

Monthly Operating Reports

April 2022

The following April 2022 operating report was sent to the Ministry of Environment and Climate Change Strategy on June 2, 2022.

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

April 2022

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	44.2	33.8	38.1
SO ₂	200	24 hr	151.6	143.3	127.8
NOx	190	24 hr	131.4	143.6	132.5
THC	10	24 hr	0.16	0.12	0.33
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.82	0.72	0.76
CO			29.7	22.8	30.5
THC			0.09	0.06	0.20
SO ₂			84.3	89.5	67.5
NOx			127.8	129.1	127.8

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
1-Apr 05:30	30 min	106.0	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
4-Apr 18:00	1 hr	108.0	Volatile fuel. Started gas burners, adjusted airflow, modified feed rate.
5-Apr 03:30	30 min	146.8	Feeder hang-up. Started gas burners, adjusted airflow, modified feed rate.
6-Apr 18:30	30 min	101.0	Volatile fuel. Started gas burners, adjusted airflow, modified feed rate.
19-Apr 08:30	30 min	138.1	Power Interruption. Started gas burners, adjusted airflow, modified feed rate.
19-Apr 17:00	30 min	103.1	Volatile fuel. Started gas burners, adjusted airflow, modified feed rate.
20-Apr 08:30	30 min	144.6	Started gas burners, adjusted airflow, modified feed rate.
23-Apr 13:00	30 min	135.6	Volatile fuel. Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

23-Apr 20:00	30 min	129.0	Volatile fuel. Started gas burners, adjusted airflow, modified feed rate.
24-Apr 13:00	30 min	150.1	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
27-Apr 09:00	30 min	112.0	Started gas burners, adjusted airflow.
29-Apr 22:00	30 min	126.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
29-Apr 11:30	30 min	122.0	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
30-Apr 15:30	30 min	121.7	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. 2

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
7-Apr 19:30	30 min	120.7	Feeder hang-up. Adjusted airflow, modified feed rate.
10-Apr 16:30	30 min	189.2	Feeder hang-up. Started gas burners, adjusted airflow.
19-Apr 09:00	30 min	113.8	Power interruption. Started gas burners, adjusted airflow, modified feed rate.

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

Date / Time	Duration	Exceedance (mg/dscm)	Action Taken
7-Apr 05:00	30 min	124.6	Started gas burners, adjusted airflow, modified feed rate.
8-Apr 06:00	30 min	132.6	Started gas burners, adjusted airflow.
13-Apr 14:30	30 min	201.0	Feeder hang-up. Started gas burners, adjusted airflow, modified feed rate.
29-Apr 11:30	30 min	100.5	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
30-Apr 15:30	30 min	140.5	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.

2.c. Transient Conditions

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#1	27 minutes	April 30 2022	12:30-12:57	
Cause				
Auxiliary burners on unit 1 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.				
Unit 1 was placed in shutdown mode at 2022-04-30 12:30 due to an induced draft fan trip. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 27 minutes between 2022-04-30 12:30 and 2022-04-30 12:57.				
Action Taken to Restore Steady State Conditions				
Covanta restarted the induced draft fan at 2022-04-30 12:48. The natural gas burners were back online at 2022-04-30 12:57. The shutdown was completed at 2022-04-30 13:12.				

Remedial Action Planned and/or Taken

An electrical braking system will be installed in the induced draft fan's variable frequency drive to prevent high voltage trips.

Gas burners unavailable during shutdown and furnace temperature average below 800C

Unit	Duration	Date	Time	
#3	11 minutes	April 30 2022	16:40-16:51	

Cause

Auxiliary burners on unit 3 were unavailable to maintain the secondary combustion zone temperature during boiler shutdown period.

Unit 3 was placed in shutdown mode at 2022-04-30 16:40 due to an induced draft fan trip. The Provincial Boiler Vessel Safety Act and the Provincial Gas Act require a boiler purge following the restart of the combustion fans. The auxiliary burners were unavailable for a period of 11 minutes between 2022-04-30 16:40 and 2022-04-30 16:51.

Action Taken to Restore Steady State Conditions

Covanta started the induced draft fan at 2022-04-30 16:45. The natural gas burners were back online at 2022-04-30 16:51. The shutdown was completed at 2022-04-30 17:19.

Remedial Action Planned and/or Taken

An electrical braking system will be installed in the induced draft fan's variable frequency drive to prevent high voltage trips.

