DILLON CONSULTING

URBANMINE INC.

Source Testing Report – Environmental Act Licence No. 3199R

Winnipeg, Manitoba

November 15, 2024 – 21-1712

Table of Contents

Tables

Appendices

1.0 Introduction

Dillon Consulting Limited (Dillon) was retained by Urbanmine Inc. (Urbanmine) to conduct source testing for particulate matter and selected metals. The source testing program included testing of two baghouse exhausts, one controlling emissions from a ferrous processing line and one controlling emissions from a non-ferrous processing line. The Urbanmine facility is located at 72 Rothwell Road in Winnipeg, Manitoba. This source testing program was conducted to satisfy Urbanmine's Environment Act Licence (EAL) 3199R, specifically Conditions 50 through 54.

A Test Plan documenting the planned source testing program was prepared by Dillon and submitted to Manitoba Environment and Climate Change (MECC) on November 1, 2022. Correspondence between Dillon and MECC occurred over the period of November 2022 and March 2023, and MECP-approval of the Test Plan was received by Urbanmine via a letter dated March 22, 2023.

Notification of the planned source testing was provided to MECC by David Diemer, P.Eng., Test Team Manager on August 7, 2024.

Dillon performed the emissions testing according to US EPA reference test methods. The on-site sampling for this testing program was conducted by Nick LaValle and Nick MacDonald over the three-day period of August 20th to 22nd, 2024.

Urbanmine ensured the normal operation of the metal processing lines and emission control equipment throughout the testing program. Urbanmine also arranged for the installation of suitable sampling ports and access to the testing location (combination of stairs, fixed ladders and mechanical lift).

1.1 Disclaimer

This report was prepared by Dillon for the sole benefit of our client. The material in it reflects Dillon's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

2.0 Objectives and Scope

The objective of this source testing program was to quantify the in-stack concentrations and emission rates of the subject pollutants during the processing of ferrous and non-ferrous metals. The test contaminants of interest to this testing program, based on the EAL and correspondence with the MECC in finalizing the Test Plan, included total suspended particulate matter and sixteen metals including the following six metals for which Manitoba Ambient Air Quality Criteria (AAQC) exist:

- Arsenic
- Cadmium
- Copper
- Lead
- Nickel
- Zinc

Table 1 provides a Test Matrix for the source testing program.

Table 1: Baghouse Test Matrix

Sampling Location	No. of Runs	Sample/ Type Pollutant	Sample Run Time (Min)	Test Method	Analytical Method/ Technique	Analytical Laboratory
Ferrous Line Baghouse Exhaust	3	PM and Selected Metals	Approximately 120 minutes	US EPA Method 29	Gravimetric, ICP/MS, GFAAS, CVAAS	ALS
Non-Ferrous Line Baghouse Exhaust	3	PM and Selected Metals	Approximately 120 minutes	US EPA Method 29	Gravimetric, ICP/MS, GFAAS, CVAAS	ALS

Notes:
ICP/MS – Inductively coupled plasma mass spectroscopy
GFAAS – Graphite furnace atomic absorption spectroscopy
CVAAS – Cold vapour atomic absorption spectroscopy
ALS – ALS Environmental, Burlington, Ontario

3.0 Source Description

3.1 Process Description

Urbanmine has been operating a ferrous and non-ferrous metal processing facility in Winnipeg, Manitoba since 2009. The facility operates as a transfer depot, where recyclable materials are received and sorted then processed and shipped to other facilities for further processing and refining.

Material is sorted as it is received and then processes through an outdoor rotary shear. Sheared materials are then transported via a conveyor inside of the ferrous building for processing through a vertical grinder for further size reduction. The grinded material is transported via a conveyor to a sorting area where magnetic separators and Eddy-current separators are utilized to separate the ferrous and non-ferrous materials. Ferrous materials are then organized by size at the sorting shaker table and stored in bunkers on the north side of the ferrous building. The building is equipped with a dust collection system throughout the building. The dust collection system consists of extensive duct work that leads into a cyclone and filter baghouse located immediately south of the ferrous building. The ferrous line was commissioned in early fall of 2021.

The Facility also has a non-ferrous processing line and consists of similar material shearing and grinding equipment as the ferrous line but notably smaller in size and power. The non-ferrous line is also equipped with a dust collector to control particulate emissions from material processing and transfer points including four desimetric separators (north, south and middle twin) and four cyclones (northwest by infeed conveyor, south and centre twin).

The facility typically operates weekdays from 7:00 AM to 7:00 PM. On rare occasions, due to unusual circumstances or operational conditions the Facility may need to operate for extended hours (i.e., 6:00 AM to 9:00 PM) Monday through Saturday.

3.2 Control Equipment Description

Particulate emission control equipment included with the ferrous line system includes one cyclone and one baghouse. The cyclone controls emissions from the vertical mill and then discharges to the baghouse. The baghouse controls particulate emissions from various collection points, including the eddy current hood, the two magnets and the Spaleck screen, and the cyclone before discharge to atmosphere. The rated capture efficiency of the combined cyclone and baghouse system is 95% for particles less than 20 microns in size. The design exit concentration for the baghouse is 10 milligrams per Normal cubic metre.

The non-ferrous line is equipped with a baghouse for control of particulate emissions. The non-ferrous baghouse system has eight collection points as noted in Section 3.1 and a single vertical exhaust stack

having a diameter of ~1 metre (m) and a height above grade of 10.2 m. Similar to the ferrous line baghouse, the rated capture efficiency of the combined cyclone and baghouse system is 95% for particles less than 20 microns in size. The design exit concentration for the baghouse is 10 milligrams per Normal cubic metre (m^3).

3.3 Exhaust Gas Characteristics

For both exhaust systems, the exhaust gases were expected to be well mixed at the point of entry to the vertical exhaust stack. No reverse flow, cyclonic flow or stratified flow conditions were found to exist in the exhaust stack sampling locations.

The design volumetric flow rate for each exhaust system is as follows:

- Ferrous Line Baghouse Exhaust: 8.3 m^3/s (17,660 cfm)
- Cyclone: 4.17 m^3/s (8,830 cfm)
- Non-ferrous Line Baghouse Exhaust: 8.3 m^3/s (17,660 cfm)

4.0 Sampling Locations

Both exhaust stack sampling locations are outdoors, accessible by fixed vertical ladders. Photographs of the baghouse stacks were provided in the Test Plan for both the ferrous and non-ferrous systems. The exhaust stack and sampling ports are identifiable in these photographs.

Sampling location details for the emission sources are as follows:

Source #1 – Ferrous Processing Line Baghouse Exhaust Stack

Stack Height:	13.1 m (43 feet (ft)) above grade 0.61 m (2 ft.) above roof
Stack Diameter:	1.0 m (39.4 inches)
Sampling Ports Location:	Approximately 10 m (33 ft.) above grade (5 ft above sampling platform level at exhaust stack)
Port Diameter:	10 centimetres (cm) (4 inches)
Number of Ports:	2 (90 degrees apart, parallel and perpendicular to the exhaust fan)
Ports Ideally Located:	Yes
Downstream from any Disturbance:	9 stack diameters (9.1 m or 30 ft.)
Upstream from any Disturbance:	3 stack diameters (3.0 m or 10 ft.)
Number and Configuration of Sampling Points:	12 points (6 per traverse)

Distance from stack wall to sampling points:

Sample Point	% of Stack Diameter	Distance (Inches)
1	4.4	1.7
2	14.6	5.8
3	29.6	11.7
4	70.4	27.7
5	85.4	33.6
6	95.6	37.7

Source #2 – Non-Ferrous Processing Line Baghouse Exhaust Stack

Stack Height:	10.2 m (33.5 ft) above grade 3.8 m (12.5 ft) above roof
Stack Diameter:	0.91 m (36 inches)
Sampling Ports Location:	Approximately 2 m above horizontal to vertical transition and 0.5 metres below the stack exit.
Port Diameter:	10 cm (4 inches)
Number of Ports:	2
Ports Ideally Located:	No
Downstream from any Disturbance:	Approximately 2 stack diameters (2 m)
Upstream from any Disturbance:	Approximately 1.5 stack diameters (1.5 m)
Number and Configuration of Sampling Points:	24 points (12 per traverse)

Distance from stack wall to sampling points:

Sample Point	% of Stack Diameter	Distance (Inches)
1	2.1	1.0
2	6.7	2.4
3	11.8	4.2
4	17.7	6.4
5	25.0	9.0
6	35.6	12.8
7	64.4	23.2
8	75.0	27.0
9	82.3	29.6
10	88.2	31.8
11	93.3	33.6
12	97.9	35.0

The non-ferrous baghouse is equipped with fixed ladders to the top of the baghouse where a fully-railed sampling platform and access to sample ports is provided.

5.0 Sampling Methodologies

The source testing program followed the most recent version of the MCC Report No. 96-07 “Interim Stack Sampling Performance Protocol”. Sampling and analytical procedures described in this section for the subject exhausts follow reference test methods from the US Environmental Protection Agency, as listed in Appendix 1 of the MCC Stack Sampling Performance Protocol. The sampling and analytical procedures employed for this testing program were completed in accordance with these methods without deviation.

5.1 Test Methods

The testing followed US EPA Method 29 which has provision for the determination of both total filterable particulate matter and selected metals. This is an isokinetic sampling method that allows for the determination of stack gas flow rate parameters along with contaminant concentrations. A preliminary survey was completed at each source to establish the expected stack gas temperature, velocity and moisture content to allow the determination of the appropriate sample nozzle size and facilitate isokinetic sampling.

The sampling equipment used to measure the stack gas velocity meets US EPA Reference Method 2 requirements and the stack gas moisture content was determined according to US EPA Reference Method 4 (condensation method). The sampling equipment met the requirements set forth in US EPA Method 5. Stack gas flow measurements were made using a calibrated S-type pitot tube/thermocouple assembly along with a primary standard inclined manometer and temperature readouts. Calibration records for the dry gas meter and sampling probe are provided in Appendix D.

The non-ferrous line baghouse tests were conducted over a 120 minute duration while the ferrous line baghouse tests were conducted over a 144 minute duration.

As an overview of the analytical steps to this test method, the filter catch and front half acetone rinse were taken to dryness and gravimetrically analyzed for total particulate matter (similar to US EPA Method 5) prior to acid digestion, combining with the metals related samples and analysis for selected metals.

5.2 Process Sampling / Data

The testing program does not require any process stream sampling. However, the type of material processed was documented and the volume/mass processed during each test was provided by Urbanmine.

6.0 Source Testing Results

Tables 2 and 3 summarize the results of the particulate matter sampling performed on the ferrous line baghouse exhaust and the non-ferrous line baghouse exhaust, respectively. Appendix A contains the stack data summary sheets for this testing and Appendix D contains the field data sheets and impinger gravimetric data used for the stack gas moisture content determinations. Appendix C contains the ALS Environmental Certificates of Analysis.

Tables 4 and 5 summarize the results of the selected metals sampling for the ferrous line baghouse exhaust and the non-ferrous line baghouse exhaust, respectively. Appendix B contains the metals results on an individual test basis.

Production data for the applicable processes during the sampling periods is provided in Appendix E.

Table 2: Ferrous Line Baghouse Particulate Results Summary

Test Location	Test Date	Test Time	Processing Rate tons/hr	Flue Gas Temp. °C	Flue Gas Velocity m/s	Water Vapour Content % by vol.	Flue Gas Flow Rate			Total Filterable Particulate Concentration		Total Filterable Particulate Emission Rate		
							acfm	dscfm	m^3/s	lb/ft^3	mg/m^3	lb/hr	g/s	g/ton
Ferrous Line Baghouse Exhaust	08-21-2024	13:30-16:10	4.70	34.6	7.6	1.8	12,570	11,670	5.51	3.51E+04	2.74	0.120	0.0151	11.54
	08-22-2024	8:35-11:15	6.03	26.9	8.4	1.7	13,900	13,210	6.23	2.69E+04	2.09	0.104	0.0130	7.79
	08-22-2024	12:50-15:22	6.03	32.3	8.3	1.7	13,870	12,940	6.11	1.79E+04	1.40	0.068	0.0085	5.09
	Average		5.59	31.3	8.1	1.7	13,450	12,610	5.95	2.67E+04	2.08	0.097	0.0122	8.14

Table 3: Non-Ferrous Line Baghouse Particulate Results Summary

Test Location	Test Date	Test Time	Processing Rate tons/hr	Flue Gas Temp °C	Flue Gas Velocity m/s	Water Vapour Content % by vol.	Flue Gas Flow Rate			Total Filterable Particulate Concentration		Total Filterable Particulate Emission Rate		
							acfm	dscfm	m^3/s	lb/ft^3	mg/m^3	lb/hr	g/s	g/ton
Non-Ferrous Line Baghouse Exhaust	08-20-2024	8:06-10:14	0.77	39.2	13.1	2.1	18,190	16,640	7.86	1.87E+04	1.46	0.091	0.0115	53.7
	08-20-2024	11:31-13:45		43.5	13.5	2.1	18,750	16,890	7.97	6.40E+04	4.99	0.315	0.0397	186
	08-20-2024	14:35-16:45		43.5	13.5	1.9	18,690	16,860	7.96	2.85E+04	2.22	0.140	0.0176	82.6
	Average		0.77	42.0	13.3	2.0	18,540	16,800	7.93	3.71E+04	2.89	0.182	0.0229	107.5

Table 4: Ferrous Line Baghouse Speciated Metals Averaged Results Summary

Analyte	Average Concentration	Average Emission Rates	
	(µg/m^3)	(g/s)	(g/ton)
Aluminum	1.52E+02	8.87E-04	5.99E-01
Antimony	<7.24E-02	<4.27E-07	<2.83E-04
Arsenic	<8.32E-01	<5.05E-06	<3.13E-03
Barium	8.06E+00	4.74E-05	3.14E-02
Beryllium	<6.46E-02	<3.83E-07	<2.50E-04
Cadmium	5.74E-02	3.37E-07	2.25E-04
Chromium	6.21E+00	3.62E-05	2.45E-02
Cobalt	2.16E-01	1.26E-06	8.56E-04
Copper	4.63E+00	2.72E-05	1.80E-02
Iron	2.24E+02	1.31E-03	8.80E-01
Lead	6.39E+00	3.70E-05	2.55E-02
Manganese	1.19E+01	6.88E-05	4.72E-02
Nickel	7.82E+00	4.56E-05	3.10E-02
Phosphorus	<3.23E+01	<1.92E-04	<1.25E-01
Selenium	<6.46E-01	<3.83E-06	<2.50E-03
Silver	<6.46E-02	<3.83E-07	<2.50E-04
Thallium	<9.98E-02	<5.77E-07	<3.99E-04
Zinc	1.50E+01	8.81E-05	5.85E-02

Table 5: Non-Ferrous Line Baghouse Speciated Metals Averaged Results Summary

Analyte	Average Concentration	Average Emission Rates	
	(µg/m^3)	(g/s)	(g/ton)
Aluminum	3.29E+02	2.61E-03	1.22E+01
Antimony	2.02E-01	1.60E-06	7.48E-03
Arsenic	4.21E-01	<3.34E-06	<1.56E-02
Barium	7.44E+00	5.90E-05	2.76E-01
Beryllium	7.82E-02	<6.20E-07	<2.90E-03
Cadmium	1.38E-01	1.09E-06	5.10E-03
Chromium	5.78E+00	4.58E-05	2.14E-01
Cobalt	4.48E-01	3.55E-06	1.66E-02
Copper	1.97E+01	1.56E-04	7.32E-01
Iron	3.18E+02	2.52E-03	1.18E+01
Lead	1.76E+01	1.40E-04	6.53E-01
Manganese	3.97E+02	3.13E-03	1.46E+01
Nickel	1.77E+01	1.40E-04	6.57E-01
Phosphorus	1.22E+02	<9.63E-04	<4.50E+00
Selenium	7.82E-01	<6.20E-06	<2.90E-02
Silver	1.95E-01	<1.54E-06	<7.20E-03
Thallium	4.86E-01	3.85E-06	1.80E-02
Zinc	1.37E+01	1.08E-04	5.06E-01

7.0 Discussion of Source Testing Results

There were no process interruptions during the source testing program that would invalidate any of the test results. The recorded processing rates for the test periods are understood to be representative of typical operations.

Based on the triplicate testing of the ferrous line baghouse exhaust, the particulate concentrations ranged from 1.40 to 2.74 mg/m^3, with an average concentration of 2.08 mg/m^3. The measured stack gas flow rate ranged from 5.51 to 6.23 m^3/s at reference conditions, with an average flow rate of 5.95 m^3/s. The stack gas temperature averaged 31.3 ºC while the average stack gas moisture content was 1.7% by volume. The average suspended particulate matter emission rate for the three tests was 0.0122 g/s.

The material processed through the ferrous line on both August 21st and 22nd are identified as 1001/1006 Clip (also described as Mint coils) in the production log. The average processing rate for August 21st was 4.70 tons/hr and for August 22nd was 6.03 tons/hr. These processing rates were combined with the measured particulate matter emission rates to obtain an average production-based particulate matter emission factor of 8.14 g/ton of ferrous material processed.

For the ferrous processing line, the average concentrations for the selected metals were low with results ranging from 5.74x10^{-2} to 2.24x10^2 µg/m^3. The highest concentration metals were iron, aluminum, zinc and manganese. The average measured iron concentration was approximately 10% of the average measured total particulate matter concentration. The average iron emission rate and production-based emission factor were 1.31x10^{-3} g/s and 8.80x10^{-1} g/ton of ferrous material processed.

Results of the particulate matter testing of the non-ferrous line baghouse exhaust indicate that the particulate concentrations ranged from 1.46 to 4.99 mg/m^3, with an average concentration of 2.89 mg/m^3. The measured stack gas flow rate ranged from 7.86 to 7.97 m^3/s at reference conditions, with an average flow rate of 7.93 m^3/s. The stack gas temperature averaged 42.0 ºC while the average stack gas moisture content was 2.0% by volume. The average suspended particulate matter emission rate for the three tests was 0.0229 g/s.

