "zero" has been used to calculate concentration and emission rates.
 *Results presented at reference conditions of 25 °C and 760 mmHg

APPENDIX II
VELOCITY TRAVERSE DATA



ISOKINETIC FIELD DATA RUN #1

INCINERATOR STACK

DATE: 19-Oct-21

TIME: 12:00 to 16:20

Port	Point No.	Stack Temp (°C)	Velocity Head (mm H ₂ O)	Velocity (m/s)	Orifice Press. (mm H ₂ O)	Volume Sampled (m ³)	Meter Temp		Temperature		Vacuum (in. Hg)	% Isokinetic	Velocity (Vertical) (m/s)	θ
							In (°C)	Out (°C)	Probe (°C)	Box (°C)				
North	1	781	1.27	7.18	17.78	0.074	15	15	120	120	-1.00	104.1	7.18	0
North	2	778	1.27	7.17	17.78	0.074	15	15	120	120	-1.00	104.0	7.17	0
North	3	784	1.52	7.88	20.32	0.081	15	15	120	120	-1.00	104.0	7.88	0
North	4	788	1.52	7.89	20.32	0.080	16	15	120	120	-1.00	104.0	7.89	0
North	5	791	1.78	8.54	23.62	0.087	16	15	120	120	-1.00	104.0	8.54	0
North	6	793	1.78	8.54	23.62	0.086	16	15	120	120	-1.00	103.7	8.54	0
North	7	790	1.78	8.53	23.62	0.087	16	15	120	120	-1.00	103.9	8.53	0
North	8	793	1.27	7.22	17.02	0.073	16	15	120	120	-1.00	103.3	7.22	0
North	9	798	1.27	7.24	17.02	0.073	16	15	120	120	-1.00	103.9	7.24	0
North	10	789	1.52	7.90	20.32	0.081	16	16	120	120	-1.00	104.3	7.90	0
North	11	792	1.27	7.22	17.02	0.073	16	16	120	120	-1.00	103.4	7.22	0
North	12	789	1.52	7.90	20.32	0.081	17	17	120	120	-1.00	104.3	7.90	0
North	13	775	1.27	7.16	17.27	0.074	17	17	120	120	-1.00	103.5	7.16	0
North	14	798	1.27	7.24	17.02	0.073	17	17	120	120	-1.00	104.2	7.24	0
North	15	798	1.27	7.24	17.02	0.073	18	17	120	120	-1.00	104.0	7.24	0
North	16	800	1.52	7.94	20.32	0.079	18	17	120	120	-1.00	103.1	7.94	0
North	17	812	1.27	7.28	16.76	0.072	18	18	120	120	-2.00	103.3	7.28	0
North	18	818	1.27	7.31	16.51	0.072	18	18	120	120	-2.00	104.0	7.31	0
North	19	822	1.52	8.02	19.81	0.079	18	18	120	120	-2.00	104.4	8.02	0
North	20	823	1.27	7.32	16.51	0.072	18	18	120	120	-2.00	104.2	7.32	0
North	21	820	1.27	7.31	16.51	0.072	18	18	120	120	-2.00	103.2	7.31	0
North	22	805	1.52	7.95	20.32	0.079	18	18	120	120	-2.00	103.6	7.95	0
North	23	798	1.52	7.93	20.32	0.080	18	18	120	120	-2.00	104.4	7.93	0
North	24	792	1.27	7.22	17.02	0.073	18	19	120	120	-2.00	103.8	7.22	0
East	25	790	1.27	7.21	17.02	0.074	17	17	120	120	-2.00	104.2	7.21	0
East	26	798	1.52	7.93	20.32	0.079	17	17	120	120	-2.00	103.2	7.93	0
East	27	800	1.52	7.94	20.32	0.080	17	18	120	120	-2.00	104.3	7.94	0
East	28	815	1.52	7.99	20.07	0.080	17	18	120	120	-2.00	104.2	7.99	0
East	29	820	1.52	8.01	19.81	0.079	17	18	120	120	-2.00	103.7	8.01	0
East	30	815	1.27	7.30	16.51	0.073	17	18	120	120	-2.00	104.4	7.30	0
East	31	820	1.27	7.31	16.51	0.072	18	18	120	120	-2.00	103.6	7.31	0
East	32	820	1.27	7.31	16.76	0.072	20	19	120	120	-3.00	104.0	7.31	0
East	33	825	1.27	7.33	16.51	0.072	20	19	120	120	-3.00	103.8	7.33	0
East	34	798	1.52	7.93	20.32	0.080	20	19	120	120	-3.00	103.9	7.93	0
East	35	805	1.52	7.95	20.32	0.080	20	19	120	120	-3.00	103.8	7.95	0
East	36	810	1.78	8.61	23.62	0.086	20	20	120	120	-3.00	103.6	8.61	0
East	37	812	1.78	8.62	23.62	0.086	20	20	120	120	-3.00	104.1	8.62	0
East	38	815	1.78	8.63	23.62	0.086	21	20	120	120	-3.00	104.4	8.63	0
East	39	820	1.52	8.01	20.32	0.079	21	20	120	120	-3.00	103.8	8.01	0
East	40	824	1.27	7.33	16.76	0.072	21	20	120	120	-3.00	104.2	7.33	0
East	41	806	1.27	7.26	17.02	0.073	21	20	120	120	-3.00	104.2	7.26	0
East	42	805	1.27	7.26	17.02	0.073	22	20	120	120	-3.00	104.0	7.26	0
East	43	790	1.27	7.21	17.27	0.073	22	20	120	120	-3.00	104.1	7.21	0
East	44	798	1.27	7.24	17.27	0.073	22	20	120	120	-3.00	104.0	7.24	0
East	45	810	1.27	7.28	17.02	0.073	23	21	120	120	-3.00	103.9	7.28	0
East	46	815	1.27	7.30	17.02	0.073	23	21	120	120	-3.00	104.1	7.30	0
East	47	820	1.27	7.31	16.76	0.072	23	21	120	120	-3.00	103.9	7.31	0
East	48	822	1.27	7.32	16.76	0.072	23	21	120	120	-3.00	104.0	7.32	0
AVERAGE		804	1.41	7.64	18.81		18	18				103.9	7.64	



ISOKINETIC FIELD DATA RUN #2

INCINERATOR STACK

DATE: 20-Oct-21

TIME: 11:10 to 13:30

Port	Point No.	Stack Temp (°C)	Velocity Head (mm H ₂ O)	Velocity (m/s)	Orifice Press. (mm H ₂ O)	Volume Sampled (m ³)	Meter Temp		Temperature		Vacuum (in. Hg)	% Isokinetic	Velocity (Vertical) (m/s)	θ
							In (°C)	Out (°C)	Probe (°C)	Box (°C)				
North	1	886	1.78	8.90	20.57	0.082	10	9	120	120	-1.00	102.1	8.90	0
North	2	889	1.52	8.25	17.78	0.076	11	9	120	120	-1.00	102.1	8.25	0
North	3	890	1.78	8.91	20.57	0.082	12	9	120	120	-1.00	102.0	8.91	0
North	4	880	2.03	9.48	23.88	0.088	12	9	120	120	-1.00	102.0	9.48	0
North	5	880	2.03	9.48	23.88	0.088	13	10	120	120	-2.00	102.4	9.48	0
North	6	887	2.03	9.51	23.88	0.087	13	10	120	120	-2.00	102.0	9.51	0
North	7	890	1.52	8.25	17.78	0.076	13	11	120	120	-2.00	102.2	8.25	0
North	8	885	1.52	8.23	17.78	0.076	13	11	120	120	-2.00	101.6	8.23	0
North	9	893	1.27	7.54	15.24	0.069	13	11	120	120	-2.00	102.3	7.54	0
North	10	890	1.27	7.53	15.24	0.069	14	12	120	120	-3.00	102.3	7.53	0
North	11	878	1.27	7.49	15.24	0.069	14	12	120	120	-3.00	101.7	7.49	0
North	12	891	1.52	8.25	17.78	0.076	14	12	120	120	-3.00	102.3	8.25	0
East	13	885	1.52	8.23	18.03	0.076	15	15	120	120	-3.00	102.1	8.23	0
East	14	879	1.78	8.87	21.08	0.082	15	15	120	120	-3.00	102.1	8.87	0
East	15	887	1.78	8.90	21.08	0.082	17	15	120	120	-3.00	101.7	8.90	0
East	16	890	1.78	8.91	21.08	0.082	18	15	120	120	-4.00	102.4	8.91	0
East	17	892	1.78	8.92	21.08	0.082	19	16	120	120	-4.00	101.8	8.92	0
East	18	885	1.52	8.23	18.29	0.076	20	17	120	120	-4.00	102.5	8.23	0
East	19	875	1.52	8.20	18.54	0.076	20	17	120	120	-4.00	101.7	8.20	0
East	20	887	1.27	7.52	15.24	0.069	20	18	120	120	-4.00	102.2	7.52	0
East	21	891	1.27	7.53	15.24	0.069	20	18	120	120	-4.00	101.9	7.53	0
East	22	898	1.27	7.56	15.24	0.069	21	19	120	120	-4.00	101.9	7.56	0
East	23	873	1.02	6.69	12.70	0.062	21	19	120	120	-4.00	102.1	6.69	0
East	24	878	0.76	5.80	9.40	0.054	21	19	120	120	-4.00	101.5	5.80	0
AVERAGE		886	1.53	8.22	18.19		16	14				102.0	8.22	



ISOKINETIC FIELD DATA RUN #3

INCINERATOR STACK

DATE: 20-Oct-21

TIME: 14:00 to 16:25

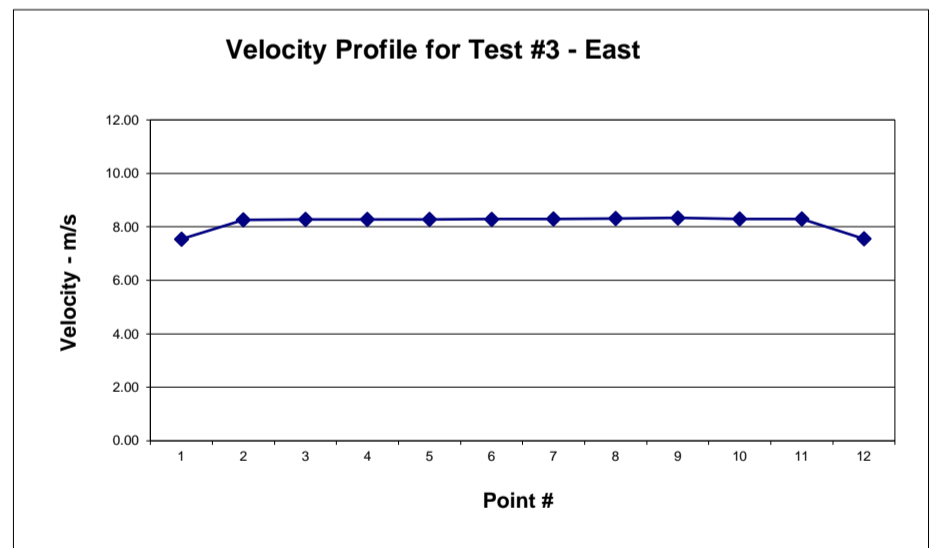
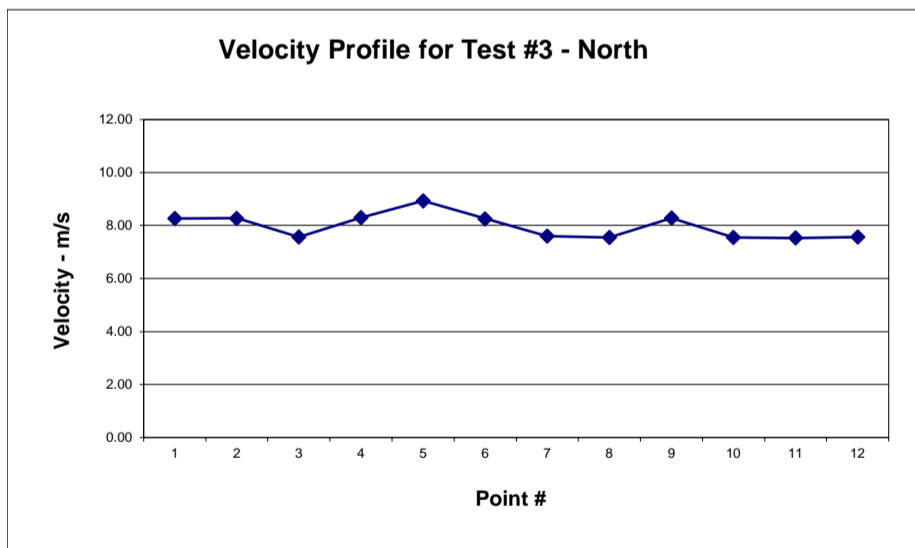
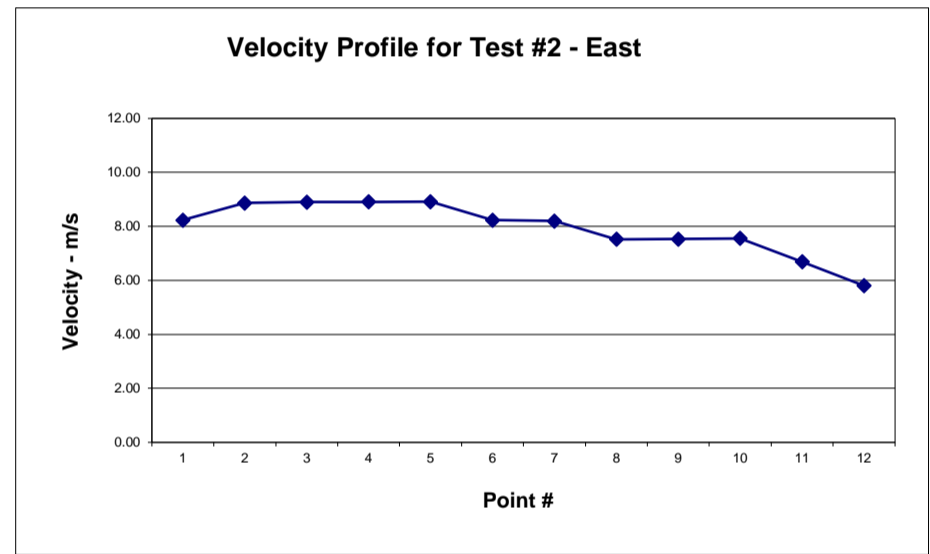
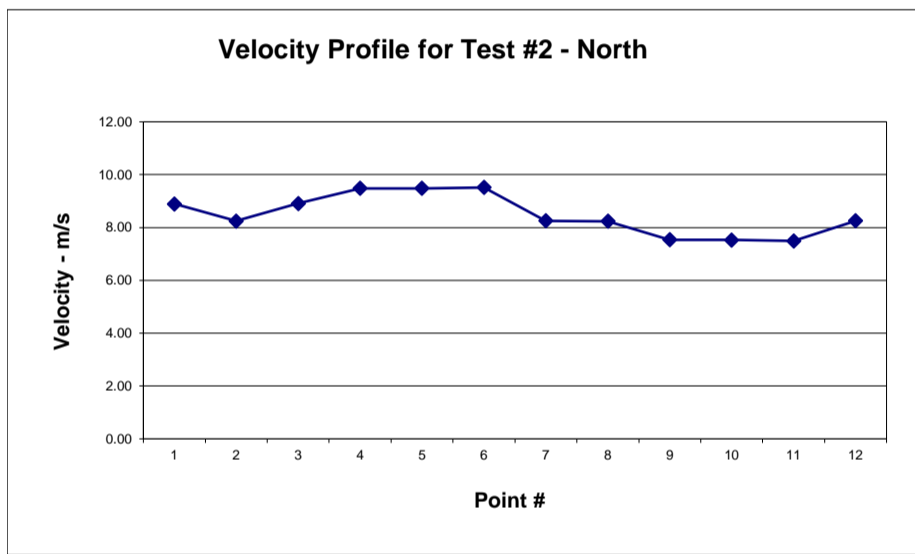
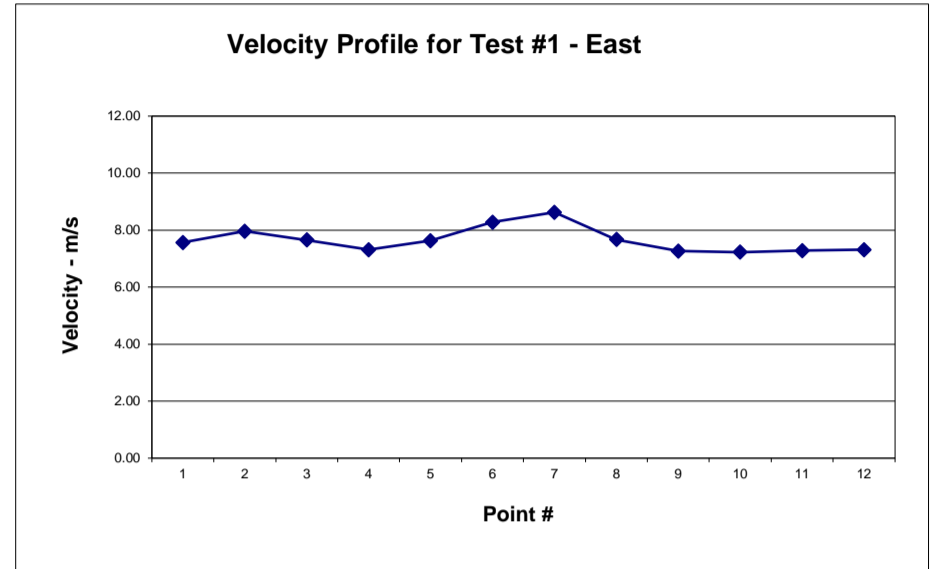
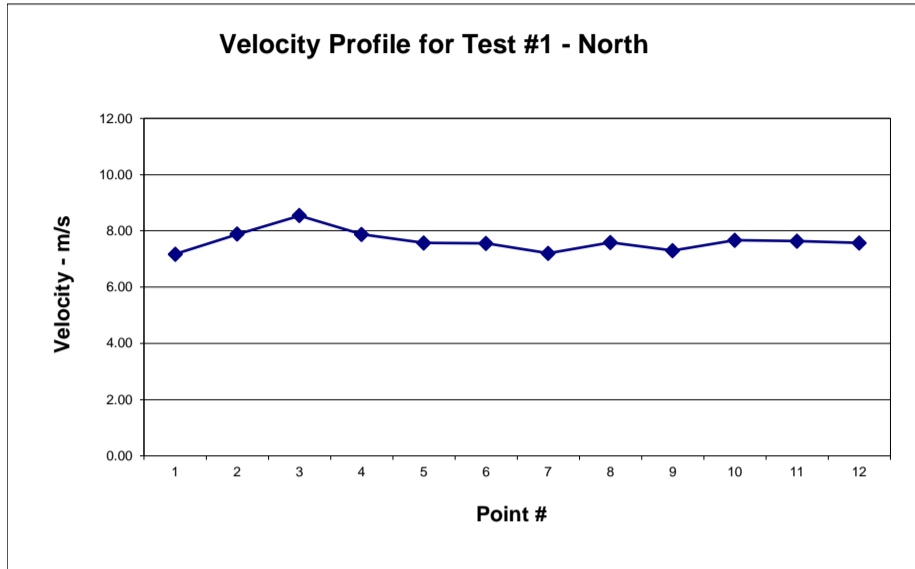
Port	Point No.	Stack Temp (°C)	Velocity Head (mm H ₂ O)	Velocity (m/s)	Orifice Press. (mm H ₂ O)	Volume Sampled (m ³)	Meter Temp		Temperature		Vacuum (in. Hg)	% Isokinetic	Velocity (Vertical) (m/s)	θ
							In (°C)	Out (°C)	Probe (°C)	Box (°C)				
East	1	856	1.27	7.54	16.26	0.069	32	32	120	120	-2.00	101.0	7.54	0
East	2	857	1.52	8.27	19.56	0.076	32	32	120	120	-2.00	101.4	8.27	0
East	3	860	1.52	8.28	19.56	0.075	32	32	120	120	-2.00	101.1	8.28	0
East	4	862	1.52	8.28	19.56	0.075	32	32	120	120	-2.00	100.9	8.28	0
East	5	859	1.52	8.27	19.81	0.075	33	32	120	120	-2.00	100.9	8.27	0
East	6	863	1.52	8.29	19.81	0.075	33	33	120	120	-2.00	101.3	8.29	0
East	7	864	1.52	8.29	19.56	0.075	33	33	120	120	-2.00	101.3	8.29	0
East	8	870	1.52	8.31	19.56	0.075	34	33	120	120	-2.00	101.1	8.31	0
East	9	877	1.52	8.34	19.30	0.074	34	33	120	120	-2.00	100.3	8.34	0
East	10	865	1.52	8.30	19.56	0.075	35	33	120	120	-2.00	101.1	8.30	0
East	11	867	1.52	8.30	19.81	0.076	35	35	120	120	-2.00	101.9	8.30	0
East	12	859	1.27	7.55	16.51	0.068	35	35	120	120	-2.00	100.5	7.55	0
North	13	858	1.52	8.27	19.81	0.075	34	33	120	120	-3.00	101.3	8.27	0
North	14	859	1.52	8.27	19.81	0.075	34	33	120	120	-3.00	101.0	8.27	0
North	15	861	1.27	7.56	16.51	0.069	35	33	120	120	-3.00	101.0	7.56	0
North	16	865	1.52	8.30	19.81	0.075	35	33	120	120	-4.00	101.4	8.30	0
North	17	858	1.78	8.93	22.86	0.081	35	33	120	120	-4.00	101.0	8.93	0
North	18	854	1.52	8.26	19.81	0.076	35	33	120	120	-4.00	101.3	8.26	0
North	19	872	1.27	7.60	16.26	0.068	36	34	120	120	-4.00	100.7	7.60	0
North	20	858	1.27	7.55	16.51	0.069	36	34	120	120	-4.00	101.3	7.55	0
North	21	860	1.52	8.28	19.81	0.075	36	34	120	120	-4.00	100.9	8.28	0
North	22	860	1.27	7.56	16.51	0.069	36	34	120	120	-4.00	101.4	7.56	0
North	23	851	1.27	7.53	16.51	0.069	36	34	120	120	-4.00	101.0	7.53	0
North	24	864	1.27	7.57	16.51	0.069	36	34	120	120	-4.00	101.2	7.57	0
AVERAGE		862	1.45	8.07	18.73		34	33				101.1	8.07	



VELOCITY PROFILES

INCINERATOR STACK

October 19 - 20, 2021





ISOKINETIC FIELD DATA RUN #2

INCINERATOR STACK

DATE: 22-Oct-21

TIME: 09:35 to 13:50

Port	Point No.	Stack Temp (°C)	Velocity Head (mm H ₂ O)	Velocity (m/s)	Orifice Press. (mm H ₂ O)	Volume Sampled (m ³)	Meter Temp		Temperature		Vacuum (in. Hg)	% Isokinetic	Velocity (Vertical) (m/s)	θ
							In (°C)	Out (°C)	Probe (°C)	Box (°C)				
North	1	866	3.05	11.57	19.81	0.080	11	13	120	120	-5.00	102.5	11.57	0
North	2	867	3.05	11.58	19.81	0.080	11	13	120	120	-5.00	103.0	11.58	0
North	3	870	3.30	12.07	21.59	0.083	12	13	120	120	-5.00	102.6	12.07	0
North	4	871	3.30	12.07	21.59	0.083	12	13	120	120	-5.00	103.0	12.07	0
North	5	886	3.30	12.15	21.84	0.083	13	14	120	120	-5.00	102.9	12.15	0
North	6	857	3.05	11.53	20.32	0.081	13	14	120	120	-5.00	103.1	11.53	0
North	7	859	3.05	11.54	20.32	0.081	14	14	120	120	-5.00	103.0	11.54	0
North	8	862	3.05	11.55	20.32	0.080	15	14	120	120	-5.00	103.0	11.55	0
North	9	865	3.05	11.57	21.84	0.080	16	14	120	120	-5.00	102.6	11.57	0
North	10	860	3.30	12.01	21.84	0.084	16	14	120	120	-5.00	102.7	12.01	0
North	11	851	3.56	12.42	23.88	0.087	17	14	120	120	-5.00	102.6	12.42	0
North	12	855	3.05	11.52	20.32	0.081	17	14	120	120	-5.00	103.1	11.52	0
North	13	866	3.05	11.57	20.32	0.080	18	15	120	120	-5.00	102.8	11.57	0
North	14	867	3.05	11.58	20.32	0.080	18	15	120	120	-6.00	102.1	11.58	0
North	15	869	2.54	10.58	16.76	0.073	19	16	120	120	6.00	103.2	10.58	0
North	16	872	2.54	10.59	16.76	0.072	19	16	120	120	-6.00	101.7	10.59	0
North	17	859	3.05	11.54	20.32	0.081	20	17	120	120	-6.00	103.3	11.54	0
North	18	863	3.05	11.56	20.32	0.080	20	17	120	120	-6.00	102.7	11.56	0
North	19	869	2.54	10.58	17.02	0.073	20	17	120	120	-6.00	102.5	10.58	0
North	20	870	2.54	10.58	17.02	0.073	21	17	120	120	-6.00	103.2	10.58	0
North	21	858	2.54	10.53	17.27	0.073	22	17	120	120	-6.00	102.5	10.53	0
North	22	862	2.54	10.55	17.02	0.073	22	17	120	120	-6.00	102.6	10.55	0
North	23	863	2.54	10.55	17.02	0.073	22	17	120	120	-6.00	102.7	10.55	0
North	24	864	2.54	10.56	17.02	0.074	22	17	120	120	-6.00	104.0	10.56	0
Leak Check														
East	25	859	3.05	11.54	20.57	0.080	22	18	120	120	-6.00	102.8	11.54	0
East	26	872	2.54	10.59	17.02	0.073	22	18	120	120	-6.00	102.5	10.59	0
East	27	859	3.05	11.54	20.57	0.080	22	19	120	120	-6.00	102.6	11.54	0
East	28	872	3.05	11.60	20.32	0.080	22	20	120	120	-6.00	102.3	11.60	0
East	29	870	2.54	10.58	17.02	0.073	23	20	120	120	-6.00	102.7	10.58	0
East	30	872	2.54	10.59	17.02	0.073	25	21	120	120	-6.00	102.7	10.59	0
East	31	880	3.05	11.64	21.84	0.079	25	22	120	120	-6.00	102.5	11.64	0
East	32	863	2.54	10.55	17.27	0.073	26	22	120	120	-6.00	101.9	10.55	0
East	33	858	3.05	11.53	20.83	0.081	27	22	120	120	-5.00	103.0	11.53	0
East	34	863	2.54	10.55	17.27	0.073	27	22	120	120	-5.00	102.6	10.55	0
East	35	851	2.54	10.49	17.53	0.074	28	22	120	120	-5.00	102.7	10.49	0
East	36	855	2.54	10.51	17.53	0.073	28	23	120	120	-5.00	102.7	10.51	0
East	37	862	2.54	10.55	17.27	0.073	29	23	120	120	-5.00	102.0	10.55	0
East	38	870	2.54	10.58	17.27	0.073	29	23	120	120	-5.00	103.2	10.58	0
East	39	875	2.54	10.61	17.27	0.073	30	23	120	120	-5.00	102.4	10.61	0
East	40	858	2.54	10.53	17.53	0.073	30	23	120	120	-5.00	102.5	10.53	0
East	41	862	3.05	11.55	17.78	0.074	31	24	120	120	-5.00	94.1	11.55	0
East	42	855	2.54	10.51	17.78	0.073	31	24	120	120	-5.00	102.4	10.51	0
East	43	870	2.54	10.58	17.27	0.072	31	24	120	120	-5.00	101.9	10.58	0
East	44	868	2.03	9.46	13.97	0.065	32	24	120	120	-5.00	102.8	9.46	0
East	45	870	2.29	10.04	15.75	0.070	32	24	120	120	-5.00	103.4	10.04	0
East	46	859	2.29	9.99	15.75	0.069	32	24	120	120	-5.00	102.0	9.99	0
East	47	866	2.29	10.02	15.75	0.069	32	25	120	120	-5.00	102.6	10.02	0
East	48	865	2.29	10.02	15.75	0.069	33	25	120	120	-5.00	102.4	10.02	0
AVERAGE		865	2.77	11.01	18.64		22	19				102.5	11.01	



ISOKINETIC FIELD DATA RUN #3

INCINERATOR STACK

DATE: 22-Oct-21

TIME: 14:15 to 18:30

Port	Point No.	Stack Temp (°C)	Velocity Head (mm H ₂ O)	Velocity (m/s)	Orifice Press. (mm H ₂ O)	Volume Sampled (m ³)	Meter Temp		Temperature		Vacuum (in. Hg)	% Isokinetic	Velocity (Vertical) (m/s)	θ
							In (°C)	Out (°C)	Probe (°C)	Box (°C)				
North	1	865	2.29	9.97	15.49	0.069	25	24	120	120	-5.00	100.8	9.97	0
North	2	865	2.79	11.03	19.05	0.077	26	24	120	120	-5.00	101.7	11.03	0
North	3	868	2.79	11.04	19.05	0.076	26	24	120	120	-5.00	101.1	11.04	0
North	4	873	3.05	11.56	20.83	0.080	28	24	120	120	-5.00	101.7	11.56	0
North	5	879	3.05	11.59	20.57	0.080	28	24	120	120	-5.00	101.3	11.59	0
North	6	881	2.79	11.10	19.05	0.076	29	25	120	120	-5.00	101.3	11.10	0
North	7	869	2.79	11.05	19.05	0.076	29	25	120	120	-5.00	100.8	11.05	0
North	8	863	2.54	10.50	17.78	0.073	30	26	120	120	-5.00	101.1	10.50	0
North	9	865	2.79	11.03	19.30	0.077	30	26	120	120	-5.00	101.4	11.03	0
North	10	870	2.79	11.05	19.30	0.076	31	26	120	120	-5.00	101.1	11.05	0
North	11	872	3.05	11.55	20.83	0.080	31	26	120	120	-6.00	101.6	11.55	0
North	12	868	3.30	12.00	22.86	0.083	32	26	120	120	-6.00	101.4	12.00	0
North	13	861	3.05	11.50	21.08	0.080	32	26	120	120	-6.00	100.9	11.50	0
North	14	863	2.54	10.50	17.78	0.073	33	27	120	120	-6.00	101.6	10.50	0
North	15	864	2.79	11.02	19.56	0.077	33	27	120	120	-6.00	101.1	11.02	0
North	16	860	2.54	10.49	17.78	0.075	34	28	120	120	-6.00	103.1	10.49	0
North	17	869	2.54	10.53	17.78	0.072	34	28	120	120	-6.00	99.2	10.53	0
North	18	875	2.54	10.56	17.78	0.073	35	29	120	120	-6.00	101.5	10.56	0
North	19	878	2.54	10.57	17.78	0.072	35	29	120	120	-6.00	100.9	10.57	0
North	20	880	2.79	11.10	19.30	0.077	35	30	120	120	-6.00	101.7	11.10	0
North	21	868	2.54	10.53	17.78	0.073	35	30	120	120	-6.00	100.7	10.53	0
North	22	869	2.29	9.99	16.00	0.069	35	30	120	120	-6.00	101.6	9.99	0
North	23	865	2.03	9.40	14.22	0.066	35	30	120	120	-6.00	101.5	9.40	0
North	24	870	2.03	9.42	14.22	0.065	35	31	120	120	-6.00	100.7	9.42	0
Leak Check														
East	25	865	2.29	9.97	16.00	0.070	34	30	120	120	-6.00	101.6	9.97	0
East	26	868	2.54	10.53	17.78	0.073	34	30	120	120	-6.00	101.2	10.53	0
East	27	872	3.05	11.55	21.34	0.080	35	31	120	120	-6.00	101.2	11.55	0
East	28	880	2.79	11.10	19.30	0.076	36	31	120	120	-6.00	101.4	11.10	0
East	29	859	2.79	11.00	19.81	0.077	36	32	120	120	-6.00	101.0	11.00	0
East	30	861	2.54	10.50	18.03	0.074	37	32	120	120	-6.00	101.6	10.50	0
East	31	870	2.54	10.54	17.78	0.072	37	32	120	120	-6.00	100.5	10.54	0
East	32	877	3.05	11.58	21.34	0.080	38	33	120	120	-6.00	102.0	11.58	0
East	33	874	2.54	10.56	17.78	0.073	38	33	120	120	-6.00	101.1	10.56	0
East	34	880	2.79	11.10	19.56	0.076	38	33	120	120	-6.00	101.1	11.10	0
East	35	875	2.54	10.56	17.78	0.073	38	34	120	120	-6.00	101.4	10.56	0
East	36	866	3.05	11.52	21.59	0.080	38	34	120	120	-6.00	101.0	11.52	0
East	37	860	2.79	11.00	19.81	0.077	38	34	120	120	-6.00	101.5	11.00	0
East	38	859	2.54	10.49	18.29	0.074	38	35	120	120	-6.00	101.6	10.49	0
East	39	860	2.79	11.00	19.81	0.077	38	35	120	120	-6.00	101.0	11.00	0
East	40	863	2.54	10.50	18.03	0.073	38	36	120	120	-6.00	101.6	10.50	0
East	41	870	2.54	10.54	18.03	0.073	38	37	120	120	-6.00	100.7	10.54	0
East	42	865	3.05	11.52	21.59	0.080	38	38	120	120	-6.00	101.3	11.52	0
East	43	874	3.05	11.56	21.59	0.080	38	38	120	120	-6.00	101.7	11.56	0
East	44	889	2.54	10.62	17.78	0.072	38	38	120	120	-6.00	100.9	10.62	0
East	45	894	2.54	10.65	17.78	0.073	38	38	120	120	-6.00	101.9	10.65	0
East	46	878	2.54	10.57	17.78	0.073	38	39	120	120	-6.00	101.1	10.57	0
East	47	868	2.03	9.42	14.48	0.065	38	39	120	120	-6.00	101.4	9.42	0
East	48	879	1.78	8.85	12.70	0.061	39	39	120	120	-6.00	100.9	8.85	0
AVERAGE		870	2.66	10.76	18.54		34	31				101.3	10.76	



ISOKINETIC FIELD DATA RUN #4

INCINERATOR STACK

DATE: 23-Oct-21

TIME: 11:40 to 16:00

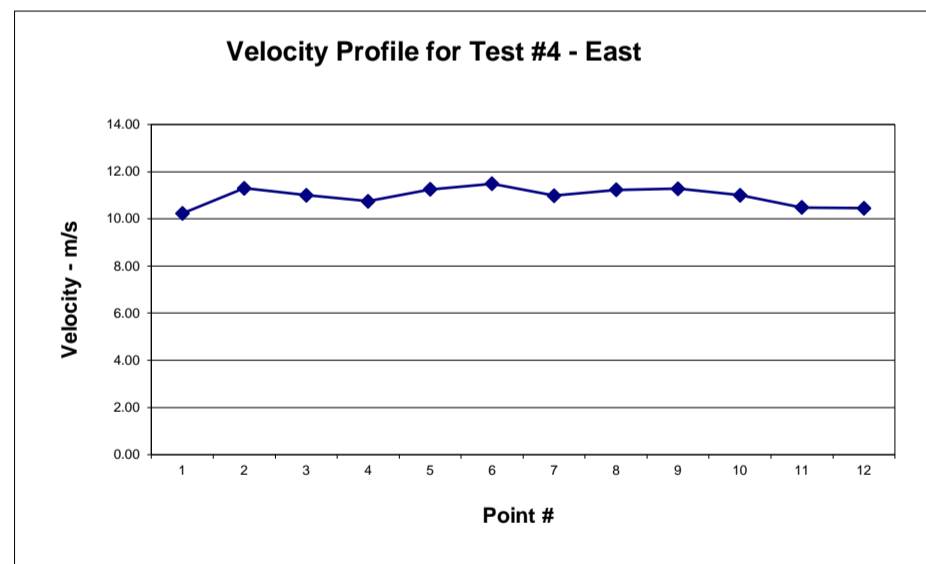
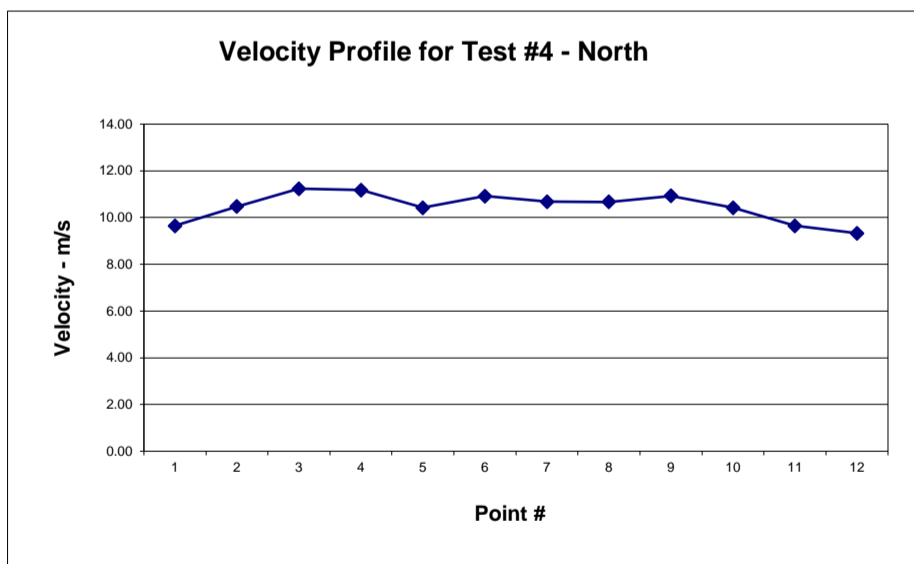
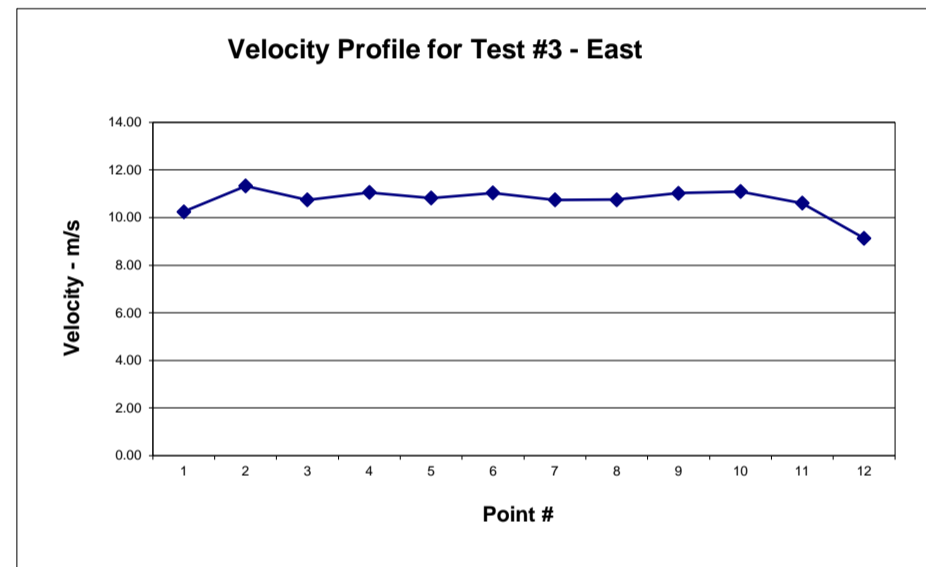
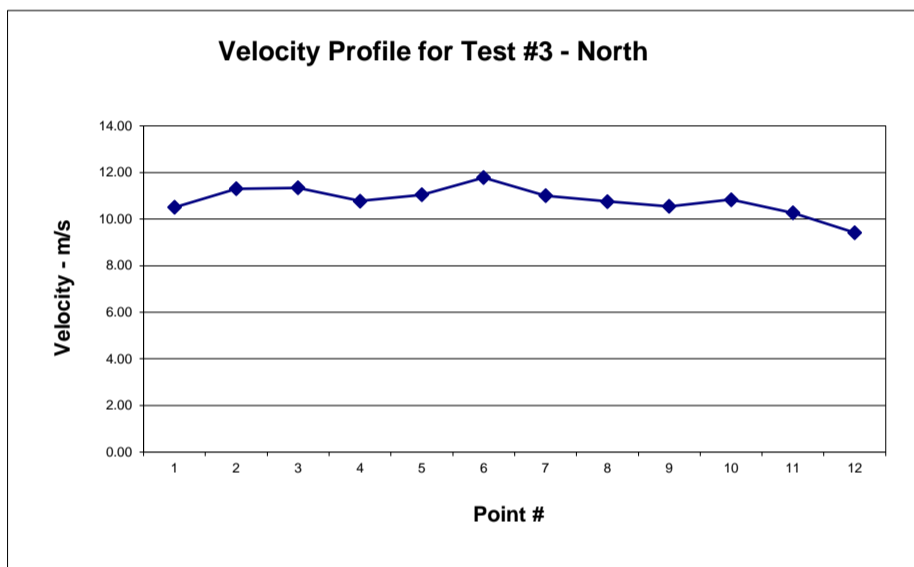
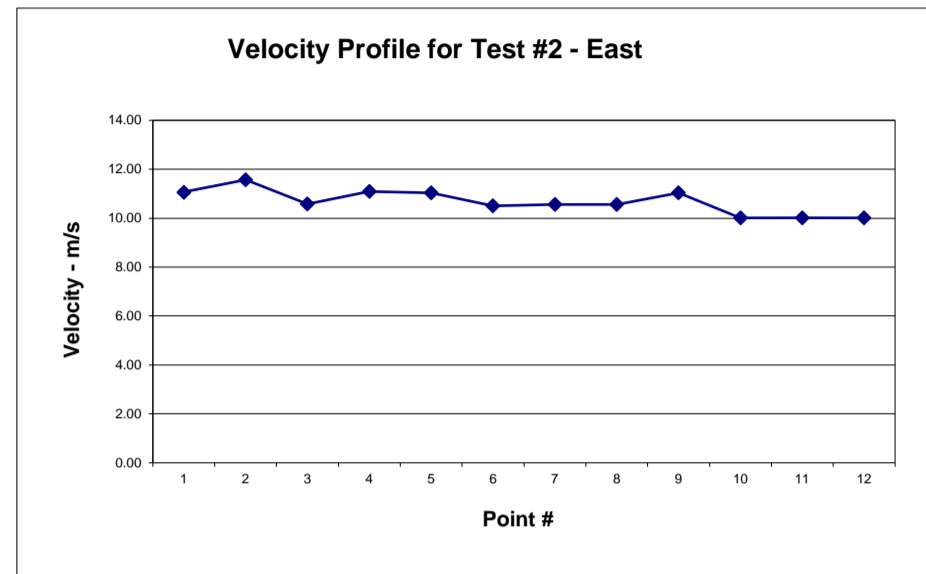
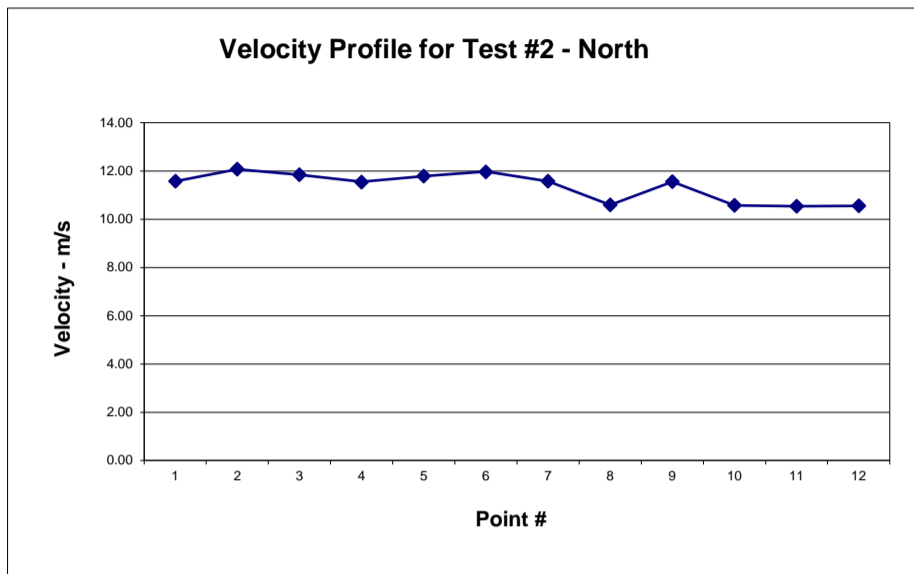
Port	Point No.	Stack Temp (°C)	Velocity Head (mm H ₂ O)	Velocity (m/s)	Orifice Press. (mm H ₂ O)	Volume Sampled (m ³)	Meter Temp		Temperature		Vacuum (in. Hg)	% Isokinetic	Velocity (Vertical) (m/s)	θ
							In (°C)	Out (°C)	Probe (°C)	Box (°C)				
East	1	852	2.54	10.48	16.76	0.074	14	12	120	120	-4.00	102.8	10.48	0
East	2	858	2.29	9.97	15.24	0.070	15	12	120	120	-4.00	103.1	9.97	0
East	3	860	3.05	11.52	20.32	0.080	15	13	120	120	-4.00	102.7	11.52	0
East	4	868	2.79	11.07	18.29	0.077	16	13	120	120	-4.00	103.0	11.07	0
East	5	859	2.54	10.51	16.76	0.073	16	13	120	120	-4.00	103.0	10.51	0
East	6	854	3.05	11.49	20.32	0.081	17	14	120	120	-4.00	103.0	11.49	0
East	7	855	2.54	10.50	17.02	0.074	17	14	120	120	-4.00	102.9	10.50	0
East	8	854	2.79	11.00	18.80	0.077	18	15	120	120	-4.00	103.3	11.00	0
East	9	858	2.79	11.02	18.80	0.077	19	16	120	120	-4.00	102.7	11.02	0
East	10	850	3.05	11.47	20.57	0.081	19	16	120	120	-4.00	102.9	11.47	0
East	11	856	3.05	11.50	20.57	0.080	20	17	120	120	-4.00	102.8	11.50	0
East	12	849	3.05	11.47	20.57	0.082	20	17	120	120	-4.00	104.4	11.47	0
East	13	850	2.79	10.98	19.05	0.076	21	18	120	120	-4.00	101.6	10.98	0
East	14	850	2.79	10.98	19.05	0.077	22	19	120	120	-4.00	102.8	10.98	0
East	15	851	3.05	11.48	20.83	0.080	24	20	120	120	-4.00	102.5	11.48	0
East	16	851	2.79	10.99	19.05	0.077	24	21	120	120	-4.00	103.0	10.99	0
East	17	858	2.79	11.02	19.05	0.077	25	22	120	120	-4.00	103.3	11.02	0
East	18	863	3.05	11.54	20.57	0.080	25	22	120	120	-4.00	102.9	11.54	0
East	19	850	2.79	10.98	19.30	0.077	26	23	120	120	-4.00	103.0	10.98	0
East	20	857	2.79	11.02	19.30	0.077	26	23	120	120	-4.00	102.9	11.02	0
East	21	856	2.54	10.50	17.53	0.073	28	23	120	120	-4.00	102.7	10.50	0
East	22	847	2.54	10.46	17.78	0.074	28	23	120	120	-4.00	102.7	10.46	0
East	23	847	2.54	10.46	17.78	0.074	29	23	120	120	-4.00	102.9	10.46	0
East	24	846	2.54	10.45	17.78	0.074	29	24	120	120	-4.00	103.1	10.45	0
Leak Check														
North	25	849	2.03	9.36	14.22	0.066	27	24	120	120	-4.00	102.8	9.36	0
North	26	851	2.29	9.94	15.75	0.070	28	24	120	120	-4.00	103.6	9.94	0
North	27	850	2.54	10.47	17.78	0.073	29	24	120	120	-4.00	102.5	10.47	0
North	28	849	2.54	10.47	17.78	0.074	30	25	120	120	-4.00	102.9	10.47	0
North	29	855	2.79	11.01	19.56	0.077	30	25	120	120	-4.00	103.0	11.01	0
North	30	849	3.05	11.47	21.34	0.081	30	25	120	120	-4.00	102.7	11.47	0
North	31	846	3.05	11.45	21.34	0.081	31	26	120	120	-4.00	103.3	11.45	0
North	32	835	2.79	10.91	19.81	0.078	32	26	120	120	-4.00	102.7	10.91	0
North	33	838	2.54	10.42	18.03	0.074	33	26	120	120	-4.00	102.9	10.42	0
North	34	839	2.54	10.42	18.03	0.074	34	26	120	120	-4.00	102.8	10.42	0
North	35	840	2.54	10.43	18.03	0.074	34	27	120	120	-4.00	103.1	10.43	0
North	36	840	3.05	11.42	21.59	0.081	34	27	120	120	-4.00	103.1	11.42	0
North	37	835	2.79	10.91	20.07	0.077	35	27	120	120	-4.00	101.6	10.91	0
North	38	843	2.54	10.44	18.03	0.074	35	28	120	120	-5.00	103.2	10.44	0
North	39	839	2.54	10.42	18.03	0.074	36	29	120	120	-5.00	102.7	10.42	0
North	40	835	2.79	10.91	20.32	0.078	36	30	120	120	-5.00	103.2	10.91	0
North	41	841	3.05	11.43	21.84	0.081	37	30	120	120	-5.00	102.8	11.43	0
North	42	840	2.54	10.43	18.29	0.074	37	30	120	120	-5.00	103.2	10.43	0
North	43	838	2.54	10.42	18.29	0.074	37	30	120	120	-5.00	102.7	10.42	0
North	44	840	2.54	10.43	18.29	0.074	38	31	120	120	-5.00	102.9	10.43	0
North	45	850	2.29	9.94	16.26	0.070	39	31	120	120	-5.00	103.0	9.94	0
North	46	847	2.03	9.35	14.48	0.066	39	31	120	120	-5.00	103.0	9.35	0
North	47	840	2.03	9.33	14.73	0.066	39	32	120	120	-5.00	102.9	9.33	0
North	48	843	2.03	9.34	14.73	0.066	39	32	120	120	-5.00	103.1	9.34	0
AVERAGE		849	2.67	10.71	18.49		28	23				102.9	10.71	



