metrovancouver

2019 Annual Report

The 2019 Annual Report was sent to the Ministry of Environment and Climate Change Strategy on March 27, 2020.

Metro Vancouver - Waste-to-Energy Facility

CONTINUOUS EMISSION MONITORING SYSTEM

2019 Annual Emission Report

1. ANNUAL SUMMARY REPORT

Parameter	Limit (mg/m^3)	Compliance Period	Maximum Measurement (mg/m^3)		
			Unit 1	Unit 2	Unit 3
Carbon Monoxide (CO)	50	24 hr	**45.6**	**43.2**	**45.2**
Sulphur Dioxide (SO_2)	200	24 hr[(1)]	**189.3**	**187.9**	**190.2**
Nitrogen Oxides (NO_x)	190	24 hr	**137.1**	**146.1**	**173.7**
			Annual Average (mg/m^3)		
			Unit 1	Unit 2	Unit 3
Opacity			**0.7**	**0.8**	**1.0**
Carbon Monoxide (CO)			**26.7**	**26.5**	**31.4**
Sulphur Dioxide (SO_2)			**64.3**	**77.4**	**68.1**
Nitrogen Oxides (NO_x)			**127.8**	**129.0**	**133.2**

1. Interim Discharge Limits will apply until and including the following dates, at which point the Discharge Limits will apply:

a. HCl – December 31, 2022

b. SO_2 – December 31, 2022

2. ANNUAL EXCEEDANCE REPORT

2.a. Discharge Limit Exceedances

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

2.b. 30 Minute Response Limit Exceedances Summary
Carbon Monoxide

	Unit 1	Unit 2	Unit 3
January	16	9	8
February	5	11	9
March	15	10	4
April	10	7	9
May	4	8	9
June	7	5	12
July	16	5	9
August	13	6	15
September	4	6	3
October	3	8	8
November	3	3	3
December	2	1	2
Total	**98**	**79**	**91**

Total Hydrocarbons

	Unit 1	Unit 2	Unit 3
January			
February			
March	1		
April			
May			
June			
July			
August			
September			
October			
November			
December	2		
Total	3	0	0

Nitrous Oxides

	Unit 1	Unit 2	Unit 3
January			
February			
March			
April			
May		1	
June			
July			
August			
September			
October			
November			
December			
Total	0	1	0

Opacity

	Unit 1	Unit 2	Unit 3
January			
February			
March			
April			
May			1
June			
July			
August			
September			
October			
November			
December			
Total	0	0	1

2.c. Transient Conditions - Furnace Temperature Below 800°C

Unit	Duration	Date	Time
#3	1 hour	16-Feb-19	13:20 - 13:41

Gas Burners not available during shutdown

Unit	Duration	Date	Time
#2	38 minutes	10-Feb-19	22:45-23:23
#2	31 minutes	11-Mar-19	16:20-16:51
#2	1 hour	3-Mar-19	00:00 to 01:00

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

Unit	Duration	Date	Time
#3	16 minutes	9-Apr-19	15:27 to 16:45
#1	20 minutes	18-Jun-19	13:35 - 13:55
#3	22 minutes	18-Jun-19	14:01 - 14:23
#3	43 minutes	19-Jun-19	8:32 - 9:25
#3	86 minutes	19-Jun-19	11:19 - 13:13
#1	24 minutes	3-Jul-19	12:31 - 12:55
#1	17 minutes	15-Aug-19	13:07 - 13:24
#3	23 minutes	18-Sep-19	11:11 - 11:34
#3	69 minutes	28-Sep-19	8:38 - 10:24
#1	59 minutes	7-Oct-19	19:08 - 20:07
#2	103 minutes	7-Oct-19	19:08 - 20:51
#3	11 minutes	7-Oct-19	19:08 - 19:19
#3	19 minutes	21-Oct-19	15:22 - 15:41

3. ANALYZER AVAILABILITY

Analyzer	Required Availability (% hours per annum)	Averaging Period	Annual Availability		
			Unit 1	Unit 2	Unit 3
Opacity	95	Hour	99.5%	99.8%	99.8%
Oxygen	95	Hour	98.9%	98.7%	99.2%
Carbon Monoxide (CO)	95	Hour	98.9%	98.7%	99.2%
Sulphur Dioxide (SO_2)	95	Hour	98.9%	98.7%	99.2%
Nitrogen Oxides (NO_x)	95	Hour	98.9%	98.7%	99.2%