The material processed through the non-ferrous line on August 20th was UBC (beverage cans). The average processing rate for August 20th was 0.77 tons/hr. This processing rate were combined with the measured particulate matter emission rates to obtain an average production-based particulate matter emission factor of 107.5 g/ton of non-ferrous material processed.

For the non-ferrous processing line, the average concentrations for the selected metals were low with results ranging from <7.82x10^{-2} to 3.97x10^2 µg/m^3. The highest concentration metals were manganese, aluminum and iron. There was considerable variation in manganese concentrations from 911 µg/m^3 for

Test #1 to 18.1 µg/m^3 for Test #3. The high result for Test #1 was the primary reason for the unexpected high average manganese concentration. The average measured aluminum concentration was approximately 11% of the average measured total particulate matter concentration. The average aluminum emission rate and production-based emission factor were 2.61x10^{-3} g/s and 1.22x10^{1} g/ton of non-ferrous material processed.

Reagent blanks were submitted to the laboratory for analysis to ensure contaminant concentrations in the laboratory supplied media were low and to ensure sample recovery procedures by Dillon were not introducing target contaminants to the test samples and potentially biasing results. The reagent sample blank results generally indicated low or non-detect level of analytes. These results, along with other laboratory QA/QC procedure results, are provided in the laboratory reports.

The average percent isokineticity for each test on each source was within the acceptable range of 100%±10%. Pre-test and post-test leak checks were within the acceptable leak rate limit. The total suspended particulate matter and metals test results should be accepted as compliance quality data.

The particulate matter concentration results for both the ferrous and non-ferrous line baghouse exhausts are well below the target design concentration of 10 mg/m^3. Baghouse exit particulate matter concentrations at or below 10 mg/m^3 are indicative of a well functioning baghouse. The particulate matter concentrations results are nearly two orders of magnitude lower that the particulate matter limit of 230 mg/m^3 stated in the EAL.

The metals concentration results for both the ferrous and non-ferrous line baghouse exhausts indicated low to non-detect levels of individual metals. The highest individual average metal concentration for each source was approximately 10% of the already low total particulate matter concentration.

Based on the low particulate matter and metals concentrations and emission rates for the main emission sources at the Urbanmine facility, the potential for impacts to human health and the environment is deemed low. The results do not suggest a need for further assessment or monitoring such as establishing ambient air monitoring stations, conducting an air dispersion modelling assessment or conducting an air emissions risk assessment.

Appendix A

Stack Data Summary Sheets

Location: URBANMINE - FERROUS LINE | Start Time: 1:30 PM | RUN No. F-MP-R1

Date: 08-21-24 | Method: EPA M29 | End Time: 4:10 PM | JOB No. 21-1712

STACK DATA		EQUIPMENT		ESTIMATES		FILTERS	
% Moisture: 1.8 % est.		METER BOX: DIL-1		Est. Tm: 80 °F		Filter #	Tare Weight
Barometric: 29.16 in Hg		Y: 0.992		Est. Ts: 111 °F		QZ11531	
Static Press: 0.36 in H_2O		Ko: 0.74		Est. dP: 0.15 in H_2O			
Stack Press: 29.19 in Hg		ΔH@: 1.685 in H_2O		Est. Dn: 0.335 inches			
%CO2: 0.00 %		PITOT: VES 4A		LEAK CHECKS		FINAL CATCH	
%O2: 20.95 %		#REF! Cp: 0.810		DGM (Vm) initial	cf	Liquid Vol. (ml)	
%N2/CO: 79.05 %		NOZZLE: VES#10		Vm start timer	cf	37.7	
Md: 28.84 lb/lb-mole		Dn: 0.307 in		Vm stop timer	cf	Particulate Mass (mg)	
Ms: 28.64 lb/lb-mole		Stack Area: 8.47 ft^2		Leak Rate 0.001	0.001 cfm		
Msa: 28.64 lb/lb-mole		Stack Diameter: 39.4 inches		Vacuum 15	15 in. Hg	7.8	

STP @ 25C 101.3 kPa
Modified
September 2006

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot ΔP	Gas Temperatures (°F) DGM			Orifice Press. ΔH (in H_2O)		Pump Vac.	Gas Temps (°F)		K FACTOR = 7.714		
	Begin	End		(in. H_2O)	Inlet	Outlet	Stack	Ideal	Actual	(in Hg)	Probe	Filter	Imp. 0	% ISO	Vs (fps)
1	0	3.0	822.330	0.150	72	72	84	1.198	1.20	1.0	231	242	68	96.9	21.60
	3	6.0	824.200	0.150	75	73	94	1.165	1.15	1.0	230	242	61	100.5	21.80
	6	9.0	826.130	0.150	77	73	93	1.169	1.15	1.0	231	244	45	102.3	21.78
	9	12.0	828.100	0.150	79	74	92	1.175	1.15	1.0	230	238	45	98.3	21.76
2	12	15.0	830.000	0.170	81	74	92	1.333	1.30	1.0	230	240	45	96.6	23.16
	15	18.0	831.990	0.160	82	75	91	1.260	1.25	1.0	231	242	45	100.3	22.45
	18	21.0	834.000	0.150	83	75	91	1.182	1.15	1.0	231	245	45	99.3	21.74
	21	24.0	835.930	0.150	84	76	91	1.184	1.15	1.0	232	243	45	101.2	21.74
3	24	27.0	837.900	0.150	85	76	91	1.186	1.15	1.0	230	239	46	94.9	21.74
	27	30.0	839.750	0.150	85	77	90	1.189	1.15	1.0	231	240	46	98.3	21.72
	30	33.0	841.670	0.150	86	77	90	1.190	1.15	1.0	232	242	46	99.3	21.72
	33	36.0	843.610	0.150	86	78	90	1.191	1.15	1.0	231	243	46	96.6	21.72
4	36	39.0	845.500	0.200	87	79	90	1.589	1.60	1.0	235	245	46	94.2	25.08
	39	42.0	847.630	0.230	88	79	89	1.832	1.80	1.0	236	246	47	97.6	26.87
	42	45.0	850.000	0.230	89	80	89	1.835	1.80	1.0	235	245	47	98.7	26.87
	45	48.0	852.400	0.230	89	80	89	1.835	1.80	1.0	236	247	47	98.3	26.87
5	48	51.0	854.790	0.270	90	81	89	2.156	2.10	1.0	235	245	48	99.0	29.11
	51	54.0	857.400	0.270	91	81	91	2.151	2.10	1.0	236	244	48	98.7	29.16
	54	57.0	860.000	0.270	91	82	93	2.145	2.10	1.0	236	244	48	95.3	29.22
	57	60.0	862.510	0.270	92	82	93	2.147	2.10	1.0	235	244	49	98.3	29.22
6	60	63.0	865.100	0.310	92	83	92	2.469	2.45	1.0	236	246	49	100.8	31.28
	63	66.0	867.950	0.310	93	82	92	2.469	2.45	1.0	236	245	50	96.6	31.28
	66	69.0	870.680	0.310	93	84	94	2.465	2.45	1.0	235	243	51	99.8	31.33
	69	72.0	873.500	0.300	93	84	94	2.386	2.40	1.0	235	244	52	98.9	30.82
	72		876.250											-	-
1	0	3.0	876.250	0.140	86	84	94	1.110	1.10	1.0	235	245	60	99.3	21.06
	3	6.0	878.130	0.140	90	85	95	1.113	1.10	1.0	236	245	45	99.4	21.08
	6	9.0	880.020	0.140	90	85	96	1.111	1.10	1.0	236	244	44	99.0	21.09
	9	12.0	881.900	0.140	91	85	94	1.116	1.10	1.0	235	244	45	100.8	21.06
2	12	15.0	883.820	0.140	91	85	94	1.116	1.10	1.0	235	245	46	99.8	21.06
	15	18.0	885.720	0.130	91	86	95	1.036	1.00	1.0	236	245	46	98.6	20.31
	18	21.0	887.530	0.130	91	86	96	1.034	1.00	1.0	235	244	46	99.3	20.33
	21	24.0	889.350	0.130	92	86	98	1.031	1.00	1.0	236	247	47	98.8	20.36
3	24	27.0	891.160	0.130	92	86	97	1.033	1.00	1.0	235	247	47	101.4	20.35
	27	30.0	893.020	0.140	92	86	97	1.112	1.10	1.0	236	245	47	97.3	21.11
	30	33.0	894.870	0.140	93	86	97	1.113	1.10	1.0	235	245	48	99.3	21.11
	33	36.0	896.760	0.130	93	86	98	1.032	1.00	1.0	236	244	48	99.8	20.36
4	36	39.0	898.590	0.130	93	86	98	1.032	1.00	1.0	235	246	49	98.7	20.36
	39	42.0	900.400	0.220	93	86	98	1.743	1.70	1.0	235	247	51	96.6	26.49
	42	45.0	902.700	0.220	94	87	97	1.749	1.70	1.0	236	244	51	100.1	26.47
	45	48.0	905.090	0.220	94	87	100	1.740	1.70	1.0	235	245	51	98.3	26.54
5	48	51.0	907.430	0.220	95	88	101	1.740	1.70	1.0	236	245	52	99.4	26.56
	51	54.0	909.800	0.240	95	88	100	1.901	1.90	1.0	235	245	52	100.4	27.72
	54	57.0	912.300	0.270	96	88	99	2.143	2.10	1.0	236	245	52	98.3	29.37
	57	60.0	914.900	0.260	96	88	99	2.064	2.05	1.0	235	245	53	104.8	28.82
6	60	63.0	917.620	0.250	96	88	99	1.985	2.00	1.0	236	245	54	93.9	28.26
	63	66.0	920.010	0.270	96	88	99	2.143	2.10	1.0	235	244	54	97.9	29.37
	66	69.0	922.600	0.270	96	89	102	2.134	2.10	1.0	237	245	55	98.5	29.45
	69	72.0	925.200	0.270	96	89	100	2.141	2.21	1.0	235	246	56	98.3	29.40
9999	Final DGM:		927.800												

RESULTS

	Vm	ΔP (H_2O)	Tm	Ts	Max Vac.	ΔH (H_2O)	%ISO	Vs
Run Time	2.987 m^3	5.03 mm	30.0 °C	34.6 °C		39.27 mm		7.56 m/s
144 min	105.470 ft^3	0.198 in	85.9 °F	94.3 °F	1	1.546 in	98.7	24.75 ft/s

Vm_{std}	Vw_{std}	%H_2O	Qsd	Qsw	Qsa	Concentration	Emission Rate
2.8518 dscm	0.0512 scm	(meas.)	330.4 dscmm	336.5 scmm	356.0 acmm	2.74 mg/dscm	0.054 kg/hr
100.699 dscf	1.810 scf	1.8	11,669 dscfm	11,883 scfm	12,573 acfm	3.51E+04 lb/dscf	0.120 lb/hr
Isokinetic validity:	valid run		5.507 dscm/s	5.608 scm/s	5.934 acm/s		0.0151 g/s

Location: URBANMINE - FERROUS LINE | Start Time: 8:35 AM | RUN No. F-MP-R2

Date: 08-22-24 | Method: EPA M29 | End Time: 11:15 AM | 1047 OB No. 21-1712

STACK DATA			EQUIPMENT			ESTIMATES			FILTERS		
% Moisture:	1.7	% est.	METER BOX:	DIL-1		Est. Tm:	80	°F	Filter #	Tare Weight	STP @ 25C 101.3 kPa Modified September 2006
Barometric:	29.07	in Hg	Y:	0.992		Est. Ts:	111	°F	QZ11640		
Static Press:	0.36	in H_2O	Ko:	0.74		Est. dP:	0.53	in H_2O			
Stack Press:	29.10	in Hg	ΔH@:	1.685	in H_2O	Est. Dn:	0.244	inches			
%CO2:	0.00	%	PITOT:	VES 4A		LEAK CHECKS				FINAL CATCH	
%O2:	20.95	%	#REF! Cp:	0.810		DGM (Vm) initial		cf		Liquid Vol. (ml)	
%N2/CO:	79.05	%	NOZZLE:	VES#10		Vm start timer		cf		41.1	
Md:	28.84	lb/lb-mole	Dn:	0.307	in	Vm stop timer		cf		Particulate Mass (mg)	
Ms:	28.65	lb/lb-mole	Stack Area:	8.47	ft^2	Leak Rate	0.001	0.001 cfm			
Msa:	28.65	lb/lb-mole	Stack Diameter:	39.4	inches	Vacuum	15	15 in. Hg		6.8	

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot ΔP	Gas Temperatures (°F)			Orifice Press. ΔH (in H_2O)		Pump Vac.	Gas Temps (°F)		K FACTOR = 7.726		
					DGM								Imp.	% ISO	Vs
	Begin	End		(in. H_2O)	Inlet	Outlet	Stack	Ideal	Actual	(in Hg)	Probe	Filter	0		(fps)
1	0	3.0	928.040	0.210	69	69	73	1.703	1.70	2.0	234	244	69	104.9	25.33
	3	6.0	930.450	0.220	71	69	74	1.759	1.75	2.0	234	244	60	100.7	25.95
	6	9.0	932.820	0.220	73	69	75	1.760	1.75	2.0	232	248	42	99.8	25.97
	9	12.0	935.170	0.220	74	70	75	1.763	1.75	2.0	232	245	42	99.6	25.97
2	12	15.0	937.520	0.210	76	70	75	1.686	1.65	2.0	232	245	42	100.0	25.38
	15	18.0	939.830	0.210	77	71	76	1.686	1.65	2.0	233	245	42	99.0	25.40
	18	21.0	942.120	0.210	78	71	78	1.682	1.65	2.0	232	241	43	98.7	25.45
	21	24.0	944.400	0.200	79	72	78	1.605	1.60	1.0	232	241	43	101.8	24.83
3	24	27.0	946.700	0.200	79	72	78	1.605	1.60	1.0	233	242	43	101.8	24.83
	27	30.0	949.000	0.190	81	73	80	1.523	1.50	1.0	233	245	43	95.3	24.25
	30	33.0	951.100	0.190	82	73	80	1.525	1.50	1.0	232	242	44	99.3	24.25
	33	36.0	953.290	0.190	82	73	80	1.525	1.50	1.0	232	242	44	97.9	24.25
4	36	39.0	955.450	0.190	83	75	81	1.526	1.50	1.0	232	242	44	100.4	24.27
	39	42.0	957.670	0.240	83	75	80	1.930	1.90	2.0	233	245	45	98.6	27.26
	42	45.0	960.120	0.240	84	75	80	1.931	1.90	2.0	231	242	45	100.5	27.26
	45	48.0	962.620	0.230	85	76	81	1.851	1.80	2.0	231	242	45	98.5	26.71
5	48	51.0	965.020	0.290	85	76	82	2.327	2.30	2.0	231	242	46	97.4	30.02
	51	54.0	967.680	0.290	86	77	82	2.331	2.30	2.0	232	243	46	99.4	30.02
	54	57.0	970.400	0.290	86	77	82	2.331	2.30	2.0	232	243	46	98.7	30.02
	57	60.0	973.100	0.290	86	78	82	2.334	2.30	2.0	232	243	46	99.7	30.02
6	60	63.0	975.830	0.330	87	78	82	2.656	2.60	2.0	231	243	47	98.2	32.02
	63	66.0	978.700	0.330	88	79	82	2.661	2.60	2.0	231	243	47	98.4	32.02
12	66	69.0	981.580	0.330	88	79	82	2.661	2.60	2.0	232	243	47	99.1	32.02
	69	72.0	984.480	0.340	88	79	82	2.741	2.70	2.0	232	244	48	100.0	32.50
	72		987.450											-	-
1	0	3.0	987.450	0.210	81	80	80	1.694	1.70	1.0	230	241	52	102.5	25.49
	3	6.0	989.840	0.200	84	80	80	1.618	1.60	1.0	230	242	45	99.9	24.88
	6	9.0	992.120	0.200	85	80	80	1.620	1.60	1.0	230	242	44	99.4	24.88
	9	12.0	994.390	0.200	85	80	80	1.620	1.60	1.0	231	243	44	99.4	24.88
2	12	15.0	996.660	0.200	86	80	80	1.621	1.60	1.0	231	243	44	99.7	24.88
	15	18.0	998.940	0.200	86	80	82	1.615	1.60	1.0	231	243	44	100.3	24.93
	18	21.0	1001.230	0.200	87	81	83	1.615	1.60	1.0	231	247	43	99.4	24.95
	21	24.0	1003.500	0.200	87	81	83	1.615	1.60	1.0	232	243	43	99.4	24.95
3	24	27.0	1005.770	0.200	87	81	83	1.615	1.60	1.0	233	243	44	99.4	24.95
	27	30.0	1008.040	0.200	88	81	84	1.614	1.60	1.0	231	244	44	100.2	24.97
	30	33.0	1010.330	0.200	88	81	84	1.614	1.60	1.0	231	244	45	99.8	24.97
	33	36.0	1012.610	0.200	88	81	83	1.617	1.60	1.0	231	245	45	99.3	24.95
4	36	39.0	1014.880	0.230	88	82	83	1.860	1.80	1.0	231	243	45	98.7	26.76
	39	42.0	1017.300	0.230	88	82	83	1.860	1.80	1.0	232	243	45	100.3	26.76
	42	45.0	1019.760	0.230	89	82	83	1.862	1.80	1.0	232	243	46	100.6	26.76
	45	48.0	1022.230	0.230	89	82	82	1.865	1.85	1.0	232	243	47	99.3	26.73
5	48	51.0	1024.670	0.290	89	82	81	2.353	2.30	2.0	233	245	47	99.0	29.99
	51	54.0	1027.400	0.290	89	82	81	2.353	2.30	2.0	233	245	47	97.9	29.99
	54	57.0	1030.100	0.290	90	83	81	2.357	2.30	2.0	230	244	48	97.7	29.99
	57	60.0	1032.800	0.310	90	83	81	2.519	2.50	2.0	231	243	48	98.0	31.00
6	60	63.0	1035.600	0.340	91	83	81	2.764	2.70	2.0	232	244	49	97.3	32.47
	63	66.0	1038.510	0.340	91	83	81	2.764	2.70	2.0	233	245	50	98.6	32.47
	66	69.0	1041.460	0.340	92	84	81	2.769	2.70	2.0	235	245	51	98.4	32.47
	69	72.0	1044.410	0.340	92	84	81	2.769	2.70	2.0	236	244	52	98.7	32.47
9999	Final DGM:		1047.370												

