metrovancouver

# 2024 Annual Report

The 2024 Annual Report was sent to the Ministry of Environment and Climate Change Strategy on March 25, 2025.

# Metro Vancouver - Waste-to-Energy Facility
# CONTINUOUS EMISSION MONITORING SYSTEM
# 2024 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 | **43.8** | **43.0** | **48.7** |
| Sulphur Dioxide ($SO_2$) | 200 | 24 hr[(1)] | **146.6** | **140.7** | **136.4** |
| Nitrogen Oxides ($NO_x$) | 190 | 24 hr | **153.6** | **161.7** | **175.6** |
| | | | Annual Average ($mg/m^3$) | | |
| | | | Unit 1 | Unit 2 | Unit 3 |
| Opacity | | | **1.0** | **0.7** | **1.2** |
| Carbon Monoxide (CO) | | | **28.9** | **27.8** | **27.1** |
| Sulphur Dioxide ($SO_2$) | | | **64.4** | **73.4** | **66.3** |
| Nitrogen Oxides ($NO_x$) | | | **128.5** | **130.0** | **137.0** |

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

a. HCl – March 3, 2025

b. $SO_2$ – March 3, 2025

## 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** | 1.5 | 3.5 | 3.5 | | | |
| **February** | 4.5 | 6 | 5 | | | |
| **March** | 3 | 2 | 1.5 | | | |
| **April** | 4 | 2.5 | 5 | | | |
| **May** | 2.5 | 3 | 5 | | | |
| **June** | 3.5 | 4 | 11 | | | 0.5 |
| **July** | 3 | 2.5 | 7.5 | | | |
| **August** | 3 | 2 | 2.5 | | | |
| **September** | 3.5 | 6 | 2.5 | | | |
| **October** | 6 | 3 | 4 | 0.5 | | |
| **November** | 6 | 6 | 4.5 | | | |
| **December** | 3 | 5 | 4.5 | | | |
| **Total** | **43.5** | **45.5** | **56.5** | **0.5** | **0** | **0.5** |

| | Nitrous Oxides | | | Opacity | | |
|---|---|---|---|---|---|---|
| | Unit 1 | Unit 2 | Unit 3 | Unit 1 | Unit 2 | Unit 3 |
| **January** | | | 0.5 | | | |
| **February** | | | | | | 0.5 |
| **March** | | | | | | |
| **April** | | | | | 0.5 | |
| **May** | | | | | | |
| **June** | | | | | | |
| **July** | | | | 0.5 | | |
| **August** | 0.5 | | | | | |
| **September** | | | | | | |
| **October** | | | | | | |
| **November** | | | | | | |
| **December** | | | | | | |
| **Total** | **0.5** | **0** | **0.5** | **0.5** | **0.5** | **0.5** |

### 2.c. Transient Conditions

**Gas Burners unavailable during shutdown and furnace temperature average below 800C**

| Unit | Duration | Date | Time |
|---|---|---|---|
| #2 | 59 min | 30-Sep-24 | 23:00-23:59 |

## 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 | 98 | 99 | 98 |
| Carbon Monoxide (CO) | 95 | Hour | 98 | 99 | 98 |
| Sulphur Dioxide ($SO_2$) | 95 | Hour | 98 | 99 | 98 |
| Nitrogen Oxides ($NO_x$) | 95 | Hour | 98 | 99 | 98 |