VELOCITY PROFILES

INCINERATOR STACK

October 22 - 23, 2021





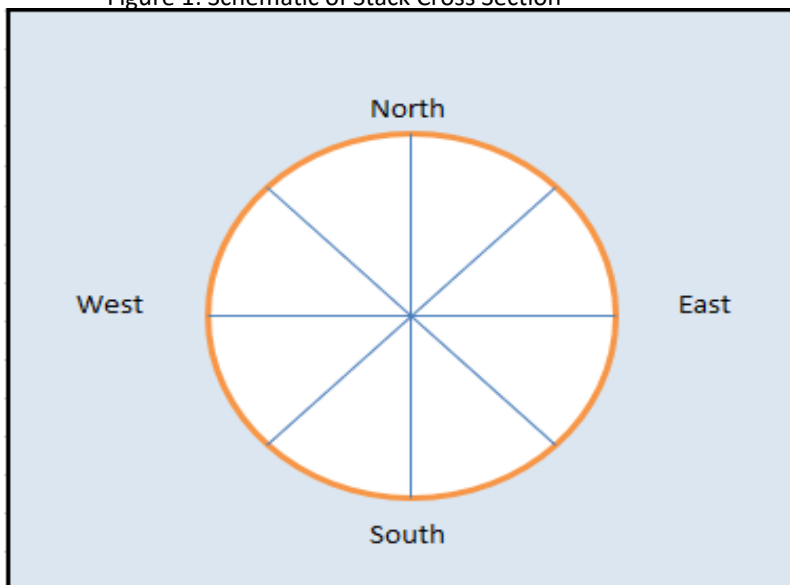
Incinerator Stack

Traverse Point Number on a Diameter	Number of Traverse Points on a Diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	5.6	2.6	1.7	1.2	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.4
2	32.9	9.6	5.6	4.0	3.2	2.6	2.2	1.9	1.7	1.5	1.3	1.2
3		28.9	11.4	7.5	5.6	4.5	3.8	3.3	2.9	2.6	2.3	2.1
4		35.9	27.1	12.4	8.7	6.8	5.6	4.8	4.2	3.7	3.3	3.0
5			32.9	26.1	13.2	9.6	7.7	6.5	5.6	5.0	4.5	4.0
6			36.8	31.0	25.3	13.7	10.4	8.5	7.2	6.4	5.6	5.1
7				34.5	29.8	24.8	14.1	10.9	9.1	7.9	6.9	6.2
8				37.3	32.9	28.9	24.4	14.4	11.4	9.6	8.4	7.5
9					35.3	31.7	28.1	24.1	14.7	11.8	10.1	8.9
10					37.5	34.0	30.8	27.6	23.8	14.9	12.1	10.5
11						35.9	32.9	30.0	27.1	23.6	15.1	12.4
12						37.7	34.7	32.0	29.4	26.7	23.4	15.3
13							36.3	33.7	31.3	28.9	26.4	23.2
14							37.8	35.2	32.9	30.6	28.4	26.1
15								36.6	34.3	32.1	30.1	28.0
16								37.9	35.6	33.5	31.6	29.6
17									36.8	34.8	32.9	31.0
18									38.0	35.9	34.0	32.3
19										37.0	35.2	33.4
20										38.0	36.2	34.5
21											37.2	35.5
22											38.1	36.4
23												37.3
24												38.1

Table 1: Location of Traverse Points used for Sampling

Annulus Length (in.): 7.75
 Stack Diameter (in.): 38.5
 Diameter(s) to be Tested: 2
 Total points tested: 24
 Total Points per diameter: 12

Figure 1: Schematic of Stack Cross Section



APPENDIX III
ANALYTICAL RESULTS



Bureau Veritas Canada
 #1 2080 39th Avenue NE
 Calgary, Ab T2E 6P7

bvlabs.com
 Toll Free 800-386-7247
 Fax 403-219-3673

PARTICULATE PRE-TEST BLANK ANALYSIS

Company: Bureau Veritas Canada - Emission Services Group

Date Reported: 2021-03-01

Analyst: Qun Wong

Approved: Bill Wong

Method Reference: AENV Method 5

Laboratory Reference: EMS SOP-00115

Initial Weighing (1) - Date/Time: 2021-02-26 / 08:10

Initial Weighing (2) - Date/Time: 2021-02-26 / 15:35

Final Weighing (1) - Date/Time: 2021-03-01 / 07:45

Final Weighing (2) - Date/Time: 2021-03-01 / 14:55

Blank Analysis

Flask #:

Manufacturer / Lot #

Volume Analyzed (mls):

Weighing Number :

Final Weight (g):

Initial Weight (g):

Net (mg):

Density (g/ml):

Weight %:

ACETONE		DEIONIZED WATER	
Q13		Q14	
Fisher Optima / 207047		Air Services Lab Deionization System	
200		200	
1	2	1	2
4.9924	4.9923	0.1302	0.1297
4.9921	4.9925	0.1298	0.1300
0.0		0.0	
0.78		1.00	
0.0000		0.0000	

Blank Analysis

Flask #:

Manufacturer / Lot #

Volume Analyzed (mls):

Weighing Number :

Final Weight (g):

Initial Weight (g):

Net (mg):

Density:

Weight %:

METHYLENE CHLORIDE		HEXANE	
Q15		Q16	
Fisher Optima / 197032		Fisher Optima / 197044	
200		200	
1	2	1	2
6.9026	6.9028	7.3001	7.3005
6.9028	6.9030	7.3004	7.3001
0.0		0.0	
1.32		0.65	
0.0000		0.0000	

Shaping a world of trust



EPA M5 - Particulate Matter (PM) - Front Half

Company:	Agnico Eagle Mines Limited
Plant Location:	Meliadine Site- Rankin Inlet, Nunavut
Source:	Incinerator Stack
Date Sampled:	2021-10-19
Date Reported:	2021-11-19
Report Version:	1

Project Number:	2194
Method Reference:	EPA Method 5
Laboratory Reference:	EMS SOP-00115
Analyst:	Qun Wong
Approved:	Bill Wong

Initial Weighing (1) - Date/Time:	2021-11-05 / 08:10
Initial Weighing (2) - Date/Time:	2021-11-05 / 14:10

Final Weighing (1) - Date/Time:	2021-11-08 / 15:10
Final Weighing (2) - Date/Time:	2021-11-09 / 08:15

Blank Analysis

Lab Tracking # / Flask #: _____
 Volume Analyzed (mls): _____
 Weighing Number : _____
 Final Weight (g): _____
 Initial Weight (g): _____
 Net (mg): _____
 Blank Concentration (mg/ml): _____

ACETONE		DEIONIZED WATER	
18075 / W5		P9	
200		200	
1	2	1	2
6.9638	6.9636	6.9108	6.9105
6.9634	6.9639	6.9105	6.9107
0.05		0.05	
0.0003		0.0003	

Blank Correction

Lab Tracking #: _____
 Test Number: _____
 Total Volume Collected (mls): _____
 Blank (mg) = Total Volume (ml) x Blank Concentration (mg/ml)

Probe Wash (Front Half)			Impinger (Back Half)		
18076	18077	18078			
1	2	3	1	2	3
100	100	100			
0.0	0.0	0.0			

Filter - Test #:

Lab Tracking # / Filter ID: _____
 Weighing Number : _____
 Final Weight (g): _____
 Initial Weight (g): _____
 Net (mg): _____

1		2		3	
18025	QM2383	18026	QM2385	18027	QM2384
1	2	1	2	1	2
0.4553	0.4556	0.4064	0.4066	0.4362	0.4363
0.4042		0.4009		0.4028	
51.3		5.6		33.5	

Probe Wash - Test #:

Lab Tracking # / Flask #: _____
 Amount of Liquid Lost during transport (ml) : _____
 Weighing Number : _____
 Final Weight (g): _____
 Initial Weight (g): _____
 Net (mg): _____
 Net (mg) - Blank Corrected: _____

1		2		3	
18076	W1	18077	W2	18078	W3
0		0		0	
1	2	1	2	1	2
4.7954	4.7957	0.1732	0.1737	3.3277	3.3276
4.7870	4.7874	0.1650	0.1649	3.3159	3.3159
8.4		8.5		11.8	
8.4		8.5		11.8	



EPA M5 - Particulate Matter (PM) - Back Half

Company:	Agnico Eagle Mines Limited
Plant Location:	Meliadine Site - Baker Lake, Nunavut
Source:	Incinerator Stack
Date Sampled:	2021-10-19
Date Reported:	2021-11-19
Report Version:	1

Project Number:	2194
Method Reference:	EPA Method 5
Laboratory Reference:	EMS SOP-00115
Analyst:	Qun Wong
Approved:	Bill Wong

Impinger - Test #:

Lab Tracking # / Flask #:
 Amount of Liquid Lost during transport (ml) :
 Weighing Number :
 Aliquot used (ml):
 Final Weight (g):
 Initial Weight (g):
 Net (mg):
 Blank (mg):
 Net (mg) - Blank & Volume Corrected:

1	
1	2

2	
1	2

3	
1	2

Impinger Filtration - Test #:

Filter #:
 Final Weight (g):
 Initial Weight (g):
 Net (mg):

1	

2	

3	

QAQC Standard

Flask Number:
 Weighing Number :
 Aliquot used (ml):
 Final Weight (g):
 Initial Weight (g):
 Net (mg):
 True Value (mg):
 % Recovery:

62	
1	2
100	
0.1571	0.1570
0.1470	0.1469
10.1	
10.0	
101.0	

SUMMARY

Test #:
 Total F/H Particulates (mg):
 Total B/H Particulates (mg):
 Total Particulates (mg):

1
59.7
59.7

2
14.1
14.1

3
45.3
45.3



Bureau Veritas Canada
#1 2080 39th Avenue NE
Calgary, Ab T2E 6P7

bvlabs.com
Toll Free 800-386-7247
Fax 403-219-3673

US EPA Method 6 / AECV Method 47071 - Sulphur Dioxide Analysis - Ion Chromatography

Company Name: **Agnico Eagle Mines Limited**
Plant Location: Meliadine Site - Rankin Inlet, Nunavut
Source Location: Incinerator Stack
Sampling Date: 2021-10-19/20
Analytical Date: 2021-11-11
Reporting Date: 2021-11-19
Report Version: 1

Project Number: 2194
Method Reference: US EPA Method 6 and AECV Method 4707
Laboratory Reference: EMS SOP-00110
Analyst: BW

<u>Lab Tracking #</u>	<u>Test #</u>	<u>SO₄</u> <u>(mg/L)</u>	<u>Total</u> <u>Volume</u>	<u>Dilution</u>	<u>SO₂</u> <u>(mg)</u>
18094	1	6.925	284	25	32.787
18095	2	0.597	268	25	2.668
18096	3	1.365	264	25	6.008
18097	Blank	0.189	200	1	0.025

Analytical Precision and QAQC

<u>Lab ID#</u>	<u>Run #</u>	<u>SO₄</u>
18094	1	6.929
	2	6.920
	Average	6.925
	% +/-	0.1

Second Source Calibration Standard

Continuous Calibration Verification

Lot# P2-MIN686378 / 1308-30-1

Lot# 1308-30-2

<u>QAQC #</u>	<u>Run #</u>	<u>SO₄</u>	<u>Run #</u>	<u>SO₄</u>
1	5189	9.187	5190	10.166
2	5196	9.148	5197	10.216
	Average	9.168		10.191
	True Value	9.006		10.000
	% Recovery	101.8		101.9

Reviewed by:  Jackson Le

Validated by:  Bill Wong

Note: All chromatograms, calibrations and QAQC data will be kept on file and will be reproduced and sent upon request.
MDL = 0.010 mg/L SO₄ or 0.001 mg SO₂



Bureau Veritas Canada
#1 2080 39th Avenue NE
Calgary, Ab T2E 6P7

bvlabs.com
Toll Free 800-386-7247
Fax 403-219-3673

US EPA Method 26/26A - Hydrogen Halides & Halogens - Ion Chromatography

Company Name: **Agnico Eagle Mines Limited**
Plant Location: Meliadine Site - Rankin Inlet, Nunavut
Source Location: Incinerator Stack
Sampling Date: 2021-10-19/20
Analytical Date: 2021-11-11
Reporting Date: 2021-11-19
Report Version: 2

Project Number: 2194
Method Reference: US EPA Method 26/26A
Laboratory Reference: EMS SOP-00110
Analyst: BW

Acidic Fraction

Lab Tracking #	Test #	Conc. Cl (mg/L)	Total Volume	Dilution	HCl (mg)
18079	1	14.359	190	25	70.143
18080	2	3.339	170	25	14.594
18081	3	2.455	202	25	12.750
18082	Blank	-0.030	100	1	-0.003

Caustic Fraction

Lab Tracking #	Test #	Conc. Cl (mg/L)	Total Volume	Dilution	Cl ₂ (mg)
18083	1	-0.030	148	1	-0.004
18084	2	-0.030	150	1	-0.005
18085	3	1.014	150	1	0.152
18086	Blank	-0.030	100	1	-0.003

Analytical Precision and QAQC

Acidic Fraction			Caustic Fraction		
Lab ID#	Run #	Conc. Cl	Lab ID#	Run #	Conc. Cl
18079	1	14.366	18083	1	-0.030
	2	14.352		2	-0.030
	Average	14.359		Average	-0.030
	% +/-	0.1		% +/-	0.0

Second Source Calibration Standard Lot# P2-MING686378 / 1308-30-1			Continuous Calibration Verification Lot# 1308-30-2		
QAQC #	Run #	Conc. Cl	QAQC #	Run #	Conc. Cl
1	5196	11.953	1	5197	10.081
2	5203	11.993	2	5204	10.076
3	5210	11.998	3	5211	10.085
	Average	11.981		Average	10.081
	True Value	11.902		True Value	10.000
	% Recovery	100.7		% Recovery	100.8

Reviewed by:  Jackson Le

Validated by:  Bill Wong

Note: All chromatograms, calibrations and QAQC data will be kept on file and will be reproduced and sent upon request.

MDL = 0.03 mg/L Cl, 0.002 mg HCl / Cl₂

" - " means less than MDL



Bureau Veritas Canada
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US EPA Method 7A - Nitrogen Oxide Analysis - Ion Chromatography

Company Name: **Agnico Eagle Mines Limited**
Plant Location: Meliadine Site - Rankin Inlet, Nunavut
Source Location: Incinerator Stack
Sampling Date: 2021-10-21-23
Analytical Date: 2021-11-11
Reporting Date: 2021-11-19
Report Version: 1

Project Number: 2194
Method Reference: US EPA Method 7A
Laboratory Reference: EMS SOP-00110
Analyst: BW

<u>Lab Tracking #</u>	<u>Test #</u>	<u>Bomb #</u>	<u>NO₃</u> <u>(mg/L)</u>	<u>Total</u> <u>Volume</u>	<u>Dilution</u>	<u>NO₂</u> <u>(mg)</u>
18087	1A	93	0.697	50	25	0.646
18088	1B	76	1.128	50	25	1.046
18089	2A	58	0.450	50	25	0.417
18090	2B	53	0.786	50	25	0.729
18091	3A	87	0.220	50	25	0.204
18092	3B	102	0.198	50	25	0.184
18093	Blank		0.000	50	5	0.000

Analytical Precision and QAQC

<u>Lab ID#</u>	<u>Run #</u>	<u>NO₃</u>
18087	1	0.696
	2	0.697
	Average	0.697
	% +/-	0.1

Second Source Calibration Standard

Continuous Calibration Verification

<u>QAQC #</u>	<u>Lot# P2-MIN686378 / 1308-30-1</u>		<u>Lot# 1308-30-2</u>	
	<u>Run #</u>	<u>NO₃</u>	<u>Run #</u>	<u>NO₃</u>
1	5179	13.447	5180	9.996
2	5189	13.493	5190	9.966
	Average	13.470		9.981
	True Value	13.289		10.000
	% Recovery	101.4		99.8

Reviewed by:  Jackson Le

Validated by:  Bill Wong

Note: All chromatograms, calibrations and QAQC data will be kept on file and will be reproduced and sent upon request.
MDL = 0.03 mg/L NO₃ or 0.001 mg NO₂



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AENV / EPA Method 3 - Fixed Gas Analysis - Gas Chromatography

Company Name: **Agnico Eagle Mines Limited**

Plant Location: **Meliadine Site - Rankin Inlet, Nunavut**

Sampling Date: 2021-10-19/20

Project #: 2194

Analytical Date: 2021-11-05

Method Reference: AENV / EPA Method 3

Reporting Date: 2021-11-11

Laboratory Reference: EMS SOP-00112

Report Version: 1

Analyst: JL

Source Location:	Incinerator Stack 10 L Tedlar Bag	Incinerator Stack 10 L Tedlar Bag	Incinerator Stack 10 L Tedlar Bag
	Test 1	Test 2	Test 3
Lab ID#:	18136	18137	18138
Time:	12:05-13:05	11:15-12:15	14:05-15:05

FIXED GAS ANALYSIS

(Mole % - Dry Basis)

COMPONENT

H ₂	< 0.05	< 0.05	< 0.05
Ar	0.96	0.96	0.96
O ₂	12.26	12.22	12.28
N ₂	80.39	80.41	80.30
CO ₂	6.39	6.41	6.46
CO	<0.0004	< 0.0004	< 0.0004
C ₁	<0.0004	< 0.0004	< 0.0004
Total	100.00	100.00	100.00

Reviewed By:

Jackson Le

Validated By:

Bill Wong

MDL - Fixed Gases for CH₄ and CO - 4 ppmv
 ZERO means analyzed for but not detected.



Bureau Veritas Canada
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 Calgary, Ab T2E 6P7

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AENV / EPA Method 3 - Fixed Gas Analysis - Gas Chromatography

Company Name: **Agnico Eagle Mines Limited**

Plant Location: **Meliadine Site - Rankin Inlet, Nunavut**

Sampling Date: 2021-10-19/20

Project #: 2194

Analytical Date: 2021-11-05

Method Reference: AENV / EPA Method 3

Reporting Date: 2021-11-11

Laboratory Reference: EMS SOP-00112

Report Version: 1

Analyst: JL

Source Location:	Incinerator Stack GC BOMB	Incinerator Stack GC BOMB	Incinerator Stack GC BOMB
	Test 1	Test 2	Test 3
Lab ID#:	18139	18140	18141
Time:	12:05-13:05	11:15-12:15	14:05-15:05

FIXED GAS ANALYSIS

(Mole % - Dry Basis)

COMPONENT

H ₂	< 0.05	< 0.05	< 0.05
Ar	0.96	0.96	0.96
O ₂	12.07	12.16	12.04
N ₂	80.18	80.10	80.18
CO ₂	6.79	6.78	6.83
CO	<0.0004	< 0.0004	< 0.0004
C ₁	<0.0004	< 0.0004	< 0.0004
Total	100.00	100.00	100.00

Reviewed By:

Jackson Le

Validated By:

Bill Wong

MDL - Fixed Gases for CH₄ and CO - 4 ppmv
 ZERO means analyzed for but not detected.



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 Calgary, Ab T2E 6P7

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AENV / EPA Method 3 - Fixed Gas Analysis - Gas Chromatography

Company Name: **Agnico Eagle Mines Limited**

Plant Location: **Meliadine Site - Rankin Inlet, Nunavut**

Sampling Date: 2021-10-22/23

Project #: 2194

Analytical Date: 2021-11-05

Method Reference: AENV / EPA Method 3

Reporting Date: 2021-11-11

Laboratory Reference: EMS SOP-00112

Report Version: 1

Analyst: JL

Source Location:	Incinerator Stack	Incinerator Stack	Incinerator Stack
	1L Tedlar	1L Tedlar	1L Tedlar
	Test 2	Test 3	Test 4
Lab ID#:	18142	18143	18144
Time:	12:00	16:00	13:30

FIXED GAS ANALYSIS

(Mole % - Dry Basis)

COMPONENT

H ₂	< 0.05	< 0.05	< 0.05
Ar	0.96	0.96	0.96
O ₂	12.18	12.02	12.14
N ₂	80.55	80.33	80.43
CO ₂	6.31	6.69	6.46
CO	<0.0004	< 0.0004	< 0.0004
C ₁	<0.0004	< 0.0004	< 0.0004
Total	100.00	100.00	100.00

Reviewed By:

Jackson Le

Validated By:

Bill Wong

MDL - Fixed Gases for CH₄ and CO - 4 ppmv
 ZERO means analyzed for but not detected.

Company: Agnico Eagle Mines Limited - Meliadine Mine - Rankin Inlet, Nunavut
Source: Incinerator Stack
Date: 2021-10-21,23
Project #: 2194

TEST 2

TEST 3

	INITIAL	FINAL			INITIAL	FINAL	
	WEIGHT	WEIGHT	LOAD		WEIGHT	WEIGHT	LOAD
MM5 SET#	2			MM5 SET#	3		
H2O IMPINGER 1	517.2	517.2	0.0	H2O IMPINGER 1	514.6	514.6	0.0
H2O IMPINGER 2	497.3	698.0	200.7	H2O IMPINGER 2	527.1	663.0	135.9
GLYCOL IMPINGER	806.0	824.0	18.0	GLYCOL IMPINGER	763.0	787.0	24.0
EMPTY IMPINGER	653.4	653.0	-0.4	EMPTY IMPINGER	654.9	656.0	1.1
SILICA GEL IMPINGER	891.4	903.0	11.6	SILICA GEL IMPINGER	908.7	920.0	11.3
CONDENSER	274.1	276.0	1.9	CONDENSER	276.6	278.0	1.4
XAD CARTRIDGE	335.0	339.0	4.0	XAD CARTRIDGE	340.5	345.0	4.5
XAD CARTRIDGE #	2			XAD CARTRIDGE #	3		

235.8

178.2

TEST 4

BLANK

	INITIAL	FINAL			INITIAL	FINAL	
	WEIGHT	WEIGHT	LOAD		WEIGHT	WEIGHT	LOAD
MM5 SET#	5			MM5 SET#	4		
H2O IMPINGER 1	491.8	491.8	0.0	H2O IMPINGER 1	511.3	511.3	0.0
H2O IMPINGER 2	446.5	638.0	191.5	H2O IMPINGER 2	487.9	487.9	0.0
GLYCOL IMPINGER	768.0	792.0	24.0	GLYCOL IMPINGER	785.0	785.0	0.0
EMPTY IMPINGER	663.7	664.0	0.3	EMPTY IMPINGER	661.3	661.3	0.0
SILICA GEL IMPINGER	914.2	933.0	18.8	SILICA GEL IMPINGER	809.5	809.5	0.0
CONDENSER	233.8	236.0	2.2	CONDENSER	219.5	219.5	0.0
XAD CARTRIDGE	331.8	335.0	3.2	XAD CARTRIDGE	335.4	335.4	0.0
XAD CARTRIDGE #	4			XAD CARTRIDGE #	5		

240.0

0.0



Your Project #: 2194
 Site#: INCINERATOR STACK- MELIADINE
 Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
 INLET, NUNAVUT
 Your C.O.C. #: 190803-02

Attention: Bill Wong

Bureau Veritas Laboratories
 Calgary - Air Services
 1 - 2080 39th Ave NE
 Calgary, AB
 CANADA T2E 6P7

Report Date: 2022/01/11
 Report #: R6957693
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X7351

Received: 2021/11/15, 08:52

Sample Matrix: Stack Sampling Train
 # Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Mercury 3C in HCl Rinse	5	2021/12/09	2021/12/20	BRL SOP-00104	EPA M29/M0060 m
Mercury 2B in HNO3/H2O2 Imp.	4	2021/11/19	2021/11/24	BRL SOP-00104	EPA M29/M0060 m
Mercury 3A in HNO3 Rinse	4	2021/11/19	2021/11/24	BRL SOP-00104	EPA M29/M0060 m
Mercury 3B in KMnO4/H2SO4 Imp.	5	2021/12/09	2021/11/26	BRL SOP-00104	EPA M29/M0060 m
Mercury 1B in Filter + Rinse (M29)	4	2021/11/22	2021/12/01	BRL SOP-00104	EPA 29 m
Metals B.H. in H2O2/HNO3 Imp.(6010C)	5	2021/11/22	2022/01/10	CAM SOP-00408 / BRL SOPEPA 6010D/M29 m -00102	
Metals F.H. in Filter + Rinse (6010C)	5	2021/12/22	2022/01/10	CAM SOP-00408 / BRL SOPEPA 6010D/ M29 m -00102	
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	5	2021/11/22	2021/11/25	BRL SOP-00103 / BRL SOP- EPA M29/CARB 436 m 00102	
Precious Metals B.H. in H2O2/HNO3 Imp.	5	2021/11/22	2021/11/24	BRL SOP-00103 / BRL SOP- EPA 6020B/M29 m 00102	
Precious Metals F.H. in Filter + Rinses	5	2021/11/22	2021/11/24	BRL SOP-00103/ BRL SOP- EPA 6020B/M29 m 00102	
Metals F.H. in Filter + Rinses (6020B m)	5	2021/11/22	2021/11/25	BRL SOP-00103/ BRL SOP- EPA M29/CARB 436 m 00102	

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

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Your Project #: 2194
Site#: INCINERATOR STACK- MELIADINE
Site Location: AGNICO EAGLE MINES LIMITED- RANKIN INLET,
NUNAVUT
Your C.O.C. #: 190803-02

Attention: Bill Wong

Bureau Veritas Laboratories
Calgary - Air Services
1 - 2080 39th Ave NE
Calgary, AB
CANADA T2E 6P7

Report Date: 2022/01/11
Report #: R6957693
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X7351

Received: 2021/11/15, 08:52

customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Marinela Sim, Project Manager

Email: Marinela.Sim@bureauveritas.com

Phone# (905)817-5828

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BUREAU
VERITAS

Bureau Veritas Job #: C1X7351
Report Date: 2022/01/11

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LIMITED- RANKIN INLET,
NUNAVUT

EPA M29 METALS (FRONT & BACK SEPARATE)

Bureau Veritas ID		RGB774	RGB775	RGB777			RGB778			
Sampling Date		2021/10/20	2021/10/20	2021/10/20			2021/10/19			
COC Number		190803-02	190803-02	190803-02			190803-02			
	UNITS	FRONT HALF SPIKE	BACK HALF SPIKE	M29- BLANK	RDL	MDL	M29- TEST 1	RDL	MDL	QC Batch
Front Half Antimony (Sb)	ug	4.4	N/A	<3.0	3.0	0.080	295	3.0	0.080	7715664
Front Half Arsenic (As)	ug	4.43	N/A	<0.80	0.80	0.080	333	0.80	0.080	7715664
Front Half Barium (Ba)	ug	49.3	N/A	2.6	1.2	0.80	9.1	1.2	0.80	7715664
Front Half Beryllium (Be)	ug	16.7	N/A	<0.18	0.18	0.040	<0.18	0.18	0.040	7715664
Front Half Boron (B)	ug	34	N/A	<30	30	2.0	<30	30	2.0	7715664
Front Half Cadmium (Cd)	ug	18.4	N/A	<0.18	0.18	0.040	6.94	0.18	0.040	7715664
Front Half Chromium (Cr)	ug	18.1	N/A	<3.0	3.0	0.10	214	3.0	0.10	7715664
Front Half Cobalt (Co)	ug	18.9	N/A	<0.18	0.18	0.020	0.60	0.18	0.020	7715664
Front Half Copper (Cu)	ug	19.4	N/A	<1.8	1.8	0.20	230	1.8	0.20	7715664
Front Half Lead (Pb)	ug	61.4	N/A	<0.60	0.60	0.040	490	0.60	0.040	7715664
Front Half Magnesium (Mg)	ug	<30	N/A	<30	30	1.0	97	30	1.0	7715664
Front Half Manganese (Mn)	ug	88.1	N/A	<1.2	1.2	0.10	12.6	1.2	0.10	7715664
Front Half Nickel (Ni)	ug	58.6	N/A	<1.0	1.0	0.20	4.2	1.0	0.20	7715664
Front Half Phosphorus (P)	ug	<90	N/A	<90	90	10	273	90	10	7715664
Front Half Selenium (Se)	ug	34.4	N/A	<2.0	2.0	0.50	2.6	2.0	0.50	7715664
Front Half Silver (Ag)	ug	18.2	N/A	<0.24	0.24	0.040	38.4	0.24	0.040	7715664
Front Half Strontium (Sr)	ug	9.40	N/A	<0.90	0.90	0.060	3.58	0.90	0.060	7715664
Front Half Thallium (Tl)	ug	16.7	N/A	<0.24	0.24	0.10	0.40	0.24	0.10	7715664
Front Half Titanium (Ti)	ug	<3.0	N/A	7.3	3.0	0.30	19.6	3.0	0.30	7715664
Front Half Vanadium (V)	ug	37.7	N/A	<0.60	0.60	0.080	2.18	0.60	0.080	7715664
Front Half Zinc (Zn)	ug	38	N/A	<10	10	1.0	1300	10	1.0	7715664
Back Half Antimony (Sb)	ug	N/A	7.75	<0.40	0.40	0.040	<0.40	0.40	0.040	7715670
Back Half Arsenic (As)	ug	N/A	7.40	<0.40	0.40	0.040	<0.40	0.40	0.040	7715670
Back Half Barium (Ba)	ug	N/A	23.8	3.42	0.60	0.040	7.50	0.60	0.040	7715670
Back Half Beryllium (Be)	ug	N/A	7.91	<0.090	0.090	0.050	<0.090	0.090	0.050	7715670
Back Half Boron (B)	ug	N/A	20	<15	15	1.0	90	15	1.0	7715670
Back Half Cadmium (Cd)	ug	N/A	8.83	<0.090	0.090	0.030	1.96	0.090	0.030	7715670
Back Half Chromium (Cr)	ug	N/A	9.2	<1.5	1.5	0.070	<1.5	1.5	0.070	7715670
Back Half Cobalt (Co)	ug	N/A	9.41	<0.090	0.090	0.010	0.216	0.090	0.010	7715670
Back Half Copper (Cu)	ug	N/A	9.40	<0.75	0.75	0.75	<0.75	0.75	0.75	7715670
Back Half Lead (Pb)	ug	N/A	30.1	<0.30	0.30	0.040	0.32	0.30	0.040	7715670
Back Half Magnesium (Mg)	ug	N/A	<15	<15	15	0.50	88	15	0.50	7715670
Back Half Manganese (Mn)	ug	N/A	38.4	<0.60	0.60	0.060	0.61	0.60	0.060	7715670
Back Half Nickel (Ni)	ug	N/A	29.5	<0.50	0.50	0.060	0.68	0.50	0.060	7715670

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable



BUREAU
VERITAS

Bureau Veritas Job #: C1X7351

Report Date: 2022/01/11

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LIMITED- RANKIN INLET,
NUNAVUT

EPA M29 METALS (FRONT & BACK SEPARATE)

Bureau Veritas ID		RGB774	RGB775	RGB777			RGB778			
Sampling Date		2021/10/20	2021/10/20	2021/10/20			2021/10/19			
COC Number		190803-02	190803-02	190803-02			190803-02			
	UNITS	FRONT HALF SPIKE	BACK HALF SPIKE	M29- BLANK	RDL	MDL	M29- TEST 1	RDL	MDL	QC Batch
Back Half Phosphorus (P)	ug	N/A	<45	<45	45	7.0	<45	45	7.0	7715670
Back Half Selenium (Se)	ug	N/A	17.6	<1.0	1.0	0.20	1.5	1.0	0.20	7715670
Back Half Silver (Ag)	ug	N/A	8.94	<0.12	0.12	0.020	<0.12	0.12	0.020	7715670
Back Half Strontium (Sr)	ug	N/A	4.72	<0.45	0.45	0.030	<0.45	0.45	0.030	7715670
Back Half Thallium (Tl)	ug	N/A	8.15	<0.12	0.12	0.050	<0.12	0.12	0.050	7715670
Back Half Titanium (Ti)	ug	N/A	<1.5	<1.5	1.5	0.080	4.5	1.5	0.080	7715670
Back Half Vanadium (V)	ug	N/A	18.7	<0.30	0.30	0.030	<0.60	0.60	0.060	7715670
Back Half Zinc (Zn)	ug	N/A	32.2	<5.0	5.0	0.60	<5.0	5.0	0.60	7715670
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



EPA M29 METALS (FRONT & BACK SEPARATE)

Bureau Veritas ID		RGB778			RGB779	RGB780			
Sampling Date		2021/10/19			2021/10/20	2021/10/20			
COC Number		190803-02			190803-02	190803-02			
	UNITS	M29- TEST 1 Lab-Dup	RDL	MDL	M29- TEST 2	M29- TEST 3	RDL	MDL	QC Batch
Front Half Antimony (Sb)	ug	293	3.0	0.080	32.7	27.4	3.0	0.080	7715664
Front Half Arsenic (As)	ug	336	0.80	0.080	52.4	54.0	0.80	0.080	7715664
Front Half Barium (Ba)	ug	8.6	1.2	0.80	5.7	6.7	1.2	0.80	7715664
Front Half Beryllium (Be)	ug	<0.18	0.18	0.040	<0.18	<0.18	0.18	0.040	7715664
Front Half Boron (B)	ug	<30	30	2.0	<30	<30	30	2.0	7715664
Front Half Cadmium (Cd)	ug	6.66	0.18	0.040	2.37	2.30	0.18	0.040	7715664
Front Half Chromium (Cr)	ug	215	3.0	0.10	263	322	3.0	0.10	7715664
Front Half Cobalt (Co)	ug	0.57	0.18	0.020	0.21	0.23	0.18	0.020	7715664
Front Half Copper (Cu)	ug	228	1.8	0.20	64.2	87.0	1.8	0.20	7715664
Front Half Lead (Pb)	ug	493	0.60	0.040	263	317	0.60	0.040	7715664
Front Half Magnesium (Mg)	ug	97	30	1.0	268	530	30	1.0	7715664
Front Half Manganese (Mn)	ug	12.7	1.2	0.10	6.2	5.1	1.2	0.10	7715664
Front Half Nickel (Ni)	ug	4.2	1.0	0.20	4.3	5.9	1.0	0.20	7715664
Front Half Phosphorus (P)	ug	271	90	10	<90	<90	90	10	7715664
Front Half Selenium (Se)	ug	2.6	2.0	0.50	<2.0	<2.0	2.0	0.50	7715664
Front Half Silver (Ag)	ug	38.1	0.24	0.040	24.3	26.7	0.24	0.040	7715664
Front Half Strontium (Sr)	ug	3.24	0.90	0.060	1.88	2.38	0.90	0.060	7715664
Front Half Thallium (Tl)	ug	0.38	0.24	0.10	<0.24	<0.24	0.24	0.10	7715664
Front Half Titanium (Ti)	ug	18.8	3.0	0.30	21.8	19.3	3.0	0.30	7715664
Front Half Vanadium (V)	ug	2.18	0.60	0.080	0.71	0.69	0.60	0.080	7715664
Front Half Zinc (Zn)	ug	1310	10	1.0	408	687	10	1.0	7715664
Back Half Antimony (Sb)	ug	<0.40	0.40	0.040	<0.40	<0.40	0.40	0.040	7715670
Back Half Arsenic (As)	ug	<0.40	0.40	0.040	<0.40	0.44	0.40	0.040	7715670
Back Half Barium (Ba)	ug	7.03	0.60	0.040	4.76	4.91	0.60	0.040	7715670
Back Half Beryllium (Be)	ug	<0.090	0.090	0.050	<0.090	<0.090	0.090	0.050	7715670
Back Half Boron (B)	ug	93	15	1.0	22	24	15	1.0	7715670
Back Half Cadmium (Cd)	ug	1.97	0.090	0.030	0.954	<0.090	0.090	0.030	7715670
Back Half Chromium (Cr)	ug	<1.5	1.5	0.070	<1.5	<1.5	1.5	0.070	7715670
Back Half Cobalt (Co)	ug	0.211	0.090	0.010	<0.090	0.097	0.090	0.010	7715670
Back Half Copper (Cu)	ug	<0.75	0.75	0.75	<0.75	0.85	0.75	0.75	7715670
Back Half Lead (Pb)	ug	0.33	0.30	0.040	<0.30	<0.30	0.30	0.040	7715670
Back Half Magnesium (Mg)	ug	87	15	0.50	31	40	15	0.50	7715670
Back Half Manganese (Mn)	ug	0.62	0.60	0.060	37.1	34.1	0.60	0.060	7715670
Back Half Nickel (Ni)	ug	0.72	0.50	0.060	4.70	1.03	0.50	0.060	7715670
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



EPA M29 METALS (FRONT & BACK SEPARATE)

Bureau Veritas ID		RGB778			RGB779	RGB780			
Sampling Date		2021/10/19			2021/10/20	2021/10/20			
COC Number		190803-02			190803-02	190803-02			
	UNITS	M29- TEST 1 Lab-Dup	RDL	MDL	M29- TEST 2	M29- TEST 3	RDL	MDL	QC Batch
Back Half Phosphorus (P)	ug	<45	45	7.0	<45	<45	45	7.0	7715670
Back Half Selenium (Se)	ug	1.5	1.0	0.20	<1.0	<1.0	1.0	0.20	7715670
Back Half Silver (Ag)	ug	<0.12	0.12	0.020	<0.12	<0.12	0.12	0.020	7715670
Back Half Strontium (Sr)	ug	<0.45	0.45	0.030	<0.45	0.53	0.45	0.030	7715670
Back Half Thallium (Tl)	ug	<0.12	0.12	0.050	<0.12	<0.12	0.12	0.050	7715670
Back Half Titanium (Ti)	ug	4.4	1.5	0.080	1.9	2.4	1.5	0.080	7715670
Back Half Vanadium (V)	ug	<0.60	0.60	0.060	<0.30	<0.30	0.30	0.030	7715670
Back Half Zinc (Zn)	ug	<5.0	5.0	0.60	<5.0	<5.0	5.0	0.60	7715670
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