RESULTS

	Vm	ΔP (H_2O)	Tm	Ts	Max Vac.	ΔH (H_2O)	%ISO	Vs
Run Time	3.379 m^3	6.21 mm	27.3 °C	26.9 °C		49.29 mm		8.35 m/s
144 min	119.330 ft^3	0.244 in	81.2 °F	80.4 °F	2	1.941 in	99.4	27.36 ft/s

Vm_{std}	Vw_{std}	%H_2O	Qsd	Qsw	Qsa	Concentration	Emission Rate
3.2483 dscm	0.0559 scm	(meas.)	373.9 dscmm	380.4 scmm	393.6 acmm	2.09 mg/dscm	0.047 kg/hr
114.698 dscf	1.973 scf	1.7	13,206 dscfm	13,434 scfm	13,901 acfm	2.69E+04 lb/dscf	0.104 lb/hr
Isokinetic validity:	valid run		6.232 dscm/s	6.340 scm/s	6.560 acm/s		0.0130 g/s

Location: URBANMINE - FERROUS LINE | Start Time: 12:50 PM | RUN No. F-MP-R3

Date: 08-22-24 | Method: EPA M29 | End Time: 3:22 PM | JOB No. 21-1712

STACK DATA		EQUIPMENT		ESTIMATES		FILTERS	
% Moisture: 1.7 % est.		METER BOX: DIL-1		Est. Tm: 80 °F		Filter #	Tare Weight
Barometric: 29.05 in Hg		Y: 0.992		Est. Ts: 111 °F		QZ11642	
Static Press: 0.36 in H_2O		Ko: 0.74		Est. dP: 0.53 in H_2O			
Stack Press: 29.08 in Hg		ΔH@: 1.685 in H_2O		Est. Dn: 0.244 inches			
%CO2: 0.00 %		PITOT: VES 4A		LEAK CHECKS		FINAL CATCH	
%O2: 20.95 %		#REF! Cp: 0.810		DGM (Vm) initial	cf	Liquid Vol. (ml)	
%N2/CO: 79.05 %		NOZZLE: VES#10		Vm start timer	cf	40.1	
Md: 28.84 lb/lb-mole		Dn: 0.307 in		Vm stop timer	cf	Particulate Mass (mg)	
Ms: 28.65 lb/lb-mole		Stack Area: 8.47 ft^2		Leak Rate 0.001	0.001 cfm		
Msa: 28.65 lb/lb-mole		Stack Diameter: 39.4 inches		Vacuum 15	15 in. Hg	4.5	

STP @ 25C 101.3 kPa
Modified
September 2006

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot ΔP	Gas Temperatures (°F)			Orifice Press. ΔH (in H_2O)		Pump Vac.	Gas Temps (°F)		K FACTOR = 7.726		
					DGM								Imp.	% ISO	Vs
	Begin	End		(in. H_2O)	Inlet	Outlet	Stack	Ideal	Actual	(in Hg)	Probe	Filter	0		(fps)
1	0	3.0	48.100	0.170	76	76	82	1.375	1.35	0.5	235	245	65	101.0	22.99
	3	6.0	50.200	0.170	75	75	86	1.344	1.30	0.5	237	244	50	101.6	23.07
	6	9.0	52.300	0.170	77	76	86	1.348	1.30	0.5	237	244	45	99.8	23.07
	9	12.0	54.370	0.180	78	76	85	1.430	1.40	0.5	235	245	43	100.1	23.72
2	12	15.0	56.510	0.180	79	76	85	1.432	1.40	0.5	232	247	42	99.6	23.72
	15	18.0	58.640	0.190	81	76	85	1.514	1.50	1.0	230	240	42	98.6	24.37
	18	21.0	60.810	0.200	82	77	85	1.596	1.60	1.0	233	240	42	100.8	25.00
	21	24.0	63.090	0.200	83	77	85	1.597	1.60	1.0	234	240	42	97.6	25.00
3	24	27.0	65.300	0.200	84	77	85	1.599	1.60	1.0	234	240	42	98.4	25.00
	27	30.0	67.530	0.200	85	78	85	1.602	1.60	1.0	235	242	42	100.0	25.00
	30	33.0	69.800	0.200	86	78	85	1.603	1.60	1.0	235	243	42	101.2	25.00
	33	36.0	72.100	0.200	87	78	85	1.605	1.60	1.0	235	243	42	100.7	25.00
4	36	39.0	74.390	0.290	87	79	88	2.312	2.30	1.0	235	243	43	95.6	30.19
	39	42.0	77.000	0.290	88	80	90	2.308	2.30	1.0	236	243	43	99.7	30.25
	42	45.0	79.720	0.280	89	80	92	2.223	2.20	1.0	236	243	44	100.0	29.77
	45	48.0	82.400	0.240	89	81	92	1.909	1.90	1.0	236	243	44	101.4	27.57
5	48	51.0	84.920	0.240	90	81	90	1.917	1.90	1.0	239	240	45	99.9	27.52
	51	54.0	87.410	0.290	90	82	89	2.321	2.30	1.0	245	242	45	99.2	30.22
	54	57.0	90.130	0.290	91	82	89	2.323	2.30	1.0	245	242	46	100.2	30.22
	57	60.0	92.880	0.290	91	82	88	2.327	2.30	1.0	245	243	46	100.5	30.19
6	60	63.0	95.640	0.340	91	83	87	2.733	2.70	1.0	245	242	47	99.4	32.66
	63	66.0	98.600	0.340	91	83	87	2.733	2.70	1.0	245	243	48	100.8	32.66
	66	69.0	101.600	0.340	92	84	89	2.728	2.70	1.0	246	243	49	100.4	32.72
	69	72.0	104.590	0.340	92	84	89	2.728	2.70	1.0	243	245	49	100.8	32.72
	72		107.590											-	-
1	0	3.0	107.590	0.180	85	84	91	1.435	1.40	1.0	236	246	60	102.5	23.85
	3	6.0	109.800	0.180	88	84	92	1.436	1.40	1.0	237	240	48	102.4	23.87
	6	9.0	112.010	0.180	89	84	93	1.435	1.40	1.0	236	248	42	103.7	23.89
	9	12.0	114.250	0.190	89	84	92	1.517	1.50	1.0	243	249	42	101.4	24.53
2	12	15.0	116.500	0.190	90	85	91	1.522	1.50	1.0	238	248	41	98.8	24.50
	15	18.0	118.700	0.190	90	85	91	1.522	1.50	1.0	236	245	41	104.2	24.50
	18	21.0	121.020	0.190	91	85	90	1.526	1.50	1.0	237	249	41	101.4	24.48
	21	24.0	123.280	0.190	91	85	91	1.524	1.50	1.0	236	248	42	101.9	24.50
3	24	27.0	125.550	0.190	91	85	91	1.524	1.50	1.0	235	246	42	101.9	24.50
	27	30.0	127.820	0.190	92	85	93	1.520	1.50	1.0	240	244	43	102.0	24.55
	30	33.0	130.090	0.190	92	85	93	1.520	1.50	1.0	240	245	43	102.0	24.55
	33	36.0	132.360	0.190	92	86	96	1.513	1.50	1.0	240	243	43	101.7	24.62
4	36	39.0	134.620	0.230	92	86	96	1.830	1.80	1.0	240	244	43	98.7	27.08
	39	42.0	137.030	0.230	93	86	96	1.831	1.80	1.0	242	245	44	101.8	27.08
	42	45.0	139.520	0.230	93	86	96	1.831	1.80	1.0	242	245	44	98.2	27.08
	45	48.0	141.920	0.240	93	87	95	1.916	1.90	1.0	241	243	45	100.3	27.64
5	48	51.0	144.430	0.270	94	87	94	2.160	2.10	1.0	241	247	46	98.2	29.29
	51	54.0	147.040	0.300	94	87	94	2.398	2.40	1.0	242	246	46	105.8	30.88
	54	57.0	150.000	0.300	94	87	94	2.398	2.40	1.0	242	245	48	98.3	30.88
	57	60.0	152.750	0.300	95	87	94	2.400	2.40	1.0	243	245	50	102.1	30.88
6	60	63.0	155.610	0.330	95	88	93	2.646	2.60	1.0	242	244	50	101.3	32.35
	63	66.0	158.590	0.330	96	88	93	2.649	2.60	1.0	241	242	53	107.0	32.35
	66	69.0	161.740	0.330	96	88	93	2.649	2.60	1.0	240	241	55	97.1	32.35
	69	72.0	164.600	0.340	96	88	92	2.733	2.70	1.0	241	242	56	98.3	32.81
9999	Final DGM:		167.540												

RESULTS

	Vm	ΔP (H_2O)	Tm	Ts	Max Vac.	ΔH (H_2O)	%ISO	Vs
Run Time	3.383 m^3	6.09 mm	29.8 °C	32.3 °C		48.13 mm		8.34 m/s
144 min	119.440 ft^3	0.240 in	85.7 °F	90.1 °F	1	1.895 in	100.6	27.30 ft/s

Vm_{std}	Vw_{std}	%H_2O	Qsd	Qsw	Qsa	Concentration	Emission Rate
3.2217 dscm	0.0545 scm	(meas.)	366.3 dscmm	372.7 scmm	392.8 acmm	1.40 mg/dscm	0.031 kg/hr
113.759 dscf	1.925 scf	1.7	12,937 dscfm	13,161 scfm	13,871 acfm	1.79E+04 lb/dscf	0.068 lb/hr
Isokinetic validity:	valid run		6.106 dscm/s	6.211 scm/s	6.546 acm/s		0.0085 g/s

Location: URBANMINE - NON-FERROUS LINE | Start Time: 8:06 AM | RUN No. NF-MP-R1

Date: 08-20-24 | Method: EPA M29 | End Time: 10:14 AM | JOB No. 21-1712

STACK DATA		EQUIPMENT		ESTIMATES		FILTERS	
% Moisture: 2.1 % est.		METER BOX: DIL-1		Est. Tm: 80 °F		Filter #	Tare Weight
Barometric: 29.28 in Hg		Y: 0.992		Est. Ts: 111 °F			
Static Press: 0.20 in H_2O		Ko: 0.74		Est. dP: 0.53 in H_2O			
Stack Press: 29.30 in Hg		ΔH@: 1.685 in H_2O		Est. Dn: 0.245 inches			
%CO2: 0.00 %		PITOT: VES 4A		LEAK CHECKS		FINAL CATCH	
%O2: 20.00 %		#REF! Cp: 0.805		DGM (Vm) initial	cf	Liquid Vol. (ml)	
%N2/CO: 80.00 %		NOZZLE: VES#8		Vm start timer	cf	40.2	
Md: 28.80 lb/lb-mole		Dn: 0.240 in		Vm stop timer	cf	Particulate Mass (mg)	
Ms: 28.57 lb/lb-mole		Stack Area: 7.07 ft^2		Leak Rate 0.001	0.001 cfm		
Msa: 28.57 lb/lb-mole		Stack Diameter: 36 inches		Vacuum 15	15 in. Hg	3.7	

STP @ 25C 101.3 kPa
Modified
September 2006

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot ΔP	Gas Temperatures (°F)			Orifice Press. ΔH (in H_2O)		Pump Vac.	Gas Temps (°F)		K FACTOR = 2.830		
					DGM								Imp.	% ISO	Vs
	Begin	End		(in. H_2O)	Inlet	Outlet	Stack	Ideal	Actual	(in Hg)	Probe	Filter	0		(fps)
1	0	2.5	532.880	0.380	76	76	99	1.092	1.10	0.5	252	250	71	102.0	34.61
	2.5	5.0	534.450	0.380	79	76	103	1.073	1.10	0.5	241	240	65	100.8	34.73
2	5	7.5	536.000	0.420	80	76	104	1.184	1.20	0.5	240	243	53	100.8	36.55
	7.5	10.0	537.630	0.420	82	77	103	1.190	1.20	0.5	239	244	56	104.7	36.52
3	10	12.5	539.330	0.450	83	77	102	1.278	1.30	0.5	239	244	55	102.2	37.76
	12.5	15.0	541.050	0.480	84	77	100	1.369	1.40	0.5	239	240	55	102.8	38.93
4	15	17.5	542.840	0.480	86	78	99	1.375	1.40	0.5	239	241	54	102.4	38.90
	17.5	20.0	544.630	0.480	87	78	99	1.376	1.40	0.5	239	244	54	100.6	38.90
5	20	22.5	546.390	0.480	88	78	98	1.380	1.40	0.5	239	245	54	101.5	38.86
	22.5	25.0	548.170	0.480	89	79	96	1.388	1.40	0.5	238	246	54	104.0	38.79
6	25	27.5	550.000	0.880	89	79	98	2.527	2.60	2.0	239	244	54	92.8	52.62
	27.5	30.0	552.200	0.880	91	79	96	2.541	2.60	2.0	240	244	54	109.3	52.53
7	30	32.5	554.800	0.880	92	81	96	2.548	2.60	2.0	241	245	54	92.2	52.53
	32.5	35.0	557.000	0.790	93	81	96	2.291	2.30	1.0	242	245	55	97.1	49.77
8	35	37.5	559.200	0.630	93	82	96	1.831	1.90	1.0	241	246	56	95.2	44.44
	37.5	40.0	561.130	0.630	94	82	98	1.826	1.90	1.0	240	245	58	101.3	44.52
9	40	42.5	563.180	0.430	94	83	99	1.247	1.30	0.5	240	243	57	105.7	36.82
	42.5	45.0	564.950	0.400	94	83	99	1.160	1.20	0.5	240	245	55	108.3	35.51
10	45	47.5	566.700	0.400	94	84	99	1.161	1.20	0.5	240	240	55	107.0	35.51
	47.5	50.0	568.430	0.420	94	84	100	1.217	1.20	0.5	241	240	53	105.1	36.42
11	50	52.5	570.170	0.400	95	85	100	1.161	1.20	0.5	242	240	53	**110.6**	35.54
	52.5	55.0	571.960	0.400	94	86	101	1.159	1.20	0.5	241	240	53	98.3	35.57
12	55	57.5	573.550	0.400	95	86	101	1.160	1.20	0.5	242	245	53	101.9	35.57
	57.5	60.0	575.200	0.420	95	86	102	1.216	1.20	0.8	242	241	53	103.2	36.48
	60		576.910											-	-
1	0	2.5	576.960	0.830	88	87	102	2.383	2.40	2.0	238	234	54	99.1	51.29
	2.5	5.0	579.250	0.830	92	87	103	2.387	2.40	2.0	235	238	54	99.7	51.33
2	5	7.5	581.560	0.830	92	87	103	2.387	2.40	2.0	238	241	54	98.4	51.33
	7.5	10.0	583.840	0.790	94	88	103	2.278	2.45	2.0	239	242	52	100.6	50.08
3	10	12.5	586.120	0.750	94	88	103	2.164	2.20	2.0	237	239	50	99.1	48.80
	12.5	15.0	588.310	0.740	94	88	104	2.132	2.20	2.0	238	239	50	99.9	48.51
4	15	17.5	590.500	0.740	96	89	104	2.137	2.20	2.0	238	240	51	98.7	48.51
	17.5	20.0	592.670	0.750	97	89	104	2.168	2.20	2.0	239	239	52	100.7	48.84
5	20	22.5	594.900	0.800	98	89	104	2.314	2.40	2.0	239	240	52	99.6	50.44
	22.5	25.0	597.180	0.810	98	89	104	2.343	2.40	2.0	239	238	52	99.9	50.76
6	25	27.5	599.480	0.860	99	90	104	2.491	2.55	2.0	238	241	52	95.5	52.30
	27.5	30.0	601.750	0.850	100	90	104	2.464	2.50	2.0	239	242	53	99.3	51.99
7	30	32.5	604.100	0.450	100	90	104	1.309	1.30	0.5	239	242	53	107.2	37.83
	32.5	35.0	605.950	0.410	100	90	107	1.186	1.20	0.5	239	242	53	102.2	36.21
8	35	37.5	607.630	0.550	100	91	107	1.591	1.60	1.0	240	245	53	97.2	41.93
	37.5	40.0	609.480	0.550	100	91	107	1.591	1.60	1.0	240	235	54	100.3	41.93
9	40	42.5	611.390	0.550	101	91	108	1.590	1.60	1.0	240	235	54	100.3	41.97
	42.5	45.0	613.300	0.560	101	92	108	1.620	1.65	1.0	240	235	54	99.9	42.35
10	45	47.5	615.220	0.560	101	92	108	1.620	1.68	1.0	240	235	55	99.4	42.35
	47.5	50.0	617.130	0.550	101	92	108	1.591	1.60	1.0	241	236	57	99.7	41.97
11	50	52.5	619.030	0.540	102	93	112	1.554	1.60	1.0	241	237	58	99.7	41.73
	52.5	55.0	620.910	0.540	102	93	111	1.557	1.60	1.0	240	235	58	105.5	41.70
12	55	57.5	622.900	0.580	102	94	108	1.682	1.70	1.0	239	234	58	98.9	43.10
	57.5	60.0	624.840	0.570	102	94	107	1.658	1.20	1.0	238	233	61	102.1	42.69
9999	Final DGM:		626.830												

RESULTS

Run Time	Vm	ΔP (H_2O)	Tm	Ts	Max Vac.	ΔH (H_2O)	%ISO	Vs
	2.661 m^3	15.03 mm	31.9 °C	39.2 °C		43.99 mm		13.09 m/s
120 min	93.950 ft^3	0.592 in	89.5 °F	102.5 °F	2	1.732 in	101.1	42.88 ft/s

