

## Monthly Operating Reports

October 2020

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The following October 2020 operating report was sent to the Ministry of Environment and Climate Change Strategy on December 10, 2020.



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

October 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	42.8	30.2	38.1
SO <sub>2</sub>	200	24 hr	168.1	131.4	139.5
NOx	190	24 hr	130.4	140.1	134.8
THC	10	24 hr	0.26	0.44	1.00
			Monthly Average (mg/dscm)		
			Unit 1	Unit 2	Unit 3
Opacity (%)			0.74	0.88	0.98
CO			28.6	20.8	30.5
THC			0.11	0.10	0.29
SO <sub>2</sub>			93.4	70.9	90.7
NOx			127.9	126.3	131.6

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

a. HCl – December 31, 2022

b. SO<sub>2</sub> – December 31, 2022

## 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
2-Oct 09:00	30 min	109.8	Started gas burners, adjusted airflow, modified feed rate.
2-Oct 13:00	30 min	217.2	Started gas burners, adjusted airflow, modified feed rate.
3-Oct 13:30	30 min	292.7	Started gas burners, adjusted airflow, modified feed rate.
4-Oct 01:00	30 min	108.3	Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.
7-Oct 03:00	30 min	120.3	Overfire air controller malfunction.
7-Oct 08:00	30 min	113.0	Overfire air controller malfunction, started gas burners, modified feed rate.
7-Oct 09:30	30 min	315.6	Overfire air controller malfunction, started gas burners.
7-Oct 10:00	30 min	174.5	Overfire air controller malfunction, started gas burners.
14-Oct 15:00	30 min	151.5	CEMS maintenance.
20-Oct 12:30	30 min	169.3	Started gas burners, adjusted airflow, modified feed rate.
26-Oct 12:00	30 min	177.0	Started gas burners, adjusted airflow, modified feed rate.
26-Oct 22:00	30 min	193.2	Started gas burners, adjusted airflow, modified feed rate.
30-Oct 04:30	30 min	149.5	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
3-Oct 21:00	30 min	100.4	Boiler plugged, started gas burners, adjusted airflow, modified feed rate.
5-Oct 13:00	30 min	183.4	Started gas burners, adjusted airflow, modified feed rate.
8-Oct 07:30	30 min	104.6	Started gas burners, adjusted airflow, modified feed rate.
11-Oct 20:00	30 min	145.8	Gas burner tripped, adjusted airflow, modified feed rate.
11-Oct 20:30	30 min	184.6	Gas burner unavailable, adjusted airflow, modified feed rate.
11-Oct 21:00	30 min	165.6	Gas burner unavailable, adjusted airflow, modified feed rate.
16-Oct 13:00	30 min	117.6	Adjusted airflow, modified feed rate.
17-Oct 03:00	30 min	106.4	Adjusted airflow, modified feed rate.
18-Oct 14:00	30 min	105.3	Poor refuse quality, 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
11-Oct 19:00	30 min	121.9	Started gas burners, adjusted airflow, modified feed rate.
11-Oct 22:00	30 min	140.3	Gas burner unavailable, adjusted airflow, modified feed rate.
12-Oct 08:00	30 min	102.0	Gas burner unavailable, adjusted airflow, modified feed rate.
12-Oct 13:30	30 min	109.3	Started gas burners, adjusted airflow, modified feed rate.
14-Oct 18:00	30 min	143.6	Ash discharger plugged, started gas burners, adjusted airflow, modified feed rate.
16-Oct 00:00	30 min	123.8	Adjusted airflow, modified feed rate.
18-Oct 22:00	30 min	101.6	Started gas burners, adjusted airflow, modified feed rate.
19-Oct 13:30	30 min	119.4	Started gas burners, adjusted airflow, modified feed rate.
29-Oct 15:00	30 min	315.1	Power failure.
30-Oct 09:00	30 min	109.4	Started gas burners, adjusted airflow, modified feed rate.