EPA M29 MERCURY (STACK SAMPLING TRAIN)

Bureau Veritas ID		RGB776			RGB777			RGB778			
Sampling Date		2021/10/20			2021/10/20			2021/10/19			
COC Number		190803-02			190803-02			190803-02			
	UNITS	MERCURY SPIKE	RDL	MDL	M29- BLANK	RDL	MDL	M29- TEST 1	RDL	MDL	QC Batch
1B Mercury (Hg)	ug	N/A	0.015	0.006	<0.015	0.015	0.006	<0.015	0.015	0.006	7715677
2B Mercury (Hg)	ug	N/A	0.15	0.006	<0.15	0.15	0.006	0.72	0.25	0.01	7710636
3A Mercury (Hg)	ug	N/A	0.005	0.0006	<0.005	0.005	0.0006	<0.0045	0.0045	0.00054	7710604
3B Mercury (Hg)	ug	<0.013	0.013	0.0026	<0.02	0.02	0.004	<0.025	0.025	0.005	7715742
3C Mercury (Hg)	ug	0.434	0.013	0.0026	<0.013	0.013	0.0026	0.641	0.013	0.0026	7715733

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Bureau Veritas ID		RGB779			RGB780	RGB780			
Sampling Date		2021/10/20			2021/10/20	2021/10/20			
COC Number		190803-02			190803-02	190803-02			
	UNITS	M29- TEST 2	RDL	MDL	M29- TEST 3	M29- TEST 3 Lab-Dup	RDL	MDL	QC Batch
1B Mercury (Hg)	ug	0.018	0.015	0.006	0.030	0.029	0.015	0.006	7715677
2B Mercury (Hg)	ug	<0.21	0.21	0.0084	<0.2	<0.2	0.2	0.008	7710636
3A Mercury (Hg)	ug	<0.0046	0.0046	0.00055	<0.0045	<0.0045	0.0045	0.00054	7710604
3B Mercury (Hg)	ug	0.091	0.025	0.005	<0.025	<0.025	0.025	0.005	7715742
3C Mercury (Hg)	ug	0.014	0.013	0.0026	0.032	0.031	0.013	0.0026	7715733

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate



BUREAU
VERITAS

Bureau Veritas Job #: C1X7351

Report Date: 2022/01/11

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
INLET, NUNAVUT

ELEMENTS BY ICP-AES (STACK SAMPLING TRAIN)

Bureau Veritas ID		RGB774	RGB775	RGB777	RGB778	RGB778			
Sampling Date		2021/10/20	2021/10/20	2021/10/20	2021/10/19	2021/10/19			
COC Number		190803-02	190803-02	190803-02	190803-02	190803-02			
	UNITS	FRONT HALF SPIKE	BACK HALF SPIKE	M29- BLANK	M29- TEST 1	M29- TEST 1 Lab-Dup	RDL	MDL	QC Batch
Front Half Lithium (Li)	ug	<3.0	N/A	<3.0	44.5	44.2	3.0	1.8	7715693
Back Half Lithium (Li)	ug	N/A	<3.0	<3.0	<3.0	<3.0	3.0	1.1	7715695
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable									

Bureau Veritas ID		RGB779	RGB780			
Sampling Date		2021/10/20	2021/10/20			
COC Number		190803-02	190803-02			
	UNITS	M29- TEST 2	M29- TEST 3	RDL	MDL	QC Batch
Front Half Lithium (Li)	ug	7.7	5.2	3.0	1.8	7715693
Back Half Lithium (Li)	ug	<3.0	<3.0	3.0	1.1	7715695
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C1X7351

Report Date: 2022/01/11

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
INLET, NUNAVUT

ELEMENTS BY ICP/MS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RGB774	RGB775	RGB777	RGB778	RGB778			
Sampling Date		2021/10/20	2021/10/20	2021/10/20	2021/10/19	2021/10/19			
COC Number		190803-02	190803-02	190803-02	190803-02	190803-02			
	UNITS	FRONT HALF SPIKE	BACK HALF SPIKE	M29- BLANK	M29- TEST 1	M29- TEST 1 Lab-Dup	RDL	MDL	QC Batch
Back Half Tellurium (Te)	ug	N/A	<0.50	<0.50	<0.50	<0.50	0.50	N/A	7715687
Front Half Tellurium (Te)	ug	<2.0	N/A	<2.0	<2.0	<2.0	2.0	N/A	7715690

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

Bureau Veritas ID		RGB779	RGB780			
Sampling Date		2021/10/20	2021/10/20			
COC Number		190803-02	190803-02			
	UNITS	M29- TEST 2	M29- TEST 3	RDL	MDL	QC Batch
Back Half Tellurium (Te)	ug	<0.50	<0.50	0.50	N/A	7715687
Front Half Tellurium (Te)	ug	<2.0	<2.0	2.0	N/A	7715690

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable



Bureau Veritas Job #: C1X7351
Report Date: 2022/01/11

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LIMITED- RANKIN INLET, NUNAVUT

TEST SUMMARY

Bureau Veritas ID: RGB774
Sample ID: FRONT HALF SPIKE
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals F.H. in Filter + Rinse (6010C)	ICP	7715693	2021/12/22	2022/01/10	Suban Kanapathipplai
Precious Metals F.H. in Filter + Rinses	ICP1/MS	7715690	2021/11/22	2021/11/24	Nan Raykha
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	7715664	2021/11/22	2021/11/25	Nan Raykha

Bureau Veritas ID: RGB775
Sample ID: BACK HALF SPIKE
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6010C)	ICP	7715695	2021/11/22	2022/01/10	Suban Kanapathipplai
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	ICP1/MS	7715670	2021/11/22	2021/11/25	Nan Raykha
Precious Metals B.H. in H2O2/HNO3 Imp.	ICP1/MS	7715687	2021/11/22	2021/11/24	Nan Raykha

Bureau Veritas ID: RGB776
Sample ID: MERCURY SPIKE
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	7715733	2021/12/09	2021/12/20	Meghaben Patel
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	7715742	2021/12/09	2021/11/26	Meghaben Patel

Bureau Veritas ID: RGB777
Sample ID: M29- BLANK
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	7715733	2021/12/09	2021/12/20	Meghaben Patel
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	7710636	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3A in HNO3 Rinse	CV/AA	7710604	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	7715742	2021/12/09	2021/11/26	Meghaben Patel
Mercury 1B in Filter + Rinse (M29)	CV/AA	7715677	2021/11/22	2021/12/01	Meghaben Patel
Metals B.H. in H2O2/HNO3 Imp.(6010C)	ICP	7715695	2021/11/22	2022/01/10	Suban Kanapathipplai
Metals F.H. in Filter + Rinse (6010C)	ICP	7715693	2021/12/22	2022/01/10	Suban Kanapathipplai
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	ICP1/MS	7715670	2021/11/22	2021/11/25	Nan Raykha
Precious Metals B.H. in H2O2/HNO3 Imp.	ICP1/MS	7715687	2021/11/22	2021/11/24	Nan Raykha
Precious Metals F.H. in Filter + Rinses	ICP1/MS	7715690	2021/11/22	2021/11/24	Nan Raykha
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	7715664	2021/11/22	2021/11/25	Nan Raykha

Bureau Veritas ID: RGB778
Sample ID: M29- TEST 1
Matrix: Stack Sampling Train

Collected: 2021/10/19
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	7715733	2021/12/09	2021/12/20	Meghaben Patel
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	7710636	2021/11/19	2021/11/24	Meghaben Patel



Bureau Veritas Job #: C1X7351
Report Date: 2022/01/11

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
INLET, NUNAVUT

TEST SUMMARY

Bureau Veritas ID: RGB778
Sample ID: M29- TEST 1
Matrix: Stack Sampling Train

Collected: 2021/10/19
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3A in HNO3 Rinse	CV/AA	7710604	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	7715742	2021/12/09	2021/11/26	Meghaben Patel
Mercury 1B in Filter + Rinse (M29)	CV/AA	7715677	2021/11/22	2021/12/01	Meghaben Patel
Metals B.H. in H2O2/HNO3 Imp.(6010C)	ICP	7715695	2021/11/22	2022/01/10	Suban Kanapathipplai
Metals F.H. in Filter + Rinse (6010C)	ICP	7715693	2021/12/22	2022/01/10	Suban Kanapathipplai
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	ICP1/MS	7715670	2021/11/22	2021/11/25	Nan Raykha
Precious Metals B.H. in H2O2/HNO3 Imp.	ICP1/MS	7715687	2021/11/22	2021/11/24	Nan Raykha
Precious Metals F.H. in Filter + Rinses	ICP1/MS	7715690	2021/11/22	2021/11/24	Nan Raykha
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	7715664	2021/11/22	2021/11/25	Nan Raykha

Bureau Veritas ID: RGB778 Dup
Sample ID: M29- TEST 1
Matrix: Stack Sampling Train

Collected: 2021/10/19
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6010C)	ICP	7715695	2021/11/22	2022/01/10	Suban Kanapathipplai
Metals F.H. in Filter + Rinse (6010C)	ICP	7715693	2021/12/22	2022/01/10	Suban Kanapathipplai
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	ICP1/MS	7715670	2021/11/22	2021/11/25	Nan Raykha
Precious Metals B.H. in H2O2/HNO3 Imp.	ICP1/MS	7715687	2021/11/22	2021/11/24	Nan Raykha
Precious Metals F.H. in Filter + Rinses	ICP1/MS	7715690	2021/11/22	2021/11/24	Nan Raykha
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	7715664	2021/11/22	2021/11/25	Nan Raykha

Bureau Veritas ID: RGB779
Sample ID: M29- TEST 2
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	7715733	2021/12/09	2021/12/20	Meghaben Patel
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	7710636	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3A in HNO3 Rinse	CV/AA	7710604	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	7715742	2021/12/09	2021/11/26	Meghaben Patel
Mercury 1B in Filter + Rinse (M29)	CV/AA	7715677	2021/11/22	2021/12/01	Meghaben Patel
Metals B.H. in H2O2/HNO3 Imp.(6010C)	ICP	7715695	2021/11/22	2022/01/10	Suban Kanapathipplai
Metals F.H. in Filter + Rinse (6010C)	ICP	7715693	2021/12/22	2022/01/10	Suban Kanapathipplai
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	ICP1/MS	7715670	2021/11/22	2021/11/25	Nan Raykha
Precious Metals B.H. in H2O2/HNO3 Imp.	ICP1/MS	7715687	2021/11/22	2021/11/24	Nan Raykha
Precious Metals F.H. in Filter + Rinses	ICP1/MS	7715690	2021/11/22	2021/11/24	Nan Raykha
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	7715664	2021/11/22	2021/11/25	Nan Raykha



Bureau Veritas Job #: C1X7351
 Report Date: 2022/01/11

Bureau Veritas Laboratories
 Client Project #: 2194
 Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
 INLET, NUNAVUT

TEST SUMMARY

Bureau Veritas ID: RGB780
Sample ID: M29- TEST 3
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	7715733	2021/12/09	2021/12/20	Meghaben Patel
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	7710636	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3A in HNO3 Rinse	CV/AA	7710604	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	7715742	2021/12/09	2021/11/26	Meghaben Patel
Mercury 1B in Filter + Rinse (M29)	CV/AA	7715677	2021/11/22	2021/12/01	Meghaben Patel
Metals B.H. in H2O2/HNO3 Imp.(6010C)	ICP	7715695	2021/11/22	2022/01/10	Suban Kanapathipplai
Metals F.H. in Filter + Rinse (6010C)	ICP	7715693	2021/12/22	2022/01/10	Suban Kanapathipplai
Metals B.H. in H2O2/HNO3 Imp.(6020B m)	ICP1/MS	7715670	2021/11/22	2021/11/25	Nan Raykha
Precious Metals B.H. in H2O2/HNO3 Imp.	ICP1/MS	7715687	2021/11/22	2021/11/24	Nan Raykha
Precious Metals F.H. in Filter + Rinses	ICP1/MS	7715690	2021/11/22	2021/11/24	Nan Raykha
Metals F.H. in Filter + Rinses (6020B m)	ICP1/MS	7715664	2021/11/22	2021/11/25	Nan Raykha

Bureau Veritas ID: RGB780 Dup
Sample ID: M29- TEST 3
Matrix: Stack Sampling Train

Collected: 2021/10/20
Shipped:
Received: 2021/11/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	7715733	2021/12/09	2021/12/20	Meghaben Patel
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	7710636	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3A in HNO3 Rinse	CV/AA	7710604	2021/11/19	2021/11/24	Meghaben Patel
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	7715742	2021/12/09	2021/11/26	Meghaben Patel
Mercury 1B in Filter + Rinse (M29)	CV/AA	7715677	2021/11/22	2021/12/01	Meghaben Patel



Bureau Veritas Job #: C1X7351
Report Date: 2022/01/11

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
INLET, NUNAVUT

GENERAL COMMENTS

EPA M29 METALS (FRONT & BACK SEPARATE)

Metals F.H. in Filter + Rinses (6020B m): Post digestion duplicate and spike were done on sample RGB778.

Metals B.H. in H₂O₂/HNO₃ Imp.(6020B m): Post digestion duplicate and spike were done on sample RGB778.

ELEMENTS BY ICP/MS (STACK SAMPLING TRAIN)

Precious Metals B.H. in H₂O₂/HNO₃ Imp.: Post digestion duplicate and spike were done on sample RGB778.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7710604	MPD	Matrix Spike(RGB780)	3A Mercury (Hg)	2021/11/24		95	%	75 - 125
7710604	MPD	Matrix Spike DUP(RGB780)	3A Mercury (Hg)	2021/11/24		95	%	75 - 125
7710604	MPD	MS/MSD RPD	3A Mercury (Hg)	2021/11/24	0.42		%	20
7710604	MPD	Spiked Blank	3A Mercury (Hg)	2021/11/24		92	%	90 - 110
7710604	MPD	Spiked Blank DUP	3A Mercury (Hg)	2021/11/24		91	%	90 - 110
7710604	MPD	RPD	3A Mercury (Hg)	2021/11/24	0.11		%	20
7710604	MPD	Method Blank	3A Mercury (Hg)	2021/11/24	<0.013		ug	
7710604	MPD	RPD - Sample/Sample Dup	3A Mercury (Hg)	2021/11/24	NC		%	20
7710636	MPD	Matrix Spike(RGB780)	2B Mercury (Hg)	2021/11/24		91	%	75 - 125
7710636	MPD	Matrix Spike DUP(RGB780)	2B Mercury (Hg)	2021/11/24		92	%	75 - 125
7710636	MPD	MS/MSD RPD	2B Mercury (Hg)	2021/11/24	0.44		%	20
7710636	MPD	Spiked Blank	2B Mercury (Hg)	2021/11/24		95	%	90 - 110
7710636	MPD	Spiked Blank DUP	2B Mercury (Hg)	2021/11/24		95	%	90 - 110
7710636	MPD	RPD	2B Mercury (Hg)	2021/11/24	0		%	20
7710636	MPD	Method Blank	2B Mercury (Hg)	2021/11/24	<0.05		ug	
7710636	MPD	RPD - Sample/Sample Dup	2B Mercury (Hg)	2021/11/24	NC		%	20
7715664	N_R	Matrix Spike(RGB778)	Front Half Antimony (Sb)	2021/11/25		101	%	75 - 125
			Front Half Arsenic (As)	2021/11/25		100	%	75 - 125
			Front Half Barium (Ba)	2021/11/25		101	%	75 - 125
			Front Half Beryllium (Be)	2021/11/25		103	%	75 - 125
			Front Half Boron (B)	2021/11/25		102	%	75 - 125
			Front Half Cadmium (Cd)	2021/11/25		101	%	75 - 125
			Front Half Chromium (Cr)	2021/11/25		99	%	75 - 125
			Front Half Cobalt (Co)	2021/11/25		105	%	75 - 125
			Front Half Copper (Cu)	2021/11/25		100	%	75 - 125
			Front Half Lead (Pb)	2021/11/25		96	%	75 - 125
			Front Half Magnesium (Mg)	2021/11/25		108	%	75 - 125
			Front Half Manganese (Mn)	2021/11/25		101	%	75 - 125
			Front Half Nickel (Ni)	2021/11/25		102	%	75 - 125
			Front Half Phosphorus (P)	2021/11/25		95	%	75 - 125
			Front Half Selenium (Se)	2021/11/25		99	%	75 - 125
			Front Half Silver (Ag)	2021/11/25		100	%	75 - 125
			Front Half Strontium (Sr)	2021/11/25		100	%	75 - 125
			Front Half Thallium (Tl)	2021/11/25		104	%	75 - 125
			Front Half Titanium (Ti)	2021/11/25		100	%	75 - 125
			Front Half Vanadium (V)	2021/11/25		105	%	75 - 125
			Front Half Zinc (Zn)	2021/11/25		98	%	75 - 125
7715664	N_R	Matrix Spike DUP(RGB778)	Front Half Antimony (Sb)	2021/11/25		105	%	75 - 125
			Front Half Arsenic (As)	2021/11/25		101	%	75 - 125
			Front Half Barium (Ba)	2021/11/25		102	%	75 - 125
			Front Half Beryllium (Be)	2021/11/25		101	%	75 - 125
			Front Half Boron (B)	2021/11/25		98	%	75 - 125
			Front Half Cadmium (Cd)	2021/11/25		101	%	75 - 125
			Front Half Chromium (Cr)	2021/11/25		101	%	75 - 125
			Front Half Cobalt (Co)	2021/11/25		102	%	75 - 125
			Front Half Copper (Cu)	2021/11/25		103	%	75 - 125
			Front Half Lead (Pb)	2021/11/25		100	%	75 - 125
			Front Half Magnesium (Mg)	2021/11/25		106	%	75 - 125
			Front Half Manganese (Mn)	2021/11/25		102	%	75 - 125
			Front Half Nickel (Ni)	2021/11/25		103	%	75 - 125
			Front Half Phosphorus (P)	2021/11/25		96	%	75 - 125



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Selenium (Se)	2021/11/25		100	%	75 - 125
			Front Half Silver (Ag)	2021/11/25		100	%	75 - 125
			Front Half Strontium (Sr)	2021/11/25		101	%	75 - 125
			Front Half Thallium (Tl)	2021/11/25		103	%	75 - 125
			Front Half Titanium (Ti)	2021/11/25		101	%	75 - 125
			Front Half Vanadium (V)	2021/11/25		105	%	75 - 125
			Front Half Zinc (Zn)	2021/11/25		101	%	75 - 125
7715664	N_R	MS/MSD RPD	Front Half Antimony (Sb)	2021/11/25	4.1		%	20
			Front Half Arsenic (As)	2021/11/25	0.93		%	20
			Front Half Barium (Ba)	2021/11/25	0.68		%	20
			Front Half Beryllium (Be)	2021/11/25	2.1		%	20
			Front Half Boron (B)	2021/11/25	3.8		%	20
			Front Half Cadmium (Cd)	2021/11/25	0.039		%	20
			Front Half Chromium (Cr)	2021/11/25	2.0		%	20
			Front Half Cobalt (Co)	2021/11/25	2.3		%	20
			Front Half Copper (Cu)	2021/11/25	3.0		%	20
			Front Half Lead (Pb)	2021/11/25	4.3		%	20
			Front Half Magnesium (Mg)	2021/11/25	1.8		%	20
			Front Half Manganese (Mn)	2021/11/25	1.1		%	20
			Front Half Nickel (Ni)	2021/11/25	0.57		%	20
			Front Half Phosphorus (P)	2021/11/25	1.1		%	20
			Front Half Selenium (Se)	2021/11/25	0.45		%	20
			Front Half Silver (Ag)	2021/11/25	0.43		%	20
			Front Half Strontium (Sr)	2021/11/25	0.92		%	20
			Front Half Thallium (Tl)	2021/11/25	0.18		%	20
			Front Half Titanium (Ti)	2021/11/25	1.1		%	20
			Front Half Vanadium (V)	2021/11/25	0.10		%	20
			Front Half Zinc (Zn)	2021/11/25	2.7		%	20
7715664	N_R	Spiked Blank	Front Half Antimony (Sb)	2021/11/25		103	%	85 - 115
			Front Half Arsenic (As)	2021/11/25		98	%	85 - 115
			Front Half Barium (Ba)	2021/11/25		99	%	85 - 115
			Front Half Beryllium (Be)	2021/11/25		102	%	85 - 115
			Front Half Boron (B)	2021/11/25		107	%	85 - 115
			Front Half Cadmium (Cd)	2021/11/25		100	%	85 - 115
			Front Half Chromium (Cr)	2021/11/25		100	%	85 - 115
			Front Half Cobalt (Co)	2021/11/25		103	%	85 - 115
			Front Half Copper (Cu)	2021/11/25		100	%	85 - 115
			Front Half Lead (Pb)	2021/11/25		102	%	85 - 115
			Front Half Magnesium (Mg)	2021/11/25		102	%	85 - 115
			Front Half Manganese (Mn)	2021/11/25		100	%	85 - 115
			Front Half Nickel (Ni)	2021/11/25		101	%	85 - 115
			Front Half Phosphorus (P)	2021/11/25		101	%	85 - 115
			Front Half Selenium (Se)	2021/11/25		99	%	85 - 115
			Front Half Silver (Ag)	2021/11/25		100	%	85 - 115
			Front Half Strontium (Sr)	2021/11/25		99	%	85 - 115
			Front Half Thallium (Tl)	2021/11/25		102	%	85 - 115
			Front Half Titanium (Ti)	2021/11/25		99	%	85 - 115
			Front Half Vanadium (V)	2021/11/25		103	%	85 - 115
			Front Half Zinc (Zn)	2021/11/25		98	%	85 - 115
7715664	N_R	Spiked Blank DUP	Front Half Antimony (Sb)	2021/11/25		101	%	85 - 115
			Front Half Arsenic (As)	2021/11/25		96	%	85 - 115



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Barium (Ba)	2021/11/25		97	%	85 - 115
			Front Half Beryllium (Be)	2021/11/25		98	%	85 - 115
			Front Half Boron (B)	2021/11/25		102	%	85 - 115
			Front Half Cadmium (Cd)	2021/11/25		98	%	85 - 115
			Front Half Chromium (Cr)	2021/11/25		97	%	85 - 115
			Front Half Cobalt (Co)	2021/11/25		99	%	85 - 115
			Front Half Copper (Cu)	2021/11/25		98	%	85 - 115
			Front Half Lead (Pb)	2021/11/25		100	%	85 - 115
			Front Half Magnesium (Mg)	2021/11/25		99	%	85 - 115
			Front Half Manganese (Mn)	2021/11/25		97	%	85 - 115
			Front Half Nickel (Ni)	2021/11/25		99	%	85 - 115
			Front Half Phosphorus (P)	2021/11/25		100	%	85 - 115
			Front Half Selenium (Se)	2021/11/25		97	%	85 - 115
			Front Half Silver (Ag)	2021/11/25		98	%	85 - 115
			Front Half Strontium (Sr)	2021/11/25		96	%	85 - 115
			Front Half Thallium (Tl)	2021/11/25		100	%	85 - 115
			Front Half Titanium (Ti)	2021/11/25		98	%	85 - 115
			Front Half Vanadium (V)	2021/11/25		99	%	85 - 115
			Front Half Zinc (Zn)	2021/11/25		96	%	85 - 115
7715664	N_R	RPD	Front Half Antimony (Sb)	2021/11/25	1.3		%	20
			Front Half Arsenic (As)	2021/11/25	2.1		%	20
			Front Half Barium (Ba)	2021/11/25	1.8		%	20
			Front Half Beryllium (Be)	2021/11/25	3.7		%	20
			Front Half Boron (B)	2021/11/25	4.8		%	20
			Front Half Cadmium (Cd)	2021/11/25	1.9		%	20
			Front Half Chromium (Cr)	2021/11/25	2.9		%	20
			Front Half Cobalt (Co)	2021/11/25	3.8		%	20
			Front Half Copper (Cu)	2021/11/25	2.1		%	20
			Front Half Lead (Pb)	2021/11/25	2.4		%	20
			Front Half Magnesium (Mg)	2021/11/25	2.7		%	20
			Front Half Manganese (Mn)	2021/11/25	3.2		%	20
			Front Half Nickel (Ni)	2021/11/25	2.0		%	20
			Front Half Phosphorus (P)	2021/11/25	0.64		%	20
			Front Half Selenium (Se)	2021/11/25	1.1		%	20
			Front Half Silver (Ag)	2021/11/25	2.5		%	20
			Front Half Strontium (Sr)	2021/11/25	2.7		%	20
			Front Half Thallium (Tl)	2021/11/25	2.3		%	20
			Front Half Titanium (Ti)	2021/11/25	1.1		%	20
			Front Half Vanadium (V)	2021/11/25	3.6		%	20
			Front Half Zinc (Zn)	2021/11/25	1.8		%	20
7715664	N_R	Method Blank	Front Half Antimony (Sb)	2021/11/25	<3.0		ug	
			Front Half Arsenic (As)	2021/11/25	<0.80		ug	
			Front Half Barium (Ba)	2021/11/25	<1.2		ug	
			Front Half Beryllium (Be)	2021/11/25	<0.18		ug	
			Front Half Boron (B)	2021/11/25	<30		ug	
			Front Half Cadmium (Cd)	2021/11/25	<0.18		ug	
			Front Half Chromium (Cr)	2021/11/25	<3.0		ug	
			Front Half Cobalt (Co)	2021/11/25	<0.18		ug	
			Front Half Copper (Cu)	2021/11/25	<1.8		ug	
			Front Half Lead (Pb)	2021/11/25	<0.60		ug	
			Front Half Magnesium (Mg)	2021/11/25	<30		ug	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Manganese (Mn)	2021/11/25	<1.2		ug	
			Front Half Nickel (Ni)	2021/11/25	<1.0		ug	
			Front Half Phosphorus (P)	2021/11/25	<90		ug	
			Front Half Selenium (Se)	2021/11/25	<2.0		ug	
			Front Half Silver (Ag)	2021/11/25	<0.24		ug	
			Front Half Strontium (Sr)	2021/11/25	<0.90		ug	
			Front Half Thallium (Tl)	2021/11/25	<0.24		ug	
			Front Half Titanium (Ti)	2021/11/25	<3.0		ug	
			Front Half Vanadium (V)	2021/11/25	<0.60		ug	
			Front Half Zinc (Zn)	2021/11/25	<10		ug	
7715664	N_R	RPD - Sample/Sample Dup	Front Half Antimony (Sb)	2021/11/25	0.52		%	20
			Front Half Arsenic (As)	2021/11/25	1.0		%	20
			Front Half Barium (Ba)	2021/11/25	5.6		%	20
			Front Half Beryllium (Be)	2021/11/25	NC		%	20
			Front Half Boron (B)	2021/11/25	NC		%	20
			Front Half Cadmium (Cd)	2021/11/25	4.0		%	20
			Front Half Chromium (Cr)	2021/11/25	0.45		%	20
			Front Half Cobalt (Co)	2021/11/25	4.1		%	20
			Front Half Copper (Cu)	2021/11/25	1.1		%	20
			Front Half Lead (Pb)	2021/11/25	0.70		%	20
			Front Half Magnesium (Mg)	2021/11/25	0.68		%	20
			Front Half Manganese (Mn)	2021/11/25	0.63		%	20
			Front Half Nickel (Ni)	2021/11/25	1.2		%	20
			Front Half Phosphorus (P)	2021/11/25	0.55		%	20
			Front Half Selenium (Se)	2021/11/25	1.5		%	20
			Front Half Silver (Ag)	2021/11/25	0.89		%	20
			Front Half Strontium (Sr)	2021/11/25	10		%	20
			Front Half Thallium (Tl)	2021/11/25	3.6		%	20
			Front Half Titanium (Ti)	2021/11/25	4.4		%	20
			Front Half Vanadium (V)	2021/11/25	0.17		%	20
			Front Half Zinc (Zn)	2021/11/25	1.1		%	20
7715670	N_R	Matrix Spike(RGB778)	Back Half Antimony (Sb)	2021/11/25		102	%	75 - 125
			Back Half Arsenic (As)	2021/11/25		98	%	75 - 125
			Back Half Barium (Ba)	2021/11/25		101	%	75 - 125
			Back Half Beryllium (Be)	2021/11/25		98	%	75 - 125
			Back Half Boron (B)	2021/11/25		95	%	75 - 125
			Back Half Cadmium (Cd)	2021/11/25		99	%	75 - 125
			Back Half Chromium (Cr)	2021/11/25		104	%	75 - 125
			Back Half Cobalt (Co)	2021/11/25		107	%	75 - 125
			Back Half Copper (Cu)	2021/11/25		104	%	75 - 125
			Back Half Lead (Pb)	2021/11/25		104	%	75 - 125
			Back Half Magnesium (Mg)	2021/11/25		106	%	75 - 125
			Back Half Manganese (Mn)	2021/11/25		104	%	75 - 125
			Back Half Nickel (Ni)	2021/11/25		106	%	75 - 125
			Back Half Phosphorus (P)	2021/11/25		98	%	75 - 125
			Back Half Selenium (Se)	2021/11/25		98	%	75 - 125
			Back Half Silver (Ag)	2021/11/25		99	%	75 - 125
			Back Half Strontium (Sr)	2021/11/25		100	%	75 - 125
			Back Half Thallium (Tl)	2021/11/25		103	%	75 - 125
			Back Half Titanium (Ti)	2021/11/25		101	%	75 - 125
			Back Half Vanadium (V)	2021/11/25		108	%	75 - 125



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7715670	N_R	Matrix Spike DUP(RGB778)	Back Half Zinc (Zn)	2021/11/25		99	%	75 - 125
			Back Half Antimony (Sb)	2021/11/25		102	%	75 - 125
			Back Half Arsenic (As)	2021/11/25		99	%	75 - 125
			Back Half Barium (Ba)	2021/11/25		101	%	75 - 125
			Back Half Beryllium (Be)	2021/11/25		100	%	75 - 125
			Back Half Boron (B)	2021/11/25		97	%	75 - 125
			Back Half Cadmium (Cd)	2021/11/25		99	%	75 - 125
			Back Half Chromium (Cr)	2021/11/25		104	%	75 - 125
			Back Half Cobalt (Co)	2021/11/25		107	%	75 - 125
			Back Half Copper (Cu)	2021/11/25		104	%	75 - 125
			Back Half Lead (Pb)	2021/11/25		105	%	75 - 125
			Back Half Magnesium (Mg)	2021/11/25		108	%	75 - 125
			Back Half Manganese (Mn)	2021/11/25		103	%	75 - 125
			Back Half Nickel (Ni)	2021/11/25		107	%	75 - 125
			Back Half Phosphorus (P)	2021/11/25		98	%	75 - 125
			Back Half Selenium (Se)	2021/11/25		98	%	75 - 125
			Back Half Silver (Ag)	2021/11/25		100	%	75 - 125
			Back Half Strontium (Sr)	2021/11/25		101	%	75 - 125
			Back Half Thallium (Tl)	2021/11/25		104	%	75 - 125
			Back Half Titanium (Ti)	2021/11/25		101	%	75 - 125
Back Half Vanadium (V)	2021/11/25		108	%	75 - 125			
Back Half Zinc (Zn)	2021/11/25		99	%	75 - 125			
7715670	N_R	MS/MSD RPD	Back Half Antimony (Sb)	2021/11/25	0.059		%	20
			Back Half Arsenic (As)	2021/11/25	1.0		%	20
			Back Half Barium (Ba)	2021/11/25	0.20		%	20
			Back Half Beryllium (Be)	2021/11/25	2.1		%	20
			Back Half Boron (B)	2021/11/25	1.8		%	20
			Back Half Cadmium (Cd)	2021/11/25	0.29		%	20
			Back Half Chromium (Cr)	2021/11/25	0.36		%	20
			Back Half Cobalt (Co)	2021/11/25	0.13		%	20
			Back Half Copper (Cu)	2021/11/25	0.23		%	20
			Back Half Lead (Pb)	2021/11/25	0.91		%	20
			Back Half Magnesium (Mg)	2021/11/25	1.6		%	20
			Back Half Manganese (Mn)	2021/11/25	1.8		%	20
			Back Half Nickel (Ni)	2021/11/25	0.49		%	20
			Back Half Phosphorus (P)	2021/11/25	0.17		%	20
			Back Half Selenium (Se)	2021/11/25	0.39		%	20
			Back Half Silver (Ag)	2021/11/25	1.8		%	20
			Back Half Strontium (Sr)	2021/11/25	1.5		%	20
			Back Half Thallium (Tl)	2021/11/25	0.88		%	20
			Back Half Titanium (Ti)	2021/11/25	0.74		%	20
			Back Half Vanadium (V)	2021/11/25	0.074		%	20
Back Half Zinc (Zn)	2021/11/25	0.16		%	20			
7715670	N_R	Spiked Blank	Back Half Antimony (Sb)	2021/11/25		106	%	85 - 115
			Back Half Arsenic (As)	2021/11/25		100	%	85 - 115
			Back Half Barium (Ba)	2021/11/25		102	%	85 - 115
			Back Half Beryllium (Be)	2021/11/25		100	%	85 - 115
			Back Half Boron (B)	2021/11/25		105	%	85 - 115
			Back Half Cadmium (Cd)	2021/11/25		100	%	85 - 115
			Back Half Chromium (Cr)	2021/11/25		101	%	85 - 115
			Back Half Cobalt (Co)	2021/11/25		103	%	85 - 115



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Back Half Copper (Cu)	2021/11/25		102	%	85 - 115
			Back Half Lead (Pb)	2021/11/25		104	%	85 - 115
			Back Half Magnesium (Mg)	2021/11/25		105	%	85 - 115
			Back Half Manganese (Mn)	2021/11/25		101	%	85 - 115
			Back Half Nickel (Ni)	2021/11/25		104	%	85 - 115
			Back Half Phosphorus (P)	2021/11/25		103	%	85 - 115
			Back Half Selenium (Se)	2021/11/25		98	%	85 - 115
			Back Half Silver (Ag)	2021/11/25		101	%	85 - 115
			Back Half Strontium (Sr)	2021/11/25		102	%	85 - 115
			Back Half Thallium (Tl)	2021/11/25		105	%	85 - 115
			Back Half Titanium (Ti)	2021/11/25		100	%	85 - 115
			Back Half Vanadium (V)	2021/11/25		104	%	85 - 115
			Back Half Zinc (Zn)	2021/11/25		98	%	85 - 115
7715670	N_R	Spiked Blank DUP	Back Half Antimony (Sb)	2021/11/25		104	%	85 - 115
			Back Half Arsenic (As)	2021/11/25		102	%	85 - 115
			Back Half Barium (Ba)	2021/11/25		103	%	85 - 115
			Back Half Beryllium (Be)	2021/11/25		102	%	85 - 115
			Back Half Boron (B)	2021/11/25		108	%	85 - 115
			Back Half Cadmium (Cd)	2021/11/25		101	%	85 - 115
			Back Half Chromium (Cr)	2021/11/25		102	%	85 - 115
			Back Half Cobalt (Co)	2021/11/25		104	%	85 - 115
			Back Half Copper (Cu)	2021/11/25		104	%	85 - 115
			Back Half Lead (Pb)	2021/11/25		106	%	85 - 115
			Back Half Magnesium (Mg)	2021/11/25		107	%	85 - 115
			Back Half Manganese (Mn)	2021/11/25		103	%	85 - 115
			Back Half Nickel (Ni)	2021/11/25		106	%	85 - 115
			Back Half Phosphorus (P)	2021/11/25		105	%	85 - 115
			Back Half Selenium (Se)	2021/11/25		100	%	85 - 115
			Back Half Silver (Ag)	2021/11/25		102	%	85 - 115
			Back Half Strontium (Sr)	2021/11/25		105	%	85 - 115
			Back Half Thallium (Tl)	2021/11/25		107	%	85 - 115
			Back Half Titanium (Ti)	2021/11/25		104	%	85 - 115
			Back Half Vanadium (V)	2021/11/25		105	%	85 - 115
			Back Half Zinc (Zn)	2021/11/25		100	%	85 - 115
7715670	N_R	RPD	Back Half Antimony (Sb)	2021/11/25	1.5		%	20
			Back Half Arsenic (As)	2021/11/25	2.7		%	20
			Back Half Barium (Ba)	2021/11/25	1.6		%	20
			Back Half Beryllium (Be)	2021/11/25	2.4		%	20
			Back Half Boron (B)	2021/11/25	2.4		%	20
			Back Half Cadmium (Cd)	2021/11/25	1.6		%	20
			Back Half Chromium (Cr)	2021/11/25	1.0		%	20
			Back Half Cobalt (Co)	2021/11/25	1.2		%	20
			Back Half Copper (Cu)	2021/11/25	2.3		%	20
			Back Half Lead (Pb)	2021/11/25	1.9		%	20
			Back Half Magnesium (Mg)	2021/11/25	1.7		%	20
			Back Half Manganese (Mn)	2021/11/25	2.3		%	20
			Back Half Nickel (Ni)	2021/11/25	2.2		%	20
			Back Half Phosphorus (P)	2021/11/25	1.5		%	20
			Back Half Selenium (Se)	2021/11/25	2.4		%	20
			Back Half Silver (Ag)	2021/11/25	1.1		%	20
			Back Half Strontium (Sr)	2021/11/25	2.9		%	20



BUREAU VERITAS

Bureau Veritas Job #: C1X7351

Report Date: 2022/01/11

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LIMITED- RANKIN INLET, NUNAVUT

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits			
7715670	N_R	Method Blank	Back Half Thallium (Tl)	2021/11/25	2.4		%	20			
			Back Half Titanium (Ti)	2021/11/25	3.9		%	20			
			Back Half Vanadium (V)	2021/11/25	1.4		%	20			
			Back Half Zinc (Zn)	2021/11/25	2.3		%	20			
			Back Half Antimony (Sb)	2021/11/25	<0.40		ug				
			Back Half Arsenic (As)	2021/11/25	<0.40		ug				
			Back Half Barium (Ba)	2021/11/25	<0.60		ug				
			Back Half Beryllium (Be)	2021/11/25	<0.090		ug				
			Back Half Boron (B)	2021/11/25	<15		ug				
			Back Half Cadmium (Cd)	2021/11/25	<0.090		ug				
			Back Half Chromium (Cr)	2021/11/25	<1.5		ug				
			Back Half Cobalt (Co)	2021/11/25	<0.090		ug				
			Back Half Copper (Cu)	2021/11/25	<0.75		ug				
			Back Half Lead (Pb)	2021/11/25	<0.30		ug				
			Back Half Magnesium (Mg)	2021/11/25	<15		ug				
			Back Half Manganese (Mn)	2021/11/25	<0.60		ug				
			Back Half Nickel (Ni)	2021/11/25	<0.50		ug				
			Back Half Phosphorus (P)	2021/11/25	<45		ug				
			Back Half Selenium (Se)	2021/11/25	<1.0		ug				
			Back Half Silver (Ag)	2021/11/25	<0.12		ug				
			Back Half Strontium (Sr)	2021/11/25	<0.45		ug				
			Back Half Thallium (Tl)	2021/11/25	<0.12		ug				
			Back Half Titanium (Ti)	2021/11/25	<1.5		ug				
Back Half Vanadium (V)	2021/11/25	<0.30		ug							
Back Half Zinc (Zn)	2021/11/25	<5.0		ug							
7715670	N_R	RPD - Sample/Sample Dup	Back Half Antimony (Sb)	2021/11/25	NC		%	20			
			Back Half Arsenic (As)	2021/11/25	NC		%	20			
			Back Half Barium (Ba)	2021/11/25	6.4		%	20			
			Back Half Beryllium (Be)	2021/11/25	NC		%	20			
			Back Half Boron (B)	2021/11/25	3.0		%	20			
			Back Half Cadmium (Cd)	2021/11/25	0.61		%	20			
			Back Half Chromium (Cr)	2021/11/25	NC		%	20			
			Back Half Cobalt (Co)	2021/11/25	2.4		%	20			
			Back Half Copper (Cu)	2021/11/25	NC		%	20			
			Back Half Lead (Pb)	2021/11/25	2.0		%	20			
			Back Half Magnesium (Mg)	2021/11/25	1.2		%	20			
			Back Half Manganese (Mn)	2021/11/25	1.8		%	20			
			Back Half Nickel (Ni)	2021/11/25	6.2		%	20			
			Back Half Phosphorus (P)	2021/11/25	NC		%	20			
			Back Half Selenium (Se)	2021/11/25	2.3		%	20			
			Back Half Silver (Ag)	2021/11/25	NC		%	20			
			Back Half Strontium (Sr)	2021/11/25	NC		%	20			
			Back Half Thallium (Tl)	2021/11/25	NC		%	20			
			Back Half Titanium (Ti)	2021/11/25	2.0		%	20			
			Back Half Vanadium (V)	2021/11/25	NC		%	20			
			Back Half Zinc (Zn)	2021/11/25	NC		%	20			
			7715677	MPD	Reagent Blank	1B Mercury (Hg)	2021/12/01	<0.015		ug	
			7715677	MPD	Matrix Spike(RGB780)	1B Mercury (Hg)	2021/12/01		95	%	75 - 125
7715677	MPD	Spiked Blank	1B Mercury (Hg)	2021/12/01		94	%	90 - 110			
7715677	MPD	Spiked Blank DUP	1B Mercury (Hg)	2021/12/01		95	%	90 - 110			
7715677	MPD	RPD	1B Mercury (Hg)	2021/12/01	1.3		%	20			



BUREAU
VERITAS

Bureau Veritas Job #: C1X7351

Report Date: 2022/01/11

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LIMITED- RANKIN INLET,
NUNAVUT