3. CEMS Availability

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

4. Shutdown Report**Unit 1**

Duration in Hours	Reason	Date
0.12	Induced draft fan trip	April 7
0.15	Induced draft fan trip	April 7
0.48	High furnace pressure trip	April 10
0.50	BC Hydro power interruption	April 19
15.25	Feed water line repair	April 26
0.63	Induced and forced draft fan trip	April 30
0.70	Induced draft fan trip	April 30

Unit 2

Duration in Hours	Reason	Date
71.38	Annual minor maintenance outage	April 4-6
0.05	Induced draft fan trip	April 7
0.08	Induced draft fan trip	April 7
0.22	Induced draft fan trip	April 14
15.80	Feed water line repair	April 26
0.38	Induced draft fan trip	April 29
0.28	Induced and forced draft fan trip	April 30
0.03	Induced and forced draft fan trip	April 30
0.65	Induced and forced draft fan trip	April 30
0.33	Induced and forced draft fan trip	April 30

Unit 3

Duration in Hours	Reason	Date
271.00	Annual major maintenance outage	April 18-29
0.65	Induced and forced draft fan trip	April 30

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	17,910		
Waste Processed	tonnes/day	242	214	145
Maximum Waste Processed	tonnes/day	255	252	241
		Units 1, 2, and 3		
Natural Gas Consumed	m ³ /day	3,349		
	m ³ /month	100,467		
Fly ash disposed	tonnes	802		
Bottom ash disposed	tonnes	2,816		

