2023 Annual Report

The 2023 Annual Report was sent to the Ministry of Environment and Climate Change Strategy on March 25, 2024.

Metro Vancouver - Waste-to-Energy Facility
CONTINUOUS EMISSION MONITORING SYSTEM
2023 Annual Emission Report

1. ANNUAL SUMMARY REPORT

Parameter	Limit (mg/m³)	Compliance Period	Maximum Measurement (mg/m³)		
			Unit 1	Unit 2	Unit 3
/ a	50 /h	24 hr	45.4	41.2	47.4
5	200 h	24 hr[1]	179.9	181.0	157.2
b h	190 bh	24 hr	166.5	156.1	182.1
			Annual Average		
			Unit 1	Unit 2	Unit 3
h			0.55	0.97	0.90
/ a /h			30.8	25.1	29.2
5 h			56.0	67.8	58.8
b h bh			128.0	128.6	135.0

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

I/ 5 h 5

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			Total Hydrocarbons		
	Unit 1	Unit 2	Unit 3	Unit 1	Unit 2	Unit 3
January	3	5	5			
February	8	3	9			
March	5	2	17			
April	7	1	9			
May	8	5	12			
June	5	5	5			1
July	5	0	8			
August	16	6	12			
September	6	1	19			
October	12	6	6			
November	8	8	1			
December	8	5	7			
Total	**91**	**47**	**110**	**0**	**0**	**1**

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

2.c. Transient Conditions

Gas Burners unavailable during shutdown

Unit	Duration	Date	Time

3. ANALYZER AVAILABILITY

Analyzer	Required Availability (% hours per annum)	Averaging Period	Annual Availability		
			Unit 1	Unit 2	Unit 3
Opacity	95	Hour	100	100	100
Oxygen	95	Hour	99	99	99
Carbon Monoxide (CO)	95	Hour	99	99	99
Sulphur Dioxide (SO_2)	95	Hour	99	99	99
Nitrogen Oxides (NO_x)	95	Hour	99	99	99

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	1.05	1.21	4.98
HF	mg/dscm	1	0.09	0.09	0.07
Hg	ug/dscm	20	0.06	0.06	0.06
Cd	ug/dscm	7	0.16	0.18	0.54
Sum of Lead (Pb), Arsenic (As), Chromium (Cr)	ug/dscm	64	4.20	6.60	11.00
Trace Organics Tests:			**Unit 1**		
PCDD/PCDF	ng/dscm	0.08	ND		
Chlorophenols	ug/dscm	1	0.0063		
Chlorobenzenes	ug/dscm	1	0.3469		
PAH's	ug/dscm	5	0.0788		
PCB	ug/dscm	1	0.0241		

Manual Stack Tests:	Units	Annual Average		
		Unit 1	Unit 2	Unit 3
Particulate Matter	mg/dscm	0.67	0.77	1.94
HF	mg/dscm	0.04	0.04	0.03
Hg	ug/dscm	0.04	0.05	0.05
Cd	ug/dscm	0.11	0.11	0.33
Sum of Lead (Pb), Arsenic (As), Chromium (Cr)	ug/dscm	3.05	4.00	5.30

5. SHUTDOWN REPORT

Reason	Hours		
	Unit 1	Unit 2	Unit 3
Annual Scheduled Maintenance Outages	386	332	296
Unplanned Maintenance Outages	490	517	569
Waste Quality	5	6	4

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	Nature of Non-compliance: Activated carbon injection system not operational for a period of 74 hours. Metro Vancouver was informed on March 21, 2023, and reported to the Ministry of Climate Change Strategy on March 23, 2023. Initial Response / Actions taken: The Waste-to-Energy Facility ran out of activated carbon on January 23 @ 10:44. Additional carbon was delivered on January 26 @ 13:23. The facility went a period of 74 hours without using activated carbon in the air pollution control system. No impacts to air quality were detected by the continuous emissions monitoring system (which remained operational throughout the outage). Monitoring conducted: Continuous monitoring utilizing the Waste-to-Energy Facility's automated continuous emission monitoring system. Further Action Items: A root cause analysis was conducted and the cause was found to be operator error. Education was provided on the importance of ensuring all aspects of the air pollution control system are in operation at all times.
	No complaints were received.
Status of Operations and Maintenance of Various Equipment	Scheduled outages were completed on all three boilers. The turbogenerator suffered a major malfunction on September 24, 2023. As such, the annual availability was 72.6%. The generator is off site for repairs.
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 14-16, 2023, May 15-17, 2023, August July 17-20, 2023, November 28-30, 2023 (semi-volatile organics) and November 14-17, 2023.
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 used in a beneficial use trial, or disposed at the Vancouver Landfill.
	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. Twelve 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	%	**90.1%**
	Waste Received	Tonnes	**236,277**
	Waste Processed	Tonnes	**232,722**
	Energy Generated	MWh	**114,720**
	Natural Gas Consumed	GJ	**74,696**
	Bottom Ash	Tonnes	**39,088**
	Fly Ash	Tonnes	**8,809**
	Ferrous Metal	Tonnes	**4,719**
	Non-Ferrous Metal	Tonnes	**286**

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 June 12, 2023. Results were within the minimum requirements, however a second RATA was recommended. A second RATA was completed December 5, 2023. All parameters were within the required tolerance. Analyzers are calibrated daily against a zero value and a known reference value.
Oxygen	Daily	
CO	Daily	
SO2	Daily	
NOx	Daily	