4. ANNUAL MANUAL STACK TESTING SUMMARY

Manual Stack Tests:	Units	Discharge Regulatory Limit	Maximum Value		
			Unit 1	Unit 2	Unit 3
Particulate Matter	mg/dscm	9	4.81	0.73	5.99
HF	mg/dscm	1	0.08	0.04	0.02
Hg	ug/dscm	20	2.1	1.8	2
Cd	ug/dscm	7	0.3	0.1	3
Sum of Lead (Pb), Arsenic (As), Chromium (Cr)	ug/dscm	64	12.8	4.7	9

Trace Organics Tests:				Unit 2
PCDD/PCDF	ng/dscm	0.08		0.0023
Chlorophenols	ug/dscm	1		0.0086
Chlorobenzenes	ug/dscm	1		0.5945
PAH's	ug/dscm	5		0.0738
PCB	ug/dscm	1		0.0114

Manual Stack Tests:	Units	Annual Average		
		Unit 1	Unit 2	Unit 3
Particulate Matter	mg/dscm	1.79	0.51	2.35
HF	mg/dscm	0.03	0.03	0.01
Hg	ug/dscm	1.1	0.9	0.8
Cd	ug/dscm	0.1	0.1	1.0
Sum of Lead (Pb), Arsenic (As), Chromium (Cr)	ug/dscm	5.6	2.5	4.2

5. SHUTDOWN REPORT

Reason	Hours		
	Unit 1	Unit 2	Unit 3
Annual Scheduled Maintenance Outages	**447**	**426**	**328**
Unplanned Maintenance Outages	**63**	**317**	**274**
Waste Quality	**1**	**3**	**3**

6. FACILITY BYPASS AND EMERGENCY/SPILL EVENT REPORT

Date/Time	Duration	Cause	Action Taken

7. OVERVIEW OF PLANT PERFORMANCE AND OPERATIONAL INFORMATION

Summaries/interpretation of compliance and complaints information	17 transient condition exceedances reported in section 2. No other compliance issues reported.
	A complaint was received on May 21, 2019 regarding a purple plume on May 17, 2019. The purple colour resolved quickly without intervention. A second complaint was received on July 4th regarding odours which started on June 24th, which the complainant felt were due to the Phillipines waste. Phillipines waste was not received onsite until June 30th. Waste was processed as quickly as possible, and no odours were detected at property line.
Status of Operations and Maintenance of Various Equipment	Scheduled outages were completed on all three boilers. The turbogenerator ran with an annual availability of 99.71%. There were a total of 20 turbogenerator outages resulting in 25.75 hours offline.
Incidences of Emergencies and Response Measures Implemented	No incidents reported.

Evaluation of monitoring programs	All monitoring programs were completed as per the Operational Certificate. Manual stack testing was completed on February 11-15, 2019, May 6-9, 2019, August 12-15, 2019, August 19-21, 2019 (semi-volatile organics) and November 4-7, 2019
Bottom ash and fly ash disposal method	Both bottom and fly ash are treated with a patented system used throughout the industry to inhibit metals leaching. Bottom ash was beneficially used at the Coquitlam Landfill until August 6, 2019, and at the Vancouver Landfill from August 7, 2019. Fly ash was disposed at the Columbia Ridge Landfill and Recycling Center located in Arlington, Oregon. Prior to hauling, each fly ash load is tested by an independent laboratory to confirm the material meets disposal criteria. Six loads did not meet the criteria for disposal and were reprocessed on site. The failed loads resulted from an inconsistent fly ash flow which impacted the fly ash to phosphoric acid mixing ratio. The remaining fly ash loads were released for disposal.

Overview of Plant Performance			
	Plant Availability	%	**93.1%**
	Waste Received	Tonnes	**253,184**
	Waste Processed	Tonnes	**259,918**
	Energy Generated	MWh	**172,604**
	Natural Gas Consumed	GJ	**40,240**
	Bottom Ash	Tonnes	**42,242**
	Fly Ash	Tonnes	**9,888**
	Ferrous Metal	Tonnes	**5,599**
	Non-Ferrous Metal	Tonnes	**371**

Summary of operation; performance, and maintenance of emissions control devices

CEMS Calibration Data	Date Calibrated	Description of Calibration
Opacity	Daily	RATA tests on Units 1, 2, and 3 were completed the week of May 14. Analysers are calibrated daily against a zero value and a known reference value.
Oxygen	Daily	
CO	Daily	
SO2	Daily	
NOx	Daily	