Vm_{std}	Vw_{std}	%H_2O	Qsd	Qsw	Qsa	Concentration	Emission Rate
2.5355 dscm	0.0546 scm	(meas.)	471.3 dscmm	481.4 scmm	515.0 acmm	1.46 mg/dscm	0.041 kg/hr
89.529 dscf	1.930 scf	2.1	16,644 dscfm	17,001 scfm	18,187 acfm	1.87E+04 lb/dscf	0.091 lb/hr
Isokinetic validity:	valid run		7.855 dscm/s	8.024 scm/s	8.58 acm/s		0.0115 g/s

Location: URBANMINE - NON-FERROUS LINE | Start Time: 11:31 AM | RUN No. NF-MP-R2

Date: 08-20-24 | Method: EPA M29 | End Time: 1:45 PM | JOB No. 21-1712

STACK DATA		EQUIPMENT		ESTIMATES		FILTERS	
% Moisture: 2.1 % est.		METER BOX: DIL-1		Est. Tm: 80 °F		Filter #	Tare Weight
Barometric: 29.22 in Hg		Y: 0.992		Est. Ts: 111 °F			
Static Press: 0.20 in H_2O		Ko: 0.74		Est. dP: 0.53 in H_2O			
Stack Press: 29.24 in Hg		ΔH@: 1.685 in H_2O		Est. Dn: 0.245 inches			
%CO2: 0.00 %		PITOT: VES 4A		LEAK CHECKS		FINAL CATCH	
%O2: 20.00 %		#REF! Cp: 0.805		DGM (Vm) initial ____ ____ ____ cf		Liquid Vol. (ml)	
%N2/CO: 80.00 %		NOZZLE: VES#8		Vm start timer ____ ____ ____ cf		40.9	
Md: 28.80 lb/lb-mole		Dn: 0.240 in		Vm stop timer ____ ____ ____ cf		Particulate Mass (mg)	
Ms: 28.57 lb/lb-mole		Stack Area: 7.07 ft^2		Leak Rate 0.001 0.001 cfm			
Msa: 28.57 lb/lb-mole		Stack Diameter: 36 inches		Vacuum 15 15 in. Hg		12.8	

STP @ 25C 101.3 kPa
Modified
September 2006

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot ΔP	Gas Temperatures (°F)			Orifice Press. ΔH (in H_2O)		Pump Vac.	Gas Temps (°F)		K FACTOR = 2.830		
					DGM								Imp.	% ISO	Vs
	Begin	End		(in. H_2O)	Inlet	Outlet	Stack	Ideal	Actual	(in Hg)	Probe	Filter	0		(fps)
1	0	2.5	627.070	0.430	91	90	105	1.255	1.30	0.5	236	234	69	104.5	37.05
	2.5	5.0	628.820	0.440	92	91	106	1.267	1.30	0.5	235	231	62	103.8	37.51
2	5	7.5	630.580	0.430	93	91	106	1.239	1.25	0.5	236	236	54	100.8	37.08
	7.5	10.0	632.270	0.420	94	91	105	1.214	1.20	0.5	236	233	50	99.3	36.62
3	10	12.5	633.920	0.750	95	91	103	2.172	2.20	1.0	235	240	50	98.7	48.85
	12.5	15.0	636.110	0.710	95	91	102	2.060	2.10	1.0	234	236	50	101.3	47.48
4	15	17.5	638.300	0.710	97	92	103	2.062	2.10	1.0	235	233	51	98.8	47.52
	17.5	20.0	640.440	0.700	98	92	104	2.032	2.00	1.0	235	236	51	99.5	47.23
5	20	22.5	642.580	0.700	99	92	105	2.030	2.00	1.0	236	238	51	99.9	47.27
	22.5	25.0	644.730	0.700	99	93	105	2.032	2.00	1.0	234	238	52	98.9	47.27
6	25	27.5	646.860	0.810	100	93	106	2.347	2.40	2.0	234	238	52	99.0	50.90
	27.5	30.0	649.150	0.810	101	93	107	2.345	2.40	2.0	235	236	52	101.1	50.94
7	30	32.5	651.490	0.810	102	93	107	2.347	2.40	2.0	233	239	53	99.7	50.94
	32.5	35.0	653.800	0.820	102	94	108	2.374	2.40	2.0	235	240	53	99.5	51.30
8	35	37.5	656.120	0.830	102	94	108	2.403	2.40	2.0	236	234	55	99.8	51.61
	37.5	40.0	658.460	0.800	103	94	108	2.318	2.35	2.0	233	239	56	100.2	50.67
9	40	42.5	660.770	0.770	103	94	109	2.228	2.25	2.0	235	241	56	99.6	49.76
	42.5	45.0	663.020	0.780	104	95	109	2.261	2.30	2.0	234	241	56	99.2	50.08
10	45	47.5	665.280	0.810	104	95	109	2.347	2.40	2.0	234	241	58	100.0	51.03
	47.5	50.0	667.600	0.780	104	95	109	2.260	2.40	2.0	234	241	58	102.3	50.08
11	50	52.5	669.930	0.450	105	96	110	1.308	1.30	0.5	234	241	60	100.2	38.07
	52.5	55.0	671.670	0.430	104	96	110	1.249	1.25	0.5	234	241	60	102.6	37.21
12	55	57.5	673.410	0.430	104	96	110	1.249	1.25	0.5	235	241	61	102.0	37.21
	57.5	60.0	675.140	0.400	104	96	109	1.164	1.20	0.5	234	240	61	105.7	35.86
	60		676.870											-	-
1	0	2.5	676.870	0.450	98	97	112	1.297	1.03	0.5	240	243	53	102.6	38.14
	2.5	5.0	678.640	0.430	103	97	112	1.244	1.25	0.5	239	244	56	102.8	37.28
2	5	7.5	680.380	0.450	104	98	112	1.304	1.30	0.5	239	244	55	100.3	38.14
	7.5	10.0	682.120	0.420	104	98	112	1.218	1.20	0.5	239	240	55	103.8	36.84
3	10	12.5	683.860	0.410	105	98	111	1.192	1.20	0.5	239	241	54	104.9	36.37
	12.5	15.0	685.600	0.410	105	98	112	1.190	1.20	0.5	239	244	54	105.0	36.40
4	15	17.5	687.340	0.700	105	98	110	2.034	2.05	0.5	239	245	54	100.2	47.48
	17.5	20.0	689.510	0.700	105	98	110	2.034	2.05	0.5	238	246	54	93.3	47.48
5	20	22.5	691.530	0.730	107	99	113	2.115	2.15	2.0	239	244	54	102.7	48.62
	22.5	25.0	693.800	0.730	107	99	118	2.097	2.15	2.0	240	244	54	100.4	48.83
6	25	27.5	696.010	0.750	108	99	119	2.152	2.20	2.0	241	245	54	98.6	49.53
	27.5	30.0	698.210	0.740	108	99	119	2.124	2.10	1.0	242	245	55	99.7	49.20
7	30	32.5	700.420	0.730	108	99	119	2.096	2.05	1.0	241	246	56	101.8	48.87
	32.5	35.0	702.660	0.740	109	100	119	2.128	2.10	1.0	240	245	58	99.5	49.20
8	35	37.5	704.870	0.800	108	100	118	2.301	2.30	0.5	240	243	57	97.5	51.11
	37.5	40.0	707.120	0.810	108	101	116	2.339	2.40	0.5	240	245	55	98.0	51.34
9	40	42.5	709.400	0.730	108	101	113	2.121	2.15	0.5	240	240	55	100.6	48.62
	42.5	45.0	711.630	0.740	109	101	113	2.152	2.15	0.5	241	240	59	98.5	48.95
10	45	47.5	713.830	0.420	109	101	113	1.224	1.20	0.5	234	242	57	103.8	36.88
	47.5	50.0	715.580	0.400	109	102	113	1.167	1.20	0.5	235	240	57	101.4	35.99
11	50	52.5	717.250	0.410	108	102	112	1.197	1.20	0.5	233	241	58	103.1	36.40
	52.5	55.0	718.970	0.410	109	102	110	1.202	1.20	0.5	235	241	60	101.1	36.34
12	55	57.5	720.660	0.430	108	102	112	1.255	1.30	0.5	233	240	60	104.8	37.28
	57.5	60.0	722.450	0.420	109	102	110	1.232	1.25	0.5	233	241	60	102.8	36.78
9999	Final DGM:		724.190												

RESULTS

	Vm	ΔP (H_2O)	Tm	Ts	Max Vac.	ΔH (H_2O)	%ISO	Vs
Run Time	2.750 m^3	15.71 mm	37.7 °C	43.5 °C		45.79 mm		13.49 m/s
120 min	97.120 ft^3	0.618 in	99.8 °F	110.2 °F	2	1.803 in	100.9	44.20 ft/s

Vm_{std}	Vw_{std}	%H_2O	Qsd	Qsw	Qsa	Concentration	Emission Rate
2.5679 dscm	0.0556 scm	(meas.)	478.3 dscmm	488.5 scmm	530.8 acmm	4.99 mg/dscm	0.143 kg/hr
90.673 dscf	1.963 scf	2.1	16,890 dscfm	17,252 scfm	18,746 acfm	6.40E+04 lb/dscf	0.315 lb/hr
Isokinetic validity:	valid run		7.971 dscm/s	8.142 scm/s	8.85 acm/s		0.0397 g/s

Location: URBANMINE - NON-FERROUS LINE | Start Time: 2:35 PM | RUN No. NF-MP-R3

Date: 08-20-24 | Method: EPA M29 | End Time: 4:45 PM | JOB No. 21-1712

STACK DATA		EQUIPMENT		ESTIMATES		FILTERS	
% Moisture:	1.9 % est.	METER BOX:	DIL-1	Est. Tm:	80 °F	Filter #	Tare Weight
Barometric:	29.20 in Hg	Y:	0.992	Est. Ts:	111 °F		
Static Press:	0.20 in H_2O	Ko:	0.74	Est. dP:	0.53 in H_2O		
Stack Press:	29.22 in Hg	ΔH@:	1.685 in H_2O	Est. Dn:	0.245 inches		
%CO2:	0.00 %	PITOT:	VES 4A	LEAK CHECKS		FINAL CATCH	
%O2:	20.00 %	#REF! Cp:	0.805	DGM (Vm) initial	cf	Liquid Vol. (ml)	
%N2/CO:	80.00 %	NOZZLE:	VES#8	Vm start timer	cf	36.0	
Md:	28.80 lb/lb-mole	Dn:	0.240 in	Vm stop timer	cf	Particulate Mass (mg)	
Ms:	28.59 lb/lb-mole	Stack Area:	7.07 ft^2	Leak Rate 0.001	0.001 cfm		
Msa:	28.59 lb/lb-mole	Stack Diameter:	36 inches	Vacuum 15	15 in. Hg	5.7	

STP @ 25C 101.3 kPa Modified September 2006

Sample Point	Sample Time (minutes)		Dry Gas Meter Reading (ft^3)	Pitot ΔP	Gas Temperatures (°F)			Orifice Press. ΔH (in H_2O)		Pump Vac.	Gas Temps (°F)		K FACTOR = 2.840		
					DGM								Imp.	% ISO	Vs
	Begin	End		(in. H_2O)	Inlet	Outlet	Stack	Ideal	Actual	(in Hg)	Probe	Filter	0		(fps)
1	0	2.5	724.780	0.440	101	101	104	1.315	1.30	0.5	236	234	69	99.4	37.45
	2.5	5.0	726.500	0.410	102	101	104	1.211	1.20	0.5	235	231	62	102.2	36.15
2	5	7.5	728.210	0.410	103	101	104	1.212	1.20	0.5	236	236	54	99.8	36.15
	7.5	10.0	729.880	0.410	103	101	105	1.209	1.20	0.5	236	233	50	99.2	36.18
3	10	12.5	731.540	0.740	104	102	105	2.182	2.10	1.0	235	240	50	101.1	48.61
	12.5	15.0	733.810	0.700	104	102	109	2.050	2.05	1.0	234	236	50	101.1	47.44
4	15	17.5	736.010	0.700	97	92	103	2.040	2.10	1.0	235	233	51	101.6	47.19
	17.5	20.0	738.200	0.690	98	92	104	2.010	2.00	1.0	235	236	51	103.3	46.89
5	20	22.5	740.410	0.690	99	92	105	2.008	2.00	1.0	236	238	51	98.6	46.93
	22.5	25.0	742.520	0.680	99	93	105	1.981	2.00	1.0	234	238	52	104.4	46.59
6	25	27.5	744.740	0.800	100	93	106	2.326	2.40	2.0	234	238	52	100.2	50.58
	27.5	30.0	747.050	0.810	101	93	107	2.353	2.40	2.0	235	236	52	102.2	50.94
7	30	32.5	749.420	0.800	102	93	107	2.326	2.40	2.0	233	239	53	99.7	50.63
	32.5	35.0	751.720	0.830	102	94	108	2.411	2.40	2.0	235	240	53	106.0	51.61
8	35	37.5	754.210	0.820	102	94	108	2.382	2.40	2.0	236	234	55	101.5	51.30
	37.5	40.0	756.580	0.780	103	94	108	2.268	2.35	2.0	233	239	56	100.4	50.03
9	40	42.5	758.870	0.820	103	94	109	2.381	2.25	2.0	235	241	56	101.9	51.35
	42.5	45.0	761.250	0.760	104	95	109	2.210	2.30	2.0	234	241	56	103.4	49.43
10	45	47.5	763.580	0.800	104	95	109	2.326	2.40	2.0	234	241	58	98.2	50.72
	47.5	50.0	765.850	0.760	104	95	109	2.210	2.25	2.0	234	241	58	100.3	49.43
11	50	52.5	768.110	0.440	105	96	110	1.283	1.30	0.5	234	241	60	101.2	37.65
	52.5	55.0	769.850	0.420	104	96	110	1.224	1.25	0.5	234	241	60	98.3	36.78
12	55	57.5	771.500	0.430	104	96	110	1.253	1.25	0.5	235	241	61	101.2	37.22
	57.5	60.0	773.220	0.400	104	96	109	1.168	1.20	0.5	234	240	61	100.6	35.86
	60		774.870											-	-
1	0	2.5	774.870	0.450	98	97	112	1.036	103.00	0.5	240	243	53	100.3	38.14
	2.5	5.0	776.250	0.430	103	97	112	1.248	1.25	0.5	239	244	56	100.2	37.28
2	5	7.5	777.950	0.450	104	98	112	1.309	1.30	0.5	239	244	55	97.8	38.14
	7.5	10.0	779.650	0.420	104	98	112	1.222	1.20	0.5	239	240	55	100.0	36.84
3	10	12.5	781.330	0.410	105	98	111	1.196	1.20	0.5	239	241	54	100.5	36.37
	12.5	15.0	783.000	0.410	105	98	112	1.194	1.20	0.5	239	244	54	99.3	36.40
4	15	17.5	784.650	0.700	105	98	110	2.041	2.05	0.5	239	245	54	99.6	47.48
	17.5	20.0	786.810	0.700	105	98	110	2.041	2.05	0.5	238	246	54	101.4	47.48
5	20	22.5	789.010	0.730	107	99	113	2.122	2.15	2.0	239	244	54	104.7	48.62
	22.5	25.0	791.330	0.730	107	99	118	2.104	2.15	2.0	240	244	54	100.7	48.83
6	25	27.5	793.550	0.750	108	99	119	2.159	2.20	2.0	241	245	54	95.3	49.54
	27.5	30.0	795.680	0.740	108	99	119	2.131	2.10	1.0	242	245	55	102.2	49.20
7	30	32.5	797.950	0.730	108	99	119	2.103	2.05	1.0	241	246	56	95.7	48.87
	32.5	35.0	800.060	0.740	109	100	119	2.135	2.10	1.0	240	245	58	98.4	49.20
8	35	37.5	802.250	0.800	108	100	118	2.309	2.30	0.5	240	243	57	102.9	51.12
	37.5	40.0	804.630	0.810	108	101	116	2.347	2.40	0.5	240	245	55	102.5	51.35
9	40	42.5	807.020	0.730	108	101	113	2.128	2.15	0.5	240	240	55	100.0	48.62
	42.5	45.0	809.240	0.740	109	101	113	2.159	2.15	0.5	241	240	59	101.9	48.95
10	45	47.5	811.520	0.420	109	101	113	1.228	1.20	0.5	234	242	57	97.6	36.88
	47.5	50.0	813.170	0.400	109	102	113	1.171	1.20	0.5	235	240	57	99.4	35.99
11	50	52.5	814.810	0.410	108	102	112	1.201	1.20	0.5	233	241	58	97.5	36.40
	52.5	55.0	816.440	0.410	109	102	110	1.206	1.20	0.5	235	241	60	105.6	36.34
12	55	57.5	818.210	0.430	108	102	112	1.259	1.30	0.5	233	240	60	105.2	37.28
	57.5	60.0	820.010	0.420	109	102	110	1.236	1.25	0.5	233	241	60	102.6	36.78
9999	Final DGM:		821.750												

RESULTS

	Vm	ΔP (H_2O)	Tm	Ts	Max Vac.	ΔH (H_2O)	%ISO	Vs
Run Time	2.746 m^3	15.61 mm	38.4 °C	43.5 °C		99.51 mm		13.45 m/s
120 min	96.970 ft^3	0.615 in	101.1 °F	110.3 °F	2	3.918 in	100.8	44.06 ft/s

Vm_{std}	Vw_{std}	%H_2O	Qsd	Qsw	Qsa	Concentration	Emission Rate
2.5697 dscm	0.0489 scm	(meas.)	477.3 dscmm	486.6 scmm	529.2 acmm	2.22 mg/dscm	0.064 kg/hr
90.738 dscf	1.728 scf	1.9	16,856 dscfm	17,183 scfm	18,688 acfm	2.85E+04 lb/dscf	0.140 lb/hr
Isokinetic validity:	valid run		7.955 dscm/s	8.109 scm/s	8.82 acm/s		0.0176 g/s

Appendix B

Metals Test Results

Ferrous Line Baghouse Speciated Metals Test #1 Results Summary						
Test Date: 8/21/24		Test Times: 13:30-16:10		Avg. Production Rate (t/hr):		4.70
Analyte	Mass (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Volumetric Flow Rate (m^3/s)	Emission Rate (g/s)	Emission Rate (g/ton)
Aluminum	642	2.852	2.25E+02	5.51	1.24E-03	9.50E-01
Antimony	0.261		9.15E-02		5.04E-07	3.86E-04
Arsenic	<1		<3.51E-01		<1.93E-06	<1.48E-03
Barium	28.7		1.01E+01		5.54E-05	4.25E-02
Beryllium	<0.2		<7.01E-02		<3.86E-07	<2.96E-04
Cadmium	0.219		7.68E-02		4.23E-07	3.24E-04
Chromium	27		9.47E+00		5.21E-05	3.99E-02
Cobalt	0.948		3.32E-01		1.83E-06	1.40E-03
Copper	16.3		5.72E+00		3.15E-05	2.41E-02
Iron	899		3.15E+02		1.74E-03	1.33E+00
Lead	31.2		1.09E+01		6.03E-05	4.62E-02
Manganese	56.8		1.99E+01		1.10E-04	8.40E-02
Nickel	35		1.23E+01		6.76E-05	5.18E-02
Phosphorus	<100		<3.51E+01		<1.93E-04	<1.48E-01
Selenium	<2		<7.01E-01		<3.86E-06	<2.96E-03
Silver	<0.2		<7.01E-02		<3.86E-07	<2.96E-04
Thallium	0.501		1.76E-01		9.68E-07	7.41E-04
Zinc	54.4		1.91E+01		1.05E-04	8.05E-02

* Where contaminant catches below the analytical limits of detection; results based on laboratory detection limits.

