

Monthly Operating Reports

December 2020

The following December 2020 operating report was sent to the Ministry of Environment and Climate Change Strategy on February 5, 2021.

Metro Vancouver - Waste-to-Energy Facility CONTINUOUS EMISSION MONITORING SYSTEM

December 2020

1. Monthly Summary Report

Parameter	Compliance Limit (mg/dscm)	Compliance Period	Maximum Measurement (mg/dscm)		
			Unit 1	Unit 2	Unit 3
CO	50	24 hr	46.9	28.7	40.5
SO ₂	200	24 hr	73.2	99.6	82.7
NOx	190	24 hr	131.3	131.5	132.1
THC	10	24 hr	2.20	0.64	0.17
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.63	0.80	0.73
CO			35.8	21.6	30.2
THC			0.96	0.08	0.11
SO ₂			43.9	62.2	43.3
NOx			127.1	129.2	129.8

Interim Discharge Limits will apply until and including the following dates, at which point the Discharge Limits and Response Limits will apply

a. HCl – March 3, 2025

b. SO₂ – March 3, 2025

2. Monthly Exceedance Report

2.a. Discharge Limit Exceedances

Unit	Compliance Parameter	Discharge Limit (mg/dscm)	Date	Exceedance Level
	Reason/Action Taken			

2.b. Response Limit Exceedances

Compliance Parameter: Carbon Monoxide

Response Limit: 100 mg/dscm 1/2 hour average

Unit No. 1

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
4-Dec 10:30	30 min	132.6	Started gas burners, adjusted airflow, modified feed rate.
6-Dec 10:30	30 min	104.0	Adjusted airflow.
8-Dec 09:00	30 min	126.8	Started gas burners, adjusted airflow.
9-Dec 08:00	30 min	161.3	Started gas burners, adjusted airflow, modified feed rate.
10-Dec 07:30	30 min	140.3	Started gas burners, adjusted airflow, modified feed rate.
23-Dec 11:30	30 min	106.1	Started gas burners, adjusted airflow, modified feed rate.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 2

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
4-Dec 21:30	30 min	108.3	Started gas burners, adjusted airflow, modified feed rate.
16-Dec 11:00	30 min	122.1	Adjusted airflow.
16-Dec 13:00	30 min	104.0	Adjusted airflow.
21-Dec 08:30	30 min	107.6	Started gas burners, adjusted airflow, modified feed rate.
24-Dec 09:00	30 min	100.6	Adjusted airflow, modified feed rate.
24-Dec 23:00	30 min	131.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
28-Dec 16:00	30 min	131.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

Compliance Parameter: Carbon Monoxide
Response Limit: 100 mg/dscm 1/2 hour average
Unit No. 3

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
4-Dec 09:30	30 min	102.2	Started gas burners, adjusted airflow, modified feed rate.
10-Dec 13:00	30 min	106.7	Started gas burners, adjusted airflow, modified feed rate.
23-Dec 12:00	30 min	110.0	Started gas burners, adjusted airflow, modified feed rate.
23-Dec 20:30	30 min	121.3	Started gas burners, adjusted airflow, modified feed rate.

Compliance Parameter: Nitrogen Oxide
Response Limit: 350 mg/dscm 1/2 hour average
Unit No. 2

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
17-Dec 02:30	30 min	385.5	Shutdown, checked aqueous ammonia flow, checked low NOx system air flow, checked aqueous ammonia spray nozzle pattern, checked instrumentation.
17-Dec 04:00	30 min	438.2	Shutdown, checked aqueous ammonia flow, checked low NOx system air flow, checked aqueous ammonia spray nozzle pattern, checked instrumentation.

2.c. Transient Conditions

Gas burners unavailable and unable to close feed chute damper during shutdown

Unit	Duration	Date	Time	
2	50 min	10-Dec-20	17:00-17:50	
Cause				
Auxiliary burners on unit 2 were unavailable, due to an issue with the forced draft fan, to maintain the secondary combustion zone temperature during a boiler shutdown period as required.				
Unit 2 was placed in shutdown mode at 2020-12-10 17:00 following a forced draft fan trip due to an issue with the variable frequency drive. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the fan. The auxiliary burners were unavailable for a period of 36 minutes between 2020-12-10 17:00 and 2020-12-10 17:35.				
Action Taken to Restore Steady State Conditions				
Covanta restarted the forced draft at 2020-12-10 17:16. The natural gas burners were back online at 2020-12-10 17:35. The shutdown was completed at 2020-12-10 17:50.				
Remedial Action Planned and/or Taken				
Metro Vancouver's facility operator Covanta rectified the issue with the forced draft fan variable frequency drive and the boiler was restarted. The boiler was back online at 2020-12-10 17:50.				