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7715677	MPD	Method Blank	1B Mercury (Hg)	2021/12/01	<0.013		ug	
7715677	MPD	RPD - Sample/Sample Dup	1B Mercury (Hg)	2021/12/01	2.7		%	20
7715687	N_R	Matrix Spike(RGB778)	Back Half Tellurium (Te)	2021/11/24		90	%	N/A
7715687	N_R	Matrix Spike DUP(RGB778)	Back Half Tellurium (Te)	2021/11/24		91	%	N/A
7715687	N_R	MS/MSD RPD	Back Half Tellurium (Te)	2021/11/24	1.5		%	0
7715687	N_R	Spiked Blank	Back Half Tellurium (Te)	2021/11/24		100	%	N/A
7715687	N_R	Spiked Blank DUP	Back Half Tellurium (Te)	2021/11/24		94	%	N/A
7715687	N_R	RPD	Back Half Tellurium (Te)	2021/11/24	5.7		%	0
7715687	N_R	Method Blank	Back Half Tellurium (Te)	2021/11/24	<0.50		ug	
7715687	N_R	RPD - Sample/Sample Dup	Back Half Tellurium (Te)	2021/11/24	NC		%	N/A
7715690	N_R	Matrix Spike(RGB778)	Front Half Tellurium (Te)	2021/11/24		92	%	N/A
7715690	N_R	Matrix Spike DUP(RGB778)	Front Half Tellurium (Te)	2021/11/24		92	%	N/A
7715690	N_R	MS/MSD RPD	Front Half Tellurium (Te)	2021/11/24	0.047		%	0
7715690	N_R	Spiked Blank	Front Half Tellurium (Te)	2021/11/24		90	%	N/A
7715690	N_R	Spiked Blank DUP	Front Half Tellurium (Te)	2021/11/24		90	%	N/A
7715690	N_R	RPD	Front Half Tellurium (Te)	2021/11/24	0.21		%	0
7715690	N_R	Method Blank	Front Half Tellurium (Te)	2021/11/24	<2.0		ug	
7715690	N_R	RPD - Sample/Sample Dup	Front Half Tellurium (Te)	2021/11/24	NC		%	N/A
7715693	SUK	Matrix Spike(RGB778)	Front Half Lithium (Li)	2022/01/10		97	%	N/A
7715693	SUK	Spiked Blank	Front Half Lithium (Li)	2022/01/10		99	%	90 - 110
7715693	SUK	Spiked Blank DUP	Front Half Lithium (Li)	2022/01/10		100	%	90 - 110
7715693	SUK	RPD	Front Half Lithium (Li)	2022/01/10	0.40		%	20
7715693	SUK	Method Blank	Front Half Lithium (Li)	2022/01/10	<3.0		ug	
7715693	SUK	RPD - Sample/Sample Dup	Front Half Lithium (Li)	2022/01/10	0.54		%	20
7715695	SUK	Matrix Spike(RGB778)	Back Half Lithium (Li)	2022/01/10		94	%	N/A
7715695	SUK	Spiked Blank	Back Half Lithium (Li)	2022/01/10		104	%	90 - 110
7715695	SUK	Spiked Blank DUP	Back Half Lithium (Li)	2022/01/10		103	%	90 - 110
7715695	SUK	RPD	Back Half Lithium (Li)	2022/01/10	1.2		%	20
7715695	SUK	Method Blank	Back Half Lithium (Li)	2022/01/10	<3.0		ug	
7715695	SUK	RPD - Sample/Sample Dup	Back Half Lithium (Li)	2022/01/10	NC		%	20
7715733	MPD	Reagent Blank	3C Mercury (Hg)	2021/12/20	<0.013		ug	
7715733	MPD	Matrix Spike(RGB780)	3C Mercury (Hg)	2021/12/20		102	%	75 - 125
7715733	MPD	Matrix Spike DUP(RGB780)	3C Mercury (Hg)	2021/12/20		102	%	75 - 125
7715733	MPD	MS/MSD RPD	3C Mercury (Hg)	2021/12/20	0.20		%	20
7715733	MPD	Spiked Blank	3C Mercury (Hg)	2021/12/20		96	%	90 - 110
7715733	MPD	Spiked Blank DUP	3C Mercury (Hg)	2021/12/20		96	%	90 - 110
7715733	MPD	RPD	3C Mercury (Hg)	2021/12/20	0.31		%	20
7715733	MPD	Method Blank	3C Mercury (Hg)	2021/12/20	<0.013		ug	
7715733	MPD	RPD - Sample/Sample Dup	3C Mercury (Hg)	2021/12/20	4.1		%	20
7715742	MPD	Reagent Blank	3B Mercury (Hg)	2021/11/26	<0.013		ug	
7715742	MPD	Matrix Spike(RGB780)	3B Mercury (Hg)	2021/11/26		86	%	75 - 125
7715742	MPD	Matrix Spike DUP(RGB780)	3B Mercury (Hg)	2021/11/26		88	%	75 - 125
7715742	MPD	MS/MSD RPD	3B Mercury (Hg)	2021/11/26	2.0		%	20
7715742	MPD	Spiked Blank	3B Mercury (Hg)	2021/11/26		92	%	90 - 110
7715742	MPD	Spiked Blank DUP	3B Mercury (Hg)	2021/11/26		94	%	90 - 110
7715742	MPD	RPD	3B Mercury (Hg)	2021/11/26	1.9		%	20
7715742	MPD	Method Blank	3B Mercury (Hg)	2021/11/26	<0.013		ug	



BUREAU
VERITAS

Bureau Veritas Job #: C1X7351

Report Date: 2022/01/11

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
INLET, NUNAVUT

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
	7715742	MPD	RPD - Sample/Sample Dup	3B Mercury (Hg)	2021/11/26	NC		%	20
<p>N/A = Not Applicable</p> <p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Reagent Blank: A blank matrix containing all reagents used in the analytical procedure. Used to determine any analytical contamination.</p> <p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).</p>									



Bureau Veritas Job #: C1X7351
Report Date: 2022/01/11

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LIMITED- RANKIN
INLET, NUNAVUT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Frank Mo, B.Sc., Inorganic Lab. Manager

John Bowman, Supervisor, Metals Group

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<u>Component</u>	<u>RDL</u>	<u>Units</u>	<u>Front Half</u>		<u>Blank Spike</u>	<u>Back Half</u>		<u>Blank Spike</u>	
			<u>Blank Spike</u>	<u>Spike Amount</u>	<u>% Recoveries</u>	<u>Blank Spike</u>	<u>Spike Amount</u>	<u>% Recoveries</u>	
Mercury (Hg)		ug				<u>RDL</u>			
						0.025	0.45	0.50	89
Antimony (Sb)	3.0	ug	4.4	16.6	27	0.40	7.75	8.3	93
Arsenic (As)	0.8	"	4.4	16.4	27	0.40	7.40	8.2	90
Barium (Ba)	1.2	"	47.6	47.4	100	0.60	23.8	23.7	100
Beryllium (Be)	0.18	"	16.7	16.6	101	0.090	7.91	8.3	95
Cadmium (Cd)	0.18	"	18.4	18.6	99	0.090	8.83	9.3	95
Chromium (Cr)	3.0	"	18.1	18.6	97	1.5	9.2	9.3	99
Cobalt (Co)	0.18	"	18.9	18.8	101	0.090	9.41	9.4	100
Copper (Cu)	1.8	"	19.4	18.8	103	0.75	9.40	9.4	100
Lead (Pb)	0.60	"	61.4	57.6	107	0.30	30.1	28.8	105
Manganese (Mn)	1.2	"	88.1	79.0	112	0.60	38.4	39.5	97
Nickel (Ni)	1.0	"	58.6	58.2	101	0.50	29.5	29.1	101
Phosphorous (P)	90	"	<90	<90		45	<45	<45	
Selenium (Se)	2.0	"	34.4	37.0	93	1.0	17.6	18.5	95
Silver (Ag)	0.24	"	18.2	18.4	99	0.12	8.94	9.2	97
Thallium (Tl)	0.24	"	16.7	16.4	102	0.12	8.15	8.2	99
Zinc (Zn)	10.0	"	38.0	37.0	103	5.0	32.2	18.5	174

EPA Method 29 - 2021-10-19/20

Agnico Eagle Mines Limited - Baker Lake, Nunavut - Meliadine Site - Incinerator
Project # - 2194

Metals Target List

Component

Mercury (Hg)

Antimony (Sb)

Arsenic (As)

Barium (Ba)

Beryllium (Be)

Boron (B)

Cadmium (Cd)

Chromium (Cr)

Cobalt (Co)

Copper (Cu)

Lead (Pb)

Lithium (Li)

Magnesium (Mg)

Manganese (Mn)

Nickel (Ni)

Phosphorous (P)

Selenium (Se)

Silver (Ag)

Strontium (Sr)

Tellurium (Te)

Thallium (Tl)

Titanium (Ti)

Vanadium (V)

Zinc (Zn)



Your Project #: 2194
 Site#: INCINERATOR STACK - MELLADINE
 Site Location: AGNICO EAGLE MINES LTD - RANKIN
 INLET, NUNAVUT
 Your C.O.C. #: 191025-01

Attention: Bill Wong

Bureau Veritas Laboratories
 Calgary - Air Services
 1 - 2080 39th Ave NE
 Calgary, AB
 CANADA T2E 6P7

Report Date: 2022/01/07
 Report #: R6953560
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X5284

Received: 2021/11/10, 09:07

Sample Matrix: Stack Sampling Train
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
2,3,7,8-TCDF Confirmation (M23)	3	N/A	2021/12/29	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	2	2021/11/20	2022/01/06	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	2	2021/11/20	2021/12/18	BRL SOP-00404	EPA M23/23A m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 2194
Site#: INCINERATOR STACK - MELLADINE
Site Location: AGNICO EAGLE MINES LTD -
RANKIN INLET, NUNAVUT
Your C.O.C. #: 191025-01

Attention: Bill Wong

Bureau Veritas Laboratories
Calgary - Air Services
1 - 2080 39th Ave NE
Calgary, AB
CANADA T2E 6P7

Report Date: 2022/01/07
Report #: R6953560
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X5284
Received: 2021/11/10, 09:07

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marinela Sim, Project Manager
Email: Marinela.Sim@bureauveritas.com
Phone# (905)817-5828

=====

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR369							
Sampling Date		2021/10/23							
COC Number		191025-01				TOXIC EQUIVALENCY		# of	
	UNITS	M23- BLANK	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<3.2	3.2	20	4.0	1.00	3.20	N/A	7736299
1,2,3,7,8-Penta CDD *	pg	10.5	3.0	20	4.0	1.00	10.5	N/A	7736299
1,2,3,4,7,8-Hexa CDD *	pg	7.2	2.8	20	4.0	0.100	0.720	N/A	7736299
1,2,3,6,7,8-Hexa CDD *	pg	12.9	2.7	20	4.0	0.100	1.29	N/A	7736299
1,2,3,7,8,9-Hexa CDD *	pg	14.1	2.7	20	4.0	0.100	1.41	N/A	7736299
1,2,3,4,6,7,8-Hepta CDD *	pg	33.8	2.3	20	6.0	0.0100	0.338	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDD *	pg	38.3	3.1	200	6.0	0.000300	0.0115	N/A	7736299
Total Tetra CDD *	pg	146	3.2	20	N/A	N/A	N/A	8	7736299
Total Penta CDD *	pg	260	3.0	20	N/A	N/A	N/A	10	7736299
Total Hexa CDD *	pg	190	2.7	20	N/A	N/A	N/A	7	7736299
Total Hepta CDD *	pg	88.7	2.3	20	N/A	N/A	N/A	2	7736299
2,3,7,8-Tetra CDF **	pg	334	2.9	20	4.0	0.100	33.4	N/A	7736299
1,2,3,7,8-Penta CDF **	pg	50.2	2.8	20	4.0	0.0300	1.51	N/A	7736299
2,3,4,7,8-Penta CDF **	pg	102	2.8	20	4.0	0.300	30.6	N/A	7736299
1,2,3,4,7,8-Hexa CDF **	pg	58.1	2.8	20	4.0	0.100	5.81	N/A	7736299
1,2,3,6,7,8-Hexa CDF **	pg	50.6	2.6	20	4.0	0.100	5.06	N/A	7736299
2,3,4,6,7,8-Hexa CDF **	pg	63.3	3.0	20	4.0	0.100	6.33	N/A	7736299
1,2,3,7,8,9-Hexa CDF **	pg	<3.4	3.4	20	4.0	0.100	0.340	N/A	7736299
1,2,3,4,6,7,8-Hepta CDF **	pg	66.8	2.2	20	6.0	0.0100	0.668	N/A	7736299
1,2,3,4,7,8,9-Hepta CDF **	pg	6.7	3.0	20	4.0	0.0100	0.0670	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDF **	pg	10.8	2.3	200	10	0.000300	0.00324	N/A	7736299
Total Tetra CDF **	pg	2090	2.9	20	N/A	N/A	N/A	18	7736299
Total Penta CDF **	pg	1290	2.8	20	N/A	N/A	N/A	15	7736299
Total Hexa CDF **	pg	436	2.9	20	N/A	N/A	N/A	11	7736299
Total Hepta CDF **	pg	90.5	2.6	20	N/A	N/A	N/A	4	7736299
Confirmation 2,3,7,8-Tetra CDF **	pg	25.6	1.3	20	N/A	0.100	2.56	N/A	7759469
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	70.4	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR369							
Sampling Date		2021/10/23							
COC Number		191025-01	TOXIC EQUIVALENCY					# of	
	UNITS	M23- BLANK	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	78	N/A	N/A	N/A	N/A	N/A	N/A	7759469
C13-1234678 HeptaCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234678 HeptaCDF **	%	78	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDF **	%	99	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234789 HeptaCDF **	%	113	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDF **	%	73	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDD *	%	71	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDF **	%	66	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123789 HexaCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-23478 PentaCDF **	%	137 (1)	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDD *	%	79	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-Octachlorodibenzo-p-Dioxin	%	107	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C137-2378 TetraCDD *	%	105	N/A	N/A	N/A	N/A	N/A	N/A	7736299

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
 QC Batch = Quality Control Batch
 ** CDF = Chloro Dibenzo-p-Furan
 N/A = Not Applicable
 * CDD = Chloro Dibenzo-p-Dioxin
 (1) Field Spike recovery is outside method acceptance criteria. However, the bias high of this parameter does not affect the native results since the internal standard is within method acceptance criteria. Data reported.



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR370							
Sampling Date		2021/10/22							
COC Number		191025-01				TOXIC EQUIVALENCY		# of	
	UNITS	M23- TEST 2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<3.9	3.9	40	2.0	1.00	3.90	N/A	7736299
1,2,3,7,8-Penta CDD *	pg	<3.9	3.9	40	2.0	1.00	3.90	N/A	7736299
1,2,3,4,7,8-Hexa CDD *	pg	7.6	4.2	40	2.0	0.100	0.760	N/A	7736299
1,2,3,6,7,8-Hexa CDD *	pg	15.8	3.7	40	2.0	0.100	1.58	N/A	7736299
1,2,3,7,8,9-Hexa CDD *	pg	20.5	3.6	40	2.0	0.100	2.05	N/A	7736299
1,2,3,4,6,7,8-Hepta CDD *	pg	128	3.9	40	3.0	0.0100	1.28	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDD *	pg	203	5.1	400	3.0	0.000300	0.0609	N/A	7736299
Total Tetra CDD *	pg	102	3.9	40	N/A	N/A	N/A	5	7736299
Total Penta CDD *	pg	118	3.8	40	N/A	N/A	N/A	6	7736299
Total Hexa CDD *	pg	359	3.8	40	N/A	N/A	N/A	7	7736299
Total Hepta CDD *	pg	440	3.9	40	N/A	N/A	N/A	2	7736299
2,3,7,8-Tetra CDF **	pg	<110 (1)	110	40	2.0	0.100	11.0	N/A	7736299
1,2,3,7,8-Penta CDF **	pg	<10 (2)	10	40	2.0	0.0300	0.300	N/A	7736299
2,3,4,7,8-Penta CDF **	pg	35.3	4.0	40	2.0	0.300	10.6	N/A	7736299
1,2,3,4,7,8-Hexa CDF **	pg	<57 (2)	57	40	2.0	0.100	5.70	N/A	7736299
1,2,3,6,7,8-Hexa CDF **	pg	23.6	3.5	40	2.0	0.100	2.36	N/A	7736299
2,3,4,6,7,8-Hexa CDF **	pg	40.5	4.0	40	2.0	0.100	4.05	N/A	7736299
1,2,3,7,8,9-Hexa CDF **	pg	<4.1	4.1	40	2.0	0.100	0.410	N/A	7736299
1,2,3,4,6,7,8-Hepta CDF **	pg	118	3.5	40	3.0	0.0100	1.18	N/A	7736299
1,2,3,4,7,8,9-Hepta CDF **	pg	20.4	4.3	40	2.0	0.0100	0.204	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDF **	pg	45.0	4.7	400	5.0	0.000300	0.0135	N/A	7736299
Total Tetra CDF **	pg	585	3.9	40	N/A	N/A	N/A	16	7736299
Total Penta CDF **	pg	379	3.9	40	N/A	N/A	N/A	12	7736299

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(2) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR370							
Sampling Date		2021/10/22							
COC Number		191025-01	TOXIC EQUIVALENCY				# of		
	UNITS	M23- TEST 2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hexa CDF **	pg	229	3.9	40	N/A	N/A	N/A	11	7736299
Total Hepta CDF **	pg	193	3.8	40	N/A	N/A	N/A	4	7736299
Confirmation 2,3,7,8-Tetra CDF **	pg	8.96	0.97	20	N/A	0.100	0.896	N/A	7759469
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	39.2	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	7759469
C13-1234678 HeptaCDD *	%	70	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234678 HeptaCDF **	%	57	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDD *	%	119	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDF **	%	113	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234789 HeptaCDF **	%	104	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDD *	%	83	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDF **	%	67	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDD *	%	121	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDF **	%	94	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123789 HexaCDF **	%	127	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-23478 PentaCDF **	%	119	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-Octachlorodibenzo-p-Dioxin	%	77	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C137-2378 TetraCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	7736299
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch ** CDF = Chloro Dibenzo-p-Furan N/A = Not Applicable * CDD = Chloro Dibenzo-p-Dioxin									



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR371							
Sampling Date		2021/10/22							
COC Number		191025-01				TOXIC EQUIVALENCY		# of	
	UNITS	M23- TEST 3	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	20.2 (1)	4.2	40	2.0	1.00	20.2	N/A	7736299
1,2,3,7,8-Penta CDD *	pg	64.4	3.6	40	2.0	1.00	64.4	N/A	7736299
1,2,3,4,7,8-Hexa CDD *	pg	49.3	3.9	40	2.0	0.100	4.93	N/A	7736299
1,2,3,6,7,8-Hexa CDD *	pg	100	3.4	40	2.0	0.100	10.0	N/A	7736299
1,2,3,7,8,9-Hexa CDD *	pg	140	3.3	40	2.0	0.100	14.0	N/A	7736299
1,2,3,4,6,7,8-Hepta CDD *	pg	344	3.7	40	3.0	0.0100	3.44	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDD *	pg	309	5.6	400	3.0	0.000300	0.0927	N/A	7736299
Total Tetra CDD *	pg	667	4.2	40	N/A	N/A	N/A	15	7736299
Total Penta CDD *	pg	1110	3.6	40	N/A	N/A	N/A	12	7736299
Total Hexa CDD *	pg	1500	3.6	40	N/A	N/A	N/A	7	7736299
Total Hepta CDD *	pg	822	3.7	40	N/A	N/A	N/A	2	7736299
2,3,7,8-Tetra CDF **	pg	<1500 (2)	1500	40	2.0	0.100	150	N/A	7736299
1,2,3,7,8-Penta CDF **	pg	260	4.1	40	2.0	0.0300	7.80	N/A	7736299
2,3,4,7,8-Penta CDF **	pg	644	4.2	40	2.0	0.300	193	N/A	7736299
1,2,3,4,7,8-Hexa CDF **	pg	1000	4.0	40	2.0	0.100	100	N/A	7736299
1,2,3,6,7,8-Hexa CDF **	pg	398	3.4	40	2.0	0.100	39.8	N/A	7736299
2,3,4,6,7,8-Hexa CDF **	pg	630	3.9	40	2.0	0.100	63.0	N/A	7736299
1,2,3,7,8,9-Hexa CDF **	pg	30.2	4.0	40	2.0	0.100	3.02	N/A	7736299
1,2,3,4,6,7,8-Hepta CDF **	pg	958	3.3	40	3.0	0.0100	9.58	N/A	7736299
1,2,3,4,7,8,9-Hepta CDF **	pg	101	4.0	40	2.0	0.0100	1.01	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDF **	pg	116	4.8	400	5.0	0.000300	0.0348	N/A	7736299
Total Tetra CDF **	pg	7620	3.8	40	N/A	N/A	N/A	18	7736299
Total Penta CDF **	pg	6120	4.2	40	N/A	N/A	N/A	15	7736299
Total Hexa CDF **	pg	4050	3.8	40	N/A	N/A	N/A	13	7736299

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
 QC Batch = Quality Control Batch
 * CDD = Chloro Dibenzo-p-Dioxin
 N/A = Not Applicable
 ** CDF = Chloro Dibenzo-p-Furan
 (1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
 (2) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR371							
Sampling Date		2021/10/22							
COC Number		191025-01				TOXIC EQUIVALENCY		# of	
	UNITS	M23- TEST 3	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	1390	3.6	40	N/A	N/A	N/A	4	7736299
Confirmation 2,3,7,8-Tetra CDF **	pg	241	3.8	20	N/A	0.100	24.1	N/A	7760579
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	558	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	7760579
C13-1234678 HeptaCDD *	%	69	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234678 HeptaCDF **	%	58	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDD *	%	129	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDF **	%	109	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234789 HeptaCDF **	%	97	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDD *	%	80	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDD *	%	115	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDF **	%	88	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123789 HexaCDF **	%	123	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-23478 PentaCDF **	%	114	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDD *	%	80	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDF **	%	66	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-Octachlorodibenzo-p-Dioxin	%	72	N/A	N/A	N/A	N/A	N/A	N/A	7736299
Cl37-2378 TetraCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	7736299
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch ** CDF = Chloro Dibenzo-p-Furan N/A = Not Applicable * CDD = Chloro Dibenzo-p-Dioxin									



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR372							
Sampling Date		2021/10/23							
COC Number		191025-01				TOXIC EQUIVALENCY		# of	
	UNITS	M23- TEST 4	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<2.7	2.7	20	4.0	1.00	2.70	N/A	7736299
1,2,3,7,8-Penta CDD *	pg	<3.1	3.1	20	4.0	1.00	3.10	N/A	7736299
1,2,3,4,7,8-Hexa CDD *	pg	3.3	2.9	20	4.0	0.100	0.330	N/A	7736299
1,2,3,6,7,8-Hexa CDD *	pg	5.5	2.7	20	4.0	0.100	0.550	N/A	7736299
1,2,3,7,8,9-Hexa CDD *	pg	5.9	2.8	20	4.0	0.100	0.590	N/A	7736299
1,2,3,4,6,7,8-Hepta CDD *	pg	31.4	2.4	20	6.0	0.0100	0.314	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDD *	pg	78.7	2.9	200	6.0	0.000300	0.0236	N/A	7736299
Total Tetra CDD *	pg	4.4	2.7	20	N/A	N/A	N/A	1	7736299
Total Penta CDD *	pg	19.3	3.1	20	N/A	N/A	N/A	2	7736299
Total Hexa CDD *	pg	86.5	2.8	20	N/A	N/A	N/A	7	7736299
Total Hepta CDD *	pg	75.7	2.4	20	N/A	N/A	N/A	2	7736299
2,3,7,8-Tetra CDF **	pg	16.6	2.9	20	4.0	0.100	1.66	N/A	7736299
1,2,3,7,8-Penta CDF **	pg	<3.1	3.1	20	4.0	0.0300	0.0930	N/A	7736299
2,3,4,7,8-Penta CDF **	pg	15.0	3.1	20	4.0	0.300	4.50	N/A	7736299
1,2,3,4,7,8-Hexa CDF **	pg	35.4 (1)	2.6	20	4.0	0.100	3.54	N/A	7736299
1,2,3,6,7,8-Hexa CDF **	pg	17.6	2.5	20	4.0	0.100	1.76	N/A	7736299
2,3,4,6,7,8-Hexa CDF **	pg	26.6	2.8	20	4.0	0.100	2.66	N/A	7736299
1,2,3,7,8,9-Hexa CDF **	pg	<3.3	3.3	20	4.0	0.100	0.330	N/A	7736299
1,2,3,4,6,7,8-Hepta CDF **	pg	49.0	2.7	20	6.0	0.0100	0.490	N/A	7736299
1,2,3,4,7,8,9-Hepta CDF **	pg	5.7	3.7	20	4.0	0.0100	0.0570	N/A	7736299
1,2,3,4,6,7,8,9-Octa CDF **	pg	15.2	2.4	200	10	0.000300	0.00456	N/A	7736299
Total Tetra CDF **	pg	33.6	2.9	20	N/A	N/A	N/A	3	7736299
Total Penta CDF **	pg	83.7	3.1	20	N/A	N/A	N/A	6	7736299
Total Hexa CDF **	pg	136	2.8	20	N/A	N/A	N/A	6	7736299
Total Hepta CDF **	pg	66.7	3.1	20	N/A	N/A	N/A	4	7736299
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	22.7	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenz-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenz-p-Furan
(1) EMPC / Merged Peak



EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Bureau Veritas ID		RFR372							
Sampling Date		2021/10/23							
COC Number		191025-01	TOXIC EQUIVALENCY				# of		
	UNITS	M23- TEST 4	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	104	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234678 HeptaCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDD *	%	94	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123478 HexaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-1234789 HeptaCDF **	%	116	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123678 HexaCDF **	%	69	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDD *	%	66	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-12378 PentaCDF **	%	62	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-123789 HexaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-23478 PentaCDF **	%	140 (1)	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDD *	%	75	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-2378 TetraCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C13-Octachlorodibenzo-p-Dioxin	%	97	N/A	N/A	N/A	N/A	N/A	N/A	7736299
C137-2378 TetraCDD *	%	108	N/A	N/A	N/A	N/A	N/A	N/A	7736299
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin N/A = Not Applicable ** CDF = Chloro Dibenzo-p-Furan (1) Field Spike recovery is outside method acceptance criteria. However, the bias high of this parameter does not affect the native results since the internal standard is within method acceptance criteria. Data reported.									



TEST SUMMARY

Bureau Veritas ID: RFR369
Sample ID: M23- BLANK
Matrix: Stack Sampling Train

Collected: 2021/10/23
Shipped:
Received: 2021/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	7759469	N/A	2021/12/29	Branko Vrzic
Dioxins/Furans in Air (Method 23)	HRMS/MS	7736299	2021/11/20	2021/12/18	Angel Guerrero

Bureau Veritas ID: RFR370
Sample ID: M23- TEST 2
Matrix: Stack Sampling Train

Collected: 2021/10/22
Shipped:
Received: 2021/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	7759469	N/A	2021/12/29	Branko Vrzic
Dioxins/Furans in Air (Method 23)	HRMS/MS	7736299	2021/11/20	2022/01/06	Angel Guerrero

Bureau Veritas ID: RFR371
Sample ID: M23- TEST 3
Matrix: Stack Sampling Train

Collected: 2021/10/22
Shipped:
Received: 2021/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	7760579	N/A	2021/12/29	Branko Vrzic
Dioxins/Furans in Air (Method 23)	HRMS/MS	7736299	2021/11/20	2022/01/06	Angel Guerrero

Bureau Veritas ID: RFR372
Sample ID: M23- TEST 4
Matrix: Stack Sampling Train

Collected: 2021/10/23
Shipped:
Received: 2021/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	7736299	2021/11/20	2021/12/18	Angel Guerrero



**BUREAU
VERITAS**

Bureau Veritas Job #: C1X5284

Report Date: 2022/01/07

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LTD - RANKIN
INLET, NUNAVUT

GENERAL COMMENTS

Client confirmed their possible switch in labelling of sample RFR369 and RFR372.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits	
7736299	AGU	Spiked Blank	C13-1234678 HeptaCDD	2021/12/16	93	%	25 - 130			
			C13-1234678 HeptaCDF	2021/12/16	87	%	25 - 130			
			C13-123678 HexaCDD	2021/12/16	92	%	40 - 130			
			C13-123678 HexaCDF	2021/12/16	77	%	40 - 130			
			C13-12378 PentaCDD	2021/12/16	94	%	40 - 130			
			C13-12378 PentaCDF	2021/12/16	77	%	40 - 130			
			C13-123789 HexaCDF	2021/12/16	88	%	40 - 130			
			C13-2378 TetraCDD	2021/12/16	81	%	40 - 130			
			C13-2378 TetraCDF	2021/12/16	81	%	40 - 130			
			C13-Octachlorodibenzo-p-Dioxin	2021/12/16	106	%	25 - 130			
			2,3,7,8-Tetra CDD	2021/12/16	95	%	80 - 140			
			1,2,3,7,8-Penta CDD	2021/12/16	94	%	80 - 140			
			1,2,3,4,7,8-Hexa CDD	2021/12/16	98	%	80 - 140			
			1,2,3,6,7,8-Hexa CDD	2021/12/16	109	%	80 - 140			
			1,2,3,7,8,9-Hexa CDD	2021/12/16	110	%	80 - 140			
			1,2,3,4,6,7,8-Hepta CDD	2021/12/16	108	%	80 - 140			
			1,2,3,4,6,7,8,9-Octa CDD	2021/12/16	98	%	80 - 140			
			2,3,7,8-Tetra CDF	2021/12/16	111	%	80 - 140			
			1,2,3,7,8-Penta CDF	2021/12/16	110	%	80 - 140			
			2,3,4,7,8-Penta CDF	2021/12/16	127	%	80 - 140			
			1,2,3,4,7,8-Hexa CDF	2021/12/16	111	%	80 - 140			
			1,2,3,6,7,8-Hexa CDF	2021/12/16	118	%	80 - 140			
			2,3,4,6,7,8-Hexa CDF	2021/12/16	137	%	80 - 140			
			1,2,3,7,8,9-Hexa CDF	2021/12/16	136	%	80 - 140			
			1,2,3,4,6,7,8-Hepta CDF	2021/12/16	110	%	80 - 140			
			1,2,3,4,7,8,9-Hepta CDF	2021/12/16	128	%	80 - 140			
			1,2,3,4,6,7,8,9-Octa CDF	2021/12/16	88	%	80 - 140			
			7736299	AGU	Spiked Blank DUP	C13-1234678 HeptaCDD	2021/12/16	110	%	25 - 130
						C13-1234678 HeptaCDF	2021/12/16	89	%	25 - 130
						C13-123678 HexaCDD	2021/12/16	98	%	40 - 130
C13-123678 HexaCDF	2021/12/16	79				%	40 - 130			
C13-12378 PentaCDD	2021/12/16	98				%	40 - 130			
C13-12378 PentaCDF	2021/12/16	82				%	40 - 130			
C13-123789 HexaCDF	2021/12/16	83				%	40 - 130			
C13-2378 TetraCDD	2021/12/16	96				%	40 - 130			
C13-2378 TetraCDF	2021/12/16	88				%	40 - 130			
C13-Octachlorodibenzo-p-Dioxin	2021/12/16	105				%	25 - 130			
2,3,7,8-Tetra CDD	2021/12/16	97				%	80 - 140			
1,2,3,7,8-Penta CDD	2021/12/16	102				%	80 - 140			
1,2,3,4,7,8-Hexa CDD	2021/12/16	100				%	80 - 140			
1,2,3,6,7,8-Hexa CDD	2021/12/16	109				%	80 - 140			
1,2,3,7,8,9-Hexa CDD	2021/12/16	109				%	80 - 140			
1,2,3,4,6,7,8-Hepta CDD	2021/12/16	101				%	80 - 140			
1,2,3,4,6,7,8,9-Octa CDD	2021/12/16	104				%	80 - 140			
2,3,7,8-Tetra CDF	2021/12/16	118				%	80 - 140			
1,2,3,7,8-Penta CDF	2021/12/16	114				%	80 - 140			
2,3,4,7,8-Penta CDF	2021/12/16	133				%	80 - 140			
1,2,3,4,7,8-Hexa CDF	2021/12/16	112	%	80 - 140						
1,2,3,6,7,8-Hexa CDF	2021/12/16	115	%	80 - 140						
2,3,4,6,7,8-Hexa CDF	2021/12/16	138	%	80 - 140						
1,2,3,7,8,9-Hexa CDF	2021/12/16	138	%	80 - 140						



BUREAU
VERITAS

Bureau Veritas Job #: C1X5284

Report Date: 2022/01/07

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LTD - RANKIN INLET,
NUNAVUT

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7736299	AGU	RPD	1,2,3,4,6,7,8-Hepta CDF	2021/12/16		116	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2021/12/16		124	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2021/12/16		100	%	80 - 140
			2,3,7,8-Tetra CDD	2021/12/16	2.1	%	20	
			1,2,3,7,8-Penta CDD	2021/12/16	8.2	%	20	
			1,2,3,4,7,8-Hexa CDD	2021/12/16	2.0	%	20	
			1,2,3,6,7,8-Hexa CDD	2021/12/16	0	%	20	
			1,2,3,7,8,9-Hexa CDD	2021/12/16	0.91	%	20	
			1,2,3,4,6,7,8-Hepta CDD	2021/12/16	6.7	%	20	
			1,2,3,4,6,7,8,9-Octa CDD	2021/12/16	0	%	20	
			2,3,7,8-Tetra CDF	2021/12/16	6.1	%	20	
			1,2,3,7,8-Penta CDF	2021/12/16	3.6	%	20	
			2,3,4,7,8-Penta CDF	2021/12/16	4.6	%	20	
			1,2,3,4,7,8-Hexa CDF	2021/12/16	0.90	%	20	
			1,2,3,6,7,8-Hexa CDF	2021/12/16	2.6	%	20	
			2,3,4,6,7,8-Hexa CDF	2021/12/16	0.73	%	20	
			1,2,3,7,8,9-Hexa CDF	2021/12/16	1.5	%	20	
1,2,3,4,6,7,8-Hepta CDF	2021/12/16	5.3	%	20				
1,2,3,4,7,8,9-Hepta CDF	2021/12/16	3.2	%	20				
1,2,3,4,6,7,8,9-Octa CDF	2021/12/16	0	%	20				
7736299	AGU	Method Blank	C13-1234678 HeptaCDD	2021/12/16		122	%	25 - 130
			C13-1234678 HeptaCDF	2021/12/16		95	%	25 - 130
			C13-123678 HexaCDD	2021/12/16		103	%	40 - 130
			C13-123678 HexaCDF	2021/12/16		81	%	40 - 130
			C13-12378 PentaCDD	2021/12/16		95	%	40 - 130
			C13-12378 PentaCDF	2021/12/16		76	%	40 - 130
			C13-123789 HexaCDF	2021/12/16		90	%	40 - 130
			C13-2378 TetraCDD	2021/12/16		88	%	40 - 130
			C13-2378 TetraCDF	2021/12/16		84	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2021/12/16		117	%	25 - 130
			2,3,7,8-Tetra CDD	2021/12/16	<2.1, EDL=2.1	pg		
			1,2,3,7,8-Penta CDD	2021/12/16	<1.4, EDL=1.4	pg		
			1,2,3,4,7,8-Hexa CDD	2021/12/16	<2.2, EDL=2.2	pg		
			1,2,3,6,7,8-Hexa CDD	2021/12/16	<2.1, EDL=2.1	pg		
			1,2,3,7,8,9-Hexa CDD	2021/12/16	<2.1, EDL=2.1	pg		
			1,2,3,4,6,7,8-Hepta CDD	2021/12/16	<2.2, EDL=2.2	pg		
			1,2,3,4,6,7,8,9-Octa CDD	2021/12/16	<2.3, EDL=2.3	pg		
			Total Tetra CDD	2021/12/16	<2.1, EDL=2.1	pg		
			Total Penta CDD	2021/12/16	<1.4, EDL=1.4	pg		
			Total Hexa CDD	2021/12/16	<2.1, EDL=2.1	pg		
Total Hepta CDD	2021/12/16	<2.2, EDL=2.2	pg					



BUREAU VERITAS

Bureau Veritas Job #: C1X5284

Report Date: 2022/01/07

Bureau Veritas Laboratories

Client Project #: 2194

Site Location: AGNICO EAGLE MINES LTD - RANKIN INLET, NUNAVUT

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,3,7,8-Tetra CDF	2021/12/16	<1.2, EDL=1.2		pg	
			1,2,3,7,8-Penta CDF	2021/12/16	<2.5, EDL=2.5		pg	
			2,3,4,7,8-Penta CDF	2021/12/16	<2.5, EDL=2.5		pg	
			1,2,3,4,7,8-Hexa CDF	2021/12/16	<1.7, EDL=1.7		pg	
			1,2,3,6,7,8-Hexa CDF	2021/12/16	<1.6, EDL=1.6		pg	
			2,3,4,6,7,8-Hexa CDF	2021/12/16	<1.8, EDL=1.8		pg	
			1,2,3,7,8,9-Hexa CDF	2021/12/16	<2.1, EDL=2.1		pg	
			1,2,3,4,6,7,8-Hepta CDF	2021/12/16	<1.4, EDL=1.4		pg	
			1,2,3,4,7,8,9-Hepta CDF	2021/12/16	<1.9, EDL=1.9		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2021/12/16	<2.0, EDL=2.0		pg	
			Total Tetra CDF	2021/12/16	<1.2, EDL=1.2		pg	
			Total Penta CDF	2021/12/16	<2.5, EDL=2.5		pg	
			Total Hexa CDF	2021/12/16	<1.8, EDL=1.8		pg	
			Total Hepta CDF	2021/12/16	<1.6, EDL=1.6		pg	
7759469	BY	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2021/12/29	<1.3, EDL=1.3		pg	
			Confirmation C13-2378 TetraCDF	2021/12/29		74	%	40 - 135
7760579	BY	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2021/12/29	<1.1, EDL=1.1		pg	
			Confirmation C13-2378 TetraCDF	2021/12/29		75	%	40 - 135

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Bureau Veritas Job #: C1X5284
Report Date: 2022/01/07

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LTD - RANKIN
INLET, NUNAVUT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cathy Xu, Scientific Specialist, Ultra Trace Analysis, HRMS

Melissa DiGrazia, Operations Manager, HRMS Department

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Your Project #: 2194

Site Location: AGNICO EAGLE MINES LTD. MELIADINE SITE-
RANKIN INLET, NUNAVUT

Attention: Bill Wong

Bureau Veritas Laboratories
Calgary - Air Services
1 - 2080 39th Ave NE
Calgary, AB
CANADA T2E 6P7

Report Date: 2021/10/13

Report #: R6850770

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1R0355

Received: 2021/09/20, 12:25

Sample Matrix: Stack Sampling Train
Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Dioxins/Furans in Air (Method 23)	1	2021/10/06	2021/10/07	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	1	2021/09/29	2021/10/01	BRL SOP-00404	EPA M23/23A m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 2194
Site Location: AGNICO EAGLE MINES LTD. MELIADINE SITE-
RANKIN INLET, NUNAVUT

Attention: Bill Wong

Bureau Veritas Laboratories
Calgary - Air Services
1 - 2080 39th Ave NE
Calgary, AB
CANADA T2E 6P7

Report Date: 2021/10/13
Report #: R6850770
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1R0355
Received: 2021/09/20, 12:25

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marinela Sim, Project Manager
Email: Marinela.Sim@bureauveritas.com
Phone# (905)817-5828

=====
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DIOXINS AND FURANS BY HRMS (STACK SAMPLING TRAIN)

BV Labs ID		QRS750							
Sampling Date		2021/09/20 12:27				TOXIC EQUIVALENCY		# of	
	UNITS	XAD GLASS PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<0.77	0.77	10	2.0	1.00	0.770	N/A	7607863
1,2,3,7,8-Penta CDD *	pg	<0.54	0.54	10	2.0	1.00	0.540	N/A	7607863
1,2,3,4,7,8-Hexa CDD *	pg	<0.83	0.83	10	2.0	0.100	0.0830	N/A	7607863
1,2,3,6,7,8-Hexa CDD *	pg	<0.74	0.74	10	2.0	0.100	0.0740	N/A	7607863
1,2,3,7,8,9-Hexa CDD *	pg	<0.70	0.70	10	2.0	0.100	0.0700	N/A	7607863
1,2,3,4,6,7,8-Hepta CDD *	pg	<0.90	0.90	10	3.0	0.0100	0.00900	N/A	7607863
1,2,3,4,6,7,8,9-Octa CDD *	pg	1.19	0.77	100	3.0	0.000300	0.000357	N/A	7607863
Total Tetra CDD *	pg	<0.77	0.77	10	N/A	N/A	N/A	0	7607863
Total Penta CDD *	pg	<0.54	0.54	10	N/A	N/A	N/A	0	7607863
Total Hexa CDD *	pg	<0.75	0.75	10	N/A	N/A	N/A	0	7607863
Total Hepta CDD *	pg	<0.90	0.90	10	N/A	N/A	N/A	0	7607863
2,3,7,8-Tetra CDF **	pg	<0.48	0.48	10	2.0	0.100	0.0480	N/A	7607863
1,2,3,7,8-Penta CDF **	pg	<0.75	0.75	10	2.0	0.0300	0.0225	N/A	7607863
2,3,4,7,8-Penta CDF **	pg	<0.78	0.78	10	2.0	0.300	0.234	N/A	7607863
1,2,3,4,7,8-Hexa CDF **	pg	<0.48	0.48	10	2.0	0.100	0.0480	N/A	7607863
1,2,3,6,7,8-Hexa CDF **	pg	<0.43	0.43	10	2.0	0.100	0.0430	N/A	7607863
2,3,4,6,7,8-Hexa CDF **	pg	<0.47	0.47	10	2.0	0.100	0.0470	N/A	7607863
1,2,3,7,8,9-Hexa CDF **	pg	<0.48	0.48	10	2.0	0.100	0.0480	N/A	7607863
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.46	0.46	10	3.0	0.0100	0.00460	N/A	7607863
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.52	0.52	10	2.0	0.0100	0.00520	N/A	7607863
1,2,3,4,6,7,8,9-Octa CDF **	pg	<0.65	0.65	100	5.0	0.000300	0.000195	N/A	7607863
Total Tetra CDF **	pg	<0.48	0.48	10	N/A	N/A	N/A	0	7607863
Total Penta CDF **	pg	<0.77	0.77	10	N/A	N/A	N/A	0	7607863
Total Hexa CDF **	pg	<0.47	0.47	10	N/A	N/A	N/A	0	7607863
Total Hepta CDF **	pg	<0.48	0.48	10	N/A	N/A	N/A	0	7607863
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	2.05	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like
Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan



DIOXINS AND FURANS BY HRMS (STACK SAMPLING TRAIN)

BV Labs ID		QRS750							
Sampling Date		2021/09/20 12:27				TOXIC EQUIVALENCY		# of	
	UNITS	XAD GLASS PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-1234678 HeptaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-123678 HexaCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-123678 HexaCDF **	%	88	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-12378 PentaCDD *	%	138 (1)	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-12378 PentaCDF **	%	103	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-123789 HexaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-2378 TetraCDD *	%	85	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-2378 TetraCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	7607863
C13-Octachlorodibenzo-p-Dioxin	%	113	N/A	N/A	N/A	N/A	N/A	N/A	7607863

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like
 Compounds
 QC Batch = Quality Control Batch
 * CDD = Chloro Dibenzo-p-Dioxin
 N/A = Not Applicable
 ** CDF = Chloro Dibenzo-p-Furan
 (1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



DIOXINS AND FURANS BY HRMS (STACK SAMPLING TRAIN)

BV Labs ID		QRS751						
Sampling Date		2021/09/20 12:27			TOXIC EQUIVALENCY		# of	
	UNITS	XAD RESIN PROOF	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	0	10	2.0	1.00	0	N/A	7621624
1,2,3,7,8-Penta CDD *	pg	0	10	2.0	1.00	0	N/A	7621624
1,2,3,4,7,8-Hexa CDD *	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,6,7,8-Hexa CDD *	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,7,8,9-Hexa CDD *	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,4,6,7,8-Hepta CDD *	pg	0	10	3.0	0.0100	0	N/A	7621624
1,2,3,4,6,7,8,9-Octa CDD *	pg	0	100	3.0	0.000300	0	N/A	7621624
Total Tetra CDD *	pg	0	10	N/A	N/A	N/A	N/A	7621624
Total Penta CDD *	pg	0	10	N/A	N/A	N/A	N/A	7621624
Total Hexa CDD *	pg	0	10	N/A	N/A	N/A	N/A	7621624
Total Hepta CDD *	pg	0	10	N/A	N/A	N/A	N/A	7621624
2,3,7,8-Tetra CDF **	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,7,8-Penta CDF **	pg	0	10	2.0	0.0300	0	N/A	7621624
2,3,4,7,8-Penta CDF **	pg	0	10	2.0	0.300	0	N/A	7621624
1,2,3,4,7,8-Hexa CDF **	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,6,7,8-Hexa CDF **	pg	0	10	2.0	0.100	0	N/A	7621624
2,3,4,6,7,8-Hexa CDF **	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,7,8,9-Hexa CDF **	pg	0	10	2.0	0.100	0	N/A	7621624
1,2,3,4,6,7,8-Hepta CDF **	pg	0	10	3.0	0.0100	0	N/A	7621624
1,2,3,4,7,8,9-Hepta CDF **	pg	0	10	2.0	0.0100	0	N/A	7621624
1,2,3,4,6,7,8,9-Octa CDF **	pg	0	100	5.0	0.000300	0	N/A	7621624
Total Tetra CDF **	pg	0	10	N/A	N/A	N/A	N/A	7621624
Total Penta CDF **	pg	0	10	N/A	N/A	N/A	N/A	7621624
Total Hexa CDF **	pg	0	10	N/A	N/A	N/A	N/A	7621624
Total Hepta CDF **	pg	0	10	N/A	N/A	N/A	N/A	7621624
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	0	N/A	N/A
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	107	N/A	N/A	N/A	N/A	N/A	7621624
RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin N/A = Not Applicable ** CDF = Chloro Dibenzo-p-Furan								



DIOXINS AND FURANS BY HRMS (STACK SAMPLING TRAIN)

BV Labs ID		QRS751						
Sampling Date		2021/09/20 12:27	TOXIC EQUIVALENCY				# of	
	UNITS	XAD RESIN PROOF	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
C13-1234678 HeptaCDF **	%	114	N/A	N/A	N/A	N/A	N/A	7621624
C13-123678 HexaCDD *	%	98	N/A	N/A	N/A	N/A	N/A	7621624
C13-123678 HexaCDF **	%	100	N/A	N/A	N/A	N/A	N/A	7621624
C13-12378 PentaCDD *	%	101	N/A	N/A	N/A	N/A	N/A	7621624
C13-12378 PentaCDF **	%	96	N/A	N/A	N/A	N/A	N/A	7621624
C13-123789 HexaCDF **	%	104	N/A	N/A	N/A	N/A	N/A	7621624
C13-2378 TetraCDD *	%	86	N/A	N/A	N/A	N/A	N/A	7621624
C13-2378 TetraCDF **	%	90	N/A	N/A	N/A	N/A	N/A	7621624
C13-Octachlorodibenzo-p-Dioxin	%	100	N/A	N/A	N/A	N/A	N/A	7621624

RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
 QC Batch = Quality Control Batch
 ** CDF = Chloro Dibenzo-p-Furan
 N/A = Not Applicable
 * CDD = Chloro Dibenzo-p-Dioxin



BV Labs Job #: C1R0355
 Report Date: 2021/10/13

Bureau Veritas Laboratories
 Client Project #: 2194
 Site Location: AGNICO EAGLE MINES LTD. MELIADINE SITE-
 RANKIN INLET, NUNAVUT

TEST SUMMARY

BV Labs ID: QRS750
Sample ID: XAD GLASS PROOF
Matrix: Stack Sampling Train

Collected: 2021/09/20
Shipped:
Received: 2021/09/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	7607863	2021/09/29	2021/10/01	Cathy Xu

BV Labs ID: QRS751
Sample ID: XAD RESIN PROOF
Matrix: Stack Sampling Train

Collected: 2021/09/20
Shipped:
Received: 2021/09/20

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	7621624	2021/10/06	2021/10/07	Angel Guerrero



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BV Labs Job #: C1R0355
Report Date: 2021/10/13

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LTD. MELIADINE SITE-
RANKIN INLET, NUNAVUT

GENERAL COMMENTS

Results relate only to the items tested.