**2.c. Transient Conditions**

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

Unit	Duration	Date	Time	
2	58 min	7-Oct-20	20:37-21:35	
<b>Cause</b>				
<p>Auxiliary burners on unit 2 were unavailable, due to a safety permissive, to maintain the secondary combustion zone temperature during a boiler shutdown period as required. The operator was unable to close the feed chute damper during the shutdown as required.</p> <p>Unit 2 was placed in shutdown mode at 2020-10-07 20:37 following an induced draft fan and forced draft fan trip. The operator was unable to close the feed chute damper as the refuse was above the damper in the feed chute. The Provincial Boiler Pressure Vessel Safety Act and the Provincial Gas Act required a boiler purge following the restart of the fans as the boiler temperature was below the safety permissive. The auxiliary burners were unavailable for a period of 20 minutes between 2020-10-07 20:37 and 2020-10-07 20:57.</p>				
<b>Action Taken to Restore Steady State Conditions</b>				
<p>Covanta restarted the induced draft fan at 2020-10-07 20:43 and the forced draft fan at 2020-10-07 20:43. The natural gas burners were back online at 2020-10-07 20:57. The shutdown was completed at 2020-10-07 21:35.</p>				
<b>Remedial Action Planned and/or Taken</b>				
<p>Metro Vancouver's facility operator Covanta checked the fan cooling system was functioning correctly.</p>				

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

Unit	Duration	Date	Time
3	2 hr 16 min	11-Oct-20	19:42-21:58
<b>Cause</b>			
Auxiliary burners on unit 3 were unavailable, due to an issue with the natural gas supply pressure, to maintain the secondary combustion zone temperature during a boiler shutdown period as required.			
Unit 3 was placed in shutdown mode at 2020-10-11 19:42 following an issue with the auxiliary burner natural gas supply pressure. The auxiliary burners were unavailable for a period of 2 hours and 16 minutes between 2020-10-11 19:42 and 2020-10-11 21:58.			
<b>Action Taken to Restore Steady State Conditions</b>			
Covanta restored boiler steam flow utilizing the waste in the boiler. The shutdown was completed at 2020-10-11 21:58.			
<b>Remedial Action Planned and/or Taken</b>			
Metro Vancouver's operator Covanta restored the natural gas supply pressure to the auxiliary burners.			

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

Unit	Duration	Date	Time
2	2 hr 11 min	11-Oct-20	21:33-23:44
<b>Cause</b>			
Auxiliary burners on unit 2 were unavailable, due to an issue with the natural gas supply pressure, to maintain the secondary combustion zone temperature during a boiler shutdown period as required.			
Unit 2 was placed in shutdown mode at 2020-10-11 21:33 following an issue with the auxiliary burner natural gas supply pressure. The auxiliary burners were unavailable for a period of 2 hours and 11 minutes between 2020-10-11 21:33 and 2020-10-11 23:44.			
<b>Action Taken to Restore Steady State Conditions</b>			
Covanta restored boiler steam flow utilizing the waste in the boiler. The shutdown was completed at 2020-10-07 23:44.			
<b>Remedial Action Planned and/or Taken</b>			
Metro Vancouver's operator Covanta restored the natural gas supply pressure to the auxiliary burners.			

### 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	98	99	99
CO	90	Hour	98	99	99
SO <sub>2</sub>	90	Hour	98	99	99
NOx	90	Hour	98	99	99
THC	90	Hour	98	99	99
Stack Flow	90	Hour	98	98	99

## 4. Shutdown Report

### Unit 1

Duration in Hours	Reason	Date
25.92	Emergency generator transfer switch tie in	Oct 6-7
0.12	BC Hydro power interruption	October 7
0.45	Induced draft fan trip	October 7
0.43	Induced draft fan trip	October 7
0.33	Induced draft fan trip	October 7
0.62	Induced draft fan trip	October 12
0.43	Induced draft fan trip	October 12
0.33	Induced draft fan trip	October 12
1.22	Induced draft fan trip	October 12
2.12	Refuse crane failure	October 14
0.47	BC Hydro power interruption	October 17
41.51	Fabric filter bag replacement	October 19-21
0.47	Turbine trip	October 23
0.35	Turbine trip	October 23
1.12	Turbine trip	October 24
0.18	Turbine trip	October 26
0.20	Capital works	October 27
0.37	Power failure	October 29

### Unit 2

Duration in Hours	Reason	Date
36.01	Emergency generator transfer switch tie in	October 6-7
0.87	Induced draft fan trip	October 7
0.25	BC Hydro power interruption	October 7
2.18	Poor refuse quality	October 11
1.80	Poor refuse quality	October 12
1.25	Refuse crane failure	October 14
0.08	Induced draft fan trip	October 16
0.32	BC Hydro power interruption	October 17
261.00	Annual major maintenance outage	October 19-29