7. Complaints and Responses

Date/Time	Complaint	Action Taken

April 2022 - Monthly CEMS Data

	Boiler #1								Boiler #2								Boiler #3							
	Stack	O ₂	SO ₂	NO _x	CO	THC	Opacity	Furnace	Stack	O ₂	SO ₂	NO _x	CO	THC	Opacity	Furnace	Stack	O ₂	SO ₂	NO _x	CO	THC	Opacity	Furnace
Date	Temp	(%)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(%)	Temp	Temp	(%)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(%)	Temp	Temp	(%)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(mg/m ³)	(%)	Temp
4/1/22	151	9.7	122.1	128.4	29.5	0.11	0.18	949	141	10.1	47	128.8	22.4	0.03	0.58	933	152	9.7	70.8	132.9	38.1	0.15	0.79	945
4/2/22	152	9.9	104.6	130.4	19.3	0.12	0.24	953	143	10	49.3	128.7	20.9	0.05	0.52	933	153	10	71	132.5	31.3	0.10	0.81	946
4/3/22	151	9.5	97.2	129.6	25.9	0.09	0.24	936	143	10.2	50.8	130.2	21.6	0.02	0.20	920	153	10.1	64.7	132.1	30.9	0.20	0.58	934
4/4/22	152	9.4	73	127.3	29.9	0.12	0.27	932									154	10.5	50.1	133.2	30.6	0.24	0.56	930
4/5/22	151	9.6	151.6	129.4	27.7	0.07	0.53	936									156	11.1	95.2	134.2	36	0.29	0.78	915
4/6/22	151	10.1	96.8	129	44.2	0.11	0.59	935									155	10.3	63	134.4	31.8	0.33	0.81	931
4/7/22	151	9.8	84.4	131.4	31.5	0.15	0.56	935	141	9.8	114.4	143.6	33.8	0.08	0.35	879	153	9.8	63.6	135.5	31	0.31	0.74	927
4/8/22	155	9.6	91.4	130.1	19.7	0.08	0.56	939	142	9.8	123.5	133.3	31.1	0.05	0.18	908	153	11.3	78.4	132.5	31.9	0.24	0.77	906
4/9/22	156	9.4	98.5	130.1	13.2	0.01	0.66	956	142	10.1	135.3	130	20.6	0.07	0.14	931	153	11.7	71.6	132.9	31.5	0.30	0.75	924
4/10/22	156	9.4	85.5	127.3	25.7	0.09	0.83	936	145	10.1	120.4	131.4	24.9	0.12	0.51	920	153	10.6	6.8	133.5	32.8	0.28	0.81	898
4/11/22	154	9.6	89.3	128.4	24.2	0.10	0.89	938	144	9.8	123.5	131.3	27.8	0.09	0.88	922	151	9.3	72	132.2	29.8	0.13	0.77	921
4/12/22	152	9.9	106.9	128.8	23.9	0.03	0.88	945	142	10	112.2	130.3	21.9	0.06	0.86	945	150	10.4	63.6	131	28.5	0.17	0.79	932
4/13/22	154	9.4	60.1	129.5	22.9	0.06	0.93	948	141	9.3	73.3	129.9	25.8	0.06	1.33	952	151	9.6	52.1	131.9	34.7	0.14	0.82	917
4/14/22	154	9.3	71.4	127.4	33.6	0.08	0.88	948	142	9.6	90.4	128.2	24.6	0.11	0.91	942	149	9.7	71.2	131.2	28.1	0.08	0.76	931
4/15/22	155	9.6	85.3	125.3	30.8	0.08	1.14	953	145	9.7	98.8	128.1	15.5	0.06	0.84	948	151	9.8	60.5	132	24.4	0.10	0.92	930
4/16/22	153	9.7	81.5	129.8	21.4	0.07	1.23	950	146	9.8	105.6	128.2	13.4	0.06	0.74	964	151	10.1	70.3	129.2	22.2	0.09	0.86	940
4/17/22	154	9.7	65.8	126.4	25.8	0.08	1.19	944	146	9.9	95.2	127.1	14.8	0.05	1.19	953	150	9.6	62.5	128.7	20.6	0.05	0.85	939
4/18/22	153	9.6	52.9	127.1	43.6	0.11	1.12	957	141	9.8	74.4	125.9	23.7	0.08	0.71	941								
4/19/22	152	9.9	97.4	124.9	37.8	0.12	1.13	949	142	10.4	143.3	124.9	24.7	0.05	1.27	938								
4/20/22	153	9.3	107.2	126.8	28.8	0.13	1.53	964	143	9.8	106.5	126.8	18.5	0.07	0.90	948								
4/21/22	157	9.4	62.2	127.5	34.9	0.15	1.58	951	147	9.9	81.7	125.8	20.6	0.06	1.23	948								
4/22/22	156	9.7	63.8	127.4	32	0.10	1.48	936	143	10	73.7	124.5	25	0.05	0.91	944								
4/23/22	155	9.9	78.1	127	39.7	0.11	1.58	932	140	10.2	77.4	126.7	23.1	0.03	1.57	946								
4/24/22	156	9.5	82.8	126.9	24.7	0.12	1.95	937	141	9.9	87.9	125.2	17.9	0.05	1.22	953								
4/25/22	157	9.2	67.8	122.7	28.8	0.08	1.54	942	140	10	79.1	129.5	24.7	0.10	0.77	949								
4/26/22																								
4/27/22	153	9.9	60.1	127.8	37	0.05	0.00	921	139	10.2	59.6	128.8	23.5	0.04	0.36	943								
4/28/22	155	10.1	53.1	127.3	36.9	0.05	0.00	912	142	10.2	64.7	132	20.9	0.06	0.32	939								
4/29/22	155	10	55	125.7	33.5	0.04	0.00	912	142	10.2	57.3	128.5	24.2	0.07	0.25	936								
4/30/22	155	9.9	99.4	125.1	34.7	0.16	0.00	924	140	10.2	80.8	129.4	27.2	0.06	0.06	927	151	10	127.8	135	35.1	0.32	0.49	861
Average	154	9.7	84.3	127.8	29.7	0.09	0.82	940	142.4	10.0	89.5	129.1	22.8	0.06	0.72	937.0	152.2	10.2	67.5	132.5	30.5	0.20	0.76	923.7
Min	151	9.2	52.9	122.7	13.2	0.01	0.00	912	139.0	9.3	47.0	124.5	13.4	0.02	0.06	879.0	149.0	9.3	6.8	128.7	20.6	0.05	0.49	861.0
Max	157	10.1	151.6	131.4	44.2	0.16	1.95	964	147.0	10.4	143.3	143.6	33.8	0.12	1.57	964.0	156.0	11.7	127.8	135.5	38.1	0.33	0.92	946.0
St Dev	1.9	0.25	22.57	1.93	7.32	0.04	0.56	12.6	2.04	0.24	27.32	3.71	4.62	0.02	0.42	17.23	1.82	0.64	22.96	1.78	4.55	0.09	0.11	20.08

Blank days have less than 18 hours of valid data due to unit shut downs or analyzer outage/maintenance.

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.