3. CEMS Availability

Analyzer	Required Availability (% hours per quarter)	Averaging Period	Monthly Availability		
			Unit 1	Unit 2	Unit 3
Opacity	90	Hour	99	100	100
Oxygen	90	Hour	97	99	99
CO	90	Hour	97	99	99
SO ₂	90	Hour	97	99	99
NOx	90	Hour	97	99	99
THC	90	Hour	97	98	99
Stack Flow	90	Hour	96	99	99

4. Shutdown Report

Unit 1

Duration in Hours	Reason	Date
1.10	Turbine trip	December 18
0.80	BC Hydro power interruption	December 26
0.28	BC Hydro power interruption	December 27

Unit 2

Duration in Hours	Reason	Date
29.51	Grate drive cylinder failure	December 3-4
23.05	Primary economizer tube leak	December 8-9
0.67	Forced draft fan trip	December 10
0.28	Forced draft fan trip	December 10
0.37	Induced draft fan trip	December 14
25.82	Primary economizer tube leak	December 17-18
0.80	BC Hydro power interruption	December 26
0.28	BC Hydro power interruption	December 27

Unit 3

Duration in Hours	Reason	Date
1.10	Turbine trip	December 18
1.50	BC Hydro power interruption	December 26
0.28	BC Hydro power interruption	December 27

5. Facility Bypass and Emergency/spill Event Report

Date/Time	Cause	Duration
	Action Taken	

6. Other Data

		UNIT 1	UNIT 2	UNIT 3
Waste Received	tonnes/day	21,597		
Waste Processed	tonnes/day	250	210	242
Maximum Waste Processed	tonnes/day	261	247	253
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	2,627		
	m ³ /month	81,446		
Fly ash disposed	tonnes	781		
Bottom ash disposed	tonnes	3,296		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