Ferrous Line Baghouse Speciated Metals Test #2 Results Summary						
Test Date: 8/22/24		Test Times: 8:35-11:15		Avg. Production Rate (t/hr):		6.03
Analyte	Mass (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Volumetric Flow Rate (m^3/s)	Emission Rate (g/s)	Emission Rate (g/ton)
Aluminum	270	3.248	8.31E+01	6.23	5.18E-04	3.09E-01
Antimony	0.207		6.37E-02		3.97E-07	2.37E-04
Arsenic	3.21		9.88E-01		6.16E-06	3.68E-03
Barium	20.2		6.22E+00		3.88E-05	2.31E-02
Beryllium	<0.2		<6.16E-02		<3.84E-07	<2.29E-04
Cadmium	0.159		4.89E-02		3.05E-07	1.82E-04
Chromium	14.8		4.56E+00		2.84E-05	1.70E-02
Cobalt	0.534		1.64E-01		1.02E-06	6.12E-04
Copper	9.88		3.04E+00		1.90E-05	1.13E-02
Iron	475		1.46E+02		9.11E-04	5.44E-01
Lead	13.2		4.06E+00		2.53E-05	1.51E-02
Manganese	21.2		6.53E+00		4.07E-05	2.43E-02
Nickel	19.9		6.13E+00		3.82E-05	2.28E-02
Phosphorus	<100		<3.08E+01		<1.92E-04	<1.15E-01
Selenium	<2		<6.16E-01		<3.84E-06	<2.29E-03
Silver	<0.2		<6.16E-02		<3.84E-07	<2.29E-04
Thallium	<0.2		<6.16E-02		<3.84E-07	<2.29E-04
Zinc	39.9		1.23E+01		7.66E-05	4.57E-02

* Where contaminant catches below the analytical limits of detection; results based on laboratory detection limits.

Ferrous Line Baghouse Speciated Metals Test #3 Results Summary						
Test Date: 8/22/24		Test Times: 12:50-15:22		Avg. Production Rate (t/hr):		6.03
Analyte	Mass (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Volumetric Flow Rate (m^3/s)	Emission Rate (g/s)	Emission Rate (g/ton)
Aluminum	476	3.222	1.48E+02	6.11	9.02E-04	5.39E-01
Antimony	<0.2		<6.21E-02		<3.79E-07	<2.26E-04
Arsenic	3.73		1.16E+00		7.07E-06	4.22E-03
Barium	25.4		7.88E+00		4.81E-05	2.87E-02
Beryllium	<0.2		<6.21E-02		<3.79E-07	<2.26E-04
Cadmium	0.150		4.66E-02		2.84E-07	1.70E-04
Chromium	14.8		4.59E+00		2.80E-05	1.67E-02
Cobalt	0.489		1.52E-01		9.27E-07	5.53E-04
Copper	16.5		5.12E+00		3.13E-05	1.87E-02
Iron	678		2.10E+02		1.28E-03	7.67E-01
Lead	13.4		4.16E+00		2.54E-05	1.52E-02
Manganese	29.5		9.16E+00		5.59E-05	3.34E-02
Nickel	16.3		5.06E+00		3.09E-05	1.84E-02
Phosphorus	<100		<3.10E+01		<1.90E-04	<1.13E-01
Selenium	<2		<6.21E-01		<3.79E-06	<2.26E-03
Silver	<0.2		<6.21E-02		<3.79E-07	<2.26E-04
Thallium	<0.2		<6.21E-02		<3.79E-07	<2.26E-04
Zinc	43.7		1.36E+01		8.28E-05	4.94E-02

* Where contaminant catches below the analytical limits of detection; results based on laboratory detection limits.

Ferrous Line Baghouse Speciated Metals Averaged Results Summary			
Analyte	Average Concentration	Average Emission Rates	
	(µg/m^3)	(g/s)	(g/ton)
Aluminum	1.52E+02	8.87E-04	5.99E-01
Antimony	<7.24E-02	<4.27E-07	<2.83E-04
Arsenic	<8.32E-01	<5.05E-06	<3.13E-03
Barium	8.06E+00	4.74E-05	3.14E-02
Beryllium	<6.46E-02	<3.83E-07	<2.50E-04
Cadmium	5.74E-02	3.37E-07	2.25E-04
Chromium	6.21E+00	3.62E-05	2.45E-02
Cobalt	2.16E-01	1.26E-06	8.56E-04
Copper	4.63E+00	2.72E-05	1.80E-02
Iron	2.24E+02	1.31E-03	8.80E-01
Lead	6.39E+00	3.70E-05	2.55E-02
Manganese	1.19E+01	6.88E-05	4.72E-02
Nickel	7.82E+00	4.56E-05	3.10E-02
Phosphorus	<3.23E+01	<1.92E-04	<1.25E-01
Selenium	<6.46E-01	<3.83E-06	<2.50E-03
Silver	<6.46E-02	<3.83E-07	<2.50E-04
Thallium	<9.98E-02	<5.77E-07	<3.99E-04
Zinc	1.50E+01	8.81E-05	5.85E-02

Non-Ferrous Line Baghouse Speciated Metals Test #1 Results Summary						
Test Date: 8/20/24		Test Times: 8:06-10:14		Avg. Processing Rate (t/hr):		0.77
Analyte	Mass (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Volumetric Flow Rate (m^3/s)	Emission Rate (g/s)	Emission Rate (g/ton)
Aluminum	731	2.535	2.88E+02	7.86	2.26E-03	1.06E+01
Antimony	0.54		2.13E-01		1.67E-06	7.82E-03
Arsenic	1.23		4.85E-01		3.81E-06	1.78E-02
Barium	15.9		6.27E+00		4.93E-05	2.30E-01
Beryllium	<0.2		<7.89E-02		<6.20E-07	<2.90E-03
Cadmium	0.483		1.90E-01		1.50E-06	7.00E-03
Chromium	16.4		6.47E+00		5.08E-05	2.38E-01
Cobalt	1.25		4.93E-01		3.87E-06	1.81E-02
Copper	31.7		1.25E+01		9.82E-05	4.59E-01
Iron	715		2.82E+02		2.22E-03	1.04E+01
Lead	40.3		1.59E+01		1.25E-04	5.84E-01
Manganese	2310		9.11E+02		7.16E-03	3.35E+01
Nickel	46.6		1.84E+01		1.44E-04	6.75E-01
Phosphorus	732		2.89E+02		2.27E-03	1.06E+01
Selenium	<2		<7.89E-01		<6.20E-06	<2.90E-02
Silver	0.9		3.55E-01		2.79E-06	1.30E-02
Thallium	1.76		6.94E-01		5.45E-06	2.55E-02
Zinc	35.7		1.41E+01		1.11E-04	5.17E-01

* Where contaminant catches below the analytical limits of detection; results based on laboratory detection limits.

Non-Ferrous Line Baghouse Speciated Metals Test #2 Results Summary						
Test Date: 8/20/24		Test Times: 11:31-13:45		Avg. Processing Rate (t/hr):		0.77
Analyte	Mass (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Volumetric Flow Rate (m^3/s)	Emission Rate (g/s)	Emission Rate (g/ton)
Aluminum	1190	2.568	4.63E+02	7.97	3.69E-03	1.73E+01
Antimony	0.588		2.29E-01		1.83E-06	8.53E-03
Arsenic	<1		<3.89E-01		<3.10E-06	<1.45E-02
Barium	21.9		8.53E+00		6.80E-05	3.18E-01
Beryllium	<0.2		<7.79E-02		<6.21E-07	<2.90E-03
Cadmium	0.357		1.39E-01		1.11E-06	5.18E-03
Chromium	19.3		7.52E+00		5.99E-05	2.80E-01
Cobalt	1.58		6.15E-01		4.90E-06	2.29E-02
Copper	76		2.96E+01		2.36E-04	1.10E+00
Iron	1210		4.71E+02		3.76E-03	1.76E+01
Lead	72.7		2.83E+01		2.26E-04	1.06E+00
Manganese	673		2.62E+02		2.09E-03	9.77E+00
Nickel	67.3		2.62E+01		2.09E-04	9.77E-01
Phosphorus	<100		<3.89E+01		<3.10E-04	<1.45E+00
Selenium	<2		<7.79E-01		<6.21E-06	<2.90E-02
Silver	0.39		1.52E-01		1.21E-06	5.66E-03
Thallium	1.51		5.88E-01		4.69E-06	2.19E-02
Zinc	45.3		1.76E+01		1.41E-04	6.57E-01

* Where contaminant catches below the analytical limits of detection; results based on laboratory detection limits.

Non-Ferrous Line Baghouse Speciated Metals Test #3 Results Summary						
Test Date: 8/20/24		Test Times: 14:35-16:45		Avg. Processing Rate (t/hr):		0.77
Analyte	Mass (µg)	Sample Volume (m^3)	Concentration (µg/m^3)	Volumetric Flow Rate (m^3/s)	Emission Rate (g/s)	Emission Rate (g/ton)
Aluminum	608	2.570	2.37E+02	7.96	1.88E-03	8.80E+00
Antimony	0.42		1.63E-01		1.30E-06	6.08E-03
Arsenic	<1		<3.89E-01		<3.10E-06	<1.45E-02
Barium	19.3		7.51E+00		5.97E-05	2.79E-01
Beryllium	<0.2		<7.78E-02		<6.19E-07	<2.89E-03
Cadmium	0.216		8.41E-02		6.69E-07	3.13E-03
Chromium	8.64		3.36E+00		2.67E-05	1.25E-01
Cobalt	0.609		2.37E-01		1.89E-06	8.81E-03
Copper	43.7		1.70E+01		1.35E-04	6.33E-01
Iron	517		2.01E+02		1.60E-03	7.48E+00
Lead	22.1		8.60E+00		6.84E-05	3.20E-01
Manganese	46.5		1.81E+01		1.44E-04	6.73E-01
Nickel	22		8.56E+00		6.81E-05	3.18E-01
Phosphorus	<100		<3.89E+01		<3.10E-04	<1.45E+00
Selenium	<2		<7.78E-01		<6.19E-06	<2.89E-02
Silver	0.2		<7.78E-02		<6.19E-07	<2.89E-03
Thallium	0.453		1.76E-01		1.40E-06	6.56E-03
Zinc	23.8		9.26E+00		7.37E-05	3.44E-01

* Where contaminant catches below the analytical limits of detection; results based on laboratory detection limits.

Non-Ferrous Line Baghouse Speciated Metals Averaged Results Summary			
Analyte	Average Concentration	Average Emission Rates	
	(µg/m^3)	(g/s)	(g/ton)
Aluminum	3.29E+02	2.61E-03	1.22E+01
Antimony	2.02E-01	1.60E-06	7.48E-03
Arsenic	4.21E-01	<3.34E-06	<1.56E-02
Barium	7.44E+00	5.90E-05	2.76E-01
Beryllium	7.82E-02	<6.20E-07	<2.90E-03
Cadmium	1.38E-01	1.09E-06	5.10E-03
Chromium	5.78E+00	4.58E-05	2.14E-01
Cobalt	4.48E-01	3.55E-06	1.66E-02
Copper	1.97E+01	1.56E-04	7.32E-01
Iron	3.18E+02	2.52E-03	1.18E+01
Lead	1.76E+01	1.40E-04	6.53E-01
Manganese	3.97E+02	3.13E-03	1.46E+01
Nickel	1.77E+01	1.40E-04	6.57E-01
Phosphorus	1.22E+02	<9.63E-04	<4.50E+00
Selenium	7.82E-01	<6.20E-06	<2.90E-02
Silver	1.95E-01	<1.54E-06	<7.20E-03
Thallium	4.86E-01	3.85E-06	1.80E-02
Zinc	1.37E+01	1.08E-04	5.06E-01

Appendix C

Laboratory Certificates of Analysis

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Dillon Consulting Limited.
ALS Project ID:	DIL400	**Client Address:**	300 - 100 Innovation Drive
ALS WO#:	L2757222		Winnipeg, MB R3T 6G2
Date of Report	17-Sep-24		Canada
Date of Sample Receipt	30-Aug-24	**Client Contact:**	David Diemer
		Client Project ID:	21-1712-2000

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (AR11 03-Sep-2024)

REPORT FLAGS:

J - The value is uncertain and below what can be reliably identified as positive with a ≥99% confidence limit (i.e. below the laboratory determined MDL).

LCB = Laboratory Control Blank
CVS = Continuing Verification Standard Sample (limits: ±2 in the last decimal)
LOR = Limit of Reporting

Certified by: [redacted]

Claire Kocharakkal
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		NF-MP-R1 (TS1 THRU TS4)		NF-MP-R2 (TS1 THRU TS4)		NF-MP-R3 (TS1 THRU TS4)		F-MP-R1 (TS1 THRU TS4)	F-MP-R2 (TS1 THRU TS4)
ALS Sample ID		L2757222-1		L2757222-2		L2757222-3		L2757222-4	L2757222-5
Matrix		Stack		Stack		Stack		Stack	Stack
Analysis type		Sample		Sample		Sample		Sample	Sample
Sampling Date/Time		20-Aug-24		20-Aug-24		20-Aug-24		21-Aug-24	22-Aug-24
Date of Receipt		30-Aug-24		30-Aug-24		30-Aug-24		30-Aug-24	30-Aug-24
PM via Gravimetric Analysis Method 5	**LOR**								
	mg	**mg**		**mg**		**mg**		**mg**	**mg**
Filter Particulate Matter	0.8	0.7	**J**	0.6	**J**	0.8	**J**	0.9	1.9
Acetone Particulate Matter	0.4	3.0		12.2		4.9		6.9	4.9
	g	**g**		**g**		**g**		**g**	**g**
Acetone Mass	0.02	43.4		58.3		43.9		48.4	40.8

ALS Environmental

Sample Analysis Summary Report

Sample Name		F-MP-R3 (TS1 THRU TS4)		REAGENT BLANK		MB	
ALS Sample ID		L2757222-6		L2757222-7		L2757222-MB	
Matrix		Stack		Stack		-	
Analysis type		Sample		Sample		Sample	
Sampling Date/Time		22-Aug-24		22-Aug-24		-	
Date of Receipt		30-Aug-24		30-Aug-24		-	
PM via Gravimetric Analysis Method 5	**LOR**						
	mg	**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	1.2		0.5	**J**	0.1	**J**
Acetone Particulate Matter	0.4	3.3		<		<	
	g	**g**		**g**		**g**	
Acetone Mass	0.02	68.8		55.4		22.6	

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Lynne Wrona	**Client Name:**	Dillon Consulting Limited.
ALS Project ID:	DIL400	**Client Address:**	300 - 100 Innovation Drive
ALS WO#:	L2757222		Winnipeg, MB R3T 6G2
Date of Report	17-Sep-24		Canada
Date of Sample Receipt	30-Aug-24	**Client Contact:**	David Diemer
		Client Project ID:	21-1712-2000

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020B (SA 12-Sep-24)
Sample Preparation via USEPA Method 29 (AR11/KC11 11-Sep-24)

ANALYST COMMENTS:

Al and Ni observed in the Method Blank (MB) at a level significantly above their LORs. Sample data within a factor of 5X, may be biased high as a result of this background contribution. Ag recoveries in the LCS and LCSD are outside ALS DQOs (found: 82, 51%, limits: 85-115%). This is likely due to silver binding other elements in solution. The presence of the filter matrix has been found to mitigate this effect, so sample data is not expected to be impacted. Mn recovery in the MSD cannot be quantified due to high levels of the target analyte in the sample, relative to the spiked amount. This is not expected to indicate any compromise to data quality. SA 13-Sep-24

LCB = Laboratory Control Blank
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
LOR = Limit of Reporting

Certified by: [redacted]