### Unit 3

Duration in Hours	Reason	Date
0.83	Feed chute hang up	October 2
63.25	Annual minor maintenance outage	October 5-7
0.37	Poor refuse quality	October 9
1.03	Feed chute plug	October 11
1.92	Poor refuse quality	October 11
3.72	Poor refuse quality	October 14
0.33	BC Hydro power interruption	October 17
0.78	Under grate air compartment plugged	October 17
0.47	Major plant electrical ground fault	October 19
0.62	Major plant electrical ground fault	October 19
0.78	Ash discharger plug	October 23
1.57	Feed chute hang up	October 24
0.97	Feed chute hang up	October 25

## 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	17,109		
Waste Processed	tonnes/day	226	122	217
Maximum Waste Processed	tonnes/day	260	229	251
		Units 1, 2, and 3		
Natural Gas Consumed	m <sup>3</sup> /day	8,067		
	m <sup>3</sup> /month	250,071		
Fly ash disposed	tonnes	613		
Bottom ash disposed	tonnes	3,030		

## 7. Complaints and Responses

Date/Time	Complaint	Action Taken

October 2020 - Monthly CEMS Data

Date	Boiler #1								Boiler #2								Boiler #3							
	Stack Temp	O <sub>2</sub> (%)	SO <sub>2</sub> (mg/m <sup>3</sup> )	NO <sub>x</sub> (mg/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	THC (mg/m <sup>3</sup> )	Opacity (%)	Furnace Temp	Stack Temp	O <sub>2</sub> (%)	SO <sub>2</sub> (mg/m <sup>3</sup> )	NO <sub>x</sub> (mg/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	THC (mg/m <sup>3</sup> )	Opacity (%)	Furnace Temp	Stack Temp	O <sub>2</sub> (%)	SO <sub>2</sub> (mg/m <sup>3</sup> )	NO <sub>x</sub> (mg/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	THC (mg/m <sup>3</sup> )	Opacity (%)	Furnace Temp
10/1/20	149	9.8	79.6	130.4	28.1	0.10	0.42	901	152	9.7	50.4	126.4	20.8	0.05	0.44	911	155	10	58.8	129.2	30.9	0.25	1.42	879
10/2/20	147	9.8	75.4	126	40.7	0.08	0.47	916	151	9.9	46.8	128.4	19.3	0.09	0.54	902	155	10.1	55.5	130.7	31.7	0.28	1.46	891
10/3/20	149	10.1	99.6	129	39.4	0.13	0.43	914	150	10.2	58.6	126.9	20.4	0.13	0.69	900	155	10.1	62.1	129.5	30.2	0.43	1.41	900
10/4/20	149	10.2	111.8	128.5	32.2	0.09	0.41	915	142	10.5	63.4	119.6	25.4	0.11	0.23	923	157	10	57.4	134.3	28.1	0.42	1.39	889
10/5/20	149	10.1	114.2	127.5	19.8	0.05	0.42	919	138	11.3	33.5	100.7	28.7	0.12	0.13	936								
10/6/20																								
10/7/20	157	9.8	92.7	129.7	42.8	0.26	0.46	923																
10/8/20	162	10.1	92.6	126.4	34.3	0.16	0.38	908	154	9.6	56.3	112.2	28.3	0.02	0.21	905	152	9.7	104	120.6	37.4	0.21	1.07	878
10/9/20	159	9.6	121.8	127.3	25.4	0.11	0.38	923	152	9.2	77.5	128.4	20.5	0.07	0.39	914	151	9.3	113.2	132.5	34.5	0.19	1.20	894
10/10/20	154	9.9	131.1	130.1	25	0.17	0.47	919	151	8.9	92.4	125.9	16.2	0.03	0.58	935	149	9.2	114.6	132.3	38.1	0.26	1.22	898