BV Labs Job #: C1R0355
Report Date: 2021/10/13

Bureau Veritas Laboratories
Client Project #: 2194
Site Location: AGNICO EAGLE MINES LTD. MELIADINE SITE-
RANKIN INLET, NUNAVUT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Angel Guerrero, Supervisor, Ultra Trace Analysis, HRMS

Cathy Xu, Scientific Specialist, Ultra Trace Analysis, HRMS

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Your Project #: 20201027
 Site#: CALGARY
 Site Location: EMISSION SERVICES GROUP MM5 PROOFING
 Your C.O.C. #: 191029-01

Attention: Bill Wong

Bureau Veritas Laboratories
 Calgary - Air Services
 1 - 2080 39th Ave NE
 Calgary, AB
 CANADA T2E 6P7

Report Date: 2020/12/07
 Report #: R6439590
 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0T1755

Received: 2020/11/02, 08:00

Sample Matrix: Stack Sampling Train
 # Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Chlorobenzenes in MM5 Trains (EPA M0010)	3	2020/11/22	2020/11/26	BRL SOP-00202	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	3	2020/11/26	2020/11/28	BRL SOP-00204	In house (M0010)
Dioxins/Furans in Air (Method 23)	3	2020/11/25	2020/11/26	BRL SOP-00404	EPA M23/23A m
PAH's in MM5 SamplingTrains (CARB429mod)	3	2020/11/25	2020/11/27	BRL SOP-00201	CARB429(ARBM1,M2)mod
PCBs in a Sampling Train (1668Amod)	3	2020/12/02	2020/11/29	BRL SOP-00408	EPA 1668A m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 20201027
Site#: CALGARY
Site Location: EMISSION SERVICES GROUP MM5 PROOFING
Your C.O.C. #: 191029-01

Attention: Bill Wong

Bureau Veritas Laboratories
Calgary - Air Services
1 - 2080 39th Ave NE
Calgary, AB
CANADA T2E 6P7

Report Date: 2020/12/07
Report #: R6439590
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C0T1755
Received: 2020/11/02, 08:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marinela Sim, Project Manager
Email: Marinela.Sim@bvlabs.com
Phone# (905)817-5828

=====

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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

BV Labs ID		OBL553							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	PROOF-GLASSWARE SETS 1-22	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<7.3	7.3	60	12	1.00	7.30	N/A	7074905
1,2,3,7,8-Penta CDD *	pg	<8.0	8.0	60	12	1.00	8.00	N/A	7074905
1,2,3,4,7,8-Hexa CDD *	pg	<7.8	7.8	60	12	0.100	0.780	N/A	7074905
1,2,3,6,7,8-Hexa CDD *	pg	<7.9	7.9	60	12	0.100	0.790	N/A	7074905
1,2,3,7,8,9-Hexa CDD *	pg	<7.2	7.2	60	12	0.100	0.720	N/A	7074905
1,2,3,4,6,7,8-Hepta CDD *	pg	<8.6	8.6	60	18	0.0100	0.0860	N/A	7074905
1,2,3,4,6,7,8,9-Octa CDD *	pg	<7.8	7.8	600	18	0.000300	0.00234	N/A	7074905
Total Tetra CDD *	pg	<7.3	7.3	60	N/A	N/A	N/A	0	7074905
Total Penta CDD *	pg	<8.0	8.0	60	N/A	N/A	N/A	0	7074905
Total Hexa CDD *	pg	<14 (1)	14	60	N/A	N/A	N/A	0	7074905
Total Hepta CDD *	pg	<8.6	8.6	60	N/A	N/A	N/A	0	7074905
2,3,7,8-Tetra CDF **	pg	<8.4	8.4	60	12	0.100	0.840	N/A	7074905
1,2,3,7,8-Penta CDF **	pg	<8.6	8.6	60	12	0.0300	0.258	N/A	7074905
2,3,4,7,8-Penta CDF **	pg	<8.8	8.8	60	12	0.300	2.64	N/A	7074905
1,2,3,4,7,8-Hexa CDF **	pg	<7.5	7.5	60	12	0.100	0.750	N/A	7074905
1,2,3,6,7,8-Hexa CDF **	pg	<7.4	7.4	60	12	0.100	0.740	N/A	7074905
2,3,4,6,7,8-Hexa CDF **	pg	<7.8	7.8	60	12	0.100	0.780	N/A	7074905
1,2,3,7,8,9-Hexa CDF **	pg	<9.5	9.5	60	12	0.100	0.950	N/A	7074905
1,2,3,4,6,7,8-Hepta CDF **	pg	14.4	7.3	60	18	0.0100	0.144	N/A	7074905
1,2,3,4,7,8,9-Hepta CDF **	pg	<10	10	60	12	0.0100	0.100	N/A	7074905
1,2,3,4,6,7,8,9-Octa CDF **	pg	<7.9	7.9	600	30	0.000300	0.00237	N/A	7074905
Total Tetra CDF **	pg	<9.4 (1)	9.4	60	N/A	N/A	N/A	0	7074905
Total Penta CDF **	pg	<8.7	8.7	60	N/A	N/A	N/A	0	7074905
Total Hexa CDF **	pg	<8.0	8.0	60	N/A	N/A	N/A	0	7074905
Total Hepta CDF **	pg	14.4	8.4	60	N/A	N/A	N/A	1	7074905
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	24.9	N/A	N/A

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
 QC Batch = Quality Control Batch
 * CDD = Chloro Dibenzo-p-Dioxin
 N/A = Not Applicable
 ** CDF = Chloro Dibenzo-p-Furan
 (1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

BV Labs ID		OBL553							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	PROOF- GLASSWARE SETS 1-22	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch

Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-1234678 HeptaCDF **	%	88	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123678 HexaCDD *	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123678 HexaCDF **	%	73	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-12378 PentaCDD *	%	84	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-12378 PentaCDF **	%	63	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123789 HexaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-2378 TetraCDD *	%	56	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-2378 TetraCDF **	%	57	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-Octachlorodibenzo-p-Dioxin	%	118	N/A	N/A	N/A	N/A	N/A	N/A	7074905

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan



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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

BV Labs ID		OBL581							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	HEXANE/ACETONE (FISHER LOT# 197044/197441)	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<8.0	8.0	60	12	1.00	8.00	N/A	7074905
1,2,3,7,8-Penta CDD *	pg	<6.9	6.9	60	12	1.00	6.90	N/A	7074905
1,2,3,4,7,8-Hexa CDD *	pg	<6.6	6.6	60	12	0.100	0.660	N/A	7074905
1,2,3,6,7,8-Hexa CDD *	pg	<6.8	6.8	60	12	0.100	0.680	N/A	7074905
1,2,3,7,8,9-Hexa CDD *	pg	<6.2	6.2	60	12	0.100	0.620	N/A	7074905
1,2,3,4,6,7,8-Hepta CDD *	pg	<8.7	8.7	60	18	0.0100	0.0870	N/A	7074905
1,2,3,4,6,7,8,9-Octa CDD *	pg	<8.6	8.6	600	18	0.000300	0.00258	N/A	7074905
Total Tetra CDD *	pg	<8.0	8.0	60	N/A	N/A	N/A	0	7074905
Total Penta CDD *	pg	<6.9	6.9	60	N/A	N/A	N/A	0	7074905
Total Hexa CDD *	pg	<14 (1)	14	60	N/A	N/A	N/A	0	7074905
Total Hepta CDD *	pg	<8.7	8.7	60	N/A	N/A	N/A	0	7074905
2,3,7,8-Tetra CDF **	pg	<8.6	8.6	60	12	0.100	0.860	N/A	7074905
1,2,3,7,8-Penta CDF **	pg	<5.6	5.6	60	12	0.0300	0.168	N/A	7074905
2,3,4,7,8-Penta CDF **	pg	<5.7	5.7	60	12	0.300	1.71	N/A	7074905
1,2,3,4,7,8-Hexa CDF **	pg	<6.6	6.6	60	12	0.100	0.660	N/A	7074905
1,2,3,6,7,8-Hexa CDF **	pg	<6.4	6.4	60	12	0.100	0.640	N/A	7074905
2,3,4,6,7,8-Hexa CDF **	pg	<6.8	6.8	60	12	0.100	0.680	N/A	7074905
1,2,3,7,8,9-Hexa CDF **	pg	<8.3	8.3	60	12	0.100	0.830	N/A	7074905
1,2,3,4,6,7,8-Hepta CDF **	pg	<10 (1)	10	60	18	0.0100	0.100	N/A	7074905
1,2,3,4,7,8,9-Hepta CDF **	pg	<7.8	7.8	60	12	0.0100	0.0780	N/A	7074905
1,2,3,4,6,7,8,9-Octa CDF **	pg	<7.0	7.0	600	30	0.000300	0.00210	N/A	7074905
Total Tetra CDF **	pg	<8.6	8.6	60	N/A	N/A	N/A	0	7074905
Total Penta CDF **	pg	<5.6	5.6	60	N/A	N/A	N/A	0	7074905
Total Hexa CDF **	pg	<6.9	6.9	60	N/A	N/A	N/A	0	7074905
Total Hepta CDF **	pg	<12 (1)	12	60	N/A	N/A	N/A	0	7074905
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	22.7	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



BUREAU
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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

BV Labs ID		OBL581							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	HEXANE/ACETONE (FISHER LOT# 197044/197441)	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch

Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	107	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-1234678 HeptaCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123678 HexaCDD *	%	95	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123678 HexaCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-12378 PentaCDD *	%	79	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-12378 PentaCDF **	%	59	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123789 HexaCDF **	%	108	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-2378 TetraCDD *	%	49	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-2378 TetraCDF **	%	41	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-Octachlorodibenzo-p-Dioxin	%	129	N/A	N/A	N/A	N/A	N/A	N/A	7074905

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
 QC Batch = Quality Control Batch
 * CDD = Chloro Dibenzo-p-Dioxin
 N/A = Not Applicable
 ** CDF = Chloro Dibenzo-p-Furan



BUREAU
VERITAS

BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

BV Labs ID		OBL582							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	GLYCOL/WATER (FISHER LOT#184420/192713)	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<8.5	8.5	60	12	1.00	8.50	N/A	7074905
1,2,3,7,8-Penta CDD *	pg	<8.0	8.0	60	12	1.00	8.00	N/A	7074905
1,2,3,4,7,8-Hexa CDD *	pg	<6.7	6.7	60	12	0.100	0.670	N/A	7074905
1,2,3,6,7,8-Hexa CDD *	pg	<6.8	6.8	60	12	0.100	0.680	N/A	7074905
1,2,3,7,8,9-Hexa CDD *	pg	<6.3	6.3	60	12	0.100	0.630	N/A	7074905
1,2,3,4,6,7,8-Hepta CDD *	pg	<7.8	7.8	60	18	0.0100	0.0780	N/A	7074905
1,2,3,4,6,7,8,9-Octa CDD *	pg	<6.9	6.9	600	18	0.000300	0.00207	N/A	7074905
Total Tetra CDD *	pg	<8.5	8.5	60	N/A	N/A	N/A	0	7074905
Total Penta CDD *	pg	<8.0	8.0	60	N/A	N/A	N/A	0	7074905
Total Hexa CDD *	pg	<13 (1)	13	60	N/A	N/A	N/A	0	7074905
Total Hepta CDD *	pg	<7.8	7.8	60	N/A	N/A	N/A	0	7074905
2,3,7,8-Tetra CDF **	pg	<9.5	9.5	60	12	0.100	0.950	N/A	7074905
1,2,3,7,8-Penta CDF **	pg	<9.8	9.8	60	12	0.0300	0.294	N/A	7074905
2,3,4,7,8-Penta CDF **	pg	<10	10	60	12	0.300	3.00	N/A	7074905
1,2,3,4,7,8-Hexa CDF **	pg	<8.5	8.5	60	12	0.100	0.850	N/A	7074905
1,2,3,6,7,8-Hexa CDF **	pg	<8.4	8.4	60	12	0.100	0.840	N/A	7074905
2,3,4,6,7,8-Hexa CDF **	pg	<8.8	8.8	60	12	0.100	0.880	N/A	7074905
1,2,3,7,8,9-Hexa CDF **	pg	<11	11	60	12	0.100	1.10	N/A	7074905
1,2,3,4,6,7,8-Hepta CDF **	pg	8.8	5.4	60	18	0.0100	0.0880	N/A	7074905
1,2,3,4,7,8,9-Hepta CDF **	pg	<7.4	7.4	60	12	0.0100	0.0740	N/A	7074905
1,2,3,4,6,7,8,9-Octa CDF **	pg	<5.8	5.8	600	30	0.000300	0.00174	N/A	7074905
Total Tetra CDF **	pg	<9.5	9.5	60	N/A	N/A	N/A	0	7074905
Total Penta CDF **	pg	<9.9	9.9	60	N/A	N/A	N/A	0	7074905
Total Hexa CDF **	pg	<9.0	9.0	60	N/A	N/A	N/A	0	7074905
Total Hepta CDF **	pg	8.8	6.2	60	N/A	N/A	N/A	1	7074905
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	26.6	N/A	N/A

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like
 Compounds
 QC Batch = Quality Control Batch
 * CDD = Chloro Dibenzo-p-Dioxin
 N/A = Not Applicable
 ** CDF = Chloro Dibenzo-p-Furan
 (1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.



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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

BV Labs ID		OBL582							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	GLYCOL/WATER (FISHER LOT#184420/192713)	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch

Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-1234678 HeptaCDF **	%	88	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123678 HexaCDD *	%	95	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123678 HexaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-12378 PentaCDD *	%	91	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-12378 PentaCDF **	%	72	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-123789 HexaCDF **	%	110	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-2378 TetraCDD *	%	59	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-2378 TetraCDF **	%	59	N/A	N/A	N/A	N/A	N/A	N/A	7074905
C13-Octachlorodibenzo-p-Dioxin	%	118	N/A	N/A	N/A	N/A	N/A	N/A	7074905

EDL = Estimated Detection Limit
 RDL = Reportable Detection Limit
 TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
 The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
 WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
 QC Batch = Quality Control Batch
 * CDD = Chloro Dibenzo-p-Dioxin
 N/A = Not Applicable
 ** CDF = Chloro Dibenzo-p-Furan



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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

BV Labs ID		OBL553	OBL581	OBL582			
Sampling Date		2020/10/27	2020/10/27	2020/10/27			
COC Number		191029-01	191029-01	191029-01			
	UNITS	PROOF- GLASSWARE SETS 1-22	HEXANE/ACETONE (FISHER LOT# 197044/197441)	GLYCOL/WATER (FISHER LOT#184420/192713)	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
1-Methylphenanthrene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
2-Chloronaphthalene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
2-Methylantracene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
2-Methylnaphthalene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
3-Methylcholanthrene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
7,12-Dimethylbenzo(a)anthracene	ug	<1.2	<1.2	<1.2	1.2	0.30	7074912
9,10-Dimethylantracene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Acenaphthene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Acenaphthylene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Benzo(a)anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Benzo(a)fluorene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Benzo(a)pyrene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Benzo(b)Anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Benzo(b)fluoranthene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Benzo(b)fluorene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Benzo(e)pyrene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Benzo(k)fluoranthene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Biphenyl	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Chrysene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Coronene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Dibenzo(a,h)anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Dibenzo(a,c) anthracene + Picene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Dibenzo(a,e)pyrene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Fluoranthene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Fluorene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Indeno(1,2,3-cd)pyrene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
m-Terphenyl	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Naphthalene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
o-Terphenyl	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Perylene	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Phenanthrene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
p-Terphenyl	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

BV Labs ID		OBL553	OBL581	OBL582			
Sampling Date		2020/10/27	2020/10/27	2020/10/27			
COC Number		191029-01	191029-01	191029-01			
	UNITS	PROOF-GLASSWARE SETS 1-22	HEXANE/ACETONE (FISHER LOT# 197044/197441)	GLYCOL/WATER (FISHER LOT#184420/192713)	RDL	MDL	QC Batch
Pyrene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
Quinoline	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Tetralin	ug	<0.30	<0.30	<0.30	0.30	0.30	7074912
Triphenylene	ug	<0.30	<0.30	<0.30	0.30	0.060	7074912
1,2,3,4-Tetrachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,2,3-Trichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,2,4-Trichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,2-Dichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,3,5-Trichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,3-Dichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
1,4-Dichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
Hexachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
Pentachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	7070091
2,3,4,5-Tetrachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,3,4,6-Tetrachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,3,4-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,3,5,6-Tetrachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,3,5-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,3,6-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,3-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,4 + 2,5-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,4,5-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,4,6-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2,6-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
2-Chlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
3,4,5-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
3,4-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
3,5-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
3-Chlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
4-Chlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400
Pentachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	7077400

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

BV Labs ID		OBL553	OBL581	OBL582			
Sampling Date		2020/10/27	2020/10/27	2020/10/27			
COC Number		191029-01	191029-01	191029-01			
	UNITS	PROOF-GLASSWARE SETS 1-22	HEXANE/ACETONE (FISHER LOT# 197044/197441)	GLYCOL/WATER (FISHER LOT#184420/192713)	RDL	MDL	QC Batch
Surrogate Recovery (%)							
13C6-Hexachlorobenzene	%	71	82	75	N/A	N/A	7070091
2H3-1,2,4-Trichlorobenzene	%	77	87	78	N/A	N/A	7070091
2H4-1,3-Dichlorobenzene	%	84	102	84	N/A	N/A	7070091
D3-2,4-Dichlorophenol	%	93	97	98	N/A	N/A	7077400
D6-Pentachlorophenol	%	97	100	97	N/A	N/A	7077400
D10-2-Methylnaphthalene	%	86	94	100	N/A	N/A	7074912
D10-Fluoranthene	%	86	91	91	N/A	N/A	7074912
D10-Phenanthrene	%	82	88	91	N/A	N/A	7074912
D12-Benzo(a)anthracene	%	91	90	93	N/A	N/A	7074912
D12-Benzo(a)pyrene	%	93	95	92	N/A	N/A	7074912
D12-Benzo(b)fluoranthene	%	94	93	96	N/A	N/A	7074912
D12-Benzo(ghi)perylene	%	99	100	93	N/A	N/A	7074912
D12-Benzo(k)fluoranthene	%	95	97	95	N/A	N/A	7074912
D12-Chrysene	%	90	92	99	N/A	N/A	7074912
D12-Indeno(1,2,3-cd)pyrene	%	99	101	93	N/A	N/A	7074912
D12-Perylene	%	92	95	93	N/A	N/A	7074912
D14-Dibenzo(a,h)anthracene	%	102	103	93	N/A	N/A	7074912
D8-Acenaphthylene	%	80	91	89	N/A	N/A	7074912
D8-Naphthalene	%	85	93	99	N/A	N/A	7074912
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable							



RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

BV Labs ID		OBL553							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	PROOF-GLASSWARE SETS 1-22	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	ng	<0.051	0.051	0.60	N/A	0.00010	0.0000051	N/A	7087253
344'5'-TetraCB-(81)	ng	<0.051	0.051	0.60	N/A	0.00030	0.000015	N/A	7087253
233'44'-PentaCB-(105)	ng	<0.030	0.030	0.60	N/A	0.000030	0.00000090	N/A	7087253
2344'5'-PentaCB-(114)	ng	<0.030	0.030	0.60	N/A	0.000030	0.00000090	N/A	7087253
23'44'5'-PentaCB-(118)	ng	0.070	0.031	0.60	N/A	0.000030	0.0000021	N/A	7087253
23'44'5'-PentaCB-(123)	ng	<0.033	0.033	0.60	N/A	0.000030	0.00000099	N/A	7087253
33'44'5'-PentaCB-(126)	ng	<0.028	0.028	0.60	N/A	0.10	0.0028	N/A	7087253
HexaCB-(156)+(157)	ng	<0.042	0.042	1.2	N/A	0.000030	0.0000013	N/A	7087253
23'44'55'-HexaCB-(167)	ng	<0.041	0.041	0.60	N/A	0.000030	0.0000012	N/A	7087253
33'44'55'-HexaCB-(169)	ng	<0.042	0.042	0.60	N/A	0.030	0.0013	N/A	7087253
22'33'44'5'-HeptaCB-(170)	ng	<0.060	0.060	0.60	N/A	N/A	N/A	N/A	7087253
22'344'55'-HeptaCB-(180)	ng	<0.063	0.063	0.60	N/A	N/A	N/A	N/A	7087253
233'44'55'-HeptaCB-(189)	ng	<0.083	0.083	0.60	N/A	0.000030	0.0000025	N/A	7087253
TOTAL TOXIC EQUIVALENCY	ng	N/A	N/A	N/A	N/A	N/A	0.0041	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	119	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'5'-HexaCB-(156)	%	103	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'5'-HexaCB-(157)	%	103	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'-PentaCB-(105)	%	110	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-23'44'55'-HexaCB-(167)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-2344'5'-PentaCB-(114)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-23'44'5'-PentaCB-(118)	%	103	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-2'344'5'-PentaCB-(123)	%	105	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'55'-HexaCB-(169)	%	91	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'5'-PentaCB-(126)	%	105	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'-TetraCB-(77)	%	105	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-344'5'-TetraCB-(81)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7087253

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable



BUREAU VERITAS

BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

BV Labs ID		OBL581							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	HEXANE/ACETONE (FISHER LOT# 197044/197441)	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	ng	<0.046	0.046	0.60	N/A	0.00010	0.0000046	N/A	7087253
344'5'-TetraCB-(81)	ng	<0.045	0.045	0.60	N/A	0.00030	0.000014	N/A	7087253
233'44'-PentaCB-(105)	ng	<0.039	0.039	0.60	N/A	0.000030	0.0000012	N/A	7087253
2344'5'-PentaCB-(114)	ng	<0.038	0.038	0.60	N/A	0.000030	0.0000011	N/A	7087253
23'44'5'-PentaCB-(118)	ng	<0.039	0.039	0.60	N/A	0.000030	0.0000012	N/A	7087253
23'44'5'-PentaCB-(123)	ng	<0.042	0.042	0.60	N/A	0.000030	0.0000013	N/A	7087253
33'44'5'-PentaCB-(126)	ng	<0.036	0.036	0.60	N/A	0.10	0.0036	N/A	7087253
HexaCB-(156)+(157)	ng	<0.043	0.043	1.2	N/A	0.000030	0.0000013	N/A	7087253
23'44'55'-HexaCB-(167)	ng	<0.041	0.041	0.60	N/A	0.000030	0.0000012	N/A	7087253
33'44'55'-HexaCB-(169)	ng	<0.043	0.043	0.60	N/A	0.030	0.0013	N/A	7087253
22'33'44'5'-HeptaCB-(170)	ng	<0.056	0.056	0.60	N/A	N/A	N/A	N/A	7087253
22'344'55'-HeptaCB-(180)	ng	<0.058	0.058	0.60	N/A	N/A	N/A	N/A	7087253
233'44'55'-HeptaCB-(189)	ng	<0.054	0.054	0.60	N/A	0.000030	0.0000016	N/A	7087253
TOTAL TOXIC EQUIVALENCY	ng	N/A	N/A	N/A	N/A	N/A	0.0049	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	117	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'5'-HexaCB-(156)	%	112	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'5'-HexaCB-(157)	%	112	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'-PentaCB-(105)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-23'44'55'-HexaCB-(167)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-2344'5'-PentaCB-(114)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-23'44'5'-PentaCB-(118)	%	99	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-2'344'5'-PentaCB-(123)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'55'-HexaCB-(169)	%	95	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'5'-PentaCB-(126)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'-TetraCB-(77)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-344'5'-TetraCB-(81)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	7087253
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable									



BUREAU VERITAS

BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

BV Labs ID		OBL582							
Sampling Date		2020/10/27							
COC Number		191029-01				TOXIC EQUIVALENCY		# of	
	UNITS	GLYCOL/WATER (FISHER LOT#184420/192713)	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	ng	<0.043	0.043	0.60	N/A	0.00010	0.0000043	N/A	7087253
344'5'-TetraCB-(81)	ng	<0.042	0.042	0.60	N/A	0.00030	0.000013	N/A	7087253
233'44'-PentaCB-(105)	ng	<0.027	0.027	0.60	N/A	0.000030	0.00000081	N/A	7087253
2344'5'-PentaCB-(114)	ng	<0.026	0.026	0.60	N/A	0.000030	0.00000078	N/A	7087253
23'44'5'-PentaCB-(118)	ng	0.051	0.027	0.60	N/A	0.000030	0.0000015	N/A	7087253
23'44'5'-PentaCB-(123)	ng	<0.029	0.029	0.60	N/A	0.000030	0.00000087	N/A	7087253
33'44'5'-PentaCB-(126)	ng	<0.025	0.025	0.60	N/A	0.10	0.0025	N/A	7087253
HexaCB-(156)+(157)	ng	<0.033	0.033	1.2	N/A	0.000030	0.00000099	N/A	7087253
23'44'55'-HexaCB-(167)	ng	<0.032	0.032	0.60	N/A	0.000030	0.00000096	N/A	7087253
33'44'55'-HexaCB-(169)	ng	<0.033	0.033	0.60	N/A	0.030	0.00099	N/A	7087253
22'33'44'5'-HeptaCB-(170)	ng	<0.056	0.056	0.60	N/A	N/A	N/A	N/A	7087253
22'344'55'-HeptaCB-(180)	ng	<0.058	0.058	0.60	N/A	N/A	N/A	N/A	7087253
233'44'55'-HeptaCB-(189)	ng	<0.067	0.067	0.60	N/A	0.000030	0.00000020	N/A	7087253
TOTAL TOXIC EQUIVALENCY	ng	N/A	N/A	N/A	N/A	N/A	0.0035	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	125	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'5'-HexaCB-(156)	%	115	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'5'-HexaCB-(157)	%	115	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-233'44'-PentaCB-(105)	%	109	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-23'44'55'-HexaCB-(167)	%	109	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-2344'5'-PentaCB-(114)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-23'44'5'-PentaCB-(118)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-2'344'5'-PentaCB-(123)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'55'-HexaCB-(169)	%	107	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'5'-PentaCB-(126)	%	110	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-33'44'-TetraCB-(77)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	7087253
C13-344'5'-TetraCB-(81)	%	100	N/A	N/A	N/A	N/A	N/A	N/A	7087253
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable									



BUREAU
VERITAS

BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

TEST SUMMARY

BV Labs ID: OBL553
Sample ID: PROOF- GLASSWARE SETS 1-22
Matrix: Stack Sampling Train

Collected: 2020/10/27
Shipped:
Received: 2020/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	7070091	2020/11/22	2020/11/26	Fan (Carrie) Jiang
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	7077400	2020/11/26	2020/11/28	Fan (Carrie) Jiang
Dioxins/Furans in Air (Method 23)	HRMS/MS	7074905	2020/11/25	2020/11/26	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	7074912	2020/11/25	2020/11/27	Fan (Carrie) Jiang
PCBs in a Sampling Train (1668Amod)	HRMS/MS	7087253	2020/12/02	2020/11/29	Cathy Xu

BV Labs ID: OBL581
Sample ID: HEXANE/ACETONE (FISHER LOT# 197044/197441)
Matrix: Stack Sampling Train

Collected: 2020/10/27
Shipped:
Received: 2020/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	7070091	2020/11/22	2020/11/26	Fan (Carrie) Jiang
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	7077400	2020/11/26	2020/11/28	Fan (Carrie) Jiang
Dioxins/Furans in Air (Method 23)	HRMS/MS	7074905	2020/11/25	2020/11/26	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	7074912	2020/11/25	2020/11/27	Fan (Carrie) Jiang
PCBs in a Sampling Train (1668Amod)	HRMS/MS	7087253	2020/12/02	2020/11/29	Cathy Xu

BV Labs ID: OBL582
Sample ID: GLYCOL/WATER (FISHER LOT#184420/192713)
Matrix: Stack Sampling Train

Collected: 2020/10/27
Shipped:
Received: 2020/11/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	7070091	2020/11/22	2020/11/26	Fan (Carrie) Jiang
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	7077400	2020/11/26	2020/11/28	Fan (Carrie) Jiang
Dioxins/Furans in Air (Method 23)	HRMS/MS	7074905	2020/11/25	2020/11/26	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	7074912	2020/11/25	2020/11/27	Fan (Carrie) Jiang
PCBs in a Sampling Train (1668Amod)	HRMS/MS	7087253	2020/12/02	2020/11/29	Cathy Xu



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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

GENERAL COMMENTS

Results relate only to the items tested.



BUREAU
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BV Labs Job #: COT1755
Report Date: 2020/12/07

Bureau Veritas Laboratories
Client Project #: 20201027
Site Location: EMISSION SERVICES GROUP MM5 PROOFING

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Angel Guerrero, Supervisor, Ultra Trace Analysis, HRMS

Melissa DiGrazia, Operations Manager, HRMS Department

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

***APPENDIX IV
FIELD DATA SHEETS***



ISOKINETIC TEST DATA

EMS FCD-00404/11

Page 1 of 1

RS 1023

CLIENT NAME	Agnico			IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED
LOCATION	Melchior			1 empty	479g	631	152g
SOURCE NAME	Inventor			2 HNO ₃ /H ₂ O ₂	576g	633g	57g
PROJECT NUMBER	2894	O ₂ (BLUE)	CO ₂ (RED)	3 HNO ₃ /H ₂ O ₂	599g	656g	7g
TEST DATE (dd-mon-yy)	19-10-21	12	8	4 Empty	502g	502g	—
TEST NUMBER	one	12	8	5 KMnO ₄ /H ₂ SO ₄	595g	596g	1g
TEST PERFORMED BY	AM DG	12	8	6 KMnO ₄ /H ₂ SO ₄	573g	573	—
STACK I.D./WIDTH	38.5"	Historical c	ANNULUS	7 Silica	798g	813	15
DELTA H@	1.490	Measured c	<input checked="" type="checkbox"/> Measured	FILTER # 1	Q2383	FILTER # 2	—
MINUTES PER POINT	5min x 2			MEASURED GLASSWARE RINSE VOLUME:			— ml
BAROMETRIC PRESSURE	29.81	mm Hg	Barom. ID# 050	NOZZLE CALIBRATION	PROBE LINER USED: Quartz	GLASS / TEFLON / STEEL	
STATIC PRESSURE	-802	inches H ₂ O	ID# Quartz	IS STACK CYCLONIC?			YES / <input checked="" type="radio"/> NO
PRE-TEST O ₂	12	% (dry)	PRE-TEST PITOT LEAK CHECK PERFORMED:				<input checked="" type="radio"/> YES / NO
PRE-TEST CO ₂	8	% (dry)	TRAIN DATA	POST-TEST PITOT LEAK CHECK PERFORMED:			<input checked="" type="radio"/> YES / NO
WATER CONTENT	5	mole%	METALS # #2	INITIAL LEAK CHECK:	0.000	CFM @ 2	in. Hg
NOZZLE DIAMETER	0.500	inches	KIT USED: 150 01	FINAL LEAK CHECK:	0.000	CFM @ 2	in. Hg
PITOT FACTOR	0.827		Meter Factor:	PITOT USED	B061	Balance ID #	26
INITIAL METER READING	212.4	ft ³	1.017	CEMS STATION ID (IF APPLICABLE)			N/A
STACK TOP HEIGHT	36.54						

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
✓	12	1200	15	15	781	005	0.7	214.88	120	120	-1	-1
	12	1205	15	15	778	005	0.7	217.36	120	120	-1	-1
	11	1210	15	15	784	006	0.8	220.07	120	120	-1	-1
	11	1215	16	15	788	006	0.8	222.78	120	120	-1	-1
	10	1220	16	15	791	007	0.93	225.70	120	120	-1	-1
	10	1225	16	15	793	007	0.93	228.61	120	120	-1	-1
	9	1230	16	15	790	007	0.93	231.53	120	120	-1	-1
	9	1235	16	15	793	005	0.67	233.98	120	120	-1	-1
	8	1240	16	15	798	005	0.67	236.44	120	120	-1	-1
	8	1245	16	16	789	006	0.8	239.16	120	120	-1	-1
	7	1250	16	16	792	005	0.67	241.62	120	120	-1	-1
	7	1255	17	17	789	006	0.8	244.35	120	120	-1	-1
	6	1300	17	17	775	005	0.68	246.84	120	120	-1	-1
	5	1305	17	17	798	005	0.67	249.32	120	120	-1	-1
	5	1310	18	17	798	005	0.67	251.80	120	120	-1	-1
✓	5	1315	18	17	800	006	0.8	254.49	120	120	-1	-1

METHOD USED: M29 w/Particulates
 PARAMETER: Metals and Particulates.
 Tester Name: Grand Mathew
 Reviewer Name: [Signature]

I certify the test data is accurate and complete. I certify I have reviewed the test data.
 150 - 102.54% H₂O - 0%



ISOKINETIC TEST DATA

PJ203

CLIENT NAME				IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED	
LOCATION				1				
SOURCE NAME				2				
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	3				
TEST DATE (dd-mon-yy)	12-10-21			4				
TEST NUMBER	one			5				
TEST PERFORMED BY				6				
STACK I.D./WIDTH		Historical C Measured c	ANNULUS	7				
DELTA H@			See page 1					
MINUTES PER POINT				FILTER # 1		FILTER # 2		
BAROMETRIC PRESSURE		mm Hg	Barom. ID#	MEASURED GLASSWARE RINSE VOLUME:			mls	
STATIC PRESSURE		inches H ₂ O	NOZZLE CALIBRATION	PROBE LINER USED:	GLASS / TEFLON / STEEL			
PRE-TEST O ₂		% (dry)	ID#	IS STACK CYCLONIC?			YES / NO	
PRE-TEST CO ₂		% (dry)		PRE-TEST PITOT LEAK CHECK PERFORMED:			YES / NO	
WATER CONTENT		mole%	TRAIN DATA		POST-TEST PITOT LEAK CHECK PERFORMED:			YES / NO
NOZZLE DIAMETER		inches	METALS #	INITIAL LEAK CHECK:	CFM @	in. Hg		
PITOT FACTOR			KIT USED:	FINAL LEAK CHECK:	CFM @	in. Hg		
INITIAL METER READING		ft ³	Meter Factor:	PITOT USED:	Balance ID #			
STACK TOP HEIGHT			CEMS STATION ID (IF APPLICABLE)					

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
N	4	1320	18	18	812	005	0.66	256.94	120	120	-1	-2
	4	1325	18	18	818	005	0.65	259.40	120	120	-1	-2
	3	1330	18	18	822	006	0.78	262.10	120	120	-1	-2
	3	1335	18	18	823	005	0.65	214.56	120	120	-1	-2
	2	1340	18	18	820	005	0.65	267.00	120	120	-1	-2
	2	1345	18	18	805	006	0.80	269.70	120	120	-1	-2
	1	1350	18	18	798	006	0.80	272.43	120	120	-1	-2
	1	1355	18	19	792	005	0.67	274.92	120	120	-1	-2
E	12	1420	17	17	790	005	0.67	277.41	120	120	-1	-2
	12	1425	17	17	798	006	0.80	280.10	120	120	-1	-2
	11	1430	17	18	800	006	0.80	282.82	120	120	-1	-2
	11	1435	17	18	815	006	0.79	285.52	120	120	-1	-2
	10	1440	17	18	820	006	0.78	288.20	120	120	-1	-2
	10	1445	17	18	815	005	0.65	290.67	120	120	-1	-2
	9	1450	18	18	88820	0.05	0.65	293.12	120	120	-1	-2

METHOD USED: M29/M5	PARAMETER: Metals w/Particulates
Tester Name: Arnold Mathew	Reviewer Name: [Signature]

I certify the test data is accurate and complete.

I certify I have reviewed the test data



ISOKINETIC TEST DATA

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P93783

CLIENT NAME				IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED
LOCATION				1			
SOURCE NAME				2			
PROJECT NUMBER	O2 (BLUE)	CO2 (RED)		3			
TEST DATE (dd-mon-yy)				4			
TEST NUMBER				5			
TEST PERFORMED BY				6			
STACK I.D./WIDTH	Historical C Measured c	ANNULUS		7			
DELTA H@		Measured					
MINUTES PER POINT					FILTER # 1	FILTER # 2	
BAROMETRIC PRESSURE	mm Hg	Barom. ID#			MEASURED GLASSWARE RINSE VOLUME:		mls
STATIC PRESSURE	inches H ₂ O	NOZZLE CALIBRATION	PROBE LINER USED:		GLASS / TEFLON / STEEL		
PRE-TEST O ₂	% (dry)	ID#			IS STACK CYCLONIC?		YES / NO
PRE-TEST CO ₂	% (dry)				PRE-TEST PITOT LEAK CHECK PERFORMED:		YES / NO
WATER CONTENT	mole%	TRAIN DATA			POST-TEST PITOT LEAK CHECK PERFORMED:		YES / NO
NOZZLE DIAMETER	inches	METALS #			INITIAL LEAK CHECK:	CFM @	in. Hg
PITOT FACTOR		KIT USED:			FINAL LEAK CHECK:	CFM @	in. Hg
INITIAL METER READING	ft ³	Meter Factor:			PITOT BE USED:	Balance ID #	
STACK TOP HEIGHT					CEMS STATION ID (IF APPLICABLE)		

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
E	9	1455	20	19	820	005	0.66	295.59	120	120	-1	-3
	8	1500	20	19	825	005	0.65	298.05	120	120	-1	-3
	8	1505	20	19	798	006	0.80	300.78	120	120	-1	-3
	7	1570	20	19	805	006	0.80	303.50	120	120	-1	-3
	7	1575	20	20	810	007	0.93	306.43	120	120	-1	-3
	6	1520	20	20	812	007	0.93	309.37	120	120	-1	-3
	6	1525	21	20	815	007	0.93	312.32	120	120	-1	-3
	5	1530	21	20	820	006	0.80	315.03	120	120	-1	-3
	5	1535	21	20	824	005	0.66	317.51	120	120	-1	-3
	4	1540	21	20	806	005	0.67	320.01	120	120	-1	-3
	4	1545	22	20	805	005	0.67	322.51	120	120	-1	-3
	3	1550	22	20	790	005	0.68	325.03	120	120	-1	-3
	3	1533	22	20	798	005	0.68	327.54	120	120	-1	-3
	2	1600	23	21	810	005	0.67	330.04	120	120	-1	-3
	2	1605	23	21	815	005	0.67	332.54	120	120	-1	-3
V	1	1610	23	21	820	005	0.66	335.03	120	120	-1	-3
	1	1615	23	21	822	005	0.66	337.52	120	120	-1	-3

METHOD USED: H2A/45 PARAMETER: Metals / Pollutants

Tester Name: Arund Mathew Reviewer Name: [Signature]

I certify the test data is accurate and complete. I certify I have reviewed the test data.



ISOKINETIC TEST DATA

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12/10/2

CLIENT NAME	Agnico			IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED
LOCATION	Meliadine			1 empty	485g	570g	90g
SOURCE NAME	Truncator			2 H ₂ O ₂ /HNO ₃	588g	588g	10g
PROJECT NUMBER	294	O ₂ (BLUE)	CO ₂ (RED)	3 H ₂ O ₂ /HNO ₃	60g	60g	1g
TEST DATE (dd-mon-yy)	20-10-21	12	7	4 KMnO ₄ /H ₂ SO ₄	562.5g	569.5g	-
TEST NUMBER	TWO	12	7	5 KMnO ₄ /H ₂ SO ₄	577g	577g	-
TEST PERFORMED BY	AM DG	12	7	6 empty	56g	506g	-
STACK I.D./WIDTH	38.5	ANNULUS	7.75"	7 Pellica	814g	821g	7g
DELTA H@	1.490	<input checked="" type="checkbox"/> Measured		FILTER # 1	Q2385	FILTER # 2	
MINUTES PER POINT	5	mm Hg	Barom. ID#	50	MEASURED GLASSWARE RINSE VOLUME: _____ ml		
BAROMETRIC PRESSURE	29.85	inches H ₂ O	NOZZLE CALIBRATION	PROBE LINER USED: Quartz	GLASS / TEFLON / STEEL		
STATIC PRESSURE	-0.03	% (dry)	ID#	Quartz	IS STACK CYCLONIC? YES / NO		
PRE-TEST O ₂	12	% (dry)	TRAIN DATA		POST-TEST PITOT LEAK CHECK PERFORMED: YES / NO		
PRE-TEST CO ₂	7	mole%	METALS #	#2	INITIAL LEAK CHECK: 0.000 CFM @ -20 in. Hg		
WATER CONTENT	7%	inches	KIT USED:	1501	FINAL LEAK CHECK: 0.000 CFM @ -20 in. Hg		
NOZZLE DIAMETER	005.0.5	ft ³	Meter Factor:	1.017	PITOT USED: B061 Balance ID # 26		
PITOT FACTOR	0.827	VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS?	YES OR NO (PLEASE CIRCLE ONE) N/A				
INITIAL METER READING	340.05						
STACK TOP HEIGHT	36'5"						

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
N	12	1110	10	9	886	0.07	0.81	342.75	120	120	-3	-1
	11	1115	11	9	889	0.06	0.7	345.25	120	120	-3	-1
	10	1120	12	9	890	0.07	0.81	347.95	120	120	-3	-1
	9	1125	12	9	880	0.08	0.94	350.85	120	120	-3	-1
	8	1130	13	10	880	0.08	0.94	353.77	120	120	-3	-2
	7	1135	13	10	887	0.08	0.94	356.67	120	120	-3	-2
	6	1140	13	11	890	0.06	0.7	359.19	120	120	-3	-2
	5	1145	13	11	885	0.06	0.7	361.7	120	120	-3	-2
	4	1150	13	11	893	0.05	0.6	364.0	120	120	-3	-2
	3	1155	14	12	890	0.05	0.6	366.31	120	120	-3	-3
	2	1200	14	12	878	0.05	0.6	368.62	120	120	-3	-3
	1	1205	14	12	891	0.06	0.7	371.15	120	120	-3	-3
E	12	1230	15	15	885	0.06	0.71	373.70	120	120	-3	-3
	11	1235	15	15	879	0.07	0.83	376.46	120	120	-3	-3
	10	1240	17	15	887	0.07	0.83	379.21	120	120	-3	-3

METHOD USED:	M29/M5	PARAMETER:	Particulates / Metals
Tester Name:	David Mathew	Reviewer Name:	[Signature]

I certify the test data is accurate and complete.