Claire Kocharakkal
Project Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		NF-MP-R1 (TS1 THRU TS4)	NF-MP-R2 (TS1 THRU TS4)	NF-MP-R3 (TS1 THRU TS4)	F-MP-R1 (TS1 THRU TS4)	F-MP-R2 (TS1 THRU TS4)	F-MP-R3 (TS1 THRU TS4)
ALS Sample ID		L2757222-1	L2757222-2	L2757222-3	L2757222-4	L2757222-5	L2757222-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		20-Aug-24	20-Aug-24	20-Aug-24	21-Aug-24	22-Aug-24	22-Aug-24
Date of Receipt		30-Aug-24	30-Aug-24	30-Aug-24	30-Aug-24	30-Aug-24	30-Aug-24
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Combined Analysis Fraction 1A + 2A							
Aluminum	20	731	1190	608	642	270	476
Antimony	0.2	0.540	0.588	0.420	0.261	0.207	<
Arsenic	1	1.23	<	<	<	3.21	3.73
Barium	5	15.9	21.9	19.3	28.7	20.2	25.4
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.483	0.357	0.216	0.219	0.159	0.150
Chromium	1	16.4	19.3	8.64	27.0	14.8	14.8
Cobalt	0.2	1.25	1.58	0.609	0.948	0.534	0.489
Copper	1	31.7	76.0	43.7	16.3	9.88	16.5
Iron	200	715	1210	517	899	475	678
Lead	0.5	40.3	72.7	22.1	31.2	13.2	13.4
Manganese	0.5	2310	673	46.5	56.8	21.2	29.5
Nickel	0.2	46.6	67.3	22.0	35.0	19.9	16.3
Phosphorus	100	732	<	<	<	<	<
Selenium	2	<	<	<	<	<	<
Silver	0.2	0.900	0.390	<	<	<	<
Thallium	0.2	1.76	1.51	0.453	0.501	<	<
Zinc	6	35.7	45.3	23.8	54.4	39.9	43.7

ALS Environmental

Sample Analysis Summary Report

Sample Name		REAGENT BLANK	MB
ALS Sample ID		L2757222-7	L2757222-MB
Matrix		Stack	n/a
Analysis Type		Sample	Sample
Sampling Date		22-Aug-24	n/a
Date of Receipt		30-Aug-24	n/a
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**
Combined Analysis Fraction 1A + 2A			
Aluminum	20	81.0	61.1
Antimony	0.2	<	<
Arsenic	1	4.01	<
Barium	5	14.8	<
Beryllium	0.2	<	<
Cadmium	0.1	<	<
Chromium	1	2.08	1.41
Cobalt	0.2	<	<
Copper	1	2.69	<
Iron	200	<	<
Lead	0.5	0.543	<
Manganese	0.5	0.675	<
Nickel	0.2	3.28	2.66
Phosphorus	100	<	<
Selenium	2	<	<
Silver	0.2	<	<
Thallium	0.2	<	<
Zinc	6	<	<

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD
Matrix		STACK	STACK	STACK	STACK	STACK
Analysis Type		Blank	LCS	LCS	LCS	LCS
Sampling Date		n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Combined Analysis Fraction 1A + 2A						
Aluminum	20	<	107	87	119	98
Antimony	0.2	<	9.87	82	11.7	98
Arsenic	1	<	52.8	88	62.2	104
Barium	5	<	51.3	85	65.2	109
Beryllium	0.2	<	52.4	87	62.4	104
Cadmium	0.1	<	26.0	87	32.8	109
Chromium	1	<	52.5	87	62.1	103
Cobalt	0.2	<	52.8	88	61.3	102
Copper	1	<	52.2	87	62.7	105
Iron	200	<	263	88	309	103
Lead	0.5	<	52.1	87	61.7	103
Manganese	0.5	<	52.2	87	60.7	101
Nickel	0.2	<	52.9	88	62.6	104
Phosphorus	100	<	1330	88	1540	102
Selenium	2	<	50.9	85	60.9	101
Silver	0.2	<	24.7	82	15.2	51
Thallium	0.2	<	50.5	84	59.9	100
Zinc	6	<	105	88	127	106

ALS Environmental

Sample QC Summary Report

Sample Name		NF-MP-R1 (TS1 THRU TS4)	NF-MP-R1 (TS1 THRU TS4)	NF-MP-R1 (TS1 THRU TS4)	NF-MP-R1 (TS1 THRU TS4)	NF-MP-R1 (TS1 THRU TS4)	NF-MP-R1 (TS1 THRU TS4)
ALS Sample ID		L2757222-1	L2757222-1	MS	MS	MSD	MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date		20-Aug-24	20-Aug-24	20-Aug-24	20-Aug-24	20-Aug-24	20-Aug-24
Date of Receipt		30-Aug-24	30-Aug-24	30-Aug-24	30-Aug-24	30-Aug-24	30-Aug-24
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Combined Analysis Fraction 1A + 2A							
Aluminum	20	731	748	984	105	1010	116
Antimony	0.2	0.540	0.549	23.4	95	25.6	104
Arsenic	1	1.23	1.13	123	101	135	111
Barium	5	15.9	16.2	140	103	153	114
Beryllium	0.2	<	<	123	103	131	109
Cadmium	0.1	0.483	0.417	62.0	103	69.1	114
Chromium	1	16.4	16.6	136	100	148	110
Cobalt	0.2	1.25	1.12	122	100	132	109
Copper	1	31.7	31.6	155	103	167	113
Iron	200	715	708	1310	99	1400	114
Lead	0.5	40.3	40.6	167	106	184	120
Manganese	0.5	2310	2410	2440	109	2530	nq
Nickel	0.2	46.6	48.1	168	101	182	113
Phosphorus	100	732	696	3680	98	3760	101
Selenium	2	<	<	119	99	131	109
Silver	0.2	0.900	0.891	59.6	98	64.1	105
Thallium	0.2	1.76	1.74	124	102	140	116
Zinc	6	35.7	33.7	275	100	295	108

Appendix D

Field and Calibration Data Sheets

MOISTURE CALCULATION SHEET

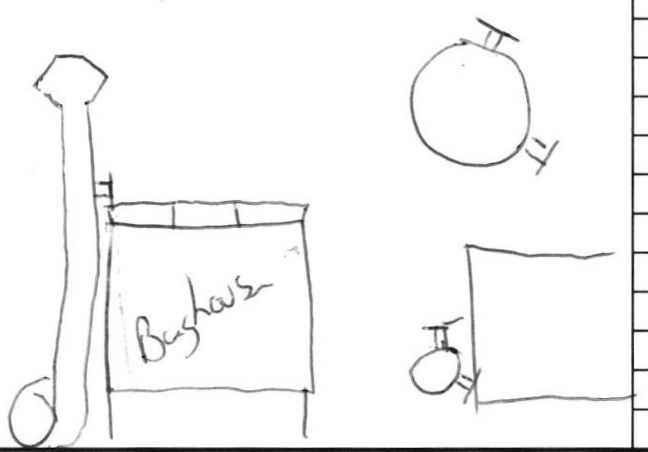
Client	URBANMINE	Test #	F-MP-R1
Location	FERRONS	Project #	VES202415LO
Date	8/21/24	Filter #	QZ11531
Preweights By		Post Weights By	

Impinger #	Contents	Vol.	Post Weight	Pre Weight	Net Weight
1	5% HNO3/ 10% H2O2		802.4	798.0	
2	5% HNO3/ 10% H2O2		734.3	734.9	
3	BLANK		654.1	649.8	
4	KMNO4/H2SO4				
5	KMNO4/H2SO4				
6	SG		852.8	825.2	27.6
7					
8					
Condenser					
XAD					
				Total	37.7

724.3 6.4
-0.6
4.3

cyclone

Comments	Static "	Delta P	Temp.
		.17	79
		.17	80
		.17	81
		.2	83
		.25	83
		.27	84
		.15	84
		.15	84
		.15	85
		.21	85
		.24	85
		.26	86



Signature [redacted] **Date** 8/21/20

Date: 8/21/24

SAMPLING TRAINS DATA SHEET

Client: URBANMINE Project: VES2024510 Sampling Location: Ferrous Roasthouse Traverse: 1 Run: F-MP-R1

O2 20 Meter Factor .992 Nozzle dia. .307 Traverse Direction: OUT Diameter

CO2 0 Barom. Press. 24.2 Probe ID Pitot Factor .605 Static Press -.36 Start Time: 13:30 Stop Time: ~~14:42~~ 14:42

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	~~20~~	0	821.33	.14	72	72	84	1.05	331	242	68	N/A	1.0
	3			824.2	.15	75	73	94	1.15	230	242	61		1.0
~~2~~	6			826.13	.15	77	73	93	1.15	231	244	45		1.0
	9			828.10	.15	78	74	92	1.15	230	238	45		1.0
~~3~~ 12	12			830.0	.17	81	74	91	1.3	230	240	45		1.0
	15			831.99	.16	82	75	91	1.25	231	242	45		1.0
~~4~~	18			834.0	.15	83	75	91	1.15	231	245	45		1.0
	21			835.93	.15	84	76	91	1.15	232	243	45		1.0
5 3	24			837.9	.15	85	76	91	1.15	230	239	46		1.0
	27			839.75	.15	85	77	90	1.15	231	240	46		1.0
~~6~~	30			841.67	.15	86	78	90	1.15	232	242	46		1.0
	33			843.61	.15	87	78	90	1.15	236	245	47		1.0
~~7~~ 4	36			845.5	.2	88	79	90	1.8	235	245	47		1.0
	39			847.63	.23	89	79	89	1.8	234	245	47		1.0
~~8~~	42			850.0	.23	89	80	89	1.8	236	247	47		1.0
	45			852.4	.23	89	80	89	1.8	235	245	48		1.0
~~9~~ 5	48			854.75	.27	90	81	89	2.1	236	244	48		1.0
	51			857.4	.27	91	81	91	2.1	236	244	48		1.0
~~10~~	54			860.0	.27	91	82	93	2.1	236	244	48		1.0
	57			862.51	.27	92	82	93	2.1	235	244	49		1.0
~~11~~ 6	60			865.1	.31	92	83	92	2.45	236	246	49		2.0
	63			867.95	.31	93	82	92	2.45	236	245	50		2.0
~~12~~	66			870.68	.31	93	84	94	2.4	235	243	51		2.0
	69			873.5	.3	93	84	94	2.4	231	244	50		2.0
	72			876.25										

Pre-test leak check: Rate (cfm)_____ at _____ inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Operators: VL/NM

Post-test leak check: Rate (cfm)_____ at _____ inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Signature: [redacted]

Date: 8/21/24 **SAMPLING TRAINS DATA SHEET** Page 3 of 7

Client: URBAMAR Project: UES2024500 Sampling Location: FERRAGHAN Traverse: 2 Run: F-TMP-R1

O2 20 Meter Factor .992 Nozzle dia. .307 Traverse Direction: OUT Diameter

CO2 0 Barom. Press. 29.2 Probe ID Pitot Factor .805 Static Press. .1 Start Time: 14:58 Stop Time: 16:10

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0	876.25	.14	86	84	94	1.1	335	245	60	N/A	1.0
	3			878.13	.14	90	85	96	1.1	236	245	45		1.0
2	6			880.02	.14	90	85	95	1.1	236	246	44		1.0
	9			881.9	.14	91	85	94	1.1	235	246	45		1.0
3	12			883.82	.14	91	85	94	1.1	235	245	46		1.0
	15			885.72	.13	91	86	95	1.0	236	245	46		1.0
4	18			887.53	.13	91	86	96	1.0	235	244	46		1.0
	21			889.35	.13	92	86	98	1.0	236	247	47		1.0
5	24			891.16	.13	92	86	97	1.0	235	247	47		1.0
	27			893.02	.14	92	86	97	1.1	236	245	47		1.0
6	30			894.87	.14	93	86	97	1.1	235	245	48		1.0
	33			896.76	.13	93	86	98	1.0	236	244	48		1.0
7	36			898.59	.13	93	86	98	1.0	235	244	49		1.0
	39			900.4	.22	93	86	98	1.7	231	247	51		1.0
8	42			902.7	.22	94	87	97	1.7	236	244	51		1.0
	45			905.09	.22	94	87	100	1.7	231	245	51		1.0
9	48			907.43	.22	95	88	101	1.7	230	245	52		1.0
	51			909.8	.24	95	88	100	1.9	236	245	52		1.0
10	54			912.3	.27	96	88	99	2.1	235	245	53		1.0
	57			914.9	.24	96	89	99	2.05	237	245	53		1.0
11	60			917.62	.25	96	88	99	2.0	236	245	54		1.0
	63			920.01	.27	96	88	99	2.1	235	244	54		1.0
12	66			922.4	.27	96	89	102	2.1	237	246	55		1.0
	69			925.2	.27	96	89	100	2.1	235	240	56		1.0
	72			927.8										

Pre-test leak check: Rate (cfm) _____ at _____ inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Operators: JL/NM

Post-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Signature: [redacted]

MOISTURE CALCULATION SHEET

Client	URBANMINE	Test #	F-MP-R2
Location	FERRONS	Project #	
Date	8/22/24	Filter #	021640
Preweights By		Post Weights By	

Impinger #	Contents	Vol.	Post Weight	Pre Weight	Net Weight
1	5% HNO3/ 10% H2O2		752.1	753.9	-1.8
2	5% HNO3/ 10% H2O2		780.5	763.4	17.1
3	BLANK		655.5	649.6	5.9
4	~~KMNO4/H2SO4~~			—	
5	~~KMNO4/H2SO4~~			—	
6	SG		872.7	852.8	19.9
7					
8					
Condenser					
XAD					
				Total	41.1

Comments	Static "	Delta P	Temp.

Signature _____ **Date** _____

Date: 8/22/24 **SAMPLING TRAINS DATA SHEET** Page 2 of 3

Client: URBAN MINE	Project: VES2024510	Sampling Location: Ferrous Anglow	Traverse: 1	Run: F-MP-R2			
O2: 20	Meter Factor: 0.992	Nozzle dia.: .307	Traverse Direction: OUT	Diameter:			
CO2: 0	Barom. Press.: 29	Probe ID:	Pitot Factor: .808	Static Press.:	Start Time: 8:35	Stop Time: 9:49	

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0	928.09	0.21	69	69	73	1.7	234	244	69	N/A	2.0
	3			930.45	.22	71	69	74	1.75	234	244	60		2.0
~~2~~	6			932.82	.22	73	69	75	1.75	232	248	42		2.0
	9			935.17	.22	74	70	74	1.75	232	245	42		2.0
~~3~~ 2	12			937.52	.21	76	70	75	1.65	233	245	42		2.0
	15			939.83	.21	77	71	76	1.65	232	241	42		2.0
~~4~~	18			942.12	.21	78	71	78	1.65	232	241	43		2.0
	21			944.4	.2	79	72	78	1.6	232	241	43		1.0
~~5~~ 3	24			946.7	.2	79	~~78~~ 72	78	1.60	233	242	43		1.0
	27			949.0	.19	81	~~80~~ 73	80	1.5	233	245	43		1.0
~~6~~	30			951.1	.19	82	~~80~~ 73	80	1.5	232	242	44		1.0
	33			953.29	.19	82	~~80~~ 73	80	1.5	232	242	44		1.0
~~7~~ 4	36			955.45	.19	83	75	81	1.5	232	242	44		1.0
	39			957.67	.24	83	75	80	1.9	233	245	45		2.0
~~8~~	42			960.12	.24	84	75	80	1.9	231	242	45		2.0
	45			962.62	.23	85	74	81	1.8	231	242	45		2.0
~~9~~ 5	48			965.02	.29	86	76	82	2.3	231	242	46		2.0
	51			967.68	.29	86	77	82	2.3	232	242	46		2.0
~~10~~	54			970.4	.29	84	~~77~~	82	2.3	232	243	46		2.0
	57			973.1	.29	86	~~78~~	82	2.3	232	243	46		2.0
~~11~~ 6	60			975.83	.33	87	78	82	2.6	231	245	47		2.0
	63			978.7	.33	86	79	82	2.6	231	243	47		2.0
12	66			981.58	.33	86	79	82	2.6	232	243	47		2.0
	69			984.48	.34	86	79	82	2.7	232	244	46		2.0
	72			987.45										

Pre-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) Leak Volume Start: ____ Leak Volume End: ____ Operators: NL/NM

Post-test leak check: Rate (cfm) ____ at ____ inches Hg (Vacumn) Leak Volume Start: ____ Leak Volume End: ____ Signature: [redacted]

Date: 8/22/24

SAMPLING TRAINS DATA SHEET

Page 3 of 3

Client: URBANMINE Project: VES2024510 Sampling Location: Furnace Building Traverse: 2 Run: E-MP-R2

O2 20 Meter Factor .992 Nozzle dia. .307 Traverse Direction: OUT Diameter 3

CO2 0 Barom. Press. 29. Probe ID 4A Pitot Factor .805 Static Press. .34 Start Time: 10:00 Stop Time: 11:15

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0	987.45	.21	81	80	80	1.7	230	241	52	N/A	1.0
	3			984.84	.2	84	80	80	1.6	230	242	45		1.0
2	6			992.12	.2	85	80	80	1.6	230	242	44		1.0
	9			994.39	.2	85	80	80	1.6	231	243	44		1.0
82	12			996.64	.2	84	80	80	1.6	231	243	44		1.0
	15			998.94	.2	86	80	82	1.6	231	243	44		1.0
4	18			1001.23	.2	87	81	83	1.6	231	243	43		1.0
	21			1003.5	.2	87	81	83	1.6	232	243	43		1.0
53	24			1005.77	.2	87	81	83	1.6	233	243	44		1.0
	27			1008.04	.2	88	81	84	1.6	231	244	44		1.0
6	30			1010.33	.2	88	81	84	1.6	231	244	47		1.0
	33			1012.61	.2	88	81	83	1.6	231	243	45		1.0
74	36			1014.68	.23	88	82	83	1.8	231	243	45		1.0
	39			1017.3	.23	88	82	83	1.8	232	243	45		1.0
8	42			1019.76	.23	89	82	83	1.8	232	242	46		1.0
	45			1022.23	.23	89	82	82	1.81	232	243	47		1.0
95	48			1024.67	.25	89	82	81	2.3	232	246	47		2.0
	51			1027.4	.29	89	83	81	2.3	233	244	47		2.0
10	54			1030.1	.29	90	83	81	2.3	230	244	48		2.0
	57			1032.8	.31	90	83	81	2.5	231	243	48		2.0
110	60			1035.6	.34	91	83	81	2.7	232	244	49		2.0
	63			1078.51	.34	91	83	81	2.7	233	245	50		2.0
12	66			1041.46	.34	92	84	81	2.7	235	245	51		2.0
	69			1044.41	.34	92	84	81	2.7	236	244	52		2.0
	72			1047.37										

Pre-test leak check: Rate (cfm)_____ at _____ inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Operators: AL/NM

Post-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Signature: [redacted]

MOISTURE CALCULATION SHEET

Client	URBANWINE	Test #	F-MP-R3
Location	FARRONS	Project #	
Date		Filter #	GF-11642
Preweights By		Post Weights By	

Impinger #	Contents	Vol.	Post Weight	Pre Weight	Net Weight
1	5% HNO3/ 10% H2O2		731.6	739.6	-8.0
2	5% HNO3/ 10% H2O2		802.2	787.7	14.5
3	BLANK		857.9	651.1	6.8
4	KMNO4/H2SO4				
5	KMNO4/H2SO4				
6	SG		834.7	807.9	26.8
7					
8					
Condenser					
XAD					
				Total	40.1

Comments	Static "	Delta P	Temp.