December 2020 - Monthly CEMS Data

Date	Boiler #1								Boiler #2								Boiler #3							
	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp	Stack Temp	O ₂ (%)	SO ₂ (mg/m ³)	NO _x (mg/m ³)	CO (mg/m ³)	THC (mg/m ³)	Opacity (%)	Furnace Temp
12/1/20	159	10.3	46.8	125.9	37.5	0.73	0.60	935	156	9.4	82.6	128.3	18.4	0.06	1.48	923	152	9.8	82.7	129.3	25.4	0.15	0.77	915
12/2/20	159	10.2	40	121.7	40.3	0.70	0.41	924	156	9.3	58.3	127.3	26.7	0.04	1.91	934	152	9.9	45.1	122.9	33.2	0.10	0.83	920
12/3/20	158	10.2	42.8	124.6	35.7	0.87	0.43	919									152						0.85	919
12/4/20	157	10.4	52.2	125.5	46.9	1.13	0.39	918									152	9.7	47	129	35.8	0.07	0.85	912
12/5/20	159	10.4	63.7	127	38	1.09	0.42	920	156	9.4	87	130.1	14.1	0.05	1.74	915	151	9.6	60.4	127.8	30.9	0.12	0.85	916
12/6/20	161	10.3	73.2	127.5	37.6	1.11	0.35	935	158	9.5	99.6	130.1	13.5	0.05	0.98	921	153	9.8	73.2	129.8	26.9	0.10	0.86	919
12/7/20	160	10.4	46.8	127.6	35.9	0.94	0.33	926	156	9.5	75.8	128.5	19.6	0.03	0.83	918	151	9.6	44.6	129.3	26	0.08	0.89	925
12/8/20	160	10.4	70.7	130.9	39.8	1.17	0.35	916									152	9.5	55.4	130.4	28.1	0.07	0.94	926
12/9/20	158	10.5	25.8	125.7	45.2	1.11	0.32	914	156	9.4	64.2	130	26.3	0.09	1.89	903	153	10	29.5	129.6	33.8	0.11	0.92	902
12/10/20	156	10.5	32.2	125.5	44.2	1.15	0.40	907	155	9.4	58.2	130.7	21.6	0.05	1.73	903	151	9.7	29.5	129.4	36.3	0.06	0.89	896
12/11/20	159	10.5	41.2	129.5	36.4	1.24	0.40	922	152	9.3	62.7	130.5	18.6	0.08	1.80	923	152	9.5	44.8	129.9	34.3	0.11	0.90	906
12/12/20	159	10.7	39.8	128.1	37	1.22	0.43	928	153	9.3	72.1	129.1	22.7	0.07	1.24	915	152	9.5	41.9	129	27.2	0.09	0.90	920
12/13/20	158	11	48.1	129.1	35.7	1.37	0.48	929	153	9.3	70.7	129.9	17.8	0.05	0.54	914	151	9.6	39.7	130.1	28.6	0.13	0.95	916
12/14/20	158	11.7	31.1	127.7	41.8	2.20	0.39	912	151	9.7	58.3	127.9	22.8	0.03	0.19	904	151	10	37.7	129.2	32.4	0.08	0.95	911
12/15/20	158	11.3	35.9	122.5	36.3	1.57	0.42	921	152	9.5	73.7	128.6	18.7	0.06	0.07	914	152	9.8	45.4	131.4	30.9	0.12	0.93	906
12/16/20	158	9.8	32.8	125.6	29.5	0.68	0.40	948	150	9.3	48.7	128.6	28.6	0.04	0.02	920	150	9.5	34.1	127.7	30.9	0.14	0.99	937
12/17/20	158	9.5	38.2	124.9	35.7	0.63	0.36	952									152	9.2	36.6	128.9	35.2	0.15	1.00	930
12/18/20	159	9.9	42.5	127.6	31.4	0.74	0.41	945	155						0.35	902	151	9.4	49.7	130	30.4	0.11	1.01	905
12/19/20	159	10.1	55.9	129.3	27.2	0.63	0.51	939	155	9.5	77	130.7	23.6	0.06	0.24	902	153	9.7	49.7	131.6	31.3	0.17	1.05	897
12/20/20	159	9.6	47.6	127	29.1	0.74	0.34	942	156	9.6	65.2	128.8	20.2	0.06	0.32	905	153	9.6	46.4	131.9	26.6	0.11	1.05	908
12/21/20	157	9.6	30.7	125.6	34.1	0.56	0.35	944	155	9.6	42.7	129.6	25	0.08	0.76	902	153	9.1	32.6	131.6	34.2	0.09	1.07	923
12/22/20	159	9.7	46.7	128.2	32.4	0.59	0.76	947	155	9.5	60.5	129.8	28.7	0.10	0.96	898	151	9.4	42.2	131.4	38.8	0.07	1.10	907
12/23/20	158	9.9	41.9	125.1	36.1	0.61	1.14	945	156	9.7	48.3	127	25.2	0.05	1.03	900	151	10	36.7	128.7	40.5	0.06	0.64	891
12/24/20	158	10	37.7	128.1	34	0.60	1.17	935	156	9.4	46.2	129.4	28.3	0.06	1.24	913	150	9.7	32.1	131.7	29.8	0.13	0.17	893
12/25/20	157	10	52.1	128.6	34.5	0.85	1.16	926	157	9.3	57.5	128.4	16.9	0.03	0.49	899	151	9.3	38.8	128.8	26.1	0.07	0.15	893
12/26/20	156	9.9	50.7	131.3	35.8	1.03	1.13	937	153	9.4	50	128.3	21.4	0.09	0.10	906	149	9	32.5	132.1	22.3	0.10	0.16	914
12/27/20	157	9.7	52.8	129	27.4	0.93	1.12	941	155	9.2	62.3	129	20.7	0.07	0.26	920	153	9.5	52.9	130.6	26.8	0.13	0.16	900
12/28/20	157	9.9	27.1	125.7	30.9	0.74	1.12	947	155	9.2	39.5	131.5	20.5	0.05	0.37	914	154	9.8	30.2	131.5	28.7	0.11	0.18	897
12/29/20	159	10	34.9	128.7	31.3	0.79	1.12	945	156	9.3	46.4	128.1	20.6	0.64	0.46	906	155	9.7	34	129.5	26.4	0.17	0.18	901
12/30/20	158	9.7	39.6	126.8	37.7	1.00	1.18	952	155	8.9	53.8	127.9	23	0.07	0.32	932	151	9.4	38.7	129.6	25	0.09	0.19	914
Average	158	10.2	43.9	127.1	35.8	0.96	0.63	933	154.8	9.4	62.2	129.2	21.5	0.08	0.80	912.0	151.9	9.6	43.3	129.8	30.2	0.11	0.73	910.4
Min	156	9.5	25.8	121.7	27.2	0.56	0.32	907	150.0	8.9	39.5	127.0	13.5	0.03	0.02	898.0	149.0	9.0	29.5	122.9	22.3	0.06	0.15	891.0
Max	161	11.7	73.2	131.3	46.9	2.20	1.18	952	158.0	9.7	99.6	131.5	28.7	0.64	1.91	934.0	155.0	10.0	82.7	132.1	40.5	0.17	1.10	937.0
Dev	1.2	0.50	11.47	2.22	4.79	0.34	0.34	13.2	1.92	0.18	14.49	1.13	4.24	0.12	0.63	10.01	1.28	0.25	12.32	1.71	4.54	0.03	0.34	11.72

Blank days have less than 18 hours of valid data due to unit shut downs or analyzer outage
According to standard guidelines used by Metro Vancouver Air Quality Policy and Environment Division, a minimum of 18 hours of valid data is required to generate a valid 24hr average