I certify I have reviewed the test data.

H₂O = 2.65%

180 - 100.52%



ISOKINETIC TEST DATA

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PJ282

CLIENT NAME				IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED	
LOCATION				1				
SOURCE NAME				2				
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	3				
TEST DATE (dd-mon-yy)	2010-21			4				
TEST NUMBER	TWD			5				
TEST PERFORMED BY				6				
STACK I.D./WIDTH		Historical <input type="checkbox"/> Measured <input checked="" type="checkbox"/>	ANNULUS	7				
DELTA H@			See pg 1					
MINUTES PER POINT				FILTER # 1		FILTER #2		
BAROMETRIC PRESSURE		mm Hg	Barom. ID#	MEASURED GLASSWARE RINSE VOLUME:			mls	
STATIC PRESSURE		inches H ₂ O	NOZZLE CALIBRATION	PROBE LINER USED:	GLASS / TEFLON / STEEL			
PRE-TEST O ₂		% (dry)	ID#	IS STACK CYCLONIC?			YES / NO	
PRE-TEST CO ₂		% (dry)		PRE-TEST PITOT LEAK CHECK PERFORMED:			YES / NO	
WATER CONTENT		mole%	TRAIN DATA		POST-TEST PITOT LEAK CHECK PERFORMED:			YES / NO
NOZZLE DIAMETER		inches	METALS #	INITIAL LEAK CHECK:		CFM @	in. Hg	
PITOT FACTOR			KIT USED:	FINAL LEAK CHECK:		CFM @	in. Hg	
INITIAL METER READING		ft ³	Meter Factor:	PITOT USED:		Balance ID #		
STACK TOP HEIGHT			CEMS STATION ID (IF APPLICABLE)					

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
E	9	1245	18	15	890	0.07	0.83	381.98	120	120	-3	-4.
	8	1250	19	16	892	0.07	0.83	384.74	120	120	-3	-4
	7	1255	20	17	885	0.06	0.72	387.33	120	120	-3	-4
	6	1300	20	17	875	0.06	0.73	389.91	120	120	-3	-4
	5	1305	20	18	887	0.065	0.6	392.27	120	120	-3	-4
	4	1310	20	18	891	0.05	0.6	394.62	120	120	-3	-4
	3	1315	21	19	898	0.05	0.6	396.97	120	120	-3	-4
	2	1320	21	19	873	0.04	0.5	399.1	120	120	-3	-4
	1	1325	21	19	878	0.03	0.37	400.93	120	120	-3	-4

METHOD USED: M29/M5	PARAMETER: Metals/Particulates
Tester Name: Anand Mathan	Reviewer Name: [Signature]

I certify the test data is accurate and complete.

I certify I have reviewed the test data.



ISOKINETIC TEST DATA

Furnace is already hot

CLIENT NAME	Agnico			IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED
LOCATION	Micheline			1 empty	496g	563g	67g
SOURCE NAME	Innulator			2 H ₂ O ₂ /H ₂ O ₃	574g	586g	12g
PROJECT NUMBER	294	O ₂ (BLUE)	CO ₂ (RED)	3 H ₂ O ₂ /HNO ₃	605g	666g	1g
TEST DATE (dd-mon-yy)	20-10-21	12	7	4 empty	481g	481g	-
TEST NUMBER	Test 3	12	7	5 KMnO ₄ /H ₂ SO ₄	585g	585g	-
TEST PERFORMED BY	AM DG	12	7	6 KMnO ₄ /H ₂ SO ₄	61g	61g	-
STACK I.D./WIDTH	08.5	ANNULUS	7.75"	7 Silicon	842g	845g	8g
DELTA H@	1.420	<input checked="" type="checkbox"/> Measured		FILTER # 1	Q 2384	FILTER # 2	-
MINUTES PER POINT	5	Barom. ID#	50	MEASURED GLASSWARE RINSE VOLUME: - ml			
BAROMETRIC PRESSURE	28.75	NOZZLE CALIBRATION	PROBE LINER USED: Analyt	TEFLON / STEEL			
STATIC PRESSURE	-0.03	ID#	Analyt	IS STACK CYCLONIC? YES / <input checked="" type="radio"/> NO			
PRE-TEST O ₂	12	TRAIN DATA		PRE-TEST PITOT LEAK CHECK PERFORMED: <input checked="" type="radio"/> YES / NO			
PRE-TEST CO ₂	7	METALS # 2		POST-TEST PITOT LEAK CHECK PERFORMED: <input checked="" type="radio"/> YES / NO			
WATER CONTENT	7	KIT USED:	1501	INITIAL LEAK CHECK: 6.000 CFM @ -22 in. Hg			
NOZZLE DIAMETER	0.50	Meter Factor:	1.017	FINAL LEAK CHECK: 0.000 CFM @ -21 in. Hg			
PITOT FACTOR	0.827	PITOT USED:	B061	Balance ID # 26			
INITIAL METER READING	905.37	CEMS STATION ID (IF APPLICABLE)		N/A			
STACK TOP HEIGHT	365"	VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? <input checked="" type="radio"/> YES OR NO (PLEASE CIRCLE ONE)					

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
E	12	1400	32	32	856	005	0.64	407.91	120	120	-5	-2
	11	1405	32	32	857	006	0.77	410.70	120	120	-5	-2
	10	1410	32	32	860	006	0.77	413.48	120	120	-5	-2
	9	1415	32	32	862	006	0.77	416.25	120	120	-5	-2
	8	1420	33	32	859	006	0.78	419.03	120	120	-5	-2
	7	1425	33	33	863	006	0.78	421.82	120	120	-5	-2
	6	1430	33	33	864	006	0.77	424.61	120	120	-5	-2
	5	1435	34	33	870	006	0.77	427.39	120	120	-5	-2
	4	1440	34	33	877	006	0.76	430.14	120	120	-5	-2
	3	1445	35	33	865	006	0.77	432.93	120	120	-5	-2
	2	1450	35	35	867	006	0.78	435.75	120	120	-5	-2
✓	1	1455	35	35	859	005	0.65	438.30	120	120	-5	-2

METHOD USED:	M29 / M5	PARAMETER:	Metals / Particulates
Tester Name:	Amel Mathew	Reviewer Name:	[Signature]

I certify the test data is accurate and complete.

I certify I have reviewed the test data

H₂O - 6.5% ISO - 99.5%



ISOKINETIC TEST DATA

CLIENT NAME				IMPINGER # / CONTENTS	INITIAL VOLUME	FINAL VOLUME	MLS CONDENSED
LOCATION				1			
SOURCE NAME				2			
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	3			
TEST DATE (dd-mon-yy)	20-10-21			4			
TEST NUMBER	Three			5			
TEST PERFORMED BY				6			
STACK I.D./WIDTH		Historical c Measured c	ANNULUS	7			
DELTA H@			<input type="checkbox"/> Measured				
MINUTES PER POINT				FILTER # 1		FILTER # 2	
BAROMETRIC PRESSURE		mm Hg	Barom. ID#	MEASURED GLASSWARE RINSE VOLUME:			mls
STATIC PRESSURE		inches H ₂ O	NOZZLE CALIBRATION	PROBE LINER USED:	GLASS / TEFLON / STEEL		
PRE-TEST O ₂		% (dry)	ID#	IS STACK CYCLONIC?		YES / NO	
PRE-TEST CO ₂		% (dry)		PRE-TEST PITOT LEAK CHECK PERFORMED:		YES / NO	
WATER CONTENT		mole%	TRAIN DATA		POST-TEST PITOT LEAK CHECK PERFORMED:		YES / NO
NOZZLE DIAMETER		inches	METALS #	INITIAL LEAK CHECK:	CFM @	in. Hg	
PITOT FACTOR			KIT USED:	FINAL LEAK CHECK:	CFM @	in. Hg	
INITIAL METER READING		ft ³	Meter Factor:	PITOT USED:	Balance ID #		
STACK TOP HEIGHT			CEMS STATION ID (IF APPLICABLE)				

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	IMP. VAC in. Hg
			IN	OUT								
N ↓	12	1525	34	33	858	006	0.78	441.10	120	120	-7	-3
	11	1530	34	33	839 839	006	0.78	443.89	120	120	-7	-3
	10	1535	35	33	861	005	0.65	446.44	120	120	-7	-2
	9	1540	35	33	865	006	0.78	449.24	120	120	-7	-4
	8	1545	35	33	858	007	0.9	452.26	120	120	-7	-4
	7	1550	35	33	854	006	0.78	455.07	120	120	-7	-4
	6	1555	36	33	872	005	0.64	457.61	120	120	-7	-4
	5	1600	36	34	858	005	0.65	460.18	120	120	-7	-4
	4	1605	36	34	860	006	0.78	462.98	120	120	-7	-4
	3	1610	36	34	860	005	0.65	465.55	120	120	-7	-4
	2	1615	36	34	851	005	0.65	468.12	120	120	-7	-4
	1	1620	36	34	864	005	0.65	470.68	120	120	-7	-4

METHOD USED: <u>AT EPA TRAC M 29/M5</u>	PARAMETER: <u>Trace Metals/Particulate</u>
Tester Name: <u>Arund Mathew</u>	Reviewer Name: <u>[Signature]</u>

I certify the test data is accurate and complete.

I certify I have reviewed the test data.



PROPORTIONAL TEST DATA - NO FLOW

EMS FCD-01280/9
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CLIENT NAME	Agnico Eagle		TEST DATE	19/10/21 <small>dd-mon-yy</small>	STACK I.D.	38.5"	<input type="checkbox"/> Historical <input type="checkbox"/> Measured
LOCATION	Meliadine		TEST #	ONE	ANNULUS	7.75"	<input checked="" type="checkbox"/> Measured
SOURCE NAME	INCINERATOR		B.P. (in. Hg)	29.8	PITOT#	2061	Factor: 0.827
			Barom. ID#	50	KIT#	ABS010	Factor: 1.059
PARAM/METHOD	8		PROJECT #	2194	CEMS SATION ID (if applicable)	N/A	
STACK TOP HEIGHT	38'5"		AMBIENT T °C	10	NOTES:	N/A	
VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? <input checked="" type="checkbox"/> YES OR NO (PLEASE CIRCLE ONE)							
IS STACK CYCLONIC: YES / <input checked="" type="checkbox"/> NO Hist <input checked="" type="checkbox"/>			Avg θ = 0°		ANALYSTS: DG AM	Balance ID # 030	
POST-TEST PITOT LEAK CHECK PERFORMED: <input checked="" type="checkbox"/> YES / NO			PROBE LINER USED: GLASS / <input checked="" type="checkbox"/> TEFLON / STEEL				
WEIGHTS OR VOLUMES				CLOCK TIME	METER VOL (ft ³ / L)	IMPINGER VAC	IMPINGER TEMP
IMPINGER CONTENTS	INITIAL	FINAL					METER TEMP (°C) / F
3% H ₂ O ₂	200ml	234ml	12:00	737.20	10	0	10.5
			12:10	739.00	10	0	11
			12:20	742.01	10	0	14
			12:30	744.50	10	0	18
			12:40	747.40	10	1	21
SILICA GEL	361 g	367 g	12:50	751.35	10	1	25
TOTAL WATER CONDENSED		40 ml	13:00	753.30	10	1	25
GLASSWARE RINSE VOLUME		50 ml	TOTAL	16.10			

THERMOMETER			
Instrument ID#	2334	Temperature (C/F)	19

LEAK CHECK	
BEFORE	AFTER
1.001 cfm @ 15 in. Hg	1.000 cfm @ 15 in. Hg

FYRITE ANALYSIS					
TEST # ONE	TEST #		TEST #		
Start Time: 12:10	Start Time:		Start Time:		
End Time: 12:20	End Time:		End Time:		
Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %
11.5	7.5				
12.5	7.0				
11.5	7.5				

Tester Name: [Signature]
I certify the test data is accurate and complete.

Verifier Name: [Signature]
I verify the test data is accurate and complete.



PROPORTIONAL TEST DATA - NO FLOW

EMS FCD-01280/9

Page 1 of 1

CLIENT NAME	Agnico Eagle		TEST DATE	20/10/21 <small>dd-mon-yy</small>	STACK I.D.	38.5"	<input checked="" type="checkbox"/> Historical <input type="checkbox"/> Measured		
LOCATION	Meliadine		TEST #	TWO	ANNULUS	7.75"	<input checked="" type="checkbox"/> Measured		
SOURCE NAME	INCINERATOR	B.P. (in. Hg)	28.75	PITOT#	8061	Factor:	0.827		
		Barom. ID#	50	KIT#	ABS005	Factor:	0.798		
PARAM/METHOD	8		PROJECT #	2194	CEMS SATION ID (if applicable)	N/A			
STACK TOP HEIGHT	3615"		AMBIENT T °C	12	NOTES:	N/A			
VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? <input checked="" type="checkbox"/> YES OR NO (PLEASE CIRCLE ONE)									
IS STACK CYCLONIC: YES / <input checked="" type="checkbox"/> NO			Hist <input type="checkbox"/> Avg θ = α		ANALYSTS:	DG AM			
POST-TEST PITOT LEAK CHECK PERFORMED: <input checked="" type="checkbox"/> YES / NO			PROBE LINER USED: GLASS / <input checked="" type="checkbox"/> TEFLON / STEEL					Balance ID #	030
WEIGHTS OR VOLUMES				CLOCK TIME	METER VOL <small>(ft³) / L</small>	IMPINGER VAC	TEMP	METER TEMP <small>°C / F</small>	
IMPINGER CONTENTS	INITIAL	FINAL							
3% H ₂ O ₂	200 ml	214 ml	11:15	631.70	10	5	25		
			11:25	633.71	10	5	26		
			11:35	635.65	10	5	27		
			11:45	637.30	10	5	28		
			11:55	639.31	10	5	28		
SILICA GEL	367 g	370 g	12:05	641.45	10	5	28		
TOTAL WATER CONDENSED		17 ml	12:15	643.80	10	5	28		
GLASSWARE RINSE VOLUME		50 ml	TOTAL	12.1					

THERMOMETER			
Instrument ID#	DT034	Temperature (°C/F)	12

LEAK CHECK			
BEFORE		AFTER	
0.000 cfm @	15 in. Hg	0.000 cfm @	15 in. Hg

FYRITE ANALYSIS					
TEST #	TWO		TEST #		
Start Time:	11:20		Start Time:		
End Time:	11:30		End Time:		
Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %
12	7				
12	7				
12	7				

Tester Name: [Signature]

I certify the test data is accurate and complete.

Verifier Name: [Signature]

I verify the test data is accurate and complete.



PROPORTIONAL TEST DATA - NO FLOW

EMS FCD-01280/9

Page 1 of 1

CLIENT NAME	Agnico Eagle		TEST DATE	20/10/21 <small>dd-mon-yy</small>	STACK I.D.	38.1	<input checked="" type="checkbox"/> Historical <input type="checkbox"/> Measured
LOCATION	Meliadine		TEST #	THREE	ANNULUS	7.75'	<input type="checkbox"/> Measured
SOURCE NAME	INCINERATOR	B.P. (in. Hg)	28.75	PITOT#	B081	Factor:	0.927
		Barom. ID#	50	KIT#	ABS005	Factor:	0.992
PARAM/METHOD	8		PROJECT #	2199	CEMS SATION ID (if applicable)	NA	
STACK TOP HEIGHT	36511		AMBIENT T °C	5	NOTES:	NA	
VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? <u>YES</u> OR NO (PLEASE CIRCLE ONE)							
IS STACK CYCLONIC: YES / <u>NO</u> Hist <input checked="" type="checkbox"/> Avg θ <u>23</u>			ANALYSTS: <u>DS AM</u>		Balance ID # <u>030</u>		
POST-TEST PITOT LEAK CHECK PERFORMED: <u>YES</u> / NO			PROBE LINER USED: GLASS / <u>TEFLON</u> / STEEL				
WEIGHTS OR VOLUMES			CLOCK TIME	METER VOL <u>FE3</u> / L	IMPINGER VAC	TEMP	METER TEMP °C / F
IMPINGER CONTENTS	INITIAL	FINAL					
3% H ₂ O ₂	200ml	218 ml	14:00	643.90	10	5	26
			14:10	645.55	10	5	24
			14:20	647.10	10	5	23
			14:30	649.35	10	5	21
			14:40	651.40	10	5	21
SILICA GEL	370g	373g	14:50	653.85	10	5	21
TOTAL WATER CONDENSED		21 ml	15:00	656.10	10	5	21
GLASSWARE RINSE VOLUME		50 ml	TOTAL	1212			

THERMOMETER			
Instrument ID#	DT034	Temperature (°C/F)	13

LEAK CHECK	
BEFORE	AFTER
1,000 cfm @ 15 in. Hg	1,000 cfm @ 15 in. Hg

FYRITE ANALYSIS					
TEST #	THREE		TEST #		
Start Time:	15:20		Start Time:		
End Time:	15:30		End Time:		
Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %
12	7				
12	7				
12	7				

Tester Name: [Signature]
I certify the test data is accurate and complete.

Verifier Name: [Signature]
I verify the test data is accurate and complete.



PROPORTIONAL TEST DATA - NO FLOW

EMS FCD-01280/9

Page 1 of 1

CLIENT NAME	<i>Agnico Eagle</i>	TEST DATE	<i>19/10/21</i> <small>dd-mon-yy</small>	STACK I.D.	<i>38.5"</i>	<input checked="" type="checkbox"/> Historical <input type="checkbox"/> Measured
LOCATION	<i>Meliadine</i>	TEST #	<i>ONE</i>	ANNULUS	<i>7.75"</i>	<input checked="" type="checkbox"/> Measured
SOURCE NAME	<i>INCINERATOR</i>	B.P. (in. Hg)	<i>29.8</i>	PITOT#	<i>3061</i>	Factor: <i>8827</i>
		Barom. ID#	<i>50</i>	KIT#	<i>ABS 005</i>	Factor: <i>8998</i>
PARAM/METHOD	<i>26</i>	PROJECT #	<i>2994</i>	CEMS SATION ID (if applicable)		<i>N/A</i>
STACK TOP HEIGHT	<i>36'5"</i>	AMBIENT T °C	<i>0</i>	NOTES:		

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

IS STACK CYCLONIC: YES / NO Hist Avg θ *22°* ANALYSTS: *DG AM* Balance ID # *030*

POST-TEST PITOT LEAK CHECK PERFORMED: YES / NO PROBE LINER USED: GLASS / TEFLON / STEEL

WEIGHTS OR VOLUMES			CLOCK TIME	METER VOL (ft ³) / L	IMPINGER		METER TEMP (°C) / F
IMPINGER CONTENTS	INITIAL	FINAL			VAC	TEMP	
<i>1 N H₂SO₄</i>	<i>100 ml</i>	<i>140 ml</i>	<i>12:00</i>	<i>601.50</i>	<i>3</i>	<i>4</i>	<i>10</i>
			<i>12:10</i>	<i>604.51</i>	<i>3</i>	<i>4</i>	<i>12</i>
<i>1 N NaOH</i>	<i>100</i>	<i>98</i>	<i>12:20</i>	<i>608.55</i>	<i>3</i>	<i>4</i>	<i>16</i>
			<i>12:30</i>	<i>611.11</i>	<i>3</i>	<i>5</i>	<i>17</i>
			<i>12:40</i>	<i>614.43</i>	<i>3</i>	<i>5</i>	<i>22</i>
SILICA GEL	<i>405 g</i>	<i>409 g</i>	<i>12:50</i>	<i>617.66</i>	<i>3</i>	<i>5</i>	<i>24</i>
TOTAL WATER CONDENSED	<i>42</i>	<i>50 ml</i>	<i>13:00</i>	<i>620.85</i>	<i>3</i>	<i>5</i>	<i>25</i>
GLASSWARE RINSE VOLUME		<i>50 ml</i>	TOTAL	<i>19.35</i>			

THERMOMETER		
Instrument ID#	<i>DT034</i>	Temperature (°C) / (°F) <i>16</i>

LEAK CHECK	
BEFORE	AFTER
<i>1,000 cfm @ 15 in. Hg</i>	<i>1,000 cfm @ 15 in. Hg</i>

FYRITE ANALYSIS					
TEST #	TEST #		TEST #		
<i>ONE</i>					
Start Time:	<i>12:10</i>		Start Time:		
End Time:	<i>12:20</i>		End Time:		
Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %
<i>12</i>	<i>7</i>				
<i>12.5</i>	<i>7</i>				
<i>12</i>	<i>7</i>				

Tester Name: *[Signature]*

I certify the test data is accurate and complete.

Verifier Name: *[Signature]*

I verify the test data is accurate and complete.



PROPORTIONAL TEST DATA - NO FLOW

EMS FCD-01280/9

Page 1 of 1

CLIENT NAME	<i>Agnico Eagle</i>	TEST DATE	<i>20/10/21</i> <small>dd-mon-yy</small>	STACK I.D.	<i>38.5"</i>	<input type="checkbox"/> Historical <input checked="" type="checkbox"/> Measured	
LOCATION	<i>Meliadine</i>	TEST #	<i>TWO</i>	ANNULUS	<i>7.75'</i>	<input checked="" type="checkbox"/> Measured	
SOURCE NAME	<i>INCINERATOR</i>	B.P. (in. Hg)	<i>28.75</i>	PITOT#	<i>R061</i>	Factor: <i>0.827</i>	
		Barom. ID#	<i>50</i>	KIT#	<i>ABS 010</i>	Factor: <i>1009</i>	
PARAM/METHOD	<i>26</i>	PROJECT #	<i>2194</i>	CEMS SATION ID (if applicable)	<i>N/A</i>		
STACK TOP HEIGHT	<i>36'5"</i>	AMBIENT T °C	<i>12</i>	NOTES:	<i>N/A</i>		
VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? <input checked="" type="checkbox"/> YES OR NO (PLEASE CIRCLE ONE)							
IS STACK CYCLONIC: YES / <input checked="" type="checkbox"/> NO		Hist <input checked="" type="checkbox"/>	Avg $\theta =$ <i>285</i>	ANALYSTS:	<i>DG AM</i>	Balance ID # <i>030</i>	
POST-TEST PITOT LEAK CHECK PERFORMED: <input checked="" type="checkbox"/> YES / NO			PROBE LINER USED: GLASS / <input checked="" type="checkbox"/> TEFLON / STEEL				
WEIGHTS OR VOLUMES			CLOCK TIME	METER VOL (ft ³) / L	IMPINGER VAC	TEMP	METER TEMP (C) / F
IMPINGER CONTENTS	INITIAL	FINAL					
<i>1N H₂SO₄</i>	<i>100 ml</i>	<i>120 ml</i>	<i>11:15</i>	<i>758.90</i>	<i>6</i>	<i>10</i>	<i>8</i>
			<i>11:25</i>	<i>761.80</i>	<i>6</i>	<i>10</i>	<i>10</i>
<i>1N NaOH</i>	<i>100</i>	<i>100</i>	<i>11:35</i>	<i>764.25</i>	<i>6</i>	<i>10</i>	<i>15</i>
			<i>11:45</i>	<i>767.15</i>	<i>6</i>	<i>10</i>	<i>25</i>
			<i>11:55</i>	<i>770.30</i>	<i>6</i>	<i>10</i>	<i>26</i>
SILICA GEL	<i>409 g</i>	<i>413 g</i>	<i>12:05</i>	<i>771.44</i>	<i>6</i>	<i>10</i>	<i>30</i>
TOTAL WATER CONDENSED	<i>24.56 ml</i>		<i>12:15</i>	<i>772.74</i>	<i>6</i>	<i>10</i>	<i>30</i>
GLASSWARE RINSE VOLUME	<i>50/50 ml</i>		TOTAL	<i>13.84</i>			

THERMOMETER			
Instrument ID#	<i>DT034</i>	Temperature (°C/F)	<i>19</i>

LEAK CHECK			
BEFORE		AFTER	
<i>1,000</i> cfm@	<i>15</i> in. Hg	<i>1,000</i> cfm@	<i>15</i> in. Hg

FYRITE ANALYSIS					
TEST # <i>TWO</i>	TEST #		TEST #		
Start Time:	Start Time:		Start Time:		
End Time:	End Time:		End Time:		
Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %
<i>12</i>	<i>7</i>				
<i>12.5</i>	<i>7</i>				
<i>12</i>	<i>7</i>				

Tester Name: *[Signature]*
I certify the test data is accurate and complete.

Verifier Name: *[Signature]*
I verify the test data is accurate and complete.



PROPORTIONAL TEST DATA - NO FLOW

EMS FCD-01280/9

Page 1 of 1

CLIENT NAME	TANICO Eagle		TEST DATE	20/10/21 <small>dd-mon-yy</small>	STACK I.D.	88.5"	<input type="checkbox"/> Historical <input checked="" type="checkbox"/> Measured
LOCATION	Meliadine		TEST #	THREE	ANNULUS	7.75'	<input checked="" type="checkbox"/> Measured
SOURCE NAME	INCINERATOR	B.P. (in. Hg)	28.75	PITOT#	8061	Factor:	0.827
		Barom. ID#	50	KIT#	ABS 010	Factor:	1.087
PARAM/METHOD	26	PROJECT #	2194	CEMS SATION ID (if applicable)	N14		
STACK TOP HEIGHT	36' 5"	AMBIENT T °C	14	NOTES:			
VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? <input checked="" type="checkbox"/> YES OR <input type="checkbox"/> NO (PLEASE CIRCLE ONE)							
IS STACK CYCLONIC: YES / <input checked="" type="checkbox"/> NO		Hist <input checked="" type="checkbox"/>	Avg θ = C^2	ANALYSTS:	DG Am	Balance ID #	030
POST-TEST PITOT LEAK CHECK PERFORMED: <input checked="" type="checkbox"/> YES / <input type="checkbox"/> NO		PROBE LINER USED: GLASS / <input checked="" type="checkbox"/> TEFLON / STEEL					
WEIGHTS OR VOLUMES			CLOCK TIME	METER VOL (ft ³) / L	IMPINGER VAC	TEMP	METER TEMP (°C) / F
IMPINGER CONTENTS	INITIAL	FINAL					
0.1N H ₂ SO ₄	100 ml	152 ml	14:00	773.34	9	10	9
			14:10	776.40	9	10	15
0.1N NaOH	100	100	14:20	778.10	9	10	18
			14:30	780.55	9	10	23
			14:40	784.13	9	10	23
SILICA GEL	412 g	418 g	14:50	786.44	9	10	26
TOTAL WATER CONDENSED	58	58 ¹⁹ ml	15:00	788.00	9	10	27
GLASSWARE RINSE VOLUME	50/50	ml	TOTAL	14.66			

THERMOMETER		
Instrument ID#	DT034	Temperature (°C/F)
		12

LEAK CHECK	
BEFORE	AFTER
1,000 cfm @ 15 in. Hg	1,000 cfm @ 15 in. Hg

FYRITE ANALYSIS					
TEST #	TEST #		TEST #		
Start Time:	Start Time:		Start Time:		
End Time:	End Time:		End Time:		
Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %	Oxygen - %	Carbon Dioxide %
12	7				
12.5	7				
12	7				

Tester Name: [Signature]
I certify the test data is accurate and complete.

Verifier Name: [Signature]
I verify the test data is accurate and complete.



CYCLONIC CHECK SHEET

EMS FCD-00795/9

Page 1 of 1

CLIENT NAME	<i>Agnico</i>	TEST DATE	<i>19-10-21</i>	STACK I.D.	<i>385</i>	Historical <input type="checkbox"/>
LOCATION	<i>Milwaukee</i>	B.P. (in. Hg)	<i>29.81</i>	TEST #	<i>1-2</i>	Measured <input type="checkbox"/>
SOURCE NAME	<i>Inventory</i>	Barom. ID#	<i>50</i>	PITOT#	<i>8061</i>	Factor: <i>0.827</i>
PROJECT #	<i>2194</i>	TEMP. (°C)	<i>4</i>	ANALYSTS:	<i>AM DG</i>	
METHOD USED:	EMS WI-00013	STACK TOP HEIGHT	<i>36'5"</i>	PARAMETER:	cyclonic check	
NOTES: <i>N/A</i>						

FLOW DETERMINATION								
Notes - 0° = normal flow position, 90° = normal null position. Test angle = 90° from null angle. Example, if null is 60° CW then should be testing at 30° CCW						Static Pressure (in. H2O): <i>-0.03</i>		
	Port ID	<i>E</i>	Port ID	<i>N</i>	Port ID	<i>E</i>	Port ID	<i>N</i>
	Start/End Time Of Traverse	<i>1630</i>	Start/End Time Of Traverse	<i>1650</i>	Start/End Time Of Traverse	<i>1755</i>	Start/End Time Of Traverse	<i>1820</i>
Point	Null Angle	Test Angle	Null Angle	Test Angle	Null Angle	Test Angle	Null Angle	Test Angle
1	<i>88</i>	<i>2</i>	<i>89</i>	<i>1</i>	<i>87</i>	<i>3</i>	<i>86</i>	<i>4</i>
2	<i>89</i>	<i>1</i>	<i>89</i>	<i>1</i>	<i>86</i>	<i>4</i>	<i>85</i>	<i>5</i>
3	<i>87</i>	<i>3</i>	<i>88</i>	<i>2</i>	<i>86</i>	<i>4</i>	<i>85</i>	<i>5</i>
4	<i>87</i>	<i>3</i>	<i>88</i>	<i>2</i>	<i>86</i>	<i>4</i>	<i>87</i>	<i>3</i>
5	<i>87</i>	<i>3</i>	<i>87</i>	<i>3</i>	<i>85</i>	<i>5</i>	<i>86</i>	<i>4</i>
6	<i>88</i>	<i>2</i>	<i>88</i>	<i>2</i>	<i>85</i>	<i>5</i>	<i>85</i>	<i>5</i>
7	<i>88</i>	<i>2</i>	<i>88</i>	<i>2</i>	<i>87</i>	<i>3</i>	<i>84</i>	<i>6</i>
8	<i>87</i>	<i>3</i>	<i>87</i>	<i>3</i>	<i>85</i>	<i>5</i>	<i>84</i>	<i>6</i>
9	<i>87</i>	<i>3</i>	<i>88</i>	<i>2</i>	<i>82</i>	<i>8</i>	<i>84</i>	<i>6</i>
10	<i>88</i>	<i>2</i>	<i>87</i>	<i>3</i>	<i>82</i>	<i>8</i>	<i>85</i>	<i>5</i>
11	<i>88</i>	<i>2</i>	<i>88</i>	<i>2</i>	<i>83</i>	<i>7</i>	<i>87</i>	<i>3</i>
12	<i>89</i>	<i>1</i>	<i>83</i>	<i>2</i>	<i>83</i>	<i>7</i>	<i>88</i>	<i>2</i>
13	<i>88</i>	<i>2</i>		<i>1</i>				
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
Cyclonic?	YES OR <u>NO</u>	YES OR <u>NO</u>	YES OR <u>NO</u>	YES OR <u>NO</u>	YES OR <u>NO</u>	YES OR <u>NO</u>	YES OR <u>NO</u>	YES OR <u>NO</u>

Tester Name:	<i>Andrew...</i>	Reviewer Name:	<i>[Signature]</i>
I certify the test data is accurate and complete.		I certify I have reviewed the test data.	



SVOC TEST DATA

191-063

CLIENT NAME	Agnico			IMPINGING CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION	Melvindale			XAD	336.7g	337	0.3
SOURCE NAME	Mincator			Condenser	274.6g	275	0.4
PROJECT NUMBER	21A4	O2 (BLUE)	CO2 (RED)	Condensate Trap	508.9g	446.3g	62.20
TEST DATE (dd-mon-yy)	21-10-21	12	7	Glycol	754g	754	—
TEST NUMBER	One	12	7	Empty	659.6g	655	0.4
TEST PERFORMED BY	Am DG	12	7	Silica	877.6g	879	1.4
STACK I.D./WIDTH	38.54	ANNULUS	7.75	<input checked="" type="checkbox"/> Measured IS STACK CYCLONIC? YES (NO)			
DELTA H@	1.470			Barom. ID#	50	PRE-TEST PITOT LEAK CHECK PERFORMED: (YES) NO	
MINUTES PER POINT	5min x 2			NOZZLE CALIBRATION		POST-TEST PITOT LEAK CHECK PERFORMED: (YES) NO	
BAROMETRIC PRESSURE	29.7	mm Hg		ID#	Quartz	INITIAL LEAK CHECK VOLUME: 0.50 cu ft	
STATIC PRESSURE	-0.03	inches H ₂ O				PORT CHANGE LEAK CHECK VOLUME: 1.7 cu ft	
PRE-TEST O ₂	12	% (dry)		ORGANICS DATA		FINAL LEAK CHECK VOLUME: 0.68 cu ft	
PRE-TEST CO ₂	7	% (dry)		XAD #	1	INITIAL LEAK CHECK: 0.002 CFM @ -22 in. Hg	
WATER CONTENT	7	mole%		Train #	1	PORT CHANGE L.C.: 0.002 CFM @ -22 in. Hg	
NOZZLE DIAMETER	0.5	inches		Filter #	1	FINAL LEAK CHECK: 0.002 CFM @ -20 in. Hg	
PITOT FACTOR	0.827			KIT USED:	150-1	Balance ID#	26 Kit Factor: 1.017 PITOTUBE USED: 6071
INITIAL METER READING	497.00	ft ³		CEMS STATION ID (IF APPLICABLE) N/A			
STACK TOP HEIGHT	36.5'						

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
N	12	1115	20	15	866	0.06	0.73	499.60	120	120	-7	2	-5
	12	1120	20	15	875	0.06	0.72	502.17	120	120	-7	2	-5
	11	1125	20	15	881	0.06	0.72	504.78	120	120	-7	2	-5
	11	1130	20	16	883	0.06	0.72	507.35	120	120	-7	2	-5
	10	1135	21	16	892	0.06	0.71	509.90	120	120	-7	2	-5
	10	1140	21	16	883	0.07	0.74	512.71	120	120	-7	2	-5
	9	1145	23	17	872	0.06	0.73	515.34	120	120	-7	2	-5
	7	1150	23	17	873	0.06	0.73	517.95	120	120	-7	2	-5
	8	1155	25	18	871	0.06	0.74	520.58	120	120	-6	3	-5
	8	1120	25	18	874	0.06	0.73	523.20	120	120	-6	3	-5
	7	1200	26	18	872	0.06	0.74	525.84	120	120	-6	3	-5
	7	1205	26	18	872	0.06	0.74	525.84	120	120	-6	3	-5
	7	1210	26	19	872	0.06	0.74	528.45	120	120	-6	5	-5
	6	1215	27	20	883	0.06	0.73	531.10	120	120	-6	5	-5
	6	1220	27	20	875	0.05	0.62	533.51	120	120	-6	5	-5
	5	1225	27	20	872	0.06	0.8	536.37	120	120	-7	5	-5
	5	1230	28	21	870	0.06	0.74	539.07	120	120	-7	4	-6

METHOD USED: EPA 816/2 PARAMETER: Duran/Furans/SVOC

Tester Name: Kevin Mathew

I certify the test data is accurate and complete. I certify I have reviewed the test data.

Shaping a world of trust

Final LC fail. Test 1 discarded
 Re-test Glass liner



SVOC TEST DATA

PS 203

CLIENT NAME				IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD			
SOURCE NAME				Condenser			
PROJECT NUMBER		O2 (BLUE)	CO2 (RED)	Condensate Trap			
TEST DATE (dd-mon-yy)				Glycol			
TEST NUMBER				Empty			
TEST PERFORMED BY				Silica			
STACK I.D./WIDTH		Historical <input type="checkbox"/> Measured <input type="checkbox"/>	ANNULUS	IS STACK CYCLONIC?			YES NO
DELTA H@			<input type="checkbox"/> Measured	PRE-TEST PITOT LEAK CHECK PERFORMED:			YES NO
MINUTES PER POINT			Barom. ID#	POST-TEST PITOT LEAK CHECK PERFORMED:			YES NO
BAROMETRIC PRESSURE		mm Hg	NOZZLE CALIBRATION	INITIAL LEAK CHECK VOLUME:			
STATIC PRESSURE		inches H ₂ O	ID#	PORT CHANGE LEAK CHECK VOLUME:			
PRE-TEST O ₂		% (dry)	ORGANICS DATA		FINAL LEAK CHECK VOLUME:		
PRE-TEST CO ₂		% (dry)	XAD #	INITIAL LEAK CHECK:	CFM @		in. Hg
WATER CONTENT		mole%	Train #	PORT CHANGE L.C.:	CFM @		in. Hg
NOZZLE DIAMETER		inches	Filter #	FINAL LEAK CHECK:	CFM @		in. Hg
PITOT FACTOR			KIT USED:	Balance ID#	Kit Factor:	PITOTBE USED:	
INITIAL METER READING		ft ³	CEMS STATION ID (IF APPLICABLE)				
STACK TOP HEIGHT							

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
N	4	1235	29	22	872	0.06	0.74	541.67	120	120	7	4	-6
	4	1240	30	22	872	0.06	0.75	544.34	120	120	7	4	-6
	3	1245	30	22	870	0.05	0.62	546.79	120	120	7	4	-6
	3	1250	31	24	869	0.05	0.63	549.25	120	120	7	4	-6
	2	1255	31	24	875	0.05	0.62	551.70	120	120	-6	3	-6
	2	1300	31	25	877	0.05	0.62	554.14	120	120	-6	3	-6
	1	1305	31	25	870	0.05	0.63	556.60	120	120	-6	3	-6
	1	1310	32	26	868	0.05	0.63	559.07	120	120	-6	3	-6
					LL	0.002	@ -20 in. Hg	560.78	cu ft				
E	12	1330	30	23	874	0.06	0.75	583.45	120	120	-6	3	-6
	12	1335	30	23	869	0.06	0.75	586.13	120	120	-6	4	-6
	11	1340	30	24	873	0.06	0.75	588.81	120	120	-6	4	-6
	11	1345	31	24	875	0.076	0.75	591.48	120	120	-6	4	-6
	10	1350	32	24	859	0.06	0.76	594.18	120	120	-6	4	-6
	10	1355	33	24	860	0.06	0.76	596.87	120	120	-7	3	-6
	9	1400	33	24	864	0.06	0.76	599.58	120	120	-8	3	-6

METHOD USED: EPS 1 RM/2 PARAMETER: Dioxins/Furans SVOC

Tester Name: Andrew Mathew

I certify the test data is accurate and complete.

I certify I have reviewed the test data.

Shaping a world of trust



SVOC TEST DATA

A 3 of 3

CLIENT NAME				IMPINGER CONTENTS		INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD				
SOURCE NAME				Condenser				
PROJECT NUMBER				O2 (BLUE)	CO2 (RED)			
TEST DATE (dd-mon-yy)				Condensate Trap				
TEST NUMBER				Glycol				
TEST PERFORMED BY				Empty				
STACK I.D./WIDTH				ANNULUS	Silica			
DELTA H@				<input type="checkbox"/> Measured <input type="checkbox"/> Barom. ID# <i>See P1</i>		IS STACK CYCLONIC?		YES NO
MINUTES PER POINT				NOZZLE CALIBRATION		POST-TEST PITOT LEAK CHECK PERFORMED:		YES NO
BAROMETRIC PRESSURE				mm Hg		POST-TEST PITOT LEAK CHECK PERFORMED:		YES NO
STATIC PRESSURE				inches H ₂ O		ID#	INITIAL LEAK CHECK VOLUME:	
PRE-TEST O ₂				% (dry)		PORT CHANGE LEAK CHECK VOLUME:		
PRE-TEST CO ₂				% (dry)		ORGANICS DATA		
WATER CONTENT				mole%		XAD #	INITIAL LEAK CHECK: CFM @ in. Hg	
NOZZLE DIAMETER				inches		Train #	PORT CHANGE L.C.: CFM @ in. Hg	
PITOT FACTOR						Filter #	FINAL LEAK CHECK: CFM @ in. Hg	
INITIAL METER READING				ft ³		KIT USED:		Balance ID# Kit Factor: PITOBEE USED:
STACK TOP HEIGHT						CEMS STATION ID (IF APPLICABLE)		

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
E	9	1405	33	24	861	0.06	0.76	582.28	120	120	-7	3	-6
	8	1410	33	24	858	0.07	0.89	585.2	120	120	-7	3	-6
	8	1415	33	25	857	0.06	0.76	587.92	120	120	-7	3	-6
	7	1420	34	26	859	0.06	0.76	590.64	120	120	-7	3	-6
	7	1425	34	26	857	0.06	0.77	593.35	120	120	-7	3	-6
	6	1430	34	26	864	0.06	0.76	596.07	120	120	-8	5	-6
	6	1435	34	27	860	0.06	0.77	598.76	120	120	-6	5	-6
	5	1440	34	27	859	0.06	0.77	601.48	120	120	-5	5	-4
	5	1445	35	28	865	0.06	0.76	604.21	120	120	-5	5	-4
	4	1450	35	28	868	0.06	0.76	606.93	120	120	-5	5	-4
	4	1455	35	28	865	0.06	0.76	609.65	120	120	-5	5	-4
	3	1500	35	28	870	0.05	0.563	612.12	120	120	-5	5	-4
	3	1505	35	29	863	0.05	0.64	614.63	120	120	-5	5	-4
	2	1510	36	29	868	0.05	0.63	617.10	120	120	-5	5	-4
	2	1510	36	29	859	0.04	0.51	619.34	120	120	-5	5	-4
	1	1515	36	29	869	0.04	0.5	621.57	120	120	-5	5	-4
	1	1520	36	30	873	0.04	0.5	623.8	120	120	-5	5	-4

METHOD USED: *EP 5.1/PM 2* PARAMETER: *Dioxin/Furans/SVOCs*

Tester Name: *Amund Mathen*

I certify the test data is accurate and complete.

I certify I have reviewed the test data.

Shaping a world of trust
 LE 0.001 @ -20 in Hg 624.48 cu ft



SVOC TEST DATA

CLIENT NAME	Ignico			IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION	Meliadine						
SOURCE NAME	Truncator			XAD	335	339	4
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	Condenser	874.1	286	1.9
TEST DATE (dd-mon-yy)	22-10-21	12	65	Condensate Trap	497.3	678	200.7
TEST NUMBER	TWD	12	65	Glycol	806	814	18
TEST PERFORMED BY	AM DG	12	65	Empty	653.4	653	
STACK I.D./WIDTH	38.5"	ANNULUS 7.75"		Silica	891.4	903	11.6
DELTA H@	1.490	<input checked="" type="checkbox"/> Measured		IS STACK CYCLONIC?			YES (NO)
MINUTES PER POINT	9min x 2	Barom. ID# 50		PRE-TEST PITOT LEAK CHECK PERFORMED:			YES (NO)
BAROMETRIC PRESSURE	29.8"	NOZZLE CALIBRATION		POST-TEST PITOT LEAK CHECK PERFORMED:			YES (NO)
STATIC PRESSURE	-0.05"	ID# Analyz		INITIAL LEAK CHECK VOLUME:			0.74 ft ³
PRE-TEST O ₂	12%	ORGANICS DATA		PORT CHANGE LEAK CHECK VOLUME:			0.75 ft ³
PRE-TEST CO ₂	65%	XAD # 2		FINAL LEAK CHECK VOLUME:			0.77 ft ³
WATER CONTENT	7%	Train # 2		INITIAL LEAK CHECK:	0.002	CFM @	-20 in. Hg
NOZZLE DIAMETER	0.43"	Filter # 2		PORT CHANGE L.C.:	0.002	CFM @	-20 in. Hg
PITOT FACTOR	0.827	KIT USED: 150-1		FINAL LEAK CHECK:	0.002	CFM @	-20 in. Hg
INITIAL METER READING	626.7	Balance ID# 26		Kit Factor: 1.017	PITOTBE USED: 8061		
STACK TOP HEIGHT	36'5"	CEMS STATION ID (if applicable)		N/A			

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES (CIRCLED) OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
N	12	935	11	13	866	0.12	0.78	629.36	120	120	-2	3	-5
	12	940	11	13	867	0.12	0.78	632.03	120	120	-2	3	-5
	11	945	12	13	870	0.13	0.85	634.8	120	120	-2	3	-5
	11	950	12	13	871	0.13	0.85	637.58	120	120	-2	3	-5
	10	955	13	14	886	0.13	0.85	640.35	120	120	-2	3	-5
	10	1000	13	14	857	0.12	0.80	643.05	120	120	-2	3	-5
	9	1005	14	14	859	0.12	0.80	645.75	120	120	-2	4	-5
	9	1010	15	14	862	0.12	0.80	648.45	120	120	-2	4	-5
	8	1015	16	14	865	0.12	0.80	651.14	120	120	-2	5	-5
	8	1020	16	14	860	0.13	0.85	653.75	120	120	-2	5	-5
	7	1025	17	14	851	0.14	0.85	656.88	120	120	-2	6	-5
	7	1030	17	15	855	0.12	0.80	659.50	120	120	-2	6	-5
	6	1035	18	15	866	0.12	0.80	662.31	120	120	-2	6	-5
	6	1040	18	15	867	0.102	0.80	665.00	120	120	-2	6	-6
	5	1045	19	16	869	0.10	0.66	667.49	120	120	-3	6	-6
↓	5	1050	19	16	872	0.10	0.66	669.94	120	120	-3	7	-6

METHOD USED: EPS 1 RMP2
 PARAMETER: Protein Furans SVOCs
 Tester Name: Arnold Mathew

I certify the test data is accurate and complete. I certify I have reviewed the test data.