Signature _____ **Date** 8/22/24

Date: 8/22/24 **SAMPLING TRAINS DATA SHEET** Page 2 of 3

Client: URBANMINE Project: VES0245760 Sampling Location: Furnace Bunker Traverse: 1 Run: F-MP-R3

O2 20 Meter Factor .992 Nozzle dia. .307 Traverse Direction: out Diameter ~~.338~~

CO2 0 Barom. Press. 28.95 Probe ID YA Pitot Factor .805 Static Press. -.36 Start Time: 2:10 Stop Time: ~~14:04~~

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0			48.1	.17	76	76	85	1.35	235	245	65	NA	0.5
	3			50.2	.17	75	75	86	1.7	237	244	50		0.5
~~2~~	6			52.3	.17	77	76	80	1.7	237	244	45		0.5
	9			54.37	.18	78	76	85	1.4	255	245	43		0.5
~~32~~	12			56.51	.18	74	76	85	1.4	232	247	42		0.5
	15			58.64	.19	81	76	85	1.5	230	240	42		1.0
~~4~~	18			60.81	.2	82	77	85	1.4	233	240	42		1.0
	21			63.09	.2	80	77	85	1.6	234	240	42		1.0
~~53~~	24			65.3	.2	84	77	85	1.6	234	240	42		1.0
	27			67.53	.2	85	78	85	1.6	231	242	42		1.0
~~6~~	30			69.8	.2	86	78	85	1.6	235	243	42		1.0
	33			72.1	.2	87	78	85	1.6	250	243	43		1.0
~~74~~	36			74.39	.29	87	79	88	2.3	255	243	43		1.0
	39			77.0	.29	88	80	90	2.3	254	243	44		1.0
~~8~~	42			79.72	.28	89	80	92	2.2	236	243	44		1.0
	45			82.4	.24	89	81	92	1.9	234	243	45		1.0
~~95~~	48			84.92	.24	90	81	90	1.9	234	241	45		1.0
	51			87.41	.25	90	82	89	2.3	245	242	46		1.0
~~10~~	54			90.13	.29	91	82	89	2.3	245	242	46		1.0
	57			92.88	.25	91	82	88	2.0	245	243	46		1.0
~~116~~	60			95.64	.24	91	83	87	2.7	245	242	47		1.0
	63			98.6	.34	91	80	87	2.7	245	243	46		1.0
~~12~~	66			101.6	.34	92	84	89	2.7	245	243	44		1.0
	69			104.59	.34	92	84	89	2.7	240	245	44		1.0
	72			107.59										

Pre-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Operators: LC/NM

Post-test leak check: Rate (cfm) _____ at _____ inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Signature: [redacted]

Date: 8/22/24

SAMPLING TRAINS DATA SHEET

Page 3 of 7

Client: UR BAN MINE Project: UES2024510 Sampling Location: FERRUGINOUS HAWK Traverse: 2 Run: E-HP-RJ

O2 20 Meter Factor .992 Nozzle dia. .307 Traverse Direction: OUT Diameter ~~.357~~

CO2 0 Barom. Press. 28.55 Probe ID 4H Pitot Factor .80 Static Press. .36 Start Time: 14:10 Stop Time: 15:22

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0	~~107.84~~	.11	85	84	91	1.4	236	246	40	N/A	1.0
	3			109.8	.18	88	84	92	1.4	237	240	42		1.0
2	6			112.01	.18	89	84	93	1.4	238	248	42		1.0
	9			114.25	.14	89	84	92	1.5	240	245	42		1.0
~~32~~	12			116.5	.14	90	85	91	1.5	238	244	41		1.0
	15			118.7	.19	90	~~85~~	91	1.5	236	245	41		1.0
4	18			121.02	.19	91	85	90	1.5	237	245	41		1.0
	21			123.21	.14	91	85	91	1.5	236	248	43		1.0
~~53~~	24			R5.55	.14	91	85	91	1.5	235	246	42		1.0
	27			127.80	.14	92	85	93	1.5	240	244	40		1.0
6	30			130.09	.14	92	85	93	1.5	240	245	43		1.0
	33			132.36	.14	92	86	96	1.5	240	243	43		1.0
74	36			134.62	.23	92	86	96	1.8	240	244	43		1.0
	39			137.03	.23	93	86	96	1.8	242	243	45		1.0
8	42			139.52	.23	93	86	96	1.8	242	248	44		1.0
	45			141.92	.24	93	87	95	1.8	241	243	45		1.0
95	48			144.45	.27	94	87	94	2.1	241	247	46		1.0
	51			147.04	.33	94	87	94	2.4	242	240	48		1.0
10	54			150.0	.3	94	87	94	2.4	242	245	48		1.0
	57			152.75	.3	95	87	94	2.4	243	247	50		1.0
11	60			155.41	.33	95	88	93	2.6	241	246	50		1.0
	63			158.59	.33	96	88	93	2.6	241	242	53		1.0
12	66			161.74	.33	96	88	93	2.6	240	241	55		1.0
	69			164.6	.34	96	88	93	2.7	241	242	52		
	72			167.54										

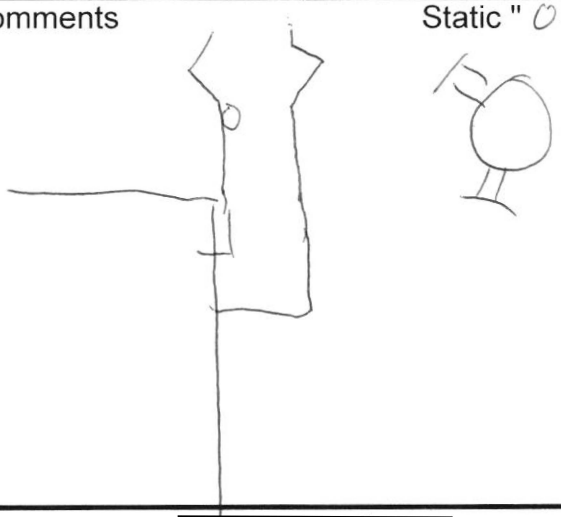
Pre-test leak check: Rate (cfm)_____ at _____ inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Operators: LL/NM

Post-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) Leak Volume Start: _____ Leak Volume End: _____ Signature: [redacted]

MOISTURE CALCULATION SHEET

Client	URBANMIX15	Test #	NF-MP-R1
Location	Non Ferrous	Project #	VES202451O
Date	Aug 20, 2024	Filter #	Q2
Preweights By	H.L	Post Weights By	H.L

Impinger #	Contents	Vol.	Post Weight	Pre Weight	Net Weight
1	5% HNO3/ 10% H2O2		764.6	764.6	-0.5
2	5% HNO3/ 10% H2O2		747.7	751.4	16.3
3	BLANK		653.9	648.0	5.9
4	~~KMNO4/H2SO4~~				
5	~~KMNO4/H2SO4~~ N/A				
6	SG		831.9	813.4	18.5
7					
8					
Condenser					
XAD					
				Total	90.2

Comments	Static " 0.2	Delta P	Temp.
			

Signature [redacted] **Date** 8/20/24

Date: July 2024

SAMPLING TRAINS DATA SHEET

Client: URBANMINE | Project: | Sampling Location: HearthFerrous | Traverse: 1 | Run: HF-IMP-R1

Probe ID: 4A | Meter Factor: 0.992 | Nozzle dia.: .124 | Traverse Direction: OUT | Diameter: 36.5

Pitot Factor: .405 | Barom. Press.: 29.20 | UP/DOWN: 21 0.5 | Static Press.: -2 | Start Time: 8:06 | Stop Time: 9:06

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0	532.88	.38	76	74	99	1.1	252	250	71	N/A	0.4
	2.5			534.45	.38	79	74	103	1.1	241	240	65		0.5
2	5			536.00	.42	80	74	104	1.2	240	243	53		0.5
	7.5			537.63	.42	82	72	103	1.2	239	244	56		0.5
3	10			539.33	.45	83	77	102	1.3	239	244	55		0.5
	12.5			541.05	.48	84	77	100	1.4	234	240	55		0.5
4	15			542.84	.48	86	78	99	1.4	239	241	54		0.5
	17.5			544.63	.48	87	78	99	1.4	239	244	54		0.5
5	20			546.34	.48	88	79	98	1.4	239	245	54		0.5
	22.5			548.17	.48	89	79	96	1.4	238	244	54		0.5
6	25			550.0	.88	89	79	98	2.6	239	244	54		2.0
	27.5			552.2	.88	91	81	96	2.6	240	245	54		2.0
7	30			554.8	.88	92	81	96	2.6	241	245	54		2.0
	32.5			557.6	.79	93	82	96	2.3	242	246	55		1.6
8	35			559.2	.63	93	82	96	1.9	241	245	52		1.0
	37.5			561.17	.63	93	83	96	1.9	240	243	58		1.0
9	40			563.18	.43	94	83	95	1.3	240	245	57		0.5
	42.5			564.95	.4	94	84	99	1.2	240	240	57		0.4
10	45			566.7	.4	94	84	99	1.2	240	240	57		0.4
	47.5			568.43	.42	94	85	100	1.2	241	240	53		0.5
11	50			570.17	.4	95	85	100	1.2	242	240	55		0.4
	52.5			571.96	.4	94	86	101	1.2	241	240	53		0.5
12	55			573.85	.4	95	86	101	1.2	242	245	53		0.5
	57.5			575.2	.42	95	86	102	1.2	245	241	53		0.5
	60			576.91										

Pre-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) | Leak Volume Start: | Leak Volume End: | Operators: NL/NM

Post-test leak check: Rate (cfm) | at | inches Hg (Vacumn) | Leak Volume Start: | Leak Volume End: | Signature: [redacted]

Date: day 20

SAMPLING TRAINS DATA SHEET

Page 3 of 3

Client: URBANMINE | Project: | Sampling Location: NE-BH | Traverse: 2 | Run: NE-MP-R1

Probe ID 4A | Meter Factor .992 | Nozzle dia. .24 | Traverse Direction: OUT | Diameter

Pitot Factor .805 | Barom. Press. 29.20 | UP/DOWN / | Static Press. .2 | Start Time: 9:19 | Stop Time: 10:14

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0			576.96	.83	88	87	107	2.4	238	238	240	44	2.0
	2.5			579.25	.83	92	87	103	2.4	230	236	246		2.0
2	5			581.52	.83	92	87	103	2.45	238	241	54		2.0
	7.5			583.84	.79	94	88	103	2.45	235	242	52		2.0
3	10			586.12	.75	94	88	103	2.2	237	235	50		2.0
	12.5			588.31	.74	94	88	104	2.2	238	234	51		2.0
4	15			590.5	.74	94	89	104	2.2	238	240	51		2.0
	17.5			592.67	.75	97	89	104	2.2	239	235	52		2.0
5	20			594.9	.8	98	89	104	2.4	235	240	52		2.0
	22.5			597.16	.81	98	89	104	2.4	239	238	52		2.0
6	25			599.48	.84	94	90	104	2.5	238	241	52		2.0
	27.5			601.75	.85	100	90	104	2.5	235	242	53		2.0
7	30			604.1	.45	100	90	104	1.3	235	242	53		0.5
	32.5			605.98	.41	100	91	107	1.2	235	242	53		0.5
8	35			607.63	.55	100	91	107	1.6	240	238	53		1.0
	37.5			609.48	.55	100	91	107	1.6	240	235	54		1.0
9	40			611.39	.55	101	92	108	1.6	240	235	54		1.0
	42.5			613.3	.56	101	92	108	1.65	240	236	54		1.0
10	45			615.23	.56	101	92	108	1.65	240	235	55		1.0
	47.5			617.13	.55	101	92	108	1.6	241	234	57		1.0
11	50			619.03	.54	102	93	112	1.6	241	237	58		1.0
	52.5			620.96	.54	102	93	111	1.6	240	235	58		1.0
12	55			622.9	.58	102	94	108	1.7	235	234	58		1.0
	57.5			624.84	.57	102	94	102	1.7	238	233	61		1.0
	60			626.85										

Pre-test leak check: Rate (cfm)____ at ____ inches Hg (Vacumn) | Leak Volume Start: ____ | Leak Volume End: ____ | Operators: NH / NM

Post-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) | Leak Volume Start: ____ | Leak Volume End: ____ | Signature: [redacted]

MOISTURE CALCULATION SHEET

Client	URBAN-MINE	Test #	NF-MP-R2
Location		Project #	
Date		Filter #	
Preweights By		Post Weights By	

Impinger #	Contents	Vol.	Post Weight	Pre Weight	Net Weight
1	5% HNO3/ 10% H2O2		765.2	753.9	
2	5% HNO3/ 10% H2O2		796.7	786.3	
3	BLANK		639.6	635.0	
4	KMNO4/H2SO4		—	—	
5	KMNO4/H2SO4		—	—	
6	SG		846.9	831.7	
7					
8					
Condenser					
XAD					
				Total	

Comments	Static "	Delta P	Temp.
96'dry			

Signature [redacted] **Date** 8/20/2021

Date: 8/20/2024

SAMPLING TRAINS DATA SHEET

Page 2 of 3

Client: URBAN | Project: | Sampling Location: HF Bypass | Traverse: 1 | Run: NF-MP-R2

Probe ID: 4A | Meter Factor: .992 | Nozzle dia.: .24 | Traverse Direction: UP | Diameter:

Pitot Factor: .805 | Barom. Press.: 29.2 | UP/DOWN: / | Static Press.: | Start Time: 11:31 | Stop Time: 1:31

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0.0	627.07	.73	91	90	105	1.3	236	234	69		0.5
	2.5			628.82	.44	92	91	106	1.3	235	231	62		0.5
2	5 ✓			630.58	.43	93	91	106	1.25	236	236	54		0.5
	7.5			632.27	.42	94	91	105	1.2	236	233	50		0.5
3	10 ✓	#		633.92	.75	95	91	103	2.2	235	240	52		1.0
	12.5			636.11	.71	95	91	102	2.1	234	236	52		1.0
4	15 ✓			638.3	.71	97	92	103	2.1	235	237	57		1.0
	17.5			640.44	.7	98	92	104	2.0	235	236	57		1.0
5	20 ✓			642.58	.7	99	92	105	2.0	236	238	57		1.0
	22.5			644.73	.7	99	93	105	2.0	234	238	53		1.0
6	25 ✓			646.86	.81	100	93	106	2.4	235	238	52		2.0
	27.5			649.15	.81	101	93	107	2.4	233	236	52		2.0
7	30 ✓			651.49	.81	102	93	107	2.4	235	239	53		2.0
	32.5			653.80	.82	102	94	108	2.4	236	240	55		2.0
8	35 ✓			656.12	.83	102	94	108	2.4	233	234	55		2.0
	37.5			658.46	.8	103	94	108	2.35	235	239	54		2.0
9	40 ✓			660.77	.77	103	94	109	2.25	234	241	56		2.0
	42.5			662.92	.78	104	95	109	2.3	234	241	52		2.0
10	45 ✓			665.28	.81	104	95	109	2.4	234	241	58		2.0
	47.5			667.6	.78	104	95	109	2.4	234	241	58		2.0
11	50 ✓			669.93	.45	105	96	110	1.3	234	241	60		0.5
	52.5			671.67	.45	104	96	110	1.25	235	241	60		0.5
12	55 ✓			673.41	.43	104	96	110	1.25	235	241	60		0.5
	57.5			675.14	.4	104	96	109	1.2	234	240	61		0.5
	60			676.87										

Pre-test leak check: Rate (cfm)_____ at _____ inches Hg (Vacumn) | Leak Volume Start: _____ | Leak Volume End: _____ | Operators: NC MM

Post-test leak check: Rate (cfm)_____ at _____ inches Hg (Vacumn) | Leak Volume Start: _____ | Leak Volume End: _____ | Signature: [redacted]

Stop test process issue 11:44 — 11:46

Date: Oct 20/24

SAMPLING TRAINS DATA SHEET

Client: URBANI | Project: | Sampling Location: McFarlane Bay | Traverse: 2 | Run: MF-MP-R2

Probe ID: 4A | Meter Factor: .992 | Nozzle dia.: .24 | Traverse Direction: OUT | Diameter:

Pitot Factor: .804 | Barom. Press.: 29.2 | UP/DOWN: / | Static Press.: | Start Time: 12:42 | Stop Time: 13:45

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0	676.87	.45	98	97	112	1.3	235	242	65	N/A	1.0
	2.5			678.64	.43	103	97	112	1.25	234	243	55		1.0
2	5 ✓			680.38	.45	104	98	112	1.3	234	243			1.0
	7.5			682.12	.42	104	98	112	1.2	234	243	54		1.0
3	10 ✓			683.86	.41	105	98	111	1.2	234	243	51		1.0
	12.5			685.6	.41	105	98	112	1.2	235	241	51		1.0
4	15 ✓			687.34	.7	105	98	110	2.05	234	242	57		1.0
	17.5			689.1	.7	105	98	110	2.05	235	241	57		1.0
5	20 ✓			691.50	.73	107	99	113	2.15	235	242	52		1.0
	22.5			693.8	.73	107	99	118	2.15	234	242	52		1.0
6	25 ✓			696.01	.75	108	99	119	2.2	235	241	52		1.0
	27.5			698.21	.74	108	99	115	2.1	234	241	52		1.0
7	30 ✓			700.42	.71	108	99	115	2.05	234	241	52		1.0
	32.5			702.66	.74	109	100	118	2.1	235	242	55		1.0
8	35 ✓			704.87	.8	108	100	118	2.3	235	242	55		2.0
	37.5			707.12	.81	108	101	116	2.4	236	242	55		2.0
9	40 ✓			709.4	.77	108	101	113	2.15	234	242	56		2.0
	42.5			711.63	.74	109	101	113	2.15	233	242	54		2.0
10	45 ✓			713.87	.42	109	101	113	1.2	234	242	59		0.5
	47.5			715.58	.4	109	102	113	1.2	235	242	57		0.5
11	50 ✓			717.24	.41	108	102	112	1.2	235	240	57		0.5
	52.5			718.97	.41	109	102	110	1.2	235	241	58		0.5
12	55 ✓			720.68	.43	109	102	108	1.3	233	240	60		0.5
	57.5			722.45	.42	109	102	108	1.25	233	241	60		0.5
	60			724.19										

Pre-test leak check: Rate (cfm)____ at ____ inches Hg (Vacumn) | Leak Volume Start: | Leak Volume End: | Operators: NL/NH

Post-test leak check: Rate (cfm) .01 at 15 inches Hg (Vacumn) | Leak Volume Start: | Leak Volume End: | Signature: [redacted]

MOISTURE CALCULATION SHEET

Client	URBANMINE	Test #	NF-MP-R3
Location	NON FERROUS	Project #	
Date	8/20/24	Filter #	
Preweights By		Post Weights By	

Impinger #	Contents	Vol.	Post Weight	Pre Weight	Net Weight
1	5% HNO3/ 10% H2O2		766.8	755.9	
2	5% HNO3/ 10% H2O2		772.4	765.4	
3	BLANK		653.9	651.0	
4	KMNO4/H2SO4				
5	KMNO4/H2SO4				
6	SG			848.9	
7					
8					
Condenser					
XAD					
				Total	

Comments	Static "	Delta P	Temp.