## 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 | 1.37 | 1.12 | 1.72 |
| HF | mg/dscm | 1 | 0.08 | 0.08 | 0.07 |
| Hg | ug/dscm | 20 | 0.11 | 0.06 | 0.23 |
| Cd | ug/dscm | 7 | 0.44 | 0.22 | 0.22 |
| Sum of Lead (Pb), Arsenic (As), Chromium (Cr) | ug/dscm | 64 | 7.44 | 6.89 | 6.91 |
| **Trace Organics Tests:** | | | | | **Unit 3** |
| PCDD/PCDF | ng/dscm | 0.08 | | | 0.004 |
| Chlorophenols | ug/dscm | 1 | | | 0.009 |
| Chlorobenzenes | ug/dscm | 1 | | | 0.307 |
| PAH's | ug/dscm | 5 | | | 0.079 |
| PCB | ug/dscm | 1 | | | 0.024 |

| Manual Stack Tests: | Units | Annual Average | | |
|---|---|---|---|---|
| | | Unit 1 | Unit 2 | Unit 3 |
| Particulate Matter | mg/dscm | 0.98 | 0.71 | 1.05 |
| HF | mg/dscm | 0.04 | 0.03 | 0.04 |
| Hg | ug/dscm | 0.07 | 0.05 | 0.10 |
| Cd | ug/dscm | 0.29 | 0.12 | 0.14 |
| Sum of Lead (Pb), Arsenic (As), Chromium (Cr) | ug/dscm | 4.83 | 4.76 | 5.01 |

## 5. SHUTDOWN REPORT

| Reason | Hours | | |
|---|---|---|---|
| | Unit 1 | Unit 2 | Unit 3 |
| Annual Scheduled Maintenance Outages | 290.65 | 317.11 | 271.07 |
| Unplanned Maintenance Outages | 440.18 | 266.56 | 330.93 |
| Waste Quality | 9.57 | 24.81 | 12.11 |
| Boiler Wash | 332.05 | 177.85 | 180.52 |

## 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** | 1 transient condition exceedance reported in section 2. No other compliance issues reported. |
| | No complaints were received. |
| **Status of Operations and Maintenance of Various Equipment** | Scheduled outages were completed on all three boilers. The turbogenerator returned to service on July 13, 2024 and ran with an annual availability of 47.38%. There were a total of 2 turbogenerator outages resulting in 2.0 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 12-15, May 16-17, Jun 4-5, July 16-19, July 24-26 (semi-volatile organics), Nov 18-20, and Dec 12-13, 2024. |
| **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.<br><br>Bottom ash was disposed at the Vancouver Landfill.<br><br>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. 14 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** | % | **90.0%** |
| | **Waste Received** | Tonnes | **243,168** |
| | **Waste Processed** | Tonnes | **242,333** |
| | **Energy Generated** | MWh | **76,030** |
| | **Natural Gas Consumed** | GJ | **80,230** |
| | **Bottom Ash** | Tonnes | **39,563** |
| | **Fly Ash** | Tonnes | **8,637** |
| | **Ferrous Metal** | Tonnes | **5,207** |
| | **Non-Ferrous Metal** | Tonnes | **300** |
| **Waste Received** | **Municipal Garbage** | Tonnes | **224,900** |
| | **International Airline Waste** | Tonnes | **3,080** |
| | **International Marine Waste** | Tonnes | **5,881** |
| | **Police loads** | Tonnes | **98.4** |
| | **Pharmaceuticals** | Tonnes | **88.1** |
| | **Pocket Coil Mattresses** | Tonnes | **26.8** |
| | **Special Handle Waste** | Tonnes | **2,226** |
| | **Wastewater Treatment Plant Residuals** | Tonnes | **6,830** |
| | **Out of Region Waste** | Tonnes | **37.2** |
| | **Toxic & Noxious Weeds** | Tonnes | **0.9** |

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

| **CEMS Calibration Data** | **Calibrated** | **Description of Calibration** |
|---|---|---|
| Opacity | Daily | RATA tests on Units 1, 2, and 3 were completed June 11-13, results were within the requirements. Analysers are calibrated daily against a zero value and a known reference value. |
| Oxygen | Daily | |
| CO | Daily | |
| SO2 | Daily | |
| NOx | Daily | |

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### 2.a. Discharge Limit Exceedances

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| **Total** | **0.5** | **0** | **0.5** | **0.5** | **0.5** | **0.5** |

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