Shaping a world of trust

20-83 180 10.15%



SVOC TEST DATA

EMS FCD-00418/10

Page 1 of 1

PS 2083

CLIENT NAME				IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD			
SOURCE NAME				Condenser			
PROJECT NUMBER		O2 (BLUE)	CO2 (RED)	Condensate Trap			
TEST DATE (dd-mon-yy)				Glycol			
TEST NUMBER				Empty			
TEST PERFORMED BY				Silica			
STACK I.D./WIDTH		Historical <input type="checkbox"/>	Measured <input type="checkbox"/>	ANNULUS			
DELTA H@		<i>See PS</i>		Measured <input checked="" type="checkbox"/>	IS STACK CYCLONIC?		YES NO
MINUTES PER POINT		Barom. ID#			PRE-TEST PITOT LEAK CHECK PERFORMED:		YES NO
BAROMETRIC PRESSURE	mm Hg	NOZZLE CALIBRATION			POST-TEST PITOT LEAK CHECK PERFORMED:		YES NO
STATIC PRESSURE	inches H ₂ O	ID#			INITIAL LEAK CHECK VOLUME:		
PRE-TEST O ₂	% (dry)				PORT CHANGE LEAK CHECK VOLUME:		
PRE-TEST CO ₂	% (dry)	ORGANICS DATA			FINAL LEAK CHECK VOLUME:		
WATER CONTENT	mole%	XAD #			INITIAL LEAK CHECK:	CFM @	in. Hg
NOZZLE DIAMETER	inches	Train #			PORT CHANGE L.C. #	CFM @	in. Hg
PITOT FACTOR		Filter #			FINAL LEAK CHECK:	CFM @	in. Hg
INITIAL METER READING	ft ³	KIT USED:		Balance ID#	Kit Factor:	PITOTUBE USED:	
STACK TOP HEIGHT		CEMS STATION ID (IF APPLICABLE)					

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

LC 00024m 691.0843

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
N	4	1055	20	17	859	0.12	0.8	672.69	120	120	-2	6	-6
	4	1100	20	17	863	0.12	0.8	675.42	120	120	2	6	-6
	3	1105	20	17	859	0.1	0.67	677.20	120	120	2	6	-6
	3	1110	21	17	870	0.1	0.67	680.4	120	120	2	6	-6
	2	1115	22	17	858	0.1	0.68	682.9	120	120	2	6	-6
	2	1120	22	17	863.2	0.1	0.67	685.4	120	120	2	8	-6
	1	1125	22	17	863	0.1	0.67	687.9	120	120	2	8	-6
	1	1130	22	17	864	0.1	0.67	690.43	120	120	2	8	-6
E	12	1150	22	18	859	0.12	0.81	693.83	120	120	2	8	-6
	12	1155	22	18	872	0.1	0.67	696.32	120	120	3	2	-6
	11	1200	22	19	859	0.12	0.81	699.07	120	120	3	2	-6
	11	1205	22	20	872	0.12	0.80	701.80	120	120	3	2	-6
	10	1210	23	20	870	0.10	0.67	704.31	120	120	3	2	-6
	10	1215	25	21	872	0.10	0.67	706.83	120	120	3	2	-6
	9	1220	25	22	880	0.12	0.86	709.58	120	120	3	2	-6
	9	1225	26	22	863	0.10	0.68	712.10	120	120	3	23	-6

METHOD USED:	<i>EPS 1KM/2</i>	PARAMETER:	<i>Drawn Filter SVOCs</i>
Tester Name:	<i>Shawn Mather</i>		<i>[Signature]</i>

I certify the test data is accurate and complete.

I certify I have reviewed the test data.

Shaping a world of trust



SVOC TEST DATA

T2

193-83

CLIENT NAME				IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD			
SOURCE NAME				Condenser			
PROJECT NUMBER		O2 (BLUE)	CO2 (RED)	Condensate Trap			
TEST DATE (dd-mon-yy)				Glycol			
TEST NUMBER				Empty			
TEST PERFORMED BY				Silica			
STACK I.D./WIDTH		ANNULUS					
DELTA H@		<input type="checkbox"/> Measured		IS STACK CYCLONIC?	YES	NO	
MINUTES PER POINT		Barom. ID#		PRE-TEST PITOT LEAK CHECK PERFORMED:	YES	NO	
BAROMETRIC PRESSURE	mm Hg	NOZZLE CALIBRATION		POST-TEST PITOT LEAK CHECK PERFORMED:	YES	NO	
STATIC PRESSURE	inches H ₂ O	ID#		INITIAL LEAK CHECK VOLUME:			
PRE-TEST O ₂	% (dry)			PORT CHANGE LEAK CHECK VOLUME:			
PRE-TEST CO ₂	% (dry)	ORGANICS DATA		FINAL LEAK CHECK VOLUME:			
WATER CONTENT	mole%	XAD #		INITIAL LEAK CHECK:	CFM @		in. Hg
NOZZLE DIAMETER	inches	Train #		PORT CHANGE L.C.:	CFM @		in. Hg
PITOT FACTOR		Filter #		FINAL LEAK CHECK:	CFM @		in. Hg
INITIAL METER READING	ft ³	KIT USED:		Balance ID#	Kit Factor:		PITOTUBE USED:
STACK TOP HEIGHT							

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
E	8	1230	27	22	858	0.12	0.82	714.9	120	120	2	3	-5
	8	1235	27	22	863	0.10	0.68	717.4	120	120	2	3	-5
	7	1240	28	22	851	0.1	0.69	717.0	120	120	2	3	-5
	7	1245	28	23	855	0.1	0.69	722.56	120	120	2	4	-5
	6	1250	29	23	852	0.13	0.68	725.10	120	120	2	4	-5
	6	1255	29	23	870	0.1	0.68	727.66	120	120	2	4	-5
	5	1300	30	23	875	0.1	0.68	730.20	120	120	2	4	-5
	5	1305	30	23	858	0.1	0.69	732.76	120	120	2	4.5	-5
	4	1310	31	24	862	0.12	0.7	735.34	120	120	3	5	-5
	4	1315	31	24	855	0.1	0.7	737.91	120	120	3	5	-5
	3	1320	31	24	870	0.1	0.68	740.45	120	120	3	6	-5
	3	1325	32	24	868	0.08	0.55	742.75	120	120	4.2	5	-5
	2	1330	32	24	870	0.09	0.62	745.20	120	120	2	5	-5
	2	1335	32	24	859	0.09	0.62	747.63	120	120	2	4	-5
	1	1340	32	25	866	0.09	0.62	750.07	120	120	2	3	-5
V	1	1345	33	25	865	0.09	0.62	752.51	120	120	2	3	-5

METHOD USED: EPS 1PM-2
Tester Name: *Frank Mathew*

PARAMETER: *Dioxin Furans*

I certify the test data is accurate and complete.

I certify I have reviewed the test data.

Shaping a world of trust

LC 0002 cfm 753.71 ft³



SVOC TEST DATA

12/18/3

CLIENT NAME	Agnico			IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION	Mehadine			XAD	3405	345	4.5
SOURCE NAME	Incinerator			Condenser	2706	278	14
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	Condensate Trap	527.1	663	135.9
TEST DATE (dd-mon-yy)	22-10-21	12	6.5	Glycol	763	787	24.14
TEST NUMBER	1st 3	12	6.5	Empty	684.9	656	21.1
TEST PERFORMED BY	AM DG	12	6.5	Silica	908.7	920	11.3
STACK I.D./WIDTH	38.5	<input checked="" type="checkbox"/> Measured	ANNULUS	7-79	IS STACK CYCLONIC? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		
DELTA H@	1.490	Barom. ID#	50	PRE-TEST PITOT LEAK CHECK PERFORMED: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			
MINUTES PER POINT	5min x 2	NOZZLE CALIBRATION	POST-TEST PITOT LEAK CHECK PERFORMED: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>				
BAROMETRIC PRESSURE	29.8 mm Hg	ID#	Quality	INITIAL LEAK CHECK VOLUME: 1-3a ft			
STATIC PRESSURE	-0.05 inches H ₂ O	ORGANICS DATA		FINAL LEAK CHECK VOLUME: 2-13a ft			
PRE-TEST O ₂	12 % (dry)	XAD #	3	INITIAL LEAK CHECK: 0.002 CFM @		-20 in. Hg	
PRE-TEST CO ₂	6.5 % (dry)	Train #	3	PORT CHANGE L.C.: 0.002 CFM @		-22 in. Hg	
WATER CONTENT	7 mole%	Filter #	3	FINAL LEAK CHECK: 0.002 CFM @		-20 in. Hg	
NOZZLE DIAMETER	0.43 inches	KIT USED:	136-1	Balance ID#	26	Kit Factor:	1.017
PITOT FACTOR	0.827	CEMS STATION ID (IF APPLICABLE)		PITOTUBE USED: 808-1			
INITIAL METER READING	755.5 ft ³						
STACK TOP HEIGHT	36' 5"						

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
N	12	1415	25	24	865	0.09	0.61	757.90	120	120	-3	2	-5
	12	1420	26	24	865	0.11	0.75	760.58	120	120	-3	-2	-5
	11	1425	26	24	868	0.11	0.75	763.24	120	120	-3	-1	-5
	11	1430	28	24	873	0.12	0.82	766.04	120	120	-3	-1	-5
	10	1435	28	24	879	0.12	0.81	768.82	120	120	-3	-1	-5
	10	1440	29	25	881	0.11	0.75	771.49	120	120	-3	0	-5
	9	1445	29	25	869	0.11	0.75	774.16	120	120	-3	0	-5
	9	1450	30	26	863	0.10	0.7	776.73	120	120	-3	2	-5
	8	1455	30	26	865	0.11	0.76	779.43	120	120	-3	2	-5
	9	1500	31	26	870	0.11	0.76	782.12	120	120	-3	2	-5
	7	1505	31	26	872	0.12	0.82	784.94	120	120	-7	3	-6
	7	1510	32	26	868	0.13	0.9	787.88	120	120	-1	4	-6
	6	1515	32	26	868	0.12	0.83	790.70	120	120	1	4	-6
	6	1520	33	27	863	0.10	0.70	793.3	120	120	1	5	-6
	5	1525	33	27	864	0.11	0.77	796.01	120	120	2	6	-6
	5	1530	34	28	860	0.10	0.7	798.66	120	120	3	6	-6

METHOD USED: EPS 12M-2 PARAMETER: *Lowans Fugans*

Tester Name: *Amrith*

I certify the test data is accurate and complete. I certify I have reviewed the test data.

Shaping a world of trust
180 - 99.78%
H₂O - 6.75%



SVOC TEST DATA

11/20/83

CLIENT NAME				IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD			
SOURCE NAME				Condenser			
PROJECT NUMBER		O2 (BLUE)	CO2 (RED)	Condensate Trap			
TEST DATE (dd-mon-yy)				Glycol			
TEST NUMBER				Empty			
TEST PERFORMED BY				Silica			
STACK I.D./WIDTH		Historical <input type="checkbox"/> Measured <input type="checkbox"/>	ANNULUS	IS STACK CYCLONIC?	YES	NO	
DELTA H@			<input type="checkbox"/> Measured	PRE-TEST PITOT LEAK CHECK PERFORMED:	YES	NO	
MINUTES PER POINT			Barom ID#	POST-TEST PITOT LEAK CHECK PERFORMED:	YES	NO	
BAROMETRIC PRESSURE	mm Hg		NOZZLE CALIBRATION	INITIAL LEAK CHECK VOLUME:			
STATIC PRESSURE	inches H ₂ O		ID#	PORT CHANGE LEAK CHECK VOLUME:			
PRE-TEST O ₂	% (dry)			FINAL LEAK CHECK VOLUME:			
PRE-TEST CO ₂	% (dry)			ORGANICS DATA			
WATER CONTENT	mole%		XAD #	INITIAL LEAK CHECK:	CFM @		in. Hg
NOZZLE DIAMETER	inches		Train #	PORT CHANGE L.C.:	CFM @		in. Hg
PITOT FACTOR			Filter #	FINAL LEAK CHECK:	CFM @		in. Hg
INITIAL METER READING	ft ³		KIT USED:	Balance ID#	Kit Factor:	PITOTUBE USED:	
STACK TOP HEIGHT				CEMS STATION ID (IF APPLICABLE)			

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
N	4	1535	34	28	869	0.10	0.7	801.20	120	120	4	6	-6
	4	1540	35	29	875	0.10	0.7	803.80	120	120	4	6	-6
	3	1545	35	29	878	0.10	0.7	806.38	120	120	4	6	-6
	3	1550	35	30	880	0.11	0.76	809.11	120	120	4	6	-6
	2	1555	35	30	868	0.10	0.7	811.70	120	120	4.5	7	-6
	2	1600	35	30	869	0.09	0.63	814.18	120	120	5	7	-6
	1	1605	35	30	865	0.08	0.56	816.52	120	120	5	7	-6
✓	1	1610	35	31	870	0.08	0.56	818.84	120	120	5	8	-6
E	12	1630	34	30	865	0.09	0.63	822.50	120	120	5	9	-6
	12	1635	34	30	848	0.10	0.7	825.1	120	120	3	2	-6
	11	1640	35	31	872	0.12	0.84	827.95	120	120	3	2	-6
	11	1645	36	31	880	0.11	0.76	830.68	120	120	4	2	-6
	10	1650	36	32	859	0.11	0.78	833.43	120	120	4	3	-6
	10	1655	37	32	861	0.10	0.7	836.7	120	120	4	3	-6
	9	1700	37	32	870	0.10	0.70	838.17	120	120	5	3	-6
	9	1705	38	33	877	0.12	0.84	841.58	120	120	5	3	-6

METHOD USED: EPS IRM-2	PARAMETER: Dioxin/Furans
Tester Name: Anand Mathan	

I certify the test data is accurate and complete.

I certify I have reviewed the test data.

Shaping a world of trust

LE- 0002cfm @ -22n/4g 820-02 v/t



SVOC TEST DATA

EMS FCD-00418/10

Page 1 of 1

1253093

CLIENT NAME				IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD			
SOURCE NAME				Condenser			
PROJECT NUMBER		O2 (BLUE)	CO2 (RED)	Condensate Trap			
TEST DATE (dd-mon-yy)				Glycol			
TEST NUMBER				Empty			
TEST PERFORMED BY				Silica			
STACK I.D./WIDTH		Historical <input type="checkbox"/> Measured <input type="checkbox"/>	ANNULUS				
DELTA H@		mm Hg	<input type="checkbox"/> Measured	IS STACK CYCLONIC?		YES	NO
MINUTES PER POINT			Barom. ID#	PRE-TEST PITOT LEAK CHECK PERFORMED:		YES	NO
BAROMETRIC PRESSURE			NOZZLE CALIBRATION	POST-TEST PITOT LEAK CHECK PERFORMED:		YES	NO
STATIC PRESSURE			ID#	INITIAL LEAK CHECK VOLUME:			
PRE-TEST O ₂		% (dry)	PORT CHANGE LEAK CHECK VOLUME:				
PRE-TEST CO ₂		% (dry)	ORGANICS DATA		FINAL LEAK CHECK VOLUME:		
WATER CONTENT		mole%	XAD #	INITIAL LEAK CHECK:	CFM @		in. Hg
NOZZLE DIAMETER		inches	Train #	PORT CHANGE L.C.:	CFM @		in. Hg
PITOT FACTOR			Filter #	FINAL LEAK CHECK:	CFM @		in. Hg
INITIAL METER READING		ft ³	KIT USED:	Balance ID#	Kit Factor:	PITOTUBE USED:	
STACK TOP WEIGHT			CEMS STATION ID (IF APPLICABLE)				

See 1253093

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
6	8	1710	38	33	874	0.10	0.7	844.18	120	120	4	3	-6
	8	1715	38	33	880	0.11	0.77	846.92	120	120	4	3	-6
	7	1720	39	34	875	0.10	0.70	849.55	120	120	4	4	-6
	7	1725	38	34	866	0.12	0.85	852.43	120	120	4	4	-6
	6	1730	38	34	860	.11	0.78	855.21	120	120	4	4	-6
	6	1735	38	35	859	0.1	0.72	857.87	120	120	4	5	-6
	5	1740	38	35	860	0.11	0.78	860.64	120	120	4	5	-6
	5	1745	38	36	863	0.10	0.71	863.3	120	120	4	5	-6
	4	1750	38	37	870	0.10	0.71	865.93	120	120	5	6	-6
	4	1755	38	38	865	0.12	0.85	868.84	120	120	6	6	-6
	3	1800	38	38	874	0.12	0.85	871.75	120	120	7	6	-6
	3	1805	38	38	889	0.10	0.7	874.37	120	120	7	5	-6
	2	1810	38	38	894	0.10	0.7	877.01	120	120	6	5	-6
	2	1815	38	39	878	0.10	0.7	879.15	120	120	6	5	-6
	1	1820	38	39	868	0.08	0.57	882.03	120	120	6	7	-
	1	1825	39	39	879	0.07	0.50	884.24	120	120	4	4	-6

METHOD USED: EPS 1RM-2 PARAMETER: Dioxins/Furans

Tester Name: Anand Mathew

I certify the test data is accurate and complete. I certify I have reviewed the test data.

Shaping a world of trust

Le. 0.002 cfm @ 20 in Hg 886.37 ft³



SVOC TEST DATA

PS/23

CLIENT NAME	Agmico			IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION	Machadine			XAD	331.8	334.8	3.2
SOURCE NAME	Incinerator			Condenser	233.8	236	2.2
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	Condensate Trap	446.5	638	191.5
TEST DATE (dd-mon-yy)	23-10-24	12	6.5	Glycol	768	792	24.0
TEST NUMBER	Four	12	6.5	Empty	663.7	664	0.3
TEST PERFORMED BY	AM DA	12	6.5	Silica	914.2	933	18.8
STACK I.D./WIDTH	38.5	ANNULUS	7.75	<input checked="" type="checkbox"/> Measured IS STACK CYCLONIC? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
DELTA H@	1.490	mm Hg		Barom. ID#	50	PRE-TEST PITOT LEAK CHECK PERFORMED: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	
MINUTES PER POINT	5 min x 2	inches H ₂ O		NOZZLE CALIBRATION		POST-TEST PITOT LEAK CHECK PERFORMED: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	
BAROMETRIC PRESSURE	29.9	%		ID#	Qndtz	INITIAL LEAK CHECK VOLUME: 0.85	
STATIC PRESSURE	-0.04	%				PORT CHANGE LEAK CHECK VOLUME: 1.03	
PRE-TEST O ₂	12	mole%		ORGANICS DATA		FINAL LEAK CHECK VOLUME: 2.13	
PRE-TEST CO ₂	6.5	inches		XAD #	45	INITIAL LEAK CHECK: 0.002 CFM @ -19 in Hg	
WATER CONTENT	7	ft ³		Train #	45	PORT CHANGE L.C.: 0.002 CFM @ 1.5-2 in Hg	
NOZZLE DIAMETER	0.43	KIT USED: 150-1		Filter #	45	FINAL LEAK CHECK: 0.002 CFM @ 213.2 in Hg	
PITOT FACTOR	0.827	CEMS STATION ID (IF APPLICABLE)				Balance ID# 26/30 Kit Factor: 1.017 PITOTUBE USED: 3061	
INITIAL METER READING	895.18					N/A	
STACK TOP HEIGHT	36' 5"						

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
E	12	1140	14	12	852	0.0	0.66	897.63	120	120	-2	-1	-4
	12	1145	15	12	858	0.09	0.6	899.96	120	120	-2	-1	-4
	11	1150	15	13	860	0.12	0.8	902.64	120	120	-2	0	-4
	11	1155	16	13	868	0.11	0.72	905.21	120	120	-2	0	-4
	10	1200	16	13	859	0.10	0.66	907.67	120	120	-2	0	-4
	10	1205	17	14	854	0.12	0.8	910.38	120	120	-2	0	-4
	9	1210	17	14	855	0.10	0.67	912.85	120	120	-2	1	-4
	9	1215	18	15	859	0.11	0.79	915.46	120	120	-2	2	-4
	8	1220	19	16	858	0.11	0.74	918.06	120	120	-2	2	-4
	8	1225	19	16	850	0.12	0.81	920.79	120	120	-2	3	-4
	7	1230	20	17	856	0.12	0.81	923.52	120	120	-2	3	-4
	7	1235	20	17	849	0.12	0.81	926.3	120	120	-2	3	-4
	6	1240	21	18	850	0.11	0.75	928.90	120	120	-3	4	-4
	6	1245	22	19	850	0.11	0.75	931.54	120	120	-3	4	-4
	5	1250	24	20	851	0.12	0.82	934.3	120	120	-3	5	-4
	5	1255	24	21	851	0.11	0.75	936.96	120	120	-3	5	-4

METHOD USED: EPS 1RM-2 PARAMETER: Dioxins Furans

Tester Name: *[Signature]*

I certify the test data is accurate and complete. I certify I have reviewed the test data.

Shaping a world of trust

H₂O = 8.4%
150 - 101.24%



SVOC TEST DATA

Pg 2 of 3

CLIENT NAME				IMPINGER CONTENTS		INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION				XAD				
SOURCE NAME				CONDENSER				
PROJECT NUMBER	2194	O2 (BLUE)	CO2 (RED)	CONDENSATE TRAP				
TEST DATE (dd-mon-yy)	23-10-21			GLYCOL				
TEST NUMBER	Four			EMPTY				
TEST PERFORMED BY				SILICA				
STACK I.D./WIDTH		<input type="checkbox"/> Measured	ANNULUS	IS-STACK CYCLONIC?		YES	NO	
DELTA H@				PRE-TEST PITOT LEAK CHECK PERFORMED:		YES	NO	
MINUTES PER POINT				POST-TEST PITOT LEAK CHECK PERFORMED:		YES	NO	
BAROMETRIC PRESSURE				INITIAL LEAK CHECK VOLUME:				
STATIC PRESSURE				PORT CHANGE LEAK CHECK VOLUME:				
PRE-TEST O ₂				FINAL LEAK CHECK VOLUME:				
PRE-TEST CO ₂				INITIAL LEAK CHECK:		CFM @	in. Hg	
WATER CONTENT				PORT CHANGE L.C.:		CFM @	in. Hg	
NOZZLE DIAMETER				FINAL LEAK CHECK:		CFM @	in. Hg	
PITOT FACTOR				KIT USED:		Balance ID#	Kit Factor:	PITOTUBE USED:
INITIAL METER READING				CEMS STATION ID (IF APPLICABLE)				
STACK TOP HEIGHT								

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
✓ E	4	1300	25	22	858	0.11	0.75	939.13	120	120	-2	5	-4
	4	1305	25	22	863	0.12	0.8	942.40	120	120	-2	5	-4
	3	1310	26	23	850	0.11	0.76	945.08	120	120	-2	6	-4
	3	1315	26	23	857	0.11	0.78	947.75	120	120	-1	6	-4
	2	1320	28	23	856	0.10	0.69	950.30	120	120	-1	6	-4
	2	1325	28	23	847	0.10	0.7	952.86	120	120	-1	7	-4
	1	1330	29	23	847	0.1	0.7	955.43	120	120	-1	7	-4
✓ V	1	1335	29	24	846	0.1	0.7	958.01	120	120	-1	7	-4
								LC - 0.002	cfm @	-20	in. Hg		959.04 ft ³
N	12	1400	27	24	849	0.08	0.56	961.33	120	120	2	7	-4
	12	1405	28	24	851	0.09	0.62	963.78	120	120	2	4	-4
	11	1410	29	24	850	0.10	0.7	966.84	120	120	2	3	-4
	11	1415	30	25	849	0.10	0.7	968.92	120	120	2	3	-4
	10	1420	30	25	855	0.11	0.77	971.62	120	120	2	3	-4
	10	1425	30	25	849	0.12	0.84	974.44	120	120	2	3	-4
✓ V	9	1430	31	26	846	0.12	0.84	977.29	120	120	3	4	-4

METHOD USED: EPS 1RM-2	PARAMETER: Dioxins/Furans
Tester Name: Anna Mather	<i>[Signature]</i>

I certify the test data is accurate and complete. I certify I have reviewed the test data.

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SVOC TEST DATA

CLIENT NAME		<i>Agnico</i>		IMPINGER CONTENTS	INITIAL WEIGHT	FINAL WEIGHT	WEIGHT DIFFERENCE
LOCATION		<i>Madison</i>		XAD			
SOURCE NAME		<i>Generator</i>		Condenser			
PROJECT NUMBER		O2 (BLUE)	CO2 (RED)	Condensate Trap			
TEST DATE (dd-mon-yy)				Glycol			
TEST NUMBER				Empty			
TEST PERFORMED BY		<i>AMJ DY</i>		Silica			
STACK I.D./WIDTH		ANNULUS					
DELTA H@		<input type="checkbox"/> Measured		IS STACK CYCLONIC?	YES	NO	
MINUTES PER POINT		Barom. ID#		PRE-TEST PITOT LEAK CHECK PERFORMED:	YES	NO	
BAROMETRIC PRESSURE		NOZZLE CALIBRATION		POST-TEST PITOT LEAK CHECK PERFORMED:	YES	NO	
STATIC PRESSURE		ID#		INITIAL LEAK CHECK VOLUME:			
PRE-TEST O ₂				PORT CHANGE LEAK CHECK VOLUME:			
PRE-TEST CO ₂		ORGANICS DATA		FINAL LEAK CHECK VOLUME:			
WATER CONTENT		XAD #		INITIAL LEAK CHECK:	CFM @		in. Hg
NOZZLE DIAMETER		Train #		PORT CHANGE L.C.:	CFM @		in. Hg
PITOT FACTOR		Filter #		FINAL LEAK CHECK:	CFM @		in. Hg
INITIAL METER READING		KIT USED:		Balance ID#	Kit Factor:	PITOTBE USED:	
STACK TOP HEIGHT				CEMS STATION ID (IF APPLICABLE)			

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

PORT DIR.	TRAV. POINT	START TIME	METER TEMP.		STACK TEMP °C	PITOT READING in. H ₂ O	ORIFICE SETTING in. H ₂ O	METER READING ft ³	PROBE TEMP. °C	OVEN TEMP. °C	IMP. TEMP. °C	XAD TEMP. °C	IMP. VAC in. Hg
			IN	OUT									
-	-	-	32	34	-	-	0.5	10390	-	-	-	-	-

METHOD USED:	<i>MN/5 - Blank</i>	PARAMETER:	
Tester Name:	<i>Andrew Mathew</i>		<i>[Signature]</i>

I certify the test data is accurate and complete. I certify I have reviewed the test data.



OXIDES OF NITROGEN TEST DATA

EMS FCD-00408/8
Page 1 of 1

CLIENT NAME	Agnico Eagle	FIELD B.P. (inHg)	—	STACK I.D.	38.5"	Historical <input type="checkbox"/> Measured <input checked="" type="checkbox"/>
LOCATION	Meliadine	BAROM. ID#	50	ANNULUS	7.75"	<input checked="" type="checkbox"/> Measured
SOURCE NAME	INCINERATOR	ANALYSTS:	DG AM	PITOT#	B061	Factor: 0.827
PROJECT #	2199	DATE (dd-mon-yy)	27/10/21	STACK TOP HEIGHT:	36.5"	PROBE LINER: GLASS / <u>TEFLON</u> / STEEL

VERIFIED THAT UNIT IS RUNNING AT NORMAL OPERATING CONDITIONS? YES OR NO (PLEASE CIRCLE ONE)

Confirmed probe and sample line rinsed with distilled water: Yes or No (Please Circle one)

Confirmed probe passed leak-check prior to inserting into the sample port: Yes or No (Please Circle one)

NOTES:

BP-29.9⁸ Oct 21/21 | Oct 22/21 BP-29.8 | Oct 23/21 BP-29.9ⁱⁿ

FIELD DATA							
PARAMETER	UNITS	2A	2B	3A	3B	4A	4B
FLASK ID #	-	93	76	58	53	87	102
TIME	-	13:00	13:05	14:30	14:40	14:35	14:45
FIELD FLASK PRESSURE	inches Hg	-28	-28	-28	-28	-28	-28
FIELD FLASK TEMP.	degrees C	20	20	20	20	20	20
SOLUTION VOLUME	ml	25	25	25	25	25	25

LAB DATA							
LAB B.P.	29.9	inches Hg	29.9	—	—	—	—
LAB FLASK PRESSURE	0.04	in H ₂ O inches Hg	-0.04	-0.03	-0.04	-0.03	-0.05
LAB FLASK TEMP.		degrees C	10°C	—	—	—	—

Tester Name:	Reviewer Name:
I certify the test data is accurate and complete.	I certify I have reviewed the test data.

APPENDIX V
CALIBRATION DATA



PITOT TUBE/PITOTBE CALIBRATION DATA SHEET

PITOT DESIGNATION

B061

Side A as Impact - Normal Alignment

Wind Tunnel Nominal Velocity	ft/s	30.0	50.0	70.0
	m/s	9.1	15.2	21.3

Calibrated: March 1, 2021

Standard Pitot Reading - in. H ₂ O x 10	0.173	0.484	0.931
Test Pitot Reading - in. H ₂ O x 10	0.251	0.690	1.325

By: M. Wilson

Pitot Factor	0.822	0.829	0.830	0.827
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Using the SAIT Wind Tunnel

Averages

Deviations	0.005	-0.002	-0.003	0.003
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Acceptance Criteria

A cal only - Average deviation less than 0.01

Thermocouple Calibration

Reference Thermocouple ID

Reference Thermocouple Temperature (°C)

Test Thermocouple Temperature (°C)

Absolute Difference %

Run 1			Run 2		
Hot	Mid	Cold	Hot	Mid	Cold
AD4JG-1	AD4JG-2	AD4JG-3	AD4JG-1	AD4JG-2	AD4JG-3
86.0	55.0	3.0	86.0	54.0	2.0
87.0	56.0	3.0	86.0	54.0	2.0
-0.3%	-0.3%	0.0%	0.0%	0.0%	0.0%

Calibrated: August 4, 2021

By: D. Gabel

Reference Meter #: REF#3

Acceptance Criteria

Absolute temperatures to agree within 1.5%



TRAIN DESIGNATION	ISO001			
METER FACTOR	Y	1.017	Intercept	1.10
ORIFICE FACTOR	DH@	1.490	Slope	0.329

DRY GAS METER CALIBRATION DATA

Date 06-May-21 By P. Vien REF METER ID # 16055633
 BP inHg 26.40

	VOLUME ft.^3	Tm C	DP in. H2O	
REFERENCE METER	4.700	22.0		Run One
DRY GAS METER	4.615	22.0	0.3	Y= 1.018
REFERENCE METER	7.600	24.0		Run Two
DRY GAS METER	7.390	22.0	0.9	Y= 1.019
REFERENCE METER	5.070	25.0		Run Three
DRY GAS METER	4.930	22.0	1.5	Y= 1.014

CALIBRATION CHECKS

Date: 30-Jul-21 By: L. Teghtsoonian BP inHg: 26.3
 REFERENCE METER 5.700 22.5 Ref ID # 16055633
 DRY GAS METER 5.765 23.5 1.5 Y= 0.988

ORIFICE CALIBRATION DATA

Date: 06-May-21 By: P. Vien

Actual DH	VOLUME ft.^3	Tm C	TIME min.	CFM	K Value	Calculated DH@
0.25	0.35	25.0	2	0.180	0.842	1.305
0.50	0.48	25.0	2	0.243	0.805	1.425
1.00	0.72	25.0	2	0.364	0.855	1.265
2.00	0.84	25.0	2	0.429	0.713	1.821
4.00	1.26	25.0	2	0.638	0.752	1.636

DIGITAL DISPLAY TEMPERATURE CALIBRATION DATA

Date: 06-May-21 By: P. Vien

TEMP °C	1	2	3	4	5
0	2	2	2	1	2
100	102	102	103	102	102
200	201	202	203	202	202
300	300	301	301	300	303
400	401	401	402	401	403
500	501	501	501	501	503



**BUREAU
VERITAS**

EMS FCD-00023/3

Page 1 of 1

TRAIN DESIGNATION	ABS005	Barometric Pres. =	26.20
CALIBRATION DATE	January 12, 2021	By:	G. RomeroVillasenor

DRY GAS METER CALIBRATION DATA

REF METER ID # 16055633 METER FACTOR 0.998 Y

	VOLUME ft. ³	Tm C	BP (in. Hg)		
REFERENCE METER	6.000	23.0		Run One	
DRY GAS METER	6.110	27.5	26.20	Y=	0.997
REFERENCE METER	6.200	23.0		Run Two	
DRY GAS METER	6.280	26.3	26.20	Y=	0.998
REFERENCE METER	7.000	22.5		Run Three	
DRY GAS METER	7.190	30.2	26.20	Y=	0.999

CALIBRATION CHECKS

Date:	27-Jul-21	By: L. Teghtsoonian	Ref ID #	16055633
REFERENCE METER	7.000	21		
DRY GAS METER	7.025	22	26.30	Y= 1.000



BUREAU
VERITAS

EMS FCD-00023/3

Page 1 of 1

TRAIN DESIGNATION	ABS010	Barometric Pres. =	26.20
CALIBRATION DATE	January 11, 2021	By:	L. Teghtsoonian

DRY GAS METER CALIBRATION DATA

REF METER ID # 16055633 METER FACTOR 1.009 Y

	VOLUME ft. ³	Tm C	BP (in. Hg)		
REFERENCE METER	5.800	22.5		Run One	
DRY GAS METER	5.890	28.3	26.20	Y=	1.004
REFERENCE METER	5.300	22.5		Run Two	
DRY GAS METER	5.410	29.5	26.20	Y=	1.003
REFERENCE METER	6.000	23.0		Run Three	
DRY GAS METER	5.930	25.3	26.20	Y=	1.019

CALIBRATION CHECKS

Date:	26-Jul-21	By: L. Teghtsoonian	Ref ID #	16055633
REFERENCE METER	5.500	22		
DRY GAS METER	5.450	23	26.30	Y= 1.014



FIELD BAROMETER CALIBRATION CHECK FORM¹

To be completed each Monday and handed in with job envelope for the week.

Field Barometer #: <u>50</u>				Analyst: <u>AM</u>		
Date: <u>Aug 13 - 2021</u>				Print Name: <u>Arvind Mittal</u>		
Reference Barometer #	True Value (kPa) ³ If reference barometer unavailable use alternate method.	Convert to in. Hg (kPa) x 0.2953 (in. Hg/kPa)	True Value Corrected for Elevation ² (in. Hg)	Field Barometer Reading (in. Hg)	Difference ⁵	Corrective Action
<u>05</u>						
<u>05545</u>	<u>874</u>	<u>258</u>	<u>—</u>	<u>25.8</u>	<u>N/A</u>	<u>N/A</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Field Barometer #: _____				Analyst: _____		
Date: _____				Print Name: _____		
Reference Barometer #	True Value (kPa) ³ If reference barometer unavailable use alternate method.	Convert to in. Hg (kPa) x 0.2953 (in. Hg/kPa)	True Value Corrected for Elevation ² (in. Hg)	Field Barometer Reading (in. Hg)	Difference ⁵	Corrective Action

¹Calibration performed as per AENV Method 5, section 2.1.9.

²Taken from Laboratory barometer

³Taken from Environment Canada Weather office (www.weather.gc.ca). Use only if reference barometer is unavailable.

⁴If referring to Environment Canada, correct for elevation. Subtract 0.1in Hg/100 ft elevation. For Edmonton, subtract 2.2 in Hg. For Calgary, 3.6 in

⁵Field barometer reading must be within 0.1 in Hg or reference value.



FIELD BALANCE VERIFICATION FORM

Balance # 30
 Date: Aug 13-2021

Analyst: AM
 Name: Amel M. Alwan

Standard Weight (g)	Field Balance Reading (g)	Corrective Action
100g	100g	~ 1
500g	500g	↓
1000g	1000g	

Balance # 28
 Date: Aug 13-2021

Analyst: AM
 Name: Amel M. Alwan

Standard Weight (g)	Field Balance Reading (g)	Corrective Action
100g	101g	NA
500g	500g	↓
1000g	1002g	

Notes:

- Balance is to be checked once at the start of work week by checking 3 standard weights.
- Standard weights usually used are 100 g, 500 g, and 1000 g. Any weight may be used as long as the verification covers the range of use of the balance.
- If balance reading differs from the standard weight by more than 2 %, follow the Corrective actions in EMS WI-00117 section 6.1.4.