Signature _____ **Date** _____

Date: 8/20/2024

SAMPLING TRAINS DATA SHEET

Client: URBAN | Project: VEC2024510 | Sampling Location: NowFer Bayfr | Traverse: 1 | Run: NF-MP-R3

Probe ID: 4A | Meter Factor: .992 | Nozzle dia.: .24 | Traverse Direction: OUT | Diameter: 36"

Pitot Factor: .805 | Barom. Press.: 29.2 | UP/DOWN: / | Static Press.: 0.2 | Start Time: 14:35 | Stop Time: 15:35

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0	20	0.0	724.78	.44	101	101	104	1.3	232	241	52	N/A	0.5
	2.5			726.5	.41	102	101	104	1.2	233	241	47		0.5
2	5			728.21	.41	103	101	104	1.2	232	243	45		0.5
	7.5			729.88	.41	103	101	105	1.2	233	242	45		0.5
3	10			731.54	.74	104	102	105	2.1	232	241	44		2.0
	12.5			733.81	.76	104	102	109	2.05	232	242	44		2.0
4	15			736.01	.7	97	97	103	2.1	233	233	57		10
	17.5			738.2	.69	98	97	104	2.0	235	236	57		1.6
5	20			740.41	.69	99	92	105	2.0	234	238	57		1.0
	22.5			742.52	.68	100	93	105	2.0	234	238	52		52
6	25			744.74	.8	101	93	104	2.4	234	238	52		52
	27.5			747.05	.81	102	93	107	2.4	255	236	52		52
7	30			749.42	.8	102	93	107	2.4	232	239	53		53
	32.5			751.72	.83	102	94	108	2.4	235	240	53		53
8	35			754.21	.82	103	94	108	2.4	236	234	55		55
	37.5			756.58	.78	103	94	108	2.35	235	236	56		56
9	40			758.87	.82	104	94	109	2.25	235	241	56		56
	42.5			761.25	.76	104	94	109	2.3	234	241	56		56
10	45			763.58	.8	104	95	109	2.4	234	241	58		58
	47.5			765.85	.76	904	95	109	2.25	234	241	60		58
11	50			768.11	.44	105	96	110	1.3	234	241	61		60
	52.5			769.85	.42	104	96	110	1.28	234	241	61		60
12	55			771.5	.43	104	96	110	1.28	235	241	61		61
	57.5			773.22	.4	104	96	109	1.2	234	240	61		61
	60			774.87										

Pre-test leak check: Rate (cfm)____ at ____ inches Hg (Vacumn) Leak Volume Start: ____ Leak Volume End: ____ Operators: GL/NM

Post-test leak check: Rate (cfm) .001 at 15 inches Hg (Vacumn) Leak Volume Start: ____ Leak Volume End: ____ Signature: [redacted]

Date: 8/20/2024

SAMPLING TRAINS DATA SHEET

Page 3 of 5

Client: URBAN | Project: VES2024510 | Sampling Location: Air Force | Traverse: 2 | Run: AF-MP-R3

Probe ID: 4A | Meter Factor: 0.992 | Nozzle dia.: .24 | Traverse Direction: OUT | Diameter: 3/8"

Pitot Factor: .805 | Barom. Press.: 24.2 | UP/DOWN: / | Static Press.: -0.2 | Start Time: 15:45 | Stop Time: 16:45

Pt.	Time (min)	O2 (%)	CO2 (%)	Meter Reading (FT³)	Velocity Press P	Meter In (deg F)	Meter Out (deg F)	Stack Temp. (deg F)	Orifice Press H	Probe Temp. (deg F)	Box Temp. (deg F)	Imp Temp. (deg F)	XAD Temp. (deg F)	Vac. (IN Hg)
1	0			774.87	.47	95	97	112	1.0				N/A	0.5
	2.5			776.15	.43	103	97	112	1.25					0.5
2	5			777.515	.45	104	95	112	1.3					0.5
	7.5			779.65	.42	105	98	112	1.2					0.5
3	10			781.33	.41	105	98	114	1.2					0.5
	12.5			783.0	.41	105	98	112	1.2					0.5
4	15			784.65	.7	105	97	116	2.05					0.5
	17.5			786.81	.7	107	99	116	2.0					0.5
5	20			789.01	.73	107	99	113	2.15					2
	22.5			791.33	.73	108	99	118	2.15					2
6	25			793.55	.75	108	99	114	2.2					2
	27.5			795.68	.74	109	100	119	2.1					1
7	30			797.95	.73	108	100	119	2.05					1
	32.5			800.04	.74	105	101	119	2.1					1
8	35			802.25	.8	108	101	118	2.3					0.5
	37.5			804.63	.81	109	101	116	2.4					0.5
9	40			807.02	.73	109	101	113	2.15					0.5
	42.5			809.24	.74	109	102	113	2.1					0.5
10	45			811.52	.42	108	102	113	1.2					0.5
	47.5			813.17	.4	109	102	113	1.2					0.5
11	50			814.81	.41	108	102	112	1.2					0.5
	52.5			816.44	.41	107	102	116	1.2					0.5
12	55			818.21	.43	108	102	112	1.3					0.5
	57.5			820.01	.42	109	102	116	1.25					0.5
	60			821.75										

Pre-test leak check: Rate (cfm) .02 at _____ inches Hg (Vacumn) | Leak Volume Start: _____ | Leak Volume End: _____ | Operators: AL / MM

Post-test leak check: Rate (cfm) .003 at 15 inches Hg (Vacumn) | Leak Volume Start: _____ | Leak Volume End: _____ | Signature: [redacted]

NF TEST 1

	FINAL	INTIAL	
1	764.1	764.6	-0.5
2	767.8	751.4	7.6
3	653.8	648.0	5.9
4	831.9	813.4	18.5
			31.5

NF TEST 2

	INTIAL
1	753.9
2	786.3
3	635.0
4	631.7

VALLEY ENVIRONMENTAL CALIBRATION SERVICES

DRY GAS METER CALIBRATION

CLIENT: Dillon DCL-ES-1

DATE: Friday, July 12, 2024

SERIAL#: 13276841

GASOMETER TEMPERATURE (DEG F) 66

BAROMETRIC PRESSURE (in. HG.) 28.95

STANDARD VOLUME (CF)	STANDARD VOLUME (DSCF)	METER VOLUME (CF)	ORIFICE ("H20)	METER TEMP (DEG F)	METER VOLUME (DSCF)	METER FACTOR	TIME (MIN)	DELTA H (a)
2.000	1.976	2.040	3	73.5	1.987	0.994	2.01	1.7207
2.000	1.976	2.040	2.5	73.5	1.987	0.994	2.2	1.7178
2.000	1.976	2.040	2	73.5	1.987	0.994	2.43	1.6766
2.000	1.976	2.050	1.5	73.5	1.997	0.990	2.8	1.6695
2.000	1.976	2.050	1	73.5	1.997	0.990	3.4	1.6411

DRY GAS METER FACTOR 0.992

DELTA H (a) 1.685

VALLEY ENVIRONMENTAL SERVICES
160 Pony Drive Unit 1
Newmarket, Ontario
PH: (905) 830-0136
Fax: (905) 830-0137

TECHNICIAN NAME: Thomas Ryan

AUDITOR: [redacted]

Calibration Method EPA Method 5 / EPS 1/RM/5
Calibration Standard Gasometer
Standard Verification Number G 196
NIST #

VALLEY ENVIRONMENTAL CALIBRATION SERVICES

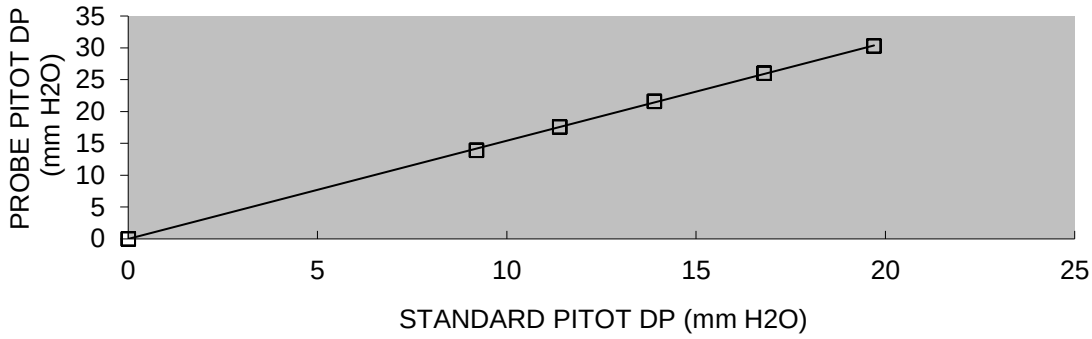
PITOT TUBE CALIBRATION REPORT

CLIENT - **VES**
PROBE ID - **M5-4A**
NOZZLE - **#8- 0.250"**
DATE - **1-Mar-24**

FAN SPEED m/s	STANDARD PITOT (mm H2O)	PROBE PITOT (mm H2O)
0.00	0.00	0.00
12.6	9.20	13.90
14.0	11.40	17.60
15.5	13.90	21.60
17.0	16.80	26.00
18.4	19.70	30.30

PITOT FACTOR Cp = **0.805**

PITOT - **M5-4A** **NOZZLE -** **#8- 0.250"**
1-Mar-24



Technician: T. Ryan

Signature [redacted]

VALLEY ENVIRONMENTAL SERVICES
160 Pony Drive #1
Newmarket, Ontario L3Y 7B6
PH: (905) 830 0136
FAX: (905) 830 0137

Tunnel	VES
Std. Pitot Cp	0.999
Static	-0.25
Barometric	28.6
Temperature	71
Abs Static	28.58

VALLEY ENVIRONMENTAL CALIBRATION SERVICES

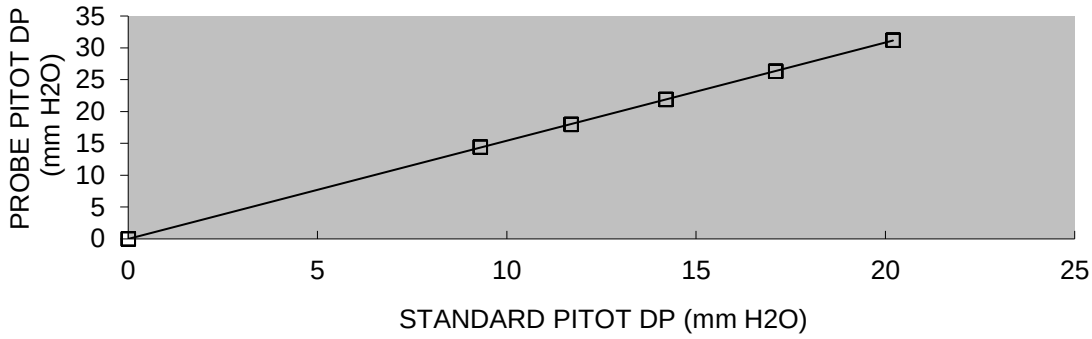
PITOT TUBE CALIBRATION REPORT

CLIENT - **VES**
PROBE ID - **M5-4A**
NOZZLE - **#10- 0.3125"**
DATE - **1-Mar-24**

FAN SPEED m/s	STANDARD PITOT (mm H2O)	PROBE PITOT (mm H2O)
0.00	0.00	0.00
12.7	9.30	14.40
14.2	11.70	18.00
15.6	14.20	21.90
17.2	17.10	26.30
18.6	20.20	31.20

PITOT FACTOR Cp = **0.805**

PITOT - **M5-4A** **NOZZLE -** **#10- 0.3125"**
1-Mar-24



Technician: T. Ryan

Signature [redacted]

VALLEY ENVIRONMENTAL SERVICES
160 Pony Drive #1
Newmarket, Ontario L3Y 7B6
PH: (905) 830 0136
FAX: (905) 830 0137

Tunnel	VES
Std. Pitot Cp	0.999
Static	-0.25
Barometric	28.6
Temperature	71
Abs Static	28.58

Appendix E

Production Data

From: **Somer Kenny** <Somer@urbanmine.ca>
Date: Tue, Nov 12, 2024 at 11:14 AM
Subject: RE: Stack Testing
To: Diemer, David <ddiemer@dillon.ca>

Non-ferrous ran 10 hours that day, 7 am – 5 pm. There were 2 operators so there was no downtime - all breaks were covered.

I asked about logs…they record production data by hand on paper, then it's entered in a database. The paper isn't kept around for long.
Here are screen shots of each machine's production.

Non-Ferrous

	Aug 2024	Closed	Op. Mins	Op. Hrs	NT Prod.	NT/HR	<<	Bano (NF)	>>
							Activity	Comment	
	Sun, Aug 18	☑	0	0.00	0	NaN	-		
	Mon, Aug 19	☐	30	0.50	0	0.00	Telehandler Inspection	andforklift inspection	
		☐	30	0.50	0	0.00	Other	lunch	
		☐	450	7.50	6.32	0.84	UBC (granulated)	tristin solo	
	Tue, Aug 20	☐	600	10.00	7.687	0.77	UBC (granulated)		
		☐	30	0.50	0	0.00	Empty Bins		
	Wed, Aug 21	☐	55	0.92	0	0.00	Hydraulic Issue	V mill leak/inspection	
		☐	180	3.00	2.546	0.85	Rads (Cu/Al)		

Ferrous

	Aug 2024	Closed	Op. Mins	Op. Hrs	NT Prod.	NT/HR	<<	Shear/Mill (Bano)	>>
							Activity	Comment	
34	Wed, Aug 21	☐	36	0.60	0	0.00	Maintenance (Unplanned)	conveyor 0 repairs	
		☐	22	0.37	0	0.00	Maintenance (Unplanned)	VFD error for conveyor 0	
		☐	184	3.07	0	0.00	Jam	top of mill plugged	
		☐	70	1.17	0	0.00	Jam	conveyor 0 jammed. x3	
		☐	268	4.47	21	4.70	1001/1006 Clip		
		☐	20	0.33	0	0.00	Other	clean up and empty line	
	Thu, Aug 22	☐	89	1.48	0	0.00	Jam	spaleck plugged. x3	
		☐	82	1.37	0	0.00	Twitch		
		☐	408	6.80	41	6.03	1001/1006 Clip		
		☐	21	0.35	0	0.00	Maintenance (Unplanned)	bolts fell out on conveyor 0	

somer kenny, metal trader
somer@urbanmine.ca
t. 204.774.0192
72 rothwell road, winnipeg, MB canada R3P 2H7
f. 204.783.3096 t. 866.820.2786
c. 431.999.9292 urbanmine.ca

urbanmine
Metal Recycling Redefined

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From: Diemer, David <ddiemer@dillon.ca>
Sent: November 12, 2024 11:30 AM
To: Somer Kenny <Somer@urbanmine.ca>
Subject: Re: Stack Testing

Great, thanks.
If you can confirm the time period for the non-ferrous processing quantity, we should be all set.

Thanks,

Dave

On Tue, Nov 12, 2024 at 9:56 AM Somer Kenny <Somer@urbanmine.ca> wrote:

> That would be a Net Ton (2000 lbs).
>
> **somer kenny, metal trader**
> somer@urbanmine.ca
> t. 204.774.0192
> 72 rothwell road, winnipeg, MB canada R3P 2H7
> f. 204.783.3096 t. 866.820.2786
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