10/11/20	151	10.3	168.1	128.3	18	0.20	0.55	921	150	9.2	105.8	126.3	30.2	0.44	1.37	921	149	9.3	139.5	128.7	36.5	1.00	1.48	897
10/12/20	155	10.8	85	127.9	29.4	0.12	0.56	904	152	10.2	53.6	129.2	21	0.07	1.16	895	149	9.8	82.4	134.5	38.1	0.17	1.86	886
10/13/20	156	10.2	110.9	128.6	29.3	0.13	0.59	910	155	9.6	72	129.4	18.2	0.07	1.44	904	155	9.3	108.2	132.2	29.1	0.48	2.52	905
10/14/20	152					0.62		913	155	10.1	64.4	127.3	18.7	0.11	1.39	885	156	9.9	95	134.8	31	0.37	1.63	897
10/15/20	151	9.8	61.5	127.1	22	0.18	0.61	924	152	9.8	56	127.9	16.7	0.10	1.08	911	156	9.6	83.9	132.9	26.4	0.33	0.54	916
10/16/20	155	9.6	71.1	130	31.4	0.14	0.60	938	153	9.8	53.4	125.9	24.6	0.05	1.00	921	154	9.6	89.2	132.4	32.5	0.22	0.82	944
10/17/20	152	9.2	95.3	128.3	34.6	0.16	0.58	939	150	10	74	129.9	18.3	0.07	0.71	920	153	9.9	114.6	132.7	28.4	0.26	1.17	936
10/18/20	149	9.4	120.4	127.4	28.9	0.12	0.59	932	148	10.4	79.7	133.6	23.1	0.06	0.95	886	151	9.9	136.5	131.6	29.7	0.32	1.86	937
10/19/20																	153	9.9	88.2	132.1	33.7	0.54	1.54	947
10/20/20																	155	9.7	105.5	132.6	28.9	0.23	0.33	914
10/21/20	158	9.5	100.5	128.1	29.7	0.13	0.70	932									156	10.1	116.6	132.8	28.4	0.17	0.36	896
10/22/20	158	9.6	98.1	130.1	20.3	0.12	0.70	937									154	9.5	100.5	131.3	25.3	0.20	0.39	914
10/23/20	156	9.5	96.7	126	25.6	0.08	0.73	940									153	9.3	96.5	130.3	26.1	0.22	0.42	910
10/24/20	156	10.2	82.8	129.6	31.3	0.12	0.95	919									155	9.7	80.8	132.2	27.4	0.22	0.31	895
10/25/20	153	9.2	94.6	122.9	30.4	0.16	1.30	938									154	9.5	91.7	132.1	24.1	0.19	0.34	901
10/26/20	156	9.6	67.1	127.2	34	0.11	1.71	923									154	9.8	74.5	131.3	27	0.21	0.37	890
10/27/20	154	9.4	66.4	126.9	26.9	0.04	2.20	919									154	9.6	82.7	131.2	26.1	0.13	0.42	903
10/28/20	156	9.8	61.8	128.7	28.1	0.00	1.56	927									152	9.8	58.4	132.5	29	0.18	0.50	904
10/29/20	153	9.5	61.7	128.7	19.3	0.00	0.47	921									151	9.5	64	132.9	31.2	0.20	0.46	905
10/30/20	154	9.5	73.1	124.9	27.8	0.13	0.72	918	149	9.1	107.5	140.1	8.7	0.14	2.28	875	154	9.8	73	132.6	35.7	0.15	0.41	902
10/31/20	156	9.5	88.1	127.9	16.4	0.00	1.11	930	152	9.2	131.4	135.6	15.6	0.08	1.25	872	153	9.8	93	132.5	28.8	0.15	0.46	904
Average	154	9.8	93.4	127.9	28.6	0.11	0.74	922	150.3	9.8	70.9	126.3	20.8	0.10	0.88	906.4	153.4	9.7	90.7	131.6	30.5	0.29	0.98	904.7
Min	147	9.2	61.5	122.9	16.4	0.00	0.38	901	138.0	8.9	33.5	100.7	8.7	0.02	0.13	872.0	149.0	9.2	55.5	120.6	24.1	0.13	0.31	878.0
Max	162	10.8	168.1	130.4	42.8	0.26	2.20	940	155.0	11.3	131.4	140.1	30.2	0.44	2.28	936.0	157.0	10.1	139.5	134.8	38.1	1.00	2.52	947.0
St Dev	3.6	0.37	24.67	1.72	6.71	0.06	0.45	10.6	4.26	0.60	24.86	8.65	5.31	0.09	0.55	18.66	2.20	0.27	23.14	2.59	3.99	0.17	0.61	17.80

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.