Weight (g)	Acceptable Range (g)
100	98-102
500	490-510
800	774-816
1000	980-1020

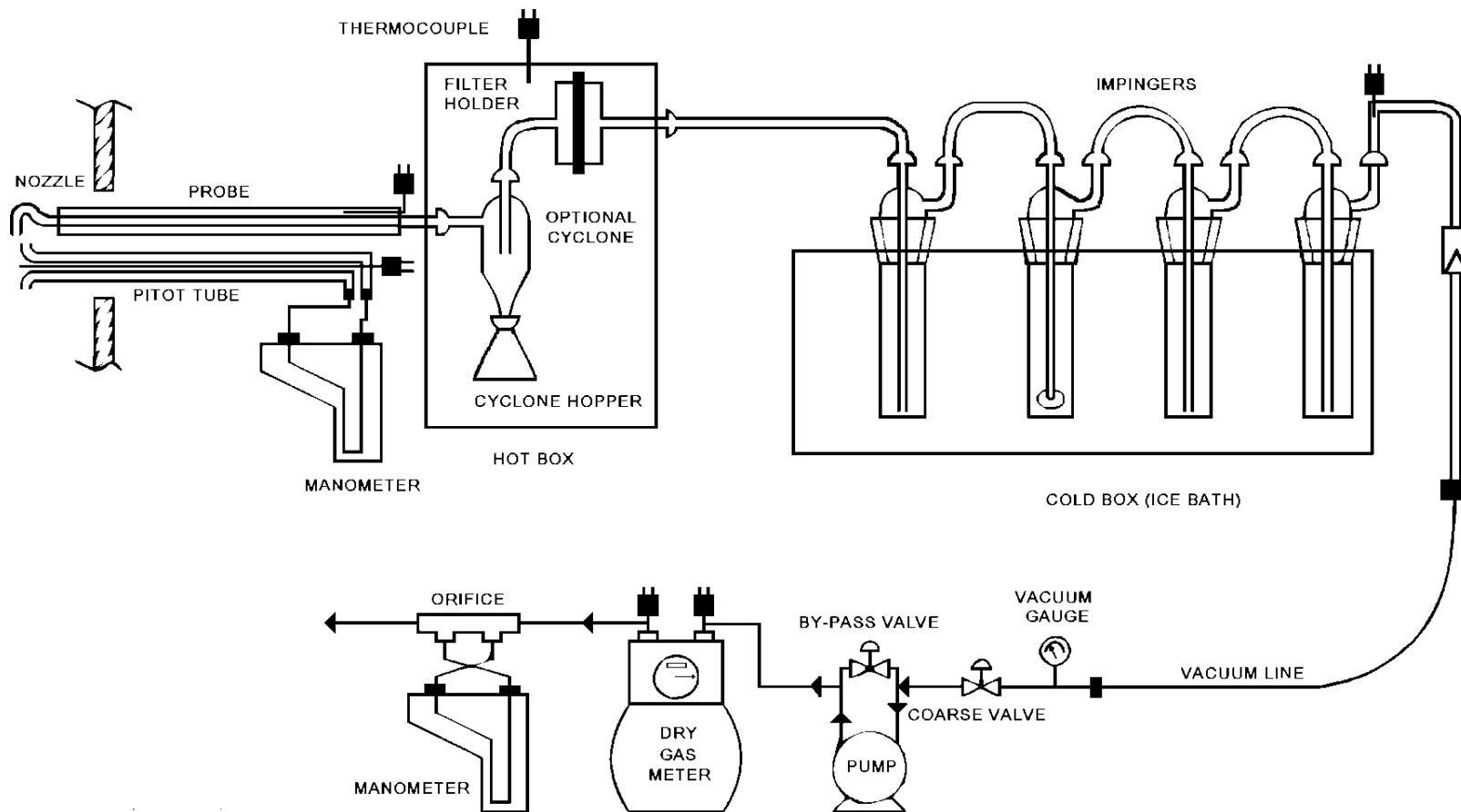
4. Calculation example of acceptable range at +/- 2%:

Upper limit = (weight + (weight*0.02))	Lower limit = (weight- (weight*0.02))
= 1000+(1000*0.02)	= 1000-(1000*0.02)
= 1020	= 980

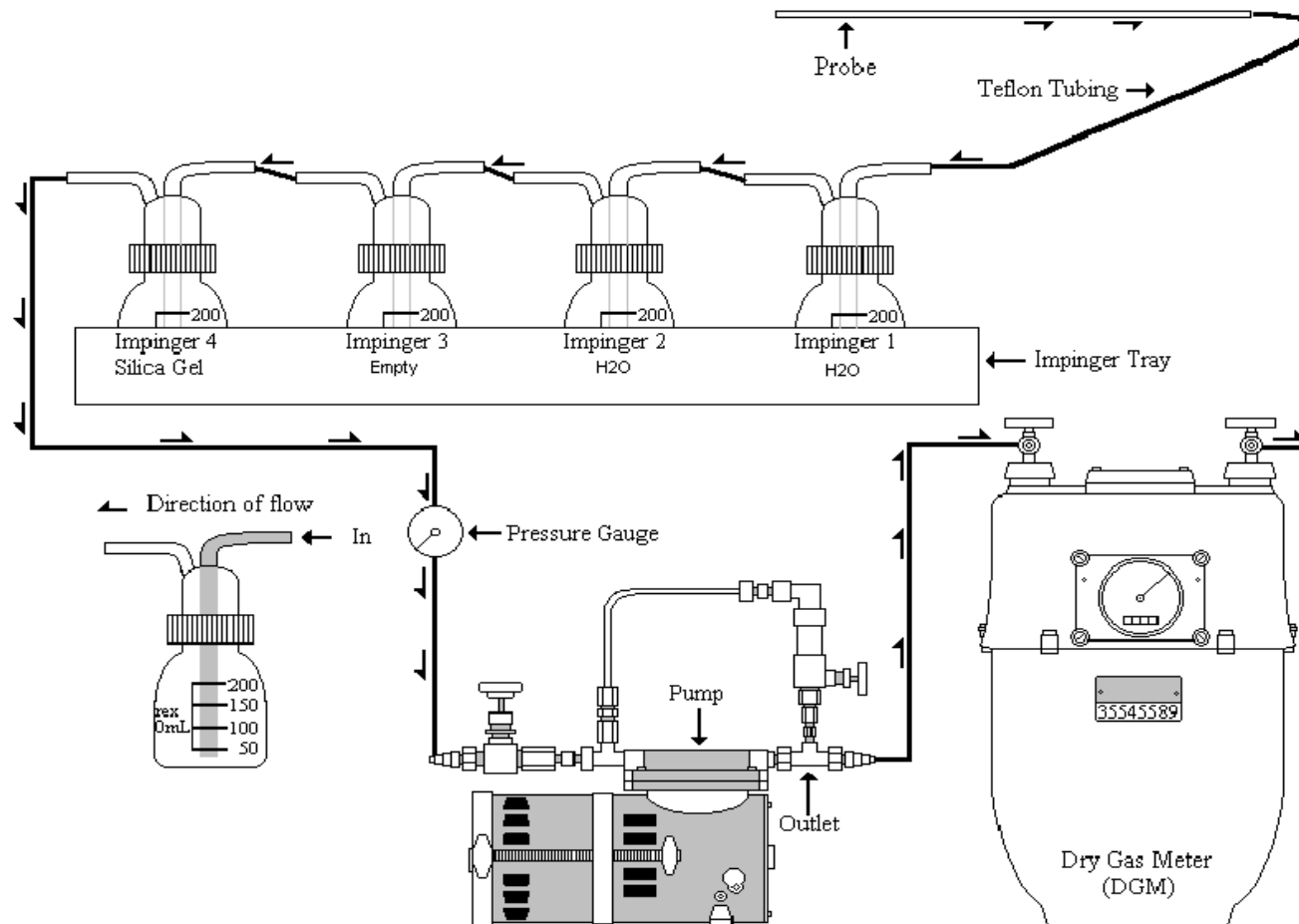
Weight (g)	Acceptable Range (g)
1000	980-1020

APPENDIX VI
SAMPLING DIAGRAMS

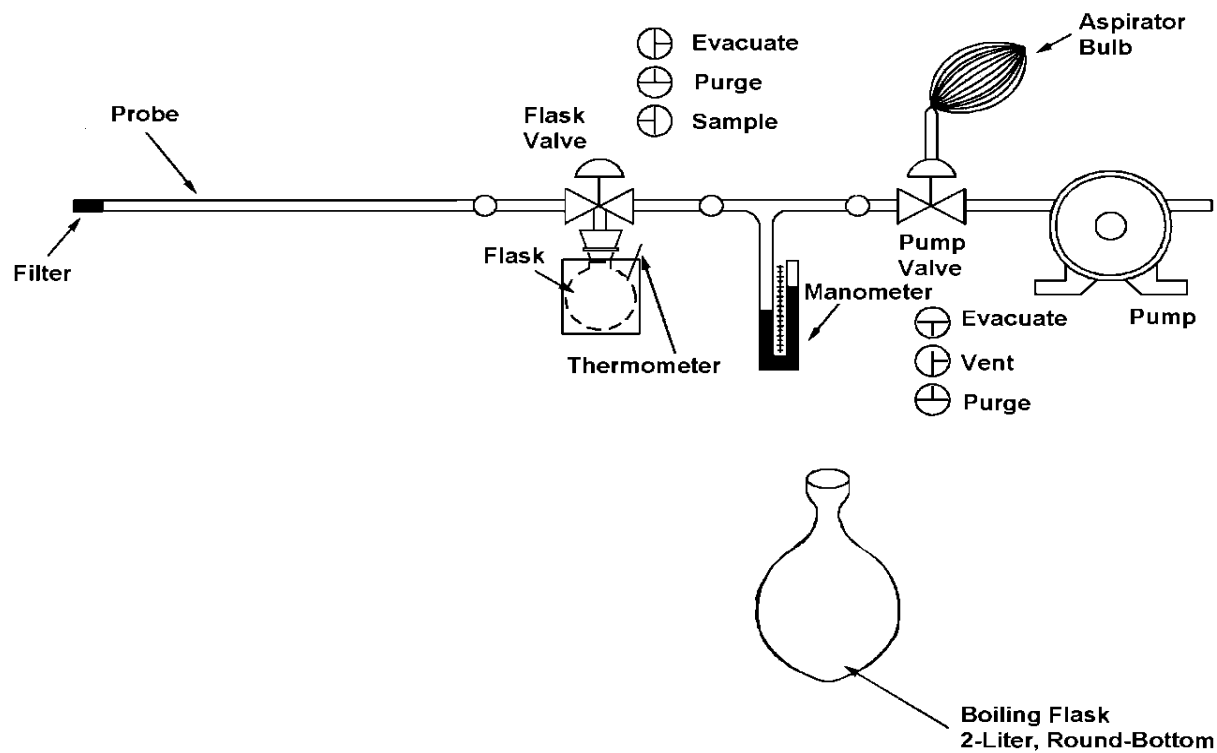
Basic Isokinetic Train



Basic Absorption Train

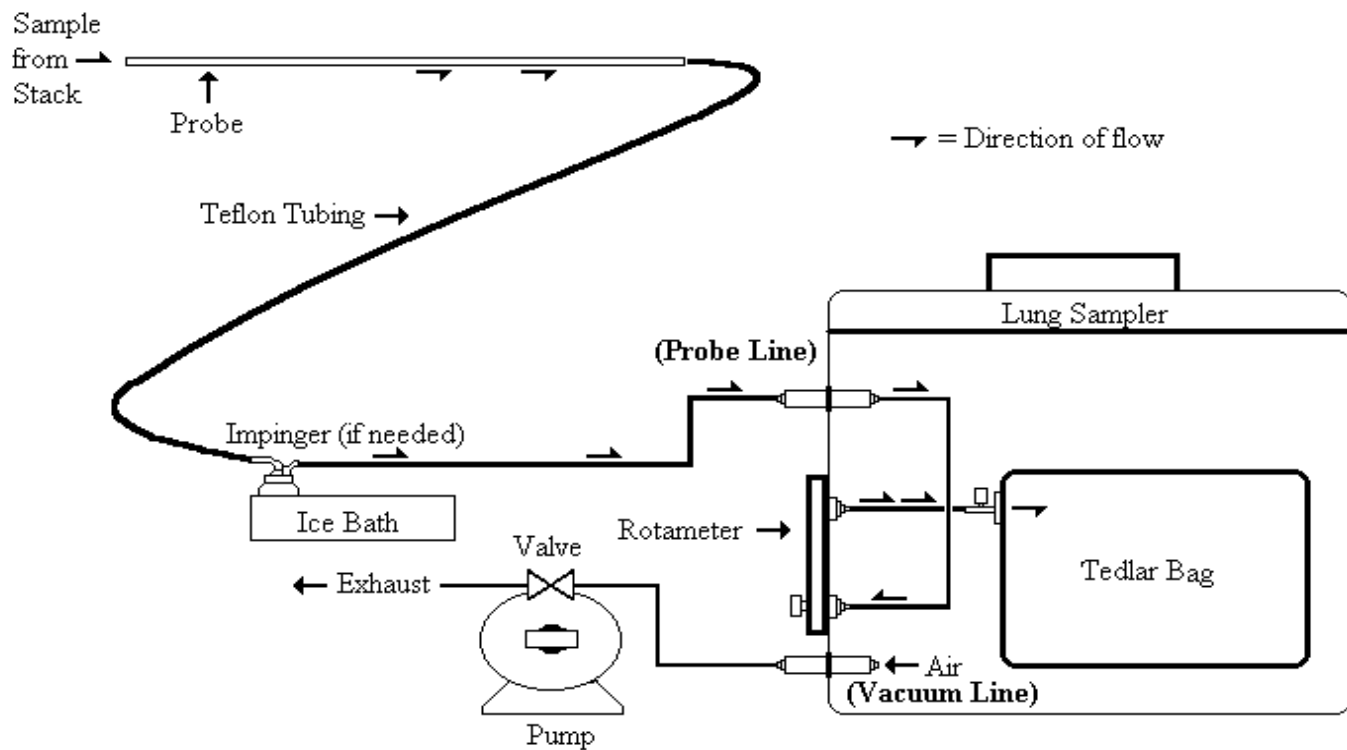


Oxides of Nitrogen – Grab Sampling Train



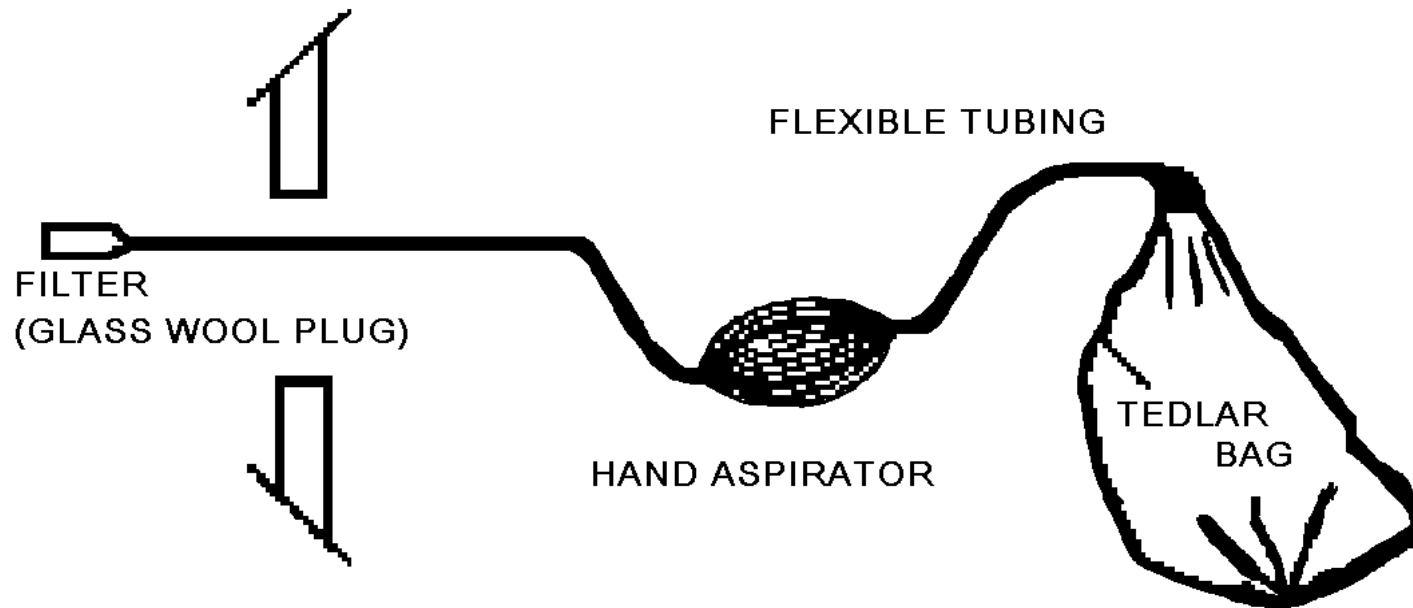


Integrated Bag Sampling Train



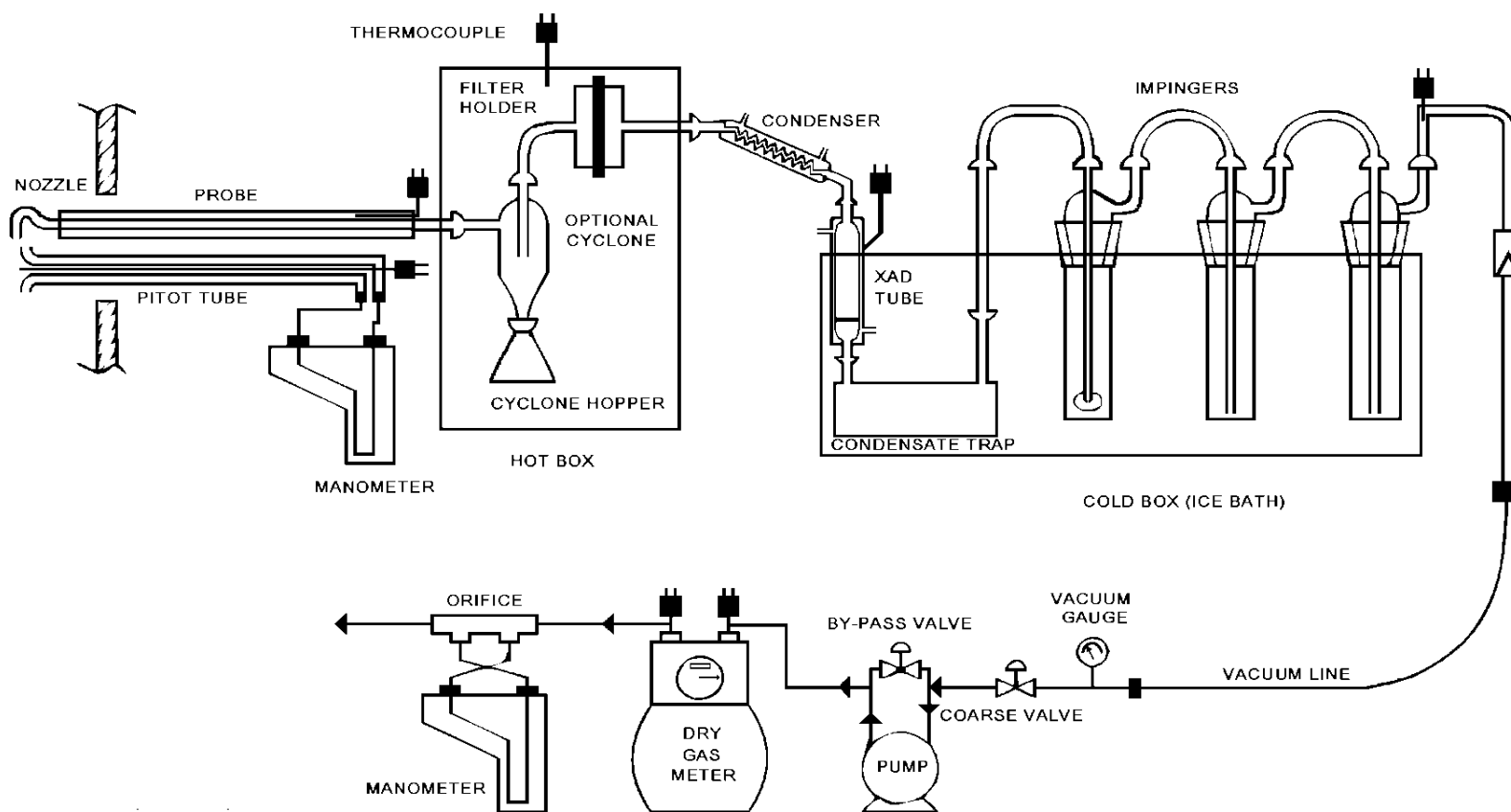


Grab Bag Sampling Train





Organics Sampling Train



APPENDIX VII
SES CALCULATIONS

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$L = ft^3 \times 28.316846592$	$ft^3 = \frac{L}{28.316846592}$	$m^3 = scf \times 0.02831685$
$K = ^\circ C + 273.15$	$g/m^3 = \frac{g}{ft^3} \times 35.3146625$	$lb/ft^3 = \frac{g}{ft^3} \times 2.20462 \times 10^{-3}$
$Barometric\ Pressure_{mmHg} = Barometric\ Pressure_{inHg} \times 25.4$	$Test\ Angle = 90^\circ - Null\ Angle$	
$Stack\ Pressure_{mmHg} = Barometric\ Pressure_{mmHg} + Static\ Pressure_{mmHg}$	$Static\ Pressure_{mmHg} = \frac{Static\ Pressure_{inH2O}}{13.6} \times 25.4$	
$Stack\ Diameter_m = Stack\ Diameter_{in} \times 0.0254$	$Stack\ Area_m = \left(\frac{Stack\ Diameter_m}{2} \right)^2 \times \pi$	
$Absolute\ Stack\ Pressure_{mmHg\ (in,\ Hg)} = P_{bar} + P_g$	$P_{bar} = Barometric\ pressure\ at\ measurement\ site_{mmHg\ (in,\ Hg)}$ $P_g = Stack\ pressure_{mmHg\ (in,\ Hg)}$	
$Molecular\ Weight_{dry} = (0.44 \times \%CO_{2\ dry}) + (0.32 \times \%O_{2\ dry}) + (0.28 \times \%N_{2\ dry} + \%CO_{dry})$		
$Dry\ Flow\ Rate_{m^3/s} = (1 - \%H_2O) \times (Velocity_{m/s}) \times (Stack\ Area_{m^2}) \times \left(\frac{(Standard\ Temp\ 25^\circ C + 273.15) \times Stack\ Pressure_{mmHg}}{(Stack\ Temp_{^\circ C} + 273.15) \times 760} \right)$		
$Wet\ Flow\ Rate_{m^3/s} = (Velocity_{m/s}) \times (Stack\ Area_{m^2}) \times \left(\frac{(Standard\ Temp\ 25^\circ C + 273.15) \times Stack\ Pressure_{mmHg}}{(Stack\ Temp_{^\circ C} + 273.15) \times 760} \right)$		
$Dry\ Gas\ Volume_{ft^3} = Final\ Meter\ Volume_{ft^3} - Initial\ Meter\ Volume_{ft^3}$		

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$\text{Dry Gas Volume}_{m3 @ ref cond} = 0.392303 \times \text{Dry Gas Meter Cal Factor} \times \left(\frac{(\text{Dry Gas Volume}_{ft3} \times 0.0283) \times \text{Barometric Pressure}_{mmHg}}{(\text{Meter Temp}_{\circ C} + 273.15)} \right)$	
$\text{Stack Gas Molecular Weight}_{wet} = M_d(1 - B_{ws}) + 18.0 B_{ws}$	
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> $K_1 = \frac{\rho_{H2O} T_{std}}{P_{std} M_w}$ $K_2 = \frac{R T_{std}}{P_{std} M_w}$ $K_3 = \frac{T_{std}}{P_{std}}$ </div> <div style="width: 30%;"> $\text{Metric } K_1 = 0.00135517_{m3/mL}$ $\text{English } K_1 = 0.04785732_{cf3/mL}$ $\text{Metric } K_2 = 0.00135919_{m3/g}$ $\text{English } K_2 = 0.04799921_{cf3/g}$ $\text{Metric } K_3 = 0.39230263_{K/mmHg}$ $\text{English } K_3 = 17.9375_{\circ R/in.Hg}$ </div> <div style="width: 30%;"> $P_{std} = 760_{mmHg} = 29.92_{in.Hg}$ $T_{std} = 298.15_K = 536.69_{\circ R}$ $M_w = 18.0_{g/g - mol} \{lb./lb. - mol\}$ $1 lb_{mass} = 453.5924_{gmass}$ $\rho_{H2O} = 0.997044_{g/mL} = 0.00219811_{lb./mL}$ $\text{English } R = 21.8479358_{in.Hg cf3 R - 1 lb. - mol - 1}$ $\text{Metric } R = 0.062363683_{mmHg L K - 1 g - mol - 1}$ </div> </div>	
$M_{s, wet} = (1 - B_{ws})M_{s, dry} + 18 B_{ws}$	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"></div> <div style="width: 50%;"> B_{ws} = water vapour in the gas stream, proportion by volume $M_{s, wet}$ = molecular weight of stack gas, wet basis $M_{s, dry}$ = molecular weight of stack gas, dry basis </div> </div>	
$ER^{wet}_{kg/1000kg(std)} = 0.0244654 \frac{m_n}{(V_{m, std} - V_{w, std}) M_{s, wet}}$	$ER^{dry}_{kg/1000kgstd} = 0.0244654 \frac{m_n}{V_{m(std)} M_{s, dry}}$
$V_s = K_p C_p (\sqrt{\Delta P_{avg}}) \sqrt{\frac{T_{s(avg)}}{P_s M_s}}$	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"></div> <div style="width: 50%;"> v_s = average stack gas velocity, m/s (ft/s) C_p = pitot tube coefficient K = pitot tube constant M_s = molecular weight of stack gas, wet basis, $g/g - mole$ ($lb./lb. - mole$) T_s = Absolute stack temperature, K ($\circ R$) P_s = Absolute stack pressure, $mmHg$ ($in. Hg$) ΔP = Velocity head of stack gas, mmH_2O ($in. H_2O$) </div> </div>	
$Q_{sd} = 3600 (1 - B_{ws}) V_s A \left[\frac{T_{std} P_s}{T_{s(avg)} P_{std}} \right]$ <p>Q_{sd} = average stack gas dry volumetric flow rate</p>	$Q_{sw} = 3600 V_s A \left[\frac{T_{std} P_s}{T_{s(avg)} P_{std}} \right]$ <p>Q_{sw} = average stack gas wet volumetric flow rate</p>
$\text{standard deviation}_{(A OR B)} = \frac{\sum_1^3 C_p(s) - C_p(A OR B) }{3} \leq 0.01$	$\% \text{ deviation} = \frac{(Q - Q_{avg})}{Q_{avg}} \times 100 \text{ (Must be } \leq 10\% \text{)}$

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$V_{wc(std)} = \frac{(V_f - V_i) \rho_w R T_{std}}{P_{std} M_w}$ <p>$V_{wc(std)}$ = volume of wate vapour condensed</p>	$V_{wsg(std)} = \frac{(W_f - W_i) R T_{std}}{P_{std} M_w}$ <p>$V_{wsg(std)}$ = volume of water collected in silica gel</p>	
$V_{m(std)} = V_m Y \frac{P_m T_{std}}{P_{std} T_m}$	$V_{m(std)} = Vm Y \frac{P_m T_{std}}{P_{std} T_m}$	$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$
$V_{ws(std)} = \frac{(V_f - V_i) \rho_w R T_{std}}{P_{std} M_w}$	$B_{ws} = \frac{V_{wc(std)}}{V_{wc(std)} + V_{m(std)}} + B_{wm}$	$V_{m(std)} = V_m Y \frac{T_{std} (P_{bar} + \frac{\Delta H}{13.6})}{T_m P_{std}}$
$V_{w(std)} = V_{lc} \frac{\rho_w R T_{std}}{M_w P_{std}}$	$B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}}$	$C_{sw} = 0.001 m_n / [V_{m(std)} + V_{w(std)}]$ <p>C_{sw} = particulate concentration, wet basis</p>
$C_a = \frac{m_a}{V_a \rho_a}$ <p>$W_a = C_a V_{aw} \rho_a$</p>	<p>C_a = acetone blank concentration</p> <p>W_a = acetone wash blank</p>	$C_{sd} = 0.001 mn / Vm_{(std)}$ <p>C_{sd} = particulate concentration, dry basis</p>
$ER^{dry} \text{ Particulate } (std) = [Q_{sd} C_{sd}] / 1000$ <p>ER^{dry} = emission rate, dry basis</p>	$ER^{wet} \text{ particualte } (std) = [Q_{sw} C_{sw}] / 1000$ <p>ER^{wet} = emission rate, wet basis</p>	
$m_c = K C_{so_2} V_{ic}$	<p>m_c = correction for NH_4^+ and H_2O</p> <p>where $K = 0.0205$, when correcting for NH_4^+ and H_2O</p> <p>$= 0.1840$, when only correcting for NH_4^+</p>	
$m_i = m_r \frac{V_{ic}}{V_{ic} - V_b} - m_c$	<p>m_i = Mass of inorganic CPM matter, mg</p> <p>m_r = Mass of dried sample from inorganic fraction, mg</p> <p>V_{ic} = Volume of impinger conctects sample, mL</p> <p>V_b = Volume of aliquot taken for IC analysis, mL</p> <p>m_c = Mass of the NH_4^+ added to sample to form ammonium sulphate, mg</p>	
$C_{cpm} = \frac{m_o + m_i - m_b}{V_{m, std}}$	<p>C_{cpm} = concentration of CPM</p> <p>m_o = Mass of organic CPM, mg</p> <p>m_b = Sum of the mass of the water and M_eCl_2 blanks, mg</p>	

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$C_{so4} = \frac{48.03 V_t N}{100}$	C_{so4} = Concentration of SO_4^{-2} in the sample, mg/mL N = Normality of the NH_4OH , mg/mL V_t = Volume of NH_4OH titrant, mL 48.03 = mg/meq. 100 = Volume of solution, mL
$C_{cpm} = \frac{m_o + m_i + m_f - m_b}{V_{m, std}}$	m_f = Amount of CPM collected on out – of – stack filter, mg
$V_{sc} = (V_f - V_a) \frac{T_{std}}{P_{std}} \left[\frac{P_f}{T_f} - \frac{P_i}{T_i} \right]$	V_{sc} = Sample volume at standard conditions (dry basis), mL V_f = Volume of flask and valve, mL V_a = Volume of absorbing solution, mL
$C_{NOx, dry} = K_2 (m/V_{sc})$ $C_{NOx, wet} = (1 - B_{ws}) C_{NOx, dry}$	$C_{NOx, dry}$ = Sample Concentration, Dry Basis $C_{NOx, wet}$ = Sample Concentration, wet Basis K_2 = 1000 (mg/m ³) / (µg/mL) for metric units
$C_{NOx, dry} = (H S F) (10^{-4}) / V_{sc}$	H = Sample peak height, mm S = Calibration factor, µg/mm F = Dilution Factor
$V_{m(std)} = V_m X Y (T_{std}/T_m) (P_{bar}/P_{std})$	$V_{m(std)}$ = Dry gas volume, standard conditions, dsm ³ V_m = Dry gas volume as measured by the dry gas meter, dm ³ X = Correction factor for CO ₂ collection Y = Dry gas meter calibration factor P_{bar} = Barometric pressure, mm Hg P_{std} = Standard absolute pressure, 760 mm Hg T_m = Average dry gas meter absolute temperature, K T_{std} = Standard absolute temperature, K
$C_{NOx, dry} = K (m / V_{m(std)})$	$C_{NOx, wet} = (1 - B_{ws}) C_{NOx, dry}$
$C^{dry}_{H2SO4} = K_1 \left[N (V_t - V_{tb}) \left(\frac{V_{soln}}{V_a} \right) \right] / V_{m(std)}$	$ER^{dry}_{H2SO4(std)} = (Q_{sd}) (C^{dry}_{H2SO4})$
$C^{wet}_{H2SO4} = K_1 \left[N (V_t - V_{tb}) \left(\frac{V_{soln}}{V_a} \right) \right] / [V_{m(std)} + V_{w(std)}]$ <p>K_1 = 0.04904 g/milliequivalent for metric units</p>	$C^{dry}_{SO2} = K_2 \left[N (V_t - V_{tb}) \left(\frac{V_{soln}}{V_a} \right) / V_{m(std)} \right]$ <p>K_2 = 0.03203 g/meq for metric units</p>

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$ER_{\text{wet H}_2\text{SO}_4(\text{std})} = (Q_{\text{sw}}) (C_{\text{wet H}_2\text{SO}_4})$	$ER_{\text{dry SO}_2(\text{std})} = (Q_{\text{sd}}) (C_{\text{dry SO}_2})$
$C_{\text{wet SO}_2}^{\text{wet}} = K_2 \left[N(V_t - V_{t_b}) \left(\frac{V_{\text{soln}}}{V_a} \right) \right] / [V_{m(\text{std})} + V_{w(\text{std})}]$	$ER_{\text{SO}_2(\text{std})}^{\text{wet}} = (Q_{\text{sw}}) (C_{\text{wet SO}_2})$
$C_{\text{CO}(\text{stack})} = C_{\text{CO}(\text{NDIR})} (1 - F_{\text{CO}_2})$	$C_{\text{CO}(\text{stack})} = \text{Concentration of CO in stack, ppmv dry basis}$ $C_{\text{CO}(\text{NDIR})} = \text{Concentration of CO measured by NDIR analyzer, ppmv dry basis}$ $F_{\text{CO}_2} = \text{Volume fraction of CO}_2 \text{ in sample}$
$Q_1 = Q_2 \sqrt{\frac{P_2 T_1}{P_1 T_2}}$	$Q_1 = \text{Flow rate at calibration absolute temperature (T1) and absolute pressure (P1)}$ $Q_2 = \text{Flow rate at new absolute temperature (T2) and new absolute and pressure (P2)}$
$C_a = 106 \frac{\bar{X}_a q_a}{q_a + q_d}$	$C_a = \text{Concentration of component "a" in ppm}$ $\bar{X}_a = \text{Mole fraction of component "a" in the calibration gas to be diluted}$ $q_a = \text{Flow rate of the calibration gas containing mg component "a" at measured T and P}$ $q_d = \text{Diluent gas flow at measured temperature and pressure}$
$C_{\text{std sol}} = \frac{760 L_v L_d (273 + T_m)}{273 M_f - M_i (P_{\text{bar}} + P_m)} 1000 \frac{\text{mg}}{\text{g}}$	$C_{\text{std sol}} = \text{Standard solvent concentration, mg/std litre}$ $L_v = \text{Liquid volume injected, L}$ $L_d = \text{Liquid density at room temperature, g/mL}$ $M_f, M_i = \text{Final and initial meter reading, L}$ $P_m = \text{Meter pressure (gauge), mm Hg}$
$\Delta P = \frac{0.01 F P_b \theta}{V_t}$	$\Delta P = \text{Allowable pressure change, cm Hg}$ $F = \text{Sampling flow rate, cc/min}$ $P_b = \text{Barometric pressure, cm Hg}$ $\theta = \text{Leak Check period, min}$ $V_t = \text{Sampling train volume, cc}$
$V_s = 0.3857 V \left[\frac{P_t}{T_t} - \frac{P_{ti}}{T_{ti}} \right]$	$V_s = \text{Gas volume sampled, dsm}^3$ $P_t = \text{Gas sample tank pressure after sampling, but before pressurizing, mm Hg absolute}$ $P_{ti} = \text{Gas sample tank pressure before sampling, mm Hg absolute}$ $T_t = \text{sample tank temperature at completion of sampling, K}$ $T_{ti} = \text{Sample tank temperature before sampling, K}$

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$C_c = \frac{\left(\frac{P_{tf}}{T_{tf}}\right) \frac{1}{r} \sum_{j=1}^r C_{tmj}}{\left(\frac{P_t}{T_t} - \frac{P_{ti}}{T_{ti}}\right)}$ $C_c = 0.3857 \left(\frac{V_v P_f}{V_s T_f}\right) \frac{1}{q} \sum_{k=1}^q C_{cmk}$	<p>C_c = Calculated condensible organic (condensate trap) concentration of the effluent, ppm C equivalent</p> <p>P_{tf} = Final gas sample tank pressure after pressurizing, mm Hg absolute</p> <p>T_{tf} = Sample tank temperature after pressurizing, K</p> <p>V_v = Intermediate collection vessel volume, m³</p> <p>P_f = Final pressure of the intermediate collection vessel, mm Hg absolute</p> <p>T_f = Final temperature of intermediate collection vessel, K</p> <p>q = Total number of analyzer injections during analysis</p>
$C = C_t + C_c$	<p>C = TGNMO concentration of the effluent, ppm C equivalent</p> <p>C_t = Calculated noncondensable organic concentration (sample tank) of the effluent, ppm C equivalent</p>
$\% \text{ recovery} = 1.604 \frac{M V_v P_f C_{cm}}{L_r T_f N}$	<p>M = Molecular weight of the liquid injected, g/g - mole</p> <p>C_{cm} = Measured concentration (NMO analyzer) for the condensate trap ICV, ppm CO₂</p> <p>n = Number of data points</p>
$RSD = \frac{100}{X} \sqrt{\frac{\sum (X_i - X)^2}{n - 1}}$	$V_{m(std)} = K_1 Y V_m P_{bar} / T_m$
$m_{HX} = K V_s (SX^- - BX^-)$	<p>m_{HX} = Mass of HCl, HBr or HF in sample, µg</p> <p>V_s = Volume of filtered and diluted sample, mL</p> <p>SX^- = Analysis of sample, µg halide ion (Cl⁻, Br⁻, F⁻)/m</p> <p>BX^- = Analysis of reagent blank, µg halide ion (Cl⁻, Br⁻, F⁻)/m</p>
$m_{x2} = 2 V_s (S_x - B_x)$	$C = K_m H_{X, X2} / V_{m(std)}$
$ERTRS = 1.41 * QS * CTRS * 10^{-6}$	<p>$ERTRS$ = Emission Rate of TRS compound, (as H₂S) kg/hr</p> <p>$CTRS$ = Concentraion of TRS compound, ppm</p> <p>QS = total flow rate of stack gas, dry, m³/h</p>
$TRS \text{ concentration} = (x)H_2S + (x)CH_3SH + (x)DMS + (x)DMDS$	<p>$(x)H_2S$ = hydrogen sulphide concentration (ppm)</p> <p>$(x)CH_3SH$ = methly mercaptan concentration (ppm)</p> <p>$(x)DMS$ = dimethyl sulphide concentration (ppm)</p> <p>$(x)DMDS$ = dimethyl disulphide concentration (ppm)</p>
$ERTRS = \frac{CTRS * QS * 34 * 3600 * 0.450}{1000,000 * 386.7}$	$CTRS = (x)H_2S + (x)COS + 2(x)CS_2$

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$B = S_m - CS$	<p style="text-align: center;"><i>B</i> = Bias at the spike level <i>S_m</i> = Mean of the measured values of the isotopically spiked samples <i>CS</i> = Calculated value of the isotopically labelled spike</p>
$SD = \sqrt{\frac{\sum(S_i - S_m)^2}{(n - 1)}}$	<p style="text-align: center;"><i>SD</i> = standard deviation <i>S_m</i> = mean of the measured values of the isotopically spiked samples <i>S_i</i> = measured value of the isotopically labelled analyte in the <i>i</i>th field sample <i>n</i> = number of isotopically spiked samples</p>
$RSD = \left(\frac{SD}{S_m}\right) \times 100$	<p style="text-align: center;"><i>RSD</i> = relative standard deviation <i>SD</i> = standard deviation <i>S_m</i> = mean of the measured values of the isotopically spiked samples</p>
$CF = 1 + \frac{d_m}{V_m}$	<p style="text-align: center;"><i>CF</i> = correction factor <i>V_m</i> = mean of the validated method's values <i>d_m</i> = mean of the paired sample differences</p>
$d_i = \frac{(V_{1i} + V_{2i})}{2} - \frac{(P_{1i} + P_{2i})}{2}$	<p style="text-align: center;"><i>V_{1i}</i> = first measured value of the validated method in <i>i</i>th test sample <i>P_{1i}</i> = first measured value of the proposed method in the <i>i</i>th test sample</p>
$P_b = P_a + \rho' g \Delta P$	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; text-align: center;"> $v_a = \sqrt{\frac{2\rho' g \Delta P}{\rho}}$ </div> <div style="width: 50%; vertical-align: top;"> <p style="text-align: center;"><i>ΔP</i> = pressure differential <i>ρ</i> = density of the fluid in the manometer <i>g</i> = 32.174 ft/s</p> </div> </div>
$C_{p(s)} = C_{p(std)} \sqrt{\frac{\Delta P_{std}}{\Delta P_s}}$	<p style="text-align: center;"><i>C_{p(std)}</i> = gas velocity using a standard pitot tube <i>C_{p(s)}</i> = velocity measured with an S – type Pitot tube if the value of <i>C_{p(s)}</i> in known</p>
$Q_n = Q_m \frac{P_m T_s}{P_s T_m} \left(\frac{(1 - B_{wm})}{(1 - B_{ws})} \right)$	<p style="text-align: center;"><i>Q_n</i> = volumetric flow rate at the nozzle tip <i>Q_m</i> = volumetric flow rate at the meter tip <i>P_m</i> = absolute pressure at meter, mm Hg (in. Hg) <i>T_s</i> = absolute stack temperature, K <i>P_s</i> = absolute stack pressure, mm Hg (in. Hg) <i>T_m</i> = absolute pressure at meter, K <i>B_{wm}</i> = approximate proportion by volume of water vapour in the gas stream leaving the 2nd impinger <i>B_{ws}</i> = water vapour in the gas stream</p>
$Q_m = K_m \sqrt{\frac{T_m \Delta H}{P_m M_m}}$	<p style="text-align: center;"><i>ΔH</i> = average pressure differential across the orifice meter, mm H₂O (in. H₂O) <i>D_n</i> = nozzle diameter <i>C_p</i> = pitot tube coefficient <i>Δp</i> = differential pressure</p>
$D_n = \sqrt{\frac{(0.035 Q_m P_m)(1 - B_{wm}) \sqrt{T_{sMs}}}{(T_m C_p)(1 - B_{ws}) P_s \Delta p}}$	

CALCULATIONS

*Calculations are being referenced from the US EPA Code of Federal Regulations.

$\% \text{ isokinetic} = \frac{\text{stack gas velocity}}{\text{gas velocity in the nozzle}} \times 100$	$\text{Velocity at the sampling nozzle} = \frac{\text{volumetric flow rate of the gas}}{\text{cross sectional area of the nozzle}}$
$v_s = K_p C_p \sqrt{\frac{T_s \Delta p}{P_s M_s}}$	$v_s = \text{average stack gas velocity, } m/s \text{ (ft/s)}$ $K_p = \text{pitot tube constant} = 34.9219411^s$ $C_p = \text{pitot tube coefficient}$ $M_s = \text{molecular weight of stack gas, wet basis}$
$V_{sw} = \frac{T_s m_{H2O}}{P_s M_{H2O}}$	$V_{sw} = \text{volume of water converted to gas at stack conditions}$ $m_{H2O} = \text{mass of water collected in the impingers}$
$\% \text{ isokinetic} = 100 \frac{T_s \left(V_{IC} K + \frac{V_m}{T_m} \left(P_b + \frac{\Delta H}{13.6} \right) \right)}{60 \theta A_n v_s P_s}$	$V_{IC} = \text{liquid water condensed in impingers}$ $P_b = \text{barometric pressure, mmHg (in. Hg)}$ $\Delta H = \text{average pressure differential across the orifice meter, mm H}_2\text{O (in. H}_2\text{O)}$ $A_n = \text{cross sectional area of the nozzle}$
$P = \frac{50 \left(D - 2R \sqrt{\frac{2j - 1}{2N}} \right)}{D}$	$P = \%$ of diameter from inside duct wall to radius $N = \text{total number of equal areas}$ $j = \text{specific area for which the location of points is calculated}$
$E_D = 4RH = 2 \left(\frac{LW}{L + W} \right)$	$E_D = \text{equivalent diameter}$ $R_H = \text{hydraulic radius}$

APPENDIX VIII
SAMPLE CUSTODY

Chain of Custody / Analytical Request



Calgary: 2021 - 41st Avenue NE, T2E 6T7. Tel: (403) 219-3690, Fax: (403) 219-3673, Toll free: (800) 386-7247
 Edmonton: 9372 - 49th Street, T6B 2L7, Tel: (780) 408-5302, Fax: (780) 408-5313, Toll free: (800) 386-7247

Project #:	2194
Client Name:	AGNICO
Site Name:	Melladine
Stack Name:	Incinerator
Sampler's Name:	

Project Manager:	0
Phone:	0
e-mail:	0

Ship Samples To:	
Bureau Veritas	
#1 2080 39th Avenue NE	
Calgary, Ab	Attn: T2E 6P7
Air Services Lab,	Attention: Bill Wong
Tel: 403-219-3663	Fax: 403-219-3675

Relinquished by:	Anand Mathew (Print name)
Signature:	<i>Anand Mathew</i>
Date:	2021/11/05

Report Writer:	0
e-mail:	0

Received by:	QUN WONG (Print name)
Signature:	<i>QW</i>
Date:	2021-11-08

Chemicals Returned by:	
Turnaround Request (Circle one)	Regular
<small>Ensure you complete the sub-part of submitting the samples.</small>	Rush

Comments:

Analytical Request (Indicate Preferred Method)									
Sample ID	Sample Description	Test #	Label #	Date Sampled	Sample Vol.	Lab ID #	AENV Method 7A - Flask - NOx	AENV Method 8 - Constant - SO2	
M7A	NOx BOMB	2A ✓	93	2021/10/2 2		18076	x		
M7A	NOx BOMB	2B ✓	76	2021/10/2 2		18088	x		
M7A	NOx BOMB	3A ✓	58	2021/10/22		89	x		
M7A	NOx BOMB	3B ✓	53	2021/10/22		90	x		
M7A	NOx BOMB	4A ✓	87	2021/10/23		91	x		
M7A	NOx BOMB	4B ✓	102	2021/10/23		92	x		
M7A	NOx BOMB	Blank				93	x		
M8	SO2 SAMPLE	1	053004	2021/10/19	284	94		x	
M8	SO2 SAMPLE	2	053002	2021/10/20	268	95		x	
M8	SO2 SAMPLE	3	053865	2021/10/20	264	96		x	
M8	SO2 SAMPLE	Blank				97		x	



Chain of Custody / Analytical Request

Calgary: 2021 - 41st Avenue NE, T2E 6T7. Ph: (403) 219-3690, Fax: (403) 219-3673, Toll free: (800) 386-7247

Edmonton: 9372 - 49th Street, T6B 2L7, Ph: (780) 408-5302, Fax: (780) 408-5313, Toll free: (800) 386-7247

Project #:	2194
Client Name:	AGNICO
Site Name:	Meliadine
Stack Name:	Incinerator
Sampler's Name:	Anand Mathew

Project Manager:	0
Phone:	0
e-mail:	0

Ship Samples To:	
Bureau Veritas	
#1 2080 39th Avenue NE	
Calgary, Ab	PC: T2E 6P7
Air Services Lab,	Attention: Bill Wong
Ph: 403-219-3663	Fax: 403-219-3673

Report Writer:	0
e-mail:	0

Relinquished by:	Anand Mathew
Signature:	
Date:	2021/11/05

Chemicals Returned by:	
Turnaround Request (Circle one)	Regular
<small>Ensure you contact the lab prior to submitting the samples.</small>	Rush

Analytical Request (Indicate Preferred Method)									
	AENV Method 10 - Integrated 1 hr - CO	AENV Method 3 - Grab Sample							
	X								
	X								
	X								
	X								
	X								
	X								
		X							
		X							
		X							

Comments:	
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Received by:	<i>Jackson</i> (Print name)
Signature:	
Date:	2021-11-11

Sample Identification	Test #	Label #	Date Sampled	Sample Vol.	Lab ID #
M10 CARBON MONOXIDE - 10 L tedlar - M29	1	1205-1305	2021/10/19		8136
M10 CARBON MONOXIDE - 10 L tedlar - M29	2	1115-1215	2021/10/20		37
M10 CARBON MONOXIDE - 10 L tedlar - M29	3	1405-1505	2021/10/20		38
M10 CARBON MONOXIDE - GC Bomb - M29	1	1205-1305	2021/10/19		39
M10 CARBON MONOXIDE - GC Bomb - M29	2	1115-1215	2021/10/20		40
M10 CARBON MONOXIDE - GC Bomb - M29	3	1405-1505	2021/10/20		41
M3 FIXED GAS BAG - GRAB SAMPLE - MM5	2	1200	2021/10/22		42
M3 FIXED GAS BAG - GRAB SAMPLE - MM5	3	1600	2021/10/22		43
M3 FIXED GAS BAG - GRAB SAMPLE - MM5	4	1330	2021/10/23		44



**BUREAU
VERITAS**

#1, 2080 39 Ave NE
Alberta (AB) Calgary T2E 6P7

PROJECT CHAIN OF CUSTODY

SERVICE LOCATION		CONTACT INFORMATION
Agnico Eagle Mines Limited - Meliadine Mine - Rankin Inlet, Nunavut Agnico Eagle Mines Limited Rankin Inlet, Nunavut		Robin Allard (819) 860-1414 robin.allard@agnicoeagle.com
SOURCE	Incinerator Stack	Project Number: 2194
JOB ENVELOPE CREATED BY:	<i>Matthew</i>	Date: <i>29/10/21</i>
QA CHECK COMPLETED BY:	<i>Kim Wilson</i>	Date: 14-January-2022
REPORT COMPLETED BY:	<i>Kim Wilson</i>	Date: 14-January-2022
REPORT REVIEWED BY:	<i>Nazek AL-Hadi</i>	Date: 14-Jan.-2022

END OF REPORT